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VOL. XXV August, 1918 No. 5

Home Owners Decreasing in Ohio

THE state health and old age pension committee, created by the Ohio legislature to investigate different questions, reports that 51.2 per cent of the homes of Ohio are owned by residents, and of these 34.6 per cent are free from debt. The percentage of Ohio home owners is gradually decreasing. In the twenty-year period from 1890 to 1910 there was a decline from 54.3 to 51.2 per cent. This is a greater decrease than in the United States as a whole. Farmers, with 71.8 per cent, show a larger per cent of home owners, and of this number 51.2 per cent are owned outright.

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Preliminary Final Figures on 1917 Lumber Production

A TOTAL computed lumber cut for the United States in 1917 of 35,831,239,000 feet is announced by the Forest Service. This figure is based on reports received up to May 15, from 16,408 sawmills out of the 24,815 believed to have operated last year. It is estimated that the actual cut in 1917, on the basis of compiled figures, was approximately 10 per cent less than the production in 1916.

The falling off in lumber production during the past year is attributed principally to largely decreased private building operations, the scarcity of labor in connection with small operations, transportation difficulties, curtailment of demand on the part of wood-using industries and a more or less general dislocation of lumber distribution thru ordinary channels of trade. A considerable portion of the total quantity produced was utilized in meeting the exceptional demands for government construction and other war emergency projects, including ship material.

The State of Washington was again the largest producer, with a lumber cut of 4,570,000,000 feet; Louisiana was second with 4,210,000,000 feet, and Oregon third with 2,585,000,000 feet, crowding into the fourth posi-

11,000 Bushel Ventilated Tile Corn Crib Being Built on Farm of N. B. Kinnick, Near Adel, Iowa. This Is an Example of Safe Housing for the Precious Corn Crop.

tion Mississippi with a cut of 2,425,000,000 feet.

Southern yellow pine, with a total of 13,539,464,000 feet, forms 37.7 per cent of the total cut. Douglas fir, its nearest competitor, is credited with 5,585,000,000 feet. White oak and white pine are each credited with 2,250,000,000 feet.

The number of mills in operation reporting in 1917 was smaller than for the two preceding years.

A comparison of the computed cut for 1917 with the total cut of the previous year in the larger producing regions shows a decrease of about 10 per cent in the southern yellow pine group of States, a decrease of 23 per cent in the North Carolina pine group, and a decrease of 11 per cent in the Lake States. On the other hand, there was an increase in production of 3 per cent in Oregon and Washington.

✣

Talk Whatever Kind of Silo You Can Furnish

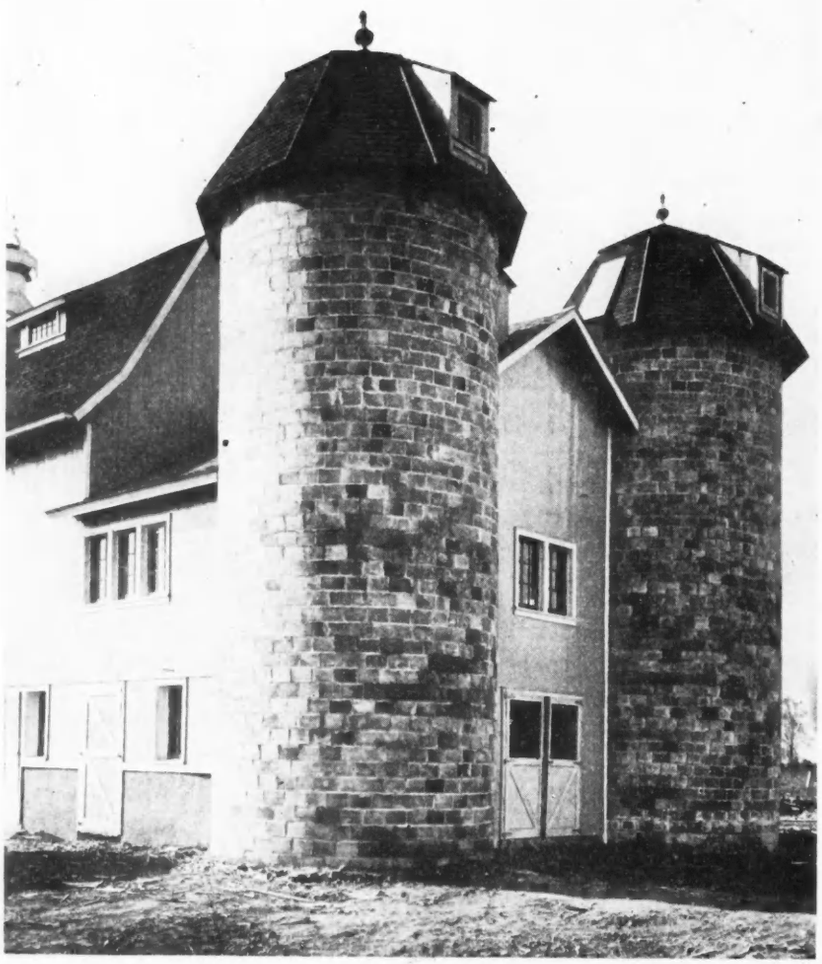
BUILDERS operating in the farming districts have an opportunity to render a valuable service in the great and all-important task of producing food this year. The faithfulness and the energy with which they seize this opportunity will go far toward measuring the sincerity and the efficiency of their patriotism. And yet it demands no sacrifice of any kind of them.

Stated very briefly, the situation is this:

The efficient and economic production of meats and dairy products, with a minimum consumption of food grains, demands the use of silos as they have never been used before. More silos than ever before must be built this year if the silo needs of the country are supplied. The carpenters and builders of the small towns and country districts must build these silos; and therein lies their opportunity to serve, and that without self sacrifice.

We would urge every builder to look into the supply of silo building materials in his locality, and then make his campaign to the farmers on the particular kind of silo which can be supplied. The uncertainties of market conditions and of freight shipments this year have worked against some of the habitually used silo materials in some territories, making them scarce and high priced. In such cases the builder will naturally switch to what he can get, and will talk it to his farmers, to the exclusion of other sorts which maybe temporarily can not be had. Each should consult with his local supply dealers regarding this.

The builder in farming communities who will publish among his farmer friends and constituents that he is in a position to build silos of a given sort will find he has considerable new business on his hands—enough to give him very profitable employment for a goodly share of the time remaining between now and the silo filling season.



A Pair of "Big Guns" That Will Keep the Dairy Products and the Good Red Meat Coming Strong for Uncle Sam's Boys While They Are Making the World a Decent Place to Live in.

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Some Silo Statistics

MORE than 400,000 silos are doing duty in the United States. Wisconsin leads in capacity, with room in its silos for 4,785,000 tons of feed. New York has as many silos as Wisconsin, but their average size is smaller. In Minnesota the average capacity of silos is ninety-five tons, while the total capacity of silos in the United States is 31,000,000 tons.

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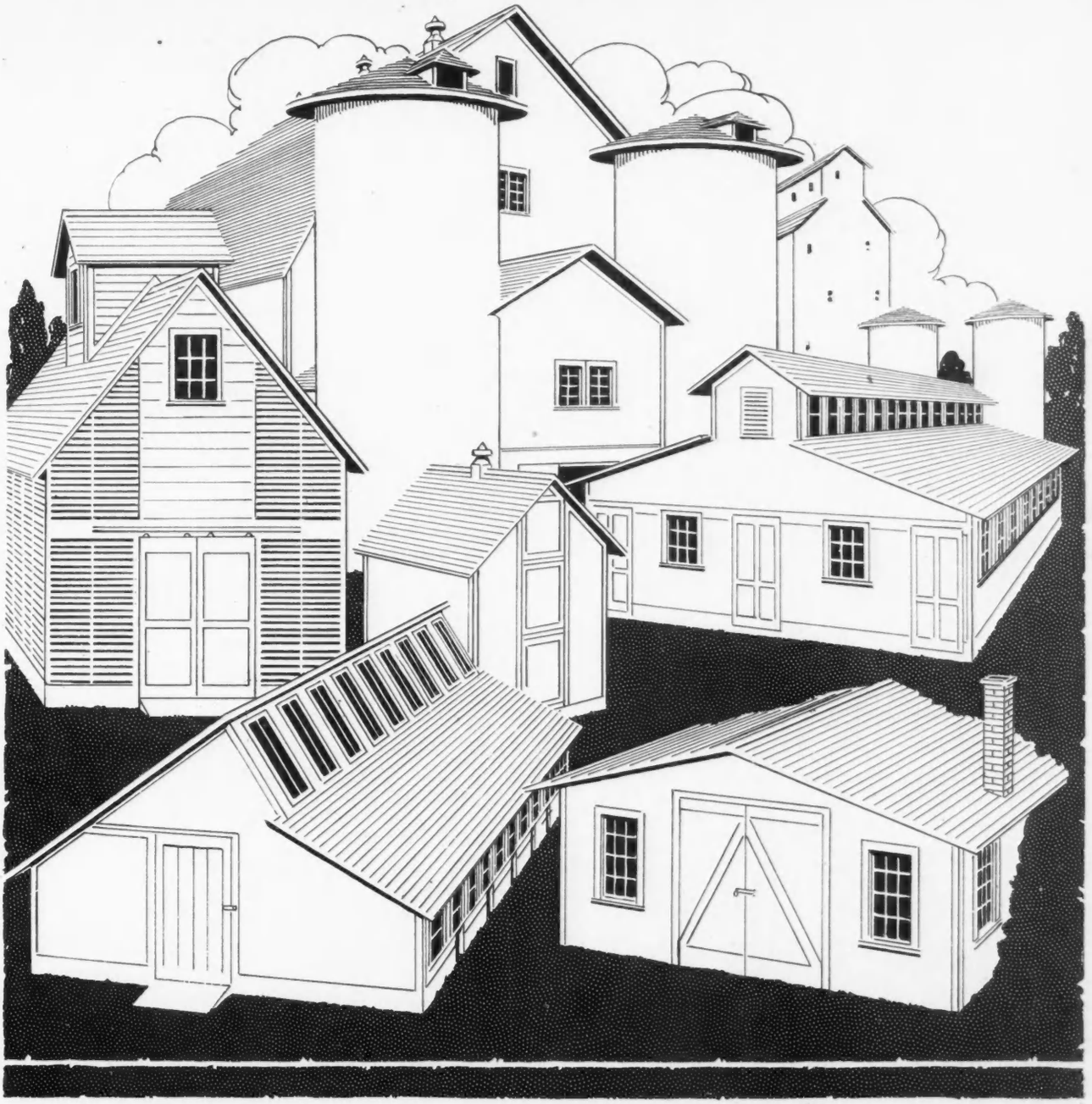
World's Biggest Building

The Turner Construction Company has obtained the contract for the erection of the War Department's supply base for overseas transportation, a freight and supply terminal that will cost approximately $40,000,000. It is proposed to erect the largest building in the world, the company claims. The building is to have 6,000,000 square feet of fireproof floor space and will be approximately 1,000 feet square.

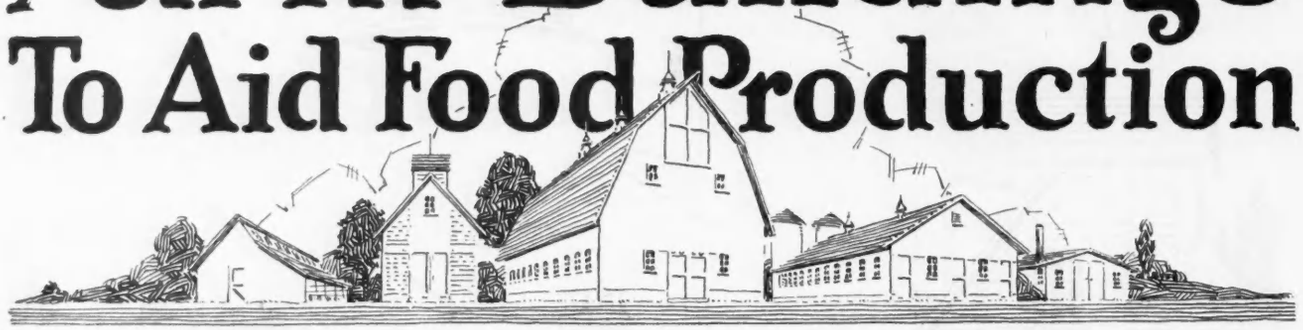


Patriotic Farm Improvement Number

"House the Stock and Protect the Crops"

The Farmers Are Urged to Increase Their Production of All Food Crops. Farm Buildings Are the Farmers' Factories and Are Essential to Productive Farming. If the Factory Output Is To Be Increased the Factory Must be Enlarged and Made More Efficient. Therefore Urge Farm Building Improvements Wherever They Are Needed.

Farm Buildings To Aid Food Production



Blue Prints of Bank Dairy Barn

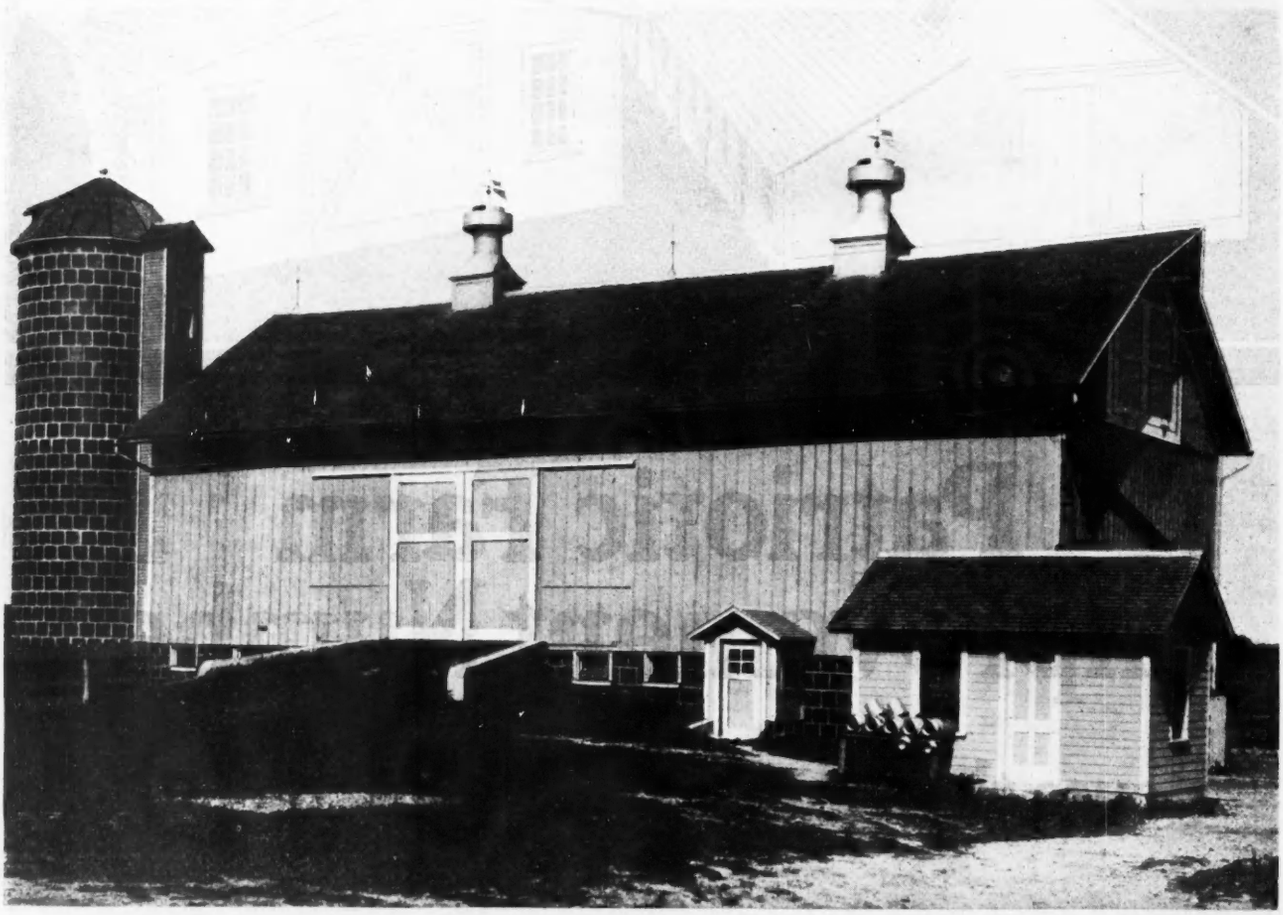
HOW TO BUILD A SATISFACTORY BRIDGE BARN

A GOOD many farmers like the bridge type of barn; and it is practical where the site is somewhat sloping. For a perfectly level site the bridge has to be too high for safety or easy hauling, and is not to be recommended.

In the barn illustrated below, and for which complete blueprinted working plans are presented in the supplement immediately following, we have a barn 36 by 52 feet 6 inches, with an 8-foot 4-inch basement of hollow structural tile. The windows near the bridge are short, but around on the other side they are full size barn sash—nine light, 8 by 14 inches.

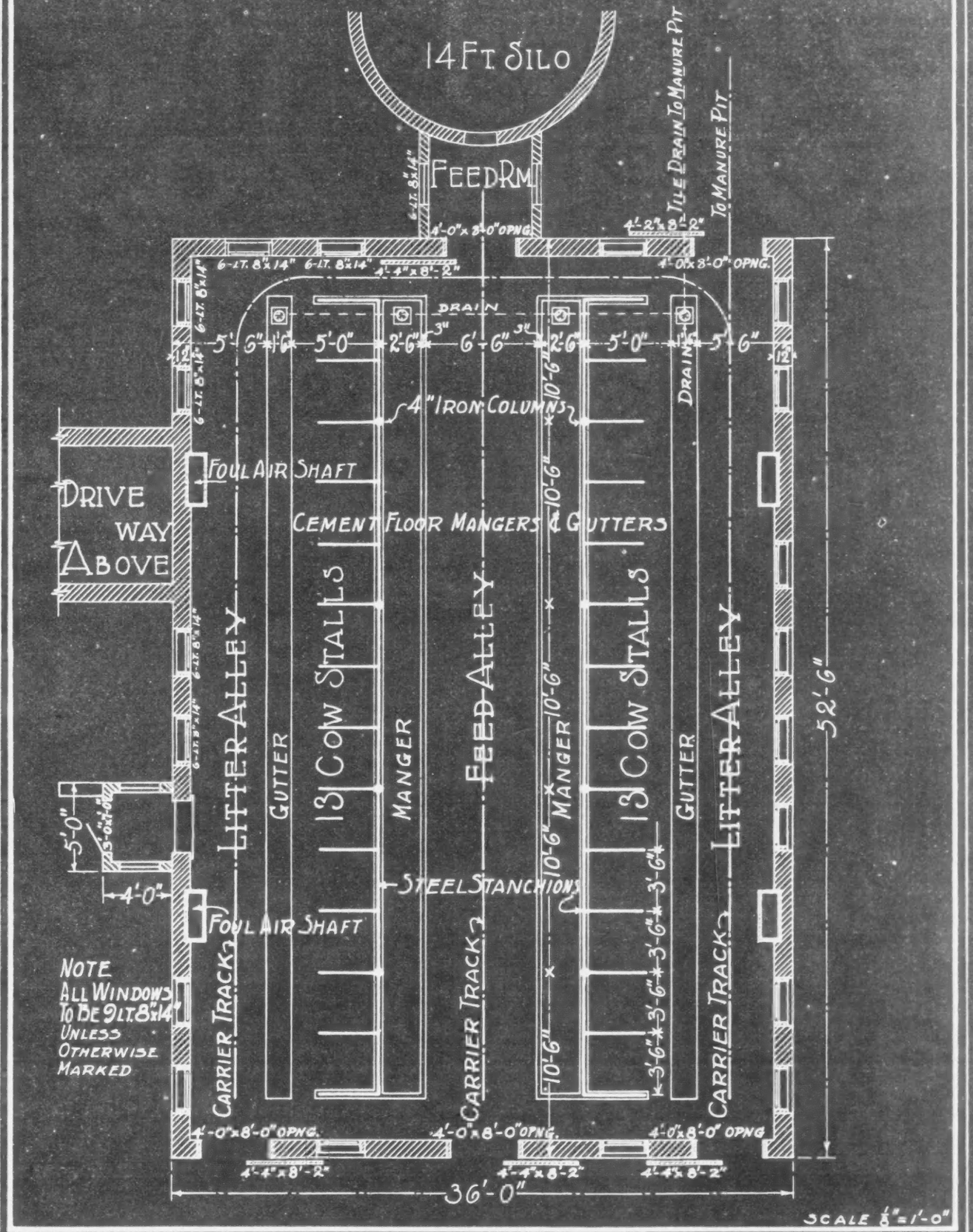
The floor plan shows stalls for twenty-six cows, arranged to face in. A feed carrier track along the center alley brings the silage directly to the animals, and a litter carrier track makes the circuit back of the two rows of stalls and out the far door away from the milk house to the manure pit.

The milk house seen in the foreground to the right is detailed on the fourth page of the blueprints.



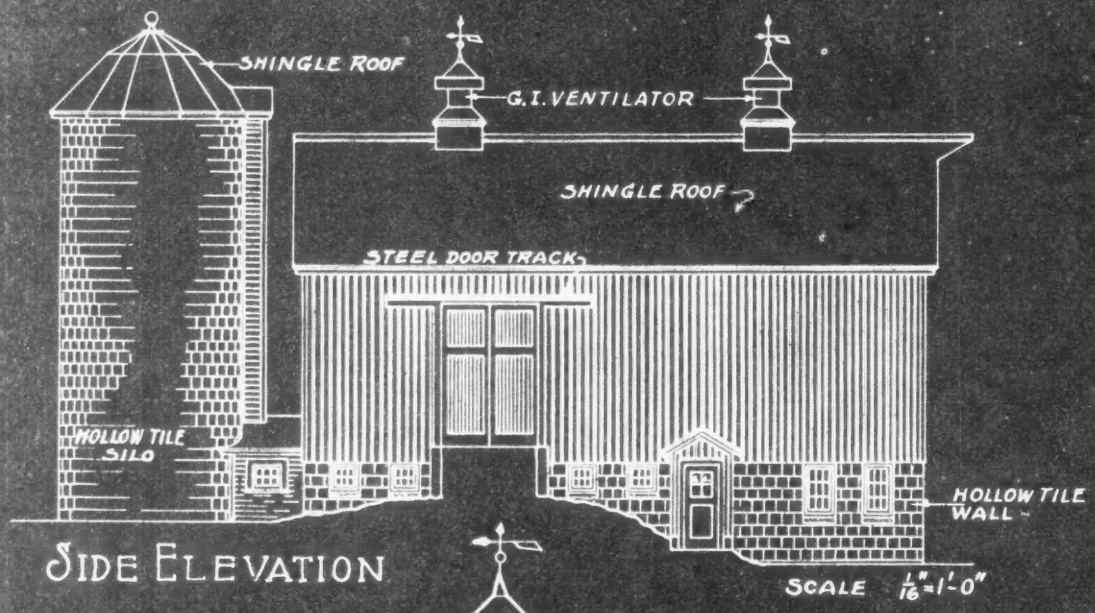
Photograph of Bank Dairy Barn as Constructed Near Oconomowoc, Wis. The Ground Slopes Away to Permit a Full Height Basement Stable with Nine-Light Windows on the Other Side and at the Two Ends. Blueprinted Working Plans Drawn to Eighth Inch Scale Are Presented in the Three Pages Immediately Following, and the Small Milk House in the Foreground Is Detailed on the Fourth Blueprint Sheet.

AMERICAN BUILDER FARM BUILDINGS



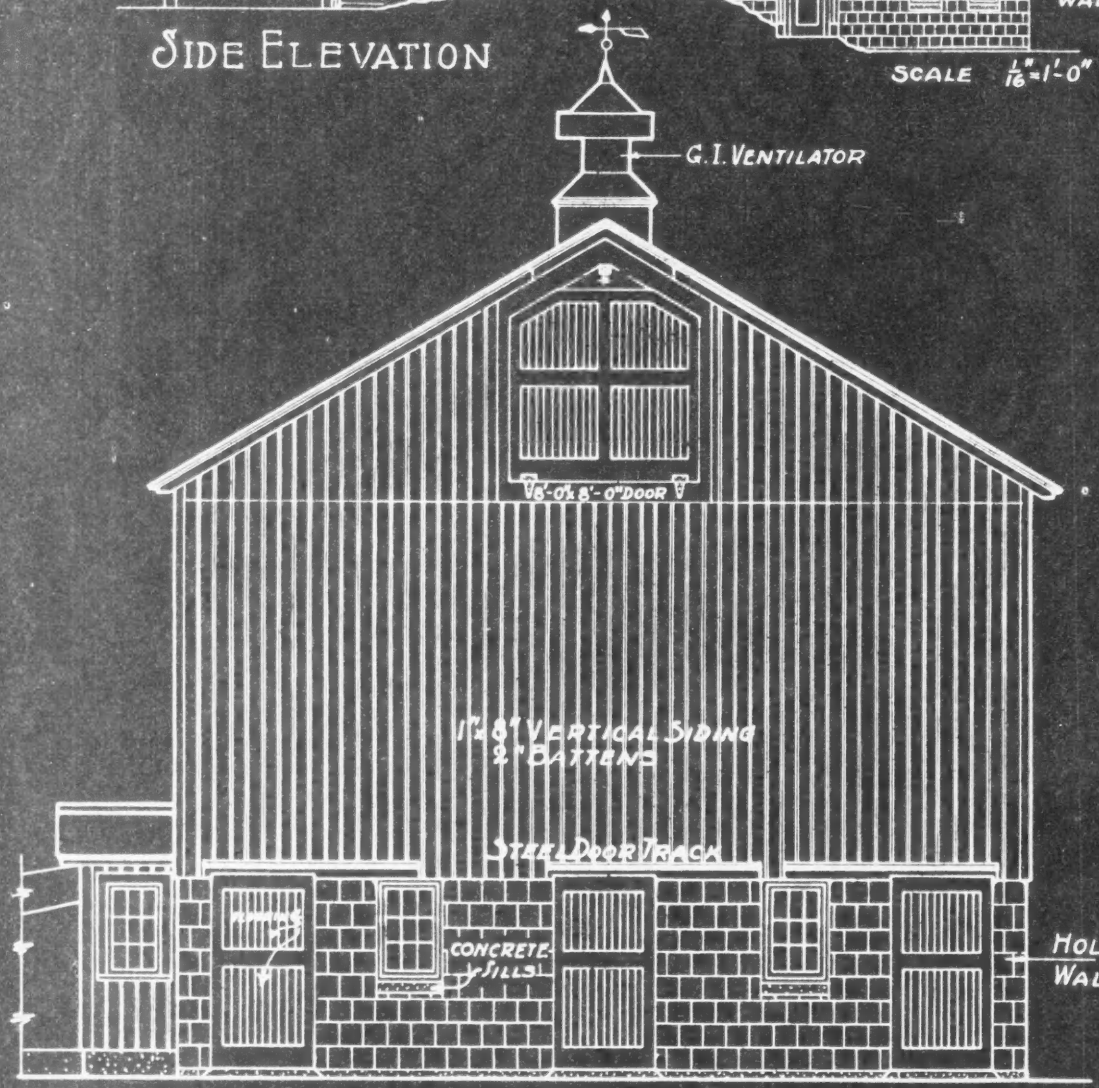
FLOOR PLAN OF A BANK DAIRY BARN

AMERICAN BUILDER FARM BUILDINGS



SIDE ELEVATION

SCALE 1/16"=1'-0"

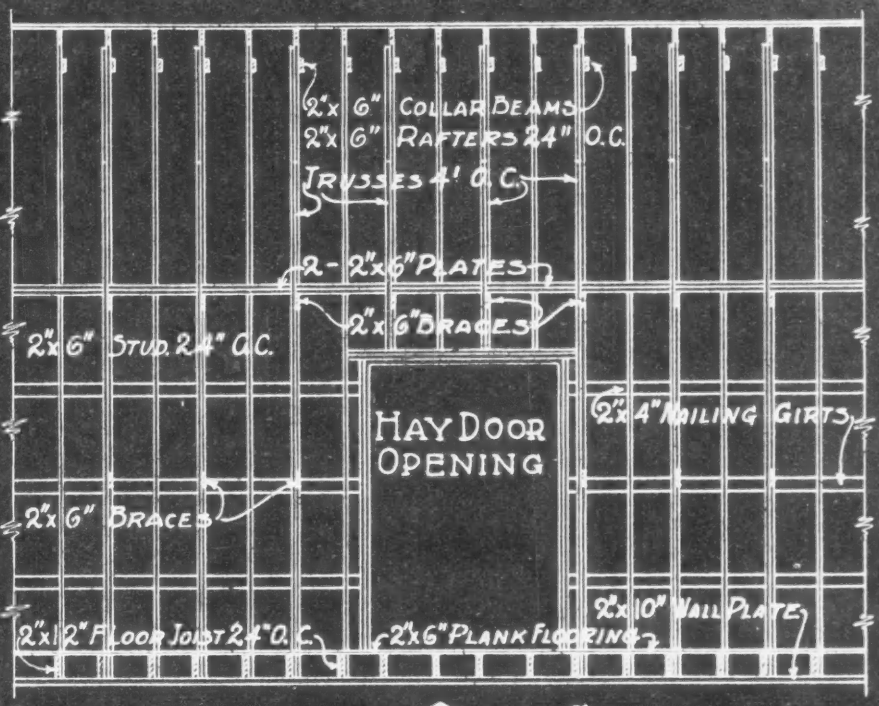


END ELEVATION

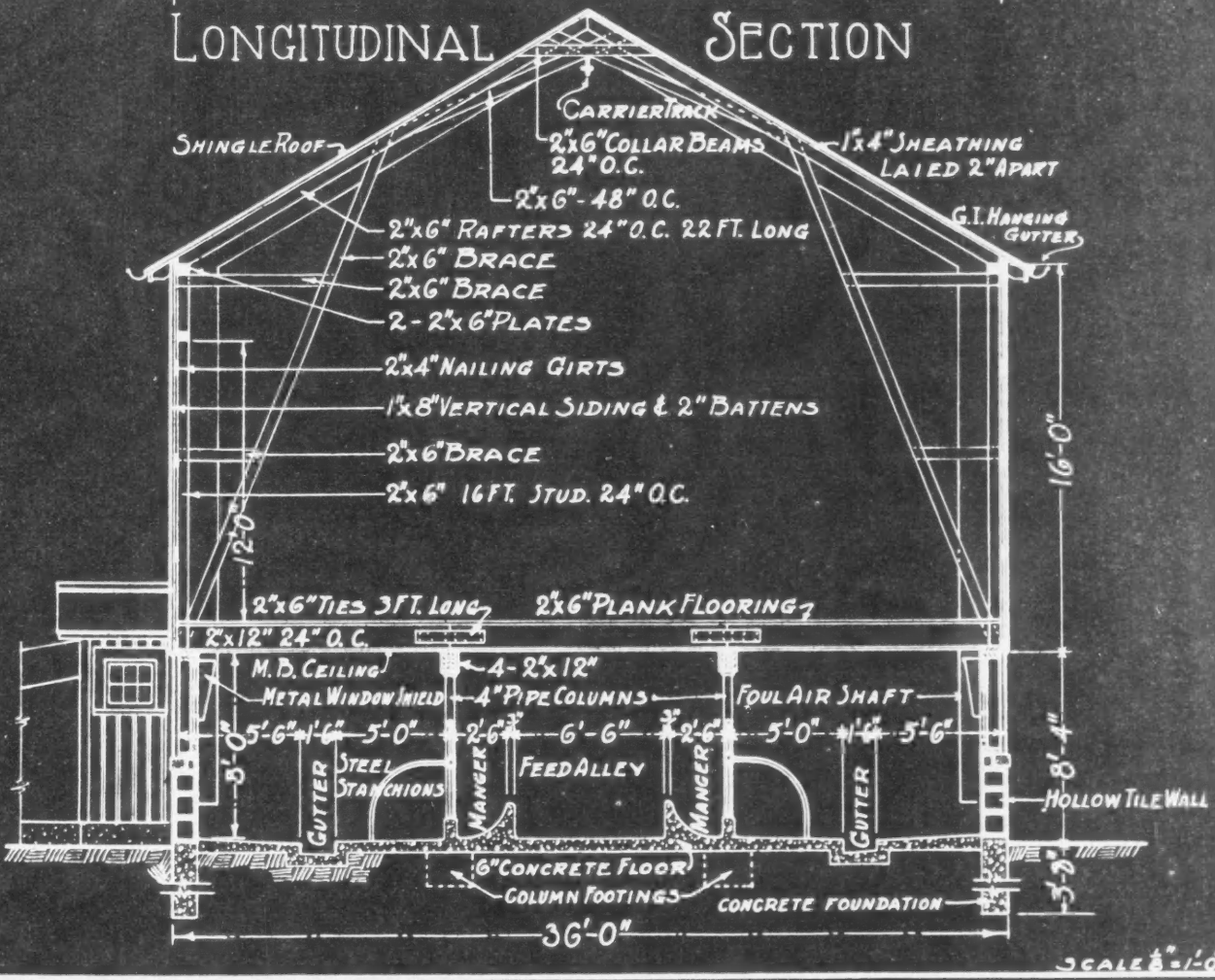
SCALE 1/8"= 1'-0"

ELEVATIONS OF A BANK DAIRY BARN

AMERICAN BUILDER FARM BUILDINGS

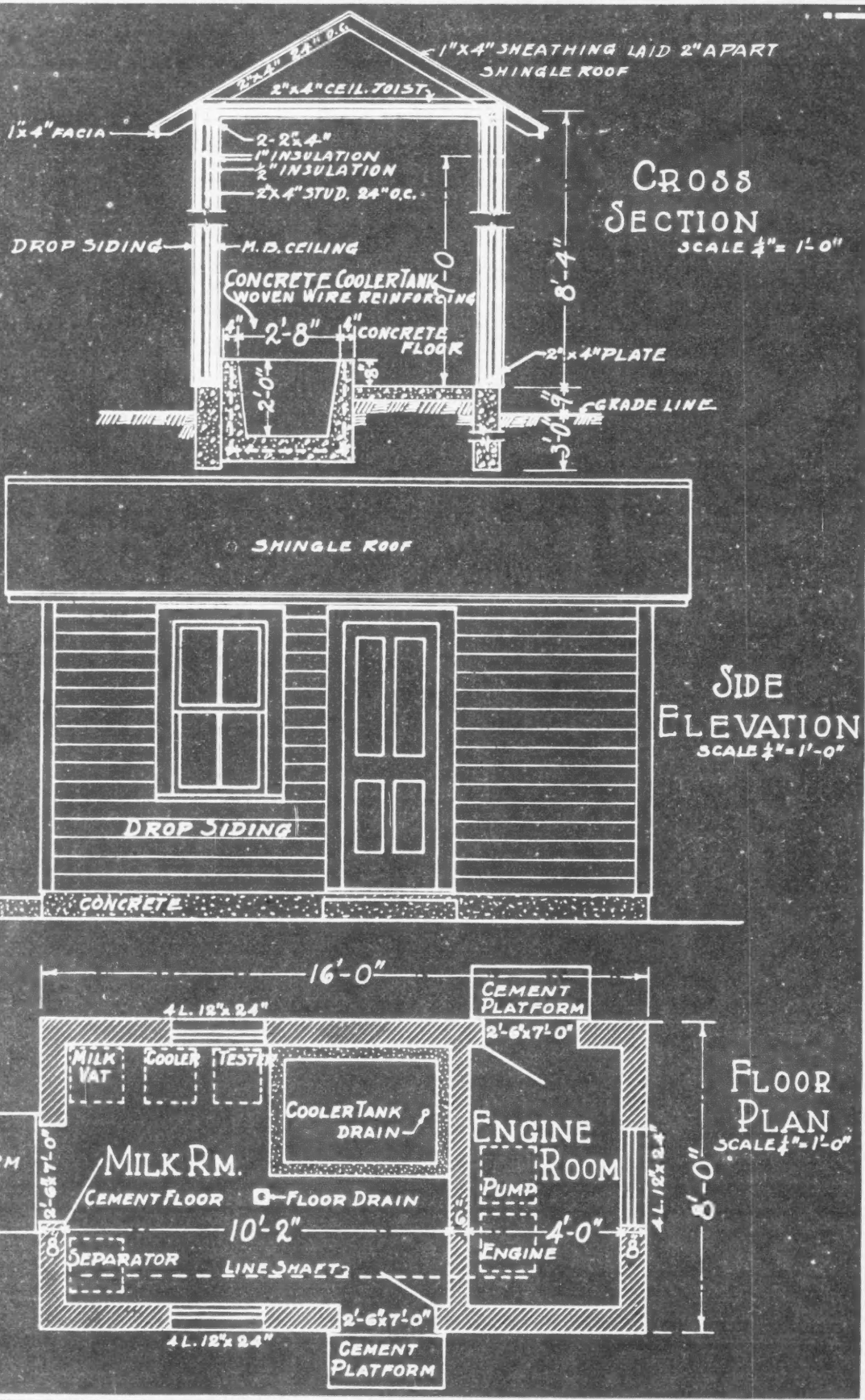


LONGITUDINAL SECTION



SECTIONS OF A BANK DAIRY BARN

AMERICAN BUILDER FARM BUILDINGS



SECTION, ELEVATION & PLAN OF MILK HOUSE

Blue Print of Farm Milk House

HOW TO BUILD THE PRACTICAL LITTLE BUILDING ILLUSTRATED IN THE FOREGROUND OF PHOTO, PAGE 18

ON the opposite page are presented blueprinted working plans, one-quarter inch scale, for the milk house shown in connection with the bank dairy barn. It is a building 8 by 16 feet, divided into two rooms so that the engine is completely separated from the milk room.

The milk room equipment is simple, consisting principally of concrete tank for keeping the milk cans cool with running water; also space for what other dairy equipment the proper handling of the milk may require.

A well insulated type of construction is specified for this building.

✣

Concrete Storage Cellars

APPRECIATING the special urgency this year of taking care of every potato, turnip, rutabaga and every other valuable food vegetable on the farm, an association of cement manufacturers has prepared standard plans for an underground concrete storage cellar—which we are privileged to present herewith.

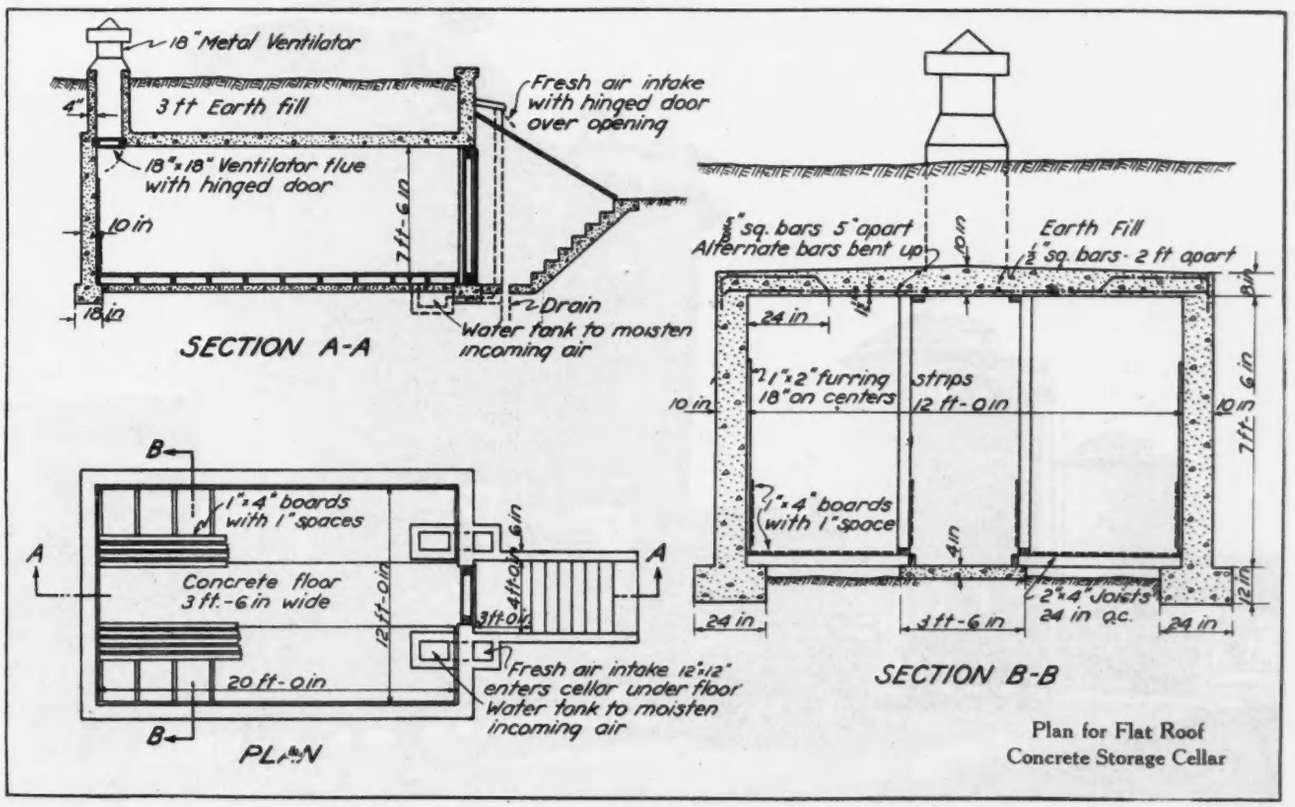
In describing this the author states that storage cellars of concrete construction are usually built mostly under ground, since concrete combines rotproofness, watertightness and great strength.

Concrete mixed in the proportions 1 part cement to 2½ parts sand to 4 parts pebbles or stone, may be used thruout, except for the roofs. The arched roof requires a 1:2:3 mixture and the flat roof a 1:2:4 mixture.

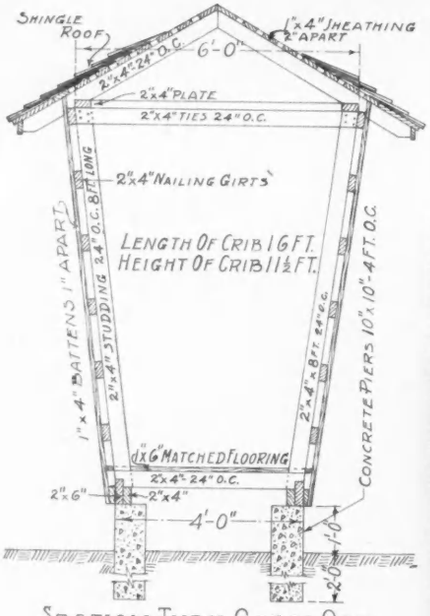
Reinforcing steel must be used in the roof of the cellar with a flat top. Bars ⅝ inch square are spaced 5 inches apart center to center and placed 1½ inches from the bottom of the slab. Alternate bars are bent up at a point 2 feet from the inside cellar wall. The ends of all bars are bent at right angles to form a hook about 3 inches long. This insures good anchorage in the concrete. One-half inch square bars, placed two feet apart, are run lengthwise of the cellar.

Apples, potatoes, beets, carrots, turnips and other fruit, roots and vegetables will keep best at a temperature between 35 and 40 deg. F. The normal temperature of the earth is around 50 deg. F., much too high for ideal storage conditions. In order to reduce and maintain the proper temperature in a storage cellar, cold air must be brought in from the outside. During the early fall months there are nights when the temperature drops near or below the freezing point. Advantage must be taken of these nights to cool the storage cellar. Cooling can be accomplished by building a good ventilating system which will provide for a rapid circulation and change of air.

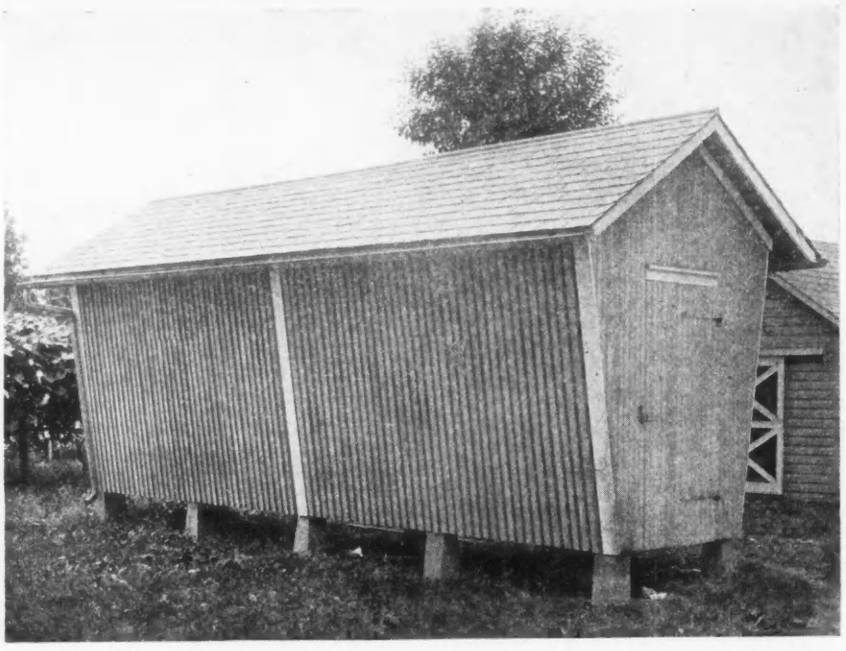
In the design below the cold air intakes are located on each side of the entrance door. Cold air enters



Storage Cellar with a capacity of 800 Bushels. Greater or Less Capacity Can Be Secured by Adding to or Taking from the Length of the Plan, Each Additional Foot of Length Increasing the Storage Capacity 40 Bushels.

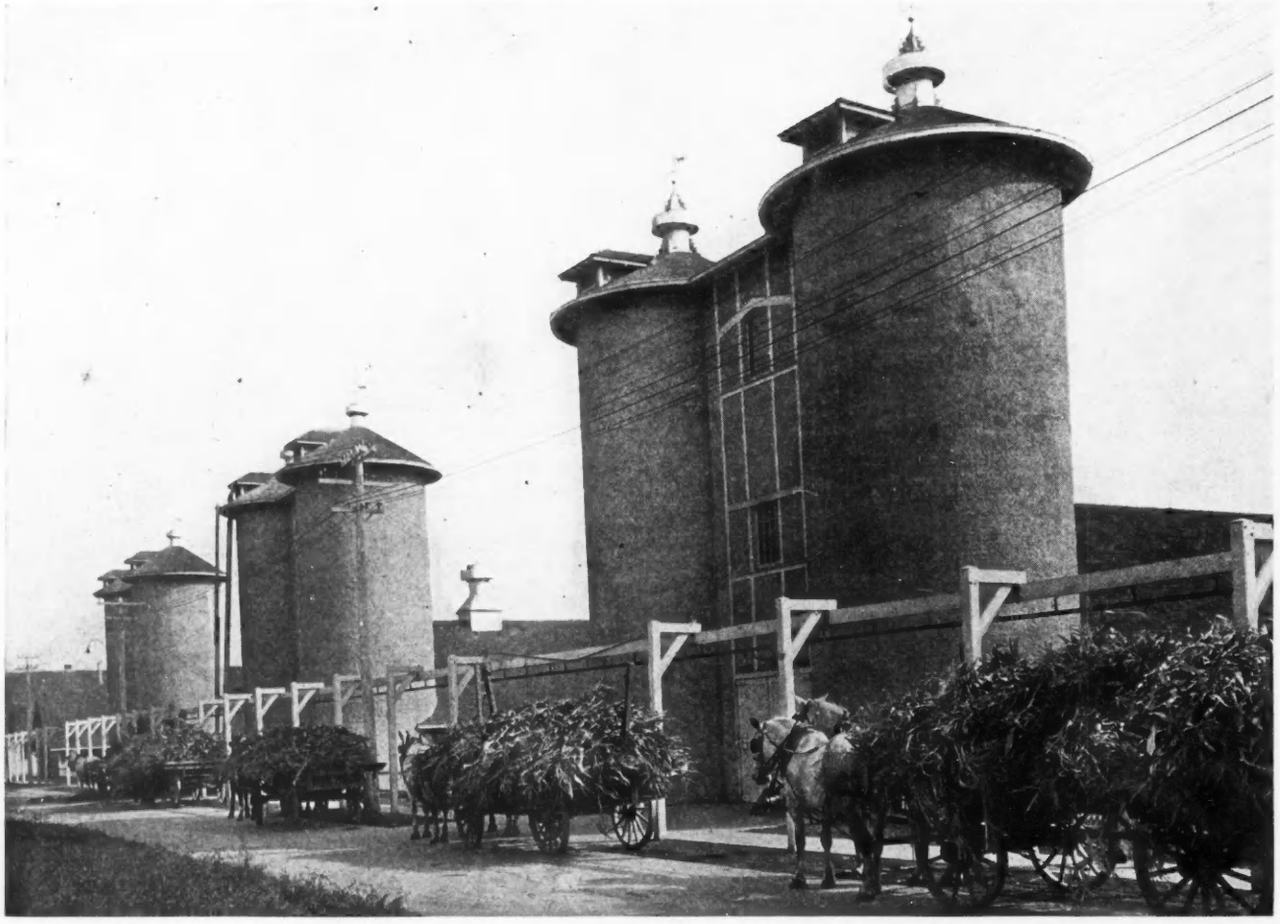


SECTION THRU CORN CRIB

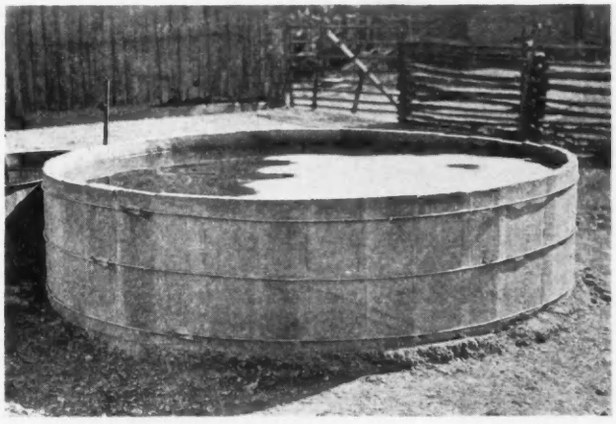


Small Single Corn Crib of the Good Old-Fashioned Type Resting on Concrete Posts 12 Inches Above Ground to Keep Out the Rats and Mice. The building is 4 feet wide at the base, sloping outward to a 6-foot width at the plates. The height is 11½ feet and the length 16 feet; 1 by 4-inch battens placed 1 inch apart form the sloping side walls and assure plenty of ventilation. For convenience in filling, there are two small doors high up in the side; the outline of these is faintly discernible in the photograph. A good, tight, well framed roof is provided, making this a very secure corn crib.

the cellar under the floor and passes upward thru and around the stored contents, cooling them. Floor, walls and partitions of the various bins are so constructed as to facilitate ventilation. The warm air in the cellar that rises to the ceiling is drawn off by the roof ventilators. In this way circulation of air is complete and in the course of one night the air is changed many times. On warm days and nights all



An Unusual Battery of Big Silos at Silo Filling Time at the Cleveland City Dairy Company Farm, Near Warrensville, Ohio. Each pair of the silos adjoins a one-story barn and holds the complete year's rations for the herd.



Farmyard Improvements Promote Better Farm Management and Sanitation. This round stock tank is made out of concrete staves, hooped and cemented together and resting on a concrete base.

ventilators and intakes are closed so as to keep the cold air in the cellar. They are not opened up again until the next cold spell.

In order to keep the air in a storage cellar moist, water tanks are built at the foot of the cold air intakes, just inside the wall. The incoming air, passing over the tanks, picks up moisture. Contents of the cellar will then keep crisp and plump and there will be no shrinking or shriveling.

✣

Farm Buildings and Food Conservation

IF food is to be saved, certainly there is no better place to begin than in the building where the food is produced.

The method of construction of farm buildings has a vital and direct relation to the amount and quality of food production on a given farm. For instance,

Handy Small Gate Set in Large Gate in Hog Lot on Farm of I. B. Morgan, Galveston, Ind.

the amount of milk a cow will give depends in great measure upon the conditions in her stable. When the barn is cold and drafty, the milk flow will be decreased, for if her food goes to the production of heat, it cannot go to make milk. It is also well known among dairymen that a cow must be in a comfortable state of mind to give the maximum milk production. She cannot make milk records when her stable is too cold in winter and too warm in summer.

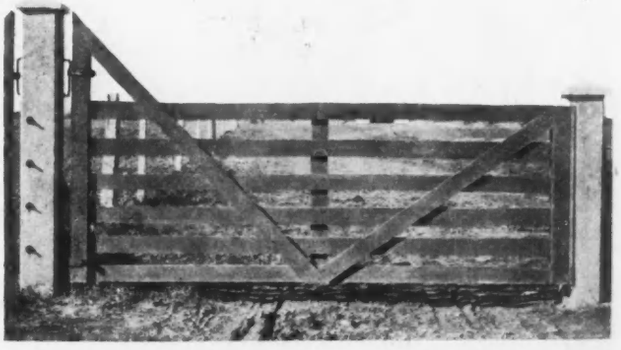
A Concrete Manure Pit Outside a Horse Barn Near Elwood, Ind. This encourages good housekeeping around the barn, and full use of the Fertilizer value of the manure.

The same line of reasoning applies with equal force to egg production in the poultry house, and to the results obtained in buildings where cattle, hogs, sheep, or fowls are fattened for the market.

Here, again, food that goes to keep the animal warm cannot at the same time be converted into flesh.

Take the matter of hog pens alone and consider the yearly wastage of spring pigs due to improper housing in pens which do not sufficiently protect the little animals from cold and moisture. This loss can be largely controlled by the proper kind of building. The saving in pigs in one year will often pay the cost of new construction.

In the matter of vegetable and fruit foods, the farm building bears an equally important relation to the output. Our Department of Agriculture is authority for the statement that 30 to 40 per cent of the sweet

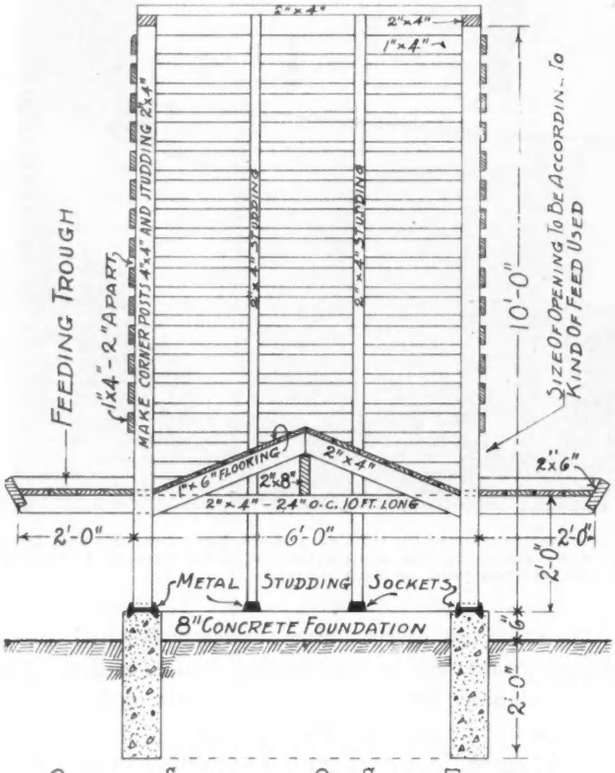


Concrete Gate Posts and Extra Well Designed and Constructed Farm Gate. Fencing is one of the first and most important farm improvements.

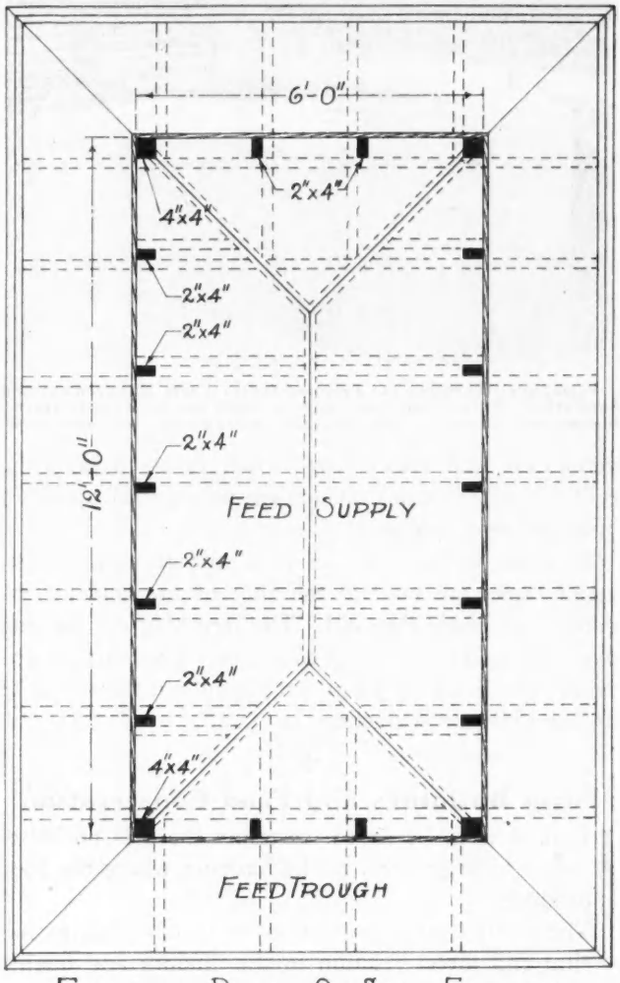
potato crop is lost thru improper storage and handling. Yet a building ideally adapted to this purpose can be built to take care of the potatoes from one or more farms, at a cost that is certainly not prohibitive.

Instances might be quoted without number to show that insufficient and improperly constructed buildings are a primary cause of great food waste.

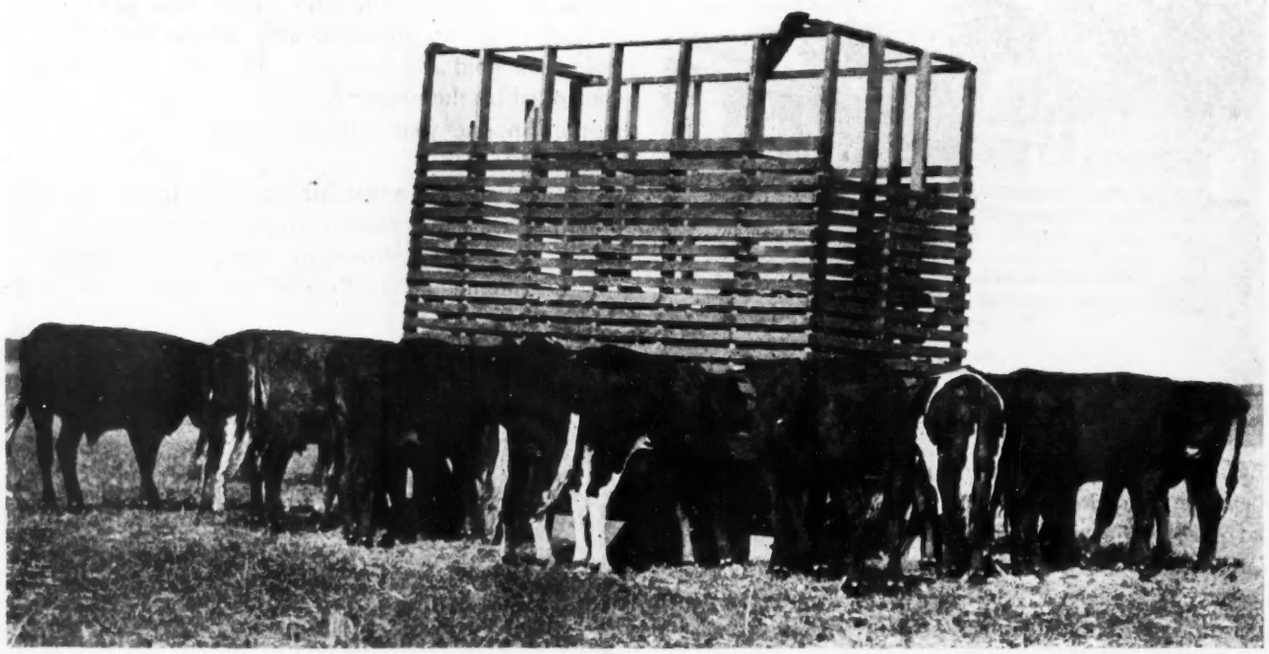
All in all, there is no problem of farm management—not even excepting those of soil fertility and seed bed preparation—which deserves more thought than the



CROSS SECTION OF SELF FEEDER



FRAMING PLAN OF SELF FEEDER



Photograph and Details of Construction of a Very Practical Self Feeder for Steers. The bin has a big capacity and the cattle help themselves without wasting any of the feed. Build this outfit strong and anchor it well, or it will be crowded off its foundation and tipped over. With the growing scarcity of farm help, the farmers are turning more and more to self feeders of various kinds in order to save labor, and at the same time increase production. The local carpenter and builder and the lumber dealer can render real service by urging this type of practical building improvements.

farm building and the materials from which it is built.

Farm buildings should give the greatest possible measure of protection against outside weather conditions. The walls should have such insulating value that artificial heating or cooling would be necessary only in extreme instances.

Excessive moisture, the arch enemy of all foodstuffs, should be guarded against by walls and floors thru which moisture cannot penetrate and on which it will not accumulate.

Fire, always a menace, must be regarded as doubly dangerous, in view of the avowed policy of enemy agents to destroy farm buildings and crops.

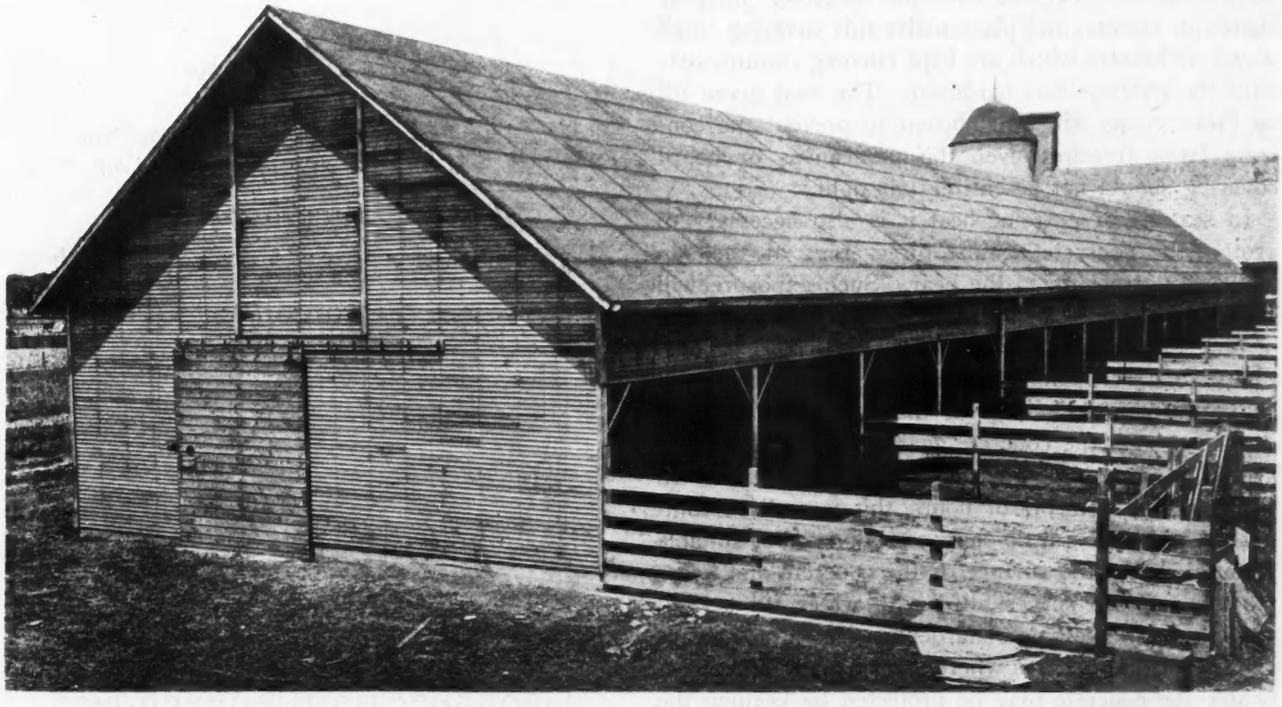
The erection of farm buildings which conform to such high standards is not an aim to be realized in one year, nor in ten; but there will never be a better time than the present to begin on a large scale.

Food products are in great demand, prices are high, most of us who till the soil have more money than usual to invest in improvements—and, most important of all, the world needs, as it never did before, every ounce of food that we can produce on the American farm.

Model Farm Buildings of Fire-Resistive Construction Arranged in a Compact Group to Save Steps.

The Protection of Newly Placed Concrete

ALL newly placed concrete work must be protected against the elements and against injury from other outside causes until the concrete has thoroly hardened. In most cases this protection need be no other than a covering of some sort which will prevent rain from falling directly on the exposed concrete surface.



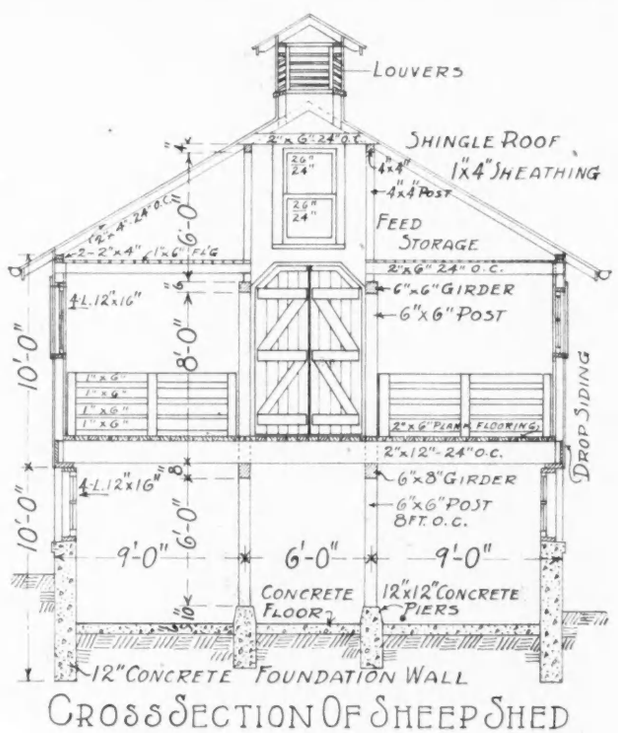
Photograph of Cattle Feeding Plant at Purdue University, LaFayette, Ind. It consists of a series of open runs in connection with a roomy shed. A certain amount of roughage is stored overhead, but the silo furnishes the greater part of the feed storage space.

A Two-Story Sheep Shed for a Sloping Site. The Main Floor Is Entered From the Far End at Ground Level. It Is Fenced Off with Pens in the Simplest Sort of Way. Down Below There Is a Big Basement Stable with Concrete on Three Sides, But Practically Open at the Front.

In certain climates, and in certain seasons of most all climates, especial precautions must be taken to protect the concrete against freezing temperatures. There are various ways of doing this. The most effective and also the most usual and easily accomplished is to build a sort of covering over the concrete, either of boards or canvas, and place under this covering small stoves or heaters which are kept burning continuously until the concrete has hardened. The heat given off by these stoves will be sufficient to prevent the concrete from freezing, even tho the canvas or board covering should not be entirely air tight.

In seasons of extreme heat it is also necessary to protect the concrete against direct rays of the sun and direct exposure to the heat. Such exposure will cause the water in the concrete mixture to evaporate or dry out before the concrete has had an opportunity to harden, and thus an inferior concrete will be produced, particularly at the surface. The best way to protect the concrete against such injury is to keep it covered with water until it has hardened. In the case of pavements or floors, this is easily accomplished by building little dams of clay or other suitable material across the surface of the concrete and keeping the enclosed spaces filled with water for several days, or until complete hardening has been accomplished In other cases where this method is not practicable the concrete may be protected by keeping the air in the room in which the concrete is located saturated with moisture either by means of escaping steam or fine spray of water.

The presence of water or moisture in the atmosphere will not in any way injure the concrete either before it has hardened or after. Before hardening has set



Construction of Sheed Shep Illustrated Above.

in the presence of moisture in the air is exceedingly beneficial to the complete and thoro hardening of the concrete. After the hardening has been accomplished the presence of moisture in the air will not affect it.

The application of paint or other protective coatings to concrete work before it has hardened will cause it serious injury. This injury arises from the fact that the hardening process will be materially retarded by the admixture of any substance not properly a part of the concrete mixture. The concrete at the surface will also be materially weakened by this application.

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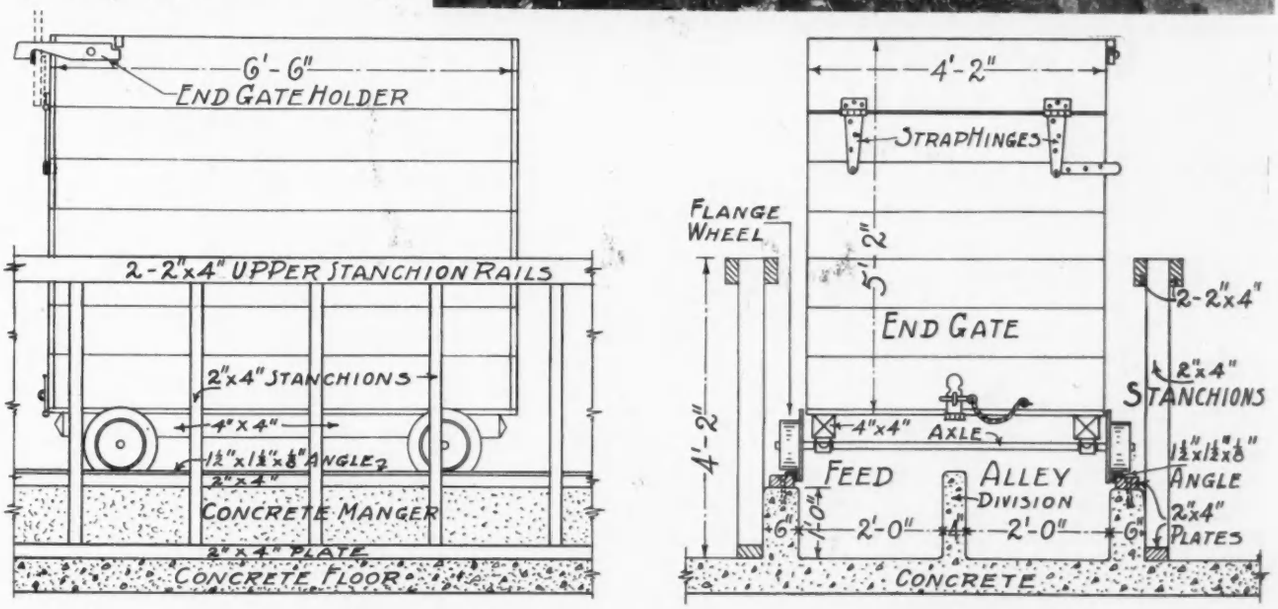
Storage Houses to Save Sweet Potatoes

Because about 50 per cent of the sweet potato crop stored in pits never reaches the consumer, the construction of proper storage houses is being urged upon the farmers of the South by specialists of the Bureau of Markets, U. S. Dept. of Agriculture. Designs for houses that will save this annual waste of millions of bushels of potatoes are being furnished to growers, and it is stated that the sweet potatoes saved the first year will pay for the cost of constructing these storage houses.



SIDE ELEVATION OF FEED TRUCK

END ELEVATION OF FEED TRUCK

Photograph and Working Drawings of Handy Cart for Feeding Silage, as Used on the Farm of Taylor Fouts, Camden, Ind. The Cart Runs on a Light Angle-Iron Track the Length of the Feed Alley. It Is Filled Directly from the Silo, and When the End Gate Is Opened the Silage Is Raked Out and Distributed with a Minimum of Time and Labor.

Repair the Old Barns

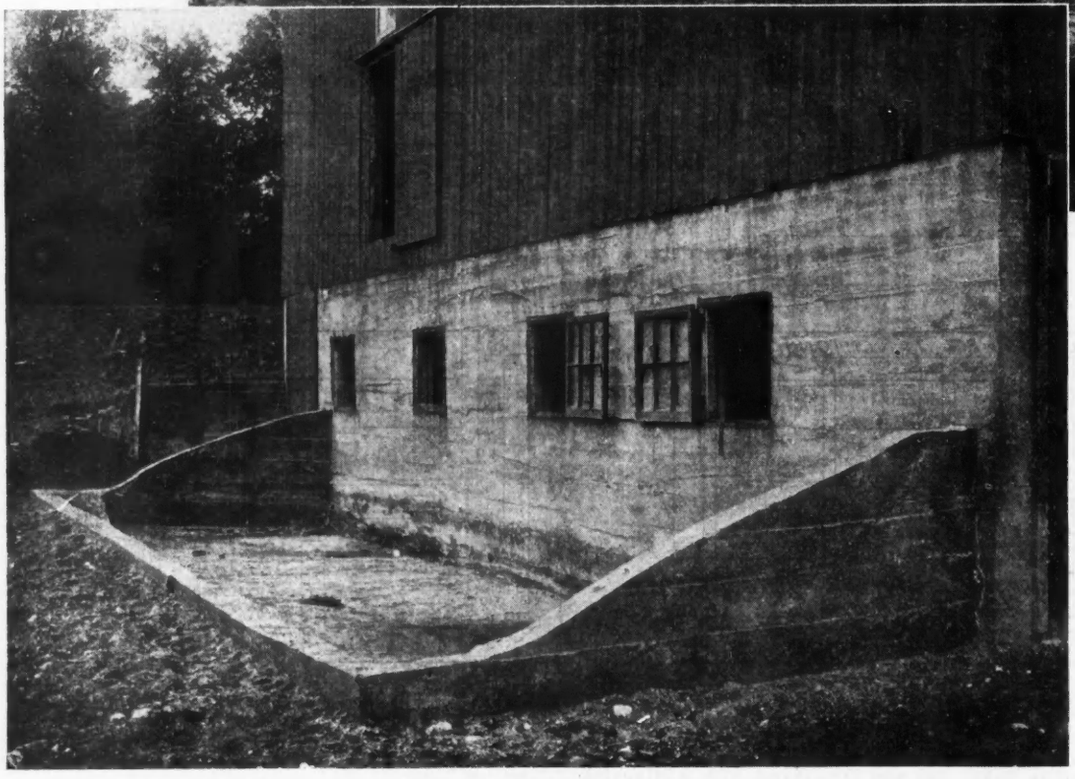
THERE is no efficiency in a tumbled down farm building. It wastes a farmer's labor and kills his ambition, besides failing to give the proper shelter to stock or crops.

Very often the barn frame is sound and with the present price of building materials, is well worth saving. Usually the principle thing to do is to jack the barn up level and perhaps to a slightly higher grade and build under it a new concrete foundation; then add a concrete floor, repair the roof and the job is practically done.

It's a disgrace the way so many farm buildings are allowed to mire down. They sink down into the mud and filth of the barn yard; and they look hopeless. Often what they need most is tile underdraining all the way around to take care of the eaves drip. Then the judicious use of concrete for feeding floor, manure platform and door approaches will work wonders.

New barns are the ideal; but this is a year to make the old do if they can in any way be put into serviceable shape. No farmer can afford this year to waste his time and strength struggling with delapidated, insanitary stables—poorly arranged and without labor-saving conveniences. Likewise he can not afford, nor will patriotism permit him, to house his crops in a wasteful building. The urgent demands of the situation call for modern efficient farm buildings, and where the old barns can be repaired and remodeled it should be done.

Before the Remodeling.



After the Remodeling.

In Remodeling This Old Barn, the Old Post Foundation on Stone Footings Was Replaced by a Continuous Wall of Concrete Which Also Formed the Side of the Manure Pit. Several Windows Give Plenty of Light and Aid to the Basement of the Barn. Timely Repairs of This Kind Not Only Preserve a Barn, But Make It More Sanitary and Convenient.

BUILDERS' HARDWARE

A Talk on Butt Hinges

By W. R. Hill

"WELL," said Mrs. Johns, "we must tackle this question of hardware for our new home some time, I suppose, and it might as well be now. I hate the very thought of it, and certainly will not spend any more time on it than I can help."

"Why don't you make a pleasure of it, my dear," replied Mr. Johns, "instead of a duty? Or, better yet, make it both a pleasure and a duty?

"I recall the house that we lived in when I was a boy, and if we don't give the question of hardware for this, our first and only real home, our personal attention and interest, we will probably get some hardware just like the hardware that was on the old home. Heaven help us if we do!

"We had on the doors," he continued, "some ugly, cheap, cast iron butts with an ornamentation on the faces that looked like a bunch of worms in a fight. The leaves were so thin that half of them were broken and the joints were cast so unevenly that they ground on each other whenever the door was opened or shut and wailed like lost souls in distress.

"The knobs were a spotty porcelain, fastened on the spindles by side screws, which worked out constantly, and not only scratched the fingers when they were fortunate enough to be in place, but, because of working out, were constantly falling on the floor."

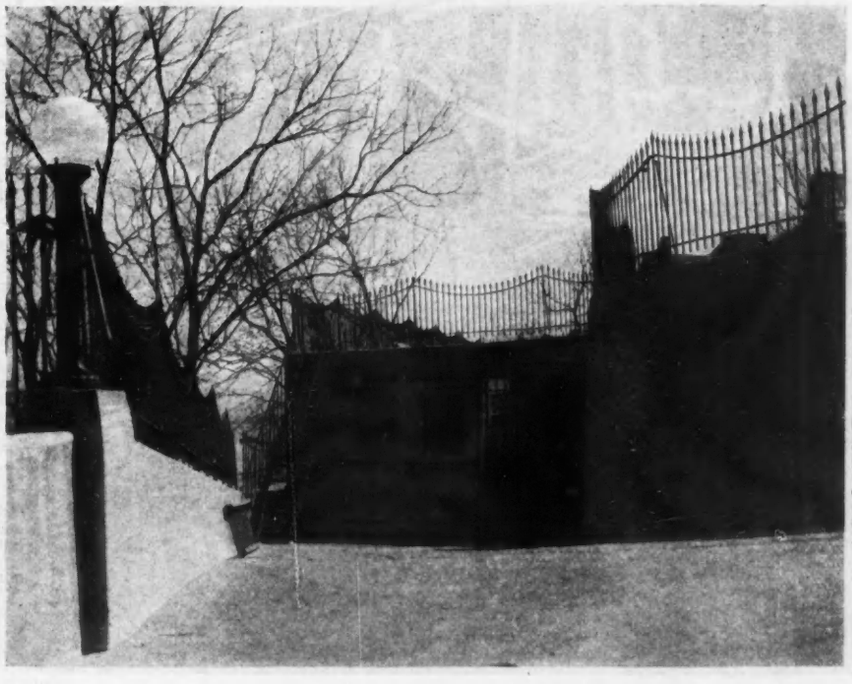
"Yes, that's so," replied Mrs. Johns. "Our house was an old one and had the same kind of hardware. And the front door! It never would shut unless you pushed it shut with your shoulder against it like a battering ram. When Jim came home at night (and he was often very late) the closing of that miserable front door woke the whole household. And I remember," continued Mrs. Johns, "that night you stayed so late; that night you—well, you know—when I shut the door after you had gone, it made so much noise that it woke Dad up, he looked at the clock and gave me 'Hail Columbia' for not sending you home before.

"Now, I know that there are locks and hinges that are better than those, and we have just got to have them on our home."

"Right you are," said Mr. Johns. "Now you are showing the correct spirit. I'll tell you what we will do. You come to the office at two o'clock this afternoon and I'll have Bill Edwards meet us with the plans at 'Knowem & Showem's Hardware Store.' We will want Bill with us as he can help us a lot."

So Mr. and Mrs. Johns, who had dreamed for the past twenty years of owning their own home, and who wanted the best they could afford to buy, went down

(*Continued to page 108.*)



Garage in Chattanooga, Tenn., Built of Concrete and Equipped with the Strongest and Heaviest Garage Hardware Made. It Is Certainly Going to Be Permanent Enough.

Lessons from the Spruce Drive—Airplane Work Boosts Lumbering Efficiency

By A. S. Atkinson

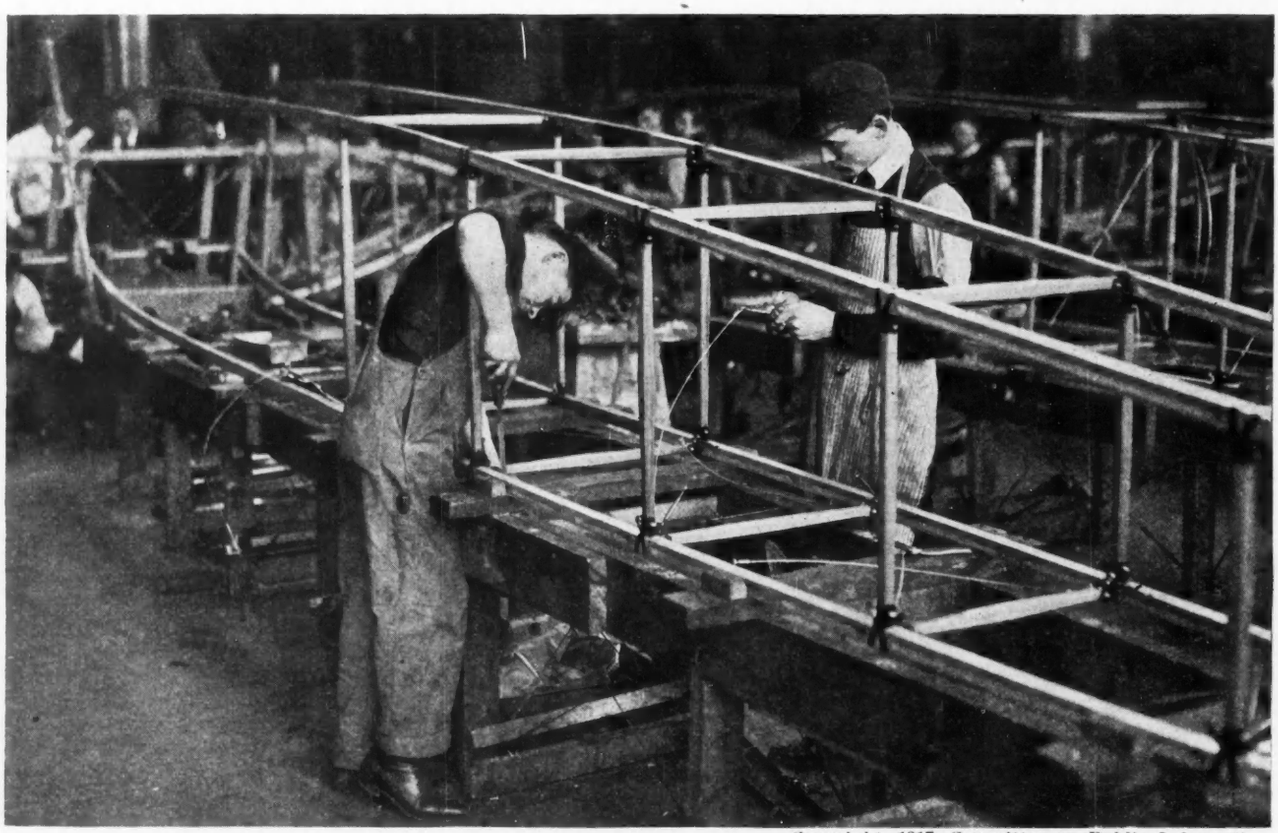
APPARENTLY no important industry has been left unaffected by the war, and few of these will come out of it in the condition that prevailed before the great conflict, nor will many of them perhaps ever return to their former state. War has not only been a great speeder up of industry, but it has imposed a degree of efficiency that might not have been attained in years during peace times. Under the compulsion of necessity past haphazard methods had to go by the board.

The spruce drive for airplane construction has established for the lumber industry a new standard that will have a permanent effect upon it. Under conditions that seemed hopelessly unfavorable, the experts in the great spruce regions have accomplished wonders in the short time we have been in the war, and some of their methods must have a permanent effect upon all kinds of lumbering. Fallacies have been exposed, old methods examined and discarded for better ones, and the whole work placed on a standard that demonstrates the driving force and efficiency of America if properly organized and pushed.

When the European war broke out spruce lumber was a rarity in the eastern markets, and its general use so limited that few yards pretended to carry any of it in stock. In fact, many yards had not carried a spruce board for ten years, altho in the West it was far more common. But suddenly, almost overnight, it might be said, spruce has become the most talked of wood in the world, and it is being cut faster than any other in this country.

The secret of this was that spruce was pronounced by airship builders as the most suitable wood for airplane construction, and hence it had to be cut in enormous quantities to build fliers, first, for Great Britain and France, and then for our own mighty fleet of airships. Some people imagine that nothing but spruce goes into airship construction. This is a common misconception. Ash, hickory, mahogany and other woods are employed for the body of the airships and for other parts where stiffness is required; but spruce is the only wood suitable for the beams and braces of the wings.

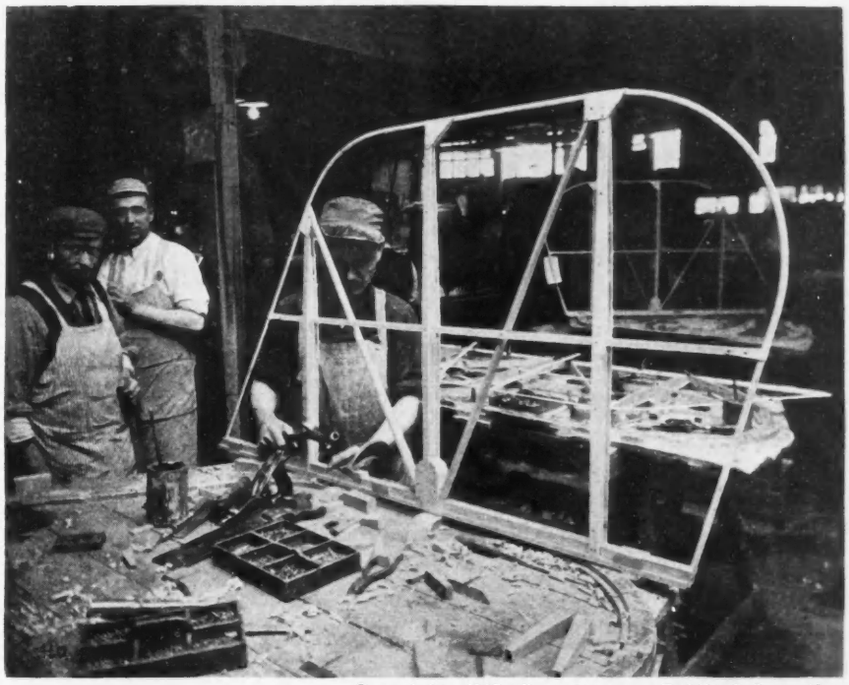
For years designers of airships had been experimenting with light metals to take the place of wood for the wings, but no metal alloys could be found that would not crystallize under the tremendous vibration of 2,500 revolutions a minute that was necessary for a flight of 150 miles per hour. Neither could any metal be found that would have the necessary resiliency for quick turns in the air and the wonderful wing spins and nose dives that have become common



Wooden Skeleton of the Fuselage or Body of an American Airplane. Each Stick Is Shaped and Hollowed for Minimum Weight with Maximum Strength. Metal End Connections and Wire Cross Bracing Give Extra Strength.

features of flying on the battle line.

So, in spite of all their laboratory and chemical research, the experts had to come back to nature's own product—spruce. Spruce is the pre-eminent wood for wing construction. It is light, tough, elastic and strong. The nearest other wood that answered all these necessities is hickory, but hickory was out of the question, for there was not enough of this wood in the whole United States to supply one-third of the demand for the Allies alone. Hickory, while possessing most of the desirable qualities, was heavier than spruce. White pine is light, but lacks the spring of spruce.

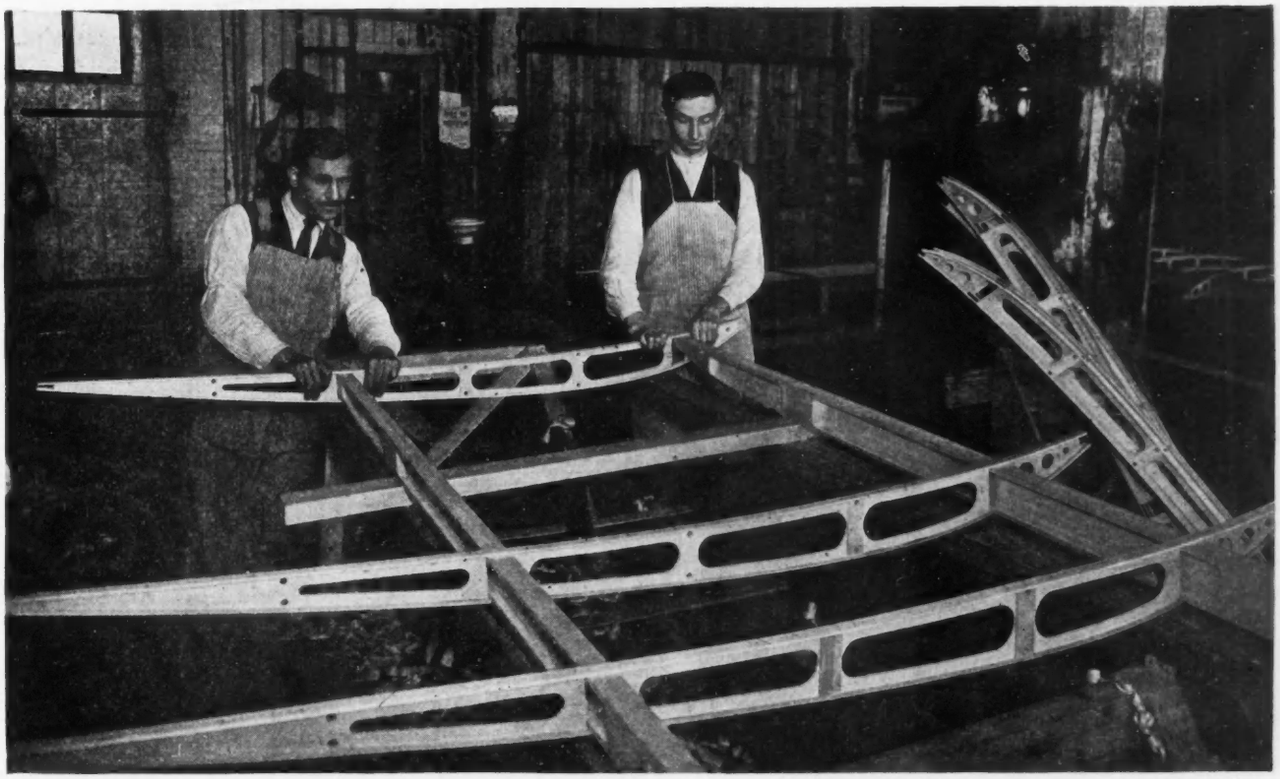


The Wooden Framework for an Airplane Rudder. Thousands of Expert Cabinet Makers Have Taken up This Work to Help Along the War.

There are six hundred separate pieces of wood in the construction of a big military airplane, including the ash, hickory and mahogany parts and it takes 167 board feet of clear, straight-grained, seasoned spruce to make the wings and braces. Now an order for spruce for a single airship is a small one, but when you multiply this by the tens of thousands, and then stop and consider it formerly took about 1,000 feet of rough lumber to yield the necessary 167 feet of good spruce, you can get an idea of the tremendous inroads made upon our spruce forests. And the demand is increasing by leaps and jumps as the war continues and the need of more airships is emphasized to secure complete mastery of the air.

Another point that had to be considered was speed. We could not wait six months or a year for the delivery of seasoned lumber for airship construction, and yet if the spruce sticks for the wings are

(Continued to page 114.)



Assembling the Frame of an Airplane Wing. The Heavy, Substantial Nature of This Construction Is Surprising Until One Remembers the Terrific Strains Which These Wings Have to Withstand.

Fixing up the Farm

Farm Sanitation

THE THIRD OF A SERIES OF ARTICLES

By C. M. Emerson, *M. E., A. E.*

WE have always been told, and have thought, that the country is much healthier than the city; but statistics show that the large cities have the lowest death rate. In nearly every Western prairie state the healthiest townships are those in the largest cities. Why is this so?

In New York City with all its slums, crowded tenements and dire poverty, one hundred and two babies out of every one thousand die; while in the country one hundred and thirteen babies out of every one thousand die. Why is this so?

We find more pale, sallow children in the country, more especially in the spring, than we do in the city. Why is this so?

A much larger percentage of men from the country are rejected by army examining officers than there are from the cities. This was so in the recent draft. In one district with which the writer is personally acquainted, a country district, as high as eighty per cent were rejected as physically unfit. While in a city district, one the writer is personally acquainted with, only sixty per cent were rejected for the same reason. Why is this so?

Twenty-three and three-tenths per cent of city children are found to be underfed and poorly nourished; while thirty-one and two-tenths per cent of country children are in the same sad condition. Why is this so?

Pure air and sunshine are essential to good health. Then why is it true that three and seven-tenths per cent of country children have lung trouble, while only one per cent of city children have it?

Is this true because the country cannot furnish pure air, sunshine and good substantial food and in sufficient quantities? We all know that every farm in the United States has plenty of air and sunshine and the freshest and best food obtainable, and an abundance of it. The children in the cities are eating food raised on the farms. In nearly every case the food in cities is stale—especially eggs and milk. Eggs supplied the cities are, in winter, mostly storage eggs which are in many cases six months old, and sometimes a year old. No absolutely fresh meat is sold in the city. An exceedingly small per cent is dressed within the state in which it is eaten. It is shipped clear across the continent in many cases. Some is months old before the consumer gets it.

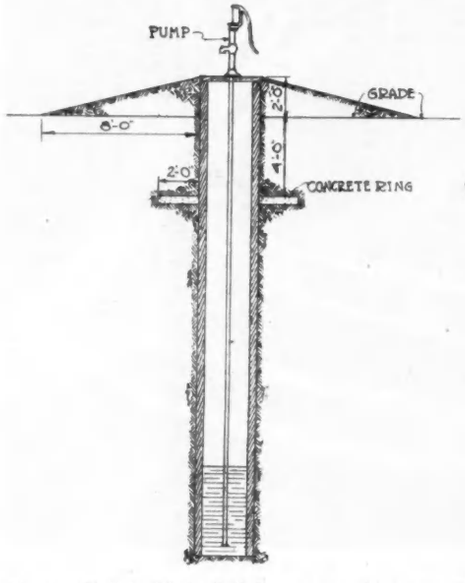


Fig. 1. Well in Light Soil Protected with Ring of Concrete 4 Feet Under Ground.

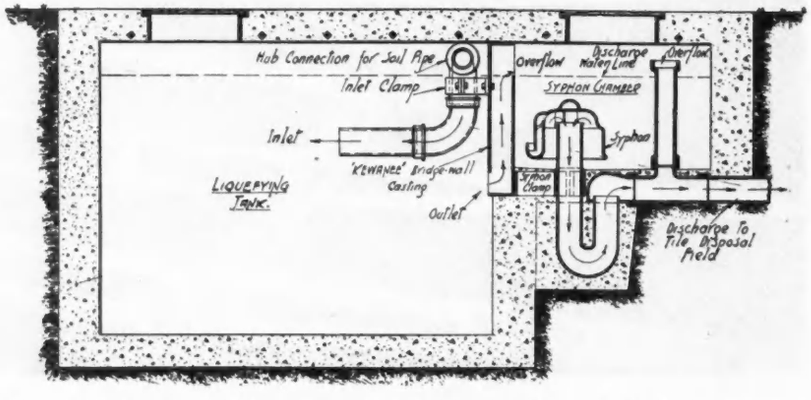


Fig. 2. Sewage Disposal Tank of Approved Design. Provided with Both Liquefying and Syphon Tanks.

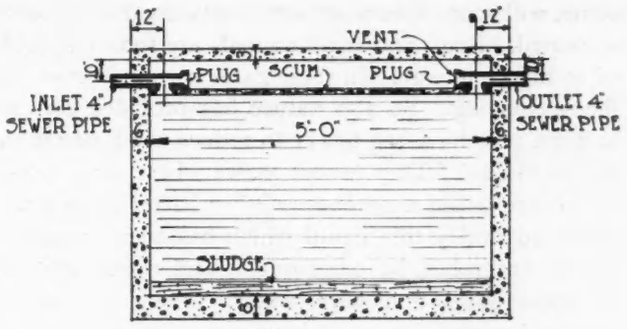


Fig. 3. Simple One-Chamber Septic Tank.

All these things being true, then it cannot be the lack of plenty of fresh air, sunshine and good nourishing food. There must be another reason. What is it? We must look further for the reason, then.

We are forced to believe that the children's parents are to blame. A mother goes "Down into the Valley of the Shadow" to give a new life to the world, she denies herself as long as she or her child lives that it may be happy and contented, healthy and well clothed. Then how is it the mother's fault that her child ranks so low as statistics show to be the case? Lack of knowledge, slowness to take up modern conveniences and methods. They are depending more on sunshine and pure air than modern sanitation. They are not preparing the food in a method to get the best out of it. Are depending on quantity rather than quality of cooking.

It is the purpose of this article to show how to care for the country home and its surroundings, and make it a healthy and pleasant place to live.

Farm sanitation really includes several matters, such as location of the house as to proper drainage, ventilation of house and barn, nature of the water supply, cleanliness and care of surroundings. The scope of this article must be limited to sewage disposal and a short discussion of pure water supply.

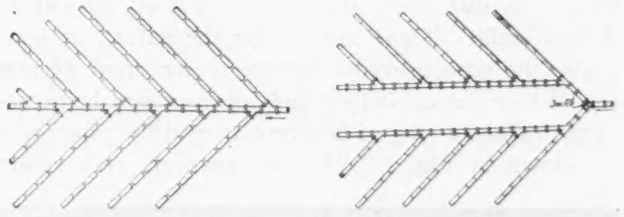


Fig. 4. Two Arrangements of Tile Drains from Septic Tank Disposal Field.

Unless the water is above reproach as to purity, no sewage disposal system will entirely remove danger of illness. The well should be located higher than the house and barn, or manure yard. Too many times the writer has found drainage from both house and barn flowing towards the well. Men go from the barn yard to the well with dirty boots, stand on a plank covering to pump water for drinking and even washing. The water slopping over runs directly into the

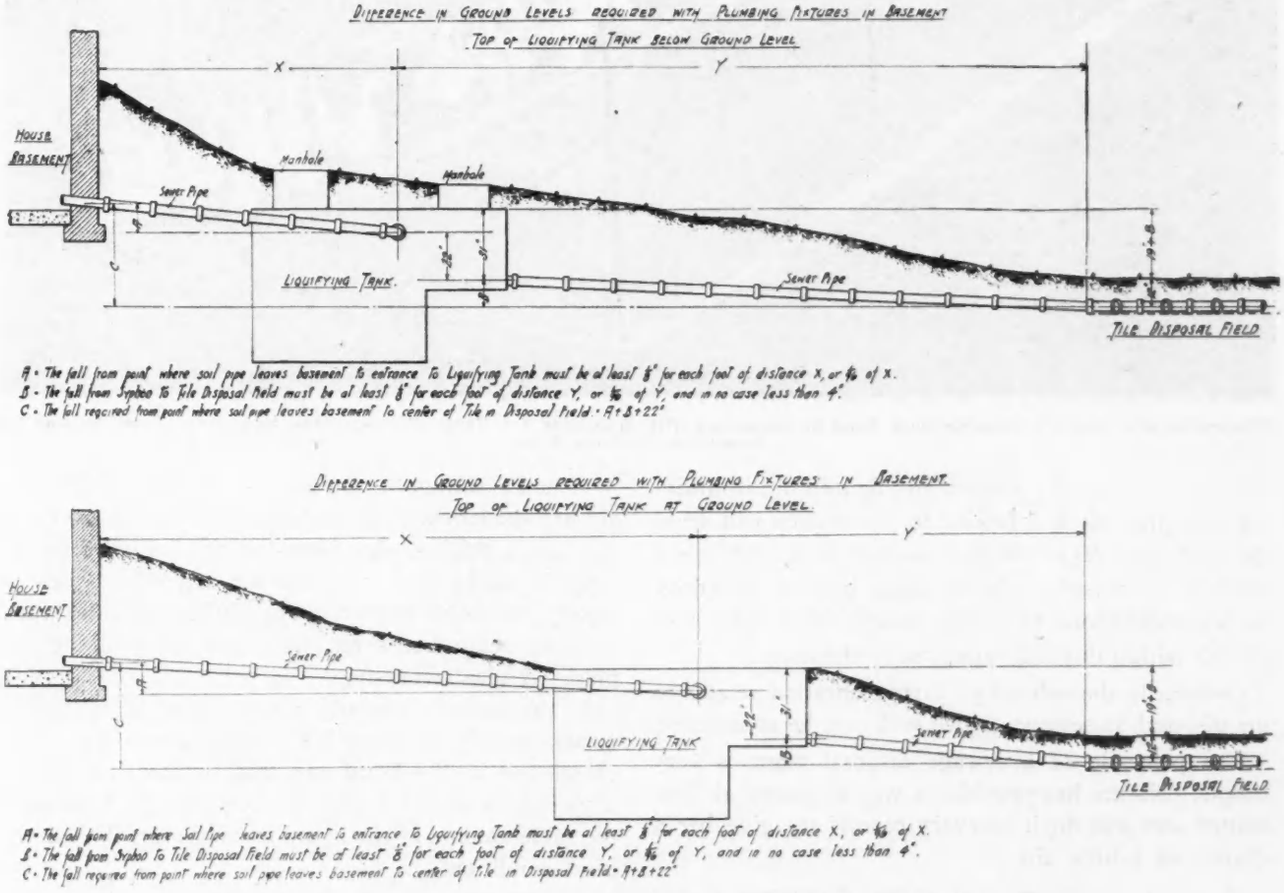


Fig. 5. Two Arrangements of Septic Tank Disposal System with Relation to the House.

well thru the cracks between the planks. To avoid this the well should be covered with reinforced concrete, sloping away from the well. Fig. 1 shows the proper way to safeguard the well. Note that the cover is two feet above the ground level and extends eight feet from the well all around. Four feet below the ground level is a concrete ring, two feet wide, all around the well. This will prevent surface water from seeping down and getting into the water thru the walls.

There is a tendency to do away with the shallow, dangerous dug wells and put down deep, driven or drilled wells. These are by far the safest, as generally the pipe prevents surface water from getting in. Where the soil is light and porous it may be necessary to place a ring of concrete around the pipe same as shown in Fig. 1. This is, however, very rarely necessary. It is well known, and figured on, in draining land, that tile laid from 3 to 4 feet deep will drain the land from 50 to 100 feet on each side, and as the depth is increased it drains from greater distances. So we should look to it that danger from open piles of filth within this drainage area is eliminated.

Ordinarily the subject of farm sanitation relates to the disposal of sewage, which will now be considered.

The principle of a sewage disposal plant is very simple. Nature has provided a way to purify all foul matter and will do it in every case if we give her a chance, or a little aid.

We have all noticed that animal droppings, if left alone, will soon be covered with finely divided soil and so buried. Bugs, and small animals are soon disposed of in the same way. In these cases certain beetles do the scavenging. So also nature has provided certain bacteria who have the power to reduce solid matter to gas and liquid. They cannot thrive where air is present so are called anaerobes. Other bacteria have the power to purify this liquid which has been produced by the anaerobes, by oxydizing it and reducing it to harmless gases and pure water. They are called aerobes because they must have air to live and thrive.

So if we provide a place for the anaerobes to work where they will *not* come in contact with air, and then provide another workshop for the aerobes, to finish the job, where they *will* have plenty of air, we have made provision for the purification of all sewage.

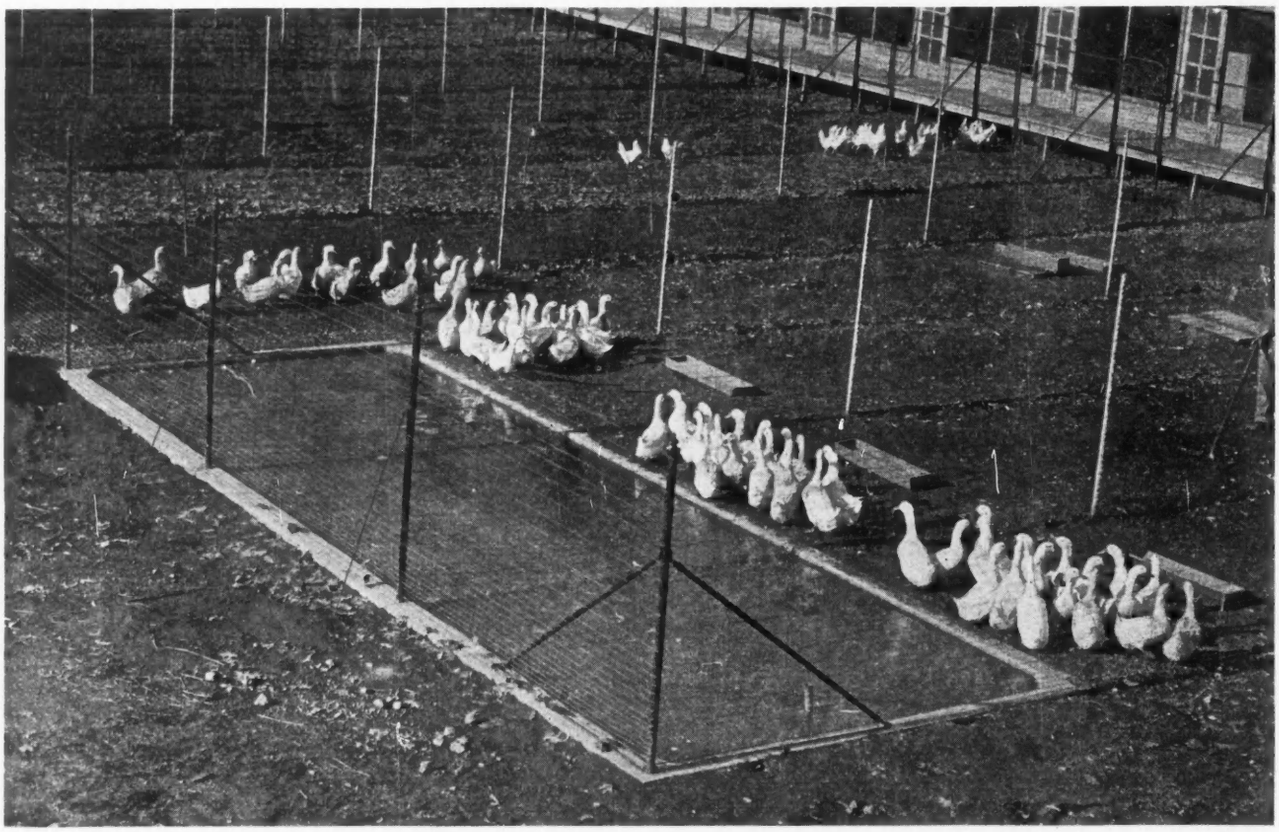


Illustration of a Sanitary Concrete Duck Pond in Connection with Runyards for Three Flocks. This Represents Fowl Raising on Productive Business Lines.

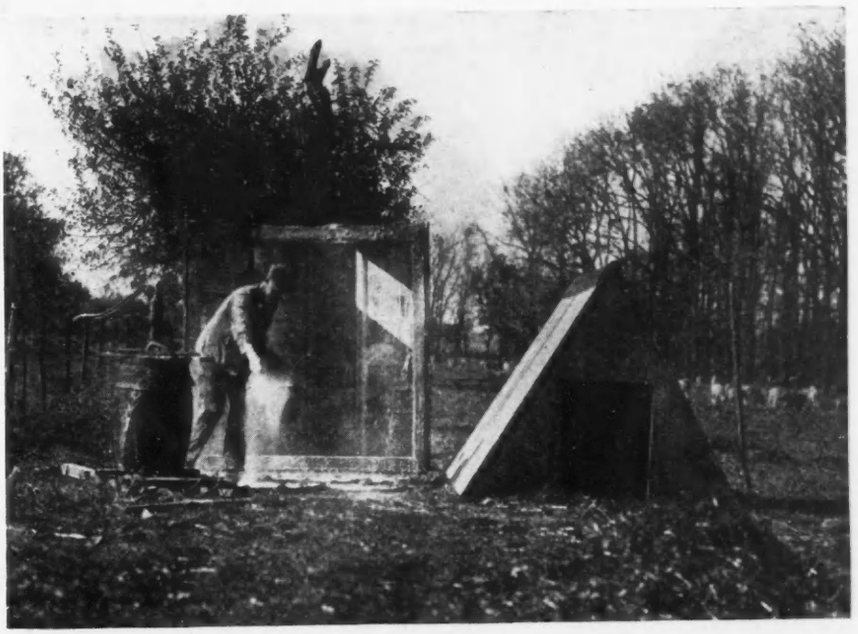
If house sewage is run into a tank where light and air are excluded, a thick firm scum forms over the top, and a thick sludge forms on the bottom. In the clear liquid between the two the anaerobes work to liquify the solid matter. The sludge provides food and the scum keeps out light and air, making the place an ideal workshop.

If the tank is properly proportioned a balance is struck usually in about six weeks, where the depth of sewage in the liquifying tank remains the same. This is because the matter flowing into the tank is of the same volume as the liquid flowing out. This is the ideal condition.

(Continued to page 106.)

Build More Ice Houses

AN ample supply of ice is of greater economic importance in the country home than in the city residence. City people can purchase perishable supplies as needed, but the remoteness of country homes from markets often renders it necessary to use canned, corned or smoked meat products during the season of the year when the table should be supplied with fresh meats. Not only is ice appreciated because of its use in the preservation of fresh meats, butter and other table supplies, but the production of high-grade domestic dairy products is almost impossible without it. Many markets to which milk is now shipped demand that it be cooled before shipment to a degree not attainable without the use of ice.



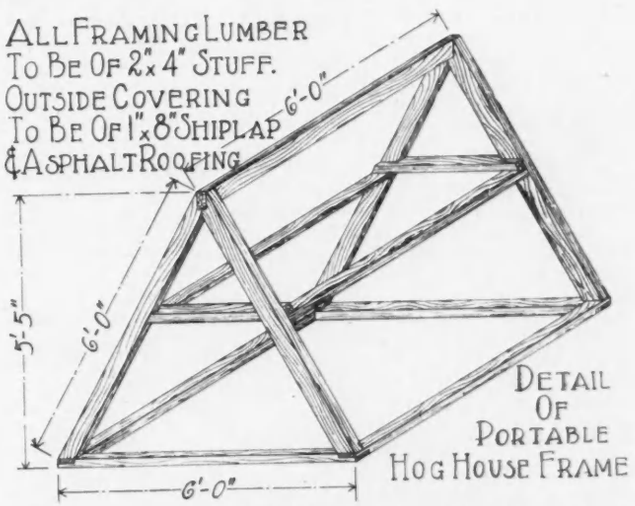
The Small Portable Hog House is Well Liked Because it is so Easily Cleaned and Disinfected and Moved About to Fresh Locations on Pasture. The construction of this type of building is illustrated below.

Ice is one of those luxuries which in many sections of the country can be had for the gathering. The cost of harvesting and storing it is not great as compared with the comfort that it brings.

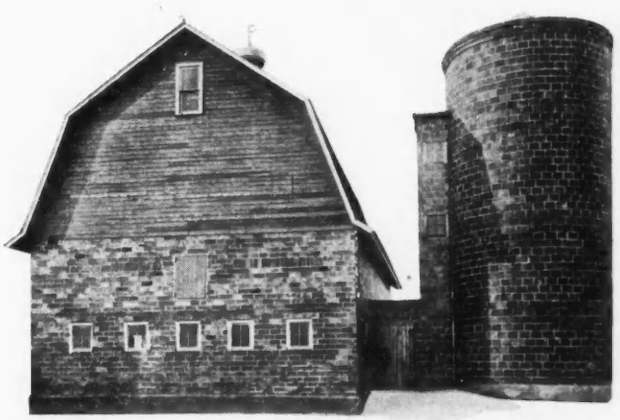
Since ice at best is a highly perishable product, requiring special equipment for its preservation, such natural advantages as are offered by shade and exposure should be taken advantage of in locating an ice house. A shady situation with a northern exposure has a decided advantage as a location for such a building.

In general design ice houses are of three types: (1) Those built entirely above ground; (2) those built partly above and partly underground, and (3) those of the cellar type, built entirely below ground. The above-ground structure is by far the most common of these types.

The advantages and disadvantages of these three types may be briefly stated as follows. Above-ground houses can, as a rule, be more economically constructed than either of the other designs. Excavations are expensive to make and difficult to insulate and drain properly. Insulation and drainage are two of the most important factors in the preservation of ice. It is true that the temperature of the earth varies less than that of the air, but the fact that the temperature of the earth at 6 or 8 feet below the surface remains at or about 55 degrees F. the year around makes it quite as important to protect the stored ice against the earth heat as against the heated air. It is more difficult to remove ice as needed during the season from pits than from structures above ground. Slight advantages are apparent at harvest time in favor of the cellar or the half-sunken types of house, and under some circumstances they will be preferred to the other type.



The Simple Framework for Portable A-Shaped Hog House. Over this frame of 2 by 4's, 1 by 8-inch shiplap is nailed, and if extra protection is wanted, asphalt roofing is put on the outside. Many lumber dealers build these hog houses at odd times and offer them for sale. They go well.



Very Well Constructed Hollow Tile Barn and Silo Near Mason City, Ia., showing the Use of Glazed Structural Tile for Farm Buildings.

Blue Prints of Important Farm Buildings

FULL DETAILS DRAWN TO SCALE OF GRANARY AND SEED STORAGE BUILDING AND OF COMBINED ICE HOUSE AND MILK HOUSE

BLUEPRINT plans of two buildings that certainly qualify for the designation "patriotic farm improvements" are presented herewith. The first is a practical farm granary, size 16 by 32 feet, of wood construction; but with a concrete foundation extending 22 inches above grade so as to discourage the rats and mice. The space inside is divided into eight bins with an 8-foot section across the front for fanning mill, bagging space, etc. Note especially the detail of improved shovel board for grain bin doors.

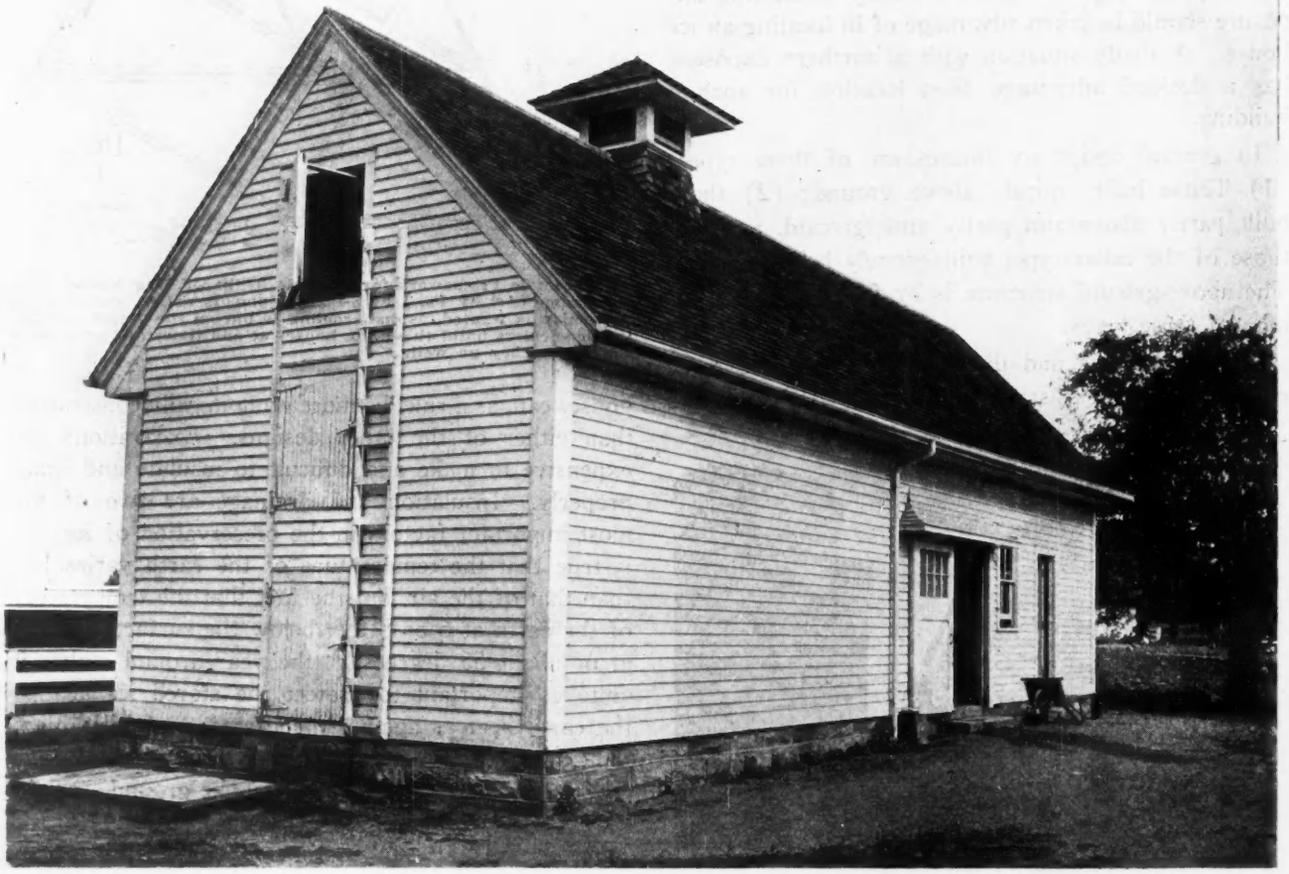
The other patriotic building for which blueprints are presented is the combined farm ice house and milk house, illustrated below. It is a building 12 feet wide by 32 feet long. Half of the length is given up to the three rooms of the dairy department; also the refrigerator projects into the ice storage section to get the benefit of indirect cooling.

✣

Relation of Ice Supply to Fruit Storage

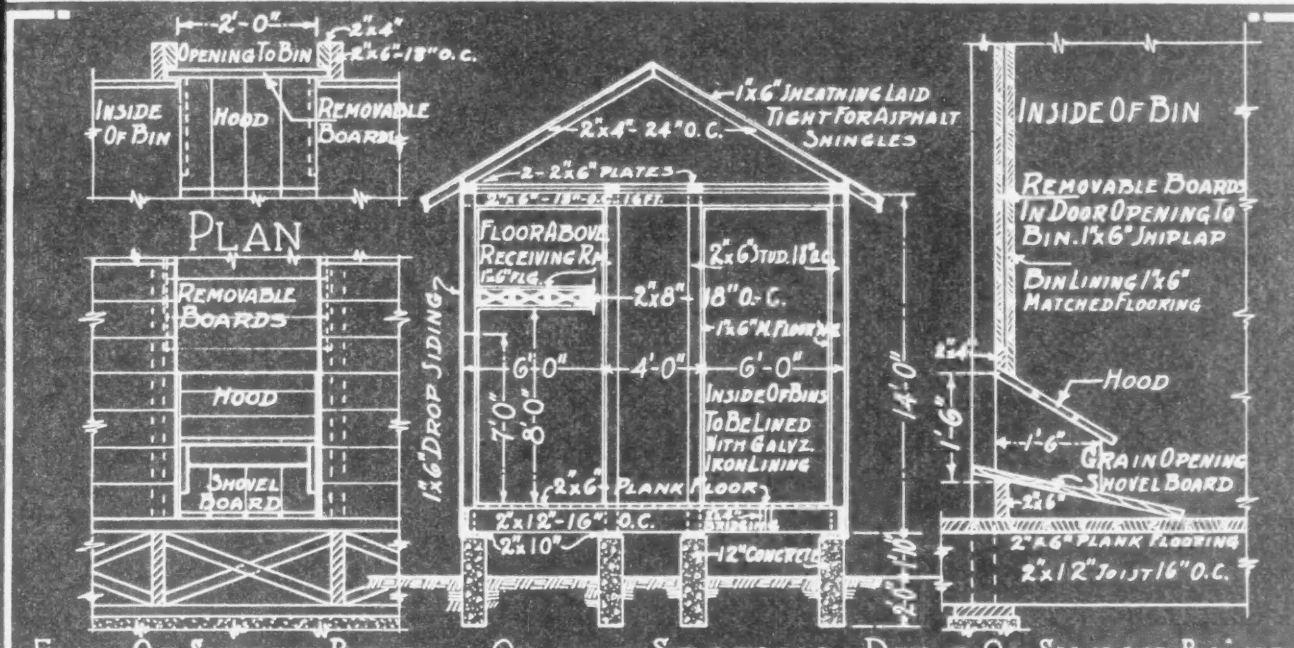
In order that fruits may be held for long periods in storage it is necessary that a uniform low temperature be maintained in the storeroom. With many products a uniform temperature is of more importance than a low temperature. With apples, which is the crop usually held in storage, it is desirable that the fruit reach an advanced state of maturity upon the tree, but that the ripening process be checked immediately when the fruit is placed in storage. This sudden check cannot be effected in ordinary storage at picking time. It is therefore necessary that the storage house be provided with means for reducing the temperature to the required point and holding it there until natural conditions permit the introduction of cold air from the outside.

Several systems have been used for accomplishing this result. The simplest is to build the ice house as a two-story structure and to store the ice above and the fruit below. The ice may be stored at harvest time in an ice house or in an ice chamber arranged over the room in which the fruit is to be held, or the place may be simply a temporary storeroom to which the ice is transferred at the time the fruit is stored. Both these plans have been followed, but the one to be used in any particular instance will depend upon the cost of handling the ice and the certainty of the fruit harvest.

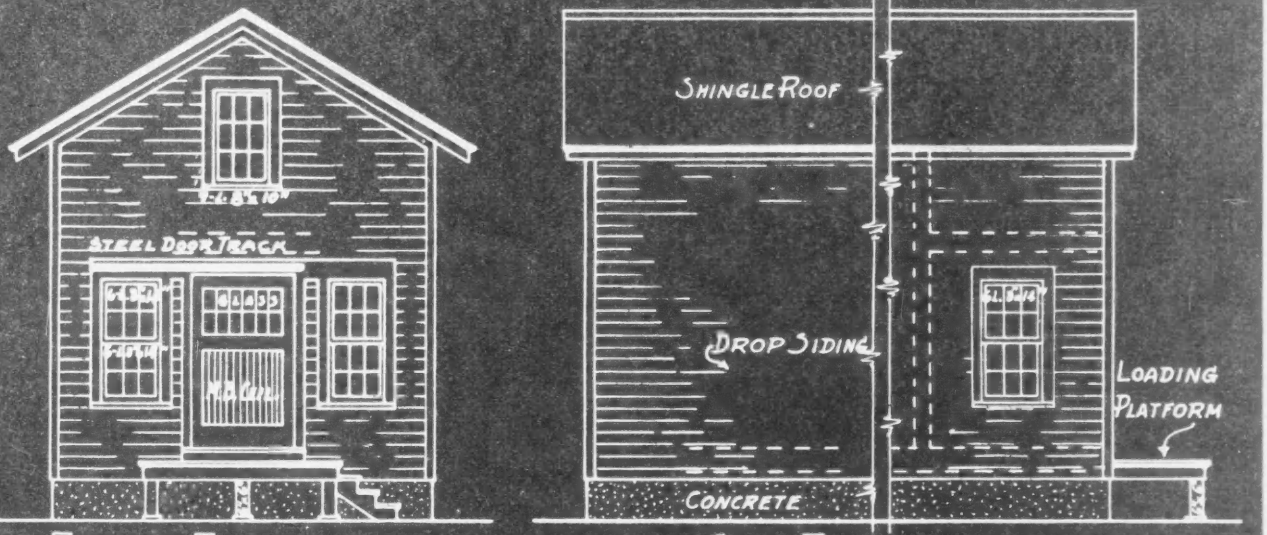


Photograph of Combined Ice House and Milk House, Complete Working Plans for Which Are Presented on the Second and Third Pages of the Blueprint Supplement Immediately Following.

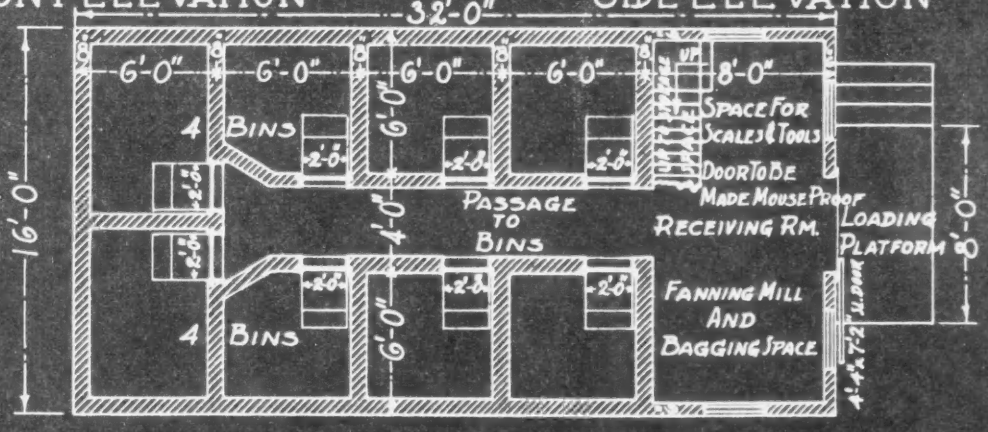
AMERICAN BUILDER FARM. BUILDINGS



ELEV. OF SHOVEL BOARD CROSS SECTION DETAIL OF SHOVEL BOARD



FRONT ELEVATION SIDE ELEVATION

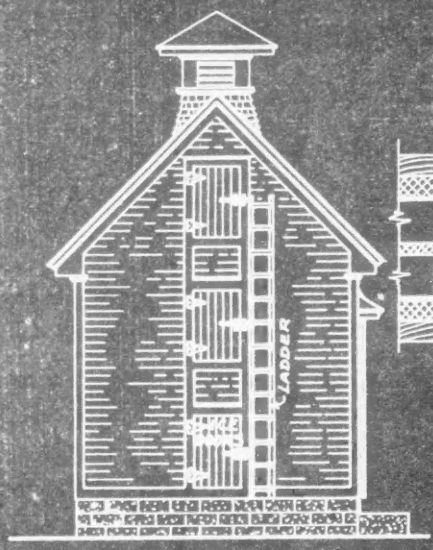


FLOOR PLAN

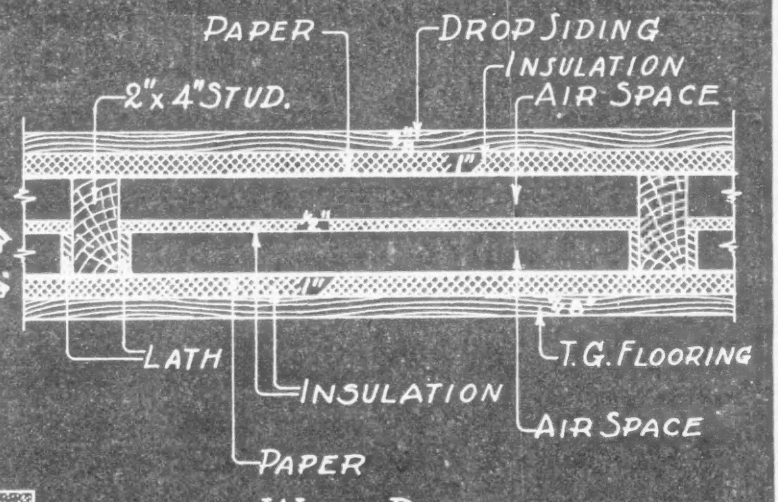
SCALE 1/8"=1'-0"

DESIGN OF GRANARY & SEED STORAGE BUILDING

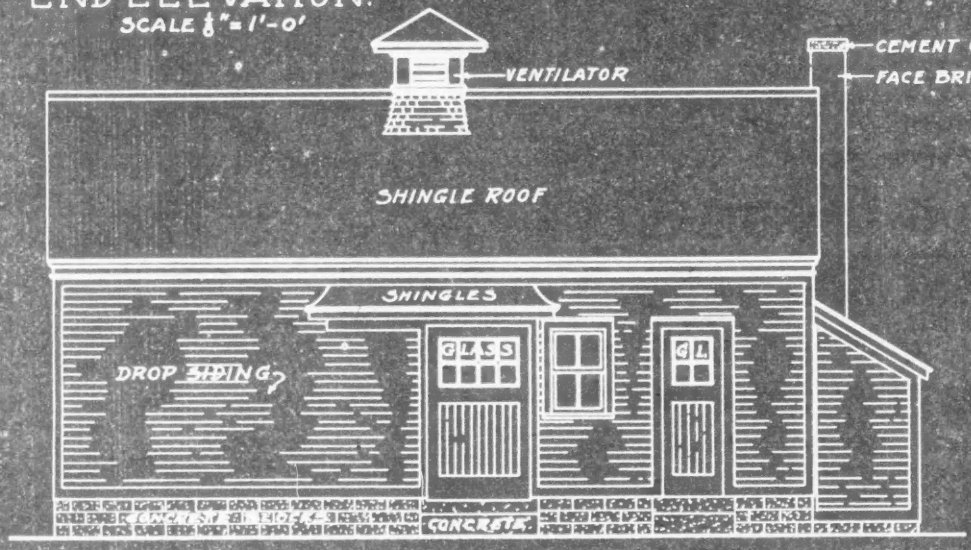
AMERICAN BUILDER FARM BUILDINGS



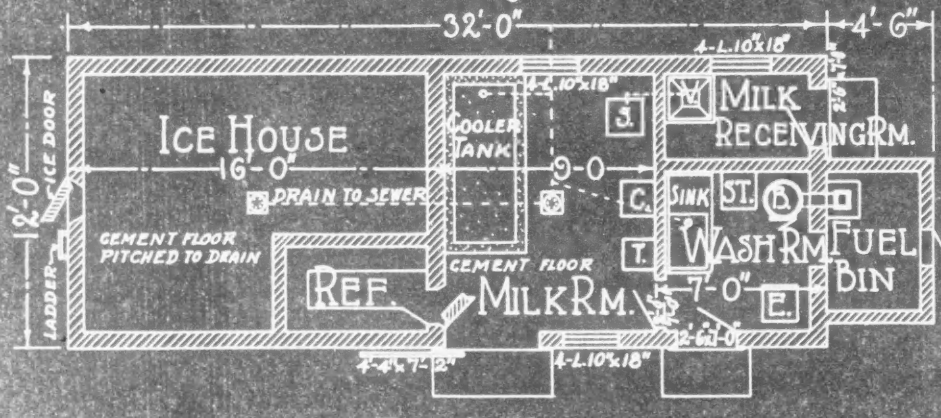
END ELEVATION.
SCALE ⅛"=1'-0'



WALL DETAIL
SCALE 1½"=1'-0"



SIDE ELEVATION
SCALE ⅛"=1'0"

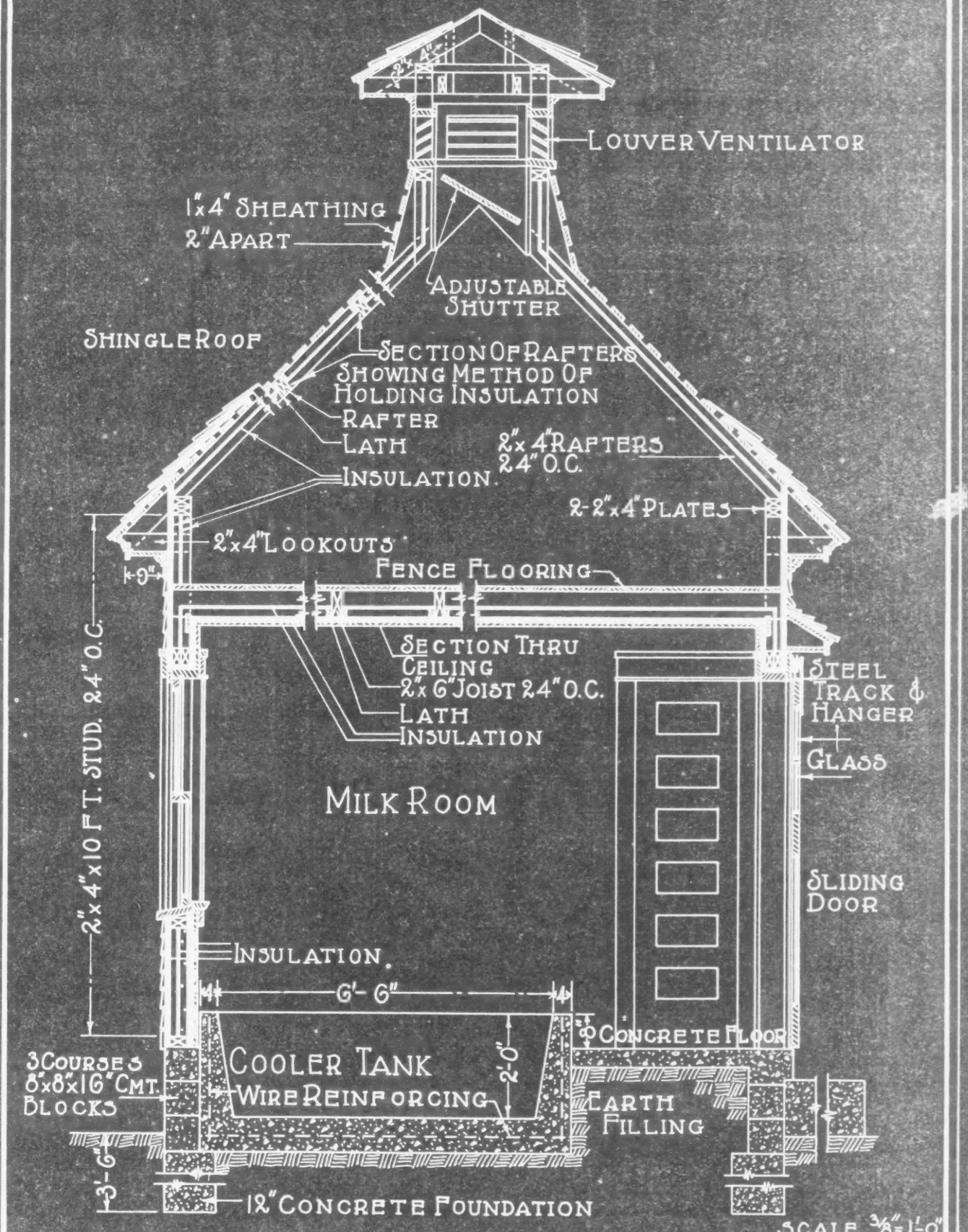


KEY
B. BOILER
C. COOLER
E. ENGINE
S. SEPERATOR
T. TESTER
ST. STERILIZER
V. VAT & STRAINER

FLOOR PLAN
SCALE ⅛"=1'-0"

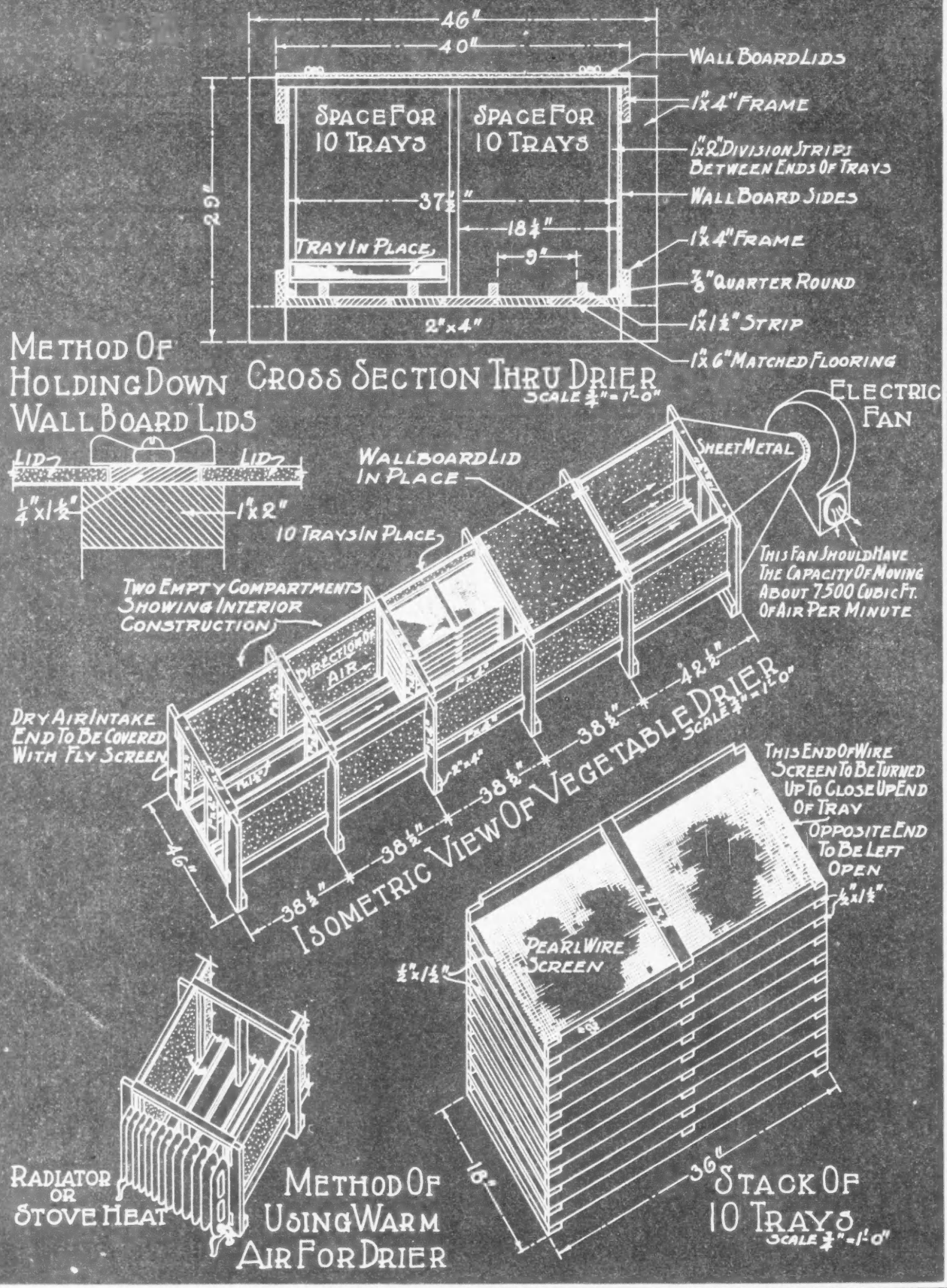
ELEVATIONS-DETAILS & FLOOR PLAN OF ICE & MILK HOUSE

AMERICAN BUILDER FARM BUILDINGS



CROSS SECTION THRU MILK ROOM

AMERICAN BUILDER FARM BUILDINGS



DRAWINGS OF A COMMUNITY VEGETABLE DRIER

Blue Prints of a Successful Community Drying Plant

ADAPTED FROM FARMERS' BULLETIN 916, UNITED STATES DEPARTMENT OF AGRICULTURE

By C. W. Pugsley
Director of Agricultural Extension, University of Nebraska

THE DRYING PLANT illustrated in detail in the blueprint opposite follows closely the specifications of a community plant at Lincoln, Neb., and 11 others in that general section, all of which were operated successfully during the summer and fall of 1917. It is an adaptation of the electric-fan process of drying. A stream of dry air is caused to flow continuously over the products being dried. The humidity of the air, the method of preparation of the vegetables, and the velocity of the air current have much to do with the rapidity of drying. It is easy to understand how this process operates, when we consider how rapidly wind will dry roads after a rain, or how much more rapidly clothes dry in a breeze than when the air is quiet.

Instead of the air being forced across the vegetables, as is done in some methods, the air is drawn across them. Laboratory tests indicate that drying is considerably accelerated when the suction method is used, altho the force method will dry satisfactorily and is used in at least one Nebraska plant.

A simple community drying plant to be of most value should be easily constructed from material ordinarily found in the community. It should be possible to operate such a plant without expert help and by power easily available. The drying plant here described can be built complete for $250 or less. The cost usually can be reduced greatly by using material already on hand. At the time of the writing of this bulletin 12 of these plants were in successful operation.

A long cabinet is constructed as shown. Ordinary flooring may be used to construct the bottom, and either flooring or wall board for the sides and top. For convenience the openings are placed at the top of the cabinet.

The trays are stacked inside the cabinet as shown. The drier here illustrated is designed for 100 trays, there being five compartments, each containing 20 trays, arranged in tiers of 10.

Trays for Drying

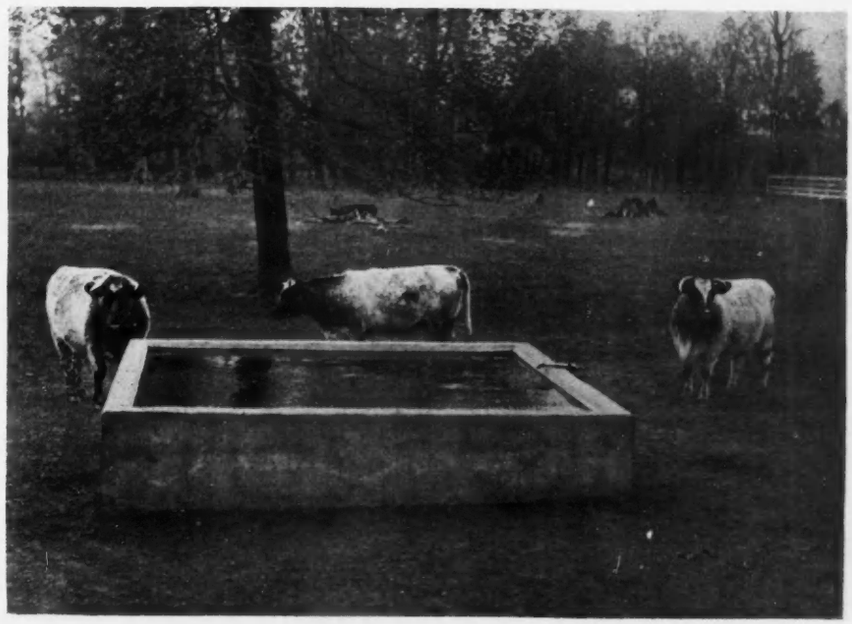
The tray, 18 inches by 36 inches, has been found to be admirably adapted to community work. It holds about the quantity of material of one kind ordinarily brought by the family for drying. It is light and easily handled, the support across the top serving as a convenient means of lifting. These trays should be made of very light material, with wire-screen bottoms and wire screen at one end, the other end being left open. The screened end prevents light material from being drawn thru, while the open end permits free access of air and ease in emptying the trays. The screened end should always be turned toward the fan when suction is used. This same type of tray is admirably adapted to the electric-fan method of home drying by stacking these trays one on the other and placing the fan at the open end of the trays.

The wire-screen trays should be paraffined to prevent the sliced fruits and vegetables from sticking. This can be done easily by warming the wire and applying melted paraffin with a brush. If any of the paraffin fills the meshes they can be opened by holding over a stove until the paraffin melts and distributes itself over the wire. The paraffin prevents all possibility of discoloration of fruits and vegetables by coming in contact with the wires.

The Fan

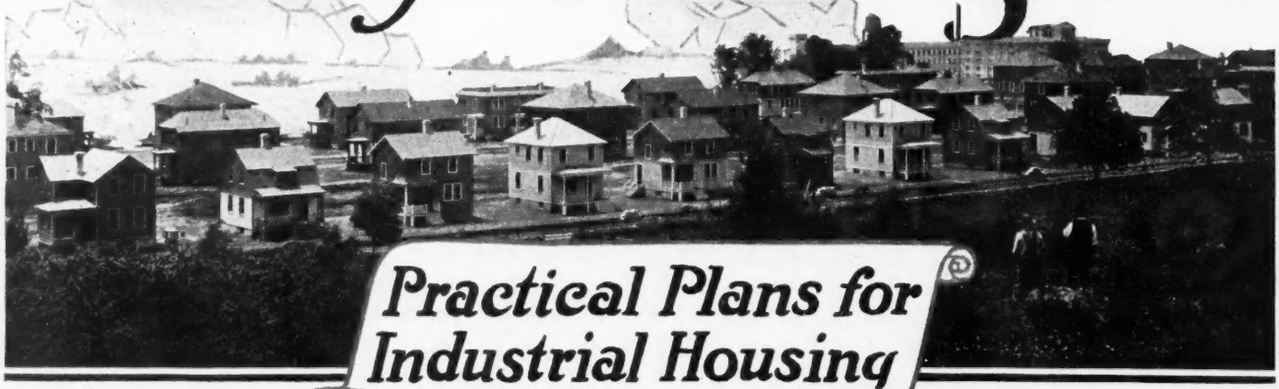
Any type of fan which moves a sufficient quantity of air can be used. Usually an old ensilage cutter blower fan or a separator fan used on a blower threshing machine can be found in the community and adapted to the exhaust end of the cabinet. One of the Nebraska plants has been fitted with a fan which had been

(*Continued to page 118.*)



A Small Investment for Concrete Stock Tank Assures These Cattle Plenty of Pure Drinking Water.

Homes for Workingmen



Practical Plans for Industrial Housing

U. S. Housing Corp. Formed

IMPORTANT REORGANIZATION OF GOVERNMENT HOUSING FORCES

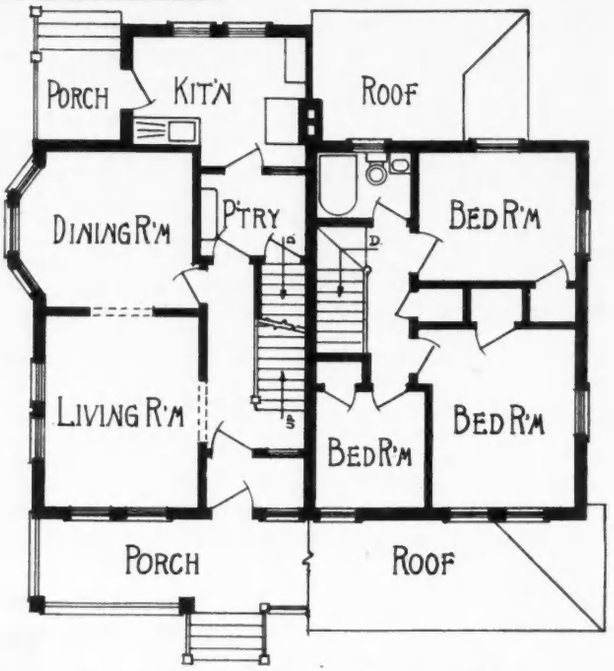
WASHINGTON, D. C., July 16.—The Department of Labor authorizes the following:

The Department of Labor announces the creation of the United States Housing Corporation, which will in a large measure take over the functions that are now being performed by the Bureau of Industrial Housing and Transportation. It is expected that this new vehicle will afford more facility in operation than would be possible under the usual government agency.

The charter was taken out under the laws of the state of New York, and the articles of incorporation provide for the issuance of 1,000 shares of stock without par value.

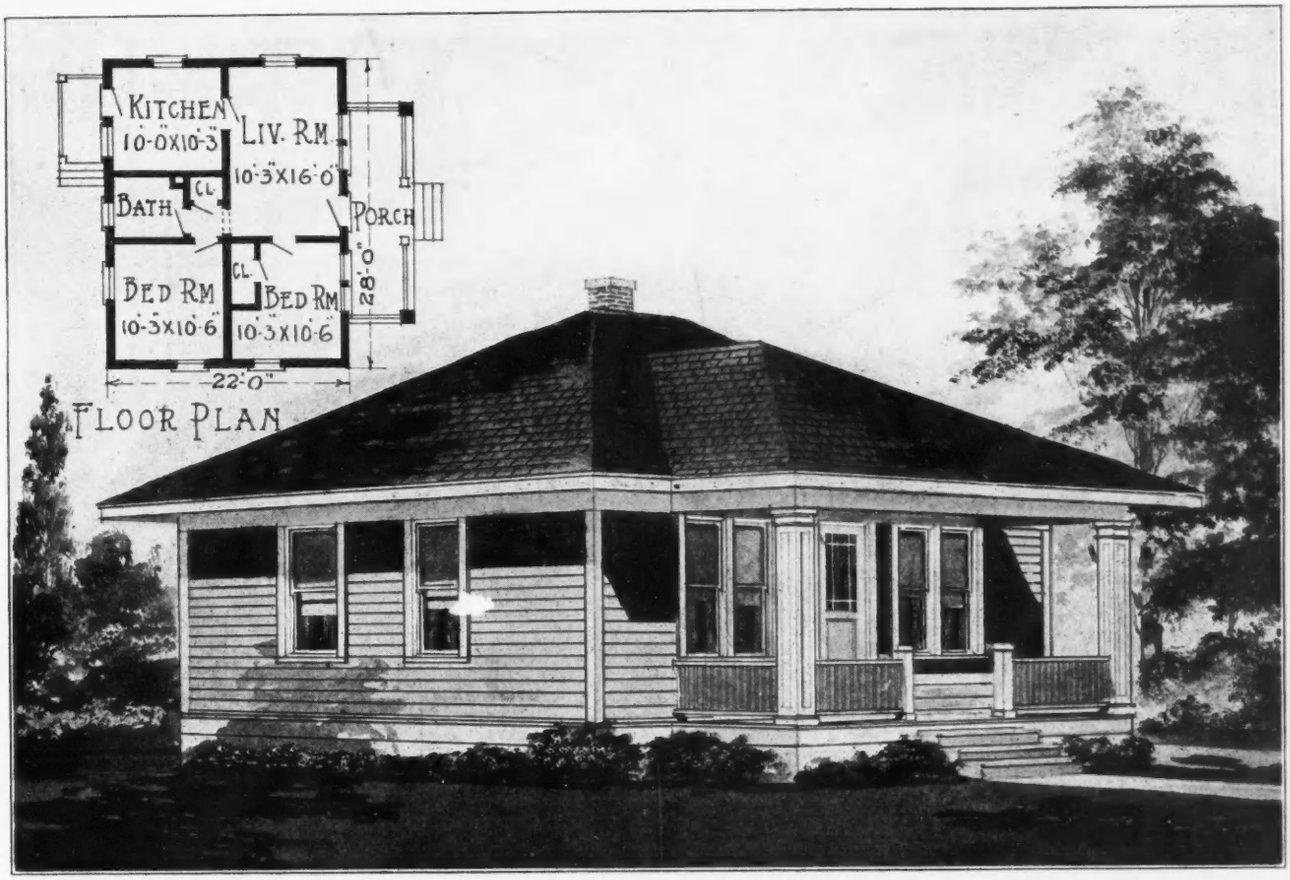
The executive officers of the corporation are: President, Otto M. Eidlitz; vice-president, Joseph D. Leland; treasurer, George G. Box; secretary, Burt L. Fenner. They, in conjunction with Albert B. Kerr, John W. Alvord, and William E. Shannon, serve as directors. The stock is held on behalf of the government by the Secretary of Labor, who is credited with 998 shares, and Otto M. Eidlitz and George G. Box, with one share apiece.

It is assumed from this announcement that the industrial housing enterprises in the several manufacturing centers where the Government is particularly interested will be in charge of this corporation.

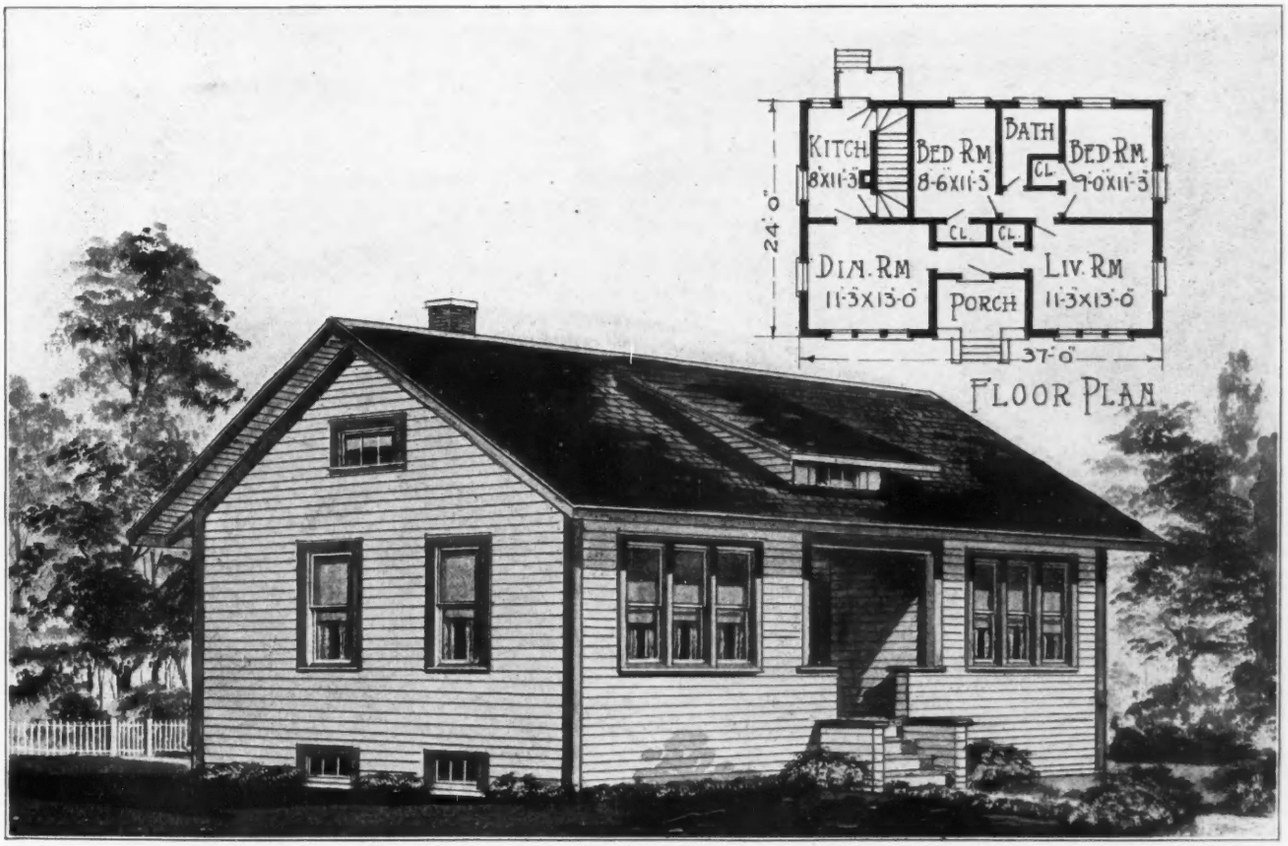


Standard Floor Plan for Six-Room Two-Family Dwellings for Industrial Housing at Bridgeport, Conn.

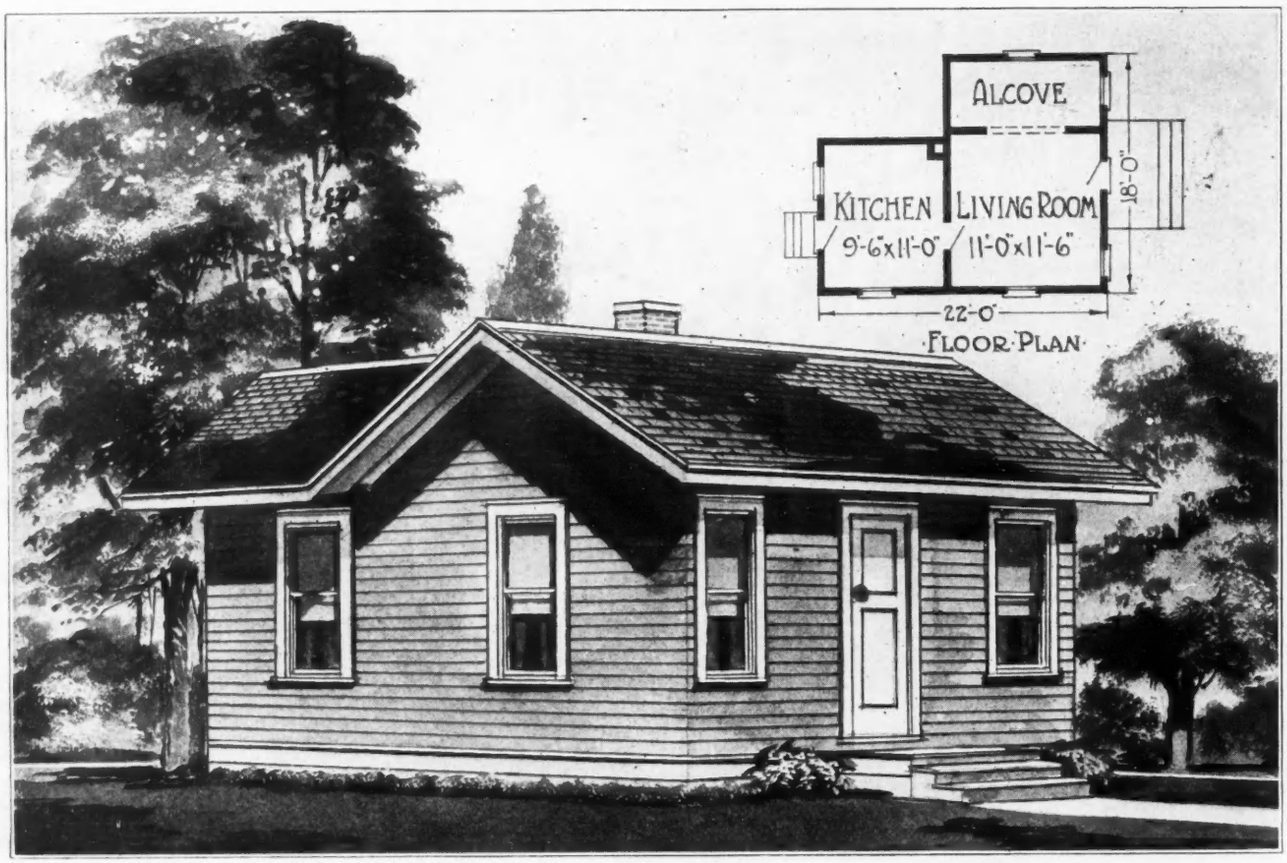
Type of Two-Family Houses Erected by the James Stewart Construction Co. for the Remington Union Metallic Cartridge Co. at Bridgeport, Conn. Alfred C. Bossom, Architect. These Houses Are of Permanent Construction, Hollow Tile, Stucco Finish. At Least Three Different Designs for the Exterior Were Used in Connection with the One Standard Floor Plan, the Changes Being Made Principally in Front Porch Treatment and Shape of Roof.



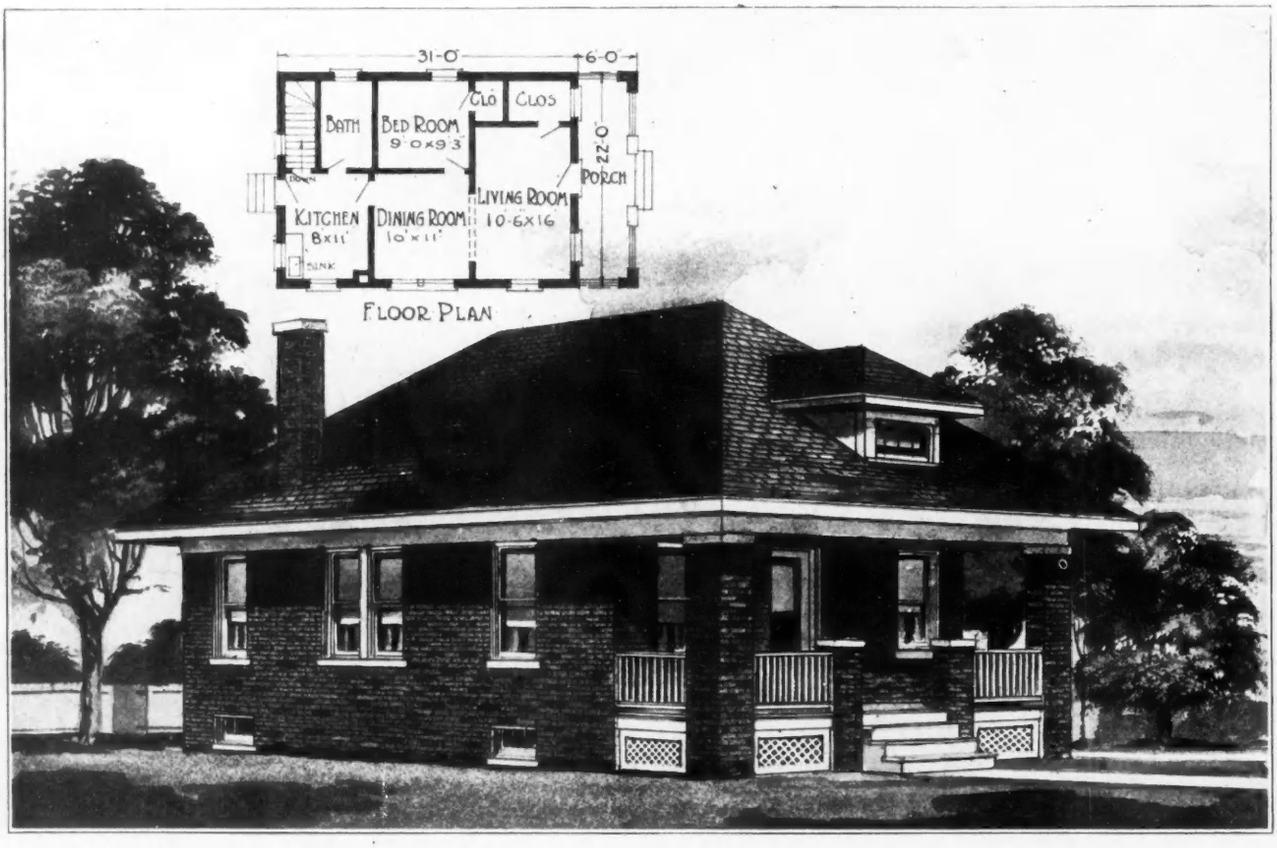
FOUR-ROOM HIP ROOF COTTAGE. This neat little cottage, size 28 by 22 feet, has a large living room big enough for dining room also. There are two bedrooms and bathroom, besides the kitchen.



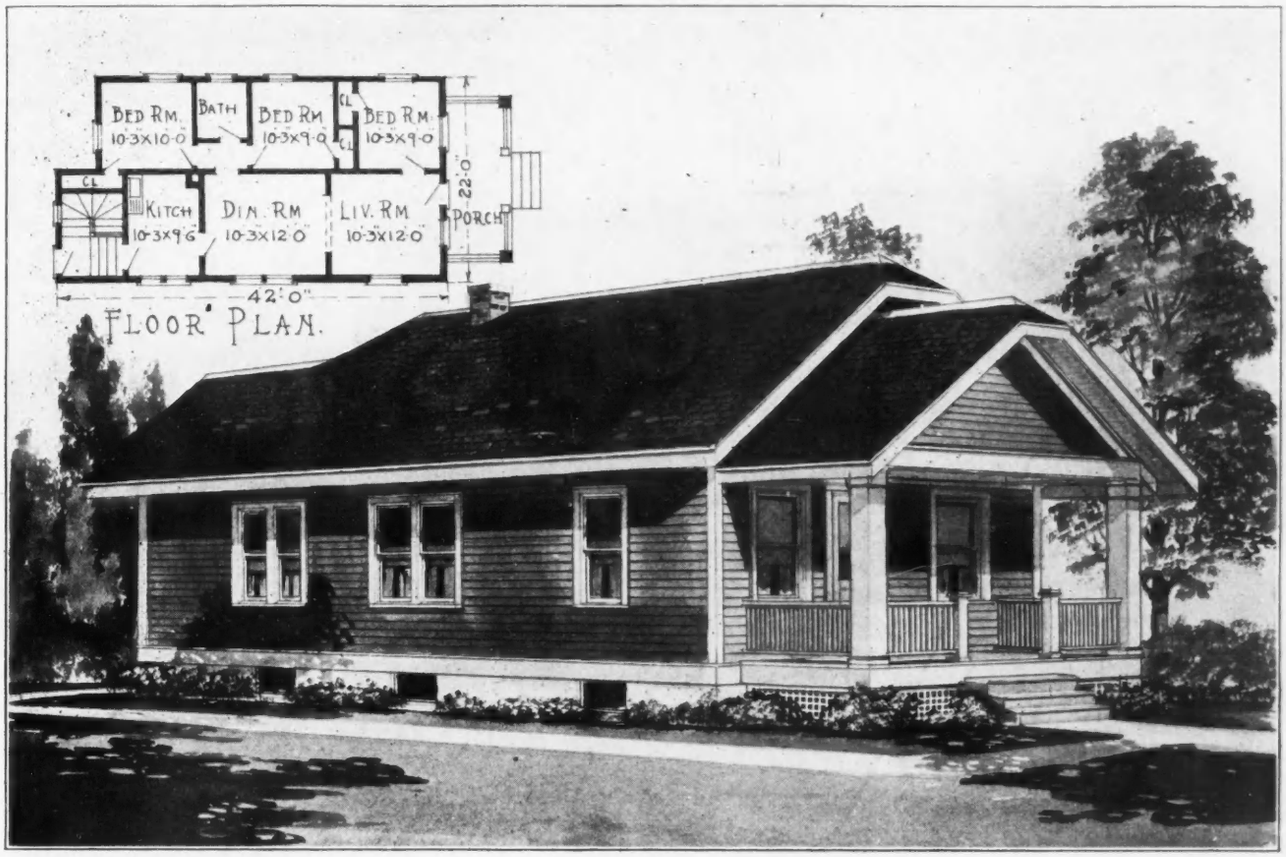
BUNGALOW TYPE COTTAGE. This house, size 37 by 24 feet, has five rooms and bath. There is some space above that can be utilized.



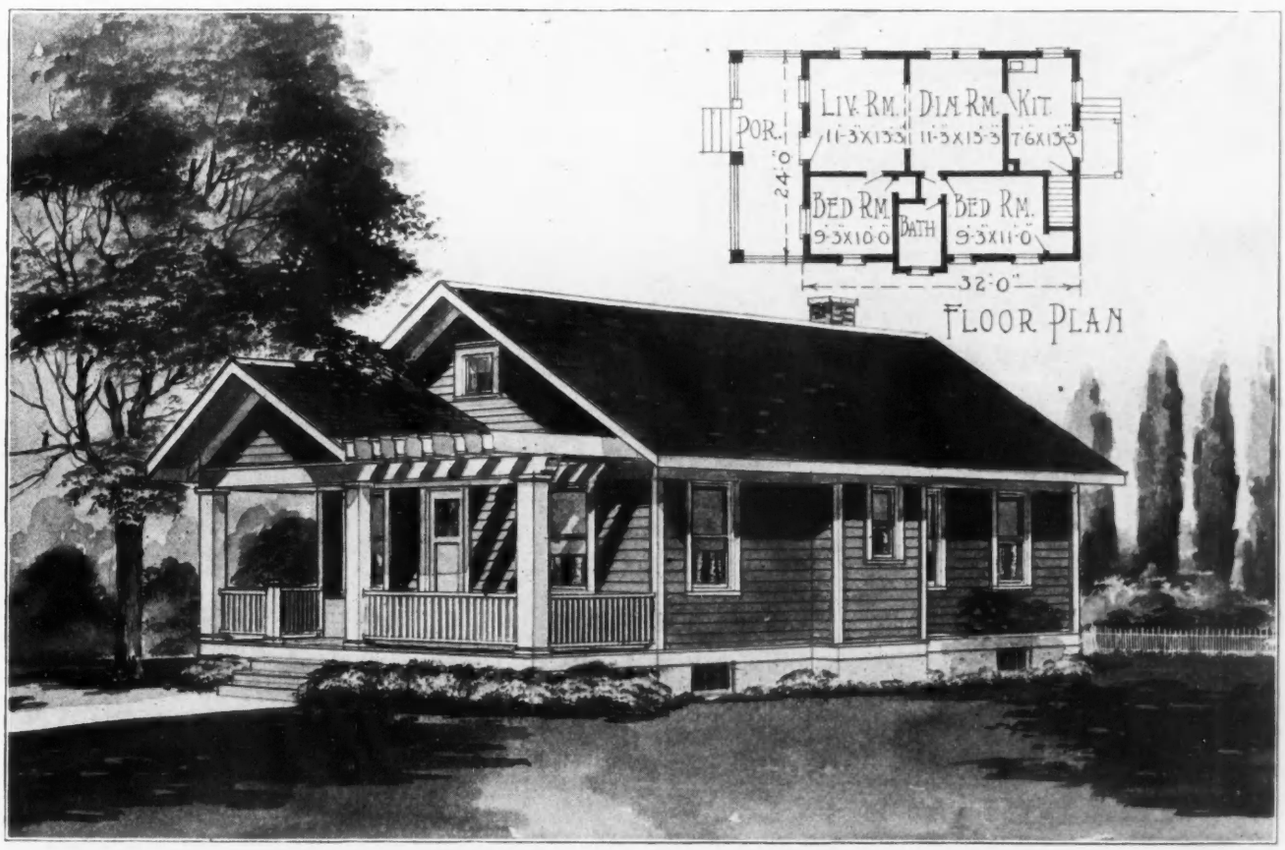
TWO ROOMS AND ALCOVE. Here is a little home reduced to its simplest terms. The alcove serves as bedroom. The kitchen is large enough for dining table also. Altho lacking all architectural pretensions, this type of house is always in demand.



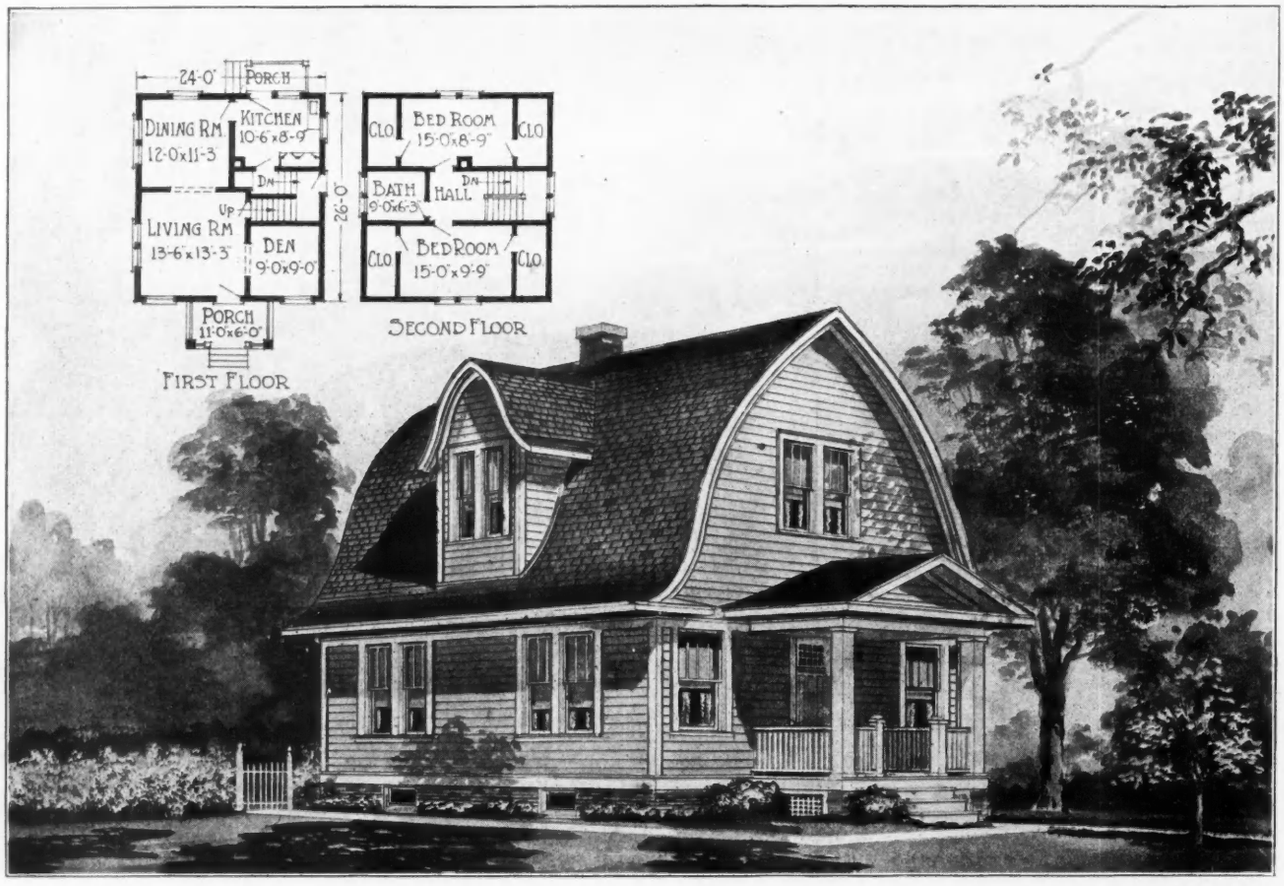
BRICK COTTAGE WITH BASEMENT. This design, 22 by 37 feet, gives four rooms and bath. It is the simplest way a brick cottage can be built, and its popularity has been proved over and over again.



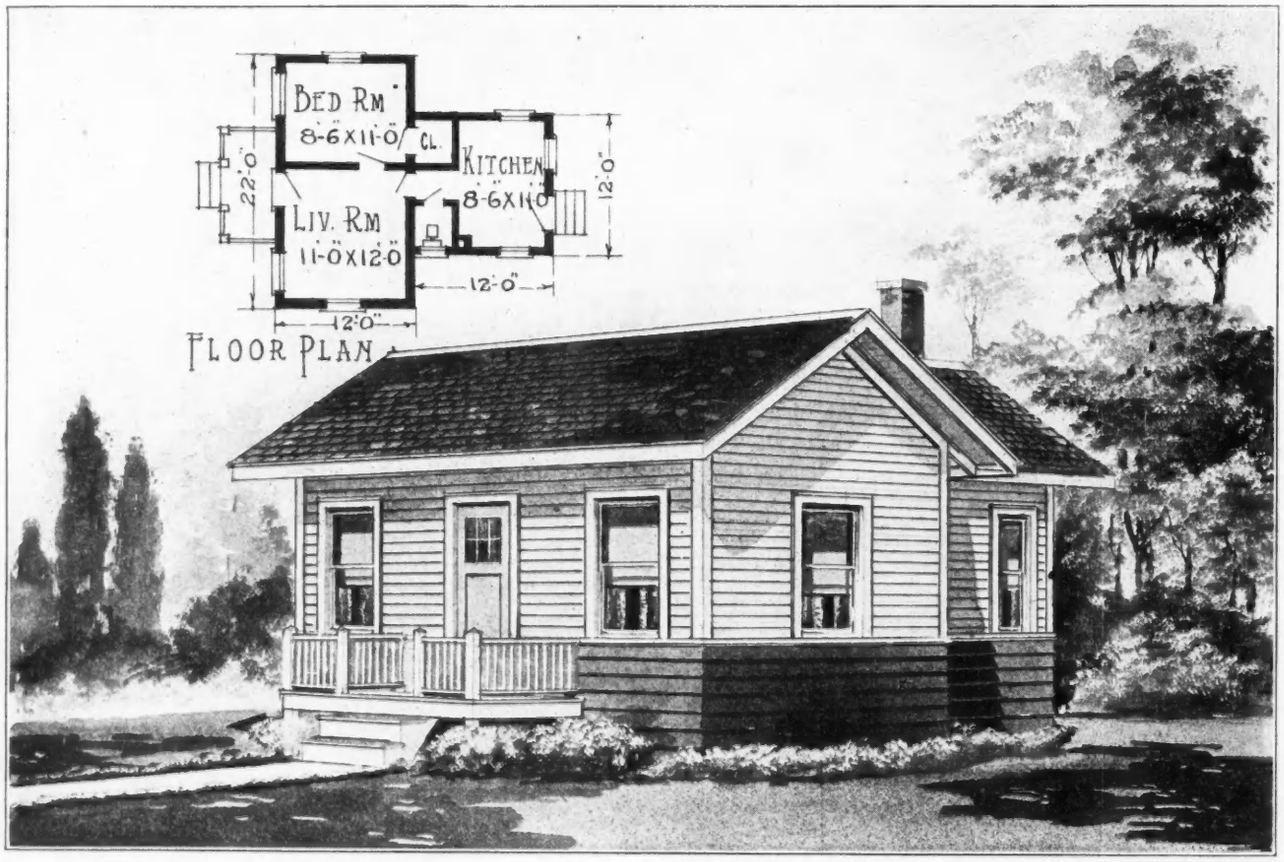
LONG NARROW BUNGALOW COTTAGE. Here is a good looking house only 22 feet wide by 42 feet long. There are three bedrooms and bath, besides living room, dining room, and kitchen. This is a very popular type.



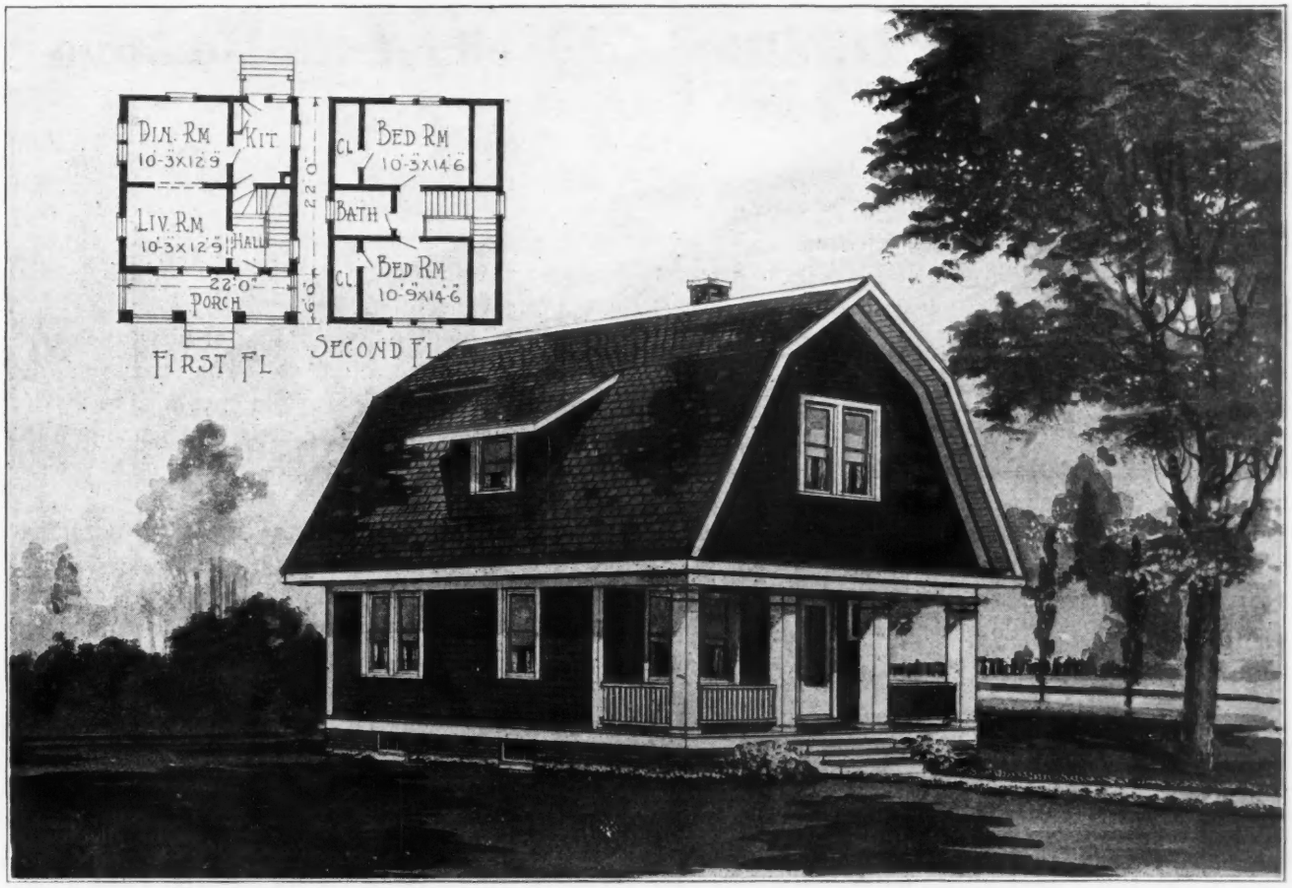
PERGOLA PORCH COTTAGE. An ornamental touch to this little house, size 24 by 32 feet, is given by the pergola type porch roof. Five rooms and bath are provided.



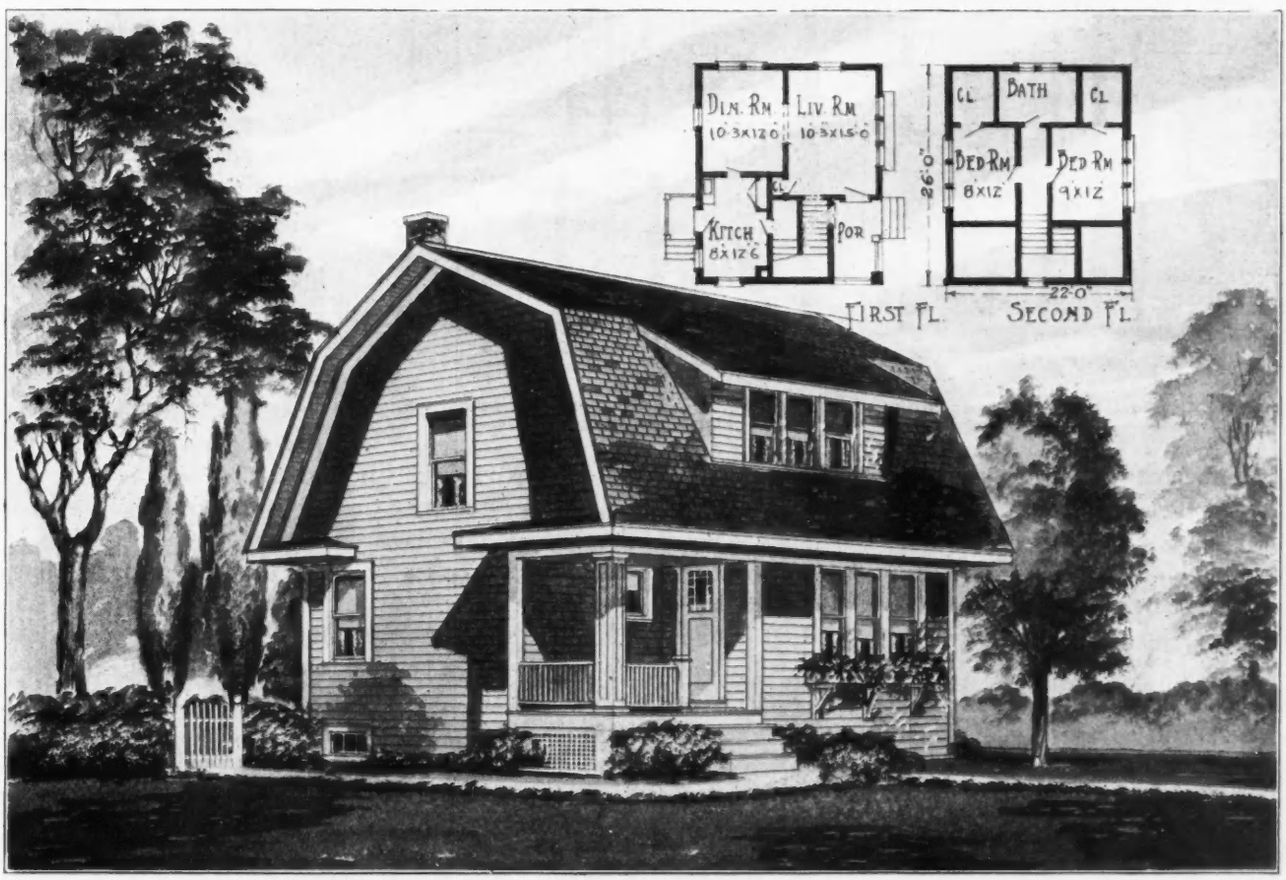
A GOTHIC ROOF HOUSE. Gothic roof barns are so popular, why not build houses the same? This design, size 24 by 26 feet, has four rooms downstairs and two fine bedrooms, four closets and a bathroom on the second floor. The rafters are bent to the curve.



THREE-ROOM UPRIGHT AND WING. Here is a popular little cottage, main section 22 by 12 feet, with 12-foot square kitchen extension. Wide boards for the foundation course give it a substantial look.



GAMBREL ROOF STORY-AND-A-HALF COTTAGE. Here we have five rooms and bath and a large porch in a house 22 by 28 feet. This style roof is economical, good looking, and gives a surprising amount of room upstairs.



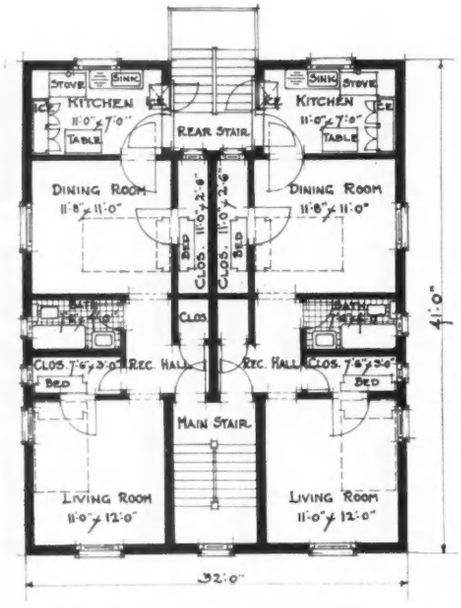
A DUTCH COLONIAL DESIGN. This is a gambrel roof house with corner porch. There are three rooms on the first floor and two rooms and bath upstairs. Size is 26 by 22 feet.

The Multiple Dwelling for Industrial Housing

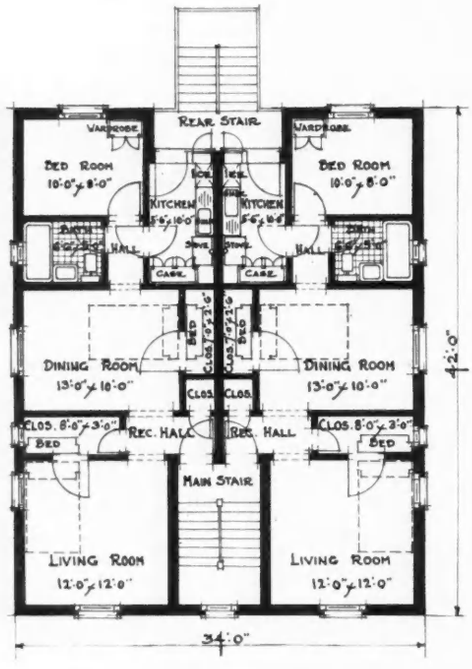
By E. L. McCarthy

IN developing plans for industrial housing projects one of the greatest problems confronting the building committees and architects is to decide what type of building will best suit conditions and meet requirements. Each type of house has its particular advantages and the decision is largely governed by climatic conditions, class of workmen catered to, proximity to large cities and the facilities for transportation.

Heretofore the detached house has generally been conceded the most satisfactory solution to the problem but after a careful survey of the situation the large industrial institutions thruout the country are rapidly awakening to the fact that the multiple dwelling or apartment building possesses many advantages over the single house.



Plan No. 1. Three-Room Apartment with Five-Room Accommodations.



Plan No. 2. Four-Room Apartment with Six-Room Accommodations.

In the multiple dwelling a number of families are housed under one roof. The number of apartments in each building varies to meet conditions. Some communities find the four-family house more successful, some the six-family and others find the larger buildings housing from eight to twenty-four families best suited to their needs. At this time we will discuss the smaller buildings containing four or six apartments each. The advantages of this type of building are worthy of much consideration.

First of all, construction costs are greatly reduced by housing a number of families under one roof. On account of the party walls, less material is required and a big saving is also affected in plumbing, roofing, painting and excavating.

Next comes the saving of ground. By building multiple dwellings more families can be accommodated on a given ground space, thereby overcoming any lack of transportation, as more concentration is made possible and it is not necessary to spread the industrial cities over so much territory.

From a purely investment point of view, the multiple dwelling is very attractive. The apartments are in great demand by people who do not wish to assume the responsibility of owning their own home and the rent derived provides a very good income on the money invested by the builder.

It is customary at the present time to encourage the workmen to purchase their homes on the deferred payment plan, making the payments out of their savings. This plan encourages thrift and is undoubtedly a very good one, but the same scheme has been carried out with the multiple dwelling with far greater success because it enables the thrifty workman to become a landlord.

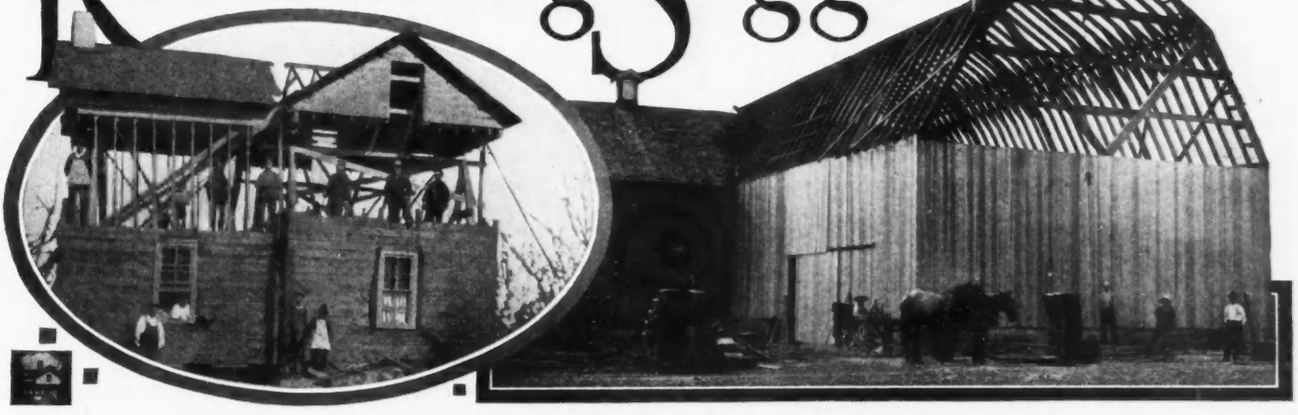
A particular instance of this kind has recently been brought to my attention. Several years ago when new steel mills were being erected in a certain industrial center, many workmen were attracted to that city and they were obliged to live in tents and other make-shifts for many months on account of the inadequate housing accommodations. The man that I have in mind was one of these workmen, but he possessed the ability to foresee the future conditions in that city.

He was employed in the steel mills and saved a large portion of his earnings until he was able to make the initial payment on a four-apartment building, assuming a mortgage for the balance. Living in one of the apartments, the other three were rented to fellow workmen and the rents applied on the purchase price. As time went on the mortgage was retired and this man was the owner of the four-apartment building, which was subsequently sold.

He immediately purchased vacant property a short distance from the mills and built two buildings which were sold promptly upon completion at a fair profit. This money was invested and reinvested until today,

(Continued to page 100.)

Remodeling Suggestions



Repair and Remodel the Old Houses Before Starting New Industrial Housing

THE policy of the Federal Government in its housing work is first to canvass the community with a house-to-house "rent a room" campaign, then to overhaul, repair and modernize every old building that can be saved and utilized for housing; and then finally to put up additional new homes.

This is a thoroly sensible and logical policy, and will have the indorsement of every building contractor, architect and building supply dealer. This repair and remodeling work will call for a substantial amount of both materials and labor, and we are confident that these will be supplied efficiently by our readers.

An illuminating side light on this old house utilization matter is given in a recent issue of the Portland, Ore., "Telegraph":

"We do not need new houses in Portland so much as we do to have the old ones fixed up and large vacant buildings made over into apartment houses," said Branch "Y" Secretary O. V. Badley, of the Albina shipyard, speaking of the housing problem facing Portland's shipyard workers.

"I have been canvassing the situation adjacent to the Albina yard and find there is ample room for several hundred families with the expenditure of little money. One thing Portland needs more than anything else is not so much new buildings as it is to fix up the buildings we now have. There are hundreds of buildings that were used for dwellings before the depression set in that have been vacant for some time and could be made tenable again with the expenditure of not to exceed a couple of hundred dollars each. It would not only relieve the congestion if these buildings were repaired, but would very materially improve the appearance of the localities where they are located."

Modernizing Old Dwellings

PART I OF A VERY TIMELY SERIES

By Chas G. Peker, Architect

WHEN one has a good house a very necessary thing is to keep it well preserved. Any parts that are worn or damaged by accident should be repaired as early as possible so that it will always be in good condition. To prevent decay we must paint woodwork or metal work, point up masonry, and repair cracks in concrete and plastering.

It is far easier and cheaper to keep a house in constant good condition than to let it run down and then repair it all at one time. Parts subject to rot will do so very quickly if exposed to the elements. A leak in a roof is nothing serious, but if not attended to promptly the constant leaking will cause extensive damage to the ceilings, walls and floors. What would have cost perhaps a few dollars to repair at first has by neglect been allowed to cause damage that will cost ten times the amount to have it put in good condition again.

A house that is simply left alone will not only run down and look dilapidated, but it will go to ruin in a comparatively short while. It is like a machine that is kept in good condition and always

ONE of the most interesting examples of preserving a house is that of the home of the Father of Our Country, built in 1743. It stands today in excellent condition and is visited by thousands of patriotic visitors every year. Diligent attention to any part damaged by the action of the elements and constant painting have well preserved this relic of our First President as an example of what we all can do to conserve our Nation's wealth.

To spend money for repairs is not a waste even in times of war or financial depression—it is saving property from deterioration. Make the necessary repairs constantly as needed. Don't let valuable property go to ruin—it is not only costly but unpatriotic.

working; it gives good service. But leave it alone and exposed to the weather and it will not be long before it rusts out and becomes useless.

What is true of the house is also true of the grounds and outbuildings; all must be kept up to keep from depreciating.

Now the old house, altho well built and comfortable, may lack some of the conveniences and the style of the modern house; and in many cases their owners become dissatisfied and wish they had a more up-to-date house.

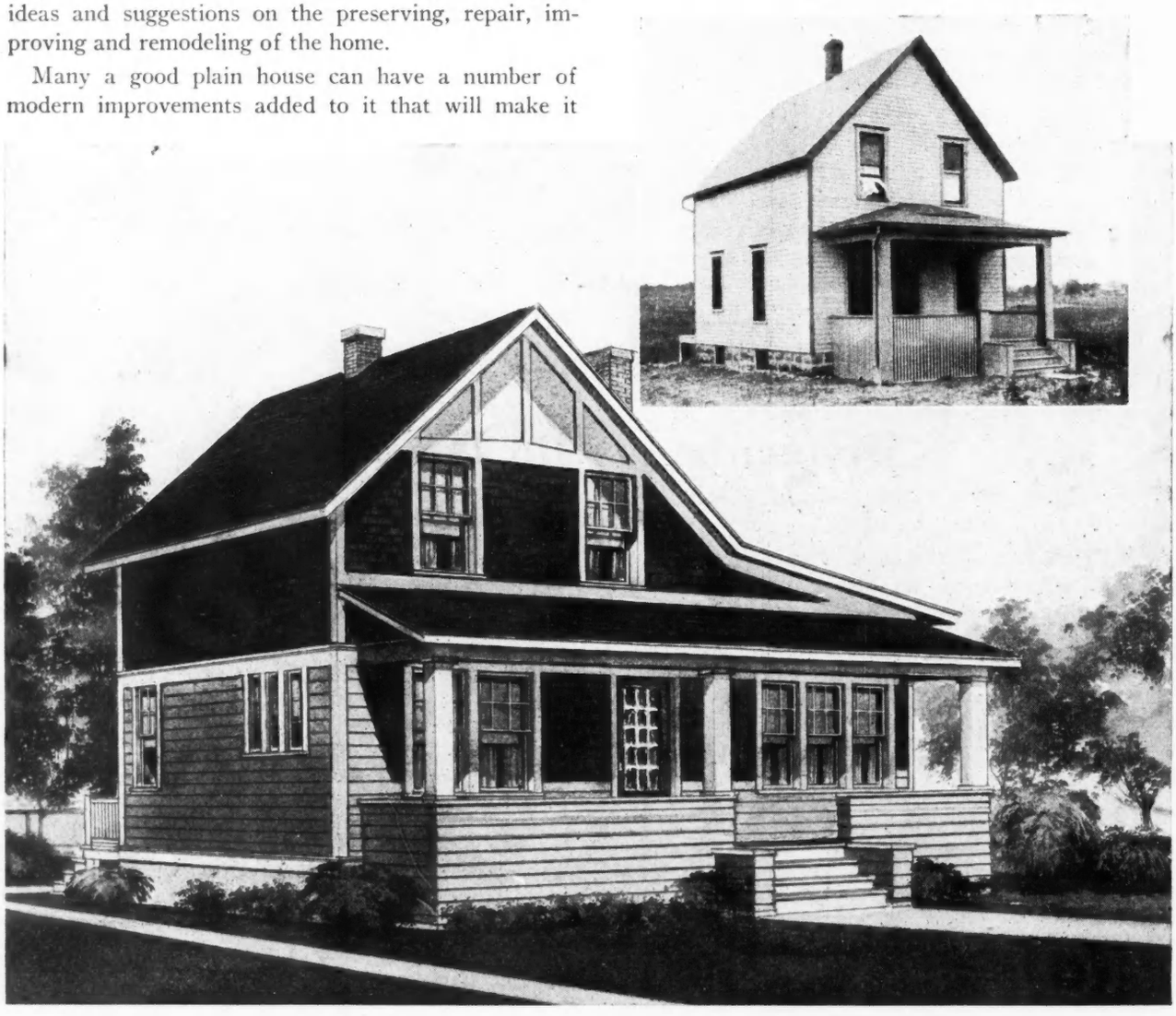
To only a very few does the thought occur that their good house can have all these modern conveniences and style. The majority of improvements can be made at comparatively little expense. The different improvements can all be made at the one time, or now and then some one thing about the house can be made better. There is a real pleasure to be obtained in fixing up something about the house that will make it more convenient or that will make it look better.

To help in this matter of conserving existing property we will give in this series of articles many hints, ideas and suggestions on the preserving, repair, improving and remodeling of the home.

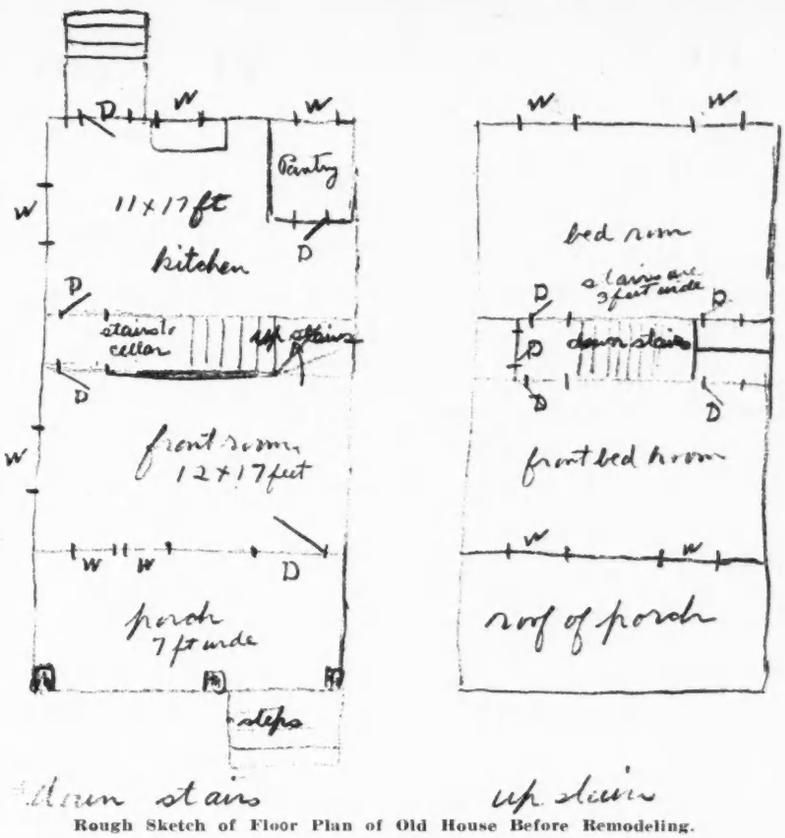
Many a good plain house can have a number of modern improvements added to it that will make it more convenient and comfortable on the inside, also a few well chosen changes and additions on its exterior that will alter it so that it will have a certain snap to its appearance so as to make it stand out from the commonplace house.

One must not make the mistake, however, of changing for the mere sake of making a change. One may have a very well proportioned house and all it will need is just a few touches to set it off a little, but if one starts changing and adding without regard to harmony it will only be a mess. Many a really good house has been spoiled by putting on a "modern porch"—perfectly good in its way, but not in harmony with the old house it was attached to; it simply spoiled a well designed house. You cannot have a mixture of styles that will look right.

Of course, an old Colonial design house may be changed into a mission design, but it must be done all over, not in spots, or otherwise it will look like a lady dressed in the fashion of today but wearing an old-fashioned skirt.



REMODELING BY BUILDING ON AN ADDITION. The Snapshot Photo of the Original House and a Picture of the Remodeled House Showing it as a Larger, More Modern and More Attractive Home. For Floor Plans See Opposite Page.



Rough Sketch of Floor Plan of Old House Before Remodeling.

It will be far better to leave the design of the old house alone and simply keep it in good condition rather than alter it partly if you are not going to do it right. A house that is well preserved looks good even if it is not the latest style of home architecture.

A very interesting example of what one can accomplish at comparatively slight expense in enlarging and making more convenient the small home, is illustrated here and on the page opposite.

The man who bought this little house went to a contractor with a little snap shot photo of the house and a rough pencil sketch of the floor layout of the rooms.

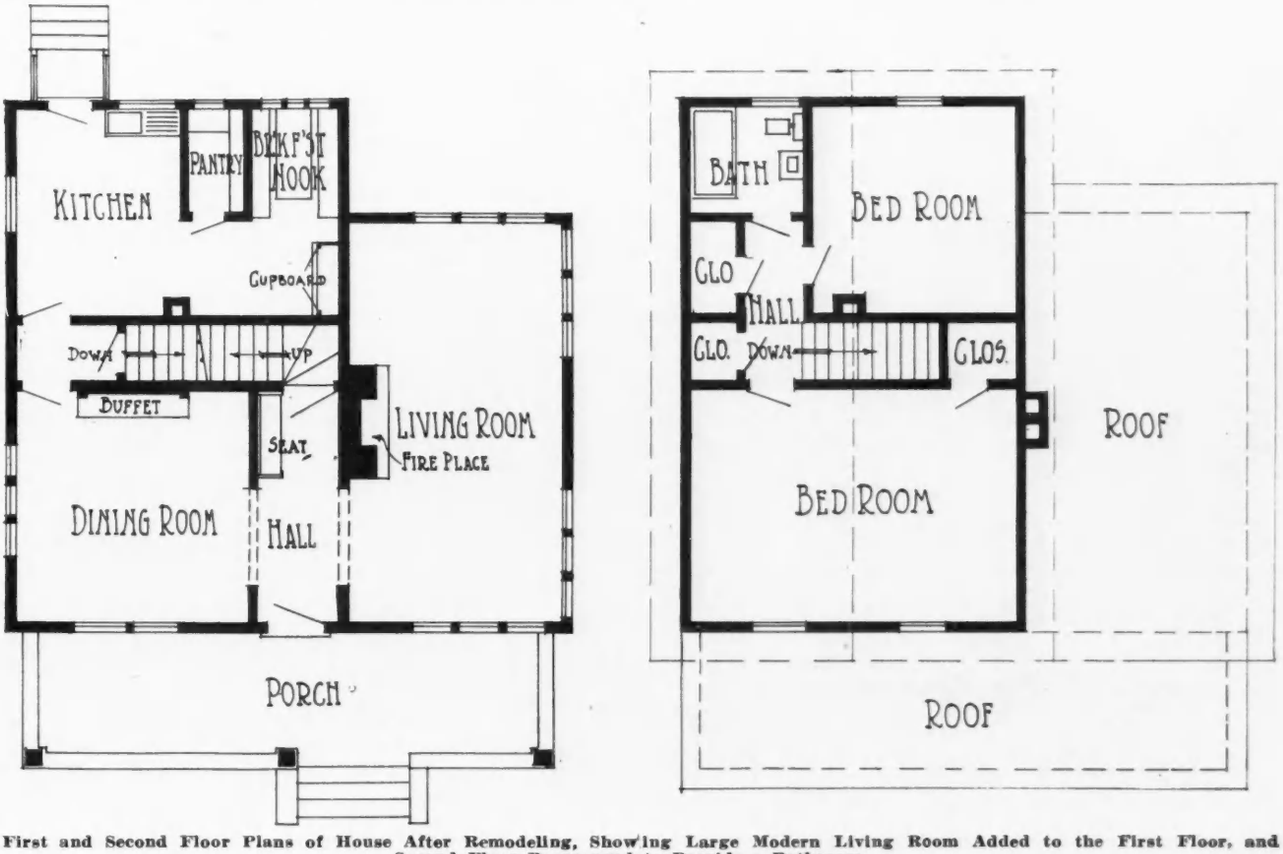
The contractor was an up-to-the-times business man.

The owner and his wife wanted all the modern conveniences installed—a bathroom was absolutely required, and they wanted a dining room and a good sized living room with an open fireplace.

The contractor took a look at the house and made careful measurements and in a few days he showed the owner a plan of the old house; also a plan showing how it could be changed to get the desired improvements. When a few minor changes were made it exactly suited the requirements of the owner and his wife.

As the plans of the house show, it contained four good sized rooms. The house was excellently built; the walls were sheathed and clapboarded and between

(*Continued to page 124.*)



First and Second Floor Plans of House After Remodeling, Showing Large Modern Living Room Added to the First Floor, and Second Floor Rearranged to Provide a Bathroom.

Logical Methods in Architectural Drafting

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

PART III—The Development of the Elevation

ALTHO the plan and elevation must be conceived as one and each should be worked out with constant reference to the other, the exterior or elevation is usually considered subordinate to the plan, and therefore comes third in our logical steps of procedure.

An elevation is a projection at scale of one face of a building upon a vertical plane which corresponds to the paper. It is as nearly as possible an actual duplicate showing two dimensions. It should be kept in mind in designing the elevation that it is impossible to see the completed structure as drawn. It can only be seen in perspective or from one point of view.

The function of the elevation is to show the style of architecture employed, the height between floors, the size and position of openings and the kind and dimensions of materials employed. Especially important is the style of architecture. Whatever style or type may be chosen, it should be carried out consistently in all the details.

The detailed parts such as cornices, window trim, doors, porches, etc., all should give evidence of a certain definite style, therefore avoid inconsistencies such as English half timber work in a Colonial gable or a Craftsman flower box under a Colonial window.

Before proceeding with the actual drawing of the elevation, study carefully the manner in which the exterior details are indicated at the ¼ inch scale. Those on the opposite page apply, of course, only to a Colonial elevation, but the general dimensions and the manner of indication would be very similar with other styles.

After having fully conceived and thought out the style or type of elevation with constant reference to the sketch and the working plan, and having noted the exterior details of that style, the draftsman is ready for the working elevation.

Proceed according to the following logical method:

If the elevation is symmetrical draw a light vertical center line.

Locate and draw grade line or ground level far enough from the bottom of the sheet to allow for drawing the basement level in dotted lines.

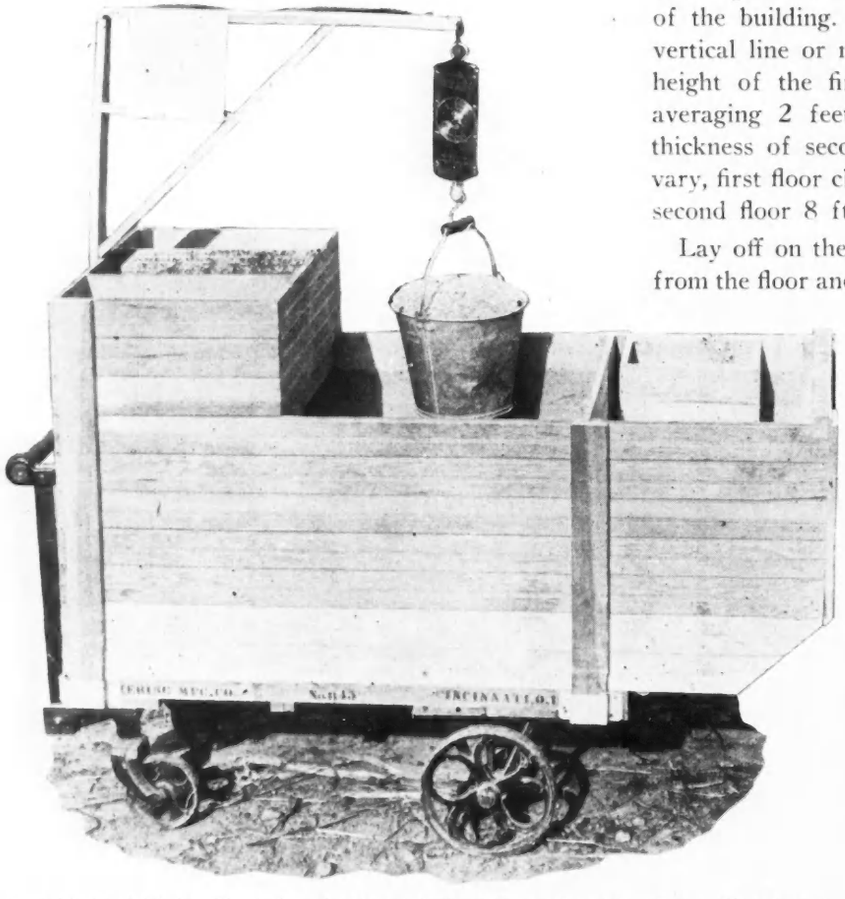
Referring to the working plan for widths, lay off with light lines of indefinite length the main corners of the building. Near the left corner draw a light vertical line or measure line, and on this lay off the height of the first floor level from the grade line, averaging 2 feet to 3½ feet, then the height and thickness of second and third floors. These heights vary, first floor clear ceiling height averaging 9 ft., the second floor 8 ft. 6 in., floor construction 10 inches.

Lay off on the measure line the height of windows from the floor and their total height.

Project and draw light indefinite lines from these heights across the elevation. Lay off the upper edge of the cornice. This depends upon the design or style of the house and the construction of the cornice.

Draw a light line indicating the ridge of the roof. This, of course, depends upon the pitch, whether ¼, ⅓, ½ or intermediate pitches, ⅓ is the average pitch. This would mean that the height from plate to ridge is ⅓ total width from plate to plate, taken as a rule across the shortest side of the house. Thus, if the house is 29 feet wide, the height or rise would be 9⅔ feet.

From the working plan locate the



Portable Feed Mixing Bin and Scale for Cattle Feeding at Shoemaker Farm, Waterloo, Ia.

(*Continued to page 122.*)

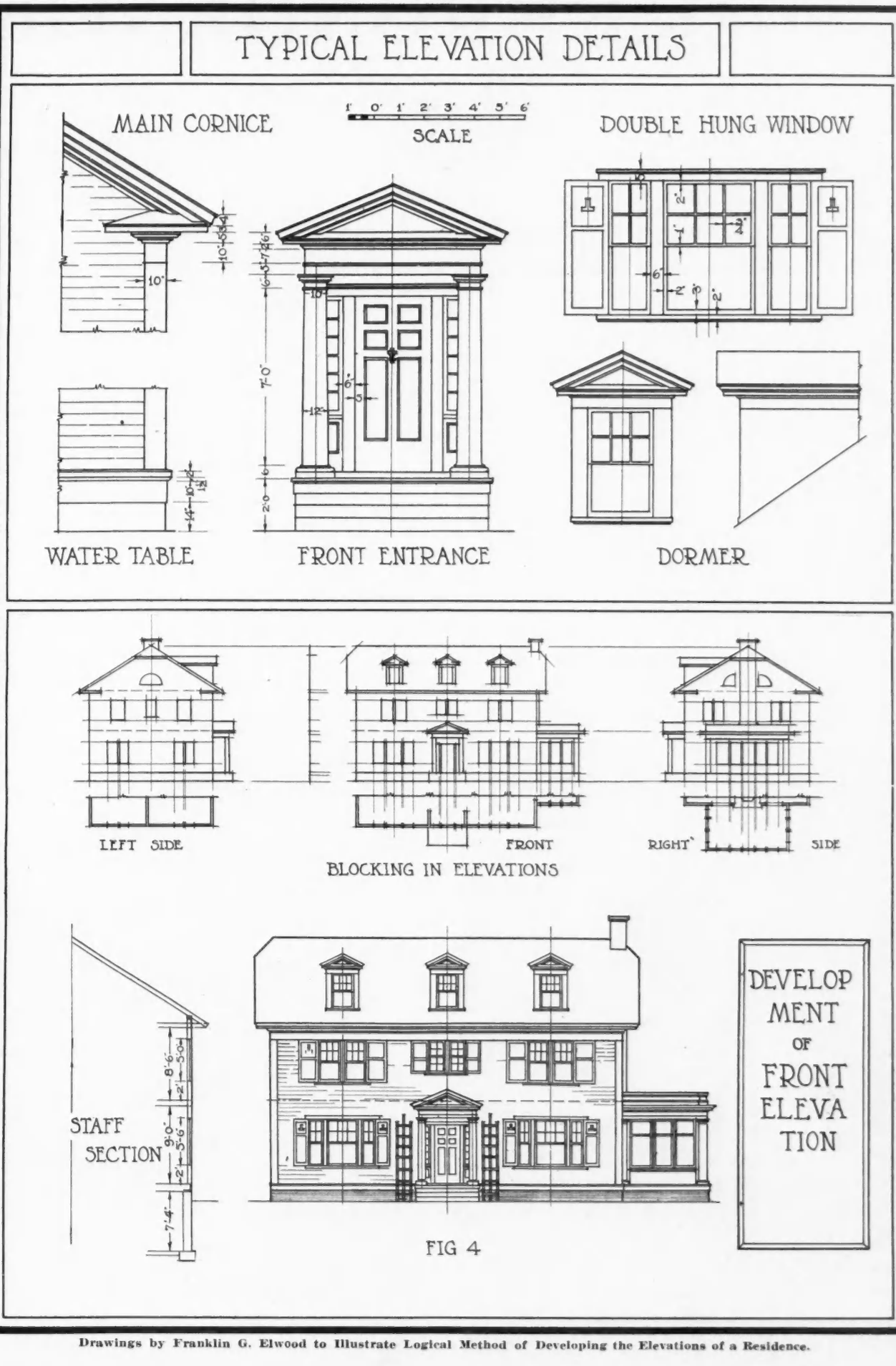


FIG 4

Drawings by Franklin G. Elwood to Illustrate Logical Method of Developing the Elevations of a Residence.

CORRESPONDENCE

Questions Answered and Ideas Exchanged.

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

Says the Blue Prints Help Get Business

To the Editor: Suisun City, Cal.

In the June issue I noticed the blueprint plans of houses, including front, side and rear elevations, also floor plans and wall sections complete; likewise barn plans complete in every respect.

I wish to express my satisfaction and happiness at finding a publication that is taking an interest in its readers along these lines to help them gain knowledge. Also such plans and perspective cuts of houses as are shown in the BUILDER every month, helps them to talk business with prospective builders. I hope that every month will find just such plans, only more of them. I like the bound plans better.

Wishing you everlasting success, I remain a devoted reader of the AMERICAN BUILDER. E. BLOSSOM.

✣

Uses Power Floor Surfacer

To the Editor: Brockville, Ont., Canada.

In April of 1916 I purchased an electric floor surfacing machine thru seeing an advertisement in the AMERICAN BUILDER. The first picture shows myself and the machine at work in the Fulford Block in this town, shown in the other photo. I have surfaced ten rooms in this block.

Wishing the AMERICAN BUILDER every success, I remain,

GEO. A. MUNROE.

Geo. A. Munroe and His Electric Floor Surfacer at Work in the Fulford Block, Brockville, Ont.

✣

Interested in Large Granaries

To the Editor: Paxton, Mont.

I have been a silent reader of AMERICAN BUILDER for some time. I get lots of interesting and useful information thru the Correspondence Department. The articles on Gothic roofs and door hanging are especially interesting.

I would like to hear from some of the builders in the grain producing states, on large granaries of the same type as the combined granary and corn cribs given in this magazine.

E. G. SCHELLER.

The Fulford Block in Brockville, Ont.

Laying Out Curves for Gothic Roof

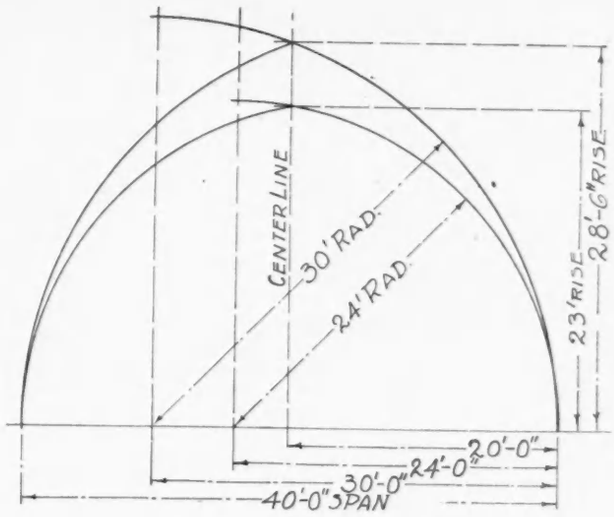
To the Editor: La Fargeville, N. Y.

In answer to S. Short, who asks in the June issue for a rule or system for laying out the Gothic roof, and for the benefit of others who are interested, I would say the system or rule is quite simple when one once gets the idea. If one looks thru some of the recent numbers of this magazine and studies the articles on this subject he will find some helpful ideas; but a few words may make the problem more clear.

The rule for getting the curve of the rafter is to take a part of the span of the roof, usually about three-fourths or three-fifths of the radius. If the barn is 40 feet wide you can use anywhere from 24 to 30 feet for this. Then on some floor where you can work readily strike a line for the width and another square across it for the rise. Have this one as far from the end of the first one as the radius you are to use. Also strike one 20 feet from the end for a center line to show where the peak comes.

Then strike the quarter circle by using a string and a piece of chalk for marking. This will give the curve of the rafter which always is a part of a true circle; but you cannot use all of this quarter circle, as the rafter would be too long and lap by at the peak. So you must shorten it to the half span of the barn, 20 feet—that is, back to the center line. You will see that this takes only a little from the height.

I show this in the drawing, and it will be well for you to work out and draw on paper the curves for barns of various widths, using more than one radius for each. Then you will get the main idea firmly fixed in your mind.



Curves for a Gothic Roof.

Remember also that the curve starts from a line from plate to plate—that is, level with the foot of the rafter—not from some point below it, such as the loft floor.

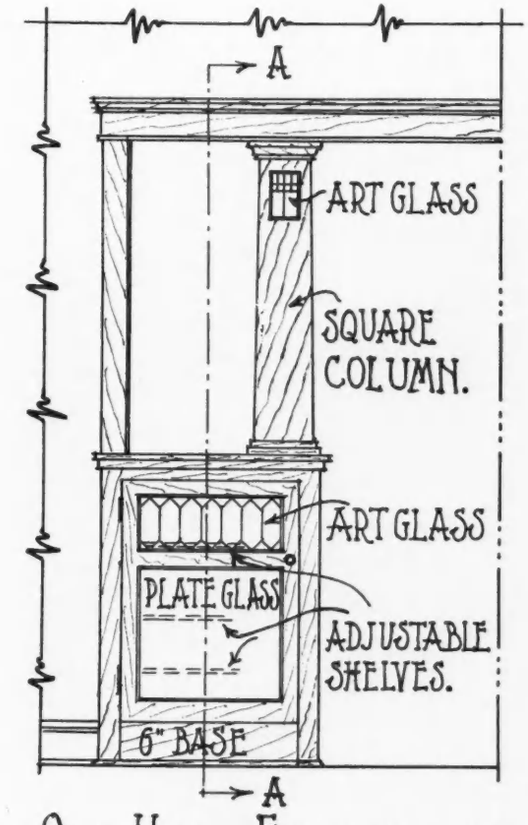
JOHN UPTON.

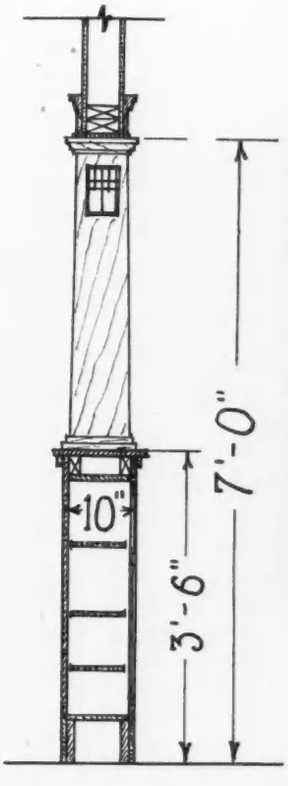
✣

A Novelty Colonnade

To the Editor: Bloomington, Ill.

Some time ago I was asked to design and build a special sort of colonnade—to have book cases in the pedestals below and an art glass lighting effect in the columns. I worked it out as shown in the drawing and photo and it surely does look swell.





Details of Novelty Colonnade Shown in Photo.

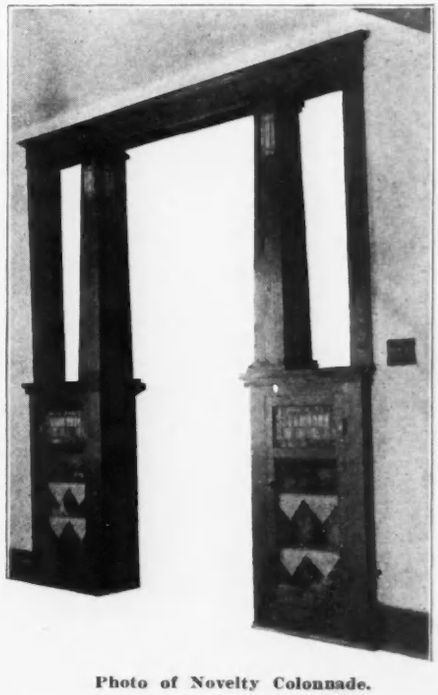


Photo of Novelty Colonnade.

I do this kind of special millwork on my own variety woodworker in my shop on rainy days and what would otherwise be dull seasons, and it pays me a nice profit.

H. F. CAMP.

(*Correspondence Department continued to page 76.*)

AMERICAN BUILDER BUILDING PLANS

Blue Prints for a Farm Tenant House

THREE FULL PAGE PLATES GIVE DETAILS OF THE POPULAR FOUR-ROOM BUNGALOW STYLE TENANT HOUSE ILLUSTRATED BELOW

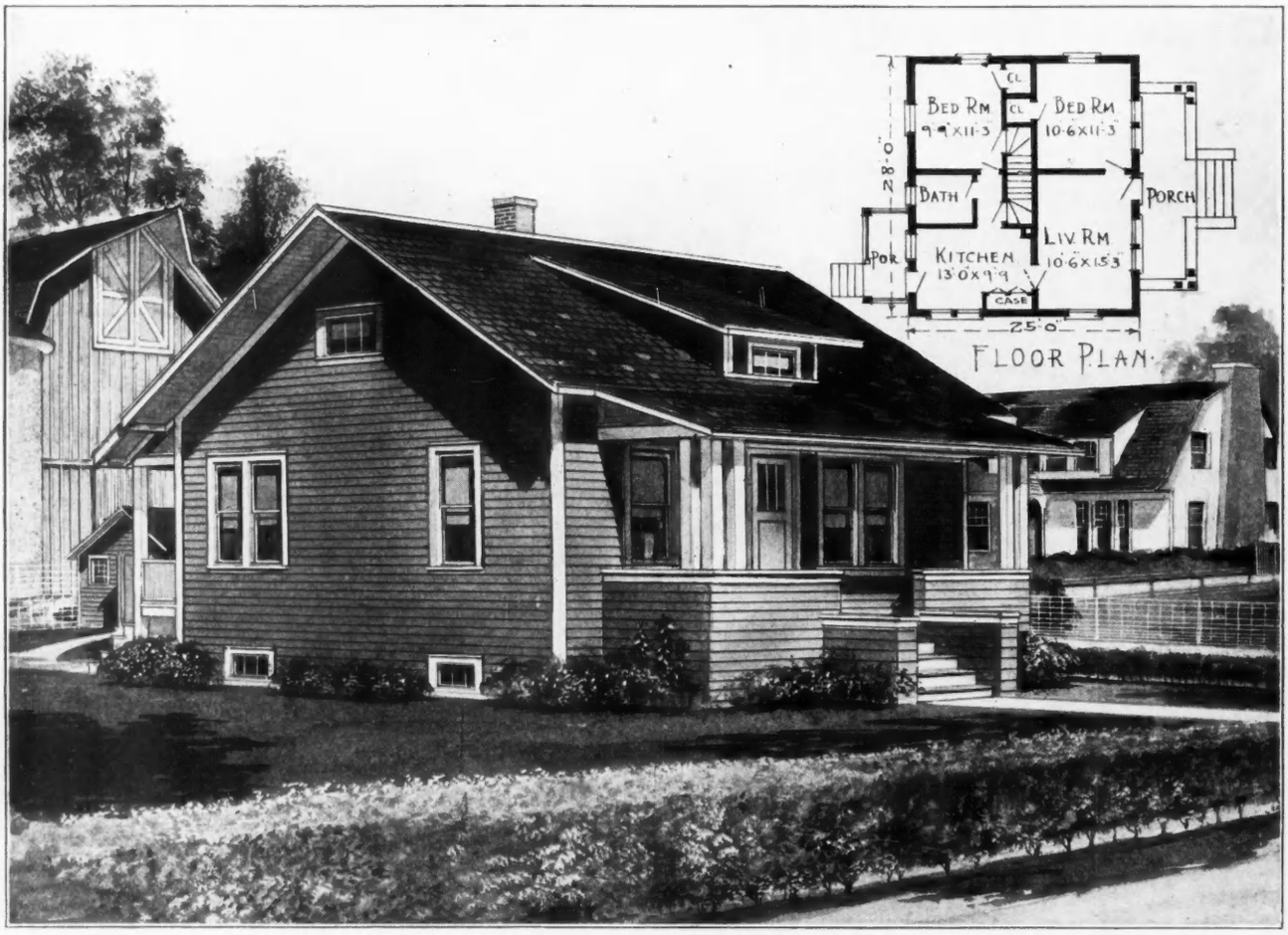
THE farm tenant house is the only real solution of the farm labor problem. It is the dependable married man who makes the best help, and he is attracted quite as much by comfortable and attractive living conditions for his family and himself as by extra wages.

For this reason, in view of the great urgency of the farm labor problem at this time, it is with special satisfaction that we present working plans for this very practical tenant house.

It is a one-story building, size 28 by 25 feet, containing a large living room, good sized kitchen, two nice bedrooms, and a convenient bathroom. The basement is excavated for basement heating plant (pipeless furnace) and laundry. A special section for the cold storage of fruits and vegetables is excavated under the front porch. One of the advantages of the pipeless or one-register furnace is that it doesn't heat the cellar, but delivers all of the heat up into the living rooms of the house. This being so, practically any part of this farmhouse basement can be used for storing potatoes, apples, etc.

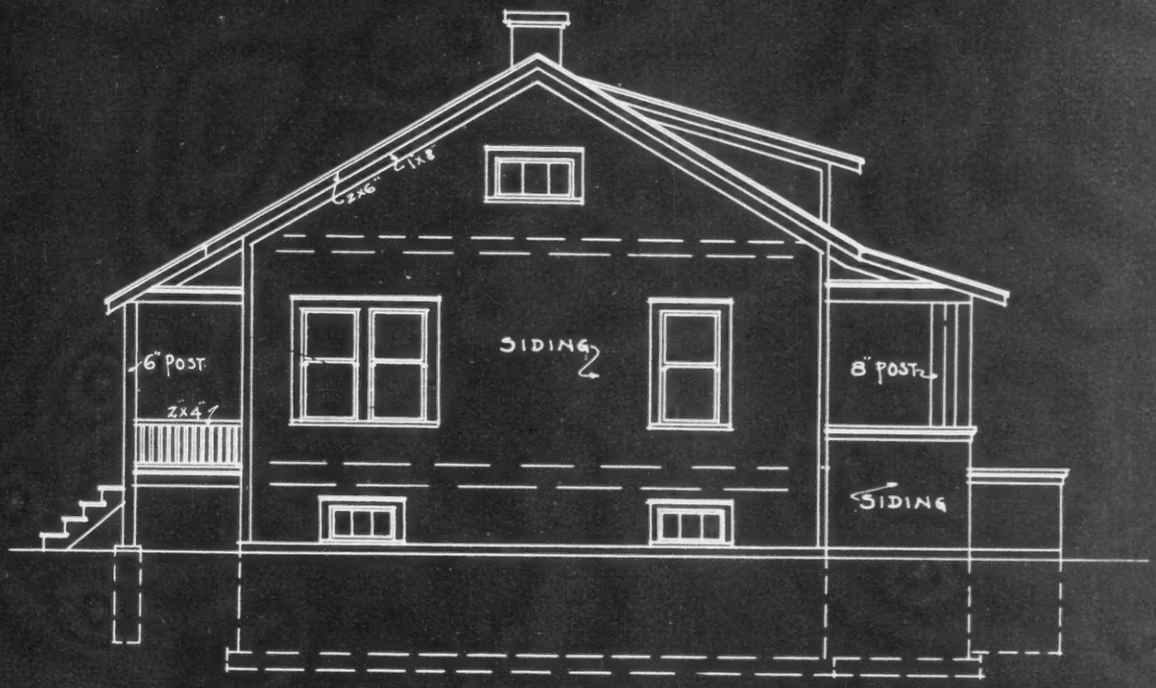
There is some attic space above for storage, or possibly for extra sleeping space.

Blueprint Sheet No. 3 shows some interesting interior details especially suited to the modern farmhouse.

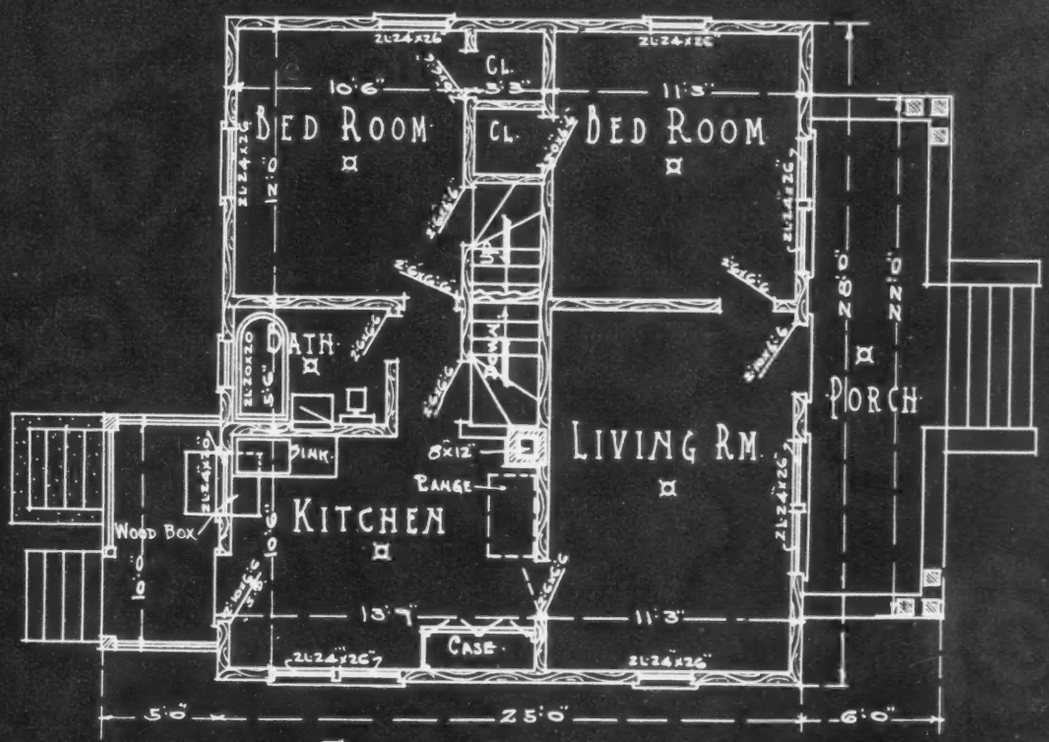


A Tenant House Like This Will Bring and Hold the Best Class of Farm Labor. Complete Plans for This Cottage Are Presented in the Blueprint Supplement Following.

AMERICAN BUILDER BUILDING PLANS



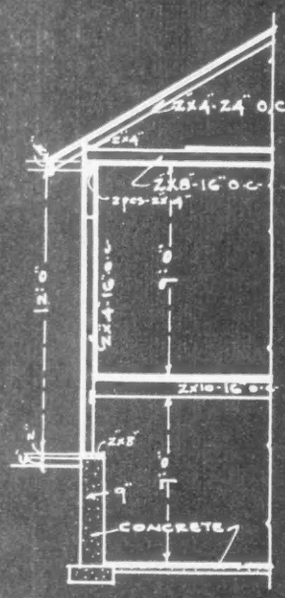
SIDE ELEVATION
SCALE 1/8"-1'0"



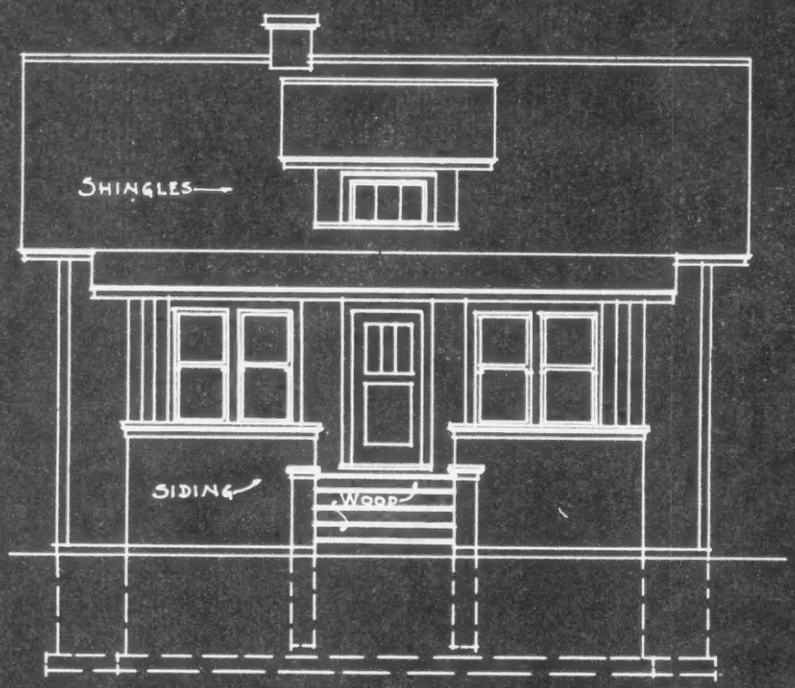
FLOOR PLAN
SCALE 1/8"-1'0

FOUR-ROOM FARM TENANT HOUSE — SHEET № 1

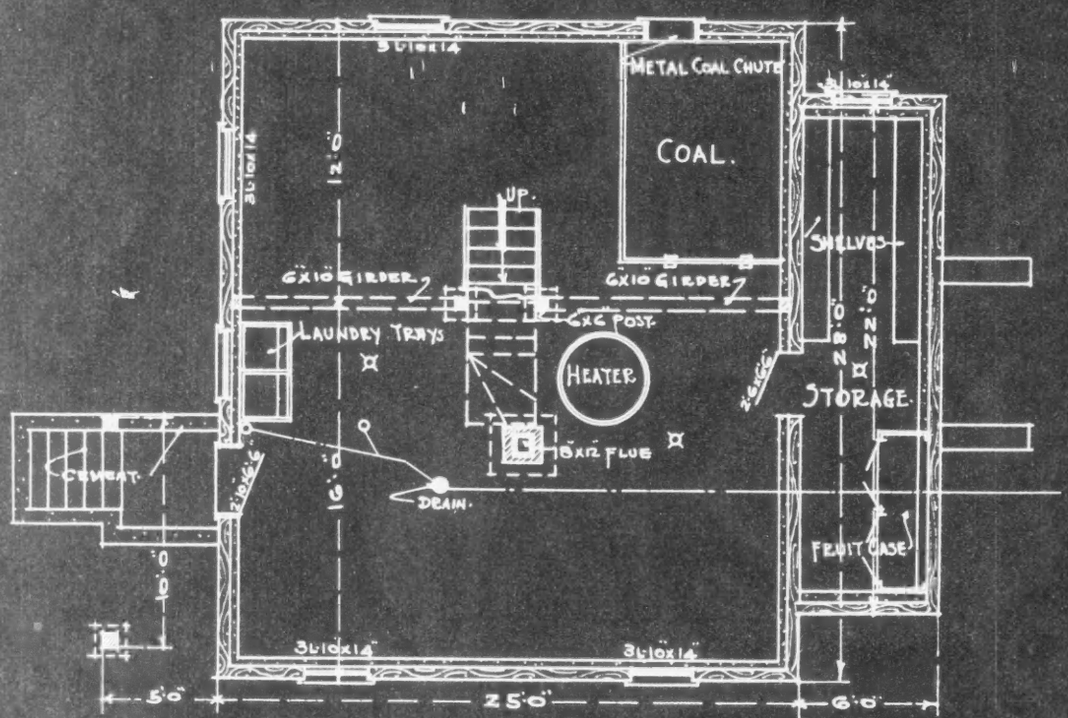
AMERICAN BUILDER BUILDING PLANS



SECTION.



FRONT ELEVATION

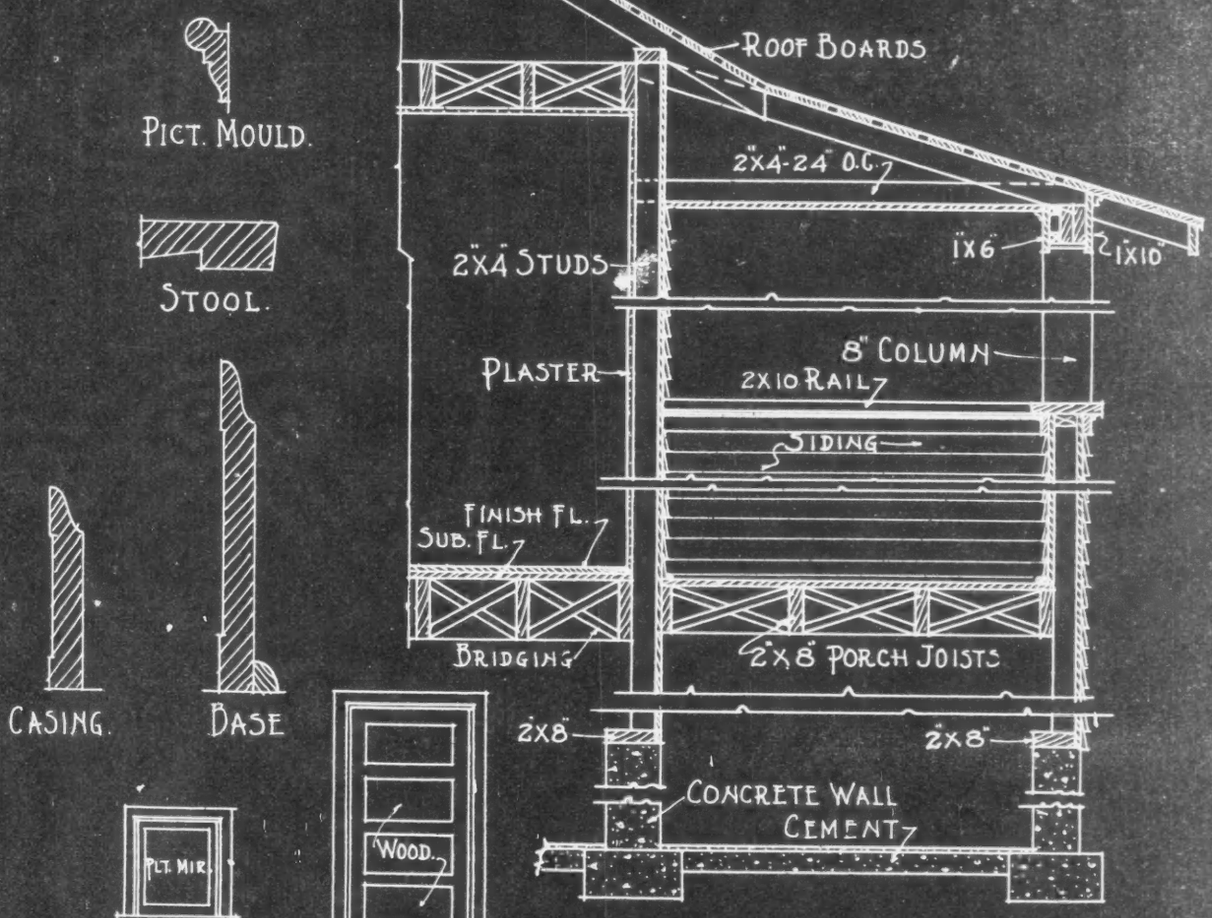


BASEMENT PLAN

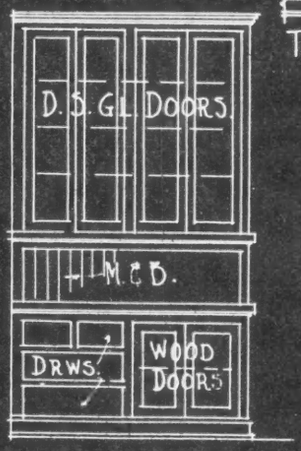
SCALE 1/8" = 1'0"

FOUR-ROOM FARM TENANT HOUSE — SHEET No 2.

AMERICAN BUILDER BUILDING PLANS

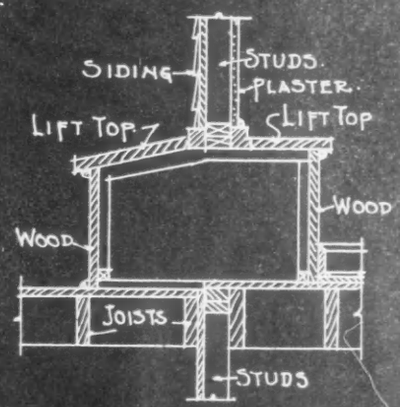


SECTION THRU. WALL & FRONT PORCH.
SCALE 3/8"=1'0"



KITCHEN CASE

FRUIT CABINET IN BASEMENT.
SCALE 1/4"=1'0"



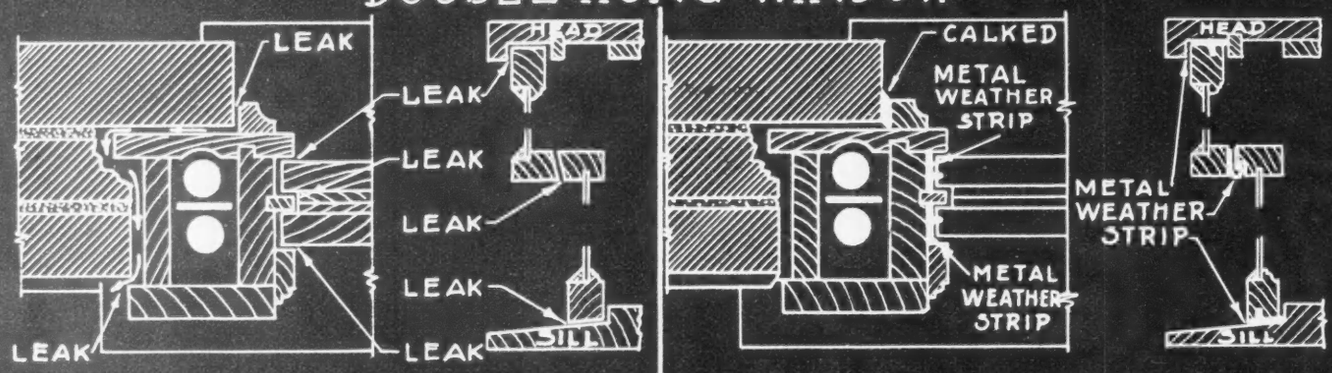
SECTION THRU WOOD BOX
SCALE 3/8"=1'0"

FOUR-ROOM FARM TENANT HOUSE — SHEET No 3.

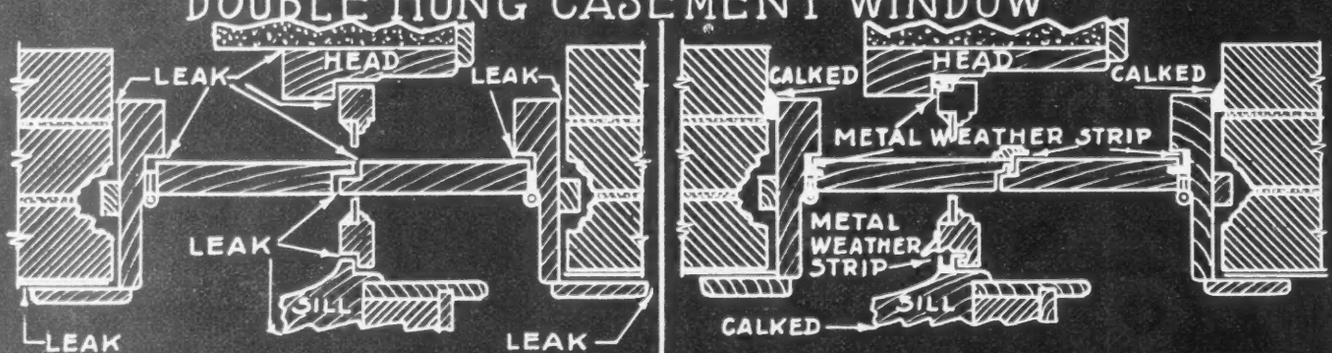
LEAKAGE OF AIR, WIND, DUST, DIRT, WATER AND HOW TO STOP IT.

LOCATION OF LEAKS — STOPPING THE LEAKS

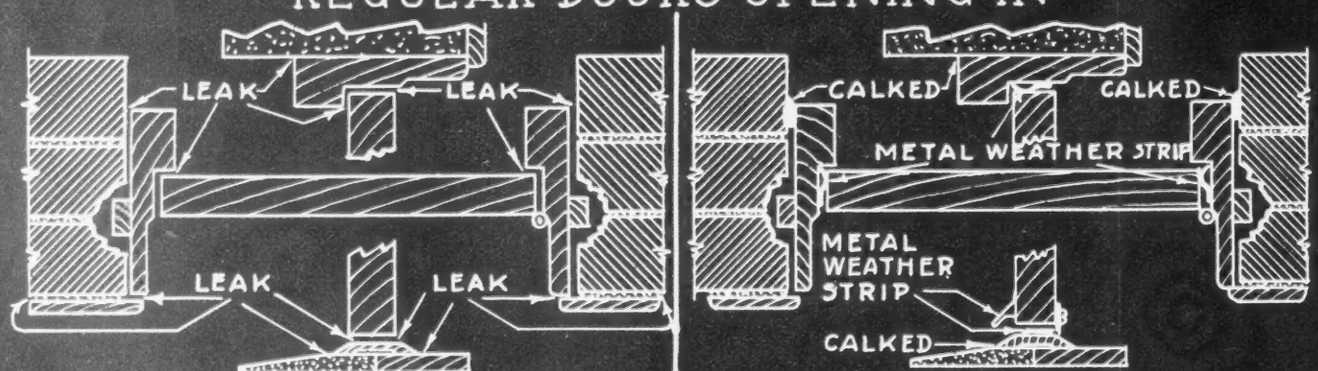
DOUBLE HUNG WINDOW



DOUBLE HUNG CASEMENT WINDOW

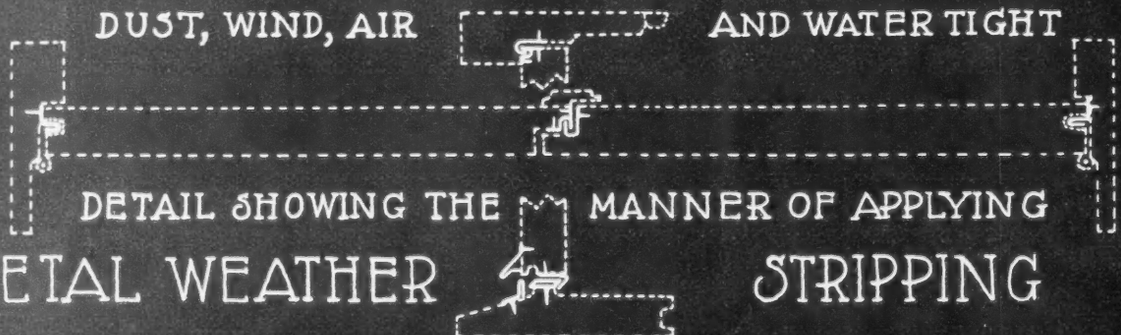


REGULAR DOORS OPENING IN



DOUBLE FRENCH DOORS OPENING IN

DUST, WIND, AIR AND WATER TIGHT



DETAIL SHOWING THE MANNER OF APPLYING

METAL WEATHER STRIPPING

Stop Those Leaks Around Windows and Doors

FACTS ABOUT THE LEAKAGE OF AIR, WIND, DIRT, DUST AND WATER—HOW TO PREVENT IT
BLUE PRINTS ON OPPOSITE PAGE SHOW ALL DETAILS

By Chas. J. Parsons

IN an experience extending over ten years, and after an inspection of thousands of windows and doors, I have, by means of the blueprint on the opposite page, endeavored to illustrate leakage conditions as they actually exist in thousands of houses—ranging all the way from the cheap to the otherwise well-built dwelling; and also to show how these conditions may be overcome.

The main cause of leakage is from the fact that timber used is not properly seasoned, and the best of it, under the most skilled workmanship, will not "stay where it is put." As an illustration, in setting the frames of windows and doors of a brick building, the wet mortar is against the frame of wood, causing it to swell, the sash or doors are then fitted to the frames while in this condition, and eventually when they dry out, there is a shrinkage and warpage which causes openings between frame and brick, the mortar dries and falls out, leaving an opening for the wind to come whistling in.

This is partially avoided by forcing oakum into the cracks, which is of some benefit, but not sufficient; consequently, there soon are black streaks around the inside casing, marring the interior decorations and proving the fact that dust, air, dirt and water can and do enter. The application of more mortar, cement or wood moulding to these cracks prevents the leakage temporarily, but only until the mortar or cement loosens up and falls out. Nothing of a wooden nature can be fitted close enough to accomplish results.

A number of years ago there was introduced to the trade a mixture known as "calking compound," which has all the appearance of putty, but is so compounded that, while it dries with a skin coat on the surface, underneath it never dries, and will stick to brick, wood, glass, tile or iron, and any shrinkage or swelling will not break the points of contact. This compound is offered by several different manufacturers, and has proven most effective for the purpose, being recognized by architects, contractors and builders as just what is needed.

Another use for calking compound is in setting glass in the sash. Very few builders or contractors embed glass in putty, as was done in former years, but even when they do, putty becomes hard brittle, and separates from the glass, causing a leak around it. Putty also falls out and has to be replaced, only to fall out again. When calking compound is used, it sticks where it is applied, and stops *all leaks for all times,* and does *not* have to be replaced.

Having closed up the cracks around the frames, the cracks or openings around the sash and doors still have to be contended with, and are as important as the others mentioned. To overcome these, various devices have been offered, among them being wood strips with felt or rubber in them. These, in their day, were of some benefit, but aside from being bunglesome and unsightly, they lost their efficiency quickly, and had to be replaced every season, causing an endless expense as well as annoyance. The introduction of metal weather strip solved the problem; since (1) the first cost is the only one, (2) they are permanent and concealed, and (3) they are made of non-ferrous material, so that there is no deterioration to them and nothing to wear out—they will practically last as long as the building.

There are several varieties of metal weatherstrip now on the market which can be installed by the ordinary carpenter on the job, with the instructions given by the manufacturer. Many manufacturers of this material have agencies located in the principal cities of the country who have men trained for this particular work.

Of the various kinds of weather strips offered, each has its own particular advantage, and in selecting the kind to use, give consideration to the following points: points:

First—Positive proof by reference that they give the desired results.

Second—that they can be installed and removed without trouble.

Third—that they are so made as to allow for shrinking, swelling and warpage and will under all conditions perform their functions.

Fourth—That the manufacturer is reliable and responsible. Having met the requirements of these four points, you can then compare the merits of the equipments offered, and no doubt be able to decide on the one best suited for your purpose.

Metal weather stripping has made possible the use of French casement windows opening in, which are so desirable because of their good looks architecturally, if only they can

Architects Favor Weatherstrips

JUST as an example of how the architectural profession regards weatherstrip protection, we can cite the practice of The Radford Architectural Company, Chicago. This prominent concern now rubber stamps every set of specifications that goes out of their office, as follows:

Fuel Saving and Comfort

We recommend that all windows be fitted with metal weatherstrips of approved type to assure comfort and to save fuel.

The Radford Architectural Co.

be made so as to prevent the leakage of water as well as wind, dust, dirt and storm. Metal weather strips do this successfully, also, and make a saving in the heating of the building of from 20 to 40 per cent in fuel and add to the comfort as well.

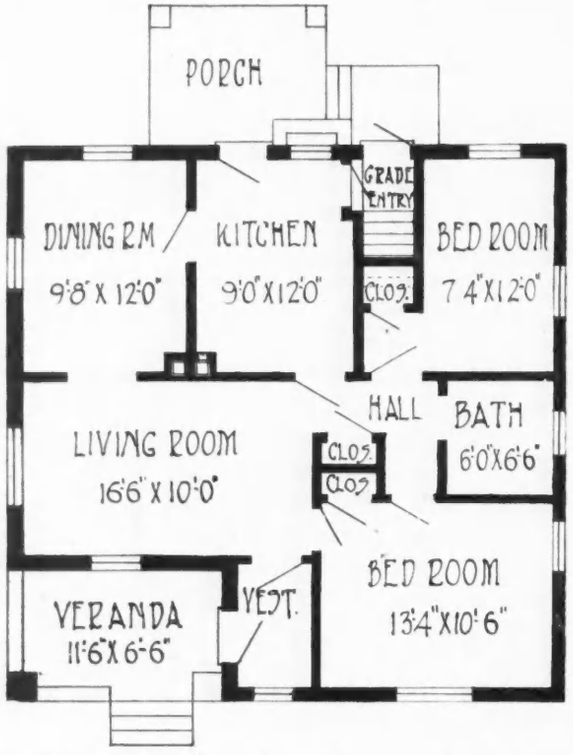
Fresh air is necessary at all times, but not in the form of draughts coming from every crack in your building. Control fresh air as you do heat, and get as much as you want when and where you want it. This can only be done when you have stopped up the openings which allow the heat to escape and let the cold air in.

The various manufacturers have literature treating on this subject, which is very interesting and will give you some idea as to the benefits to be derived from the use of calking compound and weather strips.

You will find the names of the leading manufacturers of these materials in our advertising columns. Write to them.

In these days when new buildings are scarce, many contractors and carpenters have taken up an agency for weather stripping and calking of buildings already built, and have found it even more profitable than their regular line. The possibilities of the business are just beginning to be understood, and the field is practically unlimited.

The U. S. Government never builds a permanent building of any consequence without specifying that the frames shall be calked and the doors and windows stripped with metal weather strips. They are not an experiment, but have been on the market for more than twenty years, and are to be found in all up-to-date buildings.



Floor Plan Diagram of Brick-Faced Tile Cottage Illustrated Below.

✣

FIGURE the price of storm sash for the average dwelling and compare it with the cost of anywhere from three to ten tons of coal that storm sash will save. Here is patriotic fuel saving work for carpenters and builders. Go to it.

A Low Cost, Well Built Workingman's Cottage at Adel, Iowa, Constructed of a Special Brick-Face Hollow Tile. This House, Size 32 by 30 Feet, Cost Two Years Ago Only $1,750.00. Complete with Warm Air Furnace and Piping for City Water. It Was Part of a Group of Buildings Put Up by the Adel Clay Products Co. for Their Employees.

NEWS OF THE FIELD

W. H. Foster War Industries Chairman for Youngstown District

W. H. Foster, president of the General Fireproofing Company, has been elected chairman of the Youngstown, Ohio, division of the War Industries Commission.

The purpose of this organization is to mobilize the industries of the country in order that the government may be more efficiently served in the production of war materials, and also the object is to assist non-essential manufacturers to change over to an essential or war basis, thus enabling them to continue to keep their plants in operation and maintain organization thruout the period of the war.

✣

Death of W. H. Caldwell

With deep regret we learn of the death of Mr. William Henry Caldwell, who since 1888 has been president of the Caldwell Manufacturing Co. Death occurred July 8 at Rochester, New York.

✣

Lakewood Holds Enthusiastic Sales Meeting

The sales force of the Lakewood Engineering Company held a very enthusiastic and successful meeting at the main plant in Cleveland the first week in June.

Sales representatives from all over the United States gathered together and discussed with the sales, production, purchasing and engineering executives the present-day problem of serving the construction and industrial fields.

Over 100 attended the daily sessions and the Lakewood spirit of co-operation, service and good fellowship was ever present.

✣

Jewett Leaves Cornell Wood Board

Mr. J. N. Jewett, Cornell Wood Products advertising manager, who has been with the company since its inception, has resigned to accept a similar position with the Aberthaw Construction Company, of Boston, Mass. Mr. C. J. Sharp, who has for the past year and a half been Mr. Jewett's assistant, will now assume the direction of the Cornell advertising. Mr. Sharp is well equipped to take charge of this work.

✣

New Head of Atkins Seattle Branch

Mr. Harry Blair has been made manager of the E. C. Atkins & Co. branch house at 510 First St., Seattle, Washington. He will have complete charge of the sales force in that territory, covering the hardware, mill saw and metal saw lines of "Silver Steel" saws.

✣

New Name for R-W Overhead Carriers

The Richards-Wilcox Manufacturing Company, Aurora, announce a new trade name, "OveR-Way," to be applied to the well known R-W Overhead Carrying Systems, thousands of which are in use in America and abroad. It is intended to identify to the user the genuine R-W system and to render easy for him its purchase by means of a distinctive name. Brass name plates 8¼x3 inches, bearing the name, will hereafter mark each system furnished by the R-W Company.

Contractors

—"cash in" with the farmer

THIS is the day of the farmer. And with the coming of his prosperity, farm drudgery and inconveniences are relegated to the past. Increased profits go into farm improvements, up-to-date machinery, automobiles and home comforts and conveniences.

No more "back-breaking" pumpings and laborous carrying of water for household and stock.

The luxury, comfort and sanitary benefits of hot and cold water at the turn of a faucet for bath, toilet and lavatory, kitchen sink and wash tubs in the home—the advantages of an abundant supply of running water in barn and dairy—all make the installation of a water system the **FIRST** step in farm improvement.

Parents find the home improvement and labor saving features of an adequate water supply system a big factor in solving the problem of keeping the younger generation on the farm.

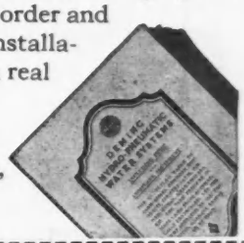
Shrewd contractors will find the farming element a fertile field to cultivate in the selling of

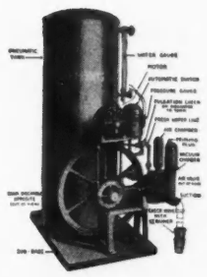
Deming

Water Supply Systems

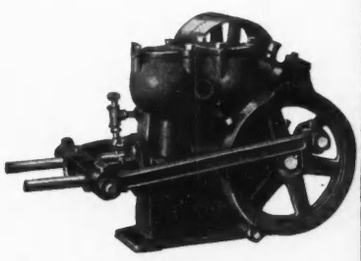
Contractors are usually in the best position to bring up the question of the water supply system. Take the order and cooperate with your plumber in making the installation. You both make a neat profit and render a real service to the buyer.

The Deming Catalog of water facts should be handy on your desk. If you haven't your copy, write or use coupon.





Deming "Marvel" complete Water System No. 2085 for wells 22 feet deep or less. Especially adapted for the ordinary requirements of a family of eight or less. Practically self-operating in all respects. Operating cost about one cent a day.



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.

The Deming Co.
99 Depot St.
Salem, Ohio

Over a thousand hand and power pumps for all uses.

Send water supply catalog and explanation of your cooperative system.

Name.....

Address.....

Town..... *State*.....

Concrete Ships Durable as Steel

Assert New Mixture Will Make Vessels 20 Per Cent Lighter Than Wood

The Inquirer (Philadelphia, Pa.), under date of July 9, 1918, presents the following Washington dispatch:

Assurance of the high value of concrete ships as a permanent contribution to the great American fleet now being created was given today with the announcement by the United States Shipping Board of the discovery of a protective coating which will make the concrete ships as durable as the mighty steel vessels now crowding the shipways of the country.

One of the drawbacks to the concrete ships in the past has been the lack of a satisfactory outside coating. It has been held that when the original surface coating has once been destroyed, the sea water penetrates the concrete and attacks both it and the metal framework in the inside, with disastrous results.

The expert opinion of R. J. Wig, chief engineer of the concrete ship division of the Emergency Fleet Corporation, is that the new coating will do away with this danger.

"From our comprehensive tests of concrete structures at sea water," said Mr. Wig today, "we are convinced that concrete ships will last a minimum of several years without any protection whatever. By the application of protective coatings which are well known to us, we are certain of an extended life of several years additional, and with the further developments of protective means upon which we are now working, I believe the concrete ship can be made as permanent as steel, if not more so.

Enthusiastic Over Their Future

"At a meeting of the American Concrete Institute, held recently at Atlantic City, I was unfortunately misquoted as saying that the concrete ship would last only one year. Of course, this is not so, nor did I say it. I am anxious to have this erroneous statement corrected as soon as possible because it puts the concrete ship in an utterly false position.

"The many able engineers who are now devoting their time to the study of concrete in our own organization are becoming more and more enthusiastic over the future of the concrete ships. Improvements are constantly being made which make concrete more suitable for ship building.

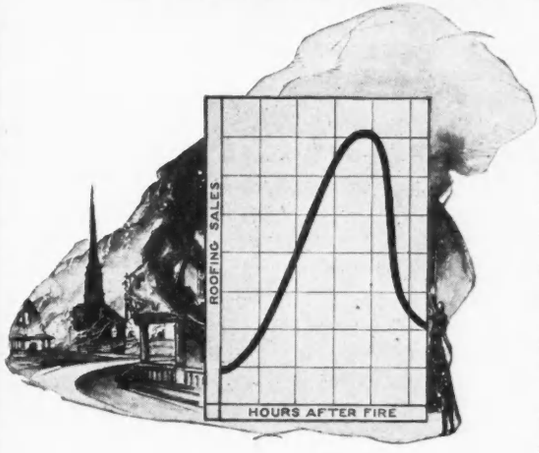
"Few people realize that the concrete ship is actually 20 per cent lighter than the wood ship, if built of a new concrete mixture developed by the Emergency Fleet Corporation. The aggregate from which this new concrete is made is so light that it floats on water and yet it makes a kind of concrete possessing twice the strength of that used in ordinary building construction. With this development the concrete ship will come into more direct competition with the steel ship.

"There are many problems yet to be solved in the building of concrete ships, and while this new industry sprung into life as an emergency war measure, its future is becoming more established as a permanent institution."

Will Build Many More

Chairman Hurley said today that concrete ships would continue to play an important part in the ship program of the country. "We shall build concrete ships," said he, "to the full extent of our opportunities, compatible with our general plans for ship construction."

What a town fire does to Asbestos Roofing Sales



A LOCAL FIRE is the best Asbestos Roofing Salesman in the world. When a fair-sized blaze burns a black hole in among a few houses or the factory district, then presto! up goes Asbestos Roofing Sales—and not only topping the burned buildings, but in the "scare circle" that surrounds the gutted area like the ring around the moon.

What a lesson there is in this for the roofer. What a true proof of the fact that people once awakened to fire danger—buy protection.

You don't need a fire to do your selling—do you? You can talk fire risk just as effectively in your prospect's office or living room as a newspaper headline can.

You can do it more effectively, because they respect your expert judgment as a roofer. Go out and tell them how to protect their property—that is now almost irreplaceable—get the insurance agent on your side, and the fire department. Write your own squib for the local paper.

Be *The Roofer* in your town, and not only that, but the best salesman with the best line to sell.

You can't beat the combination and there were never more chances than right now to use it.

Let us send you all the details about Johns-Manville Roofing and the Company behind it.

Tell us where it will reach you — *now!*

H. W. JOHNS-MANVILLE CO.
NEW YORK CITY
10 Factories — Branches in 61 Large Cities

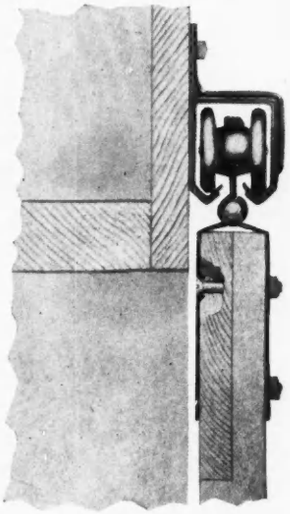
JOHNS-MANVILLE SERVICE
COVERS THE CONTINENT

JOHNS-MANVILLE ASBESTOS ROOFING

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.

New Double V Barn Door Track

The novel "double V" shaped tread of a new door track gives maximum strength, least contact or friction with the hanger wheel, is self-cleaning, and keeps the hanger in alignment at all times. The track is bird and storm proof, the ends being closed by the brackets. It is made on a huge press which insures uniformity, since each piece is shaped exactly the same as any other. The weight of the track, per foot, is 2.2 pounds. Painted a durable black, it presents a neat appearance when installed.



New Double V Barn Door Track and Hanger.

The "double V" hanger is made with double tandem trucks and the axles turn on roller bearings. The superior mechanical features are evident in the trussed frame of the hanger, the pin joint giving flexibility, a minimum friction due to the roller bearings, and the flush construction of the door strap. Note that the back of the strap, next the building, has no bolt heads projecting to interfere with the free rolling of the door. A close fit can be made, and this is appreciated by the farmer in cold or stormy weather.

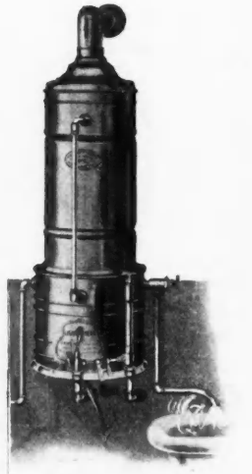
✣

Instantaneous Bath Water Heaters

"Where an abundant yet cheap supply of hot water is wanted at the fixtures of the modest modern bathroom and for any reason the automatic type of heater cannot be used, nothing is equal in capacity or economy to the instantaneous bath water heaters." Such a confident and positive statement coming from the biggest organization in this field calls for the strongest kind of a manufacturer's guarantee to the user.

In view of the remarkable statements about these bath

(*Continued to page 72.*)



Instantaneous Gas Water Heater.

What's New?

(*Continued from page 70.*)

heaters, the home owner is likely to get the impression that the article is priced accordingly. Investigated, the surprise is that such a never-failing plentiful supply of hot water, for bathing and all domestic purposes, may so easily be had at so slight expense—away below what might ordinarily be expected for such dependableness, and free from the bother and expense of coal bills and coal and ashes handling.

The present fuel situation and the proper conservation of coal for patriotic purposes but the more strongly points to the ideal fuel gas. In the instantaneous bath water heaters we are told fully ninety per cent of the heat units are directly imparted to the water spelling maximum heating efficiency.

From good authority we have it that three out of every four homes using gas do not have a gas water heater—have not yet experienced this simple yet satisfactory means of meeting the always present need for hot water in the home. Builders, however, are more and more providing for an up-to-date gas water heater service in modern plumbing specifications, and undoubtedly with the ever increasing availability of gas as a cheap fuel supply, the exception before long will show that coal water heating systems have served their day and given place to gas.

✣

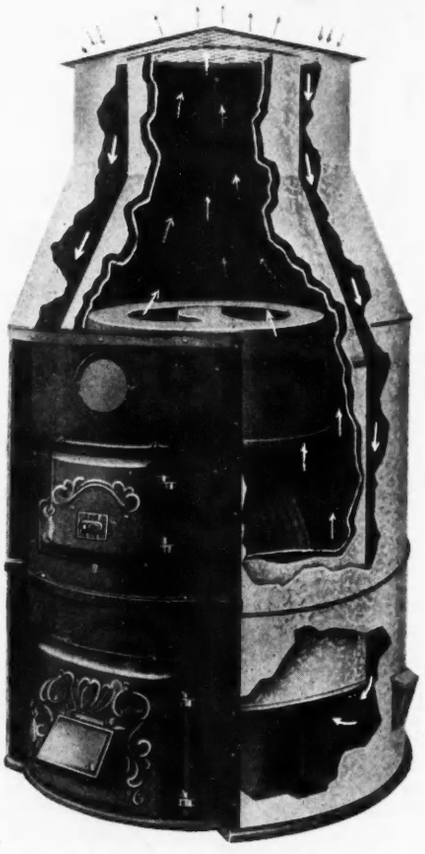
Heat with No Lost Motion

The ambition of the heating engineers is to secure as nearly as possible 100 per cent efficiency in the use of fuel, whether it be for the generation of power or for the warming of buildings.

One hundred percent efficiency is, of course, an idle dream, but in striving to realize it some surprising advances toward it have been made.

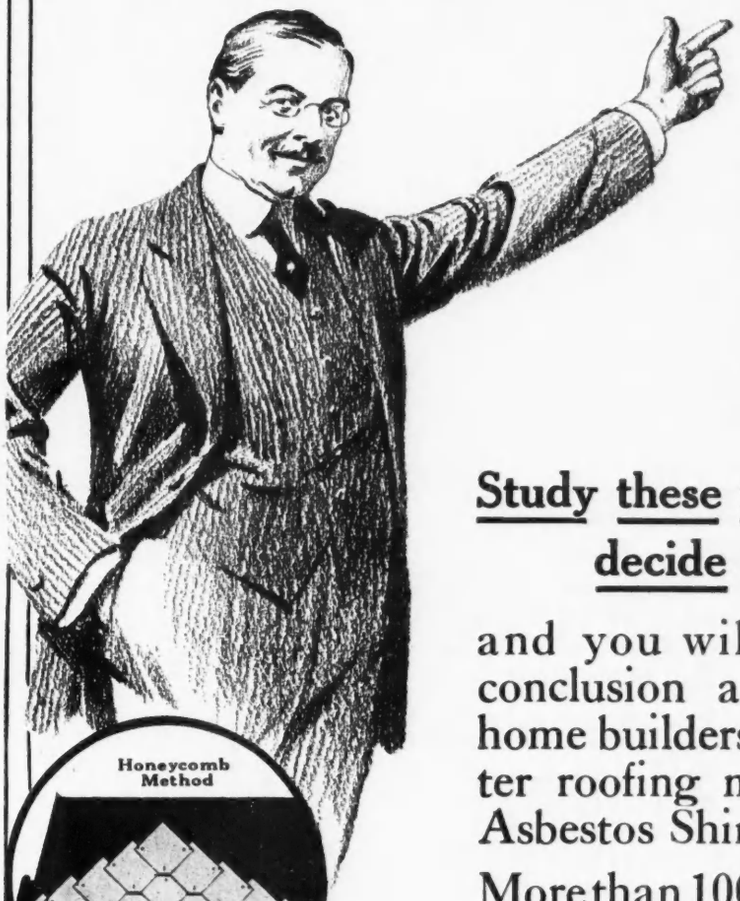
It is the natural law for warm air to rise. Making use of this fact, one-register furnaces have been developed of the type illustrated, and the amount of fuel they save is really astonishing. The reason is that they deliver all of the heat up into the living rooms of the house without permitting any of it to go to waste in the basement. The arrows show the circulation of the cool air down on the outside and up over the fire pot directly into the living room.

This type of furnace has been thoroly tested and is winning new friends every day.



Type of Direct Action Heater That Delivers All the Calories Up Into the Living Room.

AMBLER
Asbestos Shingles

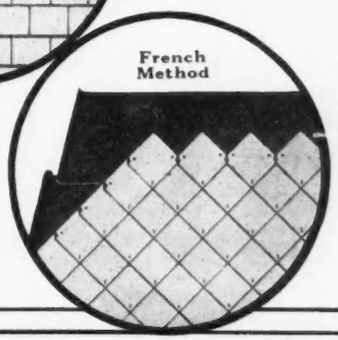


are Fire-proof
Storm-proof
Repair-proof
Lightning-proof
Permanent
Economical

Study these facts well before you decide on your roofing

and you will come to the same conclusion as thousands of other home builders--that there is no better roofing material than Ambler Asbestos Shingles.

More than 100,000 roofs in the United States bear silent witness to the truths of our claims. These roofs represent every type of structure from cottage and bungalow to country homes and mansions.

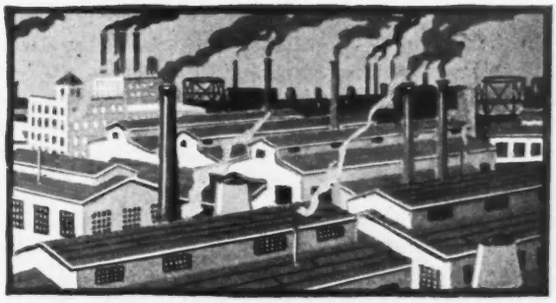


From a standpoint of *utility, permanence, protection* and *appearance* they leave nothing to be desired.

Write for more information, prices, samples and pictures. Architects' and contractors' service sheets furnished on request.

Keasbey & Mattison Company
Dept. B-1 Ambler, Pa., U. S. A.

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



Neponset Quality Commands Orders for You

WHETHER you are repairing or building for your customer, there are two kinds of profits for you in Neponset Products. One is in cash. The other is in good-will and repeat jobs from the friends of the owners you serve.

Thirty years of quality are back of Neponset Building Papers. Neponset Products, known to the trade as the dependable family of building and repairing essentials. For full money's worth to you and your customers you *can't* beat

NEPONSET

Twin Shingles Building Paper

Paroid Roofing Wall Board

Neponset Roofs have good looks aplenty. They are intensely practical. They reduce the danger of loss from fires. They are made from materials not needed for government use. They satisfy your customers. And it's the same with *all* Neponset products.

Be the Neponset man in your town. You can cash in strong on Neponset quality, on Neponset prestige, on Neponset integrity. It's a rare case where one Neponset Job doesn't sell another.

There's a particularly big opportunity now for you to get in right on the repair work in your neighborhood. People realize that they must keep their property up, even if they don't build new buildings. Neponset Roofings and Neponset Advertising open the way for profit to you.

BIRD & SON, Inc., (Dept. C) EAST WALPOLE, MASS.

ESTABLISHED 1795

CHICAGO NEW YORK WASHINGTON Canadian Office and Plant, Hamilton, Ont.

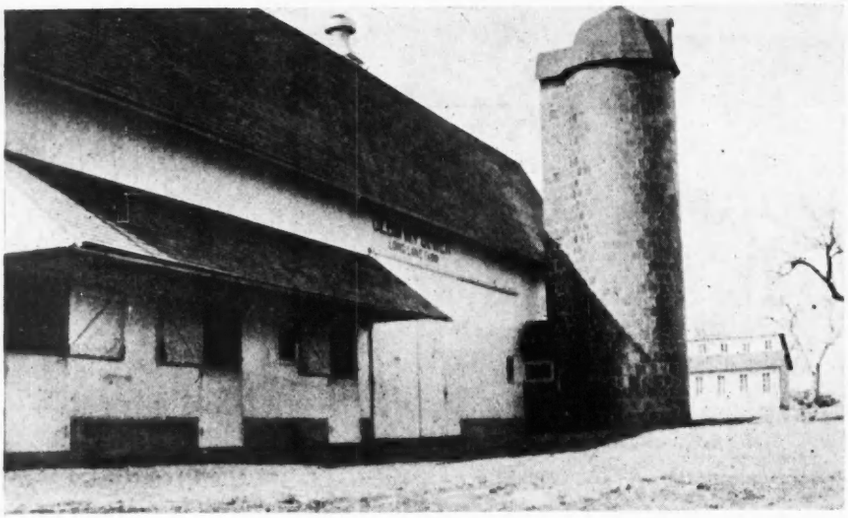
ROOFS

(*Continued from page 57.*)

Doing a Big Silo Business

To the Editor: New Paris, Ind.

Enclosed find a postal of one of the many Natco tile silos I have erected in the last few years. Note tile chute and tile feed room which makes a very fine job. I would like to see this picture in the AMERICAN BUILDER, as this is a large year for silos, and am erecting a lot of these silos this season; each takes from three to five days.



Chas. Rock Puts Up a Silo Like This in from Three to Five Days.

CHAS. ROCK,
General Contractor and Builder.

Relative Merit of Square and Hollow Backing

To the Editor: York, Pa.

The question often arises as to whether hollow-backing is really necessary. Its discussion has pointed to the fact that much interior trim made these days is perfectly straight and square-edged, yet it is neat and tasty.

Some of the contractors and builders are responsible for some of this, probably more so than the planing mills. Many have gotten into the habit of ordering interior trim for door and window casing simply surfaced on four sides and sanded. They order it made in standard lengths of lumber and cut it up themselves to fit their openings. That is, they have it neatly surfaced on both sides and both edges, then carefully sanded, so as to get a better finish and take out the planer marks.

This gives them a choice of two sides for facing, so that they can select the best, and it insures a better and cleaner surface than can be had if they get the face or edges moulded. If the corner is rounded with a sticker and the stock is made hollow-backed, when it goes thru the sander just the straight part of the face is cleaned off and the rounded corner is not cleaned, consequently a lot of hand-cleaning must be done to make the job look nice.

A great deal of this finish is used with corners rounded,

(*Continued to page 78.*)

Correspondence Department

(*Continued from page 76.*)

but the enterprising carpenters and builders say they can do this in a moment with a hand plane, and prefer to get their stock just surfaced four sides and sanded; then, after cutting it off to lengths, they take a rounding plane and round the corners, if it is desired to have them rounded. If there is just a slight round wanted, they take a piece of sandpaper and simply take off the sharp edge with that.

Finishing material made in this manner is very easily gotten out, as it can be done on a four-side surfacer, four-side moulder, sticker or flooring machine. The fact, too, that most builders are showing a preference for this almost answers the question of whether hollow-backing is necessary or not, for in this there is no hollow-backing, both sides being faces. The builder takes his choice for the outer face and puts the other to the wall.

It may be that hollow-backing finish and flooring would tend to somewhat lessen the ill effects of dampness, but it is probable that this was not the primary reason for making finish in that way.

In plastering up to a ground or a frame, the plaster almost invariably is left slightly projecting or rounding outwards. It would thus be practically impossible to so nail a straight-backed casing to make it come down on both edges. Whether this fullness of the plaster is avoidable or not it is hard to say; but it is very rarely absent. How often in days gone by have we heard the grumbling of joiners who had to gouge out the backs of their casings by hand; and we have seen some such hand work necessary on modern casings. Modern plasterers, it is true, do somewhat better than of old, but still casings could but rarely be properly put on unless the back was hollowed in some way.

The hollowing out is not quite as essential in the case of baseboards, but it often saves a lot of work and annoyance. In the case of flooring, one cannot shift all the responsibility to the shoulders of the plasterer, nor can it be successfully argued that the necessity is quite as great; but, as the lower floor is apt to be somewhat uneven, the hollow-back generally tends to a better job.

Sometimes one sees flooring from the South with so much of it hollowed out on the back that it really makes against the strength and solidity of the floor. Among the hardwood flooring people a little better care is exercised, and hollow-backing is done in better form.

One peculiar thing about it, tho, is that, while the stock which is dressed two sides and center-matched looks better and more desirable, there are many old and experienced buyrs of flooring who insist on having hollow-backed stock. Whether they do it thru habit or thru conviction is an open question. Of course, the claim is that it lays better, fits together nicer, and all of that, but it seems practical in this day and time to so dress stock that it will lay and fit well without disfiguring it with the ugly hollow back. The hollow-back looks particularly objectionable when one gets thin ceiling and thin flooring. Take ⅜-inch stock in hardwood flooring, which is thin and light enough as it is, and to hollow-back it makes it rather shell-like, and it really is convincing that it would be much better to dress both sides smooth and even, instead of making it hollow-back and shelly.

To quite an extent the same logic applies to interior finish, casing and base. There is, of course, an excuse for hollow-back finish. It is often laid up against damp walls and absorbs moisture, is more or less inclined to swell in the back and cause the edges to cup out. If it is imperative to get protection against moisture swelling the wood, it would probably be better to run a few grooves in the back, like some planing mills do in window and door frames. It ap-

(*Continued to page 80.*)

BEAVER BOARD

FOR BETTER WALLS & CEILINGS

Get After the Profitable Re-Modeling Jobs, Too

When building operations slow up, remodeling increases. Then there are many opportunities for good profit in the repair and remodeling jobs.

Entire buildings are furnished with Beaver Board. Partitions go in, additions are built. This knotless, crackless, manufactured lumber covers up countless cracks, unsightly spots and falling plaster. It makes old houses look young again. It puts new life into buildings that formerly seemed absolutely hopeless.

This kind of work is profitable. It goes through quickly and looks like twice the money it costs. You can go in, in the morning, and come out in the evening, with a good job done and more profit in the cash drawer.

Beaver Board work makes other kinds of carpenters' jobs Paneling and interior trim, rehardwaring and other profitable repair work usually follow a Beaver Board job.

This proposition is worth looking into right now. We'll gladly send you the name of the nearest Beaver Board Dealer, and our Department of Design and Decoration will furnish free estimates, panel arrangements and color schemes.

BEAVER BOARD PURE WOOD FIBRE

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

THE BEAVER BOARD COMPANIES
38 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.

(*Continued from page 78.*)

pears that it would be safer and better to protect the back against swelling by cutting a few grooves in it with power saw, lengthwise the stock. Or perhaps the best plan yet, to see that the plaster is thoroly dry before putting it up. This logic would aid in removing the cause of the swelling and prevent the disfiguring of the lumber in making it shell-like by excessive hollow-backing. LEE PRIOR.

✣

We Blush with Pride

To the Editor: Wakefield, R. I.

I wish my brothers to know how greatly I prize the AMERICAN BUILDER. Having been in the family some time, I am getting to know some of you boys quite well, and I am also convinced that the contractor who is without this helpful magazine is losing a good many dollars worth of sound, sensible and practical information.

Such strides in improvement as our magazine has made from year to year is seldom noted among the country's publications of any kind, and the writer of this article comes near knowing, as he has been a reporter and writer for various publications for thirty years.

Well, you say that's a comical thing for a builder to be doing. However, you come onto one of our jobs, see our methods, view the quality of work we get out of the boys and the amount of work, then you'll allow us a little time off each evening to scribble off some copy from local events or mechanical suggestions.

Boys, keep in touch with the good old AMERICN BUILDER and aim for all those things that tend toward better building, nobler living, and stronger mutual brotherhood.

WANTON R. CARD,
Contractor and Builder.

Weighting Windows

To the Editor: Centralia, Wash.

In reply to Mr. F. E. Kennedy's suggestion in the May issue that the manufacturers make a supplement half pound weight will say that we have had such weights on the market for some time; but the way that I treat such cases is to form the center pocket the same width as any other pocket, then use a single weight twice as heavy as the weight required. For instance, if the window requires a 5-lb. weight I use a 10-lb. weight for the center. I fasten the cord to one window, run it over a pulley, then down to where the weight should be. Then I place a small pulley on the cord, run up over the other pulley and fasten to the second window; then fasten the weight to the pulley in the pocket, which gives the desired results and makes a much neater looking frame by having all three casings the same width.

N. E. GREENLEAF.

✣

Making the Cistern Into Fireproof Vault

To the Editor: La Fargeville, N. Y.

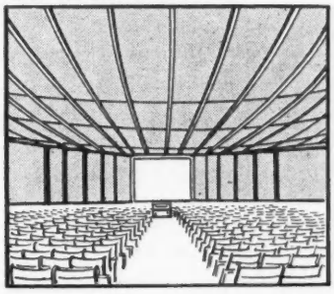
Like J. W. Doull, who asks in the June issue about making a fireproof vault out of a cistern, I have been a subscriber for some time and have some library on building, but nothing which just fits his problem. However, I have an idea that if I had this work to do I should want to take up the floor over the cistern; for two reasons: First—One can save several inches in height by taking the joists out and letting the floor rest on nailing pieces set in the concrete. Second—There does not seem to be any way of making a fireproof or, in fact, any kind of ceiling to the vault unless the floor is removed.

After the floor is out of the way the construction of the

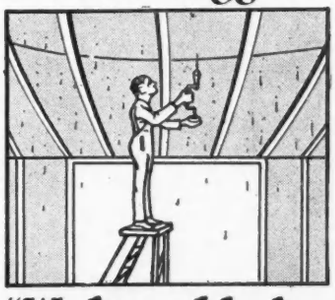
(*Continued to page 82.*)

LITTLE STORIES IN *DEPENDABILITY*

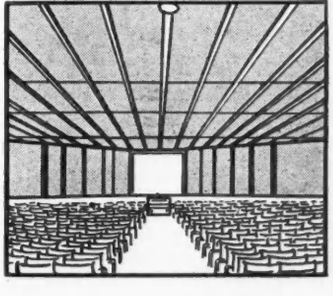
"We Upsonized the Auditorium ceiling before the roof was mended—then it rained."

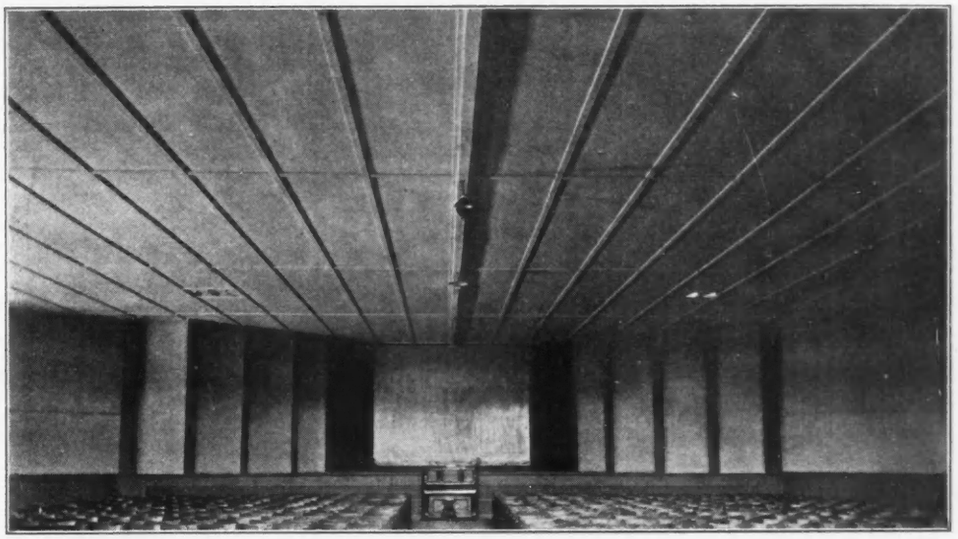


"For over a day the water lay in pools inches deep and the Board sagged."



"We bored holes to let the water out—and in a few days you'd never know there had been a leak."





Over 18,000 feet of giant 22′ Upson Board panels were used in Upsonizing this Convention Hall, in a city of western New York. In spite of the serious leaking of the roof—described in the illustrated story—not one panel had to be replaced!

THERE was the case of Exposition buildings where thousands of feet of unsatisfactory wall board had to be torn out, and Upson Board installed—without one complaint thereafter. There was a difficult wall board ceiling job in a hotel dining-room where repairs were constant until Upson Board was finally used. We wish you could read the Upson Board reports of certain unusual factory installations; of survival of floods and fires; of Upson Board holding fast under the concussion of cannon fire.

The hundreds of these reports in our files—and the hundreds of other reports that have come to our dealers' ears—go far toward showing why carpenters everywhere are learning that there **is** a DEPENDABLE wall board. They show why nearly every day adds discriminating carpenters to the list of Upsonizers.

Facts of **actual accomplishment** are one thing. Mere **claims** are quite another thing. This is the difference between Upson Board, that has made good in **actual use**—and inferior imitations that make good only on the paper where they are advertised.

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 waterproofed; surface-filled to give a perfect painting surface.
6. Cost of finishing included, it is by far the most economical board for your customer.
7. Made in the most complete line.
8. Holds the efficiency record of LESS THAN ONE COMPLAINT TO EVERY 2,000,000 FEET SOLD AND USED.

UPSON PROCESSED BOARD — LOOK FOR ME! "SUNNY" UPSON

UPSON PROCESSED BOARD

BY INVITATION MEMBER OF

The Most Dependable Board Made in America

Upson Board superiority is endorsed by our invitation to membership in the Rice Leaders of the World Association—composed of 22 of the largest and most reputable manufacturers in America. The qualifications for membership are: HONOR in Business; QUALITY in Product; STRENGTH in Finance; Efficiency in SERVICE.

You can easily prove for yourself why Upson Board is known as the "standardized" board. Send today for your samples of Upson Board, and give them a thorough, practical test against any other wall board on the market. We leave it entirely to you to quickly discover the many important points of difference. We will also send you facts on wall board installation trade that it will pay you to know.

"What UPSON **does** today, imitators **attempt** tomorrow."

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.

THE UPSON CO., *Fiber Board Authorities* **57 Upson Point, Lockport, N.Y.**

LOOK FOR THE FAMOUS *BLUE* CENTER

Correspondence Department

(*Continued from page 80.*)

ceiling will present no great difficulties.

As to the side walls needing a brick lining, this will depend on the condition of the old walls. How would it do to line them with metal lath and put stucco on?

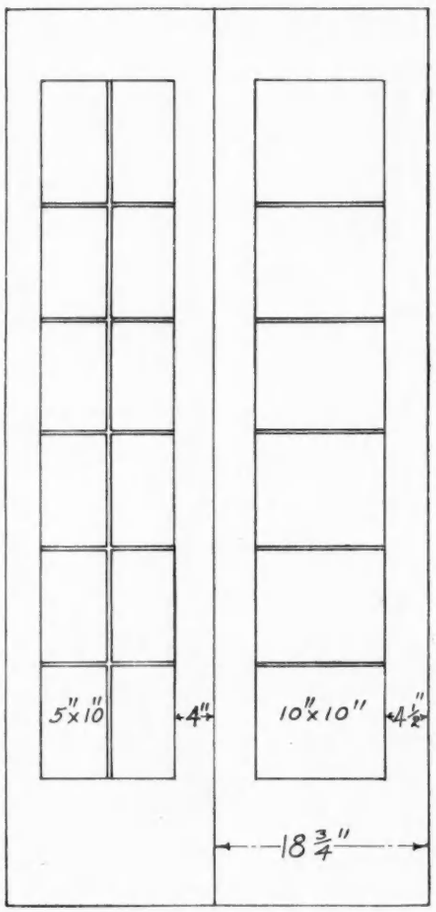
To get the electric light wire in I would put in a half-inch pipe and run wires thru this. The pipe could have a curve in it, but there should be no short turns.

JOHN UPTON.

French Doors

To the Editor: La Fargeville, N. Y.

D. A. Haff asks in the June issue about French doors for an opening 6 feet 3 inches wide. This is rather a narrow space for four doors. It would seem better to make only two doors if this would be satisfactory, but if there are to be four, they can be only 18¾ inches wide. I wonder if it would look as well to have only one row of lights in them or if they should have two rows. Two rows would mean glass only 5 inches wide and as the doors are to be 6 feet 9 inches high they would look somewhat odd.



Design for Pair of French Doors.

By having only one row of glass the stiles could be a little wider and this would tend to make the door look better, as it would avoid the appearance of height and narrowness.

JOHN UPTON.

Coke-Concrete

To the Editor: Walnut, Ill.

I have a copy of a letter written you January 17, 1916, by Kohl & Myer Company, of Du Quoin, Ill., in regard to a concrete building which I built for them, using coke as an aggregate.

You asked me to give you details of the construction, etc. Being a poor writer, I neglected to do so. The subject is still open, and possibly of more interest today than then.

I have written to the Bureau of Standards at Washington for tests on this material and my request was turned over to the Shipbuilding Department, who are making test, which will be available soon.

(*Continued to page 84.*)

(*Continued from page 82.*)

I am at Walnut erecting a coke-concrete dwelling at present. This is the fourth dwelling at this place. We used coke for walls, partitions, floors and ceilings, making an all-fireproof dwelling. We are building these walls by the Aiken system of raising the walls in units.

I erected a hog house last winter between Christmas and March 1 during the cold winter weather, having no other appliances than can be found on any farm. This building is 21 feet wide by 90 feet long, walls 8 feet high, and a coke-concrete mix for walls and roof. The building is just as I left it on March 1. T. H. HOLLIGSHEAD, Supt.

✣

Remedy for Wood Borers Wanted

To the Editor: Azusa, Cal.

I have been taking your journal for ten years and have come to believe that you can give us carpenters information of value on all subjects in our line. I am going to ask for information on a subject I have never seen discussed by you.

How would you handle a building infested with "Termites" or "white ants" (wood eaters)? I was called to put a new oak sill in a very nice residence, and on investigation found the sill eaten to a sawdust pulp by small creatures about ¼ inch long and resembling a white ant in appearance. From the door sill they had passed into the Oregon pine sill of the house 6x6 inches and completely destroyed 18 feet of it, and from it passed into the cross timbers of 4x4 inches Oregon pine which support the lower story floor joists. On jarring these timbers with a hammer, wood dust pours out of them from one end to the other. I do not know where to draw the line between the good and infected wood.

Do you know of any way to treat these insects effectually without wrecking the building to get at them?

CHAS. H. EDWARDS.

Answer—We can only put this proposition up to our readers. Perhaps some of them have had experience and will volunteer the answer. EDITOR.

✣

Quite a Builder's Library

To the Editor: La Fargeville, N. Y.

I enclose check for $2.00 for subscription to AMERICAN BUILDER and book, "Architectural Drawing." I have "How to Read Plans," "Cement and How to Use It," "Details of Building Construction," "House, Barn and Roof Framing," and "Guaranteed Building Plans."

I find that I need the AMERICAN BUILDER more each year and get more help from it. I should say that it is all right to bind the blueprints in the magazine, for if one really wants to he can cut them out. I think that farm buildings will be helpful to many of us, and that blueprints of such houses as you show in the monthly portfolio would suit some. Perhaps some interior details, as built-in furniture for library and kitchen, and maybe some other furniture, as tables or chairs, would go well. But other people may wish something else, so let them speak.

✣ JOHN UPTON.

Some Rafter Dope

To the Editor: LaFargeville, N. Y.

In the July number a reader asks about a system for telling the different pitches of roofs and how to get the lengths of rafters, and an explanation of these may be helpful to a number of readers.

If the peak is as high above the plate as half the width of

(*Continued to page 86.*)

Above Houses Designed by Davis, McGrath & Kiessling

Our Lighting Fixture Service For Industrial Housing

SIXTY years of conscientious service in the manufacture of exclusive Lighting Fixtures, unexcelled for conception of design, artistry and workmanship has established the name and prestige of Mitchell Vance Co., Inc.

Mindful, however, of the Emergency Needs of Properly Housing Industrial America, working to Win this War, we have reorganized our plant and with the use of Vanco Bronze, the New Metal which retains our full guarantee but revolutionizes the cost—

We Will on 10 Days' Notice

Deliver Lighting Fixtures Up to One Thousand Houses Weekly

We offer complete sets, including cast and spun fixtures, wired complete with glassware and tripods, ready to hang (no insulating joints) with choice of six beautiful and permanent finishes from

$15.25 for a Six Room House and Upwards

Vanco Bronze Lighting Fixtures for the house of $3000.00 or less will average as low as $2.50 an outlet. In our more elaborate selections are all the standard and many other rare and unusual finishes.

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MITCHELL VANCE CO., INC.

Sole Producers of VANCO BRONZE, The New Metal

Offices, Factory and Display Rooms:

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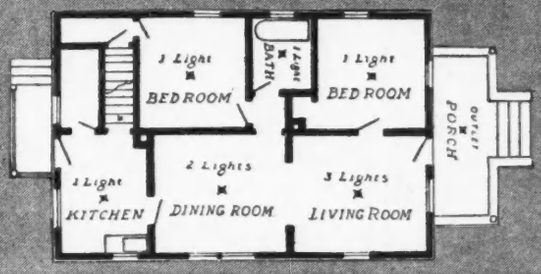


Correspondence Department

(*Continued from page 84.*)

the building, the roof is called half pitch. If the height of the peak is one-third the width, it is one-third pitch, and the same for the other fractions as ¼, ⅜, ⅝, etc. It would seem that the pitch was originally taken from the fraction of the width and not from the rise per foot of run of the rafter; for if a rafter rises as many feet as it runs it is called half pitch. When it has a rise of 8 inches to a foot it is one-third pitch; as 8 is one-third of 24, tho two-thirds of 12, so one must take twice the run to get the span, which is divided by the total rise, not the rise per foot, unless the width happens to be 24 ft. This shows that we must know the width of the building to get the length of the rafters.

Most roofs are between one-third and one-half pitch, but on gambrel roofs we find more than one-half pitch for the lower part and less than one-third for the upper part.

There are several ways to get the lengths of rafters. One is:

For ¼ pitch multiply span by .559 or 7/12 nearly
For ⅓ pitch multiply span by .6 or 3/5.
For ⅜ pitch multiply span by .625 or ⅝.
For ½ pitch multiply span by .71 or 7/10.
For ⅝ pitch multiply span by .8 or 4/5.

Another way is to multiply the span by a given number for each pitch or rise per foot run. Still another way is to add a certain amount for each foot run. These two methods are practically the same. Since with a 10 ft. span we may multiply by 17 and get 170, or add 50 inches to the 120 inches of run.

The following table gives more data:

Pitch	Rise Per Foot Run, Inches	Multiply Run by	For Each Foot Add, Inch
1/12	2	12.17	1/5
1/6	4	12.65	2/3
¼	6	13.89	1 9/10
⅓	8	14.42	2 4/10
⅜	9	15.	3.
5/12	10	15.62	3 3/5
½	12	16.97	5.
⅝	15	19.21	7 1/5
¾	18	21.63	9 3/5

These were originally figured out by square root, using the rise and run as two sides of a right angle triangle, squaring their lengths and extracting the square root of their sum for the third side.

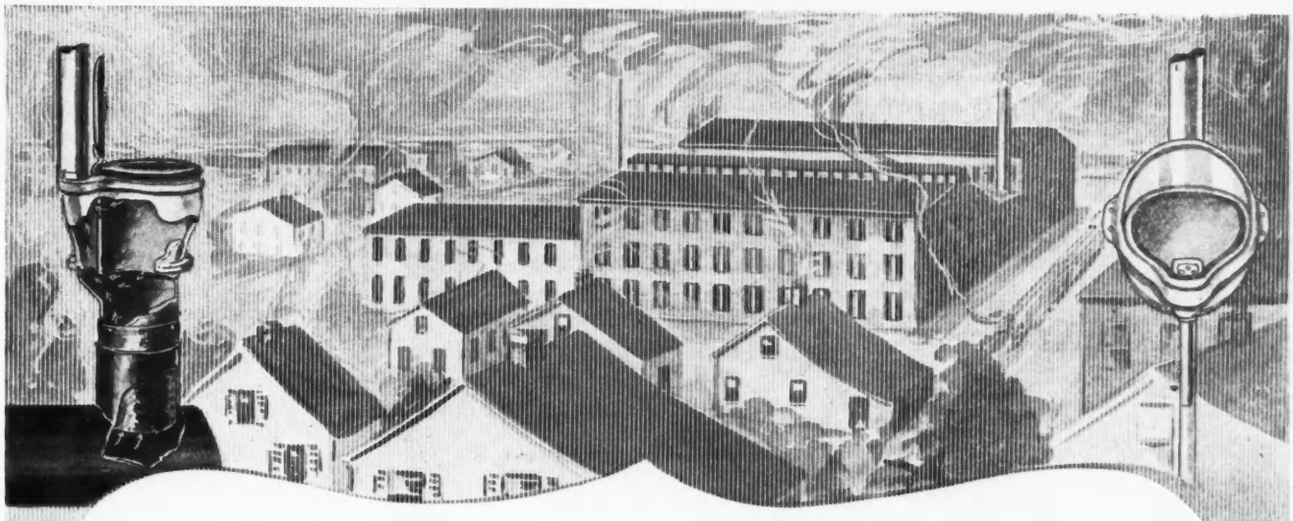
This is the most accurate way to get the length of a rafter. The carpenter will get it by measuring across his square from the figure representing the rise to that for the run, or when he has a square corner on the sills can measure across that, and get it full size.

Or he may get it directly on the stick by applying the square as many times as there are feet in the run, placing it so as to bring the right figures at the edge of the stick.

It makes some difference whether we want the length for marking out a rafter, or whether we want to know how long a stick need be to make a rafter, for they may or may not project an uncertain distance below or beyond the plate. The lengths found by these rules are from peak to edge of plate, or directly above it. If there is to be a projection or tail this must be added on, commonly 14 inches or more. Sometimes this is a separate piece of different material as ornamental stubs for open cornice or those on gambrel roofs at a less pitch to get more projection for the same length.

A few inches shortage on a rafter will not matter much if the rest of the work is made to agree with it. That is, for a half pitch roof of 24 ft. span the length figures practically 17 ft., but an 18 ft. stick could be used and still give enough

(*Continued to page 88.*)



SPEED, COST, and EFFICIENCY Demand

Kaustine Waterless Toilet Equipment

In Factories and Villages Being Built for War Work

In less than thirty days we have installed complete Kaustine Equipment in entire villages. In cost, such an installation will average a great deal less than a water system of equal capacity. In certainty of service, the Kaustine System is most satisfactory. There are no pipes to clog or freeze; no complicated parts to get out of order; no flush valves, joints or traps that require frequent attention.

Kaustine Waterless Toilet Equipment

provides complete disposal of sewage matter by means of a large "Armco" Iron Tank in which is kept the powerful germicide *Kaustine*. As sewage matter enters the tank, this germicide effects an immediate sterilization and purification. All germs are destroyed and the ventilating system carries off any temporary odor, automatically. This system safeguards the health. No untreated sewage escapes. It is as comfortable and convenient as a water toilet.

Let Our Engineers Help You Plan Installations

Our Engineers are at your service to plan installations of from one single unit to one thousand or more houses. We prefer to work with local contractors or builders, but if it is your desire that we handle the entire job, we will be glad to figure on that basis. Write us if you are working on or know of an industrial housing job without sewers. We can show you the way to profits on the securing of good sized contracts.

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Home Office: BUFFALO, N. Y.

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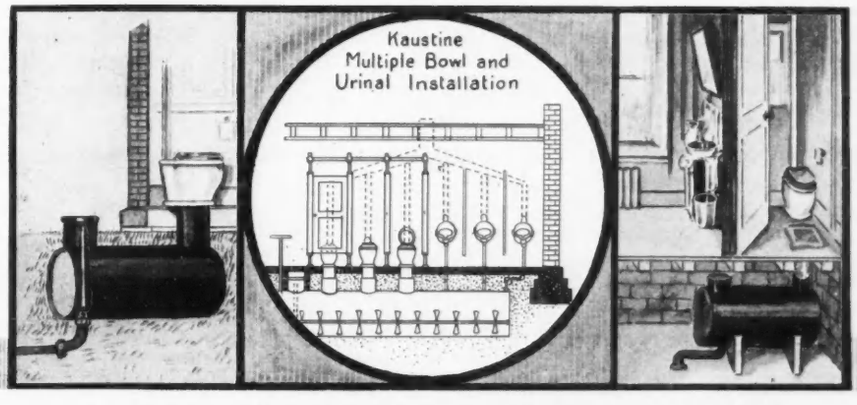


Spokane, Wash.

Philadelphia, Pa.

Kaustine Co. Ltd. Toronto, Ont. Canada

(Continued from page 86.)

projection if the pitch is cut down a little, rather than get 20 ft. sticks and waste the difference. Tho if more than 16 inches projection was wanted in this case it would be best to get longer stuff.

For hip and valley rafters, multiply the run of common rafter in feet by 17, or add 5 inches for each foot to get run of hip. Or get length from length of common in same way, 17 inches instead of 12. JOHN UPTON.

✣

Nails for Roll Roofing

To the Editor: LaFargeville, N. Y.

I wonder where H. J. Blacklidge has been getting his prepared roofing? I have used quite a little of it of several different kinds and have not had much of the trouble which he mentions.

As to cement, there is not too much if you have to do much flashing around chimneys and against the side of a house. Then this same cement is all right for patching holes in old roofs or those actually made in new work.

As to nails, there is sometimes a shortage in number, tho never in sizes; but I always aim to get some extra ones before beginning work, for those furnished are generally too short, especially if used where old shingles are left on. In such work I like to get tin roofing caps and use a three, four or even six-penny nail with them, and then I am sure that some part will stay. For new work on sound roof boards shorter nails will work. I think there is a nail made, called the Siptex combined nail and cap, which looks good to me, tho I have not used it. When I wish to make a good looking job I take a strip of wood two inches wide and run it around the edge so as to cover the edge of the roofing, and the nails and caps as well. JOHN UPTON.

Mortise and Tenon for Re-Silling

To the Editor: La Fargeville, N. Y.

In reply to J. B. Syddleman in June issue I would say that in re-silling a barn one can join the sills with mortise and tenon if desired and make a good job of it. I had such a job and the owner wanted it this way. One old carpenter said that it could not be done; but others said it could. I think that this way is stronger than spiking, and better where a barn is to be raised or moved. If it were merely to sit still it would not matter so much.

As to the accordion doors, I do not see any reason why they should not be satisfactory. But why not use some kind of overhead trolley hanger, such as are advertised in this magazine? It would seem that these would solve the problem. Surely such things are worth looking into in case one might want to use them.

This idea of fast work about which we read so much is all right at times; but it is more important to do work well than to do it fast.

When one has to reshingle a roof that has been on only a few years because the other man was in a hurry and only half nailed them, he gets tired of fast work and becomes a crank in that he insists on the work being done right or not at all.

There are times when everything seems to come right and one can get along with the work rapidly. Then there are times when the opposite seems to be true and one must take more time for the same work.

All would be well if we all said like one man, "It is not how much you do, but how you do it." If you do a man a good job he will forget about the cost, but if it is not good he will never be suited.

JOHN UPTON.

THE illustrations show a practical way of solving the wartime industrial housing problem. We have selected for an example a workman's home in Youngstown, Ohio. A miniature reproduction of the completed house is shown, also front elevation, first floor plan and section through building. This is the no-sheathing type of metal lath and stucco construction. Herringbone Rigid Metal Lath was applied directly to the studs, plastered on the outside and then back-plastered so as to cover fully and imbed the lath.

Practical Industrial Homes

THE Government has indorsed metal lath and stucco construction. Workmen are kept in better condition when they are housed with their families in the comfortable, attractive homes made possible by metal lath and stucco. Such building materials have these wartime advantages:

They are easily handled and quickly erected. They frequently can be found on the job or close to point of building.

When shipped by freight, the saving of car space (metal lath for a given job requires much less space than other materials) is a valuable consideration.

Any high-grade metal lath makes safe and permanent outside stucco walls or inside plaster walls, and ceilings. But Herringbone Rigid Metal Lath is especially desirable because of its exceptional rigidity, due to the heavy longitudinal ribs set at an angle of 45 degrees to the plane of the lath.

The Herringbone clinches the plaster and the plaster clinches the Herringbone in an unbreakable grip. Herringbone industrial homes are cool in summer, warm in winter; fire-safe; mice, vermin, moisture and decay proof.

Herringbone industrial homes are comparatively economical to build and most economical in the end, because repair and repainting bills are practically eliminated. These houses are not built overnight to fall apart in a year. They can be rapidly erected, but they will last through many generations.

Because of its facilities for distributing metal lath in all principal centers, The General Fireproofing Company is in an unusually favorable position to serve the builders of industrial homes. We shall gladly furnish complete information and give every possible assistance to architects and engineers interested in this type of construction. Write:

The GF Industrial Housing Book will be sent free to any interested architect, engineer or contractor on request. To others, upon remittance of $1.00.

The General Fireproofing Co., Youngstown, Ohio

Manufacturers of Metal Lath, Concrete Reinforcements, and Waterproofings

Members of Associated Metal Lath Manufacturers

Branches in Principal Cities

GF

Trade Mark
Reg. U. S. Pat. Off.

Herringbone

RIGID METAL LATH

To Build—or Not to Build

THE June issue of "The Interlocker," a magazine of information on Hollow Interlocking Tile construction, presents the following timely observations:

Every one connected with the building trade—architect, contractor and prospective building owner—is faced with this big question.

It is not a question of how best to keep our business going, but how we best can serve our country.

The men in these callings are like those in every other calling. In the main, they are conscientious citizens and will be guided by that which is right whenever they can find out what it is. It is to be regretted that something like a panic was caused in the building business by the misquoting and misinterpretation placed on the utterances of government officials with reference to building.

Is building necessary or is it not—and if necessary, what buildings should be classed as necessary? It is perfectly obvious that there have been a great many ridiculous claims as to what industries are necessary. One of the first protests against the Fuel Administration's closing order came from the pool and billiard parlors, who feared that the ivory balls on the table might be spoiled from the cold, and there were other protests fully as ridiculous.

The men who make the building industry certainly do not want to be placed in this class, but there is an open question as to what is the desirable procedure at this time.

A hundred prominent statesmen and business men have voiced the principle that our first and foremost duty is to win the war. Nothing can be permitted to interfere with that purpose. Primarily this big national job requires men—money—and material. Wherever building activities would divert any of these essentials from our war work there certainly is no question that such building projects should be abandoned.

Let us analyze these requirements.

First—Men, the military requirements of the government for men have been taken care of wisely and well by the selective service law, by which the government takes from the hands of the individual the matter of deciding whether service to his country is more important than his regular job. Men who should be carrying a gun will not have the opportunity to work in the building trades, thus disposing of that question.

Other men required for government work, such as shipbuilding, munitions making, etc., will be secured by means of the natural law of supply and demand which is making wages for that class of work and conditions of work attractive to men, in addition to the inducement of patriotic duty.

After every positive requirement for men has been filled there will be a great number of men left in the building industry. Naturally these men should be busy, if possible, at their own callings. For it is only by earning the highest wages that they can buy bonds and contribute revenue toward the winning of the war.

Second—Money. The war requirements of money are indeed stupendous, and here is the chief reason why building activity must be curtailed. To put across loans and to take care of other financial requirements the banks must not only loan large sums of money to the government, but they must underwrite a large share of each loan that is floated. This naturally cuts down the money available for building loans.

However, it is well to remember that all the money which is raised by the government thru the Liberty Loans will be spent right here in America. True it has not yet begun to come back to the people in the fullest extent, but even

(*Continued to page 92.*)

A New Angle in the 1918 $50,000 Round Oak National Advertising Campaign

The certainty of increased Sales and Profits should induce every dealer to line up for the big September Round Oak event! Mail coupon for full particulars.

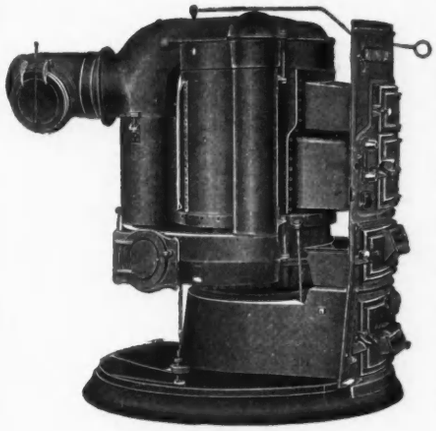
In the September 7th issue of the Saturday Evening Post, we will announce a Round Oak Week (Sept. 7 to 14) playing up in connection with the Round Oak Moistair Heating System, ***three other equally well known and universally sold Round Oak products.***

Also manufacturers of the Genuine Round Oak Stoves, Boiler Iron Ranges and combination Coal & Gas Ranges

If your are a Round Oak merchant, ***decide here and now*** to cash in to the maximum on this event, and write for particulars. If you are ***not*** in the Round Oak family, investigate. Let us show you what sales, profits and real factory co-operation are available to you. Investigate the

Round Oak
Moistair Heating System

The Only Heating System that Automatically Ventilates and Humidifies



Five Star Points of Round Oak Supremacy

***Comfort**—Circulates pure, warm, everchanging air, free from dust, gas, and smoke—automatically humidified like nature's way.

***Health**—The one heating system that automatically ventilates and properly moistens the air you breathe.

***Economy**—Longest fire travel, steals most heat from chimney. Perfected hot blast, extra-deep fire pot and combustion chamber over size, guarantee complete combustion with all fuels—Absolute control.

***Convenience**—Single regulation controls entire system. Automatic sprinkler guarantees dustless removal of ashes—extra-large ground feed doors—Burns all fuels.

***Durability**—Materials used stand highest physical tests. All hinge pieces drilled, not cast. Never a bolt where a rivet will do! Tight fittings guaranteed. Renders more than a generation of Supreme Service.

Constant re-iteration of the Round Oak story of Comfort, Health and Economy—in the forcefully written, graphically illustrated full page advertisements in the Saturday Evening Post, Country Gentleman and Literary Digest, has resulted in a Nation-wide investigation and demand for this Improved, Powerful heating system.

All over the United States, indifference has been turned into ***interest***—interest into ***demand***—demand into actual ***sales.*** Not a live Round Oak merchant who hasn't been ***cashing in!***—who won't cash in bigger than ever this Fall! Who won't sell an increased number of other Round Oak products as well as Round Oak Moistair Heating Systems as a result of Round Oak quality, backed by the $50,000 Round Oak Advertising Campaign, and the factory co-operation which we liberally give the dealer.

You should send for our book of "Sales and Profits"—explains all—shows how in a short time you can control the high grade profitable heating business in your locality—proves every claim made. FREE! Write for copy now. Send coupon to

The Beckwith Company *Round Oak Folks*

Established 1871 178 Front Street Dowagiac, Michigan

THE BECKWITH CO. *Round Oak Folks,*
178 Front St., Dowagiac, Mich.

Gentlemen:

Without obligation, please send us full det ils of your 1918 plans for increasing local sales of Round Oak Moistair Heating Systems, also a copy of your "Sales and Profit" book as well as your catalog, prices, terms, etc.

Yours very truly,

Name_____

Address_____

To Build or Not to Build

(*Continued from page 90.*)

today most people are earning and spending far more than ever before, so it is evident there will continue to be a great deal of money in circulation.

The magnificent subscriptions to the Liberty Loan and contributions to the Red Cross the country over show that people are certainly not holding back from any of these but are doing their full share. If they still have money to invest in building, why in the world should they not put it to that purpose? The banks are close to the government and will not lend money for building unless they feel that the building should be done. This is the best kind of an automatic check on building work and will prevent any building from going on which would hinder war activities.

Third—Material. No shortage whatever exists in most lines of building material. The big exception is steel, and fortunately most of the buildings which require steel are buildings which are used for government work, anyway, and can secure steel thru priority orders. Another point is that the government can get anything in the way of material which it wants, and no ordinary builder's requirements will be allowed to interfere in the slightest measure with war work.

Now, as to the work which men in the building trade can do during this war period. There are many architects who have devoted their time largely to monumental buildings who will naturally sacrifice their work during the war period. Many of these men are already in the government service or helping on the big government building problems. Others have before them the greatest opportunity of their lives for service in devoting their attention to workmen's housing, beautifying communities, building better farm buildings and other work which, tho not remunerative, has been long needed.

Contractors are already busy in the government service in cantonments, warehouses and other buildings pertaining to government work. Large contracts for factory buildings will continue to be let until long after the war has ceased.

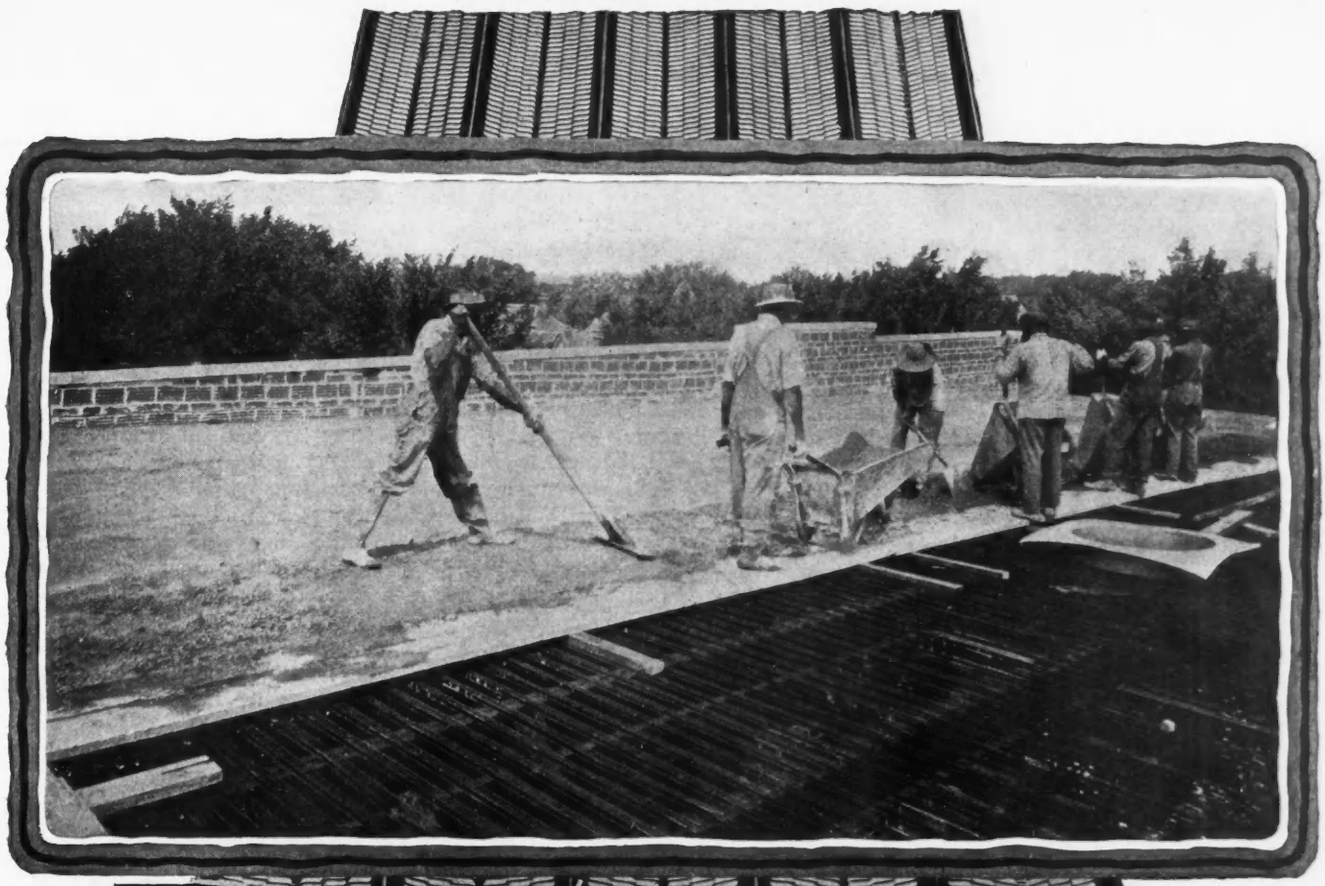
Now let us examine for a few moments the different classes of buildings which represent the country's most urgent needs at this time.

Homes—There is not a city in the United States where workmen have sufficient good housing facilities. The government has recognized this and knows that good housing is a tremendous factor in securing the best work and maximum production from working men. In fact, the government is in a number of cases financing the erection of proper homes in the vicinity of munition works. However, all of this work cannot be done in this way, and a great deal must be done by encouraging workmen to build their own homes.

Workmen the country over are earning more than ever before. While the cost of living has gone up somewhat, it is undoubtedly true these workmen are earning so much that they feel they can earn sufficient for their needs in four or five days' work and are laying off the other one or two days. It is one of the greatest problems of war work to induce the men to work these extra days. It can be done only by giving them an interest in something which will make them want the extra money they might earn. There can be no better way of doing this than interesting them in a permanent home.

Not only will it stimulate more work, but it will make them better workmen. Now is the time of all times to interest them in saving money for a home. The subscriptions of factory workmen to the Liberty Loan and other patriotic

(*Continued to page 94.*)



RIBPLEX

A COMBINED CENTERING AND REINFORCING

Forms Basis for Roof of High School at Paola, Kans.

Ribplex construction forms light, economical, permanent, fire-resistive concrete roofs at a minimum cost of time, labor and material.

No other centering is required and no carpenter work except temporary supports for longer spans.

Ask Department K-3 for sample of Ribplex

THE BERGER MFG. CO., Canton, Ohio

Branches: Boston New York Philadelphia Chicago St. Louis Minneapolis San Francisco

Export Department: Berger Building, New York City, U. S. A.

To Build or Not to Build

(*Continued from page 92.*)

funds proves beyond doubt that they are doing their share, and still they can have a surplus to invest in building. No architect or contractor need feel that he is unpatriotic in advising a workman to build a home for which the bank is willing to make him a loan.

Schools—This is another place where the demand for building is always far in excess of the supply. A prominent business man in a large city recently spoke against building of more schools in that city, stating that more work should be done in the present buildings. This is another case of total disregard for the facts. For in that city the schools are busy from early morning till late at night. The schedule is arranged for continuous use of every room. It would be impossible to put more children into the schools in the present school houses in that city.

Surely, it is not going to contribute to the winning of the war to put two hundred children into rooms intended for one hundred, to wear out teachers and use inefficient equipment in an attempt to save a building which might be put up without injuring anyone.

Bond issues, it is true, are usually required for school buildings, but we must not forget that all the people have money—more money than they are putting into war work—and that there will always be a limited market for such securities.

Hospitals—The building of hospitals will naturally be curtailed. A very great percentage of the physicians and surgeons have gone to the front and to the cantonments. Contributions and funds ordinarily used for hospital purposes will be doubly hard to get. Under such circumstances artificial restraints on hospital buildings will hardly be necessary or desirable. In any event, it will be a great mistake to build cheap or hurriedly constructed hospitals in any city. This can only defeat the very purpose for which they are erected, viz., better health for the community; and the tendency will be to use them long after better buildings should have replaced them.

Factories—The question of new factory construction automatically takes care of itself. Few manufacturers will build new plants unless they are directly or indirectly of service to the government in the prosecution of the war. There is plenty of room for work on these buildings in the matter of working out more artistic designs, for the buildings will be permanent after the war is over, and to make them tasteful in design will cost but little more and take no longer than to erect a building which will always be an eyesore.

Above all, such factory buildings should be made fireproof. It will not contribute to winning the war to erect buildings for war production where there is a constant hazard of fire. Such buildings have been put up in several instances to the detriment of the whole war program.

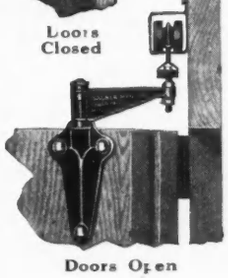
Farm Buildings—Hoover says—and truly—that "Food Will Win the War." Food production and conservation can only be increased by efficient work, and that means good farm buildings. It will not increase the production of meat or milk to have animals in buildings that are cold and dirty. It will not achieve the purpose we are after if we store fruit, potatoes and vegetables in buildings where a large percentage of them will perish rather than to build new warehouses where they are needed.

Insanitary milk houses and creameries will not aid, but hinder, the food production, and they should be replaced by new and better ones. The farm home must be made attractive and comfortable in order to keep labor on the farm. Even patriotic motives will scarcely keep hired help on the farm if they can secure better wages and better living conditions working in munitions factories in the cities.

(*Continued to page 96.*)

FARM BUILDINGS SHOULD HAVE WEATHER-TIGHT DOORS

Doors Closed



Doors Open

Good farmers now recognize the fact that there is a better way of ventilation than open cracks about doors and windows to admit cold blasts. Good, tight, snug-fitting, weather-proof doors are demanded for barns, tool-sheds, granaries, garages and other buildings where a wagon-size opening is necessary. For just such requirements there isn't a better hanger in the world than the

WAGNER CLOZTITE HANGER

With Self-Cleaning, Bird-Proof Track

The Wagner Cloztite is a ball-bearing swivel hanger designed exclusively for folding-sliding doors.

In using this hanger two or three doors are hinged together and operate as one large 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. No sagging, no chance for trolley to come off track, no sticking of doors.

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, bird-proof track. In four, five or six door openings, two hangers are used—one hanger for each set of two or three doors hinged to either side of jamb.

Very little clearance room is required when track is placed on the inside of building—not more than the width of one single door. By putting the track on the outside, no clearance room whatever is required. The hanger and track work as well on the outside of buildings as on the inside.

Wagner Cloztite Hanger is 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 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. When attaching there is no complication or difficulty adjusting brackets. It has a simple vertical adjustment that cannot get out of order.

The Wagner Cloztite Hanger is simply and 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.

Wagner tracks are so constructed that dirt and trash cannot lodge—nor can birds build nests. Trolley can't jump track, stick nor freeze up. Wagner Hangers and Wagner Tracks always make a smooth, easy-working, trouble-free combination.

TWO SIZES

No. 58—Cloztite used with Wagner Leader Track No. 10 or No. 15 for two or three doors having a combined weight not exceeding 600 lbs.

No. 78—Bigger and heavier for two or three big doors having a combined weight not exceeding 1,000 lbs. Used in connection with Wagner Hawkeye Leader Track No. 25.

Write for catalog showing entire line of Wagner Door Hangers and Tracks for every purpose.

WAGNER MFG. CO.

Dept. N **CEDAR FALLS, IOWA**

To Build or Not to Build

(*Continued from page 94.*)

Food Storage Buildings—Here is certainly one of the greatest necessities in the entire country's building program. A large percentage of last year's sweet potatoes perished because of improper storage houses. Millions of bushels of wheat and flour were burned thru storage in wooden elevators and warehouses. The housewives all over the country have exerted every effort to save food in every possible form, yet a great amount of these efforts have gone for naught thru failure to provide buildings which will prevent fire and protect the food against extremes of temperature.

There are many other types of buildings which might be discussed. All of these are sufficient evidence that the building industry is necessary and that building will continue and that the government will not issue any prohibition against so vital an industry.

One thing is sure. If we all make up our minds that business is going to the bow-wows, it will go. If we all rush in and try to carry a gun or work in Washington, we will find out that all cannot serve in this capacity. Then if we sit down and twiddle our thumbs we are going to hurt Uncle Sam far more than we help him.

Let us do our best to find out what our duty is, then attend to it. When in doubt let us ask the government or its representative. When we are called on in person or in pocketbook to do our bit, let us do it cheerfully. Let us devote every energy to winning the war, but meanwhile let us not rock the boat.

Don't Overload Your Motor Truck—A Timely Warning

By H. P. Branstetter

MOTOR truck owners and drivers in helping to relieve the railroads of short hauls by employing trucks for freighting purposes are apt to overload them in their enthusiasm and desire to haul as many tons per load as possible.

The promptness with which inter-city and interstate motor truck transportation companies, Return Loads' Bureaus, etc., were formed, is proof of America's truck owners' and drivers' patriotism. It cannot be estimated at this time how many hundreds of thousands of tons of goods motor truck owners have helped the railroads to move, but that the amount is considerable, can be proven in most every city where the motor truck has been brought into play for this purpose.

But, with the growing scarcity of help in garages, due to the mobilization of the country's mechanics and expert automobile men to keep the Government's trucks and service stations going full speed, it has now become just as patriotic for owners to keep their trucks out of repair shops by not overloading them as to keep them in constant service.

Overloading a motor truck not only results in excessive strains and a greatly accelerated rate of depreciation, but in unnecessary high maintenance cost.

Overloading affects frames, springs, wheels, axles, tires, power plant, and even the driving mechanism—and while the truck is designed with a certain factor of safety, this factor was intended merely for emergencies, and not for continuous and continual abuse.

Overloading means motor truck suicide. While it is true

(*Continued to page 98.*)

Don't Overload Your Motor Truck

(*Continued from page .96*)

that the fatigue of steel is much slower than that of flesh tissues, the fatigue is there just the same.

The first bad effect on the motor truck from overloading is that the springs are forced down to a flattened position. This practice, if kept up, reduces their flexibility, resulting in the springs losing their life and becoming inactive, like a solid bar of steel or iron.

Greater tire wear is another result of overloading. The heavier the load, the harder the tires are forced against the road or pavement, causing greater friction and wear. Truck tires are guaranted for so many miles. The tire manufacturers base their guaranteed mileage on the fixed weight a certain size tire is built to carry. Thus a tire that is carrying an overload cannot possess the mileage of the tire which is carrying the rated load.

Overloading the trucks is equivalent to overloading the motor, because the motor is designed to produce power equivalent to the performance of the truck with a normal load. This shows plainly that if the truck is overloaded, more gear shifting and slower speed, as well as higher gasoline consumption must be expected. For example, the truck with a rated capacity of 5 tons has, we will say, a motor of a size necessary to take this truck with a 5-ton load up a 6 per cent grade without shifting gears. If 2,000 additional pounds were added, shifting gears would be necessary to make the same grade, or it might only make a 4½ per cent grade without shifting gears. And it is the same way on the level road. A truck that is built to carry a rated load at, say, 15 miles an hour would be able to move an overload at probably no greater speed than 10 to 12 miles an hour.

With the axles, wear and greater resistance, caused by excess weight, forces the wheels into the ground. When the power is turned on, the differential gears are subjected to greater stress to move the excess weight. Thus we can see that when the load is too far in excess, the driving effort on the axles will also be excessive.

With the frame built to hold a certain tonnage, an overload is bound to cause a deflection each time it is so overloaded. If the elastic limit is overstepped continually, the frame will eventually break.

It must not be forgotten that the motor truck is built to perform a certain service the same as any other common carrier. I was recently talking with a driver of a motor truck which I knew had been in commission for a considerable number of years. I asked the driver how it was that the truck was in such good condition, and he answered: "Because it has never been overloaded. I make it a point at all times to see that it does not carry more than its rated capacity. I have driven trucks that have been overloaded and I could not get anything out of them. They were always in the repair shop and when they were in commission I was continually forced to shift gears on grades that they should have taken on high with ease. I had to be overcareful in rounding corners for fear that a sudden jolt or slight shifting of weight would prove the breaking point to the axles or frame. I was never sure of reaching my destination without having to stop and tighten up the bolts, and instead of getting ten or twelve miles an hour on a gallon of gas, as I should have, I was lucky if I got four or five.

"While I am on the subject, I want to state that there is just as much science in loading a truck as there is in loading a freight car. A good many owners do not appreciate the fact that if a truck is not evenly loaded—by that I

(*Continued to page 100.*)

Don't Overload Your Motor Truck

(*Continued from page 98.*)

mean the weight evenly distributed—they are subjecting certain parts to the same stress and strain as if the truck was carrying an overload, when in reality it might be carrying only half of its rated capacity.

"In loading a truck, I always ascertain, if possible, just what articles are scheduled to go on—the approximate individual weight, the size and shape, and whether they are boxed or loose. By knowing this beforehand, in loading my truck I can arrange the goods so that when entirely loaded, there is a minimum amount of waste space between the different cases. This not only produces an evenly distributed weight, but makes the load more compact and less liable to slide about while in transit."

If truck drivers would use judgment in loading and insist on not overloading, their trucks would not prematurely wear out, better tire, gasoline and oil mileage would be secured, more dependable service of the trucks would result, which would insure owners meeting shipping and express schedules more easily and with a great deal more certainty.

Truck over-speeding is another habit easy to acquire which results in excessive strains and a greatly accelerated rate of depreciation. The advantages of motor truck haulage over horses are not only a matter of speed, but rather the gain accruing from constant operation in all sorts of weather at any time of the day or night.

Upkeep and depreciation are serious items to the truck owner and the relation between efficiency and speed is of equally vital importance. That's why the over-speeding of heavily loaded trucks in rough and tumble fashion is every bit as dangerous as truck overloading.

The Multiple Dwelling for Industrial Housing

(*Continued from page 50.*)

the man, who a few years ago was a day laborer, is the owner of extensive properties and is engaged in a very profitable building business with a large yearly income.

Experience has proven that there is a ready market for income producing property and in sections where ground values are high, the multiple dwelling provides a much more lucrative investment than the detached house.

In order to make the small apartment building a distinct success, the most important thing to consider is the floor plan of the apartments. An elaborate elevation is entirely unnecessary and only adds to the cost of the building, but when it comes to the floor plan no idea should be overlooked which will economize space or save housework. It costs no more to build from a good plan than it does from a poor one. In fact, poor layouts are often more expensive.

In building for industrial purposes, it is absolutely necessary to keep the building costs down as low as possible whether the apartments are to be rented or sold outright. The average workman is a man with a family of from three to five, consequently maximum sleeping accommodations must be provided without

(*Continued to page 102.*)

The Multiple Dwelling for Industrial Housing

(*Continued from page 100.*)

materially increasing the cost of the building. In carrying out the modern ideas of efficiency, all unnecessary rooms must be dispensed with entirely.

The accompanying floor plans (page 50) are for buildings for four or six families each (depending on whether two or three stories high), and the striking feature of each building is the vast saving of space affected by eliminating bed rooms.

Plan No. 1 is for a building only 32 feet wide and 41 feet long, and can be built on a lot only 40 feet wide, yet there are two apartments on each floor, each apartment having sleeping accommodations for four people. These are really the old style five-room apartments "boiled down" so to speak, to the modern "efficiency" apartments of three rooms. The two bed rooms of the five-room apartment are completely eliminated by concealed beds, which convert the living and dining rooms into sleeping rooms at night. During the day we have the same living room, dining room and kitchen as the old style five-room apartment. At night we have a kitchen and two large, airy sleeping rooms. Each room has private access to the bath room. This plan is used successfully in many sections of the country and is much more efficient than the old plan of eliminating the dining room, compelling the housewife to serve meals in the kitchen.

Sometimes it is advisable to have at least one regular bed room. In such instances a plan such as No. 2 is used. This plan is for a building 34 feet by 42 feet and represents the old style six-room apartment with two bed rooms eliminated, reducing it to four rooms. In addition to the living room, dining room and kitchen there is one bed room. Otherwise the same ideas contained in plan No. 1 are carried out.

The size of any house or apartment is governed entirely by the number of bed rooms it contains; thus a four-room house has one bed room, a five-room house two bed rooms, a six-room house three bed rooms, and so on. The space occupied by these bed rooms is practically wasted, because they are used only a few hours at night for sleeping purposes. All day long these rooms stand idle, yet they cost about as much to build as any other room and the tenant must furnish, heat, light and keep these bed rooms clean.

Great economy in construction, furnishing and housework is gained by eliminating as many bed rooms as possible and making the living and dining rooms do double duty, serving as bed rooms at night when they are no longer needed for other purposes.

Concealed beds have been used successfully for many years in high grade apartments and residences, but only in the last two years have their advantages been recognized in connection with industrial housing.

(*Continued to page 104.*)

The Multiple Dwelling for Industrial Housing

(*Continued from page 102.*)

A full size, all metal bed, sanitary in every respect, is concealed in an ordinary clothes closet behind a door only three feet wide. The operation of the bed does not interfere in any way with the closet for clothes hanging purposes. The expense of installing these beds is but a small fraction of the cost of a bed room. Closets must be provided anyway and it is simply a question of planning and arranging these closets properly to receive the beds.

In the plans shown herewith, a bed closet with outside window is provided adjacent to each of the living and dining rooms. These rooms perform their usual functions during the day but when night comes, in ten seconds' time, and with very little effort the beds are swung out of their closets and lowered for use, thereby converting the largest and best ventilated rooms into sleeping rooms. Three rooms will serve as five and four rooms can be made to serve as six by taking advantage of this method of planning.

There is a wide variance of opinion as to whether or not an industrial house should have a bath room. There are arguments in favor of each plan. A bath room represents a considerable expense and in many instances it is dispensed with entirely. Some authorities contend that a great many people have never been accustomed to bath rooms and do not appreciate them. Personally, I have inspected a number of workmen's houses where the bath tubs were utilized for coal bins and other purposes, particularly among the foreign element, but in a great majority of cases I should say that a well equipped bath room is a very good investment and that a building so equipped will attract a better class of people.

In planning industrial houses, it is advisable not to make the rooms any larger than necessary so as to keep construction cost down as low as possible. Large rooms are more expensive to furnish and require more housework to keep them clean. Plenty of closet room should be provided and a sufficient number of windows to insure perfect ventilation.

If a dining room is provided, as it should be, the kitchen can be made very small. With the proper kitchen equipment many unnecessary steps are saved for the housewife. A well designed kitchen cabinet eliminates the necessity of a pantry and the ice box should be arranged for outside icing.

The simplest exteriors for these buildings are satisfactory as the average workman does not care for anything elaborate. What he wants is a comfortable home, large enough only to take care of his family without over-crowding. The plans shown offer maximum accommodations in a minimum space and buildings of this character can be erected at a minimum cost.

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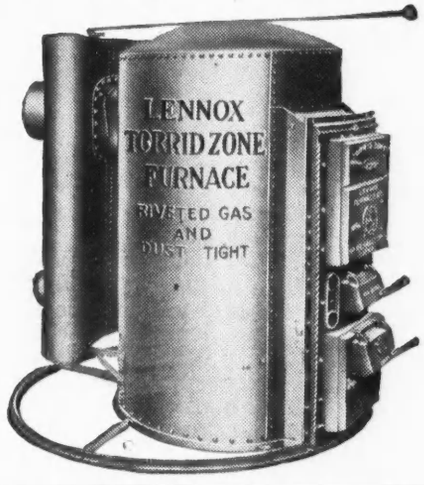

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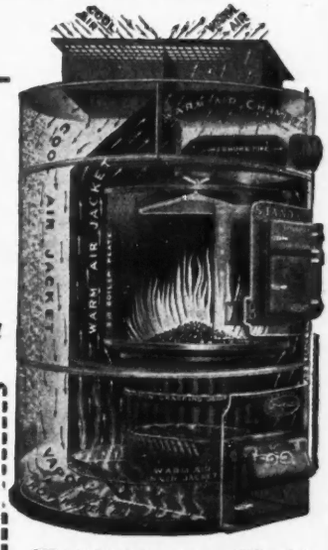

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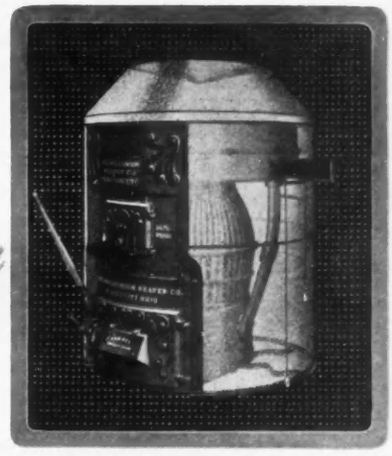

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Farm Sanitation

(*Continued from page 36.*)

Now we must provide a workshop for the aerobes to purify the liquid. The soil is pretty well saturated with air to a depth of eighteen inches and has been called the "living earth," because it teems with millions of microscopical bacteria. These are the aerobes. So we must not get this workshop so low as to get below this "living earth."

Fig. 2 shows a sewage disposal tank of the most approved design. Being provided with both liquifying and syphon tanks, the sewage is discharged into the larger tank where it is liquified but not purified. As it gradually rises higher the bacteria have changed all solid material to liquid and gas. If properly proportioned it will take about six weeks to raise high enough to flow over into the syphon chamber. It is best purified by being spread out in a thin sheet, exposed to air, and protected from direct sunlight. In large plants for cities and towns this is done by means of sand or crushed rock. In a family size it is best to keep it below the surface of the ground, but not so deep as to exclude the air. So the proper and most economical way is to cause it to flow thru common drain tile. These disposal fields, as they are called, should not be covered more than eighteen inches, preferably not over twelve inches. There is no danger of their freezing as the action of the oxygen in the air creates sufficient heat to prevent it.

Fig. 3 shows a single septic tank which is essentially the same as the liquifying tank of Fig. 2. The sewage should flow thru the tanks periodically and not constantly. This because the bacteria in the tile are liable to be washed away before the matter is properly purified. The double tank is much to be preferred.

Fig. 4 shows two disposal fields, the double system is for use where the soil is impervious to water or large systems. The single for smaller or the average farm.

The main tile must be of sewage tile and have cemented joints. The lateral, or side branches of common drainage tile. This main tile from the tank must have a fall of at least one-eighth inch to the foot. The disposal field must be nearly level so that the liquid sewage will flow very gently or lie still, to give the bacteria a chance to work on it and purify it, and the air time to oxygenize it. Besides this time must be given for the purified sewage to soak into the ground. These are the reasons why the sewage must flow to the disposal field periodically and not continuously. The tile may be laid in cinders, sand or gravel if the soil is not porous enough.

It is not necessary for it to soak into the ground, but if arranged as above it can be discharged into a running stream or drainage tile which is already laid.

As it is necessary for the liquid sewage to have air, some provision must be made for it, either by having

(*Continued to page 108.*)

Farm Sanitation

(*Continued from page 106.*)

the end of the field open to the air, as when discharging into a drain or open ditch or stream, or there must be openings in the top of the tanks. This is best done by manholes with perforated tops. Where the tile is open to the air the top of the tanks can be covered with soil and sodded over.

Fig. 5 illustrates two possible locations for the septic tank and the inlet and outlet pipes in relations to the house. The lay of the land determines the location.

Beyond question the common house fly carries many disease germs. Flies revel in filth and it is more than possible that they fly from filthy places directly to the kitchen, lighting on food and babies' toys, depositing the germs of some deadly disease. So the houses should be thoroly well screened and all outbuildings where refuse is left should be cleaned and made fly proof.

✣

A Talk on Butt Hinges

(*Continued from page 31.*)

to Knowem & Showem's Hardware Store, met their architect and proceeded to select their hardware.

The young man who waited on them had given considerable study to what was practical, durable and suitable in hardware and proceeded to give them some very valuable points.

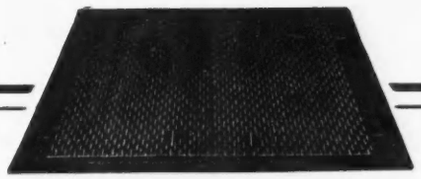
He told them, for instance, of the extreme importance of the hinge. How in the whole subject of hardware, no article deserves more consideration and receives less than the butt, or hinge. How it carries the whole weight of a door and is in constant use, the resulting friction of its parts and the various strains to which they are subjected all tending to produce wear and disturbance. Therefore, butts, or hinges, of proper size and quality should always be used, and economy, if needed, be sought elsewhere than in the use of cheap and inferior butts, of which, unfortunately, there are so many.

He explained to them how the butts are to the door what the foundation is to a house. Just as a foundation that is narrower than it should be for the house it is supporting—so a butt, the knuckles of which are too thin or the metal of which is not the right alloy, will eventually let the door down on the sill.

A badly made butt acts just like some of these old buggies you see and hear on the road. The air is filled with squeaks and groans, the door will not close properly because it drags on the sill, the latch bolt and the deadbolt will not engage in the striker so the door cannot be kept shut, and it is just a general all-round nuisance.

Now, why do people pay so little attention to purchasing the right butts for the house?

(*Continued to page 110.*)



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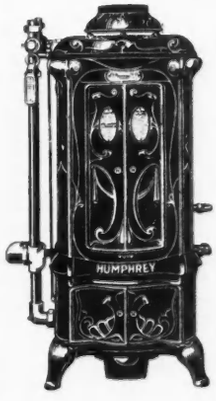

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A Talk on Butt Hinges

(Continued from page 108.)

It is generally because the owner, the architect and the hardware man too often show the butt and simply say, "You see this butt is solid brass"; or "The butts are cast iron"; or "The butts are of steel"; and that is all he says about them. Consequently, Mr. Architect or Mr. Owner are not impressed with the necessity of care in the selection of their butts and the salesman can put in anything he chooses. That "beauty is only skin deep" is just as applicable to a hinge as it is to human beings; particularly as a sample of a butt is usually selected by the salesman with care, so that it will look all right and therefore is accepted by the architect, or the owner, as they do not know much about it and think it is all right.

A high polish on a butt does not necessarily mean that the essentials are properly executed to a point which will bring durability and satisfaction.

In the first place comes the manufacturer. The name of the manufacturer of a butt means just as much in durability as the name of the manufacturer on the lock means security and durability. The name of a well known manufacturer of butts on the leaf means standardized manufacture, correct proportioning at the knuckles, proper inspections, and the proper mixture of elements to produce the correct alloy.

This is an important fact, because in the eyes of the unsophisticated one butt looks as good as another, whereas nine-tenths of the actual value of the butt to the purchaser lies in what manufacturer made it.

Therefore, always find out the name of the manufacturer of the butts you are buying and be sure that it is the name of one of the standard manufacturers.

The second point that interested Mr. and Mrs. Johns so much was in the metals that ought to be used.

Bronze is the best metal, as it is hard and will not rust.

Brass is the next best metal. It is not so hard as bronze, but it will not rust.

Either bronze or brass should be used on all exterior doors or hinged windows. Iron, or steel, no matter how well they are coated (except with paint) will rust and eventually discolor the woodwork.

Butts of bronze or brass should be examined carefully to make sure that the knuckles fit so exactly that at the point of contact the surfaces are absolutely even. If they are uneven, these unevennesses wear down and the butt lets the door down to the sill.

The diameter of the knuckles, or rather the thickness of the wearing surface around the pin and the thickness of the leaf where it joins the knuckle are the most important points in butts as far as strength is concerned. (This has no reference to the metal.)

In inspecting the metal of bronze or brass butts, a comparison of the percentage of copper in the bronze

(Continued to page 112.)

A Talk on Butt Hinges

(Continued from page. 110)

butts can be made by noting the color of the different samples. Those having a deeper tinge of orange have more copper, while those samples, which are supposed to be bronze, are more yellow and brassy and show that the percentage of copper is less. The benefit of having the right percentage of copper in the bronze butt is that the durability increases.

It is perfectly proper to use brass metal in butts if it is desired to have that color for hardware, but even more care must be used in ascertaining the name of the manufacturer of the butt because of its being a comparatively soft metal. Either brass or bronze butts should have self-lubricating washers inserted in each end of each knuckle, retaining a proper portion of surface of bronze, or brass, beyond or outside of the bushing.

Both brass and bronze metal butts are made in cast and in wrought metal. In the former the leaf is generally thick at the knuckle and tapers to the edge. In the latter the metal is of one thickness around the knuckle and in the leaf.

At this point Mr. Johns interrupted to say, "I have made up my mind from what you have said that we must have bronze or brass butts on all our exterior doors and casement windows, but is there not a less expensive butt that we can use for the inside of the house?"

"Yes," said Mrs. Johns, "but I think we ought to have bronze or brass in our bathrooms and in our laundry, because if we use iron or steel the steam would rust them. I know this to be the case, because that is what has happened in the house we are living in now."

"Most certainly," said the builders' hardware man, "you can have either iron or steel on the service parts of the house, but I agree with Mrs. Johns that it is much better to have bronze or brass in the bathrooms and in the laundry."

"Steel," continued the young man, "makes an excellent butt, where it is desired to reduce the cost of the hardware. Steel butts are excellently made mechanically and are thoroughly appropriate for a wide range of uses. The material insures strength and durability and adapts itself to all kinds of finishes, especially to bronze or brass plating. They are made in various qualities and of different thicknesses, and when you are ready I will be very glad to show you the samples.

"Cast iron butts are, when made in exactly the same way and subjected to the same inspection and tests as the bronze butts, extremely durable, and will outwear many other kinds. They also are made in all finishes, including bronze plate, the latter being difficult to distinguish from solid bronze.

"A steel butt can be obtained with ball bearing washers which insures a noiseless easy action, and which prolong the life of the butt."

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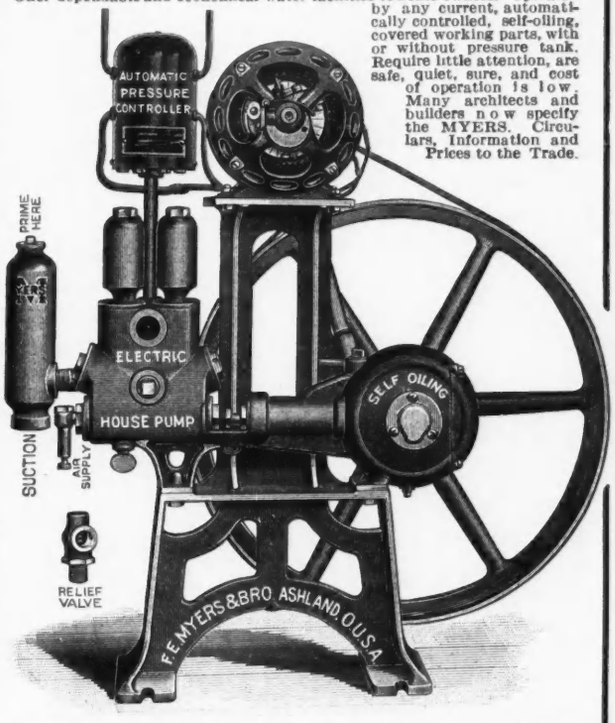

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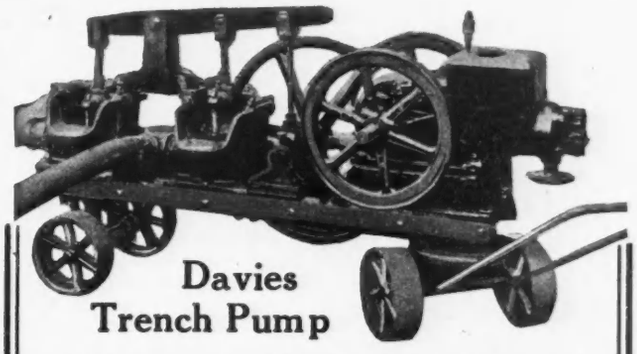

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Patton Paint Co.
Milwaukee, Wis.

Airplane Work Boosts Lumbering Efficiency

(Continued from page 33.)

not thoroly seasoned they are almost worthless.

The problem of speeding up the production was the first essential. This was largely a matter of efficient organization, and it was accomplished in the face of tremendous difficulties. An appeal to the patriotism of the workmen in the woods, however, had its desired results, and today there are no more faithful workers than the men in the spruce forests of the Northwest.

The second problem tackled was the elimination of waste. This was enormous, as the statistics show. Today the waste has been so appreciably reduced that the necessary 167 feet of clear, flawless spruce for each airship is obtained from approximately 500 to 600 feet of rough lumber, a reduction of nearly one-half. This reduction in waste was obtained in the following way:

The old method was to saw the logs in planks paralleling the heart or pith of the tree. Sometimes a single plank would not yield one clear piece sufficient for the longerons of the airship planes. An examination of the growth of the spruce trees showed that the grain of the wood did not run parallel with the heart or pith of the tree, but with the bark. Therefore, in sawing the trees in planks the grain would often be cut down, and an otherwise good log was spoiled for airship construction.

When this discovery was made, the old method of splitting the logs had to be resorted to in order to save waste and get the highest results. But splitting logs by hand was a slow, tiresome method. American genius solved the problem of splitting quickly by devising a pile-driver that would hammer the wedges in automatically. This mechanical beetle or splitter works with great rapidity, driving the wedges in by means of a trip hammer that rises and falls as fast as that used for pile driving. The splitter was portable and easily set up wherever needed. A big log could thus be split up almost as quickly as another could be sawed into planks.

By splitting the logs into beams or "cants" the grain was saved. The government calls for cants 18 to 26 feet in length, and not more than 14 inches thick or more than 3 feet wide on the bark surface. The smallest dimensions of any piece is 7 inches at its minimum point, and must contain at least 50 square inches on its smallest end. The hearts are entirely worthless and discarded, for only the sap wood is used. The base price for this quality of spruce is $90 per thousand feet, with bonuses for speedy work ranging as high as $40 per thousand. No explosives whatever are permitted in splitting the wood. It must be rived with wedges.

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Airplane Work Boosts Lumbering Efficiency

(*Continued from page 114.*)

After having introduced efficient methods of organization in the woods to get out the lumber, and solving the problem of conserving waste thru the employment of mechanical means of splitting the logs so the grain would not be injured, the experts had to face the still harder question of saving time in the seasoning of the material. Thoro seasoning of spruce for airship work by the old air-drying process took all the way from one to three years. Kiln-drying by the old method was much quicker, but the strength and resiliency of the timber were greatly injured. This immediately condemned the spruce for high-grade work. When you consider that the spruce for this purpose must be absolutely free from all checks and flaws of any kind, the problem of seasoning the wood in a short time seems insuperable. It was for a time, and it looked as if our airship production would have to be held up for the lack of properly dried spruce timber.

But this problem was attacked by a large number of experts, and a method of seasoning the timber so that it retains all of its characteristics was developed. This improved method is so remarkable that it is now possible to have seasoned sticks on their way to France within a month after the trees are cut in the woods of the Northwest.

The old kiln-drying was based upon either forcing superheated steam or dry air heated at a high temperature thru the kilns. Both of these had tendency to warp and kill the life of the wood. It made it more or less brittle and liable to check. While satisfactory to many lumbering industries, it would not answer for airship wings. The Tiemann kiln now commonly used in drying spruce for aeroplanes employs only moderate temperatures. The wood is first heated by air so humid that it is on the point of saturation. The kiln is heated all thru before the drying process begins. Temperature, humidity and air circulation are all under control. After the lumber has been heated all thru with moist air, the drying begins under a moderate temperature, and the air regulated so that the flow of internal moisture from the heart of the wood is at the same rate as the surface evaporation. The humidity of the heating air is gradually reduced until only dry temperatures are used. In the old kiln-drying method the rapid evaporation of the surface moisture produced case-hardening, and the heart of the wood, drying more slowly, would tend to check or split. By the new Tiemann process the drying is uniform, going on, if anything, a little more rapidly at the heart than on the surface. The result is no checks or splitting occur, and the wood does not lose its life and elasticity. It takes

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Airplane Work Boosts Lumbering Efficiency

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experts to handle the drying of the wood, to see that the air and moisture are properly regulated.

In no woodworking establishment is the final product subjected to a severer test than in the plants engaged in making airships. Each piece is carefully investigated for checks and flaws. After that the cant is split up into sizes as desired—never sawed. Each piece must be as absolutely flawless as human inspection can make them, for the life of the aviator and his machine depend upon this very perfection of the wing construction.

The new kiln drying of spruce for aviation work will not die with the war. It has made a distinct departure in quick, thoro seasoning of wood that will will be of special value in many other lines of industry when peace comes. Splitting of logs to secure the grain in perfection may also prove a lasting return to the old lumbering methods. There are many other industries in which this method of preparing the lumber might prove of great value. Conservation of material has, of course, been a question of industrial organization for years past, but the lesson learned in airship production may add one more improvement leading to the final goal in which waste is reduced to the minimum.

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A Successful Community Drying Plant

(*Continued from page 43.*)

discarded at a planing mill, having been used there for drawing sawdust and shavings from the planing machines. Another plant was fitted with an exhaust fan which had been used in a foundry for the removal of gases at the forges. Other plants are fitted with fans costing from $25 to $50. Suitable fans can be purchased from any of the fan manufacturing companies.

The main point to keep in mind in the selection of a fan is to get one that will move a sufficient quantity of air. The figures given are for a drier the size here described and give the rate of air movement when the cabinet contains no trays. Air should enter the cabinet at a rate of not less than 1,000 feet per minute, and better results will be secured if the speed is 1,250 feet per minute. This means that the fan should move air at the rate of 7,500 cubic feet per minute, which will change the air in the cabinet approximately 75 times per minute. If the fan will move air fast enough for the suction to hold a piece of cardboard or other material 1 foot square and weighing 8 ounces against the wire screen at the intake end, the drying will proceed satisfactorily.

The most important feature to watch in the construction of a drying plant of this type is the fan. It should be simple in construction, easy of operation, and, above all things, large enough to move great quantities of air. When the 100 trays are filled with fruits and

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A Successful Community Drying Plant

(*Continued from page 118.*)

vegetables it is necessary to move the air rapidly to prevent souring and molding.

The fan may be operated by an electric motor from 2 to 5 horsepower or by a gasoline engine of similar power. With an electric motor the only attention needed in operating is oiling the fan and occasionally the motor. A gasoline motor will require more attention in the way of oil and fuel supply, but even this is simple to operate and understood in every community.

Nebraska's experience with community drying indicates that ordinarily a better-colored and better-flavored product is obtained if no artificial heat is applied. Even in arid countries, however, and always in humid countries, it is best to have equipment for heating. This will be needed when the air contains much moisture, as during rainy spells. Heating the air in the room in which the drying is done will lower its humidity and facilitate the drying. If the temperature of the air is raised above 120 degrees Fahrenheit, however, some of the dried products may be discolored or the natural flavors may be changed. Therefore a heating device should be such that the temperature of the air will not be raised greatly. It should also be one which can be easily constructed from material found in the community.

A very effective method of heating the air is by the use of a hot-water radiator placed at the intake end of the drier. The water in this radiator can be easily heated by means of a small hot-water heater.

The air is drawn thru the hot-water radiator and in passing thru becomes sufficiently heated to raise its temperature considerably, thus lowering the percentage of humidity.

The simplest method of raising the temperature of the air is by having the intake end of the drier in a room in which there is a stove. If this is not convenient, a small room or compartment of sufficient size to contain a stove can be constructed of cheap material, such as wall board. The stove should be within a few feet of the intake end. A good hot fire in the stove will do wonders in accelerating the drying on humid days. Caution should be observed to avoid fire in view of the strong draft flowing from the hot stove to the inflammable dryer.

The Development of the Elevation

(*Continued from page 54.*)

width and position of all door and window openings. These widths may be transferred to the elevation by projecting or by "stepping off" on a strip of paper, that is, with the dividers prick holes in the paper strip and then placing strip on the elevation prick the points off. Altho the latter method is more rapid, it is less accurate unless carefully done.

Draw in the height and position of chimney or chimneys.

From the plan determine the position and sizes of entrance and living porches. Draw in general proportions just such as column height, frieze and cornice heights. Then draw base and cap of column and detail cornice.

In a similar manner block out the main proportions of the dormer. The mouldings of the dormer cornice should be of the same character as those of the main cornice, but of a smaller size.

All windows may now be completed in detail. The rectangles shown in the small elevations represent the sash opening. In completing the window in elevation, the width of the sash—2 inches at the sides and top and 3 inches at the bottom—will come inside of the rectangle, while the casings at the side and the architrave or head casing at the top and sill at the bottom come outside the rectangle.

At the ¼-inch scale the muntins, which separate the upper sash with smaller panes, should be indicated by two lines.

The glass dimensions may be shown in two ways, either on the plan inside the window or on the window in elevation, the width coming first. The common practice is to show it in elevation. Do not indicate glass by a series of light, sloping, shade lines. It is unnecessary as a rule and does not add to the appearance of the elevation.

After the skeleton construction of the cornice is worked out in the staff section, draw in accurately the detail members of the main cornice.

Show the various materials of construction used, such as shingles or slates, siding, brick foundation, etc. Do not cover the entire surface but show only sections, especially around window openings and at the corners. Use notes to supplement the drawing, thus cypress shingles 4½ inches to the weather.

Floor levels should be shown by dotted lines. When a section does not accompany the elevation, stairs, basement, foundations and footings may be indicated by dotted lines.

The staff section or skeleton wall section should always accompany at least one elevation.

With one elevation completed it is a simple matter to draw the remaining elevations by projecting or transferring height from the one already drawn.

Note method of blocking in elevations as illustrated.

Every Country Home

Every country home, or other isolated building that you construct must give your clients perfect satisfaction in every detail. Upon that satisfaction depends your reputation.

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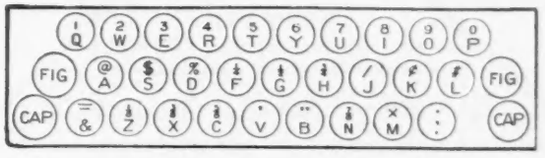

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Modernizing Old Dwellings

(*Continued from page 53.*)

the studs sheathing quilt had been used, making a very warm house. Despite its excellent construction, it had no attractiveness and was sold at a good deal less than it cost.

The old owner had lost sight of the fact that it is the convenient and attractive house that can be sold at a good price when it is necessary to sell. The purchaser saw the possibilities in this house and got a bargain, and with the co-operation of the contractor and the lumber dealer he was able to remodel it into a comfortable, modern home at but slight cost.

But little need be said, as the pictures and plans tell the story better than words can. The principal changes were the addition to the living room and enlarging the front porch.

Downstairs the big kitchen was altered and a new pantry and cupboards built, also a breakfast nook. A partition with a wide cased opening was placed across the old living room, dividing it into a hall and dining room.

The old kitchen was a big, roomy affair. In the remodeling a new pantry was made alongside of the old one, the front wall of which was removed, and what was once the old pantry is now a delightful breakfast nook, and a cupboard adds to the convenience and looks of the kitchen.

Upstairs the greatest convenience of all has been installed, and this is the bathroom—a portion of the large rear bedroom was partitioned off thereby getting this much needed improvement in the house.

A small heating plant in the cellar completed the improvements, and as the house now stands it is thoroly modern and gives one an excellent idea of what can be accomplished by doing a little remodeling to what many thought was an impossible house. The changes to the exterior are very simple and really self-evident.

✣

Central American Wood for Airplanes

Development of the airplane industry is expected to be effected somewhat by the exportation from Central America of Balsa logs, the lightest wood so far known with strength sufficient for practical construction work. It is very porous and is a good insulator.

The Balsa tree is now being planted extensively in some sections of the tropics, has no insect enemies and grows rapidly. In a year it will grow to a height of 10 feet with trunk 4 inches in diameter and will reach 20 feet in two years.

A five-year-old tree is expected to cut 200 board feet, bringing $8 at current prices. There are two varieties, the red and white. Native names for these are the Balsa Colorado and the Balsa Blanca.

Short Talks With Our Subscribers

What is Advertising?

WHY BUILDING CONTRACTORS, LUMBER MANUFACTURERS AND DEALERS SHOULD READ THE ANNOUNCEMENTS IN THE DISPLAY PAGES OF THEIR PAPERS.

ONCE in a while (but not very often these days) the AMERICAN BUILDER gets a comment from a subscriber that too many of its pages are given over to advertising or that the advertising ought to be fixed in such a way that only the reading pages could be bound up and the valuable building information contained in them preserved for future reference.

The advertising pages of any periodical, particularly a paper going to a special class or industry, constitute the most valuable part. There is as much, if not more, genuine instruction in the announcements of new materials, specialties, machinery, tools, equipment and labor-saving devices as can be found in what is known as the "reading" pages.

The AMERICAN BUILDER frequently receives requests for information about some product that was advertised in it a number of years ago. The subscriber remembers reading the advertisement, but did not pay much attention to it at the time. Later on he finds that he needs something of the kind and wants it badly. When a manufacturer develops a new specialty for the building industry, or trade-marks his materials, he shows the confidence he has in it by taking the dealer and the builder into his confidence and backing it up with advertising in the paper that reaches the class of men who are likely to be his best customers.

War times are hard times for the average publisher. The best publications in any field prosper and thrive, but the weaker ones have all they can do to keep their heads above water. The wise advertiser knows that by advertising in the best papers in the various fields he wants to reach he can help the government by saving the expense of sending out travling men, conserving man power, economizing in railroad transportation and still have his message go further and at much smaller expense. He studies the circulation, learns the kind of men that read the papers he is considering, analyzes the character of the information printed in them and judges the interest, influence and buying power of the subscribers.

As a result he selects such papers as the Saturday Evening Post in the popular magazine field, the Literary Digest in the more serious popular magazine field, Popular Mechanics in the semi-technical field, Engineering News-Record in the engineering field and the AMERICAN BUILDER in the building field. Each of these papers has shown a very healthy increase of business this summer in spite of the most adverse publishing and business conditions; but practically every other publication reaching the same classes of readers has suffered a severe drop in advertising.

The AMERICAN BUILDER in August, 1918, published more advertising than in any previous August in its history, while the other two building papers had much less advertising than in any August since 1915.

Contractors and dealers should read and study the advertising pages. There is a wealth of information that will save them money and bring money to them. One lumberman in Northern Indiana read an advertisement in the February, 1918, number of the AMERICAN BUILDER describing farm building equipment, wrote for further information, secured the agency for his territory and has netted nearly $5,000 in the last six months. Many cases like this are known to us.

Contents for September 1918