

AMERICAN BUILDER

Formerly AMERICAN CARPENTER AND BUILDER

Member of the Audit Bureau of Circulations
Circulation Audited and Verified June, 1918

American Builder

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

Published on the first day of each month by

AMERICAN CARPENTER AND BUILDER COMPANY

Publication Offices:

Radford Building, 1827 Prairie Ave., Chicago

EASTERN OFFICE: 261 BROADWAY, NEW YORK CITY

SUBSCRIPTION RATES

One year, \$2.00; six months, \$1.00; single copies, 20 cents. Special rates for two or more subscriptions when received together, to be sent to different addresses—Two subscriptions, \$1.75 each; three subscriptions, \$1.50 each; five subscriptions, \$1.25 each; ten or more subscriptions, \$1.00 each. Extra postage to Canada, 50 cents; to foreign countries, \$1.00.

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VOL. XXVI

November, 1918

No. 2

Opportunities in the Building Industry

WHILE there is much popular complaint over the scarcity of building operations, which is bringing about a period of excessively high rentals, these conditions will prove blessings in disguise at the end of the war if not before.

We believe that the building and construction industry, which is second in importance and magnitude only to agriculture, will prove an industrial and financial shock-absorber in the period of adjustment that will come with the ending of hostilities—a period which to many seems fraught with treacherous possibilities.

Certain it is that the sudden curtailment of demands for munition and other war supplies and the home coming of several hundred thousand young men from the fighting front each month will present a situation such as America has never witnessed before.

There will be thrown on the markets a vast reservoir of man power, and alarm is felt by many as to the results of such a precipitate situation. However, the building industry, by reason of its present stagnation, will be able to absorb a sufficient amount of this oversupply of labor to prevent general unrest.

We believe that the building industry is going to be the first great peace industry to come back to

normal, and it will do this immediately on the cessation of our war efforts. For four years we have been building less than our normal requirements. Private building enterprises have almost entirely ceased, while the special army camp work and the munitions plant work and the government's industrial housing projects have had the right of way. Once the ban is removed from private building there will certainly be the biggest volume of building activity which this country has ever experienced.

This building activity will be widespread. The farmers have more ready money than ever before. The value of farm crops for three years now has been more than 75 per cent above normal. At the same time, for patriotic reasons (as they suppose) the farmers have refrained from making their regular building improvements. This forecasts an immense boom in the farm building field just as soon as the government sounds the word to go ahead.

Without any question, many of the huge manufacturing concerns that have been built up during the past few years to supply war needs will turn to the building field when the war is over. There will be many new lines of building materials and building specialties placed upon the market, and those that are well advised will not long delay in laying their plans to reach this field.

Safeguard Food Stored on Farms

Provide Adequate Protection Against Weathering and Spoilage

*Prepared Especially for the
AMERICAN BUILDER
by the U. S. Food Administration*

THE task of crop production for 1918 is about finished and the implements of agriculture are now being put away for the winter. *But with hammer and saw, with paint pot and brush, with cement tools and kindred equipment, important farm work is still to be done.* From a total harvest, somewhat less than last year, we must now increase our exports of foodstuffs 50 per cent. Instead of making emergency savings of wheat, meats, fats and sugar to maintain the Western Allies as we have already done, the new food program calls for a general saving of all staple foods.

To get this food we must put into operation at once an effective system of saving, a system much more rigorous than last year. Public eating places are already under strict regulations which limit amounts of food that may be served. There are new rules for conservation in the home. But on farms, where most of this food originates, savings will depend on individual resourcefulness. *American farmers are asked to protect from spoilage all food and feed now stored in barns, cribs, granaries and similar buildings. In the aggregate, the amounts of these products are enormous; the opportunity to save is, therefore, correspondingly large.*

Most of this food needs protection, and the following requests for farm conservation illustrate the kind of savings which are especially desired. Farmers are asked to extend this conservation program as much as possible to cover other sources of loss coming under their observation.

Farm Conservation Request

Protect Both Feed and Food

In addition to food intended primarily for human use, feeds such as fodder, hay, root crops and coarse grains play an important part in the food program. They are the basis of meat and milk production, ***and should have adequate protection against spoilage and deterioration.***

Provide Fire Protection

Removal of rubbish, plowing fire guards, proper installation of lightning rods, use of safety lanterns and other improved methods of lighting—these and similiar measures should be supplemented by an equipment of ladders, extinguishers, buckets or water-pressure system. Regard the farm as a food munition establishment and protect it against fire accordingly.

Make Buildings Rat-Proof

Prevent rats from eating holes in our bulwarks of national strength by making the farm buildings rat-proof. Concrete floors and the destruction of all places likely to harbor rats are effective. Regard the rat seriously as the direct enemy of starving humanity.

Keep Roofs in Repair

Prevent spoilage of food and feed deterioration of farm implements by keeping roofs of farm buildings in good repair and implements under cover. ***In proportion to amount of material and time needed, probably few repairs result in as large savings as the maintenance of good roofs.*** Emphasis is placed on tight roofs for poultry houses. Dry henneries are essential to health of fowls and maximum egg production, especially during winter.

Protect Farm Implements

Conservation of farm machinery by paint, grease and other anti-corrosive preparations is suggested. Maximum crop production in America depends on suitable machinery. The prompt

repair of farm equipment and buildings during seasons when farm work is not pressing, means maximum results from minimum labor, both in conservation and production of food.

Save Two Tons Per Farm

During the coming season the United States must export to its armed forces and to its Allies 17½ million tons of foodstuffs, or nearly three tons for each of our six million farms. Before the war our corresponding exports averaged about 5½ million tons, or less than one ton per farm. Thus each average farm is primarily responsible this year for about two tons more food than in pre-war times. Effective conservation efforts in cities and towns are not possible unless they have the food to conserve and the first step is to prevent spoilage of products stored on farms. ***Granaries, cribs and good sheds are especially useful since the extra two tons of foodstuffs must be saved from our 1918 production.***

Stock Losses

More than a million tons of our food exports must comprise meats, fats, dairy products and poultry products. The quantity of this class of food depends largely on comfortable housing and the care which animals receive. Needless exposure and irregular attention may result in reduced production and mortality. Thoro farm conservation demands that live stock be kept comfortable and in healthy condition, thereby securing maximum results from the feed consumed.

Old Buildings and New

Put old buildings in repair and utilize them as fully as possible. Regulations allowing new farm construction, as announced by the War Industries Board, emphasize the need for postponing extensive and unnecessary building operations indefinitely. The regulations are aimed chiefly at saving material, transportation, labor and capital. ***Provision is made, however, for permitting construction of necessary buildings, such as those needed for live stock, crops and machinery.***

The well-recognized merits of silos as store houses of succulent feed, gives this class of farm structure special prominence.

Building operations should be planned to utilize local materials and local labor as much as possible. The kind of structures justified by present conditions may be judged from the following economic trend. The final arrival of peace will increase rather than lessen America's obligations. Already the territory lately recovered has added to the number of destitute people whom we must include under our food guardianship. After the war about 180,000,000 people in addition to the Allies will look to America for food.

These populations include Poland, the Balkans, parts of Russia and certain other European countries now shut off from relief by the war zone. We must have abundant food resources to meet this demand which will come quickly as soon as relief can be sent them. Our ability to supply these stricken millions will be the final test of America's resourcefulness and agricultural efficiency. Such facts point to the needs for postponing luxury building. Farmers and builders are asked to take an international view of the entire situation and plan only for necessary utility structures.

We must not only win the war, but we must emerge from it with our farms properly equipped and herds intact for meeting foreign food demands. These thoughts should be uppermost if we are to fulfill this year's obligations which are imperative and be ready for taking on the new responsibilities that are coming.



Amended Regulation Allows New Farm Construction When Cost Does Not Exceed \$1,000

CHAIRMAN B. M. BARUCH, of the War Industries Board, authorizes the following:

A new regulation controlling nonwar construction for the period of the war adopted by the War Industries Board authorizes new constructions for farm purposes without permit where the aggregate cost involved does not exceed \$1,000.

Exceptions to General Rule

The exceptions from the general regulation laid down by the priorities division of the War Industries Board that all nonwar construction shall be done on special permit includes:

Structures, roads, and other construction projects falling within the following classification: Undertakings, cleared and approved by the War Industries Board, directly by or under contract with the War Industries Board, directly by or under contract with the War Department or the Navy Department, Shipping Board, Emergency Fleet Corporation, the Bureau of Industrial Housing and Transportation of the Department of Labor, or the United States Housing Corporation.

Repairs or Extensions

Repairs of or extensions to existing buildings involving in the aggregate a cost not exceeding \$2,500, and new construction for farm purposes involving in the aggregate a cost not exceeding \$1,000.

Roadways, buildings, and other structures undertaken by or under contract with the Railroad Administration or a railroad operated by such administration.

Those directly connected with mines producing coal, metals, and ferroalloy minerals.

Public highway improvements and street pavements when expressly approved in writing by the United States Highway Council.

No building projects not falling within one of the foregoing classes shall be undertaken without a permit in writing issued by or under authority of the Chief of the Non-War Construction Section of the Priorities Division of the War Industries Board. A local representative of the Council of National Defense will report to the War Industries Board on each proposed project requiring permits.

While it is not the policy of the Government, says the War Industries Board, to interfere unnecessarily with any legitimate business, industry, or construction project it must be borne in mind that there is an imperative and constantly increasing demand for labor, material, and capital for the production and distribution of direct and indirect war needs, to satisfy which much nonwar construction must be deferred. Manufacturers and dealers may continue to supply materials for buildings or constructions started and partly completed.

Drafting Houses

WE are getting so accustomed to all sorts of war drafts that it excites us but to momentary comment when we hear of the government's draft of houses in Washington, D. C. It so happened that some rich folk had winter houses in the national capital and summer homes elsewhere. Usually they lived in New York or Newport, spending but few days in their Washington mansions.

Those were needed for government clerks and officers detained in Washington. They have been commandeered. The Glover House, the Stilson Hutchins' residence and those of the Keans, Beales, McMillans and the Robert T. Lincolns, all were taken by the government and turned into dormitories for war workers in a town where new housing has not been able to keep up with the sudden demand. About 8,000 war workers have been provided for. Every house, not occupied, is to be commandeered.

Already some owners are closing up their New York and Newport residences and hurrying back to Washington to live in their homes. Others are patriotically sending the front door keys to the government and telling it to go as far as it likes in using the houses.



How Uncle Sam Buys Building Lots

THE spending of \$150,000,000, merely as the first installment to meet national housing problems, is not a hard task, according to S. S. Thorpe, Minneapolis real estate man, who is assistant manager in the real estate department of the United States Housing Corporation.

Mr. Thorpe was interviewed recently regarding his part in the management of "the biggest real estate office in the world."

"The United States Housing Corporation surely does do things in a big way," Mr. Thorpe said.

"My first assignment was in an Atlantic seaport town. The navy wanted 600 acres of land and the price was supposed to be about \$920 an acre. I bought it for less than \$300.

"My last assignment, before leaving for the west coast, where I have been for three months, was to obtain some testing ground for target practice at an Atlantic port. The land was said to be worth \$49,000, but we investigated, with the result that it was purchased for \$19,000.

Buying in Ninety-two Cities

"We are now buying property in 92 different cities, and it all is done with the help of the National Real Estate Association and the real estate boards in the cities. I want to say they all are giving us their heartiest co-operation.

"It is estimated we are saving the government \$100,000 a day in the purchase of land alone. It is all

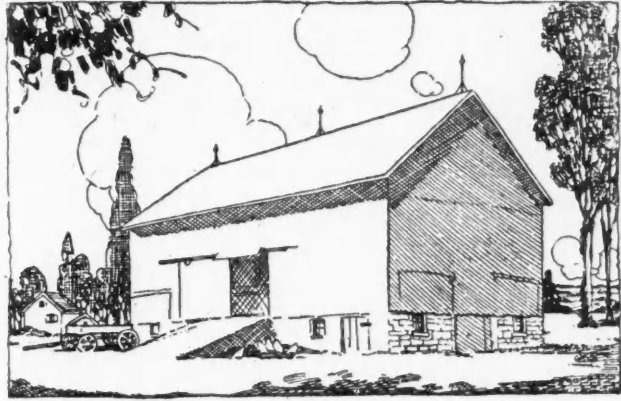
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Ontario Government Urges Lightning Protection

PROVINCIAL MINISTER OF AGRICULTURE BUYS ADVERTISING SPACE TO PREACH IMPORTANCE OF LIGHTNING RODS

UNDER the heading, "Fire Loss from Lightning of \$400,000 a Year Could Be Saved If Ontario's Barns Were All Rodded," the Ontario Department of Agriculture is using a full page of advertising space in the leading farm papers of Canada to convey the following message. It is a

was \$262,282. No doubt the actual loss exceeded the insurance by perhaps one-third or one-half. If so, the actual loss was \$350,000 or over. Ninety-four per cent of this equals \$331,450, which represents the saving that would have been effected that year if all the buildings had been rodded.



1. Barn Protected Against Lightning.

notable indorsement of modern lightning protection methods:

"As a comprehensive conclusion from Ontario Department of Agriculture investigation, we have found that, if all the buildings in rural Ontario were rodded, more than 95 per cent of the annual damage to buildings by lightning would be prevented.

"The method by which this conclusion was arrived at was as follows: In 1912, eighteen insurance companies in Ontario kept special records for us; from their reports we learned that, out of every 7,000 unrodded buildings insured by them, 37 were struck by lightning, while in every 7,000 rodded ones only two were struck by lightning. The rods prevented damage in 35 cases out of an expectancy of 37, showing an efficiency of 94.7 per cent. Since that, we have determined the efficiency for the years 1913, 1914 and 1915. The results for the four years are as follows:

Year.	Efficiency of Rods.
1912	94.7
1913	92.0
1914	99.8
1915	99.9

Average for 4 yrs. 97.2

"To apply these figures: The report of the Superintendent of Insurance shows that in 1912 the insurance paid on losses caused by lightning

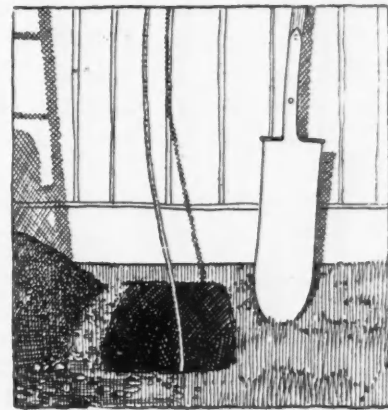
\$400,000 Annual Fire Losses

"In 1913 the insurance paid on lightning losses to buildings was \$305,104, which means a total loss of \$400,000 or more. Ninety-two per cent of this shows a saving of \$368,000 if the buildings had been rodded.

"Similar computations might be made for the other years, if the lightning losses were at hand.

"Investigations along similar lines in Iowa has shown an efficiency of 98.7 per cent for rods in that state, based on the report of 55 mutual companies each year for eight years.

"In Michigan the efficiency of lightning rods has been shown to be from 98 per cent to 99 per cent. In this state many companies keep their rodded and unrodded risks in two separate classes and assess each for its own losses. The reports of eight of these companies for the years 1913, 1914 and 1915 show that—



3. Making a Grounding. The same cable as hanging down silo, sunk 8 feet in ground by drill. The square hole is only a foot deep, just enough to pour in a pail of water to soften the ground for the drill.

In unrodded class, the average assessment per \$1,000 risk.....	\$3.15
In rodded class, the average assessment per \$1,000 risk	\$2.28

"The only possible cause for the difference is the rods on the buildings.

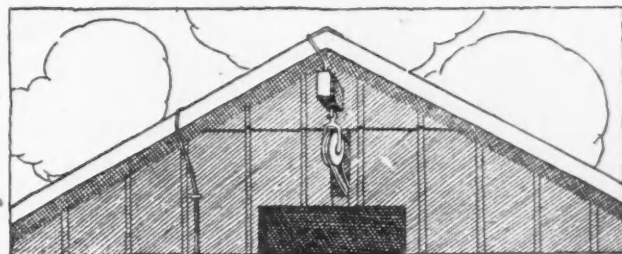
Rods Even Better Than Insurance

"These few facts, which are all matters of record in published reports, establish beyond question the

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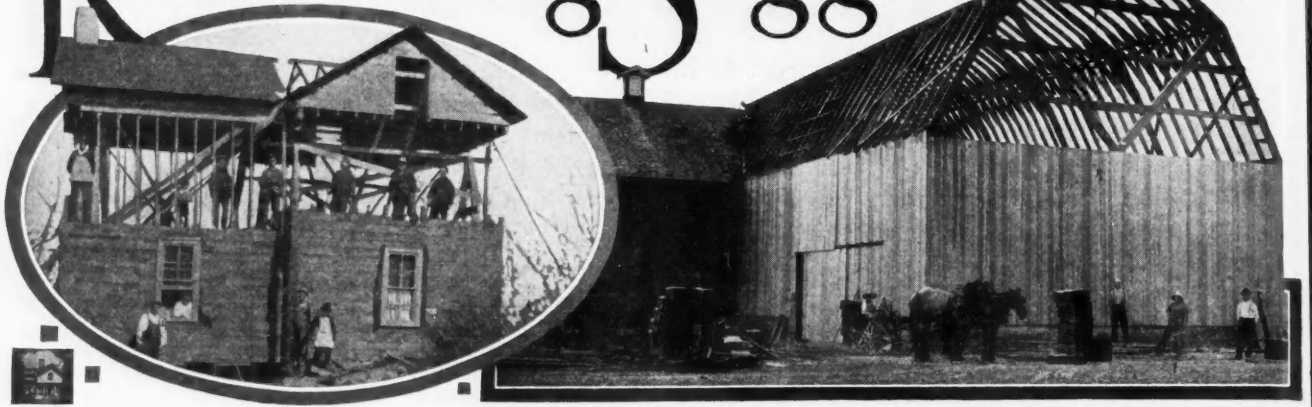


2. Rodding a Silo. Note the Cable Hanging Down Side.



4. Hay Fork Track Connected to Main Cable.

Remodeling Suggestions



How to Modernize a Store Building

PART IV. of a Very Timely Series

By Charles G. Pekar, Architect

THE value of a store depends on the number of people that pass it daily. To get many people to stop and look at the goods displayed is the aim of every live merchant—the first step to making a sale is to get the passerby interested enough

to stop, look at the window display and then come into the store.

An attractive store front is necessary to catch the eye of the passerby. Too many of our stores are unattractive and do not produce the amount of business that should come from the location. For this reason it is a good business investment to remodel the store front, and in doing so one must take into consideration the line of goods to be displayed in the windows.

To display rings and watches requires an altogether different style of store front than to display furniture. Before remodeling consider what the store is to sell and plan the window arrangement so that the goods for sale in that particular store can be attractively displayed.

Many a store simply will need the old divided panes of glass removed and a plate glass put in its place, and just a little simple work on the outside to give it a more snappy appearance; the cost is but very little, and increased trade will soon pay for the improvement. Too many stores still have old-fashioned half-wood, or in some cases all-wood doors! Put in a modern door with plate glass, so that customers can look into the store. Then put on a very good door lock; everybody does that; make it talk the prosperous, successful store.

A very important matter is the lighting of a store window. Don't display a chandelier too prominently unless you are selling them. Use the



How the Old Style Double Decker Looked After Being Remodeled Into a Modern Store Building with Living Apartment Above.



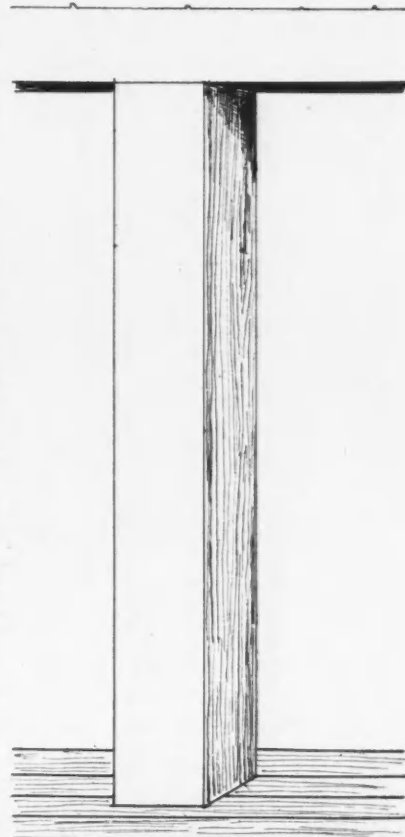
In Many Cities There Are Old Double Deckers Like This on Semi-business Streets. They Remodel Into Useful Store Property.

same temperature; that is to say, the window should be closed off from the heated store and ventilators left so that the outside cold air can get into the display space. To prevent dust coming in the ventilator is covered with a thin piece of cloth. The window can be closed off from the store by means of a wood, glass or wallboard partition, or any combination of these materials.

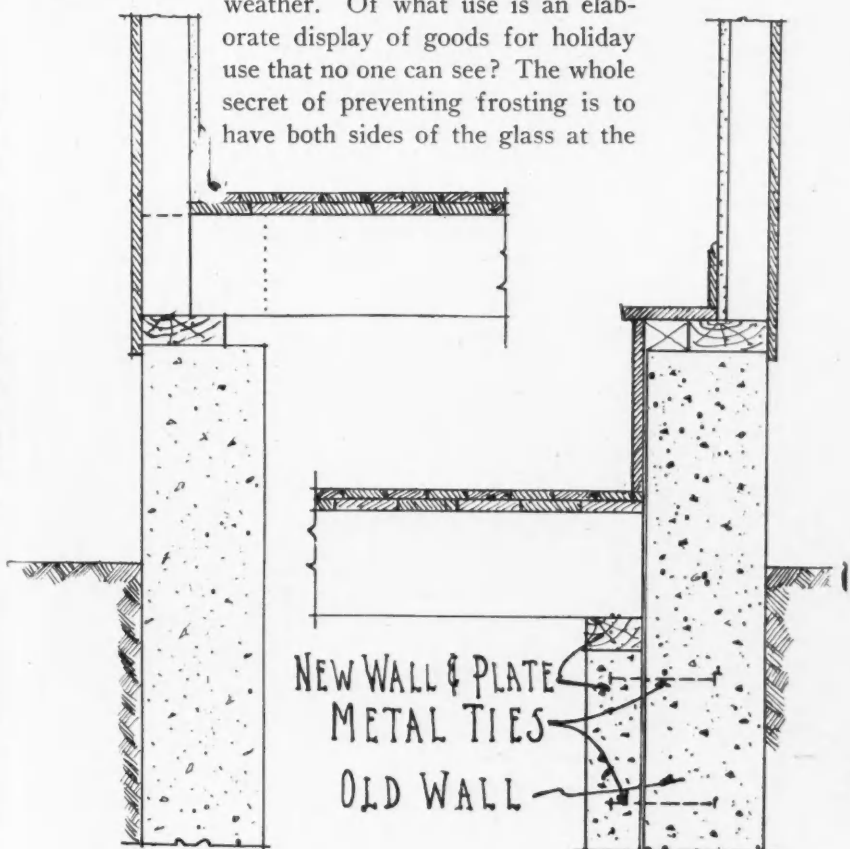
If it is inadvisable to have the window closed off from the store the frosting can be prevented by having an electric fan blow a current of cold air on the glass.

concealed lighting fixtures. Get the light to illuminate the goods in the window, and take care that it does not shine in the eyes of the people outside.

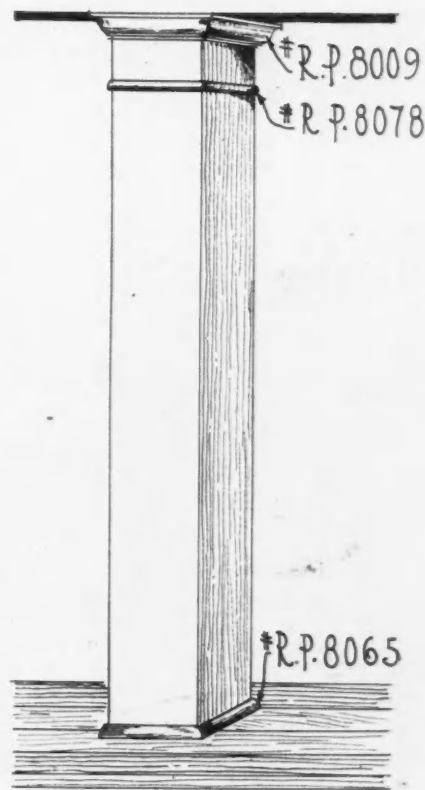
Another point that should receive consideration is the preventing of frosting of the windows in cold weather. Of what use is an elaborate display of goods for holiday use that no one can see? The whole secret of preventing frosting is to have both sides of the glass at the



Square Unfinished Post Has Crude Appearance.



Before and After Cutting Down the Floor Level to Make Dwelling Into Store.



Simple Mouldings Added Give It an Architectural Finish.



Two Adjoining Stores as They Were.



The Stores Joined by Piercing the Wall.

The interior as well as the exterior may require some attention to make it look more attractive.

The plaster ceiling may be cracked and dangerous looking; a stamped metal ceiling would look very attractive and appropriate. Even the side walls above the shelving can be of metal. One can now obtain metal sheets stamped like tile; this makes an excellent wall for grocery and butcher stores; the walls when painted with a few coats of enamel have a tile-like and sanitary look that will be pleasing to the customer. It will be a trade-inviting improvement.

In other stores wallboard can be used effectively; all sorts of artistic panel work can be easily made with strips of wood and simple moulding both on ceilings and walls.

Showcases and special fixtures are best ordered from the manufacturers who make a business of that line of work, but ordinary counters and shelving can

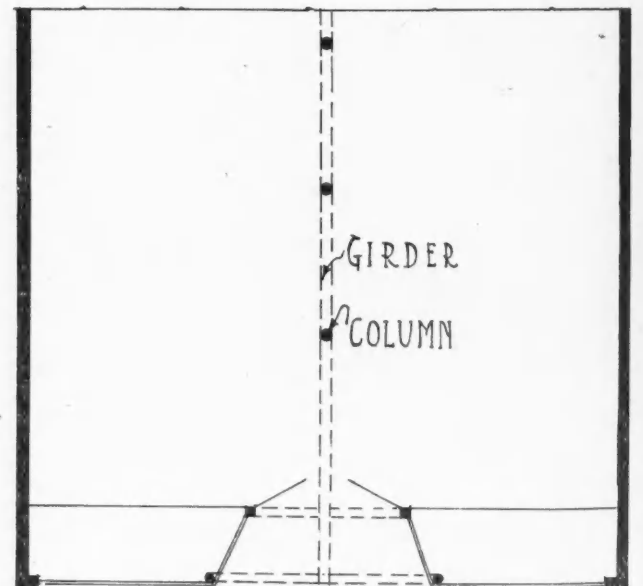
easily be made in the carpenter shop. Good plain lumber and some ornamental moulding is all that is necessary, and one can get pressed composition ornaments, capitals, etc., that are readily glued and tacked on, so that one is able to have made at home a store outfit that will be reasonable in price and attractive in looks.

A good deal of attention should be paid to the arrangement of the store fixtures; arrange everything so that the goods will be on display. Some tables or counters in the middle of the store is an excellent idea.

Posts in a store are frequently only a necessary eyesore. In a great many cases they can be boxed around with shelving or three or four mirrors in neat frames; it is a failing with the human race that they like to look at themselves. Mirrors are always popu-



The Wall Entirely Removed and Columns and Girders Used to Carry the Upper Walls.



The Wall Entirely Removed and Columns Spaced so as to Allow of Large Free Center Entrance.

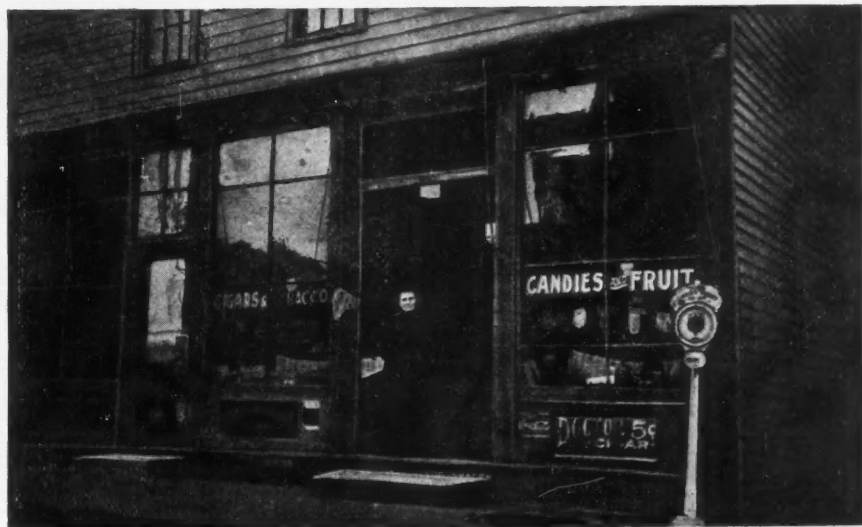
lar; add them wherever you have the chance.

Square posts in the middle of the store can be made a little ornamental looking by using a moulding at top and bottom, so as to make a capital and base effect. A round iron column will perhaps look very skimpy; it can be boxed around with wood and made to look like a substantial column.

Remodeling a Residence Into a Store

A residence street frequently changes into a business street, and the property would bring a better income if it was a store. In most cases the alteration can be easily done; all of the interior partitions removed, the breaks in plastering repaired or entire new walls and ceilings of metal or wallboard substituted.

In the illustrations we show a two-family house, the lower floor of which was remodeled into a store and which rented for a little more than twice the amount that was received from the rent of the dwelling rooms. It did not take long to pay for the improvement and it really cost the owner nothing, as



Old Store Before Remodeling as Shown Below.

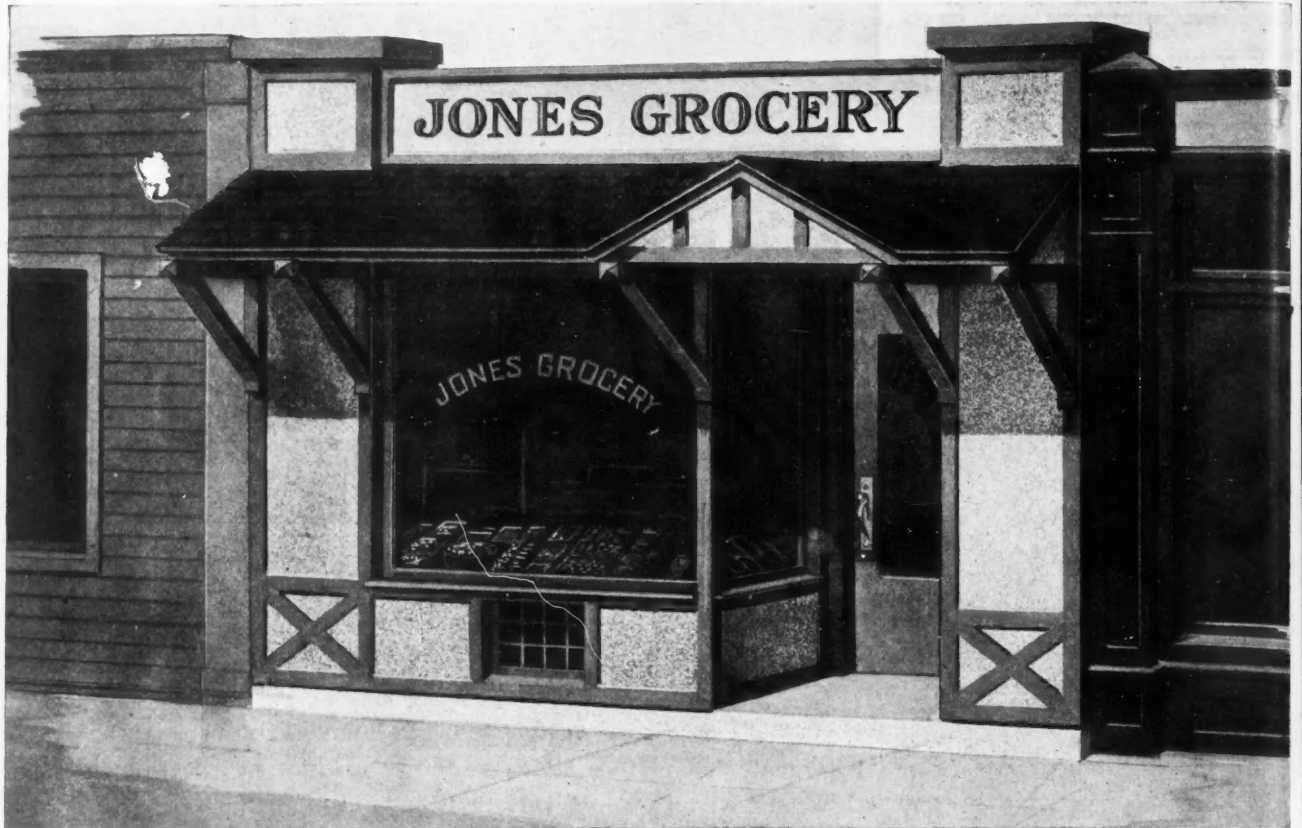
he secured an installment mortgage, and the increase in rent received was more than sufficient to make the payments.

Another way of remodeling this house would have been to raise it and build a brick or concrete wall for the store, but this would have cost considerably more.

Where the floor level of the house is two or three feet above grade, the floor should be lowered so that the store floor is near grade; one step is all that there should be from the sidewalk level to the store floor; in many cases an incline in the vestibule is preferred



What a New Store Front Will Do Can Be Seen by an Examination of the Above Pictures. Before re-modeling the store was decidedly unattractive, and now it simply invites trade. The energetic proprietress of this store secured an increase of business during the first six months after the alteration to more than pay for the improvement. An attractive store front creates trade.



Using Chipped Slate Roofing and 1 by 4 Wood Strips for Panel Work Changed the Old Store Front, as Illustrated at bottom of page, to Something Attractive.

to a step. A simple way of lowering the floor is shown in the two illustrations, which show a new 6-inch concrete wall to support the joists, which are cut at the dotted lines and lowered to the new level. The new wall is tied to the old by metal ties cemented in drilled holes in the old walls. Of course, dropping a floor like this will make the cellar ceiling very low.

Adding an Adjoining Store

A frequent addition to a prosperous store is taking the store on either side and adding it to original store. It depends on what the store has to sell just how the wall is to be broken thru and how the show windows are to be arranged. The question of doors also is determined by the merchandise for sale. A jewelry store, clothing store, furniture store, etc., are best

with but one door. A market, dry goods, novelty store, etc., are better arranged with two doors, as they attract the larger crowds.

The intervening wall between the old and new store can be entirely removed and girders and columns used to hold the upper floors or wide openings to nearly the ceiling line may be made where necessary for aisle space.

The old front may be retained or a new one arranged.

The floor of the new store may not be on the same level as the old one. If there is not much difference an incline is to be preferred to a single step, as one is apt to trip over a single step, especially so if there is but little rise to it; when the other floor level is two or more steps above, there is no trouble, as one can easily see the difference between the floor levels.



Peace Talk and Food Danger

We seem to be in for an era of peace talk. The inevitable result, unless our people are warned, will be a relaxation in food production and conservation.

Should peace come tomorrow, the food obligations of America will be immensely increased rather than lessened. The withdrawal of Bulgaria from hostilities means 4,000,000 more people clamoring to us for food and we should always be willing to exchange food for the right kind of peace.

Besides Bulgaria, there are in Poland, the Balkans, parts of Russia and certain other portions of Europe, a total of 180,000,000 people threatened with starvation. With the coming of peace this huge population will be added immediately to America's food guardianship. These stricken people, plus the Allies, represent about 300,000,000 human souls.



Old Store Front Before Remodeling as Shown Above.

War Conditions Boost Second Hand Building Materials

ANTI-WASTE MOVEMENT COMBINES WITH SCARCITY AND HIGH PRICE OF MANY STRUCTURAL MATERIALS TO BRING THE WRECKING AND SALVAGE OF OLD BUILDINGS INTO FAVOR

JUNK will help to win the war." We are all familiar with this slogan and are heeding it in many branches of industry by cutting out waste, utilizing the by-products, and reworking all recoverable second-hand materials. It is a gain in national thrift that is one of the direct benefits of the war.

In the building field economic conditions and priority orders have taken some materials entirely out of the reach of the ordinary builder.

But if he can't get new he will use second-hand.

An interesting light is thrown on this proposition by a full page announcement in the "Chicago Tribune" of Oct. 16, signed by a large firm of house wrecking contractors. It appeared under this heading, which extended clear across the page:

Salvage Your Old Buildings

NOW IS THE TIME to Tear Down Your Old, Unused or Unsatisfactory Manufacturing Plants, Office Buildings, Factories and Apartment Buildings

The ad went on to say:

THE present day value of the material contained in them may be worth more than the total former cost of their construction. Conservation of building materials is enforced by government regulation. The scarcity of such materials demands reclamation. Waste is a crime. Within the limits of the city of Chicago, within the Chicago territory, within the boundary lines of the United States there are hundreds of millions of dollars tied up in useless buildings of all kinds that should be doing valiant service in the winning of the war. To reclaim these hundreds of millions of dollars is not only an unusual and valuable form of patriotism but a source of unexpected profit to their owners. Out-of-date manufacturing plants, decrepit office buildings, strings of ramshackle tenement houses are gold mines of valuable lumber, doors, windows, plumbing, steel and bricks.

"You can turn these buildings into cash by tearing them down and converting that unused material into essential war material. Hundreds of thousands of tons of second-hand material, as good as new material, can be made available at once if every owner of such a building will have it wrecked at once. Conditions are now reversed. The owner today of buildings that should have been torn down long ago finds himself in an advantageous condition. Many such owners who formerly refused to pay for removing their unused structures now are being paid by us for the privilege of wrecking them and buying the material. New materials have jumped sky-high in price, making it imperative to use all available second-hand

material. As a consequence, now is your great opportunity, Mr. Owner or Manager, to pocket a profit where you formerly expected a big expense.

"The ——— Wrecking Company in the past year has wrecked buildings occupying over 2 miles of street frontage, including skyscrapers and near-skyscrapers, manufacturing plants and factories, private homes and apartment houses. A freight train twelve miles long would be required to transport all of the valuable and usable material reclaimed in these operations—and that material today is going back into essential new factories, new buildings and enlarged government plants, thereby avoiding a waste of natural resources and labor now of more vital importance in other work recognized as 'essential' today.

"We buy wrecking jobs in all parts of the United States. Our organizations, our equipment and our outlets for materials are so well co-ordinated that we undertake successfully the largest contracts in any section of the country. We pay attractive cash prices for such jobs. We finish all wrecking on or before the date contracted for. Our service record of performance and our reputation is as well known today among the big builders and corporations as the record of any other well established, reliable house. For instance, a glance at this list of customers for whom we have done an immense amount of work is our greatest recommendation as to reliability, speed and success.

"Lumber, doors, windows, plumbing, radiators, boilers, piping, structural steel, brick—for sale in large lots. Our immense wrecking operations keep us constantly supplied with an enormous amount of second-hand material requiring acres of storage space. As the conditions existing in many industries today make it almost impossible to secure new material for building operations, contractors and builders find it particularly advantageous to buy from us. Immediate delivery of materials is assured and the high prices prevailing on new materials necessarily are not in force on our supplies, while their suitability for practically all building operations is unquestioned. We shall be glad to make quotations on your requirements.

"Don't waste good money in taxes on useless buildings. Ask for our proposition; save money; make money by letting us tear them down for you. Progressive corporations, manufacturers, and property owners now in possession of unprofitable plants and buildings should get in touch with us at once for estimates and our cash offer. Phone now—or write."

No doubt there will be more of such advertising announcements, and a greater use of second-hand building materials.

The Value of Wallboard for Essential Uses

By Emory S. Russell

THE building material dealer, the contractor, and the property owner now face a condition for which there is no precedent—a condition where their work must be determined solely upon its helpfulness to the Government's win-the-war program.

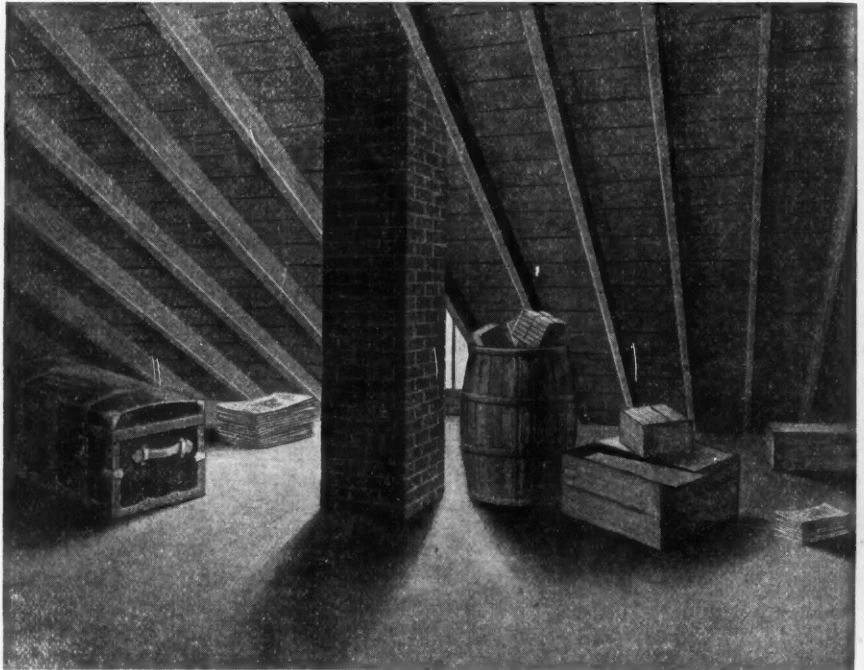
What building work is essential? How can we sell enough building materials for essential uses to do a good business? Both questions must be met and answered by every one connected with the building business.

While these questions present a difficult situation, they do not by any means imply a disastrous or "hard time" period. In fact, a clear-headed survey of the present building material market indicates a reasonable business for every contractor and dealer who properly adapts his efforts to the kind of work which has been made available by the restrictions to essential uses.

The Government recognizes that homes and business buildings must be kept in good working order. That means that repairs and replacement must be made.

If such work is not done, the usefulness of the building is impaired. In curtailing practically all new construction the Government has felt that old buildings could be made to serve until the war is over. To do that, of course, it will be necessary to keep them in

good condition. Consequently the Government not only allows but favors all repair and remodeling work that will make a home or business building more serviceable. It has ruled that repair and remodeling work



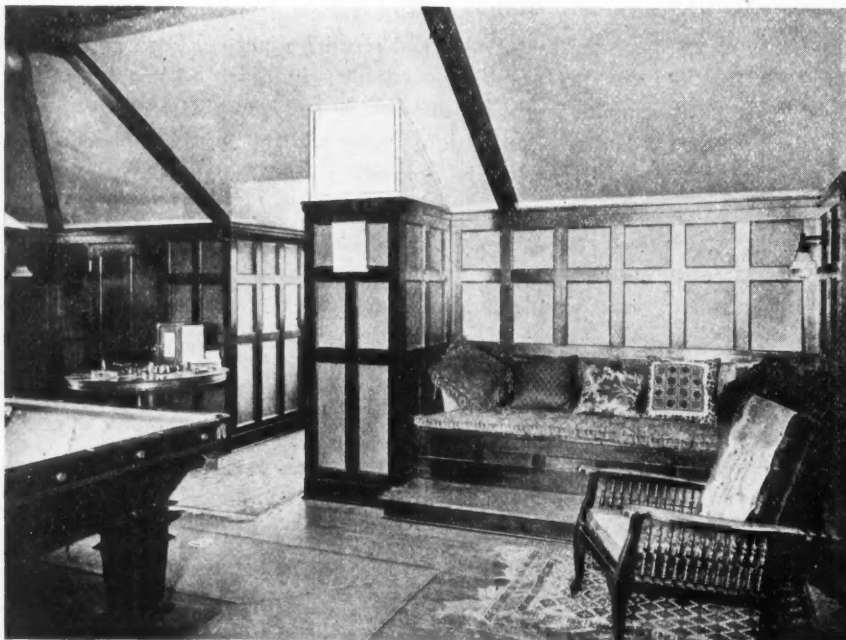
Why Should an Attic be Only a Storeroom for Old Books and Discarded Trash?

can be done without permit where it does not cost more than \$2,500.

Under the terms repairs and replacements the Government includes a wide variety of work that can be done to advance the war-time value of a home or commercial structure. It means making those necessary repairs to roofs and outside framework which will make a building as weather-tight as possible. Leaky houses require more fuel to keep them warm. And it assuredly includes the utilization of every inch of inside space.

Every dealer and contractor knows many houses that have been allowed to go into premature decline. Structurally they are well built and could be made useful for years to come if their rooms were only up-to-date, free from cracked and crumbling walls, and more attractive. The old house also generally has an immense amount of waste space. The attic hardly ever has been finished and there are often "store rooms" or other unused quarters that could be readily changed into usable room.

Living quarters are in demand as never before. Homes are scarce



Wallboard Remodeling Changes the Attic Into the Most Popular Room in the House.

and yet new building has been curtailed and discouraged. This places an obligation upon the present home-owner which has never previously existed. It is his war-time duty to fix up all empty space, to remodel over-size interiors into two or more smaller rooms, so that either by renting or boarding he can increase the accommodations of his house.

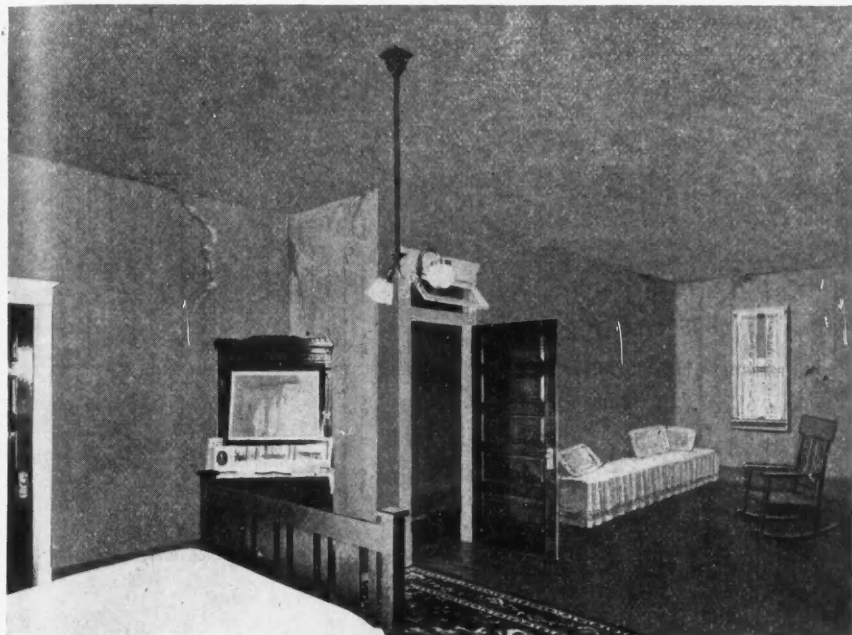
sanitary appearance. Many an old home lacks a bathroom which could readily be built in by reconstructing one of the needlessly large bedrooms. The kitchen also is a room that probably is way behind the times and the housewife would find her work much more easy and pleasant if it were carried on in a kitchen that had been brought up to date by permanent remodeling.

Before the war this kind of repair and remodeling was being carried on largely with wallboard. Fortunately this product is still available and its cost has risen much less than many other materials. Wallboard possesses distinct advantages for this kind of reconstruction. It is light to work with, permits a quick completion of the work without any delays, and makes lasting walls and ceilings that will not be in constant need of repair or redecoration. As it is always painted, not papered, it gives a room a bright, clean, sanitary aspect that is often a marked contrast to the dinginess of the former walls and ceilings.

The reconstruction work that is now permissible and desirable in the home can be paralleled in many

stores, offices, factories and other commercial structures. Often a business seems to have advanced where new quarters are imperative. Yet a few partitions, so readily put in with wallboard, will allow extra offices, stock rooms, and other needed quarters, that

(Continued to page 114.)

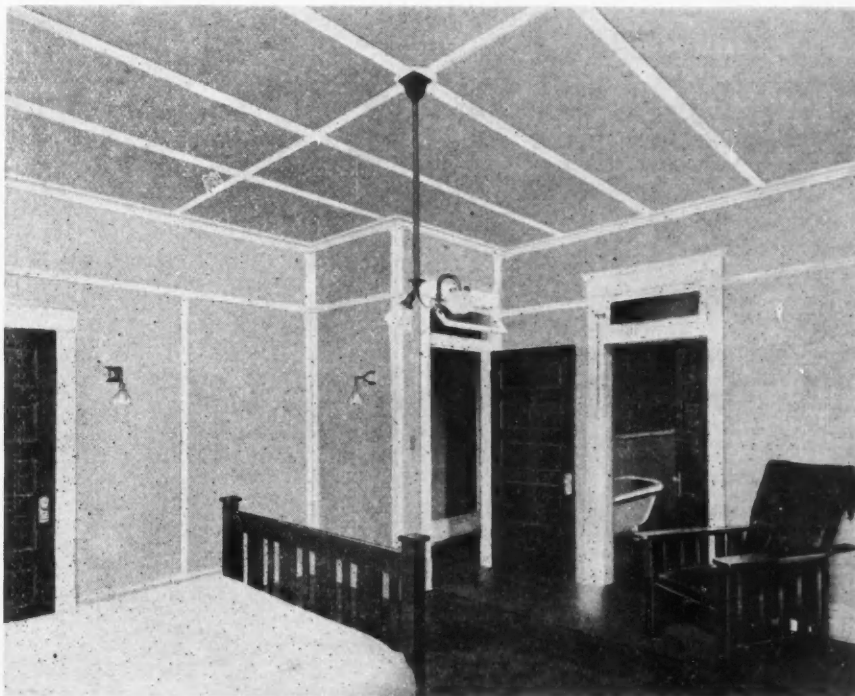


Many a Large Bedroom Would be Doubly Useful if Remodeled Into Two Rooms.

Several permissible, reconstructed rooms are shown by the illustrations. These and several other reconstructions are allowed by the Government's ruling on essential uses. The attic in this case was used for a billiard room, but it could just as well have been employed as a bedroom.

The attic bedroom has been a war-time discovery for many home-owners. It has permitted the creation of one or more pleasant, comfortable, commodious sleeping rooms that can be profitably rented. The demand for rooms has been so great in many localities that home-owners who would not have considered roomers in peace days now recognize their obligation to rent such unproductive space. The cost of owning a home, like the cost of living, has been mounting steadily and a rented room in the attic helps to balance these rising expenses.

If an old ceiling cracks and falls there isn't any argument but what it is essential to repair the walls and ceilings immediately. But it is better to anticipate such accidents by permanently covering the old walls and giving the room a modern,



Here Wallboarding Gains a Bathroom as Well as Improving the Original Room.

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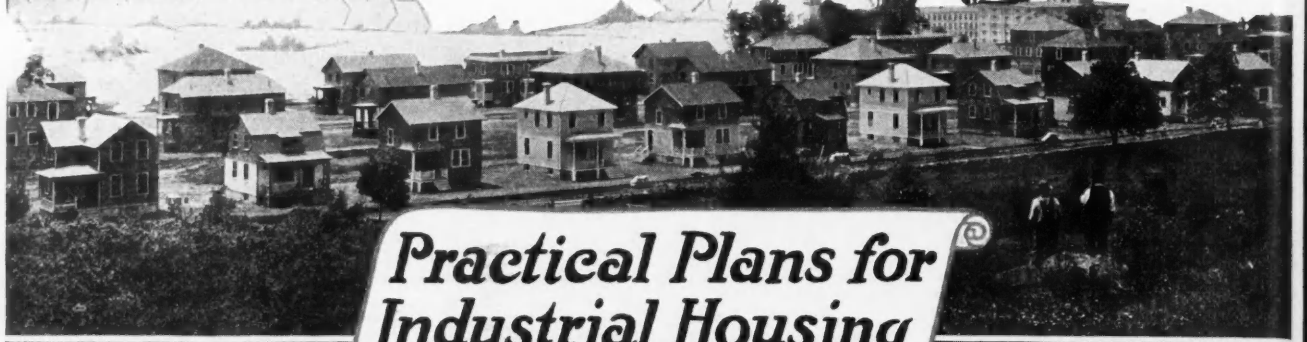
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Homes for Workingmen



Practical Plans for Industrial Housing

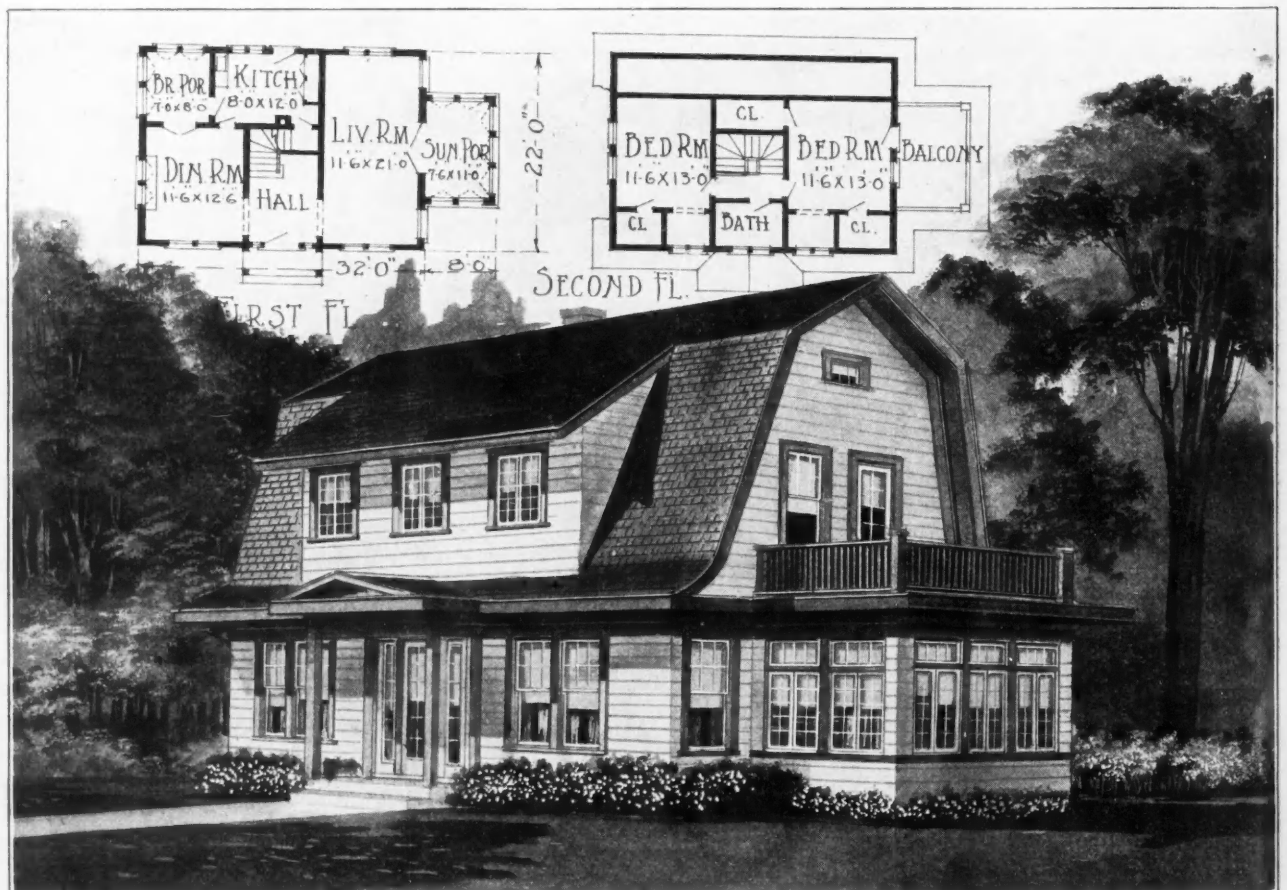
Standard Designs Only Are Appropriate for Industrial Housing

WE read of the tremendous house building program of the government for the munition-making centers and the shipyards, and we are overwhelmed by the immensity of the enterprise. Approximately twenty-nine thousand dwelling houses have been built or are now under construction by government representatives in eighty-eight cities of the United States. And this is only the beginning.

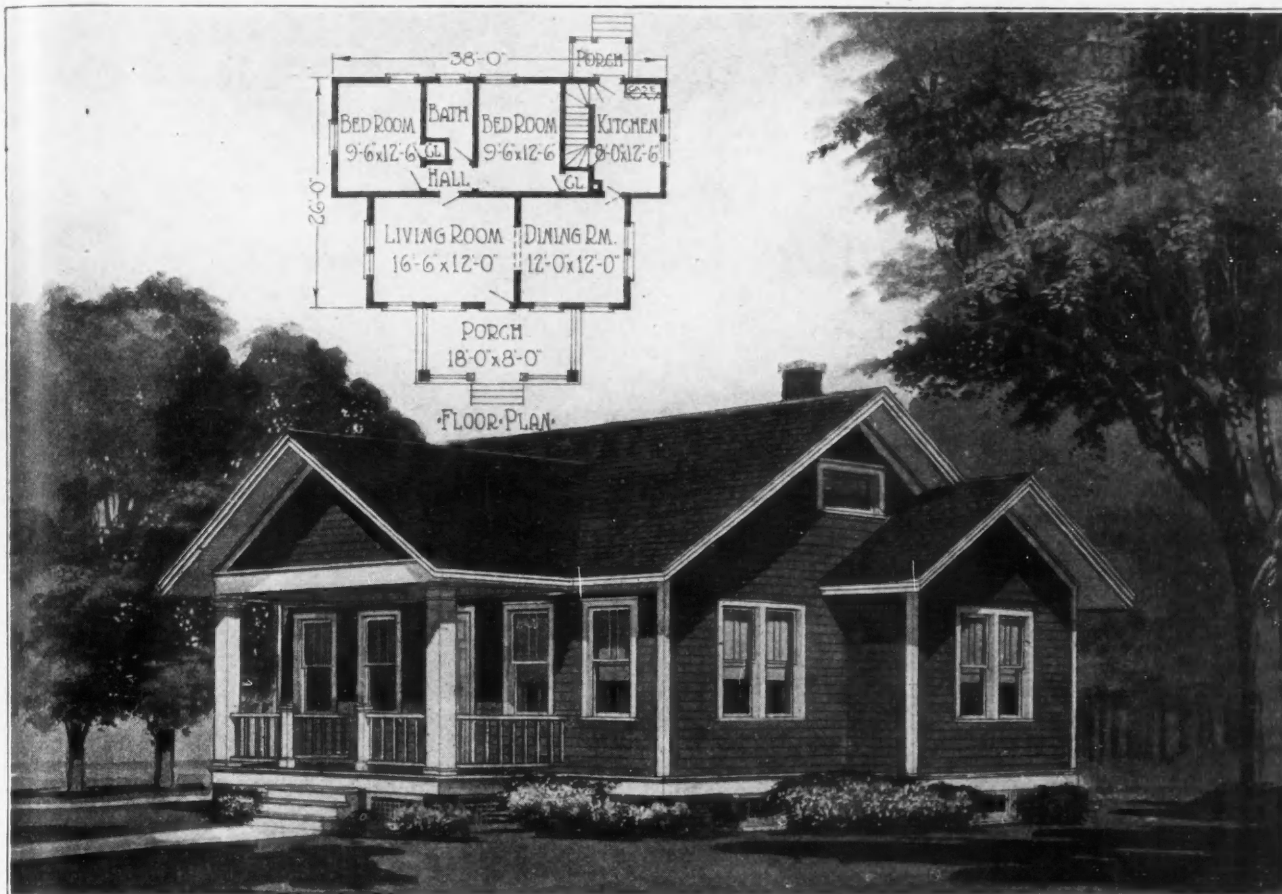
This is real estate building by the wholesale.

The regular real estate standards of design should be and are being applied to this work. While these houses are put up now to meet an emergency, and there will be no trouble to find occupants, the time is coming when this emergency will have passed and the extra pressure on these localities will have diminished.

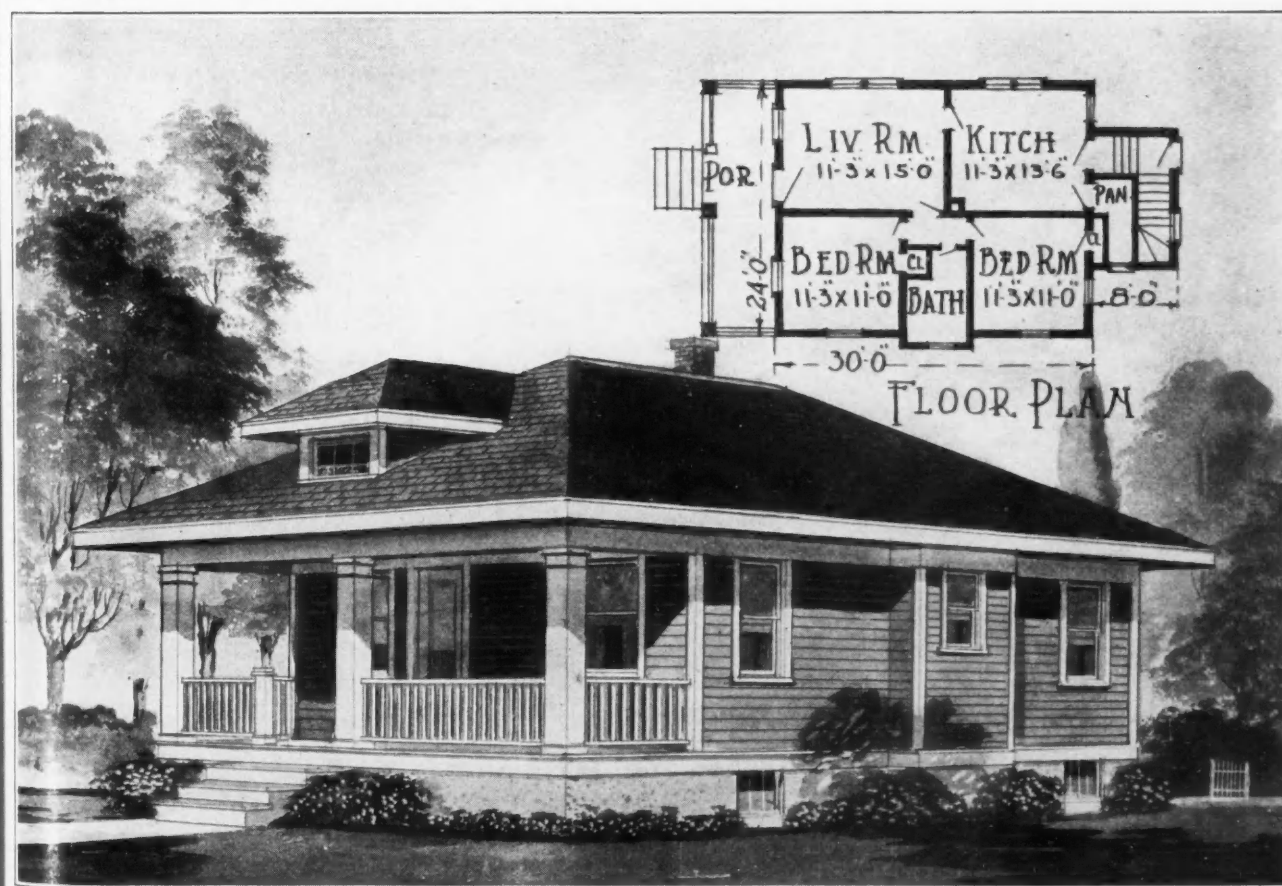
Nothing savoring of the freakish should be permitted in the design of any house which is to be placed on the market either for rent or for sale. The average of public taste should be catered to, and that average taste is conservative.



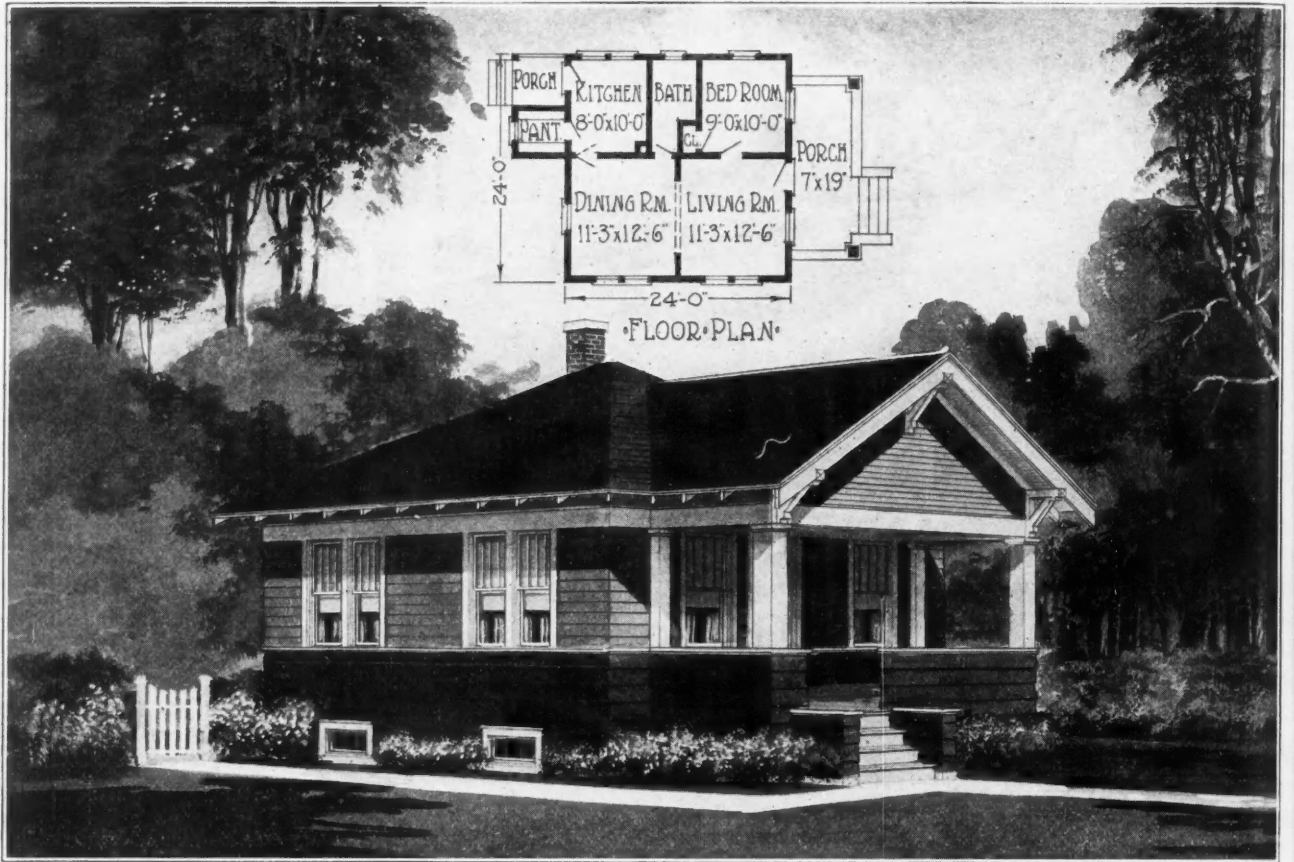
SMALL DUTCH COLONIAL HOUSE. Here is a gem, in size only 22 by 32 feet, containing five rooms besides the big sun parlor, the breakfast porch and wide reception hall. The two bedrooms upstairs are delightful with their tiny alcoves, which give additional light and cross ventilation.



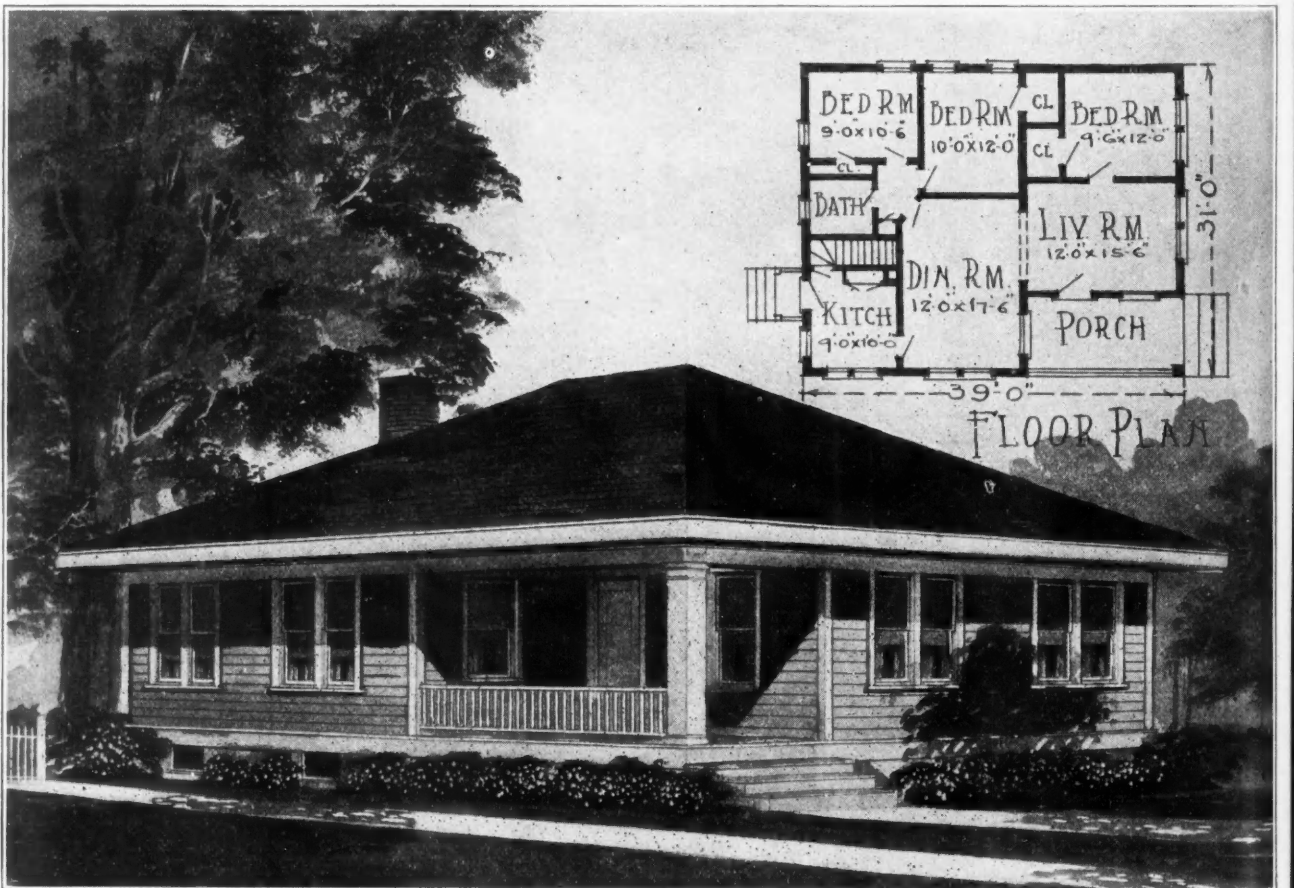
FIVE-ROOM BUNGALOW. For a broad, shallow building lot this plan is good. The living room and dining room extend across the front, while at the rear in the wider part are grouped two bedrooms, bath and kitchen. Size except for porches is 26 by 38 feet.



COMPACT FOUR-ROOM COTTAGE. This trim little house is divided exactly thru the middle, the living room and kitchen occupying the left half, and two bedrooms and bath opening off a tiny hall, the other half. The grade entrance, cellar stairs and pantry are in a wing at the back. The main roof covers the front porch, which increases the apparent size of the house.



WIDE BOARD FOUNDATION. This little cottage is given the modern bungalow look by its foundation course of wide boards creosoted. Above is regular bevel siding painted in a lighter tone. The trim is pure white, which makes a striking contrast. This is a four-room, single bedroom design.



THREE BEDROOM BUNGALOW. A broad, square design, containing six rooms is illustrated. There is a front bedroom off the living room, while two bedrooms and bath at the back open off a small hall. Size over all is 31 by 39 feet.

AMERICAN BUILDER BUILDING PLANS



Blue Prints of Farm Home and Three Associated Buildings

FULL PAGE PLATE PHOTOGRAPHS (PAGES 34 AND 39) OF EXCEPTIONAL BEAUTY AND INTEREST ILLUSTRATE THE EIGHT-ROOM FARM HOME, A PRIVATE GARAGE, A MODERN POULTRY HOUSE, AND A COMBINED MILK AND ICE HOUSE, WORKING DRAWINGS FOR ALL OF WHICH IN BLUE PRINT FORM ARE PRESENTED

TURN over the page and feast your eyes on the fine Thanksgiving turkey and on the picture of the modern, well-kept farmhouse and buildings where he was raised. This Thanksgiving we are sending the turkeys over to our soldier boys in France, and we are likewise patriotically building only those farm homes and other buildings which are most essential to the public good.

We are presenting blueprinted working plans for this farm home, and also for the private garage which stands at the rear. These appear on the first three pages of the blueprint insert.

The fourth page of the blueprints is devoted to the very business-like poultry house and combined milk and ice house which are illustrated in the full-page plate which immediately follows these blueprints.

All of these buildings are of the most practical sort, and under many circumstances will be found so essential that their construction will not be delayed. We take particular pleasure in presenting them at this time. During the past few weeks the heart of the entire nation has been brightened by the prospect of quick victory, and thoughts are turning again to peace and the aggressive conduct of the work of peace. The world looks forward to reconstruction. A building boom is in the air; and the building industry can be looking forward to it with all confidence.

The farmhouse design is the popular square hip roof type, containing eight rooms and bath. There is a downstairs bedroom opening off the living room and separated from it by double doors, glazed. Some will no doubt use this as a parlor or music room; or since it is so handy to the side door it would serve nicely as the farmer's business office or den.

Both the living room and dining room are pleasant, well lighted, square apartments. The kitchen is conveniently located and is of ample size for the needs of the farm housewife.

THE GARAGE DESIGN. On Sheet 3 will be found plans for the one-car garage. It follows the hip roof style to harmonize with the dwelling. It measures 14 by 18 feet, and has an 8-foot doorway at the front, and a group of four windows along each side. This assures a well-lighted garage.

Poultry House and Combined Milk and Ice House

The fourth page of the blueprints gives working drawings for the two important buildings illustrated in the full-page plate, page 39. The poultry house is a two-unit building, size 8 by 17 feet. Poultry wire is stretched across the middle, dividing the space into two rooms so that the birds can be managed as two flocks.

This is a modified type of what is known as the "open front" poultry house, in which a muslin cloth takes the place of two of the glazed sash. This is for ventilation. Poultry needs plenty of fresh air, but cannot stand a direct draft. The muslin breaks the force of the wind, but lets in the fresh air.

Comparatively little headroom is needed in a poultry house. This one is built 7 feet high at the front where the door openings are, but at the back it is only 5 feet high. The roosts are in this back part over the nests, which is the warmest place.

Concrete foundations are specified and they go down two feet under ground. This is important, for it keeps out the rats and other small animals that are apt to prey upon the flock.

COMBINED MILK AND ICE HOUSE. This useful little building is constructed of hollow building

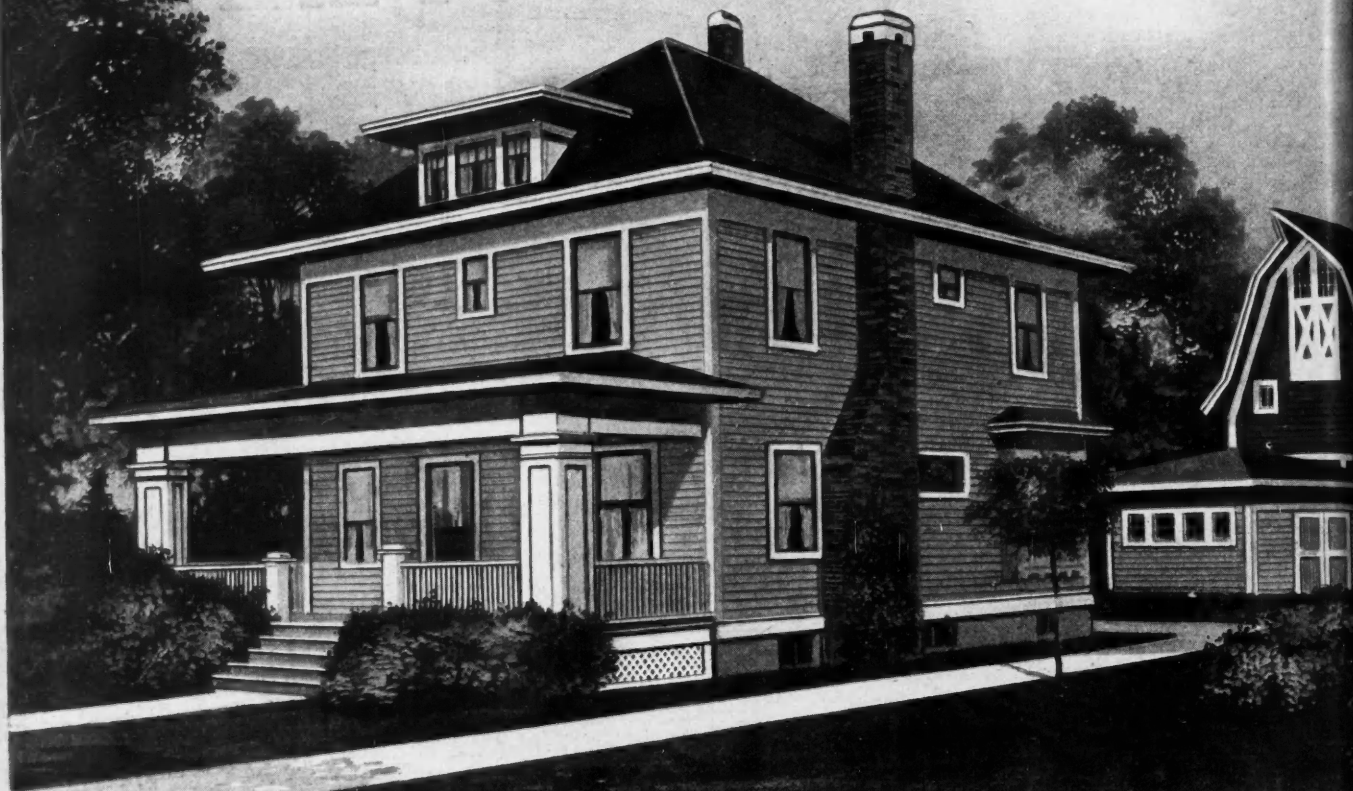
tile, or of concrete blocks. The size on the ground is 12 by 16 feet. One-third of the space is given up to the milk room. It has a cooling tank at each side where the milk cans are kept in ice water.

The ice storage space is just about the right size for the average farm.

Full Page Plate Photographs of Blue Print Buildings

Eight-Room Farm Home Private Garage to Match } Page 34

Two-Unit Poultry House Combined Milk and Ice House } Page 39



A Modern Comfortable Farmhouse

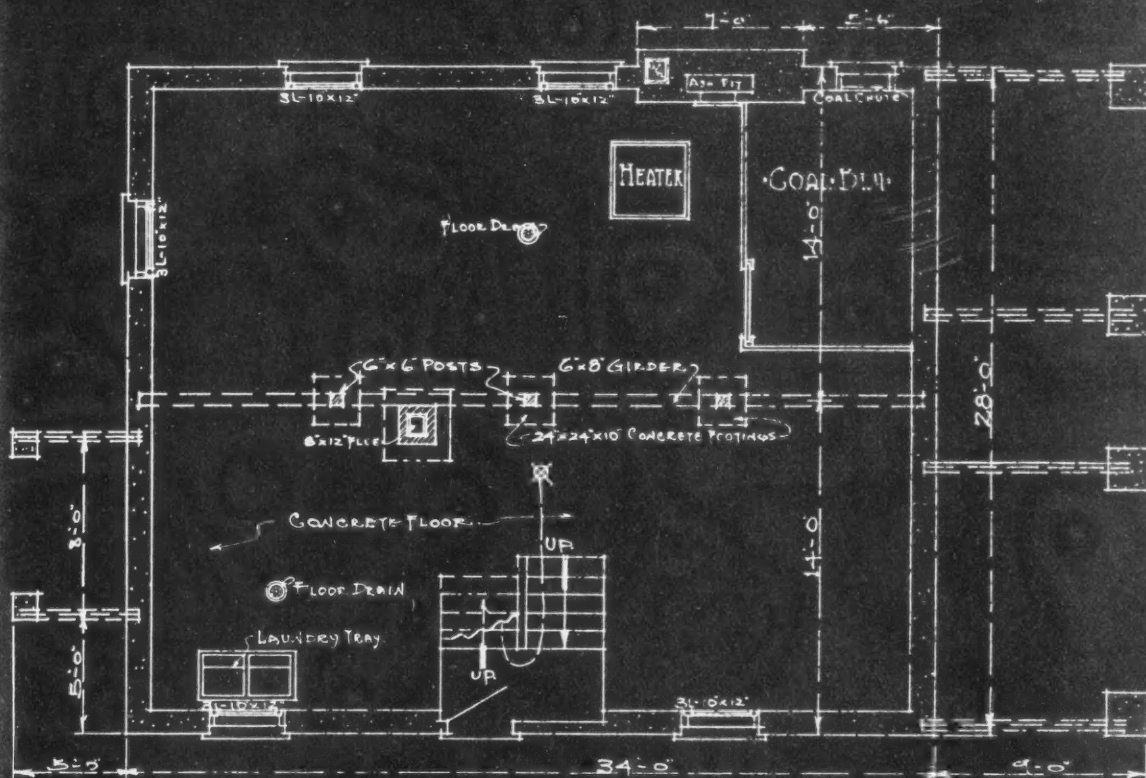
**For Working Drawings see Blue Print
Sheets Nos. 1 to 3**

**“Farm Home Conveniences
Keep Rural Folks Contented”**



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AMERICAN BUILDER BUILDING PLANS.



BASEMENT PLAN

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

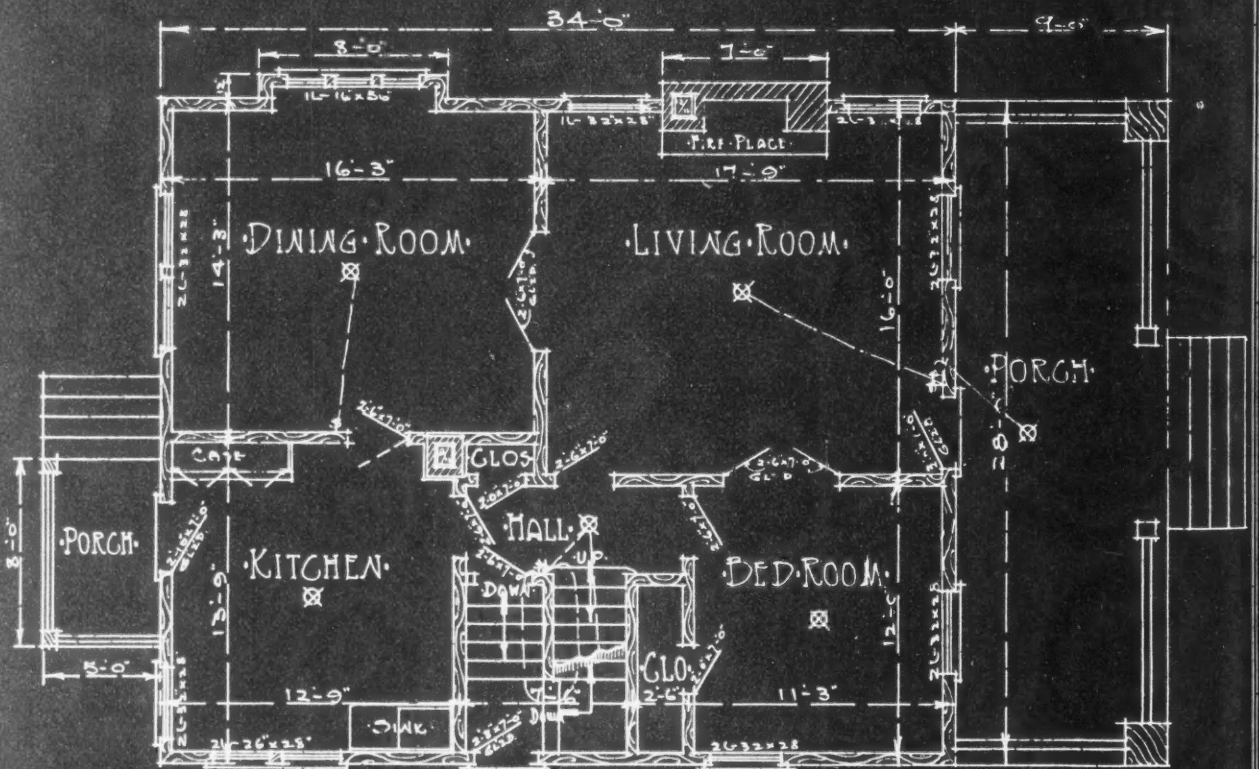
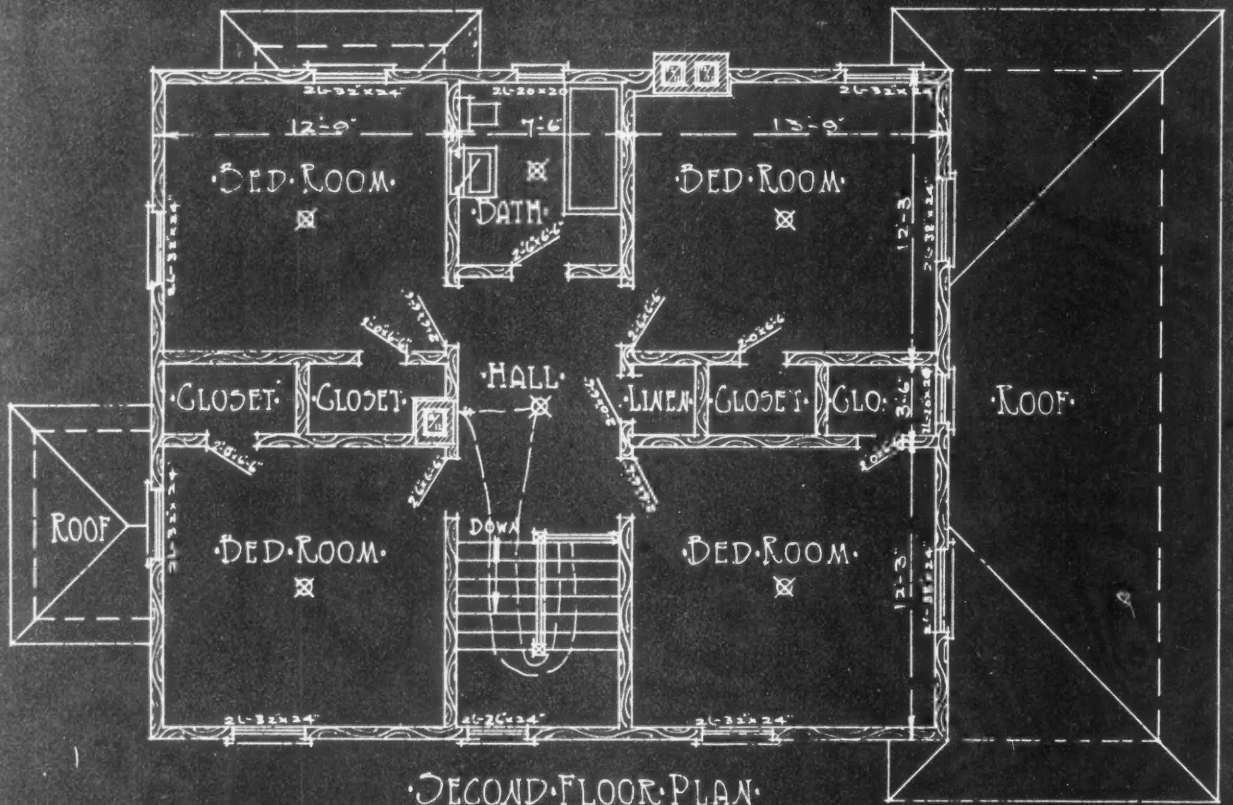


FRONT ELEVATION

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

TIGHT ROOM RESIDENCE & GARAGE. SHEET No. 1

AMERICAN BUILDER BUILDING PLANS.



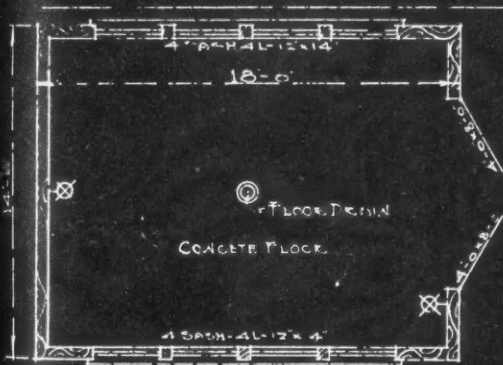
SCALE: $\frac{1}{8}'' = 1'-0''$

EIGHT ROOM RESIDENCE & GARAGE. SHEET NO. 2.

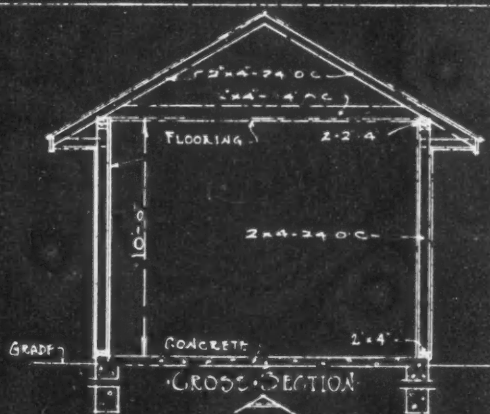
AMERICAN BUILDER BUILDING PLANS.



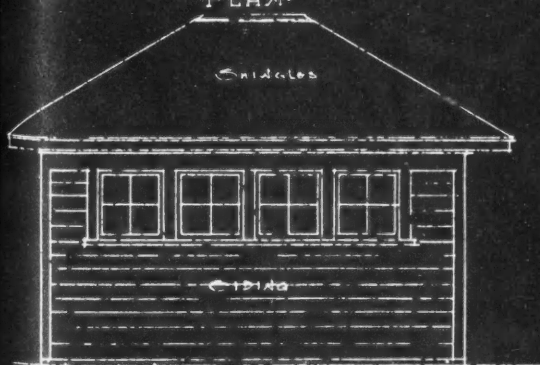
LEFT SIDE ELEVATION
SCALE 1/8" = 1'-0"



PLAN



CROSS SECTION



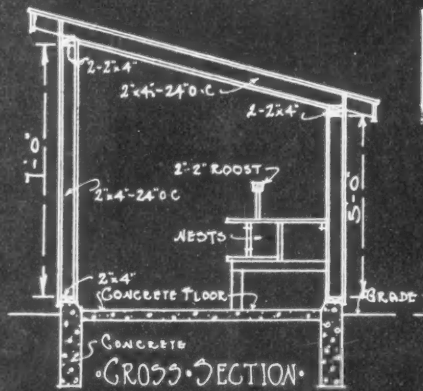
SIDE ELEVATION



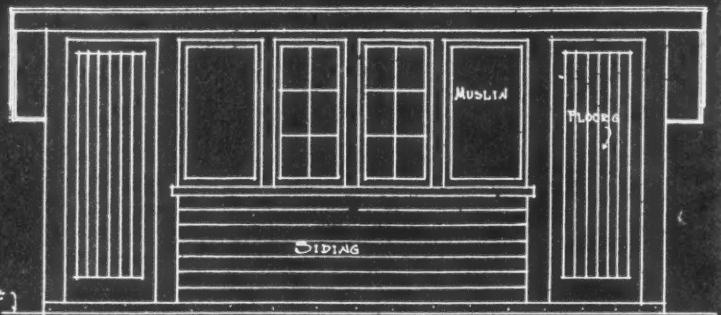
END ELEVATION

PLANS OF GARAGE

AMERICAN BUILDER BUILDING PLANS



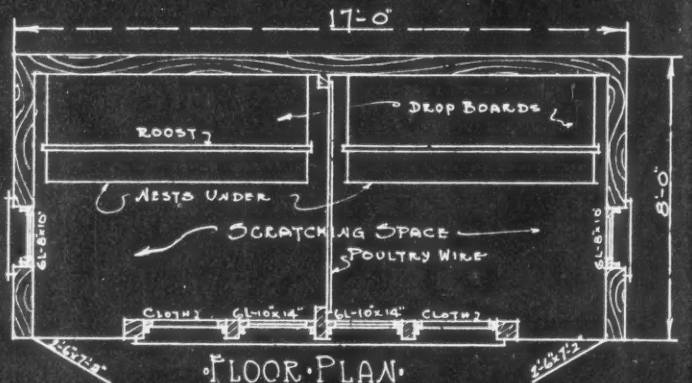
CROSS SECTION



FRONT ELEVATION



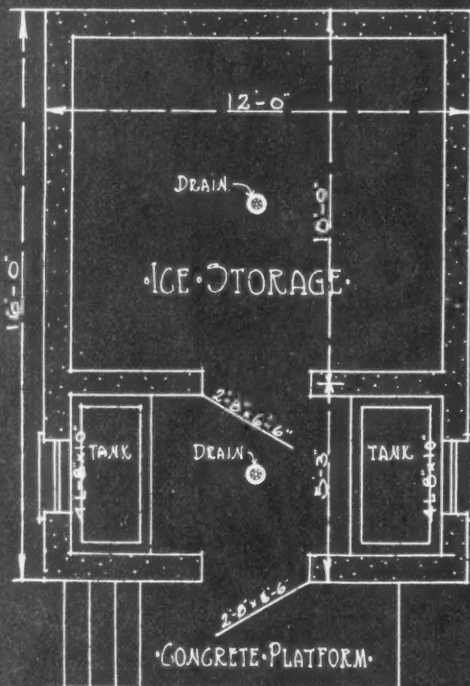
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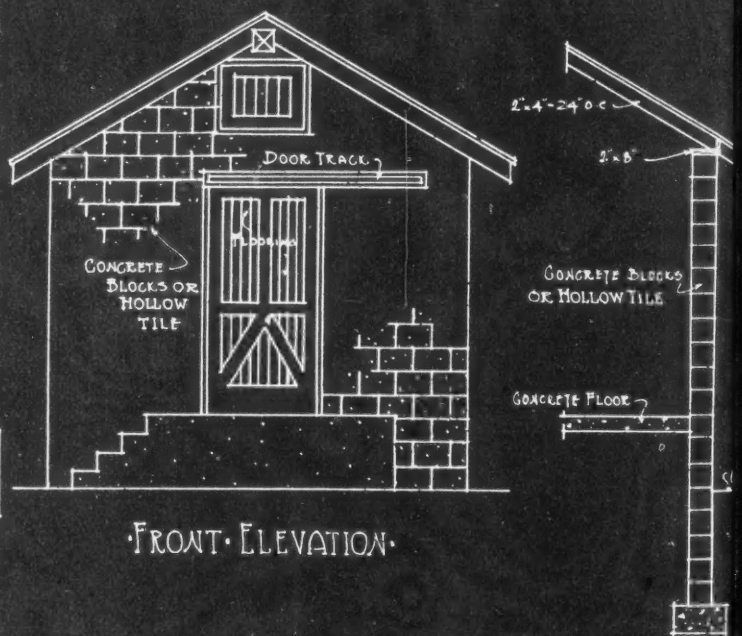
FLOOR PLAN

POULTRY HOUSE PLANS

SCALE: 3/16" = 1'-0"



FLOOR PLAN



FRONT ELEVATION

SECTION

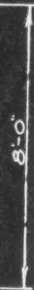
PLANS FOR COMBINED MILK AND ICE HOUSE

SCALE: 3/16" = 1'-0"

POULTRY HOUSE.

ICE & MILK HOUSE

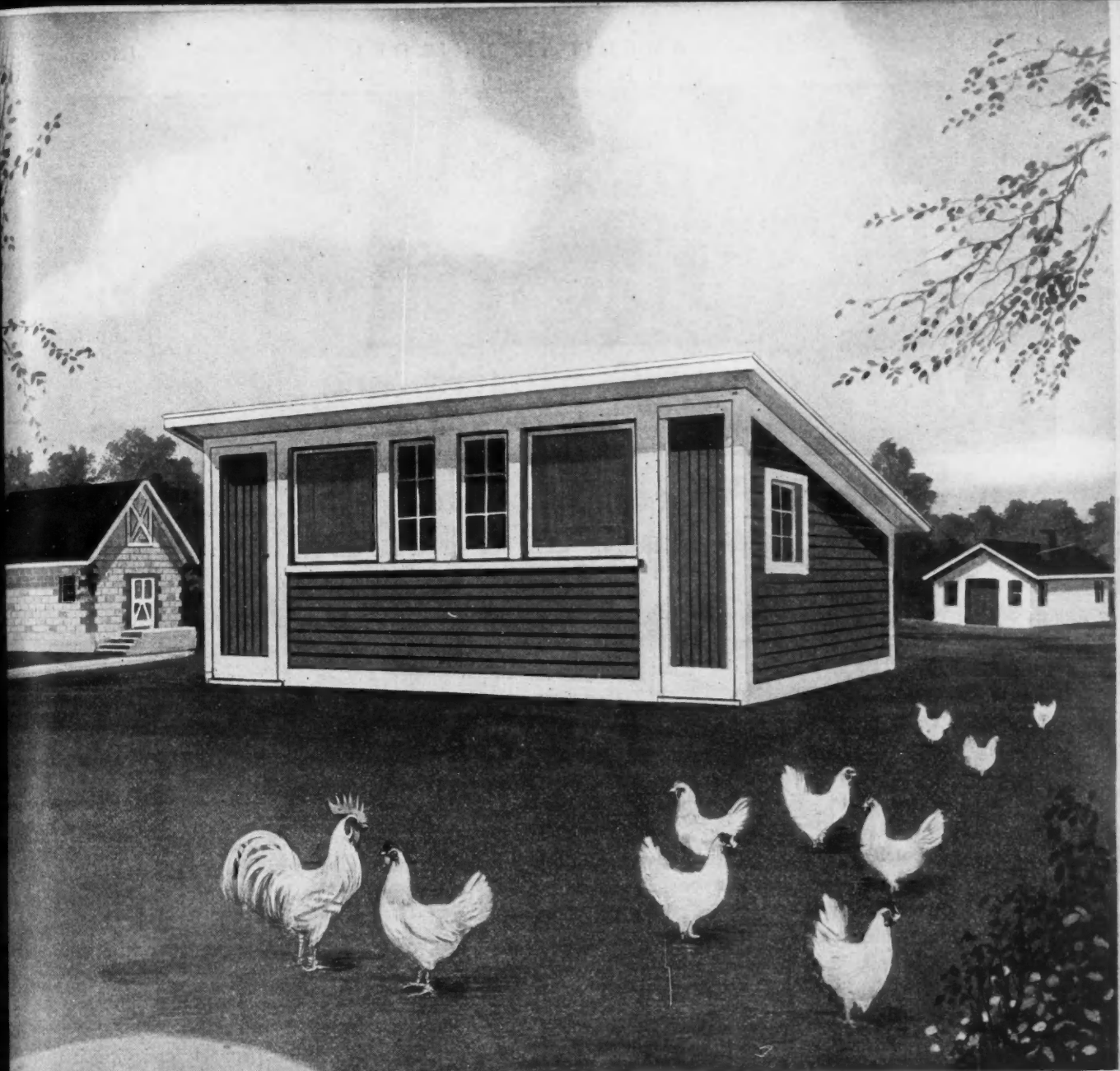
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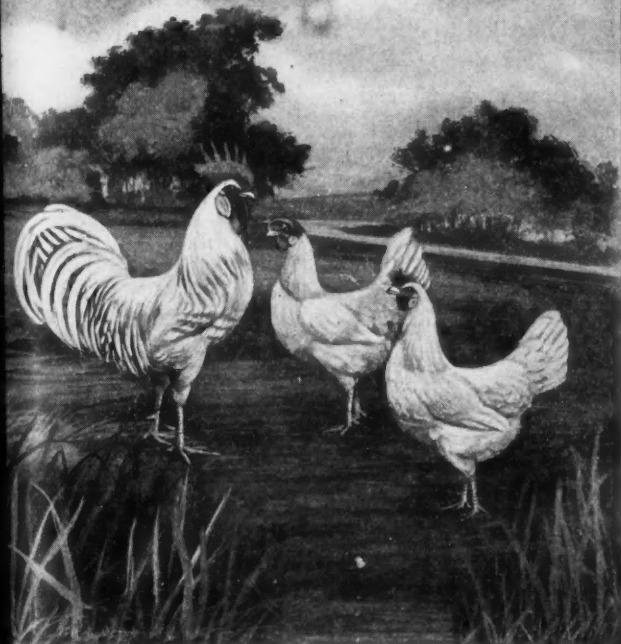




Two-Unit Poultry House and Combined Milk and Ice House

For Working Drawings see Blue Print
Sheet Opposite

**“Important Buildings to
Aid Food Production”**



Pavilions for Stairs and Toilets in Reinforced Concrete Factories

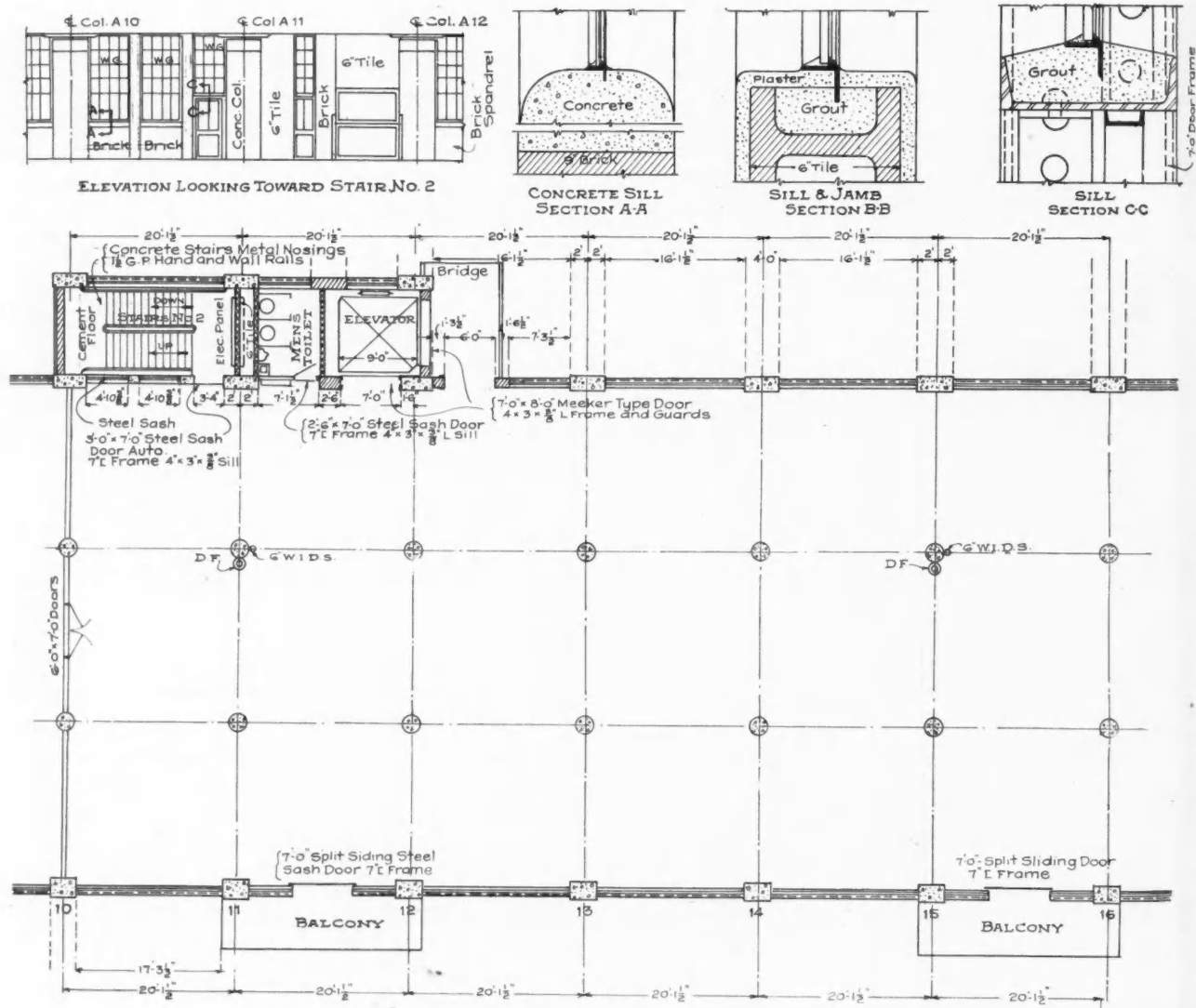
By Albert M. Wolf,

Assoc. M. Am. Soc. C. E.

TWO of the main requirements in modern factory buildings are plenty of light and ventilation thruout, dark and poorly ventilated portions of a structure being looked upon as waste space by most factory managers. Then, also, a building must be so arranged that changes in machinery and process routes can be made, when the occasion demands, with little or no alteration to the building itself. To fulfill these latter requirements the factory floor space should be clear and unrestricted from one end of the building to the other, especially with the more popular type of relatively narrow factory building (60 ft. to 80 ft. wide) and not broken up or cut into by toilet and service rooms or stairways and elevators.

Plenty of light and good ventilation can be obtained in ordinary multiple story factories by choosing a

building width of three or four bays, depending upon the class of work done and the arrangement of aisles and machinery, with a total width of 60 feet to 80 feet, story heights of 13 to 15 feet and the use of counter-balanced or pivoted ventilator steel sash occupying from 60 to 65 per cent of the side-wall area, with 30 to 50 per cent of the sash area capable of being opened for ventilation. If, however, the factory space is broken off or cut into by stair towers, elevator shafts and toilet rooms of the usual kind, with brick or tile walls, the light and ventilation in some of the adjacent bays is bound to be affected. For this reason in a large number of the more modern factory buildings pavilions or towers from ten to twelve feet wide are built out from the line of the main building for housing stairs, elevators, toilet and service rooms, as shown in Fig. 1. At first thought one might say



Oblong Type of Stair and Elevator Tower for Reinforced Concrete Factories.

that this is a waste of ground space between towers, not being of any particular value other than storage space. In view of the fact, however, that modern plant layouts almost universally provide for an open space 40 to 60 feet between adjacent buildings to insure good light and air in the buildings this objection disappears, for the towers or pavilions simply encroach on this open or court space occasionally, and the effective width of the same, as far as its main purpose is concerned, is practically the same as if the towers did not occur. In the case of single buildings on city lots, however, the use of towers or pavilions may be impracticable and a waste of valuable land.

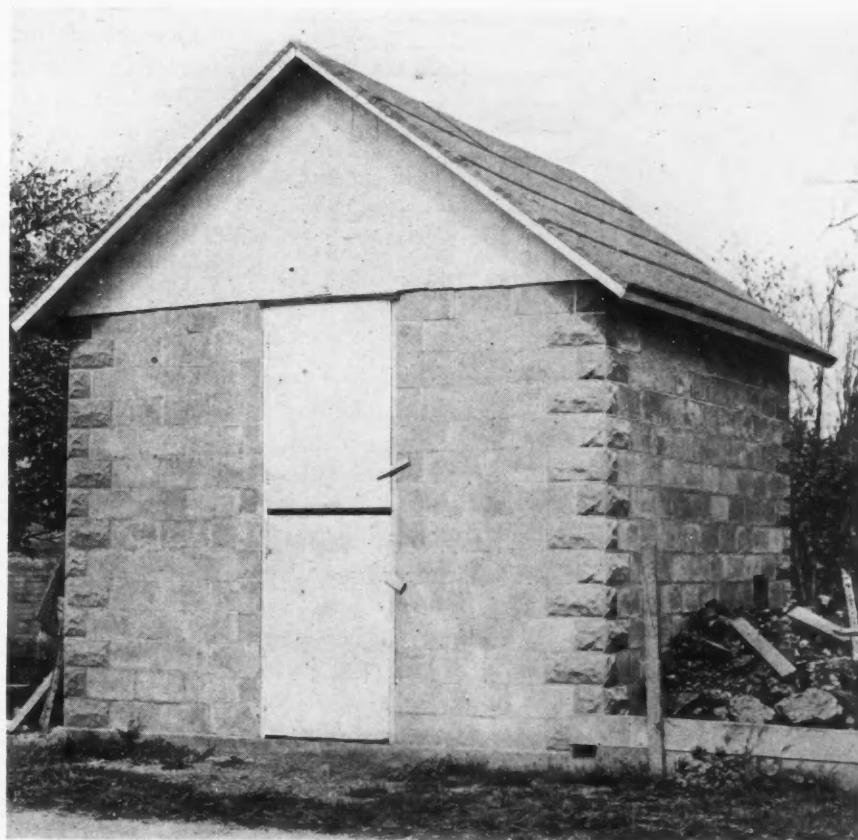
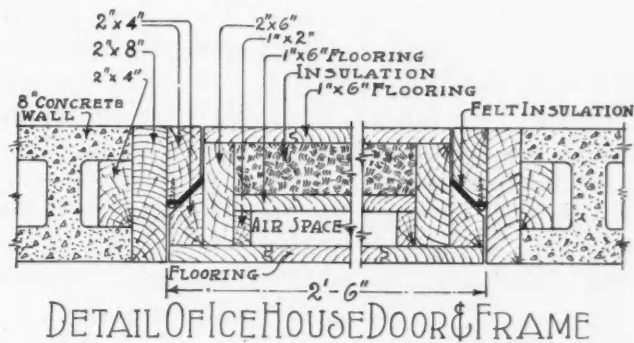
As regards architectural appearance, these pavilions can be so designed as to actually add to the appearance of a building or treated in the same manner as the rest of the structure, so as to be scarcely distinguishable from the main portion a little distance away. By providing the same area of steel sash in the exterior walls of these pavilions, and then putting in fixed sash in the partition wall between the pavilion and the main building, the light in the factory space is cut down very little, and while the ventilator openings are cut out the ventilation or circulation of the air in the factory is not materially affected, as is the case when the rooms or partitions extend out in the main floor space, and, furthermore, the supervision of workers in the unrestricted clear floor space is much easier and effective.

In Fig. 1 is shown a plan and inside elevation of a factory building "service pavilion" housing an elevator, stairs and toilet rooms. It will be noted that the sash in the partition wall between stair and main buildings are set in relatively small sized units, approximately 5 feet by 9 feet between reinforced concrete mullions and set on brick curtain walls. This rigid construction and the glazing of the sash with wire glass is used to give the stair shaft adequate protection in case of fire in the building. The sash at toilet rooms need not be in such small units and the partition walls need not be so heavy, since the fire danger is by no means as great. The details of the sill and jamb fastenings of steel sash are given in Fig. 4. The sash heads were clipped to 2 by 2½ by ¼ inch angles anchored to the concrete ceilings. None of the sash interior wall of pavilion should have ventilators.

An Ice House of Concrete Blocks

As rural folks get more prosperous, they are more and more making use of what city people have enjoyed for years, namely, ice; and they have this advantage that it doesn't cost them anything like as much as it does their city cousins. This ice house can be built at small cost, using 8-inch hollow building blocks. It will hold a generous year's supply for the average dairy farmer. It can be stocked with ice along the middle of January, usually at no expense except for the labor of cutting and hauling.

When building an ice house, be sure to provide good drainage underneath to carry away the water of melting. In a permanent masonry ice house like this, the door construction is important. The detail illustrated shows an excellent method.



A Practical Farm Ice House Constructed of Concrete Blocks. Size Is 12 Feet Square. Build This Now in Time for This Winter's Ice Harvest.

Fixing up the Farm

Plumbing in the Country Residence

PART II—THE SEWAGE DISPOSAL FIELD

By Harrold L. Alt, Engineer

REMEMBERING that the septic tank performs only half the process required in disposal of sewage, let us take a look at the second and final portion of the procedure. The bacteria in the tank have broken down and dissolved the sewage so that upon leaving the tank it is a cloudy, ill-smelling liquid, carrying little, if any, solid matter; all substances which are dissolvable have been broken up while the undissolvable ones are deposited in the bottom of the tank, going to make up a gradually increasing accumulation known as "sludge." This accumulation must be cleaned out at infrequent inter-

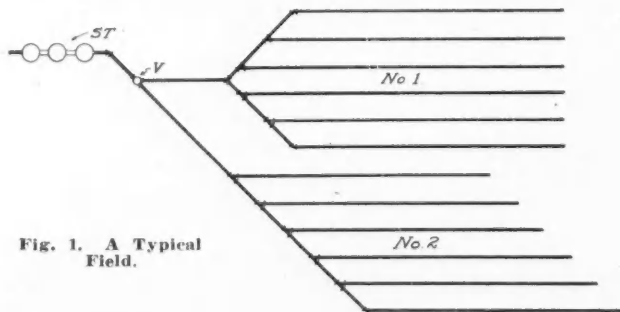


Fig. 1. A Typical Field.

vals, the periods between cleanings being much longer than with a cesspool of any type.

The purification of the discharge from the septic tank is accomplished by other organisms or bacteria, which, however, are of a different type from those flourishing in the tank. The second form of bacteria thrive best in an open porous soil, requiring light and air for their existence. If the discharge from the septic tank is brought into contact with bacteria of this sort it is reduced in a short time to a harmless liquid, which can readily be absorbed in the soil indefinitely at intermittent periods without danger of pollution or other bad results.

It has been found by experience that one of the

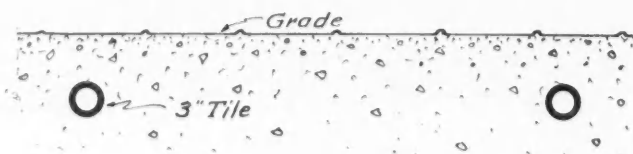


Fig. 2. Cross-Section of Typical Field.

cheapest and best methods of bringing the sewage into contact with the bacteria is by means of what is known as a sewage "disposal field." A typical field of this character is illustrated in Fig. 1, where the septic tank ST discharges into Disposal Field No. 1 or Disposal Field No. 2, being alternated as desired by the valve V.

These fields are composed of 3-inch agricultural tile, laid with open joints in lines varying from 5 feet to 10 feet apart, according to the soil, it being possible to place these lines more closely in sandy soil than in a non-porous soil.

The bottom of the tile is placed about 10 inches below grade, a typical cross-section of such a field showing two lines of pipe, being given in Fig. 2. Before covering with earth a piece of burlap or sometimes a piece of special curved tile is placed over the open joints, the object being to prevent earth packing into the joints and thus preventing proper leakage. The pipes are graded from the septic tank downward continuously, so as to allow the sewage to flow toward the farther end of the run, a minute portion leaking out at each joint into the soil; tight joints, however, are made in the pipe lines between the septic tanks and the fields.

Where the ground is not of a particularly absorbent nature the tile pipes are often laid as shown in Fig. 3, where an open and porous material is used to fill in the trench, thus providing sufficient area to distribute the liquid into the ground, which would not otherwise readily occur. Where the ground is very clayey or saturated with water the pipe must be laid as shown

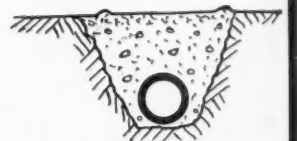


Fig. 3. Pipe in Poor Ground.

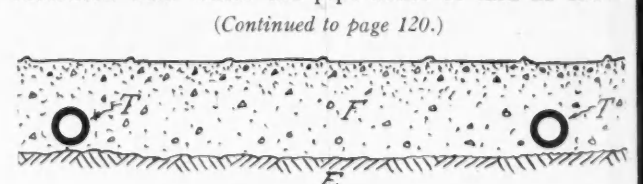


Fig. 4. Artificial Disposal Field.

(Continued to page 120.)

The Wood Stave Silo

By H. M. Koelbel

Secretary E. C. Tecktonius Manufacturing Company

A GREAT deal has been written of the various kinds of materials used in silo construction. There is no gainsaying the fact that what has been written has accomplished great results in the matter of educating the farmer to the value of silage, whether it be preserved in a wood, brick, tile, cement or steel silo. It has awakened him to the fact that silage, properly made and intelligently fed is a genuine money-maker, a great labor-saver, and every silo erected is a patriotic contribution to the United States government's efforts to win the war. At the present time this is the main issue. "A Silo on Every Farm" is a slogan that should be hammered at every farmer in the country until the fact is accomplished. Silage to the farmer and to the country in general is just as essential as canned vegetables and preserves are to the housewife of the United States.

It is the country builder's job to erect the silo, just as it is the lumber dealer's job to sell the materials that enter into its construction. Now the question arises, what are the requirements of a silo? In the first place, it should have a cement base and floor. It should be round or at least have no sharp angles. It should be air-tight at the bottom and sides, with smooth perpendicular walls, and a height at least twice its diameter. If a silo is not air-tight at the sides and bottom spoilage will take place.

This article is written primarily to show that the wood stave silo holds a position second to none in the silo industry. To have any silo, however, that will meet the demands made upon it, proper construction is the very first essential. In the case of the wood stave silo, proper construction means several things. Silo fixtures enter largely into this question of proper construction. Great care should be exercised in obtaining fixtures of approved design. The local lumber dealer should always carry these in stock, as they command a ready sale and can be easily obtained. The lug or hoop fastener—one of the fixtures—is an item of great consideration. This must combine ample strength, flexibility, with ease of operation, in order to take care of any contraction or expansion in the staves. Then there is the silo door. These must be adequately hinged, tight fitting, and should be equipped with a positive lock at all

four corners, in order to keep the air from the silage. Proper and adequate anchorage should be provided. This is as important as the foundation is to the house.

When chopped green feed is placed in a silo, fermentation or ripening immediately begins and the silage passes thru certain chemical changes that increase the digestibility and palatability of the feed. This process of fermentation generates a certain amount of heat that must be retained in the silo, for upon it depends the ripening of the silage. Now wood, as everyone knows, is practically a non-conductor of heat or cold, and consequently a wood stave silo holds the heat of fermentation that is essential to the making of first-class silage.

The wood stave silo is easily erected in a very short time, and its cost is comparatively low. Even today, when lumber is at a higher level of price than is customary, stave silos are erected at a figure within the reach of every farmer. Their upkeep cost is also very low. Like any other building on the farm, a coat of paint is needed every few years to protect the staves from the weather. Creosoting at tongue and groove of staves, and at base of silo where staves come in contact with the cement is primarily impor-

(Continued to page 112)



The Business End of a Modern Dairy Barn or Beef Cattle Feeding Barn; Two Exceptionally Well Built Wood Stave Silos.

Farm Buildings To Aid Food Production



The Billion Dollar Waste

SUPPOSE that every time you hauled a full load of wheat to town half that wheat would leak out of your wagon box before you got to the mill. You'd fix up that wagon box or buy a new one in short order, wouldn't you?

Suppose that every time you planted a field of corn but half that field would come up. You'd spend some time and quite a bit of money to learn the cause and find a remedy, wouldn't you?

Suppose that somebody told you that the American farmer—meaning you and your neighbor and your neighbor's neighbor—was, either thru ignorance, carelessness or indifference, allowing over one billion dollars' worth of the farm's most valuable by-product

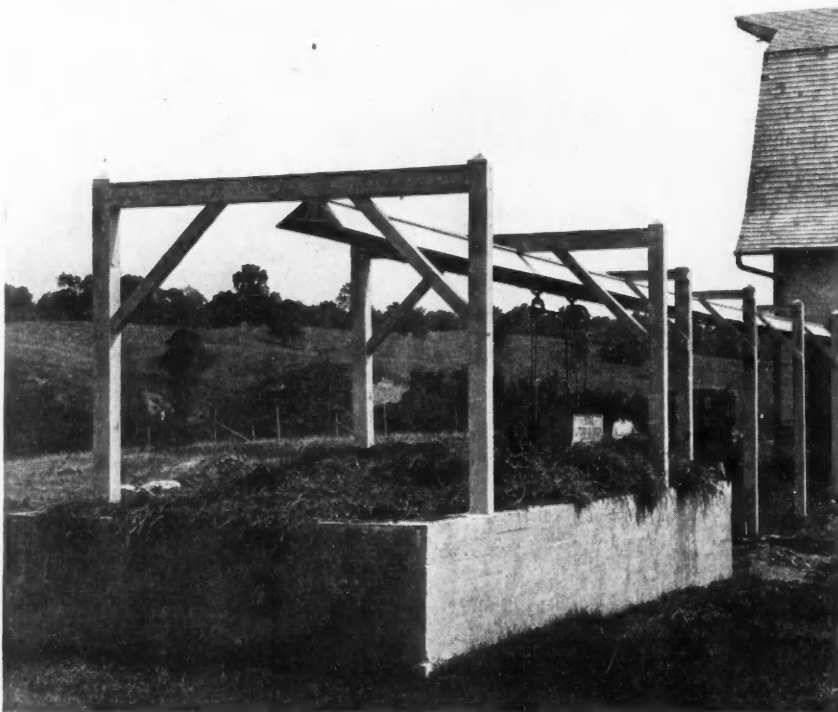
to go to waste annually, would you sit up and take notice, believe it, and do something about it?

Assistant Secretary of Agriculture Carl Voorman tells you that over \$1,000,000,000 worth of barnyard manure is going to waste annually, because the average farmer is not taking care of this product as it should be taken care of. Dean Davenport of Illinois has calculated that by the end of the present century there would be in this country a density of population of about 200 people to the square mile as against the present density of 16 people per square mile. The late James J. Hill, opener of the great Northwest, prophesied that by 1950 there would be a wheat shortage in the United States of 400,000,000 bushels!

Increased population demands increased production.

To avert the fulfillment of James Hill's sober prophecy it is up to the American farmer right now to maintain and increase the fertility of the soil, to conserve and employ every pound of barnyard manure: It means work, it is true, but it is work that, if simplified with modern equipment, can easily be done in odd moments, *odd moments*, that in the light of increased fertility and increased production, will be turned into *golden moments* for the progressive farmer.

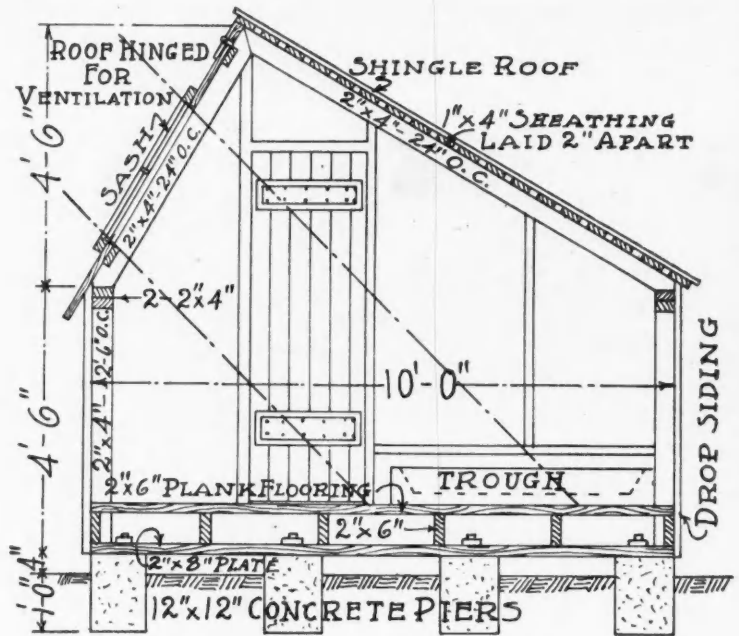
A ton of manure properly preserved contains about 10 pounds of nitrogen, 10 pounds of potassium and two pounds of phosphorus. But aside from the plant food it contains it is particularly valuable for the humus it adds to the soil. Humus (the brown or black material formed by the rotting of vegetable or animal matter) greatly improves the mechanical condition of the soil. Ma-



This Manure Pit Is Well Built and Is a Great Convenience to the Farmer; But It Would be Greatly Improved if Roofed. Manure Should Not be Permitted to Weather Except Out on the Land It Is to Fertilize.

the sun and rain has robbed him of \$500 lost thru inefficient storing and handling!

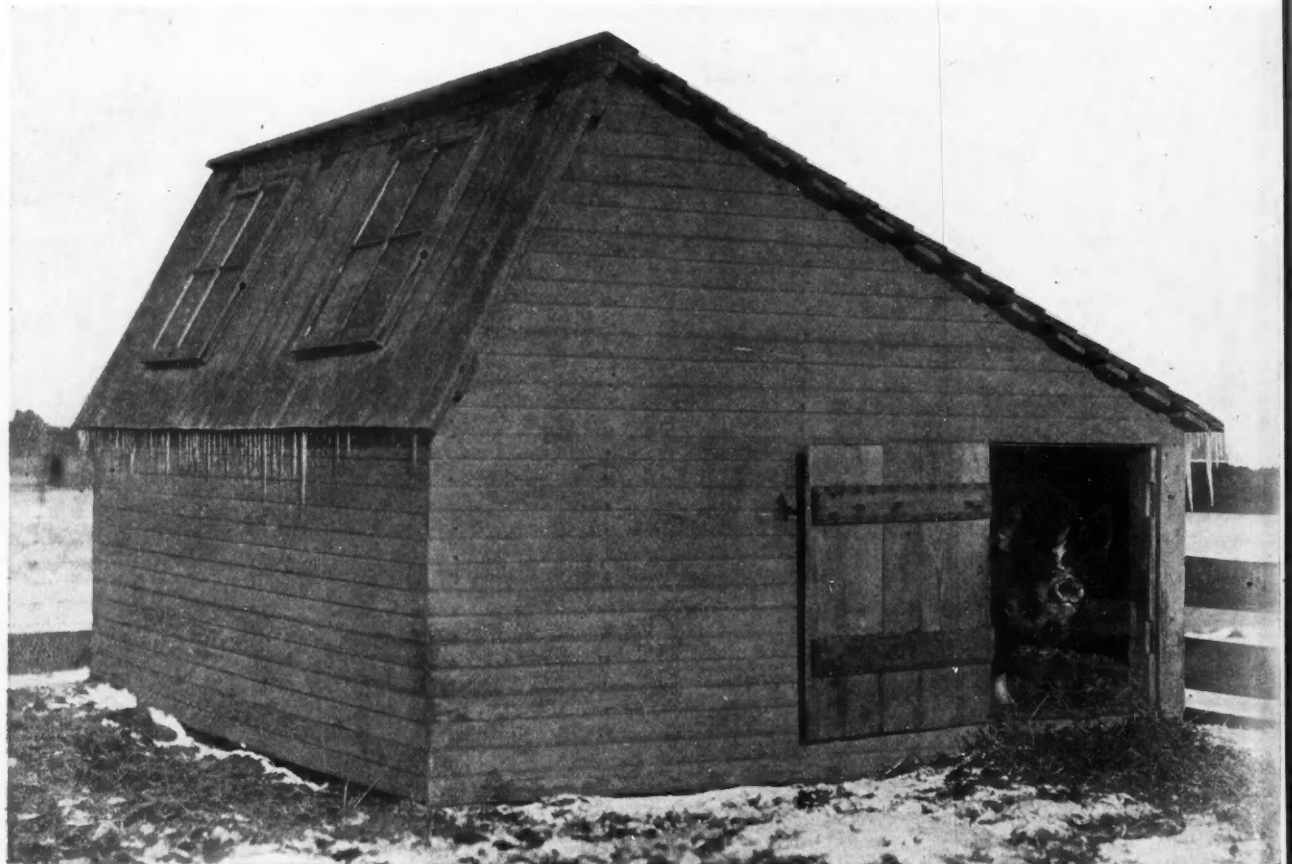
Manure is very perishable, and the parts most readily lost are the most valuable. Over 50 per cent of the total plant food in manure is soluble in water and when it lies out in the rain this soluble material is washed out, and either soaks into the soil or runs down the barnyard into the near-by creek; literally a stream of liquid gold running to waste every day in the year. Twenty tons of manure left unprotected from the elements for six months decrease in volume 50 per cent; that is, at the end of six months there are but ten tons left. This loss in weight is due largely to the rapid fermentation of the manure, also called "firefanging," in which nitrogen escapes into the air in the form of ammonia gas. Not only is there less plant food in this weathered manure, but there is a smaller amount of organic matter, straw, etc., which means that the farmer has less to spread over his fields, or, what amounts to the same thing, he can cover less area.



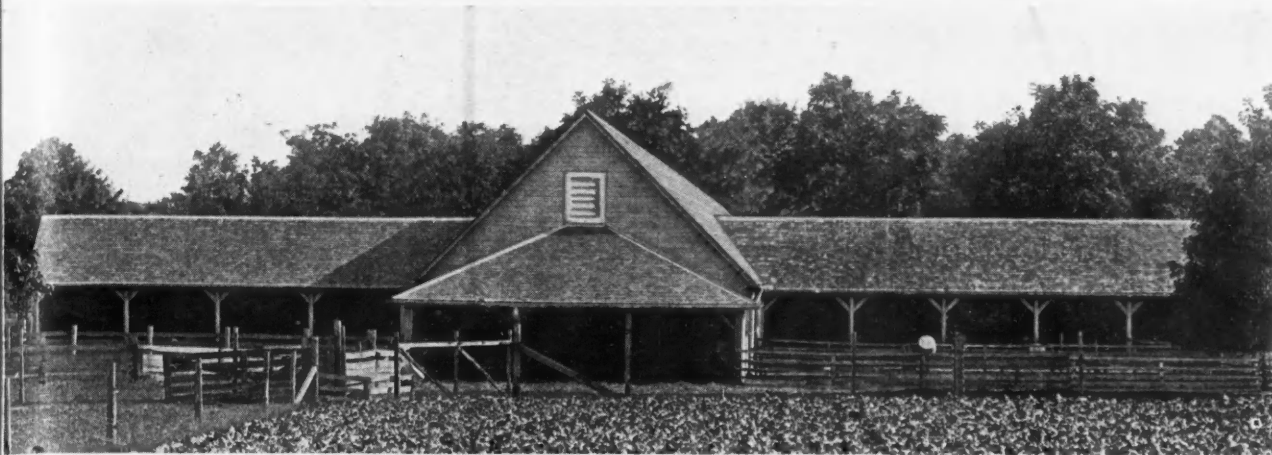
CROSS SECTION OF HOG HOUSE

Farmers in the East where the land has formerly been robbed of its fertility for years are now spending 7 to 8 percent of the farm products they raise for commercial fertilizers.

Commercial fertilizers are expensive and hard to get. Last year there was produced in this country



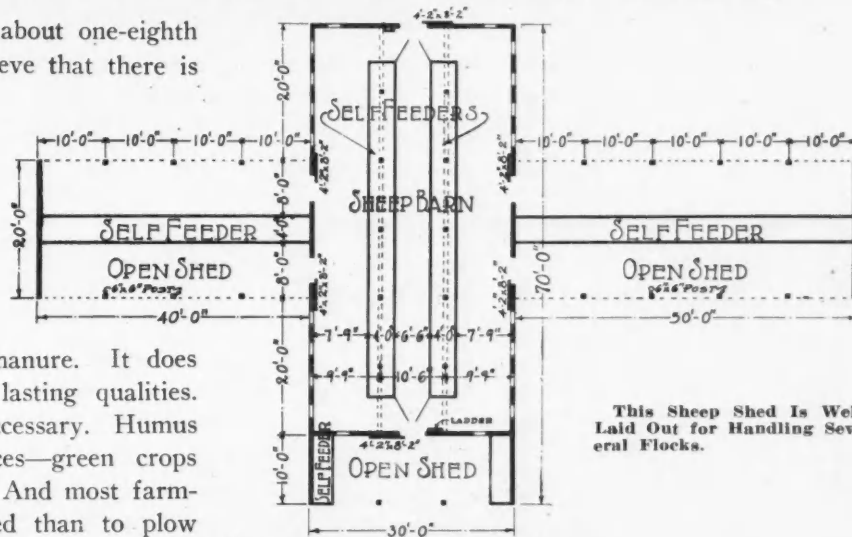
Type of Individual Pen Winter Hog House. The Door for Attendant Is in the Far Side. The Interior Is Lighted by Two Roof Windows Set in the Hinged Flap, Which Can Be Raised for Ventilation.



Sheep Barn with Open Sheds on Three Sides. The Main Section Is 30 by 60 feet, with Some Storage Space Above.

126,577 tons of potash, which was about one-eighth of the normal supply. Experts believe that there is no chance for the United States to get the amount of potash needed to meet the farmers' demands next year. Consequently there will be a serious shortage of commercial fertilizer.

And even tho commercial fertilizer were abundant and cheap it cannot fill the place of barnyard manure. It does not equal it in completeness and lasting qualities. To maintain soil fertility humus is necessary. Humus may be obtained from two sources—green crops plowed under or barnyard manure. And most farmers find it more economical to feed than to plow under without feeding. Of these perhaps the biggest class is the dairy farmer. Dairying and farm fertility

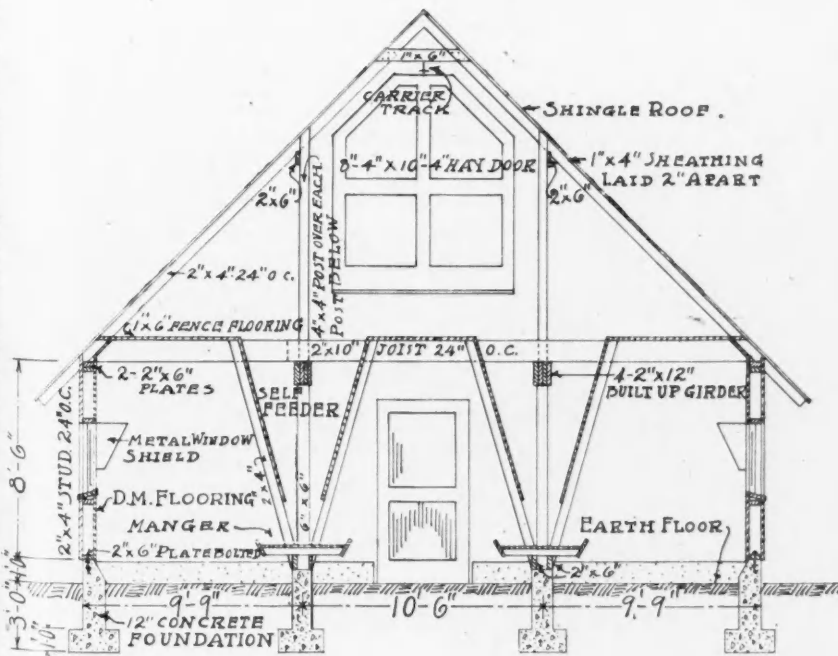


This Sheep Shed Is Well Laid Out for Handling Several Flocks.

FLOOR PLAN OF SHEEP BARN

go hand in hand. Of 100 units of digestible food fed each cow she returns to her owner 18 per cent in milk and approximately 75 per cent in barnyard manure. The dairy cow produces an average of 12 tons of manure annually. In a herd of 20 cows, therefore, the manure production equals 240 tons, and is worth more than \$1,000.

How to conserve every possible pound of this valuable product is the problem that confronts the thrifty farmer. If he could haul it from the barn out to the field continually there would be very little waste. But there are times when it is practically impossible for him to haul the manure directly to the field, as in his busy season, or when the ground is too soft, or when there is no field upon which to put it. So he should make some provision for storing it until such



CROSS SECTION OF SHEEP BARN

Detail of Sheep Barn, Showing Scheme for Feeding from the Mow Above.

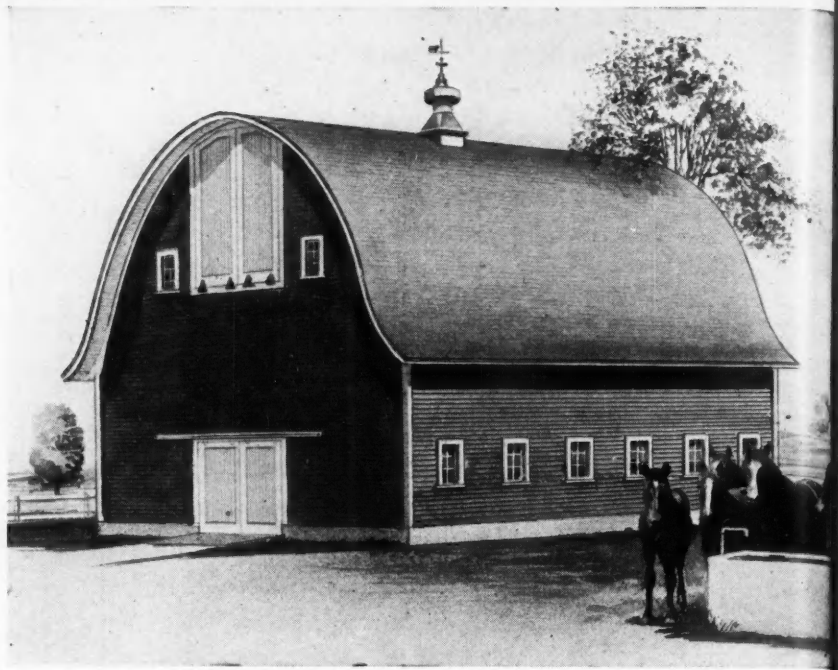
(Continued to page 104.)

Two High Barns

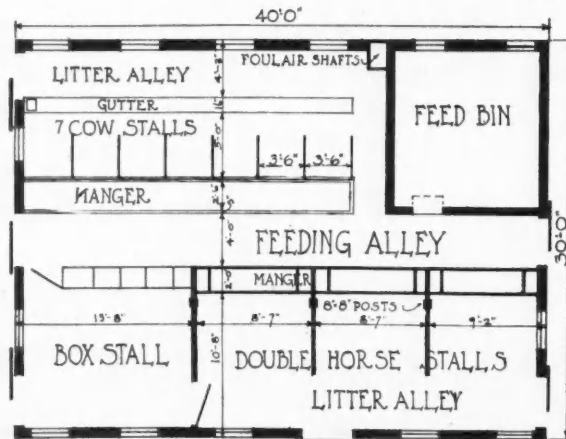
THESE structures have architectural as well as utilitarian value. The lines are beautiful and the barns are well planned for light, ventilation and utilization of the space enclosed.

The floor plans given show one use of the space. This arrangement may be changed to conform to the needs of the builder, whatever they may be. It is equally possible, of course, to increase the length of either barn—the width is ample for all practical purposes—and to make over the interior arrangement entirely for horses and cattle.

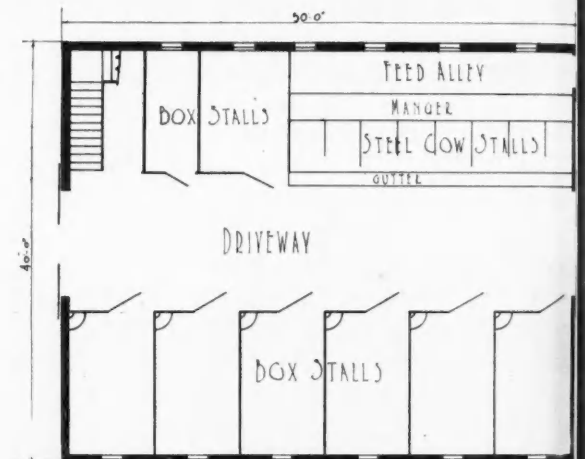
In this connection we would like to impress on your mind the fact that a heavy waste of mate-



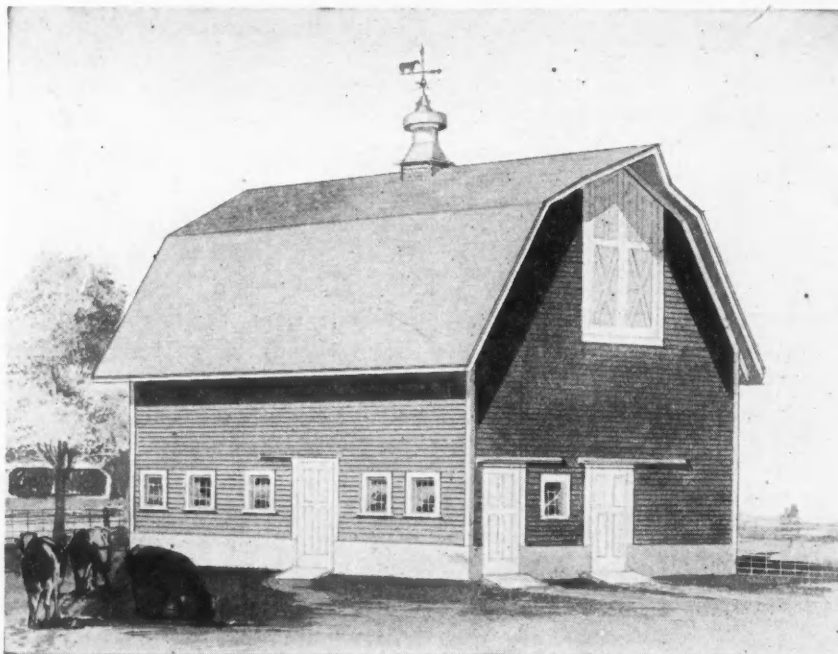
Gothic Roof Barn, Size 40 by 50 Feet, Arranged for Horses and Cows.



Arrangement of Forty-foot Gambrel Roof Barn.



Arrangement of Gothic Barn.



A Forty-foot Gambrel Roof Barn, Size 30 by 40 Feet.

rial is not necessary to form the arches for this Gothic roof. That matter has been worked out in a very satisfactory manner by builders and waste has been eliminated.

Again we would urge the importance of buying in time and buying to advantage. Building in the right way with an eye open to future needs and possible developments, the structures you plan and erect need not be replaced for several generations.

The only question arising in connection with farm buildings is whether or not they are suited to present and prospective needs. While you may be able to approximate the future it is not always possible to foresee exactly what will be required. In nearly all cases it will be a simple matter to secure more room by increasing the length of the building, and buildings should be located with that possibility in view.

Back-Yard Poultry Keeping

IN THREE PARTS—PART III

By Rob R. Slocum

Animal Husbandry Division United States Department of Agriculture

(Continued from October Issue)

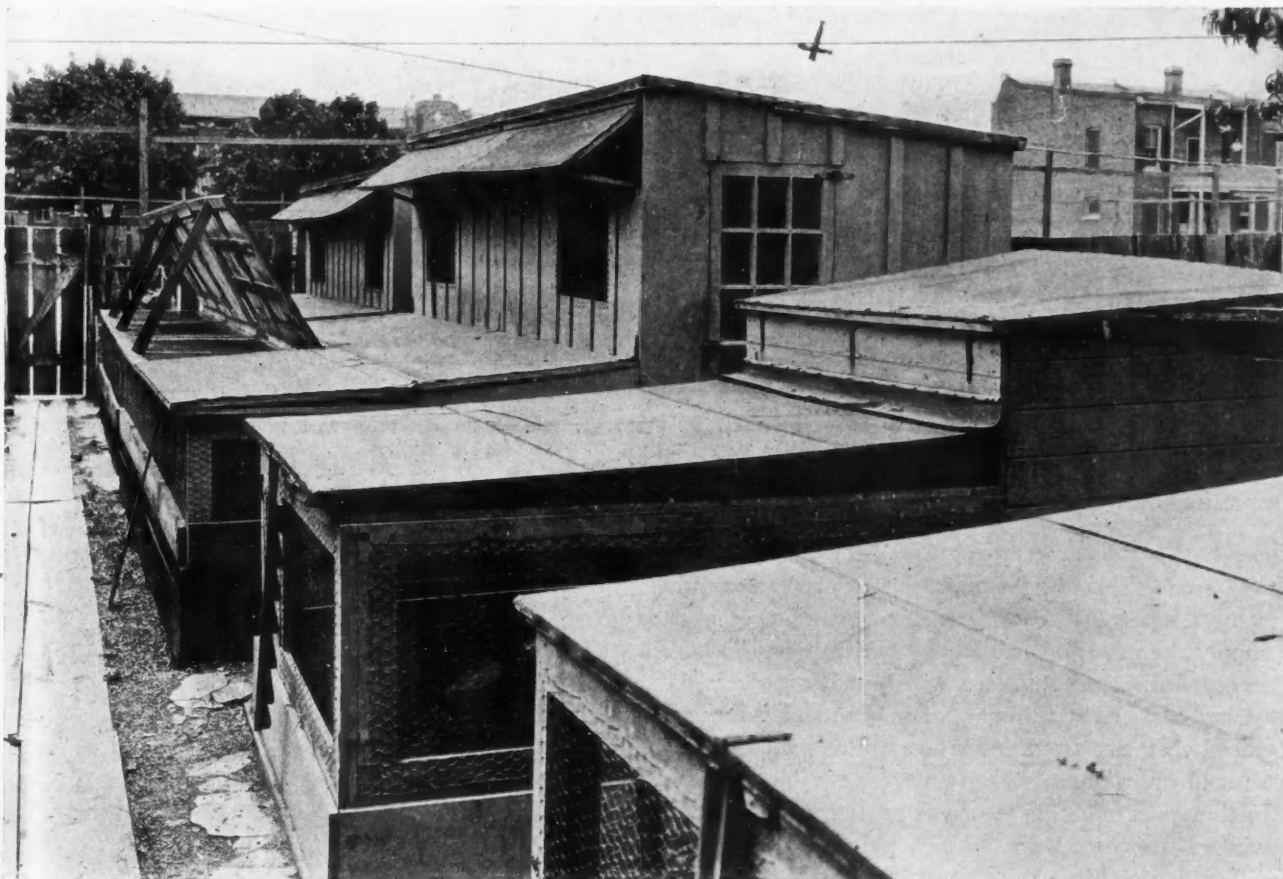
Often it is inadvisable to attempt to renew the city poultry flock by hatching and rearing chicks or buying and rearing day-old chicks. Previous experience in the raising of chickens often increases the chances of success. However, the land available is usually small in area, and no attempt should be made to raise chicks unless a plot can be provided separate from that to which the hens have access and upon which there is grass, or a supply of green feed can be furnished. Where these conditions are not available, it is better to kill the hens as soon as they have outlived their usefulness and replace them by well-matured pullets in the fall. Where it is found desirable to hatch and rear a few chicks this can best be done with hens. Where a few day old chicks are purchased to rear and no hens are available for the purpose, it is possible with little trouble and expense to construct a fireless brooder which will answer the purpose.

The hatching should be done early in the spring and should be completed if possible by the first of May. Chicks hatched before this time will have a good chance to mature and be in laying condition as pullets

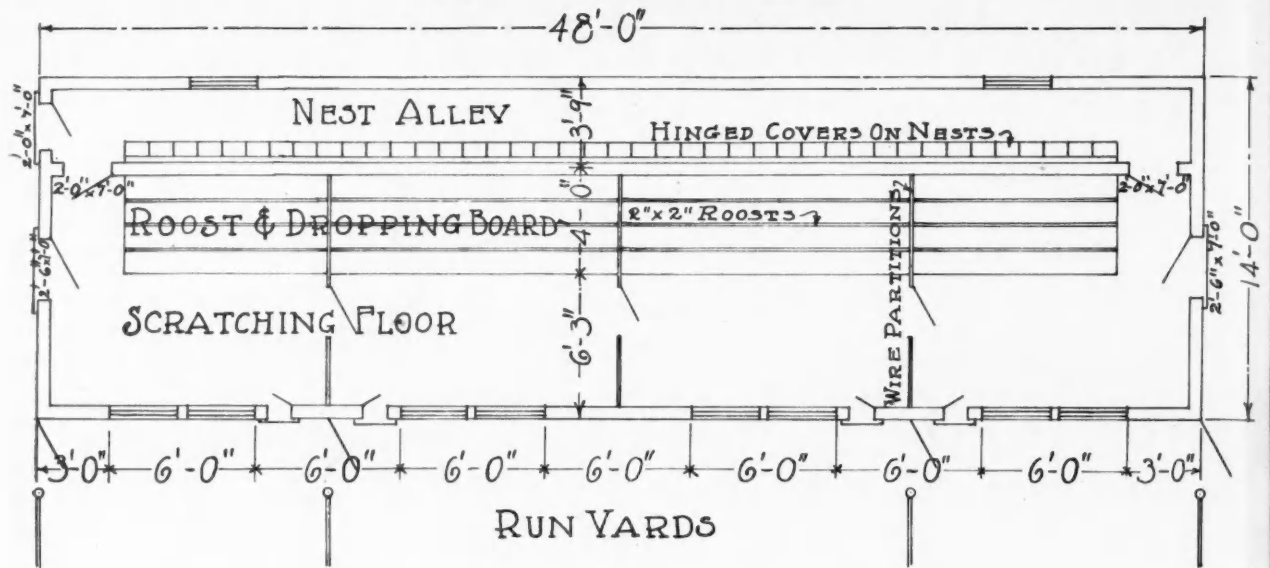
before the cold weather or fall sets in, and should in consequence be producers during the entire fall and winter. Early hatched chicks are also easier to raise, as they live and thrive better than those which are still small when the hot weather begins.

Culling the Hens

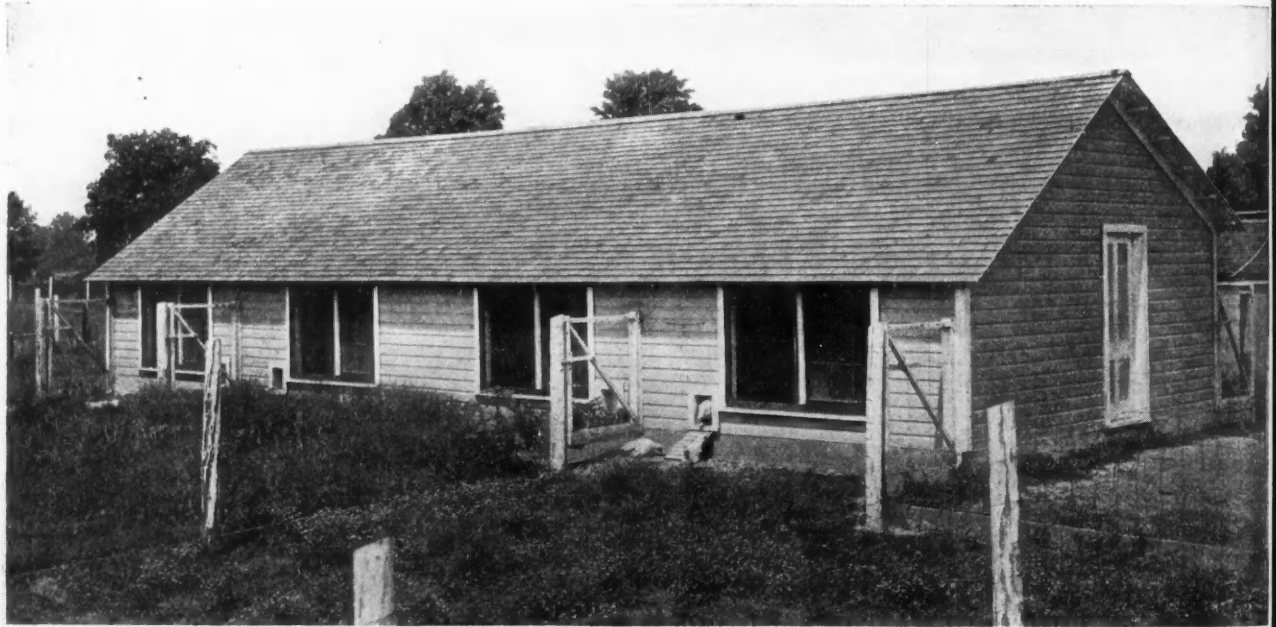
In any flock some hens will be found to be much better producers than others. Often there are a few hens which are such poor producers that they are unprofitable. Where the flock is comparatively small, the owner is often able to determine by observation which are the poor producing hens. Needless to say, these should be the ones to kill and eat as fowls are desired for the table. All hens molt in the fall and early winter. During this molting season, which usually takes about three months, the hens lay few or no eggs. It is advisable, if well-matured pullets can be purchased at a reasonable price, to kill and eat the hens as they begin to molt, replacing the flock with newly purchased pullets. The hens should not be killed, however, until they begin to molt and their comb begins to lose its size, color and flexibility, for if these changes have



An Intensive Back-yard Poultry Plant. Practically the entire yard is occupied by houses and covered runs, and about 70 hens are carried. Each house is 6 by 14 feet, divided into two pens with a covered yard of the same size. Each pen carries about 15 hens. The houses are raised from the ground so that the hens can run under them. The soil in the runs is renewed four times a year. A flock of 13 hens in one of these pens laid 2,163 eggs in a year. Oats are sprouted in the cellar of the dwelling house for green feed. In addition, chickens are raised here.



FLOOR PLAN OF POULTRY HOUSE



Large Well Designed and Well Built Poultry House for Four Flocks. Each Unit with Run Yard in Connection Is 14 by 12 Feet

not taken place the hens will probably be laying and at a time of year when eggs are especially valuable.

Preserving Eggs

A small flock of hens, even five or six, may produce enough eggs during the greater part of the year to supply the needs of a medium-sized family. Where a larger flock is kept, there will be a time during the spring and early summer when more eggs are produced than are used. These surplus eggs can either be sold or, what is perhaps more desirable, preserved in the spring for home use during the fall and early winter, when eggs are high in price and much more difficult to obtain from the flock.

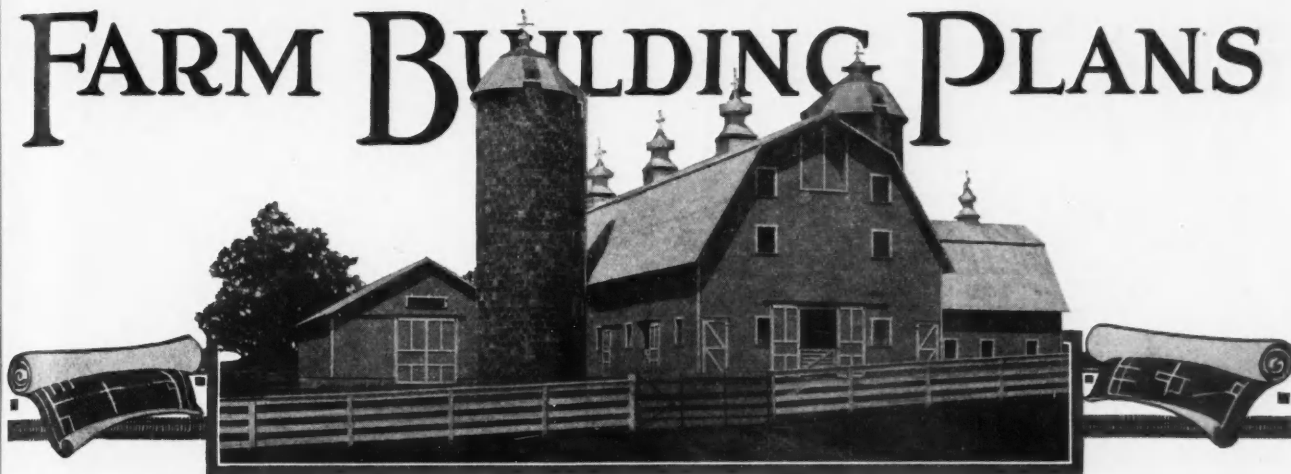
The eggs to be preserved must be fresh. They should be put in the preserver on the day on which they are laid. The eggs should be clean, but it is better not to wash them. Eggs with dirty shells can be used for immediate consumption and the clean eggs

preserved. Cracked eggs or those with thin or weak shells should never be used for preservation. Not only will the cracked egg itself spoil, but it will cause many of the other eggs packed in the same jar with it to spoil as well.

One of the best methods of preserving eggs is by the use of waterglass. This material can be purchased by the quart from the druggist or poultry supply men. It is a pale yellow, odorless, sirupy liquid. It should be diluted in the proportion of 1 part of waterglass to 9 parts of water which has been boiled and allowed to cool. Earthenware crocks or jars are the best containers for the purpose, since they have a glazed surface and are not subject to chemical action from the solution. The crocks or cans should be scalded out so that they will be perfectly clean, and allowed to cool before they are used. A container holding 6 gallons will accommodate 18 dozen eggs and will require

(Continued to page 120.)

FARM BUILDING PLANS



Blue Prints of Three Important Farm Structures

FULL PAGE PLATE PHOTOGRAPHS (PAGES 54 AND 59) ILLUSTRATE MONITOR ROOF HORSE BARN, FARM IMPLEMENT SHED, AND BEEF-CATTLE FEEDING SHED, AND THE BLUEPRINT SUPPLEMENT SHOWS THE CONSTRUCTION OF THESE IMPORTANT BUILDINGS

N ECESSARY buildings have the right of way at this time. From the farmer's point of view there is nothing more vital to his business of working the soil and growing crops than a first-class stable for his work horses.

A very practical type of horse barn is presented in working drawing form on the first two sheets of the blueprints. It is a monitor roof barn, the center part being hay storage clear from the ground up to the high roof. With this depth of mow, the hay packs down and many tons can be stored.

The horses are stabled in the low sections along each side. At the front there is a handy space for driving in to unhitch. The oat bin and harness room are also at the front.

Implement Shed and Feeding Stable

The two very essential farm buildings illustrated on page 59 are portrayed in the working drawings on sheets three and four of the blueprints.

The farm implement shed combines under one roof, a closed section and a shed with open front. Some farm machinery needs more protection than others; and this arrangement makes provision for both kinds. It is a building 22 by 40 feet, built somewhat higher in the front than at the rear, so as to give enough head room at the doors for high machines.

Beef Cattle Feeding Shed

The cattle shed is designed to harmonize with the implement shed, being higher at the front than at the back. It is a simple

inexpensive building, 22 feet wide by 54 feet long, with a big silo at the far end. There is a double range of feed racks down the center. These will have to be very solidly built and anchored, or they will be overturned and broken.

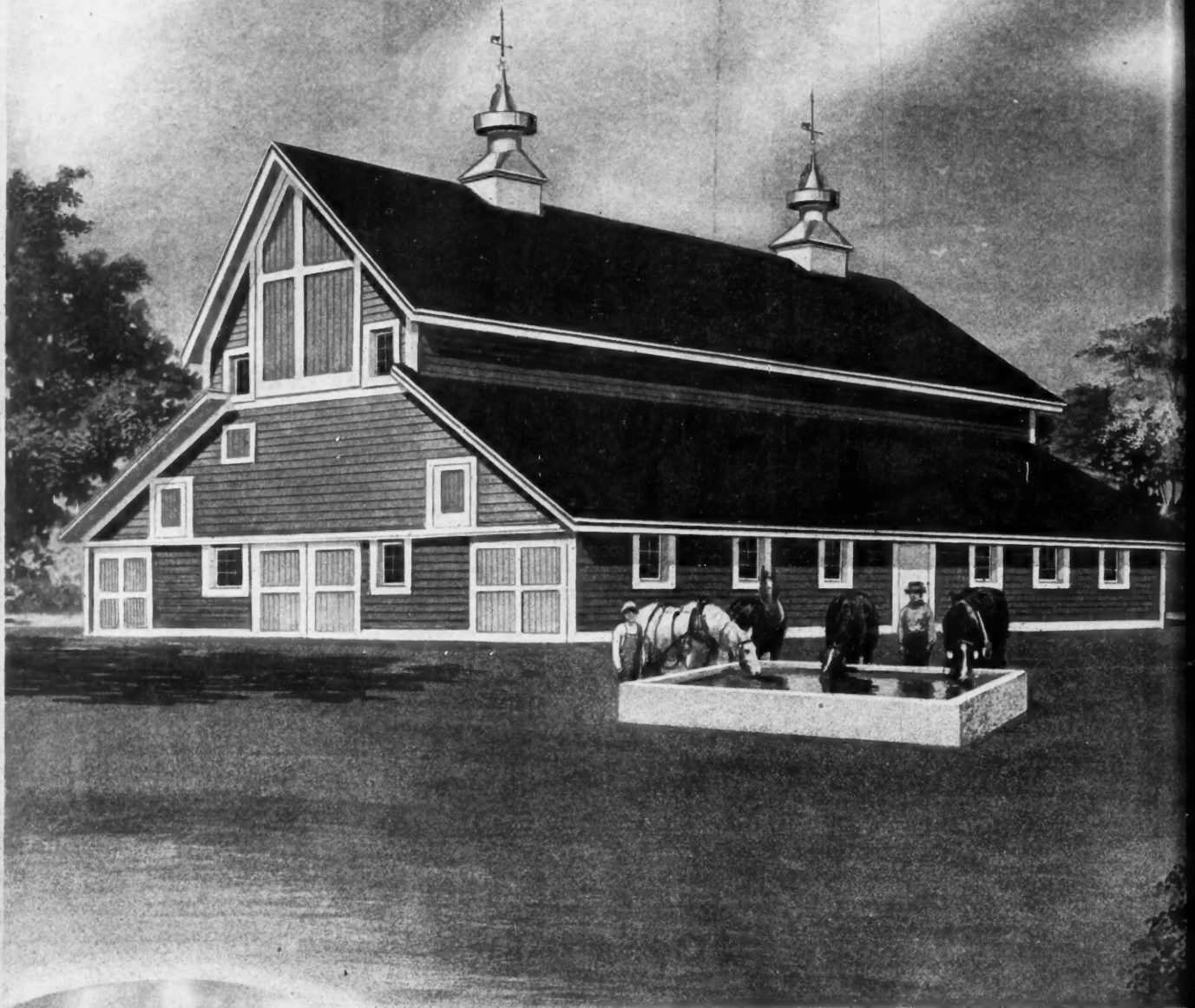
A smooth concrete floor is specified for this cattle shed. The farmer that keeps his steers warm, dry and comfortable is well repaid by the increased gains in weight which they put on.

Full Page Plate Photographs of Blue Print Buildings

- Monitor Roof Horse Barn Page 54
- Farm Implement Shed } Page 59
- Cattle Feeding Shed



A Self-Feeder for Hogs Which Comes Partly Built and Is Assembled by Merely Bolting Together. The Slide at the Bottom Can be Regulated to Feed Coarse or Fine Feed.



Monitor Roof Horse Barn

**For Working Drawings see Blue Print
Sheets Nos. 1 and 2**

**Illustrating "Carnot," Famous \$40,000
Imported Percheron Stallion**

**Our horse population is 21,000,000;
valued at \$2,174,000,000**



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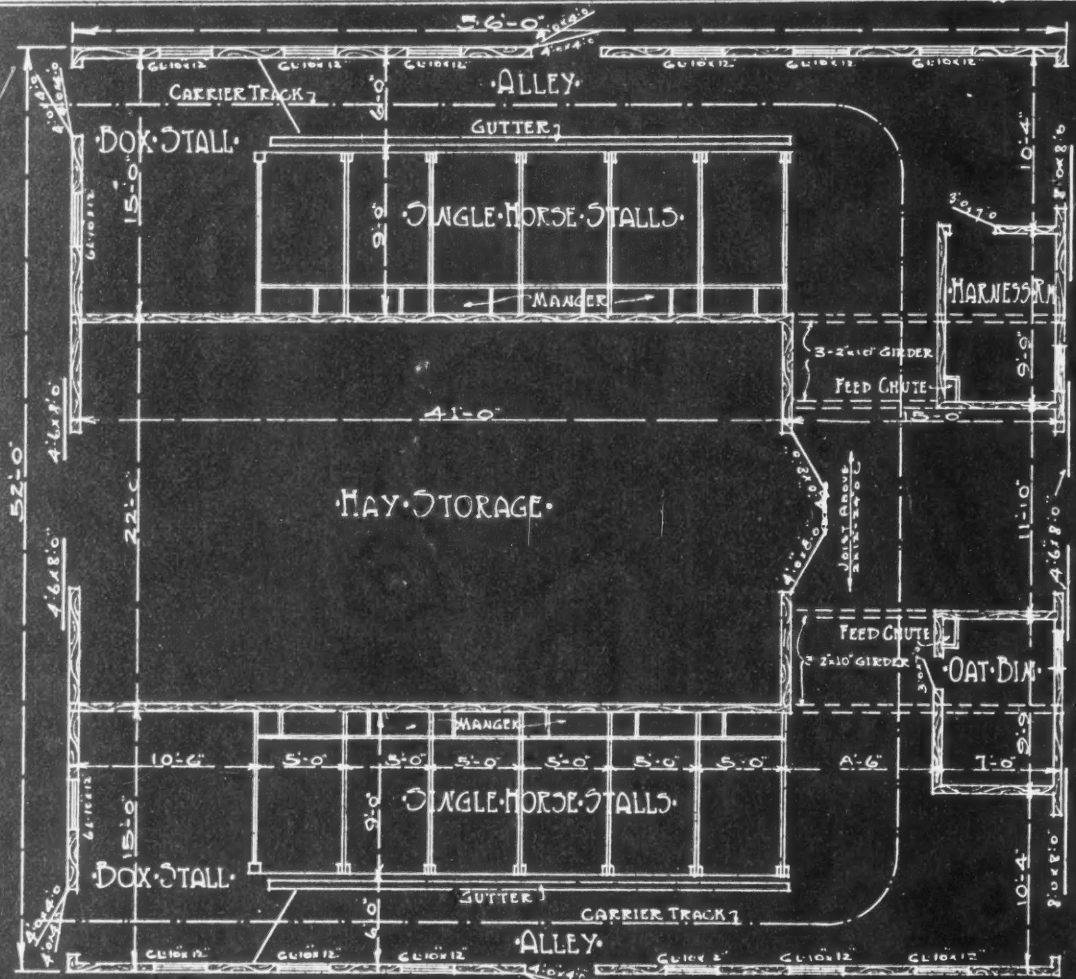
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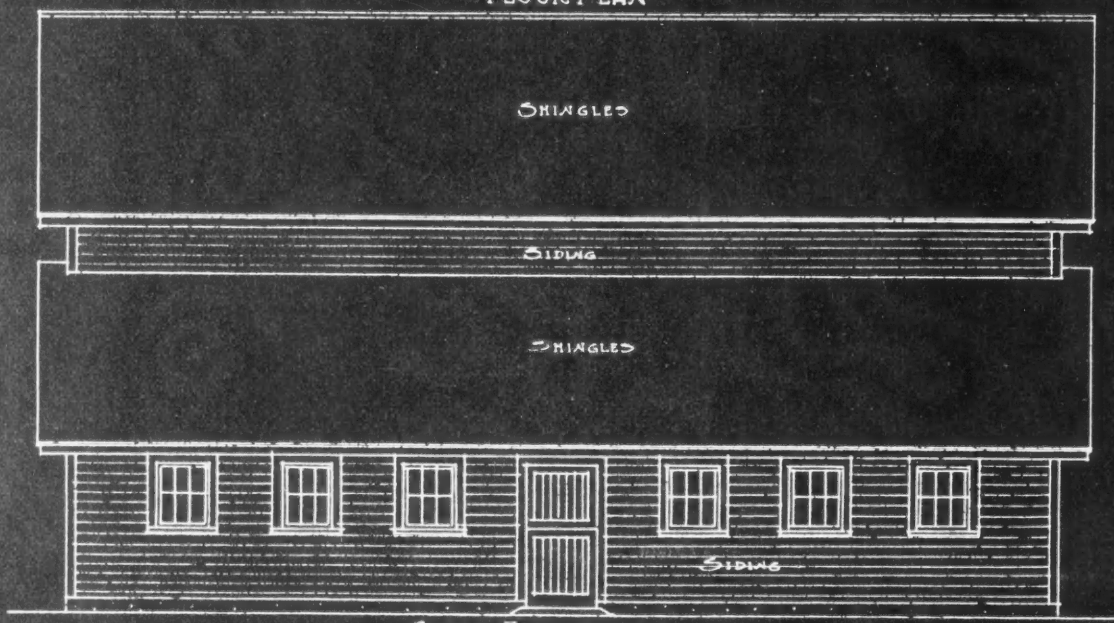
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AMERICAN BUILDER BUILDING PLANS.



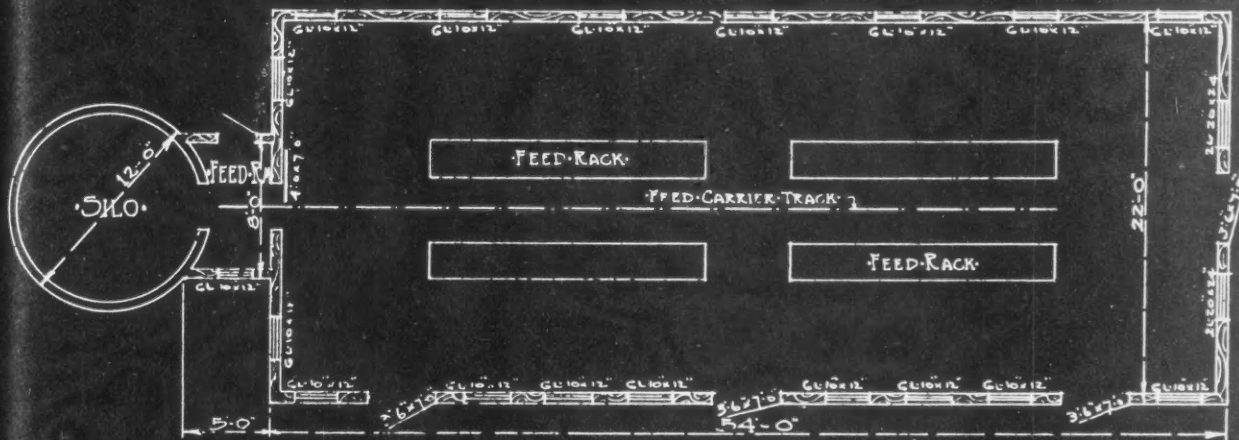
FLOOR PLAN



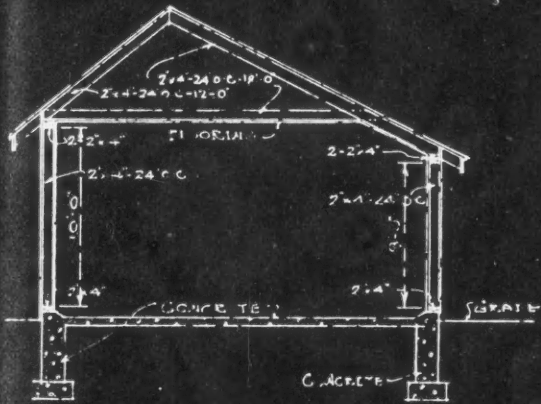
SIDE ELEVATION
SCALE 1/2" = 1'-0"

WORKING PLANS OF MONITOR ROOF BARN. SHEET No. 2

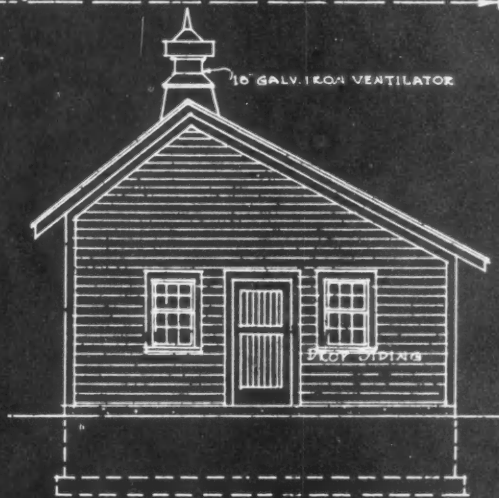
AMERICAN BUILDER BUILDING PLANS.



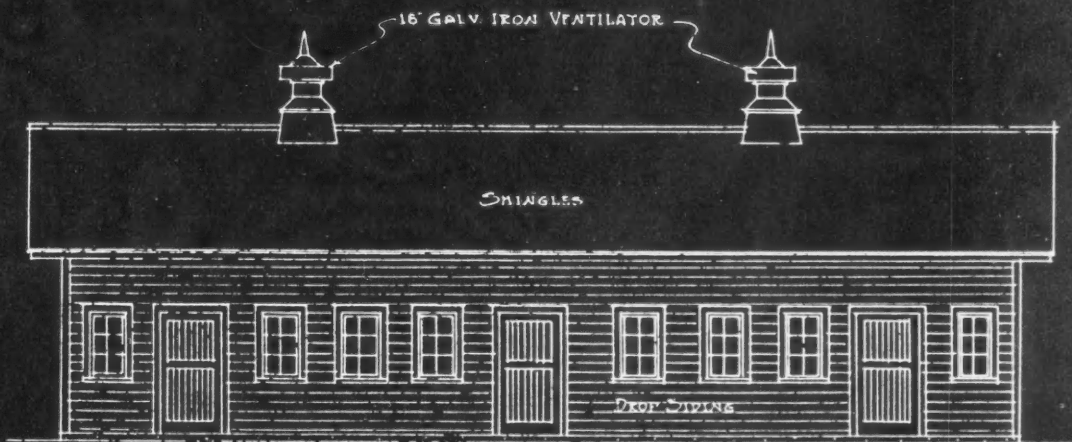
PLAN
SCALE $\frac{3}{8}$ " = 1'-0"



CROSS SECTION
SCALE $\frac{3}{8}$ " = 1'-0"



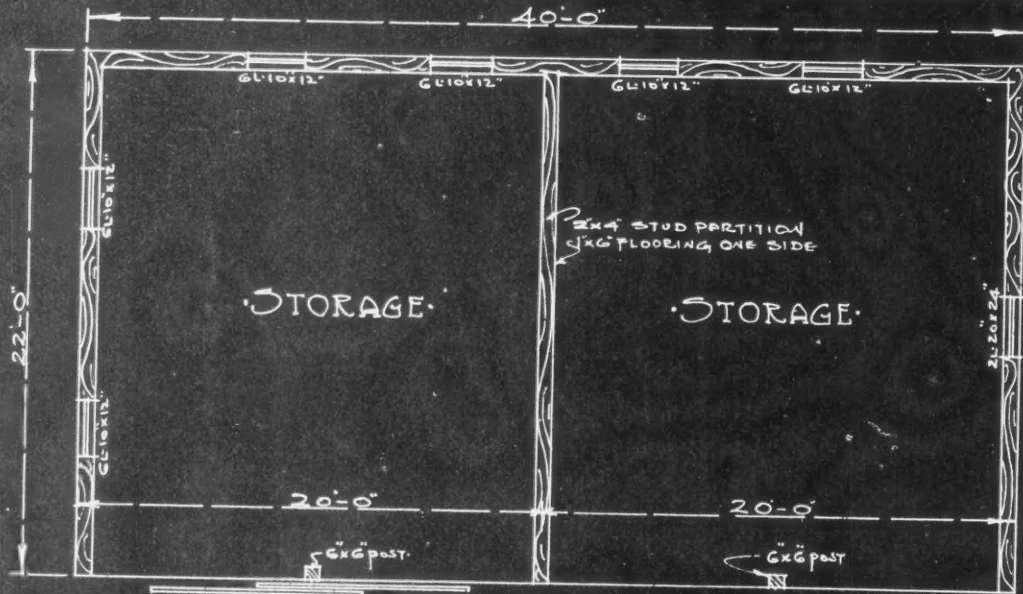
END ELEVATION
SCALE $\frac{3}{8}$ " = 1'-0"



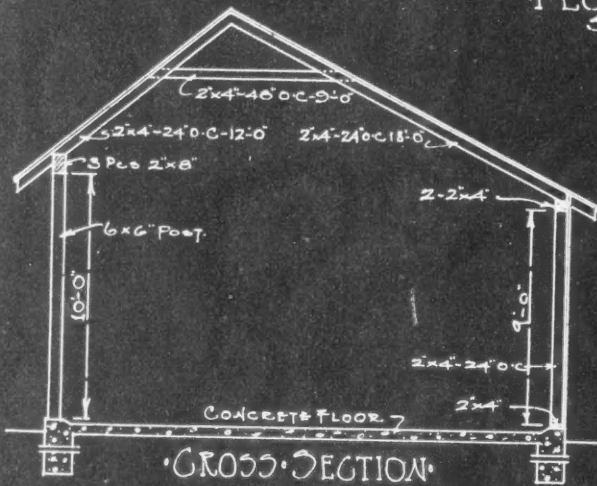
FRONT ELEVATION
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WORKING PLANS OF CATTLE FEEDING BARN

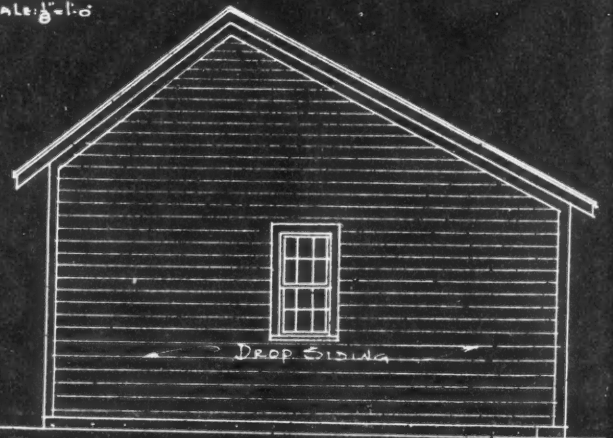
AMERICAN BUILDER BUILDING PLANS.



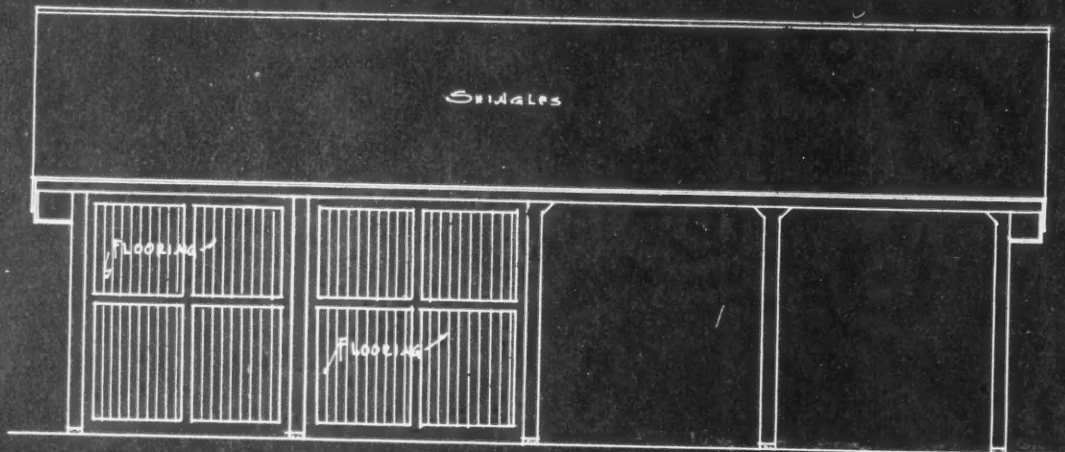
FLOOR PLAN
Scale: $\frac{1}{8}$ " = 1'-0"



CROSS SECTION



END ELEVATION

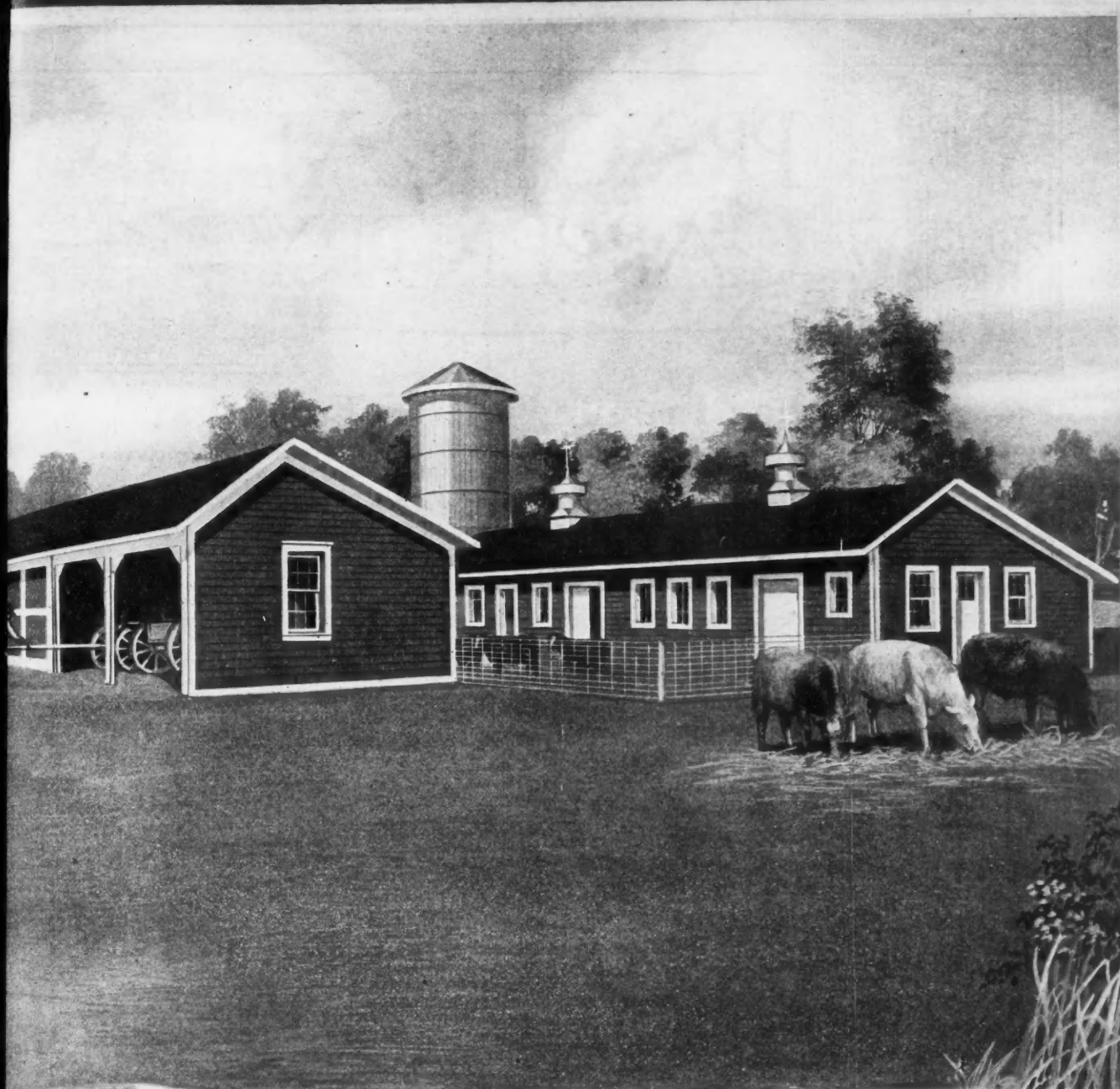


FRONT ELEVATION
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WORKING PLANS OF IMPLEMENT SHED.

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Farm Implement Shed and Cattle Feeding Shed

For Working Drawings see Blue Print
Sheets Nos. 3 and 4

**Illustrating "Cumberland's Type,"
Famous Shorthorn Bull**

36 Times Champion in as Many Shows
"A Warm Stable Saves a Feeding a Day"



Timber Framing in the Far West

BOTH THE "BALLOON" FRAME AND THE EASTERN "DROP-GIRT" FRAME HAVE BEEN DISCARDED IN THE BETTER CLASS OF PACIFIC COAST DWELLINGS

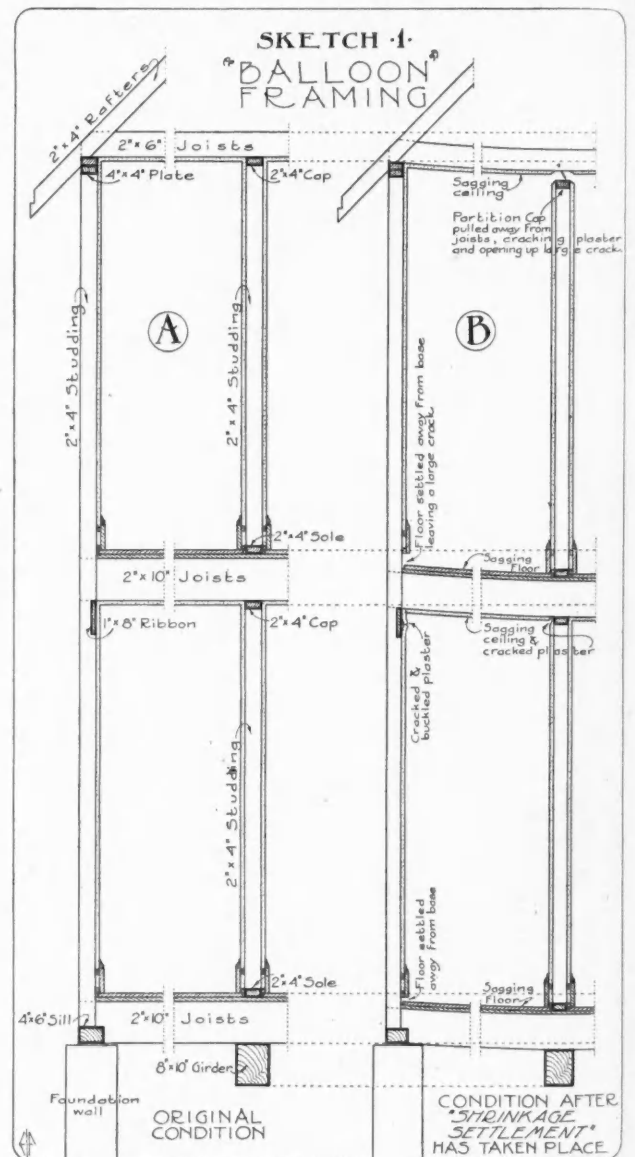
By Ernest Irving Freese

IN the far western states, particularly California, there has been evolved a system of house-framing that is worthy of widespread adoption.

The prime factor in the development and perfection of the "Western" frame was the desire to entirely eliminate *unequal shrinkage-settlement* and its numerous attendant evils. This highly commendable ambition has not only been realized, but, incidentally, a system of framing has been produced that is easily and quickly erected, and that renders the resultant construction fire-retardant, rat-proof, and thoroly rigid. In view of these manifest advantages over the "balloon," and "drop-girt" methods of framing, the "western" frame is entitled to serious consideration. The fact that it is not more generally known is the only plausible and logical reason for its seeming restriction to the Pacific coast. It is the only system of house-framing in existence wherein the equalization of shrinkage-settlement, in all corresponding parts of the frame, has been satisfactorily and economically accomplished.

It is a well-known property of structural timber that its shrinkage *lengthwise* of the grain is negligible, being practically nothing. Also, and more to the point, it is well known that the shrinkage *crosswise* of the grain is considerable, the resultant amount depending upon the initial dryness of the stick and the humidity of the atmosphere. It has been found by actual experiment that ordinary market-bought structural timber is subject to a maximum shrinkage of about $\frac{1}{2}$ inch to the foot before becoming thoroly seasoned. In other words, a 12-inch floor-joist will eventually shrink to 11 $\frac{1}{2}$ inches in height, thus causing a vertical settlement of $\frac{1}{2}$ inch to take place either locally or in the total height of the building, depending upon the method of framing and the disposition of the timber. In the same manner, all other horizontal *bearing-timbers* in and about the floor-construction, such as sills, plates, ribbons, girts, partition-caps, etc., will shrink a proportionate amount and thus cause vertical settlement accordingly. However, the fact that structural timber is subject to this inevitable shrinkage, and consequent settlement when disposed in a horizontal direction, is

not, in itself, at all serious. It becomes serious only when the timber is so disposed that the resultant settlement will not be *relatively equal*, that is to say, when the settlement occurring in any one portion of the

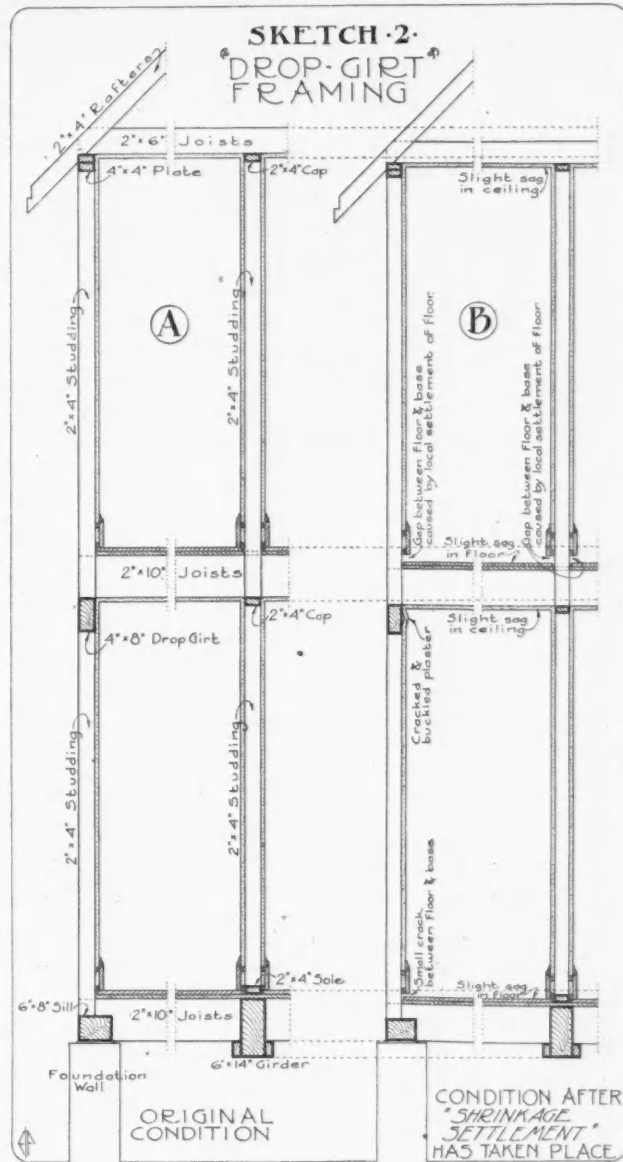


Sketch No. 1. Showing Settlement Which Is Customary with Balloon Framing.

frame will not exactly equal the settlement occurring in any other corresponding portion. And it is my purpose to herein present and illustrate a method of framing, the "Western" method, by which the equalization of shrinkage settlement can be attained. But it will first be instructive to analyze the two commonly accepted methods, namely, "Balloon" framing and "Drop-Girt" framing, and show wherein they are at fault.

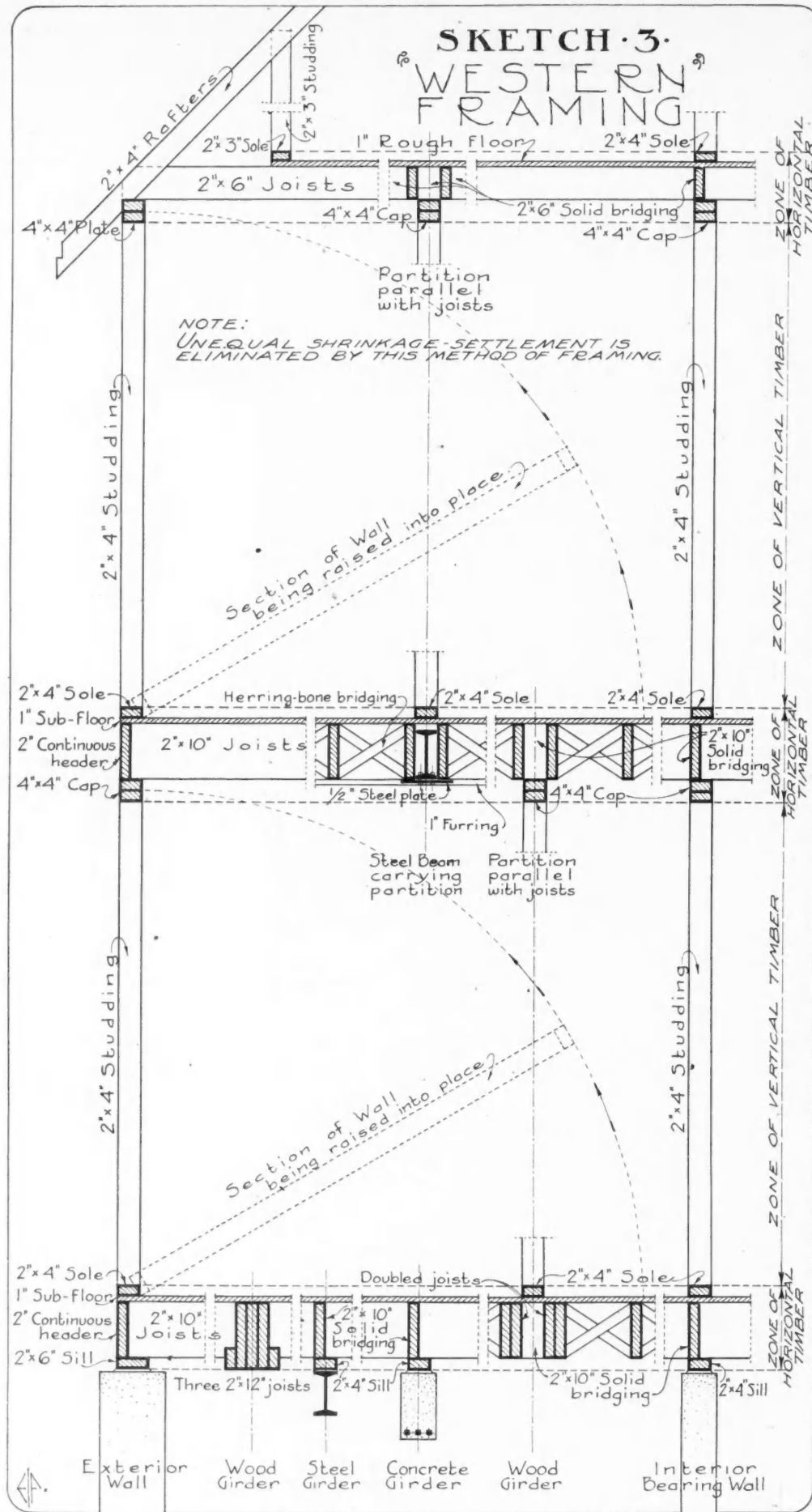
Sketch No. 1 shows a cross section of a "balloon" frame taken from an actual example. It is a glaring violation of all the principles of good construction, fire-resistance and sanitation. It's a fire trap, a vermin harbor, and is subject to a disastrous amount of *unequal settlement*. At "A" is shown the original condition of the framework just after being built. At "B" is indicated, graphically, the dilapidated and deplorable condition of affairs, a year later, after the inevitable shrinkage-settlement has taken place. And it is to be especially noted that the faults shown are not the result of settlement itself, but rather the result of the *difference* in settlement of corresponding and adjacent parts. If an engineer were to design a foundation in such a manner as to be productive of the faults shown, he would, most assuredly, be considered an exceedingly poor engineer. And rightly so. Why, then, in the name of common justice, is not the builder who, day after day, continues to design and frame the timber superstructure in the manner shown, deserving of the same amount of condemnation as the discreditable engineer? Wherein is the difference between an incompetent designer of foundations and an incompetent designer of timber framing? As a matter of fact, the latter, in this particular case is more to be censured than the former, for, in residence construction seven cases out of ten the evils resulting from unequal settlement can be traced to the timber framework rather than to the foundation.

In the "balloon" framing, shown in Sketch No. 1, the exterior studding extends in one length from sill to rafter plate. Hence, the amount of shrinkable timber contributing to the total vertical settlement of the exterior wall is made up of the 4-inch sill and the 4-inch rafter-plate, equalling 8 inches in all. In like manner, the shrinkable bearing-timber in the interior partition is made up of the 10-inch girder, the two sets of 10-inch floor-joists, the two layers of 1-inch sub-flooring, the two 2-inch partition-soles, and the two 2-inch partition-caps, totalling 40 inches. Hence, assuming an ultimate shrinkage of $\frac{1}{2}$ inch to the foot, the exterior wall will settle $\frac{1}{24}$ th of 8 inches, or only $\frac{1}{3}$ inch, while the interior partition will settle $\frac{1}{24}$ th of 40 inches, or $1\frac{2}{3}$ inches. And the *difference* of $1\frac{2}{3}$ inches is bound to cause trouble—floors sag, door frames are thrown out of square, plastering cracks, and the upper partition sometimes parts company with the ceiling overhead or, perhaps, pulls away from the floor and hangs suspended from the ceiling-joists. Trouble enough, surely! But that is not all. Damaging local settle-



Sketch No. 2. Showing Shrinkage Settlement with Drop Girt Framing.

ment also takes place at the outer ends of the floor-joists, often leaving a wide gap between the finish floor and base-board, as shown exaggerated in the sketch. At the second floor line the total shrinkage of the 1-inch sub-floor, the 10-inch joists, and the 8-inch ribbon, will measure the magnitude of the gap equaling, in this case, about $\frac{3}{4}$ inch, for this shrinkage will always be *downward*, in the direction of the load, while no compensating relative settlement will take place in the vertical studding which extends through this "zone" of horizontal bearing-timber. The base does not move in relation to the studding. But the floor *does*. Hence, the gap. At the interior partitions, however, the vertical studding does not extend thru the floor-construction. Therefore the base and the studding *both* move downward in response to the settling floor. In other words, the settlement is here *general* rather than *local*. Hence, no gap occurs between the finish floor and base. On the other hand, if the settlement continues, the base might buckle, or become split, because



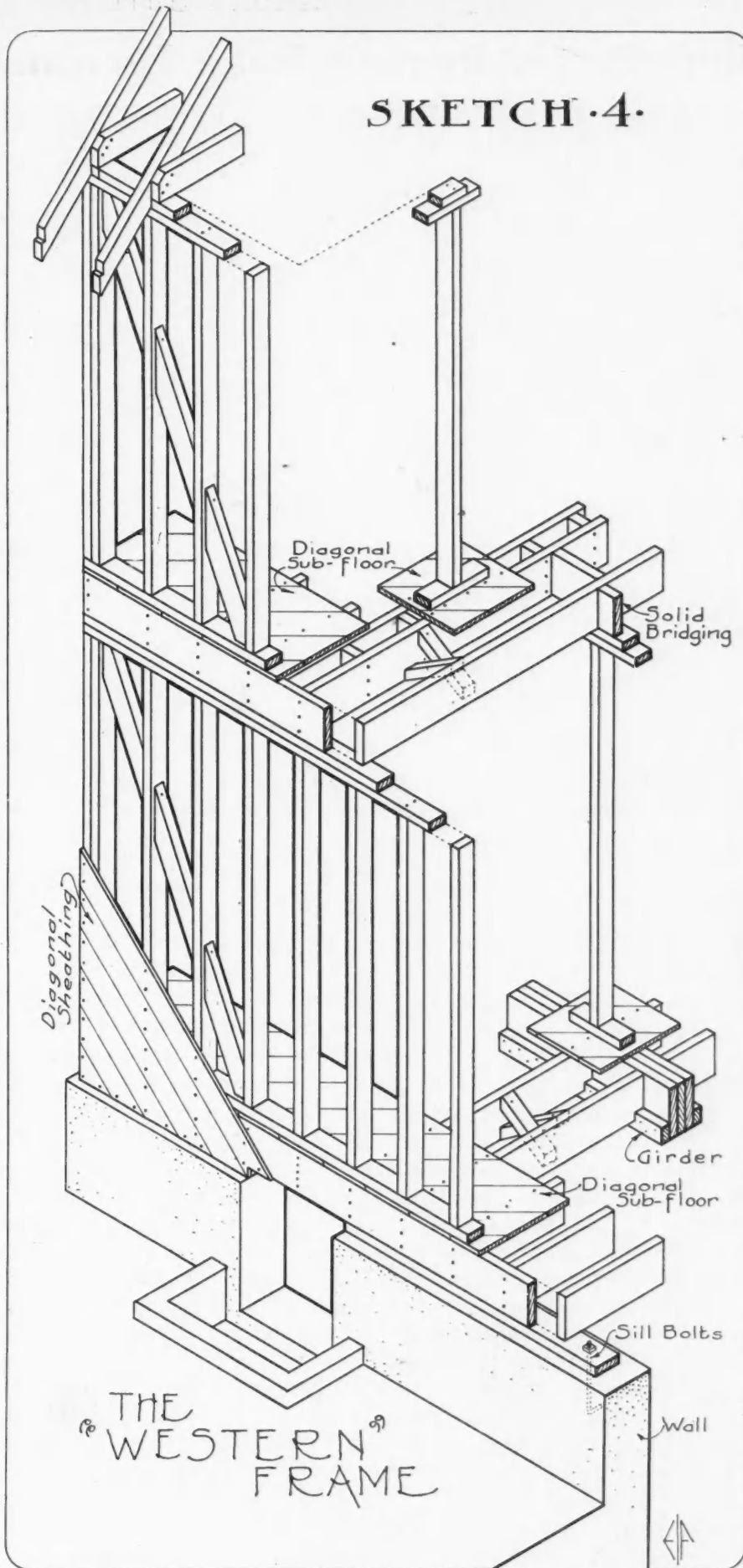
Sketch No. 3. Western Framing Which Strives to Eliminate All Unequal Shrinkage Settlement.

of the relative upward thrust of the excessively sagging floor. Moreover, this general settlement, not being equalized, is bound to open up a crack in the plastering at the junction of the ceiling and wall underneath. And, finally, the wide ribbon, supporting the outer ends of the second floor joists, is liable to more relative shrinkage than the plastering that covers it. This is the cause of numerous plaster cracks in this vicinity and, if this shrinkage is excessive, the plaster will buckle and, perhaps, fall from this portion of the wall.

Sketch No. 2 shows a cross-section of a "drop-girt" frame as called for by the most approved practice. At "A" is shown the original condition of the frame upon completion, while at "B" is shown the same construction after the usual shrinkage-settlement has taken place. While this frame is far superior, in every way, to the "balloon" frame, yet it is, nevertheless, subject to the same resultant evils, even though these evils be of lesser extent. In the "drop-girt" frame, the second-story exterior studding and the outer ends of the second floor joists are supported upon the 4-inch by 8-inch girt, while the upper interior partition studding rests upon the 2-inch partition cap of the story below, as clearly indicated in the sketch.

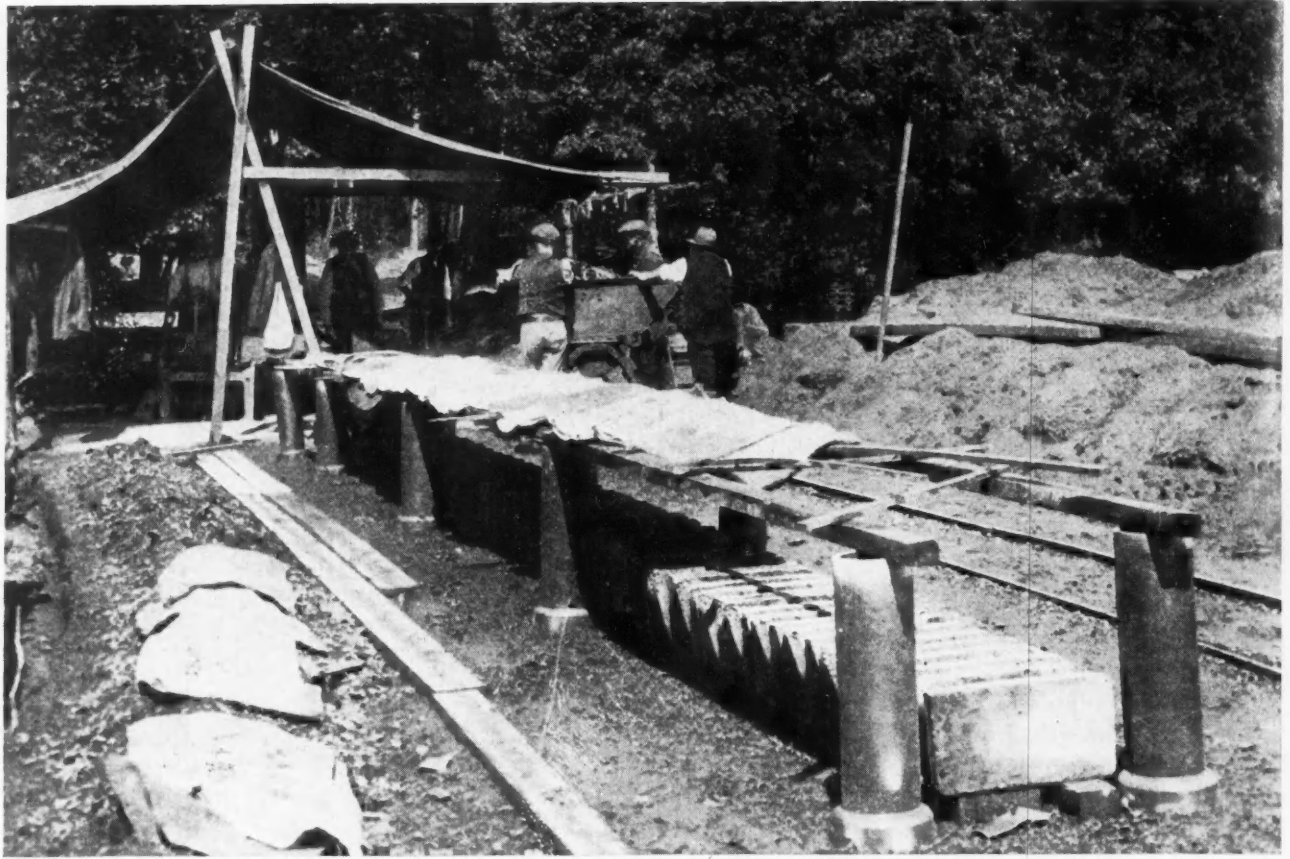
Moreover, the 6-inch by 14-inch first-floor girder is framed with the top of the joists. Consequently the *general* settlement has been almost, but not entirely, equalized. There will still be a slight sag in the floors and ceilings, but probably not enough to crack the plastering. The sag in the first floor, in this instance, is equal to the difference in settlement between the 14-inch girder and the 10-inch joists, amounting to but 1/24th of 4 inches, or a little more than an eighth of an inch, while the sag in the second floor will be not quite one-quarter of an inch, and the sag in the second-story ceiling will equal the difference in the total general settlement of the exterior and interior walls, amounting to exactly an eighth of an inch. But, as before said, this slight sagging will probably cause no serious damage. However, the *local* settlement occurring at the outer ends of the first floor joists, and at *both* ends of the second floor joists, cannot be so easily overlooked. At all of these points, as shown in the sketch, the vertical studding extends into the "zone" of the floor-construction. Hence, the floor settles *in relation to the studding* and therefore opens up a gap between the floor and base, being more pronounced at the second floor-level because of the greater depth of shrinkable material existing there between the top of the sub-floor and the bearing-surface of the joists. A gap of 1/2 inch or more is not an uncommon occurrence. An attempt to remedy this fault is sometimes made by placing a base-shoe at the junction of base and floor, and nailing same to the floor only. Then, as the floor settles, the shoe moves downward with it, and in sliding contact with the base, thus keeping the gap "covered." But now, behold, instead of the gap showing, an unpainted strip of base appears

(Continued to page 124.)



Sketch No. 4. Perspective of All Wood Western Frame.

Red Cross Rushes Base Hospital Construction



The Building of a 3,000-Bed Hospital Is no Small Task in England, Where Labor and Material Have Been so Largely Commandeered for War Purposes. When the American Red Cross Started the Biggest American Hospital in England, at Salisbury, Near Southampton, It Found Lumber Almost Unobtainable, so It Decided to Build the Hospital Huts Mainly of Concrete Blocks. Several Shacks for the Manufacture of These Blocks Were Erected at Convenient Points Around the Big Estate and Linked up with Light Railways.

LUMBERMEN and concrete men of the United States will be much interested in the way in which the American Red Cross workers, assisted by English engineers, solved the problem of supplying shelters for thousands of wounded American soldiers at Salisbury Court, near Southampton.

The American Red Cross bought this big Tudor Manor House, with its 186 acres of farmland, meadows and woods, and began the work of transforming it into Base Hospital No. 40, which has been turned over to the medical authorities of the American Expeditionary Force. The Manor House supplies merely a nucleus, or headquarters, for this huge hospital. Acres of hutments for wards, quarters for nurses, doctors and men, an administration building, operating room, and a huge warehouse for stores had to be put up before patients could be received. Speed was essential, for American wounded from France were pouring into England, and the army could not wait until Salisbury Court was finished to maximum capacity.

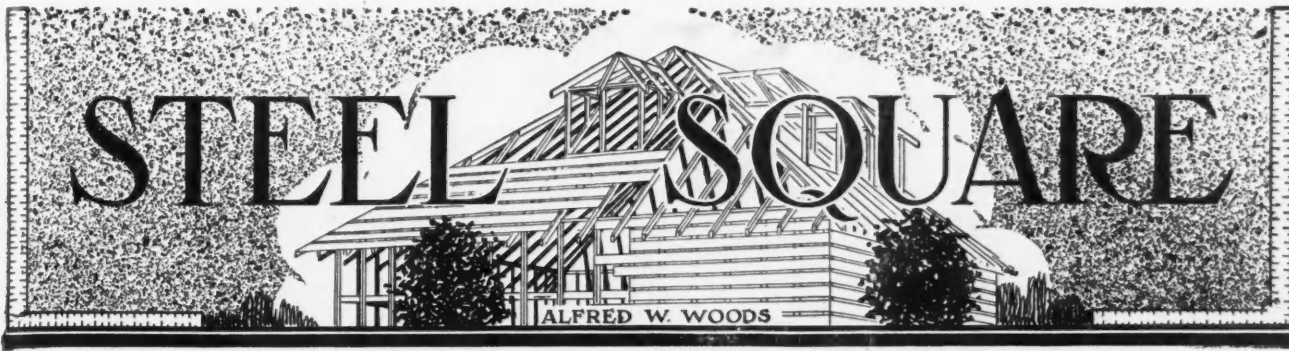
Capt. F. Harper Sibley, former president of the Rochester, N. Y., Chamber of Commerce, in charge of the American Red Cross work in the Southampton district, took charge of the construction program. The

British Royal Engineers lent him Capt. E. J. Rimmer, who, with Arnold Thornley, a Liverpool architect, drew plans. Both labor and material were short and difficult to obtain.

The first step was to install a sawmill and utilize the famous timber on the estate. The next step was to purchase a pile of concrete blocks in the neighborhood and the machine which had been making them. A pit found in the woods supplied plenty of sand and gravel, which was brought to the mixer over a little hand-power railway laid for the purpose. In a very few weeks—in early August—the doctors' quarters, a bathhouse for enlisted men, and a kitchen had been completed. At the end of August work was well in hand on six wards, the administration building and operating room, and the quarters for nurses and orderlies were in process of construction. A fully equipped Red Cross hospital canteen was doing business in two hutments which had first been used in the South African war.

Even this work, however, did not keep up with the demands for beds, so the Red Cross put into use a large tent hospital consisting of seventy large tents, double-roofed and with windows and provided with

Continued to page 126.)



Problems of Roof Framing Solved

FIRST OF A SERIES OF ARTICLES ON THE PRACTICAL USE OF THE STEEL SQUARE FOR ROOF FRAMING—TERMS DEFINED

By A. W. Woods

THE number of young fellows coming up into the steel square using trades—now that so many of their older brothers have gone to war—makes it particularly timely now to get back to the first principles of steel square figuring.

For this reason we are especially pleased to be able to present this very practical series of lessons. In commencing this it will be our aim to make the work as simple as possible. While it will be necessary to cover the same ground as in some of the former articles, new dress and illustrations will be brought into use with a view to simplifying the problems wherever possible.

Therefore, we have thought best to begin this series with an explanation of the common terms used in roof work, so that even those not actively engaged in car-

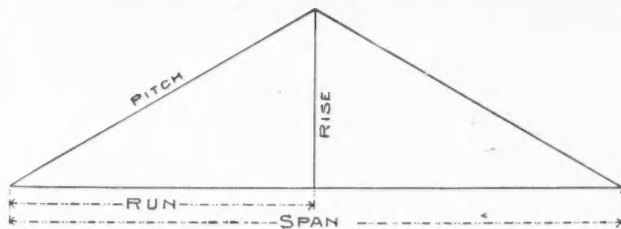


FIG. 1.

penry work may fully understand the subject and apply the steel square to obtain correct results in the actual work.

Span—The first thing to be considered is the span. It has reference to the gable or that part of the building over which the common rafters are to be placed, regardless of deck.

Run—The run is equal to one-half the width of the span, unless the roof contains a deck. In that case, deduct the width of the deck from that of the span; the run will be one-half of the remainder. It is sometimes called the base of the rafter.

Rise—The rise comprises that portion of space on a plumb line directly under the comb, or highest point on the measurement line of the rafter, to a point level with the plate on which it rests. Its height regulates the slope given the roof and determines the pitch, as $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, etc., or the proportion between the rise and the span.

Pitch—The pitch represents the slope given the roof, as before mentioned, and is the slope of the common rafter. This completes the triangle formed by the run and the rise.

These three terms, "run," "rise" and "pitch," name the parts of a right-angled triangle. Knowing the lengths of the first two, the length of the third (common rafter) is found by extracting the square root of the sum of the squares of the first two. This method is the one most used by engineers in steel construction. But in ordinary roof framing, where wood is employed, absolute accuracy in lengths is not essential, as a fraction of an inch or so in the rise is not noticeable so long as the other members are framed on the same basis.

Therefore, the usual way of obtaining the lengths of the rafters is by scale; that is, by letting inches represent feet on the blade of the steel square for the rise and on the tongue for the run of the roof; and the length taken diagonally across from these points will represent the length of the common rafter. By using the side of the square that is divided into twelfths of an inch, the divisions will represent inches in the measurement of the actual rafter. So, in laying out work, great care should be observed as to accuracy in applying the square, because the variation of $\frac{1}{12}$ inch in the run or rise, amounts to a full inch, and more in the length of the rafter.

In Fig. 1 is shown a simple diagram of the parts that must be known before laying out the rafter.

Another method quite generally used is to take the

(Continued to page 128.)

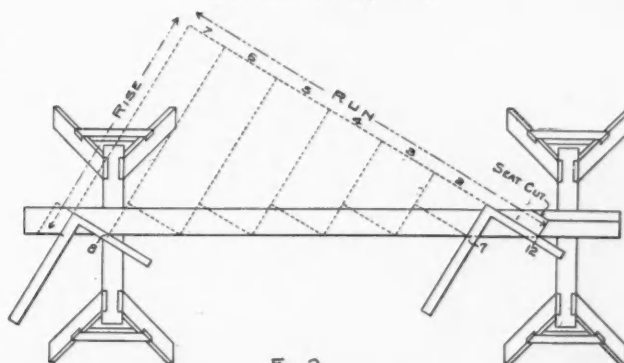


FIG. 2.

CORRESPONDENCE

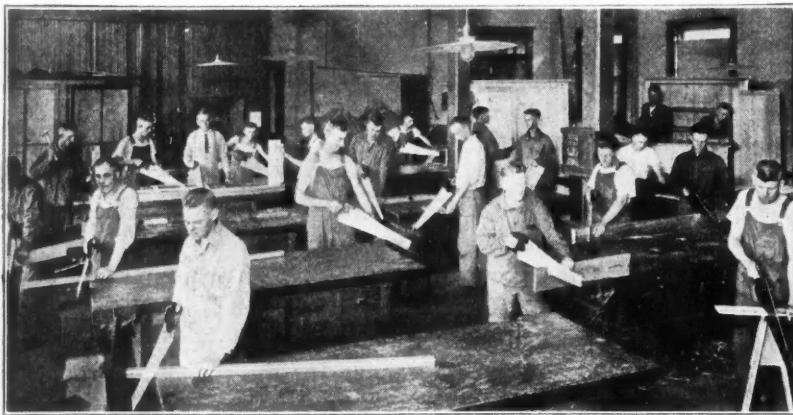


Questions Answered and Ideas Exchanged.

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

Soldier Carpenters Made in Two Months

To the Editor: Indianapolis, Ind.
Here is a class in a detachment of the Vocational Army of our government.
All the men in the picture are using Atkins "Silver Steel" saws. It goes without saying that they are "starting right."



Soldier Boy Carpentry Students.

These men are studying carpentry, and during their course of instruction, which covers a period of about eight weeks, they are taught, thru this intensive training, how to build things; how to repair quickly and efficiently such important things as gun carriage spokes, airplane parts that are made of wood, mitering and splicing, etc.

They receive such wonderful instruction in two months that they are really most excellent carpenters after the course of study, which, of course, is of a very practical nature.

To make them efficient great attention is given to the tools they use, with the result that they use nothing but those of proved worth.

E. C. ATKINS & Co., INC.,
T. A. Carroll,
Manager Publicity.

A New Electric Planer

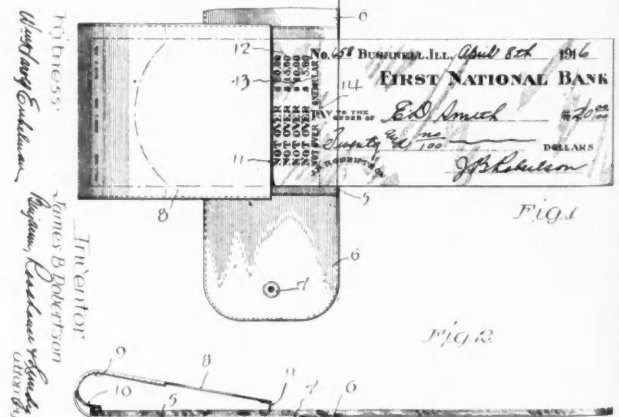
Editor AMERICAN BUILDER: LaFargeville, N. Y.
I am in the town of Clayton, on the famous old St. Lawrence river, helping build ships for Uncle Sam. This yard put out submarine chasers, or destroyers, last year, one of which got two submarines.
This company has just purchased an electric planer which is a wonder. The machine uses the same current as the electric boring machine, 220 volts. It is connected to the motor by a flexible shaft, some six feet long, is used for

getting out plank and saves all adzing, as it will take off an eighth of an inch as rapidly as a man can walk along with it. You can see what this means on a forty-foot plank, but it is used more for planing the sides of the boat and does its best work on the decks because here it may be more easily handled. It will give a good surface by going twice over and does the work as rapidly as five or six men.

JOHN UPTON.

Patents Non-Raisable Check Device

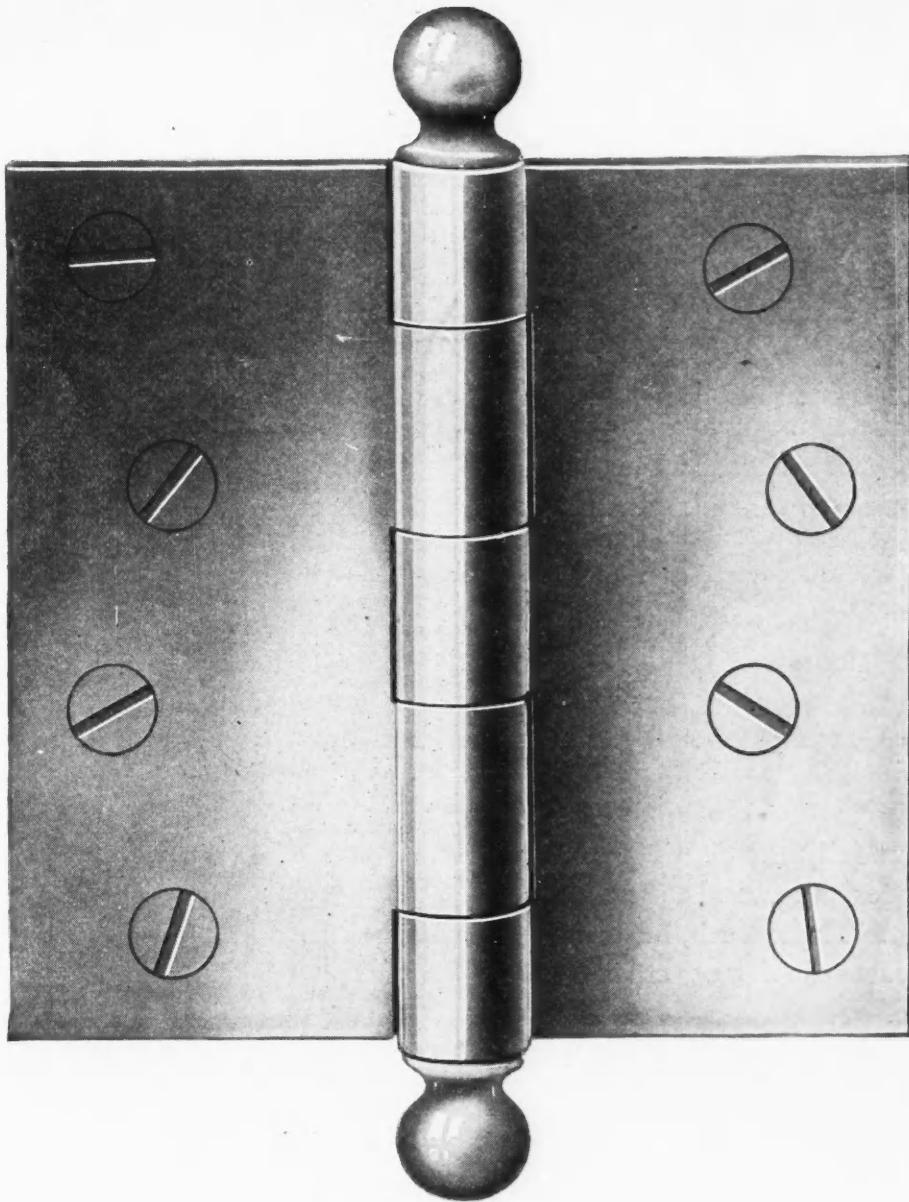
To the Editor: Bushnell, Ill.
Please find inclosed patent drawing of non-raisable pocket check book which I think will be of much interest to contractors, as there is more or less paying done on the job to strangers, and it is impossible to carry a protectograph in one's pocket.
I have used it for the past year and would not do without it.
It is good up to \$300 (three hundred dollars).
There is a patent both on the check and the cover.
J. B. ROBERTSON,
Contractor and Builder.



Patent Drawing of Check Protector.

Submit Facts to State Council

To the Editor. Alexandria, La.
We take the liberty of writing you for some information as to the proper parties that we could take the following matter up with at Washington:
The Priorities Division of the War Industrial Board has issued a ruling that all new buildings that are unessential must
(Continued to page 68.)



You need this Butt

WE can say this with assurance because this is one of the most popular butts made, and it will please and serve you as it has thousands of others. There's nothing showy or elaborate about it. Its design is plain, dignified, and handsome—and *it does the work.*

Stanley Wrought Steel Loose Pin Butts with Ball Tips—Plinished. No 241

Here is a substantial, smooth-acting, sturdy but which will compare favorably with any other plated butt on the market. The $3\frac{1}{2}$ inch and larger have five knuckles in the joint, the smaller sizes three.

Today send for catalog on Stanley Hardware; free on request.

New York
100 Lafayette Street

The Stanley Works
NEW BRITIAN,
CONN., U. S. A.

Chicago
73 East Lake Street

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

Stanley Garage Hardware is adaptable for factory and mill use.



Nothing Succeeds Like Success

All your little jobs are really samples of your work. Success with them will mean other and bigger contracts from the same clients—contracts for houses, stores and buildings. That is why it pays to do your finishing with

Murphy Varnish

"the varnish that lasts longest"

It brings out fully the depth of tone and grain. It seals the wood and makes its beauty last. The smooth, beautiful finish it imparts does not crack or scratch white.

Your work will have the permanent beauty that means success if you use these longest-lasting products:

Murphy Transparent Interior
Murphy Transparent Spar
Murphy Transparent Floor
Murphy Nogloss Interior
Murphy Semi-Gloss
Murphy Univernish
Murphy White Enamel
Murphy Enamel Undercoating

Murphy Varnish Company

Franklin Murphy, jr., President

Newark

Chicago

Dougall Varnish Company, Ltd., Montreal, Canadian Associate

ANA

Correspondence Department

(Continued from page 66.)

be stopped. This ruling allows for necessary Government work to go on and remodeling on other buildings to the extent of \$2,500.00.

In view of the above facts we are prohibited in this city from building any more new houses, and as we have Camp Beauregard located within four miles of this city there has been and is a great demand for small houses. It was estimated recently by the War Camp Community Service that there was needed at once at least one hundred more houses. This city is congested for the reason of its being a cantonment city, that it is impossible for the army officers at the camp and civilians that are connected with the camp to bring their families here.

As stated in the beginning of this letter, the Priorities Division of the War Industrial Board has stopped the building of houses. We think that this city should be made an exemption for the reason as above stated (on account of Camp Beauregard being located in our midst). We would thank you very much if you could assist us in getting a permit to build twenty or twenty-five small homes, not to exceed, say, a cost of \$2,500.00 each. Thanking you in advance for any information or assistance you may be in a position to give us, we are,

GEHR CONSTRUCTION CO., INC.

Per W. G. Gehr, Secretary.

Answer.—We can appreciate the position you are in relative to the recent ruling of the War Industries Board affecting new buildings.

The regulations specify that applications for building permits be made through the State Council of Defense. They have been given authority to receive applications, to pass upon them tentatively, and, if approved, forward them to Washington for final O. K. Since this procedure has been specified we believe your best course is to make application to the Louisiana State Council of Defense, presenting your case to them as strongly as the situation will permit. There may be some delay in getting the matter thru, but we believe it can be arranged.

In presenting this to the Council of Defense, make clear not only the urgent need for the additional housing, but also the facilities at hand for handling the proposition. If there is an adequate supply locally of the principal building materials, and if labor is available which cannot readily be utilized for more necessary war work, the chances of getting your project O. K.'d will be improved. EDITOR.



About the Wood Borers

To the Editor:

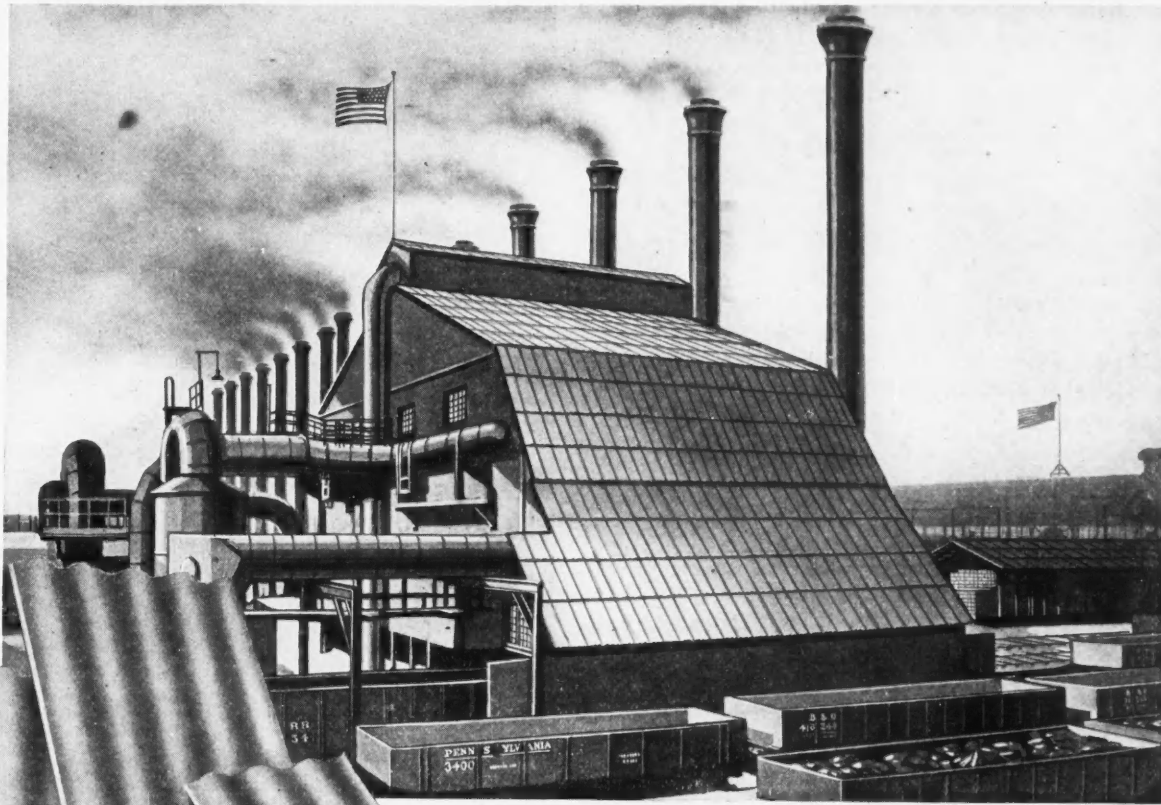
La Fargeville, N. Y.

There is a difference between hoping and expecting. I hope that someone will answer Chas. Edwards and tell him just what to do for those insect wood borers he mentions in the August issue, because it certainly is some case. But I do not expect that anyone has a sure cure, so I will make a few suggestions.

Try a solution of some of these—salt, alum, saltpeter, or lime water, vinegar, blue vitriol, or most anything that could be put into the wood thro holes bored in it. Turpentine or gasoline might be the stuff.

A man who writes and reads much sometimes runs across such things as this, but I have done a little of both and have not met with its equal. Perhaps W. R. Card, who has been at it for thirty years, can help, or some of the other older writers. My wife says it is a question for a man who lives in a warm place. We cannot get an answer from the warm-

(Continued to page 70.)



In the Front Line Trenches of Industry

Generating plant of Jones and Laughlin Steel Co., Hazelwood, Pa. Roofed with Ambler Asbestos Corrugated Sheathing.

Here, as well as in the trenches "over there", there is danger—danger from fire. In all the large industrial centers where men are working day and night there is the constant menace of fire due to increased activity.

Thousands of buildings and manufacturing establishments are protected from this menace by

Ambler Asbestos Corrugated Roofing and Siding

But there are many new structures that will be exposed to the danger of fire unless they are so protected. Contractors and builders who protect the buildings they have in their charge by specifying Ambler Asbestos Corrugated Roofing and Siding are doing a patriotic service. Loss by fire now not only means the loss of the building burned but also thousands and often millions of dollars worth of munitions and other supplies that would be saved if the building were properly protected.

Ambler Asbestos Corrugated Roofing cannot burn because it is made of non-burnable materials—Asbestos and Portland cement. It never needs repairs. Never requires paint and is not affected by weather conditions.

The Ideal Skylight

We have manufactured exclusively for us a Corrugated Wire Glass to be used for skylights in conjunction with Ambler Asbestos Corrugated Roofing. It makes a non-leakable, fireproof skylight. Easily put into place and is much more economical than other types of skylights.

Write today for more information.

KEASBEY & MATTISON COMPANY

Dept. B-1 Ambler, Pa., U. S. A.

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

(Continued from page 68.)

est place, but a man who has lived in tropical countries or in India might know of some remedy. How about some of the government officials at Washington, or the Smithsonian Institute at Washington? A letter would bring an answer at least. I suppose there is a state college of agriculture in California like ours at Ithaca. If so, try it.

JOHN UPTON.



Want More Correspondence Dept.

To the Editor: West Toronto, Ont.
Please find enclosed my subscription for another year for the AMERICAN BUILDER. I might say that I find it very useful, like blueprints very much, would be better pleased if correspondence department was enlarged greatly.

JOHN M. BENTLEY.



Wants Derrick Design

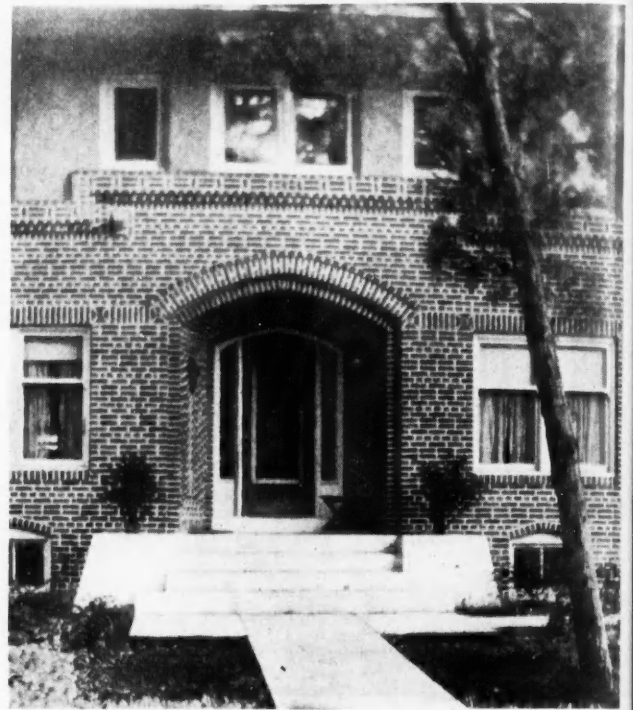
To the Editor: Covington, Va.
In your near future, AMERICAN BUILDER, I would like to see some articles on the design of derricks, also on the design of swinging foot bridges about 200-foot span.

ERIC G. FLANNAGAN.



Useful for General Superintendent

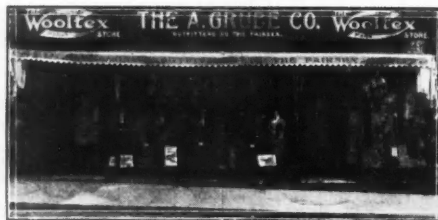
To the Editor: Des Moines, Iowa.
Enclosed please find draft for \$4.00, for two years' subscription to the AMERICAN BUILDER. It is the most useful book I have found in connection with my work, as I have been general superintendent of all classes of buildings for the last sixteen years.



Detail of Entrance, Home of Architect N. T. Vorse, G. H. Youngerman, Superintendent.

I am enclosing some photos showing some of the high-class work I look after. This is the main entrance to the residence of Mr. N. T. Vorse, architect.

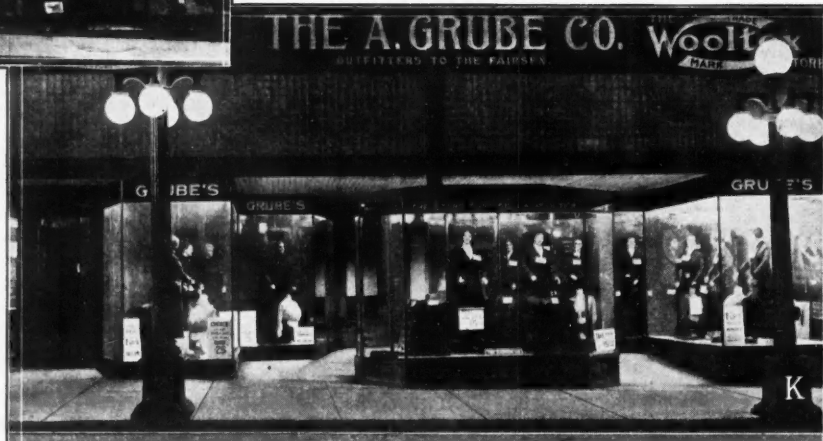
G. H. YOUNGERMAN.



This Kawneer Store Front Brought 25% Increase in Sales

War
Conditions
Call for
Remodelling

The
Kawneer
Way is the
Profitable
Way



By installing a modern **Kawneer All-Metal Store Front** this merchant was able to boost his sales without increasing his advertising.

60,000 other merchants vouch for the value of the **Kawneer way of modernizing store buildings.**

Kawneer

STORE FRONTS

Write today for Catalog and Portfolio of Designs.

Let us show you how you can make money as the store front expert in your locality.

Kawneer Mfg. Company, Niles, Mich.

**“I’ve used it for twenty years—
and don’t know yet what it’s made of”**

BUT, for that matter, who *does* know (outside the factory that made it) exactly what “rubber type” roofing is?

And that’s just the reason you can’t afford to judge roofing solely by its looks. For, in spite of a general similarity in appearance, there is a great difference in the *service* “rubber type” roofing and Johns-Manville Asbestos Roofing give.

The difference lies in the fact that “rubber type” roofing is made of a coal tar or asphaltic compound, with merely enough wool or cotton fibres to hold it together, while Johns-Manville Asbestos Roofing is made of asbestos fibres with enough Trinidad Lake and natural asphalt to make it waterproof—the asbestos felt alone meeting every other requirement of a perfect roofing.

Because Johns-Manville Asbestos Roofing is all mineral—fire, weather and time-resisting—it gives the greatest return, in fire safety and long life, for the money invested in it.

That makes Johns-Manville Asbestos Roofing the easiest roofing to sell—and its service on your customer’s roof builds new business for you, year after year. Let us send you more details about this better roofing and what the service behind it means to you.

Tell us where to send it—today.

H. W. JOHNS-MANVILLE CO.
NEW YORK CITY
10 Factories—Branches in 63 Large Cities



JOHNS-MANVILLE ASBESTOS ROOFING



You're the man
who can make offices and factories
more comfortable, warm for this
winter.
For you are the man who can put in

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TREATED
WOOD FIBRE
WALL-BOARD

The hard, stiff, water-proof Plastergon Wall-Board, by shutting out the cold far more than sieve-like plaster, also does the patriotic work of saving coal.
Different from any other wall-board. Don't forget that! Chemically saturated.
Why don't you do now what the Government did before using Plastergon Wall-Board in ninety per cent of the new Washington buildings. Find out the difference.

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QUICKER
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PROFIT
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Carpenters Make Money
Owners Save Money by finishing with

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WALL BOARD

Carpenters get more money out of every building they erect because they do the work formerly done by plasterers.
You please the owners with a wallboard that never warps and can't crack and fall off like plaster. The owner saves money, gains time and generally saves a month's rent. You can do the neatest kind of work, the walls can be beautifully decorated and their beauty endures. Write

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1021 Wayne Avenue, Lockland, CINCINNATI, OHIO

House Plans to South America

To the Editor:

Corvallis, Ore.

I am enclosing check for \$2.00 for my subscription to the AMERICAN BUILDER.

I have sold several plans from my article in the last November AMERICAN BUILDER. I sold one to a Dr. Luis de la Carrera, of Santiago, Chile, who saw the article in your magazine. I greatly appreciate the AMERICAN BUILDER and I wish to thank you for the splendid cuts and liberal space you gave my dwelling.

With best wishes for the future of the AMERICAN BUILDER, I am,
C. L. HECKART,
Designer and Builder.



What a Boy Can Build

To the Editor:

Elkhart, Indiana.

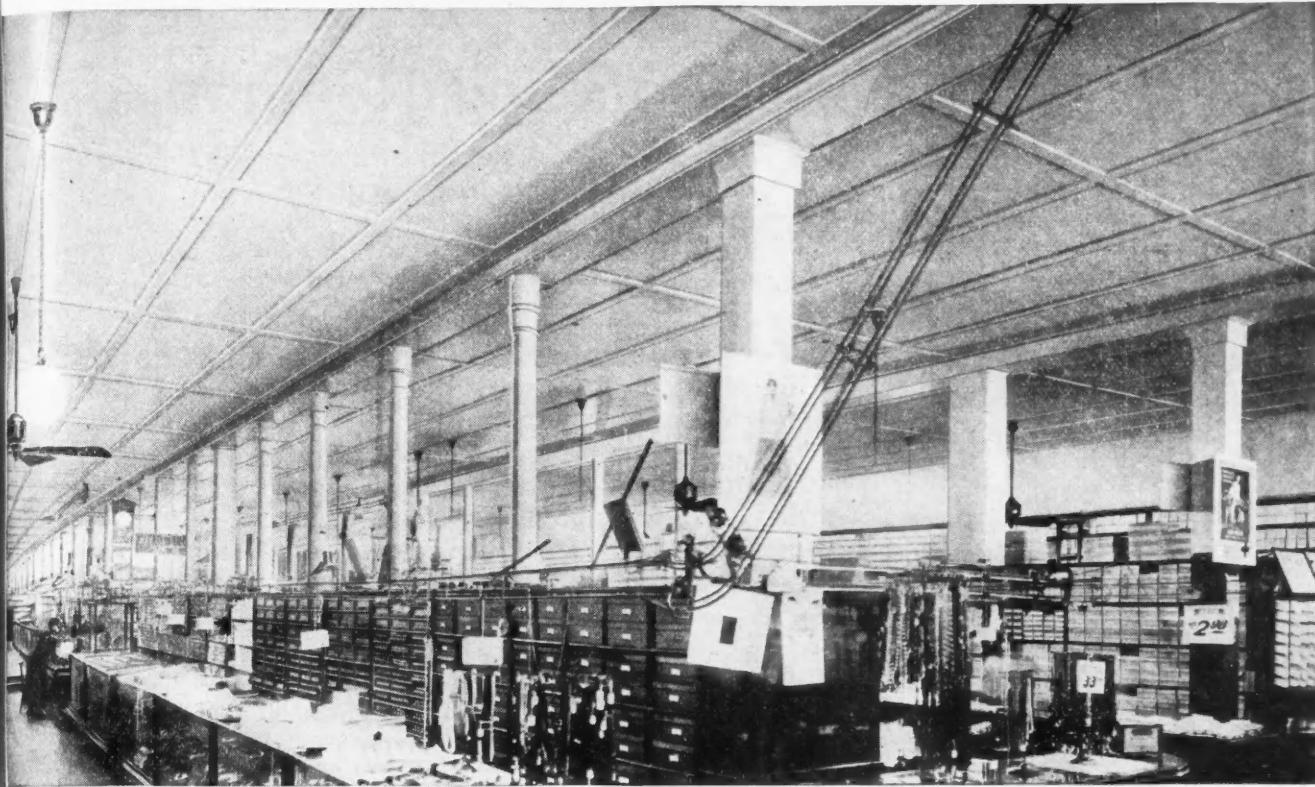
Under separate cover we are mailing you a cut of Everett Lieberenz, who lives in this city. Everett is fourteen years old and displays a natural ability in wood craft. His first attempt at building phonographs was the working parts of an old cylinder machine which he built into a cabinet. He next built the machine which is illustrated in the photograph. Since then he has built one other larger machine.

Some of the other things that Everett has built are a library table, a dressing table for his sister, pedestals, cabinet for player piano rolls, a floor lamp and numerous other small articles of furniture. As a small boy Everett always displayed his ability to build and construct models of boats and aeroplanes, kites and various toys that boys are interested in.

(Continued to page 76.)



Everett Lieberenz and the Phonograph He Built.



Interior of Siegrist & Fraley Department Store, Buffalo, N. Y., where 10,000 sq. ft. of Beaver Board was used on ceilings.

10,000 Sq. Ft. of Ceiling

10,000 sq. ft. in one job—all Beaver Board.

This ceiling and hundreds of others like it show how successfully Beaver Board can be used for big ceilings.

Beaver Board is peculiarly adapted to use on large ceilings or large surfaces of any kind. It is light but sturdy. It is treated with a patented *Sealtite* process to prevent bulging or warping. It conforms to every type of architectural paneling, and its surface is suited to unlimited decorative effects.

With metal prohibitive in cost and heavy in weight, plaster extremely dangerous, and other cheap materials unsuitable, it's no wonder that such an ideal material as Beaver Board is being used for work of this sort.

Our Department of Design and Decoration will gladly plan and estimate Beaver Board on big jobs or small ones. This service does not obligate you in any way but it does save your time and gives you practical advice.

There's a Beaver Board Dealer in nearly every locality. If you cannot locate him, please write us.

THE BEAVER BOARD COMPANIES
41 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.

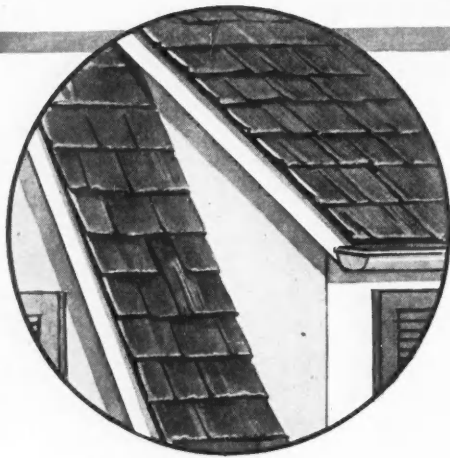


You can't expect Beaver Board results unless this trademark is on the back of the board you buy.

BEAVER BOARD

FOR BETTER WALLS & CEILINGS

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



Roofs and Reputation

NOT any roll roofing will do to lay right on top of old wood shingle roofs that leak. Carpenters, contractors and builders who have an eye to future business and who prize reputation above everything else know they are *safe* when they specify NEPONSET Slate-surfaced Roofings.

NEPONSET Slate-surfaced Roofings make the ideal war-time thrift roofing. Just the method of laying is new. Your customers recognize NEPONSET as the time-tested roofing that has protected buildings, large and small, from fire, sun, rain and snow these last 20 years. The war-time method of laying NEPONSET Slate-surfaced Roofings gives a first-class roof at half the cost of a new shingle roof.

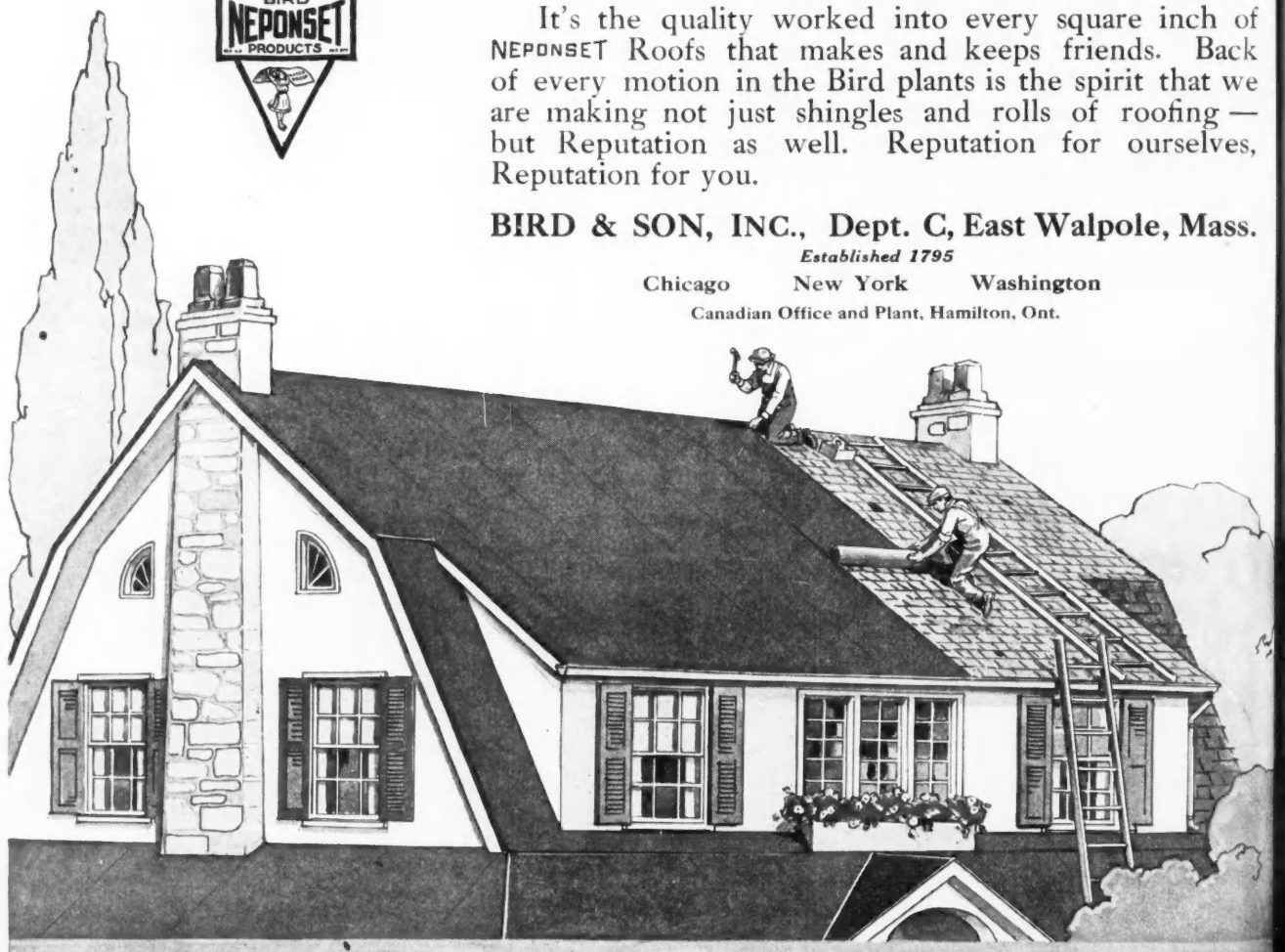
It's the quality worked into every square inch of NEPONSET Roofs that makes and keeps friends. Back of every motion in the Bird plants is the spirit that we are making not just shingles and rolls of roofing — but Reputation as well. Reputation for ourselves, Reputation for you.

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

Established 1795

Chicago New York Washington

Canadian Office and Plant, Hamilton, Ont.



NEPONSET ROOFS

Send me, without obligation, free Selling Plan folder and directions for the war-time method of laying NEPONSET Roofings.

Name

Address

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



right over old roofs

Exactly What Your Customers Want

KEEPING busy on profitable roofing jobs in war-time is comparatively easy if you are prepared to offer your customers the roofing they need at the price they want to pay. Art Craft is that roofing.

Low cost, good looks; fire-safe; extra long wear—these are the reasons why Art Craft is the roofing your customers need. The standard Art Craft roll contains 108 sq. ft., is 32 in. wide and 40 ft. 6 in. long. Tile pattern in handsome red, green and silver grey.

Without doubt you are missing out on a real opportunity unless you are prepared to offer your customers Art Craft. Use coupon for further information.

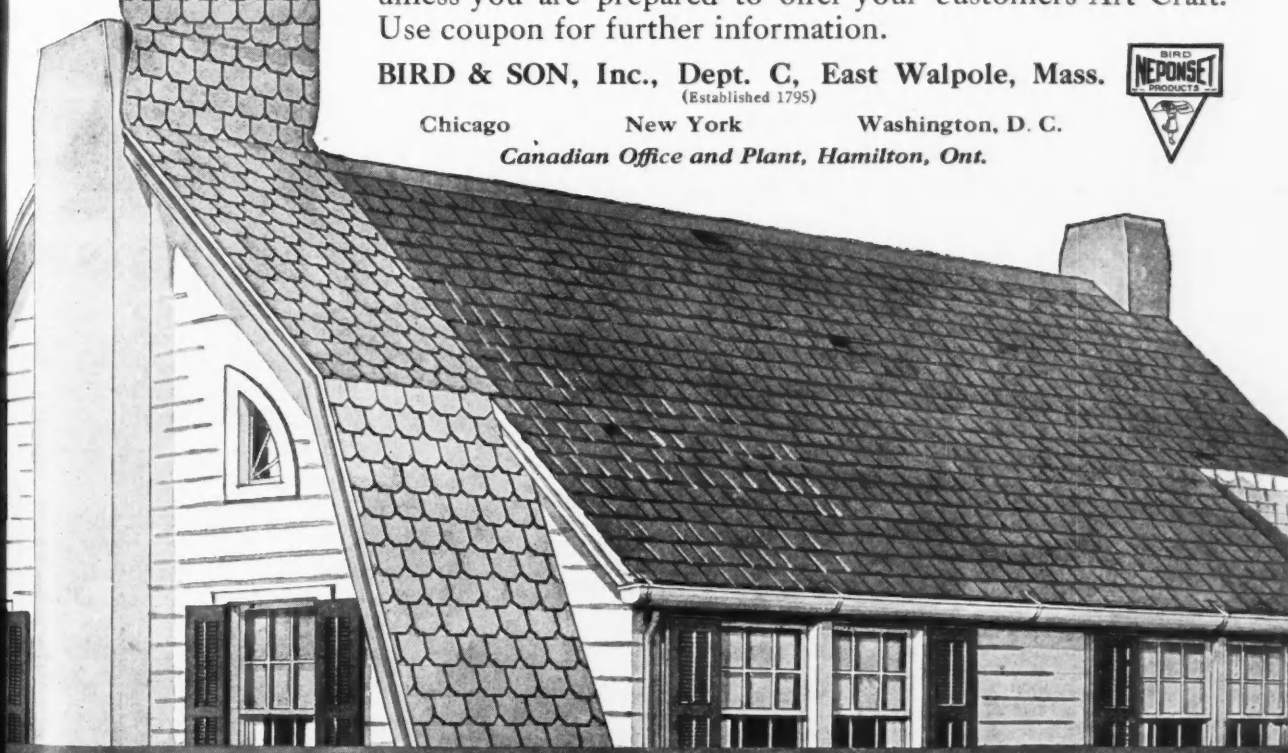
BIRD & SON, Inc., Dept. C, East Walpole, Mass.
(Established 1795)

Chicago

New York

Washington, D. C.

Canadian Office and Plant, Hamilton, Ont.



Art Craft Roof

BIRD & SON, Inc. (Write to nearest address given above) I want to know how Art Craft will bring me more business. Send complete information. Name..... Address.....

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

(Continued from page 72.)

During the summer Everett has been doing the draughting at a local furniture factory, which is a responsible position for a boy of his years.

Everett has a very complete workshop and set of tools and has fitted himself up a bench in the garage. He is now planning to convert a motor from an old motorcycle to run a lathe in connection with his shop.

Everett spends his spare hours in building many useful articles for his friends and has had no difficulty of disposing of several of these at a nice profit.

REX L. BUELL, Pres., Choraleon Company.



Garage Designs Wanted

To the Editor:

Danvers, Mass.

I wish you would publish a few nice up-to-date garages. It would be a great help to us, and an improvement for the AMERICAN BUILDER.

HANS SVENSON.



Finds Weather Stripping Profitable

To the Editor:

Wilkes-Barre, Pa.

In my estimation, the AMERICAN BUILDER is the most progressive building paper of the day. I have been reading it for a number of years, and have been greatly benefitted by it. Some of the brothers do quite a lot of kicking about the way the ads, blueprints and reading matter are arranged. Now the way the BUILDER is arranged suits me to a T, as I read everything from cover to cover. Some want to file part of the magazine and throw the balance away, but I think that if part of it is worth saving, all is worth saving. Some day they will want the part they have thrown away.

I am not contracting at the present time, but enjoy the BUILDER just the same. In 1912 I started in the contracting business, and in March, 1914, I took the agency for the Diamond Flexible Metal Weather Strips as a side line. Since that time I have built up a weather strip business that now requires all my time.

If you care to get a look at me, turn to the Diamond Metal Weather Strip Company's ad in the August or September BUILDER.

HARRY W. POUST.



Red Cross to Establish Dairy Plant in France

Fresh milk will be supplied to 20,000 sick and wounded soldiers in France by 1,000 cows which the French government has agreed to loan to the American Red Cross, according to an announcement just issued by the Red Cross. With these cows the Red Cross will establish a model experimental dairy plant at the largest American Army hospital in France, \$5,000 having been set aside for the inauguration of the plant. As the dairy will be operated by convalescent soldiers, the cost of maintenance will be comparatively small. It is pointed out, however, that cost is not important, as fresh, pure milk is absolutely essential in the proper diet of the cases at the hospitals.—The Official U. S. Bulletin.



EVERY producer, every distributor and every consumer is individually responsible for maintaining a never-failing flow of the best quality of food from America to our troops in France.



Get This!

You like to sell **birch** because its price permits you to make a profit. You like to handle it because it makes a beautiful job that does you credit.

What do you do when the owner wants white enamel?

Do you tell him that, though it seems a shame to cover up so fine a wood, its hardness, and durability, paint-holding quality and reasonable price make it the ideal wood for enameling?

Those are the facts. Salt them down till you need them. And don't forget to send for the **birch** book and six finished samples—they are yours.

Northern Hemlock & Hardwood
Manufacturers' Association
201 F. R. A. Building Oshkosh, Wis.

Are You Keeping Busy?

New building is off, of course, but there is no reason why the real wide-awake contractor and carpenter should not be doing a lot of work.

Families who have postponed building are buying Curtis Built-in Furniture. They are putting new conveniences into old exteriors. There is going to be a heavy demand for just such items as are shown here. People are finding it necessary to offset the labor shortage with labor saving conveniences.

Keep close to the Curtis Dealer in your town. He knows who is buying Curtis Built-in bookcases, ironing boards, sideboards, linen closets, medicine cabinets and so on through a long list.

Remember, that such work, although not big contracts, is business right now and builds for the future.

A piece of **CURTIS** Woodwork beautifully installed may bring you a house contract.

Every piece of **CURTIS** Woodwork is of unsurpassed materials, designs, workmanship and finish. Each piece bears our trademark.

Let **CURTIS** Woodwork and your skill work hand in hand for your bigger future.

THE CURTIS COMPANIES, SERVICE BUREAU

1920-2020 S. Second Street, Clinton, Iowa

Manufacturing and Distributing Plants at

Oklahoma City	Sioux City, Iowa	Detroit	Clinton, Iowa	Lincoln, Neb.
Minneapolis	Wausau, Wis.	Topeka, Kansas	Chicago	Dayton, Ohio
Eastern Offices at Pittsburgh and Washington				

The makers of CURTIS Woodwork guarantee complete satisfaction to its users. "We're not satisfied unless you are."



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Morgan Storm Doors and Storm Sash

A Source of Immediate Business and Profit for Progressive Contractors

There never was a season that offered the wide-awake contractor greater possibilities for storm protection business. Coal was never so high—people are saving every possible penny.



Safeguards Your Reputation

All MORGAN Combination Storm and Screen Doors and Storm Sash are made of selected, well-seasoned materials. While they are built primarily for service, they are made in a variety of attractive designs.

Because they are made with the same thoroughness and care as has always characterized MORGAN Products—you can recommend MORGAN Storm Protection and be sure that there will be no "come-backs" or dissatisfaction. The MORGAN Guarantee insures your reputation.

Write for the name of the Morgan dealer nearest to you. You can depend on him to give you all the particulars and prompt service.

Morgan Sash & Door Company

Dept. Chicago, U. S. A.

Morgan Co., Oshkosh, Wisconsin
Morgan Millwork Co., Baltimore

Members of the
Wholesale Sash and Door Association



NEWS OF THE FIELD

Des Moines Conference Petitions War Board to Simplify Building Regulation

At a conference of farmers, county agricultural agents, state county agent leaders, representatives of agricultural colleges, publishers, manufacturers and dealers in farm building materials and equipment, held September 26, 27 and 28 in Des Moines, Iowa, a committee consisting of the undersigned was directed to draft the following resolutions and transmit them to the War Industries Board, Washington, D. C.:

Resolved, That this conference pledges its hearty support and acceptance of any regulations that the War Industries Board may decide necessary to impose in order to win the war.

Resolved, That in view of the essential necessity of conserving food and forage crops and of increasing the production of live stock and all farm crops for supplying both our Allies and ourselves, we respectfully suggest that permits be freely granted for such farm building improvements as will increase production, conserve labor and make rural workers more efficient and that any rulings to govern the construction, enlargement or maintenance of farm buildings be made as simple and as elastic as possible.

To this end, we suggest and petition that the length of time for securing any permits required, covering necessary farm building work be reduced to a minimum by empowering the Council of Defense in each state with final authority to pass upon proposed improvements and issue permits for the same.

Signed by the Resolutions Committee:

- R. S. WHITING, National Lumber Manufacturers Association, Chicago, Ill.
C. M. LYMAN, Sales Manager, International Heater Company, Utica, N. Y.
BERNARD L. JOHNSON, Editor AMERICAN BUILDER, Chicago, Ill.
C. B. NASH, Standard Sanitary Manufacturing Company, Pittsburgh, Pa.
FRANK B. WHITE, Manager-Director, Agricultural Publishers' Association, Chicago, Ill.
P. H. ROSS, County Agent Leader, Columbia, Mo.
H. P. GILLESPIE, Vice-President, Michigan Stove Company, Detroit, Mich.
L. R. PUTMAN, Advertising Manager, Southern Pine Association, New Orleans, La.
A. J. R. CURTIS, Director Extension Division, Portland Cement Association, Chicago, Ill.
H. P. SHEETS, Secretary, National Retail Hardware Association, Argos, Ind.
GEO. C. SHELDON, Sheldon Manufacturing Company, Nehawka, Neb.
A. J. HUEBNER, Aladdin Company, Bay City, Mich.
F. J. ST. JOHN, Domestic Engineering Company, Dayton, Ohio.
B. B. BELL, Hunt, Helm, Ferris & Co., Harvard, Ill.
H. B. KEELER, Mason City Brick & Tile Company, Mason City, Iowa.
N. A. AIMER, Heppes-Nelson Roofing Company, Chicago, Ill.
P. C. McNULTY, JR., Vice-President, United Pump & Power Company, Milwaukee, Wis.

(Continued to page 80.)



Fall Business for Contractors

THE attention of every householder is at this time centered on the coal situation. Any help in solving this problem is welcomed with open arms.

You can help—and develop a profitable business for the fall and early winter—by suggesting to your customers that they equip their houses with

Storm Windows and Storm Doors

Every house not already equipped is a prospect, if you go after the owner and tell him the facts about storm windows and storm doors.

You know from your experience that houses that have this protection require from one-third to one-half less coal—a saving that pays for the storm windows and storm doors in one or two seasons.

Furthermore, they make houses more healthful and comfortable. Regardless of outside temperature the furnace can heat the house and it is possible to have perfect ventilation without dangerous cold floor-drafts.

The Director of Conservation of the Fuel Administration says: "The National Fuel Administration realizes that a large amount of coal can be saved by the installation of storm doors, storm windows" . . . "and advocates such installation the same as we do proper firing methods and proper attention to boilers."

We are telling the story to more than four million readers of metropolitan newspapers; and lumber dealers everywhere are co-operating with advertising in their local newspapers.

Co-operate with your local lumber dealer and cash in on the demand we are creating.

Wholesale Sash & Door Association, Chicago

Des Moines Conference Petitions

(Continued from page 78.)

- L. A. SELMAN, Advertising Manager, Beaver Board Companies, Buffalo, N. Y.
 W. R. KILLINGER, Chicago Steel Post Company, Chicago, Ill.
 C. M. LEMPERLY, Advertising Manager, Sherwin-Williams Company, Cleveland, Ohio.
 EARL STOTTS, Vice-President, Dodd & Struthers, Des Moines, Iowa.
 G. S. CASWELL, Denison Bulletin, Denison, Iowa.



All Berger Plant Employees Subscribe

On Saturday, October 5, every employee of the Berger Manufacturing Company, Canton, Ohio, from the president down, formed in line and accompanied by the Canton Grand Army Band and the factory band marched from the plant thru the business section of the city, halting at the Court House, where they were addressed by Judge Henry W. Harter, chairman of the Fourth Liberty Loan Committee of that district.

The occasion of this parade was the celebration of the achievement of having reached 100 per cent in the Fourth Liberty Loan campaign. Every employe in the plant had subscribed for one or more bonds. The total subscription was \$500,000.00.

When you consider that this campaign among two thousand workers was completed in 4½ days, with the amount subscribed more than doubles any subscription secured in any previous war campaign, that the work was done easier and in a shorter time and that no one failed to buy, it is easy to understand the spirit which exists in that organization.

Not only is this spirit evidenced by the results of this

campaign, but by the manner in which the employes are sticking to the job. Practically the entire equipment and man power of this great plant (including the men who in normal times sell its products thruout the United States) are now employed in producing sheet metal products of different kinds for the Government. The workers have realized the necessity of supporting the government 100 per cent thru the efforts of their hands and minds and, therefore, it is not strange that they also were quick to support the bond issue to the fullest extent.

Their parade, which was over a mile long and included many special features in the way of original signs and exhibits, is said to be the largest industrial parade ever put on in Canton and served as a great inspiration to the city as a whole to reach and pass its quota in the Fourth Liberty Loan.



Rules for Use of Iron Pipes in New Government Projects

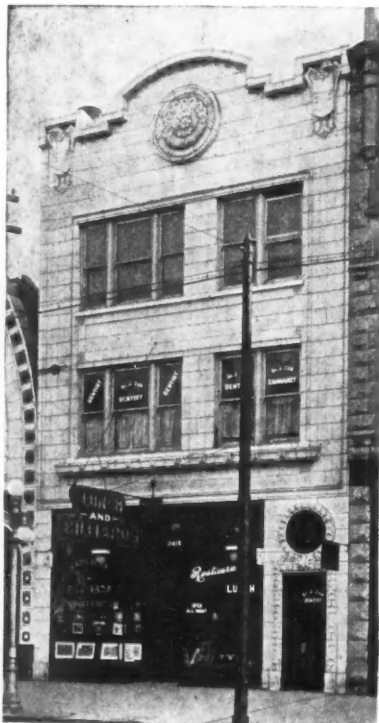
B. M. Baruch, chairman of the War Industries Board, authorizes the following:

The building materials section of the War Industries Board will effect a saving of 40,000 tons of pig iron, the equivalent of about 80,000 tons of steel, thru new regulations governing the use of cast-iron pipes, tanks, and accessories to be placed in Government projects under way and under consideration.

Rules to be Enforced

The regulations and conditions will be enforced by the Government, even tho they may conflict with municipal ordinance, codes, or local building regulations in the communi-

(Continued to page 82.)



USE MIDLAND TERRA COTTA ON YOUR BUILDING

The effect of rare richness obtained through the use of MIDLAND terra cotta creates a lasting impression upon the casual beholder whereby he remembers the location of such building when requiring your product.

"QUALITY AND SERVICE"
our motto

MIDLAND TERRA COTTA COMPANY
Lumber Exchange · Chicago

MV MV MV MV MV MV MV MV MV MV MV

In Government Service

**WE ARE HELPING UNCLE SAM
WIN THIS WAR!**

Our Vanco Bronze and other lighting fixtures are now devoted solely to Industrial housing. Our entire plant is being utilized for special Government work.

**THIS WILL CONTINUE FOR THE
DURATION OF THE WAR**

In common with all other loyal American Industries this entire service to National Needs will hasten the Day of Victory and a resumption of the good-will and co-operation that has been so conscientiously sought for and prized by this manufacturing firm of exclusive lighting fixtures.

MITCHELL VANCE CO., INC.

Sole Producers of VANCO BRONZE, the New Metal

503-511 West 24th Street

New York City

MV MV MV MV MV MV MV MV MV MV MV



Big Economy in Metal Lath Construction

The man who builds will appreciate the reasonable cost at which you can construct modern, strong, fire-proof homes by utilizing our metal lath products. You can save the owner time, material and labor expense.

Use Hy-Rib and Rib Lath—and you save forms, stiffening channels and labor. The metal lath is so stiff and rigid that supports may be placed a greater distance apart—saving in the cost of supports and the labor and time necessary to attach the lath. Moreover, streaked and cracked plaster is prevented.

Hy-Rib furnished in four depths of ribs and various gauges.



Hy-Rib

A steel sheathing, stiffened by rigid deep ribs. Manufactured from a single sheet of steel. Its use is decidedly simple. The easily handled sheets are fastened to the supports and the plaster or concrete applied. No forms, stiffening channels nor wiring required.

Rib Lath

A superior metal lath with beaded ribs that span between the studs, making it exceptionally stiff and rigid and permitting the wider spacing of studs. Provides a perfect clinch for plaster and prevents cracking or streaking. Saves time, labor and material in erection.

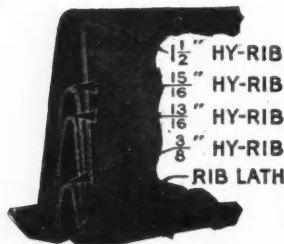
Begin now to build with Hy-Rib and Rib Lath. The line is complete, including Diamond Lath, Channels, Studs, Corner Beads, Base Screeds, etc.

Write today for free copy of Hy-Rib Handbook, with specifications, tables, illustrations, etc. Very valuable to builders. Address Dept. H-44.

Truscon Steel Company
(Trussed Concrete Steel Co.)
YOUNGSTOWN, OHIO



Representatives in Principal Cities



Rules for Use of Iron Pipe

(Continued from page 80.)

ties where the Government is building. The only departure authorized is where the size or type of the structure make changes necessary, in which case special application shall be made to and the approval secured of the building materials section. The regulations will not preclude the use of existing manufactured stocks, provided the metal cannot be utilized for more essential war purposes.

The regulations were adopted at a meeting of the building materials section, of which Richard L. Humphrey is chief, with representatives of the Army and Navy, the United States Housing Corporation, the Supervising Architect's Office of the Treasury Department, the Railroad Administration, and the priorities, conservation, and steel divisions of the War Industries Board.

List of Regulations

Following are the regulations:

1. Nothing larger than 4-inch diameter nor heavier than standard plain cast-iron soil pipe is to be used for vertical stacks above ground; the full size stack to be carried thru the roof. Portland cement concrete or vitrified clay pipe shall be used for horizontal lines underground. . . .

8. No metal pipe shall be used for water mains without special permission of the War Industries Board. This does not apply to pipe lines carrying pressures of more than 100 pounds. . . .

10. All water-supply tanks shall be of other material than metal. . . .

11. Culvert pipes shall be reinforced concrete, burned clay, or other material than metal. . . .

NOTE.—Text of items, 2, 3, 4, 5, 6, 7, 9 and 12 are omitted above because referring to methods to be used rather than materials.



Prepared Roofing Situation Reviewed at Meeting of Association

By granting to the Prepared Roofing and Shingle Manufacturers' Association of the United States and Canada priority in shipments as an industry essential to armed conflict the War Industries Board in Washington effected a revolution in the roofing trade and placed prepared roofings on the plane of indispensable commodities.

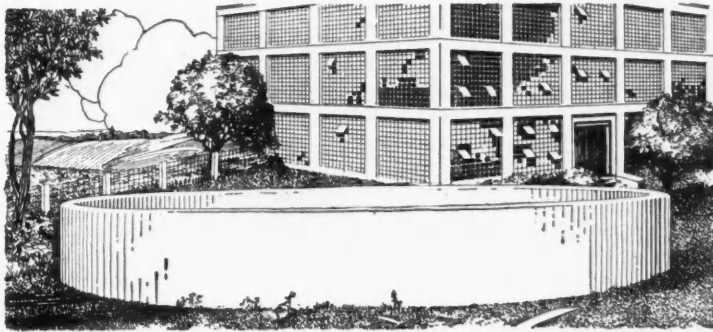
These and the fact that the organization had pledged to the federal government co-operation in the conservation of raw materials and in the standardization and regulation of production were topics at the recent special meeting of the association in Chicago.

It was due to the forceful presentation of the war achievements and aims of the industry, by its organizer and president, Mr. O. A. Heppes, that the ruling as to priority was made.

It is conservative to estimate, asserted Mr. Heppes, that of a normal roofing business approximating \$200,000,000 annually but 40 per cent now exists and that this is confined almost as a whole to composed products. "It is the composition roofing industry which in these days," said he, "is called on to supply virtually all of the shelter for the entire nation."

The composition roofing trade exists today, Mr. Heppes maintained, solely because of its economic position. This is supported by governmental requirements (direct and indirect), by purchases by allied administrations and by civilians for replacement purposes. Despite the rule of the War Industries Board limiting building operations, the output of composition

(Continued to page 84.)



U. S. and Allied demands for steel for the last six months of 1918 are already past 23,000,000 tons; the capacity of American rolling mills for that period does not exceed 18,000,000. What's the answer?

USE CONCRETE FOR STORAGE TANKS *and save steel*

“Encourage in every way possible the substitution of concrete for steel in the building of tanks for oil and gasoline storage wherever it is possible to do so,” is the urgent appeal of the Oil Division of the United States Fuel Administration to every individual and firm planning or even contemplating the construction of oil or gasoline storage tanks.

We have, therefore, devoted Number 13 of ALPHA AIDS—a publication issued regularly by us in the interests of engineers, architects, builders, contractors, building material dealers and property owners interested in concrete construction—largely to the construction of concrete storage tanks and other forms of concrete storage bins or pits, including a number for the conservation of grain, fruit, etc.

This Storage Issue of ALPHA AIDS is generously illustrated with half tone views and working drawings, and a copy will be sent without charge or obligation, to any one interested in the construction of buildings that save and serve.

Other special issues of ALPHA AIDS that are available are, Number 10, dealing with the construction of workmen's homes; Number 11, dealing with form buildings, coal pockets, and Number 12, dealing with municipal hog houses and the over-coating of old dwellings. Any or all of these issues will be sent free, upon application.

ALPHA PORTLAND CEMENT COMPANY

General Offices: EASTON, PA.

BRANCHES: NEW YORK PHILADELPHIA BOSTON PITTSBURGH BALTIMORE SAVANNAH

Prepared Roofing Situation Reviewed

(Continued from page 82.)

roofing is greater now than when market conditions were normal.

Elimination of competitive materials and the utilization of by-products have caused the present economic situation in the industry. The basis of the composition roofing is rag felt. Rags are gathered in almost every community and carefully sorted so as to separate the woolen bits. The residue of the rags, about 50 per cent, is converted into composition roofing and cannot be used for any other purpose. Were it not for the utilization of this residue the recovery of woolen rags either would cease or the price would rise almost incredibly. An official of the wool section of the War Industries Board has impressed on the roofing trade the necessity of gathering mixed rags.

Asphaltic materials used in the manufacture of composition roofing are derived almost entirely from petroleum as residues from the distillation of gasoline, kerosene and lubricating oils. Coal tar pitch for so-called tar roofing is a residue in the process of coking coal by which benzole, toluol, naphthalene and creosote oil are obtained.

The pressure upon the industry exerted by the government in furthering its program of war is tremendous, it was said. In construction of all kinds—railroad, cantonment, aircraft, ships and housing—composition roofing is a vital factor. Plants specializing in the manufacture of munitions, too, have borne heavily on the industry.

Those at the meeting in Chicago were told that roofing for 70,000 houses for war workers had to be made and that contracts for composition roofing totaled millions in dollars. One firm had obtained a contract involving \$1,000,000 for roofing to be used overseas. In addition to the abnormal demands of war, the composition roofing industry is experi-

encing an unprecedented call from private owners for repairs and replacements. This is taxing to the utmost all of the plants in the trade.

The roofing association includes 103 of the 105 plants in the United States, which represent an investment of \$80,000,000.

The meeting in Chicago was attended by sixty members who by resolution pledged to reduce production on a scale ranging downward from sixty to four articles. This is in harmony with the federal program to conserve raw materials, labor and capital. This plan, too, will preclude multiplicity of effort on the part of the manufacturers and will stabilize the industry by regulating competition. "It is the aim of this association," declared Mr. Heppes, "to make these conditions, necessitated by war, permanent in peace."

The members also resolved to regulate production by adhering to a series of specifications for flat roofs, temporary or permanent in nature, and to keep the pledge of the organization to purchase raw materials only as they are allocated or apportioned by the government.

J. L. NEWMAN.



Wall-Board City Sets Wisconsin Pace

In reporting the results of the first day's Liberty Loan Drive, the *Chicago Tribune* of Sunday, September 29, printed the following:

"Cornell, Wis., September 28—(Special).—The home of the Cornell Wood Products Company, manufacturers of the wall board used by war industries and cantonment camps, was the first Wisconsin village to report its quota in the Fourth Liberty Loan Drive. H. C. Frisbie, chairman of the Fourth Liberty Loan Committee, reports the quota of \$27,000 was subscribed early this morning, with indications of heavy oversubscriptions."

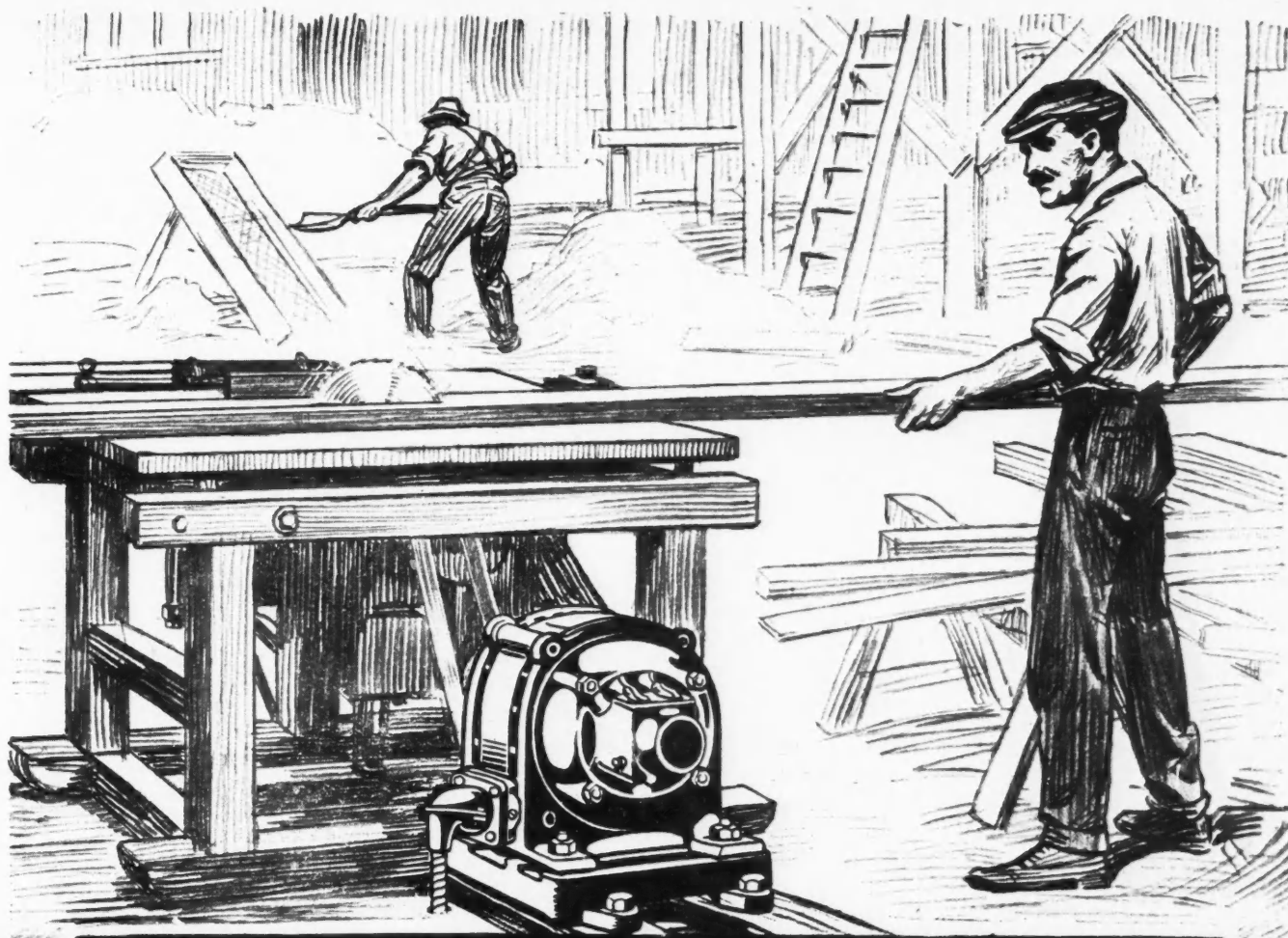
EXCELSIOR Wire Products



THIS magnificent structure—the Travelers' Insurance Building of Hartford, Connecticut—exhibits many distinctive features, among which is the tower. This tower differs architecturally from other similar structures throughout the country. It is identical, however, with hundreds of other magnificent buildings because of the fact that EXCELSIOR WIRE LATH was used in its construction. Architects and builders whose duty it is to specify or use a plaster base are invited to write for booklet F, which gives in detail information concerning Excelsior Wire Lath.

WRIGHT WIRE COMPANY
WORCESTER, MASS.

Architect—Donn Barber
Builders—Marc Eidlitz and Son, Inc., New York City



An Electric Motor On The Job

is as good as an extra man, for it's the odd jobs and the special work that takes the time.

Put a portable electrically driven saw or buzz planer on your next construction job.

The cost for power is only a few cents an hour.

With motor driven outfits your men can rush work through with the same speed and sureness as in your own shop.

Tell your power needs to your electric company or your nearest motor agency.

General Electric Company

General Office



Schenectady, N.Y.

Sales Offices in All Large Cities

6970



KOHLER IS AN IDEA

Forty-five years ago the founder of this business was inspired by an idea—to build on quality alone.

Today that aim is exemplified not only by a great manufactory given to the making of a world-famed product; it finds expression also in a modern town whose interest is centered in developing and enhancing still further the Kohler idea.

Here that idea is a living fact. Through it Kohler has come to mean superiority in enameled plumbing ware. Headed by the famous Viceroy built-in bathtub, Kohler products have long won their way into the world's finest homes and institutions.

A Kohler installation is a lasting tribute to the judgment of the discriminating builder. Here quality is matched by a beauty and durability distinctively Kohler—for forty-five years a mark of quality.

Write today for book which pictures and describes the Kohler line.

KOHLER OF KOHLER

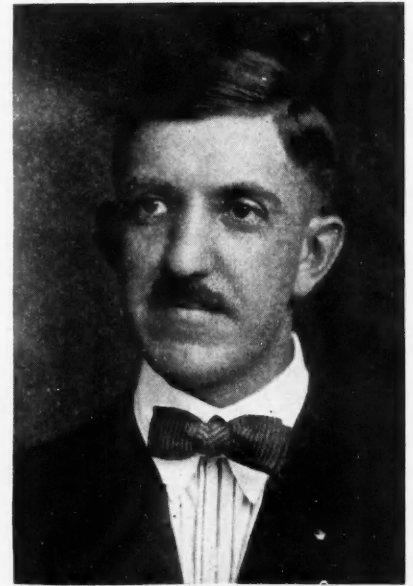
Kohler Co., Kohler, Wis.
Shipping Point, Sheboygan, Wis.
AND TWELVE AMERICAN BRANCHES

MANUFACTURERS OF ENAMELED PLUMBING WARE

Payne G. West Goes With Lakewood

Payne G. West has been appointed assistant manager of field sales for the Lakewood Engineering Company, Cleveland.

Mr. West is a graduate of Carroll College, class of 1901. He later studied civil engineering for two years at the University of Wisconsin. In 1907 he became associated with The T. L. Smith Co., of Milwaukee. During 12 years with this firm—most of which he was assistant sales manager—Mr. West thoroughly familiarized himself with all branches of the machinery field as well as with factory production methods.



Payne G. West.

To Build or Not to Build

The farmer is debating the question of whether he shall build now or after the war. His mental attitude is analogous to that of the man who, finding himself at the midway point of an unexpectedly long journey, debates whether he shall go forward or backward. His course must be determined by the importance of his mission; he should not be overcome by the handicap of fatigue.

Farm building must go on. The idea is in accord with patriotism. No one knows how long the war will last, and the man who is without adequate accommodations for his farm implements, feed and livestock, can ill afford to resort to makeshift means of housing, that will lessen production or efficiency. Lumber will probably continue to advance in price for a decade. It may never be cheap again. Today it is but one-third higher than prior to the war, while many other materials have doubled and tripled in value. After the war the demand will be tremendous. Northern France and Belgium will have to be rebuilt, and with the devastation of forests in Europe, there will be a call for lumber from this country. We are none too well supplied, and we are using millions of trees in the manufacture of airplanes, ships, cantonments and other emergency war equipment. Labor is not likely to be cheaper, for there is a shortage in supply, which may continue for many years.

To build now seems to be the logical and economic thing for the farmer to do. He is at the half-way point in his development. He is prospering. His future prosperity depends largely upon the completeness of his equipment. Actually, all commodities are higher because the dollar has decreased in purchasing power; but the farmer has more dollars with which to do things today than he had before the war; because farm produce and livestock have an enhanced value that offsets increased cost of maintenance and production. If the farmer's net profits are not at least 25 per cent larger, if he is not more comfortable, better circumstanced in all respects than ever before, he is, indeed, a poor farmer. Having prosperity and needing more of the things with which to increase his prosperity—why not build?—"The Field," September, 1918.



Free Lesson

Learn to Read Blueprints



Mail coupon today for this **FREE LESSON**. It will positively convince you that **Plan Reading from Blueprints** is not at all difficult—that by our new, easy method you can master it in a short time. You don't pay a cent for this lesson—now or at any other time—and your request for it places you under no obligation at all.

You are looking ahead to something better than working with the tools of your trade. Some day you hope to become foreman or superintendent in charge of building work—perhaps go into business for yourself. In any such case a knowledge of plan reading is absolutely necessary—and we want to show you how to get it.

Thousands of bright, energetic, capable men are being held back because they lack this knowledge. They are expert workmen but they seldom, if ever, get a chance to study the blueprints or have them explained. They must follow the lead of the man who does understand plan reading and directs their work.

We give you practical instruction in blueprint reading that you can apply to your everyday work. We place in your hands blueprints used in actual building work in Chicago and other cities, and send full instruction on every point. Every detail is carefully explained by practical contractors and builders—men in charge of construction work right here in Chicago. You get the benefit of their long years of practical experience. They give you the kind of knowledge that brings advancement and a fatter pay envelope.

Learn Builders' Course Easy by Mail Payments

Just a few hours of your spare time at home each week devoted to study will enable you to master this Course in a surprisingly short time. Our lessons come to you by mail in convenient form for spare-time study—during evenings at home or at any other convenient time.

Note the wide range of subjects covered in this thorough, comprehensive and practical Builders' Course.

Throughout the entire course your instruction is under the personal guidance of our experts. Every subject is handled in a plain, straight-forward manner in language that you can easily understand. You are taught the things you need to know—and taught in such a way that you will remember them.

And you can get all this training on easy monthly payments, so small that you will scarcely feel the cost.

Complete Course Includes:

Plan Reading How to read a building plan. Floor plans and elevations. Use and meaning of different lines on the plan. Sections and section lines. Cross sections. How different materials are shown on the plan. How to read dimensions. Detail drawings. How to lay out work from the plans. Tracings and blue prints—how they are made. Practice in reading complete plans from basement to roof, etc., etc., etc.

Estimating Practical rules. Problems worked out from the plans. Brickwork and carpentry. Excavations. Labor and material for footings in brick, concrete and rubble stone. Methods of practical builders. Reinforced concrete—full plans and specifications for re-inforced concrete buildings. Estimates of labor and material required. Labor and material for brick work: figuring common and pressed brick walls of different thicknesses, etc. Chimneys, fire places and cisterns. Fire proofing, tile, tile flooring, arches, partitions, furring, terra cotta, etc. Lumber and timber; figuring board feet. Estimating posts, girders, sills,

joints, studs, bridging, rafters, etc. Estimating all kinds of roofs, floors, siding, cornices, etc. Labor for rough and finished carpentry.

Estimating mill work. Labor and material for window and door frames, sash, blinds, base board, wainscoting and all kinds of closets, cupboards, etc. Lathing, plastering, sheet metal work, exterior and interior marble jointing and decorating, glazing, plumbing, heating, wiring, etc.

Construction of brick, concrete and stone. Brick laying, joints in brick work, pointing, tuck pointing, etc. Brick and stone arches. Use of different kinds of stone.

Carpentry: Kinds and uses of wood's, cornices, interior details, framing, roof construction, bridging, miter joints, butt joints, etc. How plans are made. Complete instructions illustrated by working blueprints of all kinds of buildings, private, public and business.

Arithmetic A complete but condensed course in arithmetic expressly arranged for contractors and builders. Teaches all a man in this business needs to know.

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A Better Job—More Money

Begin at once to prepare yourself for more responsible work and better pay. Mail the coupon and by return mail get the **Free Lesson in Plan Reading** together with full information regarding our Builders' Course which will prepare you to make more money. Remember, this places you under no obligation whatever. But get the **Free Lesson**, judge from it and the full descriptive literature we will send you, how easy it really is to master this course—and then decide about enrolling with us.

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Chicago, Ill

CHICAGO TECHNICAL COLLEGE,
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Without obligation on my part, send me the Free Lesson in plan reading, also information on your Builders' Course in Plan Reading, Building Construction, Estimating, etc.

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Address.....
City or Town..... State.....
Present Occupation.....

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

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

State of Illinois }
County of Cook } ss.

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

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

Publisher, American Carpenter & Builder Company, Chicago, Ill.

Editor, Wm. A. Radford, Chicago, Ill.

Managing Editor, Bernard L. Johnson, Chicago, Ill.

Business Manager, E. L. Hatfield, Chicago, Ill.

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

American Carpenter & Builder Co., 1827 Prairie Avenue, Chicago, Ill.; Wm. A. Radford, Chicago, Ill.; Helen M. Radford, Chicago, Ill.; Roland D. Radford, Chicago, Ill.; Wm. A. Radford, Jr., Chicago, Ill.; E. L. Hatfield, Chicago, Ill.; G. W. Ashby, Berwyn, Ill.

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

There are no mortgages, bonds or other securities outstanding against the American Carpenter & Builder Company.

4. That the two paragraphs next above, giving the names

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

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

Sworn to and subscribed before me this 1st day of October, 1918. MAME C. BRUSH.

(My commission expires April 29, 1922.)



No More Red Rosin Building Paper

The War Industries Board issues the following under date of October 10:

- (a) Use of coloring matter shall be eliminated.
- (b) Weights between 20 and 40 pounds (to 500 square feet) shall be eliminated, and the following standards substituted: 20 pounds, 30 pounds, and 40 pounds. Wherever a customer demands intermediate weights, the next light weight shall be substituted, or customers shall furnish the board mill, in writing, satisfactory reason for not accepting the next lighter weight, and demanding the heavier standards.

Schoolroom Safety

Many busy feet moving in unison to and from the classroom have a tendency to loosen plaster. Too often we read of injury and even death resulting from the fall of such a ceiling—at best the results are alarm, interrupted school work, delay and expense. An absolute safeguard against such accidents in school, church, store, public hall or any other structure is found in

"BERGER'S" Classik STEEL CEILINGS

These ceilings cannot fall — they offer an added safeguard against fire — they are exact reproductions of beautiful molded plaster — they are sanitary — easily kept clean — and they'll last as long as the building. Design catalog D-4 on request.

The Berger Mfg. Company, Canton, O.
Branches: Boston, New York, Philadelphia, Chicago, St. Louis, Minneapolis, San Francisco. Export Dept., Berger Bldg., New York

[A Classik Ceiling in the Grant School, Des Moines, Ia.]



Bird's-eye view of industrial houses built for the U. S. Shipping Board Emergency Fleet Corporation, in the Sparrows Point District, Maryland. 300 houses at St. Helena, 531 at Dundalk. Exterior walls of St. Helena houses, stucco and Herringbone Rigid Metal Lath. Herringbone Lath and plaster were used for interior walls of Dundalk houses. Architect, E. L. Palmer, Baltimore. Contractors, Consolidated Engineering Co., Baltimore, G. P. Zouck, President, C. A. Cummins, Vice-President and General Manager.

Build Workmen's Homes For Peace Times, too

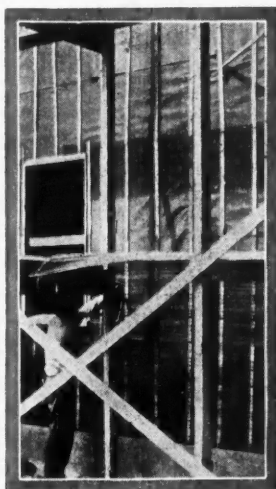
Metal Lath and stucco is the most practical type of construction for industrial houses. For they can be built in a hurry for war times and built permanently for peace times in one and the same operation. Metal Lath and stucco stubbornly resist fire, mice, vermin, weather and decay. Such homes attract and hold essential workmen because they are handsome, snug, comfortable, economical and permanent.

The General Fireproofing Co. is prepared to ship Herringbone Rigid Metal

Lath in desired quantities from any one of our distribution centers—they are in all of the principal cities.

Indeed we are strictly on a war basis. And Herringbone Rigid Metal Lath is but one of a number of *essential GF products* which are helping the country carry on war and promote the national interest.

We should like to get in touch with architects who agree with us that industrial housing is the one vital war-time building opportunity.



A detail of Metal Lath and Stucco Work at St. Helena

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

The name of the GF dealer nearest you can be obtained by phoning Buyers Aid, Inc., in cities of 70,000 or over. Ask them to send you the GF catalog or we will send it to you direct from the factory.

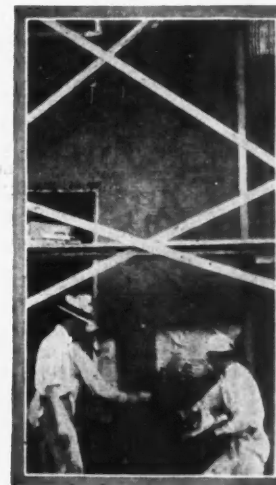
THE GENERAL FIREPROOFING CO., Youngstown, Ohio
Manufacturers of All Types of Metal Lath, Concrete Reinforcements, Waterproofings and Technical Paints

Members of Associated Metal Lath Manufacturers

Branches: New York Philadelphia Chicago San Francisco Kansas City
Atlanta Cincinnati Buffalo Utica



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



Metal Lath and Stucco Homes are quickly built

Herringbone Rigid Metal Lath



Sell
YOUR
OWN
Silo --

Make
All the
Profit

*We supply the fixtures,
you supply the rest.*

Our Plan is the ONLY Logical Way to Sell Silos

We furnish the fixtures only. You purchase your staves direct—save handling, freight—build up business under your own name—make all the profit—give the farmer a better silo for less money.

Selling silos built with SECURITY Silo Fixtures is permanent, profitable business, a staple necessity that sells readily year after year. Some SECURITY dealers have sold 20 to 50 silos yearly for last five years.

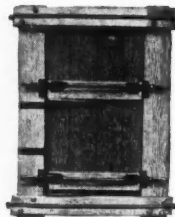
With our 1918 fixture prices still prevailing and our new selling plans, we put you in a commanding position to get the business.

Security Silo Fixtures

supply the selling features that farmers want. Make silo easier to erect—simpler to handle. Superior sagless hinge door and collapse-proof anchorage. Safety ladder. Make a silo that produces best silage.

Dealers testify that they can beat all competition and prices and make good profits.

A million silos are still needed on American farms. Hundreds—thousands of dollars in profits can be made yearly with our plan and SECURITY fixtures.



Security Sagless Hinge Door
A Great Selling Feature

COMPLETE DETAILS FREE
WRITE TODAY

Chicago Warehouse & Silo Fixture Co.
329 So. LaSalle St. Chicago, Illinois



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Outside Dumbwaiters for Remodeled Houses

When old residences are converted into apartment or flat buildings one of the problems is service to the several floors. A dumbwaiter is needed, but it is hard to find a place to install the shaft without tearing out floors and ceilings and spoiling some good rooms.

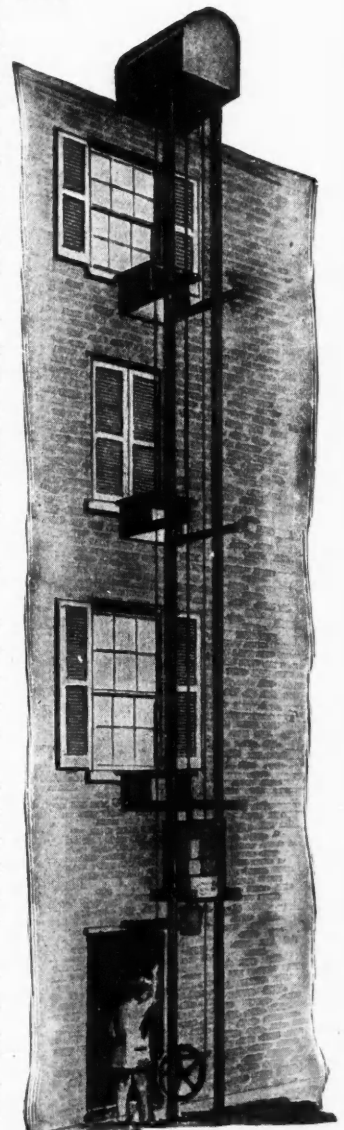
A type of dumbwaiter has been developed to meet this condition; it is erected entirely outside the building. Steel tubes, treated with corrosive proof finish, support the winding machine and act as guides for the car.

The car is given a moisture-proof finish.

The winding machine is well protected with galvanized iron hood. This machine provides for a frictionless counterweight which makes operation easy.

The hand pull rope is provided with a floating gravity tail sheave at the bottom. This keeps the rope at uniform tension and makes kinking impossible.

This elevator or dumbwaiter is easy to install and gives excellent satisfaction. It is being used extensively in the east for the remodeling which the industrial housing situation has brought about.



Picture of Wall Type Outdoor Steel Tube Dumbwaiter.

OF thirty-three grain states where efforts towards cleaner threshing were centered, two-thirds have already reported an aggregate saving of 16,000,000 bushels of wheat.

"LOOK BEFORE YOU BUILD"

150 DISPLAYS TO INTEREST YOU

Have you visited the Permanent Building Material Exhibit where one hundred and fifty displays of the latest developments in the building trade await your inspection? Spend a day at the Exhibit. Profit from the valuable ideas it will bring to you.

Building Material Exhibit

Entire Second Floor

Insurance Exchange Bldg.

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CHICAGO

If you can't come in person write us. We will cheerfully answer any requests for information or estimates on any building material matter. The service is free.

SEND FOR OUR FREE MAGAZINE

United War Work Campaign to Raise \$170,500,000

A PARTNERSHIP drive for the largest service offering of money ever subscribed by a single nation will begin on November 11, when the seven welfare organizations of the United States league themselves together in the United War Work Campaign for \$170,500,000. The organizations joining in the single call upon the public are the Young Men's Christian Association, the Young Women's Christian Association, the National Catholic War Council, the Jewish Welfare Board, the War Camp Community Service, the American Library Association and the Salvation Army.

It is a call upon the industrial army to help the fighting army. The men in the ranks whom the United War Work Campaign assists today are the men of the mills and the shops and the factories after the war. Many of them are men who will only come back to industry because a welfare organization sent from here over there has helped them to keep their health and their spirits and their grip on home. It is a call upon industry which has been enlarged and spurred on by war conditions. The whole people of the United States will contribute the funds, the seven organizations will distribute them and all men in the ranks will receive.

The Young Men's Christian Association, which is asking \$100,000,000 for its war work, is serving no less than three million American soldiers and sailors in Europe and in the training camps at home. It was between five and six hundred huts in this country and a greater and growing number on the other side. It is keeping a bit of home even at the trenches

and under the fire of the enemy. The Y. M. C. A. hut at the front is the soldier's club, his church, his college. It is open to all denominations for service, from the early mass of the Roman Catholic to the later service of the Protestant clergyman and the Jewish Rabbi and the song service of the Salvation Army. It is used for musical and theatrical entertainments by the most famous musicians, actors and actresses of the world. It is a place of study and lectures for the boy who would study French or other subjects to be turned to account in after-war days; it is the quiet place where the soldier reads or writes his letters home.

The Young Women's Christian Association, asking for \$15,000,000, has gone into the war and into the war industries with the women and girls called to new and perilous work. It has co-operated with the government in the proper housing and care of the women munition makers in this country and has provided recreation centers at all of the twenty-one cantonments. It has established similar centers at munition plants in France and has been so successful in providing necessary rest and recreation that the English government has asked the help of the American Y. W. C. A. in work of that character in England. It has club centers in Russia, at Petrograd, Moscow and Samara, and co-operated with the Y. M. C. A. during the summer in an agricultural exhibit on a boat that plied up and down the Volga River. It has about one hundred hostesses houses—"a bit of home within the camp"—erected at military camps at the requests of the commanders, and a number more are authorized and being

(Continued to page 94.)

It is now so easy

for any Carpenter or Farmer to quickly construct a strong and substantial wagon bed or hay rack by using our new

Hay Rack and Wagon Bed Hardware

SEND FOR DETAILS
Today Without Fail

SOLD BY LEADING
DEALERS

ALLLITH-PROUTY CO., Danville, Ill., U. S. A.

Chicago New York Boston Philadelphia San Francisco Los Angeles

And Representatives in All Principal Foreign Cities

PRODUCTS: Door Hangers and Tracks Rolling Ladders Overhead Carriers Light Hardware
Spring Hinges Fire Door Hardware Garage Door Hardware Hardware Specialties

Catalogs, blue prints and special information promptly furnished

OUR ENGINEERING SERVICE IS AT YOUR DISPOSAL WHENEVER DESIRED



The Silo Fixture Proposition You've Been Looking For



YOU, Mr. Lumberman and Contractor, can recommend Tecktonius Silo Equipment. Why? Because this equipment will produce a really better silo. Every Tecktonius purchaser becomes a salesman for you.

The Tecktonius Silo

YOU PURCHASE STAVES ALREADY CUT TO STANDARD PATTERNS—WE FURNISH YOU FIXTURES FOR ANY SIZE SILO.

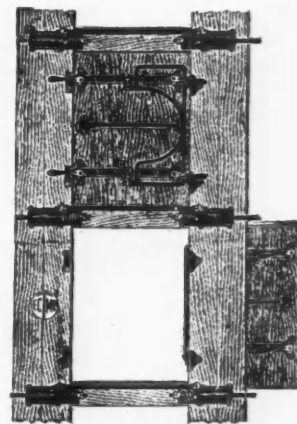
This enables you to sell a silo that will give absolute satisfaction to your customer, at **less cost** to him, and **greater profit** to you. **You** become the silo manufacturer of your community, building up an ever-growing business.

What Others Claim, Tecktonius Backs With a Signed Guarantee

Five Year Guarantee

With every set of Tecktonius Silo Fixtures, the purchaser gets a signed guarantee as good as a U. S. Government Bond, backing every claim made for the superior construction features. This eliminates all risk and insures absolute satisfaction in every essential detail.

This is the Proposition you've been wanting. It will protect your interest as no other silo will. Our comprehensive illustrated 32 page booklet "Cashing



The Famous Tecktonius perfect fitting hinged Silo Door which keeps silo air-tight at all times. Has four points of suspension and hangs perfectly. Swings easy and without sagging, binding, warping, or sticking. Locks tightly on all four corners.

The Tecktonius Silo is a monument of efficiency and convenience. It stands rigid and erect in defiance of all storm and wind conditions, due to its superior anchorage system which stoutly supports it at three vital points — base, top and middle.



The Tecktonius Self-adjusting Hoop Fastener which automatically cares for the contraction and expansion of Silo staves due to climatic conditions.

In On Silos" tells you why. Send for a copy today. It's yours for the mere asking.

A Silo is War Time Equipment

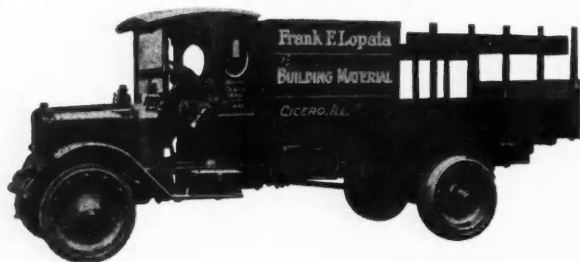
E. C. Tecktonius Mfg. Co.

Racine

1324 Thirteenth Street

Wisconsin

It's PERFORMANCE that counts!



REPUBLIC Trucks have earned their reputation and their tremendous demand solely on the basis of performance. Whenever a Republic Truck is bought for work in any kind of hauling, it is only a short time until there is a voluntary demand for Republics from other business houses in the same community.

The reason for this demand is the dependable service that Republic Trucks always deliver and the reason behind the dependable service is the quality that is built into all Republic Trucks. The fact that Republic builds nothing but trucks and that Republic engineers specialize in producing trucks of ideal hauling efficiency makes possible the highest standard of truck quality.

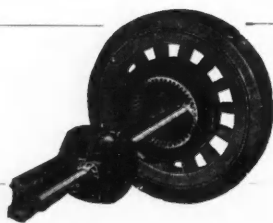
More than 1300 Republic Service Stations distributed all over the United States, make dependable service everywhere available.

There's a Republic exactly fitted to the requirements of your business. Seven models — $\frac{3}{4}$ ton to 5 ton.

The Republic dealer will aid you in selecting the model that will prove most profitable in your business. Booklet sent on request.

REPUBLIC MOTOR TRUCK CO., INC.
Alma, Michigan

The Torbensen Internal Gear Drive, used in all Republic Trucks, delivers 92% of the motor power to the wheels. We know of no other type of drive that delivers as much.



REPUBLIC

Internal Gear Drive

MOTOR TRUCKS

7 Models — $\frac{3}{4}$ Ton to 5 Ton

Built by the Largest Manufacturers of Motor Trucks in the World

United War Work Campaign

(Continued from page 92.)

built. It is doing work among the colored girls affected by war conditions, and among the foreign-born women whose men have gone to war.

The National Catholic War Council, including the Knights of Columbus, asks \$30,000,000. The Knights of Columbus have erected club houses at the points of embarkation in this country and embarkation in France, and have secretaries assigned to permanent duty aboard transports plying between this country and European ports; one hundred K. of C. secretaries have been ordered to Italy, where ten buildings are being erected. There is a headquarters building in Paris and permanent club houses thruout France and in London. A fleet of motor trucks follows the rapidly advancing armies to provide our soldiers with "service under fire." These trucks carry cigarettes, tobacco, chocolate, writing material, soap and towels and other articles.

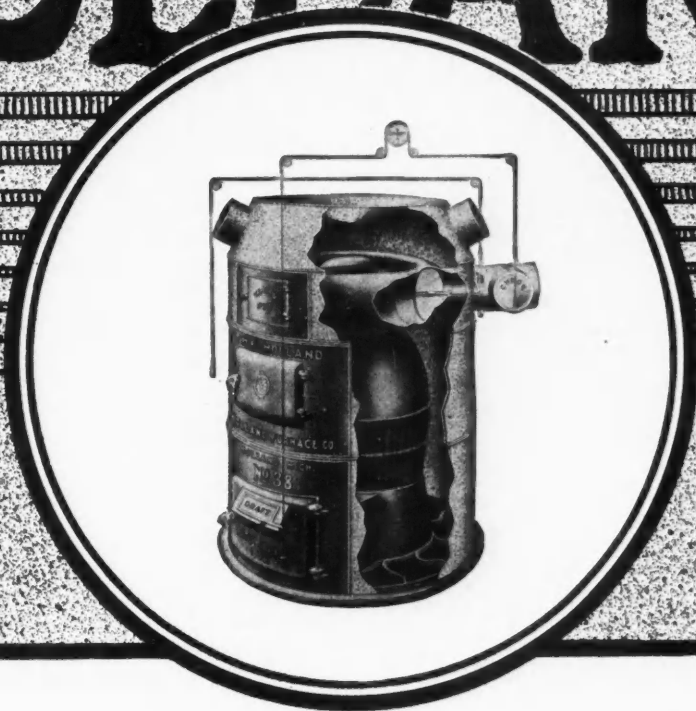
The Jewish Welfare Board, which will receive a \$3,500,000 share in the United War Work Campaign, officially represents all national Jewish organizations in building up the morale of more than one hundred thousand Jewish men in the army and navy. It has sent its trained workers into the camps and naval training stations. It has erected clubrooms to which soldiers, irrespective of race, can go for rest or for entertainment, where there are libraries with English, Yiddish and Hebrew books, where religious services on Friday evenings and holidays are open to any man who wishes to attend. In the towns near the camps community centers furnish the soldiers with social rooms and sleeping quarters. Jewish chaplains are serving with the army overseas and in the navy. Welfare workers are aiding the families left at home and among the men in the ranks are performing personal services, distributing gifts and keeping up the boy's contact with his home.

The Library War Service of the American Library Association, which is asking for \$3,500,000, has sent overseas during the past year more than a million books for the men of the fighting forces. It supplies a book for the man when he wants to read, and the kind of a book that he wants. It gives its service quickly and directly to the army and furnishes to the soldier who is preparing for after the war technical books that he needs for his study. In the huts and canteens of all the welfare organizations a branch library has been established at which the soldier or sailor can pick up in his hour off duty the novel or magazine that suits his fancy. There is a deck library on every transport, and on many of the warships and government cargo ships. In every ward of every military hospital a shelf of books is near the hand of the convalescent soldier. The book from the home library, the magazine, the new educational or technical volume bought with money from the public will circulate thru the association to every man in every branch of service.

The War Camp Community Service, which is asking \$15,000,000, is a nation-wide movement for hospitality keyed to harmonize with the training camp program of the War and Navy Departments. It has a definite, ordered program, supplemented by resources of the folks back home. It invites the soldier and sailor off duty in a strange town to dine and dance and meet the right sort of women. It counteracts the red-light lure with the greater attraction of wholesome recreation and speeds the man in khaki or blue on his overseas way with a keener enthusiasm to fight for a country in which he leaves no bitter, regretful memories. The War Department Commission on Training Camp Activities was appointed by Secretary Baker in April, 1917. The Navy

(Continued to page 96.)

HOLLAND



—Heats Economically

It is more important now than ever before to install or recommend for your customers a furnace that burns the smallest amount of coal in proportion to the heat supplied. You can do this and at the same time add to your reputation as a reliable contractor, by installing *Holland Furnaces*. The Holland Guarantee and Holland Five Year Service Bond insures absolute satisfaction to every owner.

The Holland has a cone grate which breaks up the clinkers and compels the fuel to roll to the wall of the fire pot. Air is mixed with the gas—the fuel burns from the sides and over the top, compelling 100% heat radiation. All gases and soot are burned.

Free Heating Plans

Write us about your heating problems. Our Engineering Department will send you free plans and information. Get our catalog and special proposition to Contractors, Builders and Carpenters. Write us today.

Holland Furnace Co., Holland, Mich.

World's Largest Installers of Furnaces

Holland, Michigan 2 Factories Cedar Rapids, Iowa

Holland Furnaces Make Warm Friends—Ask Any Lucky Owner

United War Board Campaign

(Continued from page 94.)

Department Commission of Training Camp Activities was established by Secretary Daniels at the same time. These commissions called on the Playground and Recreation Association of America, which has had years of experience in this sort of thing, to carry on the work in the communities outside and adjoining the camps under the official name of the War Camp Community Service.

The Salvation Army's request for its work at home and abroad is \$3,500,000. As near the trenches as relief work can be carried, the Salvation Army "hutment" is open, and a woman officer ready to serve hot food to the men under fire. A cook stove with an oven that can bake is certain to be a part of the equipment of the little Salvation Army house. In front of it, "lassies" with baskets of food have stood under fire in order to give a hot cup of coffee to the men who are bringing up the ammunition. Truckloads of pies and doughnuts start daily from the bases to the extreme ends of the lines. The women officers have mended the clothing and darned the stockings of the soldiers who came to the hutment for recreation. In this country the Salvation Army maintains hotels near the military and naval bases, and in their clubrooms entertainments fill the soldiers' leisure time. Church services are held on Sundays.



How Raw Materials Are Saved

By Harvey D. Higgins

Associate Chairman, Committee on Public Information

The War Industries Board has added three or four million yards of cloth to our national supply simply by obtaining a reduction in the size of the samples of cloth issued by manufacturers.

It has made a similar saving in leather by reducing by one-half the number of styles of shoes that are manufactured and by limiting the height of women's shoes to nine inches.

The whole plan of its work is illustrated by the means it adopted to save paint. Manufacturers of house paint were putting out forty to one hundred different shades. Retailers carried large stocks to have as many shades as possible on their shelves. By limiting the number of shades to thirty-two the War Industries Board reduced the amount of paint that stood unsold on dealers' shelves. The same end was attained by standardizing the size of the can—that is to say, by discontinuing the making of half-gallon cans of paint or varnish and allowing none smaller than half-pints.

It has saved tin by providing for the substitution of other metal in metal bronzes, castings, solder, collapsible tubes and tin foil. In solder, for example, 50 per cent tin has been used and 50 per cent lead, altho the board now finds that 40 per cent tin and 60 per cent lead was as serviceable a solder. This substitution means a 20 per cent saving.

It has saved steel by obtaining a 75 per cent reduction in the number of sizes and types of drills, plows, tillage implements, farm wagons, etc. It has saved rubber by reducing the number of types and sizes of pneumatic tires from 287 to 32; and, since all our raw rubber is imported, this means a saving also of ship tonnage. Wool has been saved by reducing the number of designs of fabrics manufactured and by eliminating those designs that were not economical in cutting. Labor and equipment have been saved in the delivery service of retail stores by organizing a co-operative delivery service and standardizing routes, so that in one case, 33 department stores saved the labor of 303 out of 848 men and freed 129 auto trucks out of 324.

(Continued to page 98.)

MORE HEAT—LESS FUEL—WHY?

Eyston ONE-PIPE FURNACE

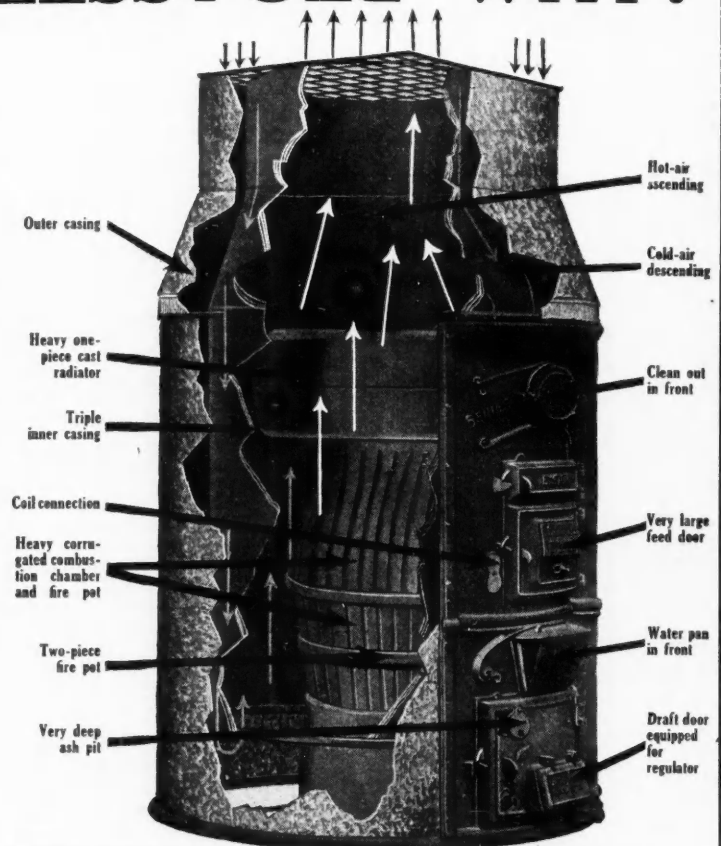
This furnace will burn with equal economy, hard or soft coal, coke or wood and burn LESS of it. It is the SAFE furnace to install, as its only hot-air connection is surrounded with a cold air duct.

25 to 40% Less Fuel

This saving means much to your clients and it makes the EYSTON furnace easy to sell. It is YOUR JOB to install it. We back up every installation with our absolute guarantee. Its cost is within the reach of every householder. Let us hear from you and we will send you our proposition.

The Tubular Heating and Ventilating Company

232 Quarry Street, Philadelphia, Pa.



HESS FURNACES

AND THE FUEL ADMINISTRATION PULL NICELY TOGETHER



Special Terms to Contractors

Hess Furnaces burn any fuel and deliver all the heat. The fire-brick fire boxes, rectangular, and wide grate areas mean perfect combustion.

The big steel radiating surfaces distribute the heat rapidly.

The welded and riveted seams are absolutely and permanently tight against leakage of smoke, gas and dust.

You can burn anything that will burn — hard or soft coal, coke, slack, lignite or wood. **THAT'S WHERE WE HELP THE FUEL ADMINISTRATION.**

Ask for our furnace booklet on pipe and pipeless furnaces

HESS WARMING & VENTILATING CO.

1220 Tacoma Building, CHICAGO

Majestic Coal Chute

is easily installed in place of unsightly basement windows, or built into new foundations. It is absolutely burglar proof. The glass door can only be unlocked from the inside and gives ample light to the basement.

Inexpensive and durable—will outlast the building. It increases the value of property and is a modern building necessity.

Write for Catalog

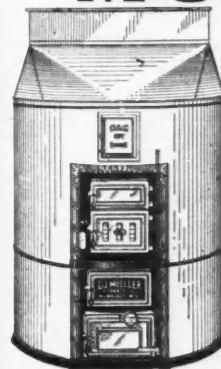
THE MAJESTIC COMPANY

800 Erie Street

Huntington, Ind.

MUELLER

Pipeless Furnace



Guaranteed to heat every room in house to a comfortable temperature through one register. Easily installed, even in partial cellar. Saves one-third and more in fuel—burns any kind. Thousands in use. **Write for free illustrated booklet and full information.**

L. J. Mueller Furnace Co.

218 Reed Street, Milwaukee, Wis.

Saves Coal



Use Arnold Automatic Damper

This simple device, placed in your Stove Pipe or Furnace Pipe immediately gives your house 25% to 33 1/4% more heat from the same quantity of fuel—no matter what type of stove or furnace you use. A Proved Success! You can easily attach it yourself—simple directions on box.

NO WASTED FUEL

Automatic in operation—requires no attention after fire is started. Keeps your house at even temperature. No overheating with waste of fuel. No underheating with dangers to health.

Saves Its Cost on First Ton of Fuel

Thousands already in use. Every owner a booster. Price \$2.50 by parcel post prepaid. Order today, stating whether for Stove or Furnace and size of pipe. Agents wanted.

ROBINSON MFG. COMPANY

91 Factories Bldg.

Toledo, Ohio

HERO

PIPELESS FURNACE

the great coal saver, it is a money maker for the contractor and jobber. Stove heated houses are all prospects for sales because of the big fuel economy.

Easily installed by any good mechanic in a day. Here is a chance to build a good business with liberal profits. Big commission and exclusive territory. Write for bulletin.

HERO FURNACE CO. 59 W. Lake St. Chicago



Never before has the need of dependability and adaptability in motor trucks been so apparent in the building business as today.

KISSEL, realizing this, has incorporated in the vital structural parts of Kessel Trucks those engineering principles and construction features which ten years of motor truck designing and construction experience have proven to produce unlimited power, ability for continuous service and low operating cost and upkeep.

The ALL-YEAR Cab, an exclusive Kessel Truck feature, insures uninterrupted performance, no matter how severe the weather may be. **In summer, it is an open, cool cab; in winter, it is completely enclosed, increasing the driver's efficiency by giving him complete protection.**

There is the right size truck for your requirements. See your nearest Kessel Dealer, who has specifications, prices, etc. See him without delay.

Kissel Motor Car Company
Hartford, Wisconsin, U. S. A.

**KISSEL
TRUCKS**

How Raw Materials are Saved

(Continued from page 96.)

All these and many other similar savings have been effected with the assistance and co-operation of the industries involved. There has been no friction and little hardship. Industries have been put on a war basis not by the imperial ukase of irresponsible authority, as in Germany, but by the patriotic willingness of the nation to do everything in its power to help the war program. And thru the War Industries Board, as thru the Food Administration, the Fuel Administration and all the other war boards of the government, the American democracy has shown its ability to organize for war as thoroly as the most servile victims of military autocracy have been organized by the most crushing despotism of modern times.



The First-Born

I spotted him, by gracious, in the twinklin' of an eye,
Out of more'n a thousand soldiers when the Big Review
went by;

Out of more durn men and horses and artillery—why, say!
I knowed him in a minute when I heard the first band play!
They was mighty like, them youngsters, as they all swung
down the line,

Lookin' straight ahead and keepin' step and marchin' mighty
fine,

But I spotted him the minute he was nigh enough to see,
And a kind of pleasant shiver come and run all over me.

If you'd ast me how I done it I don't know as I could say,
But he looked a little slicker than the rest of them some way;
He was buttoned up some neater and his head was purty high,
Just a little wee bit higher than he went a-marchin' by;
And he stepped a little spryer, so it sort o' seemed to me,
And he never seemed to tire, but went marchin' with a free
And a stiddy, smooth and swingin' stride; they all looked
mighty fine,

But you couldn't help but spot him when they all come down
the line.

They was just a little difference—not much, I'm free to say,
But they was a little difference—a little in the way
That he held his head and shoulders, and you might not
hardly see

What it was, but I can tell you it was plain as day to me.
He stood just a little straighter than most anybody there,
Sort o' carried himself better and his shoulders was more
square,

And I couldn't help but notice how durn trim he was and
tall,

And he ketched the tune and step a little better than them all.

You don't have to take my judgment; I might favor him,
it's true,

Favor him among them others, as a daddy's apt to do,
But his mother, she was with me, and she says to me, says
she:

"Jim looks trimmer, straighter, taller than the others seem
to be,

And he marches on some spryer and his shoulders is more
square,

And his blouse is buttoned slicker than most anybody there!"
Which she seen the same as I did, and was said before she
heard

What I thought when I first seen him—and corroborates my
word!

—JAMES W. FOLEY, in *Saturday Evening Post*.

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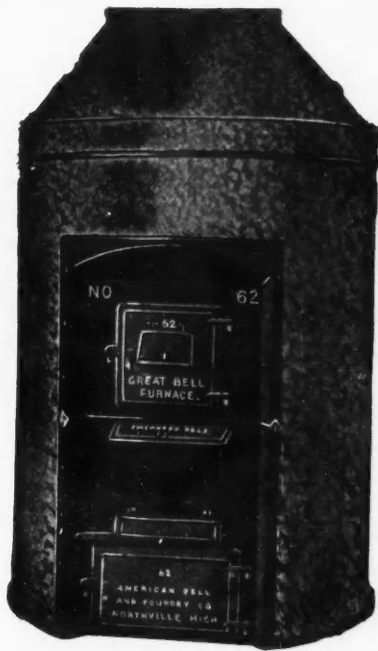
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ost.

The Great Bell

-original Pipeless Furnace



Father of Them All

We have thousands in use. Sizes, styles and prices to suit all. **\$50.00 and up.**

Made for the building where a furnace is needed, but where the cost has been prohibited.

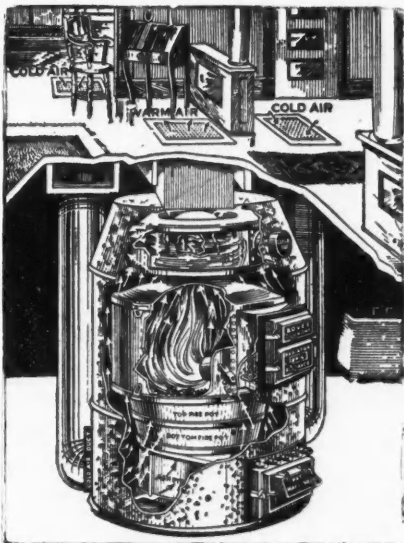
The GREAT BELL PIPELESS FURNACE will heat any one or two-story building in the most efficient manner with the least effort and the lowest relative cost. While **Cost** is secondary to **Service** in this furnace, our methods of production and sales have reduced the cost so low that no builder can afford to overlook our proposition.

And we guarantee our furnaces to be and do all we claim for them in both catalog and correspondence.

Write for our catalog, describing the various styles, prices and specifications of the Great Bell Furnaces.

American Bell & Foundry Co.

27 Cody Street, Northville, Mich.



BOVEE'S PIPELESS FURNACES

Central Heating and Regular Pipe Furnaces

Bovee's Pipeless Furnaces four sizes. One Register. Cool basement. Easy to install. Very economical of fuel and very durable.

Bovee's Central Heating System Furnaces

Six sizes. One large warm air register. Other registers can be added if found necessary. Separate cold air ducts. Aids in circulation of heat and removes cold air from warm air registers. Ordinary rugs can be used.

Regular Pipe Furnaces furnished where registers are desired in each room. Send pencil sketch of building for estimate.

Horizontal Furnaces for 4-ft. wood or coal with double doors 16x16-in. or 17x21-in. furnished with Central Heating or Regular Piping

Buy from Manufacturers and Save All Commission, one-third the cost of your Heating Plant.

FREE CATALOGUE

BOVEE FURNACE WORKS, 50 W. 8th St., Waterloo, Iowa

50% Less Fuel Producing 100% More Heat

Guaranteed by Bond

The Only Furnace that Insures Clean Air

Big Money for You

Meets Abnormal
Costs of Material
and Labor

Simple to Install
Easy to Operate

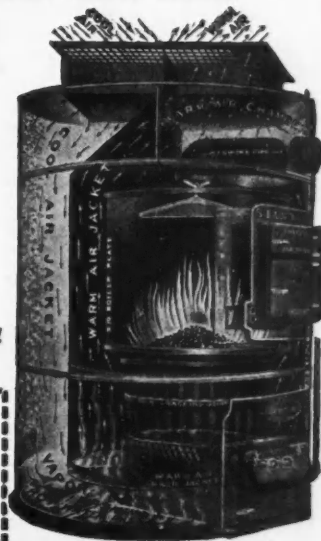
We Want Good,
Active Men to
Represent Us.

Write today for our special
agency proposition

MAIL TODAY

Standard Heater Co.
438 W. Ontario St., Chicago
Send me your Special Agency
Proposition to Contractors.

Name.....
Address.....



STANDARD HEATER CO.
438 West Ontario Street
CHICAGO, ILL.

The Carpenter and Builder and His Gasoline Engine

By James F. Hobart

I DON'T know of any better way in which to prepare for winter work than to put a gasoline engine in the shop and a machine or two to be driven therefrom. If only one machine can be provided, then put in a circular saw and add other machines as you can. You can do it, too, for a circular saw will enable you to handle work which you can't touch without that tool.

You might put in a combination wood worker. Some carpenters have found them invaluable in the jobbing shop. If you intend to always have a "one-man shop," then a good combination woodworker is all sufficient; but if you intend to branch out, increase your shop machines and become a larger concern, then, I would advise special machines instead of one universal machine. But even in a large shop I have seen universal woodworkers making a good profit by being kept for job work altogether, little miscellaneous jobs being sent to that machine, thereby avoiding the necessity for taking two or three of the regular machines off their regular work.

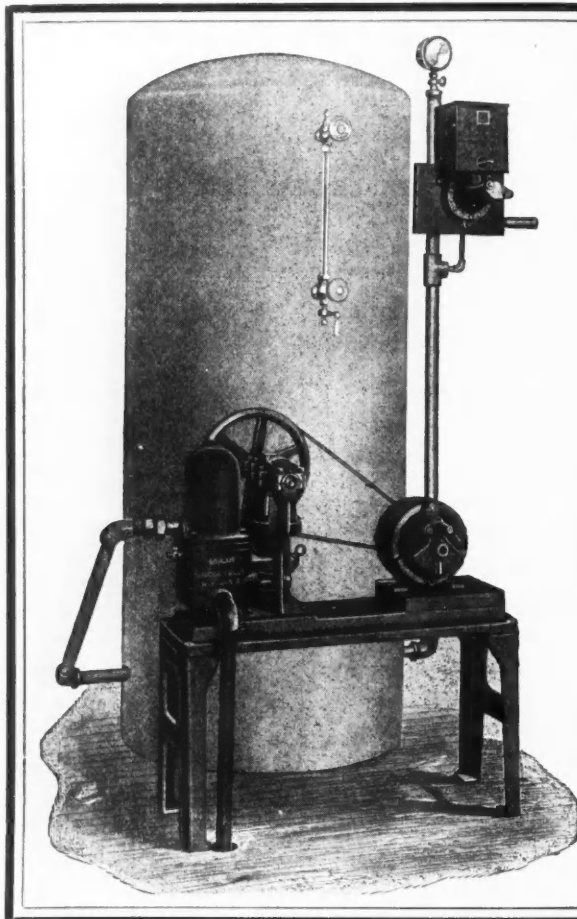
But, be that as it may, and returning to the gasoline engine, which is the subject of this story, put one in your shop this winter, together with at least one good

woodworking tool, and you can then go right out and get business, for you will be able to make deliveries on time and ahead of your competitors who must rely upon hand work or the regular planing mill for their machine work.

If you can't afford to pay outright for a gasoline engine and a woodworking machine, then buy one on payments. You can easily pay for it in that way, even if it costs you a bit more than for cash. There is only one time when I would not advise the purchase of a gasoline engine, and that time is when your shop is so situated that you can obtain electricity at a reasonable price. Electricity is even better, for power purposes, than the gasoline engine, but obtain an engine if you are not where current can be obtained cheaply.

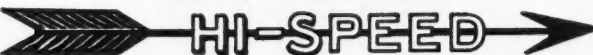
And, after you have purchased a gasoline engine, set it in your shop at once, but do not make the mistake of placing that machine in a corner, and a dark one at that, and possibly underneath the stairs as well as in a dark corner. Place the gasoline engine in an open part of the shop where you can get at each and every part of it readily. There are several things about gasoline engines which require attention, and if

(Continued to page 102.)



Noiseless Water Supply PUMPING OUTFITS

For open or compression tank water systems
180 to 360 gallons per hour

GOULDS

Pumping Outfits

run so quietly when driven by electric motor that you can't hear a sound 10 feet away. The Pump oils itself at every turn and is so simple there is scarcely anything to get out of order.

Hi-Speed outfits are made in 13 different combinations as follows:

- 1 gasoline engine driven outfit.
- 4 electric motor driven outfits for use in connection with 32-volt home lighting systems.
- 8 electric motor driven outfits for 110 and 220 volt alternating and direct currents.

WRITE for DEALER'S PRICES and DESCRIPTIVE LITERATURE

THE GOULDS MANUFACTURING CO.
Main Office and Works—Seneca Falls, N. Y.

NEW YORK	BOSTON	CHICAGO	PHILADELPHIA
16 Murray St.	58 Pearl St.	12-14 S. Clinton St.	111 North 3rd St.
PITTSBURGH	ATLANTA	HOUSTON	
636 Henry W. Oliver Bldg.	3rd Nat'l Bank Bldg.	1001 Carter Bldg.	

How about it?

Are you going to see that your neighbors and Customers have their new Canton Coal Window this year?

Profit to YOU

It means an added profit to you this year and leads to extra jobs around the house.

Canton Sidewalk Doors and Coal Chutes add to the appearance of any building. Burglar proof and substantial. Stay rods and chains hold them in place either when open or closed.

Ask Us About Our Proposition to Contractors. Write for Catalog B-8.

Canton Foundry & Machine Co.
Canton, Ohio



MYERS HOUSE PUMPS



Each year there is a big increase in the number of dealers who sell Myers House Pumps.

Somehow, they have a strong appeal to the buying trade that keeps them moving. They have the looks which produce the inquiries and the construction which insures the service.

All in all, they have the Pumping Qualities, Capacity,

Ease of Operation, Design and finish—with many patented features which get the business for Myers dealers.

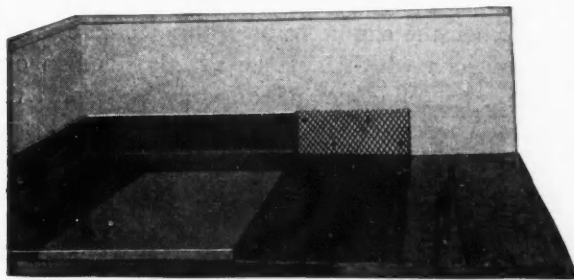
While you are thinking over what we have just said, take a minute's time and drop us a line—just a card will do—and ask for circular showing many of the Myers House Pumps in colors as finished and also request our late prices. Chances are you will be selling Myers House Pumps in the near future, if you do this, write.

F. E. Myers & Bro.
Ashland, Ohio



OLD FLOORING AS A BASE FOR A NEW FLOOR

Any old floor, although splintered, torn and badly battered, furnishes the necessary underfloor or base for ASBESTONE.



ASBESTONE is easily spread with a trowel over wood or concrete, forming a tough, resilient, sanitary wearing surface, making a New floor out of an Old one. ASBESTONE is light weight and reinforces the underfloor, fills the cracks and if there are any holes these can be filled with ASBESTONE.

Agents wanted to represent us in every county, no experience necessary. Others are making big money, why not you? Write for particulars regarding this offer.

Franklyn R. Muller & Co.

8114 Madison Street

WAUKEGAN, ILL.

Cure Chimney Troubles with "Best" Revolving Chimney Tops



The only all cast iron ball-bearing revolving top. Protects chimney and keeps it clean. Produces better draft, easy to install, will last a lifetime. Legs have slotted holes and radical adjustment so that each size top will fit any size chimney up to the largest for which it is designed. Write for folder.

Sterling Foundry Co.
8 Ave. A. Sterling, Ill.

Get Our Free Estimate For Hot Water Heat In that new or old house



\$200.00
Get Our Proposition and Big Heating Book

ANDREWS HEATING CO., 1524 Heating Bldg., Minneapolis, Minn.

GOOD PROFIT FOR CONTRACTORS

The Andrews Contractor Plan enables you to net more from the heating price and gives your customers the best system. We furnish free estimates on complete plants ready to screw together. Steel Boilers alone if desired.



\$95 an Hour!

"Every hour I spent on my I. C. S. Course has been worth \$95 to me! My position, my \$5,000 a year income, my home, my family's happiness—I owe it all to my spare time training with the International Correspondence Schools!"

Every mail brings letters from some of the two million I. C. S. students telling of promotions or increases in salary as the rewards of spare time study. What are you doing with the hours after supper? Can you afford to let them slip by unimproved when you can easily make them mean so much?

For 27 years men in offices, stores, shops, factories, mines, railroads, in the Army and Navy—in every line of technical and commercial work—have been winning promotion and increased salaries through the I. C. S. Over 100,000 men are getting ready *right now* in the I. C. S. way for the bigger jobs ahead.

Your Chance Is Here!

No matter where you live, the I. C. S. will come to you. No matter what your handicaps, or how small your means, we have a plan to meet your circumstances. No matter how limited your previous education the simply written, wonderfully illustrated I. C. S. text-books make it easy to learn. No matter what career you may choose, some one of the 280 I. C. S. Courses will surely suit your needs.

One hour a day spent with the I. C. S. will prepare you for the position you want in the work you like best. Yes, it will! Put it up to us to prove it. Mark and mail this coupon *now!*

TEAR OUT HERE

INTERNATIONAL CORRESPONDENCE SCHOOLS

Box 8160, SCRANTON, PA.

Explain, without obligating me, how I can qualify for the position, or in the subject, before which I mark X.

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| <input type="checkbox"/> ARCHITECT | <input type="checkbox"/> SALESMANSHIP |
| <input type="checkbox"/> Architectural Draftsman | <input type="checkbox"/> ADVERTISING |
| <input type="checkbox"/> Contractor and Builder | <input type="checkbox"/> Window Trimmer |
| <input type="checkbox"/> Building Foreman | <input type="checkbox"/> Show Card Writer |
| <input type="checkbox"/> Concrete Builder | <input type="checkbox"/> Sign Painter |
| <input type="checkbox"/> Structural Engineer | <input type="checkbox"/> BOOKKEEPER |
| <input type="checkbox"/> Structural Draftsman | <input type="checkbox"/> Stenographer and Typist |
| <input type="checkbox"/> Ship Draftsman | <input type="checkbox"/> Higher Accounting |
| <input type="checkbox"/> Plumber and Steam Fitter | <input type="checkbox"/> COMMERCIAL LAW |
| <input type="checkbox"/> Heating and Ventilation | <input type="checkbox"/> Common School Subjects |
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| <input type="checkbox"/> Sheet Metal Worker | <input type="checkbox"/> ILLUSTRATING |
| <input type="checkbox"/> CIVIL ENGINEER | <input type="checkbox"/> Railway Mail Clerk |
| <input type="checkbox"/> Surveying and Mapping | <input type="checkbox"/> CIVIL SERVICE |
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| <input type="checkbox"/> Machine Shop Practice | <input type="checkbox"/> Navigation |
| <input type="checkbox"/> STATIONARY ENGINEER | <input type="checkbox"/> AGRICULTURE |
| <input type="checkbox"/> CHEMIST | <input type="checkbox"/> Poultry Raising |

Spanish
 French
 Italian

Name _____
Present Occupation _____
Street _____
and No. _____
City _____ State _____

The Carpenter and Builder and His Gasoline Engine

(Continued from page 100.)

the machine be placed in a dark corner it is apt to be left without the necessary attention, and when trouble comes you can't half work on the machine because of the dark, confined locality in which the engine has been placed.

Instead of tucking the engine away in a dark corner, place it in the middle of the floor and leave room enough so you can readily get at all parts of the mechanism. If you can't find such a place in your little shop, then build a little addition. A lean-to will answer, and place the engine therein. You can run the main shaft of the shop right thru the partition into the lean-to and connect the gasoline engine by belt thereto. But, while you are doing this—and it is a mighty good scheme, too, for it removes the engine from the reach of shop dust—make the lean-to long enough so that a decent length of belt can be used for connecting the engine and the shaft pulley.

Don't make this distance less than twelve feet from center to center of the shafts, measured on a diagonal line direct from one to the other. Another benefit of the long lean-to is that you can, a bit later if you can't afford it at present, place an electric generator on the floor underneath the line shaft and belt direct thereto from the flywheel of the gasoline engine. In this way you can have a finely lighted shop during the dark winter evenings and be able to run full time upon winter orders.

With an engine placed in the middle of the floor instead of in a dark corner, no time is lost in locating trouble when the engine refuses duty. There are certain conditions which must be strictly filled in order to have a gasoline engine do duty. Among these things the carpenter will find that the chief ones are: A proper supply of gasoline in the right place at the right time, an adequate spark properly timed and a good compression in the engine cylinder.

When the engine refuses to operate and you can get at it readily, it requires but little time and trouble to test out these matters, in the order in which they are noted. Ninety-nine times in one hundred you will have found the cause of trouble before you have gotten past the gasoline and spark tests, for in these lie nearly all engine troubles. Troubles which would never happen to the carpenter or to any other user of the gasoline engine could he always be sure that all the little matters pertaining to gasoline and electrical distribution were in perfect order in his engine.

After you have placed the gasoline engine so that you can see it and get at its several parts when necessary, then give it at least time enough for keeping it decently clean. No machine can work well when it is neglected, allowed to accumulate grease and dirt and

(Continued to page 104.)

It is the Direct Top Vent

that makes the PURITY JR. an odorless toilet. Unlike a toilet depending upon an elbow side opening, the PURITY JR. seat may be raised a hundred times without impure air entering the room.

An Outdoor Toilet

causes more distress in winter than the thoughtful father and husband is willing to permit his family to endure. Because the PURITY JR. can be bought for little money, it is being installed in many homes that formerly were denied such convenience thru excessive cost.

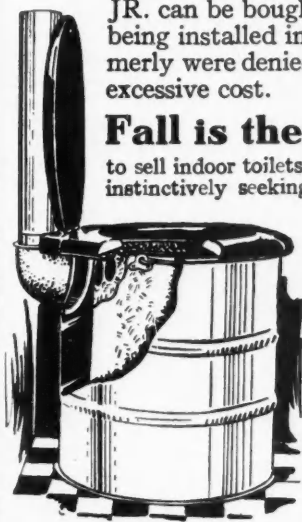
Fall is the Best Time

to sell indoor toilets. Right now each home is instinctively seeking to secure the thing that will add most to its comfort during the coming winter.

The builder who has given them their other conveniences is the man to whom they turn for a better toilet.

Prepare to Meet this Demand by establishing yourself now as one of our agents. PURITY toilets create business.

Night Commander Lighting Company
Jackson, Michigan



Comfort Indoor Closet

Odorless Sanitary Germ-Proof

No Sewer — No Waterworks — No Plumbing Needed

This modern home necessity is fast taking the place of the unsightly, unhealthy, inconvenient outhouse in the back yard. Thousands now in use and all giving complete satisfaction. Can be put wherever convenient in the house. No odor whatever. Gives city convenience in the country or town.

Abolish Outdoor Closet

Anybody can afford one. Saves those cold night trips out-of-doors. Impossible to get same amount of comfort for the money another way. Sold on 30 days' trial and under sworn guarantee to refund all money if not entirely satisfactory. Send for description and prices today. Be fair to your family.

Agents Make Big Money Easily

Comfort Indoor Closets sell themselves as fast as people understand about them. Contractors and carpenters are making big money by merely suggesting this closet.

Write for details of this exclusive agency offer. Send postal now before somebody else gets your territory.

Comfort Chemical Closet Co.
311 Factories Bldg. TOLEDO, OHIO



Lane's SUPERIOR QUALITY Ball Bearing Trolley Barn Door Hangers



are rapidly displacing those of inferior quality.

Send for latest prices and complete catalog, showing all styles of house and barn door hangers.

LANE BROS. CO. CHERRY STREET
POUGHKEEPSIE, N.Y.

Earn \$35. to \$100. WEEKLY



You can make \$35 to \$100 a week. I want hustlers, money-makers, to work with me. to advertise, sell and appoint agents. Biggest thing in years. City convenience without plumbing. Used in any room. Sells on sight. Demonstrating tub furnished. Folds small, self-emptying, non-leakable. Guaranteed 10 years.

AGENTS MAKE SALES EASILY

Two sales daily means \$60.00 a week. Leggett, Ohio. "Worked two hours took two orders profit \$10.00." Hayhurst, Neb., "Took 11 orders in 4 1/2 days—profit \$55.00, ordered 12 more tubs." Manning, Iowa. "Sold 10 tubs in one day—profit \$50.00." DeHut, Nebr., "Sold 12 tubs in three days—profit \$60.00." And hundreds of others making big money. 70 percent of homes have no bath tubs. Experience and capital unnecessary. Credit given to the right man. Get full particulars and "special plan;" all free.

H. S. Robinson, Pres., **THE ROBINSON CABINET MFG. CO.**
4896 Factories Building, TOLEDO, OHIO

A Tank You Can Trust



You don't have to keep your eye on a Caldwell Cypress Tank. You need have no fears of breakage or leaks. It's like a good workman — on the job and giving honest service every day in the year.

And it's all because the Caldwell Tank is built of the highest grade materials according to engineering principles by experienced tank builders who realize that a good tank is more than a carpenter's job. As a guarantee against leakage, every joint is machine-planed with full bearing and the hoops are spaced so that no hoop is overstressed.

Send for Catalogue

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



RO-SAN Indoor Closet



The original chemical closet. More comfortable, healthful, convenient. Takes the place of all outdoor toilets, where germs breed. Be ready for the long, cold winter. Have a warm, sanitary, comfortable, odorless toilet right in the house anywhere you want it. Don't go out in the cold. A boon to invalids.

GUARANTEED ODORLESS
The germs are killed by a chemical in water in the container. Empty once a month as easy as ashes. Closet guaranteed. Thirty days' trial. Ask for catalog and price.

BOWE SANITARY MFG. CO.
911 Rowe Bldg., Detroit, Mich.
Ask about Ro-San Washstand—Hot and Cold Running Water Without Plumbing.

This ad running all over the country. Cash in on it.

AGENTS WANTED

We have a good proposition for one **CARPENTER** in each town.

Use your spare time this winter making good profits.

Write today for terms and territory.

The Carpenter and Builder and His Gasoline Engine

(Continued from page 102.)

in which the lost motion is never taken up as long as the machine continues to run.

You certainly would not expect your watch to run and keep time with a bunch of sawdust inside the cases, or with dried grease and metal mud exuding from its bearings. You wouldn't even expect an old wooden foreplane to do decent work if left neglected, for everybody to use and with nobody to care for it, from one month to another! Of course you wouldn't? Then how can you expect a gasoline engine to do good work, or do any work at all, if it be pushed into a dark corner of your shop, left there in its dirt and dust for month after month, with little attention and no care whatever?

You can't expect an engine thus cared for to work well, therefore, don't try it. Give the gasoline engine at least as good care as you do your Sunday boots and you will have no trouble and no lack of power.

Shogren Metal Weatherstrip

Saves 20% Fuel—A Need in Every Home

**Good Profit To You on Installation
Help Uncle Sam Save Coal**

Shogren Metal Weatherstrip Co., 706-8 Townsend St., Chicago, Ill.

The Billion Dollar Waste

(Continued from page 49.)

times when it can be hauled.

A covered concrete manure pit at a convenient distance from the barn is an investment that will return big dividends to the farmer who would preserve the fertility of his soil. A pit 6 feet by 12 feet, with 3-foot sides, and covered with prepared roofing, can be constructed at little expense. Cement, prepared roofing and a little lumber, amounting in all to about \$50 to \$60, is all that is needed.

The concrete pit will preserve all of the liquid manure, and if the manure is kept wet and well packed down very little loss will result. The manure can then be hauled out to the field whenever convenient.

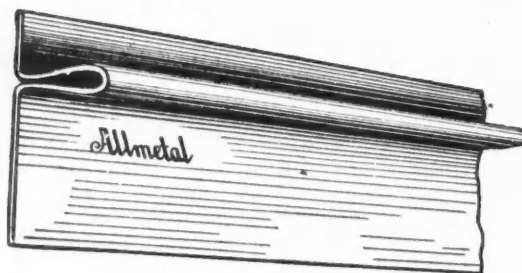
Most farmers who evidence their progressiveness by having a manure pit in their yards make the removal of the litter from the barn to the pit an easy operation by means of a litter carrier. The litter carrier can easily be filled in the barn, run out on an elevated track to the manure pit and then dumped without a particle going to waste. Some farmers, who have not yet built a manure pit, keep their spreader under a covered shed and run the carrier out over the spreader. This saves considerable time since the litter goes thru but one handling on its way to the field. Either method is a good, economical way of handling manure, and is a money-saver and a money-maker for the up-to-date farmer.—"James Barn Magazine"



Wasted Every Day

Just Think This Over!

You customers waste 6 pounds of COAL every winter's day. ALLMETAL WEATHERSTRIP will put a complete stop to this unnecessary waste and bring MONEY to you.



Carpenters! Builders!

Your Opportunity is Here Now!

MANY SALES BIG PROFITS

Easy to Sell—Easy to Install

Your customers will readily grasp this opportunity to reduce their fuel expenses. ALLMETAL WEATHERSTRIP will positively save twenty-five percent of the coal by keeping out the cold air and preventing the heated air from escaping.

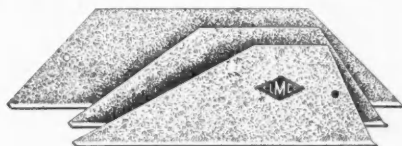
ASK US NOW FOR INFORMATION

Get Started Early on an Unlimited Field of Prosperity

**Allmetal Weatherstrip Company, 230 West Madison Street
CHICAGO - ILLINOIS**

Mark Your Own Rafters Quickly and Accurately

ELMCO Handy Rafter Markers answer your need for a small building job on your farm or anywhere. You don't need an expert to mark out your rafters. With a set of ELMCO markers your twelve year old boy can mark and cut your rafters to fit.



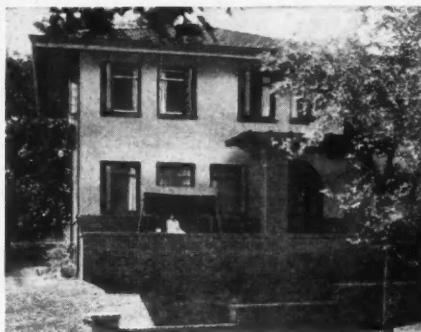
The ELMCO Handy Rafter Markers (Patent Applied For)

Give you every angle and length you want for the ordinary small farm building. You only need a pencil and this set of markers to lay out your rafters the correct length—at any pitch you want. Saves your money—and no time wasted. Order a set of ELMCO Handy Rafter Markers for your Fall building job.

Only \$1.00 per Set sent parcel post paid



E. F. Elmberg Co., Mfrs., Parkersburg, Iowa
Box 10



Satisfied? Yes—Enthusiastic!

Those are the customers who build business and profit for you. We get many enthusiastic letters from folks who have Whitney Windows installed in their homes, schools, apartment buildings, hotels, etc.

WHITNEY CASEMENT WINDOW HARDWARE

makes possible a distinctive type of casement window. Open, they afford a beautiful unobstructed view; closed, they are storm-proof, eliminating need of storm windows.

We sell only the patented hardware. Use any style sash. Our Service Department will help you to adapt Whitney Windows to unusual requirements. Write today for our proposition and full information.

Whitney Window Corporation
1420 East Franklin Avenue Minneapolis, Minn.

Carpenters Wanted

The Henry Airtight Weather Strip for bottom of doors and side hinged windows. A perfect protection against rain, cold, snow and dust. Approved by architects, carpenters and builders wherever known. Carpenters and others are making big money selling them.

Write today for our proposition

The H.
Henry Airtight
Weatherstrip Co.
Crawfordsville,
Indiana



The use of Airtight Weather Strips Advocated by the U. S. Fuel Administration

MAKE Hanging Storm Sash Easy, Quick Work



Done in a jiffy when your storm sash are equipped with KEES (Gossett) Hinges. Put on in no time. No tools or ladder needed. Simple, inexpensive, satisfactory. Millions in use.

KEES (Gossett) Hinges for Storm Sash

Made of either wrought steel japanned, solid brass, solid bronze or galvanized steel—screws to match. Our storm sash fastener makes opening and closing of sash easy. Holds sash open for ventilation. Windows can be raised or lowered to suit. A great combination. Write for FREE Samples for Trial NOW! Address.

F. D. Kees Mfg. Co., Box 552, Beatrice, Neb.

Metal Weather Strip

We have in stock a complete supply of all lengths in zinc strips for sliding and casement windows, in 1", 1 3/8", 1 3/4" widths. Spring bronze in four widths.

Brass thresholds, both wide and narrow, in any length up to 12 feet.

Automatic Door Bottoms in lengths up to 54".

Copper covered felt Door Bottoms in lengths up to 60".

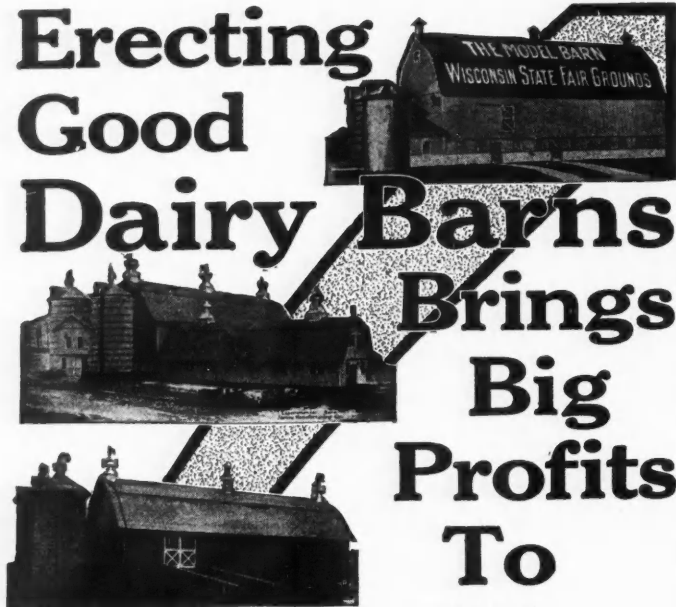
Nails, screws and other supplies.

Write us for samples and prices.

We can ship most sizes the same day we receive the order.

George Angell Company
400 Penobscot Building
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Erecting Good Dairy Barns Brings Big Profits To Builders



Dairy barns so built and equipped that they make for more milk, better milk, cleaner milk—and less work for the dairyman, are in big demand. Dairymen all through the land are either erecting new and better barns or are remodeling their old ones.

James Barns and James Equipment are known to these dairymen. We advertise heavily in farm and dairy papers.

We will be glad to cooperate with you and help you land contracts for building barns in your vicinity the "James Way." We will send you the 312 page book "The James Way," illustrated below—FREE. It is packed with valuable dairy barn building facts and directions.



It will enable you to "talk dairy barns" convincingly. It costs you nothing. Simply send us the names of farmers you know who intend to build or remodel barns and the size of their herds, and this valuable book goes to you free. Write today.

JAMES MFG. CO.
EM75 Cane St., Ft. Atkinson, Wis.
(East of Ohio Address)
EM75 Williams Street, Elmira, N. Y.

The Progress in Electrical Woodworking Tools

By RICHARD NEWBECKER

JUDGING the rate with which the individual woodworking tools are being placed on the market, and the favor they find, it would seem that truly the era of the electrically driven woodworking tool is at hand, and it would be no surprise at all to the observing building contractor if the method of doing certain work which is now being done by hand will in the very near future be completely revolutionized by the aid of the constantly increasing number of new tools being manufactured for the use of the woodworking industries.

Does it pay to invest in some of these new tools placed on the market, especially for the woodworker? And what are the capabilities of performing the duties required of them? These are the vital questions over which every building plant operator or owner often ponders before investing in one or more of these new tools for his plant.

Well, let us make a comparison of what is being accomplished now under present conditions, and what can be accomplished under identically the same conditions by the aid of the modern electrically-driven woodworking tool.

Electric Routing Tool

Take, for instance, the work of routing for inlay banding, etc.; also the routing of stair cases and paneling. Everyone conversant with the ordinary methods employed, will acknowledge that they are slow and often dangerous to perform; for instance, the routing of a flush door for inlay banding when same has to be done on a table saw or like machinery, and which is not such a cinch of a job to the operator after all if accurate work must be done.

Now, for doing work of this kind or similar nature there has been for some time past an electric routing tool on the market which not only obviates all dangerous work common with saws, but also enables one man with the aid of this tool to do more work than four men could do under ordinary circumstances. And the beauty of it all is, that no work has to be lugged from one machine to the other one, as the tools are all operated from the plain, every-day electric lamp socket. The work is simply laid on the finisher's benches, and presto! the imps of electricity are at your bidding to do the work for you.

Electric Drill and Screw Driver

Among the list of other electrically driven tools for the woodworker may be mentioned electric drill for drilling in wood, individual electric tenoning machines for small work or small odds and ends where the order can easily be gotten out with this tool in much less time than it would take the regular tenoning

(Continued to page 108.)

"ALPINA"

Siphon Revolving Ventilator

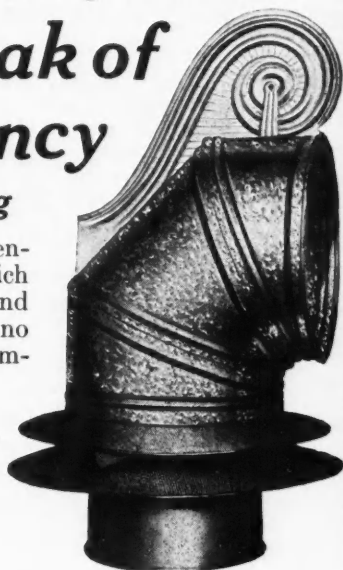
The Peak of Efficiency

In Ventilating

Brass ball bearings encased in grease, which insures noiseless and easy turning and no back draft. Unexampled capacity.

Best for Factories, Foundries and other Industrial Buildings

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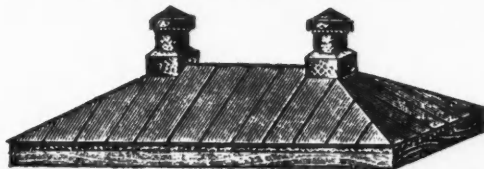


(PATENTED)



Milwaukee Corrugating Co.
Branch at
Kansas City, Mo. **MILWAUKEE, WIS.**

BADGER SHEET METAL PRODUCTS GIVE SATISFACTION



We Manufacture Cornices, Skylights, Ventilators, Tanks, Hog Troughs, Roofings and Sidings, etc.

Write for Free Catalog

BADGER CORRUGATING CO.
LA CROSSE, WIS.

Recommend O K Cupolas

If you want to make more profit—build your reputation and good will, equip the barns you build with O K Cupolas.

O K Cupolas solve the barn ventilation problem. They sell themselves. Are made of heavy galvanized steel; bird, storm, rot and rust proof. Neat in appearance. Are easy to erect—shipped ready to install. Every one you put on adds to your reputation.

Special prices to builders and contractors where we are not represented. Write for full particulars.

Phillip Bernard Co.
2402 Floyd Ave., Sioux City, Ia.



Simplicity



The economy—the efficiency—the durability and the desirability of "GLOBE" Ventilators are due to their simplicity.

"GLOBE" VENTILATORS

are simple in construction, yet are made with the utmost skill and care; of the highest grade material. They are simple to erect—no complicated or troublesome fitting of parts. They are simple in operation because they take advantage of a Natural Law, requiring no artificial stimulus whatever.

Their lines are simple, graceful and harmonize perfectly with any style of architecture.

Architects and Contractors who know the value of simplicity, keep catalogue within easy reach.

GLOBE VENTILATOR COMPANY
Department F
TROY, N. Y.

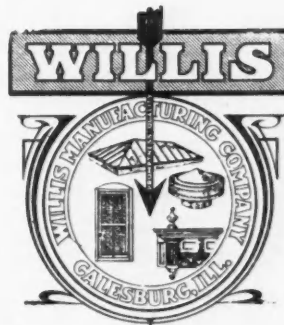


Increased Profits and Satisfied Customers

WILLIS sheet metal products for farm buildings are unsurpassed in quality. Our prices and co-operation will help you increase your profits. The quality assures satisfied customers.

Our Ventilators and Skylights will solve any ventilating and lighting problem.

Our 180-page catalog contains information you cannot afford to be without. It is used constantly as a reference book. If you do not have one in your files, send today. It's free.



WILLIS MANUFACTURING COMPANY
Galesburg, Illinois

Progress in Electrical Woodworking Tools

(Continued from page 106.)

machine to be set up. Then there is the electrical screwdriver which has more than cut the cost of labor in two on such work where many screws are employed, as for instance, motor boats, automobile bodies, carriages, wagons, pianos, furniture, and all kinds of cabinet work.

Electric Tool Grinder

And again there is the small electrically driven grinder. Do you realize, Mr. Factory Owner, what a boon of this kind would be if placed in your cabinet department? Nine chances to ten your cabinet makers and finishers at present make regular trips to the tool room to grind their hand planes, chisels, scrapers, etc. Who pays them for the time thus lost while traveling back and forth to the tool room, which in some cases is located on one or two floors below or above the cabinet department? You do, of course! You do, at least, if the men work by the hour.

Do you realize, Mr. Building Operator, what a boon one of these tools would be if placed in your cabinet department? Of course, you do. It may not always be convenient to erect shafting in any nook or corner of the room to operate a belt-driven grinder. Well, then, do the next best thing. Get one of these new-fangled grinders and place it among your finishers, and you will not only notice a smile of con-

tentment on their faces, but inside of a month's time you will have more than saved the price it cost in the greater production of work you will receive, and thenceforth the tool will do its mite toward helping you put the balance on the right side of the ledger.

Electric Bench Planer

Then there is the bench planer, which is nothing more than a small reproduction of the well known buzz planer or jointer, which can be carried from one bench to the other; and like the rest of the tools, runs from an electric light socket. It has a cutter head that is 4 inches wide, and will easily perform any job of jointing that may occur in the cabinet maker's room. You, Mr. Builder, don't you think it would pay to install one of these tools also in the finishing-up department, than to have them whittle away with their hand planes, trying to get the pieces to fit?

Electric Door Fitter

And last, but not least, there is the new electrical tool called a door fitter. This tool was designed for the small plant getting out building material, and for the carpenter trade in fitting doors in buildings by means of a template, then laying same over door and cutting the exact size to fit in door frame. Besides this use this tool covers such a wide range of adaptability in the woodworking plant in general that as soon as it becomes more widely known, it will be hard

(Continued to page 110.)



For Remodeling Is Unequaled

Trade Mark Registered, U. S. Patent Office, No. 94745

It handles easily—saws clean and smooth. Won't warp, shrink, chip or crack. Adaptable to any method of decoration. Keeps out heat, cold and moisture. Compo-Board is the only wall board with the wood core. That is the feature that makes Compo-Board superior to other wall boards and also instantly identifies the genuine. Sold by dealers everywhere in strips 4 feet wide and in lengths of 1 to 18 feet, as desired. Write for interesting book and sample.

The COMPO-BOARD CO., 5777 Lyndale Ave. No. Minneapolis, Minn.

Cornell-Wood-Board

Excels for Walls, Ceilings and Partitions
Repairs Alterations or New Work

For war-time repair and alteration work, show your customers that Cornell-Wood-Board is unequaled. Will not warp, crack, chip or buckle and nails direct to the framework or over the old walls. Easily put up and lasts a lifetime. Resists heat, cold and moisture and is ideally adapted for the walls and ceilings of Homes, Garages, Stores, Offices, Farm Buildings, Industrial Housing, Cantonments, etc. Increase business and make friends by recommending Cornell-Wood-Board.

Write for Free Samples, sent on request

Cornell Wood Products Co. 173-175 W. Jackson Blvd.
Dept. 1010 CHICAGO



The Most Dependable Board Made in America
Upson Board is made good to make good. It is not like other Boards! It is stronger, harder, stiffer—holds the record of not one complaint to every 2,000,000 feet used. Write for all the facts.
THE UPSON COMPANY Fibre Board Authorities
56, Upson Point, Lockport, N. Y.

Nearly Twice as Strong as Other Wall Boards!

You can apply a third more of Upson Board a day than of soft, punky boards. It works like wood; doesn't pull from the nails. No come-backs!

Better than Plaster for Walls and Ceilings

UPSON PROCESSED BOARD



OTHER BOARDS

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BAYONNE

ROOF AND DECK CLOTH



BAYONNE Roof and Deck Cloth

BAYONNE is specified by leading architects because it has proved to be the ideal covering for low-pitch or flat roofs, verandas, sleeping porches, sun parlors, conservatories and all floors exposed to the weather or to constant wear.

The Chas. DeJong Building Company, of Paterson, N. J., writes: "We have been using Bayonne for the last four years, and recommend it most highly, as it has proved satisfactory in every instance."

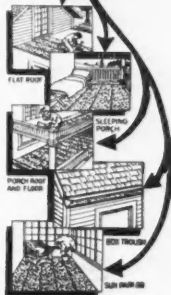
Bayonne outwears other materials of its kind, is laid on dry boards (an easy and inexpensive job), and is painted afterwards—any color desired. It is absolutely water-proof, cannot crack or buckle, and fits perfectly into nooks and corners. It is kept clean by sluicing with water. A Bayonne Roof or Deck never leaks.

Our Free Sample Book "N" shows texture and gives prices and directions for laying. Write for it today.

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112-114 Duane Street, 70-72 Resda Street, New York City
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Where CONSER-TEX Should be Used



Economical Serviceable Artistic and Profitable

The ideal material to use wherever a flat surface is to be covered or where the pitch is less than 4" to the foot.

Cost very little.

Is easy and inexpensive to lay.

Makes a neat, smooth, durable surface.

Will not leak, rot, stretch or shrink.

Send for booklet "Roofing Facts and Figures"

William L. Barrell Company

8 Thomas St.

New York

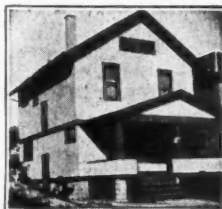
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KRAGSTONE REMODEL! AMERICAN MAGNESIA PRODUCTS CO. CHICAGO STUCCO Big Profits This Fall



Dealers Wanted

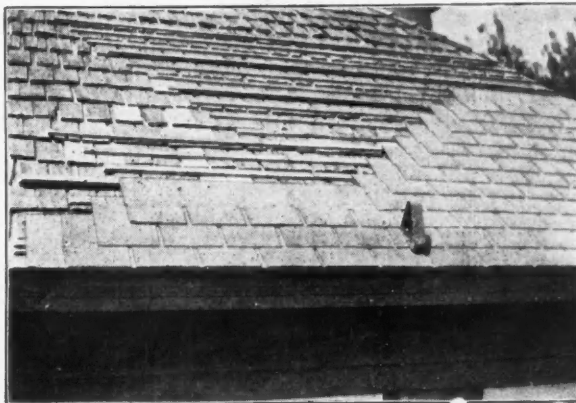
Any old frame or brick house can be made better than new with Kragstone Stucco.

Beautiful and fire-proof. Does not check or crack. 300% stronger than ordinary stucco.

Write for free book, which tells all about Kragstone—for remodeling, for new buildings, etc. Every builder should have it. SEND POSTAL.

American Magnesia Products Company
North La Salle St., Chicago

THE NATION'S BUILDINGS NEED PROTECTION



RE-ROOFING—which means protection to existing buildings is recognized as *ESSENTIAL* by the War Industries Board.

Use **REX STRIP SHINGLES** for RE-ROOFING—they conserve labor, because they are applied in about half the time it takes to lay individual shingles—they conserve fuel, in manufacture and transportation—they conserve nails, because fewer are required in applying than any other type of shingle.

Write for Catalogue and Special Booklet

THE FLINTKOTE COMPANY

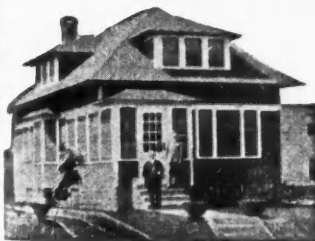
90 PEARL STREET, BOSTON

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WINTHROP TAPERED ASPHALT SHINGLES

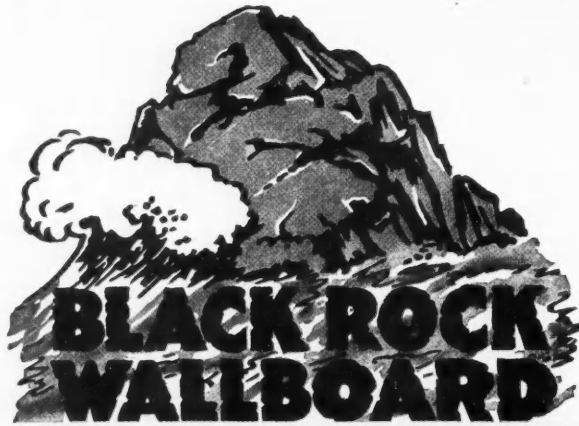


The Only Kind Tapered Like Wood

Thick at the butt—thin at the top. Tough, pliable and resists fire and weather. Easy to lay, like wood shingles, with ordinary shingle nails. Ask for a sample shingle.

THE BECKMAN-DAWSON ROOFING CO.

Asphalt Shingles
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BLACK CENTRE

The good builder makes a real gain by insisting that his wallboard shall have this trade-mark on the back of every panel.

Then he has a wallboard that can be relied upon, the wallboard that stands up even under unusual conditions—the only wallboard with the moisture-repellent Black Centre—the wallboard whose quality helps good workmanship in every step of the job.

If you don't know the Black Rock Dealer nearest you, write us.

BLACK ROCK WALLBOARD CO.
1505 Ontario Place BLACK ROCK, N. Y.



Fiberlic Wall Board

Fiberlic Wood Grain Panels

The material from which it is made, the fact that the pulp is chemically cleansed and that the fibre lengths give the finished product that natural reinforcement that is lacking in ground wood boards, is in itself a guarantee of the superiority of Fiberlic from strong, permanent, economical and sanitary construction.

McAndrews & Forbes Company
200 Fifth Avenue, New York City
Factory: Camden, N. J.

Progress in Electrical Woodworking Tools

(Continued from page 108.)

to find a plant without one, where any fitting at all of sash, doors or drawers, or any other work of like nature is done. The labor time required is about one tenth that required by one man to fit a sash, door or drawer.

With the aid of this tool the fitting of softwood doors, cupboard doors or china cabinet doors is a mere nothing, and the edges and end wood are as smooth as tho run thru a sander. This tool also has a bore in the end of the spindle so an auger bit can be inserted. It also has a thread on the end of the shaper collars, and makes an ideal shaper for small work or small cuts, and a perfect jointer for long joist or moulded edge work. Furthermore, it is claimed by its manufacturers that it is being used for a multitude of purposes such as rip-saw grooves, shaping, jointing, sanding, boring machine and so forth down the line.

If this progress keeps on in this line in the future as it has in the past, it would not be surprising at all, if before long we will be carrying complete wood-working plants around in a satchel or trunk, and be able to start operating same wherever there is an electric light in sight. And as for localities where electricity has as yet not penetrated, Thomas Edison will quickly solve the problem with his storage batteries.

Will the advent of these tools diminish the demand for the general run of woodworking machinery? Most certainly not! These tools are building a reputation for themselves, which in no way will interfere with the regular mill machinery. The time had simply arrived when they were demanded as a necessity. They have arrived and apparently are here to stay.



Your Standing with the Material Man By J. Crow Taylor

"Give me the contractor with a clean record and I don't care whether he has a dollar of capital or not," was the expression of a lumberman when the matter of contractor credits was under discussion. Then he went on to elaborate on what he considers a clean record. He says the man he likes to do business with is the man that comes and settles up clean on every job when the money for that job is all paid to him, and doesn't try the game of taking the money from one job to finance another along till drawing time. The contractor without a dollar, he says, who will come to him with each job, so that he knows where his lumber is going, and can keep up with it, and that makes each job clean up and settle itself, is the man he likes to do business with. Then he knows just what is back of his credits all the time.

On the other hand, when he catches a contractor closing up building accounts without settling with him

(Continued to page 112.)

Tools

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Go Carefully Into the Comparative Cost of Sheldon's Slates and Artificial Roofings

You will find that you can have an attractive roof of **SHELDON'S SLATES** at the cost of a flimsy artificial roof. And the first cost will be the only cost—there will be no renewing, repairing or repainting.

Ask for Interesting Booklet "The Roof of Eternal Youth" Fully Describing Sheldon's Slates.

Roofers: You can make money laying Sheldon's Slates. Write.

F. C. Sheldon Slate Company
Granville, N. Y.



From Quarry To You
with the greatest speed and safety. Use G. F. T. Roofing slate. First cost the last cost. No risk. Nature's own roofing. It is not an experiment. Fire, storms, snow, rust, etc., cannot damage Genuine Franklin Tunnel roofing. Write for catalog. **SLATINGTON SLATE CO., SLATINGTON,**

MANUFACTURERS OF ROOFING
"SLATES OF QUALITY"
MOTTLED GREEN AND PURPLE - WEATHERING GREEN
UNFADING GREEN - MAMMOTH VEIN POULTNEY SEA GREEN
GENUINE BANGOR FROM OUR CELEBRATED BANGOR UNION QUARRY
BLACKBOARDS - STRUCTURAL SLATE
SLATER'S TOOLS - MACHINES & SUPPLIES

We furnish "SLATES OF QUALITY" in random widths, graduated thicknesses and in one or varied colors. SEE SWEET'S CATALOGUE.

THE AULD & CONGER CO.
ESTABLISHED 1870.
We publish a handy book "THE SLATE ROOFER" CLEVELAND, O.

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Dry Foundations!

are assured by having the walls treated with

Carey
PERCOPROOF
DAMP-PROOFING COMPOUND

Applied with a brush direct to foundation walls, concrete construction, masonry, or stucco surfaces. Percoproof forms an unbroken elastic surface, fills every crack and pore and prevents moisture from penetrating.

Unlike ordinary waterproofing materials, Percoproof contains no oil and requires no thinning. It comes ready for use and is equally satisfactory in all climates and seasons.

THE PHILIP CAREY CO.

136 Wayne Ave., Lockland, Cincinnati, O.



Vendor SERVICE

DON'T BE SHORT ON HEAD WORK

Try out the "Vendor" service. You will find it prompt and efficient in every way. We carry immense stocks on our quarry banks at all times and make promptness a cardinal virtue. Over forty of the leading quarries in the Pennsylvania slate regions make this service possible. And you get exactly what you order, too.

We have some open territory. Write for our proposition.

Uncle Sam knows "Vendor" service. That's why the Government uses such quantities of our Roofing Slate

VENDOR SLATE CO.
INCORPORATED
BANGOR, PENNSYLVANIA
Largest Shippers of Roofing Slate in the World

Your Standing with the Material Man

(Continued from page 110.)

for each one as it is closed, mixing his finances and his accounts all up, that is the man he is going to watch close and keep after for collection, no matter how well he is rated for capital and credit. There is a whole lot in this lumberman's view point that the builder may well consider, for it is essential to progress and success that you stand well with the material men. Also, it shows that the clean dealing man can easily establish a credit and do business whether he has much capital to start on or not.



Minnesota Offers Lumbering Course by Mail

St. Paul, Minn., Oct. 20.—A full-fledged course in lumber and its uses is now being offered by the General Extension Division of the University of Minnesota, this institution probably being the first in the country to add the course to its curriculum.

While primarily for lumber dealers, manufacturers of timber products, contractors and carpenters, the course will prove of special advantage to hundreds of young men who desire to enter this particular industry, which has become highly important thru the war requirements of forest products.

The course is designed to teach the students how to know the quality of the material they handle, either as inspectors of woods or as dealers. It is to be supplemental for the lumber inspector who desires to obtain much valuable information along his own line, as a sound basis for future work.

The Wood Stave Silo

(Continued from page 45.)

tant, but not absolutely essential. This done, and you will have a silo that will give years of the very best service.

It is very often the case on the farm that the farmer desires to move his silo from one place to another. He has possibly added more buildings since building his first silo and the added buildings make



Self-Adjusting, Straight-Pull Hoop Fastener That Automatically Cares for All Contraction and Expansion of Staves.

a change of silo location imperative. Here again the wood stave silo adapts itself to the change as it is only a matter of building a new base and then moving the silo to its new location. This will take but two days and the cost is very little.

Today the crying need of the country is "more silos." The Council of National Defense, thru its various state branches, has inaugurated a series of "Build a Silo" campaigns. Every builder and lumber dealer should get in touch with those of their farming friends who have use for a silo and sell it to him. You will find that he will be easy to persuade and ever

(Continued to page 114.)



F. W. Cook Bldg., Fargo, N.D. Architects, Ashelman and Gage

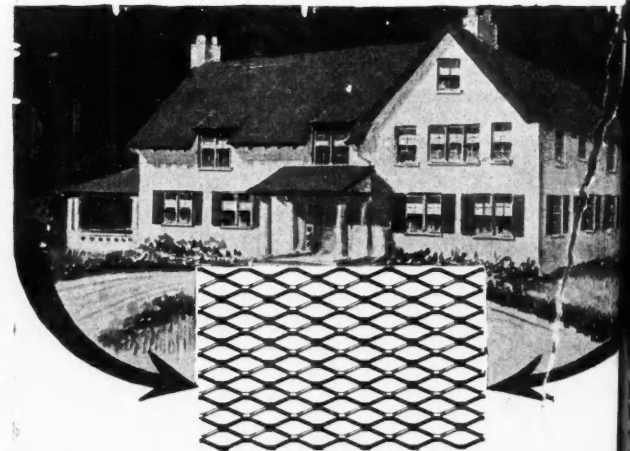
Built in Zero Weather

Ten to Twenty Degrees BELOW ZERO— that's where the thermometer was hovering while the the Metal Lumber floor, partition and roof framing of the above building were being put into place. Cold weather is no obstacle to fire resistive construction when Metal Lumber is used—Send for Bulletin L-3.

The Berger Mfg. Co., Canton, Ohio

BERGER

Metal Lumber



A STUCCO OVERCOAT MAKES YOUR OLD HOUSE LOOK LIKE NEW

In these days when new construction is limited by the rulings of the Priorities thousands of old houses are being made practically new again by the new method of stucco overcoating. In many localities dealers and contractors have been very successful in interesting property holders in this class of work, and have been able to develop quite a business along these lines. Sykes Metal Lath is best for this work. It is a heavy lath, requires no furring strips, and produces a strong, rigid surface. It cannot be applied wrong—a big feature in these days of shortage of skilled labor.

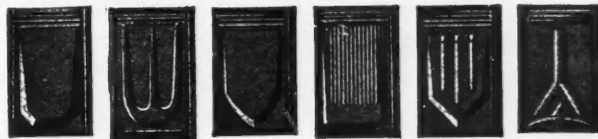
Sykes Metal Lath is as superior for interior work as it is for exterior work. Write for free sample and book of specifications.

Sykes Metal Lath & Roofing Company
504 Walnut Street, Niles, Ohio



WALTER'S & COOPER'S METAL SHINGLES

The Shingles That Last



The Shingles That Last

The Most Complete Line of Designs **The Best Quality Workmanship and Finish**
Made in Painted Tin or Genuine Re-dipped Galvanized Tin
SOLD AT THE RIGHT PRICE
May we send you full-size samples and prices?

NATIONAL SHEET METAL ROOFING CO. 339-345 GRAND STREET
JERSEY CITY, N. J.

For the outer covering of a building no other wood gives such long and satisfactory service as

WHITE PINE

"SIGNED LUMBER IS SAFE LUMBER"

FOR BEST LUMBER INSIST ON TRADE-MARKED "TIDE-WATER"

CYPRESS

LUMBER—BECAUSE IT'S "THE GENUINE WOOD ETERNAL" AND LASTS—AND LASTS—AND LASTS—AND LASTS

Look for this on every board—
Accept no Cypress without this mark.



Edwards' Metal Ceilings and Walls

Here is a chance to build up an independent profitable business for yourself right at home. Many are now devoting their entire time to selling our metal ceilings and walls. Others have made big profits simply devoting part of their time to selling and applying our Metal Ceilings and Walls. No matter how you handle the proposition, the profit is in it, because the demand has already been created.

You Must Act Quick

Write us about your territory at once. This doesn't mean next month, or next week, or even tomorrow, but right now! One hour's delay may mean that someone else may be given your territory. Send for our special agent's proposition and large illustrated Ceiling catalog of attractive sales-making designs.

THE EDWARDS MANUFACTURING CO.

"The Sheet Metal Folks"

401-417 Eggleston Ave. CINCINNATI, OHIO

World's Largest Manufacturers of Metal Roofing, Metal Shingles, Metal Spanish Tile, Metal Ceilings, Metal Garages, Portable Buildings, Metal Lockers, Rolling Steel Doors, Partitions, etc. 3

CORTRIGHT METAL SHINGLES

Bring in Profits from Two Angles

Not only will you make your regular profit for laying the shingles, but you will also make a good margin on their sale.

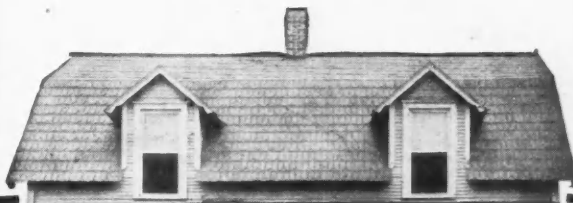
Our policy of protecting contractors and builders assures you a lower price and a higher profit than can be made from handling other types of roofing.

Of special interest to you at this time is our ability to ship promptly "Cortrights" in all four styles—Red Painted Tin, Green Painted Tin, Galvanized Tight Coat and Galvanized Tin.

Be in a position to make these two profits. A postal will bring full particulars.

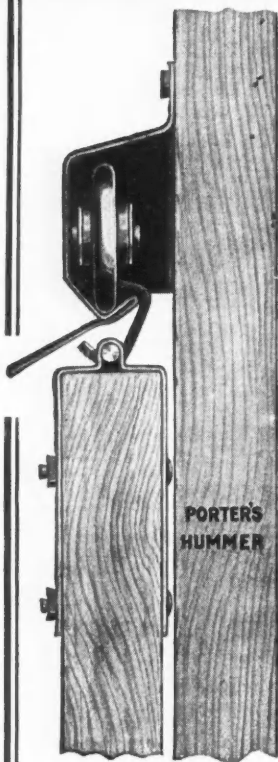
Cortright Metal Roofing Co.

PHILADELPHIA CHICAGO



THE HUMMER

Barn Door Track and Hanger



*Specify the Hummer
When You Plan
Your Barn Jobs*

It will be certain to satisfy and please the owner and it is recommended by architects as practical, economical, efficacious and easily installed. There are so many points of superiority about the Hummer that it now is considered a necessity and the demand for it is universally established and growing right along, as its merits become more and more widely known.

For half a century the Porter name has been recognized among barn builders and the Porter Trade-Mark is accepted by them as a pledge that the product it's stamped on is the best they can get and the one they want.

Porter Points That Appeal

V-Shaped Tread—This is the biggest thing of a dozen big things about the Hummer that appeals to the farmer. This tread makes a two-point contact, eliminating almost all the friction, enabling the wheel to roll easily, and forming a self-centering construction for the hanger. Wheels are roller bearing.

Maximum Strength and Rigidity—The Hummer track is a single piece of heavy gauge steel. It comes in 6, 8 and 10-ft. lengths, with lag screws, end brackets, etc., furnished without extra charge.

Bird-Proof, Water-Proof—The Hummer is so shaped that it forms a perfect watershed and is guaranteed to be bird-proof.

Send a Post Card

A postal card will bring you information about the Hummer or our other barn equipment products.

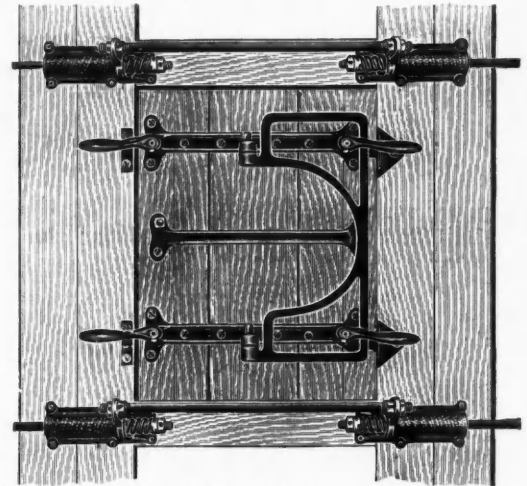


J. C. Porter
284 Guion Street
Ottawa, Illinois
(29)

The Wood Stave Silo

(Continued from page 112.)

sale that you make will not only bring you additional profit, but also will meet an urgent need. It is the patriotic thing to do, both from your standpoint and that of the farmer. If he already has one silo, then sell him another. If he is in doubt as to the size of



The Perfect Fitting Hinged Silo Door That Swings Properly and Keeps Silo Air-Tight at All Times.

the silo to erect, here is a table that will give him the necessary information:

Depth of silage after settling	Capacity of silo having an inside diameter of																						
	10 feet	11 feet	12 feet	13 feet	14 feet	15 feet	16 feet	17 feet	18 feet	19 feet	20 feet	10 feet	11 feet	12 feet	13 feet	14 feet	15 feet	16 feet	17 feet	18 feet	19 feet	20 feet	
Feet	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
24	34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	38	46	55	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	42	51	61	71	83	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	47	56	67	79	91	105	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	6	62	74	86	100	115	131	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	80	94	109	126	143	161	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	87	102	119	136	155	175	196	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	...	...	...	110	128	147	167	189	212	261	...	...	...	...	...	...	...	...	...	...	...	...	...
40	...	...	...	...	138	158	180	203	228	281	...	...	...	...	...	...	...	...	...	...	...	...	...

These figures are exact enough for estimating purposes. The average farmer knows the amount of silage to feed, but in figuring the size of silo required you can figure that a 900-pound dairy cow will consume about thirty pounds daily; a 1,200-pound cow about forty pounds. Fattening cattle should be given daily about 25 to 35 pounds of silage for each 1,000 pounds of their live weight. Yearling cattle eat about half as much as mature animals and a sheep will eat about one-eighth as much as a cow.

Get busy among your farmer friends and get this silo business under way. It is profitable to all concerned and will be a material help in pushing thru to Berlin.



Value of Wallboard for Essential Uses

(Continued from page 29.)

new construction again can be deferred.

Necessary additions are deemed essential. An addition to a store, factory or home can be completed the more expeditiously if wallboard is used. Wallboard also will permit completion of the work with a minimum of dirt and disturbance. The same men who erect the framework and handle the outside construction can put up the wallboard and trim.

In the essential building which is being permitted

(Continued to page 116.)

"The Saw Makers"



Saws?

YES! We Make Them!

The best saws on the market today! Have you tried them? If not—do so!

Simonds Saws have a national reputation. We have just the saw you are looking for.

\$3.00 buys this excellent Hand Saw. Correct balance, weight, temper, etc. Straight or sway back. 24 or 26 inches. Write for a FREE copy of our "Carpenters Guide Book."

SIMONDS MFG. COMPANY
FITCHBURG, MASS.
17th Street and Western Ave., Chicago
5 Factories and 11 Branches



For protection and permanency it should be "Yale"

AMERICA'S builders are successfully meeting their greatest task. To produce permanent homes for our great home army, our thousands of war workers. Not merely places in which to live, but houses that are comfortable and secure and protected.



Real home protection is not only a question of putting on so many locks and so much hardware. It should be a security installation and a durable, lasting one. That means you will put on sturdy, enduring Yale locks and hardware to insure the maximum protection now and for years to come.

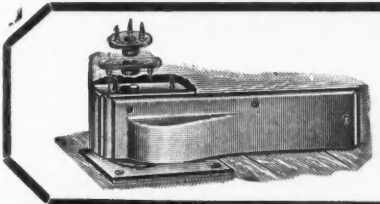


The Yale & Towne Mfg. Co.
9 East 40th St., New York City
Chicago Office: 77 East Lake Street
Canadian Yale & Towne Ltd.,
St. Catharines, Ontario



THE H. B. IVES CO.

NEW HAVEN, CONN., U. S. A.
ESTABLISHED 1876 INCORPORATED 1906
MANUFACTURERS OF
BUILDERS' HARDWARE
HIGH GRADE WINDOW AND DOOR SPECIALTIES
Write for Illustrated Folder



The "Shelby CHIEF" Floor Hinge WITH IMPROVED PIVOT AND SOCKET

The installation of the Shelby Chief greatly simplified. Mortising for pivot and socket entirely eliminated. To install bore a 1 1/2-inch hole 3/8-inch deep in top jamb for rim of pivot and 1/2-inch in top of door for socket. Secure with wood screws, allowing the thickness of metal of socket for clearance between door and top jamb. Insist upon having genuine Shelby Chief Hinges.
THE SHELBY SPRING HINGE CO. SHELBY, OHIO

STAR Barn Equipment

Everything for the complete equipment of modern dairy barns. Also garage and barn door hangers, ventilators, litter carriers and hay tools.

Detailed literature on request

HUNT, HELM, FERRIS & COMPANY
HARVARD, ILL.

Main Office and Factory, 59 Hunt St., Harvard, Ill.
Eastern Branch: Industrial Bldg. Albany, N. Y.

Finest in Material, Design and Workmanship

Hammer forged from Master Steel, the finest steel obtainable for the purpose. Octagon shaped handle of second growth hickory, ideal hardness, and a claw that firmly grips nails of all sizes.



GERMANTOWN MASTER BUILDER

—is the name that guarantees the quality. Be sure that it appears on the hammer you buy. Three sizes, 11 oz., 16 oz., and 20 oz.

GERMANTOWN TOOL WORKS, Philadelphia, Pa.
Branch: 62 East Lake Street, Chicago

Value of Wallboard for Essential Use

(Continued from page 114.)

on the farm, wallboard also becomes a logical material to use as it can be brought to the farm without difficulty and does not require specially skilled help for its application and decoration. New farm buildings which does not cost in excess of \$1,000 can be done without a permit and the farmer is being encouraged to erect small tenant houses or enlarge the living and sleeping quarters of his home so that he will have a better dwelling place for his farm help. It is felt that more attractive living quarters would go a long way toward solving the acute problem of adequate farm labor. The farmer also needs better storage barns and tool houses and is urged to keep all of his farm buildings repaired so that there will be no loss of grain or produce, because the buildings have not been kept leak-proof and storm-proof.

The use of wallboard has been specifically permitted for such essential war-time construction as reconstruction. It is a material that conserves time, labor and transportation facilities. One car of wallboard will cover an area that would require five or more cars of other wall building material. The quickness of the work and the absence of delays are well known qualities of this product. There is also a labor saving effected where wallboard is used because it can be put up and painted by the same carpenters who do the rest of the work.

To interpret the rulings of essential uses as a measure restrictive of all building activity would be a mistake. There is too much essential repair and remodeling work to be had by the dealer and carpenter who quickly make an earnest drive for this kind of work. And it is the kind of business they can honestly and patriotically promote because every building that can be made more useful is a distinct help in the conservation of men, materials and transportation facilities which are so urgently needed in winning the war.

✦

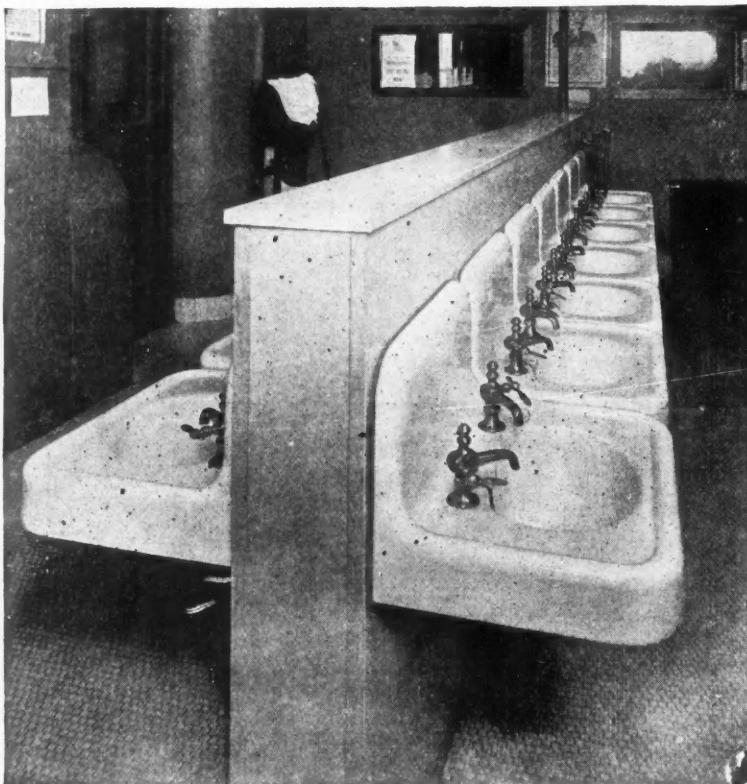
How Uncle Sam Buys Building Lots

(Continued from page 20.)

bought in the name of the corporation, so taxes will be paid on it. After the war the corporation will sell its land and buildings to individuals.

"We build houses, rooming hotels, apartment houses, anything that is needed. I just came from Bremerton and Seattle, where I have been for three months. In Bremerton, just across the bay from Seattle, we are building 500 houses, a 350-room hotel and 45 apartment houses for the boys of the navy yards.

"Our real estate department also has supervision over the appraisal of property in all parts of the country for the alien enemy custodian."



Wolf Lavatory in Reid, Murdock & Co. Building, Chicago
George C. Nimmons, Architect C. J. Stein Plumbing Contractor

Specify Wolff Plumbing

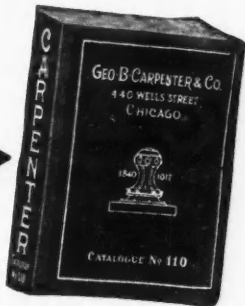
For installations of any size or character. It is the best today as it has been for over 60 years.

**L. Wolff
Manufacturing Co.**

General Office and Showroom
111 N. Dearborn Street

Chicago

You need this book



It lists equipment for

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|----------------------|---------------------|
| CARPENTERS | FOUNDRIES |
| ELECTRICIANS | MILLS |
| MACHINISTS | RAILROADS |
| CONTRACTORS | ELEVATORS |
| PLUMBERS | ROOFERS |
| SHIP BUILDERS | POWER PLANTS |

Simplify your buying problems—send for a copy of this remarkable catalogue today. Over 1100 pages of equipment items; an able representative of our seventy-eight years of merchandising experience. Address Dept. 1.

GEO. B. CARPENTER & Co

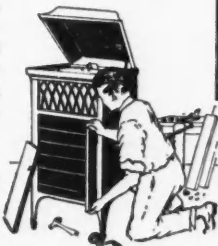
440 No. Wells St. CHICAGO

BUILD Your Own Phonograph

It's easy with our help

AND SAVE OVER HALF

A few hours interesting work saves many dollars and gives you a machine exactly to suit your ideals. We furnish motors, tone arms, case material, blue prints and full instructions. Plays any record. You can make fine profit building phonographs for your friends.



"Agents wanted for our ready built Choraleons"
Write today for our free blue print offer
Choraleon Company
111 Monger Bldg., Elkhart, Ind.

Earn \$27⁵⁰ A Day Easily



Sold direct at Wholesale Price in open territory.

Carpenters and builders can earn this money by working all or spare time. Start now to own a business of your own. Akron Lighting Systems are wanted in homes, stores, churches and public buildings. Best and cheapest light known. Uses common gasoline. Absolutely safe. Permitted by Insurance Companies.

Sell Akron Lighting Systems They are simple, dependable and durable. Have latest patented improvements. Give an abundance of bright, clear, soft, steady light which is restful to the eyes. Complete line of portable lamps and lanterns. Lamps are clean—no smoke, no wicks to trim and odorless. They will burn in any position whether standing erect or upside down. Lantern is storm-proof, bug-proof and wind-proof. Gives a 400 c. p. light. Is absolutely safe; can be dropped or rolled without danger of exploding. Fully guaranteed. Exclusive territory to Agents. Outfit Free. Write NOW for catalog and agent's proposition all Free.



AKRON GAS LAMP CO., 310 Gas Building, Akron, Ohio



Griffin

Pressed Steel Door Stops

No. 640

Are drawn into shape from one piece of high quality Cold Rolled Steel making them extra strong—guaranteed indestructible.

The rubber bumper is made from the best rubber and is backed up by a metal disc, which in turn is knurled, "ENTRENCHED," in place—and will stand all the "Banging" one can possibly give it, and absolutely cannot work out of place.

Beautiful Yet Plain

Compare this beautiful, plain door stop with the ordinary kind. It is modern and when finished in any of the various Griffin Hardware Finishes, it harmonizes with the beautiful interior finish of the Modern Home or Building.

No sharp edges or corner to cut the hand on, catch the clothes, as the woodwork is dusted. This is the door stop your customer is looking for. Have your Hardware Dealer show them to you.

Send for complete circulars and information at once

The Griffin Mfg. Co.

Erie, Pennsylvania

30 Warren St.
NEW YORK

17 E. Lake St.
CHICAGO

**One System Supplies
Electric Light
and
Running Water**






**The Guarantee Behind
Your Guarantee**

THE Kewanee trademark on the system that you recommend or install is a guarantee that will back up your judgment.

The Kewanee Combination System will furnish light and water at the cost of a lighting plant alone. And dependability will furnish a lifetime of satisfaction.

Built right from the start and adapted to the work they are to do, Kewanee Systems save the waste of repairs.



KEWANEE
COMBINATION SYSTEMS
KEWANEE PRIVATE UTILITIES CO.
(Formerly Kewanee Water Supply Co.)
424 Franklin St. Kewanee, Ill.

Ontario Government Urges Lightning Protection

(Continued from page 21.)

conclusion first given, that if all buildings in rural Ontario were rodded, 95 per cent of the annual lightning damage to buildings would be eliminated.

"For the individual, lightning rods are a better investment than insurance. When they save a building, the farmer's only loss is the interest on the price of his rods. Under insurance, in case of fire, he loses at least one-third the value of his buildings, together with his premiums.

Kind of Rods

"Copper rods are the most durable and, therefore, the best, altho any metal will do the work as long as in proper condition. But iron rusts off at the ground, and aluminum also corrodes under certain conditions. A rod composed of two metals, one wrapped around the other, is especially objectionable.

How to Rod

"All rods should be grounded 8 feet deep. From the ground the cable should run up the corner of the building, over the eave, up the edge of the roof to the peak, along the peak, down to the opposite eave and into the ground at the corner diagonally opposite the first. Points should be placed every 20 or 25 feet along the peak, also on chimneys, dormers, etc. On more complicated buildings, more groundings should

(Continued to page 120.)



HOUSE-PAINTING done four or five times faster and the costs greatly reduced—these are the speed and economy possibilities with the

Aeron System

Portable Painting Equipment

Contractors, Master Painters and others with painting to do, can now better meet present-day working conditions.

Wood, stucco or any other kind of surface can be spray-painted by one Aeron operator in at least the same time it would take four or five hand-brushers to coat it. Dripping of material and other wastes are eliminated. There are no costly brushes to replace. No time is lost in continual dipping from pail to the work. Outfit is simple to operate, and can be easily moved any place.

The Aeron System is sold on a strictly guaranteed-to-make-good basis—certainty of results is assured.

Let us mail you full particulars and copy of new catalog.

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

CALCIMINES AND WATER PAINTS

These materials are so much cheaper than wall paper and oil paints, and are so much better than lime wash that every wide-awake builder and owner should investigate them fully, learn which are the most practical, and find out how much they will help to reduce costs.

Calcimines are glutinous compositions intended for decorating ceilings and walls of residences, offices, schools, churches, theatres. The best are called **MURALITE** and **CALCITINE**.

Water Paints are caseinous compositions intended for whitening ceilings and walls of factories, mills, sheds, garages. The best are called **PERMANITE**.

Our products are more practical than any similar ones on the market, and are sure to please you.

Send for descriptive cards and prices

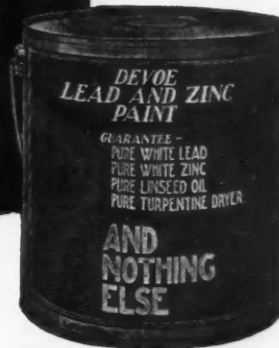
M. EWING FOX COMPANY

Manufacturers

240 East 136th St. NEW YORK 1501 So. Pecunia St. CHICAGO, ILL.

Paint DEVOE Paint

Guarantee
formula
on every can



DEVOE & RAYNOLDS CO., Inc.
New York—Chicago

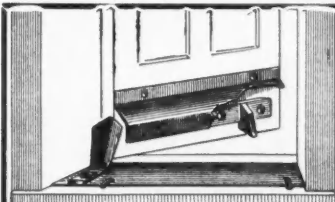
Sell Us Your "Dull Season" Time \$50 to \$100 a Week



This little booklet gives you the "inside information" about selling lightning rods. Whether you expect to sell lightning rods or not, you ought to have the information it contains. Copy free if you write for it.

Steady your income by installing Barnett Pure Copper Cable Lightning Protection. Right now, when building has almost stopped, there's a greater demand than ever before for adequate lightning protection. Buildings, and the crops they contain, have doubled in value. Farmers know it would be impossible to replace them. They are not satisfied with insurance, they want protection. We need men—not trained salesmen, but men like yourself who are in touch with property owners. You need a larger income. We can help each other. Let's get together! We have a mighty interesting profit-sharing proposition for you. Write for it

Jos. Barnett & Co.
220 Fourth Ave., East, Cedar Rapids, Ia.



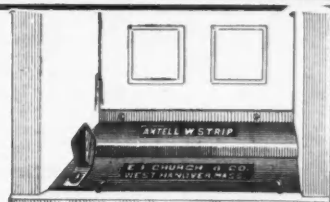
AXTELL "All Metal" WEATHER STRIPS

For bottom of doors and swinging windows. Applied in 20 minutes at 200% profit. Saves all wear on sill. Full size sample by mail for \$1.00 bill.

Over a MILLION in Daily Use.

E. I. CHURCH & COMPANY

Sole Manufacturers West Hanover, Mass.



A MARTIN SEMI-TRAILER WITH A FORD makes the most efficient, as well as the most economical **ONE-TON TRUCK** in the world. Tracks, tracts, backs. Full information on request.

MARTIN ROCKING FIFTH WHEEL CO., Springfield, Mass.

TOPPING GARAGE DOOR HANGERS

Read this advertisement very carefully. Here is a MONEY MAKER. Every Garage Builder buys almost on sight. TOPPING FOLDING GARAGE DOOR HANGERS are the SIMPLEST and STRONGEST on the market.

THEY WILL OUTLAST THE BUILDING

BIG MONEY IN INSTALLING

Contractors, get busy with TOPPING FOLDING GARAGE DOOR HANGER SETS. Every sale means more installations for you. They sell themselves. Are neat in appearance. Automatic locking device. Just what your clients have been looking for. Look into our proposition at your local dealers. It means money in your pocket.

Safety Door Hanger Company

Ashland, Ohio



"I'm Strong for the Louden Carrier"

-The Hired Man.



If you have a barn building proposition in hand include Louden Labor - Saving Barn Equipment in the plan. It is a necessary part of your proposition, because no barn is complete without it.

Louden Equipment represents over 50 years steady progress in designing and building barn fittings. It is today's standard—installed in over a million barns. *Wm. Louden, Inventor of Modern Labor Saving Barn Equipment.*



Louden Litter Carriers Hold First Place

Because of patented features which make it supreme in safety, simplicity, lifting power, freedom from trouble and insure lasting service. Easily installed in any barn, a daily labor saver and profit maker.

Write for 224-Page Illustrated Catalog

It shows the full Louden Line, including "Everything for the Barn." Sent postpaid, no charge or obligation. "Louden Barn Plans," a 112-page book devoted entirely to barn building, is especially valuable to carpenters and builders. Sent without charge for names of one or more barn building prospects in your vicinity.

Our Barn Building Architects are at your service without charge for advice and blue prints on any building proposition you have on hand. They will save you trouble—help you get the business.

THE LOUDEN MACHINERY CO.

(Established 1867)

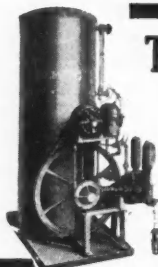
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Your plumber installs it and your client is better pleased with his new home. Send for Deming catalog of hand and power pumps and details of co-operative plan.

THE DEMING CO., 99 Depot St., Salem, Ohio
"Hand and Power Pumps for all uses"

Ontario Government Urges Lightning Protection

(Continued from page 118.)

be made, and all parts of the system connected together. Also metallic parts of the structure should be connected to the rods. Silos should be rodded.

"Fuller directions for rodding, also a treatment of the entire subject of lightning rods, will be found in Bulletin 220. It will be sent free on application.

"If there is any special information you would like to have on the subject of lightning rods, or if you have any questions you would like answered, kindly send us full particulars and we will send you a prompt reply. Address the office of the Commissioner of Agriculture, Parliament Buildings, Toronto."

(Signed)—

ONTARIO DEPARTMENT OF AGRICULTURE

Parliament Buildings, Toronto

HON. GEORGE S. HENRY,
Minister of Agriculture.

DR. G. C. CREELMAN,
Commissioner of Agriculture.



The Sewage Disposal Field

(Continued from page 44.)

in Fig. 4, in which F is a porous fill 10 to 12 inches deep, T the tile pipe and E the original earth.

The reader may question why two disposal fields are needed together with the valve V in Fig. 1. This is for the reason, as previously stated, that the ground bacteria cannot flourish when excluded from the air, and where one field is used constantly the ground soon becomes saturated, preventing the proper action of the bacteria, which results in the stoppage of the purification process, this causing the ground to turn "sour." To overcome this difficulty the two fields are used on alternate days, the day when the field is not in use being a drying out day, or what is technically known as its "breathing" period.

(The third article of this series will appear in an early issue.—Editor.)

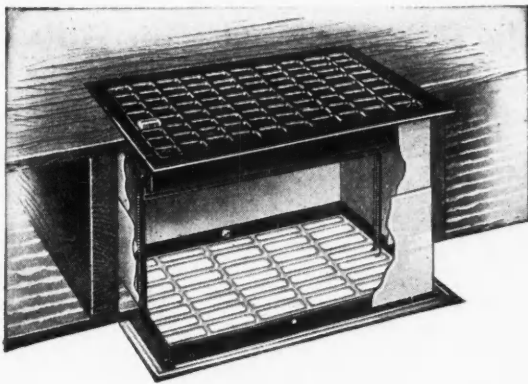


Back Yard Poultry Keeping

(Continued from page 52.)

about 22 pints of solution. Too large containers are not desirable, since they increase the liability of breaking some of the eggs. Half fill the container with the waterglass solution and place the eggs in it. Eggs can be added from day to day as they are obtained, until the container is filled. Be sure that the eggs are covered with about 2 inches of waterglass solution. Cover the container and place it in a cool place, where it will not have to be moved. It should be looked at from time to time to see that not enough of the water has evaporated so that the eggs are uncovered. If there seems to be any danger of this, sufficient cool boiled water should be added to keep them covered.

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"H. & C." Adjustable Ventilator

puts the extra heat to work and warms that cold upper-floor room. Makes every pound of coal do double duty. Saves fuel, labor and dirt. Easy to install. Neat, durable and satisfactory.

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They add 100% to any interior. The model shown here gives an idea of our line and prices. It is offered in selected Oak or Birch, Mahogany finish, Piano Polish. Stands 7 feet high. Note beveled mirror, enameled tile and grate.

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World's Largest Mantel House



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No ice is needed in Fall or Winter Filled from the outside in Summer. Progressive builders put their Refrigerator problems up to us.

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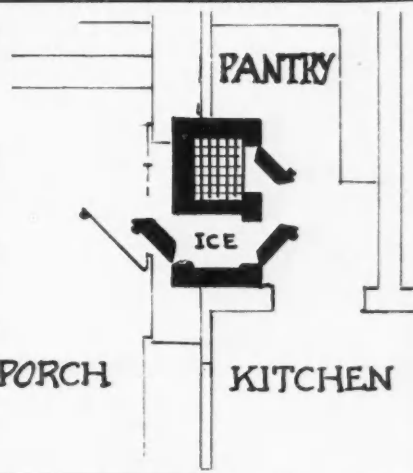
will be sent to you on request. Build up your reputation by suggesting and specifying the

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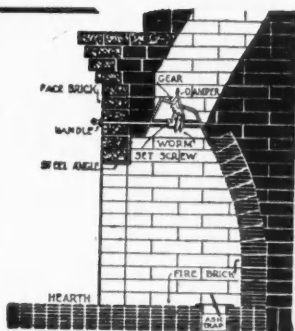
Scientifically constructed. Assures perfect air circulation. Keeps foods clean and fresh. The Herrick requires no ice in cool weather.

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HERRICK REFRIGERATOR CO.
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Build the Fireplace Right



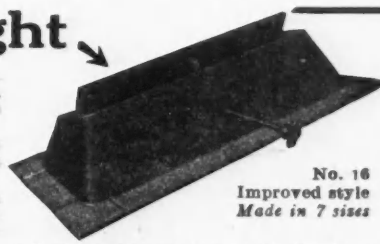
Don't try to reduce the cost by leaving out a good damper. It results in an expensive fireplace to operate and allows rain, wind, birds, and other objectionable things to enter the room when the fireplace is not in use.

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

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

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

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



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Made in 7 sizes

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Stover Mfg. & Engine Co., 725 East St., Freeport, Ill.

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Showing Sun-Shade Attachment

Try This Aloe Level 10 DAYS—FREE

Easy Monthly Payments If You Buy

Prove the superior quality of the Aloe Convertible Level by testing it out for 10 days. Use it on your every day work laying out buildings, locating foundation piers, leveling up foundations, walls and floors, aligning, shafting walls, piers, etc., for getting angles, or levels anywhere and the hundred and one other things for which you would use a level or transit. Then, if you decide to keep it, you may pay for it in easy monthly payments so small that you will scarcely feel them.

Aloe Convertible Level

is more than a mere level. It is a modified transit permitting double the range of work possible with an ordinary architect's level. Its construction is such that sights above or below the horizontal can be taken, making it the finest instrument ever offered at anywhere near the price. For taking vertical sights the instrument is provided with a special convertible bracket rigidly and permanently attached to the cross-bar thus eliminating the extra time that other instruments require for changing the telescope in position to take vertical readings. The telescope which is fitted with a permanent axis, rests in the bracket bearings and owing to our special constructed clips the instrument can be used for leveling while in

this position if desired, although the bracket clips are easily and quickly released from the telescope axis when levels only are to be taken. The telescope is then set in its normal position in the wyes and you have overcome the old method of attaching and detaching the convertible bracket.

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Remember, you are under no obligation whatever to keep the Aloe Convertible Level. We do not even ask you to promise to buy. But you owe it to yourself to see and try it. If it isn't all you expect you may return it at our expense. If you do keep it, you will find the small monthly payments easier than paying rent for an instrument—and at the end of a few months you will own it—absolutely. There's no red tape about this offer—we ask no embarrassing questions—everything is confidential—we charge no interest. You have practically your own time to pay.

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It explains the Aloe Convertible Level in detail and shows how easily the man without the training of the engineer or surveyor may secure the same accurate results as the expert. Send your name on coupon or postal for free copy and full particulars of our original, unique and popular selling plan.

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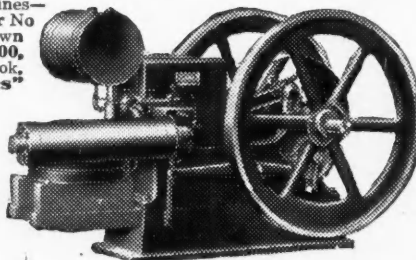
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"Artfashioned" Brick should be used on your Industrial Housing Jobs. No Painting! No Repairs! Absolutely Permanent. Just as easy to use as frame.

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Sales Offices all through the Middle West. Boone, Iowa

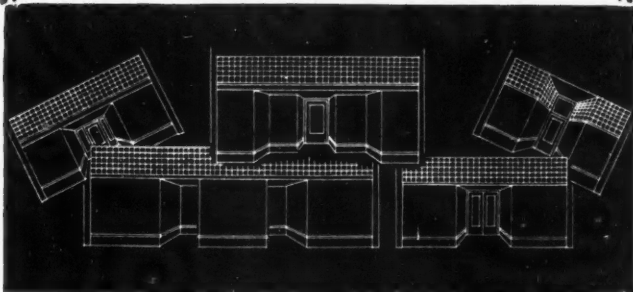
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Hundreds of progressive retailers are remodeling their store fronts right now. Hundreds of contractors are making handsome profits—you can do the same in your city. The materials are comparatively easy to secure, and each job will net you a good profit. Send for our new book on store fronts; it contains many modern store front designs and information that will help you secure contracts of this kind. We will also send details of "Desco" construction with prices and discounts. You'll find "Desco" easy to order, easy to install and its cost is less than you have been accustomed to pay for material of this kind. Write today and start making money on store fronts.

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JOHNSON'S RADIATOR CEMENT

Quick—Efficient—Harmless

Johnson's Radiator Cement contains no powders, cement or anything which can coat or clog the cooling system, and is absolutely harmless in every respect. It will ordinarily seal a leak in from two to ten minutes.

Johnson's Radiator Cement blends perfectly with the water until it reaches the leaks—just as soon as it comes in contact with the air it forms a hard, tough, pressure-resisting substance which is insoluble in water making a permanent seal.

Quarts. \$1.75 Pints. \$1.00 Half-Pints. \$.65
Write for our folder on "Keeping Your Car Young"—it's free.

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I enclose \$1.00 for which please send me, all charges prepaid, a pint of Johnson's Radiator Cement. Also send me, free your booklet on "Keeping Your Car Young".

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EVERY carpenter and builder knows and appreciates the value of good, accurate tools. That is why his choice is invariably for Starrett Tools.

He can depend upon these fine tools for laying out and measuring stairs, mortising, cabinet work and interior finishing. There are no tools the equal of the "Starretts."

The line includes rules, squares, levels, dividers, marking gages, builders' combination tools, steel tapes, etc.

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It shows 2,100 sizes and styles of these fine measuring instruments.
A copy of the book sent upon request.

The L. S. Starrett Co.
The World's Greatest Tool Makers
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42-852



Brisk Trade on Storm Sash

Evidence that people of the United States, especially those of the northern half, are getting ready to protect themselves from the cold of the forthcoming winter is to be found in the reports that are coming in to the National Headquarters of the Wholesale Sash and Door Manufacturers' Association. It is declared that large sales of storm sash and doors are being made in all section of the northern half of the country.

Experience has taught the people that much of the discomfort of winter may be eliminated thru the use of a little common sense and storm sash and doors. The fuelless days of last winter did more to impress upon the public the utility of the storm sash than anything else possibly could.

Millmen here declare that there will be quite a lively demand for storm sash and doors during the next two or three months, as a measure of fuel conservation economy in the heating of dwellings.



Lakewood Opens Chicago Office

The Lakewood Engineering Company announces the opening of new offices in Chicago in the Lumber Exchange Building. Messrs. E. A. Allen, A. W. French, E. W. Cox and E. E. Zeiss are in charge.



Timber Framing in the Far West

(Continued from page 63.)

above the shoe. Moreover, the gap will still be in evidence underneath the door-casings unless the threshold is made long enough to "cover" it. But these "remedies" are merely makeshifts. The gap is still there.

Another serious objection to the "drop-girt" frame is the dropped girt itself. This girt, like the ribbon of the "balloon" frame, will shrink and cause the plaster to become cracked and buckled, as depicted in Sketch No. 2.

Sketches No. 3 and No. 4 depict the "Western" method of framing by which, as before said, all the aforementioned evils occurring in both the "balloon" and "drop-girt" frame have been entirely eliminated. In other words, no *relative* shrinkage, either general or local, takes place in the "Western" frame between any two parts occurring in the same horizontal "zone." As indicated in Sketch No. 3, the total height of the "Western" frame is divided into *zones of horizontal timber* alternating with "*zones of vertical timber.*" At the first floor, the zone of horizontal timber occurs between the underside of the sill and the upper face of the sole piece, while at the second floor, the zone of horizontal timber occurs between the underside of the studding-cap and the upper face of the sole piece, and so on, as clearly depicted in the sketch. Moreover, it is to be especially noted that *no vertical timber extends into, or thru, any zone of horizontal timber.* In other words, each timber occurring in the exterior wall, whether horizontal or vertical, has an exact counterpart in each interior partition. It is thus seen that all shrinkage-settlement takes place in the zones of horizontal timber only. And it is evident that this settlement must be absolutely uniform because of the fact

(Continued to page 126.)

SEDGWICK

Is Your Profit Secure?

When you install a cheap dumb waiter, you may figure a profit. But are you likely to secure it?

Makeshift dumb waiters cause endless trouble. Complaints come fast in cheap outfits—and either you are asked to make good on repairs, or your client loses his confidence in you.

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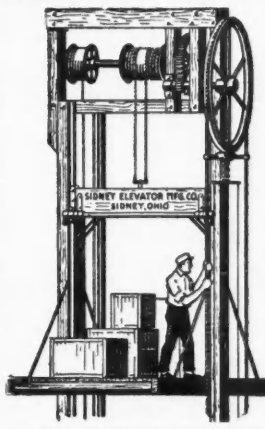
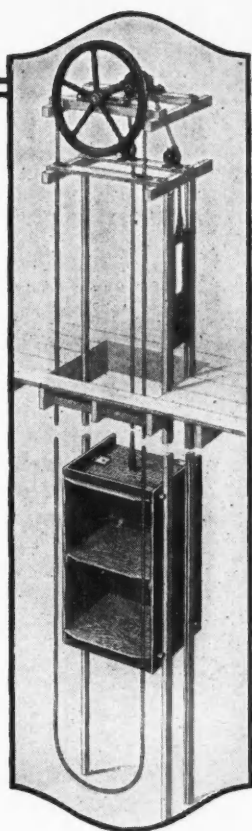
New York City

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Elevators and
Dumbwaiters
Exclusively*

TIPS FROM THE TRADE

"When we make a sale of Sedgwick products, they are so satisfactory we hear nothing more unless it be a re-order."

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Will reduce your handling expense, and speed up your work.

Our machines are easily installed from our complete plans and instructions which are sent with each elevator.

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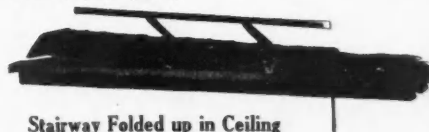
Write us today, stating requirements, giving style of machine wanted, size of platform and number of feet travel, and we will quote a money saving price on equipment to serve you well.

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Scarcity of Building Materials

makes it imperative that economy be employed in designing and building. You can make use of the attic without building a stairway into the house if you specify

The Bessler Movable Stairway



Stairway Folded up in Ceiling

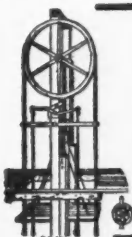
This stairway is always ready for use. Folds up into ceiling—out of the way—when not needed. Occupies no floor space in lower room when not in use. A child can operate it.

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Now is the time to act. Big Money. Ready Seller
Sanitary Automatic Dumbwaiter saves carrying food to and from cellar. Perfectly ventilated; screened opening; finished inside with durable white enamel. Keeps food perfectly. Top has flush with kitchen floor. You can walk over it. Operates with push button or lever. Also furnished as a Refrigerated dumbwaiter. Assembled complete ready to install. But three hours required to place our waiters in actual operation: old or new homes. Quotations include every needed supply. \$19.11 apiece. Illustrated catalogue.
York Automatic Dumbwaiter Works 639-645 West Market Street, York, Pa.

Timber Framing in the Far West

(Continued from page 124.)

that no one piece in any zone can settle relative to any other piece in the same zone. This being true, the entire building must necessarily settle uniformly in all its parts, and there can be no independent local settlement whatsoever. Hence, be the amount of shrinkage what it may—a half-inch to the foot or even an inch to the foot—yet, in a building constructed in the manner shown, the floors will remain level, the door-frames will remain true to square, the plastering will not become cracked, and gaps will not open up between the floor and base-board. Moreover, the horizontal timbers are, in themselves, so disposed as to act as fire-stops and rat-stops, as can be readily seen upon an inspection of Sketches Nos. 3 and 4. Also, because the framework is erected "one-story-at-a-time," and because the timbers are all "planks," the "Western" frame is easily and quickly erected.

Various details of construction are shown in Sketch No. 3, suitable to varying conditions, while Sketch No. 4 indicates, pictorially, the assemblage of the completed frame. A close study of these two drawings will render further explanations uncalled for, and, I feel certain, will result in the conviction that this "Western" frame is far superior, in every way, to both the "balloon" and "drop-girt" frames that have been heretofore described and criticized.

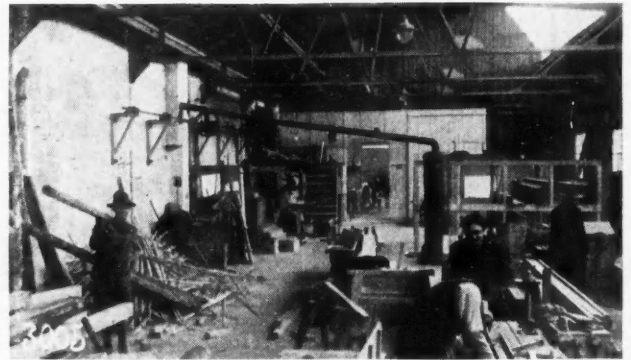
Red Cross Rushes Hospital Construction

(Continued from page 64.)


wooden or concrete floors or sides. Each tent is 20 by 40 feet in size and put up in units of three to make continuous wards. Each unit provides 45 beds. These tents when not in use for patients are used as storing places for supplies.

Meanwhile, the Manor house, beautifully constructed of severe Tudor architecture, had been completely remodeled and its 50 high-ceilinged, well-lighted rooms turned into wards and nurses' quarters. One of the best wards was a huge room formerly used as a dance place for the employes on the estate. The kitchen, a huge white-tiled room, with a 30-foot ceiling, has now a capacity for feeding 1,800 people.

(Continued to page 128.)



Members of the Society of Friends at Work in the Factory at Ormans Where, in Co-operation with the American Red Cross, the Portable Houses Were Built for the Settlement.




USED By All

Syracuse Nail Sets are used by all expert mechanics on the job. Syracuse Nail Sets are carefully tempered, accurately cupped and tested on steel. Two designs, either round or square. Sizes, 2-32 to 5-32.

No-Rol cannot roll away, having square sides. It costs 15c. The round nail set costs 12c. If your dealer cannot supply you, we will mail either of these postpaid at the above prices.

Syracuse Twist Drill Co.
Syracuse, N. Y.



FOR BUSY WORKMEN

The busy man has not time to trust to guess work, and take the chances of making mistakes. Let the Interlox rule do your figuring.


All difficult measurements "inside and outside" quickly and accurately read at a glance. Lengths 2 to 8 feet—best wood finished with waterproof lacquer—solid brass trimmings. If your dealer does not handle them, send us 20c per lineal foot, and we will ship you one promptly. You need one—write today.



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Patented Ratchet Brace



V & B Braces are unique in construction. The chuck cannot work loose, as there is no end screw. Our patented key construction holds the chuck firm. The jaws will hold all styles of bits up to and including one-half inch.

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Non-Binding Handle
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By request of the Government to conserve labor, we are not buffing our braces. If your dealer does not carry this brace, we will send it to you pre paid. Let us have dealer's name, also.

Manufacturers of the Vaughan's Vanadium Nail Hammers, Price \$2.00 each

Vaughan & Bushnell Manufacturing Company
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No. 222 Brace. All Sizes. 10-inch Sweep
\$3.50 Each



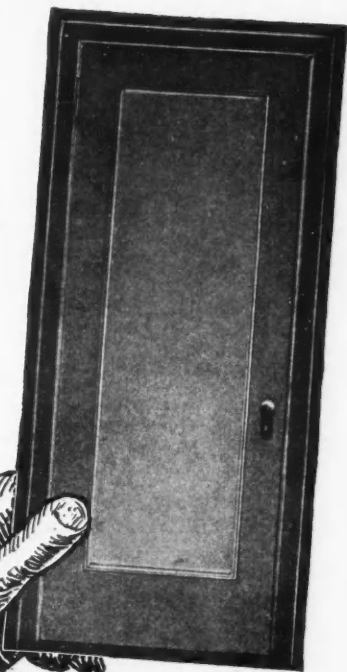
Fire-Proof Doors

Metal and Metal-Covered

Standard Sizes in Stock of All Designs

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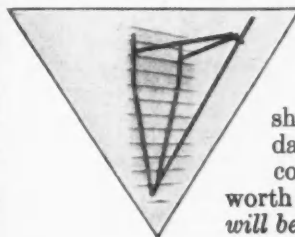
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Steel Brackets

Meet all your bracket needs with Reliable Folding Steel Scaffold Brackets. Used on either Stucco, Brick, or Frame. They save Time, Labor, and Trouble.



They save enough on the first job to pay for themselves. Every contractor should use them. A ten days' FREE TRIAL will convince you of their worth—if not your money will be refunded.

Write for Catalog

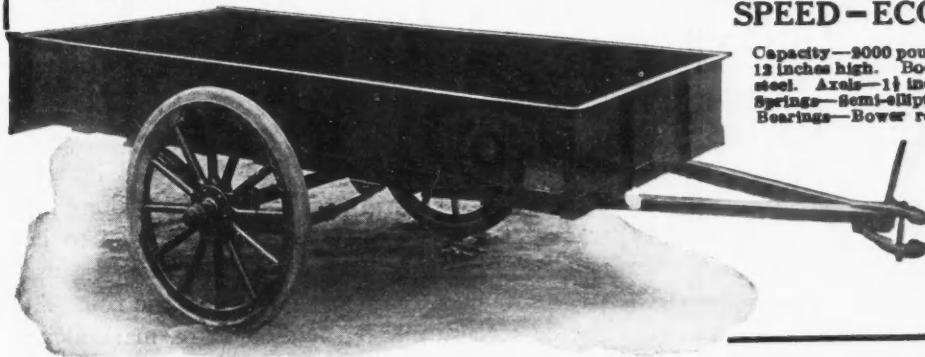
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Contractor's Handy Auto Trailer

SPEED—ECONOMY—STRENGTH



Capacity—2000 pounds. Body—8 feet long, 46 inches wide, 12 inches high. Body and under frame built of open hearth steel. Axles—1 1/2 inch square bar, special high carbon steel. Springs—Semi-elliptic, oil tempered and double heat treated. Bearings—Bower roller. Wheels—1 1/2 inch spoked, artillery type, second growth hickory. Tires—32x2, solid rubber. Weight—524 lbs.

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

Write for Catalog C.

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Oak Floors "America's Best Flooring"

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Oak Floors are made in 1 1/2 inch and 3/4 inch thicknesses and in four grades. 3/4 inch is used very extensively and economically over old pine floors in remodeling old houses.

Carpenters and builders during dull periods find 3/4 inch Oak Flooring a very profitable side line and business getter to lay over old pine floors in old houses. 3/4 inch Oak Flooring is very beautiful, durable and economical. The modern woman wants Oak Floors because they simplify house cleaning and housekeeping by being the ideal floor for the home.

WRITE FOR FOLDERS

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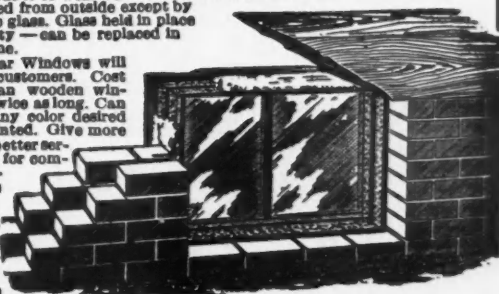
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The solution of the cellar window problem—a modern, 20th Century Cellar Window made right for service. Made of steel-window, casing and all. No rotting, shrinking or swelling. Fits perfectly all the time. Trouble proof, easy to open and close, leak-proof and fire-proof. Will not rust. Nothing about it to wear out. Fitted with special, inside steel latch—cannot be opened from outside except by breaking the glass. Glass held in place without putty—can be replaced in minute's time.

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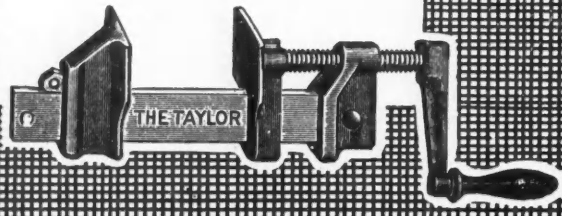
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We can PROVE it in your own shop. Write today.

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Absolute Accuracy

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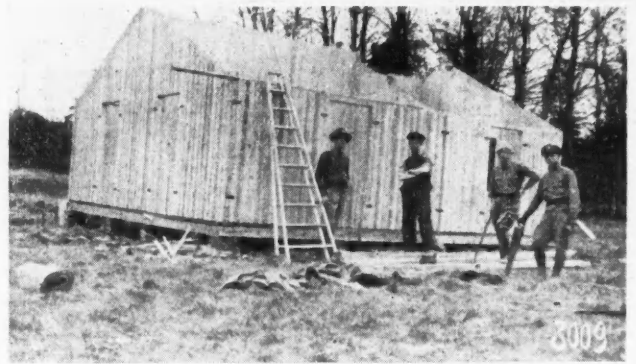
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(Continued from page 126.)

An extensive plumbing system has been installed, so that the house is an ideal place for 160 patients and the entire nursing staff of the institution.

Meanwhile, with the lumber and concrete blocks manufactured on the estate, the engineers are rushing up an isolation ward—a fully equipped hospital for those contagious diseases—and a recreation hall which will have a seating capacity for 1,000 people.



Problems of Roof Framing Solved

(Continued from page 65.)

rise on the steel square for 1 foot run of the common rafter. It does not matter which member of the square this is taken on, but for reasons which we will explain later, let the measurement taken on the tongue represent the run. Suppose the rise is 7 inches to the foot; the figures then would be 12 on the tongue and 7 on the blade. These figures will give the seat and plumb cuts. Now, say the span is 13 feet 4 inches, the run being one-half this amount, namely 6 feet 8 inches; the square is placed seven times at 12 and 7 along the upper edge of the rafter (which is supposed to be straight for a pattern). We say seven times, because there are six and a fraction of a foot in the run. At the last or seventh placing of the square, mark along the tongue and draw in the square till the figure 8 rests at the edge of the rafter and a line drawn along the blade will represent the proper line for the plumb cut, provided there is no ridge piece. If there is a ridge piece, one-half of the thickness of the piece should be deducted from the run by slipping the square over that much further to allow for same. Thus the length of the rafter is indirectly obtained without further measurement.

In Fig. 2 is shown the layout of this rafter on the trestles ready to cut. The dotted lines show how the run and rise is taken care of in the manipulation of the square.

Next month we will show the relation of the hip and the common rafter.



Let Public Works Take Up the Slack

WITH the last restriction on building operations and construction removed, we should at once prepare for a quick return to the prosperity of peace times.

Many public improvements, not to mention a greater number of private enterprises, were necessarily suspended or postponed because of the war. These should at once be resumed. As the *Engineering News-Record* says:

"Each day that labor is unemployed there is an economic loss to the community. Every man not employed is either a public charge or an idle producing unit, and since it is certain that return to peace basis will take some time, public works should absorb labor as fast as possible, even under conditions which might seem uneconomical on account of high wage scales and high prices of materials. Even if the public pays a greater price for public improvements, it prevents the economic loss due to idle man-power. If, to prevent unemployment, the army is demobilized slowly, the public pays for the maintenance of the soldiers. It

would be better to demobilize as promptly as the military situation permits, increasing the amount of public work to such an extent as to prevent unemployment. Such a course would mean permanent and substantial returns for the money spent, whereas the maintenance of men in camp after the military necessity ceases is a dead loss."

It should be remembered, too, that labor is now being rapidly released from works of various kinds connected with the prosecution of the war. It must find immediate and steady employment.

Public works and private enterprises can and will take up the slack. We urge our readers in every locality to use their influence with their local newspapers to give publicity to this thought, and with respect to your community enumerate the many suspended or needed building projects of which you have knowledge so that labor and industry will be properly directed toward one channel at least, leading to a prosperous peace.

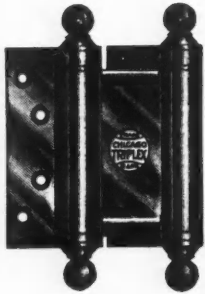
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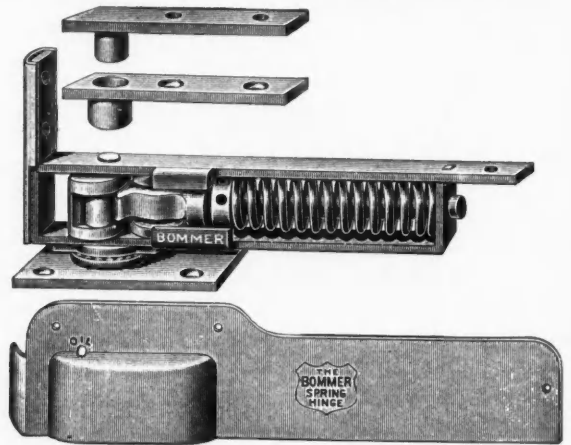


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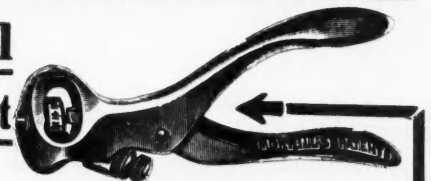
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