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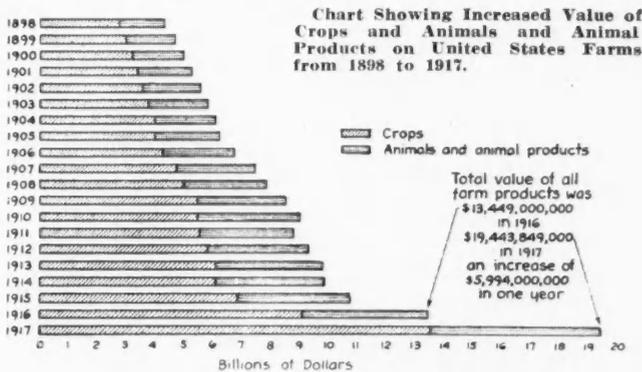
Not and Buts of Good Business

NOT long-face hard-luck stories, but Red-blood Optimism. Not surrender to conditions, but Greater Effort to Win. Not graft, but Service.



Farm Wealth Makes Big Increase

PROSPERITY in agricultural pursuits is conclusively shown in figures recently issued by the U. S. Department of Agriculture. These indicate an increase of nearly six billion dollars in the value of farm products in 1917 over the same products in 1916. Last year almost 19½ billion dollars came from the



farms. This is nine billions more than in 1915. A good portion of the profits on this gross business should be spent to stop waste and put farms on a basis where they will continue to be money-making and expense-proof when the high tide of prosperity begins to decline.

A Financing Plan

AN interesting plan for housing war workers has been proposed by Lawson Purdy, former president of the New York City Tax Department. A limited dividend corporation would be formed, to which the Federal government shall contribute four-fifths of the capital, and local capital one-fifth. The government is to receive 4½ per cent interest, and the local capital is to draw a dividend not exceeding 5 per cent. The rent should not be more than one-fifth of the prevailing wage, nor more than 10 per cent on the actual cost of the building. An amortization charge of 2 per cent would pay off the government's claim in approximately twenty-seven years, and the renters would then own their own homes. Sufficient land should be acquired by purchase or condemnation proceedings to build a complete town unit, including not only dwellings, but stores, theaters and other necessary buildings. The cost of five-room two and a half story cottages of brick and concrete with modern improvements would run from \$2,500 to \$3,000. If the rent averaged \$25 a month, or \$300 a year, it would be apportioned as follows:

Taxes, 2½ per cent.....	\$ 45.00
Insurance, repairs, etc., 2 per cent.....	60.00
Five per cent dividend on one-fifth capital.....	30.00
Four and one-half per cent interest on four-fifths capital.....	108.00
Two per cent amortization.....	48.00
Contingencies.....	9.00
	<hr/>
	\$300.00

Homes for Workingmen



Practical Plans for Industrial Housing

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

“Efficiency” as Applied to Industrial Housing

DO AWAY WITH “BED ROOMS” AND SAVE A THIRD

By E. L. McCarthy

ONE of the great problems now confronting the large manufacturing institutions of the country is the proper and adequate housing of the workmen employed at the different plants. The most

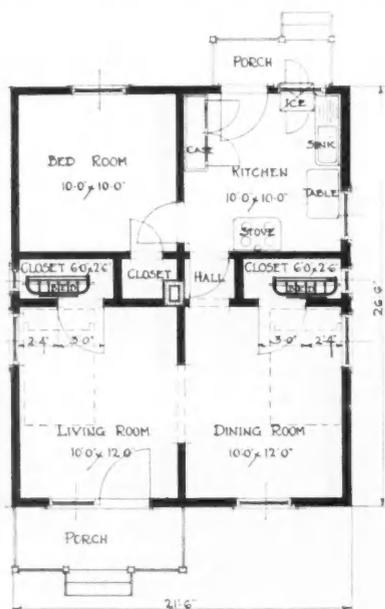
expert men obtainable are employed to develop plans for houses that will furnish maximum accommodations and at the same time be moderate in cost.

The logical and most practical solution to this problem is to analyze the old plan of housing, take advantage of the mistakes that have been made and get down to the modern basis of efficiency and economy of space.

Not so many years ago real estate sold by the acre instead of by the foot and buildings materials could be purchased at a very low price. Every family had a large house and garden; and very little thought was given to economy either in building construction or in housework.

Surrounded by such conditions, we formed the extravagant habit of building houses just about twice the size necessary in order to have two complete sets of rooms, one to occupy at night and the other to occupy during the day. At that time the modern bungalow and small cottage were practically unknown.

Today modern economic conditions have forced us to abandon our extravagant ideas and figure out how we can build more economically without sacrificing comfort or convenience. Labor and materials are very scarce and must be conserved to meet the government requirements. Houses must be built in the minimum space of time to accommodate the vast influx of work-



Six Rooms Are Compressed Into Four in This Cottage by Making the Dining Room and the Living Room Each Work Twenty-four Hours a Day Instead of Only Half Time.

men to the industrial centers. On account of the large number of houses the cost of construction must be reduced to an absolute minimum per unit.

The solution lies in the elimination of bedrooms.

This statement may sound peculiar to a great many readers who will remark, "How in the world can I get along without bedrooms?" Stop and think a minute. Can you figure out any good reason why a whole room costing from \$300 to \$600 to build should be set aside, labeled "bedroom" and then be used only a few hours at night? All day long this room stands absolutely idle, yet you must furnish, heat, light, decorate and keep it clean just the same as any other room. In other words, you are investing your money where it earns dividends only one-third of the time.

The modern builder builds for efficiency. He makes every room work twenty-four hours every day. This is accomplished by the use of the concealed bed, which eliminates the necessity of the bedroom.

The concealed bed has changed the whole idea of what a home should be. It is not a folding bed, but a full-size, all-metal bed, standard in every dimension, so constructed that during the day when it is not needed it is swung into a clothes closet and concealed behind a door only 3 feet wide. When night comes in ten seconds' time and with scarcely any effort, the bed is swung out of the closet and lowered for use in the adjoining room. Any living room or dining room can be almost instantly converted into a sleeping room. Instead of sleeping in small crowded bedrooms, the largest, best ventilated rooms in the house are used for sleeping purposes at night, when they are no longer needed as living rooms.

Study the accompanying plans for a moment: Above is shown the modern three-room house with five-room accommodations made possible by the use of two concealed beds, one in the living room and the other in the dining room. During the day you have the regular living room, dining room and kitchen. At night you

have a kitchen and two large, airy sleeping rooms. Only three rooms to furnish and keep clean, but just as comfortable as a five-room house. This little cottage is only 18 feet wide and 30 feet long, yet the living room is 17 by 10 feet, the dining room 10 feet 6 inches by 9 feet, and the kitchen 10 feet 6 inches by 7 feet 6 inches. Even in such a small house there is no feeling of being overcrowded, all on account of the arrangement.

The saving in construction between this house and one of five rooms makes it worthy of much consideration.

The other plan is for a four-room house with six-room accommodations. Two concealed beds are used in this house and one regular bedroom is provided. The same ideas are carried out as in the three-room with the exception that no bathroom is provided. This house with six-room efficiency is only 21 feet 6 inches wide and 26 feet 6 inches long, yet it furnishes perfect sleeping accommodations for six people without overcrowding.

The concealed bed is no longer an experiment. It is a pronounced success and is in general use today in every section of the country. No other one idea has been so instrumental in reducing construction cost and furnishing maximum accommodations in a minimum space.



Here is a Modern Three-Room Cottage with Five-Room Efficiency Due to the Disappearing Bed in the Living Room and in the Dining Room.

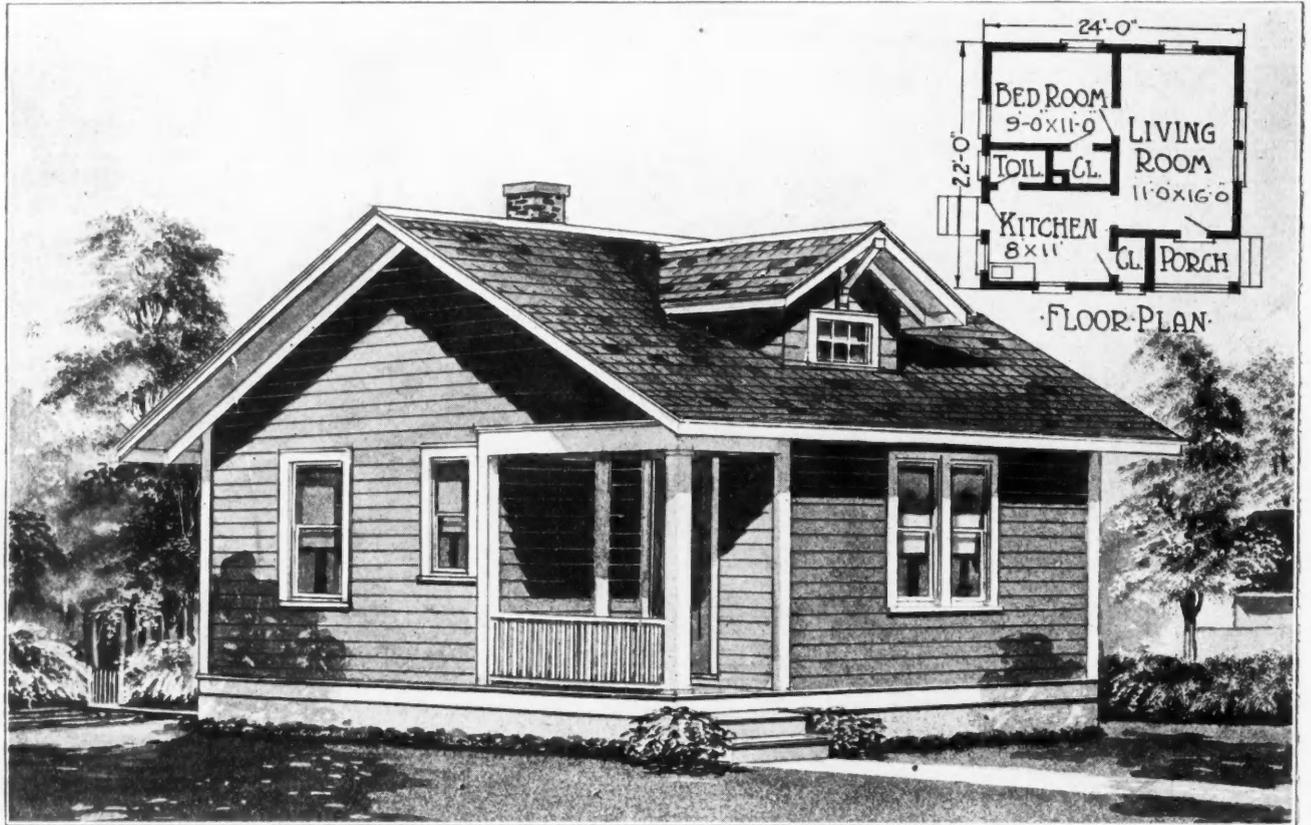


During Day Bed Put Away.

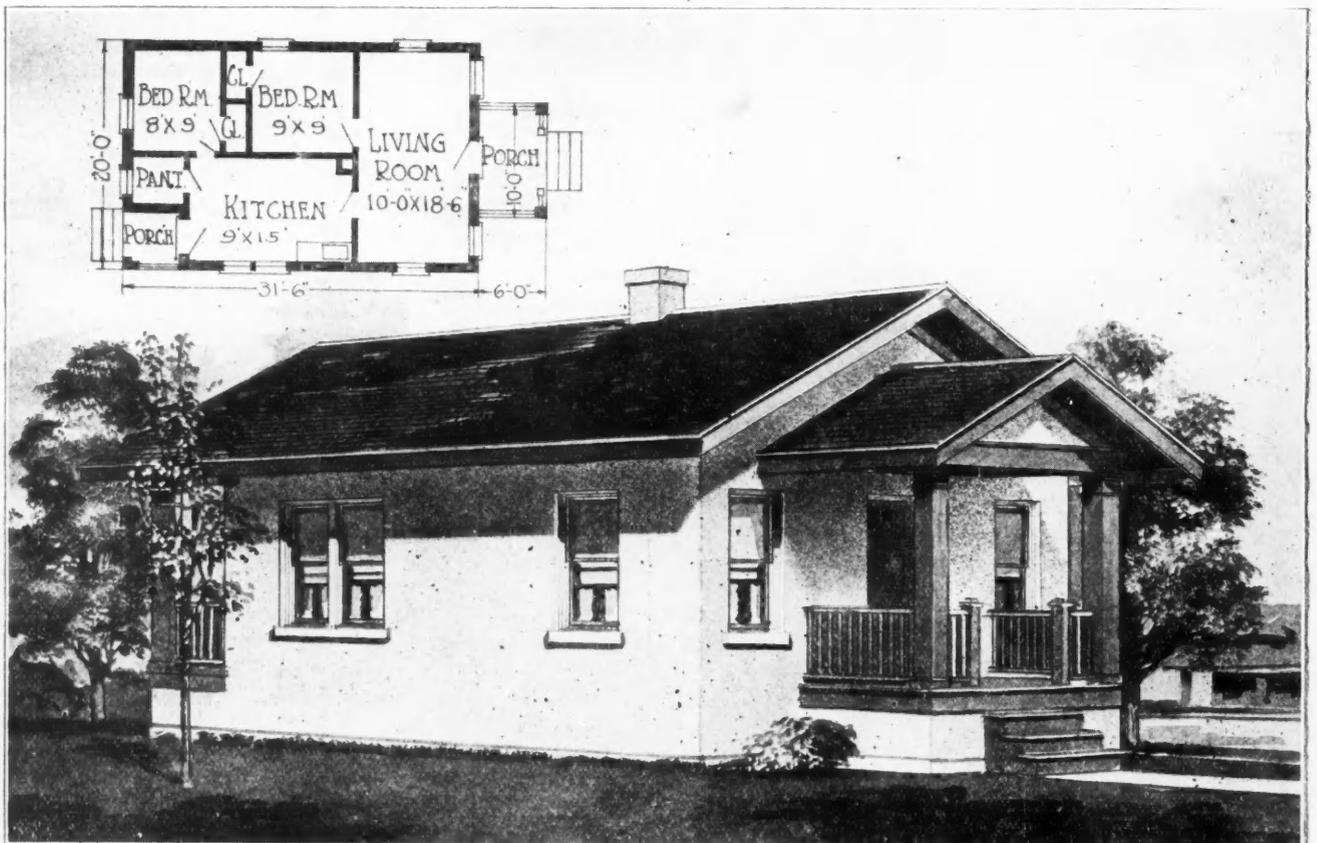


At Night Good Bed in Sight.

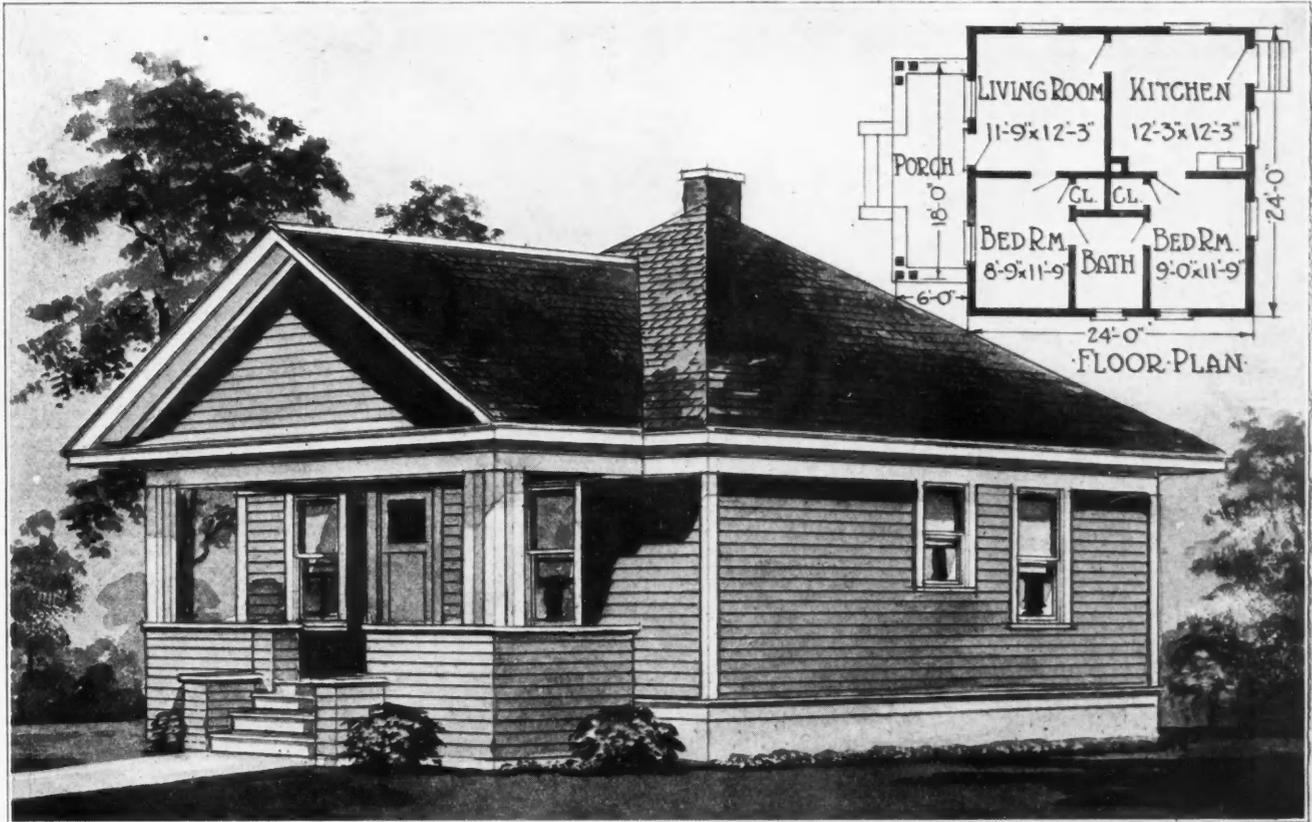
HOW THE LIVING ROOM IS TURNED INTO A PERFECT BED ROOM BY OPENING THE CLOSET DOOR AND SWINGING OUT THE BED.



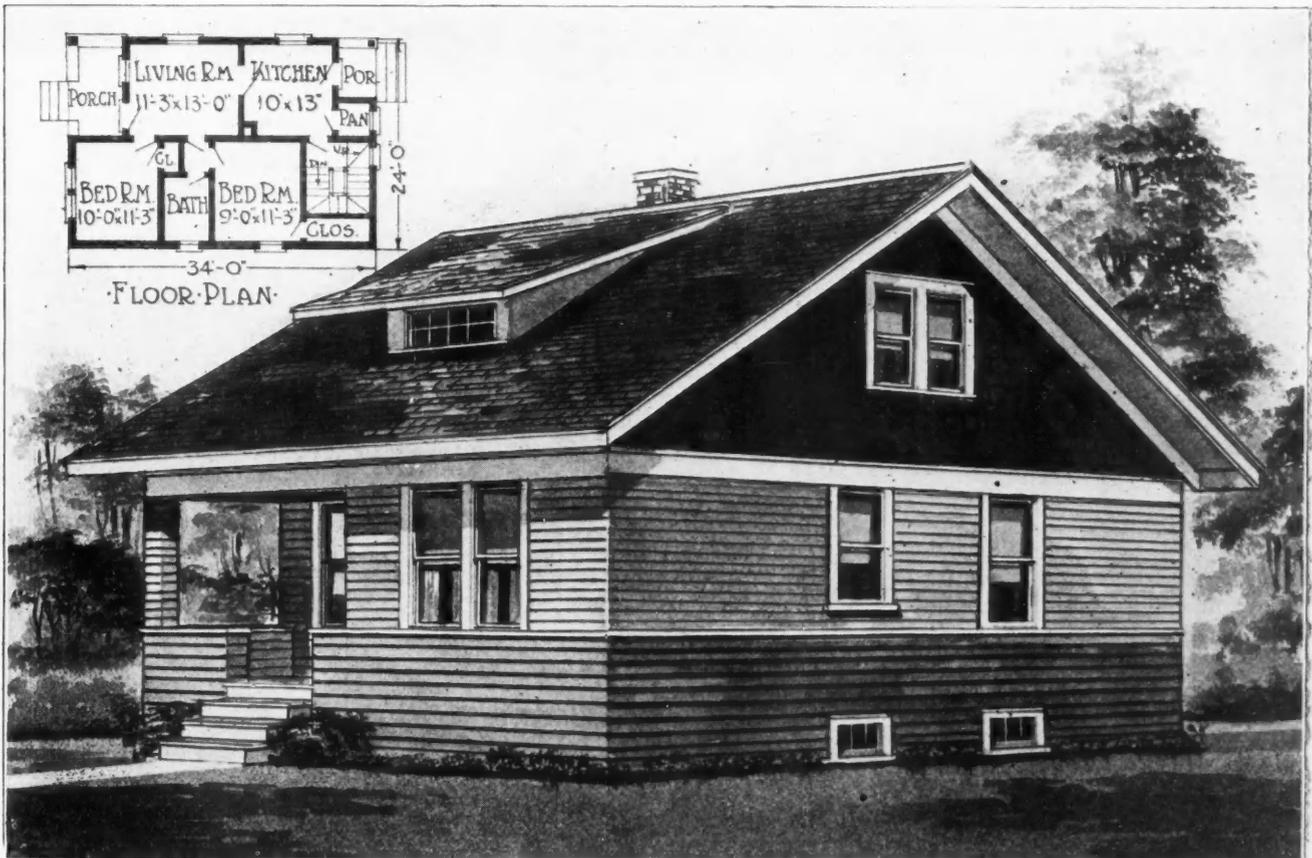
THREE-ROOM FRAME COTTAGE. Here is a trim, snug little home of the kind the people want. Size 22 by 24 feet. It is laid out for maximum economy, but will serve a small family very well.



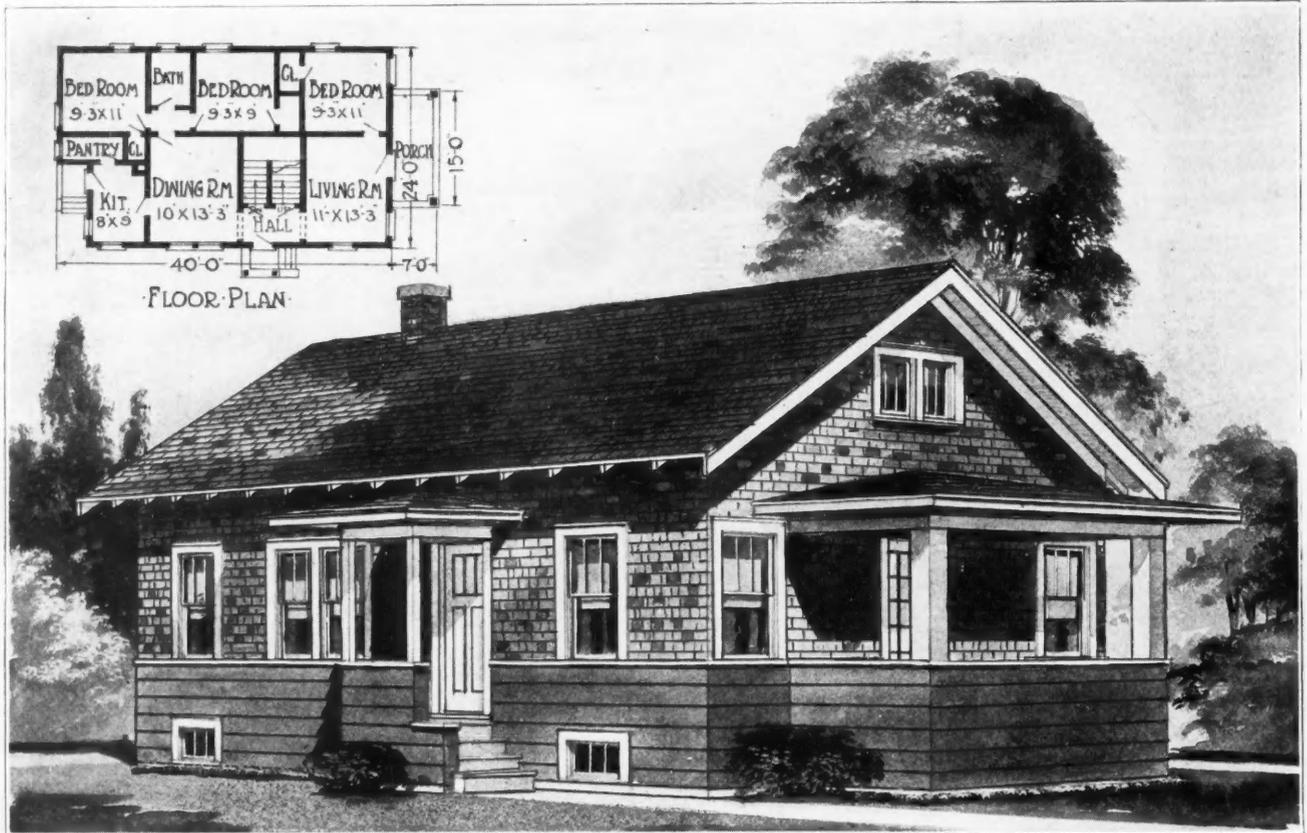
FOUR-ROOM COTTAGE OF HOLLOW TILE STUCCOED. This is narrow lot design, only 20 feet in width by 31 feet 6 inches in length. The living room is of generous size and the kitchen is large enough to serve as dining room also. There are two bedrooms.



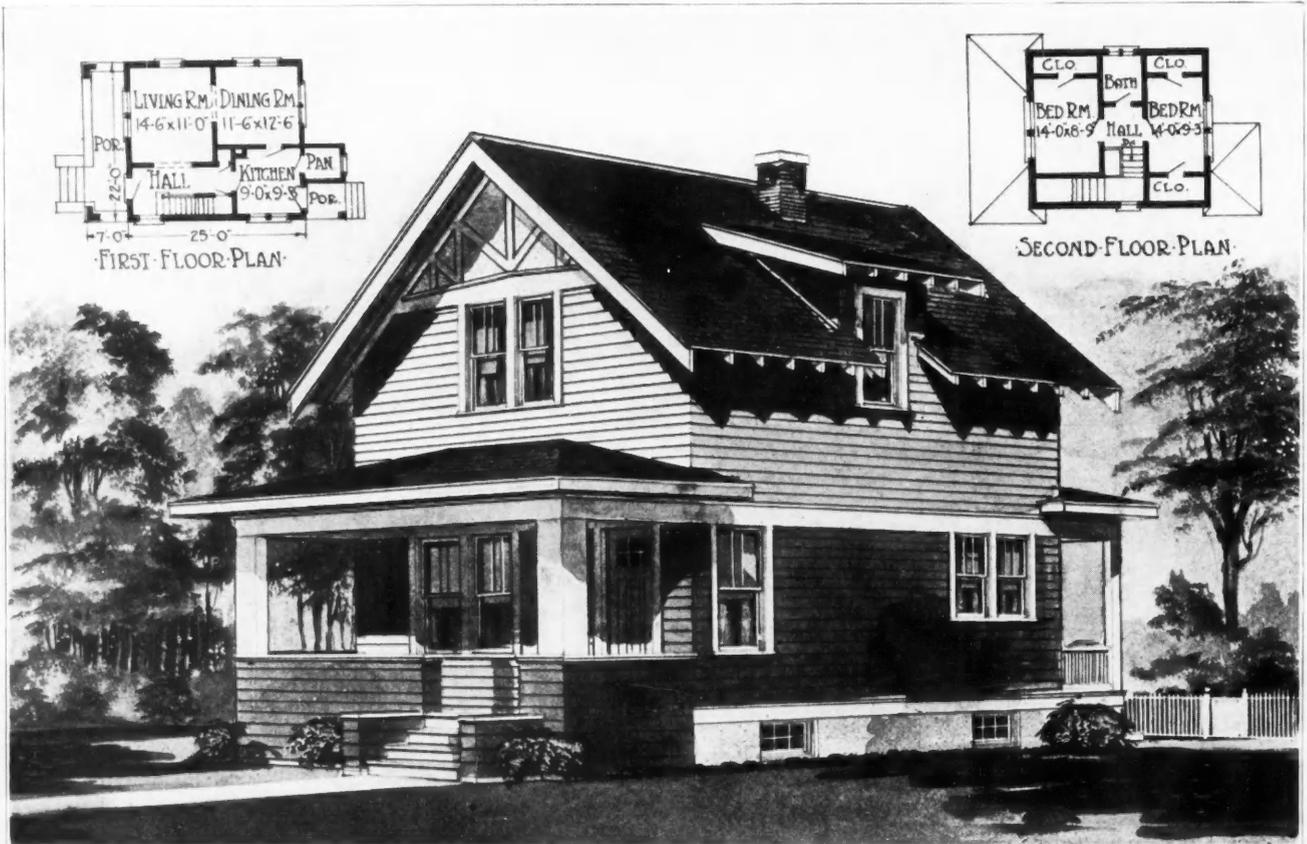
SQUARE FRAME BUNGALOW. This design shows four rooms and bath. Size on the ground 24 by 24 feet. Kitchen serves also as dining room. The heavy porch is desirable for the architectural effect.



BUNGALOW TYPE COTTAGE. This design, 24 by 34 feet, gives four rooms and bath nicely arranged. Two closets and a pantry are provided. Wide boards for the foundation with narrow siding above and gables shingled, make the exterior attractive.



SIDE ENTRANCE SHINGLED COTTAGE. This is a larger house, size 24 by 40 feet, containing six rooms and bath, besides some space upstairs. Entrance is at the side; private porch in front.



TWO-STORY FRAME HOUSE. Here is an economical design, only 22 feet wide by 25 feet deep, not including porches. There are three rooms downstairs, two rooms and bath upstairs. It gives variety to any industrial village to work in some two-story houses.

Industrial Housing to Aid War Activities

Consult us about any housing project that is under way or contemplated in your locality.

We are especially well equipped to help our readers with suggestions, ideas and layouts for industrial villages, groups of homes or single dwellings for workingmen. We have a remarkable collection of designs suited to all localities and for any climate.

We can furnish any housing organization, corporation or contractor complete information on any type of home, from temporary barracks or bunkhouses to up-to-date, comfortable, well-equipped residences.

If coupon below does not completely cover the information needed for any Housing Project, write full particulars on separate sheet and mail it, together with coupon, to

AMERICAN BUILDER

1827 Prairie Ave.

Chicago, Ill.

CUT OR TEAR OFF COUPON

In your town is there a shortage of Workingmen's homes? _____

If so, what is the cause? _____

Give names of corporations interested in housing employes? _____

How many new homes are needed? _____

Size of Houses wanted (number of rooms)? _____

What type of construction? _____

Have plans and specifications been prepared? _____

What movements are under way to supply these needed homes? _____

Names and addresses of men in charge of such housing work? _____

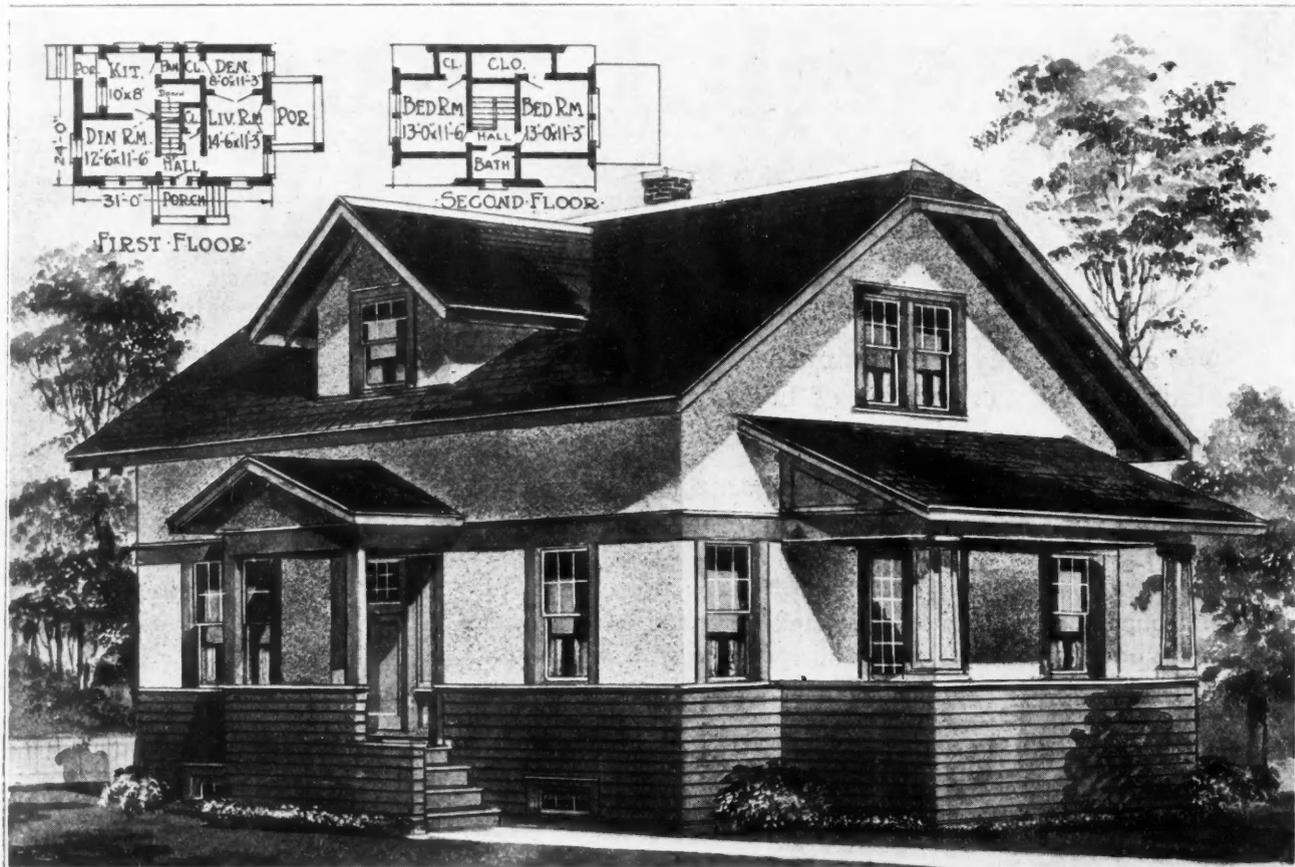
Will housing be permanent or temporary? _____

Houses for rent or for sale? _____

What other necessary buildings besides dwelling houses will be put up? _____

By _____ Business or
Name of Person Furnishing Information Official Position } _____

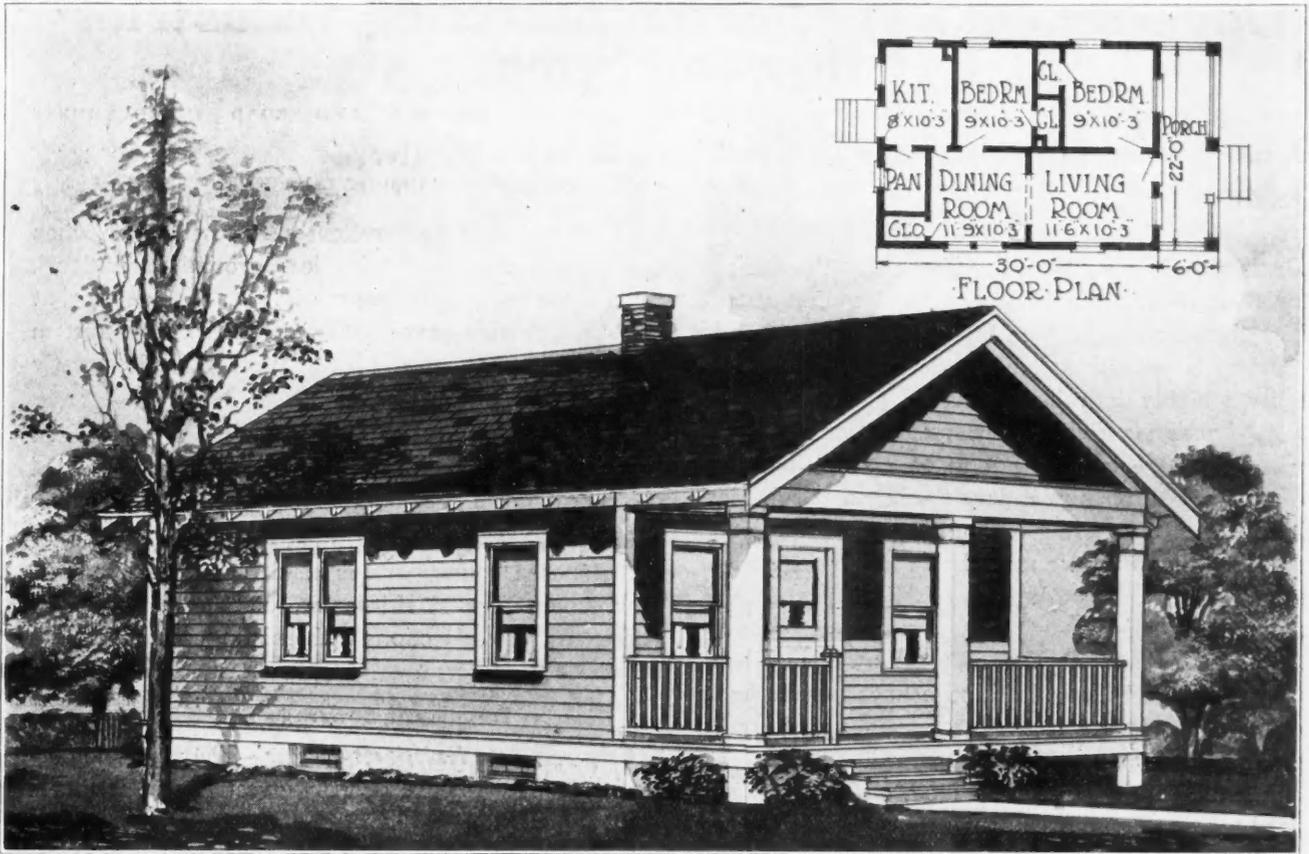
Address _____



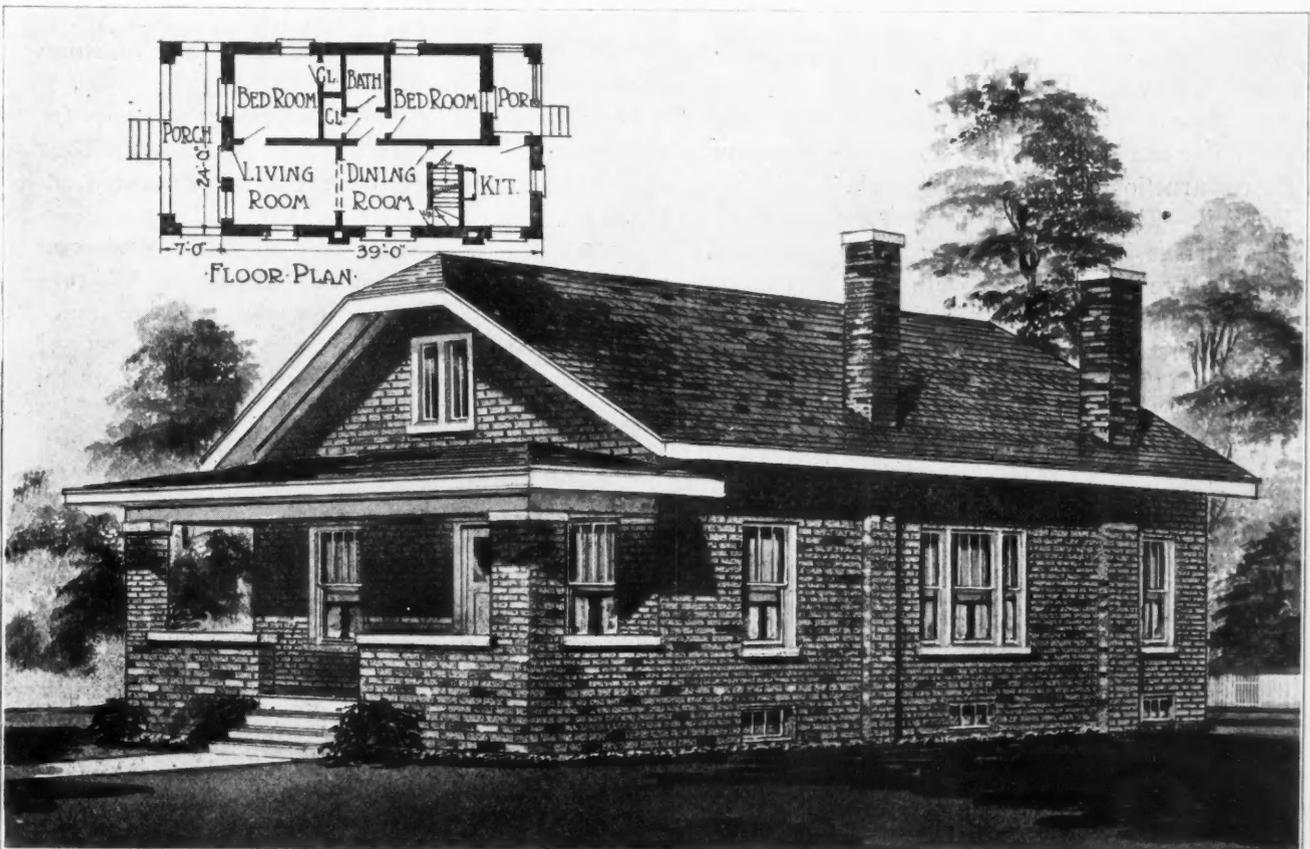
STORY-AND-A-HALF STUCCOED BUNGALOW. Here is a good looking modern design, containing four rooms downstairs, and two rooms and bath upstairs. Size 24 by 31 feet. Exterior finish cement plaster with creosoted boards for foundation.



THREE-ROOM SHINGLED COTTAGE. Here is a little gem. Size is only 20 by 22 feet, but no space is wasted. A pleasing exterior is secured at small extra expense.



FRAME COTTAGE OF FIVE ROOMS. This is what the people want and it doesn't cost much. Size 22 by 36 feet. The rooms are small, but well arranged.



BRICK BUNGALOW OF FIVE ROOMS. Here is a substantial home of modern arrangement and appointments. Size 24 by 46 feet. Five rooms and bath downstairs, and usable attic space above.

Government's Advice on Selecting Industrial Housing Sites

RECOMMENDATIONS COVERING WATER SUPPLY, DRAINAGE, SEWAGE DISPOSAL AND ROAD IMPROVEMENTS

Compiled Under Direction of John W. Alvord

Engineering Division, Bureau of Housing and Transportation, U. S. Dept. of Labor

GENERAL CONDITIONS TO BE OBSERVED

Drainage—It is important to notice that the site can be well drained to ample depths required for cellars. High, slightly rolling or gently sloping land at least 15 to 20 feet above an available outlet in the immediate vicinity is highly desirable and ideal.

Low Lands Available—Low marshy land with no marked drainage lines is not to be entirely avoided, because it can probably be developed, but at considerable expense for grading or pumping the sewage and drainage, which expense must be added to the cost of the land and should be kept in mind for purposes of comparison.

Marked Natural Drainage—Gently sloping land, with well marked natural drainage lines traversing it, is desirable, as the cost for natural drainage is lessened and desirable open spaces are increased.

Broken Land—Very broken land, with accordingly rugged topography, all requiring a great deal of heavy grading to render it habitable, is to be avoided for present purposes.

Desirable Sandy Land—Sandy soils, with low ground-water level and good outlet, are desirable, altho expensive to develop fully. The disadvantage of expensive black soil importation offsets in part the naturally good drainage, dry cellars, and cheap storm water removal available.

Undesirable Sandy Land—Sandy soils with high ground water and poor outlet facilities are expensive, for the construction of underground work.

Clay Soils—Close clay soils are not entirely desirable, as surface drainage must be largely increased, especially where steep slopes prevail. Stiff clay makes for expensive pavements, imperatively needed, and often cellar drainage must be especially provided.

Gravels and Sands—Sandy gravel, even containing

some clay, makes an excellent site, particularly when porous and combined with low ground-water level. Such a site needs a minimum of street pavement or, at best, inexpensive pavement, and the drainage system will be much cheapened. Excavation is also less costly than in some other soils.

Sites Best for Streets—The topography best suited for streets will furnish grades not less than 0.3 or 0.4 per cent and not greater than 4 per cent.

Corporate Limits—It is important to note whether the proposed housing site is inside corporate limits of the municipality and, if it is not, to ascertain possibility and terms for connections with existing municipal public utilities.

Important Sewerage Details

Connection to Existing Systems—The available outlet for the sewers must be fully investigated. If this is thru an existing sewer in a neighboring sewer system, ascertain if it is large enough, where it empties, and what, if anything, it imperils. Report type of sewer system, whether sanitary, combined or storm water.

Note approximate drainage areas, direction of flow and relative surface elevations, with particular reference to the necessity and approximate size of storm sewers and open ditches.

Long Outlet—If long outlet sewers are necessary for connection with neighboring sewers, ascertain their cost and how this may compare with other possible outlets.

Legal Status—Investigate if local sewers in adjacent systems can be legally used without payment. If proposed housing quarters are outside corporate limits, can connection be made with sewers in the corporation?

Special Assessment Laws—Always check general



This Entire Village Was Equipped with Chemical Toilets in Record Time, and It is Only One of Over a Dozen Cotton Mill Towns Similar

statements about the use of adjacent sewers by consultation with the city authorities and particularly see the special assessment laws and ordinances by which such sewer districts were formed and such sewers paid for.

Constructive Questions—Ascertain soil conditions as to cost of construction on the proposed site. Will the banks stand up alone? To what depth? Quicksand? Rock? Ground water?

Local Material—Are there local supplies of building material? Lumber? Cement? Sand? Gravel? Broken stone? Prices?

Local Contractors—Are there local contractors and builders? What equipment is available, such as trench machines, concrete mixers, grading outfits, steam shovels, teams, motor trucks? Find recent contract prices for sewers, paving, curbs and sidewalks.

(Continued to page 118.)

Chemical Closets for Industrial Villages

HOW THE SANITATION PROBLEM IS QUICKLY AND CHEAPLY SOLVED

By H. B. Milward

ONE of the big achievements in the field of waterless toilets has been the speeding up of sanitation in unsewered villages—particularly industrial housing villages. The accompanying panoramic picture of a Southern cotton mill town is an illustration in point. One of the prominent chemical closet manufacturers provided the equipment, installed the outfit, and had everything in running order in about three weeks, finishing by organizing the necessary service for emptying and recharging the chemical tanks when they should require it.

When such an achievement is compared with the usual progress of a water draining undertaking, with the sides of the roads heaped up for many weeks with piles of excavated dirt, the advantages do not need elaborating upon. The achievement is a striking evidence of the success of this company in overcoming the difficulties usually attending the installing of sewage disposal, and simplifying the apparatus and installation to a great degree.

The outlook for improved sanitation in rural communities is vastly bettered by the waterless toilet campaign, begun about eight years ago. Scores of industrial villages are now equipped like the one illustrated, and the movement is spreading rapidly, especially as the military activities of the country call for quick development of housing villages.



A Typical Installation of Chemical Closet in a Cottage.



provided for. This Means of Supplying Sanitation Quickly and Inexpensively in Unsewered Localities Is Attracting Favorable Attention.

Some Community Buildings Needed in Connection with Industrial Housing

A GOOD many of the big industrial plants for the manufacture of war supplies are being put up in more or less isolated locations, removed from any city. The old way was to let a boom town of shacks and cheap store buildings spring up around the plant. Today we are handling this problem better. In spite of the rush for war preparation, we are taking thought to lay out these new industrial villages along improved town planning lines.

Not only are homes for the workmen being provided, but also the several buildings that go to make up a complete town, such as school houses, theatres, recreation centers, business buildings, etc.

We are privileged to illustrate on this and the three pages following, the buildings of this nature planned and built by the Traylor Shipbuilding Corporation at Cornwells, Pa. These show remarkably good architecture and their construction is of unusual interest, being cement plaster "shot" into place by a special pneumatic placing apparatus. While these buildings

may be said to be permanent, they are of inexpensive construction, the wall being simply 2 by 4 studs lathed and plastered inside, and outside covered with tar paper, over which woven wire fabric is applied to serve as a reinforcing for the exterior coat of cement plaster when it is sprayed on.

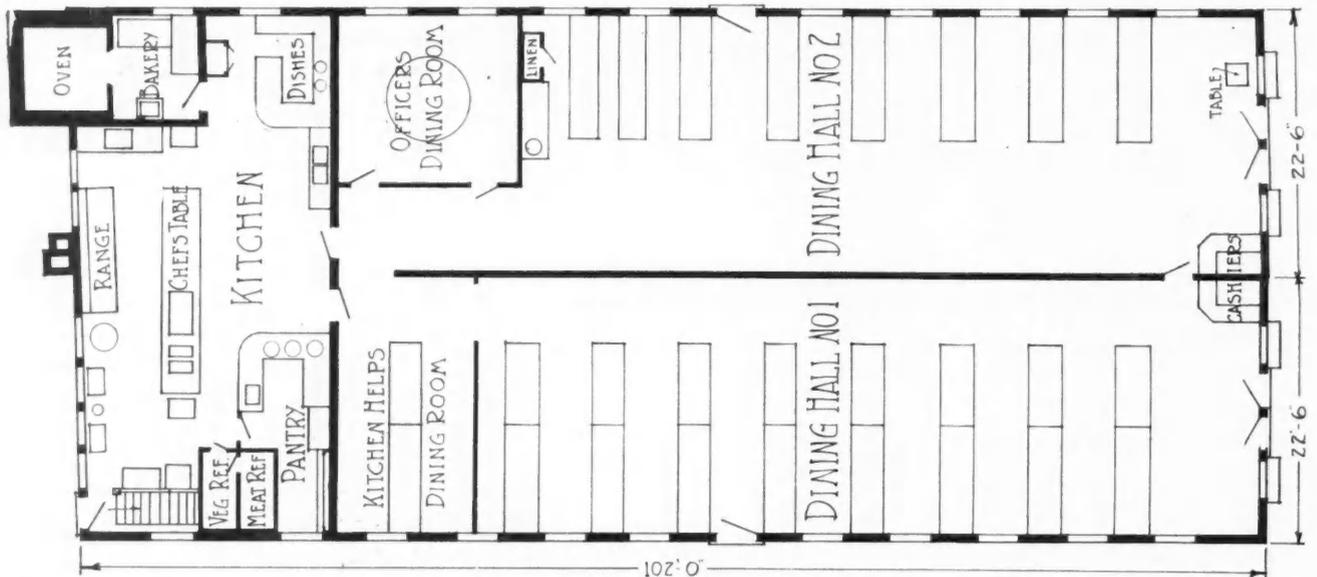


Bridgeport Gets First Housing Funds

GOVERNMENT has offered Bridgeport a loan of \$3,000,000 for the construction of houses to shelter workers in war goods plants. Many cities applied for similar aid. Bridgeport is the first to receive it, and will be the first to build under it.

The terms offered by the government are exceedingly favorable. The loan is for 15 years. It is made to the Bridgeport Housing Company, which gives a mortgage on all its property, and underwrites an agreement to repay 30 per cent of the loan at the end of seven years, and 5 per cent on the principal until the government is reimbursed.

The underwriting seems to be substantially without



The Floor Plan Shows the Restaurant Building to Be 102 by 45 Feet, Divided Lengthwise Into Two General Dining Halls. At the Rear Is a Good-Sized Kitchen, Laid Out for Efficiency.



Double Dining Hall Built for the Employees of the Traylor Shipbuilding Corporation at Cornwells, Pa. There Is No Building in Connection with a Housing Project More Essential than the Restaurant. It Can Be Made Architecturally Attractive and at the Same Time Fairly Inexpensive.



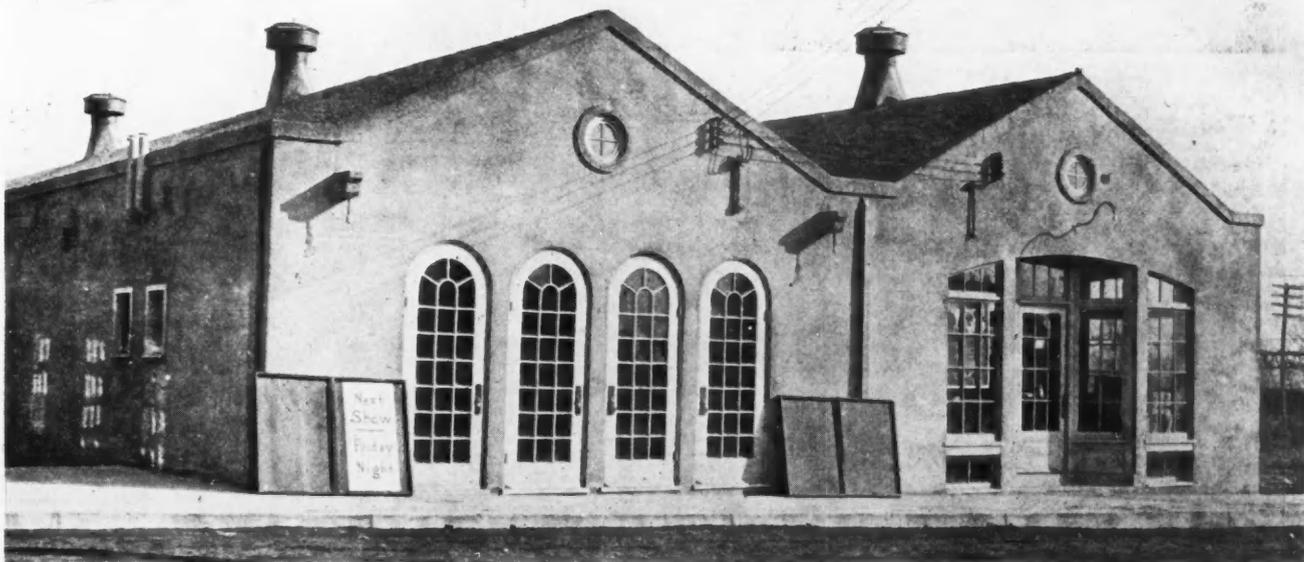
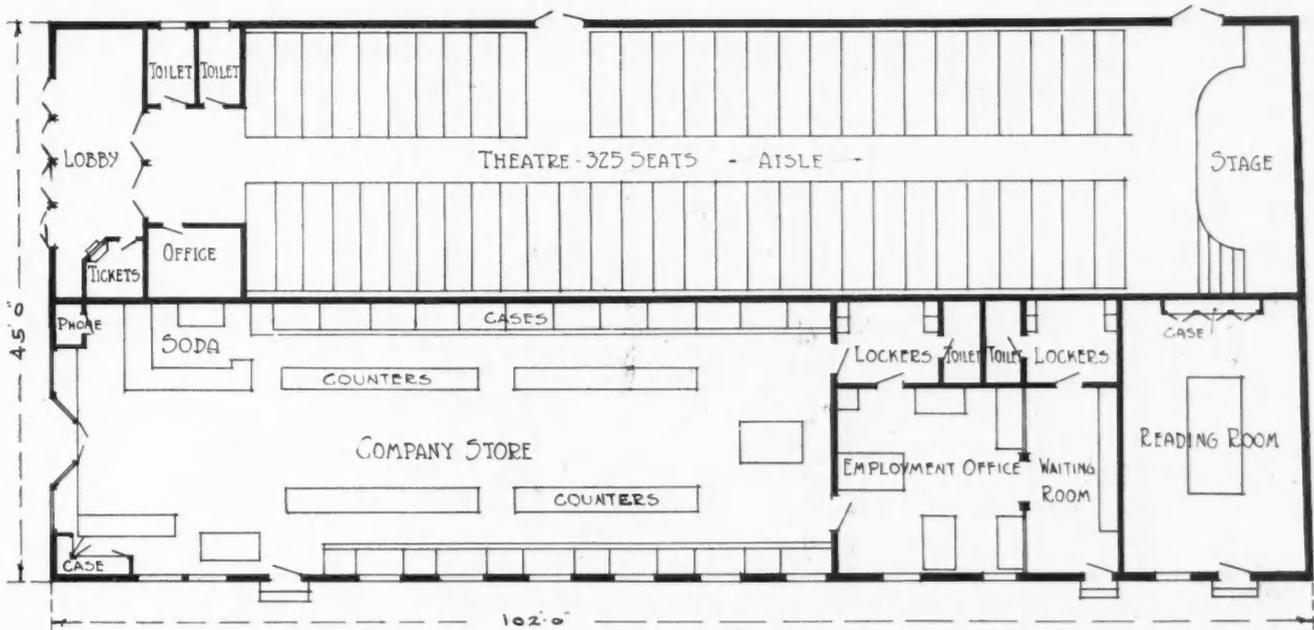
Experience Has Proved That Provision Must Be Made for Wholesome Entertainment and Recreation in Any Isolated Plant Housing Enterprise. This Photograph Shows the Company Store with Reading Room, the Moving Picture Theatre, and the Double Dining Hall of the Traylor Shipbuilding Corporation at Cornwells, Pa.

risk. The proposition offered by the government is easy in terms and certain in results. There cannot be losses, as long as America remains America.

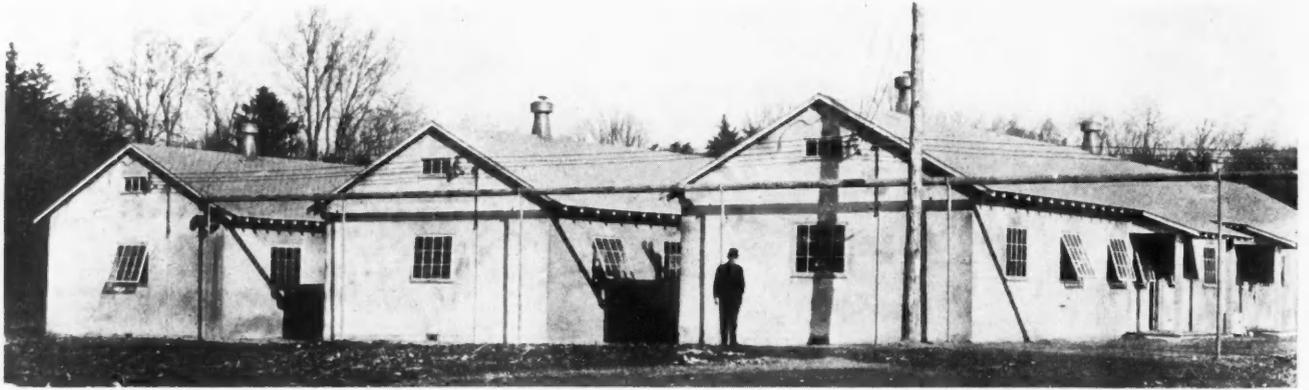
this might be arranged with the government. All such arrangements would take time.

There are many ways in which such a program as

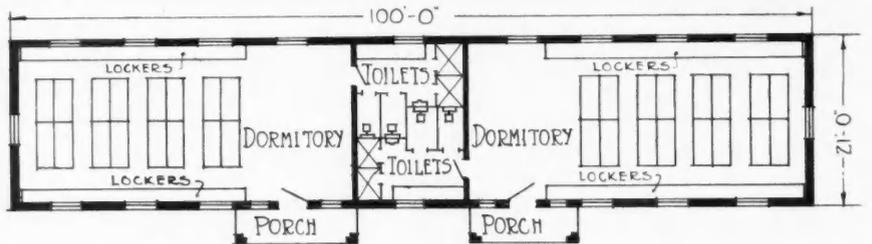
Bridgeport was fortunately situated. There was in being a concrete and substantial organization, which



The Store and Theatre Building Is Similar in Design and of the Same Size as the Restaurant Building, 102 by 45 Feet. At the Rear of the Store Are Employment Office and Reading Room. The Store is Exceptionally Well Lighted. The Theatre Is Well Laid Out and Is of Good Seating Capacity.



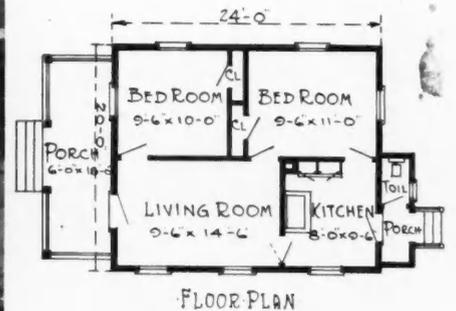
Where Company Dormitories or Bunk-Houses Are Wanted for the Unmarried Men, They Can Be Designed to Present an Architectural Appearance and the Interior Laid Out for Comfort and Efficiency Without Running Into Extravagant Expense. This Group of Three Double Dormitories, Each Measuring 100 by 21 Feet, Is Heated from the Central Steam Plant.



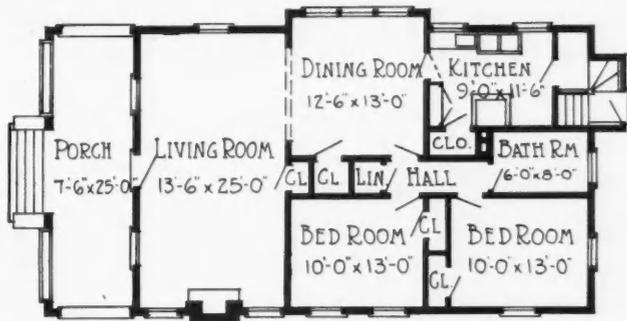
had engaged in an effort to solve the housing problem, and which was operated essentially as a non-profit and which had property and financial responsibility, taking public institution.



It was the presence of this organization which gave the government something tangible to deal with, that makes Bridgeport the first of 63 applicant cities to receive government support.



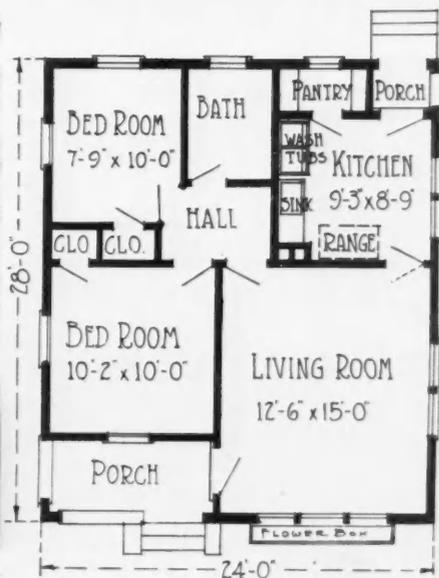
A Group of Four-Room Cottages with Floor Plan as Indicated, Built by the Traylor Shipbuilding Corporation at Cornwells, Pa., for Their Men with Families. The Rear View of One of These Cottages Shows the Trim, Substantial Character of This Development.



FLOOR PLAN



A Street of Five-Room Cottages Under Construction for the Traylor Shipbuilding Corporation at Cornwells, Pa., and "Close Up" of One, Showing Method of Construction. Metal Fabric Is Stretched Over Tar Paper and the Cement Stucco Shot in Place with a Pneumatic Placing Apparatus.



FLOOR PLAN

A Four-Room Bungalow of Considerable Architectural Merit, Designed and Built by the Traylor Shipbuilding Corporation at Cornwells, Pa. They Follow the Wise Policy of Allowing Generous Space Between the Houses. This Will Make a Street of Real Homes, and the "Narrow-Lot Blight" Will Not Fall Upon It.

AMERICAN BUILDER BUILDING PLANS



Blue Prints for Two Family Building

FOUR FULL-PAGE PLATES GIVE COMPLETE DIRECTIONS FOR THE CONSTRUCTION OF THIS FIVE-ROOM, TWO-FLAT BUILDING. CONSTRUCTION TO BE OF BRICK, STUCCO ON HOLLOW TILE, STUCCO ON METAL LATH, OR ALL FRAME

THE construction of good-looking two-flat buildings is not by any means confined to the large cities. They now dot the suburbs; and property owners in the smaller cities and towns are turning to this economical and satisfactory type of home-building improvement.

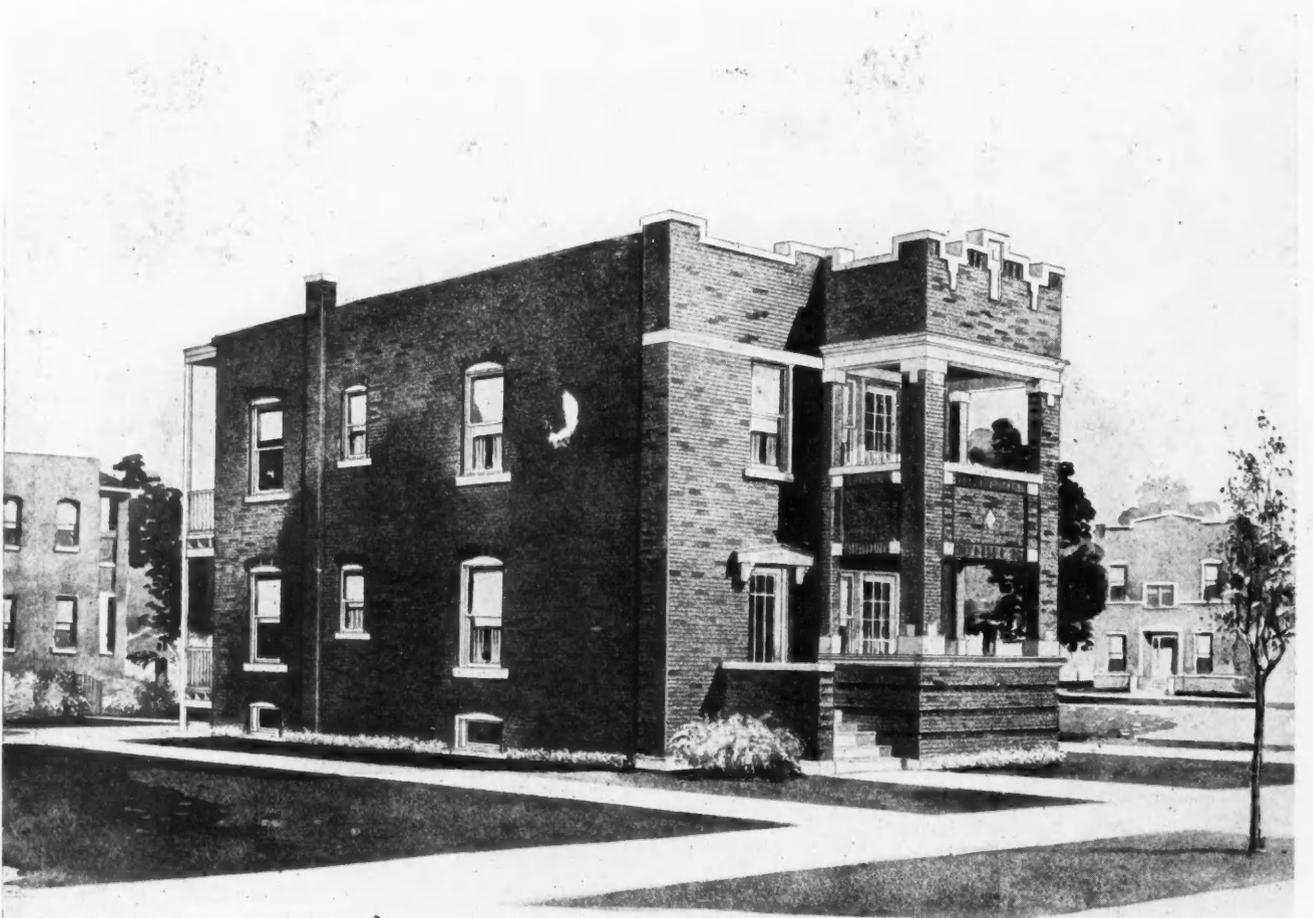
The two-flat building goes on a narrow lot and houses comfortably two families, where only one would be accommodated in bungalow or other dwelling house. In cost, the two-flat building runs only a little more than a one family house of the same ground area. "You live in one and rent the other," and so easily pay off the cost of the building.

For industrial housing purposes, the two-flat building has many advantages. The AMERICAN BUILDER offers the design below, which is fully detailed in the accompanying Blueprint Supplement, with full confi-

dence that it will be what the people want.

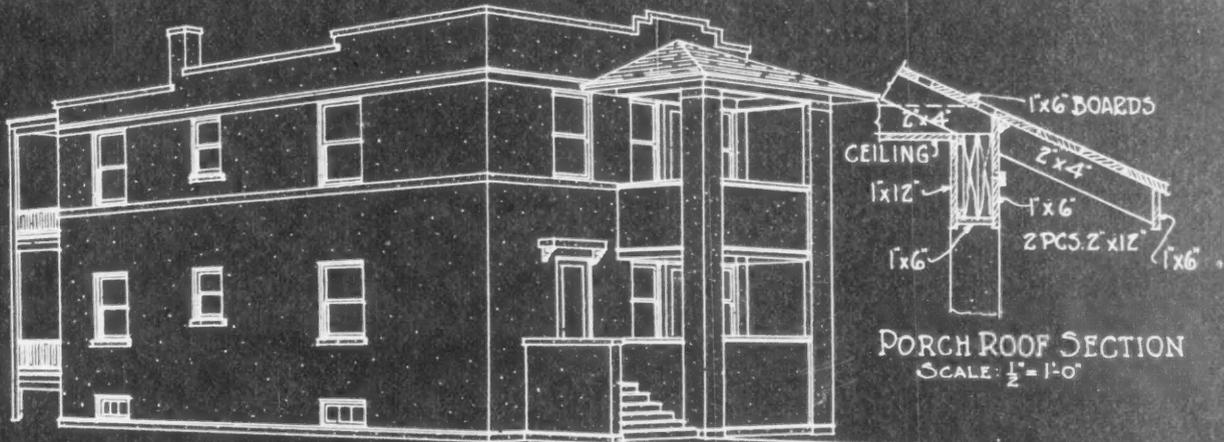
Four methods of construction and four styles of exterior are illustrated to go with the one standard floor plan. They are brick, hollow tile stuccoed, cement plaster on metal lath over wood frame, and beveled siding all-frame construction. Two designs show the regulation flat roof, one a hip roof, and one a gable roof.

The building measures 24 by 41 feet, with a 7-foot extension for the front porch. Each floor has living room, dining room, kitchen, pantry, two large bedrooms, and bathroom. The second floor is exactly like the first except for the extra closet over the vestibule. In the basement two heaters are provided and two coal bins all partitioned off with tight board partitions from the rest of the basement, which is used for laundry and store rooms.



The Architect's Conception of How the Industrial Housing Two-Family Building, Illustrated in the Blue Prints, Will Look if Built of Brick. Three Other Styles of Exterior, Using Different Materials Are Presented on the Page Opposite, and Complete Working Drawings for These Buildings Follow.

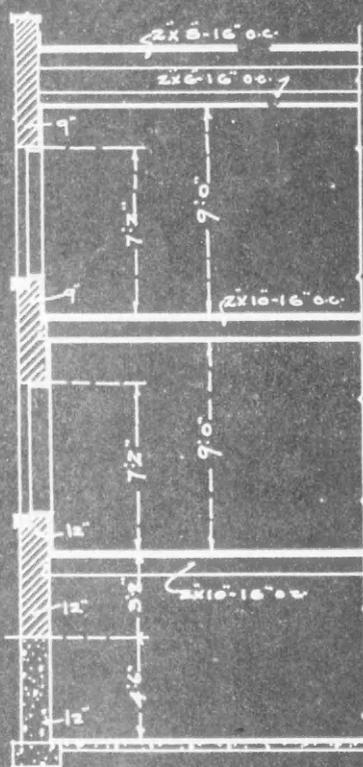
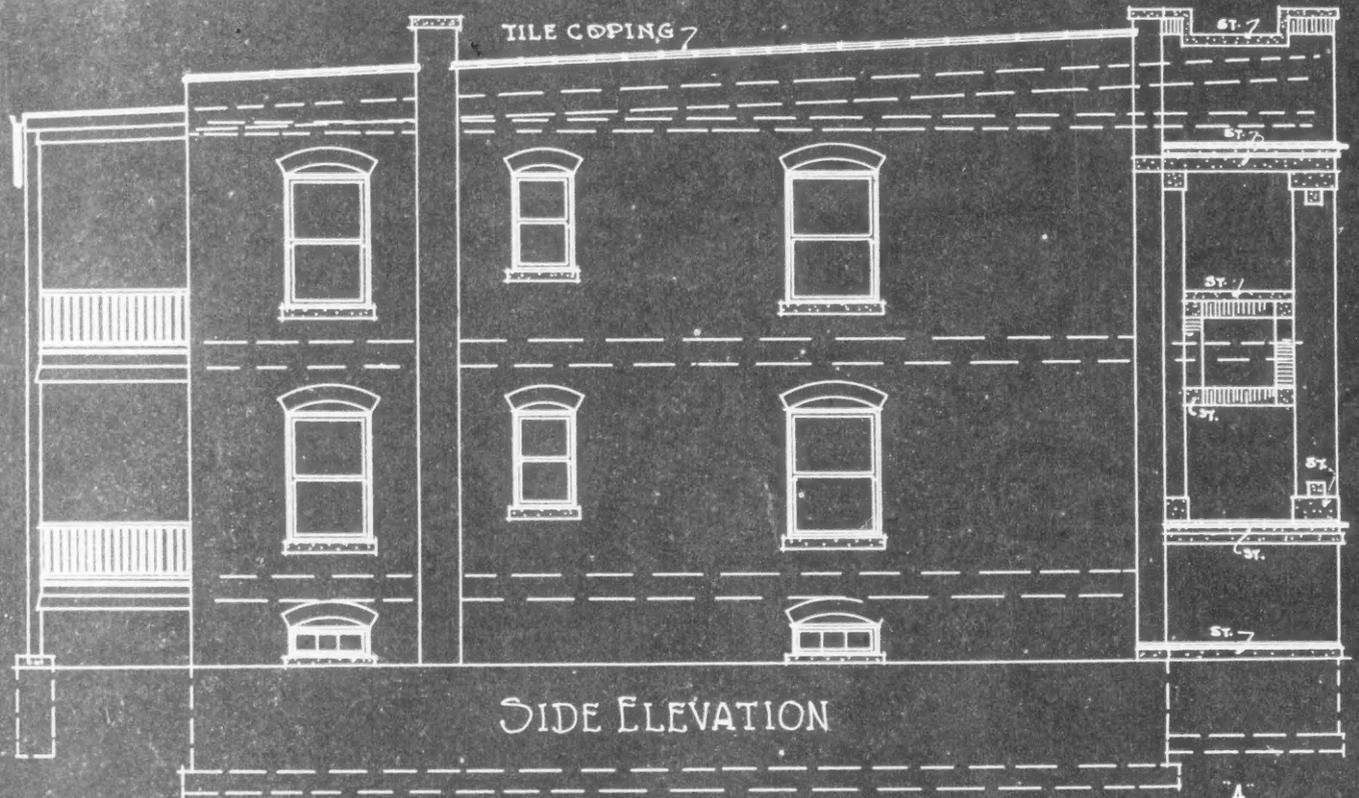
AMERICAN BUILDER BUILDING PLANS



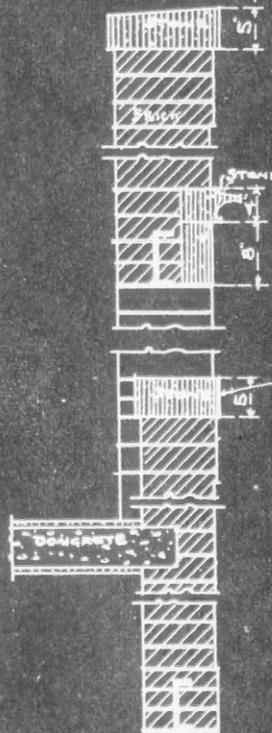
ALTERNATE EXTERIOR
HOLLOW TILE & STUCCO



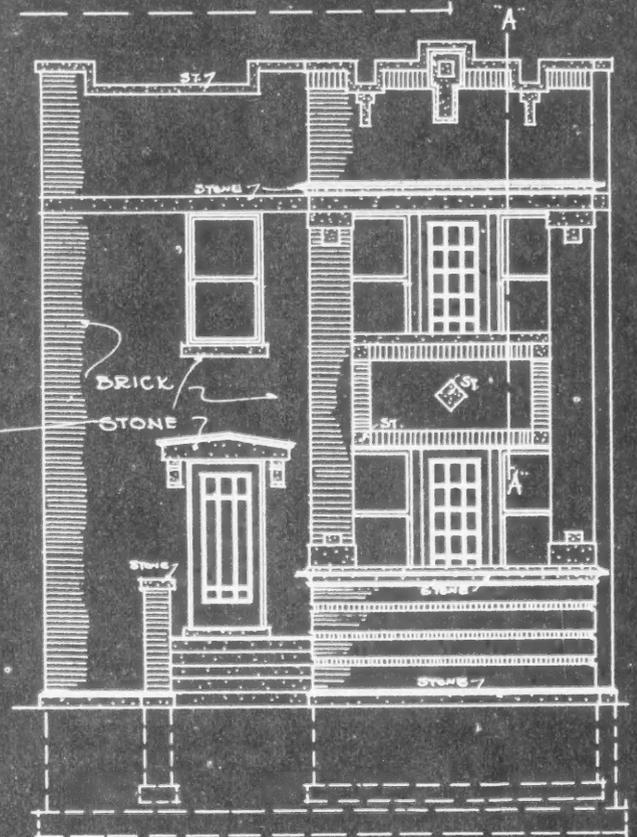
AMERICAN BUILDER BUILDING PLANS



CROSS SECTION
Scale 1/4" = 1'-0"

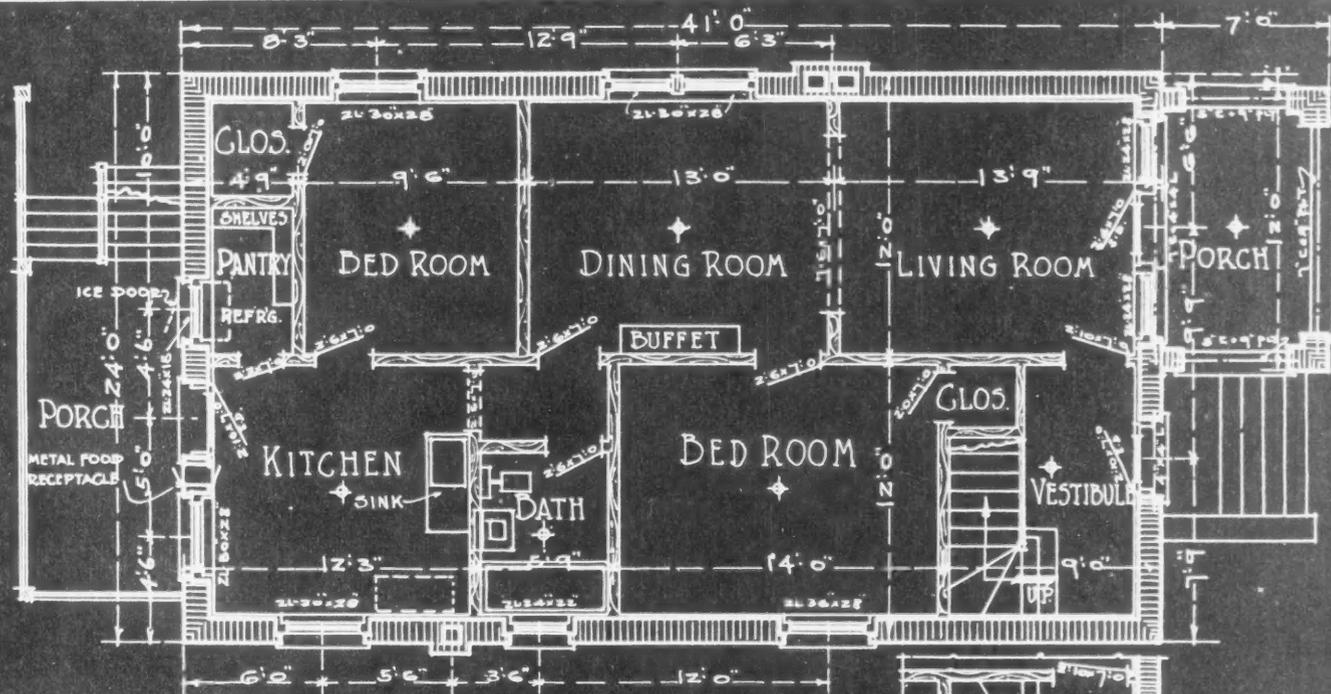


SECTION A-A
Scale 1/2" = 1'-0"



FRONT ELEVATION
Scale 1/8" = 1'-0"

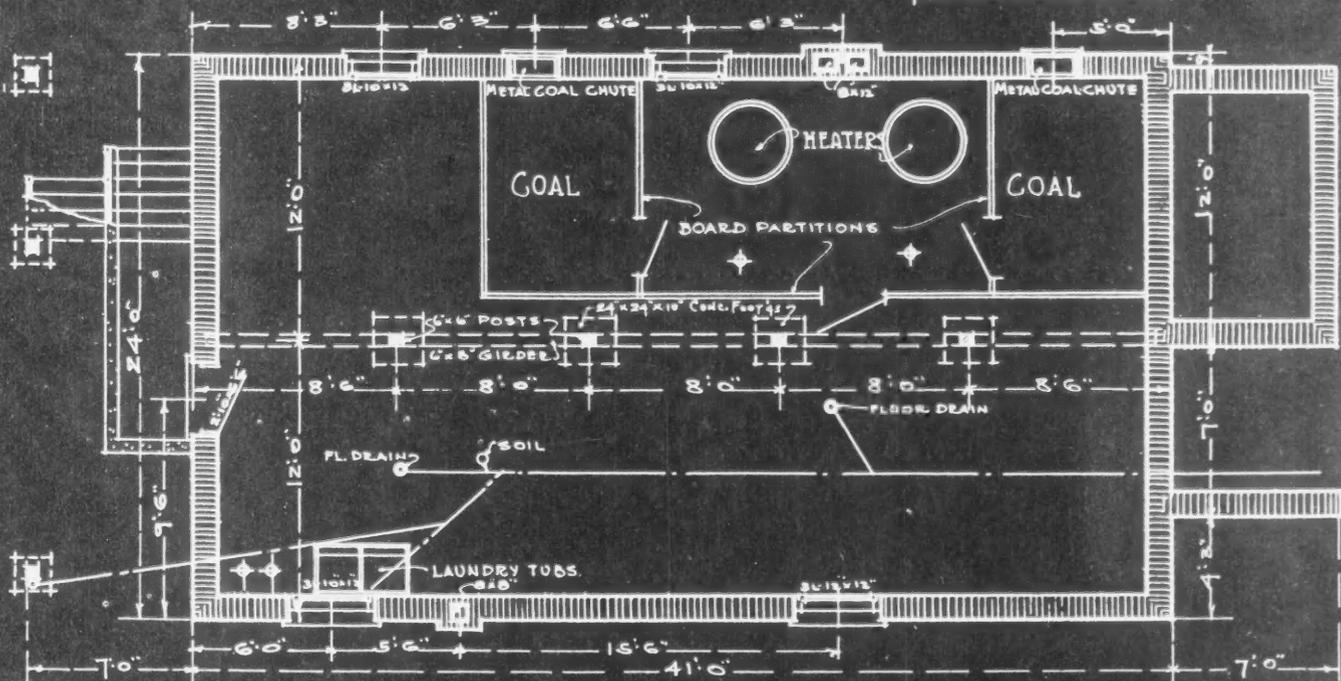
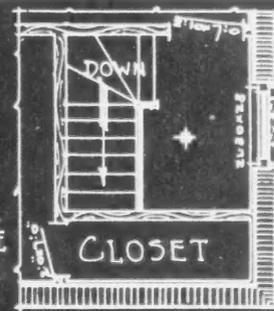
AMERICAN BUILDER BUILDING PLANS



NOTE
ALL WINDOWS AND DOORS
TO HAVE WEATHER STRIPS AND SCREENS.

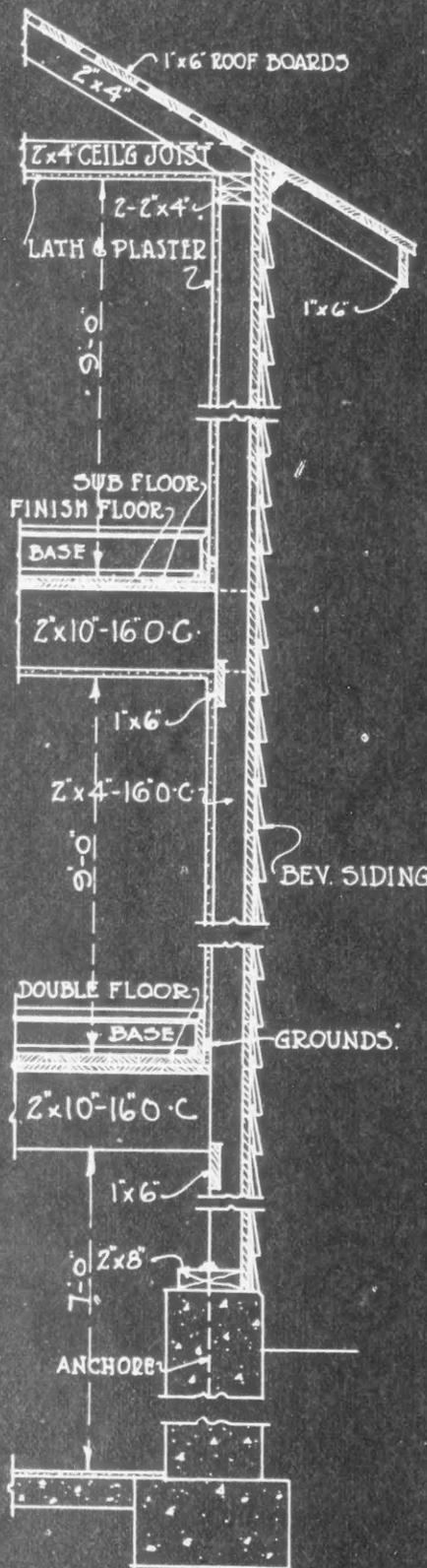
FIRST FLOOR PLAN
SCALE: $\frac{1}{8}'' = 1'-0''$

PLAN SHOWING SECOND
FLOOR MAIN STAIR MALL.
BALANCE OF FLOOR SAME
AS FIRST FLOOR PLAN.

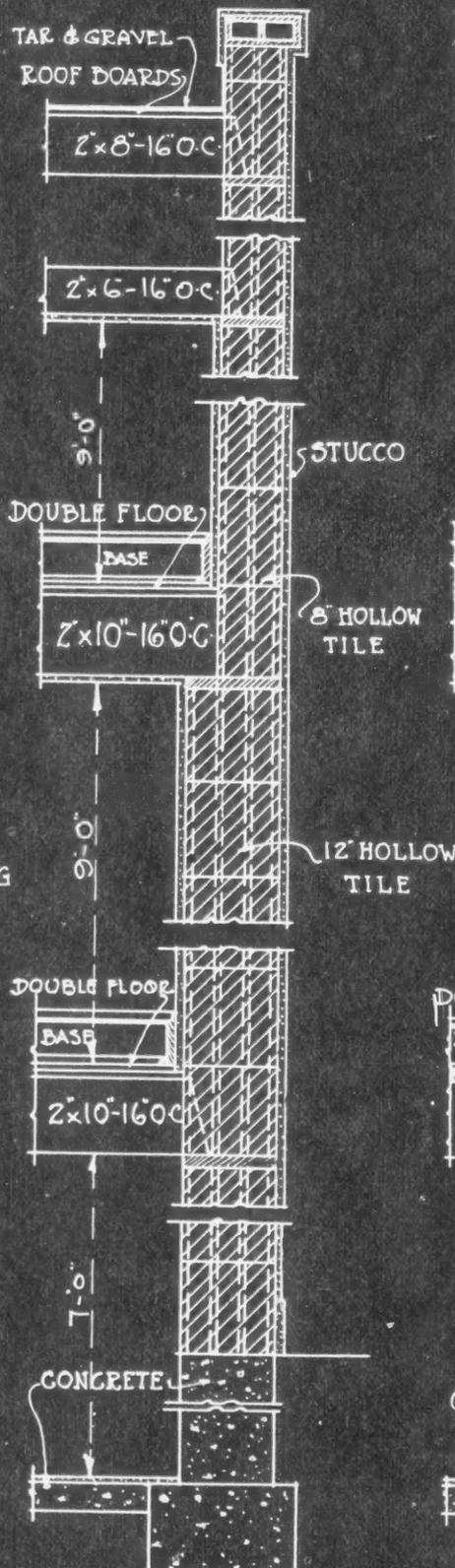


BASEMENT PLAN
SCALE: $\frac{1}{8}'' = 1'-0''$

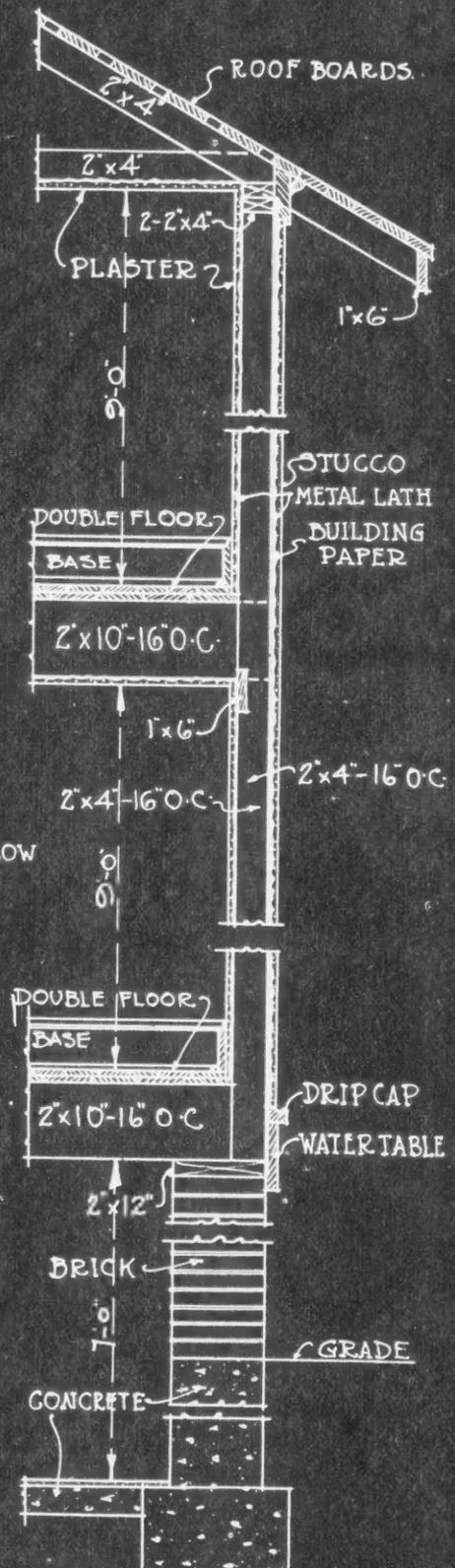
AMERICAN BUILDER BUILDING PLANS



WALL SECTION
FRAME



WALL SECTION
STUCCO ON HOLLOW TILE



WALL SECTION
STUCCO & METAL LATH ON FRAME



S.



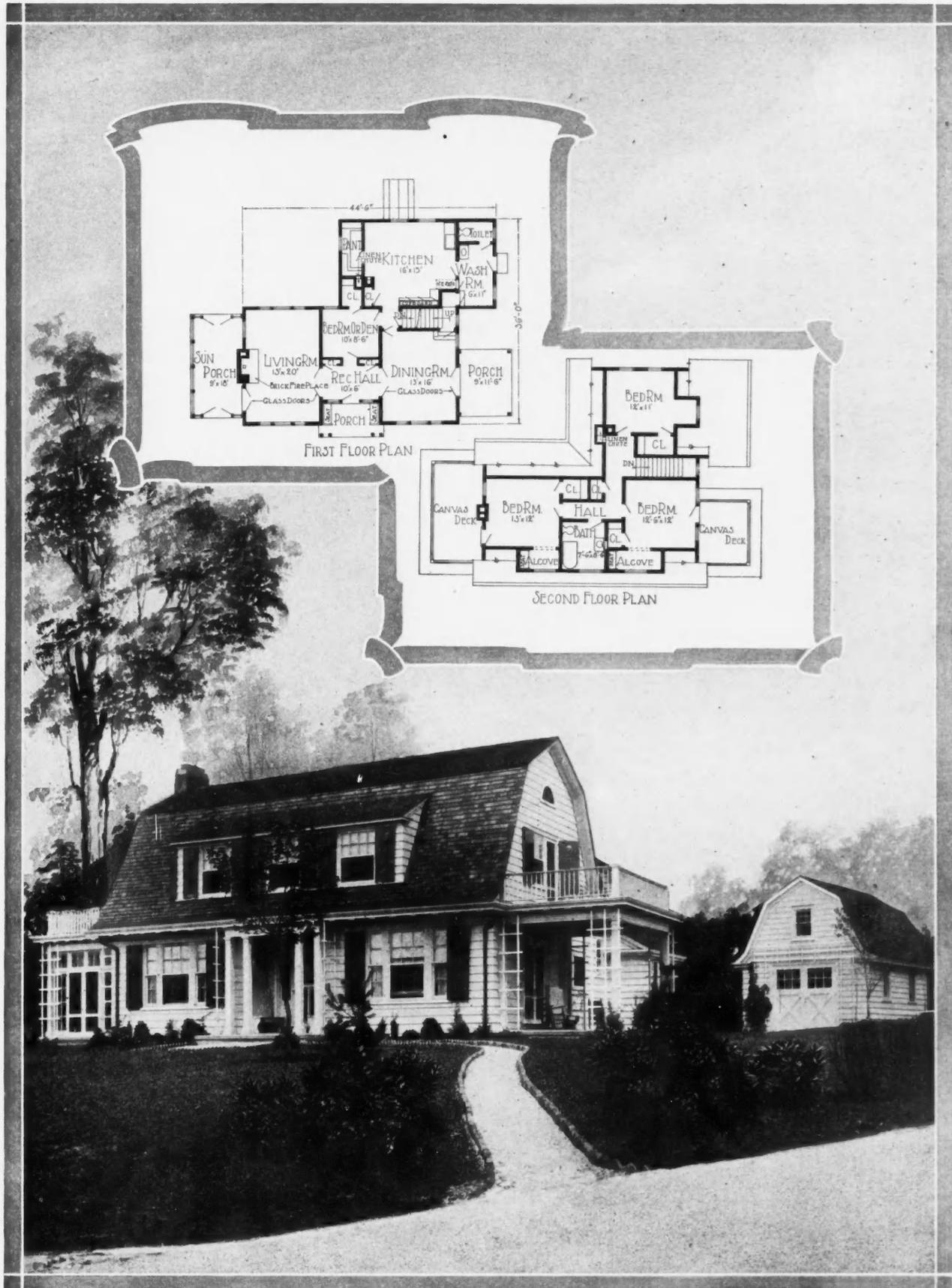
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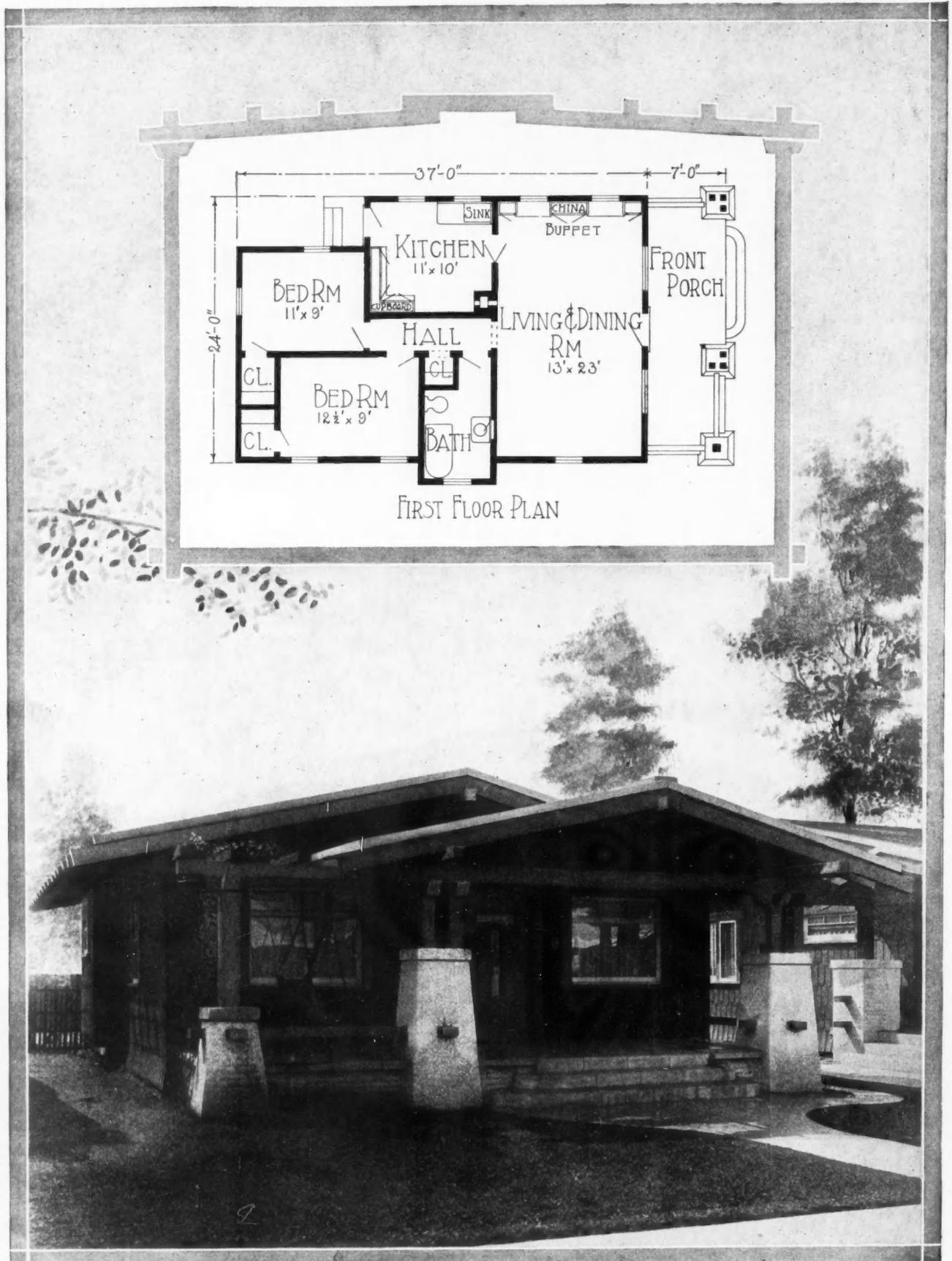
BLE



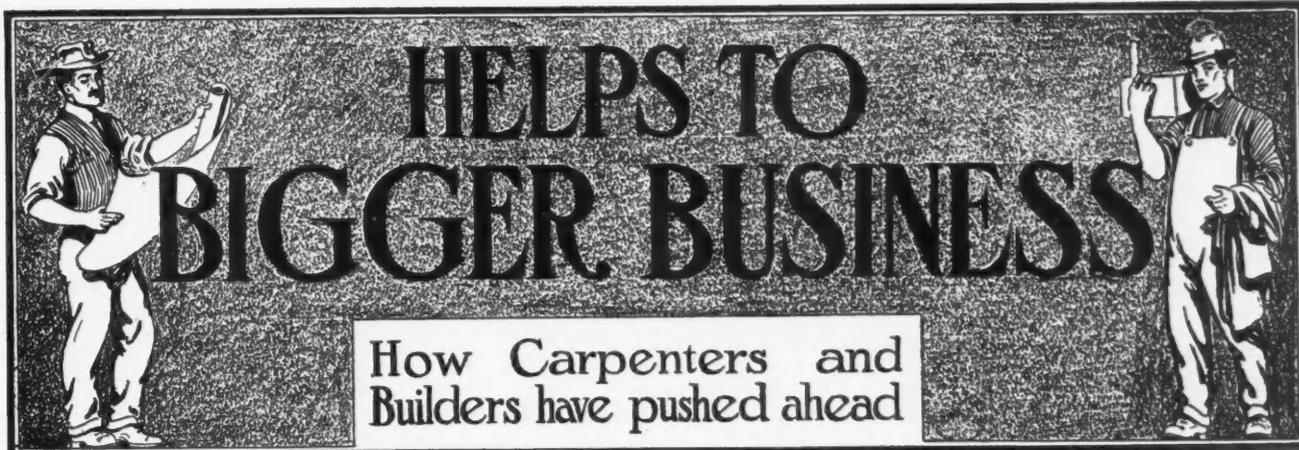




DUTCH COLONIAL FARMHOUSE. Good architecture is not confined to the cities. This seven-room farmhouse has all of the beauty of the best work and all the modern home conveniences, adapted especially to farm requirements. Note the big, airy kitchen, the outside washroom, farmer's office or den, and then across the front of the house the elegant balanced plan that is typical of the Colonial country home, with living room and dining room each side of the central hall.



MODERN FOUR ROOM BUNGALOW. This design comes from California, but makes an attractive home anywhere. One big room extends across the front, 13 by 23 feet, and answers the double purpose of living room and dining room. The low pitch roof is covered with roll roofing of a light color.



Keeping Up With Things

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

By Wm. P. Munger

In Two Parts, Part Two

The cost records are found by opening the ledger accounts with each job and joblet, and posting the debits from the work accounts. A ledger containing the forms shown in Fig. III is used to receive these postings, thus the costs are analyzed as they are posted. The form shown is filled out to show the structural conclusion of small house of the type that we frequently build. Economy of space is secured by writing items entered at practically the same time, on the same horizontal line. As thruout the office system red is used for credit entries, and there should be very few credit entries from the nature of the account, there is no special need for credit columns.

As to the headings of the other columns and how the items are to be grouped thereunder, that is a matter for judgment and experiment. To show the reasoning used along this line, let us take the heading "Metal." This includes plumbing, heating, tining; electric wiring, all hardware, lighting fixtures. Now as all these items except hardware are usually sublet at the beginning of the series of jobs, the hardware is the only one of the items that could vary. By subtracting the non-varying items from the metal total, the cost of the varying hardware is obtained whenever it may be needed for comparison. It would be interesting to have tabulations that would show variations per job in the number of pounds of certain sized nails, but in a business the size of mine, where the boss is on the job enough to prevent undue waste, this would be over-systematizing and a waste in itself.

Whatever be the heading adapted it is difficult to make a new employee see that building paper is hardware, and comes under the metal classification, that lath is not lumber, or that making a cellar window frame when specially listed is not carpenter labor, etc.

When the job is completed (as shown) the amount charged the customer is posted in red from the journal and put in the total column on the third line below

the last debit entry. After addition of the columns, the profit is computed and written on the intervening vacant line. The profit is not immediately posted back thru the journal to the profit and loss account of the general ledger, because this would destroy the showing of the running total profit indicated by the difference in the footings of the two work columns of the journal, after the open work accounts had been deducted. When the books are closed, however, such transfer of profit takes place.

While the customary rulings are used in the accounts receivable and accounts payable ledgers and usually in the general ledger, it is sometimes desirable to analyze a general ledger account in the manner above described. Such a sheet for a property account is shown in Fig. IV. The first of the cash columns contains all of those expenses which cannot be controlled by the owner or agent. The second column contains all the running expense, semi-fixed charges, etc. The third column is the property column and in it are entered the cost of the property and all of the improvements, and repairs thereon. The fourth column might be termed the overhead column, for in it all overhead charges are placed. The fifth and sixth columns are the total columns. The totals in the credit column arriving periodically from the installment ledger, as was explained above.

The standard form used in recording installments is shown in Fig. V. A special description of this form is not needed except as to the entries "Amt. of Contract" and "Contract No." The amount of contract is the amount of lease and is so entered for legal reasons. The entry under contract number refers to the document envelope in the safe that contains the lease and all other documents relating to the property and the number of the installment sheet is also put on the property account to facilitate ready references.

The limitations of this system are that, as far as explained, it takes no cognizance of future liabilities or future assets. For instance, if I let a contract to Bill Jones, to furnish and install hot air heating system on a certain job for \$125, payable to him in two installments, no knowledge could be obtained from this set of books regarding this obligation until the obligation or some part of it had matured. This condition is met by our order system. All supplies and materials are bought and contracts are put on order blanks, of which two copies are retained in the office, one in a binder until the order is completely filled. Notations are made on the sheet in this binder as the stock is delivered or the work or portion of it is completed. This occurs contemporaneously with the entering the work or payment in the journal. The balance on the order blank in each case is the future liability.

A similar idea is used to keep track of contracts receivable, the balances in each case being future assets.

The reader may by this time think that there are enough forms, blanks, etc., connected with this system, but there is another form which is of great use as the business expands and the boss is not in direct

touch with the bookkeeping detail. That form is a seven-column "Balance sheet," which has the explanation column in the center, and three cash columns on either side, the left for the debits and the right for the credits. As the accounts are balanced each month in the various ledgers the totals are drawn off and put in the debit or credit column, as the case may be, furthest from the description column, and the change in the account, if any, in the remaining column. By bringing the totals of three columns together on another page, a complete statement of the business is formed, the volume of business in each department is shown, and by reference to the pages when the separate accounts are listed the manager can very quickly see the tendency of each account. As the number of the account is also given in the description column, the manager can very quickly make a memorandum concerning the accounts which need special attention.

Taken as a whole, this system, then, presents in a tabulated form, ready for instant and convenient reference, all of the information needed to check leaks, avoid repetition of loss, and to prevent such errors of management as would destroy the equilibrium of business. But as outlined above, this system is more

1913		FINANCING	MASON SUPPLIES	MASON LABOR	METAL	LUMBER	CARP. LABOR	PAINTING SUPPLIES	PAINTING LABOR	EXTRA MISC.	TOTALS
Jan 2	Brt. Fwd.	98 03	18 0 26	8 3 12	2 1 0 81	6 0 6 07	17 6 37	2 3 10	1 1 63		138 9 39
" 7	Cement Sash		1 0 00			6 4 43					7 4 43
" 10	Int. payroll	3 1 50					1 75				3 3 25
" 16	Lumber					3 7 00					3 7 00
" 17	Plas. Hdw. Payroll			6 0 00	2 5 00		1 6 50				9 5 50
" "	Plumbing				1 2 0 00						1 2 0 00
" "	Flashing				35						35
" 31	Payroll						2 1 00		7 50		2 8 50
" 24	Payroll						2 1 00				2 1 00
" 23	Sash wts.				58						58
Feb 7	Hdw. Payroll				1 7 88				1 3 50		3 1 38
" 7	Lum. brt. to yard					2 5 82					2 5 82
" 16	Payroll								9 69		9 69
" 12	Pointing up		2 00	2 00							4 00
" 12	Payroll								2 0 00		2 0 00
" 12	Doors					3 0 55					3 0 55
" 20	Payroll								57		57
" 26	Cellar bottom		2 0 00	2 0 00							4 0 00
" 21	Payroll						44		3 75		4 19
" 21	"						43				43
" 7	"						9 36				9 36
Apr 10	Walks, grading 2d coat Payroll paint		3 6 00	1 1 0 00			1 0 02	1 1 70	2 0 00		1 8 7 72
		1 2 9 53	2 4 8 26	2 7 5 12	3 7 4 62	7 1 2 23	2 5 6 87	3 4 80	8 6 64		2 1 1 2 07
	Profit										2 8 7 03
Apr 11	Cr. to prop. a/c										2 4 0 00

Fig. III. The Running Cost Analysis Shown on This Form is Made with Little More Extra Labor Than Is Required to Post an Item from Any Ordinary Journal to a Ledger.

1912		TAXES INSURANCE INTEREST	WATER, LIGHT HEAT JANITOR	REPAIRS AND IMPROVEMENT	COLLECTIONS AND ADMINISTRAT'N	TOTAL DR.	CR.
Nov. 1	Deed			4 00 00		4 00 00	
" 2	Legal exp., title, searches, etc.				1 42 20	1 42 20	
Dec. 31	Interest	4 15				4 15	
1913 Apr. 11	Construction %			2 40 00		2 40 00	
May 31	Rentals						4 00 00
" 31	Int. lot 6 mo. house 1 mo. 20 days	3 20 00				3 20 00	
July 1	Water bill		2 50			2 50	
" 10	Const. % Repair washout in laun.			1 60		1 60	
Aug. 1	Sold prop. Int. and ins. adjusted						3 31 7 20
" 1	Rentals						4 50 00
" 1	Interest accrued					2 4 00	
" 3	Commissions				6 6 00	6 6 00	
	Legal expense				4 80	4 80	
	Profit & Loss Account					4 6 2 95	
		3 6 15	2 50	2 80 1 60	8 5 00	3 4 0 2 20	3 4 0 2 20

Fig. IV. This Form Groups the Expenses of the Landlord Into Four Heads—Fixed Expenses, Running Expenses, Property and Overhead. By Referring to Fig. III it Will be Seen that the Building and Real Estate Profits Have been kept Separate.

suitable for the medium and large-sized volume of business, where office help can be afforded than for the average small job contractor.



Plenty of Lumber for All Needs

DESPITE the vast demands made upon the lumber resources of the United States by the war, there is little occasion to fear that the lumber supply of this country is either doomed or seriously menaced. This fact was brought out by King H. Pullen, of New

Orleans, at the recent meeting here of the Louisiana League of Homestead and Building and Loan Associations.

"To those who apprehend that 'all the trees soon will be gone,' I commend some interesting figures compiled after months of careful research by Mr. Charles H. Mackintosh," said Mr. Pullen. "He finds that of the earth's total land area of 33,123,171,200 acres, forests still cover 8,097,319,827 acres, or nearly one-quarter of the total land surface of the world.

"A very moderate statement of the lumber yield per acre of timber, averaging various species of wood, is 10,000 feet, board measure, to the acre of forest. You can deduce from this that the world's present visible supply of timber is 80,973,198,270,000 feet.

"American people naturally are more vitally interested in American affairs than in those of the rest of the world. A glance at our own forest resources is proportionately reassuring. Mr. Herbert Knox Smith, when commissioner of the Bureau of Corporations, in his report issued in 1909, estimated the forests of the United States to contain 2,800,000,000,000 feet of merchantable timber, if manufactured in accord with the methods then current.

NAME Andrew J. Cummings		ADDRESS 1036 Riverbine Ave.		LEDGER FOLIO C-4		
DESCRIPTION OF GOODS 7 Room House and Lot 1036 Riverbine Ave.						
DATE OF CONTRACT April 4/13	CONTRACT NO. B-16	MORTGAGE NO.	CASH PAYMENT \$5.00	PAYM'T'S TO BE \$5.00 per wk. 1 year	AMT. OF CONTRACT \$260.	
DATE	PAYMENT	DATE	PAYMENT	DATE	PAYMENT	BALANCE
7/4	5 00	14/4	5 00	21/4	5 00	30 00
19/5	5 00	26/5	5 00			10 00
		May 31	Transferred to	proper lg %	Gen. Led.	40 00

Fig. V. This Little Form Gives All the Information a Collector Need Know About a Tenant, and Saves a Lot of Space in the General Ledger.

Logical Methods in Architectural Drafting

By Franklin G. Elwood, B. Ar.

Instructor of Architecture, Bradley Polytechnic Institute

PART II—The Development of the Working Plan

AFTER the sketch, the next logical step is the development of the working plan. If, however, it is necessary to secure the work thru competition, exhibition or competition drawings may be made first. These drawings, while usually worked out to a definite scale, give only the large dimensions, such as sizes of main rooms and outside or overall measurements. No details or detail sizes are given. The walls are cross-hatched or blackened in with pencil or ink in order that their outlines may be seen at a glance. On the elevations shadows are cast and building and background usually rendered in water color. Both the plans and elevations are neatly drawn and attractively lettered in order to give a pleasing impression. They have, however, no definite value as practical working plans.

Between the sketch and the working plans are two transitional or intermediate steps which are sometimes employed, namely, the "cross section" or co-ordinate paper drawing and the eighth-inch scale drawing.

The first named step I deem most important, especially in house planning. All the material necessary is a pad of cross ruled paper with squares preferably of ($\frac{1}{8}$) one-eighth inch, and a soft pencil. Lay out the plan freehand, following the steps given in the article, "The Sketch," allowing one square to equal one foot to scale. Then if the plan does not work out correctly using the dimensions you have assumed, or if the client wishes alterations, they may be made more easily and with less difficulty than in the final scale drawing.

The purpose of the second step, like that of the first, is to give a plan which, while correctly scaled and proportional, is not worked out in detail, and may be altered easily.

At this stage the draftsman should study carefully the plan symbols and conventions used to denote details, such as windows, doors and fixtures. These symbols are, of course, not arbitrary, but differ somewhat with various architects in different sections of the country. Those shown are a few of the most typical and are to be employed on one-fourth-inch scale drawings or larger. In smaller scale drawings it

will be found necessary to simplify some of the symbols.

After the co-ordinate or cross-section paper sketch has been made, and the symbols and conventions carefully noted, the draftsman is ready for the working plan. First locate the plan carefully upon the sheet, centering it up and making the greatest dimension of the plan, including porches, to correspond with the longest dimension of the sheet.

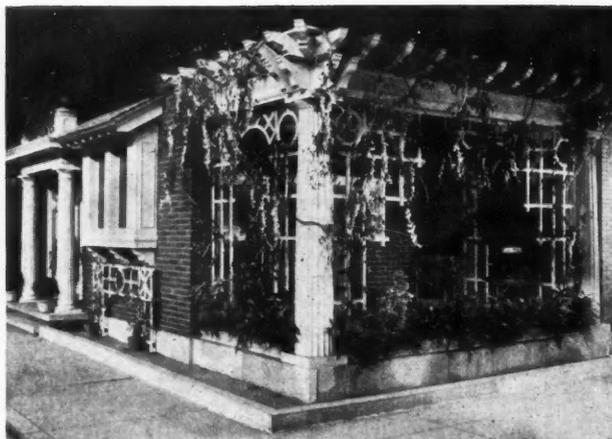
Then proceed to block in plan in the following logical sequence: If the plan is symmetrical, draw either light vertical or horizontal center line, as the case may require. With scale placed vertically upon paper, lay off accurately the thickness and the position of the front and rear walls, showing their relation to each other, making the lines light and of indefinite length. Main horizontal or cross partitions of indefinite length are also drawn. With scale placed horizontally upon paper, lay off side walls and main partitions. These should be in light lines also and should be drawn so that they will just intersect horizontal walls and partitions. All wall and partition lines should be drawn without reference to the openings.

Draw all minor partitions. Locate all door openings.

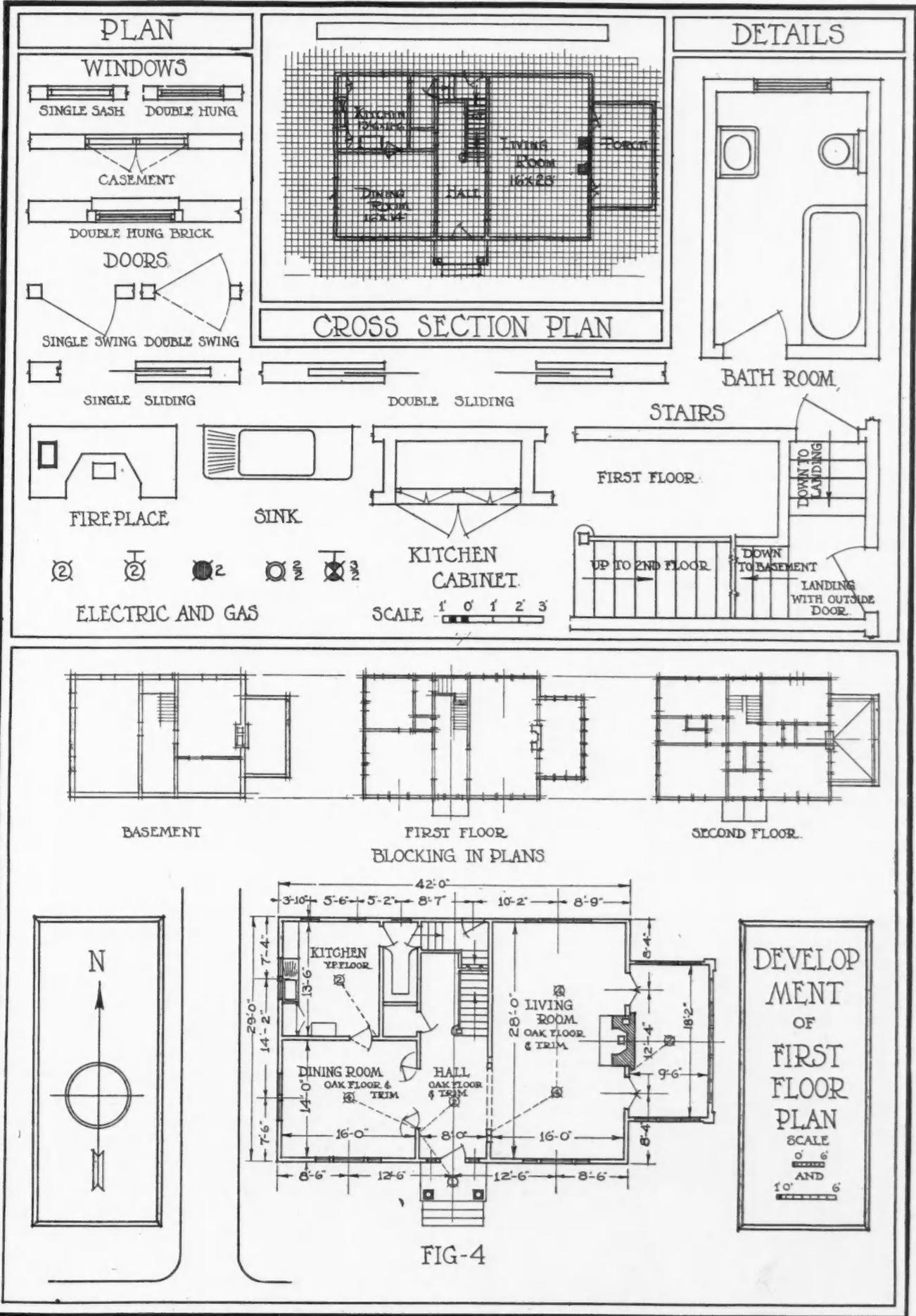
The stairs having been calculated according to the height of the ceiling and the amount of space available for the staircase are then drawn accurately. Usually a complete flight of stairs cannot be shown upon one floor plan, since the space beneath the main flight is utilized for the basement stairs and the space above for the attic stairs. The common method is to show both the basement and main stairs on one plan, as illustrated in the plan details, the broken line indicating the difference of levels or the separation of the two flights. The landing and the remainder of the main flight are shown on the second floor plan. At

the door openings erase the partition lines and indicate swing of the door. Draw in the windows, giving correct width and position of scale. Refer to the preliminary sketches for their approximate position. Their detailed drawing should be left until the elevations are made. Then if it should seem necessary to change their positions to improve the exterior design, it may be done more readily.

(Continued to page 116.)



An Exhibit of Great Architectural Merit at an Eastern Building Show to Demonstrate Pressed Metal Columns in Connection with Face Brick and Wood Lattice Work.



Drawings by Franklin G. Elwood to illustrate Logical Method of Developing the Floor Plans of a Residence.

Fixing up the Farm

Electricity on the Farm

THE SECOND OF A SERIES OF ARTICLES

By C. M. Emerson

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

ELECTRIC light is universally conceded to be superior to any other method of artificial lighting. It is the safest, requiring no matches and having no flame. It is the most healthful, taking no oxygen from the air and giving off no products of combustion to pollute the air. It is the cleanest, producing no soot and making no air currents to deposit dust on walls and ceilings. It is the easiest to install, as wires can be run almost anywhere, in old houses as well as new. It is the handiest, as lights can be located out of reach and switches placed wherever most convenient.

Electric flatirons, toasters, chafing dishes and shaving mugs, curling iron heaters and other small heating and cooking devices are fast becoming household necessities and can be operated from storage battery systems, provided plants large enough are installed.

By doing away with the use of matches, candles, lanterns and oil or gas lamps the electric current provides what is better than an insurance policy or a fire extinguisher—a prevention of fires.

Until very recently the use of electricity has been a city luxury. The development of the gasoline engine and the storage battery made the service of the isolated plant equal to that supplied by the central station. The Tungsten lamp, with its low current



consumption, reducing the capacity of battery and size of engine and generator required, and the use of low voltage lamps, reducing the number of cells of storage battery required, have brought the price of the plant within reach of the average owner of a farm or country home.

The storing of electricity in a storage battery is almost as simple as storing water. You use from it till the pressure gets low and then pump it full again.

Speaking generally, they are "home plants," where the battery is filled during the daytime and the current is used at night while the generator is not running, altho the generator may be run and its capacity added to that of the battery when an unusual amount of current is required.

Low voltage gives simplicity and economy in operation and a low price of battery. Thirty-two-volt plants will carry a reasonable load thru ordinary size wires a distance of 500 feet or less.

By "low voltage" is meant any voltage up to and including 60 volts. Any current above that is called "high voltage."

Figs. 1 and 5 show a plant suitable for an average farmhouse of eight rooms, and is made up of the following:

Twelve and one-half-ampere system, 32 volts.

Two-horsepower gasoline engine, dynamo, switchboard and 16-cell storage battery.

Wiring the house, including wire, a good set of fixtures, price about \$310.

This plant will operate 15 16-candle Tungsten lights for eight hours without the engine running, or, with the engine and batteries combined, will operate 38 lamps. As to the cost of operating, the engine under full load would consume about two gallons of gasoline in 10 hours. But other machinery, like pump, cream separator, churn or washing machine could be operated by the engine and batteries charged at the

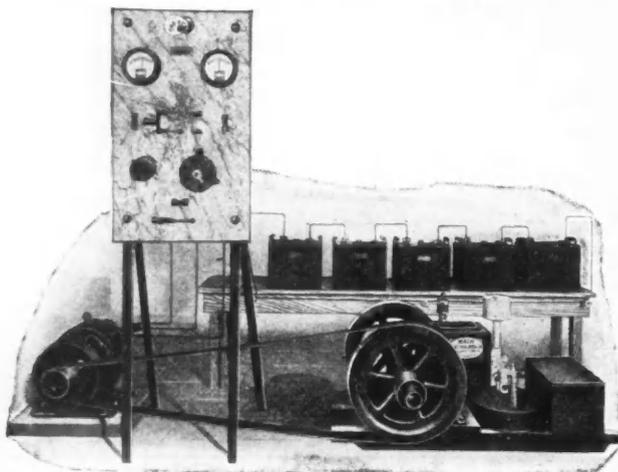


Fig. 1.

same time. Any one of these can be operated while charging, thus reducing cost to a mere trifle.

There is practically no expense attached to the operation of the dynamo, as the oil for the bearings cost very little. New brushes for the dynamo will be needed about once in a year, and these cost \$1.75 per set.

As the electrolyte gets lower in the cells, caused by evaporation of the water, it will be necessary to fill these cells with clean rain or distilled water to about half an inch over the plates.

There will be practically no depreciation of the dynamo, which should last as long as the engine with which it is operated.

The depreciation of the storage battery will depend upon the treatment it receives. If it is taken care of, the positive plates will probably have to be renewed in five or six years, and the negative in ten or eleven years. This means that the average cost of maintenance of the battery and dynamo should not exceed seven or eight dollars per year.

It is very important that the batteries be kept fully charged and the current be not allowed to drop more than 4 or 5 volts below standard. Say not less than

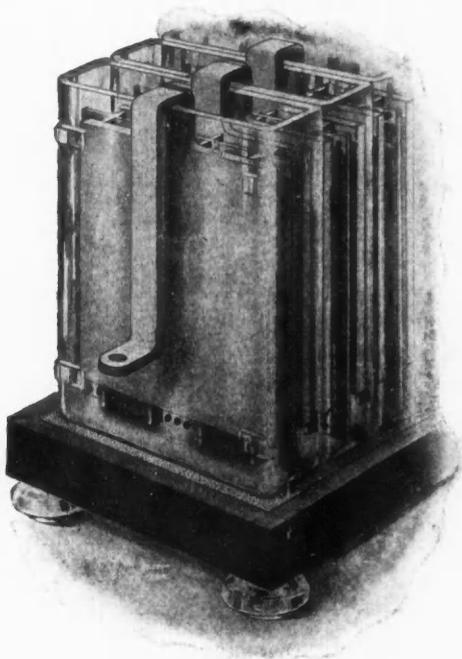


Fig. 2.

29 volts for a 32-volt current, or 100 volts for a 110-volt.

The reason for this is, when the batteries are charged the first time the electrolyte is not put in the cells until they are ready to be charged. The reason is that the electrolyte is made up of distilled water and chemically pure sulphuric acid. The acid will not seriously attack the plates when electrically charged or while being charged. As soon as the current gets low it begins to attack the plates. For this reason, then, the current must not be allowed to get low.

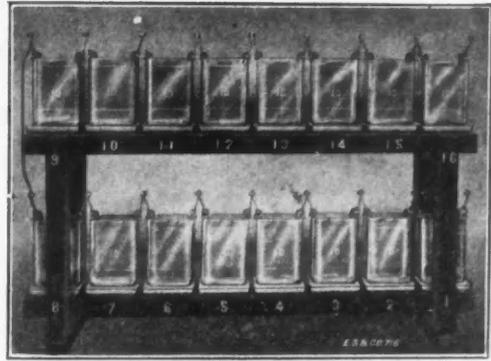


Fig. 3.

The total cost of operation and maintenance of farmhouse lighting outfit will be found thru actual practice to be much lower than that of any gasoline or acetylene gas system.

Space forbids extended description of generators, switchboards, etc. So we will pass them by and describe briefly the storage battery.

There must always be a container, or jar, as they are commonly called. These may be either glass or hard rubber. The rubber cells are always sealed. Glass cells may be either sealed or open. Generally they are sealed and shipped fully charged ready for use when received.

There are separate jars for each cell, the cells placed side by side in a battery box. In the jars are two sets of plates, one set negative and the other positive. The number and size of these plates vary according to the capacity needed. Each plate is made of an alloy of antimony and tin, which makes for stiffness and resistance to acid. The positive plates are filled with a brown paste of peroxide of lead and the negative with spongy gray lead. In the cells the negative plates are connected together by lead strips, leaving a space between them called connecting straps, having binding posts attached, the positive plates being connected together in the same way. The two sets are now placed in the cell between one another so that there is a positive and then a negative, and so on until all are in place. They are separated usually by a wood separator plate. The electrolyte is now added so as to cover the plates about half an inch. It is now ready to be charged, which is done by connecting wires to each set of plates, one to the negative and one to the positive, and the current turned on. When the current enters the cell it decomposes the water into hydrogen and oxygen gas. The oxygen combines with the gray lead paste and changes it to peroxide of lead, and this leaves the plate and is deposited on the positive or peroxide plate. This continues until the plate can hold no more peroxide of lead or give off no more lead, when the battery is fully charged.

When a circuit is made outside the cell the current leaves the battery and the plates gradually change

(Continued to page 108.)

Farm Buildings To Aid Food Production



Organize a Silo Building Campaign

LAST month we told about the silo campaign which the State of Indiana has organized. Ten thousand more silos are to be built there this summer, a certain quota being apportioned to each county, and a county silo leader and local silo leaders for each township appointed.

If this is good for Indiana, why not for every other live stock growing State?

A silo should be part of the permanent improvements on every farm. Farmers who have one already should build another. The contractors and builders, and the building material dealers in every community should proceed at once to organize a silo building campaign.

There is no doubt as to the advantages of the silo. It is essential for the economical feeding of live stock, and especially for the profitable production of beef and milk. The results of hundreds of feeding experiments conducted in the past ten years with silage as a part of the ration give proof of its great value to the farmer.

The silo combines more things, pointing to greater profits, than any other building on the farm. Most builders are thoroly familiar with silo construction, but

they may not realize how important the silo is in the farmer's business. In previous articles we have explained how to build each type of silo. Here are some of the talking points on silage or the use of the silo, which will appeal to the farmer and lead him to line up for your silo building campaign:

1. More feed can be stored in a given space in the form of silage than in the form of fodder or hay.
2. There is a smaller loss of food material when a crop is made into silage, than when cured as fodder or hay.
3. Corn silage is a better feed than corn fodder.
4. An acre of corn can be placed in the silo at less cost than the same area can be husked and shredded.
5. Crops can be put in the silo during weather that could not be utilized in making hay or curing fodder.
6. More stock can be kept on a given area of land when silage is the basis of the ration.
7. There is less waste in feeding silage than in feeding fodder. Good silage properly fed is all consumed.
8. Silage, like other succulent feeds, has a beneficial effect upon the digestive organs.
9. Silage is the cheapest and best form in which a succulent feed can be provided for winter use.

10. Silage can be used for supplementing pasture more economically than can soiling crops, because it requires less labor, and silage is more palatable.

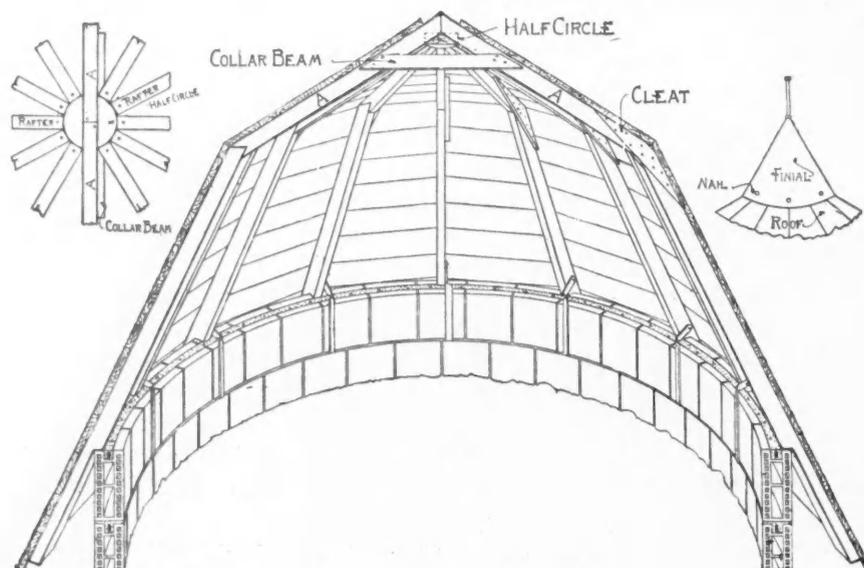
11. Converting the corn crop into silage cleans the land and leaves it ready for another crop.



We Are Encouraged

To the Editor: Ames, Kans.

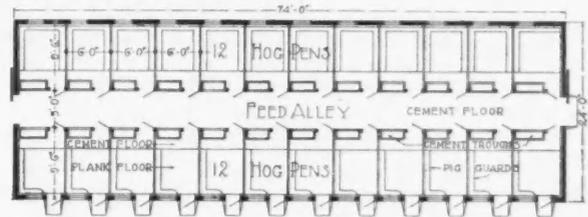
It would be treating the staff mean to send the \$2.00 for renewal without a word of encouragement, which we know you justly deserve. Your paper is indeed a welcome visitor to our desk and to a person of a mechanical turn, as well as to a mere business man, is a great educator. May you long continue and have great success financially.—N. NELSON, Local Mgr., Chicago Lbr. & Coal Co.



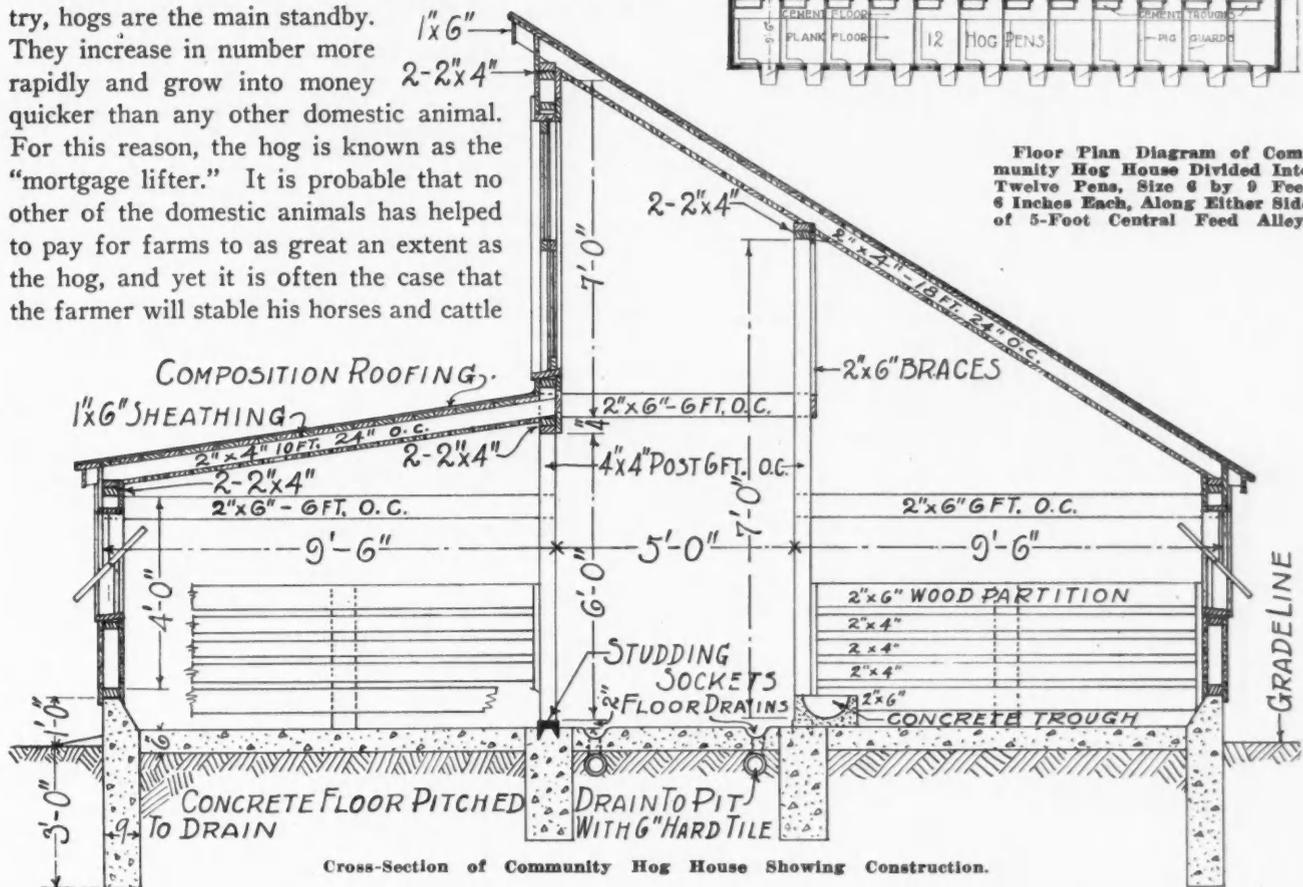
Section Thru Roof of Gambrel Topped Tile Silo, Showing How the Rafters Are Framed Together and Fastened to the Top Course of Blocks by Means of Iron Straps Bolted to the Wood and Imbedded in the Masonry.

Community Hog House of Improved Type

THE importance of hog houses and the opportunity for building new ones are best appreciated when we remember that on most of the farms of our country, hogs are the main standby. They increase in number more rapidly and grow into money quicker than any other domestic animal. For this reason, the hog is known as the "mortgage lifter." It is probable that no other of the domestic animals has helped to pay for farms to as great an extent as the hog, and yet it is often the case that the farmer will stable his horses and cattle



Floor Plan Diagram of Community Hog House Divided Into Twelve Pens, Size 6 by 9 Feet 6 Inches Each, Along Either Side of 5-Foot Central Feed Alley.



Cross-Section of Community Hog House Showing Construction.

in a first-class manner, but make his hogs practically shift for themselves—a practice that has cost American farmers millions of dollars.

Hogs should be provided with quarters that are clean. The design illustrated is of an approved type. The foundations, floors, and trough are all of concrete; the

superstructure of double-wall frame construction. This is an extra well lighted and ventilated community hog house of the saw tooth roof type. Face this building toward the south and direct sunshine will come into every pen each day. The upper windows are double hung, and the side wall windows pivoted.

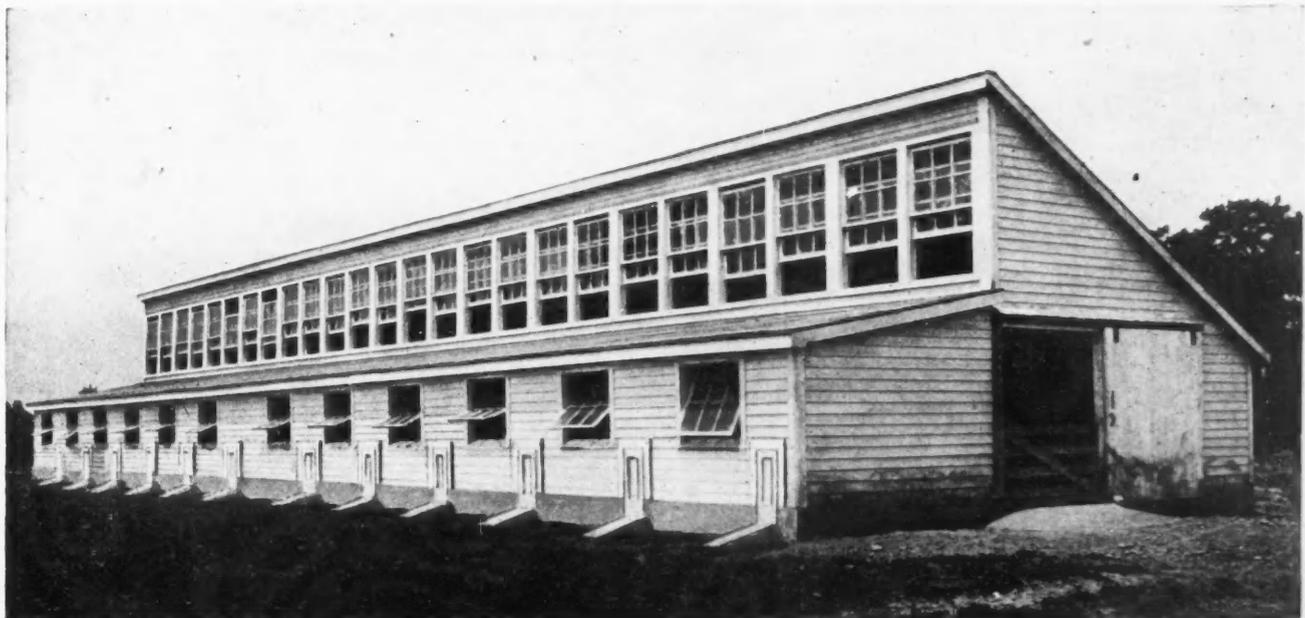
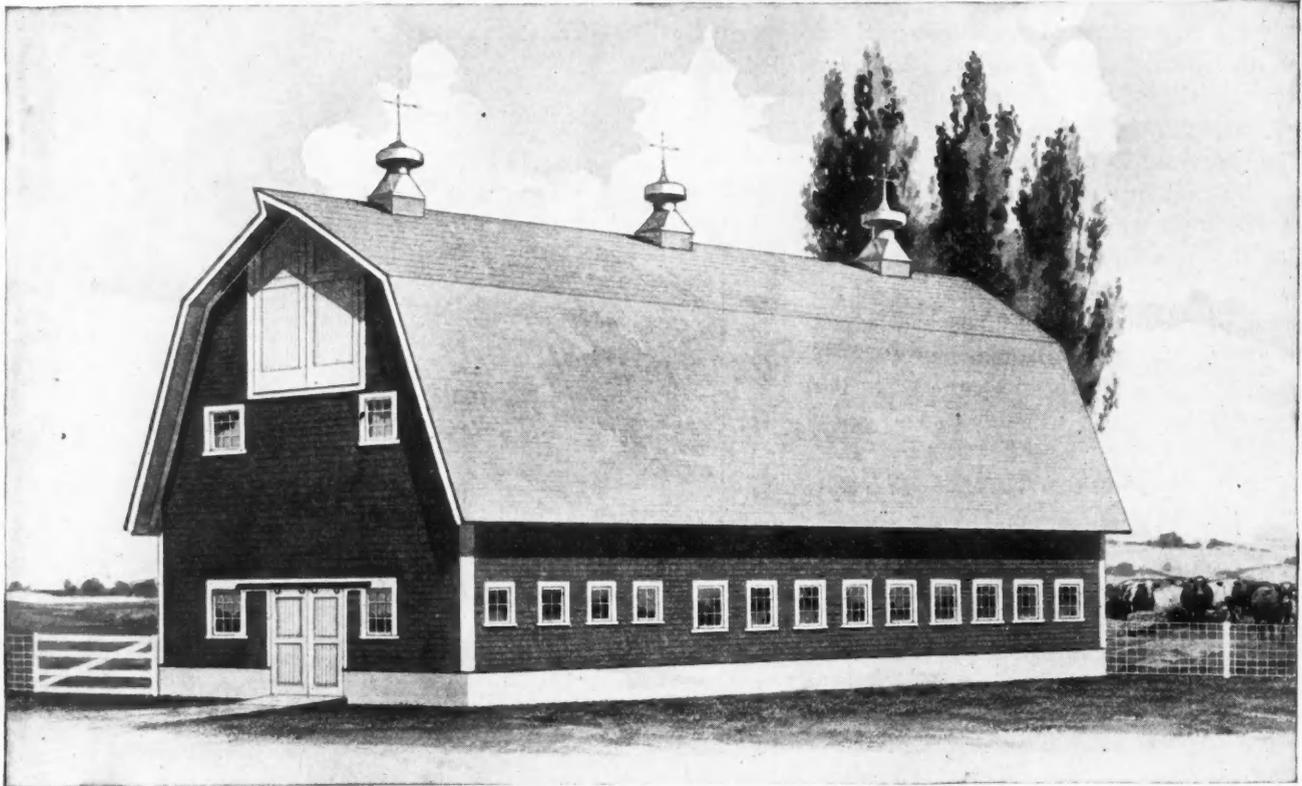


Photo of Saw Tooth Roof Type Community Hog House, Size 24 by 74 Feet, Containing Twenty-four Pens.

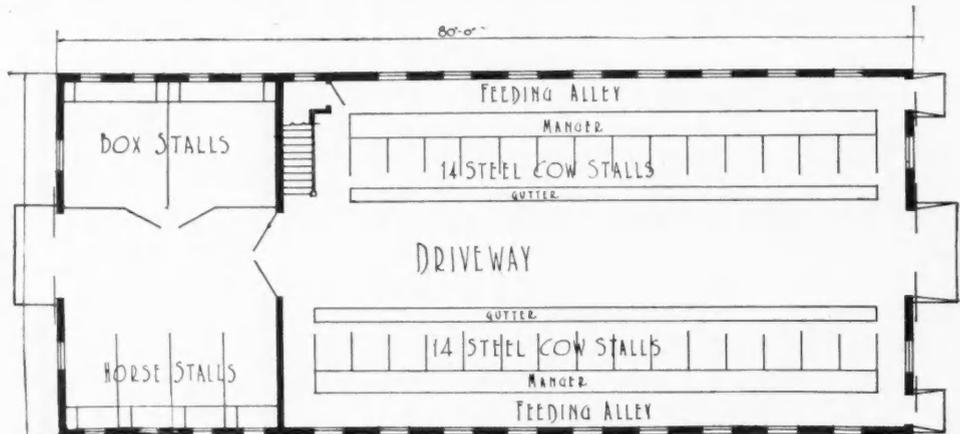


Big Gambrel Roof Dairy and Horse Barn, Size 34 by 80 Feet, Arranged to Stable Twenty-eight Cows and Six Horses.

Horse and Dairy Barn

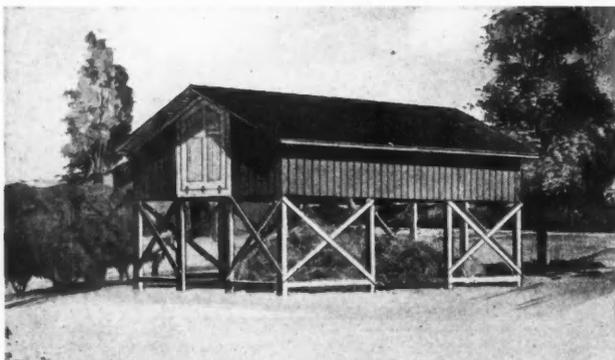
A barn of this type must be used before its many conveniences and economies can be thoroly appreciated. In effect, it is two stables in one. The horse barn, as should be the rule, is shut off from the dairy stable by tight partitions and solid doors.

Room is provided in the tremendous mow for the storage of sufficient forage to last thru an ordinary winter season. Any surplus hay product, however, may be stored to excellent advantage in a hay shed of the type shown below.

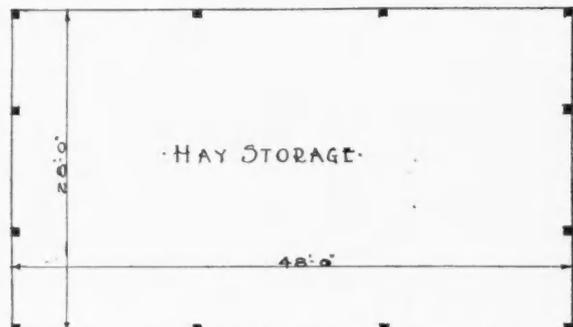


Floor Plan of Gambrel Roof Barn, Arranged for Twenty-eight Cows and Six Horses.

This plan for this barn may be modified, if desired, by creating more space for horses, or by eliminating the horse barn feature entirely and making a dairy barn of the entire structure.



A 28 by 48-Foot Hay Shed.



Showing Floor Plan of Hay Shed.

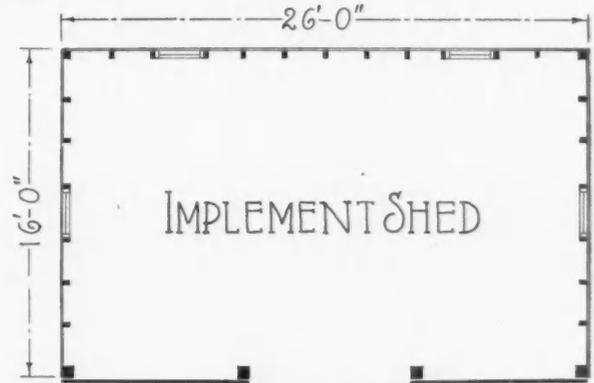


Photo and Floor Plan of Well-Built Implement Shed with Doors Hung in Three Sections to Roll.

House the Farm Machinery

THE shortage of farm labor this year is forcing the farmer to invest in every sort of labor-saving equipment.

The lumber dealers and their "traveling salesmen," the rural carpenters and builders, should get together on a thoro-going campaign to make sure that every farm implement or piece of farm machinery is properly housed.

There are too many who are just shiftless enough to put a thousand dollars, more or less, into a farm

tractor and then let it stand out in all kinds of weather.

Such waste is a crime, and builders will not be doing their patriotic duty this year if they permit it to continue.

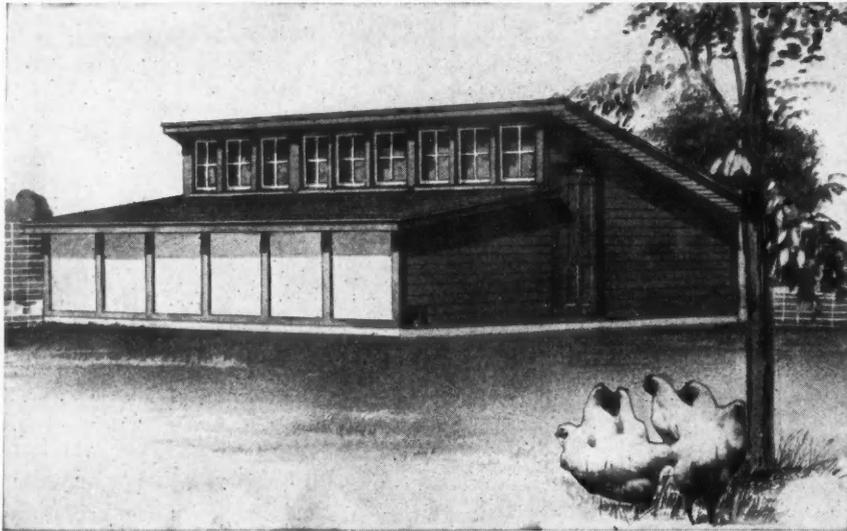
Get out and sell and erect implement sheds; and so help Uncle Sam.



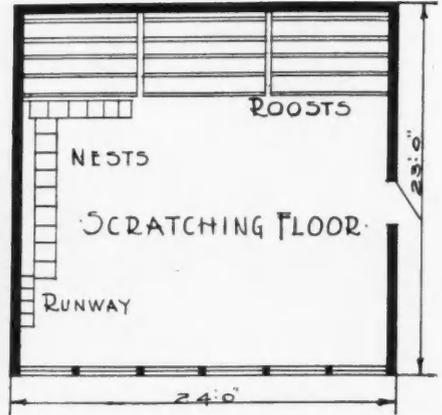
IT is rumored that the Kaiser is making special lots of Iron Crosses for Americans who help him by careless talk. Have you qualified yet for your Iron Cross?—Store Chat.



The Dairy Cow, Like Any Other Worker, Needs a Clean, Well-Lighted and Well-Ventilated Factory to Produce Most Efficiently. Take, for Instance, the One Item of Drinking Cups. Dairy Records Show that These May Increase the Milk Flow 10 Per Cent.



Saw Tooth Poultry House. Size 23 by 24 Feet.



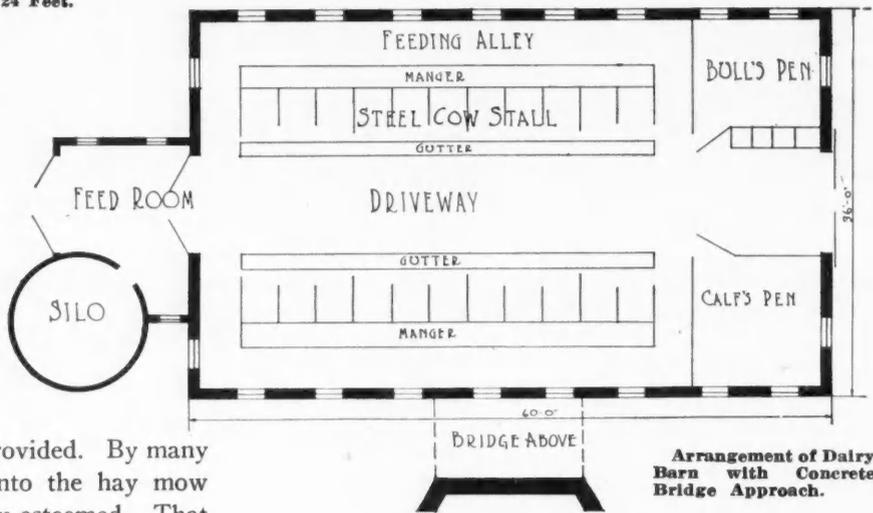
Arrangement of Saw Tooth Poultry House. is one of the distinctive features of this barn. Another is the convenient location of the silo.

Saw Tooth Poultry House

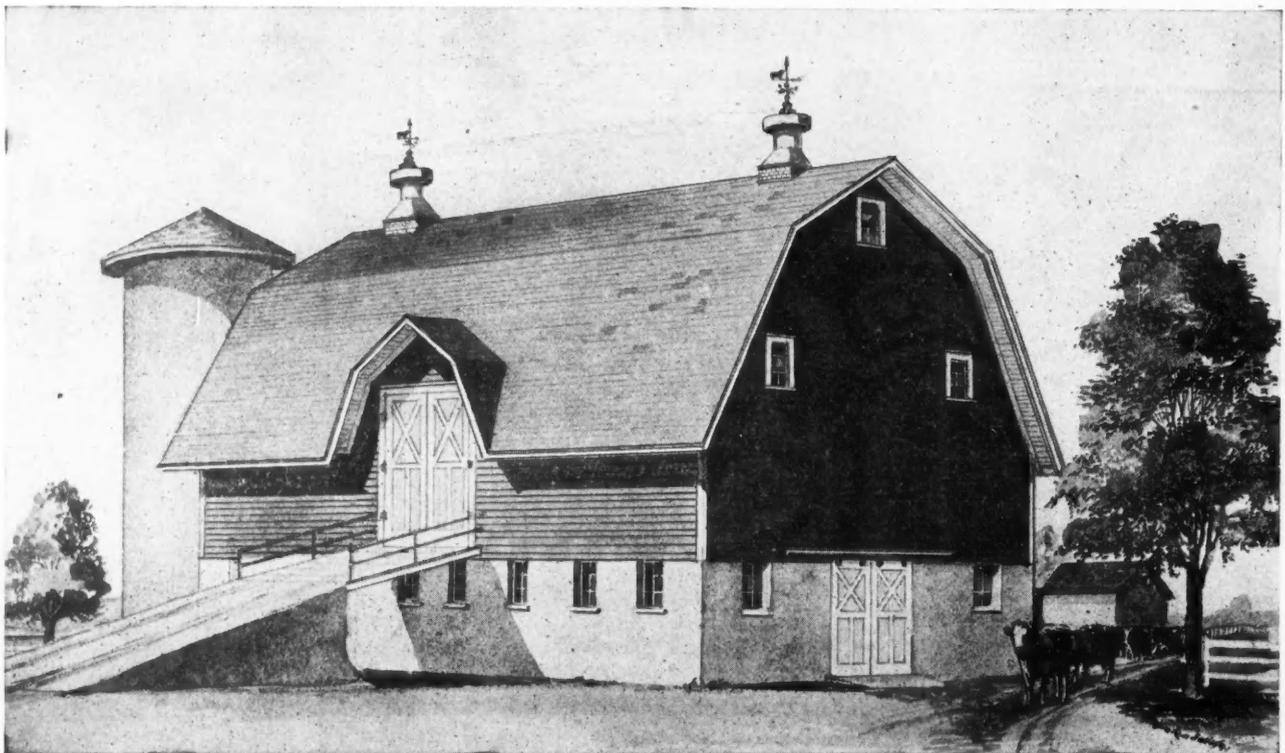
The windows in the saw tooth carry germ destroying light into the furthest recesses of the structure. The muslin-covered areas insure adequate ventilation and plenty of fresh air. This is a type of poultry house in which the brood should thrive.

Basement Barn with Bridge

This dairy barn affords accommodations for twenty-two head of stock. Bull and calf pens also are provided. By many agriculturists the ability to drive into the hay mow and unload from the wagon is highly esteemed. That



Arrangement of Dairy Barn with Concrete Bridge Approach.



Gambrel Roof Dairy Barn, with Concrete Bridge Approach. Size of Barn on Ground 36 by 60 Feet.



Portable A-Shaped Hog Houses Are Preferred by Many Stock Men for Brood Sows and Young Pigs. They Are Easily Constructed as Illustrated Below.

Portable A-Shaped Hog Houses

A FAVORITE type of hog house is illustrated. It is nothing unusual to have a farmer drive up to a lumber yard or carpenter shop where these little buildings are offered for sale and load half a dozen onto his wagon.

One farmer was recently relating his experience with this type of hog houses.

"We have a number of individual hog houses," he said, "built on the A-shaped plan with separate floors, so that they may be easily taken apart for cleaning. The advantage of the small individual houses is that the sow and young pigs may be moved to a field and left there with very little attention until the pigs are old enough to wean. This is an advantage at certain times of the year. Individual houses are sometimes used for the small pigs after weaning time.

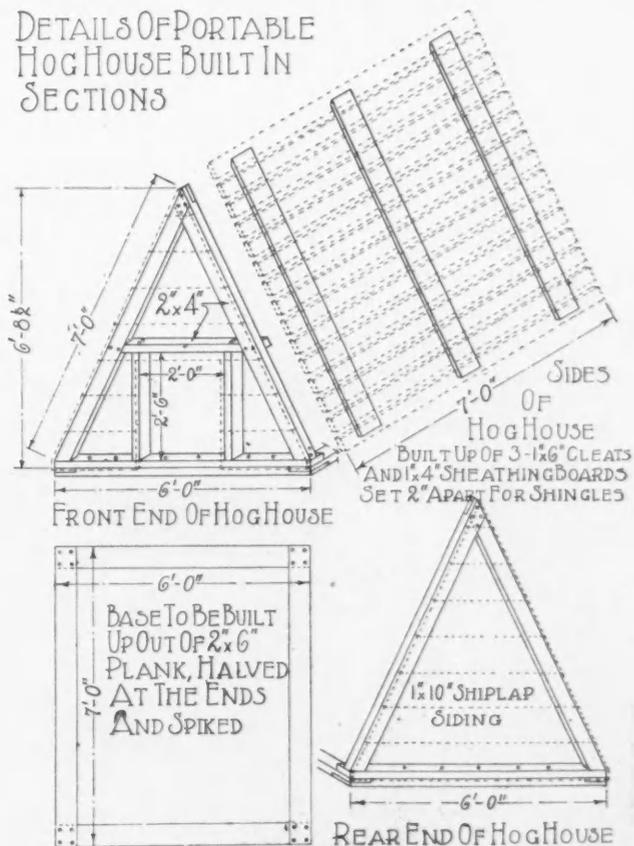
"Again in the fall at farrowing time, individual houses are almost indispensable for pure bred stock when it is not wanted around the barnyard. It often happens that the system of rotation includes certain crops that hogs can harvest for themselves, so that they can be kept in the fields a good deal of the time. But they require shelter at night and in case of cold rain storms.

"Both sow and pigs are better to run out and forage for a greater part of their feed when weather conditions are favorable. The expense is very much less when hogging-off crops are grown, because the hogs help themselves and save the labor of harvesting and feeding.

"Another advantage of this system is that the

manure is scattered around where needed without the labor of handling it. I urge you to recommend individual hog houses to every farmer who can manage the hogging-off feeding system to advantage."

DETAILS OF PORTABLE HOG HOUSE BUILT IN SECTIONS



Short Stuff and Odds and Ends Around the Lumber Yard Go Into This A-Shaped Hog House and Meet with a Ready Sale at a Good Price.

AMERICAN BUILDER FARM BUILDING PLANS



Blue Prints of Double-Silo Barn

COMPLETE SET OF WORKING PLANS PRESENTED IN THE BLUEPRINT SUPPLEMENT FOLLOWING

A SHORT time ago we were talking with a high official of the Illinois State Council of Defense regarding the value of farm buildings as an aid to food production. We were putting to the front the smaller and more inexpensive types of buildings as being more in line with war economy and the spirit of the times; and were rather making excuses for some of our large dairy barn designs.

"Not at all," this official declared. "To the farmer who has a big herd of cows that big barn *is necessary*; and he ought to be encouraged to build it."

Our Blueprint Supplement barn this month is a fine

type of dairy barn of generous size. It stables thirty-two cows in a gambrel roof building, 36 by 64 feet. The building looks larger than this, because of the two silos at the front. These are 12-foot silos connected to the barn by a 5-foot feed room, which makes the total frontage of this building 70 feet.

The ventilation of this barn is taken care of in an unusual way. The four foul air shafts project outside the walls, leaving the inside walls flush. The hay mow space is ventilated thru three louvers in each side wall under the eaves. The eighth-inch scale blueprints show fully the construction of this barn.

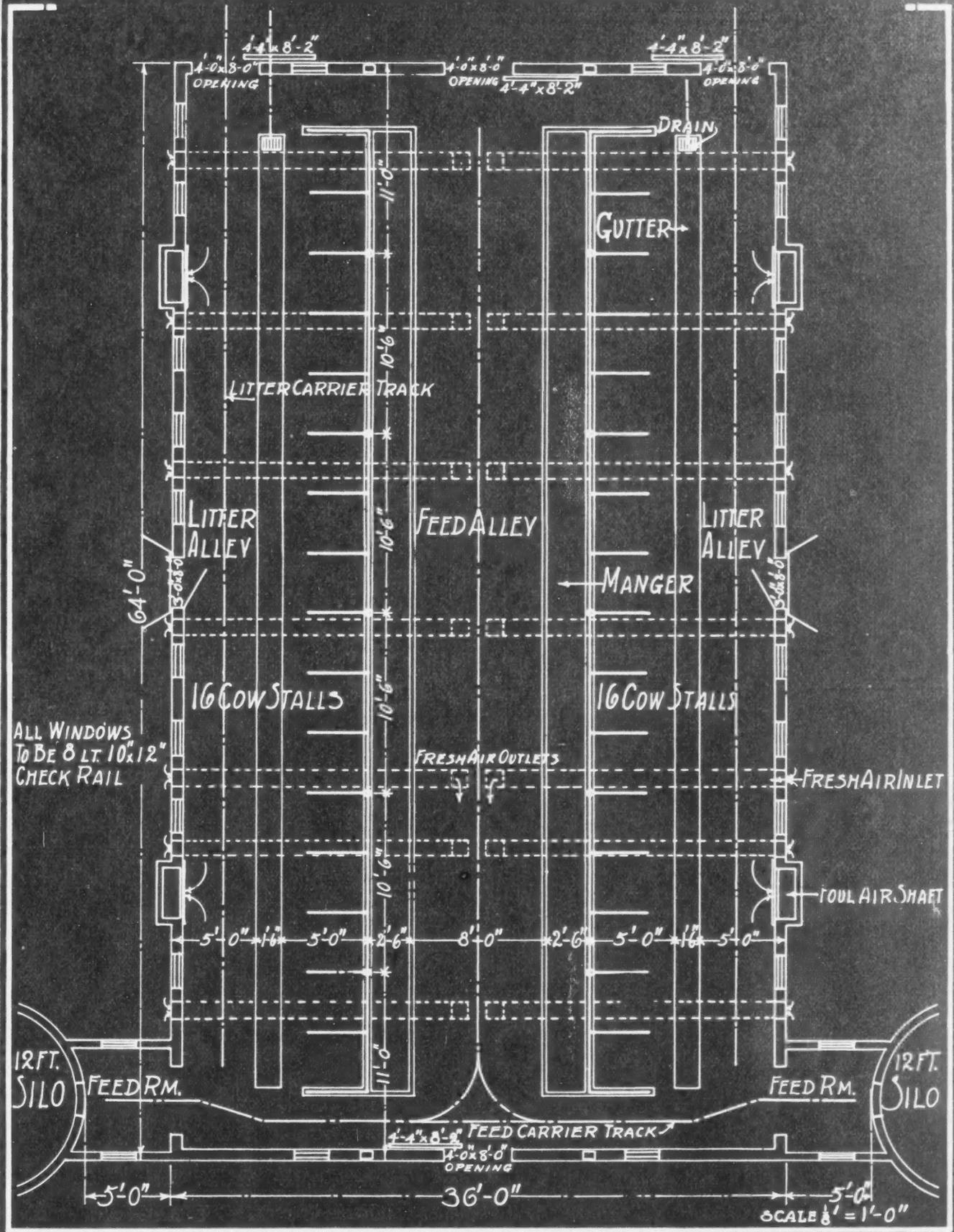


Photograph of Double-Silo Barn with Sheet Metal Roof. Size Is 36 by 64 Feet, Arranged to Stable Thirty-two Cows. Complete Plans for This Modern Dairy Barn Are Presented in the Blueprint Supplement Immediately Following.



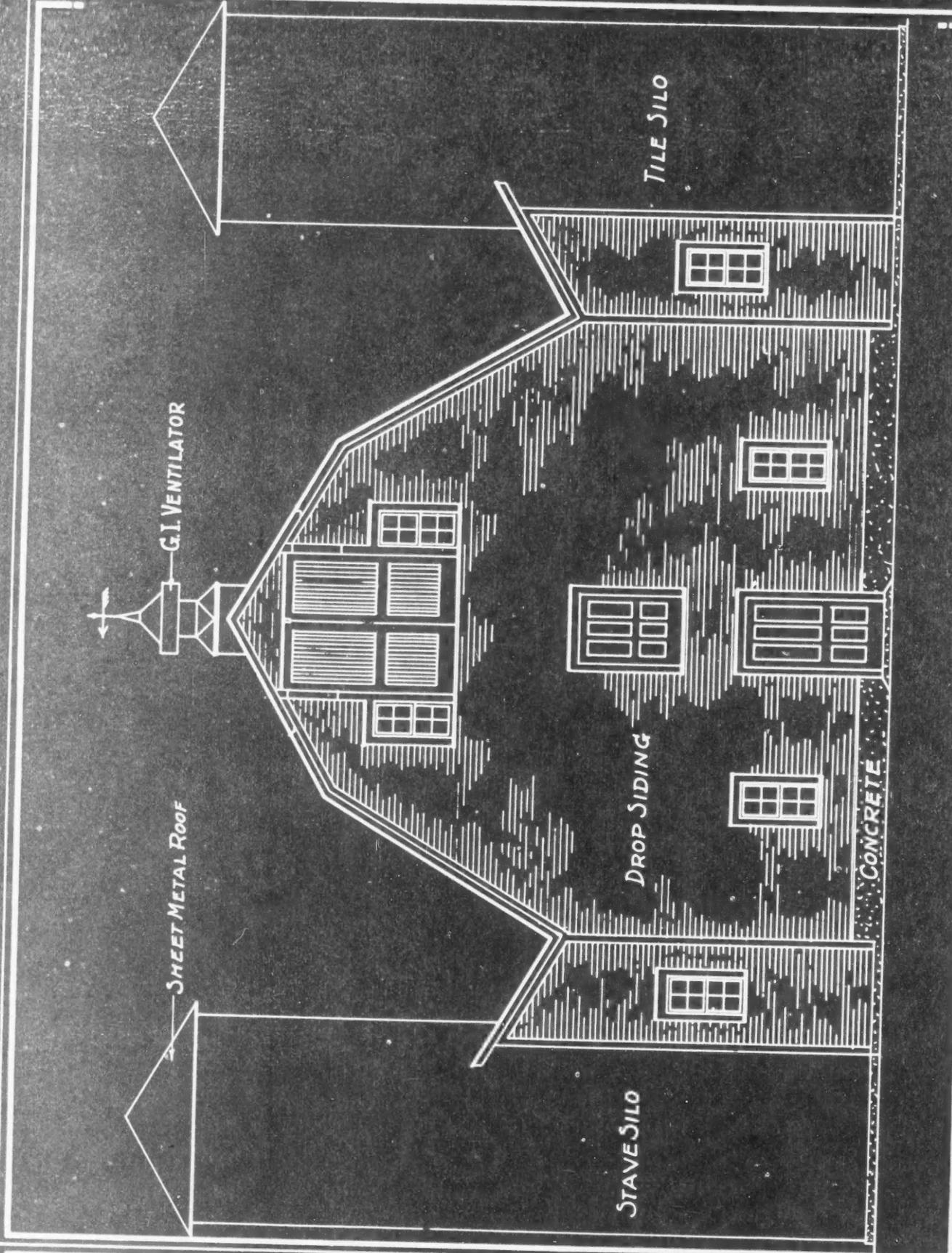


AMERICAN BUILDER FARM BUILDINGS



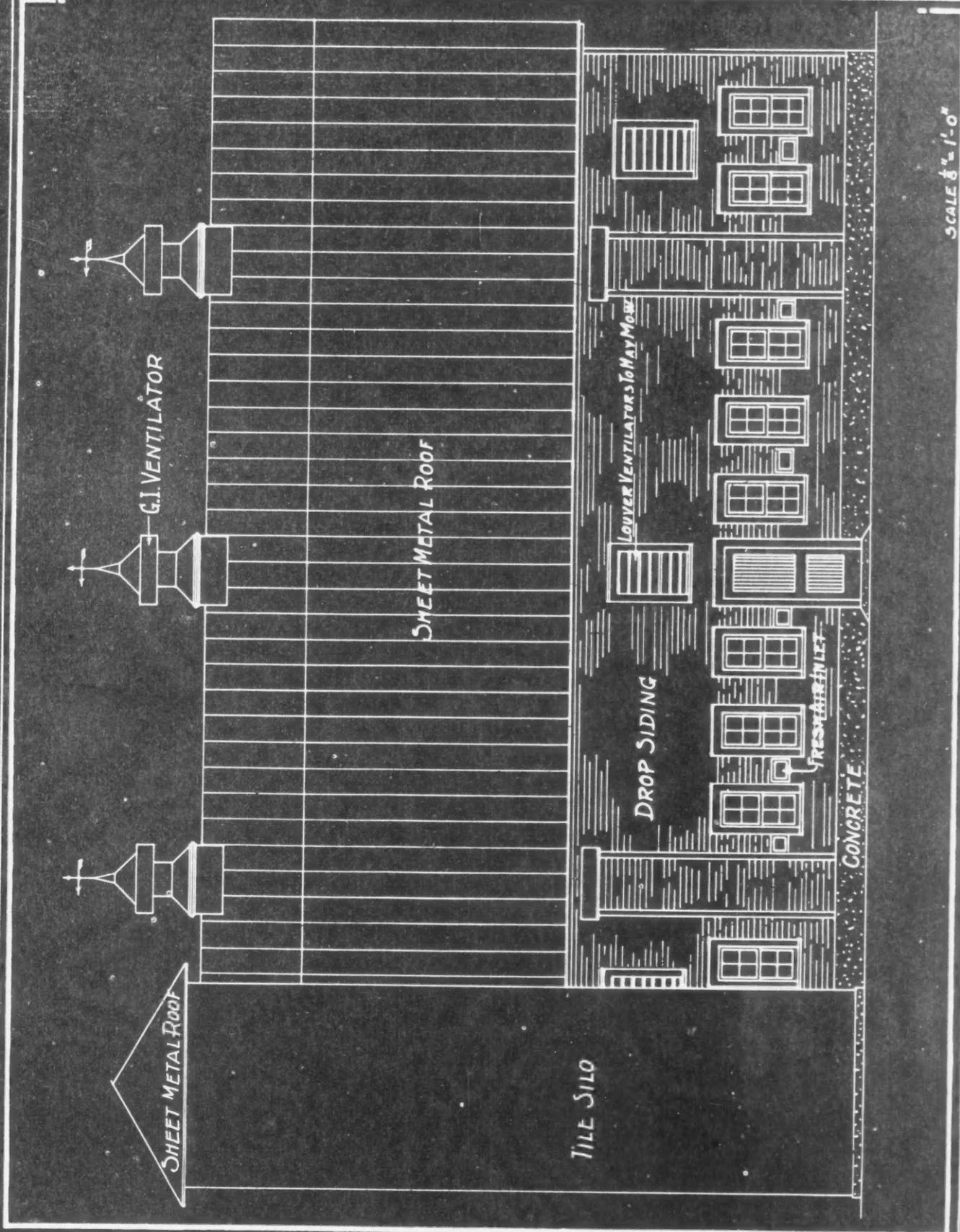
FIRST FLOOR PLAN OF DAIRY BARN

AMERICAN BUILDER FARM BUILDINGS



FRONT ELEVATION OF DAIRY BARN

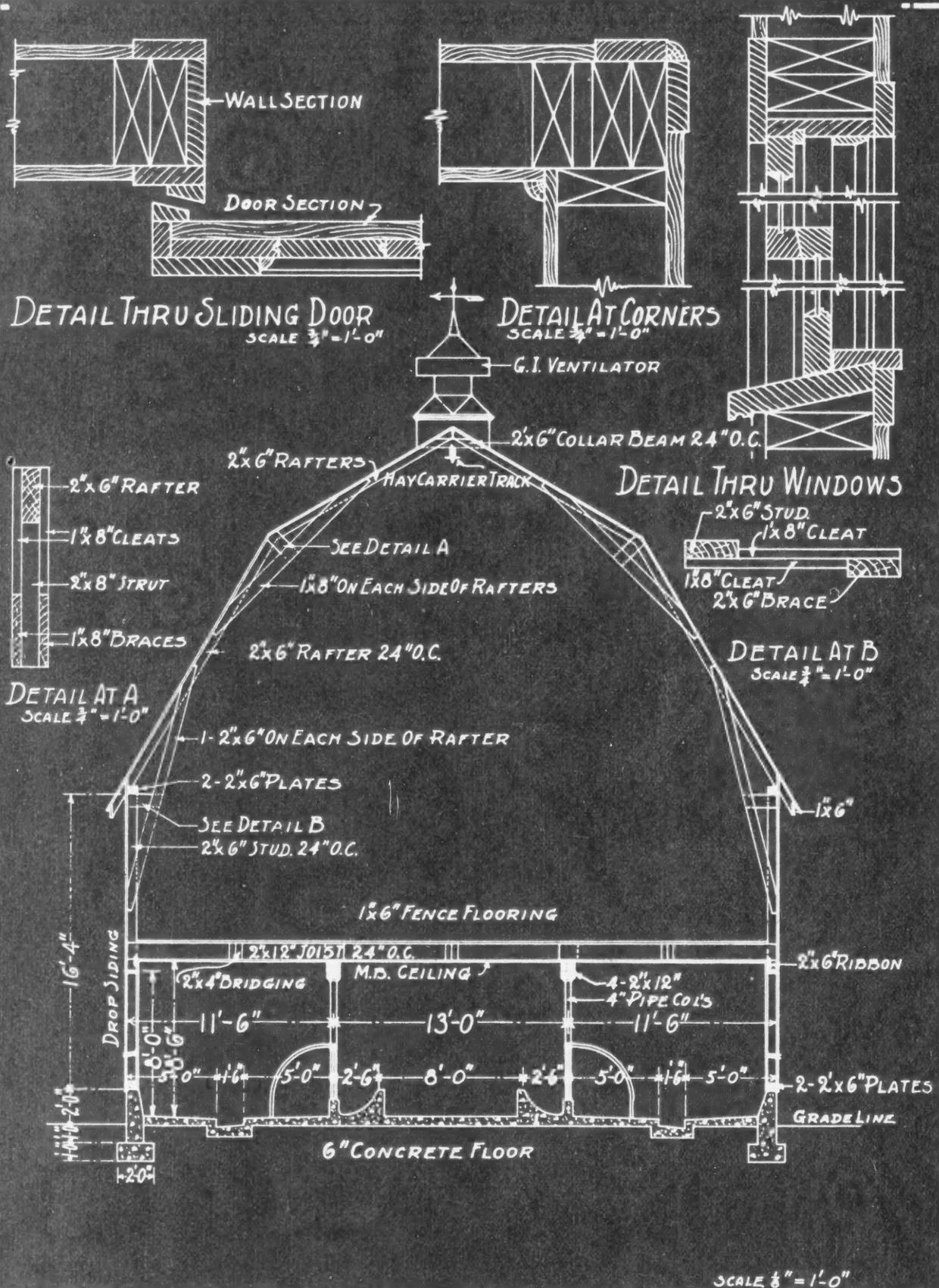
AMERICAN BUILDER FARM BUILDINGS



SCALE 1/8" = 1'-0"

SIDE ELEVATION OF DAIRY BARN

AMERICAN BUILDER FARM BUILDINGS



CROSS SECTION & DETAILS OF DAIRY BARN





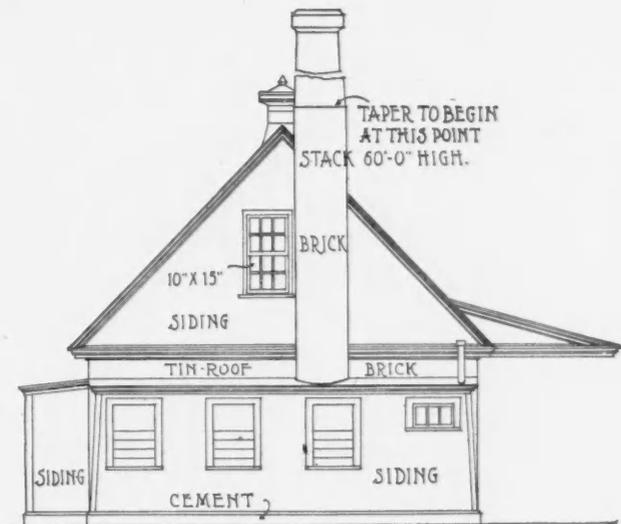
**Department of Agriculture Designs
Modern Creamery**

DURING the past few years a large number of creameries have been built in the United States, and the indications are that the present demand and high prices for butter will cause a good many more to be put up. In view of the interest which every rural builder has in any construction matter of this kind, some recommendations issued by the Department of Agriculture covering the method of organizing a co-operative creamery and of planning and constructing a model building are especially opportune at this time.

We are privileged to illustrate this design for the benefit of our readers, and we feel sure that a good many will find themselves in a favorable position to help along one of these creamery projects and then to handle the building contract.

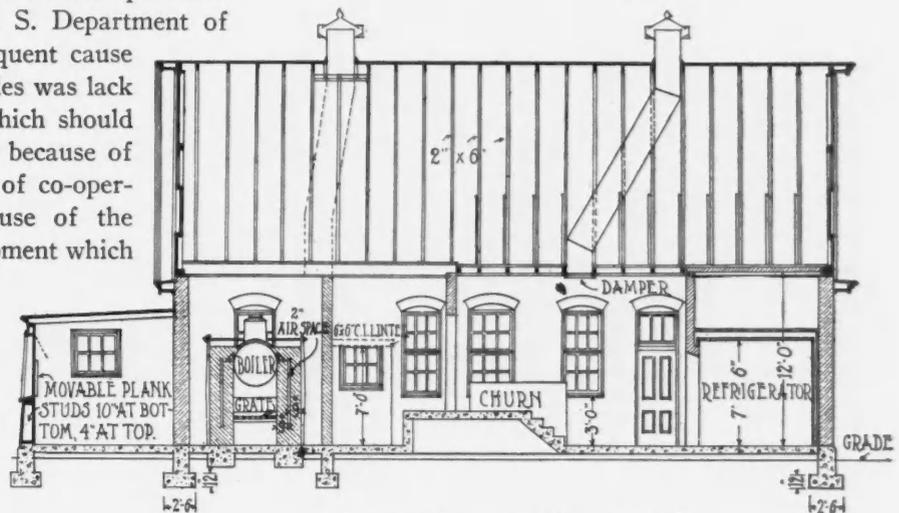
It should be borne in mind that before a creamery is put up, enough farmers with a sufficient number of cows, have to be pledged to insure successful operation. An investigation made by the U. S. Department of Agriculture has shown that a frequent cause of failure of unsuccessful creameries was lack of a sufficient number of cows, which should not be less than 400. Others fail because of improper organization in the case of co-operative creameries, and some because of the excessive cost of building and equipment which were of a type not suited to the requirements of the situation.

It should be remembered that a thriving local creamery increases the prosperity of all the farming community and is better than shipping the whole milk away to the city, since it permits the skim milk to be kept on the



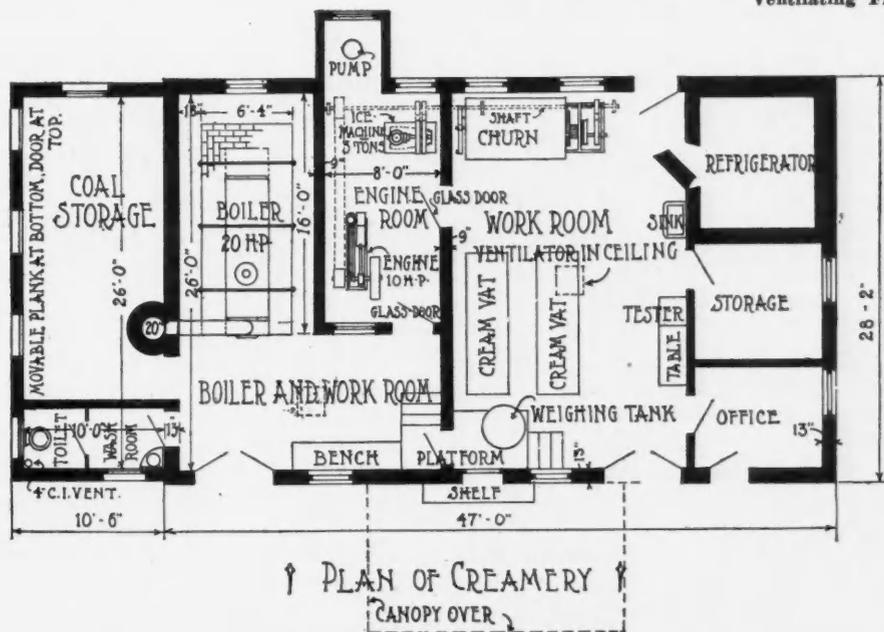
↑ END ELEVATION ↓

End Elevation of U. S. Creamery.



↑ LONGITUDINAL SECTION ↓

Section Thru U. S. Creamery, Showing Contour of Concrete Floor, Roof Framing, Ventilating Flues, Etc.

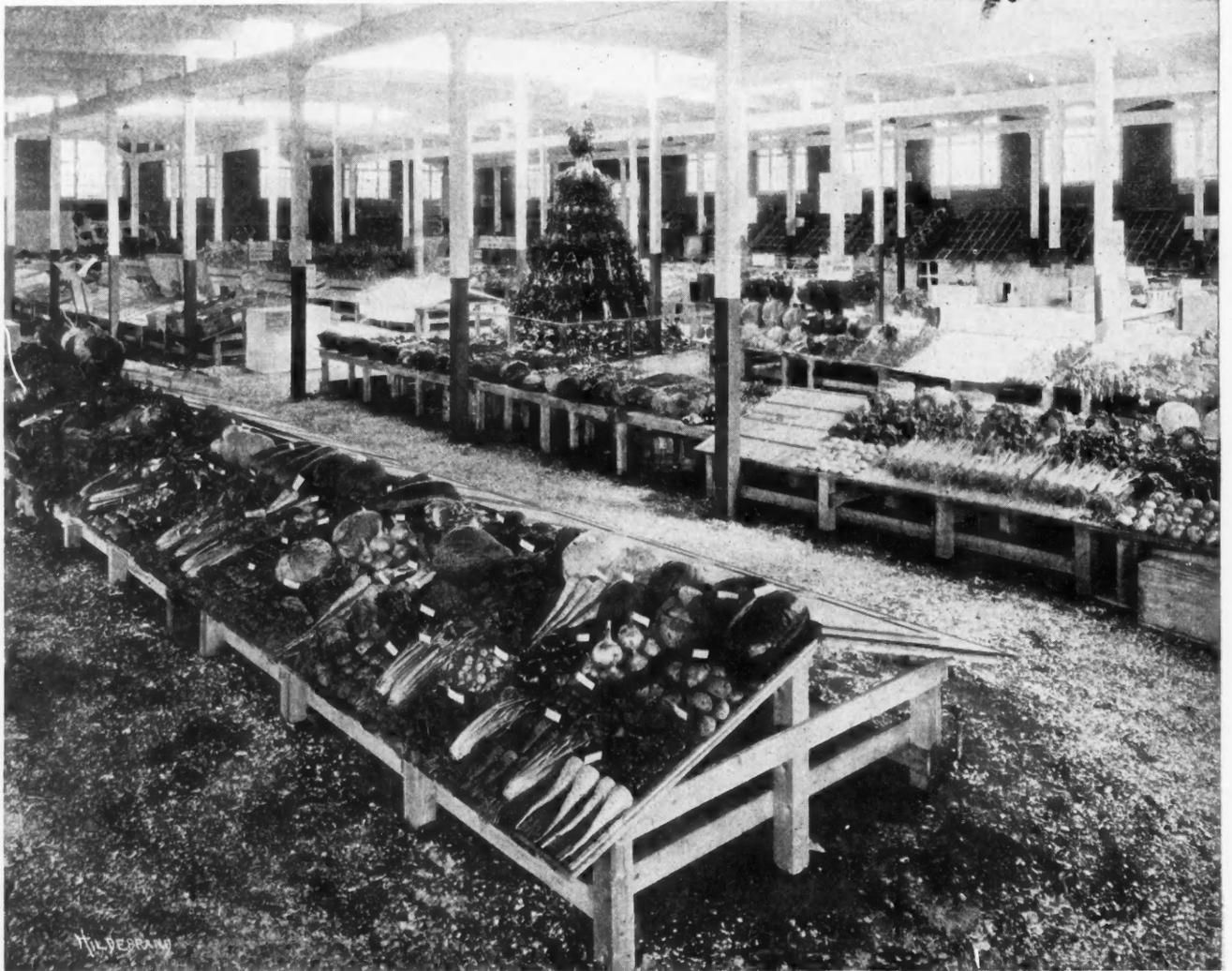


↑ PLAN OF CREAMERY ↓

Main Floor Plan of Creamery as Designed by the U. S. Department of Agriculture.

farm and fed to calves, pigs and poultry; all of which means prosperity for the farmer and more farm buildings to be put up. Any builder or lumber dealer will find himself well repaid for interesting himself in helping along any proposed creamery project.

The design recommended by the Department of Agriculture calls for a building about 28 by 47 feet. It consists of main workroom, engine room, boiler room (including space for refrigerating machine), coal room, refrigerator, store room and office. This is assumed to be a gathered cream plant, each farmer to do



With All the War Gardens This Year, There Will Be an Unusual Call, no Doubt, on Carpenters and Lumber Dealers This Fall for Display Racks and Tables for County Fairs and Other Exhibitions. This Is the Way They Should Be Built.

his own separating. If the whole milk is to be delivered to the plant, a power separator would have to be provided.

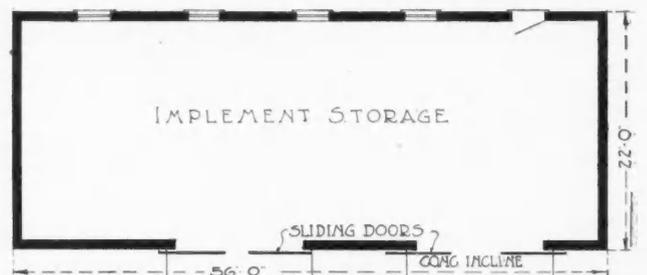
The layout as proposed calls for the following machinery or apparatus: Fifteen horsepower boiler, 10 horsepower engine, combination churn with a capacity of 600 pounds of butter, two cream vats, weighing tank, tester, three-ton ice machine, pump, etc.

In constructing the building, special care should, of course, be given to the matter of sanitation. An impervious floor of concrete should be laid, rounded up at the wall lines to avoid cracks or corners. Provide plenty of window space, as sunlight is the best disinfectant. Plenty of it admitted will help keep the creamery sweet.

Proper ventilation is very important. Because of the nature of the business, a creamery is damp—the air laden with moisture. If proper ventilation is not provided, the machinery soon rusts, belts go to pieces, and the wood parts of the building decay, so that periodically the building has to be renovated and rebuilt inside. All of this is a constant and continual expense if the creamery is not properly ventilated.

Sooner or later, every creamery in this country will have a successful system of ventilation. In new cream-

eries this important matter is being taken care of as they are built, and the old creameries are being remodeled and ventilation supplied.



Photograph and Floor Plan of Snug and Substantial Farm Machinery Shed of Hollow Tile. Size is 56 by 22 Feet. Two Pairs of Sliding Doors Make It Convenient to Get Any Implement Out with Very Little Shifting of Other Tools.



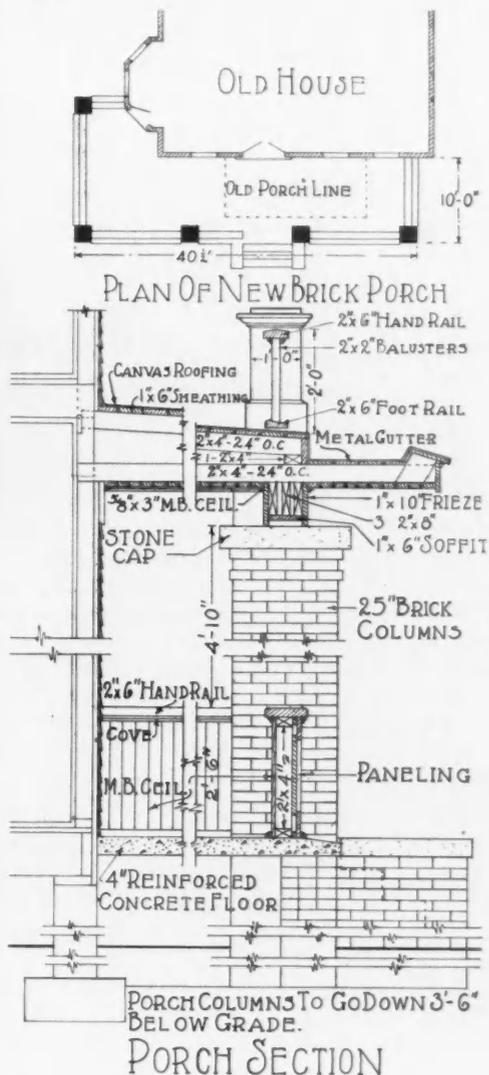
Modernizing an Old Fashioned House

THE AMERICAN BUILDER has been asked by J. M. Partridge, of Eagle, Wis., to work out some remodeling ideas for the substantially built old-style residence shown above. He desires a living porch of generous size to be built of face brick.

Our suggestion is illustrated below, showing how this house will look after the proposed new porch is built on. The construction detail gives dimensions and details of the work.

Our recommendation is for a broad porch extending clear across the front of the house and out at the side far enough to cover the octagon bay. Cut the forward window of the bay down to the floor and let it be a full-glazed French door; then that end of the porch can be screened in and be made a usable addition to the living room of the house.

On the second floor also we would make the corresponding window into a door so that this big balcony can be fully enjoyed.



The American Builder's Suggestion for Remodeling the Old-Style Residence Illustrated Above. Detail Gives Dimensions and Shows How the Work Would Be Handled.

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

Lattice Truss Porch Roof Support

To the Editor:

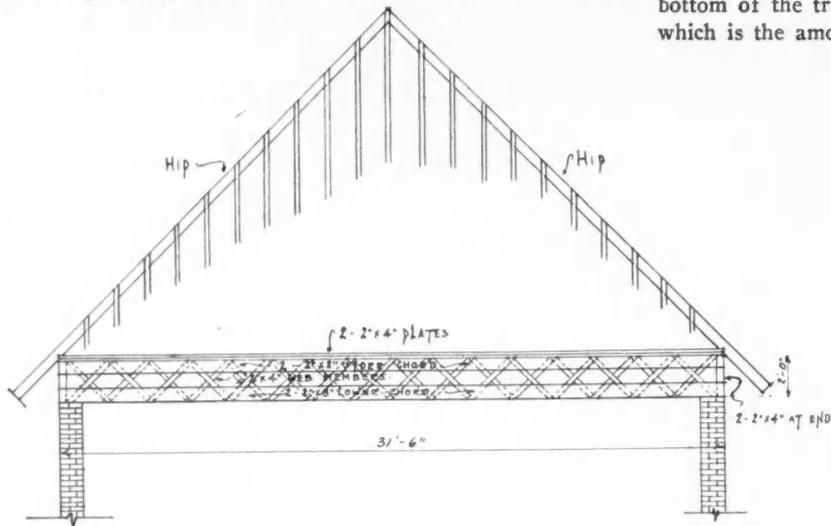
Montgomery, Ind.

Can you give me any light on supporting the roof over the porch across the front of a house? I only have about two feet in height for the supporting member and the roof must be supported across the 31 feet 6 inches without center posts. The main hip roof of the house extends over the porch which is 7 feet wide. The roof pitch is one-half. There are two brick columns at the outside corners of the porch.

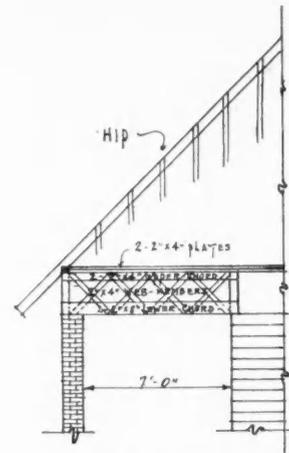
Answer—The portion of the roof which extends over the porch may be supported by lattice trusses the details of which

are shown in the illustration. Three of these trusses will be required. One across the front of the building and one on each end of the porch from the brick columns to the frame work of the house.

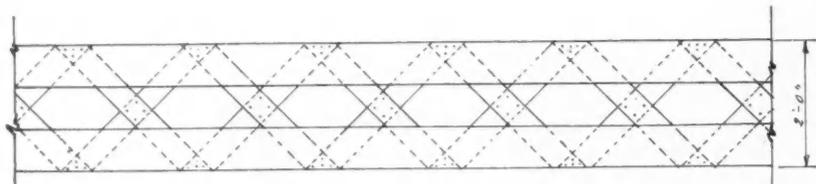
The lattice truss across the front of the house is built up of a top and bottom chord securely spiked to diagonal cross members set at 45 degree angles with these chords. The web members are cut from 2-inch by 4-inch lumber and are secured at intersecting points between the chords with four spikes. The chord members are 2-inch by 8-inch planks spiked on each side of the web members along the top and bottom of the truss. The total height of the truss is 2 feet, which is the amount of clearance available.



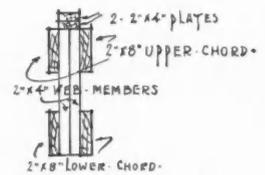
SECTION A AT FRONT SHOWING TRUSS A



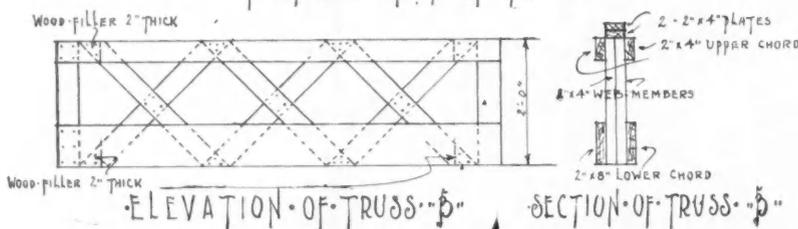
SECTION B AT SIDE SHOWING TRUSS B



PART ELEVATION OF TRUSS A



SECTION OF TRUSS A



ELEVATION OF TRUSS B SECTION OF TRUSS B

Detail Showing Method of Constructing Lattice Trusses to be Used to Support Overhanging Part of Hip Roof.

The truss across the end of the porch is built in the same way except that the upper chord members are 2-inch by 4-inch lumber. Two 2-inch by 4-inch plates are spiked to the top of each truss. The rafters bear upon these plates.

EDITOR.



Contractor Mangels Is Not Ashamed of His Work, so Puts up a Sign and Lets Each New House Advertise His Ability as a Builder.

Ability to Draw Plans Gets Business

To the Editor: Davenport, Ia.
 I am enclosing herewith, photographs of a few of my best buildings erected during the last season and up to this date, and would like to see reproductions of same put in the next issue of "Our Builder," of which I have been a subscriber for the past five years.

I have at the present, eight new houses under construction and have a gang of ten men busy. I use the "Elite" folding scaffold brackets exclusively on all my work, and find them wonderful labor-savers.

I design and draw up my own blueprints and specifications, and find this a wonderful asset to my business, as the people appreciate it when you are equipped to give them this service.

WM. C. MANGELS,
 Building Contractor.



Pointers for the Mill Men

To the Editor: Madelia, Minn.
 Pardon me for neglecting to send in my subscription as long as I have, but I have been so busy that I have hardly had time to think. Thank you ever so much for sending my May number, as I can't afford to miss it. Enclosed with this note please find check for \$2.00 to pay for one year's subscription, and now a few words to our brothers.

First on the list we have a man by the name of J. M. Kane, who is making some kicks about builders' hardware which are interesting to read, and I do wish the manufacturers would sit up and take notice. However, there is one item he has about spindles and knobs threaded; we have such on the market.

Now, I have a kick to make to the millwork man. Why don't they make the width of their jambs to fit for a 2 by 4-

inch or 2 by 6-inch stud? They make them at least 3/8 inches too wide. In years gone by when 2 by 4 inch were 2 by 4 inch in full, it was all right to have 5 3/8-inch jambs, but now when studs are only 3 5/8 inches with 3/4-inch sheathing, and as a rule a thinner lath 5 1/4 inches is plenty wide to make room for plaster. We manufacture our own frames, but there are some who don't and they should be able to buy things that are right.

I also notice in the May issue we have a brother, Mr. F. E. Kennedy, who has trouble with his sash weights. For a twin or triple, the best way to use weights is to have only two weights in each box. There is no need for four. You simply take one weight, the weight of your sash, fasten a 1 1/2-inch awning pulley to your sash weight. Now run your cord thru the awning pulley and each end thru the sash pulley and fasten to your sash, one on each side, and you have it. It works better and your box can be smaller.

There are manufacturers who make small weights with holes thru the center such as Mr. Kennedy mentions, and I have tried them, but don't like them.

Wishing the AMERICAN BUILDER great success, I am,
 P. C. PAULSON,
 Contractor and Builder.



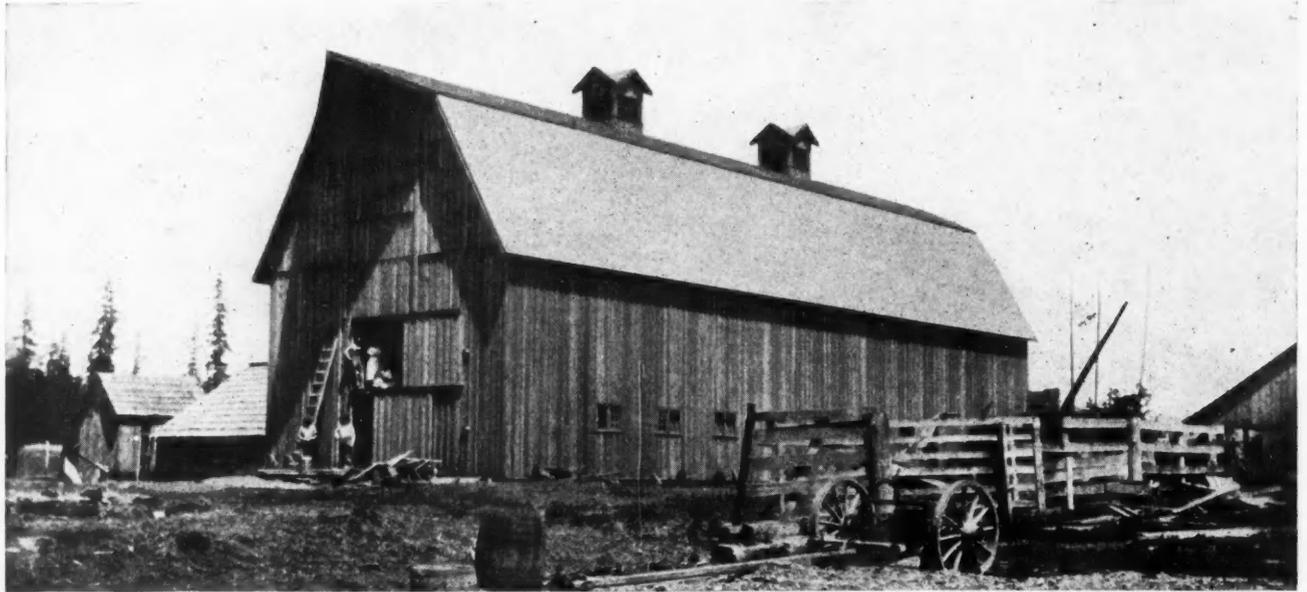
Laying Out Gothic Roof Hip or Valley

To the Editor: Estelline, S. D.

In the April number of the AMERICAN BUILDER you show a sketch of a Gothic roof barn, which as interested me very much, but I have a question to ask.

What radius, or how would you find the radius and proper curve for the hip or valley rafter of this barn with a span of 30 feet? There are perhaps different ways to find this, but I would like the simplest way.

HARVEY T. THOMPSON.



A Big Barn in Washington

To the Editor: Ethel, Wash.
 I herewith send you my subscription for another year, and with it a photo of a barn I put up for T. O. Hendricks at

Forest, Wash., last summer. It holds fifty cows, milk room, room for milk machine, root cutter and bin to put roots in. It is 120 by 36 feet, 22 foot posts.

NELS J. CLASSE.



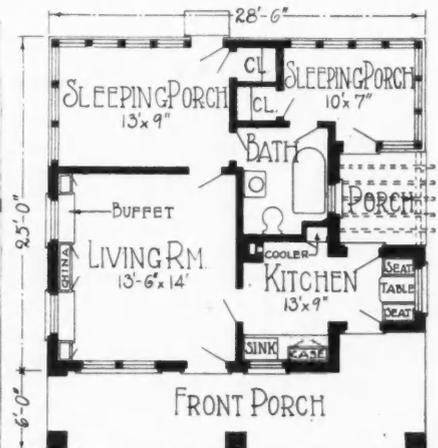
Blacklidge is Busy

To the Editor: Tucson, Ariz.

Here are a few of those pictures I have been promising; also a floor plan of my own "shack." Talk about busy! They are sure making me hustle for my salary these days.

We are using a good many of the AMERICAN BUILDER'S advertised products on these houses—Certainteed Roofing, R-W Hardware, Malthoid, Litholite, Hardwall, and so on. I can't think of half of them when I want to. We have built mostly of yellow pressed brick, two of the klinker brick (and they are the prettiest of all, I think), one plain red brick and two brick plastered.

Best wishes from
 H. J. BLACKLIDGE.



New Residence of H. J. Blacklidge at Tucson, Ariz. The Combined Buffet and China Cupboard Across One Entire Side of the Living and Dining Room Is a Popular Feature with This Builder.

Cup-End Bar for Driving Out Pins

To the Editor: Wakarusa, Ind.
 Having received notice that my subscription has expired, you will find enclosed a check for another year's subscription, hoping it is not too late, as I cannot get along without it. I appreciate all it contains. The articles on the Square are fine, if only I could better appreciate them. I would like to see an article on circle saw filing and setting, and the best methods of doing same.

Here is wishing the AMERICAN BUILDER and its readers the best of success. If we cannot all see alike in all matters, let's wish each other all the good we can.

I have a pin driver which I use in removing the pins in old frame buildings or in new ones when I need to. It is 5/8-inch soft steel, 12 inches long, which has a cup in one end like a nail set, only the cup is 5/8 inches deep and large enough to leave just 1/8 inch thick at outside. It is great to remove pins. Have cup end spread to 7/8 inches and you can remove them quick.

I have a mechanical drawing set. A screw in the bow pen of set beams became broken, so I took it to a jewelry store to get it fixed. He riveted it and it is a bum job. Where can I send it to get it properly mended?

L. I. HERSHBERGER,
 Contractor and Builder.



How to Roof a Concrete Stave Silo

To the Editor: LaFargeville, N. Y.
 M. C. Morrison asks about putting on a roof on a concrete stave silo. There could be some bolts put in the upper ends of the top staves when they were made or there could be holes made by using wooden plugs or by drilling in the staves so that a rod could be run down from the plate and put thru these holes, or it could be flattened and bolted to the staves.

There being an iron rod around the silo, the rods from the plate could come down and hook under this. They could go inside of it if they were flattened and a place made in the stave to receive them. Perhaps the people who sell the stave machines could tell something about this.

The plate could be in several pieces and should be double or even three layers, if made of inch stuff.

A farmer told me that his tile silo leaked a little thru the joints near the bottom and that a man told him to take asphalt and paint it inside. This idea might be helpful with a concrete silo also.

JOHN UPTON.



Uses Advertised Building Materials

To the Editor: Brownsburg, Ind.
 Enclosed you will find \$2.00 for my renewal to the AMERICAN BUILDER, also some photos of work we have been doing, which may give you an idea of some of the benefits derived from your journal. Each photo represents something



Home of H. Johnson, one of the Johnson Brothers, Contractors, which is roofed with Vulcanite Asphalt Shingles, the outside wall lathed with Bishopric Plaster Board, and heated with a Modern Way Pipeless Furnace.



"This is the home of H. C. Bell, of the Indiana Truck Sales Company, built by Johnson Brothers and heated by a Modern Way Pipeless Furnace, sold and installed by them. Some say a pipeless furnace will not heat, but this one has been giving satisfaction for the past two winters, and last winter was some winter, too."

advertised in the AMERICAN BUILDER.
 I have been a subscriber for a number of years, and always look forward to the time for each number to arrive. I always take much interest in the advertisements, but I believe much more help could be gotten and time saved if more prices were given along with the ads.
 HARRY JOHNSON,
 Johnson Bros., General Contractors and Electricians.



Wants to Build Drum Sander

To the Editor: Throckmorton, Texas.
 I would like to have thru the paper plans for building a drum sander.
 E. A. BIRCHITT.



Wants Rafter Table

To the Editor: Graceville, Minn.
 Please advise of a certain system that can be followed showing various pitches of roofs and how to arrive at the length of rafters used for various pitches.
 J. B. SCHMIDT,
 Agent, Neumann Lumber Co.



Up to Him to Build Portable Floor

To the Editor: Aberdeen, S. D.
 My employer, interested in an amusement park, expects to build a large canvas-covered dancing and skating floor. The floor is to be built in sections so that it would be portable. We would like some information from you as to the proper way to do this work.
 E. O. WEBSTER.



How Fast to Case a Window?

To the Editor: Lexington, Neb.
 Your reminder at hand, for which I heartily thank you, for I certainly don't want to miss a single issue of the AMERICAN BUILDER. You may rest assured that I'm getting my money's worth out of it, and then some. Subscribing for the AMERICAN BUILDER is just like sowing two bushels of wheat and reaping eighty bushels at harvest.
 My compliments to Mr. Forrest Reichard on his article in the May issue. That article is worth more than a dozen on "how fast a door can be hung." Those of us who employ carpenters know how many men can hang more than nine or ten doors in ten hours.

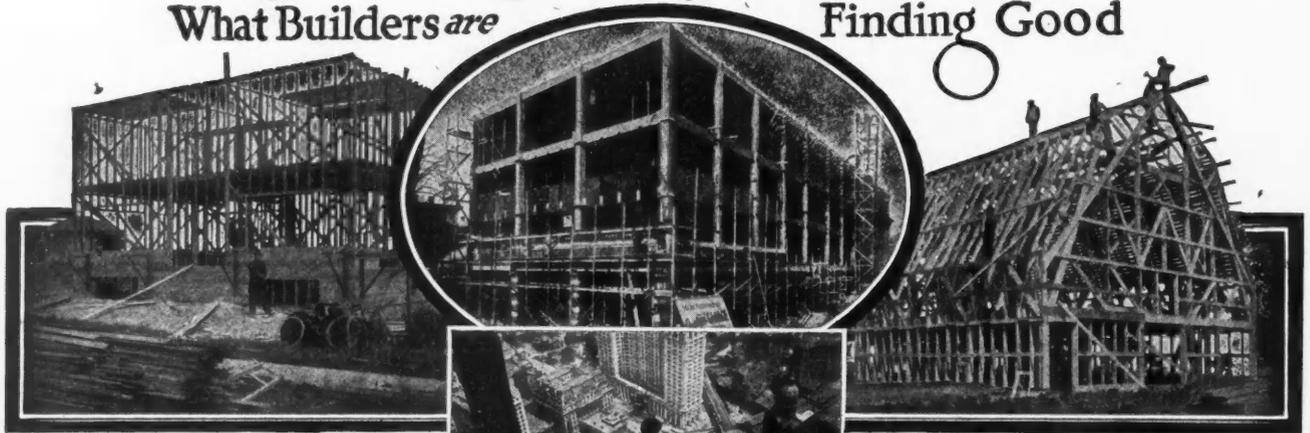
We have heard a lot about hanging doors; now how about casing windows? Who is the speed merchant at that, and who can submit the best outline on casing a window?

FRED W. KOCH,
 Contractor and Builder.

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.

Selling Pumps Thru the Window

A New Noiseless Pump Offers Great Opportunity for Attractive Display

Did you ever notice how window displays reflect the character and quality of a business? A well-arranged attention-getting window display announces a progressive business. Often it is the dealer's best salesman. A good window display drives home a single idea instead of scattering the attention over a half dozen or more lines.

A new pumping outfit is being displayed by many dealers and it offers abundant material for such a show window. It is the first and only *noiseless* pump for the home water supply system. These plants are now almost a necessity on the modern farm and in village homes where there is no public water supply.

An exhibit in full operation always commands attention and many of the onlookers will become quickly interested in a pump that runs so quietly that they can hear only the pleasant purr of the motor.

Now, a word about installing the exhibit. Attach a suc-

tion pipe to the pump so as to draw water from a barrel in the basement. Discharge the water into a funnel so connected that the water will return to the same barrel. It is so easy and simple to display this new pump that almost no directions are needed. Better get your window display under way. It makes a business-getting exhibit. The window exhibit shown above is worthy of imitation.

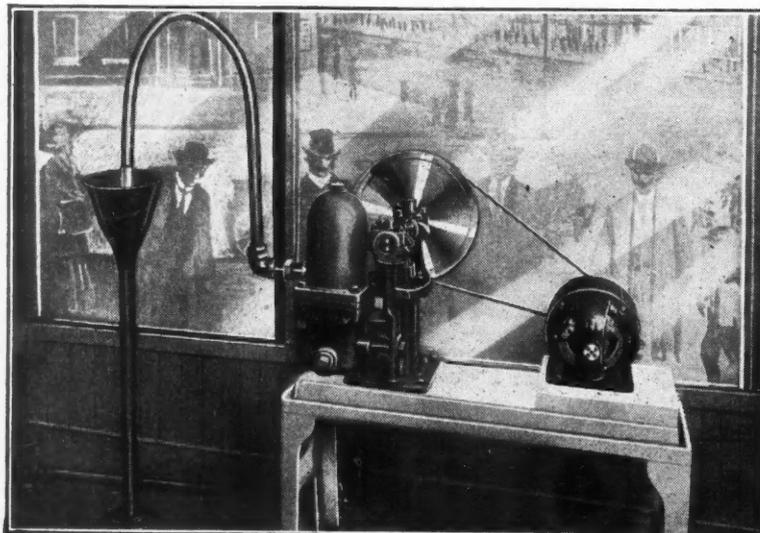


Watch Your Sand

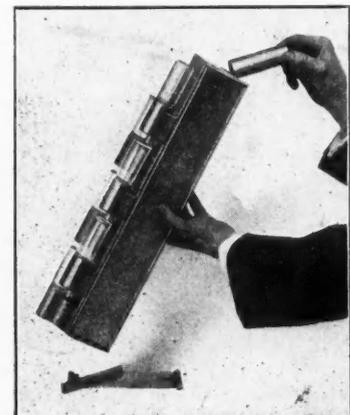
Everyone who uses sand knows that testing is necessary, but until the advent of a simple tester it was so inconvenient outside of a laboratory that this highly important step in the making of concrete remained essentially neglected except on the very largest of operations.

Like other sands, the sand used in concrete work is rock which has broken down under the weathering process of the ages. All sand grains are minute fragments of rock, usually transported from their original site by some agency such as water and deposited in beds of greater or less thickness and extent. Just as waves wash on the beaches of today, so other waves washed on those prehistoric beaches, until, layer after layer, the sand banks from which we get our sand today have been built up.

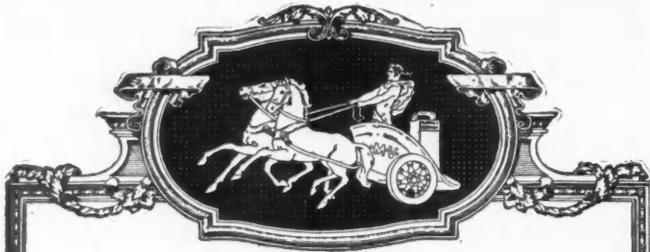
(Continued to page 68.)



This Window Display Attracted Crowds of Interested Prospects.



Putting the Sand Into the Tester.



How Are Your Buildings Coming?

Rising labor-costs and material-prices endanger the profits on many a contract. A saving in varnishing means a whole lot today if it need not sacrifice quality.

Murphy Varnish

"the varnish that lasts longest"

It flows freely and is easily applied. A little goes a long way. It increases the daily output of your painters.

Its beautiful finish seals woods and makes them last and last—impervious to wear and weather.

Safeguard your profits and serve your clients by using these *longest-lasting*, economical finishes:

- Murphy Transparent Interior*
- Murphy Transparent Spar*
- Murphy Transparent Floor*
- Murphy Nogloss Interior*
- Murphy Semi-Gloss Interior*
- Murphy Uni-vernish*
- Murphy White Enamel*
- Murphy Enamel Undercoating*

Murphy Varnish Company

Franklin Murphy, jr., President

Newark Chicago
Dougall Varnish Company, Ltd., Montreal, Canadian Associate

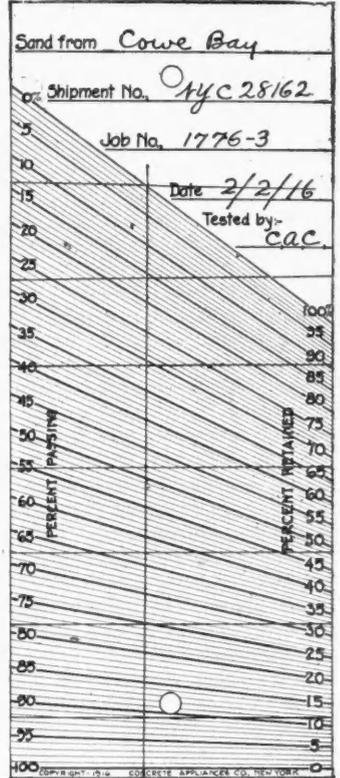
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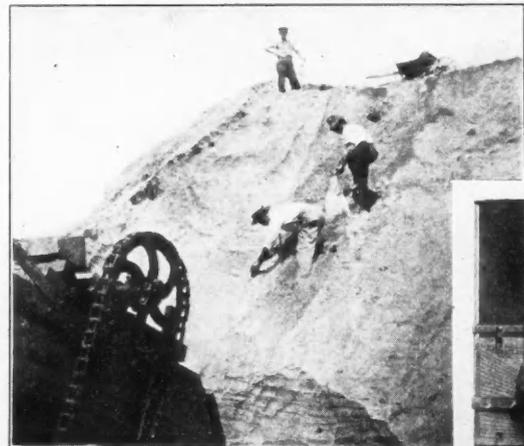
Agitating Sand with Water to Separate Into Grades.

Sand as obtained from such sand banks must vary in quality. Some parts of the bank are coarse and other parts of the bank are fine; and since these sand deposits are water-formed, it is only natural that they should contain more or less dirt or silt, or other washed-in materials detrimental to concrete. In the light of these facts and knowing that to make first grade concrete there must be used a proper quality of sand, it is rapidly becoming recognized that all sand going into concrete must be of known and suitable quality. The quickest, simplest, easiest and most accurate way of checking up the quality of the sand is with the sand tester.

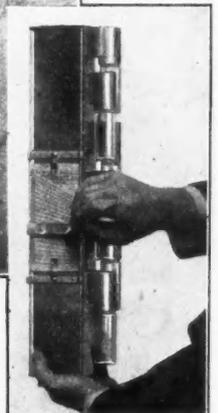
Prospecting for Sand—It will pay to keep the sand tester on every job, whether it be making concrete for walls, for foundations, for dams, for bridges, for roads, for sidewalks, for reservoirs or for concrete products. And, in addition, have you ever considered what it would mean, when hunting the materials for your



Record Sheet for Marking Results of Sand Tests, Showing a Record of a Test Marked Thereon.



Using the Tester on the Job.



work, if you were able to send your man to investigate sand beds equipped with a light, handy, self-contained instrument that would assure accurate data?

Official Grading

Neat Package

No Culls

Guaranteed Thickness

Responsible Manufacturers

RITE-GRADE
INSPECTED

**5 Points
in Favor of
RITE-GRADE
INSPECTED
Red Cedar Shingles**

"If it isn't up-to-grade — it isn't Rite-Grade"

These five points of quality and service make "Rite-Grade Inspected" Red Cedar Shingles pre-eminent for permanent exterior wood construction.

For siding "Rite-Grade Inspected" Red Cedar Shingles are enduring, substantial, economical in first cost and upkeep and architecturally beautiful.

For remodeling, nothing will add more to the attractiveness and increase the value of the old home from crest to foundation than a covering of "Rite-Grade Inspected" Red Cedar Shingles.

A good shingle demands a good nail, always use the rust-proof nail—hot dipped zinc coated or pure iron.

"Rite-Grade Inspected" means that the Official Bureau of fifty associated mills guarantees under the "Rite-Grade Inspected" mark (incorporated in the manufacturer's own label or stencil) uniform size, thickness, grain, grade and selection.

Send for our Distinctive Homes and Farm Building Books; also a novelty sample of "Rite-Grade Inspected" Red Cedar Shingles—all free on request.

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

Feeds Nails Automatically

A light, well-built, durable device which is attached to the handle of any kind of hammer and will feed nails to hammer has recently come onto the market. By operating the trigger with the forefinger this device will feed the nail from the magazine right up to the hammer, and hold it there securely until nail is firmly set into the wood. Upon releasing the trigger, the holder drops back, leaving the hammer free to finish driving the nail.

Anyone can attach this device to the hammer handle or remove it in a few seconds. With this device attached to your hammer, you can drive nails as fast as you can swing your arm, and as high as you can reach. It is claimed to be a great time-saving device for shingling, lathing, siding, building scaffolds, forms, etc.

It may save your life, because you can do all the work with one hand and the other hand you have free to hold yourself while you work in a dangerous place.

Does the work of two men, because in many places you must have another man hold up for you, whereas, with this device you can do it all alone, because

you can hold up with your other hand. This will also be just the thing for the one-armed man. He will be able to nail quite as well as his two-handed brother.



Nail Feeder Being Loaded and Used for High Nailing.

✦ Safety First Shoes

When rodding buildings, shingling or doing any other roof work, provide yourself with climbing shoe plates. They remove all the danger in climbing wooden roofs, either wet or dry and are worth many times the small cost. These plates are made from the best special steel, and fitted with hardened blued steel calks securely riveted to plates that do the work. They do not injure roofs because of the number of the points.

Safety demands every rod man and other roof worker to have a set.

They are simple and easy to put on any pair of shoes.

They come one set packed complete in a box with full instructions for putting on shoes. You can do rodding in one-half of the time with the aid of plates. If once

used you will never be without them. They will not damage the roof.



Climbing Shoe Plates.

"Forked Leaf" Brand Oak Flooring
"The Kind That Makes Good"

The LONG-BELL LUMBER COMPANY
 R. A. Long Bldg. - Kansas City, Mo.

View of Ballroom
 Hillcrest Country Club
 Kansas City, Mo.

Ask your Lumber Dealer for "Forked Leaf" Brand Oak Flooring. It will satisfy your customers.

There never was a better chance to sell a roofing idea at a good profit

ROOFING contractors are experiencing a new sensation—that of going out hard after business. There were days when new work came in steadily and re-roof jobs even came over the 'phone. Now the tables are turned.

Let the other fellows fight it out over the remnants of new roofing business—you mix common sense with your courage and go after re-roofing business with a brand new idea.

Fire-safe, lasting Johns-Manville Asbestos Roofing has a reputation behind it big enough to make you a wealthy man. You at once lift yourself out of the class known as local roofers into the class of the exponents of Johns-Manville Asbestos Roofing.

People need new roofs because they have too long let them go neglected. But they want good roofs because the war and the times have taught them a new idea of economy—the real idea, ultimate economy. Before you take our advice, see if you can locate a Johns-Manville Dealer who was ever sorry he took the step.

H. W. JOHNS-MANVILLE CO.

NEW YORK CITY

10 Factories—Branches in 61 Large Cities



JOHNS-MANVILLE ASBESTOS ROOFING



"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 8156, Scranton, Pa.

—TEAR OUT HERE—

INTERNATIONAL CORRESPONDENCE SCHOOLS

Box 8156, SCRANTON, PA.

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

- | | |
|---|---|
| <input type="checkbox"/> ARCHITECT | <input type="checkbox"/> SALESMANSHIP |
| <input type="checkbox"/> Architectural Draftsman | <input type="checkbox"/> ADVERTISING |
| <input type="checkbox"/> Contractor and Builder | <input type="checkbox"/> Window Trimmer |
| <input type="checkbox"/> Building Foreman | <input type="checkbox"/> Show Card Writer |
| <input type="checkbox"/> Concrete Builder | <input type="checkbox"/> Sign Painter |
| <input type="checkbox"/> Structural Engineer | <input type="checkbox"/> BOOKKEEPER |
| <input type="checkbox"/> Structural Draftsman | <input type="checkbox"/> Stenographer and Typist |
| <input type="checkbox"/> Ship Draftsman | <input type="checkbox"/> Higher Accounting |
| <input type="checkbox"/> Plumber and Steam Fitter | <input type="checkbox"/> COMMERCIAL LAW |
| <input type="checkbox"/> Heating and Ventilation | <input type="checkbox"/> Common School Subjects |
| <input type="checkbox"/> Plumbing Inspector | <input type="checkbox"/> Mathematics |
| <input type="checkbox"/> Foreman Plumber | <input type="checkbox"/> GOOD ENGLISH |
| <input type="checkbox"/> Sheet Metal Worker | <input type="checkbox"/> ILLUSTRATING |
| <input type="checkbox"/> CIVIL ENGINEER | <input type="checkbox"/> Railway Mail Clerk |
| <input type="checkbox"/> Surveying and Mapping | <input type="checkbox"/> CIVIL SERVICE |
| <input type="checkbox"/> ELECTRICAL ENGINEER | <input type="checkbox"/> MINE FOREMAN OR ENGR |
| <input type="checkbox"/> Electric Lighting and Rys. | <input type="checkbox"/> Metallurgist or Prospector |
| <input type="checkbox"/> Electric Wiring | <input type="checkbox"/> Gas Engine Operating |
| <input type="checkbox"/> Telegraph Engineer | <input type="checkbox"/> Textile Overseer or Supt. |
| <input type="checkbox"/> Telephone Work | <input type="checkbox"/> TRAFFIC MANAGER |
| <input type="checkbox"/> MECHANICAL ENGINEER | <input type="checkbox"/> AUTOMOBILE OPERATING |
| <input type="checkbox"/> Mechanical Draftsman | <input type="checkbox"/> Auto Repairing |
| <input type="checkbox"/> Machine Shop Practice | <input type="checkbox"/> Navigation |
| <input type="checkbox"/> STATIONARY ENGINEER | <input type="checkbox"/> AGRICULTURE |
| <input type="checkbox"/> CHEMIST | <input type="checkbox"/> Poultry Raising |
| | <input type="checkbox"/> Spanish |
| | <input type="checkbox"/> French |
| | <input type="checkbox"/> Italian |

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

My Business Creed

By Lester G. Herbert

Every business must have a Head—a real Head. If I'm IT, I will be far-sighted, just, and keenly alive to the best interests of everyone and everything. I will not be puffed up or forgetful of the rights of others.

If I am a private or even an officer in the ranks, I will do my best with intelligence and persistence, remembering that my first concern must be the good of the whole rather than individual gain or advantage.

I have confidence in myself because my habits are right and my vision true. Moreover, I am constantly seeking to learn better methods and to correct my own business weaknesses.

I like my job. Whenever I feel a bit out of sorts with it, I just contrast it with other fellows' work and opportunities, and then I know that it isn't the job, it's the man that *counts!* The man makes the job—or breaks it.

As I am freshest early in the day and feel possessed of the most initiative and courage, I will tackle my hardest tasks first, then the rest will come so easy that I will go on enjoying my work from day to day and year to year.

I will always avoid jealousy. When I am inclined to criticize the other fellow, I will stop first to discover if there is anything of envy in my attitude. I can never build myself up by tearing the other fellow down.

I will not be ready when criticized to raise a defense of self-justification. I will do the more manly things—examine myself to see if the criticism is justified. If it is, it is up to me to improve my ways; if it isn't, I do not need to care.

I will be big enough to rejoice when someone else succeeds and I will make that success count for myself by studying his methods and learning the reason why, that I may succeed, too.

Realizing the importance, necessity, and dignity of my work, I will be enthusiastic about it. And being enthusiastic, I will never do less than my best.

True success is not measured merely by dollars and cents—it is reckoned also in terms of manhood, integrity and service.

I will never allow a prejudice, a whim, or a habit to warp my life. I—my intelligence—is captain of my personality and I do not propose that any one weakness shall dominate me.

I will be perfectly frank with myself and frank with my associates, always remembering that "As I salute, so shall I be saluted."

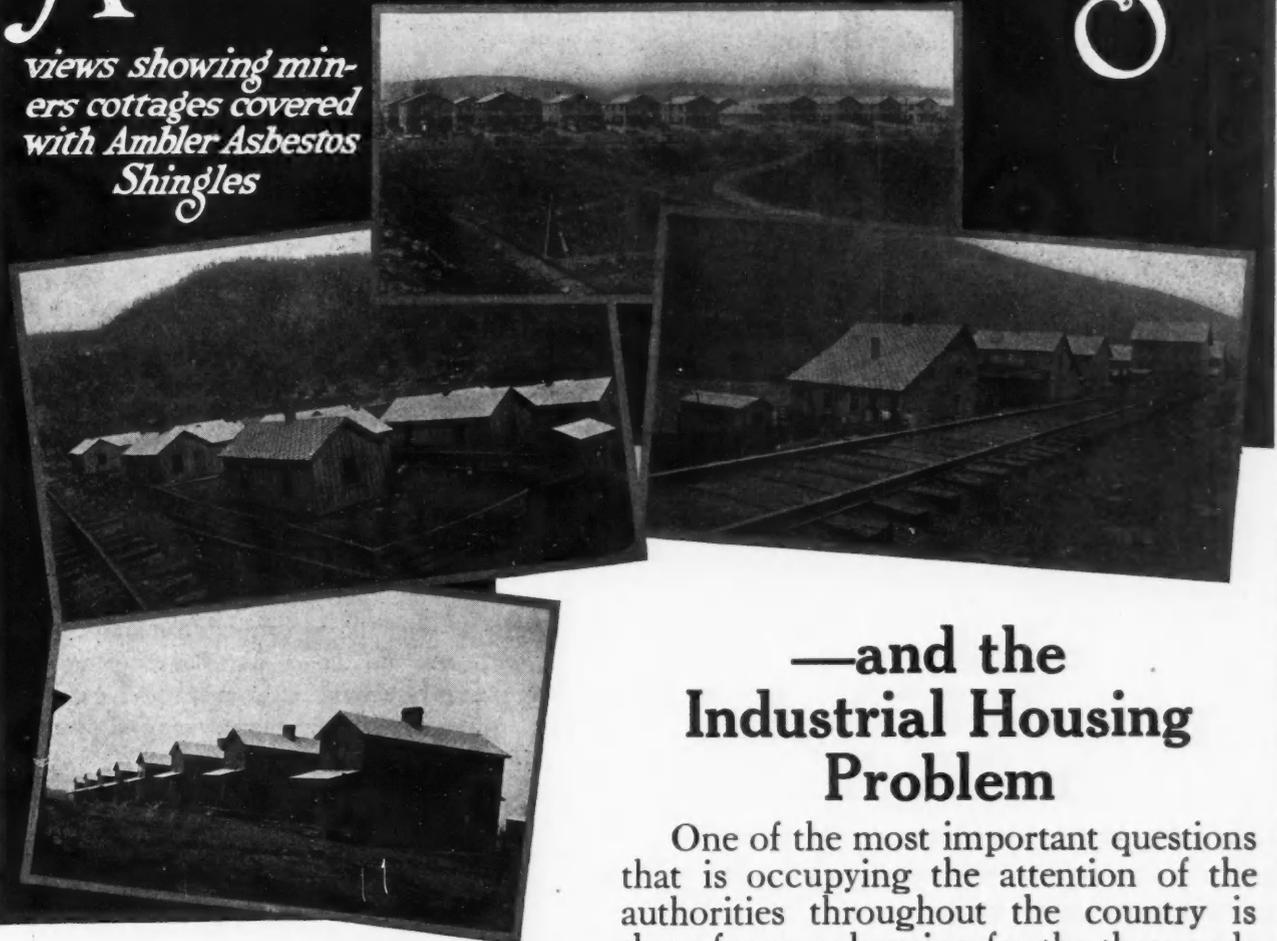
I will be eminently fair with everyone, for fairness disarms antagonism and prejudice. I will always wait to hear both sides of a story before taking sides, in order that I may be fair to myself.

I will be unselfish, for selfishness is the root of

(Continued to page 74.)

Ambler Asbestos Shingles

views showing miners cottages covered with Ambler Asbestos Shingles



—and the Industrial Housing Problem

One of the most important questions that is occupying the attention of the authorities throughout the country is that of proper housing for the thousands

of laborers at the various centers of industrial activity.

Owing to the "speeding-up" process the danger from fires correspondingly increases. If the thousands of new houses built are not fireproof there is not only danger of a conflagration, but there is also a constant menace to the industrial plants themselves. A spark from a locomotive, for instance, may ignite the roof of a house and thereby jeopardize the entire community. Roof the new house with $\frac{1}{2}$

AMBLER Asbestos Shingles

and the danger will be eliminated because Ambler Asbestos Shingles cannot burn. They are absolutely fireproof, as they are made of cement reinforced with asbestos fibre. Exposure to the elements only serves to make them more durable.

Architects, Contractors and Builders who specify Ambler Asbestos Shingles are doing their "bit" to help reduce the losses from fire.

Space does not permit us to tell the whole story here. Write today for pictures, prices and samples. Estimates gladly furnished free.

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

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

My Business Creed

(Continued from page 72.)

almost every evil in the world. If I am unselfish, I shall merit friends, and friends are one of life's greatest treasures.

I will be straightforward in every act and transaction of my life, so that I may look every man in the eye and go forward to meet the future, unafraid.

I will be public-spirited in order that I may be self-respecting, for I cannot and will not partake of the benefits of the labors of others without making my own contribution.

I will be progressive because I believe that life is an opportunity to march forward toward the goal of finer achievements rather than a leisurely period in which to loaf or stand still.

I will try to be the sort of all-around business man whom I admire most and to whom I am ready to take off my hat on cloudy days as well as sunny ones.

I will be loyal to my co-workers and to my country, remembering that the Stars and Stripes is my flag and stands for all I hold most dear.



Chimney Construction

By I. P. Hicks

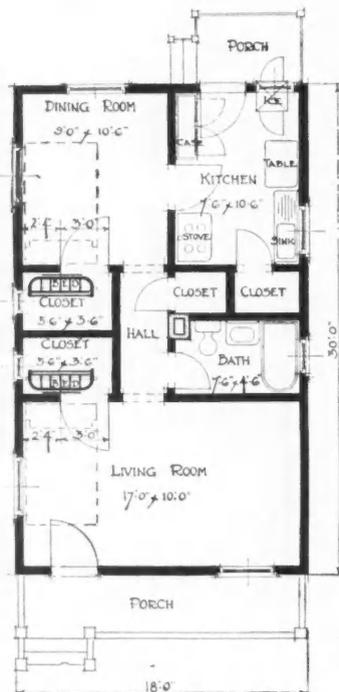
ONE very important thing about building is the construction of chimneys and the framing up around them. A good foundation is one of the essential points in chimney building. A broad, deep and substantial

foundation is necessary—one that will not settle to any great extent. It is absurd to say that a chimney will not settle, because they will all settle, more or less, much depending on the kind of footing the chimney has under it. Chimney footings should be 4 to 6 inches wider on each side than the chimney proper. If built of brick, the bottom footing course should be double and then the footing should be properly stepped up. A brick footing on firm ground will serve all right. If the ground is wet and soft, then by all means build the chimney footing of concrete.

Make a solid concrete footing about 6 inches wider all around than the chimney and 6 to 8 inches thick, and you will have a footing that will carry the weight on soft, mushy ground far better than any brick footing. Bricks will gradually sink into soft ground far more than the solid concrete will, and the difference between a brick footing and one of concrete is really surprising. Concrete is by far the best for footings.

The chimney should be perpendicular, straight and smooth, without angles, corners, projections, jogs, or contractions of any kind, and at no point in contact with wood. A space of 1 inch or more should be left at all points where the chimney passes joists, rafters or timbers, or thru floors, ceilings or roofs. Joists should not be masoned in, or in any manner bear upon the chimney; they should be framed into a header set at least an inch away from the chimney.

(Continued to page 78.)



Three-Room Cottage with Perfect Five-Room Accommodations

Murphy In-a-Dor Beds Solve the Industrial Housing Problem

Bedrooms completely eliminated without loss of comfort or convenience.

Full size all metal bed concealed during the day in a clothes closet behind a door only three feet wide. At night the bed is swung out of the closet and lowered for use in the adjoining room. (See plan.)

Old style bedrooms are used only a few hours at night. All day long they stand idle, yet they cost practically as much to build as any other room. The MURPHY IN-A-DOR BED makes every room do double duty. Every room is available twenty-four hours every day.

Construction Costs Reduced 25% to 40%

Instead of building a house with many small rooms, build fewer and larger rooms. The workman will appreciate the change because he has less rooms to furnish, heat, light and keep clean. Build the modern way.

FULL INFORMATION ON REQUEST

Murphy Door Bed Company

CHICAGO BROOKLYN ST. LOUIS CLEVELAND KANSAS CITY TULSA, OKLA.
Majestic Bldg., 24 W. Monroe St. 7 East 17th St. 462 Chemical Bldg. 661 Leader News Bldg. 390 Glendale Bldg. 17 East 5th St.

MEDUSA WATERPROOFING



Apartment House, Terra Haute, Ind., Formerly an Old Brick Barn

Brick barn becomes an attractive apartment

Work a transformation in some of the old buildings in your locality, Mr. Builder; make them just as attractive as the illustrated Medusa-ized old brick barn in Terre Haute, Ind. This apartment house at Wedgewood Grove shows what can be accomplished with stucco made with Medusa Waterproofed White Cement.

Insure the permanent beauty of your buildings by adding *Medusa Waterproofing* to your stucco mortar. Medusa Waterproofing becomes an *integral* part of the concrete—without affecting either its strength, color or durability.

Let the old farm buildings in your locality suggest a *Medusa transformation*. The everlasting damp-proof qualities of Medusa Waterproofing, in particular, should interest the farmer no less than the permanence, strength and durability of Medusa White Cement. He might use a *new-looking* building—if spared the expense of new construction.

Write today for this booklet: "How to Make Concrete Waterproof" is the title of an interesting and practical booklet, which we will send upon request to any contractor. Write for *Your Copy — Today*. Please address Dept. G.



The Sandusky
Cement Company
Cleveland, Ohio



THE SANDUSKY



CEMENT COMPANY

Kaustine Water

In Less Than a Month pletely Equipped with

SPEED is the essence of war work—especially for *industrial housing*. Quick action was necessary—yet expense had to be considered. The ordinary outhouse meant constant disease danger, while to wait for water and sewer installation meant a month's delay.

Kaustine Waterless toilets solved the problem, providing convenience and comfort equal to water toilets, and better safeguarding the health.



The Kaustine System provides complete disposal of the sewage matter. It allows no germs—no flies, filth or noxious disease-laden atmosphere. The chemical, Kaustine, disposes of all these. The entire work from the planning to the final installation—every detail—we do, and in record time.

Why Kaustine Systems Are Superior:

Simplicity — Free from flush valves, joints and traps; never clog, never out of commission, necessitating plumbers' bills. Easily and quickly installed by handy mechanics. Require little care, and the draining of the tank is done infrequently.

Economy—Water mains, costly sewers and final disposal beds are eliminated. The chemical Kaustine is inexpensive and service rendered costs practically nothing.

Durability—No pipes or valves to freeze and clog—no breakages to occur. All materials of the most durable character. The tank is made of the best rust-resisting iron known.

Germ Destruction—The chemical action upon the sewage does away utterly with dissemination of disease germs, either by flies or into the soil. Kaustine Chemical is nearly twenty times as powerful as pure carbolic acid. It dissolves in water.

To Contractors and Builders

We are in a position to supply complete, satisfactory sewage disposal systems from one to one thousand or more houses. In fact, the job is never too large for us to handle. While we can handle this work ourselves, we always prefer to work with the local contractor or builder. If you are working on, or know of, an industrial housing project without sewers, get in touch with us at once. We can show you the way to profits or the securing of good sized contracts.

Write our engineers for plans to meet your needs

These engineers are at your disposal. They have successfully planned systems for industrial villages and manufacturing plants throughout the country. The work is done quickly, thoroughly. We handle the job from beginning to end and guarantee results—or will work with any contractor.

erless Toilets

This Entire Village Com-Sewage Disposal

Over 30,000 Kaustine Systems in Successful Use

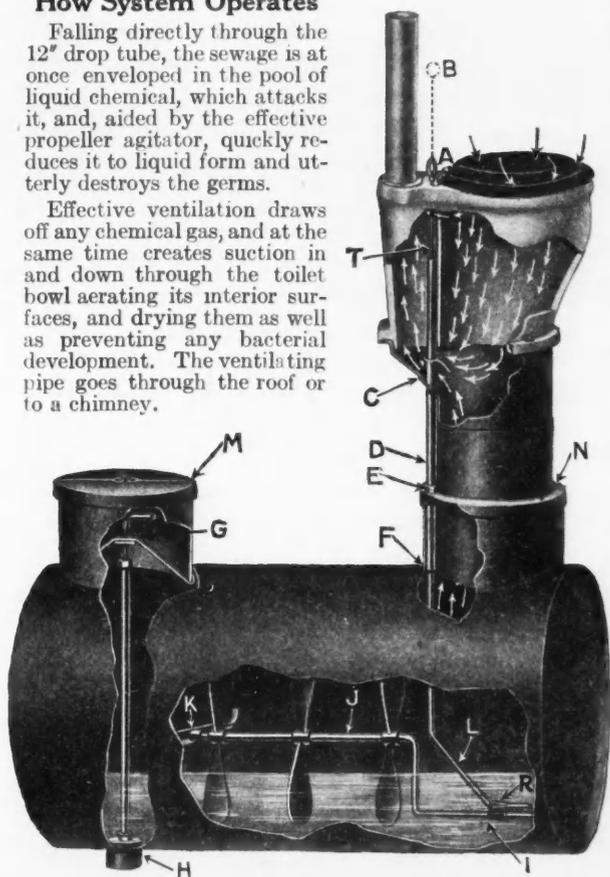
In equipping with Kaustine you get more than the pipes, tanks, bowls, etc.—you get service that means satisfaction for the future. In schools, homes, manufacturing establishments of all kinds—in unsewered districts throughout the country, Kaustine Systems have been giving complete satisfaction for years. The Health and Industrial authorities approve them.

If you have a problem of this sort, do not hesitate to write us. Our consulting engineers are glad to afford information, provide sketches and make suggestions—all this putting you under no obligation. We will tell you just how many days it will require to Kaustinize your village or factory.

How System Operates

Falling directly through the 12" drop tube, the sewage is at once enveloped in the pool of liquid chemical, which attacks it, and, aided by the effective propeller agitator, quickly reduces it to liquid form and utterly destroys the germs.

Effective ventilation draws off any chemical gas, and at the same time creates suction in and down through the toilet bowl aerating its interior surfaces, and drying them as well as preventing any bacterial development. The ventilating pipe goes through the roof or to a chimney.



KAUSTINE COMPANY, Inc.

Home Offices: Buffalo, N. Y.

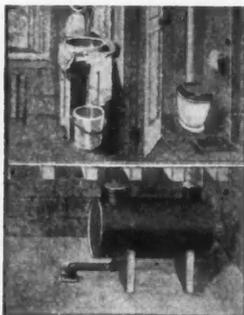
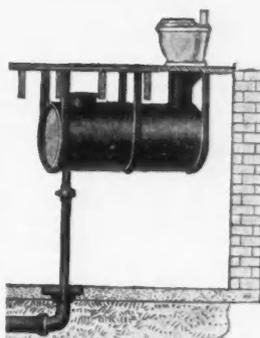
General Agencies: 353 Peoples Gas Bldg., Chicago

Lansing, Mich. Greenville, S. C. Oakland, Calif.
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There are many ways of installing Kaustine systems, both singly and in multiples. Some methods used for single systems are here illustrated—they are the more common ones.

Kaustine equipment may be installed on the second floor and will work with perfect satisfaction the same as on the ground floor. Many other plans freely available on inquiry.



(Continued from page 74.)

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Cornell-Wood-Board

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

YOUR patrons with whom you come in daily contact, value your judgment and suggestions. Tell them about the wonderful economies effected by the use of Cornell-Wood-Board.

Show them how easily handled it is, how strong, durable and dependable. Explain that it will not warp, crack chip, or buckle, that it resists heat, cold and moisture. When they understand that it requires less paint or calimine than other interior finishing materials, and how artistic it is—

All these customers of yours will commence calling for Cornell-Wood-Board. For the walls and ceilings of their stores, offices, homes, garages, farm buildings, etc., they will find it unequalled. You will make many permanent friends and increase your business, by cordially recommending Cornell-Wood-Board.

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Cornell-Wood-Board is ideally adapted for the Walls and Ceilings of Stores

It used to be the custom to plaster chimneys smooth on the inside, but, in our opinion, tile flue lining is far the best. The flue lining should be set in mortar and made solid against the brick, not just dropped in loose-jointed.

Chimneys should be built before there is any wood-work in the way, and should be carried thru the roof before the roof is put on—of course, the sheathing should be put on. You can always get a better job to finish up the chimney after it is built than in any other way.

One of the most important things about house building is the proper building of the chimneys. No part of the house contributes more to the comfort of the occupants of the house than a good chimney. This statement may seem absurd to most of the house builders; in fact, many think the chimneys an unimportant matter. The fact is, the chimneys are a very important matter. A chimney with a poor draft is next thing to a great calamity. With a poor draft, there is much trouble to get the fire to burn and it is smoke, smoke, smoke, till everybody is nearly driven out of the house, and after this faulty construction has been permitted, there is usually no remedy, and the occupants have to put up with the nuisance the best they can.

Most of this faulty chimney construction comes thru false notions of economy. It is true, chimneys are an expensive part of the house building and in order to cut down expenses, many chimneys are built too small, and many times too many pipes are run into one chimney. We do not believe that any chimney should have less than an 8x12 flue and such chimney should not have over two six-inch smoke pipes entering it, and these should not enter the flue on the same level. If more than two pipes have to be provided for, make a double flue 8x12 in size or larger, or build another chimney in some other part of the house. Don't attempt to crowd too many pipes into a chimney of small capacity, for if you do the result is sure to be unsatisfactory. Fireplace flues and furnace flues should never be less than 8x12 inches and should be independent flues thruout. No other smoke pipes should enter these flues. This may make the chimneys for a house cost more money, but many times it avoids the smoke troubles which are the most unendurable of all things in chimneys.

All chimneys should be provided with an iron door and frame at the bottom for taking out the soot. There are chimneys put up by the thousands without this provision but it is a mistake just the same. Chimneys will fill up with soot and even stop the smoke pipe, even tho it may be a flue of six or eight feet, it will eventually fill up and then, if there is no way to take it out except from the stove pipe entrance, you have a job on your hands that will prove very annoying.

What Should Be Done for School House Safety?

PARTS OF A PAPER BEFORE THE ELEVENTH ANNUAL CONVENTION FIRE MARSHALS' ASSOCIATION OF NORTH AMERICA, NASHVILLE, TENNESSEE.

By Hon. Bert B. Buckley

State Fire Marshal of Ohio

WHAT should be done for school house safety" is important in the protection of life, rather than property.

My knowledge of the conditions and needs of these buildings comes thru the inspecting for causes which result in losses of property and thru recently having had each assistant fire marshal induce fire drills in the two and three-story school buildings in his district. Under the Ohio law, fire drills are required, but the duty of enforcing the regulation is laid upon no particular officer, with result that they were ineffective in many schools and neglected altogether in a greater number, therefore, I assumed the duty.

With the growth of our country has come the thousands of public school buildings in city and country. Greater safety is demanded in the city because the congestion of population enforces the gathering of large groups of children for which adequate accommodations, under State supervision, must be provided.

Two of the most important items are those of health and life and limb hazard. I shall deal with the laws of the State of Ohio, which I consider equal to the laws of any other State, if not the best in exist-

ence on this subject. The requirements are first, that a school building, two stories high or more, shall be of fireproof or composite construction.

By fireproof construction we mean either brick twelve inches thick or monolithic concrete eight inches thick. Some buildings are built, in the rural districts, of hollow tile, having on the outside a four-inch brick, not permitting, if you please, hollow tile to be classed as a standard fireproof material; neither are cement blocks.

In order to make a building absolutely safe as a fire hazard, the partition walls are made of standard fireproof material. All communicating openings should be covered by double standard fireproof doors in order that a fire can be kept from communicating from one room to another. Corridors, wherever it is possible, should be separated from rooms by standard fireproof walls and standard fireproof doors. The means of egress, in order to preclude panic as near as possible, should be from one story to another, enclosed fireproof stairways, as far apart as possible. One in the front end, one in the rear end, or one in each

(Continued to page 82.)



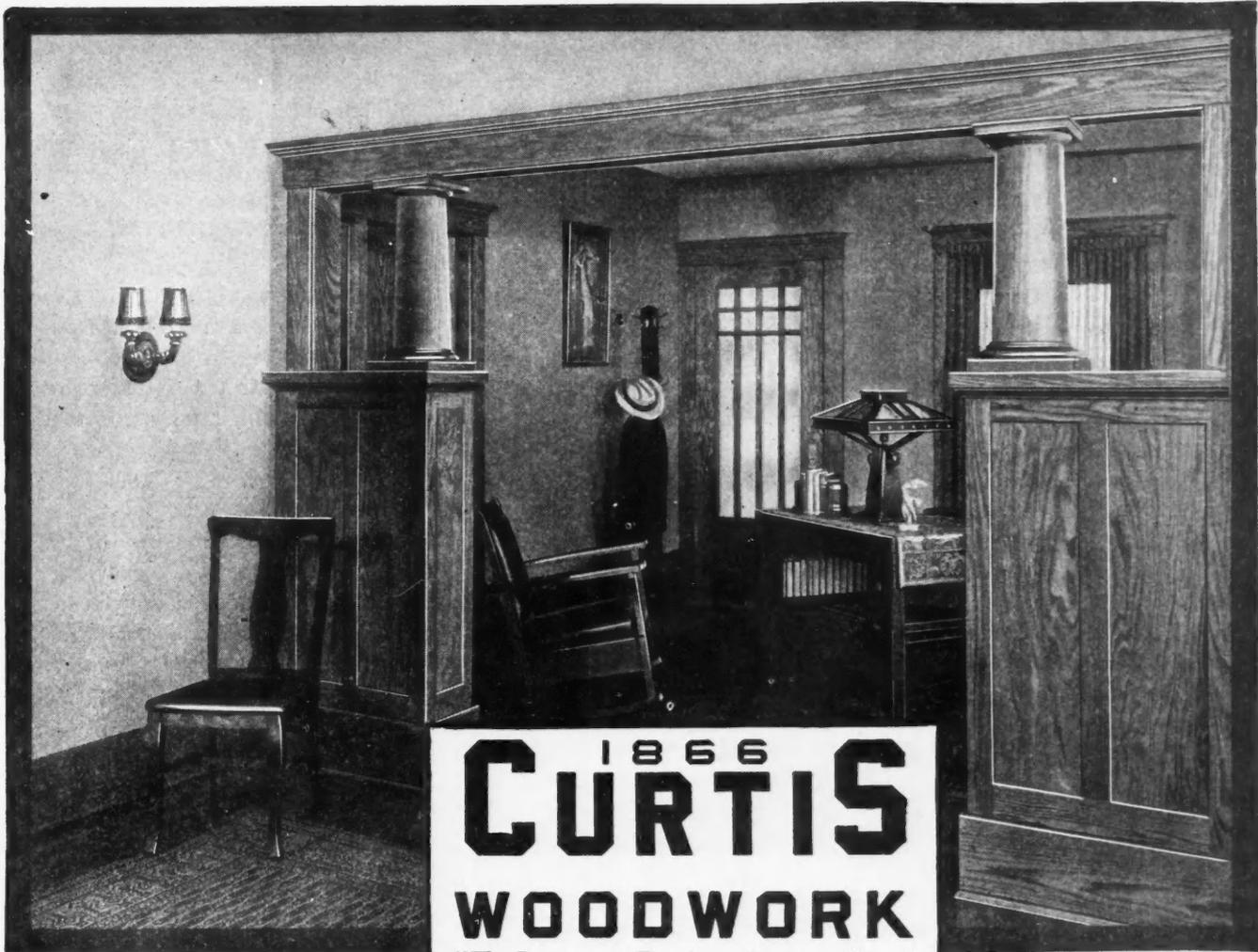
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CURTIS Colonnades are designed by experts and constructed in a way that is worthy of the designs. Corners of pedestals and columns are made with our interlocking mitre-joint construction. The edge of one board is not set against the face of another. Nail holes are pleasingly absent. In every detail, **CURTIS** Woodwork is so carefully made that you are able to get splendid results with a minimum of time and labor.

Your use of Curtis built-in furniture will enable you to build more homes with less labor because you will have to spend less time with built-in details. Push Curtis built-in furniture. It will mean more building for you.

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Permanent Houses for Industrial Workers

In planning homes for factory employes, permanence, speedy erection and low initial cost are obtained by the use of Hy-Rib Metal Lath products, which assure fire resistance, sanitation and low upkeep cost. These products are standardized and carried in stock in all parts of the country; labor and material to apply them are readily obtainable, so that erection proceeds with utmost speed.



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Stucco on Hy-Rib Metal Lath

Hy-Rib makes a thin monolithic reinforced concrete wall which is fire-resisting and permanent. Metal Lath is then applied to the inner face of the studs and plaster. Houses so built are easy to heat, require no painting and are generally preferred for their attractive appearance. They cost less than any other permanent construction.

If interested in any industrial housing operation, give us an outline of what is proposed so that we can send our detailed suggestions.

TRUSCON STEEL COMPANY

(FORMERLY TRUSSED CONCRETE STEEL CO.)
YOUNGSTOWN, OHIO.

WAREHOUSES AND REPRESENTATIVES IN PRINCIPAL CITIES



What Should Be Done for School House Safety?

(Continued from page 80.)

side of the public school building.

Ohio's Building Code requires that in primary schools the rise of steps shall not exceed six inches and the width of the tread shall not be less than eleven inches. This proportion gives a safe footing in both ascent and descent.

A building thus constructed would naturally afford sufficient means of egress to prevent all accidents. These stairways, moreover, lead out at the bottom directly to the open air and separated on other floors from the corridor connecting with these stairs to the next floor by a quarter-inch wire glass which we consider a very satisfactory fire stop.

A composite building which is used only in the rural districts and small towns, is composed of brick and wood. In a composite building naturally, there is more of a dangerous element existing than in those of standard fireproof construction, and the requirements of egress should be better and more numerous.

While I do not consider a fire-escape essential on a standard fireproof building, I am inclined to favor strongly a fire-escape on any composite building two stories high. This, with two fireproof stairways, one at each end or one at each side.

History of great fires wherein many lives have been lost, show conclusively that it is the hysteria which takes possession of people in an assembly hall or theater, or school, and it is the frantic rush with the idea of self-preservation that causes hundreds to be trampled to death.

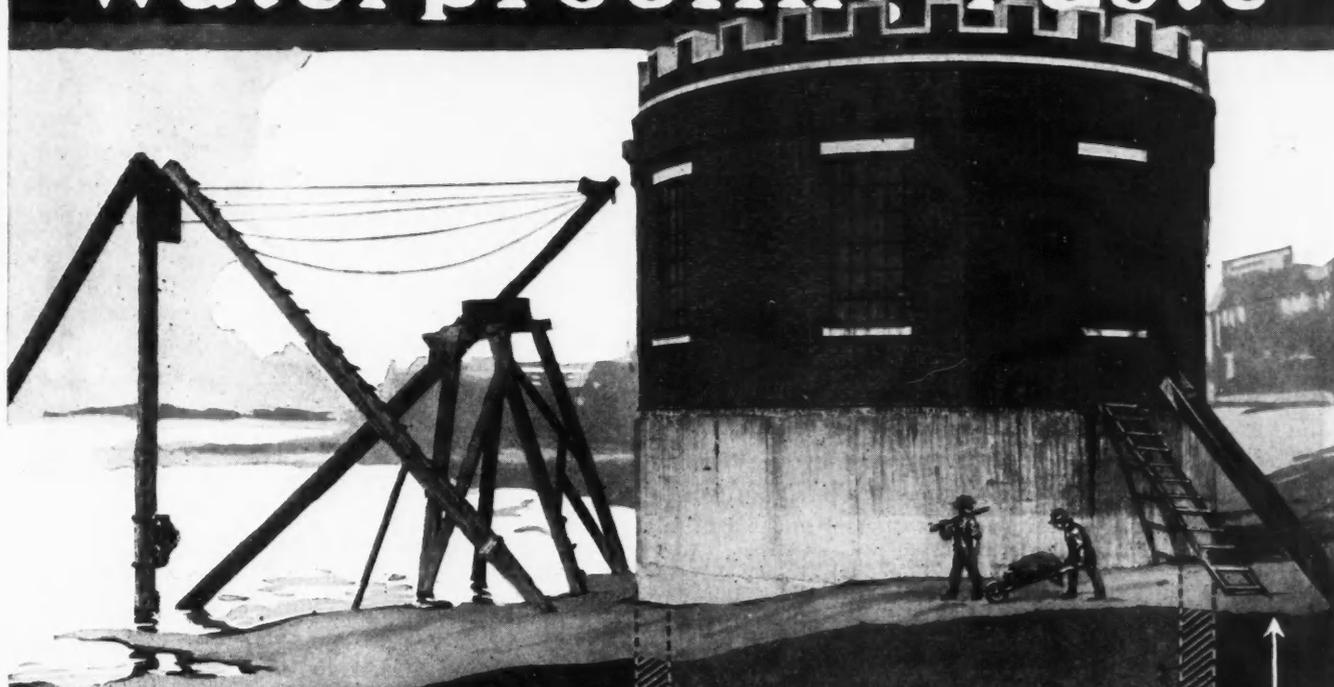
In the great Iroquois fire at Chicago some years ago, more people by over half, were trampled to death than were burned. This being the case, it then occurs to me that the safety or the safe exodus from buildings depends upon the means of egress, their number, and the means of access thereto. In other words, narrow or obstructed aisles hamper and retard the rapid emptying of a room, as do narrow doorways or stairways.

In the fire in the St. John's School at Peabody, Massachusetts, the entire United States was appalled; and yet, from the report of the chief deputy of the fire inspection department, we find that the exits from this building practically complied with the law. In noting the recommendations of the fire chief, I am pleased to say that the Ohio School Building Laws have for a number of years provided for practically all of the first sixteen recommendations he makes.

Heater rooms must all be fireproofed. In basements where heating apparatus is installed, all openings except windows, must be hung with fireproof doors with fusible link, practically confining a fire in the basement to the basement. And yet, I would go further and say where it is at all possible and where

(Continued to page 84.)

GF No. 10 INTEGRAL Waterproofing Paste



Maximum Hydrostatic Pressure, 2600 Pounds Per Foot

THIS pump well of the Public Utilities Co., Evansville, Ind., is located on the edge of the Ohio River. It is sixty feet deep, about twenty-five feet in diameter and has eighteen-inch reinforced walls. The bottom of the well is five feet lower than the river bed. This well is subject to a constant pressure from a forty-three foot head of water, and it is absolutely bone dry.

The concrete mixture is 1:2:4 with two pounds of GF No. 10 Integral Waterproofing Paste to each bag of cement.

GF No. 10 is a smooth paste which is dissolved in the gauging water and carried into every part of the concrete mass. It is absolutely soluble and remains in perfect suspension, which insures uniform distribution.

GF No. 10 waterproofs permanently and in no way affects the set or strength of the concrete.

Ask for the GF Waterproofing Handbook. It shows many other uses for GF No. 10 and covers the application of entire line of GF Waterproofings. Sent on application to Engineers, Architects and Contractors.

THE GENERAL FIREPROOFING CO.
YOUNGSTOWN, OHIO

Manufacturers of Metal Lath Concrete Reinforcements and Waterproofings

Branch Offices: Chicago, Philadelphia, Atlanta, Utica, Buffalo, Kansas City
Members of Associated Metal Lath Manufacturers

Stocks in Principal Cities



60 FT. UNDER GROUND



What Should Be Done for School House Safety?

(Continued from page 82.)

there is an adequate supply of water to be secured, the basement should be fitted with a sprinkler system. In the corridors and in the rooms should be placed small chemical fire extinguishers.

I am not inclined to favor the large three-gallon extinguishers of soda or sulphuric acid, because it would require a "piano-moving" type of man to operate it; but the Fyr Fyter, Pyrene, J. M. and other standard chemical liquid fire extinguishers using the carbon tetrachloride liquid, or any other chemical possessing the same qualities for smothering a fire. These do not remove the desirability of a standpipe and hose.

From the health viewpoint, the system of heating and ventilating is one of the most essential accessories. A system cannot be installed in the State of Ohio which will not heat the class room to a temperature of 70 degrees when the weather is at zero on the outside, and the corridors must be heated to 60 or 65 degrees.

Together with this must be a ventilating system that will change the air six times an hour. In Ohio, we have three systems in use: steam, hot water and warm air from hot air furnaces.

We have a gravity, semi-mechanical and mechanical system of ventilating. The semi-mechanical is practically the gravity system, having a fresh air duct and a foul air duct. This we term semi-mechanical because

of the aid to the natural or gravity ventilation. The installation of accelerating coils, the heat from which causes a draft, aids the natural system. This is employed mainly in rural districts where it is hard to secure the power necessary for the mechanical system. It is permitted also, in one, two and three-room and small school houses to use a heating and ventilating stove, a jacketed stove, but it must meet the requirements that there be no reheating of ventilated air. Trouble is experienced in the rooms with some of the systems on account of the humidity. This, however, is easily overcome, and while under certain conditions it is detrimental to the health of the pupils, it is not, in my opinion, as much of a detriment as a room improperly heated.

We do not permit electrically operated fire gongs, but insist upon an eight-inch triple, manually operated gong which can be operated from any floor. The use of this gong is confined strictly to fire drills, not to be used as a study or recitation bell, altho we sometimes have trouble in impressing upon superintendents of schools that it is a requirement by statutory enactment.

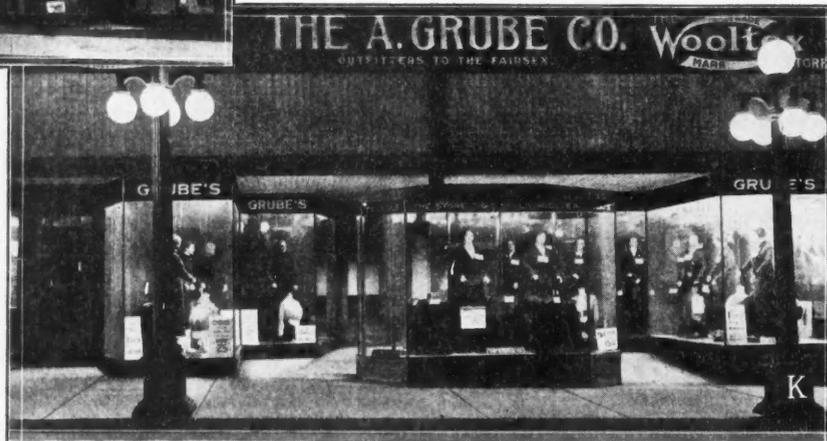
The Ohio department desires to go on record as being an advocate of the spiral fire escape attached to the outside of the building, with the entrance leading into it from each floor, which entry must at all times open, and examined daily by someone in authority,

(Continued to page 86.)



War
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The
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Way is the
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This Kawneer Store Front Brought 25% Increase in Sales

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

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

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STORE FRONTS

Write today for Catalog and Portfolio of Designs.

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

Kawneer Mfg. Company, Niles, Mich.



Real Lighting Fixture Service



We are Offering
Lighting Fixtures

Complete For This Two Family House
(Full blue prints shown in this issue)

at \$55.00 to \$60.00

Includes for each apartment, cast and spun fixtures wired complete, with glassware and tripods ready to hang (no insulating joints) with choice of six beautiful standard finishes as follows:

Living Room	1-3 center light	Bedroom	1-2 light
Dining Room	1-3 center light	Bedroom	1-2 light
Kitchen	1-1 light	Bath	1-1 light
Porch	1-1 light	Vestibule	1-1 light

Total, Two Apartments, 28 lights, 16 outlets.

For houses of \$3,000 or less, Vanco Bronze Lighting Fixtures will average as low as \$2.50 an outlet.

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We Will on Ten Days' Notice

Deliver Lighting Fixtures Up to One Thousand Houses Weekly

No higher standard in design and workmanship than our Vanco Bronze, the New Medal. It not only revolutionizes the cost of Lighting Fixtures, but carries the same guarantee as all our noteworthy productions of sixty years' service to the trade.

We offer many rare and unusual finishes to conform to any scheme of decoration.

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AFTER you have made a careful study of **Copper Store Front Construction**, give yourself the benefit of the doubt. "High priced" construction possesses no higher degree of trade-pulling power

The more you study the **Brasco** and **Brasco-Hester Systems**, the more reasons you will find for insisting upon their use in your new front.

**A Better Front
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COUPON

BRASCO MANUFACTURING COMPANY
5029 Wabash Ave., Chicago, Ill.

Please send me storefront book and suggestions for a sales creating storefront.

Width of Front.....

Height Floor to Ceiling.....

Depth of Return.....

Name.....

Address.....
AB-18

What Should Be Done for School House Safety?

(Continued from page 84.)

to see that the egress door at the base also is open during school hours.

The external skeleton fire-escape on schools is a misfortune in an emergency, unless the children have become accustomed to that means of exit thru its frequent use.

The following story of a push-button alarm is from a report from an assistant fire marshal:

"The fire drill at this building was in no way satisfactory. No drills have been held there, and no attention has been paid to anything along this line. They have no gong. A small electric bell operated with a push-button served in this capacity. After talking to the principal in charge he informed me that this was the fire gong. I informed him that I wanted a fire drill and he consented, after telling me that the signal in such cases was pressing the button six times. I did not hear any of the pupils responding to the alarm and went into the hall and saw the superintendent running from room to room and telling them that there was a fire drill on. Some started to run into the hall and he told them to go back the other way and down the fire-escape."

Let me read a paragraph in which another drill is reported. Says the assistant: "We found the front doors locked at this school. We held a fire drill without unlocking the doors, stationing one of the firemen at each door, so none of the children would be injured in the crush, and, after about seventy-five children were packed in the halls we called the attention of the principal in charge to what might happen in case there was a fire. She gave instructions immediately to the janitor that his first duty each morning would be to see that all outside doors were unlocked."

The Ohio regulations for new school buildings and fire drills, if strictly complied with, would reduce to the lowest possible minimum the danger in school houses from fire or panic resultant from fire or any other condition which would produce hysteria.

The Insurance Commissioner of North Carolina, Mr. James R. Young, in a letter to the superintendent of public instruction in his state (a letter which should be put under the eyes of all members of boards of education), makes the most lucid and forceful statement of the demands of humanity in the building of school houses. I am constrained to quote verbatim, five of his paragraphs:

(1) "We are building mostly frame and brick metal-roof hollow construction buildings. These are not the safest, nor in the end, the cheapest buildings. Where over one story they are a menace to the lives of the children and call for the heaviest insurance rates and greatest depreciation and repairs."

(2) "The fireproof brick building, erected on the

(Continued to page 88.)

Power Pumps That Bring Business

Folks who live in the country and small towns are waking up to the advantages of running water in the house and barns. The bathroom is no longer considered a city luxury, but a necessity for comfortable living everywhere. This is your market!

Here are three power pumps that will help you to "cash in" on this higher standard of living. Either of them will solve the problem of the water supply for the country or small-town home.

Goulds "Hi-Speed" Pump has created a sensation wherever shown. It is *noiseless*. All gears have been eliminated. It can be operated in any home without causing the slightest annoyance. Our self-oiling device keeps it perfectly lubricated.

This pump is furnished with 32-volt motor for operation on current from farm lighting system, or with 1/2 h. p. gasoline engine; also with outfits for 110 or 220-volt a. c. or d. c. currents. It may be used with either open or pressure tank systems.

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Goulds "Pyramid" Double-acting Piston Pump has for years been the standard small-power pump. It can be driven either by gasoline engine or electric motor, direct or belt connected. It is very compact and strong, and handles a lot of water—6 to 114 gallons' per minute, according to the size. It is adapted to open or pressure tank systems.

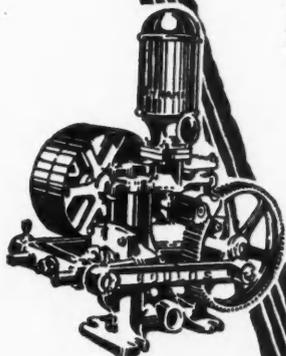


Fig. 1531

"PYRAMID" PUMP

For filling tanks to an elevation of 175 feet or for pneumatic pressure systems.

GOULDS PUMPS FOR EVERY SERVICE

Goulds Figure 1680 Combined Working Head and Jack is a special favorite with practical well men because it is so simple and easy to install. It comes in two parts connected by a flange. The flange is first screwed upon the top of the last length of pipe. Next, the hollow open base is shoved under it, fitting snugly around the pipe. The two sections are then bolted together with the flange between, the jack connected and the pump is ready for business. The head of this pump is adjustable for 6, 8 or 10-inch stroke, and can be operated by hand, windmill or power. With a large pulley, it is adapted for electric motor drive.

These are but three of nearly 400 styles in the Goulds line—a line which is widely advertised and backed by seventy years of pump-manufacturing experience. Every pump is guaranteed to perform satisfactorily the work for which it is recommended. *Write for complete data and prices.*

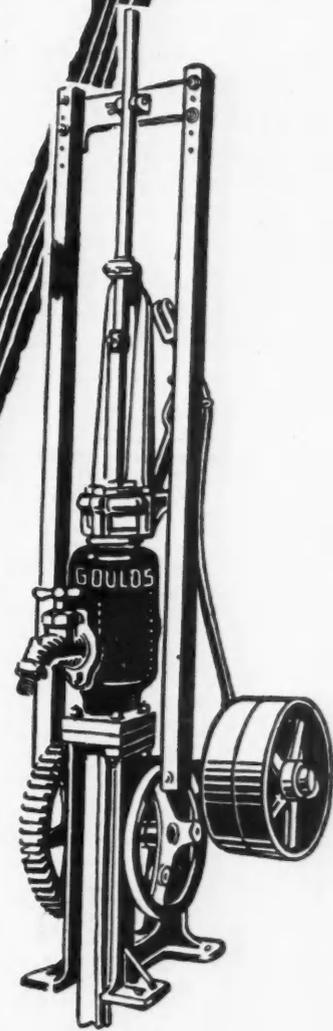
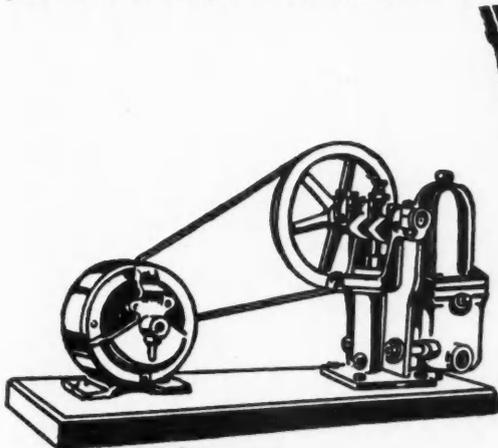


Fig. 1680

COMBINED WORKING HEAD AND JACK WITH OPEN BASE

This combination may be operated by hand, windmill, engine or electric motor.



"HI-SPEED" OUTFIT "C"

This outfit consists of 6 g. p. m. "Hi-Speed" Pump belted to 1/4 h. p. motor and mounted on a heavy plank. For open or pneumatic tank water systems.



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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

What Should Be Done for School House Safety?

(Continued from page 86.)

slow burning or mill construction plan, will cost only about seven (7) per cent more than the brick metal-roof building referred to above. When provided with automatic sprinklers, this building will be absolutely safe, be less subject to depreciation and calls for not more than one-half the present insurance rates."

(3) "A reinforced concrete building will cost only twelve per cent more than the brick metal-roof hollow construction building, furnish much less depreciation and occasion for repairs, and insurance at one-third or less."

(4) "Again, at practically no additional cost, all inside stairways and openings can be put out of all these buildings, furnishing safety to children and building by the use of tower stairways or fire-escapes. These tower stairways are desirable because they are simple, safe and economical, making unnecessary fire-escapes, and yet, rendering buildings of two or more stories absolutely safe for children even in case of fire."

(5) "I recognize that it is hard to change any general custom of a people, but I am prepared to show that these suggestions are in accord with any of the well established rules designed by teachers for school buildings, and are principles that do not interfere with the best efforts and skill of architects. These suggestions have been submitted to you, your assistants, and

many school superintendents and teachers, and met with the approval of all. Both associations of architects in the State have heartily endorsed the suggestions as desirable for improving school buildings and giving additional safety to children."

It might truthfully be added to Mr. Young's statement that the modifications of common plans of construction which he demands would, in the lifetime of a building be paid for by the reductions in insurance rates.

The Fire Marshals' Association of North America, in 1908, at St. Paul, Minn., made the expression which follows:

"Whereas, a large number of fires in school houses have caused an enormous loss of life and property, and whereas, the panics incidental to such calamities render fire escapes and fire drills almost useless: Therefore, be it resolved, that we, as fire marshals, earnestly recommend that the height of all school houses be hereafter limited to two stories as the only efficient safeguard against such calamities."

No one will question the wisdom of limiting the height of these buildings to two stories in the interest of safety to life, if we are to continue to build tinder boxes, but state building regulations such as I have recited, justify the erecting of higher buildings in cities where land is high priced and playground space is always too limited.

(Continued to page 90.)

Sure Signs of High Value



When steel sheets actually resist corrosion year after year, successfully withstanding the rigors of all sorts of weather and service conditions—surely you will admit that the material has fully complied with the true tests of value. Just such tests have proved the superior wearing qualities of KEYSTONE COPPER STEEL Black and Galvanized Sheets and Roofing Tin Plates. Send for interesting "Facts" booklet;—every builder and roofer should read it.

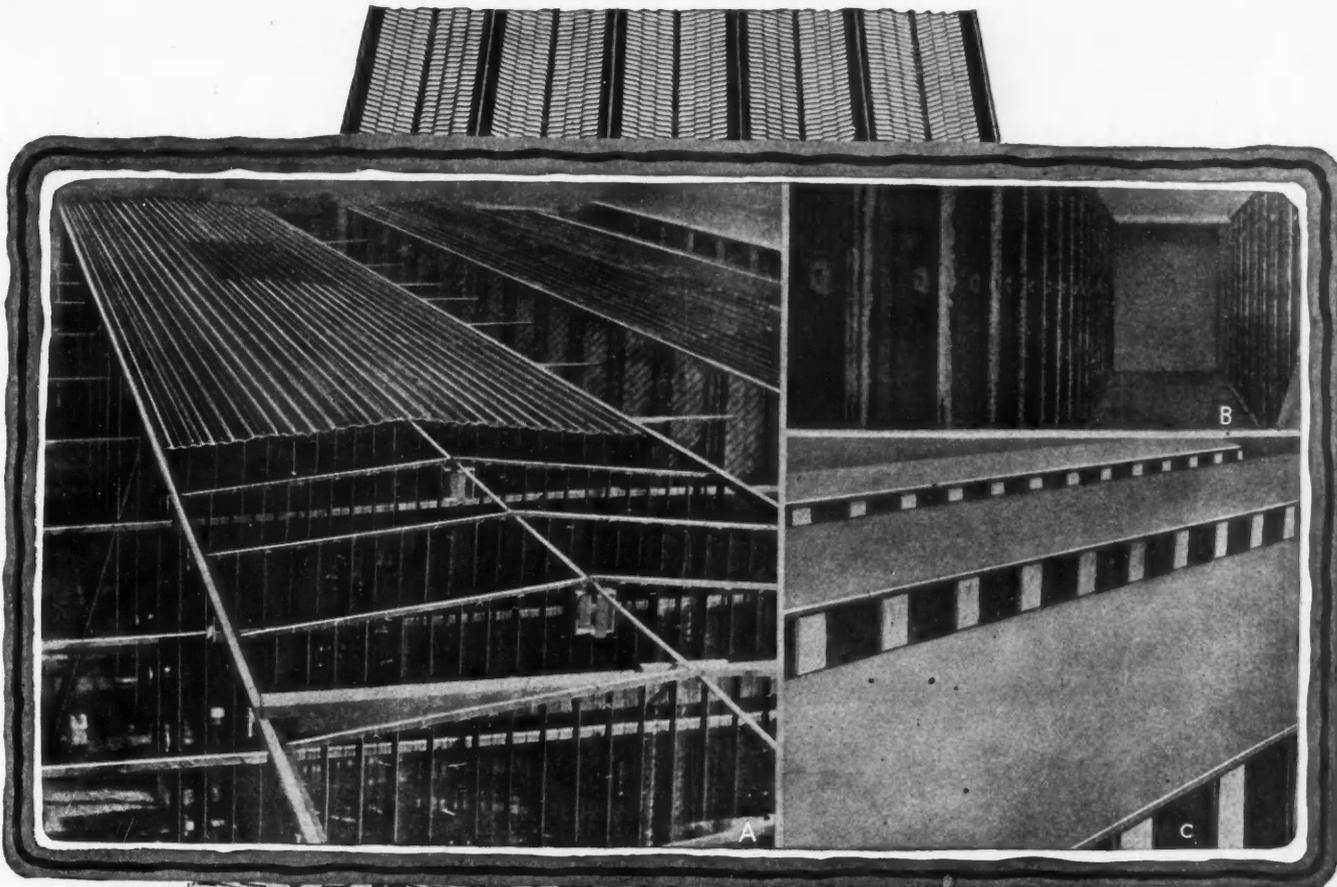
American Sheet and Tin Plate Company

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RIBPLEX

A COMBINED
CENTERING AND REINFORCING

Gives Splendid Results in Bath-House Construction at Fort Phoenix, Fairhaven, Mass.

A—Ribplex in place. B—One side plastered.
C—Complete ready for the doors.

These bath-houses, owned by the Union Street Railway Co., of New Bedford, Mass., have roofs, walls and partitions of concrete reinforced in every direction by the Ribplex which also served as centering and studding.

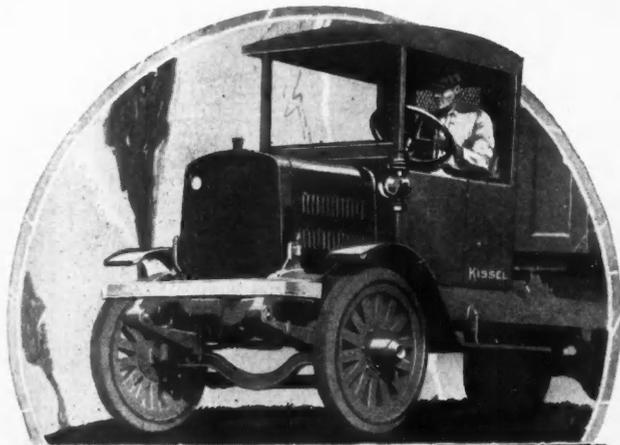
Ribplex has a wide range of use in light, permanent, fire-resistive roofs, walls, floors and partitions in all sorts of structures.

Write Dept. K-3 for sample and full information



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KISSEL TRUCKS

Backed By Ten Years Experience

KISSEL has spent ten years to bring his trucks up to that point of mechanical superiority that insures dependable performance, uninterrupted service and economical maintenance.

Kissel builds his own truck power plant. That's why Kissel Trucks give uninterrupted performance. The perfected worm-drive rear axle and superior front axle are traction insurance. The Kissel frame, springs, brakes—every moving or fixed unit—are so designed, constructed and balanced to give 100% efficient service.

As a result, Kissel Trucks fully meet today's closer shipping schedules, wider delivery areas and greater hauling distances.

If you would choose your motor truck equipment by its reputation and known performance, see your nearest Kissel dealer.

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

What Should Be Done for School House Safety?

(Continued from page 88.)

In several states district schools are being centralized in township buildings, to which the children are hauled from their homes in the morning and returned in the evening.

In a large number of townships in Ohio, speaking of conditions that came under personal observation during the last year, these buildings have been erected and the growth of the idea of centralizing the schools and its efficiency having been proven, other communities will follow this example, seeing the value that has accrued to their neighbors.

The question arises as to how these buildings should be built. Ground is cheap in the country and there is no excuse for building up in the air and jeopardizing human life when these rooms can be spread out in one story.

In some of the thickly settled townships high schools are being added to the central building, but there can be no excuse for making them high in altitude; they should be on the ground floor.

But the little red school house long will be far the most numerous of educational institutions. As we know it in Ohio, it is 24 by 36 feet with a height of 14 feet to the square and 8 feet more to the comb. Whether of brick or wood its important fire dangers are mistakes in building which could have been corrected in the specifications without adding to the cost. At one end is the entrance and teachers' desk; the other end is a blind wall. In the center of the school room is a cannon or burnside coal stove, whose pipe runs straight up into the base of a brick chimney which is built up from cleats or a plank which rests upon the joists.

More than half of all district school house fires result from such chimneys. The wood in the bottom of the chimney is protected from fire only by some mortar being splashed upon it. Iron straps or a stone under the brick is much better than wood, but a chimney supported by the joists can in no way be made even reasonably safe. The weight springs the joists and the chimney in settling is likely to open joints between the bricks so that sparks may escape into the attic.

In nearly all rural school houses there is no ready means of access to the attic in case of fire, the water supply is eight quarts less than what the children have used since school "took up" and it is sometimes five minutes' walk to the nearest well or brook. So, the school house burns and the directors contract for another just like it.

Putting the chimney in the blind end wall where it should be solid, and corbelling it out at the square cost less in brick and labor.

Another advantage of the end placed chimney is

(Continued from page 92.)



THIS Would Have Prevented This



The Corbin Ball Bearing Pin-Tumbler Cylinder Lock

THE MOST EFFECTIVE HOME GUARD

SOLD BY THE BEST HARDWARE DEALERS IN ANY CITY

MADE BY

P. & F. CORBIN

The American Hardware Corporation, Successor

NEW BRITAIN, CONN.

CHICAGO

NEW YORK

PHILADELPHIA

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

What Should Be Done for School House Safety?

(Continued from page 90.)

this: the stove pipe being carried from the center to the end of the room, you get more heat from the same amount of coal, and it is given off where it is needed. Scientists have shown that a sheet-iron drum the size of a stove pipe placed directly over it will radiate as much heat as the stove. The pipe running along the ceiling is an elongated drum. This arrangement would save about one-fifth of the coal bill.

In the centrally located chimney the sparks go quickly out upon the roof, white hot. With an end chimney they are cooled by a long journey and would fall clear of the roof half the time.

When a fire is built in a school house stove and the builder is away while the room warms up, the building may burn from sparks in the attic, from kindling or coal box placed too near the stove or from inadequately protected floor. Zinc under the stove should extend two feet beyond its base. Zinc is safer than brick.

Some fire losses depend upon the fact that coal packed on a fire, to keep it over night, will swell one-third, and if the stove is too full the coals will fall out of the open door.

A school house should have a slate roof because it lessens fire dangers and because a shingle roof is

the first thing to need repair in any school house.

A school room stove should be large enough to warm it without being made red hot. When iron is heated to redness carbon monoxide, a most poisonous gas, produced in the burning of coal, is a common cause of headache, languor and debility in school children in winter.

Kerosene lamps for illuminating during an evening entertainment, if fixed, are fairly safe, but hand lamps which may be carried in, are dangerous. Candles have gone with the log school house and the spelling bee.

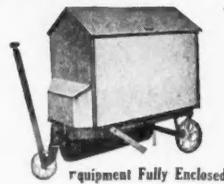
Of 2,915 school house losses in the United States in 26 years, 60 2/3 per cent were from heaters and 35 per cent from incendiarism.

State laws incarcerate every child for a fixed number of hours during eight years. An alarm of fire in their prison throws them into panic in which they will jam the doors and be crushed or burned to death or be injured or killed by jumping from windows unless they are carefully trained for such an emergency. During this period they should be given talks by their teachers on the care they should exercise to prevent fire loss, and they should be taught the first things to do in case of a conflagration. One child has been known to save the life of another child by having presence of mind to throw a rug about the body of the

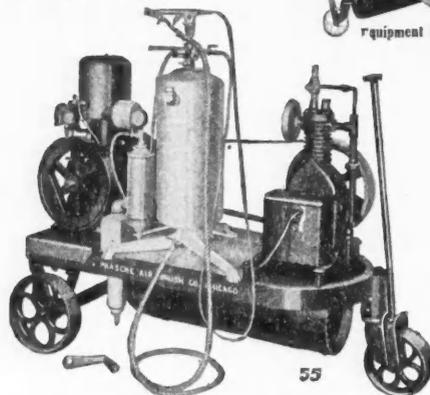
(Continued to page 94.)

TURN 6 to 4 DAYS WORK INTO 1 with the PAASCHE PORTABLE PAINTING OUTFIT

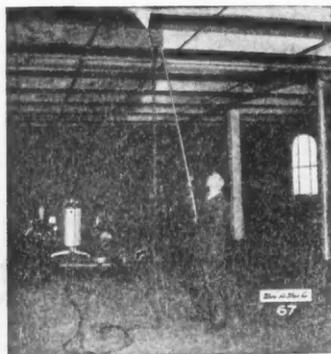
The Marvel Paint Machine of the Age
A Gilt Edge Investment Offering Big Returns



Equipment Fully Enclosed



PORTABLE PAINTING OUTFIT
Complete with Gas Engine or El Motor... \$325.00
Extra for 6-foot Extension Handle... 9.50
Extra for Water-Oil Separator... 16.00



Inaccessible Places Easily Reached

Used Extensively for

INTERIOR PAINTING, DECORATING, FINISHING, CALCIMINING, ETC.

Paint — Varnish — Enamel and Stain

The New Paasche Way

Enables you to fill your Contracts on Time with BETTER WORK.

Quickest and Surest Road to Success



Speedy Process Eliminates Scaffolding

The **Contractor** uses IT, because: "IT" Saves Him Big Money in unnecessary Labor.

The **Sub-Contractor** uses it because "IT" enables him to do the work himself within the TIME LIMIT.

PAINTERS, CONTRACTORS everywhere use it because:

"IT" produces unmatched work in the shortest possible time with

GREATEST ECONOMY!

Paasche Air Brush Co.

Write Today for Circular No. 13
1219 WASHINGTON BLVD. **Chicago**



Aeron System

Portable Painting Equipment

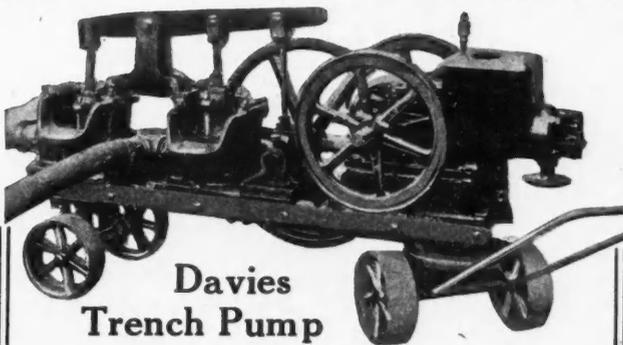
enables you to **SPRAY-PAINT** wood, stucco or brick houses of any style of construction, both outside and in, at an average **saving of four-fifths the labor cost.**

One Aeron operator easily does the work of five hand brushers, and applies a more thorough and uniform coating on all surfaces. There is no skimping—no dripping nor other wastes. The extension pole, which fits regular Aeron, saves scaffolding when painting walls and like surfaces of ordinary heights. Considerable time and labor is also saved in simple operation and easy portability of the outfit.

There is practically the same advantage in speed, facility and economy on the small job of painting as on the large. There is always a certainty of best results, as the Aeron System is sold on a strictly guaranteed basis.

A complete explanation of these advantages and economies as applied to your own problems or plans will be gladly mailed to you — ADDRESS —

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



Davies Trench Pump PAYS FOR ITSELF

Study This Cost Problem

The old way, eight men at \$3.00 per day.....	\$24.00
The Davies' way, 12c per hour, eight hours.....	96
The Davies saves you in one eight-hour day.....	\$23.04

Twelve twenty-four hour days more than pay for the complete outfit, and does twice the work of four men, without an engine.

Always running—any kind of weather—day or night. It has independent connecting links between pump and engine. If links should break, it would not be necessary to get a new engine.

The Davies Trench Pump is not an experiment, but has a record of proven ability and value by long practical jobs. Anyone can run it. When once started, it runs by itself. Costs only five cents per hour to operate. Equipped with three-horse power gasoline engine, with direct oil and waterproof magneto. Write for information about this money-saving trench pump.

Davies Engineering Co.
1465 Broadway, New York
Sales Agents Wanted



Blown On? Yes!

The Modern Way

This Paint Gun—Does It! Painting cost reduced. Save labor of four men.

Your Big Outside Painting Jobs handled easily, rapidly, and with profit.

One surface handled as easily as any other. Very little scaffolding used. Operators' reach increased by 8 ft. One unskilled man does the work of 3 to 12 skilled painters.

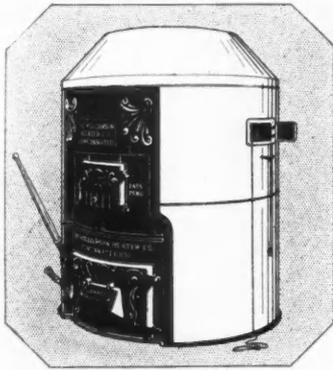
Our Catalog will tell you ALL.

Write for it NOW—It is FREE!

We are prepared to furnish complete gasoline engine or motor driven air compressor units.



Spray Engineering Co., 91 Federal St. Boston, Mass.



Williamson All-Cast Furnace
Thousands in successful use Everywhere

Big Industries Adopt these Furnaces for Industrial Housing Projects

Most of the houses built by the big American manufacturers for industrial housing will be heated with warm air.

WILLIAMSON WARM AIR FURNACES

have been adopted and are being used for heating industrial housings by

- The General Electric Company,
- The U. S. Steel Corporation,
- The Du Pont Powder Company,
- The U. S. Government,

because their investigation proved them to be economical in fuel consumption, high in heating qualities and low in price.

Furnace Pipe and Fittings

For many years Favorite Furnace Pipe and Fittings have been used in ever increasing quantities by leading contractors everywhere.

A large and complete stock kept constantly on hand makes possible the shipping of complete furnace installations—furnace, pipe, fittings, registers and all other necessary parts—without delay.

Engineering Department

As a part of the extensive Williamson factory service for contractors a thoroughly equipped and competent engineering department is maintained for the purpose of preparing detailed heating plans and estimates.

Your plans and sketches will receive prompt and careful attention.

Get your share of this enormous industrial business. Write for particulars about our co-operative selling plans.

The Williamson Heater Co.

217 West 5th Street Cincinnati, Ohio

CONTRACTORS—Go after the pipeless furnace business with the Williamson Pipeless Furnace. It will soon build a profitable business for you.

MAIL COUPON TODAY

The Williamson Heater Co.
217 West 5th St., Cincinnati, Ohio

Gentlemen:

Send particulars about your Special Contractors Industrial Heating Proposition and tell me how to get my share of this business.

Name

Street

Town

I am interested in your pipeless Furnace Proposition.

I am not

What Should be Done for School House Safety

(Continued from page 92.)

one on fire. Fires of this kind are occurring daily somewhere, because from time immemorial children have been left in their homes temporarily by their parents with the expectation that they will be careful and that one will protect the other. What a fine thing for them to know what to do in time of danger and to have learned it from their teacher or a talk by a visiting fireman. Teachers should give a half-hour talk each week on fire prevention, making liberal use of the excellent school texts.



Homes for All

“THE matter of housing the big army of employees at the numerous government plants is going to be solved,” remarked H. O. Jones, construction engineer of New York. “There is material for building houses in almost every community, and it is not a question of style of construction, but the most available. In one of the big plants in Ohio all sorts of houses have been built—from brick, stone, wood, concrete and even iron—and all are not only commodious, but comfortable and durable. Modern engineering has enabled builders to construct houses more rapidly and better than they could a decade ago.

“It is possible now to put up a house or 500 houses in a few weeks, and these structures will last as long as buildings that required months to erect. Many of the employees in the government plants and large contracting works are buying their homes, and after the war there will be a larger private ownership in this country than was ever known.”



Company Proposing to Build not Liable on Contract with Architects

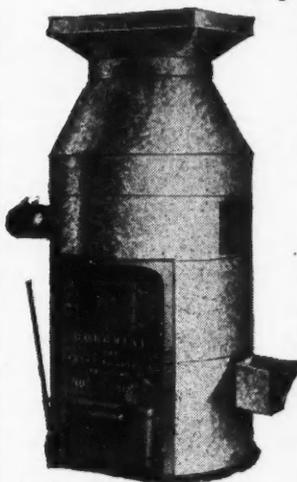
The Appellate Division of the New York State Supreme Court has recently handed down an important decision in a case brought by a firm of architects against a manufacturing corporation proposing to build a new plant, holding that the company is not liable on a contract for the preparation of plans for a building if the agreement was not authorized by the Board of Directors.

The architects asked for payment of a sum of \$700 for services in designing and preparing plans for the proposed plant, which was estimated to cost about \$125,000. The manufacturing company defended the suit on the ground that its President had made the contract without any authority, that the capital of the corporation was only \$10,000 and that further funds for the erection of the plant, particularly to the extent of \$125,000 as estimated, were not available, while the land upon which it was proposed to build the structure did not belong to the company.

In sustaining this defense and rendering a decision for the manufacturing company, the Supreme Court says that such a contract was not within the scope of the President's general authority, particularly if the proposed building would involve an expenditure largely in excess of the capitalization of the company, and that the architects were bound to take notice of the limitation of the President's authority in this respect.

L. R. W. ALLISON.

Jahant Pipeless Furnace Burns Every Kind of Fuel



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

Built for Service

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

The Jahant Furnace with its Down Draft construction burns oxygen from the air, giving perfect combustion, saving 1/2 to 1/3 on the coal bill.

Contractors and Builders

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

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

Industrial Housing —demands the MODERN WAY FURNACE

BECAUSE:-

It is adaptable to any locality. It burns Hard or Soft Coal, Coke or Wood. Simple to install. Safe to operate, and gives guaranteed satisfaction. Convince **yourself** by investigation. One of the oldest Pipeless Furnaces on the market.

The Modern Way Pipeless Warm Air Furnace Heats, Ventilates, and Satisfies. Especially adaptable to your Industrial Housing jobs. **Ask about our special proposition to Contractors and Builders! Now is the time!**



Write today!

The Modern Way Furnace Co.
Fort Wayne, Ind.

THE UNITED STATES FUEL ADMINISTRATION



HESS STEEL FURNACE

Every seam welded; absolutely gas and dust tight. Burns any fuel; saves all the heat.

Moistens the air — circulates heat evenly — maintains health and comfort.

Sold direct from maker to user — a few dollars down, a dollar or two weekly.

Free Booklet and Estimate on request

has notified us that consumers of anthracite coal will be allowed not more than two-thirds of their usual supply for next winter's use; coke is practically all preserved for Government uses; the Eastern smokeless soft coals will not be shipped west of Ohio, and all consumers must make up the deficiency with soft coal from nearby mines.

There are many types of furnaces, boilers, stoves, etc., which are not adapted to using these various kinds of fuel and, therefore, the owners of such heaters cannot realize from some fuels, which they must use, the full heating value.

HESS WELDED STEEL FURNACES will burn *any* fuel, hard or soft coal, screenings, slack, lignite, wood, coke, etc., and will deliver the full heating value of such fuels. The heavy brick lining of the fire box, which retains the heat, insures proper combustion of the gases usually wasted with fire boxes of cast iron; the welding of all seams in the Hess Furnaces insures against leakage of gas, smoke and dust. The absence of smoke flues and obstructions inside of the furnace prevents the accumulation of soot, which would check the draft and insulate the heating surfaces, thus preventing radiation. The extensive grate area under the fire provides a plentiful supply of fresh air for combustion and makes the care of the furnace simple and easy, with any fuel.

Consider these things when you buy a heater, for if you are not prepared for burning such fuel as you may be able to get, you may face discomfort and inconvenience later on. Ask for our free booklet.

**Pipeless Furnaces
Piped Furnaces**

Special terms to Contractors

Hess Warming & Ventilating Co.
1220 Tacoma Building, Chicago, Ill.

Financing the New Home

A HOMEBUILDER TELLS HOW THE BUILDING AND LOAN PROPOSITION WORKS OUT IN PRACTICE

THE architect often has to be financial advisor to the home builder as well as councilor on roof lines and front door design. For building is a money transaction of a considerable size, and it is seldom that some sort of "easy payments" or other financing scheme does not have to be put into operation before the deal is closed.

Not long ago I had the following personal experience narrated, and will pass it along to others for the help I am sure it will be to them:

"We had been married eight years," began the home builder, "and had about \$1,200 in the bank, and getting 3 per cent for it. I can't tell you how many times in those eight years we sent for plans and pictures of houses, and looked up the locations in which we would like to build. I was making about \$25.00 a week, surely not a great deal.

"I got to telling the savings bank cashier about my hopes, and about one particularly fine opportunity I had to get a home. An investment company had been formed in our city and was selling land and building houses on the installment plan. We had seen a plan of one house which we particularly wished to buy, but the man at the savings bank persuaded me that it was best not to. You see, I had hoped the savings bank people would take a mortgage on it, to help me along a

bit, but I found out that the houses were not considered good security, from the way they were put up, and the easy payments were really not so easy, but meant that I was asked to pay about 8 per cent interest.

"A short time afterwards we picked out just the kind of place we wished to live in. Our kind of church was near by, and a school also, and most of the men who worked alongside of me were already living there. My wife, too, knew their wives, and that means a great deal, I can tell you. We found out the cost of the lot would be \$1,200.

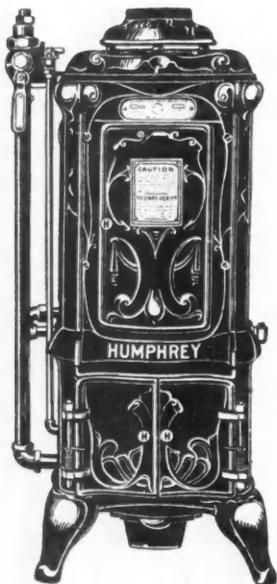
"In talking about this with the man at the savings bank, he told me it seemed good. Then he had it looked up for me, and found that a well-known institution guaranteed the title of the lot, and that the taxes had been paid, something worth watching out for when you buy a lot, I tell you. Well, we decided to buy the lot, and pay \$1,200 down, but blessed if I knew just how we would go about building a house. Didn't know where the money could come from.

"My wife got to telling some of our future neighbors about what we did, and that night when I got home she had some news for me. It was simply this: Half the houses on all sides of our lot had been built thru a building and loan association, in which these

(Continued to page 98.)

The Intention Is Missed

if the homes in any housing operation are without such a needed detail as Humphrey Hot Water Service.



Our organization covers
the country

Hot Water Must Be Used

in every home. It must be procurable at all times. *Easily and Quickly and Cheaply.*

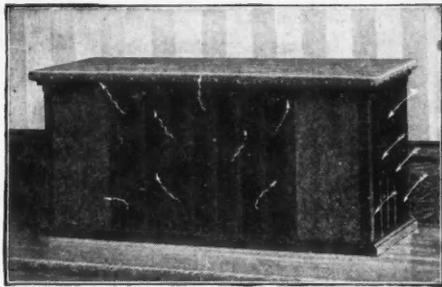
Humphrey instantaneous and automatic gas water heaters fill the need to perfection. There are types and sizes for all needs—the cottage for the laborer and the mansion of the owner.

*Explain your needs and secure our
recommendations of what best meets it*

HUMPHREY COMPANY

Div. of Ruud Mfg. Co.

KALAMAZOO, MICHIGAN, U. S. A.



MAJESTIC DUPLEX REGISTER

A radical departure from the old, unsanitary and inefficient floor or wall register and is one of the greatest improvements ever made in warm air heating.

The large spacious front of the register permits the warm air to flow freely with the least possible friction and with full volume. The cold air is drawn from the floors through the sides of the register. This feature entirely overcomes cold, draughty floors, or overheated ceilings—maintains even temperature and consequently saves coal. Currents of pure warm air constantly circulate through the rooms, insuring healthful air.

FITS ANY FURNACE

The Majestic Duplex Register can easily be fitted to any furnace—pipe or pipeless—and will furnish more heat with much less coal than any other register.

It has an attractive appearance—is solidly made of steel and hardwood, upholstered in Craftsman Leather to harmonize with interior furnishings—a handsome piece of furniture used either as a seat or a base for bookcases, etc. It is also frequently built into colonades. Can be placed anywhere—in any part of a room.

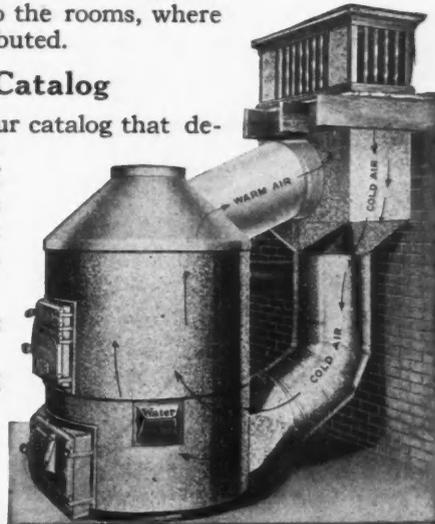
MAJESTIC Duplex Heating System

is an improved gravity system of warm air heating, which insures a uniform temperature, warm floors, pure air and economy of coal.

The Majestic Duplex Register draws the cold air down into the furnace, where it is heated and purified—then the full volume of warm humidified air is forced through the register into the rooms, where the heat is evenly distributed.

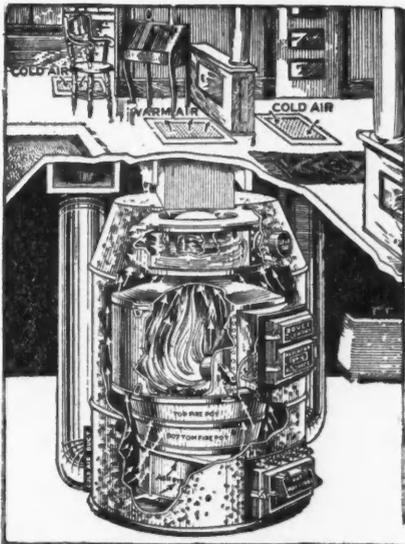
Write for Catalog

Write at once for our catalog that describes fully the Majestic Duplex System of warm air heating, tells the advantages of this system in residences, stores, schools, etc.



The Majestic Company

800 Erie Street
HUNTINGTON, IND.



BOVEE'S PIPELESS FURNACES

Central Heating and Regular Pipe Furnaces

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

Bovee's Central Heating System Furnaces

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

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

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

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

FREE CATALOGUE

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

50% Less Fuel Producing 100% More Heat

Guaranteed by Bond

The Only Furnace that Insures Clean Air

Big Money for You

Meets Abnormal
Costs of Material
and Labor

Simple to Install
Easy to Operate

We Want Good,
Active Men to
Represent Us.

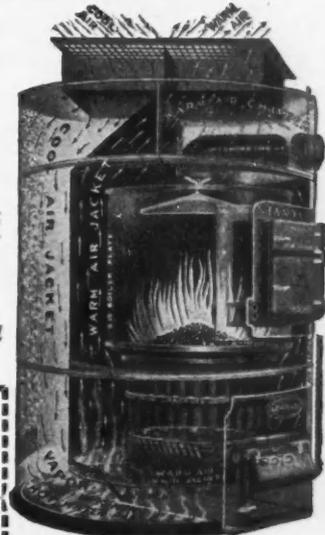
Write today for our special
agency proposition

MAIL TODAY

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

Name.....

Address.....



STANDARD HEATER CO.

438 West Ontario Street
CHICAGO, ILL.

Every Buyer a Booster

EVERY home owner to whom you sell a Mueller Pipeless Furnace will help to spread through your community the news of its economy and efficiency. Every job you sell is sure to sell others. That's because the Mueller Pipeless Furnace *always makes good.*

MUELLER PIPELESS FURNACE

It is advantages like these that make the Mueller the most desirable Pipeless Furnace for the builder and dealer to sell and install. Besides its splendid record of service and satisfaction, you have as selling factors the prestige and 60 years reputation of the L. J. Mueller Furnace Co. and you are enthusiastically backed up in your selling work by the result-producing Mueller advertising campaign.



You Make a Good Profit on Every Sale

Mail the coupon now and secure complete details of our attractive proposition to builders and dealers.

L. J. MUELLER FURNACE CO.

Makers of Heating Systems of all kinds Since 1857

218 Reed St., Milwaukee, Wis.

Mail this Coupon Now

L. J. MUELLER FURNACE CO.

218 Reed Street, Milwaukee, Wis., U. S. A.

Gentlemen:

Without obligating me in any way, please send me full details of your proposition to builders and dealers.

Name

Address

City State

Financing the New Home

(Continued from pag 96.)

people were members. It was just made up of people in our town, whom we nearly all knew, and I found that Jim Forbes, the manager of the office at the plant, happened to be the secretary. He told me that they would have a meeting a week from that Wednesday, and for us to come along and see just what could be done. He was anxious to help. However, I thought I would have the man at the savings bank tell me about this new proposition again. He gave it his O. K.

"Now, the wife and I had figured out that a house which some friends of ours had built for around \$3,200 would just about suit us, both as to style and price, and when I talked to Forbes of the building and loan association he told me that if I were to put a house like that on my \$1,200 lot, making a total figure of \$4,400 in all, the association would let me have up to \$3,500 if I wanted it, but he advised against drawing any more money than actually was required. So we compromised at the \$3,200.

"Forbes then told me: 'You will pay \$32.00 a month to the association. This will be for interest, principal and everything else. You will have to pay a small premium on your loan when you get it, so that your first month's payment will run as high as \$60.00.'

"This looked pretty stiff, and I feel sure we could not have made a go of it, but my wife's brother, John, was making his home with us, and paying us \$15.00 a month. I know this doesn't seem much, but he was very handy about the place, always fixing up this and that, and the work he did was easily worth \$15.00 to anybody.

"That night, after we had talked it over and secured John's promise to see us thru, by coming to live with us at the new home, when we had it built, I decided to have Forbes propose me as a member of the association. I undertook to take out sixteen shares of their stock, par value \$200 each, and which we would undertake to begin to pay for immediately at the rate of \$32.00 a month. This would give the \$3,200, and I was surprised to find that we didn't have to have it all in the bank when we began to build.

"Well, five months later the house was finished, and it was examined by the association and appraised at about \$4,500. I was instructed by Forbes that I could get this money I wanted at the next meeting of the association, as there wasn't a great deal of building going on, and there would be few borrowers.

"At the next meeting, then, I got the \$3,200 by bidding, as they called it, one-half of one per cent premium. That meant that I paid a premium of \$16.00, and the \$3,200 was mine, to be paid back, including interest, at 6 per cent, at the rate of \$32.00 a month. You understand, of course, that these monthly payments were not really a paying off of the loan, but were the continuous installment payments for the sixteen

(Continued to page 100.)



The Great Bell

-original Pipeless Furnace

Father of Them All

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

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

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

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

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

American Bell & Foundry Co.

27 Cody Street, Northville, Mich.

How about it?

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

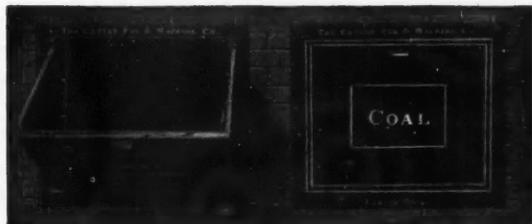
Profit to YOU

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

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

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

Canton Foundry & Machine Co.
Canton, Ohio



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.

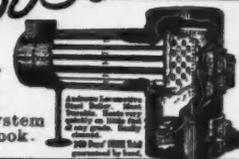
HERO FURNACE CO. 59 W. Lake St.
Chicago

Instead Of Overhauling Old Hot-Air Plants It Is Wiser To Install A New

HANDREWS HOT-WATER HEATING SYSTEM

FOR OLD OR NEW HOUSES

Easiest for Contractors to handle. Good profits and sure to please your clients. We assume risk. Most economical, durable, easiest to manage system. Steel Boiler sold alone if complete system not required. Write for Big Free Book.



HANDREWS HEATING COMPANY
1500 HEATING BLDG., MINNEAPOLIS-MINN.

Financing the New Home

(Continued from page 98.)

shares of stock in the association. Just how long it would take for me to do this, Forbes couldn't say, as if the profits on the sixteen shares of stock I had in the association were large, it would take probably ten years or less, as against twelve or fourteen years if the profits weren't so great. The idea was that whenever my monthly payments, together with the accumulated profits, amounted to \$3,200, the stock would be fully paid, the loan would be canceled, and we would own the house free and clear.

"It seems harder telling about it this way than it is. A lot of times I've wondered if it was worth while. We've had to scrape a little. Haven't been able to get all we wanted to, either, sometimes, in the way of this and that, but things are picking up. Last year, for instance, we lived off our little garden in fine shape, and altho John volunteered and is now with the army, he built a little garage to one side, that is steam heated in winter, and which brings in about \$15.00 a month, and did a lot of things about the house which have added to its value."

The Houston office of the H. W. Johns-Manville Company will be located at 424-426 Washington Avenue, Houston, Texas, on and after July 1, 1918.



Winter Quarters for Bees

The accompanying photograph illustrates the plan of a Chicago man to afford his apiary a warm and substantial overcoat.

Inside of the structure are six ordinary bee hives, each containing a very live and active colony of honey bees. The hives stand in a row on a bench. Around and over the hives an outer house is built in sections and screwed together. It is placed over the hives late in the fall and is taken off with the coming of warm days of spring.

There are six openings in the side of the overhouse,

(Continued to page 102.)

CONTRACTORS - BUILDERS - CARPENTERS
DO YOUR OWN PLUMBING-HEATING

Our New Easy Way—Buy From Us at Low Cost
 Every builder and contractor needs **Our Free Handy Man Book**. Shows new home improvements and everything in guaranteed plumbing and heating supplies exclusively at wholesale prices. Any handy man can install with our free, easy installing plans and instructions.

Cut to Fit Heating Plants
 Our 40 years' experience enables us to furnish heating plants, Cut-to-Fit; bath room outfits, etc., with new original installing features, combining quality, economy, simplicity and ease of installation. Our \$500,000 organization is behind our guarantee. Write today, for free book.

THE HARDIN-LAVIN CO. Chicago
 40 years at 4332-42 Cottage Grove Ave.

Building Contractors
Make money out of water!

Not by magic—but in the modern way, selling house customers on the home sanitation and convenience of a

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WATER SUPPLY SYSTEM

Hydro Pneumatic No. 2010, Capacity 570 gals. per hour.

Your plumber does the work when the house goes up—you both make an extra profit and the owner gets a more modern, livable home. Send for full information on this plan.

The Deming Company
 99 Depot St., Salem, O.
 Hand and Power Pumps for all uses

I WILL SELL YOU AN ENGINE

On Practically Your Own Terms

ALL CASH, PART CASH, or NO CASH DOWN

Any worthy, creditable person, anywhere in the U. S. can buy on these terms. Any one can order without risk. I guarantee safe delivery to your station. All WITTE Engines sold on 5-year guarantee, 2 to 30 h-p. My factory is the largest exclusive engine factory in the world, selling direct to the user, any style—Stationary, Portable or Saw Rig. **I Ship Your Engine Quick.** You choose engine and plan of payment. WITTE Engines are best-looking, best balanced, easy to operate. **Money Back If Not Satisfied on My New 90 Day Engine Offer—FREE.**

—ED. H. WITTE, Pres.

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When you install systems of running water be sure that you specify

KEWANEE WATER SUPPLY SYSTEMS

Then you can be sure that your customers will have systems that will never fail to give the service that means more business for you. For more than 20 years Kewanee Water Supply Systems have been giving universal satisfaction to thousands of users in every part of the country.

<p>Electric Light</p> <p>Kewanee Electric Lighting Plants make all the comforts of electricity possible for everyone. 28 different sizes furnish light and power for every purpose.</p> <p>Write for bulletins on <i>Water Supply, Electric Light and Sewage Disposal Systems.</i></p>	<p>Sewage Disposal</p> <p>Kewanee Sewage Disposal Systems bring health and comfort to every country building. All waste is taken care of in the most sanitary way. Simple to install and operate.</p> <p>Write for bulletins on <i>Water Supply, Electric Light and Sewage Disposal Systems.</i></p>
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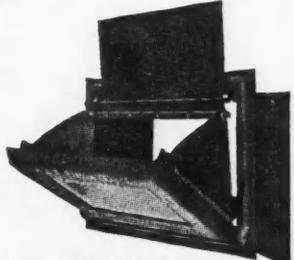
Kewanee Private Utilities Co.
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Will Answer Every Requirement

- Opens Automatically
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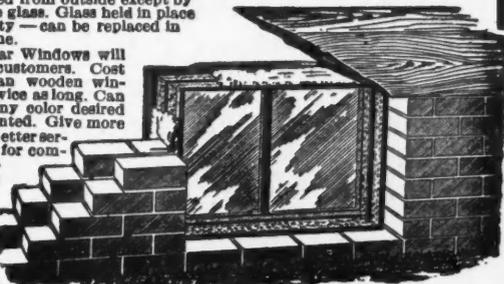


Agents Wanted
THE WESTERN IRON & FOUNDRY CO.
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Famous Chief Cellar Windows Will Not Stick, Warp or Rot

The solution of the cellar window problem—a modern, 20th Century, Cellar Window made right for service. Made of steel-window, casing and all. No rotting, shrinking or swelling. Fits perfectly all the time. Trouble proof, easy to open and close, leak-proof and fire-proof. Will not rust. Nothing about it to wear out. Fitted with special, inside steel latch—cannot be opened from outside except by breaking the glass. Glass held in place without putty—can be replaced in minute's time.

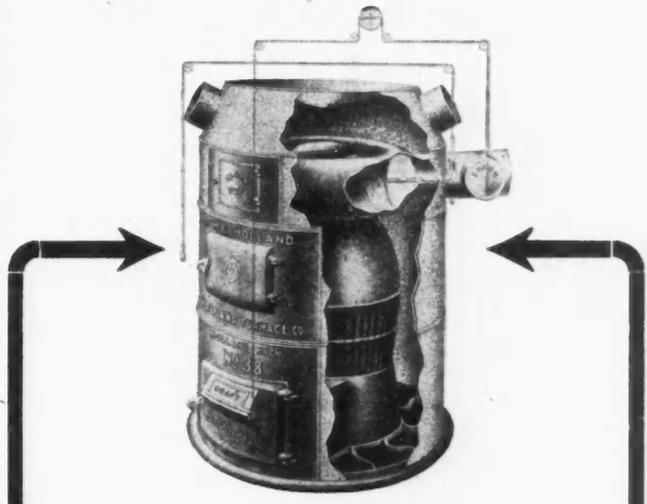
Chief Cellar Windows will please your customers. Cost no more than wooden windows—last twice as long. Can be painted any color desired or left unpainted. Give more service and better service. Write for complete description, prices and terms.



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Holland Furnaces

Make Warm Friends



A Contractor is a Good Judge of a Furnace

He knows the furnace is really the "heart of the home;" and he knows 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.

Carpenters recommend the Holland Furnace because they not only know the advanced principles of its design and the dependability of its construction; but they know that the Holland Guarantee and the Holland Five Year Service Bond positively insures heating satisfaction to every owner.

The HOLLAND Leads in Sales In 125 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.

Contractors—Builders—Carpenters

Pass the word along. Write for our special proposition to you. We will also send you our free catalog, free heating plans and full information. Let us get better acquainted to our mutual advantage. Write today.

HOLLAND FURNACE CO., Holland, Mich.
World's Largest Installers of Furnaces
Holland, Mich.—2 Factories—Cedar Rapids, Iowa
Ask Any Lucky Owner

Winter Quarters for Bees

(Continued from page 100.)

and it will be noticed that each opening is sheltered so that no honey maker may get its feet wet if it ventures out in inclement weather.

This is the idea of George Theodore Halla, whose home is in one of the finest apartment house sections of the north side. His apiary is fairly surrounded on three sides by this class of city homes, and in such a place he takes care of twelve colonies in two of the outer houses described.

There are many new ideas in wintering bees in Chicago, because the bees have wonderfully multiplied in the residence districts within the last few years.

J. L. GRAFF.



How to Determine the Correct Belt and Pulley Sizes to Use

By W. F. Schaphorst

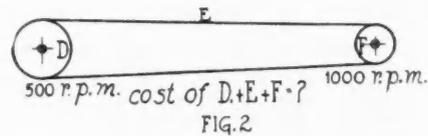
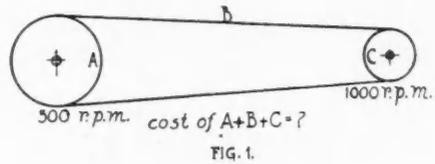
It is not so difficult to select belts and pulleys as is generally supposed. They can usually be selected intelligently by observing these simple directions:

- 1—Determine the pulley ratio from the speeds of the shafts. In Figs. 1 and II the ratio is 1 to 2.
- 2—Assume various diameters for the small pulley from minimum to maximum as in Figs. 1 and II.
- 3—Compute the width of the belt from the old rule of thumb, "a single-ply belt 1 inch wide running 800 feet per minute will transmit one horsepower." For

double-ply belt it becomes "500" instead of "800."

4—Figure the cost of large pulley, plus cost of small pulley, plus cost of belt for every combination, and compare the totals.

5—Select the combination that costs least money, provided the smallest pulley is large enough to pull without slipping.



A Narrow Belt Over Large Pulleys May Be Cheaper Than a Wide Belt Over Small Pulleys.

Pulleys should be at least 1 inch wider than the belt they are to carry.

By the above method you will frequently find that large pulleys and a narrow belt, as shown in Fig. I, will cost much less than small pulleys and a wide belt, as shown in Fig. II.

Large pulleys are usually to be preferred because there is less danger of slip at the higher speeds and the initial tension on the belt needn't be so great.

"YANKEE"

PLAIN RIGID DRIVERS

Cabinet Style No. 95
Standard Style No. 90

They cannot loosen in the handle in use or abuse. You have our guarantee.

They are as Durable as the high-grade steel that composes them, and will render faithful service for generations. The comfortable handle and various lengths of blades make them suitable for all classes of work. Your dealer can supply you.

Let us send you a "Yankee" Tool Book

NORTH BROS. MFG. CO.
PHILADELPHIA, PA.



Make New Business
From Old Business

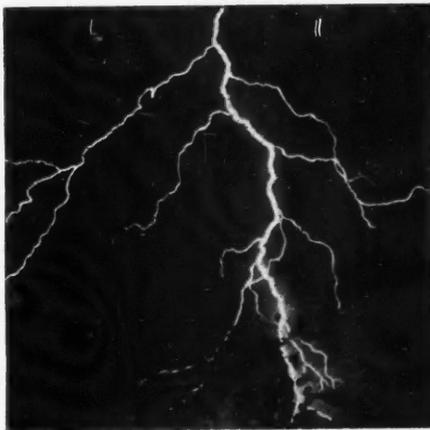
The Mark of Quality in Plumbing

In remodeling Homes, Schools, Business Houses, or Factories and for new buildings, insure Plumbing satisfaction by using Wolff products, the standard of Plumbing value for over 62 years.

L. Wolff Manufacturing Company

General Offices and Storerooms, 111 North Dearborn Street

CHICAGO



Taken from Actual Photograph

Lightning Rods

CARPENTERS — BUILDERS

"GO OVER THE TOP" WITH

BARNETT SYSTEM

Guaranteed Lightning Protection

Why let the big extra profit go to the other man after you have done the hard work erecting the buildings? This easy profit belongs to you. You are the logical man right on the job to install this protection on every building you erect. The owner's confidence in you will make it easy to secure this additional work and profit on the same job. Why not make \$50.00 to \$75.00 per week extra?

Our Rods are in big demand. Made of pure copper endless cable, no rust (no joints) with attractive fixtures. Easily put on buildings. Two hours extra work rods the building, and puts profit in your pocket. Money back guarantee with each job. Hundreds of our Carpenter agents began in a small way, now doing a big business. Secure the agency now. Write today for free Catalog, Cable Samples, and Prices.



JOS. L. A. BARNETT & CO., Cedar Rapids, Iowa

Oak Floors "America's Best Flooring"

Always attracts a better class of buyers or tenants and invariably increases the selling and renting values. This is a proven fact.

Oak Floors are made in $\frac{1}{2}$ inch and $\frac{3}{4}$ inch thicknesses and in four grades. $\frac{3}{4}$ in. h is used very extensively and economically over old pine floors in remodeling old houses.

Carpenters and builders during dull periods find $\frac{3}{4}$ inch Oak Flooring a very profitable side line and business getter to lay over old pine floors in old houses. $\frac{3}{4}$ inch Oak Flooring is very beautiful, durable and economical. The modern woman wants Oak Floors because they simplify house cleaning and housekeeping besides being the ideal floor for the home.

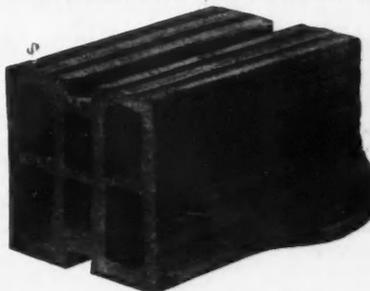


WRITE FOR FOLDERS

OAK FLOORING MFRS. ASS'N.
Union Trust Bldg., Cincinnati, O.

"HEAVY DUTY" INTERLOCKING TILE

The STRENGTH of BRICK and the DRYNESS of TILE are combined in Vigo American Heavy Duty Interlocking Tile to make a BETTER wall than solid brick and at two-thirds the cost.



We also manufacture Fire-proofing, Building, Arch, Partition and Drain Tile, Hollow Brick and other shale products. Send for our literature.

VIGO-AMERICAN CLAY COMPANY
7th and Ohio Sts., TERRE HAUTE, IND.

The Effect of Soldiers' and Sailors' Civil Rights Act on Business

THERE appears to be but little accurate information among business men as to the Soldiers' and Sailors' Civil Rights Act, which is the law passed by Congress to prevent the bringing of suits and actions against men in the army and navy, in any way which would make their absence a detriment to them. This is already affecting large numbers of business houses, and with the millions more men certain to be under arms in the next few months, this law is destined to be of great importance. That it is really important already may be seen from the fact that one of my clients, a wholesaler, encountered it five times in one week in trying to collect delinquent accounts.

This law is in force for the period of the war, and to quote from its own terms, it is for this purpose: "Protection is hereby extended to persons in military service of the United States, in order to prevent prejudice or injury to their civil rights during their term of service, and to enable them to devote their entire energy to the military needs of the nation, and to this end the following provisions are made for the temporary suspension of legal proceedings and transactions which may prejudice the civil rights of persons in such service during the continuance of the present war."

In a nutshell, the act puts creditors where they cannot take snap judgment against a man who owes them an account, if that man is in the army or navy. This is so in the case of any business transaction, including transactions where fixtures and such things are bought on installments. The justice of the law is not debatable, but creditors are going to find it a good deal of a nuisance, no doubt.

This law applies to every court in the United States, even

justices of the peace, aldermen or magistrates' courts. Its provisions, so far as they are germane to this article, I briefly summarize as follows:

If you sue a defendant to recover an account, or for any other purpose, and he doesn't appear, you could ordinarily get judgment by default. Now, before you can do that, you must file an affidavit either that he is not in the military service, or that you don't know whether he is or not. If he is in the military service, you can't get judgment without the court's permission, and permission may not be granted. It will not be granted in any event until the court has first appointed an attorney to represent the defendant and has, if thought necessary, made you put up a bond to reimburse the absent defendant from any damages he may suffer from your judgment, if you are granted leave to take judgment and the judgment is set aside after he comes home.

If it wasn't for this provision a creditor could have started his suit against a man in the army or navy, served the paper at the debtor's home and in time gotten judgment by default and levied on anything he could find belonging to him.

If any judgment is rendered against any man in military service, and it appears that he was prevented or hindered in making his defense by his absence on military service, the judgment can be opened any time up to ninety days after he leaves the service, and he will then be allowed to make his defense, provided he can show he has one.

This means that no judgment will be safe against anybody in the military service, up to a date ninety days after he leaves, until he has come into court and defended at the time.

(Continued to page 106.)

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FREE—Send for large, costly, most comprehensive and elaborate catalog of its kind ever issued. Vitally important to Architects, Contractors, Carpenters, Builders and Dealers, showing correct, up-to-the-minute methods of doorway construction and proper hardware to handle any requirement. Profusely illustrated; also valuable details—request it TODAY. When building, submit your plans or an outline of your needs to us. Our Engineering Service is at your disposal. No obligations whatever.

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LOUDEN



Barn Plan Service and Barn Plan Book Cost You Nothing

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

"LOUDEN BARN PLANS"

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

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

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

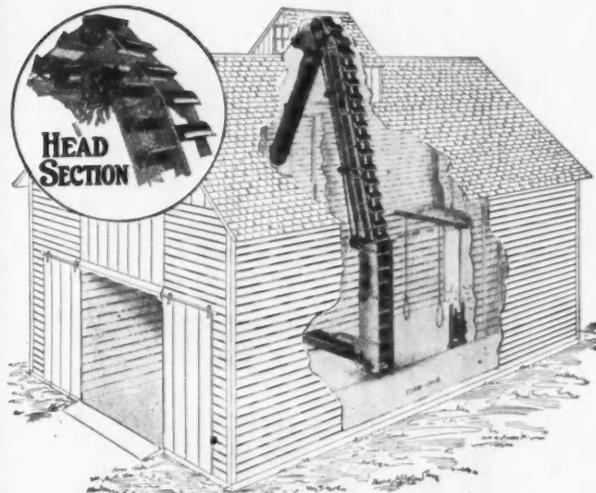
You should have also the Louden General Catalog showing the full line of Louden Modern Steel Barn Equipment, without which no barn is complete. Postpaid on request.

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

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



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



The Best and Most Sensible Inside Outfit Ever Made

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

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

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

Get Full Details of Proposition to Carpenter-Contractors

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

Wonderful New Book and Crib Plans FREE

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



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

Comfort Indoor Closet

ODORLESS SANITARY GERM-PROOF

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

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

COMFORT CHEMICAL CLOSET CO., 307 Factories Bldg., Toledo, Ohio



Agents \$60 Weekly

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

Write for free tub offer.
ROBINSON CABINET MFG. CO., 4850 Factories Bldg., Toledo, Ohio

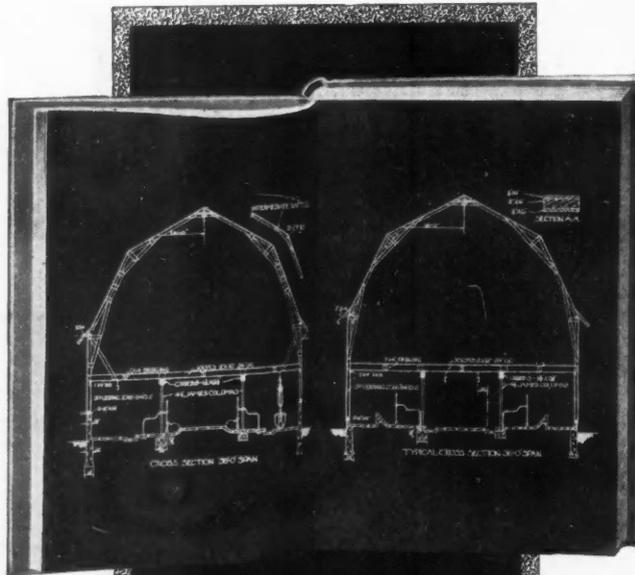
In every summer cottage you build

—you can install, at a profit, a **Ro-San Indoor Closet**

Every building—home, cottage, store or office—that has no sewer connection needs this modern sanitary indoor closet. Absolutely odorless. Act as our agent—this fixture sells easily to your customers—good profit. Hundreds of carpenters represent us. We also distribute through builders the **Ro-San Washstand** Provides Running Water, Hot or Cold, Without Plumbing. Every housewife wants one. Convenient, sanitary. Sells readily with little effort. Carry this work along with your regular business. Ask for terms to agents. "We are prepared to ship promptly any quantity of closets. No waiting."

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BACK your building skill with the scientific knowledge of our barn experts. "The James Way" Book gives the practical, helpful suggestions for better barns and barn equipment. It advises as to the best location. Basing its advice on drainage, ventilation and best distance from other buildings.

Complete Dairy Barn Information

From cover to cover "The James Way" is filled with the best, most modern dairy barn facts. Including blue print plans for complete barns, floors,

windows, ventilation, etc. Showing **James Barn Equipment** the equipment used by thousands of dairymen and installed by leading builders everywhere

Write for this Book TODAY!

Just send us the names of farmers who intend to build or remodel, and for how many cows. James reputation added to your skill will do more to increase your income. Dairymen everywhere know the

name "**James**" to stand for the **best** in barn equipment. Get in touch with us as quickly as possible. We have some barn information that will help you land jobs and **beat competition**. Write us **now**.

James Manufacturing Company

EB75 Cane Street, Ft. Atkinson, Wis.

Elmira, N. Y.

Effect of Soldiers' and Sailors Civil Rights Act on Business

(Continued from page 104.)

The court can stop proceedings against a person in military service, at any stage, provided it appears that his being engaged in military draft is hampering him in any way. This is left in the absolute discretion of the court.

Suppose you have a running contract of some sort with a customer who is called in military service, and ordinarily, if he broke it, you could collect damages, either damages specified in the contract, or damages you could show you had suffered. If the court stops your proceeding, you cannot collect any damages from then on, even if the proceeding is suspended for five years. Also, if somebody who has entered into such a contract is compelled to default on it because he was called into service, you cannot collect damages from him by reason of such default, if the court thinks collecting damages is unfair, as it probably will.

If you have issued an attachment or have garnished the property or wages of a man in the service, the court can set the attachment aside. If you can show the court that being in the service has no effect on the defendant's ability to pay, you may induce the court not to set the attachment aside, but in the average case this will not be easy.

All the stays and stops referred to above can be made for the full period of the war and three months thereafter, the latter period being provided to allow the debtor to get on his feet again.

This law contains some special provisions regarding the installment contracts by which so many fixtures and business appliances are sold nowadays. It is provided that no concern which has sold something on installments, or on the usual lease or property note, and has collected a deposit or installment on it can—if the buyer defaults on his payments—step in and either seize it or take legal proceedings against the buyer. Any seller who violates this provision can be fined \$1,000 or sent to prison. In addition, the court can compel him to refund all installments which have been paid, or it may stay the whole case. Of course, if it can be shown that the military service of the buyer is not interfering with the case in any way, the court may refuse to interfere, but I say again the courts are going to take the position that they must be very clearly shown before they deny persons in military service the protection given them by this act.

Other provisions of this act, not important to the readers of this article, extend similar protection against foreclosing either real estate or chattel mortgages, or taking summary proceedings for unpaid rent, or cancelling life insurance policies for non-payment of premiums, or selling real estate for non-payment of taxes.

(Copyright, June, 1918, by Elton J. Buckley)



All the Best Periodicals Do It

To the Editor:

Bridgeport, Conn.

While enjoying every page of advertising and reading matter from cover to cover, I am of the opinion that many readers other than myself would prefer an article to go thru from start to finish without jumping from page 25 to 132, 134, 136 and 138, 27 to 144, and so on. Those interested in buying will look carefully thru the ads to find what they want, and those not requiring material at the moment will do so to keep posted on the latest.

There seems no need to mix reading and ad matter. The AMERICAN BUILDER would also be less bulky to bind. Will you put this up to your readers? I like your idea of blueprints. Looks more like a "Builders' book." Would it not be possible to eliminate plans of all "architects" who put bathrooms and toilets over the entrance hall or living rooms?

GEO. MITCHELL.



Appearance

How a ventilator LOOKS is a secondary matter—how it VENTILATES is the point to be considered.

Yet you do not sacrifice EITHER Appearance or Efficiency when you install—

“GLOBE” VENTILATORS

“GLOBE” Ventilators are naturally the first choice of a great many architects from the standpoint of APPEARANCE.

Their simple lines harmonize so well with practically every style of architecture. And they operate efficiently in a 5-mile breeze—have an exhaust capacity equal to any, greater than many of this type—will last as long as the building itself—nothing CAN get out of order—no upkeep cost. Made with fire retarding damper if desired.

For complete information, please address Department F

GLOBE VENTILATOR COMPANY
TROY, N. Y.





BETTER HOGS FOR THE FARMER BIGGER PROFITS FOR YOU

GOVERNMENT REPORTS show that all possible sunlight and good ventilation in well built hoghouses means better, healthier hogs.

NO BETTER WAY can be employed to allow sunlight to shine into the building the greatest number of hours each day than by using

WILLIS HOGHOUSE SKYLIGHTS

They offer a reasonably priced well-made product for this use. Perfectly watertight, without use of putty. Very easy to set in place. Made in several sizes and styles to care for every requirement.



Write for prices, etc., which include detail drawing of above hog-house

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Manufacturers of
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RESULTS THAT COUNT

**Profits
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TIP TOP (roof) Ventilators and **TIP TOP** More Sun (hog house) Windows directly increase food production and insure greater profits for sellers and users.

It is impossible to get these results without proper ventilation and sunlight.

Dealers and contractors should write today for our plan of co-operation.



PURE AIR
TIP-TOP VENTILATORS
THE BEST STOCK CONDITIONER
INSURE FARM PROFITS

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are built in sizes and designs for every requirement. Special sizes for unusual requirements are built to order.

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GET ALL THE PROFIT

**Shipped
Ready to
Install**

**Easy to
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Your reputation and future orders depend upon the equipment you recommend. Don't take a chance. Get the present and future profit by recommending and equipping the barns you build with

O-K Cupolas

Every one you erect adds to your reputation. They solve the barn ventilation problem and sell themselves. **O-K Cupolas** are neat in appearance. Bird, storm, rust and rot proof. Made of heavy galvanized steel. Cost no more than the ordinary kind.

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Write for full particulars of this and other money-making specialties

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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



Gambrel Roofing a Silo

To the Editor:

Ovid, Mich.

I have been a reader of your paper for four years and like it splendid.

I see in the May issue M. C. Morrison, of Timewell, Ill., asks for information in regards to framing a gambrel roof for a silo. As I have done quite a little of this kind of work, would say that I cut plates from good timber, 2 inches thick to the circle of the silo top and fasten with anchor bolts every 2 or 3 feet; then frame roof the same as for a gambrel roof barn, using 8 pairs of rafters. I have never seen one give way, and roofs which I put on five or six years ago are still in good condition.

E. S. DECKER.



Electricity for the Farm

(Continued from page 47.)

back to their original form.

Care must be taken to keep the plates covered with the electrolyte and to keep the battery fully charged. There is much more danger of their being undercharged than overcharged. In fact, the writer has never yet found them overcharged, but very often undercharged. We blame this to the fact that electric recording instruments are frequently not correct. They cannot be depended on to be correct any more than can a hundred-dollar watch, and they are generally incorrect on the wrong side; that is, showing to high a current. For this reason makers of storage batteries direct that they be given an overcharge frequently. Undercharging causes more trouble than

any other one thing. The specific gravity must be watched carefully and should not rise higher than 1.280, and should not be allowed to drop lower than 1.250. Fig. 2 shows a glass cell fully assembled. The battery should never be discharged until the lights get dim.

There are batteries made of steel cells, the Edison, in which the negative plate is made of iron and the positive plate of nickel oxide. The electrolyte is caustic potash dissolved in distilled water. It is much lighter than a lead battery, the plates do not become sulphated, and it is hard to injure it by over or under charging, and it can be left fully charged or discharged indefinitely without injury. A common saying of it is, "It takes an axe to injure them."

Figure 3 shows the Edison steel cell.

There are some so-called "Automatic Electric Systems" on the market, and the writer advises anyone who buys such to be very careful that there is some way to overcharge the battery. Those which he has seen have no such method, and it is very important to give all batteries an occasional overcharge. Again there is much danger of overdischarging by cranking the engine with the battery. This is the greatest fault of these so-called automatic systems. However, with proper attention this may be avoided; without this care serious damage will result.

(Continued to page 110.)

Our Free Plans Will Help You—

Meadows
TRADE MARK REGISTERED

Don't figure on any crib or granary without consulting our Free Plans. They will show you how to get greatest capacity at least expense by installing **Meadows Inside Stationary Cup Elevators.**

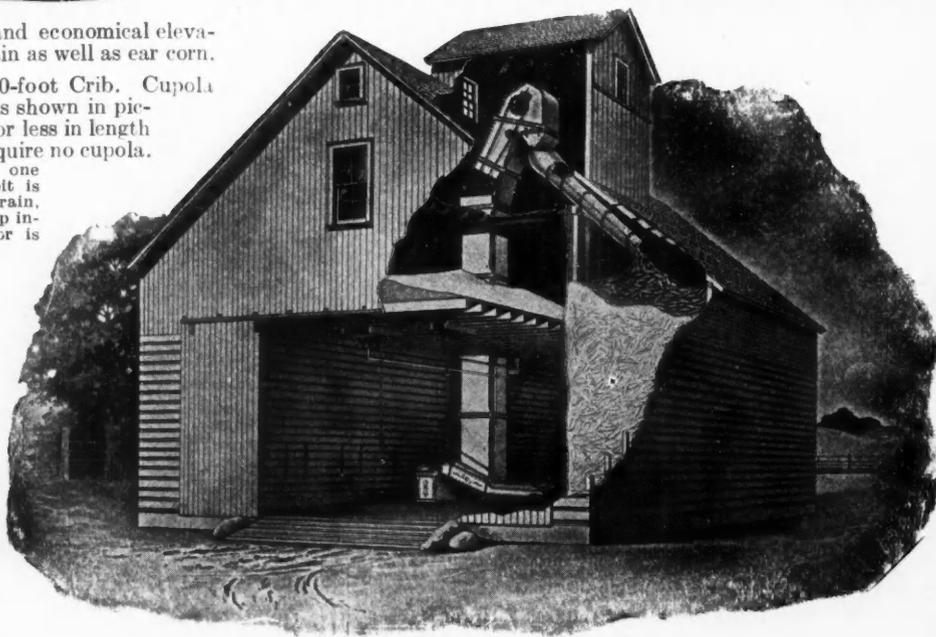
The most convenient and economical elevators, carrying small grain as well as ear corn.

The picture shows a 40-foot Crib. Cupola need not be as large as shown in picture; the cribs 36 feet or less in length with half-pitch roofs require no cupola.

Elevator is confined to one side of driveway. No pit is necessary for dumping grain, just a hole 16 inches deep into which boot of elevator is set. The wagon jack is entirely overhead, fastened to the joints.

But write in today for our free Crib and Granary plans, catalogs and large posters telling all about our outfits and their application. Valuable information for the builder, and writing for it obligates you in no way.

**Meadows
Mfg. Co.**
Pontiac, Illinois



Disappearing Refrigerator

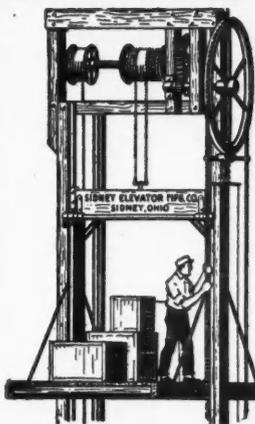
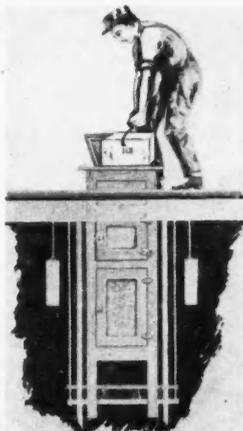
Automatic Dumbwaiter

Simply by pressing a push button on the floor—the refrigerator automatically comes up from the cellar. A marvelous invention.

It saves carrying food to and from cellar. Finished inside with white enamel. Top lies flush with kitchen floor. You can walk over it.

Assembled complete and ready to install. Price as low as \$19.11 apiece.

Carpenters Wanted As Agents
Ask us about our proposition. Write for catalog
YORK AUTOMATIC DUMBWAITER WORKS
639-645 W. Market St., York, Pa.



SIDNEY ELEVATORS

Will reduce your handling expense, and speed up your work.

Our machines are easily installed from our complete plans and instructions which are sent with each elevator.

The Reasonable Cost Will Interest You

Write us today, stating requirements, giving style of machine wanted, size of platform and number of feet travel, and we will quote a money saving price on equipment to serve you well.

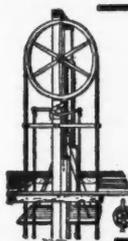
SIDNEY ELEVATOR MFG. WORKS
SIDNEY, OHIO

DUMBWAITER

COMPLETE \$22.00 READY TO INSTALL

Includes all necessary material, not knocked down—machine, machine timbers, bolts, boxes, car, counterweight, ropes, guide ways, etc., all ready to set in hatchway and erection instructions. Length up to 20 feet. All material guaranteed. Money back if not satisfactory. Write for further particulars.

Highwood Dumbwaiter Co., Grand Ave., Leonia, N. J.



KIMBALL ELEVATORS
PASSENGER AND FREIGHT

We manufacture an improved line of Electric, Hand or Belt Power Elevators, Dumbwaiters, Hatch Gates, etc. Send for full information.

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KIMBALL BROS. CO., Council Bluffs, Iowa



HAND, BELT AND ELECTRIC ELEVATORS

That will stand the wear and tear of years of service at a minimum cost of upkeep is our motto.

Let us solve your elevating problems for you.
DUMBWAITERS and SIDEWALK LIFTS
J. P. SPEIDEL, READING, PA.

NO

FALLING WINDOWS
SMASHING GLASS
POCKET FRAMES
SASH WEIGHTS
RATTLING
BINDING
CORDS with

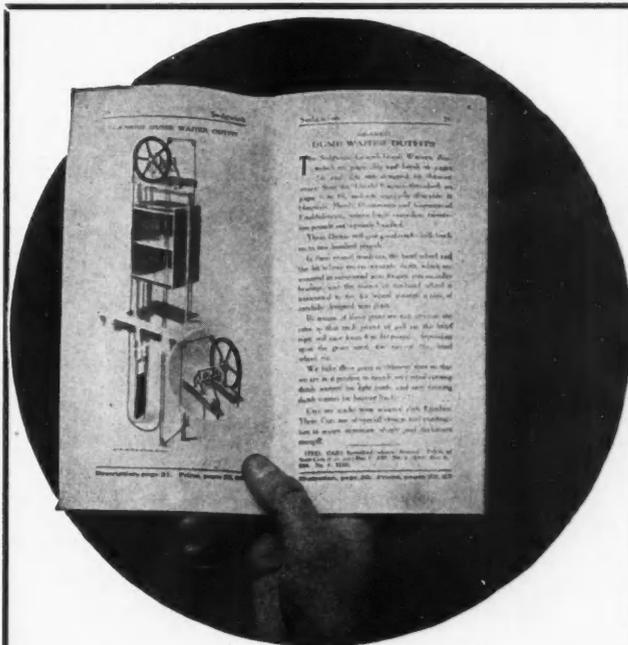


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SPECIFY USE DEMAND

Automatic Sash Holders

and save labor, lumber and money. Send for trial set (\$1 prepaid) stating approximate weight of sash, or our circular
Hardware Sales Co., Inc.,
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What more constant effort has the Contractor made than to provide his office with accurate data to help in his plans, **when he needed help?**

You want all the information you can get on a subject—measurements, sizes, weights, types and prices—when you are estimating, not after you have estimated. And you want complete, accurate, authentic information.

In a single volume Sedgwick gives you all the **dumb waiter** data you need—in a volume handy to file, handy to handle, profusely illustrated, compactly compiled, clearly expressed.

It is a book that represents twenty-five years of experience in the design, manufacture and installation of hand power dumb waiters.

It describes all standard types, giving sizes, space requirements, details of construction and prices. Together with our Service Sheet, it forms the most complete and authentic representation of the dumb waiter subject ever made available for the contractor's use.

You should have this new, up-to-the-minute catalog without delay. We will send it to you upon request.

One other thing: If when you have this book, you find occasion to figure on a special outfit, not pictured or described, send your plans to us. In our store of blue prints we can usually locate an outfit and an installation, which with some minor changes, covers just the type you are seeking.

And this special service applies to any Contractor at any time, with no obligation attached.

SEDGWICK MACHINE WORKS
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Hand Power Elevators and Dumb Waiters, Exclusively

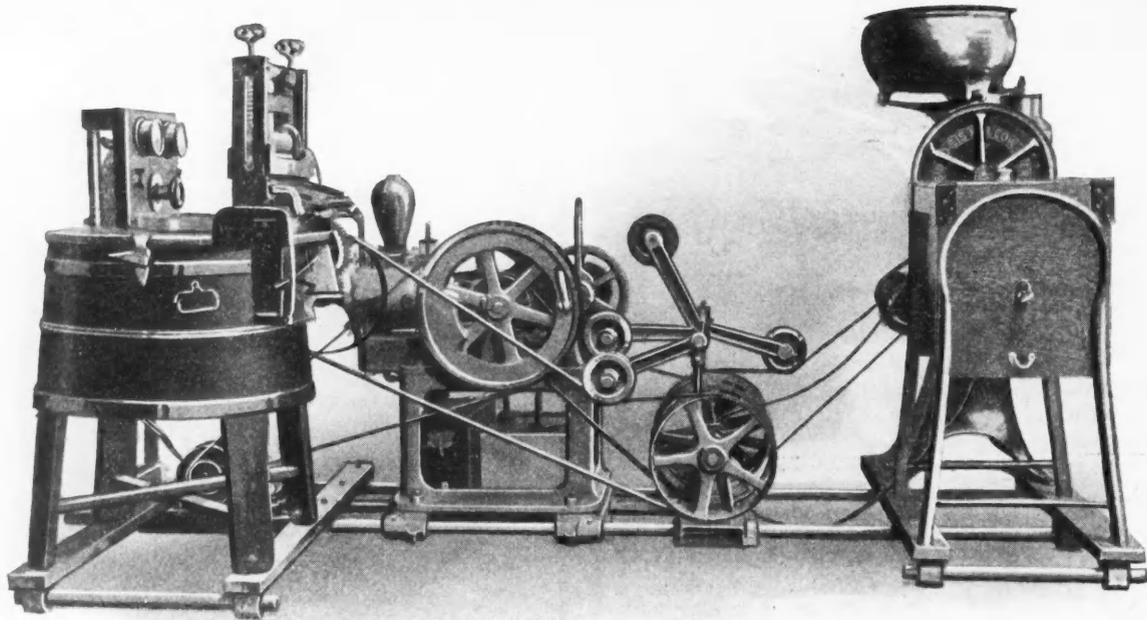


Fig. 4
(Continued from page 108)

As to the power needed, any good gasoline engine or other power generator is suitable to charge the batteries. There are many small streams on farms, now running to waste, which could be made to gener-

ate sufficient power to run the dynamo, or even develop sufficient power to operate many farm machines. There are water wheels made to utilize such streams, which may be bought sufficiently low to pay to install.

(Continued to page 112.)



BLACK CENTRE

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

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

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

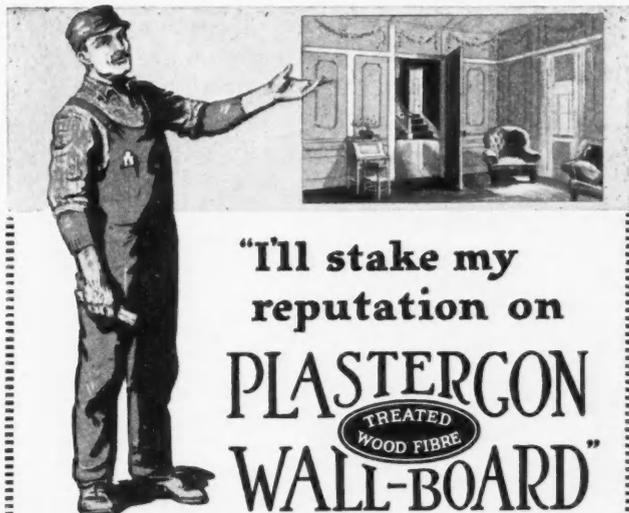
BLACK ROCK WALLBOARD CO.
1505 Ontario Place BLACK ROCK, N. Y.



Fiberlic Wall Board
Fiberlic Wood Grain Panels

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

McAndrews & Forbes Company
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Factory: Camden, N. J.



"I'll stake my reputation on
PLASTERGON
TREATED WOOD FIBRE
WALL-BOARD"

YOU needn't dodge any questions at all in recommending this heavy, tough Wall-Board. Goes up easily and quickly.

Once up, Plastergon's up to stay.

Your work will stand as long as the building stands.

Because sturdy Northern Spruce fibre, solidly united and chemically saturated makes Plastergon warp-proof, water-proof, permanent.

It's a pleasure to work with Plastergon Wall-Board — so stiff, firm, cuts so easy. Saves your customers more money, too. Plastergon is not merely sprayed — it's saturated with sizing. All ready to paint.

The Government knows the difference in wall boards. 90% of Uncle Sam's new buildings at Washington are "Plastergoned."

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Plastergon Wall-Board Company

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Why Divide Profits with the Plasterer?

Recommend Carey Wall-board, then apply it yourself

or have your cheapest men apply it. Thus you save the plasterer's profit for yourself while your customer gets a better and more attractive job, all of which means future business for you.



is a better wallboard. It is twice as strong as pulp boards, hence a more suitable building material. The plies are cemented together with asphalt, making it waterproof. You can buy it in attractive wood finishes in addition to plain gray and tan.

You owe it to yourself to write for free samples and full information.

THE PHILIP CAREY COMPANY

General Offices:

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For Remodeling  **Is Unequaled**

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

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

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

Industrial Housing Conditions

are reaching an acute stage in all industrial centers. Homes are needed—but at the same time material must be conserved. One way to save space and material is to specify

The Bessler Movable Stairway

Stairway Folded up in Ceiling

the stairway that is always ready for use, but folds up into the ceiling when not needed. Occupies no floor space in room below when not in use.

The Bessler Movable Stairway Co.
 AKRON, OHIO

Nearly Twice as Strong as Other Wall Boards!

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

Better than Plaster for Walls and Ceilings

UPSON PROCESSED BOARD

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

(Continued from page 110.)

It will pay anyone having running streams to investigate them.

Fig. 4 shows a farm machinery system with gas-line engine, pump, electric generator, washing machine, wringer, cream separator and churn all combined on the same sub-base. This system requires no line shaft. It is complete within itself, machines are all in line and not liable to get out of line.

Of course electricity can be used to drive any machinery where power is needed. The only thing to look out for is to get the generating set sufficiently large to do

the work. Below is a table of the power required to operate common machines and appliances.

Wires may be run to motors almost anywhere:

CURRENT CONSUMPTION OF SMALL MOTORS

	Volts	Amperes	Watts
One-sixth horsepower	32	6.3	110
One-fourth horsepower	32	9.0	288
One-half horsepower	32	16.1	515
One horsepower	32	29.1	932

CURRENT CONSUMPTION OF APPLIANCES

	Volts	Amperes	Watts
8-inch fans	32	.625	20
12-inch fans	32	1.25	40
3-pound flatiron	32	8	250
6½-pound flatiron	32	16.4	525
4-pound polishing iron.....	32	8	250
Toaster	32	12.5	400
Coffee percolator	32	12.5	400
Curling iron	32	2.8	90

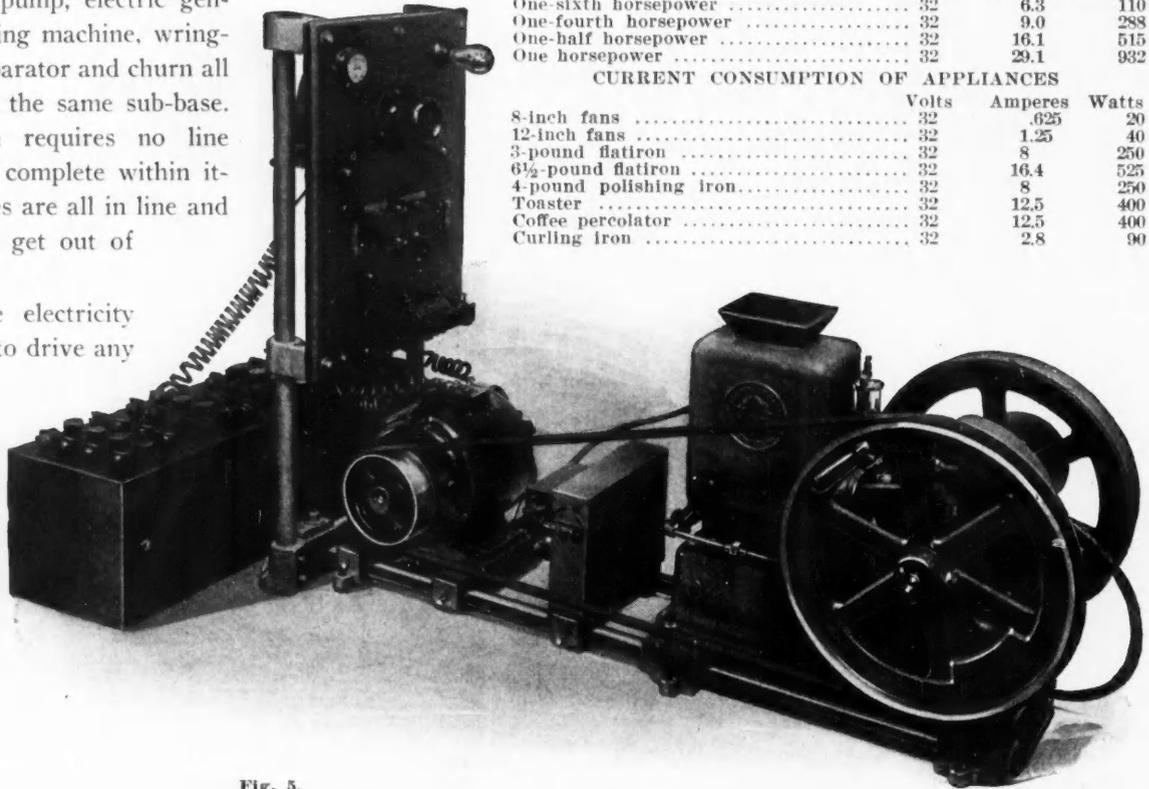


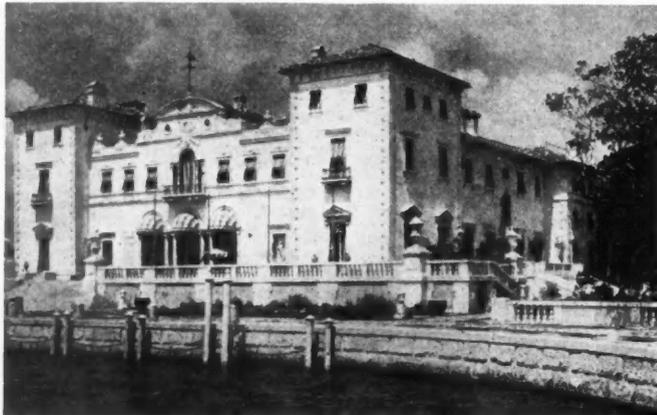
Fig. 5.

EXCELSIOR Wire Products

*Wherever there is need for plaster,
there is use for EXCELSIOR WIRE LATH*

Irrespective of the size or nature of the building, **Excelsior Wire Lath** can be used economically, profitably and easily. The illustration shows one of the most ornate as well as most magnificent private dwellings ever erected. It is noteworthy that **Excelsior Wire Lath** was selected as the plaster support. It has met fully, all the exacting requirements and is now supporting almost priceless treasures which adorn these walls.

Architects specify **Excelsior Wire Lath** because it permits them to plan buildings to suit their own as well as their clients' desires without fear of being handicapped on account of the plaster base. It can be cut to fit all shaped openings, and can be formed around pillars, girders, etc.



Excelsior Wire Lath is a woven fabric of cold-drawn steel wires, of extraordinary tensile strength. In comparison with its area, there is a relatively small amount of metal carrying the plaster. Has an even selvage which permits easy handling and tying. Readily attached to either iron or wood furring or direct to brick or stonework. Can be used inside or out. When properly put up, the plaster will key through to the back, completely imbedding the lath which prevents disintegration and rust. Three styles, plain, japanned and galvanized.

*Write for booklet F giving information
of value to architects and builders.*

WRIGHT WIRE CO., Worcester, Mass.



BAYONNE

ROOF AND DECK CLOTH

BAYONNE

Roof and Deck Cloth

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

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

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

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

JOHN BOYLE & CO., Inc.
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This Is Your Opportunity To Make Extra Profits

Use roofing material that gives service and satisfaction, that costs less than most others, is easy and inexpensive to lay, and that makes a neat and durable surface.

On Repair Jobs or New Buildings your estimates will be much lower, your profits bigger if you use

CON-SER-TEX CANVAS ROOFING

It is a canvas roofing chemically treated to protect the fiber from mildew, and the detrimental action of the oil in paint. It's water-proof, weather-proof, wear-proof.

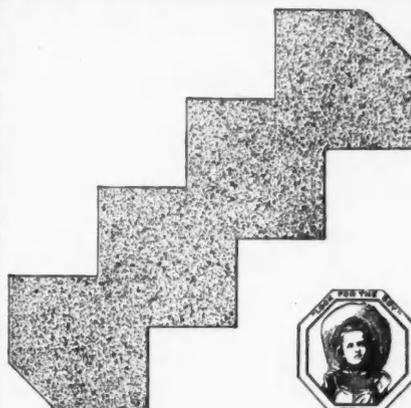
INVESTIGATE—samples showing widths, weight, prices and complete details sent upon request.

Wm. L. Barrell & Co.
8 Thomas St., New York City
Branch Offices
Chicago Distributor: Geo. B. Carpenter, 430-49 Wells St.
California Distributors: Waterhouse & Price Co., Los Angeles; The Pacific Building Materials Co., San Francisco.



Rex Diamond Strip Shingles

An interesting comparison with standard individual asphalt shingles



First:	A saving of at least 50% in labor.	Fifth:	425 less chances of leaks per square.
Second:	A saving of 38% in nails.	Sixth:	Exposed area on Diamond Strips is 16 inches to the shingle, while on individual shingles it is 32 square inches—this means half the possibility of blowing up.
Third:	A saving of 35% in freight.		
Fourth:	The head lap is the same as with individual shingles, namely 4 1/4 inches.		

Send for circular and prices

The Flintkote Company

90 Pearl St. Boston, Moss.

New York Chicago New Orleans



Makes a Perfect Roof

BECAUSE

- The convenience and lightness of wood.
- All the protection of Asphalt.
- Easy to lay—low in cost.
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ASPHALT SHINGLES

The Only Kind Tapered Like Wood

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

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REMODELING!

KRAGSTONE STUCCO

AMERICAN MAGNESIA PRODUCTS CO. CHICAGO

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Easy! Economical! Practical! Patriotic!

Kragstone Stucco makes buildings fireproof, check-proof and crack-proof. 30% stronger than cement stucco. Beautiful! Permanent!

New Book! Tells all about Kragstone! How builders can use it profitably. Write!

American Magnesia Products Co.
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No Paint—No Repairs

"Artfashioned" Brick should be used on your Industrial Housing Jobs. No Painting! No Repairs! Absolutely Permanent. Just as easy to use as frame.

"Nuovogue Artfashioned Brick" is made in many beautiful colors. A variety of textures for bungalow or mansion.

Your local dealer should carry "Nuovogue Artfashioned Brick" if not — tell us. Write for information.

Manufacturers of "Artfashioned Brick"

Boone Brick Tile & Paving Co.

Sales Offices all through the Middle West.

Boone, Iowa



Industrial Homes Quickly Built

Denison Load Bearing Tile only requires three operations in building.

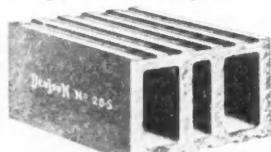
FIRST—Erect your tile. This is quickly done as each tile is 4 brick courses high and 12 inches long.

SECOND—Apply stucco for outside finish.

THIRD—Plaster directly onto the tile without lathing for the inside finish.

Denison Load Bearing Tile

is 25% cheaper than solid brick construction. It will last for generations. Will not rot, shrink, warp, nor decay. No repairs! No painting!



Patent July 31, 1917

Send for Prices and Further Information

MASON CITY BRICK & TILE CO.

900 Eighth St.

MASON CITY, IOWA

Lumber Music

THE music of the lumber yard beats song turned out by any bard. Oh, I might take my old tin lyre, and warble like a house afire, until its rusty strings were strained, and nothing by it would be gained.

But where the lumber chorus swells, Prosperity, the goddess dwells. We hear the workman's hammer swing, we hear his handsaw purr and sing, and that's the sanest sort of sound that anyone can hear around.

While industry keeps up its gait, we all may have our smiles on straight, altho the Teuton and the Hun may strive for places in the sun; we shall not want for anything while handsaws hum and hammers ring.

With fear the view we may regard, when in the local lumber yard the cheerful music dies away; then will our skies seem dark and gray. We'll know the people's hopes are killed; they have no heart to mend and build; they do not think it worth their while to build a house in modern style, or put up sheds to house the swine, or stables for the lowing kine. When lumber music sounds no more, our souls will all be sick and sore.

But now the music's sounding loud, encouraging the busy crowd. We'll can the Teuton royal nibs by building granaries and cribs.

I wish old Kaiser Bill might come and hear the busy handsaws hum, and see us building everywhere, instead of howling in despair. In his own bleak and hungry land the lumber music all is canned; the only things they build are swords, and they don't make 'em out of boards. If he could see us building cribs he'd rend his tuckers and his bibbs, and cry, "Mein Gott! I'm feeling hipped! These fellows never can be whipped!"

The lumber music soars along, the country's sweetest, finest song, and we may be serene and gay, until that music dies away.—Walt Mason in "Curtis Service."



Housing Standards Revised to Permit Vitrified Tile Drains

Standards for industrial housing, formulated by the Department of Labor, have been revised to permit the use of vitrified clay pipe for house drains. The present wording of the first clause of paragraph 4 is, "House drains, under the house and 5 feet outside the house to be of extra heavy cast iron. Vitrified clay pipe with proper joints may be used where ordinance permits."

The revision of the standard in this important particular followed a demonstration in Washington that the joint question in vitrified house drains has been solved by the development of the poured joint. The Department of Labor also gave considerable weight to the argument that metal ought to be conserved for war purposes and vitrified house drains permitted wherever there was no conflict with local authority. The fact that many of the larger cities of the Middle West have always permitted vitrified house drains, and that the list of such municipalities is growing, makes the change an important one from the standpoint of plans for pending house contracts, to say nothing of the exemplary effect upon the building and architectural field at large.

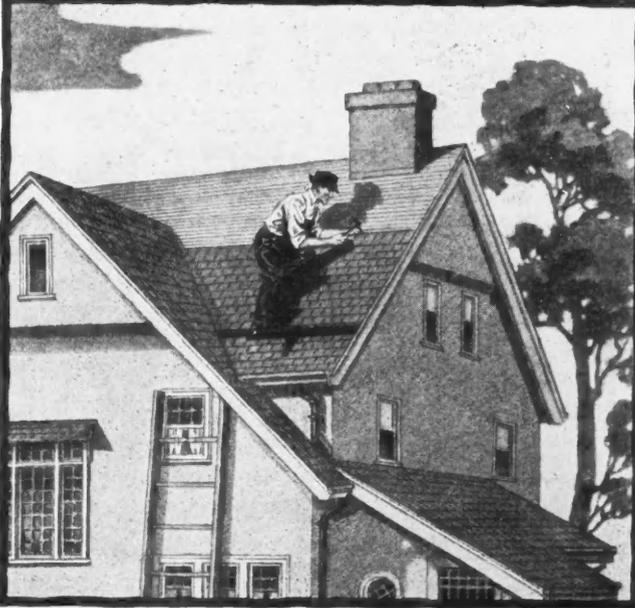
Go Carefully Into the Comparative Cost of Sheldon's Slates and Artificial Roofings

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

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

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

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



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

Dry Foundations!

are assured by having the walls treated with

Carey
PERCOPROOF
DAMP-PROOFING COMPOUND

Applied with a brush direct to foundation walls, concrete construction, masonry, or stucco surfaces. Percoproof forms an unbroken elastic surface, fills every crack and pore and prevents moisture from penetrating.

Unlike ordinary waterproofing materials, Percoproof contains no oil and requires no thinning. It comes ready for use and is equally satisfactory in all climates and seasons.

THE PHILIP CAREY CO.

136 Wayne Ave., Lockland, Cincinnati, O.



Vendor SERVICE

SLATE IS THE BEST ROOFING IN THE WORLD

It has earned its honor mark and is held in high esteem by thousands of satisfied users. Knowing this, don't you think it wise to tie up for your needs with a concern that is in a position to give you the very best of service? You get just what you order, and when you order it, when you use "Vendor" Service. We still have open territory. Write for our proposition.

The United States Government recognizes the superiority of the "Vendor" service. They want quick shipments, and get them, too.

VENDOR SLATE CO.
INCORPORATED
BANGOR, PENNSYLVANIA
Largest Shippers of Roofing Slate in the World

Need for Black Walnut Census Urgent

IN connection with the black walnut census which President Wilson has asked the Boy Scouts of America to undertake, Henry S. Graves, the Chief of the United States Forest Service, has written a letter to the Boy Scouts explaining why the need for the work is urgent.

"The tremendous forest resources of the United States," Colonel Graves states in the letter, "will undoubtedly be a very important factor in the winning of the war for the allies. One of the most essential timbers for war purposes, as the President points out, is the black walnut. With the exception of mahogany, which has to be imported and thus burdens the shipping facilities of the country, no other wood is so well adapted for airplane propellers.

"Since four or five propellers are required for each airplane and since black walnut is scarce and only the best grade can be utilized for this purpose, it is important for the government to know immediately the location of all available supplies. Walnut is also the chief wood used for gunstocks.

"I believe that the Boy Scouts are performing a most valuable patriotic service in undertaking this work. Let me urge you to impress upon the farmers of the country the importance of properly conserving their forests and especially propagating such valuable species as the black walnut, which has appropriately been called the Liberty Tree."

Logical Methods in Architectural Drafting

(Continued from page 44.)

Draw living porch, entrance and rear porches, showing only main outlines. Leave minor details, such as position and width or diameter of porch columns and rails, until elevations are drawn.

Draw fireplace, chimneys and smoke flues, their sizes depending upon both the interior and exterior design.

Locate and draw all built-in equipment, such as bookcases, cabinets, buffets, cupboards, etc., also kitchen fixtures, the sink, range, icebox and cupboards.

Indicate the lights and the radiators or registers.

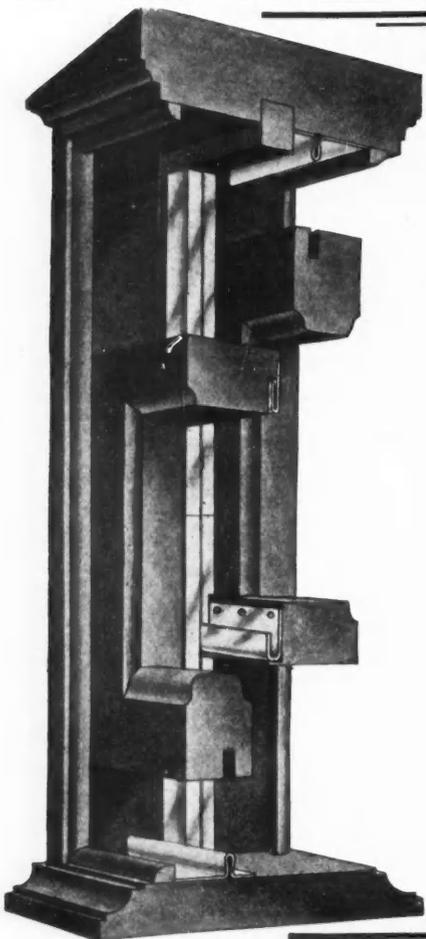
Dimension plan fully. This should not be done, however, until plans and elevations are complete in pencil.

In frame buildings outside dimensions should be taken from corners to the center of openings. For masonry construction from the corners to the edge of openings. Detail and over-all dimensions should always check accurately.

Inside dimensions are grouped or are kept in straight lines. They are taken either to the center or the edge of partitions. Avoid repetitions. All dimensions should be placed so they may be read from left to right or top to bottom of sheet (Fig. 4).

Letter all rooms uniformly, making notes of ma-

(Continued to page 118.)



Heating Cost Cut 20%

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What are *you* doing to help your clients meet the coming shortage of coal this season?

Will it be possible for your patrons to add to the living comfort of their home and use less coal at the same time? Impossible? No it is not!

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slide both sides of the sash the full height of the frame. This feature found only with "SHOGREN."

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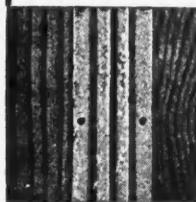
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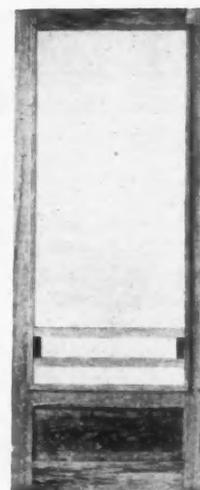
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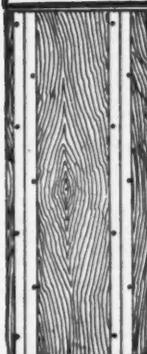
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on the market. We have some good territory still open. Our agents are supplied with a complete outfit of samples, models, etc. We give exclusive agencies to those who make good. This is a splendid opportunity to add considerable to your income. No regular agencies established in towns of less than 10,000. Write now.

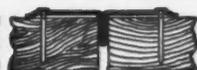
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Make your buildings tight. Chief Galvanized Steel Strips fill the cracks between boards and make strong, neat, weather-proof joints. Keep out vermin. Cannot rot, warp or split like wooden batten. Always fit. Allow for contraction and expansion of boards without loosening nails. Furnished in 6-7-8-9-10 ft. lengths with interlocking joints. Write for full information.



Shows end view of Chief Batten with joint closed. Siding expanded. Note position of the batten in the crack.



Shows end view of Batten with the joint open and siding contracted. Chief Battens automatically accommodate expansion and contraction.

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 430 Walnut St. :: Atlantic, La.

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The Oliver Nine—our latest model—direct from the factory to you. It is the finest, the costliest, the greatest typewriter ever built. Used by the leading concerns.

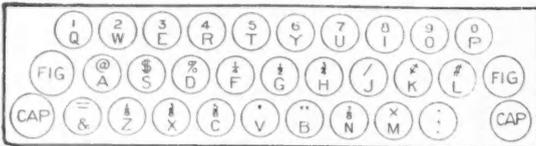
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(Continued from page 116.)

materials and finish in small capital letters.

Check entire plan alone and in connection with other plans and elevations before tracing.

The basement, second floor and attic or roof plans may be easily determined by projecting from first floor plan, as illustrated, or a common method in office practice is to place either tracing paper or cloth over the first floor plan and transfer wall outlines, main partition stairs, chimneys and position of openings to either the second floor or basement plans. The same sequence may be used in drawing up the other plans.



Government's Advice on Selecting Industrial Housing Sites

(Continued from page 29.)

Transportation—What are the railroad switch and transportation facilities for delivery material?

Local Labor—Investigate local labor situation with reference to available carpenters and laborers.

Selection of Sewer Outfalls

Outfalls to be First Considered—As the sewerage and drainage are in many ways affected by the ultimate method of sewage disposal, it is essential that investigators should obtain the data for the proper solution and approval of that problem.

State Control—In most states the state board of health has control of the sanitary standards to be observed, and in some cases they issue rules, directions and, in other cases, have well defined policies which it is important to know and follow.

Detailed Approval by State Authorities—Where state board of health or other authority controls steam pollution, it is usual to find that the law provides that it has final approval of all plans and specifications. This should be kept in mind.

Extension of Existing Facilities—In localities where sewerage facilities exist, extension of such facilities is presupposed, unless the state authority or good practice requires their revision or rejection.

Local Practice—In developments which are contiguous to municipalities or are parts of municipalities, the practice and method of such municipality should be followed if good, and followed and supplemented by good practice where desirable.

Isolated Developments—Where developments are not adjacent to settled territory of any description, standards must be outlined, future expansion taken into account and especially complete information obtained.

Stream Pollution—In general, streams should not receive raw sewage from isolated developments unless the extreme low-water flow of the stream exceeds about 5 cubic feet per second for each 1,000 of the probable future population.

Provisions for Future Tankage—In every case,

(Continued to page 120.)



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

Start now at once in business for yourself.

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



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

Laying Asbestone floors is both easy and profitable.

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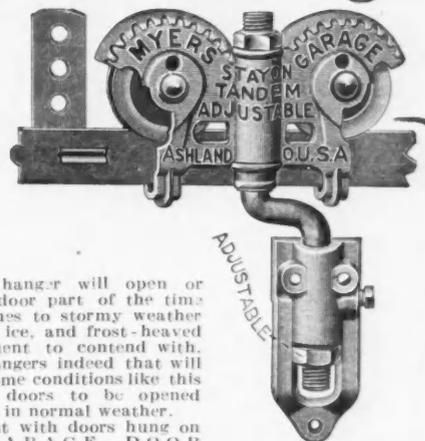
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MYERS Garage

Door
Hanger
No. 25



Most any hanger will open or close a garage door part of the time but, when it comes to stormy weather with snow and ice, and frost-heaved ground and cement to contend with, there are few hangers indeed that will meet and overcome conditions like this and permit the doors to be opened or closed just as in normal weather.

It's different with doors hung on MYERS GARAGE DOOR HANGERS—year through service is the ticket for doors are on the inside and slide around the corner on curved section of track out of the weather and out of the way. These hangers are also equally successful when used for regular sliding or folding doors and can be mounted on any 1 1/2" flat steel track, a section of which can be easily curved for the corner.

Special features include adjustable, flexible and stayon construction, tandem trolleys, steel roller bearings double stayon device crank shaped stem, etc., which produce ideal sliding door service for any building. Sold and installed by dealers, contractors, carpenters and builders. Catalog and prices to the trade. Catalog and information to anyone.

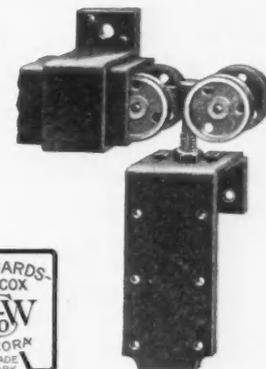


F. E. MYERS & BRO.
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Ability to Stand Wear and Tear

Determines the character of door hangers for warehouses, freight sheds, wharf sheds, lumber sheds and similar buildings.

Richards-Wilcox Parallel Sliding Door Hangers



are built to stand up under constant use. Doors hung on R-W warehouse door hardware move easily and can be opened at any point, eliminating the necessity of spotting cars and trucks; save annoyance.

Sold by the best hardware trade everywhere

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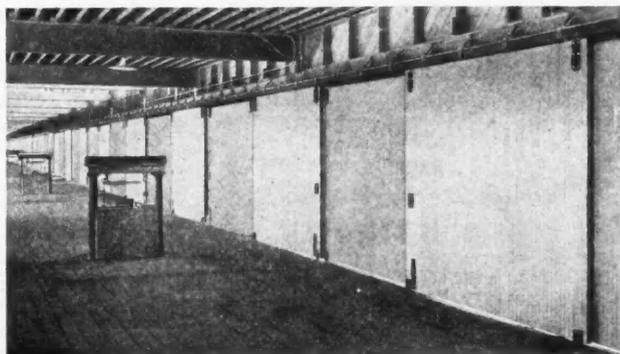
SAN FRANCISCO
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Richards-Wilcox Canadian Co., Ltd., London, Ont.

"A hanger for any door that slides"

PHILADELPHIA
MINNEAPOLIS
BOSTON
DETROIT



Government's Advice on Selecting Industrial Housing Sites

(Continued from page 118.)

where possible, outlet sewers should be at such elevation that sewage treatment by tankage can be readily introduced in the future, if required.

Outlets—In the cases of all considerable streams into which the contents of sewers are discharged, good practice would suggest that submerged outlets conveying the normal flow should extend out into water of such depth that the sewage will be quickly diffused and not easily observable. Overflow at the shore line may provide for abnormal flow.

Tidal Outlets—In cases where outlet sewers empty into tidal estuaries, special studies are necessary to be assured that freedom from offensive conditions will be obtained. In some cases, where elevation is lacking, it may be necessary to store the sewage temporarily during high tide, and in other cases it may be desirable for other reasons to release the sewage from storage reservoirs on the falling tide only.

Partial Treatment—In cases where the low-water flow of streams available for sewerage is less than about 5 cubic feet per second for each 1,000 of ultimate future population served, treatment works should be planned for, and if the population in the near future requires such works should be introduced more or less completely, as circumstances appear to render necessary.

Complete Treatment—In cases where the sewage must be emptied into a stream quite insufficient in flow to deal properly with it, treatment works of a reasonably complete character must be introduced.

Complete Plant for Extreme Cases—No sewage or polluted storm water should be discharged into a stream used as a source of domestic water supply at any point where it may possibly contaminate such water supply, except in the most extreme cases. When it is absolutely unavoidable to divert the sewage from a stream used as a source of water supply, treatment plants of the most complete and reliable character should be introduced. A site involving the above conditions is undesirable, and should not be selected if it is possible to avoid it.

Provision for Future Treatment—Where it is likely that while the present population may safely empty sewage into streams, the future population can probably not do so. Space and elevations should be left so as to provide for the possible future installation that may be necessary.

Treatment Sites Removed from Population Areas—Sewer outfalls liable to require treatment plants should not be located in or near thickly populated or residential property, if it is possible to avoid it.

Long Outfalls Avoided—Long outfall sewers are to be avoided if possible, where the liability to introduce

(Continued to page 122)

RUSTLESS ROOF NAILS

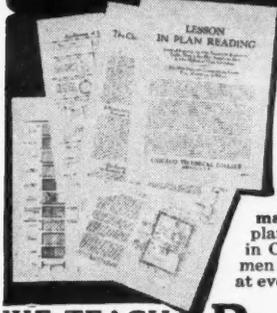
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\$3.00 buys this excellent Hand Saw. Correct balance, weight, temper, etc. Straight or sway back. 24 or 26 inches. Write for a FREE copy of our "Carpenters Guide Book."

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Pressed Steel Door Stops

No. 640

Are drawn into shape from one piece of high quality Cold Rolled Steel making them extra strong—guaranteed **indestructible**.

The rubber bumper is made from the best rubber and is backed up by a metal disc, which in turn is knurled, "ENTRENCHED," in place—and will stand all the "Banging" one can possibly give it, and absolutely cannot work out of place.

Beautiful Yet Plain

Compare this beautiful, plain door stop with the ordinary kind. It is modern and when finished in any of the various Griffin Hardware Finishes, it harmonizes with the beautiful interior finish of the Modern Home or Building.

No sharp edges or corner to cut the hand on, catch the clothes, as the woodwork is dusted. This is the door stop your customer is looking for. Have your Hardware Dealer show them to you.

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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.

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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.

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Write for our folder on "Keeping Your Car Young"—it's free.



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I enclose \$1.00 for which please send me, all charges prepaid, a pint of Johnson's Radiator Cement. Also send me, free your booklet on "Keeping Your Car Young".

Name

Address

City and State

My Dealer is

Government's Advice on Selecting Industrial Housing Sites

(Continued from page 120.)

treatment works is only a future possibility. Short outfalls to the nearest outlet may be selected, but at such elevation that intercepting sewers to more distant outfalls can be introduced when found necessary.

Water Supply Details

Extension of Existing Facilities—Available water supplies already developed should be examined in detail, to ascertain that they will be satisfactory from the standpoint of (a) quality; (b) quantity, and (c) pressure.

Water-Works Information—Water-works information should include: (a) Type and capacity of pumps; (b) average daily supply; (c) population served; (d) pressure near point of extension; (e) relative elevation of proposed site; (f) size of main supply pipes to site; (g) reservoir and standpipe elevations or storage.

Cost of Connecting Mains—Where connecting mains outside of the site are not sufficient in size or are deficient in pressure, the cost of supplying these deficiencies should be approximately ascertained, if possible, and also inquiry should make known whether that cost will be assumed by the municipality or water company.

Water Rates—Ascertain whether water is sold in adjacent territory by meter or flat rates or in part; both what these rates are and what policy the water company or department will have in the matter of the housing development, particularly if the proposed housing quarters are outside of the corporate limits.

Cost—Ascertain whether the extension of water mains within the housing development site will be a direct charge or will be amortized in the rates.

Pressure—Find out whether the pressure is deficient, whether new and higher pressure can be generally installed, whether a high service district is necessary, or whether booster pumps or storage will be needed.

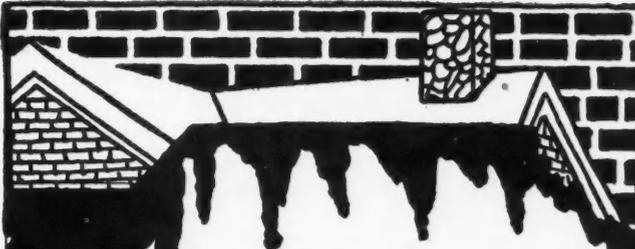
Fire Engines—Ascertain whether fire engines are used or extra fire pressure, developed at the pumping station, is used for fire service.

Poor Supply Quality—Water supplies from surface supply unfiltered are to be looked upon with suspicion, and, generally, arrangements should be urged, if possible, for their filtration or, at least, sterilization.

Contamination by New Housing—Water supplies in adjacent developments should not be imperiled by the installation of the new housing developments in such manner that the sewage will reach their source.

Special Report—If entirely new supplies must be developed, an experienced water-works engineer should report especially on the possible source and the cost of construction and operation, and should show the resulting rates as well.

(Continued to page 124.)



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MORTAR COLORS
ARE PERMANENT

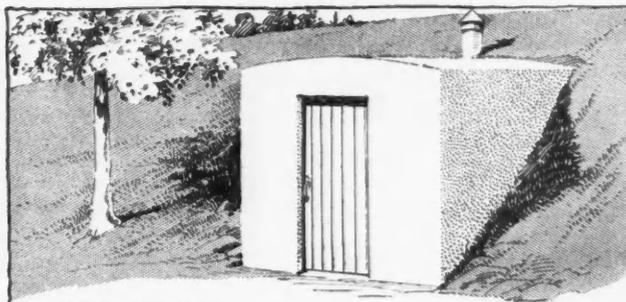
This is because of our careful manufacturing process and the use of only the best and purest ores obtainable.

Clinton colors have stood a test of 35 years and because of their richness of tone and durability of color they are specified by leading architects, contractors and builders.

Clinton Mortar Colors offer a wide range of tones and shades to most effectively bring out the beauty of the structure.

Send for illustrated booklet No. 11 and samples.

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BUY WAR SAVINGS STAMPS

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The current issue of Alpha Aids is devoted to practical ideas and plans for various storage buildings. The Alpha Service Sheets and Special Bulletins give details of construction on the subjects listed below. Any one of these Service Sheets and also Alpha Aids will be sent free if you live east of the Mississippi.

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Check the one that interests you.

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CONCRETE for PERMANENCE

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BECAUSE it means an economy of both time and material to you.—It requires little, if any, sand-papering and dries hard in 8 to 12 hours, allowing one-coat-a-day work to be done with safety.—It will enable you to make first-class jobs on close grained woods with one coat of filler and one coat of varnish.—It will hold out varnish better than shellac and will cover 800 sq. ft. to the gallon.—It will make the very best Flat Stain by simply shading with colors in oil or a varnish stain by adding a little good mixing varnish. It is very valuable as a first coat for floors to bring them up to an even surface.—It helps the user over many a difficult place and adds to the quality of his work.

Be sure you get the genuine "Nice" Filler. Ask your dealer to show you Nice or write for our prices and catalog of varnishes, paints, coatings, fillers, enamels, etc.

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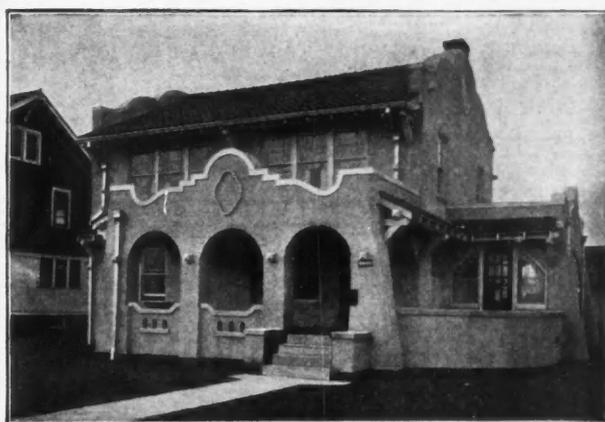
CWG WATERPROOFING PRODUCTS

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NATIONAL KELLASTONE CO.

1330 Mollers Building

CHICAGO

(Continued from page 122.)

Streets and Pavements

Situation—Note location of the proposing housing site with reference to street connections of the municipality. Is the site on a main thoroughfare? Will extensive street work be required to connect the housing site with the business and factory sections?

Soil and Drainage—As a well-drained site or one with gravel soil may materially reduce the necessity for expensive improved pavements, these features should be specially observed.

Grades—The best topography for street grades will run not less than 0.3 per cent or 0.4 per cent and not greater than 4 per cent. Note the extent of grading required for streets and houses.

Local Practice—Observe the local practice as to types of pavement, street and pavement widths, curb and gutters and sidewalks, particularly where there are recently built industrial housing quarters or new real estate developments. Note whether alleys are used.

Local Materials and Prices—For approximate or

comparative estimates, note the availability of local paving materials and prices, also recent contract prices for pavements, curbs and walks.

Electric Light and Gas

A good description of the local electric-light plant and gas company should be secured. Have they capacity? How connected up to site? Cost? By whom paid? Report on local methods of street lighting.

Investigate rates. Is there dissatisfaction in the community? Is it reasonable? Or unreasonable? Hear both sides to any controversy. Compare rates with other similar situation. See if there is any reason for abnormal rates. Are rates governed by state or other utility commission?

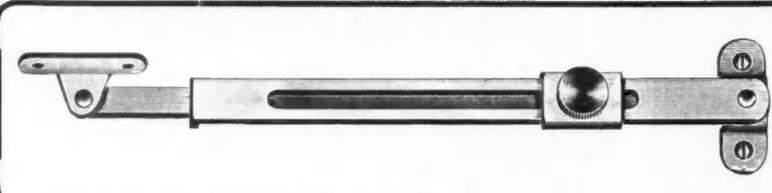
Is service good? Quality of gas? How determined? What ordinance requirement? Electric light: Are there breakdowns and stoppages? Why?

Will companies finance complete installation and authorize through rates or expect cash cost advance and rates accordingly?

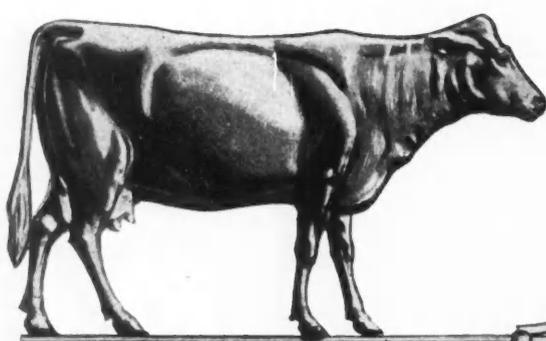
What contractual relations otherwise may be reasonably expected?



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Fig. 11—Covered with Pure Gold Leaf



"One of Our Eight Brands of Pure Copper Cable Lightning Rods"

Short Talks With Our Subscribers

Hughes Condemns Postal Zone System

THE following open letter from Charles E. Hughes, probably the ablest mind in Republican national councils, and who was the head of the Hughes Postal Commission which made the latest investigation of the Postal Department of the country, is self-explanatory. It is a splendid letter and we commend it to the serious thought of every one of our readers.

By virtue of the months of painstaking investigation on the part of Mr. Hughes in these postal affairs, he is enabled to speak on postal matters in condemnation of this destructive postal "zone" law with technical authority and a professional reputation of national recognition.

He condemns absolutely this iniquitous, reactionary and destructive postal "zone" law enacted last year.

1262 New Hampshire Avenue,
Washington, D. C., June 17, 1918.

Mr. Allen H. Richardson, Publishers' Advisory Board,
200 Fifth Avenue, New York.

Dear Sir:

In answer to your letter, I beg to say:

I prefer not to accept a retainer to appear before legislative committees upon matters of general policy, as in such matters, if I have anything to say, I desire to speak only as a citizen.

I have no hesitation in saying that I regard the zone system of postal rates for newspapers and periodicals, coming under the definition of second-class mail matter, as ill advised. The Commission of Second-Class Mail Matter (appointed in 1911), of which I was a member, considered this question and reported unanimously against the zone system. We said in that report:

"The policy of zone rates was pursued in the earlier history of our post office and has been given up in favor of a uniform rate in view of the larger interest of the nation as a whole. It would seem to the commission to be entirely impracticable to attempt to establish a system of zone rates for second-class matter. * * *

"Progress in the post office, with respect, both to economy in administration and to public convenience, leads away from a variety of differential charges to uniform rates and board classifications."

In my judgment the zone system for second-class mail matter is unjust to the publisher and unjust to the public. It not only imposes upon the publisher the additional rates upon a sectional basis, but it makes necessary the added expense for the necessary zone classifications at a time when every economy in production and distribution is most important. It introduces a complicated postal system to the inconvenience of the publisher and public when there should be a constant effort towards greater simplicity. There is no more reason for a zone system of rates for newspapers and magazines than for letters.

Newspapers and magazines are admitted to the second-class postal rates on the well established policy of encouraging the dissemination of intelligence, but a zone system is a barrier to this dissemination. If it is important that newspapers and magazines should be circulated, it is equally important that there should not be sectional divisions to impede their general circulation thru the entire country.

We are proud at this moment of our united purpose, but if we are to continue as a people to cherish united purposes and to maintain our essential unity as a nation, we must foster the influences that promote unity. The greatest of these influences, perhaps, is the spread of intelligence diffused by newspapers and periodical literature. Abuses in connection with second-class mail matter will not be cured by a zone system of rates. That will hurt the good no less than the bad and perhaps some of the best sort of periodical literature will be hit the hardest.

We do not wish to promote sectionalism, and "one country" means that in our correspondence and in the diffusion of necessary intelligence we should have a uniform postal rate for the entire country. The widest and freest interchange is the soundest public policy.

I hope that Congress will repeal the provision for the zone system which is decidedly a looking-backward and walking-backward measure.

Very sincerely yours,

(Signed) CHARLES E. HUGHES.

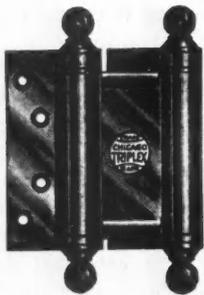
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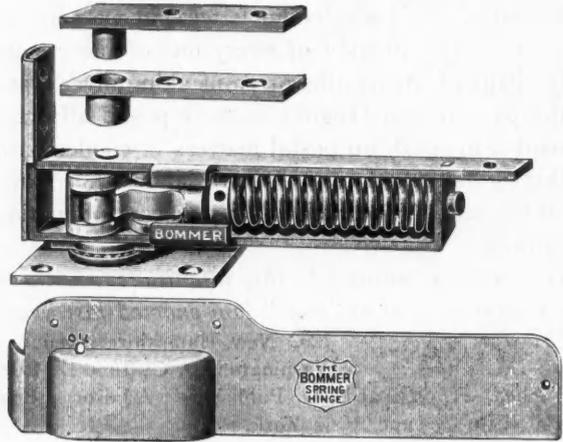


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