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Short Talks by the Editor

Why Stop Construction in the Winter?

THERE was a time not so long ago when builders and contractors looked forward to the winter season as a period of inaction, but things have changed. Modern inventions have made this winter layoff period a matter of tradition and not fact. Engineers and architects have found ways and means to continue work right thru the winter.

In the face of the present housing shortage this is fortunate. Even with the whole year available for work, the time is far too short; but the fact that several months heretofore considered useless have been made available will help tremendously in this great construction work which must be carried on.

It has been demonstrated that if a project has been decided on in early winter it is more profitable to go ahead with the work immediately than to let it lie over until spring. The finished building in the spring when people are looking for quarters is certainly a more attractive asset than a building just in the first stages of construction. The profits gained from this early occupancy willl offset any extra expense incurred by winter construction.

There are several advantages from all year work that have been demonstrated by actual test. In the first place labor is not such a difficult problem when the men are assured of steady employment. The overhead is kept down because depreciation on materials and machinery is less and the interest on money involved is reduced. When equipment is kept working it increases the contractor's income. Lying idle it is a heavy liability.

Another important factor is transportation. In the busy season everybody is trying to get material. By taking advantage of the off season the transportation costs are reduced and delivery is not so liable to delay and confusion.

With the development of new ideas and machinery the possibility of continuing work in the cold weather will continue to approach the efficiency of the warm season and the time is not far off when the barrier of temperature will be entirely overcome by the skill and ingenuity of the building profession. Certainly such a distinct progress will not be unwelcome when every available minute is so precious, so urgently needed.

Study the Front Cover

THIS month the front cover portrays a beautiful bungalow. Last month it showed a modern daylight factory. Each month it has a definite message —it may be a home or a skyscraper, a factory, garage or apartment hotel, which is proper since this magazine covers every phase of the building field and includes within its scope all kinds and all types, all methods and all devices that may be of interest and practical benefit to every member of the building profession, large or small. There is something of interest in every number for all, something in every corner that will attract the attention of specialists in any phase of the industry. Expense is not spared in the preparation of these covers because we feel that they should illustrate the best types of buildings.

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Building—the Most Effective Saving

MANY people overlook the wonderful stimulus to permanent saving afforded by building. Some of the benefits it offers are set forth in an article in Modern Building published by the Truscon Steel Company.

"With one exception, practically everything purchased with money goes to waste in a short time. So-called necessities, such as clothing, last only a few months, and then are worthless. Only a small amount of food consumed really goes into body building. Even machinery for factories has relatively few years of usefulness before it is replaced or becomes obsolete.

"Building represents one form of expenditure with a minimum depreciation. Buildings average from tweny-five to fifty years in usefulness, and with the present permanent types of construction their life is practically unlimited. Every dollar put into building construction means an increase in national wealth. Put into almost anything else, it is soon dissipated into nothing.

"Building therefore should have the moral and active support of every farseeing interest in the country. Government, banking and business should find means to encourage more building. Money so spent will mean a saner, happier and wealthier country, redounding to the benefit of everyone individually and collectively."

Exempt New Home Mortgages from Income Tax

LEGISLATION WILL FREE LARGE SUMS OF MONEY FOR HOME-BUILDING PURPOSES—NOW INVESTED IN TAX EXEMPT SECURITIES

"Property is the fruit of labor.—Let not him who is houseless pull down the house of another, but let him diligently work and build one for himself, thus by example assuring that his own shall be safe from violence when built."—Abraham Lincoln.

NO single factor is as vital to the safety of the whole country as the building of homes. When this fundamental program is threatened by lack of money it is the duty as well as the privilege of every person connected with the building profession to advocate legislation that will remedy this situation.

Banks are not making construction loans for the simple reason that they cannot get customers for real estate mortgages. The heavy surtax on larger incomes makes mortgage buying at 6 per cent, the prevailing rate for real estate loans, practically impossible. It is only natural for men with incomes that warrant their investing in securities to invest in the most profitable proposition. To encourage municipal improvements that class of bonds was exempted.

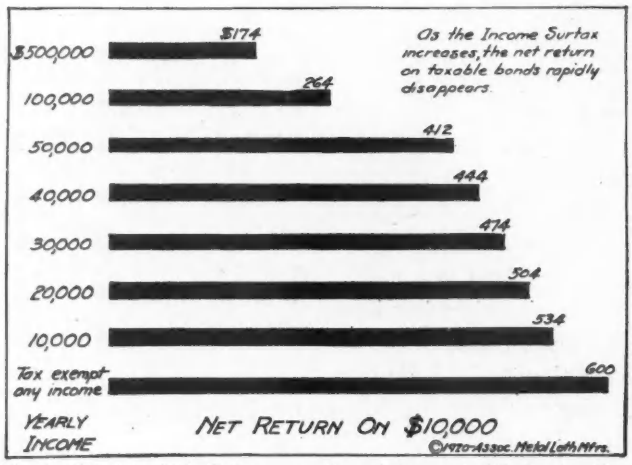

Chart Showing Net Return on Investment of $10,000 to Men Having Incomes from Tax Exempt Figure to $500,000.

Mr. Wharton Clay, Commissioner of the Associated Metal Lath Manufacturers, has prepared some very illuminating charts showing the return necessary from taxable bonds to produce 6 to 7 per cent net to investors with large incomes. The figures are most enlightening and present in a graphic way the reason for the present lethargy in the building loan market. Real estate bonds yielding 6 and 7 per cent and subject to tax give a return of 5.34 per cent to the man with an income of $10,000, while they yield only 1.74 to incomes of $500,000 or over.

No one can very well blame the man with an annual income of $50,000 for refusing to make investments that will yield but $412 on $10,000 when he can get $600. The reasonable solution is tax exemption for real estate mortgages so that they will be made as attractive as other tax exempt investments.

It is obvious that the great bulk of money for new mortgages will come from the people having larger incomes. At the present time to compete with the municipal bond yielding 6 per cent the banks cannot interest an investor of the $30,000 class with anything less than 7.6 per cent on a taxable mortgage or the $50,000 investor with anything less than 8.7 per cent. However, if these mortgages were tax exempt there would be a ready market for them at 5 and 6 per cent.

A clear understanding of the situation will do wonders in securing the needed legislation. Congress expresses the wish of the people. There is nothing so vital, so near the hearts of every family as the home, and whatever is done to make it more secure and available will be certainly considered by the lawmakers of the country. Mr. Clay has started a campaign that is bound to bear fruitful results. Constructive propaganda is needed because the mass of people must be educated to understand the seriousness of the housing situation. No more urgent duty ever faced the men in the construction industry. They are the logical ones to start such a movement because they are vitally concerned with its success.

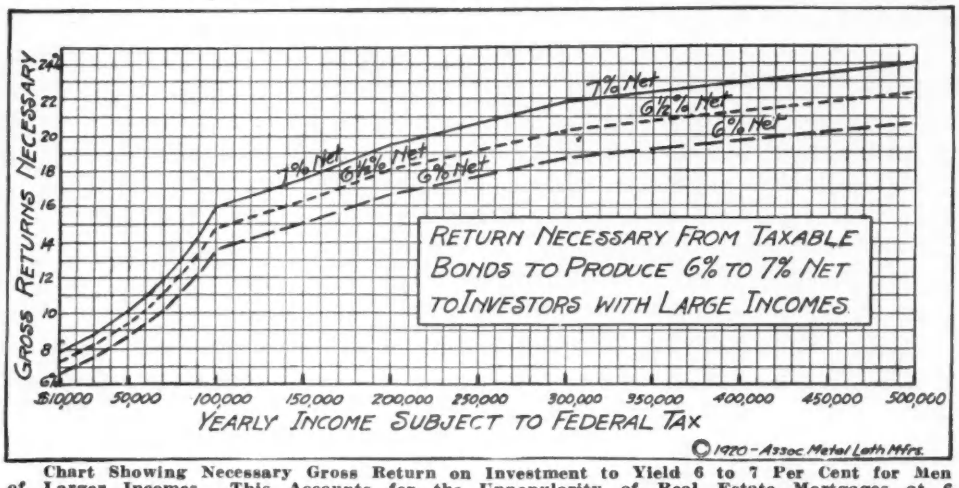

Chart Showing Necessary Gross Return on Investment to Yield 6 to 7 Per Cent for Men of Larger Incomes. This Accounts for the Unpopularity of Real Estate Mortgages at 6 Per Cent.

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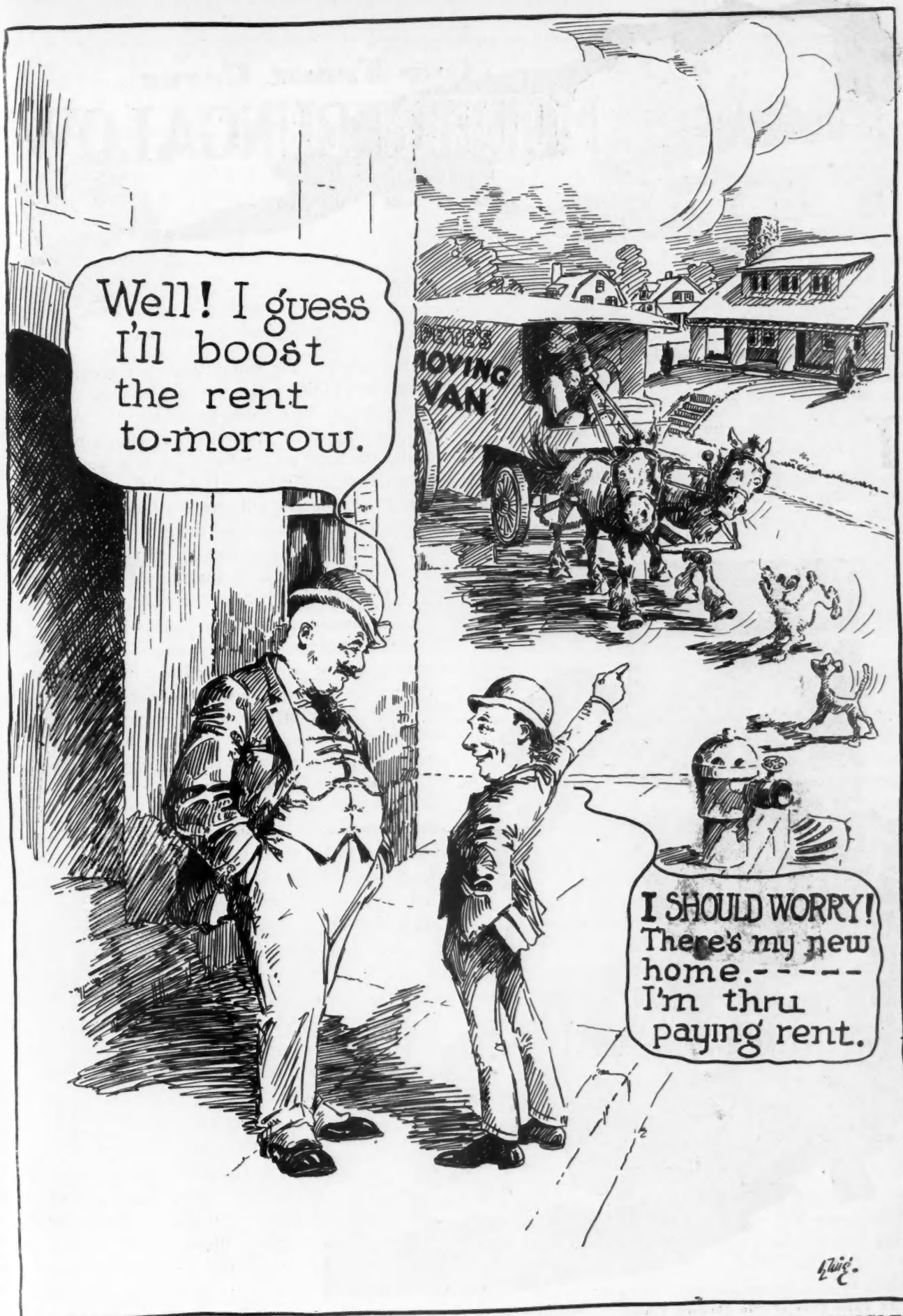
IN 1850 New York ranked first among the states in lumber production and contributed 20 per cent of the total cut of the country. Now it is in the 25th place and contributes only about 1 per cent of the annual cut. In 1860 Pennsylvania was the leading lumber producing state; at present it is 20th. Michigan led the states from 1870 to 1895, but is now 13th on the list. Washington is now first.

The Worm Has Turned



CARTOON BY ED. QUIGLEY

Our Front Cover
MODERN BUNGALOW

I would rather see smoke from my own chimney than fire on another's hearth.
ANONYMOUS.

THAT is the echo of millions of hearts, the unexpressed hope of a vast host of home-starved families who cannot smother the yearnings of an instinct as old as the ages, the corner-stone of all civilization. Even in the lower forms of animals, birds and beasts, this home instinct is manifest, this desire to build a nest, a shelter for the family. Yet many people are groping about in darkness, failing to see the light that will make this hope a reality, their dream an actual act. Were they to concentrate their ambitions and efforts on a goal such as the home on the front cover, it would not be impossible of realization. Just a little determination, a steadfast program will secure a home. Never was this subject so important of thought, never so vitally interwoven with the destinies of individuals, families, and the nation as it is at the present time. Opportunity knocks! Shall it be heeded?

In These Days of "No Children Allowed" a Bungalow of the Type Shown on the Front Cover Is a Haven of Delight for the "Kiddies." Plenty of Air, Room, and Sunshine Make for Happy Families and Build Up the Future Generation for the Nation.

In the beauty spots of the world there are many wonderful gardens, but we wonder if they are more appealing to the sincere home-lover than the picture on the front cover. We doubt it, for here the most important flower in this delightful garden setting is the home, a bungalow of low, rakish effect, fitting snugly into the entrancing scene. The advantage of the bungalow lies in its great variety of style and architectural arrangements. Individual touches can be added to make each house of this type distinct and different. And after all it is one of the weaknesses of human nature to do, think, or own something different from the rest of the world.

In choosing this type of dwelling the owner can exercise his own individuality, can satisfy his favorite hobby, and use his power of imagination. The successful bungalow builder can rest easy on his laurels for his work stands as a permanent evidence of his ability. For that reason many contractors specialize in this type of building to the exclusion of all others.

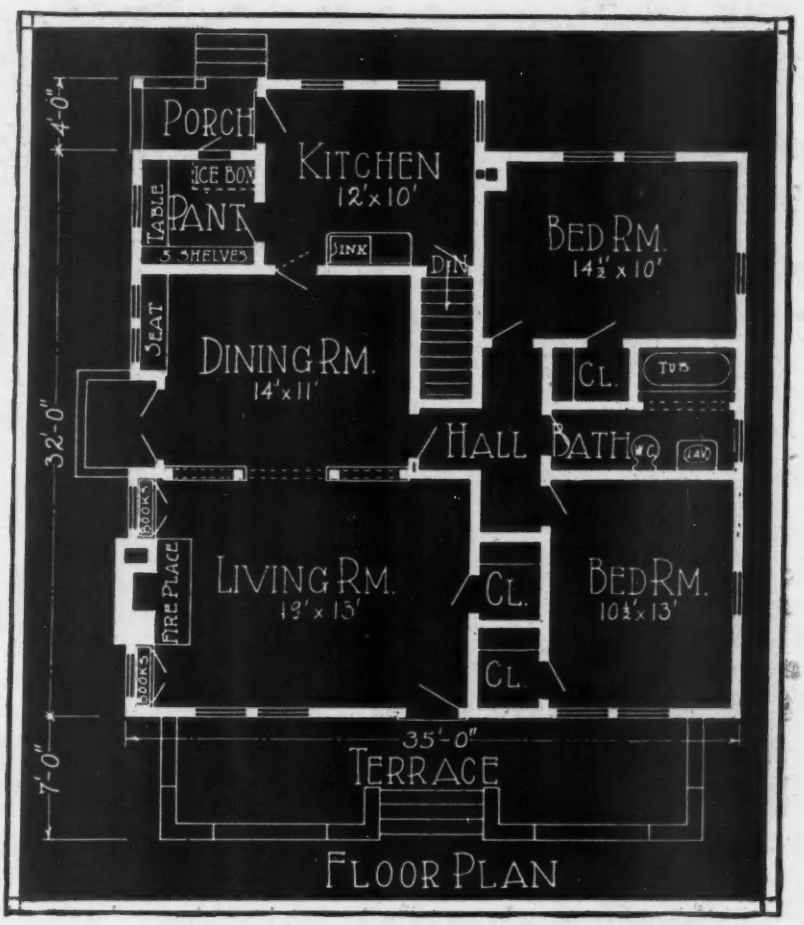
One of the attractive features of this front cover bungalow, something that will charm the visitor and be a constant source of delight to the owner is the well designed, unique exterior. The broad siding boards painted an immaculate white offer a pleasing contrast to the low shingle roof, in this case painted green. Rising up thru the

roof at one end is a chimney of concrete, rendered distinctive by the addition of a course or two of red brick. The wide overhanging eaves with their stout rafter supports are effective in making the picture an unusual one.

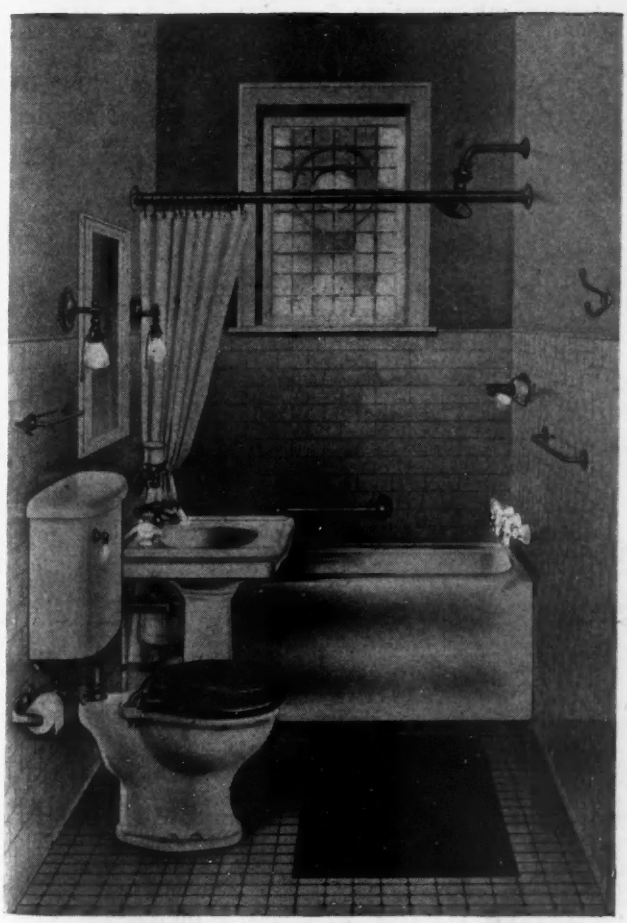
The low terrace extending across the front of the house, with stucco rails topped by a course of soldiered red brick, adds considerably to the general effect. A smaller terrace of similar design has been built on the side, opening off the dining room.

Prominent among the distinctive features which help to make up the pleasing exterior is the front entrance surmounted by a semi-circular hood of the type so often found in quaint Colonial homes. The door proper is mostly glass divided into small panes. The windows are double hung with very small panes, a feature in such popular demand at the present time.

A study of the interior arrangement reveals the assuring fact that it is just as completely and satisfactorily handled as the exterior. The front entrance opens directly into a large, spacious living room, an ideal place for lounging and recreation, entirely free from any crampy feeling and made



Floor Plan Arrangement of Bungalow Showing Large, Comfortable Rooms and Efficient Layout. Note the Seclusion of the Sleeping Rooms with Regard to Living Quarters.



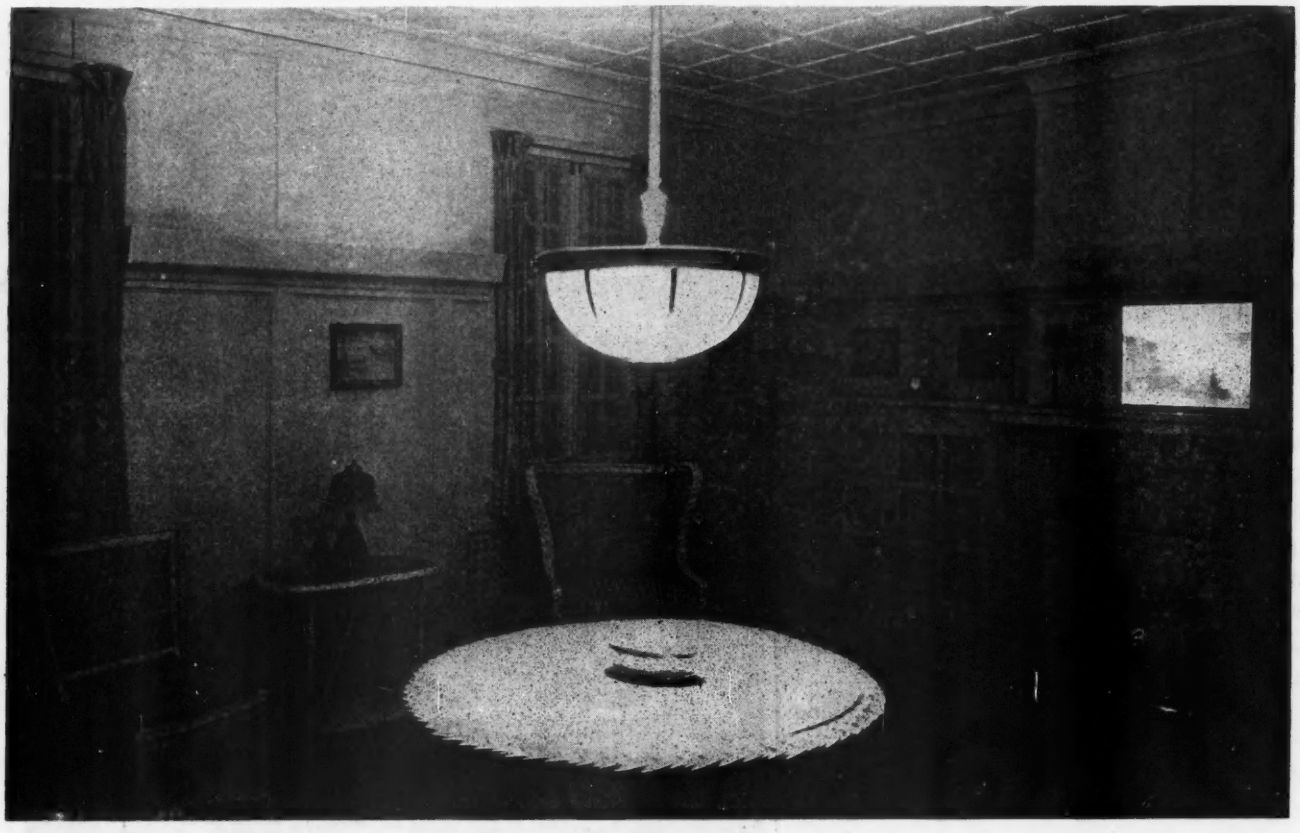
Sanitary Bathrooms with Tile Floors and Walls Are an Essential Feature of Modern Homes. They protect the Health of the Household and Are an Inestimable Boon to the Housewife.

especially cheerful and comfortable by the open brick fireplace which leads into the unique chimney mentioned above. On either side of the fireplace are built-in bookcases, ever convenient for a peaceful reading hour before the fire. In the cold winter months this room will be doubly attractive and a source of constant joy for the family. This room is 19 by 13 feet. A closet for street clothes is off the living room opposite the fireplace.

Directly to the rear of the living room and connected by a wide colonnade is the dining room, also quite roomy and comfortable, 14 by 11 feet, with an exit in the form of French doors out onto the small side terrace. Immediately next to the doorway is a window seat placed beneath two windows which furnish the light for this room. Another door on the opposite side leads into a hall giving access to the two bedrooms and bathroom.

Arranged as they are, the bedrooms are secluded from the living quarters and very convenient with relation to the bathroom. Members of the family can retire without being disturbed by any noise from the other rooms. The bedrooms are commodious, being 14 feet 6 inches by 10 feet and 10 feet 6 inches by 13 feet. They are particularly well lighted by windows on two sides. Each room has a large clothes closet.

The kitchen and pantry make up the rest of this



"Gone Are the Days of Kerosene Lamps," Being the Hub Around Which the Home Life Centers, It Is Important to Have a Cheerful, Well-Lighted, Well-Heated Living Room Where the Family Can Congregate and Enjoy the Pleasures of a Real Home

very efficient five-room home. The kitchen built along the present-day lines of compactness and a minimum of waste space is connected with the dining room by a swinging door and is equipped with modern range, sink, etc. It is lighted by two windows on one side and one on another. The ice box has been placed in the pantry, also the work table. The ice box is fitted with an outside-wall door, allowing the ice man to deliver the ice without entering the kitchen.

Exclusive of the front terrace, the bungalow is 32 feet long and 35 feet wide. The terrace is 7 feet deep. In the basement there is a room for the heating plant and storage of fuel. The entire basement is not excavated. To the rear of the dwelling is a small one-car garage built to harmonize with the rest of the building. It is reached from the main road by concrete trackways.

Altho complete, modern and well equipped in every respect, in addition to being attractively designed, this bungalow is very reasonable in cost, a most important factor at the present time. Many people who are paying exorbitant rents in small apartments could very advantageously divert that money to a home like this. Within a few years they would have it entirely paid for, whereas if they keep on paying rent they keep getting farther away from a permanent home. A home of this kind insures independence, comfort, and a certain measure of happiness that always comes from the satisfaction of home-ownership. By building attractive bungalows, builders will do much to stimulate interest in home-ownership for the appeal of a delightful little home, such as this front cover bungalow is, is very difficult to resist.

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IN the earliest times, as in Babylon, doors swung on sockets instead of hinges. In Roman days wooden doors were decorated with bronze and inlaid, and throughout the Middle Ages richly carved doors of wood adorned the churches. In the Gothic period, wooden doors were decorated with wrought iron hinges which were often elaborated into intricate ornamentation covering a large part of the door. The doors of the cathedral of Notre Dame in Paris of the thirteenth century are the finest examples of this class. During the Renaissance in Germany and France elaborately carved doors were among the most beautiful products of wood sculpture.

Some of the old English doors were formed of narrow planks placed side by side and in dwelling houses generally, in the Middle Ages, the doors were small and fairly simple, meant for strictly practicable purposes and often provided with some means of defense. The doors of the Norman period were round-headed, while with the thirteenth century came the doorway with the pointed arch and later the flattened arch.

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THERE is no such thing as an all-service paint. Paint should be selected according to the material to be painted and the conditions under which it must give service. The wear on a floor is more severe than on a wall; hence the floor calls for a tougher, more elastic paint.

Pennsylvania Stone Makes Picturesque Home

MANY HOMES IN EAST ARE BUILT OF MATERIAL FOUND IN THAT REGION—ADDS CHARM TO EXTERIOR APPEARANCE

DOWN in Pennsylvania they have several natural resources besides coal, iron, and oil, and one of them, certainly one of the most picturesque, is the natural stone used in building many attractive homes like that shown here. All thru this section of the country this stone is extensively used in homebuilding and it goes without saying it makes a most charming dress for a dwelling.

There Is Solid Comfort Here. Broad Ground Level Porch of Comfortable Stone Mansion Typical of Many Homes in the Region Where This Stone Is Quarried

In the language of the builder, this stone construction is known as rubble masonry. It is divided into two classes: uncoursed rubble or unsquared stones, in which these stones are laid without any attempt at regular courses; and coursed rubble, in which the block of unsquared stones are leveled off at specified heights to an approximately horizontal surface. Coursed rubble is often built in random courses, that is, each course rests on a plane bed but is not necessarily of the same depth or at the same level thruout so that the beds rise or fall by steps.

In building masonry of this kind the stone is prepared by knocking off all of the weak angles of the block. It should be cleansed from dust and moistened before being placed on its bed. Each stone should be firmly imbedded in mortar. However small and irregular the stones may be, care should be taken to break joints. The hollows between the larger stones are filled with smaller stones imbedded in mortar.

Using Stone to Splendid Advantage. There Is Something About This Substantial Old Home That Charms the Eye of the Visitor and Gives an Irresistible Appeal of Comfort. It Blends Excellently Into the Surroundings. This Stone Is Unusually Adaptable to Artistic Design

Her Influence on the Farm Home

WOMAN HAS BEEN THE PIONEER IN MAKING FARM HOMES AS MODERN, COMFORTABLE AND CONVENIENT AS THE HOMES IN THE CITY

WOMEN are homebuilders by instinct, almost as primal as the maternal quality. Back in the early days of this country when Daniel Boone blazed a trail over the mountains into the wilderness of the Kentucky, then the Far West, the sturdy womenfolk worked shoulder to shoulder with their husbands in the battle to establish a home. They shouldered an axe and chopped down trees, to build the crude little nest of logs, chinks and mud plaster. Despite the lack of material and conveniences they permeated it with the home atmosphere.

They have always been the pioneers in homebuilding. As new inventions made their appearance, the farm wife, keenly alive to the progress of the cities, began to exercise an influence that could not be downed. In the country customs are tenacious—oldtimers find it difficult to relinquish some of the ideas of their fathers. But they failed to consider a most potent element—the housewife. She has upset tradition, has demanded and got the labor-saving appliances that make the farm home worth while.

Farmer's Wives Are Just as Progressive as Their City Sisters. Keenly Alive to the Spirit of the Day They Have Demanded Modern Conveniences in the Farm Home. Running Water Has Lifted a Heavy Burden From Their Shoulders.

The result is everywhere apparent on the farm today. Instead of being the black sheep of the farm building group, the home is now the hub of all activity. It is no longer built as a roof and four walls but with a thought to appearance, comfort, with an attractive well-designed exterior, large, comfortable rooms and the best conveniences money can buy.

Today there is running water in the kitchen, bathrooms and laundry. There are real plumbing fixtures with built-in bathtubs, lavatories, sinks, and all that kind of thing. Cheerful rooms are lighted by electric fixtures of the latest type. These are only a few of the things that come as a blessing to the farmwife and mother. For many years electric lights and bathrooms have been two of the greatest needs of the farm home and the women on the farm have made it a reality. A clean, white porcelain tub is a tremendous improvement on the old tin, portable type, and turning a faucet is far more easy than carrying water in buckets.

"It's an ill wind that blows no good." In addition to her natural instinct to make the home as congenial and comfortable a place as possible, in short, to make it a real home, the farmer's wife was aided in her struggle against the inherited drudgery of ages by the shortage of help. While the shortage of help has worked havoc in most cases it is not without its compensating features.

Necessity is the mother of invention and a whole lot of other things. Shortage of help created a necessity. Necessity spurred on mechanical genius to greater efforts—the result is a wonderful array of labor-saving machinery on the farm that has taken over a big part of the help shortage burden and increased the production of the farm. Threshers, binders, reapers, and a score of other machines have eliminated countless tasks requiring hours and men.

Just as it has affected the man, so has it worked wonders for the farmer's wife. As acute as the male shortage is, the scarcity of hired girls for domestic work is even worse. The farm hired girl seems to have become as scarce as the horse on the streets of a large city. Whither she has disappeared no one seems to know, altho she is more than likely working in some factory where high wages are for the time being more attractive—the fact remains that she is missing. Naturally the housewife was confronted with a problem even greater than that of her city sister, who also complained of lack of help. For the farmer's wife's duties are manifold and arduous, especially during the busy season. The compensating features of the help shortage made themselves manifest here.

Ingenuity was called upon to solve her problem as it had in the case of the farmer. The scenery was shifted and redrawn—a new setting was ushered in. The old oaken bucket had been replaced to live as a memory in song or verse, and the kerosene lamp is slated for a berth in the museum of antiques. In response to the pulse-beat of the farm home as expressed by the housewife, the whole scheme of living, of construction, has been revolutionized.

We are living in a wonderful age, and perhaps the most wonderful feature of it is the development in modern construction. In this category is included those space-saving and labor-saving devices that are an integral part of the new home, a working part of the builder's program.

For instance, in the farm home in which we are particularly interested in this article, running water, electric light and heating plant are three fundamental parts of the building. These three are of vital interest to the housewife because on them depends much of her work and the comfort of the family. A well-heated home is a comfortable home and comfort always leads to congenial relations. Electric light adds to the cheer and electric devices eliminate much of the drudgery of the routine household work. The introduction of the electric lighting plant has made this possible. Thousands of farms are located where they cannot get electricity from a town power house and would not be able to have these electrical comforts were it not for the lighting plant.

Baby's Smile Expresses the Sentiment of This Housewife on Washday. She no Longer Fears That Important Day in the Weekly Program, for Modern Equipment in the Way of Washing Machines and Electric Irons Has Taken the Drudgery Out the Work.

Likewise in the case of running water which has been made possible by the water-supply systems. It is one of the greatest boons that has been introduced

A New Setting on the Farmhouse Porch, with the Housewife as the Stage Manager. Her Influence Is Now Dominant in This Province and She Has Practically Revolutionized the Working Scheme of the Farm Home.

in the farm home and certainly a welcome feature for the wife. When an Indian who was visiting civilization for the first time was asked to give his opinions, he was more impressed with the running water from faucets than limousines or skyscrapers.

Because these three items are of vital interest to the farmer's wife they should be of the same importance to the builder with whom she and her husband consult. Unless he is susceptible to the desires of his clients and in hearty sympathy with progressive ideas in building he is more than liable to lose out on the business. He must overcome the old idea, if it still lingers with him, that the man in the household is the only one worthwhile talking to, because times have changed. The spirit of co-operation is more evident in family counsels because woman has advanced to the stage where she is qualified to pass on a wide range of subjects.

Her interests in the household have become the interests of the builder, which explains the rapidly growing scope of his work. Today he is mentor on plumbing, electricity, heating, decorating, washing, and a host of other activities.

BUILD "drudgeless" homes; increase the good-will and number of your clients.

Cement Brush Coating Removes Contraction Cracks

A REALTY company had built and sold a beautiful stucco residence, but, after two years, contraction cracks showed up very prominently in the exterior coats. The following treatment to make the stucco fresh and desirable was suggested. First the cracks were filled with a mix—one part portland cement and one part silica sand. This material was mixed with water to a doughy consistency and allowed to stand forty minutes until hydration had taken place. Then the painters added more water and stirred the mix to a creamy consistency.

Before treating the exterior stucco surface, water was applied with a light spray. Then the surface was kept damp ahead of the workmen as they applied the first cement brush coating. After this coat had taken its initial set the whole surface was sprayed lightly again two or three times before the application of the second coat. While the second coat was being applied the surface was again kept damp ahead of the workmen. After completion it was wet down twice daily.

The owner of the property was so delighted with the success of this stucco treatment that he decided not to sell the property, altho several buyers wanted it.

The contraction cracks disappeared entirely under this treatment. Investigation showed that an excess of lime had been responsible for these cracks, due to improper proportions in the first mix.

The entire cost, including material and labor, for the treatment only amounted to seventeen cents a square yard. In the first coat on rough stucco, a mix one by one was used. In the finished work the proportions were one by one-half.

Woman's Influence Has Made Bathrooms of This Type a Part of Many Farm Homes. This Is Real Convenience and Lifts a Heavy Load From the Housewife's Shoulders. She Is the Pioneer in Household Improvements.

House-Hunting in the Garden of Eden

SHORTAGE OF BUILDING HARDWARE AND MATERIALS IS HANDICAP TO BUILDING PROGRAM

By Dawn Powell

"ALL packed up and no place to move" is probably the way the Asiatic ragtime writers describe it—providing of course that they have syncopation kings in the Near East, as well as in America. All of which goes to prove that the house problem extends from the wheat belt to the original Garden of Eden—and then some. The Near East difficulty is more pronounced than ours, however, because political affairs keep everything in a turmoil—no one can be sure just when a massacre will be staged and his house destroyed. The shortage of building hardware and raw materials is a handicap to any construction program, hence we find a large band of refugees wandering about with no homes, and little possibility of their erecting any for some time to come.

In Aleppo, Syria, that city is so crowded with Armenian and other victims of the war that many people live in underground rooms—dig themselves a "bungalow for two"—or ten—under the streets. Pedestrians are constantly stumbling across these curious apartments, or being confronted suddenly by one of the cave-dwellers popping up magically from his home.

At the Near East Relief orphanages the boys are taught carpentry, in order that they may help in the rebuilding of their country when the time comes. Furniture and repair work around the orphanage buildings is about the limit of their ventures so far, but when conditions permit the launching of the many building projects necessary for commercial progress, the chances are that these boy carpenters will prove their worth. The American influence is felt very strongly there, owing to the number of American relief workers on hand, and the American idea of extensive plumbing, good light and ventilation in all buildings is bound to have its effect on Near East building enterprises.

Rents in Bulgaria have increased 150 to 200 per cent and even the wealthtiest citizens find themselves sadly pinched by the house shortage. Compulsory construction of new houses is anticipated—and it would seem that some such step will have to be taken in other parts of the Near East, if the vast army of the homeless are to be taken care of.

Boys in the Near East Are Taught Carpentry so That They Will be Able to Help in Rebuilding Their Country When the War Clouds Have Passed

How Slate Roofing Is Laid

CERTAIN FUNDAMENTAL FEATURES OF THE WORK SHOWN IN DETAIL ON PAGE 93

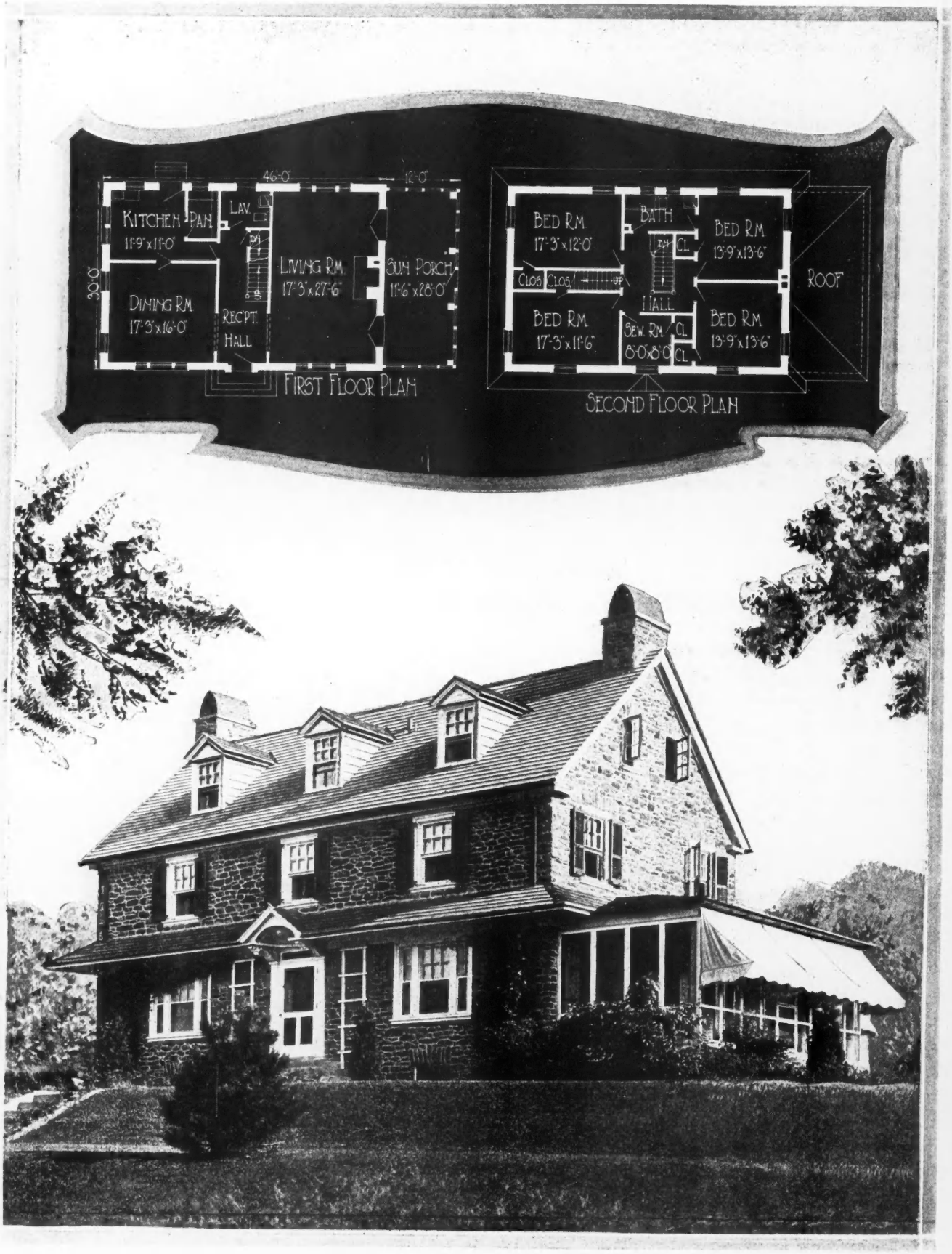
ROOFING SLATE is generally estimated and sold by the square. This square means enough stock to cover 100 square feet of surface and allow a 3-inch lap. The approximate weight of slate roofing of ordinary thickness is 650 pounds per square.

In laying slate, the men begin at the eaves and work up. As a rule, the slate is made in sizes ranging from 9 by 7 inches to 24 by 16 inches. The usual thickness is from 1/8 to 3/16 inch. In starting the job a "cant" strip about two inches wide and three-eighths inch thick sh uld be well nailed across the roof at the eaves. The slate in the first course are short and covered entirely by the second course and also overlapped by the third. This overlapping is continued and is called the "lap." If it covers a space of 3 inches it is a 3-inch lap, etc.

The length of the slate in the first course is governed by the length of the slate selected for the roof. but they should be long enough to be overlapped by the third course 3 inches or according to the lap given the rest of the roof.

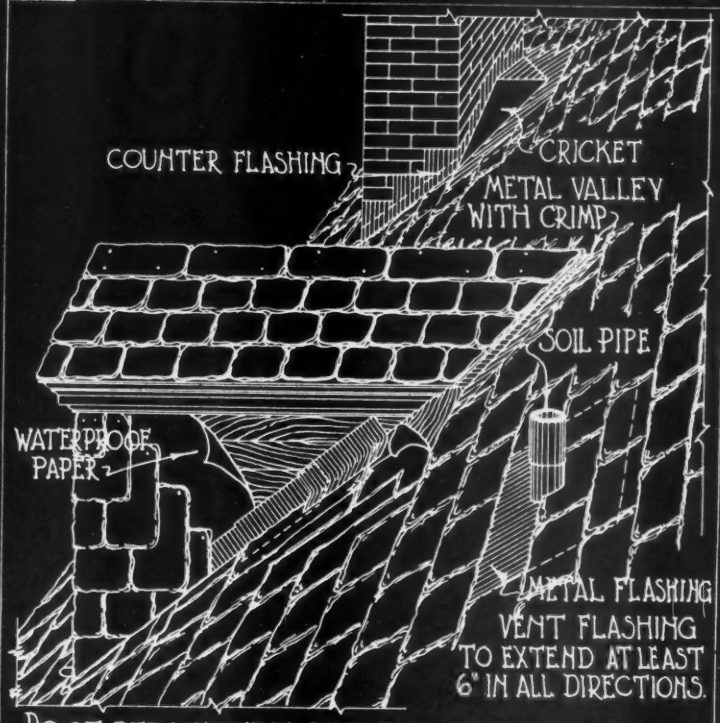
The first or "undereaves" course usually runs lengthwise, but it is a different size than the other slate on the roof. If 10 by 20 slate is specified for the roof then the size for the undereaves course will be 12 by 20 and if the width of the slate required to make this course the proper width is not on hand, then the slate specified for the roof can be cut in two to the right length and put on with the grain running up and down. but be sure to lay them with well broken joints.

As the work approaches the ridge a little variation may be needed in the last lap to get the proper width for the last course of finishers. This last course at the ridge is usually laid lengthwise.

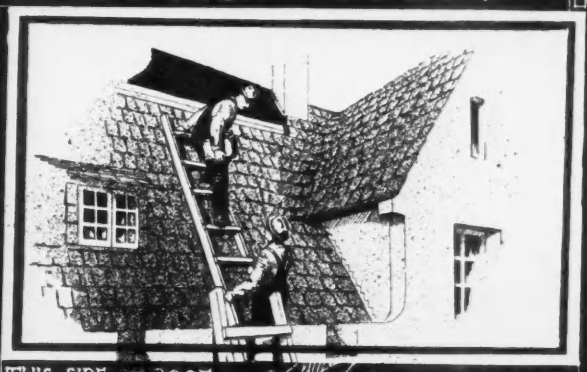


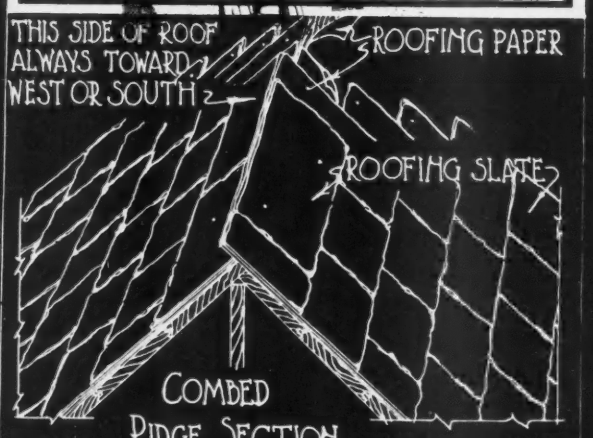
WELL-PLANNED STONE COLONIAL HOUSE. This is an excellent example of the type very popular in the East where this particular stone is available. It happens that slate abounds in the same region and perhaps for that reason the roof is slate, details of which are shown on the opposite page. However, slate is in thoro harmony with a substantial building of this kind, which gives an impression of comfort and strength. The rooms are large, cheerful and well-lighted, as a glance at the floor plans shows. Three rooms form the lower floor plan with a large sun porch, 11 feet 6 inches by 28 feet. They are living room, dining room and kitchen. A lavatory is an added convenience. Upstairs are four large bedrooms, bathroom and a sewing room, with ample closet room. The size of this home is 30 by 46 feet, exclusive of the sun porch.

RECOMMENDED CONSTRUCTION

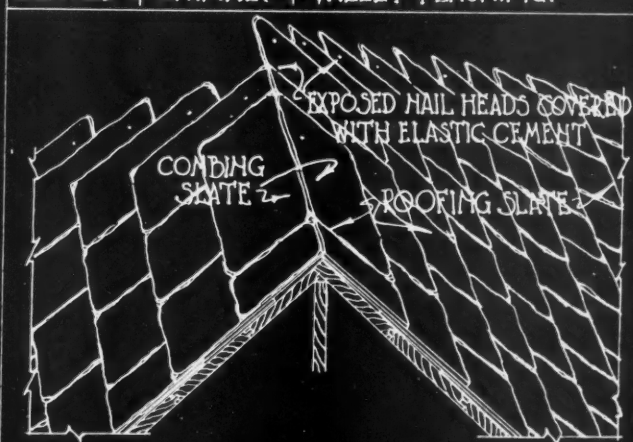


ROOF PERSPECTIVE SHOWING SHOWING ROOF SLATES & CHIMNEY & VALLEY FLASHING.

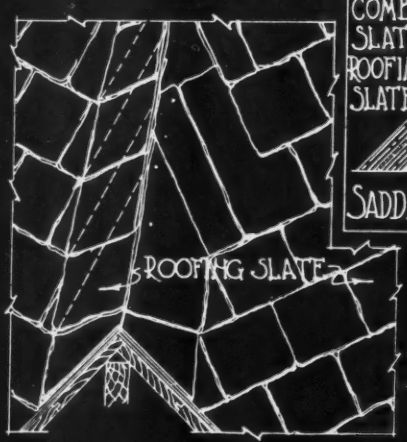




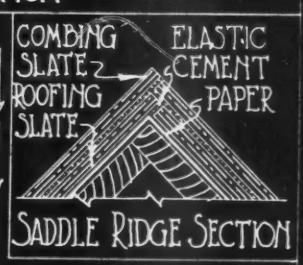
COMBED RIDGE SECTION



SADDLE RIDGE SECTION

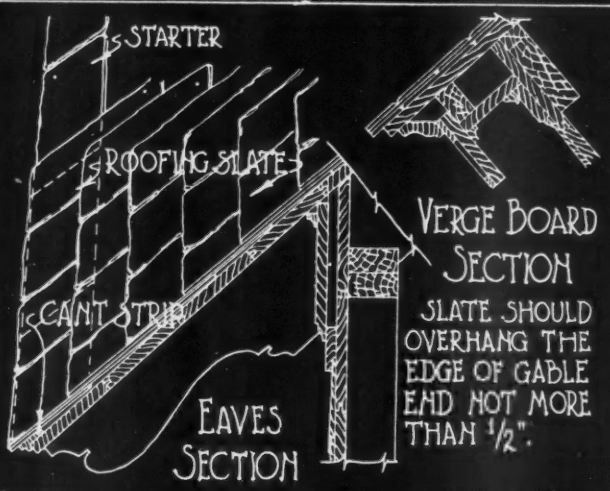


BOSTON HIP DETAIL



SADDLE RIDGE SECTION

TIGHT HIP DETAIL



EAVES SECTION

VERGE BOARD SECTION

SLATE SHOULD OVERHANG THE EDGE OF GABLE END NOT MORE THAN 1/2".

SLATE ROOFING

Architects to Compete for Prize War Memorial

COMMITTEE OF PROMINENT ARTISTS APPOINTED TO SELECT DESIGN FOR $3,000,000 CLUBHOUSE DEDICATED TO OFFICERS KILLED IN WAR

LEADING architects of the country will be asked to submit competitive drawings of the $3,000,000 clubhouse the Army and Navy Club of America is to build in New York in memory of the 3,500 officers who died in the war. The memorial will be a national one, dedicated to the commissioned men in all branches of the service who made the supreme sacrifice.

Charles Dana Gibson, Edwin Howland Blashfield, Henry Bacon and Benjamin Morris with Admiral Bradley A. Fiske, president of the club, form the committee appointed to select the design for the building.

Notable contributions have been made to American art and architecture by members of the committee on design. Edwin Howland Blashfield decorated the great central dome of the Liberty of Congress. His war posters attracted international attention. His most recent important work was the design for the government's certificate of honor issued for every man who died or was wounded in service during the war.

The impressive Lincoln Memorial at Washington was designed by Henry Bacon. He formerly was a member of the firm of McKim, Mead & White. He is a member of the National Institute of Arts and Letters, and the National Academy of Design.

Benjamin Morris was the architect for the Junius Spencer Morgan Memorial at Hartford, the Westchester County Court House at White Plains, and is the designer of the new Cunard Building at 25 Broadway, New York. He is president of the Society of Beaux Arts Architects.

Charles Dana Gibson is known thruout the world as an illustrator. He has a wide personal acquaintance among artists and architects. "Life" was recently purchased by Mr. Gibson and he is now its publisher.

The new clubhouse will be centrally located and will serve not only as a monument to the men who died, but also as a home for living officers, active or retired, in the army, navy or state militia. Civilians interested in nation's defence are also eligible for associate membership.

The committee on design will decide the rules governing the competitive drawings the club will request of all the leading architects. Only tentative plans have been decided on, but interesting features of the new building are included in these.

The memorial feature will probably take the form of a central court or hall with bronze paneled walls where the names of those who made the supreme sacrifice will be engraved.

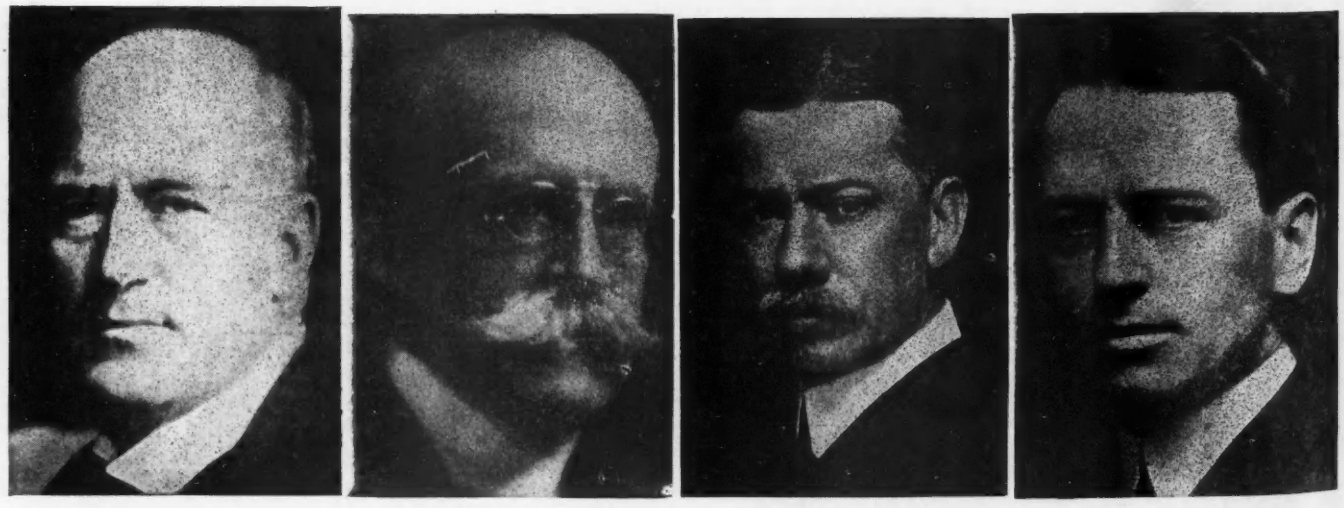
The present clubhouse at 18 Gramercy Park has long been unsuited for entertaining the hundreds of officers who annually come to New York. During the war members found it very inadequate.

Since the war the need has been even more emphasized. While enlisted men have canteens, huts and clubhouses, the officers have been without a place to go for meals, or lodgings, except the very expensive hotels. The moderate pay of our military leaders has made the cost of stopping at these hostelries almost prohibitive.

In the new clubhouse there will be at least 400 bedrooms. A large dormitory furnished with cots will also be provided for use on special occasions when the city is crowded with service men.

There also will be a large assembly hall and small rooms for meetings of patriotic societies. Women friends of members, or women relatives of the deceased men will find a dining room and reception room for their exclusive use. Other features to be found in a modern clubhouse will be included in the plans.

The club recently broadened its scope so as to include in its membership all officers, ex-officers, and all commissioned men with the allied armies during the war, numbering approximately 200,000.



Charles Dana Gibson — Edwin Howland Blashfield — Henry Bacon — Benjamin Wistar Morris

Members of the Committee on Design, Which Will Have Charge of a Nation-Wide Competitive Contest Among Architects for the Design of the Proposed $3,000,000 Officers' Memorial Service Club, Which Will be Built in New York City

Stone Workman's Cottage at Ayrshire, Scotland. Durability Is One of the First Considerations of the Builder. Climate Determines the Thickness of the Walls. Note the Shingle Roof Which Is Rapidly Displacing the Thatch Formerly So Popular

Labor Shortage Changes English Building

DRASTIC CHANGES IN TYPE AND MATERIAL CAUSED BY WHOLESALE DESERTION OF BUILDING TRADES MEN TO OTHER INDUSTRIES

By John Y. Dunlop, *of Glasgow, Scotland*

TO understand clearly how much the want of labor is interfering with the construction of houses in England one would almost need to know something about our climate and also our methods of constructing our homes.

Thus, in the north, a stone country, a two-foot wall has been considered necessary for a dwelling. In the south, where stone is scarce, a 9-inch brick wall serves, and in the midlands of England in early days a wealth of timber caused the general use of half-timber construction.

Common clay is found abundantly in many of our districts and is invaluable, for from it we have been able to make common bricks, roofing and other tiles, terra cotta and other forms of material for very durable, fire-resisting walls.

But, with all this raw material at hand, we are sorely handicapped for the want of unskilled labor to work it.

Effect on Brick Construction

Brick construction which a few years ago was reasonable in cost, has jumped up six times in price because the cost of manufacture of bricks has gone up, freight is so high and, when the material arrives on the job, bricklayers are in such a demand that they can command regular employment, altho they only lay one-fourth the number of bricks which was considered a fair day's work before 1914.

One of the illustrations shown here gives an example of one of our brick cottages found all over the southern part of England.

In these districts the wayside cottage and dwellings in the small village and the large town are all built of this material, and it is only in the matter of roof covering that the wayside cottage differs from the town house.

Thatch Rapidly Disappearing

Thatch in some districts consists of straw from wheat laid in several layers and sewed on to the rafters. In others it consists of reeds treated in much the same way. Today, when these thatch roofs begin to show signs of tear and wear they will have to be replaced with other roof covering material, because the old roof thatchers are dying out and no one seems anxious to take up this calling, which at the best

Half Timber Type of House at Largs, Scotland. In This Construction Heavy Timbers Are Framed Together and the Panels Filled with Brick, Then Coated with Stucco. Note the Sharp Gables

Brick Cottages with Thatched Roofs at Crawley Hants, England. Thatch Is Rapidly Disappearing in England Because of the Scarcity of Trained Workers in That Branch of Work. Brick Is Used Extensively.

did not pay too well and was somewhat irregular.

In some districts many of the roofs in villages and towns were either covered with slates or tiles. But these trades, as all others, have been affected by the unsettled state of the world for the last six years with the result that there were few boys serving an apprenticeship. Many more who have returned from service are not inclined to learn a trade when such good money can be made at unskilled labor.

Face Brick Manufacture Dying Out

Facing bricks which used to be one of the most important features of a brick dwelling, has passed out of existence. In fact, I do not think they are being made, and certainly there is no demand for them. Slating and tiling of roofs are only being carried out in the best work and many average buildings are now being covered with asbestos shingles, due to the shortage of slaters and tilers.

At the present time in many districts the carpenter, after putting on the roof, sets the asbestos shingles.

Stone Difficult to Get

One of the trades which has suffered most of all by this great upheaval is the work of the stone mason.

Just now most of the quarries in our country are shut down because there is little demand for stone. From what I know of the business, there is no immediate chance of their being reopened. This is surprising because Britain is rich in this material. The question is often asked, "why cannot quarry masters devise some means of having stone cut in piecework fashion, so that when the material arrives on the job it would only require setting?" This is being done with timber houses and naturally our own countrymen wonder why some move of this kind is not brought about to increase the output of the quarry and reduce to a great extent the cost of the material.

At one time we had some of our quarry masters operating along these lines. They were prepared to supply the stone dressings for doors and windows and stone for walls dressed up in long lengths.

Typical Stone Residence at Ayrshire, Scotland. The Day of Stone Construction in England and Scotland Is Passing Because of the Acute Shortage in Stonemasons, Quarrymen and Cutters. They Have Been Attracted to Other Trades Because of Better Wages.

All the vertical jointing had to be done on the job.

Coal Mining Attracts Quarry Workers

In many stone districts there are rich seams of coal. As a result most of those men have gone to coal mining. As coal is a necessity, the reward for a day's work has gone up considerably beyond what any firm or quarry master can afford to pay.

Brick and concrete fabric are the popular materials today. We are having a good amount of timber shells, a class of work which has no comparison to the stone walls.

Typical Stucco Cottage Found in Many Sections of England. This Material Is Gradually Replacing Stone Because of the Difficulty Connected with Quarrying and the Scarcity of Labor. This Thatch Roof Is Made of Wheat Straw or Reeds.

In the accompanying photographs the type of house as shown at Rosemont, illustrates extreme originality, both in building and in planning.

The dressings of the walls are sandstone and the walls are built of local stone in polygonal rubble. Bay windows with large heavy mullions and crossed by horizontal transoms are a special feature. The gables are made of scroll work which follows in a general way the slope of the roof.

The chimneys are a special and prominent feature and are carried up boldly so that they play an important part in the composition and outline of the house. The chimney is always a decorative feature in British homes, even in the smallest roadside cottage. This is because every room in the house has a fireplace and every fireplace a flue.

The broad staircase of oak is particularly attractive, with its heavy carved newels, pierced balustrading and rich carving. It is placed in connection with the hall and lends to the interior an air of spaciousness and dignity.

On the three sides of the hall are the dining room, the drawing room, the morning room and library.

On the upper floor are the bed rooms, and to the rear the servants' quarters.

In the most of those houses the influence of landscape gardening is most prominent. The English

Stone Gate Lodge and Entrance, Hopeton House. English Architects Pay Considerable Attention to Landscape Gardening About the Home and Build Elaborate Entrances, Gardens and Terraces. The Small Buildings Are Built in Harmony with the Main Structure.

Law for the Builder

RIGHT OF CONTRACTOR TO REFUSE TO PAY FOR MATERIAL, ORDERED FOR A SPECIFIC CONSTRUCTION, UNTIL THE ENTIRE ORDER HAS BEEN DELIVERED

By Leslie Childs

THE question of when payment is due for material delivered on a construction job, in the absence of a special contract, has been the subject of many lawsuits in the building and construction field. In particular has this been true in situations where the material contracted for was ordered as one contract, with the understanding that it was to be delivered in installments, or as the work progressed.

In cases of this kind, in the absence of a clear understanding as to payment, the parties furnishing the material frequently demand payment as delivery is made, or after a certain amount has been delivered. The contractor on his part may counter with a demand that complete delivery be made, and refuse to pay until this is done. Here, then, are gathered all the ingredients for a first class lawsuit.

In disputes of this kind the question of whether or not the contractor must pay as the material is delivered, or whether he is within his rights in insisting on a complete delivery before payment, usually turn on the point of the divisibility of the order. A clear case illustrating the application of this rule of law was Kelly Construction Co. vs. Hackensack Brick Co., 91 N.J.L. 585. The circumstances culminating in the action were briefly stated as follows:

"After a Certain Amount of Brick Had Been Delivered, the Hackensack Brick Company Demanded Payment."

Brick Ordered, Time for Payment Not Fixed

The Kelly Construction Company had a contract for the erection of a certain high school building. It placed a written order for the furnishing of the brick, with the Hackensack Brick Company, which provided that the latter company should furnish, deliver, and stack on the job, "all the common hard brick required by the plans and specifications for the Englewood High School at $7 per thousand; brick to be delivered as required by us and sufficient brick to be kept on the job so that we will always have approximately 50,000 brick stacked until the completion of the job."

This order was accepted by the Hackensack Brick Company, but neither the order nor the acceptance made any mention of the time of payment. After a certain quantity of the brick had been delivered, it appears, the Hackensack Brick Company demanded payment for what had been delivered. This was refused on the grounds that the money was not due until the entire order had been delivered.

The Hackensack Brick Company refused to make further deliveries, and the Kelly Construction Company then went into the open market and bought the remainder of the brick needed. It also brought suit against the Hackensack Brick Company for damages for their failure to complete the contract.

Upon the trial of the cause, among other defenses put forward by the Hackensack Brick Company, was that it had the right to refuse to make further deliveries when those made were not paid for. The trial however, resulted in the Kelly Construction Company being given a judgment for damages, based upon the difference between the contract price and what it was compelled to pay for the additional brick in the open market. From this judgment the Hackensack Brick Company prosecuted an appeal to the Court of Errors and Appeals, where in passing on the defense, outlined above, of the Hackensack Brick Company, it was among other things said:

"The defendant's [Hackensack Brick Company] contention is that is was legally justified in refusing to complete its contract by reason of the admitted fact that brick already delivered in part performance of the contract had not been paid for. But that contention is unsound in law. Where, as here, the sale is of a specified quantity of brick (i. e., sufficient to complete a building according to stated specifications), the contract is entire, and a failure to pay when a part delivery has been made does not excuse the seller from completing delivery, no time for payment being stated in the contract. * * *"

After passing upon other defenses, of the Hackensack Brick Company not material to this discussion, the court affirmed the judgment rendered in the lower court, Justice Minturn, however, dissenting, in favor of the Kelly Construction Company. Holding that in this case the contract to deliver the brick was entire, and that as no particular time for payment had been

named, payment was not due until the entire order had been delivered.

The rule laid down on the foregoing decision is followed by the great weight of authority. And where a contractor orders material in a lump, for a specific job, in the absence of a special agreement relative to payment, the law will not enforce payment until the entire order has been delivered. And this applies even though delivery is to be made on the installment plan.

Obviously the rule is an important one from the contractor's standpoint, for it may in many instances tend to protect him from inopportune demands by materialmen during the progress of a given undertaking. In fact, a good point of law for every contractor to remember, as knowledge of it may frequently be the means of assisting him over the rough spots in the credit field of his endeavors.

✣

FOR stock over 1 inch and not more than 3 inches thick the drying time is proportional to the thickness. For example, 3-inch stock requires 3 times as long to dry as 1-inch stock.

How to Distinguish Mahogany and Walnut from Red Gum

IN the manufacture of furniture and cabinets a great deal of red gum is used as an imitation of mahogany or Circassian walnut. When red gum is properly finished it can be made to look so much like either of these woods that only by very careful observation can the true be distinguished from the substitute. There is a very distinct difference, however, between red gum and mahogany or walnut. This difference lies in the size of the pores.

In mahogany, Circassian walnut and black walnut the pores are so large that they can be seen very distinctly on a smoothly-cut surface of the end grain, where they appear as minute openings smaller than pin holes but visible without magnification. On surfaced faces the pores appear as fine grooves, running parallel with the grain. They are even visible thru the varnish, appearing as dark lines.

In red gum the pores are much smaller and can be seen only with a magnifying glass.

Heating the Home by Steam

VARIOUS METHODS OF INSTALLATION EXPLAINED AND DETAILS OF DIFFERENT SYSTEMS SHOWN ON PAGE 101

ONE of the most popular types of heating systems used in houses and for that matter in buildings of all kinds is the steam heating system. In addition to being economical to install, it renders very satisfactory service and is not complicated in its workings. Steam is generated in a boiler in the basement and passes from the boiler thru pipes to radiators in the various rooms above. Here the steam condenses, liberates its heat into the room, and the water, forced by the condensing of the steam, flows back by gravity into the boiler, where it is again evaporated and the journey repeated.

When low-pressure steam is the medium employed the piping can be the one-pipe method or the two-pipe system. The one-pipe system is quite popular because of its economy, neat appearance and its ready adaptability to any residence. In the one-pipe system the radiators are connected by a single pipe, which is used both as flow and return. In the two-pipe system each radiator has a separate flow and return pipe. This system calls for a double system of cellar piping.

These systems are again divided into circuit, divided circuit, overhead, and one pipe with dry returns. The circuit system is extensively used. The main supply from the boiler rises directly to the highest point, then runs horizontally at a grade or pitch downward of not less than one-half inch in each ten feet, making a circuit of the basement of the building. This circuit is made at a distance of from two to six feet from the basement wall. In making the circuit of the basement the main is carried to a point as near the boiler as possible. A reducing elbow is placed at the end of the main, reducing one or two sizes. Connection is then made with return opening of boiler.

The various branches connecting the radiators and risers are connected from the top of the steam main with 45 or 90 degree elbows, as shown in the detail sheet on page 101.

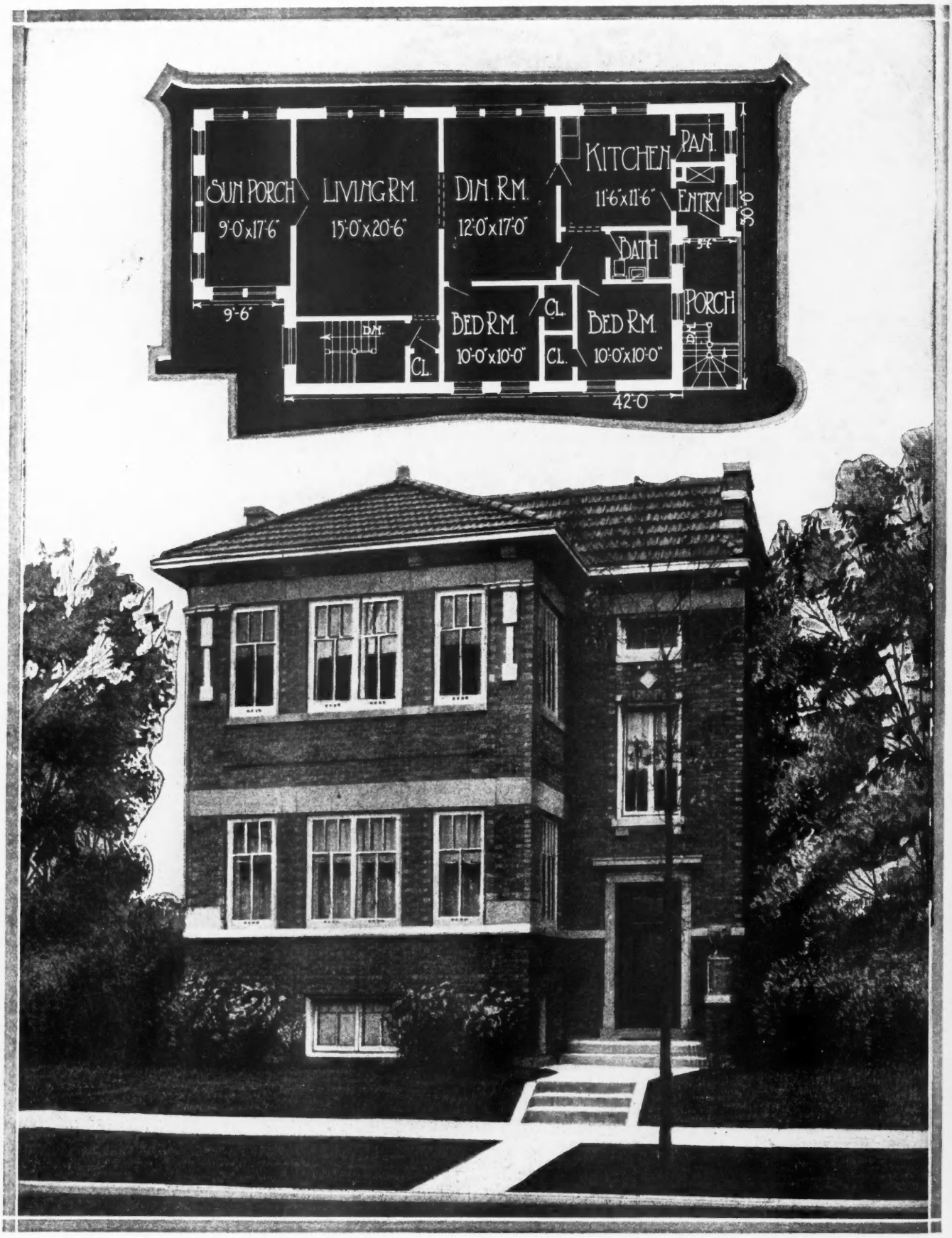
In the overhead system, which is also shown on the blue-printed page, the risers rise directly to the top floor and branch in several directions necessary to feed the various drop risers supplying the radiators. The branches connecting these risers are taken from the side of the main. The two-pipe system is not used much in ordinary house work. When specifying heating plants builders often select the steam heating system because of its frost-proof qualities, quick heating, and because it does not affect the purity of the air in the room. Automatic dampers, safety valves and other safety appliances have made the steam heating system safe.

✣

PAINTING should be done when the temperature is lower than 50 deg. F. as the paint will not flow well. It is impractical to paint a hot surface. The old painting axiom is: In spring and fall follow the sun; in summer, follow the shade.

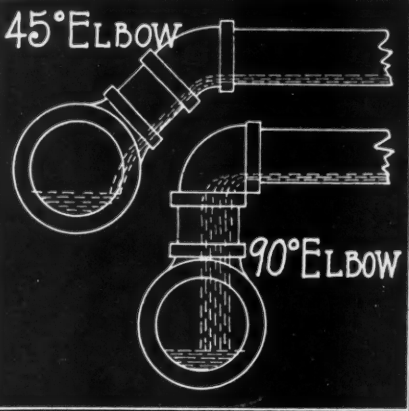
Outside painting should be done in dry weather. Surfaces should not be painted when wet.

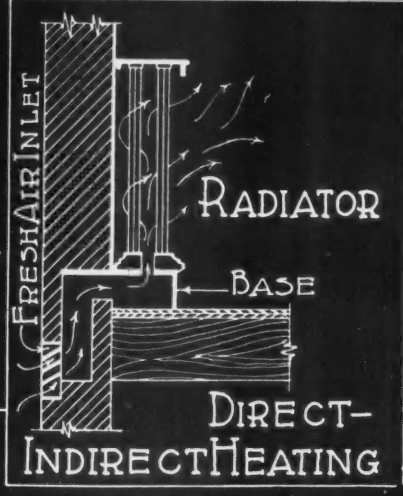
Surfaces to be painted should be gotten as smooth and clean as possible. They should be free from grease. If painting new wood knots and sappy surfaces should be shellacked first. If painting over previously painted surfaces, all blisters and loose or peeled spots should be scraped or burned clean.

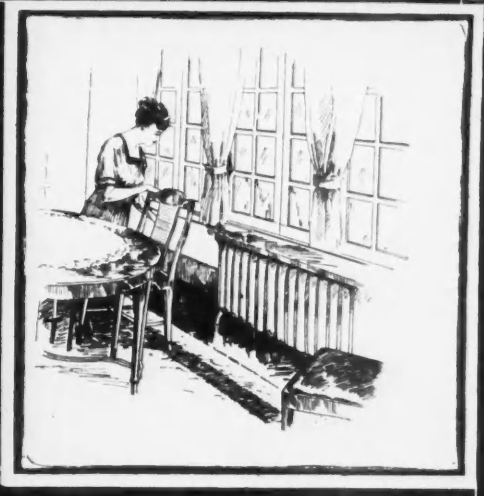


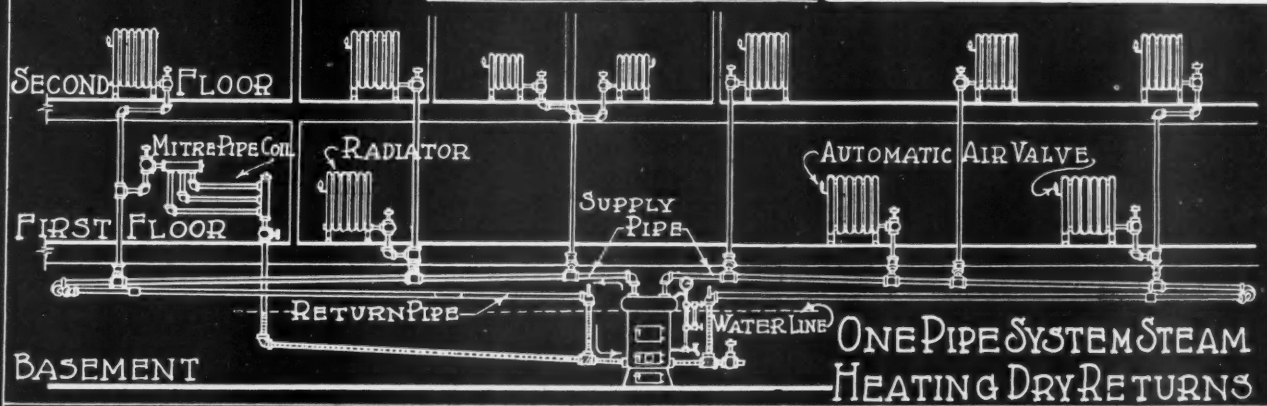
ATTRACTIVE TWO-APARTMENT BUILDING WITH SUN PARLORS. Here is something that has a double-barreled appeal—it affords a modern home and revenue-producing investment. Built substantially of brick with an ornamental false roof tile, it has two apartments of five rooms each with the added feature of large, well-lighted sun garlors, 7 by 17 feet 6 inches. Both apartments are heated by steam from a plant in the basement. Consult the detail sheet on the opposite page for information on various types of steam heating systems. The front of the apartment building is face brick well designed and set off by terra cotta trim. Each apartment has two bedrooms, living room, dining room and kitchen. Exclusive of the sun parlors, this building is 42 feet long and 30 feet wide.

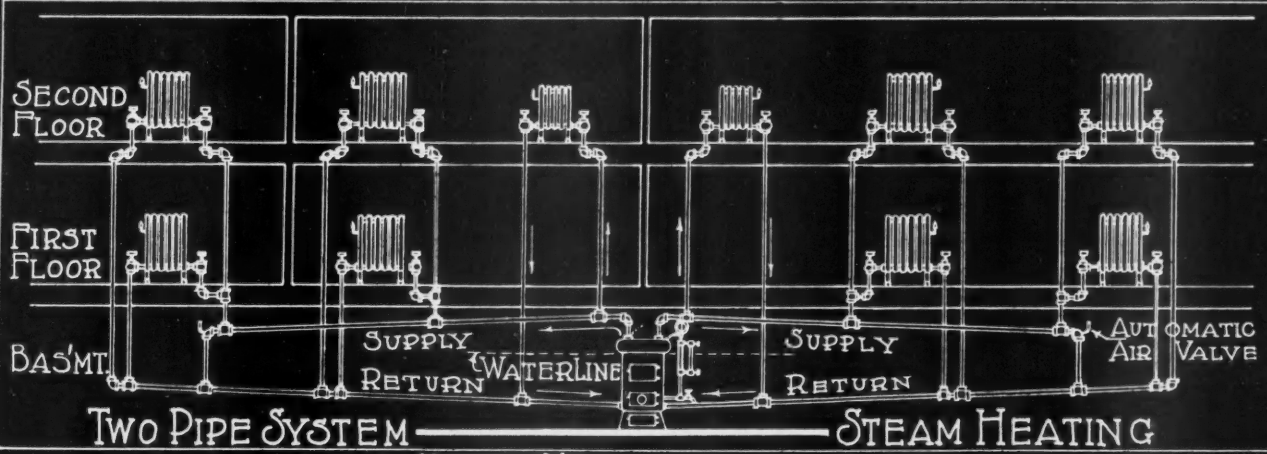
RECOMMENDED CONSTRUCTION

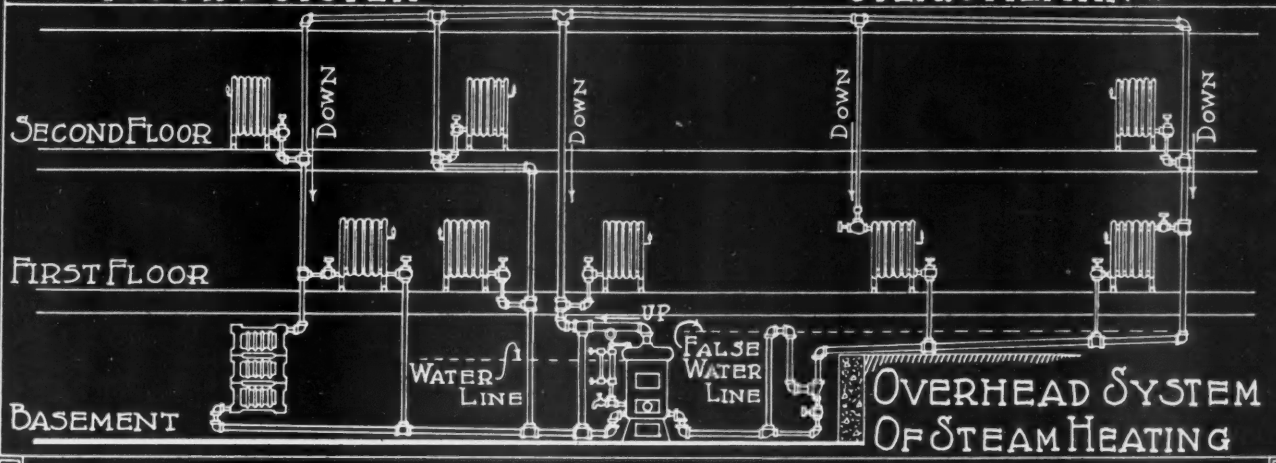




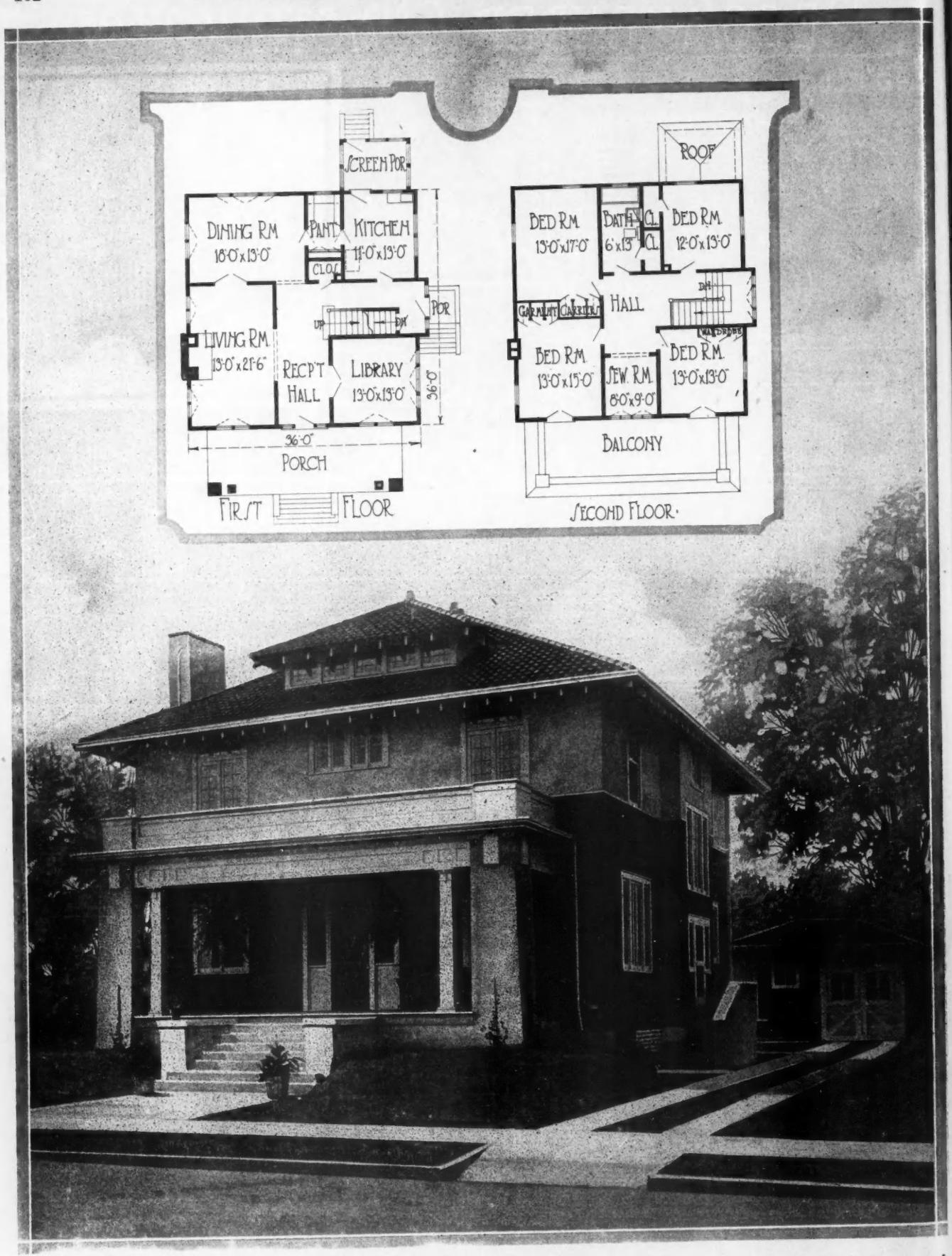








STEAM HEATING SYSTEMS



ORNAMENTAL HIP-ROOF HOUSE OF ECONOMICAL DESIGN. Here we find the very popular hip roof type, considerably enhanced by the use of attractive roofing tile, surmounting a frame and stucco exterior. Built along familiar square lines, this dwelling completely fills the requirements at economy in cost. The large front porch with balcony above is a most attractive feature. On the first floor are four rooms, living room, dining room, library and kitchen. The living room is of the large, popular type with open fireplace. The front entrance leads into a commodious reception hall which opens into both living and dining room thru wide doorways. Four bedrooms, sewing room and bathroom constitute the second floor arrangement. The bedrooms are unusually comfortable, the two front rooms opening out onto the balcony thru French doors. The dimensions of the house are 36 by 36 feet.

Helps On Painting and Decorating

BRING your painting and decorating problems to the American Builder. Call on this Department for help. Also pass the word along to your friends, neighbors, clients, that thru the American Builder they can secure FREE OF CHARGE color schemes, decoration layouts, painting and wood finishing directions—in fact, a complete consulting service. Mr. Lemperly has consented to serve as Expert in Charge of this Department and Service. With his long experience in this work and his trained business staff, consisting of artists and decorators, chemists and practical painters, he is ideally qualified and equipped to render American Builder readers and their friends assistance. A few questions and answers will be published here; most will be handled direct by mail. This Service is Free. Write us.

EDITOR AMERICAN BUILDER.

Some Pointers on Exterior Paints and Painting

ARTICLE II OF SERIES EXPLAINS MIXING AND ESTIMATING AMOUNT NEEDED FOR HOUSE

By C. M. Lemperly

IT is often surprising to note the seeming "mystery" which surrounds paints and painting. And equally surprising to note the simplicity of both, after a little experience and practice. Even the painter is sometimes inclined to think he knows best thru some particular fancy or prejudice and will not always look into some other things that might make him better posted. But he generally paints "instinctively" and the average property owner, without the same instinct, lacks this advantage.

White lead and oil is perhaps the most widely used material for exterior house painting. The recent lead shortage has brought into use more prepared paint and zinc and paste paints than ever before, but there has been a shortage even in these and the manufacturers have been struggling with production for some two years. This condition has forced many painters and property owners to "shop around" more than formerly, and while quality may have suffered thru substitutions in some places, still the reputable manufacturers have upheld their trade-marked products at any cost, and have gained headway thereby.

Paint prices have advanced, but not nearly in proportion to many other commodities, and compared to the increased values of building materials and property, it is more necessary than ever to keep homes and buildings well painted. For good paint preserves as well as beautifies.

Pure linseed oil is the life of any paint. It comes from flax, being pressed out of the seed, filtered, refined and aged.

Lead is a necessary ingredient, giving the body to

Painting Is Not a Mysterious Act That Only a Few Can Do. When Explained in Simple Language It Is Simple to Understand and Apply. This Man and His Wife Are Making Their Home Attractive at Little Expense.

the paint to take the painter's tinting colors.

Pure spirits of turpentine carry the paint into the wood.

The painter generally prefers to use his own mixture and adds the necessary driers, thinners, and sometimes zinc.

But the average man and woman, and many good painters, find the better grades of prepared paint enable them to rely on the uniform mixture, without guess work; this mixture generally being the right proportion of linseed oil, white lead, turpentine, color, a small percentage of inert material to keep the paint

Proper Colors in a Modern Bathroom of This Type Are Important to Preserve the Harmony of the Color Scheme. Walls and Ceilings Should Be Painted with Colors That Will Add to the Light and Sanitary Appearance of the Room.

in suspension, and all these ingredients thoroly ground and mixed, to insure fineness, smoothness and the best working qualities, all ready for convenient use.

Most prepared paints have a proportion of zinc, which adds toughness and hardness. As a general rule a formula of which the main ingredients are lead, zinc and oil, in proper proportions, gives best results.

Zinc is used in the form of oxide of zinc, and lead as sulphate of lead and carbonate of lead. White lead alone (carbonate), in the opinion of most experts, does not give the greatest degree of efficiency when used with zinc, and should have right proportions of sulphate of lead in combination.

The popularity of prepared paints, which is growing yearly, is due largely to the uniformity of ingredients, thoro grinding and mixing, and scientific formula, which it is apparent, are not always forthcoming in a hand-mixed lead and oil paint. But both kinds, when ingredients are of good quality, will give paint service which means life to property and keeps away deterioration due to the action of the elements. Lack of paint invites decay and loss.

A good painter should be employed when possible. It has been difficult to get painters, but that should not deter people from painting as it is a costly neglect. It is not necessary in order to get a satisfactory paint job, if certain rules are followed.

The surface should be dry.

All pitchy surfaces should be treated either by burning or by sealing with good orange shellac.

All knots should be shellacked.

The paint should be stirred thoroly. This is important and most complaints can be traced to lack of stirring, as the "pigment" settles and the oil comes to the top. A thoro mixture is necessary.

Use only pure raw linseed oil when oil is necessary and never use boiled oils in any primers or for thinning paint.

Beware of "cheap" paint—it is always the most "expensive" to use.

Do not paint in too frosty weather or over too glossy a surface. Avoid flies and gnats when possible.

To mix a can of paint properly, shake the package violently. Cut out the whole top. Pour off into another package at least two-thirds of the liquid that has raised above the pigment. Stir the pigment and remaining oil with a smooth paddle until the mass is smooth and entirely uniform. Begin returning the surplus oil a little at a time, until all has been added, stirring constantly. Then pour the paint back and forth from one pail to the other from six to ten times, each time leaving about one-quarter of the paint in the pail which is being emptied.

Proper brushes and clean brushes, spread with plenty of "elbow grease" are important.

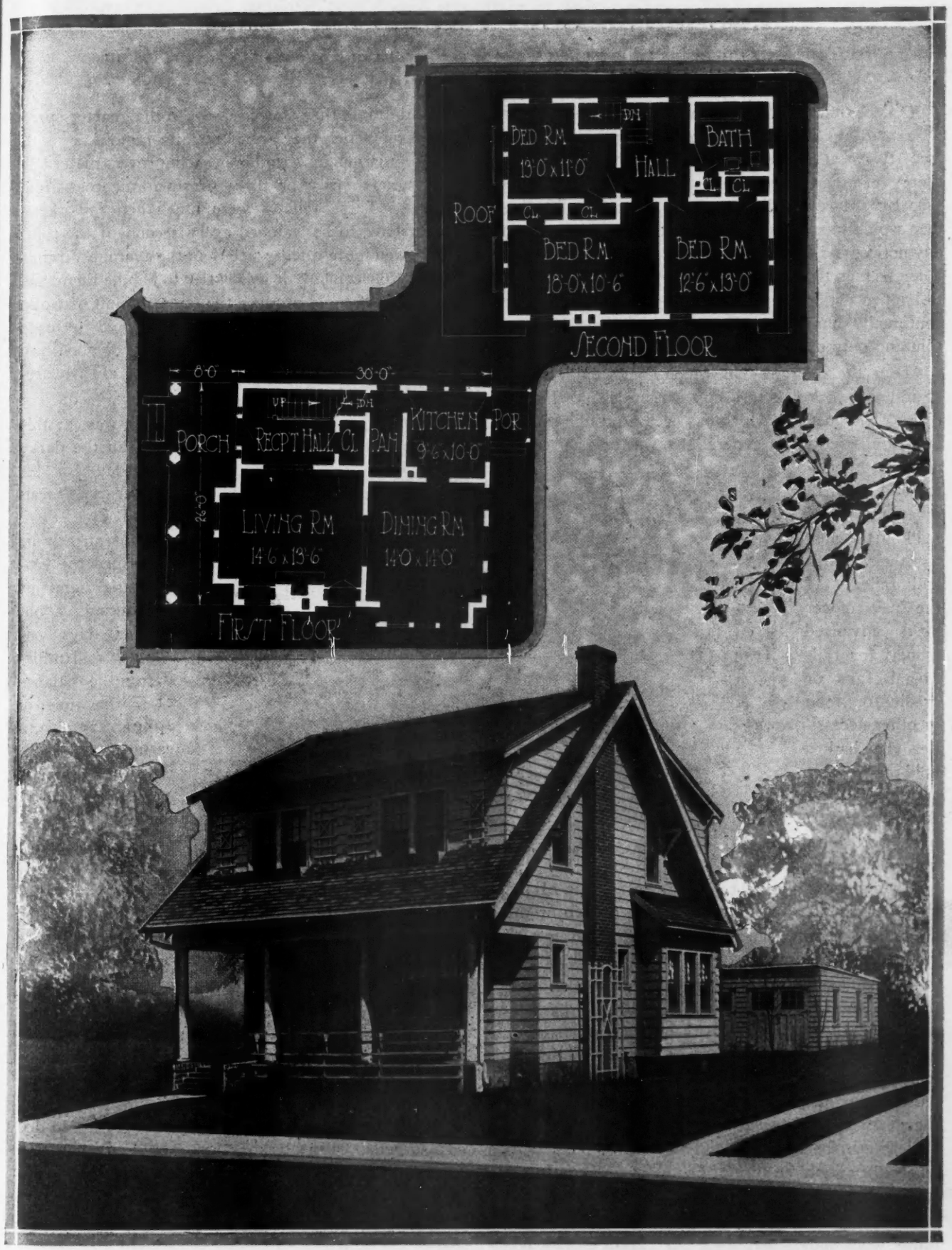
An approximate estimate of the covering capacity of paint can be made as follows: Measure the distance around the building and multiply by the average height, which secures the square feet of the siding. Divide this number by 300 (the number of square feet the average paint will cover two coats). The result secured will give about the number of gallons it will take for the body.

To secure the amount for trimming the cornice, pillars, etc., take from one-eighth to one-fifth the quantity required for the body, one-eighth if there is average trimmings and one-fifth when a house has an unusual amount of heavy trim.

For porch ceilings, floors, etc., ascertain the square feet by multiplying the length by the breadth and divide the result by 300.

In a later article the writer will discuss directions for applying paint to various kinds of new and old wood, thinning, proper drying, brushing, etc., as this is a very important phase of painting, and many grievances can be avoided, such as peeling, scaling, chalking, cracking, running, etc., if proper care is taken at the outset.

Charming Story-and-a-Half House



CHARMING SIX-ROOM STORY-AND-A-HALF HOME. At first glance, it is evident that this house is compact and complete, a most livable home. It has been made unusually appealing by its overhanging eaves and roof dormers. The front porch is recessed under the main roof. The exterior has been rendered even more attractive by the addition of lattice work and a unique entrance with side panels. It gives an impression of snugness and comfort. The interior has been arranged efficiently with the three living rooms on the lower floor. The living room is 14 feet 6 inches by 13 feet 6 inches with open fireplace. The dining room is very convenient to the kitchen. Three bedrooms and bath are found in the upper floor plan. This pleasing little home is 26 by 30 feet.

Laborers—and Other Laborers

SHIFTLESSNESS ONE OF DIFFICULTIES CONTRACTORS HAVE TO CONTEND WITH ON JOB

By O. R. Rietschlin

SOME time ago on a job in Virginia, an effort was made to use local negroes as common laborers. It was at a time when there were more jobs than there were men to fill them, and with the usual carefree lack of responsibility of the typical darky, these men would move about from job to job without giving any notice, and frequently without a discernible reason. They seemed to be concerned only with what was going to happen within the next twenty-four hours, being as continually hungry as the proverbial doughboy, and thinking only of meals and sleep.

About the only way in which they could be kept steadily at work was to keep them in debt to the company. This method, which has been a prolific cause of industrial friction for generations, was resorted to only as a last measure and when all other means of holding the men to their work had failed. If the pay officer had advanced money for railroad fare or credit for food or other necessities, he had a hold on the men, and they knew that they would not get any money until they had worked out the debt. If, however, one of these men ever found himself in possession of two or three dollars, it became absolutely necessary to get that money spent before he would do another lick of work.

"Others Would Discuss Long and Earnestly Which End of a Plank Each Man Should Handle"

Another method adopted in holding the men on the job consisted in establishing a restaurant where they could obtain food at the cost of the raw materials. Here the men could get far better food, well cooked, than at any other place in the neighborhood, and for a much lower price. As this was run largely on the charge basis, against earnings, it formed an additional tie between the company and the men. Bunk houses where they could be sure of being dry and comfortable were another potent aid in keeping them satisfied.

It was quite impossible to drive the darkies, but those who understood their mercurial nature could easily lead them, particularly where the leader had a faculty for mimicry or other forms of amusement. One timekeeper, who was an excellent amateur ventriloquist, kept a whole gang working at top speed so long as he could keep them laughing. As soon as this impetus was withdrawn they slowed down to the quarter speed or less, for which they are frequently famous.

The situation in Virginia was improved materially by bringing in two or three drafts of negroes from Georgia. These fellows were much better workers, did not have to be watched every second of the time, and showed more intelligence than the average Virginia darky. Consequently it was easier to handle them, and smaller effort could produce the same amount of work. As no distinction with regard to pay could be made between the two groups, however, the use of good men alongside utterly inefficient men did not always produce a happy combination.

The rate per hour for a ten-hour day was, at this time, some 37 cents. This was more than the darky needed for his next day's meals and shelter. Consequently he formed the economic habit of working about four days per week and utilizing the balance of the time in spending his earnings. As an offset to this, an attempt was made, by means of a special bonus, to keep the men working more steadily. Each man who stuck to the job thru the entire fifty-four hours of the week received an additional five cents per hour, or $2.70 for the week. This device was only partially effective, for a mere dozen men out of forty-two on that job earned the bonus.

Even when the men were working, or supposed to be working, they were found exercising all sorts of ingenuity to avoid making every movement effective. One man was discovered down near the river bank watching somebody shooting snipe. Others would discuss long and earnestly how they should go about performing the simplest sort of task, and which end of a plank each man was to handle. This did not involve anything of a quarrelsome nature, but it was distinctly discouraging to a supervisor accustomed to the snappy work obtainable in most places in the North.

Another form of labor with which difficulties of a different character were experienced is the so-called "padrone." Greeks, Spanish, Italians and Albanians all work on this principle; Spanish and Albanians par-

ticularly so. The padrone, or leader, looks after a considerable group of men, acting in effect as their business agent, and delivering the entire crew to any job which pays high enough for his and their services. The men will not work independently of the leader, nor can they be hired away from him. If anything displeases the padrone, he will take his whole gang away to the next job. This gives the employment manager gray hairs in trying to fill the gap before there is a chance to hold up other parts of the job, due to the lag in the work which was being done by these men.

Geography has a good deal to do with the handling of labor in building construction. Knowledge of local characteristics and of various types of men is essential if results are to be obtained. Even under the best of conditions, however, with adequate knowledge and familiarity with the men, there arise many cases where the kind of result desired is unobtainable no matter how great may be the effort to get it.

For instance, some years ago, when Mexican labor was quite content with 50 cents per day, an attempt was made to increase the production per man by raising the rate to a dollar. The result was a prompt disillusionment. The 50 cents had been ample to permit the men to live; hence with one dollar per day they worked only half as many days and loafed the rest of the time. The employment manager, therefore, who expects to obtain similar results from his men regardless of local conditions is likely to be disappointed whenever he gets into a region where negro or Mexican labor has to be depended upon to any considerable extent.

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Wood Lighter Than Cork

BALSA wood is so light that one man finds it not difficult to carry six or eight large planks on his shoulder. It grows in Ecuador and for generations has been used by the natives for building their rafts, but now it promises to supplant cork in the construction of life preservers and other safety devices of the sea. Capt. A. P. Lundin, a seafaring man, tried out the first Balsa wood in this connection. It was his recollection of observing the natives of Ecuador building rafts of a very light wood which started him on the path to the discovery of the many practical uses to which the wood may now be put. The most astonishing feature about the Balsa tree is the rapidity of its growth. There are records showing that trees have grown from the planting of the seed to a height of 36 feet in one year. It has been found that the tree increases in diameter about five inches per year, so that a tree from 24 to 30 inches can be produced in from five to six years. One of the most valuable qualities claimed for Balsa wood is the property of insulation against heat and cold, which it possesses in a remarkably high degree because of its cellular texture and the absence of fiber in its structure.

Sewage Disposal for Farm Home

SEPTIC TANK IS EFFECTIVE AND EFFICIENT METHOD OF GETTING RID OF SEWAGE WHERE STREET DRAINS ARE NOT AVAILABLE—SEE DETAILS ON PAGE 109

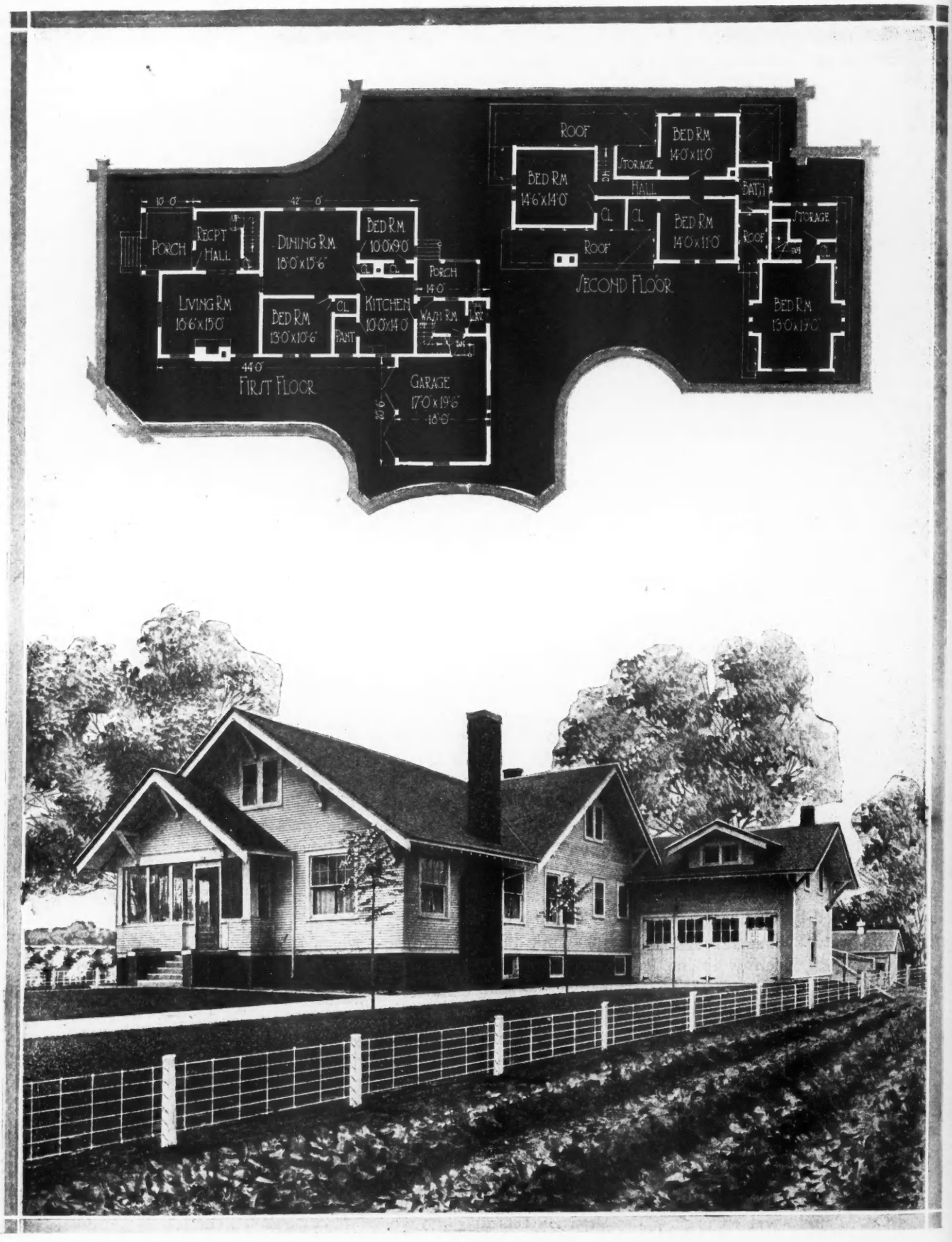
ONE of the greatest problems of the farmer who wants to have his home as modern as possible in every respect with running water, bathroom and laundry, is sewage disposal. A great step was made in farm home building when the old outhouse was displaced by a sanitary, convenient lavatory with running water. The introduction of the septic tank, the details of which every builder should know, has been the most instrumental factor in this development. It has revolutionized not only rural plumbing, but rural building. Today the bath is no longer the exception.

There are many forms and many varieties of septic tanks, but the fundamental principle is the same. They all tend to reduce the sewage to a liquid state by decomposition, brought about by action of bacteria, and then allow it to pass out thru drain tile into the sewage disposal bed, where it gradually seeps into the soil or is evaporated by the sun.

In the detail sheet on page 109 is shown a typical sewage disposal system which has been installed in connection with farm or suburban homes where city drainage pipes are not available. On the surface this may not seem to be the problem of the builder, but actually he is very vitally concerned. In the construction of the rural home he handles all details of construction and should be acquainted with the details of a suitable sewage disposal system.

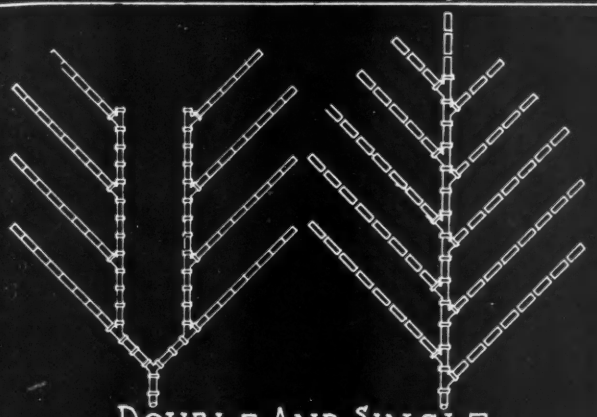
In this septic tank arrangement two tanks are built of concrete in the ground with iron manhole tops, air tight. The sewage passes from the bathroom into the drain pipe which leads into the first tank. Bacterial action here reduces the sewage to a liquid or watery state. From this chamber it passes by means of a siphon arrangement made by a short elbow of pipe into the second chamber. At the far corner of this chamber is an outlet in the floor known as an automatic siphon, which leads into the outlet to the disposal field. This siphon works automatically, only allowing so much liquid to pass out at a time so that the field will not receive too much fluid to be absorbed properly. An overflow pipe of drain tile is also connected with this chamber to prevent any overflow from getting out into the surrounding soil. The tile leading to the disposal field is generally 5 inches in diameter.

The disposal field is preferably a sloping site of sandy soil. Here the water from the septic tank is slowly absorbed into the soil and purified by the action of sun and air.

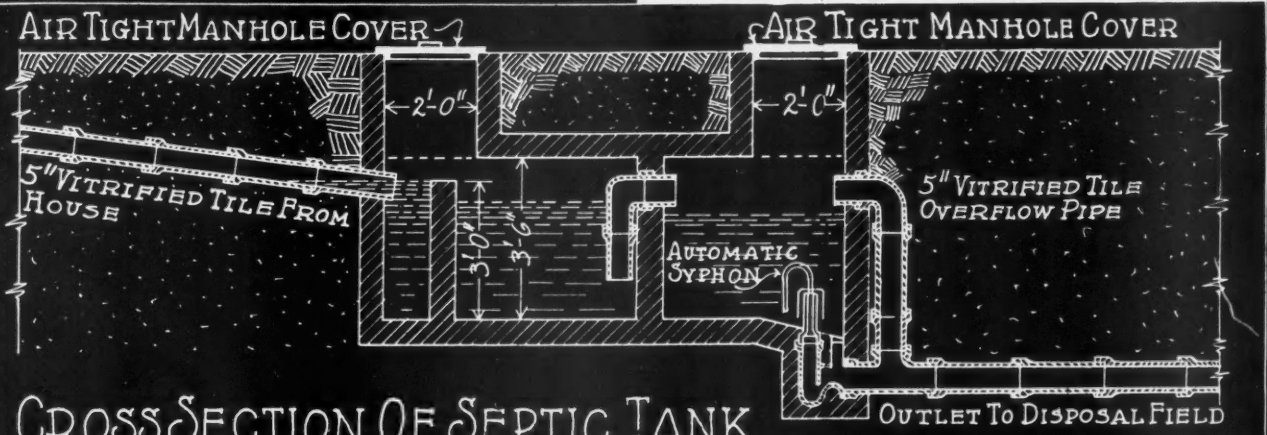


COMFORTABLE, CONVENIENT FARM HOME. This modern farm home reflects very clearly the progressive spirit of the farmer who owns it. He believes in installing the comforts and conveniences of the city in his home, such as electric light, running water and an up-to-date sanitary sewage disposal system of the type shown in detail on the opposite page. His farm buildings are thoroly modern, why not his home? This delightful little dwelling with brick foundation and frame exterior contains nine rooms with a wing for a garage adjoining the building. A bedroom for the hired man is above this garage. Built along rambling lines, it gives a feeling of spaciousness and welcome. A handy wash room for the men on the first floor and a storage room upstairs are two essential features of the farm home. There are six bedrooms in all. Size, 26 by 42 feet.

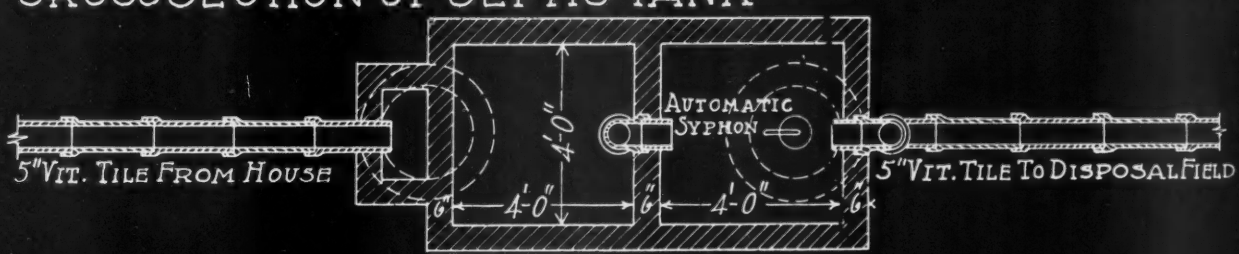
RECOMMENDED CONSTRUCTION



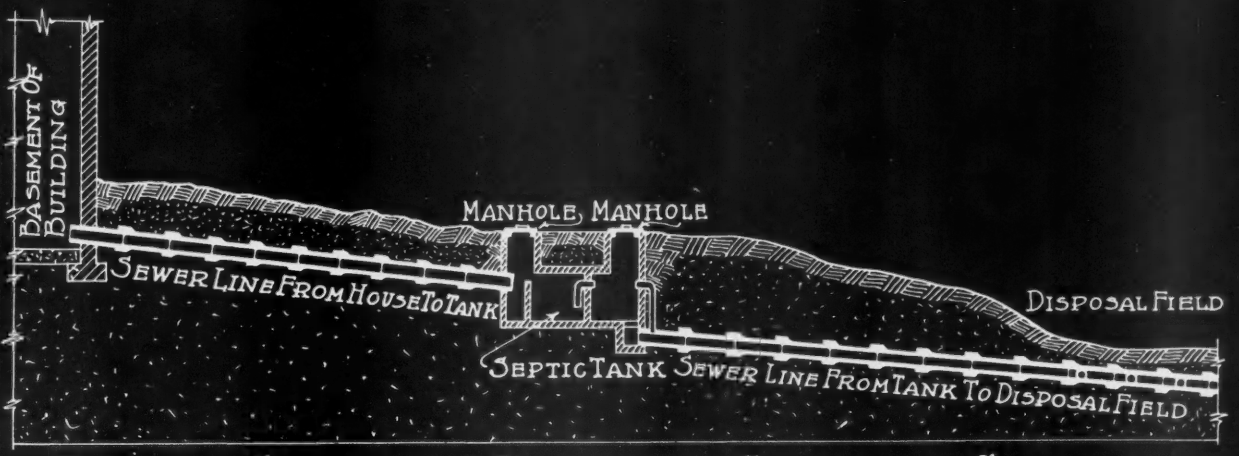
DOUBLE AND SINGLE
LIQUID DISTRIBUTING TILE



CROSS SECTION OF SEPTIC TANK



PLAN OF SEPTIC TANK



CROSS SECTION SHOWING SEWAGE SYSTEM

METHOD OF COUNTRY SEWAGE DISPOSAL

Ideal Home for the Family

EIGHT-ROOM STORY-AND-A-HALF HOUSE EMBODIES COMFORT, MODERN CONVENIENCE AND ATTRACTIVE APPEARANCE

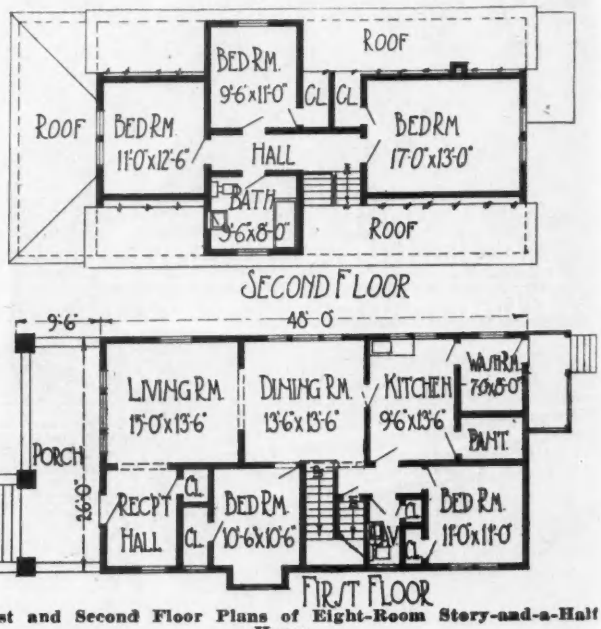
EIGHT room homes are growing scarcer every day, but that does not mean there is no demand for them. There are still a few families who require that much space altho, sad to relate, they are gradually becoming the unusual. For these families a home like the one shown here will be a welcome sight, a source of powerful appeal.

Built with an eye to charm, as well as comfort and room, it has a most pleasing exterior of frame and shingle siding with a rough-faced concrete block foundation and porch post bases. A large front porch extends the full width of the house, providing an excellent and comfortable retreat for the family on warm days and a playground for the children. The use of braces under the roof eaves is an artistic touch that helps.

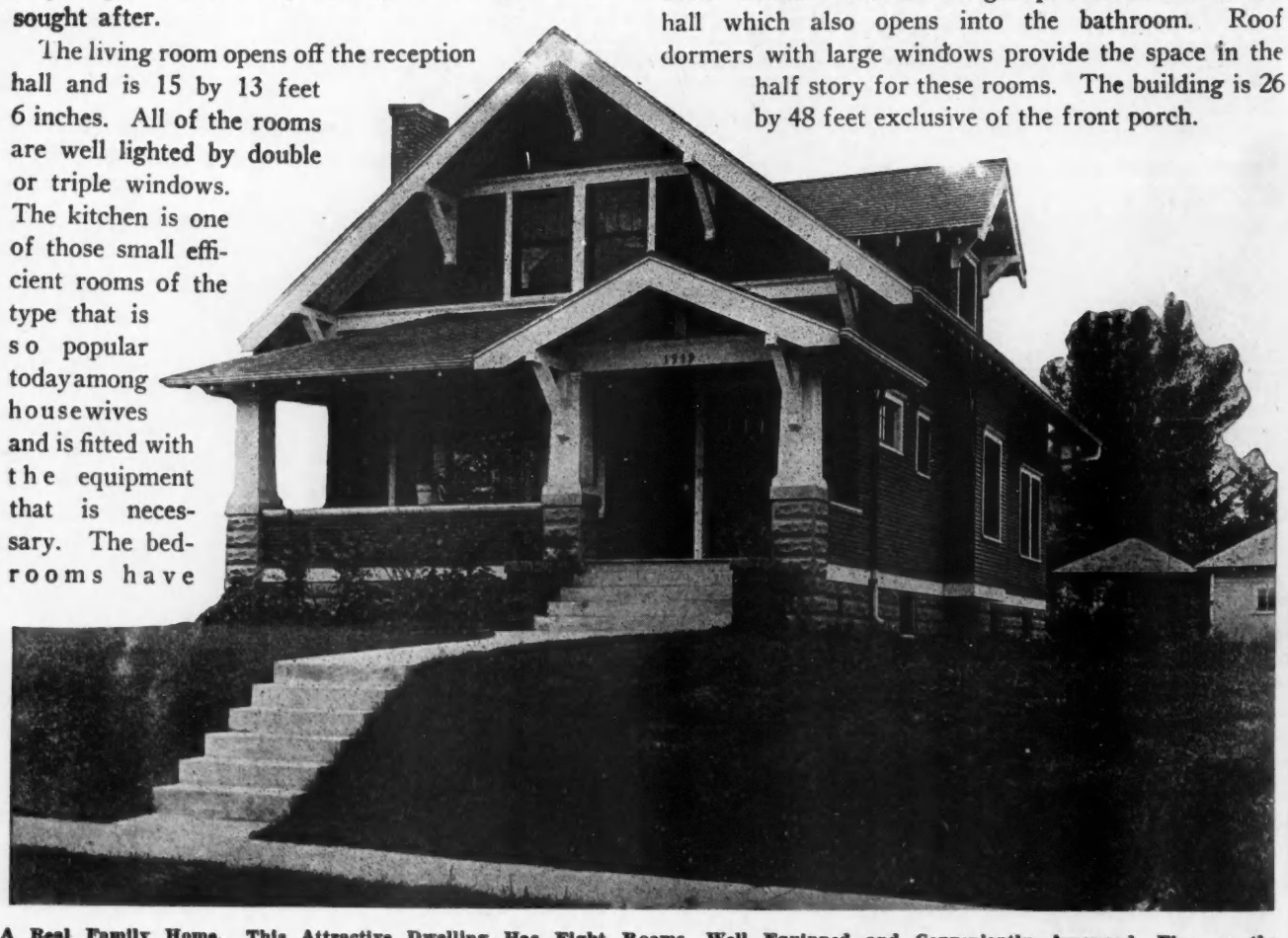
Five of the eight rooms are on the first floor. They are the living room, dining room, kitchen, and two bedrooms. A washroom, 7 by 8 feet, immediately adjacent to the kitchen, provides a very handy workroom for the housewife. Fitted with a washing machine and the other accessories of a modern home laundry it will help much towards reducing her work. Inasmuch as she has a large family the work factor is very important and any reduction is a goal to be sought after.

The living room opens off the reception hall and is 15 by 13 feet 6 inches. All of the rooms are well lighted by double or triple windows. The kitchen is one of those small efficient rooms of the type that is so popular today among housewives and is fitted with the equipment that is necessary. The bedrooms have ample closet facilitates while an extra lavatory is a convenience that is practical.

A glance at the upper floor plans shows three bedrooms of which one is especially large, being 17 by 13 feet. These bedrooms are grouped about the central hall which also opens into the bathroom. Roof dormers with large windows provide the space in the half story for these rooms. The building is 26 by 48 feet exclusive of the front porch.



First and Second Floor Plans of Eight-Room Story-and-a-Half House



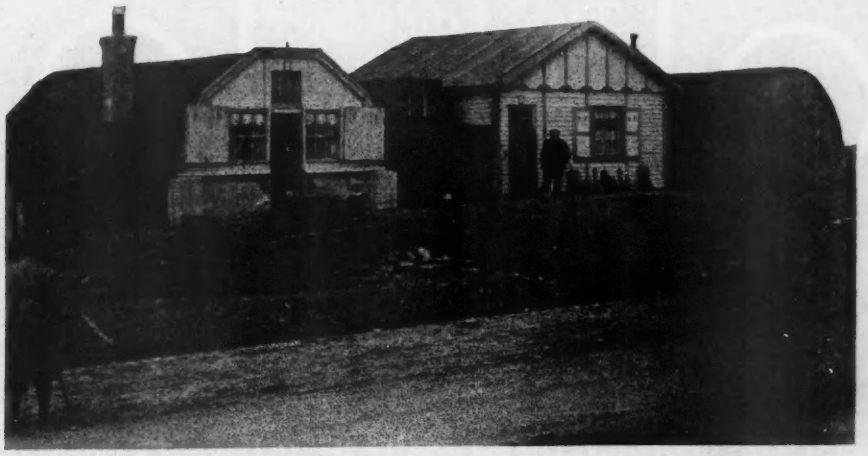
A Real Family Home. This Attractive Dwelling Has Eight Rooms, Well Equipped and Conveniently Arranged, Five on the Lower Floor and Three in the Half Story. It Is Frame and Shingle-Sided with a Rough-Faced Block Foundation

American Bungalows in the War Zone

NATIVES GETTING ACCUSTOMED TO FRAME STRUCTURES OF AMERICAN DESIGN

SCATTERED here and there thru the debris of former battle areas and along the narrow streets of what were once thriving towns and cities of France and Belgium, the tourist will find something in the way of a surprise not listed in the guide books. For the typical American bungalow has invaded the war zone. It stands out among the surrounding disorder and war wreckage as its own best advertisement for comfort, convenience and economy of time, labor and material in building.

Now that the inhabitants are reconciling themselves to the loss of their beloved pre-war homes of brick and stone, they are becoming enthusiastic over this type of modern American building. It was at the suggestion of the American Red Cross that the bungalow was used as the best and quickest way of solving temporarily the housing problems that confronted the governments of these countries. It is believed that the virtues of wooden houses are becoming generally recognized, and that the future will see them more extensively used.



Street of Bungalows in Flanders Showing American Builder Influence.

Large fortunes have been made in Warsaw in the past on flat and apartment investments. It is a city of apartment houses, practically all of brick with stucco dressing. Separate houses are almost unknown, except in the case of private residences of the very rich or the aristocracy, no matter what their dimensions may be. All sites are freehold, and loans and securities are so manipulated that it is possible, theoretically at least, to build without a cent of capital and realize a profit of two per cent on money by others.

Electric Lighted Farm Buildings

ELECTRIC LIGHTING PLANTS SPECIFIED BY BUILDERS TO MAKE FARM WORK MORE PLEASANT AND INCREASE GOOD WILL OF CLIENTS—DETAILS OF ELECTRICALLY LIGHTED BARN ON PAGE 112

A TURN of a switch in his bedroom—the yard and dairy barn is flooded with electric light. That is the convenience many farmers are demanding of contractors when giving the order for a new barn. If they happen to overlook this important item or are opposed to it because it is out of the beaten track, there is an excellent opportunity for the builder to advocate it. Results will soon satisfy his client.

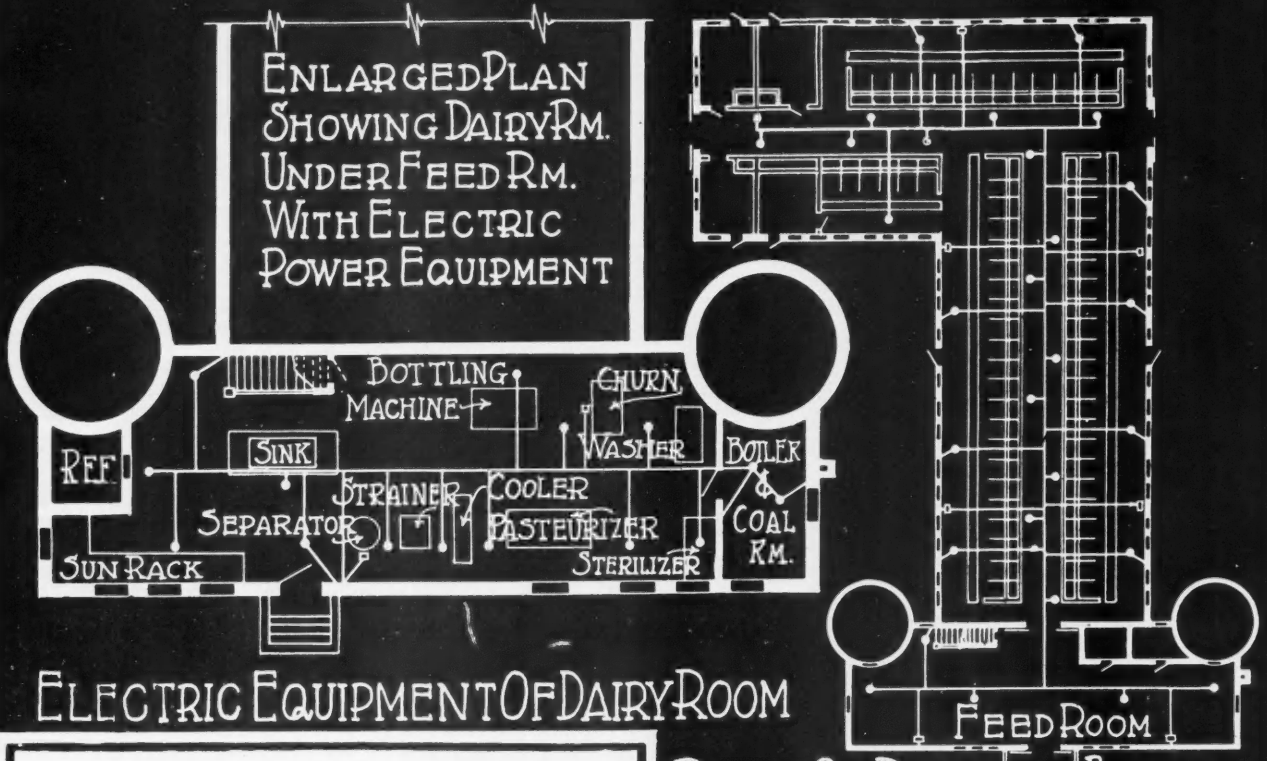
This electric light is made possible by the installation of an electric lighting system where the farm is not close to a regular power station. While furnishing power to light the home, it can light the surrounding yard and farm buildings as well. In the detail sheet on page 112, the floor plan of a modern dairy barn is shown with outlets for electric light and electrically operated machinery.

The importance of this light in the barn is especially emphasized during the dark, windy days of winter when the days are very short and feeding must be done after dark. Like many other time-worn appliances, the lantern has become a tradition, due in large measure to the active work of progressive farm building contractors, who are constantly in search of some new convenience that will lessen the work of their client and make the barn or home more efficient. Everyone will agree that comfort and convenience in the farm home is very desirable, why not in the farm buildings where most of the heavy work of the farmer is found?

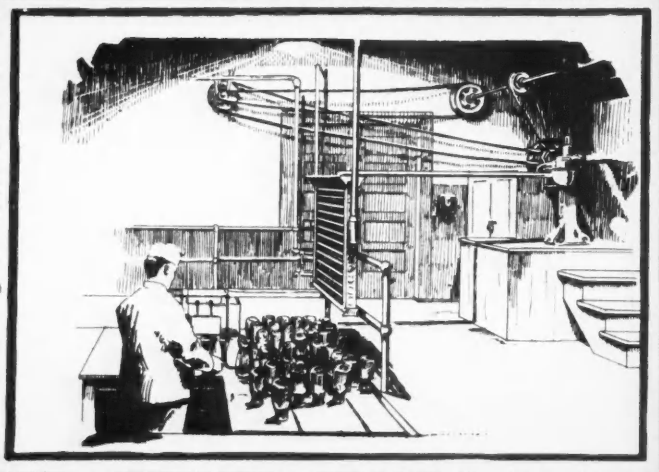
Many factors have been responsible for the present-day development of dairy barn construction and the striking outcome of it is the increased production of the animals. It has been proved that contented cows yield greater amounts of milk. What has been the cause of this contentment? Nothing more than well-ventilated, well-lighted dairy barns with modern stall and stanchion equipment. In an electrically lighted barn there are no dark corners where filth can accumulate to breed disease germs which eventually will affect the animals. In any kind of weather the light is there to facilitate the cleaning out of the barn. Moreover, another essential feature is the effect on the hired man.

Because the electric lighting plant is easily installed according to directions issued by the various manufacturers, many builders have taken up this work as a side line and find it a lucrative source of income. They have found that in many cases where they recommend the use of a lighting system it has helped their business substantially because of the satisfaction it gave their customers.

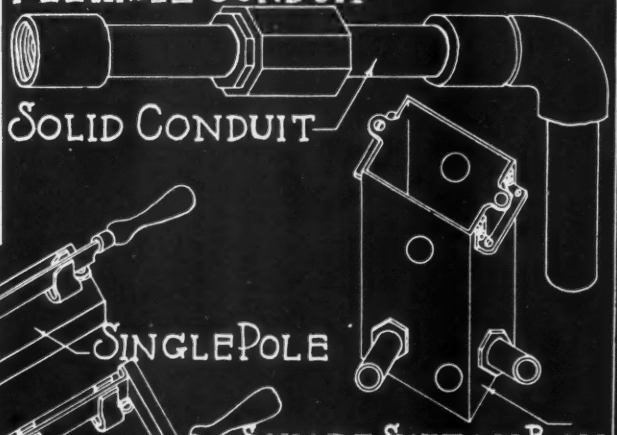
RECOMMENDED CONSTRUCTION

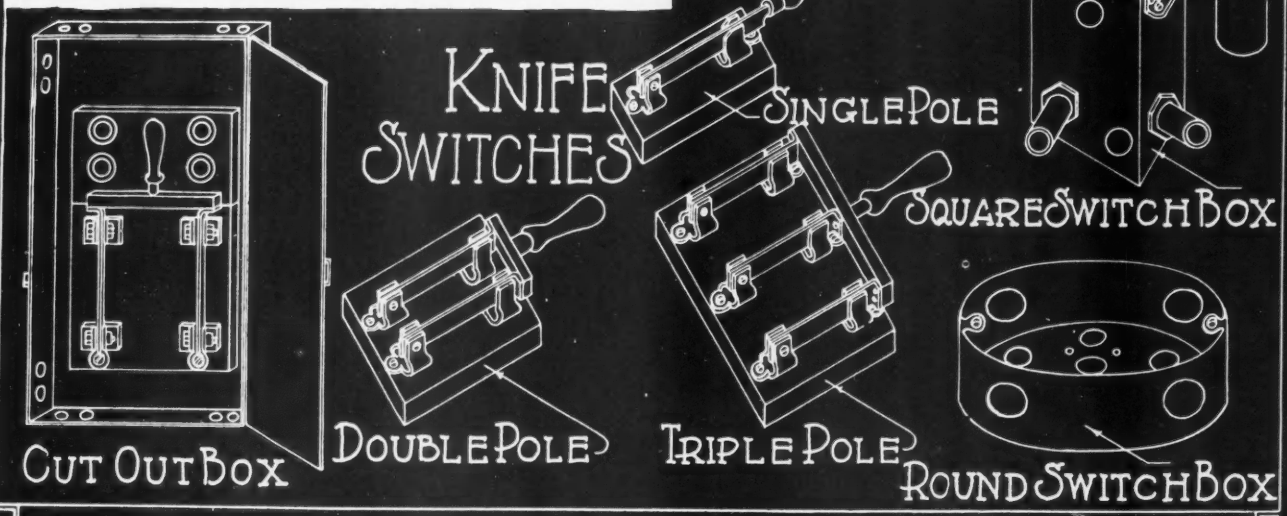


ELECTRIC EQUIPMENT OF DAIRY ROOM

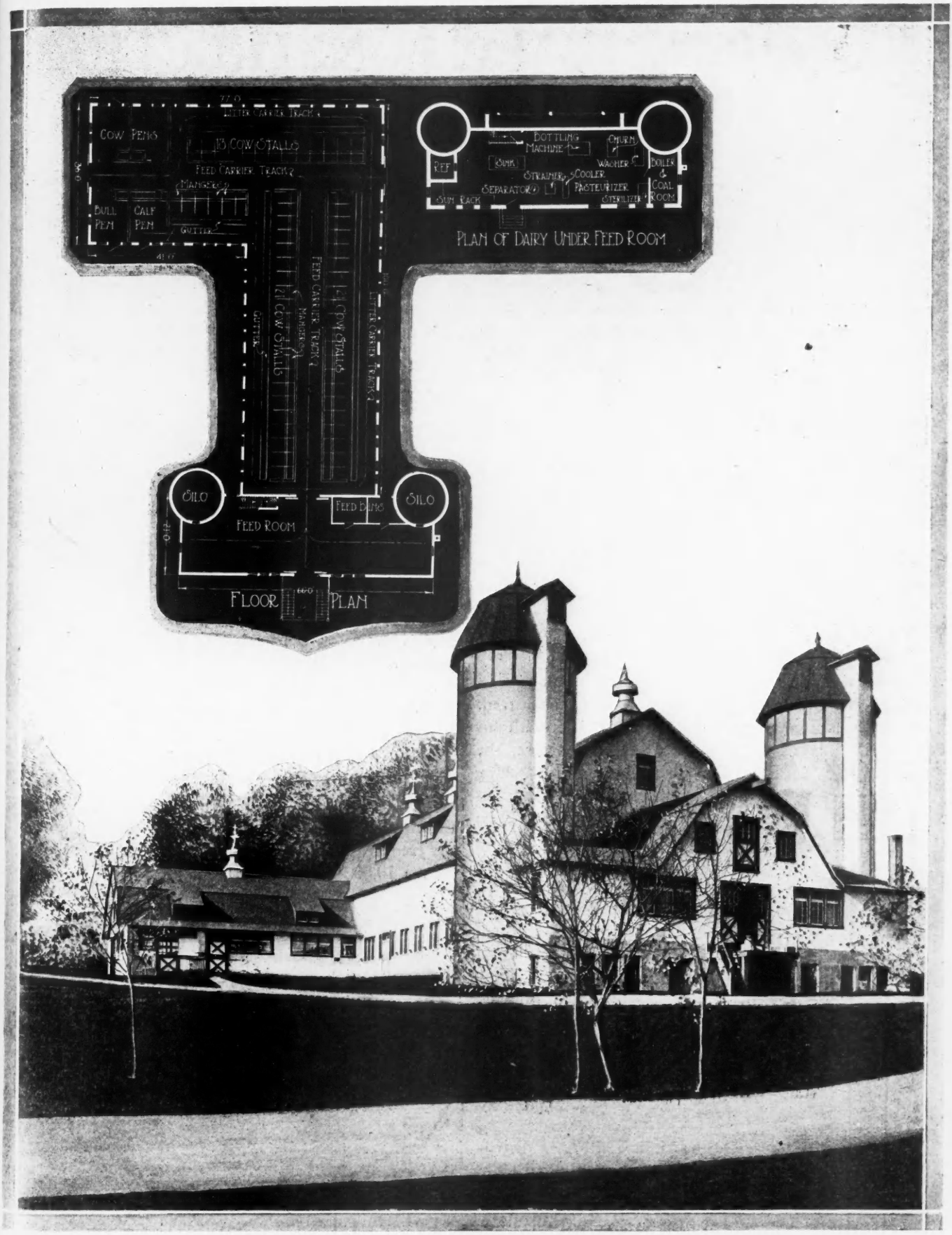


PLAN OF DAIRY BARN ELECTRICALLY EQUIPT





ELECTRIC EQUIPMENT OF FARM BUILDINGS



UNUSUALLY ATTRACTIVE AND EFFICIENT DAIRY BARN. Very seldom can you find such a satisfactory combination of utility and beauty in a farm barn. Care has been exercised in the construction of this structure down to the finest detail and the result is more than gratifying. Substantially built, attractive in exterior design, this dairy barn has been built to accommodate 55 cows with bull, calf and cow pens, not to mention feed room and bins, and two large silos. It is equipped with the latest types of sanitary stalls, stanchions, drinking cups, and labor-saving feed and litter carriers. Below the feed room is a complete milk room with the machinery needed to pasteurize, churn and cool the milk. It is a complete working unit. All doors are hung on tracks and easy moving rollers. Over-all dimensions are 121 by 77 feet.

DESIGN of SAFE CONSTRUCTION

By Charles W. Leigh

Associate Professor of Mechanics, Armour Institute of Technology

Bending Combined with Tension or Compression

ARTICLE VIII OF AN EXTENSIVE SERIES ON STRENGTH OF MATERIALS

IT often happens that a beam or structure is carrying a load producing direct tension or compression, and at the same time carrying a load that produces bending fibre stresses. Take as an example a vertical beam, A B, Fig. 1, fastened at B, and supporting a load of 1,000 pounds. This load causes uniform compressive fibre stresses in A B. If at the same time a horizontal pressure of 400 pounds acts at C, a bending moment is set up in the structure. This causes compression in the fibres of the beam on the side, C, and tension in the fibre on the side, D. The result is a compression on the side C equal to the sum of the two compressions and a stress on the side D equal to the difference of the tensile and compressive stresses. Whether the resultant stress on the side D is tension or compression depends upon which of the two original stresses is the greater.

Before taking up the solution of problems a graphical representation of forces will be considered. A force is represented by a straight line with an arrow head on the line, the head of the arrow being drawn in the direction in which the force acts. The length of the line depends on the unit of force chosen. Suppose the force is 1,000 pounds. If a convenient unit is a line ¼ of an inch long to represent 500 pounds, then a line ½ of an inch in length would stand for 1,000 pounds. Suppose that in Fig. 1 the beam is 4 by 4 inches. The fibre stress per square inch is

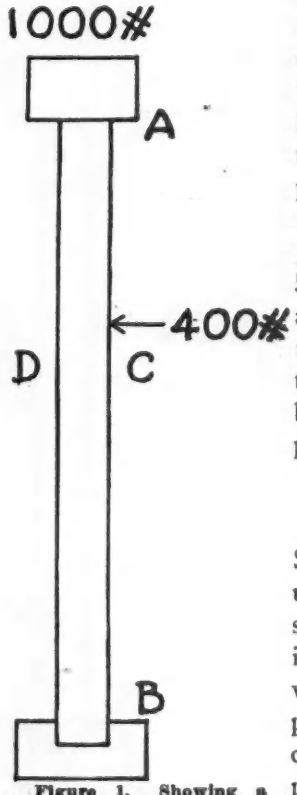


Figure 1. Showing a Post in Compression and Bending.

$$\frac{1,000}{4 \times 4} = 62.5 \text{ pounds.}$$

Since it is uniformly distributed over the entire area, the stress will be represented as in Fig. 2. The length of the vertical lines stands for 62.5 pounds. Since the stress is compression, the narrow head points down or toward the beam on which the force acts.

Now when a force produces bending moment, the maximum stress is the outer fibres, decreasing to zero at the neutral axis. These stresses may be shown as in Fig. 3. The stress at C is formed by adding D C and G H. That at D by subtracting E F from B A or B A from E F, depending on which is the greater numerically. If B A and E F are of equal length, the resultant stress is zero.

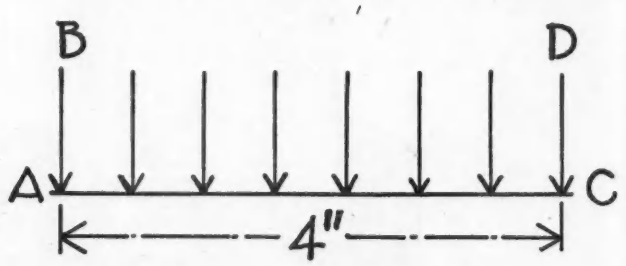


Figure 2. Representation of Uniformly Distributed Forces.

Suppose that the designer wishes to find the maximum fibre stress developed in a simple wooden beam 6 by 8 inches having a span of 8 feet, carrying a concentrated load of 1,500 pounds at the center, and an end compression load of 10,000 pounds, Fig. 4. Since the cross-section area of the beam is 48 square inches, the compressive fibre stress per square inch developed by the 10,000-pound load is

$$G_c = \frac{10,000}{48} = 208.3 \text{ pounds.}$$

This force is shown in Fig. 5, where E F represents the line C D of Fig. 4. For fibre stress due to 1,500 pounds we use the formula

$$\text{Bending moment} = \frac{P\,I}{e} \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

where p is the fibre stress, I the moment of inertia, and

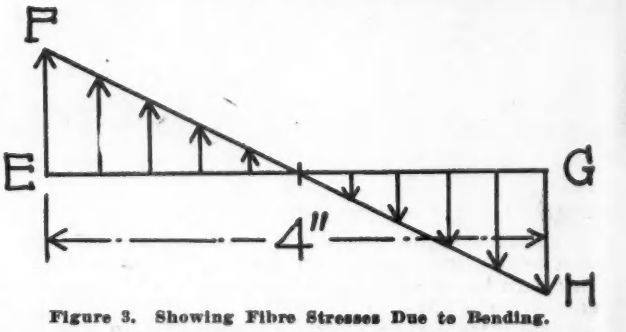


Figure 3. Showing Fibre Stresses Due to Bending.

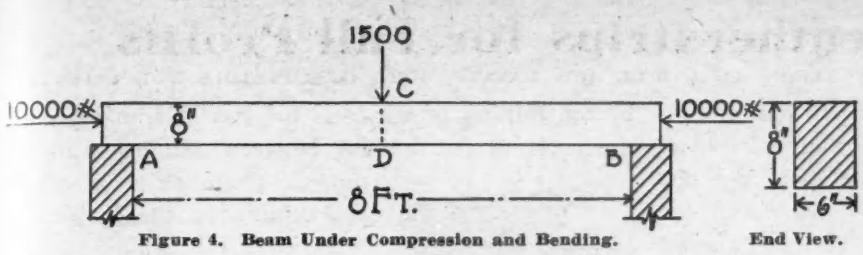


Figure 4. Beam Under Compression and Bending. End View.

e the distance from the neutral axis to the extreme outer fibre.

But bending moment $= \frac{1}{4}\,Wl = \frac{1,500 \times 8 \times 12}{4} =$ 36,000 inch pounds.

$$I = 1/12\ bh^3 = \frac{6 \times 8 \times 8 \times 8}{12} = 256$$

and e = 4 inches. Then

$$\frac{256}{4} P = 36,000$$

$$P = 562.5 \text{ pounds.}$$

This force is shown in Fig. 6 where E F represents C D of Fig. 4.

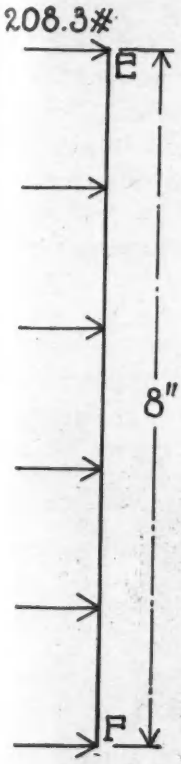


Figure 5. Compression Stresses.

Fig. 7 shows the combined fibre stresses acting along C D of Fig. 4. At E the resultant stress is the sum of the two stresses or 770.8 pounds. At F the stress is 562.5—208.3 = 354.2 pounds tension. Then the maximum fibre stress is 770.8 pounds and is the one that the designer must reckon with in selecting the kind of wood for the beam.

If in Formula 1 we let M stand for bending moment, and solve for p, the fibre stress

$$p = \frac{e\,M}{I}$$

Also $S_c = \frac{P}{A}$, where p is the total end load, A the area of the cross-sections, and s_c is the uniform fibre stress due to the compressive stress.

Then the maximum fibre stresses developed in the beam, if represented by f may be formed by means of the following formula:

$$f = S_c + p = \frac{P}{A} \pm \frac{M\,e}{I} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

If the end loads are compression forces, the plus sign will give the maximum compressive fibre stress for designing. The minus sign gives the fibre stress on the opposite side of the beam, which may be tension or compression. If $\frac{P}{A}$ is greater than $\frac{M\,e}{I}$ the resultant stress is compression. If $\frac{P}{A}$ is less than $\frac{M\,e}{I}$ the resultant stress is tension. In the case of a steel or wooden beam, not much attention need be paid to the latter stress. But with cast iron for which a safe working tensile stress is only 3,000 pounds per square inch, while the safe working compressive stress is 15,000 pounds per square inch, both fibre stresses must be carefully considered. For example, if $\frac{M\,e}{I} - \frac{P}{A}$ should exceed 3,000 pounds, altho the fibre stress is safe on the compressive side, the designer must select the beam to withstand the tension fibre stress, by decreasing the load or increasing the size of the beam.

In the case of brick work or stone walls no tensile strain is supposed to be thrown into the structure for safety. Consequently in this case $\frac{M\,e}{I}$ must never exceed $\frac{P}{A}$, because that would indicate a force that tends to open up the joints, especially toward the top of the structure, where the weight of the material is not sufficient to offset the tensile force.

If the problem is to find the beam for certain loading, when the allowable fibre stress is given, the solution of Formula (2) is quite complicated. However, the designer could handle the problem by the so-called "cut and try method"—that is, assume a certain sized beam, substitute the values in the right-hand side of Formula 2. This value should come as near f, a safe working stress, as possible, but never exceed it.

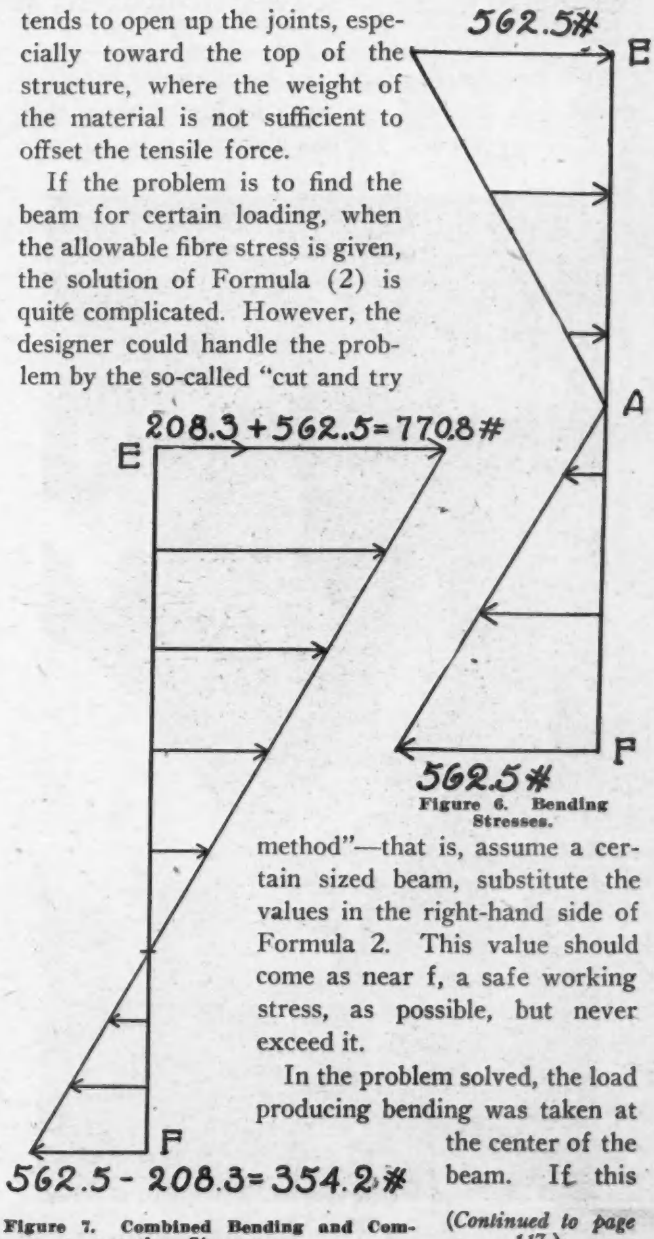


Figure 6. Bending Stresses.

Figure 7. Combined Bending and Compression Stresses.

In the problem solved, the load producing bending was taken at the center of the beam. If this

(Continued to page 117.)

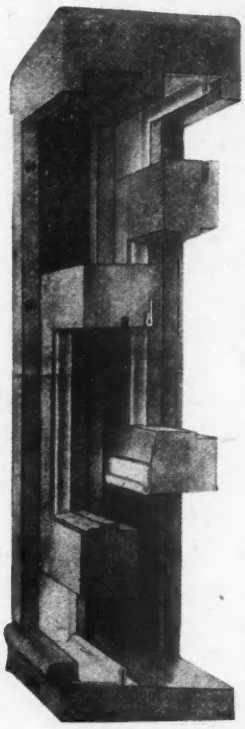
Installing Weatherstrips for Fall Profits

IMPORTANT WORK OF BUILDER IN SAVING COAL BILL AND MAKING HOME COMFORTABLE FOR CLIENTS

"A WIND blowing fifteen miles per hour allows about 30 cubic feet of air per minute to enter thru the cracks between the sash and the frame." This astonishing fact was discovered by actual test. Naturally with all this air comes dust, dirt, and cold.

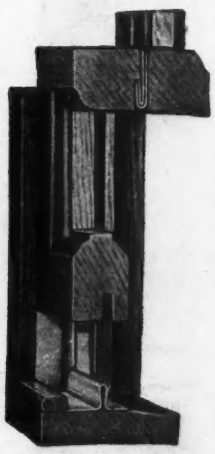
In the cold weather this means a continual draft of cold air. In view of the present shortage of coal and the high prices this condition in a new or old home is a very serious one and involves a considerable expense. Many builders who are aware of these conditions have found that by installing metal weatherstrips in the house, when it is being built, they can add substantially to its comfort. In the case of houses already built the same job has actually reduced the coal bill. During the war the war conservation board estimated that the total output of weatherstrip installed during 1918 actually resulted in a saving of 40,000 cars of coal.

With the coming of fall the home owner begins to ponder over the best way to make his home as comfortable as possible. He has been not only bothered by the rattling of windows but has been annoyed by drafts from the opening between the sash and the frames. There is an excellent opportunity for the builder to increase his fall profits and use some of his spare time installing weatherstrips in homes of this kind. Home owners will look favorably on any means that will help them cut their coal bills. Many contractors are now handling and installing weatherstrips in connection with their regular business, because the heavy weatherstrip season comes in the fall and winter when building is usually slack.



Showing Metal Weatherstrip Installation on Window.

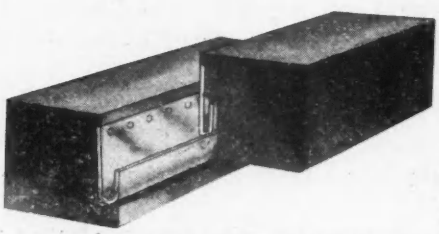
The installation of weatherstrip which is manufactured in a variety of designs, both wood and metal, is comparatively simple, especially for the carpenter who is well versed in hanging windows and doors and fitting sash. With the instructions furnished by the various companies, he will find it an easy task.



A Half-section Window Equipped with Weatherstrip, Showing Single Rib Strip on Head and Sill and Interlocking Strip.

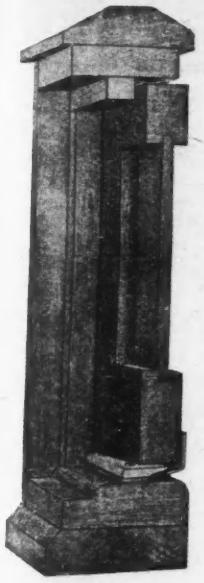
Briefly the method followed is this: The meeting rails are carefully examined to see if they are too thick to let both sash hug the parting strip at both sides. If they are, they must be dressed off. Then plow a groove in the edge of the meeting rail of the upper sash three-eighths of an inch from the bottom edge. Plane off whatever is necessary above the groove to bring the sash close against the parting strip. Plane the same thickness off the bottom edge of the meeting rail of the lower sash, using a ½-inch rabbet plane. This gives a rabbeted meeting rail providing a better contact on the meeting-rail strip.

Installing Parting Bead in Weatherstrip Job. Builders Find This Work a Source of Extra Income in the Fall.



Interlocking Meeting Rail Strip, Showing How Weatherstrip Makes Window Airtight and Prevents Drafts.

The two inside stops are then removed, sash cords loosened, and pulled up. When both parting beads are removed, fit the upper sash

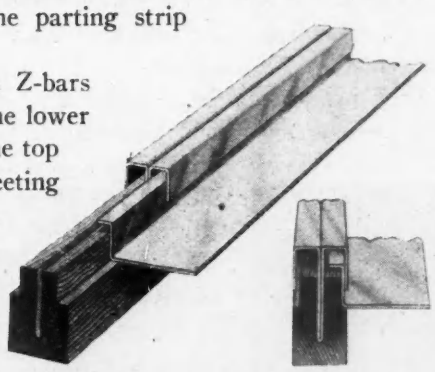


Installation of Weatherstrip on Door Showing How It Is Made Airtight and Draught-Proof

first, and then the lower sash to get the sides of the sash parallel with the adjoining jambs and with not less than a sixteenth inch play on each side. Care must be taken that the meeting rails are not thrown out of line with each other or the weatherstrip may not be air-tight. Do not let the top sash get out of position while fitting the meeting rail.

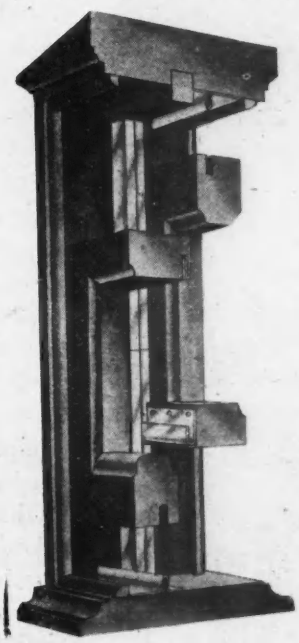
The edges of the sash next to the parting rails must be straight. If necessary they should be planed with a ½-inch rabbet plane. The grooves in the top of the upper sash and the bottom sash are now cut. Then the meeting-rail strip and Z-bars are nailed to the edge of the sash. The proper adjustment of the Z-bars is the most important part of the job. There should be just enough room between these bars and the sash for the flange of the parting strip to slide easily.

Next nail the Z-bars to the edge of the lower sash, fitting at the top edge of the meeting rail and cut it off at the bottom. Hang the upper sash, nailing the cord thru the knot with a four-penny nail. Fit the lower parting beads so that they are even, likewise the upper, then remove them and lay them so you will know where they belong. The strips are now ready to be installed. The parting strips are pushed into their slots and the window moved up and down to see if there is any hitch.



Parting Bead and Z-Bar Interlocked. It Is Important That There be Perfect Contact

Fasten the parting strip with a ¾-inch screw set well in the wood so that the Z-bars on the upper sash will pass over it freely. Then push in the sill and head strips. Nail both sides of the strip, two inches apart. This is a brief description of how the job is done. There are several precautions which must be observed which are covered fully in the directions and blueprints issued by each manufacturer.



Cross Section of Double Window Showing Weatherstrip in Position. Note Parting Rail or Bead, Z-Bar and Meeting Rail

In this season when work is beginning to slack up a little there is an excellent opportunity for the builder to keep up his mid-season profits by doing this kind of work.

✣

QUARTER-SAWED stock requires from 25 to 35 per cent more time to dry than plain sawed. Drying to 10 or 14 per cent moisture content takes from one-fourth to one-third less time than drying to 6 per cent.

✣

Design of Safe Construction

(*Continued from page 115.*)

force is not at the center, first calculate the end reactions. Then either reaction multiplied by its distance in inches from the load will give the value of M to substitute in equation (2).

In the case of a post or column fastened at one end with a load on the top, and a side force causing bending, we have a cantilever effect. The maximum fibre stresses occur at the bottom, and M is simply the side force multiplied by its distance in inches from the bottom of the column or strut.

Take, for example, a wooden post 8 inches square and 6 feet high, which carries a load of 12,800 pounds and is pushed to the right by a force of 300 pounds applied 2 feet from the top, Fig. 8, to find the fibre stresses in A B and C D.

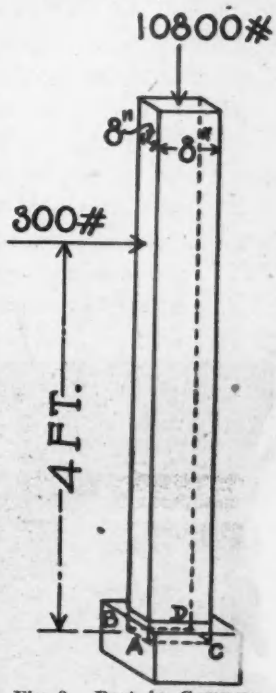


Fig 8. Post in Compression and Bending

Now P = 10,800 pounds, A = 8 × 8 = 64 inches, e = 4 inches.

$$I = 1/12\, bh^3 = \frac{8 \times 8 \times 8 \times 8}{12} = 341.3$$

The moment M at the bottom, where the danger section is located, is:

$$M = 300 \times 4 \times 12 = 14{,}400 \text{ inch pounds.}$$

Substituting in Formula (2):

$$f = \frac{12{,}800}{64} \pm \frac{14{,}400 \times 4}{341.3} = 200 \pm 169, \text{ approx.}$$

The 300-pound force causes tension in A B and compression in C D.

Then f = 200 + 169 = 369 compression in C D.

Also, f = 200 — 169 = 31 compression in A B.

A very familiar problem of the type just considered is the pressure of water against a dam. This force tends to overturn the dam, but is prevented by the weight of the material principally.

Domestic Heating Appliances

ELECTRICITY HAS BECOME THE SOURCE OF MANY CONVENIENT LABOR-SAVING DEVICES

By Milton Henoch

A FEW years ago the term "saturation point" was used almost nationally by the average central station manager to express his opinions of the condition of further demand for heating appliances on the lines of the electric company.

Today he sees the fallacy of such judgment, and he has been forced to realize that "saturation point" is a myth—that no such condition can exist.

In further proof of this truth the manufacturer today is forced to refuse further orders for electrical devices, and in many cases is asking the customer's consent to cancel his orders, due to the phenomenal demand, and the inability of the factories to produce more than one quarter of the orders placed.

Manufacturing facilities are being increased double and treble to handle this demand.

This condition is not confined to any one manufacturer, nor any one locality, but is general all over the United States.

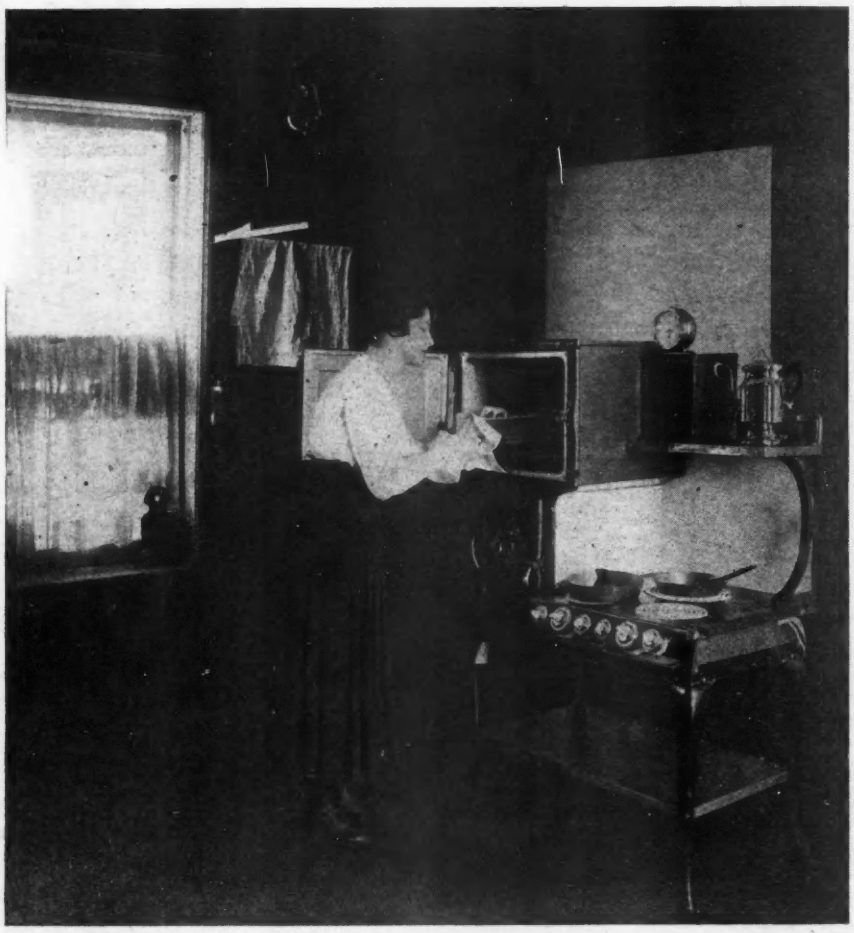
Even the growth of the export business of electrical devices is keeping pace with the growth at home, and it is a universal condition.

It is interesting to note that what would appear to be a stimulant for an increase in the demand for domestic heating appliances, has been entirely ignored, and it is but recently that the National Electric Light Association and the Society for Electrical Development are advocating convenient receptacles to further encourage the use of electrical heating devices in the home.

In going back to the inception of the electrical heat applied to household devices, we find the iron to be the first—to say the least, this was a lucky application, which no doubt brought about demands for further applications to portable domestic devices.

Due to the working conditions of the cast iron sad irons, it became a weekly drudge which women abhorred. The thought of ironing day was a dread especially during the summer months. The electric iron converted this drudge of work into a task of pleasure.

The hours of constant trips from the hot stove to the ironing board, the over heated kitchen, sticky irons, hot handles and the scorching of goods was changed as by magic to a pleasurable task—a restful occupation—in a cool kitchen or on the porch—the saving of steps—a cool handle—an evenly heated ironing surface that did not stick to starched goods—smooth and improved work with the iron at the proper temperature.



Electricity Has Become King of the Kitchen. This Happy Housewife Is Taking a Batch of Something Good Out of the Oven of an Electric Range. In Many New Buildings This Type of Range Is Being Installed.

When first designed, the electric iron was simply a piece of metal shaped like the old "sad iron," with no attempt by the designing engineer for efficiency.

At the present time, efficiency is the first consideration and competitive construction is based on efficiency rather than appearance or mechanical construction.

The public generally was "sold" on the service of this practical device, and then followed other applications of electric heat. The toaster-stove, percolators, radiant toasters, chafing dishes, grills, disc stoves, curling irons, etc., until now the list is almost inexhaustible.

Improvements in design and efficiencies have always been the watchwords of the manufacturers, and in consequence the making of household devices has increased in leaps and bounds, and today thousands of families are enjoying the conveniences, comforts and the

cleanliness of domestic appliances.

The production has also entered the industrial field. Many bakeries are doing electrical baking—and many hotels have electric kitchens.

Electrical heating devices are classed as necessities, and the complete electrification of the home is crowding itself upon us.

The field for the distribution of electric ware was originally confined to some central station, but now includes all electrical contractor-dealers, department stores, hardware stores, drug stores and jewelers.

The introduction of the 32-volt farm lighting system has also opened a new field, which has caused the manufacturer to work out a 32-volt line of domestic appliances. It has already been shown that the farmer is fully as progressive as the residents in cities and towns.

As a Source of Heat Easily and Safely Handled, Electricity Is Unexcelled. The Device Shown Here Is Taking the Place of the Old Fashioned Water Bottle. Builders Are Now Making Provision for These Appliances by Providing Plenty of Outlets in the Walls.

In the United States the farm population is even greater than that of the cities, which indicates what a wonderful demand awaits the manufacturer and the dealer.

To indicate in a way the sales possibilities which have not been anticipated it is well to separate the rooms in what could be considered a typical home.

The porch, fitted for summer—besides requiring the porch light for night illumination, should have a receptacle for portable reading lamp, electric fan and an illuminated house number which can be seen after dark.

Reception hall—a floor or base board receptacle for vacuum cleaner and stand lamp.

The parlor—receptacle for vacuum cleaner, portable lamp, piano player or victrola and fan.

Living room or library—receptacle for vacuum cleaner, fan, reading lamp and cozy glow heater.

Dining room—receptacle to which can be plugged in connections to a dining table which is wired to three outles on the edge below the table top—convenient to plug in table stove, toaster stove, radiant toaster, coffee percolator, tea samovar or chafing dish.

This scheme of wiring is also desirable to serving table or tea cart, so foods can be prepared and kept hot for serving—baseboard receptacle for fan, cozy glow heater, vacuum cleaner.

Den—receptacle for reading lamp, cigar lighter, heater and vacuum cleaner.

Kitchen—receptacle for electric iron, dish washer, utility motor, exhaust fan, water heater, salad mixer, heater—electric range and electric refrigerator.

Bedrooms—receptacle for fan, heating pad, baby milk warmer, curling iron, traveling iron, vibrator or violet ray machine.

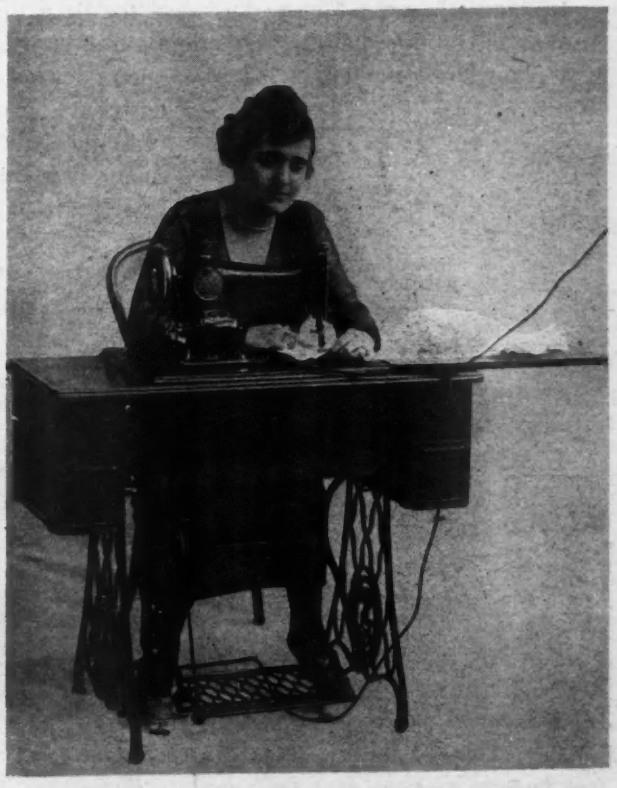
Bathroom—receptacle for fan, heater, curling iron, hair dryer, massage vibrator.

Sewing room—receptacle for fan, heater, traveling iron, sewing machine motor.

Laundry—receptacle for washing machine, electric iron and mangle.

Garage—receptacle for cozy glow, radiator heater, vulcanizers and buffing motor.

The foregoing, altho incomplete, gives one an idea how inadequate the present plans for house-wiring are made up.



Another Reason for an Extra Receptacle in the Baseboard of the Living or Dining Room. This Outlet Will Provide Power for a Sewing Machine, Vacuum Cleaner and Many Other Appliances.

CONCRETE CONSTRUCTION

Surface Finish of Concrete Block

ARTICLE IV OF A SERIES ON RECOMMENDED PRACTICE FOR CONCRETE BLOCK AND TILE CONSTRUCTION, BASED ON REPORT OF THE COMMITTEE ON CONCRETE BLOCK, NATIONAL CONFERENCE ON CONCRETE HOUSE CONSTRUCTION

By A. J. R. Curtis

THE future success of concrete building block and tile depends primarily on the appearance of the units or on that of the walls constructed with them. Progress made in the introduction of concrete block and tile in the past has been limited to a considerable extent by the fact that the appearance of these units has been given insufficient consideration.

Two classes of surface finish will be considered for block and tile, divided according to use:

1. Surfaces suitable for foundations below grade, exterior walls to be covered with portland cement stucco, interior walls and partitions.

2. Surfaces suitable for exterior walls above grade, of exposed surface block.

Block and tile included in the first class require surfaces suitable for the application of cement mortar, stucco or plaster coats. In such case these units are made of one mixture thruout, and have no mortar or other special aggregation facing. The surface finish on the block shown in Figure 1 is ideal for these purposes and is produced at the very minimum of expense, in a plain-faced mold box. In the manufacture of concrete structural tile, where the thinner walls limit the size of the aggregates to particles of relatively small size, the corrugated surface shown in Figure 2 has become practically standard.

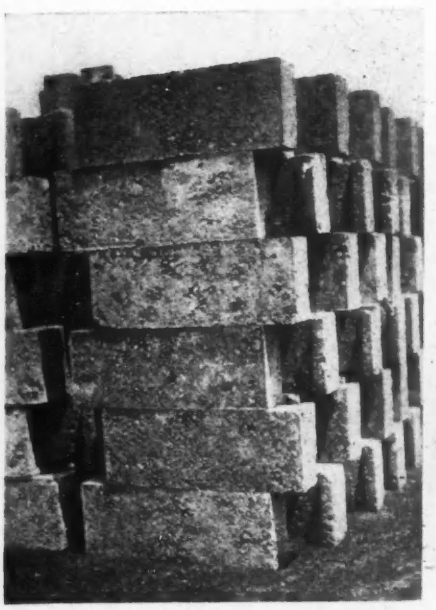


Figure 1. Pile of Stucco or Foundation Block, Showing the Uniformly Rough Texture Produced by Using a Standard Concrete Mixture Thruout the Block Without Facing.

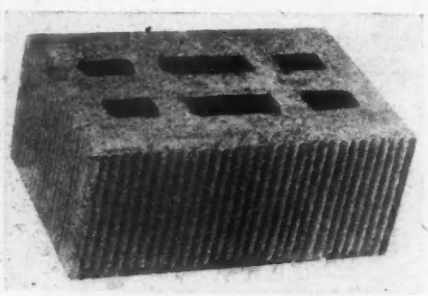


Figure 2. Concrete Structural Tile Made of Aggregate Under One-half Inch in Size, Showing Corrugated Surfaces Provided to Produce a Strong Bond with Stucco or Plaster.

Finishing the Foundation Wall

If the block or tile are of good quality, carefully laid up with cement mortar covering the entire face and surfaces of the previously moistened block, the wall should be watertight so far as ordinary ground water pressures are concerned. However, it is good practice to coat the exterior of basement walls as an additional precaution, using either a recognized asphaltic coating applied hot to walls absolutely dry, or a rich portland cement mortar applied to walls previously well dampened. The surface of the block or tile which will form the interior surface of the wall should be finished correspondingly, in order to take an interior coat of portland cement mortar if desired.

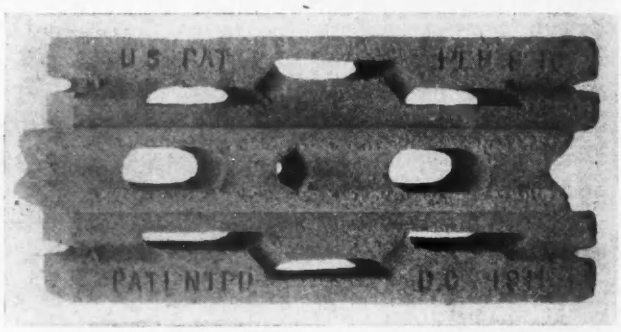


Figure 3. Type of Multiple Air Space Concrete Tile Extensively Used as a Base for Stucco in Residence Construction.

Stucco and Plaster Directly on Block

Concrete block and tile of common rough texture such as shown in Figures 1 and 2 make a thoroly satisfactory, and in fact most desirable surfaces on which to apply either portland cement stucco or plaster, because these surfaces are uniform in absorption and texture, neutral in color and produce an absolutely rigid backing, relieving the stucco or plaster of all structural strains. The block faces are true to plane and absolutely rectangular, producing flat surfaces requiring a minimum of stucco or plaster material.

In applying stucco to block or tile the joints should be raked out or cut back at least even with the

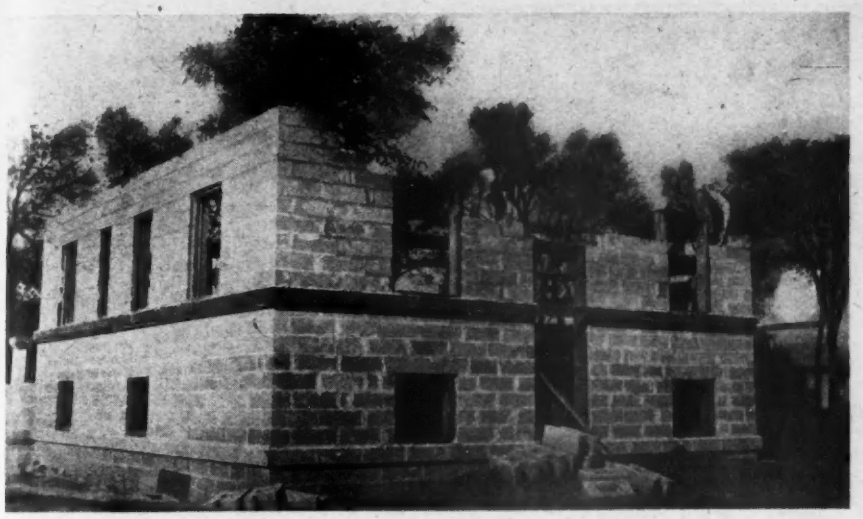


Figure 4. Dwelling of Concrete Stucco or Foundation Block to the Surface of Which Portland Cement Stucco will Be Applied.

face of the wall; no projections should be left. The wall should be brushed free from all loose particles and wet down and should be moist at the time the stucco is applied; if dry, the moisture is absorbed from the stucco and a weak finish is the result; if too wet, a film of water prevents a proper bond.

Ordinary wall plaster is applied to the block in the same manner as stucco, but in both stucco and plaster operations it is possible to omit any intermediate courses, applying the finish coat directly to the scratch coat. In reducing the number of stucco coats applied it becomes increasingly important that only rich, dense, watertight stucco mixtures be used.

Plaster may be applied directly to concrete block or tile for all interior and partition walls regardless of the thickness or type of block used. For outside walls, interior plaster coats should be applied to lath supported on furring, the same as would be necessary with other approved forms of masonry construction.

Exterior Walls of Exposed Surface Block

For all exterior finished walls of buildings where stucco is not to be used, the concrete block should be subjected to some effective surface treatment to expose the aggregates in order to add to the beauty and variety of the surface. Concrete block should not be molded to simulate other forms of masonry such as pitched or hewn stone. The "rock face" design, so commonly used, seldom if ever presents the best architectural possibilities when used above the foundation. Flat, smooth, special aggregate surfaces, as shown in Figures 7 and 8, have been found the most satisfactory under a wide variety of conditions, combining the beauty and the watertight qualities of natural stone with the ease of cleaning of terra cotta. The aggregates available for facing concrete block offer a wide choice and variation both in texture and color. Among the aggregates that may be used are screenings from different colored marbles and granites, river and lake gravel, feldspar, micaspar crystals and colored sands. In order to produce a greater color contrast than is obtained with colored aggregates and gray portland cement, white portland cement may be used. Mineral coloring pigment is sometimes mixed with the cement but it is not to be recommended for general use because of the difficulty in obtaining surfaces comparable in appearance and durability with other types of finish.

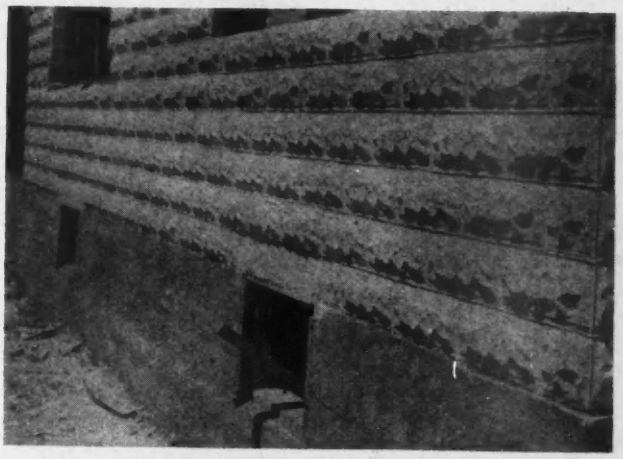


Figure 6. This Wall Presents a Monotonous and Generally Unsatisfactory Appearance Due to the Use of Rock Face Design. The Monotony Is Accentuated by the Use of Only One Rock Face Pattern. These Blocks Are of Splendid Quality Well Laid Up, and if Properly Surfaced Would Have Produced a Substantial and Pleasing Effect.

Figure 5. Applying Portland Cement Stucco to Concrete Block Surface. The Dash Coat Is Applied Directly to the Base Coat.

Methods by which block facing is applied vary with the system of manufacture, the mixture being placed in the mold box in a slightly different manner in the case of side-face, upface, downface pressure

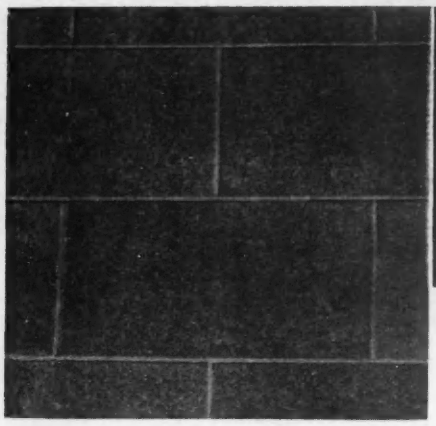


Figure 7. Block Surface Produced with Facing of Cement, White Marble, Gray and Black Granite and Mica, Washed with Fog Nozzle on Removal from Mold.

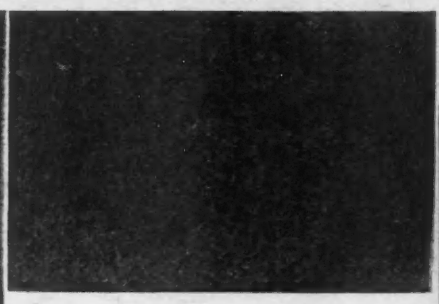


Figure 8. Block Texture Produced by a Facing Mixture of Marble, Quartz, Granite and Mica Spar and White Portland Cement, Acid Washed as Explained in the Accompanying Article.

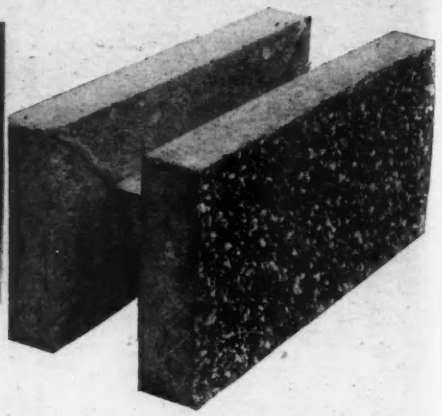


Figure 9. Block Surface Produced in a Down-face Wet Mold by Covering the Mold Face with Glue, on Which Is Sprinkled the Facing, a Mixture of Colored Marble, Quartz and Granite. The Glue Holds the Facing Particles in Position.

and wet mold equipment. The thickness of the facing varies from a minimum of ⅜ or ½ inch for block made in tamped or pressure machinery to the total thickness of the block, for wet cast sand-mold block. Various common methods of exposing the aggregate are described in the following paragraphs:

Brushing and Scrubbing—Brushing and scrubbing should be done while the concrete is still green, but sufficiently hardened so that particles of the aggregate will not be removed. For this purpose water and a brush with stiff fiber or steel wire bristles are used; when the concrete has become too hard, a little muriatic acid should be added to the water. Any surface treated with acid must afterwards be thoroly washed with clean water to entirely remove the acid.

Acid Wash—The surface may be washed with dilute muriatic acid, applied with an ordinary scrubbing brush and thoroly washed with clean water when the etching effect of the acid has proceeded as far as desired. This finish is shown in Figure 8. In some instances it has been found more economical to dip the unit in an acid bath instead of applying the acid by hand. The strength of the solution will depend upon the age and hardness of the concrete but generally varies from three to six parts of water to one part of acid for scrubbing purposes and as strong as one to one for dipping.

Water Spraying—This is done with a fine vapor spray or "fog nozzle" as soon as the product is made.

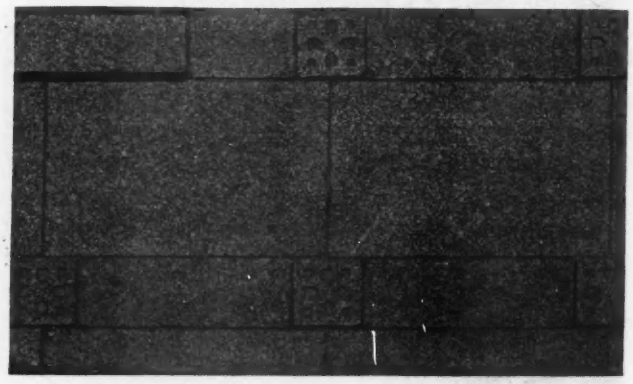


Figure 11. Concrete Block with Surface Produced by Grinding to Expose the Aggregate Texture.

The outlet holes should be about the size of a pin and a water pressure of at least 40 pounds is required to give good results. The washing must be carefully done so as not to wash away the facing material. Spraying is necessarily confined to products removed from the molds as soon as made. The block shown in Figure 7 were surface treated by this method.

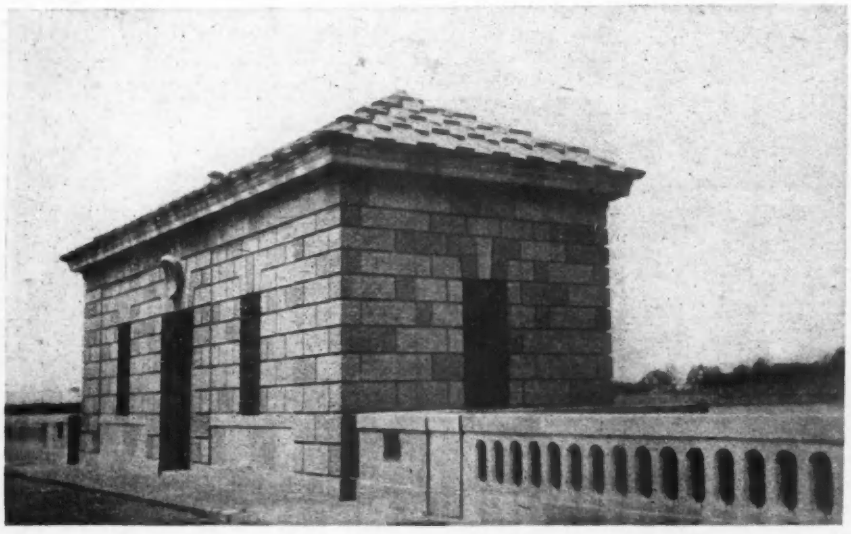


Figure 10. Concrete Block Structure of Hand Tooled Blocks, Made with Marble and Granite Aggregates. The Surface Texture Is Unusually Attractive.

Tooling—Block may be tooled by methods similar to those used in treating natural stone, the process consisting of chipping or roughening the surface with a bush-hammer, chisel, or other hand or power tool. When colored aggregates are used in the concrete, a pleasing and beautiful texture may be secured as shown in building illustrated in Figure 10. This method, however, is considerably more expensive than the various methods of surface finish previously mentioned.

For tooling, the concrete should be thoroly hardened and at least three weeks old.

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Builders Use Gasoline Saw Rigs to Increase Profits

By J. W. Wooley

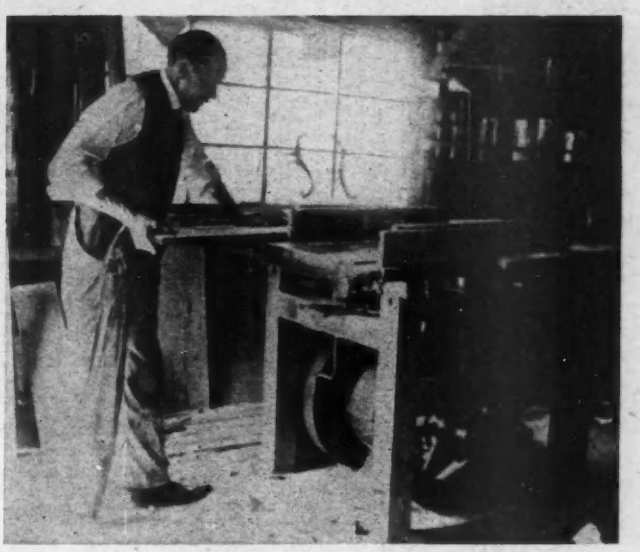
THE small contractor, builder and even the journeyman carpenter, who at one time would have considered an investment of $400 to $500 as beyond his means, is beginning to realize that they are losing money by not purchasing a saw rig. Many small builders whose work is confined to cottages, barns, garages, and even small interior work, such as putting in doors, window frames and base boards, find that the time, labor and material which the machine saves them soon pays for the entire outfit.

A conservative estimate of the life of a first-class gasoline saw rig is six years. Assuming a cost of $440, this means only a yearly investment of $73. Figuring repairs at $25 and interest on the money invested in this outfit at $31, the complete cost per year is only about $120.

Adding another $73 for depreciation, the total yearly cost is less than $200, including a sinking fund that will enable the contractor to pay cash for a new outfit when the old one wears out. Many contractors have used rigs steadily for nine or ten years without needing any but the most minor repairs.

An outfit will save the time of at least two men. This means a saving of $16 a day. Assuming two gallons of gasoline, at 30 cents a gallon, are consumed in a day, the net saving amounts to $15.40 a day. So in thirteen working days the total yearly cost of a machine, together with the sinking fund for a new outfit, is made up. The balance of the year it operates at a very handsome profit.

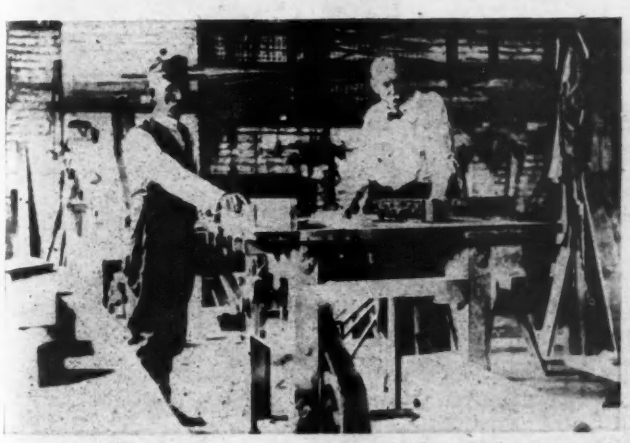
A first-class gasoline saw rig with its attachments will perform the following operations: Joints, grinds, mitres, sands, rabbets, tenons, bores, bevels, rip saws, cross cuts, band saws, dadoes and mortises.



This Builder Is Using His Spare Time to Advantage Making Screen and Storm Doors.

Practically all hand sawing is eliminated from every building job. Rafters, framing, step risers, casings, mantle heads, veranda rails, window sash and trim can be turned out in just as satisfactory manner with fewer men and in less than half the time. Many carpenters who put in their usual eight hours working for a contractor have a saw rig in their barn or shed at home, on which they make screens and storm doors in their spare time, evenings, Sundays and Saturday afternoons.

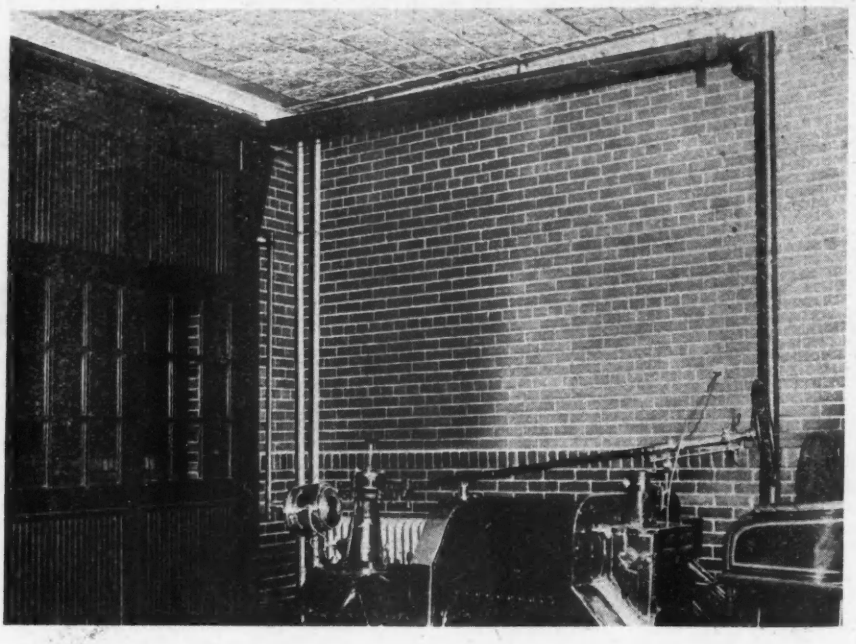
One Machine of the Type Shown Here Will Perform Many Operations, Such as Jointing, Grinding, Mitreing, Rabbeting and and Dadoing. Many Lumber Dealers Are Installing Saw Rigs in Their Yards.



Many Carpenters, Builders and Contractors Have Found the Saw Rig a Valuable Assistant in Their Work Shop. One of These Outfits, it Is Estimated, Will Save the Time of Two Men.

A contractor no longer has to depend upon the planing mill when he has his own saw rig. All the mill-work profits become his own and, more than this, he is saving the delay which often holds up big jobs, due to late delivery of materials from the planing mill. Most saw rigs are highly portable and can be moved on skids from one job to another. In winter they may be set up at home for making up odds and ends of lumber.

Lumber dealers, even those with small yards, are installing saw rigs, which they use in the shed or move from one lumber pile to another. Odd lots of all descriptions can in this way be made into saleable lumber.



When the Fire Chief of Pueblo, Colo., Was Confronted with a Station Too Short for Swinging Doors He Installed Right Angle Doors and Solved His Problem. They Are Ten Feet Wide. Notice How Close the Truck Is to the Door.

Right Angle Door Solves Fire Station Problem

WHEN Chief Christy of the Pueblo fire department backed his engine into the new fire house designed to house it, he found that the building was constructed three feet too short to allow the use of swinging doors. The doors with which the new engine house was furnished did not operate in the space between the truck and the front of the building, and the proximity of the door jamb to the side wall precluded the use of the ordinary straight sliding type of door.

Mr. Christy presented this doorway problem to some hardware experts who suggested corner sliding doors to swing around the corner against the side wall, inside the building, without interfering with the truck.

The equipment was so successful that a delegation from the fire board of Denver was sent to Pueblo to inspect it after the board had heard a description of the equipment given by Mr. Christy. The Colorado Springs fire department have also inspected the doorway and the La Junta fire department, who are erecting a new building for their No. 3 engine, intend to send a committee to inspect the Pueblo doorway.

The doorway is automatically opened by counter weights when the latch is released by pulling a cord from the seat of the fire truck. The counter weights suspend from one end of the cable attached at the top corner of the door, as shown in the picture, and running over a pulley fastened at the side wall. The weights run up and down in a vertical pipe, also shown in the picture, and rest on packing in the bottom of the pipe when the door is in open position. A 6-inch removable section of this pipe is provided at its base so that any possible difficulty in connection with the weights may be conveniently and quickly rectified by taking out the section of pipe, which is accomplished simply by unscrewing a couple of unions.

Chief Christy says: "The opening is 20 feet wide and is closed by two 10-foot corner doors. There is no pier in the middle. You can see in the picture how close the truck is to the door. I use a ⅜-inch cable to pull 22 pounds of weights.

"I have a 21-foot opening on another station and a 12-foot swinging door on another, all very heavy plate glass doors. They are, as you see from the picture, extremely simple in operation and the doors are under no strain, swinging free from the two points."

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Mixer Discharges Batch in Ten Seconds

WHEN engaged in construction work one of the important results the builder is after is speed. All his machinery is keyed up to the fastest pitch in order to cut down the working hours as much as possible. In this work the concrete mixer is a very vital cog, the faster it works, the faster the job is done.

The essential feature of the mixer shown here is its speed, both for mixing and discharge. On a recent job it discharged a batch of fairly dry 1-2-4 mix using 1½-inch rock in ten seconds.

The capacity of the machine is 6 cubic feet of unmixed cement, stone, gravel, or sand or 4 cubic feet of mixed concrete. Operated by a kerosene, coal oil or gasoline engine, which is mounted on the truck and protected by an iron frame, this mixer has a large sized drum 37½ inches in diameter and 28 inches wide, fitted with six buckets and six mixing blades.

Three types of hoppers are used in connection with the mixer, depending on the nature of the work; a barrow hopper, a batch hopper of 3 cubic feet capacity and a power loading hopper with 7 cubic feet capacity.

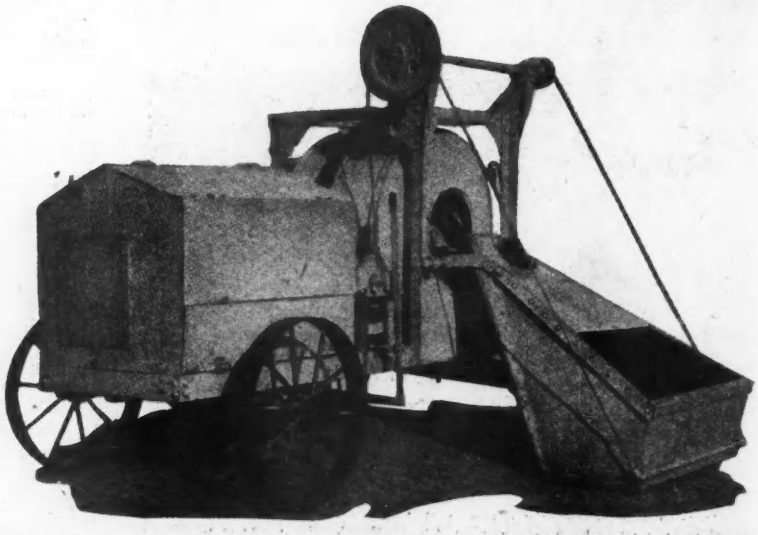
✣

Hooping Concrete Stave Coal Pockets

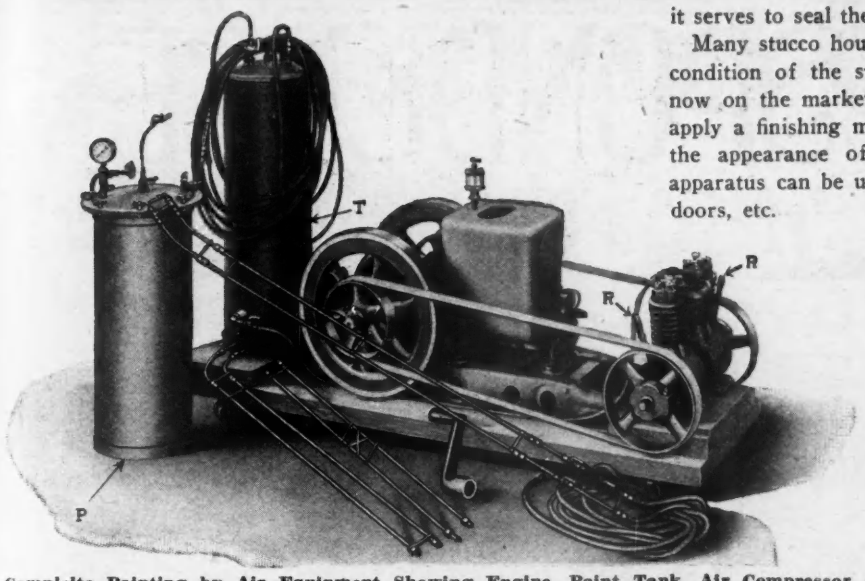
The National Cement Stave Silo Association supplies the following information as to hooping stave coal pockets as follows:

Size and Spacing of Hoops for Concrete Stave Coal Pockets—This Table is for Round Rods with Rolled Threads

Dist. from. Top in ft.	12 ft. Diam.	14 ft. Diam.	16 ft. Diam.	18 ft. Diam.
0–10	9/16″–15″ ctrs.	9/16″–15″ ctrs.	9/16″–15″ ctrs.	9/16″–15″ ctrs.
10–20	9/16″–15″ ctrs.	9/16″–15″ ctrs.	9/16″–15″ ctrs.	9/16″–10″ ctrs.
20–30	9/16″–15″ ctrs.	9/16″–15″ ctrs.	9/16″–10″ ctrs.	9/16″–10″ ctrs.
30–40	9/16″–15″ ctrs.	9/16″–15″ ctrs.	9/16″–10″ ctrs.	9/16″–10″ ctrs.
40–50	9/16″–10″ ctrs.	9/16″–10″ ctrs.	9/16″–10″ ctrs.	9/16″–10″ ctrs.
50–60	9/16″–10″ ctrs.	9/16″–10″ ctrs.	9/16″–10″ ctrs.	9/16″–10″ ctrs.



Mixer Which Discharges Batch in Ten Seconds. It Is Built for Size and Speed and Has a Capacity of 7 cu. ft.



Complelte Painting by Air Equipment Showing Engine, Paint Tank, Air Compressor, Rubber Hosing and Gun Sections

Painting by Air

"THERE is an advantage in being known as a 'Nut' on some subject," said the Man from the Lumber Yard, "and I am on the subject of painting by air."

The machine he had in mind is a fish-rod sort of apparatus that can be used for house painting, waterproofing, and stucco work. The length of this apparatus can be extended as desired by adding sections of the type shown in one of the illustrations. Each section is interchangeable with each other and sections are fastened together with ground joint unions, no gaskets are used. One side carries the paint, the other the compressed air generated by an engine. The advantage of a paint-gun apparatus is its economy from a labor standpoint.

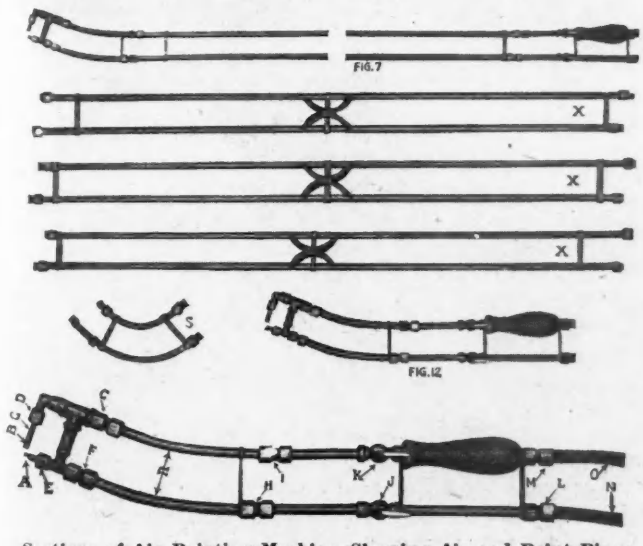
In repairing felt or gravel roofs the gun can be used to blow off dirt and dust before applying the paint. When painting interiors, after the ceiling has been finished, section after section can be removed until only the head is left. With the head, the workman can paint from the baseboard up to a height of three feet above his head.

Waterproofing is an effective way of preserving concrete work and the material can be applied very efficiently by means of a paint gun. Unfinished walls are often damp. Applying waterproofing with a brush over this rough surface is not as effective because cracks and crevices are not filled. The air gun fills all these. Similarly in painting brick walls it serves to seal the surface and prolong the life of the brick.

Many stucco houses are unsightly because of the splotched condition of the surface. With the various air equipments now on the market it would be only a short day's work to apply a finishing material to the stucco and greatly improve the appearance of the exterior of the house. This air apparatus can be used by the home-owner for painting sash, doors, etc.

This paint gun apparatus has eliminated the use of scaffolding or ladders, as additional sections will reach corners which in hand painting would require these methods. In factories, warehouses and other buildings of this nature where scaffolding is dangerous or impossible because of moving machinery or stored goods, the air-painting apparatus can be used without interfering with the regular work. Where there is an extensive job of fence painting the complete equipment except the gun should be carried in a wagon that can keep pace with the workman. This machine will not handle whitewash or cold-water paint which has a heavy sediment settling quickly in the bottom of the container.

Applying Paint on a Roof. By Adding Sections Scaffolds and Ladders Can be Eliminated in the Painting Job. This Machine Will Apply Waterproofing Material.



Sections of Air Painting Machine, Showing Air and Paint Pipes. The Sketch at the Bottom of the Picture Shows the Gun for Use in Applying Material on Nearby Work

Surprise Party for a Burglar

COLONIAL houses are quite the vogue now. One of the features of them is the window sash with six small panes of glass. The window catch is usually placed just above the middle light on the upper edge of the lower sash and the lower edge of the upper sash.

Some burglars' favorite method of breaking into a house is to cut a little semi-circle, with glass cutter, in the window light just above or just below the catch, give the cut-out piece a little tap and it drops, leaving a hole thru which the finger is inserted to throw off the catch.

There is a very simple and practical way of handing a burglar a great surprise if he tries this method of breaking in. It is to use two panes of safety glass in each window from which the catch could be reached.

This so-called "safety" glass was designed primarily for automobile windshields and windows. Instead of a single sheet of ordinary plate glass, it consists of two sheets of fine glass welded together by pyroxylin plastic sheet between them. Thus, there are three layers—glass, transparent sheeting and glass—welded to form a single unit, resilient, impenetrable, non-shattering.

Even when struck a heavy blow, as with a hammer, for instance, the resilient central sheet remains practically intact, and holds the glass on either side of it firmly. The glass cracks, but no hole is made thru which a burglar could extend his hand.

You Are Requested and Urged to Make Free Use of These Columns for the Discusison of All Questions of Interest to the Building Industry

Wall Plaster Rips Off After Eight Months

To the Editor: Charleston, Mo.

I have a house finished with hard wall plaster, plaster paris white coat, and after eight months it has begun to rip off in small pieces. There are other jobs here doing the same way and none of the plasterers seem to know the cause or how long they will continue to rip.

Can you give us any information on this?

JAMES L. BYRD.

✣

Advertisers—Add This Name to List

To the Editor: Berea, Ohib.

I am starting in the surveying and platting work for myself and expect to work into general contracting as soon as possible. I will be glad to be on any of your advertisers' mailing lists.

FRED HENDERSHOT.

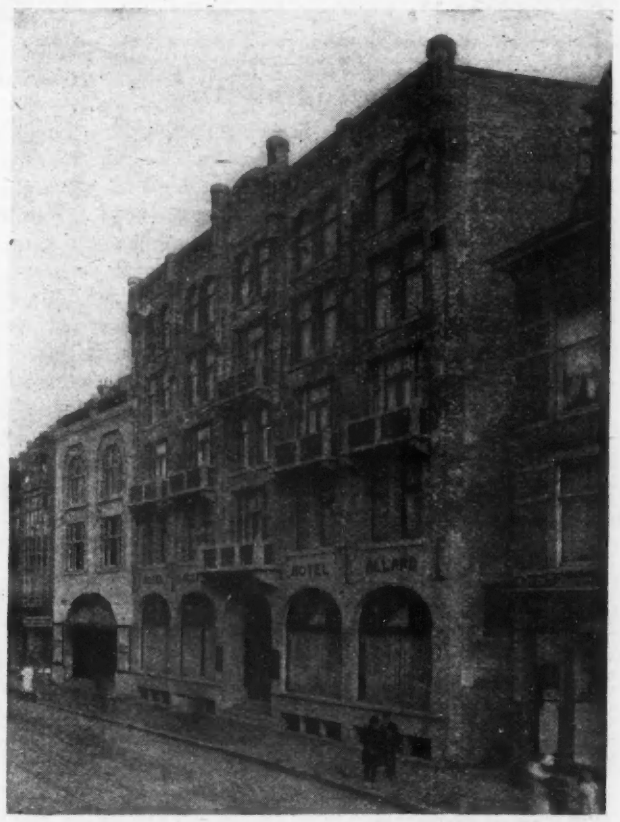
✣

Holland Builder Has New Method of Concrete Construction

To the Editor: Rotterdam, Holland.

I am an architect and have made a specialty of concrete buildings for many years in Rotterdam. The pictures which I have enclosed give some idea of the kind of work I have been doing over here. This hotel was built during the war and is modern in every respect.

Lobby of Hotel Allard. Mr. Vermaas Writes That He Is Interested in Labor-Saving Devices of all Kinds That Will Make Construction More Economical.



Hotel Allard, Rotterdam, Holland, Designed and Built by P. J. Vermaas, Enthusiastic Reader of the American Builder. He Is a Specialist in Concrete Construction.

I firmly believe that in the United States as well as in my country the main topic of the day is: How to build houses quickly at less cost and with less labor. Working along these lines I have perfected a system of constructing concrete buildings which I believe will interest many American contractors, builders and concrete machinery concerns. I would like to get in touch with some concrete machine manufacturer who is interested in new labor-saving machinery.

P. J. VERMAAS.

✣

How to Make Adobe Brick

To the Editor: Los Angeles, Calif.

In looking over one of the local papers out here, I ran across the enclosed clipping. I think this will be of interest to Brother David F. Stokes, as he asked about adobe brick in the July number:

THE STANLEY WORKS

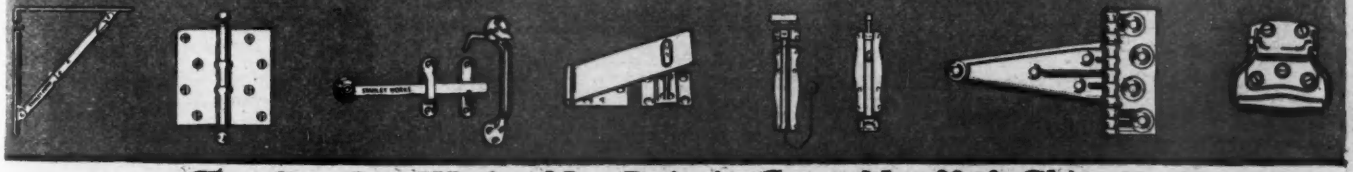
With the first chill of winter your customers will look to their storm windows

Suggest to them the real comfort of having storm windows hung on dependable hangers and fasteners; Hardware that is void of rattles and noise; Hardware that is easy for you or them to apply.

Storm Windows correctly hung are not a luxury but a positive necessity in the winter. Have your customers prepare before the season, install The Stanley Storm Sash Hardware now.

A book (A10) shows other styles of fasteners and hangers

THE STANLEY WORKS PRODUCTS



The Stanley Works-New Britain, Conn., New York, Chicago.

"Carry enough of the mixture to the mold, which has previously been swabbed with a sopping wet cloth, and pack and knead until a dense mass is formed. Keep sprinkling a little water on the top of the clay as you do this until the mass is of a thick jelly-like consistency, then carefully remove the mold, swab out again and repeat the process.

"Let the bricks lie flat on the ground for three or four days, then turn them all up on edge and clean the bottom side of dirt or weeds that have clung to them with a heavy trowel. Let the brick stand on edge for from seven to ten days, and if the weather is warm and sunny they ought to be thoroly cured and ready to use. In the winter it will take sometimes at least 40 days to cure the brick."

H. J. Ackerman.

✣

Manufacturers—This Sounds Good

To the Editor: Harbin, China.

I want to enter in business communication with American manufacturers and dealers and therefore ask you to recommend my firm in the line of goods mentioned below:

Retail and wholesale stoneware, glass ware, plate and cut glass, household goods and miscellaneous hardware, cutlery, plated ware, tools and heavy hardware, nails, wire and wire products, sanitary appliances, builders' hardware, electrical supplies and construction tools, heating devices, wire and cable, brass goods, engineers' supplies, pipe fittings, pipe iron and steel, and automobiles.

References: American Consul in Harbin; American Foreign Banking Corp., Harbin; Shanghai & Honkong Banking Corp., Harbin; Russo-Asiatic Bank Corp., Harbin.

I have the oldest retail and wholesale store in Harbin.

S. F. Skoblin.

12 Konnaia Street, Harbin, China.

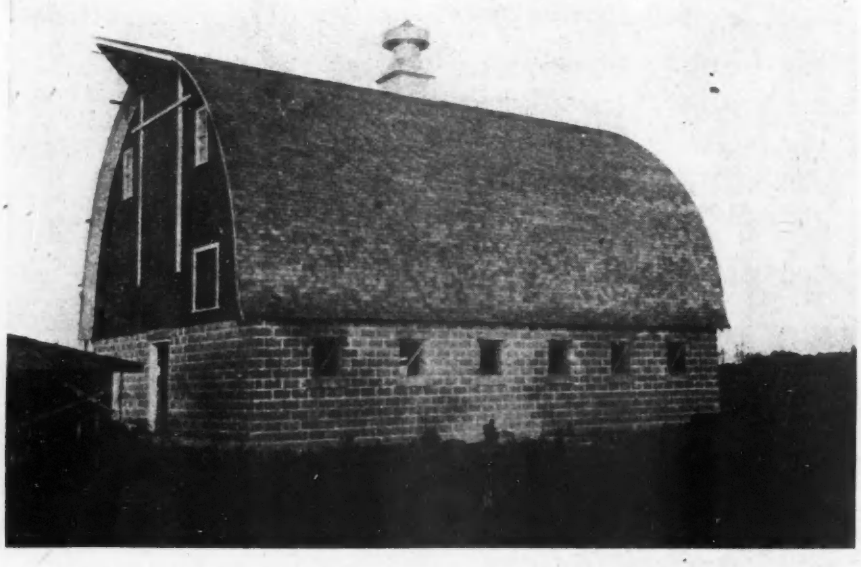
✣

American Builder Aids Builder in Barn Work

To the Editor: Twin Valley, Minn.

I enclose a snapshot of a barn which is a new type in this neighborhood. This barn is constructed on the Aaby farm near Twin Valley, Minn.

The American Builder was very educational to me in this method of construction. I would rather build this type than the gambrel roof. I have a Parks B. B. portable saw rig which I find a great labor-saver. O. Kallerud.



Mr. O. Kallerud, Builder at Twin Valley, Minn., Erected This Barn Along Lines Suggested in the American Builder. It Is a New Type in That Locality.

Why Does Vegetable Cellar Sweat?

To the Editor: Ipswich, Mass.

I am building a vegetable cellar 14 by 26 feet inside measure, side walls 8 feet high, stone top arched with cement 2-foot rise. I am seeking information about ventilation. I have visited a number of such cellars and find that they sweat badly and in extreme cold weather, frost. It is built in the side of a hill. A. L. Lord.

✣

The Lumber Industry and the Metric System

To the Editor: New York.

To realize the effort involved should laws be passed for the "compulsory use" of the metric system, the study of a few figures given below touching the lumber industry now carried on in inch and foot measurements will prove instructive.

The total production of lumber in the United States for 1916 was estimated by the Forest Service, U. S. Department of Agriculture, at 39,807,251,000 feet board measure (practically 40,000,000,000 board feet). Mills producing less than 50,000 board feet per year have been omitted.

Geographically, this production was divided as follows:

	Board Feet
Northeastern States	3,025,000,000
Lake States	4,050,000,000
Central States	3,315,000,000
Southern States	19,707,237,000
Pacific States	8,136,000,000
Miscellaneous group	1,574,014,000

For the year 1914, during which many mills were shut down owing to the stoppage of all exportation on account of the war, the following information is given:

Number of mills	27,249
Approximate number of employes	480,207
Wages paid	$240,172,000
Value of product	715,941,000

To show the practically universal use of the English system of measurement in the lumber trade, we quote from U. S. Commerce Reports (Feb. 11, 1920):

"According to Trade Commissioner A. X. Oxholm, lumber exported by a company in northern Sweden is cut as follows:

69 per cent to English foot.

7 per cent to Danish foot (1 Danish foot equals 0.9711 English foot).

8 per cent to "metric" foot (1 "metric" foot equals 1.0936 English feet) (Equals ⅓ meter).

7 per cent to Spanish foot (1 Spanish foot equals 1.0783 English feet).

4 per cent to Dutch foot (1 Dutch foot equals 1.0768 English feet).

4 per cent to German foot (1 German foot equals 1.0639 English feet).

1 per cent to decimeters (1 decimeter equals 3 15/16 English inches) (equals ⅒ meter).

American Institute of Weights and Measures.

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THE Correspondence Department is for the use of American Builder readers. It is the medium by which the more than 50,000 members of the building industry who read the American Builder may consult with one another. Questions are welcome, and also answers to the questions of others.

What Is Your Job?

ARE you the man who is bossed—are you doing the hard work while some other man gets the high pay for telling you what to do? Why not be the boss yourself? The only difference between you and the men higher up is in what they know that you don't know. They get their big pay and have the easy work because they know how to direct you and other workmen. If you could read blue prints, estimate on work, know how to direct construction, you too would be in the big pay class. Read below how you can get this knowledge and be a bigger man in your line.

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At home—in your spare time—you can get instruction *by mail* from the experts of Chicago Technical College. You can learn all the higher branches of your trade and soon know as much or even a good deal more than the man who is bossing you now. If you are a workman, you can train for a foreman's or superintendent's job or you can look ahead to being a contractor in business for yourself. This training doesn't cost much and you can pay on easy terms. Look into this now. Just send the coupon below and get catalogs and full information.

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

CONSTRUCTION

Brickwork: Footings and foundation walls of brick, concrete and stone. Brick laying, joints in brick work, pointing, tuck pointing, etc. Brick and stone arches. Use of different kinds of stone.

Carpentry: Kinds and uses of woods, cornices, interior details, framing, roof construction, bridging, miter joints, butt joints, etc. How plans are made. Complete instructions illustrated by working blue prints. Plans and specifications. Residences, apartment buildings, factory buildings, school houses, hospitals, store and office buildings, bank buildings.

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Practical rules. Problems worked out from the plans. Brickwork and carpentry. Excavations. Labor and material for footings in brick, concrete and rubble stone. Methods of practical builders. Re-inforced concrete—full plans and specifications for re-inforced concrete buildings. Estimates of labor and material required. Labor and material for brick work; figuring common and pressed brick walls of different thicknesses, etc. Chimneys, fire places and cisterns. Fireproofing, tile flooring, arches, partitions, furring, terra cotta, etc. Lumber and timber; figuring board feet. Estimating posts, girders, sills, joists, studs, bridging, rafters, etc. Estimating all kinds of roofs, floors, siding, cornices, etc. Labor for rough and finished carpentry.

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

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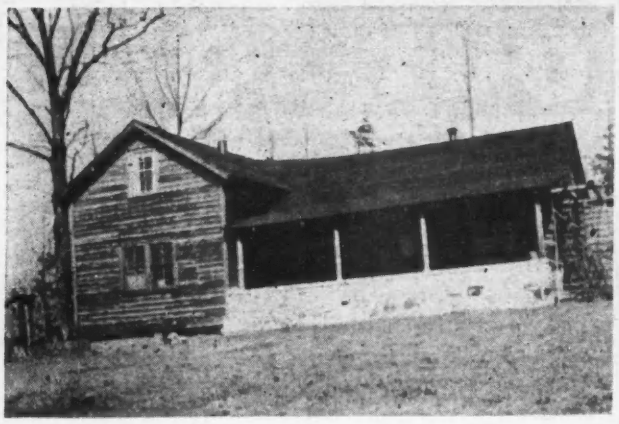


Fig. 1. Felix H. Taylor, Contractor, Vienna, Va., Transformed This Log Cabin Into a Modern Story-and-a-Half Home at the Small Cost of $1,500.

Fig. 2. A Home to Be Proud of. You Would Never Recognize This Attractive Looking House as the Old Log Cabin Opposite But it Is with a New Suit of Clothes.

An Unusual Job of Rebuilding

To the Editor: Vienna, Va.

I have been a reader of the AMERICAN BUILDER for several years, and have followed with interest its numerous descriptions of remodeled buildings. The photographs and drawings shown herewith illustrate a rather unusual job of remodeling which I recently completed. Figure 1 shows the building as it appeared before the work was commenced. The original structure was a one-story log house, with a frame addition. The final result (Figure 2) is a modern two-story home of the bungalow type, presenting an entirely different appearance. It is seldom that such an extensive and elaborate job of remodeling is attempted, and in this respect it is unique.

The old building was supported on wooden piers, and these were replaced by a concrete foundation. The old roof was removed entirely, and a new roof was built at a higher level, in order to provide for several additional rooms on the second floor. The floors in the log house, which were unsound, were torn up and rebuilt with new joists. The log walls were furred both inside and out with vertical strips spaced 16 inches on centers. The exterior walls were sided with cypress siding, and red cedar shingles were used on the gables and dormer windows. Asphalt slate surfaced roofing was used on the roof. Wall board was applied over the log walls, as well as in the second-story rooms; more than 4,000 square feet being required.

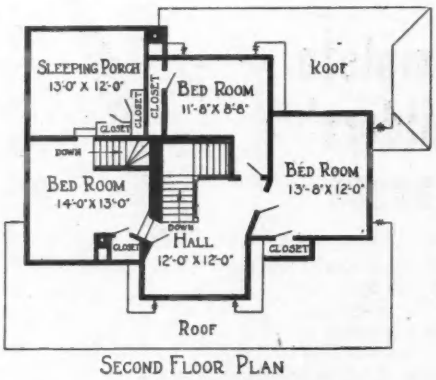
The floors and woodwork are of yellow pine, stained dark. The walls are painted with flat finish paint and the paneling strips are stained dark to match the trim. The exterior is painted a dark brown, with cream-colored trimmings.

The floor plans show the room arrangement before and after the change. The work of remodeling presented many difficulties, the most important being: (1) the problem of making true walls over the uneven logs, (2) the desirability of making an attractive exterior without too much alteration of the original floor plan, and (3) the necessity of carrying on the work while part of the building was occupied.

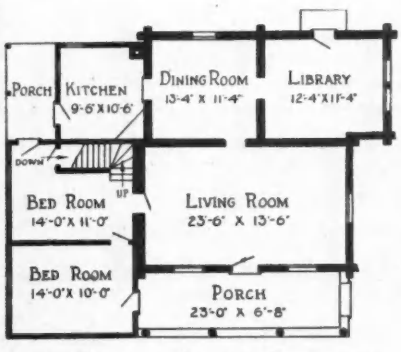
One of the peculiarities of this style of architecture is that it deceives the observer as to the real size of the building. This building contains nine rooms, but the outside appearance leads one to suppose that it is much smaller.

The work, including the foundations and chimney, was done by the writer. A period of one year was required for its completion. The cost of materials was approximately $1,500. The building is situated near the town of Vienna, Va. The owner is Mr. E. D. Taylor, the writer's father.

FELIX H. TAYLOR.

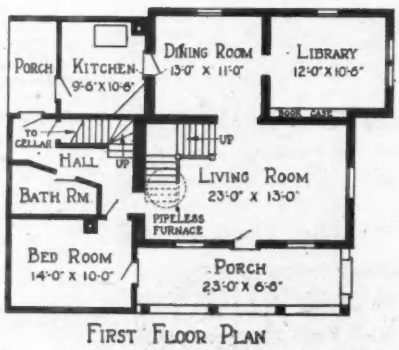


SECOND FLOOR PLAN



FLOOR PLAN OF ORIGINAL BUILDING

This Is the Floor Plan of the Old Building. There Are Six Rooms, No Bath or Conveniences.



FIRST FLOOR PLAN

In the New Arrangement There Are Eight Rooms—Bathroom, Sleeping Porch Upstairs and Plenty of Light and Ventilation.

How Is Cistern Capacity Found?

To the Editor: Marion, Ohio.

I have been an interested reader of the AMERICAN BUILDER for only six months, but I have received a great deal of good from it. As I am in the contracting game, I would like some simple rule or a table for determining the number of barrels of water in a cistern. I am a little young in this game and there is no one around here who has any table to go by.

Will someone suggest or give me a table for this work? HOLLY H. RICKEY.

Plan for Wine Press Wanted

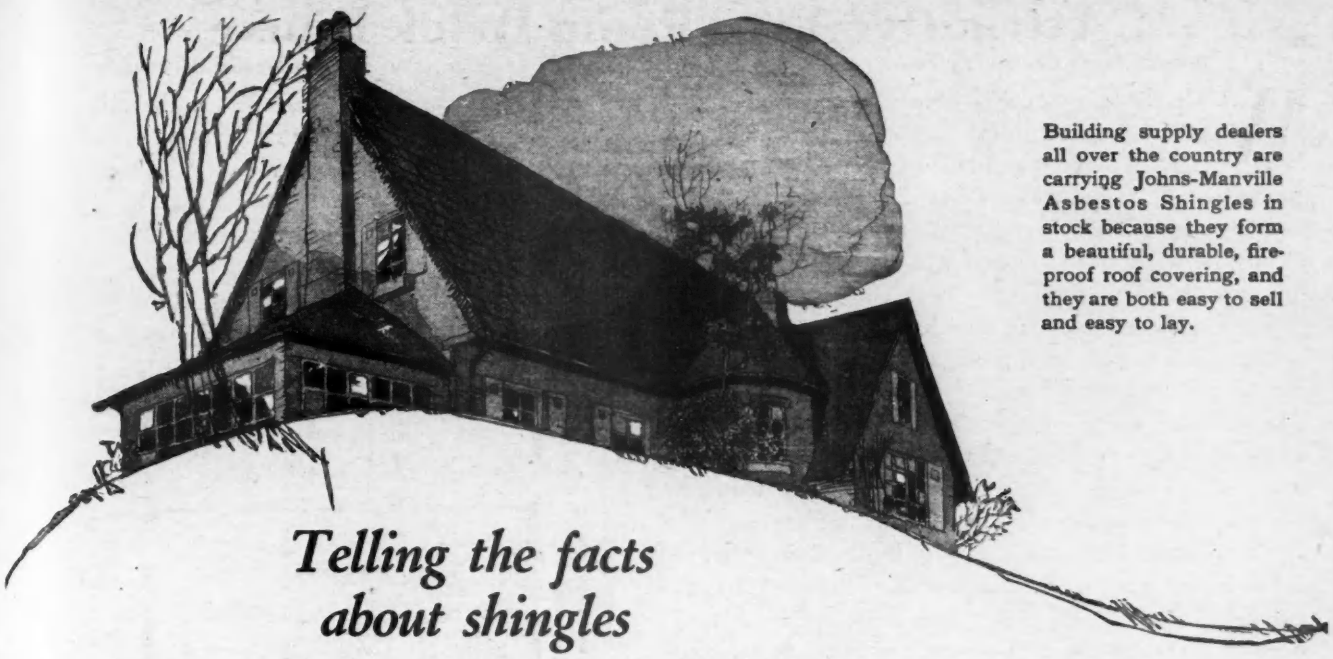
To the Editor: Keyport, N. J.

Will you please give me thru your correspondence department a plan and full information for building a wine and cider press?

I think it will be a great help to a great many of your readers, as I for one do not know how to plan it just right.

BENJ. R. BUSCH.

THE Correspondence Department is an open forum for the exchange of ideas. Send in your building problems.



Building supply dealers all over the country are carrying Johns-Manville Asbestos Shingles in stock because they form a beautiful, durable, fireproof roof covering, and they are both easy to sell and easy to lay.

Telling the facts about shingles

AS an expert on building materials and their application, you are undoubtedly often asked to give opinions on the subject. When you talk about shingles to the man who is going to build a home, or one not quite so fortunate, who must renew his roof—tell him why you recommend Johns-Manville Asbestos Shingles.

He may not be particularly interested in the fact that Johns-Manville Asbestos Shingles are more easily and quickly applied than any other fireproof roofing, because they are so accurately made—with even the nails and nailholes furnished.

But he *will* be vitally interested in the fact that Johns-Manville Asbestos Shingles give unequalled durability, that they protect his home from roof-communicated fire, because Johns-Manville Asbestos Shingles cannot burn—that they are, in addition, artistic in appearance.

Then, too, there's the fact that Johns-Manville Asbestos Shingles are given the highest rating by the Underwriters' Laboratories, Inc.

So whatever the prospective builder is looking for in roofing, whether it's ultimate economy, or durability, or fire-safety, or beauty—he can find it in Johns-Manville Asbestos Shingles—at a good profit to you.

The nearest Johns-Manville Branch will be glad to give you more information about Johns-Manville Asbestos Shingles. Send for booklet.

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Attractive Five Room Brick House

SUBSTANTIALLY BUILT HOME HAS WELL-DESIGNED EXTERIOR AND LARGE FRONT PORCH

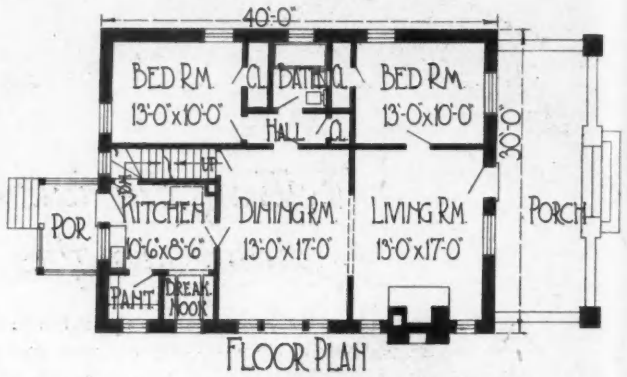
WHEN planning on a home, there are two important factors uppermost in the mind of the prospective home-owner — permanency and general appearance. He wants a house that will look attractive and appealing, yet, as a man of modern means, he wants a house that will last a lifetime. For this reason many choose brick as the material when giving a contract to the builder.

The home shown on this page is an excellent example of a small, comfortable, well-built brick home. The walls are stout, well able to withstand the assaults of the elements and the exterior design is very attractive. A large front porch extending the full width of the house provides an excellent recreation center for the family and a playground for the children. It has brick balustrades and pillars and is covered by an extension of the main roof, which is shingled. A roof dormer gives light to a high attic which may be converted into two extra rooms if they are needed. Set back on a high terrace with two sets of concrete steps leading up the front entrance, this little home presents a most pleasing picture and one well worth while studying.

The front door leads directly into the living room, a large spacious room, 13 by 17 feet, well lighted by windows on two sides and made especially inviting and cheerful by the open brick fireplace. A wide doorway leads the way to the dining room, equally comfortable, lighted by a triple window on the side of the house.

The kitchen is very happily arranged and is of the size now considered most efficient for the housewife. Located next to dining room, it is only a few steps from the stove to the dining table. Off one corner of the kitchen is a breakfast nook to be used by the family when the work of preparing a big meal can be avoided. A pantry is also provided.

The bedrooms, two in number, and bathroom, make up the other side of the house. The front bedroom

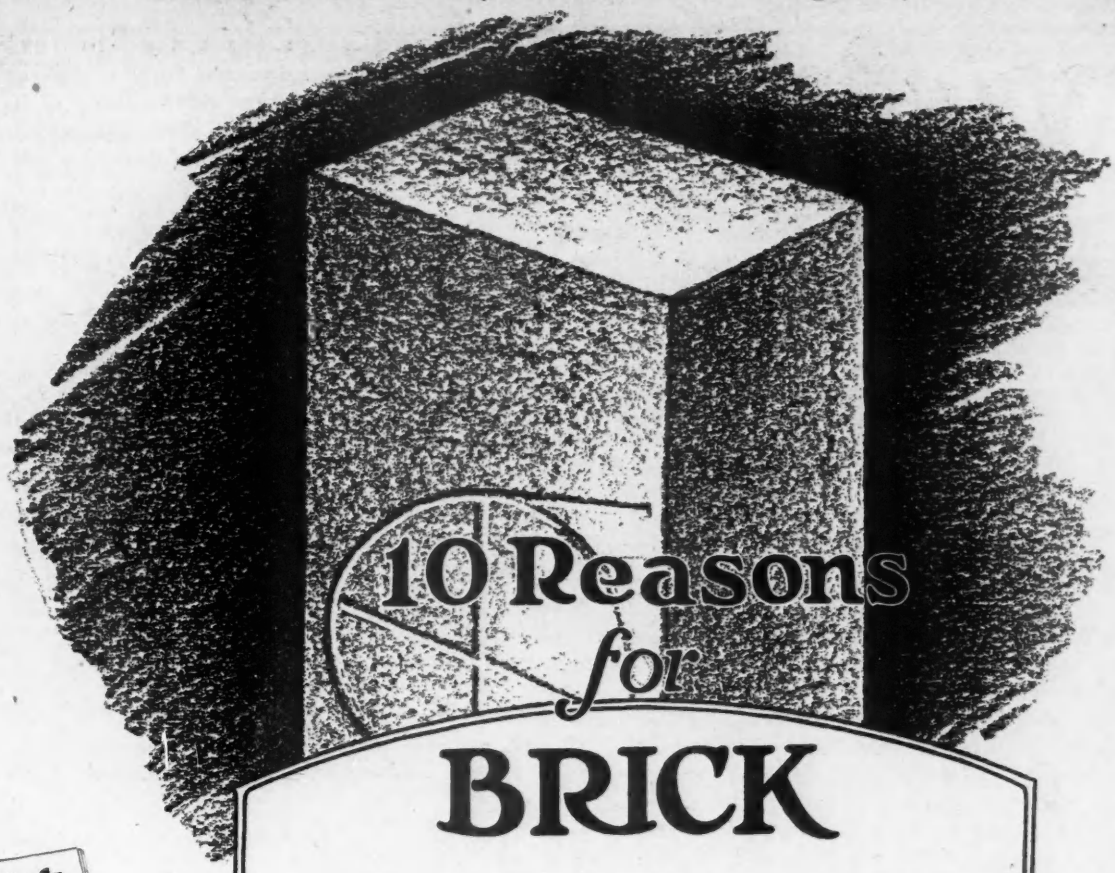


Floor Plan of Brick House Showing Arrangement and Number of Rooms.

opens off the living room and has double windows exposure providing plenty of ventilation, an essential feature of a healthy home. The rear bedroom opens off a hall which leads into the dining room and also gives access to the bathroom.

As mentioned before in case some extra room is needed the attic can, at a very reasonable cost, be converted into one or two rooms.

Here Is a Home That Combines Beauty and Permanency—Two Features Which the Average Homeowner Desires in His New Home. It Is Built of Brick, and Contains Five Rooms. The Size of This House Is 30 by 40 Feet.



10 Reasons *for* BRICK

"BRICK, How to Build and Estimate," is the most practical and helpful book on brick work ever written. Gives complete tables for estimating labor and material quantities quickly and accurately. A complete mason contractors' guide, working drawings of equipment used and details of brick construction. Sent postpaid for 25 cents.

You will also find it exceedingly worth while to have a copy of "BRICK for the Average Man's HOME", containing 35 designs of modern brick homes. Working drawings available for each. Price $1.00

Send $1.25 and get both books.

1 In most cities it is easier to get loans on homes of brick—bigger loans, affording more leeway and speeding building operations.

2 Brick is available **locally**—2,000 brick plants deliver it quickly to the job in the desired quantities.

3 The average life of the brick home is 100 years; it houses three generations, yet it is paid for but once.

4 The brick home is **soonest paid for** because there is practically no upkeep.

5 On the monthly payment plan a $9,000 brick home can be **cleared of debt** 7 months sooner than an $8,500 "painted house".

6 The brick home is worth most when paid for; depreciation is nil during the first five years; after that only 1 per cent annually.

7 There is a considerable saving in fuel—solid walls of brick keep out cold and dampness.

8 It is fire-safe; insurance costs next to nothing.

9 Generally it is easier to sell, always at its full value. Moreover, alterations are easily made on a brick home.

10 Its beauty is **permanent**; both owner and builder will always be proud of it.

THE COMMON BRICK INDUSTRY OF AMERICA
1306 Schofield Building,
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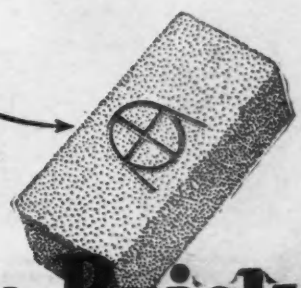
Your Guarantee of Quality



For Beauty *with* Economy
build with Common Brick

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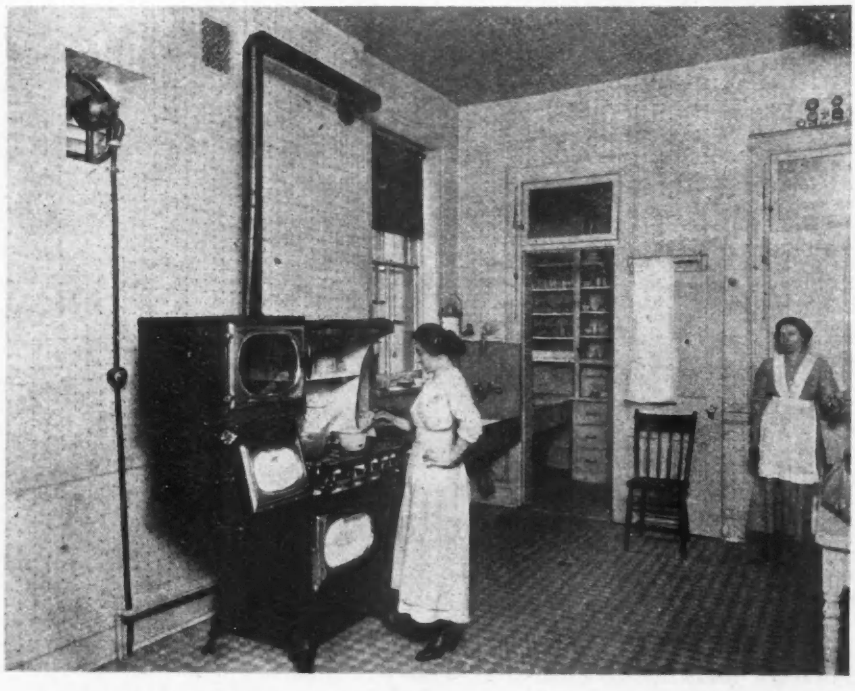
Inexpensive Kitchen Ventilator

THE influence of the housewife on building construction is becoming more marked as the days pass. In an effort to provide her with the latest conveniences and comforts builders have been devising and installing ingenious labor and space-saving devices. Particularly is the case in the kitchen. Now the ventilator makes its appearance and it is of a nature to attract the attention of builders.

The housewife knows perhaps more than any other member of the family that the oppressive fumes and cooking odors arising in the kitchen are largely responsible for the expense in keeping the remainder of the home or apartment clean. They lay an invisible film of smudge over walls, curtains, and decorations, necessitating frequent cleaning, redecorating and causing definite damage to furnishings.

The ventilator which is installed in the upper part of a window, in the wall, window sash, door transom, or any wall opening, is designed to remove these odors and keep the air circulating and clean. It is operated by a self-cooled, enclosed motor.

It is operated by an ordinary lamp socket connection and can be used where the kitchen range is equipped with a hood.

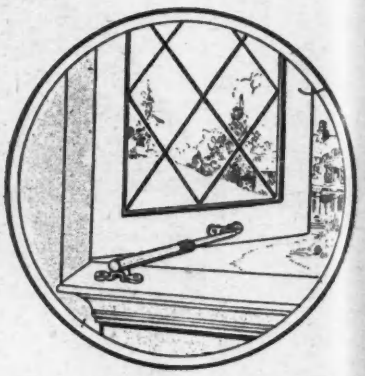


Carrying Away the Odors and Warm, Impure Air of the Kitchen, This Small Kitchen Ventilator Prevents the Smudge from Collecting on Curtains and Walls and Keeps the Kitchen Clean.

New Adjuster for Casement Windows

ONE of the most attractive features that can be built in a home to add to the general charm of its exterior is casement windows. They are decorative and, if fitted right, are thoroly practical. Needless to say they add a touch of distinction to the house.

However, to be thoroly satisfactory they must be adjusted properly. Recently a casement window adjuster was placed on the market to take care of this particular problem. It consists of simple telescoping parts fitted with a friction lock that holds the window in any position. Wherever the window is moved in or out, it stays. There are no clamp screws needed in this device to tighten or catch draperies.



New Adjuster for Casement Windows Which Makes the Window Stay Put Wherever It Is Moved.

This adjuster is used for either right or left-hand windows. The illustration here shows how it operates.

Close-up View of Adjuster, Showing Telescopic Arrangement and Friction Lock.

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New Fireproof Nailing Base

A SUBSTITUTE for wooden nailing strips in the form of a cement product has been recently invented and is now being used for that purpose. This product is made of portland cement, sand and asbestos fiber. The combination makes a composition material which is cellular in nature permitting it to take and hold nails.

It was originally invented to replace sleepers as a base for wood flooring, but its uses have increased so that it can now be used in place of wood as a base. One interesting use is as a sub-floor for composition or mastic flooring in which case it tends to reduce the possibility of cracking. As a base for linoleum or carpet it can be firmly cemented, and at the same time secured to the flooring by screw tacks pending the setting of the cement.

In many buildings it is now being used as a base for roofing such as slate, tile, metal, cement or asbestos shingles. They can be fastened to it by nails. In partitions it is used in place of plaster for either solid or hollow partition finish. In this particular case it takes a smooth finish which can be easily decorated. Finish trim can be nailed directly to it.

It is also used as an insulating material. As a base for wood floors or roofing tile, the minimum thickness of this material is 1¼ inches, altho 1½ is preferable. For all other purposes a minimum of ½ inch is allowed. Its weight is 82 pounds to the cubic foot, as ordinarily used, up to 100 pounds, when special compressive strength is used.

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THAT'S what everyone wants now whether it is new work or old. Do you know the secret of an enameled job is in the under-coat? It's like the foundation of a building—everything depends upon it.

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Won't you try Johnson's PerfecTone Under-coat and Enamel at our expense, so that you can see for yourself what beautiful effects may be procured? Use the attached coupon.

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Without any obligation to me, I am willing to try Johnson's PerfecTone Under-coat and Enamel. Please send me a pint of each Free and Postpaid. The best Dealer to carry your line of Enamel is .....

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Laying Concrete Slabs on Roof. This Material Is Porous Concrete and Is Designed for Use as Sheathing and Siding. It Acts as Insulation Because of the Small Air Holes Which It Encloses.

Porous Concrete Slabs for Sheathing and Siding

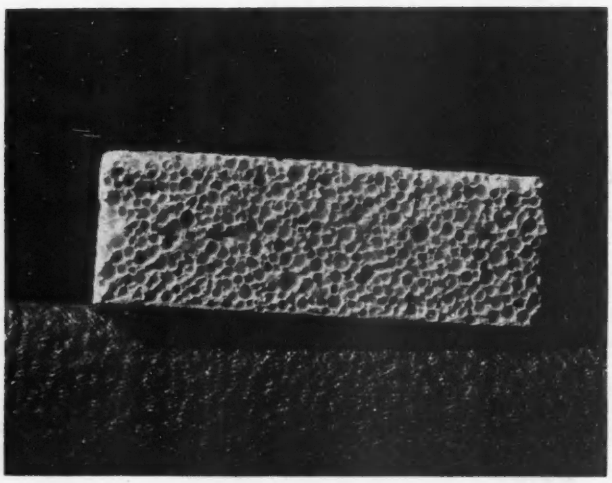
VERY successful results have been obtained in making light weight aggregates for concrete not only in the United States but also in Europe. It is possible with these light weight aggregates to make bricks and building blocks by mixing them with sand and cement in the proper proportions.

A new material is now being made of portland cement concrete made uniformly porous thruout its mass. At the present time it is furnished in thin slabs 24″x32″x1″ and 1⅛″ thick. These slabs are reinforced with wire cloth.

The process for making this material is roughly as follows: Portland cement, sand and water are mixed with small globular pellets made of a chemical compound. This mixture is poured into steel forms. After setting the slabs are exposed to steam which melts and removes the chemical completely, leaving air holes in their place. The result is a light porous stone made of portland cement and sand only, the porous character being uniform thruout the material. The process and the product are covered by patents.

This material possesses all the qualities of portland cement concrete except that on account of its light weight and its diminished real cross-section, the crushing strength is somewhat lower. On account of the small air holes which it encloses it makes a good insulating material for ordinary temperatures. In addition it acquires the property that nails can be driven thru it without beakage.

The manufacturers have decided that there would be the greatest demand in the beginning for a thin slab 24″x32″x1″ thick, which can be used as a sheathing and siding material for outside purposes where no weight has to be carried on it.



Cross Section of Concrete Slab Showing Porous Character of Material. These Air Holes Help to Make it an Insulating Material to Be Used in Partitions. It Is Manufactured in Thin Slabs 24 by 32 Inches and One Inch Thick.

On account of its porous character it is necessary to protect it on the outside with a layer of stucco. The slabs as they are made now are smooth on one side and rough and porous on the other. They can be nailed to wooden studding or clipped to steel framing with the rough side out. One heavy coat of stucco on this rough side will make the wall waterproof. Stucco holds particularly well on this porous surface.

The material would also be excellent for the inside partitions of a house. However it cannot compete with the present construction of lath and plaster. It has been used as a furring material on the inside of brick and concrete walls where it is nailed without an air space against the wall. On account of the large size of the slabs it can be put up quickly after which it is plastered on the inside. For furring purposes on concrete walls the slabs have replaced the wooden form boards on the furring side. When the concrete is poured the slabs are firmly attached to it and can be plastered. This makes a good insulating and damp-proof wall.

Altho the strength of the material is considerably lower than that of concrete, the slabs when suitably reinforced can

Underside of Roof Over Which Concrete Slabs Have Been Laid as Sheathing. This Material Can Carry Fairly Heavy Loads. Nails Can Be Driven Thru This Material to Wood Studs.

be made to carry heavy loads as roof or floor slabs. Such a slab is being made 24″x32″x1⅛″ thick, which is reinforced near the bottom with expanded metal. When it is covered with a thin coat of cement on the upper side it will carry a breaking load of over three hundred pounds per square foot on a free span of 32 inches, while with a thicker layer of cement about three-sixteenths-inch thick it will carry five hundred pounds breaking load per square foot on the same span. It is therefore suitable for roof-decks and light floors which have to be fireproof. As a roof-deck it is necessary to protect it with a water-proofing the same as a wooden roof-deck Such a roof laid on steel purlins is excellent for industrial buildings, theaters and garages. It is half as light as any other similar material, weighing only 6½ pounds per square foot. At the same time it gives a roof which insulates well and which will not condense moisture on the underside.

There is another demand for the siding slabs for very light and thin partitions and walls of structures which are exposed to heat or steam as, for instance, in dry kilns, and also as an insulating material for refrigerating chambers.

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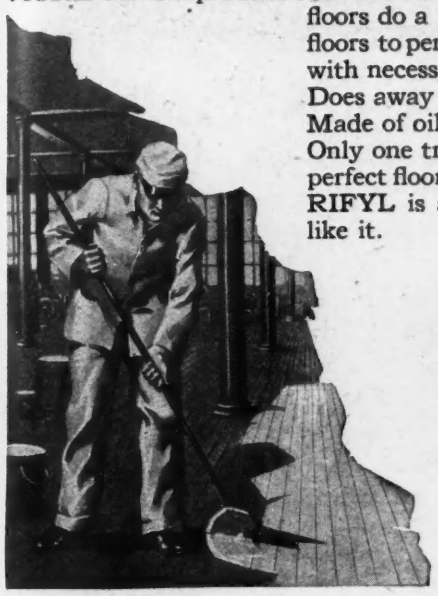
IT is difficult to lay down a rule for measuring round towers, owing to the wide variance in the style, etc., of same. There are several rules practiced. The most common one is to multiply the circumference of the base by the length of the rafter or the slant of the height. This produces a result considerably in excess of the actual surface measurement, and usually gives enough extra to take care of the extra time required for cutting, loss of slate, etc.

Why Are YOU In Business?

THERE may be many reasons, but chief among them is to **earn a profit.** Sometimes economic conditions make this difficult. For instance, when building is slack and materials are both high-priced and scarce. VITRIFYL is a product that will earn a handsome profit for you now. It helps building owners to make old floors do a while longer. It protects and restores wood floors to perfect condition—renews their life. It does away with necessity for frequent oilings, painting, waxing, etc. Does away with dry rot, cracking, splintering, warping. Made of oils and gums that penetrate the entire flooring. Only one treatment necessary. We positively guarantee perfect floors if VITRIFYL-treated, for **five years.** VITRIFYL is a scientific discovery. There is nothing else like it.



Vitrifyl sells on sight. Owners' most economical floor treatment. Vitrifyl is a liquid flushed on floors and applied with ordinary long handled paint brush. Large covering capacity—makes old and new wood floors wearproof, dustless, water, oil and acid resistant; fire-retardant, sightly and sanitary. One treatment GUARANTEED five years. No other treatment necessary.

Contractors, Dealers and Builders Profit by VITRIFYL

Contractors and dealers apply or sell VITRIFYL and you render a SERVICE to your customer. It builds additional sales and prestige. Architects should specify VITRIFYL for all new floors. It is common-sense economy.

Go back to old floors you have sold or erected—or know about—and apply or sell VITRIFYL—by the gallon or on a square foot price basis. Every wood floor owner in town is **your** prospect. You can keep up continuous profitable work and sales all year around—while others wait for "better times." VITRIFYL for industrial, school and public buildings is indispensable. Tear off and send coupon for our Profit Proposition, NOW.

VITRIFYL is successfully answering the question, "WHY ARE YOU IN BUSINESS?", for thousands of other live builders and dealers—with **real profits.** Why not for you?

THE Vitrifyx Company are the largest Floor Preservation Specialists in America. They also manufacture and sell VITRIFYX for concrete floors: HYDROLITHIC concentrated waterproofings for concrete: VITRIMIX for cold-weather concrete, etc.

The VITRIFYX line is one of the strongest in the United States. Ask us for full information regarding representation in your market.

Tear This Off and Mail Now

THE VITRIFYX COMPANY
Department "A"

Gentlemen: Without obligation, send me
Kindly Check

- ☐ Dealer Profit Proposition on VITRIFYL—The bonded wood floor preserver.
- ☐ Full Contractor information on VITRIFYX FLOOR PRESERVATION SERVICE—and how it can increase my business.
- ☐ I am interested in HYDROLITHIC and your full line of waterproofing products.

Firm Name_____

Address_____

Your Name_____

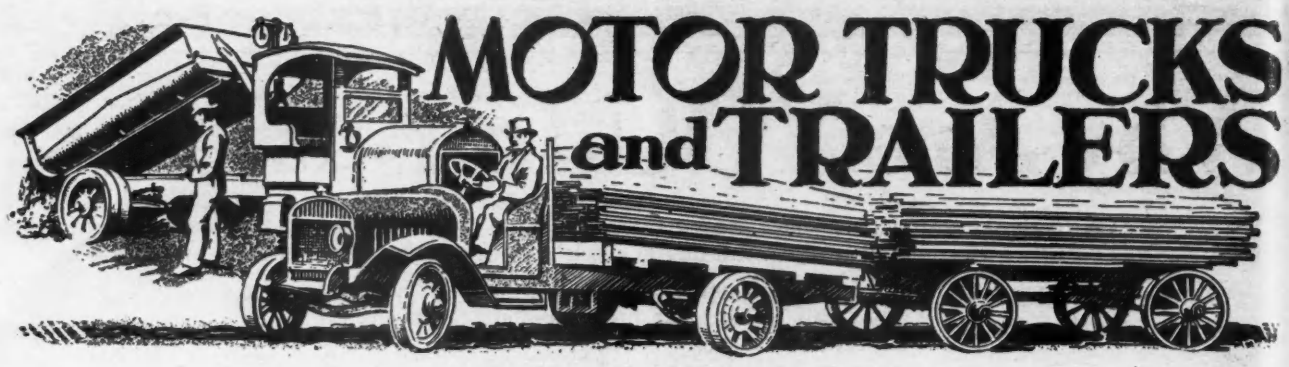
The VITRIFYX COMPANY
Division of Floor Preservation

Executive Offices
2528 W. CONGRESS ST.
CHICAGO
103 PARK AVE.
NEW YORK

SALES OFFICES

BALTIMORE	CLEVELAND
DETROIT	INDIANAPOLIS
ST. LOUIS	KANSAS CITY
MILWAUKEE	OMAHA
ATLANTA	MINNEAPOLIS
DENVER	NEW ORLEANS
LOS ANGELES	PORTLAND
SAN FRANCISCO	SEATTLE

50 Sales and Service Stations in the United States



No Guesswork in Figuring Truck Costs

BUILDER CAN GET MAXIMUM EFFICIENCY OUT OF TRUCKS BY USING STANDARD COST SYSTEM

By J. R. Gibson

BETTER service at lower cost is naturally the wish of every user of motor trucks or teams in the building industry. The first thing necessary to make this possible is for the contractor to know the true cost of EVERY item of his hauling expense. The omission of two or three facts makes any tabulation useless. It merely deceives the owner into believing his costs are lower than they really are.

An accurate record of truck's or horse's daily performance must also be obtained. This includes loading time, running time, available but not used time, miles run, amount caried (tons, yards, feet or the unit of the material being hauled), and number of trips. The information must be recorded plainly so that a glance at the record sheet gives a clear idea of what the truck is doing.

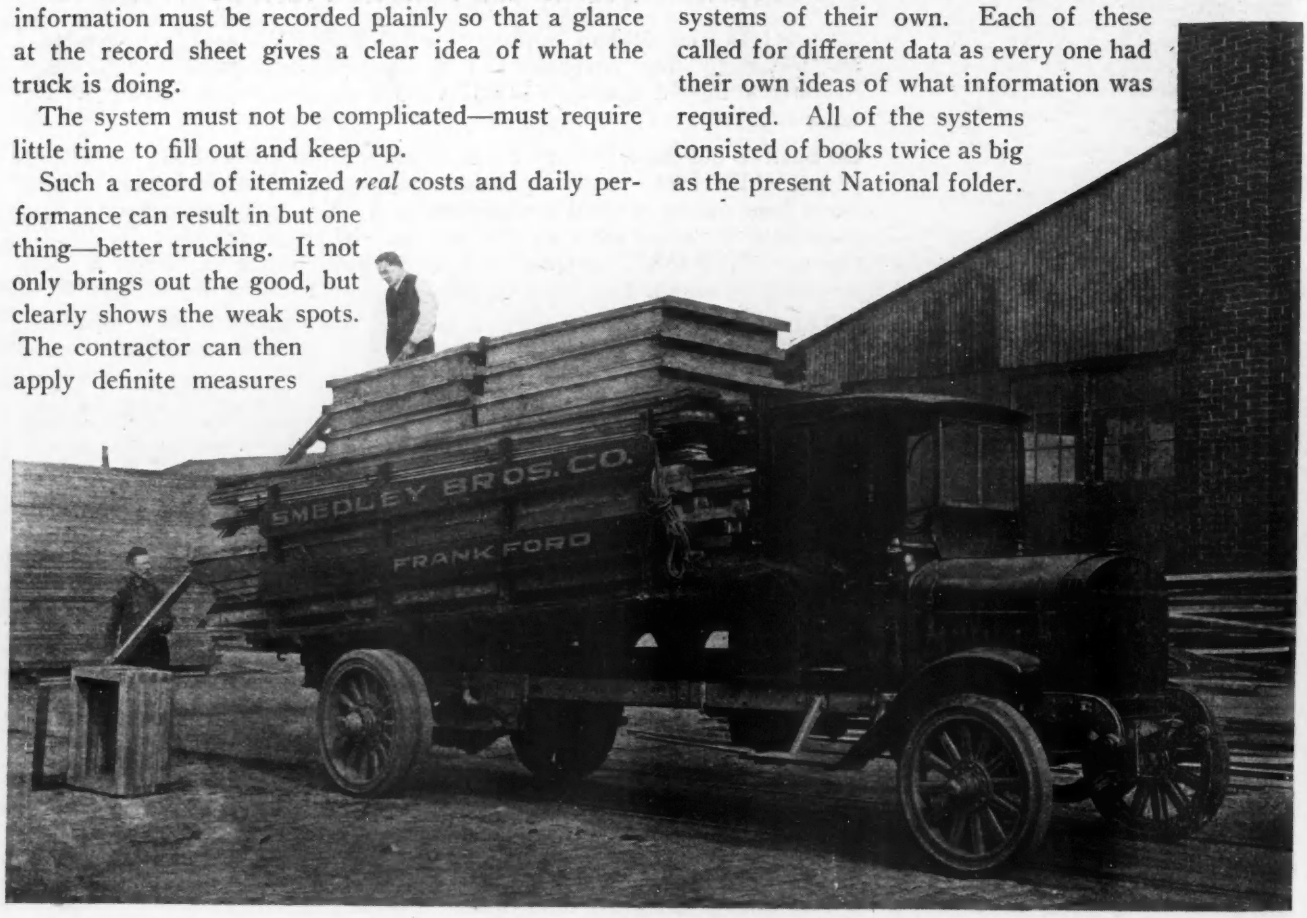
The system must not be complicated—must require little time to fill out and keep up.

Such a record of itemized *real* costs and daily performance can result in but one thing—better trucking. It not only brings out the good, but clearly shows the weak spots. The contractor can then apply definite measures to correct difficulties. He doesn't have to work in the dark.

This general summing up of an ideal cost system describes the National Standard Truck Cost System. This is not any particular truck manufacturer's, assembler's or tire company's system. It is a truck owner's system developed by truck operators. It was inaugurated in 1917.

At that time the operators of large truck fleets realized the necessity of a standard form for keeping truck costs. They wanted a form by which they could compare their work with that of other haulers.

Various tire and truck companies were distributing systems of their own. Each of these called for different data as every one had their own ideas of what information was required. All of the systems consisted of books twice as big as the present National folder.



Lumber Dealers Find Motor Trucks One of Their Most Reliable Assistants. In This Business Delivery Is Important and Smedley Bros. Co. Have a Reputation for Getting Material to the Job on Time. They Use This "GMC" Truck for Hauling Material from Their Mill.

DUPLEX TRUCKS

BUILT FOR BUSINESS

IN a run from Los Angeles to El Centro via San Diego with a 3060 pound load, it made 267 miles in 8 hours 26 minutes—an average speed of 34 miles per hour. It went the full distance without a stop and the speed limit was observed in all towns in transit.

Another Limited running from New Orleans to Baton Rouge, 124.6 miles, carrying 3750 pounds, made the distance in 6 hours, 55 minutes running time.

The Only Motor Truck With All These New Features In It

Read These Features—Think What They Mean—And You Will Agree That Here Is a Truck That Must Be a Wonderfully Good Investment

YOU know what's the need of the hour in trucks. If you have been a truck user for any length of time you have probably had some experiences that have given you an entirely new angle on motor trucks and their value.

You don't need to be told of the shortcomings of the old truck standards, but you probably are tremendously interested in learning about the real features of a truck that you can depend on.

It is on this basis of honest value to you and to every other user that the Duplex Limited is made and sold.

Do you know that the Duplex Limited is probably the fastest and most rugged truck of its size and capacity in America.

Do not make the mistake of thinking that this truck is merely a speed truck. It isn't—its a strong, rugged truck built to carry 3000 to 5000 pounds and it gets its speed from motor power—not gear ratio.

Built and designed for pneumatic tires—standard tread—it takes roads as they come and averages express train speed. It has probably the most perfect balance ever developed in a truck. Friction is saved everywhere possible by using ball bearings throughout. Scientific tests show that it takes 29 times less power to move a given load when ball bearings are used as against any other type. This wonderful balance and almost frictionless running makes a big saving in gasoline.

You get further saving in gasoline because the truck has complete electric equipment, including starter. That means that the driver *will* shut off the motor when the truck is idle and he will save you from 2 to 4 gallons a day that way alone.

The patented Duplex Spring Suspension for the radiator allows ¼-inch sideways and 1-inch up and down movement before the radiator touches anything solid.

This eliminates at one stroke the greatest single source of radiator leakage and consequent motor damage from overheating.

Put your hand in the crank case of a Duplex Limited that has run over dusty roads and notice that there is no sand or sediment in the oil. This is due to the fact that there is a special flapper valve arrangement that keeps the sand and dust out of the lubricating system.

See the Duplex dealer near you—he will give you any demonstration you want and let the truck speak for itself. He is a responsible man—he will not exaggerate and he stands ready to back up, as we do, every truck that bears the name "Duplex." Get the facts about the Duplex Limited.

Write us direct for details about the two wonderful runs of the Limited and also for free copy of "DUPLEX DOINGS," the Truck Users' Magazine.

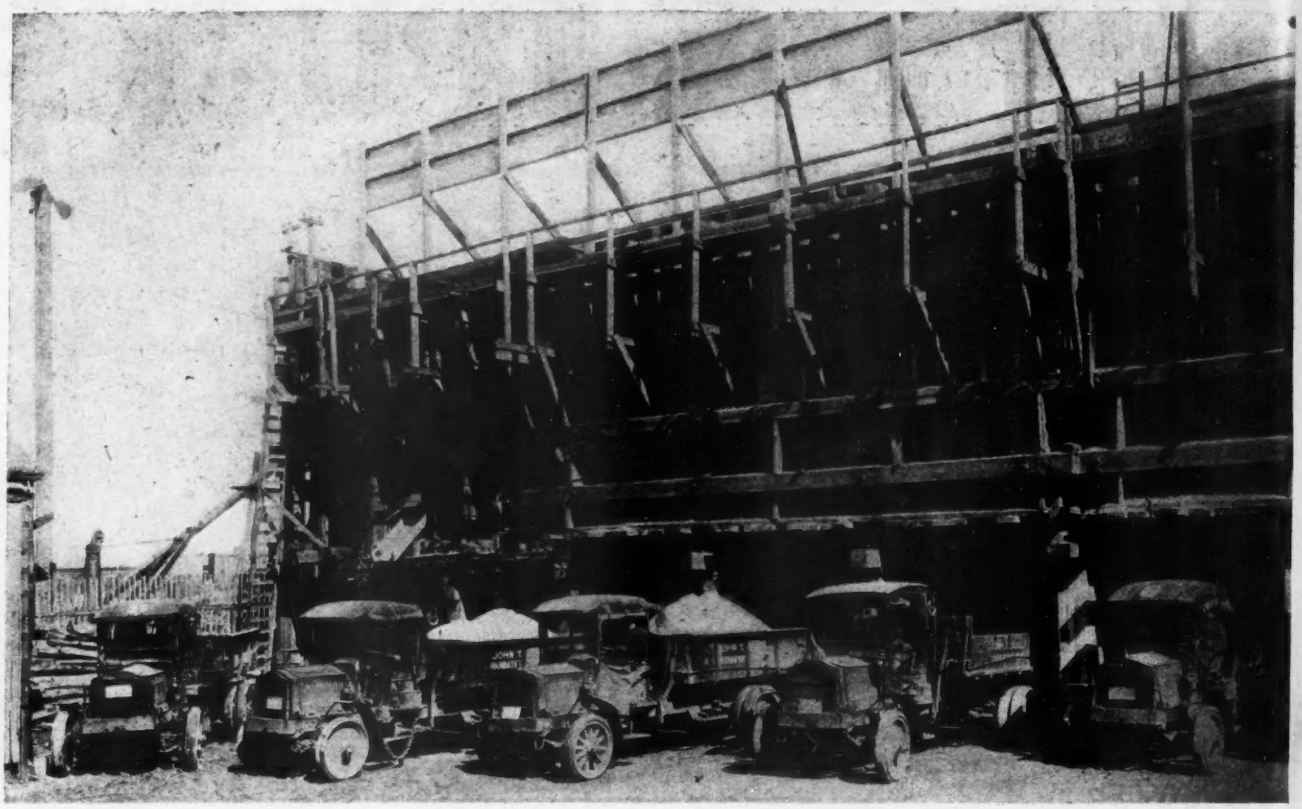
For heavy duty, the Duplex 4-Wheel Drive is everywhere admitted to be in a class by itself. Power in every wheel, 3½ tons capacity—it keeps going as long as the wheels touch ground and for heavy work is without question the most economical truck in America.

DUPLEX FOR BUSINESS

Duplex Truck Company

Lansing · Michigan

One of the Oldest and Most Successful Truck Companies in America



Fleets Do Not Always Sail on the High Seas. The New Land Fleets of Motor Trucks Have Become One of the Greatest Means of Transportation for Large Building Supply Dealers and Contractors Like the John Scully Foundation Co. Here Is a Squadron of Five "Packards" Getting Under Their Loads at the Gravel Hopper.

After a good deal of consideration, study and thought on the part of the actual truck users, an owners' conference was called. The development of the National Standard Truck Cost System (series of 1918) was the result of this meeting. A further result was the decision to hold these conferences, to discuss truck cost operation, four times each year in four principal cities of the country. This has been done. A slight change was made in the system in the latter part of 1918, but since that time the operators have agreed none have been necessary.

It is readily apparent these meetings insure that any new ideas developed by truck operators thruout the country, if practical, will be incorporated in the cost system.

A word about the system itself: It consists of a Daily Service Record, a Daily Record, a Monthly Analysis of Operation, Cost Record and a Tire Record. This enables a contractor to—

1. Compare one truck against the other as to detailed performances and itemized costs—thus determining which unit, size and type of truck is best suited to his trucking conditions.

2. To compare the mileage and cost per mile of different makes and types of tires—to know what is best for his trucks.

R. G. Witters, Contractor in Canton, Ohio, Believes in Speed. That Is Why He Has This 2-Ton "Garford" Equipped with Pneumatic Tires. It Is a Real Source of Economy and Responsible for a Long List of Satisfied Clients.

3. To decide which drivers are the best producers.

4. To check the truck's repairs, gasoline consumption, etc.

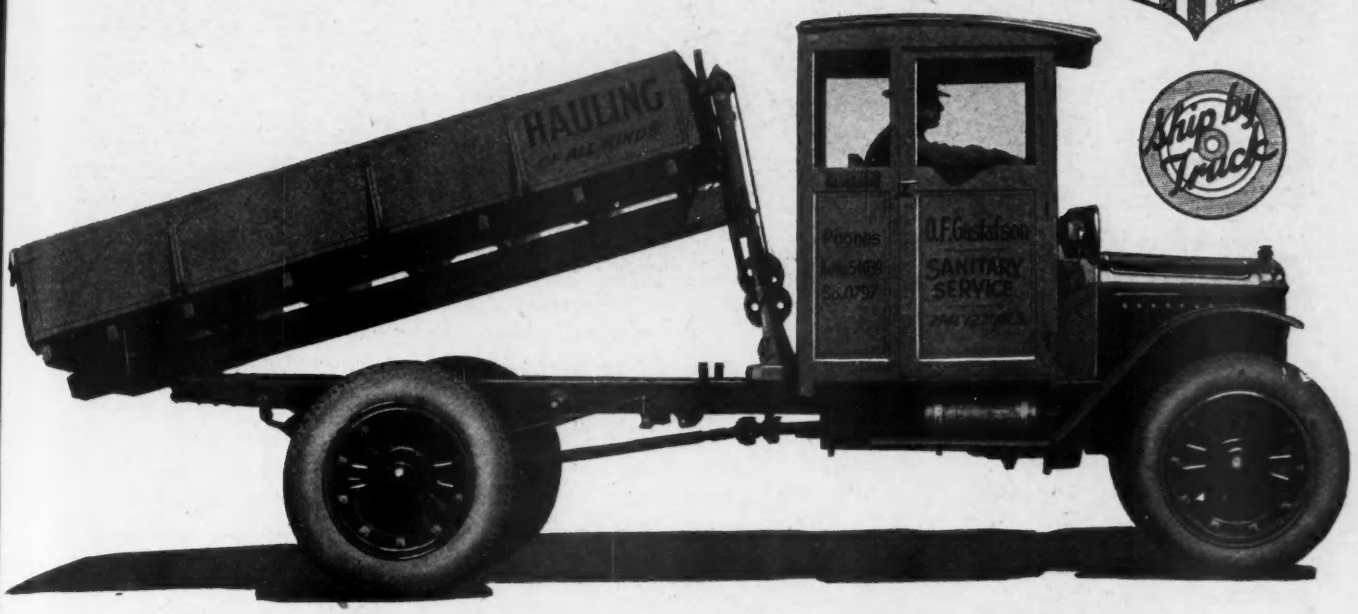
5. To rent trucks on an equitable basis.

6. To prove where it is less expensive to ship by truck than by freight.

7. To see where trucks are less expensive than horses—and vice versa.

The National Standard Truck Cost System is not a new idea. It has been thoroly tried, tested and found good. To the contractor it means the end of guesswork in hauling, getting out of his hauling equipment the last ounce of work it is capable of supplying.

REPUBLIC TRUCKS



BUY REPUBLIC TRUCKS

Republic construction, assuring ruggedness and performance, contributes its important part to the world's need for dependable transportation. Maintenance of two thousand fully equipped service stations and seven National Parts Depots gives positive and uninterrupted service to owners of Yellow Chassis trucks everywhere.

Republic Truck Sales Corporation, 953 Michigan Avenue, Alma, Michigan

Hickman & Livie, General Contractors in Brockton, Mass., Are Busy People and This "Acme" Truck Is One of the Reasons. It Carries a Variety of Material, from Roofing Material to Brick and Sand, and Always Gets to Its Destination in a Hurry and Without Any Accidents.

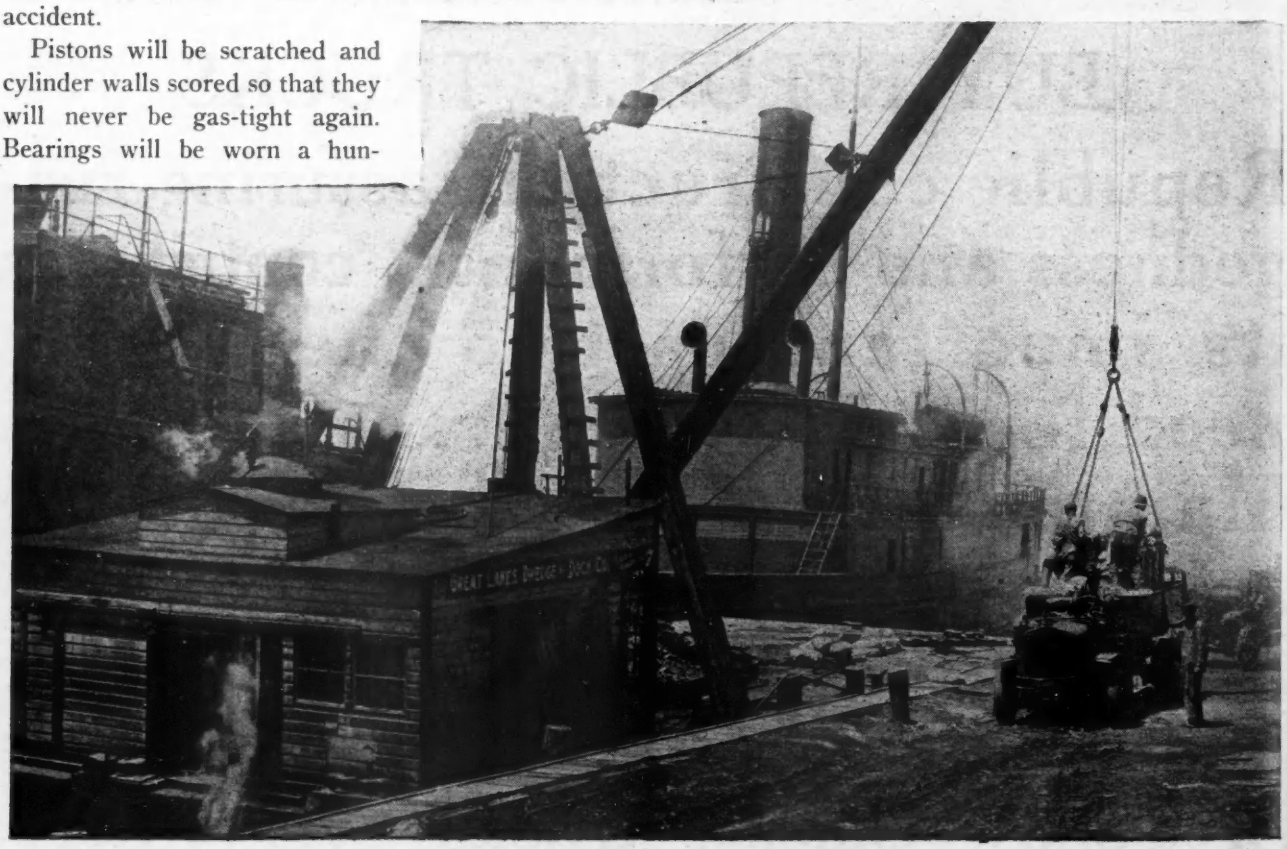
Lubrication is Important

A truck can be speeded up to thirty or forty miles an hour, hit a bump, and break an axle or a spring. The driver will possibly be fired and forty or fifty dollars spent for repairs.

But run a truck without oil, and, while there will be no excitement and the driver may be retained, ten times more harm will have been done than in the accident.

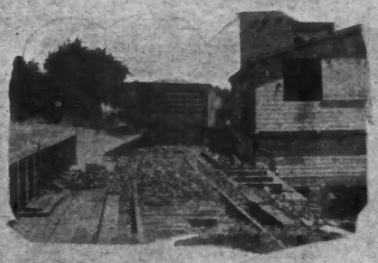
Pistons will be scratched and cylinder walls scored so that they will never be gas-tight again. Bearings will be worn a hundredth of an inch, perhaps. Axles, spindles, universal joints, steering gear—all scratched and worn out of true. The transmission and differential—damaged so that they will never work again at the same degree of efficiency. The worm-gear drive that was polished down to the thousandth of an inch (where one-sixth the thickness of a hair from your head makes a notable difference in efficiency) and designed to run in a perpetual bath of oil—scarred and scored so that it may soon have to be replaced by a new one.

Of course, an oil that is good for one thing may not be good for another. Pistons that fit "snugly" in the cylinders call for a light easy-flowing oil that can work its way in to the small space between the two walls of steel. If the motor is prone to leak compression, a heavier oil would be needed. Excessive quantities of the light oil would be sucked into the combustion chambers, where it would form soot and carbon and would be wasted thru the exhaust. It would also be blown out of the way and allow gas from the combustion chamber to leak into and condense in the crank-case.

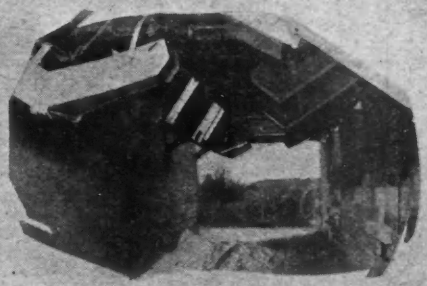


Hauling Builder's Supplies Is the Acid Test of the Dealer's Success. This 5-Ton "White" Is Getting a Load to Haul to a Job and Is Only One of a Fleet of Fifty-one Owned by the Cleveland Builders' Supply and Brick Co., Cleveland, Ohio. Heavy Hauls and Strenuous Usage Are no Obstacles for These Trucks.

YESTERDAY—Unloading a 50-ton carload of coal the old way took 2 men 15 hours.



TODAY—The Kissel engineered way. Empties a 50-ton carload in 10 minutes by dumping through bottom of car into bins inside loading shed, *saving 14 hours, 50 minutes.*



Loading chutes inside sheds connected direct with bins.

KISSEL

Engineering Service

by a corps of transportation engineers of specialized ability, plus 14 years' experience advising on transportation equipment in over 200 lines of business

Goes Beyond Truck Building

by quickly building up a profit for you besides having equipment pay for itself in a short time.

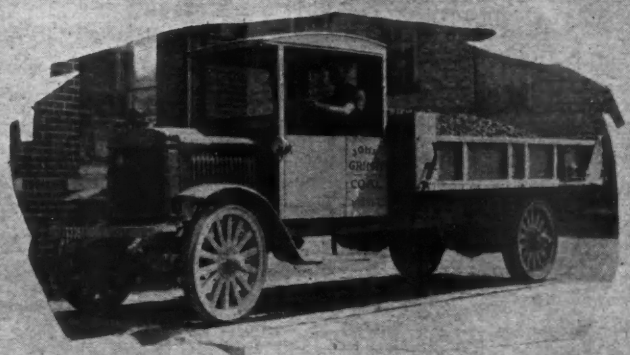
In addition to solving specific trucking problems peculiar to your business, Kissel engineering service will prove that in any transportation problem, if properly designed truck, adaptable body and efficient methods of handling commodities are employed, it is not a case of "can you afford a truck with proper equipment" but a case of "how you cannot afford to employ motor trucks unless properly designed and equipped, and most efficient methods employed for handling commodities."

Illustrations show only one of the many instances of how Kissel efficiency engineering is applied with resultant decreased operating costs and increased efficiency.

Kissel Motor Car Co., Hartford, Wis., U. S. A.

Originators of ALL-YEAR Cab for Trucks.

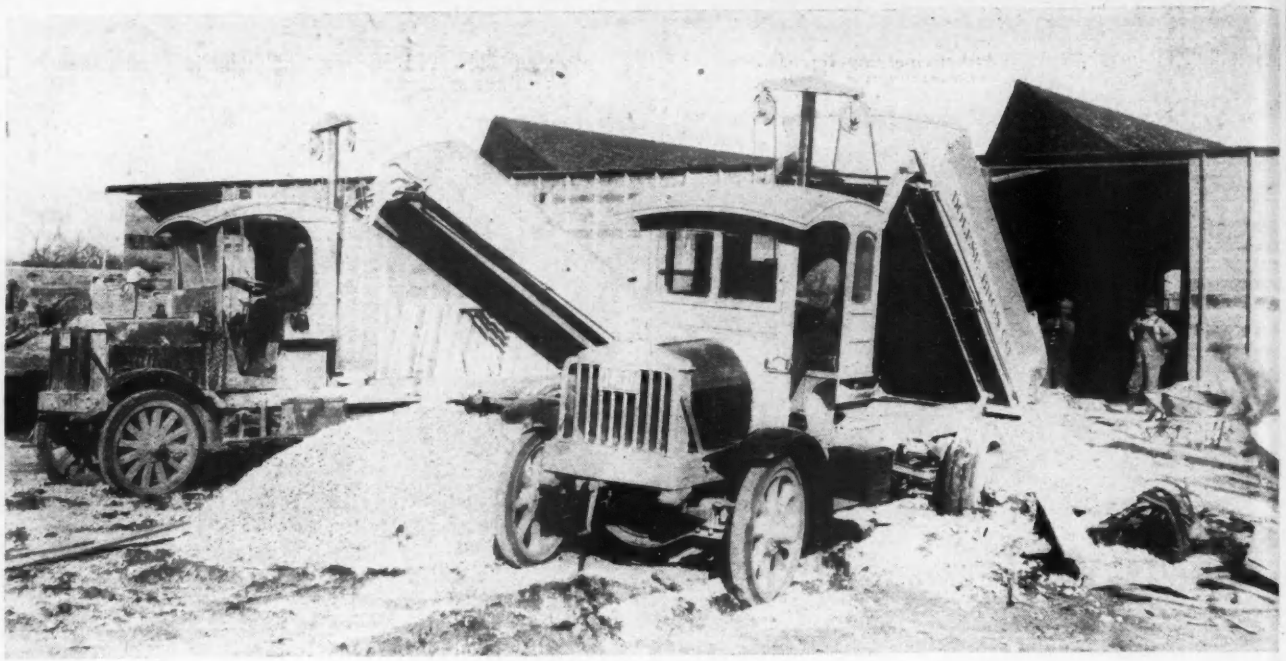
Loading 2½ tons of coal from chutes in 2 minutes, *saving 23 minutes.*



Weighing 2½ tons of coal; delivery time 3 miles in 10 minutes, *saving 1 hour, 30 minutes.*

YESTERDAY—Unloading 2 tons of coal the old way took 2 men 30 minutes.

TODAY—Unloading 2½ tons of coal from Kissel dump and hoist truck takes 2 minutes, *saving 28 minutes.*



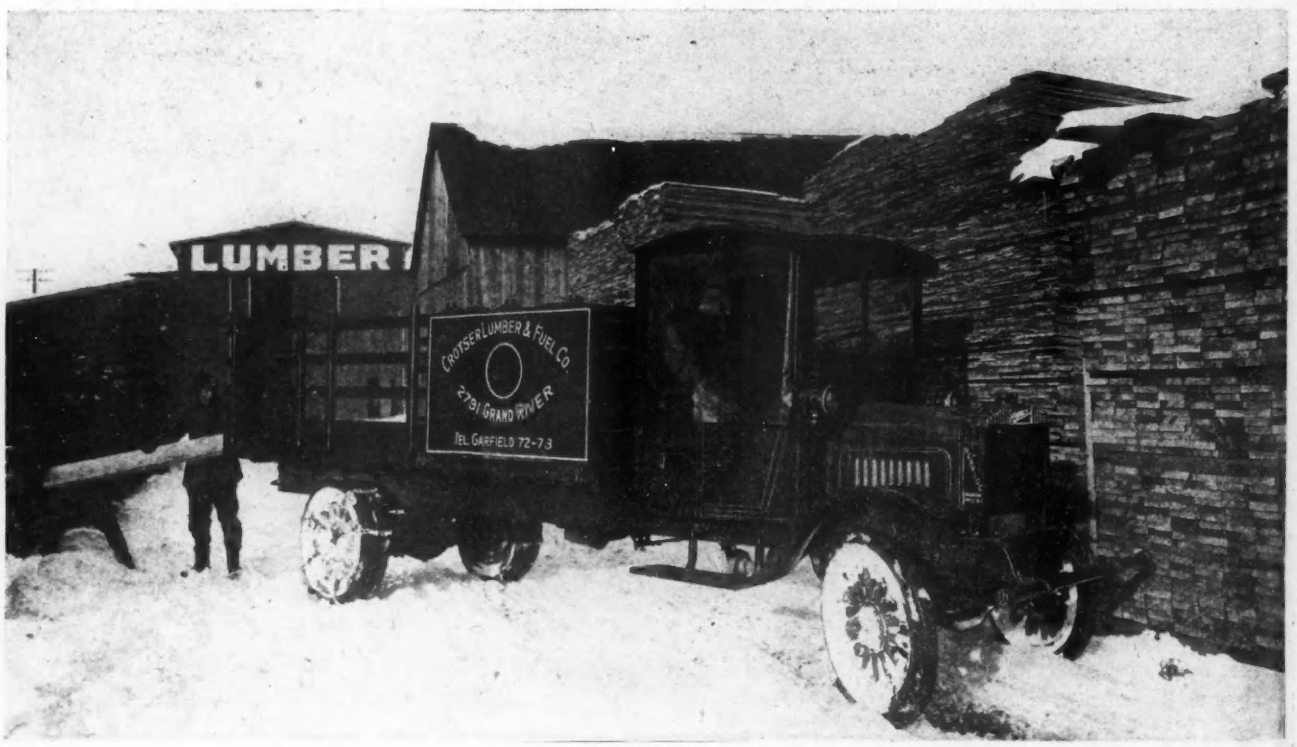
Cutting Building Costs. One of the Big Factors in This Problem Are Efficient Hauling Units Which Eliminate Delay at Unloading Stations. Dolese Bros. Co., Oklahoma Contractors, Use a Fleet of "Federals" in Their Work, Which Is Increasing Every Day.

Neither of these would be suitable in the transmission gears or the differential, however. The surfaces to be lubricated bear against each other with such pressure that the light oils would be squeezed out and steel would again meet steel.

As a general thing, a truck owner can make no mistake by using in the various parts of his truck the oils recommended by the truck manufacturer. His engineers have given much thought and study to the subject, and have tried many types of oil under almost every conceivable condition.

In summer a heavier oil should be used than in winter, because it will be less fluid in cold weather. Likewise, heavier oil should be used on old than on new trucks. It should be borne in mind that *it never pays to buy "cheap" oil, no matter what the price.*

But the most important thing is to see that the makers' oiling charts are studied and understood—and that they are followed systematically and regularly. If this is done, lubrication will never give you cause for annoyance. While your gravest danger, if neglected, lubrication is at the same time your greatest friend.



Winter Brings With It Rough and Slippery Roads. Crotser Lumber and Fuel Co., Detroit, Mich., Have Found a Solution for Hauling Lumber Under These Conditions. They Use This 5-Ton "Service" and Several Others All Thru the Severe Weather. Chains Eliminate Sliding While Power Conquers All Rough Roads.

HAUL IT IN A HALL

Hall Trucks are the development of forty-six years experience in the fabricating and transportation of structural steel

Rugged Strength a Feature of Hall Trucks

HALL users invariably comment on the excess strength of Hall Trucks, and on their economy of operation.

Now these two features are characteristic of Hall Trucks. They are the result of exceptionally high standards of workmanship and of unusual engineering skill.

You will find that Hall Trucks embody sound, use-tested and time-proven engineering principles. They are not experimental in any sense.

From the users' point of view this means that Hall Trucks will always stand up and give practical, enduring economical service. They never develop unsuspected weaknesses or defects—because every Hall Truck is correctly designed and honestly constructed.

One or the other of the various Hall models will be found to be entirely suitable for your kind of work—and whatever model you get you can always be sure of Hall quality in every part and in every detail.

Write us direct for complete details and the name of the Hall dealer nearest you. Address Dept. 13.

LEWIS-HALL MOTORS CORPORATION
DETROIT, MICHIGAN
Formerly Motor Truck Division of the Lewis-Hall Iron Works

2½, 3½, 5 and 5 to 7 Ton Models. Any type of body.

HALL TRUCKS

ACME TRUCKS

Keeping up with the job

A contractor wants his lumber when he *needs* it—not a day or two later. Carpenters demand their pay whether they are working or waiting for materials to arrive. That's why the L. James Lumber Company of Minneapolis, Minn., considers the dependable haulage service of the Acme truck as a real business asset.

Says Mr. James: "This truck has been in continuous service since we purchased it about a year ago. It has been kept busy practically all the time, as we load lumber on wooden horses in our yards and when the truck comes on, it backs under these horses and is on its way in about three to five minutes. Thus it runs practically all of the time during the day. Our next truck will also be an Acme, as this one has given us such good service."

If you desire *certainty* in your haulage operations—if you want a truck that has proved itself equal to the strenuous demands of contracting and engineering delivery—choose an Acme. Its popularity among contractors is proved by the fact that over 21% of all Acmes built go into this service.

Let us give you more detailed information. An inquiry will receive our prompt attention.

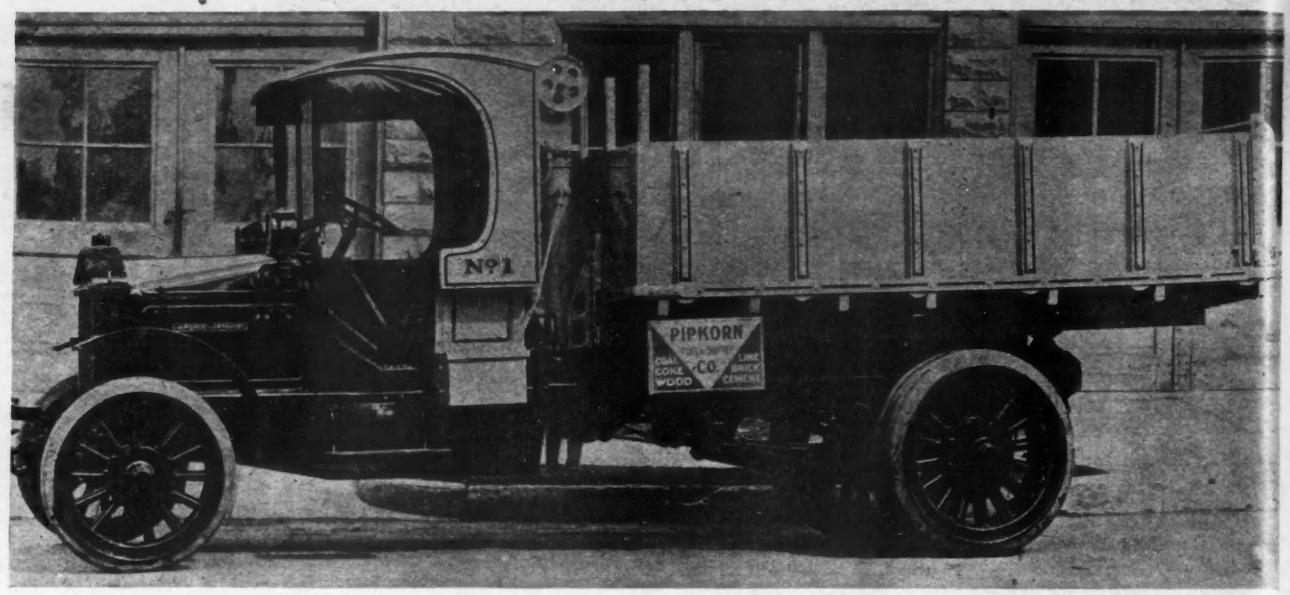
Built in 1, 1½, 2, 3½ and 5 ton models

ACME MOTOR TRUCK CO.
330 Mitchell St. Cadillac, Mich.

Seal of Dependable Performance

ACME THE TRUCK OF PROVED UNITS

Trade Mark Registered in U. S. and other countries



W. H. Pipkorn Co., Milwaukee, Wis., Has Several Veterans Like the 5-Ton "Pierce-Arrow" Shown Here. The Oldest One Has Covered 120,000 Miles and Is Still as Reliable as Ever. This Concern Found One Motor Truck Replaced Six Teams of Horses and Increases the Hauling Radius Four Times.

Truck Has Covered 120,000 Miles

FIVE-TON trucks have meant business growth to the W. H. Pipkorn Company of Milwaukee, Wis., dealers in builders' supplies.

From the time in the fall of 1911 when the firm purchased its first unit, speedy and voluminous deliveries supplanted the slow-limited haulage afforded by horse teams.

The veteran, now approaching its 120,000th milestone, performs just as reliably and profitably as ever. The original worm gears are intact. The old-timer has, in fact, outworn many other makes of trucks.

The Pipkorn Company found that the truck would replace six teams of horses and had a four-fold radius of operation. Most important of all the truck afforded customers an unprecedented service of immediate deliveries.

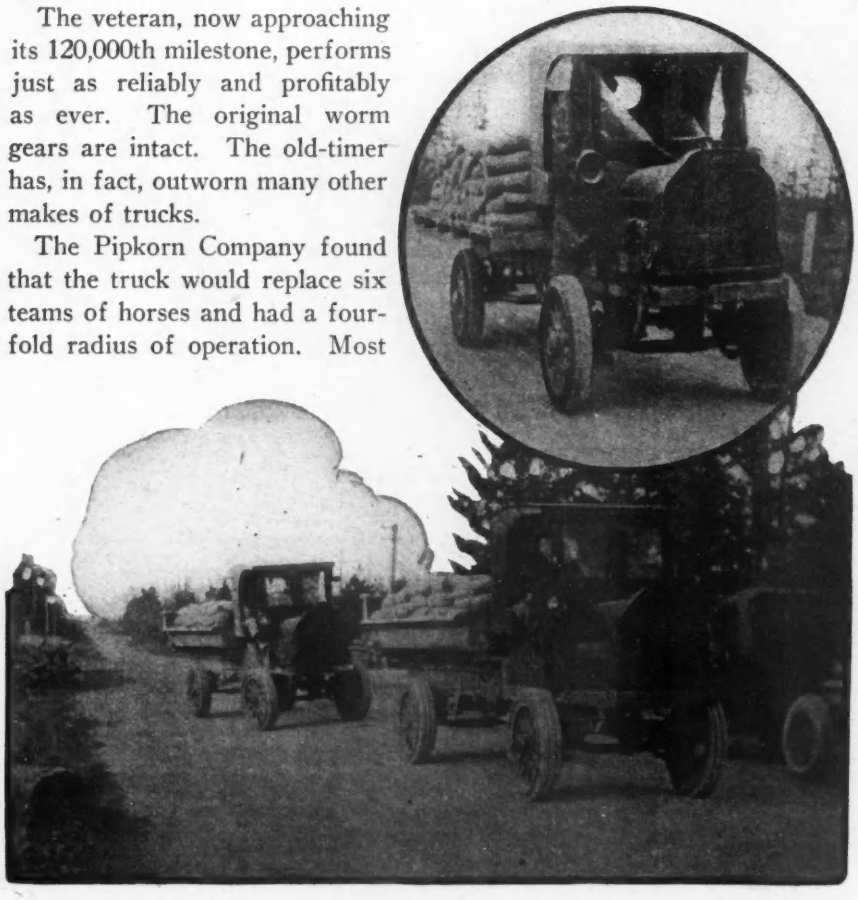
Naturally a second five-ton unit was purchased. This truck, installed in February, 1912, has an equally envious record as its older mate. It has traveled about 100,000 miles. A third truck, equipped with a combination dump body, recently was added to the fleet, which also includes four lighter trucks.

Much of the material hauled, bags of cement, building tile, etc., has to be handled by hand, yet despite this the trucks accomplish remarkable haulage results. One of the trucks, for instance, recently made 20 three-mile round trips in a 10-hour day, delivering 100 tons of cement.

A typical month's record can be found in that of July, 1919. In 25 working days, the firm's No. 1 truck traveled 1,204 miles, or an average of slightly more than 48 miles a day. Materials which aggregated 532 tons in weight were hauled, an average of 21.2 tons per day. This record has been exceeded frequently.

Gasoline yields about four miles to the gallon. Rear tires rarely fail to travel from 12,000 to 14,000 miles and have exceeded these figures.

"The trucks have had but one or two complete overhauls," said Mr. W. H. Pipkorn, president of the company.



For Faithful Service Over a Year This "Duplex" Truck Owned by the Skagit Construction Co. was Given a Unique Reward. It was Given a Double Shift and Now Works Nights as Well as Days. It Hauls 124 Sacks of Cement on a Single Load and Hauls a Plow by Night.

THE ROMORT AIR & WATER STATION

IN PLANNING A GARAGE

Don't overlook the paramount importance of an efficient air and water service.

With an air hose that never touches the ground, becoming dirty and grimy, to soil the hands and clothing, and water service that is ever available without trouble and loss of time, the Romort Air and Water Station renders the cleanest, quickest and most efficient air and water service you can specify.

By All Means Investigate the Romort Air and Water Station

MANUFACTURERS
The Romort Mfg. Co.
OAKFIELD, WIS.

Write Us Today for Full Details

SALES DEPT.
The Zinke Co.
1323 MICHIGAN AVE.
CHICAGO ILLINOIS

What Standardized Lumber Sizes Mean

THE need of standard sizes for all the different lumber products has been felt for some time, due to the exceedingly numerous and constantly changing sizes, and the action of prominent lumbermen in promoting standardization presages another progressive step in the lumber industry. The United States Forest Products Industrial Research Laboratory at Madison, Wis., has been co-operating during the past year with the National Lumber Manufacturers' Association in working out an equitable basis for standardizing softwood lumber sizes. Some of the benefits to be derived from the standardization of sizes are as follows:

1. It makes possible a common language for all. The consumer can substitute one species for another with assurance of getting material of the same size. Similarly, if a contractor starts to build several houses and orders his millwork, sash, doors, etc., based on certain lumber sizes as to stock around which the casing fits, the kind of wood can be varied as he desires.

2. Architects and purchasers can order more rapidly with one set of sizes—looking for sizes scattered thruout different grading rule books is eliminated.

3. Material of standard sizes is more salable and by increasing the consumer's good will creates and adds value to the products.

4. Building design is simplified, since fewer sizes can be used.

5. Uniformity in construction results, regardless of the grading rules under which the material is purchased. Manufacturers now cannot standardize millwork, etc., because it is dependent upon the sizes of the lumber used in building.

6. Remanufacture of larger sizes to match smaller sizes will be reduced and greater utilization with less labor and expense result. The architect frequently designs a building in accordance with the minimum sizes of lumber which may be furnished rather than on a species that can be procured in larger sizes.

7. Standardization of sizes eliminates local legislation on lumber sizes which confuse manufacture and distribution. Such legislation has been already suggested.

8. Standardization makes for fewer sizes and hence greater efficiency, ease and accuracy in lumber grading.

9. It equalizes competition between manufacturers, because present differences in overrun and freight charges are important factors in determining price.

10. It makes possible uniform practice and sizes in resawing.

11. It makes possible a fewer number of drying schedules in the klin drying of lumber. At present the actual thicknesses of lumber of the same and different kinds cut under the rules of different associations often varies several per cent.

✣

Light Creosote Oils in Wood Preservation

LIGHT creosote oils properly injected into wood apparently will prevent decay until the wood wears out or until it checks so badly that the untreated portions are exposed. Such is the indication of service records collected by the Forest Products Laboratory on railway ties and telegraph poles preserved with low boiling creosotes.

Creosotes used in ties from 25 to 50 years ago were for the most part oils having 50 per cent or more distilling below 235 degrees C., with a residue not to exceed 25 per cent at 315 degrees C. The ties so treated lasted from 15 to 20 years, and failure was traceable in most cases to mechanical wear, such as rail cutting and spike killing. In no case was failure found to be the fault of the preservative.

NEWS OF THE FIELD

New Improvement on Austin Cube Mixer

APPLICATION has been made to the U. S. Patent Office for an improvement on the Austin cube mixer drum. Its special feature is the speed of mixing, loading and discharge. The new design is called the Cube-Hex and the mixing action is increased by the addition of six extra planes which throw the concrete across that thrown by the six side planes. The claims are that dry mix, specified by many states, is much more quickly mixed in this new machine than by the cube-shaped mixers used by the U. S. Government at Panama Canal Locks.

✣

Lumber Association Appoints Assistant Secretary

Mr. Fred Larkins, who has been assisting Directing Manager Putman in organizing the forces of the American Wholesale Lumber Association since that organization was formed on May 20, last, has been appointed assistant secretary of the association. For the past 18 years Mr. Larkins was engaged in the wholesale lumber business at Birmingham, Ala., as president of the American Lumber & Export Company. Prior to that time he was for many years connected with the Camp interests in Florida in the capacity of sales and traffic manager.

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Technical Committee of Construction Federation Studying Conservation of Materials

WITH an idea of eliminating useless structural material and cut the costs of building, the technical committee of the Staff Council of the National Federation of Construction Industries is inaugurating an important study of the situation thruout the country. The executive committee, consisting of Wharton Clay, chairman, commissioner, Associated Metal Lath Manufacturers; B. H. Jillson, Illinois Society of Architects; C. E. Paul, construction engineer, National Lumber Manufacturers' Association; Virgil G. Marani, chief engineer, Gypsum Industries Association; A. C. Irwin, engineer, Portland Cement Association; W. Carver, architect, Common Brick Association, and L. P. Keith, secretary, are preparing this study and will shortly issue a tabulation showing the stresses allowed by the Bureau of Standards and other authorities. Against this will be shown the building ordinance requirements of the various cities.

One feature of the work that is developing already is the more sane requirements adopted by the lately framed building codes, indicating that a full understanding of the technique of use of various materials is rapidly being appreciated and no extra useless material is being required by the more modern codes.

It is not the plan of the committee to determine the proper stresses, but to compile them so that building and government officials may have a bird's-eye view of the situation and the

Make More Money-Be a Bigger Builder

The Good Things—the Big Things—of Life are for those who will reach out for them. You can have them for the grasping—just an energetic thought—saying "I Will" and they are yours. Are you content to make a small profit slowly on hand labor or—will you make a large profit quickly by means of a modern machine? Which?

IT'S EASY

Let The Magic Mixer-Mix Your Concrete

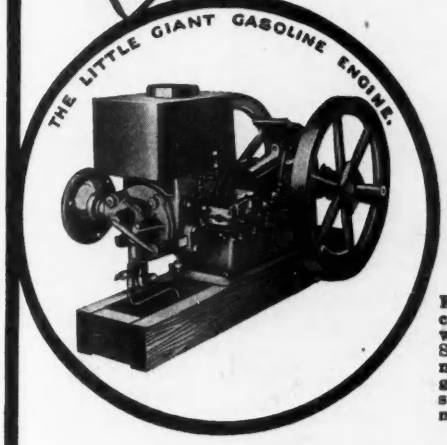
Does it faster—better—cheaper

This Mixer will put you in position to do all kinds and classes of concrete work. It will enable you to work faster, do more work, do bigger work, do better work—and will help you build up a permanent and substantial business.

$25

BRINGS IT TO YOU

Balance on Aloe's Easy Rental Purchase Plan—you have TEN MONTHS TO PAY—and the mixer will be making money for you faster than the easy payments come due. Certainly this is a rare opportunity for you to get away from the old shovel method and get into the class of the big men who are doing the big jobs in the modern way.



Your Big Opportunity For Greater Prosperity

With this wonderful machine and two men you can do as much work as you formerly did with six men. And you can do it easier, quicker and better, producing an absolutely uniform batch every time. It will mix 4½ to 5½ cubic feet per batch—can be speeded up to a batch every minute—over 2,000 cubic feet per day. It is the most practical and efficient mixer made—scientifically constructed of the best materials—light in weight, portable, simple and durable. Backed by the Aloe iron-clad guarantee to give the utmost service and satisfaction.

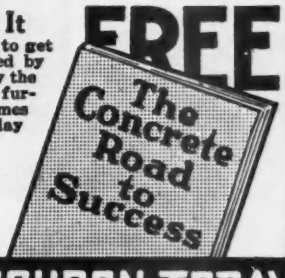
The Engine

Fitted with 2½ horse-power four cycle, horizontal gasoline engine with high-grade Webster magneto. Simple, powerful, reliable, economical—requires only two gallons gasoline a day. Protected by all-steel housing. Two doors at rear make it easy to get at.

Anyone Can Run It

Nothing complicated—nothing to get out of order. Can be operated by anyone who will read and follow the simple directions which are furnished with each mixer. It comes complete—ready for work the day you get it.

FREE



Free Trial Offer

So confident are we the Magic Mixer will please you in every way we will gladly send it to you for 10 DAYS FREE TRIAL on payment of only $25.00. Take it out on your jobs—put it to the most severe tests. Then, if you can be induced to part with it again ship it back at our expense—and we will promptly return your money without a word.

Get This Free Book

"The Concrete Road to Success"

You ought to have this booklet of invaluable facts about the wonderful opportunities the Magic Mixer offers you. Sent FREE together with full particulars of our Easy Rental Purchase Plan by which the Magic Mixer will pay for itself and put you on the road to greater success at the same time. Get this remarkable offer.

Mail The Coupon Today—NOW

The road to success is open to you. The opportunity to make yourself a big man is before you. The simple act of signing and mailing this coupon may be the turning point of your career. Don't sit idly by while other men are forging to the front. Start the coupon on its way. Get the facts. The time to act is NOW.

A. S. ALOE CO.

616 Olive St., St. Louis, Mo.

MAIL COUPON TODAY

A. S. ALOE CO.
616 Olive St., St. Louis, Mo.

Send me FREE booklet, "The Concrete Road to Success", full description of the Magic Concrete Mixer and particulars of your Easy Rental Purchase Plan.

Name_____

Address_____

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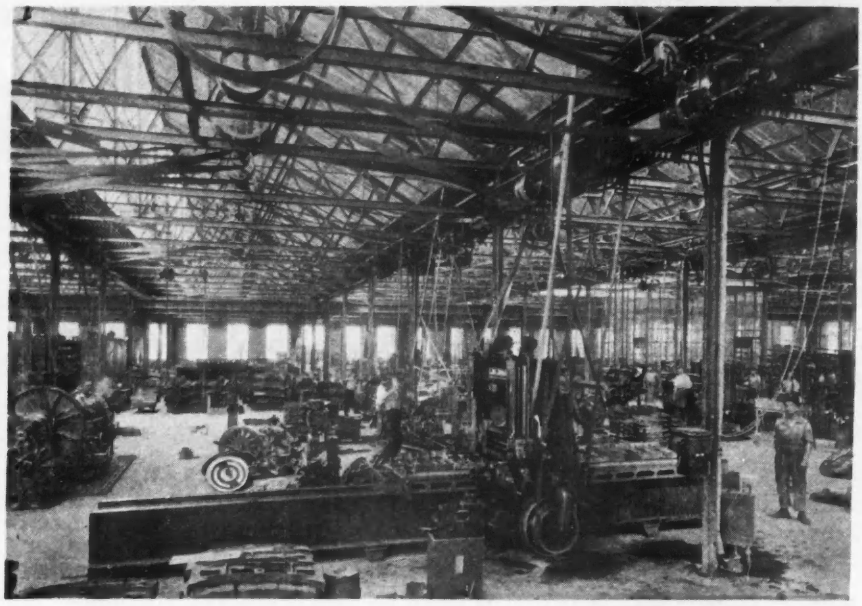

Interior of New Trailmobile Factory at Cincinnati, Ohio. It Has an Area of 100,000 sq. ft.

building industry in the various cities may realize how much precious material is being required for extra and unnecessary strength.

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New Trailmobile Factory Ready

THE new factory of the Trailmobile Company, Cincinnati, Ohio, is now completed with an area of about 130,000 square feet.

It is laid out and equipped according to the most advanced practices of industrial engineering and all material is routed thru the plant from the receiving platform and stock room in a direct line to the shipping platform.

The equipment in the machine shop includes pneumatic riveters, power shears, and planers, radial drills, drill presses, milling machines, shapers, lathes, etc., of the most modern manufacture. There is a complete woodworking equipment, air brush painting installations, etc.

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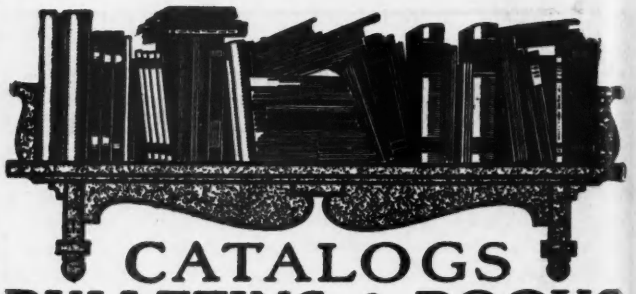
Porter Corporation Expands

THE J. E. Porter Corporation, Ottawa, Ill., has established a branch office at Minneapolis, Minn., 426 Washington Avenue, North, with Mr. William Elander as manager. There will be twelve salesmen out of this branch office covering the Northwestern states. The entire line will thus be more intensively sold in this section of the United States and better service offered to the dealer and the consumer.

Its capitalization has been increased to $400,000. The following officers were elected: A. S. Hook, president; R. B. Louden, vice-president; W. L. Weintz, secretary, and B. S. Jordan, treasurer.

This company has been in business since 1868.



CATALOGS BULLETINS & BOOKS RECEIVED

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

Time and labor saving devices for plain and reinforced concrete construction which are manufactured by the Concrete Devices Corporation, are described and illustrated in a booklet recently issued by that company. The list includes form clamps, washers, form ties, bar spacers and many other devices which are handy for contractors and builders engaged in concrete work.

"Cabot's Creosote Stains" is the title of a color booklet issued by Samuel Cabot, Inc., Boston, Mass. It contains many attractive pictures of homes which have been treated with these stains. Directions for their application are presented in detail.

"The Panama Line," a line of road machinery manufactured by the F. B. Zieg Mfg. Co., Fredericktown, Ohio, is fully described and illustrated in a small booklet now being distributed to builders. The booklet deals especially with grading and drag machinery.

"Boca Solid Steel Sash" is the subject of Catalog D 20 issued by the Bogert & Carlough Co., Paterson, N. J. The various products of this company are described and illustrated and several pictures of factory buildings in which Boca steel sash has been installed are shown. The Boca line includes side wall, monitor and power house sash, mechanical operators, steel partitions, tubular steel doors, and steel door frames.

"Insulating Compounds" and "Insulating Fabrics" are two of the subjects discussed in a series of new bulletins issued by the General Electric Co., Schenectady, N. Y. The other bulletins are devoted to descriptions and illustrations of synchronous condensers, and the Hewlett link insulator.

"Interior Wood Block Floors for Factories, Warehouses and Platforms" is the title of a booklet issued by the Republic Creosoting Co., Indianapolis, Ind. It contains several illustrations of factory interiors, showing the wood block flooring. It is ten pages with cover.

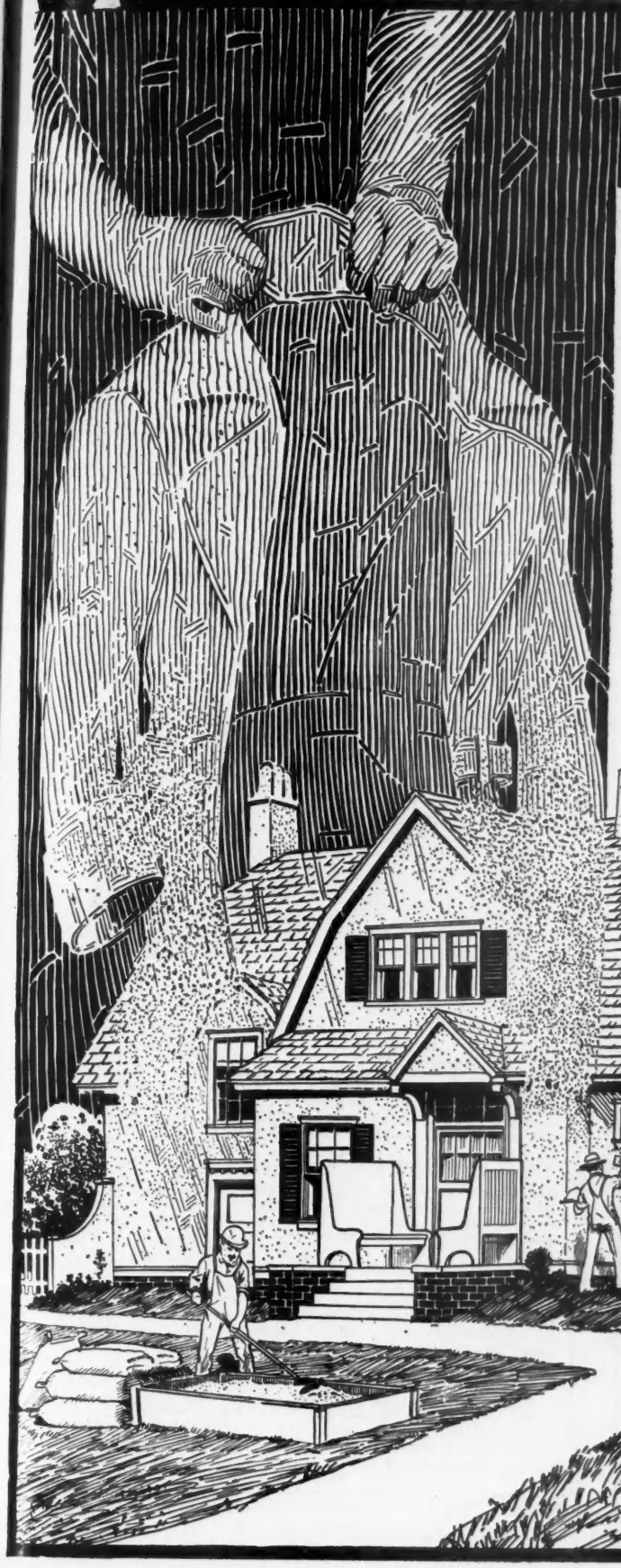
"A Manual of Face Brick Construction," the new book issued by the American Face Brick Association, Chicago, Ill., is a very complete text on the use and application of face brick in construction. In addition to an explanation of standard practice it contains several color pictures of brick homes. The book is sold for $1.00.

The Simplex System is explained in a new book being distributed by the Simplex Steel Products Co., Chicago, Ill. This book deals with the system of partition and ceiling construction which was originated by the Simplex Company. Blue-printed details of this method are contained in the book, supplementing photographs of prominent buildings in which this system has been used.

"Rubber Tiling" is the title of a very attractive booklet in colors issued by the New York Belting & Packing Co.,

KELLASTONE

IMPERISHABLE STUCCO



Put an Overcoat on That Old Cold Home

Stop paying the fuel bills for heating "all out of doors"—lock out the cold drafts that filter through joints and cracks. Put a fine, big, warm overcoat on that cold home. Overcoat it with

KELLASTONE
IMPERISHABLE STUCCO

The scientific, original, magnesite stucco. Hermetically seals the house from cellar to roof against frost, wind, dampness and fire. Savings on fuel and paint bills soon repay the cost.

KELLASTONE never cracks like ordinary stucco—contains no Portland cement, lime or gypsum. Many beautiful color effects can be obtained by using various colored granite or marble chips. KELLASTONE may be applied in zero weather without danger of freezing.

Cover up the old age lines of that house. Transform it into a beautiful and modern home. Increase its sales value. Send for FREE BOOKLET—today.

Price Advance Only 15% in 4 Years.

NATIONAL KELLASTONE COMPANY, Mfgrs.
Room 515, 155 E. Superior Street **CHICAGO**

New York. It contains many color plates showing the various designs and color effects which can be developed with rubber tiling, also descriptive text explaining its application and manufacture.

Hand and Horse Power Stump Pullers, as manufactured by the La Plant Choate Co., Cedar Rapids, Iowa, are completely described and illustrated in a catalog issued by that company. There are many illustrations in this book showing how stumps are pulled out by these machines.

"A Handbook of Fireproof Construction" is the title of a booklet being distributed among the building trade by the Concrete Engineering Co., Omaha, Neb. In this booklet and two smaller supplementary pamphlets is contained an illustration description of the Meyer system of fireproof construction which is installed by the company.

"Sometown" is the title of a new booklet published by the Hollow Clay Products Association, Chicago, Ill. Written in story form, it is designed to create a desire for proper city sewerage by describing the bad living conditions in an unsewered town and contrasting them with the conditions of a well-drained city.

Garage hardware is the subject of a new folder from the Stanley Works, New Britain, Conn. It describes a set of hardware consisting of ball bearing hinges, foot and chain bolts, and the 1774 garage door holder, complete equipment for garage doors. The folder is now ready for distribution.

"Human Nature and the Factory Building" is the latest book issued by the Truscon Steel Co., Detroit, Mich. It discusses the basic principles of modern industrial engineering and shows the relationship between factory building and the human element in production. The book is well illustrated with pictures of modern factories.

"Shop Practice for Home Mechanics" is the title of a new book from the press of Norman W. Henley Publishing Co., New York City, N. Y. It was written by Raymond Francis Yates and is designed as a help for those having little or no experience in shop work. It also contains several chapters on the use of small tools and mechanical measuring instruments. Lathe work, drilling, reaming, pattern making, and home foundry work are some of the subjects discussed.

"Hollow Tile for the Home" and "Hollow Tile Farm Buildings" are the titles of two attractive books just issued by the Hollow Tile Building Association, Chicago, Ill. They cover very completely with attractive illustrations the building field from the hollow tile standpoint. Floor plans for the buildings are also shown.

Sidewalk lights are discussed in a folder issued by the American 3-Way Prism Co., Cicero, Ill. It contains architectural details and specifications for the installation of the Simplex Fresnel reinforced concrete construction which is manufactured by that company.

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Hardware Manufacturers Build New Plant

THE Gray Iron Foundry Co. of Reading, Pa., has under construction a $40,000 addition to its foundry. The new structure, which is of the daylight type, will be 60 by 200 feet, built of steel and concrete.

A section of the building will be put in operation within a few days and when completed will require a working force of sixty men.

Tabor moulding machines, with a total capacity of 6,000 to 8,000 castings daily, are being set up and will provide for the making of castings of every class weighing from one-half ounce to ten pounds each.

The addition to the plant was necessary to supply castings for hardware specialties, lawn mowers, lamp stands, household appliances, small machines, toys, novelties and other-goods which the concern makes wholly or in part in the machine, plating and assembling departments of its extensive plant which is thoroly equipped to handle orders in quantity thru ever stage of manufacture, from the blueprints to the finished articles.

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Fire Prevention Day

FIRE AND ACCIDENT PREVENTION DAY is an important factor in the campaign for the conservation of the national resources by reducing the preventable fire waste of the country and the terrible toll of life and accidents.

Here are listed a few dos and don'ts to prevent fires in your homes:

DON'T put ashes in other than metal receptacles, and don't dump them where they will come in contact with combustible materials.

DON'T use an open light when looking for escaping gas or in the presence of inflammable liquids.

DON'T use insecticides or liquid polishes in the vicinity of open flame lights. Many such compounds contain volatile inflammable oils.

DON'T use gasoline or benzine to cleanse clothing near an open flame light or fire.

DON'T use kerosene, benzine or naptha in lighting fires, or to quicken a slow fire—it may result in death.

DON'T permit oily rags to lie around.

DON'T hang electric cords on nails.

DON'T make bonfires of rubbish where the wind can scatter it. Burn it in a container.

DON'T throw away lighted matches, cigars or cigaretts.

KEEP waste paper and rubbish cleaned up, and remove from building at least daily.