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VOL. XXVI

March, 1919

No. 6

Efficient Equipment Means More Profits

EFFICIENCY!

How often we hear and read that word. It has become so common that it is awe-inspiring.

We have efficiency engineers; and when one comes around a shop or goes on a job, revolution in methods and machinery is expected.

But simmer all this efficiency idea down and the "sugar of the boil" is merely that efficiency means to do what has to be done in the easiest way. The more efficient a workman is the easier he does his work, or rather the more he accomplishes with the same amount of effort.

There are two kinds of efficiency—efficiency of the men on the job and efficiency of the contractor. The former depends on the latter.

There was a time when the most efficient builder was one who could cut a tree and hew out a joist or a sill quicker and better than another.

He wouldn't be called efficient today when the saw-mill does the work not only quicker and better, but cheaper.

There was a time when the most efficient carpenter was one who could saw a timber more quickly and truer than another.

He wouldn't be called efficient today when there is a power saw rig at hand to do the work.

This comparison might be carried along thru all the different operations required in building—hand-mixed concrete versus the power mixer; toting bricks and mortar up a ladder on men's backs, rather than by the hoist and elevator; transporting equipment, materials, tools and men by an ox team or a horse-drawn wagon instead of by a motor truck.

Yes, efficiency in the workmen depends on efficiency in the boss, and the efficient boss is the one who has efficient equipment to perform efficient work—equipment that will do the work quickest, best and cheapest.



Is Your City Patriotic?

ARE they going ahead with legislation providing for bond issues to pay for public buildings and other improvements in your city? If the officials are not, they are not heeding the urgent call of their government, and are lagging behind most of the others in the country. Construction work must be started, so that there will be no break in the prosperity of the country.

This movement means work, plenty of it, for the building industry. The contractors will be called on to build city halls, school houses, libraries, pavements, good roads and the other improvements that are made with public money. Every branch of the industry will profit.

Immediate Resumption of Building Activities as a National Asset

By F. T. Miller

Associate Director General, Information and Education Service, U. S. Dept. of Labor

THE main issue now before our country is: Are we in a state of liquidation, trying to settle up our affairs, or are we a going concern?

This country has two hundred and sixty-five billion dollars of wealth; wealthier than four of the wealthiest nations of the world combined; we have \$2,500,000,000 worth of gold in this country—the greatest amount ever known in the possession of this country, and considerably more than half of the gold of the world. We are over the war. We have shown moral characteristics in accepting the draft that have enabled us to put men on the Western front in numbers second only to France, and our men have fought well.

The war is over and we do not expect attack from anybody, but we are still wondering what we are going to do—how we are going to get along. After the Civil War was over, when we had foreign complications and when we had but \$133,000,000 in gold against \$346,000,000 greenbacks, Secretary Sherman came out and said, "The way to resume specie payment is to resume." Payment was resumed and we did business, because the people had faith in the country.

This is the greatest, strongest, wealthiest, healthiest country in the world, and it is a country that should be doing business and not a country in a state of liquidation; and yet, because of a psychological status, everybody is waiting to see if somebody else is going to reduce his price on something. Copper consumption is down. Iron consumption is down.

The great question is one of consumption. If we do not buy, we cannot exist and do business—this is the issue.

Now if we had the four million immigrants that this country would have received if the war had not commenced—if we had our two million soldiers home again, if adjustments had been made, and if we were all working steadily in the pursuits of peace—if we had the three to five billion dollars' worth of domestic structures of which we are short, and the shortage of which is causing increase in rents (and rentals growing out of this shortage cumulatively increased the cost of every necessity of life)—if we had these things and were all working steadily, and if there were no exceptional draft on our products from abroad, prices might again be what they used to be.

When the European war broke out, we expected it to last but a few months and looked immediately for return to old conditions. In the meantime, different conditions have been arising and we still have our minds fixed on a return to the old conditions. The thought of a nation is one of *ante bellum* character. But conditions have come about which have changed

To the Rescue!

NEVER before has the call gone out so insistently to the building industry to furnish the country with homes, farm buildings, factories and store buildings. And the building industry is going to the rescue of the homeless, and of the farming and industrial businesses.

On this and the following page our artist has illustrated some of the building needs of the country and has shown how the building industry is bringing to the homeless family, the business farmer and the school children the homes, farm buildings and school houses that are needed and must be built quickly.



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this country far more than conditions which came about from the Civil War. We cannot turn the clock back.

When the armistice was signed in a Pullman car in France, and people tossed a lot of newspapers out of windows here, we all thought we were back to the old conditions. Many now know we are not to go back to those conditions, but it is hard to realize that we must adjust ourselves to new conditions and act promptly.

The inertia of economic events is a continuing force and we must all take the new hand of cards that has been dealt to us, familiarize ourselves with them as quickly as possible and play with them. It will do us no good to sit and look at them and hope that in some mysterious way they will change into the old hand we had before the war.

After the Civil War, we characterized people who maintained their old ideas as “*ante bellum*.” The darkies said “befo’ the wah,” but the majority of people in this country now are still in the mental hoop skirts and pantelettes of the before-the-war attitude of mind, and they do not fully realize the strength of the nation or the close political and economic contacts that have been brought about with the world in general, and which will influence all of our future activities.

We are not going to get the immigrants which we received formerly; prices of labor are higher in Europe than they were; prices of materials are higher in Europe than they have been for years, in some cases higher than they are here, and the influence of the European markets on our prices must be taken into consideration.

Prices of materials in the building line have increased sixty per cent in the face of a declining demand. Prices of other commodities have increased one hundred and nine per cent.

Former Secretary McAdoo said in substance on Nov. 17, 1918, in instructing the supervising architect to commence building for the Treasury Department, “The normal activity of the building industry will facilitate the transition of general industry from a war to a peace basis.”

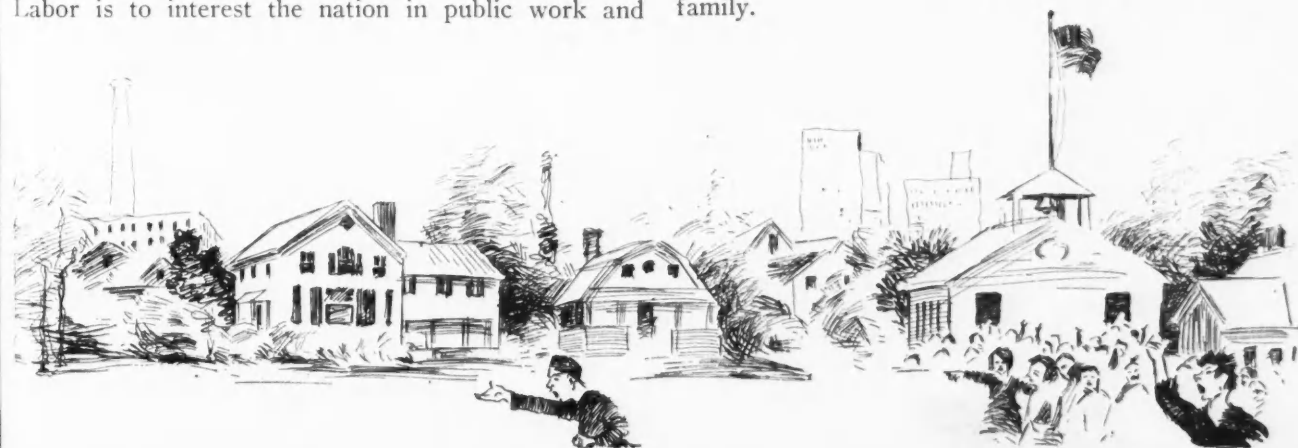
The purpose of this Division of the Department of Labor is to interest the nation in public work and

private construction. When figures and principles are submitted to the public, each must use his own judgment as to the prudence of his individual undertaking. We are simply helping to bring about realization in this great basic industry that conditions have changed.

During the reconstruction period, the labor and materials which might otherwise be idle can be fixed thru this basic industry into permanent wealth which has earning power and pays taxes. Otherwise this labor and materials will go to waste. The activity of this industry is literal *reconstruction*.

Deferred construction is a part of our war debt—the first part to be paid, because thru reconstruction we are making good our impaired facilities and putting ourselves into better condition to repay the remainder of our debt.

It is probable the cost per cubic foot of modern fire-proof buildings, up to three years ago at least, was less than the cost per cubic foot of the old six-story, non-elevator, non-fireproof building of thirty years ago. This is because of the rapid advance in the art, the manufacture of materials in large quantities and the more ready assembling of the component parts thru standardization of forms. In the assembling of these materials there are one or two hundred skilled artisans. As inventions and improvements occur—as metal lath is substituted for the wooden, reinforced concrete for brick, the kalomine doors for wooden doors, etc., these trades suffer successively and yet the public is benefited. In the adjustment of the incidental trade disputes over such matters occurs our greatest trouble—yet this is just the same kind of trouble which occurred in Manchester, England, on the introduction of the textile machinery, and as has occurred in every great industrial center upon the introduction of the labor-saving devices and improvements, each temporarily injuring one trade yet benefitting society as a whole. Less than 10 per cent of our labor difficulties in the building line are due to contests for wages. Home building and home owning is the basis of the strength of the nation. While the home is not a negotiable investment, history has shown that it pays very large financial returns in the increased efficiency of the family.



“Hey There: Do You Want a Home on a Farm”

SECRETARY LANE SENDS OUT THIS CALL TO ALL WHO HAVE BEEN IN UNIFORM—PROJECT OF IMMENSE INTEREST TO BUILDERS

THIS is the unique title of a little booklet which the Secretary of the Interior, with the active co-operation of the War and Navy Departments, is sending to the various camps of the army, navy and marine corps thruout the country to ascertain the attitude of the men toward his plan for providing them with work and homes on reclaimed land.



The U. S. Dept. of Interior Proposes This Plan.

The booklet is in the form of questions and answers which will give a complete and concise description of the plan, and also has attached to it a post-card questionnaire which the men are asked to fill out and mail to the Department. Each man interested will be asked to state his name, home address, age, occupation before enlistment, whether he has ever worked on a farm, whether he is interested in the plan, what kind of farming he would like to follow, whether general, live stock, truck or fruit, and whether he would be willing to take a job in his own state or anywhere in the United States if a job on one of these proposed projects is offered to him.

A tabulation of the replies will be presented to Congress in connection with Secretary Lane's request for an initial appropriation of \$100,000,000 to begin construction on meritorious projects thruout the United States.

Work and Homes For Our Fighting Men

The questions and answers in the booklet are as follows:

- Q. What do you mean, work and homes?
- A. Just this. There is a bill now before Congress asking for an appropriation of \$100,000,000, which, if passed, will enable the Interior Department to begin work at once devel-

oping co-operative farm settlements for soldiers and sailors in all or nearly all of the States.

- Q. Who will get the farms?
- A. Those who create them by working on draining, clearing, irrigating, and improving the lands.
- Q. Will all get farms?
- A. That depends on the amount of land desired.
- Q. Is this plan only for men who have been across?
- A. No. It is for all of the men who have worn Uncle Sam's uniform in the great war.

- Q. Where is this land located?
- A. In practically every State in the Union there are large areas of this land. There is dry land in the West that needs water, which can be provided by building dams and canals. In the East are large areas of cut-over or logged-off timber land, from which it will be necessary to blow the stumps and clear off the underbrush. In the South is a large amount of cut-over land and swamp land which must be drained.
- Q. Could I get a job near my old home?

A. Probably you could. These proposed settlements are scattered all over the country, and it is planned to have one in each State, if Congress provides the money for construction.

- A. How about wages?
- A. You would be paid fair wages by the Government while doing this work—just as good wages as you would be able to get in outside work of like character.

- Q. Would I be enlisted?
- A. No. This work is only for men who have been honorably discharged from the service.

- Q. What kind of work is it?
- A. The Government will have work of all kinds in connection with these settlements, from the highest technical and clerical positions to that of laborer.

- Q. Now how about getting a home out of this?
- A. After you have helped build the dams and canals, or cleared the cut-over land or stumps, or built the ditches to drain the swamp land; after you have helped to erect houses and barns, built fences, constructed roads, and laid out

town sites, built creameries, canneries, warehouses, schools, etc.; after you have, in fact, actually reclaimed the land, the Government will allow you to pick out one of these farms planted in crops.

- Q. Does the Government give me this farm for nothing?

A. No. And you wouldn't want the Government to do it. The plan is to arrange for you to pay for your farm home in small payments over a long term of years, with interest charges at the rate of 4 per cent per annum.

- Q. How about stock and farm implements?

A. It is planned that the Government will also furnish you with the necessary stock and farm implements, to be paid for by you in small payments spread over several years.

- Q. Where will I get the money to make even these small payments?

DEPARTMENT OF THE INTERIOR
U. S. RECLAMATION SERVICE.

Name in full

Home address

How old are you?

What was your occupation before you enlisted?

Have you ever worked on a farm?

Are you interested in this plan to provide work and a farm for you?

.....

What kind of farming do you wish to follow? State whether general, live stock, truck, or fruit

Would you be willing to take a job on some project if offered to you?

In your own State? Anywhere in the United States?

WRITE PLAINLY AND MAIL TO-DAY—NO POSTAGE REQUIRED. 0—5944

Start Public Building, Urges G. W. Ashby

NOTED CHICAGO PUBLIC SCHOOL ARCHITECT CALLS UPON BUILDING INDUSTRY TO AID GOVERNMENT PLAN TO FURNISH EMPLOYMENT FOR LABOR

"DON'T tell the readers of the AMERICAN BUILDER they *ought* to build public buildings, tell them they *must* build public buildings.

"Look there! See that bulletin from the U. S. Department of Labor? It says: 'Build now. That school house, city hall, church, courthouse, factory, memorial and all other public improvements.'

"I wish I could emphasize the need of building so strongly that every business and professional man and worker in the country would spread the reasons why public building should start right now—not tomorrow, or next week, but right now."

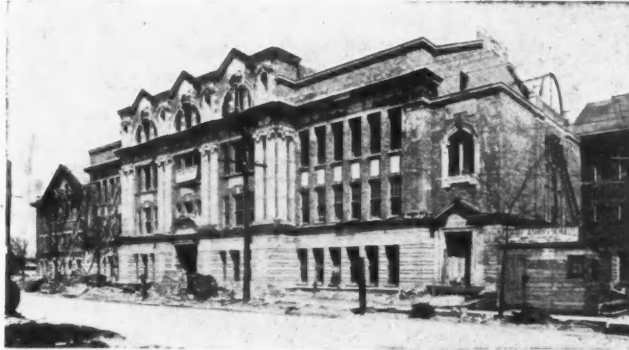
The speaker was G. W. Ashby, Chicago architect. Mr. Ashby specializes in public school buildings, and has one or many monuments to his architectural genius in the shape of school buildings in every state of the United States. Readers of the AMERICAN BUILDER know Mr. Ashby, and we have known him for years. So do thousands of present and former members of school boards, who have had under consideration school building projects during the last twenty-five or more years.

Consequently, when Mr. Ashby speaks, he speaks with authority.

1919 To Be Big Building Year

"I'm not pessimistic about the immediate future of the building business; in fact, I am extremely optimistic. I believe that this year will see more public building than any in the immediate past, but if speaking pessimistically at this time will have the effect

of stirring up the readers of the AMERICAN BUILDER—will cause those thousands of contractors, carpenters, lumber, material, hardware and school supply dealers,

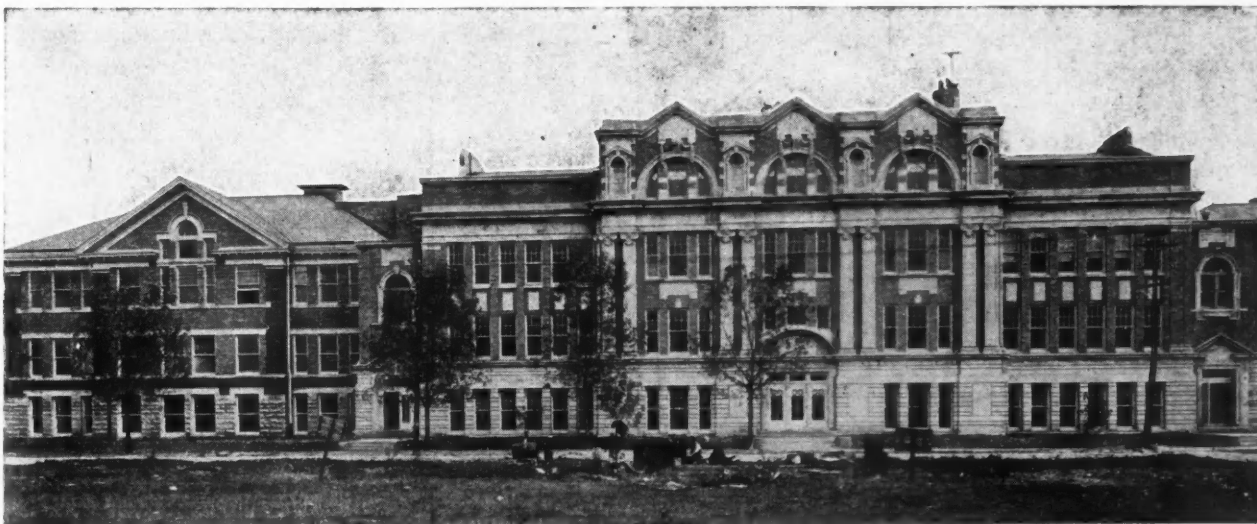


The J. Sterling Morton High School, Cicero, Ill., After Exterior Had Been Completed and Ready for Work on Interior to be Begun. View Shows Beauty of Architectural Design.

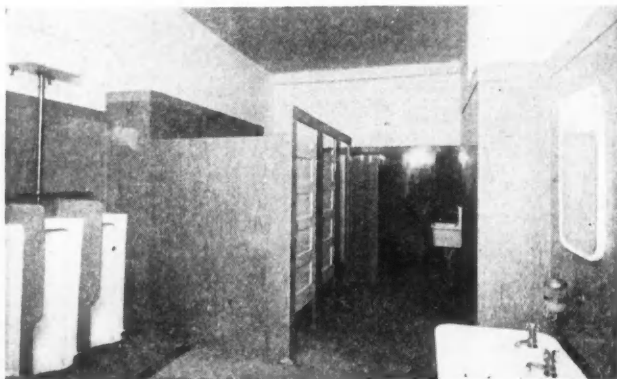
and architects—to a realization of the seriousness of the situation, why here goes.

"February 1 it was reported that there were 10,000,000 men and women in the United States out of employment. To provide many of them with employment, the government has started a campaign urging the resumption at once of public building. Before going any further into the labor situation, however, let's consider how public buildings are financed.

"School buildings, city halls, and all other public improvements are paid for thru the issuance of bonds. There is no better or more marketable securities than municipal, county and state bonds. These bonds are



The "Last Word" in High School Buildings. The J. Sterling Morton High School, Cicero, Ill., showing front elevation. Three stories and basement of fireproof construction. Materials are buff brick, stone, concrete and steel. Basement contains all departments of manual training, mechanical drawing, natatorium, recitation rooms, power, heating, laundry, filtration and fuel rooms; first floor gymnasium, gymnasium instruction and paraphernalia rooms, showers and recitation rooms; second floor has board and administration rooms, recitation rooms and boys' locker room; the third floor is devoted to the science department, recitation rooms and laboratories. The building is 314 by 182 feet and cost nearly \$500,000. Ashby, Ashby & Schulze, Chicago, were the architects and the Smith Brothers Construction Company, Chicago, the general contractors.



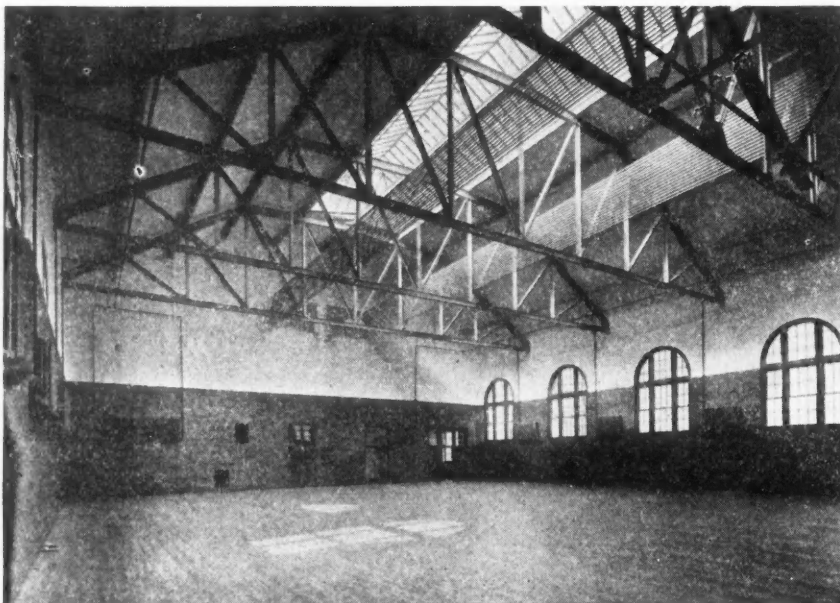
Typical Toilet Room in the J. Sterling Morton High School, Cicero, Ill. Eight-foot marble wainscoting. Partitions and backs of water closets also are of marble. Urinals are of porcelain. The equipment consists of lavatories, mirrors and slop hopper. Floor is of terrazzo. Plastering in corners and ceilings is of sanitary curved construction.

usually issued in series, due in from one to twenty years. Consequently, the tax is spread over twenty years, each taxpayer paying 5 cents a year.

Returned Soldiers Must Be Employed

"The returning soldiers and the laborers who were employed in government construction work, on the ships, the munitions factories, the housing projects and in all the other war-time building, now are out of employment, or, at least, a majority of them are. They have to be provided with work, or we shall see great bread lines in our cities and in the smaller places, too.

"Eighty per cent of the cost of building is labor. Unless that statement is explained, most people won't believe it. But when they consider that nature fur-



Looking west in Gymnasium of the J. Sterling Morton High School, Cicero, Ill. The room is 80 by 100 feet and 42 feet high. Overhead heating system, with wall radiators 8 feet above floor, is interesting feature. Door in far corner leads to instructor's office; center door to storage room for gymnasium equipment, and door to left to locker and shower rooms.

nishes the materials and that labor takes them in their natural state and fashions them and puts them in place, it can readily be understood that the greater proportion of the cost of building is labor.

"Consequently, a great percentage of the money spent for public buildings, and private buildings, for that matter, will go toward keeping our soldiers and our workmen independent of charity.

"As the government says, building public buildings now is a duty. Nothing should be placed in the way of an immediate resumption of public building activity. The man who opposes these projects is a slacker of the worst character."

Thus does Mr. Ashby view the situation and thus does he support the government's insistence that public building start at once. He points out that there is plenty of time to get the necessary legislation thru so that the building of these improvements can start next summer.

The Blue Print Supplement of Model School House Designs

As suggestions to the members of the building industry who will be called into consultation by school boards, Mr. Ashby has submitted for their consideration plans for four different types of school buildings. These plans are shown on the four pages of blue prints immediately following.

Sheet No. 1 shows a design for a four-room brick grade school building. Front and end elevations, a cross-section and the main floor and basement plan, together with the picture rail, chalk rail, picture moulding, casing and head casing are given.

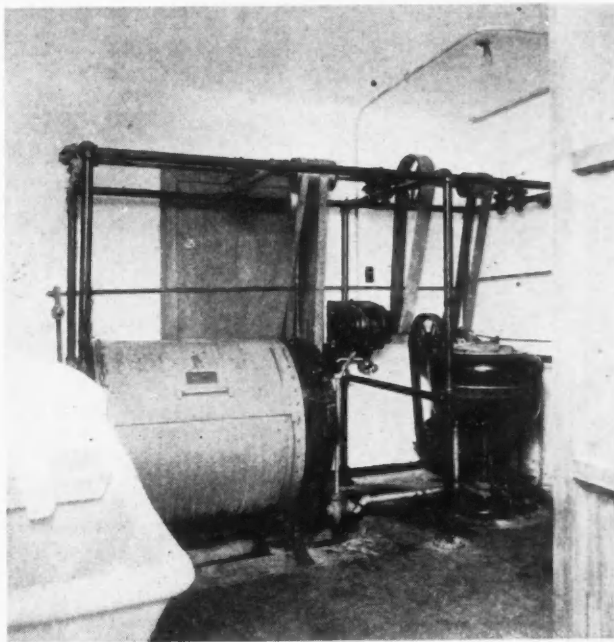
This design, as do those on the other three blue print sheets, reflects Mr. Ashby's idea that a school building should be a school building and not a monument to some architect, who puts unique effects above utility. Here there is no money wasted on decoration, while every bit of space is used to the best advantage.

On the first floor are four good sized class rooms, the office and a hall. The rooms occupy the four corners of the building, each room opening from the central hall. The office is over the front entry. The class rooms are lighted by the unilateral system, light coming from one side and shining over the left shoulder of the pupils. Neither does the teacher face the light. Blackboards are on the right hand and front walls, and on the rear wall, if desired. Connected with each room is a coat room.

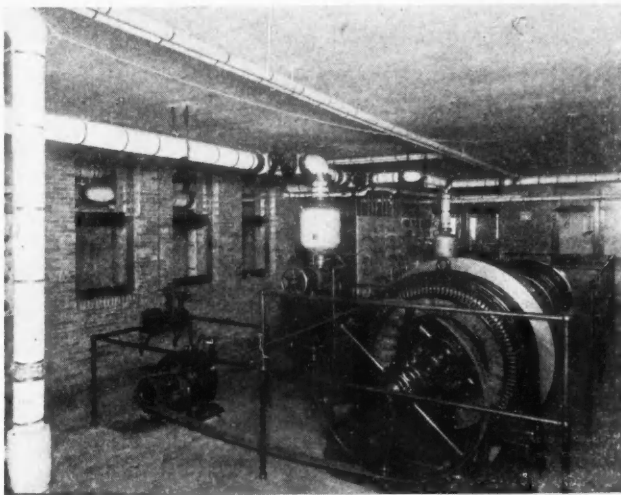
The basement of this building is devoted to the domestic science, manual training and girls' play rooms, toilets and the heating plant.

• Model One-Story Brick High School

A one-story brick high school building is shown on the second blue print sheet. From the basement and main floor plans it will be seen that this high school building has a number of extraordinarily good fea-



Electric Light and Power Plant of the J. Sterling Morton High School, Cicero, Ill. Washing machinery and tubs are shown, but dryer was not caught by the photographer. Here towels and girls' bathing suits are washed. Adam J. Ensinger, Berwyn, Ill., contractor on plumbing and laundry equipment.



Electric Light and Power Plant of the J. Sterling Morton High School, Cicero, Ill. The generators and exciters are in the foreground and switchboard in the background. Piping and valve installation, and engine are shown. The room is lined with glazed brick. Kohler Bros., Chicago, contractors on electric light and power plant.

is provided for the recitation rooms in this building.

Blue Print of Large School

An eleven room unit of a twenty-four room grade school building is shown on the third blue print sheet. This building has two floors and a basement and is of brick construction. The high basement wall is of stone courses and stone trim.

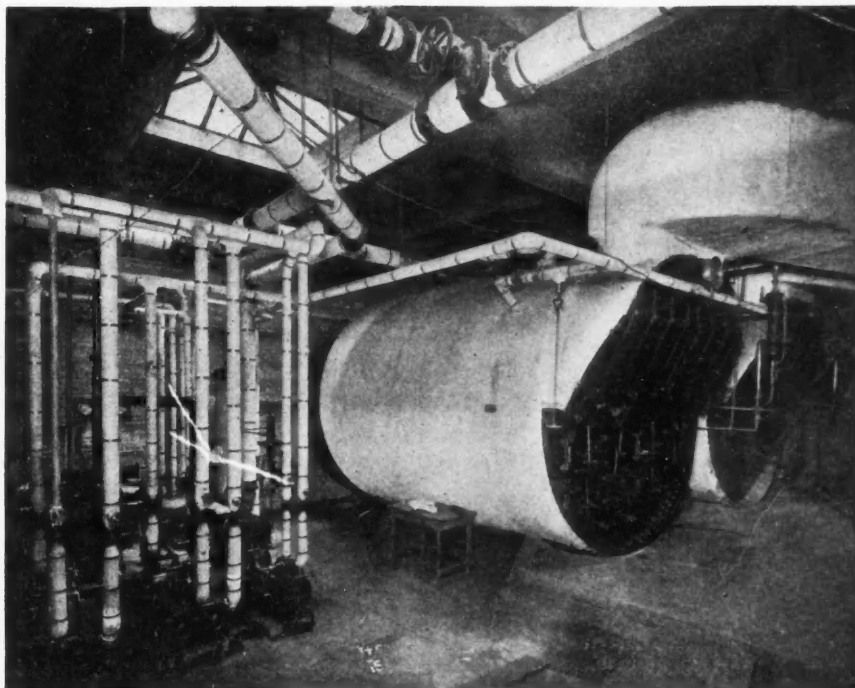
tures, notably the assembly room and gymnasium.

The recitation rooms, six in number, are placed advantageously. Across the front of the building are three of them, while the others are connected with two science laboratory rooms and the manual training room. The science laboratories are on either side of the assembly room. The recitation rooms are alongside the stage, so that they may be used as dressing rooms when necessary. Two offices are located over the stairways at either end of the building.

In the basement is located an exceptionally large gymnasium, with tier seats for spectators. On one side of the gymnasium is the domestic science room, which connects with the girls' locker rooms. At the other end is the boys' locker room and showers and the heating plant. Along the front of the basement is the manual training room, with a recitation room connecting.

The same lighting arrangement

The stairway from the entrance in the center of



Heating plant of the J. Sterling Morton High School, Cicero, Ill. Two marine boilers, 11 feet and 6 inches in diameter, generate the steam. Illustration shows covered pipe installation, and condensation, feed and water pumps. All dampers are thermostatically controlled. The Phillips-Getschow Company, Chicago, contractors on heating plant.



Laying the Roof, the Last Work on the Exterior of the J. Sterling Morton High School, Cicero, Ill. Concrete and mortar mixers and hoist were in natatorium in basement and material was elevated to different floors and piped by gravity to workmen.

the building leads to a corridor extending the length of the back of the structure. Over the stairway is the office and the board room. On the first floor are four class rooms, two on each side. Each is 30 by 24 feet and each has left side lighting and blackboards on the right. Coat rooms are provided for connecting with each room.

The second floor has five class rooms, the additional one being in the space over the office and board room. These are all 30 by 24 feet.

The manual training room, 56 feet 4 inches by 24 feet, and the domestic science room, the same size, are in the basement. The girls' toilet adjoins the

While this building in shape is attractive, the floor plans show how well the space has been used.

Each room is designed for thirty-five pupils. The seats are arranged so that they face the end wall, with the windows ranged along the left side of the building, giving unilateral lighting.

The entrance at the end leads to stairs going both to the main floor and to the basement. At the end of the stairs is a hall, opening off of which are the two class rooms and the office.

In the basement are two playrooms, one for boys and one for girls, with toilets opening off of them, and the heating plant. The cross-section shows the stair arrangement and hall.

Here are four school building designs that will meet the needs of most boards of education, and the builder who is called on to help the local board with suggestions may confidently show them, as they are designed by Mr. Ashby, who, as is well known, is one of the foremost school building architects of the country.

Mr. Ashby's emphatic suggestion that it is the duty of everyone to start talking public building can well be taken up by builders everywhere. Because no matter who gets the work, whether it be the man who starts the project, his competitor or someone from another community, building must be started if the building industry is to be prosperous.



Interior View of Natatorium of the J. Sterling Morton High School, Cicero, Ill. The pool is regulation size, 24 by 60 feet, with distance markings, spring boards and ladders. Arrangement of heating system is especially noticeable, all pipes being overhead. All steel and metal work is white. The terrazzo floor has proper pitch to shed water into gutter outside pool curb. A filtration system is used and temperature of water is thermostatically controlled.

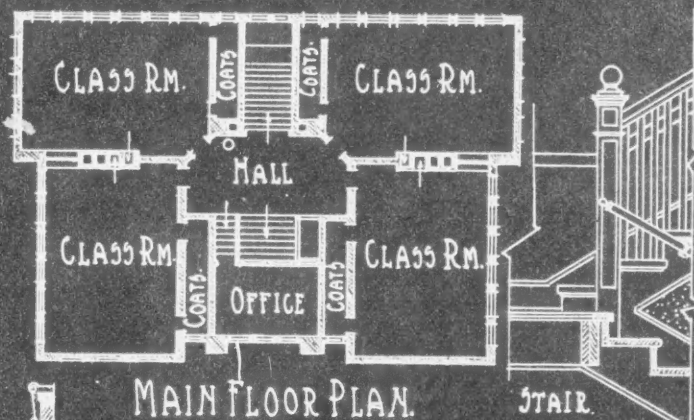
FOUR MODERN School House Designs by Mr. G. W. Ashby, Architect, are Presented on the Blue Prints Following.

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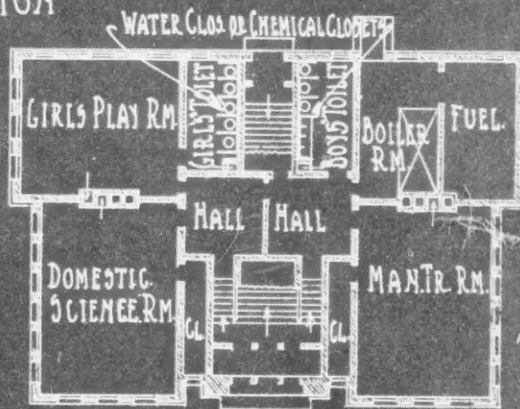




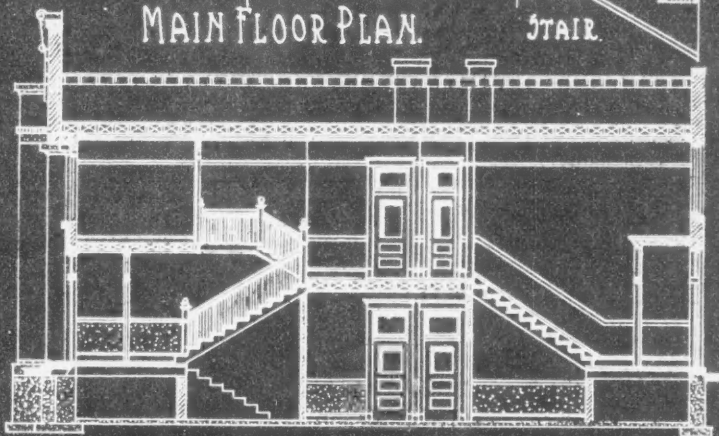
FRONT ELEVATION



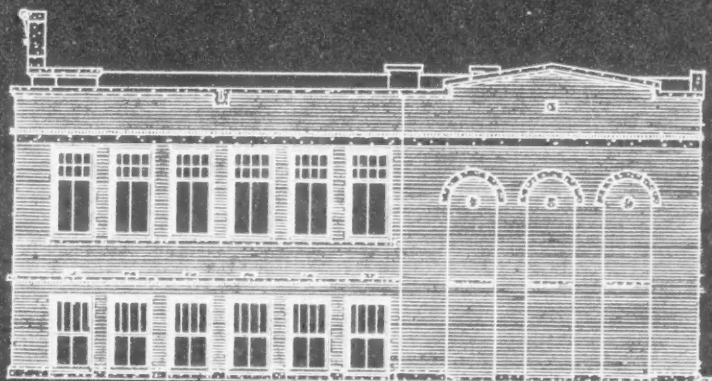
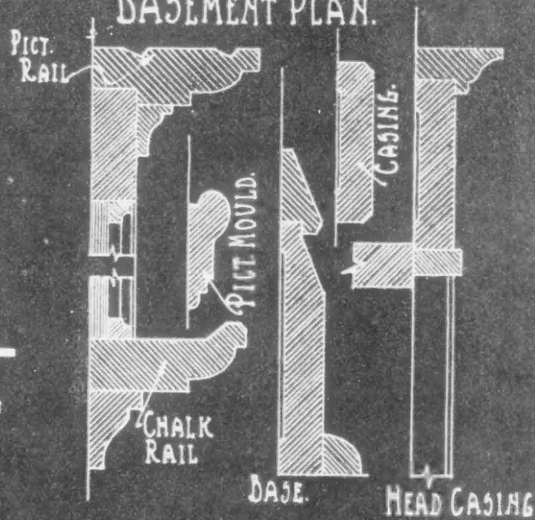
MAIN FLOOR PLAN.



BASEMENT PLAN.

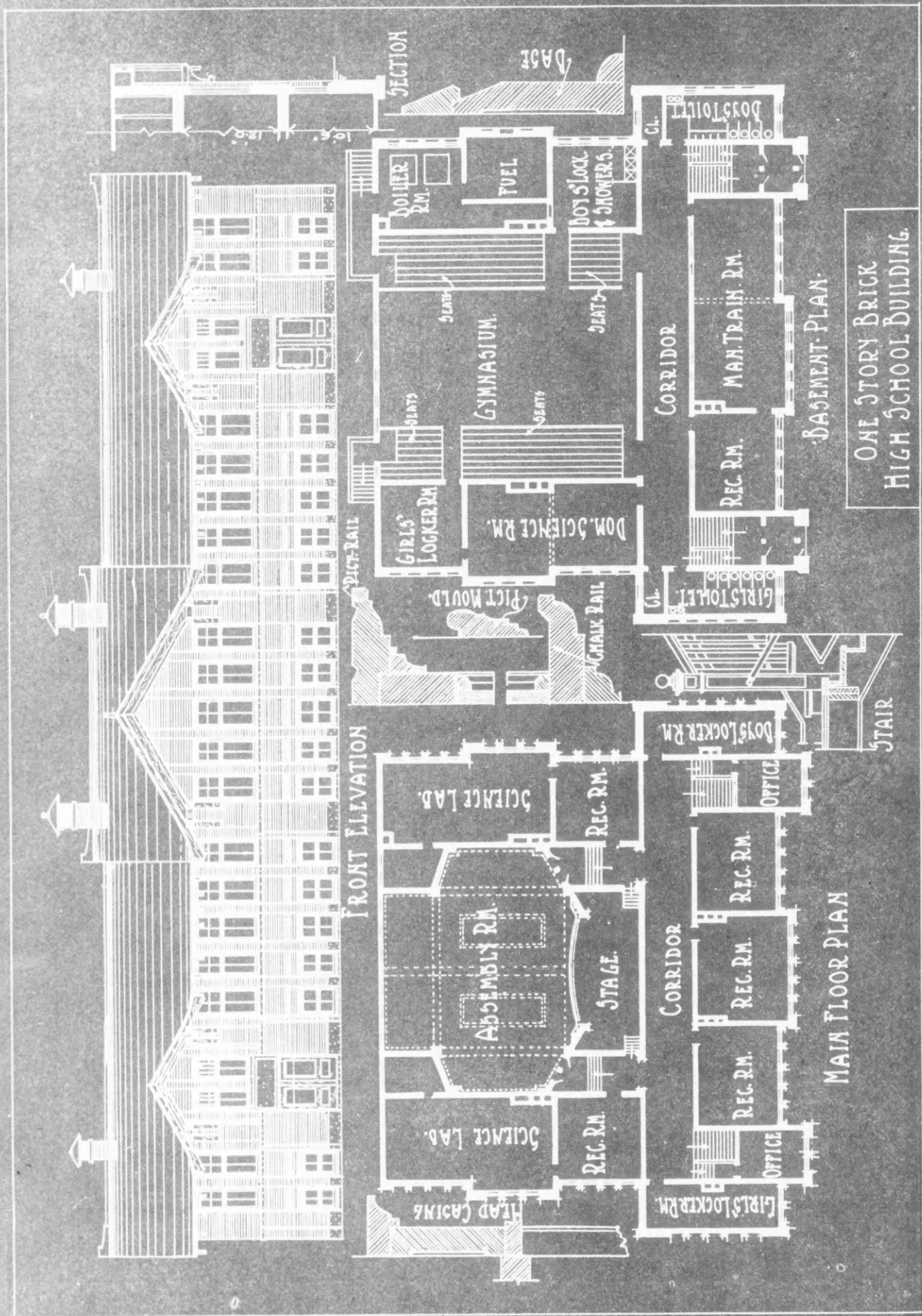


CROSS SECTION



END ELEVATION

DESIGN OF A
FOUR ROOM BRICK
GRADE SCHOOL BUILDING.



ONE STORY BRICK
HIGH SCHOOL BUILDING.

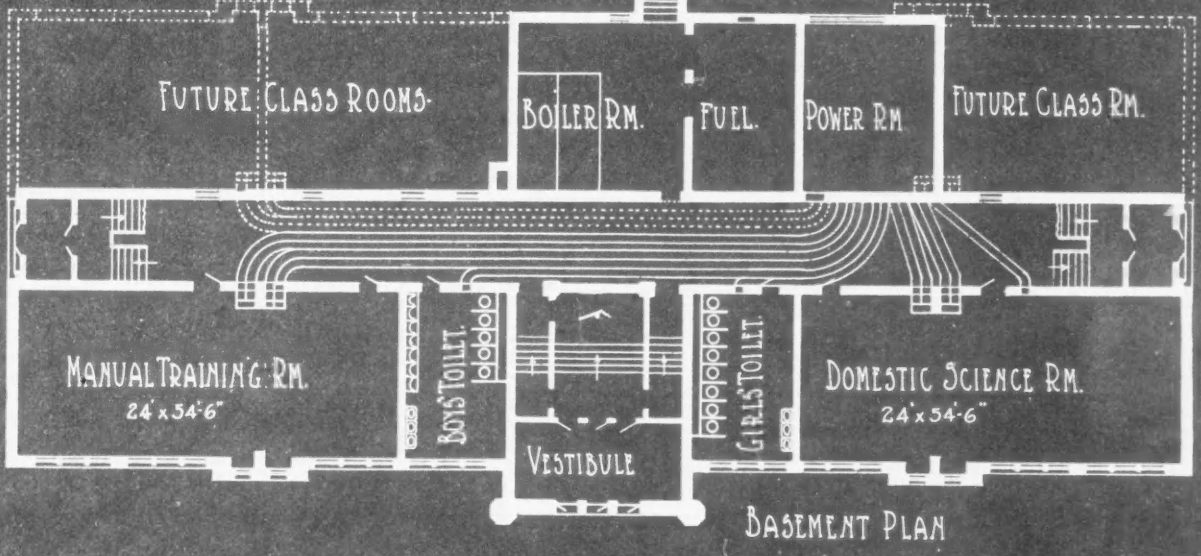
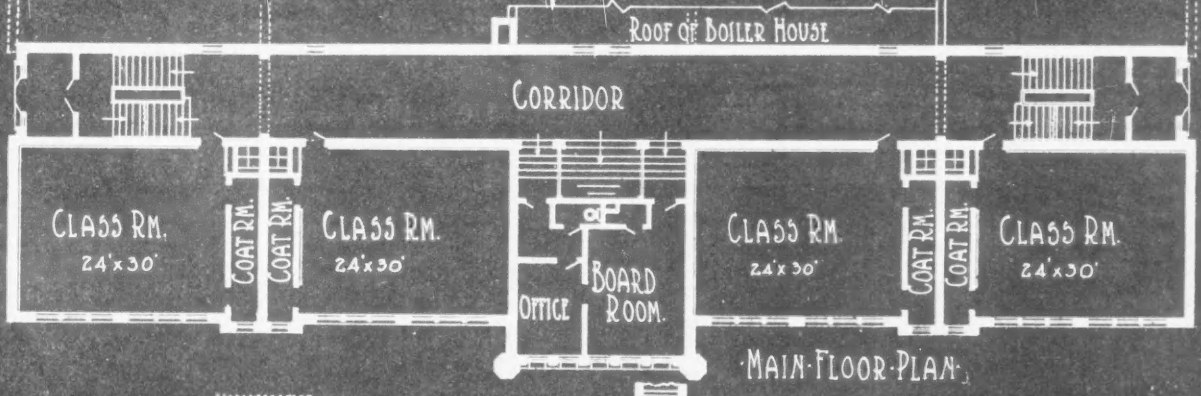
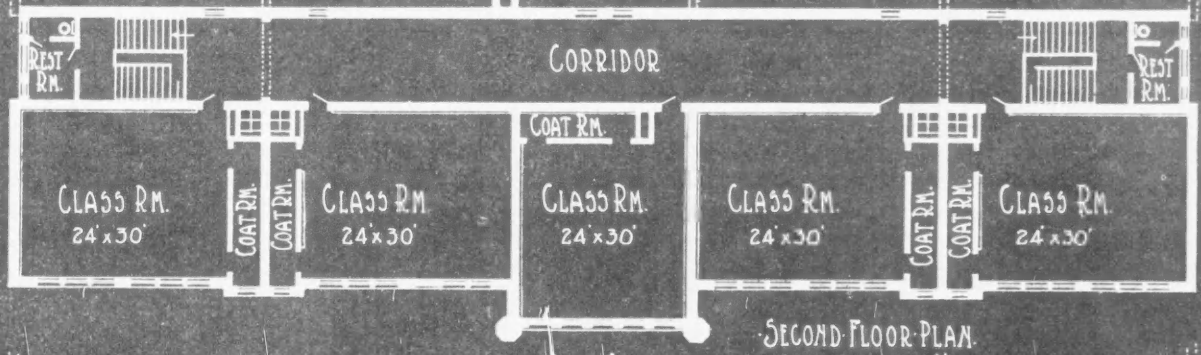
FRONT ELEVATION

MAIN FLOOR PLAN

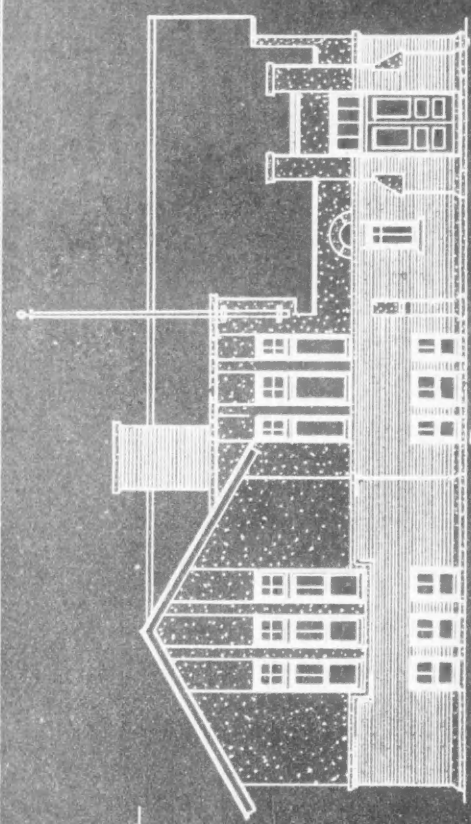
BASEMENT PLAN



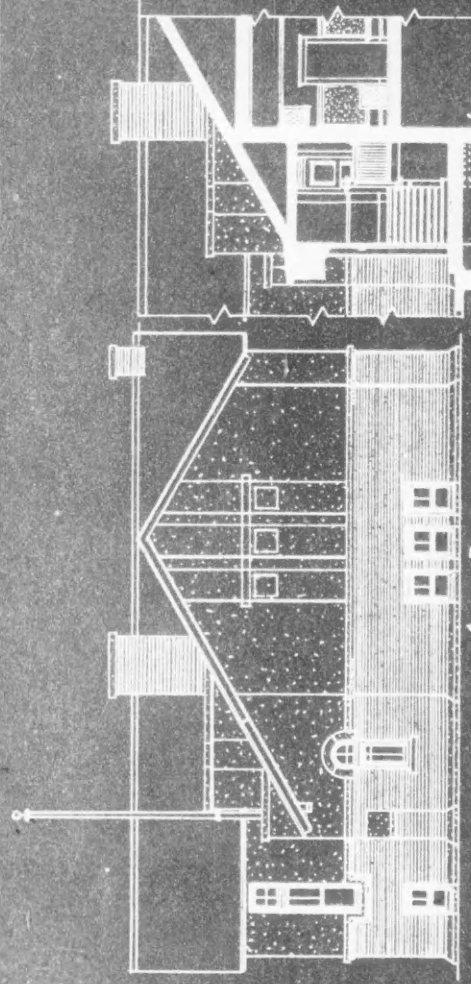
FRONT ELEVATION



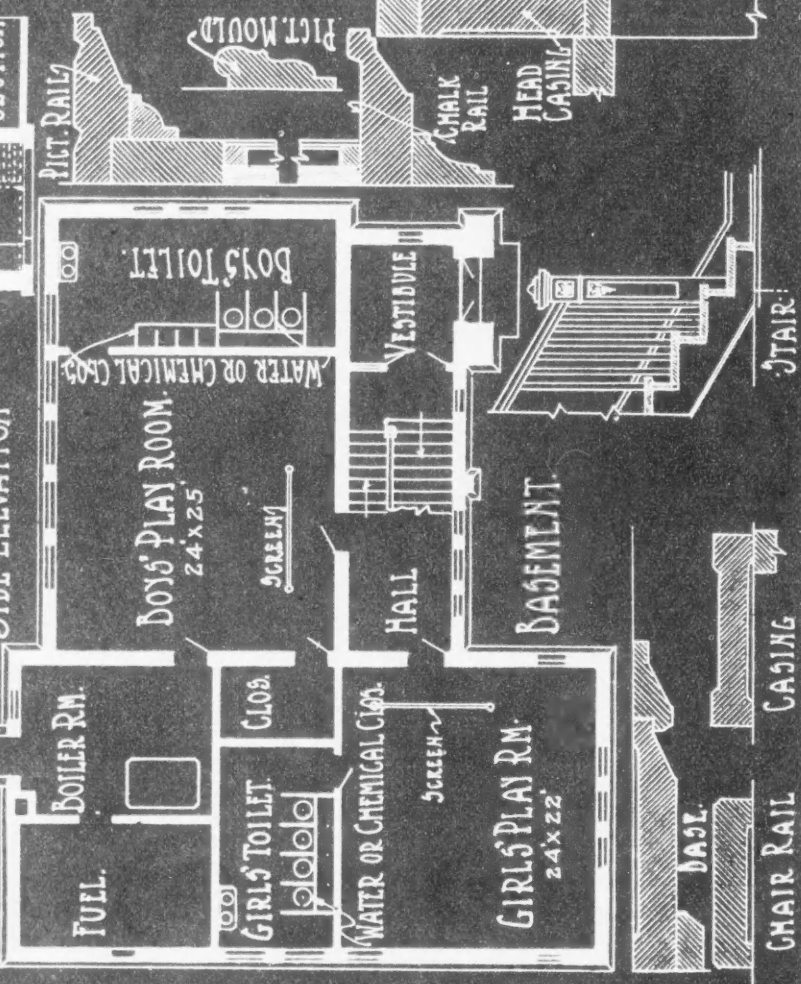
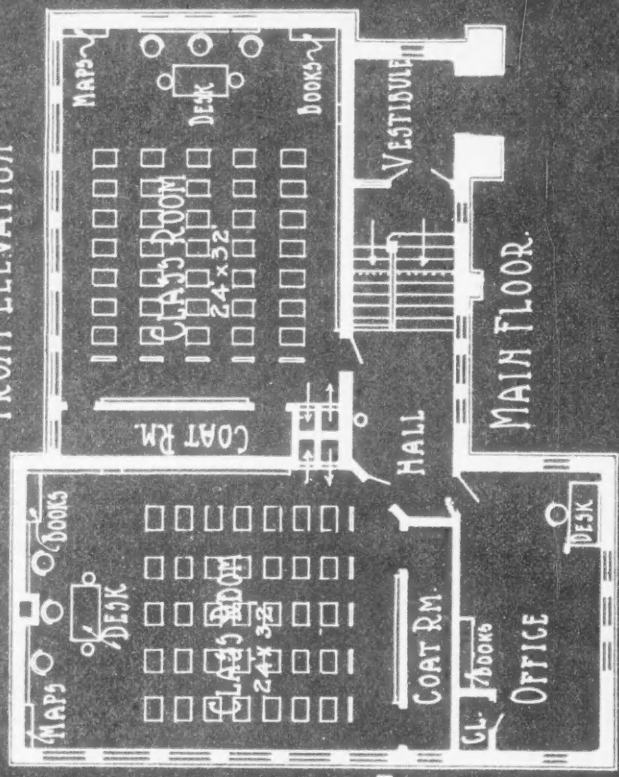
ELEVEN ROOM UNIT OF A TWENTY-FOUR ROOM SCHOOL BUILDING



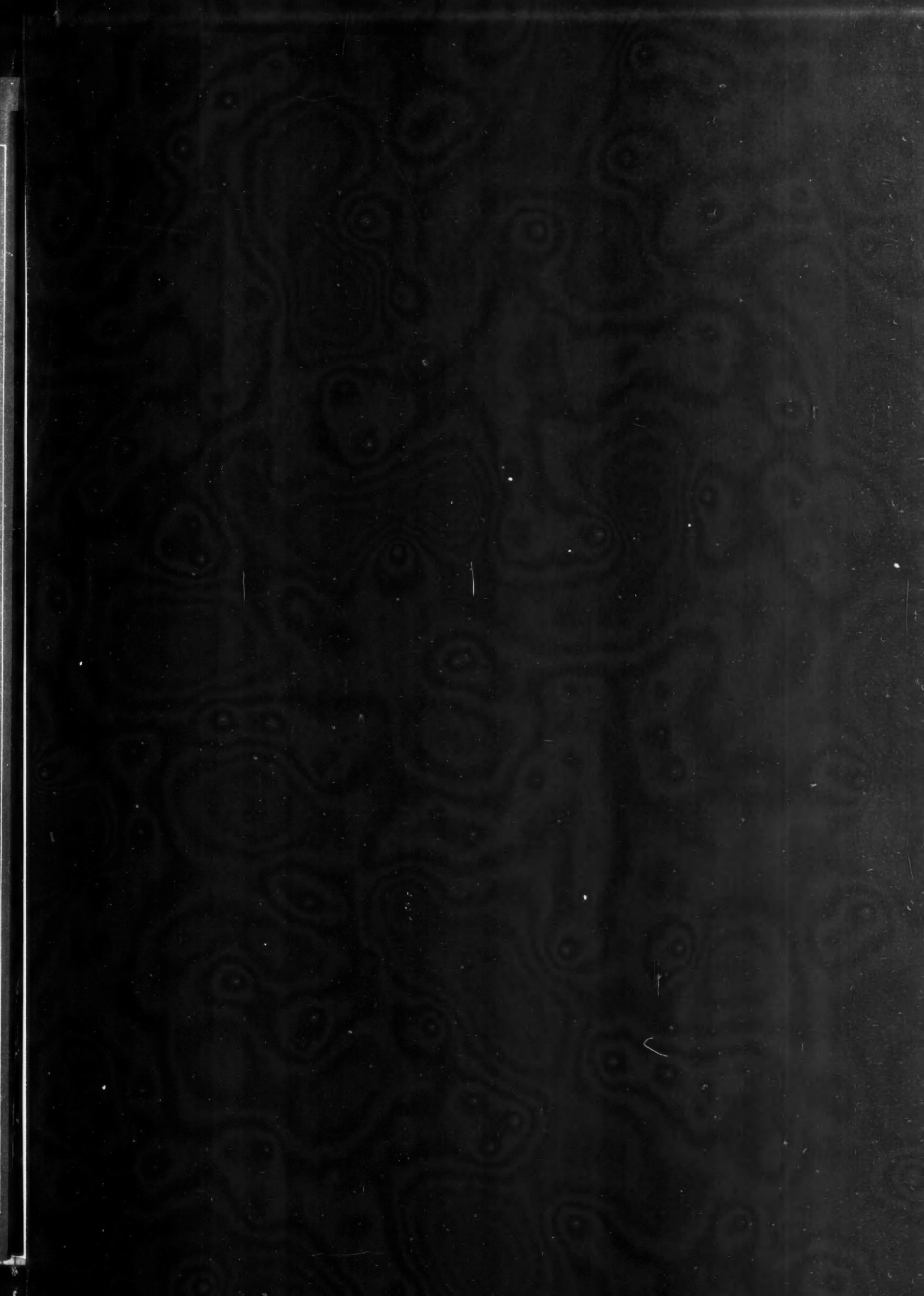
FRONT ELEVATION



SIDE ELEVATION



DESIGN OF A TWO ROOM
BRICK & STUCCO SCHOOL BUILDING



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\$100,000,000 for School Buildings

BUILDING INDUSTRY CALLED ON TO HELP WITH THESE PROJECTS—SOME SCHOOL BUILDING IDEAS OF EXPERTS

“THE nation-wide lack of public school accommodations, which is known to all, is one of the earliest problems that must be solved with others that belong to the reconstruction period.”

This statement of F. T. Miller, director of the Division of Public Works and Construction Development of the U. S. Department of Labor, is of particular interest to architects and contractors who do public school building.

Before coming to this conclusion, however, Mr. Miller made a survey of the building conditions of the country, with particular reference to the needs of school buildings.

“Contracts for 800 school buildings, totaling some \$80,000,000, have been held up as a result of the war, according to a partial tabulation of building conditions thruout the United States,” says Mr. Miller. “It is estimated that the completed tabulation will show that these school projects, now being held in abeyance, aggregate more than \$100,000,000.

“In round numbers, this is about \$1 per capita thruout the United States. As school buildings are customarily financed on twenty-year serial bonds, this means an installment payment of about 5 cents per capita per year for the people of the country, if they would have their school program put thru at the present time.

“Assuming that a decrease of 20 per cent in construction costs might develop during the next four or five years (and this is regarded by many as the maximum decrease), the immediate completion of the nation’s school program would involve an excess of only 1 cent per capita per year over the per capita cost, even if construction were delayed for several years.

“The educators of the country ask, shall the country have its schools now at 5 cents per capita per year, or delay having them four or five years in order to buy them at 4 cents per capita per year?”

Schools Our First Consideration

Everyone who has studied the American nature knows that “we want what we want when we want it” and will have it if we can get it, without taking into much consideration the cost. Free public education is one of the foundations of the progress in school building because the government needed the materials for a temporarily more important purpose—that of winning the war—have accentuated the need of greater school accommodations.

Therefore, it may be concluded that the government’s statement that “the nation-wide lack of public school accommodations will be one of the earliest problems solved” has a sound basis, in fact, and that construction work of this character will be one of the first that will engage the building industry.

Architects and contractors in every city, large and small and in the towns and villages now will be called on to help in this great work of school building construction—that is, the live ones will be. They will be asked for advice during the drafting of the preliminary plans and estimates that usually are made before the project is put up to the voters or submitted to the test of public opinion.

Advocating “better buildings” long has been a policy of the AMERICAN BUILDER. In this connection, the following coming from Herbert L. Patterson, C. E., engineer of the Boston School House Commission, an eminent authority on school house construction, bears on this point in such a way that his statement is useful in support of this phase of planning a new school building:

Cheap Buildings Not Economy

“The word economy, to my mind, is a much abused word, in that it is often taken to mean something cheap. Cheapness is not economy by any means. For instance, a second-class building is cheaper than one of first-class construction, but in the long run the first-class building is the more economical.



SPEEDING THE PARTING PEST!

—Harold Heaton in the School Board Journal.

From our experience in Boston, the repairs on a second-class building are over twice the amount of repairs on the first-class building."

Continuing, Mr. Patterson said:

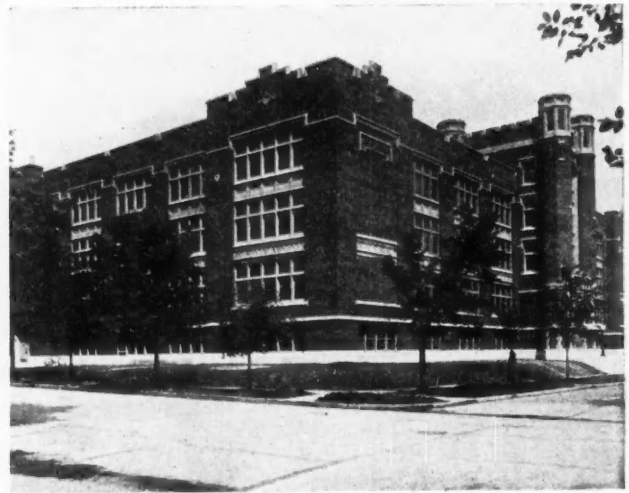
"In planning a school building, the official or officials in charge should, in order to best serve the interests of the city or town which they represent, be certain that the building is economically planned. Standardization of class rooms, assembly hall, gymnasias, corridors, teachers', nurses' and store rooms, boys' and girls' toilet rooms, etc., is brought about by the use of a minimum amount of floor space for which the room is intended and the minimum height in the clear. For instance, a seating plan of a class room will determine its minimum area. The various laws of city or state often determine the floor area required for each occupant of a class room or assembly hall. A rule which we have used with good success to check the floor area of plans submitted by architects may be briefly stated as follows: Multiply the area of one class room by the number of class rooms on a floor and multiply the product by two. This, we have found, will allow ample floor space for all special rooms, corridors, etc., needed in the building.

Compact Building is Advocated

"The architect should be made to plan a compact building. Corridors should be of minimum width. Too much stress cannot be laid on planning with the minimum amount of floor space allowed for each activity. Thus, not only is a saving made in the cost of building, but in the upkeep as well. See to it that the stairways are sufficient in number and that the exit doors are supplied with panic bolts. Smoke will follow stairwells and corridors and to overcome this we have an intercommunicating door between class rooms connecting with a stairway, which runs only to the first floor and which is separated from the

corridor by metal-covered doors. In other words, we have an interior fire escape system.

"Foundations should be carried down below the frost line and reach into good materials, such as stiff clay or hardpan, hard packed sand and gravel, or



The Mason City, Iowa, High School, Constructed of Tile and Brick. Cost, \$365,000. J. H. Felt & Co., Kansas City, Mo., Architects.

some other suitable material, far enough to obtain a good footing. Money can often be saved by investigating and allowing only the minimum amount of excavation, thus reducing the stone or concrete in the foundation.

"Concrete foundation is the most economical and, I think, the best, and should be carefully designed to carry the load upon it. Plums placed in the foundations below the grade make for saving. These should be of sizes proportioned to the walls. Well-cleaned plums, properly spaced, will give as good results as an all concrete wall.

"A study should be made of the different types of floor construction and the one that will come up to requirements and be the least expensive should be chosen. Among the types of floor construction we

have used in Boston are the following: A one-way system of reinforced concrete beams and tile fillers; steel beams with tile arches; a two-way system with special terra cotta channels to enclose the reinforced concrete beams and the mushroom system of concrete construction."

In Mr. Patterson's discussion of this type of school building there are many ideas, gained by long experience, that will be useful to the architect or builder who is a member of the local school board, or is called into consultation when the plans are discussed.



A Conservative and Economical School Building, the Central Grade and High School Building, North Chicago, Ill. Two stories and basement of stone and brick, with slate roof. Ashby, Ashby & Schulze, Chicago, architects.

12,000,000 Children Attend Country Schools

In considering school building, however, it must not be thought that the larger buildings in the city greatly overshadow those in the rural communities. Nearly three-fifths of the children in the United States, or about 12,000,000 of them, are attending schools in towns of less than 2,500 inhabitants. One-half of this number, or about 6,000,000 children, receive their first and frequently their only education in the one and two-room schools scattered thru the farming communities.

Thus, it will be seen, a great amount of this proposed school building is in the country.

A comparatively new mental attitude toward the rural school and its functions and the progress in building and in building equipment have changed the character of what has been a feature of American country life—the “district school house.” The poorly constructed, poorly equipped shack that house the farmers’ children no longer is tolerated. These buildings, as well as their city brothers, must be constructed in the most approved, modern way. The district school, with its wood and coal-burning stove, its lack of ventilation or too great ventilation, its windows arranged without regard for proper illumination, and, finally, that country-school abomination, the open-vault outhouse, has been replaced by a neat, properly ventilated and equipped building, where the children not only receive their education amid healthful surroundings, but where community spirit and social betterment go hand in hand with the intellectual development of the children.

Illumination and Equipment

Regarding the arrangement of the illumination and equipment with regard to the eyes of the children, Creighton Barker, M. D., of the Bureau of Municipal Research, New York City, in discussing the “Small Country School House,” recently said:

“The subject of illumination is highly technical, and the practical application of principles involved, in so far as daylight illumination is concerned, is not easy, due to the absence of working standards. Recently, however, certain requirements for the daylight illumination of class rooms have been deduced. The object of these requirements are:

“To insure a maximum of light from the right direction.

“To insure a maximum diffusion with its avoidance of objectionable glare.

“To make suitable provision for the regulation of light by increas-



Houston School, Caldwell, Idaho, Erected by W. A. McGee & Son, of Specially Designed Buff and Brown Rough Faced Concrete Brick.

ing or diminishing the amount admitted, as necessity may demand.

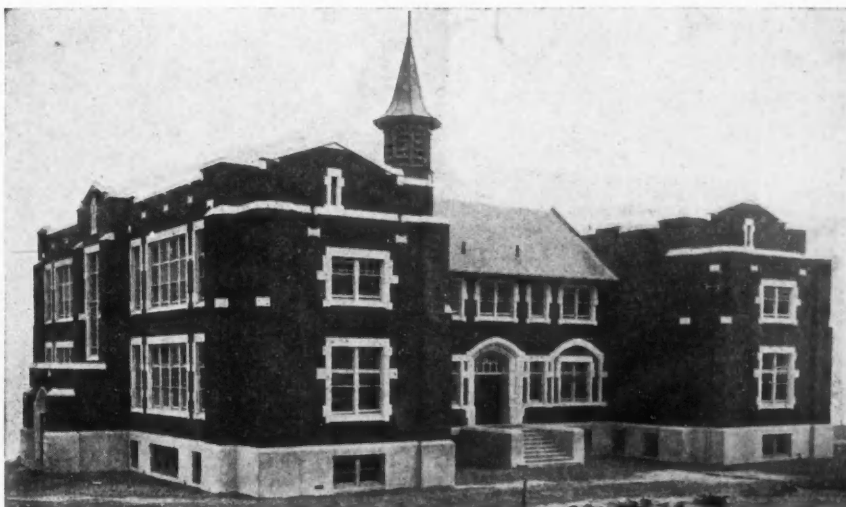
“The most widely accepted standard is the one which requires the glass area of the class room windows to be not less than one-fifth or one-sixth of the floor space of the class room.”

In this connection, Dr. Barker discussed blackboards. Regarding them he said:

“Blackboards are an essential for class room instruction and careful attention should be given to their construction, with consideration as to their distance from the floor level and their location in relation to the windows.”

Discussing heating the country school house, Dr. Barker advocated the use of the jacketed stove. However, it now is pretty generally recognized that the special school heaters, which are improvements over the jacketed stove, come nearest to being the ideal country school heater. They are equipped so that the fresh air is drawn into the building from outdoors and the foul air carried out.

(Continued to page 156.)



West Point Grey School Building, Vancouver, B. C. Twizel & Twizel, Architects. British Columbia Granitoid & Contracting, Limited., Builders. Stonework by Monarch Art Stone, Limited, Brick and Artificial Stone. One Thousand Four Hundred Cubic Feet of Stonework Made in Special Molds and Finished with Surface Driven Vertically, Six Cuts to the Inch.

Are You Ready, Mr. Contractor?

DO YOU KNOW OF THE GREAT PROGRESS IN EQUIPMENT AND METHODS THAT WILL ENABLE YOU TO MEET THE COMING ENORMOUS DEMAND FOR BUILDING?

Once upon a time there was a man engaged on an important piece of work.

He had planned it with care and was ready to start.

Then something happened.

Another job came up.

It was more, exceedingly more, important than the one on which he was engaged.

The first could wait; the second could not.

Naturally, he dropped the first, went at the second with all the resources at his command and finished it; in fact, made a good job of it.

This done, he again turned his attention to the thing he had been forced to abandon temporarily.

However, since he had left it, he found, it had become more and more important.

But he buckled down to the job and again brought all of his resources into action so that he might complete it rapidly.

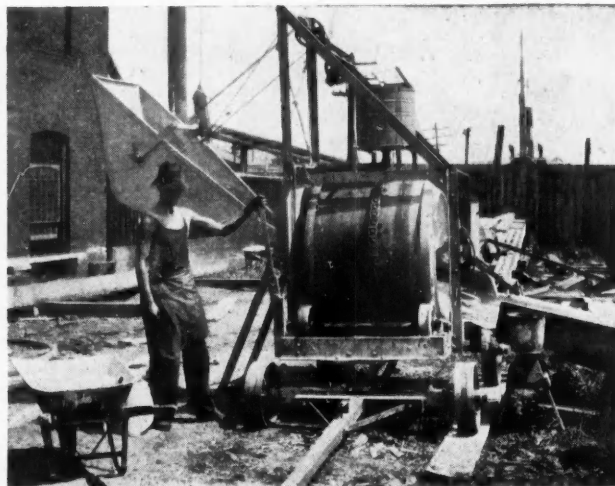
THE man in this fable is the building industry; the big job finished was winning the war; the resources employed were the labor, the materials and the equipment that have made modern building operations possible and efficient; the task at hand is the building that had to be temporarily abandoned at the beginning of the war.

It has been said, and rightly so, that the building industry of the United States faces the era of its greatest activity and prosperity. This statement was based on an estimate that building to cost \$1,000,000,000 is needed at once to put all branches of the country's commercial and agricultural activity in a

position to meet the demand to be made on them.

Far-Reaching Building Plans

However, just a casual consideration of the building plans that have been launched during the last two months would lead to the belief that the billion-dollar



A Mix a Minute Was the Speed of This Concrete Mixer During the Building of the Government Shipbuilding Yards at Philadelphia. Government Tests Proved That This Speed Was Good Engineering Practice.

estimate is far too low. Here are some of the items that have been reported by the newspapers:

School houses to cost \$100,000,000 had been planned, but were temporarily dropped when the war started. This statement was made by the U. S. Department of Labor.

Improved and new roads are contemplated for this year in the various states to cost more than \$150,000,000. This statement is based on data gathered by G. A. Kissel, president of the Kissel Motor Car Company. Mr. Kissel estimates that 50,000 miles of roads, to cost around \$1,000,000,000, are included in the good roads program of the country and will be built during the next five years.

These are only two of the activities of the building industry, but the figures given indicate what will be done in the building line during the next few years.

Consider the immense number of houses that are needed for the workers of the country; the business buildings, manufacturing plants and the farm buildings that

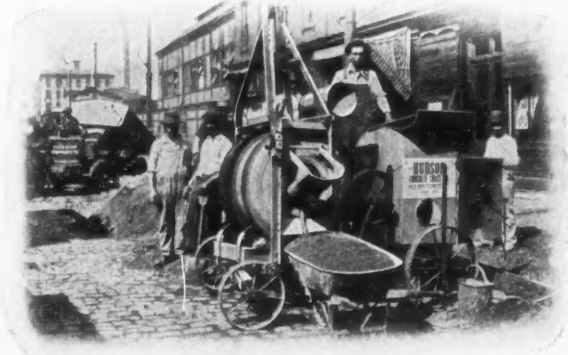


Cut-Off Saws and Portable Outfit Used by the A. Bentley & Sons Co. on Construction Work at Camp Sherman, Chillicothe, Ohio. This Equipment Transferred Part of the Woodworking Shop to the Job.

will be required to catch up with the country's normal building program.

Surely, contractors, material dealers and manufacturers and the makers of contractors' equipment never before had better times just ahead of them.

Are the contractors and builders going to meet the demands that will be made on them in the most profit-



The Hudson Concrete Co., Jersey City, N. J., Laying Curb and Sidewalk at Pennsylvania Station with the Aid of a Concrete Mixer.

able way? Are they going to profit by the experiences they gained while doing war work when they resume their normal activities?

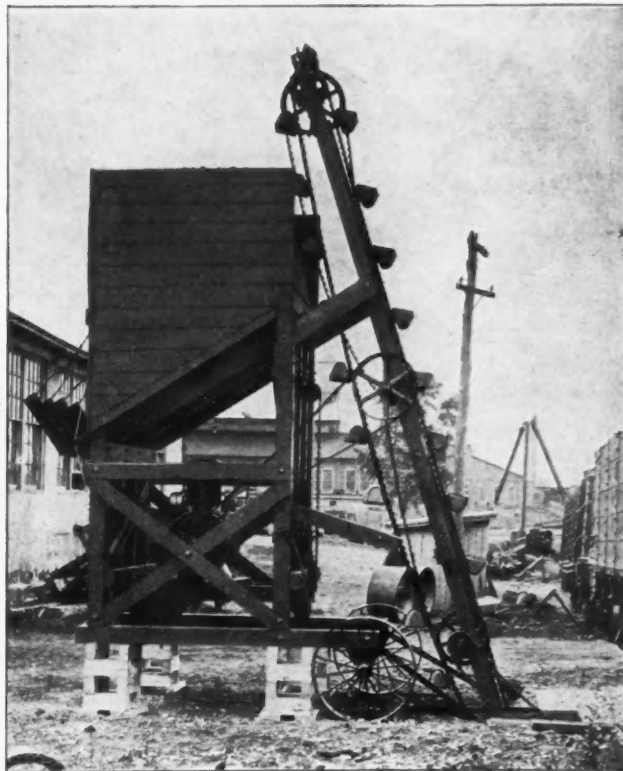
They certainly are!

The Changes the War Brought

Peace-time necessity is the mother of invention. War-time necessity has been both the mother and father of invention. During the more than four years of the conflict in Europe, the world learned a lot of things that had not been known before. And the leaders in this progress have been the American builders—the men who did the things that had not been thought possible.

But how far would these Americans, who went to France and "astonished the neighbors" with their accomplishments, have gone had it not been for American machinery and American labor? Construction back of the war zone and reconstruction in the devastated districts did as much to bring the war to a quick and successful conclusion as the shells, bullets, gas and the other machinery of war.

To accomplish this many new methods and much new equipment were devised. These methods and this new and improved equipment are now available for the construction period in this country. And they will be used, because no matter what the job is the American lives up to the last part of his name, "I can."



This Unloader Is Set Up at the Railroad Track and Quickly Gets Building Materials from the Cars Into the Motor Trucks or Wagons.

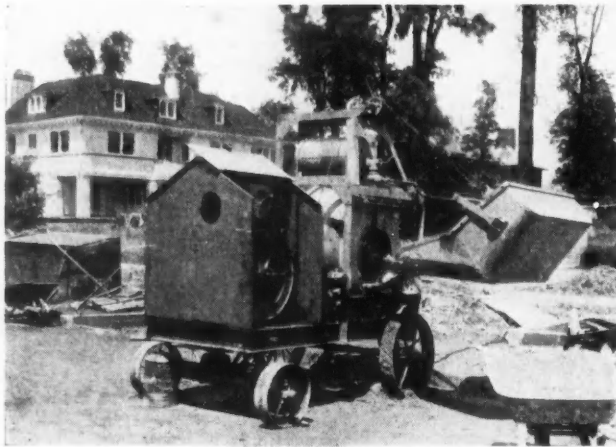
When the railroads of the country fell down before the problem of transport, the American auto truck said "I can do it," and did.

When General Pershing wanted a concrete dock and pier at disembarkation port in France, American cement and American concrete mixers, hoisting devices and gasoline engines chorused, "I can do it," and did.

That same "I can" spirit and ability now is present



O. A. Hough, Pekin, N. D., Turns Out a Lot of Work in His Shop. The Saw Bench Is One of the Reasons He Is Able to do It.



Finishing Up the Job. This Mixer Worked Continuously While the House Was Being Built and Then Supplied the Concrete for Curbs and Walks.

in the building industry to a greater degree, even, than before the war.

Building Industry Alert

No matter what the building needs of the country will demand, that demand will be met.



Cline & Boelens, Grand Haven, Mich., Contractors, Laid 600 Yards of Paving with This Mixer and a Crew of Eight Men.

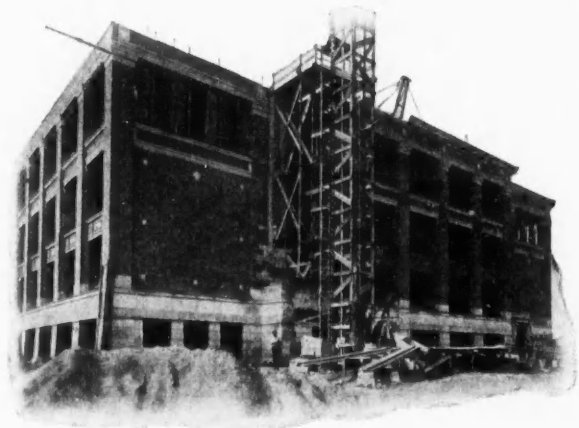
However, it will only be met by the contractors and builders getting up to date as to methods and equipment, especially in the latter, as great strides have been made in them during the war.

Those old catalogs of concrete mixers, saw rigs, gas engines and motor trucks will not tell of the changes that have been made in some of them during the last two years. But new ones will.

And any contractor who has seen the new ones will vouch for the statement that this equipment, so necessary to efficient and economical building operations,

has made wonderful strides. It has been thru the furnace. Some come out unscathed; others have been improved where improvements made them more efficient, while experience brought about some that are new.

Old methods, slow and costly, must give way to the new ones. No longer is the farmer satisfied with an old type of barn; he wants one that will make his work lighter and his livestock more comfortable and productive. No longer will the manufacturer consider



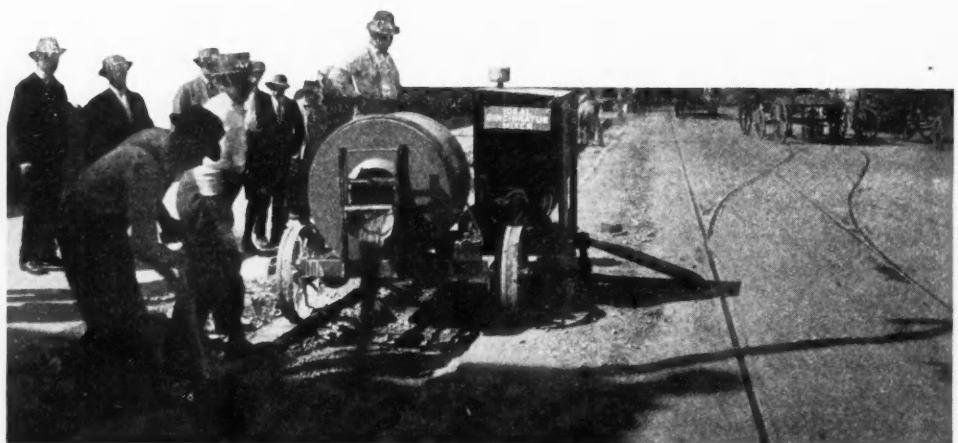
Robert S. Rathburn, Carnegie, Pa., Mixes Material for Floors in the Mixer Placed Close to Elevator.

the old type of factory; he wants a building that is planned so that the operations can be performed with the greatest ease, a structure modern in every respect. The man who plans a house wants it built and equipped in the most up-to-date way.

And to the contractor who keeps up with the progress in the building industry will the bulk of this vast amount of work go.

Profits in a Concrete Mixer

Several years ago the AMERICAN BUILDER learned to its satisfaction that the concrete mixer is one of



This Concrete Mixer Is A-straddle a Trench in Cincinnati and Is Putting in Concrete to Replace the Paving Base After a High Pressure Fire Water System Had Been Installed. The Machine Is Mounted on Two Wheels, Is Light and Only Required Three Men to do the Work. Five Miles of This Trench Were Filled.

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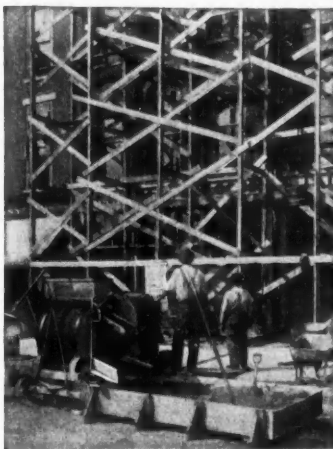
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the pieces of equipment that has done great things for the smaller builder. From its large family of readers it was discovered that the addition of a power mixer to the builder's equipment had been the basis of the success of many prosperous contractors. Since that time there have been added many new members to the AMERICAN BUILDER family, and for their benefit some of the facts secured from the older contractors are here given.

Nine out of ten building contractors are or were carpenters. The nature of the carpenter's work on a building job brings him into close touch with all phases of building. Not only does he put up the



Pumping Outfit Taking Water from the Kalamazoo River, Near Battle Creek, Mich., and Delivering It to a Concrete Mixer on a Road Job Two Miles Away.



A. B. Ballard, Shelbyville, Ind., Mixes and Hoists Mortar with the Same Machine.

framework, but he starts by building the forms for the concrete work. If it be of stone or brick walls, the carpenter erects the scaffolding for the masons. The roofer cannot work until the carpenter does his part; neither can the plasterer.

This general knowledge of modern construction, coupled with the carpenter's science,

The addition of a concrete block machine to the mixer opens up great possibilities for the builder, whether he be in the city or country. There is a growing demand among farmers for "concrete for permanence" in their buildings. Concrete foundations for the barns, cribs, granaries, hog house and other farm buildings are specified in almost all modern plans. This work the mixer does. But added to that are stock barns and silos, feeding floors, root cellars, ice houses and last, but not least, that farm necessity, the garage, all constructed of concrete blocks.

The builder with the equipment is the man who gets these jobs.

(Continued to page 168.)

has been the reason why carpenters have gone in for general building contracting.

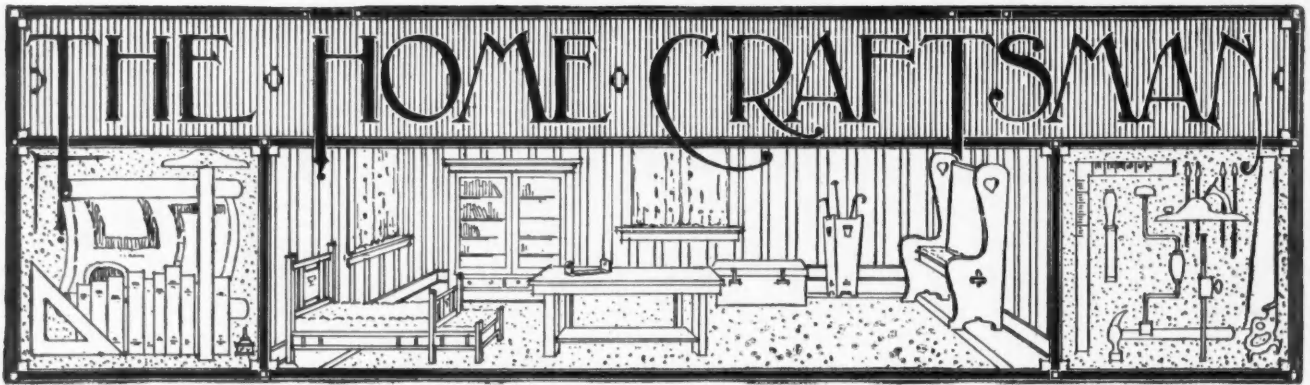
And no small part of the success of these progressive men is attributed by them to the concrete mixer, which is now made in sizes and at prices that fit in with the needs of all contractors.

With a concrete mixer the carpenter-contractor does not have to sublet the foundation work and thereby hand over some of his profits to another; he is equipped to do and take all sorts of jobs, even to plaster, as the mixer prepares plaster as well as concrete.

"Thanks to my concrete mixer, I have been very successful," was one contractor's terse explanation of his prosperity.



The J. R. Vansant Construction Company Found This Concrete Mixer Did a Large Part of the Work in Erecting the Worthman Office Building, at Kansas City.

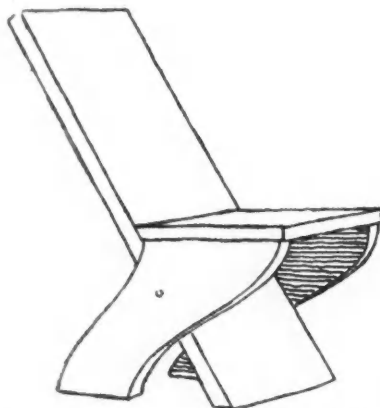


Knock Down Furniture and How to Make It

By W. S. Davenport

THIS suggestion to the professional readers of this periodical for the introduction of a new sort of furniture comes from an amateur and is offered as an outline only, not as a worked out plan.

If an average American were given a few common tools, some nails, screws and bolts and a pile of lumber sawed into all possible cross-sections, he could put together the necessary articles of furniture to furnish a summer camp, tent house or log cabin. The furniture would have a certain definite style if he used only the ordinary tools such as a handsaw, bitstock,



Four Pieces of Board Turned Into a Chair.

hammer, screwdriver and wrench.

It would not be cabinet-making, but carpentry work. His bedstead would be made of four upright pieces of joist to which horizontal pieces of boards and joists would be bolted. This bedstead would

have a certain aesthetic value, because it would be in harmony with the elemental simplicity of the house. It would be cheap, strong, easy to take apart and move, and it would be more attractive in looks than a cheap iron bedstead of the folding class.

Homemade furniture of this kind is now made of boards, boxes, barrels, etc., but the average American has not got that pile of lumber of all possible cross-sections. The manufacturer would supply it. He would get out the pieces to the right length and size, wire them together, tie on the necessary hardware, and this bundle could be shipped by freight at a low cost for carriage, materials and work. The only tools needed to put it together are hammer, screwdriver and wrench.

The machines to get it out, if necessary, could be limited to circular saw and boring machine. Bolts and

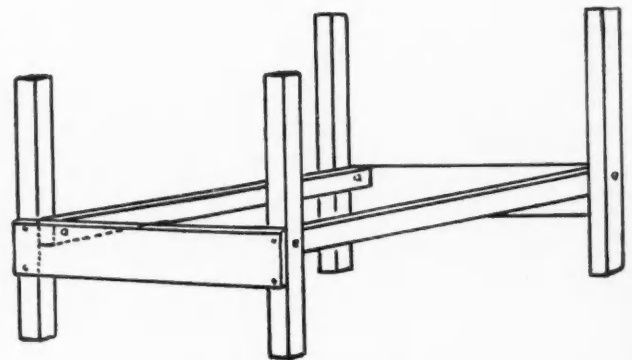
screws would replace mortises and tenons and glue. The furniture of this class would not compete with the usual sort, very seriously, but would be an addition to it, a temporary make-shift for the informal vacation camp, or for the home of the young working man who marries on little capital and will furnish his home later on. At present these men can get at the five-cent store the utensils necessary for the kitchen, but they have no similar cheap furniture for the house.



Tin Cracker Box Lines the Simple Ice Chest.

If this new type were standardized in dimensions, special metal connecting pieces of wrought iron could be manufactured to replace the usual joining. There are things made for other purposes that could be used. For instance, the wood necessary to put a box together to hold a common cracker can could be shipped without the can (which is to be had everywhere). Packed in sawdust this makes a good icebox for a ten-cent piece of ice. It will not hold food, but with ice to cool drinking water and harden butter one can get along. Ice is now kept in a towel in a washtub by those who have no ice chest. Standard sizes of glass can be used for mirrors, picture-framing and table tops.

(Continued to page 154.)



Bedstead of Joists and Boards.

The Story of Cradock, Virginia

HOW THE UNITED STATES HOUSING CORPORATION IS HANDLING ITS JOB OF CITY BUILDING

By Raymond Schenck

YESTERDAY a quiet rural spot; today a center of hustling and systematic construction; tomorrow a model city wherein 5,000 or more people will be comfortably housed. Briefly, this is what is being done down in Virginia, near the Portsmouth Navy Yard, where the wonderful city of Cradock has sprung up almost overnight to meet the terrific demand for housing which the gigantic task of supplying the sinews of war created. The combined efforts of, and the most efficient co-operation between the United States Housing Corporation, which is in charge of the entire project, and the Hegeman-Harris Company of New York City, the contracting firm, is accomplishing the enormous task of converting cornfield and forests into a modern city.

Congestion Increased Rapidly

The important work in connection with Army and Navy requirements near Norfolk and Portsmouth caused an influx into the district, between May 1, 1917, and January 1, 1918, of 20,000 persons. The United States Navy Yard the Naval Operating Base at Hampton Roads and the United States Magazine comprise the naval activities while those of the Army con-

sist on the Pig Point Ordnance Stores, Tanners Creek General Stores, Engineers' Depot at Norfolk and the Norfolk & Western Railroad Pier.

Remarkable Facts Pertaining to the Work at Cradock

(Observed December 11th and 12th, 1918)

A tract covering 450 acres.

Twelve hundred men at work on houses and utilities.

Temporary barracks and canteen for white workers.

Cafeteria Mess Hall, serving over two thousand meals a day. At lunch for example, on December 12th, seven hundred men served in 17 minutes.

Separate barracks, canteen and Mess Hall for colored workers.

Welfare office: Records of all men on job. First aid to injured.

Three miles of railroad, delivering material practically on the spot where it is needed.

Average of 30 freight cars of material received daily (as many as 58 have been received in one day).

Ten million feet of lumber has been delivered to job to date—enough material for 1,000 houses.

Central concrete mixer furnishing 250 cubic yards of concrete per day—enough for 25 house foundations.

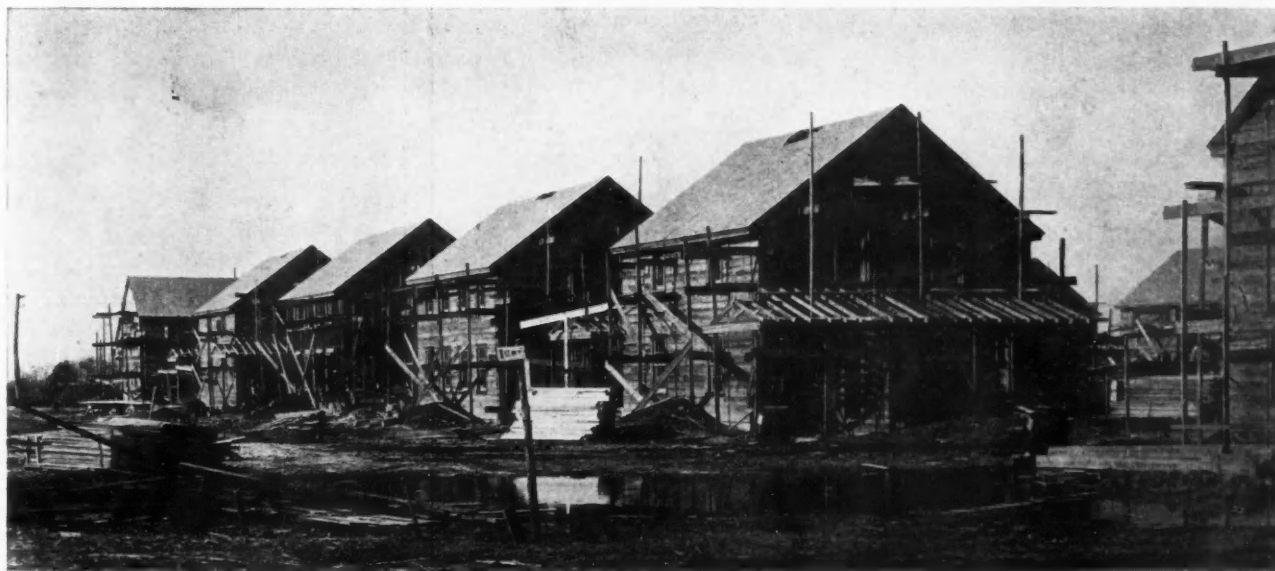
Tractor drawing dump carts of mixed concrete. Each tractor as effective as several teams of horses.

Saw mill cutting material for 12 to 15 houses per day.

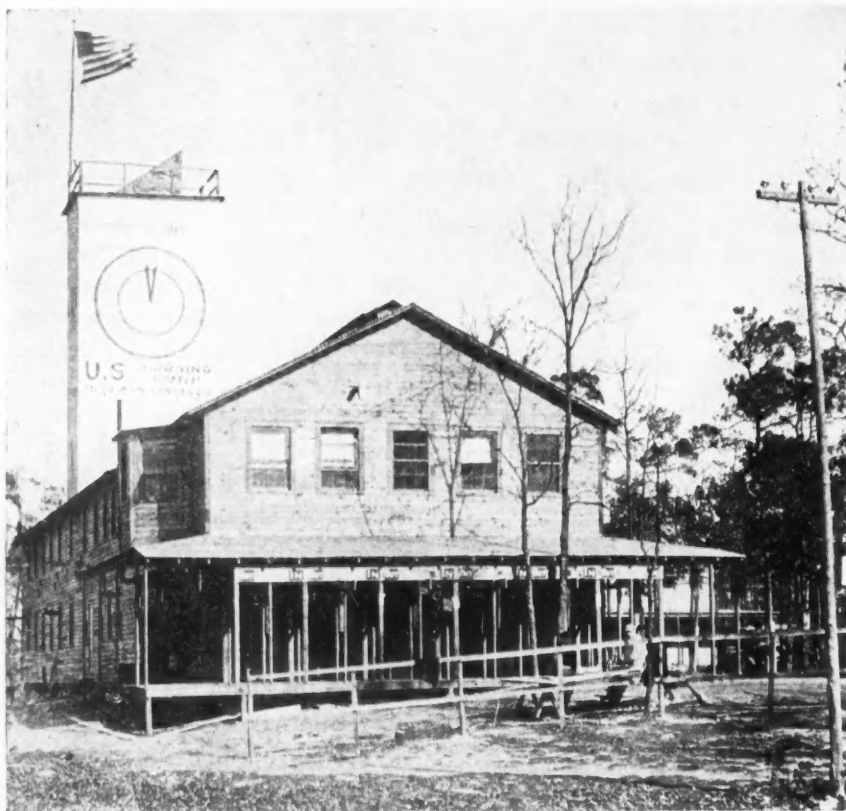
At work on 463 houses.

The estimated permanent post-war requirements of the Army and Navy in this vicinity, made at the time of the preliminary investigation in January, 1918, showed that a large percentage of the housing should be of a permanent nature. Thus, it may be said that the need of housing in this locality is as necessary in peace as in war times. One phase of the situation, pointing towards the probable necessity of further construction in the future, is that both the workers who are required permanently and the occupants of houses who patriotically have placed their vacant rooms at the disposal of the workers undoubtedly will become weary of the inconvenience that they cheerfully have experienced during the strenuous war times. So, while the present period is one of reaction, it will be of interest to note the future demands for housing in this district when all of the industries there have been adjusted to peace requirements.

The site of Cradock, a tract of farmland with an area of 450 acres, was selected with the approval of



Yesterday—Cornfields and Forests; Today—Houses Everywhere. U. S. Housing Corp., Norfolk (Cradock), Va.



The Progress Clock Helped to Build the City on Schedule Time.

Admiral F. R. Harris, who is in charge of Naval Housing operations in this district. It is watered by Paradise Creek, and is served, in a transportation way, by the Virginian Railroad and the Gilmerton branch of the Virginia Railway & Power Company.

A Project of Exceptional Interest

Housing experts all over the country are watching the development of this plan with the keenest interest, because Cradock is not a mere jumble of houses, but a permanent city of substantial construction. The people of Norfolk, Portsmouth and other cities and towns of this district will be especially interested in the speedy completion of this project because it will bring to life a civic neighbor which, before it begins to exist,

war needs. At Cradock there are fifty distinct designs of houses, single and double, ranging in size from four to eight rooms,—for the most part six rooms. Each will be a well appointed substantial home with all modern conveniences. Each will have a lot ranging from 30 by 100 feet to 120 feet according to the size of the house. There will be 609 of these houses when the entire project is completed. (A nearby but separate development consisting of 250 houses for colored workers is known as Truxton).

Eminent architects and city planners, working under the direction of president, Otto M. Eidlitz, of the United States Housing Corporation, have planned this city, and experts who have seen the plans agree that when completed Cradock will indeed be a model city.

one may say, has a national reputation as a model city.

Quite apart from the future possibilities of Cradock as a city, the people of this district are vitally interested in its success because, as it progresses, it will relieve the housing congestion which has taxed the combined capacities of the entire district for a long time.

The Work of Highly Trained Specialists

We may take pride in the fact that the men who heretofore have been known by their devotion to the importance of attaining the beautiful in their buildings have shown that they are ready to adapt their art and experience to purely practical ends, and in the planning of our war housing, they have fully justified to the world their thorough training as architects. So, then, we do not find long monotonous "rows" of houses in the developments planned and built to meet



Caterpillar Tractors Carry Concrete Over a 450-Acre Site—Note Agitator in Mixed Concrete Vat to Prevent Settling of Concrete.

Utility and convenience have been the principal considerations in the planning of the city, but civic beauty and provisions for the comfort and entertainment of its citizens, young and old, have entered closely into the general plan.

The plans for Cradock were prepared by George B. Post & Sons, of New York, one of the leading architectural and city planning organizations of the country. The engineering work was done by Hill & Ferguson, of New York. The entire construction work is being done by the Hegeman-Harris Company, Inc., general contractors, of New York. John W. Harris is in active charge of the work.

Work Commenced

Engineering work on the site of Cradock was begun on August 7, 1918. The grounds were plotted; lots were laid out; parks, playgrounds, town squares and a community green were provided, and a boulevard system encircling the city, which will connect with broad parkways running thru the center of the city. Residence streets will be 50 feet, all curbed and drained. Thirty-inch sewer pipes run thru the city and 16-inch water mains, connected with the Portsmouth water pumping station, will provide abundant water. Fire plugs at every street intersection will give fire protection.



Dinner: 2,000 Meals per Day Are Served in This Mess Hall.

New Problems

The problem that faced the Hegeman-Harris Company was a new one in the contracting "game." That the plan of operations, worked out by their department heads, is successful is apparent to one making a tour around the project. So vast is the enterprise that the writer spent two days going over it, on foot, in motor cars and on horseback. The last mentioned method is used extensively by superintendents and foremen to expedite their work.

Before any work was started the contractors prepared careful plans of operations which have been

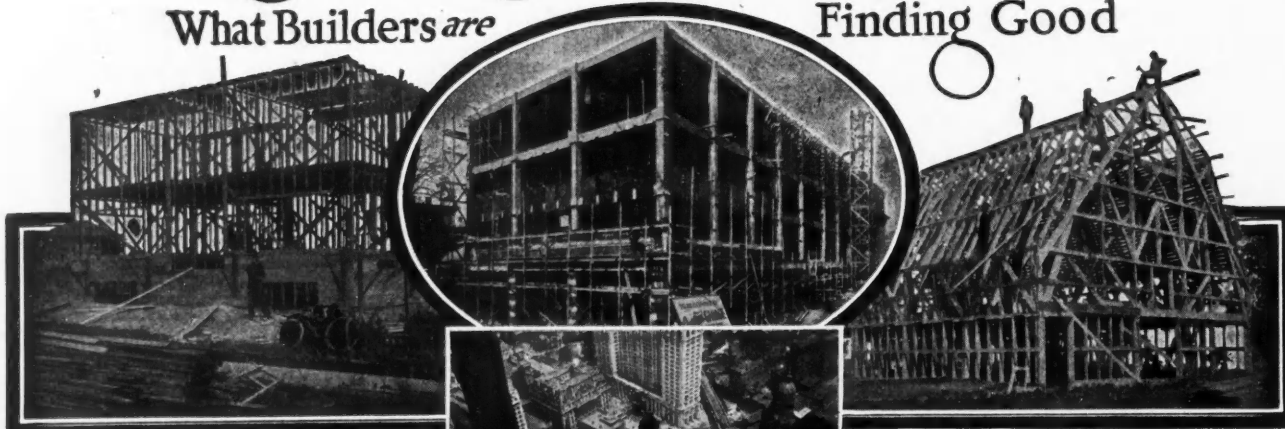
(Continued to page 158.)



An Offspring of the Fighting Tank Breaking Ground for a New City.

OUT ON THE JOB

What Builders are Finding Good



EDITOR'S NOTE: The American Builder does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or

seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address American Builder Information Exchange, 1827 Prairie Ave., Chicago.

Slate Blackboards, 55 Years Old, Still on the Job

When the Central High School, Philadelphia, was erected in 1853, the blackboards installed were of wood—pine, painted. No other kind was known in those days.



Central High School, Philadelphia, Where Slate Blackboards Have Been in Service Fifty-five Years and Are as Smooth as Ever.

But ten years later, in 1863, there had come on the market slate blackboards, and the old wooden ones were replaced with this material. Those same slate blackboards are doing service in the Central High School today. Fifty-five years is a considerable span of time, but they are there and are still as smooth as ever.

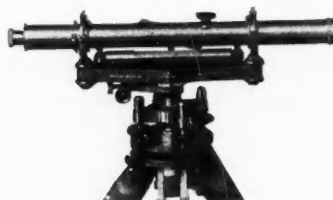
The manufacturers of these slate blackboards desired a photograph of the Central High School and the blackboards. Charles R. Pancoast, a Philadelphia photographer, was given the commission to take the pictures. He writes: "The making of these pictures was of particular interest to me from the fact that I am a graduate of the Central High School, 61st class, graduating in 1873. The blackboards I photographed are the identical ones on which I 'did sums' 46 years ago, and seem to be easily good for another 46, or even more years."

The Central High School, despite its 65 years of age, is of brick construction and is in good condition. Perhaps it will continue to be used for another 50 years. But it seems more certain that the blackboards will

outlast the building. Maybe they will be installed in the new school building that sometime is bound to replace the Central.

Contractors' Improved Wye Level

During the year just closed, an engineers' and contractors' wye level having a number of new and improved features has

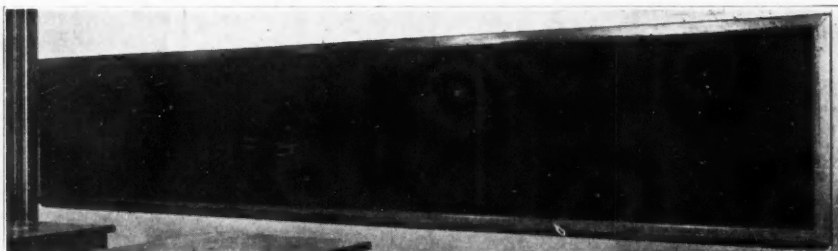


Improved Wye Level for the Builder.

been brought out. In the construction of this instrument, a hardened steel center is fitted in a socket of annealed iron, and is secured to a heavily ribbed level bar of hard bronze. Replaceable bushings are provided in which the leveling screws are fitted, the complete leveling head being so designed as to insure an absolutely non-cramping center.

The telescope is set low in the wyes, and the entire instrument extremely rigid, well-balanced and most efficient in use. The reflecting mirror shown in the illustration may be instantly detached or used on either the right or left side of instrument as desired. By means of a special lens combination, a minimum focal range of telescope of about seven feet has been obtained, without sacrificing its unusually clear and brilliant field of view on long range.

Suitable dust guards for focussing slide and eyepiece are provided, and the bearing surfaces of the telescope are of



For More Than Half a Century, Students at the Central High School, Philadelphia, Have Used This Slate Blackboard. It Appears Capable of Finishing a Century of Usefulness.

hardest bell metal. A new type of lock screw for securing the wye clips is used. The clamp and tangent screws rotate with the bar, and are always in the same relative position to the operator. Suitable adjustment is provided on the tangent screw socket for taking up wear.



Great Year for Silo Builders

The government's guarantee to farmers that they will receive \$2.24 per bushel for their wheat crop in 1919, no matter what the market price is, will undoubtedly cause farmers everywhere to put every available acre into wheat. This, it is predicted will cause a shortage of food crops for the livestock.

Under these conditions the AMERICAN BUILDER'S slogan, "A silo for every farm," will be especially appropriate this



Vitrified Tile Silo on the Farm of J. M. Preston, Washington, Mich.

year, because every pound of live stock food must be conserved.

While few new barns are erected without a silo or two adjoining it, there are many thousands of farms that are siloless, and there is a great chance for those builders who handle farm work to get silo building jobs this year.

Every farmer now knows that a silo provides his cows with fresh, succulent food thruout the winter, and that with this kind of food they will be more productive. With a shortage of corn, every bit of fodder must be saved.

There are numerous types of silos to meet the needs and pocketbooks of the farmers. One of them is of tile. Here-with is illustrated a tile silo on the farm of J. M. Preston, Washington, Mich. A quality that has been found necessary in silo construction and is found in tile silos, is durability. They also are fire-proof, storm-proof, air-tight, structurally strong and non-conductive of heat, cold and moisture. Most of these qualities contribute to the big fundamental requirements that the silo preserve the silage for a reasonably long time without spoilage.

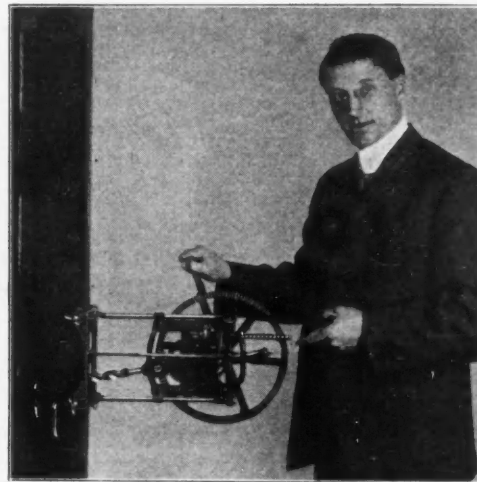
Builders also will be called on to erect many wooden silos this season. There are a number of manufacturers who make the fixtures for wooden silos and the staves are purchased from the local lumber dealer. The doors, lugs and anchoring devices are supplied to the builder to fit his specifications.

"A silo for every farm" will become a reality before many years have passed, and in the meantime the builders in the rural districts will create some good jobs by talking this feature of farm building.

Makes a Mortise in Four Minutes

Making a mortise by hand has always been a slow job, as every carpenter knows. It means shifting from a brace and bit to a chisel and back again. However, modern inventive genius has produced a machine that will do this sort of handwork quickly and easily.

The accompanying illustration shows the machine making a mortise in a door, to which it is clamped. The operator merely turns the handle and the mortise is cut.



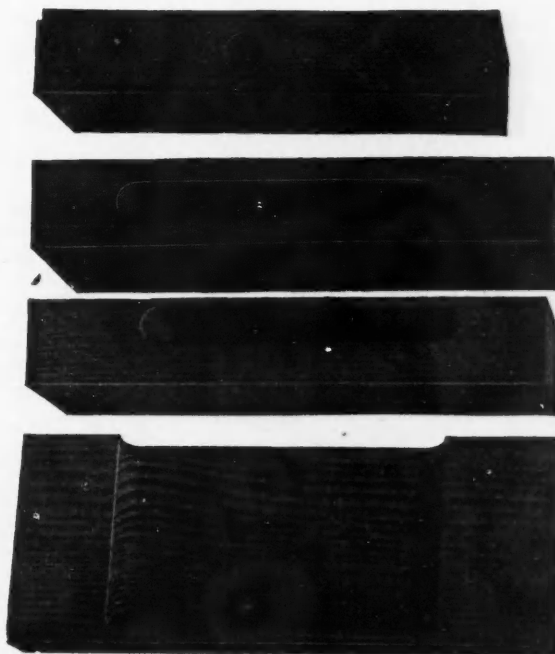
Making a Mortise for a Lock. The Machine Is Clamped to Door and Operator Merely Turns the Handle.

The machine operates on a principle

similar to that of a hand drill. The operator turns a wheel that causes a bit to revolve and swing back and forth, cutting the mortise. There is a feed arm which feeds the bit to a desired depth and stops it automatically.

Some of the features claimed for the mortiser are that it is automatic and ball bearing; is adjustable in a moment from a round hole to a 6/4-inch slot; needs no measuring or marking of centers; has a graduated scale for any depth mortise; will cut 120 mortises in a day, and handles materials 1/4 inch thick as easily as thicker pieces. The second illustration shows the types of mortises the machine will make.

For making mortises for door locks, sashes, sash pulleys,



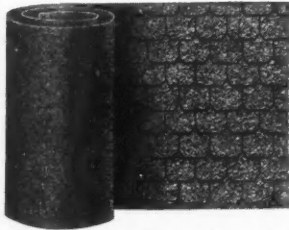
Types of Mortises That Can be Made by a Machine That Is Simple to Operate.

screen doors, folding and sliding door rollers, cabinet work, etc., this is an excellent time and labor saving device.



Prepared Asphalt Shingle Effect Roofing

There are many advantages in prepared asphalt roofing material that appeal to builders. It is practical for flat or steep surfaces; defies wind and weather; can be speedily applied; is durable and is spark and fire-brand proof.



Asphalt Provides a Less Expensive Shingle Effect Roofing

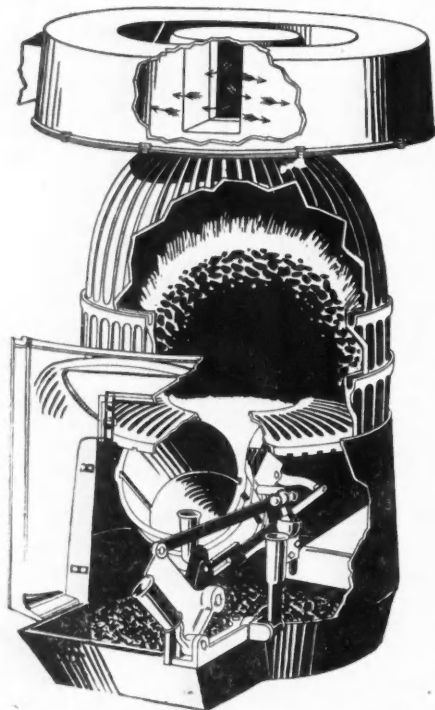
As the cost of this roofing material is not great it appeals to the thrifty builder. There is no waste to it and, as it is pliable like rubber, it does not crack, break or shrink. The mineral surfacing gives the color effect and will not fade or discolor, and also furnishes a weather-resisting coating.

Fire insurance companies make the same rate on prepared asphalt roofing as on metal or slate.



Furnaces That Save the Fuel

Contractors and builders all are agreed that the subject in which their clients are especially interested when planning a house is the problem of adequate heat at a minimum expenditure for fuel. As all indications point to a steadily



Cross-Section, Showing Method of Firing an Underfeed Hot Air Furnace.

creasing activity in home building, the question will be asked many times this year, "How can I keep my house comfortably warm and at the same time not have an enormous coal bill?"

One answer to this query is found in the furnace made so that the coal is fed into the fire-pot from underneath the grate, instead of being thrown on top of the fire. The accompanying illustration shows the method of "pumping" the coal in thru the fuel bed.

The economy of this method has been illustrated by comparing the fire in the furnace with a lighted candle. The fire is the lighted wick and the coal, fed from beneath, is the tallow of the candle. The fire eats down into the coal instead of up thru the coal.

While that comparison explains the operation of the under-

feed furnace, the scientific explanation of fuel saving is that all the gases the heat generates and causes the fresh coal to throw off, must pass thru the flame and be consumed before they pass out thru the chimney. Not only does this method of combustion utilize the gases, but it acts as a smoke consumer as well.

The coal is placed in a hopper at the side of the furnace. The upper opening of the hopper is outside the furnace casing. The lower end of the hopper is connected with a chute, which passes thru the ash-pit and curves upward. The opening is on a level with and in the center of the furnace grate. In the coal chute is a cast iron plunger. This is operated by a handle, which, when up, draws the plunger down and permits the coal in the chute to drop in front of it. By pressing down the lever the coal is forced thru the chute opening and under the fire. As the fuel is forced in the fire naturally lifts and falls on either side of the fresh fuel, leaving a thin fire on top of it. The heat generates the gases, which are consumed, and the fire eats into the fresh coal. An automatic valve in the coal chute prevents the fire from dropping when the plunger is drawn downward for a new charge of coal.

Underfeed furnaces cannot be called new. They have been on the market for some time, but many persons are not familiar with the principle on which they are operated. However, many hundreds of home owners who have them in their houses attest that this method of firing a furnace is economical. And that's what the builder wants to give his client.



Floor Surfacers Aid Movie Making

Little do most builders realize when they are watching a story unreeled in a movie house that the floor surfacing machine, one of the various types he uses in resurfacing floors in homes and other buildings, plays an important part in the production of motion pictures.

At Universal City, Cal., where many motion pictures are made, there are eight stages on which the scenes are enacted and photographed. A great portion of these stages is outdoors, with the sky as the ceiling. All of them combined have about 150,000 square feet of floor space.

Before the director of this company hit on the plan of using floor surfacing machines, this immense area of floor space had to be repainted every time a "set," as the scenery is called, was put in place. Now they give the floors a smooth



Here's a Floor Surfacing Machine Doing Its Part in Producing Moving Pictures at Universal City, Cal. The Outdoor Stage Floor Has to be Gone Over Frequently to Get the Best Results.

surface with a machine and then put on the highest grade of varnish. This coat of varnish lasts nearly six months. Then the floor is gone over again with a surfacing machine and revarnished.

That a smooth, bright surface is necessary will be seen when it is realized that the eye of the camera overlooks no defect and that everything that will aid in reflecting light is valuable.

The accompanying illustration shows the stage area being resurfaced and also gives a chance to peep "behind the scenes" in a motion picture studio.

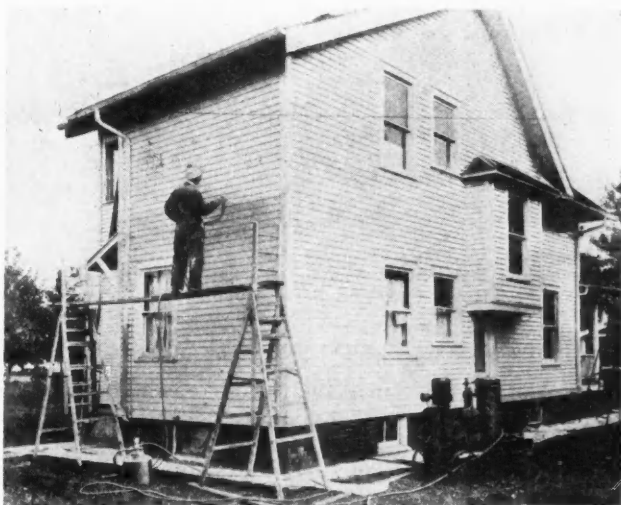
Owners of floor surfacing machines have found them valuable income producers during the last two years. While there was little building to be done, there were many floors that needed resurfacing and contractors who own one or more machines have specialized in this work, and have done well at it.

Now, however, when buildings are in demand these machines will be put to work on new floors. How much more can be accomplished and how much better the work is done by machines as compared with the old method, is realized by most building contractors. The floor surfacing machine is a valuable addition to every builder's equipment.



The Modern Painting Method

It is approaching "clean-up and paint-up" time; and this spring and summer the house-painting business promises to



House Painting Is a Rapid One-Man Job When the Compressed Air Method of Spraying on Paint Is Used.

be better than ever. Bituminous has been about the only coal available thruout practically the whole country this winter. Houses everywhere show the effects of this soot-producing fuel, and repainting will be general.

Painting contractors have found that the compressed air method of applying paint has many advantages over hand brushing. The speed with which the work can be done and the fact that one man can apply as much as several with hand brushes, make this method popular.

The accompanying illustration shows how painting contractors use this compressed air equipment. The gas engine and air tank are mounted on a small truck and may be quickly transported to the job. The tank seen on the ground directly underneath the painter contains the paint. As the air passes thru, it carries the amount of paint desired. The operator

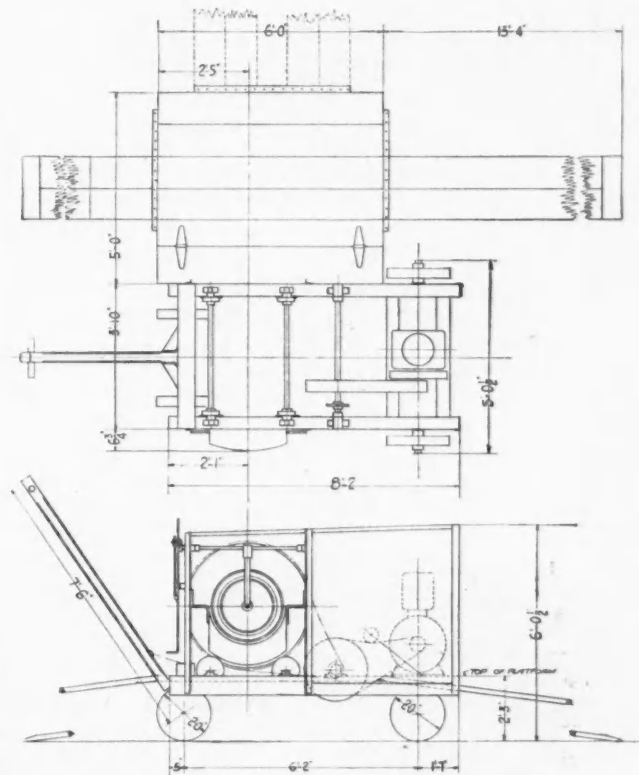
can turn on or shut off the paint by a simple movement.

For applying paint on either old or new buildings this compressed air method has been found to be much more profitable than the old way of hand brushing.



Mixer for the Small Contractor

A concrete mixer of small capacity is a valuable adjunct to the equipment of the general contractor and builder. With it he can lay the foundations for the average building and save the profit of a sub-contractor. There are many



Side Elevation and Details of a One-Bag Mixer Designed for Small Contractor.

small buildings of concrete construction that a mixer of this sort will furnish the material for. As concrete construction is in greater demand now than ever before, this fact is being realized and small mixers are in great demand.

The dimensions of a complete mixer are often very desirable in determining its utility and the way in which it may be set up. The accompanying plan and elevation of a mixer of full one-bag batch capacity are, therefore, shown herewith.

In elevation it will be noticed that the entire height is 6 feet ½ inch, that the wheel base is 6 feet 2 inches and that the top of the loading platform is 2 feet 3 inches above the ground.

In the plan is shown the arrangement of the platform and the runways, as well as the over-all width of the mixer itself, which is 5 feet ½ inch from end to end of axle. This mixer is readily portable by hand on the 20-inch wheels and adaptable to all general classes of contracting where quality of concrete, large capacity and relatively low price are essential features.

Fixing up the Farm

Hitch a Water Plant to the Windmill

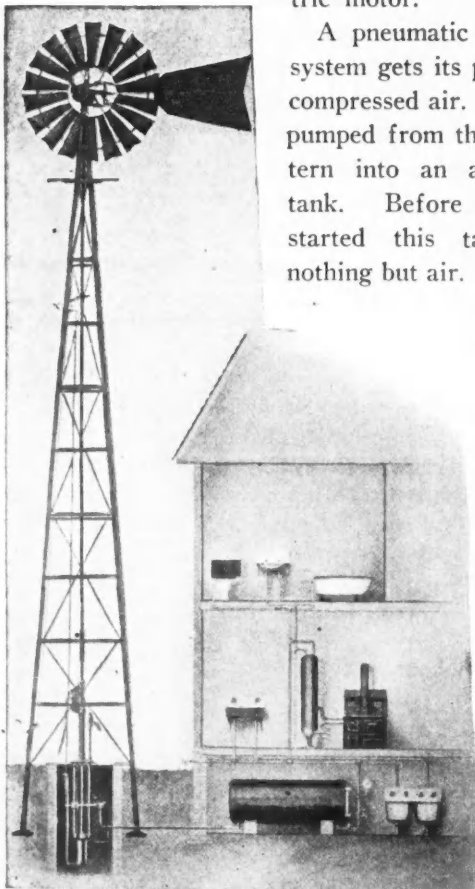
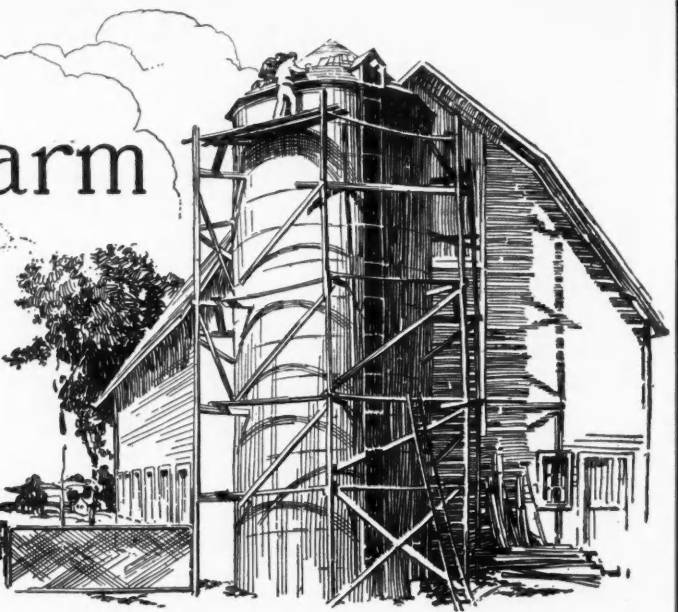
PNEUMATIC SUPPLY SYSTEM FURNISHES RUNNING WATER IN HOUSE AND BARN AND GETS ITS POWER FROM THE WINDMILL, GAS ENGINE OR ELECTRIC MOTOR

THERE are many types of water systems that can be hitched up to the power plant, without which no modern farm is complete. These may be as simple or as elaborate as the farm needs demand. But what appeals most to the busy farmer is the system that operates as nearly automatic as is possible.

One of the latter types is a pneumatic water supply system that may be operated by a windmill, a gasoline or kerosene engine, or an electric motor.

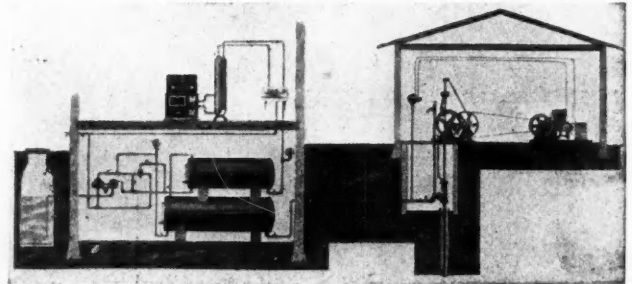
A pneumatic water supply system gets its pressure from compressed air. The water is pumped from the well or cistern into an air-tight steel tank. Before pumping is started this tank contains nothing but air. Water is not elastic and cannot be compressed.

On the other hand, air is elastic and can be compressed. Therefore, as the water is pumped into the tank, the air is compressed and forms the pressure that forces the water to



The Windmill Automatically Operates This Pneumatic Water System.

the hydrants in the house or barn, and to those at other points on the farm. A tank half filled with water creates an air pressure of about 15 pounds; two-thirds filled, a pressure of 30 pounds, and three-fourths filled,



Pneumatic Water System That Provides Both Hard and Soft Water. It Can be Operated by Windmill, Gasoline Engine or Electric Motor.

a pressure of 45 pounds. Fifty pounds of pressure is equivalent to that furnished by an elevated tank 100 feet in the air.

Utilize the Windmill

There are many farms that are equipped with windmills. Consequently, when the owners are approached on the subject of installing a water pressure system they are not particularly enthusiastic, because the windmill is doing the pumping and a system operated by a gas engine means junking the windmill.

Illustrated herewith is a pneumatic water system that is operated automatically by a windmill. This system can be arranged for as limited or extensive plumbing as desired, affording running water in both the house and barn. It can be used in either deep or shallow wells. For ordinary farm use, the supply tank should not be smaller than 36 inches in diameter by about 12 feet long. This tank, when two-thirds full, gives a net working capacity of about 450 gallons. Larger ones may be installed, increasing the capacity. The equipment consists of windmill force pump, air cylinder, pumping cylinder, strainer, regulator, con-

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troller, relief, check and gate valve, hose bibb and stop cock. These, with the necessary piping, complete the system. The ratchet regulator controls the windmill perfectly under all conditions, as it automatically throws the mill out of gear when the tank is full, and causes the mill to resume operation as the water is used. This system may also be operated by either gas engine or electric motor.

System for Hard and Soft Water

Another illustration shows a pneumatic system arranged to provide both hard water from the well and soft water from the cistern. This requires two tanks, the soft water tank being the smaller. The hard water is pumped into the tank by a three-way underground power head, operated by a windmill, gasoline engine, or electric motor. It is adaptable for either a deep or shallow well, and is equipped with a combination air cylinder and air chamber, pumping both air and water at the same time. When operated by a gasoline engine it is semi-automatic, while with an electric motor or windmill it is wholly automatic. The soft water supply is pumped by a water motor, operated by the pressure from the hard water tank. When a hard water faucet anywhere on the system is opened, the water motor is started. By running the soft water pipe thru a coil in furnace or stove, hot soft water may be had.

How this double pneumatic water system is installed when operated by a windmill is shown in the accompanying drawing. In addition to the system described, there is a storage reservoir to take care of any waste water from the water motor.

While this method of providing a water system on the farm and in country homes, where city water pres-

sure is not available, is comparatively new, it is old enough to have been given thoro tests and owners of them are enthusiastic over their performances.

Contractors will find in the pneumatic water supply systems many features that will appeal to those who want running water in their homes and barns.



No Increase in Land Values Since 1913

The Bureau of the Census reports that the assessed value of real estate in cities of over 30,000 population increased from \$24,900,000,000 in 1913 to \$30,200,000,000 in 1918. If this valuation had increased as rapidly as the general index number of commodity prices, the assessed valuation of real estate in all cities of the country of 30,000 or over would have been at least \$46,000,000,000 in 1913 instead of \$31,000,000,000.

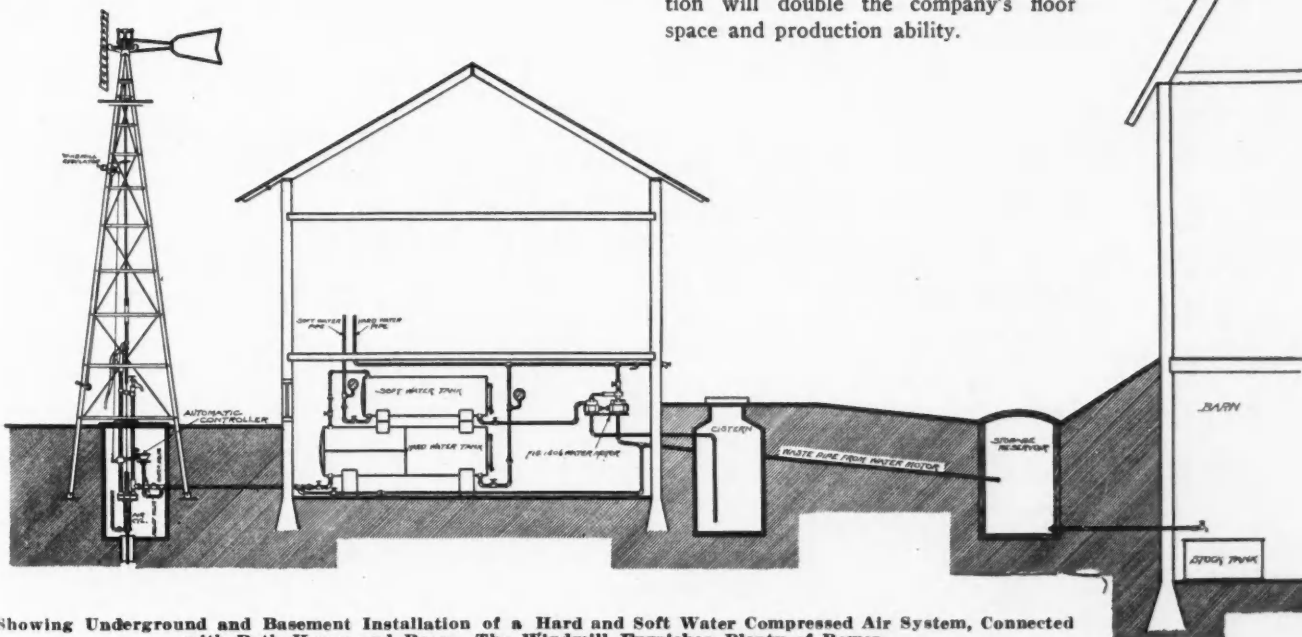
In other words, real estate valuations from 1913 to 1918 increased \$15,000,000,000 less than the rate of advance of prices in general.

It is of course to be noted that the figures here given are for real estate *valuations* determined by tax assessors. It is, however, likely that the increase in real estate valuations is at least as great as the increase in real estate values. Most of the revenues of each of our cities arises from real estate taxation. The search for larger revenues during the period since 1913 has in many cases driven tax assessors to increase the valuation of real estate, for this valuation is the basis of the tax. Therefore, it is entirely possible that this increase in real estate valuation is more rapid than the increase in values. In other words, the total value of real estate in 1918 compared with 1913, if we could ascertain it, would probably show an even smaller increase compared with commodity prices, than the increase in real estate valuation.



Sterling Wheelbarrow Co. Doubles Plant

The Sterling Wheelbarrow Co., Milwaukee, Wis., has finished the excavation for an addition to its plant and building operations will be started at once. The new building will be 185 by 385 feet. As this is the size of the present factory, the addition will double the company's floor space and production ability.



Showing Underground and Basement Installation of a Hard and Soft Water Compressed Air System, Connected with Both House and Barn. The Windmill Furnishes Plenty of Power.

Building Activity or Watchful Waiting?

By W. E. Armstrong

BUSINESS travels in cycles. Every period of depression is followed by a corresponding boom. It is the working of the age-old law of supply and demand. Demand is a constant factor, while production fluctuates according to existing conditions. If for any reason production is halted, the time comes when operations must be resumed with renewed vigor. Demand has created a ready market and there is a quickening in the pulse of industrial activity.

Since 1914 there has been a marked slowing down in the building movement, except such structures as were urgently needed for war work. This slackening was due to various causes, which can be easily pointed out. All our energies, both individual and as a united nation, were devoted to winning the war. The industries of the country were diverted from peace-time pursuits to turning out shrapnel, cannon, tanks and the thousand and one things needed by our boys at the front. Business was thrown out of its normal channels and new conditions sprung up. No building or construction work was done, unless it was an absolute necessity, for every bit of material and every ounce of man power was devoted to winning the war.

We have won the war and the same spirit of co-operation and mutual helpfulness that made victory possible, should carry us thru the trying period of readjustment. The slogan, "All for one and one for all," must not be forgotten, and each of us can do our part to keep the wheels of industry moving.

When our great industrial centers sent out calls for men and more men, thousands flocked to the cities. Working people, both men and women, were compelled to put up with all sorts of living conditions, and they were content to do so, for they were helping to win the war. Personal comfort was a small sacrifice. But with the return of normal conditions, many of these war workers have remained in the cities and they want better homes for themselves and families.

A recent government investigation shows that there is a marked shortage of homes in practically all urban communities. Out of ninety-four real estate boards that were questioned, only four report that such a condition does not exist. Building has not kept pace with the unprecedented development of the cities and in most municipalities the housing problem is a serious one.

**LET THIS
BUILDING BE BUILT
SO WELL
AND
SO QUICKLY
THAT THE
OWNER WILL BE
ENCOURAGED TO
BUILD ANOTHER**

U. S. DEPARTMENT OF LABOR
W. B. WILSON,
Secretary of Labor.

For additional copies address Roger W. Babson, Chief, Information and Education Service, Department of Labor, 1200 C Street N.W., Washington, D. C.

**LET EVERYONE
EMPLOYED
ON
THIS JOB
HELP SET A
PACE THAT WILL
MAKE BUILDING
POPULAR
AND
PROFITABLE**



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**"ONE GOOD TURN
DESERVES ANOTHER"
GOOD WORK
HERE WILL
ENCOURAGE
OTHERS TO
BUILD**



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Secretary of Labor.

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**Best Efforts
ON THIS
BUILDING
WILL PROVE AN
INSPIRATION FOR
SOMEONE TO
ERECT ANOTHER
NEARBY**



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**KEEP
TIMES
GOOD**

— BY —

**BUILDING
NOW**

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**CONSTRUCTION
ADDS
TO THE
WEALTH**

OF THE

COUNTRY

BUILD NOW

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**Own
A Home**

for your
**Children's
Sake**

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Secretary of Labor.

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Now that government restrictions on building have been removed, and the materials are no longer needed for war purposes, there should be great activity in the building field. Thousands of working people need homes and somebody must build them. The workers and development companies have more money than ever before, yet the lack of extensive building activities is decidedly marked. In many cases the plans have been made out and have been consigned to a pigeonhole in the desk or are still in the architect's office. Everybody is waiting, and for what?

There is a general impression that the prices of materials and the cost of labor will go down, but have we any real good reason for thinking that this will be the case? On this point there is a great difference of opinion among authorities. But one way we have to be guided is by precedent; and prices have maintained a high level for a decade after every previous war. As long as the cost of living is high the workmen must have a corresponding high wage and there is no immediate prospect for an appreciable reduction in the price of materials.

The foreign demand for purposes of reconstruction will also tend to keep up prices. The countries of Europe will buy millions of dollars worth of materials in the American markets to restore the lands that the ravaging hand of the Hun has made desolate. Already

**I want to see
every
Wageworker
own his
own home.**

W. B. WILSON
Secretary of Labor.

U. S. DEPARTMENT OF LABOR
W. B. WILSON,
Secretary of Labor.

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large orders have been placed and almost every ship that leaves our ports will carry at least a partial cargo of lumber, steel, glass or tools and machinery to restore the devastated lands.

When the long heralded business boom arrives in America, there will be a great demand for all sorts of building materials. The factories will need greater capacity. They will employ more workmen and these workmen will need homes. Such a condition will not have a tendency to reduce prices.

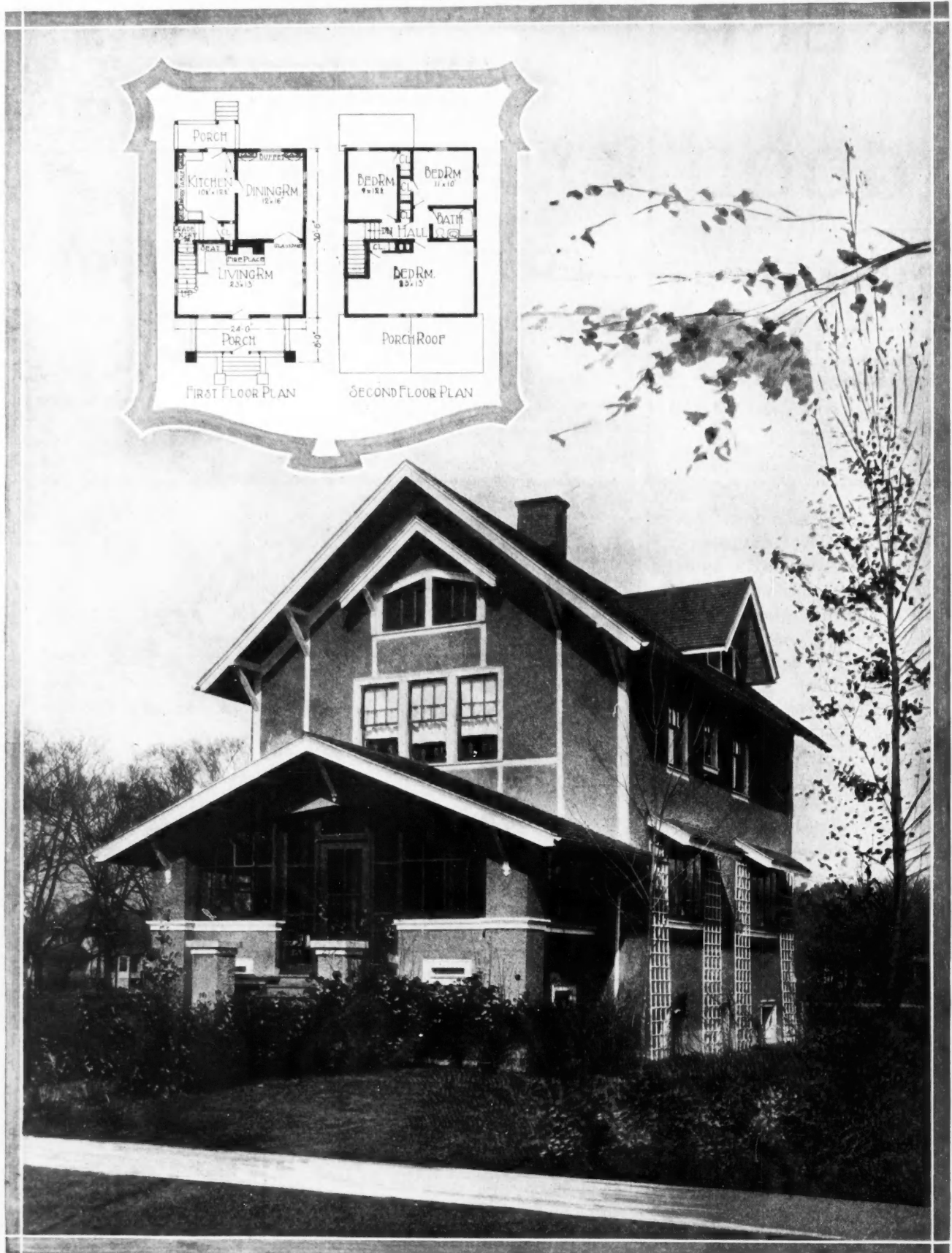
Most authorities tell us that prices will not go down, but on the other hand there is likely to be an advance. In view of this, it would seem advisable for those who contemplate building to proceed with construction work rather than be deprived of the use of their buildings for six, eight or even ten years, while waiting for lower

prices on labor and materials.

Building costs are unquestionably high when compared with the costs of four or five years ago. But there has been a general advance all along the line, and prices will probably never go back to their pre-war level. It is only guess work to say when they will be reduced and to what extent.

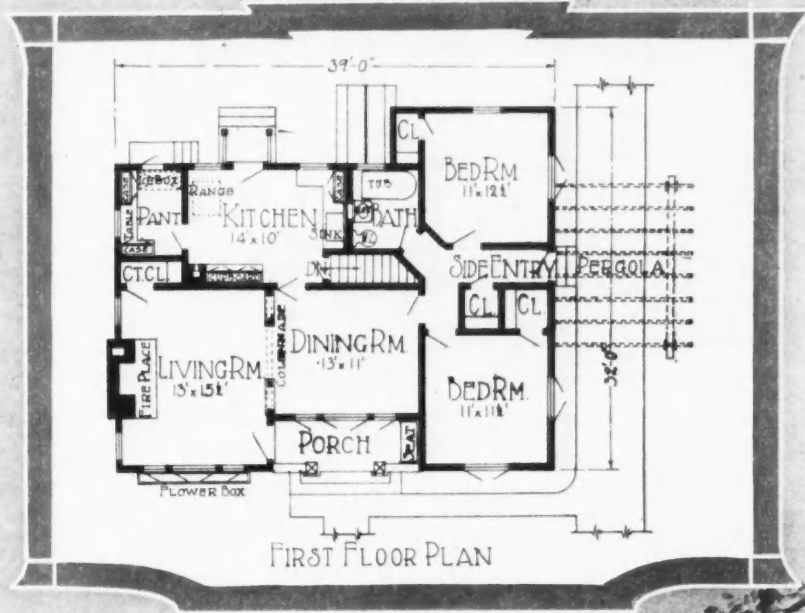
When prices are high there is a tendency to resort to make-shift construction and cheaper materials, but this is short sighted economy. Proven materials are

(Continued to page 158.)



MODERN CITY STYLE HOME. This six-room stucco house will enthrall every person who wants an attractive, modern type of home. The large porch, the attractive exterior design and the modern room arrangement all combine to make this house one that will appeal to the prospective home-builder. The exceptionally large living room, the good-sized dining room and the bedroom over the living room that is larger than will be found in most homes are features.

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ANOTHER WHITE BUNGALOW. Here is an unique bungalow design. Ranged across the front are living room, dining room and bedroom, while at the back are the kitchen and second bedroom. The porch, set into the house, and the window looking on it from the dining room, are unusual. The pergola is an artistic addition to the house. This is an exceptional design.



Three Modest Home Designs

THE rapid development of many communities, made necessary to house the workers in war industries, proved that the greatest demand is for small houses, four and five-room structures. These are moderate in cost, provide the family with all the space necessary and can be maintained with a minimum amount of labor and expense. Pictured on this and the following page are three houses of popular design.

The idea of the architect in these designs has been to provide modern homes at the least possible cost. The bungalow on this page contains five rooms, while

the cottages shown on the following page are each of four rooms. The convenience of the arrangement and the space provided are shown in the floor plans that accompany the pictures of the houses themselves.

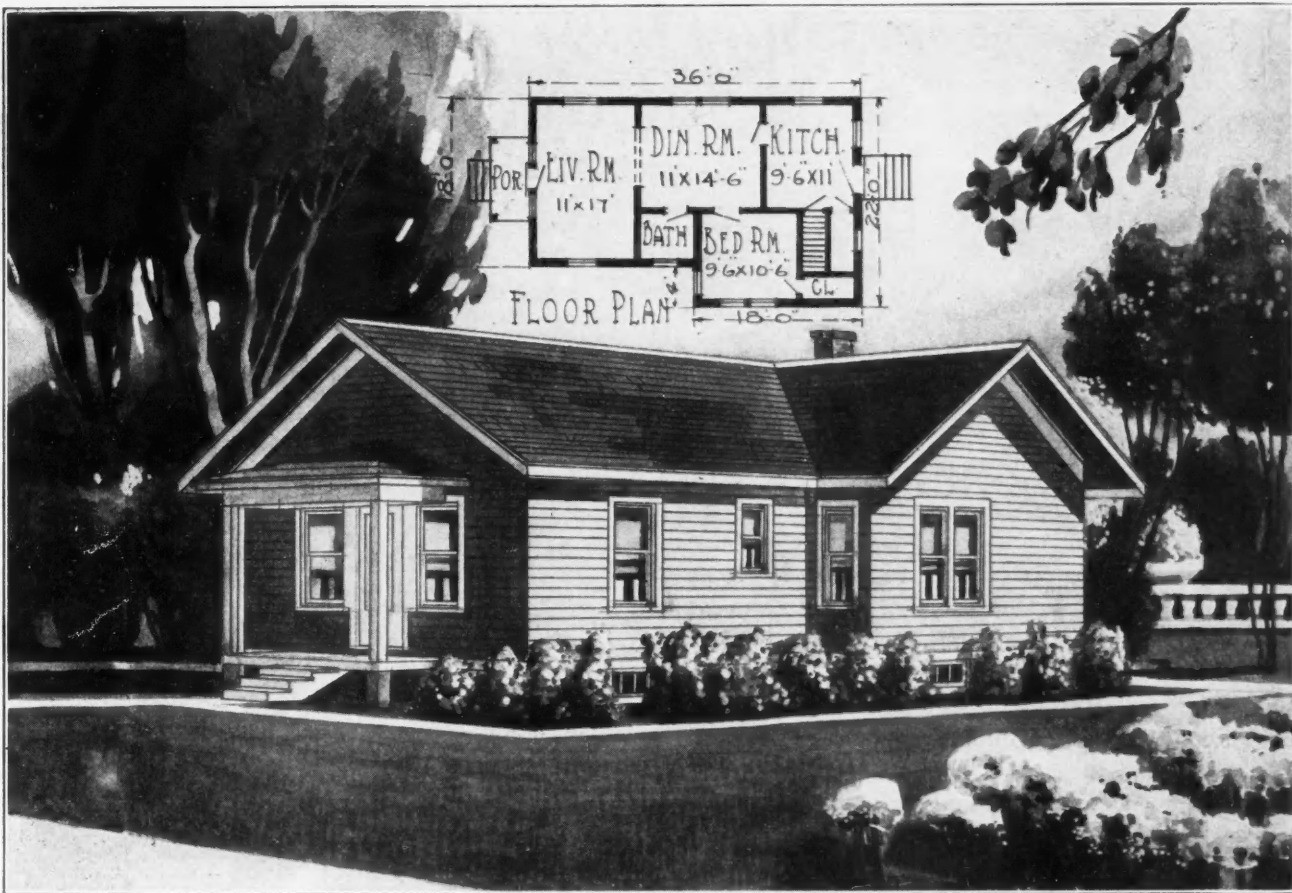
All three of these cottages will be valuable in the coming season, as they will exactly fill the wants of a great many home-builders. They are attractive in design, moderate in cost and will provide up-to-date homes. Houses of this character are needed almost everywhere, and by using different designs the builders can range them along side of each other, thus providing a number of homes practically uniform in size, yet having entirely different exteriors.



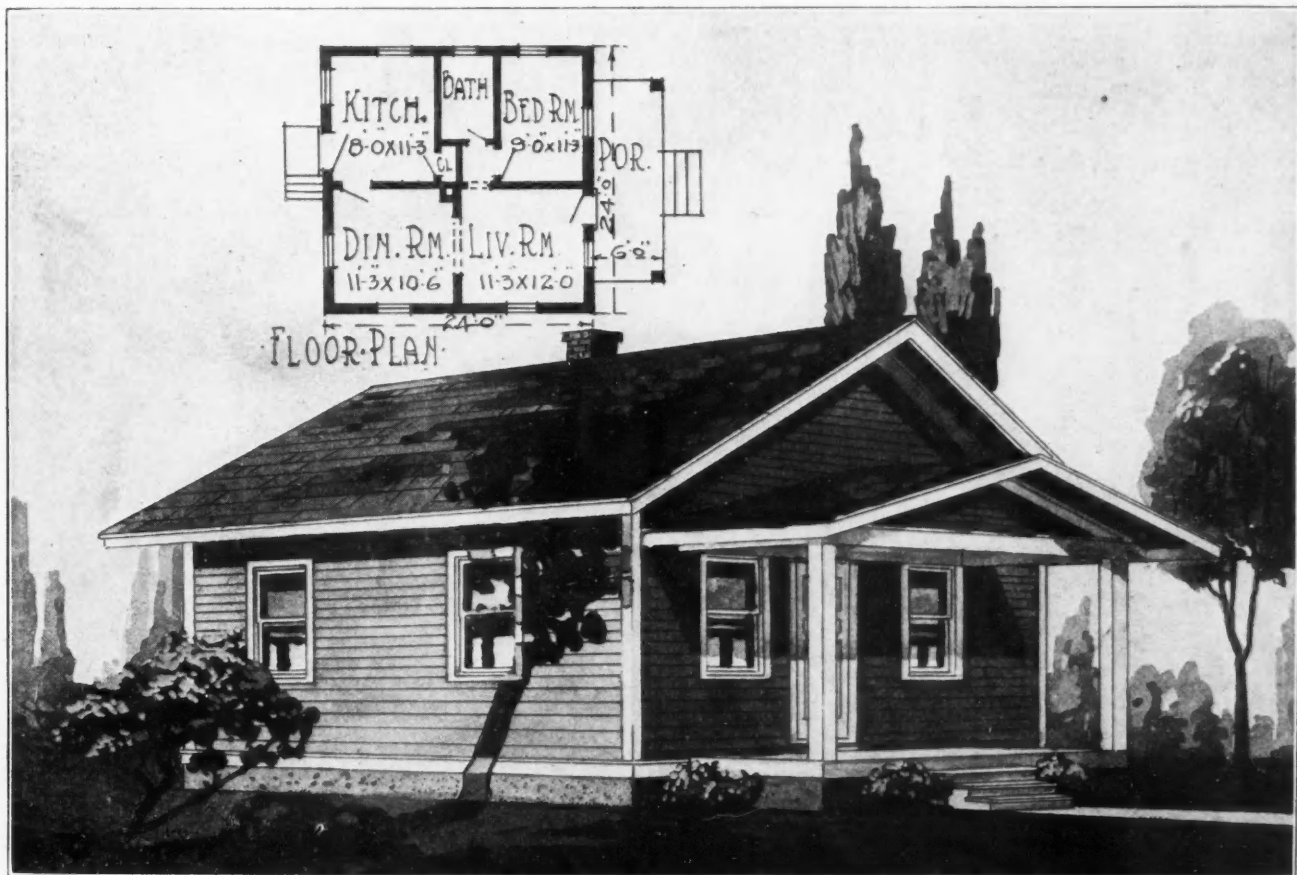
Five-Room Bungalow with Hip Roof. This Design Will be in Demand as It Is Modern in Every Respect and Does Not Cost Much. Comparatively, to Build. The Sun Parlor of Both the Living and Dining Rooms Is an Attractive Feature.

Four-

Twenty



Four-Room Cottage. This Wooden House Will Meet the Need of the Small Family That Wants a Comfortable, Convenient Home at a Moderate Cost. Living Room, Dining Room, Kitchen and One Bedroom and Bath Are Provided.



Twenty-Four Feet Square of Satisfaction. Designed for the Person Who Wants an Economical Home. The Large Porch Opens Directly Into the Living Room, While the Bedroom Also Is at the Front. Dining Room and Kitchen Are at the Rear.

AMERICAN BUILDER BUILDING PLANS



Blue Prints of a Homey House

EIGHT-ROOM DWELLING WITH MANY ATTRACTIVE FEATURES AND ALL CONVENIENCES WILL MEET WITH THE APPROVAL OF A LARGE NUMBER OF HOME BUILDERS—PLANS IN BLUE PRINT SECTION

THE home that is designed so that the owner will get the most for his money in number of rooms and convenience of arrangement is the type of house that is going to be in greatest demand this year. Herewith is illustrated such a house, while the working plans are shown in the four-page blue-print section following.

This house is an eight-room, two-story and basement building of wooden construction. It contains four rooms and a breakfast nook on the first floor and four rooms and bath on the second. A large sun parlor, 8 feet 6 inches by 18 feet 6 inches, is a feature that will appeal to many prospective clients, as it opens off both the living and dining rooms.

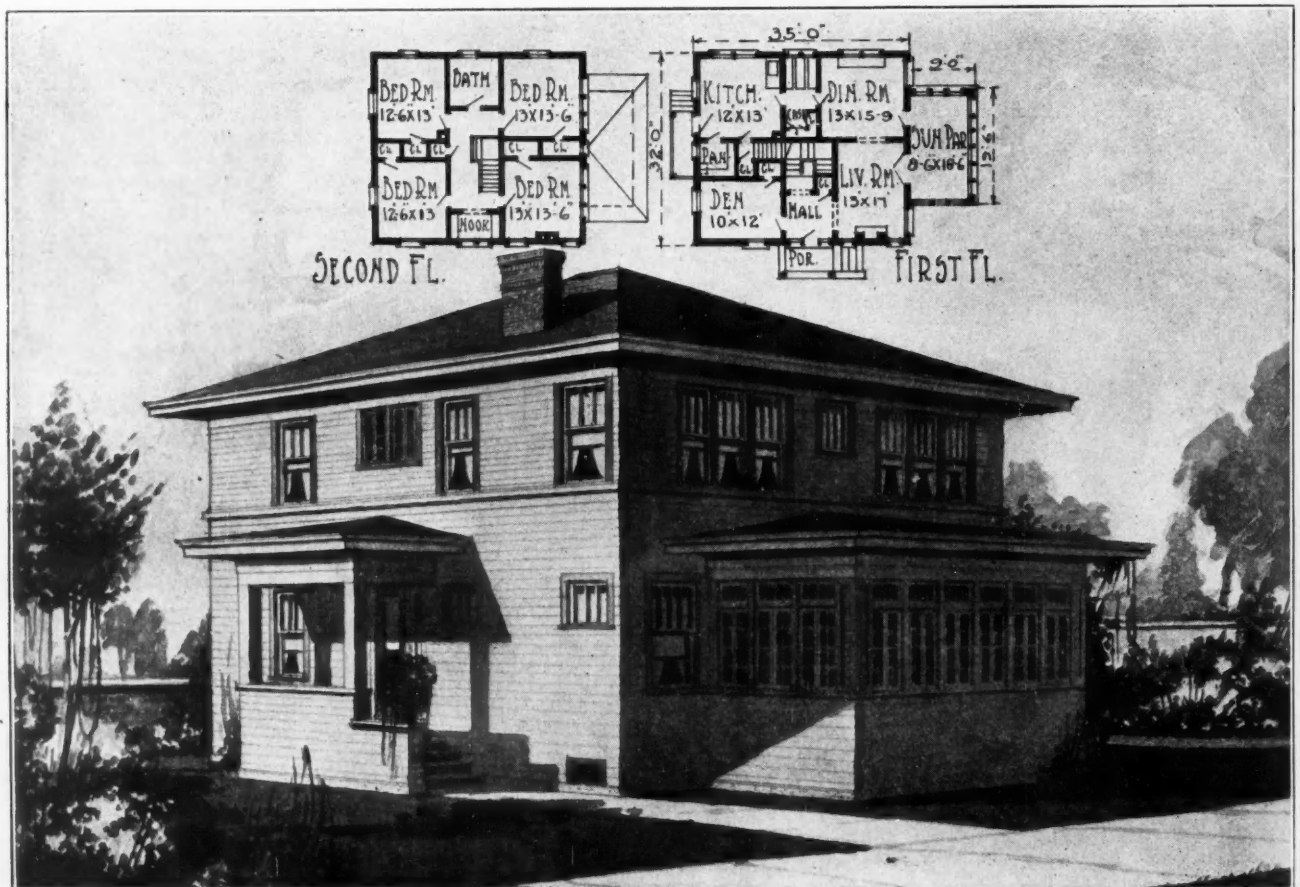
A plain building, almost square, the dimensions being 32 by 35 feet, this house can be erected at a moderate cost. There are few corners, features that are expensive, while every convenience has been provided. The entrance at the side opens into a hall, in which is the stairway. The living room and dining

room, both of good size, are across the front, while a den, opening off the hall, and the kitchen are at the back. Upstairs are four bedrooms, almost equal in size, opening off a central hall, at the end of which is the bathroom.

The first page of the blue print section gives the front elevation of this house and an alternate elevation, showing an exterior of brick and stucco, with enough changes in design to make it appear an entirely different dwelling. The same floor plan may be used for two adjoining houses and at the same time they will be unlike.

The second blue print page shows the basement plan, the cornice detail, the second floor sill course and detail of the corner post of the sun parlor.

The third blue print sheet contains the first floor plan, the breakfast nook elevation and the china case. The fourth page shows the second floor plan, the nook at the head of the stairs and the linen case.



An Eight-Room House of Either Wooden or Brick and Stucco Construction. Size, 35 by 32 Feet. A Large Sun Parlor Opening Off Both the Dining Room and Living Room, a Breakfast Nook, and Other Attractive Features Make This House Most Desirable. Alternate Designs for the Exterior Permit Practically the Same Plan to be Used in Houses Adjoining.





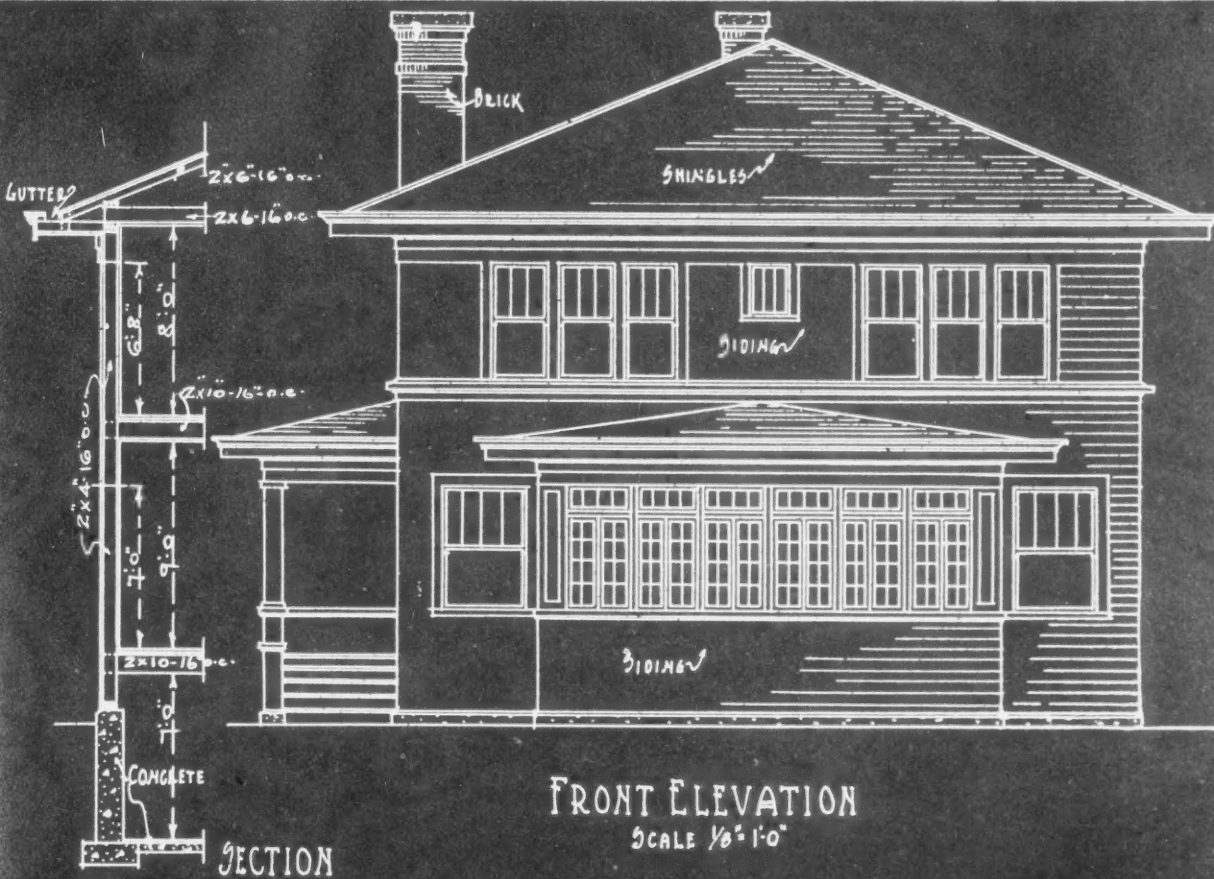
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AMERICAN BUILDER BUILDING PLANS



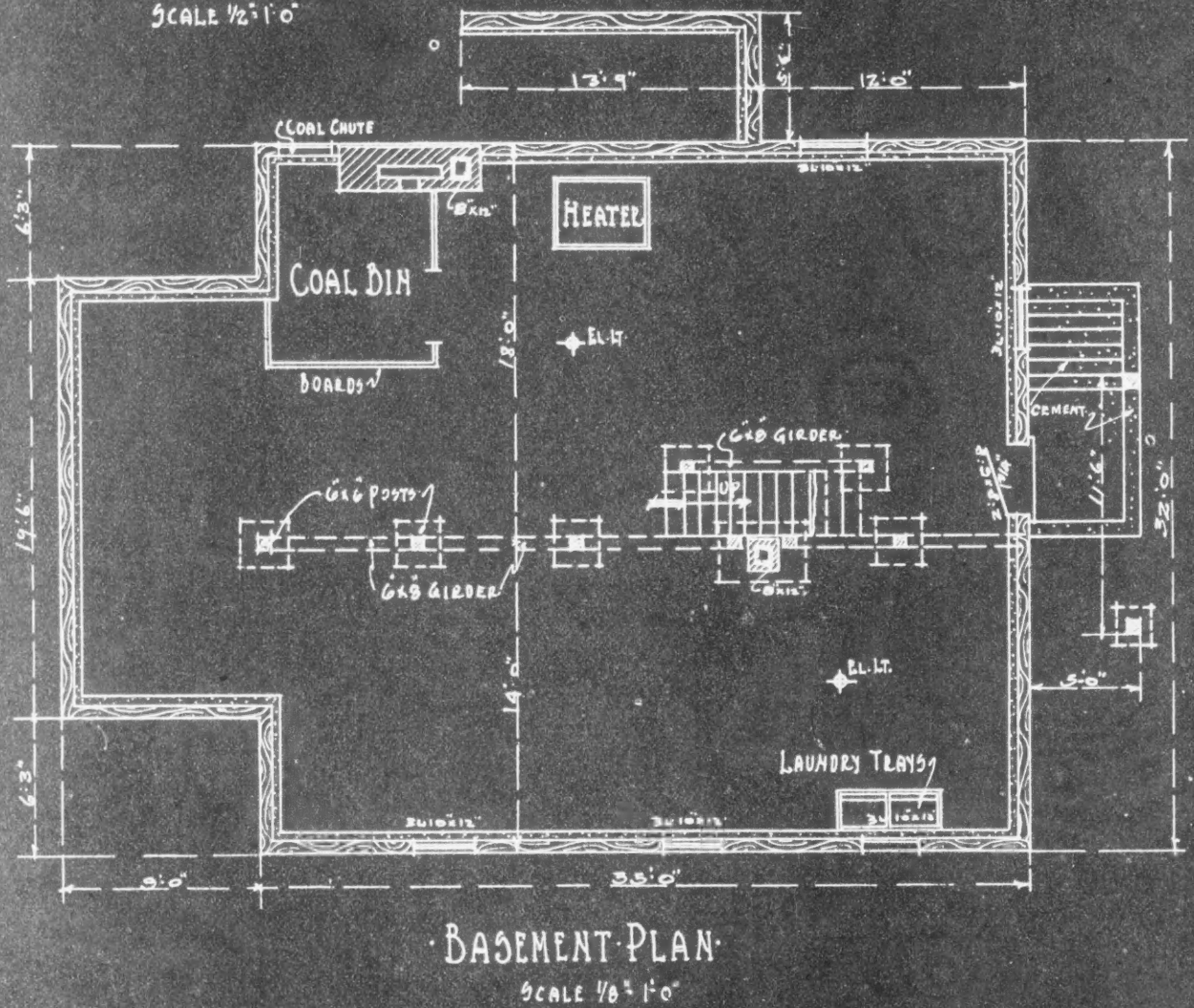
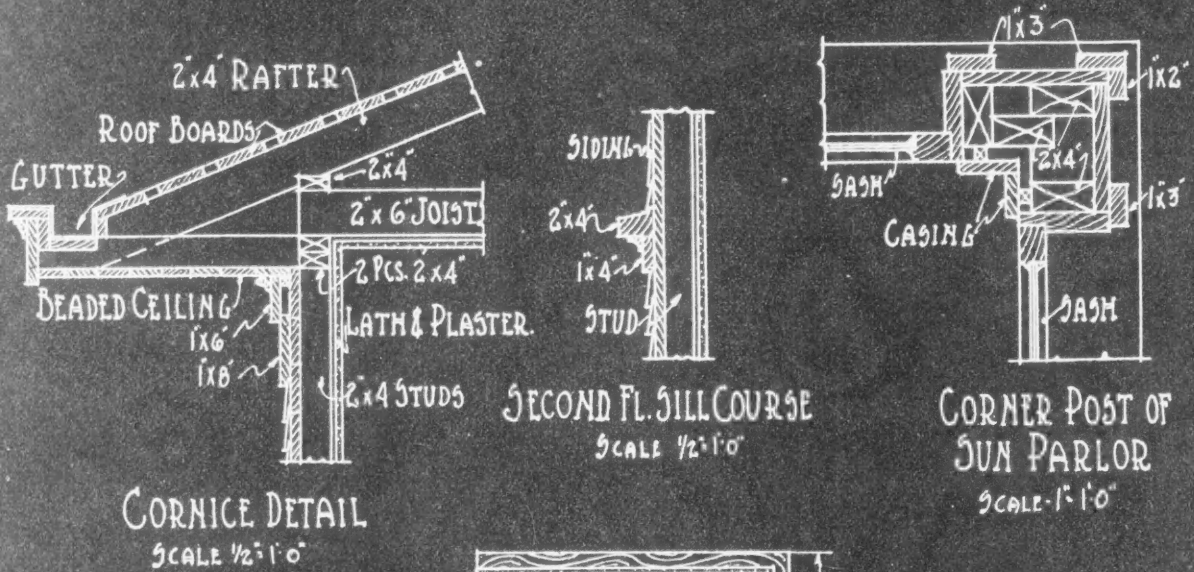
ALTERNATE EXTERIOR
BRICK & STUCCO



EIGHT ROOM RESIDENCE

SHEET NO. 1

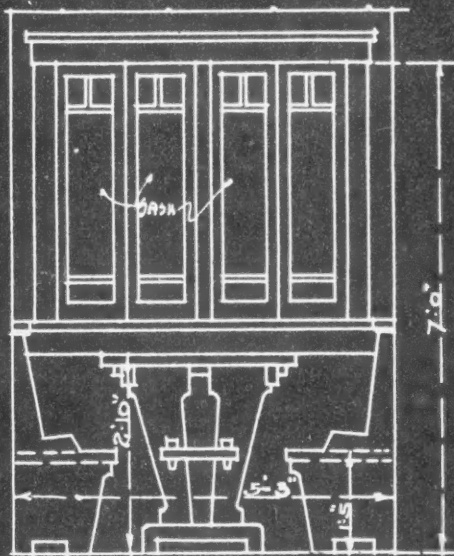
AMERICAN BUILDER BUILDING PLANS



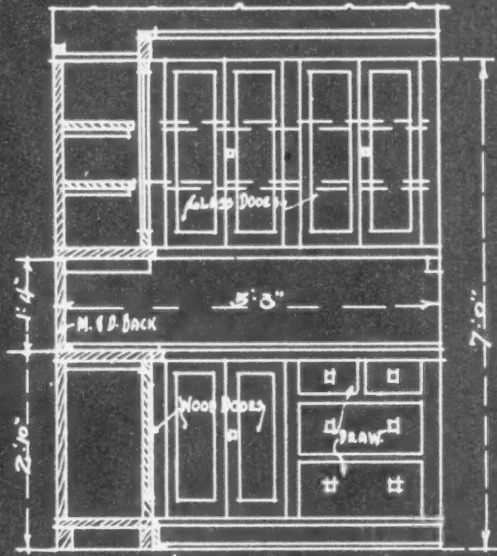
EIGHT ROOM RESIDENCE

SHEET NO. 2

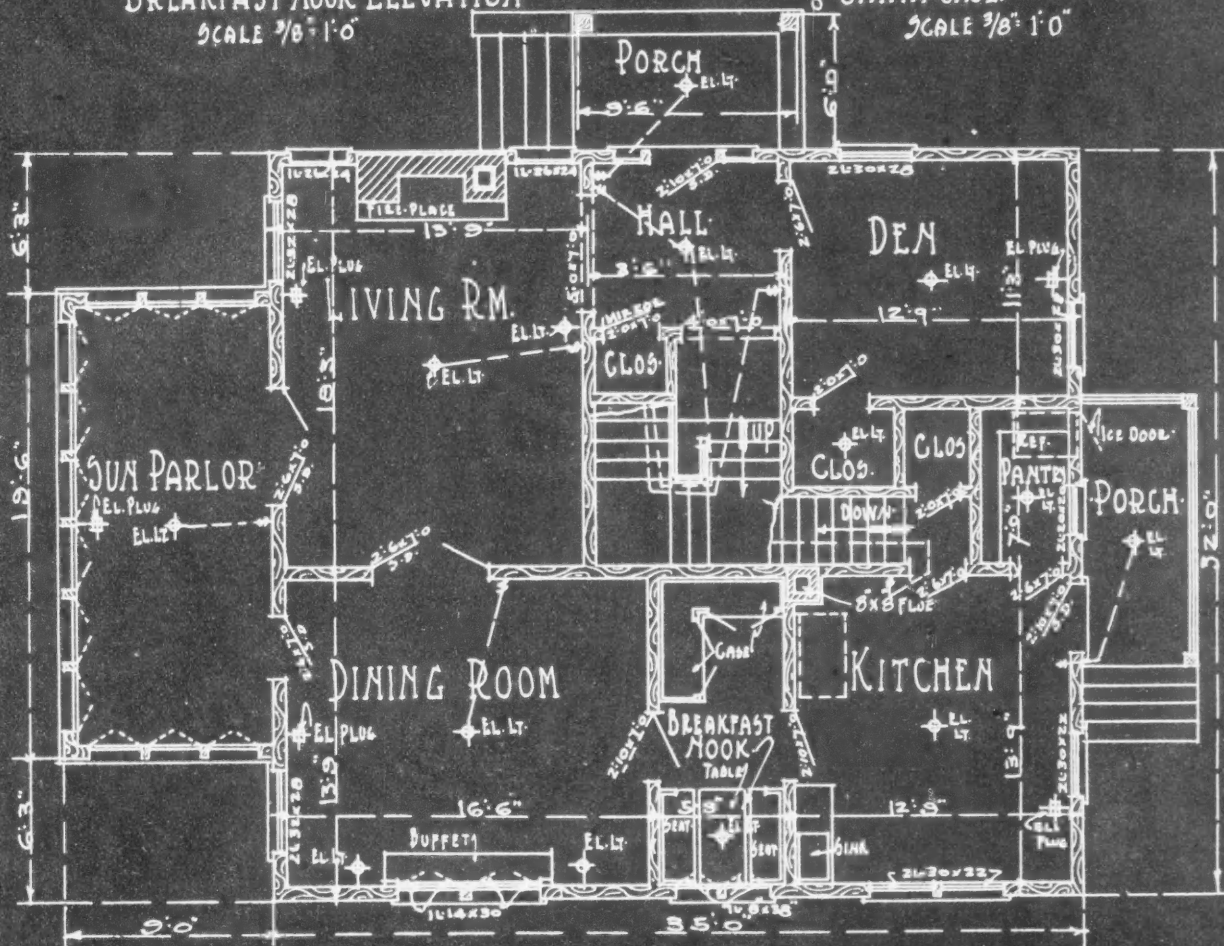
AMERICAN BUILDER BUILDING PLANS



BREAKFAST NOOK ELEVATION
SCALE 3/8" = 1'-0"

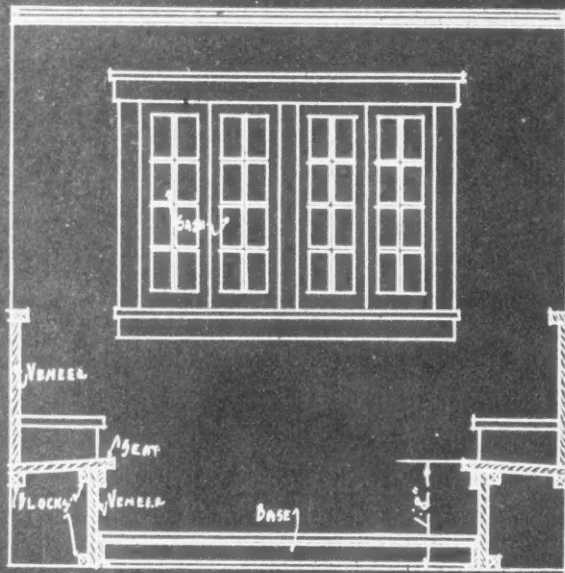


CHINA CASE.
SCALE 3/8" = 1'-0"

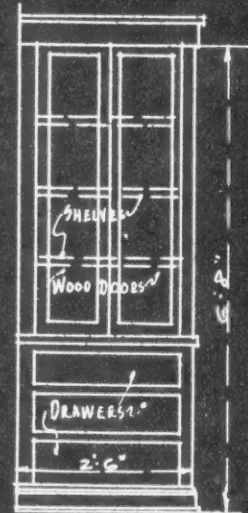


FIRST FLOOR PLAN
SCALE 1/8" = 1'-0"

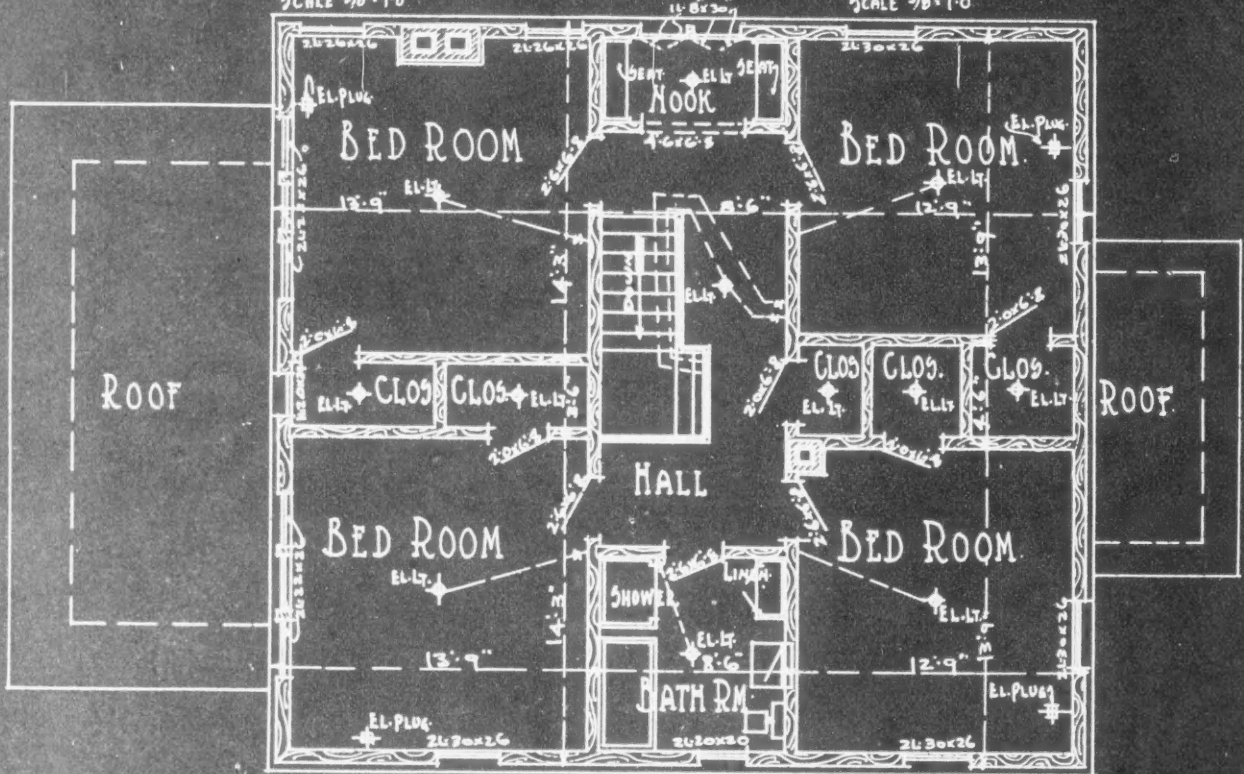
AMERICAN BUILDER BUILDING PLANS



SECOND-FLOOR NOOK
SCALE 3/8" = 1'-0"



LINEN CASE
SCALE 3/8" = 1'-0"



SECOND FLOOR PLAN
SCALE 1/8" = 1'-0"

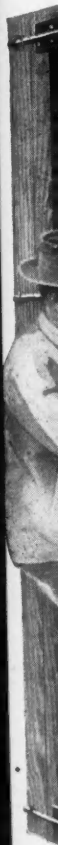




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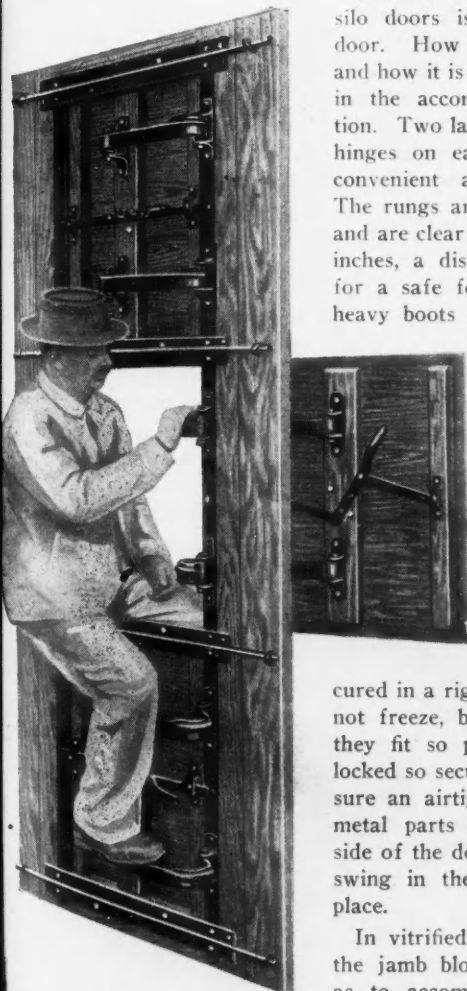
Latest Improved Silo Hinge Ladder Door

Progress in silo construction has been rapid and no portion of a silo has engaged more attention from manufacturers than the doors. Those first used were loose and undoubtedly the awkwardness of this type of door had much to do with the refusal of many farmers to build a silo. However, since the hinge door came into general use, there have been many improvements made on it, so that now it comes pretty near being perfection.

One of the latest types of silo doors is a ladder hinge door. How it is constructed and how it is operated is shown in the accompanying illustration. Two large malleable iron hinges on each door form a convenient and safe ladder. The rungs are 15 inches apart and are clear of the door seven inches, a distance that allows for a safe foothold, even tho heavy boots or arctic rubbers are worn. One operation unlocks and opens the door. A light sliding pressure on the handle shown does it. These doors always are workable

They are secured in a rigid frame and will not freeze, bind or stick, and they fit so perfectly and are locked so securely that they insure an airtight silo. All the metal parts are on the outside of the door. As the doors swing in they always are in place.

In vitrified tile construction, the jamb blocks are so made as to accommodate the steel frame of the doors. These blocks form vertical hollow spaces, which are filled with



The Iron Hinges on This Silo Door Form a Ladder, with Rungs 15 Inches Apart and a Clearance of 7 Inches from the Door.

concrete and reinforced with heavy, twisted steel rods, forming concrete pillar supports for the door frame. In wood stave construction the frame at the top and bottom of each door is held securely by the hoops.

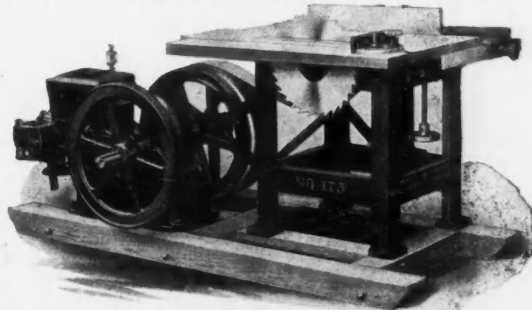
While this door is practically new, it has been on the market long enough to have been given a thoro test. It has been put in wood stave and vitrified tile silos in a number of states and has given excellent satisfaction to the owners of the silos.



A New Portable Saw Bench

The portable saw bench is one of the most useful pieces of the builder's equipment. It takes right out on the job a small portion of the shop equipment and saves labor, time and money.

Herewith is illustrated a new saw rig that recently was brought out by a well known manufacturer of wood working machinery, and is designed for general work, such as cross-



New Design of Portable Saw Rig That Has Many Good Features.

cutting, ripping and the other uses to which a rig of this kind can be put.

The frame is of cast iron, bolted together to form a firm support for the working parts. The cross pieces carrying the arbor boxes are large to give long bearings to the saw mandrel, which is 1 7/16 inches and runs in babbitt-lined, self-oiling boxes. It is turned to 1 1/4 inches where the saws are applied and extended at the saw end to take dado cutters and other special fixtures. The opposite end is bored to take 1/2-inch shank machine bits and is provided with a hollow safety set screw to fasten the bit.

The table is of iron with a wood extension on the right hand side. It is hinged at the rear of the frame and can be raised and lowered by a hand wheel. The table is 42 by 33 inches and will rip 18 inches between the saw and ripping gauge. The table is provided with a removable wood plate, which can be taken out when using the grooving and other special heads.

This machine can be driven by either gasoline engine or electric motor. The power is applied direct from the motor or engine pulley to the mandrel pulley. A 3-horse power gasoline engine is supplied for ripping up to 1 1/2-inch lumber, or a 6-horse power engine for heavy work. The engine is of the four-cycle, water-cooled, built-in magneto type.

The regular equipment of this saw bench consists of 14-inch rip and cross-cut saws, one bevel ripping gauge, one mitre cross-cut gauge, endless leather belt, boring attachment, with 1/4, 3/8 and 1/2-inch machine bits and either of the gasoline engines.



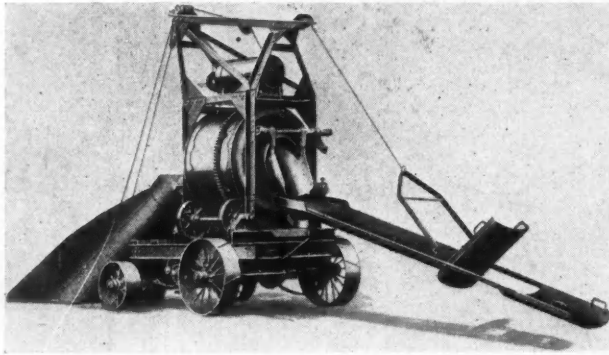
New Mixer for Paving Jobs

With the United States Department of Labor urging municipal, county and state officials to get busy at once with public improvements, there is bound to be a general resumption of pavement construction this spring and summer. And

there is no piece of contractors' equipment more important on a paving job than a concrete mixer.

Herewith is illustrated a new design of a concrete mixer, made especially for paving work. This paver is compact and short coupled, making it possible to use it in an alley as well as on a broad street. The width is seven and one-half feet and the length with the loader down, without the spout, is 14 $\frac{1}{3}$ feet. The height is 11 feet, so that it will readily pass under bridges and viaducts.

This paver is conservatively rated at 10 cubic feet of dry material per batch, or eight cubic feet of wet mixed concrete. It propels itself forward or backward under its own power and will climb a 10 per cent grade. The power is an 8-horse power gasoline engine, but steam or an electric motor can be used. The loading skip is 70 inches wide and receives the contents of two wheelbarrows at the same time. When the loader reaches the discharge position the clutch is automatically released. The entire operation is controlled by one man, who is on a platform and has all levers within easy reach.



This New Design of Mixer Has a Capacity of 10 Cubic Feet per Batch. Features Are Its Compactness and Rigid Construction. Gates in the Distributing Spout Deliver Material Over a Considerable Area Without Moving the Mixer.

The mixer drum is of the non-tilting type, gear driven from semi-steel heads joined by heavy boiler plate steel. The distributing spout swings 180 degrees and is built of steel, reinforced with angle irons. It has an adjustable pitch and is provided with gates for discharging concrete in three places.

Roller bearings are used in the drum rollers, main shaft and counter shaft. These are heavy duty, dust-proof bearings, which result is a direct saving of power and elimination of bearing troubles.

Such a paver will be found of great value to the paving and road contractor during the boom in construction of this character.

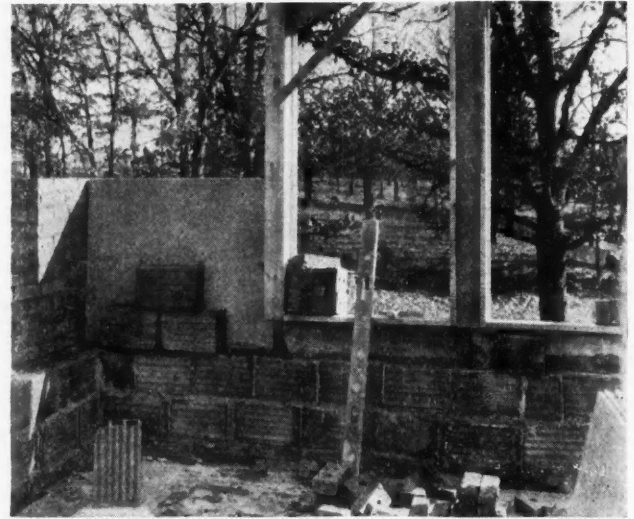


New Stucco Board Also an Insulator

Perfect insulation between brick and tile walls, so as to prevent condensation of moisture, is one of the points a builder always is careful about. Various methods have been used to bring this about. One of the latest is the use of an insulating wall board that is not only water-proof, but cold and heat-proof as well. It is made from wood fibre.

The insulating material is made in sheets about one-half inch in thickness and cut to specifications. Its color is light brown and the surface is similar to gunny-sack material. While it has enough elasticity to be compressed between the thumb and finger, it is exceptionally strong.

Every builder will be interested in the accompanying illustration, which shows how this insulating board is used in brick veneer and tile construction. As will be seen this material, when used as insulation, is placed against the brick veneer. The corrugated bonding bands in the brick wall



Showing How the New Insulating Wood Fibre Material Is Used in Brick and Tile Walls to Prevent Condensation. Much Detail of Construction Methods Also Is Shown.

penetrate the insulation and are put in the plaster joint in the tile backing.

There are many other ways in which this material can be used and in which it has proven to have some exceptionally fine qualities. One of these is as a base for plaster and stucco exterior walls. The second illustration shows the fibre board being used as a base for magnesite stucco. It is nailed to the studding and fitted and then the stucco is directly applied. Because of its rough surface, the stucco will adhere to it permanently. A considerable number of houses in the army cantonments, such as officers' quarters, recreation halls and other buildings, were constructed with this material for the walls and covered with paint, or plaster.

Tests have demonstrated that this material has a strong affinity for plaster and stucco. It developed that the strength of the bond was over 200 pounds to the square foot, or 57 times the weight of the surfacing material.

Another feature of this material is that it will take oil paint when it is sized in the manner artists size canvas.

There are so many uses to which this material can be put and where it will perform most satisfactory service that every architect and builder should become acquainted with it. Its heat and cold resistant qualities, make it ideal for ice-house insulation. As a floor insulating material, its value also has been proven.

There are thousands of houses in the Northwest in which this material has been used for insulating purposes. And the owners all attest that it does what is claimed for it.



Stucco and Plaster Have a Strong Affinity for the Rough Surface of an Insulating Board Used as a Wall Base in This Building. The Strength of the Bond Is 200 Pounds to the Square Foot.

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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

Wanted: Dependable Builders

To the Editor: Richmond, Utah.
Are you trying thru your paper to locate carpenters and contractors returning from the war? This part of the country could use some of this class of workmen, if they were experts in the work, and no booze-fighters, but good substantial workmen with up-to-date trade ideas and a little money ahead to carry on a contracting business with, as everything here is pretty well on a cash basis now. No doubt if the up-to-date fellows knew of this, they would like to locate in just such a place. Expert and up-to-the-minute house and barn builders are the kind of fellows that would do well. We would gladly correspond with any such and help any worthy person to get located.

MONSON LUMBER CO., LTD.

Our Canadian Friends Won't Be Neglected

To the Editor: Saskatoon, Sask., Can.
I must say I am very pleased with your magazine, but would like to see something in this year relating to Western Canada in the building line.

L. L. PULLAN.

He Made This Saw Rig

To the Editor: Worthington, Minn.
Your BUILDER has surely been a great help to me. Cannot

afford to miss a single copy. I read it all, from cover to cover, ads and all, but am especially interested in the correspondence department and the blue prints.

I would like to see working plans of furniture every now and then, such as tables, chairs, dressers and so on.

Am sending you a snap shot of a saw rig, our own make which we find very useful in all kinds of work. We also have a 24-inch drum sander that does the work of several men.

CHAS. A. JOHNSON.

A Study of the Gambrel Roof

To the Editor: Seattle, Wash.
It is with great pleasure that I have noticed that you occasionally have made use of my letters and rough drawings in your highly esteemed magazine, AMERICAN BUILDER. Encouraged thus, I am again taking heart and sending you one more contribution in the form of some crude sketches and a letter as complement thereto. If it is fit for the printing press or not I beg to leave to your judgment, but should you find it good enough to go into the A. B., then I should be pleased some day to read it again, in print, believing, as I do, that it will perhaps prove a help in a small measure to the craftsman engaged in construction of similar kind as my enclosed sketches are about.

The sketches, Fig. 1, Fig. 2 and Fig. 3 give solution or answer to some problems pertaining to gambrel, or Mansard roof. Each figure shows a separate system. They are similar insofar as they are all limited to the semicircle drawn on the span as diameter and consequently radius R equal to half the span and also represents run and rise of a straight rafter with the one-half pitch.

They are also similar as to the members of the rafters. In each system these members, upper and lower parts, are of same height, which is readily understood by the layout.

In Fig. 1 these members meet on the circumference (periphery) of the enclosing circle and the intersection point is found by dividing the run and the rise, or R, in three equal parts, and from the second division point from the center drawing perpendiculars or lines at right angle. The point where those lines meet is taken as intersection point for the upper and lower rafter.

In Fig. 3 (the original "mansard roof,"



Charles A. Johnson, Worthington, Minn., Made This Saw Rig and Finds It Useful in All Kinds of Work.

so named from the French architect, Mansard, of the first part of the seven-teenth century, who is said to have in-vented it), the radius, R, is set off from each end of the diameter upwards on the circle and drawn, and also from the termination of the perpendicular radius down and drawn; where these lines meet there is the break in the roof, as shown in Fig. 3, left side.

On the left side of the figures are denoted the angles of the "cuts," in de-grees and minutes, seat cut, miter-cut and plumb-cut, as carpenters prefer to name them.

On the right side are noted the values (numbers) in inches and thirty-seconds of inches to be taken on the steel square for obtaining the cuts; also the length of the rafters in fractions of radius R. These numerical values are arrived at by applying algebra and trigonometry to the triangles (construction for solving the problem) of each system. These numbers are reliable for all practical purposes in wooden construction.

As a matter of fact, any mechanic is acquainted with arithmetic and under-stands a simple formula so much as to

732

interpret $\frac{732}{1000} \times R$, but for a novice in

1.000

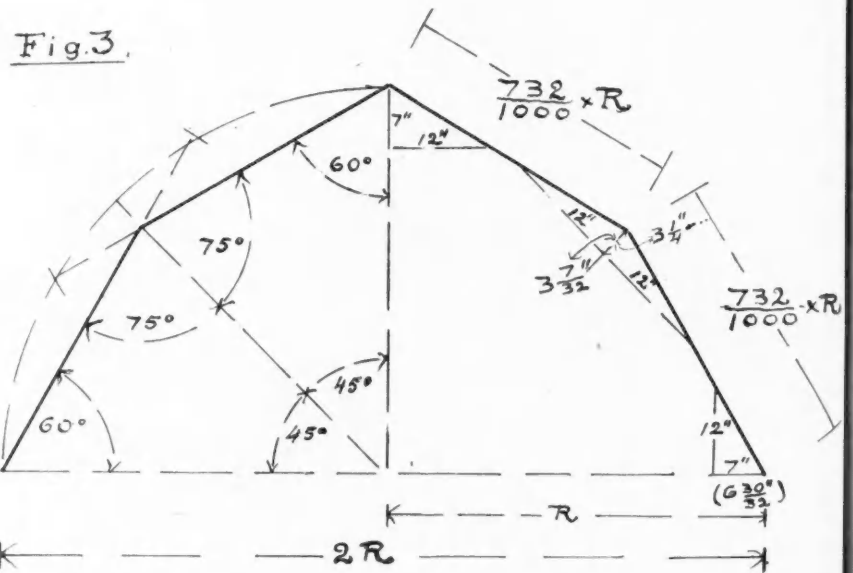
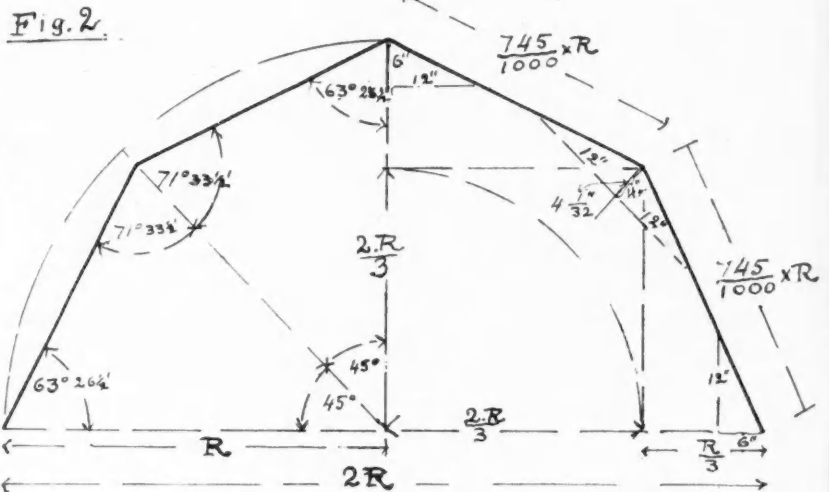
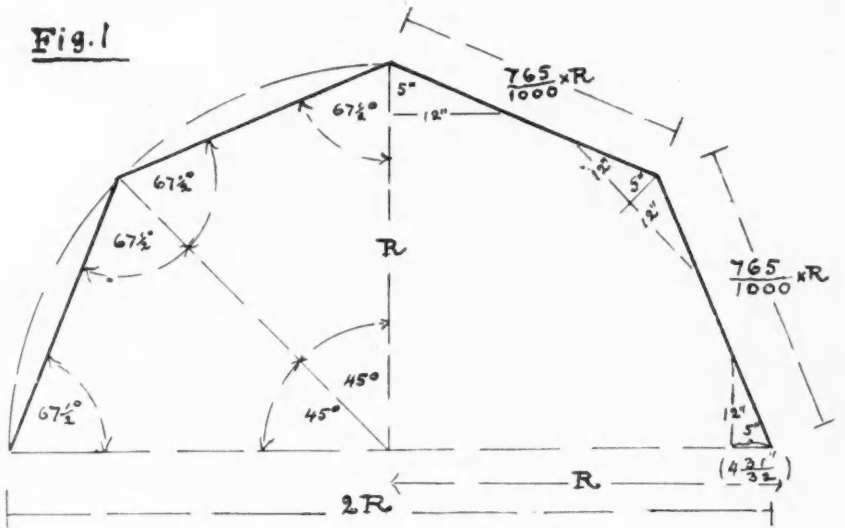
the art it might be well to state that it means to multiply 732 by the numerical value (feet or inches) of R, or half the span, in these cases, and when that opera-tion surely and duly is performed to point off from right to left three decimals, which is the same as to divide by 1,000 (one thousand). The sketches and fig-ures may be intelligible enough to render further written explanation unnecessary.

Respectfully,

KNUT A. WESTHOLM.

P. S.—In your last January issue of the AMERICAN BUILDER I noticed that a gentleman from Oregon had given a rule for finding the curve for a hip, or valley, rafter in Gothic roof. This gentleman seems to believe that curve to be circular, as he gives a brilliant enough solution how to find the radii.

I beg to state for the benefit for him-self and everybody else in the craft that it is a circular curve in very rare cases, and not at all when the common rafter is circular; then it is always an ellipse with half the minor axes (b) equal to radius (R) for the common rafter, $b=R$, and with half the major axes (a) equal to same radius (R) plus the run



(Continued to page 64.)

Angles, Cuts and Rafters in Gambrel Roof (Mansard Roof).



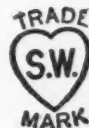
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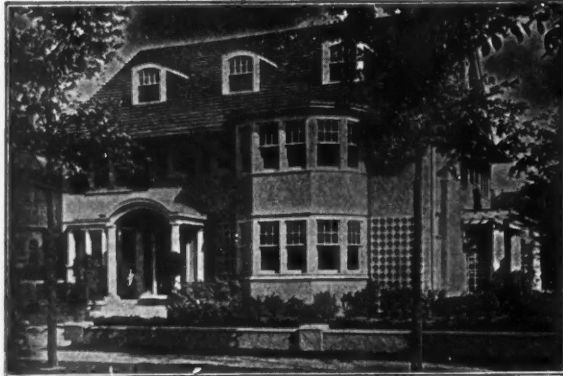
We Shall Be Glad to Mail You on Request Our Latest Printed Matter

THE STANLEY WORKS
New Britain, Conn.

NEW YORK
100 Lafayette Street

CHICAGO
73 East Lake Street





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.

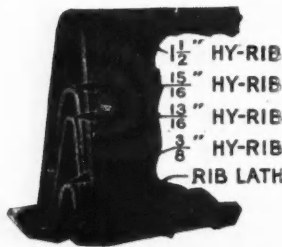
Begin now to build with Hy-Rib and Rib Lath. The line is complete, including Diamond Lath, Channels, Studs, Corner Beads, Base Screeds, etc.

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



Correspondence Department

(Continued from page 62.)

of hip rafter (r_h) minus the run of common rafter r_c , or algebraically $a = R + r_h - r_c$ and $b = R$. Textbooks of mathematics give several good rules for drawing an ellipse when the axes are known, so taking up space with such matters here would be to waste paper to no avail. It should be kept in mind that a and b referred to here means half the major axis and half the minor axis, respectively, in an ellipse corresponding to a circle of radius R made use of in laying out rafter for Gothic roof.

Circle and ellipse have common center, the minor axis is parallel to the perpendicular representing the rise of the roof and equal to radius of the circle and the major axis is parallel to the perpendicular representing the rise of the roof and equal to radius of the circle and the major axis is at right angle to minor axis at the common center. For the craftsman who remembers some of the analytical geometry we studied in our schooldays I beg to remind the equation of an

$$\text{ellipse which looked like this: } \frac{x^2}{a^2} + \frac{y^2}{b^2} = 1.$$

K. A. W.



Log Cabin Play House

To the Editor:

Essex, N. Y.

Enclosed is photograph of a playhouse built by myself on the summer residence of Sam I. Keyser, at Essex, N. Y. This house is 12 by 12 feet in size, and is covered with matched spruce, then tarred paper and veneered with spruce slabs, edged. Has field stone chimney and fireplace. Has two



J. E. Murphy, Carpenter and Builder, Essex, N. Y., Built This Log Cabin Playhouse.

casement windows at sides; the windows in upper part are set in solid. The interior walls as far up as the top of upper windows are ceiled with white spruce finished in the natural wood. There is a seat at each side of door entrance. The chimney is on back side and only the extreme top shows.

J. P. MURPHY, Carpenter and Builder.



Built His Own Power Woodworker

To the Editor:

Owosso, Mich.

I have taken the BUILDER for a number of years and have found many helpful things, even in the advertisements.

I see in the December number, on page 61, a picture of

(Continued to page 66.)



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 by Mail Builders' Course Easy 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,

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

Construction 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.

Brickwork: Footings and foundation walls 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 points, 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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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 Builder's 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.

Chicago Technical College
336 Chicago "Tech" Bldg.
Chicago, Ill

CHICAGO TECHNICAL COLLEGE,
336 Chicago "Tech" Bldg., Chicago

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.

Name.....

Address.....

City or Town..... State.....

Present Occupation.....

(Continued from page 64.)

a saw rig a carpenter made himself. Several years ago I made one myself. I studied the different advertisements in the *BUILDER*, which resulted in a New-Way air-cooled engine with high tension magneto, which is all right, as I have had no trouble to start in the coldest weather. Then I got saws and dado head from Huther Bros., attached a boring machine and sticker.

It is made so that I can take it thru a 2-foot 8-inch door by taking off some attachments without taking out a bolt or using a wrench. I also have a 24 by 24-inch drum sander to go with it.

I have taken it in several houses and gotten out all the finish that I used. When I am using the machine on construction work outdoors I have a galvanized garage for it. By taking off the boring machine, it only takes a garage 36 inches wide by 56 inches long and 42 inches high. I think I have as complete a rig as the next fellow.

✦ F. G. WARD.



Completely Equipped Corn Crib of G. E. Reed, Near Pontiac, Ill.

A Well Equipped Corn Crib

To the Editor:


Pontiac, Ill.

This crib with gambrel roof is located on the farm of G. E. Reed, near Pontiac, Ill. This crib is 48 feet long, has large driveway with cement floor. Bins for small grain are

built over the driveway. These bins are covered with flooring and have trap doors in the top for inserting the spout when filling with grain.

A stairway leads from the driveway to the floor on top of the grain bins. This crib is equipped with the Meadows

(Continued to page 68.)



Build Right

The building material that affords greatest permanence, comfort, fire protection and economy,—that most completely satisfies your customers,—inevitably results in more good will, business and profit to you. Such material is

DENISON Hollow Building Tile

It is more easily and quickly laid than brick. Buildings constructed of Denison Hollow Tile cost no more than other substantial buildings, are more comfortable, winter and summer; never require painting and are fire-resisting.

Our fine tile clay deposit and double process of manufacture, produces a wonderfully fine-grained, close-textured, strong, durable and uniform building tile.

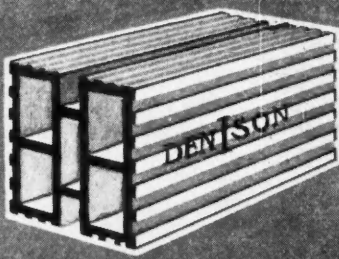
Builders—Contractors

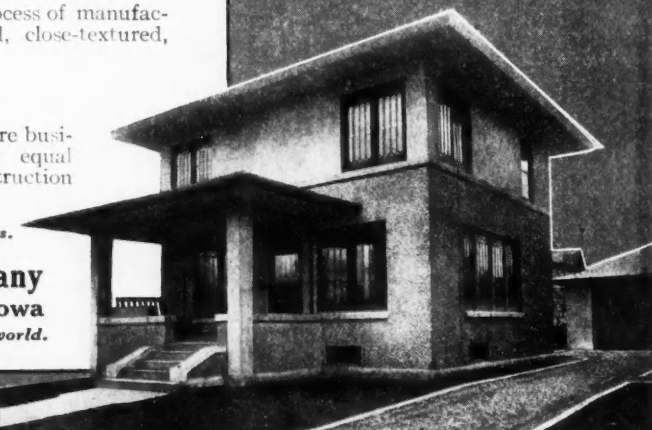
By using this material you develop future business and good will, as well as securing equal immediate profits. Write for our free construction details, prices and full information.

Sold everywhere by the best lumber dealers.

Mason City Brick & Tile Company

900 Eighth Street, Mason City, Iowa
Largest manufacturers of clay products in the world.





“Why should this asbestos roofing cost more?” asks your customer



AND you can't blame him. At ten feet they look alike—look black or gray—wrapped in paper-bound rolls. This is your cue to forget that you are selling roofing by the sheet and to start to sell fire safety and wearing economy.

Tell your customer what Johns-Manville Asbestos Roofing is made of—that it is actually a rock-felt that turns fire like a granite brick turns an axe edge. Tell him that its binder is real asphalt, and that natural asphalt will not carry fire.

Then prove it all to him by directing the flame of a blow-torch against a sheet. A little of the binder will melt, but the asbestos base will be unaffected. Then test other roofings the same way and see what happens.

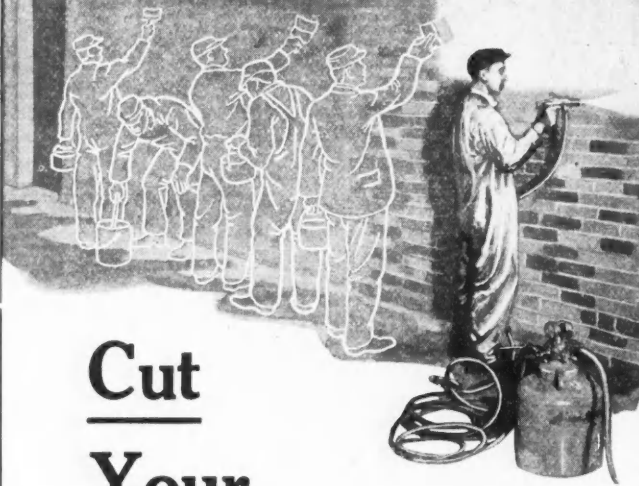
Sell safety at a fair price. That's merchandising—and good advice to the buyer; he will see it every time.

H. W. JOHNS-MANVILLE CO.
NEW YORK CITY

10 Factories—Branches in 63 Large Cities

JOHNS-MANVILLE ASBESTOS ROOFING

5 Hand-Brushers to Equal This ONE Sprayer's Speed



Cut Your Painting Costs

Painting outside and inside work with wood, brick, stucco, concrete or plaster surfaces can be done

- with at least four-fifths LESS the usual amount of labor;
- without waste of paint;
- without costly brushes which wear out quickly;
- with less scaffolding, by using

Aeron Painting *System*
Surpasses Brushing

Portable Painting Equipment

This is part of the experience of contractors in spray-painting all types of construction with the Aeron. The slow, aboribus brush-painting method has been discarded.

Further experience proves that the highest quality of work is obtained on each individual job. Regardless of kind of work or kind of paint used, the coating applied is uniform on every part of the surface and thoroughly covers it.

The ease with which the operator handles the machine and can move the outfit around, enables him to get these results under practically every condition.

How your painting costs can be cut and the best work done with Aeron method and Aeron equipment, will be gladly explained in detail.

The De Vilbiss Mfg. Co.
1276 Dorr Street Toledo, Ohio

*All Aeron Equipment sold on a strictly
guaranteed-to-make-good basis*

Correspondence Department

(Continued from page 66.)

Inside Cup elevator with driveway jack, and line shaft for driving the gasoline engine. It is completely equipped with electric lights, current furnished from the farm lighting plant. This crib is strictly modern in every way, and one that any farmer would be proud to own.
E. J. AGNEW.



Klima Says It Won't Work

To the Editor:

Owatonna, Minn.

We have read with very much interest the letter in your February Correspondence Department, entitled "Would Bend the Flues Back at Right Angles."

This, we understand, is a reply to the article you had in your December issue on a barn where the owner did not want to run the foul air flues up thru the center of the Gothic hay mow.

This drawing is a very nice one indeed, and I think that the author of the article has very good intentions.

You will note by this drawing that the arrows show that the air is moving up towards the aerator on the roof, but that it must travel horizontally for a space of about 8 feet.

The author of this article perhaps is not in the ventilating business, or, if he is, he is not giving a positive guarantee of results.

We find that there are always those that are willing to give advice, but what we would like to see is someone manufacture a ventilating system like this illustration shown and give the owner of the building a positive guarantee of results.

You can rest assured that we will be the first ones to incorporate an idea of this kind when we find that it will do the work, but at this time we are convinced by experience that this is not practical and that it will not get the desired result.

I think that it would be a good idea for you to write to the author of this letter and ask him how many ventilating systems of this kind he has ever seen that would pass the state and federal inspection.

If he will give you the names of three or four barns that are ventilated with systems that are working where the foul air flue runs horizontally for 8 feet between the joists, then the writer or some member of this company will be glad to spend the time and money to go to that barn promptly and get the necessary data.

We are not willing to back up on our proposition, and we could have sold this kind of ventilating system long ago if we had wanted to conform with his ideas.

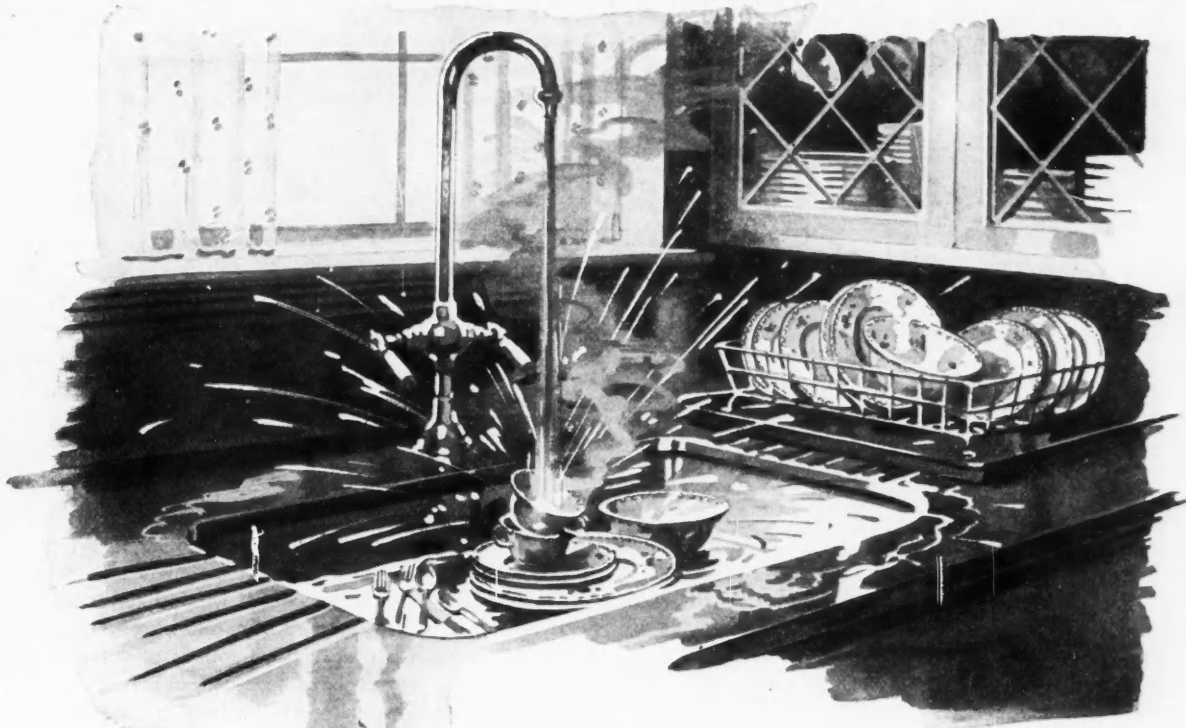
Our experience, which is based upon years of careful study of this exclusive subject, has convinced us that it is much easier to make drawings of barns and show arrows moving air than it is to get the air to follow the arrows.

Perhaps if you will follow this carefully, you will find that the author of the article is someone who has read a few articles on ventilation, but who has never sold and guaranteed one in his life.

Think this over and see what you can make out of it. I am sure that it is too important to allow a matter of this kind unfinished in your publication.

I want to thank you personally for the lot of good material you have in the February issue on farm building. You certainly have a lot of good stuff and are doing a great good for the building game. Let the good work go on because we are with you and appreciate the value of a publication such as yours.

KING VENTILATING COMPANY,
By L. Klima, General Manager.



*A Varnish as impervious
to hot water as glass or china*

WOODWORK around a sink should be the most sanitary part of the house—and is often the least so.

Univernish gives it a surface almost as hard as glass—a surface which boiling water will not injure or turn white—a surface that may be scrubbed with hot water and soap—a surface that will not stain or offer lodgment to waste.

The practical, livable, keep-cleanable qualities of a home go far toward insuring the lasting satisfaction of the owner. The specification of Univernish for kitchen, pantry, bathroom and bedroom woodwork assures a finish of real beauty and great durability.

May we not supply full specifications on Univernish and on the complete line of Murphy Varnishes and Enamels for all finishing purposes?

Univernish is furnished as clear varnish and in the following transparent wood colors:

<i>Dark Oak</i>	<i>Mahogany</i>
<i>Light Oak</i>	<i>Walnut</i>
<i>Bog Oak</i>	<i>Green</i>

Murphy
Univernish

The Universal Varnish

Supplied clear and in six transparent wood colors

Murphy Varnish Company

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NEWARK

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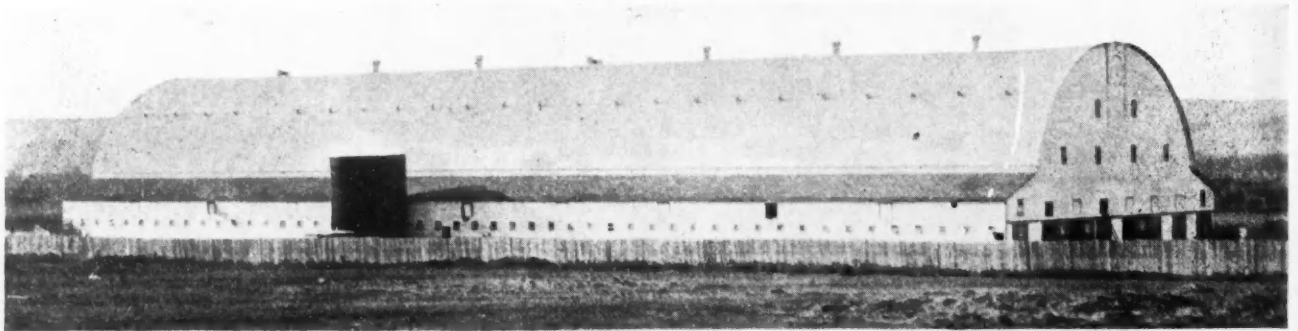
Large t Barn in North America

To the Editor:

Leader, Saskatchewan.

Am enclosing picture of the largest barn in North America, located on the W. T. Smith ranch, eight miles from Leader. The barn is 128 feet wide by 400 feet long, 70 feet to the ridge. One carload of nails, one million feet of lumber and

servng nearly a year overseas—not in "front" with the doughboys and returned with glory hung all over you (which they justly deserve)—but far behind the lines, serving as a common everyday carpenter boss with a bricklaying construction company. Tho I can't say that we established any great record for speed, as I kept no account of the amount



Barn 128 Feet Wide, 400 Feet Long and 70 Feet High, Located on Smith Ranch, Near Leader, Sask.

four thousand sacks of cement were used in its construction. The roof is covered with galvanized roofing.

A. H. HUNNEWELL,

With E. D. Kimball Lumber Yards, Ltd.

From a "Gold Stripe" Builder

To the Editor:

Mt. Pleasant, Mich.

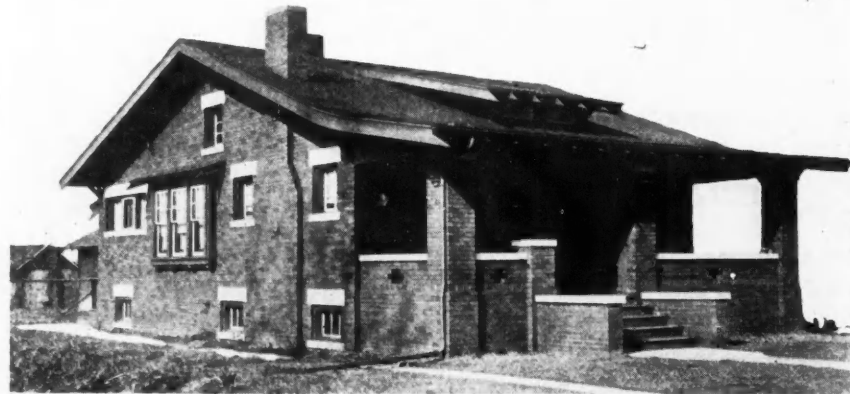
Enclosed find my renewal subscription, and I wish to thank you for continuing to send my magazine each month since my subscription expired.

I presume you wondered why I didn't send the renewal before. I was just discharged from the Service, after

done, yet we showed the English tradesmen a thing or two. We did a great variety of work, ranging from the smallest toilet to double hangars of 100-foot span each, using a wooden truss of lattice design. I would like to have seen some of these fast nailers start in some morning to do one of these trusses, as there are nearly 500 pounds of spikes in each one.

Of course, we all have to learn our trade, but I would like to know how many of the brothers would be in favor of the apprenticeship system and passing a state examination and registration. It seems to me there would be better wages and more work done. So many men that are just

(Continued to page 74.)



WESTERN FACE BRICK

The picture shown here is the residence of W. H. Goodwin, Danville, Ill. It is built of Gothic Full Range Mixture Face Brick and presents a beautiful harmonious color effect of reds and browns.

Western Face Brick is made in many colors and textures to suit the most exacting tastes of our customers. We have just the color and texture you have long been wishing for.

WESTERN HOLLOW TILE

for farm buildings is the most economical building material—no repairs—no upkeep. It has made possible buildings that are absolutely permanent—fireproof and vermin-proof.

Our line covers every building need.

Building Material Dealers carry the "Western Line." Tell your dealer to write for samples and prices.

WESTERN BRICK COMPANY - Danville, Illinois



Competition

of the sharpest kind is the most vital situation to be met during the reconstruction of the world's business to a Peace basis.

To meet your competitors with any chance of a success, you **must reduce every item of overhead.**

The most practical method of reduction is the erection of fire-proof buildings at the **least initial cost**, which guarantee the **least maintenance cost.**

No building material comes as near 100 per cent in the above two particulars as

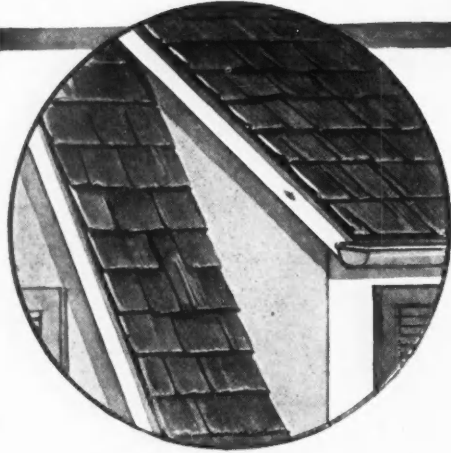
Ambler Asbestos Corrugated Roofing and Siding

Made of the best Portland cement reinforced with strong Asbestos fibre, it provides the most durable, fire-proof, water-proof, wind-proof covering for any building. It does not require painting; will not crack, warp or split; and has just enough elasticity to stand any strain from vibration, wind pressure, and expansion or contraction, without breaking in any way.

Write today for full information with pictures and prices

Keasbey & Mattison Company, Dept. B1, 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



The Double Roof Idea

THE thrift-way of laying roll roofing right over old wooden shingles makes the call for Neponset Paroid, slate surfaced, bigger than ever. The double roof idea has caught on.

For twenty-five years Neponset Paroid has made good on railroad buildings, barns and great industrial plants, sheds and shops. Colors—natural slate-red, slate-grey, and slate-green.

You are losing out on a real opportunity unless you are prepared to offer your customers the protection and economy that Neponset Paroid gives.

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

Established 1795

Chicago New York Washington
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NEPONSET ROOFS

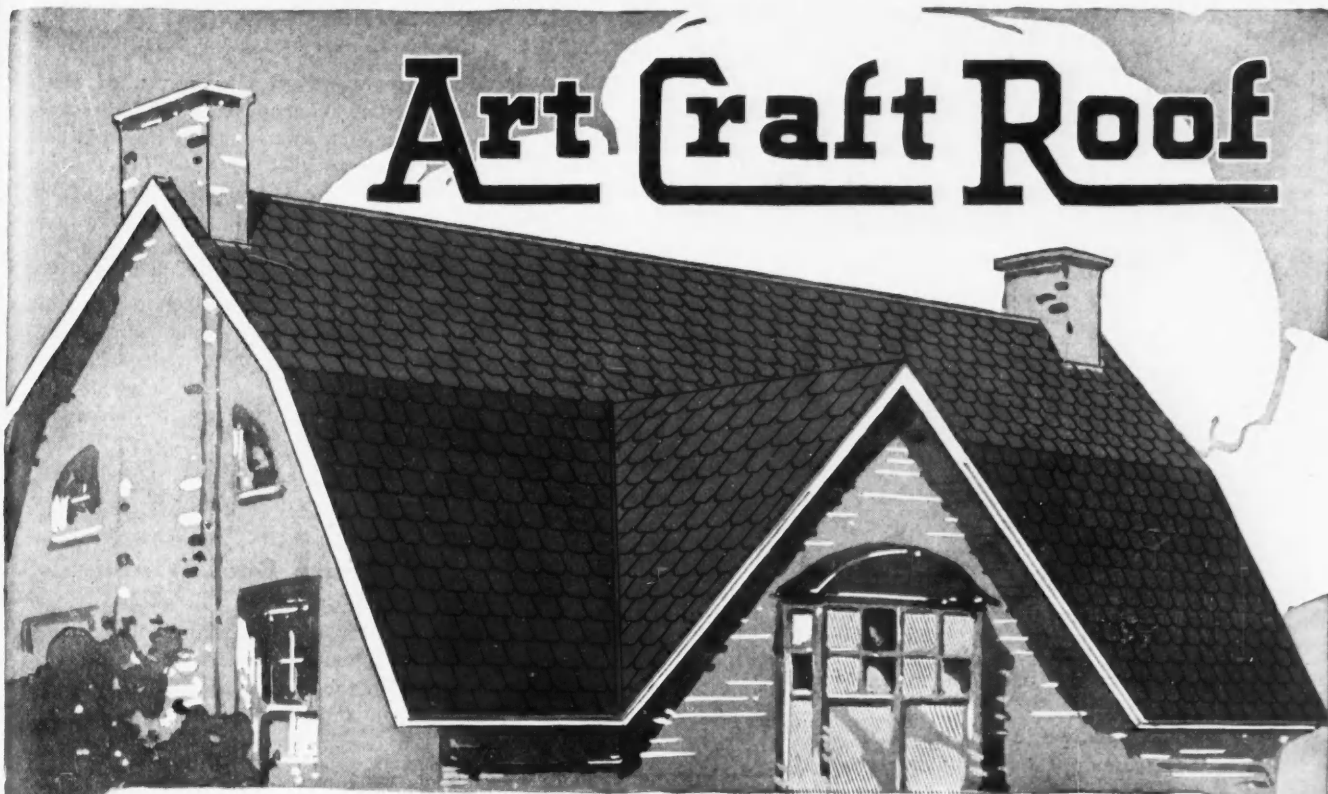
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Send me, without obligation, free Selling Plan folder and directions for laying NEPONSET Roofing over wood shingles.

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

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Art Craft Roof



The Repairing Season

THE repairing season is at hand. Art Craft will play no small part in beautifying the houses of America.

Fix these points firmly in mind: Art Craft is fire-safe; it gives lasting service; it comes in beautiful shingle or tile designs, slate-red and slate-green; laid right over old wooden shingles it saves the expense and litter of ripping off the old roof.

You are missing a real opportunity unless you are prepared to offer your customers Art Craft. Write us for complete information.

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

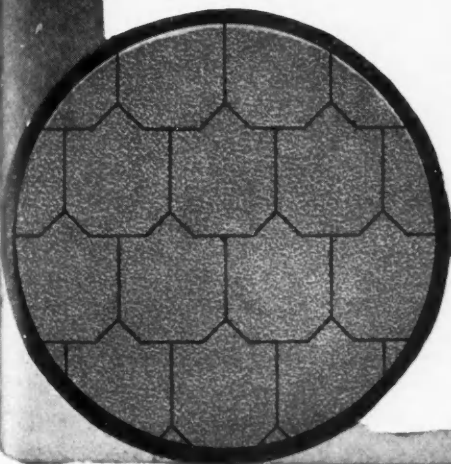
(Established 1795)

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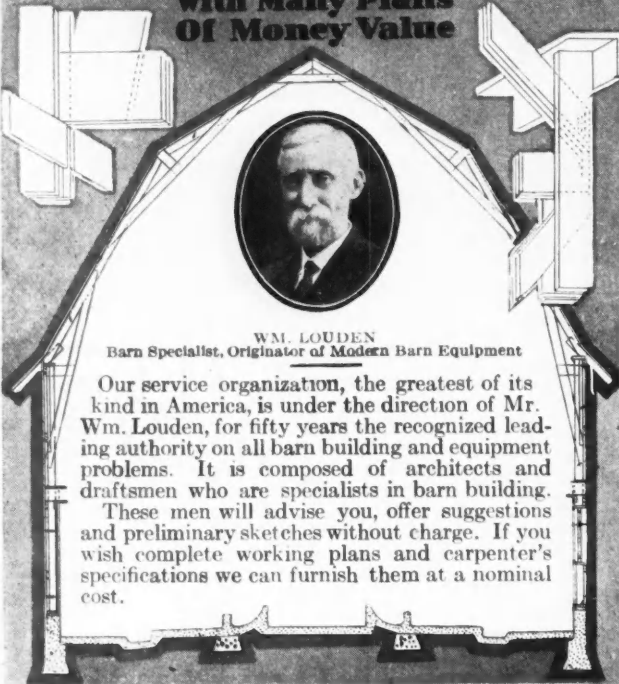


BIRD & SON, Inc., Dept. C, East Walpole, Massachusetts

I want to learn how Art Craft will bring me more business. Send complete information. Name..... Address

Carpenters And Builders! LOUDEN

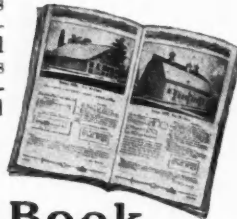
Will Help You
With Many Plans
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WM. LOUDEN
Barn Specialist, Originator of Modern Barn Equipment

Our service organization, the greatest of its kind in America, is under the direction of Mr. Wm. Louden, for fifty years the recognized leading authority on all barn building and equipment problems. It is composed of architects and draftsmen who are specialists in barn building. These men will advise you, offer suggestions and preliminary sketches without charge. If you wish complete working plans and carpenter's specifications we can furnish them at a nominal cost.

Louden Service enables you to approach your prospect with expert advice and definite plans that meet his individual needs, which impress him favorably and which he will appreciate.



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Sent Carpenters and Builders Postpaid—No Charge

It is not a catalog, but the most valuable book of exclusively barn building information ever written. 112 pages of expert information on grading, drainage, concrete work, framing, strength of materials, lighting and ventilating. 74 representative plans of barns. Sent postpaid on receipt of one or more names of prospective builders. Write for it.

Write also for the Louden Barn Equipment catalog, 224 pages, illustrated. Shows the full Louden line of labor-saving equipment, including Stalls and Stanchions, Feed and Litter Carriers, Hay Unloading Tools, Water Bowls, Barn Door Hangers, Garage Door Hangers—"Everything for the Barn."

We will start things for you if you will send us the names of farmers who are likely to build or should build.

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(Established 1867)

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Branches: St. Paul, Minn. Albany, N. Y. Chicago, Ill.

The Louden Machinery Co., 5515 Court St., Fairfield, Iowa

Please send me full information on your Barn Building Service to Carpenters, also books checked below:

Louden Barn Plans. Louden Catalog.
Prospective builders are:

.....
.....
My Name.....
P. O. State.....

Correspondence Department

(Continued from page 70.)

handy take the trade as a way to get a better rate of wages until they can start in some other business. If there are any doubts, let them stop in a strange town and see how much wages he can get to start with.

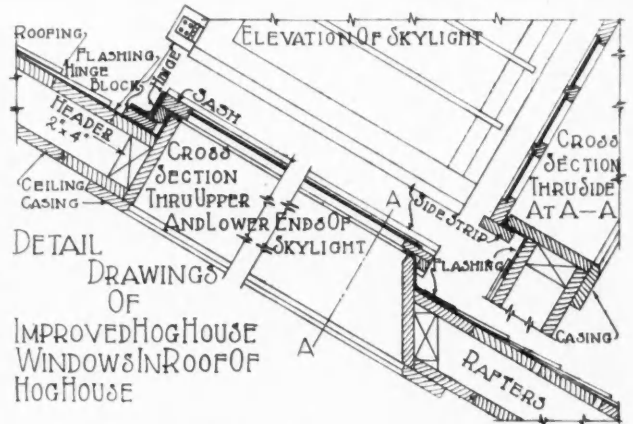
My answer to Contractor V. E. Clow, of Portland, Ore. (refer to Correspondence Department of the January number), would be to learn his trade a little better before he claims to be a "Builder." I have taken the AMERICAN BUILDER a number of years and certainly like it fine. But it seems to me a great many are imposing on the men that have spent a long time learning their trade, by asking such simple "wee boy" questions.

Hoping you can see my ideas of the necessity of registering carpenters and asking the other fellows' opinion, I remain
"A GOLD STRIPER,"
Melvin G. Hunt.



To Make Hog House Roof Windows Water Tight

To the Editor: Minneapolis, Minn.
In your December, 1918, issue, page 42, you show a plan of a hog house window in the roof, I would like to know how you hinge this window and how you expect to keep the rain from coming in at the upper end. I am making a



Detail of Water Tight Roof Window for Hog Houses.

plan for a hog house and had just such a window in mind, but am somewhat puzzled as to making it water tight at the upper end.
C. W. WHEELER,

Of Weeber & Race, Contractors and Builders.

Answer—We are pleased to send you herewith a detail prepared in our Architectural Department, which shows one method of handling this proposition in a way to be water tight. We hope that this will serve your purpose.—EDITOR.



Here's a New "Makeup" Idea for Publishers

To the Editor: Prince Albert, Sask., Can.
I enclose subscription to the AMERICAN BUILDER for the year 1919.

If the system of distributing the reading matter is continued to the extent it is now, I shall have to destroy all back numbers as they are too bulky and lose a mine of valuable information.

You recently took to task some of your readers for complaining on this point and to strengthen your argument re-

(Continued to page 76.)



dealers!

AN authority on the building field estimates that there is twice as much building construction now projected in this country as the best previous year.

Our national horizon widens—we see with a clearer vision now. We face a period of industrial and building expansion unparalleled in history.

A new era of building is upon us. The greater portion of these new buildings will be covered with high grade asphalt shingles and asphalt prepared roofing in rolls. Particular buyers are going to specify McHenry-Millhouse roofing materials. *Can you supply them?*

Now is the time to prepare to get your share of this business. With plenty of goods on hand in plenty of time you will be equipped to get the cream of the trade and make a real sales record.

If you are interested in making your business *pay greater profits* through increased sales, get in touch with us. Write or wire for details.

A new folder describing our roofing is just off the press. We shall be glad to mail you a copy without obligation to you. Your inquiry will meet with promptness and courtesy.

McHENRY-MILLHOUSE MFG. CO.

(INCORPORATED)

PLANTS: SOUTH BEND, IND., and FULTON, N. Y.

GENERAL OFFICES: SOUTH BEND, IND.

(Continued from page 74.)

ferred to the custom of the *Saturday Evening Post* and other standards.

I simply detest that confounded "Continued on page —" and fail to see any justification for commencing articles always at the top of the page. Take the *Engineering News-Record* and several other magazines. When an article is ended they commence another directly under it, even two-thirds down the page. Their advertising is classified; just turn to the index for the page and all advertisers are found together, which is better than in a dozen different places. I am not writing this as disinterested in the advertising, as I have purchased in the United States over one thousand dollars worth of builders' machinery from firms I have never seen. The advertiser who keeps his goods continually before the public will make the sales, other things equal.

Now I have two ideas which I should like to see fully ventilated in your columns.

First, I would suggest the reading matter to be kept together and no article to be "Continued on page —," so as to commence a new article on next page.

The second plan would be to classify the reading matter under a self-filing plan. Take the October issue. Page 23 would be classified ads; 24 to 31 would be Remodeling Suggestions, and page 32 would be ads. On page 33 would be classed "How to Increase Business," with a page of ads behind it. Pages 34 to 43 would be classed as house plans, with classified ads before and after. Correspondence would be on pages 59 to 62, with the perspective on pages 63, 64 and 65.

Say now one of your readers is particularly interested in the Steel Square. He can divide and remove that part and file each article away (without having to look thru twenty separate numbers) providing there is on the reverse side

no part of an important article that might suit someone else.

I should like to see this freely discussed, nothing but good could come eventually. Let your readers see that you want them to be interested and make suggestions.

H. H. LUKE.

EDITOR'S NOTE—There is just one question we would like to ask, touching the above. How many builders buy this magazine for cutting up and filing away, and how many buy it for current use?—EDITOR.



Suggests Blue Prints for Steel Square Lessons

To the Editor.

Redcliff, Alta, Canada.

I have taken the *AMERICAN BUILDER* for some time, and I want to tell you that I appreciate its worth very much and look forward to it every month. Every article is worth reading, and I never lay it down without finding real help and fresh inspiration in my work as a carpenter. I have brought it to the notice of several in different parts of this country, and urged them to make use of the good things to be found within its pages.

I am interested in the articles on "Problems of Roof Framing Solved," and I would suggest that if you would add some Isometric Drawings of roof framing showing the timbers in their proper places—in other words, showing the proper construction—it would make an added interest to the above articles, especially to the young men who are weak in the art of framing a roof properly. I would suggest blue print drawings of hips and valley rafters, dormers and lookout, pediments of various kinds, and gambrel roofs showing valley construction, such a roof, for instance, as illustrated on page 41 of the December number. It would mean a lot to many

(Continued to page 80.)



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

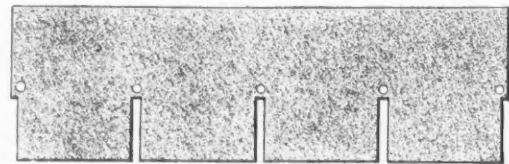
Write us about your territory at once. This doesn't mean next month, or next week, or even tomorrow, but right now! One hour's delay may mean that someone else may be given your territory. Send for our special agent's proposition and large illustrated Ceiling catalog of attractive sales-making designs.

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



REX STRIP SHINGLES

Asphalt—Slate Surfaced

IF YOU are not handling this popular Asphalt Shingle you are passing up a mighty good proposition. The spring building season will soon be here. Are you prepared?

Catalog Number 20 and Samples of Rex Products on request.



The Flintkote Company

Asphalt Shingles Prepared Roofing

90 Pearl Street, Boston

New York Chicago New Orleans



Carey

ROOFINGS

*—insure
your profit and
please the owner*

TAKE CAREY MICA-KOTE Roofing, for instance, made in four weights. It is the toughest, most durable piece of roofing you ever saw. The surface on both sides consists of flakes of silver-like mica.

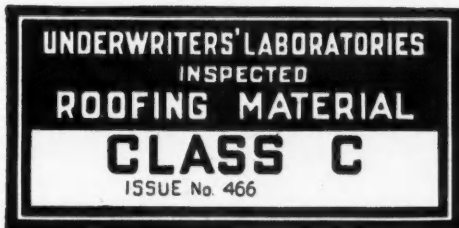
The body of the roofing is Carey Woolfelt, made in our own mills. This is thoroughly saturated with the toughest, most elastic asphalt compound, which is made in our own refineries.

Carey Mica-kote is a quality piece of goods through and through, but it is cheap roofing in the long run because it wears better.

There is a weight for every building, from the smallest shed to the largest barn or warehouse.

We have a complete chain of distributors all over the country and can always supply your needs promptly.

Write us for samples and prices.



THE PHILIP CAREY COMPANY

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

50 Branches and Distributors

- | | | | | | |
|------------|-------------|--------------|-------------|---------------|------------------|
| Atlanta | Chattanooga | Detroit | Memphis | Omaha | Spokane |
| Baltimore | Chicago | Jacksonville | Minneapolis | Philadelphia | St. Louis |
| Birmingham | Cincinnati | Kansas City | Montreal | Pittsburgh | Tacoma |
| Boston | Cleveland | Knoxville | Nashville | Portland | Toronto |
| Buffalo | Dallas | Little Rock | New Orleans | San Francisco | Wheeling |
| Charlotte | Denver | Los Angeles | New York | Seattle | Washington, D.C. |



Keystone Copper Steel



Look for the Keystone added below regular brands as indicated above. It is your protection mark.

Keystone was an advance step—the *first* Copper Steel manufactured, so branded and marketed. Being the *pioneer* in the field it is backed by greater skill and experience than any competitive copper-bearing material. This fact should not be overlooked by buyers and users of sheet metal.

American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES:

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh St. Louis

Export Representatives: UNITED STATES STEEL PRODUCTS COMPANY, New York City

Pacific Coast Representative: UNITED STATES STEEL PRODUCTS COMPANY, San Francisco, Los Angeles, Portland, Seattle



*Highest Quality Manufactured—
Superior in Rust-Resistance
Satisfactory in Service
Reasonable in Cost*

—the First in the Field

Our efforts to improve the lasting qualities of sheet metal products resulted in the production of *Keystone Copper Steel*. This material is not an experiment—for service installations the country over bear witness of its long endurance, and unequaled rust-resistance. The excellence of *Keystone* quality is further evidenced by the growing demand for this material.

BUILDERS

Architects, Roofers, Contractors and Property Owners will find that Galvanized Roofing, Siding, Cornices, Spouting, Tin Roofs, and all exposed sheet metal work will give greatest service and rust-resistance when made from **KEYSTONE**.



Supplied in Black and Galvanized Sheets, Galvanized Culvert Stock, Formed Roofing and Siding Products, Roofing Tin Plates, Etc., Etc.

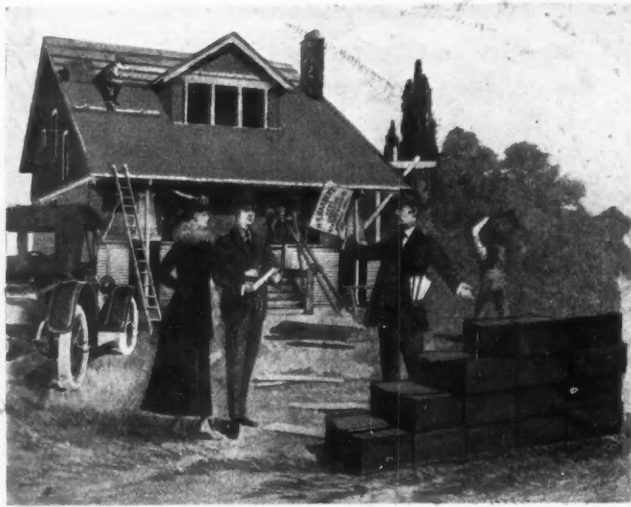
If you are interested in securing more service from sheet metal products—send for Keystone booklets.

American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

MANUFACTURERS OF

Sheet and Tin Mill Products of every description, including Black Sheets, Galvanized Sheets, Tin and Terne Plates, Electrical Sheets, Corrugated and Formed Roofing and Siding Materials, Special Sheets for Stamping, Keystone Hammered Polished Steel Sheets, Automobile Body Sheets, Stove and Range Sheets, Black Plate, Etc.



COLOR LENDS CLASS QUALITY INSURES SATISFACTION . .

BUILDERS know the important part good shingles play in building. Especially in the small house, cottage or bungalow, where success depends so much upon individual color effects, and where it is necessary to exercise the greatest economy of labor to realize the maximum profit.

THE "BARCREST" BRAND

shingles are carefully selected and prepared to meet this particular demand. They are sawn from the finest live Cedar—sorted into 12 grades and sizes, 16", 18" and 24" lengths and are all thoroughly dried, individually color treated (20 beautiful shades or any special color desired), before leaving our factory.

This careful process means that every bundle leaving our factory is composed of perfect shingles—it means speed and economy in laying—"To the Builder"—it means a roof without a fault, that can withstand snow or rain without fading or streaking.

Our shingles are listed in "Sweet's Architectural Catalog"—they are endorsed by Builders throughout the country.

Shipped direct from factory to Roof in any part of the country with an absolute guarantee to be in perfect condition.

Write today for our roofing suggestions, color samples and catalog—it will interest you.

H. S. Barber Cre-Sote-Stained Shingle Co.

ORIGINATOR AND SOLE MANUFACTURER OF

**THE "BARCREST" BRAND
CRE-SOTE-STAINED SHINGLES**

Office and Factory

173-193 Beaufait Avenue

DETROIT, MICHIGAN

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Correspondence Department

(Continued from page 76.)

a youngster who is striving to be efficient in this part of his work. The blue prints are a grand idea and I take them out and keep them together, and a young student of the craft would do well to do the same, and in roofing problems they would always be a source of light and help.

Kindly excuse the suggestion, but I have come across so many young fellows who have a lamentable idea of roof construction outside a plain span roof, that I feel the need of this in most of our building papers as a source of instruction. When I come across this kind of a young fellow craftsman, I always help him if I can.

J. ELDEN.



Steel Squaring a Gambrel Roof

To the Editor:

La Fargeville, N. Y.

In the January issue a reader asks about the steel square and the self-supporting gambrel roof shown in the February, 1918, issue, page 71.

This looks like a 60 and 30-degree roof and the 30 and 60-degree triangle shows that it is. This brings up the subject of degrees and degree framing, which is a story by itself and of which more anon.

We find that the nearest way to express a 60-degree angle as a pitch is seven-eighths. This would give us 14 and 8 as the figures to use for marking the cuts. But as a seven-eighths pitch is 60 degrees 17 minutes or a little over one-fourth degree more than we want, we decide to use eight and thirteen and seven-eighths on the square to mark the seat and plumb cuts.

Another way is to use 12 and $20\frac{3}{4}$, as it figures out almost even this way.

The cut at the gambrel is at an angle of 45 degrees to a horizontal line, and, of course, the same from a vertical. To make sure that this is correct refer to that drawing on page 71, February, 1918, issue, or any similar one where the rafters are at an angle of 60 and 30 degrees, or draw one yourself, or merely the two lines for one side of it, and prove for yourself that it will not make any difference where the rafters meet, or if you cut the end off one or the other.

The joint will be the same at an angle of 45 degrees, and as the rafters are just 15 degrees different from this the figures on the square to cut 15 degrees will be the ones to use. These are 4 and 15 or $3\frac{1}{4}$ and 12.

To get the length of the rafters depends on where you wish the joint to come, but according to the given drawing a 12-foot rafter is used at the top and a longer one below.

If the two were the same it could be figured out readily and now we will get it by the square. Measure across from 12 to 21 and you will have 24 and a little more. It figures out 24.19. This is the length for each foot run and is practically 2 feet to one and the upper rafter is practically 2 feet length to each foot rise, and the only way I can see now to get the run of either rafter is to measure the drawing.

JOHN UPTON.



Casine Mucilage

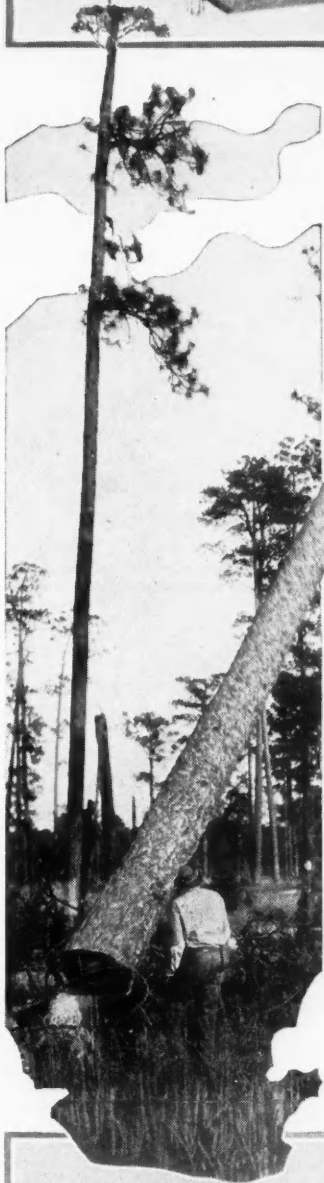
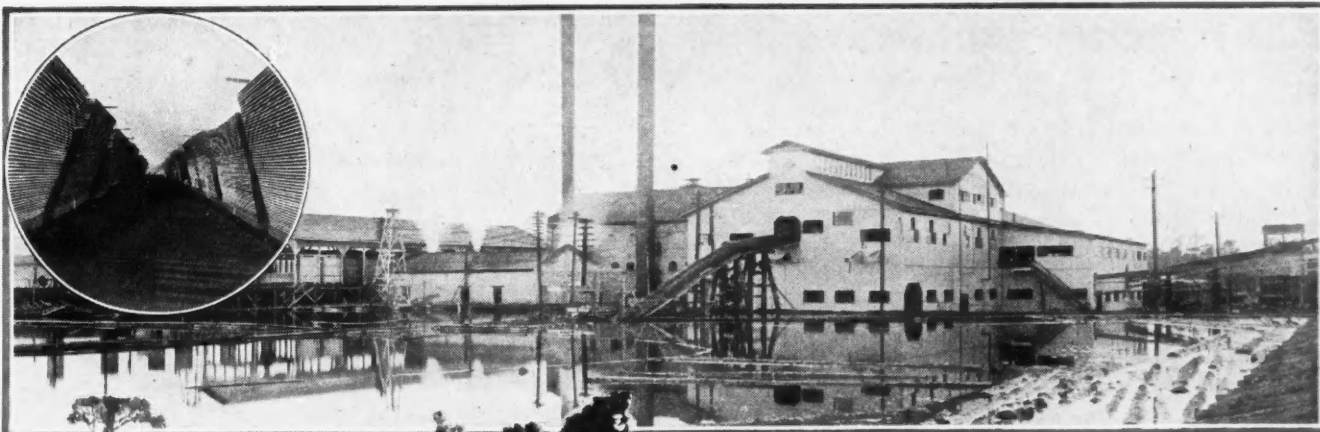
To the Editor:

La Fargeville, N. Y.

In answer to C. H. Tollener, here is a formula which I believe he will like to try:

Take curd off skim milk (freed from cream and oil), wash thoroughly, dissolve to saturation in a cold concentrated solution of borax. This keeps well and I like it much better than mucilage of gum arabic.

JOHN UPTON.



Why Long-Bell Lumber is Trade-Marked

For a quarter of a century we have manufactured lumber that has maintained a reputation for uniform high quality. For an equal period a constantly increasing number of consumers have purchased our products, and in many cases did not know who made them. Now all our lumber and timbers bear this trade-mark

Long-Bell

THE MARK ON QUALITY LUMBER

Because of our capacity and ability for service, our modern equipment, our care in grading and efficient supervision of each process of manufacture, we believe it should be possible for contractors, carpenters and consumers to take advantage of the quality of our products, therefore, all Long-Bell lumber and timbers are branded with the above trade-mark.

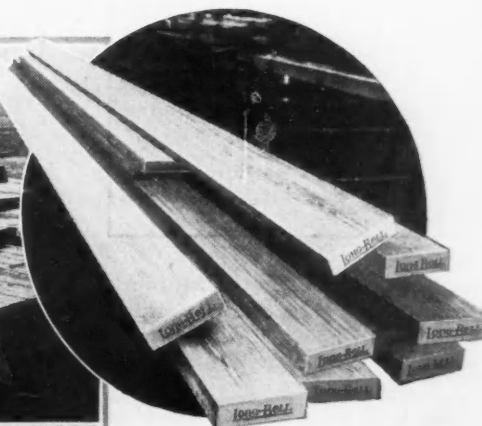
Ask Your Dealer for Long-Bell Brand

The Long-Bell Lumber Company

R. A. LONG BUILDING

KANSAS CITY, MO.

Manufacturer of Southern Pine, hardwood, oak flooring; creosoted lumber, ties, posts, poles, pilings and wood blocks.



The Huntington, Indiana Plan

To the Editor:

Huntington, Ind.

I have been reading with a great deal of interest your articles published in behalf of encouraging building conditions at this particular time and it prompts me to write you and give you a little information in regard to our own local situation which I am sure will be interesting to you. If you feel it will be helpful to your subscribers I have no objection to your publishing the contents of my letter.

My subject will be "The Huntington, Indiana, Plan." I might say in the first place that the statistics in our state last year showed that in Huntington, a city of 20,000 population, there were more new houses built, according to the population, than in any other city in the state of Indiana.

One year ago several of our progressive builders and supply dealers and lumbermen thought of a novel idea and a very good one to help to increase the interest in the building situation in our own locality. We organized what we called the Huntington Community Development Club. The organization was made up of the lumber dealers, building supply dealers, hardware merchants, plumbers, electrical contractors, sheet metal contractors, furnace dealers, furniture dealers; in fact any class of people in our community who were interested in the sale of material entering into the building of a modern home.

We elected a president, secretary and treasurer and an advertising committee. Our plan was for each member to subscribe a small amount toward a fund to be used for educating our people to the fact that they should build homes NOW. We used full page space in our two daily papers and the result, we are confident, was that we encouraged a great many people to build homes which were badly in need in

our city at that time, and are still just as badly in need.

The plan worked out so well and we had such a good reputation last year that we have reorganized our committee again this year and have added a number of other firms to our list, including real estate dealers, building contractors, such as carpenters, masons and cement contractors.

In raising this fund we have no amount larger than \$25.00 and nothing less than \$10.00. This gives us a fund of between \$500 and \$600, which we will invest in full page space in our two daily papers. You can readily see that this is a very small expense to any one of the firms interested, but on the whole it will amount to fine publicity in increasing the interest and building conditions in our own locality.

You understand, of course, that the advertisements refer simply to general building conditions and do not advertise any one particular commodity.

We had some mighty fine copy in our last year's campaign and I think we could furnish anyone, who would be interested, with duplicates of our copy if they would care to adopt the same plan. Furthermore, if any of your readers wish to go into this matter and adopt the Huntington Plan and will correspond with the writer, I will be very glad to put them on a mailing list and send them copies of our local papers as our advertisements appear.

I am confident that if all of the smaller cities would adopt this plan, which would not be a very expensive one owing to the small rate for advertising space in cities of this size, we would create a great deal of interest thruout the United States and encourage a great deal more building than would be possible if the attention of the people was not called to it thru a sane and careful advertising campaign.

J. M. TRIGGS, President,
The Majestic Company.

What Is the Contractor's Business?

What the mark



stands for

Up-to-Date Designs
Selected Woods
Extra Thick Veneers
White Pine Core
Wedge Dowel Construction
Quick Service
Positive Guarantee
of Satisfaction

Send today for "Morgan Millwork Handbook." Free for the asking and a handy book to have around.

People expect two things of a contractor—knowledge of construction and knowledge of building-materials.

Of all the material that goes into a house, nothing can cause more trouble and inconveniences than poor doors. They swell in damp weather—shrink in dry weather.

Retrimming and rehanging don't help, for with the changes of seasons the diseases of poor doors keep coming back. Not very good advertising—not apt to build good will for the contractor.

The sure way to win the confidence and good will of your customers is to install trouble-free Morgan Doors. They stay put, season in and season out.

Morgan has for years held the leadership in the door field. Held it on merit. Because Morgan Doors are architecturally right in design—built only of finest selected woods—and because the exclusive Morgan construction features make a door that gives perfect service.

Morgan Sash & Door Co., Dept. 73, Chicago
Morgan Millwork Co., Baltimore
Morgan Company, Oshkosh, Wis.



*"A living thing
Produced too slowly ever to decay." — Wordsworth*

THE natural romantic appeal of California Redwood should mean more and better business for you.

Even without the stimulus of our advertising, home lovers would sense the charm of this rose-tinted wood from the "big trees" of history. Soft (yet firm) of texture and free from pitch and resin, it permits of a variety of uses, both interior and exterior, which mark the Redwood-built home as distinctive—attractive—beautiful.

In our advertising through the leading magazines of the country we are fostering this appreciation. We are also explaining how the natural preservative which has protected the big trees for so many centuries, gives Redwood lumber remarkable lasting qualities today, and how its freedom from pitch gives it a remarkable resistance to fire.

By a simple statement of facts, we are stimulating the desire for this remarkable wood.

You will find that it pays you to fall in with this campaign. In money, because every pretty home built creates a desire for another. In reputation, because even the simple bungalow of Redwood has a "differentness" which advertises its builder.

Probably your lumber dealer can supply your California Redwood requirements. If not, give us his name.

Write for details and further information! Let us send you our free booklets: "California Redwood Homes," "How to Finish Redwood," "California Redwood for the Engineer," "California Redwood Block Paving" and "Specialty Uses of Redwood."

CALIFORNIA REDWOOD ASSOCIATION, 728 Exposition Building, San Francisco, Cal.

California Redwood
Resists rot and fire



Profit-Making Barns For Both Owner and Builder

Milk is an "essential" of life. **More** milk is the imperative need and demand. More and better dairy barns are absolutely necessary—for **better dairy barns result in more and better milk.** That's why there should be a great increase in **better** dairy barn building.

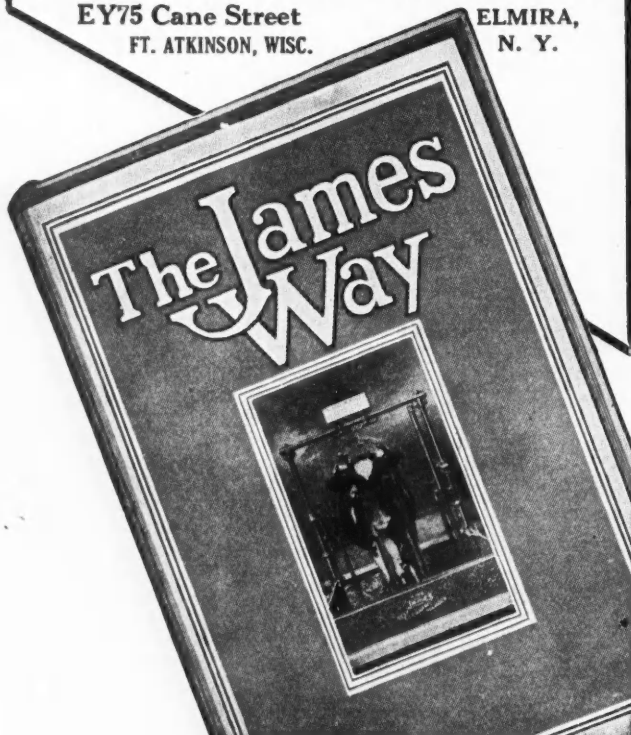
Why not get your share of the contracts for these barns?

We are in position to help you do this very thing.

Write Us For A Free Copy Of That Famous Book "The Jamesway"

When writing send us the names of farmers who are thinking of building or remodeling barns and give us the size of their herds. We will send advertising literature to those farmers which will bring their building contracts into your hands. Co-operate with us and you will make more money.

JAMES MANUFACTURING CO.,
EY75 Cane Street ELMIRA,
FT. ATKINSON, WISC. N. Y.



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

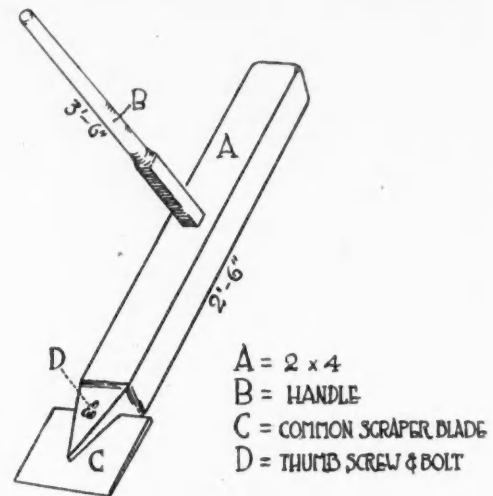
A Practical Floor Scraper

To the Editor:

Ravenna, Ohio.

One of your readers wanted to know what kind of a scraper is best to use on a floor to remove paint or varnish.

I am enclosing a drawing of one I use frequently and make myself on the job, and find it the best I have used so far. One person pulls on the handle and another holds it to the floor by resting one hand on top of the 2 by 4 where I have the cross, and the other hand on the handle. You take short strokes with it the same as you do with the common "hoe" scraper. The scraper blade for this kind of a scraper,



A Two-Man Floor Scraper.

and in fact all scraper blades for floor work, should be beveled, then brought to a sharp, smooth edge and turned with a burnisher.

Hope the party will try this style of scraper on a painted or dirty floor, and let me know the results of his efforts.

Thanking you for the valuable space I have taken in the best builder's magazine published, I am,

H. R. CLARK.



Interested in Estimating

To the Editor:

Lincoln, Neb.

I note that Mr. C. E. Clow wants some information on estimating.

I believe that the AMERICAN BUILDER could do the craft a great deal of good by printing in each number some information on labor quantities along practical lines. However, all quantities should be in minutes and hours, not dollars and cents.

A dwelling could be taken and all labor given from foundation to finish, including some built-in features, dressing lumber, etc. Also the difference in time required to do the best work, and ordinary work.

Barns and other buildings could be taken in turn. This subject could be extended almost indefinitely and it would make interesting reading, not only for the novice, but also the seasoned contractor.

One of the worst features to contracting of dwellings and farm buildings is there are many contractors that, thru inexperience, overestimate the amount of work that can be done per man, and consequently, bid too low. They not only often lose money, but make it difficult for any other contractor to obtain a fair price in the same locality.

ANDREW J. METZ.

Here's the Formula

"Rite Grade Inspected"
Shingles

plus

Rust Proof Nails

equals

"The Roof of Ages"

JUST these things with your good workmanship—no more, no less—are necessary to build a real roof, a roof that will add to your prestige as a builder and give satisfaction to the owner.



For Siding

The modern Bungalow or Colonial home is wonderfully attractive when sided with "Rite Grade Inspected" Red Cedar Shingles. Let us send you our Distinctive American Homes and Farm Building booklets.



RITE-GRADE SHINGLES



The Shingle Agency
of British Columbia
1026 Standard Bank Bldg.
Vancouver, B. C.

Shingle Branch
West Coast Lumbermen's Assn.
426 Henry Building
Seattle, Washington

The Editors Drawer

New things worth while

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

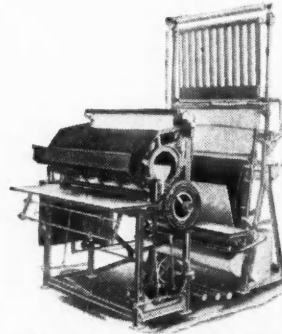
Continuous Blue Printing Machine

A blue print of a building plan is the architect on the job, telling the contractor and the bosses thru their eyes just what the designer of the building intends shall be done and how it shall be done. How necessary are blue printing machines, which furnish copies of the original plans to the men who are doing the work, everyone in the building industry knows. The machines that produce the blue prints have undergone many changes during recent years and have become more and more elaborate.

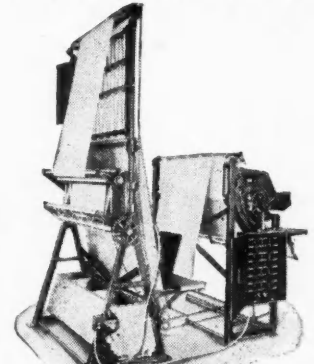
Herewith is illustrated a type of machine that will produce as many or as few blue prints from original drawings as

the contractor and builder may require. With one of these machines a single operator can print, wash and dry 100 linear feet of blue prints per hour.

This is a continuous photo-printing machine, used in conjunction with an automatic washer and dryer. The illustrations show a front view of the machine; a side view, illustrating the course of the paper thru the machine, and how easily accessible the lamps are for trimming and cleaning.



Front View of Continuous Blue Printing Machine, Showing How Tracings Are Fed Into It.



South View of Continuous Blue Printing Machine, Showing Course Tracings Take.

The tracings are fed into the machine from the table shown in the front view and beneath it are two horizontal spindles which carry rolls of sensitized paper of different widths. The tracings and paper are carried upwards over a cylindrical segment of thick plate glass, at various speeds, regulated by a rheostat, where exposure takes place. In front of the glass is a battery of five arc-lights, shown in one of the illustrations. A small electric fan drives a current of air thru the machine, carrying away the heat from the lamps.

(Continued to page 88.)

"Beautiful Birch for Beautiful Woodwork"

Our nation-wide campaign of advertising is calling upon millions of prospective home builders to insist on "Beautiful birch" for the interior finish, veneer doors, floors, etc. We're working with (and for) the men who must *do* the building—"Team Work." You're with us, of course?

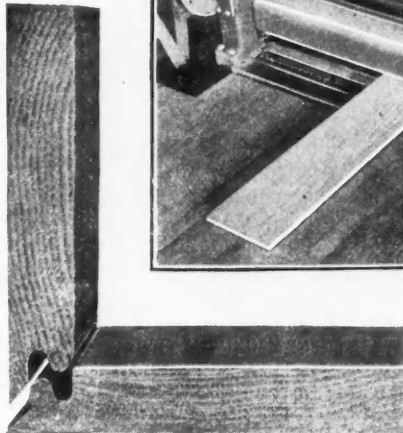
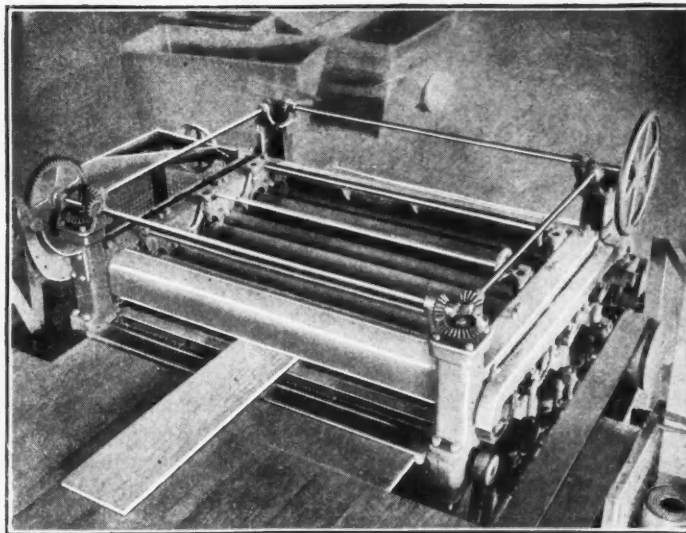


THE FREE *birch* BOOK GIVES INTERESTING FACTS ABOUT "THE HARDWOOD THAT ALWAYS MAKES GOOD." WRITE FOR IT—TODAY.

NORTHERN HEMLOCK & HARDWOOD MANUFACTURERS' ASS'N.

201 F. R. A. BLDG.

OSHKOSH, WIS.



*Machine sanding
saves labor on the job*

This lock mitre joint is used on Curtis Cabinet Work. No butt joints. No nail holes.

Put quality into the houses you build—and profits into your pockets—by installing **CURTIS** Cabinet Work. Built-in articles of home appointment, sideboards, buffets, cupboards, mantels, nooks, bookcases and paneling, add to the beauty, comfort and convenience of a home. Every piece of this built-in furniture you use will add to your reputation as a good and rapid builder and will make money for you at the same time.

All **CURTIS** Cabinet Work is made of selected wood properly cured and dried, matched as to grain and color, and finished with infinite care in every detail. Machine sanding and lock mitre joints are typical of **CURTIS** Cabinet Work.

Work with your lumber dealer in pushing Curtis Built-in Furniture. Let him tell you of its profit-making possibilities and see his complete catalogue. If he doesn't carry **CURTIS** Woodwork, write to

The Curtis Companies, Service Bureau
2037-3037 South Second Street, Clinton, Iowa

Manufacturing and Distributing Plants at:
Oklahoma City, Okla. Detroit, Lincoln, Neb. Sioux City, Iowa Wausau, Wis.
Topeka, Kans. Minneapolis Clinton, Iowa Dayton, Ohio Chicago
Eastern Offices at Pittsburgh and Washington

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

1866 CURTIS WOODWORK

"The Permanent Furniture for Your Home"

PLASTERGON WALL-BOARD

TREATED
WOOD FIBRE

(See how this 10-foot panel stands straight without bending! Send for actual photo.)



DO YOU BUILDERS KNOW

That by using this scientifically sized and cured waterproof wall board, you not only save time in covering wall space, and eliminate all the delay, expense, and muss of the Plasterer, but you are enabled to finish your building far more satisfactorily—and with individuality and novelty in color and design effects. In addition to these advantages it enables you to realize a handsomer profit than you can possibly enjoy with any other wall covering that can boast one-half as much quality.

There Is But One "Plastergon"

It is composed of the choicest Northern Spruce fibre; each board is then carefully seasoned and cured in our plant; and last, it is individually treated and every pore sealed by a scientific process of sizing—sheds water like a duck's back). That is the reason why it resists all atmospheric conditions, though it be nailed upon green studding there can be no trouble—only satisfaction—endurance—beauty.

Samples and our "Contractors' Practical Working Guide" sent free. Send the name of your Lumber or Builders' Supply Dealer. Write today.

Plastergon Wall Board Company

Manufacturers of the
"Quality" Board—Plastergon

Dept. A.

BUFFALO, 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

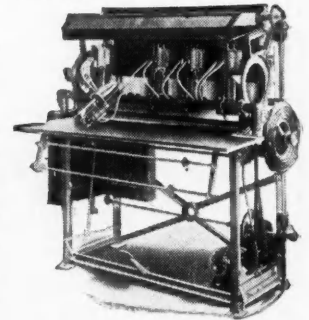
200 Fifth Avenue, New York City
Factory: Camden, N. J.

The Editor's Drawer

(Continued from page 86.)

After printing, the tracings are delivered into an enameled iron trough in front of the machine, so that the operator can remove them without changing his position. This trough also serves to catch the exposed sensitive paper if the printing machine is used independently of the washing and drying equipment, as is often the case. Usually, however, the exposed

paper passes over a roller at the top of the printing machine, and thence to the washing and drying machine. In it the paper is first washed by a spray of pure water, and afterwards treated by a weak solution of potassium bichromate. After a further washing with pure water, the paper passes upwards in front of the drying device, over a roller at the top, and down at the back of the machine. Here it passes through a system of rollers which carry a series of elastic bands, running in opposite directions, and forming part of a device for rolling up the finished prints. These are not wound up on a shaft, but the end of the paper is formed into a loose roll. This roll of finished prints is entirely free from wrinkles and distortion, being placed upon the bands and continues to roll itself up automatically until the operator wishes to cut it off and start a new roll.



Battery of Five Arc Lights in Continuous Blue Printing Machine Is Easily Accessible.



You Can Nail Into This Concrete

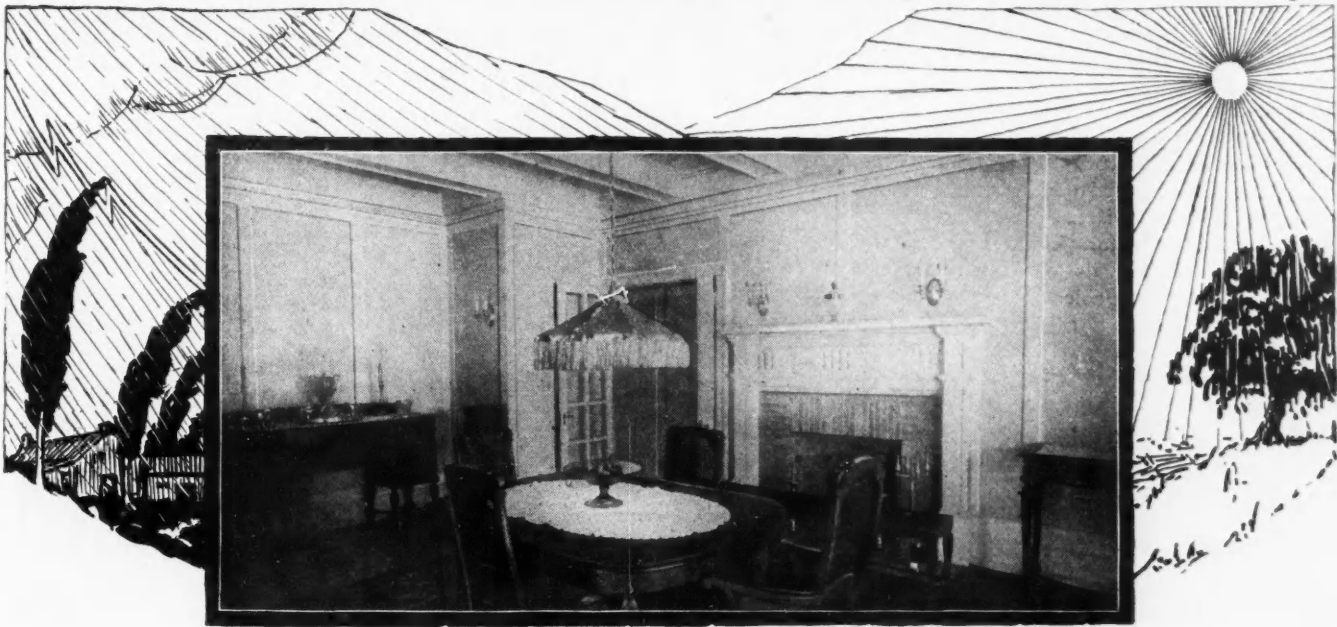
Builders and contractors will be much interested in a new building material called nailcrete which is being extensively used in the \$5,000,000 Parliament building now in course of construction at Ottawa, Ontario, Canada. The material has many of the properties of concrete, including its strength; in addition it is very light, works readily, and has the highly desirable virtue of taking nails and screws after it has set.

The photographs show in a vivid fashion some of its proper-

(Continued to page 90.)



Nailing the Baseboard to Nailcrete. Note the Layers Between the Hollow Tiles Inserted so the Framework of the Door May be Conveniently Nailed Fast.



Put Up the Wallboard That Stays Put

Rain or shine, in hot climates or cold, Black Rock Wallboard keeps out the dampness, or the heat, and "stays put." Never falling, or cracking, once up it stays up, for Black Rock will last as long as the building.

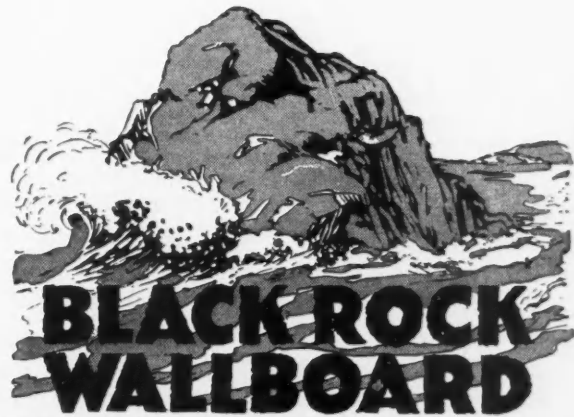
Black Rock Wallboard is built to meet differing weather conditions. Surface-sealed and sized on front and back, and further protected by its moisture-repellant black centre, this good wallboard has quality built right into it.

Black Rock Wallboard has many good jobs to its credit. Builders in many parts of the country have learned to depend on it. If you want real Black Rock results look up the Black Rock dealer in your vicinity.

Sample of Black Rock Wallboard cut from stock and details of our free Plan Service, sent on request.

THE BLACK ROCK WALLBOARD COMPANY
 65 Ontario Street Buffalo, N. Y.

Dealers—Write for details of our exclusive sales plan.



BLACK CENTER

BLACK ROCK WALLBOARD

BLACK CENTER

(Continued from page 88.)

ties. It may be interesting to know, however, that the binding constituent is portland cement, which may be varied with the other ingredients within a wide range to produce a composition of varying cost, strength and qualities to meet varying needs. It is fire-proof, water-proof and an insulator. Under ordinary building conditions its expansion and contraction is negligible. It even has some of the resiliency of wood, as may be judged from the fact that it takes nails and screws.

Interesting tests with regard to the holding powers of nailcrete were made by Mr. E. Viens, its inventor, in the laboratory for testing materials in the Department of Public Works at Ottawa. A two-inch nail was driven one and a half inches into various kinds of wood and also into nailcrete and careful measurements made as to the force required to pull the nail. For basswood, spruce and pine the force required was 47 pounds; for hemlock, 135 pounds; for ash, 223 pounds; for birch, 263 pounds; for red oak, 336 pounds; for maple, 430 pounds; and for nailcrete from 50 to 480 pounds, depending upon the composition.

The uses to which nailcrete may be put are numerous. As it takes a high polish, it may be used for flooring, walks, and similar purposes. In fire-proof construction, layers put in near the floor or between hollow tiles about doors and



The Method of Laying Nailcrete. The Mixed Nailcrete is Wheeled in in a Barrow, Spread with a Shovel, Tamped Thoroughly, and Smoothed with a Leveler; After It Has Hardened a Smooth Surface Is Given It with a Polishing Machine.

windows afford a convenient means of nailing the wooden baseboard and frame work in place. In the Parliament building it is used for the ceiling of the large chamber in which the House of Commons (consisting of over 400 members), will meet; the reason is that the canvas on which various paintings will be painted can be very conveniently nailed to the nailcrete. (Continued to page 92.)

Extreme Uses

such as for wall linings of ocean-going steamships where it stands the supreme test of vibration, moisture and strain, proves conclusively the strength and efficiency of



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

Its center core of kiln-dried wood slats—the only wall board thus made—is the secret of its strength, durability, cold, heat and moisture-resisting qualities and its adaptability to a wide variety of decorative methods.

Compo-Board is the modern wall lining. It will not buckle, warp, or shrink. So tough that it can't chip, crack or mar, and is not injured by ordinary knocks.

Sample Sent Free; also Interesting Booklet. Write for them.

The Compo-Board Co.

5777 Lyndale Avenue North
MINNEAPOLIS, - MINN.



Has
No Equal
For Factories
Foundries

and other industrial
and public buildings.
Brass Ball Bearings
completely enclosed.
Noiseless and Easy
Turning.
No back draught
Nothing to get out of
order.



Patented Oct. 21, 1913

Ask for Alpina Booklet

Milwaukee Corrugating Co.

Branch at Kansas City, Mo.

Milwaukee, Wis.

You Can Always Use One Good Job of Upsonizing as a Stepping Stone to Larger Success

More Building and Repairing This Year Than Ever Before. Become an Upsonizing Specialist and Get Your Share

There is one splendid feature about Upsonizing. The results are cumulative—ever increasing.

Th possibilities are unlimited! Think of the walls and ceilings that need repairing—think of the store to be relined—think of the dozens of ways in which Upson Board can be used in factories—to say nothing of the greatest volume of new construction in history to be done. Every kind of building, new or old, offers an opportunity for you to sell your service as an Upsonizing expert.

If you will do one good job of Upsonizing, you can use it as a stepping stone to larger success and bigger profits.

Wall board is the nearest perfect lining for walls and ceilings. But there is a big difference in quality as there is in lumber, trim, tools, or anything else. To build an increasing, permanent reputation as a wall board expert you should recommend and buy



UPSON-BOARD

PROCESSED

THE MOST DEPENDABLE BOARD MADE IN AMERICA

Upson Board is known as the standardized board because it has originated every worth-while quality in wall board during the past five years. Its unequalled record justifies the reputation—"less than one complaint to every two million feet sold and used."

It is the strongest and stiffest wood pulp board on the market the $\frac{1}{8}$ inch board testing about 350 pounds to the square inch whereas most wood fiber boards test little more than 200 pounds to the square inch.

You can tell genuine Upson Board by its famous Blue-center. Do not let your dealer

impose an imitation with a center of any other color simply because he may make a dollar more per thousand. From the standpoint of your reputation and the satisfaction of your customers, you should insist upon genuine Upson Board—the board with the famous Blue-center.

GET OUR CONTRACTORS' BOOK. It tells exactly how an enterprising contractor built up a very pleasing and profitable business by Upsonizing. After reading his interesting story, you will say that you can do the same. With this book we will send you a sample of Upson Board so that you can easily see how much stronger and better it is than ordinary wall board. Comparison is invited!



THE UPSON COMPANY
Fiber Board Authorities
LOCKPORT, NEW YORK, U.S.A.

The
Upson
Company
80 Upson Point,
Lockport, N. Y.

Send me your Contractors' Book showing how I can increase my business by Upsonizing—also a sample of Upson Board for inspection and comparison.

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

LOOK FOR THE BLUE CENTER

A STANDARD FULL SIZE BED THRU AN ORDINARY DOOR



MURPHY IN-A-DOR BEDS

installed in the small modest bungalow or the largest hotel or apartment house means a great saving of money. They cut the original cost of building enormously, and the economy and convenience they offer cannot be duplicated by any other building equipment.

Your building is not modern if it is not equipped with Murphy Beds.

We maintain a Technical Service Department for you. We will send you suggestive sketches for your particular case that will convince you that the Murphy IN-A-DOR bed is essential to economy and convenience in modern building.

Call on us personally, or write for complete catalogs.

MURPHY DOOR BED CO.

Entire Fourth Floor, Majestic Building, Chicago
Chemical Building, St. Louis



MERCHANT'S METAL GOTHIC SHINGLE ROOFS

are your best protection against fire. They are made of copper and of Tin Plate, painted or galvanized.

No better roofing than Merchant's Metal Gothic Shingles can be specified for churches, residences and farm buildings, where neat roofs of moderate cost and good quality are desired.

They need practically no attention or repairs and will give years of satisfactory service.

Merchant's Metal Gothic Shingles can be safely specified, as they are light in weight, durable and made of the best material. We have no better recommendation than our thousands of satisfied customers.

We also manufacture "Star" Ventilators, "Almet" Fire Doors and Shutters (approved by the U. S. Government), High Grade Roofing Tin, and Metal Tiles. Write for catalogs and information today. It will save you money.

Important—Mark your inquiry for Department 16

MERCHANT & EVANS Co

NEW YORK PHILADELPHIA WHEELING
BALTIMORE ATLANTA CHICAGO
CLEVELAND ST. LOUIS
KANSAS CITY

The Editor's Drawer

(Continued from page 90.)

A severe but wholly unpremeditated test led to the extensive use of nailcrete in the floors, walls and ceilings of the new Parliament building. A floor had been laid in one room as a test. Before it had thoroughly set a change in plans made it necessary to tear down part of the walls. The workmen, having little interest in the material, proceeded to drop plastering and scaffolding, throw brickbats to the floor, and wheel away the debris without any protection whatsoever to the floor. Even the inventor, when he learned what had been done, expected to find the floor ruined. It was found, however, that it was not even so much as marred. The chief architect regarded the test as satisfactory and immediately ordered 1,900 tons of the material to be used throughout the building.



FRED TELFORD.

Double-action Concrete Tools with Long Handles

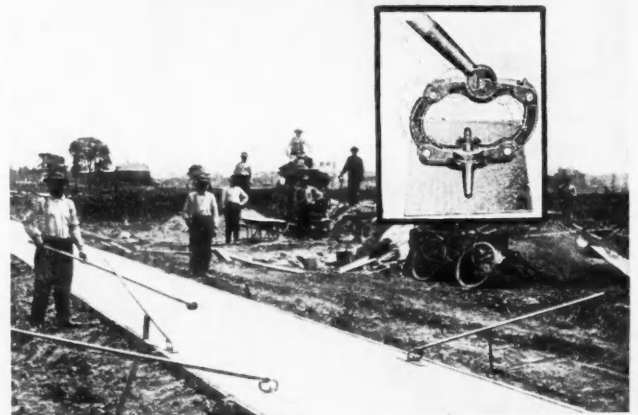
Trowelling the surface of concrete is a back-breaking job and, as it has to be done quickly, often taxes the strength of the man wielding the trowel. These two facts combine to make securing a smooth, attractive surface difficult. A man on his knees on a board, elevated on blocks and trowelling the surface as far as his arm will reach, often times does not get the top dressing as smooth as might be.

With these facts in mind, every concrete maker will appreciate the features of the double-acting, long-handled concrete trowel shown in the accompanying illustration. The picture shows a workman using a roller on the surface with a jointer, while the other two tools shown are the trowels with the double-acting device and long handles, while the inset illustrates the device, itself.

The double-acting device on these tools transfers the rocking motion of the workman's hand to the end of a stick. As the tool is moved forward and backward, the device tips the far or near edge and avoids hollows by doing away with the semi-circular arm stroke. It is adjustable in any tangent to the direction of the stroke and also is adjustable to any angle to accommodate the height of the operator. The action is mechanically steady and accurate and enables the operator to put on as much pressure as is required without danger of jabbing the surface.

Tools equipped with this double-acting device other than the trowel and jointer are the edger and float. How valuable these tools will be and how much hard work they will do in laying sidewalks, concrete roads and pavements, floors in

(Continued to page 94.)



Concrete Tools with Double-Acting Device That Puts the Motions of the Hand and Arm at the End of a Long Handle, Make Finishing Easy.



Attractive interior of office of the Illinois Macaroni Company, Chicago, built by the Armitage Construction Co.



ANTON DEYOUNG
President Armitage Construction Company

The Job—The Man and the Profitable Results

That "one good Beaver Board job brings others" has been amply proven by the remarkable success of the Armitage Construction Company of Chicago, Ill.

January 30, 1919

Big jobs or little jobs, the same thoughtful care has been exercised, and extraordinarily attractive offices, factory interiors, partitions and show windows have resulted. And always at a good profit to the builder.

Beaver Board business spells PROFITS in big letters—profits from each individual job and more profits through the repeat business that Beaver Board jobs bring.

Read the following booster letter from Mr. DeYoung, Pres., then decide to get some of the profitable Beaver Board business for yourself. Interesting literature on request.

THE BEAVER BOARD COMPANIES
88 Beaver Road Buffalo, N. Y.
Branches at Boston, New York, Baltimore, Cleveland, Detroit, Chicago, Minneapolis, Kansas City, San Francisco, Ottawa, Can., and London, Eng.
Manufacturers also of Beaver Greenboard and Beaver Blackboard.
Distributors in principal cities, dealers everywhere.

The Beaver Board Companies,
Buffalo, N. Y.

Gentlemen: We aim to make every job a continuous endorsement of our company, knowing that it will bring additional work for us.

With this motto we have eliminated the use of everything but first grade materials and accordingly confine our efforts to sealite Beaver Board instead of so called wall board.

Beaver Board permits us to complete a job quickly, without any dirt or litter, at a minimum expense to our client and we find that it always produces the highest satisfaction.

Beaver Board work means additional profits for us and we promote its use at every possible opportunity.

Very truly yours,

THE ARMITAGE CONSTRUCTION COMPANY,
(Signed) Anton DeYoung, President



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

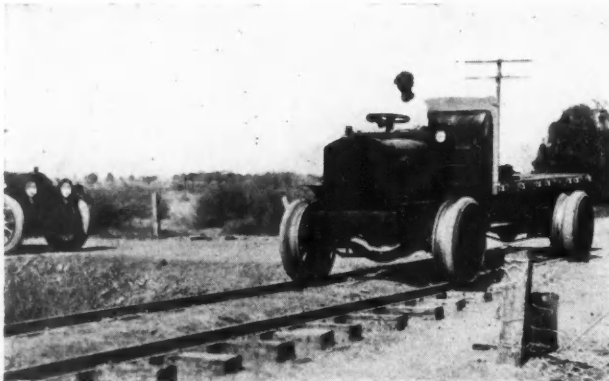
(Continued from page 92.)

buildings of all kinds and feeding floors on the farm will quickly be realized by the contractors who do this sort of work. These tools have been tried out for some time and have been found valuable. One place where they were used to great advantage was on the concrete highways of Monroe County, Mich., said to be the finest in the country.



Auto or Railway Car?

Californians now have something besides the glorious climate to talk about when the unsuspecting Easterner appears upon the scene. An interurban railway between Holtville and El Centro is equipped with a sort of cross between an auto and regular railway car which leaves the track at will to gather up freight or passengers, and returns at the convenience of the driver. The vehicle is provided with wheels



This Auto Truck Is Equally at Home on Railroad Tracks or the Country Road.

which serve for use on the ordinary street or highway; inside these is an additional set for use on the tracks of the interurban line. At terminals, or along the line, the cars leave the track to pick up or deliver freight or passengers. At each terminal and each highway crossing there is a switch to make this possible. The car develops a speed of forty miles an hour on the tracks, and on the highways has no difficulty in exceeding the usual speed limit. The ability of the driver to pick up business at stores, warehouses, hotels, street and highway intersections, and to leave the tracks if necessary, has caused all competitors to give up the unequal struggle.

FRED TELFORD.



Shorter Hours—Greater Production

Labor demands shorter working hours—more time for recreation. Capital replies, "If we get that, we must have greater production; otherwise, we cannot meet competition."

All of which resolves itself into a need for the best of working conditions to enable labor to produce the most and the best in the least possible time.

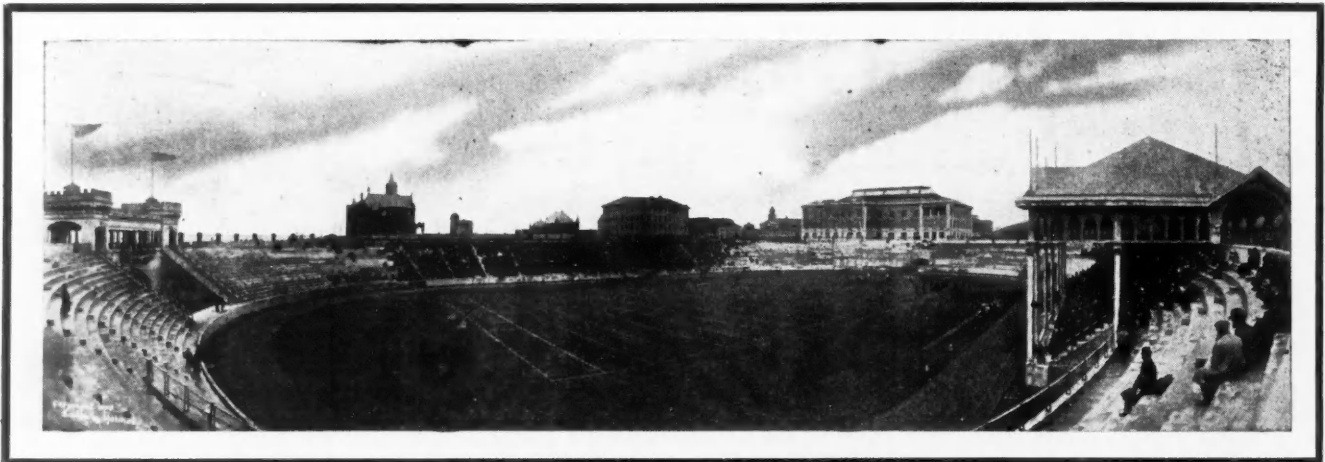
Poor light is one of the greatest handicaps to maximum production of best quality.

In short, the old-time factory building will not answer modern conditions and requirements. But it isn't always necessary to rebuild to improve lighting conditions. Science has come to the rescue here as in many other realms.

Bad lighting in old buildings can often be remedied in a very simple way at small cost and without burning more artificial light or wasting precious coal either.

The answer is replacing dirty, light-absorbing walls with clean, white, light-reflecting surfaces thruout offices, mills and factories. Multiplied illumination it is called.

(Continued to page 96.)



STADIUM UNIVERSITY OF SYRACUSE

LIVING—STONE

is the non-acid method of bonding Cement, Concrete Hardener, and Granolithic Top Finish to Concrete Floors, Cement and Stucco Finish and outside Walls. It bonds new concrete to concrete that has already set, making a positive and an impermeable bond.

CONTRACTORS KNOW

that new Portland cement will not affect perfect cohesion with concrete that is old or set.

The dinner hour on a very hot day is sufficient to permit crystallization, and work renewed afterward is quite distinct and separate from that of the forenoon.

LIVING-STONE is the only NON-ACID remedy yet discovered that positively overcomes this difficulty. With this process, whether the work has been delayed 2 hours or 2 years, whether the day be wet or dry, hot or cold, the cohesion will be effected perfectly, without trouble or delay to the builder.

One gallon is sufficient for 250 to 300 square feet, and the cost is about 1c a foot. IF YOU BUILD FOR PERMANENCE write today for catalog and complete information.

The Paragon Plaster Co., Syracuse, N. Y.

Replying to your favor we would advise that we have been selling Living-Stone Cement Bond for eight or nine years and always with the very best of success.

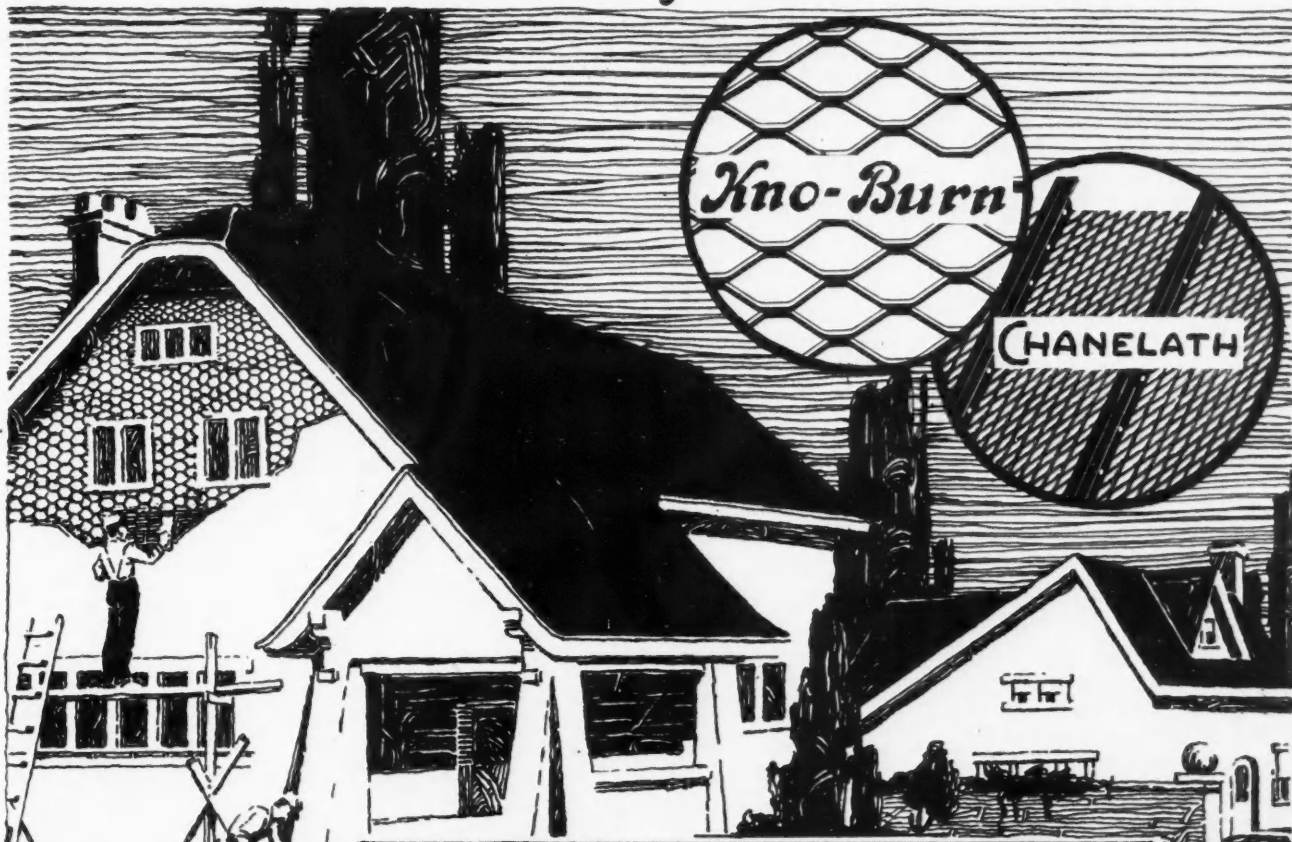
Our largest job was the Syracuse Stadium for the finish concrete was put on some months after the rough work had been done. Tests on this work showed that it was impossible to cause a fracture to the bond. The fracture to the concrete invariably coming at some other point. It is the only material that we know of which solves the problem of bonding old and new concrete.

Very truly yours,

THE PARAGON PLASTER CO.

THE LIVING-STONE CO.
703 LAW BUILDING, BALTIMORE, MARYLAND

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



Economical, Fire Resisting Construction

To secure the best results on your stucco jobs and to insure your interior or plastering work from cracking or discoloring, it is essential that you use as a base a material which is permanent, unaffected by moisture and **non burnable**.

Kno-Burn
Expanded Metal Lath

KNO-BURN has a coast to coast reputation. It is easy to work over. The diamond shaped openings hold the plaster with a vise-like grip. It simplifies decorating—makes it possible to use lighter, thinner, partitions.

3c Postage Brings This Valuable Book

A new **KNO-BURN** Book on Fire Proofing is coming off the press. It's cram full of **details**—sketches, photos, plans, etc.—many of which are **new**. Every builder wants it. Edition limited. Get your copies **quick**.

North Western Expanded Metal Co.

**903 OLD COLONY BLDG.
CHICAGO, ILLS.**

Here's a Handy Concrete Mixer for You



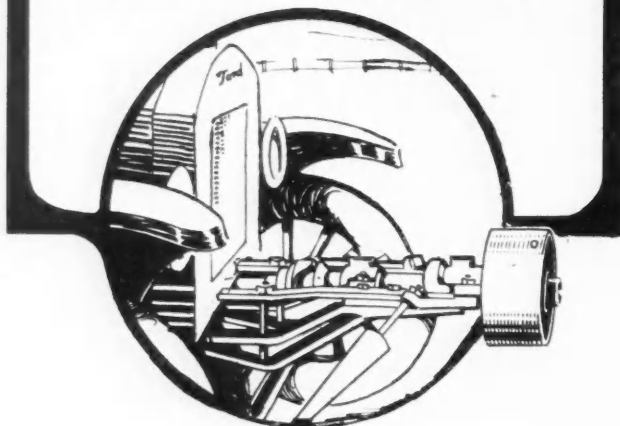
Get an ELMCO, the convenient mixer for small jobs. Small and light, it is easily carried anywhere you want it, and costs but little. It is durably constructed of best quality materials and can be filled from one side and dumped from the other. Runs with a one and one-half horse power gas engine or you can get

Belt Power From Your Ford

with the ELMCO Ford belt attachment, on or off in fifteen seconds without bolts, screws or cumbersome jacks. Does not interfere with looks or use of car. Gives you eight horse power at a fraction of the cost of a separate engine. Goes anywhere your Ford can go.

Write for circular and full details about these Elmco money savers.

E. F. Elmborg Company
44 Main Street Parkersburg, Iowa



The Editor's Drawer

(Continued from page 94.)

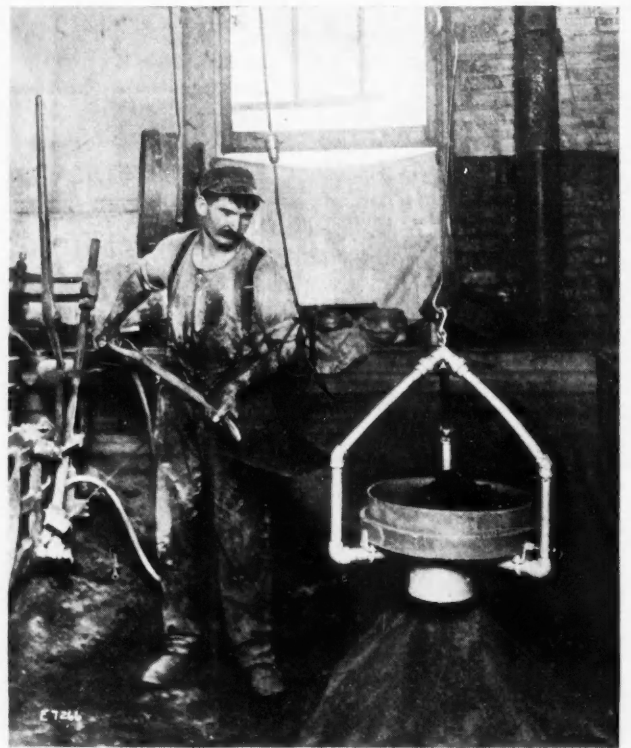
Many paint manufacturers now make a gloss white that stays white and doubles daylight. It is a light diffuser and reflector. It is equally effective on wood, iron, plaster, concrete, cement, or brick.

Manufacturers desirous of producing greater output in shorter hours should give this question of better light very serious consideration. It has an important bearing on their problem.



Enter the "Sand Hog"

A vest pocket edition sand sifter which weighs only 35 pounds, not only does efficient work, but also mystifies the onlooker, as a perfect whirlwind of sand comes out of the bottom, apparently without rhyme or reason. The secret is in the electric motor which is suspended below the riddle, and which throws the sand towards the rim by centrifugal force.



An Electric Motor Agitates This "Sand Hog," as the Machine Is Called, and It Just Eats the Sand.

The "Sand Hog" as the machine is called, operates both rapidly and economically and may be placed in just the right position to suit the operator. The motor is fully enclosed and not a particle of dirt can get into it. It is cooled by the circulation of air thru the hollow frame or supporting members, and also by the running sand.

FRED TELFORD.



Daylight Factory Buildings of Glass

Light, the kind that nature provides without charge, is given every opportunity to penetrate the modern factories, warehouses and other buildings of a like character. To accomplish this many of the buildings are made of glass—not the ordinary fragile glass, but glass that is especially constructed and strengthened with wire mesh thru it.

(Continued to page 98.)



Every Kellastone Structure Creates a Sale for Another

Today many a Building Contractor is multiplying his profits by specializing on KELLASTONE. A single job has proven the means of creating big business—homes, apartment buildings, hospitals, schools, churches, etc.

A KELLASTONE structure is truly an inspiration to the prospective builder—a source of everlasting satisfaction to the owner and a matter of civic pride to the entire community.

KELLASTONE

IMPERISHABLE STUCCO

Is the original magnesite stucco—as lasting as the pyramids—does not expand, contract, chip or crack like ordinary stucco. It's a scientifically balanced composition that does not contain a particle of gypsum, lime or portland cement.

KELLASTONE qualifies for cottage or mansion, affording exclusive talking points which instantly appeal to every particular builder. Meet us half way and we will unfold the details of a proposition that will enable you to cash in on the approaching wave of prosperity in the building world.

National Kellastone Company

1315 Mallers Bldg.

Chicago, Ill.

(Continued from
page 96)

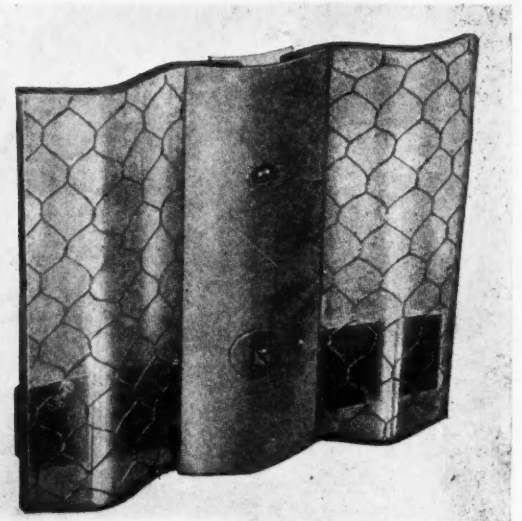
There are many advantages in this type of building which appeal to manufacturers. By the use of corrugated wire glass in sidewalls and roofs a daylight building is obtained without any shadows or glare. It is easily and quickly erected and is weather and dust-proof. The glass absorbs the heat rays and makes the building several degrees cooler. It is sanitary, makes an attractive appearance, is fire retardant and will withstand a strong wind pressure.

Sheets of corrugated wire glass are made 26½ inches in width and five feet, six inches in length. The sheets are so corrugated that they readily fit and join to corrugated iron or asbestos corrugated sheets or protected metal. Tests have shown that they will sustain as high as 73 pounds pressure per square foot.

The accompanying illustrations show how the corrugated wire glass is joined. A space three-eighths of an inch is left between each sheet of the glass. This joint is covered with a two and three-quarters inch strip of asphalt roofing,



Iron Supporting Clip Fastens the Glass to the Purlins.



Sheets of Corrugated Wire Glass Are Joined with Strips of Painted Asphalt Roofing Covered with an Iron Cap.

and painted with asphalt paint on the side next to the glass. On this is placed a galvanized iron cover cap. This cap is bolted down, with a lead washer where the glass is fastened to the purlins, and is bolted every 12 inches. A one and one-half inch inner strip is placed over the joint. The exterior cover cap and the interior cover strip are bolted together. The iron supporting clip shown occurs only where glass is attached to purlins. In this way absolutely rigid, air and water-tight construction is secured.

**MAKES
OLD
FLOORS
NEW**



FLOORS OF QUALITY

**MAKES
NEW
FLOORS
BETTER**

ASBESTONE floors are fireproof, sanitary, easy to walk on, not noisy, handsome in appearance and moderate in cost.

They add that much desired touch of distinction that can be found in no other type of floor.

Put down with a trowel like spreading plaster over old or new wood or cement floors.

Complete instructions for installing Asbestone Floors accompanies each shipment. We will be glad to quote prices upon request.

ADAPTED FOR USE IN

Homes	Churches	Hospitals	Clubs
Offices	Stores	Banks	Colleges
Factories	Schools	Hotels	Public Bldgs.

Let us send you samples and information. Write us today.

FRANKLYN R. MULLER & COMPANY

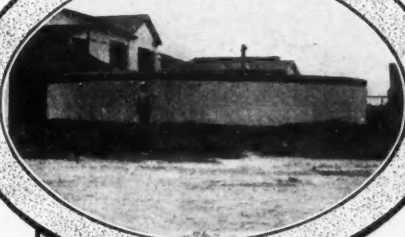
934 Madison Street

WAUKEGAN, ILL.



Ceresit Building Protective Products

CERESIT
TRADE MARK

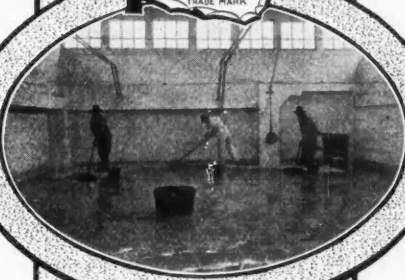


Ceresit Waterproofing Compound

Ceresit waterproofs concrete work of all kinds. A few pounds in each cubic yard of concrete permanently prevents water penetration. Use Ceresit for basements, cisterns, tunnels, pits, concrete storage tanks, cement stucco—wherever water is to be kept in or out.

The new Ceresit Specification just off the press will give you the information you need for your work this Spring.

MAKES CEMENT
INDURITE
LIKE FLINT
TRADE MARK

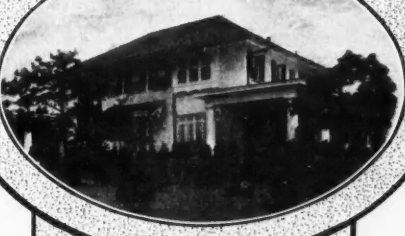


Indurite Liquid Hardener

Indurite is a liquid chemical compound. When flushed over concrete floors it changes the surface into a flint like substance of intense hardness. Wherever a concrete floor has to stand heavy service, use Indurite.

Indurite is easy to use. It's economical. Anyone who can do a job of scrubbing can apply Indurite. The new Indurite folder tells the whole story.

COVERING
CEM-BRIC
TRADE MARK
COMPOUND

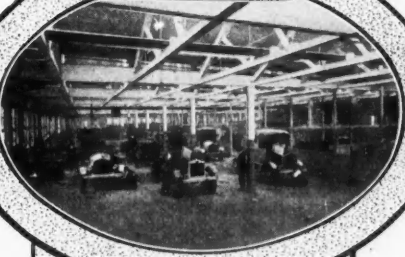


Cem-bric Covering Compound

Cem-bric is a waterproof decorative paint for exteriors of cement stucco, brick and masonry, also for concrete floors. It is more than a paint, as it penetrates and seals the surface pores, becoming an integral part of the surface.

Cem-bric is made in several attractive shades all shown in the Cem-bric folder.

LUXSTAR
WHITE



Luxstar Industrial Enamel

Luxstar is a pure white paint-enamel for every class of interior work. It's economical and retains a clear white surface which can be washed and cleaned.

Luxstar is ideal for the interiors of dairies, bakeries, stores, basements, office buildings, schools, and churches. The Luxstar folder describes the material completely.

CERESIT WATERPROOFING CO.

910 WESTMINSTER BUILDING
CHICAGO

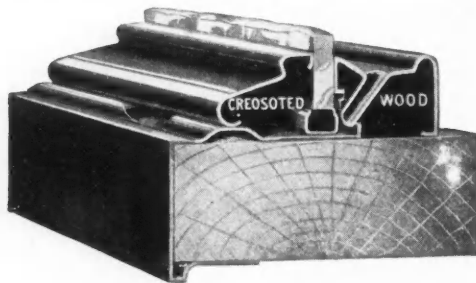
Send in your name for the new Ceresit Specifications—you can use them

Brasco

Not the Highest in
Cost But the Highest
in Earning Power

Store Front improvement to result in a permanently profitable investment to you and your clients must be planned with the greatest care and discrimination.

Erratic changes—many times mistaken for improvements—result in a cost out of all proportion to the returns they produce.



In selecting Brasco, the first cost is the only cost, and its earning power, as high as can be purchased anywhere, is greater in proportion to its lower cost than in any other materials you purchase for your client for the Store Front improvement.

To those who have used **Brasco Store Front Construction** the word **Brasco** stands for Quality, Durability, Greater Sales and profit, all from a lower first cost.

Don't throw away your clients' dollars. Investigate Brasco.

Brasco Manufacturing Co.

5029 South Wabash Avenue
Chicago, Ill.

Coupon

Brasco Mfg. Co., Chicago:

Please forward Special Store Front Book No. 24, and oblige

Name.....

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

Business.....

AB-3-19

Binding Old and New Concrete

When it is considered that portland cement will firmly unite brick, stone and unglazed tile, it is a peculiar fact that it will not adhere permanently to old concrete or concrete that has set. On a very hot day concrete will set in an hour, while under any conditions the pouring must be continued



How New Concrete Is Bonded to Old.

until the work is done, or a binder used. As there are many jobs where the former method is impracticable, and often times impossible, the latter must be employed.

Some contractors use ordinary grouting as a binder between old and new concrete, but this does not always produce the required chemical union. Others roughen the old surface. This is an expensive operation and does not change the chystalized character of the concrete.

Several years ago there was discovered a liquid preparation, containing no acid, which, when mixed with water and cement added, will make a perfect bond between the old and new concrete. The preparation is put into the water in the proportion of one gallon to 20 and then mixed with any brand of tested portland cement to a sloppy consistency. This mixture is spread over the old concrete to a thickness of one-eighth to one-fourth inch and the new concrete immediately applied.

The many valuable uses that may be made of this bonding material will at once be realized by contractors. In putting on top finish and in repair jobs this binder has been found to perfectly bond the new and old materials.

This is especially true in placing the top finish, as it allows it to be applied after the work that follows the laying of floors is finished. The advantages of placing the finish after building is closed are that the pipes, partition centering and tile may be handled without fear of damaging the finished floor; the concrete base can be tested for floor loads, and sufficient time has elapsed so that any imperfect concrete in the base can be replaced. The top finish is placed independent of weather and there will be no disfiguring patching to be done, nor the floors scarred by previous work.

This preparation has been given many tests and the contractors who have used it are recommending it to their fellows in the building industry.



Lumber and Its Uses A Course in Forestry by Mail

The correspondence course in Lumber and Its Uses announced some time ago by the School of Forestry, University of Idaho at Moscow, Idaho, has met with a very ready acceptance, the enrollment for the work exceeding expectations. The course was offered in response to a demand for information, in convenient form, regarding the properties of wood and the adaptability of different woods to different uses.

The topics treated include the structure of wood, physical properties of wood, structural timbers, seasoning and preservation of wood, lumber prices, lumber production and the time uses of wood.

The course is designed to be of special value to lumber dealers, lumber salesmen, contractors or builders connected with the wood-working industries. A prospectus of the course will be sent on application.



USE

MIDLAND TERRA COTTA

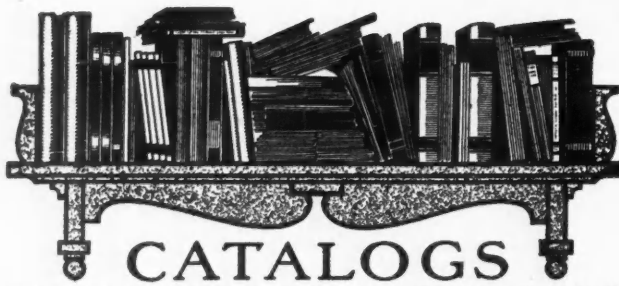
Where beauty is desired, quality
and service required and "Just
as good" is not good enough—

QUALITY AND SERVICE

Our motto

MIDLAND TERRA COTTA COMPANY
Lumber Exchange Building Chicago





CATALOGS BULLETINS & BOOKS RECEIVED

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

Concrete mixers and saw rigs are described and illustrated in the 1919 catalog of the Oshkosh Manufacturing Co., Oshkosh, Wis. The company's saw rig is described as a "complete saw mill in about five square feet." The catalog also contains much valuable information to the contractor and builder.

Laying out a concrete plant is fully described in the 1919 catalog of concrete chutes and equipment, issued by the Ransome Concrete Machinery Co., Dunellen, N. J. Not only does the catalog show the various pieces of equipment this company makes, but contains many plans and views of complete concrete plants.

Carpenters who would be architects and others who desire to learn that profession will be interested in the booklets, "1,000 Successes in Architecture and the Building Trades" and "Architecture, Structural Concrete and Bridge Engineering," issued by the International Corre-

spondence Schools, Scranton, Pa. These booklets describe the courses in architecture and allied subjects at the Scranton schools, and give some interesting information about those in the building industry who have advanced thru this method of study.

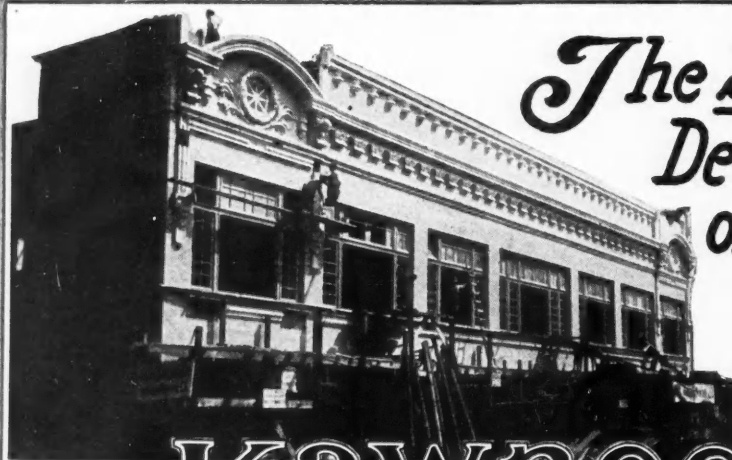
Ladder hinge silo doors of the latest type in vitrified tile and wood stave silo construction are described and illustrated in a 16-page booklet, issued by the Lansing Silo Co., Lansing, Mich., which produces "Lasco" ladder hinge door silos. The booklet also contains views of excellent farm building groups and a picture of Tilly Alcartra, the new Holstein world's champion milk producer.

Blue print plans of a model corn crib and granary are being put out by the A. F. Meyer Manufacturing Co., Morton, Ill. There are five blue print sheets of this building, 32 feet long, 26 feet wide and 16 feet high to the eaves, together with specifications and the bill of materials. The plans also show how the Meyer elevator is installed.

"Perfect Ventilation" is the title of a 12-page and cover booklet describing Alpina revolving ventilators, issued by the Milwaukee Corrugating Co., Milwaukee, Wis. The booklet also contains illustrations showing factories, theaters and public buildings on which Alpina ventilators are used.

Working plans of a corn crib and granary, together with bills of materials for 20 different sizes of this building are contained in 18 bound pages, including four blue print sheets, furnished by the John Deere Co., East Moline, Ill. Each crib is designed for the installation of the John Deere inside cup elevator.

(Continued to page 104.)



*The Store Fronts will
Determine the Effect
of this Modern Building*

Kawneer

Store Front Construction

will show up this building—ar any other—at its best. Since Kawneer Fronts were invented, some twelve years ago, over 75,000 have been installed. This proves their worth from an architectural and sales-pulling standpoint.

You can easily realize that the profitable installation of Kawneer Store Fronts is not confined to new buildings. The more antiquated the structure, the more receptive the owner is to the idea of modernizing it by the Kawneer method.

We help you in every way possible to make the job satisfactory. Service has been a big reason for Kawneer progress. Besides putting out the best material, we make every effort to design the proper front for the building in question.

Our designers—expert—are ready to cooperate with you in every problem of store front installation.

Write for Beautiful Catalogue

KAWNEER MFG. COMPANY,

1126 Front Street

NILES, MICHIGAN



This shows a patented Kawneer feature. The corner bar—copper or bronze—holds the plate glass with a rugged but resilient grip that defies all winds.



Thousands of old fashioned fronts like the above are being replaced by new and modern fronts

Contractors are Selling "Desco" Store Fronts for Us

You Sell At a Profit

You are the logical man to sell "Desco" store front construction in your city. Store building owners and retailers know you personally, they have confidence in you and what you recommend. By selling "Desco" construction direct to you great expense is saved in eliminating branch offices and road salesmen. Your discount on "Desco" enables you to make a good, clean profit and at the same time save money for your customer. This plan is the result of 29 years of experience dealing with contractors and it is favored by contractors and owners all over the country.

Quality of "Desco" Not Sacrificed

In order to sell "Desco" at a lower price its high quality has not been altered in the least—our cost of selling is the cost of advertising. You and your customer pocket the difference.

Simplicity and strength are the first features you will notice in "Desco" construction. The corner bar, for example, is reinforced by a heavy steel channel rustproofed by the well-known Parker Rust Proof Process. The sash is so built that the glass rests against cushions of creosote-dipped blocks of cypress, and there is provision for ventilation and drainage. While the glass is held firmly, there is full allowance for expansion, contraction and vibration.

Let's Work Together

Your discount on "Desco" allows you a generous profit. With our complete manufacturing facilities we are equipped to make quick shipments—no delays. It is easy to order "Desco" and when you receive the material, you can install it without the least trouble. You will find that the Detroit Show Case Co. enjoys a splendid reputation—retailers know us also by the high quality of "Silent Salesman" show cases. That reputation will make it even easier for you to sell "Desco." The business is there, so don't wait—send this coupon in today.

This is Your OPPORTUNITY COUPON

Easy to Install

You also save money on "Desco" because it is so easy to install. Any carpenter can install it properly and the glaziers can set the glass without danger of breakage. Our broad experience permits us to design and build store front construction that can be installed without the expensive help of factory mechanics.

A Big Profit Awaits You

Every red-blooded retailer wants a new store front. You do not have to sell them on the idea; all you do is to explain the kind of front you plan to install, how long it will take and the price. And in order to help you put up your proposition in a simple and practical way, we offer you a book containing suggestions of how to get your share of this profitable business.

See Sweet's Catalog

Turn to pages 477-478-479-480 in Sweet's Catalog. There you will find details showing the sturdy construction of "Desco." Architects and contractors who have used it highly recommend it. There is nothing experimental about "Desco"—it is the product of years of actual experience.

Desco
METAL
STORE FRONTS

A COMBINATION OF STRENGTH AND SIMPLICITY, SOLD AT A MODERATE PRICE.

modern fronts—large and small—full size details of "Desco" with prices and your discount. Use this coupon and prepare to get your share of this profitable business.

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

Gentlemen:

Without obligation please send me copy of "Book of Store Front Suggestions," full size details of "Desco" construction with list prices and special discount.

Name _____

Street Address _____

City _____

State _____



KOHLER

Also MEANS AN ENAMEL

Here at Kohler flows almost unceasingly an iridescent stream of molten enamel—the beautiful complexion of every Kohler product—the joy of thousands of Kohler enthusiasts.

Kohler bathtub or kitchen sink, laundry tray or foot bath, lavatory or drinking fountain—its lustrous beauty and wondrous durability are insured by this blanket of pure white enamel, famous for years.

Into the enamel itself is glazed inconspicuously the Kohler name, a guarantee of quality, an assurance of worth, a mark of achievement.

This is just another of the many Kohler superiorities that appeal to the builder who builds for quality throughout. You know that every Kohler product has a beauty and durability that insure life-long satisfaction to the owner.

An interesting book has been written describing the Kohler method and the Kohler line. A postal brings a copy with our compliments.

KOHLER OF KOHLER

Kohler Co., Kohler, Wis.
Shipping Point, Sheboygan, Wis.

AND TWELVE AMERICAN BRANCHES



MANUFACTURERS OF ENAMELED PLUMBING WARE

Catalogs, Bulletins and Books Received

(Continued from page 102.)

How to build with cement pressed blocks is thoroughly described and illustrated in a 48-page and cover booklet, issued by the Helm Brick Machine Co., Cadillac, Mich. The booklet is illustrated with line drawings showing details and halftones of buildings constructed of pressed cement blocks, while the text describes methods of manufacturing the blocks and gives hints on estimating and other points of interest to builders.

Wheelbarrows on the job are shown in Catalog No. 31, entitled, "The Sterling Lines," issued by the Sterling Wheelbarrow Co., Milwaukee, Wis. Wheelbarrows of the newest types and with the most modern improvements are illustrated in this 48-page and cover booklet, which is an exceptionally artistic piece of advertising literature, containing many items of interest to building contractors.

"**This Blackboard Will Outlast the Building**" is the title of a 24-page and cover booklet, published by the Natural Slate Blackboard Co., Pen Argyl, Pa. The booklet is well illustrated with pictures of school buildings where slate blackboards are installed and the text is devoted principally to letters commending the material.

Pneumatic water supply systems of types for which windmills, gasoline engines and electric motors furnish the power are fully described in a 32-page and cover booklet, issued by the Flint & Walling Manufacturing Co., Kendallville, Ind. The mechanical principles of these systems and how they are installed are graphically described by text and illustrations.

Artistic and practical steel gates and fences for farm and home grounds are described and pictured in a 56-page and cover booklet, issued by the Iowa Gate Co., Cedar Falls, Ia. Included in the booklet also are illustrated descriptions of the barn equipment this company manufactures. The booklet is most attractive in design and printing.

"**Lakewood Clam Shell Buckets, Diggers and Handlers**" is the title of Bulletin No. 26, issued by the Lakewood Engineering Co., Cleveland, O. The bulletin is of particular interest to large contractors, as it contains many illustrations showing clam shell diggers and carriers at work. There also are illustrated descriptions of the equipment this company makes.

"**Inventor's Manual—How to Make a Patent Pay**" is the second edition of a guide for inventors in perfecting their inventions, taking out their patents, and disposing of them, with cautions as to pitfalls for the unwary, by George W. Hopkins, an experienced inventor, as revised by A. A. Hopkins. This is a most interesting book of 144 pages, bound in cloth and will undoubtedly be helpful to anyone who has an inventive turn and seeks to patent his inventions. The book is published by the Norman W. Henley Publishing Co., New York City. Price \$1.25.

Dairymen and livestock raisers will find inspiration and instruction in a bulletin, entitled "The Foster Mother of the World," published by the Illinois State Department of Agriculture. The bulletin is a collection of short articles by well known authorities on the need of increased dairy production and breeding of better cows. It contains 32 pages and is well illustrated and printed.

"**Gasoline and Kerosene Carburetors**" is a simple, yet comprehensive treatise explaining the basic principles of transforming liquid fuels into gas for operating internal combustion engines. This book will interest owners of automobiles and gas engines. It was written by Victor W.

(Continued to page 106.)



Commercial Bldg.
 Bay City, Mich.
 Architect
 A. C. MUNGER
 Contractor
 H. C. WEBER CONS. CO.

GF Steel Tile Floors Are Light in Weight

CONSIDER the fact that GF Steel Tile occupies from 45% to 60% of the cubical contents of a floor. Where formerly this space was filled with lazy concrete or heavy tile, Steel Tile transforms it into dead air space weighing nothing. Yet this is done without sacrificing anything in the strength of the floor.

Such a large reduction in actual weight permits lighter girders, lighter walls; in fact, lighter construction all the way through to the very footings of the structure.

Less weight does not in the least imply a sacrifice in safety. On the contrary, every pound of concrete in Steel Tile floors is of use and so built and graded from thin slabs to deep reinforced joists that the whole strength can be exerted in sustaining any live loads placed on the floor.

Write for the Steel Tile Handbook, which gives detailed information

The General Fireproofing Co.

Metal Lath—Concrete Reinforcements Waterproofing—Technical Paints
 MEMBER ASSOCIATED METAL LATH MANUFACTURERS

YOUNGSTOWN, OHIO

Branches: New York, Chicago, Boston, Washington, Atlanta, Seattle

Catalogs, Bulletins, and Books Received

(Continued from page 104.)

Page, M.E., contains 320 pages and 89 illustrations and is bound in cloth. The publisher is the Norman W. Henley Publishing Co., New York City. Price \$1.50.

"**Masterpieces of Doorcraft**" is an artistic 24-page and double cover booklet, issued by the Morgan Door & Sash Co., Oshkosh, Wis. The booklet is illustrated with half-tone reproductions of photographs of homes and other buildings where Morgan doors have been installed.

"**Housing and Marketing Rabbits**" is an interesting and instructive booklet on raising rabbits for the market, by R. S. Whiting, A.E., and published by the engineering department of the National Lumber Manufacturers' Association, Chicago. Mr. Whiting gives some interesting information as to the possibilities of profits in rabbits and about the proper houses for them. The booklet contains 20 pages and cover and is well illustrated.

Concrete can be bonded by the use of a liquid preparation that is described in a booklet containing architects' and builders' specifications issued by the Living-Stone Co., Baltimore, Md. Besides the specifications the booklet contains illustrations showing a number of famous concrete structures where the Living-Stone preparation is used. The booklet contains 12 pages and cover.



Wants to Build Round Porch

To the Editor:

Raymond, S. Dak.

I would like to ask you to have some brother carpenter explain to me thru the columns of the BUILDER how to frame a roof of a porch that circles around the corner of a house.

I have a porch to build that forms a circle at the corner

of house and goes to meet a porch that is already there.

As I am a beginner in the business, I thought there was no harm in asking for advice of some of the wiser ones.

ANTON HOMOLA.



How to Cut Off Tile

To the Editor:

Elmira, N. Y.

I thought I would send you a kink. It may help somebody.

If you wish to break chimney or other tile, fill the tile up with sand to where you wish to break it; then take a cold-chisel and hammer and strike it lightly, going around it till it breaks. Tamp the sand in hard.

O. B. WILLIAMS.



Question for Filing Experts

To the Editor:

Prince Albert, Sask., Can.

I would ask you to give us space for a discussion on the following:

I have a quantity of news clippings which I am proposing to file alphabetically between covers or in envelopes. Any special subject noted in a book would be indexed under its subject on a card and inserted in its proper place.

What have any of your readers found to be the most convenient size for a self-filing cabinet?

H. L.



Can Saw Files Be Renewed With Acid?

To the Editor:

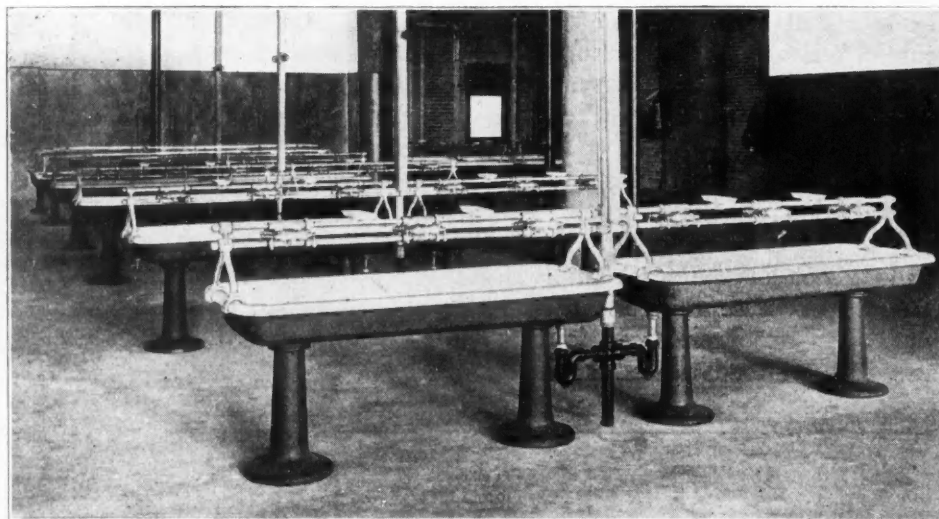
Clayton, Mo.

I have seen somewhere a method described for recutting worn saw files with acid or an acid preparation. It may be that you have the formula within easy access. If so, will you please send it to me?

WM. GEMMER,

Carpenter and Builder.

"BIG BUSINESS" BUYS Wolff Plumbing



Washrooms of the Continental Can Co. of Clearing, Ill.

J. J. Daly, Plumbing Contractor

WHEREVER long life, constant service and high efficiency are demanded of plumbing, there WOLFF Products command the interest of owner, architect and contractor.

For installations of any size specify WOLFF Plumbing and be safe.

L. WOLFF MANUFACTURING CO.

General Offices and Showrooms, 111 N. Dearborn Street, Chicago



EVERY illustration in full color—interiors and exteriors—floor plans and color specifications—this book is an encyclopedia of color decoration—a source of quick, handy information for the architect, decorator or painter who aims at artistic individuality in his color plans.

We want this book in the hands of responsible upper-class painters and contractors who are doing the best work, and are courageously asking prices that their work is worth. Such a painter or contractor will not hesitate to send 25c for this portfolio which actually costs us over one dollar each. If, when you see this portfolio, you do not realize that 25c simply covers postage and packing—if you are dissatisfied in any way—just say so, and we will send back your 25c, and you can still keep the portfolio.

Get this
Library
of Color
Plans
Interiors
and Exteriors
See Next Page





Economical More Artistic Wall Decoration

SOFT, subtle, harmonizing wall tones, proof against most of the things which deface other wall decorating materials and compel redecorating—Patton's Velumina, the oil flat wall paint, means distinction in decoration and new economy.

Those finger marks can be washed away—also the dirt that accumulates about radiators and registers—these things do not compel redecorating.

Apartment buildings and business buildings are standardizing Patton's Velumina color schemes—also home owners, because in the long run it cuts decorating costs at least one-third.

Write to our Milwaukee office for Portfolio of Color Plans as described on preceding page.

**PATTON'S
VELUMINA**
the Oil Flat Wall Paint

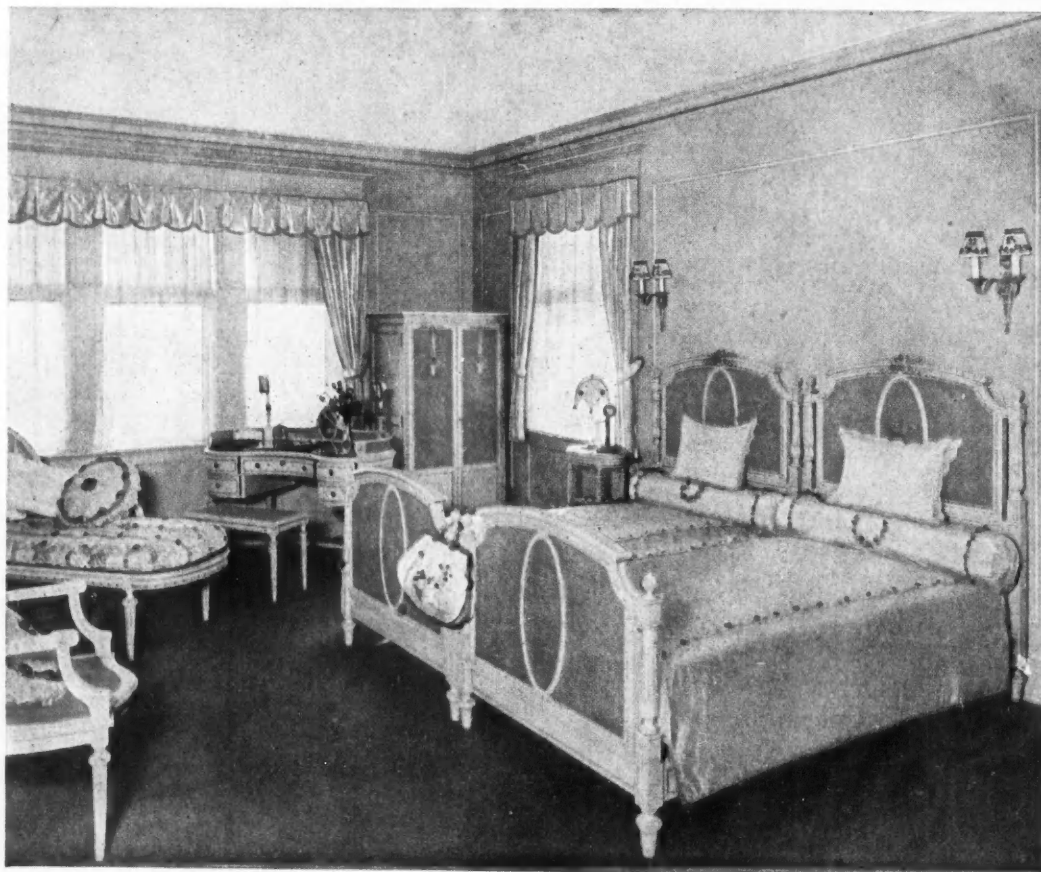
PATTON PAINT CO.

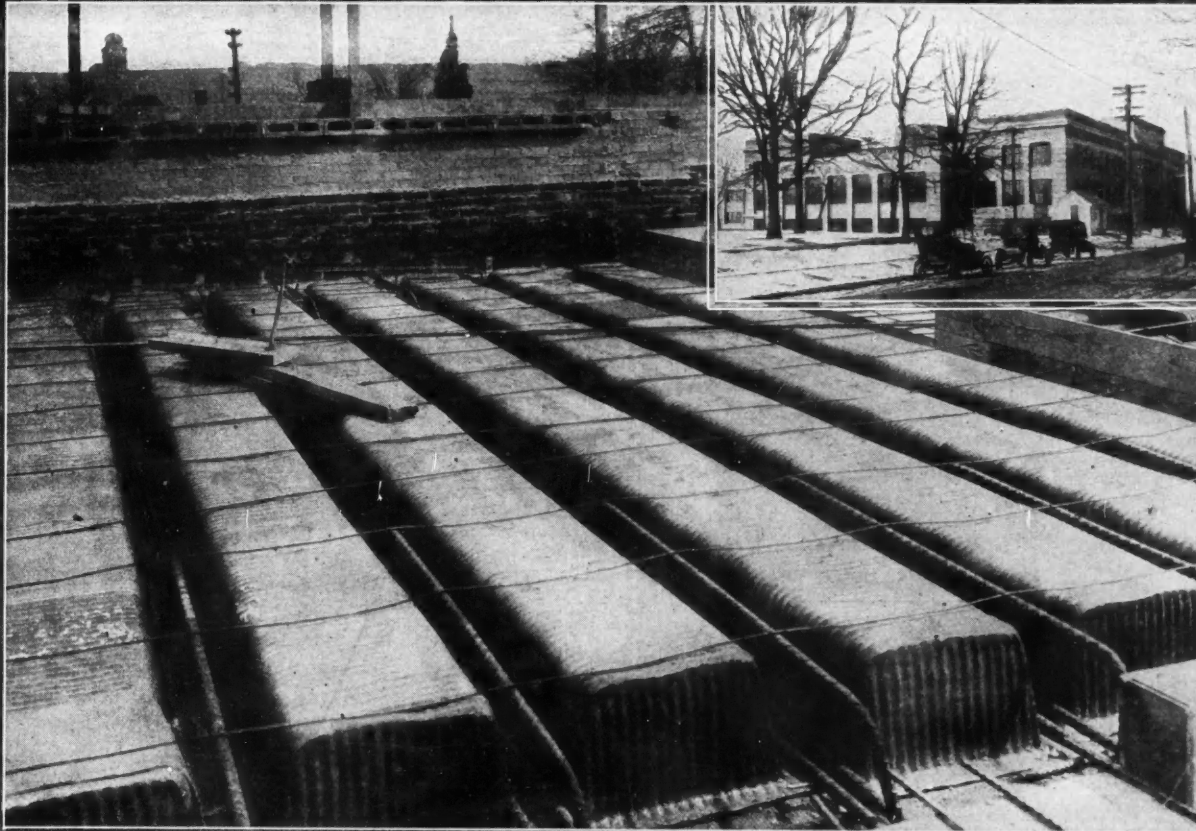
Milwaukee Newark Los Angeles
San Francisco Seattle

PITTSBURGH PLATE GLASS CO.

Distributing Stocks in 34 Leading Cities

Export Department, Woolworth Bldg., New York





A Few of Schools Built With Floor-Cores

- Public School - Belleville N. J.
Chas. Granville Jones, Archt.
- High School - - - Alta, Iowa
Smith & Keffer, Archts.
- Glenwood School - Marion, Ohio
Mariott, Allen & Hall, Archts.
- Austin Blair School, Jackson, Mich.
Leonard H. Field, Jr., Archt.
- Parochial School - Superior, Wis.
E. Ulrich, Archt.
- High School, Chagrin Falls, Ohio
W. G. Eckles, Archt.
- Horner School - Wilkinsburg, Pa.
Ingham & Boyd, Archts.

**STEEL FLOOR-CORES
In School Construction**

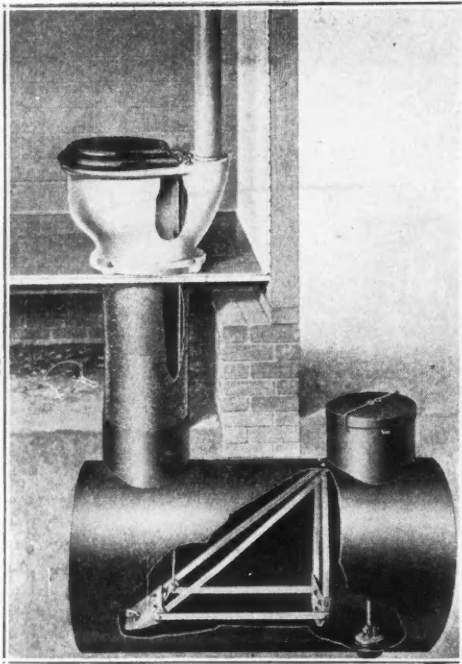
In addition to Fire-Resistance, Strength, Permanence and Economy, Floor-cores offer two special advantages for school buildings. The long spans permit rooms unobstructed by columns or beams. The concrete and dead air space between floor and ceiling will not transmit sound. Floor-cores are splendidly suited to the construction of all sorts of buildings in which people live and work. See Sweets and write.

THE BERGER MFG. CO., Canton, O.

Branches: Boston New York Philadelphia Chicago St. Louis
Minneapolis San Francisco
Export Dept.: Berger Bldg., New York City, U. S. A.

BERGER

**EXPANDED METAL LATH-FLOOR CORES-REINFORCING PLATES-METAL LUMBER
STEEL FILING CASES-LOCKERS-FACTORY STORAGE BINS AND SHELVING
STEEL CEILINGS-ROOFING-SIDING AND OTHER PRESSED STEEL PRODUCTS**



An Indoor Closet To Be Proud Of

The people of today in country and town want **modern** indoor closet convenience—the equivalent to that found in city homes. This demand is fully met by

THE WATERBURY SANITARY SCAUSTIC CLOSET

It is convenient, sanitary and attractive. Disinfects the waste; requires no water or sewer. It reduces the waste to a sterile semi-liquid, which may be either drained off direct or pumped out two or three times a year.

It affords up-to-date closet convenience for homes, schools, churches, factories, and all buildings where water and sewer are not available. Adds to the health and safety of your community.

Contractors

Once introduced, the "Waterbury" will be preferred above all others by your customers. Here's the opportunity for a good volume of business and profit. Write today for full information.

The Waterman - Waterbury Co.
Minneapolis, Minnesota



NEWS OF THE FIELD

Lumber Congress Dates Announced

A National Lumber Congress which is to eclipse anything ever held before in that industry has approached definite form with the announcement of tentative dates, probable speakers, and other interesting data.

The congress will be held in Chicago, April 14, 15 and 16, according to Dr. Wilson Compton, secretary-manager of the National Lumber Manufacturers' Association, who is busily engaged in planning the details of the proposed affair. It will immediately precede the annual meeting of the National Association, April 17, and it will take in all branches of the industry in a nation-wide discussion of export and domestic problems.

Trade extension, lumber economics, and logging operations will be among the subjects for the congress, while the list of speakers so far prepared includes W. B. Colver, chairman of the Federal Trade Commission; Col. H. S. Graves, Forester; W. S. Culbertson, Tariff Commissioner, and B. S. Cutler, Chief of Bureau of Foreign and Domestic Commerce.



Of Course We Can Do It!

Despite the pangs of readjustment thru which the country is now passing, the people of the United States, taken as a whole, were never in a better position to contribute to a Government loan than will be when the Victory Loan is offered in the spring.

The country has enjoyed—and will soon again enjoy—an unparalleled prosperity. There must, of course, be a period of transition. Producers and wholesalers still have goods made and bought at the peak of the war-time price advance. They naturally wish prices sustained until they can get out from under. Consumers, on the other hand, know that lower prices are inevitable, and are withholding orders. This leads to temporary idleness and to unemployment.

But the pause is only temporary. The nation has a bottled-up demand for commodities of all kinds—accumulated during the year or more of war conditions that made it impossible to get supplies for general consumption, or that forced the price level to prohibitive heights. In all lines, therefore, the public is now awaiting a return to practical conditions to begin a great buying campaign.

Everybody has money. On December 1 last the per capita supply of money had reached the highest point ever known—\$56.23. Compare this with the same date in the year 1879—\$16.92. The Government is borrowing in huge amounts, but the wealth of the nation has grown enormously. Even in eleven months the amount of money in circulation for every man, woman and child in the nation increased from \$48.76 to \$56.23. The total stock of money in the United States increased in the twelve months of 1918 by \$1,524,595,335. The investment power of the people at large is now greater in the United States than it has ever before been in the history of any country.

(Continued to page 110.)



DELCO LIGHT is a complete, compact, simple, Electric Light and Power Plant. Burns kerosene for fuel at a running cost of four or five cents a kilowatt.

DELCO LIGHT is air-cooled and is not subjected to weather conditions, which permits installation anywhere about the premises.

Self-cranking—no belts—Ball Bearings—thick plate—long-lived battery.

DELCO-LIGHT

WE WANT to send a Delco Light catalog to every contractor and builder whose business reaches out with the rural and farm districts.

DELCO LIGHT is carrying electricity and its many conveniences into every nook and corner of the country.

And it is important that every farm building that is erected should be properly wired.

And it is equally important that you, as a contractor and builder, should know about and appreciate Delco Light.

Hence we want to send you the catalogue.

We want you to know that you can safely specify

Delco Light for use in farm homes, schools, churches, stores and public halls.

Delco Light furnishes an abundant supply of bright, clean Electric Light and at the same time provides power to pump water, operate washing machine, cream separator, churn, vacuum cleaner, or other small machinery.

It not only brings city conveniences to the farm home but saves so much time and labor that it quickly pays for itself.

More than 70,000 satisfied users testify to the dependable, economical service given by Delco Light.

Be sure to write for the catalogue and the name of the nearest Delco Light distributor.

The Domestic Engineering Co.
 DAYTON, OHIO
Makers of Delco Light Products

Send Me the New Delco Light Catalogue:

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Address.....

Town.....

American Builder (March)



Brick, concrete and stucco need not deteriorate! Buildings of these materials can be made *permanent* examples of your handiwork.

Bay State Brick and Cement Coating preserves walls—for all time.

“Bay State” works itself right into the wall’s pores and lodges there for life. It retains all the natural beauty of the concrete, brick or stucco and *adds* to it. This coating gives the walls a clear, even color and absolute protection against weather.

Bay State Coating made in white and a variety of tints enables you to harmonize your buildings with their surroundings.

Our Book No. 20 shows you some transformed buildings—and a sample will show you the “transformer.” We will be glad to send these on request.

WADSWORTH, HOWLAND & CO.
INCORPORATED
Paint and Varnish Makers Boston, Mass.
New York Office: Architects’ Building

**BAY STATE
BRICK AND CEMENT COATING**

News of the Field

(Continued from page 108.)

The latest bank report is sufficient answer to the gloomy complaints that are now being heard from individuals who cannot see beyond the short interval of readjustment for which the nation has now paused. The latest bank figures show that the American people have accumulated a mass of wealth such as no other people ever possessed. The public could subscribe a \$12,000,000,000 loan in April, if a national crisis made this necessary, with little real hardship in any quarter.

The following table should reassure anyone who is faint of heart as to the future of the United States. It shows the unparalleled growth in national wealth and the pace at which the United States has been rising into international leadership in commerce. With the promise of these figures in mind, no one can fail to be serene as to the future of this nation, or in doubt as to the nation’s ability, and his own personal ability, now to oversubscribe the Victory Liberty Loan.

This table shows the United States balance of trade—the excess of merchandise exports over imports—in the last ten years:

1909	\$ 252,677,921
1910	303,354,753
1911	560,167,586
1912	581,144,938
1913	691,421,812
1914	324,348,049
1915	1,776,074,152
1916	3,091,006,766
1917	3,281,044,642
1918 (approximate).....	3,050,000,000

With these figures before him, who shall say that America is unable to float another Liberty Loan?



Mr. Lind Secretary Prepared Roofing Association

John Lind has recently been appointed secretary of the Prepared Roofing and Shingle Manufacturers Association, with offices in the Conway Building, Chicago. Mr. Lind was formerly assistant secretary of the National Lumber Manufacturers Association, and has had wide experience in organization work.

In his present connection he is carrying out a number of plans for the betterment of the prepared roofing and shingle industry, including the standardization of manufacturing and shipping practices, with a view to getting the product to the builder in the best condition and at prices which will tend to encourage construction work.

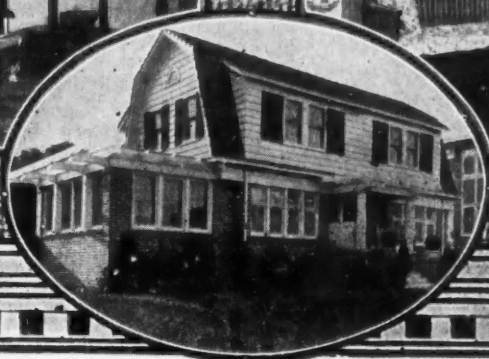
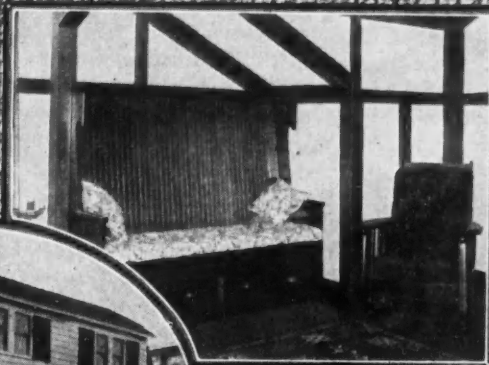
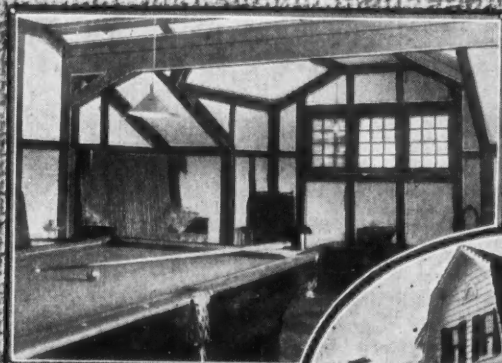
In the reorganization of the association, Herbert Abraham, of the Standard Paint Company, New York, has been made president; Ralph Esau, of the Barrett Company, Chicago, vice-president, and C. J. Berman, of the Chatfield Company, Cincinnati, treasurer.

E. S. HANSON.



The Real Home Maker

Teacher—“What is a home?”
 Little Girl—“The place where we live.”
 Teacher—“Who makes the home?”
 Little Girl—“Mr. Howard, the carpenter, who lives on our street.”
 Teacher—“No, your mother makes your home.”
 Little Girl—“Well, she didn’t make ours. Mr. Howard made it, and mama just lives there with papa and me.”



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THE distinctive mat surface of the Universal Insulite is of that charming craftsman type of beauty. It lends itself to an infinite variety of pleasing and artistic decorative effects. It can be tinted, stained or painted.

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It combines the most efficient, rigid form of insulation known with a beautiful wall lining—at the cost of a wall lining alone.

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Made from long selected wood fibres only. Clean, odorless, vermin-proof. Comes in even, uniform sheets, 32 and 48 inches wide, 8 to 10 feet long— $\frac{1}{4}$ and $\frac{1}{2}$ inch in thickness. Handled and applied like lumber.

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"The Board of a



Thousand Uses."

Six States Show Building Deficiency of \$500,000,000

It will take approximately \$500,000,000 expended in buildings in Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and New York to make up the building deficiency incident to the war. This construction work must be in addition to the normal, current requirements of 1919.

The Information and Education Service of the United States Department of Labor has issued the results of a study of building needs in these six states, made by the Economics Section of the Division of Public Works and Construction Developments. Taking the building permits issued in 1914, 1915 and 1916, to obtain an average representative of the normal year's requirements and comparing this average with the permits actually issued during the war years of 1917 and 1918, the Information and Education Service establishes the actual reductions in buildings in twenty-one cities.

To obtain an approximation of the building deficiency in the several states it is assumed that the building deficiency in the state is in the same ratio to those in the cities, as the property valuations of the state are to those of the cities.

Nine cities form the basis for the figures in New York state and from the actual decreases in building activities in these it is estimated that New York's building deficiencies for 1917 and 1918 are not less than \$236,000,000. Massachusetts shows up \$214,000,000 short, the basis for the computation being actual falling off in the building permits in seven important cities of which Boston is one; Maine, New Hampshire and Rhode Island show \$8,000,000 or more, and Vermont's building deficiency is \$4,960,000.

New York City shows a deficiency of \$173,192,304, while the figures for Boston are \$70,258,082. The normal building

activities for 1917-18 in New York, on the basis of building permits issued in 1914-15 and 16, should have been \$318,315,367—they were but \$145,123,063. Boston to have approximated normal should have shown building permits totaling \$100,898,780 for 1917 and 1918. Its total was but \$30,640,698.

A resume of the survey made by the Economic Section is as follows:

MAINE

Portland issued building permits in 1916 of \$1,653,742; 1917, \$769,543,000; 1918, \$601,647,000. Deficiency in last two years, taking 1916 as normal, \$1,936,294. A chart published by several trade publications indicates there is a shortage in Portland of residences, schools, factories and public buildings.

The real estate valuation of Portland is about \$79,000,000; that of the entire state is about \$339,000,000. Of the deficiency is in proportion to these assessments, the state is behind its normal building conditions to the extent of about \$8,300,000.

NEW HAMPSHIRE AND VERMONT

Manchester, N. H., issued building permits in 1914 to the amount of \$1,649,867; 1915, \$2,598,055; 1916, \$1,448,129; 1917, \$1,263,945; 1918, \$320,862. The deficiency of 1917 and 1918 over the two-year average of the preceding years is \$2,212,561.

The valuation of real property in Manchester is about \$75,000,000. That of the state as a whole is \$277,200,000. Assuming the building deficiency is in the same ratio as the real property valuations, the whole state would appear to be behind in its building program approximately \$8,130,000.

Vermont has no city for which building permit figures can be obtained. The estimate for this state is, therefore, based on the Manchester figures as typical of the locality. The real estate valuation of Vermont is about \$159,000,000. Its building deficiency is estimated at about \$4,960,000.

MASSACHUSETTS

Boston issued building permits in 1914 to the amount of \$24,150,170; 1915, \$63,901,000; 1916, \$64,297,000; 1917, \$23,294,161; 1918, \$7,346,537. Two-thirds the amount for three years previous to the entry of the United States into the war was \$100,898,780, while the permits for the last two years amounted to only \$30,640,698. The apparent deficiency in Boston's building program is, therefore, \$70,258,082.

A survey by building trade publishers indicates a shortage of residences, schools, factories and public buildings.

(Continued to page 116.)



LA PLANT-CHOATE MFG. CO.
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A long way to go for them, perhaps, but it will add to your satisfaction and subtract from the cost.

For sixty years we have been designing and making nothing else but Lighting Fixtures for every type of houses—pretentious or modest. We even have our own kind of metal—Vanco Bronze. You cannot get it in any other fixtures. It has many advantages, which we

will be glad to explain in detail.

We know that we can meet your requirements and save money for you, or we would not be wasting our time or your time telling you about ourselves.

Send for plates of our New Design "Series B" and for any specific information you may desire.

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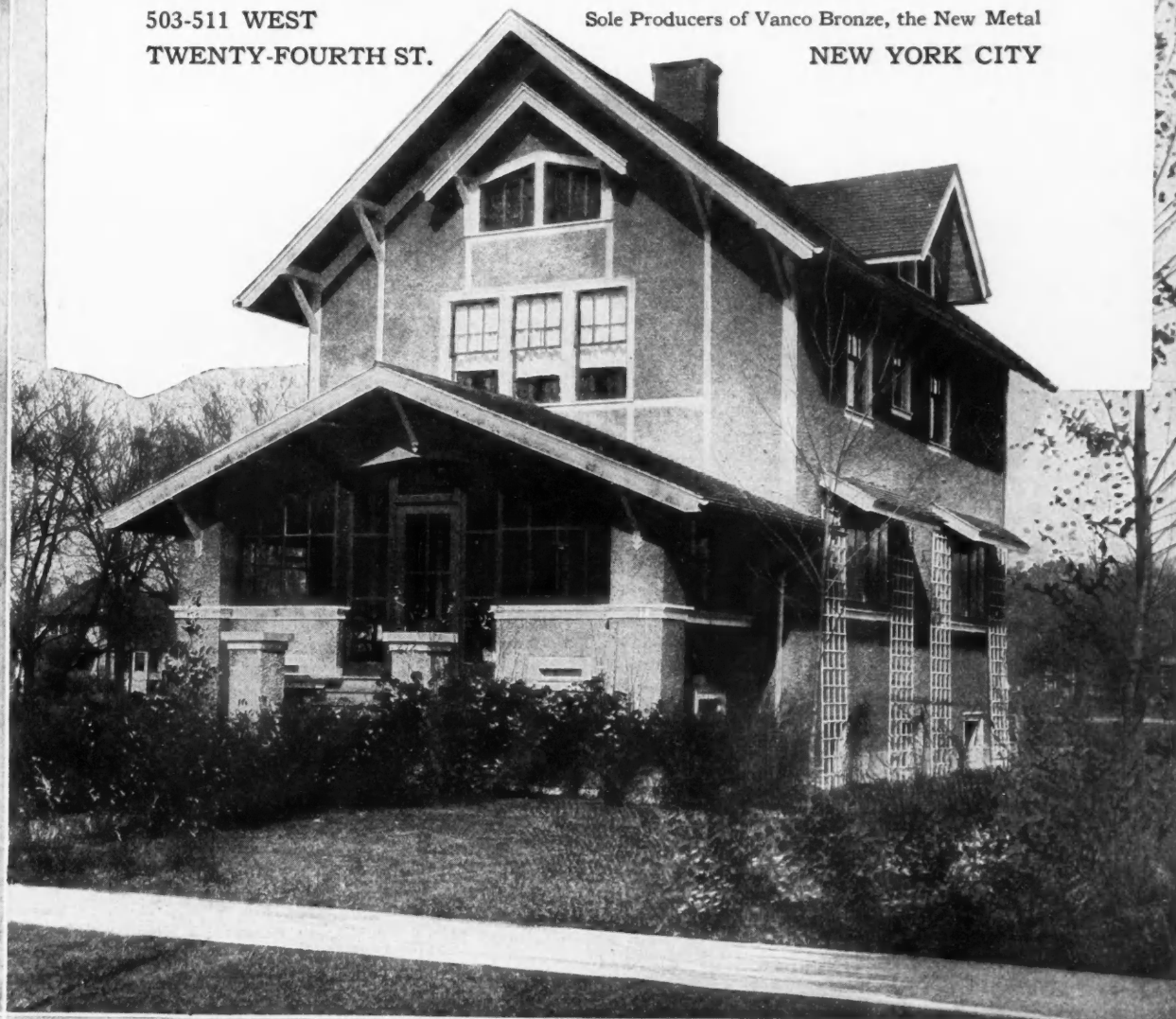
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500-Foot and 1000-Foot Lightning Rod Outfits Shipped Direct

THERE'S an extra profit waiting for you on many jobs, which you can easily get by installing proper lightning protection. The property owner has confidence in you—make this extra money yourself. With only a small investment in our Builder's Special Outfit, you will realize this big profit in selling and erecting

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Many Thompson agents are making \$3,000.00 extra per year. Every un-roofed rural building is a prospect for a sale ranging from forty to several hundred dollars. Your profit on a complete 1000-Foot Outfit is \$165.00; on a 500-Foot Outfit, \$82.50.

FREE If you are a Builder, Carpenter Contractor, or Lumbar Dealer, with your initial order we will give you free a set of the necessary Special Lightning Rod Tools. This offer is limited.

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For contractors who wish to utilize their time and build up a wide reputation. By installing Star Section Lightning Rods you are doing the utmost for your customer and pocketing a big profit each month.

Seventy years of successful manufacturing of lightning rods guarantees to the contractor that he is handling the product that will give his customer the most complete satisfaction. There is no greater asset than satisfied customers. We have some "territory" in which we want more reliable representatives. You can serve your own best interests by writing us at once regarding this unoccupied territory.

You cannot afford to delay—it is territory that yields great profits to wide awake contractors.

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Successors to
REYBURN-HUNTER & CO. E. A. FOY COMPANY
Philadelphia-Chic.go Cincinnati



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Survey of Building Needs

(Continued from page 114.)

Brocton issued building permits in 1916 to the amount of \$1,252,440; 1917, \$757,832; 1918, 280,130. Twice the amount for 1916 exceeds the total for the two following years by \$1,466,918.

Holyoke issued building permits in 1915 amounting to \$934,505; 1916, \$133,570; 1917, \$752,410; 1918, \$230,595. Even with the slump of 1916 the two pre-war years exceed the two war years by \$851,070.

Lawrence issued building permits in 1915 amounting to \$1,516,723; 1917, \$592,405; 1918, \$1,852,398. Twice the amount of the normal year, 1916, exceeds the sum of the two war years by \$588,643.

New Bedford issued building permits as follows: 1915, \$3,126,734; 1916, \$4,762,081; 1917, \$3,054,211; 1918, \$976,714. The first two exceed the last two years by \$3,857,890.

Quincy permits for 1916 are not available. The amount for 1915 is \$1,169,450; 1917, \$1,348,297; 1918, \$3,915,796. Quincy being a very active ship building city, a large part of the 1918 building was undoubtedly government work. For this reason the city is excluded from the computation.

Springfield issued building permits for 1915 in the amount of \$6,066,394; 1916, \$7,101,032; 1917, \$3,782,318; 1918, \$1,600,565. The first two years exceed the two latter by \$7,784,533. Survey, made by Public Building Trades Journals, indicate that houses and schools are needed, and information from the Real Estate Board of the city indicates a demand for buildings, apparently for houses, apartments, stores and office buildings.

A steady increase in the population of about 5,000 per year is estimated by the same board, which would require additional housing.

Worcester issued permits in 1916 amounting to \$6,164,871; 1917, \$4,838,840; 1918, \$2,066,734. Twice the 1916 amount exceeds that for 1917 and 1918 by \$5,424,168.

Several cities have permit figures for only two years, 1917 and 1918, or otherwise do not admit the comparison between the war years and those preceding.

The deficiency of building in seven cities is apparently as follows:

City	Deficiency
Boston	\$70,258,082
Brocton	1,466,918
Holyoke	85,070
Lawrence	588,643
New Bedford	3,857,890
Springfield	7,784,533
Worcester	5,424,168

Total \$89,465,904

The total valuation of the seven cities is \$1,897,095,926, while that of the entire state is \$4,538,998,071. If the deficiency in building is in proportion to these valuation figures, it would be for the entire state about \$214,000,000.

RHODE ISLAND

Providence issued building permits for the years indicated as follows: 1914, 6,334,900; 1915, \$7,023,700; 1916, \$9,249,500; 1917, \$3,968,100; 1918, \$4,972,700. The two-year average of the three years first mentioned exceeds the sum of the last two years by \$6,131,296, and this is the apparent deficiency in building in the city during the period that the United States was in the war.

The valuation of real property in Providence is \$349,000,000. That of the state is \$456,000,000. Assuming that the deficiency in building is in the same ratio, it would be, for the whole state, slightly more than \$8,000,000.

NEW YORK

Albany issued building permits as follows: 1914, \$4,173,796; 1917, \$2,446,212; 1918, \$1,336,102. The building during the two years this country was in the war was less by \$4,565,278 than it would have been if, during each of these years, 61 had been as great as in 1914.

A survey by building trade publishers indicates a shortage of schools and public buildings.

Auburn issued building permits as follows: 1916, \$352,615; 1917, \$234,115; 1918, \$233,249. The deficiency shown in 1917 and 1918 over twice the amount for 1916 is \$237,866.

Binghamton issued permits for building as follows: 1915, \$1,519,007; 1916, \$1,927,948; 1917, \$1,657,742; 1918, \$607,293. The deficiency shown by the two war years over the two previous years is \$1,181,920.

Buffalo issued permits for building as follows: 1914, \$10,709,000; 1915, \$11,798,392; 1916, \$13,137,000; 1917, \$10,501,000; 1918, \$7,014,000. The average for two years, from the figures for the first three, is greater than the actual figures for the last two years by \$6,247,928, which is the apparent deficiency in building in this city.

A survey by building trade publishers indicates a shortage of residence property.

New York City issued permits as follows: 1914, \$134,180,790; 1915, \$148,625,651; 1916, \$194,666,609; 1917, \$90,171,870; 1918, \$54,951,193. Two-thirds the amount for the first three years is \$318,315,367, which can be taken as the normal amount for two years. The amount for 1917 and 1918 is \$145,123,063, which shows a deficiency of \$173,192,304, which is the apparent amount the metropolis of the country is behind in building.

A survey by building trade publishers shows that there is need at the present time in New York City of residences, schools, business and office buildings and hotels.

Niagara Falls issued building permits for the last three years as follows: 1916, \$2,026,336; 1917, \$1,819,054; 1918, \$2,081,126. This does not show any great decrease in money value of building. The United States Housing Corporation built fifty-eight apartments in 1918, which kept up the amount.

Rochester issued permits as follows: 1914, \$8,733,257; 1915, \$9,108,333; 1916, \$9,379,447; 1917, \$6,739,620; 1918, \$1,949,531. The two-year average from the first three mentioned shows a greater amount of building than that of 1917 and 1918 to the extent of \$9,458,187. The population, which was 218,000 in 1910, is estimated to have increased at about 10,000 per year.

(Continued to page 118.)

Completely Built *versus* Half Built Homes

Bigger Future Than Ever for Builder and Contractor

By S. J. DUNCANSON

Today, the builder of small town homes and farm houses faces America's big opportunity. Farming now is the *first essential industry*, and the farmer is *the man* with money to buy what he wants.

The city no longer attracts the country youth as the only place to make a large fortune. On the contrary, it's the city youth, with an eye to the main chance, who seeks the farm.

The "hayseed" of the funny papers has disappeared. The farmer now rides to town in his automobile, wears city clothes and a fur coat—sends his produce by motor truck—works his ground with a tractor—makes use of every modern device to increase his yearly output.

And the first thing thousands and hundreds of thousands of farmers are looking for today, is a completely built home instead of the half built home of the past.

The farmer expects the builder to provide him with those city conveniences to which he has grown accustomed, through close contact with city ways. He knows the value of modern machinery. He has learned that health and increased profits are the sure results of modernizing his farm. Running water, electric light and sewage disposal systems have become as necessary to him as the roof and walls of the house, and he depends on the builder to provide him with the best.

Different Kinds of Water Supply Systems

The three best known systems of water supply are the elevated tank system, the non-storage system and the pneumatic system. The last, while a trifle more expensive, offers greater advantages than any other.

A small pump, driven either by gasoline engine or electric motor, pumps the water from cistern to well, into a tank. At the same time, a certain percentage of air, which acts as a cushion in the tank, is pumped in automatically. As additional water enters, the air cushion is compressed, creating power that forces out the water when a faucet is opened.

The whole system, comprising pump and pressure tank, can be installed in a corner of the cellar, or in an adjoining out house. The constant supply of hot and cold water, is always dependable. The comfort and convenience of running water under strong

pressure, and the protection it affords against fire, cannot be overestimated.

Nor can the builder be too careful in the system he selects to provide this prime essential in meeting his clients' needs. On that selection much of his reputation depends. Makeshift water supply systems injure him seriously, creating a lasting grievance in the client's mind. The worst investment is one that, cheap in the beginning, grows more and more expensive as time goes on.

The ideal water supply system must be built to give years of unflinching service. It should be compact and simple, easy to install and operate, and free from delicate parts. It should be built as nearly along the lines of *public utilities plants* as it is possible to build it. A water supply system of this type establishes the builder's reputation and increases his business by that word-of-mouth advertising that results from the satisfaction of the user.

Electric Lighting Plants

After settling the proper water supply system the builder naturally turns to the best means of lighting house, barn, grounds and out-houses.

There are several types of electric lighting plants, the direct connected type, where generator and engine are built together, and the indirect system, where the generator is separate from the engine.

The former is more compact, and in the hands of an experienced electrical engineer, quite satisfactory, if well built. The one disadvantage, however, in connection with this type is that the engine must run at a very high speed. The latter indirect system offers opportunity for using a slow-speed engine, connected by belt to a generator, and makes it possible to locate and remedy trouble more readily than in the direct connected type. In selecting either type of electric lighting plant, care should be exercised that a plant large enough, not only to meet present requirements, but future requirements as well, should be selected. The conscientious builder, therefore, will rather make his selection from a line made by a concern manufacturing many different sizes than from a concern manufacturing only one or two sizes. Too many a manufacturer makes the user's requirements fit the few models he makes, rather than provide a variety of sizes in order to fit the specific needs of the buyer.

Combination Water and Light Plants

Certain manufacturers today have solved the water supply and lighting problem, with one plant that provides both with equal efficiency—a plant that pumps water into a pressure tank, and a plant that generates electric current for the lighting of farm, house and grounds.

Naturally, in selecting such a plant, the greater wisdom lies in choosing one made by a manufacturer who furnishes countless sizes. To repeat, this is the only way possible to get a plant that fits the requirements of the user, instead of making the requirements

of the user fit the plant the manufacturer happens to have on hand.

The builder or contractor will do well to bear in mind that a system should not be too automatic. The manufacturer who says his system requires no care or attention does an injustice to builder and user alike. Electric lighting plants *DO* require attention, and always will. But the fewer the automatic devices attached to such a plant and the simpler its construction, the greater its efficiency and dependability at all times. Two minutes more attention a week, and twenty times the service extending over a lifetime.

Sewage Disposal Plants

Modern science and invention have developed a sanitary system of sewage disposal, which is perfect in operation, easy of construction, low in cost, and once installed, requires practically no attention. The principle involved is the bacterial treatment of sewage disposal.

The Triple Triple Alliance

To get from every prospective job the profits to which he is entitled, the builder today must not only recognize the importance of the Big Three—Electric Light, Running Water and Sewage Disposal—he must be thoroughly familiar with the *best* type of plants to provide each and all. This is his progressive opportunity. His work will stand as the best and highest grade—his reputation for modern and up-to-date methods will take on a well known stamp and he will find the Triple Triple Alliance—Running Water, Electric Light and Sewage Disposal—Health, Comfort and Convenience for the client—Prestige, Profits and Increased Business for himself—will work together with the greatest possible success.

Electric Light and



Running Water

from one plant

You can now have all the convenience and comfort that come with electric light and running water in your country home no matter where you are located. One complete, compact system furnishes them both.

KEWANEE

COMBINATION SYSTEMS

save money on first cost, last longer, require fewer repairs than any other installation, and never fail to give perfect, uninterrupted service year in and year out. No matter how large or small your farm, there is a Kewanee System that exactly fits your needs.

An abundant supply of running water under strong pressure is always ready for use. Electric light and power for every purpose is yours at the turn of the switch.

Write for bulletins on *Running Water, Electric Light, and Sewage Disposal.*

Our Drafting and Engineering Depts. will co-operate with you

KEWANEE PRIVATE UTILITIES CO.
(Formerly Kewanee Water Supply Co.)
424 S. Franklin St., Kewanee, Ill.

Survey of Building Needs

(Continued from page 116.)

A survey by building trade publishers indicates a shortage in this city of schools, factories and public buildings. A statement by the Real Estate Board of the city indicates a good demand for stores, offices, houses and apartments, but no serious shortage.

Schenectady issued building permits as follows: 1914, \$1,457,918; 1915, \$1,550,030; 1916, \$1,760,825; 1917, \$1,869,168; 1918, \$1,230,001. It will be seen that there has been no great variation in the amount of building, the amount for 1917 and 1918 being, however, less than the two-year average of the other years by \$80,013.

Syracuse issued building permits as follows: 1914, \$3,412,184; 1915, \$4,663,216; 1916, \$2,617,000; 1917, \$4,251,701; 1918, \$1,637,895. The two-year average of the three earlier years exceeds the amount for 1917 and 1918 by \$1,238,671.

A survey by building trade publishers indicates a shortage of residences and schools in this city, and the same is indicated as to houses and apartments, is made by the Real Estate Board of the city.

Utica issued permits for building as follows: 1914, \$1,897,535; 1915, \$2,137,020; 1916, \$1,827,575; 1917, \$1,413,980; 1918, \$876,530. The two-year average of the first three years exceeds the amount for 1917 and 1918, \$1,617,577.

Deficiencies in nine cities are as follows:

City	Deficiency
Albany	\$ 4,565,278
Auburn	237,866
Binghamton	1,181,920
Buffalo	6,247,928
New York City.....	173,192,304
Rochester	9,458,187
Schenectady	80,013
Syracuse	1,238,671
Utica	1,617,577

Total

\$197,819,744
The total real estate valuation of the nine cities amounts to \$9,558,900,000. That of the state is \$11,146,000,000. If the building deficiency is in proportion to the assessed valuations given, it is, for the state as a whole, about \$236,000,000.

Authorities Tell Why Building is Slack

WHAT is holding back building and construction work?

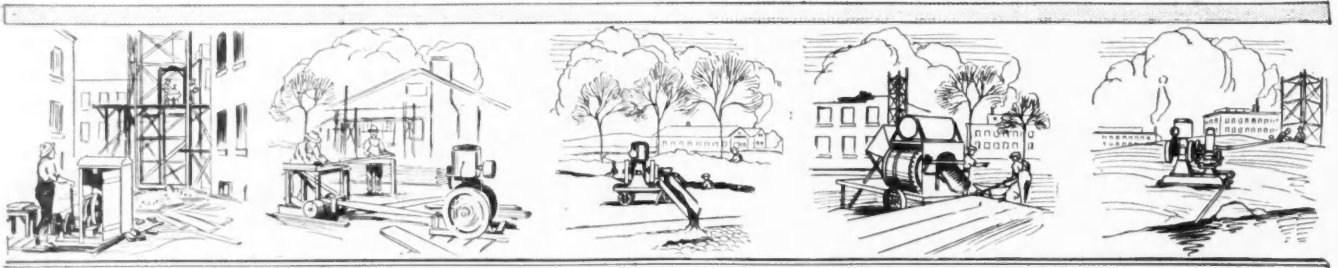
More than five hundred opinions on this question have been received in the last two weeks by the Information and Education Service of the United States Department of Labor. Many building authorities blame Congress, others charge the financial interests of the country with responsibility. In the Central West, freight rates are said to be exerting an injurious influence. In the main, high costs of materials are held to be the chief obstacle.

"Don't expect private capital to build merely for the sake of furnishing jobs for workmen," writes a well known architect from Buffalo. "That is the obli-

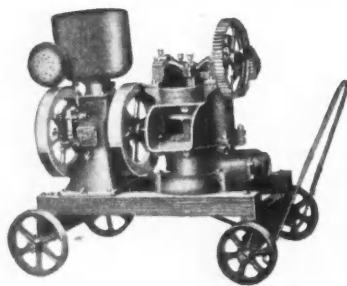
gation of the government, be it local, state or national. Let public works be started at once for the benefit of the public. The cost will be high and the public will have to pay the price, but the public will reap the benefit in the reduction of unemployment, the absorption of the products of many industries and the use of many works of which there is great need."

From Passaic, N. J., comes the following statement: "I am greatly hindered in progress of this work by not being able to procure loans by way of mortgage, in large amounts, say, in the neighborhood of \$150,000. The banking institutions and mortgage companies are making only small loans around here and, even where

(Continued to page 120.)



Money Making Equipment



Regardless of cost, the equipment that makes the most money for the contractor is that which does the greatest amount of work with the least trouble and attention.

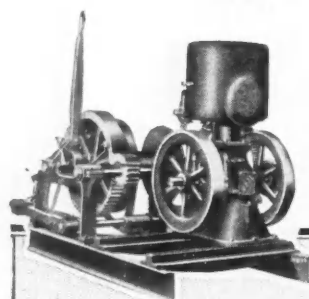
Well constructed Ideal Hoists, pumping outfits and other equipment are not only big labor savers and money makers, but also a real necessity in modern construction work.

The ideal Diaphragm pumping outfits shown here is one of our most popular small sized outfits. The power is a 2½ H.P. Ideal. Either 3" or 4" pump can be furnished with capacity

of 3000 or 4500 gallons per hour respectively. Our complete line also includes other pumping outfits of various types and capacities, suited for practically any kind of pumping.

Bottom photo shows the Ideal direct connected one way hoist. This is a simple and reliable outfit that is sold at a most reasonable price. It is designed to insure both convenience and safety for the operator. Various other types of hoisting outfits are shown in the complete Ideal catalog.

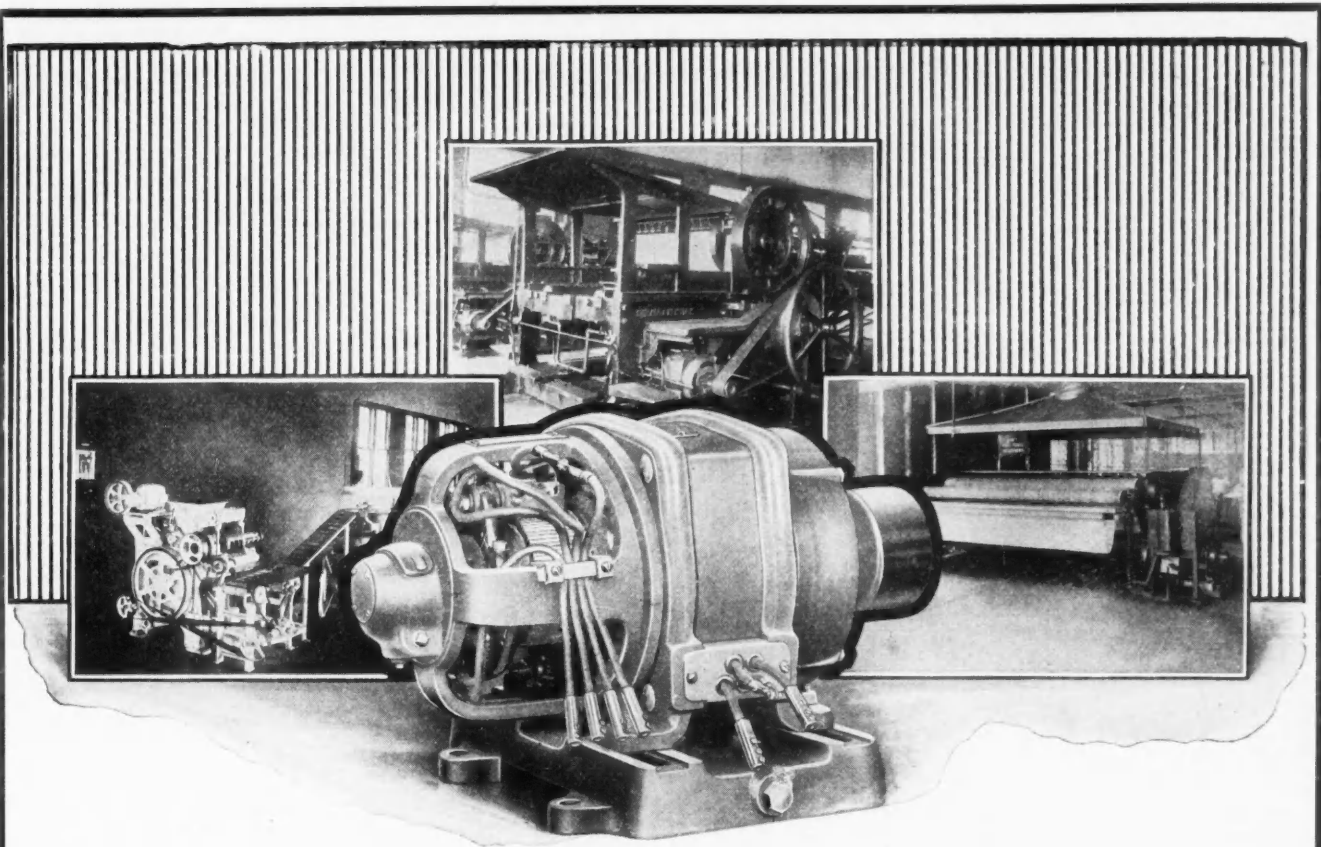
Write today for complete details and information regarding Ideal Engines and equipment.



IDEAL ENGINE COMPANY

R. E. OLDS, Chairman
630 East Kalamazoo Street Lansing, Mich.

IDEAL  **POWER**



Form C Single Phase RI RI Motors

are particularly well suited to services where reversal of rotation is required—elevators, small cranes, and hoists—as well as certain machines used in the wood-working industries.

Standard 60-cycle non-reversing continuous duty type RI motors can be made reversible at reduced intermittent duty rating by simply bringing out extra leads from the windings to a double-pole, double-throw switch.

Type RI reversing motors are built in sizes from 1/4 to 5 h. p., 110-220 volts.

Shipment on popular sizes and frequencies can be made from stock.

Call up the nearest G-E sales office or Motor Agency for the size you need.

GENERAL ELECTRIC COMPANY

GENERAL OFFICE:



SCHENECTADY, N.Y.

Atlanta, Ga.
Baltimore, Md.
Birmingham, Ala.
Boston, Mass.
Buffalo, N. Y.
Butte, Mont.
Charleston, W. Va.
Charlotte, N. C.
Chattanooga, Tenn.
Chicago, Ill.

Cincinnati, Ohio
Cleveland, Ohio
Columbus, Ohio
*Dallas, Texas
Dayton, Ohio
Denver, Colo.
Des Moines, Iowa
Detroit, Mich.
Duluth, Minn.
Elmira, N. Y.

Eric, Pa.
*El Paso, Tex.
Fort Wayne, Ind.
Hartford, Conn.
*Houston, Texas
Indianapolis, Ind.
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Joplin, Mo.
Kansas City, Mo.
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Los Angeles, Cal.
Louisville, Ky.
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New Haven, Conn.
New Orleans, La.
New York, N. Y.
Niagara Falls, N. Y.

*Oklahoma City, Okla.
Omaha, Neb.
Philadelphia, Pa.
Pittsburgh, Pa.
Portland, Ore.
Providence, R. I.
Richmond, Va.
Rochester, N. Y.
St. Louis, Mo.
Salt Lake City, Utah

San Francisco, Cal.
Schenectady, N. Y.
Seattle, Wash.
Spokane, Wash.
Springfield, Mass.
Syracuse, N. Y.
Toledo, Ohio
Washington, D. C.
Youngstown, Ohio

*Southwest General Electric Company. *For CANADIAN BUSINESS refer to Canadian General Electric Company, Ltd., Toronto, Ont.
GENERAL FOREIGN SALES OFFICES: Schenectady, N. Y.; 120 Broadway, New York City; 83 Cannon St., London, E. C., England



Stop Those Leaks!

THE easiest and quickest way of repairing leaks in radiators, pumps, water jackets, motor head gaskets, hose connections, etc., is to use Johnson's Radiator Cement. This will stop the leaks in just a few minutes without laying up the car. No mechanical experience is required—all you have to do is remove the cap and pour the cement into the radiator.

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.



If your dealer cannot supply you, use attached coupon.

S. C. JOHNSON & SON, Dept. AB 3
Racine, Wis.

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".

Name
Address
City and State
My Dealer is

Authorities Tell Why Building Is Slack

(Continued from page 118.)

there is ample security, will not consider investing a large amount of money in one place."

Labor conditions and demands are held to be unfavorable to immediate building operations by many of the authorities writing to the Information and Education Service. An architect, writing from Lincoln, Neb., makes the following statement, typical of the complaints along this line:

"Construction work in these parts is now and has been impeded not a little, due to the unreasonable demands of labor, not only for exorbitant wages, but more by the fact certain very undesirable trade rules are being enforced by labor organizations which run up the cost of doing work enormously."

Many of the contractors and builders in the Central West assert freight rates are the chief trouble. Typical of these arguments is the following from Greenville, Ohio:

"We have no complaint to make in the matter of securing credits, building materials and labor. It is true that wages are quite high and yet not prohibitive. The greatest detriment to our industry thru the Central West is prohibitive freight rates on sand and gravel. It is not only threatening to destroy our industry, but at the same time it is impeding highway construction and other building projects which demand a high grade of these basic materials."

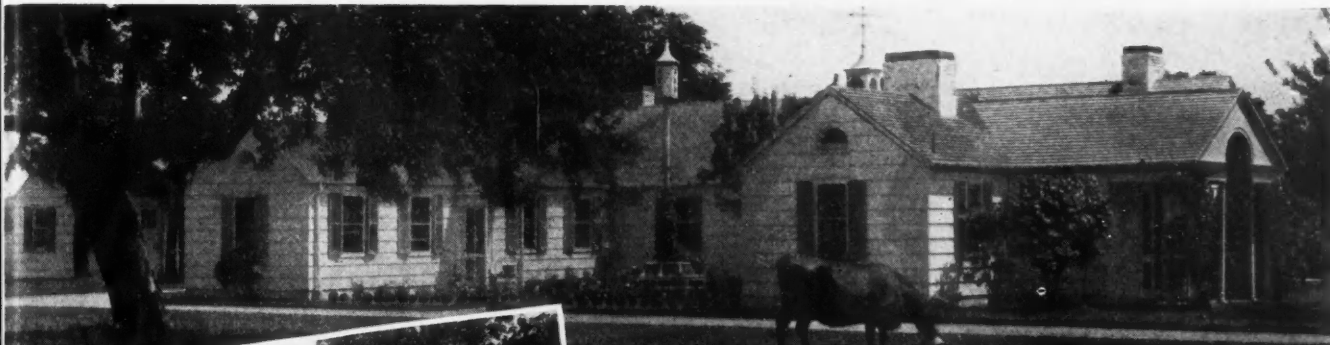
Lack of co-operation on the part of financial interests seems to be the outstanding obstacle in New York. One of the best authorities on the building industry in New York City sums up the situation there in this fashion:

"We have in the United States serious difficulty owing, principally, to the unwillingness of financial interests to co-operate in building projects with the material and labor market in its present condition. We are working on a total of nine industrial projects involving approximately 6,000 workmen's homes, to be carried out by private interests in various important industrial centers, but in each case we are hampered by the building loan situation. The only definite work we expect to carry out without delay is located outside of the United States."

From St. Louis, Mo., a well known architect writes: "I am firmly convinced that the one thing the building public wants to know is the cost of building today as compared to the next three to five years. If they could be assured that the cost will not drop within that time, there would be a tendency to proceed with the needed work."

As for the last question the Information and Education Service of the Department of Labor, thru the Division of Public Works and Construction Development now is seeking authoritative information as to

(Continued to page 122.)



Farm buildings designed by
ALFRED HOPKINS

CHARLES S. REEVE

ALFRED HOPKINS
ARCHITECT
101 PARK AVENUE
NEW YORK

LESTER S. LA PIERRE

February 7th, 1919.

DEVOE & RAYNOLDS COMPANY, INC.,
101 Fulton Street,
New York City.

Gentlemen:-

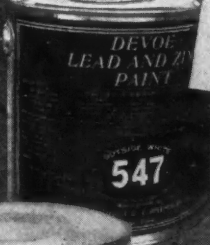
On going through our records we find that we have specified some of your materials on practically every one of our commissions.

We use your velour wall finishes Enamel for the walls and ceilings of dairies and cow barns, as well as woodwork, and for metal work Redull is used.

Our work is scattered over a wide territory and it is impossible to specify local materials, so we have specified your materials because they are standard and known practically everywhere.

Yours very truly,

CSR/MP



DEVOE

The oldest paint manufacturing concern in the United States
Founded in New York in 1754

DEVOE & RAYNOLDS CO., Inc.
New York Chicago

Authorities Tell Why Building Is Slack

(Continued from page 120.)

what can be expected in material prices for the next five years. While the investigation lacks completeness at this time, no definite conclusions may be stated. Many eminent building and material authorities, however, insist that no marked decrease in material prices may be expected for the next five years. They assert with some positiveness that pre-war prices on building materials will not be re-established for several years, if ever. These assert that persons who delay building in the hope of marked reductions in building costs probably will be disappointed and will have denied themselves the use of needed property and the revenues which would be derived therefrom.

In response to the Department of Labor's inquiry as to future rates on building and construction materials, the United States Railroad Administration asserts there is to be no general 30 per cent advance on freight rates for sand, gravel, crushed stone and slag. The rumor that such advances were contemplated was arousing anxiety in the Central West. Under date of Jan. 20, the Railroad Administration put out a circular which says: "There is no foundation for the report that the Railroad Administration has given or is giving any consideration to any increase in present basis of rates."

The Department of Labor points out that building,

being a basic industry, will stimulate general business and is, therefore, very vital to continued financial prosperity. The national economic loss resulting from the idleness of thousands of men cannot be permitted and its injurious effects escaped. Present building costs are not so high that they equal in the aggregate the wealth the country loses thru the idleness following in the wake of building stagnation. Homes are needed, business quarters are needed, public works are needed. The United States is the wealthiest country in the world. The most reliable authorities in the country assert that unprecedented prosperity is ahead. Why longer delay the revival of building?

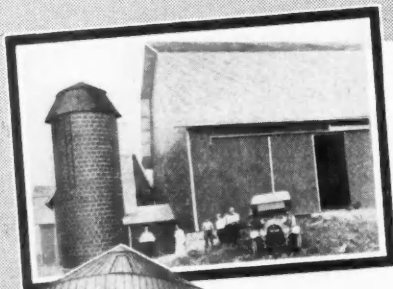


Building Industry Will Support Fifth Liberty Loan

NOW that Uncle Sam is about to ask his people to subscribe to another great Liberty Loan, it may be well for the builders of America to sit down and seriously consider their patriotic responsibilities in regard to that loan.

Shall they not say to themselves: "No other American industry will profit more by the coming of peace. Therefore, the building industry should subscribe on the splendid promise of the future, more generously than any other industry."

It is believed that the Fifth Loan will be the last great popular offering.



HINGE-DOOR LADDER SILOS



Tile or Wood Stave

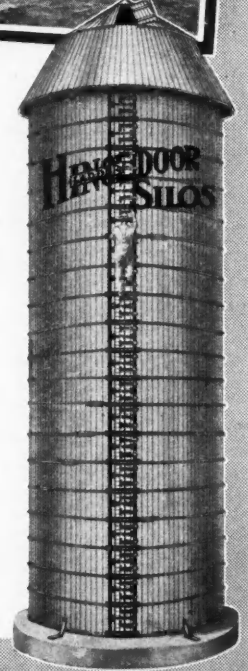
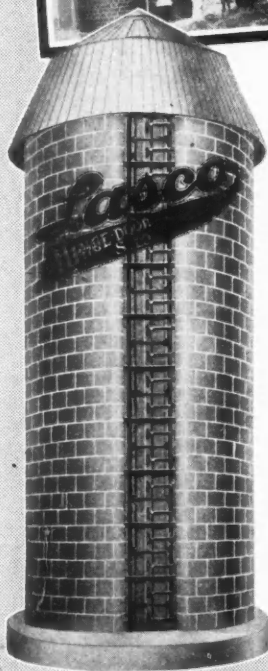
Mr. Contractor or Carpenter: You are the logical man to sell Hinge Door Silos for us. Why? Because you are in immediate touch with farm building conditions in your locality. Hundreds of new farm buildings are going up this spring and summer, and you will doubtless secure some good contracts. Why not be in a position to suggest to the farmer that he needs a silo, if he does not own one? The farm paper advertising, booklets, catalogs and mailing circulars, which we furnish you, along with the co-operation of our state agents, and our effective selling plans, make it easy for you to sell the Famous Ladder Hinge Door Silos. You can make from \$75.00 to \$100.00 clear profit on every silo you sell and erect. The erection of a silo is an important matter and usually requires the services of a contractor. You are in a better position to give this service to the farmer than any other person we could choose for an agent. Write us today and we'll explain all the detail in the first letter, and mail you our complete line of advertising helps.

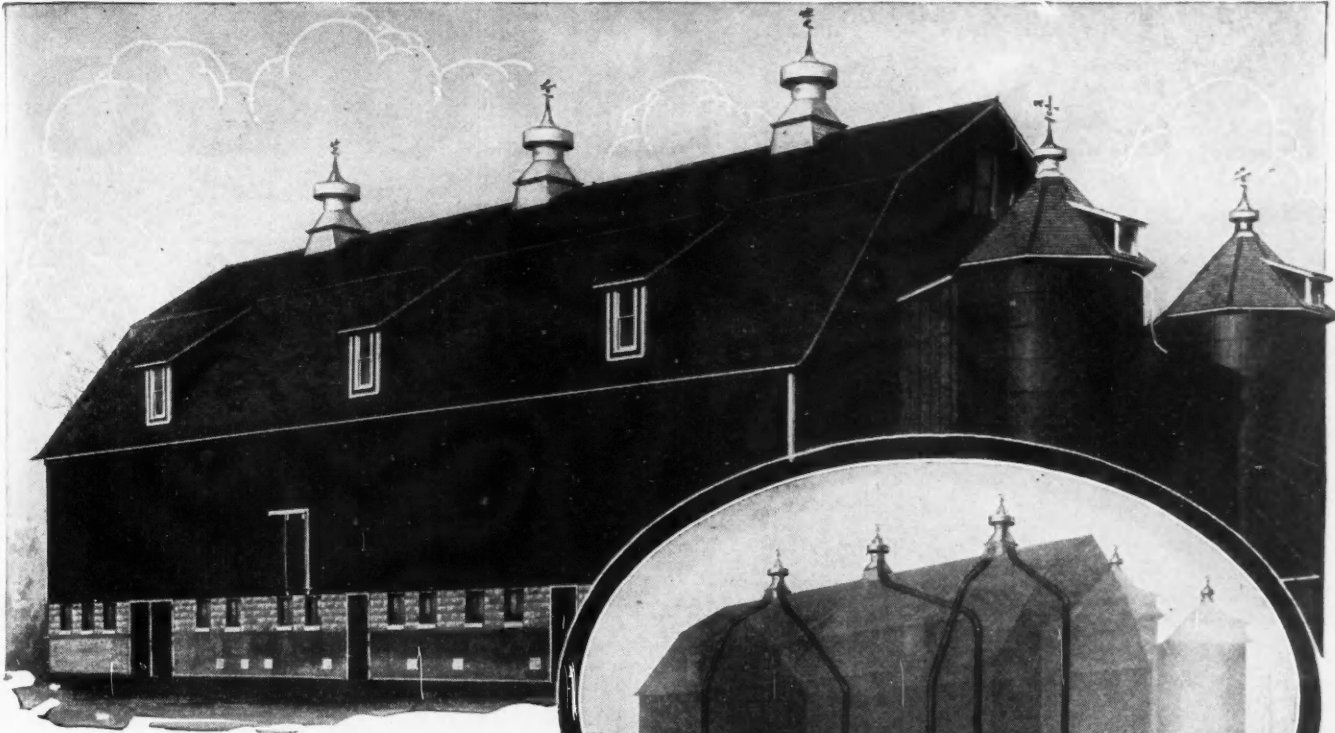
The Hinge Door feature makes our silos easy to sell. It is our exclusive patent. No other silo manufacturer can give the same feature in silo construction.

Write Today for Our Proposition

LANSING SILO COMPANY, Lansing, Mich.

Factories: Lansing, Mich. East St. Louis, Ill.





Give Your Customer a King Finished Barn

IF you are a barn builder you are known by the kind of barns you build. If they are fine-looking buildings that serve their owners well, you have a right to be proud of them. Any man has a right to be proud of good workmanship and the barn builder is no exception.

But isn't it true that a good barn is always made a better-looking building with one or more King Aerators on the roof?

It is also true that barns ventilated with King Systems last longer and stay in better condition, which means much to the man who built them.

If you have been about the country you have seen King Aerators and King Systems. You can tell King Aerators when you see them. They are unlike any other ventilator. They are more beautiful in design; they have a better, brighter finish in a silver gloss, and, what's more important, they are scientifically built to draw foul air out of the building.

Recommend the King System of ventilation for the barns you build. If your customer doesn't want the complete King System, ask him to let you put King Aerators of the right size and in the right place on the roof, anyway. You will give him a better-looking barn and make him a better-satisfied customer.

The King finished barn, with King Aerators on the roof or the complete King System ventilating it, is always a good advertisement for the man who built it.

Let Us Send You Our New Catalog

showing many photographs of barns ventilated with King Systems, and giving facts about barn ventilation that you will be glad to know.

King Ventilating Co. 1202 Cedar Street
OWATONNA, MINN.
On the Jefferson Highway
Canadian Factory: Moose Jaw, Saskatchewan
Ventilating Engineers for Farm Buildings and Creameries



King Aerators can be used with or without the King System

KING System of Ventilation

Save \$1026



— Make That Same Saving on Every Six Jobs. What Would it Mean in a Season? In Ten Years?


These are not *paper* figures, but actual figures—these six jobs were actually built in Milwaukee and costs of concrete work was carefully checked up.

The actual cost of the concrete work with Reichert Metal Molds showed a saving of \$1026.72 over the estimated cost of wood forms. The saving *paid for the forms*—and the forms will be good year after year. At that carpenter labor was figured at only 70c per hour.

Make your own estimate of how much it would cost you to build the wood forms for these same six jobs—prove this big money-saving yourself.

Send us your name and address and we will send you plans showing these jobs—no simple concrete work about them. We send you actual figures of the cost with Reichert Metal Molds, and our figures on what the wood forms would cost. You can check up this big money-saving to your own satisfaction—to your own big profit. Just write your name and address right in the margin of this page and send it on—we will know what you mean.

A saving of over a thousand dollars on every six jobs is too big not to investigate.

See next page 

on the Concrete Form Work of these Six Jobs



—They Do Everything That Wood Forms Can Do—Do It Better and Faster.

Builds a two-inch or a ten-foot wall. Builds any angle. Builds silos. Speed? Listen to this: A 28'0" x 50'0" laid Monday afternoon. Tuesday eight men started a foundation and by quitting time entire foundation was raised eight feet, with windows in place. Next morning the molds were released for another job.

Sixteen men could not have had the forms built in the same time! Time saved—money saved—profits kept!

Reichert Metal Forms are simplicity itself—no complications—suitable for small jobs as for big construction.

The plans, estimates and costs on these six jobs will open your eyes to the money you are losing. Write for them.



REICHERT METAL MOLDS

Reichert Mfg. Co.

1437 Booth St., Milwaukee, Wis.



MOTOR TRUCKS IN THE BUILDING INDUSTRY



Truck is Contractor's Best Friend

MOTOR TRANSPORT QUICKLY AND CHEAPLY MOVES HEAVY AND LIGHT EQUIPMENT, MATERIALS, MEN AND TOOLS TO AND FROM THE BUILDING JOB

WHAT would the building industry do without the motor truck? How could the contractor meet the demands of the building operations of today were he forced to depend on horse-drawn wagons for the transport of materials, equipment and men?

These are questions the motor trucks, themselves, are answering every day, as they have become such an essential part of the building contractor's equipment that the man without one or more of them is working under a disadvantage.

This is true of every phase of building, whether it be in the city, the smaller towns, or rural districts. The ability of the truck, to carry several times the load of a wagon gives its owner many advantages that his less progressive competitor does not have. He can transport equipment and materials more quickly, cut the cost of hauling and conduct his operations with

fewer men.

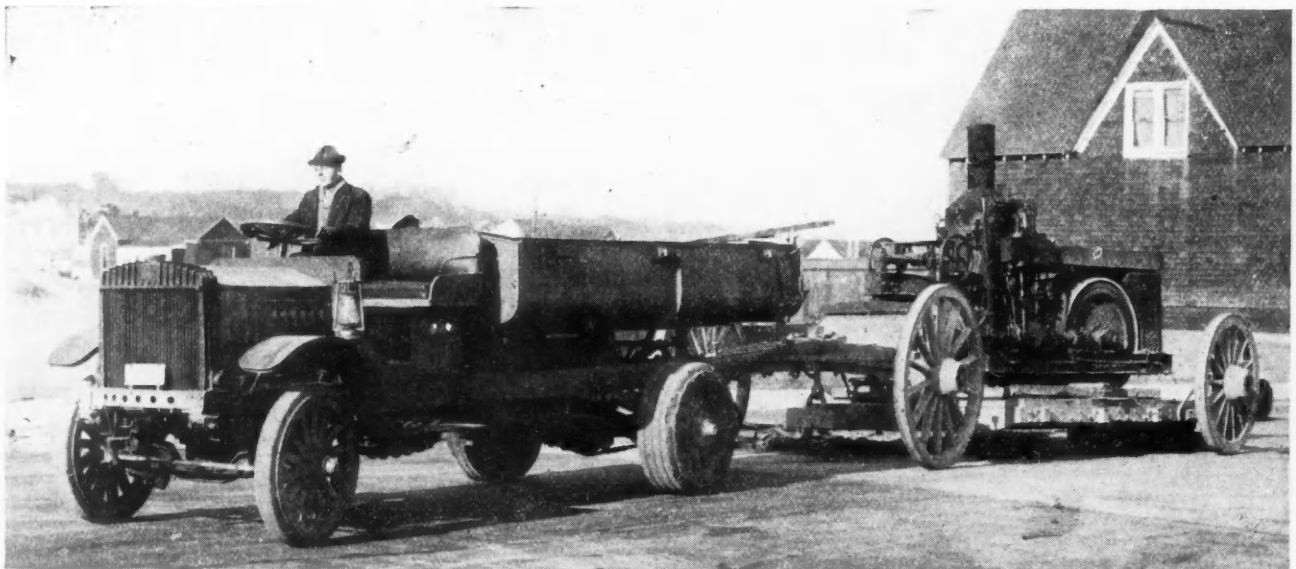
There seems to be no limit to the things a truck is valuable for on a building job. It is efficient in the wide range of requirements between being available to "run errands" to doing excavation work. Few paving or road-building jobs could be accomplished without it.

How the Contractors Use Them

Varied uses of the motor truck in building operations are best told by the accompanying illustrations.

D. L. Bienfeld & Co. are general contractors in San Francisco, Cal., but specialize in street paving and paving repairs. One of the illustrations show how this firm use a truck to haul steam rollers from one job to another. Attach to the truck is an underslung trailer, of the type ordinarily used for hauling heavy building stone. A timber track is laid to its floor, the steam roller run onto it by its own power, is

(Continued to page 128.)



D. L. Bienfeld & Co., San Francisco. Use a "Ricker" Truck to Haul This Underslung Trailer Loaded with Steam Roller from One Job to Another, Thus Keeping Equipment in Almost Constant Use. The Truck Carries Materials When Not Otherwise Employed.

Announcing Two Improved Models



The "Yellow Chassis"
Trucks that serve so
well—

- Republic Dispatch, with Express Body and Canopy Top - \$1095.00
- Republic Special, with Express or Stake Body - - - 1295.00
- Model 10: 1 Ton, with Express or Stake Body - - - 1535.00
- Model 11: 1½ Ton, Chassis 1885.00
- Model 19: 2-2½ Ton, Chassis 2395.00
- Model 20: 3¼ Ton, Chassis 3450.00

All prices F. O. B. Alma, Mich.

Model 19—Republic Invincible—2-2½ Tons Model 20—Republic Dreadnaught—3½ Tons

Founded on experience gained through building more than 50,000 motor trucks, Republic announces two improved models.

Developed from a careful study of the needs of motor transportation in every industry and business and under every road, load and climatic condition encountered in the 27 countries in which the "Yellow Chassis" Trucks have served so well.

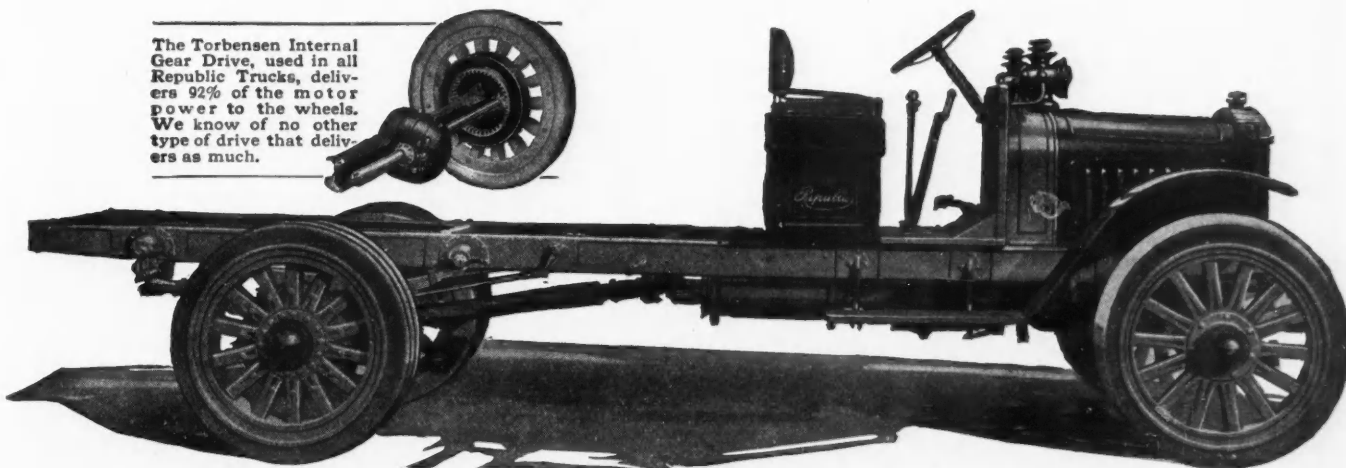
In basic design these improved Republic models adhere to Republic practice which has amply proved its correctness through five years of constantly increasing public confidence. But many improvements have been made to give increased service and value.

Continental motors of great power are used in both models. A 4-speed transmission adds flexibility. Enlarged radiators give increased cooling capacity equal to any emergency. Perfected oil governor absolutely controls speed and delivers full power at all speeds. Rear spring suspension constructed according to government design. And every mechanical feature is kept in perfect balance with the truck as a whole. Every improvement that could be logically dictated from Republic's vast experience, has been incorporated in the Republic INVINCIBLE and the Republic DREADNAUGHT. We believe they set new standards of truck value that truck users will be quick to appreciate, and they are ready for immediate delivery.

More than 1400 Republic Service Stations insure continuously satisfactory service to every Republic user.

REPUBLIC MOTOR TRUCK CO., INC., ALMA, MICH.

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.



Model 19—Republic INVINCIBLE, 2-2½ Tons

REPUBLIC

Internal Gear Drive

MOTOR TRUCKS

Built by the Largest Manufacturers of Motor Trucks in the World



“Keep to Your Schedules in Spite of the Weather” is Industrial America's Slogan

OWNERS in the building business realize that during this winter their transportation departments must not be interrupted—their schedules must be maintained. Naturally Kissel Trucks, equipped with the *ALL-YEAR Cab*, have become first choice.

The *ALL-YEAR Cab* is the only perfected means of protecting drivers during winter's stormy days or any disagreeable weather. Its patented features increase results of owners by keeping trucks in operation the year 'round.

You should not delay in seeing your nearest Kissel Dealer if you want uninterrupted haulage and delivery of materials or finished goods.

Kissel Motor Car Co.
HARTFORD, WIS., U. S. A.

**KISSEL
TRUCKS**

Truck Is Contractor's Best Friend

(Continued from page 126.)

blocked in place and is ready to be taken to another job. This underslung trailer also is used to transport the concrete mixers, road scrapers and other heavy equipment. As this firm usually has several jobs, either original paving construction or paving repairing jobs, going at the same time, how much time is saved by being able to move the equipment quickly and how continuously in operation it may be kept can readily be understood.

The truck ordinarily is used for hauling sand, gravel, cement and other paving materials when it is not transporting the equipment.

Moves Equipment Easily

Ability to transfer this equipment from one place to another quickly has two important advantages. First, less equipment is needed to do the same amount of work. Second, none of this expensive equipment is idle a part of the time; neither does it take the best part of a day to travel a few miles, as it does when it is propelled by its own power.



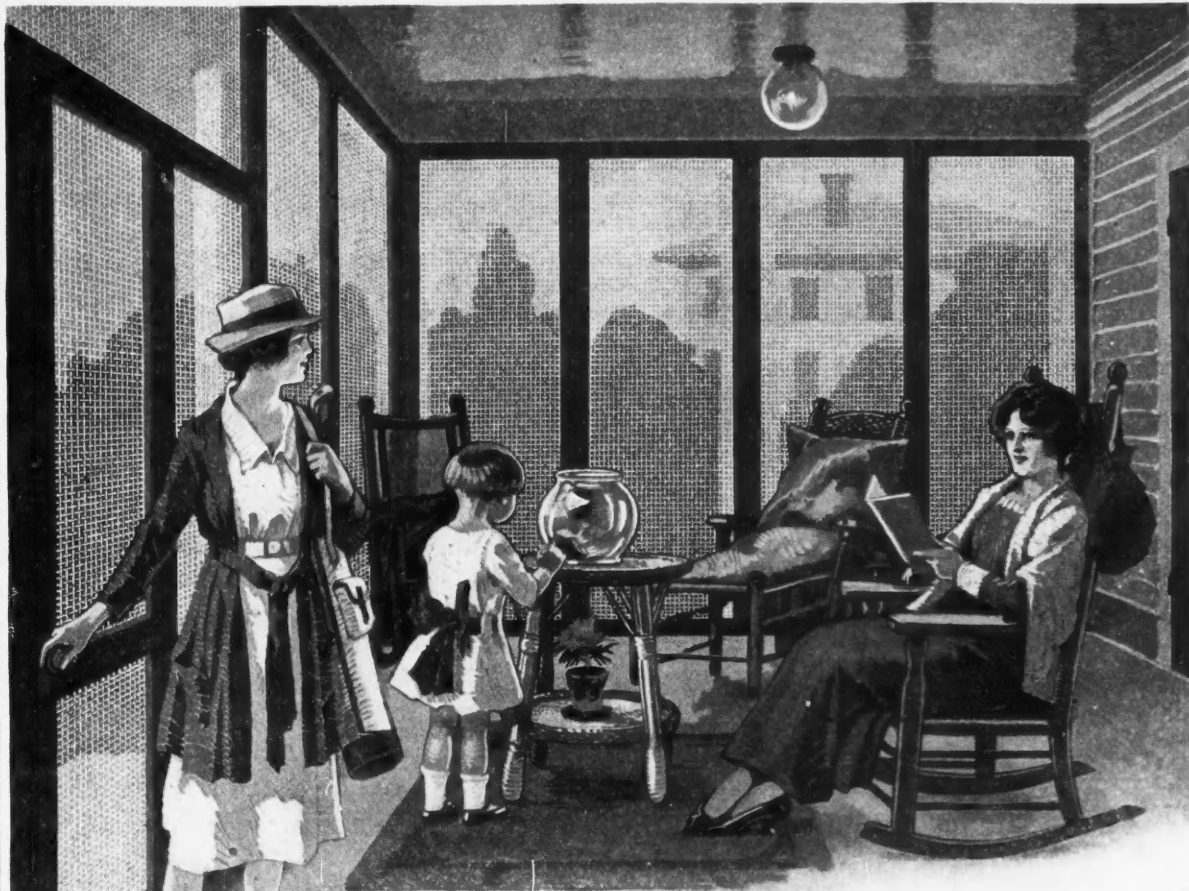
Smith Hauser & McIsaac, Inc., New York City. Contractors Use "White" Trucks with Special Dump Bodies to Deliver Materials to the Building Job. The Driver Seems to Like the Ease with Which He Can Dump the Load.

How a concrete mixer can be loaded into a truck and carried to and from the building job quickly is shown in another of the illustrations. A Newark, N. J., contractor does not own an auto truck, but when he wants his concrete mixer moved he employs a transfer company. Heavy skids are placed at the rear of the truck, the mixer run aboard, the wheels blocked, the truck is off and the mixer is on the job in a short time.

Compare this method with the old way of slowly hauling a mixer, attached to a wagon, thru the streets and over all sorts of pavements and roads.

Country road building, one of the first of the activities halted by the war, will be resumed everywhere this spring. In this class of building the auto truck is one of the most useful pieces of the contractor's equipment, for, with few exceptions, road making is a job that is far removed from the sources of material

(Continued to page 132.)



The Most Popular Room in the American Home Today!

WHEN YOU SCREEN A PORCH you make it more desirable for the owner—more attractive to the occupant—create a room which allows the comforts of out of door living—a sun porch by day—a sleeping porch by night, protected against disease carrying flies and mosquitos.

NOW IS THE TIME to call upon the many whose porches need screening. They are money makers for you.

OUR PORCH PLAN, sent free for the asking, will aid you in showing how simple porch construction really is.

PROTECT YOUR WORKMANSHIP by specifying **PEARL** Wire Cloth. Longest lasting—therefore costs less in the long run besides being the most handsome and sanitary. No painting or repairs.



BE SURE to get the genuine—which has two Copper Wires in the Selvage and our round tag on every roll.

Call on our local dealer or write direct for samples and literature if you're interested in screen material.

Address Department A

The Gilbert & Bennett Mfg. Co.

New York Georgetown, Conn. Chicago Kansas City, Mo.

*PEARL is Made in Two Weights — Regular and Extra Heavy
The best Hardware Dealer in your city sells "PEARL"*

GODELL PRATT

1500 GOOD TOOLS

Amateur Bench Lathe No. 125

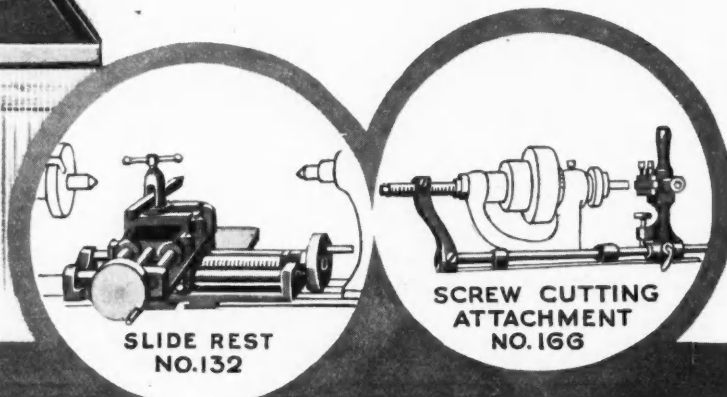


IF you have a repair shop or do experimental work, you will find this lathe with its attachments the most adaptable machine ever designed for the purpose.

You can have a complete machine shop in your home at relatively small cost. It enables you to experiment at the cost of material only—to work out your own ideas instead of hiring someone else.

A wide range of work is permitted by the many special attachments, some of which are illustrated on this page. This complete outfit costs less than you would be required to pay for separate units.

The Amateur Bench Lathe will take work up to 12 inches in length, with a swing of 7 inches. Every Lathe is provided with an adjustable Tee Rest, a Slotted Face Plate, a Saw Arbor, and a Drill Chuck of 0 to $\frac{1}{4}$ inch capacity, with a No. 1 Morse Taper Shank. The tail stock has both lever and screw feeds.



SLIDE REST
NO. 132

SCREW CUTTING
ATTACHMENT
NO. 166

GOODELL PRATT

1500 GOOD TOOLS

A Machine Shop in Your Home

With the various attachments, which we manufacture or which you may make, it is possible to do almost any wood or metal work within the capacity of the machine.

This Amateur Bench Lathe is typical of the Goodell-Pratt line of 1500 different tools. Every tool of this complete line is built with the same care, by the same skilled workmen and with the same determination to make it the best Amateur Bench Lathe of its kind. That is why users of Goodell-Pratt Tools have pride and confidence in them—pride in their design and finish, confidence in our claim that they will last a lifetime.

Write for full description or ask your dealer to show it to you.

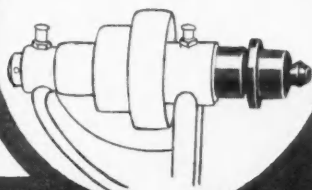
GOODELL-PRATT COMPANY

Toolsmiths

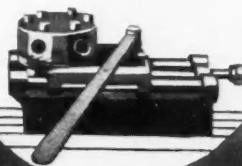
GREENFIELD, MASS.
U. S. A.



COMPRESSION CHUCK
NO. 129



TURRET ATTACHMENT
NO. 128



Truck is Contractor's Best Friend

(Continued from page 128.)

supply. After putting the equipment, such as the concrete mixer, the road scraper, the stone crusher, if there is available nearby a supply of rock, and the workmen on the job, the truck keeps a constant stream of materials coming.

Displaces Seven Teams on Road Work

One interesting example concerns a 3½-ton truck with a combination stake and dump body delivering a load of crushed stone for Louis Hoffman, contractor, on a state road near Belgium, Wis. The supply of this material was 4½ miles away, but the truck delivered 33 yards daily and displaced seven teams and six men, who would have been required to do the same amount of hauling. Such a saving soon would pay for a truck.

The Samuel Gamble Company, general contractors, Carnegie, Pa., use four 4-ton trucks to haul crushed stone to its building jobs. It has an elevated materials hopper along side of which the trucks are loaded.



"Going Down to the Sea" in Motor Trucks. Only This 3½-Ton "Republic" Goes Into the River to Get a Load of Sand for the Building Job.

The contractor who is putting up any sort of a building has found motor trucks all but indispensable. As a means of removing dirt from the excavation for the basement, putting the concrete mixer, the saw rig, the hoisting engine and elevator, the men and their tools

(Continued to page 134.)

OUR FREE PLANS

should be in the hands of every contractor and every farmer who is expecting to build a new crib or granary.

They are money-makers for the contractor, easy to understand and show how to get the greatest capacity with the least expense, by installing Meadows Stationary Inside Cup Elevators.

THE MEADOWS

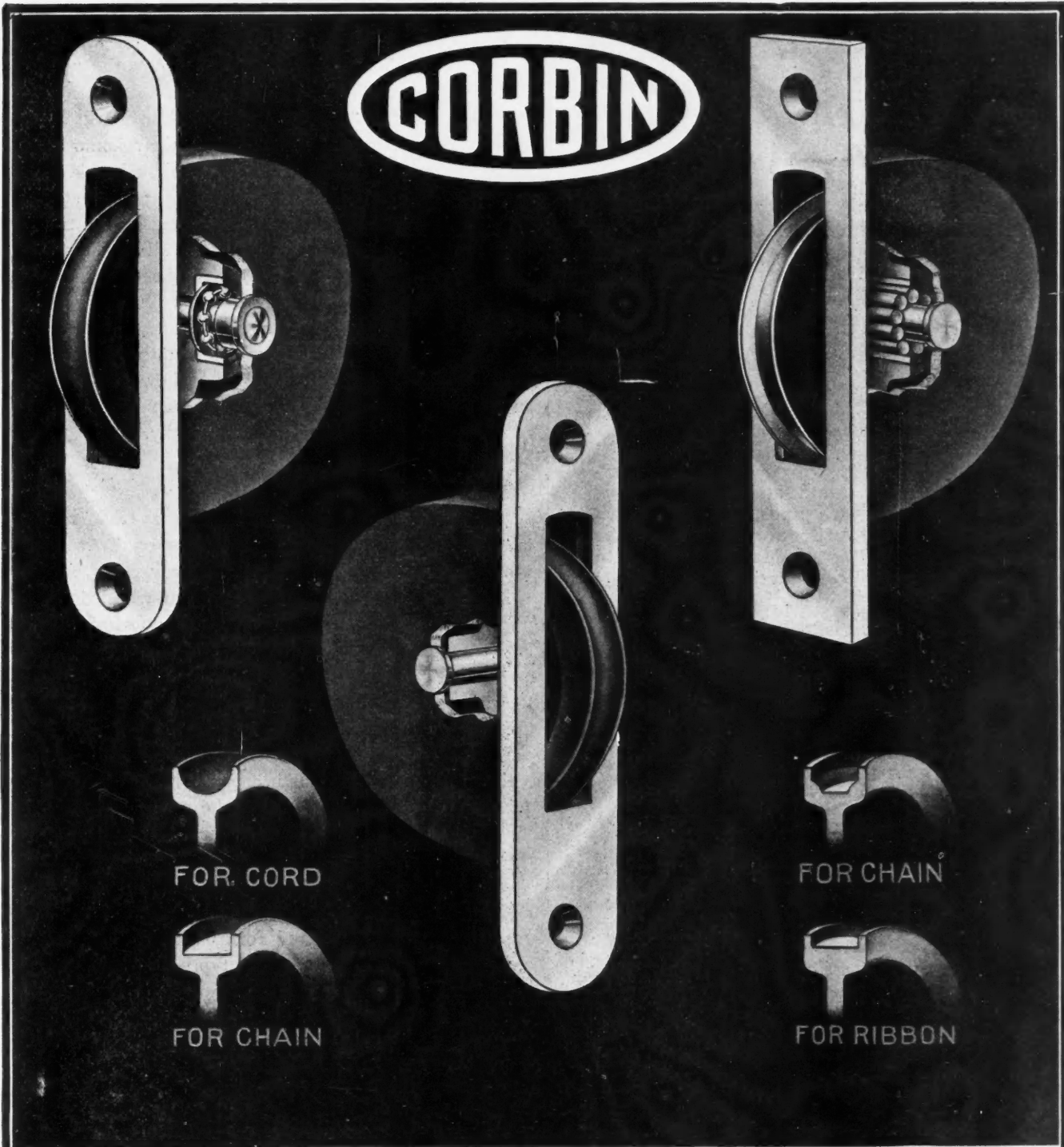
is convenient and economical. It elevates small grain as well as ear corn. It is easy to install.

Don't Delay

writing for our plans and catalogs, which tell you all about our outfits and their money saving application.

**MEADOWS
MFG. CO.
PONTIAC, ILL.**





CORBIN AXLE PULLEYS

are made with ball-bearings, roller-bearings and plain bearings, with wheels turning freely on heavy fixed axles; in any size or metal desired and with wheels grooved for rope, chain or ribbon. They are accurately made to standard gauges, rigidly inspected and give satisfaction under the most severe conditions. They are specified for the best buildings by architects who have learned their value. Full particulars on request, or from any dealer in Corbin hardware.

P. & F. CORBIN

The American Hardware Corporation, Successor
NEW BRITAIN, CONN.

NEW YORK

PHILADELPHIA

CHICAGO



The Trade-Mark That Means Full Satisfaction

The contractor knows that in a Porter Product he is assured of the quality that makes for satisfaction.

Fifty years of co-operation and knowledge of his requirements have built around the Porter Trade-Mark a complete confidence.

And the confidence is warranted. For back of the Trade-Mark is the Porter pledge of satisfaction.

PORTER Barn Door Hangers

Porter Barn Door Hangers have all the superiorities, all the betterments that have built up the Porter prestige.

Important points are exclusively Porter's—the whole represents all the Porter distinction of thorough workmanship, superior materials, time-tested design.

They are of a quality of steel that will not sag with the weight of the door for which they are made.

They are of a design that makes them waterproof and bird-proof.

They operate easily because of their doubled running surface and the roller bearings of their wheels.

Write for our free catalog on door-hangers. Let us tell you more fully of the advantages of the "Hummer" and other styles. Or ask for our "Barn-Planning Service Book."

J. E. Porter Co.
471 Guion Street
Ottawa, Illinois

(39)

Truck Is Contractor's Best Friend

(Continued from page 132.)

on the job and bringing up the materials the motor truck is at once efficient and economical.

Smith, Hauser & McIsaac, Inc., New York City, have put up many large buildings in their home city. Their operations are so extensive that trucks play an important part in their work. One of the illustrations shows a truck with dump body, operated by the truck engine, being unloaded at a job that is all but finished. The driver's face indicates that he likes his job.

Every builder will realize from this illustration the things the trucks were called on to transport to get this building to its nearly completed state. And it is a foregone conclusion that the truck shown would not be in operation unless it had proven capable of doing all that was required of it economically.

Trailers and Semi-trailers

Trailers and semi-trailers that can be attached to either passenger automobiles or trucks have undergone a remarkable development recently, especially with a view to their adaptation to building contractors' needs.

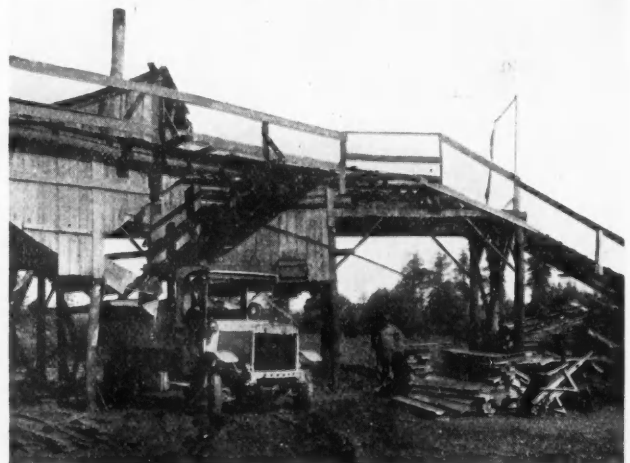
It was not so long ago that a four-wheeled light wagon, usually of the "democrat" type, attached to the back of an automobile and filled with ladders, tools and building materials was a common sight. However, they were not satisfactory for the simple reason that the wheels of the two vehicles "didn't track."

But the wheels on the present-day trailers and semi-trailers "track." This has been brought about by rods attached to the steering gear of the machine that furnishes the power extending to the axles of the one trailing.

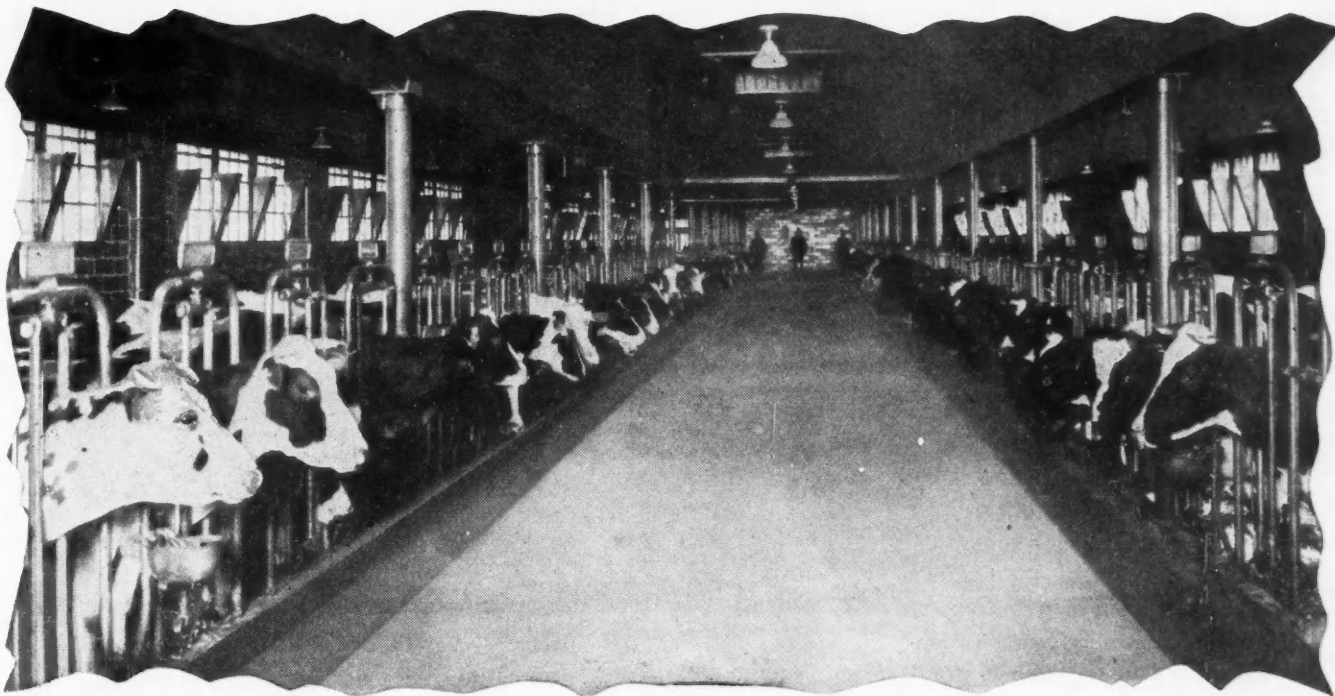
There are trailers and semi-trailers especially designed to be attached to light roadsters, the kind every one scoffs at but uses, and form, with little work, a one-ton truck. Others of these types range in capacity up to 10 tons.

This ability to haul a load as well as carry one

(Continued to page 136.)



"Riker" Truck Taking on a Load. Owned by J. R. Craighill & Co., Pittsburgh, Pa.



Interior of STAR Equipped Barn
on Wheatfield Farms,
Tonawanda, N. Y.

Recommend "Everything for the Barn" From the Complete STAR Line

YOU can equip your customer's barn with not only STAR Stalls and Stanchions but STAR Water Bowls, Steel Pens, Litter and Feed Carriers, Hay Tools, Door Hangers, Cupolas and everything else in steel equipment from floor to roof top. You can give him the advantage of being able to get *all* his equipment from one place, and have the same high standard throughout.

Save Time and Work—Give Your Customer a Better Job

It's easier to install STAR Equipment. With the STAR Unit System you can put in one stall or a hundred to exactly fit your customer's need. He can always add other STAR Stalls as he needs them.

The STAR Curb Clamp simplifies installation. Does away with anchors or templates in the cement.

STAR Steel Pens are also easy to put in. They come in sections. STAR Equipment is built in the factory and not in your customer's barn. You can always save time and labor when you recommend it for your barn jobs.



Offer FREE Barn-Plan Service

Who is going to build or remodel in your territory? Offer him a complete plan of the kind of barn he wants. The STAR Master Barn Designers will plan it for you. Barn plans get barn equipment business. Here's free STAR service that you can make YGUR service with the STAR line. Write and ask about it.

Hunt, Helm, Ferris & Co.

Complete Barn Outfitters
Harvard, Ill. Albany, N. Y.

The STAR Line

Barn Equipment
Litter Carriers
"Harvester" Hay Tools
Door Hangers
Garage Equipment
Coaster Wagons
Tank Heaters and
Other Farm
Specialties

STAR Equipment

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Truck Is Contractor's Best Friend

(Continued from page 134.)

comes from the fact that the average truck has what is known as a reserve power plant, which furnishes power for unusual loads and roads. Besides being able to carry a load, a truck is capable of hauling one consistent with its pulling capacity.

As an example: A one-ton truck has a "draw bar pull" of approximately 1,000 pounds. The required draw bar pull to haul a ton is 250 pounds. Thus a one-ton truck is capable of hauling four tons.

These trailers and semi-trailers are made to suit all the requirements of a building contractor. Bodies designed for hauling lumber, stone, cement, sand, brick and other like materials and the equipment builders use are mounted on the two-wheeled semi-trailer and the four-wheeled trailer.

Profit by Experience of Others

While this is only a general sketch of the work the motor truck performs for the contractors on all classes of building construction, there is one outstanding fact. The successful contractors use them constantly; they



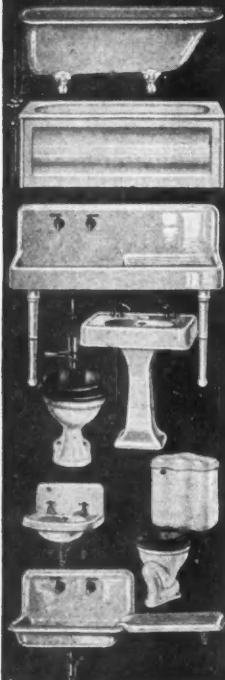
Newark, N. J., Contractors Employ the McGann Company to Quickly Transport Their Equipment to and from the Job. Here Is a Concrete Mixer Loaded in a 3 1/2-Ton "Acme" Truck.

consider that they are not properly equipped to take a job, large or small, unless they have the needed number of motor trucks.

The methods and equipment used by prosperous builders are pretty good methods to follow and pretty good equipment to use. Both have proven best by experience—successful experience.

And, as someone has remarked, it's an exceptionally wise man who profits by the experiences of others.

CONTRACTORS—BUILDERS—CARPENTERS DO YOUR OWN PLUMBING-HEATING



Free Handy Man Book

we will mail you one. Besides being our wholesale catalog, this able, instructive Handy Man Book also contains many pages of plans, elevations, diagrams, etc. It gives many suggestions of what fixtures to select and how to install them, etc. Shows how to save unnecessary material, hard labor and time by doing your plumbing and heating this new original

Cut to Fit Method This new way enables any contractor with a few tools to install a complete plumbing, water supply, hot water, air or steam plant at low cost.

We furnish a special contractor's and builder's wholesale discount sheet applying to this big book.

Water Supply Systems Our new electric, gasoline or hand operated water supply systems are up to the minute. Write us just what you have in mind. Our Handy Man book describes over 10,000 different plumbing and heating fixtures and supplies, including plumbing outfits, water supply systems, warm air, hot water and steam heating plants and everything else pertaining to plumbing and heating supplies exclusively. Write today and save.

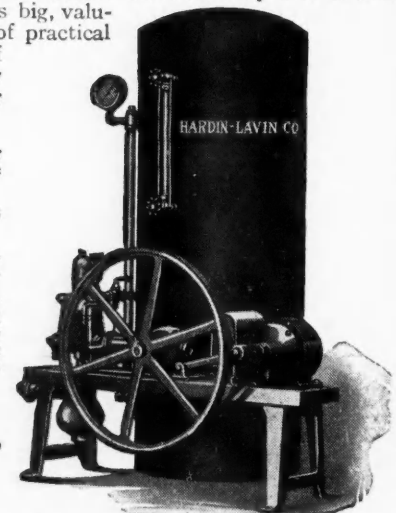
Hardin-Lavin Co.

\$500,000 Plants Behind Our Guarantee

40 Years at

4522-34D Cottage Grove Avenue, Chicago

A copy should be in the hands of every contractor, builder, carpenter and mechanic. Send the coupon to us and big, valuable practical



Hardin-Lavin Water Supply System

REMEMBER

HEALTH

Is The Important Issue In Home Heating

THE time when merely warming the air in the house was considered "efficient heating" has passed. The modern, well informed home owner and contractor demands a heating system that furnishes three vital elements:

- (1) Properly warmed air.
- (2) Properly moistened air.
- (3) Properly circulated air.

These three elements are essential to healthful conditions in the home, during the months when doors and windows are kept tightly closed the greater part of the time.

Each year it is becoming more difficult for the short-sighted builder to put over old-time theories of heating or to dispose of heating systems that do not scientifically handle the moisture feature.

This is due partially to the persistence with which physicians and health experts are preaching the gospel of scientifically humidified air, and partially to the ever-widening influence of the Round Oak Moistair Heating System which is now promoting Health and Comfort in over 70,000 homes.

Round Oak Moistair System

The demand for balmy, healthful, ever-changing air is met by the Round Oak Moistair Heating System.

The proper percentage of moisture in the air anywhere and everywhere is maintained by the patented Automatic Humidifier—a part of the system itself.

Scientific Hygrometer tests in many homes have proved this system.

Heating Problem Permanently Solved

The Round Oak Moistair Heating System and the Round Oak Pipeless Furnace will satisfactorily solve all owners' and builders' problems in houses where either new or replacement plants are to be installed.

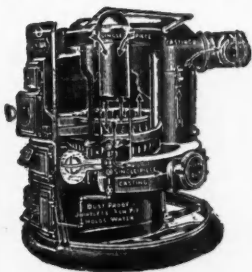
Complete information should be had from the manufacturers; and every possible co-operation is extended to both owners and builders.

Round Oak MOISTAIR Heating System



Round Oak PIPELESS FURNACE

The Best Pipeless Heating System
on the Market



Five Star Points of Round Oak Moistair System Supremacy

Health—Patented, automatic humidifier, keeps the family more healthy, prevents furniture from drying out.

Comfort — Circulates balmy, warm, moist air, permanently free from dust, gas and smoke.

Economy—Long, indirect fire travel forces most powerful radiation of heat; deeper fire pot, improved efficient hot blast, and oversize combustion chamber combined; guarantee most perfect combustion with maximum heat from minimum fuel.

Convenience — Single regulator conveniently located, controls entire system. Large seamless ash pit fitted with sprinkler, prevents dust. Easy to operate. Burns all fuels.

Durability—All iron is dally tested chemically and physically. The tens of thousands in use, many for more than thirty years, proves conclusively Round Oak Super-Service.

The Heating System That Automatically Humidifies and Ventilates

Proven Quality Construction

Round Oak methods have been successful for 48 years. Our 75,000 users testify to the super service of Round Oak Moistair Heating Systems.

Once correctly installed, this modern and scientific heating system gives years of smooth, uninterrupted, satisfactory service.

Both the Round Oak Moistair System and the Round Oak Pipeless furnace are as "good as new" long after others would have been scrapped.

Write for Detailed Information

House owners or builders who contemplate a new heating system or who anticipate a replacement should write The Round Oak Folks for complete information. We have prepared forcefully illustrated books on both the Moistair System and the Pipeless Furnace which we shall be glad to send on request.

DEALERS are urged to write for our "Sales and Profit Plan" and for exclusive Round Oak representation in their territory. More than 5,000 dealers say that the Round Oak Exclusive Agency is the most valuable connection any stove or furnace dealer can possibly acquire. Let us tell you now the many profit points in it.

THE BECKWITH COMPANY

"The Round Oak Folks"

ESTABLISHED 1871

232 Front Street, Dowagiac, Michigan

Also manufacturers of the Genuine Round Oak Stoves, Boiler Iron Ranges and Ironbuilt Cast Range.

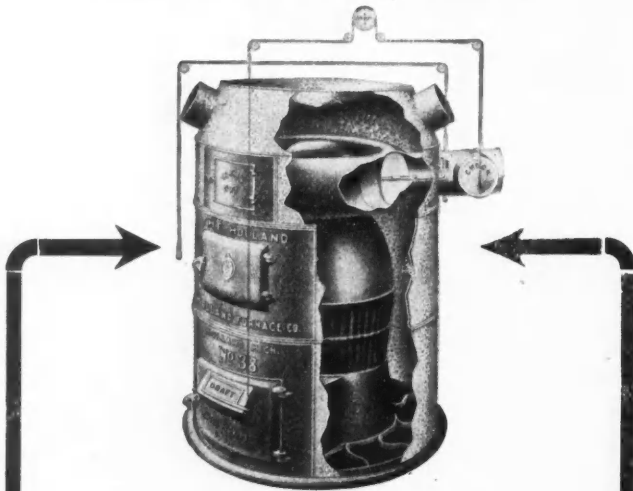


Ten Star Points of Round Oak Pipeless Furnace Supremacy

1. Built absolutely fire-proof.
2. Improved gas and dust-tight bolted construction.
3. Burns all fuels successfully. Economically.
4. Strongest. Lasts the longest. Heavier, too.
5. Humidifies and circulates pure air.
6. Holds the fire 24 hours.
7. Cool basement. Delivers all the heat to the home.
8. Responds more promptly than a stove.
9. Easily operated and quickly installed.
10. Made by "Makers of Good Goods Only."

Holland Furnaces

Make Warm Friends



You Are a Good Judge of a Furnace

You know the furnace is really the "heart of the home;" and you know that if a man is absolutely pleased with his furnace he naturally is better satisfied with everything else that was done in the building or remodeling of his house.

You can recommend the Holland Furnace because you not only know the advanced principles of its design and the dependability of its construction; but you know that the Holland Guarantee and the Holland Five-Year Service Bond positively insure heating satisfaction to every owner.

The HOLLAND Leads in Sales In 147 Cities Where Now Introduced

The reasons are very plain to the man who knows. The Holland is built to burn scientifically—the cone grate breaks up clinkers and compels the fuel to roll to wall of fire-pot. Air is mixed with the gas—the fuel burns from the sides and over the top in the only natural way to compel 100% of heat radiation. All gases and soot are burned. No internal explosions or "puffing." The Holland is clean, healthy, efficient.

High-test cast-iron construction, with the fact that all castings are evenly heated, prevent warping or burning out, and have given the Holland a certified reputation as repair-proof. The Holland fire-pot absolutely outlasts any other.

Get Our Catalog and Special Proposition to Contractors, Builders and Carpenters.

HOLLAND FURNACE CO., Holland, Mich.

World's Largest Installers of Furnaces
Holland, Mich.,—2 Factories—Cedar Rapids, Iowa

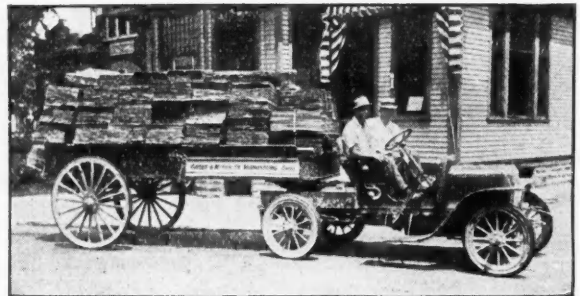
Ask Any Lucky Owner.

Trailers Enlarge Trucks Usefulness

BUILDING INDUSTRY NOW REALIZES THAT ADDITION OF TRAILERS AND SEMI-TRAILERS GREATLY INCREASES VALUE OF MOTOR TRUCKS

By R. T. Alleutt

IF the rapidly increasing use by the building industry of the tractor-semi-trailer method of hauling can be taken as a criterion, there will be many more commercial motor vehicles on the highway in another year with semi-trailers attached to them. The reason is obvious. The capacity of the motor vehicle, whether it be a small runabout or a five-ton truck, is doubled, and in many cases trebled, by the semi-trailer method, at a very small additional first cost and an



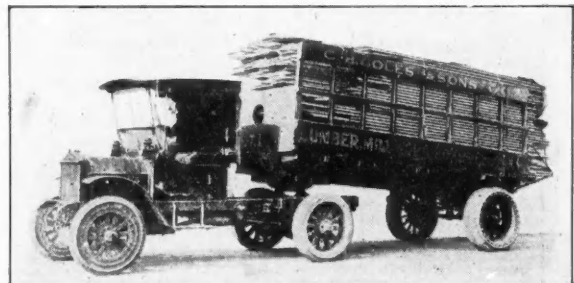
Grover & Weber, Miamisburg, Ohio, Haul Loads of from 15 to 1,800 Pounds with This Maxwell Runabout and Rocking Fifth Wheel Semi-Trailer. The Maxwell Is Eight Years Old, was in a Railroad Wreck, Dug Out and Repaired, and a Year Was Carried a Block from Its Garage by a Flood. But Now Its on the Job 365 Days in the Year.

equally small additional operating cost. Therefore it is safe to say that those who have heavy hauling to do will adopt this method.

Both theory and experience have proven that it is easier to draw a load than to carry it and the motor truck, as it is developed today, will draw about three times as much as it will carry over ordinary highways.

Trailers Now in General Use

Why the trailer method did not come into general use years ago is hard to understand, unless it was that engineers were afraid that drawing a load would be disastrous to the mechanism of their particular



The C. B. Coles & Sons Co., Camden, N. J., Hauls Five Tons with This Rocking Fifth Wheel Semi-Trailer and 1 -Ton Federal Truck. The Quantity of Lumber the Outfit Will Carry Is Shown in the Illustration.

machines. It has been clearly demonstrated that there is less damage done to the motor truck by drawing three times its rated capacity than by carrying just a little more than its rated capacity. The reason is that the driving mechanism of the motor vehicle must be

(Continued to page 140.)

TAKE time to "Look Before You Build." Now that building activities are on again don't plunge ahead — first visit the permanent

BUILDING MATERIAL EXHIBIT

Entire Second Floor
Insurance Exchange Building
175 W. Jackson Boulevard
Chicago

Many new and vitally interesting displays to guide you in your plans, whatever they may be. If you can't come in person write and we will gladly furnish free information and estimates.

Send For Our Free Magazine

Trailers Enlarge Truck's Usefulness

(Continued from page 138.)

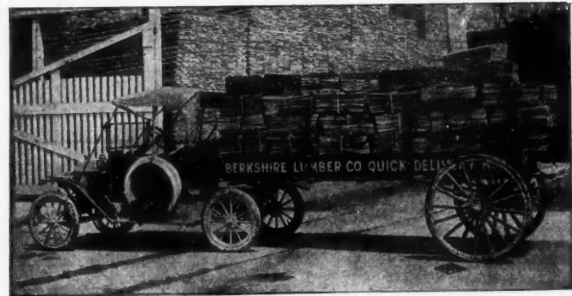
strong enough to overcome a certain resistance. This resistance comes where the tire is in contact with the road, and the factors combining to make it are weight and friction.

In any properly designed motor vehicle carrying its maximum load when the clutch is dropped suddenly into the flywheel the inertia of the flywheel will slip the drive wheels on a dry road. If it will not do this



It is Economy to Use Trailers in Lumber Loading. This Trailer Keeps This "Federal" Truck Busy.

and some part of the driving mechanism gives way instead, that particular motor vehicle is weak structurally. When, however, more than the maximum load is carried, a break is likely to come somewhere—a gear may strip, a key shear off, a shaft twist, or a universal joint give way. If no greater load is put on the driving wheels than the designer indicated, no



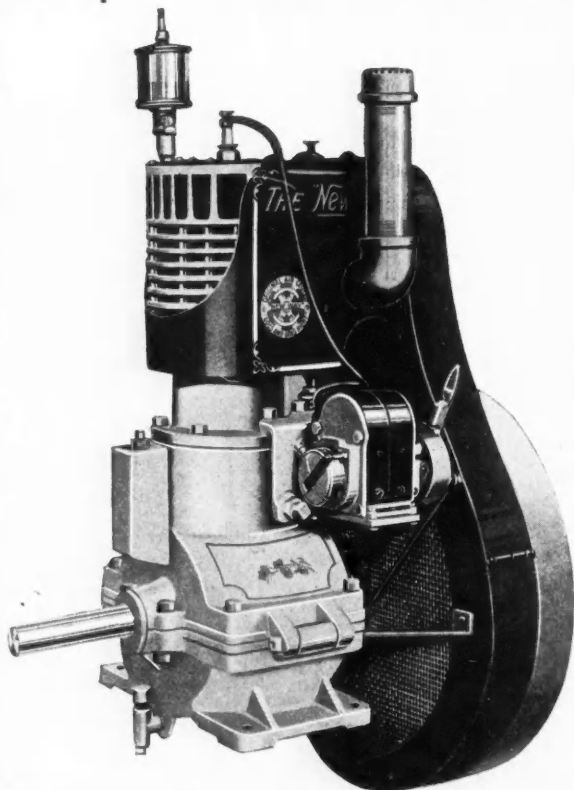
The Berkshire Lumber Co. Uses This Rocking Fifth Wheel Semi-Trailer and Ford Runabout for Quick Delivery of Loads up to 3,000 Pounds. The Outfit Costs 6c a Mile to Operate and Averages 50 Miles a Day.

damage can result, regardless of how much load is hauled back of the driving wheels. The wheels will simply slip until the flywheel inertia is exhausted and the motor stalls. Thus it can be seen that instead of the motor vehicle being damaged by use of the trailer, the driving mechanism is frequently saved, as there is no tendency to put an overload on the truck.

The reason given by many truckmen and large teaming concerns for not adopting the motor truck more extensively is that they do not want to scrap their valuable equipment—and they certainly cannot be blamed for that—but a condition has arisen which will not only let these firms get into the motor trucking game without expense, but they can put money in the bank while they are getting into it.

(Continued to page 142.)

THE "NEW-WAY" LIGHT WEIGHT ENGINE



These Light Weight High Speed engines are adaptable for mounting on all classes of machinery where maximum power and minimum weight is required.

THE "New-Way" ENGINE
GOES AND GOES RIGHT

These engines are throttle governed, equipped with Bosch High Tension Magneto, float feed automobile carburetor, perfectly balanced, requiring little space for mounting. Speed changing lever permits a wide range in speed while in operation.

DIRECT COOLED—No Water or Water tanks.

No excess weight or complications.

Write for blue prints and prices.

THE "New-Way" MOTOR COMPANY
LANSING, MICHIGAN, U.S.A.

NOVO ENGINES AND OUTFITS

This is What Novo Power Means

The water mains shown in the accompanying photograph were laid in low, sandy ground, in East Chicago. Surface water accumulated in large quantities, and had to be pumped off.

Five Novo Triplex Pumping Outfits, of 6 H. P. each, were put on the job. At the time the photograph was taken, these five Novo Pumps had been running continuously for two months—24 hours every day, and seven days a week.

That is the kind of service these five Novo Pumps delivered to the Leonard Construction Co. That is the kind of service you get every time you put Novo Power on the job.

Novo Engines and Outfits, 1½ to 15 H. P. Furnished to operate on gasoline, kerosene, distillate, natural or artificial gas. Outfits for Pumping, Hoisting, Air Compressing, Sawing.

Write for full information.

NOVO ENGINE CO.

Clarence E. Bement, Vice-Pres. & Gen. Mgr.

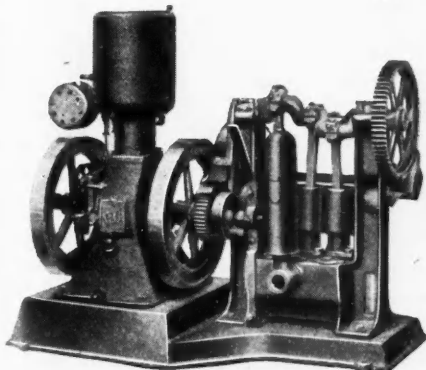
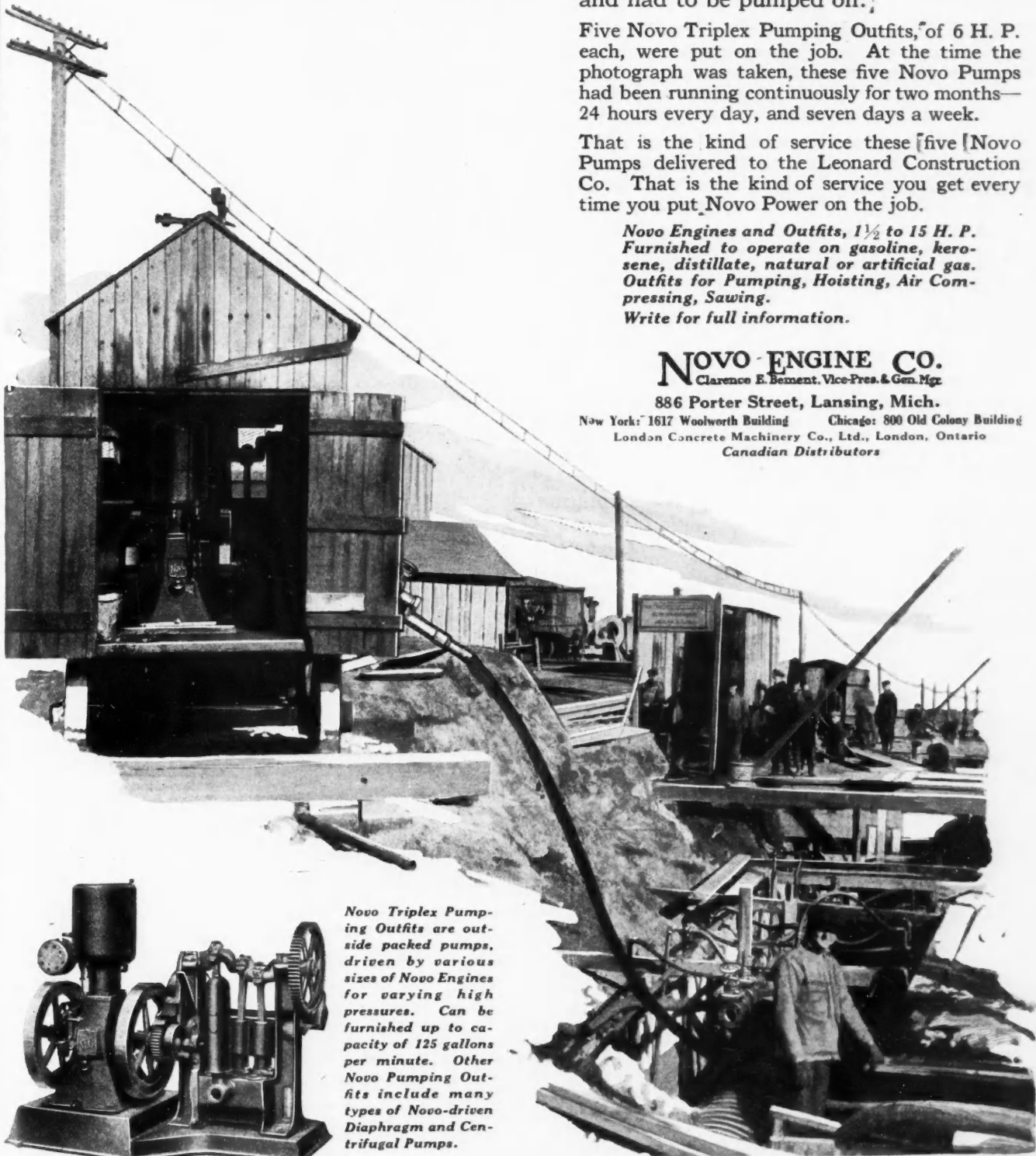
886 Porter Street, Lansing, Mich.

New York: 1617 Woolworth Building

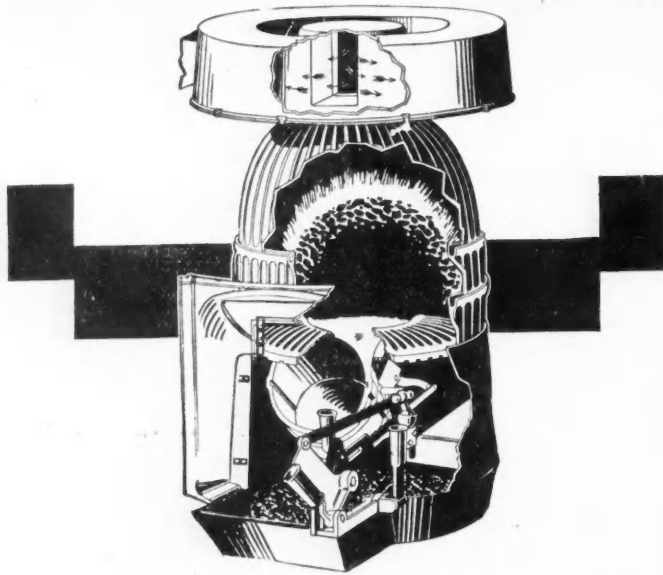
Chicago: 800 Old Colony Building

London Concrete Machinery Co., Ltd., London, Ontario

Canadian Distributors



Novo Triplex Pumping Outfits are outside packed pumps, driven by various sizes of Novo Engines for varying high pressures. Can be furnished up to capacity of 125 gallons per minute. Other Novo Pumping Outfits include many types of Novo-driven Diaphragm and Centrifugal Pumps.



Easy to Sell With Our Help

The demand for Williamson UNDERFEED Furnaces and Boilers was never so great as right now. And, with war-time orders out of the way, we are prepared to fill all orders promptly. That's why we are advertising in the big national magazines—publications that reach millions of home owners every month. But that's only one way we're helping to sell Williamson UNDERFEED Furnaces and Boilers. Read on.

WILLIAMSON
UNDERFEED FURNACES & BOILERS
Cut Coal Bills Way Down

We follow up any prospects that you refer to us with sales-producing letters and literature. Without cost to you we will supply you with attractive booklets and folders, electrotypes for newspapers, picture slides and other timely and valuable selling aids. And our Engineering Department, upon receipt of rough sketches, will prepare your heating plans and estimates without cost to you. This service is not only a big help in selling; it also enables you to install the job quickly and profitably. For further details regarding our close co-operation in selling and installing, mail the attached coupon.

The Williamson Heater Company
72 W. Fifth Street, Cincinnati, Ohio

THE WILLIAMSON HEATER CO.
72 W. Fifth St., Cincinnati, Ohio

Please send me full details regarding your plans to help me sell and install Williamson UNDERFEED Furnaces and Boilers. This request is to involve no obligation on my part.

Name

Address

Business

Trailers Enlarge Truck's Usefulness

(Continued from page 140.)

Sell Horses and Buy a Truck

The price that a good team of horses will bring today will go a long way toward buying a one-ton capacity truck. This truck, used as a tractor with semi-trailers, will do as much work as three teams. Therefore, the extra amount the two teams will bring can be put in the bank.

Semi-trailers are simply wagons, nothing else; and the existing wagons may be used just as well as new ones. It is only necessary to take off the front gear



The W. A. C. Miller Lumber Co., Detroit, Says This "Federal" Truck and Trailer Do Five Times as Much as a Team.

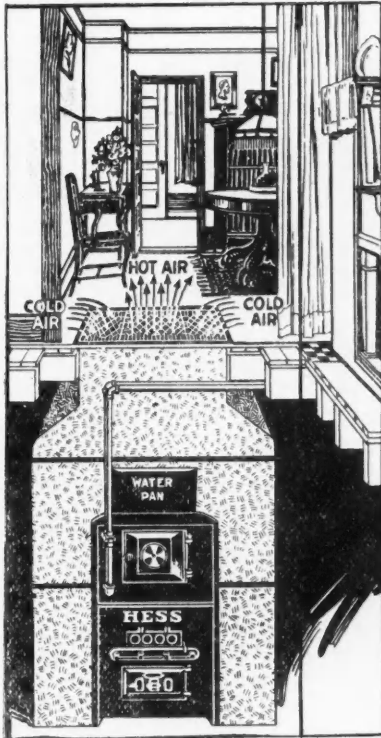
and mount an upper member of a rocking fifth wheel in place of the old bolster plate and fifth wheel. No other change is necessary. After a good many months of running at considerably higher speed than horses draw the wagons, the spokes will probably loosen up in the hub. When this happens it is a very easy matter to have an anti-friction axle and rubber-tired wheels put in the place of the old wheels and the equipment is then good for an indefinite period. Therefore, anyone in the building industry using horses and wagons can, without the investment of a single nickel, have motor equipment that will do two or three times as much work and make two or three times as much money.

Trailers Help Conservation Movement

Just at this time conservation of resources is the uppermost thought in the minds of Americans, and any system that will utilize existing equipment, combining the speed and pulling power of the motor vehicle with the weight-carrying capacity of the wagon, must be a good system.

The fact that the adoption of semi-trailers means the perpetuation of the wagon business, because the wagon builders are the logical trailer builders, will be of especial interest to readers of the AMERICAN BUILDER. The semi-trailer consists merely of a wagon body, a pair of wheels, axles, springs, and fitted with a rocking fifth wheel to combine it with the tractor. It must be borne in mind, however, that as a motor vehicle will take a wagon at a very much greater speed than horses would take it, it must be substan-

(Continued to page 144.)



THE HESS PIPELESS FURNACE
(We make Pipe Furnaces also)

The HESS Pipeless Furnace

warms your whole house
with one register

No horizontal pipes; no cold air ducts. The heat is distributed thoroughly and evenly; all cold air is drawn off the floors. Moisture (humidity), added to the air, gives your home a healthful, summer atmosphere.

Saves coal—you can burn **anything**; the cheapest soft coal gives results equal to anthracite.

Never leaks, for all the seams are **welded**; no cement required, and never open from expansion or contraction. The inside is smooth; no flues nor smoke passages to clog and prevent radiation.

WE MAKE PIPE FURNACES ALSO—six sizes, for separate pipes and registers.

We Guarantee Our Lowest Prices Now, to Early Buyers

Right now, the dull season, is the best time to buy. Lower prices later on seem improbable, but if we should reduce our rates before October we **guarantee to refund** to all early purchasers, an amount equal to any reduction we may make. Therefore, you are guaranteed the season's lowest prices on your early purchases.

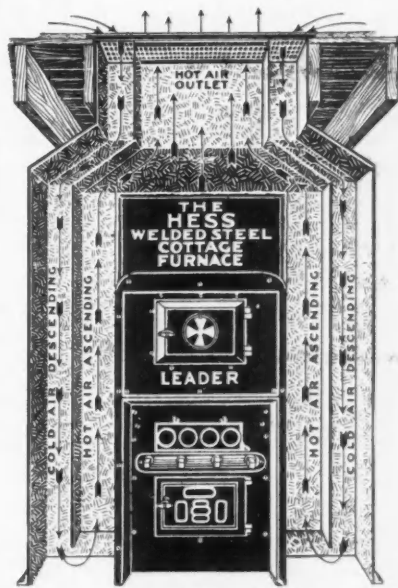
Terms, Cash, Liberty Bonds, or easy monthly payments.

Send us a sketch of your house, for our estimate and our plan, showing the size and location of every detail required.

Our 48-page book on furnace heating is free. Let us send you one and let us tell you, also, **how to burn soft coal** and get **FLAME** and **HEAT** instead of **SMOKE** and **SOOT**.

Special rates to contractors for resale. We sell to very many contractors everywhere, and their repeated orders, year after year, are the best evidence of the success of our heater and our direct-selling policy.

Hess Warming & Ventilating Co.
1220 Tacoma Building CHICAGO



Sectional View Inside
Pipeless Heater

Trailers Enlarge Truck's Usefulness

(Continued from page 142 and Concluded on page 146.)



H. Humphreys & Co. Attach "Troy" Trailers to Their "Riker" Trucks When Hauling Extra Long Pieces of Lumber.



PAASCHE PORTABLE PAINTING OUTFITS

SAVE TIME, LABOR AND MONEY

Contractors will find no modern labor-saving invention that really makes them as much money as the Paasche Painting Equipment. With this equipment one man does the work of from four to eight men. This immediately reduces the cost of both exterior and interior painting.

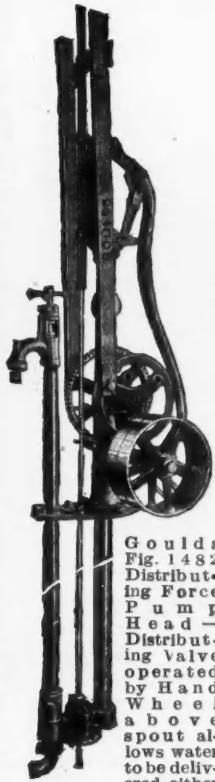
QUICKER--BETTER--CHEAPER From thirty to forty square feet of paint is easily applied per minute, and being applied by compressed air a cleaner, smoother and more uniform finish is obtained. The same smooth finish is given the roughest corners and edges, hollows, lips, and irregular joints.

The Paasche Painting Outfit is equipped to do all general painting, calcimining, varnishing of floors and all around decorating and finishing. From largest battleship or building to the smallest job of decorating, the Paasche Outfit will do it better and at a great saving.

The United States Government uses Paasche Portable Painting Equipment in all railroad and shipbuilding yards and wherever paint is needed.

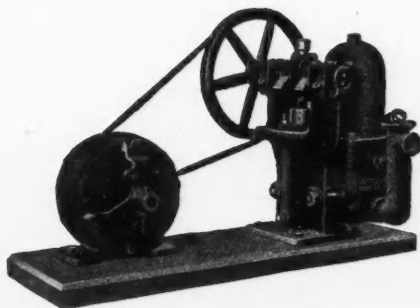
CONTRACTORS Can you afford to do less than investigate a proposition that offers you such an opportunity? Write today for complete information. It will make you money.

Paasche Air Brush Co. 1230 W. Washington Blvd., Chicago, Ill., U. S. A.

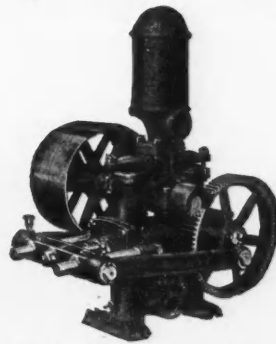


Goulds Fig. 1482 Distributing Force Pump Head — Distributing Valve operated by Hand Wheel above spout allows water to be delivered either

at spout or forced underground to desired point. For engine, windmill or hand operation. For filling tanks up to 200 feet above level of water.



One of the Goulds Hi-Speed Pumping outfits — A new line containing 13 different outfits for gasoline engine or electric motor drive. For either open or compression tank water systems. Two sizes: 3 and 6 gal. per minute for pressures up to 43 lbs. or elevations up to 100 ft.



Goulds Pyramid Pump Fig. 1531—For open or compression tank water systems. For direct or belted drive from electric motor or belted drive from gasoline engine. Capacity 6 to 114 gal. per minute against pressures up to 75 lbs. or elevation up to 175 ft.



Goulds Fig. 1680 — Combined Deep Well Working Head and Jack. Easy to install. Flange (in center) screws on end of well pipe which fits into recess in base that supports the pipe, allowing top part of pump to be installed with ease. For filling tanks not more than 190 feet above water level. Forengine, windmill or hand operation.

Pumps For Water Systems

Engine-driven, electric-motor-driven, hand and windmill operated pumps for both open and compression tank water systems.

Our book, "Pumps for Every Service", shows our complete line. Write for copy today.

The Goulds Manufacturing Company
Main Office and Works: Seneca Falls, N.Y.

New York	Boston	Chicago	Atlanta
16 Murray St.	58 Pearl St.	12-14 Clinton St.	3rd Nat'l Bank Bldg.
Pittsburgh	Houston	Philadelphia	
636 H. W. Oliver Bldg.	1001 Carter Bldg.	111 No. 3rd. Street	

Running water—under pressure

THE most essential of all modern conveniences is an adequate supply of running water, under pressure.



Hoosier Systems

are carefully planned to meet the needs of the home in which installed, thus insuring satisfaction.

Made in a variety of styles, for any kind of power, and in many sizes.

Hoosier Pneumatic Tanks, coated inside with Hoosier Anti-Rust Enamel, are preferable for a home water supply system, because there

is no danger of water contamination from rust and scale.

If interested—write today for copy of Bulletin E.

HOOSIER
WATER SUPPLY
SYSTEMS

Flint & Walling Mfg. Co.
KENDALLVILLE, INDIANA

\$50 to \$100 Extra a Week

Selling Protection

Rutherford G. Young, New Galilee, Pa., writes: "The Lightning Conductor business is booming. It is the easiest and most honest money I can make. I have handled Shinn-Flat for 8 years and am convinced you have the best system of Lightning Protection on the globe. It is no trick to make \$50 to \$100 extra a week."

Shinn-Flat

PREVENTS LIGHTNING LOSSES

Is the greatest scientific Lightning Conductor ever devised. It is endorsed by scientific authorities in preference to all round or other old-style cables or rods.

It sweeps the field of all competition. We help you get business. Write for particulars.

W. C. Shinn Mfg. Co.
1659 Monadnock Bldg., CHICAGO



Big Furnace Money! Sell and Install

Carpenters, contractors and builders, now is the time to go after the Williamson Pipeless Furnace business. Thousands of Williamson Pipeless Furnaces are in successful operation. And returns from our big 1919 advertising campaign are setting new records. Wasteful stoves and grates are doomed. Home owners are anxious to protect themselves against the high cost of fuel. That's why selling Williamson Pipeless Furnaces is so easy and—profitable.

WILLIAMSON Pipeless
Furnace
Saves In Many Ways

We'll help you sell and install. Our striking advertisements in the country's leading farm publications are bringing a large number of inquiries every month. We follow these up with rapid-fire attention-winning letters, booklets, catalogs, folders, etc. Right now there are, no doubt, many likely purchasers of the Williamson Pipeless Furnace among your own clients. Our splendid selling helps will be of great practical benefit to you in closing these prospects.

And you won't have to worry about the installation. First, because our up-to-date Engineering Department is fully at your service in making plans and estimates. Second, because the Williamson Pipeless Furnace is easy to install. Remember also that it fits any cellar, is sold at a very reasonable price, and is made by a concern with thirty years' experience in the manufacture of heating apparatus. The best time to sign up for Williamson Pipeless Furnace profits is—now. Mail the coupon *today* for further details of a plan that will make money for you.

The Williamson Heater Company
76 W. Fifth Street, Cincinnati, Ohio.

THE WILLIAMSON HEATER CO.
76 W. Fifth Street, Cincinnati, Ohio

Send full details regarding your plan to help me make money selling and installing the Williamson Pipeless Furnace. This request is to involve no obligation on my part.

Name.....
Address.....
Business.....

Trailers Enlarge Truck's Usefulness

(Continued from page 144.)

tially built and an axle and wheels used that do not require daily greasing. Furthermore, the rubber tire is desirable, because at a speed of ten to twelve miles an hour the effect of the tire running over cobble stones is such that it soon stretches, the spokes become loose and disaster follows unless the tire is set very frequently.

Automobile experience has taught the proper size and material for axles, wheels, tires, springs and fittings, so the wagon maker of today does not have to experiment. This information may be obtained by him from any automobile engineer.

Three Methods of Using Trailer Principle

There are three methods of using the trailer principle which have been more or less adopted, with no little controversy as to which is the best. There is the four-wheel trailer which is drawn by a pole hitched to some part of the motor vehicle; the two-wheel type, which is a body balanced over the axle and is hitched



Big Loads of Singles Are Transported in This "Federal" Truck.

to some part of the motor vehicle; the two-wheel semi-trailer, which, as the name implies, is half a trailer, the other half being carried. In a perfectly level country, where little weight is required on the driving wheels for traction, and where there is no congested traffic and no occasion for backing, the four-wheel trailer is as good as any other. And under the same conditions the two-wheel cart, where the load is balanced over the axle, may be used.

For city streets, however, the semi-trailer is more to be desired for the following reasons: The over-all length is only a foot or so more than that of the conventional truck of the same loading space; the semi-trailer can be handled entirely by one man; it can be turned in narrow quarters and backed in the same manner as the wagon is backed by a horse. And there is sufficient weight on the driving wheels for traction.

The semi-trailer is fast becoming popular in the building industry, not only on account of the ease with which it can be manipulated, but because of the great diversity of its uses. It can be adapted to any kind of hauling business and the expense of hauling by this method is little more than half that of any other.



KRAGSTONE
AMERICAN MAGNESIA PRODUCTS CO. CHICAGO
STUCCO

The Stucco Beautiful

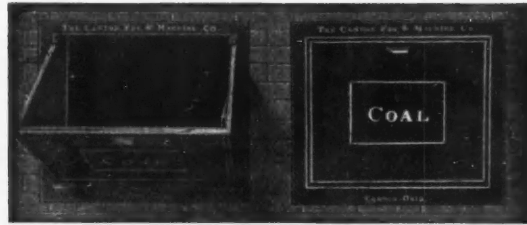
The most attractive and lasting stucco ever produced. Easy to apply. Bonds perfectly to almost any surface. Does not check or crack. Has 30% more tensile strength than cement stucco.

Big Season for Stucco Construction

Use Kragstone Stucco and get most of the business. Kragstone beauty and economy appeal instantly.

Send for new Illustrated Book, samples, coverage sheets and prices. **WRITE TODAY!**

CONSTRUCTION MATERIALS CO.
135 W. Washington St. CHICAGO



**BOOST
YOUR PROFITS**

CANTON COAL CHUTES and SIDEWALK DOORS are easily sold. They are made of the best materials and add greatly to the appearance of the buildings and walks. Every home is a prospect because of the universal need of permanent coal chutes and sidewalk doors. Each job brings other sales and repair jobs.

You can represent no better line than the

CANTON

Start building a greater business today. Write for Catalog B-8.

CANTON FOUNDRY & MACHINE CO.
CANTON, 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

Mr. Contractor-

WITH STANDARD are Sales Speedy

Very profitable, too. The real MONEY MAKER you have been looking for.—Uses any kind of fuel.—Simple construction and few parts make it quick and easy to install. A GREAT SIDE LINE PROPOSITION FOR CONTRACTORS AND CARPENTERS.

Sold Under Bond

Write at once for Special 1919 Offer

STANDARD HEATING CO.
438 W. Ontario St. CHICAGO

Clip the coupon. It will pay you to mail it.

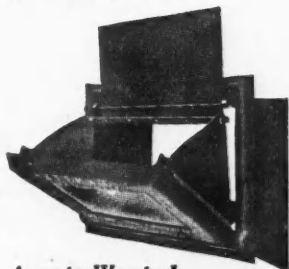
COUPON
Send Us Your Proposition

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

THE AUTOMATIC COAL CHUTE
Will Answer Every Requirement

- Opens Automatically
- Closes Automatically
- Locks Automatically
- Fool Proof

Order one from your dealer or direct from



Agents Wanted
THE WESTERN IRON & FOUNDRY CO.
Wichita, Kansas

Disability Benefit to Building Industry Thru Applying Experience With Crippled Soldiers

By Douglas C. McMurtrie

Director, Red Cross Institute for Crippled and Disabled Men

IN the past, our method of dealing with the man permanently disabled in the course of employment has been to pay the worker a pension in the form of compensation, and forget him and his injury. But the cost of disability to the building trade has not been alone in the premiums paid for casualty insurance. There has been the cost involved in the training experience, and adaptation of a skilled worker who does not return to his job, and the fitting of a newcomer to take his place.

There are three means of reducing and approaching the complete elimination of the cost of disability: first, accident prevention; second, thru medical attention to minimize the disability resulting from the injury, and, third, salvage of the remaining abilities of the worker thru rehabilitation of self-support. The first of these has already received wide attention from employers and has wisely been encouraged in a financial way by casualty insurance companies and state funds. The values of the two latter have, however, not as yet been appreciated. Their energetic application would effect a tremendous saving to industry.

Many injuries from which men would completely recover in a short time under adequate and high-grade medical attention are treated for an insufficient time, or by incompetent physicians and, instead of a prompt return to work, the case at best drags along over an extended period and at worst becomes chronic or develops into permanent disability. Some states require the insurance carrier to provide but two weeks of compulsory free medical attention to the injured man. For the insurance company to take advantage of this limitation is the most short sighted policy possible, because for every dollar saved in physicians' or hospital fees, the insurance carrier pays out later ten dollars in compensation. And what the insurance company pays is actually paid by the insuring employers in their regular premiums.

Unlimited medical attention of the highest grade should be an axiom of casualty practice. It should be insisted upon by employer and workman alike. The best outcome of any injury is to have the employe return to his job as a well man in the shortest possible time. It is well to develop a

(Continued to page 150.)

The "BEST" Revolving Chimney Tops Create the BEST Drafts



Once installed they prove themselves an indispensable necessity, because they keep the chimney clean and protect it from snow or rain.

The slightest breeze turns the back of the hood to the wind, creating a strong draft in the chimney.

† They are simple and durable and are easily attached. Made of cast iron.

Write today for illustrated folder.

STERLING FOUNDRY CO.
8 Avenue A, STERLING, ILL.

Advise Your House Customer on the Water System

You can save your client money and give him a better home. Take the order yourself and install the system when the plumbing goes in. The low cost of a

DEMING Marvel System

—the "cent or two a day" cost of operation and the automatic "self-operating" features make the Marvel the ideal system for the home.

Write for catalog of Water Supply Systems

THE DEMING CO.
99 Depot St., SALEM, OHIO



"GET-A-WITTE"

BIG CUT IN ENGINE PRICES

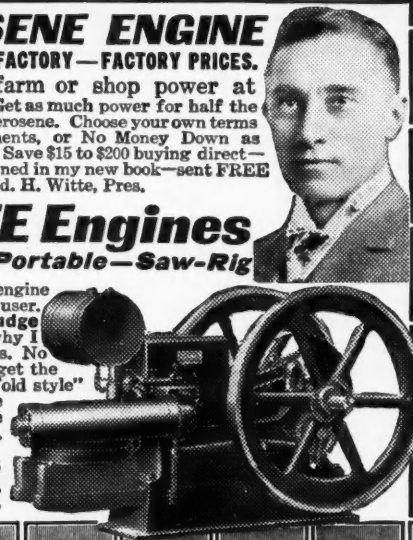
KEROSENE ENGINE
DIRECT FROM FACTORY—FACTORY PRICES.

Own your farm or shop power at lowest cost. Get as much power for half the price, using kerosene. Choose your own terms—Cash, Payments, or No Money Down as arranged for. Save \$15 to \$200 buying direct—all fully explained in my new book—sent FREE on request.—Ed. H. Witte, Pres.

WITTE Engines
Stationary—Portable—Saw-Rig

are all made in the largest exclusive engine factory in the world dealing direct with user. My Free Factory Book, "How To Judge Engines", tells the whole story—tells why I can make a better engine and sell it for less. No need to pay higher prices than I ask to get the kind of an engine you want, or accept an "old style" or "back-number" to save money. Write for my new illustrated factory book and see just what a big offer I am able to make.

Witte Engine Works
1772 Oakland Ave. Kansas City, Mo.
1772 Empire Bldg. Pittsburgh, Pa.



SAFE!

To Help You Sell the Barnett SYSTEM

A Practical Handbook For Barnett Agents

Joe Barnett & Co.
Cedar Rapids, Iowa

There's Money in Selling Lightning Protection

There's no other thing a man pays for so cheerfully as protection—protection for his family, his buildings, and his live stock.

That's why our agents find it so easy to sell Barnett's Pure Copper Cable Lightning Rods.

Every property owner wants lightning protection. He knows the value of good rods and has the money to buy the best.

When you build or remodel a house or barn, you're the logical man to rod it.

Why should you allow some lightning rod salesman to come right behind you and earn the easiest profit on every job? The owner has confidence in you, and in most cases you need only mention rods to get the contract.

The Barnett exclusive sales rights in your territory will net you a handsome profit this year—\$20.00 to \$50.00 on every job. We'll gladly send you full particulars, if the territory is still open when we get your letter.

A post-card will do—but mail it TODAY!

JOSEPH L. A. BARNETT & COMPANY, Cedar Rapids, Iowa

Write for this valuable FREE booklet.

A Furnace With a Record

The Mueller Pipeless Furnace has proved its efficiency, economy and absolute reliability in thousands of homes in the coldest parts of the United States.

Builders and contractors can recommend it with assurance.

MUELLER PIPELESS FURNACE

The Mueller's remarkable record is due to the fact that, in every part, it is correctly and scientifically proportioned in accordance with the laws of pipeless heating efficiency. It is **guaranteed** to heat every room of the house comfortably.

Burns hard or soft coal, lignite, coke, wood, gas or oil with remarkable economy, saving $\frac{1}{3}$ to $\frac{1}{2}$ on fuel.

Write for the Mueller booklet, "The Modern Way of Heating Your Home," free, and the name of the nearest Mueller dealer.

L. J. MUELLER FURNACE COMPANY
218 Reed St., Milwaukee, Wis.
Makers of Heating Systems of All Kinds Since 1857

Extra Profit For You

Building Contractors

Specify

MAJESTIC COAL CHUTE

YOU can make quite an added profit in building by simply specifying the use of the Majestic Coal Chute—merely suggesting this will assure you of the sale.

Placed on your properties built to sell will attract purchasers. The appearance of having "all the modern conveniences" appeals to prospects.

Specify and use the Majestic Coal Chute. Literature and specifications gladly sent.

THE MAJESTIC CO.,
820 ERIE STRET
HUNTINGTON, IND.



“You Get The Job”

“We’ve been watching you, young man. We know you’re made of the stuff that wins. The man that cares enough about his future to study an I. C. S. course in his spare time is the kind we want in this firm’s responsible positions. You’re getting your promotion on what you know, and I wish we had more like you.”

The boss can’t take chances. When he has a responsible job to fill he picks a man *trained to hold it*. He’s watching **you** now, hoping you’ll be ready when the opportunity comes.

The thing for you to do is to start today and train yourself to do some one thing better than others. You can do it in spare time through the International Correspondence Schools. Over 5000 men reported advancement last year as a result of their I. C. S. training.

The first step these men took was to mark and mail this coupon. Make your start the same way—and make it right now.

I. C. S., Box 8164 Scranton, Pa.

INTERNATIONAL CORRESPONDENCE SCHOOLS

Box 8164, SCRANTON, PA.

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

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> <input type="checkbox"/> ARC HITECT <input type="checkbox"/> Archi tectural Draftsman <input type="checkbox"/> Contractor and Builder <input type="checkbox"/> Building Foreman <input type="checkbox"/> Concrete Builder <input type="checkbox"/> Structural Engineer <input type="checkbox"/> Structural Draftsman <input type="checkbox"/> Ship Draftsman <input type="checkbox"/> Plumber and Steam Fitter <input type="checkbox"/> Heating and Ventilation <input type="checkbox"/> Plumbing Inspector <input type="checkbox"/> Foreman Plumber <input type="checkbox"/> Sheet Metal Worker <input type="checkbox"/> CIVIL ENGINEER <input type="checkbox"/> Surveying and Mapping <input type="checkbox"/> ELECTRICAL ENGINEER <input type="checkbox"/> Electric Lighting and Rys. <input type="checkbox"/> Electric Wiring <input type="checkbox"/> Telegraph Engineer <input type="checkbox"/> Telephone Work <input type="checkbox"/> MECHANICAL ENGINEER <input type="checkbox"/> Mechanical Draftsman <input type="checkbox"/> Machine Shop Practice <input type="checkbox"/> STATIONARY ENGINEER <input type="checkbox"/> CHEMIST | <ul style="list-style-type: none"> <input type="checkbox"/> SALESMANSHIP <input type="checkbox"/> ADVERTISING <input type="checkbox"/> Window Trimmer <input type="checkbox"/> Show Card Writer <input type="checkbox"/> Sign Painter <input type="checkbox"/> BOOKKEEPER <input type="checkbox"/> Steno grapher and Typist <input type="checkbox"/> Higher Accounting <input type="checkbox"/> COMMERCIAL LAW <input type="checkbox"/> Common School Subjects <input type="checkbox"/> Mathematics <input type="checkbox"/> GOOD ENGLISH <input type="checkbox"/> ILLUSTRATING <input type="checkbox"/> Railway Mail Clerk <input type="checkbox"/> CIVIL SERVICE <input type="checkbox"/> MINE FOREMAN OR ENGR <input type="checkbox"/> Metallurgist or Prospector <input type="checkbox"/> Gas Engine Operating <input type="checkbox"/> Textile Overseer or Supt. <input type="checkbox"/> TRAFFIC MANAGER <input type="checkbox"/> AUTOMOBILE OPERATING <input type="checkbox"/> Auto Repairing <input type="checkbox"/> Navigation <input type="checkbox"/> AGRICULTURE <input type="checkbox"/> Poultry Raising | <ul style="list-style-type: none"> <input type="checkbox"/> Spanish <input type="checkbox"/> French <input type="checkbox"/> Italian |
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Name _____
 Present Occupation _____
 Street _____
 and No. _____
 City _____ State _____

Disability Benefit to Building Industry

(Continued from page 148.)

science of dealing with cripples, but the ideal is to have fewer and fewer cripples with which to deal.

The third method of attack on the cost of disability is rehabilitation for self-support—the re-education of an injured man for an occupation which he can follow, or a process which he can perform, in spite of his handicap. The science of rehabilitation is new, and the experience in it has practically all been gained in the effort to make sound and just provision for the disabled soldier or sailor. Every country among the recent belligerents is today operating a comprehensive system of re-education for disabled soldiers, and is placing upon that system more dependence than upon the pension system.

Paying a man a small monthly or weekly stipend on which he is expected to live in idleness is not a very constructive method. With the breakdown of confidence in the pension system, it was realized that the only real compensation for disablement was restoration of capacity for self-support. It was further realized that very few jobs require all the physical faculties and that in the present-day variety of industrial processes, it is possible to find a job in which a man with a given type of disability can function 100 per cent efficient. Some jobs are standing, some seated, others require walking about, some jobs at a bench working on small articles require but little strength, others involve great physical exertion. Still others do not require the sense of hearing, in others the sense of sight is not essential. Finding the future work of the disabled man, therefore, requires expert and painstaking choice, but a successful selection is possible even for the seriously handicapped. The first aim is to place the man back in a different job in his own trade or in a trade closely related. In such a job his past experience will stand him in good stead. Failing this, he can be re-trained for a different line.

The process of re-training the disabled is known as re-education, and can best be provided in a special school for crippled men. The first school of this kind in the United States is the Red Cross Institute for Crippled and Disabled Men, established in New York City thru the generosity of Jeremiah Milbank. At this school, open to disabled civilians and soldiers alike, six trades are already being taught; artificial limb-making, motion picture operating, oxy-acetylene welding, printing, jewelry work, and mechanical drafting. More will be added as the demand develops. Graduates are already giving satisfaction in the jobs to which they have been graduated, so the enterprise has passed the experimental stage. And in the results attained with disabled soldiers abroad there is overwhelming evidence of the logic and practicability of rehabilitation.

The cost of soldier rehabilitation is being met by the United States government and by the governments of some of our allies. It will be admitted without argument as desirable that the advantages of re-education be made available to disabled civilians as well, but will not the cost be prohibitive? The fact is that rehabilitation effects a reduction rather than an increase in the cost of disability to industry or to the community as a whole.

A typical case will illustrate how the saving is effected. A worker in Massachusetts was injured by a fall while working inside a submarine and his hand became permanently crippled. In due course his compensation rate was determined and he was referred to the insurance carrier to be paid ten dollars a week for a long period, with a maximum total payment of four thousand dollars. Since the disability was manifestly permanent the insurance company wrote the

(Continued to page 152.)

Set It Up In 30 Minutes

NEEDS NO
WATER,
NO
SEWER

CARPENTERS and contractors can make big money during the winter months by selling and installing *Magic* sanitary chemical inside toilets. They need no water or sewer connections. They are operated by chemicals only, keeping the toilet sterilized at all times. The *Magic* can be placed in a bedroom, closet or bathroom. Enjoy all the comforts of city homes. Keep out of the cold, rain, snow and wind. Avoid exposure to the weather.



Write to the address below for their liberal money-making proposition to carpenters and builders. You run no risk. We guarantee absolute satisfaction and refund your money after thirty days' trial if you are not pleased and contented.

Chemical Closet Supply Co.
Jackson, Michigan

The PURITY JUNIOR

Odorless
Waterless
Germ-Proof

Operated by chemicals that decompose all sewage, killing all bacteria and rendering the contents of the container absolutely sterile.

The Purity Junior is perfectly constructed and very simple in operation. It can be installed in any room, closet, or basement. Fittings are white enameled, giving them a very handsome appearance.



Contractors!

Outdoor Toilets are a source of great distress in winter and are germ breeding, undesirable places in summer. By installing The Purity Junior you not only reap a big profit for yourself, but you add to the general good health and well being of the community.

Don't permit your customers to be inconvenienced by the lack of a good indoor sanitary toilet.

Purity Toilets Create Business. Write us today.

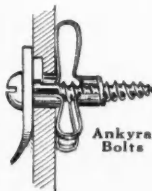
**THE NIGHT COMMANDER
LIGHTING COMPANY
JACKSON, MICHIGAN**

Your fixtures will "stay put" when fastened with ANKYRA Bolts

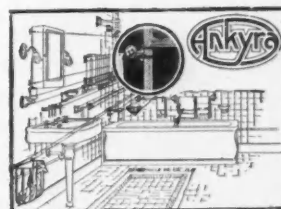
ANKYRAS are the one device to *fasten* your bathroom fixtures, kitchen fittings, or any kind of fixtures, ground or trim in *any kind of wall*.

Simplicity itself to install.

Send *one dollar* for a *trial package*, one collapsing tool, 25 No. 8 ANKYRAS, and complete instructions.



Ankyra Manufacturing Co.
151 Berkley St., Wayne Junction
PHILADELPHIA



Ankyras holding fixtures in tiled bathroom.

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.

ROWE SANITARY MFG. CO.
903 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.

Comfort Indoor Closet

Odorless - Sanitary - Germ-Proof

Every home without sewerage needs one. No plumbing or running water needed. Anyone can install. A boon to sick people. Placed in any room in house, in town or country. 10,000 now in use.

U. S. Health Bureau Approves

Says: "Chemical Closet complies satisfactorily with requirements of sanitary system." Abolish cold outdoor closet. Put a warm Comfort Toilet in your home, a guarantee of healthy, sanitary conditions. Has all the latest improvements. Germ-life killed by chemicals. Emptied once a month. Needs no other attention. State Boards of Health endorse it. Third successful year.

REPRESENTATIVES WANTED. No Capital needed. Men now making \$50 to \$75 weekly. Exclusive territory. **FREE!** Handsome Catalog. **COMFORT CHEMICAL CLOSET CO., 303 Factory Bldg., Toledo, O.**



Disability Benefit to Building Industry

(Continued from page 150.)

case off their books as a four thousand dollar loss and transferred that amount to preserve to cover the weekly payments. After the compensation had been paid for nearly a year, a new official of the insurance company began looking over the list of men to whom the company was paying compensation. His attention was directed to the man in question and the latter was requested to call at the office of the company. The case was like many thousands of others susceptible to rehabilitation for self-support, so the insurance company official put a proposition to the man in very frank terms. "I believe that you can be trained to earn a good living. I want you to understand very clearly, however, that this proposal is to the financial advantage of the company, but I also believe it is to your advantage as well. A total income of ten dollars is not very attractive to you and you would probably rather return to work at a good wage than remain idle. If you will consent, the company will send you to a school of re-education and see if we cannot get you back on your feet in good shape."

The injured man consented to the proposal and the company sent him to the Red Cross Institute in New York. They began to pay him not ten dollars a week as required by law; but forty dollars a week, twenty to him in New York and twenty to his wife at home. The company also paid liberally his traveling expenses in both directions. In the period of eight weeks he was re-educated in oxy-acetylene cutting and welding and returned home. He is now making not only a satisfactory wage, but twice as much as he had ever earned before the accident took place.

In the whole transaction every party at interest was benefited. The man was advantaged in that his general living standard was distinctly raised, and the necessity of working

for his living could not be considered as a hardship. The company paid less than five hundred dollars for his rehabilitation and this expense in conjunction with the five hundred dollars already paid in weekly compensation during the first year of idleness made a total for the case of one thousand dollars. They were thus enabled to charge three thousand dollars of profit to the account of profit and loss. The community was infinitely the gainer in that the man, formerly an unproductive consumer, became a useful producer instead. The community further gained in the elimination of the disabled man from the category of a prospective dependent, because while compensation might have taken care of him in a very insufficient way during the period of idleness, there would have come a time when compensation ceased and then he would have been in a desperate economic status indeed—confirmed in habits of idleness, untrained for skilled work, and without any source of support.

A more intelligent handling of disability by insurance carriers will, therefore, reduce their expense, and will thus cut the cost of casualty protection to the employer. There is indeed also, however, some revision of compensation laws so that there may be definite encouragement to insurance carriers to offer opportunity of rehabilitation and definite encouragement to the disabled men to take advantage of it. Practically every compensation case that has ever come to the Red Cross Institute has come on the day his compensation expired. For one year, for two years, or for four years the man has existed in idleness, drawing compensation, and cultivating habits of indolence. When his support was cut off, he then became interested in re-habilitation. Present compensation legislation tends to encourage the man to remain idle because his payments are reduced by any improvement in earning capacity. A revision of this practice will make for more constructive provision.



A EUREKA MIXER

on the job means that the Contractor is making a big profit and doing the work as fast and as well as it can be done.

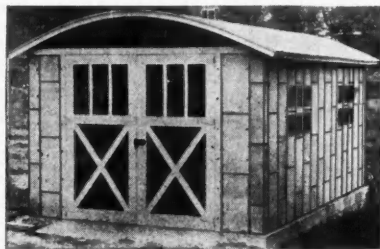
LOOK ABOUT YOU

and you will find that most enterprising contractors use the Eureka. They have found in the Eureka, qualities that other machines do not possess. They have found that it really produces, and stands the tests of hard usage. We have many more things to tell you about the Eureka. Little things that make it desirable and big things that make it your best possible investment. They are made in several sizes. We have a size that will just suit you.

—WRITE US TODAY—

EUREKA MACHINE CO., 103 Handy St., Lansing, Michigan

Moore's Reinforced Concrete Lumber



Was designed to meet the demand for low priced fireproof garages. Simply set the staves up and bolt them together.

**NO MASON
NO MORTAR**
Make concrete lumber and supply the demand. Write for particulars.

Merrill Moore :: Box 33 :: Creston, Iowa

Make Your Basements WATER TIGHT

by using Bitu-Mortar Waterproofing Compound. Liquid, for waterproofing cement coatings—powder for waterproofing mass concrete—dampproofing, for interior surfaces of masonry walls. Inexpensive and everlasting. Write for our catalog.

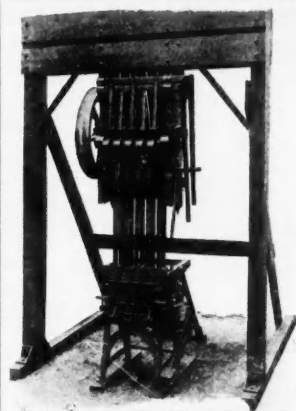
The Bitu-Mortar Waterproofing Co., Inc.



Engineers, Contractors and Manufacturers,
340-344 East 27th Street New York, N. Y.

THE IDEAL CONCRETE MACHINERY CO.

1308 Monmouth Ave., CINCINNATI, OHIO

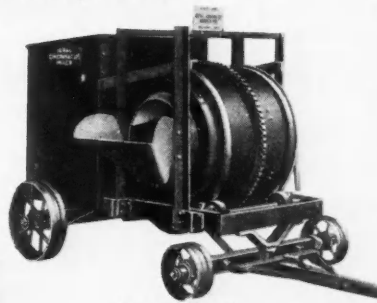


Catalog No. 28

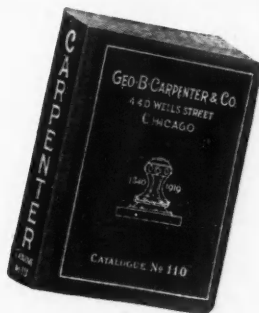


Catalog No. 30

Concrete Machinery for all Purposes



Catalog No. 33



Established 1840

FOR 78 years we have been rendering a real service—a service of good merchandise, fair prices, complete stocks and careful attention.

Our 1100 page catalogue, pictured above, is good evidence of our success in these things. It should be in the hands of every equipment buyer, large or small, and we will gladly send it on request. Write today to Dept. 1.

Equipment for Contractors, power plants, mills, mines, railroads, steamships, machine shops and all forms of industrial activity.

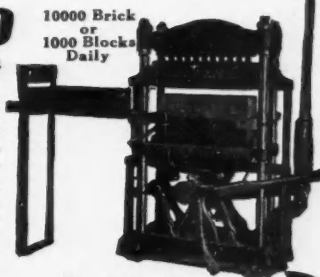
Geo. B. Carpenter & Co 440 No. Wells St. CHICAGO

Make Your Own Brick

and
\$20 to \$50
Extra Daily Profit

10000 Brick or 1000 Blocks Daily

Be independent of the clay brickmaker and dealer. Put yourself in a position to make more money on your contracts, to take bigger jobs—more profitable jobs without worry of delays or lost time eating into your profits. With a Helm Press you can make 10,000 Brick or 1,000 Blocks a day—\$20 to \$50 daily profit. Operates under 80,000 pound pressure. No tamping—no burning—every brick or block perfectly true. A big demand in your own community for this superior kind of building material. Equip yourself to supply it.



The Helm Press

Helm "Dry Wall" Building System

Appeals to builders, contractors and architects. It overcomes the opposition to concrete because it offers absolutely Dry Wall construction. It saves money for builders, as no furring and lathing are required, and it makes rigid walls and fireproof walls. This is the system which is bound to get you business and give you the advantage over all other products.

Send for Our Valuable Book FREE

Let this FREE book tell you all about this great opportunity which is open to you today. It will tell you all the details of this system, about the Helm Press and the Dry Wall building system. It will show you how easy it is to start a profitable business. It tells how each product is made, how it is cured and sold. Write today. Use a post card or coupon.

HELM BRICK MACHINE CO.

573 Mitchell St. CADILLAC, MICH.

Helm Brick Machine Co.
573 Mitchell Street
Cadillac, Mich.

Gentlemen—Please send FREE your book on Concrete and Helm Presses.

Name

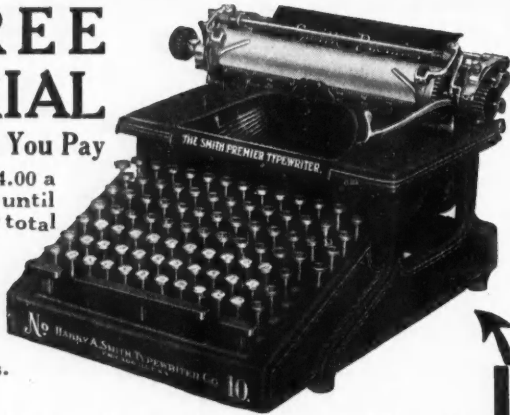
Address

TYPEWRITER SENSATION

FREE TRIAL

Use as You Pay

Only \$4.00 a month until the low total price of \$53.15 is paid, and the machine is yours.



This is absolutely the most generous typewriter offer ever made. Do not rent a machine when you can pay \$4.00 a month and own one. Think of it—Buying a \$100.00 machine for \$53.15. Cash price, \$50.35. Never before has anything like this been attempted.

STANDARD VISIBLE MODEL 10 SMITH PREMIER

Perfect machines, Standard size. Full 84 character one motion keyboard. The easiest to learn and simplest to operate. The entire line of writing completely visible at all times, has the tabulator, the two color ribbon, with automatic reverse, the back spacer, ball bearing carriage action and ball bearing type bars. In fact, every late style feature and modern operating convenience. Comes to you with everything complete; tools, cover, operating book and instructions, ribbon, practice paper—nothing extra to buy. You cannot imagine the perfection of this beautiful reconstructed typewriter until you have seen it. I have sold several thousand of perfect latest style machines at my bargain price, and every one of these thousands of satisfied customers had the beautiful, strictly-up-to-date machine on five days' free trial before deciding to buy it. I will send it to you F. O. B. Chicago for five days' free trial. It will sell itself, but if you are not satisfied that this is the greatest typewriter you ever saw, you can return it at my expense. You won't want to return it after you try it—you cannot equal this wonderful value anywhere.

You Take No Risk—Put In Your Order Now

When the typewriter arrives, deposit with the express agent \$9.15, and take the machine for five days' trial. If you are convinced that it is the best typewriter you ever saw, keep it and send me \$4.00 a month until our bargain price of \$53.15 is paid. If you don't want it, return it to the express agent, receive your \$9.15 and return the machine to me. I will pay the return express charges. This machine is guaranteed just as if you paid \$100.00 for it. It is standard. Over one hundred thousand people own and use these typewriters and think them the best ever manufactured. The supply at this price is very limited, the price will probably be raised when my next advertisement appears, so don't delay. Fill in the coupon today—mail to me—the typewriter will be shipped promptly. There is no red tape. I employ no solicitors—no collectors—no chattel mortgage. It is simply understood that I retain title to the machine until the full \$53.15 is paid. You cannot lose. It is the greatest typewriter opportunity you will ever have. Do not send me one cent. Get the coupon in the mails today—sure.

HARRY A SMITH, 300, 218 N. Wells St., Chicago

H. A. SMITH, 300, 218 N. Wells Street, Chicago, Ill.

Ship me the Smith Premier F. O. B. Chicago, as described in this advertisement. I will pay you the \$44.00 balance of the SPECIAL \$53.15 purchase price at the rate of \$4.00 per month. The title to remain in you until fully paid for. It is understood that I have five days in which to examine and try the typewriter. If I choose not to keep it I will carefully repack it and return it to the express agent. It is understood that you give the standard guarantee for one year.

NAME

ADDRESS

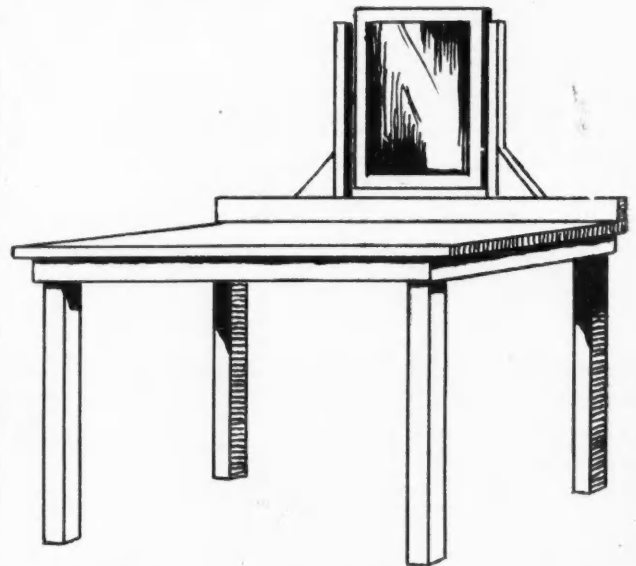
.....

Knock Down Furniture and How to Make it

(Continued from page 38.)

The designer of this furniture will find it a most interesting task to use these things made for other purposes. The carpenter who has a few woodworking machines will find it amusing to see what he can put together in the way of furniture out of boards and pieces of joist. His part is to help the householder to help himself, as is now done with knock-down boats.

For instance, a man who would not go to the bother to make a fire-screen would nail the pieces together that were all ready for him. A good comfortable chair with an inclined back can be made of nothing more than four pieces of board; one long piece serves as back and front legs, another as seat, and two more



Dressing Table of Lumber That Otherwise Might be Wasted.

support the seat and run down as back legs. A dressing table can all be made of such pieces of straight wood screwed and bolted together, the mirror to be bought locally to fit the frame. Besides the new material made for other purposes there is much waste material that is of a standard size that could be utilized, packing cases and dovetailed boxes, pasteboard boxes, tinned iron receptacles, barrels, sacks and such things.



To Bore Thru Glass

To the Editor:

La Fargeville, N. Y.

In answer to Thomas Collins in your January issue: For drilling holes in glass a common steel drill well made, and well tempered, is the best tool. The steel should be forged at a low temperature so as to be sure not to burn it, and then tempered as hard as possible in a bath of salt water that has been well boiled.

Such a drill will go thru glass very rapidly if kept well moistened with turpentine in which a little camphor has been dissolved.

JOHN UPTON.

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**.

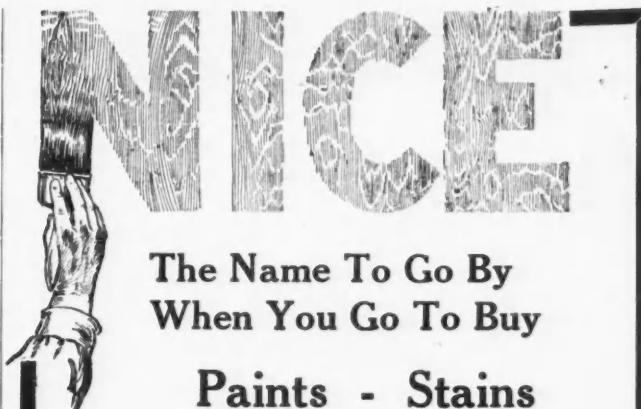
Our products are more practical than any similar ones on the market, and are sure to please you.

Send for descriptive cards and prices

M. EWING FOX COMPANY

Manufacturers

240 East 136th St. NEW YORK
1501 So. Peoria St. CHICAGO, ILL.



The Name To Go By
When You Go To Buy

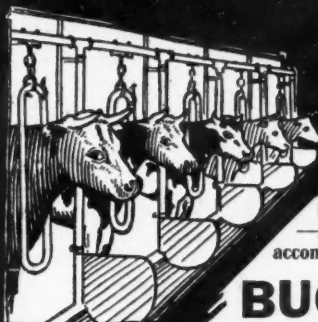
Paints - Stains Varnishes - Wood Fillers

There's a special "NICE" product for your every use, perfected by over 40 years of practical, painstaking, paint and varnish making experience.

Let us send literature and prices.

EUGENE E. NICE

PHILADELPHIA, PA. - CAMDEN, N. J.



EQUIP YOUR BARN FOR BIGGER PROFITS

INSTALL

BUCKEYE BARN EQUIPMENT

Now is the time to make every effort for increased production—*increase the food supply—eliminate all extra labor!* You can help accomplish all these things if you install

BUCKEYE BARN EQUIPMENT

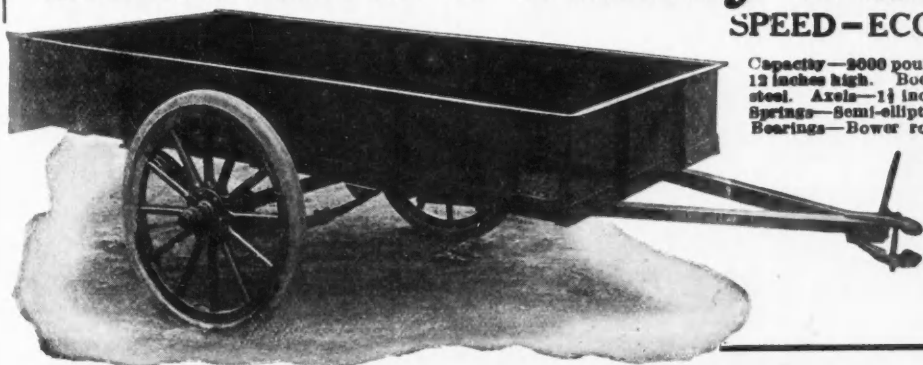
Clean, comfortable stalls for the cows will net *big returns in increased milk flow* while hours of time and labor will be done away with if you install this wonderfully simple and easily put up equipment. *Write to-day.* A postal brings you free catalogs.

MAST, FOOS & CO., SPRINGFIELD, OHIO



Contractor's Handy Auto Trailer

SPEED - ECONOMY - STRENGTH



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

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

Write for Catalog C.

Rogers Brothers COMPANY

Albion - - - Pa.

ROOFING SLATE

Build Fireproof

WHY erect an expensive public building or residence, only to have it destroyed through a fire-brand blowing onto the roof from some other fire?

A slate roof can't burn. And it will still be giving complete service when the walls of the structure crumble with age.

Owner, architect and builder can always feel pride and satisfaction in the longest-wearing, most economical and fireproof roofing—slate.



VENDOR SLATE CO.
Largest Shippers of Roofing Slate in the World
BANGOR PENNSYLVANIA



\$100,000,000 for School Building

(Continued from page 33.)

The sanitary chemical closet is another feature of modern country building equipment that appeals to the designers and officials who are building school houses. These sanitary closets eliminate what has been heretofore called "the country-school abomination."

School buildings of all types, large, small and medium-sized, constructed of the wide variety of materials that now are available, will be erected this year. The thoughts contained in this article will be applicable to many of them. But whatever the size or type that is proposed in a neighborhood, the local architect and building contractor should be ready to help with his service. Helping others has many times been found to be an excellent way to help yourself.



Wants Lamp Designs

To the Editor: St. Lambert, Quebec, Can.
Would it be convenient for you to show a few designs during the coming year of mission and turned electric table lamps and domes?
A. GABORIAULT.



Knew His Own Worth

An I. W. W. came to Contractor John, and John asked him whether he wanted a job.

"What'll you pay?" asked the I. W. W.

"I'll pay you all you're worth," said Contractor John.

The I. W. W. scratched his head a minute, and then exploded: "I'll be darned if I work for that!"

Natural Slate Blackboards

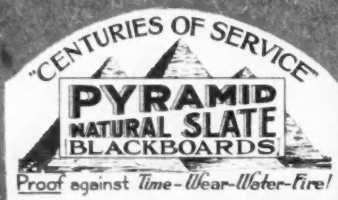


Immediate Shipments to Serve You On Time

WE have put an end to shipment delays by carrying *one million square feet of stock on hand* in thirty-five storehouses.

Contractors may thus be sure of having Natural Slate Blackboards arrive on the job at the *exact time needed*.

We offer you the active co-operation of thirty-five quarries, mills and our Service Organization.



Natural Slate Blackboard Co.
Pen Argyl, Pennsylvania

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

You will find that you can have an attractive roof of

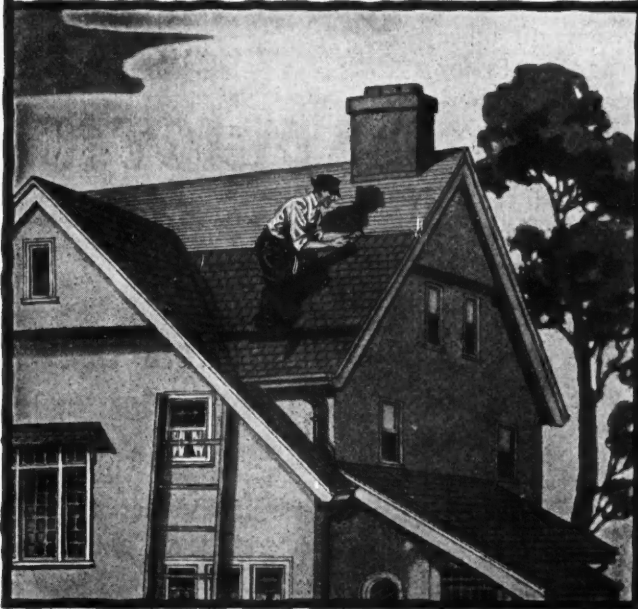
SHELDON'S SLATES

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.



ROOFING SLATE

G. F. T.

Roofing Slate
Everlasting—Beautiful

The roofing whose first cost is the only cost and that retains its superb richness of color as long as the building stands. Genuine Franklin Tunnel Slate is absolutely Fire-proof. Water-proof and Decay-proof. Free Samples and Prices on request.

Slatington Slate Co.
Slatington, Pa.



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.

Lavatories of Slate Please the Eye

A LAVATORY ought to look good. It should be tempting and refreshing in appearance, so people will enjoy using it.

Slate is always "at its best" if occasionally cleaned with warm water. Scrubbing and

acids are not necessary. What other material will retain its original color, free from stain, for a hundred years or more?

Made in various styles and sizes, to fit any requirement. May we quote prices?



The Structural Slate Co.
Manufacturing Five Carloads Daily
Pen Argyl, Pennsylvania

FLOORS

The Wood-Mosaic Kind



For every home—Old or New. Can be installed by your mechanics. Our 5/16" flooring can be laid in old or new houses. We make all kinds and thicknesses; Wood-Carpet, strips Plain and Ornamental Parquetry, Tongue and Groove Flooring.

Send accurate measurements of rooms for sketch with exact estimate of cost of the flooring required. Instructions for laying and finishing accompany all orders shipped.

Send for free catalogue in natural wood colors.

Wood-Mosaic Company
New Albany, Indiana



Beautiful Oak Floors

are always the source of unlimited satisfaction and pride.

Every modern home today has **Oak Floors**. The owners know that **Oak Floors** will attract a better class of tenants and make a big difference in values when **renting** and **selling**.

Oak Floors are **rich** and **cheerful** in color and always create a friendly atmosphere. With a little care **Oak Floors** will last a lifetime.

3-8 in. Oak Flooring offers a very **beautiful** and **economical** floor at a very low cost for all classes of buildings. It is the ideal flooring for covering old pine floors in old houses as well as in new houses over cheap sub-floors.

Our Government used millions of feet of **Oak Flooring** at various housing projects.

Oak Flooring can be laid successfully by any carpenter or handy man. It makes a very profitable side line during the winter months.

Write for folders that tell all that is worth knowing about **Oak Flooring**.

Oak Flooring Manufacturers' Assn.
1603 Union Trust Building CINCINNATI, OHIO

Building Activity or Watchful Waiting? (Continued from page 49.)

cheapest in the long run, even at prevailing prices. For example, the builder who intended to put on a good sheet metal roof is wise if he carries out his intention, even if the price does seem a little high, instead of substituting something cheaper that will have to be replaced after a few years of unsatisfactory wear. The same standards can be applied to the selection of other materials for building purposes.

If the past can be cited as a guide for the future and the prediction of authorities can be relied upon, it is good business to build now. Prices may go down a little, but needed buildings should be erected at once. Immediate use will more than offset any saving that may be made in construction.

The prospective builder, who can be made to see things in this light, will help to give employment directly and indirectly to our returning soldiers, who have made their sacrifice on the fields of France.

In nine cases out of ten the man who helps to keep the wheels of industry moving is ahead of the one that pursues the policy of watchful waiting. Besides he has performed a service to himself, to his community and to his country. "Build Now," should be America's slogan.

The Story of Cradock, Va.

(Continued from page 41.)

adhered to practically without deviation. The exigencies of certain situations have required additional labor saving devices to be adopted almost on the spur of the moment. But these always are worked out to supplement rather than to conflict with the original efficient plan. The spirit of the organization is brought to life both in the remarkable results to date and in the remark of John W. Harris, "We are here to save Uncle Sam all we can." And they are doing that very thing wonderfully well.

(Continued to page 160.)

DURING THE WAR IT WAS PATRIOTIC

NOT TO BUILD

Now we can best
show our patriotism
by building.



U. S. DEPARTMENT OF LABOR

W. R. WILSON,
Secretary of Labor.

For additional copies address Paper No. 1000, Chief Information and Education Service, Department of Labor, 1200 G Street, N.W., Washington, D. C.

One of the Series of Posters Being Sent Out by the U. S. Dept. of Labor to Encourage Building Activity NOW.



BOYLE'S BAYONNE

ROOF AND DECK CLOTH

Boyle's Bayonne Roof and Deck Cloth

as a covering for low pitched or flat roofs, verandas, sleeping porches, sun parlors, conservatories and all floors exposed to the weather or to constant wear, *has no equal.*

It is easy to lay because it is stretched over dry boards and painted after it is laid.

It is guaranteed waterproof and will not crack or peel.

It can be painted any shade to conform to color scheme of porch or house.

It is less expensive than any other roof or floor covering of equal merit.

Write for Sample Book with prices and directions for laying.

JOHN BOYLE & COMPANY, Inc.
 112-114 Duane St.—New York—70-72 Reade St.
 Branch House: 202-204 Market St., St. Louis, Mo.




METAL LATH

Because Metal Lath

Making An Old House Like New Stucco Over Sykes Lath

Converting a frame house into a Stucco House is an easy and inexpensive process, considering the big value it adds to the house—in appearance as well as durability. Contractors and builders find this method of renewing a house both profitable and certain to please their customers. For best results use

SYKES EXPANDED CUP METAL LATH

—because it is self-furring—is heavier—cannot be wrongly applied—and is lasting.

Free Sample for the Asking.

Sykes Metal Lath & Roofing Co., 504 Walnut St., 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.


"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



For the outer covering of a building no other wood gives such long and satisfactory service as

WHITE PINE

The Story of Cradock, Va.

(Continued from page 158.)

Within the tract there was planned and constructed three miles of steam railroad and switches and spurs so located as not to interfere with permanent construction and so distributed that all material is delivered practically on the spot where it is to be used.

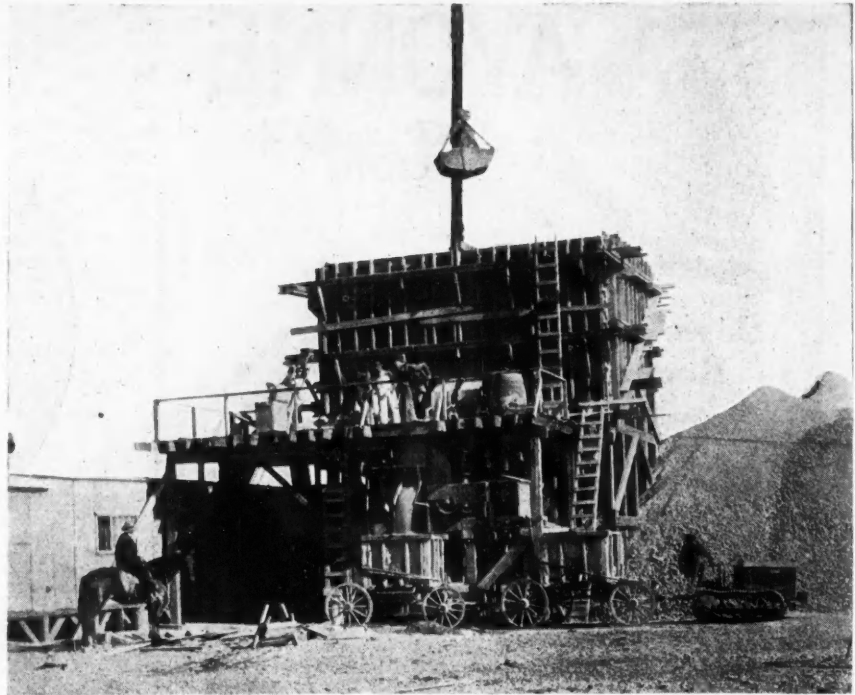
This railroad connects the Virginian Railroad with the project, running thru the heart of the city and forming a complete return loop, so that no time or efficiency is wasted in distributing materials.

Supplementing the railroad are numerous trucks, tractors and horse-drawn wagons. The small caterpillar tractor, looking more like a toy machine than a powerful hauling engine, is extensively used.

These tiny "tanks" are used for plowing, pulling down trees and hauling huge loads of materials over rough ground as well as on roads.

Innovations

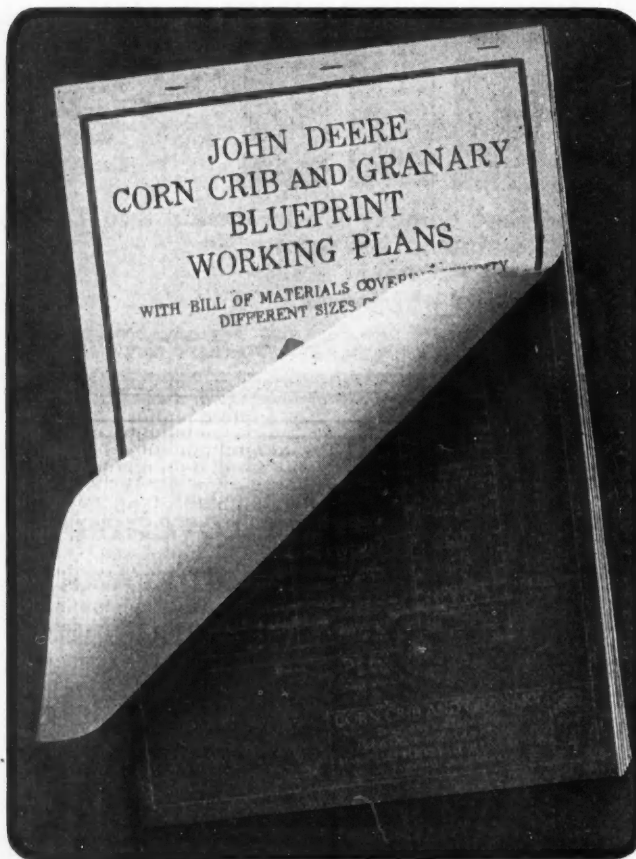
Many accepted methods of procedure in building work have had to be set aside in building Cradock



Central Mixing Plant Mixing Concrete for 463 Houses at Norfolk, Va.

because of the scarcity of labor and machinery. Every day new problems arise which usually have to be solved in some new way. "It can't be done, but here it is," the slogan of the United States Engineer Corps has been adopted by the men in charge of this job, and

(Continued to page 162.)



Actual size of Plan Book 11"x16 1/2". Contains 48 pages of valuable information

FREE CRIB PLANS

for

Contractors, Carpenters and Lumber Dealers

If you are going after the farm trade this season, this set of Blue Print Working Plans will be of real value to you.

This set of plans include Blue Prints of the modern combination corn crib and granary, showing end elevation, side elevation, transverse section and floor plan; bills of material covering 20 different sized buildings; and fully illustrates the John Deere Elevator equipment that is easily installed and meets every requirement.

These plans, complete and comprehensive in every detail, give the biggest capacity and least expense—they can be used effectively in competition.

Ask for Corn Crib Plans CC-2

This valuable set of plans will be sent you at once free of charge. Write today before you forget it.

You can recommend the John Deere Grain Elevator to your trade with full assurance that it will give continuous satisfactory service.

JOHN DEERE, Moline, Illinois

**After
Nine
Years
Service**



ALL RIGHTS RESERVED
MULVIHILL FURNITURE COMPANY
127 1/2 NORTH TULSA STREET
ST. LOUIS, MO.
\$87.50
Dec. 17, 1918.
Berger Mfg. Co.,
16-18-20 S. 10th St.,
St. Louis, Mo.
Gentlemen:-
Some nine years ago, after
a rather disastrous fire in our build-
ing, your firm erected the Berger
Steel Ceilings, which we are pleased
to state have given every satisfaction.
They are still in splendid
condition and we are glad to recommend
them at any time.
Yours very truly,
Mulvihill Furniture Co.
M. J. Mulvihill
Pres.

**Berger
Steel
Ceilings**

Remain like new

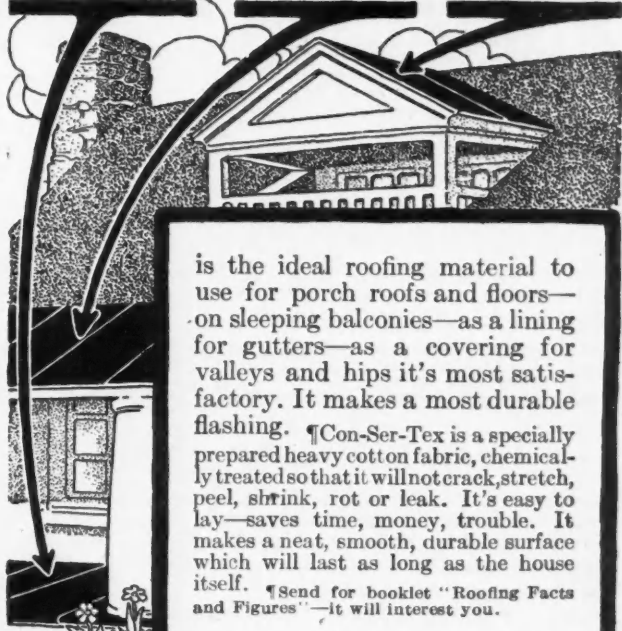
Ask our nearest office for
our big illustrated Ceiling
Catalog D-3.

**The Berger Mfg. Co.,
Canton, Ohio**

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

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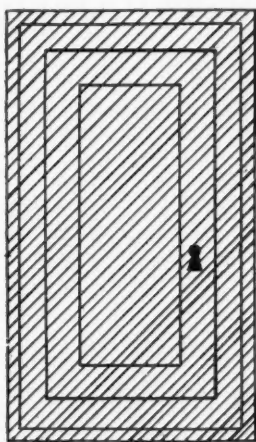
CON-SER-TEX



is the ideal roofing material to
use for porch roofs and floors—
on sleeping balconies—as a lining
for gutters—as a covering for
valleys and hips it's most satis-
factory. It makes a most durable
flashing. ¶Con-Ser-Tex is a specially
prepared heavy cotton fabric, chemical-
ly treated so that it will not crack, stretch,
peel, shrink, rot or leak. It's easy to
lay—saves time, money, trouble. It
makes a neat, smooth, durable surface
which will last as long as the house
itself. ¶Send for booklet "Roofing Facts
and Figures"—it will interest you.



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METAL AND METAL COVERED

Standard Sizes in Stock of all Designs

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**A. C. CHESLEY CO. 279 RIDER AVE.
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Cornell-Wood-Board

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

For quality repair and alteration work, show your
customers that Cornell Wood-Board is unequalled.
Will not warp, crack, chip or buckle and nails direct
to the fram work or over the old walls. Easily put up
and lasts a life time. Resists heat, cold and moirture
and is ideally adapted for the walls and ceilings of
Homes, Garages, Stores, Offices, Farm Buildings, In-
dustrial Housing, Factories, 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. 103 CHICAGO**

**Victory Brings
More Work**



**Building Season Reopens
Coal Saving a Necessity**

Your customers waste six pounds of coal on every opening
every winter's day. Allmetal weatherstrip will positively
stop this unnecessary waste and bring money to you.
Agents all over the United States and Canada are coining
money.

Write for latest price list

**ALLMETAL WEATHERSTRIP CO.
230 W. Madison St. Chicago, Ill.**



Save \$43.00 This Easy Way

Here is your opportunity to own a genuine Oliver, Model 9, for \$57. The identical model formerly priced at \$100. Not a single change has been made in the machine in order to make this astounding reduction in price.

Only our sales plan has changed. We learned new economies during the war. We found it unnecessary to have great numbers of traveling salesmen and numerous, expensive branch houses throughout the country. We were able to discontinue many other superfluous, costly sales methods. You benefit by these savings.

Free Trial

We ship the Oliver for free trial. You can keep it for five days. Use it as if it were your own. All without paying one cent in advance.

If you agree that it is the finest typewriter regardless of price, and want to own it, merely pay us \$3 per month until the \$57 is paid.

If you want to return it, ship it back, express collect. We even refund the out-going transportation charges.

During the trial you are the sole judge. No eager salesman need influence you.

\$3 Per Month

Our easy plan makes it possible for all to own a typewriter. And to use it while paying. There is no need to rent.

You obtain the same wonderful model used by such big concerns as U. S. Steel Corporation, Pennsylvania Railroad, Encyclopedia Britannica, Otis Elevator Company, Nat'l City Bank of N. Y., and others of equal rank. Over 700,000 Oliver's have been sold!

No Typewriter is finer. It is noted for its workmanship, speed and durability. It is easy to learn. It has a standard keyboard. And all the latest improvements. If any typewriter is worth \$100 it is this splendid Oliver.

Mail the coupon now for our remarkable booklet entitled "The High Cost of Typewriters—The Reason and the Remedy," sent free, together with details of our plan. Then you may order a FREE Trial Oliver.

Canadian Price, \$72

The Oliver Typewriter Co.

2403 Oliver Typewriter Bldg., Chicago, Ill.

(48.03)

THE OLIVER TYPEWRITER COMPANY, 2403 Oliver Typewriter Building, Chicago, Ill.

Ship me a new Oliver Nine for 5 days' free inspection. If I keep it, I will pay \$57 at the rate of \$3 per month. The title to remain in you until fully paid for.

My shipping point is _____

This does not place me under any obligation to buy. If I choose to return the Oliver, I will ship it back at your expense at the end of five days.

Do not send a machine until I order it. Mail me your book—"The High Cost of Typewriters—The Reason and the Remedy," your de luxe catalog and further information.

Name _____

Street Address _____

City _____ State _____

Occupation or Business _____



The Story of Cradock, Va.

(Continued from page 160.)

they are living up to it every day in the week.

Before actual building operations could be begun on the permanent work extensive temporary buildings had to be created. A central office building, numerous storage houses, a complete saw mill, temporary housing for the laborers and many smaller buildings sprang up over night. All trees on the site were boxed to prevent injury, and fencing was placed around important sections. At the same time work on barracks, to care for 3,000 workers, with mess halls, canteen and other service buildings, was begun, and now all are completed. These barracks, by the way, are the last word in this type of housing. They are heated, have running water and shower baths, and everything is comfortable and sanitary.

A novelty that has attracted wide attention in the building world is the central concrete plant, which supplies concrete for foundations. This plan eliminates the numerous small mixing machines which otherwise would be required. These machines each require many hands and involve waste of time and material, as well as duplication of handling raw material and finished concrete. So it was decided to build a large mixing plant in the center of the grounds, and distribute the concrete by means of small dump carts hauled by the fast little caterpillar tractors. Wise builders wagged their heads doubtfully and opined that it could not be done. But "THERE IT IS," and a wonderfully efficient labor and machine-saving innovation it has proved to be.

As a sort of "Morale stimulator," the contractors have built a tower on their office building, on which has been installed a huge clock marked in colors to show daily progress on the work. This clock can be seen from all parts of the work, its hands pointing, day by day, under the folds of "Old Glory," which flies from the top of the tower, to what has been done each twenty-four hours.

Unprecedented Speed in Permanent Construction

Once the temporary work was completed, construction of the permanent houses was begun. Indeed the carpenters have followed close upon the heels of the excavators, and as this is written, over 200 houses have been "framed," with many under roof and ready for interior completion. An idea of the speed with which Cradock is being pushed, despite a marked and aggravating scarcity of labor, may be gathered from the work on a group of seven apartment buildings, totaling 104 four-room apartments. Foundations for this group were begun on October 23rd. On November 10th, one building was completed with plumbing, running water, electric light, all installed and the apartments ready for occupancy. All the other buildings, as far as construction work is concerned, were practically

(Continued to page 164.)

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Big Little Profit Builders

Kees Money Making Devices for Hardware and Building Material Dealers

Send for List and Samples to Dept. 552.

Kees

Metal Barn Battens for Vertical Siding

Will make a hit with your customers. Show them how they'll add durability to barn, chicken house, granary or garage. Keep joints tight—rat and weather proof—make buildings warm.

Made of tight coated Galvanized iron. Lengths 5 to 12 ft. Every length straight and perfect

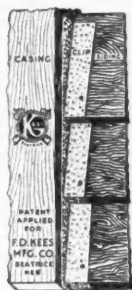
How They Work



Before and After Siding Shrinks.

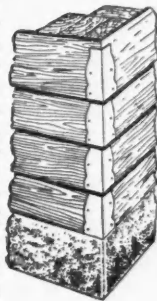


Kees Metal Building Corners Will Save You Money



Easily applied by common labor—costs no more than corner strips, require less work to put on—make a warp-proof joint. Patterns plain—look like mitred corner without expense of beveling siding.

Made for all widths Lap Siding and for Nos. 106, 109 and 117 Drop Siding.



Try Them On Your Next Job. If Your hardware and lumber dealers do not carry them, write us.

F. D. Kees Mfg. Co. Beatrice, Nebr.

Carpenters Wanted as Special Representatives

Carpenters and others are earning big money. Right in your line. Fenton, of Indiana, made 400 sales in one week; Wood-ard sold 47 the first day. Sell

The Henry Weatherstrip

for bottom of doors and hinged windows. A perfect protection against cold, snow, rain, dust. Approved by architects, carpenters and builders wherever known. Now is the time to start.

Send Now for Money-Making Plans

THE HENRY AIRTIGHT WEATHERSTRIP CO.
510 Elm Street, Crawfordsville, Ind.



PREPARE NOW For Your Spring Weather Strip Business

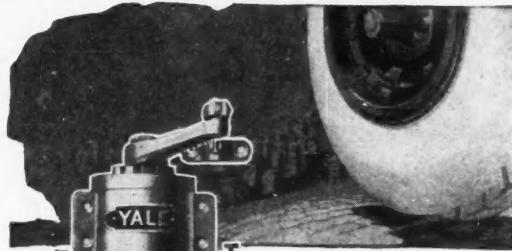
ANGELL WEATHER STRIP is made in all standard sizes of windows and doors, Brass Thresholds, Spring Bronze, Felt Door Bottoms, Automatic Door Bottoms, planes for installing and all other supplies.

We sell to the retailer; we do not installing ourselves.

GEORGE ANGELL COMPANY

400 Penobscot Building

DETROIT, MICHIGAN



A shock absorber for the door

THE Yale Closer absorbs the shock of the violently closed door. It acts as a cushion between the door and the jamb as the pneumatic tire cushions the auto from the uneven road.

The Yale Door Closer is so sound mechanically as to necessitate practically no attention after installation.

Yale Door Closers are necessary and should be specified for certain doors in the home, such as entrance, den, nursery, kitchen and pantry doors.

Our Door Closer consulting department is at your service

The Yale & Towne Mfg. Co.

9 East 40th Street

New York City

Chicago Office:

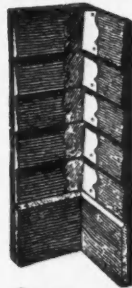
77 East Lake Street

Canadian Yale & Towne Ltd.

St. Catharines, Ont.

Chief Metal Building Corners

Warp-Proof—Rust-Proof—Fit Anywhere



They make a corner with the smoothness and neat appearance of a "mitred corner" and save the time and labor of beveling down the siding. Made of heavy galvanized steel. Fit any corner—inside or outside and make a smooth corner that does not hold dust or moisture. Cannot warp or split, and prevents warping of the siding.

Chief Corners protect buildings from injury and are practically indestructible. Furnished ready perforated for nailing to the siding. Put on easily and quickly. Can be painted any color or left unpainted as desired.

Write for free sample and full information



SHRAUGER & JOHNSON :-: 430 Walnut St. ATLANTIC, IOWA

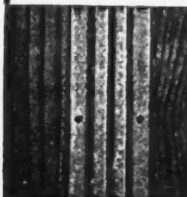
Protect Your

barns and buildings from weather and vermin. Line your grain bins or wagon boxes with

METALLIC BATTEN STRIPS

They allow for expansion and contraction of siding 5, 6, 7, 8, 9 and 10 foot lengths—interlocking joints. Easily cut; no waste. Nailed directly to siding.

Write for free sample
Metallic Batten Company
Owensville, Indiana



End View Showing Batten Open.—Pat.

The Story of Cradock, Va.

(Continued from page 162.)

completed on the same day, and turned over to the plasterers, plumbers and electricians.

This group of apartment houses marks a new departure in industrial housing. They are two-story buildings, each containing commodious four-room apartments, with all modern conveniences. They are grouped around a spacious, well-wooded court for the tenants.

Speed Despite Labor Shortage

One of the many "speed" devices is the mill where all framing timber, exterior and interior trim and all door and window frames are cut so that the carpenters on the houses have only to assemble the various pieces and secure them in place. This elimination of petty cutting on the work saves an enormous amount of time. Another speed device is the use of temporary platforms upon which lumber is loaded from the railroad cars, and is rolled on the motor trucks, thus eliminating the time that has been the rule when a truck waits for its load. A conservative estimate of this scheme shows that one truck will do the work that would require four if the old method were used.

Practical Results

The combined efforts of all organizations affiliated with this project are producing a city that will provide better homes than the workmen have occupied in the past, and the cost is so low, notwithstanding the high

quality of the work and the high prices of materials and wages, that the Government will be able, if it chooses, to transfer the property to private owners at a profit. This gratifying situation will be made possible by the gigantic scale of the project and the unusually effective co-operation between the Housing Corporation and the contractor.

After this project has become a live addition to the community a survey of conditions here and in all other cities where housing for war needs has been built will prove very interesting in a sociological way to the general public as well as to housing specialists. It is well to consider the benefits that will accrue locally from these new cities and communities, not only to the workers and the manufacturers, but to the cities themselves. Improved conditions are already apparent and new ideas of civic pride and organization are bound to spread beyond the confines of these war-emergency towns. The large scale of the projects, as compared to previous private speculative developments, combined with an appeal to patriotism, has afforded the opportunity of engaging high-grade specialists, working co-operatively to an extent that professional jealousy and the lack of an urgent crisis had largely prevented before the war, with the result that better homes have been provided than had ever been attained in pre-war construction of this type. And this has been done economically and upon a sound and practical basis not-

(Continued to page 166.)



Your
Catalog
is waiting
for you

Willis Products Can Boost Your Profits

We know it and you should know it also

Thousands of Contractors and Builders have profited by our special service. Try it. Others have and liked it—so will you.

Your New Copy

of our large illustrated catalog, which tells about the entire line of Sheet Metal Building Materials is here waiting to be sent to you postpaid immediately on your request.

When you are making up your estimates you should have a Willis catalog at your elbow to give you exact cost and sizes. Eliminate guesswork.

A Willis Skylight

is always right. All easy-to-get-out-of-order parts have been left out in its manufacture. A hammer and screw driver puts them up. You need no soldering outfit. All designs and sizes. Everyone guaranteed not to Sag or Buckle.

Remember it is free—we give it to you. Request your copy at once.



Willis Turret Skylight

Willis Mfg. Co.

Galesburg - - - - Illinois

Wire Window Guards



Counter Railings
Elevator Enclosures
Tubular Hand Rails
Brass and Bronze Work

DON'T FAIL
to get our catalog and full information for your own benefit!

The Cincinnati Mfg. Co., Cincinnati, Ohio

Badger

Sheet Metal Building Specialties

We make a full line of **QUALITY** sheet metal products including:

Corrugated Roofing and Siding, Stamped Steel Ceilings and Shingles, Eaves Troughs, Conductor Pipe, Finials, Cupolas, Ventilators, Hog House Skylights, Ridge Rolls, Gutters, Corners, Rock Face, Brick Face and Weather-board Siding.

Write for Catalog showing complete line. Badger products are guaranteed to give you satisfaction and save you money.



BADGER CORRUGATING CO.
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LA CROSSE WISCONSIN



Provide All Your Buildings With "ROYAL" VENTILATORS



They are best to use on Cattle and Dairy Barns where lots of fresh air is necessary to insure healthy cattle and milk that is free from odors.

Fresh air is the greatest enemy to disease and decay. Hay and grain keep better in ventilated barns. Factories, schools and theaters require perfect ventilation. Supply it with ROYAL Ventilators.

Catalog and particulars on request
ROYAL VENTILATOR CO.
417 Locust St., Philadelphia, Pa.

CHIEF ALL-STEEL CUPOLA

New-improved, scientifically designed ventilating cupola for all buildings. Up-to-date in design, material and construction. Used and approved on hundreds of farms. Made of heavily galvanized steel with base strongly braced. Can't rust, rot, or blow off. Absolutely storm-proof and bird's-nest proof.

Easy to Install—Sure to Please Your Customers

Chief Cupola saves time and labor installing—base bolts directly to roof and cupola bolts to the base. Only six bolts needed. Meets all requirements—insures adequate ventilation—satisfies all users. Write for full description, prices, etc.

Shrauger & Johnson Co.
430 Walnut Street, Atlantic, Iowa



\$289⁰⁰ EARNED in LESS THAN A MONTH

This Is What L. M. Francis, Penn., Earned

Not a dream—not a myth, but a reality. Mr. Francis owns and operates one of our "Ideal" Lawn Mower Sharpeners. This new invention sharpens lawn mowers scientifically—perfectly, wonderfully; does the work as nothing else can. It is

A NEW BUSINESS—BIG BUSINESS

A BUSINESS TO ENTHUSE OVER—MONEY MAKING

Mr. Francis says: "I have sharpened 289 Lawn Mowers so far this month, and intend to make it 400." He charged \$1.00 per mower. If he sharpened the full 400 mowers, he earned \$400 in one month. "IDEAL" paid for itself in less than a week; big profit first month; has the whole summer season ahead of him; keeps busy all the time. All he takes in is now his.

Earns \$22 One Day

Elmer Smiley, Albia, Ia., writes: "I have sharpened 22 lawn mowers today." — \$22.00 daily earnings is some money.

E. W. McCormick says: "Have had 'Ideal' only 15 days—sharpened 117 mowers, plenty of work ahead." That is making

\$117 in Two Weeks

A GOOD BUSINESS PROPOSITION

You want to **make money**—you want a business of your own. Go into this new business which is making money for others and will make money for you. **Wm. D. Troutner, Ill., says: "I have preference of Lawn Mower Sharpening from other towns 12 to 20 miles around." You can have same kind of business.**

You Start Now

There never was a better time to get into an honorable **Big Money Making Business** than Now. Start right in your own town. No town too small. Lawn mowers all dull—owner doesn't know where to get it sharpened. Mowing the lawn dreaded because of dull or improperly sharpened mower. Lawn mowing healthful, invigorating and pleasant when mower is "Ideally" sharpened. You do the work scientifically—you are in big demand. Every owner of our "IDEAL" Lawn Mower Sharpener is considered a benefactor to his community. He announces he is in business—specializes in lawn mower sharpening, and will call for and deliver the

LAWN MOWERS SHARPENED TO RAZOR EDGE

People glad—owners delight in mowing lawn with mower sharpened on an "IDEAL" Mower runs light—click—click—click—and the grass is cut. He ring the keen blades shave the grass as real music. Puts money in your pocket—makes friends for you—builds a business for you. Be the most popular man in your community this summer. Build permanent business for yourself. Start Now!

Write Today Get the Facts—Get OUR PROPOSITION

If you are honest we will arrange for payments. **FREE**—We have detailed illustrated book to send you. Write today for our proposition.

The Root-Heath Mfg. Co.
Dept. 26, Bell & High Sts.
Plymouth, Ohio

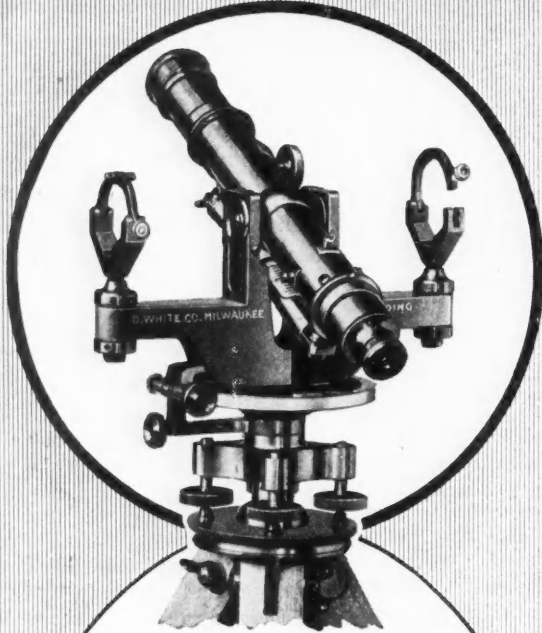
Mail it Today!



Root-Heath Mfg. Co.
Bell & High Sts.
Dept. 26, Plymouth, Ohio

Send me at once details of your complete proposition.
Name
Address

A DEPENDABLE AID TO THE BUSY BUILDER



YOU will wonder how you ever worried along without a White Convertible Level once you use one for laying out your work and checking results. The White Convertible Level is so popular among Architects and Builders and has such a **high reputation for accurate and dependable service** on the job that it is considered standard equipment for surveying work connected with building operations. The reason for this is simple enough. The White Convertible Level is different from ordinary instruments of its kind. **Study the illustration carefully!** Note the cross-bar and standards are cast integral—no loose parts—no set-screws of doubtful accuracy to fuss with in changing instrument from level to transit, or back again—**telescope never has that up-side-down appearance when in transit position.** These points and a host of others put the White head and shoulders above other levels. Don't be satisfied with an ordinary convertible level.

Buy the Best. Demand the White.

*Try-it Before
You Buy-it*

Above instrument will be sent on approval to responsible parties anywhere in the U. S. and may be returned, at our expense if found unsatisfactory.

DAVID WHITE CO., Inc.
419 East Water Street Milwaukee, Wis.

The Story of Cradock, Va.

(Continued from page 164.)

withstanding the ever-increasing cost of building materials and wages.

This war-time emergency construction is bringing to the attention of manufacturers and municipalities the fact that a sufficiency of a good housing attracts the worker and consequently draws new industries to the locality. It also furnishes a valuable criterion for industrial housing of the future. The beneficial effect of good housing upon the health, happiness and efficiency of the worker is being more generally realized. While much has been done in a short time, it may be said that we are just beginning to solve this important and difficult problem. The entire elimination of slum districts thruout the land should be the goal. Housing for war needs has shown the way as no private enterprise could have shown it. It is to be hoped that we do not drop back to our pre-war somnolence, but rather that we benefit by the providential crisis that has awakened us.



Hey There! Do You Want A Home On A Farm?

(Continued from page 28.)

A. You should be able to save the amount of the first payment out of your wages while working for the Government helping to build these settlements. The balance you should be able to pay from the proceeds from the sale of your crops.

Q. I think I should like farm life, but I don't like the idea of being too far away from other people.

A. It is the plan, if Congress passes the bill now pending before it, to build what are known as community settlements, each containing not less than 100 farm homes surrounding a town, so that you will have near neighbors, good roads over which to bring your produce to town, and a market for the sale of your produce within a short distance of your farm home.

Q. How many acres will my farm contain?

A. This will depend upon the location and kind of farming you engage in. For general farming from 40 to 80 acres each, live stock from 80 to 160 acres, fruit farms 15 to 20 acres, and truck from 5 to 20 acres.

Q. I don't know anything about farming, but would like to get a farm home. How will I learn to farm?

A. Competent instructors in farm practice will be stationed on each project to teach men like you just how to make a success of farming.


Q. You say that this plan depends on Congress passing this bill. Then, why are you asking me these questions now, before the bill is passed?

A. Because Congress has asked the Interior Department to make a preliminary investigation of possible settlements thruout the country, and also wishes to know whether, if construction of these settlements is authorized, the soldiers, sailors, and marines would be interested in securing work and homes on these settlements.

Q. Can I get any further information about the plan?

A. Yes. Fill out the post card on the last page of this booklet (see page 23), and mail it. Your name will then be on file in the Interior Department, so that you can be notified later if the plan is started. It is not possible now to say when this information can be sent

(Continued to page 168.)



SAWS

Why, man, you can't beat a **SIMONDS**

If you want a saw that will stand the wear and tear of grilling usage—if you want a saw that feels right and that will hold an edge—you want a

SIMONDS

THE OLD MAN KNOWS

He has been in the game 30 years and Simonds has been his watch-word for the past 25.

Take a tip from the *old boy* and saw the right way.

Ask your dealer to show you a Simonds—the price is very reasonable—the quality is unquestionably the finest.

SIMONDS MFG. COMPANY
 "The Saw Makers"
 FITCHBURG, MASS.
 Established 1832

Pullman Unit Sash Balance

Cost Less than Cords, Pulleys and Weights.
 Labor Saving in Installation.
 Every Balance Guaranteed for Ten Years.



PULLMAN Unit Sash Balances are especially adapted for use in School Buildings, Residences, and Factories, or wherever a smooth running, unbreakable, and practically noiseless Sash Balance is required. The Pullman UNIT Sash Balance is made entirely of steel. Over six million in use.

Hundreds of School Buildings throughout the country are entirely equipped with the Pullman UNIT Sash Balance and are giving entire satisfaction.

Pullman UNIT Sash Balances are approved by Fire Underwriters' laboratories for Fire Proof Buildings.

Write today for illustrated catalog with blue prints showing how easy to install the Pullman UNIT Sash Balances.

PULLMAN MFG. CO.
 10 Industrial St., Rochester, N. Y.

Pullmanize Your Windows

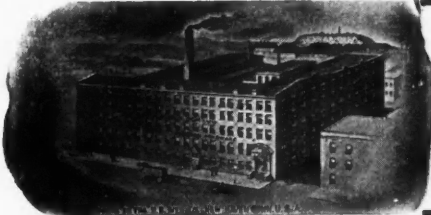


Say You Want **SHELBY GARAGE DOOR HOLDERS**

for they are built to give you service and satisfaction. The rod is $\frac{1}{2}$ inch round by 33 $\frac{1}{2}$ inches long. The brackets are made of heavy wrought steel. Easily installed; a child can operate it, and the cost of purchase is so small that it appeals to all auto owners. Will hold the door open and lock it when closed. Ask about them.

The Shelby Spring Hinge Co., Shelby, Ohio

Strong, Durable and Practicable



THE H. B. IVES CO.
 NEW HAVEN, CONN., U. S. A.
 ESTABLISHED 1876 INCORPORATED 1900

MANUFACTURERS OF **BUILDERS' HARDWARE**
 HIGH GRADE WINDOW AND DOOR SPECIALTIES

Write for Illustrated Folder

"STRICKLER"

HAY TOOLS and Sanitary BARN EQUIPMENT



Steel Stalls, Cow Stanchions, Litter Carriers, Feed Carriers, Watering Bowls. Every modern barn should be equipped with Strickler goods. All Carpenters and Contractors should send for our FREE CATALOG and Builder's Proposition. Write Today.

STRICKLER HAY TOOL CO., Janesville, Wisconsin

Broad Axe



The same steel in this as in the White Adze

Every carpenter knows how good our adze are

Our Broad Axes are just as good

Ask your dealer or write for catalog

THE L. & I. J. WHITE CO.
 10 COLUMBIA ST. BUFFALO, N. Y.

Hey There—Do You Want A Home On a Farm?

(Continued from page 166.)

you, and you should, of course, in the meantime not sit idly, but instead accept the best employment that now presents itself. You are urged on your return home to get in touch with the U. S. Employment Service in your locality and with your local Council of Defense, both of which organizations will gladly give you advice and assistance in securing employment now.

Now fill out the post card on the back page and mail it. You don't have to put a stamp on it. Be sure and sign your name and write plainly. But remember that this means work. This is not a bounty scheme. It will give a chance to own a farm only to those who want to work a farm.



Are You Ready Mr. Contractor?

(Continued from page 37.)

Gas Engine, Saw Rig and Hoist

The gas engine revolutionized and made building operations more efficient. It supplies the power for the hoist and elevators and much of the woodwork is now made on the job. Here, too, there is a wide choice



The Lowly Wheelbarrow—They Cost the Least and Are the Most Important of the Contractors' Equipment.

for the builder. His equipment can be as simple or as elaborate as the character of the work he does requires.

Equipment will be as necessary to the builder during the coming period of construction as it was to the Allied armies in the war. The man who is equipped will be the man who will win in the battle for more and bigger building jobs.

So let's get ready to do this work the country needs done. Let's find out about these new methods, new materials and new equipment. Then we can meet any sort of fair competition when we go after a job and know that we will be able to do it in the most efficient, and therefore most economical and profitable, way.

WE DON'T SELL SAW DUST

But Manufacture a Saw That Makes It Mighty Fast

It's the New 20th Century Ultra Speed, with the first real noticeable improvements in hand saws since they have been in existence.

We guarantee the *Ultra Speed* to be the smoothest, cleanest, easiest and fastest cutting Saw in the World, and back it to the extent of a 30-day trial against any Saw regardless of Manufacturer.

All Good Saw Manufacturers sell their product as the fastest and easiest operating saws, on a 30-day trial. But, when we all claim the same thing, how are you to know, unless you order one saw from each Firm under their guarantee, returning the ones that are not what is claimed of them.

The great cutting quality of a 7 point 26 inch *Ultra Speed* was demonstrated by cutting off a 6½x12 inch piece of timber in 67 seconds! Think of it! Try a piece of the same size with the saw you are using today and see what the result will be.

The question of steel for holding a keen cutting edge is a thing of the past. WE pay the price and get the BEST that can be obtained, heat treating it with a *secret process*, which is also one of our new discoveries.

Write for Pamphlet giving full details, such as: *The Life of the Ultra Speed, Why the Ultra Speed Saw is in Existence and 12 Reasons Why the Ultra Speed Saw is Superior to All Others.*

It will pay you to send a Post Card NOW.

ULTRA SPEED SAW WORKS

317-355 Broad Avenue
Main Office and Factory

Frackville, Penna.

