

Copyright, 1921, by American Carpenter and Builder Company.



Formerly AMERICAN CARPENTER AND BUILDER

Member of the Audit Bureau of Circulations
Circulation Audited and Verified April, 1921

American Builder

Entered as second-class matter July 1, 1905, at the postoffice at Chicago, Ill., under the Act of Congress of March 3, 1879.

Published on the first day of each month by

AMERICAN CARPENTER AND BUILDER COMPANY

Publication Offices:

Radford Building, 1827 Prairie Ave., Chicago

TELEPHONE: CALUMET 4770

EASTERN OFFICE: 261 BROADWAY, NEW YORK CITY

ADVERTISING RATES

Furnished on application. Advertising forms close on the 15th of the month preceding date of publication.

SUBSCRIPTION RATES

One year, \$2.00; six months, \$1.00; single copies, 35 cents. Special rates for two or more subscriptions when received together, to be sent to different addresses—Two subscriptions, \$1.75 each; three subscriptions, \$1.50 each; five subscriptions, \$1.25 each; ten or more subscriptions, \$1.00 each. Extra postage to Canada, 50 cents; to foreign countries, \$1.00.

PROTECTION FOR OUR READERS

The publishers of the AMERICAN BUILDER reserve the right to decline any advertising they believe is detrimental to the interests of its readers; to edit advertising copy and to change or eliminate any statements that reflect injuriously or cast discredit upon other building products, machinery, equipment, supplies or tools.

Be sure in writing to advertisers to say: "I saw your advertisement in the AMERICAN BUILDER."

EDITORIAL DEPARTMENT

WILLIAM A. RADFORD, Editor-in-Chief.

BERNARD L. JOHNSON, B. S., Editor.

WM. B. REEDY
J. D. EDDY
A. W. WOODS } Associate Editors

BUSINESS DEPARTMENT

WM. A. RADFORD, President and Treasurer.
E. L. HATFIELD, Vice-President and General Manager.
ROLAND D. RADFORD, Secretary.
DELBERT W. SMITH
C. R. W. EDGUMBE
J. T. DOWD } Advertising Staff

VOL. 31

July, 1921

No. 4

Table of Contents

Table listing various articles and their page numbers, including 'Short Talks by the Editor', 'Home', 'Small Cottage Bungalow', 'Insulation of Concrete Block Building', 'Walls', 'Some Well Proven Methods of Resisting the Dissipation of Heat', 'Steel Lumber Construction', 'Entire Framing of Small House in Steel Lumber', 'Six-Room Dwelling Has Steel Joist Flooring and Studs—Practical Questions Answered', 'Design of Safe Construction', 'Types of Trusses', 'Bonds and Joints in Brick Construction', 'Some of the Principal Types in General Use and How they are Formed', 'Reducing Costs in Apartment Construction', 'Active Gary Contractor Has Erected Three Buildings and Made Money by Installing Space Saving Beds', 'Sunshine School Aids Study', 'Unique Newspaper Plant Built in Small City', 'South Bend Tribune Has Complete Plant in Attractive Building Larger than Many in Big Cities', 'Small Jobs for Rural Builders', 'Design for a Colony Poultry House', 'Septic Tank or Liquid Manure Pit', 'What's New?', 'Beautiful Fountain Made from Cast Stone', 'Special Stone for Building Accessories', 'New Fireplace Throat Arrangement', 'New Tapered Asphalt Shingles', 'Insulating the New House', 'New Method of Marketing Magnesite Stucco', 'Correction Department', 'Correspondence Department', 'Explains Projection on Hand Saw', 'Indiana Builders Find Bungalow Work Interesting', 'Here's Something to Think About', 'Some Real Advice Needed Here', 'Bothered by Green Fuel', 'Builders Active in Colorado', 'Has Trouble with Chimney', 'Question on Foundation Work', 'Wants Bathing Pavilion Suggestion', 'Rule for Getting Cut on Gambrel Roof', 'Some Pointers on Corn Crib Construction', 'Can You Tell Him?', 'Design of Cozy Five-Room Brick Bungalow', 'Charming Little Home Has Attractive Exterior and Well Arranged Interior', 'Out on the Job', 'Special Construction Saves \$600 on a Home', 'Motor Trucks and Trailers', 'Keeping the Trucks on the Road', 'Is Your Motor Truck Ready for Summer?', 'Standardization of Building Codes', 'Effect of Wall Thicknesses on Cost and Plans of Small Houses', 'News of the Field', 'Completes Model Statue for Chicago Pageant', 'Indiana Limestone Association Reorganizes', 'Kawneer Head Visits Europe', 'Sunken Joints in Furniture Panels', 'Catalogs, Bulletins and Books Received', 'Stresses in Laminated Wood Construction'.



Kragstone Will Bring You More Satisfied Customers

KRAGSTONE
AMERICAN MAGNESIA PRODUCTS CO. CHICAGO
STUCCO

Every house you build with **Kragstone** Stucco means another satisfied customer who is going to sell your skill and sell **Kragstone** to his friends.

This means a constantly increasing business in new construction at a good profit. There is equally good business to be done in overcoating old houses with **Kragstone**.

Kragstone is a standard, fireproof, and weather resisting building material. It can be applied in winter as well as summer. It costs less than other types of construction, and lasts longer. Therefore, it sells easily. See the **Kragstone** dealer in your town, or write us for full information and literature.

AMERICAN MAGNESIA PRODUCTS CO.
5732 Roosevelt Road : CHICAGO, ILLINOIS

Short Talks by the Editor

Judge Landis Starts Building Machinery

SELECTED AS ARBITRATOR IN CHICAGO DISPUTE, FIRST ACT IS TO PUT MEN BACK TO WORK—ENTIRE COUNTRY STIMULATED

THIRTY THOUSAND Chicago building workmen have gone back to work after six weeks of enforced idleness. Fifty million dollars worth of big work, and as much more of smaller jobs—apartment, residential and scattering—is being resumed with a rush.

Contractors and men are both eager for the work and are confident that Judge Landis, the arbitrator, will hand down an award that will be fair to all.

A decided improvement in efficiency and economy is expected which will encourage thousands of other jobs to be released. The architects' offices are full of plans awaiting the "go ahead" signal.

The middle of June is a late start for the year's building; and contractors plan to speed up to make the most of the good weather before snow flies. A large amount of midsummer and fall building is predicted; in fact, those best informed predict a steady increase in building right thru the year, because of the building shortage and high rents.

Situation in Other Cities Improved

Altho the country generally has not suffered from labor troubles like Chicago, this smoothing out of the difficulty here is very encouraging to the entire building field. Chicago has been called the hub of the building industry. When the hub turns the whole wheel turns.

Reports from many cities and country towns, both east and west, received at the AMERICAN BUILDER offices show builders hard at work, keen for business, and hopeful for the future. Building is evidently the first great industry to really revive.



Hoover Urges Action

WE do not get any houses by crying over spilt milk, and if we are to have a restoration of our housing capacity one of the first and most constructive things that can be done would be for the great economic organizations in the country such as Chambers of Commerce, the building trades organizations, the material trades organizations, and the

labor organizations to get together and arrive at some sort of a cooperative basis by which they can induce the public to start building on terms of such reasonable order and under such assurance as will re-establish their interest."—*Herbert Hoover*.



Homes, and More Homes

WHEN Napoleon was fighting the world, his main need was "money, more money, and then more money." In the war just terminated the cry was "ships, more ships, and still more ships." The peace time cry of the United States today is "homes, more more homes, and many more homes." They are just as important to the successful continuance of this nation as were ships for the successful continuance of the war by the allies or money for the success of Napoleon's plans.

In fact, they are even more important because they represent real constructive progress necessary for the upbuilding of the American home and family. A nation without homes "shall perish forever from the earth." There is little sense in having a large navy or army to protect homes when they no longer exist. In the past few years every energy of the world has been directed toward destruction; now it is high time these energies, this money, and this thought should be diverted back into the channels of construction.

"Home in one form or another is the greatest object in life.



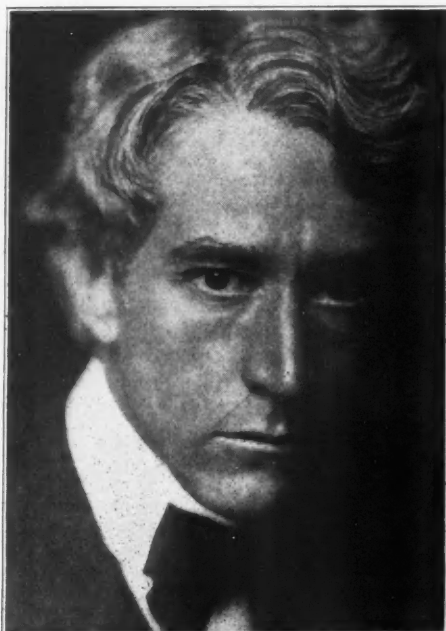
HIGH price of construction is the real, original, and underlying cause of the mysterious industrial depressions which have occurred in the industrial nations when these depressions have come in the absence of external and recognized causes."—*George H. Hull*.



A MAN is known by the company he keeps—a business man by the advertising he does.



YOU can always make a satisfactory deal with an honest man—unless you are in the dishonest class yourself.



JUDGE K. M. LANDIS
Selected to Arbitrate the Differences Between the Chicago Building Trades and the Contractors. His First Step Was to Put the Men Back to Work.

Cooperation Needed

ONE MILLION, five hundred thousand homes! That is what the nation needs today. According to the report of the Senate committee on Reconstruction, 100,000 families in New York City alone are "doubling up." In some cities it is not uncommon to find a dozen people living in three rooms.

"People are sleeping six, eight and ten in a room; men, women, and children not even related to each other," says E. J. Rosenthal in a report to the Association of Commerce of Chicago on the housing situation in that city.

What are we going to do about it?

Boston requires between 3,000 and 5,000 new homes and apartments; Philadelphia is short accommodations for 20,000 families; St. Louis, 10,000. Detroit has prepared a program calling for \$250,000,000 and Cleveland at the present time is short 15,000 homes.

Such a condition is not only of tremendous importance to the nation as a whole but to the building industry. It means there is an enormous amount of potential business waiting for the architects, builders and contractors of the country. How to convert this existing demand into actual workable reality is the problem that builders must try to solve. Whether this can be achieved thru legislation such as the tax exempt laws of New York, proposed mortgage exempt bill before Congress, and many other remedial measures remains to be seen. It is doubtful that isolated action such as this will make for general improvement. The real solution, as we see it, lies in more active and genuine cooperation between the contractor and workmen, the building supply dealer and the home seeker. The client is here waiting to be sold, anxious to be. But he must be shown that it is more advantageous for him to build now than wait.

Facing a situation unparalleled in history, the wise builder will use this lean period to extend his efforts



Rohn, in Rocky Mountain News
READY FOR THE PRODIGAL SON.

and double his energies, throw away his blue glasses and get a real view of the sunshine!

✦ Let's Go!

"ARE you going to build any new houses this year?"

"I don't know. In fact, I don't know what to do about building. If I do build I'm afraid of a drop in property values; if I don't build I may miss an opportunity to take advantage of an abnormal demand for houses. I don't like to take any chances until the country gets back to normal, so I guess I'll wait and see what happens."

"The reply voices a business policy logically fallacious and economically unsound. It predicates a willingness to get on the band wagon and ride after the parade has been started at someone else's risk. It does not reflect that element of business courage which built America," says the Right Angle published by the General Fireproofing Co.

"It is logically fallacious and economically unsound. The value of property is determined by the laws of supply and demand. Builders who are straddling the fence, waiting for something to happen, are apparently waiting for property values to seek a lower level. How can they when we are 1,500,000 homes short? The price of a house may drop temporarily but it will seek a new higher level immediately. If there are three loaves of bread and five persons demanding bread but only three buying at 10 cents; to drop the price to 9 cents will bring four persons demanding the three loaves. The four will bid against each other and the price goes to 10 and often 11 cents.

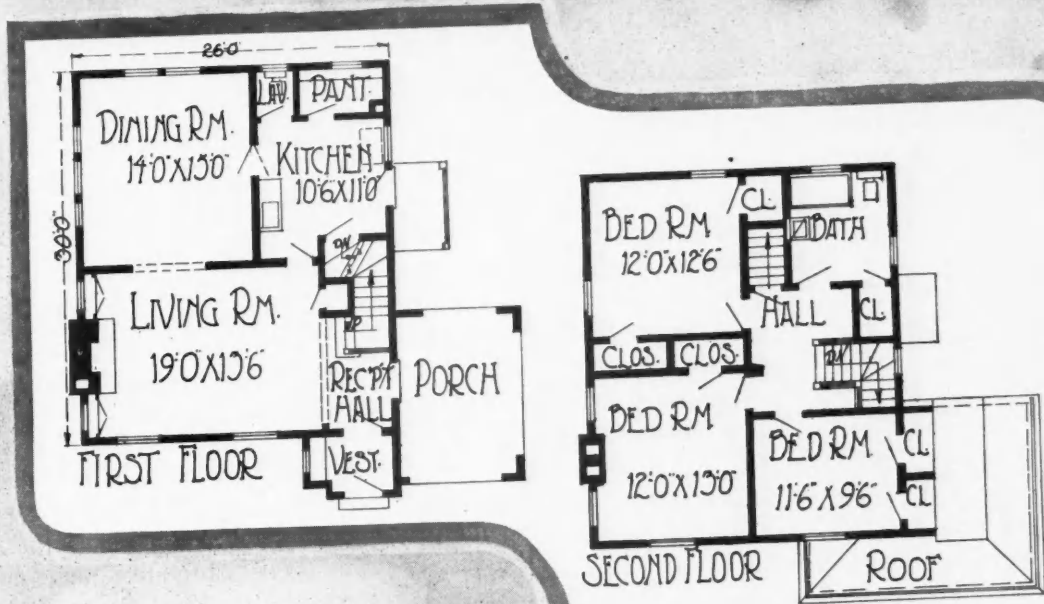
"Normalcy! The very meaning of the word makes it impossible to fix the 'norm' or standard of what should be normal in 1921. The standard of values in 1914 is no criterion, because there has been upheaval of war and post-war prosperity which has—whether we admit it or not—raised our material standards of living to a new higher level. We are eating sirloin steak instead of soup-bones.

"We can maintain our present standard of living if we will accept it and put full steam ahead. If we wait hard enough and long enough for a reversion to standards that are history—we'll get them. But—do we want 1914?"



BASEMENT fires constitute a serious hazard which demands greater attention on the part of property owners. Most of them are due to waste paper, packing boxes, excelsior and rubbish which should not be allowed to accumulate. Fires starting in the basement frequently get such a start that they are a serious menace to the lives of those on the floors above. The remedy recommended by the fire prevention experts is better housekeeping in the basements, enforced by regular and frequent inspections by the owner or responsible employees.

Charming Home of Colonial Type



PLEASING "HOMEY" DWELLING OF DISTINCTIVE DESIGN. There is Colonial influence in the lines of this well planned home of six rooms, three on each floor. The wide white siding, quaint shutters, and front entrance are all Colonial. The small sun porch is also quite charming and homelike. On the first floor are located the living room, large, roomy, and comfortable, with old-fashioned open fireplace, wall bookcases, lighted by two large windows in front and smaller ones on the side, the dining room to the rear and a small efficiently arranged and equipped kitchen. Upstairs are located the bedrooms, and bath. The attic is high and can be very easily converted into living quarters at small cost. Thruout simplicity of design and comfort are the predominant qualities. Size, 26 by 30 feet.

Way Down South in the Philippines

WILLIAM A. RADFORD, JR., PAYS A VISIT TO THE HOMES OF WARLIKE NATIVES AND FINDS MUCH OF INTEREST

By William A. Radford, Jr.

EDITOR'S NOTE—William A. Radford, Jr., who has spent the last two years on a trip around the world in the interests of the AMERICAN BUILDER, has returned home, landing at Seattle, Wash., June 9. Consequently this is the last of his series of articles written from foreign lands, but he will continue to contribute articles about conditions in foreign lands to the AMERICAN BUILDER. Anyone who desires specific information about the many places Mr. Radford has visited is invited to write to him. Address your letter to William A. Radford, Jr., 1827 Prairie Ave., Chicago.

MANILA, P. I., May 10—Tomorrow, May 11, I sail for home, going by the way of China and Japan, which takes nearly a month aboard ship. However, this letter will reach home a week or so in advance of my arrival.

The last three weeks of my two years' trip around the world have been spent among the Philippine Islands. I have visited Cebu, one of the principal southern ports of the islands, Zamboanga, farther south and Miambung, the capital city of the Island of Jolo and

home of the Sultan of Sulu. Incidentally I just missed an uprising of Moros at Jolo, a warlike party having ran amuck, causing considerable trouble before quiet was restored. From what I saw of the Moros and from what I learned about them, I can say that they are some fighters. Unlike most of the natives of these islands they are husky in build and brave to the point of fanaticism. About a hundred were killed before the fighting was ended.

While at Miambung I attempted to see the Sultan, but he was not receiving visitors, I was told, having taken two new wives the week before. However, the town presented much that is of interest to the traveler, altho the principle business, pearl fishing, was dead. At the principal bank I was amazed at the sign over the cashier's window: "Absolutely no cash transactions." It seems that the supply of money had about worn out, and no more was being received because of business conditions. The banks were holding on to what they had.

At Cebu there was a businessman's carnival in progress and on display were the products of many American manufacturers. In one booth where there was an American flag prominently displayed, there were pumps of all kinds, engines and farming equipment such as feed grinders, etc. In another booth was an



William A. Radford, Jr., on the Shore at Dumaguette, Philippine Islands.



Mr. Radford Had Some Difficulty in Getting this Moro at Miambung to Pose for His Photograph, but Succeeded After He Had Purchased the "Barong," or Knift, the Warrior Is Wearing.



Native Houses on the Water Front at Dumaguete, Philippine Islands. The Natives Get their Living by Fishing, While Nature Provides Their Other Food.

American tractor, made not far from Chicago.

On the way to Zamboanga from Cebu the boat stopped for a day at Dumaguete. This town, some good pictures of which I obtained, is nothing more than a group of native huts along the shore, set in a background of cocoanut palms. The natives run strongly to hogs and game chickens, but gain their livelihood from gathering cocoanuts and fishing.

Zamboanga is a beautiful town, more like a garden than a city. Also it is most progressive. They have parks there that would be the envy of almost any American city; the street lamp posts are of concrete, and I saw this material in use for a great many purposes. While the city appeared to be asleep, great quantities of freight, mostly of American origin was unloaded there, and in the stores I saw fine displays of American goods.

From the things I saw in the southern islands, which, by the way, are clustered about the Equator and have some extremely hot weather, I can safely say that there is much business down there for Americans in normal times. Just now there is little demand for their products, cocoanut oil and hemp, but when business revives there will be a great deal of exporting and importing done.

Here in Manila conditions are anything but good. Yet there is a great deal of building going on. Two large office buildings of steel and concrete are under construc-

tion, and home building is going ahead at a good rate.

Before this gets into print I will have returned home. My trip of nearly two years, fifteen months of which were spent in the Orient, has taught me that our neighbors in the far east are bound to become our best customers in the near future. Everywhere I found that there is a friendly feeling toward Americans and a desire to do business with us. Our products have the highest reputation, and are in demand everywhere.



GERMANY is using window cords made of paper.



MORE than 60,000 people have returned to the ruins of Rheims.



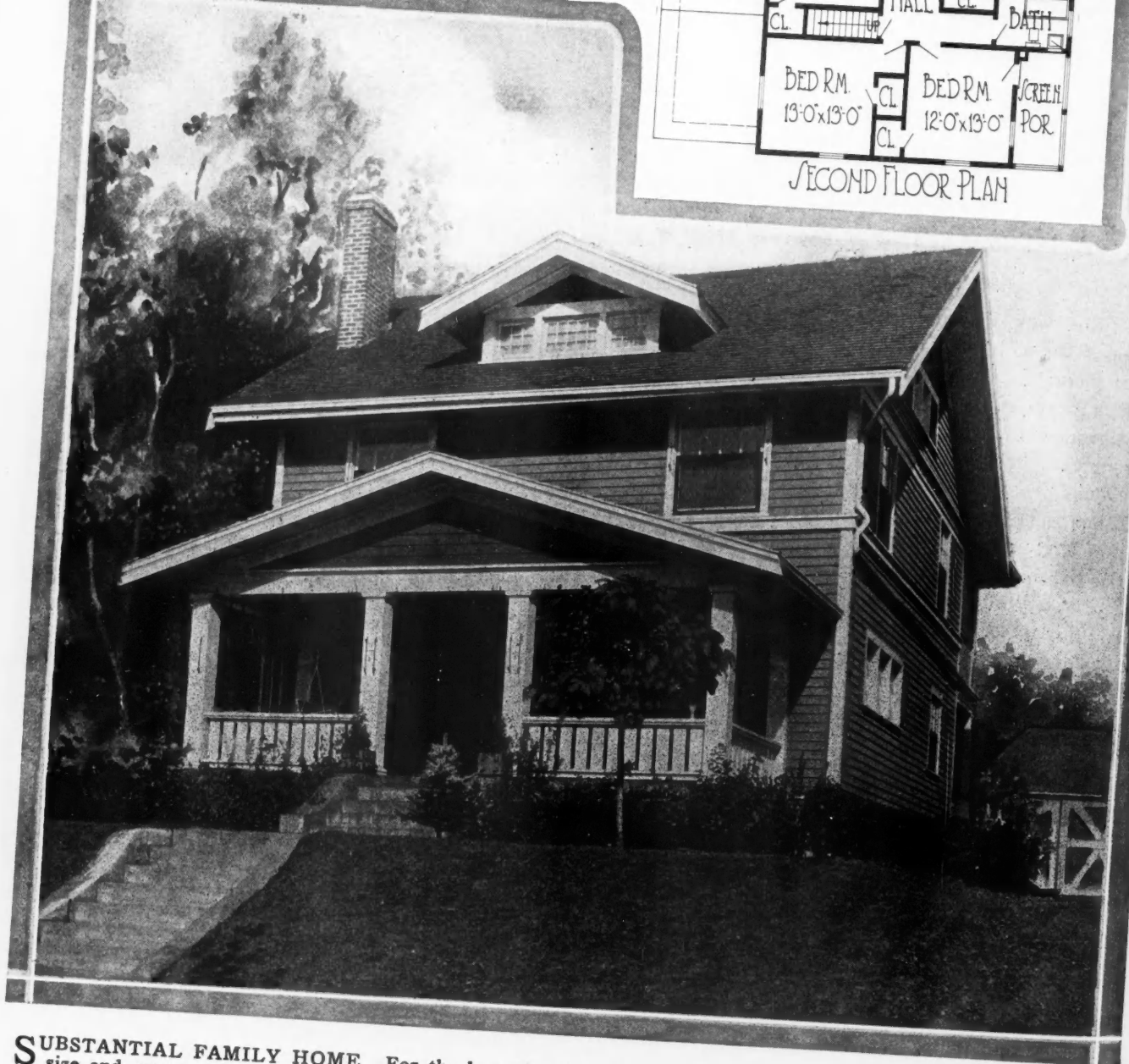
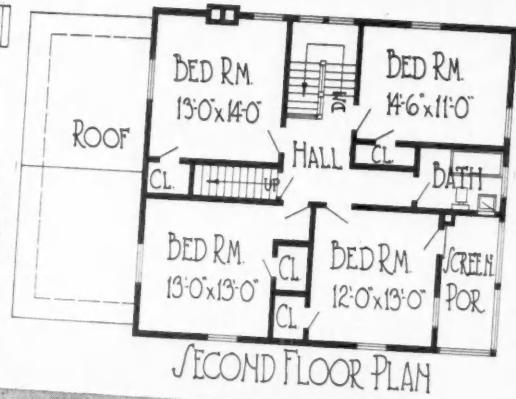
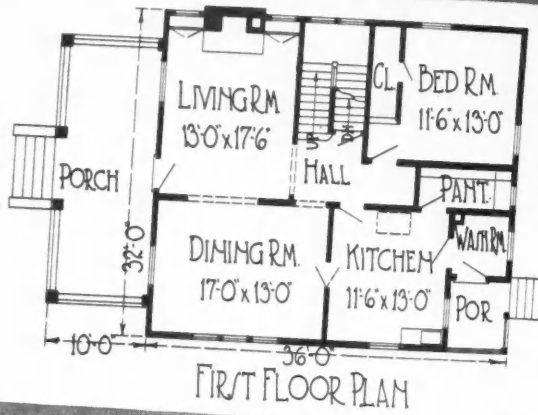
ONE person in every 2,000 in the United States is deaf.



Another Picture of the Water Front at Dumaguete, Taken from the Pier Where Mr. Radford's Boat Stopped.

Large Family Home of Frame

[July, 192



SUBSTANTIAL FAMILY HOME. For the large family this house should prove very attractive because of its size and arrangement. It is characterized by a spaciousness and bigness that insures plenty of room and breathing space. The large front porch is only one indication of this commodious size. It is substantially built of frame set on a concrete foundation with front steps of the same material. On the first floor are four rooms, living room, dining room, kitchen and bedroom, also a washroom which can be used as laundry or in the case of a farmhouse as a cleanup room for the help. Upstairs are four more bedrooms and a screened-in sleeping porch. There is also a high attic under the gable roof which can be used if necessary. This house is 32 feet wide and 36 feet long.

Choosing the Site for the New Home

SOME CONSIDERATIONS THAT SHOULD NOT BE OVERLOOKED WHEN PLANNING THE HOUSE

By Wm. B. Reedy

WHEN a woman buys a hat she considers its color in relation to the color of her dress. Just as in music, there is always a possibility of dissonances and discords in color agreement. Did it ever occur to you that in choosing the site for your future home the same attention should be paid to harmony? Your idea of what kind of a house you are planning to build is pretty well fixed in your mind. Are you going to place that house in a setting that will make it an ugly eyesore? Why paint an attractive picture only to lose its effect by surrounding it with an incongruous, unharmonious frame.

That is what many people do when they buy the site for their home. They never stop to consider a great many things which will immeasurably enhance the home and make it all the more attractive. Most of the time their only considerations are money and general appearance. How about size? You want plenty of room if it can be bought. It is a good plan to buy as much land around that house as possible. Then there is room for a lawn, a flower garden and other trimmings that go to make a pretty atmosphere.

There is no need for rush in choosing the site of the home. There are too many small details that should be carefully weighed and considered. There is the surrounding neighborhood, the position with reference to future development of the town or city, position with reference to essential conveniences such as church; school, and then there is the all-important problem of transportation.

What are the building restrictions? Are you assured of future protection against the building of a factory in the vicinity, an uncouth building or some other structure out of harmony with the general plan? These are some of the lesser details that should not be overlooked.

What kind of landscape are you going to have? Is it natural or will you have to expend a lot of money to make it possible. Take the lot with several nice large trees. Can't they be used in the plan? Do they stand where they will be a real benefit and comfort when the sun comes out strongest? Don't overlook the necessity of shade trees.

The prettiest home in the world will look barren and uninviting if it is set in a bare plot of ground devoid of a delicate touch of Nature. It is the trees, the garden, the beautiful expanse of lawn, the rolling terrace or the charming hedge that add the touches that make the house different and distinctive. Nothing is so depressing, so monotonously dull as a row of



Choice of Site Has Lifted this Home from the Plane of the Usual Attractive Well-Built House to that of the Distinctive and Outstanding. It Will Not Be Touched by the Usual Deterioration of the City House and Shall Be a Delightful Abode for All Time. William Farnum, the Movie Star, Finds the View Delightful.



Building Restrictions Have Insured this Beautiful Street a Lasting Charm. By Considering Such Factors as Zoning, Size of Lot, Etc., Home-Owners Can Ward Off the Possibility of Retrogression and Invasion of Slums.

buildings jammed up close together with little space for landscape touches, little variety in exterior design, narrow spaces in between for narrower sidewalks, small yards, etc. What a difference when compared to another row, no more expensive in cost, set on a wider lot with a patch of green here and there to soften the hard lines of buildings, a variety in design, not radical but just enough to drive away that oppressive sameness.

True enough homes are built first for utility but a little care and forethought will make them attractive at the same time.

Grading is another important consideration in choosing the site for a home. The character of the soil should be learned. Clay is not desirable because of its soggy character. Loam and sandy soil is more porous, absorbs moisture quickly and is more productive of real lawns and gardens.

Lots on a hillside or elevated plot of land are good because they make the house more attractive when completed, set apart from the main level. So are irregular shapes of lands because they give the builder and architect something to work with. He is able to picture the house as it will appear when finished and he can work in several individual touches that otherwise would have to be left out.

The wide awake human being always wants something a little different from his neighbor. He wants a home that will stand out not as one of the houses in the block but as Mr. J.'s house. And he wants it to be a constant source of delight as the years go by instead of an increasingly bitter monument of regrets and disappointment.

Careful choosing of the site will protect the prospective home builder against future depreciation in the value of his property and future deterioration in the character of the neighborhood.

ALL Eskimo tribes speak the same basic language.

Pine Stronger Than Steel

CALCULATION confirmed by experiment has shown that, weight for weight, pine wood is stronger than steel in both transverse and tensile strength. It is regarded as doubtful if any metal could be made into hollow rod equalling a bamboo rod in stiffness without exceeding it in weight.



A LARGER percentage of American lumber is consumed in Peru than in any other South American country. Peru stands fifth in quantity of lumber consumed, Douglas fir being nearly 90 per cent of all kinds used. Mines, farms and railroads are all large lumber users in Peru.



DOUGLAS fir made up about 95 per cent of the total lumber imports of Chile before the war. Production of lumber in Chile is between 30,000,000 and 40,000,000 feet a year. Chile's forest area is estimated at 39,362,000 acres out of a total land area of 188,110,750 acres. About 9 per cent or 3,500,000 acres is covered with merchantable timber.



AT the end of 1920 there were 52,638 postoffices in the United States. Post routes extended a distance of almost a half million miles.

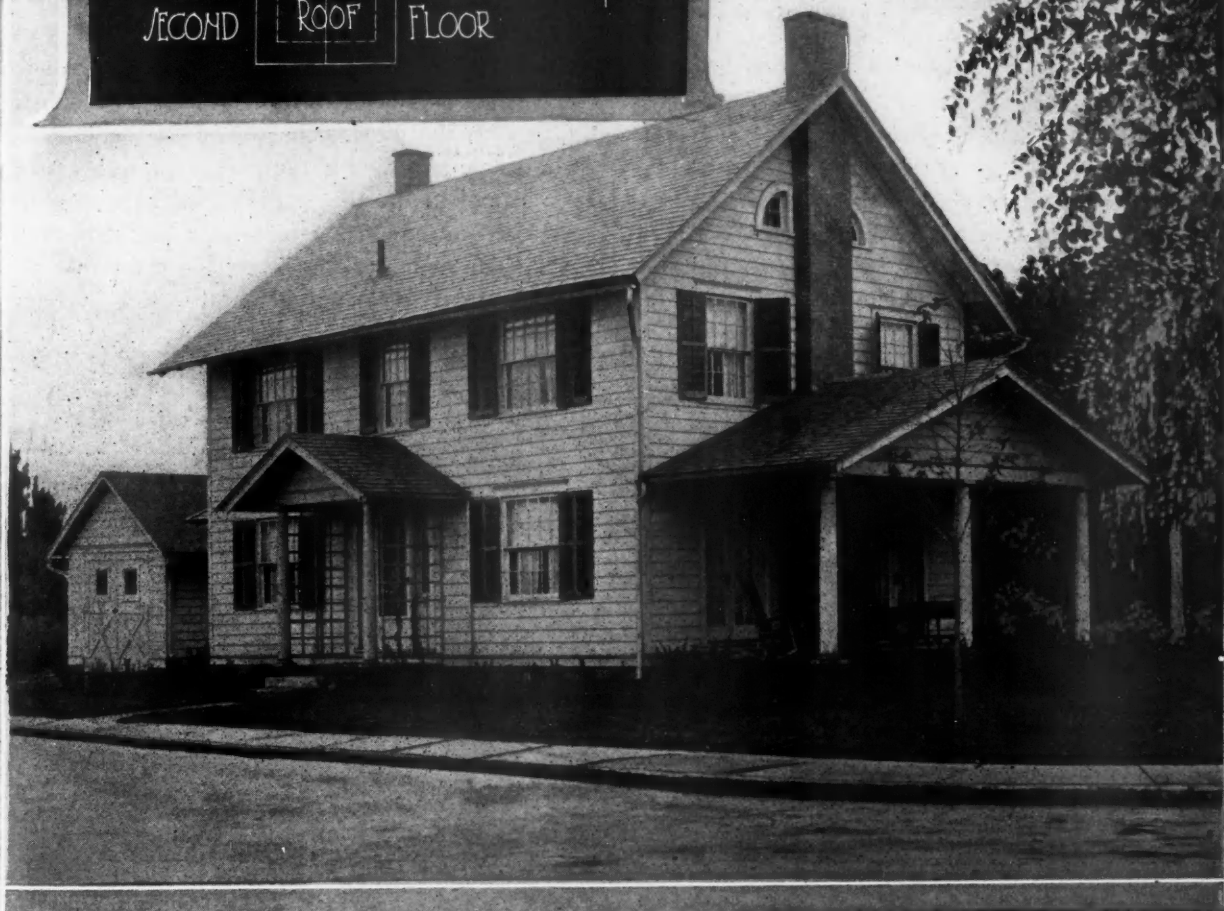
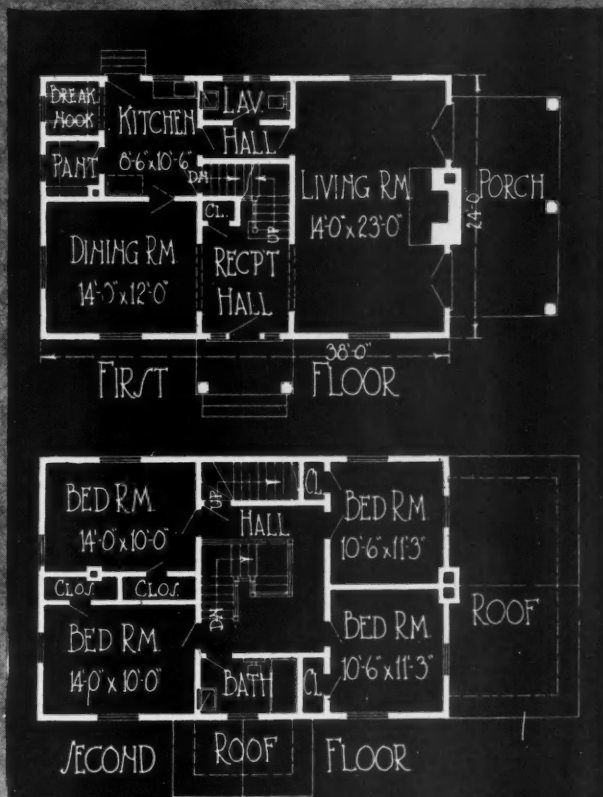


A FOUR-YEAR average of lumber production before the war in Brazil estimates annual cut as 101,000,000 feet. Sixty-four million feet was imported each year, largely southern pine. Compare this with somewhat over a million feet of southern pine imported to Brazil from the United States in 1919.



ARGENTINA imports ten times the amount of lumber she produces, being a great lumber market for Brazil. Buenos Aires receives 70 per cent of the country's lumber imports, much of it being redistributed.

Ever-Popular Colonial House of Seven Rooms



REAL, HOSPITABLE COLONIAL HOME. This house has its appeal in its simplicity and quiet dignity. It is always symbolic of true fireside happiness, a reason for its unflinching popularity. Because of its regular plan, the Colonial house is economical to build. This beautiful home contains seven rooms, the usual comfortable living room with fireplace, dining room, kitchen, and four bedrooms on the second floor. In addition there is a cozy breakfast nook adjoining the kitchen. It possesses all the exterior beauties of the true Colonial home, the entrance, white walls, shutters and regularly-spaced small-pane windows. The open porch at the side is inviting. It can be changed into a modern sun parlor if desired. At the rear is a small garage. Size, 38 by 24 feet.

Suggestions for Garage Construction

GENERAL ATTRACTIVENESS AND EFFICIENCY GREATLY INCREASED BY RIGHT KIND OF DOOR HARDWARE

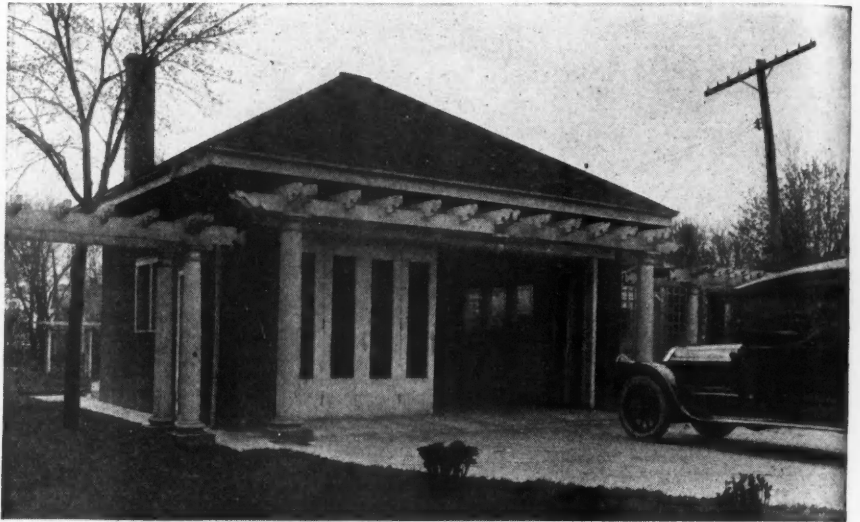
By Wm. G. Johnson

AUTOMOBILES have come to stay. And just as the chicken is the inevitable corollary of the egg or vice versa so is the garage the necessary co-partner of the automobile. The amazing development of this means of transportation and pleasure has opened the field of garage construction to the builder and has provided him with a source of profit if he is on the alert to take it. The garage is no longer a slapstick shed but is now a definite part of the architectural scheme of the home.

Presented on these pages are several designs of attractive garage built of frame, brick and stucco. The real charm of the garage lies in its doors. Because of the infinite variety offered in this particular section of the work, the garage building can be made just as attractive as a home. Moreover, the development of the hardware which affords a great variety in type of door has been an important factor.

The private garage as a rule is built to hold one, two, or three cars, very seldom more. The public garage takes care of larger numbers. Consequently we will confine our talk to private garages. In the construction of this type of building the first thing to consider is the floor. Without doubt this should be

concrete because of its substantial character, fireproof qualities, and ease with which it is kept clean. In this floor a drain or two should be installed to take care

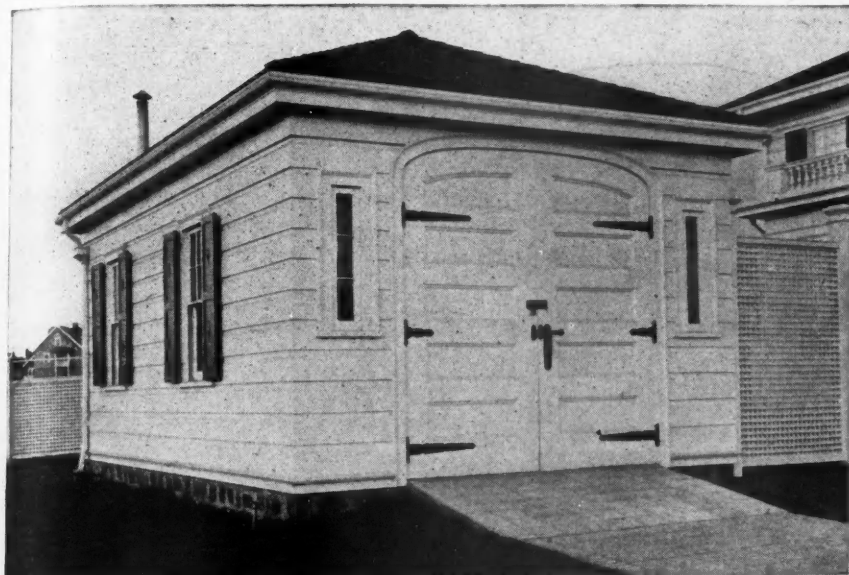


Beautiful Two-Car Garage Which Has Been Built with Attention to Architectural Harmony and Beauty. The Special Sliding and Folding Doors Are a Valuable Feature of this Building.

of the water, etc., used in keeping the car in condition and repair. Because cars are more or less standardized in size, the dimensions shown on the floor plans of the single and double car garages here are suitable for any make. In the single car garage floor plan, the structure has a 14-foot frontage and 18-foot depth. The floor drain is located in the center of the floor. In the two-car garage the width is 24 feet and

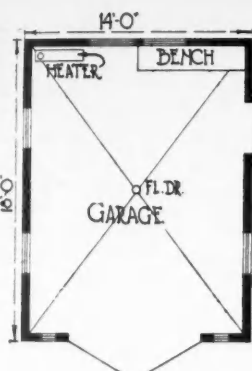


Entering the Garage After the Daily Spin. The Doors Painted White with Narrow Glass Panels Are Swung Back Against the Wall. Note How They Slide Along an Overhead Track Above the Door.



Attractive Single Garage of Frame Built on Colonial Lines to Harmonize with the House in Front. The Large Old-Fashioned Hinges Are a Distinct Asset to This Small Building and Stand Out in Sharp But Pleasing Contrast to the White Background.

the kind of hardware used. There is no excuse for building garages alike, as there is a large assortment of door styles available. First there is the familiar swinging type, hung on hinges which are made in very artistic designs. Where this style of door cannot be used because of space restrictions, the folding type or sliding type is often very useful. These folding and sliding doors are made in narrow or wide panels to harmonize with the architectural scheme, with glass or without and are operated on a track installed along the top of the doorway, inside or out. In the case of sliding doors, they are either of the parallel sliding type moving along a track to either side of the building or sliding along a track on



Floor Plan of One-Car Garage Shown Above.

length 18 feet. In this plan a partition has been built, altho this is not always necessary. In fact, if not used the cost will be slightly reduced.

Floor drains are provided under each car. Other welcome and convenient features in modern garage building are heaters of the oil, gas, or electric type, and a work bench.

In the construction of the walls it is important to provide some window space to insure light and ventilation. The hip roof is perhaps the most popular type altho others are used.

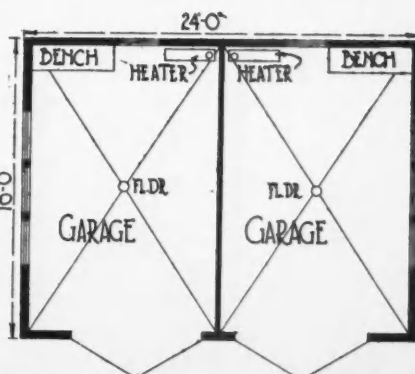
But the important feature in the garage construction is the doors. The garage doorway that serves merely as a frame for the keyhole has come to be considered insufficient. The main point the builder wants to over to his customer is service and by installing the proper door in the garage he is accomplishing this result better than in any other way. For the door is the part that will either make a garage a real servant or a continual nuisance. The first thing to consider is the architectural effect of a good doorway. It is the connecting link between the house and garage and preserves the general harmony of the building plan.

And in this connection the hardware is an effective aid. Doors that are easy to operate are the best. Operation depends entirely upon

the inside so that when open they are against the side walls.

The factor that determines the type of door to be used is space. When planning a garage, the architect or builder must take this into consideration. Otherwise they will not give their client real service and will have to correct the mistake later on.

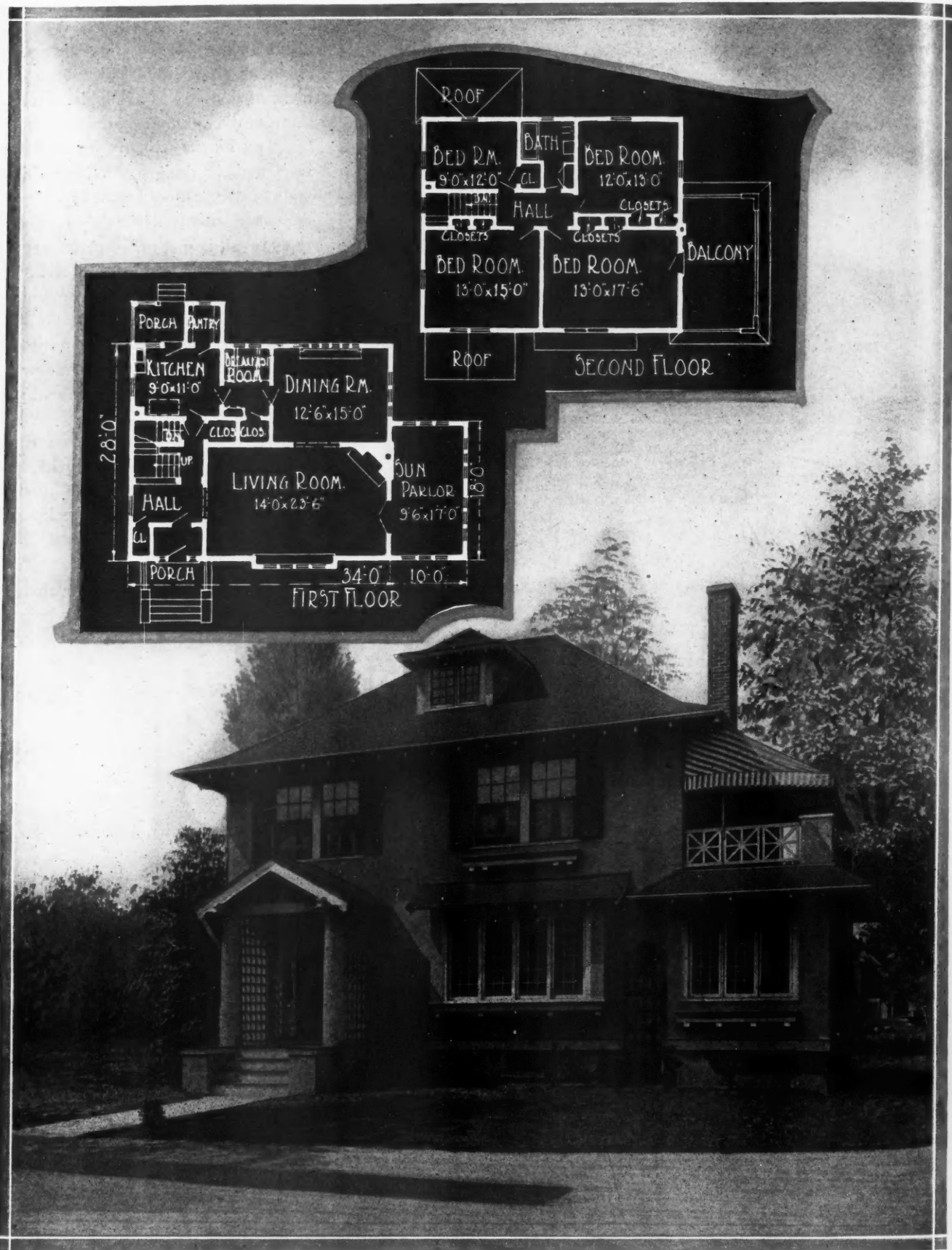
Builders should have the catalogs of all the garage hardware concerns so as to be posted.



Floor Plan of Two-Car Garage Showing Floor Drains, Heaters and Work Bench.



Another Attractive Garage of Stucco with Shingled Hip Roof. The Doors Are Easily the Outstanding Feature of this Structure. The Doors Swing Out on Hinges.



BEAUTIFUL STUCCO HOME OF ARTISTIC DESIGN. It would be difficult to find a more pleasing home and one that includes such real charm and comfort. The exterior is attractive stucco—the backing can be either frame, hollow tile, or concrete block. At one end is a cozy sun parlor with casement windows and a balcony above. The small-paned casement windows on the first floor and shutters on the windows upstairs are enhancing touches. There are seven rooms in this house, three on the lower floor and four on the second. The living room is particularly “homey,” and comfortable and quite large, 14 by 23 feet 6 inches. A small breakfast nook is adjacent to the kitchen. The fireplace in the living room is located in one corner, giving the room even a larger appearance than it is. Four bedrooms are located on the upper floor. They all have windows on two sides and space-saving closets. Size, 34 by 28 feet.



Street of Beautiful Homes

Home Number Five

ART INSERT HOME

DESPITE the alarming tendency in this country to follow French styles even so far as practicing "race suicide" there are still some good-sized families in America. Confronted on one side by the familiar sign, "Children not allowed," and on the other by one and two-room apartments, in which only one or two people can live, their natural inclination turns to the home where there are no population restrictions nor lack of space.

That is one reason why the art insert home in colors for July is a good sized home built to accommodate several persons in ample comfort. It is one of those broad, substantial looking stucco houses with hip roof that are so popular at the present time. No doubt one of your clients is looking for just such a home on the street of beautiful homes.

A house of this design always gives an impression of bigness, altho a glance at the dimensions reveals it to be a house of average size but so arranged as to provide a maximum of room. There is little waste space for frills and the square type of construction makes it possible to erect with economy in cost.

On the first floor are three rooms—living room, dining room and kitchen. The living room extends the

full length of the house and is 13 by 28 feet 4 inches. It opens out onto a large sun parlor. The kitchen is equipped with many special labor-saving features, such as dumbwaiter, outdoor icing refrigerator and clothes chute is built in the hall.

On the second floor are four well-sized bedrooms provided with double windows on two sides, insuring plenty of sunshine and fresh air, both of which are essential to bedrooms. There is also a sewing room, a handy place for the housewife away from the activities of the lower floor.

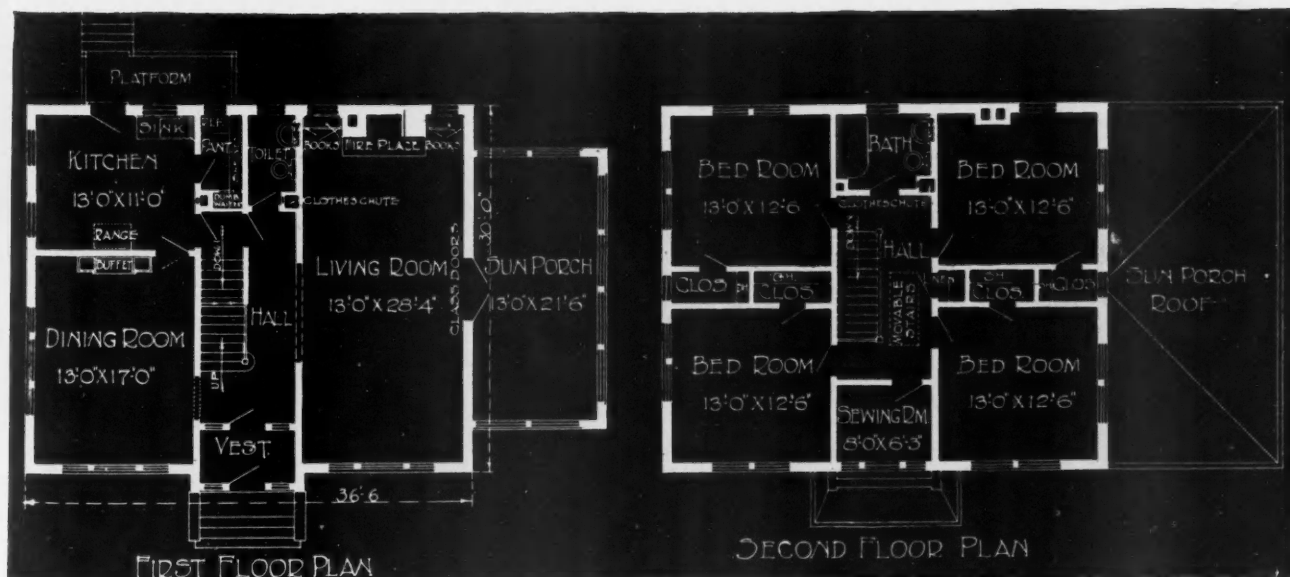
The house is 36 feet 6 inches by 30 feet. Details of interior furnishing and decorating are explained in an article that follows. See pages 88 and 89 for blueprint details of construction.



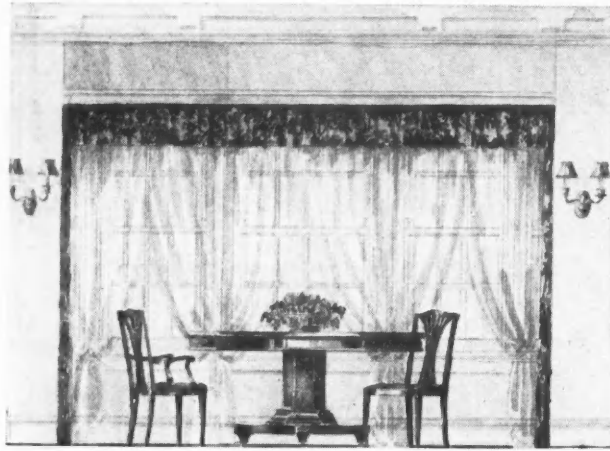
Suggestions for Furnishing the Art Insert Home

By Mary M. Farley

IT IS most important that the entrance to the house be pleasant. Its furnishings should be simple and its color scheme cheerful; in all it should have an air of cordial welcome and at the same time



First and Second Floor Plans of Art Insert Home in Colors, Home No. 5 in the Street of Beautiful Homes. This Stucco House Contains Seven Well-arranged Rooms and Is 36 Feet, 6 Inches by 30 Feet.



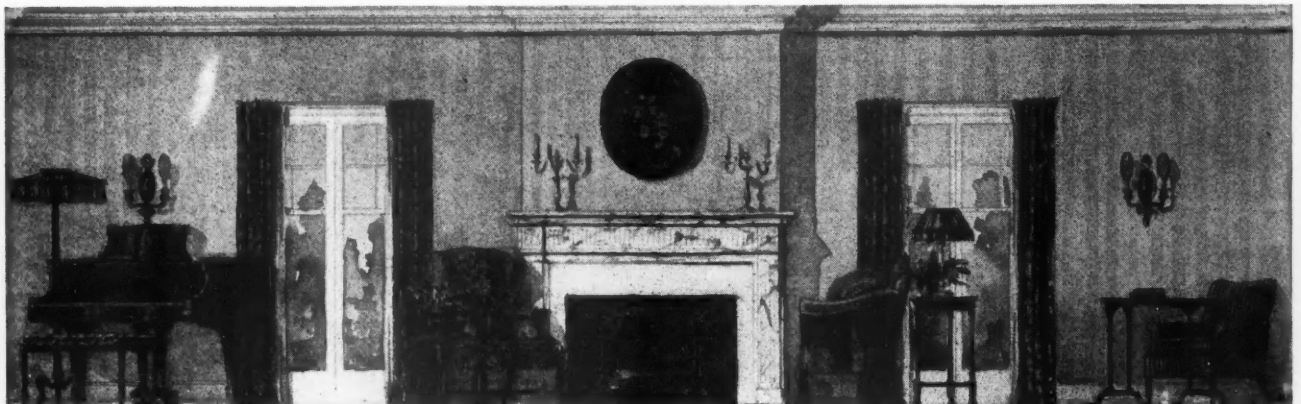
Walls of Paneled Effect and Woodwork of Dull Stain Finish Are Very Desirable in the Dining Room. Touches of Color Can Be Added in the Lamp Shades and Window Curtains.

be more or less formal in that its main purpose is to give access to the other rooms of the house. Few pieces of furniture are necessary. The hall mirror is one thing in your hall you may be sure will attract attention and at the same time cater to the vanity of your guests. Select one that is plain and not elaborately gilded and ornate. An attractive type is oblong with the corners cut off and a wide moulding having a dull gold and black tracery design, or if one prefers, a round one suspended by a decorative cord. Other necessary furnishings for the hall are a chair or two, space permitting, and a table or console to hold the tray for cards and a vase of flowers. A console is advisable, one with drawers for an odd shawl and the automobile blue book. If you have an umbrella stand choose one large enough so that one umbrella may not be thrust into the other, and even thru it, by mistake and at the same time render the withdrawal of either difficult. A foliage paper is selected for this hall, one in which soft tones of blue and mulberry are blended with gray and tan. The ceiling is a plain light tan, and the woodwork enameled to harmonize in ivory. Double-faced portieres are made of damask and carry out mulberry and taupe.

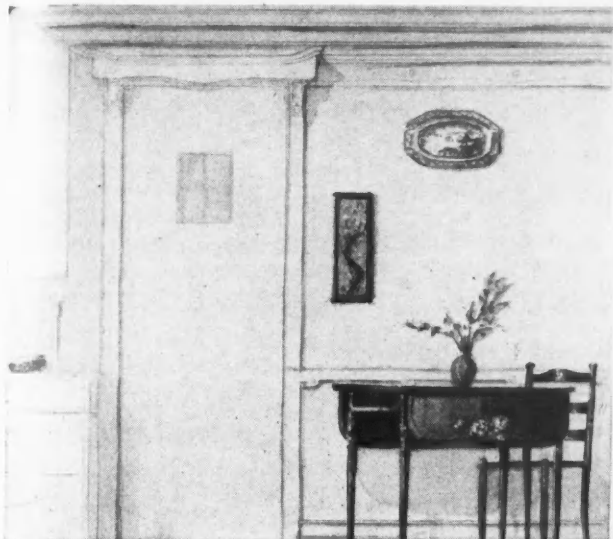
Living Room

The living room, the largest room in the house, is a combination reception room, parlor, and sitting room. It is best located on the west side of the house, being most used in the afternoon. In furnishing this room there is no reason why the furniture should be in sets of like pieces. In fact, there is more unity violated in furnishing houses today than is ever dreamed of because of the temporary craze for period styles. By far the most satisfactory way is to select a combination of pieces which properly accompany each other. Especially in the living room there is no room for mistakes. One artist tells us how he found a certain living room otherwise simply furnished with colonial pieces where the owner had two large chairs upholstered in red brocade—the apple of her eye. If there had been but one as he said “like Satan you could put it behind you,” but there they stood and to add to the agony, reflected in a large mirror.

Nothing that is truly artistic is uncomfortable. Make this room comfortable if you wish your family and your friends to enjoy it. Consider every piece of furniture from a standpoint of utility as well as for its artistic value. “A cheap article gives satisfaction but once—when we pay the bill. It extorts compound payment whenever afterward it enters into consciousness.” And, too, every article should have firmness, if a table or writing desk, it should not appear to topple when touched, if a chair, it should not develop a squeak in a short time. The davenport and easy chairs should be easy. Avoid rocking chairs in a living room, they have a restless look, and take up more than their share of space. A substantial table with a good reading lamp on it, a few magazines, and a flower bowl; a desk equipped for writing; a davenport which here may be placed to face the fireplace and built-in book shelves, and three chairs; a piano, a sewing table, a footstool, and a few well chosen pictures that are of common interest are appropriate furnishings for this living room. A well made bench or stool is doubly useful. It may be used to sit on or at times to hold a tray or what not. Beware of bric-a-



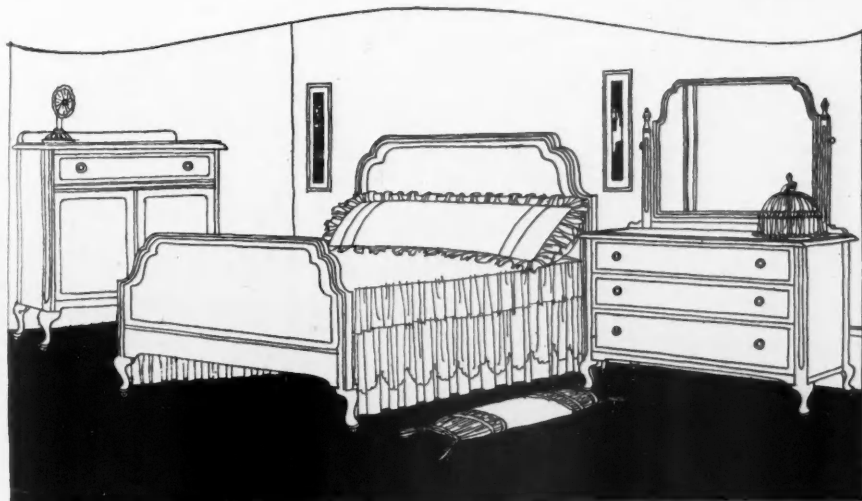
“Nothing That Is Truly Artistic Is Uncomfortable.” A Table or Writing Desk, Large Davenport Facing the Fireplace and Easy Chairs, Piano and Attractive Lamps, Make the Living Room a Place of Rest and Solid Comfort.



Glimpse of Bedroom Which Is Artistically but Simply Furnished. Consider Every Piece of Furniture from the Standpoint of Utility as Well as Appearance.

brac, for many sins are committed in that name.

To effect a sense of unity thruout the rooms the colors chosen for the living room here embrace warm tones of mulberry and fawn. Have in each room just a suggestion of the color used in an adjoining one. The floor should be stained a medium brown and waxed, the woodwork enameled ivory. The rug suggested is of deep fawn colored wilton; or if one wishes to spend the money, Orientals. Casement curtains are of square mesh heavy cream net and the draperies of velour edged with a heavy silk cord. Essex repp may be used for the side curtains with a lambrequin of the same or of velour. English chintz makes attractive slipover covers for the furniture. The davenport and easy chairs may be of striped velour and duplex damask. The lamps and side lights introduce a note of contrast with shades in which mulberry, green and gold appear. The furniture selected should be Colonial, Georgian or Queen Anne, these styles being most appropriate for enamel or mahogany trim.



White and Yellow in the Bedrooms Are Cool and Restful Colors. Blue Is Also Pleasing. Avoid Too Much Furniture.

Dining Room

It goes without say that the dining room furniture should match. In most other rooms of a house pairs and sets are to be avoided, but here furniture, candlesticks, mirrors, and even porcelain jars in pairs are decorative. High back chairs are awkward in a dining room, and a clumsy maid is made more so by them when serving. After selecting the table, chairs, buffet, and serving table, do not forget a tea wagon with an *upstairs* and a *downstairs* which carefully arranged and placed at the right of the mother of the family does away with much of the jumping up and down if there



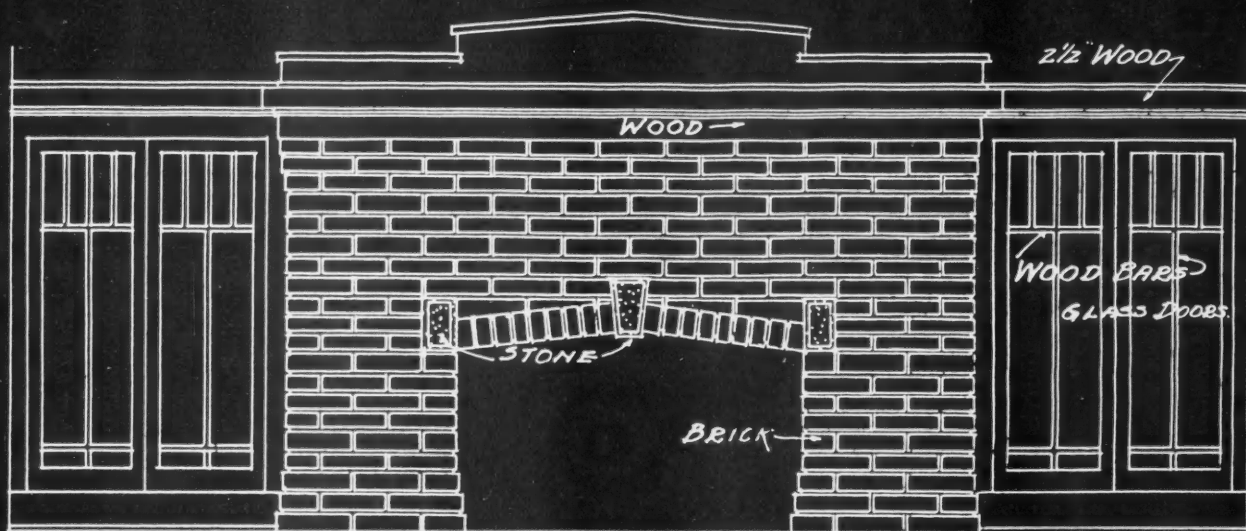
Cozy Corner in Living Room. A Large Comfortable Chair and Reading Lamp Are Invaluable in Making a Reader Enjoy His Book.

is no maid in the home. Also a boon to the woman who does her own work is the servette, a circular plate on a center pivot standard to hold necessities used during the breakfast or dinner by each person who can turn the servette and serve himself to salt, pepper, cream, sugar, or jam. Do not forget some candles for the dining room, they give a soft, pleasing light during dinner. A very common mistake in the dining room is made by an inordinate display of silverware and cut glass, and hand painted china, and even a plate rail with its procession of plates and mugs always gathering dust is not desirable. So placed, these articles are neither useful nor decorative.

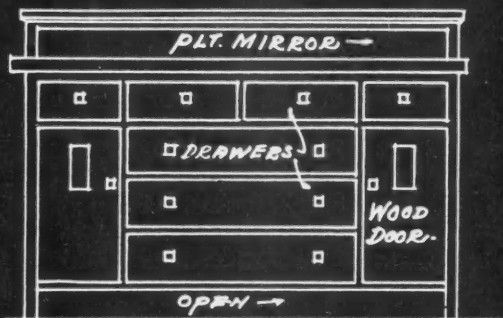
Here again the woodwork is enameled in a dull satin finish, and for the walls there is suggested the paneled effect painted a few tones lighter. The rug is a plain taupe with a two-toned border, or if one

(Continued to page 107.)

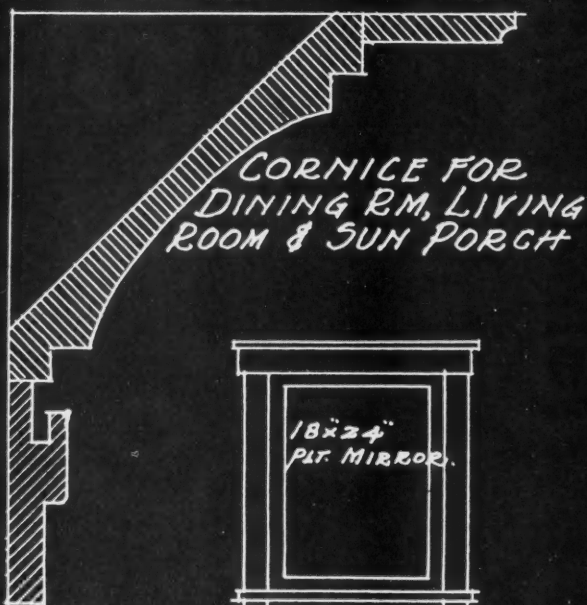
ART INSERT HOME



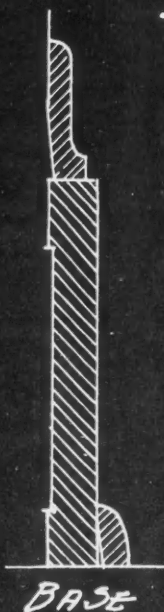
FIRE-PLACE & BOOK-CASES
SCALE 1/2" = 1'-0"



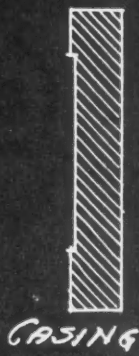
BUFFET.
SCALE 3/8" = 1'-0"



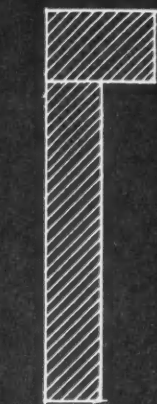
MED. CASE
SCALE 1/2" = 1'-0"



BASE



CASING



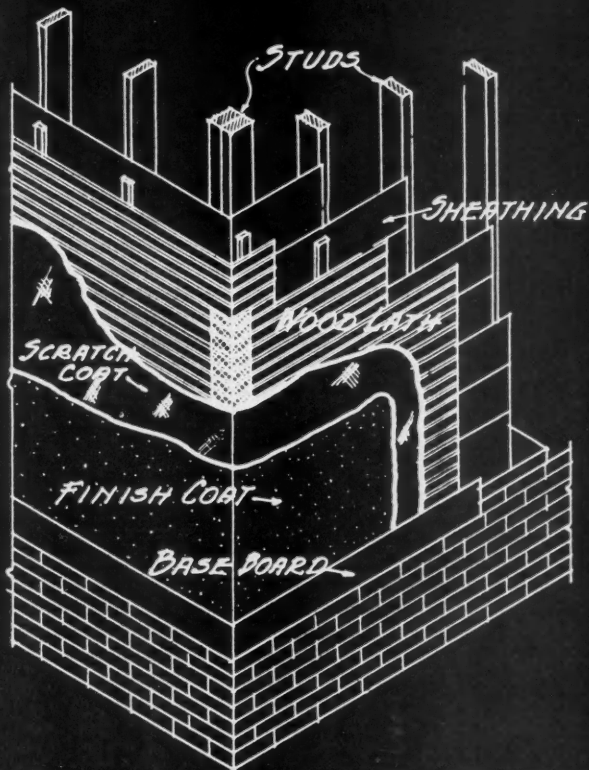
HEAD CASING



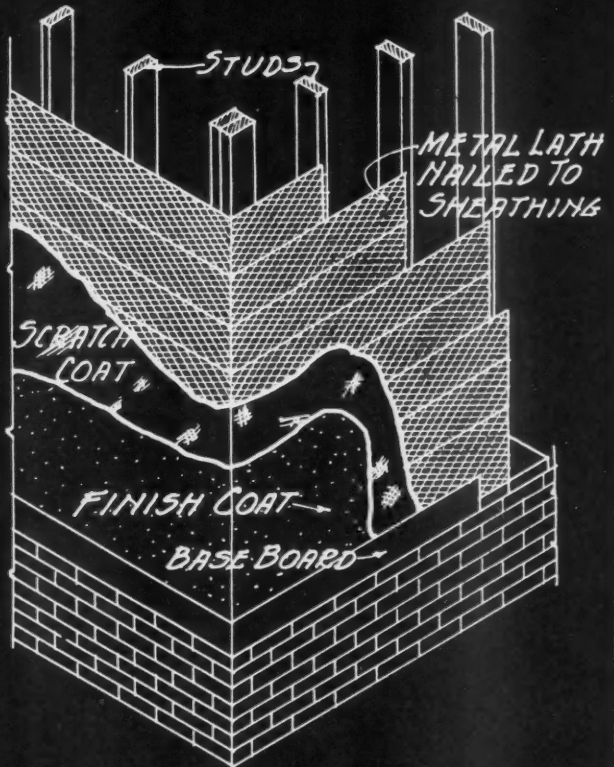
CHAIR RAIL.

INTERIOR DETAILS

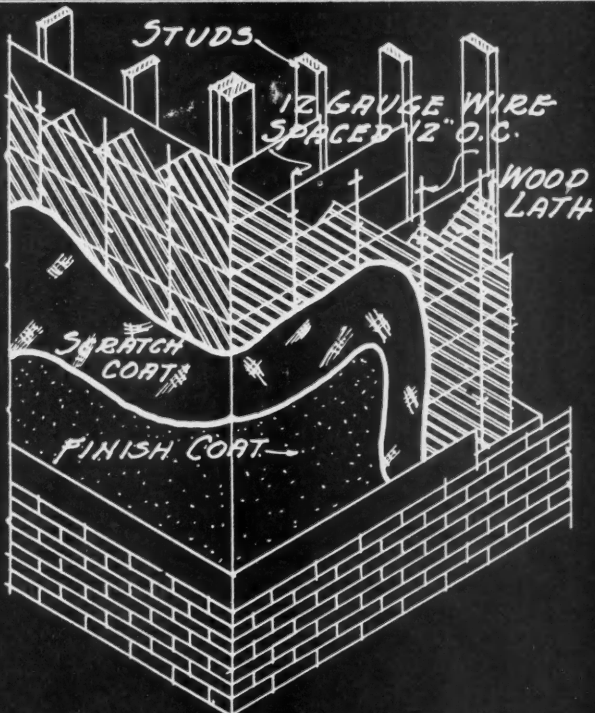
ART INSERT HOME



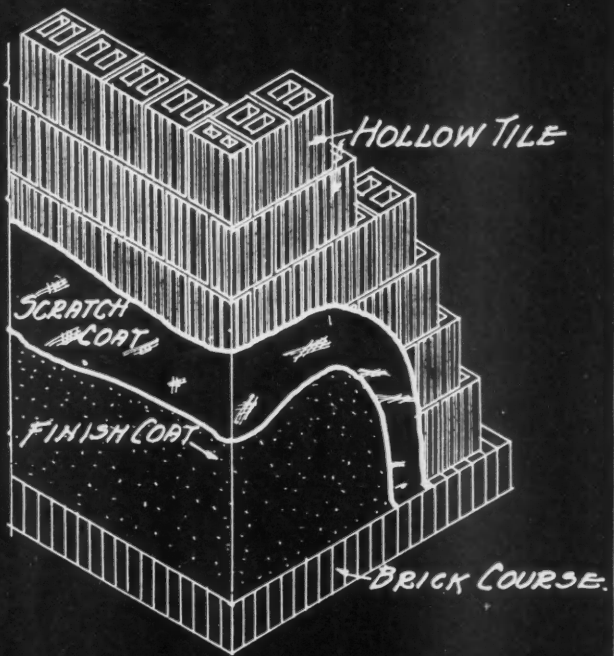
STUCCO APPLIED TO WOOD LATH & 1x2" FURRING STRIPS.



STUCCO APPLIED TO METAL LATH

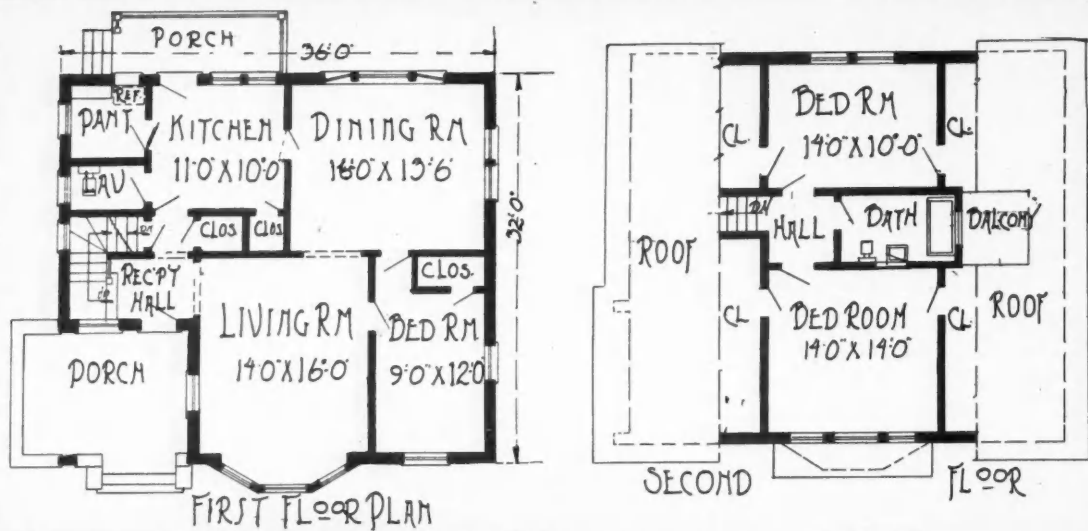


STUCCO APPLIED TO WOOD LATH & 12 GAUGE WIRE SPACED 12" ON CENTERS.



STUCCO APPLIED TO HOLLOW TILE

EXTERIOR WALL SECTIONS



CHARMING STUCCO HOME, COZY AND COMPLETE. Stucco forms as excellent exterior for both large and small dwellings and this is no exception. Here is presented a most inviting little story-and-a-half home of six rooms. The design is rather quaint and pleasing and should appeal to the homeseeker of small means. The small front porch is recessed under the main roof. The front door opens into a small reception hall which leads on one side to the living room and thru another doorway to the kitchen. One small bedroom is located on the first floor. An outdoor icing refrigerator has been built in the pantry wall. The dining room is a delightful room, 16 by 13 feet 6 inches. Upstairs are two good sized bedrooms, 14 by 10 and 14 by 14 feet. The house is almost square in shape lending to economy in cost. It is 32 by 36 feet.

Law for the Builder

JUDICIAL CONSTRUCTION OF BUILDING CONTRACT WHICH PROVIDES THAT CERTAIN MATERIAL "OR EQUAL" SHALL BE USED

By Leslie Childs

THE importance of having building specifications plain, unambiguous, and specific, is obvious to anyone who gives the subject thought. For unless the specifications are clear to all parties concerned they may become a fruitful source of contention as the work progresses; in particular is this true where the contractor binds himself to furnish the material, and the quality of the material is not plainly specified in the contract.

On the other hand the drawing of specifications for a building of any considerable magnitude is a highly technical undertaking. And it is not always practical to arbitrarily set forth the specific kind of material or appliances that shall be used in the entire building. In situations of this kind building contracts not infrequently provide that a certain material, "or equal," shall be used in the section or portion of the building named.

This then raises the question of what right the term "or equal" gives the contractor in the matter of substitution for the material named if it becomes to his advantage to substitute. The point was passed upon in an interesting and instructive manner in *Camp vs. Neufelder*, 49 Wash. 426, the facts involved being, in the main, as follows:

A contract to furnish the material, reconstruct and remodel a building in the city of Seattle was entered into. In the material to be furnished were certain prism lights, and in describing this feature of the work and material the specifications prescribed as follows:

"All sidewalk lights to be 3 by 3 inches reflecting prism lens, set in cement; all frames to be known as bar-lock construction. All joints must be made and guaranteed watertight. These lights shall be of the W. B. Jackson make, or equal, and shall be constructed to carry a safe load of 350 lbs per sq. ft."

The contract also contained a provision that the work should be performed to the satisfaction of the architect, and that the latter had the right to approve or reject all work. The work was entered upon and when the time came to provide the lights mentioned above the contractors informed the architect that they had several lights equal to the W. B. Jackson light, and requested that the architect make his selection.

Architect Refused to Consider Different Lights

The architect it appears declined any light other than the W. B. Jackson light, and informed the contractors

that no other light would be approved by him. The contractors thereupon installed the W. B. Jackson lights, which they claimed cost them \$600 more than other equal lights would have cost them. Thereafter they filed a lien against the building for this \$600 which they claimed they were entitled to recover owing to the action of the architect in forcing them to put in the W. B. Jackson lights at this increased expense.

The instant suit was to foreclose this lien and upon the trial the contractors were refused the right to show that there were other lights equal to the W. B. Jackson light. The trial court taking the position that as the W. B. Jackson lights were actually installed, and were allowed by the contract, the contractors could not recover the extra cost. Judgment was thereupon rendered in favor of the building owner, from which an appeal was taken by the contractors to Washington Supreme Court. Here in passing upon the issues raised, and in construing the contract it was, among other things, said.

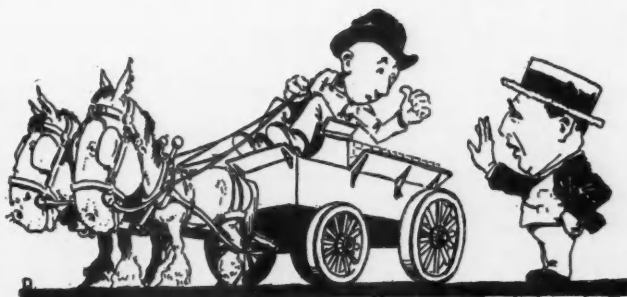
"The mere fact that the contractors put in the W. B. Jackson lights at the instigation of the architect does not stop them from claiming of the owner the loss sustained thereby. The architect, while he stood in relation to umpire in some of his aspects under the contract, stood in the relation of agent for the owner

in this instance; that is to say, he was the person selected by the owner to determine the character of the material that should go into the work, and in this respect was the owner's agent; and, in the performance of this duty, was as much bound to act fairly and impartially as the owner would himself be bound had there been no selection of an intermediary. The contractors, therefore had the right to treat the direction given by the architect as a direction given by the owner, and can recover any loss suffered because thereof if the direction was so far arbitrary as to be without the terms of the contract. * * *

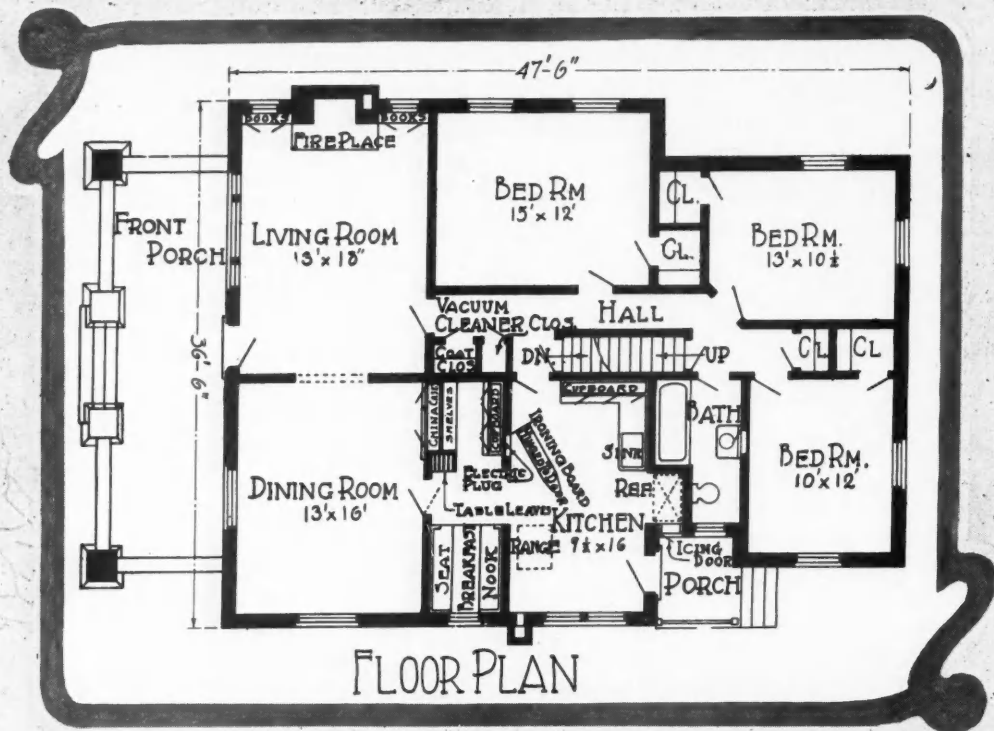
"Manifestly, the appellants (contractors) were given the option either to put in the W. B. Jackson lights, or lights equal to the W. B. Jackson lights; and, this being so, the installation of either would be a compliance with the contract. * * *"

The court next directed its attention to a contention of the building owner that as the contract provided the work should be done to the satisfaction of the architect his decision on the lights would be final any-

(Continued to page 112.)



Builder: These sidewalk lights are just as good as those you specified.
Architect: Nothing doing. If you install any but those I specified, I won't O.K. the job.



A ATTRACTIVE SIX-ROOM BRICK BUNGALOW OF PLEASING DESIGN. This is a most delightfully arranged small home, its six rooms being laid out with a thought to convenience and the saving of household labor. Set back upon a terrace with open broad front porch, it looks very inviting and cozy. It is built of brick with attractive face finish. Facing the porch are the living and dining rooms, the former 13 by 18 feet, with brick fire-place and wall bookcases, the latter slightly smaller in size and well lighted. Connected by a passageway between a breakfast nook and pantry is the kitchen equipped with many labor-saving features that will appeal strongly to the housewife. Three comfortable well-lighted, airy bedrooms are included in the floor plan and are grouped conveniently in the rear of the house. This bungalow is 36 by 47 feet 6 inches.



Woman and the Home

Electricity for the Farm Home

By Grace T. Hadley

Society for Electrical Development, Inc.

UNTIL recent years the American farmer has worked practically every day in the year from dawn to after dusk. During the summer months when work is heaviest, he has risen from his bed long before daylight and worked until long after dark. Lanterns and candles provided his light for the dark hours. Horses and mules furnished his power for threshing.

Nowadays, American farmers are able to do much of their work within reasonable hours. American farm women are having their burdens eased up considerably. How has this change been accomplished? By putting electricity to work on the farm.

Instead of candles, tallow dips and kerosene lamps, the house and barn are illuminated by electric lights which can be turned on and off by pressing a button. Fire risk has been reduced. There are no lamps to fill and clean, thus one very disagreeable phase of work is eliminated from the daily routine of the farm home. A simple wire connects the light with the electrical source and the switch does the rest.

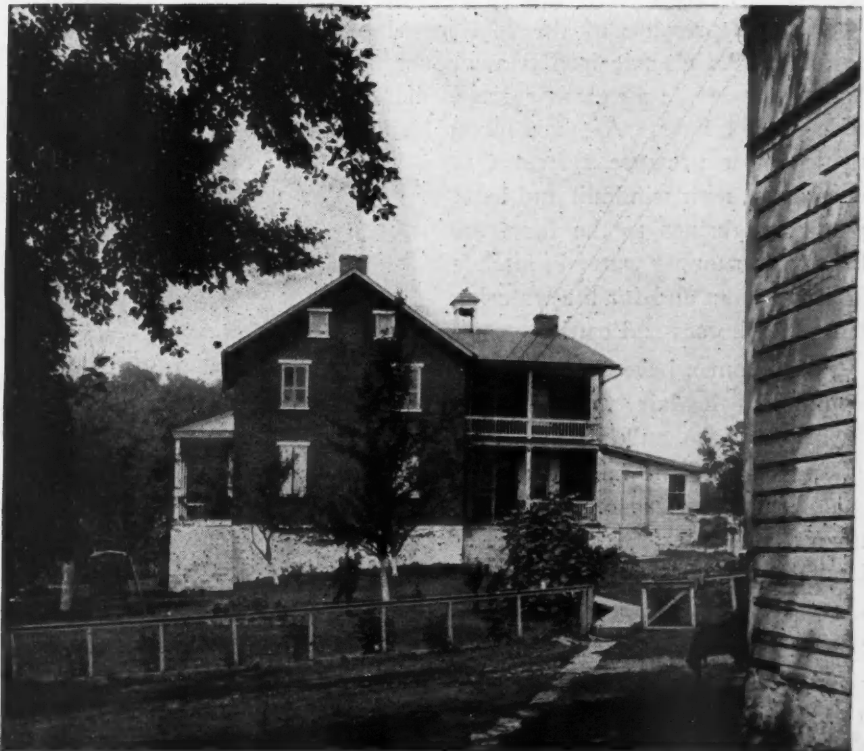
Where electric current is not obtainable from a power and light company, thru transmission lines, there are independent generating sets that are easy to operate and satisfactory in practice. Iowa is said to be further ahead in the matter of transmission lines than any other middle western state. The power and light company at Cedar Rapids operates in some twenty counties, has about 100 farm extension lines with an average of 20 farmers to the line, making 2,000 customers in all. So widespread is the demand for this power on the farm it is estimated that 8,000 to 10,000 more Iowa farms will be equipped within another year. Ohio

is probably next to Iowa in the matter of rural electric lines. The power and light company at Dayton has 230 miles of transmission lines and about 1,600 farmer customers along its right of way.

Electricity in the Farm Home

First consider the important part electric lights play in the farm home of today. The vital part of home life comes after the day's work is done. Happiness and contentment are never partners of leisure hours if spent in semi-darkness beside smelly oil lamps. They are unhandy, they have to be cleaned and filled daily, chimneys polished and wicks trimmed. When electric lights enter the farm home, the old oil lamps retire to a back shelf and the farm wife gains an extra hour for other and more agreeable work.

Besides lighting electric power can be used for the



Modern Farm Home with Latest Labor-Saving Equipment. Electricity Has Solved Not Only the Farmer's Troubles in the Barn, But Has Provided the Farmer's Wife with a Source of Wonderful Power that Helps Her in Her Daily Tasks.



"In the Good Old Days" Many Farmers' Wives Do Not Recall Them with Any Overabundance of Pleasure. They Meant Work, Plenty of Disagreeable, Backbreaking Tasks, One of Which Is Shown Here.

power requirements of the farm. It will milk cows, churn the butter, saw wood, pump water, chop feed, grind meal, fill silos and almost daily new applications are being discovered by the ingenious farmer.

In the farm home, electricity is chief help-mate of the farm wife. An electric washer washes the cloths and takes the hard work out of the weekly washday. The electric vacuum cleaner cleans the home easily and quickly. An electric sewing machine sews faster with just a pressure of the foot insted of constant pedaling. An electric iron is a wonderful helper on ironing day while an electric fan is almost indispensable on hot days. A small motor insures an automatic water pressure system that does away with windmill and hand pump and brings to the farm the luxury of running water in kitchen and bathroom and for the watering trough of horses and cattle.

Farm women have always had to do much of the dairy work on small farms, even to milking the cows, taking care of the mild, churning, making the butter and driving to town with it. Electricity in the dairy lends a very helpful hand. Where there are many cows to be milked, electric milkers can be employed and all the work connected with the job of milking is to move the machines from cow to cow. By this method about thirty cows can be milked by using the milkers with



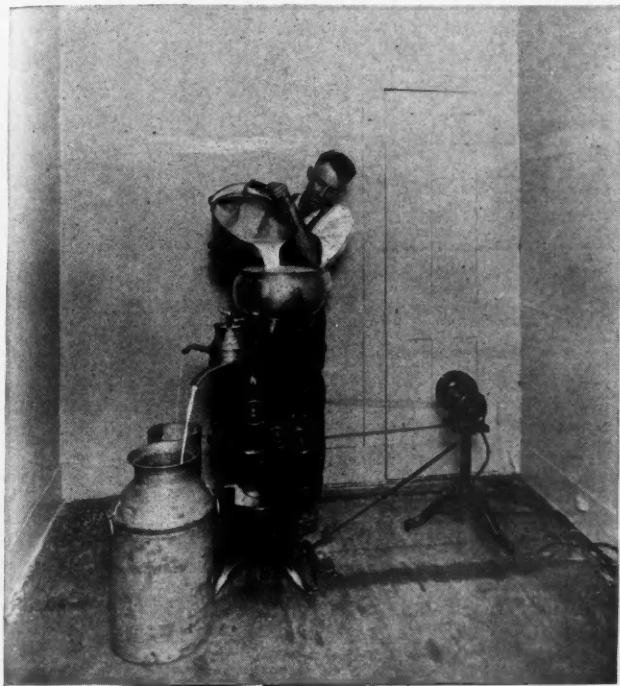
Now It Is Different. Electrical Power, Furnished by Plants or Power Lines, Have Transformed this Home and Made the Wife Younger by Many Years.

with only one man in attendance.

From the barn where the cows are milked the milk is conveyed to the separating room. Here an electric cream drive separator is installed. By pressing a button the separator is started. The fresh warm milk is poured into a reservoir from which it is automatically fed to the separator. Two spouts come from this separator, as the milk flows to the machine, the milk and cream are separated and from one spout flows the rich yellow cream while from the other comes the skimmed milk. This milk may be fed to the hogs



Running Water is No Longer the Exception on Modern Farms. Here the Turn of the Faucet Supplies Plenty for the Stock. Water Supply Systems Have Made this Innovation Possible.



Gone is the Old Churn and Gone is the Task that Farm Boys and Girls Used to Consider with Dread. Electrical Power Does the Work in Shorter Time and with Little Effort.

or calves or mixed with their ground feed.

The cream is used for butter-making or sold to creameries. If the dairying includes the sale of milk, some of the milk will be kept whole for sale to customers. In order to insure the purity of this milk and its freshness it must be cooled. The old method was to put the milk in large cans and set the cans in tanks of cold water. The water was kept cold by putting ice in it or else it was drawn from a nearby spring and was natural ice-cold water. But modern methods are different.

The best dairies now have electric ice-making machines and cold storage equipment operated by electricity. Better results are obtained than by old methods because the necessary temperatures can be held accurately at any desired point and the fresh milk and cream cooled in less time. This makes the milk ready for delivery sooner and much time and storage space are saved to the dairyman.

Tho touched on briefly it can be seen that the farm home profits and benefits by the use of electricity. The farmer has time to read in the evening while his wife does her work with less fatigue. She has time to visit with the neighbors and keep in touch with neighbors doings and to participate in the social life of the community.

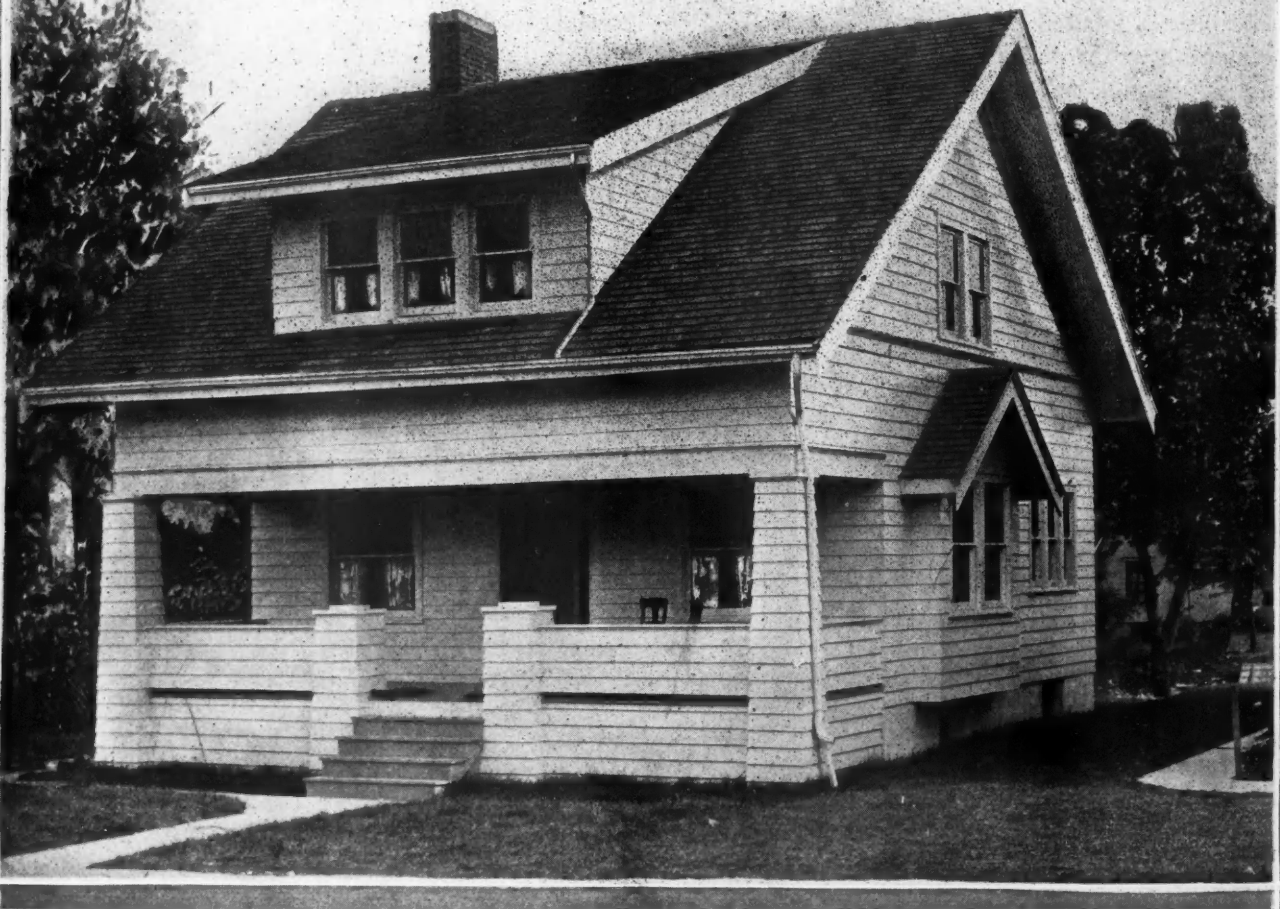
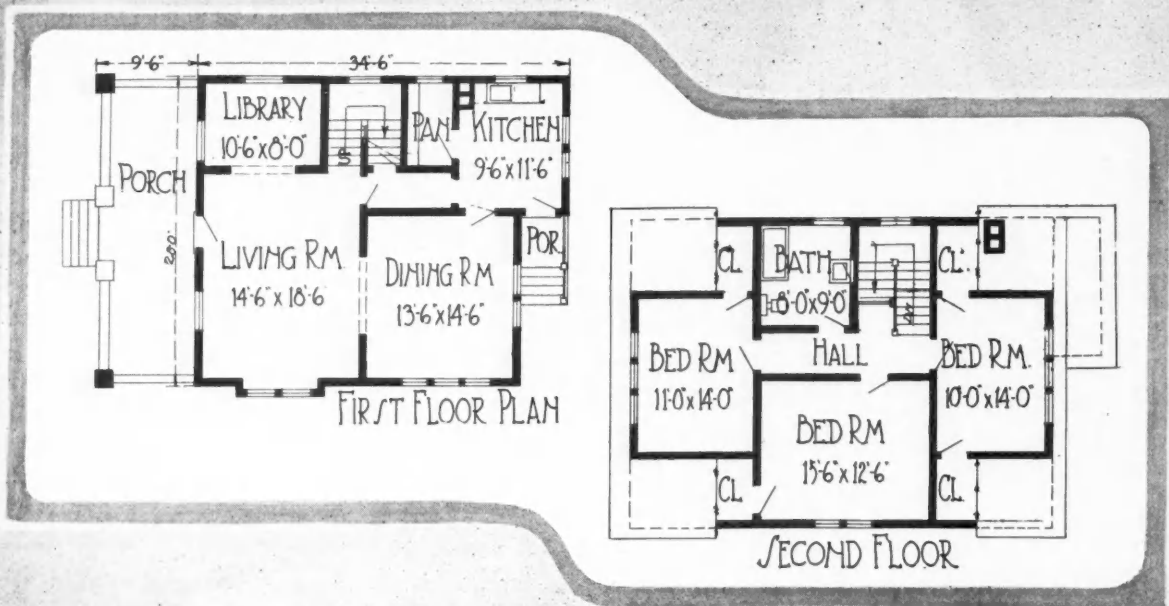
Another feature of the use of electricity in country districts is worthy of notice. School houses and churches are the natural meeting places of the farmers and their families. If these are electric lighted the meetings are much better attended and are much pleasanter in every respect. A gathering of farm folks under smoky oil lamps is a cheerless affair but under the cheery glow of modern electric lights, these meetings can be turned into real social occasions. Common problems can be discussed and education advanced. Women on the more isolated farms are all feeling the benefit from having trained home demonstration agents help them to work out home management problems.

In 1920 home demonstration agents in Georgia helped to plan 120 new homes, the remodeling of 237 and the repair of 249. They also worked with the women in installing 232 lighting systems, 16 heating systems, and 136 water systems. This means that 758 Georgia homes were either built or were made more livable by improvements in which electricity figured extensively.

JAMAICA has 400,000 to 500,000 acres of forest, including cedar, mahogany and satinwood.



Kettner in Ft. Morgan (Colo.) Herald.
Plenty of Building This Summer and Fall Will Remedy This Situation!



SMALL COTTAGE BUNGALOW. This delightful little home has a very pleasing exterior of broad white clap-board with wide front porch set back under the main roof. It contains six rooms and library, conveniently arranged and of good size. The living room, dining room, kitchen and library are on the first floor. The living room is of comfortable size and gets splendid light from a large window facing the porch and a bay window on the side. The library which opens off this room is 10 feet 6 inches by 8 feet. The dining room also has the advantage of ample window space and consequently is cheerful and bright. The kitchen is small but complete. On the upper floor are three bedrooms not oversized, each getting light and air from dormer windows in front side and rear. The dwelling is 28 by 34 feet 6 inches.

Insulation of Concrete Block Building Walls

SOME WELL PROVEN METHODS OF RESISTING THE DISSIPATION OF HEAT

By A. J. R. Curtis

IN northern climates, it is necessary to combat the dissipation of heat thru building walls of any common material. Concrete and the masonry materials are usually considered better conductors than dry wood, but in common practice they make tighter walls and the loss of heat by conductivity thru one may offset the loss of the heat by direct passage thru the other. Certain precautions must be taken with any material to produce warm walls in severe climates. It is the purpose of this article to point out some of the most obvious and, let us say, well proven methods of making concrete block walls warm.

Good Block Well Laid

It goes almost without saying that to be warm the concrete block wall must be so constructed that no moisture or cold winds can actually pass thru it; this means that the block faces must be dense and water-tight and the mortar joints made absolutely tight. Block passing the American Concrete Institute specifications* can be depended on to keep out moisture, if properly laid in portland cement mortar (1:2 cement and sand with 10 per cent hydrated lime by bulk of cement). The block should be moderately moist when laid and both ends should be buttered.

Contrary to the idea frequently expressed that concrete block walls occasionally allow the passage of moisture directly thru the walls, investigation proves that this is seldom the case, except where the blocks are so poor as to be absolutely intolerable in appearance or strength, or on other general grounds. Moisture seldom enters thru the walls, but it is occasionally found as condensation on the inner surfaces of exterior walls, merely as an evidence that the wall is colder than the air within. The precaution to be

taken to prevent the direct passage of moisture or condensation in the case of concrete block walls are no more exacting than in the case of other masonry walls; but in many cases builders have labored with the mistaken belief that they could take liberties with the block wall which no one would think of taking

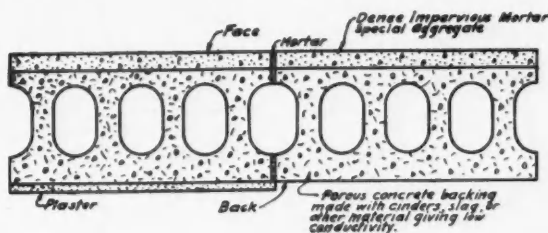


Fig. 3. Sketch of Elliptical Air-Space Concrete Block Illustrating Suggestion that Face Be Made of Dense, Watertight Cement and Sand Mortar, While the Body Be Made of a Cinder or Slag Concrete Mixture.

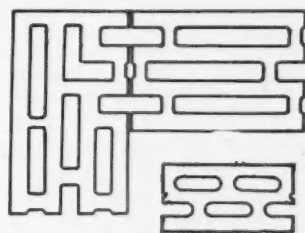


Fig. 4. American Block and the British Block Employ Multiple Air Spaces with Circuitous Partition Walls to Increase Resistance to the Passage of Heat.

with a brick or tile wall. The ideal wall is air-tight and water-tight and possesses a high degree of insulation against the passage of heat.

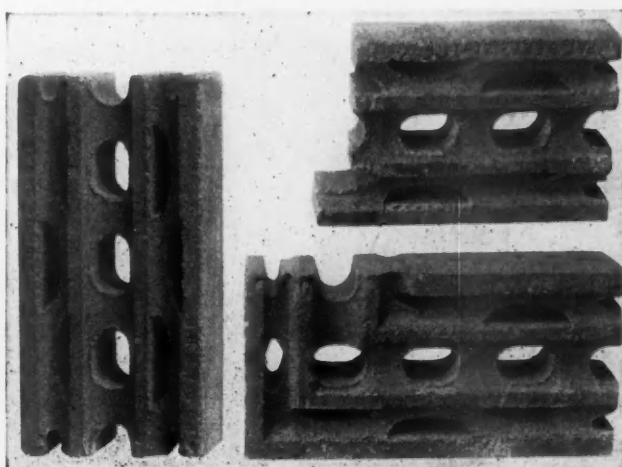


Fig. 5. The Two Systems in which Block is Laid Dry, Center Holes Poured Full of Quaky Concrete Rigidly Attaching All of the Units. The Plaster is Applied Directly to Inner and Outer Wall Surfaces.

Air Space Insulators

Almost all forms and types of building construction make use of air spaces or air cells for obtaining insulation against the passage of heat. Motionless air is an excellent heat insulator. Air which circulates freely is likely to be not so good an insulator due to opportunity of movement of warmer air upward and cooler air downward, creating a systematic movement of the warm air toward cold walls and cold air toward warm walls. This movement is considered only a secondary factor in building wall insulation and it may be reduced or prevented by a variety of means. Figure 15 presents



Fig. 1. Common Type of Concrete Block with Self-Contained Air Spaces, Rectangular in Shape. The Air Spaces Occupy About One-Third of the Total Volume of the Block.

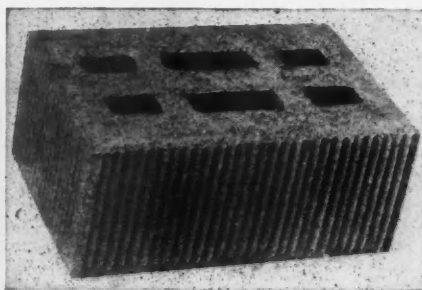


Fig. 2. Typical Concrete Building Tile, Similar in Design to the Block Shown in Fig. 1, But with the Air Space Area Greatly Increased. The Upper Face is Greater in Area than the Base, in Order to Provide Space for a Wide Mortar Bed.

*Copies can be secured from the Secretary, American Concrete Institute, New Telegraph Building, Detroit, or from nearest office of the Portland Cement Association.

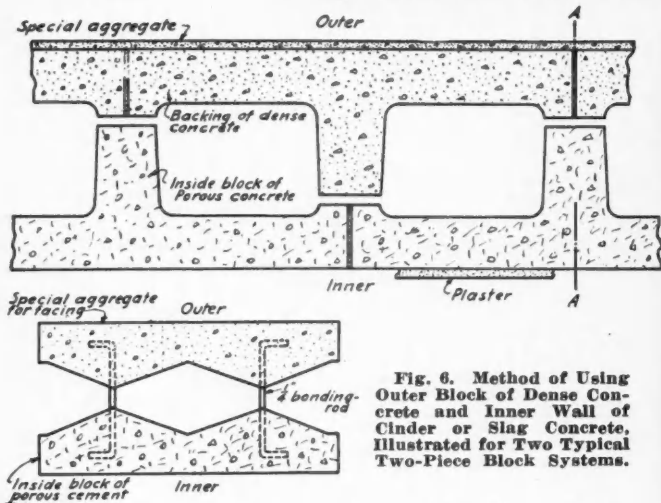


Fig. 6. Method of Using Outer Block of Dense Concrete and Inner Wall of Cinder or Slag Concrete, Illustrated for Two Typical Two-Piece Block Systems.

an effective means of interrupting vertical air currents.

The more commonly used concrete block as shown in Figure 1 contain air spaces formed within the block. These spaces may be rectangular, elliptical or circular, or a modification of these, and usually occupy a volume equal to approximately one-third of the gross volume of the block.

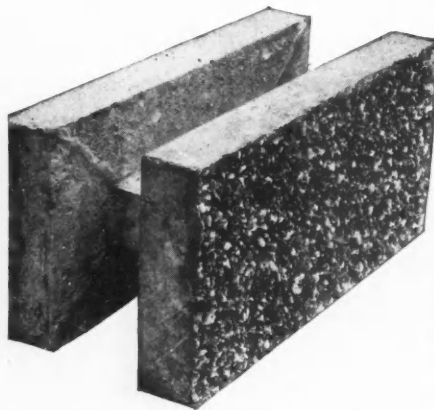


Fig. 7. System Provides Two Parallel Walls with Small Integral Concrete Connectors.

There are six types of concrete building tile in use, all rather similar in shape to the tile shown in Figure 2, which belong to the same general type as the block shown in Figure 1, only with walls very much reduced and air spaces increased in volume. The efficiency of the units just described as heat insulators obviously depends quite materially on reducing the passage of heat thru the walls or webs between the air spaces. Why not

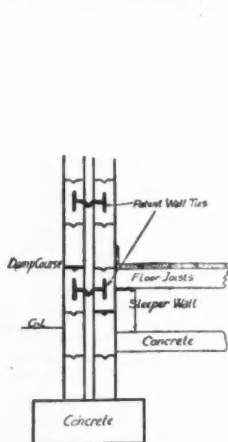


Fig. 8. Sketch of a European Double Wall Block System illustrating the Employment of Looped Metal Connectors, Commonly Used in British Masonry Practice to Prevent Moisture from Traveling on the Connector.

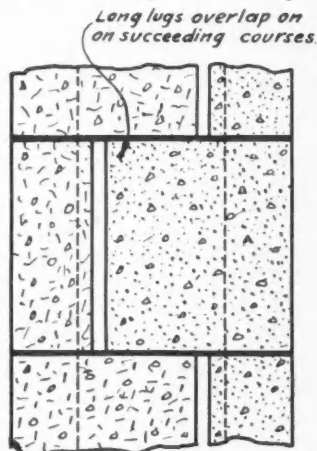


Fig. 9. Overlapping Concrete Connector Lugs Between Inside and Outside Walls Can Be Coated with Asphaltum to Insulate against the Passage of Heat.

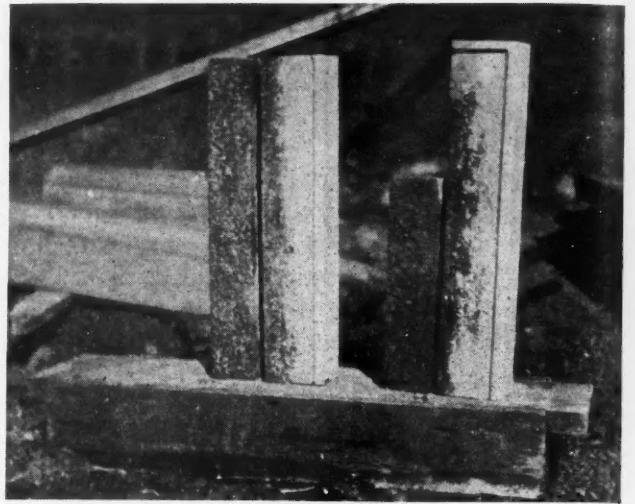


Fig. 10. Two-Piece Block for Watertable Course with 3/4-Inch Air Space Between and Connected by Small Metal Ties for Convenience in Setting.

make block or tile as shown in Figure 3 with a dense, impervious face to resist the ingress of water, making the body of the block with such aggregates as clean cinders, slag or other suitable material which produces concrete of considerably lower conductivity than that made with the usual stone or gravel aggregates? It would go without saying, of course, that cinders, slag or similar material selected for this purpose, preferably should be capable of producing block meeting standard specification requirements of 1,000 pounds per square inch of net cross section.

In a few block systems like that shown at the left of Figure 4, and the system shown at the right of

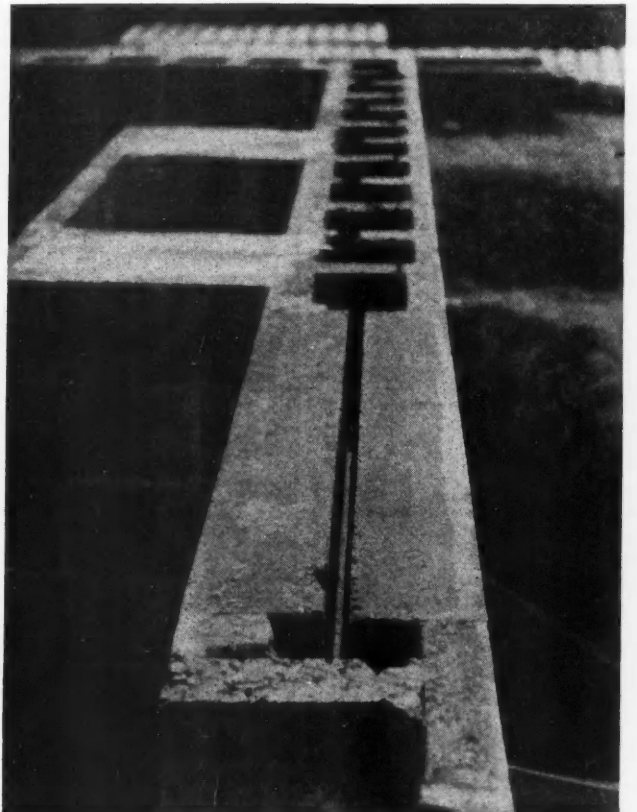


Fig. 11. Illustrations of Double Concrete Lintels Used for their Insulation Value in Residence Walls—One-Inch Air Spaces Between.

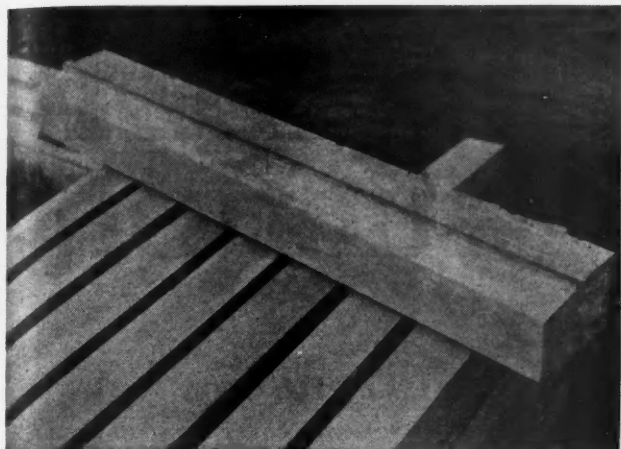


Fig. 12. Sill with Recommended Zinc Weather Strip which Fits Into a Recess in the Bottom of the Wooden Sill to Be placed upon it.

the same figure, multiple air spaces are introduced and the passage of heat thru the webs very much reduced by making the latter circuitous and of narrow section. The systems, both employing the units shown in Figure 5, make successful use of this same principle.

The two-piece block wall systems find their problem of insulation centered largely on the connector between the two walls. Some form of connector necessarily must be used. The connectors used are of concrete or steel. One system, for example, uses two 3/8-inch galvanized iron ties in each pair of inner and outer normal block; another system casts the inner and outer block separately without ties, but places the latter in the mortar joints as the blocks are laid. The double wall system casts long lugs on each inner and outer block unit, which project inwardly, but do not coincide with lugs on blocks immediately above and below. Some of the British systems use concrete pins or keys to inner and outer walls held rigidly apart, but so far as is known, that is not being done in this country. The nearest approach to the concrete connector are those which may be considered as two slabs with small integral concrete connector, such as represented by the block shown in Figure 7.

Metal connectors need have only a very small cross

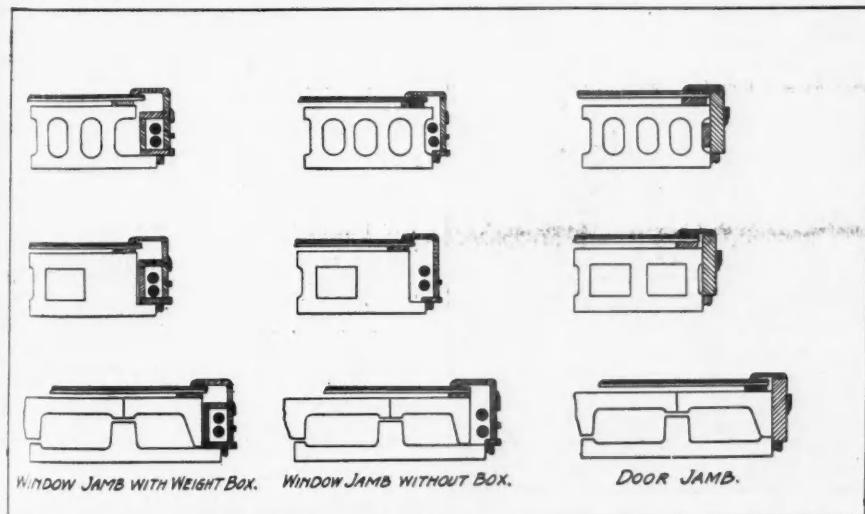


Fig. 13. Several Recommended Types of Jamb Block for Use with Box and Plank Frames. It is Decidedly Slovenly Construction to Use Common Wall Block at the Openings.

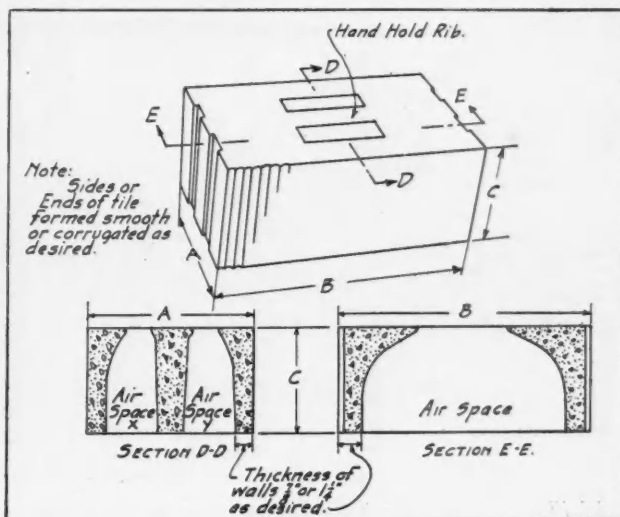


Fig. 14. New Type of Insulated Block Construction, Specified for 500 Houses in the Overlook Suburban Development, Washington, D. C.

section area and, therefore, their relatively high coefficient of conductivity is no great objection. The principal argument against the metal connectors is that they eventually succumb to rust. The life of the

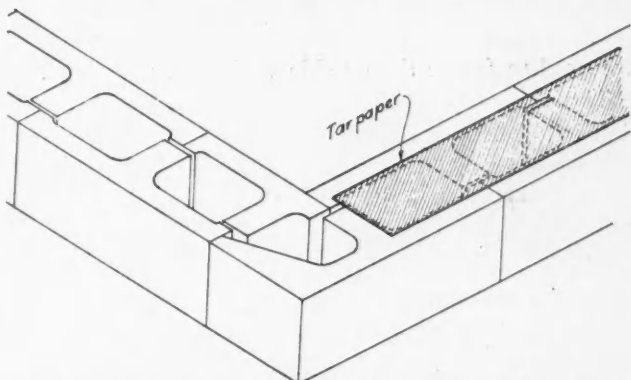


Fig. 15. Showing Use of Tarred Paper Laid Between Courses (Every 6 to 8 Courses) to Prevent Vertical Air Currents.

metal connector may be greatly prolonged by coating before use with asphaltum, or perhaps better, with portland cement grout. The asphaltum has merits as a heat insulator as well as a preservative.

In British construction, hollow brick and concrete block walls are used very extensively to combat a very moist climate. It is common practice there to give metal connectors half loops between walls, as shown in Figure 8, so that any moisture which might run down on the inside of one wall cannot cross over to the other. In this country we aim to make both walls in our double wall systems water-tight and to prevent water from entering at the top. Nevertheless, moisture occasionally enters and as a precaution the loop shown in the illustration is recommended wherever metal ties are used.

Overlapping or interlocking concrete ties connecting inner and outer

(Continued to page 104.)



STEEL LUMBER Construction

Entire Framing of Small House

SIX-ROOM DWELLING HAS STEEL JOIST FLOORING AND STUDS—PRACTICAL QUESTIONS ANSWERED.

By Gilbert Canterbury

EDITOR'S NOTE—This is the seventh 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.

THAT steel joists and studs can be used for the entire structural framing of a dwelling is illustrated in the construction of a small house in an Ohio city last spring. In this house steel joists support first and second floors and the roof. Steel studs are used to frame the outside walls and partitions.

The only combustible material used in the construction is the floor surfaces, wood sheathing on the roof and wood trim.

The dwelling is a six-room house, two stories high. The walls are four-inch steel I-studs and four-inch steel channel studs to which is attached metal lath both outside and inside. The outside lath is covered with stucco and back-plastered. The inside lath is plastered thus forming a hollow wall approximately five inches in thickness without a single stick of combustible ma-

terial.

Steel joists support both first and second floors and the plain hip roof. The first floor joists are supported on brick foundation walls. The second floor joists are supported on the steel stud frame. One steel lumber fabricated column is used supported on center bearing wall in the basement. This column is composed of an I-joist section reinforced by spot-welding plates to each flange.

The studs are placed twenty-four inches on centers and the floor joists spaced nineteen inches on centers. The usual double wood floors are utilized, the sheathing being nailed directly to nailing strips which have been nailed into the web of the steel joists.

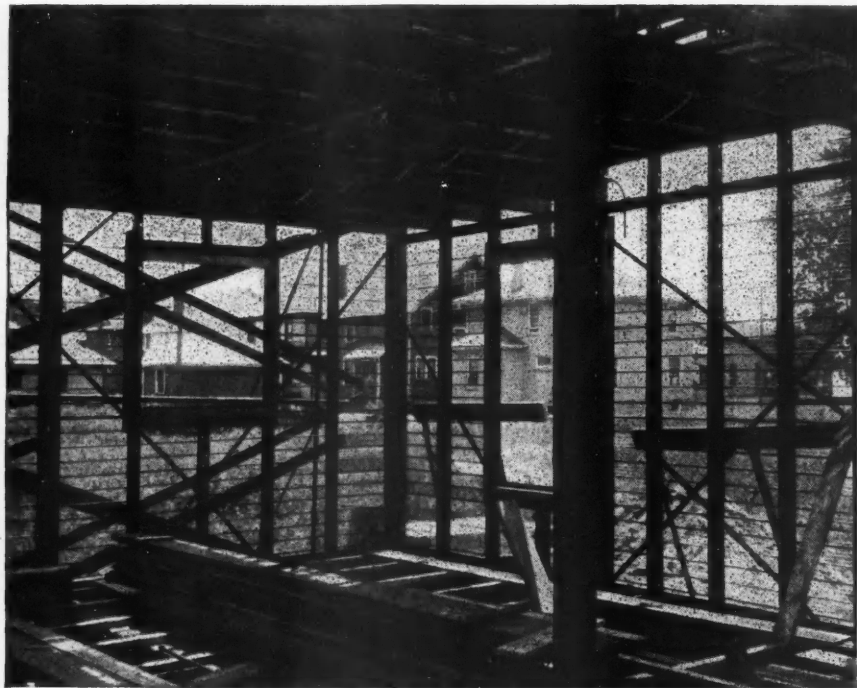
The first floor joists are left open in the basement. To the second floor joists metal lath has been attached and this lath plastered for ceiling. Plastered metal lath on steel joists also form the ceiling of the second floor. The roof is supported by steel joist sections to which is nailed sheathing and the sheathing covered with a metal surface and painted green.

The structure is sturdy and rigid and possesses a number of advantages in addition to fire safety. The joists and studs, of course cannot shrink or warp and consequently the plaster on walls, partitions and ceilings does not crack. The house must also be free from rodents and vermin. By using a thin concrete slab across the first floor joists with embedded sleepers for nailing wood floor surface, the house would also be made largely dustproof.

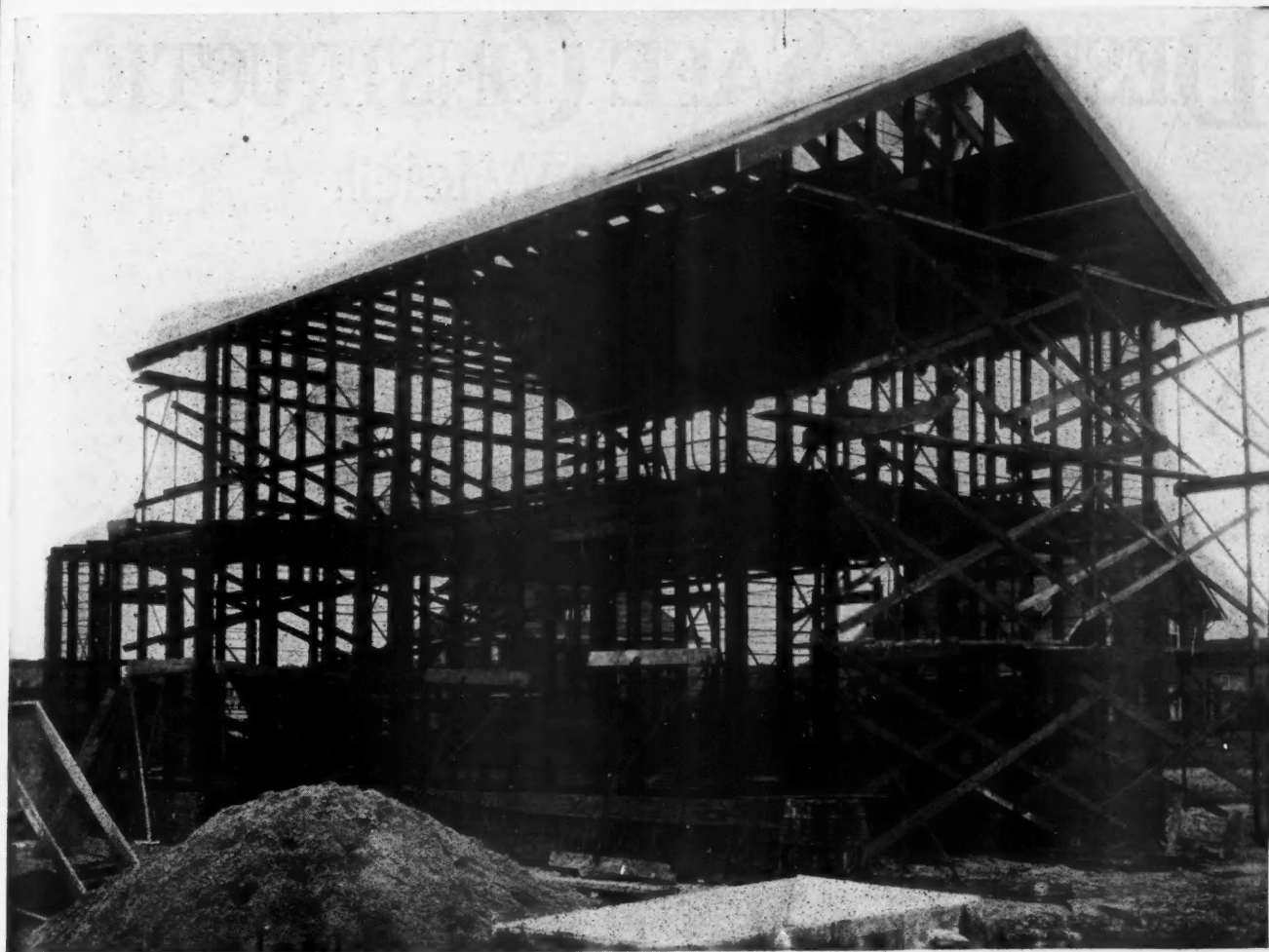
Is Steel Lumber Floor Cold

Question—I grant the fire safety of a steel lumber first floor, but would it not be too cold for use in a residence?—H. K. Polk, Orion, Kans.

Answer—No, the steel lumber



Interior View of Steel Frame House Showing Four-Inch Steel Studs and Metal Lath as Base for Stucco Walls.



Steel Frame Dwelling—An Example of All Steel Framing for Walls, Floors and Roof. The Foundation Is Brick. The Walls when Completed Will Be Stucco.

used in a floor would have nothing to do with temperatures. The steel lumber used in the firesafe floor is steel joists and these joists are supporting material only. The concrete slab covering the joists would act as a fire-blanket. Wood nailing screeds would be embedded in the concrete and the regular hardwood surface nailed to these screeds. Your floor surface, then, would be just the same as the complete wood construction were used.

Lath Need Not Sag

Question—It looks to me like metal lath stretched across steel lumber joists spaced say nineteen inches on centers would buckle or sag under the weight of a two-inch slab of wet concrete. How about this? H. J. Fownes, Cincinnati, Ohio.

Answer—Two inches of concrete weigh about twenty-five pounds to the square foot. Any good metal lath stretched tightly and fastened firmly to steel joists spaced nineteen inches on centers will not sag more than three quarters of an inch to one inch. If a ribbed lath is used with the ribs running at right angles with the joists, there should not be any sag.

No Need of Fire Trim

Question—What sort of a saw should I use to trim steel lumber joists?—Oliver Compson, Titus, Ind.

Answer—If you mean a fire-bevel trim, this, of course, will not be necessary since steel lumber joists

cannot burn. As to getting the joists cut to the right length for your span it is well to remember that steel lumber joists are sold ready cut to the exact measurements of your span, the sale always being made by distributors who are equipped to lay out the floor panels and cut the joists before delivering to the job. A hack saw or an acetylene torch will cut steel lumber easily and some saw companies manufacture special saws for this work.

Question—Are steel lumber joists sold by the thousand linear foot?—C. W. Cook, Buffalo, N. Y.

Answer—Steel lumber joists are customarily sold by the pound like structural steel I-beams. Standard joist sizes are 4, 5, 6, 7, 8, 9, 10, 11 and 12 inches. Weights in different sizes vary slightly according to the manufacturer. The following weights are those of one of the leading steel lumber producers and closely approximate the weights of all joist sections: 4-3.7 pounds, 5-4.3, 6-4.9, 7-5.8, 8-6.8, 9-7.7, 10-8.7, 11-10.7, 12-12 per linear foot. This pound price is a basic commodity price but it is on this basis that the distributor or dealer in steel lumber will always figure the cost to a contractor.

Editor's Note: Mr. Canterbury Will Answer Practical Questions That the Readers of the AMERICAN BUILDER Want to Ask on Steel Lumber Construction. Send in Your Problems.

DESIGN of SAFE CONSTRUCTION

By Charles W. Leigh

Associate Professor of Mechanics, Armour Institute of Technology

Types of Trusses

ARTICLE NINETEEN OF AN EXTENSIVE SERIES ON STRENGTH OF MATERIALS

A ROOF TRUSS is usually thought of as a frame work built up of members in such a way that the structure as a whole cannot be changed in shape without the crushing or pulling apart of some of the members. The truss is considered as acting vertically on the supporting walls or columns, except in the case of a cantilever truss, to be considered later. The strength of a truss does not depend on the rigidity of the connection, for the assumption is usually made that the members are pinned at the joints and are free to turn about the pins. The structure depends on the strength of the members alone.

Now the only rigid frame is made of three members forming a triangle as in Fig. 1.

If four members were joined as in Fig. 2, forming the figure A B C D, then without any change in the lengths of the sides, the figure may be changed to A E F D. Fig. 3 represents one type of truss called the king rod or king post truss with its loads and support reactions. The points A B C D E and F, where the members are pinned together are called joints. The live and dead loads are assumed as acting at the joints of the upper chord, while ceiling loads if any would act at the joints of the lower chord. The length A B, B C, C D and D E are called panels.

Some of the members, A B, B F, etc., are in compression and are called struts, while others such as C F, A F are in tension and are called ties. A E is sometimes called a tiebeam. Now, timber will resist crushing stresses to good advantage. But on account of the low shearing strength of timber when a pulling or tensile stress is to be resisted, a wooden member is often unsatisfactory. The wood in front of a pin or bolt will often shear out, leaving the rest of the member in perfect condition. Consequently such a member as C F is sometimes made of steel. Trusses are often built up with wooden and steel members, which pass thru the wood at the joint, and are fastened by washers.

For the most economical design of trusses the loads should come at the joints by means of purlins or purlin trusses resting on B, C and D of Fig. 3. If the purlin rests on the truss at a point between A and B the effect of the load is to cause bending stress, in addition to compression. This requires a larger member in A B, for example, than if the load were at the joint. Under the assumption that the loads are carried in this manner, I will show how the loads at the joints are figured for several types of trusses.

Suppose that the trusses of the type shown in Fig. 3

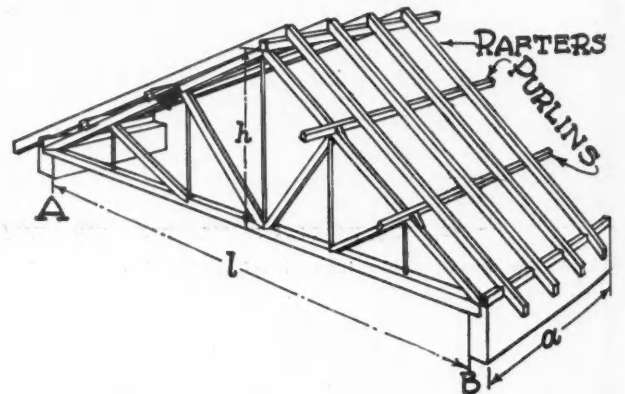


Fig. 4. Roof Supported by Trusses, Purlins and Rafters.

are spaced 8 feet from center to center. Also assume that A C is 20 feet long. Then the roof area to be carried by the upper chord A C is $8 \times 20 = 160$, Fig. 4. For the entire truss $160 \times 2 = 320$ square feet. If now we take 40 pounds per square foot of roof area, as the combined snow, wind and dead load, the total load on the truss is

$$40 \times 320 = 12,800 \text{ pounds}$$

Now the joint B takes one-half the load from A to B and one-half from B to C. The load at A and E is just one-half that B, C or D. In other words, the joint load is one-fourth the total truss load. But there are four panels. Then to find the load at any joint, not at the ends, simply divide the total load, W, by



Fig. 1. Showing a Triangular Frame.

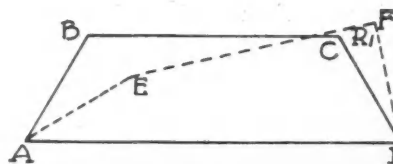


Fig. 2. Showing a Four-Sided Structure that Is Not Rigid.

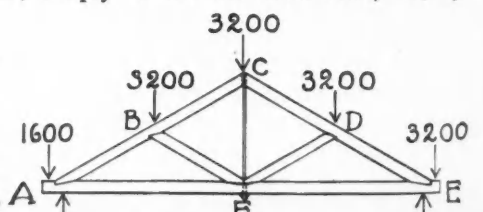
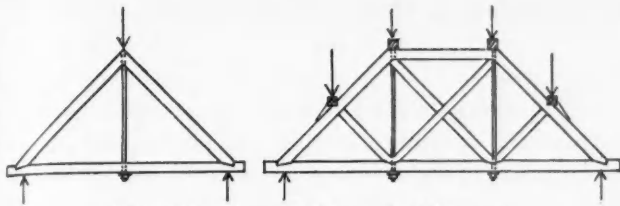


Fig. 3. Showing a King Rod or King Post Truss.



Figs. 5-6. Types of Queen Rod Trusses.

the number of panels. The end loads are just half the first result.

Then the load at B, C and D are
 $12,800 \div 4 = 3,200$
 While those at A and E are
 $3,200 \div 2 = 1,600$

Fig. 3 shows the result on the assumption that the loads on both sides are the same and are uniformly distributed.

If the truss of Fig. 5 is to carry a ceiling load, a vertical tie rod is added to relieve the bending stress at the center and prevent too great a deflection in the horizontal tie beam. This type of truss is used for spans up to 20 feet.

If the span is over 20 feet, a type of truss shown in Fig. 3 may be used where the upper chord members A C and C E are braced by the struts B F and F D. This truss is used for spans up to 35 feet. In case a ceiling or floor load is carried, the lower chord A F E should be braced by vertical tie rods from B and D, as shown by the dotted lines.

For spans from 30 to 45 feet the queen rod truss shown in Fig. 6 is used. If the load was the same on both sides of the truss there would be no need of the inclined braces in the center panel. But as this would not be the case when the wind blows, the braces should be inserted. If the span is from 40 to 50 feet the horizontal members in the center panels would be from 13 to 17 feet long and would require vertical rods and bracing as shown in Fig. 7.

Fig. 8 is a combination of types shown in Figs. 3 and 5. The number of panels depends on the span as well as other specifications. The span seldom exceeds 60 to 75 feet.

In the preceding types of trusses a pitch in the neighborhood of one-third is considered by many architects as the most economical. For steep roofs with pitch one-half or over, the scissors truss, shown in Fig. 9, is often used where the span does not usually exceed 50 feet.

I have given a few of the simpler types of trusses

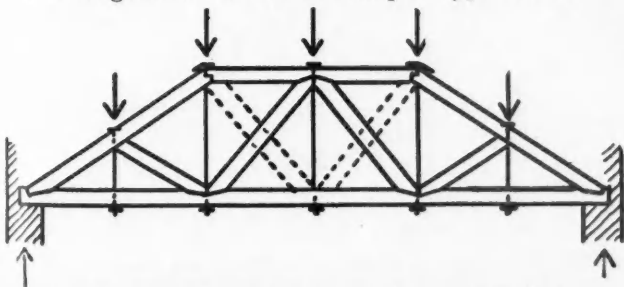


Fig. 7. Queen Rod Truss with Center Tie and Braces.

with some of the properties considered to be good practice. However, there are many other types in common use, especially in larger and more complicated structures, that will only be considered in special problems later on.

The article will be concluded by showing how the loads are figured in a couple of cases when the span and pitch are given.

In Fig. 8 let the span be 60 feet, rise 20 feet, and 12 feet the distance between trusses. To find the joint loads at A B C D, etc., and the reactions: Now A G = 60 feet and H D = 20 feet. A H D is a right triangle. To find the length of A D use the following formula:

$$S = \sqrt{h^2 + \left(\frac{l}{2}\right)^2}$$

Where h = rise, l = span and S the upper chord

$$h = 20, \frac{l}{2} = 30$$

$$\text{Then } S = \sqrt{400 + 900} = \sqrt{1,300} = 36, \text{ approx.}$$

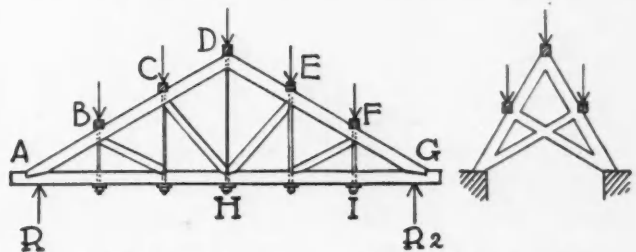


Fig. 8. Queen Truss.

Fig. 9. Scissors Truss.

Then the roof area carried by A D = $36 \times 12 = 432$ square feet.

If we assume 50 pounds per square foot for the combined loads, then the entire load for both sides is

$$W = 2 \times 432 \times 50 = 43,200 \text{ pounds}$$

Since the load is uniform, each reaction is $\frac{W}{2}$ or

$$R_1 = R_2 = 21,600 \text{ pounds}$$

Also since there are six panels of equal length the joint loads at B C D E and F is $\frac{W}{6} = 7,200$ pounds.

$$\text{Those at A and G} = \frac{7,200}{2} = 3,600 \text{ pounds.}$$

As another example, take a truss shown in Fig. 10 of span 42 feet, rise 14 feet, rise at hip 10 feet, horizontal distance from hip to peak 12 feet. The trusses are 8 feet apart. To find the joint loads assuming a combined roof load of 50 pounds per square foot of roof surface, the horizontal distance A D = $21 - 12 = 9$ feet.

$$\text{Then } A B = \sqrt{9^2 + 10^2} = \sqrt{181} = 13.45 \text{ feet.}$$

Then the load on A B = $50 \times 8 \times 13.45 = 5,380$ pounds.

$$\text{The load at A} = \frac{5,380}{2} = 2,690 \text{ pounds} = E.$$

$$B C = \sqrt{12^2 + 4^2} = \sqrt{160} = 12.65$$

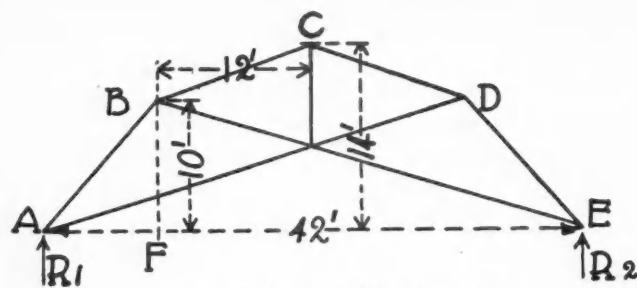


Fig. 10. Showing a Hip Roof Truss.

The load on B C = $50 \times 8 \times 12.65 = 5,060$ pounds = C D.

Joint B takes one-half of the load on A B and one-half of B C, or which is

$$\frac{5,380}{2} + \frac{5,060}{2} = 2,690 + 2,530 = 5,220 \text{ pounds} = D.$$

Joint C takes one-half of B C and C D or 5,060 pounds.

The reactions R_1 and R_2 are one-half the total load or

$$R_1 = 5,380 + 5,060 = 10,440 \text{ pounds} = R_2$$

In the next article I will discuss the methods for determining the stresses in the members of a roof truss after the loads at the joints have been figured.



Insulation in Concrete Block Construction

(Continued from page 99.)

walls usually do not provide excessive conductivity for heat, but considerable reduction is possible by coating connecting portions of the lugs with asphaltum as indicated in Figure 8.

Prevention Direct Passage of Heat and Cold

As indicated in preceding paragraphs, good block well laid will prevent actual passage of moisture or cold winds thru the block and joints; but a far more important consideration is the manner in which the openings are weather stopped. The practice of using solid or one-piece sills and lintels is perhaps the most common failing. A sill or a lintel extending thru the entire thickness of the wall obviously is not so good an insulator as the hollow block wall which surrounds these pieces. Divide the sills, lintels, watertable and other similar units vertically along the long dimension, (as illustrated by the units shown in Figures 10 and 11) and excellent insulation properties are secured. The air space should be at least one inch wide to prevent clogging with mortar and usually there is no advantage in making it wider.

The two sections of such units may be joined by small metal connectors, if desired. The units shown in Figure 10 are joined in this manner altho the connectors are not visible in the illustration. If for any reason the double sill is not used, the one piece sill may be made to positively prevent the passage of water by setting in a zinc or copper strip as illustrated by the sill shown in Figure 12. This strip is made to fit snugly into a slot in the bottom of the wooden sill.

A number of recommended types of jamb block

for use with both plank and box frames, are shown in Figure 13. All of these are efficiently wind-stopped and have been found satisfactory in practice. The make-shift habit of using ordinary wall block at the openings, in place of jamb block, is to be discouraged as slovenly construction and inefficient under most circumstances. All casings should be carefully and tightly fitted and mortar bedded wherever the mortar will help in keeping out cold.

Sealed Air Space Construction

An interesting new system of insulated block construction using the light-weight parallel air space unit shown in Figure 14 has been specified for use on several hundred houses in the East. Referring to sectional view D-D in Figure 14, air space "X" for example would be adjacent to the outer wall and air space "Y" adjacent to the inner wall. The wall between these two air spaces is made solid (and fully bedded in mortar) so that in the wall there will be no connection between air space "X" and air space "Y". Air space "X" is closed off every few courses providing dead air chambers next to the outer wall, thereby intercepting the inward progress of either heat or cold. Air space "Y" next to the inner wall, is open at the level of the basement ceiling and at the attic, so that heat usually unavoidably wasted by the heating plant in the basement, is picked up by these flues and used in heating the walls. This same arrangement could be used with equal efficiency any parallel air space block (such as those shown in Figure 2) provided there is a continuous wall between the two or more parallel lines of spaces.



Cardinal Points of Good Stucco Design:

(1.) Stucco should not be run down to the ground without a solid impervious base course.

(2) The proper overhang and drip should be provided for all window sills and other horizontal woodwork, and some stop should be provided at the ends to avoid the concentration of water over end of the sill.

(3.) The design should be chosen to permit of a generous overhang of eaves and cornices.

(4) There should be no horizontal surfaces of stucco on which water can collect. Liberal discriminating use of flashings should be made wherever water might get behind stucco—such as at roof and wall intersections, under joints of masonry trim, etc.

(5.) Chimneys should be covered with impervious caps to avoid unprotected stucco at top of chimney. Chimneys should be wrapped with metal lath before stuccoing. Sheathing should be eliminated and metal lath back-plastered according to the finding of the U. S. Bureau of Standards.



FOOTINGS for chimneys should be at least 6 or 8 inches wider all around that the chimney foundation and for small chimneys should be 12 inches wide all around.

Bonds and Joints in Brick Construction

SOME OF THE PRINCIPAL TYPES IN GENERAL USE AND HOW THEY ARE FORMED

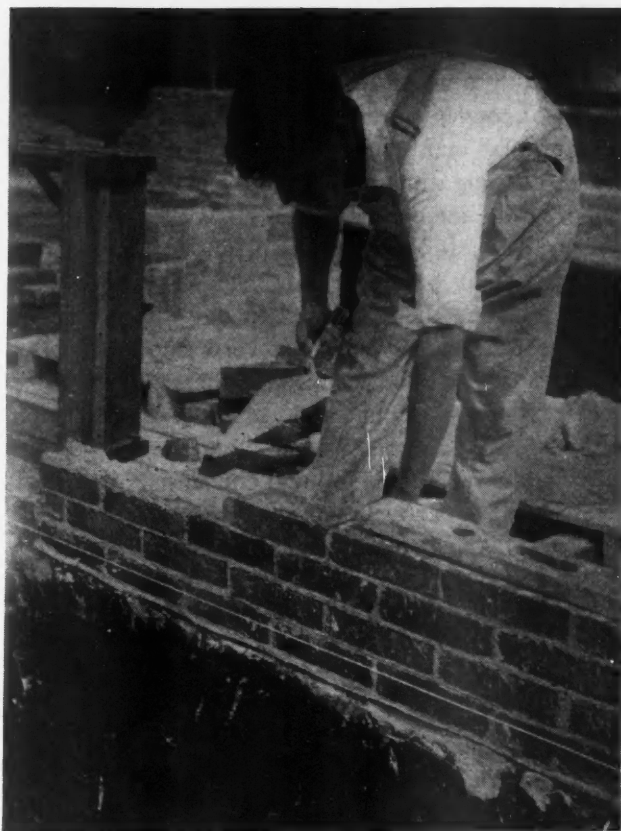
BRICK can be laid a variety of forms known as bonds and very pleasing effects can also be obtained by varying the method in which the mortar is applied. This latter practice is called joints.

The common bond is the most frequently used because it is the easiest and cheapest to lay. It is considered by many engineers as the strongest of all bonds. In building an eight inch wall with this bond, the first six courses are laid entirely with stretchers and the seventh is a header course. In the case of a twelve inch wall, every seventh course is a header course, both in front and back of the wall.

Common bond is used for face work very often and always for interior partitions, backing up a wall laid with fancy face brick.

Alternate course of headers and stretchers form a bond known as English bond. While this is very strong it is not used extensively except for special effects. Flemish bond calls for headers and stretchers alternating in each course. This arrangement is very artistic. The English cross bond is very similar to the English bond but in addition has the courses of stretchers break joints with each other forming small St. Andrew's crosses.

The matter of joints is very important and many artistic effects can be obtained by a simple stroke of the trowel in a skilled workman's hands. In all unexposed surface work the plain cut joint is used. The



Struck Joints Are Used in Back and Side Walls. They Are the Easiest Joint to Work and One of the Strongest.

joint is formed by cutting off with the trowel the surplus mortar squeezed from the joints when the brick is laid.

For outside work the most commonly used and easily made joint is the struck joint which is formed by using the upper brick as a guide and drawing the point of the trowel along the upper surface of the brick below.

Joints struck flush are formed similarly to struck joints except that the face of the joints is flush with the face of the brick. Beautiful effects can be produced by using this joint.

Raked joints are used frequently on fancy face brick finishes and have a beautiful appearance. These joints are not recommended for eight inch walls, however. When various mortar colors are used this type of joint stand out very strikingly and adds very much to the beauty of the exterior of the building in which it has been used.



FALSE teeth of paper are made in Germany.



OIL used for lubricating watches and delicate machinery of various kinds is a high-priced product. It is obtained from the jaw of the porpoise and sells for between \$50 and \$100 a gallon.



Raking Joints in a New Brick Job. This Joint is Very Attractive and is Used in Fancy Face Finishes.

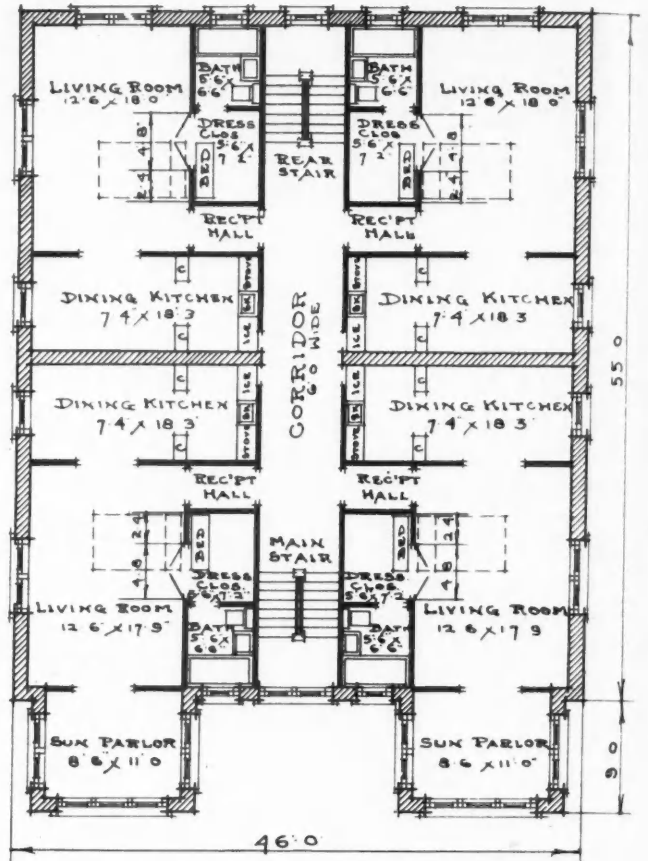
Reducing Costs in Apartment Construction

ACTIVE GARY CONTRACTOR HAS ERECTED THREE BUILDINGS AND MADE MONEY BY INSTALLING SPACE SAVING BEDS

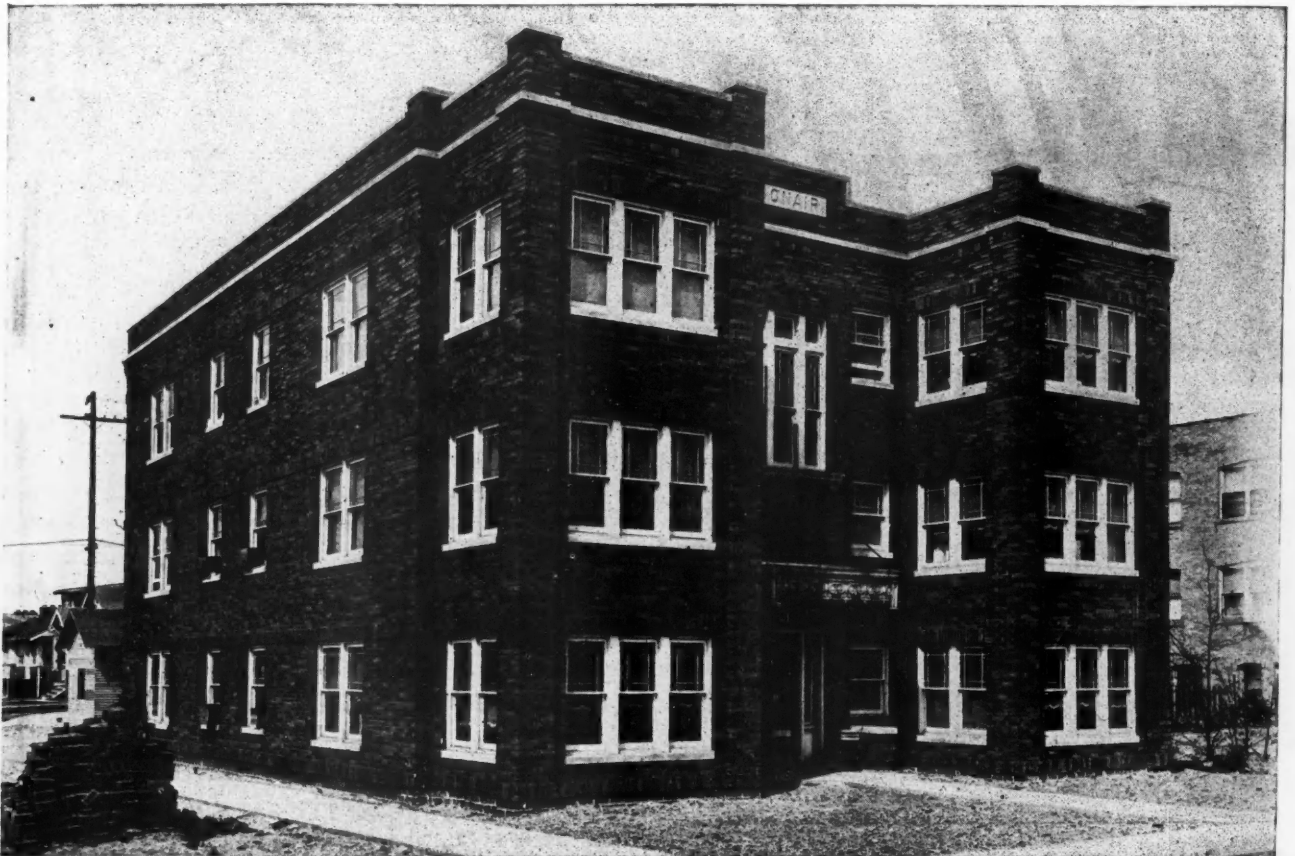
EVERY cubic foot of construction in a new building means certain amount of expense. If the same number of apartments with the same amount of convenience can be built in a smaller space, it means that many cubic feet of space is saved and a corresponding amount of money cut off the bill.

That is the line of logic Wm. H. Welter, contractor in Gary, Ind., followed when planning a number of new apartment buildings for that progressive steel city. He knew there was a demand for apartments and that the return would be very satisfactory. It was up to him to build them so that he could rent them for a reasonable amount and yet make a good profit for his work.

To do this he decided to build condensed apartments or kitchenette apartments as they are more familiarly known. This apartment contains a large living room, kitchenette and bath. These three rooms will serve the purpose of five. In the living room there is a wall bed concealed behind a door which opens into a small dressing closet. At night this door is opened and the bed lowered into position. In the morning it is again raised and folded up and the door swung back into position. The use of this concealed bed eliminates the need of a bedroom. By using these beds in his apartments Welter saved several hundred square feet of floor space and naturally a similarly large number



Floor Plan of Space-Saving Apartment Building Showing Wall Beds and Kitchenette Arrangement.



Apartment Building Erected by Wm. H. Welter, Gary, Ind., Contractor. By Installing Space-Saving Beds He Has Made Possible for the Owner to Get More Rent Out of this Site and Has Reduced the Cost of Building.

of cubic feet of material.

The kitchenette serves the dual purpose of kitchen and dining room. At one end of this room which is long and narrow is the kitchen workshop. Here are located range, sink, shelves, and cupboards for food and utensils. The china closets are so placed as to form a sort of partition between this end of the room and the "diningette" where the meals are served. By the use of this type of room the pantry is eliminated and the space used for kitchen and dining room greatly reduced.

In the apartment building shown here with floor plans, contractor Welter built eleven two-room apartments, four on each floor and three in the basement. These apartments rent for \$40 to \$45 a month, very reasonable in the face of rents being charged in all sections of the country. Yet he figures he can rent them for this price and get a fair return on his investment. He has solved the high rent problem by eliminating certain costs in construction.

In a larger apartment building which he recently completed in Gary he saved over \$8,000 in structural expense by using space-saving features and also increased the renting return. He is planning to build several more as he finds the demand for apartments of this type is very heavy and his buildings are rented long before they are actually completed.



Furnishing Art Insert Home

(Continued from page 87.)

wishes, a Chinese Oriental. With the plain walls use either overhangings of blue silk or repp at the windows or cretonne. The casement curtains are cream net. Blue velour lambrequins may be used. For a touch of color introduce orange in the shades on the lighting fixtures, and have an orange bowl for flowers. Some pieces of colored china would look well in the corner cupboard.

Sewing Room

The sewing room is always a delight to the housewife, a place to sew unmolested and where the seamstress may cut and stitch to her heart's content without upsetting the order of one of the family bedrooms. On occasion this room may be used as an extra sleeping room. The furnishings are simple, a sewing machine with a flat top that may be converted into a dressing table, a chair, a box couch, a chiffonier, a mirror on the back of the door, a clothespole, and a cutting table that folds so that it may be put up when not in use. A low rocker without arms is very essential, also.

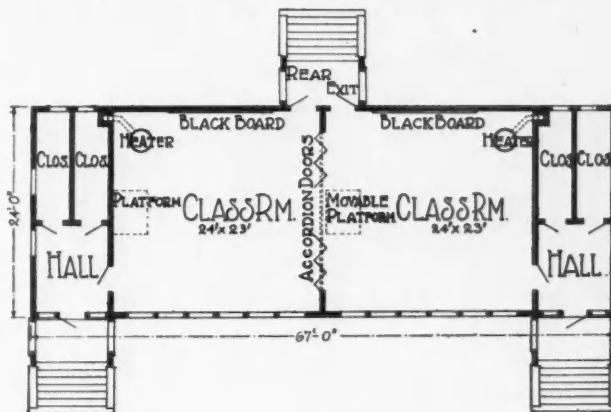
Bedrooms

Cool and restful is the guest's bedroom in white and yellow. The curtains are Swiss with yellow dot.

Sunshine School Aids Study

OUT in Seabeck, Washington, a small town that most people have never heard of, they have a way of doing things all their own. When the officials found they needed a small school to take care of the growing juveniles, they built one that stands forth as being unique and interesting.

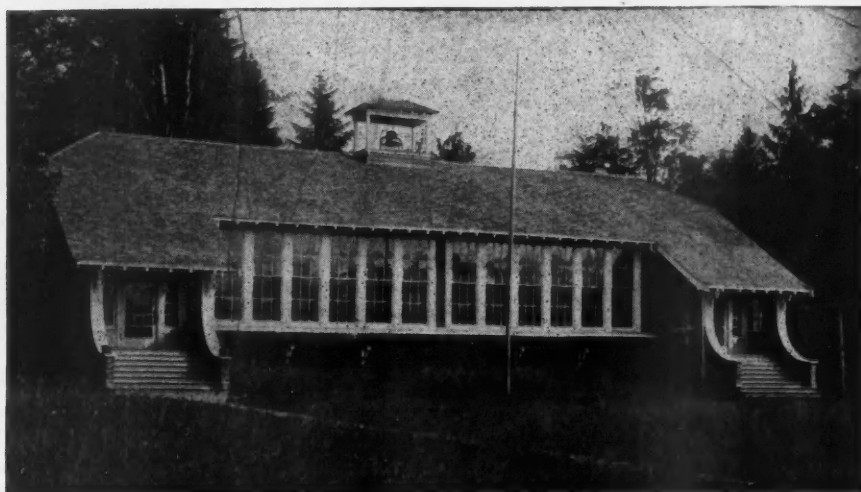
It was built on the sunshine plan as the picture



Floor Plan of Unique School Building Erected at Seabeck, Wash.

below shows. The entire front wall is glass, a row of twelve double hung windows admitting the maximum amount of natural daylight. The building is divided into two rooms with entrances for each on each end of the building. The school looks quite cozy, nestled in a picturesque surrounding of trees and green lawn.

At the rear of the halls on each side are dressing closets. The class rooms are separated by folding and sliding accordion doors which can be moved back against the wall out of the way in order to form one large room for entertainments. At the end of one room is a platform and in the other room is a movable platform which can be taken out whenever the larger space is needed. Each room contains a small heater, all that is needed even on cold days as the sunshine furnishes most of the heat. Against the rear walls are the blackboards.



Sunshine in Abundance Is Provided by the Windows in This Schoolhouse. The Children Are Happy and Healthy.

Unique Newspaper Plant Built in Small City

SOUTH BEND TRIBUNE HAS COMPLETE PLANT IN ATTRACTIVE BUILDING LARGER THAN IN MANY BIG CITIES

ENTERPRISING small cities are not conceding a thing to their large sisters when it comes to modern large buildings. There always has been an idea among many builders that big and interesting work was only carried on in cities of the million class. That, however, is not the case judging by many instances.

South Bend is a good example. Not a very large city as cities go, this live Indiana town is wide-awake and when the slump came along they did not throw up the sponge. In fact, that is just when they put on extra steam. The South Bend Tribune, which exemplifies in large measure the spirit of the town, ordered plans for one of the most unique and complete printing establishments in the country. This building was designed by local architects, Austin, Shambleau and Wiser, and contains several features, such as auditorium, dining room and kitchen that render it unusual and interesting to builders.

From a construction standpoint it is complete.

Built of concrete and steel, the building is three stories high and has an extra large basement extending out under the fifteen foot sidewalks and providing storage space for 1,000 tons of paper.

The concrete and steel super-structure is faced on the two street sides with reddish brown, rough faced brick, laid in a mortar harmonizing in color.

The ornamentation is very simple. The base on the street sides is three feet and eight inches high and of unpolished gray granite. Bands, lintels, and other decorations are of terra cotta in a color to match the gray granite base. To secure the effect of height and also to create a pleasing design, the two street sides have pilaster effects. At each of the three street corners of the building these pilasters end at the top in tower effects giving to the structure a solid, substantial appearance.

The effect of height is also augmented by the windows, which are perpendicularly long and glazed with long, heavy, clear plate glass. The north and east sides of the building, those away from the streets, are plainly finished. Most of the windows on these two sides are glazed with opaque wired glass. All window frames and sash are of metal.

The columns are reinforced hooped columns. The footings are reinforced and calculated to carry a six story building. Thruout the floors are of tile, or composition except in the auditorium on the third floor where a maple dance floor was laid and also on the stage which has a maple floor. The basement floor is of concrete.

One of the unique features in the building is a reinforced concrete foundation for the big press, which weighs 60 tons.



New Plant of South Bend Tribune, Designed by Wiser, Shambleau, and Austin, Architects, of that City. This Handsome Three-Story Building Has Many Unique Features, Among Them the Dining Room, Kitchen and Auditorium with Stage. Latest Construction Was Used Thruout.



View of Advertising Office and Lobby Showing Ornamental Tile Floor and Artistically Designed Walls and Ceiling.



Special Steel Sash in the Work Rooms Insure Plenty of Natural Daylight which is Essential to the Printers. This Floor is Composition.

An ample supply of fresh air is assured by a mechanical blower which is a feature of the building equipment.

Two public entrances on Colfax avenue, on which The Tribune building fronts, open into the first floor, they have bronze doors. The main entrance opens directly into a vestibule with double inside doors of leaded glass. The stairs are of marble.

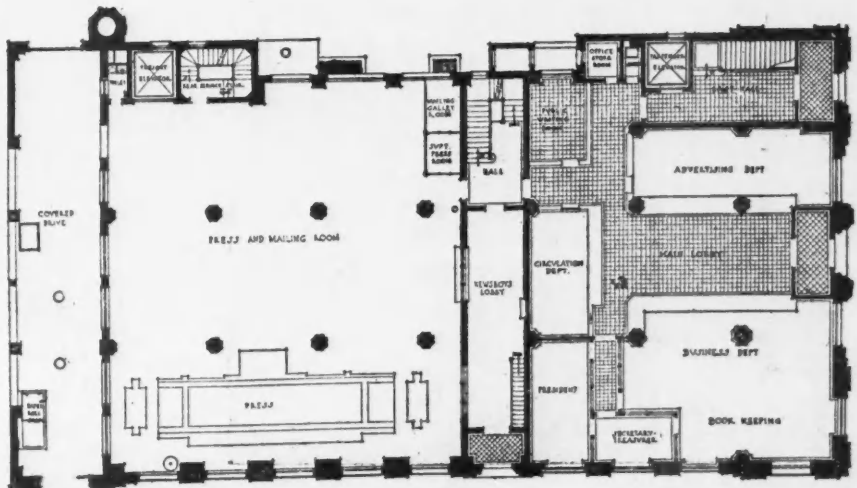
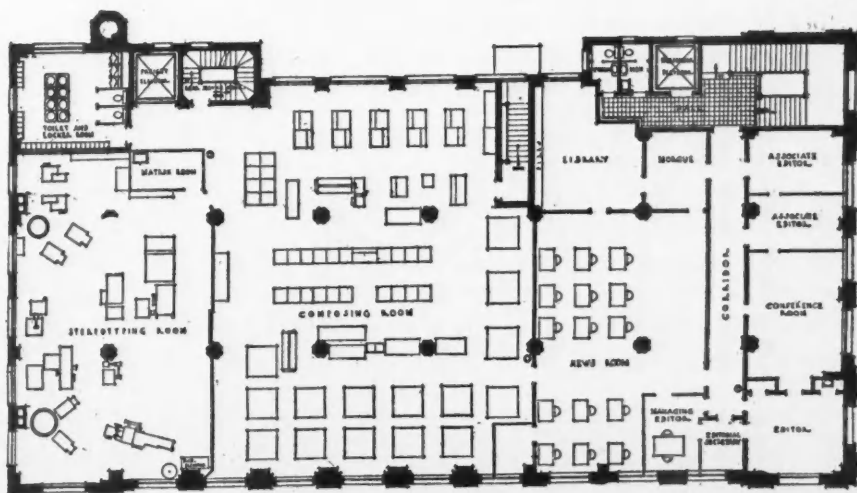
The ceilings are plain but beautifully wrought in artistic moulding effects and finished to harmonize with the walls. The hall floor is laid with white octagonal tiles with light chocolate colored border of square tiles.

Light in Abundance

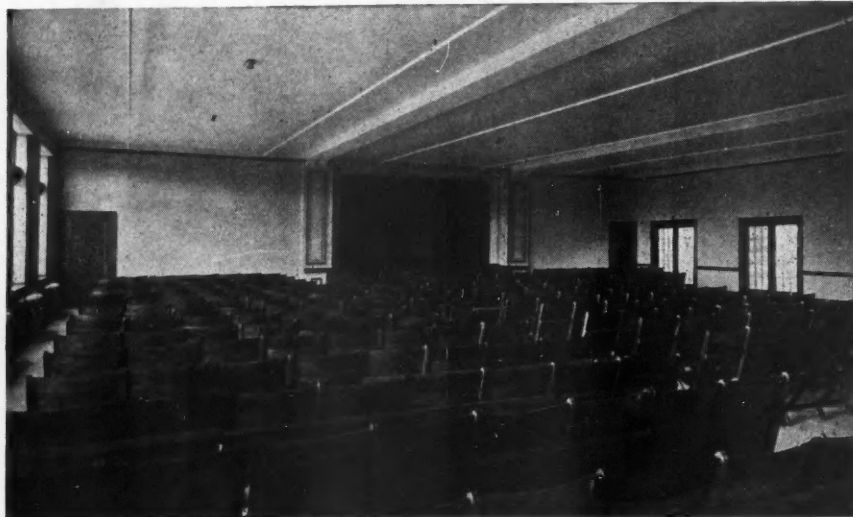
The general office is 52 feet by 59 feet in size. Thick imported Welsh tiles of reddish brown colors and laid in block 9 inches square with a mortar which brings out the tile colors, were used in the office lobby floor. This lobby extends north from the vestibule and then branches to private offices on the west and to the east hall on the east. Other general office floors are of a special cork material. The wood used in the general office is darkened oak worked out in effective paneling.

The press and mailing room occupies the entire width of the building and the rest of the first floor except the driveway on the north and is 60 by 64 feet in size. In the southeast corner is the mailing gal-

ley room 6 by 9 feet, and next to it on the west the private office, six by seven feet, of the superintendent of the press room. These rooms have metal and glass partitions. Upstairs in front are private offices of the editorial staff.



Floor Plans of First and Second Floor Showing Business and News Office and Printing Departments. The New Building is 75 by 144 Feet and One of the Largest Newspaper Plants in the Country.



Large Cities Are Not the Only Places Where Real Progressive Building is Going On. This Newspaper Plant Has a Real Theater for the Amusement of Its Employees. Sprinklers Guarantee Protection in Case of Fire.

On the north side of the corridor and also connected with it by French doors are the news room, 29 by 43 feet in size and the library 18 by 20 feet. The rest of the second floor is devoted to composing room, stereotyping room or foundry and other necessary departments. The composing room is directly north of the news room, only a partition separating them. This proximity was planned so as to place as closely together as possible the two departments which operate in unison, are interdependent and require close and constant communication. The composing room is 54 by 64 feet in dimensions.

The top floor is approached by the same stairway that leads from the east entrance to the second floor. An east and west foyer 11 feet wide and 35 feet long leads to a general reception room 21 by 28 feet in size and occupying the southwest corner of the floor. Joining the general reception room on the east is a smaller ladies' reception room. Its dimensions are 15



Private Office of F. A. Miller, Editor-in-Chief of South Bend Tribune. This New Building Marks an Achievement of Note in the Building Field Because It is a Large Enterprise in a Small City.

by 16 feet. Opening from this room is a ladies' coat room and east of it a men's coat room.

North of the foyer and the general reception room is an assembly hall 60 feet in dimensions and seating 500 persons. The assembly hall or auditorium floor is of hard maple. Strips of wood of wedge shape were laid on the original steel and concrete floor and between these strips concrete was poured to hold them solidly in place. The strips were then leveled and over all was put a coating of hot pitch. On top of this was placed felt paper and then came the hard maple boards 1½ inches in width. The object of pitch and paper is to keep

moisture from the concrete entering the boards of the floor and causing them to warp. After the floor was laid a finishing machine electrically operated was used on it to secure a smooth dancing finish. This machine passed over the floor 12 times.

A stage with a proscenium opening of nearly 18 feet on the north side of the room is large enough for recitals, musicales, amateur theatricals and other entertainments.

The dining room is 30 by 43 feet in size. East of it is the kitchen. A service hall along the east side of the floor connects the front hall with the kitchen.

The basement extends under 15 feet sidewalks which are provided with prism glass to admit light.

North of these are the toilet and locker rooms for the employes in the foundry and press and mailing room. Here is also a large metal storage tank with a capacity of 250 gallons for supplying hot water to the shower baths, to lavatories thruout the building and to the auditorium kitchen. For summer heating a special coal burning heater is provided. This is also in the machinery room. An air service tank is also placed in this room for the storage of air used in drying printing plates and for cleaning about certain machinery.

North of the machinery room is the boiler room. This is equipped with two large, low pressure, smokeless steam boilers. With the vacuum vapor system used The Tribune building and the garage can be heated in zero weather with a gauge pressure of about two pounds, one boiler providing the heat. The main roof is of concrete and is what will be the floor of the fourth story when the latter is made necessary.

To secure drainage this concrete and steel floor was covered with cinders which were thoroly tamped, the surface being inclined towards the drain outlets. On top of these tamped cinders was placed a concrete surface one-inch thick. This concrete surface was then covered with roofing paper which was given a thick coat of liquid pitch. The roof was then graveled.

SMALL JOBS FOR RURAL BUILDERS

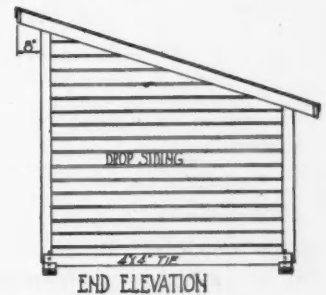
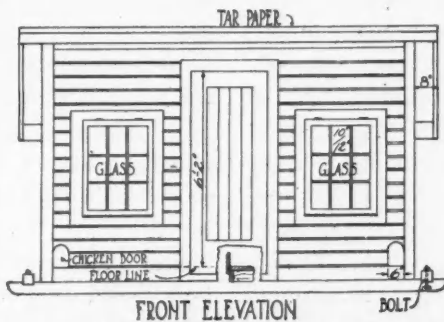
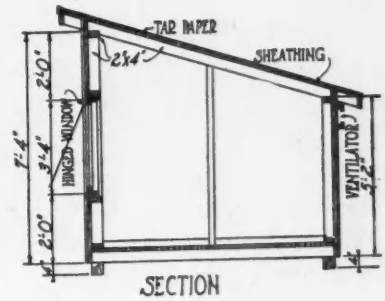
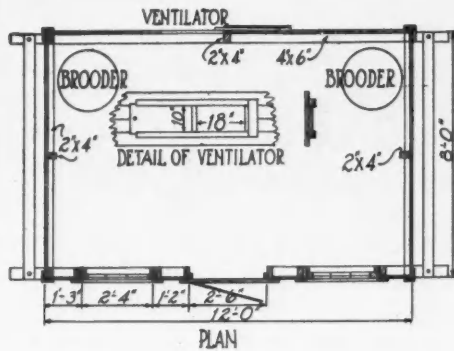
Design for a Colony Poultry House

A LITTLE portable house, 12 feet by 8 feet is shown in this design. It is well built of 2 by 4 studding, covered with building paper and clapboards, or drop siding, on the outside. The inside is finished in the same way except that the boarding is a good quality of narrow matched tongue and groove ceiling, carefully driven together and blind nailed in such a way as to leave a smooth surface. The lower edges of the rafters are finished the same as the side walls, so the inside finish is the same all around, floor and all.

Building paper is carefully worked around the door frame and window frames and is doubled at the corners. In using building paper sometimes workmen are careless. It is difficult to bend thick building paper around inside corners without breaking.

The floor of this little portable house is made double, with building paper between. The upper

floor is matched the same as the walls and ceiling. The one entrance door shuts against the inside jambs at the doorsill as well as sides and top to prevent a draught in cold weather. This makes a little



Details of Construction of Portable Brooder House. The Construction and Exterior Appearance the Same as Colony House Illustrated Below.

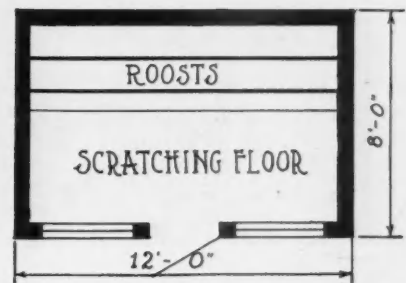


Colony Poultry House Set on Skids so as to Be Easily Movable. Size, 12 by 8 Feet

poultry house that is air-tight when the door and windows are shut, so that some means of ventilation must be provided.

The plan with this house is to cover both windows with thin cotton or muslin stretched across the window opening outside. Each sash is hinged at the top, so the bottom may be swung in and back against the ceiling and fastened with a button. This arrangement is simple and it leaves the amount of air entirely under the control of the attendant.

These little portable houses are used around the barns in the win-



Floor Plan of Portable Poultry House.

ter time, and in the spring they are hauled out into the orchard to house chickens as soon as they are old enough after hatching. In this way it becomes a very useful house. It may be used to house laying hens during the winter and as a roosting shed, used on the colony plan, during the summer and fall. In the spring it makes a good brooder house.



Septic Tank or Liquid Manure Pit

ONE of the most important improvements that can be added to the farm is a sewage system. This implies the building of a septic tank to take care of the disposal of the sewage. Many builders have found this work very profitable.

When a water system has been installed in the farm home, provision must be made for an adequate sewage outlet. To take care of this the septic tank is usually built in a section of the farm on a lower level than the house in order to provide sufficient slope for drain. It is built of concrete about six feet deep and contains two or three chambers. The sewage enters the first chamber thru a drain pipe and immediately bacterial action starts to break down the solids and convert them into liquid. When the chamber becomes filled up to a certain point the surplus is drained off into the second chamber by a syphon arrangement and from this chamber after all the impurities have been broken down is drained off thru an automatic syphon arrangement at the bottom of the chamber into a drain leading to the waste field.

Another similar construction job is the building of a liquid manure pit.

In the case of the liquid manure pit, a picture of which is shown below, the walls of the tank are solid

thruout and built to hold its contents for a long period of time. The walls should be about 6 inches thick and well troweled with cement to make them as leak-proof as possible so that the contents will not seep thru into the surrounding soil. The walls are usually built with rough wood forms. On all dairy farms there is a need for tanks of this kind, as liquid manure is valuable as a fertilizer.



Law for the Builder

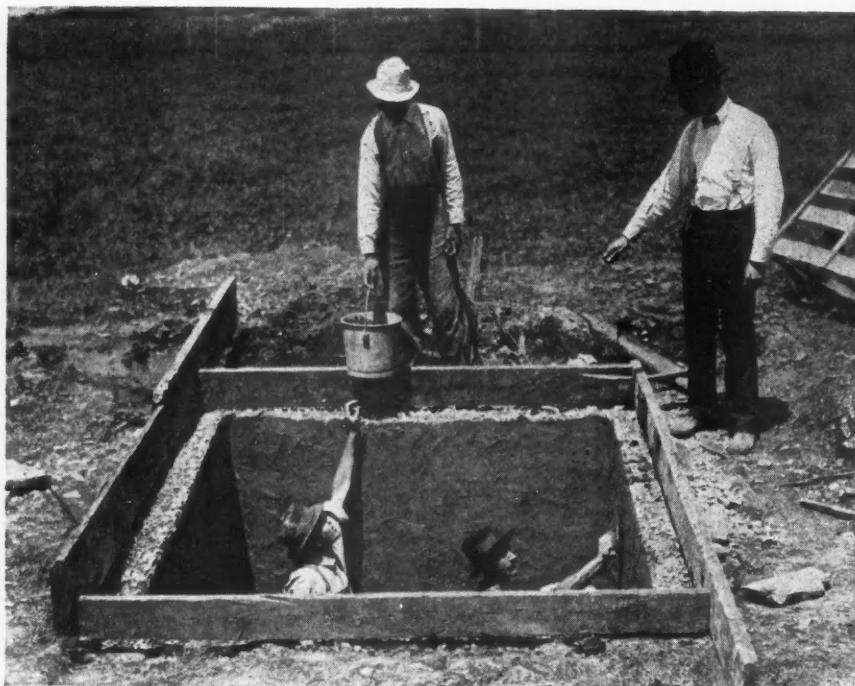
(Continued from page 91.)

way; contending that in view of this clause in the contract the contractors had no cause for complaint. In reply to this the court, in part, said.

What the Court Decided

"While it is true that the contractors were bound to perform to the satisfaction of the architect, yet it was equally true that they had a right to demand that he exercise an independent and honest judgment, and that he should not arbitrarily refuse to consider or determine matters submitted to his judgment. If the contractors did in fact produce lights equal to the W. B. Jackson light, they had the right, not only to install them, but the right to have the architect's approval of them before they were installed; and it was the architect's duty to give them the benefit of his honest judgment in passing upon the character of the lights produced. If he did not do this, but arbitrarily refused to consider or pass upon them and arbitrarily directed that the W. B. Jackson lights be put in, his conduct was so far a fraud upon the rights of the contractors as to entitle them to submit to the courts the question whether or not the lights they desired to substitute were lights proper to be installed under the contract, and whether or not they have suffered loss by the architect's action. * * *"

The judgment in favor of the building owner was thereupon reversed, and the case ordered back for a new trial. The court holding in substance that on the record the contractors were entitled to have the merits of their contention passed by the courts. And that they were entitled to show if they could, under the contract that gave them the right to use W. B. Jackson lights, "or equal," that they could have produced a light equal to the W. B. Jackson light; in which event the building owner would be responsible for a loss caused by the contractors by their being compelled by the architect to use the W. B. Jackson light. It should be noted that the foregoing opinion was rendered by a divided court.



Building a Liquid Manure Pit on a Large Dairy Farm. This Is Only One of a Score of Small Jobs Around the Farm That Can Be Done During Spare Time and Slack Seasons by the Builder.

WHAT'S NEW?



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

Beautiful Fountain from Cast Stone

Wonderful possibilities in the ornamental cast stone field are indicated in the photo of the fountain shown on this page. It is made of cast stone 9 feet 8 inches high with a base 12 feet in diameter. The extreme top bowl is used for an inverted light, the second bowl for flowers. Water flows out of the swans' mouths as well as the dolphin heads just below and falls to the third bowl, then from the lions' mouths to the lower basin. The pockets in the lower basin and between the dolphin heads are designed to hold natural flowers.



Beautiful Fountain of Cast Stone Recently Installed in Auto Salesroom.

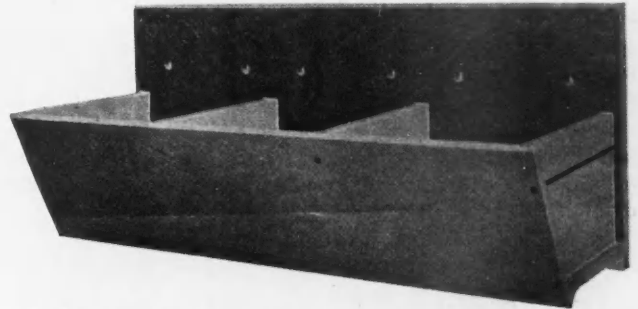
This beautiful fountain has been installed in Lange Bros., Chicago, new automobile salesrooms, considered one of the finest in the country. It was designed and executed by G. G. Girolami & Co., Chicago.

Special Stone For Building Accessories

In a public or office building the stair treads and lavatories are subjected to terrific and constant usage. No other part of the building perhaps requires as much attention, especially in the case of lavatories. And subject to a similar amount of hard usage in the private home or apartment building is the laundry tray.

In both of these instances the material used must submit to this wear and tear successfully or these particular parts

will be a source of expense. Recently a treatment of freestone has been discovered which enables manufacturers to turn out a case-hardened stone that is wear-resisting and very satisfactory for these installations. Ohio freestone is scientifically treated so as to make it non-absorbent. Being hard it will withstand shock and because of its non-porous surface is



Laundry Tray Made from New Case Hardened Stone. It is Freestone Treated by a Special Process and is Designed for Use in Lavatories, Laundries, Etc.

easy to keep free from dust. The flush construction leaves no projections to catch and tear clothing.

This material is used in lavatories for toilet slabs and floor slabs, also as shower stalls, stair treads, bathing pools, mouldings, tilings, etc. It has an enameled surface and can be repaired without showing marks.

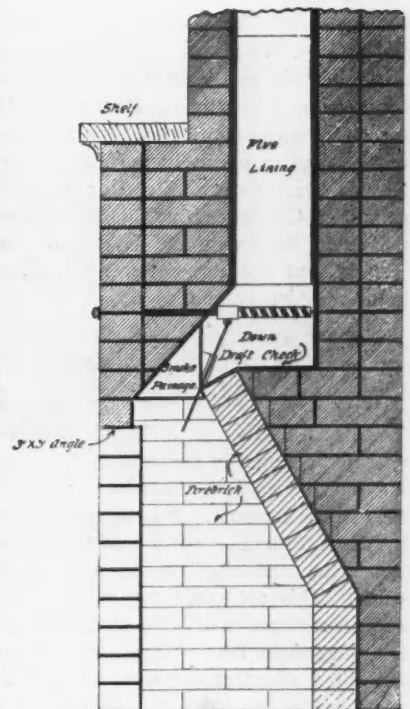


New Fireplace Throat Arrangement

In the construction of a fireplace that burns, the most important consideration is that of ventilation or draught. Unless this is built properly the house will suffer from smoke, soot and disagreeable gases from the fire.

A novel throat arrangement and draft regulator has been invented to eliminate this trouble and is shown in detail in the diagram. It is also designed to reduce the working hours on the building job at least two to four hours.

In this arrangement the damper or grate is in a vertical position and does not stop the gases of combustion. When opened it regulates size of the passage that is necessary under normal and abnormal conditions. An angle 3 by 3 inches square supports the lining firebrick above. In this layout the mason must have a down draft check (see drawing) which is flat and offers a barrier to the draft when it comes down. The passage for the smoke from the throat to the flue lining is absolutely smooth and there is little chance for fire leaking thru. The simple construction of the draft regulator enables the mason to install it in a joint. The handle will not bother him as there is a slot in the housing so that it can be raised or lowered and can be moved in and out an inch or so. It is not a permanent fixture until it is bricked in, and then its only movement is a rotating one.

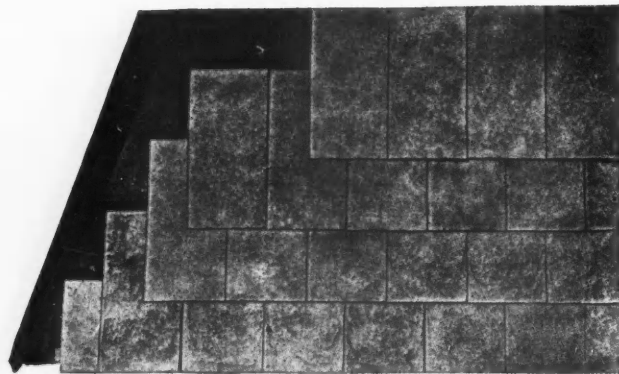


New Fireplace Throat Arrangement Designed to Cut Labor Time and Improve Draught.

New Tapered Asbestos Shingle

HERETOFORE when considering tapered shingles, we have invariably thought of wood shingles, but a new asbestos shingle which has been recently placed on the market has this feature and when laid on a roof has the same appearance of alignment of a wood shingle roof. The familiar large asbestos shingle is square in shape and not tapered.

This new shingle is made of hydraulic cement and asbestos fiber in the standard size of 8 by 16 inches in five styles. It has a heavy butt and beveled edge. The butt may be straight edged, rounded or pointed and the hip and ridge roll is made in sections 16 inches long. Ninety-three sections of ridge roll are required to cover 100 lineal feet of ridge or hip.



New Tapered Cement Asbestos Shingles Made in Assortment of Colors.

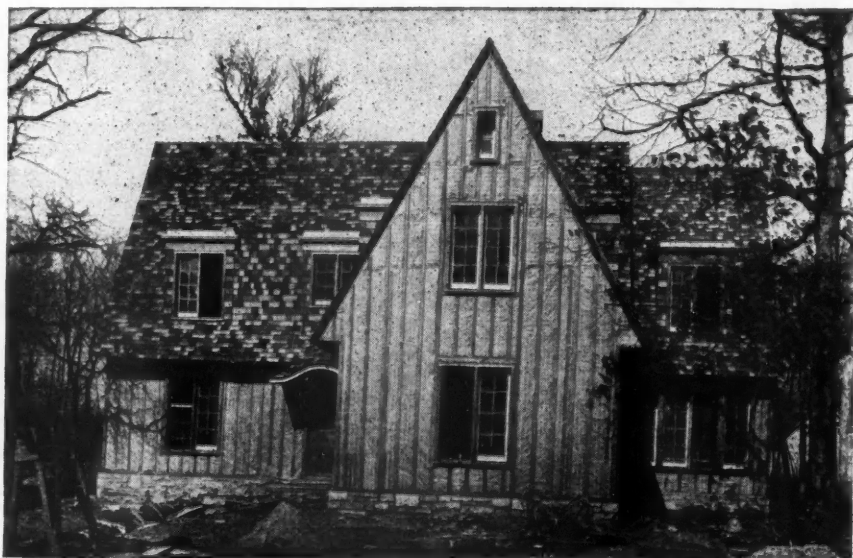
The shingles are laid 7 inches to the weather with not less than 2-inch headlap. Two hundred and seventy shingles cover a square and the average weight of a square is about 500 pounds. These shingles are made in cement gray, brick red, slate, conglomerate brown, buff and roof green.

They are laid according to the American method which in short is this: The roof boards are laid in the usual manner, breaking joints and nailing securely, leaving no loose ends. Roofing boards should be well seasoned and preferably of narrow width. Then lay one thickness of good slater's felt with a 4-inch lap and not less than 10-inch lap on hips and valleys. Apply cant strip, lath or other material $\frac{3}{8}$ inch thick. Apply one course of asbestos slate starters parallel with eaves, overhanging them about $1\frac{1}{2}$ inches. Apply the second course of shingles, then proceed with laying in precisely the same manner as with natural slate or wooden shingles. Galvanized nails are used and driven in flush with the surface of the shingle, but not down too tight. The holes are countersunk.



Insulating the New House

INSULATION in a home prevents rapid changes in temperature by keeping out the cold in the winter and the heat in the summer. It is brought about by the introduction of effective dead air space between the outside and inside walls. This air space acts as a buffer against air currents. This insulation can be effected in many ways, and one of the most effective methods as well as most reasonable in cost, is the use of a wall quilt which is inserted between the walls such as is shown in the illustration.



House Covered with Special Insulating Material Ready for Final Exterior Finish of Stucco. This Material is Made of Eel Grass.

This insulating material is a felted matting of cured eel grass stitched with strong thread securely fastened between two layers of strong paper. The eel grass fibres are long and flat and form a cushion filled with dead air spaces. Single ply is usually sufficient for lining housing. It is made in rolls of 250 square feet.

This quilt is 3 feet wide with thin edges for lapping. The single ply is ordinarily used in lining houses and similar work, and is about one-third inch thick, compressing to about one-fourth inch. The double ply is used for sound deadening, cold storage insulation and is about one-half inch thick.



New Method of Marketing Magnesite Stucco

WHAT will be the verdict of dealers everywhere who have endeavored to make magnesite stucco an attractive part of their business when they learn, thru an announcement elsewhere in this issue, that it is now possible to procure a material where the magnesite and chloride are shipped dry in the same bag and delivered that way to the job, leaving nothing to add at the building but water, thus avoiding the necessity of completing the manufacture of the material by either diluting the chloride shipped in 600-lb. drums or delivering 400-lb. barrels of chloride mixed with water to the job?

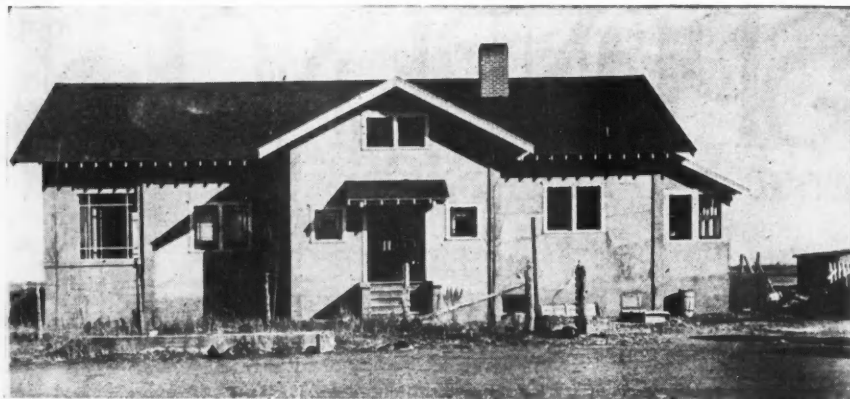
This saves a very large percentage of the freight, teaming and warehouse charges. It eliminates the loss occasioned by leaky containers permitting fluid to come in contact with the dry cement. It also eliminates the large investment which has heretofore been necessary in carrying quantities of dead stocks of chloride and the return shipment of heavy barrels which have the faculty of becoming sun-dried and collapsing before their return. But, above all, is the tremendous importance and advantage of correct proportions, as mixed dry at the factory gives a security to the product impossible to obtain by haphazard mixing by "labor chemists" at the job.

The discovery of this improved method of marketing a magnesite chloride mixture will prove to be one of very great importance to the trade.



Correction

IN an article in the June number in this department on "New Asphalt Shingle Locks on Roof," the measurements of the shingles were given as 8 by $12\frac{3}{4}$ inches, which were incorrect. The new shingles are 16 by 16.



Attractive Stucco House Built by Henry & McKinley at Monte Vista, Colo. Mr. Henry Reports Considerable Activity in that Locality.

Builders Active in Colorado

To the Editor:

Monte Vista, Colo.

I am sending a few photographs of some of our work done last year in a house we built for Felix Kaiser near Monte Vista, Colo. I planned and built the bookcases, colonnade, and buffet. These rooms are finished in oak thruout. The house is cement plastered on the side. This work was done by Henry & McKinley.

HOMER HENRY.



View of Living Room and Dining Room Showing Colonnade Planned and Built by Homer Henry, Contractor. He Also Built the Bookcases and Buffet.

Has Trouble With Chimney

To the Editor:

Hartley, Ia.

I would like to ask you for some advice. A customer of mine has a chimney in a two-story house which always stains thru the plaster and spoils the paper. The stain shows only on the first floor. The chimney is connected with a furnace. It is 8 by 8 inside. Can you tell me the cause of the trouble and how to remedy it?

Is it necessary to build a new chimney?

R. M. KOBRICH.

Question on Foundation Work

To the Editor:

Brewster, Kan.

We have a brick building which was built without a basement. The foundation is set 2 feet in the ground. They dug out the basement under this building after it was built, leaving the walls of the basement 2 feet inside the foundation. Now they are planning to build another brick building next door with a basement and use the wall of the old building. Will it be safe to dig under this building and build a new founda-

tion under it from the bottom of the basement of the new building, say, dig out 4 feet at a time and fill it with concrete, then leave it to set one week, and then add 4 feet more, and so on until the whole foundation is completed?

HANS MADSEN.



Wants Bathing Pavilion Suggestion

To the Editor: Port Hope, Ont., Can.

Our town has a population of about 6,000 people and we are contemplating building a bathing pavilion on our beach which is on Lake Ontario.

Can you send me some idea as to size, accommodations necessary, and style of architecture which would be very neat

and probably a little out of the ordinary for our section of North America? I would very much appreciate it. The majority of our buildings here are colonial architecture.

GEO. W. GARNETT.



Rule for Getting Cut on Gambrel Roof

To the Editor:

Sedalia, Mo.

In regard to Harold G. Daskam's question on cut on gambrel roof at break, I submit the following rules for cuts on any pitch roof. Draw a line from A to B representing the base line of the pitch for the top rafter. With your square laid on this base at the figures for the lower rafter pitch, draw a line from A to C; keep the square on this line and slide down the stick until the figures on tongue represent the width of the lower rafter come to edge of stick at D. Cut from A to D. The cut will be same on both top and bottom rafters if they are the same width.

L. J. MAY.

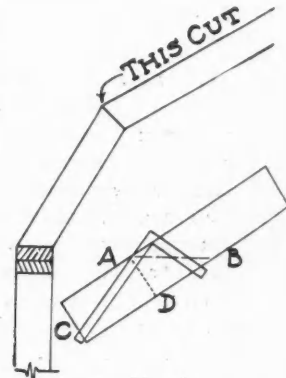


Diagram Explaining L. J. May's Rule for Obtaining Cut on Gambrel Roof.



Explains Jack Cuts

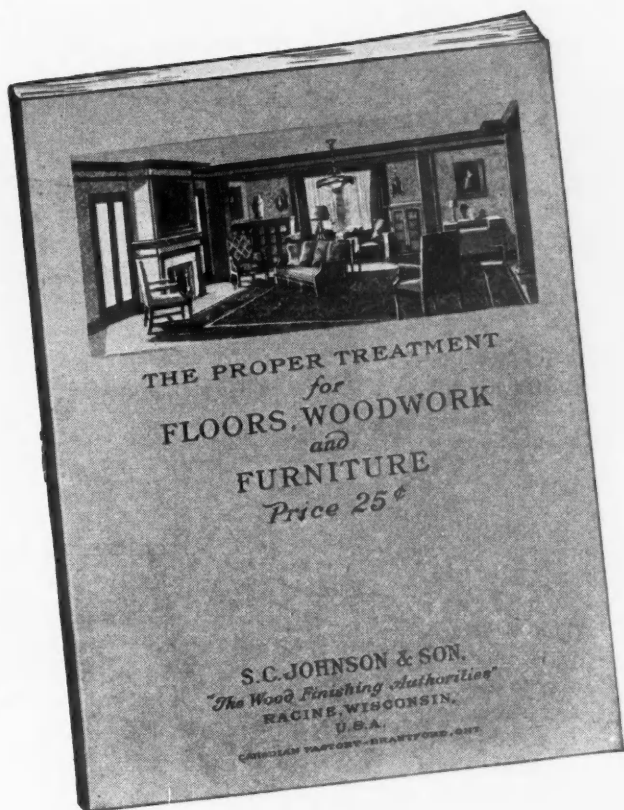
To the Editor:

Jackson, Minn.

I find that many carpenters do not know how to cut jack rafters or even common rafters. I cut rafters of different kinds and shapes, and do not know how long they are, but still they fit.

Regarding jack rafters, I shall try to explain an easy method which will perhaps help some other carpenter: Take $\frac{1}{2}$ pitch, with jack rafters 16 inches on centers as an example. In the case of a 12-inch base and 8-inch rise, the diagonal of these two figures will give you length of a jack 12 inches on centers. Why not take 16 inches for the base and 10 $\frac{8}{12}$ inches rise? This will give length of jack rafter 16 inches on centers. For each inch on the base will require $\frac{8}{12}$ of one inch for rise; consequently 16 times $\frac{8}{12}$ equals $\frac{128}{12}$ inch which make $10\frac{8}{12}$ inch. Another easy way is to lay square on work at edge of the timber, 12 inches on tongue and 8 inches on body of square, and mark timber with pencil along 12-inch side of square; then move square ahead to 16 inches on tongue, keeping it on the line drawn. The results will be the same as stated above, 16 by $10\frac{8}{12}$ inches. Other pitches may be solved in the same way.

F. O. SAFGREN.



This Valuable Instruction Book on Wood Finishing FREE

It's the best book ever published on Artistic Wood Finishing. It is written for the practical man — contractor, builder, architect, painter, interior decorator, etc. Contains practical suggestions on finishing woodwork, floors and furniture — both hard and soft woods. Tells how to finish wood in beautiful stained effects with **Johnson's Wood Dye** and in enameled effects with **Johnson's Enamel**. This book is the work of famous experts—illustrated in seven colors. Fill out and mail coupon below.

JOHNSON'S ARTISTIC WOOD FINISHES

The perfection of Johnson's Artistic Wood Finishes has been the work of years. You get the benefit of our experience—of our money expenditure—of our knowledge of woods. Our plant is equipped with the best up-to-date mills and machinery and every department is in the hands of experts.

Our line of Artistic Wood Finishes is complete—it includes:

Johnson's Prepared Wax

Johnson's Perfectone Enamel

Johnson's Wood Dye

Johnson's Perfectone Undercoat

Johnson's Crack Filler

Johnson's Electric Solvo (Varnish Remover)

Johnson's Paste Wood Filler

Johnson's Floor and Finishing Varnishes

Johnson's Artistic Wood Finishes are being used all over the United States and Canada by manufacturers of the highest class furniture, who realize the importance of a perfect finish on their fine furniture and pianos.

Build up your reputation on the sound foundation of good workmanship and Johnson's Artistic Wood Finishes—then there will never be any slack season for you.

S. C. JOHNSON & SON, Dept. AB 7
"The Wood Finishing Authorities"
Racine, Wis.

S. C. JOHNSON & SON, Dept. AB 7,
Racine, Wis.

Please send me, free and postpaid, your Instruction Book on Wood Finishing, "The Proper Treatment for Floors, Woodwork and Furniture."

NAME.....

ADDRESS.....

CITY & STATE.....

I Buy From.....

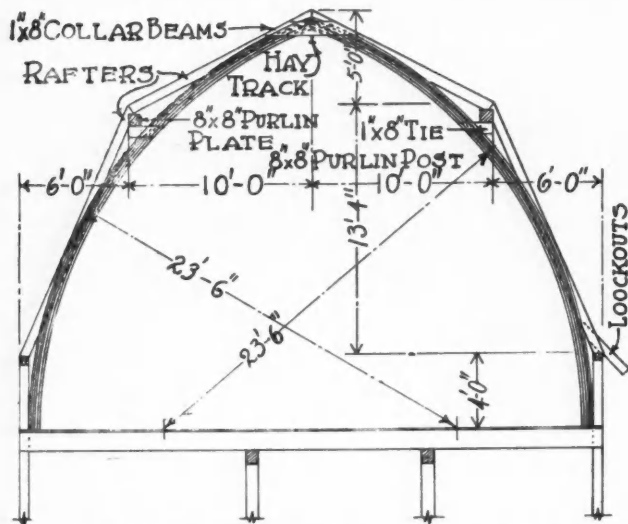


Diagram Showing W. A. Leonard's System of Constructing Gambrel Roof for Barn.

How to Make Truss

To the Editor: Muscatine, Iowa.
 I am sending the drawing of a barn roof truss. The truss is built of 1 by 8's, spiked together and sprung to the required shape. When being fastened together six or eight thicknesses should be used to form a 6 by 8 or 8 by 8 and the trusses should be spaced about 8 or 10 feet apart.

W. A. LEONARD.



Some Pointers on Corn Crib Construction

To the Editor: North Bend, Neb.
 Enclosed are two methods I have used in farm corn crib construction and building.

1. To repair decayed corn crib joist—stud and sill:

In the ordinary construction of open boarded corn cribs, the ends of the floor joist, the lower end of the side studs, and the sills are the first parts to decay. Especially is this the case on the low side of the sloping roof crib and still more so if this is on north side of the building. A new sill is easily placed when the decayed one is removed, but to repair the ends of the joist and sills makes a very much patched job if an attempt is made to splice them. In Fig. 1 the sill and part of joist, as well as the sill below the line (A) is the part to first decay and both are the essential parts because each is where the full weight of the crib and its contents rest on sill and foundation.

The most practical method to repair this is to first jack up the side of crib a few inches and support it on posts placed under upper plate as at (B), Fig. 3, then saw studs at (S) and joist at (W), Fig. 1. The old sill is then removed and the rock on which it rested moved in 6 inches (as Fig. 2) and

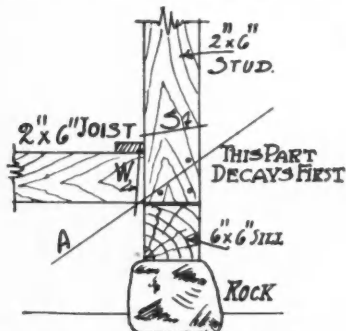


Fig. 1. Showing Sill and Joist, Which Are First Liable to Decay.

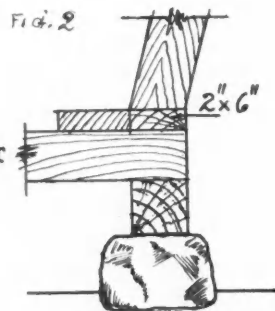


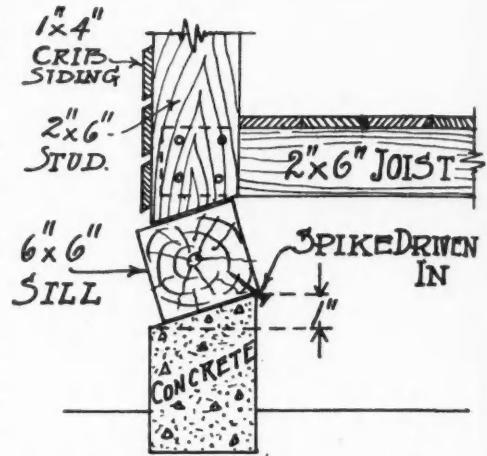
Fig. 2. Sill Removed and Rock Moved in 6 Inches and New Sill in Position.

the new sill placed on it under the ends of sawed-off joist. The nails are then pulled from ends of crib boards (Fig. 3) and the whole side of the crib pushed in 6 inches. A 2 by 6 is placed flat on top of joist and the ends of studs are then lowered by removing the posts supporting the side. As the joist will be 2 inches to one side of studs, each may be spiked solid, then the 2 by 6.

The ends of end boards may then be sawed off and boards railed to corner studs in their new location. This makes a solid construction and saves the same parts from further decay because the roof drip will not reach them. Even the rain striking the side boards of the crib has a tendency to drain out and drip off rather than to drain in to run down on the joist and sill.

2. To prevent corn crib sills from decaying:

Because sills of a corn crib are not protected as sills of a closed building are, they are the first parts to rot and allow weight of corn to settle sides and ends of crib out of shape. This is because water finds its way to their top and bottom surface and has no chance to drain out, but must soak into the timber and there remain until evaporated. If the sills are placed on a sloping foundation so as to drain off what water may find its way beneath, this decaying will be prevented. By so placing the sill, the ends of the studs also last much longer, as well as the ends of the joist, because the water does not lie on top of sill to soak in and more space is left for drying out between joist and sill.



A Sloping Foundation Will Drain Off Water and Help Prevent Decay of Timbers.

With the sill extended about 3/4 inch over the foundation on the inner side, any moisture which may develop from drifted snow or driving rain will drip to ground rather than run under the sill. One inch in six is sufficient—that is, for 6-inch sills. The inside is built 1 inch higher than the outside.

GEO. G. McVICKER.



Can You Tell Him?

To the Editor: Shoal Lake, Man., Canada.

I want to know how to get all rafter cuts, jacks and backing jacks. What is the difference in the length of 2-foot centers?

W. R. PEARCE.



To the Editor: Hardy, Iowa.

In your last issue in printing the size of the Gothic hoghouse built for Mr. A. N. Clancy you made an error in the size. The size of this hoghouse is 28 by 80 feet; you have it as 285 by 80 feet.

S. C. TOWNSWICK.

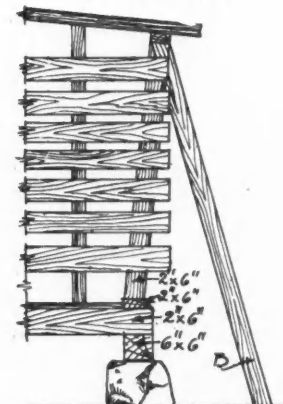
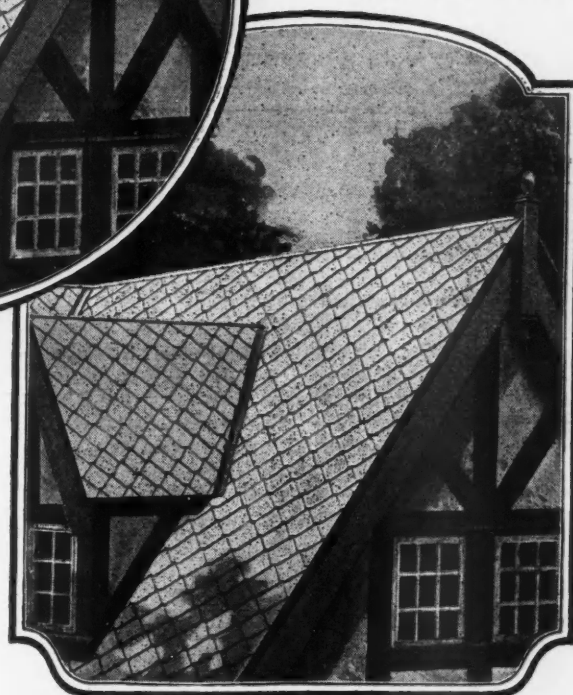


Fig. 3. Whole Side of Crib Pushed in, Protecting Bottom from Roof Drip.

Re-roofing for the last time with Johns-Manville Asbestos Shingles.



The job completed, Johns-Manville Asbestos Shingles applied right over old wooden shingles as illustrated on the left.



Re-roofing is easy now

ISN'T it strange how we sort of get accustomed to unpleasant jobs? Renewing old roofs, for instance—ripping off old shingles or roofing, pulling rusty nails and, sometimes worst of all, having the "lady of the house" get after you for letting dirt and litter, or some unexpected rain get into her attic, or allowing her lawns and shrubbery to get mused up.

But re-roofing is one job that is easy now—the old bother and muss is needless.

Just lay Johns-Manville Asbestos Shingles right over the old wood shingles. Don't rip off a solitary old shingle—leave them all on. Rig up a scaffold—tack down the shingles that may have turned up—snap a few chalk guide lines and fire ahead.

You'll be amazed how easy it is to do a first-class job. There aren't any shims or nailing strips to fuss with and usually even roofing felt is unnecessary.

The worst looking old roofs can be re-roofed with Johns-Manville Asbestos Shingles

speedily, neatly and permanently. And that house is re-roofed for the last time. The Johns-Manville Asbestos Shingles should outlast the house.

There's nothing in them but asbestos rock fibre and cement, formed into shingles under enormous pressure. Johns-Manville Asbestos Shingles actually grow stronger and tougher the older they get.

Better get in touch with the nearest Johns-Manville Branch. Tell them to show you the sample roofs they have covered with Johns-Manville Asbestos Shingles over old wooden shingles. Or write to the main office for the booklet "Re-roofing for the last time."



Through—

Asbestos

and its allied products

JOHNS-MANVILLE
Serves in Construction

Heat Insulations, High Temperature Cements, Asbestos Roofings, Packings, Brake Linings, Fire Prevention Products

JOHNS-MANVILLE, Inc:
Madison Avenue, at 41st Street, New York City
Branches in 65 Large Cities
For Canada: CANADIAN JOHNS-MANVILLE CO., Ltd., Toronto

JOHNS-MANVILLE ASBESTOS SHINGLES

Design of Cozy Five-Room Brick Bungalow

CHARMING LITTLE HOME HAS ATTRACTIVE EXTERIOR AND WELL-ARRANGED INTERIOR—25 BY 47 FEET

NOW that peace in the building industry is virtually an established fact, there is no doubt about an extensive building schedule this summer and fall. Are you prepared for the rush or are you going to sit tight and be caught unprepared? What have you to show in the way of bungalows that will appeal to the prospective client?

Shown here with plans is a most attractive brick bungalow of five rooms, just the type of home that will find favor with a majority of families. It has a pretty exterior design of brick with stucco under the eaves. There are plenty of good sized windows, well placed, to provide cheer and sunshine to the rooms within. An attractive stone trim lends a beautifying touch and the odd roof arches and projecting rafters are also enhancing features.

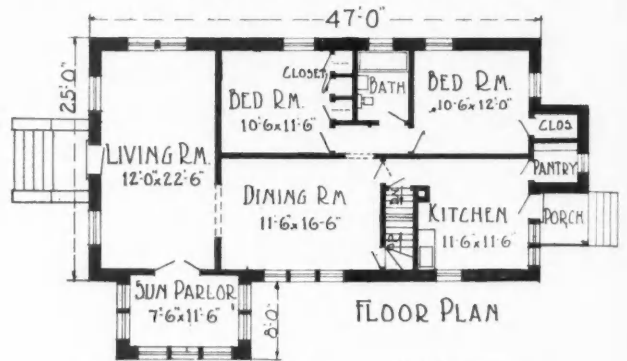
This home, which is 25 feet wide and 47 feet long, has five rooms and a large sun parlor on the side, 7 feet 6 inches by 11 feet 6 inches. The living room is easily the outstanding part of the house as it is unusually large and roomy, 12 by 22 feet 6 inches. It gets natural sunlight from windows on three sides, in addition to light coming thru the wide doorway between the living and dining rooms. The latter room is directly in rear of the living room and is 11 feet 6 inches by 16 feet 6 inches. It receives light and air from a triple window.

Leading from the dining room to the rear is a hall to the kitchen and on the side is another hallway which connects the bedrooms and bathroom. The kitchen is one of those small modern rooms that are in such demand by housewives who have found the advantages of a small compact workroom as compared to the old

style large kitchen.

The two bedrooms are comfortable in size and equipped with special space-saving garment carrier closets. In the rear of the lot is a frame garage.

Aside from its general charm there is another feature that will appeal to the man who wants a home



Floor Plan of Cozy Five-Room Brick Bungalow.

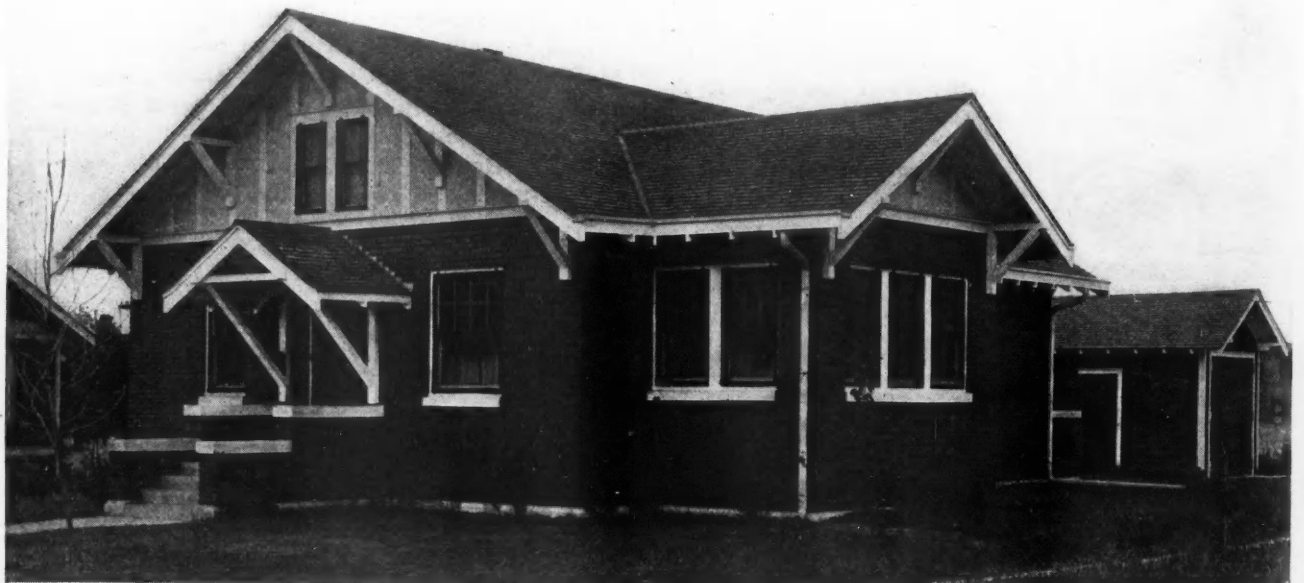
that will last. That is the substantial character of the construction thruout. The walls are solid brick with an attractive facing, the foundation solid concrete. This construction insures permanency and protection against fire.



COATING 10,000 square feet of brick wall with asphalt requires 200 lbs. of asphalt (hot), four hours attending fire and four hours mopping wall.



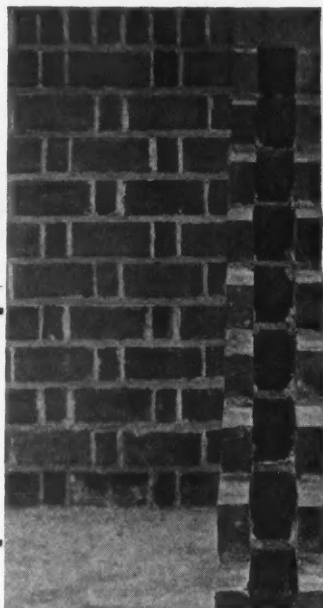
ESTIMATING the quantity of tile required for a given building may be done roughly. It is only necessary to figure the square foot area of work to be done and multiply result by number of tile required to lay one square foot.



Very Charming and Cozy Brick Bungalow of Five Rooms and Sun Parlor. It Is Substantial and Not Expensive to Build. Size, 25 by 47 Feet.

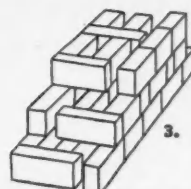
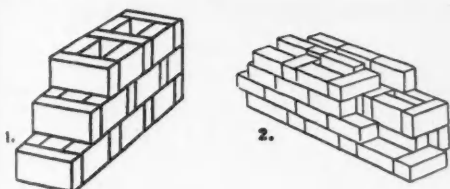
IDEAL

Cuts Cost of



WALL

Brickwork $\frac{1}{3}$



1. 8 inch Ideal All-Rolok Wall.
2. 12 1/2-inch Ideal Wall, Rolok backing. Headers every third course.

3. 12 1/2-inch Ideal All-Rolok Wall. Double air spaced.

Ideal Wall Puts Brick Home Within Reach of the Average Man



The Ideal Wall may be built in 8-inch and 12-inch and 16-inch thickness.

Uses any standard Brick — Common or Face — or combinations of the two.

Meets every engineering requirement.

Particularly adapted to residence construction, garages, and small buildings.

Completely dry — an air current constantly courses through it.

A BUILDER needn't be a star salesman to sell attractive, fire-safe Brick homes at the cost of Frame. Nor need he endure long waits between sales—the new Ideal Wall changes all that!

The Ideal Brick Hollow Wall doubles your market. 95 people out of 100 prefer a Brick home to any other and they will buy now that the cost of wall construction has been cut one-third. *Two* renters can be converted into home owners for every *one* converted before.

Build Brick Homes with Ideal Walls. Any standard Brick, any wall thickness, bond or pattern. Save brick, mortar, labor, furring. Get speedier construction.



Permits many variations in the width, color and treatment of mortar joint—any bond or pattern.

It saves brick, mortar, labor, time.

Gives permanent, fire-safe construction at cost of frame.

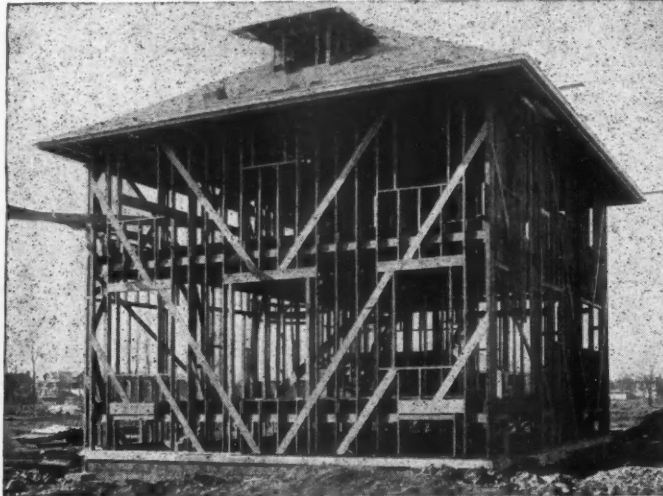
Simple to erect—bricklayers lay a greater area of wall per day.

One or more air spaces.

Drop us a post card today, or obtain detailed information regarding Ideal Walls from your nearest Brick Manufacturer.

THE COMMON BRICK INDUSTRY OF AMERICA
1306 SCHOFIELD BUILDING
CLEVELAND, OHIO





Skeleton Framework of Rose Residence Showing Bridge Construction.

Special Construction Saves \$600 on Home

THIS residence of A. G. Rose, Jr., River Forest, Ill., has attracted wide attention because erected without sheathing at a net saving of about \$600 on the exterior alone. All side walls were reinforced by a bridging construction of 1 by 6 inch boards placed to form the hypotenuse of a triangle, connecting base with perpendicular. Each bridging board was notched into every stud it crossed, thereby gaining rigidity both from the shoulder so formed and from the nails, developing a strength equal to, if not greater than sheathing would have produced. It saved waste in lumber and time and labor in erection.

To the studs, exterior and interior a special fabric was applied. The heavy, waterproofed felt backing of the material furnished double insulation against cold and heat, serving as a base for stucco on outside and plaster on interior walls. The heavy galvanized reinforcement of the fabric was completely imbedded in the mortar, providing a base that cannot rust or corrode. The sheets 32 inches wide and 98 inches long, were shaped around all angles and corners, overlapping and thereby eliminating all joints, so that the house was wholly encased in a monolithic, reinforced slab, lending additional strength and rigidity to the structure.



Applying Stucco to Special Fabric Backing which is Fastened Directly to Studs Without Sheathing.

The house is 33 feet 4 inches by 28 feet 8 inches, with bay windows, first and second story, sun and sleeping porches and front porch. This combination of bridge construction and fabric made a saving of \$600 at least as compared to cost, if sheathing had been used.

The saving in construction was large. But in addition Mr. Rose has a dwelling, fireproof and moistureproof, with double insulated walls saving not alone in first cost but continually in upkeep and in heating.

Comparative Cost of Completed Walls in Residence of A. G. Rose, Jr.

These figures show clearly great saving effected by bridge construction and use of fabric, exterior and interior, as compared to usual construction with sheathing:

Total cost if sheathed, papered, furred, wood lathed on outside and inside.....	\$1.549 sq. yd.
Total cost of bridging the construction and using fabric, outside and inside.....	1.0426 sq. yd.

Net saving5064 sq. yd.

Besides saving 50c a square yard, Mr. Rose got better walls, fireproof, weather, rust and waterproof, inside and out.



Treatment and Protection of Concrete Surfaces

IN concrete walks, floors or pavements that are to be subjected to any considerable wear, particular attention must be given to the aggregates used in the concrete and to the method of finishing the surface after concrete has been placed. Too much troweling of a floor or pavement or troweling it too soon after depositing the concrete, not only makes the surface slippery but brings an excess of fine material to the surface which reduces the wearing quality of the pavement. Unless an exceptionally smooth finish is desired it is always preferable to finish outdoor walks and floors with a wood float. This will give a slightly gritty texture that will result in a non-slippery surface upon which animals and persons can obtain good foothold.

To protect concrete walks, floors and pavements newly placed, they should be covered with moist earth, or similar material, as soon as it is possible to do so without marring the surface, so as to retain the water which is in the concrete and prevent too rapid drying out. The protective covering should be sprinkled several times daily to keep it moist and thus assist the hardening of the concrete.



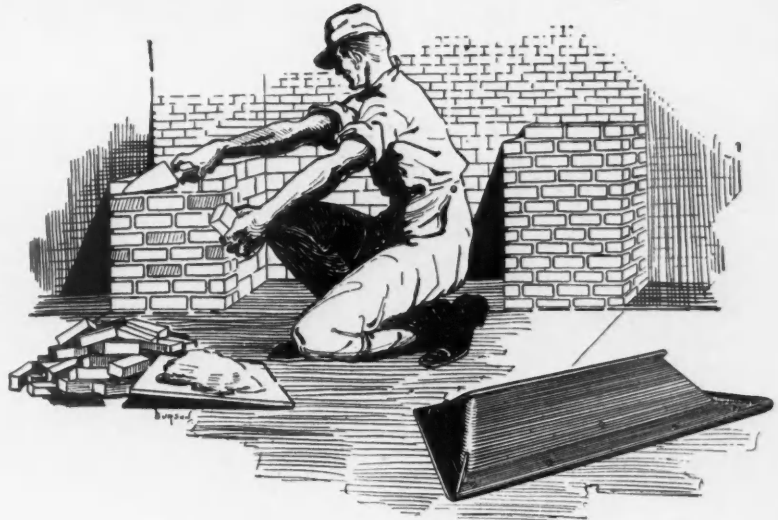
Link-Belt Buys Caldwell & Son

THE Link-Belt Company has acquired all of the capital stock of the H. W. Caldwell & Son Company, and Frank C. Caldwell has been elected a director of the Link-Belt Company.

The Link-Belt Company will handle the Helicoid conveyors and power transmission machinery. While the H. W. Caldwell & Son Company's plant will continue to operate under separate corporate existence and under its present name, the joint facilities of the two companies will be available to the customers of both.

DONLEY DEVICES

Modernize the Home



There's a Knack About Building Fireplaces

A CENTURY ago when the open fireplace was the principal heating device, the mason who could build the best fireplace was a highly prized craftsman. Now that fireplaces have "come back" as valued luxuries, home owners are again hunting for the builder who can assure them of a fireplace that will give genuine worth with little fuel; that will be free from smoke eddies and from odors that are the mark of the badly constructed fireplace.

DONLEY DAMPERS

Make possible a fireplace better than Grandad ever enjoyed. They promote right construction and save their cost in reducing the mason's time. Moreover they are your best single guarantee of a fireplace that will be a joy to the owner's family. Donley Dampers do these things:

Regulate draft to give much heat with little fuel.

Help in making a deeper slope at the back of the fireplace.

Provide an iron throat of smooth construction and just the proper angle to carry off the smoke from the fireplace to the chimney. This prevents escape of smoke and saves many hours of a mason's time that would be spent in building a perfect throat of masonry.

Support the brick work of the fireplace front by means of their broad, strong flange.

Send for booklet on fireplace construction. Free while they last.

USE ALL THE DONLEY DEVICES

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

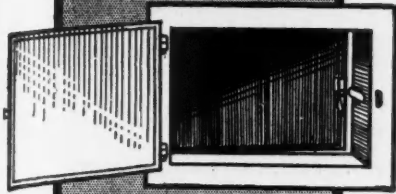
Donley Package Receivers meet the delivery man and hold his packages safe whether you are there or not.

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.



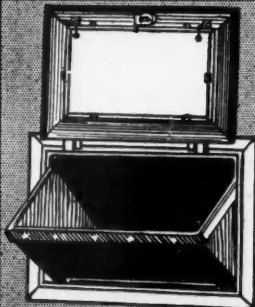
Package Receiver



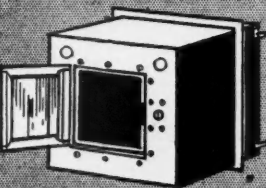
Fireplace Damper



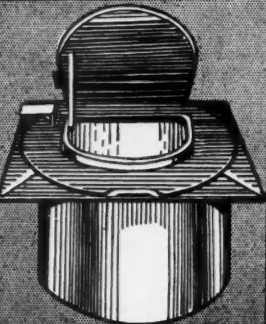
Ash Dumps



Coal Chute

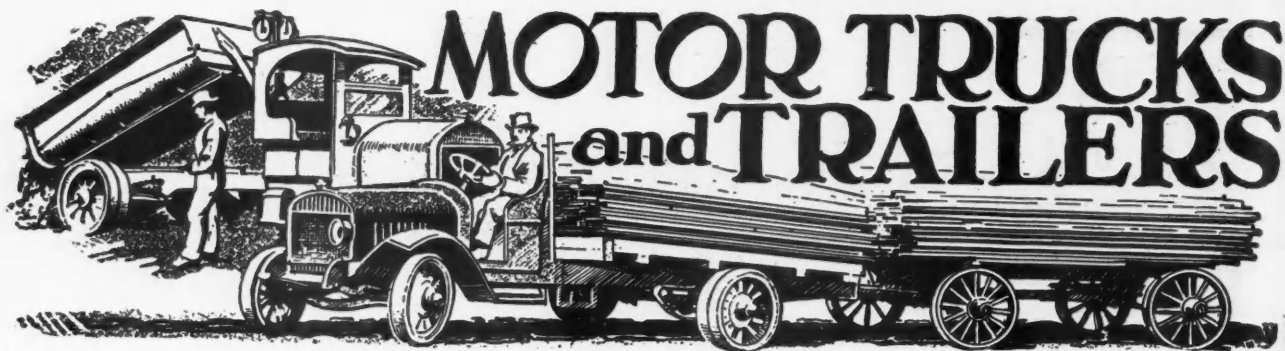


Meter Box



Garbage Receiver

The **DONLEY BROTHERS Co.**
BUILDING SPECIALTIES  **7400 AETNA RD CLEVELAND**



Keeping The Trucks On The Road

HOW AN ENTERPRISING LUMBER YARD MANAGER MAKES TRUCKS PAY BY SPEEDING UP LOADING AND UNLOADING

By P. L. Sniffin

IF ANYONE were to ask Mr. Robert Inglis, who is manager of the San Joaquin Lumber Company of Stockton, Cal., what in his opinion is the biggest factor in the success of motor delivery in the retail lumber business, he would probably say "Keeping the trucks on the road." And his success in this connection well justifies a brief outline of his practice and experience.

The company operates two trucks, one of five and one-half tons capacity now two years old, and one of two and one-half tons capacity which has been in service a little more than a year. The smaller truck has pneumatic tires, both front and rear, while the five and one-half tonner is equipped with solids.

What is perhaps the most interesting phase of the company's system is expressed by Mr. Inglis' statement that he "does not figure a truck to pay unless its load is always ready." As shown in the accompanying illustration, each load is assembled in the yard and is ready when the truck arrives. The lumber is suspended by a chain hoist above the truck runway and the truck drives under the hoist. It takes only five minutes by this method to drop the load on

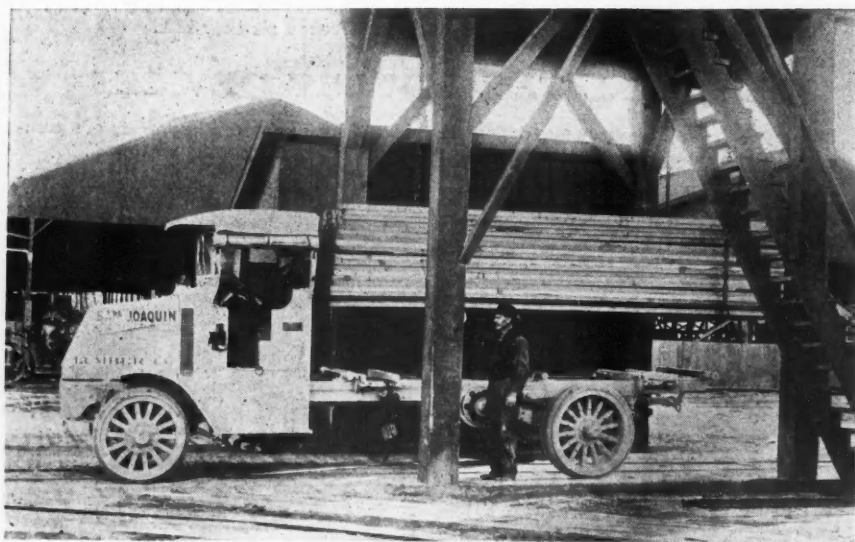
the truck and bind it. Thus, the trucks are on the go all of the time, a decided factor in productive efficiency.

Likewise, in unloading at the point of delivery, the truck's idle time during this operation is reduced to an absolute minimum by means of a series of rollers located on the frame of the truck. The ropes which bind the load to the truck are unfastened and the lumber is rolled to the rear so that one end is upon the ground, after which the forward motion of the truck releases it entirely. Almost invariably, the boards are unloaded in this way so that they are placed on the ground in the same compact, orderly form in which they were originally loaded upon the truck. Mr. Inglis figures that by utilizing these rapid methods of loading and unloading, one truck can be made to handle almost as much business as two trucks could under hand methods.

Of no less importance among the San Joaquin Company's methods of "keeping the trucks on the road," is that of furnishing sufficient work to keep the trucks busy at all times. As in practically every lumber business, there are busy periods and slack periods.

Rather than maintain enough trucks to take care of peak loads with ordinary running, Mr. Inglis believes in having just enough to adequately handle the hauling when requirements are low, and then working them more hours per day when necessary. He says, "when we are busy, we do most of our country hauling nights and early mornings or over Sundays. It is not unusual for the big trucks to start out at 5 a. m. and keep going steadily until 10 p. m."

Motor trucks are expensive investments and fixed charges such as depreciation and interest run so high that it is a costly matter to have idle trucks on hand for any period of time. An interesting ex-



Efficiency in Loading and Hauling Lumber. This 3½-Ton "Mack" is One of Several Operated by the San Joaquin Lumber Company, Stockton, Calif., and Works Frequently from 5 a. m. Until 10 p. m.



General Motors Trucks

As there is only limited storage space on the average city construction job, Holmes, Pyott & Co., Iron Works, Chicago, use a 2-ton GMC Truck to deliver material *when it is needed*. Among hundreds of other contractors depending on GMC Trucks are:

- J. C. Byram & Co. - - - - - Birmingham, Ala.
- DuPont Engineering Co. - - - - - Detroit, Mich.
- J. Henry Miller - - - - - Baltimore, Md.
- Rosslyn Supply Co. - - - - - Washington, D. C.
- Thompson-Starrett Co. - - - - - Detroit, Mich.
- Underhill & Sons - - - - - Glen Cove, L. I.
- Mississippi Sand Co. - - - - - Alton, Ill.
- Triangle Construction Co. - - - - - Ritzville, Wash.
- Gordon Construction Co. - - - - - Casper, Wyo.
- Southern Construction Co. - - - - - Dallas, Texas
- A. R. Young Construction Co. - - - - - Clarksville, Ark.

GENERAL MOTORS TRUCK COMPANY

PONTIAC, MICHIGAN

(825)



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



"G. M. C." Heavy Duty Truck Performing Arduous Duty on Excavating Job.

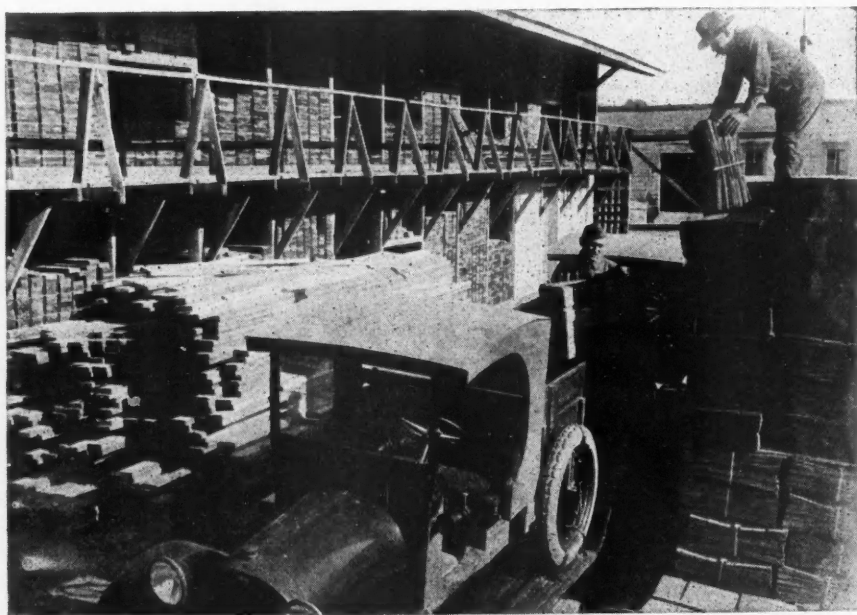
ample of how the importance of this fact was regarded by the San Joaquin Company occurred two years ago when the yearly business increased to such an extent that the three and one-half ton truck then in service could not quite handle all the business. Rather than buy a new truck and take a chance on its being idle for part of the year, the three and one-half tonner was traded in for a new five and one-half tonner which is now serving very satisfactorily. The two and one-half ton truck which was installed a year ago takes care of the smaller loads and short-distance delivery. An added factor in favor of the five and one-half tonner is the economy that goes with big units, with which most lumber dealers are familiar. Obviously,

tenance methods. Complete cost records are kept and trucks are lubricated, inspected and adjusted at regular intervals.

Mr. Inglis says that motor trucks have been very helpful to him in the expansion of the business. While formerly the customer hauled all of his own lumber, now it is delivered to him by truck and this, in itself, has created much new business. The company's average radius of business is from fifteen to twenty miles and deliveries are sometimes made as far as thirty miles from the yard.



Is Your Motor Truck Ready For Summer



Light "Reo" Speed Wagon Preparing for Hurry Call to Job. Light Trucks Are in Favor Among Lumber Dealers.

the unit cost of hauling decreases as the size of the truck increases, provided full capacity loads are available. It is interesting in this connection to point out that one motor truck authority (Jesse Vincent, vice-president of the Packard Motor Car Co.) quotes the following relative costs per ton mile: One and one-half ton truck, 16 cents; two-ton truck, 13 cents; six-ton truck, 7½ cents. Obviously this rate decreases still more up to the 7½-ton size.

Purchasing good equipment and taking good care of it are, of course, important factors in "keeping the trucks on the road." Mr. Inglis has not lost sight of this requisite and the fact that his trucks are seldom consigned to the repair shop, speak well for his careful main-

THE sweltering days of summer are with us and service stations are again filled with heat-afflicted motor trucks. Is your truck prepared to give uninterrupted service during the summer months?

Some of the main points which require attention are briefly outlined.

1. Do you understand the truck's cooling system thoroly? If not, now is the time to go over it carefully and find out all there is to know about it. See that the flow of water is not impeded by any sort of obstruction and that the overflow pipe is not bent below the level of the base of the radiator filler. Be sure that the overflow pipe is not clogged.

BIG CUT IN International Motor Truck PRICES

THese new prices on International Motor Trucks are made for the buyer who has been waiting for lowest prices, yet would not be satisfied with anything short of **HIGHEST QUALITY.**

Compared price for price, quality for quality, the International line stands today the lowest-priced line of motor trucks on the market, backed by an inspection and service organization without equal.

Model	Capacity Lbs.	Tire Equipment	New Price	Reduction
101	10,000	Solid	\$3,600	\$900
61	6,000	Truck Cord	2,750	700
41	4,000	Truck Cord	2,395	565
31	3,000	Truck Cord	2,032	393
21	2,000	Truck Cord	1,874	286
61	6,000	Solid	2,400	400
41	4,000	Solid	2,100	300
31	3,000	Solid	1,850	200
21	2,000	Solid	1,750	100

Our new 1500-pound Speed Truck, electric lights and starter, 34x5 cord tires, is the best buy in its class for \$1,500

Prices quoted are for the chassis f. o. b. factory

Come in to our Branch House or the salesroom of our nearest dealer and let us show you these motor truck values

INTERNATIONAL HARVESTER COMPANY OF AMERICA

Branch Houses in 82 Principal Cities
Dealers' Service Stations Everywhere

(Incorporated)

Chicago U S A



One of hundreds of International Motor Trucks facilitating the work of contractors and builders. This one hauls materials efficiently and reliably for H. C. Jensen, of Hamlin Avenue, Chicago

Standardization of Building Codes

EFFECT OF WALL THICKNESSES ON COST AND PLANS OF SMALL HOUSES

By D. Knickerbacker Boyd

Presented at the Fifty-fourth Annual Convention of the American Institute of Architects

AT the present time there is a great cry for more homes and for the lower cost of homes. In an effort to encourage building and stimulate interest in house construction, by far the most important and most practical suggestion, not alone in its present influence but in its effect on future building, is to revise building codes and to make their requirements as nearly uniform as possible throughout the country.

In almost hundreds of cities, building codes are now in operation which were prepared or approved a decade or more ago and have not been revised or amended since that time. These codes fail to take into consideration the advances made in the scientific and efficient use of structural materials and, in numerous cases, changes might be made which would reduce building costs while still retaining safe structural requirements.

One of the most obvious of these necessary revisions, relating to wall thicknesses, was brought to light recently in an investigation by the Structural Service Bureau of some building codes throughout the country. These results thus far verified are tabulated as follows:

CODE PROVISIONS FOR BRICK EXTERIOR WALLS IN DWELLINGS

	Cities
One-story dwellings, 8-inch walls.....	63
One-story dwellings, over 8-inch walls.....	14
Two-story dwellings, 8-inch walls, both stories.....	28
Two-story dwellings, over 8-inch walls, first story.....	31
Two-story dwellings, over 8-inch walls, both stories.....	19
Three-story dwellings, over 8-inch walls, all stories.....	6
Three-story dwellings, over 8-inch walls, first story.....	10
Three-story dwellings, over 8-inch walls, first and second stories.....	21
Three-story dwellings, over 8-inch walls, all stories.....	39

Schedules have been prepared which list the variations and give the width, area and height limit of houses in relation to each thickness of wall.

The lists are prepared on a generally comparable basis as to size of house and give the requirements, according to latest available information for a two story house.

It will be noted that the same city is in some cases included in two lists, apparently contradictory. This is due to the code requiring thicker walls inside the fire limits, or special regulations covering areas or heights. An example of this is Albany, N. Y., where 8-inch walls are permitted in the 2nd story of a two story dwelling, outside the fire limits but when inside the fire limits, a 12-inch wall is required—whereas in New York City, or in Philadelphia, the 8-inch thickness is permitted in both stories within the fire limits.

The first list includes some 29 municipalities permitting 8-inch walls in each story of a small two story house, as follows:

Baltimore, Md., Birmingham, Ala., Boston, Mass., Buffalo, N. Y., Cambridge, Mass. Cleveland O., Cincinnati, O., Columbus, O., Camden, N. J., Dayton, O.,

Detroit, Mich., Duluth, Minn., Hartford, Conn., Minneapolis, Minn., New Bedford, Mass., New Orleans, La., New York, N. Y., Philadelphia, Pa., Portland, Ore., Pittsburgh, Pa., Rochester, N. Y., Seattle, Wash., Syracuse, N. Y., Tacoma, Wash., Tampa, Fla., Trenton, N. J., Washington, D. C., Wilmington, Del., Worcester, Mass.

The second list includes cities requiring the walls on the first story of a small house to be 12 or 13 inches thick, but providing for an 8 or 9-inch wall in the second story. There are 31 cities on this list as follows:

Albany, N. Y., Albuquerque, N. M., Boise, Idaho, Butte, Mont., Chicago, Ill., Dallas, Tex., Davenport, Ia., Denver, Colo., Grand Rapids, Mich., Indianapolis, Ind., Jacksonville, Fla., Kansas City, Kan., Knoxville, Tenn., Lawrence, Mass., Los Angeles, Cal., Manchester, N. H., Memphis, Tenn., Milwaukee Wis., Norfolk, Va., Oakland, Calif., Omaha, Neb., Providence, R. I., Richmond, Va., Salt Lake City, Utah, San Francisco, Cal., Savannah, Ga., Spokane, Wash., Springfield, Mass., Toledo, Ohio, Worcester, Mass.

The third list includes those cities which require the walls of each story in every small house two stories in height to be 12 or 13 inches thick. There are 19 cities on this list namely:

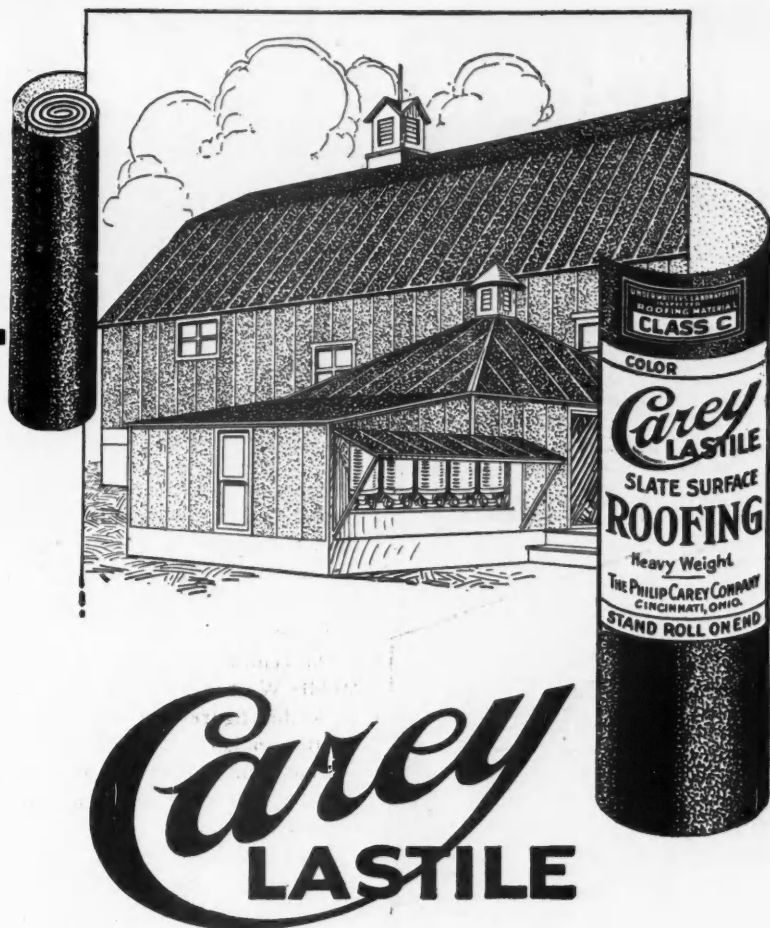
Albany, N. Y., Atlanta, Ga., Augusta, Ga., Bridgeport, Conn., Buffalo, N. Y., Chattanooga, Tenn., Des Moines, Iowa, Jersey City, N. J., Louisville, Ky., Lowell, Mass., Nashville, Tenn., Newark, N. J., New Haven, Conn., Paterson, N. J., Petersburg, Va., Shreveport, La., St. Louis, Mo., St. Paul, Minn., Wichita, Kans.

It is plain that in some cities it is possible to construct a two story dwelling with 8-inch walls for both stories above basement, while in a neighboring city, perhaps not ten miles distant, 12-inch walls are required throughout. Why should the thicker walls be required if the 8-inch wall is equally safe and is approved by 28 cities, among them some of the largest in the country?

Of especial interest to the home builder is the fact that the use of an 8-inch wall means a saving to him in money and space. Just how much of a saving in money can be visualized by a specific example:

The following figures are based on two storied walls, not allowing for half stories, gables or for openings, and disregarding whether the foundations are of stone, concrete, brick or other solid material. In a house 20 x 30 feet—using that merely as a convenient standard of size for the purpose of calculating—there will be a saving between an 8-inch wall and a 12-inch wall, of 12,500 bricks (in round numbers). Those

(Continued to page 134.)



There is no guess work about how long a Carey roof will last. Carey roofings have been manufactured for nearly fifty years. They have been tested for decades in actual use. Building owners who have used them, dealers who have handled them, architects, contractors, and carpenters who are familiar with them will tell you there are no better roll roofings made.

You can prove it for yourself by testing the roofing we send you.

Cut a piece off any roll. Cut a piece off a roll of any similar kind of roofing, of *equal weight* and *price* and apply any test, such as cutting, tearing, breaking with a Mullen tester, and you will find the Carey roofing unsurpassed at its weight and price.

Carey roofings come in smooth and rough surface; in red and green slate finish, and in three or four different weights. You can get just the weight you want and the best value for the price you are willing to pay.

Headquarters for the building and insulating products of
ASPHALT ASBESTOS MAGNESIA
 "A Roof for Every Building"

Write for samples and prices

THE PHILIP CAREY COMPANY
 510-530 Wayne Ave. Lockland, Cincinnati, Ohio

Study at Home and Make More Money

At home—in your spare time—you can get instruction by mail from the experts of Chicago Technical College. You can learn all the higher branches of your trade and soon know as much or even a good deal more than the man who is bossing you now. If you are a workman, you can train for a foreman's or superintendent's job or you can look ahead to being a contractor in business for yourself. This training doesn't cost much and you can pay on easy terms. Look into this now. Just send the coupon below and get catalogs and full information.

FREE Lesson in Plan Reading

Send
the
Coupon



What We Teach

Plan Reading. How to read a building plan. Use and meaning of different lines. How to read dimensions. Detail drawings. How to lay out work from plans. Tracings and blue prints—how they are made. Practice in reading complete plans from basement to roof, etc., etc.

Construction Brickwork. Footings and foundation walls of brick concrete and stone. Brick laying complete. Brick and stone arches. Use of different kinds of stone. Carpentry. Kinds and uses of woods, cornices, interior details, framing, roof construction, bridging, miter joints, butt joints, etc. Plans and specifications for all kinds of buildings.

Estimating. Practical rules. Problems worked out from the plans. Brickwork and carpentry. Re-inforced concrete. Estimates of labor and material for all classes of construction. Fire proofing, tile flooring, arches, partitions, furring, terra cotta, etc. Lumber and timber; figuring board feet. Estimating posts, girders, sills, joints, studs, bridging, rafters, roofs, floors, siding, cornices, etc. Estimating mill work. Lathing and plastering, sheet metal work, marble jointing and decorating, glazing, plumbing, heating, wiring, etc.

Arithmetic, Architectural Drafting, Plumbing, Heating and Ventilating all taught by practical men.

Send Coupon

This brings catalogs and complete information about the course which interests you. Send today.

CHICAGO TECHNICAL COLLEGE
736 Chicago "Tech" Building, Chicago

Send information on the course I have marked X below.

- Plan Reading and Estimating
- Plumbing
- Heating and Ventilating
- Architectural Drafting

Name.....

Address.....

Post Office..... State.....

If inquiry is for Plan Reading and Estimating, free lesson accompanies catalog



NEWS OF THE FIELD

Completes Model Statue for Chicago Pageant of Progress

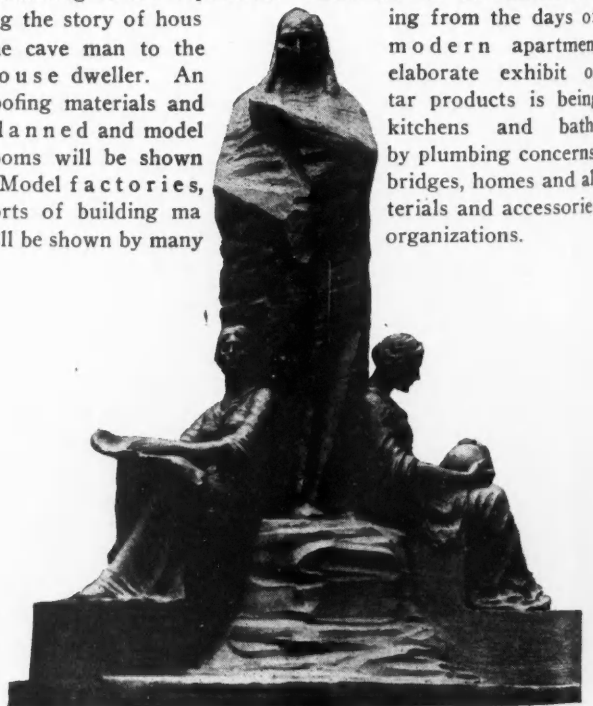
THIS is a sketch model for a huge statuary group typifying the "Pageant of Progress" completed by George Mulligan, son of the late Charles F. Mulligan, well-known Chicago sculptor. The Pageant of Progress Exposition will be held from July 30 to August 14, on Chicago's \$5,000,000 Municipal Pier. The tentative plan is to erect the group in bronze on a base of red granite in the center of the plaza at the land end of the pier. A large copy in plaster may be finished by that time.

The central figure of the group is an Indian typifying the Middle West in its original, uncivilized state. In the finished work this figure will be between 35 and 40 feet in height. At the Indian's feet repose three figures representing the dreamer, the thinker and the doer, or invention, silence and industry—the three forces which have made the Middle West what it is today.

The dreamer holds a scroll and looks far off into the future. The thinker holds a globe and compasses. The doer, who sits at the Indian's back, grasps a cog-wheel. Wherever these three have touched the native rock it has taken the form of architecture. The Indian, typifying primitive force and ignorance, is slowly sinking back into the native rock before the march of modernity but his vision remains clear to witness the great change being wrought.

The building and housing section will be one of the most interesting at the exposition. There will be an exhibit telling the story of housing from the days of the cave man to the modern apartment house dweller. An elaborate exhibit of roofing materials and planned and model kitchens and bathrooms will be shown by plumbing concerns.

Model factories, bridges, homes and all sorts of building materials and accessories will be shown by many organizations.



Statuary Group Typifying "Pageant of Progress" to Be Held in Chicago, July 31-Aug. 14. Geo. Mulligan is the Sculptor.



Let Your Good Work Advertise You

BUILD A RED CEDAR SHINGLED Bungalow or Colonial Home. It attracts immediate attention because of its great beauty, economy and endurance.

Use Rite-Grade Inspected Shingles

The Rite-Grade Inspected trade mark is a cooperative inspection mark, the property of over one hundred associated mills, manufacturing more than 3½ million squares annually. The Rite-Grade Inspected mark on a bundle means that the Shingles are produced by a member of our Association, and are guaranteed by official inspection to be up to grade as to thickness, grain, selection, and covering capacity.

Write today for our Dealers Service Pamphlet and ask your mills to supply you with Rite-Grade Inspected Shingles—always up-to-grade.

Shingle Branch, West Coast Lumbermen's Association, Henry Bldg., Seattle, Wash.; or, The Shingle Manufacturers Assn. of British Columbia, Metropolitan Building, Vancouver, B. C.



Indiana Limestone Association Reorganizes

THE Indiana Limestone Quarrymen's Association has been reorganized and their executive personnel has been changed.

H. S. Brightly, present secretary, will become service engineer and devote his entire attention to service and research work in charge of the Architects' Service Bureau and the publication of a comprehensive series of service literature.

R. M. Richter, former secretary, returns as secretary and executive head of the organization.



Kawneer Head Visits Europe

F. J. PLYM, president of the Kawneer Mfg. Co., Niles, Mich., will sail for Edinburgh with the delegation of Rotarians attending the international convention at that city. He will spend the summer in Scotland and Wales and the Scandinavian countries and return about Sept. 15.



Sunken Joints in Furniture Panels

A DEFECT in manufacture known as a sunken joint is sometimes noticeable in thick panels, especially tops of tables, desks, and other pieces of furniture. This defect appears as a long, shallow depression in the surface, and may be very conspicuous when viewed at certain angles.

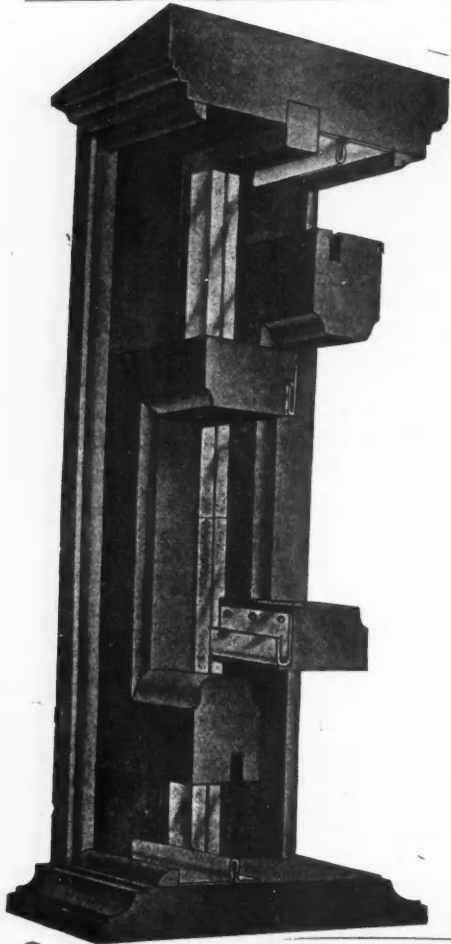
In modern practice furniture tops are generally built up of five plies of wood, consisting of a thick core, cross banding, and faces. The core is usually made of a number of pieces of lumber glued together. Investigation shows that the defect in question occurs over joints in the core stock.

The Forest Products Laboratory finds that too rapid progress in the preparation of the core is the basic cause of sunken joints. The wood next the joint absorbs moisture from the glue and swells. If sufficient time is allowed between the gluing of the joints and surfacing of the core, which is the next step in manufacture, more wood will be removed at the joints, because of the greater swelling there than at intermediate points. During subsequent drying and seasoning, greater shrinkage takes place at the joints, causing permanent depressions.

The remedy for sunken joints is an extension of the seasoning period between gluing and planing. The proper length of this period will vary with the thickness and species of wood, and atmospheric conditions, but it should be long enough to allow the moisture added by the glue to evaporate or to distribute itself thru the wood.



TOTAL annual lumber consumption in Venezuela has been only about 8,000,000 feet with American exports 98 per cent of the total. Virgin forests cover about 160,000 square miles, but only from 5 to 10 per cent are merchantable timber.



SAGER

METAL WEATHERSTRIPS

Keep Out Dust

Dusty days convince home owners of the value of weatherstripping. Once installed they not only keep out dust, soot and rain during the summer months, but will save fuel by keeping cold out during the winter.

The practicability of these strips make them easy to sell and every sale means a double profit for you. One on the sale and one on the installation.

Write for our offer today.

SAGER LOCK COMPANY
NORTH CHICAGO ILLINOIS

SAMSON SPOT SASH CORD

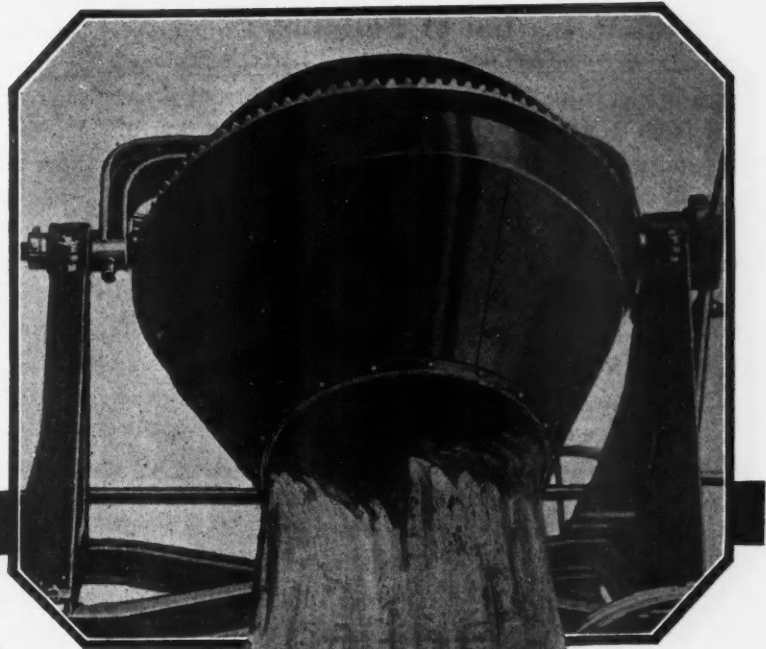


Samson Cordage Works 88 Broad St. Boston, Mass.

Made of extra quality stock, carefully inspected, and guaranteed free from the imperfections of braid and finish which destroy common cords so quickly.

Samples and full information gladly sent.

You Can POUR Faster Than You Can DIP

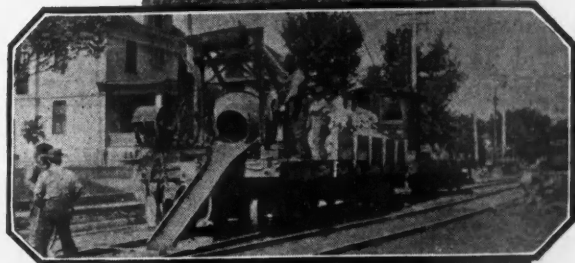


The act of emptying rapidly has always been best accomplished by tilting and POURING. This is so apparent that no argument is necessary for the tilting feature in a concrete mixer.

Wonder Mixers tilt and POUR OUT the mixed concrete. If the Inspector requires that the batch must be **mixed** for a specified time, say one or two minutes, more batches can be mixed in a WONDER per hour because less time is consumed in discharging—the concrete is **poured out**—not **dipped**.

Thousands of WONDER owners in the past ten years have profited from our rapid discharge feature, which combined with WONDER simplicity and efficient mixing action have enabled them to bid their way to profitable contracts.

A copy of catalog M-33, describing the complete line of WONDER MIXERS and their exclusive features and design, sent on request.



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

Standardization of Building Codes

(Continued from page 128.)

extra bricks would mean, at the average current price, that from \$250 to \$300 has been added to the cost of the house for the brick alone, to which a like sum must be added for the cost of the mortar and the time of the bricklayers and helpers necessary in laying of the extra 12,500 bricks. In other words, a house of the same outside dimensions would cost from \$500 to \$600 more in Albany or St. Louis than it would in Pittsburgh or Seattle.

In addition to safe structural requirements and money savings there are other important features. The difference in thickness of the walls increases the area on each floor by about 30 square feet, or in other words, the 8-inch wall means about the size of a small bath-room or several large closets added to each story.

The coal required to produce the additional material for the thicker wall would amount to 6 tons for each house. While that means, in the cost of the coal at the place where the material is burned, we will say \$50—which amount is included in the money saving before mentioned—think of the conservation of coal and transportation which an 8-inch wall effects. Six tons and its hauling eliminated with each house built! If we construct the walls in the smaller or isolated houses, hollow, with brick or hollow tiles where hollow material is permissible, there is still a further

saving of about 2½ tons of coal.

The Institute Committee on Fire Prevention in its current report says, "Now is the proper time to revise building codes generally and remove from them all unnecessary restrictive requirements." It goes on to suggest consideration of the newly developed hollow wall of brick and other types of construction which if permitted will result in quite materially reducing the cost of construction of the so urgently needed housing. It further states that if codes were properly amended small houses may be constructed with walls of fireproof or fire-resisting materials at approximately the cost of timber and lumber.

The U. S. Housing Corporation adopted for its War Housing Developments, the 8-inch thicknesses as standard for brick walls or houses. In all localities this thickness, which was only accepted after thorough investigation was used in spite of any prevailing regulations to the contrary. That corporation and the Emergency Fleet Corporation adopted the 8-inch thickness as an amply safe and sound all-time standard for small houses, and not as a war measure of expedient.

As an instance of the effect that wall construction may have upon type of plan—in the city of Philadelphia, 9-inch walls have long been allowed, but this thickness has been limited to a building not over 16 feet wide. The operative builders of Philadelphia



E-Cod Fabric is the "ideal plastering base" for every use, exterior and interior



E-Cod Fabric



WHEN developers build in one subdivision over a period of years they know that the first houses help sell those built later on.

Stucco houses that stand year after year without cracks, that are waterproof, weatherproof, and fire resisting, are sales agents for builders.

The base used determines the success of stucco. The Home Builders Company realize that and so the three houses pictured above have E-COD Fabric under the stucco. Forty-seven other houses will follow these, all built by the same company and all using E-COD Fabric.

Contractors and builders will appreciate not only the permanence but also the distinct saving effected by the use of E-COD Fabric.

We will gladly send you our pamphlet "Saving Money in Home Building".

MacAdams & Call
111 W. Washington St.
Chicago, Ill.

Don't Gamble on Uncertain Building Materials—

Know the truth about the material you choose before you start to build. Don't gamble now and repent later. Build for a lifetime. Use

KELLASTONE

IMPERISHABLE STUCCO

Take no chances—use Kellastone the all-mineral magnesite stucco. Kellastone contains no lime, gypsum or Portland Cement.

Kellastone is moderate in cost, always beautiful and substantial in appearance. By using various colored granite or marble chips any color effect can be obtained.

Modernize the old building by overcoating with Kellastone—save paint and repair bills.

Don't gamble—use Kellastone. Let us tell you more about this wonderful material. Send for free booklet.

KELLASTONE Composition Flooring produces a durable, sanitary floor of quietness, strength and elasticity. Ideal for office buildings, hotels, schools, hospitals, factories, etc.

National Kellastone Company

World's Largest Magnesite Stucco Producers
ROOM 518
155 East Superior Street CHICAGO, ILL.

THERE IS ONLY ONE GENUINE KELLASTONE. LOOK FOR THE NAME ON EVERY SACK.



KELLASTONE

IMPERISHABLE STUCCO

found that they could sell much more readily, a house that had more light and more air than the old conventional type—a house with an L at the back and a narrow court.

But according to the Building Laws, they had to make the better planned wider houses with wall 13 inches thick, therefore many of them stuck to the old type of building; because being narrower it could have 9-inch walls and hence was cheaper. So the Operative Builders called on the Chief of the Bureau of Building Inspection and explained the situation; and he, thoroly convinced that a change was desirable said: "We will prepare and submit an Enabling Act to the Legislature of Pennsylvania." And last year,

among them all, they amended the 16-foot act so that houses 20 feet wide could be built with 8-inch walls and the type of plan for dwellings in Philadelphia is now developing into what is called the "air-light" house without any back extension and departing from the old one with a narrow court-like yard.

Thus there is placed squarely before the public one of the most practical means of relieving the housing shortage. What has been proven wise in the past by so many cities thruout our great land should certainly prove wise for all.

Revise building codes to permit a more efficient and scientific use of building material!

AGENTS WANTED

We want the most progressive builder in your town as our Agent. The business is there. The carpenter or builder is the man to get in. We have a proposition that is worth while. We have Agents making big money selling and installing ALLMETAL WEATHERSTRIP.

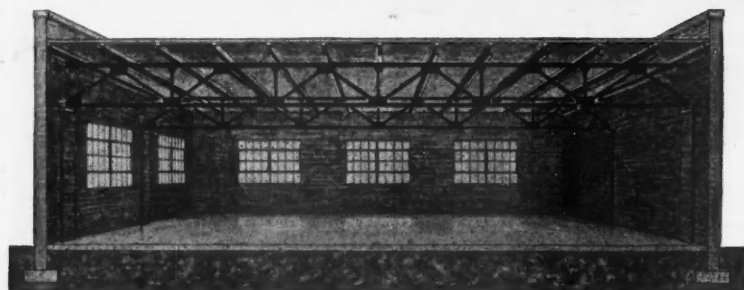
The reason ALLMETAL STRIP sells is because it is simple. It is easy to sell and easy to install. Plenty of business to be had RIGHT NOW.

WRITE FOR DETAILS OF OUR OFFER

ALLMETAL WEATHERSTRIP CO., 124 WEST KINZIE STREET CHICAGO, ILLINOIS



A modern garage featuring a gasoline filling station under the corner of the building. Floor plan of this garage sent upon request



Sectional view showing steel roof construction

STEEL for

**BUILDINGS AND BRIDGES
COMPLETE PUBLIC GARAGES
MODERN STORE FRONTS**

Designs and Estimates Furnished Free

Steel Windows, Steel Ceilings, Skylights, Ventilators, Cornices, Elevators, Millwork and Glass

Write for "Garage Illustrations" showing at least 50 modern buildings designed by us

INTERNATIONAL STEEL & IRON CO., Inc. ADDRESS DEPT. 18 **Evansville, Ind.**

MAGNESTONE

COMPOSITION FLOORING



**Put it on right over
the old floors!**

MAGNESTONE flooring works equally well over an old or new wood or cement base. It is laid one-half inch thick in any of eleven colors and trowel finished like cement. Any competent mechanic can lay it.

MAGNESTONE permanently solves your flooring problem, giving you a durable, beautiful and economical floor for use in Hospitals, Schools, Residences, Stores and Industrial Buildings. You eliminate the up-keep.

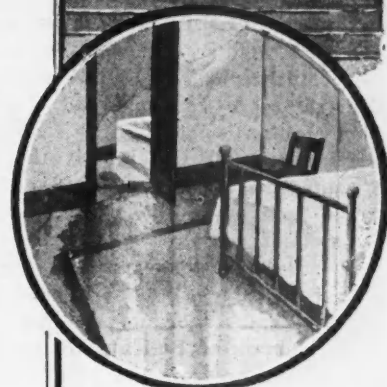
CONTRACTORS AND BUILDERS:

Hundreds of America's leading architects, firms and individuals are MAGNESTONE users.

Write for our MAGNESTONE flooring proposition today and ask your dealer.

AMERICAN MAGNESTONE CORPORATION
Division of Floors

EXECUTIVE OFFICES SPRINGFIELD, ILLINOIS
Also Manufacturers of Magnestone Quality Stucco
Factories at Ottawa, Ill., Springfield, Ill., Kansas City, Missouri



A Typical Magnestone Installation in Residences, Hotels, Clubs, etc.

**Magnestone
Points of Merit**

- 1 SANITARY
- 2 ATTRACTIVE
- 3 RESILIENT
- 4 FIRE PROOF
- 5 WATER PROOF
- 6 LIGHT WEIGHT
- 7 NOISELESS
- 8 WARM
- 9 NON SLIPPERY
- 10 ECONOMICAL

TRADE MARK

NEW WAY MIXER

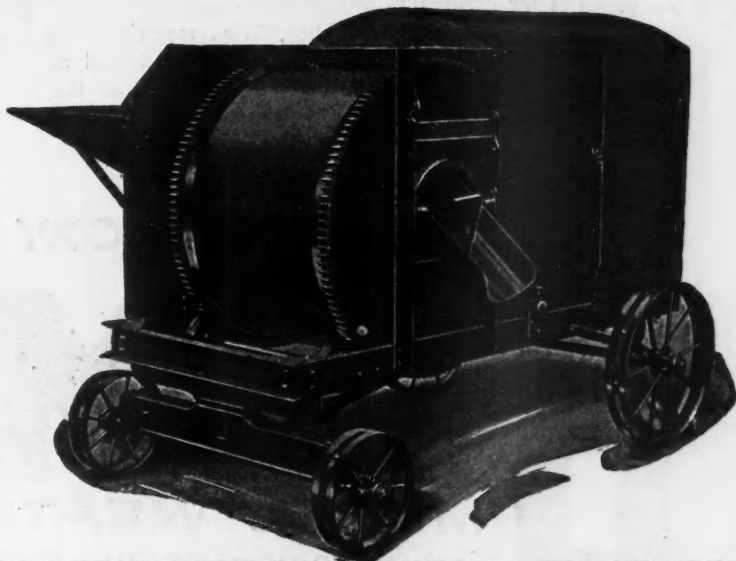
"Performance" is the argument that really counts, and performance, with light weight and simplicity are the features that make the unusual value of the "NEWAY."

Get the Neway Catalog and price list—Moderate prices—We ship promptly either from the factory or from our dealers' floors.

Three sizes—Half Bag—Bag—Ten-foot.

NEW WAY MFG. CO.

Eau Claire, Wis., U. S. A.



Books, Catalogs and Bulletins Received

Union metal columns, pergolas, garden fixtures, entrance standards, wall brackets, exterior newels are described in three new catalogs just issued by the Union Metal Manufacturing Co., Canton, Ohio. These booklets contain many illustrations of these products in actual use in homes and gardens.

"T/M/B flooring" is the subject of a booklet being distributed by the Thomas Moulding Brick Co., Chicago, Ill. In this booklet are shown several illustrations of buildings in which the T/M/B composition flooring has been laid.

"Contractors' Equipment" is the title of a new catalog, eighty-two pages with cover, issued by the Oshkosh Mfg. Co., Oshkosh, Wis. It contains illustrations, descriptions and complete specifications of Oshkosh concrete mixers, saw rigs, and attachments.

"Sterling Transits and Levels" are described completely and illustrated in a booklet issued by the Waren-Knight Co., Philadelphia, Pa. Other engineering field equipment, drafting room furniture, and drawing materials are also included in this catalog.

"Architectural Granite" is the title of No. 1 of the Granite series being prepared and published by the National Building Granite Quarries Assn., Inc., Boston, Mass. It contains complete specifications for the use of granite with several attractive photographs in colors showing the actual appearance of the stone, also drawings of typical granite details showing practical methods of construction.

"Handbook of Building Construction," in two volumes, has just come from the press of McGraw-Hill Book Co.

It was edited by Geo. A. Hool, professor of structural engineering at the University of Wisconsin, and Nathan C. Johnson, consulting engineer, New York, and was compiled by a staff of forty-six specialists covering thoroly all types of construction and design. It contains many illustrations and descriptions of building equipment. The price is \$10 postpaid.

"Blawforms for general concrete construction" are fully discussed and illustrated in Catalog No. 23 issued by Blaw-Knox Co., Pittsburgh, Pa. This book is devoted to heavier types of forms and is designed to be of particular value to engineers, contractors and others interested in this kind of work.

The new Stanley Mitre Box is described and its operation explained in a folder being distributed by the Stanley Works, New Britain, Conn. This book which contains six pages is for carpenters and builders.

Chain Belt Company, Milwaukee, Wis., manufacturers of Rex concrete mixers and pavers, have just issued an interesting new catalog featuring the low-charging machines, Nos. 4-S and 7-S. Among the unusual feature is

STEEL for Quick Construction

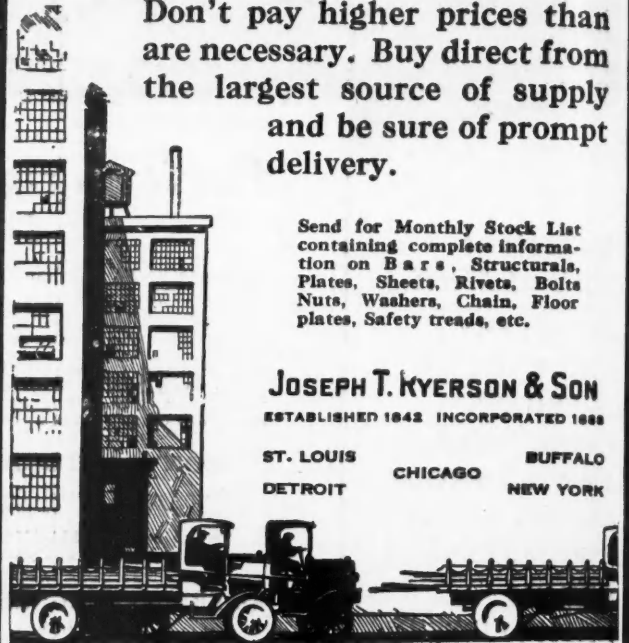
Don't pay higher prices than are necessary. Buy direct from the largest source of supply and be sure of prompt delivery.

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

JOSEPH T. KYERSON & SON

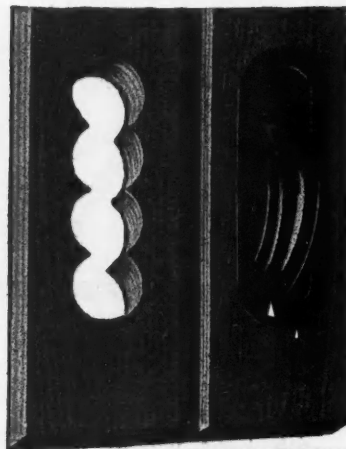
ESTABLISHED 1842 INCORPORATED 1888

ST. LOUIS BUFFALO
CHICAGO NEW YORK
DETROIT



KYERSON STEEL-SERVICE

903-L



An Investment of

\$82.00

enables you to produce perfect pulley mortises like illustration.

Let us solve your problems. Write us

**Woodworkers
Tool Works**

220 So. Jefferson St.
Chicago

GOOD TERRITORY FOR LIVE AGENTS

DIAMOND

METAL WEATHER STRIPS

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

UNION METAL COLUMNS

Beautiful and Permanent Pergolas

Nothing adds to the charm of yard or garden more than a handsome Union Metal Pergola. It is an ever present source of beauty and satisfaction. Perhaps one of your customers has wanted a pergola for years, but did not realise that he could purchase one with enduring pressed steel columns at a price so reasonable.

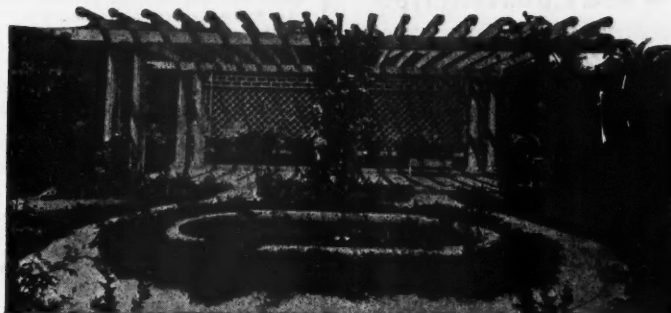
The columns in Union Metal Pergolas are made in all designs and sizes from enduring copper bearing steel. They will not split, rot, or open at joints as wood columns always do when surrounded by damp vines and shrubbery.

Write today for Pergola Catalog No. 15-P, showing some of the country's most beautiful installations

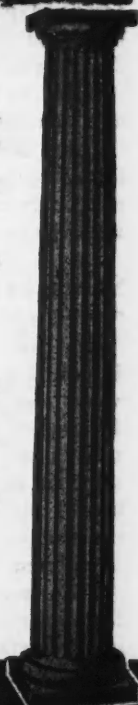
THE UNION METAL MANUFACTURING CO.

Canton, Ohio

Union Metal Pergola in garden of Mr. A. W. Williamson, Hollywood Boulevard, Los Angeles. Frank L. Meline, Architect.



Union Metal Column Design No. 240, Plain Doric, well adapted to Pergola construction.



"The Ones That Last A Lifetime"

"YANKEE" PUSH BRACE



No. 75

Here's the tool for quick work in close quarters. It gets into places where you cannot reach with any other brace, and does it quicker.

Fine for wood boring, screw driving, running up nuts on bolts, etc. Bores a 3/8" hole in hard wood, 5/8" in white pine. Takes any bit that you can use in an ordinary swing brace.

If your dealer cannot supply you, write us for price.

Let us send you the "YANKEE" Tool Book

NORTH BROS. MFG. CO. (Dept. A) PHILADELPHIA, PA.

the method of illustrating the various construction features. The unit described is shown practically as an original photograph, while the balance of the machine is brought out in pen and ink sketches.

Seventy-two useful lumber tables on board foot and prices are contained in a handbook prepared and published by L. H. Alberty, Winfield, Kans. These tables are arranged particularly for carpenters and builders and is handy in figuring woodworking problems. Answers to 20,736 problems are contained in it. The price is \$1.00.

"How to Use Ceco Lathing Materials" is the title of a new handbook issued by the Concrete Engineering Co., Omaha, Neb. It contains directions for the use of the following building materials: metal lath, cold rolled channels, corner beads, nose beads, rail and base beads and metal picture moulding.



Stresses in Laminated Wood Construction

THE use of heavy and light material of the same species in laminated or glued-up wood construction has less injurious effect than has been generally supposed. Laminated wood specimens under observation at the Forest Products Laboratory show little weakening or tenency to warp from this cause. Most warping and checking in laminated construction can be traced to one of two causes. The first is the use of plain-sawed and quarter-sawed lumber in the same construction, and the second is the combination of material of different moisture content.

Plain-sawed lumber of any species shrinks and swells more than quarter-sawed lumber; and when the two kinds are glued together, they pull against each other with every change in moisture content. If the block containing such a combination is kept for a long time in the same atmospheric condition, the stresses die out, because the block checks or changes shape more or less to relieve the stretched condition of its fibers. As soon as the atmospheric conditions change, new stresses will be set up.

If boards of different moisture content are glued together, internal stresses will result from the unequal shrinkage of the boards as their moisture contents equalize thru seasoning. In some blocks made at the laboratory these stresses were large enough to rupture the wood. If the wood is not ruptured, the stresses will disappear permanently in time, but the block will have changed its shape somewhat in getting rid of them.

From these facts it becomes apparent that for laminated-wood articles where strength and accurate shape are required, it is desirable to use all plain-sawed or all quarter-sawed material, to have all pieces at a uniform moisture content when glued, and to prevent as far as possible subsequent moisture changes by means of moisture-resistant coatings. For the manufacture of rougher articles where slight changes in form are of no consequence, these precautions are of much less importance.



Stained with Cabot's Creosote Stain

Stained Shingles

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

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

Cabot's Creosote Stains

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

Cabot's "Quilt"

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

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

SAMUEL CABOT, Inc.

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

MAKE MONEY Moving Houses

Big money—sure profits—easy work. Wonderful opportunities for the house mover—\$100 to \$300 on a job—\$5000 a year and up. Houses are scarce—building costs prohibitive.

LaPlant-Choate House Moving Equipment

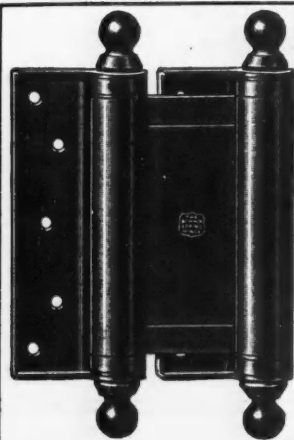


Makes it easy for you to break into this profitable business with a set of our Trucks and Capstans. You are quickly established as the leading contractor in your locality. Our equipment can be depended upon to do the work in shortest time. Made of steel—no repairs—no upkeep. Will last a lifetime. Write today for free drawings and blue prints explaining this work. Ask about our 30-day Free Trial Offer. Ask for Catalog B.



I'LL START YOU

LaPlant-Choate Mfg. Co.
620 First Ave., Cedar Rapids, Iowa



BOMMER SPRING HINGES

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

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