AMERICAN BUILDER

Formerly AMERICAN CARPENTER AND BUILDER

Member of the Audit Bureau of Circulations

Circulation Audited and Verified March, 1917

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 Office:

Radford Building, 1827 Prairie Ave., Chicago

EASTERN OFFICE: 261 BROADWAY, NEW YORK CITY

SUBSCRIPTION RATES

One year, $2.00; six months, $1.00; payable always in advance. Single Copies, 20 cents. Canadian Subscriptions, $2.50. Foreign Subscriptions, $3.00.

ADVERTISING RATES

Furnished on application. Advertisements, to insure insertion, should reach our Chicago office not later than the 15th of the month preceding date of publication.

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.*
CHARLES G. PEKER, CHAS. E. PAUL, S. B. } *Associate Editors*
WM. REUTHER, 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, LOUIS H. REICH, C. R. W. EDGCUMBE, E. B. WOLFROM } *Advertising Staff*

VOL. XXV — June, 1918 — No. 3

10,000 More Silos for Indiana

Hoosier State Takes the Lead in Promoting a Silo for Every Farm.

INDIANA is going to fight the war in the cornfield. Not that Indiana is a slacker in any other way, but thru the silo it hopes to hit the Kaiser one more hard knock.

The campaign already under way is without doubt the most comprehensive of its kind ever organized in America. The State Council of Defense, the State Committee on Food Production and Conservation, the extension Department of Purdue University, the County Agricultural Agents, the farm press and daily papers, the builders of various types of silos, hundreds of patriotic farmers, bankers and merchants are all directing united effort to accomplish in a single year what ordinarily would be considered the work of ten or more.

The campaign for 10,000 more silos for Indiana is being conducted under the general direction of Maurice Douglas, of Flat Rock. Mr. Douglas bears the title of State Silo Leader. All of Indiana's ninety-one county agricultural agents have perfected county and township silo organizations to tie their efforts to the broad state activities. The work in each county is directed by the county silo leader, and local silo leaders for each township. The State Silo Leader and his advisory board have specified each county's quota of new silos according to the volume of dairying and stock raising in each county. Reports will be made at frequent intervals showing the progress of the campaign in every community of the state, and every effort will be made to speed up silo slackers.

Indiana says, "If you can't put a gun on your shoulder, put a silo on your farm." Indiana farmers are keenly alive to the situation and it is unquestioned that their silo building achievements this year will have a most important bearing on the economical production of live stock and dairy products in the Hoosier State.

This campaign is one which should be organized and carried thru to successful ending in every state in the Union. H. COLIN CAMPBELL,
Director, Editorial Bureau Portland Cement Association.

✣

The War is Making Sleeping Porches More Popular

THE approach of sleeping porch time is being reflected in the demand from lumber yards and manufacturers for the materials used in building such additions to the home. From the experience of dealers in these materials it is apparent that the war is creating a greater interest in sleeping porches. Lumber dealers in different parts of the country report that purchasers of sleeping porch material say they are influenced by the accounts of the benefits of outdoor sleeping sent home by the boys in the training camps and "over there."

The Foot Rule

By Lester G. Herbert

1. Have you any definite plan for the regular saving of money or do you just put a little aside when it is convenient? That is a mighty poor plan, for it's so seldom convenient! Just plan that you owe your savings bank so much at the first of every month and *make up your mind to pay the bill.* You'll be glad some day if you do.

2. Do you pay yourself a regular salary? No matter if you are in business for yourself, what of it? You should take every Saturday night as much as you could earn by the same effort if you worked for someone else. Then charge yourself up at cost price with anything you use out of the business. That is the only way to keep matters satisfactory and to know at the end of the year whether you have gained or lost.

3. Do you hold your head erect, breathe deeply and look every man in the eye? If you do, you are well and happy. A man who doesn't pay his bills promptly or who has continually to take a cross street to escape a creditor, is never ready to look people in the eye.

How Do You Measure Up?

4. Do you give yourself a reasonable time for relaxation — the kind of relaxation which is really re-creation? Which will send you back to your work more eager for it and more fit to accomplish bigger things? Take your wife along with you and your boys and girls if you have any old enough to enjoy good music, an amusing picture or an inspiring play. Don't get to be so hidebound that all you can see is dollars and cents, and ledgers and day books, and profit and loss!

5. Do you know the measure of success which will satisfy you, or are you just drifting along day by day and week by week, reasonably satisfied to have three meals a day, pay your rent and get nowhere in particular? Do you aim to be the head of the rat or the tail of a mouse? Are you satisfied to have *anything short* of the biggest business in your line in town? If you are, you better take a spring tonic—one that'll make you feel like a new man.

6. Do you really enjoy your work or are you constantly growling about its being the meanest business in the world? It is if you say so—to you—or you can glorify it and make it the finest thing under the blue canopy of heaven. Take your choice!

7. Are you striving to become more efficient, or can the boys who have just learned the business give you no end of tips? Don't be satisfied to become a "has been."

8. Which habit are you "afflicted" with which lessens your efficiency and makes you fall short of your best? Are you master of yourself or are you a slave to the habit? How much is it costing you per year?

9. Do you realize which one of your habits is the most valuable and is worth the most money to you? If you don't know, set to work and find out, for you will need to take mighty good care of that habit and all the others contributory to it.

10. Do you know what scientific management means as applied to the financial end of your business, or are you going along in the old ox cart way of a century ago? Don't be satisfied that everything at this end of your business is O. K. unless you know what you are talking about and have consulted some one who knows more about it that you do.

11. How do you feel toward your competitors? Do you regard them as dark villains who ought to be in the front line trenches, or have you reached the modern standpoint of regarding them as co-operators, ready to make better conditions for business so that all may profit by it?

12. Here is the twelfth division on the foot rule, and it is entitled to at least an inch of space. Are you teachable? Oh, I say, *are* you teachable? If you are not, then your wife and family and business associates deserve all the sympathy which all their friends can give them, for if there is anything that is nerve-wrecking, and happiness-destroying, and success-killing, it is to be continually associated with an individual who never learns by experience or observation or reading.

Many people know as much when they are born as when they die. They simply are not teachable. You cannot tell them anything—they know it all. I pray you, whatever else your faults, BE teachable!

Homes for Workingmen

Practical Plans for Industrial Housing

The AMERICAN BUILDER takes pleasure in presenting on the eighteen pages following several authoritative industrial housing articles, and a collection of twenty-one industrial housing designs—real homes for workingmen of the sort so urgently needed right now in hundreds of cities and towns in practically every State of the Union. The AMERICAN BUILDER has for years been featuring the type of dwellings wanted at this time to house the nation's war workers; it is the greatest available repository of housing designs and data, and the AMERICAN BUILDER readers—the house building contractors—are the men who are handling the great bulk of this industrial housing work.

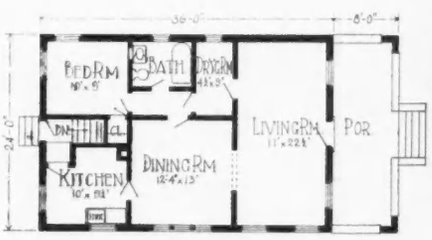
Civic Interest in Workmen's Houses

By W. M. Harding

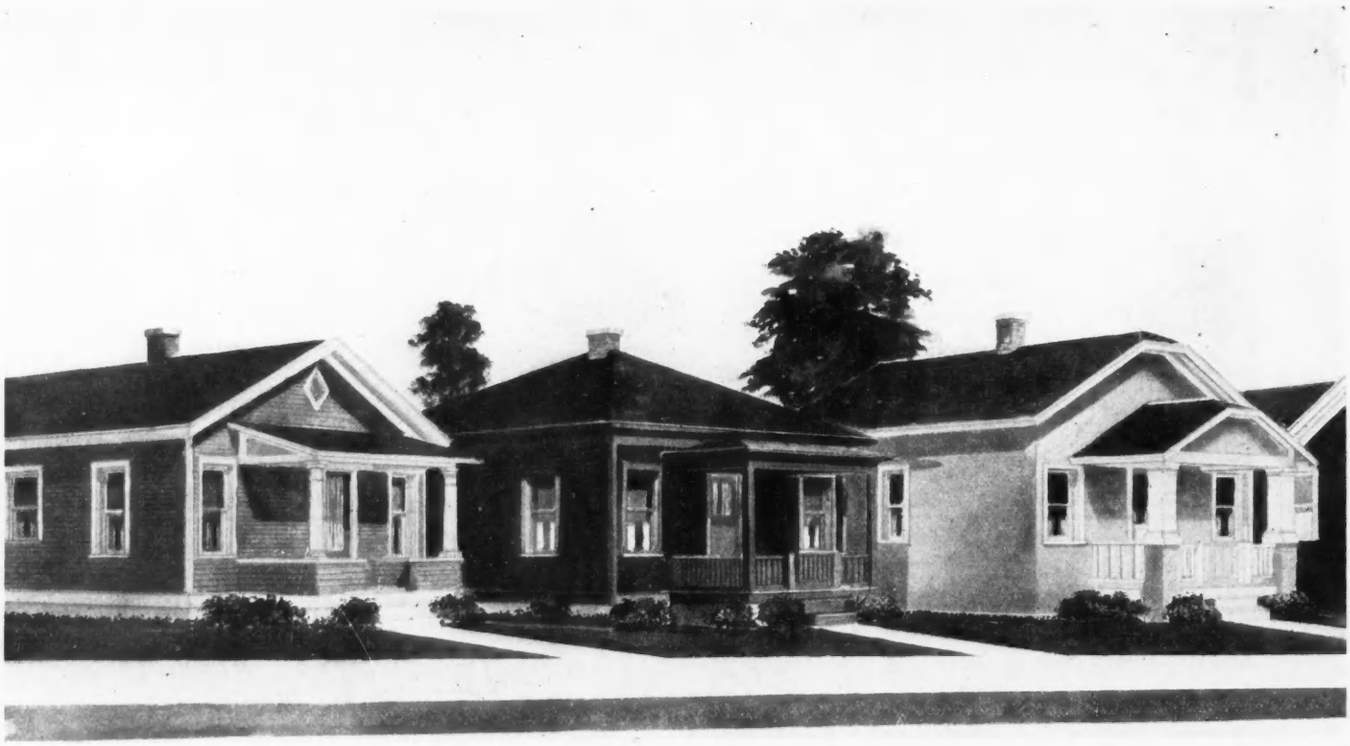
CIVIC bodies thruout the country are manifesting great concern in the matter of properly housing workmen in local manufacturing plants. It is important that such interest be properly directed. Chambers of commerce, boards of trade and manufacturers' organizations are giving earnest thought to this subject, and many of these bodies are planning methods by which homes may be provided for operatives coming daily into already overcrowded cities.

Housing of workmen is a vital question in every industrial center. Many cities have organized housing committees. Local manufacturers are demanding relief from expensive labor turnover. In some communities the housing question has been stressed by the sudden expansion of Government arsenals, where from five to eight times as many men are employed in the factories as before the war. In such sections, and for that matter in every community where war supplies are being manufactured, there exists a strong, impelling patriotic motive for civic bodies to put forth their best efforts to properly house the labor that is engaged on war work.

The national industrial housing shortage has become so acute that in considering the location of a new factory the first question asked is relative to housing possibilities. The community which can offer good housing facilities not only attracts industry but will be able to maintain undiminished industrial activity long after the war has ceased to be.



Four-Room Cottages of Tile Construction at Gary, Ind., Erected by W. L. Plew & Company. The Same Floor Plan as Shown on the Left is Used for All. Variety of Exterior is Gained by Having One Stuccoed, Another Faced with Brick, and a Third of Matt-Face Tile, etc.



A Street of 4-Room and 3-Room Cottages, Having Floor Plans as Illustrated Below. A Variety of Architectural Styles and of Materials of Const

The value of large payrolls is thoroly appreciated by civic bodies. Yet it must be realized that the value of a payroll to any community is largely dependent upon the proportion of well-housed married men among the industrial population. Such men, with their families, spend or bank their entire receipts locally. A poorly housed working force will be found to consist largely of single men of the transient type or married men boarding near the plant. These men send a large proportion of their wages to families located in some distant city. From the community standpoint, well-planned industrial housing is a paying

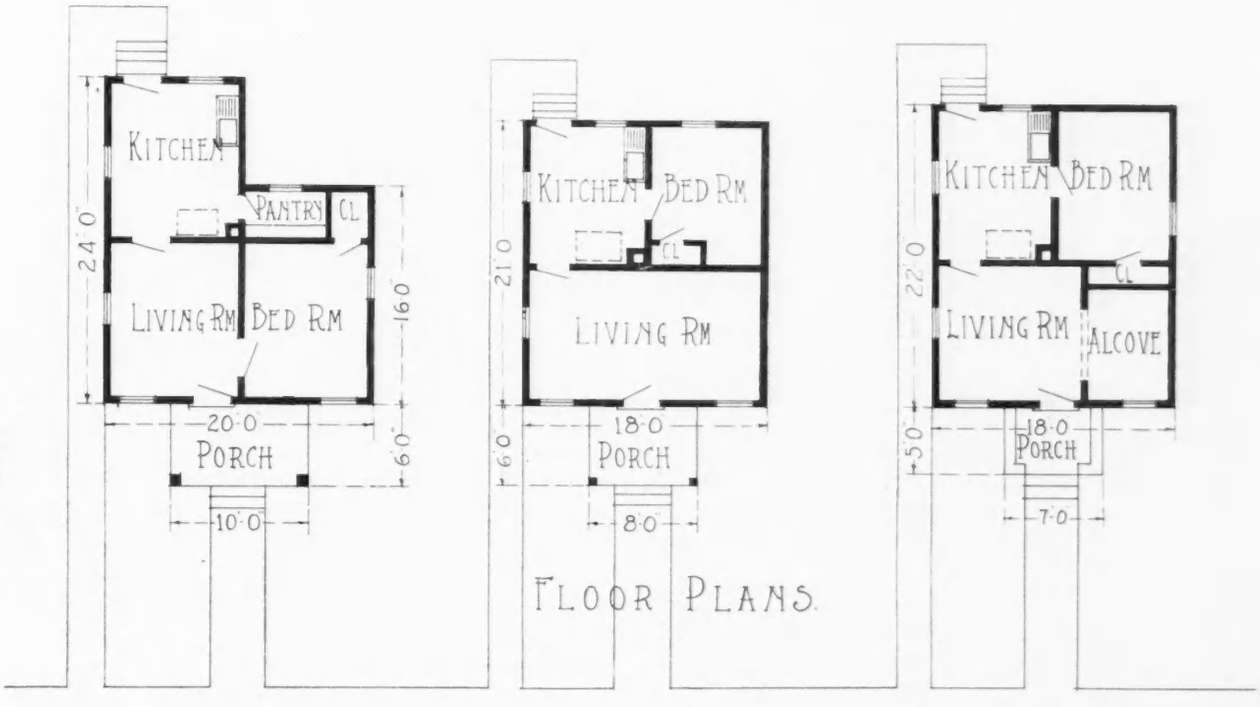
These Three Cottages Have Four Rooms, Two of Them Bedrooms. The Width, 22 and 20 Feet, is Right for the Narrow City Lot.

Construction for the Outside Walls Avoids the Monotonous Effect So Often Seen Where Numerous Small Cottages are Built at One Time.

investment in that it carries with it a financial activity which is beneficial to all local business.

Stimulation of local interest, which will result in the actual provision of housing, can only be carried out thru proper methodical invesigation. Local support for a housing program can best be gained by civic bodies presenting the proposition in an attractive appealing, and forceful manner to the heads of industries most directly affected or those which are likely to become affected.

This report, which should be based on thoro expert investigation, should give general information covering transportation possibilities, available sites of land for industrial communities, and analyses of working forces



These Three Houses are Smaller, Containing Three Rooms Each. They are 20 and 18 Feet in Width.

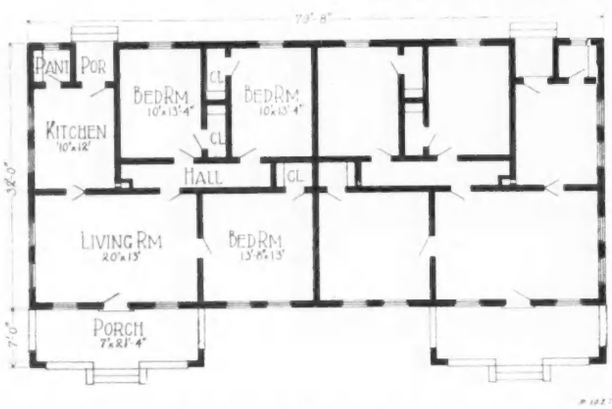
at various local factories. Recommendations should be made as to the best types of housing for various classes of workmen and for the different nationalities, general town-planning features and community utilities. Estimated costs of proposed houses should be made and, wherever feasible, suggestions should be advanced as to methods of financing.

Two purposes are served by a report of this nature: first, to bring clearly to light facts which will encourage local co-operation, and second, to offer a sound basis on which a housing company may be organized and financed. Moreover, if Government aid in the matter of financing industrial housing projects should be made available to communities, a report of this nature would prove of value in bringing this matter to the attention of the proper Government officials.

At this writing, Congress has passed an all-important measure, which has been signed by the President, appropriating $50,000,000 to be expended or loaned for industrial housing purposes in communities where war-manufacturing activities are extensive and where housing shortage is most acute. This amount will be assimilated rapidly in the more important industrial centers, so local civic organizations should not place too much dependency upon the factor of immediately forthcoming Government financial aid to meet their housing problems. It must be realized, too, that any community is to benefit now and in the future thru the provision of proper industrial housing. For that reason it would not be fair nor businesslike to expect the Government to bear the entire burden. As a matter of fact the Government will, in many cases, never assume this burden or any part of it. The ultimate benefit to the community in establishing a stable, well-housed working population is so great and of such value that every effort should be made to meet the housing shortage thru local means. The issue should be faced and prompt steps taken to satisfy an immediate need.

Another fact to be considered is after-war decentralization. Extensive plans are already under way to render suburban and farm life more attractive to the workman. Farm and factory are to bid against each other for labor. Production is to be at its most highly developed stage and labor, now more than ever, is at once the servant and the master of production.

Row of Double Houses at Brazil, Ind., for the Employes of the Clay Products Company. Using Their Own Material—and It Is a Logical One of the Construction of Workingmen's Homes—these Houses are of Tile Construction.



Each Half of the Two-Family Cottages Illustrated Above Contains Five Well Arranged Rooms.

Our industrial centers depend upon factory production as the commercial foundation for the community structure, so they must look to the keystone of that foundation—labor. The workman must be housed attractively and honestly if in the years to come many of our present thriving industrial centers shall not collapse.

✣

The Clay Products Company Builds Homes For Its Employes

The homes shown in the photograph demonstrate what can be done with matt-face structural tile when it comes to building inexpensive homes. They also show the interest which the Clay Products Company take in the housing of its employes.

These houses were erected at their Brazil plant to house the workmen in order that they might live near the plant, which is located several miles out of Brazil proper.

These are two-family bungalows, size on the ground, 32 by 71 feet, each half containing five rooms. The economy of this construction is shown by the fact that they are rented to the employes at $6.00 per month, which includes the house and a garden patch in the rear.

A little variety is given to the group by constructing the first of standard Interlockers, the second of matt face, the third of small conduit, and the fourth of small single Interlockers, and repeat.

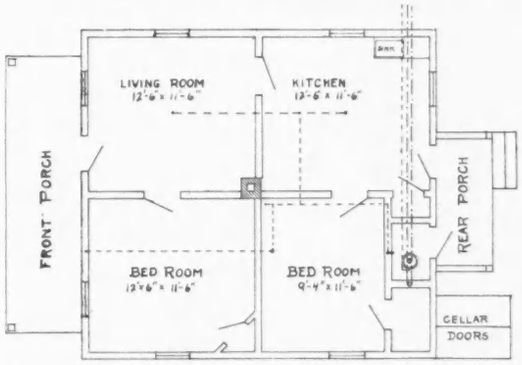
Housing Employes of the Michelin Tire Company

EXAMPLES OF LOW-COST SIMPLE HOUSING

Group of Four-Room, Shingled Cottages Built at Milltown, N. J., for the Michelin Tire Company. Fifty-Three Houses Were Built Complete in 56 Working Days, by the John W. Ferguson Company, at $1,125 Each.

THE critical housing conditions which prevail at the present time have forced many manufacturers to erect large numbers of houses in order to provide homes for their help. The trouble has been in many cases that the manufacturer is influenced too much by idealism, and any dwellings he erects to overcome congestion are more elaborate than his employes can afford to rent. It is perfectly obvious that large rooms, cellars, bath tubs, gardens, electric lights and all modern conveniences should be considered necessities by those living in comfortable circumstances, but to the poorer people they are luxuries not at all necessary. For this reason it is well for the manufacturer to build houses which are not too expensive or too elaborate.

A very satisfactory housing development has been conducted recently by the Michelin Tire Company at Milltown, N. J. On account of increased business this company realized the necessity of immediate facilities for housing more families and gave contract to the John W. Ferguson Co., building contractors of

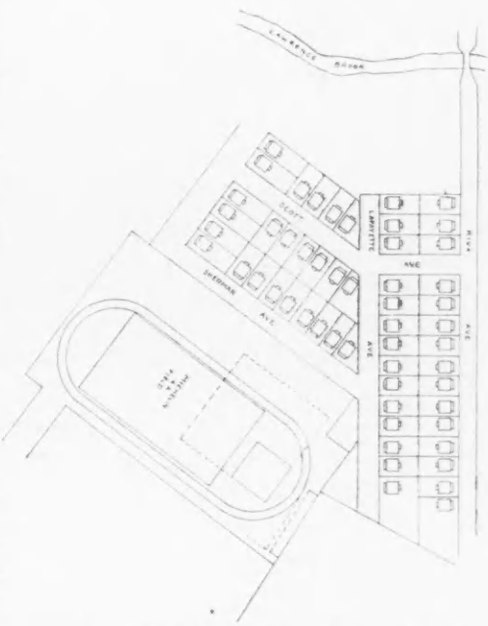


The Standard Floor Plan for the Michelin Shingled Cottages.

Paterson, N. J., to erect 50 houses in 75 working days. This was in the summer of 1916, and the contract price of each house was $1,125. The Ferguson organization took hold of the job and built in all 53 houses, the entire work being completed, with sewers laid, in 56 working days. This was 19 days ahead of schedule.

These houses are wooden frame, the outside walls being covered with cedar shingles and the roof with slate. Inside cypress finish was used and the walls were plastered. Each house contains four rooms, as shown in the floor plan, the living room and kitchen providing ample room for dining and recreation. In fact, in most families of this class the kitchen is used as a dining room and living room, and if a so-called living room is provided it is used as a bedroom by a member of the family or rented as such.

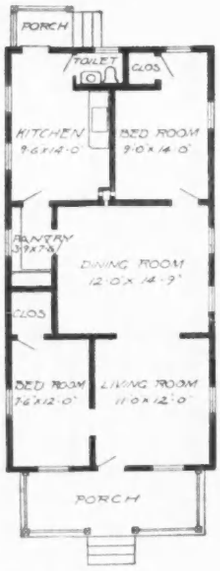
It will be noted that these houses have a toilet but no bath, and experience shows that baths are not used among the great majority of tenants of this class.



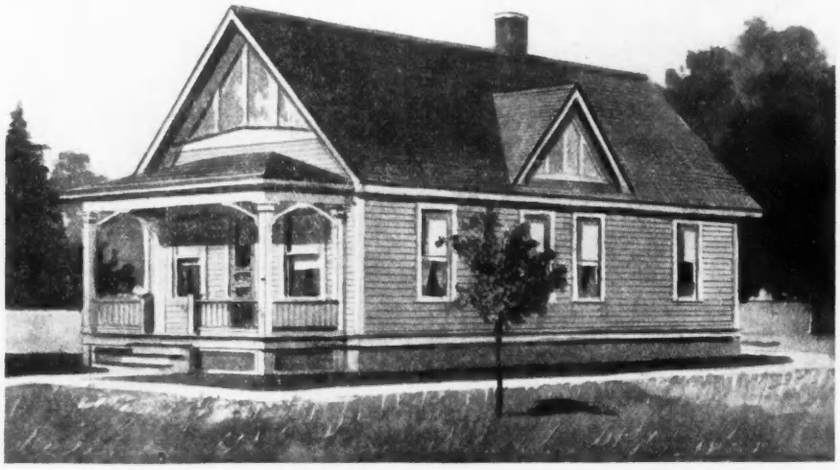
Plot Plan of Michelin Housing Project, Showing the Location of the 53 Cottages.

The gable is left entirely unfinished and this large air-space helps to keep the houses cool in summer and warm in winter. Concrete foundations were installed and the floor raised a sufficient distance above the ground so that there is no trouble from moisture, and approximately a quarter of the space under the house is excavated for a cellar. Each house has its own flower garden and lawn.

Houses of this price and quality rent very readily among lower priced employes and are exactly the kind desired by them. If more manufacturers would see to it that such dwellings were available they would have much less trouble in attracting labor and in retaining the operatives whom they have paid good money to train.



Floor Plan



Plain straight roof cottage. Size, 20 feet wide by 40 feet in length, exclusive of porch.

Plain 5-Room Cottage

A neat little straight roof cottage, somewhat on the bungalow order, is shown in the design above. It is 20 feet in width by 40 feet in length, exclusive of porches. This size and layout give us five comfortable rooms. One of the bedrooms is narrow, but the length makes up sufficient room for placing the furniture for convenience, and that is the principle thing necessary in a bedroom.

This little house can be built as cheaply as any style of building offering as much room as this that will look right when finished.

Story-and-a-Half House

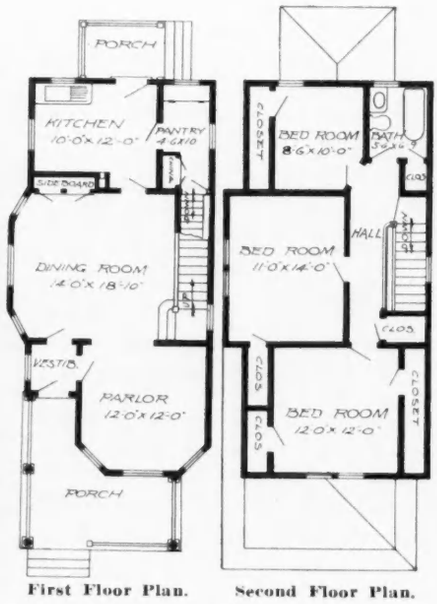
Where comfortable living rooms are wanted with three small bedrooms and a bath room above, this design offers many advantages. In the first place, it is inexpensive to build, also when finished it looks neat and attractive.

The porch is roomy, which makes a pleasing entrance approach and the bay windows in the parlor and dining room help the architectural effect. It is a convenient house for a small family, easily heated and is generally very satisfactory.

This is the style house that suits the average factory worker and his family, even tho it be a fairly good sized one.

Usually the women folks prefer to do their own work. They want a neat, little, compact house, that they can take care of themselves. They want a small, warm-air furnace under the dining room, so that the whole house may be heated with one fire. In all probability, they would run a partition across the cellar to make a cold storage room for fruit and vegetables.

This plan has worked well a great many times. It gives the mechanic and his family an opportunity to live in comfort.



First Floor Plan. Second Floor Plan.

Story and a half house with bedrooms under the roof. Size, 20 feet in width by 38 feet in length, exclusive of porches.

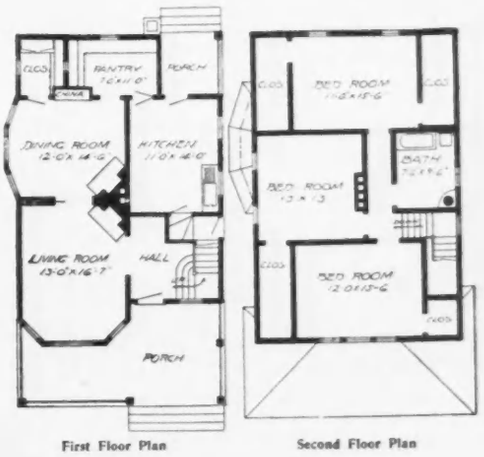
Six-room, story and a half house. Size, 27 feet wide by 38 feet in length, exclusive of porch.

Six-Room House

A distinctive appearance is given to this house by the manner in which the gables are treated. The design above gives the lay-out of a very comfortable six-room house. Six rooms and a bath, two fireplaces, a splendid dining room with china closet and an extra good pantry are unusual in a small house.

There is a grade entrance at the side of this plan that offers great conveniences if the owner makes much use of the cellar. There are a few steps up from this entrance into the kitchen and a few steps down into the cellar. The intention is to make a convenient way out and in, either from the cellar or the kitchen.

Altogether, this plan is very neat and well arranged, and it makes a very comfortable house.

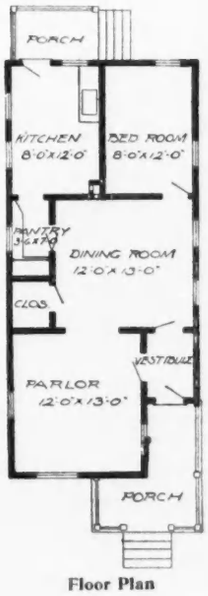


First Floor Plan Second Floor Plan

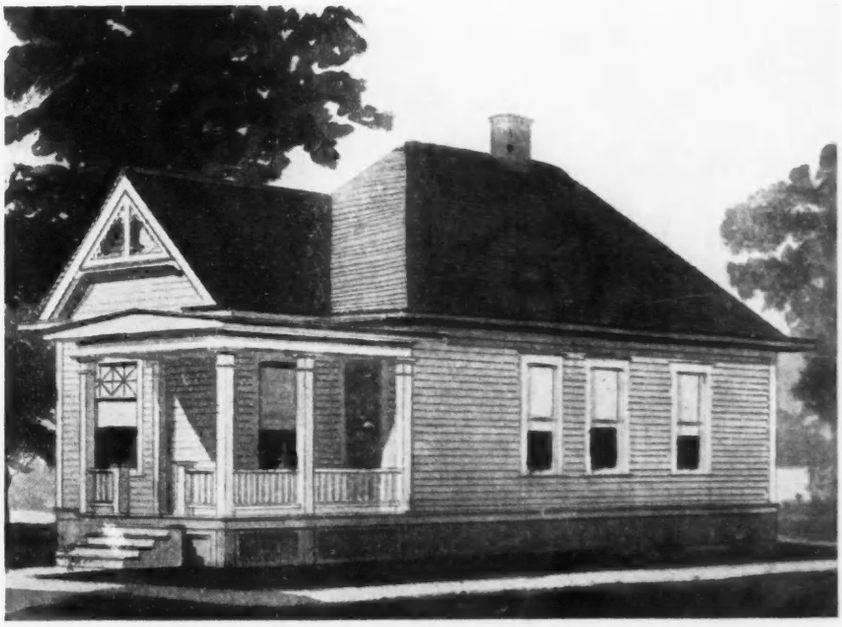
Four-Room House

When four rooms are sufficient they may be had by building after the design below. In communities where land is not too valuable, houses like this are much better and more economical than crowding into flats. Transportation will decide whether a person can live in a suburb or not, but this design is interesting for young people starting housekeeping if they can possibly arrange to build it.

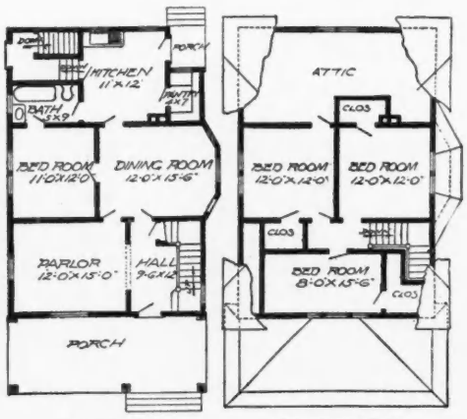
The size is 18 feet by 39 feet. An 18-foot house may be put on a narrow lot. A great many young folks get their start in life by building a small house on a comparatively cheap lot, which may be paid for on the "inducement" plan.



Floor Plan



Narrow four-room house, 18 feet in width by 39 feet in length is shown in this design. For a narrow lot it offers the advantage of four rooms with only 18-foot width of building.



First Floor Plan Second Floor Plan

A house of four gables, 28 feet wide by 38 feet in length, is illustrated in this design.

House of Four Gables

The appearance of a house depends greatly upon the shape of the roof. The design above has much more room than its outside appearance would indicate. It looks like a small house, but it contains seven rooms and they are all plenty large, because the space in the gables have been used to such good advantage.

The arrangement of the rooms down stairs is very pleasing. The up stairs is divided between three bedrooms and the attic storage room.

Six Room, Story-and-a-Half House

Six-room houses are very popular in almost all American cities. Six rooms will accommodate most families, but sometimes there is little waste or unused room to be cared for. This design below offers a splendid arrangement of rooms.

The large dining room, 12 by 17 feet, with a fireplace, is the main attraction. The open stairway going up from this room is one of the interesting features of the house.

In this case it was necessary to have a window on that side of the dining room, so the plan of building an open stair was adopted. It permitted a window over the first landing, which, together with the bay window on the opposite side of the room, admits plenty of light and ventilation.

The double vestibule entrance is different from most houses. It is intended as a substitute for the usual hallway. There is a place for a hat and coat rack in the alcove as you enter the dining room, and a hall tree may be placed in the vestibule.

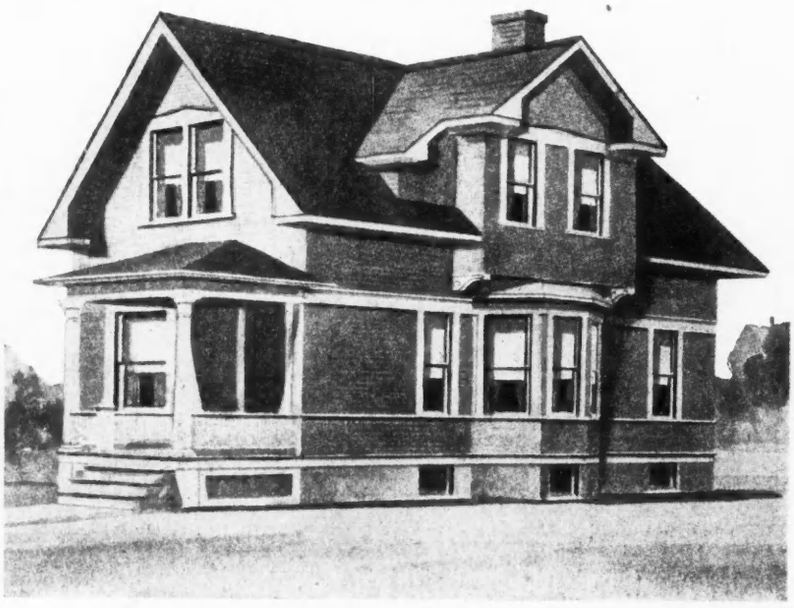
It is a well balanced house, with its three rooms down stairs and the three bedrooms with a good bath room upstairs.

Kitchens as large as this one are not common in small houses. But where the dining room is used for a general living room, the large kitchen may be used for dining room except on state occasions, when the rich uncle comes to be entertained.

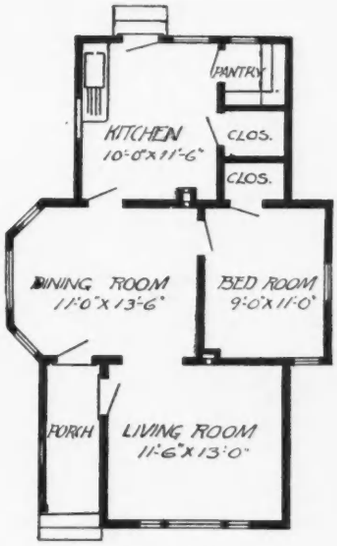
The little back porch on this house may be screened.

First Floor Plan. Second Floor Plan.

Six-room, story-and-a-half house.



Size of house, 28 feet wide by 38 feet long, exclusive of porch.



Floor Plan

Four-room cottage house. Size 24 feet wide by 36 feet in length.

Popular 4-Room Cottage

The word cottage is an elaboration of the old English word "cot." It is much used at the present time in some parts of England when referring to small, one-story houses of neat appearance and low cost.

In some parts of the States the word is misused to name great wandering summer palaces costing large sums of money.

This design is rather English. It has four rooms with a very neat corner porch covering two outside entrance doors, one to the living room and one opening into the dining room. The plan is very convenient and may be made very comfortable for a small family.

Five Room Story-and-a-Half House

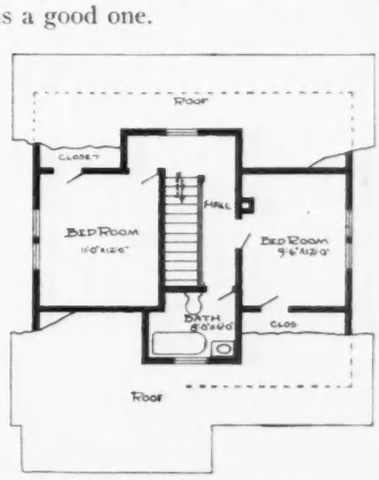
The design below represents a very comfortable five-room house. The large porch has rather a massive appearance which adds to the house the feature of solidity, an effect that is difficult to obtain in a small house.

The living rooms are on the first floor with two bedrooms and the bathroom tucked away up under the roof.

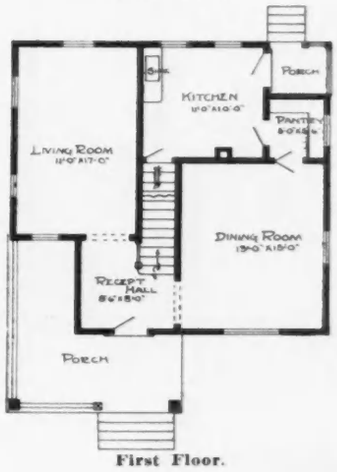
This arrangement gives a great deal of floor space to the bedrooms and living rooms. There also is plenty of kitchen and pantry room. The stairway to the upper floor is so built into the partition that it takes up very little room.

This little house looks well from the street and it looks well from every other direction. The design is a good one.

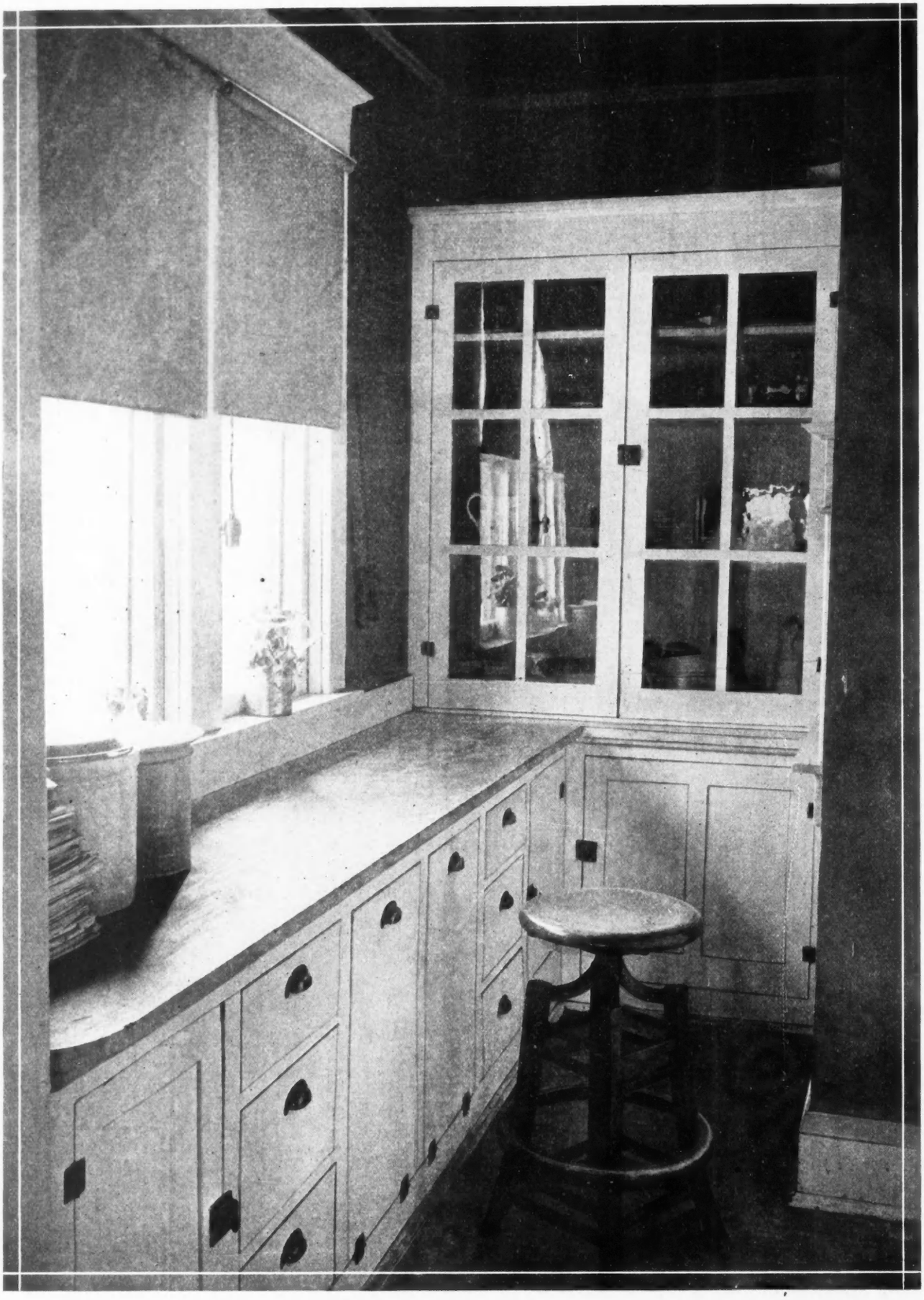
Five-room, one-story and a half house of exceptionally fine appearance. Size, 29 feet in width by 26 feet 6 inches in length.



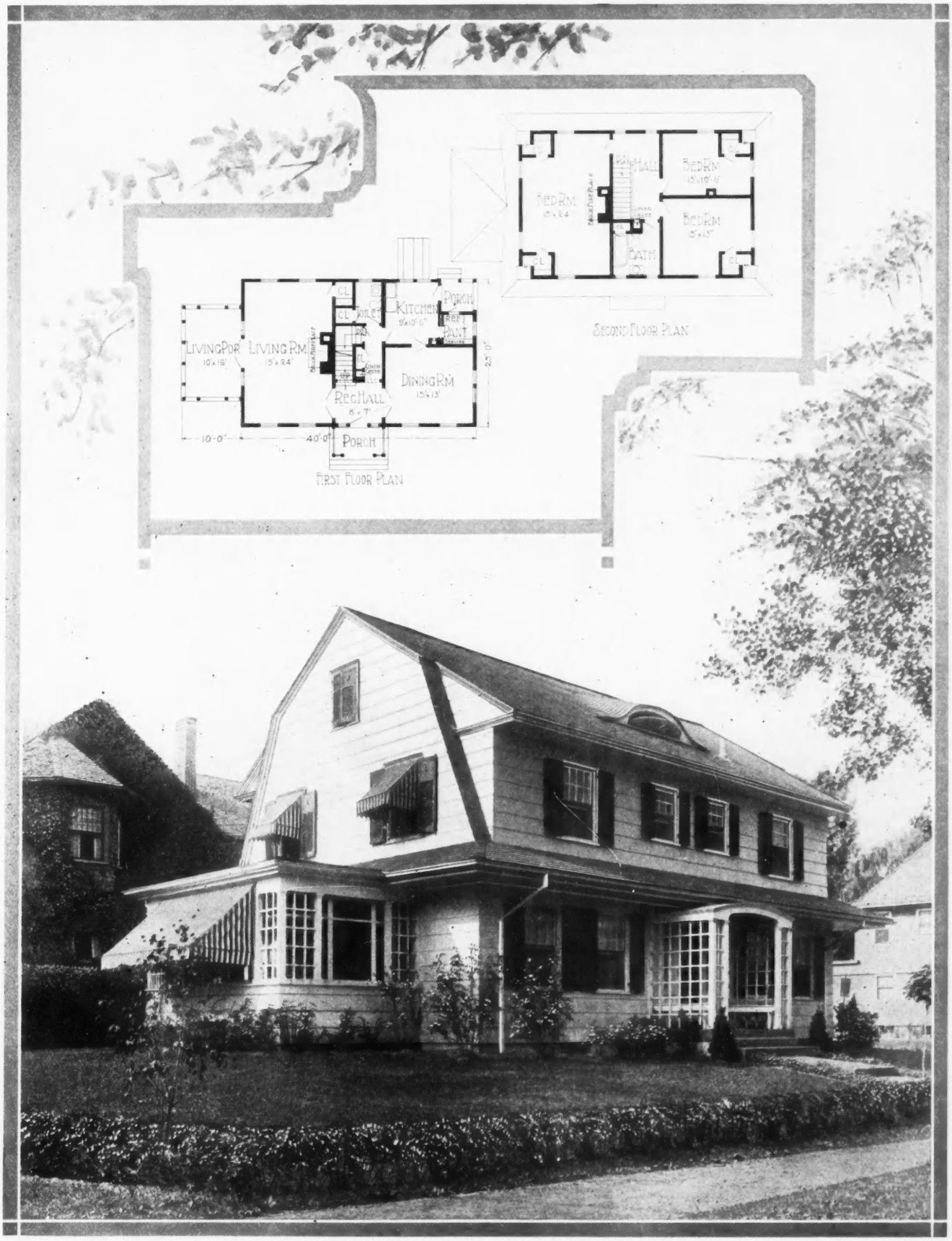
Second Floor.



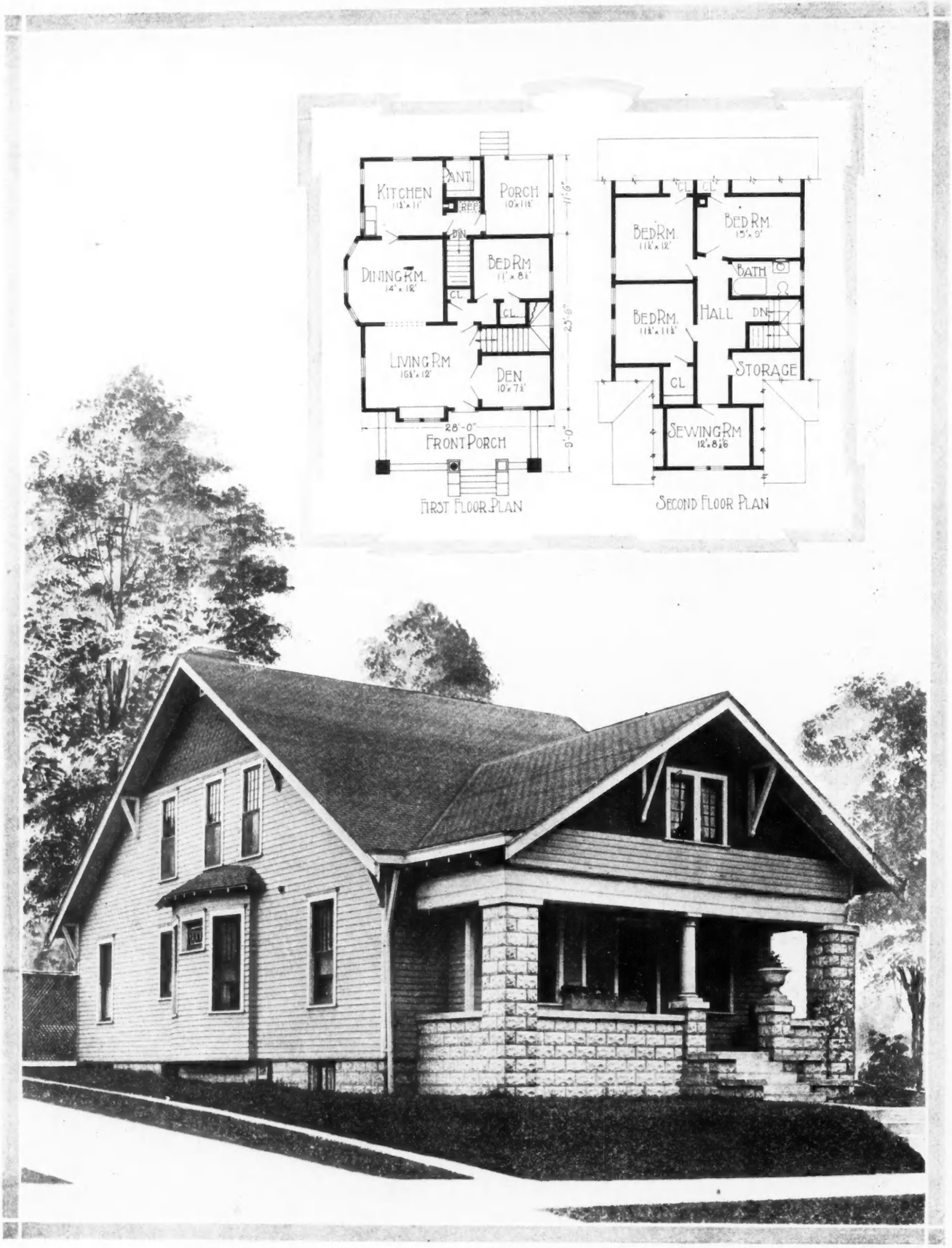
First Floor.



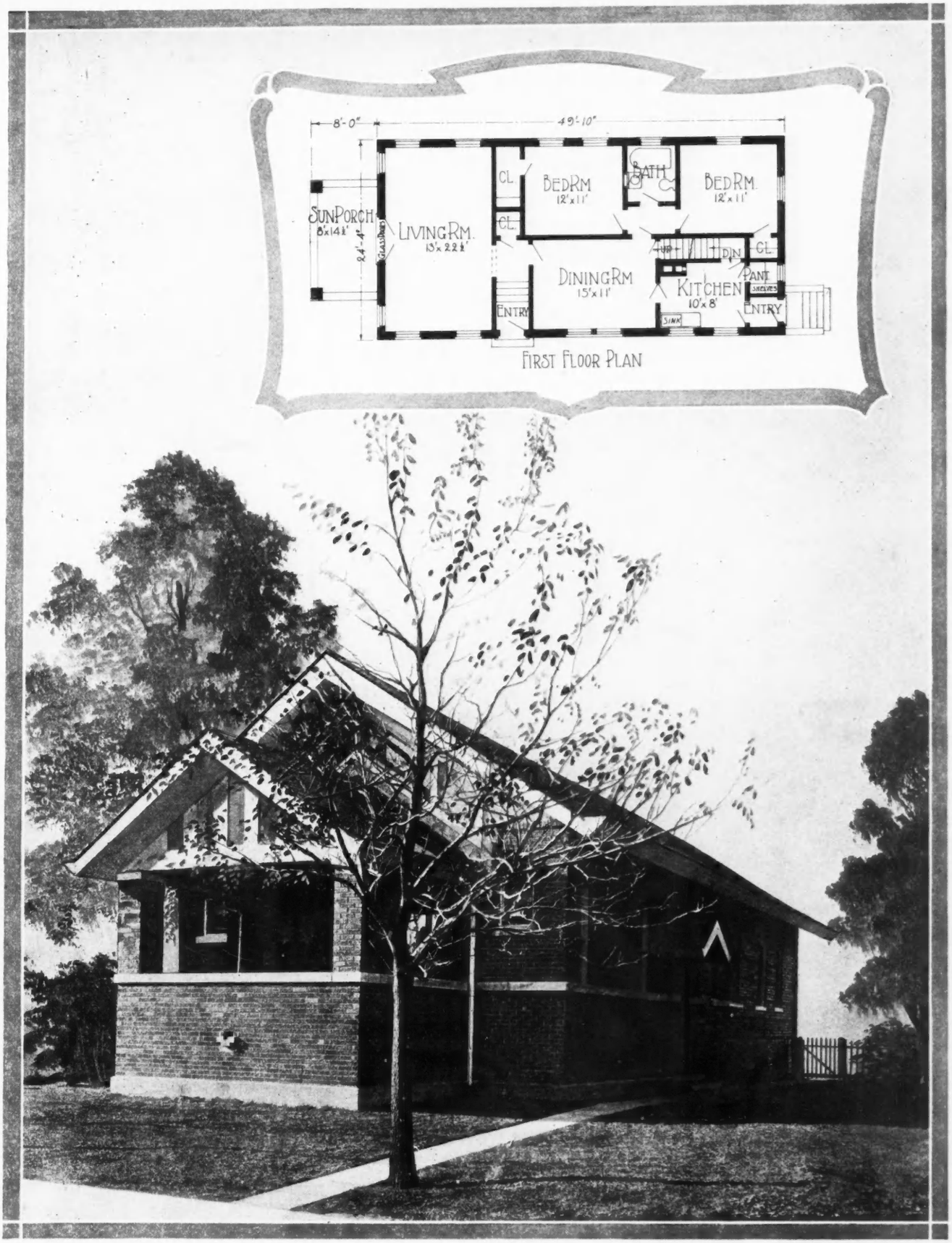
The Efficiency Corner in a Modern Home Kitchen. Good Light, Handiness and Neatness Make This a Joy to the Housewife, Whether on the Farm, in Village or City House. The Builder Helps the Housewife Help Mr. Hoover When He Plans and Builds a Kitchen Like This.



DUTCH COLONIAL HOME OF SIX ROOMS. This photograph proves that a house can have at the same time a gambrel roof and a gable roof. In other words, the roof dormer here is so wide that it takes in the whole roof, except for just a narrow strip at each end, which serves to define the gambrel. In size, 25 by 40 feet, the floor plan arrangement of this house is ideal.



A CONCRETE PORCH DESIGN. This is one of the practical and popular residence types that have flourished wherever good quality concrete blocks have been available. It is a house of fairly good size, measuring 28 by 37 feet on the ground, and a story-and-a-half in height. Nine rooms of fairly good size, besides the big porches, front and rear, are provided.



A BRICK HOUSE FOR THE CITY. This is a side entrance design with big living room clear across the front and private front porch, which should be screened in the summer and glassed in for cold weather. A convenient dining room and kitchen group and two good bedrooms with adjoining bath, complete the layout. The dimensions of the house proper are 24 feet 4 inches by 49 feet 10 inches.

AMERICAN BUILDER BUILDING PLANS

Complete Blue Prints for a Wall Board Cottage for Industrial Housing

FOUR FULL PAGE PLATES GIVE COMPLETE DIRECTIONS FOR THE CONSTRUCTION OF THIS FIVE-ROOM COTTAGE. EXTERIOR CAN BE VARIED BY COVERING WITH CLAPBOARDS OR STUCCO

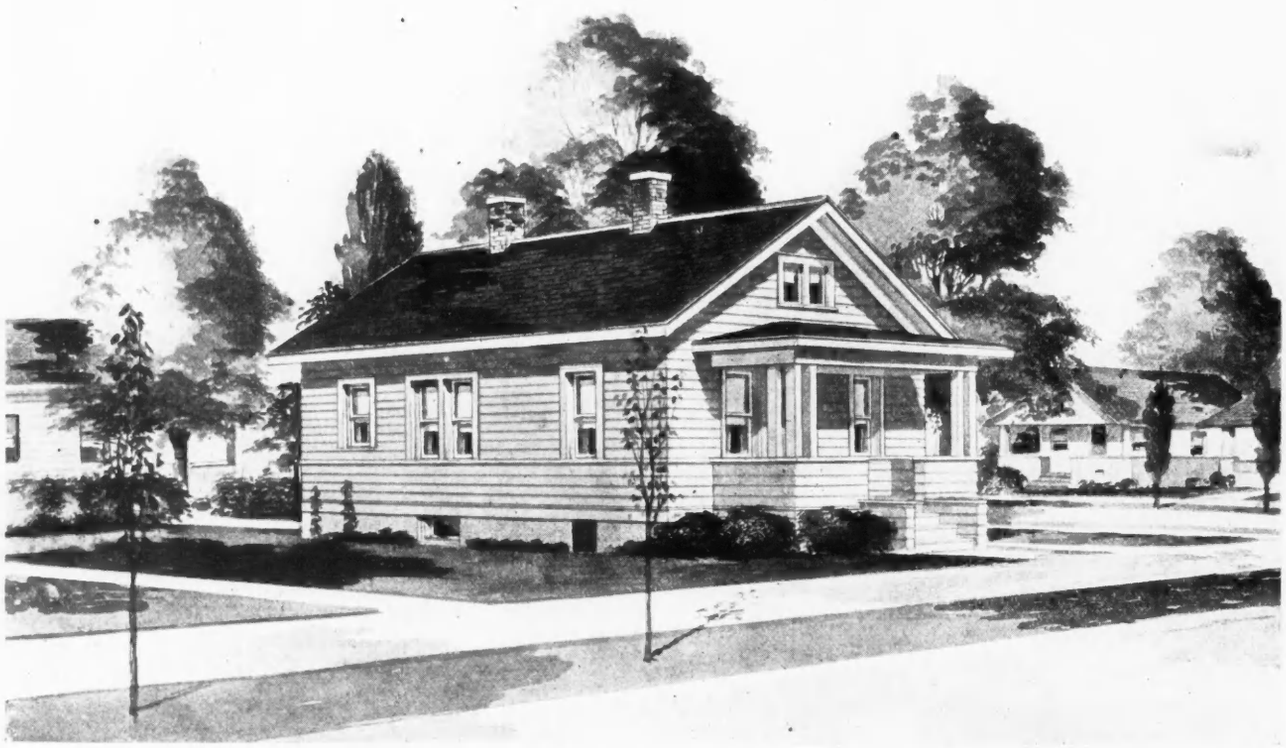
A VERY practical idea for workingmen's cottages, or, in fact, for any dwelling where low cost and rapidity of construction are important factors, is illustrated in the Blueprint Supplement plans immediately following.

They show the use of wallboard for the inside finish of this house thruout. It is *planned for wallboard* and that is the way wallboard should be used. Too often the builder changes his mind and switches to wallboard at the last moment, substituting it for lath and plaster, and so does not enjoy the full saving he might, if the job had been planned for wallboard from the start.

Notice in the floor plan how the studs are placed to come right for the wallboard. The construction details show best recommended practice for using this material for interior walls and ceilings.

A new idea advanced in these plans is to use wallboard for the outside walls to take the place of the ⅞-inch sheathing boards. Nail the wallboard on over the studs, then cover with tar paper to keep out dampness, and then put on the siding. For stucco finish nail on stucco board directly to the studs to take the place of wallboard and building paper. Apply either cement or magnesite stucco to produce a very substantial, attractive exterior.

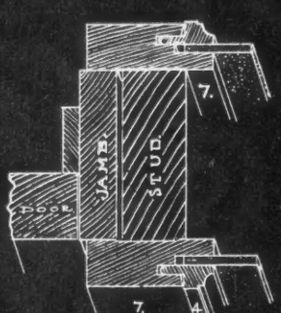
Paneling for the walls and ceilings of the several rooms has been designed to use stock sizes of wallboard and to work out economically without becoming monotonous.



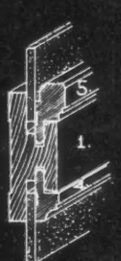
The Architect's Conception of How This Wall Board Cottage Will Look When Completed. It Is a Thoroly Practical Five-Room Home; Built Individually or in Quantities. Complete Working Plans for This Dwelling are Presented on the Four Blueprint Pages Following.

AMERICAN BUILDER BUILDING PLANS

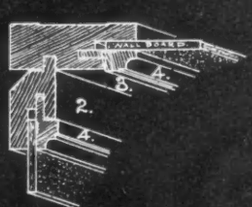
ALTERNATE EXTERIOR



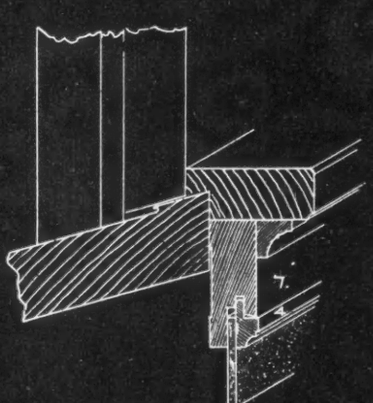
DOOR JAMB & CASING:



Nº5 PICTURE MOULD:



INTERNAL ANGLE:



STOOL & APRON:

BASE:

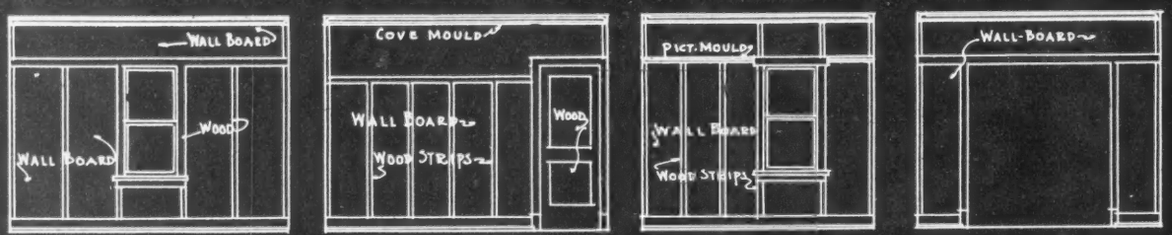
EXTERNAL ANGLE:

MOULDING BETWEEN PANELS:

W.R. FRIEDEL'S MOULDING: PAT'D: FOR INTERIOR TRIM:
THESE ELIMINATE USING HEADERS AND BLOCKS: ¼ FULL SIZE:

WALL BOARD COTTAGE FOR INDUSTRIAL HOUSING. SHEET Nº 1

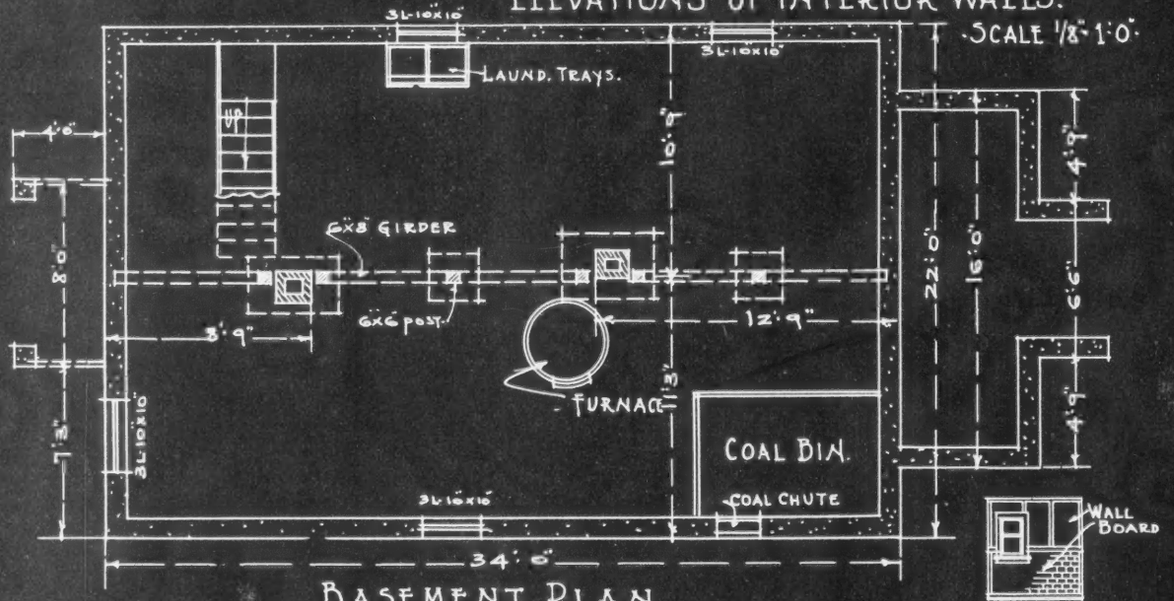
AMERICAN BUILDER BUILDING PLANS



WALL "A" WALL "D" WALL "C" WALL "D"

ELEVATIONS OF INTERIOR WALLS.

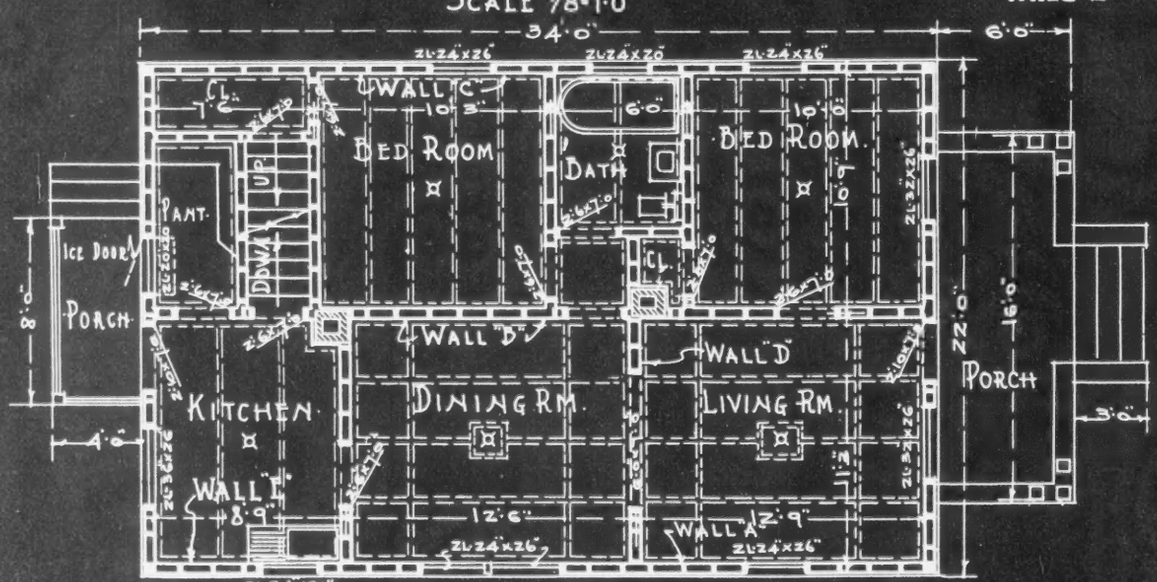
SCALE 1/8" 1'0"



BASEMENT PLAN.

SCALE 1/8" 1'0"

WALL "E"

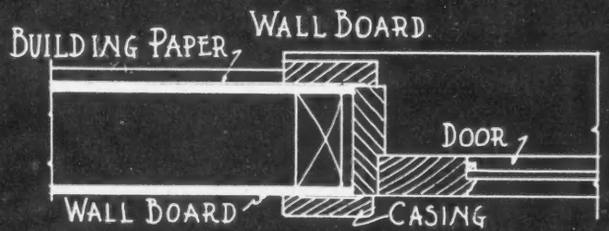


FLOOR PLAN

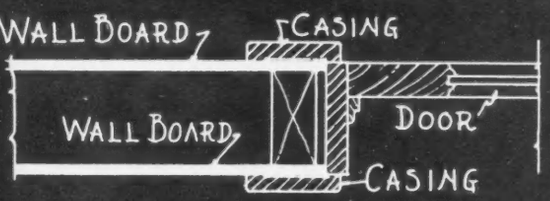
SCALE 1/8" 1'0"

WALL BOARD COTTAGE FOR INDUSTRIAL HOUSING. SHEET № 2

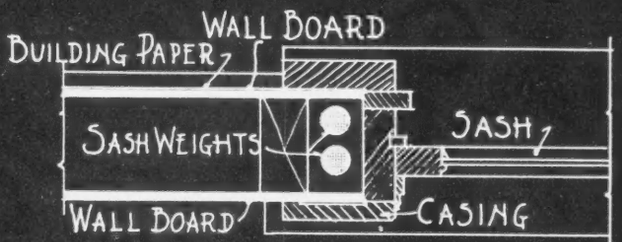
AMERICAN BUILDER BUILDING PLANS



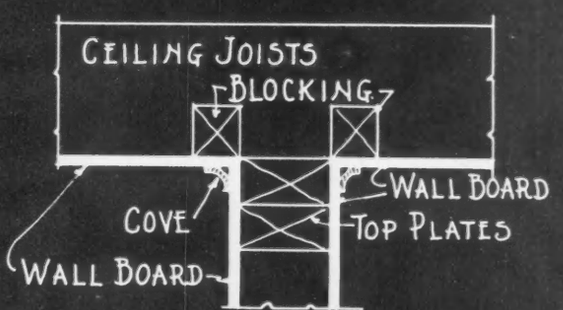
DOOR FRAME & WALL SECTION

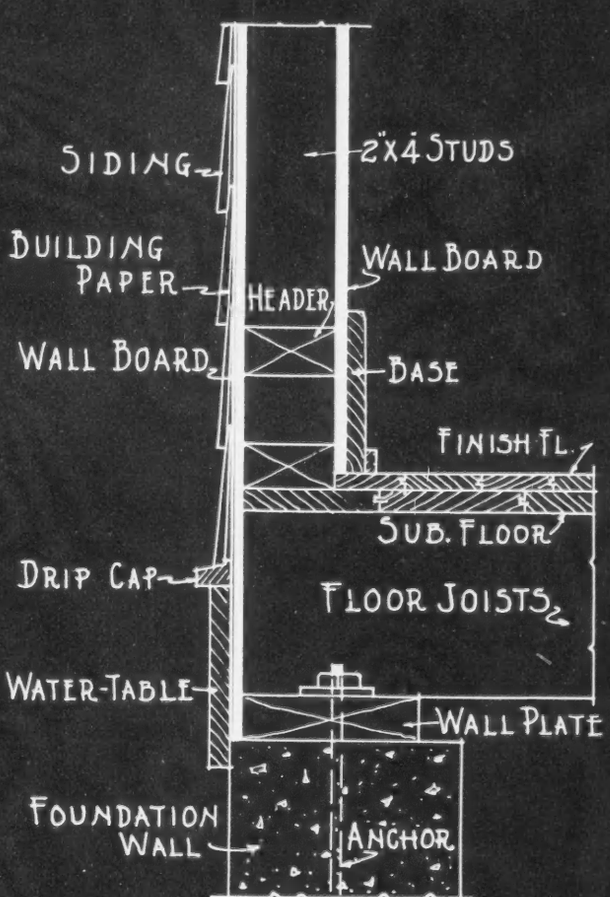


DOOR JAMB & PARTITION SECTION



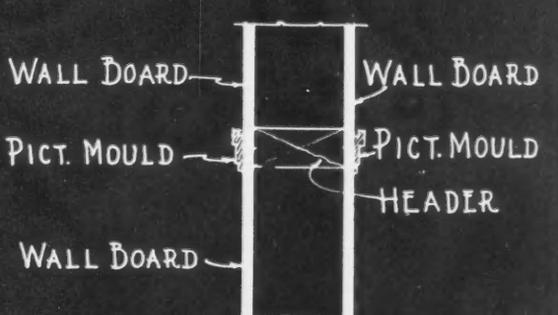
WINDOW FRAME & WALL SECTION.

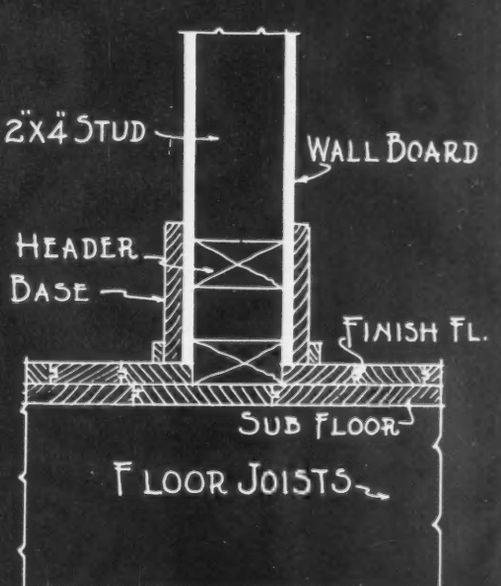




EXTERIOR WALL SECTION

SCALE 1½"-1'-0"



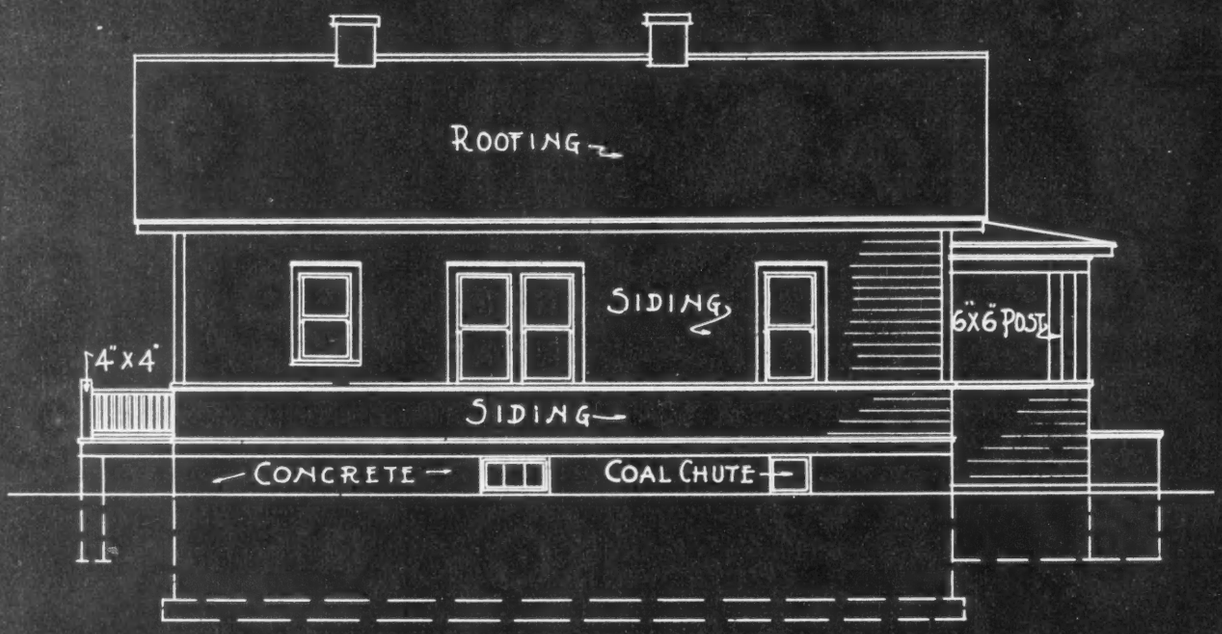


INTERIOR WALL SECTION

SCALE 1½"-1'-0"

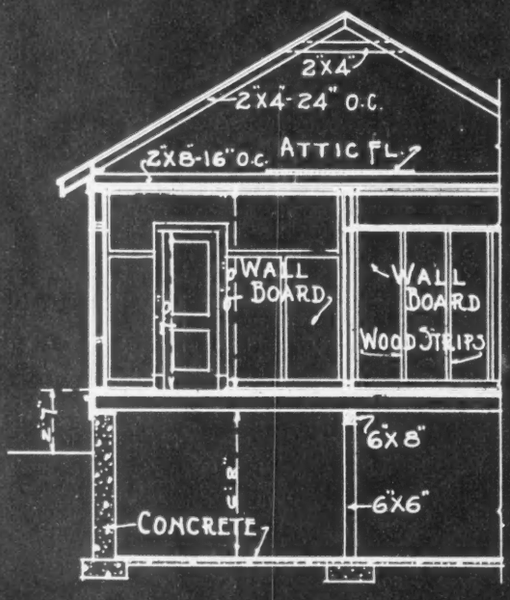
WALL BOARD COTTAGE FOR INDUSTRIAL HOUSING. SHEET Nº 3

AMERICAN BUILDER BUILDING PLANS

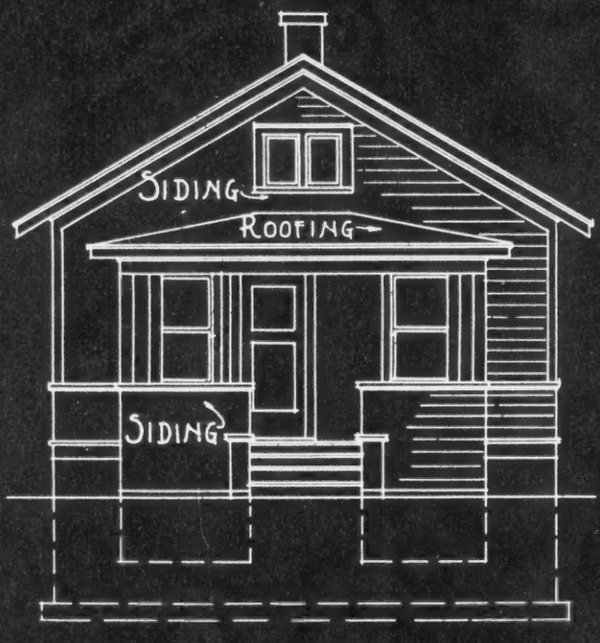


SIDE ELEVATION

SCALE 1/8"-1'-0"



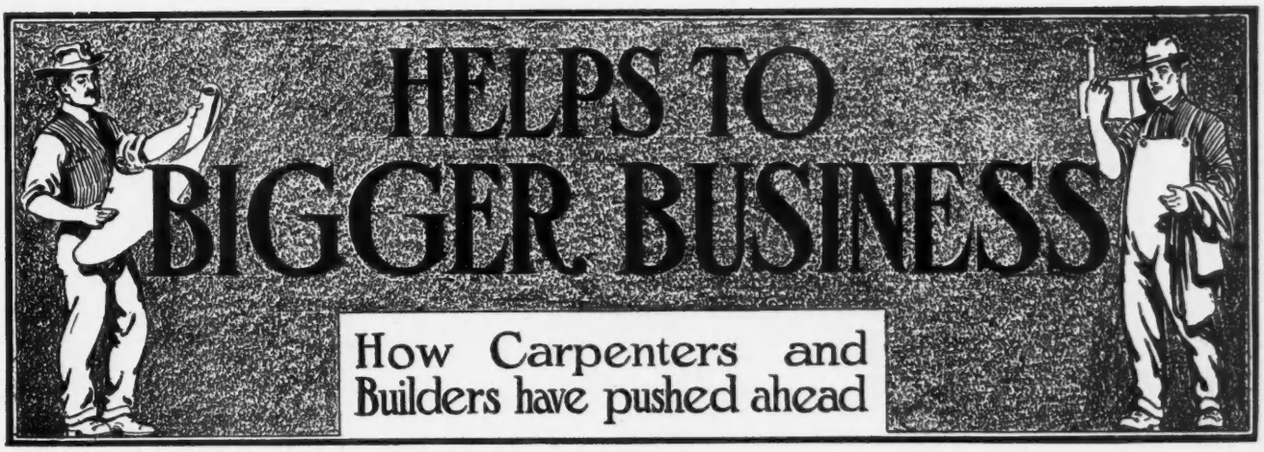
CROSS SECTION



FRONT ELEVATION

SCALE 1/8"-1'-0"

WALL BOARD COTTAGE FOR INDUSTRIAL HOUSING. SHEET Nº 4



Keeping Up With Things

A BUILDER TELLS OF HIS EXPERIENCES IN BOOKKEEPING AND OUTLINES A COMPLETE SYSTEM OF CONTINUOUS RECORDS

By Wm. P. Munger

In Two Parts, Part One

WHEN I abandoned other things for the contracting game, I began with the time-honored daybook-ledger system. It soon became apparent, however, that a lot of work was being done that did not get me anything. Besides the bookkeeping it took an all-fired lot of figuring to tell where I was making or losing; and tall guessing was the only way to tell what to let alone.

If I was to meet close competition I must know how I stood financially—not once a month or so, but each minute.

I looked around.

I found that most of the builders of my acquaintance and volume of business were using systems, which, to say the least, were no better than mine. But at the office of the Enterprise Realty Co. I found that their system was a departure, and a helpful departure, from the methods which had been in use for many years. (See special form shown in Fig. 1.)

The Enterprise Realty Co. dealt in subdivisions, and the form was used as a receivable journal to care for the payments made by the subscribers to its lots. Essentially the form consisted of day, cash, and explanation columns on the left, and many cash columns at the right which were divided into pairs by special colored lines. The names of the various subdivisions were written over the pair of columns, so that there was one pair for each subdivision. As all the entries on this form were debits, the right-hand column of each pair was used to record that part of the cash payment which was to be paid to the party for whom the company was agent, and the left column of the pair being used to record the rest of the payment which was the commission retained by the Realty Co. The clerk told me that the details worked out in a satisfactory way, but that the forms were expensive.

Now, in the systematizing in which I have been interested, I have always been a sticker for standard forms, even if they had to be slightly altered and some of the neatness sacrificed to suit the condition, because first: Capital does not have to be uselessly tied up in "over-head stock." Second: More supplies can be had at any time. Third: Changes in forms owing to changes in business cause minimum loss. Fourth: If records are kept on forms for which there is enough demand to have a stationer stock them, then when new help is being trained, the methods being so near the conventional way of doing things, the inconvenience of breaking in new help is of least duration.

It was therefore a pleasing sensation to notice in a

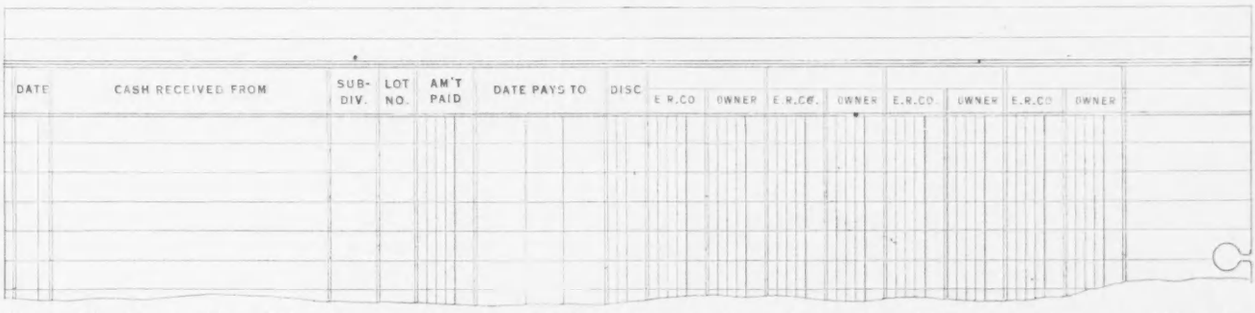


Fig. 1. The Reverse Side of the Form Here Shown is Ruled with Nine Double Cash Columns, Similar to the Four on the Right Side of the Figure. The Form is Used by a Realty Company for Books of Original Entry for Payments on Lots.

COMBINED CASH BOOK AND JOURNAL

GENERAL LEDGER DEBIT	GENERAL LEDGER CREDIT	ACCOUNTS PAYABLE DEBIT	ACCOUNTS PAYABLE CREDIT	ACCOUNTS RECEIVABLE DEBIT	ACCOUNTS RECEIVABLE CREDIT	DAY	ITEMS	✓	FOLIO
							Bro't forward		
4 2 10 ✓						2	*Lot 10 Tryondale Sub. Taxes Dr.*		
3 5 26 ✓							*12 " " " "*		
4 2 10 ✓							*18 " " " "*		
3 5 26 ✓							*72 " " " "*		
			1 5 4 72 ✓				*County Treasurer (Taxes) Cr.*		
				1 4 60 ✓		2	*Mrs. L. H. Morton Dr.*		
							Work a/c (Repairing Storm Porch) Cr.		
							Cartage, (Hanley to Leily St.) Cr.		
		6 3 61 ✓				2	*A.G. LaBerk Dr. (a/c in full)*		
							Cash Cr		
							Bank Cr.		
							Discount Cr.		
						2	*Job 160 (Painting Material) Dr.*		
							" 142 " " Dr.		
							" 153 " " Dr.		
							Stock " " Dr.		
			3 8 61 ✓				*F. S. Doolittle Cr.*		
						3	*Carpenter Labor Job 160 Dr.*		
							" " " 154 Dr.		
							" " " 132 Dr.		
							Cash (to Murphy) Cr.		R
						3	*Cash Dr.*		
							Installments 1036 Riverbine Ave. Cr.		R
						3	*Cash Dr.*		
					1 0 67 ✓		*M. E. Marion Cr.*		R
					1 5 00 ✓		*Consolidated Rubber Co. Cr.*		R
					1 4 60 ✓		*Mrs. L. H. Morton Cr.*		R
					1 6 2 00 ✓		*Steve Thompson Cr.*		R
					1 0 00 ✓		*Abe Timmilinks Cr.*		R
						3	*Bank Dr.*		
							Cash Cr.		
						3	*Office Expense (Dave Brown)*		R
							" " (Lulu Smith)		R
							Cash Cr.		
							Am't Frd.		

Fig. 2. It Is Not Necessary to Post All of the Entries from the 20-Column Journal, so a Check Mark is Placed Next to the Figures Posted Instead of the Usual Column, Then There are No Skips in the Column Posted. "R" in the Column After an Item Shows a Receipt was Issued or Received in the Transaction and Is One of the many Devices in This System to Keep the Records Together.

stationer's window not far from their office an exhibit of multi-cash-column ruled pads, some of which, with very little alteration could be made to answer the purpose of the Enterprise Realty Co. By beginning each day's collections on a separate sheet and keeping the sheets in a suitable binder (if they did not want to keep the used sheets in a correspondence file) they would have a daily report of collection system with the current work on top. The footing on each sheet would, of course, be transferred to the general books and the items to the individual ledger accounts.

From this system of the Enterprise Realty Co. I saw the items could be classified when the items were originally entered. From general knowledge that six to eight column journals were in use, I gathered that if the classifications were judiciously selected (such as merchandise, cash, expense, etc.), a large part of the posting could be saved. But could I find a form or series of forms that would accommodate all the transactions in collecting rents on commission, collecting rents on my own property, contracting on large and small jobs, building houses and trading real estate on speculation, doing small carting business, buying and selling securities, running a commercial garden, etc., etc.? In addition to recording activities in these branches and digesting the information, I wanted a system that could be indefinitely expanded without a jar as the business grew, and

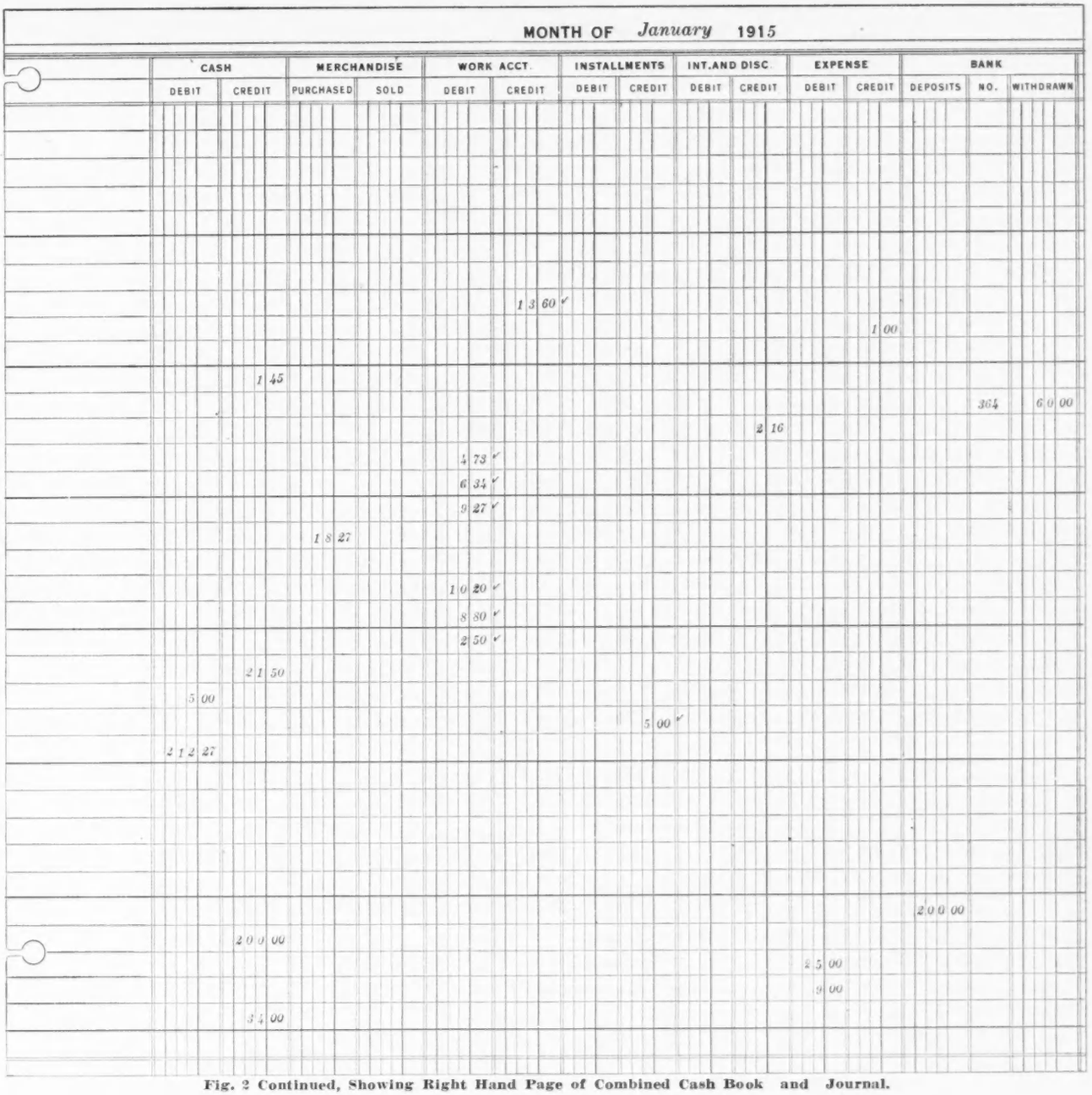


Fig. 2 Continued, Showing Right Hand Page of Combined Cash Book and Journal.

would not be burdensome when at certain time of the year activities were so reduced that there was perhaps only myself and three or four others employed.

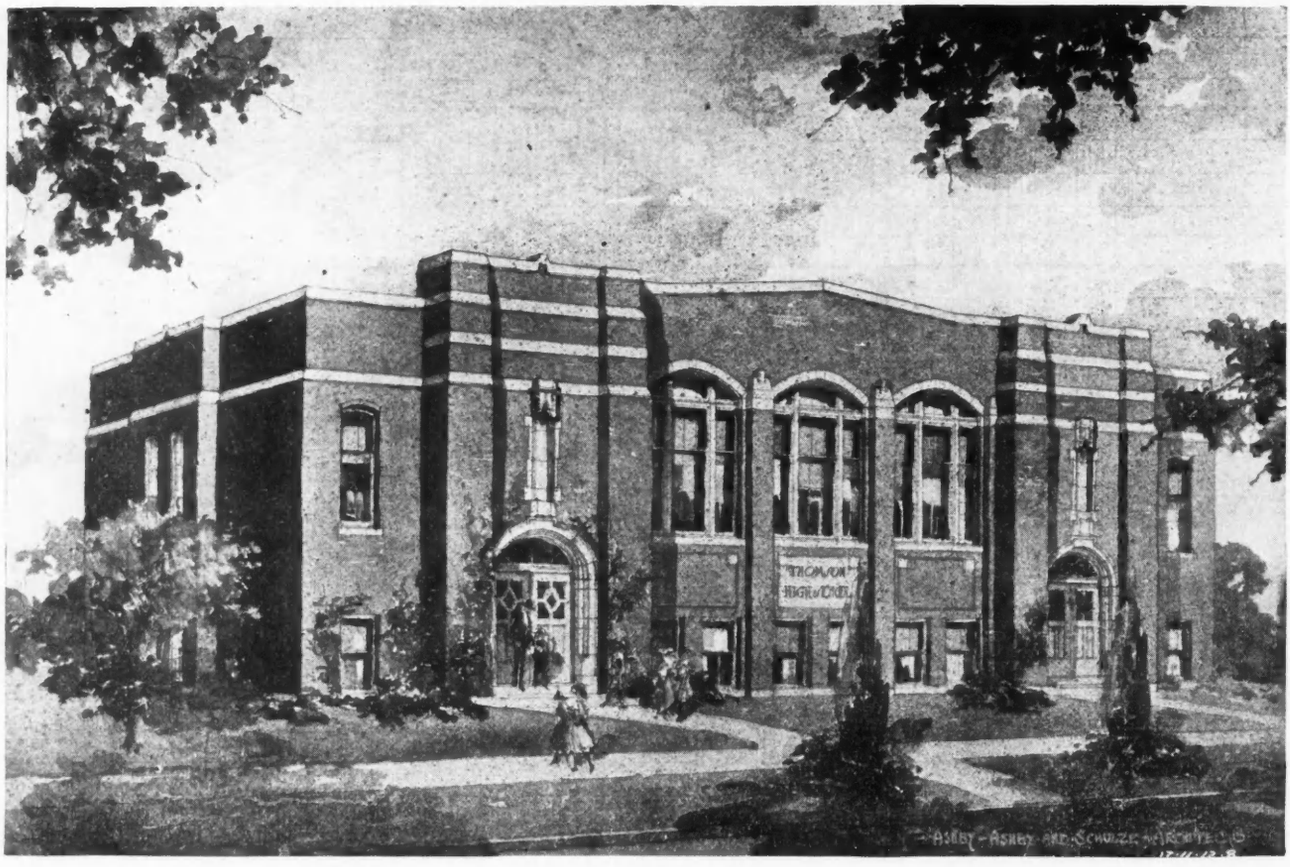
I continued to experiment and found that the classifications could be so laid out that by adding the current day's business to that of its predecessors, the conditions of the business could be told at any time. This would lead to investigations which would correct dangerous tendencies before it was too late. Also to get the fullest cash value from experience, I wanted to get the cost and incidentally the percentages on each job.

One day after I had spent considerable time in designing the system and found that in anything of a complex business, accounts could not be classified and analyzed at the same time, I saw in a stationer's window the form illustrated in Fig. 2. As this was something of an improvement on the form I had designed, I at once adapted it and built the rest of the system around it.

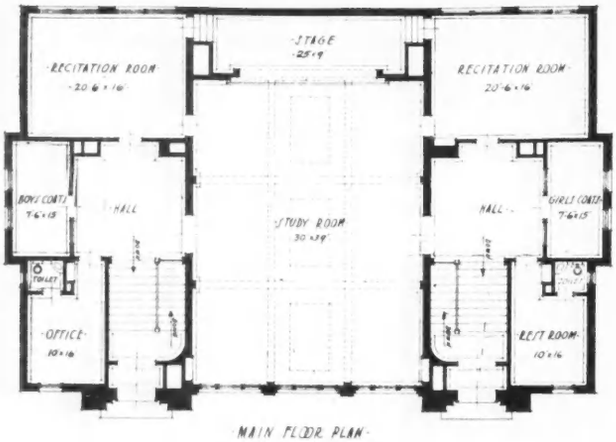
In using this form, the full description of the item is placed in a column headed "items," with the date in the date column, and I aim to make the description complete.

When I buy anything and don't pay for it at the time, the amount is credited in the accounts payable column, a corresponding debit appearing in another column. When I sell anything and it is not paid for at that time, a debit is made in the accounts receivable column and a corresponding credit in another column.

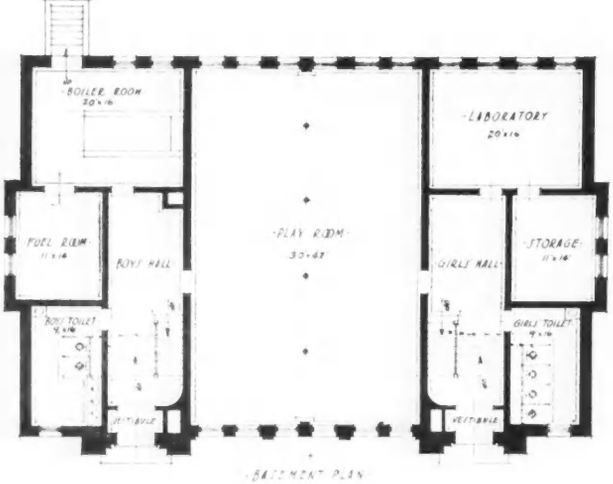
When I pay some one that I owe, a debit is made



Perspective View and Floor Plans of Very Well Designed High School as Planned by the Well-Known Chicago Architect, G. W. Ashby.



MAIN FLOOR PLAN



BASEMENT PLAN

in the payable column, and a credit in the cash or bank column, as the case may be. In the latter case the number of the check is written in the "no" division of the bank column, producing thereby a connection between the check book and journal which has been wanting in other systems. By adding up the accounts payable and subtracting the one from the other, I can at any time find how much I owe without bothering with any of the other accounts.

When some one pays me an open account, the credit is made in the accounts receivable columns and the debit is made in the cash columns. At first we frequently put the amount directly in the bank column, if it was a check and immediately deposited, but we soon stopped this, for there was no way to tell at any time what our collections were, up to that time.

When I sell goods on open account or amounts are transferred from the work accounts as explained below, debits are made in debit column of the accounts receivable columns, so by footing these columns and subtracting one from the other, I can at once see how much money I have standing out.

As to the merchandise column at the right of cash, these were at first used for merchandise, but when the character of the business changed so that there was no stock maintained, the columns were used for mortgages and notes. In either case the difference of the footings tells me at once the value of the stock on hand or the value of the securities held.

(Continued to page 136.)

The Romance of Varnish

By H. W. Wack

WILLIAM H. DUNBAR, a laboratory expert, has a wood panel that has been varnished with 128 coats. It has hung in his office thirty-odd years. This panel is of exceptional interest, in that the condition of its surface not only demonstrates the matchless durability of good varnish, but because it also indicates how a thin and almost unseen filament of properly-balanced oil and gum can preserve and beautify the hundreds of thousands of articles which varnish usually covers. Finally, the most amazing of all is the fact that the 128 coats of varnish created a thickness of a little less than one-eighth of an inch! To the layman this may seem incredible; to the expert painter it is at least a revelation, for few finishers of the present generation have kept such a faithful record of any panel.

The archives of this laboratory contain many rare specimens—not only of gums in which ancient lizards and beetles are encased in a perfect state of color and preservation, but of the unique results of varnish experiments. Where the varnish tests are exceedingly elaborate, discoveries are sometimes made which, while technically of little value, are intensely interesting otherwise.

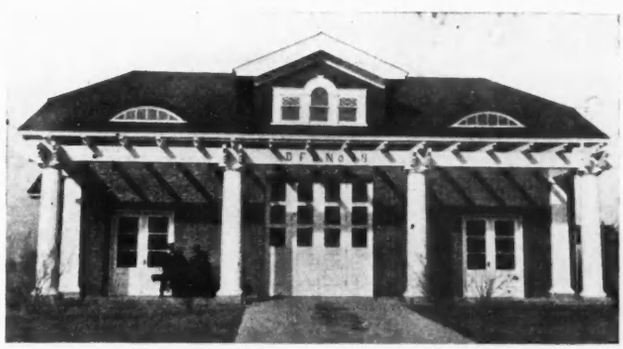
The origin and history of varnish is romantic. Few of the millions of people who unconsciously look upon it every hour of the day know anything about it. To the layman it is a mystery; to the expert finisher it is that which represents his skillful work to the eyes of the public. As a distinguished preacher once said, "It is the blessing an artist finally bestows upon his handiwork."

Varnish is made from resin gums, vegetable oils and turpentine. Gum Copal, the base of good varnish, as the term is used commercially, includes Kauri gum, Manila and Congo Copal gum and other similar gums. These are all partially fossillized pine resin which has been buried in the ground many centuries. It is found in widely scattered localities, but principally in Africa, New Zealand and the South Sea Islands. It lies in small deposits from five to twenty feet beneath the surface and frequently in the mud under shallow water. It is mined by natives equipped with long sticks.

Linseed oil and China wood oil are principally used in the manufacture of varnish, the former being made from the flax plant grown in North America, the latter from a Chinese nut. Turpentine, the final ingredient of good varnish, is the distillate of the sap of the long-leaf pine which abounds in our Southern states. The residuum of this distillation is resin, which, because of its cheapness, is used in low-grade varnishes as a substitute for Gum Copal. Such varnish lacks the qualities of tenacity and elasticity.

The manufacture of fine varnish requires experience and a high degree of skill. The gum is evenly melted in large kettles.

(*Continued to page 124.*)



Bungalow as Fire Station

A well-built bungalow makes one of the snuggest and handiest fire stations imaginable. This has been shown in Denver. Members of Company 15 declare that they wouldn't trade their neat quarters for any others in the city. The building is homelike in the fullest sense of the word. It is built on park land at Twenty-second Ave. and Colorado Blvd. On one side of the building are the captain's office, two rest rooms for the firemen, and a kitchen. On the other side is a dormitory. There is a full basement where stores are kept.—GEORGE F. PAUL.

Fixing up the Farm

Farm Water Supply

THE FIRST OF A SERIES OF ARTICLES

By C. M. Emerson

Of the Department of Agricultural Engineering, The Ohio State University.

WE have two sources of water supply, namely, surface water and underground water. Both are fed by rain; even that which is found in deep wells has its origin in rain falling on the surface of the ground, into which it soaks, feeding springs and underground streams.

Surface water is very seldom fit for human use, as it is nearly always contaminated by the washing into it of impurities. If it runs over gravelly shallows so as to be broken up and exposed to the air, it will be purified, providing it is exposed long enough. Still, it may be, and often is, contaminated while so flowing. It is all right for watering stock, but not for human use. Even swimming in impure water often causes typhoid and other enteric diseases.

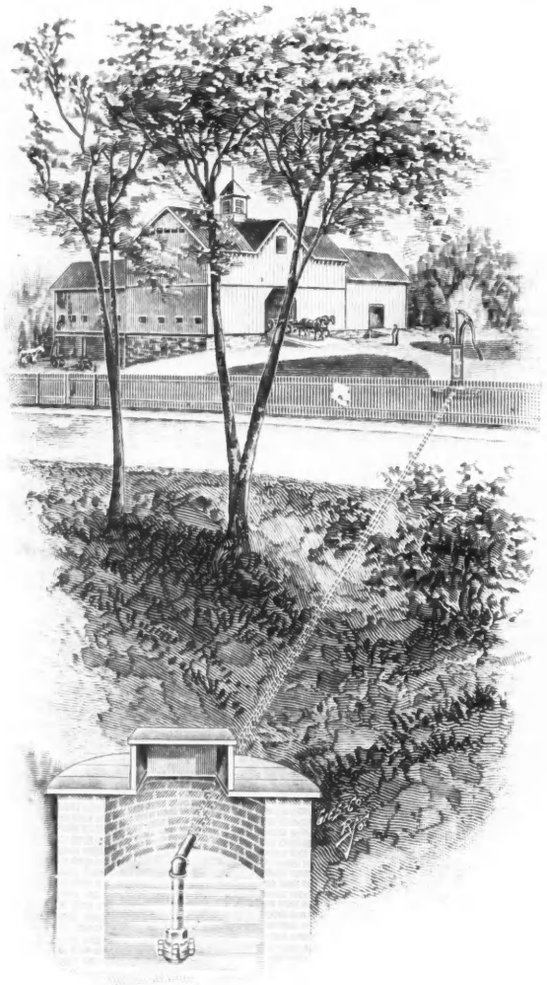


Fig. 1.

Next we have the underground water. This is reached by springs, wells, etc. Springs have from time immemorial been considered a satisfactory and safe source of water. But they are often unsafe to use. In the early days of this country, when settlers were few and far between, springs were safe and satisfactory. But they are seldom so now. Where water can be taken direct from the spring, just where it issues from the ground, it is pretty generally pure, but if allowed to stand exposed to flying dust, wash from surface ground, etc., it is pretty sure to be contaminated. By properly covering so as to protect it from surface wash and dust it makes a very satisfactory source of supply.

Fig. 1 shows one very good way to so cover and protect a spring. Concrete can be used to better advantage than the brick shown in the cut, and a concrete slab should be built over the top, sloping away from the center all around. This is to prevent waste from falling thru between cracks when planks are used. Sewer tile of proper size may be used to great advantage, and makes a splendid lining for any water system, well or spring. It should be so placed as to extend above the ground enough for a sloping concrete cover to be built over it. Fig. 2 shows a very good way to use tile. Several other methods can readily be devised by anyone interested. The thing to guard against in all cases is contamination from surface wash or other ways of contamination from above the ground.

It is, of course, more than possible that spring water may be contaminated under ground by flowing close to the surface and so being made impure. If such is the case it is usually possible to determine it by the fact that the water comes out roily. When it is roily,

especially after rain, care should be used to make sure there are no open privy vaults or cesspools near the source, and the distance these should be from the spring depends on the lay of the ground and character of the soil and water bearing strata.

Wells

Wells are by far the most common source of farm water supplies. Those commonly found are either dug, driven or drilled.

Dug wells were formerly the only kind used, and so are the most common in older settled parts of the country. We will consider them first. They were generally put down by the farmer himself, as but little skill is necessary. Dug wells are not practical where it is necessary to go deeper than say 60 feet, altho wells are in use which are much deeper. They are mostly in use where the water comes to within 40 feet of the surface of the ground.

Wells are dug in many different sizes, and either round or square—round mostly. In any case the dug well should be made safe from pollution by things falling into it. It should be so protected that worms, frogs, toads, snakes, rats and other vermin cannot get into it. For this reason it should be laid in stone, concrete or brick. By all means the top should be covered with a concrete slab properly reinforced with metal of some kind. This slab should be higher in the center and never be used as a washroom.

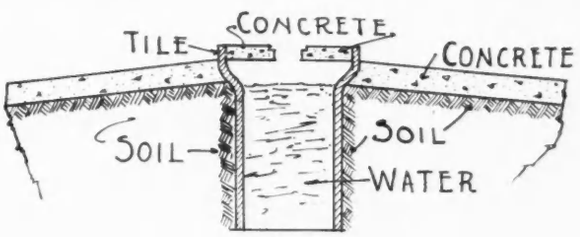


Fig. 2.

Wells are liable to pollution from surface wash and from seepage, as well as from underground drainage. They should be placed at sufficient distance from cesspools, privies, barnyards and such like places as to insure freedom from contamination. This distance must be according to the nature of the soil. It is well to remember that drain tile are laid to drain water from the soil, and that where it is laid four feet deep it will drain the soil as far away as one hundred feet on each side. This being true, then it is apparent that a deep well will drain much farther. So if the soil is gravelly or of open nature the well should not be placed nearer than two hundred feet from places of contamination.

Drilled wells are the ones mostly in use. They are as a rule what are known as "four-inch wells," being cased to that size, but there are many smaller as well as larger, even up to eight inches, and the writer has seen many ten inches in diameter. In many cases it is dug down to the rock and then drilled the rest of the depth. In such cases no casing is used as a rule. Casing is not ordinarily put in the rock, as they are sufficiently protected by the rock walls. The writer's father had one, however, which was drilled thru the rock with a six-inch drill, then reamed to eight inches down four feet. Six-inch casing was then put down thru the rock and the space around filled with cement. Drilled wells are seldom contaminated by surface wash, as the casing thoroly protects them. Drilled wells are pretty sure to have good, pure water.

Where the soil is free from stones to a depth sufficient to reach water, the driven well is a very satisfactory source of water supply. Ledges of rock or large loose stones will prevent the pipe from being driven and so prevent it from being a success. Should the water be not over twenty feet from the surface of the ground a two-inch pipe is large enough for most places. Should the water not be reached within the twenty feet, then a three-inch pipe should be driven. This is because a pump cylinder must be lowered in the well to a point under the water where it will never get below the twenty feet.

Water from driven wells is very seldom polluted, as the pipe prevents contaminated water from getting into the supply. It might be possible, however, for the water to be at so high a level as to be polluted before getting into the pipe below the surface. However, the writer never saw bad water from a driven well and he has seen many hundreds in the West. So driven wells are not only the cheapest but about the safest well which can be used.

Cistern water is another source of supply, and furnishes about as pure and palatable water as we have. It should be properly stored in a well constructed cistern, filtered thru either a brick wall or preferably thru gravel and charcoal, thoroly well protected from possible contamination and dirt by leaves, birds' nests, dead birds and such matters.

We all know that water will *not* run up hill, and we all know it *will* run *down* hill. If we have water on a hill higher than the house it is easy to get it into the house. But there are not many places where we have this convenience. So if we wish to get water into the house we must force it to go there. We must take it from the well, spring or other source of supply, make it run up hill high enough to get to all the places we want it to go. In other words, if it is not already on a hill we must place it there.

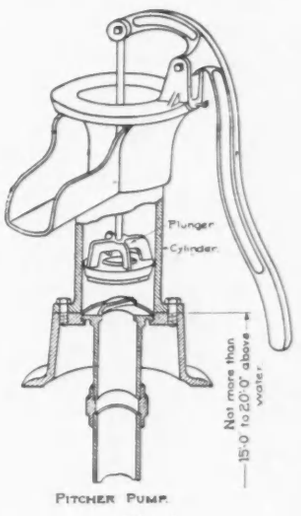


Fig. 3.

Now there are several ways of doing this. We can pump it into a tank set higher than where we want it to go. We can

pump it direct into the pipes, which will conduct it there. We can force it into a tank and compress the air which is already in the tank, until we get a pressure high enough to raise the water to the desired height.

Elevated Tank

The appearance of the elevated tank is too familiar to need an illustration. No one likes to look at an elevated tank; it is not an object of beauty, does not add to the scenery anything attractive. It is exposed to all changes of weather, freezing in winter and warm in summer; must be protected from both, which is almost impossible.

On the other hand, it generally has large capacity, and is easily looked after should it spring a leak. The pipes to and from it can be easily repaired should they give trouble. It takes the same power to raise water to a tank on a tower as it does to force it into a closed tank, on the ground or under it, against the pressure necessary to raise the water as high as the tank is placed.

There are locations where the barn is on higher ground than the house. Where this is so, and the barn is enough higher than the house, a tank can be placed on a tower between them, the top of tank being just below the level of the barn roof eaves, and its bottom as high as the roof of the house. This will allow the water from the barn roof to fill the tank from which it will flow to the house. This is an economical and satisfactory system where rain water is not objectionable. Those interested can easily plan different ways of using an elevated tank.

Having decided on which system we are to use, we must now decide on how to get the water where we want it.

There are two methods of raising water by power methods, by the hydraulic ram and the gas engine pump.

The Hydraulic Ram

In many sections of the country springs are to be found near farm buildings and on a considerably lower level. In such cases the hydraulic ram is satisfactory and very economical method of forcing the water to the buildings. There are some conditions necessary for the operation of the ram. First, the amount of water must be much in excess of the needs. We must remember that only about 10 per cent of the supply can be saved for use. The ram is a kind of pump which gets its power from a large part of water flowing from a spring, a stream or flowing well. Approximately 90 per cent of the flow is required to raise the other 10 per cent, and deliver it a distance from the source. It is not necessary to go into details of the construction at this time, as we are not so much interested in the machines as in their use. A catalog can be gotten from any maker by asking for it.

There are some necessary conditions required for the successful operation of the ram. The ram must be placed some distance from the source of supply and downstream from it. It is usually placed in a pit; this, however, must have drainage to take care of the waste.

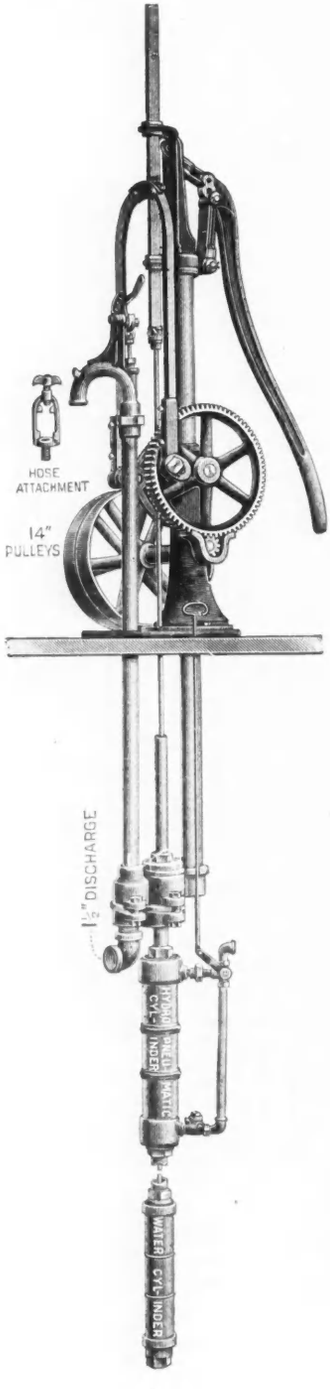


Fig. 4.

A pipe is laid from the source to the ram, and should be on an even grade, without elbows or bends, to the ram. The length of this supply pipe should be about the same as the height it is to be lifted. That is, if it is to be lifted, say, 50 feet above the ram, the supply pipe must be at least 50 feet long. The fall from the spring to the ram should be not less than 4 feet. To illustrate the capacity we will mention one size and its capacity: A ram having a drive pipe of ¾ inch and a discharge pipe of ½ inch will deliver 10 to 15 gallons per hour to a height of 20 feet with a fall of 4 feet from source to ram and a drive pipe 30 feet long.

There is hardly a limit to the life of a ram. The writer remembers one in New Jersey which he saw in operation when he was a boy at school during the Civil War, say in 1864.

We must remember that while they deliver but a small part of the water flowing to them, still, as they operate every hour of the day, every day of the week and every week of the year, they will deliver an enormous amount in a year. In the above example, for instance, suppose it delivered 12 gallons an hour; that would be 280 gallons a day of 24 hours. This is sufficient for a family of three very easily, and allows of a bathroom and inside toilet, laundry, etc. This, tho, is provided some of it is stored.

The ram may be used for storing water in an elevated tank or in a pneumatic tank under pressure. We should remember, however, that if we use the latter we must figure that the pressure in the tank will equal about 2 feet of elevation for each pound pressure, and this must be figured with the elevation.

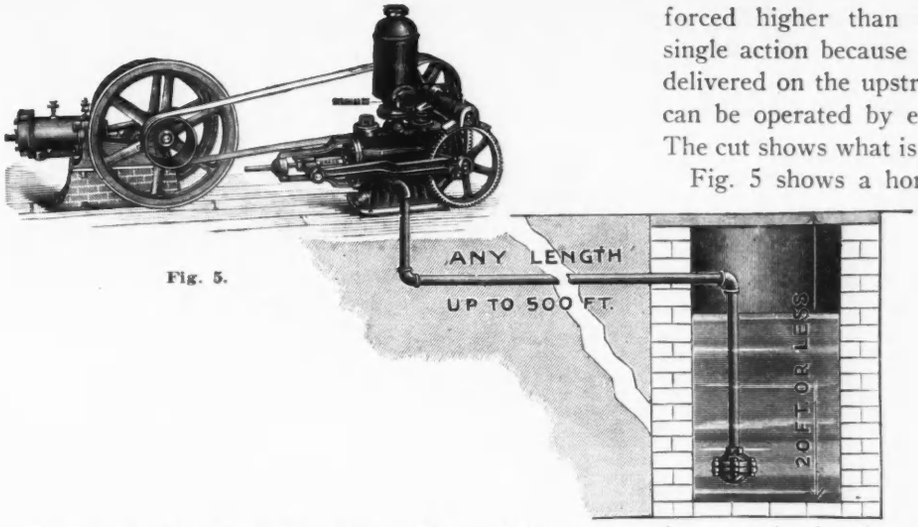


Fig. 5.

So we see that if we have favorable conditions, the hydraulic ram is a cheap and very satisfactory method of getting water to where we wish to use it.

Pumps

We are living at the bottom of a great sea of air which is many miles in depth. Just as a column of water supported in a vertical pipe exerts a pressure at the bottom of the pipe, so does this sea of air exert a pressure on all objects or all surfaces at its bottom.

Atmospheric pressure is 14.7 pounds per square inch at sea level. This pressure decreases as elevation increases, at an approximate rate of ½ pound for each 1,000 feet, until at an elevation of 45 miles the air is so rare as to have no appreciable weight.

We constantly hear this expression, "My pump won't suck the water." The fact is a pump never does "suck water." What is does do is as follows: The piston, or plunger, of the pump working in the cylinder when drawn upward exhausts the air from the cylinder and the pressure of the atmosphere upon the water in the well forces the water up thru the pipe and fills the cylinder. Theoretically, pump cylinders could be placed 34 feet above the level of low water, but owing to valve leakage, worn leathers, etc., the maximum working distance is 25 feet; 20 feet is a safer and the average working distance, but every joint must be perfectly tight and pump leathers kept in perfect condition.

The sweep was probably the first mechanical machine for lifting water. Then came the windlass; then some simple type of pump.

There are a great many different types of pumps, each adapted to some particular purpose. The limited size of this article forbids a description of them; we can give only general descriptions.

Fig. 3 illustrates a common pitcher or cistern pump, with which we are all familiar, and illustrates "a pump" very well.

A *single action lift pump* is shown in Fig. 4, so called because the top of the standard thru which the plunger rod works is open so that water cannot be forced higher than the water spout. It is called single action because the greater part of the water is delivered on the upstroke of the plunger. This pump can be operated by either hand, windmill or engine. The cut shows what is commonly called a "pump jack."

Fig. 5 shows a horizontal power pump, driven by a gasoline engine, and is taking water from a cistern or shallow well. While it is not safe to try to lift the water over 20 feet, it can be drawn quite a long distance horizontally.

A *single action force pump* differs from the lift pump in that the standard is enlarged into an air chamber and the plunger rod works thru a stuffing box in the top of this chamber. With reasonable fast pumping a steady stream is maintained and, since the top of the standard is closed, the water may be delivered against considerable pressure, giving use to the term "force pump."

Double acting pump. This pump has two cylinders. One lifts water from the well on the upstroke of the handle, the other on the downstroke. It is not much used in ordinary pumping except when the pump is operated by some kind of power, windmill or engine.

The above types of pump are the so-called "suction" type, where water does not need to be lifted over, say, twenty feet.

When the source of water supply is more than

(*Continued to page 126.*)

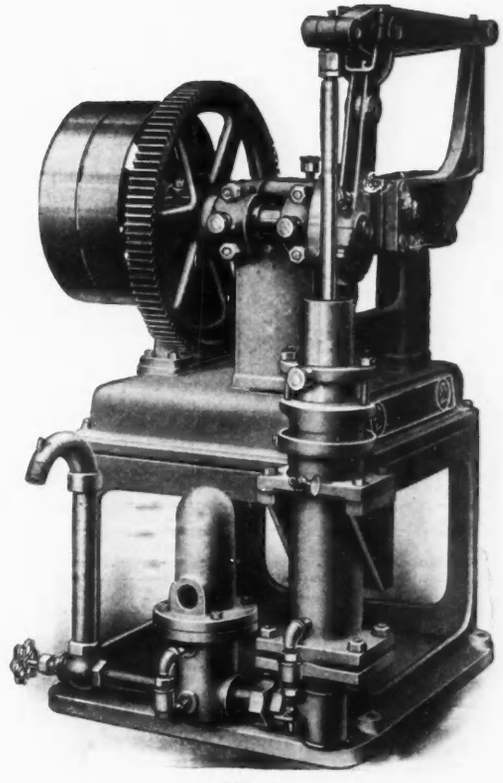
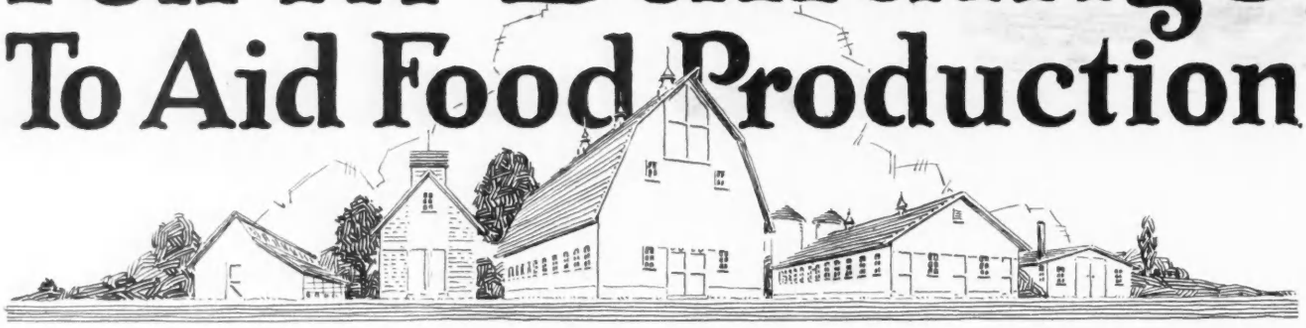


Fig. 6.

Farm Buildings To Aid Food Production

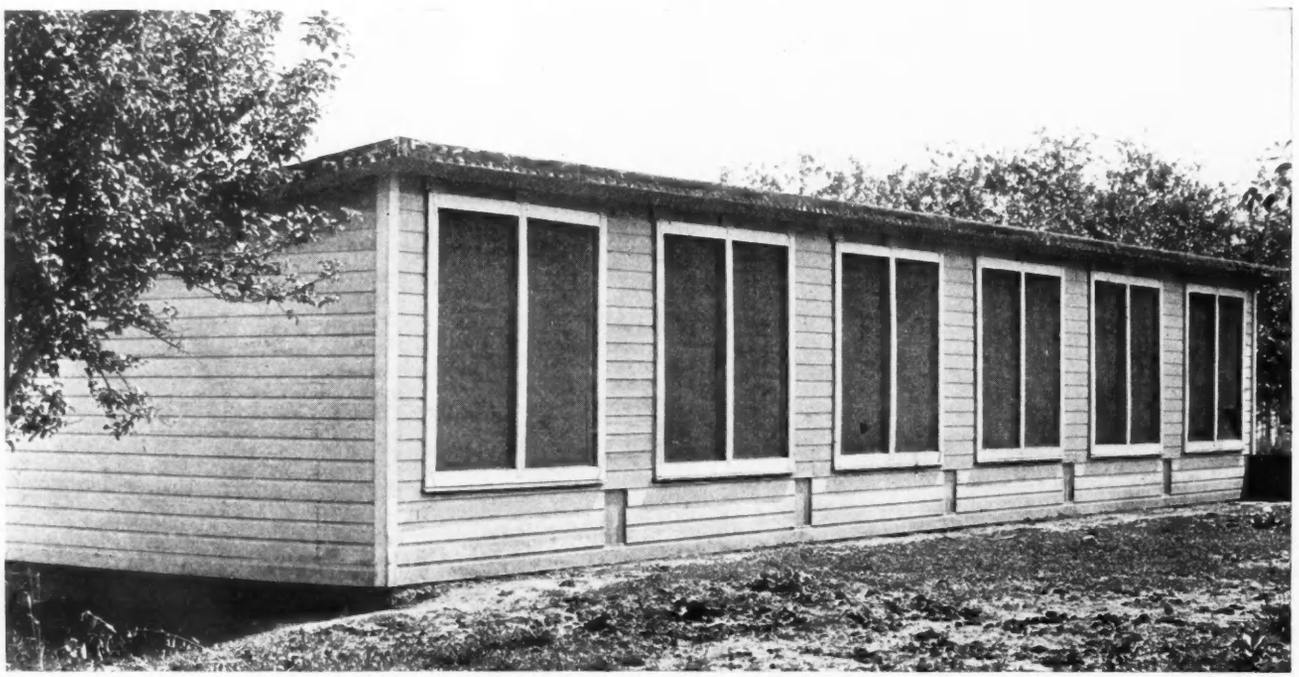


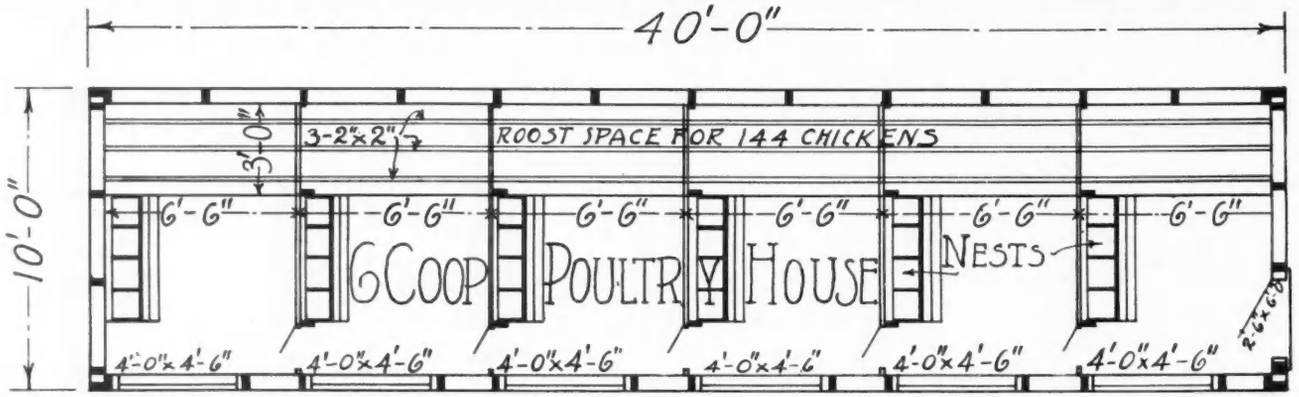
A Six-Coop Poultry House

COMPLETE working plans for the very practical type poultry house illustrated are presented on the page opposite. A concrete foundation extends all around the building and serves the double purpose of supporting the superstructure and keeping out rats, weasels, and other poultry hunting animals. Inside, a well packed earth floor is satisfactory.

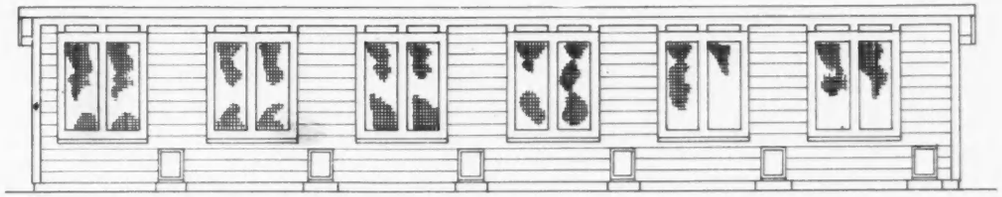
This is an open front house, muslin screens forming practically all of the south side. The space inside is divided by means of wire netting into six coops, each measuring 6 feet 6 inches by 10 feet, and intended for twenty-four chickens.

There is considerable advantage in keeping the several flocks separated; and in this way it is easily managed. Outside runways can be put up so that each flock has its own pen. Build these of poultry wire supported on light posts.

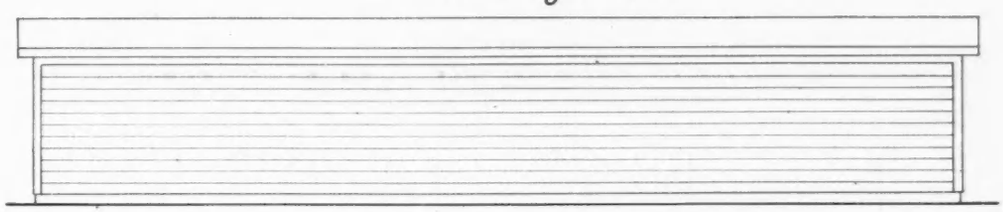




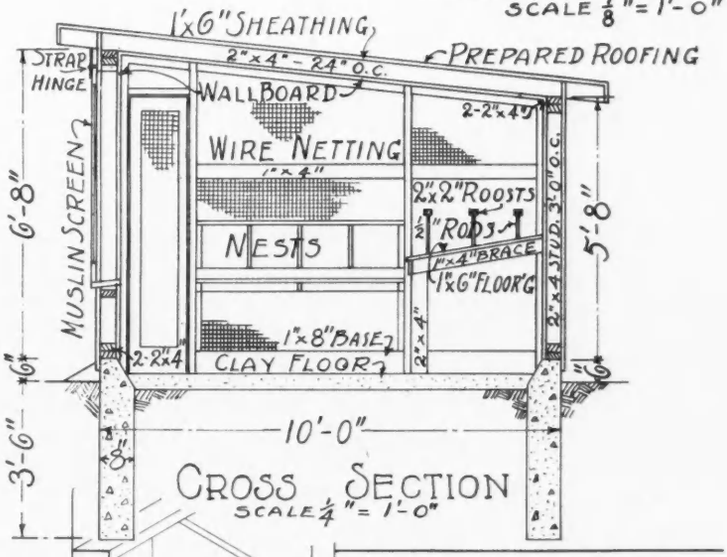
Photograph and Floor Plan of a Six-Coop Poultry House—Size 10 by 40 Feet—Located on Farm of Eichenberg Bros., Russiaville, Ind. For Working Plans of This Poultry House, See Opposite Page.



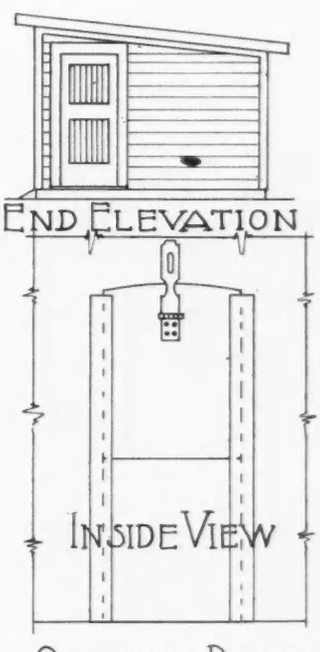
FRONT ELEVATION
SCALE $\frac{1}{8}$" = 1'-0"



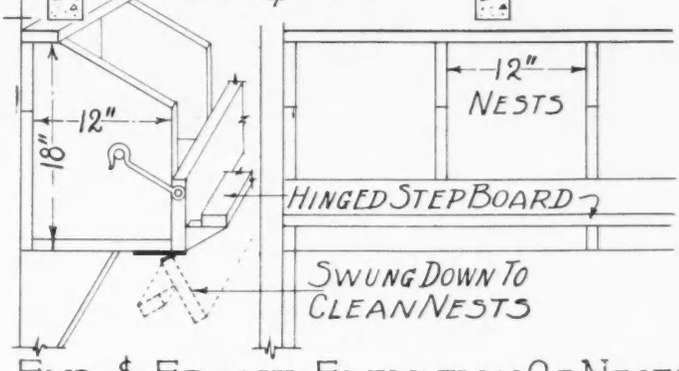
REAR ELEVATION
SCALE $\frac{1}{8}$" = 1'-0"



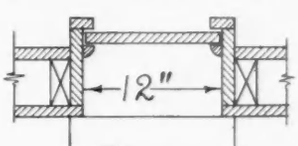
CROSS SECTION
SCALE $\frac{1}{4}$" = 1'-0"



CHICKEN DOOR



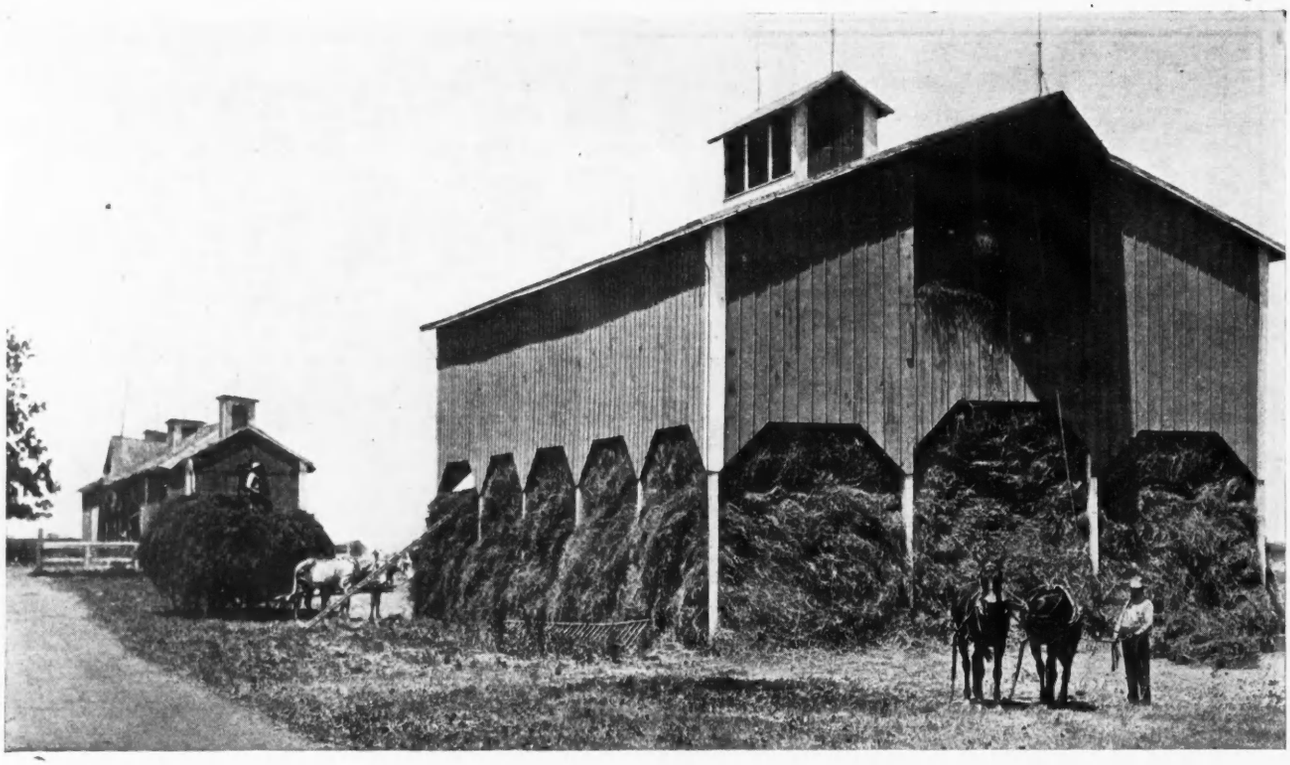
END & FRONT ELEVATION OF NESTS
SCALE $\frac{3}{4}$" = 1'-0"



PLAN

PLANS OF A 40 FT. POULTRY HOUSE

Working Plans Drawn to Scale of Six-Coop Poultry House Illustrated on the Opposite Page.



Inexpensive Hay Shed Equipped with Hay Carrier. A Strong, Simple Method of Framing This Shed Is Illustrated Below.

Some Barn Suggestions

By John Upton

WHEN you build that new barn there are certain things that you will want and in order that you may get them it is well that you consider what they are. We are supposing that this is to be a cow barn or at least that there is to be a stable connected with it.

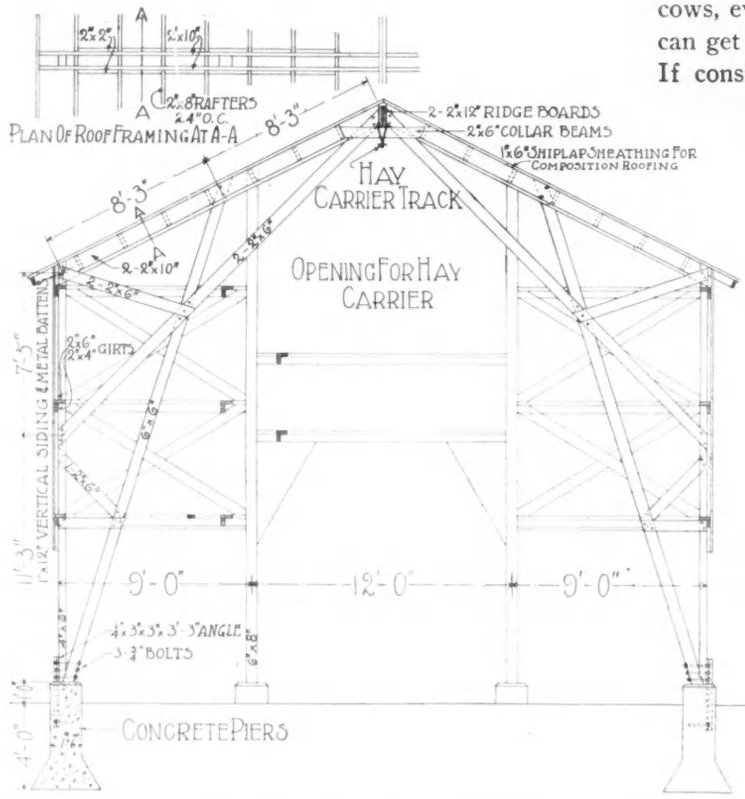
You will probably use concrete for the floor and perhaps for the foundation, and also for the drive floor, if there is one.

With a good wall the sills can be of plank—in fact, the entire frame may be made of plank at a considerable saving. You will want a hay loft over the cows, even tho you only use it for straw, because you can get the room here at less expense than elsewhere. If considerable storage room is desired there should be a gambrel roof. This will give you more room for the same height of posts.

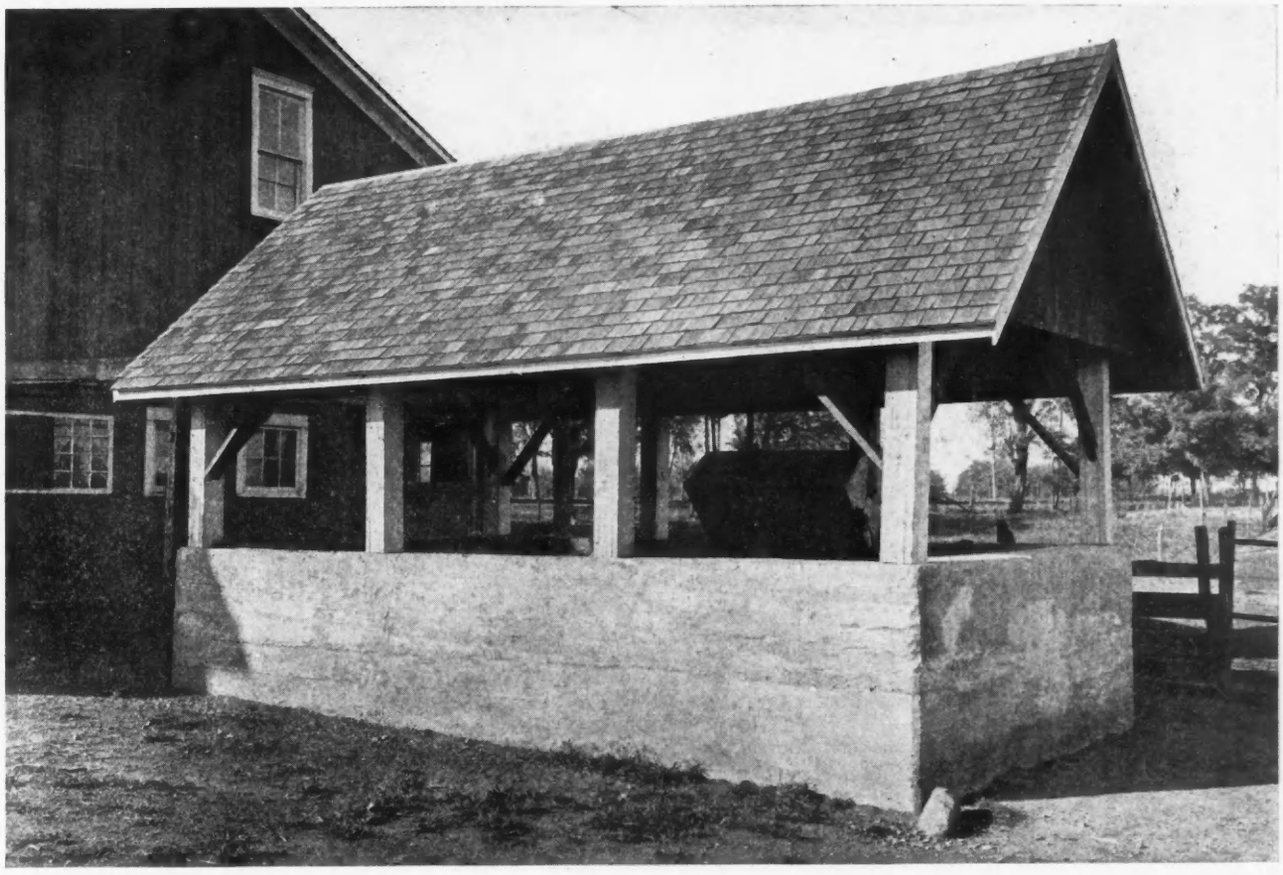
A barn for two rows of cows should not be less than 30 feet wide; and anywhere up to 36 feet is better.

If you cannot readily get sawed timbers as you want for the beams, you can build them up from plank, spiked and bolted together with the joints broken.

In the modern plank frame cow barn the joists are of 2 by 8's, run crosswise, and rest on built-up timbers or girders which are sup-



Cross Section Showing Frame Construction and Ground Floor Plan—Size 30 by 60 Feet—of Hay Shed Illustrated Above.



Covered Manure Pit of Concrete Construction. A Very Practical Improvement for Any Farm. It Keeps the Barnyard Free from Litter and Prevents the Valuable Fertilizer Content from Being Leached Away by the Rains.

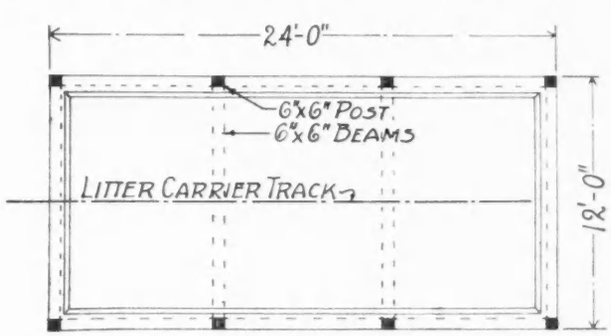
ported by iron columns in the row of stanchions, entirely out of the way.

It will pay you to get a good grade of siding. You will get a better barn. It can be made to look better and can be kept looking better, for of course you will want to paint it.

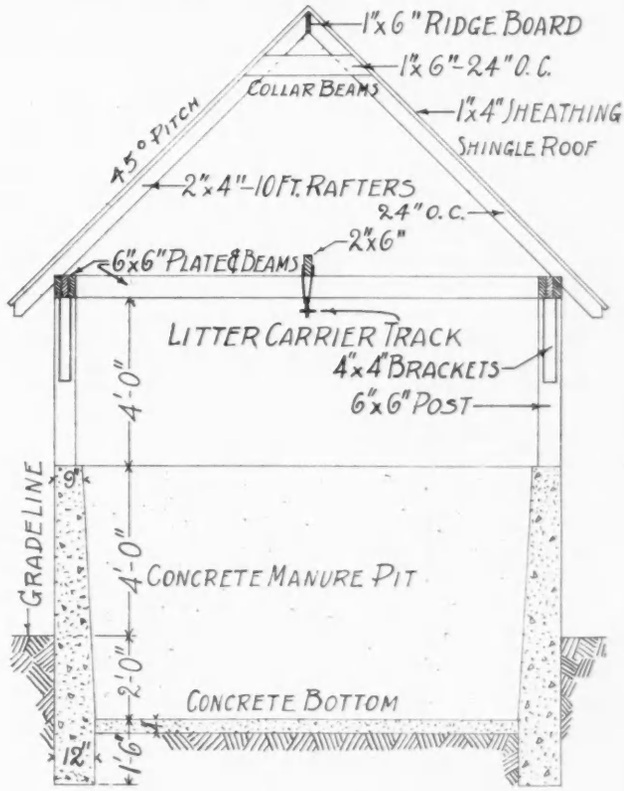
Have plenty of windows. The rule is 4 square feet for each cow or horse. Windows on end will admit more light than when on the side.

When there are two rows of cows it is an advantage to have them face in toward the center of the barn; but there are good reasons also for having them face out. The barn can be cleaned out and kept clean easier with the latter arrangement.

Now that silo: You may not be ready to build, but you can at least plan so that when you do build you will not make extra work getting ready. Also make some provisions for running water in the barn. In short, plan for the future and make every step count toward the final result.

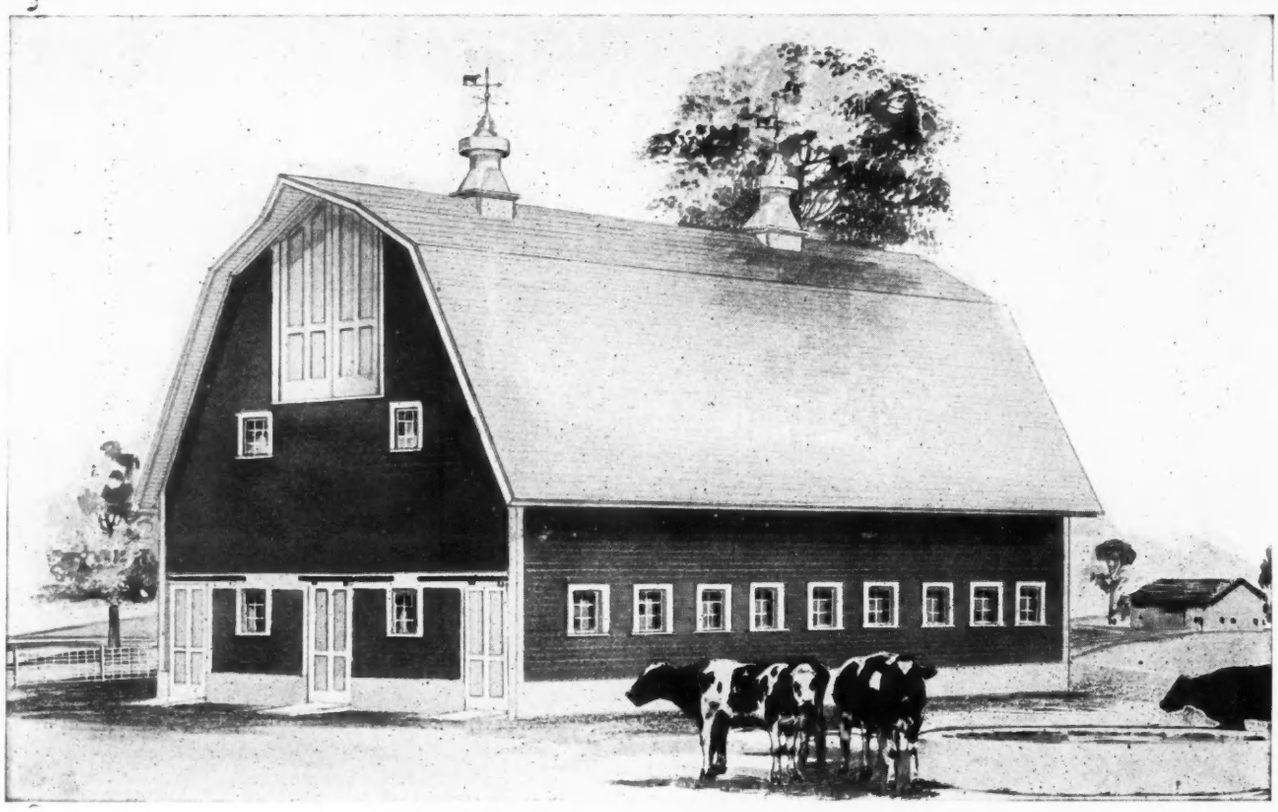


PLAN OF MANURE PIT

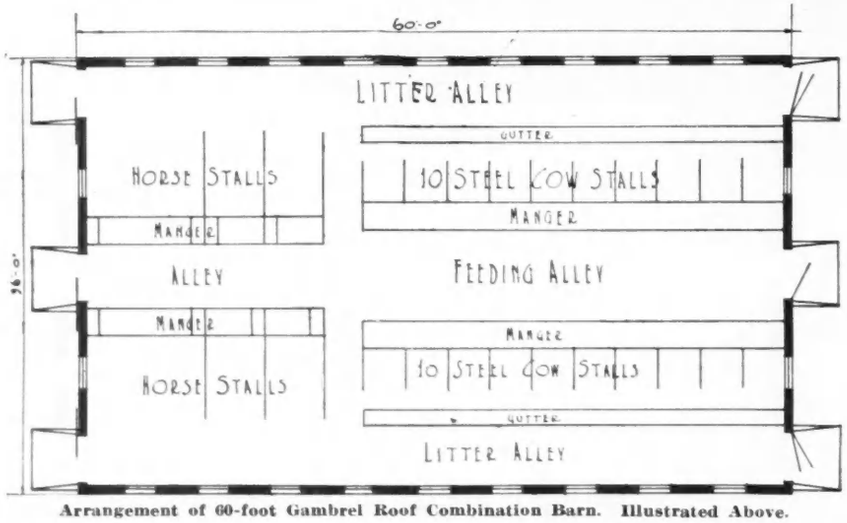


CROSS SECTION OF MANURE PIT

Floor Plan and Cross Section of Covered Manure Pit Illustrated Above.



Sixty-foot Gambrel Roof Combination Barn. Size 36 by 60 feet.



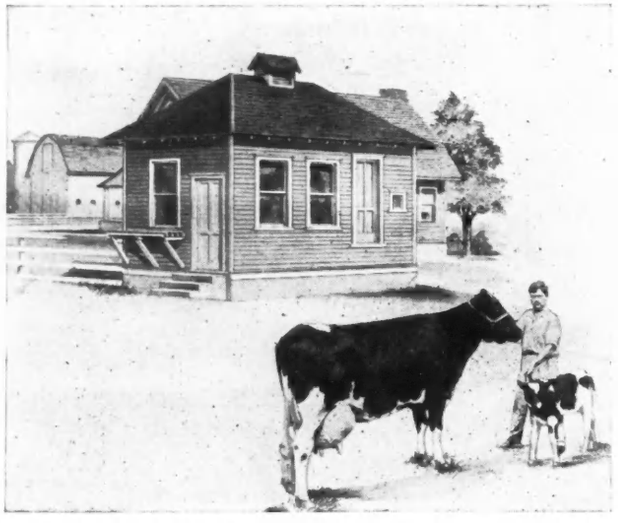
Arrangement of 60-foot Gambrel Roof Combination Barn. Illustrated Above.

Farm Barn and Creamery

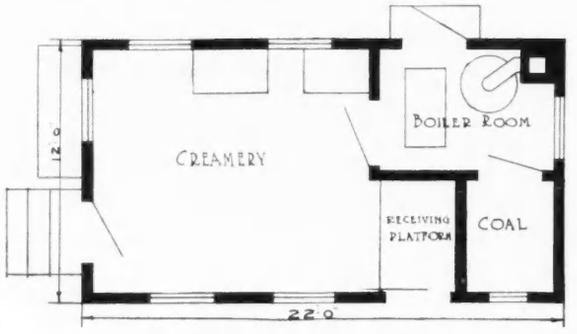
Here is another commodious combination barn shown in the accompanying design. It provides accommodations for twenty dairy cows and eight horses. The central feeding alley is a feature that will be appreciated by many.

This barn is well lighted and well ventilated. The size is sufficient to meet the needs of the average farm. The plans for this structure call for Radford's Standard Plank Frame Construction, so that all the material needed for framing may be supplied from materials ordinarily carried in stock.

We wish to say that an investment in a building of this character should be regarded in the light of a permanent improvement from which a saving will be effected, and not as an item of unnecessary expense.

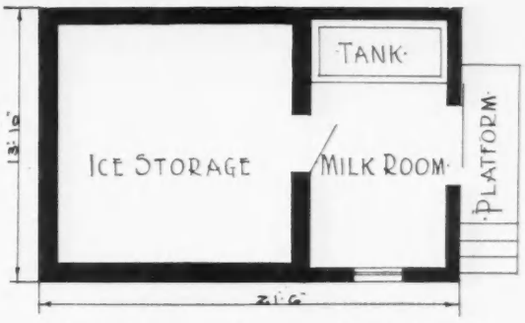


The Farm Creamery. Size 12 by 22 feet.



Arrangement of Farm Creamery.

Combination Ice Storage and Milk House. Size 13 feet 10 inches by 21 feet 6 inches.

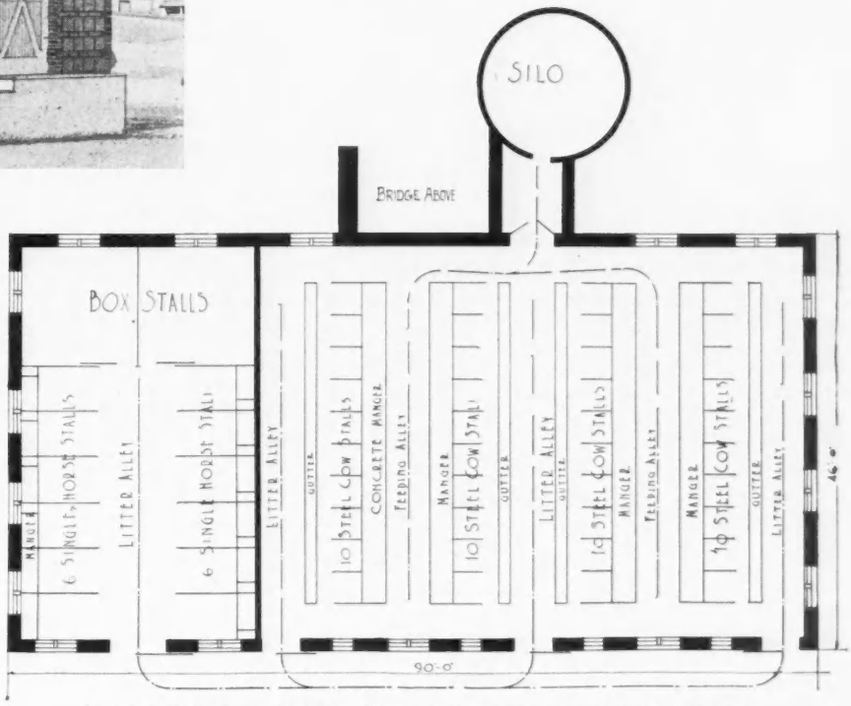


Floor Plan of Ice Storage and Milk House.

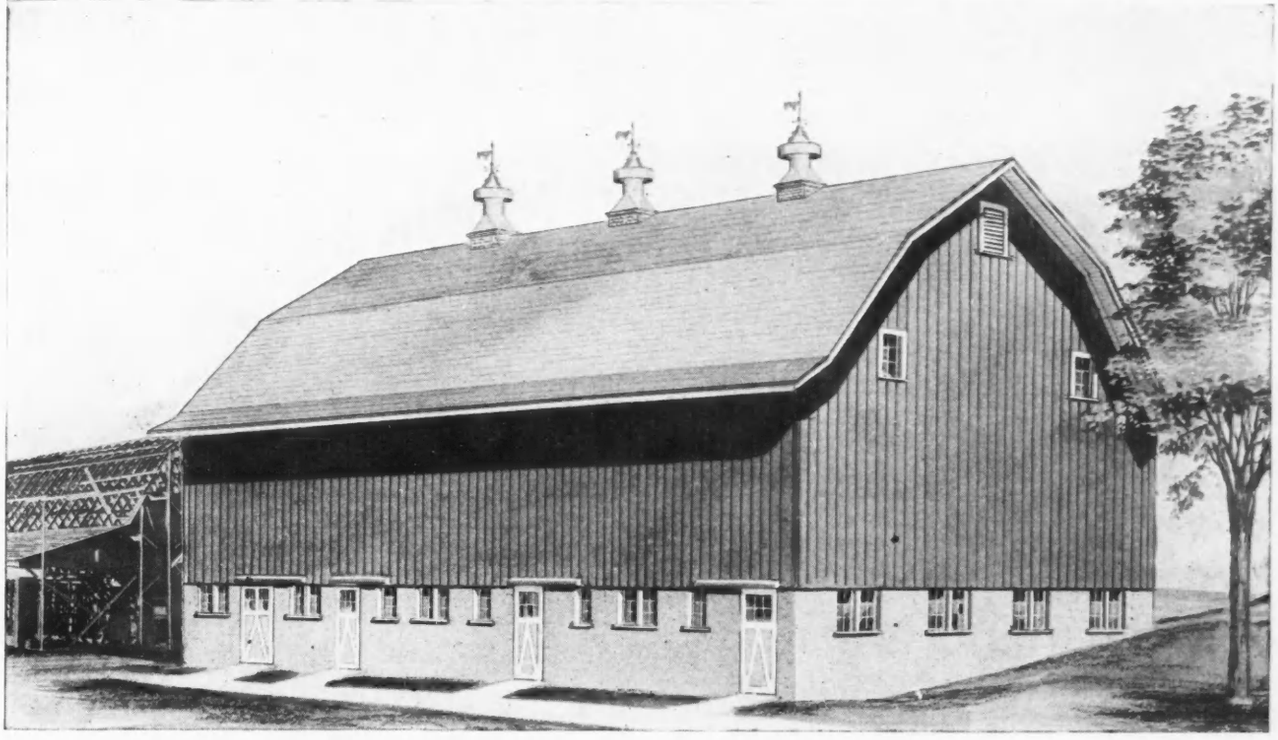
Two Barns in One

In the design below we have two barns under one roof. The horse compartment is solidly partitioned from the dairy barn. Facilities are provided for handling the feed to and the litter from the stalls.

It now is almost universally conceded that market milk, or any other milk for that matter, should be cooled as soon as possible after it is produced. A combination ice house and cooling room, as illustrated above, provides facilities for handling the work to advantage.



Arrangement of Combination Barn for Fourteen Horses and Forty Cows.



Combination Horse and Dairy Barn. Size 46 by 90 feet.

Blue Prints of Practical Cattle Feeding Plant

COMPLETE SET OF WORKING PLANS PRESENTED IN THE BLUE PRINT SECTION IMMEDIATELY FOLLOWING.

"A GOOD stable saves a feeding a day." This old saying, which has for years passed current among farmers and has never been contradicted, has taken on this year a new importance.

Feed is priced unbelievably high, so if a good stable will actually save a feeding a day, the farmer will very soon find that his stable is paid for and hasn't cost him a cent.

But more than that—a good stable keeps the steers gaining right thru the bad weather. They are ready for the market sooner, and so the stable is contributing directly to Uncle Sam's war campaign to increase the nation's food supply.

And finally there is the saving of labor in feeding. Farm help is scarce. A cattle feeding plant that is arranged conveniently so that the stock can be fed with a minimum of time and effort will benefit the farmer every day of the stabling season.

These are the timely and practical considerations that give special point to the accompanying photograph and set of blueprinted working plans. Here we have a two-story cattle feeding shed 144 feet long by 30 feet wide. The lower part is open and is adjoined by fenced runyards, so that the steers can move freely about, enjoying the sunshine and open air on clear days and seeking shelter within the shed when stormy or extra cold.

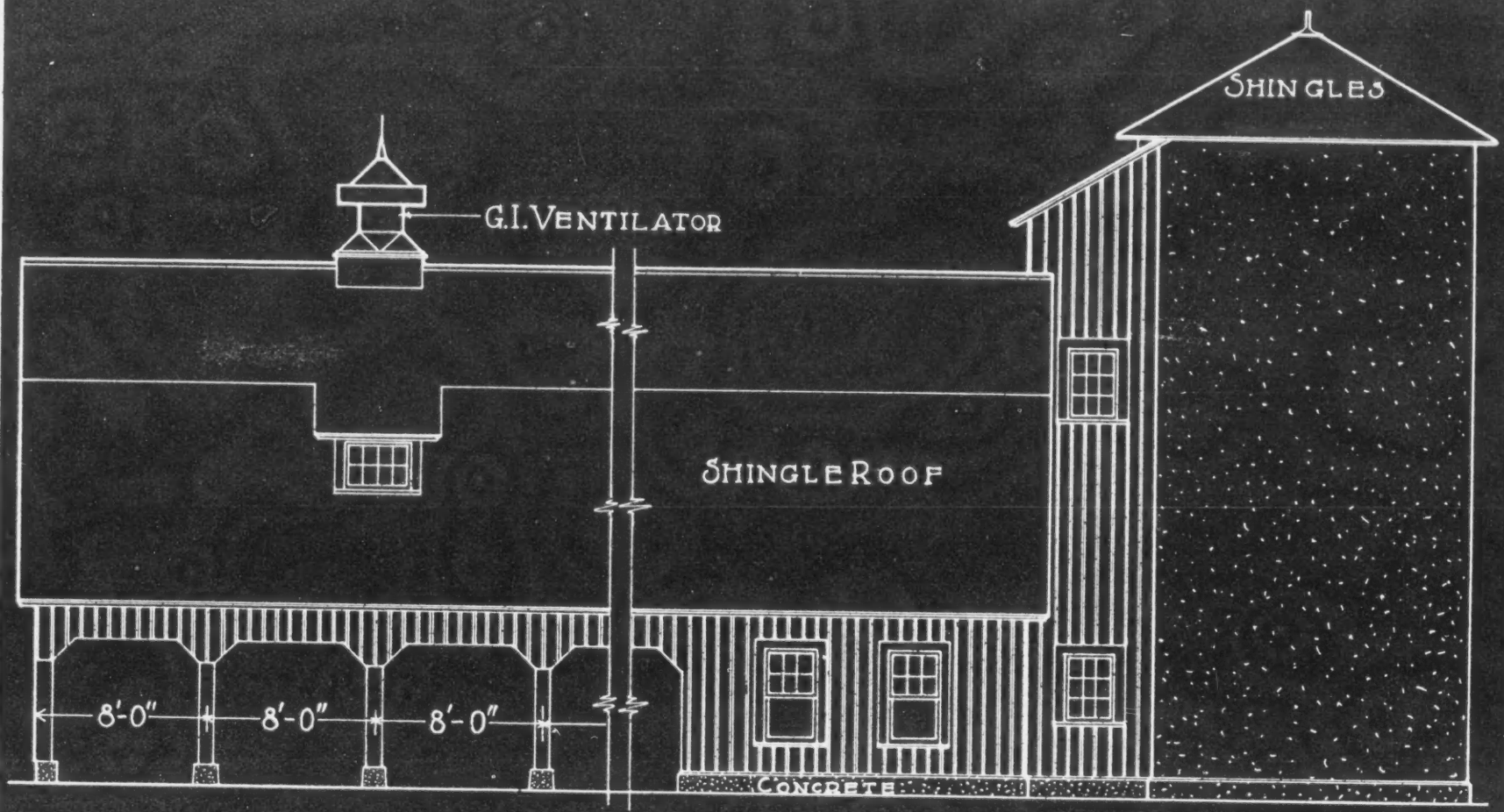
Convenient feeding arrangements are provided. Along the back wall from end to end is a hayrack, into which the hay can be thrown down from above anywhere it is wanted along the entire stretch. Then in the middle of each of the 32-foot pens there is a feed trough for grain and silage. A feed carrier track runs the length of the barn past all these racks from the silo and feed mixing room at the far end.

The construction of this cattle shed follows standard lines. The roof span is 30 feet, which is easily handled by 2 by 6-inch trussed rafters, set 24 inches on centers to form a self-supporting roof. Eight by eight inch posts set eight feet apart hold up the building along the front and two similar lines of posts run down the middle, dividing the stable into three bents. All of these posts rest on concrete footings one foot square on top, increasing to eighteen inches square at the bottom, placed one foot above grade and three feet six inches below grade.

The construction of feed bunks, mangers, etc., has been worked out in a very practical way, as illustrated in the working drawings.

Photograph of a Cattle Feeding Plant Consisting of a Series of Four Open Sheds with Runyards in Connection. The Space Above is Used for Hay Storage and a Large Silo is Located at the Far End. Complete Working Plans for this Cattle Feeding Plant Are Presented in the Blueprint Supplement Immediately Following.

AMERICAN BUILDER FARM BUILDINGS

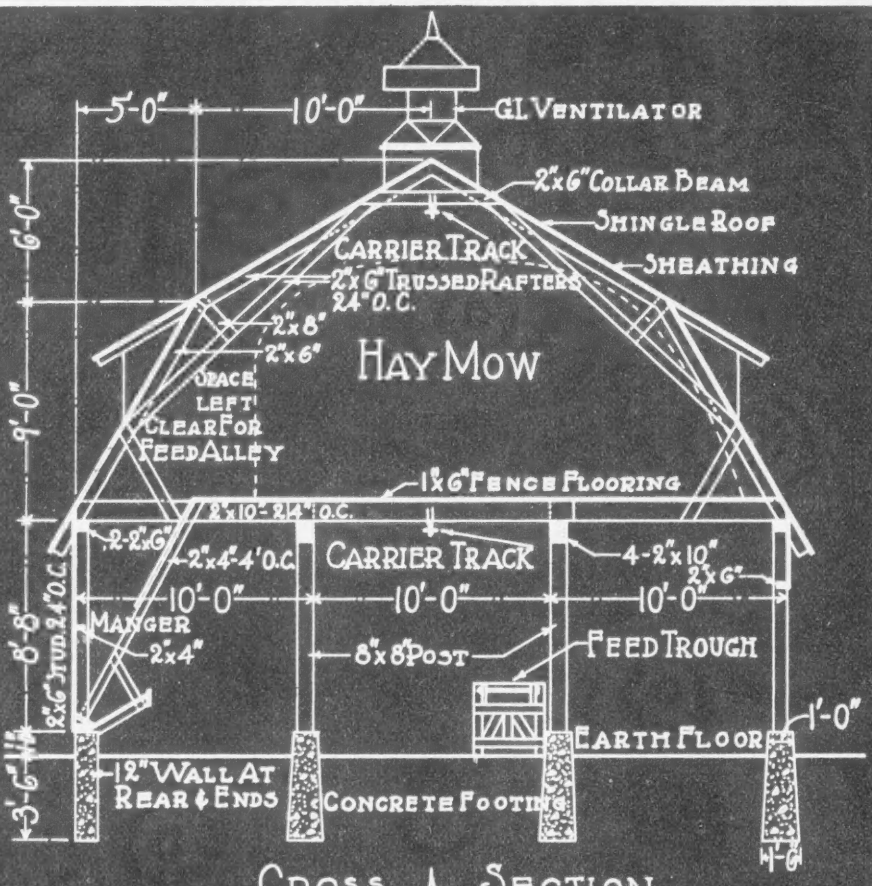


FRONT ELEVATION

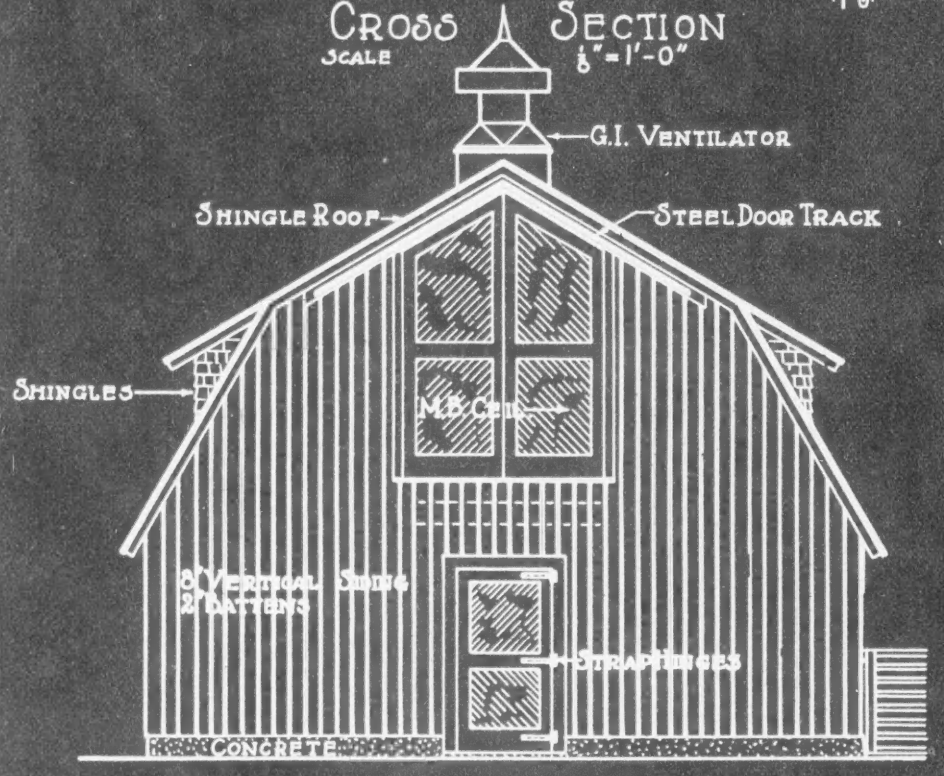
SCALE $\frac{1}{8}$"=1'-0"

FRONT ELEVATION OF CATTLE FEEDING PLANT

AMERICAN BUILDER FARM BUILDINGS



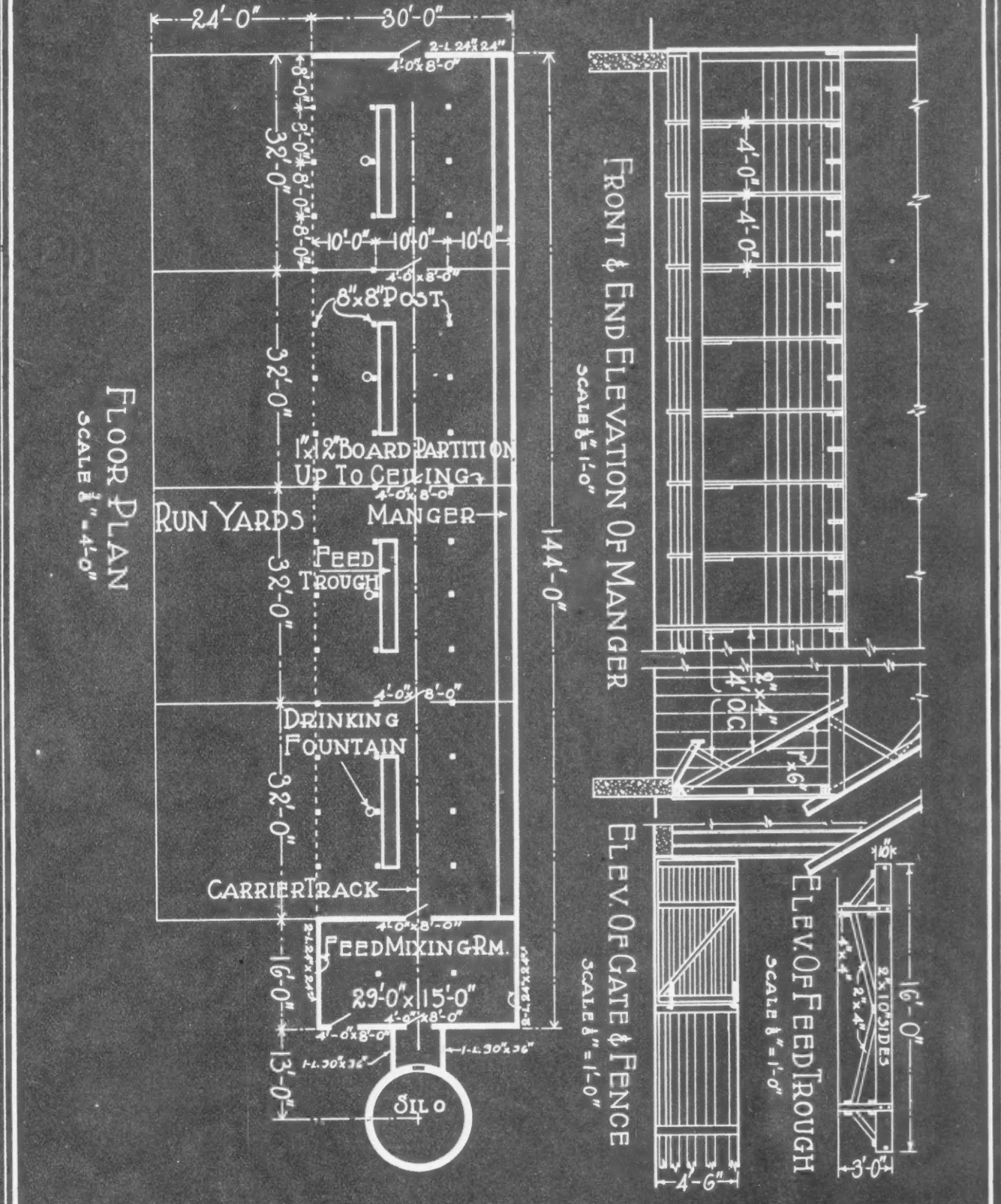
CROSS SECTION
SCALE 3/8" = 1'-0"



END ELEVATION
SCALE 3/8" = 1'-0"

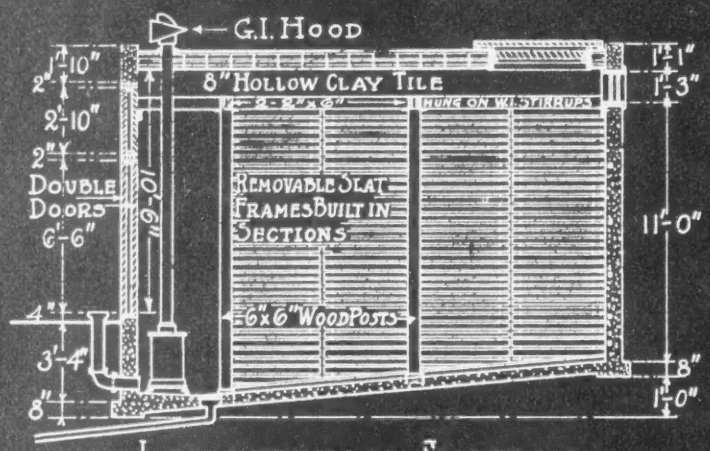
CROSS SECTION & END ELEVATION OF CATTLE FEEDING PLANT

AMERICAN BUILDER FARM BUILDINGS

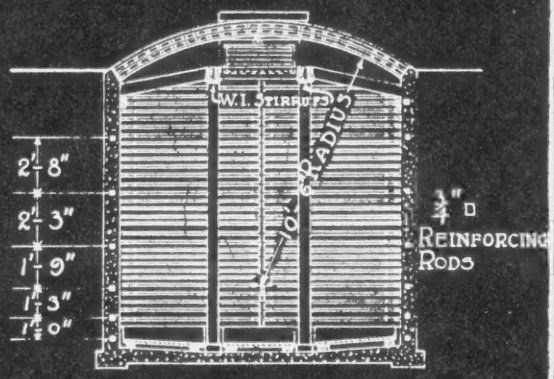


MANGER & FLOOR PLAN OF CATTLE FEEDING PLANT

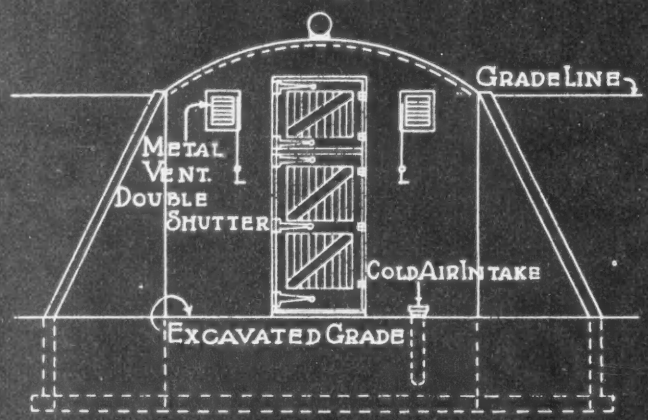
AMERICAN BUILDER FARM BUILDINGS



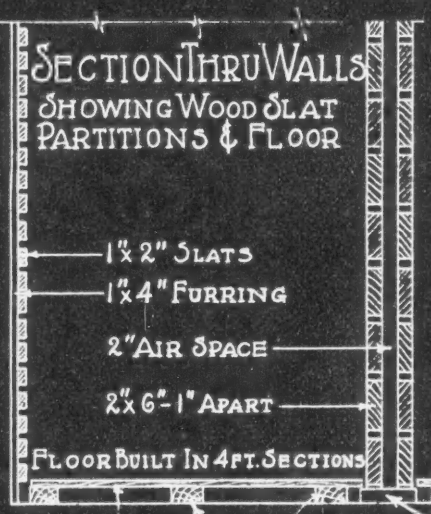
LONGITUDINAL SECTION
SCALE ⅛"=1'-0"

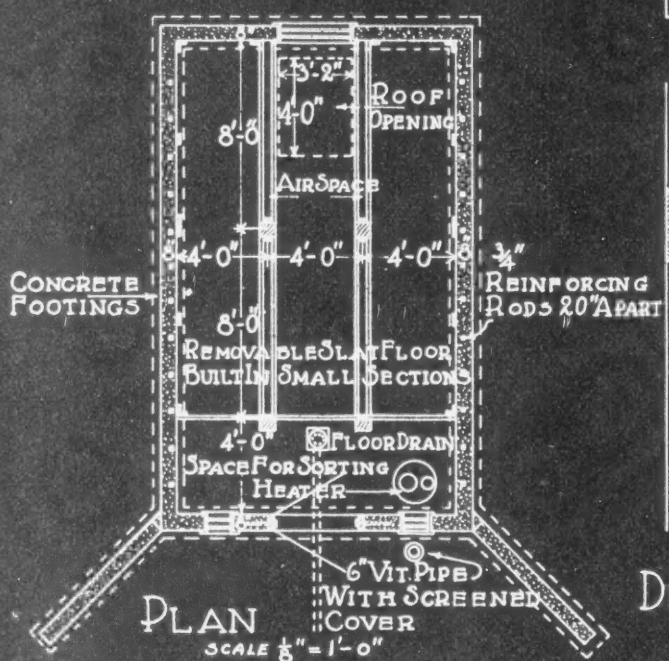


CROSS SECTION
SCALE ⅛"=1'-0"

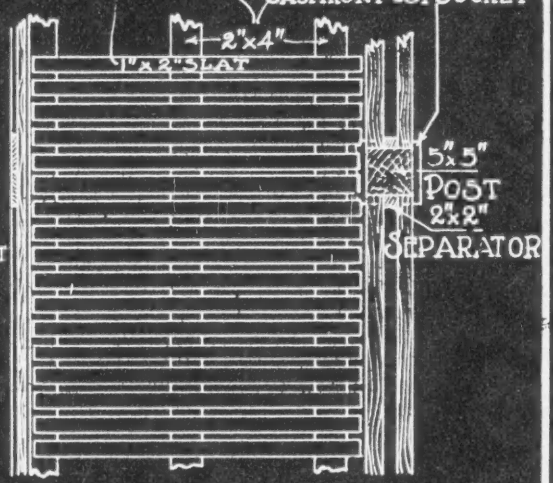


FRONT ELEVATION
SCALE ⅛"=1'-0"



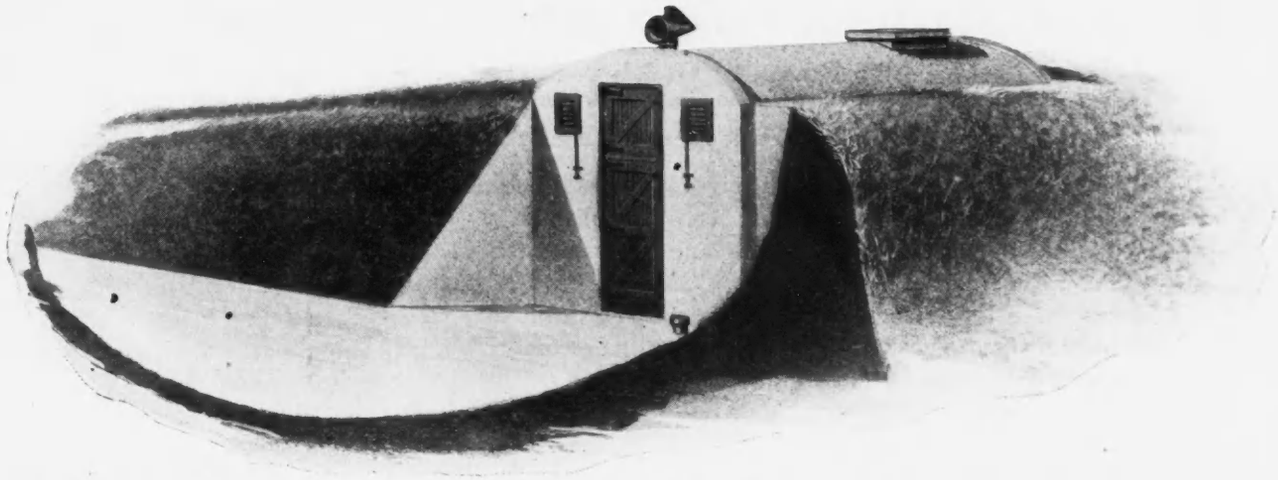


PLAN
SCALE ⅛"=1'-0"



DETAIL OF SLAT FLOOR
SCALE ½"=1'-0"

VEGETABLE STORAGE CELLAR



Perspective Sketch of Vegetable Storage Cellar of Concrete Construction. The Near Embankment is Shown Cut Away So That the Driveway and Door May Be Seen. Complete Working Plans for This Valuable Food Storage Building are Presented in the Blue-Print Page Opposite.

Blue Prints of Vegetable Storage Cellar

A VEGETABLE storage cellar of concrete construction, measuring 12 by 20 feet inside and about 12 feet high, is illustrated in the blue print sheet opposite. This is intended to be built in a side hill or with a depressed driveway so that all of the pit except the roof will be under ground.

The walls are 8 inches thick, reinforced with ¾-inch rods set 20 inches apart, both horizontally and vertically. Triangular wing walls at the front act as retaining walls to hold back the earth around the doorway.

These plans show a suggested arrangement for the interior of this storage cellar. Three bins are indicated, each 4 feet wide by 18 feet long, separated by wood slat partitions built double, with 2-inch air space for ventilating the bins. At the front there is a 4-foot clear space for sorting, packing, etc. A small stove will make this space comfortable.

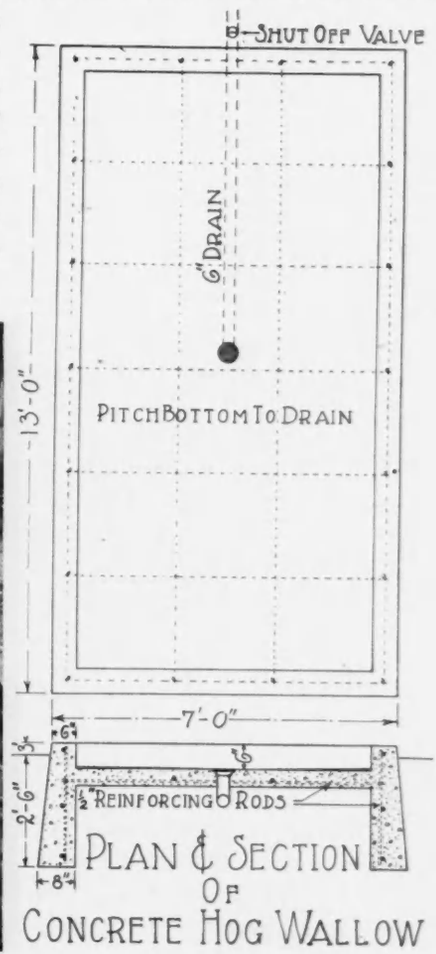
The floor is sloping to take care of drainage.

There is a scuttle in the roof at the back for dumping in potatoes or vegetables.

✣

Concrete Hog Wallow

This concrete hog wallow is easily and cheaply made, and it is a sensible improvement for the hog lot. The pigs love to get into the water on the hot days and they make more pork when kept comfortable. Don't permit them to wallow in the filth of the barn yard. This concrete wallow is laid like a cement sidewalk, except for the turned-up edges. An 8-inch footing around the outside goes down 2½ feet for a solid foundation.



A Concrete Hog Wallow Which is Relished by the Porkers and Endorsed by the Stock Raiser as a Profit-Bringing Investment.

Logical Methods in Architectural Drafting

By Franklin G. Elwood, B. Ar.
Instructor of Architecture, Bradley Polytechnic Institute

PART 1.—The Sketch

A KNOWLEDGE of architectural drafting is vitally essential to the carpenter, builder or contractor, who would develop both himself and his business to the greatest possible extent.

The builder who is able to work out a neat and accurate set of drawings or "plans" fully dimensioned and detailed, leaving nothing to chance has a very decided advantage over his brother, who without fully conceived ideas and plans, starts building, and trusts to luck and good fortune that everything will work out all right. Even rough sketch drawings with approximate dimensions are better than none, but only full and detailed sets of plans are advisable.

In evolving a set of working plans the first logical step is the sketch. The purpose of the sketch is to fix the various ideas of either the builder or his client or of both and to give same definite basis for a start.

The medium for the sketch may be either pencil, pen and ink, water color or wash, the first named being the most common and the simplest to use.

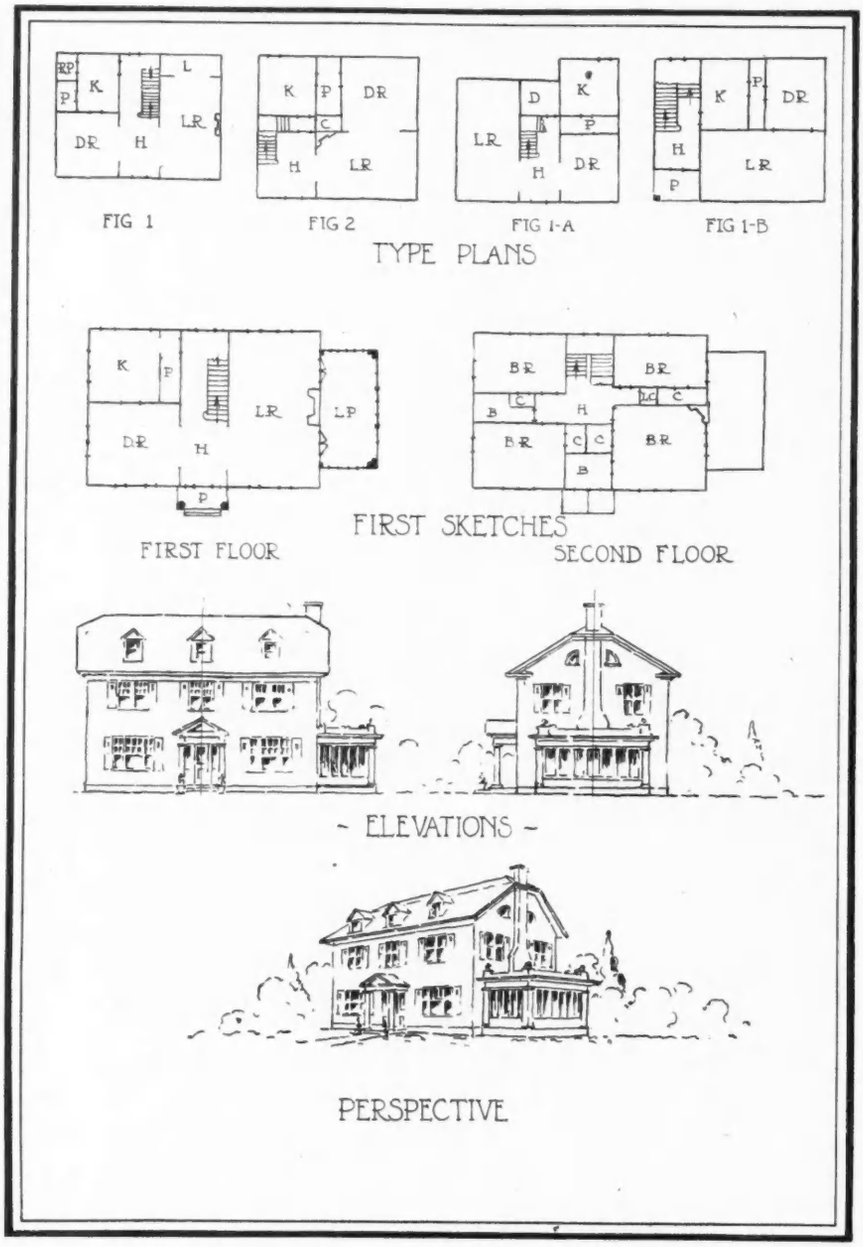
The value of the sketch to the "builder architect" can hardly be over-estimated, because if well and attractively done, it may bring valuable contracts, which might not be obtained if this means of expression were not used.

Preliminary or "thumb nail" sketches, as they are sometimes called, should not be over 3 or 4 inches in size. They are not drawn to any definite scale and their chief purpose is to show arrangement. They should, however, be kept in proportion as much as possible.

The type of plan for such a sketch must of course be determined upon before the first drawing is made and the deciding factors are, first, the character of the site, and second, the style of the exterior.

If we analyze any number of house plans we will find that they may be broadly classified into two general types, namely, the central entrance or central hall type, and the side entrance or side hall type. In the first named, as illustrated (Fig. 1), we have a symmetrical arrangement of rooms opening from a central hallway. This is the typical "Colonial" plan and calls as a rule for that style of elevation. In Fig 2 we have the second type shown; note that in this type we have a plan that is unsymmetrical and is adopted especially to the narrow city lot.

We will take as an illustration of the logical steps to follow in making a sketch the first type, or central hall plan. First determine the approximate proportion of the floor plan, say two as to three. 1. Sketch cen-



ter line. 2. Draw front and rear outside wall lines representing the width of the wall by a single line. 3. Side wall lines. 4. Locate main partition lines. 5. Minor partition lines. 6. Rough in approximate position of openings, doors and windows.

Study carefully at this time the relation of rooms and the circulation.

In like manner sketch second floor plan. It will be found that the basement, as a rule, logically takes its arrangement from the first floor plan, so we need not consider it in the first sketch.

After line sketches of the plans are made, the front elevation and then principal side elevation should be drawn.

The style of the exterior having been decided, determine first the proportion of the front wall, that is the height from the ground to the underside of the cornice compared with the width. This height in the ordinary two-story house varies from 20 to 24 feet.

1. Block in this rectangle with center line.
2. Block in height lines for windows and doors.
3. Draw vertical outside lines for windows and doors, determining their positions approximately from plans.
4. Draw roof, taking height as ¼, ⅓ or ½ depth of plan, depending on judgment of designer.
5. Draw in porch or porches according to style of exterior.
6. Darken or shade window openings and show shadow under cornice.
7. Sketch in background.

Freehand perspective sketches are very effective but are more difficult to make since they require a knowledge of the principles of mechanical perspective.

Remember that a good sketch depends upon your judgment of good proportions and your ability in freehand drawing.

To Build or Not to Build Now

By George Ethelbert Walsh

THOUSANDS of prospective home builders had planned the construction of their future homes just prior to the outbreak of the war, and the plans have ever since been filed away awaiting a more favorable time for perpetuating them in wood, brick or stone. The problem facing them can be summed up in two sentences: First, is it patriotic to take skilled labor away from the more immediate necessities of the day; second, on account of the high cost of all building materials and labor, will it not pay to wait until the days of peace before beginning construction?

Architecture as a profession is in a condition of suspended animation, waiting for the building boom that must inevitably follow the return of peace. Many of the profession have volunteered their services, and are at the front or in camps. House-building is in about the same condition as architecture, except that carpenters, masons, plumbers and steel workers are commandeered for our shipyards or other important government work.

England long ago realized her mistake in stopping all building operations when war broke out, and as a result of it she is facing the most serious housing problem of the age. She is now making stupendous effort to catch up and get houses built on the shortest possible time. We have already approached a similar crisis, and Washington is busy trying to encourage and direct in a wise way the construction of buildings, first, for labor, and, second, for the surplus population of the country.

Nearly all of our cities report an approaching crisis in the housing facilities. In New York City alone it is estimated that a surplus population of two hundred thousand must be provided for each year, and if the buildings to accommodate this number of people are not annually constructed there must be overcrowding or worse. The same is true in all of the other cities. Growth of population demands increased housing facilities. One cannot be checked without seriously interfering with the other.

In view of these conditions, these hard and fast facts which cannot be disputed, the question of whether or not it is patriotic to build in war times answers itself. It is a part of our home duty to see that the increasing population is adequately housed. It cannot be ignored without inviting social disaster. Speculative building is not desirable in these times. Risks of invested capital should not be invited, nor permitted. But legitimate house-building on a scale commensurate with the growth of the population is as patriotic as building factories or doing Red Cross work. There are in every town and city many skilled carpenters and builders who are too old to engage in war work, and their employment in their trade should be encouraged. The man of sixty and over is being drafted into many commercial lines, which a few years ago despised taking on any who had passed the period that was popularly understood as "dead line of efficiency." Now the old men are having their day again. Then why not give the builders their chance?

The high cost of materials and labor has dissuaded many from building. They are firmly of the opinion that after the war prices will go down, and they can build at one-third the cost of today. This delusion may as well be shattered now as later. The price levels of labor and building material that prevailed before the war have gone forever, or at least for such a long time in the future that it is idle to speculate on it. Any architect or builder who remembers

the conditions that prevailed for years after our Civil War will smile at the snap conceits of some of the young men who predict a big drop in prices of materials and labor the moment peace comes.

And if our Civil War produced a long period of high wages and materials, how infinitely more will the same conditions be repeated by this world-wide conflict! Take the conditions in Europe alone. France and Belgium must be entirely rebuilt in part, and they haven't the men or the materials for doing it. The call on American skilled labor for this work will be enormous, and our raw material will be demanded in Germany and Austria when peace comes in a way that will drain our markets if we are not careful. England will be a big buyer of our building materials.

We will be far behind in our own building schedule, and the demand for houses will increase the competition enormously for labor and materials. Speculative builders, so long held back, will plunge also, and prices are more than likely to go up another notch to two.

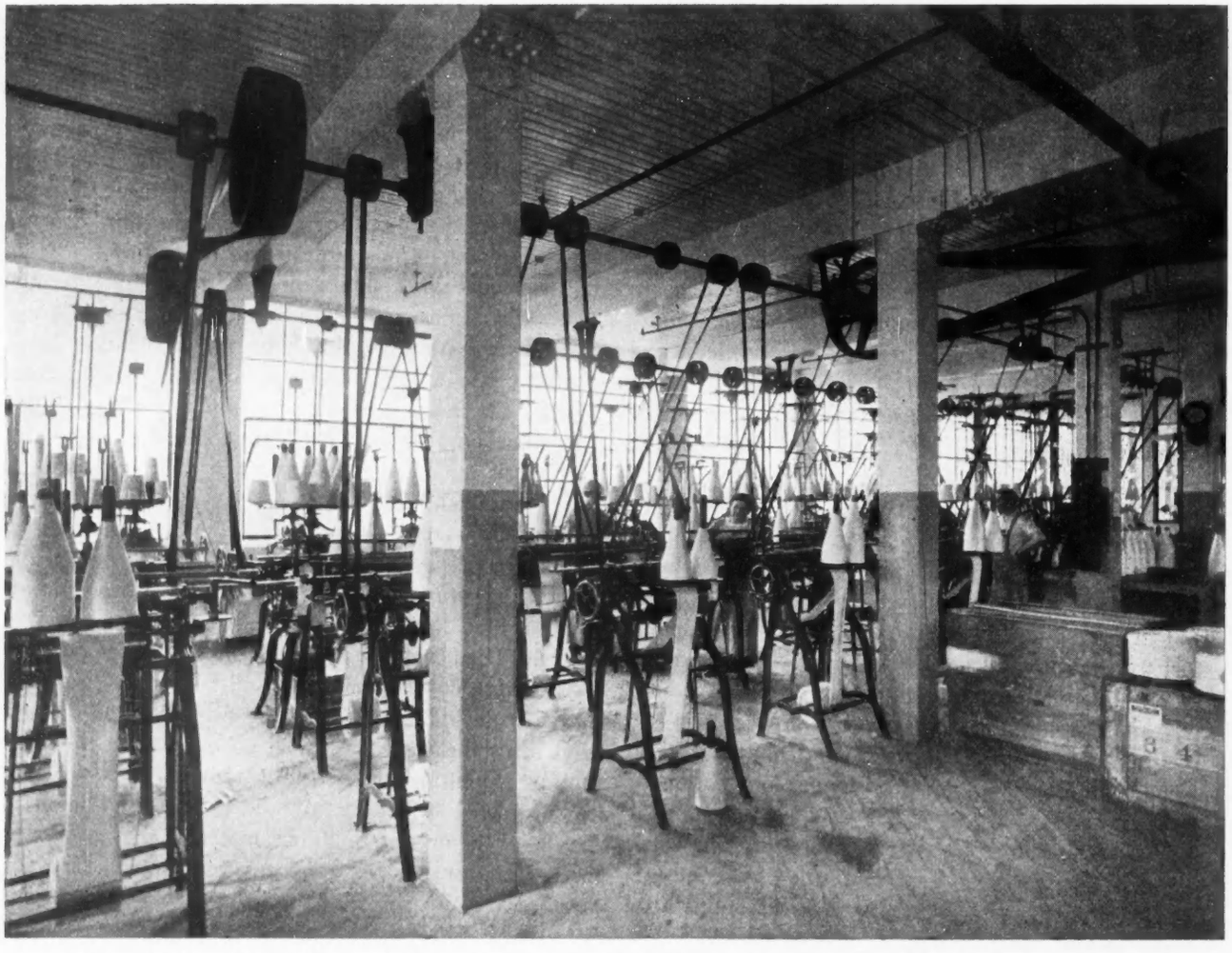
Therefore, the time to build that house you have planned is now. Every day it is put off will increase your chances of ever finishing it. You may find yourself outbidden by the big building concerns when peace comes, and you cannot get even the old carpenters and

(*Continued to page 138.*)

A Well Lighted Knitting Room

THIS photograph gives a good idea of the excellent lighting effect of the skeleton-style window. It shows the knitting room of a white goods factory, where capability of seeing the fine threads and the finer parts of the knitting machines is worth employe's eyesight and employer's money. For ventilation in summer, the two lower quarters of each window are pivoted at the center on a horizontal axis, the lowest edge swinging outward. Walls, ceiling, and posts above the 4-foot 10-inch level are painted white, throwing the light thru the room to such an extent that the furthest corners are well illuminated, as is plain in the photograph. Belts are kept as tight as is consistent with good running machines, so that their flapping does not, as much as ordinarily, throw confusing shadows. The light shown is a northeast light, the windows being in the side wall of a building facing southwest.

It may be noticed that the visible topmost layer of flooring is of matched boards laid diagonally. Beneath them is a layer of matched planks running at right angles to them, and therefore laid diagonally in the opposite way upon the floor joists. On alternate stories the directions of the plank floors, tho still diagonal, are at right angles, so that the whole system ties the building firmly together against the destructive tendency of a great many machines vibrating.

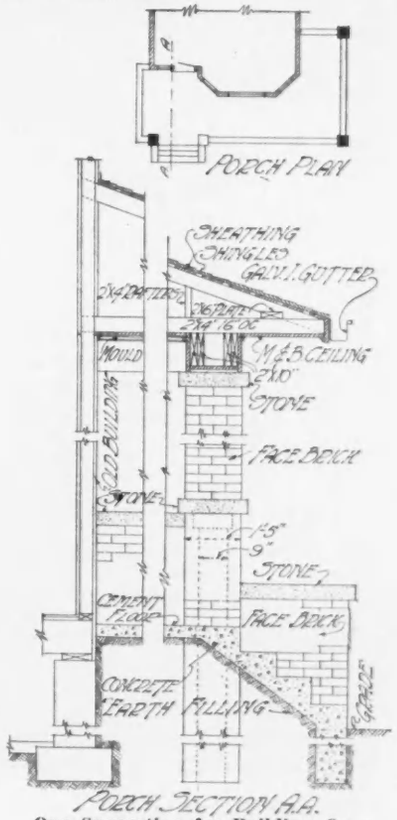


An Eastern Knitting Mill of Standard Heavy Timber Construction, Well Lighted by Means of Steel Sash, All-Glass Windows.

The House as It Will Look When the New Brick Porch Recommended is Built On.

WE are sending picture of a house for plans for new brick porch. I want about 7 or 8 feet floor in clear. I do not want it too large or expensive. Porch to be brick posts built from ground up. Would like one or two short posts in front of door.—C. B. MOORE LUMBER CO., COMPTON, ILL.

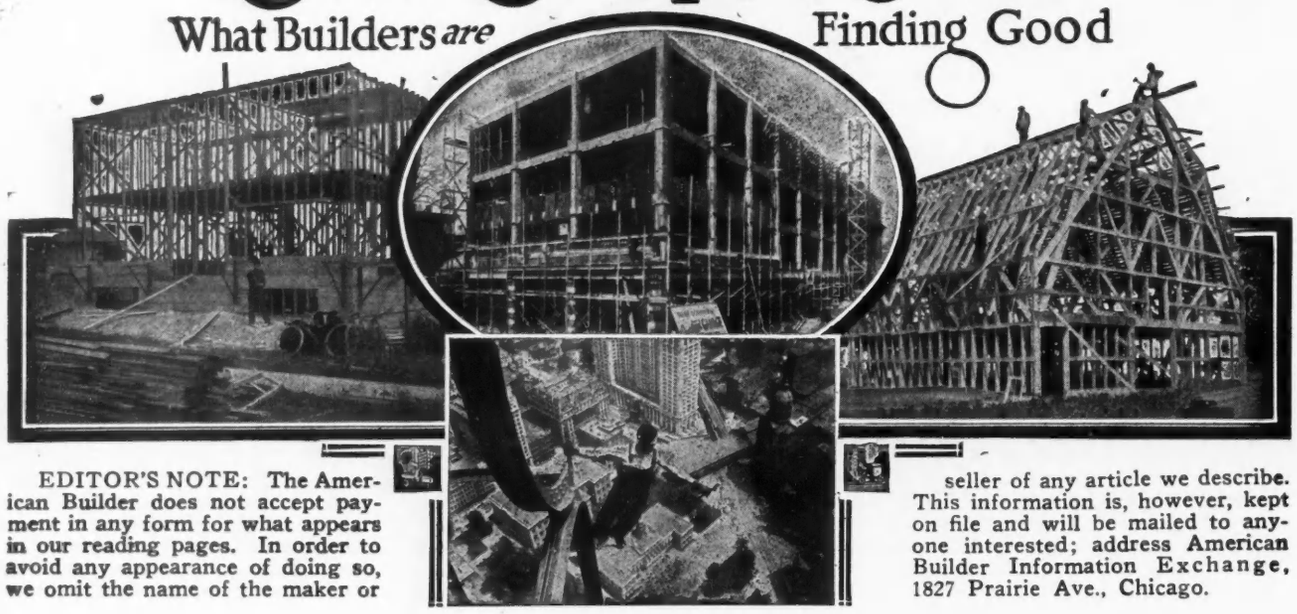
Substantial Old House Which C. B. Moore Lumber Company, Compton, Ill., Wish to Remodel.



Our Suggestion for Building On a Massive Brick Porch.

OUT ON THE JOB

What Builders *are* Finding Good



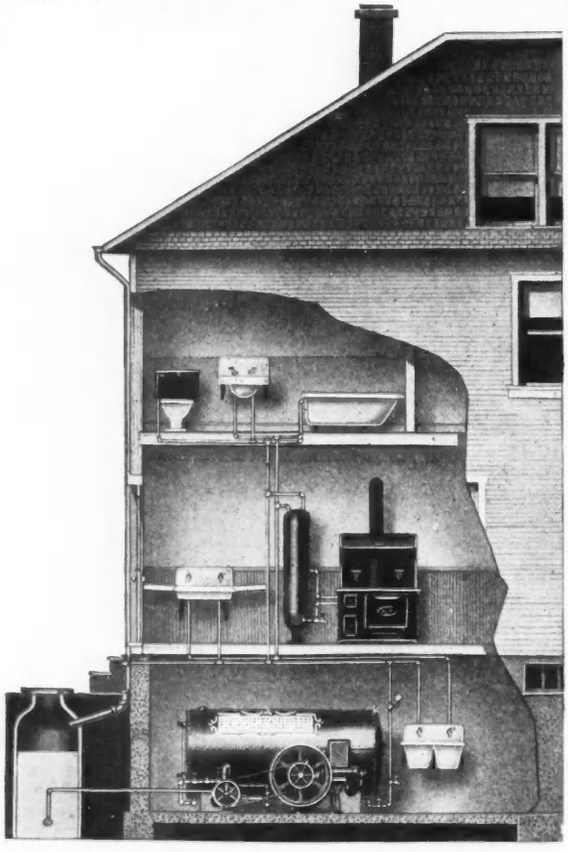
EDITOR'S NOTE: The American Builder does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested;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

An Electric House Pump

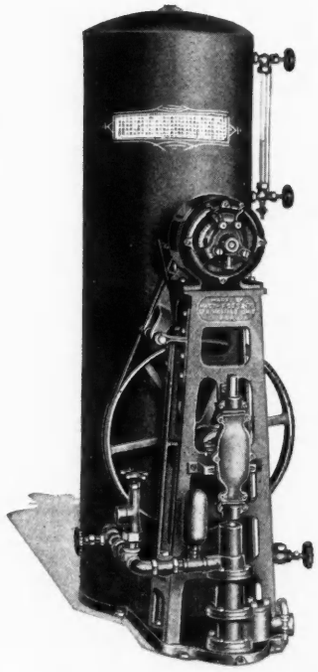
A prominent Ohio concern has recently placed on the market an electric house pump for cisterns and shallow wells which can be operated by electric current from city or trolley lines or from a farm lighting and power system.

This pump is controlled by an automatic switch and being provided with large oil pockets for all bearings, requires practically no attention. The driving mechanism is totally enclosed and runs in grease with felt washers to prevent the grease escaping or dirt getting into the bearings. Roller bearings of a special type are used, insuring easy starting, the minimum amount of power for operation, perfect alignment and durability.

The outfit has a capacity of 180 gallons per hour, which is said to be sufficient for supplying all the water that would be required for the bathroom, kitchen and laundry of an ordinary dwelling. It is equipped with an air chamber and vacuum chamber to prevent water hammer and insure a steady flow of water. The valves are faced with rubber to eliminate any noise in operation.



House Cut Open to Show Installation of Electric Pump and Important Plumbing Fixtures.



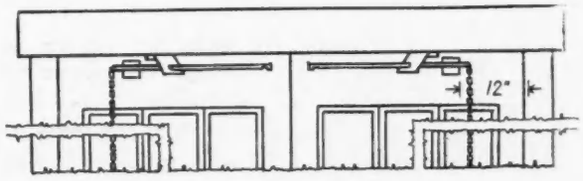
Electric House Pump and Pressure Tank.

Improved Scaffold Machine for Heavy Construction

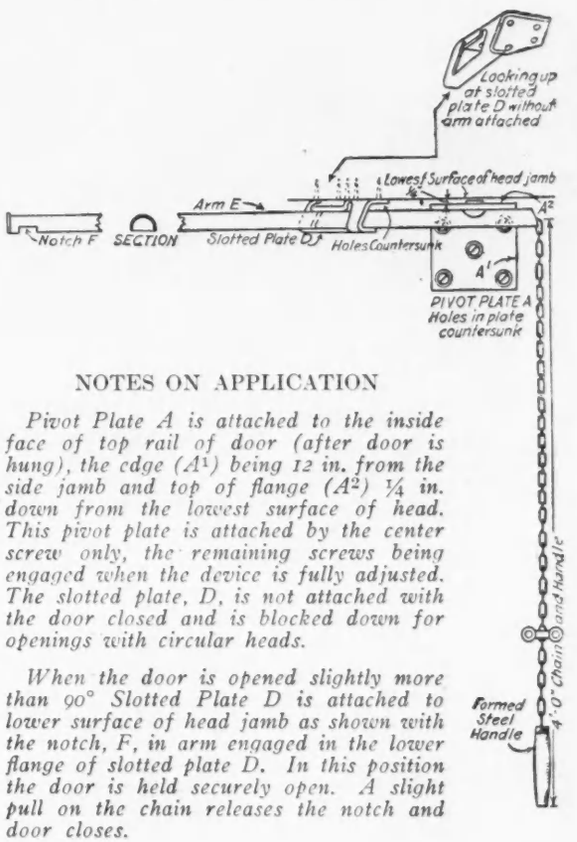
The scaffolding equipment shown in the accompanying illustrations has several features which are interesting to the contractor engaged in the erection of buildings of two stories height or over. The principal advantages which are claimed for this device are that it will raise a given load with the same power at any height, that its working parts are thoroly protected from the elements, that it can be installed or dismantled very quickly, that it is simple and practically indestructible, that it occupies little space and that it is sufficiently strong to hold under any conditions which it might be subjected to.

Referring to the drawing, the device is 4 feet high, 7½ inches wide and 2¼ inches thick. The two rods that couple

(*Continued to page 66.*)



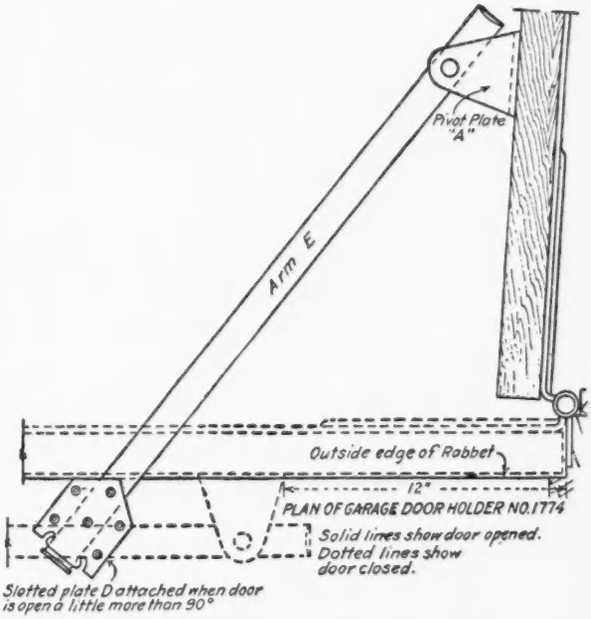
ELEVATION OF GARAGE DOOR HOLDER NO 1774
Pivot Plate A attached to door; Slotted plate D to head jamb.



NOTES ON APPLICATION

Pivot Plate A is attached to the inside face of top rail of door (after door is hung), the edge (A^1) being 12 in. from the side jamb and top of flange (A^2) ¼ in. down from the lowest surface of head. This pivot plate is attached by the center screw only, the remaining screws being engaged when the device is fully adjusted. The slotted plate, D, is not attached with the door closed and is blocked down for openings with circular heads.

When the door is opened slightly more than 90° Slotted Plate D is attached to lower surface of head jamb as shown with the notch, F, in arm engaged in the lower flange of slotted plate D. In this position the door is held securely open. A slight pull on the chain releases the notch and door closes.



Stanley Garage Door Holder No. 1774

THE architect whose admiration of the new house he had designed was changed to chagrin when the owner in forceful language informed him that he had forgotten the chimney, was in but little worse predicament than is the builder who forgets to put Stanley Door Holders on the garage he builds.

The door isn't going to stay open of its own accord!

To prevent the door smashing against the car which is entering or leaving the garage, the Stanley Garage Door Holder—an automatic working-arm of steel—is a positive necessity. It locks the door open and the door is released by a pull on the chain. They are an essential feature to every well-built garage.

You should have complete information about this and other Stanley Garage Hardware Products—Bolts, Hinges, Latches and Pulls.

Sold by Leading Hardware Stores everywhere

Write for our Illustrated catalog on Stanley Garage Hardware. Free on request

The Stanley Works

New Britain, Conn., U. S. A.

New York
100 Lafayette Street

Chicago
73 East Lake Street

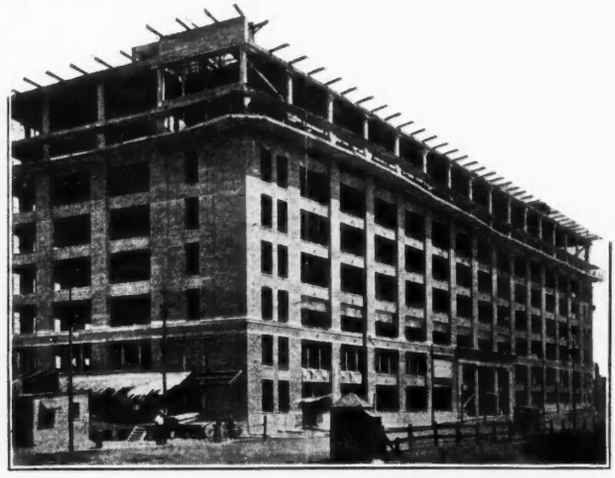
Manufacturers of Wrought Bronze and Wrought Steel Hinges and Butts of all kinds, including Stanley Ball Bearing Butts. Also Pulls, Brackets, Chest Handles, Peerless Storm Sash Hangers and Fasteners; Screen Window and Blind Trimmings; Furniture Hardware; Twinrold Box Strapping, and Cold Rolled Strip Steel.

Stanley Garage Hardware is adaptable for factory and mill use.

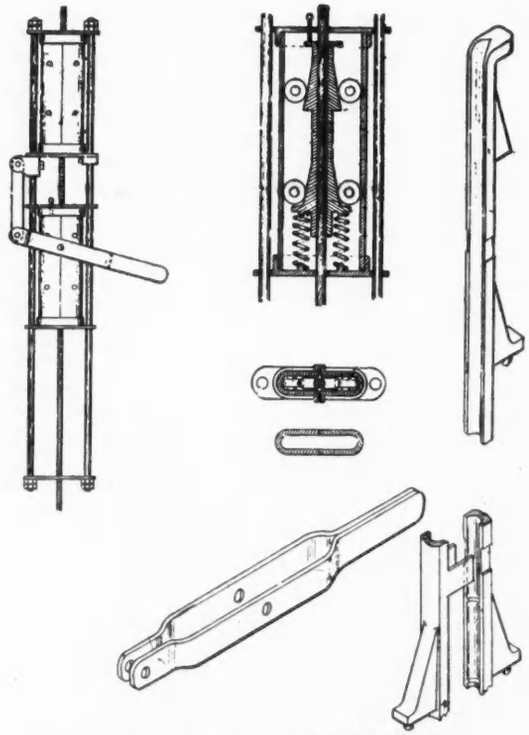
What Builders Are Finding Good

(*Continued from page 64.*)

all parts are ⅝-inch cold rolled steel rods, 4 feet long, fitted with double nuts at each end. The steel plate at the bottom, which carries the cross beam under the platform, is ½ by 1¾ inches in section, 10 inches long. The caps on the clutch boxes are ⅜ inches thick of malleable iron. The clutch boxes are ¼-inch thick. The jaws to the clutch are each 10 inches long, ¼-inch thick and reinforced on the back with two ½-inch ribs. Each jaw is hung on two steel rollers 1¼ inch in diameter and ½ inch thick. The rollers are secured to the clutch boxes with ½-inch wrought bronze axles. The coil springs are 3 inches long and ½-inch in



The James S. Kirk Building, North Ave. and the River, Chicago, Ill., George A. Fuller Co., Architects, Showing Scaffold Machine in Use.



Essential Parts of Scaffold Machine.

diameter, compressing ¼-inch in operation. The lever is made of two pieces of ¼ by 1¾-inch steel, riveted together and hung on a ¾-inch axle cast to the clutch box. The lever connects with a steel link ½ by 1¼ inches in section, fitted with ⅝-inch steel pins. The lever ratio is such that 100 pounds of force applied will raise 800 pounds of load; the

(*Continued to page 68.*)

Today the difference between Asbestos and other ready roofings is greater than ever

SMITH, who walks into your place to talk roofing, is in a different buying mood today. Like all Americans he is thinking differently. He has had conservation, economy and elimination of waste kneaded into his mind until he is the best prospect in the world for asbestos roofing.

All you have to do is to tell him the truth—that today there is more difference between asbestos and other ready roofings than ever before—that manufacturers are so hard pressed for raw materials that most anything passes for roofing felt nowadays, but that Johns-Manville Asbestos Roofing hasn't changed a bit. It is still made of 100% pure asbestos from our own mines, impregnated with the best natural asphalts—nothing to carry fire, nothing to rust, nothing to decay quickly.

And when you cover a roof with Johns-Manville Asbestos you do more than make a profit. You put a roof on exhibition that is so resistant to fire, so weather proof and durable that it sells every prospect in your community. Every roof you cover makes the next sale easier.

H. W. JOHNS-MANVILLE CO.
New York City
10 Factories—Branches in 61 Large Cities

JOHNS-MANVILLE
ASBESTOS ROOFING

What Builders Are Finding Good

(*Continued from page 66.*)

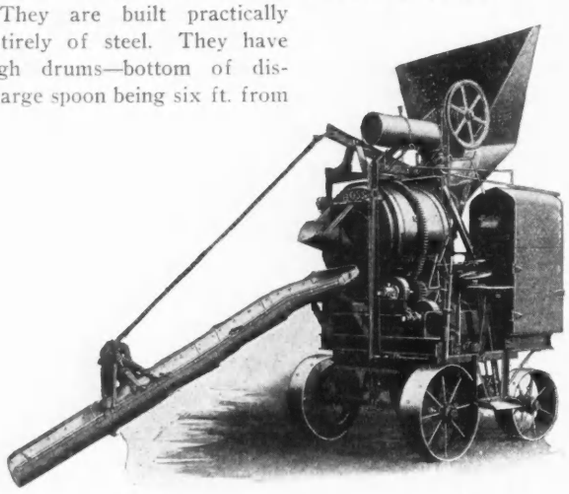
machine is raised 6 inches each stroke. A load of 7,270 pounds has been imposed upon a pair of these devices without apparent effect on the supporting cable. The cross beam may be made any length to correspond to the width of platform required.

✣

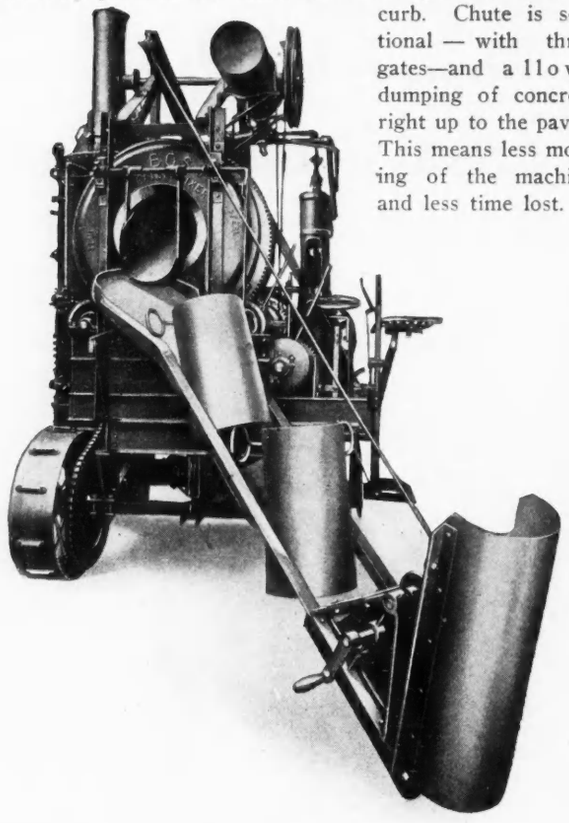
High Drum "Non-Tip" Highway Pavers

The modern improvements in paver design and construction which meet the demands of the paving contractor for higher efficiency and greater economy are well illustrated in the machines known as Lincoln Highway pavers.

They are built practically entirely of steel. They have high drums—bottom of discharge spoon being six ft. from the ground. Danger of tipping is eliminated by specially wide track and wide tires—machine will not tip. The high drum gives steep pitch to the chute which swings from curb to curb. Chute is sectional — with three gates—and allows dumping of concrete right up to the paver. This means less moving of the machine and less time lost.



New High Drum "Non-Tip" Paving Mixer.



The Chute is Sectional with Three Gates.

Uncle Sam knows a good thing when he sees it

THE Bureau of Engraving and Printing at Washington, D. C., shelters many valuable dies, plates and records, and these must not be submitted to the risk of being lost by fire. Uncle Sam realizes that the way to make a building fireproof is to make the roof fireproof, and has therefore covered many public buildings with

AMBLER Asbestos Shingles

(Fireproof) (Repair-proof) (Storm-proof)

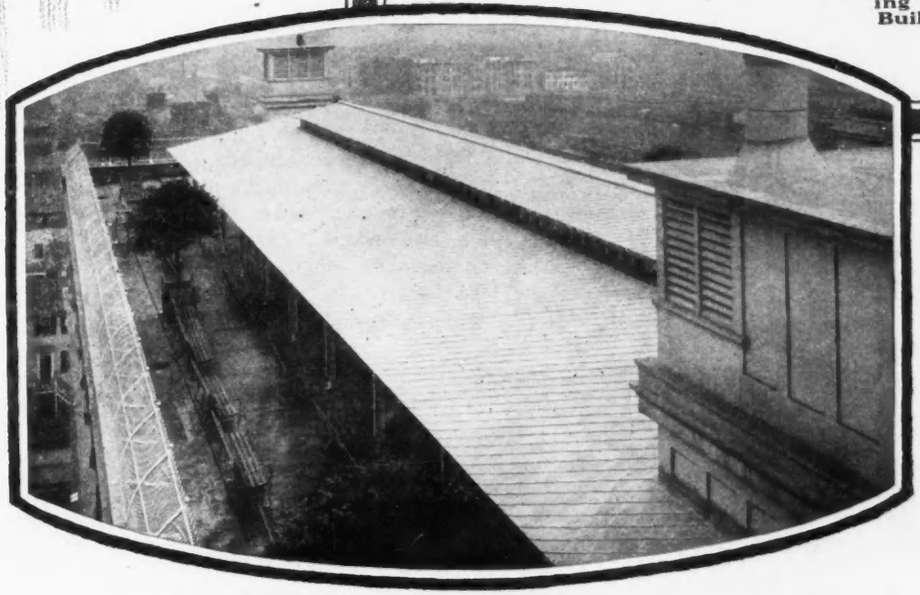
Many of the largest fires owe their origin to the fact that they took fire from **without.** Flying sparks or fire brands, and lightning are some of the commonest causes of fire. A roof covered with Ambler Asbestos Shingles will not take fire because the shingles are absolutely non-combustible and are non-conductors of lightning.

They can be used on nearly every class of structure where there is sufficient pitch of roof for the ordinary shingle, and will harmonize with any style of architecture.

Write today for the evidence.
Architects' service sheets furnished on request.

KEASBEY & MATTISON COMPANY
Dept. B-1 AMBLER, PA., U. S. A.

Manufacturers of Ambler Asbestos Shingles, Asbestos Corrugated Roofing and Siding, 85% Magnesia Pipe and Boiler Covering and Asbestos Building Lumber.



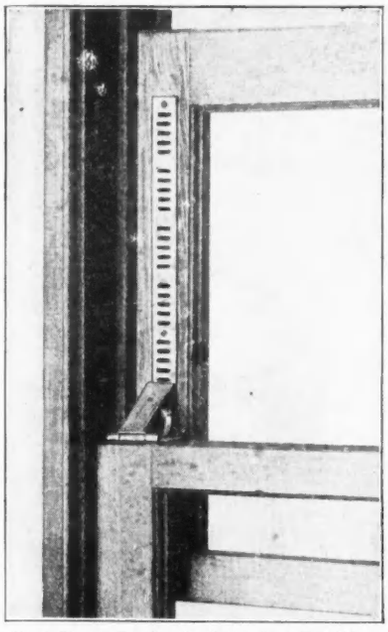
U. S. Government Promenade for Employees Bureau of Engraving and Printing. Washington, D. C.

Contractor W. E. Mooney. Washington, D. C.

Covered with Ambler Asbestos Shingles.

A Window Ventilating Lock

The accompanying illustration shows a new window ventilating lock that has recently appeared on the market. It has two important distinctions—it will lock a window in an open as well as a closed position, and the design of the lock makes it an unusually safe window-locking device.



Steel Brace Locks Sash in Any Position.

A window equipped with this ventilating lock need not be in any particular position, when open, to be locked, but may be changed to suit the weather. This feature enables the housewife to keep her home properly ventilated with entire safety.

The principle upon which the new lock operates is similar to the old-time stick which our forefathers placed between the window sashes to keep out intruders. A small iron wedge takes the place of the stick and fits into the slotted metal strip that extends up the side of the upper sash. A suitable metal cover protects the locking wedge and prevents its operation except by means of the key at the base of the lock at the right. This operating key can be withdrawn whenever desired, so that the lock becomes proof against anyone's reaching in the open window and releasing the lock.

✣

Twin Service Carburetor

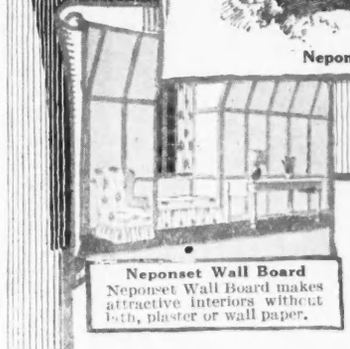
The engine used on a 1918 concrete mixer is equipped with a Twin Service carburetor.

This device permits the operator to use either gasoline or kerosene in the engine, as desired. The makers claim that this carburetor will effect a reduction in mixer fuel costs of one-third to one-half—surely a worth-while saving in these days of mounting expenses.

The illustration shows two lead pipes from the storage tank, each with a shut-off valve, enabling the operator to draw either fuel

(*Continued to page 62.*)

Carburetor Arranged to Burn Either Kerosene or Gasoline.



A Neponset Job Brings Customers Back

AFTER all, a quality job is what makes a steady customer for you. Better still, that customer's word-of-mouth advertising brings new customers that you didn't have before. Neponset Products are of first quality. They are *right* for new buildings or for repairing jobs. The name Neponset has stood for quality for thirty years.

Neponset Building Papers during all this time have been *known* to the trade for the quality that brings complete satisfaction to both contractor and owner. Neponset Twin Shingles, Neponset Paroid Roofs, Neponset Wall Board also stand first in the regard of thousands and thousands of the country's best carpenters and owners.

Use Neponset Products for profit. Use them for convenience. Use them because they are all made from materials not required by the government for war work. Use them for the time they'll save you and for the good name they'll bring you. Any Neponset Roof is a first-class roof, and *will* be as long as the house of Bird exists—and that has been our working principle since 1795.

BIRD & SON, Inc., Dept. C, East Walpole, Mass.

(Established 1795)

Canadian Office Plant: Hamilton, Ont.

New York **Washington, D. C.**

1434 Monadnock Building, CHICAGO, ILL.

NEPONSET ROOFS

What's New?

(*Continued from page 70.*)

as wished. By means of a superheating attachment, which introduces gas from the muffler of the engine, the kerosene is votalized to the proper point for producing the maximum explosive power within the cylinder.

✣

Cuts Out All Wheelers

A new piece of cost-cutting, labor-saving equipment for contractors is the "Mixer Loader," a combination of measuring bins and the belt conveyor principle applied to a light portable machine, which is supplied with its own power, and traction, moving from job to job under its own power and in paving work preceding the mixer.

The full over-all length of the machine is approximately 60 feet. It receives materials from any point within this distance of the mixer. For shipping, half of the frame is quickly detachable.

The measuring bins are mounted on the frame and provided with wheels which roll on tracks on the top and along the length of the frame. According to the capacity of the mixer, two or three bins are provided.

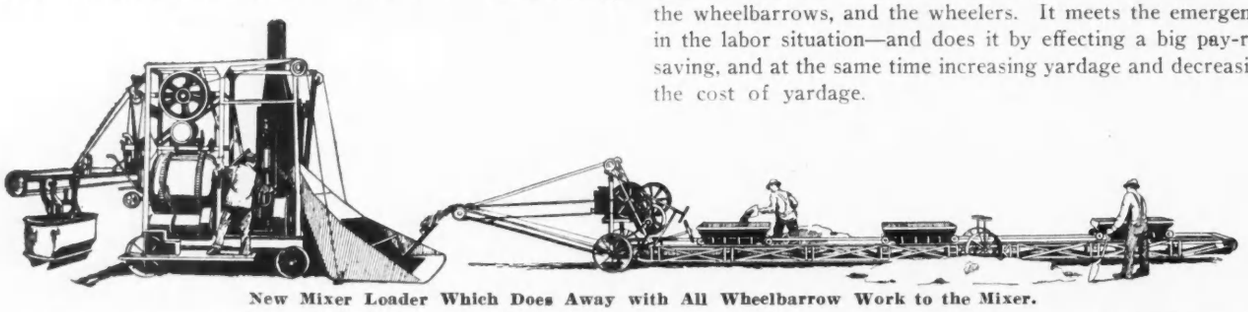
As materials are shoveled from the sub-grade, as in paving work, these bins are moved along the top of the frame to maintain them in convenient shoveling position to materials.

Each bin is adjustable. The sides are extendable so as to hold the proper proportion of aggregate for any size of batch. By striking off the bins an accurate measurement of materials is obtained.

The entire frame is adjustable up and down, providing plenty of clearance for traveling from job to job, and permitting the structure to be lowered to a point of small "lifts" in shoveling materials from the sub-grade. The range of this adjustability is 10 inches.

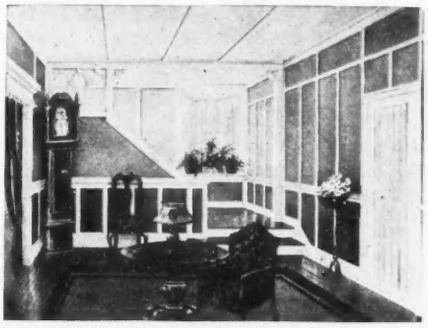
When bins are filled with aggregate, properly measured, a lever control opens the bottom of each bin, permitting aggregate to fall on the conveyor belt, moving at the speed of 500 feet per minute, which carries materials to the mixer and into the loading skip, which is then operated in the usual way.

The practicability of this machine is positive—it eliminates the costly, disorganizing element of mixer loading—getting materials to the mixer. It does away with the planking for the wheelbarrows, and the wheelers. It meets the emergency in the labor situation—and does it by effecting a big pay-roll saving, and at the same time increasing yardage and decreasing the cost of yardage.

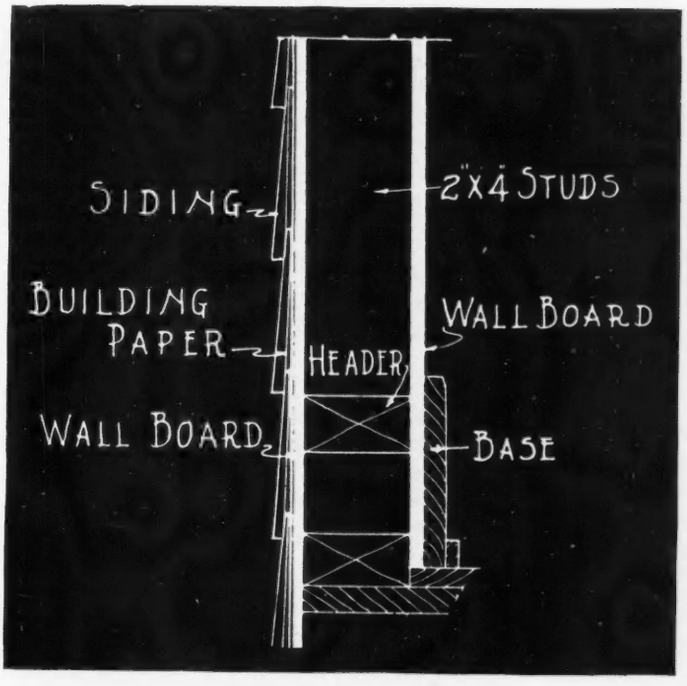


New Mixer Loader Which Does Away with All Wheelbarrow Work to the Mixer.

FIBERLIC WALL BOARD COTTAGES FOR INDUSTRIAL HOUSING



See complete plans and blue prints of typical Wall Board cottage, shown in the Industrial Housing Section opposite Page 34 of this issue. This Cottage uses Wall Board for Exterior Lining to take the place of Sheathing and also for Interior Finish of Entire House.



Fiberlic WALL BOARD

Settle the wall and ceiling question Right!—Now!—Belore YOU Build. Thinking of building a new home? Then specify Fiberlic for your walls and ceilings. With Fiberlic you have the unequalled privelege of obtaining a grand old mansion-like interior for the parlor or a quaint Dutch effect for your dining room. Decorate the room to your own taste. You don't have to select what somebody else prefers.

Fiberlic is sanitary, permanent, economical and easy to apply. It costs less than lath and plaster and there is no up-keep cost to Fiberlic. Fiberlic is made from chemically treated root fibre. It is a recognized insulator. It will keep your rooms warmer in winter, thereby reducing your coal bills. It also resists the intense summer heat from the outside.

Samples and prices free on request
Write for them

MacAndrews & Forbes Company
200 Fifth Ave., New York City
FACTORY: Camden, New Jersey
LONDON OFFICE: 2 Broadstreet Place, E. C.

CORRESPONDENCE DEPARTMENT

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

Building in France

2nd Co., 2nd M. M. Regt., S. C., A. E. F., France,
To the Editor: April 21, 1918.

Your communication received on the 17th, also the AMERICAN BUILDER received yesterday, for which I thank you, and I certainly appreciate your kindness in sending it. It will be a source of pleasure to many of us, because it is the only building magazine in our camp, and it will be the means of keeping us in touch with home all the time we are out here.

Lumber is very scarce here, the trees being cut down and sawed one day and used the next, because Uncle Sam is busy and requires more lumber than the French can estimate; but we are building all the time, and as soon as barracks are "blown together" troops are here to occupy them.

I wish I could get some pictures of the French ways of working and the tools they use. It is impossible for them to hurry with such old-fashioned tools, and they tell us, "American fast." Yes, we have the good old American tools here, so we can turn the work out fast, which is absolutely necessary. I think the rapidity of our work will be a means of awakening their mechanics, altho they will never have the "pep."

The health of our men is wonderful, because we live practically an outside life and the weather is none too desirable. There is rain every day, which leaves a clammy dampness over everything, but in spite of it all no one complains. We are here to beat the Huns, and we will stay and do it, as long as you homefolks will keep sending the necessities of life to us and the young men.

ROBT. B. ALLEN.

✣

Cobble Stone Work

To the Editor: La Fargeville, N. Y.

In your May issue E. A. Siders asks for some details of cobble stone construction. If he had said examples I should have referred him to the chimney on page 31, March issue, 1918, and to the house on page 46, July, 1917. I suppose he has seen something like these on paper and wishes to build it. Just the proper way to use cobble stones depends somewhat on the size and shape of the stones and the work for which they are to be used. If one could see the stones and get an idea of the work he could then give more exact details, but will try to give some ideas which may be of help.

When the stones are as large as a man can readily lift they are laid up as with squared and dressed stone, using a line and plumb bob except that they are usually allowed to project more beyond the line so as to bring out the projections more prominently and the less there are of them, the more they project. That is where there is only a little cobble-stone work on a house such as porch piers or chimney foundation it must be made conspicuous; but where there is a lot of it, this feature should not be overdone.

Where the stones are mixed large and small the larger ones are placed at or near the bottom of the work and the smaller ones used higher up. For these smaller stones one

(*Continued to page 76.*)

A typical scene in the devastated area.

BROOKFIELD BROS. LIMITED
COMMISSION MERCHANTS
DEALERS IN
LUMBER, SHINGLES, DOORS, SASHES, MOULDINGS, CEMENT, LIME, PLASTER, FIRE BRICKS, FIRE CLAY, DRAIN PIPES, CHIMNEY CROCKS, ETC.
VIRGINIA WHARF
HALIFAX, CANADA 18th Jan. 1918

The Beaver Co., Ltd.,
Ottawa, Ont.

Dear Sirs:

STABILITY OF BEAVER BOARD.

With regard to our new office building on the ceilings and walls of which were used Beaver Board, just prior to the disastrous explosion of December 6th last in the city:

We wish to report that the North side of said office building (which was situated nearly two miles from the scene of the explosion) forced in several inches, some of the frame-work of the upper story of the building being badly dislocated and practically every pane of glass in the building demolished including four large sheets of heavy plate glass. Besides this the hot-air heating apparatus in the cellar fell to the floor and was knocked out of commission and other minor damage occurred. In spite of this some of the Beaver Board panels warped or moved at all, though some of them were slightly out by flying glass. This damage however is not now noticeable after having been painted over. As an illustration of the forces of the explosion which this office building had to withstand we would say that a large front door was burst in, the heavy lock and some of the frame work of the door torn away. We consider that the manner in which Beaver Board stood the shock was remarkable, and thought it would interest you to know the above facts.

Yours truly,
BROOKFIELD BROS. LIMITED.
Vice President.

BEAVER BOARD
PULP WOOD FIBRE

You can't expect Beaver Board results unless this trademark is on the back of the board you buy.

Beaver Board's Worth Proved at Halifax

Read this letter from Halifax. It tells how Beaver Board withstood the shock of explosion in a locality two miles from the scene of explosion where doors were twisted and torn, windows shattered, and *plaster turned* to *dust*.

Beaver Board weathered the storm. No other kind of wall and ceiling material could stand up under such conditions. The sturdy, yet pliable quality of this knotless, crackless manufactured lumber overcomes severe vibration and holds firmly in position without a break or crack.

Vibration, in any degree, will sooner or later make plaster crack. Beaver Board is unaffected, as this letter testifies, by twenty times the strain of ordinary conditions.

While Beaver Board is used mostly for the walls and ceilings of permanent structures, it is daily finding new use in temporary buildings. Listed prominently among the urgent materials telegraphed for by Halifax authorities, Beaver Board was soon on the ground and providing shelter for many people in the stricken district.

In these times of urgent building, contractors and carpenters all over the country have found a ready ally in Beaver Board. They are daily discovering new uses for this sturdy building material.

Your lumber or building supply dealer will always have plenty of Beaver Board in stock. We'll gladly send you interesting Beaver Board literature and give you the advantage of our Design and Decorative Service.

THE BEAVER BOARD COMPANIES
36 Beaver Road **Buffalo, N. Y.**

Branches in Boston, New York, Baltimore, Cleveland, Detroit, Chicago, Minneapolis, Kansas City and San Francisco.

Manufacturers also of Beaver Greenboard and Beaver Blackboard.
Distributors in Principal Cities. Dealers everywhere.

BEAVER BOARD

FOR BETTER WALLS & CEILINGS

(*Continued from page 74.*)

may use a sort of form. Guides may be set up in corners and loose boards put in between, and moved up as the work proceeds.

If the work is to go to a considerable height it may be well to use forms from the start. These are partly to keep the work true to line and partly to hold them in place till the mortar sets, tho one cannot rely entirely on the mortar to hold them, as each stone must be so placed that it will stay without any holding by the mortar.

As the mortar must not come to the face of the wall, or at least not beyond the face as far as the stones, it is well to fill the outer edge of the form with sand which will fall out when the form is removed. This is done by laying the stones first in mortar and then putting in the sand. This cobble work is generally battered—that is, made larger at the bottom than at the top. There are two good reasons for this. It is more stable, looks better and can be more readily built this way, as it would be difficult in some cases to carry the work up plumb; but it can be gradually drawn in and even tho it may not exactly come to the lines, no harm is done nor the defects noticeable. A good rule to remember is to start large enough at the base and then draw in as needed. Do not attempt to put the stones in courses, but lay a larger then a smaller. Don't get mortar too wet. Rake out and point the joints after work is finished, using richer mortar.

JOHN UPTON.

Gothic Roof Question

To the Editor: Bentley, N. D.

Please give some rule or system for laying out a Gothic roof. SYLVESTER SHORT.

How to Tackle the House Shortage Problem

To the Editor: Charleston, S. C.

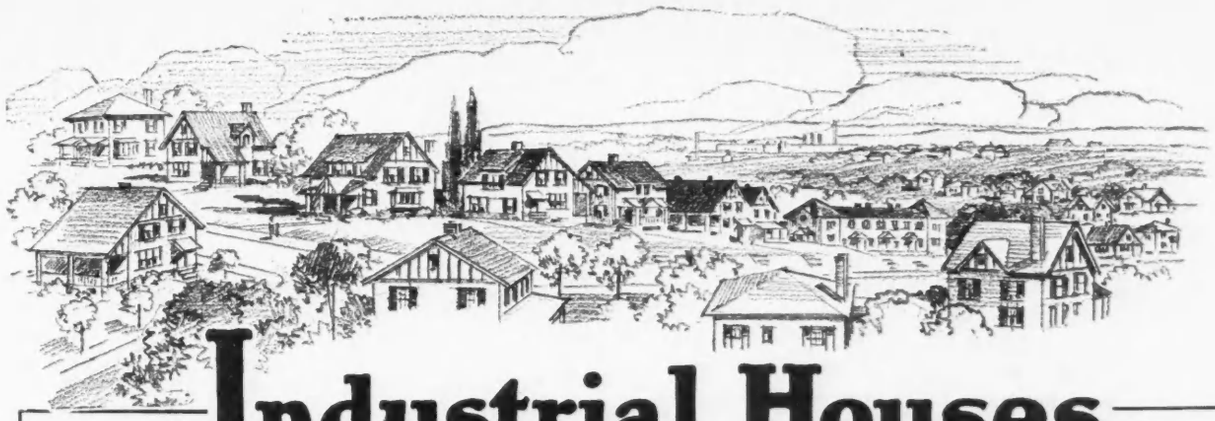
Charleston as a community has awakened to the fact that the only way to relieve the acute housing shortage existing in the city is for everybody to stop talking and start building. As a first step, a large number of leading business men and bankers have gone thru the preliminaries of organizing the Victory Housing Corporation and they will have a capital stock subscribed of $300,000, shares of $100 each, and shares may be paid at the rate of 1 per cent a month for 100 months. It is planned to make the company popular and democratic, yet managed in a business-like way that will insure reasonable profits to the shareholders. The company has the backing and endorsement of the Charleston Chamber of Commerce.

The Victory Housing Corporation will be governed by a board of directors, including some of the leading business executives of the city. There will also be an advisory board of bankers to aid in the financial transactions of the company.

The corporation's plans include the building of new houses and the remodeling of old properties. Charleston has a large number of old family mansions that have become dilapidated and are not in use, but that can be renovated rapidly and made into desirable lodging houses or apartment houses. Because of the scarcity of materials, the company feels that it may be wisest in the beginning to devote most of its attention to a program of renovation, which can be done more cheaply and more rapidly than new construction.

It is not expected that the Victory Housing Corporation will do more than make a beginning. Indeed, it is intended to be principally an example for other companies and individuals. It is hoped by means of this step to institute a very general movement for construction and repair in Charleston which will result in caring for thousands of new people who have

(*Continued to page 78.*)



Industrial Houses

How Plastergon Wall Board Helps You Land the Contracts for Them

In bidding for extensive building operations as Industrial Housing, improve your chances of success by basing your bid on the use of

WATER-PROOF
PLASTERGON
TREATED WOOD FIBRE
WALL-BOARD

You will profit by the fact that Plastergon Wall Board passed the Government Tests conducted by the Bureau of Standards so satisfactorily, that it was used in nine-tenths of the New War Administration Buildings, in Washington—including

HOOVER FOOD CONTROL BUILDING **GARFIELD FUEL BUILDING**
ORDNANCE BUILDING **ARMY & NAVY BUILDING**
THE COUNCIL OF NATIONAL DEFENSE

The All Important Speed

You can safely slice many days off your estimate by figuring on Plastergon Wall Board, instead of lath and plaster.

No delay in waiting for plaster to dry.

Quickest possible application. Plastergon Wall Board not only lays rapidly on straight work, but cuts cleanly and is easily fitted into awkward places.

Because Plastergon Wall Board is thoroughly sized in its manufacture (saturated, not merely sprayed), no further sizing is necessary to day work. The board is painted as soon as it is on the walls and ceilings.

Permanence

Not a temporary interior, but walls and ceilings to stand as long as the building remains.

You protect yourself fully in using Plastergon Wall Board. We will stand back of every panel of the board we send you, and guarantee it to give perfect satisfaction, if applied in accordance with our simple rules for application.

Cost

With the high cost of lath and plaster, a great saving can be affected by the use of Plastergon Wall Board.

And in using it, you save from $4.00 to $6.00 per 1,000 sq. ft. because it is "ready sized."

Service

We will give you prompt service, in helping you figure your plans and estimates, and in the delivery of the board on the job. This is a big factor. We'll help you complete your work on time.

DO THIS NOW—Write for a sample of Plastergon Wall Board and the free Plastergon Service Plans for helping Contractors and Builders.

PLASTERGON WALL BOARD COMPANY

201-207 Philadelphia Avenue **Buffalo, N. Y.**

Correspondence Department

(*Continued from page 76.*)

recently become residents of the city. Charleston's population has increased by about 10,000 recently and the prospects are for an increase of at least 10,000 more within another year.

The Chamber of Commerce has devoted much attention during the last few years to the problem of caring for the new citizens and it is believed that in the Victory Housing Corporation a method of solving the difficulty has been found.

SIDNEY RITTENBERG,
Publicity Secretary Charleston Chamber of Commerce.

✣

Plugging Cures Warped Door

To the Editor: Los Angeles, Cal

In the March issue of your valuable publication, Mr. T. L. Anderson asks for a remedy for a warped door. The writer would suggest the following:

Bore a row of half-inch holes in edge of door, nearly thru stile and quite close to concave side of same. For each hole rip a plug out of thoroly dry oak and round off corners with plane, each plug to be ripped to form two wedges and when ready for use the pin would be ½ by 9/16 inches and should be driven so force is against end of grain in stile. Space between holes, space between hole and face of stile and width of plug will depend on kind of wood in door and resistance. Door should be forced into line, or a little better, before plugs are driven.

This scheme worked fine on a 2 by 6 inch by 12 feet O. P. more than 2 inches concaved. WM. FRATER.

✣

Strap Iron Straightens Door

To the Editor: Frankfort, S. D.

I will try to answer the question, "How to straighten a door." We had one to straighten some time ago, and we put the door in clamps to straighten, then got a piece of strap iron 1 inch wide and as long as the door, bored holes for screws, and cut out a place for the lock. Then we plowed the depth of 3/16 of an inch (the thickness of the strap iron), screwed the strap iron to the edge of the door with 1¼-inch screws. If possible, leave the door in the clamps for a day or two.

W. R. SCHLOTTER,
Contractor and Builder.

✣

Crown Mould Radius for Curved Corner

To the Editor: Mt. Sterling, Ky.

Would you please give me some information relative to the easiest way to get radius of crown mould to bend over corner of porch? The radius to cut out piece ready for slicking; also to get radius of spring mould to bend over circle to window? E. F. ROBERTSON.

✣

Three-part Accordion Door 10 by 10 Feet

To the Editor: Freeport, Me.

I wish to get a little information in regard to joining sills at corners. I have a barn to resill, the sills practically all gone.

In resilling, which gives the better satisfaction, mortise and tenon, or half the sills and spike together with heavy spikes? The barn has got to be raised 2 or 3 feet, and I want the joint that will stand the most strain in raising.

I also would like to know if accordion doors would be practical on a door 10 feet wide and the same height? On account of a building adjoining a rolling door can't be used. Would a door divided in three parts with four hinges to

(*Continued to page 80.*)

Repair and Remodel with

Explain to customers how much better it is to Upsonize the ceiling FOR GOOD than to be bothered constantly with cracking, falling plaster and the muss of repairs

This is the year—your year—to create a Permanent, Profitable Business in UPSONIZING

UPSON-BOARD PROCESSED

Better than Plaster for Walls and Ceilings

The Most Dependable Board Made in America

HIGHER cost of construction materials has led many people to believe that building is prohibitive for them this year.

Repair and remodeling work will be more extensive in 1918 than new construction—with the exception of construction along certain essential industrial and farm building lines.

This is your opportunity to test out to your own satisfaction the profits and possibilities of Upsonizing.

You can easily secure jobs repairing cracked plaster ceilings with Upson Board. The price of wall board has not gone up nearly as much, comparatively, as that of lumber and other building materials. Upsonizing costs your customers no more than re-plastering or re-papering would. And the $5 to $15 per 1000 sq. ft. it saves in paint over other boards make DEPENDABLE Upson Board actually cost them less than any cheap, inferior board.

With the ceiling done, a gradual Upsonizing of the walls and ceilings of the entire house usually follows. Only a DEPENDABLE board that will insure customers' complete and lasting satisfaction can bring you these repeat orders consistently. Choose the MOST DEPENDABLE BOARD IN AMERICA—the board whose RECORD of **less than one complaint to every 2,000,000 feet sold and used** has brought its makers, of all wall board manufacturers, an invitation to membership in the famous Rice Leaders of the World Association. Every member must have gained national recognition for HONOR in Business; UTILITY in Product; STRENGTH in Finance, and Efficiency in SERVICE.

You can do a quarter more work with Upson Board. It cuts clean, without tearing, crumbling or gumming your saw—and with less waste. It is more easily handled and applied than brittle or flimsy boards. UPSONIZING is agreeable, interesting work. Your trade, once started, increases of itself.

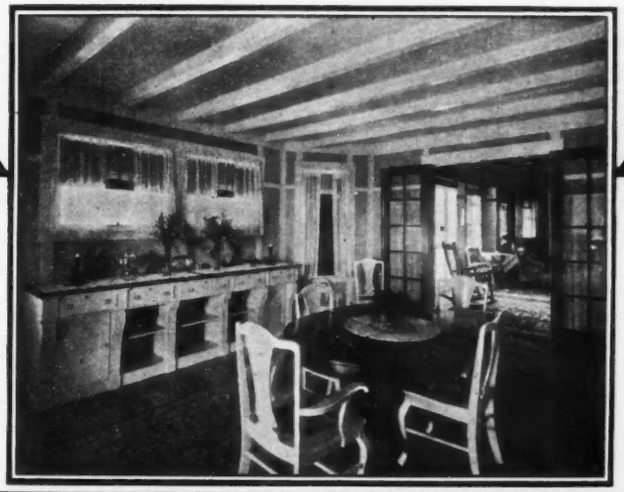
In fairness to yourself, don't judge Upson Board by other boards you may have used. It's **different—better**—because harder, stiffer and nearly twice as strong as most boards. Write us today and we will send you Upson Board samples for your own test. We also will provide you with useful suggestions on installing wall board.

"What UPSON Does Today, Imitators Attempt Tomorrow"

THE UPSON COMPANY, Fiber Board Authorities
55 Upson Point, Lockport, N. Y.

UPSON BOARD IS NOT LIKE OTHER BOARDS

1. It is **nearly twice as strong** as any other wood pulp board.
2. The only wall board that looks, feels **and works** like wood.
3. Cuts, handles and applies more easily. Carpenters have found they can install from 25% to 30% more Upson Board a day than any other wall board.
4. Does not pull from the nails, or warp, buckle and twist on the walls—like soft, punky boards.
5. The one wall board SCIENTIFICALLY PROCESSED; **kiln-cured,** like interior trim; genuinely **water-proofed; surface-filled** to give a perfect painting surface.
6. Cost of finishing included, it is by far the most economical board for your customers.
7. Made in the most complete line.
8. Holds **efficiency record** of LESS THAN ONE COMPLAINT TO EVERY 2,000,000 FEET SOLD AND USED.



Finished in an attractive shade or tint of sanitary, washable paint—the Upsonized Ceiling makes a much handsomer room, and soon saves its cost many times over

MAKE SPARE TIME PROFITABLE

Keep a few bundles of Upson Board handy for use in your shop. In any spare time you have you can turn out cabinets, screens, store window trims, simple household furnishings, etc. They are easy to make and sell, and will bring you in many an extra dollar.

BY INVITATION MEMBER OF

NEW YORK U.S.A.

UPSON PROCESSED BOARD LOOK FOR ME! "SUNNY" UPSON

LOOK FOR THE FAMOUS *BLUE* CENTER

NOT LIKE OTHER BOARDS! THE LITTLE DIFFERENCE IN PRICE DOES NOT MEASURE THE BIG DIFFERENCE IN QUALITY!

(*Continued from page 78.*)

each part work on a door of this width? Garage door floor bolts to be used to hold doors from buckling out when closed.

Please give me this information in an early edition of the AMERICAN BUILDER, as work must be done in the near future.

I have seen quite a lot in past editions in regard to fast shingling, hanging and setting doors, etc., and would some of the brother carpenters start the ball rolling in regard to fast lathing? I have a friend who says he can nail 2,500 laths per day. As this is something I never have done but one day in my experience, I am at sea on a question of this nature.

Some of the brothers have given receipts for ingredients to be used on sore hands. I will give a recipe of mine, which I consider the best I have ever found:

One-fourth ounce gum tragacanth. Soak twenty-four hours in 1 pint of water. Strain forcibly thru cloth; then add 1 ounce alcohol or bay rum, 1 ounce witch hazel, 1 ounce glycerine, 10 drops carbolic acid (pure). Put on hands in small quantities and rub in thoroly. There is nothing better.

J. B. SYDLEMAN.

✣

Design Wanted for Glazed French Door

To the Editor: Oak Park, Ill.

I would like to see published in your magazine a sketch showing the proper proportion of French glass doors to fit into an opening 6 feet 3 inches wide and 6 feet 9 inches high, the doors to be designed in four parts, opening in the middle and folding back on one another like the old-fashioned wood blinds on the inside of windows.

These are to be inside doors between living and dining rooms.

D. A. HAFF.

Not so Fast on Doors to be Oiled

To the Editor: Churdan, Iowa.

I enclose $2.00 to renew my subscription to your paper, which I have read with pleasure the past year.

I have read with interest the discussion about hanging doors in the last few issues. In this locality a good deal of the inside work is oil finish and we get lots of doors that take over thirty minutes to clean for the oiling after they are hung. Fast work is commendable, but good work remains to tell the story long after the time required to do it is forgotten.

R. H. HALLOWAY.

✣

Roll Roofing as Wall Insulation

To the Editor: Jamestown, N. D.

I have been a reader of your paper for a number of years and have enjoyed it very much, especially the correspondence department, and have made use of ideas expressed therein that far exceed in value the small subscription price.

Regarding Bro. Fred W. Kochs' question in the March issue about Unifelt for insulation, I think I have something better and just as economical. I use a cheap grade of prepared roofing applied with lath nailed flush with inside of studding, thereby forming a double air space. This is used without waste, as the rolls are 36 inches in width, which are split in half, and studding are 16 inches on centers, leaving the strips plenty wide enough for cleating with lath.

I have plastered houses in zero weather and never experienced any difficulties, and I never had any complaints about frost forming on inside of plaster since I have insulated in this way, a common occurrence in this country.

Wallboard makes a good insulator, but I personally prefer the roofing, since, being cleated with lath and not drawn too

(*Continued to page 82.*)

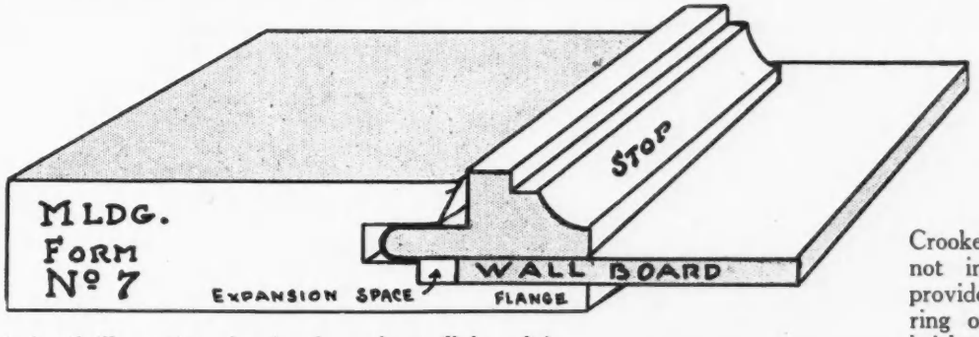
A room in the Wall Board Cottage showing Friedel's (Pat.) Flange Moulding in Use.

Use Wall Board? Yes! BUT—Use it Right!

100% Improvement over old way.

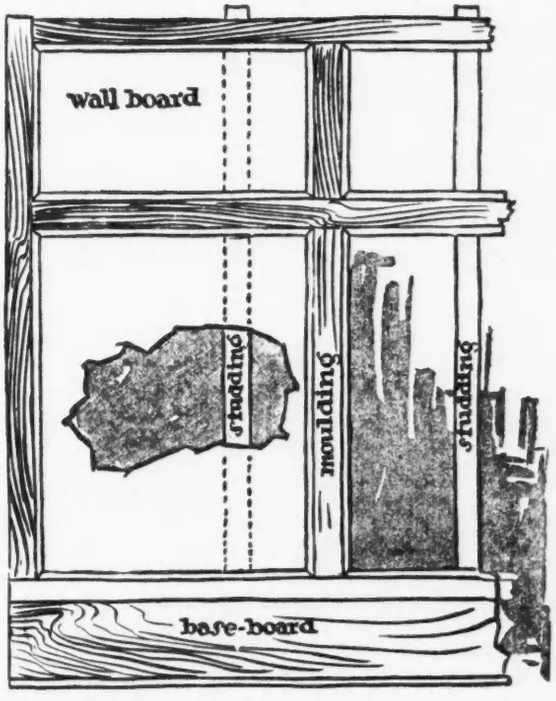
The Editorial Pages of this Issue opposite page 34, illustrate in detail the common type of Industrial Housing Wall Board Cottage.

Friedel's (Pat.) Flange Moulding for Wall Board is a modern improvement for using Wall Board. A special Tongued Stop secures wall board *without* nailing at edges. Supporting Flange *eliminates* headers or nailing pieces under Wall Board. Expansion Space *prevents* bulging of wall board caused by nailing at edges.

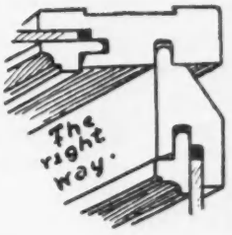


A detail illustration showing how the wall board is held in place. Notice space allowing for expansion and contraction of wall board.

Crooked framing does not interfere. Flange provides sufficient furring over old lath or brick walls. *No headers! No nailing!*



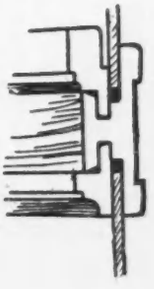
This view shows moulding spaced irrespective of studding.



Friedel's (Pat.) Flange Moulding has many advantages—it is Artistic, Economical and Mechanical. Its use is highly recommended by leading contractors and wall board manufacturers. Also Architects.

The Moulding Forms are made in several different styles to suit every need. Edges of flange or moulding are grooved to receive a stop, which secures the wall board in position.

Friedel Moulding is manufactured in stock lengths 10, 12, 14 and 16 ft. Clear, yellow pine. Special forms made to detail in Oak, Birch, Gum or Mahogany.



Request our Free Book "New Working Ideas."

W. R. Friedel Co., Dept. 21 Memphis, Tenn.

Correspondence Department

(*Continued from page 80.*)

tight, it allows for shrinking and swelling of lumber, thereby insuring a tight joint at all times.

I believe in keeping abreast of the times and have a shop and a light Parks rip, cross-cut and band saw machine which has paid for itself many times over, and I am always ready to try any new thing that looks good.

I read with a great deal of interest the articles on fast work; but I think more of good work than speed. If a thing isn't worth doing right it isn't worth doing at all, for a building stands a long time for everyone to see the cheap work and defects. I never timed myself on hanging doors, but always take time enough to do as near a perfect job as possible; which I think is the most important.

I just sent in a renewal this month in connection with "Architectural Drawing," which I hope to receive soon.

Yours for a greater AMERICAN BUILDER,

LESLIE H. LUCAS,
Contractor.

✣

Three Butts to a Door

To the Editor: New Britain, Conn.

For many years we have advocated the use of three butts to a door and in instances where good construction is desired, the practice has become general. There are, however, many doors which are hung on only two butts for various reasons, among which is the lack of knowledge on the part of the user or owner of the value or necessity of the third butt, and the unwillingness of the carpenter or builder to incur the additional expense of applying it.

The reasons for using a third butt are many and would require greater space than we care to take in this letter to state them in detail. A few of the technical advantages of its use are as follows:

Prevents the door from sagging or warping.
Protects the casing and trim from being mutilated.
Relieves friction and consequent wear of knuckles.
Relieves strain on screws.
Prevents pins from working out.
Keeps latch and dead bolt from getting out of alignment.
Doors are easier to operate.
Eliminates noise caused by grinding of knuckles or binding on pin, and forcing door closed when latch is out of line.
Increases life of woodwork and hardware applied to door.
Makes opening dust and weather proof.
The third butt saves its cost by eliminating repair bills.

The method of packing them heretofore has been one pair in a box with screws, but we are now supplying them three in a box, constituting a set, which we are introducing to the hardware trade thru the various mediums of publicity, such as trade journals, pamphlets, booklets and the personal solicitation of our traveling representatives.

THE STANLEY WORKS,
A. Zimmerman,
Sales Manager.

✣

Likes the Blueprints

To the Editor: La Fargeville, N. Y.

I agree with George E. and others that the blueprints now being printed are a great addition to the AMERICAN BUILDER, tho it was a puzzle as to what happened to the kitchen chimney in the April issue, but it comes out thru the roof, so we will call it all right.

(*Continued to page 84.*)

Herringbone Rigid Metal Lath

THE perfect "key" of Herringbone Rigid Metal Lath and plaster affords the greatest possible resistance to the ever-present menaces of fire, falling ceilings, mice, vermin, weather, and decay.

Herringbone Lath is composed of a series of heavy longitudinal ribs, set at an angle of 45 degrees to the plane of the lath. The wide, flattened strands curl the plaster around the lath with an unbreakable grip.

Specify Herringbone Rigid Metal Lath for all your stucco and interior plaster work. Send for the Herringbone Catalog.

THE GENERAL FIREPROOFING CO.
YOUNGSTOWN, OHIO

Manufacturers of Metal Lath, Concrete Reinforcements, and Waterproofings

Members of Associated Metal Lath Manufacturers
Branch Offices in Principal Cities

GF
YOUNGSTOWN, OHIO

Correspondence Department

(*Continued from page 82.*)

These blueprints certainly do give us a chance to study what we might not otherwise get and it is getting so now that every man should be familiar with such printed plans and details that he may understand the meaning without a lot of verbal explanations. We are coming more and more to the time when the printed plan will cover about all the instructions one will get for doing the work, and the boss may not even be within call. I would suggest that every reader study them and learn all he can about their meaning and perhaps get some good books on plan reading and drawings and study those also.

JOHN UPTON.

✣

Wants to Remodel Old Stone Cistern Into Fireproof Vault

To the Editor: Sackville, N. B., Canada.

Enclosed find post office order for two dollars for renewal of my subscription, also book, "Mechanical Drawing."

I have been a subscriber ever since your paper started, and also have your Encyclopedia of Building Construction, as well as nearly all your other publications; but while they contain a vast amount of information, I am just now up against a problem I would like a little definite information on which I don't find anywhere.

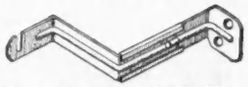
There is an educational institution in Sackville that wants to convert an old-time stone water cistern into a fireproof vault. The inside measurements are 7 feet wide, 13 feet long and 8 feet deep from bottom of cistern to the underside of first floor joists. It is built in the center of basement of a stone building two stories high, all wood inside, slate roof. What I want to know is if the 2-foot stone wall built in lime and sand mortar would be sufficient; or would it be necessary to build a brick wall inside with an air space between? Also, how best to construct fireproof ceiling and have sufficient height inside vault, and also the best and proper way to build in electric light wire.

J. W. DOULL.

✣

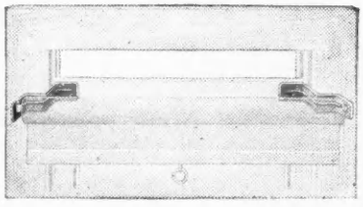
Ventilating Window Shade Fixtures

You have found that it is decidedly unsatisfactory to open your windows from the top—altho this is the best way to admit fresh air.



No. 55 and 56—Shade Fixture (Greatly Reduced.)

If you lower them from the top you must roll the shades clear up, which will probably make the room too light and if you draw the shades down the wind rattles the shades and damages them, besides keeping you awake.



Shade Fixture Attached. Window Open from the Top.

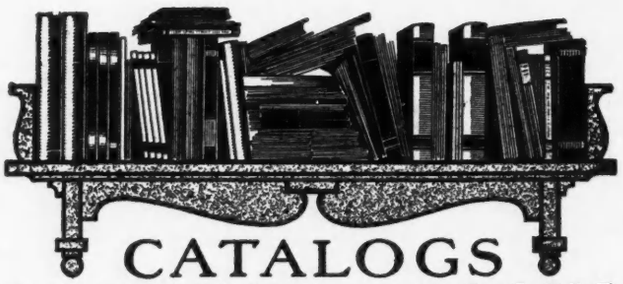
If you open them from the bottom there is danger from drafts.

There is no need of putting up with these annoyances longer.

Simply hang your present shades the modern way — with ventilating window shade fixtures.

These are fastened to the window instead of to the casing so the shade moves up or down as the window is raised or lowered.

Thus you can admit fresh air without a direct draft. Still the shade can be unrolled as much as you like to exclude the light and secure privacy.



CATALOGS BULLETINS & BOOKS RECEIVED

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

A New Book on Elevator Door Hardware.—The Richards-Wilcox Manufacturing Company, Aurora, Ill., have just issued a handsome book for the use of the architect and builder, entitled, "The Ideal Elevator Door Equipment and Checking Devices"; twenty-four pages, 8½ by 11 inches, printed on heavy enameled paper and completely illustrated with halftone cuts and line drawings.

New Edition of Truscon Building Products Handbook. One of the most useful and convenient little publications issued for architects and builders, is the 104-page book of the Truscon Steel Company, Youngstown, Ohio, under the title, "Truscon Building Products." The size of the book, 3½ by 6 inches, is such that it can be conveniently slipped into the pocket, yet it contains a great fund of useful tables and building information. This book is a compact digest of the many elaborate catalogs published by this company. It contains complete information regarding all their various products, together with tables of carrying capacities, strengths, etc. The present is the eighth edition, and has been completely revised.

Lakewood Bulletin No. 32. The Lakewood Engineering Company, Cleveland, Ohio, have made their Universal Mixer the subject of an 8-page bulletin of standard size, namely, 8½ by 11 inches, bearing the above serial number. It illustrates this mixer in detail and gives sizes and capacities. On the last page is a very interesting group illustration giving a comprehensive view of all the various pieces of engineering and contracting equipment which go to make up the Lakewood line.

"McKinney Butts for All Doors." A neat little 24-page booklet, size 3½ by 6 inches, printed in two colors, is being distributed by the McKinney Mfg. Company, Pittsburgh, Pa. It contains practical suggestions on hanging different kinds of doors and other information of special interest to architects, contractors and prospective owners.

American Metal Shingles are the subject of a very attractive circular which the advertising department of the Milwaukee Corrugating Company, Milwaukee, Wis., is just now sending out. With it goes another of equal interest pertaining to their "invisible joint" art metal ceilings. Every day the fire-retarding effectiveness of metal ceilings is being demonstrated by the confinement of the flames to a single room. Metal shingles also perform a great service along this same line.

Evans "Almetal" Fire Doors and Shutters. Taking this as the subject of their new 40-page catalog and handbook, the Merchant & Evans Company, Philadelphia, have prepared and are now distributing a work of exceptional value. It embodies the results of their experience and practice in fire protection and prevention appliances over a period of many years. Comparing it with the average

(*Continued to page 88.*)

Catalogs, Bulletins and Books Received

(*Continued from page 86.*)

catalog on fire doors and shutters, this is more technical and more exact, containing more up-to-date information, advice and practical facts for the man who will specify or install fire doors and shutters. An important section of this book concerns itself with their famous "Star" ventilators. Size is 8½ by 11 inches, enameled paper, copiously illustrated with photographs and working drawings.

Bulletins on Kewanee Private Utilities. Anyone having to do with water supply systems, electric lighting systems, sewage disposal systems, gasoline storage plants, or stationary vacuum cleaners, will find the collection of "Kewanee Bulletins" as issued by the Kewanee Private Utilities Company, Kewanee, Ill., of very practical interest. They are prepared in loose-leaf form with substantial binding cover. Size is 8 by 10½ inches. While serving as a catalog for the equipment which this company has to offer, these Bulletins are much more. They are instructive text books going fully into the scientific and practical considerations of water supply, electric lighting, sewage disposal, etc.

"Monolithic Concrete Silos." Under this title, the Portland Cement Association, 111 W. Washington Street, Chicago, is distributing a meaty little pamphlet of 24 pages, size 3½ by 7 inches. By means of well selected photographs and descriptive text, it makes out a good case for concrete silos, and tells why and how they should be built.

"Boss" Mixer Catalog No. 18. The American Cement Machine Company, Inc., Keokuk, Iowa, have gotten out a new catalog, size 8½ by 11 inches, 44 pages. It is an artistic piece of work, printed in two colors, black and blue. The illustrations are all good and big so that the smallest details are easily examined. In this catalog are featured their line of side discharge and end discharge building mixers, pavers, grouters, hoists, back fillers, material elevators, pumps, and concreting carts.

"Fire Prevention and Fire Fighting On the Farm." This publication, prepared and distributed by the U. S. Department of Agriculture, Office of Farm Management, will be especially valuable to rural builders and their farmer customers. It is a book of 16 pages. Address the department at Washington, D. C., and ask for Farmers' Bulletin 904.

"National Giant Farm Elevators." The Portable Elevator Mfg. Company, Bloomington, Ill., have prepared one of the most complete and elaborate corn crib and granary equipment catalogs we have seen. It is a book of generous page size, 8½ by 11½ inches, which permits the illustrations to be large and clear. Thirty-six pages are devoted to the various features of the portable and built-in cup elevators offered by this company. The associated equipment, such as dumping jacks, speed jacks, horse power outfits, etc., are also illustrated. A supplement to this catalog of particular interest to carpenters and builders, is a 12-page set of "Modern Crib Plans," illustrating five different types of modern corn cribs.

Cube Mixer Catalog. The F. C. Austin Company, Inc., Chicago, have prepared an exceptionally complete catalog of 84 pages, descriptive of the Austin Cube Mixer. Close up photographs show in detail the several styles offered, and some very interesting construction views are included, showing the use of this equipment in various labor-saving ways. The illustrations are supplemented with instructive

(*Continued to page 90.*)

Catalogs, Bulletins and Books Received

(*Continued from page 88.*)

text matter and complete specifications. Size of catalog, 8 by 11 inches.

"Screen Door Hardware." A timely leaflet under the above title is being distributed by the Stanley Works, New Britain, Conn. It illustrates a few of the best selling items of screen fixtures and trims made by the Watrous-Acme Manufacturing Company, for which the Stanley Works is acting as sales agent. Retail hardware dealers are securing this folder in quantities to be imprinted with their name and distributed to their customers.

"The Housing Problem in War and Peace," is a paper bound book of 116 pages, size 8½ by 11 inches, published by The Journal of the American Institute of Architects, Washington, D. C. The text matter and illustrations are reprinted from the issues of the Journal, September, 1917, to February, 1918, inclusive, being the series of articles presented under the general title, "What Is a House?" Many will be glad to have them collected and bound together in this convenient book form. Price $2.25 postpaid.

"Industrial Housing." This bulletin, and its companion, "Natco Homes for Workingmen," are the contribution of the National Fire Proofing Company, Pittsburgh, Pa., to this urgent question of providing, without delay, satisfactory housing conditions in the various industrial centers which have expanded so rapidly since the beginning of the war. Both of these bulletins are well illustrated with photographs and practical working drawings showing clearly Natco hollow tile construction for inexpensive homes. This is by no means an untried material for this work, as the views of several of the well known industrial housing enterprises amply demonstrate.

"Housing and Industry." This is a very timely contribution by Mr. R. S. Whiting, of the Engineering Bureau of the National Lumber Manufacturers' Association, Chicago, to this important subject. It is a booklet of 24 pages and covers, size 6 by 9 inches. All of the important factors of the industrial housing proposition are taken up in logical sequence, concisely and to the point. Some typical floor plans are illustrated, together with photographs of a few of the better known housing developments. A noteworthy feature is a 4-page map insert showing panoramic view of Firestone Park, Akron, Ohio, where 725 frame houses were built in 12 months.

"Community Homes Built With Steel Forms." The Hydraulic Pressed Steel Company, Cleveland, Ohio, offer a classy book of 32 pages and covers, bearing the above title. It develops in a convincing and attractive way the thesis that workingmens' homes can be, and are being built of concrete poured into pressed steel forms.

Housing Number of "Alpha Aids." The current issue of the publication of the Alpha Portland Cement Company, Easton, Pa., is devoted to several industrial housing projects where concrete construction is being used. Sixteen pages and covers, size 9 by 12 inches, are packed full of worthwhile illustrations and text matter pertaining to this subject. An 8-page blueprint supplement gives suggestions and working plans for small houses of concrete construction.

New "Wonder" Equipment Catalog. The Waterloo Cement Machinery Corporation, Waterloo, Iowa, have prepared a new catalog of 60 pages and covers, size 8 by 10 inches, to show their complete line of concrete mixers, pavers, hoists, pumps, back fillers, air compressors, and gasoline engines. It is a very attractive book, well printed in two colors on high grade paper. The illustrations really

(*Continued to page 92.*)

Catalogs, Bulletins and Books Received

(*Continued from page 90.*)

illustrate and the descriptive text is lucid and complete.

Pull versus Carry. This is the theme of a breezy little publication received from the Failor-Martin Corporation, Woolworth Bldg., New York City, who are the eastern distributors for the King Trailer Company, Ann Arbor, Mich. This 16-page booklet features the King Semi-Trailers and demonstrates the economy of their use for the kind of hauling which builders do.

The "New-Way" Kerosene Engine is described and illustrated in catalog D18A of the New Way Motor Company, Lansing, Mich. This is a booklet of 12 pages, size 8 by 11 inches, printed in two colors. Testimonials from users tell of the conspicuous success of this 365-day kerosene engine in contractors and builders work.

Lakewood Industrial Haulage. A 24-page illustrated bulletin has been issued by the Lakewood Engineering Company, Cleveland, Ohio, to show their trackless haulage equipment. It illustrates the Lakewood-Galion tractor, storage battery trucks, factory trucks and trailers. In these days when production must be speeded up and labor conserved, haulage equipment of this sort for factories, railway terminals, and industrial enterprises generally, takes on new importance.

✣

Power Wastage Eliminated by Semi-Trailer

"Power wastage," declares E. F. Hartwick, Chief Engineer of the Fruehauf Trailer Company, "is a weak point in our industrial system today. On every hand we can see losses that are sapping the profits and increasing costs. It does not always require the services of efficiency engineers to point out these losses resulting from wastage of power. Engineers are putting forth every effort to curtail these losses.

"The use of the semi-trailer is connection with the motor truck is a big step in the conservation of power. By this method we are able to use the tractive forces as well as the carrying capacity of the truck.

"A semi-trailer scientifically built, with anti-friction bearings, reduces the wear and tear on the motor truck to a minimum and increases the truck's capacity three-fold."

✣

Painting Over Cement

By R. H. Langston

THE painting of concrete and cement surfaces is a subject the master painter of the past was not called upon to consider, and I find very little information to be had bearing on the matter.

It is but one of the many new problems that changing conditions of recent years have brought to the master painters of today, and there is no question but that it is a matter demanding of the master painter of today and of the future, a thoro knowledge and investigation. The rapid decrease in the lumber supply and the vast improvements made in cement construction, whereby it has been adapted to every conceivable purpose, all serve to bring it into extensive and increasing use, and I predict the time will come, within the life of many of us, when on exterior painting more paint will be applied over concrete or cement surfaces than on wood.

(*Continued to page 94.*)

"VENDOR" SERVICE

The Reliable

Roofing Slate Service

Genuine Bangor
Albion Bangor
Jackson Bangor
No. 1 Pen Argyl
Slatington Big Bed
Washington Big Bed
Trout Creek Big Bed
Franklin Big Bed

The various qualities of Roofing Slate quoted above are the product of the following companies and are sold EXCLUSIVELY through the Vendor Slate Company.

WE CAN MAKE IMMEDIATE SHIPMENTS IN ANY QUANTITY—IN ANY SIZE—IN ANY QUALITY.

Genuine Bangor

Genuine Bangor Slate Co.
Old Bangor Quarry
American Bangor Quarry
Bangor Excelsior Quarry
Star Quarry
Royal Quarry

North Bangor Slate Company
North Bangor Quarry
Bangor Washington Quarry

Bangor Quarry Company
Bangor Union Quarry

East Bangor Consolidated Slate Co.
East Bangor Consolidated Quarries

Bangor Central Slate Company
Bangor Central Quarries

Bangor Supreme Slate Company
Grand Central Quarries

New Bangor Valley Slate Company
New Bangor Valley Quarries

Bangorvein Slate Company
Peerless Quarries

Albion or Jackson Bangor

Jackson Bangor Slate Company
United States Quarry
Valley Quarries
No. 5 and 6 Jackson Bangor Quarries

Albion Vein Slate Company
Stoddard Quarries

Genuine Bangor Slate Company
Albion Quarries

M. L. Tinsman Slate Company
Tinsman Quarries

No. 1 Pen Argyl

Hercules Slate Company
Hercules Quarries

Hammann Slate Company
Northampton Quarries

Shimer Slate Company
Alpha Quarries

Slatington Big Bed
Washington Big Bed
Franklin Big Bed
Trout Creek Big Bed

Provident Slate Co.
Genuine Washington Slate Co.
Genuine Franklin Slate Co.
Prudential Slate Co.
Washington Slate Co.
Trout Creek Slate Co.
Blue Mountain Slate Co.
Blue Valley Slate Mfg. Co.
Custard Slate Co.
Carbon Slate Co.
Thomas Slate Co.
Ellis Owens Slate Co.
Lobb, Parry & Co.
Henry Quarries Co.
Royal Blue Slate Co.
Highland Slate Co.
Manhattan Slate Co.
Roberts Bros.
Blue Vein Slate Co.
Ellis Owens Sons Slate Co.
Pennsylvania Slate Co.

THE LARGEST SHIPPERS OF ROOFING SLATE IN THE WORLD

V

VENDOR SLATE CO.

INCORPORATED

EASTON, PENNSYLVANIA

V

Painting Over Cement

(*Continued from page 92.*)

It must be understood that ordinary linseed oil paints cannot be applied with success directly to cement or concrete surfaces on account of the alkaline lime present in the cement, and which is subject to prolonged formation in the presence of moisture. The action of this alkali is to burn up or destroy the oil, causing rapid fading of colored paints, chalking and scaling off of the material. Therefore, it is necessary, if a linseed oil paint is to be used, that the surface be first thoroughly saturated with a neutralizing wash that will destroy the alkali action. The most approved method is to use a solution of zinc sulphate, made by dissolving sulphate of zinc crystals in water in the proportion of three pounds to a gallon of water. A cement surface treated with this wash and allowed to dry can then be painted without danger from alkaline action, and with the assurance that results will be lasting, as if applied to a wood surface.

Many manufacturers now put out cement paints in liquid form, ready for use, in white and all shades; the vehicle used in these paints being alkali proof and therefore requiring no treatment of the surface before the paint is applied. Paints of this nature are being used extensively on cement and concrete construction with the very best of results, and can be obtained at a very reasonable price.

I would not, under any consideration, recommend the use of so-called "water color paints" for exterior cement coating, as they do not form a waterproof coating (one of the most important requirements of a cement paint), and offer no protection from deteriorating influences.

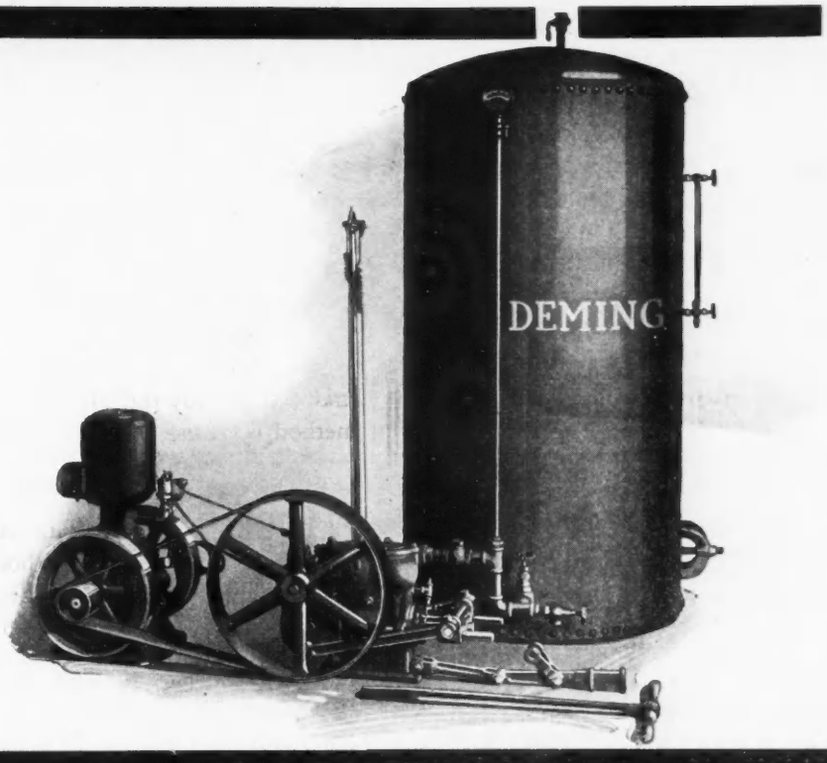
For interior cement surfaces no better material can be employed than an approved flat wall paint. Most of the leading brands of flat wall paint being of an alkali-proof nature, and where a gloss finish is desired, any ordinary gloss paint or enamel may be applied over one or two coats of the flat paint.

All new laid cement surfaces, either exterior or interior, should be allowed to become thoroughly dried out and hard before painting, and the best results have been obtained where the work has stood not less than a month before paint was applied. If the surface is dry and the paint right, it will penetrate freely on the first coat, filling the pores and rendering peeling impossible, but this would not be the case if applied over a damp surface.

Exterior cement paints should dry to a flat or semi-flat finish in order to carry out the stone or cement effect. Nothing looks more out of place than a full gloss paint applied to exterior cement surfaces.

Cement construction, especially of a lighter type, as applied to residence work, is subject to very rapid deterioration unless protected and made waterproof by the application of a suitable paint, and, while in the

(*Continued to page 96.*)



DEMING PUMPS THE WORLD'S BEST

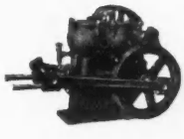
The Deming Trademark for 35 years on the world's best pumps.

Are You a Dollar-Dodger?

A "dollar dodger" isn't so rare as you might suppose. He is a man who does **part of a job** and then fails to pick up the extra profits by doing **all the job.**

For instance, he is a contractor who builds a house or a barn without taking the order for the water-supply system. Yet it takes only a Deming catalog, a few minutes extra time and calling in a local plumber. The extra sale is easy money for the contractor and makes the plumber a booster for you.

Better get our Water System Catalog showing all sizes and types (for hand, windmill, gas or gasoline engine and electric motor drive) today and have it handy for reference.



Deming "Atlas" the old reliable. A pump for wells and cisterns 25 feet deep or less. Use with gasoline engine or electric motor and vertical or horizontal tank.

Deming straightline power working head for wells 300 feet deep or less. Discharges water into spout or elevated tank. May also be operated by hand or windmill.

Prime yourself with pump facts. Send for Deming Water Supply Catalog today.

THE DEMING COMPANY

99 Depot St. - - SALEM, OHIO

Deming

Hand and Power Pumps for all uses.

Painting Over Cement

(*Continued from page 94.*)

early history of cement construction little attention was paid to the matter, owing probably to the fact that cement work at that period was confined to rough, heavy construction, such as factories, warehouses, etc., at the present time all architects and builders recognize the fact that, aside from the embellishment and decorative feature whereby the cold, unfinished appearance of cement construction is made attractive and pleasing to the eye, the protective and waterproof feature is of even greater importance. It is being plainly demonstrated in many cases where cement-made houses have remained long unpainted, that exposed parts become water-soaked and by afterwards freezing, burst the bond, causing cracking and crumbling of the construction; therefore, with the increasing use of cement construction we may expect a greatly increased demand for the painting of these surfaces.

The painting of cement floors, especially in factories warehouses, stores and public buildings is a necessity in order to prevent the constant powdering of the surfaces from the wear, with consequent damage and annoyance from contact with this lime dust. For cement floors, the same as for other cement surfaces, the paint must be of an alkali-proof nature, but quick-drying, with a good gloss and must produce a tough, elastic waterproof surface.

Many of the ready-prepared cement floor paints, the quick-drying vehicle of which is largely China wood oil, have been found to give excellent results.

Prepare and close up all cracks and surface imperfections with a plaster or cement. To all surface apply a thoro coat of zinc sulphate, giving twenty-four hours to dry, after which apply three coats of paint, color to be selected, each coat to be thoroly dry before the application of another. The plaster or cement must be thoroly dry before painting.—*The Master Painter.*

✣

Combination Woodworkers are Money Makers

There are many handy things in the way of power appliances coming the way of the progressive carpenter and builder these days, not the least by any means of which is the combination woodworker—that power driven machine that has anywhere from three to nine machines combined in one.

The rip saw itself is a great thing, and even the man with a plain rip saw table is way ahead of the man with no power-driven machines at all, but when you can add to that a band saw, a top smoother or buzzplaner, a boring machine and a few other special combinations the conveniences are multiplied by a factor considerably greater than the additional cost.

(*Continued to page 98.*)

Federal Farm Loan Bonds
Supply Funds To Finance Farmers
The First Year's Work

The bond of the Federal Loan System should command the attention of all investors.

The Federal Farm Loan System is the one agency of the United States Government which will bring to America month by month, year by year, and decade by decade through all the future a highgrade security, issued for the purpose of carrying out a great national agricultural policy.

The whole world looks for salvation to the American farmer.

The American farmer looks for financial help to the Federal Farm Loan System.

The Federal Farm Loan System seeks to enlist the wise investor in its movement to finance the farmer safely, soundly and conservatively, and thus save the world.

There are twelve regional Federal Land Banks, all operated under the inspection, examination and control of the Federal Farm Loan Board, a bureau of the Treasury Department at Washington.

The first of these banks to be organized received its charter March 1, 1917. Others were chartered immediately afterward. The farmers borrow through national farm loan associations. The first of these associations received its charter on March 27, 1917.

On March 31, 1918, associations had been formed to the number of 2808, or about four associations to every five counties in the United States.

About 56,000 farmers had joined these associations for the purpose of borrowing money on farm mortgages.

Loans amounting to over $160,000,000 had been approved by the banks and on over 30,000 of these loans money had been paid to the farmers to the amount of about $80,000,000.

And since March 31st the work has gone on—new associations have been organized; new applications have been made; new bond issues have been authorized.

And it will go on forever. So long as investors will buy Federal Farm Loan Bonds, and so long as farmers need money and can give security this work will go on. It is a mighty movement to put farming on a better financial basis. You can enlist in it to your own profit and to the good of the Nation by buying Federal Farm Loan Bonds.

Federal Farm Loan Bonds bear 5 per cent interest, payable semiannually, May and November, and in the language of the Federal Farm Loan Act, "shall be deemed and held to be instrumentalities of the Government of the United States, and as such they and the income derived therefrom shall be exempt from Federal, State, Munipical and local taxation." It will be noted that this exemption is complete. Interest on these bonds need not be included in income tax returns.

Such exemption from taxation in a five per cent bond constitutes an advantage hitherto unknown in American investments. These bonds are issued in denominations of $25, $50, $100, $500 and $1,000, and in either coupon or registered form. They are due in 20 years and redeemable after 5 years.

Federal Farm Loan Bonds are printed in the Bureau of Engraving and Printing in Washington, and have the same protection against counterfeiting that is enjoyed by the currency in your pocketbook.

In the language of the Farm Loan Act, Federal Farm Loan Bonds "shall be a lawful investment for all fiduciary and trust funds and may be accepted as security for all public deposits." You can offer your banker no better collateral.

You can buy Federal Farm Loan Bonds at 101 and accrued interest. Order through any bank, trust company, broker or express agent, or write to any of the twelve Federal Land Banks:

Springfield, Mass.
Baltimore, Md.
Columbia, S. C.
Louisville, Ky.
New Orleans, La.
St. Louis, Mo.
St. Paul, Minn.
Omaha, Neb.
Wichita, Kans.
Houston, Texas
Berkeley, Cal.
Spokane, Wash.

THIS SPACE DONATED BY

PATENT VULCANITE ROOFING CO.

Chicago, Kansas City, San Francisco, Albany Birmingham, Ala., Minneapolis, Minn.

or address:

FEDERAL FARM LOAN BOARD
Treasury Department,
Washington, D. C.

Combination Woodworkers are Money Makers

(*Continued from page 96.*)

The two great advantages of the combination woodworker are these: It enables the carpenter to do for himself at small cost a lot of special work that it would often be inconvenient to get promptly from some mill, and it gives him a chance to refine and work up to advantage many of the left-overs and scraps from jobs and get out of them work that would cost considerable money at some mill.

It is seldom that a man has a job of much pretensions, but there are some changes, some special frames or something that he can make with his combination woodworker easily and thus save both time and money. Often, too, these very things can be made of scraps and leavings from some other jobs.

Again, there comes a rainy time when it is not practical to work on an outside job. Then is the time to get busy in the shop with the combination woodworker at any one of a dozen or more things that can be done, from the making of screens to the getting out of frames for some job ahead. Instead of having odds and ends of lumber piled around the back yard, weather beating and going to waste, they can all be taken in the shop and converted to good use. There are many times that short lengths and small sizes in high-priced finish can be made from common lumber that costs much less by refining, trimming and ripping out the knots; and it is things like this that not only help the machine pay for itself in a little while, but keep on helping make a profit for the builder.

During those rainy days if there is lots of work ahead in the shop it is practical for two, three or even four men to work around some of these combination machines, thus keeping the crew together and busy. For some of the larger undertakings in building operations the combination woodworker is an excellent thing to take right out on the job, especially if there is a lot of concrete forming to do, and always it is a good things to have in the shop to help do special work, and utilize to the best advantage material that would otherwise go to waste because it would be cheaper to go to some mill and buy the special stock wanted than to make it by hand from lumber you have. That is why the combination woodworker is not by any means the least of the many conveniences coming the way of progressive builders these days. J. Crow Taylor.

✣

Treated Wood Block Flooring

CREOSOTED wood blocks, already extensively used as paving material for city streets, have been coming into use as flooring for the last four or five years, according to the Forest Service. Its durability, noiselessness under heavy traffic, and sanitary properties are its chief advantages for paving and also give it special value for making floors, especially for use where heavy trucking, the moving of heavy ma-

(*Continued to page 100.*)

Treated Wood Block Flooring

(*Continued from page 98.*)

chinery, or other severe use makes the maintenance of floors a serious problem. Its rather high cost is its chief disadvantage.

Wood block is now widely used for flooring in factories, warehouses, machine shops, foundries, various types of platforms, wharves, and docks, and for such miscellaneous purposes as hotel kitchens, hospitals, laundries, and slaughter houses. Possibly one of the oddest of these uses is for the floors of wild animal cages and runways. Notwithstanding the recent increase in the use of wood block for these purposes, it is believed that the growth of this industry will be even more rapid in the future. These floors are well liked by the workmen because they are easy on the feet.

Most of the blocks for these floors are now made of southern yellow pine. Hemlock, larch, Douglas fir, black gum, beech and maple are also used. The blocks are sawed from long sticks of timber and are treated in huge steel cylinders from 6 to 7 feet in diameter and 100 feet or more in length. Creosote oil is run into the cylinders and pressure is then applied to force it into the wood. The oil is a product obtained in the manufacture of coke from coal and its purpose is to prevent decay of the wood, and also to prevent shrinking and swelling of the floor after it is laid.

The blocks are laid with the grain vertical, so that the most wear-resistant surface is exposed, and usually on a concrete foundation. The joints or cracks between the blocks are then filled wtih hot paving pitch or asphalt which binds the many separate pieces into one continuous surface. According to the experts, the cost of creosoted wood-block floors averages about $1.50 per square yard for the blocks alone and about $2.40 per square yard for the completed floor.

For best results these floors should be laid under competent supervision, for unless certain fundamental rules are followed trouble is very liable to ensue. Most of the trouble is caused by the swelling or the shrinking of the wood, due to changes in content of moisture, difficulties which may be guarded against, however, by carefully following the most approved methods.

✣

What is "Inspected" Fire Hose

THE importance of knowledge gained from accurate testing, as opposed to guesswork, has just been illustrated anew at Allentown, Pa. The peculiar circumstances of the case give it a general public interest.

In the month of October, the Copley Cement Manufacturing Company of Allentown, had a fire in its stone bunker—presumably from a locomotive spark. The bunker was a slow-burning construction, the fire was quickly discovered and the mill fire squad responded promptly; there should have been little loss.

(*Continued to page 102.*)

The Master Painter—*Does it!*

It Helps You Make Money

Start today and create a painting business of your own in your locality. Your operator can earn more money. Your customers will have better work and lower prices if you own and use a Master Painter Portable Painting equipment.

Only $96.00 F. O. B. Chicago, for the handy Air Painting Equipment complete with 6 ft. of air hose and 8 ft. of electric socket cord either a. c. or d. c.

The illustration at the bottom of page shows the Master Painter mounted on our special Shorturn Trailer. Get to the job in a hurry. Attach a Shorturn Trailer to the rear of your automobile and speed along the road as fast as you desire. A Shorturn Trailer enables you to get around quickly and carry your portable painting outfit along with you ready for instant use. It is especially advantageous to BUILDING AND PAINTING CONTRACTORS ON INDUSTRIAL HOUSING JOBS.

The Master Air Painting Equipment produces a better finish, uses less material and makes an enormous saving in labor over the hand method.

We build special equipment for special work. Our engineering departments are at your service.

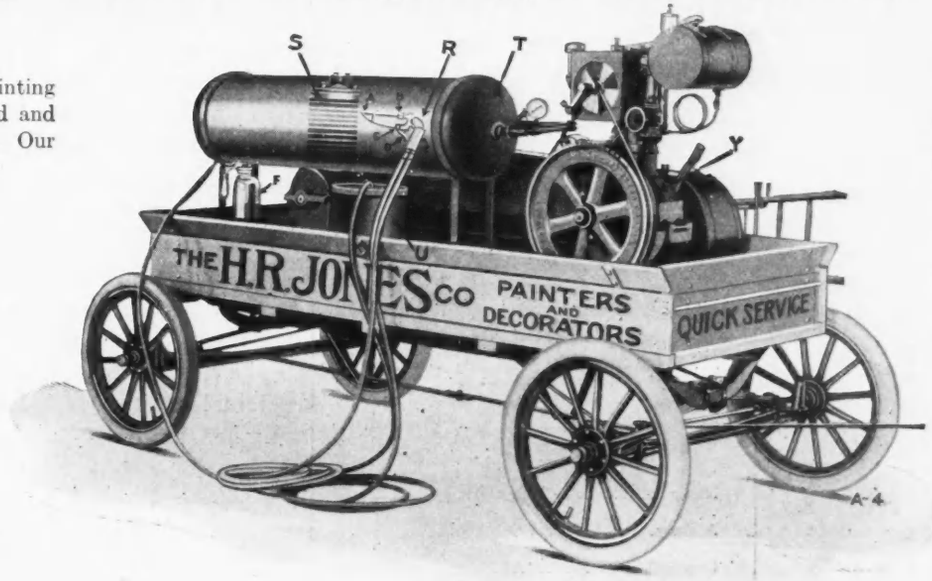
The Surty Guard Company, Inc.

62 East Lake St
CHICAGO, ILL.

Write us about your painting work, describing the kind and amount of work you do. Our engineers will give you all details covering your requirements.

Air Appliance Division

Surty Guard Co., Inc.
62 East Lake Street
CHICAGO



For Those Big Outside Painting Jobs

What is "Inspected" Fire Hose?

(*Continued from page 100.*)

The fire squad attached a coupling of the plant's expensive new fire hose, ran it to the blaze and turned on the water. The hose burst in five or six places and the fire merely gained headway. The disgusted squad hurried to uncouple the hose and throw in another length, which immediately burst like its predecessor.

By the time a successful stream was finally secured the fire was burning fiercely. The loss amounted to $7,000 and was almost entirely due to the failure of the hose.

Why did the hose burst?

A $7,000 blaze is of no great public interest, but the answer to this question concerns everyone.

Note these points: The hose was not old but new. The company had not economized by purchasing cheap hose; on the contrary, it is reported to have taken a special measure of precaution—i. e., had specified *and paid for* hose inspected by the Underwriters' Laboratories.

It is alleged that the agents of the manufacturers who sold this faulty hose made the false charge that the Underwriters' hose, to a large extent, is "a game of graft on the part of the insurance companies," and naturally discrediting the value of the rigid inspection made by the Underwriters before a label is permitted to be placed upon fire hose by the Laboratories.

The incident serves to emphasize the need of proper testing to safeguard the life and property and three important points in connection with this fire deserves consideration:

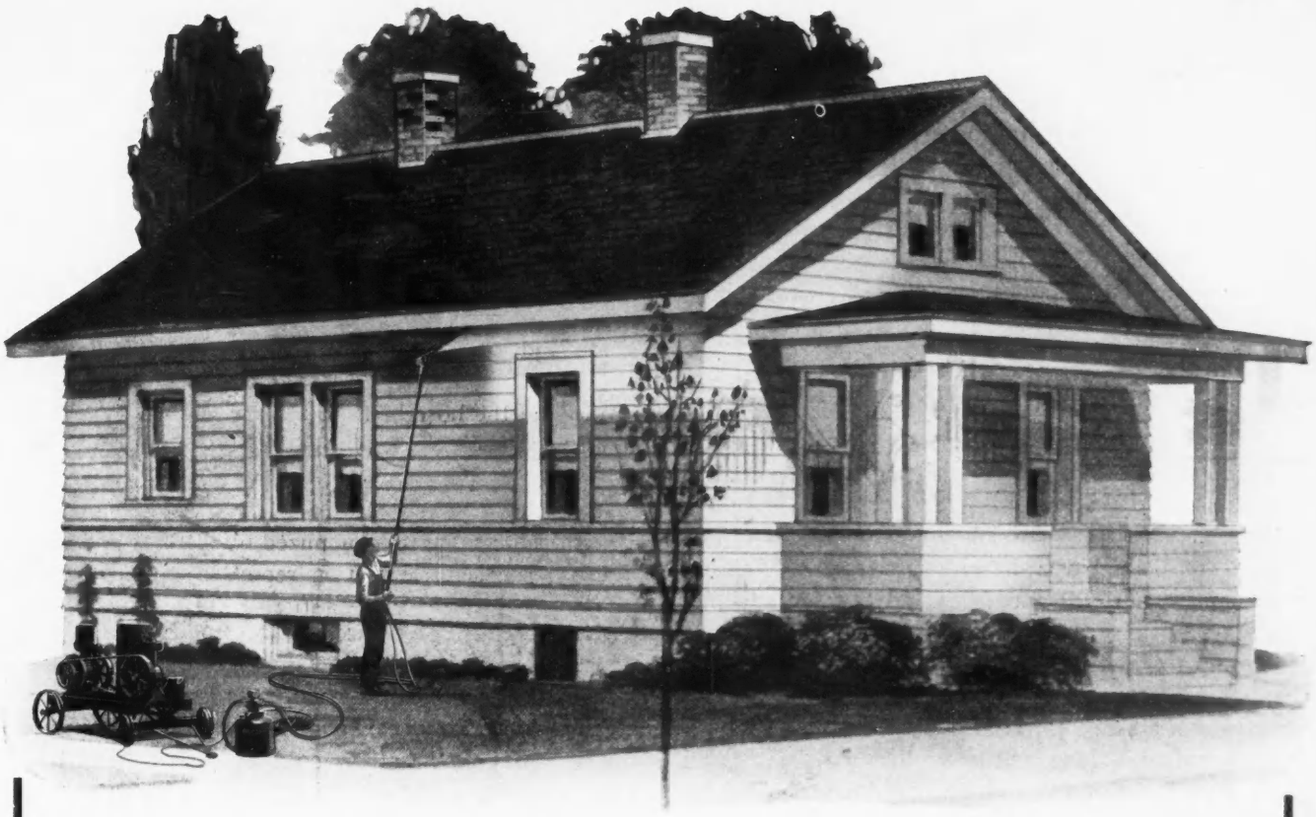
1st. The hose in question was not Underwriters' hose. It is reported to have been sold for Underwriters' hose and to have included in the price the Underwriters' charge of one cent per foot for inspection.

2nd. Before an Underwriters' label may be attached, each length of mill yard fire hose is tested at the hose factory under three hundred pounds pressure by an inspector of the Laboratories, and must be shown to withstand that pressure test before it may be used. The defective hose at Allentown did not bear this label and is reported to have burst at a pressure much less than the three hundred pounds required.

3rd. The Laboratories' test is the direct opposite "of a game of graft." It is maintained under the direction of the National Board of Fire Underwriters in the interest of public safety at a large annual expense to the companies. The charges made for inspection are nominal and the work is not intended to and does not produce a profit.

Any product that can comply with the standard of its tests can secure its label, but no product will be labeled under any circumstances until it has withstood the rigid test necessary to prove its worth in time of need.

(*Continued to page 104.*)



Painting this Cottage with the Aeron System

Aeron System
Portable Painting Equipment

Operation Facts

The painting is done at least 5 times faster than hand-brushing.

All coats are applied more thoroughly and uniformly. The spray reaches all surfaces.

There is no skimping—no dripping and other wastes.

THERE IS AN EXTENSION POLE TO FIT REGULAR AERON FOR SUCH WORK AS HERE PICTURED.

The equipment is compact and easily portable.

THE big saving in time, labor and cost effected on this class of job, demonstrates in a practical way the remarkable possibilities of the Aeron portable spray-painting system on all house painting.

Whether you are building a small or a large group of dwellings for industrial housing purposes; and whether this construction is of wood, stucco or brick in any type; both exterior and interior surfaces that should have a protective or decorative coating can be Aeron-painted to equal advantage and with equal speed and economy.

You are assured of the best possible results, as all Aeron equipment is sold to you on a strictly guaranteed basis.

Tell us about your painting problems or plans and we'll gladly submit Aeron System particulars that will show how to meet them—ADDRESS—

The DeVilbiss Mfg. Co., 1276 Dorr St., Toledo, Ohio

Contractor's Handy Auto Trailer

SPEED – ECONOMY – STRENGTH

Capacity—2000 pounds. Body—8 feet long, 46 inches wide, 12 inches high. Body and under frame built of open hearth steel. Axels—1¼ inch square bed, special high carbon steel. Springs—Semi-elliptic, oil tempered and double heat treated. Bearings—Bower roller. Wheels—1½ inch spoke, artillery type, second growth hickory. Tires—32x2, solid rubber. Weight—534 lbs.

Other models with gates at front; also extension tongue which permits carrying lumber, poles, ladders, etc. 30 feet long.

Write for Catalog C.

Rogers Brothers
COMPANY
Albion - - - Pa.

What is "Inspected" Fire Hose?

(Continued from page 102.)

The lessons of this incident are two-fold. In the first place, life and property may be, and often are, sacrificed to imperfect fire hose. In the second place, those who wish the security furnished by fire hose tested and passed by the Underwriters' Laboratories must make sure that each length bears a label certifying to such test. Without such label, any statement by any salesman to the contrary notwithstanding, the hose is not "Underwriters'" hose.

✣

Keeping the Tools Sharp

By J. Crow Taylor

The best way to keep cutting tools sharp is to grind them light and often. Once when on this subject before the injunction was made that the time to grind tools is just as soon as possible after they need it. The idea in mind, then, was that when a chisel, for example, is put away dull and left that way for a while, there is a turning to others for the work in hand, and by and by this dull one will be used for some purpose that will further dull it—some work that you don't want to risk a sharp chisel at.

Then the next thing you know that tool has passed from a good cutting tool to a grub and is getting along the road toward the scrap pile. There is another point than this in mind now. It is to preserve the temper and the keenness of the tools. If you keep whetting a cutting tool till it gets thick and stubby, the chances are that when you get to the grind stone with that tool you will get impatient about the time it is going to take, you will bear down heavy and perhaps burn the metal or draw the temper. It is a mighty easy thing to do this in grinding, so easy that carpenters perhaps unconsciously spoil more tools in grinding than are poor as to metal or temper originally.

And, besides, you keep the tools in better order by frequent grinding, and save enough whetting time to more than make up for the trouble. If you want to do a real nice job of planing on a board you take a light cut and go over it frequently with the plane. Well, something of the same thing holds in grinding tools—light grinding and frequent is what keeps them in the best shape.

✣

Standardization in Home Building Predicted

IN England the architects and builders are discussing the house of the future. The London Economist is leading this discussion and in a recent issue it said that standardization of finished parts is now generally accepted as a strong plank in any program of future housing. The fear that it would lead to tedious repetition of design is fast vanishing, and it is being gradually realized that it will not greatly interfere with the architect's individual touch. The greatest difficulty of all, however, is the utter impossibility of providing

(Continued to page 106.)

For Garages—Specify No. 58 Wagner Cloztite Hanger

TRACK FOR No. 58

One-Half Actual Size

We claim — and experience **proves** — that this is the best hanger ever designed for folding-sliding doors.

It is simple — strong — works smoothly and quietly. Doors never sag nor stick. Birds can't bother because track is bird-proof—and dirt-proof.

Two or three doors are hinged together and operate as one door. When open, the doors fold up compactly and are entirely out of the way. When closed, the door fits just as snug and tight as an ordinary hinged door in your home. May be used on inside or outside of building as desired. Requires very little clearance for doors when used inside—**none** when used outside.

Doors are hinged together and hung to the jamb, being supported at the opposite side by one Wagner Cloztite Hanger operating in Wagner, self-cleaning, dirt-proof track. In four and six door openings, two hangers are used — one hanger for each set of two or three doors hinged to either side of jamb. Adapted for openings of any width and may be used with any number of doors, from two to six. No. 58 is used with doors having a total weight not exceeding 300 lbs. No. 78 (with Wagner Hawkeye Track) for doors weighing up to 1,000 lbs.

Simpler, stronger, easier to attach than any other hanger or device designed for folding-sliding doors. It has a decided advantage over the extended track or adjustable bracket method in that it is much simpler and and there are no adjustments to get out of order. There is less strain on the track and brackets, for the track is fastened directly to the wall at all points the same as for ordinary sliding doors.

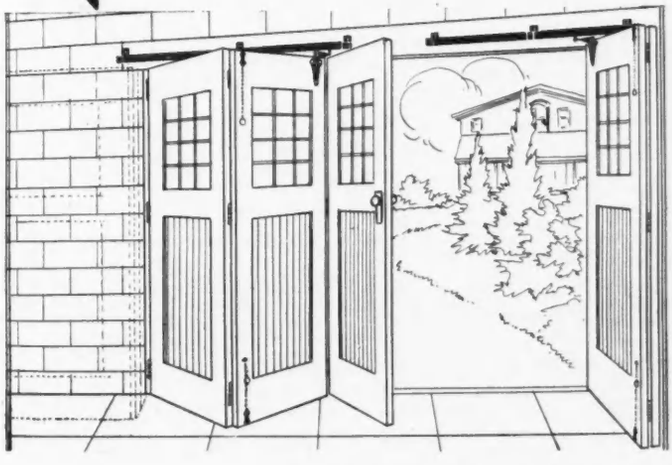
Substantially constructed of malleable iron. Has roller-bearing trolley wheels and the hanger bolt revolves on a heavy duty ball bearing swivel, insuring silent and easy operation of the doors at all times. It carries the usual Wagner guarantee of quality and satisfaction.

There's a Wagner Hanger for every purpose

Leading hardware dealers sell the Cloztite and other Wagner Door Hangers and tracks for garages, barns, factories, warehouses, etc. Ask for and **insist** upon having Wagner Hangers and Tracks. Write for free circular showing various garage door arrangements and giving full details about Wagner Cloztite Hangers.

Back Uncle Sam Buy Liberty Bonds, Thrift Stamps, War Savings Stamps — and help support the Red Cross and other organizations that work for the good of the boys "over there." We **must** win the war—we **will** win the war! Your bit and our bit will help. "Billions for defense, but not one cent for tribute to the Huns."

Wagner Manufacturing Co. Dept. N **Cedar Falls, Iowa**



For Factories, Docks, Warehouses, Etc. Specify Wagner No. 78 Cloztite Hanger

Standardization in Home Building Predicted

(*Continued from page 104.*)

dwellings at low rents, owing to the increased cost of material and labor.

Building must be done rapidly. The slow processes, once the rule, can no longer meet the changed conditions. Houses must be had quickly, but they must be substantial. Such a policy will call for more change in building methods in England than in this country, but change may be expected here. The house built of wood can be standardized more than heretofore. Doors and windows are already largely standardized, and the practice might be extended to stairs, floors, cornice and interior finish. By the use of such standardization, houses might be erected in shorter time and at less cost, and little or nothing need be sacrificed in quality.

Statement of the ownership, managemet, circulation, etc., required by the Act of Congress of August 24, 1912, of American Builder, published monthly at Chicago, Ill., for April 1, 1918.

State of Illinois } ss.
County of Cook }

Before me, a Notary in and for the state and county aforesaid, personally appeared E. L. Hatfield, who, having been duly sworn according to law, deposes and says that he is the general manager of the American Builder and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business managers are:

Publisher, American Carpenter & Builder Co., Chicago, Ill.
Editor, Wm. A. Radford, Chicago, Ill.
Managing Editor, Bernard L. Johnson, Chicago, Ill.
Business Manager, E. L. Hatfield, Chicago, Ill.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.)

American Carpenter & Builder Co., Chicago, Ill.; Wm. A. Radford, Chicago, Ill.; Roland D. Radford, Chicago, Ill.; Helen M. Radford, Chicago, Ill.; Wm. A Radford, Jr., Chicago, Ill.; E. L. Hatfield, Chicago, Ill.; G. W. Ashby, Berwyn, Ill.

3. That the known bondholders, mortgages and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are: (If there are none, so state.)

There are no bonds, mortgages or other securities outstanding.

4. That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is: (This information is required from daily publications only.)

E. L. Hatfield, general manager.

Sworn to and subscribed before me this 29th day of March, 1918.

F. R. Dusenberg.

(My commission expires Feb. 11, 1918.)

Damages in Building Contracts

By CHESLA C. SHERLOCK

THERE is always considerable doubt as to the meaning of stipulations in building contracts for damages in case of a breach thereof. Perhaps there is no one phase of the law of contracts, espepecially as applied to the building trade, that has caused the wide difference of opinion that this question of damages has. If the courts are puzzled, it is high time that the contracting parties should learn to express their meaning in clear and conclusive terms. If this is not done, one may find himself bearing a considerable loss because of his own negligence.

In former times, when a provision was included in a contract providing for damages in case of breach thereof or a failure to perform within a certain time, the courts held that the stipulated amount was a penalty to be recovered in full, regardless of the actual loss sustained. That is to say, if A contracted to build a house for B and to complete it within sixty days, to pay $500 in case of failure, under the old rule of law B could recover the full $500, even tho A completed the house sixty-one days after the execution of the contract and B's damage was only a nominal one.

This rule soon led to disaster for builders and oftentimes for those working under them. It encouraged fraud and deceit in the execution of contracts and oftentimes in a distinct loss to the contracting party. It was manifestly unfair and the courts soon found out that if one party to a contract was permitted to take advantage of the other, that the other would be very apt to retaliate in every conceivable way in order to make his profit. It resulted in builders cheating not only the one who had employed them, but also their own mechanics and other employes.

Out of this state of affairs grew a new rule of law, one which is at once confusing and bewildering to many people, but when once understood a safer guardian of the rights of both parties than the old rule.

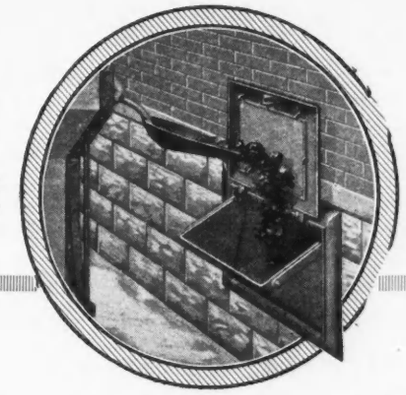
The courts have now decided that where there is a stipulation in a contract for damages two constructions can be placed upon it. These are: (1) Penalty, and (2) liquidated damages. But in this case, under the later rule of law, penalty does not mean what it formerly did. Today a penalty means that it is agreed that damages may be recovered, up to a stipulated amount, for the actual loss. The other construction is that the amount specified is to be treated as liquidated damages, or that it has been agreed that the damages will equal the amount stated in the contract and is agreed between the parties that such amount shall be recovered.

Any one can appreciate what a host of contention is generated by litigants when there are two such widely different constructions placed upon a stipulation in a contract.

It has been next to impossible for the courts to lay

(Continued to page 110.)

No Scarring Siding or Breaking Windows



No Spoiling Lawn or Walks

Now Let the Coal Man Do His Worst!

All the coal goes where it belongs through a Majestic Chute. No coal bounces up to strike wall, walk or window. No litter, no coal marks, no damage to siding or windows. Improve and protect the beauty of your home with the

Majestic Coal Chute

Locks from inside—absolutely burglar-proof. Also serves as a window, giving splendid ventilation and light to basement. Can be put in old homes as well as new.

Write for Free Catalog of Majestic Specialties —Coal Chutes, Garbage Receivers, Package Receivers, Furnaces, Etc.

THE MAJESTIC COMPANY
702 Erie Street, Huntington, Ind.

Does it Pay to Experiment

The Modern Way Furnace Company Finished Experimenting Years Ago

Today thousands of MODERN WAY heaters are giving entire satisfaction, because they are scientifically right, and mechanically correct.

With our foundry capacity doubled, we are in a position to give you service with a Real Pipeless Furnace.

Get our proposition today.

THE MODERN WAY FURNACE CO.
Offices: 7th Floor Shoaff Bldg.
FORT WAYNE, IND.

Pipeless Profits

BUILDERS and dealers all over the country are making big profits on the Mueller Pipeless Furnace. There are hundreds of pipeless furnace prospects in your community waiting to be sold. You can sell them. It's quick, easy money and every sale makes a friend and a Mueller booster.

MUELLER PIPELESS FURNACE

The Mueller Pipeless has made a record for fuel saving and efficiency during the past severe winter which has given it a nation-wide reputation. It's a real furnace with sixty years of furnace building experience behind it. Write today for our proposition to builders and dealers.

L. J. Mueller Furnace Co.
Makers of Heating Systems of All Kinds Since 1857
218 Reed Street
Milwaukee, Wis.
U. S. A.

Mail This Coupon Now

L. J. MUELLER FURNACE CO.
218 Reed Street **Milwaukee, Wis., U. S. A.**

Gentlemen: Without obligating me in any way please send me your catalog fully describing and illustrating the Mueller Pipeless Furnace.

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

Damages in Building Contracts

(*Continued from page 108.*)

down any rules for the government of themselves in the just determination of these disputes. In fact, a great many of our best authorities have said that each case must be decided upon its own merits, rather than upon any hard and fast rules of law. Out of the decisions, however, there has been slowly evolved a more or less distinct method of deciding these cases that should be of vital interest to every one engaged in the building trade.

Damages should be purely compensatory and nothing more. Because the courts have recognized that only such a construction of damages is conducive to justice for all parties, they have leaned more and more to the idea that provisions in a contract for damages should be treated as penalties rather than as liquidated damages. In this way, say the courts, the true loss can be fixed and the responsibility placed, at the same time working justice to both parties.

But in many cases where the courts have taken this view they are almost immediately confronted with another problem just as hard to solve. In many contracts it is almost impossible to determine what the actual loss was. So the courts have cast about from one construction to another, until both lawyers and builders are at sea.

In these latter instances, if there be no reasonable means of ascertaining the actual loss, the courts have held that the damages specified in the contract are liquidated damages, provided such construction would not result in absurdity or impossibility.

Oftentimes the intention of the parties, the nature of the contract and the work contracted for and other outside considerations are entertained by the courts in an effort to determine what was intended by the contract. This may or may not result in justice being meted out. Certainly a great deal of risk could be eliminated by all parties if they would be sure to express the meaning of their agreement in clear and concise language.

The courts have adopted some tests for determining the status of these provisions in building contracts that should be of value to builders. They have said that if a provision in a contract for damages cannot be treated as liquidated damages, then it is clearly in the nature of a penalty. Now let us see how they go about it to decide whether they are liquidated damages or not.

They have used two rules in determining whether or not such a provision is intended to mean liquidated damages. They are: (1) Where the damages are uncertain and not readily capable of ascertainment in amount by any known or safe rule, whether such uncertainty lies in the nature of the subject, or in the particular circumstances of the case; or (2) where, from the nature of the case and the tenor of the agreement, it is apparent that the damages have already been the

(*Continued to page 112.*)

Damages in Building Contracts

(*Continued from page 110.*)

subject of actual, fair estimate and adjustment between the parties, such a provision will be construed as providing for liquidated damages. If these rules cannot stand the test with a given case, the courts exclude the contention that they are liquidated damages and declare them to be a penalty.

It has always been the rule that in the construction of contracts, the intention of the parties was to govern. The courts resort to many means in order to determine the contract. It would not be advisable to go into that subject here, as it would require considerable time and space. Suffice it to say that if builders would be a little more exact and careful in their use of language in writing provisions in their contracts for damages it would save them much litigation and tend to safeguard their rights. It is clearness of expression that counts in contract writing. If you mean liquidated damages, say so; if you mean a penalty, make it clear.

✣

Circus Nets for Builders

THE Safety Department of the Industrial Accident Commission of California has been responsible for the introduction of safety nets in San Francisco for buildings under the course of construction. These nets are used in some of the large Eastern cities and there are European countries that require a similar safety precaution.

It has been found that the law is impracticable that calls for the temporary flooring of all buildings under construction. High balconies, galleries, arch trusses of theaters, auditoriums, churches, armory buildings, railroad train sheds, towers, viaducts, bridges, domes and cupolas on which men are engaged are not safe in case men fall. The distance to the floor is too far. The safety net supplies the need. A man falling many feet into a net is uninjured. The cost of the net is nominal and it is easily adjusted and removed. It can be readily transported from one job to another.

The safety nets are similar in character to those employed by fire departments in some of our large cities to catch persons jumping from blazing windows. Circus performers are protected in like manner.

Safety nets are in use for the protection of structural steel workers employed on the erection of the California Theater at Market and Fourth Streets, San Francisco. The four nets cost $60 each.

The need of these safety nets is best illustrated by California's experience in 1915. In the building industry fifteen men lost their lives—ten of these men fell to death and five were struck by falling objects. There were ninety-one permanent injuries. The temporary injuries numbered 1,447. The use of nets would have affected the seriousness of some of these 1,553 casualties.

The Value of a New Building to a Bank

Increase in Deposits Is Directly Traceable to Modern Quarters, Which Are Also an Attractive Advertisement

THE value of new banking quarters was recently made the object of a nation-wide investigation. A questionnaire, touching on the following points, was sent to a list of financial institutions which had of late either erected new structures or materially improved their old banking quarters:

1. What, if any, is the advertising value of a new building or improved quarters?
2. Other things being equal, do you believe that the bank with the new building is the one most favored by depositors?
3. Have deposits increased or decreased since the occupancy of the new quarters?
4. Would you attribute all or any part of this increase, if any, to the attraction of the new quarters?

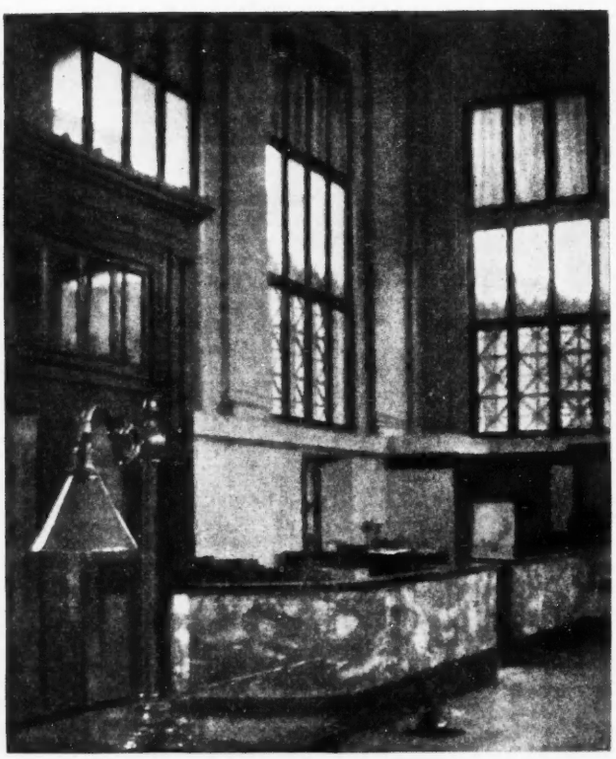
With but little variation and only slight reservation or exception, all of the banks from which an answer was received replied in the affirmative to each of the questions.

One bank considers its building as its "best advertisement for many years to come," and says that its value in this respect "cannot be estimated in dollars."

An officer of another institution says: "The advertising value of a new building or improved quarters is, in my opinion, very high. People like beauty, and an imposing banking room appeals to most for the reason that a bank is supposed to represent the accumulated wealth of its community. Cheap equipment indicates a poor or cheap bank in the eyes of many."

Deposits, as a matter of cold figures, have in most cases shown positive and important increases, judging

(*Continued to page 116.*)



A Modern Bank Interior.

Jahant Pipeless Furnace

Burns Every Kind of Fuel

For the heating of the home or building of open construction the Jahant Pipeless Furnace has proven to be the best. Because of its scientific construction the Jahant Furnace will save from $20 to $30 on the average coal bill.

Built for Service

Jahant Furnaces are built to give the best service possible to be had and they will last a lifetime. Our Engineering Department will give their advice absolutely free in regard to any heating problem involving the Jahant Furnace. They will make drawings and plans and advise whether or not the pipeless furnace is suitable for your use. We have been manufacturing and selling Jahant Furnaces for 35 years and have never had one returned. The service we have rendered to others we can also give to you.

The Jahant Furnace with its Down Draft construction burns oxygen from the air, giving perfect combustion, saving ⅛ to ½ on the coal bill.

Contractors and Builders

Jahant Furnaces give universal satisfaction—once sold they stay sold. We guarantee each Jahant Furnace. We pay the freight when shipping. It will be well worth your time to investigate our proposition — it's a money maker for you. Write today for catalog and literature.

The Jahant Foundry and Heating Co.
106 Jahant Bldg., Akron, Ohio

Sales Easily Made

If YOU would spend a few hours of your time to the boosting of the Canton Sidewalk Doors and Coal Chutes you would be pleasantly and profitably awakened to the starting of hundreds of extra repair jobs around every home.

Start the Ball a Rolling

Canton Sidewalk Doors and Coal Chutes are the best cards for you to play on approaching a prospective customer on the proposition of repair work. Canton Sidewalk Doors and Coal Chutes are burglar proof, made of the best materials, and stay rods and chains hold them in place either when open or closed. This is your opportunity to make added profits and also to stir up new work. Write for our catalog B-7.

CANTON FOUNDRY & MACHINE CO.
CANTON, OHIO

Don't Buy a Cheap Tank

It costs more in the end.
Economize. Invest in a Caldwell Cypress Tank.
It's the tank that's built according to ***engineering principles*** by men who have been at it thirty years. Every joint is machine-planed with full bearing. The hoops are of the proper size and number and spaced so that no hoop is over-stressed. The result being that the Caldwell Cypress Tank is thoroughly leak-proof and gives good, long, dependable tank *service*.

Send for Catalogue

W. E. CALDWELL CO.
Incorporated
1990 Brook St., LOUISVILLE, KY.

Caldwell TANKS AND TOWERS

Comfort Indoor Closet

ODORLESS SANITARY GERM-PROOF

Every home without sewerage, plumbing or running water needs one. Anyone can install in any room. Placed in any room in house. 10,000 in use.

U. S. HEALTH BUREAU APPROVES

Says: "Chemical Closet complies with requirements." Abolish fly-breeding closet. Germ-life killed by chemicals. State Boards of Health endorse it. 10,000 in use.
Agents Wanted. Exclusive territory. Catalog FREE.

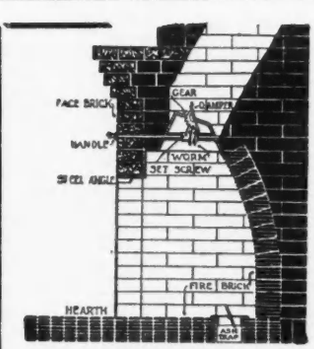
COMFORT CHEMICAL CLOSET CO., 306 Factories Bldg., Toledo, Ohio

Agents $60 Weekly

Robinson Folding Bath Tub. Big Seller. Costs little, no plumbing, little water. Weight 15 pounds, folds into small roll. Full length baths, far better than tin tubs. Guaranteed 10 years. $10 a day easily made.
Write for free tub offer.

ROBINSON CABINET MFG. CO., 4844 Factories Bldg., Toledo, Ohio

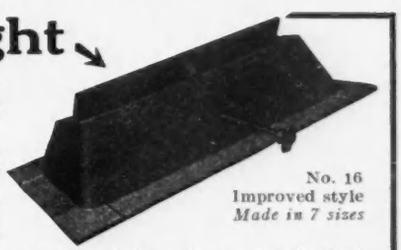
Build the Fireplace Right



Don't try to reduce the cost by leaving out a good damper. It results in an expensive fireplace to operate and allows rain, wind, birds, and other objectionable things to enter the room when the fireplace is not in use.

Stover Dampers support the brick work, form a smooth throat, regulate the draft perfectly, and reduce the labor cost of erecting fireplaces.

The price is low enough so a Stover Damper can be used in every fireplace. Made in several styles for all size openings. The Improved style shown above is one of the most popular.



No. 16
Improved style
Made in 7 sizes

Send for catalog No. 1740 showing our fireplace fixtures and giving information as to the best fireplace construction.

We also make wind mills, feed mills, gasoline engines, hinges, pulleys, saw vises, latches, sink brackets, and other hardware.

Stover Mfg. & Engine Co.
Freeport, Illinois

Stover Mfg. & Engine Co., 725 East St., Freeport, Ill.
Send us Catalog 1740.

Name..... Business.....

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

The Value of a New Building to a Bank

(Continued from page 114.)

from the answers to question three. While a number of those questioned merely replied that deposits had increased, others gave actual figures.

Deposits of one bank, for example, increased from $6,500,000 to $9,500,000 since the erection of a half-million-dollar building. Another's deposits increased from $6,000,000 to $12,000,000. Still another reported an increase of $1,500,000, and another an increase of 40 per cent.

It would be a fallacy to state that all of these increases were due to the new buildings. There were, undoubtedly, other factors; but all things being equal, the bank with attractive quarters and up-to-date, modern equipment secures the most business.

Of course, it must be borne in mind that, to be successful, the preliminary planning of a banking room must receive competent consideration. In order to insure the greatest facility and economy of operation, it is necessary that the designer and builder have thoro knowledge of the routine procedure of the banking business. A bank building may be most impressive in appearance, yet possess faults of arrangement which will cause permanent inconvenience and dissatisfaction to its occupants.

The result of this investigation is fairly conclusive evidence that there is a real commercial value in properly housing a banking institution. Better facilities increase the loyalty of old customers and attract new accounts. They make for greater efficiency among employes and make pleasanter for customers their transactions with the bank. They increase public confidence in the soundness and strength of the institution. They make for increased profits, satisfied directors, well-pleased stockholders.

✣

Home Building Routs Labor Turn Over

MOST plants hiring 2,000 men can well afford to set aside the sum of $100,000 to finance homes for their workmen, according to John Lind, of the N. L. M. A. This has been done at Kenosha, Wis., where manufacturers made it possible for 180 workmen to build their own homes, at Akron where 725 workmen's houses have been completed and at Flint, Michigan 138. At the same time, manufacturers have received 5 per cent interest on money thus advanced in financing workmen. The biggest leak on many balance sheets drawn up at the close of the present financial year will be found to be *"labor turnover."*

When Henry Ford in 1913 learned that he lost $2,500,000 to keep a steady payrool of 13,000 men, he found it was because 52,445 men were hired, fitted and fired. But when Henry Ford's working force was increased to 17,000, he saved $2,000,000 by having a

(Continued to page 118.)

LOUDEN

Wm. Louden
Barn Specialist

Barn Plan Service and Barn Plan Book Cost You Nothing

If carpenters and builders will write us their names and addresses, we will send, postpaid, one of the most valuable books ever written on barn building.

"LOUDEN BARN PLANS"

is a real barn building encyclopedia—not a catalog. Shows how to build the kind of barns which all up-to-date farmers now demand. Gives 74 illustrations of barns and other farm buildings; also illustrations showing details of construction; chapters on drainage, ventilation, concrete work and many other subjects pertaining to modern barn building.

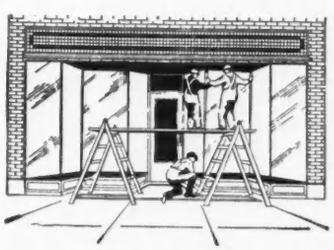
This book is worth real money to you. Write for it to-day—no charge—no obligation.

Our Barn Building Experts are at your service for helpful suggestions and blue prints in which your ideas are worked out to the best advantage. No charge.

You should have also the Louden General Catalog showing the full line of Louden Modern Steel Barn Equipment, without which no barn is complete. Postpaid on request.

Write us the names of prospective barn builders and we will help you get the business, but you should have the Louden books anyway. Write for them today.

The Louden Machinery Company
(Established 1867)
5520 Court St., Fairfield, Iowa



Used in All Types of Fronts

LARGE Fronts, small fronts, fronts of all types are made better by the use of **"Desco"** construction. You will find it easy to order, and your mechanics will say it's the easiest to install. The cost of **"Desco"** is less than you have been accustomed to pay. It is strong, protects the glass, durable and attractive.

Desco METAL **STORE FRONTS**

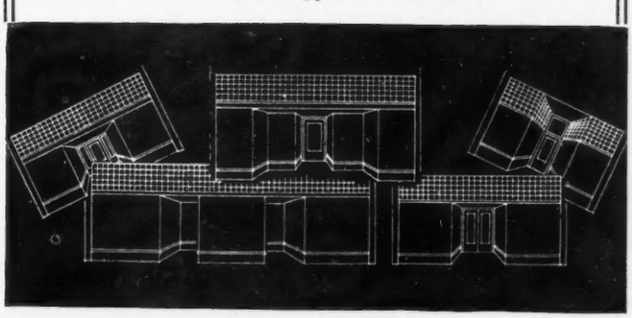
Our 29 years of experience is your assurance of the practicability of all our products.

Send today for prices and our newly published

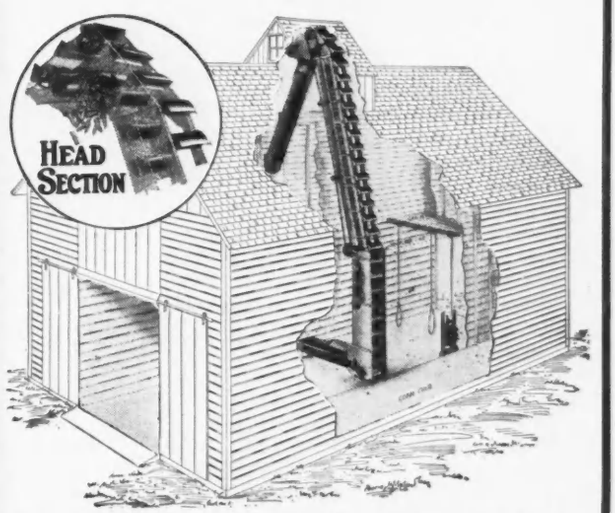
"Book of Store Front Suggestions." A card will do.

DETROIT SHOW CASE CO.
491 Fort Street, W. DETROIT, MICHIGAN

"Desco" fits all types of store fronts



Attractive Proposition for Carpenter-Contractors on the National Giant Inside Bucket Elevator



The Best and Most Sensible Inside Outfit Ever Made

Carpenter-Contractors drop us a postal, please, and we'll be glad to tell you how to make big extra profits by recommending and installing our **National Giant Bucket Elevators** in your crib jobs.

The "National Giant" has more desirable features for you to base your recommendation upon and more **sensible features** for the FARMER than can be found on any other make of inside grain elevator. Why? Because on cribs 30x32 ft. or less, with half-pitch roof, it is not necessary to have a cupola. Saves the farmer money. When cupola is necessary, we can save the farmer from $15 to $30 with the National Giant. Ask us why, please. We also save the farmer the cost of digging a pit, and on the length of elevator required.

Elevator is equipped with No. 77 chain. Buckets hold a peck. Does not shell corn, because feeder empties directly into mouth of bucket. Short distance delivery means lightest draft. Has no overhead gearing. Other features just as sensible.

Get Full Details of Proposition to Carpenter-Contractors

Ours is a good proposition **for you** and **the farmer.** It will pay you to look into it. It will bring in more business, greater profits for you. One satisfied customer will bring you many more crib jobs.

Wonderful New Book and Crib Plans FREE

We have just issued a wonderful new elevator catalog, containing pictures and description of every type of elevator. Don't miss getting this catalog—also new Crib Plans—just out. Write and we'll quote you a very attractive price for 1918 and send you name of dealer nearest you, who will be pleased to co-operate with you if you so desire. Write us today. Satisfactory credit terms may be arranged. Get details.

Portable Elevator Mfg. Co., 854 East Grove St. BLOOMINGTON, ILL.

Home Building Routs Labor Turnover

(*Continued from page 116.*)

labor turnover of 24% instead of 400% as in 1913.

A Columbus, Ohio, corporation reports saving $120,000 in five years by reducing its labor turnover.

Twenty corporations engaged in metal trade manufacturing submitted reports on *labor turnover* for 1914. They hired 69,000 men to keep a force of 44,000 men employed. With a normal labor turnover they should have hired only 27,600 men to keep 44,000 men in steady employment, and thus 41,400 men were employed more than can be accounted for. This represents a total loss of $1,760,000, or an average of $88,000 for each of the twenty corporations referred to. The twenty corporations were from a selected list in the metal trade manufacturing business, and all but two worked every month in the year during the period of the investigation. The cost of labor turnover covers the expense of employing and instructing workmen, breakage of tools and machinery, spoiled work and decreased production.

It is good business, not social philanthropy, that has led one corporation to reduce its labor turnover from 153 per cent to 33⅓ per cent, at the same time reducing manufacturing costs 10 per cent and increasing production 42 per cent.

Of a variety of methods employed in reducing the tremendous loss due to labor turnover, the one that arouses the sentiment of the workman the most keenly is his love of home. When the workman is his own landlord he is a better workman than the tenant or "floater," and a better citizen as well.

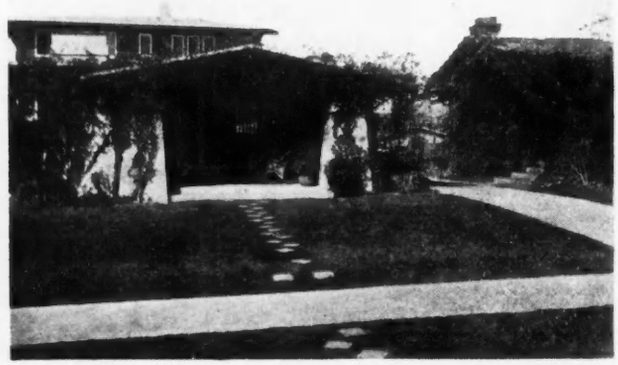
✣

A Stepping Stone Walk

By ALBERT MARPLE

A resident of Pasadena, Cal., has devised and constructed one of the most novel small-home approaches. It is a "stepping stone approach," constructed of stones 12 by 12 inches square and 4 inches thick. This feature is a pleasing contrast to the ordinary solid concrete walk.

The irregular manner in which these concrete stones or slabs have been installed, gives them the appearance of having been "dropped" in place, rather than having been laid there.



Stepping Stones Lead Across the Lawn to the Bungalow Door.

NEWS OF THE FIELD

Council of National Defense Authorizes Motor Express Lines

After thoro investigation the Highways Transport Committee of the Council of National Defense has urged upon the State Councils of Defense the promotion of rural motor express lines to connect the farms with the cities, thus expediting the production of foodstuffs. The plan is to use the return-loads system, by which farmers can ship into the city all varieties of farm products, such as milk, dairy products, calves, hay, grains and particularly perishable products, and receive in return from the city farm implement parts, seed, fertilizers and other supplies.

The supplies which the farmer needs from the city can be ordered by the farmer in the morning over the phone and delivered at his gate the same afternoon. These rural expresses have already been started in many localities and have proved their value by promoting an increase in food production. In many farm communities where the express is in operation the farmers state that any interruption of the service would immediately result in reduced production.

The development of the rural motor express, the Highways Transport Committee hopes, marks the beginning of a system of universal farm transportation over all the main highways, making the farmer's gate a shipping platform alike for his outgoing products and his incoming supplies.

One of the main advantages of the rural express system is that it reduces labor. In some places the hauling formerly done by five men with wagons is now being done, at many times the speed, by one man with a truck. The other men relieved from their task at hauling are at work in the fields cultivating additional acres. Most of the express lines already established are private enterprises. They can be started to advantage by individuals in the country who know initimately the problems of the farmers in their particular sections.

✣

Berger Company Form Auxiliary Council for National Defense

In the Third Liberty Loan campaign the employes of the Berger Manufacturing Company, Canton, Ohio, subscribed for a total of $112,750 worth of bonds; 98.8 per cent of the employes subscribed. This campaign was put across by about seventy-five team workers organized into six different teams.

As an appreciation of the work of the committeemen the Berger Manufacturing Company entertained them at a dinner given at the Courtland Hotel, Canton, Ohio, the evening of April 23. The guests were addressed by Mr. Geo. H. Clark, chairman of the draft board, whose patriotic appeal stirred them to such an extent that there was a unanimous decision to organize immediately a Berger Auxiliary for the Council of National Defense, this auxiliary to extend thruout the plant, every employe being invited to join.

At a meeting held four days later in the plant the charter members effected a permanent organization, electing W. H.

(*Continued to page 122.*)

News of the Field

(*Continued from page 120.*)

Koontz, Welfare Department, president, and Howard Miller, product inspector, secretary and treasurer. One vice-president will be chosen by each team.

The object of the council is to render efficient co-operation in connection with all war campaigns.

✣

Ferguson Goes with Ideal Engine Co.

L. A. Ferguson, former manager of the Eureka Machine Company of Lansing, Mich., has become associated with the Ideal Engine Company of the same city as special representative.

L. A. Ferguson.

Mr. Ferguson had been connected with Eureka Machine Company ten years and previously conducted a machine shop in Jackson, Mich. He has always been closely associated with construction work and will be active in the distribution of Ideal engines which furnish power for the operation of concrete mixers, power loaders, hoists, pumping outfits, spraying machines and various other equipment used by contractors, manufacturers and farmers.

✣

Plenty of Lumber for All

New Orleans, La., May 7.—Heavy demands of the government for lumber and timbers, expected during the next several months, will not result in any curtailment of the abundant supply of Southern pine which has always been available for domestic needs, according to J. E. Rhodes, secretary-manager of the Southern Pine Association.

The government has purchased, since we entered the war, more than a billion and a half feet of Southern pine, says Mr. Rhodes. This material has been used principally in the construction of cantonments, ships, storage warehouses, piers and wharves. In spite of the enormous quantity this represents, it was scarcely more than 10 per cent of the total production of Southern pine. The other 90 per cent went to the individual consumer.

"Persons needing Southern pine for building purposes will have no difficulty in obtaining it promptly this year," says Mr. Rhodes. "While attention to the government's needs is being given first consideration, there is plenty of lumber for all."

✣

Concealed Lightning Rods

Recently there have been improvements made in the method of applying modern conductors to buildings which make it possible for lightning conductors to be applied underneath the siding and shingles of a building, as it is being built, with points only showing. The reason for this is that many owners of fine homes and architects prefer that the lightning conductors be concealed.

Steel and Architectural Ambition

By S. J. E.

No man, regardless of the vocation in which he is engaged, aspires more earnestly to high ideals and professional perfection than the modern-day architect.

He strives, ceaselessly and persistently, to advance the standards of one of the noblest of arts. He is engaged with the task of making today's work surpass the work of yesterday, and of planning for the predominance of tomorrow's achievements over the achievements of today. That he is making palpable progress is evidenced in many ways.

Everything that can be utilized for the purpose of promoting architectural beauty and substantiality is enthusiastically welcomed, and *steel* is now recognized as one of the most important building materials to which the modern architect has access.

Innumerable architectural components which were once made of wood are now being made of steel—not for the tall metropolitan skyscrapers alone, but for structures of all kinds and in all sections of the world. From the modest farm home to the most magnificent city mansion, from the little "eight by ten" real estate office on the corner of a suburban lot to the pretentious office building in the very heart of town—all readily lend themselves to the adaptability of steel.

Window frames, lath, roofing ornaments and scores of other attributes of architectural usefulness are quite as available as material of less value and inferior durability.

To do justice to your talent, to gain a wider reputation in your profession, and to provide your clients with structures in which they may take genuine pride, you can well afford to make unstinted use of steel, particularly *sheet steel.*

Dixon Company Elects Officers

The stockholders of the Joseph Dixon Company held their annual and regular meetings on Monday, April 15. The following directors and officers were elected: Directors—George T. Smith, William G. Bumsted, J. H. Schermerhorn, George E. Long, Edward L. Young, Harry Dailey, Robt. E. Jennings. Officers—George T. Smith, president; George E. Long, vice-president; J. H. Schermerhorn, vice-president; Harry Dailey, secretary; William Koester, treasurer; Albert Norris, assistant secretary and assistant treasurer.

✣

The Romance of Varnish

(*Continued from page 43.*)

Oil which has been separately heated is then added to it at the precise moment when certain reactions are desired. Metallic oxides and prepared driers are added to control the drying and hardening of the firm. The degree of heat, the duration of cooking and the relative quantity of gum, oil and turpentine are determined by the specific purpose for which each separate batch of varnish is made. They are secrets of the varnish maker. After being stored in large tanks and "aged," often for a year or more, during which time certain chemical changes take place and produce qualities not otherwise obtainable, the ripened product is carefully filtered of all sediment and impurities. This is the varnish that covers, preserves and beautifies nearly all things in human use,

(*Continued to page 126.*)

The Romance of Varnish

(*Continued from page 124.*)

from a battleship to the top of a shoe button.

The origin of varnish is buried in tradition. Noah's Ark is said to have been "pitched" with a substance that included crude varnish. The Egyptians used it in preserving their mummies nearly 3,000 years ago. In the third century B. C. varnish, having developed a distinct quality, was given a name derived from that of Berenice, wife of the Egyptian King, Ptolemy I. This queen was celebrated for her beautiful, amber-colored hair. When, in gratitude for the safe return of her King from a war in Asia, she cut it off as an offering on the altar of Venus, the poets bestowed her name upon the only thing they considered comparable to her hair. So the name Berenice, in its transition from the Egyptian to the Anglo-Saxon, became Varnish.

✣

Farm Water Supply

(*Continued from page 47.*)

20 feet below the level of the pumping machinery, the suction type of pump cannot be used. In the "deep well type" of pump used under such conditions the "pump stand" or "working head," is set directly over the well and the pumping cylinder is attached to the end of a pipe, which extends down below the water level.

The plunger in the submerged cylinder is attached to a rod, which extends up thru the "drop pipe" and is operated by the "working head" above. On the "downstroke" the water flows thru the plunger and on the "upstroke" the water is lifted to the surface and forced where needed. It is evident that the energy required to force the water is added to that required to lift the water from the well.

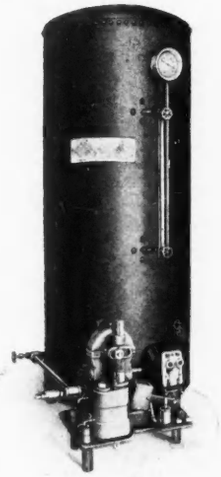


Fig. 7.

Fig. 6 is a cut of one type of deep well pump, and illustrates it very well. Where electricity is available a pump driven by an electric motor is decidedly the most convenient system. Where water is stored under pressure an automatic device can be attached which will start the pump when the pressure falls about 15 pounds below what it is set for, and will stop it when desired pressure is reached. Fig. 7 shows such an electrically operated pump combined with a vertical tank.

Hydro-Pneumatic System

The principle on which the hydro-pneumatic system works is this: When a receptacle is spoken of as being empty, it is ordinarily not empty at all—it is full of air. If we have an air-tight tank with an opening

(*Continued to page 130.*)

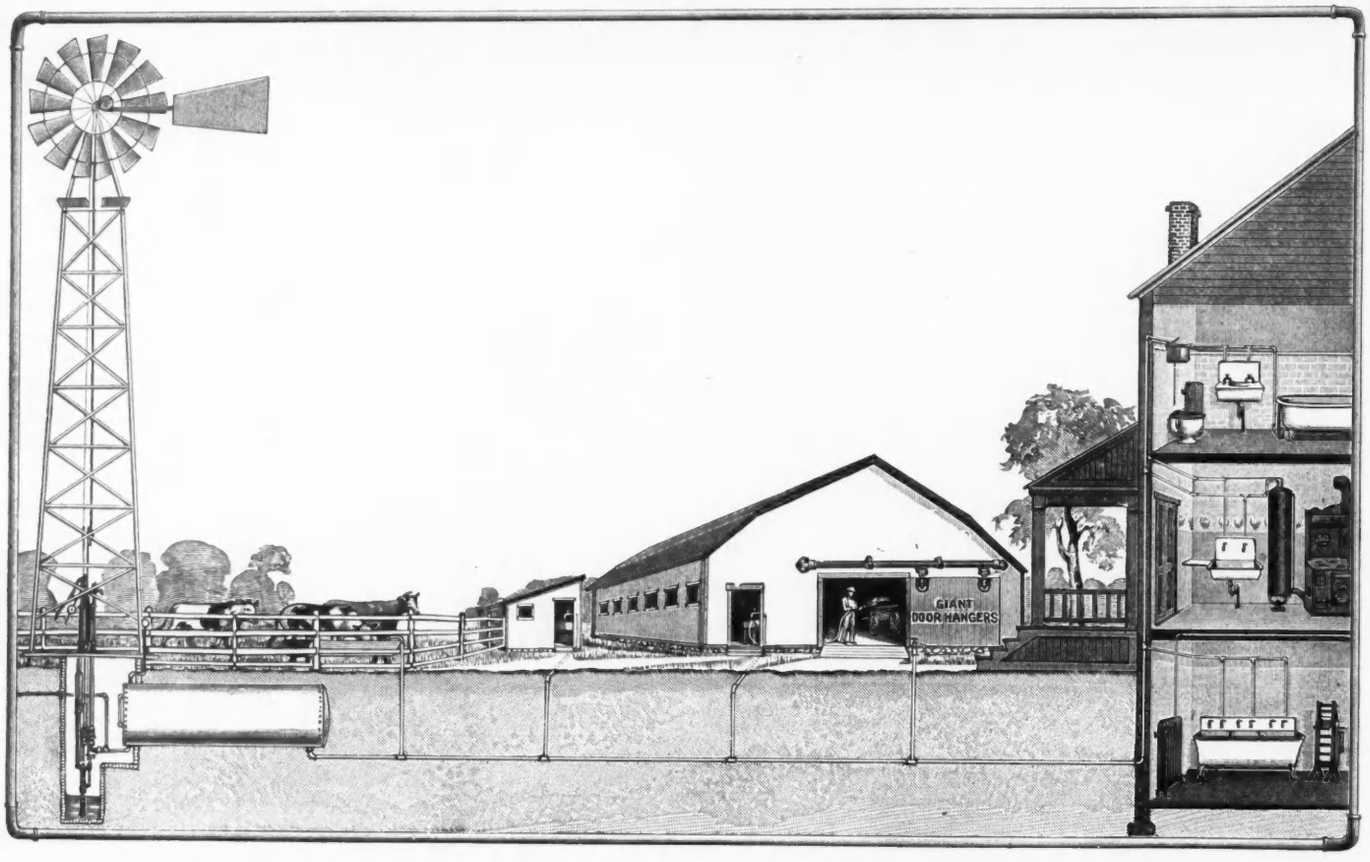


Fig. 8. Ideal Arrangement of the Various Parts that Go to Make a Modern Farm Water Supply System

Farm Water Supply

(*Continued from page 126.*)

in the bottom, and force water into this opening, the air already in the tank, having no outlet, is compressed. When the tank is half full of water, the air which originally filled the entire tank, is compressed into the upper half and will exert a pressure of 15 pounds to the square inch. If, now, a supply pipe is run from the bottom of the tank, this air pressure will force the water thru the pipe to a height of 33 feet. This air remains in the tank. It is compressed when more water is pumped in; and expands downward, pushing the water before it, when water is drawn off.

This system consists of an air-tight tank usually located in the basement of the house, a pump to force the water into the tank, and a piping system leading to various parts of the house or other buildings.

Fig. 8 shows a hydro-pneumatic system of water supply, illustrating how it can be distributed to buildings and yards.

The tank is the most expensive single item of the system. It must be well made, of good material, in order to stand the pressure to which it is subjected. The best tanks are made of sheet steel, such as steam boilers are made of, and should be tested to a pressure of 125 pounds per square inch.

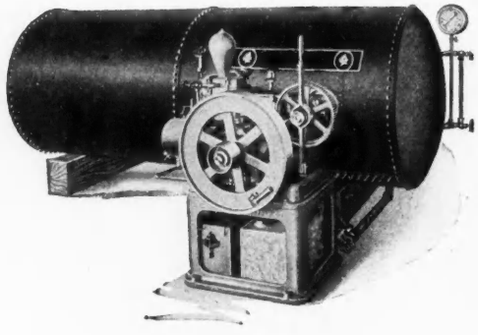


Fig. 9.

The mistake is frequently made of getting a tank that is too small. It should be remembered that the tank is never completely filled with water. As the water is pumped in the air is compressed more and more until

At 5 lbs. pressure the tank is 1/4 full of water,
At 15 lbs. pressure the tank is 1/2 full of water,
At 45 lbs. pressure the tank is 3/4 full of water,
At 60 lbs. pressure the tank is 4/5 full of water.

Since the working pressure seldom exceeds 45 pounds, the tank is seldom more than three-fourths full. Furthermore, a tank will not deliver all of the water it contains to a point above the level of the tank itself unless the air within the tank is first changed to a pressure equal to the height to which the water is to be raised. For example, the bathroom fixtures are usually about 20 feet above the tank. It will require a pressure of about 10 pounds to lift the water in these pipes. Hence, if all of the water from the tank is deliv-

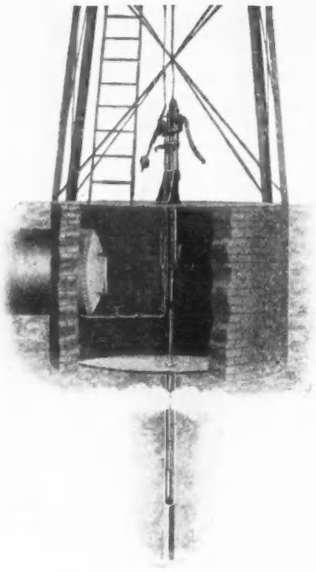


Fig. 10.

Farm Water Supply

(*Continued from page 130.*)

ered into the bathroom, there must be a pressure of 10 pounds left in the tank. In other words, after the pump is started and enough water has been pumped to thoroly soak the leathers in the pump, air should be turned on long enough so that when the tank is half filled there is a pressure of 35 pounds. There will then be a pressure of 10 pounds above atmospheric pressure. This 10 pounds excess pressure will empty all the water out of the tank and deliver it on the second floor.

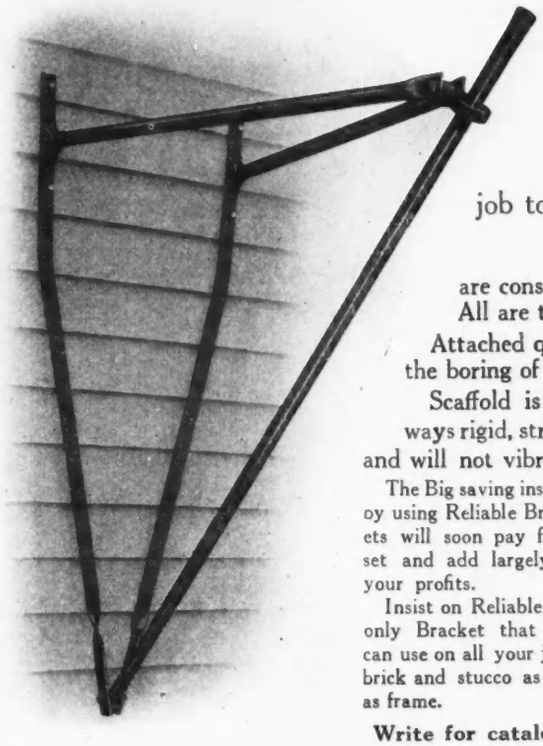
Table No. II gives the sizes of tanks most frequently used, together with the total capacity and working capacity:

TABLE No. II

Size of Tank		Total	Working
Diam.	Length	Capacity	Capacity
In.	Ft.	Gals.	Gals.
24	6	140	95
30	6	220	145
36	6	315	210
36	8	420	280
36	10	525	350
42	8	575	385
48	10	940	625

While the tank is usually located in the basement, it may be buried in the ground just outside the wall, with one end projecting thru the basement wall. This keeps the water cool in summer time, prevents freezing in winter, and the end projecting into the basement allows for the convenient connection of pipes, gauges, etc. The tank if placed in the basement may be put

(*Continued to page 134.*)



YOU NEED
Folding Scaffold Brackets

Every contractor should use them on his new Industrial Housing Jobs. They are easily moved from job to job and take up very little room in moving.

Reliable Folding Scaffold Brackets

are constructed entirely of malleable iron and steel on scientific lines. All are thoroughly tested before leaving factory.

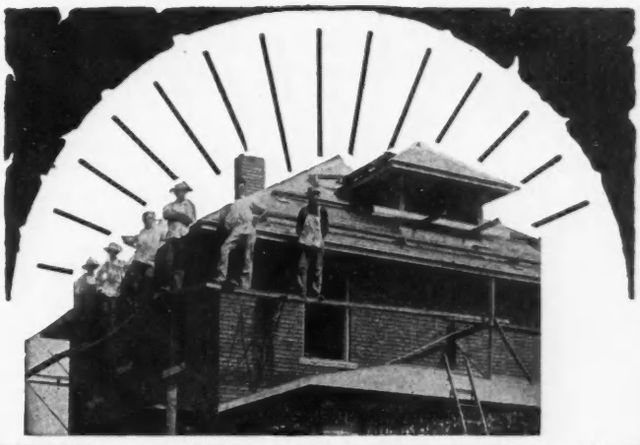
Attached quickly and easily to your building without the use of bolts or the boring of holes. 10-d or 16-d nails fasten them securely.

Scaffold is always rigid, strong and will not vibrate.

The Big saving insured by using Reliable Brackets will soon pay for a set and add largely to your profits.

Insist on Reliable, the only Bracket that you can use on all your jobs, brick and stucco as well as frame.

Write for catalog



Elite Manufacturing Company
ASHLAND, OHIO

WILL HELP YOU THRU THE DULL SEASON

JUST get one installation of Whitney Windows in a neighborhood and it's surprising how quick the neighbors fall in line. Whitney Windows can only be installed with the patented Whitney Casement Window-Hardware.

¶ They make houses more liveable, comfortable, healthful, convenient—airy as a veranda in Summer, stormproof in Winter. All rattling, slamming and sticking are eliminated. Also used extensively in schools, hospitals, etc.

Write for our attractive proposition to contractors and dealers.

WHITNEY WINDOW CORPORATION
1420 EAST FRANKLIN AVE., MINNEAPOLIS, MINN.

Permanent Scaffolding
BIG 30 DAY FREE TRIAL

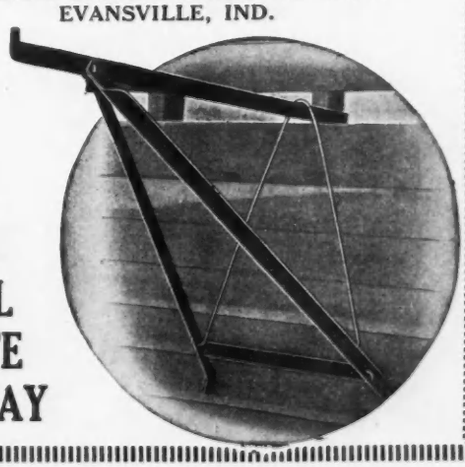
Use permanent scaffolding brackets on your Industrial Housing Jobs. Buy "Trouble Savers". Men work better on firm and solid scaffolding.

No bolts, screws or nails! Just **hook** one on to a stud and your scaffold is up. Illustration shows this simple operation. Two minutes and you're ready to work.

Try them on your next job at our expense. Send for circular illustrating and describing "Trouble Savers."

STEEL SCAFFOLDING CO.
EVANSVILLE, IND.

30 DAY FREE TRIAL WRITE TO-DAY



Farm Water Supply

(*Continued from page 132.*)

in either a vertical or horizontal position.

Since the water absorbs a certain amount of air it is necessary to supply air to the tank at more or less regular intervals. Pumps for this purpose are so designed that air may be forced in with the water. Sometimes a separate air pump is supplied, but this is not necessary, is expensive and a trouble maker. Unless two tanks are put in, only one kind of water can be furnished. By all means, this should be soft water, since the chief household needs call for soft water. If hard water is desired another tank may be put in and both systems operated by the same pump if the well is shallow enough to permit.

Any type of pressure pump may be used—a hand pressure pump or any power driven pump. The power may be gasoline engine, and Fig. 9 shows a combined gasoline engine and suction type pump. Fif. 10 a hydro-pneumatic system with windmill pump. Fig. 11 a hand pump combined with a vertical tank.

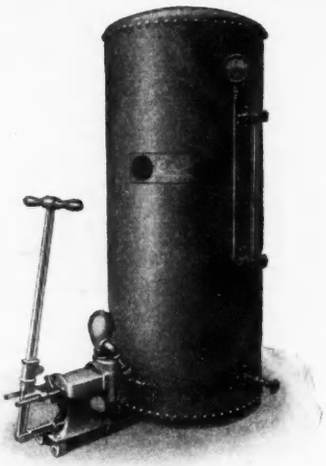


Fig. 11.

Now the size can be determined by the following:

A horse will consume 8 to 10 gals. per day, 24 hours.
A cow will consume 10 to 14 gals. per day, 24 hours.
A hog will consume 1½ to 2 gals. per day, 24 hours.
A sheep will consume ½ to 1 gal. per day, 24 hours.

For bathrooms the average consumption is: 1½ gallons for lavatory, 20 to 30 gallons for bath, 5 to 8 gallons for toilet.

Average laundry for family, 100 to 200 gallons.

The average ½-inch faucet delivers 6 gallons a minute.

(*Continued to page 136.*)

Farm Water Supply

(*Continued from page 134.*)

A ¾-inch hose throwing a solid stream delivers 6 gallons per minute. It takes 8 gallons to sprinkle 100 square feet of lawn, when held in the hand. It takes 20 gallons to soak 100 square feet.

Where a house is equipped with modern facilities an average of 20 gallons per day will be used for each occupant, including laundry. Without a water system the average is from 5 to 8 gallons. So from the above the proper size can be determined very easily.

The writer recommends one large enough as to have a storage sufficient for full 24 hours use, with a pump of sufficient capacity to fill the tank in an hour or a little longer. The reason of this preference is for fire protection, loss of power, etc. Fire protection is one of his main reasons for a water system, the saving of the woman's work is the principal reason. This because most improvements on farms are to save the man work and too few are to save the woman.

✣

Keeping Up with Things

(*Continued from page 42.*)

The next columns at the right were captioned "work account" and the debit side of all entries concerning money paid out for labor and material were put in the debit side of these columns. At the conclusion of the job or a well defined portion of a job, the work columns was credited with a certain amount, and the account receivable or the general ledger columns credited with an equal amount. When the merchandise columns were used for merchandise, all merchandise sent from the stock to various jobs would be credited to the merchandise account and debited to the work account. When merchandise was sent direct from dealer to the job, the debit was put directly in the work account, and the credits in cash, bank, or accounts payable, as the case might be.

The installment columns were used to credit rent payments and payments receivable on mortgages, land contracts, conditional sales, etc. Periodically, or if accounts closed before, the totals are transferred to the property accounts of the general ledger. This is both to save space in the general ledger and make it easy both to note and to follow up the delinquent tenants.

I originally debited all expenses such as my own drawing account, stenographer's salary, telephones, supplies, horse and wagon, etc., etc., to expense column. When work was especially slack one time, I contracted the copying of a bunch of letters, in order to keep the stenographer busy. Likewise, when I charged separate items of cartage to the specific work by which they were consumed, credits again appeared in the expense account, and when the horse and wagon was replaced by a truck, and such an amount of work was taken on that the truck ran night and day with two shifts of chauffeurs the expense account actually

(*Continued to page 138.*)

Keeping Up With Things

(*Continued from page 136.*)

showed an apparent profit. I met this difficulty by separating the carting business under a separate name with separate books. The Carting Co. was then charged a percentage of its business to help our overhead and the cartage performed for us was debited on our accounts and credited in the accounts payable column daily, and the balance paid monthly. In order to save labor where possible, legal expense was charged to the job or property affected, and the balance to expense columns.

In the interest and discount columns all the interest and discount except that on mortgages is entered. Also all commissions on rent collections and real estate sales were so entered, BUT all commissions paid for the collection of rentals or the sale of property were entered against property affected. In the general ledger columns, real estate and expense on real estate are entered, as well as the usual general ledger accounts.

An inspection of the entries in Fig. II will show that items are both divided and grouped in this system. As an instance of the former, when Murphy was paid off on the 3rd, the cash payment to him was divided among three jobs. As an instance of the latter, it is shown that the moneys the collector turned in on the 3rd were so grouped that only one cash entry appeared for the six accounts on which he collected.

(*To be concluded in the July American Builder.*)

To Build or Not to Build Now

(*Continued from page 62.*)

masons to consider your cry. When big jobs are booming the little man is ignored. No one wants to bother with a three or six thousand dollar house when he can get a contract for others costing ten times that amount.

Yes, everything is abnormally high in the building trade—lumber, bricks, cement, steel and labor. They are a part of the price we must all pay for the great war. We cannot dodge them. They are here, and dreams of building a home at prices prevailing a few years ago are futile.

The home builder should face the 10 to 20 per cent increase in cost intelligently. This applies to repairs, rebuilding and new building. Just as you have to pay more for your food, clothes and luxuries, so you must pay a little more for that house you have in mind. Delay may prove more costly if not actually disastrous. Build now—but build carefully and permanently.

There may be some modification in the plans required to meet the present conditions. For instance, the uncertainty of getting steel delivered should make one cautious about using it in building except where absolutely necessary. Eliminate it so far as possible. Substitute brick, concrete, stone or wood. It can be done without loss or injury to the permanence of the structure.

Bricks are high, but there is hardly a community that hasn't a brick-making plant within a reasonable distance of it. Long distance hauling is out of the

(*Continued to page 140.*)

Wait A Minute!

Do not pass over this announcement to every contractor and builder before reading it and learning of this BIG MONEY MAKING PROPOSITION.

SOLD! SOLD!--PROFIT! PROFIT!

Yes, they are sold upon sight. Garage owners appreciate TOPPING FOLDING GARAGE DOOR HANGER SETS every time. They are completely sold on the proposition, and all you have to do is to get after their order. Big money is made every day by our thousands of contractor or builder representatives.

TOPPING FOLDING GARAGE DOOR HANGER SETS are the simplest and strongest on the market today. They offer many new ideas in garage hardware. If there is anything new, the TOPPING FOLDING GARAGE DOOR HANGER SET has it. Packed in complete sets. Automatic locking device can be opened or shut by any member of your family. Neat appearance, last forever, and every sale brings another.

Does Not Sag or Bind

Investigate our proposition at your local dealers, and get acquainted with the TOPPING FOLDING GARAGE DOOR HANGER SET. It means profit to you.

Use Red Rib Barn Door Hangers

They are especially adapted to the use of heavy barn doors. They are designed by experts to withstand the strain and wear brought upon barn door hangers. Consider lasting qualities, and you will find none better than the "Red Rib" Hangers. Solid, double-grooved wheel. Very strong trolley. Sheds water. Bird proof. Tandem wheel. Hinge hanger. Noiseless. Roller bearing wheel. They are absolutely guaranteed.

There is money in this proposition for you. Investigate it at your local dealers. Or, if by chance, he does not carry them in stock, write for our money-making proposition to contractors and builders, and descriptive literature.

Safety Door Hanger Company

Ashland, Ohio

When You Build a Country Home

WHEN you build a country home or isolated public institution, be sure that one of the biggest problems of all—sewage disposal—is solved.

That is the way to win the confidence of your clients—to lay a real foundation for bigger business.

KEWANEE

Sewage Disposal Systems

are like all Kewanee Systems. They never fail to give absolute satisfaction, for they are built right. Health and comfort are brought to every country building, and all waste is taken care of in the most sanitary way.

WATER SUPPLY SYSTEMS

For 20 years thousands of Kewanee Water Supply Systems have been giving absolute satisfaction to homes, institutions and other buildings in every part of the country.

ELECTRIC LIGHTING PLANTS

Kewanee Electric Lighting Plants make all the comforts of electricity possible for everyone. 28 sizes furnish light and power for every purpose.

Write for the co-operation of our engineering and drafting departments and for bulletins on *Sewage Disposal, Water Supply and Electric Lighting Systems*

KEWANEE PRIVATE UTILITIES CO.

(Formerly Kewanee Water Supply Co.)

424 S. Franklin Street **KEWANEE, ILLINOIS**

WHY WORK FOR WAGES?

Be independent. Be your own boss, don't slave for wages.

Start now at once in business for yourself.

You need no experience, we tell you how, in a plain, simple manner.

MULLER ASBESTONE COMPOSITION FLOORING

We offer you an opportunity to represent us and at the same time make a handsome profit for yourself.

Laying Asbestone floors is both easy and profitable.

Write at once for the territory you want and we will send you full particulars and information of what others say about Asbestone flooring.

Franklyn R. Muller & Co.

864 Madison Street **Waukegan, Ill.**

To Build or not to Build Now

(*Continued from page 138.*)

question. Patronize the local industries. If the nearby brick plant can guarantee the delivery by truck of good bricks use them. It is the most patriotic way of responding to the government's appeal for housing facilities.

In other sections stone quarries are nearby. Many homes can be built of rough hewn stones quarried on the site. The haulage and material problem is solved for you. The labor question is the only one you must seriously face. Remodel your plans so that rough hewn stone quarried on the site can be used instead of other materials that must be hauled from a long distance. Always the haulage question must be considered, for that is one of the most serious problems the government has to deal with.

Perhaps concrete or stucco are the materials you should use owing to the favorable location of plants furnishing them for quick delivery. Concrete and stucco houses can be made as handsome and durable as any others. You have time to consider them carefully and get the best results. Consult your architect and builder as to the advisability of using these materials in the best way.

Clay and tile factories are scattered all over the country. Some of them are idle, with an accumulation of material on hand. Owing to the railroad congestion, they cannot ship their stock to distant points without adding materially to the prices. But for home construction nearby, where delivery can be made by truck, they will often name prices that are attractive. Clay products are the most durable of building materials, and your architect and builder can easily remodel that plan to fit the local conditions.

Then a word about lumber material. Lumber is high priced and scarce, especially for that hauled long distances. But is there not a local supply and nearby mills that can work up lumber suitable for your home? This is not a time for demanding special woods for the different parts of the house. Select your wood to fit your plans, but also consider it from another angle—the cost and distance of haulage.

The surest way to have that home, and avoid the rush that will follow the coming of peace, is to plan now, and then go ahead slowly and deliberately, estimating the cost in advance after a careful study of the local supplies and markets. Plan and co-operate intelligently with builder and architect. They are more anxious to take your orders now than later. They will do their best by you now, while later it may be indifferent to them whether you build or not. In nine cases out of ten you will get better service today, better oversight and better material and labor than in that period of uncertain future when all nations are at peace again. Build now for your own protection and pocket-book. The wisdom of it will be apparent later.

Short Talks With Our Subscribers

Zone Postage Law Now in Effect

ON July 1, the law goes into effect establishing a system of zone postal rates on all publications. The law provides for eight zones radiating from the place of publication, with progressively higher rates in each zone. These rates will be raised each year for four years, until increases have been effected ranging from 50 to 900 per cent higher than the present flat rate of 1 cent a pound.

Few if any publications will be able to stand this terrific and unprecedented burden of extra costs. If they are to continue in existence the additional postal charges will have to be collected from the readers and possibly from the advertisers as well. No industry could withstand a sudden increase of several hundred per cent in the cost of transporting its product, and in any event transportation costs eventually must be paid by consumers, just as we are now paying the added freight rates on our raw materials.

We have faith, however, that the present Congress may yet take steps to remedy the situation, and so for the next few months at least we are going to make a brave effort to get along without a readjustment in our rates, in the hope that it may not be necessary.

We conceive it to be our duty to do our share to ward off as long as possible, the disastrous effects which will surely follow any attempt to penalize the dissemination of intelligence. This is no time to cripple or obstruct our established channels of public information.

Suggests Blue Prints for Filing

"REFERRING to your article on blueprinted working plans, page 17, June issue, why not let them be loose with margin strip on one side so they can be bound in loose leaf binder? This would permit of separate files on hardware, dwellings, farm buildings, etc., as may suggest themselves.

By devising a binder for this purpose exclusively and keeping sheets of uniform dimensions, a very interesting and valuable set of blueprinted files would be at all times ready for quick reference.

You, as publishers, could sell these files, thereby adding to your sales and I am sure your subscribers would be glad to get them.

As a suggestion for a blueprint, I noticed in the *Ladies' Home Journal,* June issue, in an article on "Canning and Drying of Vegetables," that upon request the drawings for the building of drying frame would be sent free of charge, their object being to encourage the drying of vegetables as a war measure.

As builders and millmen who are your readers may be called upon to make them, why not get this information and feature it in an early issue of blueprints, thereby patriotically helping along the cause, and also putting this valuable information in possession of your subscribers.

THE G. J. BRETHAUER PLANING MILL CO.,
Cincinati, Ohio.
H. W. Brockmann, Supt."

What do some of the others think about the Blueprint Supplements? We want to give you just what you want in this feature—and just how you want it.

Editor AMERICAN BUILDER.

Contents for July 1918