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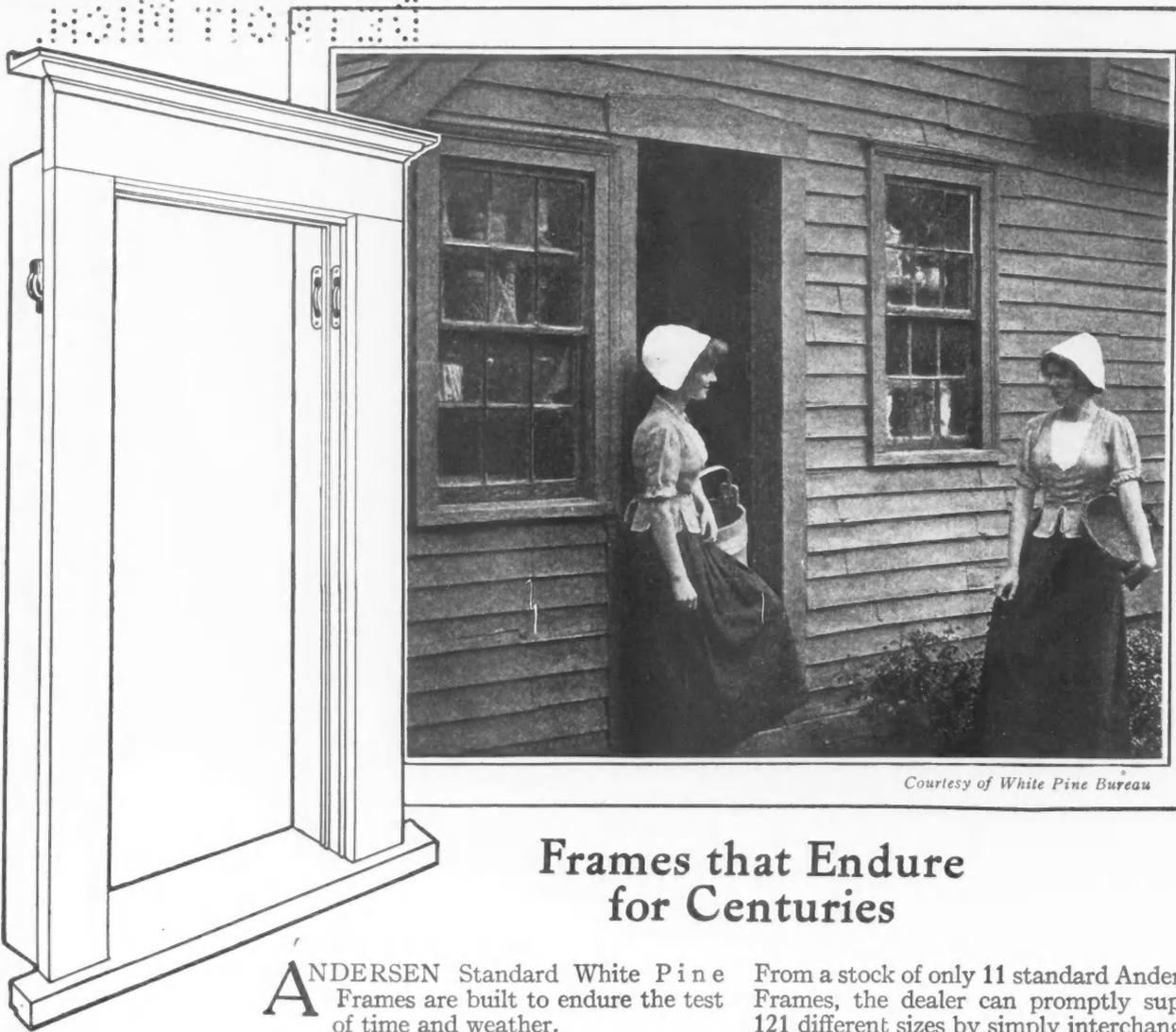
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AN INVITATION TO YOU

The AMERICAN BUILDER cordially invites and urges you to enjoy the privileges and benefits of its Correspondence Department. Any phase of any building question may be profitably and instructively discussed in this department. If your problem is a knotty, technical one submit it to the Correspondence Department and secure the benefits of the opinions of other experienced builders. It's a "give" as well as a "take" department and you are asked to relate your achievements and tell how you have conquered difficulties as well as to ask for information and advice. Rough drawings are desired, for they make clear involved points. We will gladly work over the rough drawings to meet publication requirements. The Correspondence Department is your department. Use it freely and frequently.



Courtesy of White Pine Bureau

Frames that Endure for Centuries

ANDERSEN Standard White Pine Frames are built to endure the test of time and weather.

In America's oldest homes White Pine has for centuries demonstrated its ability to withstand all weather conditions without warping, rotting, cracking or shrinking. All exposed portions of Andersen Standard Frames are made of White Pine.

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Each frame is packed in two compact bundles containing seven units. These seven units complete with pockets and pulleys in place can be nailed up in ten minutes.

Write for This Book

We have prepared an interesting book on the qualities and economies of Andersen Frames. Upon request, we will gladly send you a copy without charge.

Andersen Lumber Company
Department A-10 South Stillwater, Minn.



Andersen FRAMES

FRIENDLY CHATS *with the* EDITOR



Building Public Must be Re-sold on Lumber

IN 1906, when American lumber production reached its highest point, the average per capita consumption of lumber in the United States was approximately 500 board feet, says the U. S. Forest Service. Since that time the per capita consumption has rapidly and consistently decreased until in 1920 the average citizen used approximately 316 board feet. This is a reduction of 37 per cent in thirteen years, or nearly three per cent a year. Should this decrease continue at its present rate, by 1940 the downward sweep of consumption would approach zero.

This, of course, will not happen. The average consumption will ultimately reach a fairly stable level, which will depend mainly—so the Forest Service says—upon the extent to which our devastated forests are made again productive.

The Forest Service is correct in its figures; but there is a whole lot more to the diagnosis than forestry exhaustion. The building public is being unsold on lumber, and there will have to be a very different attitude on the part of lumber producers toward publicity and educational work in behalf of lumber products before the market will justify any extensive reforestation program.



Beautiful Granite Building to be Erected by U. S. Government in Brazil

A LARGE and beautiful building to be built chiefly of granite and concrete will soon be under construction at Rio de Janeiro, Brazil. The building is designed in keeping with the Portuguese Colonial style, much followed in Brazil. The materials will be granite with reinforced concrete walls, floors, stairways and roof to be finished in tile and marble. It will house the U. S. Government activities in that country.

While the building is being erected for a national exposition, it was decided to make it substantial and enduring and to use it after the exposition for the U. S. embassy. Following the decision at Washington to erect a permanent structure, five other governments have adopted the same sort of an idea and will have permanent, rather than temporary exposition buildings.

The walls of the U. S. building encloses a patio

or open court in which is a fountain and tropical garden. A wide corridor or gallery surrounds the patio with large arched openings on three sides and a main staircase on the fourth side on which all rooms of the first and second stories open. The walls of the patio, corridors and main staircase will be finished in a soft buff Caen stone, with the frieze and soffits of the overhanging cornices and the tile inserts of the walls all in high color, giving this central feature of the interior a striking and pleasing architectural and decorative effect which will show distinctly a Latin-American spirit. The building is being constructed for the United States of America by Dwight P. Robinson & Co., Inc., from plans and specifications and under the direction of Frank L. Packard, architect, of Columbus, Ohio.

The roof of the structure will be a perfectly plain hip roof without a break or dormer. The window and door openings of the first story are covered with ornamental wrought iron grills. The climate makes it necessary to have doors and windows open, and these grills serve as a protection. Grills are characteristic of the Latin-American architecture and add distinct charm to the general exterior appearance. The building is located on the Avenue of Nations, along which will be the permanent buildings of the following nations: Japan, France, Great Britain, Italy, Denmark, Norway, Belgium and Portugal.



Architect's Drawing of Official United States Government Building Now Being Constructed at Rio de Janeiro for the Brazilian Centennial Exposition. The building is of permanent construction and will serve as the American Embassy after the close of the Exposition.

Moving a Town by Truck

The Lumber Town of Jennings, Mich., is Being Transferred Bodily Into Cadillac, Eleven Miles Away

By W. A. CARPENTER

THE developments of the past ten years in the automotive industry are almost startling, when one calmly reviews them. Tasks that a few years ago would have been called impossible and wild dreams have been successfully accomplished by the truck and trailer. Practically everything moveable has been moved and almost daily we hear of some new triumph of automotive engineering. This is the story of one such accomplishment.

The big motor truck company of Cadillac, Mich., has just built a trailer of unusual design that is being used in a unique and unusual job—moving practically an entire village to Cadillac, a distance of eleven miles.

The town of Jennings, eleven miles north and east of Cadillac, was founded about a quarter of a century ago by the Mitchell Brothers Lumber Co., whose saw mill, chemical and flooring plant, gave employment to approximately 50 men. Jennings was a "company town" for tho it had a number of churches, "opera house," roller skating rink, community house, band stand, jail and other civic buildings, there was but one store in the village, that a general one, carrying all sorts of supplies, really a department store. About every able-bodied man in the village was employed in one of the three company mills.

When the village was founded the unbroken hardwood forests surrounded the village for miles and miles in every direction. A beautiful little lake nestled

among the hills, the waters of which were alive with gamey bass, pike, perch of unusual size and many other varieties of fish. Life in the little village was very nearly ideal. The company paid good wages and the needs of the inhabitants were simple.

But as the years rolled around, the standing timber around the village gradually disappeared before the onslaught of the men with axes and saws, until a few months ago the last of the big trees fell and then it was only a question of time when the fires in the boilers would be drawn and silence fall over the mills.

Various plans were considered for the preservation of the industrial life of the happy and contented little village, but all were discarded. Then was born the idea of moving the mills, the families and the residences to Cadillac, eleven miles southwest. Many plans were considered and rejected as impractical before the motor truck and trailer was considered. The truck company engineers studied the problem from every angle, then finally W. A. Kysor, president of the truck company, submitted a report to the lumber company which was accepted and the gigantic trailer illustrated in connection with this article was built. It was such a large size that it had to be built out of doors.

The next thing to be considered was the road over which the 30 to 45-ton load would have to pass. About eight miles of the distance is over the Michigan trunk



Typical Street Scene at Jennings Before the House-Moving Program Was Started. There are a number of streets very much like this one that will soon be barren waste.

highway, M55, the rest of the way over a fairly good dirt road. Considerable work had to be done on this highway, the road bed widened at a number of points and in all cases of this kind heavy planks of timbers were laid smoothly to make a level roadway. A bridge across the Calm River was widened and re-enforced. In the village entire streets were paved with heavy green planks to sustain the weight of the load, as the soil there is largely loose, soft, sand.

The houses to be moved vary in size from 24 by 30 feet to 24 by 40 feet. Many of them have hardwood floors, all are a story and a half high, well-built comfortable and arranged for convenience. The weight of the houses varies from 15 to 35 tons. The windows

electric light and telephone wires to allow the house to pass under.

At the time this article was written the rate of moving is about two houses every three days, or four per week, altho as the crew doing the work grows more accustomed to it it is thought a house a day will be brought over. There are from 75 to 100 of these residences to be moved, so the work will require all of the rest of the year to complete, altho there is a possibility that an early and heavy fall of snow may retard the work and make it necessary to complete the project in the spring of 1923.

The flooring and chemical plant will be brought to Cadillac, which will result in an increase in population



Residence of the Jennings Village Marshal Enroute from Jennings to Cadillac. Size of house 24x40 feet, weight about 35 Tons.

are left in all of them. So perfectly does the trailer function that there is not the slightest jar in any part of the journey and not a window has been even cracked, except in passing thru the city of Cadillac, when the limbs of shade trees along the street broke one or two when the first house was brought in.

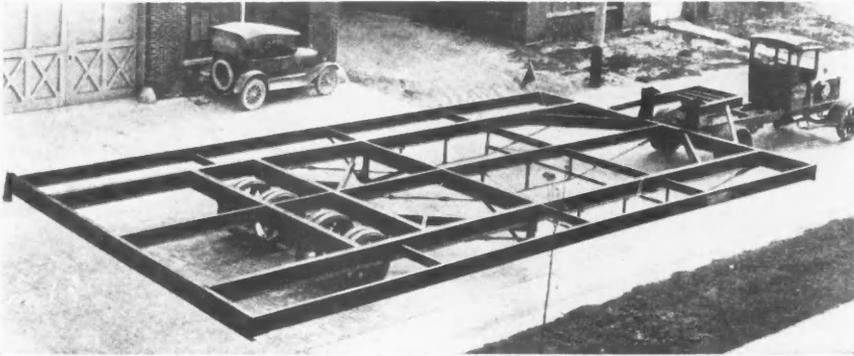
The eleven-mile trip is made in about four hours, which includes all necessary stops to wait for traffic to pass before entering upon a stretch of road too narrow to allow passing, tho the actual running speed is from five to eight miles per hour. Loading and unloading and passing thru the city requires a longer time than that, as it is often necessary to remove the

here and make additional homes necessary, there being at the present time a shortage of houses in the city.

Many of these houses are being sold at a very reasonable price to working men, making it possible for a man receiving average wages to own a very comfortable home with all modern conveniences, for considerable less than \$2,000.

So Cadillac gains two important industries, from 75 to 100 new houses and from 500 to 1,000 added population at the same time.

The trailer that is accomplishing this unique job is constructed with a frame work of heavy structural



Gigantic Truck and Trailer, Designed and Built Especially by the Acme Motor Truck Company for the Jennings House Moving Project.

steel beams. A channel and I-beam platform, raised 18 inches above the trailer frame and rigidly connected to it, transfers the load at the forward end of the trailer to a rocking fifth wheel mounted on the truck. This construction eliminates all twisting stresses from the trailer proper.

The trailer frame is supported at the rear by four steel truck wheels abreast, equipped with solid rubber tires. These wheels are placed under the trailer in such a position that approximately 75 percent of the weight of the trailer and load is carried on them, thus making it possible to carry a very heavy load on the trailer without overloading the truck used for motive power.

The trailer is designed to safely carry a maximum uniformly distributed load of 35 tons, and the complete unit weighs approximately five tons.

The trailer proper is 24 feet wide by 42 feet long. It consists of five longitudinal members of heavy section structural steel, securely held in place by two main and four supplementary transverse beams. Diagonal cross braces are built into the frame to distribute the stresses where excessive weaving and twisting would occur. To give added rigidity and strength to the structure, the three center longitudinal members are re-inforced with large truss rods securely anchored to the member at each end and supported at equal intervals by cast iron struts. The tension in these rods is equalized by a series of turnbuckles. All frame connections, gussets, braces, etc., are hot riveted, the entire frame reflecting the skill of the structural workers.

The platform at the forward end of the frame is raised 18 inches above the trails. It is constructed of channels, I-beams and plates, and substantially braced with diagonal members to the forward transverse member of the trailer proper in order to eliminate side sway. This platform is connected to the trailer frame by means of heavy gusset plates and channels of sufficient strength to safely transfer approximately 25 per cent of the weight of the trailer and load to the rocking fifth wheel mounted on the truck.

At the rear the trailer is carried on four cast steel

trailer frame. This unique construction not only cushions the load but successfully provides for road inequalities which is very essential when taking into consideration that the distance between the outside wheels is approximately 11 feet.

To relieve the springs from driving stresses a radius rod with flexible connections is provided for both sets of wheels the forward end of which is secured rigidly to the trailer frame and the rear end fastened to the end of the wrought iron pipe thru a swivel connection.

In order to maintain perfect alignment of all four



Enroute from Jennings to Cadillac. At many points the road was just wide enough to allow the truck and loaded trailer to pass.

wheels, the wrought iron pipes supporting the axle shafts are tied together by a system of flat bars secured to the trailer frame and so arranged as to compensate for spring deflection.

Method of Loading

The house is raised by a series of jacks located at each side. The two outside longitudinal members of the trailer, which are bolted on, are removed. The trailer is then backed under the building and the house is lowered until it rests evenly on the trailer frame. The side members are replaced if it is found necessary, and the unit is ready for its journey.

Tear out along this line and mail today to Chicago office.

You Know Us—We Want to Know You And We Want You to Help Us Edit The "American Builder"

WE HAVE 50 CASH PRIZES FOR THOSE WHO
SEND IN THE MOST COMPLETE SCHEDULES

One \$5.00 Prize, One \$2.00 Prize, and 48 \$1.00 Prizes

We want to get better acquainted with our readers—We are willing to pay out good money for the privilege of knowing you better.

If you will check over the items on this **your** Building Magazine. We want to know sheet (it will only take a few minutes of your just what your work consists of so that we time) and will send it in to us, we can prepare articles that you will find most valuable.

**PRIZE
CONTEST**

we will be able to serve you better and more intelligently than ever before.

We want to take a vote of our readers to find out what editorial features and departments you are most interested in. In fact, we want you to help us edit neither your name nor business secrets will be divulged.

Look over this list and check off the answers.

50 Cash Prizes *will go to those who send in the most complete and neatest prepared lists*

Tear out this sheet and mail it to Editor, AMERICAN BUILDER, 1827 Prairie Avenue, Chicago, who will be the judge of this contest.

Contest Closes November 15th PRIZE WINNERS WILL BE ANNOUNCED IN THE DECEMBER ISSUE

Confidential Census of American Builder Readers

Fill in as many spaces as you can

Name.....
Address.....
Population of city or town?.....
Area of your operating district?.....

IF A BUILDER PLEASE CHECK FOLLOWING:

Do you prepare your own building plans for the buildings you erect? Yes. No.
Amount of annual business? \$.....
Number of contracts handled in 1922?.....
What will be the number of the following buildings you have and are erecting in 1922?.....
 Residences Office Buildings
 Churches Stores
 Public Garages Theatres
 Farm Buildings Silos
 Apartment Houses Other Buildings
 Schoolhouses

WHAT IS YOUR OCCUPATION?

Builder
 Dealer in Building Materials
 Architect
 Other occupation. What?.....

(See over)

Tear out along this line and mail today to Chicago office.

Confidential Census (Continued)

IF A DEALER IN BUILDING MATERIALS, CHECK FOLLOWING:

- What are your principal lines?
-
- How many buildings do you furnish materials for in a year?
-
- Do you do any contracting?
- Do you recommend materials for buildings?
- Do you furnish architectural service for those about to build?

IF AN ARCHITECT, PLEASE CHECK FOLLOWING:

- Do you furnish complete architectural service, including specifications of materials?
- How many buildings did you plan this year?
- What was their total cost?

CHECK SUBJECTS IN WHICH YOU ARE SPECIALLY INTERESTED FOR EDITORIAL TREATMENT:

- | | |
|---|---|
| <input type="checkbox"/> Timber Construction | <input type="checkbox"/> Modern Barn Equipment |
| <input type="checkbox"/> Reinforced Concrete | <input type="checkbox"/> Farm Lighting and Water Supply |
| <input type="checkbox"/> Cement Products | <input type="checkbox"/> Metal Construction |
| <input type="checkbox"/> Brick and Tile | <input type="checkbox"/> Waterproofing |
| <input type="checkbox"/> Electric Lighting and Wiring | <input type="checkbox"/> Wall Board |
| <input type="checkbox"/> Heating | <input type="checkbox"/> Roofing |
| <input type="checkbox"/> Plumbing | <input type="checkbox"/> Machine Woodworking |
| <input type="checkbox"/> Painting | <input type="checkbox"/> Motor Truck Hauling |
| <input type="checkbox"/> Interior Decoration | <input type="checkbox"/> Sales Agency Opportunities |

PAINTING INFORMATION:

- Do you specify or recommend brands of paint, varnish, stains, waterproofings, etc?
- Do you sell them?
- Do you handle painting contracts?
- Do you decide on style of finish?
- Do you do interior decorating?

HEATING INFORMATION:

- Check the kinds of heating equipment you handle:
- Warm Air Furnace Steam
- Hot Water Vapor
- Do you recommend heating systems?
- Do you Purchase? Sell? Install?

PLUMBING INFORMATION:

- Do you recommend the type of Plumbing?
- Do you Purchase? Sell? Install?

LIGHTING AND WIRING:

- Do you handle wiring contracts?
- Do you select lighting fixtures?

BUILDERS' HARDWARE:

- Do you recommend the Builders' Hardware?
- Do you Purchase? Sell? Install?

CONCRETE AND CEMENT:

- About how many bags of cement will you use this year?
- About how many bags of cement will you sell this year?
- List some of the concrete projects you handled in 1922.

EQUIPMENT OWNED:

- Do you own a motor truck?
- How many teams do you employ?
- What is the length of your average haul?
- Number of Concrete Mixers?
- Hoists?
- Saw Rigs?
- Pumps?
- What other special equipment?
- Do you operate a Saw Mill?
- Do you operate a Planing Mill?
- Do you operate a Power Shop?
- If so, how many machines?
- Are you in the market for power equipment?
- What, especially?
- How many people regularly read your AMERICAN BUILDER?
- Do you use the AMERICAN BUILDER as a sales help to show your customers and prospects latest ideas in building designs, building materials and building equipment?

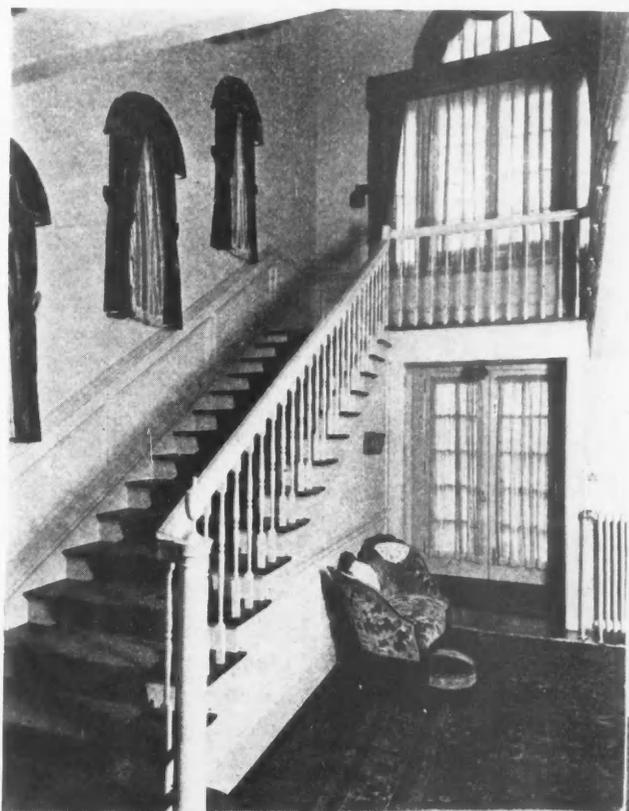
50 CASH PRIZES will go to those who send in the most complete lists

Poetry in a Stair

By ESTELLE BETHEA MARLOWE

EVERY true piece of architecture is a poem expressing the poetic nature of the builder just as truly as the writer of verse finds expression in the written symphony of words. The work of the builder is as truly a symphony in material.

Here is a poem of stately dignity in a stair. Much the same type of stair that one would imagine inspired Longfellow in his famous poem of the clock on the stair, for it was no more the clock, perhaps, than its impressive dignity from its post high on the landing of the stately old stair that wrung the homely verse from our great poet of the home. Here, however, the old style of the stair is made more complete in its appeal thru the injection of touches of modern art and improvement that combines with the old quaintness a certain finish peculiar to the newer architecture.



A View of the Beginning of the Stair, Taken from the Front Entrance Directly Under the Landing. The ease with which the stair can be seen from the entire lower floor is shown here. The large hall is made a part of the general house thru the double door leading into the dining-room ahead, and the wide door leading to a spacious drawing-room on the left. Thus the stair thru its position facing the rooms becomes a vital part of the home.

HOME PLANNING TALKS

*By Our
Head Draftsman*



“Cut Out the Waste Space and Provide Only the Rooms You Actually Need, If You Would Avoid High Home Building Costs.”

THIS is a compact age. A Middle West concern recently made a big success offering meat products fresh daily done up in 10c packages. The delicatessen store and the corner grocery, with everything done up in neat but small packages, are in step with the kitchenette idea in the home.

Small dining rooms and smaller kitchens are the rule today as we see the trend of things all over the United States and as our clients talk over their own building hopes and fears with us.

They want their homes smaller—fewer rooms in them, but these rooms large. Especially the living room has to be often 15 by 25 feet or larger, and a tendency of late to work out a high ceiling for it.

Home planning is decidedly following the lead of city apartment designing, wherein every cubic inch of space is utilized, where only as many rooms are built as the family actually has need of, and where ingenious space saving and convertible furniture makes certain rooms do double duty.

We sometimes sigh for the good old days when mother lived in the big house with two or three spare rooms for company, and where at Thanksgiving time the family could all gather around the big table in the dining room stretched out to twenty feet or more.

We sigh for those days, but they are gone forever. The visiting relatives are now comfortably accommodated at the neighboring hotel, and if a big dinner has to be planned it is the hotel chef that does the planning.

Yes, this is a compact age in home planning as in everything else. The labor and expense of keeping up the big home is avoided, and the money saved by building smaller and just what the family actually needs is

spent to good advantage for more complete home equipment and appointments, more plumbing, more and better electric wiring, plenty of convenience outlets, artistic lighting fixtures, quality builders hardware, beautiful interior decoration and efficient heating plant. We are designing our homes better every day, cutting out the drudgery, making them more livable.

SPEAKING of modern apartments, they are no longer limited to the large cities. We are having calls every day for apartment house plans and ideas from builders in the smaller growing cities all over the United States. In the railroad junction towns in particular, the apartment building home has found a warm welcome. Railroad men and traveling men feel

more secure leaving their families at home if they are in a building with others. Rents are high, too, for these three, four and five-room apartments—the smaller cities almost equaling the Chicago rental scale. This would show that these buildings offer an attractive investment return.

“HOW much will it cost?” That is the question we are asked almost oftener than any other. We can figure the cost pretty accurately too if we know all about how the building is to be finished and equipped, and if it is to be built in a locality where we are acquainted with labor and transportation costs. Without knowing these

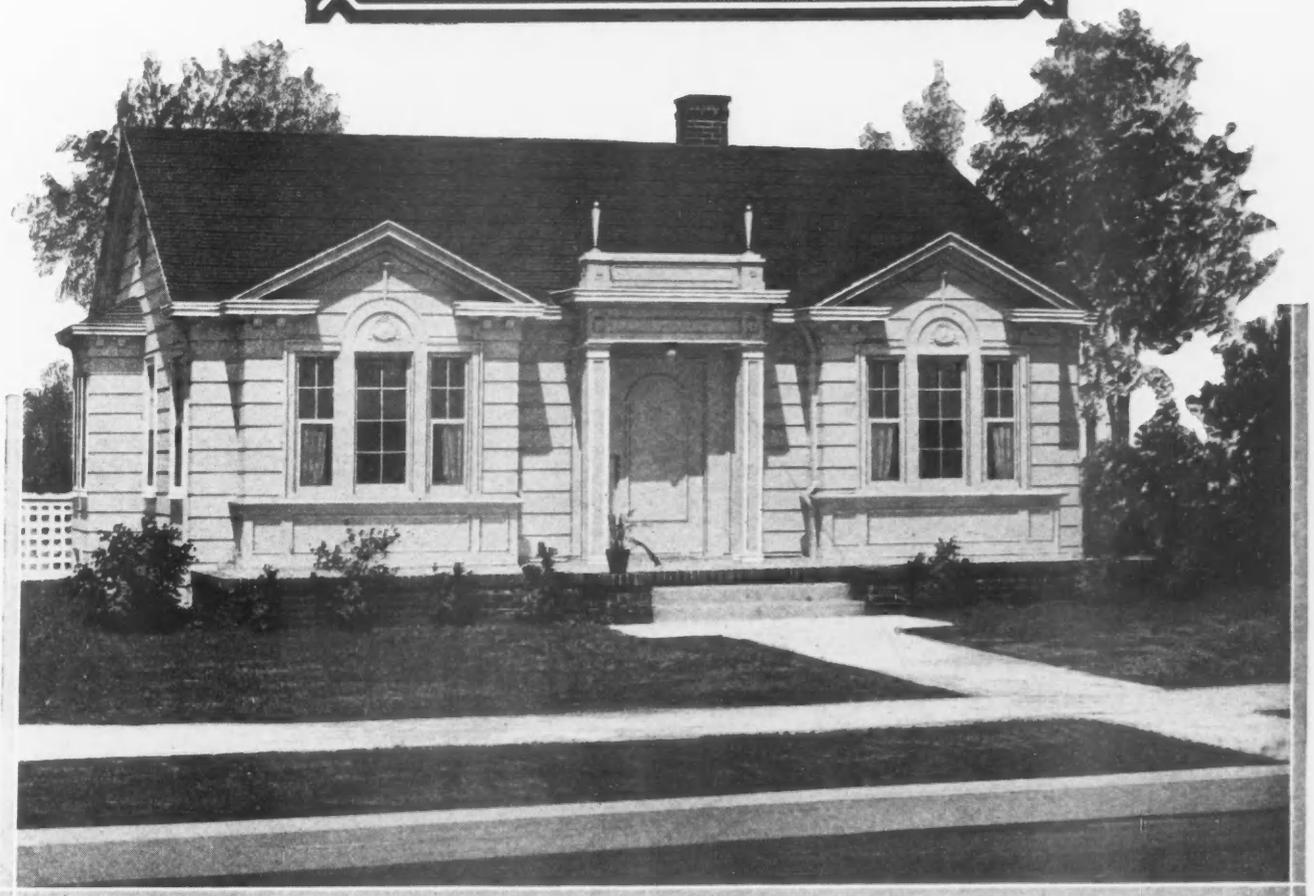
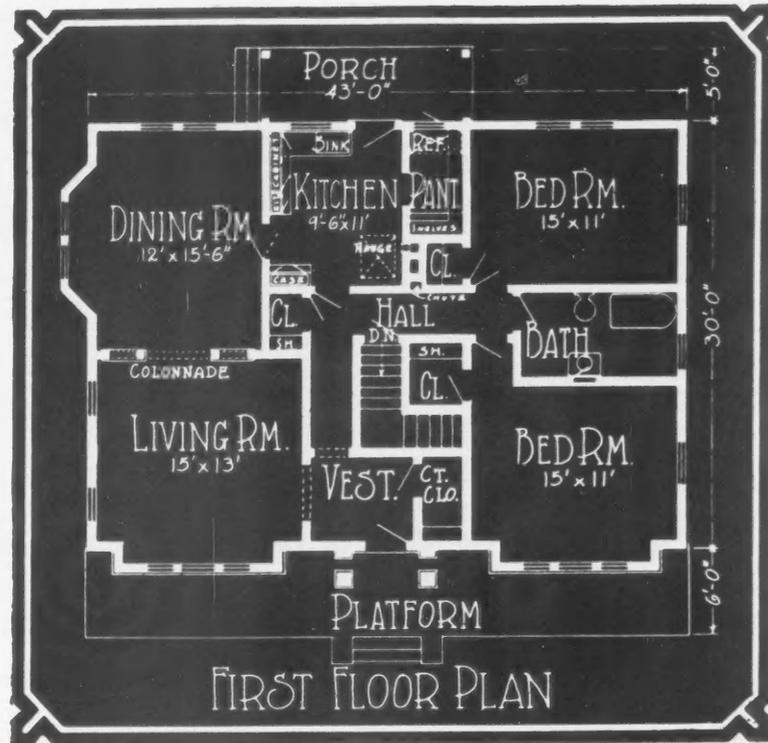
things it's a wild guess for anyone. There is just one right and proper way to get an estimate of cost on a proposed new building, and that is to get it from a responsible local builder or supply dealer who will stand back of his figure by delivering the materials and labor at the price quoted.

Our clients and the clients of AMERICAN BUILDER readers are often writing us asking this question, especially in regard to our Blue Ribbon Homes. We could make a good guess and it would be accurate so far as we know the details of the job; but after all, it is the responsible local man who will furnish the labor and materials who is the only one whose estimate has any value.

All buildings illustrated in the American Builder are real buildings that have actually been constructed and found to be practical and popular. Anyone interested in obtaining working plans and other detailed information should consult the nearest architect, builder or dealer, or write the American Builder, 1827 Prairie Ave., Chicago.

BLUE RIBBON HOMES

PRACTICAL
&
ARTISTIC



CHARMING BUNGALOW OF SIMPLE, ECONOMICAL DESIGN. Here we find the influence of both the Pacific Coast and South and some of the appealing features of the old-fashioned Colonial home have been incorporated into it with a very pleasing effect. The 5-room home is designed so that it is ideally adapted to a short lot. It is a frame structure and should be built very reasonably as there is no excessive expense in the way of materials. The front platform leading to the stately entrance is of brick as is the foundation. The interior is attractively arranged, the living and dining rooms on one side separated by a colonnade with the two bedrooms and bath on the other. The front entrance opens into the vestibule and there is also a roomy kitchen, pantry and back porch.

Getting Ahead Thru Study

Night Courses at Carnegie Tech. Opens Door of Advancement to Thousands

By R. S. CLARK

A ROMANCE of education for industry that can carry a lesson to nearly every American business center has been going on in Pittsburgh in recent years and is today unfolding in a startling way.

It is built upon the foreseeing genius of the great industrialist, Andrew Carnegie, and centers in the night work of the Carnegie Institute of Technology—an institution which has become a great university for industry and the arts, functioning in the center of one of the world's foremost industrial regions.

The romance is in the knitting into one close practical texture of the educational and the industrial elements of an entire district. Ultimately it will result, according to Dr. Thomas Stockham Baker, Acting President of the Institute, in the maintaining in Pittsburgh of the world's greatest research laboratories.

The workers of Pittsburgh—skilled and unskilled—have the fortunate opportunity of obtaining additional technical training at a great college. There are other

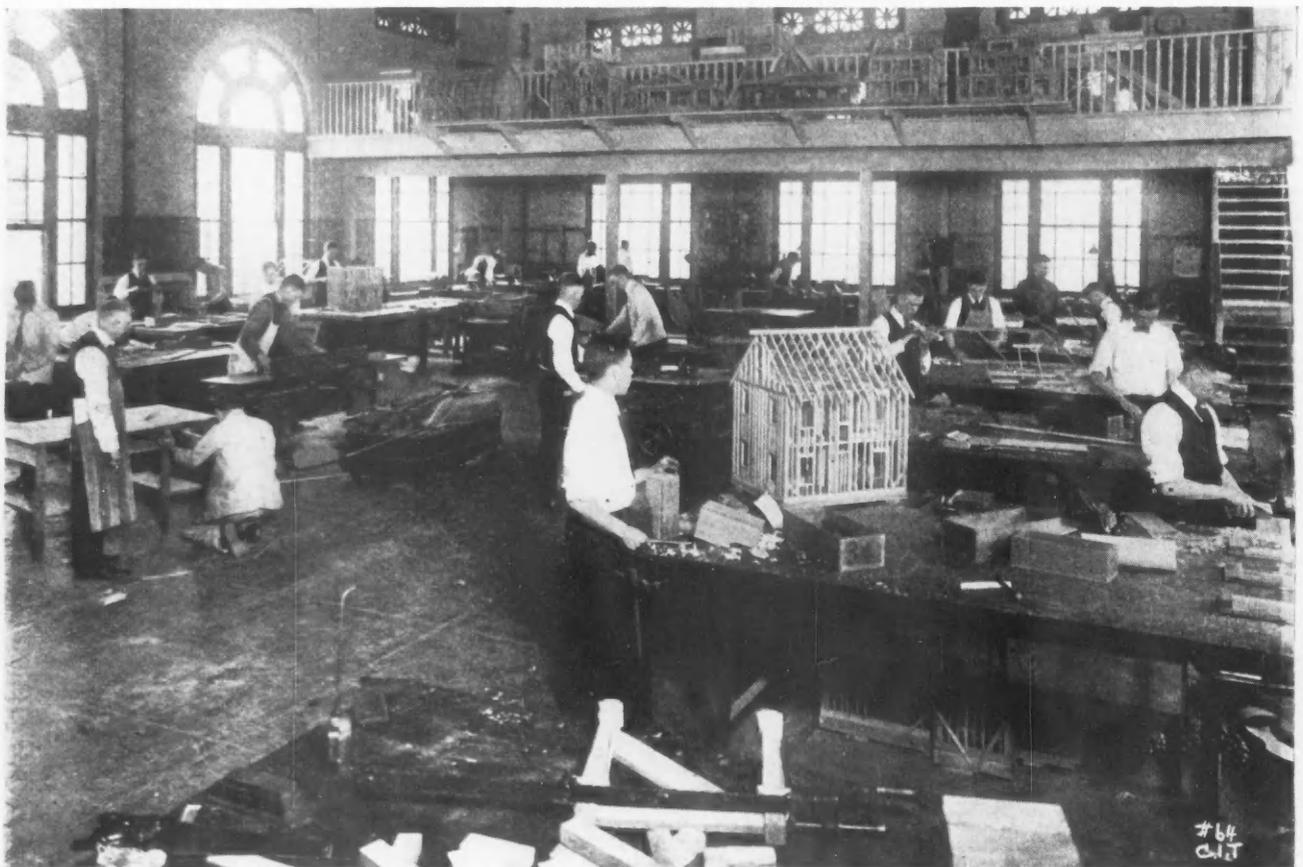
THIS fall season is the time for AMBITION to get in its work. There are night classes being organized in almost every city and town. Public schools, trade schools, and colleges are inviting ambitious men to enroll. Evening classes are planned to suit the needs of each student.

Not every man in the building industry can attend a Carnegie Tech., but every one who so desires can enroll this fall in some class, school or reading course that will profit him.—EDITOR.

American cities where the same thing holds true. A system of night education in and for industry has been built that touches practically every phase of industrial life. The effects of this system are today apparent in hundreds of

cases from shop girl to chief engineer.

Thru the medium of the night courses at the Institute, hundreds of ambitious youths each year are started on the road to increased earning power, and, in many cases, toward executive positions in their particular fields. But the outstanding feature of the Pittsburgh night courses is that many of its students go beyond the minor executive positions and become prominent business men, engineers, and professional experts. Many companies encourage both their younger and their college-trained employes to enroll, and often these students are assisted financially by their employers. The technical level of proficiency in the Pittsburgh district today, on the authority of Dr. Baker, is traceable directly and singly, in many cases, to some one man



The Woodworking and Carpentry Shop at Carnegie Institute Is a Popular Place for the Ambitious Young Men Studying Building Construction.



Life Class Studio in the Department of Architecture at Carnegie

or group of men in high positions who have obtained their training in the Technology Night Classes.

One of the advantages of the night courses is their flexibility. No matter how limited may be the previous education of a young workman, he can get a start. If he wishes a general technical training in any field he can get it. If he wants to specialize, he can do so. Special short courses are given to students seeking training in some one subject. On the other hand, a student can earn his collegiate degree in various fields in these same night courses. High school graduates are particularly interested in this opportunity, and a large number have already been graduated with bachelor degrees in various important engineering night courses, and have immediately advanced to more effective employment in their various specialized fields.

Still another source of students, almost unknown elsewhere in technical night courses, is the college graduate. Various advanced classes in engineering fields, chemistry and other branches of science are organized each year to accommodate college graduates desiring additional training. These students often combine the practical problems of their daily work with the practical and theoretical work of the night courses to the individual advantage of their employing companies and, not infrequently, of a whole industry.

As a matter of fact, the establishment of the Institute in 1903 by Andrew Carnegie as an industrial

school for the benefit of ambitious boys marked the beginning of an educational development, the remarkable significance of which to America no one realized at the time. Its purpose was, in a somewhat general way, to help young men to greater technical training, so qualifying them to increase their earnings. Now, in less than twenty years, the Institute has also taken its place as a great American college, in which both day and night students share in the use of one of the country's educational wonder-plants—the practical laboratories and shops at Schenley Park.

Hundreds of thousands of dollars have been expended, under Mr. Carnegie's endowment, to equip the Institute thruout with the most modern and efficient facilities, and the equipment of these laboratories and shops alone represent a substantial part of the entire investment. Technical experts and industrial leaders, both can learn things of profit from this great equipment.

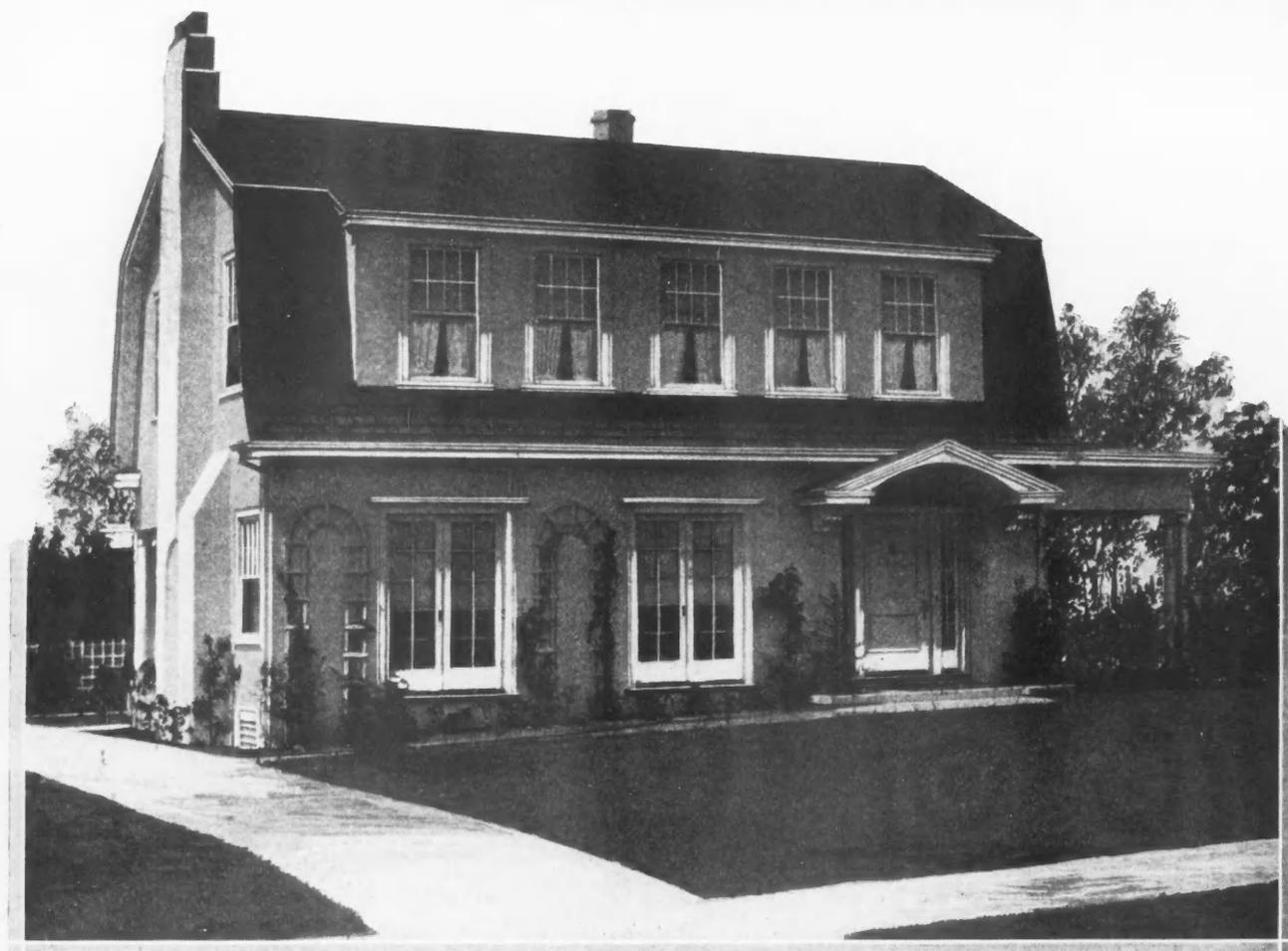
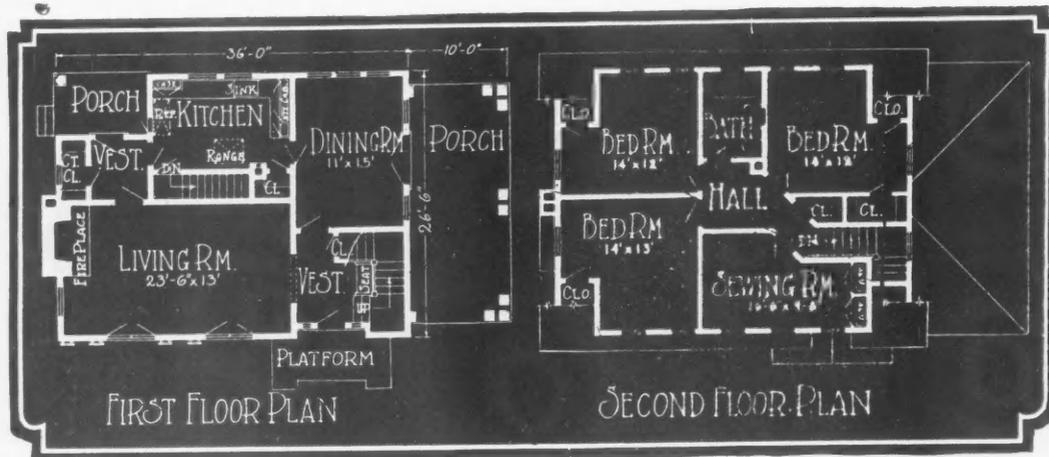
Most of the Pittsburgh night students enroll in the College of Industries, where the variety of courses offered is large, and where the educational requirements for admission are more lenient. In the building trades, the subjects taught are plumbing, carpentry, bricklaying, sheet metal, electric wiring, structural drafting, building trades drafting, heating, ventilating, concrete, masonry, plan reading and estimating.



The Drafting Room at Carnegie Tech. Is a Busy Place

BLUE RIBBON HOMES

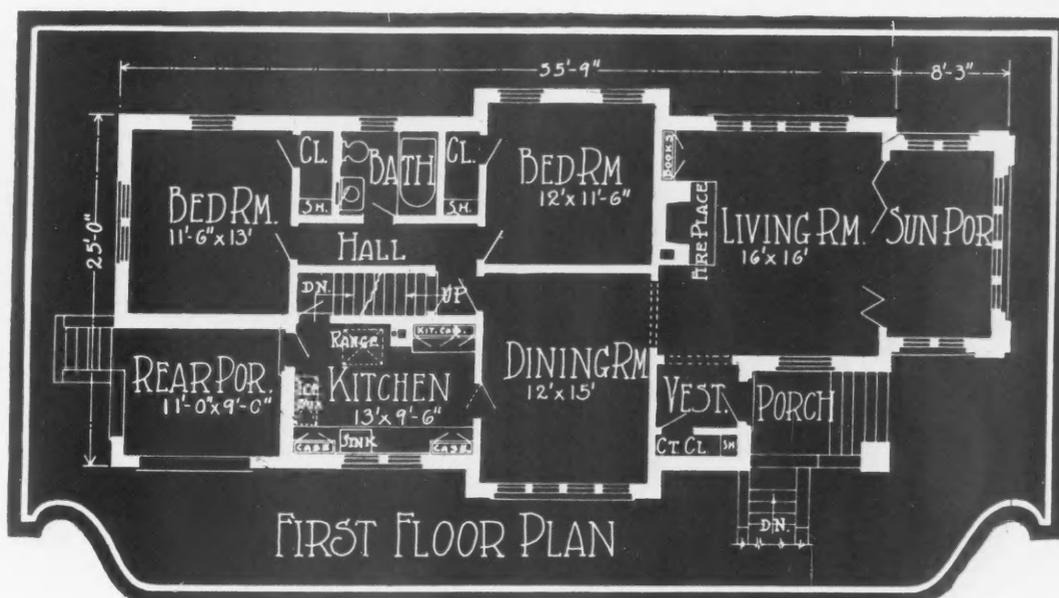
PRACTICAL & ARTISTIC



IMPOSING STUCCO HOME OF DUTCH COLONIAL DESIGN. This is a distinguished looking residence that would be an asset to any city. The 7-room home will particularly appeal to those who desire a stucco home of the Dutch Colonial type. The exterior is beautifully decorated with many features that add to its distinctiveness and charm. The large windows, lattice work, attractive front entrance and side porch have all been excellently designed and worked into the general plans of the home. The entrance opens into the vestibule; and the stairway leading to the second floor is directly on the right. The dining room is straight ahead and the living room with its fireplace is at the left. The kitchen and pantry and another vestibule leading onto the back porch also occupy this floor. Three bed rooms, all size 14 by 12 feet, a large sewing room and bath are on the second floor.

BLUE RIBBON HOMES

PRACTICAL
&
ARTISTIC



SUBSTANTIAL BRICK HOME OF ATTRACTIVE DESIGN. There is always something about a brick home that suggests permanency and strength and this one is no exception. The house has a number of features that add very much to its appearance. The ornate tile roof sets it off distinctively and helps create an impressive appearance. The walls are solid brick with face brick finish and the garage in the rear has been built of the same material. As the illustration shows, there is an entrance to the basement beneath the front porch. The sun porch at the front of the house opens into the living room where there is a fireplace. The two bedrooms and bath are on one side and the dining room and kitchen on the other. Two rooms can be finished off upstairs.

Landscaping and the New Home

By WM. BEAUDRY

WHAT a wonderful change in the looks of that new place, you exclaim. Yes—every new house ought to have the services of the landscape man as one of the most important of the sub-contracts that go to make a complete job—one that gives full satisfaction.

But turning to the accompanying pictures—the most unusual thing about this is that it took the owner only 8½ months to change from barren surroundings to a

finished landscape scheme—with flowers and shade in abundance.

The reason for this is that the owner selected his landscape plan many months before the actual execution of the work. This gave the landscape concern time to plan and arrange the details so that the work could be given the necessary time.

The combination drive, as used here, has many advantages; and, if made of brick or colored cement,



BEFORE AND AFTER PLANTING. The upper photo was taken Sept. 20, 1920; the lower, nine months later, June 10, 1920, was taken from exactly the same point. Such planting completes the new home. Residence of Mr. Christ Hansen, River Forest, Ill. Lamburtus Buurma, builder; Wm. A. Beaudry, landscape gardener.

enhances the beauty in that it does not cut up the yard. This is of particular advantage to small lots. Curved drives or walks, if skillfully worked out with tree and shrub arrangement, add to the charm of the picture.

Here the landscape man has a semi-formal placement of the trees, which dignifies the entrance as well as affords shade, which is so necessary.

The vistas that are created in the side lawn give a perspective of distance and altogether create a seemingly larger area than really exists—in other words, planting arrangement should be with this definite object.

A very interesting rear view is afforded by the use of a pergola with the central feature of a small pool

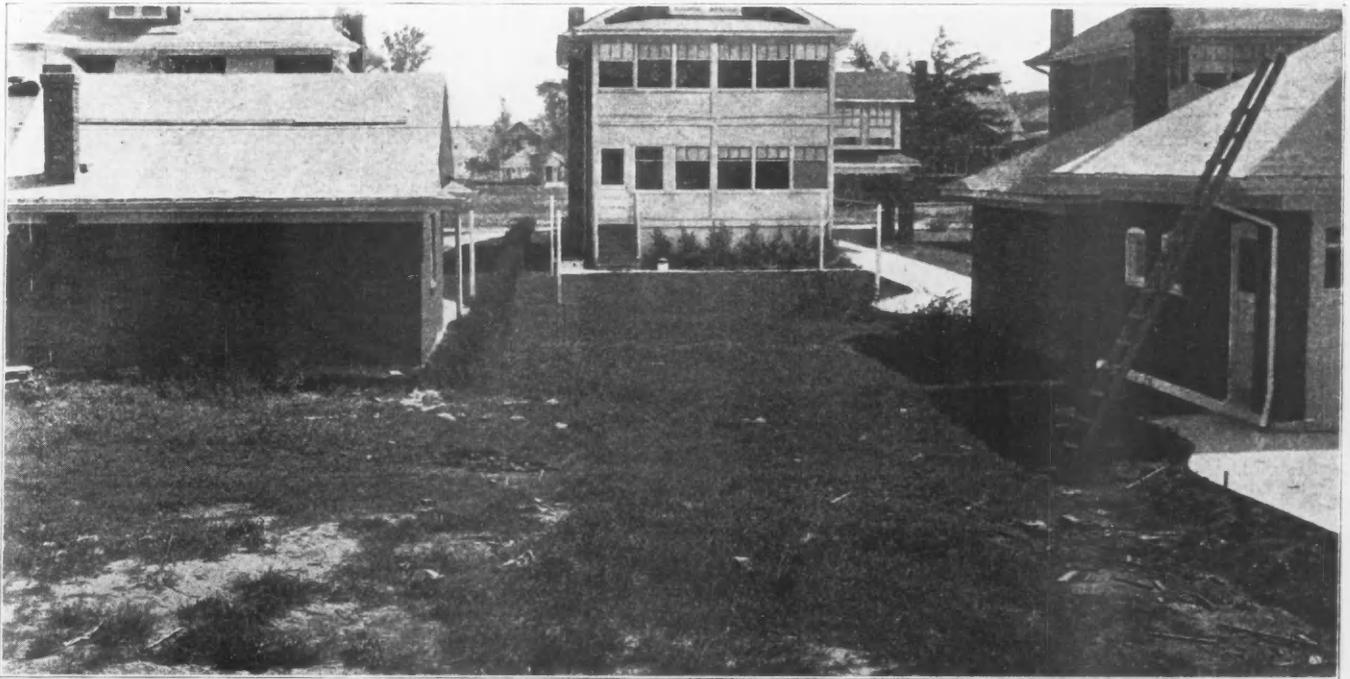
with pond lilies. This area, too, is very much enlarged by the landscape treatment, as is shown by the identical picture taken 8½ months before.

Builders and architects should take seriously the decided necessity of a well arranged plan long before the completion of the house.

The next step after the execution of the work is to see that the landscape concern maintains the picture after it is once created.

In connection with the picture—varieties mean comparatively little in comparison with the arrangement.

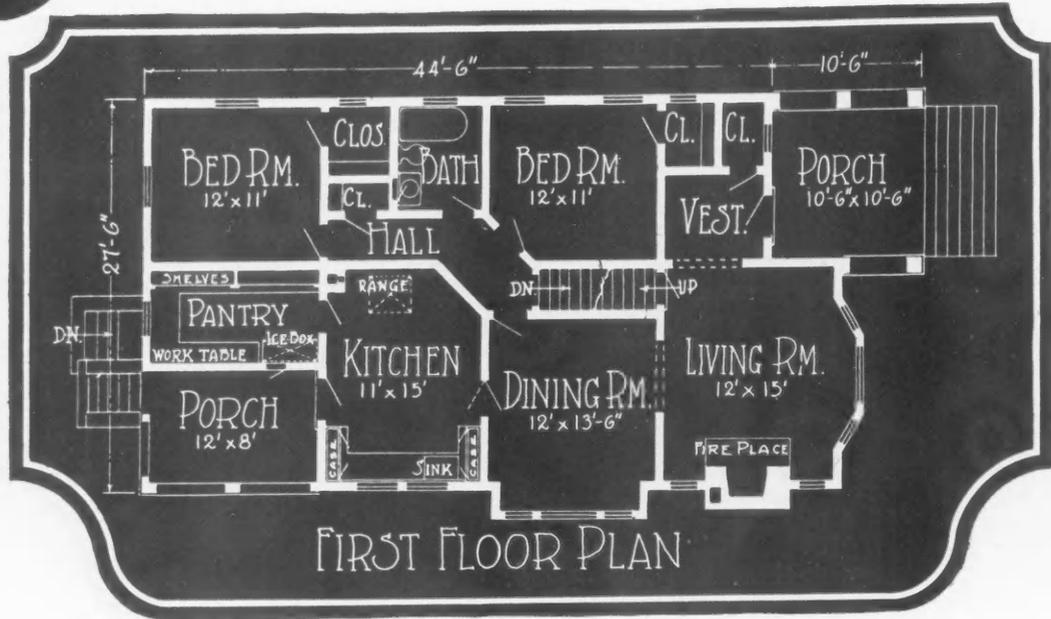
As plantings poorly arranged or cared for mean that the most beautiful, artistic house is not a good looking picture as a whole—look well to the plan.



The Rear Yard of the Christ Hansen Residence Shows the Surprising Effect of Enlargement Wrought by Pool, Pergola, and Planting. All of this accomplished in nine months. Don't stop at completing the house. Develop the Outdoor spaces also.

BLUE RIBBON HOMES

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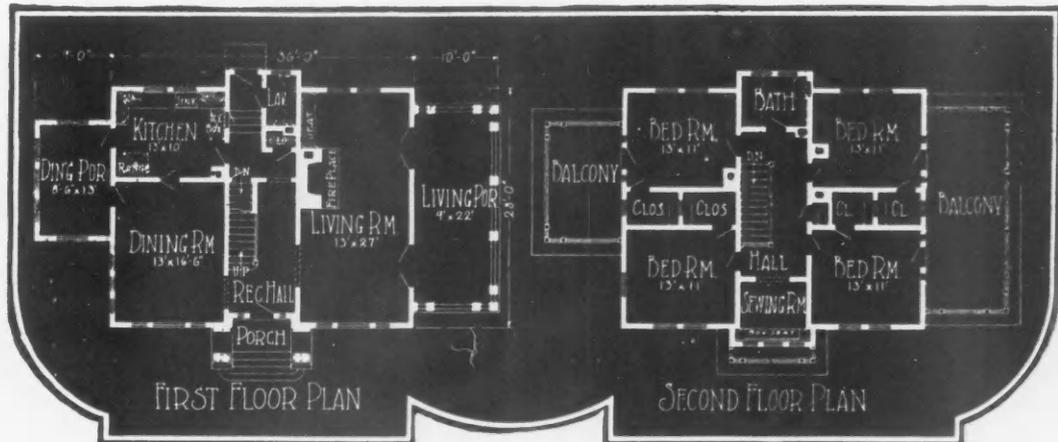


PLEASANT TO BEHOLD, PLEASING TO LIVE IN. At first glance, this home gives a favorable impression. The lines are graceful and substantial and all that it promises in convenience and attractiveness from without is fulfilled by an examination of the interior. There are five rooms besides the pantry and bath room besides two good sized and desirable porches. Each of the bedrooms measures 12 feet by 11 feet and in addition to the closets off them there are closets off the hall and vestibule. The work table in the pantry is something of an innovation that women will want. The curved bay and fireplace are appreciated features of the living room.

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BLUE RIBBON HOMES

PRactical & ARTISTIC



ROOMY AND REGAL. There are several distinctive features in this design. Note the large living porch, also the dining porch for warm weather use, the up-stairs sewing room with its box window seat and the fact that three of the four bedrooms open onto balconies. Even without these refinements the home would appeal, because it is roomy and built on tasteful and somewhat imposing lines. The house covers ground space measuring 28 feet by 54 feet, permitting the seven rooms to be of good size besides permitting porches and balconies that add useful room and attractiveness to the design. Altho large and pleasing, this house can be built economically.

Apartment with Inside Court

Single Street Entrance Feature of this Novel Building Which Suggests French Chateau Style of Architecture

By CHARLES ALMA BYERS

THIS little apartment building is designed along decidedly distinctive lines. Containing but four apartments, its interior planning is more typical of a small flat building than of the usual apartment structure. However, to all outside appearances it possesses a single or common street entrance, instead of individual entrances, as are customary in flat planning. And yet closer inspection will reveal there is something of the art of camouflage practiced in this matter of entrance designing.

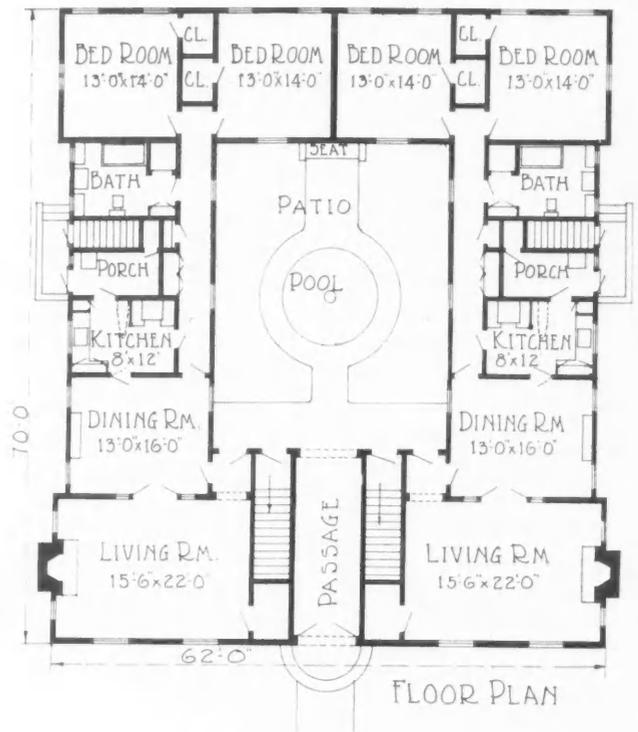
Inviting Inside Court

An especially distinctive feature of this building is its inside court, or *patio*. Twenty-six feet by thirty-three feet six inches in dimensions, this court is uncommonly spacious. Quite naturally it is treated in very attractive garden style—with cement walks, lawn plots and an enhancing use of flowers and other foliage. It also contains, in the center, a fair-sized circular pool with a fountain, handled in somewhat rustic style, and, constructed against the rear wall, an inviting lattice-enclosed garden seat, with an electric light overhead.

Entrance Designing Unique

The matter of entrance designing, particularly as it affects this inside court, deserves study. Entry from the street, it will be seen, is made by way of a broad cement walk and three circular steps, thru a large arched doorway leading into a cement-floored and arch-ceilinged passage, which, in turn, terminating in another arched doorway, leads directly into the court, or *patio*. The outer doorway, with an electric light at either side, is equipped with a pair of wrought-iron

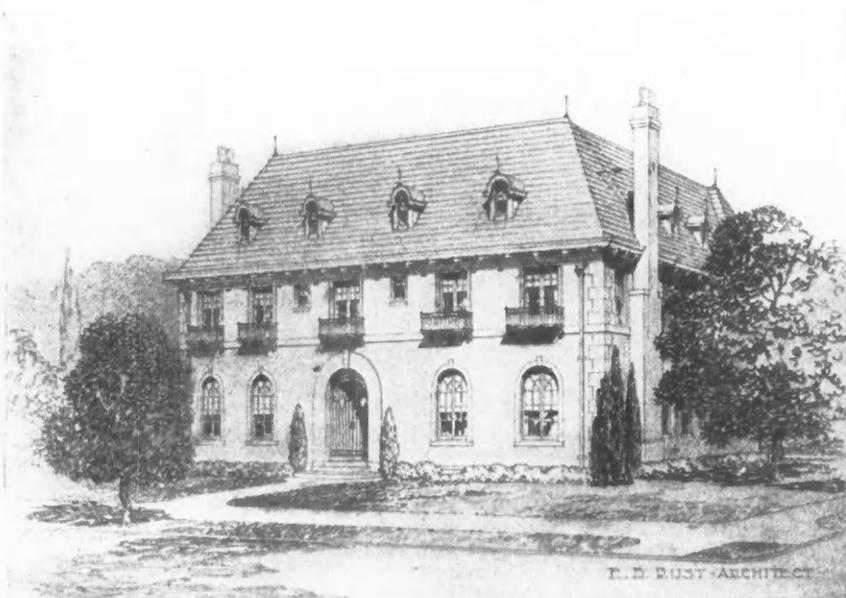
gates, which bear the name of the building, and the inside doorway is left entirely open. Directly before the latter, and extending entirely across this end of the court, there is a five-foot cement walk; and it is immediately off from this walk that open the individual or private entrances to the four apartments—two on



Arrangement of First Floor of Inside Court Apartment Building. The second floor is similar.

each side of the passage's court terminus. These four doors are designed with arched tops, constructed of vertically channeled material with a small glass panel in the upper part of each, and equipped with old-fashioned latches, while above each is a neat bracket-style electric light.

The building, in architecture, is suggestive of the French chateau style. The outside walls, including those facing upon the court, are of cement-stucco over metal lath and frame construction. They are given a rather pronounced sand finish and left in the natural light gray shade. The corners are finished with cement in imitation of stone, which, together with the frames of the entrance doorway and first-floor



Artists' Sketch of the Inside Court Apartment Shows Its Substantial and Pleasing Lines. E. B. Rust, Architect.

front windows and other cement trimming, is given a perfectly smooth surface and painted a slightly darker gray than the walls. The ceiling and walls of the arched passage are of stucco over metal lath and framework, and are blocked off in imitation of tile, likewise of light gray finish, while its cement flooring

is joint-marked to produce a suggestion of irregularly shaped flagstone. All wood trimming is in French gray, and the shingled roof is painted grayish black. The chimneys are of brick

on each of its two floors, with the exception that the right-hand apartment of the second floor possesses a small den and closet additional. The main entrance to the first-floor apartments opens to a small vestibule, thence thru an open, arched doorway to the living room; and to the second-floor apartments it is by way of a stairway leading to the living room. A pair of French doors in each instance is used between the living room and dining room, and a long, straight hall leading from a rear corner of the latter forms direct connection with the kitchen, bath room and two bed rooms of each apartment. Windows look out upon the inside court from all dining rooms, halls and four of the eight bed rooms. Each apartment is provided with a kitchen entrance that leads thru the customary screened porch, side stairways therefore being introduced for reaching the second floor also.



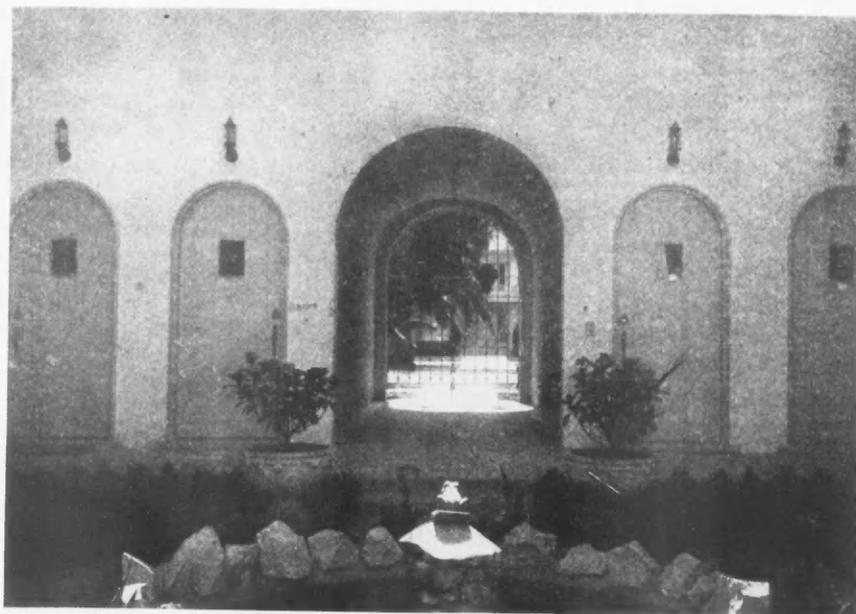
The Front Entrance Suggests a House Rather Than an Apartment Building.

construction, surfaced with stucco, and the foundation is of concrete, which, however, is finished across the front with a red brick veneer. The court pool quite naturally has its basin constructed of concrete, but it is edged in rustic style with split granite.

The exterior detailing is an especially interesting feature of the building. Aside from such work already mentioned, notice, for instance, should be taken of various points in reference to window treatment and of the enhancing effect produced in the roof designing. The windows, in the first place, are very largely of the casement type. Further, those of the first floor front are designed with arched tops, and the ones of the second story front, as well as some of the others, are finished with a small balcony-like wrought-iron railing—which, incidentally, like the entrance gates, are painted a sort of copper color. The roof features an effective style of little dormers, and is further characterized by a doubling of every fourth course of shingles, while the peaks are finished with a neat, spindle-like ornament.

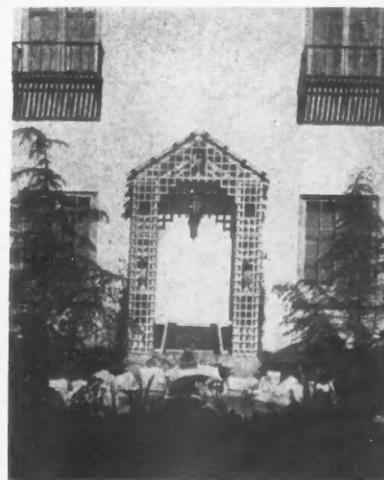
Particularly worthy of notice also is the second-floor balcony, which overlooks the court from the front.

The building has a width of sixty-two feet and a depth of seventy feet, exclusive of the entrance extensions. It contains two apartments of five rooms each

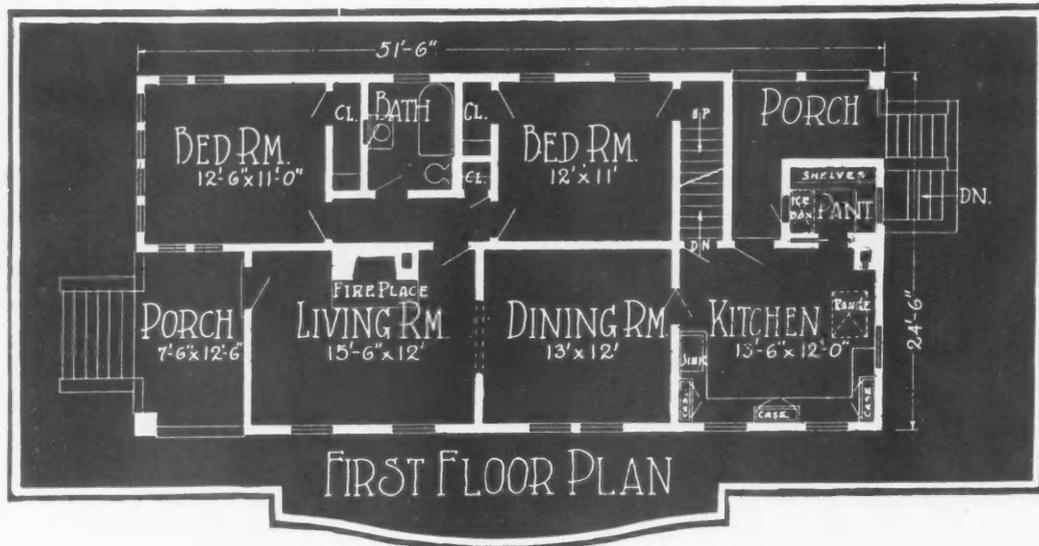
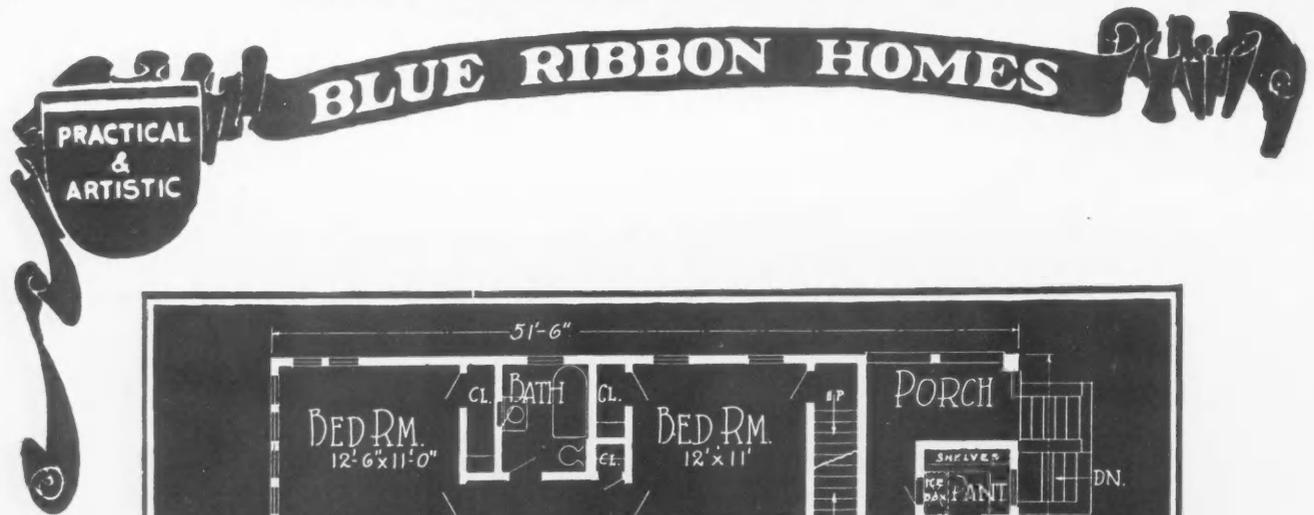


Individual Entrances to the Apartments Open Off the Court Just Inside the Main Entrance.

The building has no basement, but it is equipped with built-in gas radiators for heating, operated on the unit plan, and with all other modern conveniences. Known as the "Roberta Apartments," it is located in Los Angeles, Cal., and is the property of Louis F. Benton, its builder. The plans are by E. B. Rust, architect, of that city.



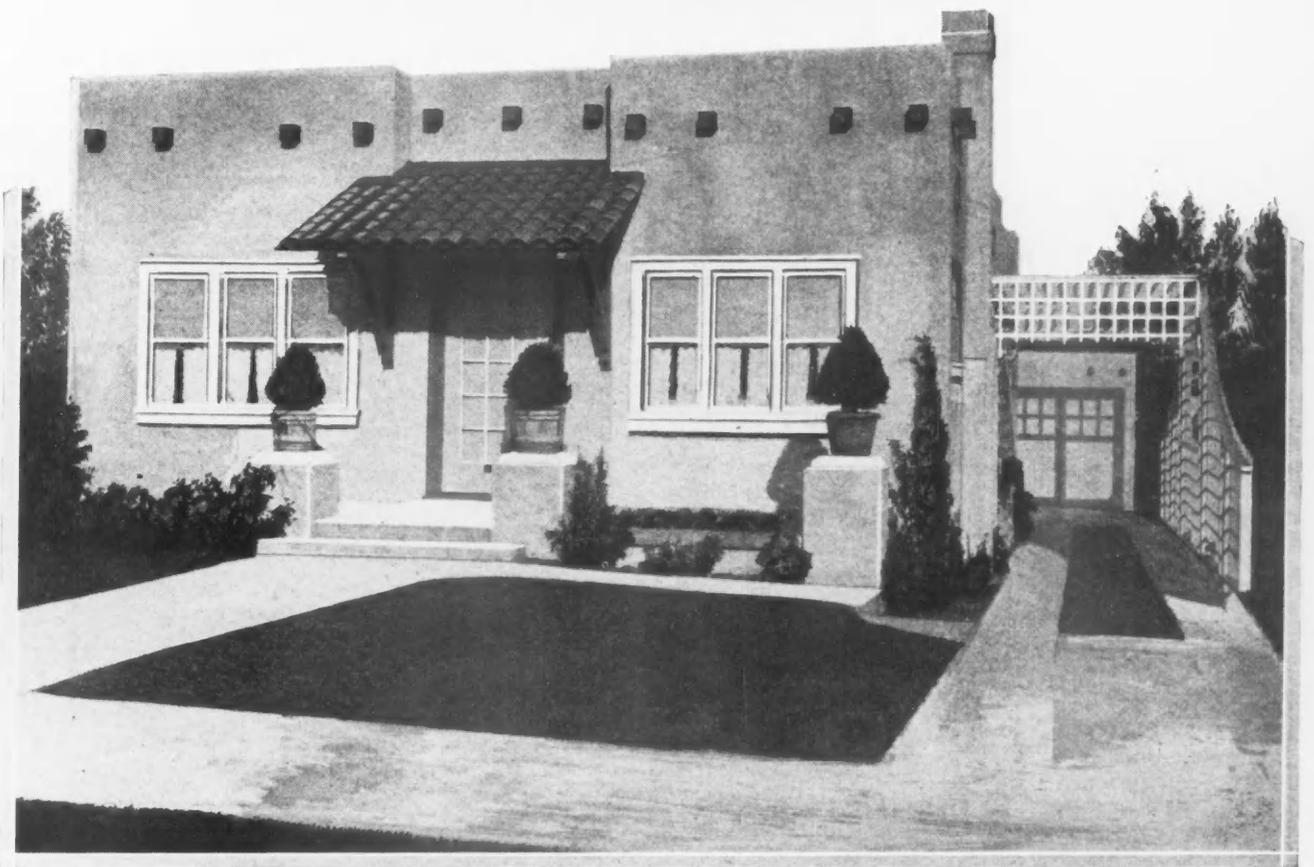
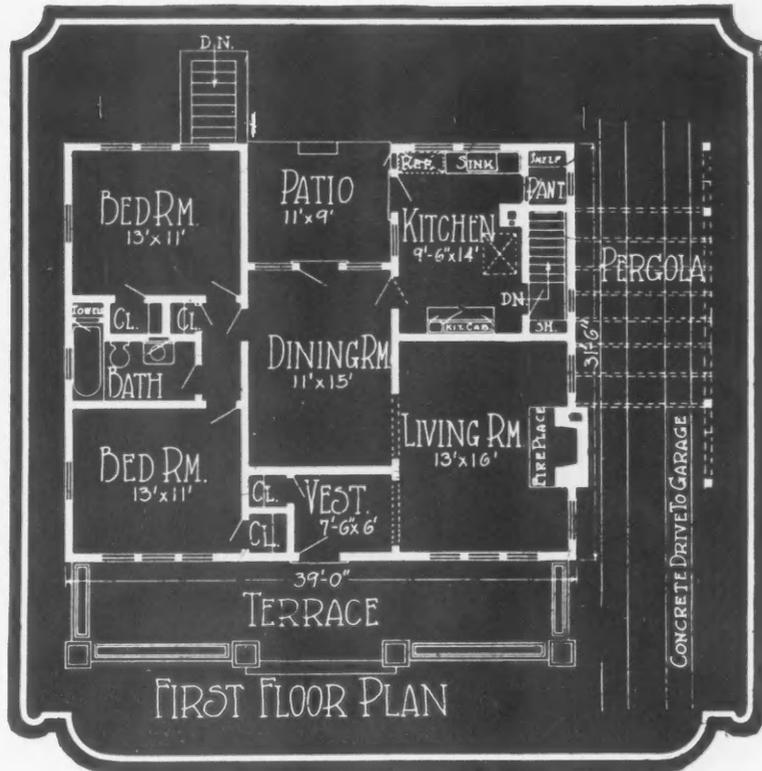
A Lattice Covered Bench Is a Pretty Nook in the Attractive Patio.



ATTRACTIVE AND ECONOMICAL STUCCO HOME. This home is especially designed for those preferring a stucco house that is cozy and compact. It has a conservative and substantial appearance, is well built and will last long and give excellent service. The rooms are all large and comfortable and the arrangement is very pleasing and convenient. From the porch you enter the living room which is 15½x12, with a good looking fireplace. To the left of the living room the two bed rooms and bath are located. The front bedroom with six windows is excellently lighted and ventilated as are all the other rooms. Every room has at least two windows. Straight ahead of the living room is the dining room and then the kitchen and pantry which are handily planned. The large back porch will also be very useful and serviceable. The one room on the second floor sets the house off attractively and it could be converted into a neat bedroom, sewing room or den.

BLUE RIBBON HOMES

PRACTICAL
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ARTISTIC



DISTINCTIVE SPANISH BUNGALOW WITH A PATIO. For those who prefer the Spanish style of architecture this 5-room home of economical cost should greatly appeal. While it reminds one of the quaint old Spanish missions, it still retains the delightful atmosphere and room arrangement of modern American bungalows. The walls are of stucco and the Spanish features, the flat roof, the protruding beams, the red tiled canopy, the pergola and the patio have all been designed and worked in attractively, giving both exterior and interior a pleasing appearance.

An Attractive Stucco House

Built in Hackensack, New Jersey

By R. C. HUNTER & BRO., Architects

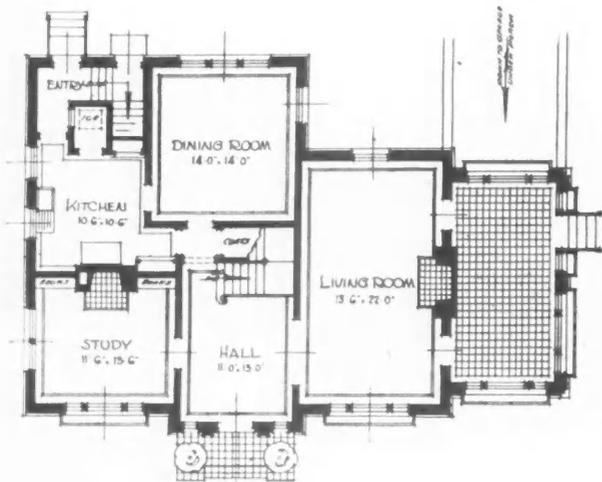
STUCCO walls, tile roof with wide overhanging eaves and an elaborate entrance doorway give this house an unusual character—a house that stands out from the crowd.

The color scheme, too, which, of course, cannot be shown in the photographs, is not what most stucco houses have, it is not a "thundercloud" of gray and

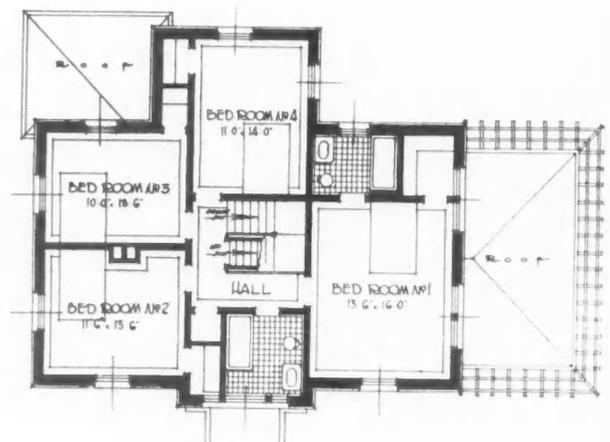
black but rather a colorful picture in yellow and green that suggests the sunshine and brilliant beauty of California.

The architects have used only warm colors, yellow was the basis thruout.

The stucco is tinted a deep cream, almost a yellow, the woodwork and trim finished a deeper tone, bor-



First Floor Plan



Second Floor Plan



Beautiful Residence in the Italian Villa Style Built in Hackensack, N. J.

dering on the buff, while tile roof and the shutters are a warm yellow green. The entrance porch has a floor of deep red tile.

The exterior walls are of hollow tile, stuccoed on the outside and plastered on the inside. The walls are dampproofed under the stucco and the latter was waterproofed. This insures permanence.

The plans are as practical and economical as the exterior is attractive, nor is the exterior expensive, in fact, good permanent construction is, in the long run, the most economical.

As one enters the house the main rooms open up well, the living room on one side and the study opposite, both with large open fireplaces.

The dining room is at the back of the house with its outlook on the garden.

The living porch of this house is ideal; completely enclosed with sash, screens and awnings, a tile floor, rough plaster walls and ceiling and flower boxes under all of the windows. It is the most popular room in the house, and justly so.

Under the living porch is the garage, a most convenient location.

Four bed rooms, two bath rooms and the various closets complete the second floor.

The front entrance detail of this house shows what is meant by good design.



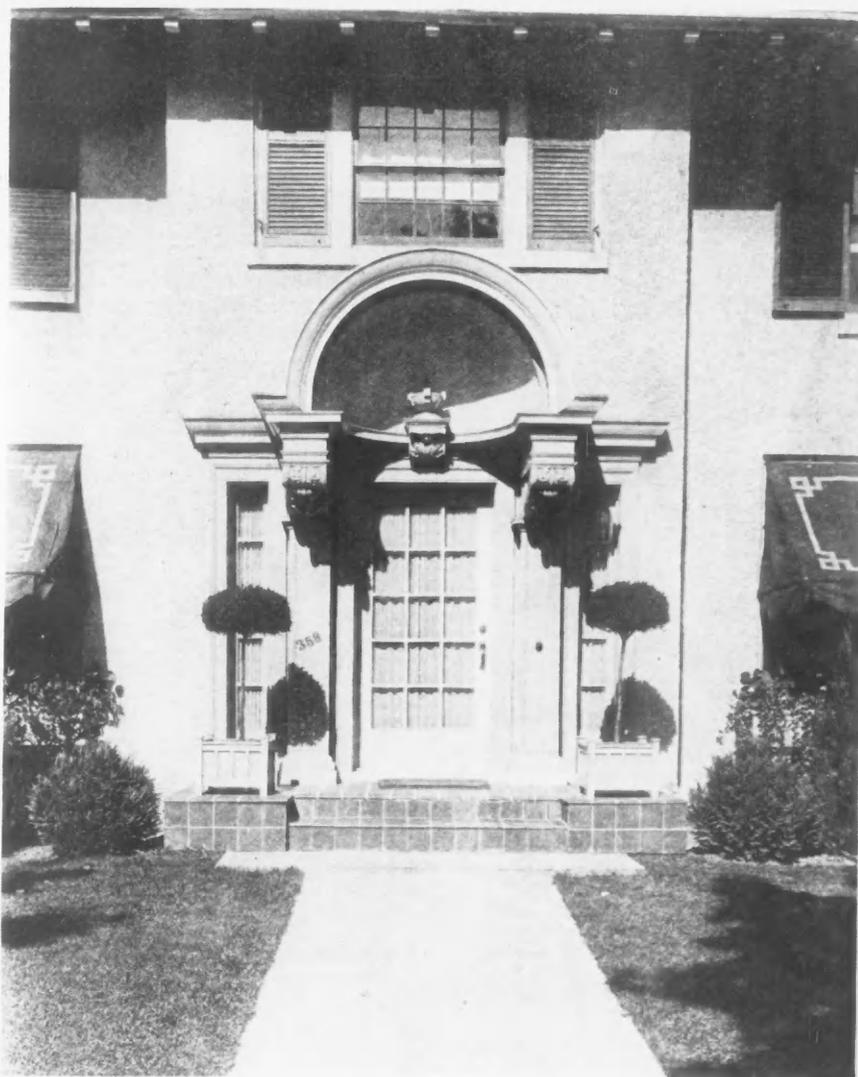
Who is an Architect? It Depends on Where One Lives

THE first impulse is to turn to our dictionary; if it happens to be the "Standard" you will find that he is "One skilled in practical architecture; one whose profession it is to devise the plans and ornamentation of buildings or other structures and direct their construction."

This does not seem to settle the question, at least in law. As a matter of fact the making of an architect in some states requires long and serious preliminary and technical training while in another state a man not possessed of the same qualifications may be accepted as an architect. The first state says he isn't an architect and the second says that he is. They both say it by a standard of law.

We have not solved the problem in our country by federal act; it is doubtful if we could, even tho there were no constitutional barriers in the way. We have twenty-two definitions to date covering that number of states; some day we shall have forty-eight.

The American Institute of Architects has, in the past, met the problem in its own way, as far as related to its membership, but one cannot help speculating as to the future attitude of this representative body. Can the Institute demand anything



Detail of Front Entrance of Beautiful Stucco Residence Built in Hackensack, N. J.

but the best in granting membership? If it does insist on the highest standards, will not its field be limited to the states requiring the highest standard by law? It seems certain that the "Model Law" adopted by the Institute is a rule that it must use in testing the qualifications of candidates for membership.

It seems also fair to assume that a person calling himself an architect in a state where the lawful use of the title does not meet the accepted standards of the Institute may not be accepted for Institute membership unless such person can pass the examinations and requirements of the state having the maximum standard.

The architects have the companionship, in their journey, of lawyers, doctors, teachers and others classed as members of learned professions. All kinds of expedients have been tried such as "reciprocal transfer"; but one state does not recognize the right of anyone in another state to govern its actions, or to examine its applicants for professional attainment.

One state says that you may be called an architect if you are a Canadian, but not if you are a Mexican; other states say that you cannot be an architect unless application has been filed for American citizenship.—Journal of the American Institute of Architects.

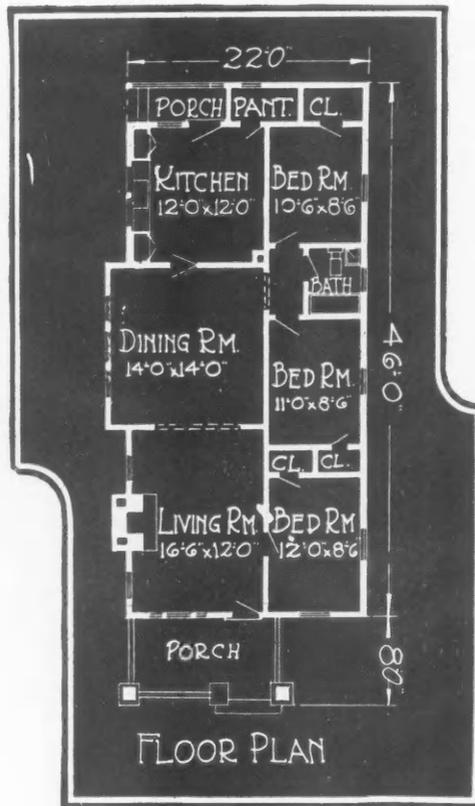


What Becomes of the Rest?

GOVERNMENT reports show that only 30 per cent of the wood in a forest reaches the form of seasoned, unplanned lumber.

PRACTICAL & ARTISTIC

BLUE RIBBON HOMES

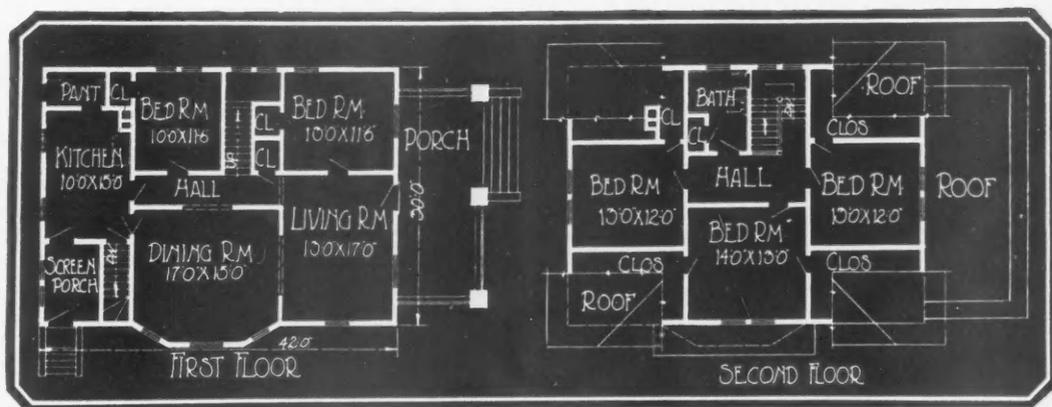


A COZY WESTERN BUNGALOW. Here is a very attractively arranged frame home that is designed especially for a narrow lot from 25 to 30 feet wide. The brick porch and fireplace distinctively set off the rest of the house and make it stand out as being different from the ordinary homes on the street. The six rooms are very conveniently arranged. From the porch you enter the living room which is excellently lighted and ventilated by four windows and is of comfortable size, being 16½ by 12 feet. The room to the right of the living room which has been designated as a third bed room could be converted into an attractive sewing room, den or library. The other rooms are all of pleasant size, well lighted and ventilated and the house could be heated effectively in winter.

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BLUE RIBBON HOMES

PRACTICAL & ARTISTIC



SUBSTANTIAL AND COMFORTABLE HOME OF PLEASING DESIGN. This is an 8-room frame house particularly adapted for a fairly large family, as there are five bed rooms and all the other rooms are large and comfortable. The porch is spacious and inviting and sets off the rest of the house very favorably. The screen porch at the rear is also a desirable feature. The materials used are plain and economical and the house should be built quite reasonably. On the first floor are the dining room, living room, kitchen and pantry, and two bedrooms. The other three bedrooms are on the second floor along with the bathroom. The bedroom on the first floor at the front of the house and with one of its windows facing on the porch is so arranged that it could be converted into a sewing room, library or small office as it opens directly onto the living room.

Correct Illumination for Exteriors

Practical and Attractive Advantages May be Realized if Attention is Given to Grounds and Garage Lighting

By A. W. POWELL and H. A. SMITH

WHILE the subject of lighting the grounds is particularly of interest to those having suburban homes, there are still many parts of cities where the street lighting may be supplemented by a lamp at the entrance of the driveway. This light acts as a welcome to guests, as a means of protection and also will contribute to the appearance of the property. The use of an ornamental standard that matches the architectural style of the house, with an opalescent glass globe or lantern type luminaire, is good practice. A 50-watt Mazda lamp in this will enable the driver of an automobile to see the entrance clearly.

Minimum Glare

When the driveway is of considerable length, it becomes necessary to place lights at least at sharp curves or particularly dark spots. The size of the lamps used will depend upon the surroundings, but Mazda lamps ranging from 25 to 75 watts should fulfill all requirements. It is necessary that these lamps be used on standards that will raise them above the direct line of view of the driver. The glassware used should minimize glare in the driver's or pedestrian's eyes.

The greenhouse or fountain lighting offers opportunities for special effects that are beautiful and unique. Colored lights may be used that will render the view

at night far more interesting than by day.

Concealed light sources are effective for illuminating banks of ferns or rocks. For general illumination of the greenhouse, lamps in opal reflectors should be installed close to the ceiling.

Sports are now pursued at night with as much enjoyment as in the daytime, due to the modern method of lighting. Data on lighting the tennis court are obtainable in a bulletin for general circulation, "The Lighting of Outdoor Sports."

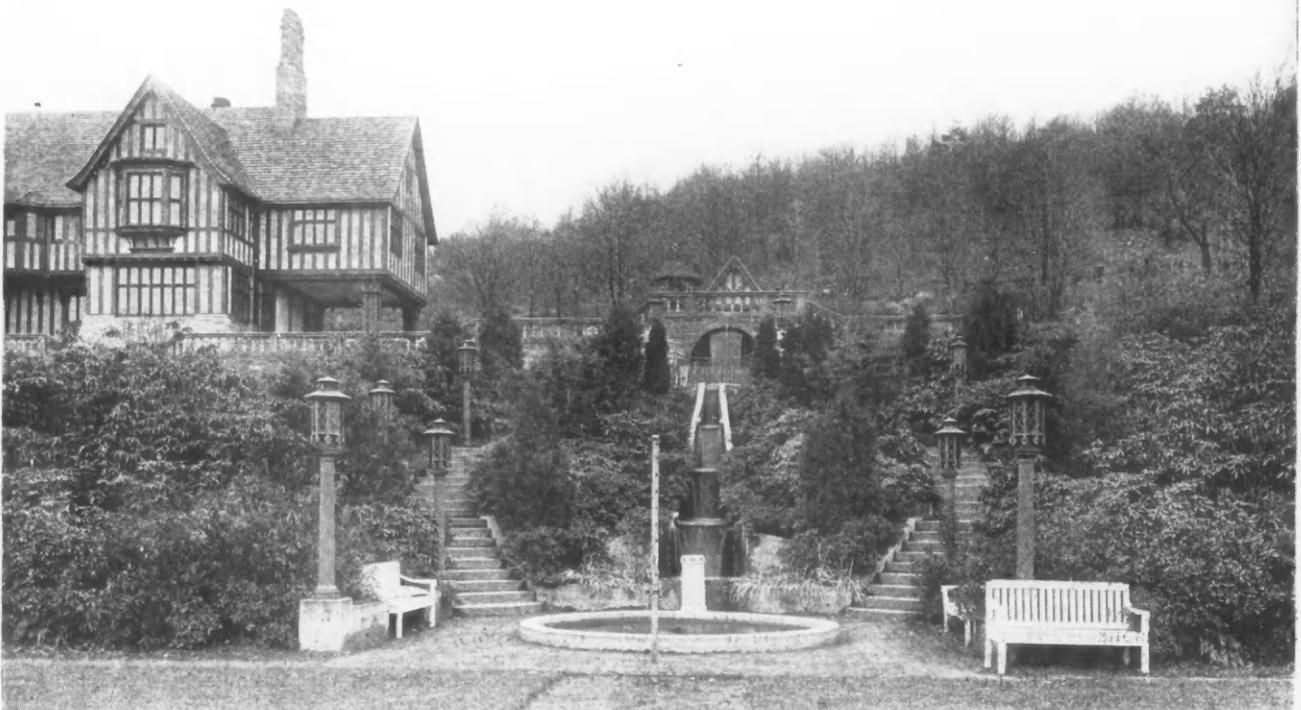
Care must be taken to use waterproof fittings for all fixtures that are to be used out of doors. Outlets

should be provided on the outside of the house to facilitate the decoration of the grounds for special occasions.

Garage Illumination

Electric light is a necessary adjunct to the garage in reducing the fire hazard, promoting safety and making adjustments and repairs in a satisfactory manner. General illumination should be furnished by one or more overhead luminaires, depending on the size of the structure. Bowl enameled Mazda C lamps in steel reflectors, porcelain enameled, of the dome type, are desirable for this service. They should be controlled by a wall switch near the entrance. Several convenience outlets are also necessary with a number of rein-

EDITOR'S NOTE—*This is the last article in the series on illumination for the home, each of which is complete in itself. While this concludes a very helpful series subsequent issues of the AMERICAN BUILDER will have equally valuable articles on various phases of lighting and the wiring of buildings.*



Beautiful Places Like This Are Attractive at Night if Properly Lighted.

forced cords, Mazda mill type lamps and wire guards, as portable lights. In working on the engine and transmission, such equipment proves of value.

Wiring—Its Importance

The standards for proper wiring from a protective basis are established by local underwriter's codes and ordinances. These must be adhered to. The choice between different systems is governed largely by economic considerations and need not be discussed here.

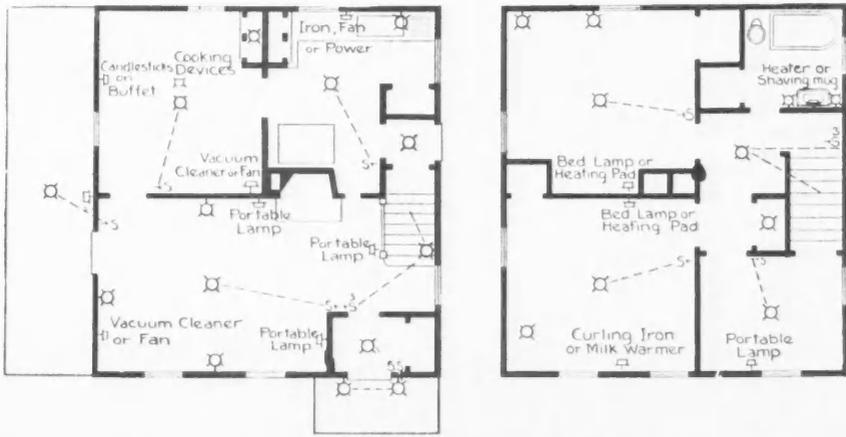
Attention should be directed to the desirability of making the initial installation complete. A given amount of installation work can be done at much less expense when doing the original work than at a later date. The mistake is often made of omitting convenience outlets and wall switches in order to keep down the cost of wiring. This will certainly be regretted when one begins to appreciate that some of the real advantages of electric service are lost.

Too Many Outlets Unlikely

The statement can be made with a reasonable degree of certainty that "one cannot have too many outlets." The errors in practice are all in the other direction.

A feature which should be incorporated in each house wired in the future is the use of the standardized luminaire receptacle. This device makes it possible to "hang a fixture like a picture" and one can change bracket or ceiling luminaires at will without the often prohibitive delay and expense of calling in an electrician to make any connections.

It will be as simple to move a fixture from one room to another as it now is to move a table lamp. A person living in a rented home need not be content with the lighting that happens to be installed, but can use his own distinctive, individual fixtures just as he does his pictures, draperies, and furniture.



Conveniences Provided in a Completely Wired Home

Special Aids

The special wiring devices which add materially to the convenience of the installation are almost innumerable. Among them might be mentioned:

The switch handle or small indicator on a pull chain socket provided with luminous material which glows in the dark, making it possible to locate the control readily.

Switches with small lamps concealed in their mechanism which serve to indicate that the attic or cellar lights are burning. Buzzing devices serve the same purpose.



Homes Completely Wired Are More Livable

Switches can be attached to the ceiling or concealed in a canopy where wall switches are missing and it is not deemed advisable to do any extensive wiring.

Three-way switches for controlling the light from two points.

Two or more circuit switches in one mechanism to produce various degrees of lighting by pushing or turning the bottom a certain number of times.

Switches which operate automatically when a closet door is opened or closed.

Master switches for lighting the whole house from the owner's bedside in case of emergency.

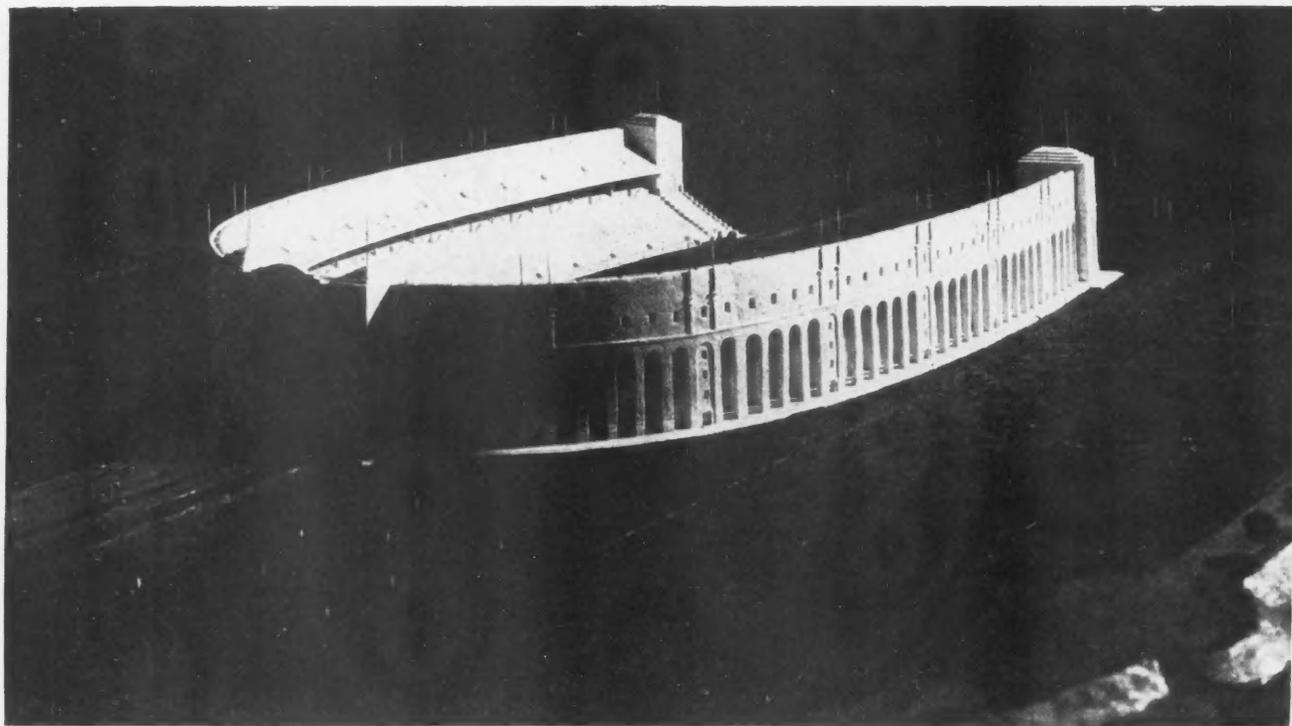
Convenience receptacles which can be installed in the wall, baseboard or floor under a table. These should be of the standard type to take a plug with 1/4-inch parallel blades spaced 1/2-inch apart so that all plugs are interchangeable.

Bell ringing transformers which do away with maintaining batteries for this purpose.

Toy transformers which can be used to provide a low voltage circuit that can be safely used in the nursery for children's electric lamps.

Sockets to convert candlesticks so that they will serve as electric lamps.

New devices of this nature are constantly being developed and the adaptability of electric service continually broadening in scope.



Model Showing the Way the Ohio Stadium Will Look When Completed.

Ohio's Double Deck Stadium

Immense Structure Used 14,000 Tons of Cement and Will Comfortably Seat 100,000 When Complete

By W. P. DUMONT

COMPLETION of the Ohio Stadium, a \$1,341,000 contract at Columbus, O., is attracting the attention of thousands of followers of the athletic fortunes of Ohio State University and the building industry as well.

Preparations are being made to seat 65,000 people, a capacity crowd, on dedication day, October 31, when the rival football teams of Ohio State and Michigan universities clash in an important Western Conference game.

New Plan Followed

In being horseshoe shaped, the Ohio Stadium follows the style of the Harvard Stadium, but in being double-decked, the Ohio plan sets a new style. The top deck will not only bring 22,000 seats much closer to the playing field than would otherwise be possible, but it will likewise provide shelter in inclement weather for

half of the 43,000 seats in the lower deck. Should the open end of the horseshoe-shaped structure be closed at some future date the resultant seating capacity would approach 100,000.

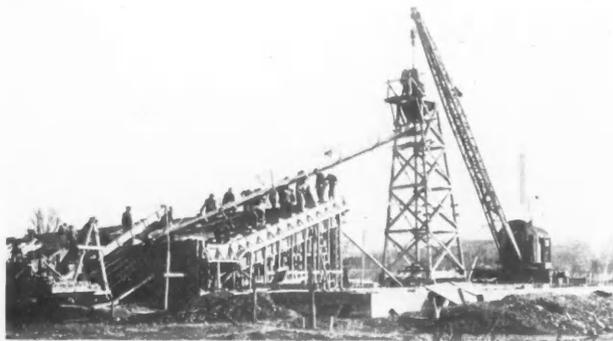
A concrete and steel dome 70 feet in diameter, to span the main entrance at a height of 85 feet; 78 arches, each 13 feet wide and 56 feet high; and two south towers at the peg end of the "horseshoe" will lend beauty to the outside of the stadium. Field houses, trophy rooms and offices will be housed in the towers.

14,000 Tons of Cement

Forty-three hundred tons of steel, 14,000 tons of cement, 17,000 tons of sand, 33,000 tons of gravel and 1,500,000 feet of lumber are figures conveying some conception of the amount of material to be consumed in construction. Twenty-one miles of oak planks will go into seats alone.

Horseshoe Measures One-Third Mile

The Stadium proper towers 107 feet. It has an outside circumference of one-third of a mile and covers a ground area of 150,000 square feet. Spectators may be admitted from one to 83 entrances. Fifty-two portals on the lower deck and 29 on the upper deck will feed 112 aisles in such a way that the Stadium may be emptied of a capacity crowd in seven minutes. Entrance to top seats in the lower deck and upper deck seats will be provided from the rear by 12 concrete ramps pitched at an incline of 15 degrees.

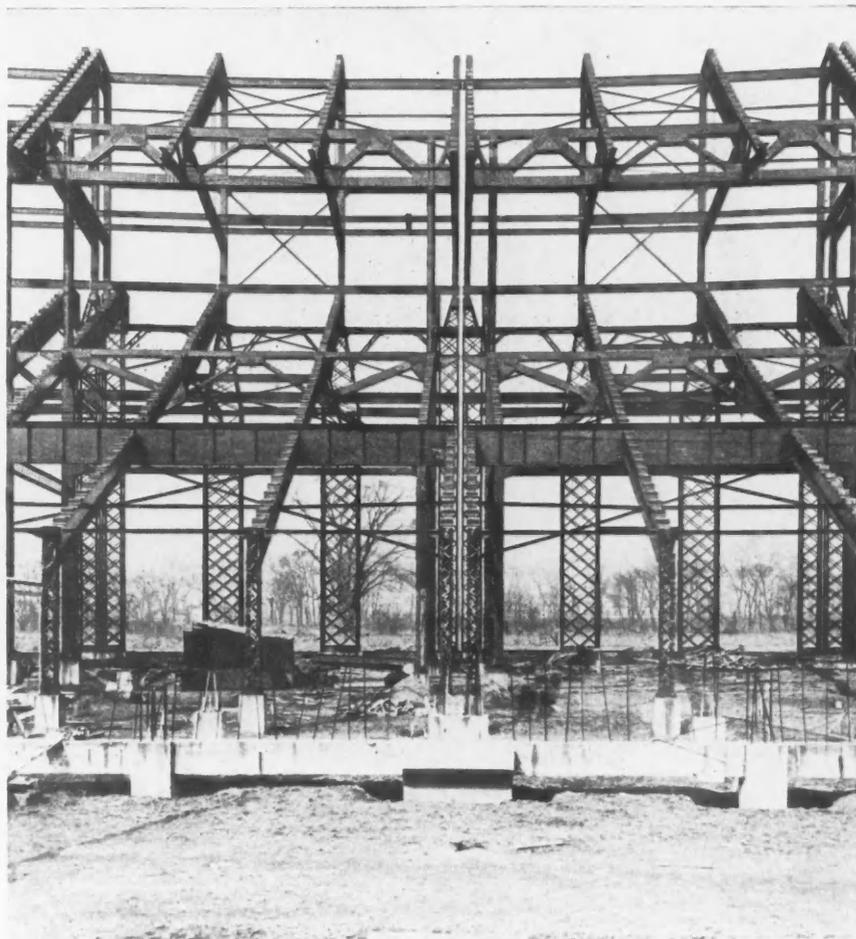


Chuting Concrete Into First Deck Seat Forms.

The first engineering problem encountered after the contract for construction was awarded to E. H. Latham Co. of Columbus in July, 1921, was involved in the laying out of foundations. The difficulty lay in the fact that all lines of the Stadium are curved. The main north and south axis having been determined, base lines were then established at 350 feet on either side of and parallel to the main axis. Actual points for the structure were located by a system of co-ordinates from the base lines.

Before excavation work started, a standard gauge track was laid around the entire structure, 25 feet in from the outside line of foundations. The three outside rows of footings and the north tower foundations were excavated with a clam-shell bucket, operated by a locomotive crane from this track. The rest of the footings, with the exception of the southwest tower, were excavated by hand. Excavation for the southwest tower was made by using a stiff leg derrick located just outside the north wall.

On the east side a satisfactory bearing material was found from 3 to 5 feet below the surface of the ground. But on the west side, which is located in what was formerly river bed, it was necessary to excavate to a depth of 8 to 15 feet to secure a satisfactory bearing material. The deepest foundations for the Stadium are 17 feet below the level of the varsity football field. In excavating for the outside line of footings, which are large and close together, it was found advisable to dig a continuous trench 15 feet wide from the south-



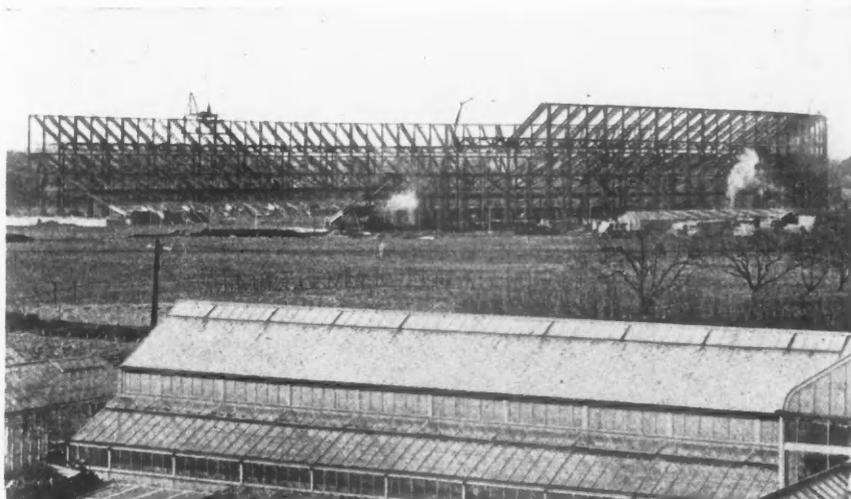
To Allow for Expansion, the Ohio Stadium Is Being Built in Thirty Distinct Sections with Gaps Between as Shown in This View.

west to the northwest tower. Wooden sheathing was used in all excavating on the west side and around the north end.

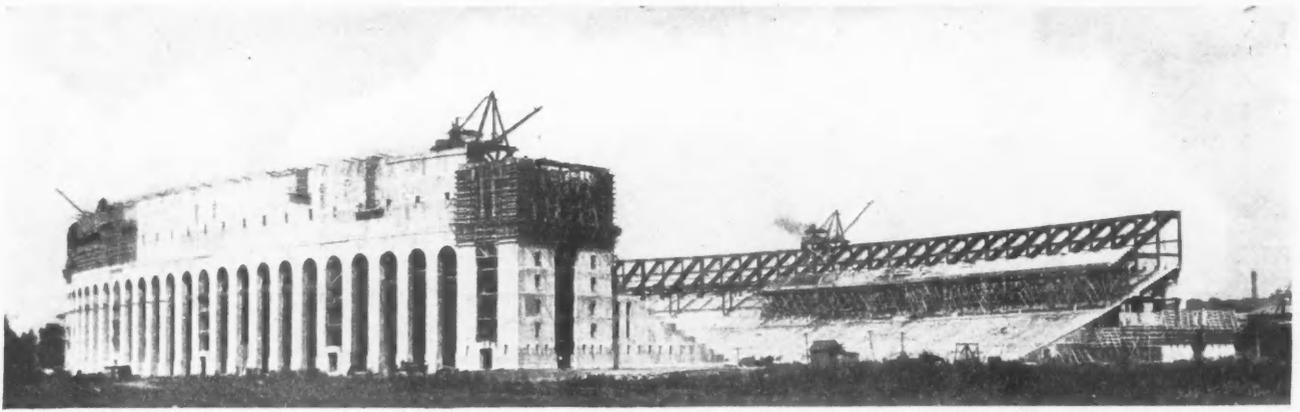
Concrete Mixed in Central Plant

Concrete was mixed in a central plant located just outside the east leg of the horseshoe. A one cubic yard concrete mixer is elevated to discharge into batch buckets on narrow gauge cars below. Sand and gravel storage bins, on the east side of the plant, are elevated to discharge into a batch hopper on the charging floor above the mixer. The cement stored in bulk directly above the charging floor, discharges thru a box on a platform scale into the batch hopper.

Open bottom batch buckets in which concrete is transported from the mixing plant to forms, are handled on an industrial railway, laid 20 feet outside the outer line of foundations, by gasoline locomotive. To pour foundations, batch buckets were lifted directly from narrow gauge cars to foundation forms by a locomotive crane on the standard gauge track. The buckets were



Steel Framework with Nearly 4,000 Tons of Steel in Place.



Outside Appearance Early in August. Note Pouring of Concrete in Top of Deck Forms.

opened directly into the forms and concrete was puddled into place. The last of the foundations were poured early in December, 1921.

To pour seat banks a chute supported at both ends by moving towers is used. The chute follows the pitch of the seats, with an opening above every second riser. Concrete is placed in a hopper on the high tower by locomotive crane. Since specifications prohibit chuting directly into forms, buckets made with semi-circular bottoms to permit emptying in either direction are suspended from the bottom of the chute at openings. Concrete then passes indirectly from the buckets into the forms.

Upper Deck Near Completion

The work is now nearly done.

Pouring of concrete for lower deck seat risers having been virtually completed, efforts are largely centered on completion of the upper deck at an early date. Meanwhile construction of a \$118,500 reinforced concrete bridge, consisting of three 113-foot spans, is being completed just northwest of the Stadium by N. R. Porterfield of Youngstown, O. The bridge is designed to connect the University with its 600-acre farm across the Olentangy river and to provide railroad and automobile access to the Stadium from the west.



Interior View Showing Football Field and Opening for Main Entrance Tower Late in July.

Winter Concreting

Need a Contractor's Earnings Cease at the Approach of Cold Weather?

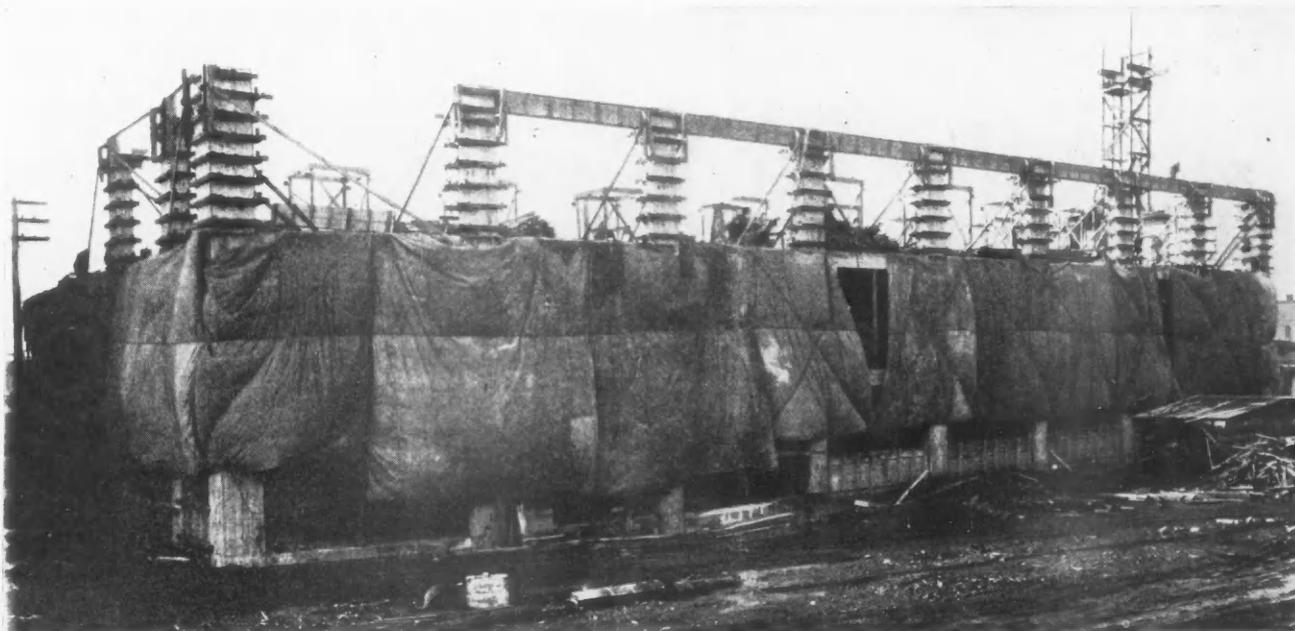
By A. J. R. CURTIS

ONLY a few years ago it was unusual for general building contractors and extremely unusual for masonry and concrete contractors to work during the winter months, that is, in the northern half of the United States and in Canada. The general effort with them was as it is with many contractors now, to live twelve months on six or eight months' earnings.

Today the contractor, in order to make reasonable

—and it is frequently desirable because of cheaper material costs or more plentiful labor to start new work late in the season, even with the positive knowledge that winter weather will have to be reckoned with.

For the contractor who is willing to take a few very ordinary precautions October is one of the best months to start houses and other buildings of moderate size. Labor is most efficient in moderate weather. Exposed portions of a moderate sized job can be com-



Reinforced Concrete Building Under Construction Showing Method of Protecting Freshly Deposited Concrete with Tarpaulins. The forms above have not yet been filled.

progress, has had to put his business on a more scientific basis, planning his work so that it may proceed practically thruout the year, reducing necessary interruptions to the minimum. The most serious normal interruptions are those due to winter weather. In spite of the most carefully made calculations work planned for the summer will be delayed until winter

pleted before severe frosts and the way paved to complete interiors when too cold to work outside. Buildings started later require precautions to prevent the possibility of freezing and everything considered, including the saving to the owner thru earlier completion, it is usually more profitable to proceed with general building construction than it is to close down,



Simple and Inexpensive Device for Heating Mixing Water Recommended Where Steam Boiler or Other Source of Hot Water Is Not Available.



Stove for Heating Sand and Gravel Made of Several Sections of Discarded Smokestack.



Iron Pipe Sections Being Used as Heaters for Sand and Gravel on the Work of the New Chicago Union Station.

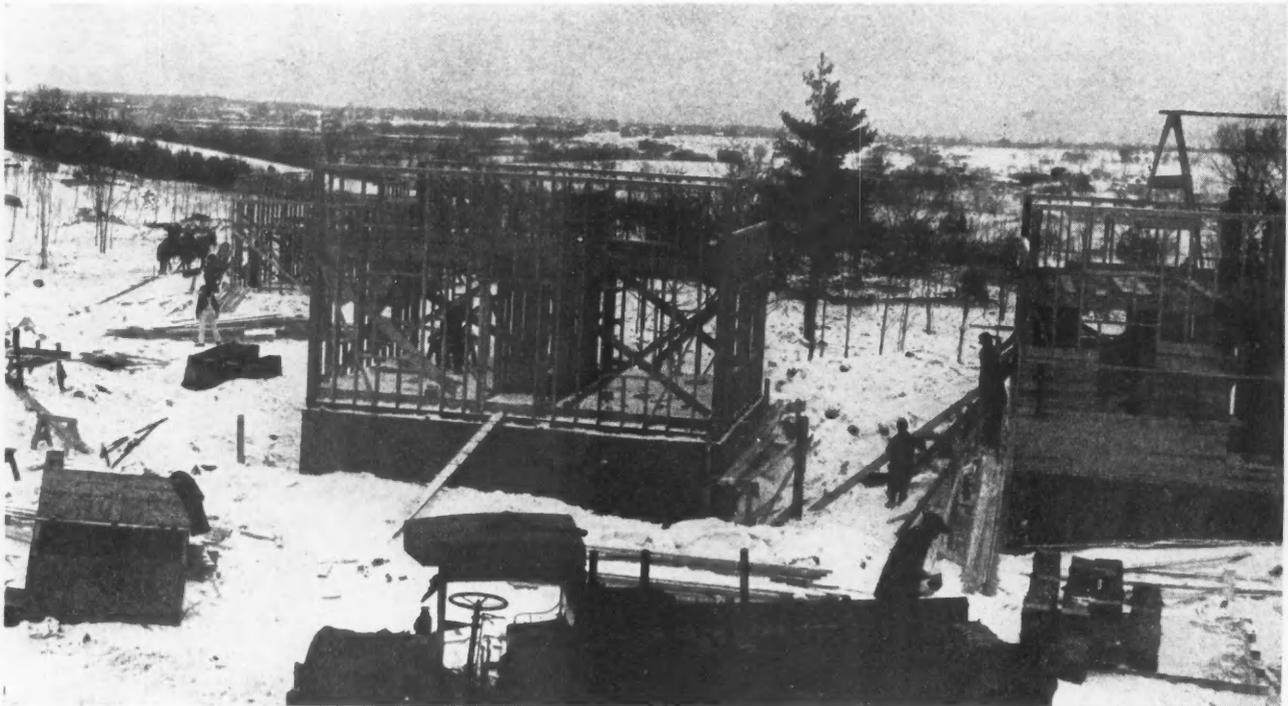
allow the contractor's gangs to be disorganized and incomes to cease.

Supplies of gravel, sand and stone for concrete and

to use. Cover with straw or boards if exposed to hard usage and move loads over the new concrete very carefully.

If concrete is exposed to freezing temperatures during the first few hours or before the cement and the water have reacted, the hardening process ceases. The water becomes ice and ice and cement do not react. Further, the water expands in turning to ice, sometimes spalls or even disintegrates the work. In mixing and placing concrete in winter weather it is necessary, therefore, to protect it against freezing until the greater part of the water has disappeared in combination with the cement. Concrete should always be kept at a temperature above freezing for at least 48 hours and preferably for three to five days.

First Precaution—If the temperature is likely to go below freezing over night, protect freshly laid



The Concrete on This Job Was Completed Early, Permitting Other Parts of the Work to Proceed During the Winter Without Interruption.

plaster, should be on hand at point of use well in advance, for most commercial sources of supply find it unprofitable to operate during the winter and close down with the first hard freeze. Aggregates frozen in the car are difficult and expensive to thaw. In the present car shortage contractors should take precautions against delayed deliveries, and ordering these materials well in advance.

Rush to early completion all concrete and masonry portions of the work. Concrete work for which the materials are mixed and deposited on the job should be completed early with due allowance for the longer hardening period required when the nights are cold and the day temperatures around 45 degrees. Protect concrete surfaces such as walks and roadways for a week or more before using, and see that they are treated considerably for the first few days after open

concrete by covering with tarpaulins, paper or straw or, if enclosed, provide artificial heat from salamanders.



Tarpaulins and Salamanders Used in Heating Concrete Block to Be Laid During Cold Weather. Warm block lay easily and rapidly and protect the mortar against freezing.

ders, steam coils or any other convenient heating arrangement. Be particularly careful to protect exposed corners and floor and other surfaces which later will be exposed to wear. A split or a hole in the canvas, or a loose flap, will cause a frozen spot.

Second Precaution—Where a steam boiler or other efficient source of hot water is available, this probably provides the cheapest method of imparting reserve heat to the concrete. Use the water at as near the boiling point as possible. Avoid excessive water. Deposited at a temperature of 60 degrees and protected with tarpaulins, concrete is safe from over-night drops of ten degrees or more below the freezing point.

Third Precaution—Heat the sand and stone. As the weather becomes colder and freezing temperatures are almost continuous, the sand and stone should be heated sufficiently to get the concrete into the work at 80 or 90 degrees. The aggregates are frequently heated to 150 to 200 degrees.

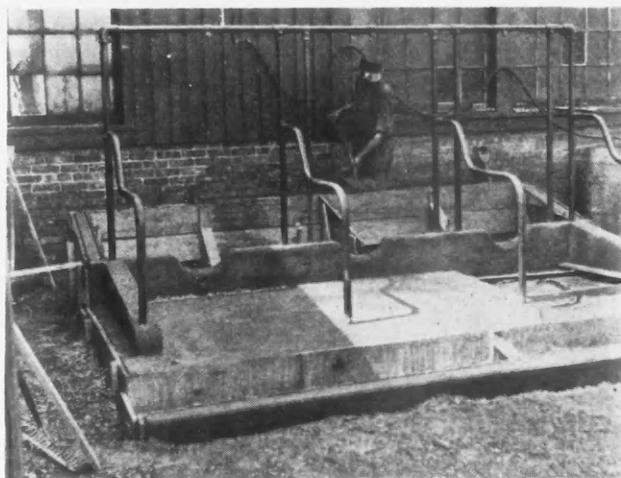


Laying Concrete Block at Temperature Around Freezing. Notice that the mason is not wearing his gloves.

an oil-burning heater designed for the purpose. The forms must be free from snow, ice or frost and should also be reasonably warm in order not to chill the surface of the freshly deposited concrete. This is particularly true where metal forms are used. A steam hose is effective in removing ice and snow and heating form surfaces. It should be used immediately before the concrete is deposited.

Ordinary or rock salt, sometimes used to prevent the freezing of concrete by lowering the freezing point of the mixing water, is not very effective and engineers do not recommend it. Small quantities of ordinary salt are only effective in lowering the freezing

Other Precautions—Locate the mixing plant in a convenient and protected place so that the concrete may be quickly conveyed to the point where it will be deposited, reducing cooling on the way. Protect aggregate piles against moisture and, so far as possible, against freezing. In extreme cases supply heat to the mixer drum by means of a steam exhaust pipe or

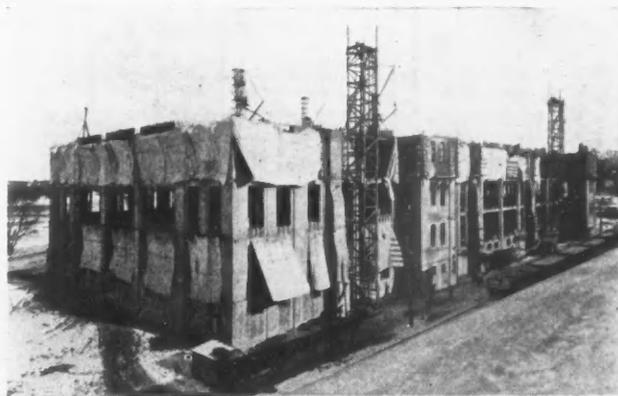


Work of This Kind Within a Barn or Protected Enclosure Can Be Carried on Without Difficulty During the Winter Months.

point a few degrees; quantities over ten per cent (by weight of the cement) are known to be harmful to strength and to promote efflorescence or discoloration of the surface. Excessive quantities are said to encourage electrolysis in reinforced work.

Chemically pure calcium chloride is much to be preferred to salt as an anti-freeze agent, for a much smaller quantity is required to lower the freezing point to a like extent. In other words the permissible amount of calcium chloride in the mixture will lower the temperature much below the point reached by the safe amount of salt. Calcium chloride seems to accelerate hardening while salt has an opposite effect. Calcium chloride acts in much the same manner as salt, however, in starting corrosion of steel and efflorescence, and should only be used sparingly and always on the advice of an experienced engineer.

Look out for two things in removing the forms. Do not take them down until absolutely certain that the concrete has hardened sufficiently. Two to three weeks should be the minimum unless the work is enclosed where the temperature can be kept at 50 to 60 degrees. If in doubt, leave them up longer. Secondly, do not injure the corners and other exposed portions of the green concrete in removing the forms.



The Upper Tarpaulins on This Building Protect Newly Deposited Concrete. Those below trap heat used in hardening the second floor. Later these same tarpaulins will be used to protect the plastering.



DESIGN of SAFE CONSTRUCTION

Elements of a Concrete Beam

By J. F. Mangold

Associate Professor of Mechanics, Armour Institute of Technology

IN the first article of this series published in the July issue we considered the design of the reinforced concrete beam to resist bending. In the second article in the August issue we investigated shear and determined the need for web reinforcement. In this article we shall continue the theory and the design of the web reinforcement.

In the reinforced concrete beam the stress in the steel is developed by virtue of the adhesion of the concrete to the steel. The stress depends on the bending moment and varies in amount at successive sections along the beam. In Fig. 1 the difference between "T₁" and "T" is due to this adhesion or bond stress. Let "B" equal the bond stress per lineal inch, then "B" = $\frac{T_1 - T}{x}$. Substituting for (T₁ - T), its equivalent value

If "St" is the unit tensile stress in the steel, then "StA," the total tension will be equal to "l_pb," where "l" is the length of rod embedded in the concrete "p" and "b" are used as before. Suppose a 1/2-inch square rod is to be stressed to 16,000 pounds per square inch, what length must extend into the concrete to prevent slipping? A common value for the adhesion or bond stress "b" is 80 pounds per square inch. "p" will be equal to (4 x 1/2) = 2 inches. Then 16,000 x 1/4 = l x 2 x 80. Solving, "l" = 25 inches. The length "l" will usually vary from 25 to 50 diameters. In order to provide sufficient bond it may be necessary to use a larger number of rods of a smaller cross-section to obtain more bond surface.

Web Reinforcement

In the previous article we derived some equations for use in computing the spacing of the stirrups for web reinforcement. We showed the reason for the diagonal tension and the necessity of providing for it in order to keep it from causing failure. From the consideration of the diagonal tension it has been pointed out that vertical or inclined stirrups, bent up rods, or a combination of stirrups and bent up rods will serve the purpose. The total tension depends on the moment, and is much less near the supports than at the dangerous section in a simple beam; it will not be necessary for all the tensile steel to extend the full length of the beam. Beyond the point where such rods are no longer needed to resist tensile stresses they might be discontinued, but the better use is to bend them up for web reinforcement.

Graphical Method

In order to find where the rods may be bent up, we shall make use of the moment diagram. Since the steel stress depends on the moment, the steel areas at different sections of the beam will be proportional to the corresponding moments. Or, $\frac{M_x}{M} = \frac{A_x}{A}$ where "M_x" and "M" are moments, and "A_x" and "A" are steel areas. Fig. 2 shows a beam and its moment diagram. Since the area of steel depends on the moment, we may let (C, D), to some scale, represent the steel required at the dangerous section. Then to the same scale, ordinates, such

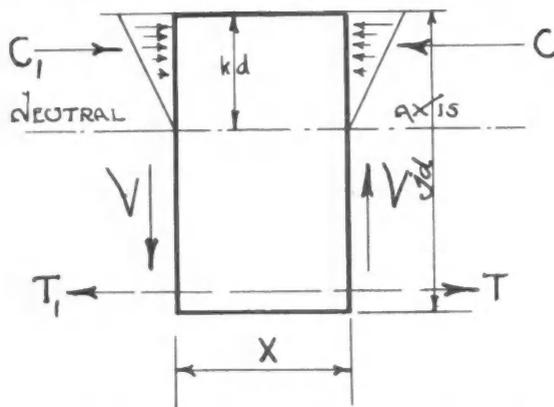


Fig. 1. Showing the Relation of Shear to Bond Stress.

$\left(\frac{Vx}{jd}\right)$, which we have previously determined, then "B" = $\frac{V}{jd}$. The bond stress "b" per unit of surface area will be equal to "B" divided by the sum of the perimeters "Np" of the steel rods, or "b" = $(B \div Np) = V \div Npjd$. "N" stands for the number of rods, and "p" is the perimeter of a rod.

In any case, in order to develop the full tensile stress in the steel, a certain length of the rod must be embedded in the concrete to prevent slipping.

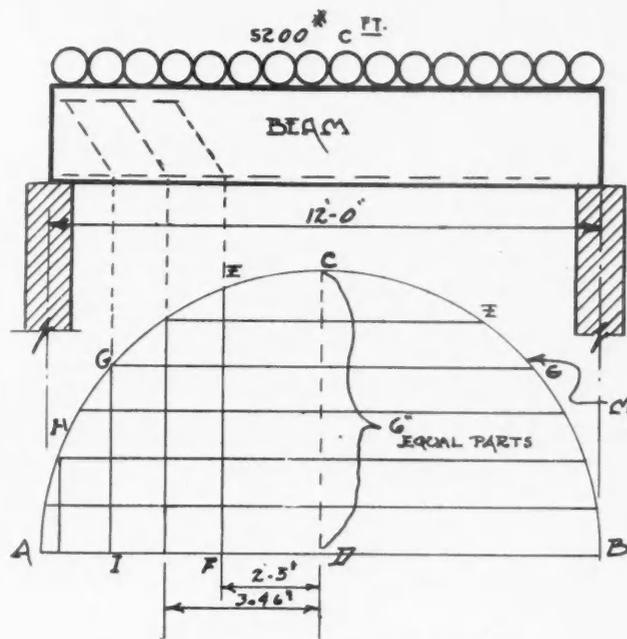


Fig. 2. Determining Points for Bending Steel.

as (E, F) and G, I), will represent the required steel areas at the corresponding points in the beam. Since the rods are most easily taken care of in pairs, we shall divide (C, D) into an equal number of parts corresponding to the number of pairs of rods. Thru these division points draw horizontal lines and where these lines intersect the moment curve, as at points E, E₁, two of the rods are no longer needed to resist bending stress and may be bent up. Other rods may be bent up at points G, H, etc.

Algebraic Method

The distances from the center of the beam to the points E, G, H may be determined from an equation. The moment curve is a parabola, and from geometry we know that the offsets from a tangent to the curve vary as the square of the distances along that tangent. Let (C, K) be such a tangent. Then $R = \frac{x^2}{(l/2)^2}$. Since $R = \frac{M - M_x}{M}$, the above equation may be written $\frac{M - M_x}{M} = \frac{x^2}{(l/2)^2}$. Solving for $M_x = M - M \frac{x^2}{(l/2)^2}$.

Let "m" = the total number of rods, and "m₁" = the number to be bent up, and "a" = the area of a rod, then "A" = "ma," and "Ax" = (m - m₁)a. Substituting these values in the equation $\frac{M_x}{M} = \frac{Ax}{A}$ it becomes

$$\frac{wl^2/8 - wl^2/8 (x^2/l^2/4)}{wl^2/8} = \frac{(m - m_1) a}{ma}$$

Cancelling in the above it simplifies to $1 - \frac{x^2}{l^2/4} = 1 - \frac{m_1}{m}$.

Solving "x" = $\frac{l}{2} \sqrt{\frac{m_1}{m}}$.

Suppose twelve rods are required to resist the tensile stress, then the distance from the center of the beam to the point

where two rods may be bent up will be "x₁" = $\frac{12}{2} \sqrt{\frac{2}{12}} = 2.5$

feet. "x₂" = $\frac{12}{2} \sqrt{\frac{4}{12}} = 3.46$ feet.

To show how the bent up rods fit into the spaces required refer to Fig. 3. Lay off the line (A, B) at an angle of 45 degrees with the horizontal and the line (B, C) at right angles to (A, B). To some scale let (B, C) be equal to the total

horizontal shear per inch of length. The triangle (A, B, C) will represent, by means of its area, the total shear to be provided for. At point "A" the shear is zero, and for some distance to the left of "A" the concrete will be able to resist the shear. Now, in the region where steel is placed it is assumed that the concrete is able to resist one-third of the total shear and the steel must withstand the remaining two-thirds. Let (B, H) be equal to two-thirds of the total shear at the support and (G, I) two-thirds of the shear at point "F," then the trapezoid (B, H, I, G) will represent, by means of its area, the total shear to be taken by the steel. This trapezoid may be divided into a number of equal parts. The

$M = 936,000 \frac{in}{ft}$

equation for total stress in the vertical stirrups is given as

"StA" = $\frac{2}{3} \frac{Vz}{jd}$. This provides for the vertical component

of the diagonal tension, the horizontal component being assumed as taken by the horizontal tension steel. For inclined stirrups or bent up rods the most unfavorable assumption is that they carry the full diagonal tension. If "z" is used as the horizontal spacing between stirrups in all cases then for inclined rods the spacing at right angles to the lines of rupture is "z cos. 45 degrees," and the total stress in the rods will be "StA" = $Ssbz \cos. 45$ degrees = $\frac{7Vz}{10jd}$.

From this relation we may find the stress in the bent up rods. The shear areas (J, M, N, L) shall be such as not to exceed the resistance which a pair of bent up rods is able to offer. If not enough rods can be bent up to take all the shear it will be necessary to provide additional inclined or vertical stirrups. It has been found that altho bent up rods may be sufficient theoretically to take all the diagonal tension, some stirrups should be provided.

Bond Stress in Web Steel

The size of stirrups or the length of embedment of bent up rods depends on the bond strength. From experiments it has been found to be safe to use six-tenths of the depth of the beam as the available length of embedment for stirrups. Then

"StA" = $\frac{6}{5} d \pi r^2$, or $St \pi r^2 = \frac{6}{5} d 2 \pi r b$. Solving for "r" = $\frac{6 db}{5 St}$.

Thus, let "St" = 14,000 pounds per square inch, "d" = 18 inches and "b" = 80 pounds per square inch, then "r," the radius of the stirrup will be $\frac{6}{5} \times \frac{18 \times 80}{14,000} = .124$ inch. A rod $\frac{1}{4}$ inch in

(Continued to Page 113)

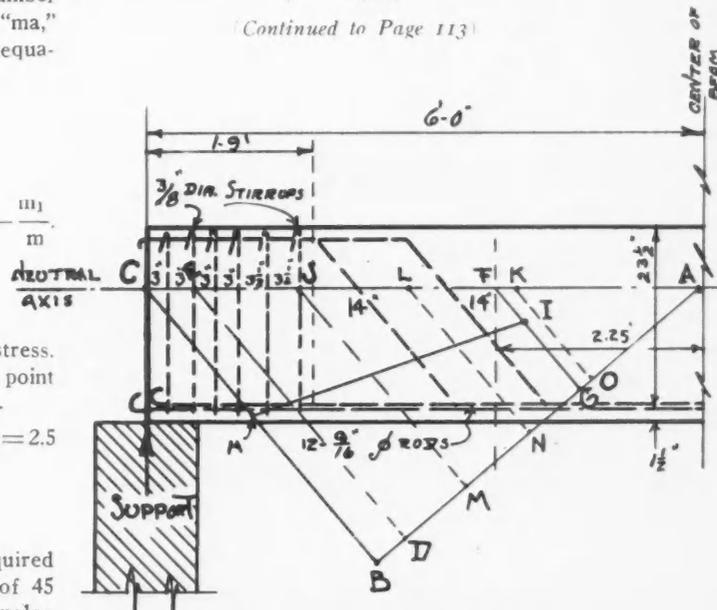


Fig. 3. Showing Steel in Place.



OUR FRONT COVER HOME

Every Room a Porch

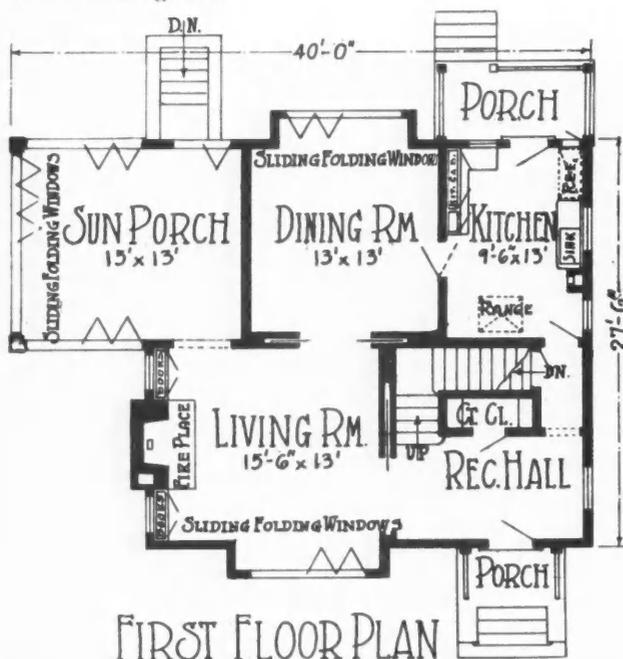
The Outdoors Admitted to All Parts of This House by Use of Special Windows

FOUR walls do not make a home. If they did civilization would be housed in shacks and clap-board siding and oil-papered windows would be considered good practice. But the modern man and his modern family demand something more than bare shelter. Convenience and comfort are essential features of every home worthy of the name. It's those added extras which afford the greatest possible enjoyment that elevate a house from a mere place to live in to the proud position of a genuine home.

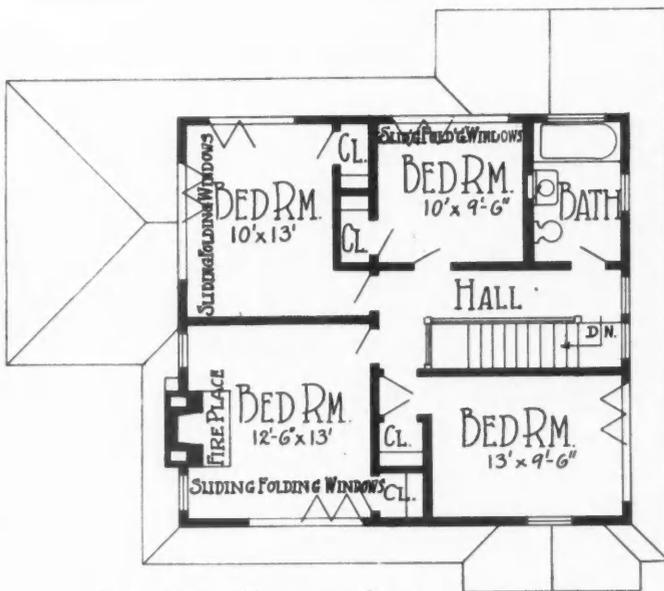
Our October front cover home has two features that lift the design out of the ordinary run of homes and make it, indeed, a delightful place in which to dwell. Those small refinements, which become large when the convenience and comfort they afford are considered, are the sliding folding windows and modern vanishing doors.

Adding to a home the advantage of having every bed room possess all the characteristics of a sleeping porch is surely a refinement that any owner would welcome. The flood of fresh air that makes a double treat of sleeping on a sleeping porch need not be confined to one room especially designed and built as a sleeping porch. This advantage may be had for every bed room if it is built with sliding folding windows. Why just one sleeping porch in the home when every member of the family is entitled to and desires the benefits and comforts of out-door sleeping?

Without the expense and oftentimes unattractive addition of projections our front cover home makes every bed room a fresh air room. This big gain is easily accomplished by simply using multifold window hardware, which makes it easy and economical to give any room the double advantage of being a sun parlor



FIRST FLOOR PLAN



SECOND FLOOR PLAN

Arrangement of Rooms in the Attractive Modern Home Pictured in Colors on Our Front Cover. Special windows make every room in this house an out-door room or porch.

or sleeping porch. When the weather is suitable the windows slide and fold back permitting a rush of cooling and bracing fresh air. The windows are so constructed that practically the entire window opening is cleared from being occupied and the entire space admits light and air.

When winter comes these same rooms have all the snug-tightness and cozy comfort of a room that is not fitted with modern sliding-folding windows. They are as storm-proof as any window made. They admit more light, when closed, than most windows and they permit the happy transformation of a room into a sun parlor or sleeping porch by the simple and easy process of folding the windows together and sliding them out of the way, an act that any child can perform without the slightest difficulty.

This type of window construction, while especially popular for bed rooms so they may serve as sleeping porches as well, is not confined to sleeping rooms. Using them in living rooms makes the living room a sun parlor as well; and to permit the fullest possible use of a sun parlor as such, these windows are always desirable. Installed, as they are, in the living room and dining room of this design, they make these popular and much used rooms light and airy.

The other "small, yet large" feature, the modern vanishing door, is rapidly gaining in popularity. These doors require no unsightly bumpers, cannot be slammed shut by the wind, never bump against other objects, can be opened to any distance and always remain just where they are put and permit particularly pleasing decorative effects. Any refinement which gives all these advantages is sure to appeal to the owner who seeks "all the comforts and conveniences of home." When different color schemes are used in two rooms each side of the vanishing door may be decorated differently. Portiers or draperies may be used in the opening and the doors will not interfere at all.

The swinging door must necessarily have enough clear space to permit the swinging around against the wall. With sliding doors this clear space is not necessary and furniture or other articles can be placed close to the opening, thus utilizing wall and floor space which would otherwise be wasted.

The best practice is to hang these doors with ball bearings, assuring easy operation and to line the track with hardwood so the doors will operate silently.

The general features of this desirable design that make it especially desirable are the use of permanent materials and the inviting roominess of the house. The dimensions over all are 27 feet 6 inches by 40 feet, while the house exclusive of projections occupies 27 feet 6 inches by 31 feet. There are three rooms, sun parlor and reception hall below stairs and four light, airy bed rooms on the second floor, with the bath room also on this floor.

The rooms have not only been well arranged but are planned well for size. Besides the big, breeze-

swept sun parlor there are two small porches that add to the general appearance and all-around comfort any family will find in this home.

In any climate this home will be found suitable. When days are balmy or torrid hot the folding-sliding windows afford the full enjoyment of every breeze that blows. When Jack Frost nips there is all the warmth that a well-built house affords.



Elements of a Reinforced Concrete Beam

(Continued from Page 111)

diameter will be suitable. In the case of the bent up rod, the diameter is known, and it remains for us to find how far the rod must extend into the concrete in order to develop the full fiber stress. Then we may write "StA" = $l p b$. Solve for " l " = $\frac{StA}{pb}$ and obtain embedded length. Only six-tenths of the depth shall be considered a part of this length and the remainder must be secured by extending the rods horizontally in the upper part of the beam after they have been bent up.

An Example

Design a beam 12 feet long to support a load, including its own weight, of 5,200 pounds per foot. Let "Sc" and "St" be 650 pounds and 16,000 pounds per square inch, respectively, and "n" = 15. From formulae already derived, "p" = .0077,

$$"k" = .378, j = .874, M = \frac{Wl}{8} = \frac{5,200 \times 12 \times 12}{8} = 936,000 \text{ inch-}$$

$$\text{pounds, } bd^2 = \frac{936,000 \times 2}{650 \times .378 \times .874} = 8,730. \text{ If "b" = } \frac{1}{3}d, \text{ then}$$

$$"b" = 15.75 \text{ inches and "d" = 23.5 inches.}$$

$$"S_s" = \frac{5,200 \times 6}{15.75 \times .874 \times 23.5} = 96.5 \text{ pounds per square inch.}$$

The area of tensile steel is $.0077 \times 15.75 \times 23.5 = 2.88$ square inches. Use twelve $\frac{1}{8}$ -inch round rods. The distance from the center to the section where web reinforcing is needed will be $\frac{x}{6} = \frac{35}{96.5} = 2\frac{1}{4}$ feet. A certain number of rods must extend

the full length of the beam to prevent too high a bond stress.

$$\text{For one rod "B" = } \frac{5,200 \times 6}{1.77 \times .874 \times 23.5} = 860 \text{ pounds. Let allow-}$$

$$\text{able "b" = 120 pounds per square inch with ample reinforcing, then } \frac{860}{120} = 7\frac{1}{3} \text{ or 8 rods to extend full length. Four rods}$$

may be bent up. Let us use them in the mid region between "C" and "F." Two rods will resist a pull of $2 \times .248 \times 14,000 = 6,950$ pounds. $S_s = 66.5$ pounds per square inch at point "J."

$$"z" = \frac{6,950}{\frac{2}{3} \times 44.1 \times 15.75 \times \frac{1}{10}} = 14.2 \text{ inches.}$$

To the left of "J" and to the right of "K" stirrups will be used as shown. The spacing is computed from the formula for stirrups.



Wood Whose Life Rivals Steel

THE Southern Pacific Co. is replacing with steel and concrete the old wooden drawbridge at Albany, Ore., which has carried freight and passenger traffic on the Yaquina Branch for some thirty years. The old bridge had two 150-foot Howe trusses and one 260-foot Howe truss draw span.

This was the longest wooden draw span in the world and it illustrates the strength of Douglas fir, the great construction timber of the Northwest.

Roofed-over bridges of this material are being built on western highways in competition with steel, and when properly protected they render as long or longer service than the steel bridge.

WHAT'S NEW?



New Machine Waxes and Polishes Floors

A PRODUCT that is finding ready sales has just been put on the market. This is a high speed floor waxing and polishing machine which was designed especially for waxing, polishing and scrubbing in private homes. Larger machines are also manufactured for use in hospitals and large public buildings. The hand method of polishing hardwood floors is so laborious that a machine of this type that does the work easily is a splendid seller.

The machine is power driven, with a 1/5-horsepower motor that is full ball bearing thruout and weighs 35 pounds. This machine works as easily as a vacuum cleaner and in much the same fashion. It is easily rolled from room to room by means of the rubber-tired truck wheels, which are raised or lowered by a slight movement of the foot. The machine is solidly built to give good efficient service and yet does not tire the operator. Scratching of woodwork and furniture is prevented by a rubber bumper guard. It is a simple operation, also, to change the polishing brush to a scrubbing brush.

Not only is this machine an excellent one for polishing and waxing hardwood floors, but it is also used for scrubbing wood, linoleum, brick, tile, cork, rubber and composition floors. The various brushes are quickly and easily interchangeable. There are three kinds of scrubbing brushes: the palmetto, for smooth floors; the baseen, which is stiff, for rough floors; and mixed tampeco and baseen, for tile and kindred floors. The same machine, then, which has waxed and polished the living room and dining room floors, may, by a quick interchange of brushes, scrub the linoleum in the kitchen, then be carried to the bathroom, where it scrubs the tiled flooring; the brick walks in the yard may then be cleaned; and lastly, the same machine can be used to put the oily floor of the garage in fine condition.

Such a machine would be an excellent one for the general contractor or carpenter to own, for it would be of great service in preparing a house or building for occupancy.



Mixer Mounted on Ford Chassis

THE new paving and building mixer, mounted on a Ford truck chassis, and designed especially for paving and contractors' short job work, has been placed upon the market. The new machine takes its power directly from the Ford motor and the full power of the engine is available for its operation.

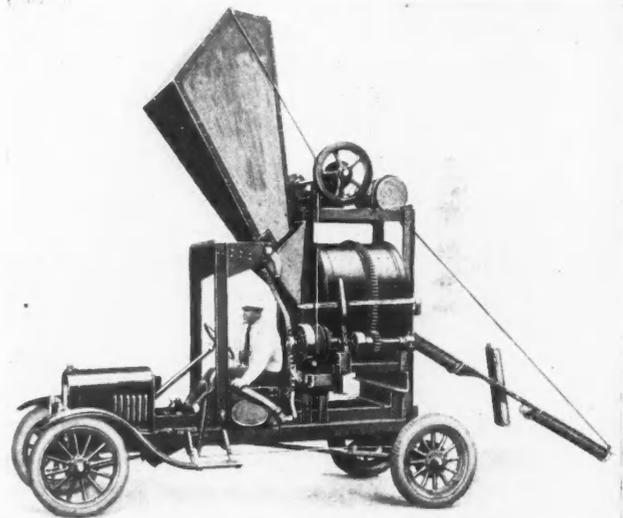
As the accompanying illustration shows, the mixer is mounted on the truck chassis with the frame simply clamped to the chassis with "U" bolts, permitting contractors to adapt it to Ford trucks they now have in service. The mixer complete, with loader, weighs approximately 2,500

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

pounds and in moving from one job to another, the side loader can be readily unbolted and hooked on the rear of the truck itself by means provided. It can be operated either from the driver's seat

or the ground; and is well braced for stiffness.

The mixing drum has a capacity of seven cubic feet. The lifting arms of the side loader permit the loose materials to be held at the mouth of the loading hopper, ready for discharging in ten seconds into the drum itself. Operated



This Mixer Rig Mounted and Powered by the Ford Truck Gets Onto the Job Quick and Gets Off Again in a Hurry.

in this manner the capacity is from 100 to 150 yards of wet mix per day.

Some of the advantages claimed of the machine are the economy and dependability of the Ford truck itself, its ample power, low operating cost, the fact that it can be easily moved on the job by its own power as fast as working conditions require, and the speed it can be moved from one job or location to another.



New Wood-Working Machine Equipped with Individual Drives

THE first contractors wood-working machine to be equipped with individual drives for all the different attachments has been placed upon the market. The machine is designed to do the maximum amount of work required of it, having been made as light and compact as possible, but still heavy enough to take care of the heaviest work required from such equipment.

FREE—This Book on Wood Finishing



This book is full of practical information on finishing new floors and trim and refinishing old work of this kind. Written by experts—profusely illustrated—contains color charts—gives covering capacities, etc. We will gladly send it free and postpaid to contractors and builders.

S. C. JOHNSON & SON,
Dept. AB10, Racine, Wis.

Please send me, free and postpaid, your book on Wood Finishing.

Name.....

Address.....

City and State.....

Fill Out and Mail this Coupon

I Buy Varnish from.....

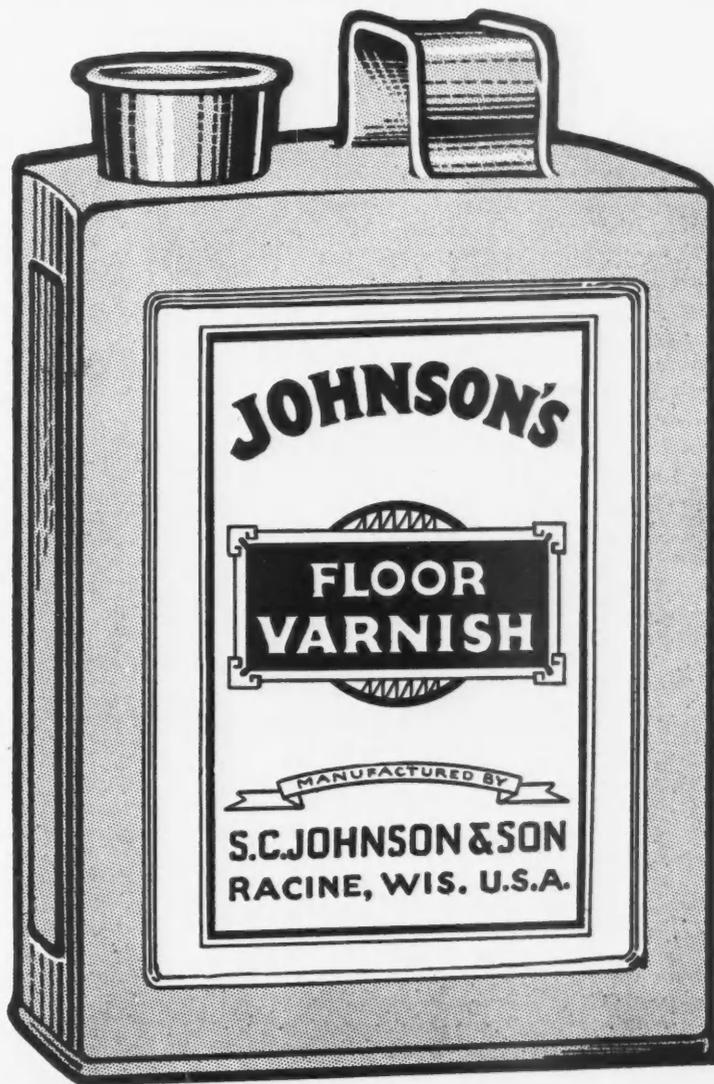
“Made to Walk on”

Johnson's Floor Varnish dries dust-free in two hours and hard overnight. It imparts a beautiful, high lustre—has good body—will give long wear—is absolutely water-proof—and will stand all reasonable tests.

Johnson's Floor Varnish is tough, elastic and durable. It gives a beautiful high gloss which will not chip, check, mar, blister or scratch white. Is very pale in color so can be used on the lightest floors and linoleum. Splendid for furniture, woodwork and trim of all kinds. May be rubbed if desired.

Free to Contractors

We will gladly send you a pint of Johnson's Floor Varnish, all charges prepaid, if you will test it in comparison with the brand you are at present using. Write us on your business letterhead—there is no obligation whatever attached to this offer.

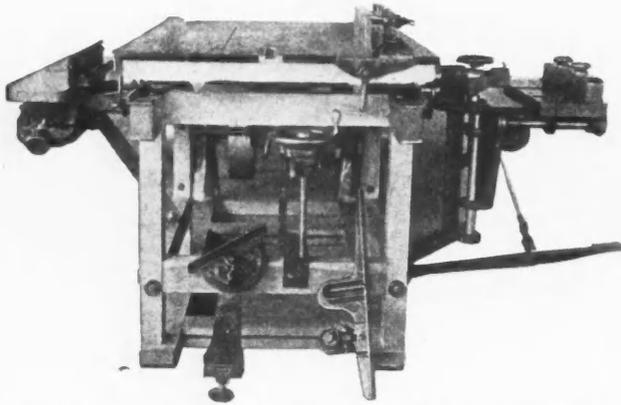


JOHNSON'S FLOOR VARNISH

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

The accompanying illustration shows the machine as a complete unit mounted on skids, having an individual drive for the saw, an individual drive for the jointing attachment and an individual drive for the hollow chisel mortising and boring attachment. Any attachment can be driven by itself independent of any other, but the complete machine is one unit.

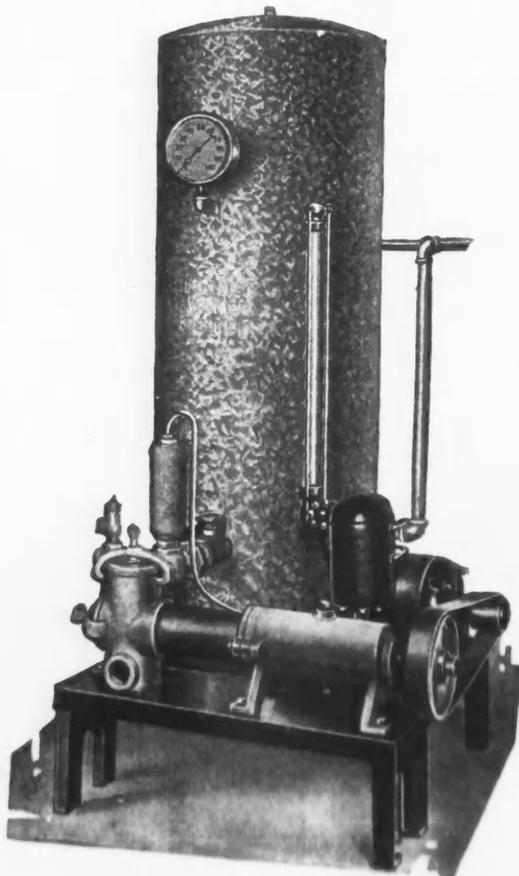
This is first time that a combination rip and cut off saw with all these attachments has been placed upon the market and it



This Woodworker Has a Separate Drive for Each Attachment.

should prove of genuine service to the industry. The photograph shows the machine equipped with countershaft, but if preferred, a gasoline or kerosene engine can be installed in place of the countershaft. With a gasoline engine attached the entire equipment weighs 1000 pounds.

It is possible for a single operator to handle material up to 20 feet in length. The jointer, the round head safety type, has a capacity of 5½ inches. The saw arbors will take up to 18-inch saw blades, working material 7½ inches in thickness. The boring attachment takes boring bits up to 2 inches in



Pump Outfit of Large Capacity

diameter and the hollow chisel mortising attachment will take any size chisel from 3/16 to ¾ inch.



New Pump Has Large Capacity

THE accompanying illustration is of a new water supply pump that has recently been brought out. It is designed and especially adapted for water systems in homes and on farms as it can be operated with ⅛, 1/6 or ¼ h. p. motor and has a capacity of 250 gallons per hour.

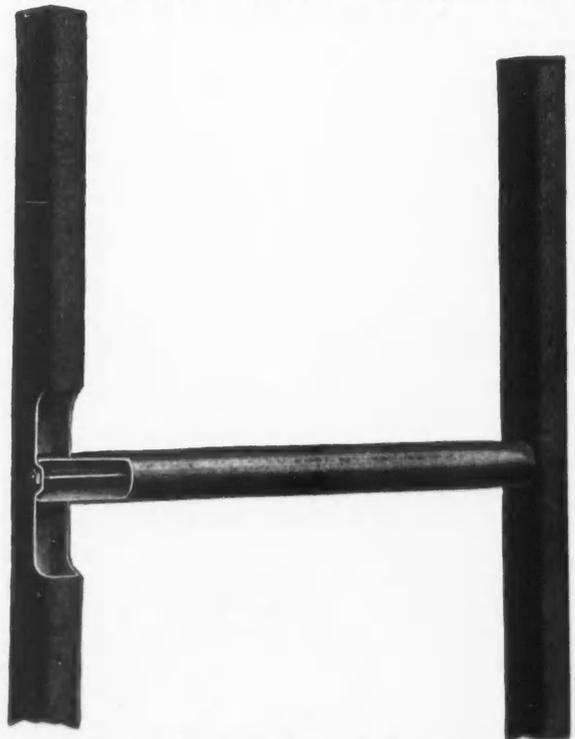
The pump has numerous attractive features that should make it desirable where an efficient water supply system is needed. There are only two wearing parts in the mechanism and both are kept running in oil. The motor is designed for pump service, and the belt drive makes the action noiseless. The pump is self priming to 20 feet and lubricates automatically. It has a speed of 50 strokes per minute and the suction is 1¼ inch and the discharge ¾ inch. The water can be pumped directly from the well.

As the illustration indicates, the pump is set upon a cast iron base. The mechanism is claimed to be very simple and the valves and other parts are very easy to get at. The system is protected from excessive pressure by a relief valve and the galvanized tank is tested to 125 pounds pressure.



New Steel Ladders for Every Purpose

THE steel ladder has been on its way for years and at last it has arrived. A Detroit concern offers tubular ladders, that are light as wooden ladders and much stronger and safer and, of course, more durable. Just as the steel structure in building and the steel bridge has come so the steel ladder was inevitable. The construction of these ladders as shown in cut is entirely different from any others.



Closeup View of New Steel Ladder with Piece Cut Away to Show Strong Rung Connection.

The tubular construction has strength at every point not leaving any weak spots and so making an entirely safe ladder.

Oval steel tubing used for the side members is drilled to take the round tubular rung and then there is a threaded tie bolt extending thru the center of the rung and a nut on each end. This makes a very rigid ladder and gives extraordinary strength.

Why not roof the whole town?

There is a Johns-Manville Roofing for every type of building.

Every roof in town becomes a sales possibility when you carry the Johns-Manville Roofing line. That's one advantage of a complete line of roofings united under a single well-known name, and covering every roofing requirement.

It means better balanced selling, too. When business is dull in one line, you have the rest of the sales field to fall back on.

It brings increased prestige. You quickly earn the reputation of being able to meet any roofing requirement.

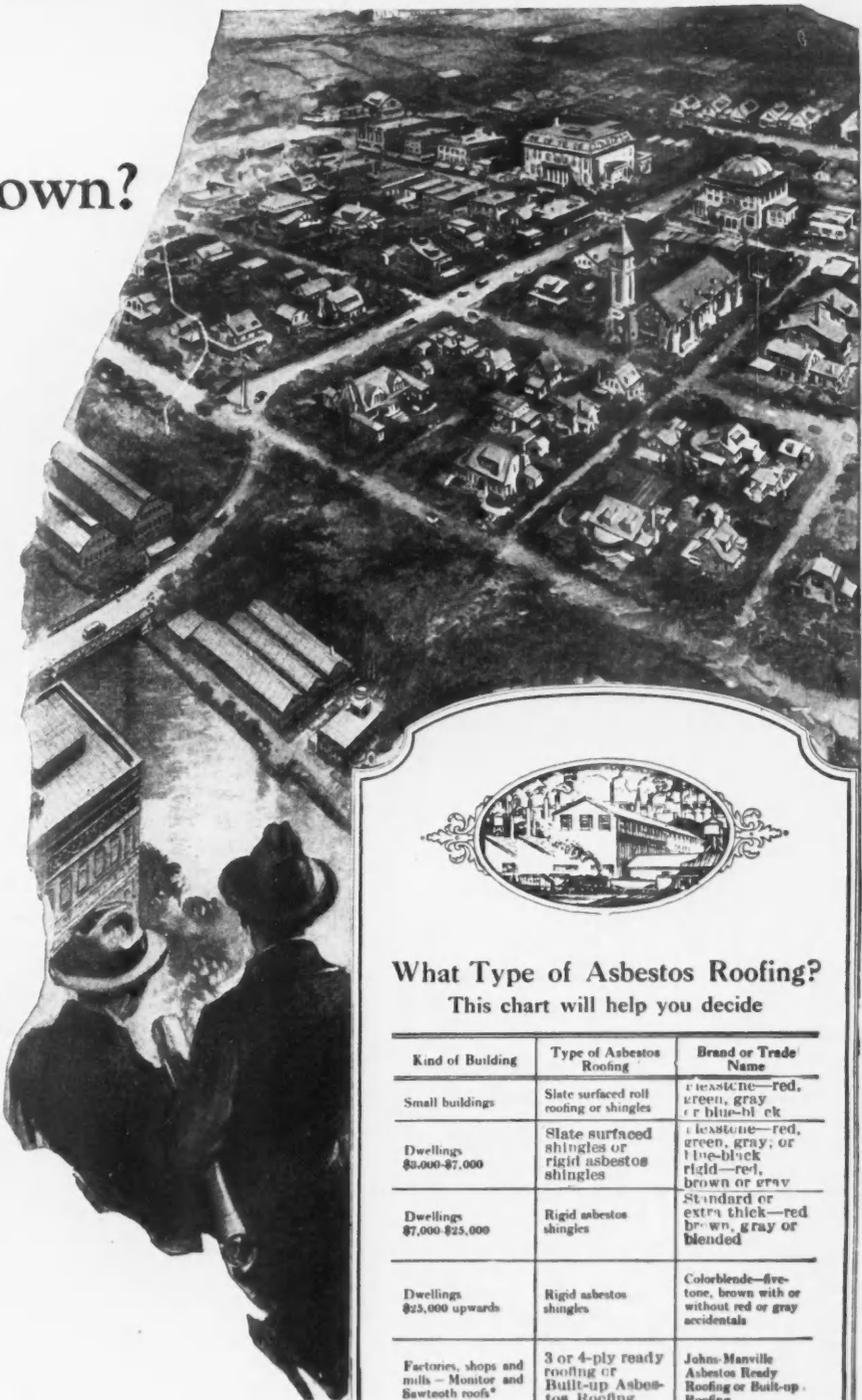
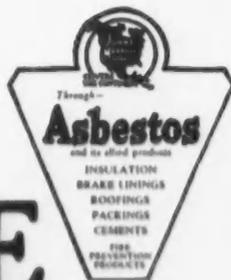
Sales work is lightened. In pushing one type of roofing you automatically boost your whole line. A well-advertised, nationally known line is far easier to sell.

The Johns-Manville Asbestos Roofing line brings you these advantages backed by Johns-Manville cooperation. The greater fire-safety and durability of asbestos is a convincing sales argument. These roofings match all others in beauty where beauty is required.

Consider these facts—and then write at once to your nearest Johns-Manville branch for an interesting dealer proposition.

JOHNS-MANVILLE Inc.
Madison Avenue at 41st Street, New York City
Branches in 50 Large Cities
For Canada:
CANADIAN JOHNS-MANVILLE CO., Ltd., Toronto

JOHNS-MANVILLE Asbestos Roofing

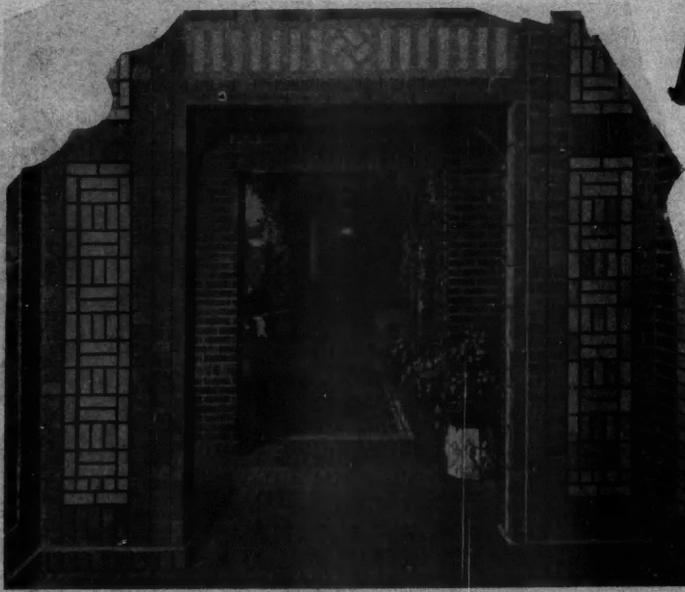


What Type of Asbestos Roofing? This chart will help you decide

Kind of Building	Type of Asbestos Roofing	Brand or Trade Name
Small buildings	Slate surfaced roll roofing or shingles	Asbestos—red, green, gray or blue-black
Dwellings \$3,000-\$7,000	Slate surfaced shingles or rigid asbestos shingles	Asbestos—red, green, gray; or blue-black rigid—red, brown or gray
Dwellings \$7,000-\$25,000	Rigid asbestos shingles	Standard or extra thick—red brown, gray or blended
Dwellings \$25,000 upwards	Rigid asbestos shingles	Colorblende—fire-tone, brown with or without red or gray accentals
Factories, shops and mills—Monitor and Sawtooth roofs*	3 or 4-ply ready roofing or Built-up Asbestos Roofing	Johns-Manville Asbestos Ready Roofing or Built-up Roofing
Flat roofs—all buildings*	Built-up roofing	Johns-Manville Built-up Roofing
Skeleton frame buildings—standard conditions*	Corrugated asbestos roofing with steel reinforcement	Johns-Manville Corrugated Asbestos Roofing
Skeleton frame buildings—excessive temperature or condensation conditions*	Corrugated asbestos roofing without steel reinforcement	Johns-Manville Transite Corrugated Asbestos Wood Roofing

*Note—Industrial buildings call for expert advice. A roofing expert is available at all Johns-Manville Branches.





MODERN USES of BRICK



English Home Building Methods

Recent Journey Thru England Reveals Much Unusual Construction—
Building Boom Wanes

By WILLIAM A. CARVER

EDITOR'S NOTE: This is the second part of an article in which Architect William A. Carver describes current practice in constructing small brick buildings in England. In the first article the author pointed out that brick cottages are built without basements and that each room has a fireplace.

IN all the English cottages where inspection was made of the construction, the outer walls were built of 10-inch brickwork, consisting of two 4-inch walls and a 2-inch cavity, the walls being bonded with galvanized iron ties, all the inner partitions, as stated before, being of 4-inch brick walls. All openings in these partitions have reinforced concrete lintels made with cinder aggregate, into which nails for the attachment of woodwork may be driven. At door jambs, behind the wood base and at other points where wood trim is required, burned clay "fixing bricks," into which nails may be driven, are placed at suitable intervals. It is not customary to plug the walls for attaching woodwork, as is the ordinary practice in this country. Plaster is invariably placed directly on the brick.

Lime Putty Plaster Used

Altho the ordinary hard-wall plasters are marketed extensively in England, there are still many contractors who prefer to use slaked lump lime putty, which they consider the most reliable. In such cases, a pit about eight feet square is dug about three feet or more deep into which the putty is screened and where it is allowed to age for about a month before being used for plastering.

The construction of the finished first floor or "ground floor" in the best practice consists of 4-inch brick "sleeper walls" placed fairly close together to reduce the span and allow the use of small wood joists, upon which are nailed the wood flooring. In cheaper cottage construction, however, in a few cases the finished wood



Interior of Typical Cottage Before Plastering. Note 4-inch brick bearing partition.

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Ideal Wall Withstands Rainy Season

Every day new and interesting facts about the success of Ideal Wall construction come to light.

Here's an extract from a letter by the Nance Construction Company of Los Angeles, California.

"All of the houses which we have built using the Ideal System stood the rainy season perfectly, not one complaint from moisture coming through the wall. It may also interest you to know that we have now under construction a \$35,000.00 residence using the 12 inch hollow wall, which is receiving favorable comment from builders who have seen it."

Scientific Tests Support Practical Results

A practical test to determine the degree of imperviousness of the Ideal Wall was made at Williamson Trade School, Delaware County, Pa., under the direction of Prof. Jos. Shisler in charge of the Masonry Department.

An Ideal Wall (8" thick) plastered on the inside surface $\frac{3}{8}$ " thick with 1:3 lime and sand mortar and finished with $\frac{1}{8}$ " hard white coat of calcined plaster and lime paste was subjected to a continuous running sheet of water. Measured showed 28 gallons per hour per square foot of wall surface.

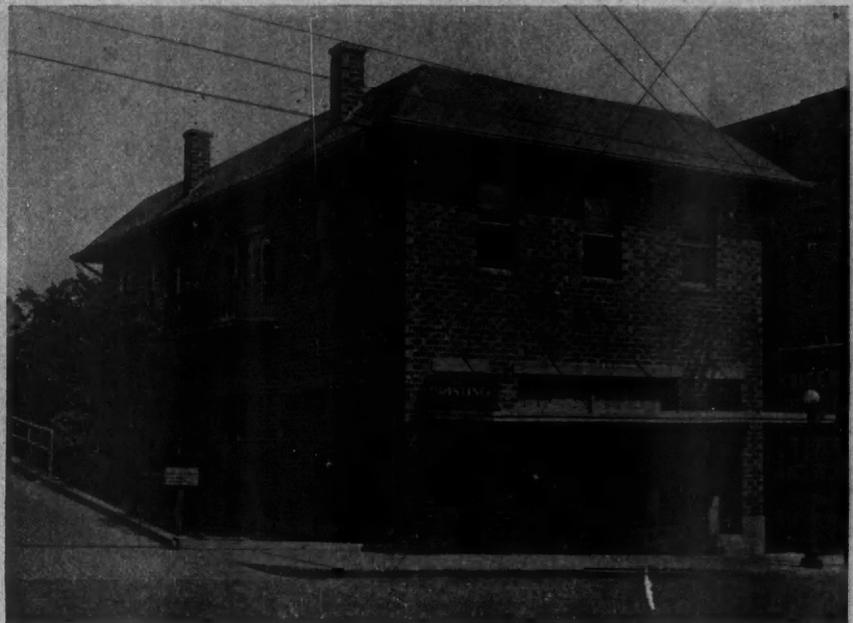
After 3 days (72 hours) the bricks in the most saturated portion of the wall had not conducted enough water through the wall to even dampen wall paper on interior.

The headers had conducted water only one-half their length. When the plaster on the inside surface of the wall was removed it showed no evidence of moisture.

Tested by water, fire, loading, etc., Ideal Wall has proved its merit—the greatest development in years for builders.

Be Sure You Have These Helpful Books

Ideal Wall construction is fully described in "Brick, How to Build and Estimate," only 25 cents, post-paid. Send \$1.25 and receive also that helpful book of house plans, "Brick for the Average Man's Home." Address, Common Brick Industry of America, 2131 Cleveland Discount Bldg., Cleveland, O.



Ideal Wall Industrial Bldg., Laurel, Miss.
L. W. Duffee, Architect

IDEAL Wall is gaining more rapidly than any other type of construction in the big building boom. No new form of construction has ever caught the contractor's attention to the extent of the Ideal Wall.

Why?

Ideal Wall saves—

- $\frac{1}{3}$ the Brick
- $\frac{1}{2}$ the Mortar
- $\frac{1}{4}$ the Labor
- Furring and Lathing

What a boon to builders—especially when materials are scarce and labor is high.



This Trade-Mark Stands for—

Quality—
An honest product, honestly advertised.

Responsibility—
A reputation for honorable, prompt and efficient business dealings.

Service—
A material of proven integrity with a record of ages of service.

The Common Brick Industry of America

2131 CLEVELAND DISCOUNT BUILDING
Cleveland, Ohio

The Ideal Brick Hollow Wall is made of standard brick obtainable everywhere

Ideal Brick Hollow Wall

"Brick Homes at the Cost of Frame"



Tusk Tenoned Joint. Ordinary Cottage Construction in England.

floor is nailed directly into a supporting bed of 1:8 cinder concrete which is leveled off very carefully to receive the wood floor. The concrete is supported on dry fill. Some doubt was expressed at the soundness of this practice, however, which was being tried out more or less as an experiment. The scullery, coal place and toilet have cement floors.

Unusual Framing Kink

The framing of the second floor joists is done in a way that would interest an American builder, as the accompanying photograph shows, each header joist being tusk-tenoned into the trimmer joist and the trimmer joist being in turn tusk-tenoned into the bridging joist at each end. Not content with the ordinary tusk-tenoning, several instances were noted where a wooden peg was employed to drive the trimmer and header home together.

Thatching a Declining Art

One characteristic and picturesque feature of many old British buildings is rapidly passing away with the decline in the thatcher's trade, and in a few years the art of thatching may become only a memory. In the Fen district reeds are used for this purpose, but in most

localities the thatch is constructed of wheat straw. For this purpose it is essential that each straw shall be round and whole; passing the straw thru a threshing machine crushes and "cripples" it. The wheat is therefore mowed by hand and the ears cut off with a sickle, the bundles being prepared for the thatcher with extreme care. One of the photographs shows a "close-up" picture of a portion of a thatched gable.

Boom About Past

The British home-building boom is now over, inasmuch as the government found it impossible to continue the subsidy on houses commenced after August 1, 1920, and, moreover, as these houses were built at the high price level which prevailed everywhere shortly after the Armistice, the rents which can be derived from them do not make a satisfactory and business-like return from the money invested. It is thought, moreover, that the government subsidy was instrumental in preventing an earlier drop in building material prices.

Whatever the economic aspects of the situation, however, much has been done to relieve the shortage of homes, and England has, on the whole, a fine group of new and permanent abodes available for her inhabitants.



Closeup View of Portion of Old Thatched Gable.

Pe

New York
Detroit
Atlanta
Milwaukee
Baltimore



**People Have Confidence in
Barrett Everlastic Roofings**

WHEN you estimate on roofing work it certainly pays to specify Barrett Everlastic Roofings, for then people know you're planning to do a first class job.

Practically every property owner in the country is familiar with the Barrett Everlastic reputation. They know, either from personal experience or from our many years of persistent national advertising, that these Barrett roofings are absolutely dependable. They know that the Barrett Company has been America's leading manufacturer of roofing materials for more than sixty years.

All over the country—on steep-roofed buildings of every kind—Everlastic Roofings are establishing new records for long, trouble-free, economical service.

At the right are described the six styles of Everlastic Roofings. They meet the need of every kind of steep-roofed building. In price and appearance they satisfy every demand.

**Your Choice of Six
Styles**

Everlastic Octagonal-Strip Shingles. A new Everlastic Shingle that is the latest development in the strip shingle. Beautiful red or green mineral surface. Made in a form that offers a variety of designs in laying.

Everlastic Multi-Shingles. Four shingles in one. Made of high grade waterproofing materials with red or green mineral surface. When laid they look exactly like individual shingles. Fire-resisting.

Everlastic Single Shingles. Same material and art finish (red or green) as the Multi-Shingles, but made in individual shingles; size, 8 x 12 1/4 inches.

Everlastic Giant Shingles. Identical in shape with Everlastic Single Shingles but made considerably heavier and thicker. They are "giants" for strength and durability.

Everlastic Mineral Surfaced Roofing. Most beautiful and enduring roll roofing made. Surfaced with everlasting mineral in art shades of red or green. Needs no painting. Combines protection against fire with beauty.

Everlastic "Rubber" Roofing. This is one of our most popular roofings. It is tough, pliable, elastic, durable, and very low in price. Easy to lay; no skilled labor required.

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OUT ON THE JOB

What Builders Are Finding Good



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Hook Holds Doors Open

A GARAGE DOOR HOOK to keep the doors from blowing shut has been placed on the market. The accompanying illustration shows the hooks in place. One hook is required to operate each door. Once put on, the hook does not have to be remembered; simply swing the door open as before. The hook will ride the steel plate until it comes to the slot, where gravity will cause it to engage. To close the door, raise the hook from the slot with finger, and push the door shut. The hook being at a very convenient height makes this a simple operation.



These Hooks Keep the Garage Doors from Swinging Shut.

This new invention promises to solve what has long been an annoyance and nuisance to garage owners and others having to open and close hinge doors. Not only have cars and doors both been damaged from the doors suddenly blowing shut but many people have been delayed, irritated and inconvenienced trying to make the doors stay open and drive their cars either out or in. This invention should also prove valuable to farmers who in addition to their garages, have a wide variety of hinged doors which daily have to be propped open with rocks or other primitive devices.

Spiral Slide Fire Escapes for Schools

THE spiral slide fire escapes are becoming more numerous every day in our schools, public institutions and other buildings that demand a fast and efficient exit in case of fire. Their practicability and advantages over the ordinary steel escapes are generally well known. Illinois has a law that requires all school buildings of four stories and over be equipped with spiral escapes and it is likely that quite a number of other states have similar statutes or soon will have.

Many schools with this equipment hold fire drills regularly when the children at the sound of the gong, rise immediately, file out and slide down the spiral. This is popularly known as "shooting the chutes at the fire drill" and has proven to be excellent training when real fires do occur.

It is possible to empty the school much more rapidly by this method than if the ordinary steel escapes were used. In one Chicago school the 1,300 children who were quietly working inside until they heard the alarm, were all outside exactly one minute and one-half after the gong had sounded.

Because this fire escape has many desirable and advantageous features that cannot be found in the ordinary types it will probably be adopted and used on buildings more frequently in the future. ❖

Lowering Device for Light Fixtures

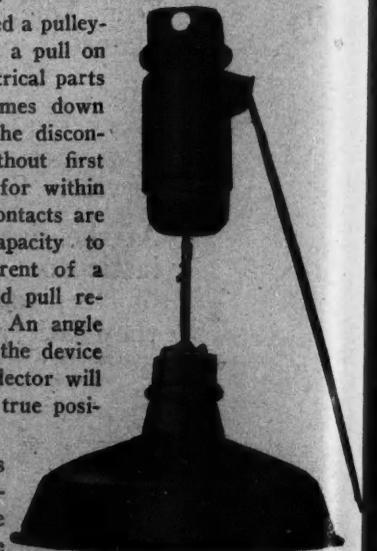
A CUT-OUT and lowering device by means of which cleaning and re-lamping of electric light fixtures can be done in absolute safety is now being manufactured.

The device which is called a pulley-socket is so arranged that a pull on a rope disconnects the electrical parts and the entire fixture comes down dead from the ceiling. The disconnection can be made without first switching off the circuit, for within the pulley-socket wiping contacts are provided of sufficient capacity to make and break the current of a 1,000-watt lamp. A second pull resets the fixture in place. An angle reflector can be used, for the device is so designed that the reflector will always come back into its true position and lock into place.

Some of the advantages of the use of this pulley-socket are that it saves time in cleaning, eliminates the dangerous use of ladders, and danger of short circuits.



Spiral Slide Brings Them Down in a Hurry



Device for Lowering and Disconnecting Light Fixtures.

ANACONDA

from mine to consumer



Plumbing Insurance

DISFIGURED walls and ceilings, ruined rugs and furniture, and the trouble and expense of opening walls and floors to reach rusted, leaking pipe—the results of installing inferior, corrodible water pipe.

Anaconda Brass Pipe resists corrosion and will not leak, split or clog. It insures you against repair annoyance and expense—not for 5 years but for 30.

The difference in cost between corrodible iron or steel and rustless brass is only about \$75 for a \$15,000 house.

Write for our new booklet "Ten Years Hence" which tells how to save on your plumbing. It is free.

THE AMERICAN BRASS COMPANY
GENERAL OFFICES, WATERBURY, CONN.

MILLS AND FACTORIES

Ansonia, Conn. Torrington, Conn. Waterbury, Conn. Buffalo, N.Y. Kenosha, Wis.

OFFICES AND AGENCIES

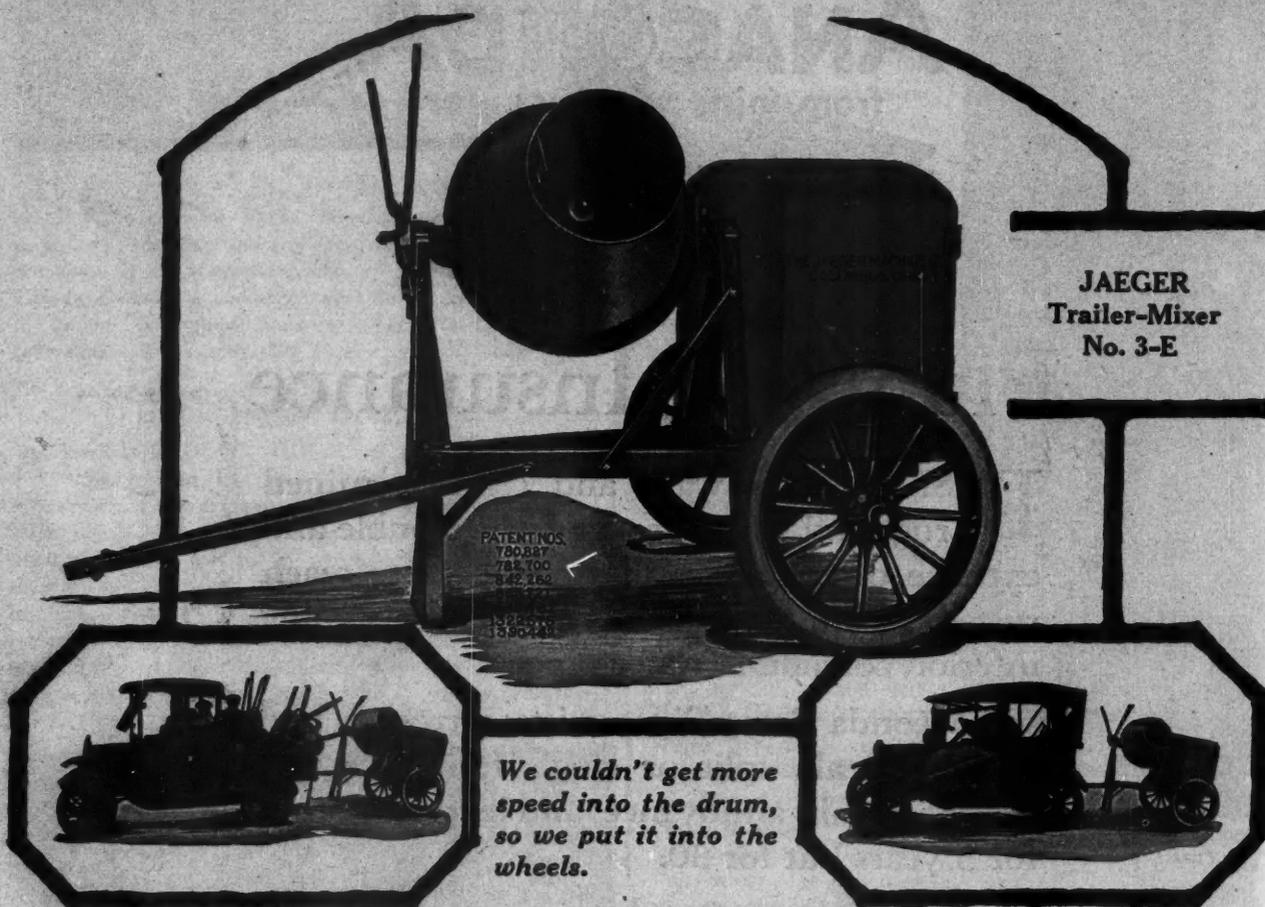
New York Philadelphia Boston Providence Pittsburgh
Cleveland Cincinnati Detroit Chicago St. Louis San Francisco

ANACONDA AMERICAN BRASS LIMITED, NEW TORONTO, ONTARIO, CANADA

ANACONDA

BRASS PIPE

The New JAEGER



We couldn't get more speed into the drum, so we put it into the wheels.

More Speed

JAEGER has again stepped ahead of the crowd—by producing this new Trailer-Mixer. Here is a mixer outfit whose *middle name is speed*. And it is living up to its name by speeding up the work and profits of hundreds of contractors.

This new fast-moving, fast-mixing outfit is a regular JAEGER Mixer mounted on automobile wheels, with pneumatic tires. This gives *extreme portability*. This is the outfit that contractors have wanted for years.

When ready to move, the contractor simply loads his equipment into his truck or machine, attaches the trailer and "steps on the gas." Instead of traveling a careful 10 miles an hour, he "full speeds ahead" at 20 or 30. His Trailer-Mixer floats noiselessly along behind—no rattling, no jarring, no loosening of bolts, no hold-up in traffic. *He gets on the job, completes it and gets to his next stop in fast, profit-making time.*

SPECIFICATIONS

Trailer-Mixer (3-E)

Size over all—3 ft. 6 in. by 5 ft. 6 in.
 Height to charge—40 in.
 Engine—2 H. P. hopper cooled.
 Costs—1 to 2 cents per hour for gasoline.
 Capacity—3 to 4 cu. ft. per batch.
 Capacity—up to 25 yds. per day.
 Weight—985 lbs. Only 145 lbs. weight to be lifted in moving the trailer about.

Trailer-Mixer (4-E)

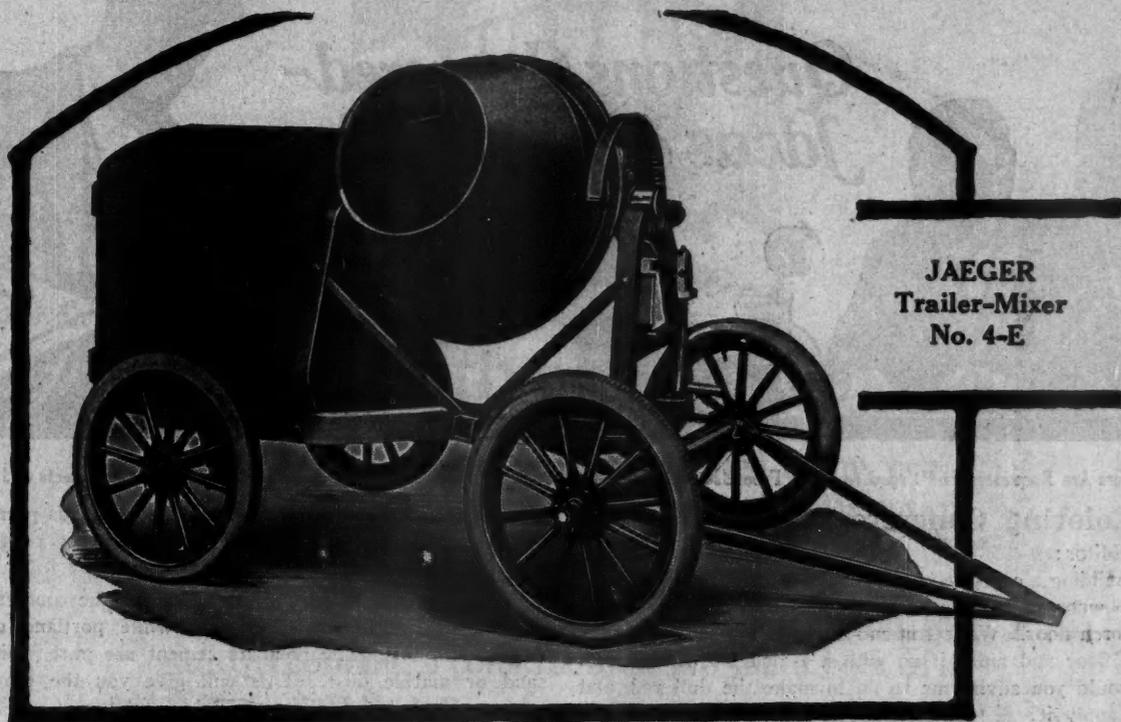
Four wheels instead of two.
 Capacity—up to 7 cu. ft. unmixed material.
 Weight—only 1760 lbs.

Here is the same machine as our regular 4-E iron-wheel mixer, except for its special wheels and pneumatic tires. Just as easily portable as the 2-wheel trailer.



*A step in advance of anything
 In the Concrete Mixer Line*

Trailer-Mixer



**JAEGER
Trailer-Mixer
No. 4-E**

More Profit!

UNDoubtedly you've often found little profit in some of your smaller or medium-size jobs simply because of the time it took to get to the job, get your mixer set, and under way. You needed an outfit that would speed things up all around. *Here is a speed outfit in every sense of the word!*

The Trailer-Mixer can start and finish a medium-size job before a big mixer can be placed and put in work. The country and the city contractor will find it indispensable on account of its extreme portability. It mixes mortar and plaster as well as concrete. Its orange cab makes it easily seen—thereby helping eliminate traffic collisions. Consider the negligible amount of weight and wear on the pneumatic tires compared to those on an automobile and you will see that these tires will last many, many months.

A Real JAEGER Outfit

Above all, the Trailer is a real Mixer—a standard, JAEGER tilting-drum outfit whose reputation for thorough mix and absolute dependability is backed by the word of more than 18,000 contractors.

Consider the *light weight, low cost, extreme portability and speed of mix* and you'll agree that for rapid work and quick profits not an outfit on the market can compare with this new Trailer-Mixer.

Send the Coupon for Full Facts

You'll be vitally interested in this new JAEGER Trailer-Mixer. Let us send you more complete information on this speedy mixer outfit. *Mail the coupon today.*

The Jaeger Machine Co.

318 Dublin Ave.

COLUMBUS, OHIO

230 Miles in Two Days With Trailer-Mixer

"I want to say that when it comes to making time and mileage, the JAEGER Trailer-Mixer can't be beat. I'm rather proud of the two-day record I made with my outfit.

"I hooked it on behind my Cadillac and traveled from Columbus, Ohio, to Newark, Ohio, (35 miles) in less than two hours. I put in a drive for a filling station—and left the same evening for Marietta. I put in another filling station in Marietta and left that evening for Columbus. I traveled 230 miles in two days with my Trailer, put in two good jobs and came through without a rattle. I can't say enough for the JAEGER Trailer-Mixer. It's just what I've always wanted. I wouldn't buy one with iron wheels now."

WM. M. FRAVEL,
Columbus, Ohio

The Jaeger Machine Co.
318 Dublin Avenue
COLUMBUS, OHIO

Gentlemen:—
Please let me have more information
on the new JAEGER Trailer-Mixer.

Name

Address

CORRESPONDENCE

Questions Answered—
Ideas Exchanged



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

Coloring Concrete Porch Floor

To the Editor:

New York City.

I am building a concrete porch around a house I am building and the owner wishes the porch to be a dull red finish, that is, the porch floor. What I intend doing is to use the regular concrete floor and finish it up with a 1-inch top of dull red. What would you advise me to do to make the dull red, and how to apply it?

The owner also wishes the steps at the front of the house and the concrete walk to the sidewalk to be a white finish. Will you please advise me how this is done.

A. ROSSITER,

Atkinson Housing Corp., Engineers and Contractors.

Answer: In the authoritative hand book by Campbell & Boyer, "Practical Concrete Work," we find this paragraph covering your question:

In aiming at color effects secured in part by mixing colors with the cement used to make a batch of concrete, it is very essential—if permanent tints are to be secured—that only reliable pigments be used. The cement, sand and coloring matter are mixed together dry, and it is advisable to experiment a little to find how much color is needed to give the desired shade. When water is added to the mixture, the mortar will appear considerably darker than the final surface will be when thoroly hardened. By mixing 5 pounds of coloring matter with a sack of cement, the following colors are obtained:

Raw iron oxide will give a bright red;

Roasted iron oxide will give brown;

Ultramine will give bright blue;

Yellow ochre will give buff to yellow;

Carbon black or lampblack will give a gray to dark slate;

A mixture of equal parts of carbon black and red iron ore gives dull red.

In all cases the addition of mineral colors causes some loss of strength but this is not of great importance on ornamental work. In general, only

mineral colors are to be recommended as regards permanence of effect produced. Blues and greens are not reliable and will fade in course of time.

With reference to pure white finish for the concrete steps, you should use one of the pure white portland cements. Along with this white portland cement use pure white silica sand or marble dust. This will give you the pure white concrete you desire.—EDITOR.



A Message from England

To the Editor:

Parkfield, East Bergholt, Colchester, England.

Your paper is undoubtedly the most up-to-date of building journals that we have yet seen, and the advent of the next number of the AMERICAN BUILDER is always awaited with pleasurable anticipation.

The planning of small houses with labor-saving ideas is always a source of interest and you certainly have the last word in this direction. Owing to the different climatic conditions and also the mode of living, many of your features would not be appreciated, for instance, central heating, which is without doubt economical and labor saving, is hardly necessary—as our winters are mild, not more than 8 or 10 degrees of frost, and then only for a day or so.

Practically all small houses here have an entrance hall, a feature non-existent in most of your planning. This hall and the landing give access to at least three rooms on each

floor and a privacy which your planning does not permit. The hall often takes the form of a lounge with an open fireplace and staircase making quite a pleasing entrance.

Our mode of building is also quite different, timber framing for walls is never used and shingles are unknown, bricks or concrete blocks being invariably used for walls and tiles or slates for roofing.

We have a number of interesting old buildings in this neighborhood, many of them half timbered construction upwards of 500 years old. If it

SEND in more letters.

This department gets right down to brass tacks and brings up the sort of things we are all interested in.

I'm doing my part. I'm glad to tell any interesting experience I have had or ask your help on some problem that's too stiff for me.

This is our corner. Let's make it the best and most practical department in the whole magazine.

And, say, pictures and drawings always make it more understandable.

Send in more letters. Rough drawings, too, when possible.

A SUBSCRIBER.



Improves with age—it's all wood

YOU as a builder are vitally interested in any product or material that makes for lasting satisfaction for the user—for the man who is going to use the building you erect. You'll find Cornell-Wood-Board a strong ally in helping you build a reputation for sturdy, economical construction. We stand back of it.

Cornell-Wood-Board gets better as it ages because it is pure wood; nothing else. Its tough wood fibers are *triple-sized*; and each surface of the board is *mill-primed*. These treatments give it splendid insulating quality; and minimize expansion and contraction.

You will recognize Cornell's adaptability to a variety of artistic treatments, for many building needs. The attractive and popular *oatmeal-finish* makes possible very good effects in paneled interiors; and there are several "tile" finishes for kitchen and bathroom.

"165 Uses for Cornell-Wood-Board" is a booklet telling how you can make many useful things for the home. Ask for one.

CORNELL WOOD PRODUCTS COMPANY
General Offices, 190 North State Street, Chicago

Cornell
Wood Board



“You won't need a cistern or a pump!”

“Well, I guess I'll have to dig a cistern and put in a pumping system. This city water is too hard for us to use.”

“Why don't you put in a water softening system like I recommended. You won't need a cistern or a pump and you can have all the soft running water you want by simply installing a system like I have in my home.”

“What kind is that?”

“It's a Wayne Rapid-Rate Softener—just a small tank that goes in the basement and is attached to the feed pipe. The water runs through it and comes out softer than rain water. And it's no trouble to take care of—just flush it out with salt water once a week. I'll tell you it beats a cistern, all hollow.”

“But doesn't it cost a lot of money?”

“Not nearly as much as a cistern and pump and you always have plenty of soft water.”

“I guess I had better investigate that system. I know you recommended it but I thought it required a lot of attention and was a bulky outfit.”

“Not at all. Take my advice and get a Wayne Softener. You'll like it.”

* * *

What about the client of yours who wants soft water—he will be much better satisfied with a Wayne Rapid-Rate Water Softening System than he could be with a cistern and pumping outfit.

Write for information. It will be profitable to you.

Wayne Tank and Pump Company

866 Canal Street FORT WAYNE, INDIANA

San Francisco Office: 534 Rialto Building
Los Angeles Office: 3311 West Temple St.

An International Organization with Sales and Service Offices Everywhere

Wayne
TRADE MARK

WATER SOFTENING SYSTEMS
Rapid-Rate



Gasoline and Oil Storage Systems Heavy Metal Storage Tanks Air Compressors Water Softening Systems Oil Filtration Systems
Oil Burning Systems, Furnaces and Forges

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

would be of interest to your readers I could furnish you with photographs and sketches of same with details of construction.

Wishing your journal the success it deserves,

H. R. WHEELER.

Move to Reduce Ready Roofing Grades

To the Editor:

Philadelphia, Pa.

Feeling sure that you are interested in any move toward the standardization of building materials in order to reduce the cost of building, we take pleasure in enclosing copy of a letter sent to 35,000 dealers and wholesale distributors of roofing thruout the United States.

It is the earnest desire of this company to eliminate the many grades of roofing now marketed and concentrate on one brand in three weights—light, medium and heavy.

Toward this end and in order to enlist the co-operation of all those interested in the merchandising of roofing we have sent out the attached letter:

Dear Sirs: We have realized for a long time that the “besetting sin” of the prepared roofing industry has been and is “too many grades and brands.” This company at present manufactures twenty-four different grades of prepared roofing, marketed (exclusive of private brands) under four different brands in varying weights.

It will be quickly evident that the utmost in economy cannot be obtained where continuity of operation is constantly interfered with by the necessity of repeated stops and changes during manufacture, due to the large number of varying grades. Increased investment in finished and raw materials and increased storage facilities are made necessary, which further increase the cost. Prompt service is interfered with, especially in shipment of mixed cars, by reason of increased opportunity for being out of some particular item ordered.

All of these added costs are reflected in the price to the dealer, whose cost of doing business is also increased due to the necessity for his carrying numerous brands of varying grades. He is forced to tie up capital in stock which could otherwise be used to advantage in other activities of his business. Furthermore, he is confronted with the difficulty of maintaining a balanced stock at minimum cost.

We believe there is no good reason or necessity for a manufacturer to make more than one brand of prepared roofing in light, medium and heavy weights. We further do not understand, under the present practice, why a consumer whose needs warrant light weight roofing should choose the light weight of the higher priced brands and, vice versa, where a heavy grade is desired, that he should purchase the heavy weight of the cheapest brands.

We are urging on the manufacturers of prepared roofing the wisdom of eliminating all brands except one to a manufacturer, and that brand to be confined to three weights in smooth surface goods and two weights in slate surface goods.

Owing to the necessity of meeting competition, this company cannot accomplish this unless the industry as a whole concurs. As distributors of prepared roofing, your interests are common with manufacturers', therefore, if you concur in the suggestions made here, will you please co-operate by writing your opinion and recommendations to the manufacturer's or wholesale distributors from whom you are buying, to the end that prepared roofing may be made and distributed at the lowest possible cost, thereby redounding to our mutual benefit?

THE BARBER ASPHALT COMPANY.

C. W. BAYLISS, Vice-President.

Screw Thread Data

To the Editor:

Flandreau, S. D.

I have been a reader of the AMERICAN BUILDER but a short time, but always find the paper interesting.

I wonder if some reader of the AMERICAN BUILDER could advise me where I could get a table showing the number of threads per inch for certain diameters of bolts that have the U. S. standard threads.

FRANCIS L. NORTON.

Answer: The mechanical engineering hand books carry this information.—EDITOR.

We Are Revising Our Agency Lists.

This leaves some very desirable territory open for business getters. If we have no agent in your section we want one — Better investigate and see what an interesting proposition we have to offer. The fuel situation makes our product unusually easy to sell.

We have agents making as high as \$13,000 per year net profits.

The exclusive flexible and removable feature of **Diamond Metal Weatherstrip** appeals to people. They are willing to pay more for it.

We established a new agency in a Pennsylvania city and in 2 months and 10 days they closed contracts for \$11,684.00 worth of business in the face of the fiercest competition and more than two-thirds of contracts were taken at higher prices than our competitors.

Building Specialty Men, Screen Makers, Job Carpenters and Weatherstrip Agencies who want a permanent, money making, year round business should investigate our proposition.

Write Today—Now, Before You Forget

ADDRESS

Sales Department

The Diamond Metal Weatherstrip Co.

626 KERR STREET

COLUMBUS, OHIO

To Readers of This Advertisement

Being a believer in **Truth in Advertising** I personally assure you that every statement made in this advertisement is absolutely true.

C. J. PARSONS,
Gen'l Mgr.

For convenience and quick delivery we have a Western Factory Branch located at Fort Dodge, Iowa, in charge of Mr. J. E. Dunmire.

Remodels Old House Into Duplex

To the Editor: Glassport, Pa.
 I think builders can well give more attention to the rebuilding of old houses that are good houses. If a house is built well of good material in the first place it can be made modern a good many years afterwards with very satisfactory results.

I am inclosing a picture of a residence I recently rebuilt. It was first put up in 1889, the year of the Johnstown flood and is 33 years old. I made a duplex, or two-flat, out of it, building on the sun parlors and outside stairway and re-arranging the windows.

It will be noted that both sun parlors are on the first floor but the one for the second floor is easily reached by a short flight of stairs. The house is now modern in every way.

I appreciate the value of the AMERICAN BUILDER very much.

✦ J. D. CAMPBELL



This House Remodelled into a Good Two-Flat. The sun parlor for the second flat is on the first floor.

To Build Perpetual Ice Box

To the Editor: Alexandria, Neb.
 I want to build a combination ice house and refrigerator. It will be on the north side of a building. I want an inside door to the refrigerator and an outside door to the ice house. I want to pack the ice around the refrigerator in winter and not have to supply it later. If any one can give me information on how to do this it will be greatly appreciated.

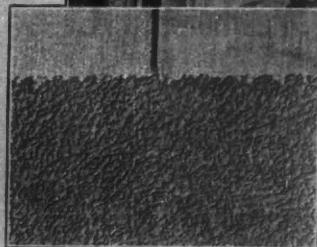
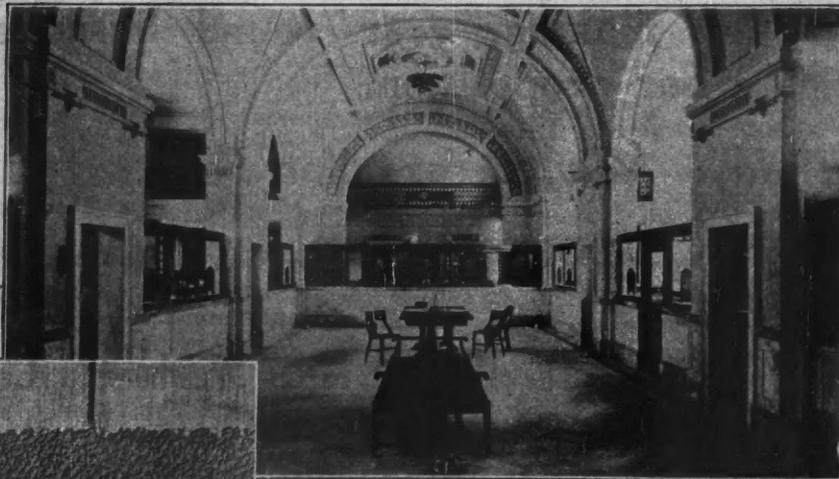
LEVI LANDKAMER.

Wants Cement Block Drafting Paper

To the Editor: Oakville, Ont., Canada.
 Could you tell me where I could buy drawing paper for cement block buildings with blocks drawn in blue to 1/4-inch scale? I have seen it but do not seem to be able to buy it.

J. H. ROBERTSON.

ONE COAT OF "CRAFTEX" DECORATES WALL BOARD



Joints of Plaster Board covered with One Coat of "CRAFTEX"

FIRST NATIONAL BANK, PATTERSON, N. J.,
 DECORATED WITH ONE COAT OF

"CRAFTEX"

OVER OLD PAINTED WALLS

DECORATED BY ALLEN, HALL CO., BOSTON, MASS.

"CRAFTEX"

Has sufficient body to completely conceal defects in plastering.

Applied over wall boards it produces an artistic surface with one coat and covers joints without paneling.

Applied with a Brush

WRITE FOR LITERATURE AND SAMPLE

Simmons, Gardner Co.

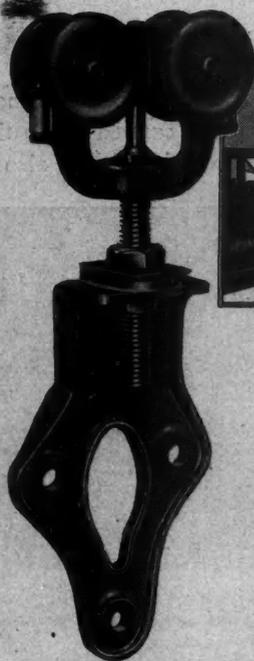
7 Water Street
 BOSTON, MASS.

Steel Base for Bassments

Install and Satisfactorily Installed in the Wall - Growing in Favor for Small Buildings

ALLITH-PROUTY

**GARAGE
and
FIREDOOR
HARDWARE
and
BUILDERS'
HARDWARE
SPECIALTIES**



The Standard of Excellence in Sliding Door Hardware

for more than twenty years has been set by the Allith-Prouty line.

The constantly increasing demand for the Allith-Prouty products clearly indicates the implicit confidence dealers and users everywhere have in this fast selling line.

Contractors and builders show an overwhelming preference for Allith-Prouty 1080 Trolley-swivel sets for folding-sliding garage doors, because these better sets are more economical to install, operate easier and last longer.

Garage Door Hardware Catalog No. 91 will help you in your business. Send for it.

ALLITH-PROUTY COMPANY

Manufacturers
DANVILLE ILLINOIS



ALLITH-PROUTY
"Satisfaction in Hardware"



Steel Sash for Basements

Easily and Satisfactorily Installed in Any Type of Wall—Growing in Favor for All Small Buildings

By S. M. FECHHEIMER

EDITOR'S NOTE: *This is the second installment of Mr. Flechheimer's instructive article explaining clearly the construction details of steel sash windows in basement walls of all types. The first part appeared in the September issue of the AMERICAN BUILDER. With this practical information the builder can use steel sash in any building with the assurance they are permanently and satisfactorily installed.*

BRICK VENEER presents no difficulties over solid brick work except that the face brick is often not applied until after building the foundation wall. Where the window is set back 8 inches from the face of the completed wall the construction is identical with solid brick. More frequently, however, the window is set back only the thickness of the face brick, or 4 inches from the face. In this case the window must be anchored in place. Usually a good grouting between the frame and the brick work is sufficient for this purpose. However, the windows with outstanding leg frame have holes punched in the jambs thru which spikes or wire can be inserted for additional anchorage in the mortar joints. The outstanding leg of course overlaps the brick work and when the face brick is placed, the leg is thoroly embedded in the brick work. For windows with channel frame, the channels butt against the brick work and the anchor clip is used for anchorage.

Simple Detail

The detail at the head in brick veneer construction is very simple. Where windows have frames with outstanding legs the leg at the head sits in between the outside of the sheathing and the face brick or

lintel. Windows with channel frames are butted against the lintel and should be calked to give weather-tightness.

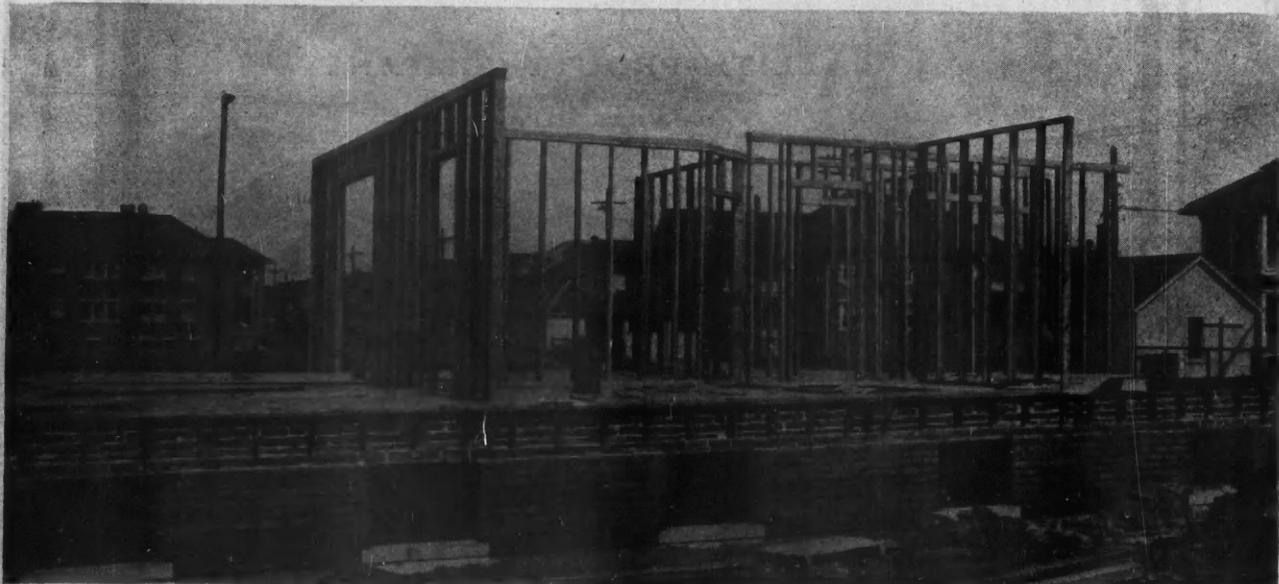
Frame and Stucco

While in most frame construction houses the solid wall of the basement is carried up to the level of the top of the basement windows, it is also quite common



Closeup of Steel Cellar Sash in Stone and Brick Wall.

to stop the wall below the window and start the wood framing at the sill level. In these cases the steel windows with outstanding legs frame against the wood studding at the jambs and are held in place by the finished wood trim front and back of the jamb. Where stucco is returned around the jambs of the windows



Residence of Mr. Curtis Massoll, Detroit, Mich., in Which Steel Sash Were Used Thruout the Basement.



*Are You
Using
Basement
Windows
that come
Complete?*

Think how much time and money you could save by installing a basement window that comes COMPLETE!

By "complete," we mean—the sash fitted and hung in the frame—the hardware in place—and the priming coat of paint applied.

When you use Fenestra Steel Basement Windows, you profit by these very advantages—they "come complete"! You don't have to have a carpenter on the job to build the frames—fit the sash—attach the hardware—or brace the window. This new Fenestra Steel Basement Window is all ready for the mason to install. It saves time, labor and money—makes a neater and more attractive job—gives the home owner a better buy for his money.

And here are the reasons why home owners want Fenestra Steel Basement Windows:

- they admit 40% to 80% more light than wood windows
- can't warp or stick
- resist fire
- provide better ventilation.
- last as long as the building
- are surprisingly Low in Cost!

Let us send you our pamphlet that tells the whole story about these new steel windows. It shows how to install in all types of basement construction,—gives the four standard sizes—tells how to glaze, screen, and many other valuable pointers on the easy handling and installation of these windows. Write for your copy NOW—it's FREE!

Fenestra
STEEL WINDOW WALLS

Detroit Steel Products Company
2293 East Grand Boulevard Detroit, Mich.

"The World's Largest Manufacturers of Steel Windows"



Detroit Steel Products Co.
2293 E. Grand Boulevard
Detroit, Mich.

**Mail
Now!**

Gentlemen:-

Kindly send me a copy of "Fenestra Steel Basement Window Pamphlet." No obligation incurred.

Name

Address

Send your dealer proposition. (For Lumber and Buildings Supply Dealers only)

this finished stucco overlaps the leg of the frame and forms a proper finish around the window. A wood strip is placed at the back and the frame is held in place before applying the stucco by means of nails driven alongside of it. The details for the head is the same as for the jamb, the outstanding leg being embedded between the wood strips or between the stucco and back strip. For windows with channel frames, details for head and jamb depend upon the condition of the job and information should be secured from the manufacturer.

Putty of Paramount Importance

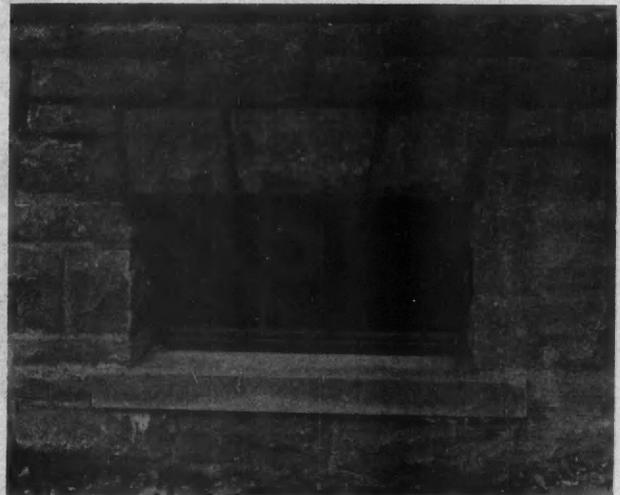
Probably the most vital factor in connection with permanent, successful steel window installation is the putty used in glazing. Do not under any circumstances use ordinary wood sash putty, as this will not harden properly on steel and will give an unsatisfactory job. Putty made especially for use with steel sash is readily obtainable on the market, and this steel sash putty should be used on all steel basement windows. The actual glazing of the steel window is very simple, the glass being held in place by spring clips furnished with the windows.

Easy to Screen

Provision is made on steel basement windows for screening. The windows are furnished with four holes drilled in them near the top and bottom and along the sides of the frame. The screen sits flush against the steel frame and is securely held to it either by screws or bolts going thru these holes. Grilles can also be attached to the steel frames in a similar way, using hook bolts thru the four holes in the window. Where desired, of course, the screens may be fitted into the masonry opening independent of the steel window.

Thus it is seen that the steel basement window

admirably meets all requirements for the day-lighting of basements. Contractors are having no difficulty in installing them—in fact, are encouraging their use because of the satisfaction they give and the entire ease with which they can be used. The manufacturers of steel basement windows are glad to co-operate with all builders and render any assistance desired.



The Steel Sash Make a Secure, Well-Lighted Basement or Cellar.

Incidentally, the use of the steel window for basements is developing their use in all types of small building work—private garages, stores, light wells in apartments, shops, etc. Of course, steel windows have been quite universally used in the larger types of industrial and commercial buildings for many years.



Important Discovery in Preservation

A NEW method by which it is claimed wood can be preserved indefinitely against attacks of all kinds of organisms, both land and water, has been discovered recently by Dr. Paul Bartsch of the Smithsonian Institution. Dr. Bartsch's method consists of impregnation with paraffin containing soluble poisons, those used so far in the experiments having consisted of iodide of arsenic and iodide of copper. Arsenic is known to be deadly to animal organisms, while the efficacy of copper salts for the destruction of plant elements is well known. Specimens of wood have been given this new treatment by the Forest Products Laboratory with great success.

It is understood that the investigations at the Forest Products Laboratory have shown that the new treatment will not cost any more, if as much, as present preservative treatments, and that the paraffin penetrates wood more readily than do the preservatives now being used. Furthermore, the same equipment heretofore used for first class impregnation with creosote and other substances can be used for impregnation by the Bartsch method.



Detail of Good Brick Veneer Construction. Note tar paper fastened with big headed tacks to sheathing boards. A 4-inch face brick wall is tied to the wood frame.

Modern Basements Need Daylight



TRUSCON
 STEEL BASEMENT
 WINDOWS

THEY are built right! That is why Truscon Steel Basement Windows are the most popular with home owners and builders. Continuous double weathering on all sides without any weak spots is an exclusive feature. Truscon Windows can be firmly anchored in the foundation and they won't stick, leak or need

repairs. When making comparisons don't forget that Truscon Basement Windows give 50% to 80% more daylight and are fully equipped with heavy steel hinges and strong automatic locks. If your dealer can't tell you about them send us his name and we will give you complete information.

TRUSCON STEEL COMPANY
YOUNGSTOWN OHIO

Dealers Are Served Thru Our Sales Offices and Warehouses in Principal Cities

NEWS of the FIELD



Surveys Show Big Building Gains

BUILDING is substantially on the increase in every section of the country, judging by the figures of recent surveys that covered the entire building activity in twenty-seven northeastern states during the month of August, 1922, and sixteen southern states for the first six months of 1922.

The forty-three states showed a building gain ranging from 42.7 per cent in the South to 46 per cent in the North over the same period in 1921. Comparing this year with 1921 on the eight months basis, this year is 58 per cent ahead.

Contracts awarded in the twenty-seven northeastern states during the month amounted to \$4,236,000, according to the F. W. Dodge Company, who made the survey. This was a 46 per cent increase over August, 1921, and only 8 per cent less than July, 1922. Since the seasonal decline that has set in after four months of unequalled building is very small, indications for increased activity during the remainder of the year are excellent.

The August figures bring the total for the year to date up to \$2,363,872,000, which not only is the largest figure for the first eight months of any year, but exceeds the total building during the entire year of 1921 by seven million dollars.

Residential building continues to maintain the lead in August with \$100,882,000 worth of contracts, which is 31 per cent of the month's total. Industrial plant construction amounted to \$67,373,000, or 21 per cent. Public works and utilities amounted to \$49,825,000 or 15 per cent; business buildings, \$38,122,000, or 12 per cent; and educational buildings, \$32,055,000, or 10 per cent. New work contemplated during the month amounted to \$41,236,000.

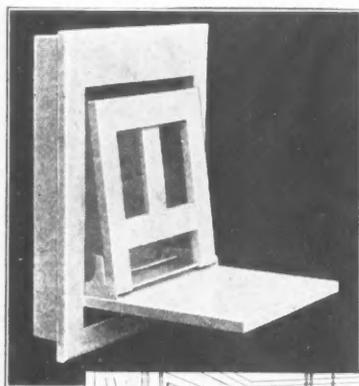
Buildings in the South during the first six months of 1922 showed a remarkable gain of 42.7 per cent over the same period in 1921 according to a report by G. L. Miller in the Manufacturers' Record. He bases his statements on an exhaustive survey of building conditions in sixteen southern states. The contracts awarded and permits issued during this period amounted to \$240,945,968 or within a few thousand dollars of a quarter of a billion.



Illinois Zinc Company Opens Chicago Sales Office

THE Illinois Zinc Company has opened a sales office in the McCormick Building, 332 South Michigan Avenue, Chicago. Previous to this expansion sales have been conducted thru offices at 280 Broadway, New York, and 1331 Filbert Street, Philadelphia. The Chicago office thus constitutes a third selling center. Smelters and rolling mills are located at Peru, Ill.

The Illinois Zinc Company manufactures Illinois Zinc shingles, slab zinc, strip zinc in coils, electrolytic slab zinc, sulphuric acid and zinc dust. Illinois zinc shingles are now being advertised widely thru technical magazines.



Built-in Units for Modern Kitchens

Below is the "disappearing breakfast nook"—four chairs and a table which fold into the walls when not in use. Over one of the seats is an ironing board which may be dropped down when other equipment is out of the way. At the left is a photographic illustration, showing the fine quality of workmanship used in all

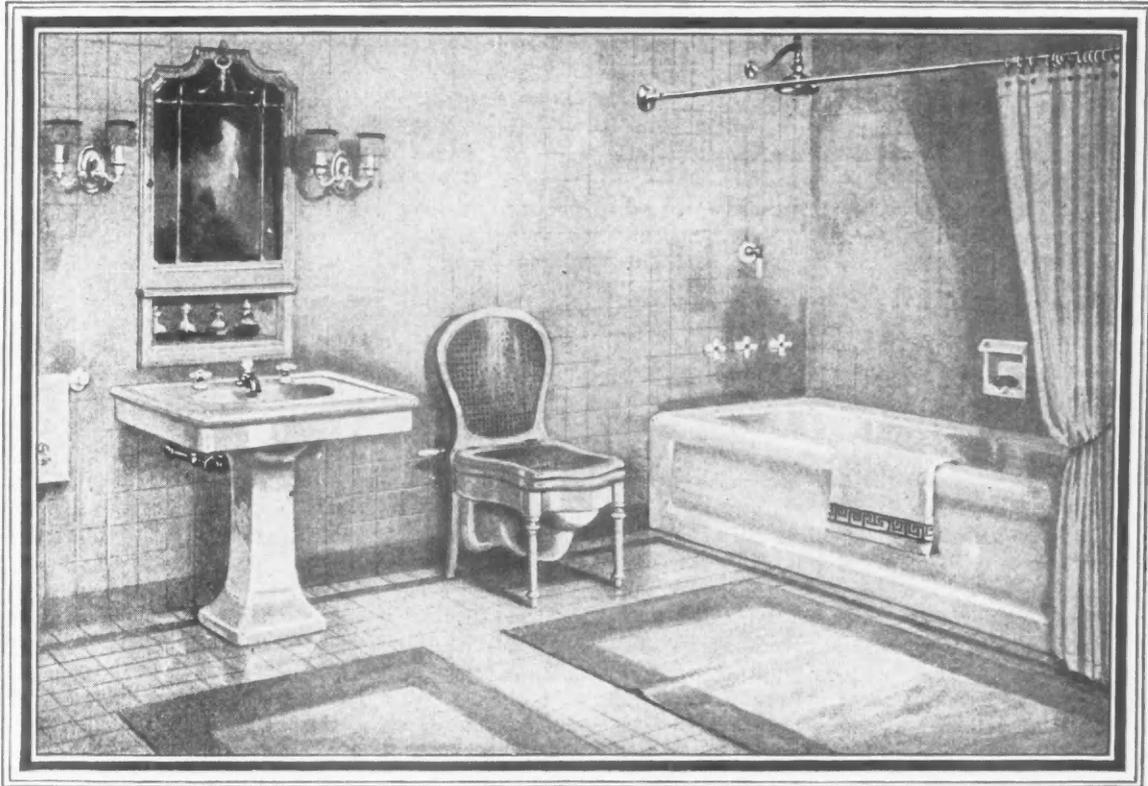
KITCHEN MAID

STANDARD UNIT
SYSTEMS

*These efficiently made units can be installed
for less than the average built-in cupboards*

Write for 12-page pamphlet, illustrating kitchen cabinets, tables, dish cupboards, broom closets, cereal and plate warmers, and other conveniences which will be appreciated in an apartment or a private home.

WASMUTH-ENDICOTT COMPANY - Andrews, Indiana



Your personal taste and appreciation of beauty in form and color can be reflected in the appointments of your bathroom, kitchen and laundry as easily as in the furnishings of your living or dining room.

Crane Co. maintains branches and warehouses in eighty-three cities throughout the United States and Canada, where agreeable selections can be made from a wide range of such equipment and accessories. In its three national exhibit rooms at New York, Chicago, Atlantic

City, these Crane products have been assembled for your inspection in original settings of charm and distinction.

You are cordially invited to visit the nearest Crane branch or exhibit room and make use of its unusual facilities. Crane service provides everything required for steam, water, refrigeration, vacuum cleaning and sanitation systems on the simplest or the largest scale. Crane beauty in the open is matched by Crane quality in all hidden equipment.

CRANE

GENERAL OFFICES: CRANE BUILDING, 836 S. MICHIGAN AVE., CHICAGO

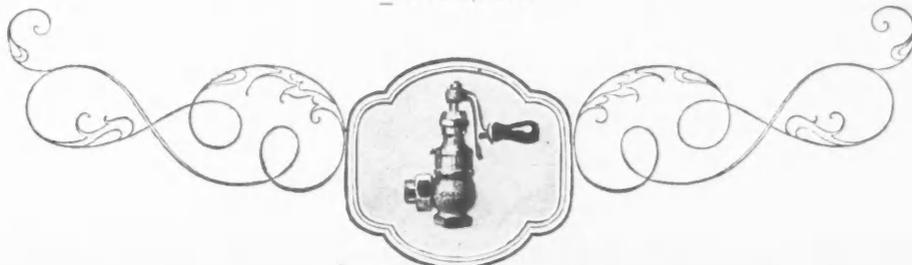
Branches and Sales Offices in One Hundred and Thirty-five Cities

National Exhibit Rooms: Chicago, New York, Atlantic City

Works: Chicago and Bridgeport

CRANE, LIMITED, MONTREAL. CRANE-BENNETT, LTD., LONDON
CRANE EXPORT CORPORATION: NEW YORK, SAN FRANCISCO

C^{IE}. CRANE, PARIS



Crane Radiator Valve, No. 231

New York to Try New Apprenticeship Plan

THE first concrete move on the part of the New York building industry to create skilled labor has been made by the New York Building Congress in putting into operation a system of training which, it is believed, will ultimately reduce the cost of building without reducing the wage scale. This new system has the endorsement of the Building Trades Employers' Association as well as the Building Trades Unions, both of which are contributing to its support.

The said system is nothing more or less than the revival of the old apprenticeship system modernized by contributing to the experience of the Middle Ages what was learned during the World War when it was necessary to create especially skilled labor.

Frank Lawrence Glynn, who has recently been selected to frame the new reclamation program for New York State prisons being initiated by Governor Nathan Miller, was the man selected to inaugurate "modern apprenticeships" for the congress.

During the last six months Mr. Glynn has modernized the old industrial system and has registered nearly 1,000 apprentices under the following conditions: Boys with a minimum age of sixteen are enrolled, note being taken of their personal, working experience and education. They are then placed with a contractor at an initial wage of \$2.70 for an eight-hour day. The apprenticeship covers a period of eight terms of six months each. At the end of every term the apprentice receives an increase; 5 per cent per hour for the even terms alternating with a 10 per cent increase for the odd terms. That is, at the beginning of the second six months he receives an increase of 5 per cent, and so on. At the end of the second year of his apprenticeship he is receiving

between \$5.00 and \$6.00 per day and during the last six months nearly \$8.00. As a youth of twenty completes his apprenticeship he will graduate as a journeyman at \$9.00 per day instead of working as a laborer as at present for from 40 cents to 60 cents per hour with no present in view and nothing to which to look forward.

The executive committee of the New York Building Congress is made up of six members, two of whom represent employers, two labor and two related interests. They are Burt L. Fenner, of McKim, Mead & White, architects, chairman; Clarence S. Stein, architect, secretary; Dr. John L. Elliott, director Hudson Guild; Ronald Taylor, of the Ronald Taylor Company, Inc., cement floor contractors; M. F. Westergren, of the M. F. Westergren Company, Inc., sheet metal contractors; Roswell D. Tomkins, general secretary; and John Halkett, member of the executive board, New York District Building Trades Labor Council.

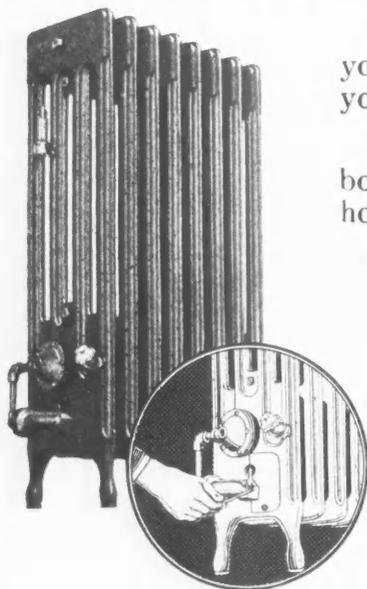


Slate Weathers the Storm

ROOFING slate is coming back into its own. The demand and shipments of roofing slate in July, 1922, were the greatest in several years. The shipments of slate for roofing purposes according to the reports from over 50 per cent of the producers exceeded the July production by nearly 60 per cent.

The demand for blackboard slate continues to climb. Already, in the first seven months of 1922 in twenty-seven Northeastern states more contracts have been awarded for educational buildings by over thirty millions than in the entire year of 1920. Hospitals and institutions likewise have exceeded in the first seven months of 1922 the whole year's total of 1920. Religious and memorial buildings in the same period have exceeded the total for 1920 by over thirteen mil-

Better Houses for Less Money



When the prospective builder says "costs too high," you can cut them by skimping on the construction, or—you can install GASTEAM Heating.

At one stroke you cut off basement excavation, chimney, boiler and piping. And the owner, besides getting a better house, gets greater heating comfort.

GASTEAM Radiators burn gas and generate *steam* heat. They are safe, odorless, convenient and cannot be damaged by freezing. Fuel comes in a pipe, is paid for as used, and requires no storage.

Let us tell you what other builders are doing with GASTEAM.

JAMES B. CLOW & SONS

General Offices: 534-546 S. Franklin St., Chicago

Sales offices in the principal cities

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James B. Clow & Sons
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Send me details of CLOW GASTEAM.

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Building Experts Wanted

The Big Money Goes to the Man Who Knows

The man who can read plans, make estimates, superintend jobs or take contracts is the man who makes the big money in the building business. Can you do these things? If you can't do them you are not yet in the real money-making class. You are not prepared for the great rush of building work—the building boom—that even now is here.

But you can become a building expert quickly by giving some of your spare time to home study under the direction of experts of the Chicago Technical College, which for 20 years has been known as "America's Greatest School for Builders." These men will train you in every important branch of the building business by practical and individual instruction on blue print building plans and specifications which we send to you. No "high-brow" books to study. The plans cover all kinds of buildings and are the same as used by the contractor. They are yours to keep.

No Matter What Your Job This Great Opportunity Is Yours

There is no longer any need for a man to stay in a job that offers little or no chance for advancement and more money. There is always a market for brains and the man who gets this Chicago Tech training soon becomes a top-notch in the building business; he gets more because he is worth more.

There is a building boom coming—it's here now! Get this

training and your opportunity will come quickly. There will be a lot of money made in the next five years by men who know the fine points of the building business. Take the Chicago Tech Builders' Course—it is planned for practical men. No time given to "fancy" studies or useless theories. Just everyday practical information that you must have to make a big success as a builder.

Easy Methods - Quick Results

You get the same blue prints, the same lessons, etc., that are used by the hundreds of builders who attend our evening school in Chicago. The same experts who teach them are your instructors. You get the same training at home at a big saving of time and money.

Complete Courses for Men in the Building Trades

PLAN READING

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

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, of residences, apartment buildings, factory buildings, school houses, hospitals, store and office buildings, bank buildings.

ESTIMATING

Practical rules for figuring costs on all classes of construction. Problems worked out from the plans. Methods of practical builders. Some of the points covered are—Figuring labor and material on brick, frame and concrete work—footings, walls, chimneys, fireplaces and cisterns. Fire proofing, tile flooring, arches, partitions, furring, terra cotta, etc. Lumber and timber; figuring board feet. Estimating posts, girders, sills, joints, stubs, bridging, rafters, etc. Estimating all kinds of roofs, floors, siding, cornices, etc. Estimating mill work. Labor and material for window and door frames, sash, blinds, base-board, wainscoting and all kinds of closets, cupboards, etc. Lathing and plastering, sheet metal work, decorating, glazing, plumbing, heating, wiring, etc.

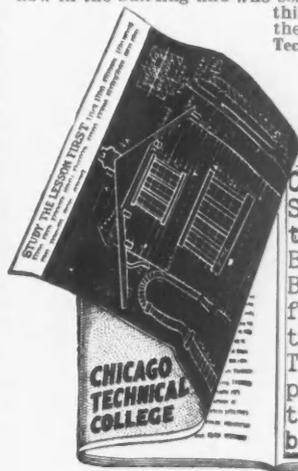
SUPERINTENDING

Methods of work on all classes of buildings. Uses and preparation of material. Hiring and handling men.

We also offer complete home-study courses in Architectural and other branches of Drafting. If interested in any branch of Drafting mention subject and ask for special catalog.

Two Books FREE on "How to Read Blue Prints"

A Trial Lesson in Plan Reading for Builders. Just off the press. Full of building information. Sent Free with Blue Prints, Drawings, etc., to any man now in the building line who sends us his name on this coupon. Mail the coupon to Chicago Technical College, 1036 Chicago Technical Building, Chicago.



C. T. C. Send me your two, big FREE Books and Blue Prints for Men in the Building Trades. Send postpaid to the address below.

Send the Coupon for Proof

Don't delay. Send the coupon and prove to yourself what this course will do for you. You incur no obligation in asking for our new book "How to Read Blue Prints," a Trial Lesson in Plan Reading for Builders; also blue prints and drawings. All sent free to any builder who sends in the coupon.

Chicago Technical College

1036 Chicago Technical Bldg. CHICAGO, ILLINOIS

Name

Address

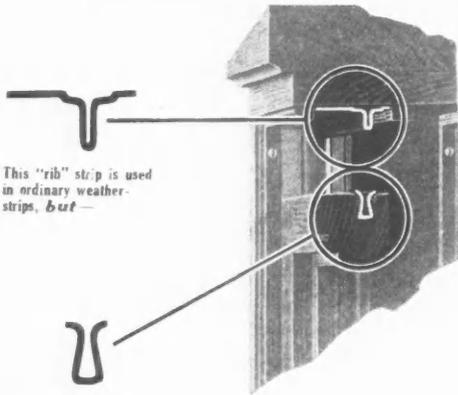
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Occupation

HIGGIN

ALL METAL

WEATHER STRIPS



This "rib" strip is used in ordinary weatherstrips, but —

Only Higgin Strips have this patent-protected, self-holding, spring-flange "Insert" strip

Builders Who Know The Difference Use Only The Strip With Insert

Do you know why so many architects and builders consider Higgin Weatherstrips the best to use and recommend?

Because no other type of stripping includes a self-holding, spring flange *Insert* strip.

The *Insert* makes Higgin Weatherstrips different and better than any others because the spring flanges grip the sides of the "rib" strip and completely prevent air seepage. The closure is draft-tight all around. Warping, swelling or shrinkage of the sash cannot cause leakage or binding.

The extra cost is so little and the greater efficiency and service so important that inferior strips will never be substituted for Higgin equipment by builders who know the difference.

Use modern Higgin Weatherstrips in the modern homes you are building.

Builders :

We have some profitable territory open for live contractor-agents. We may need a representative in your locality. Write for details of our proposition and free booklet on Higgin All-Metal Weather Strips.

The HIGGIN Mfg. Co.

Newport, Ky.
Toronto, Canada.

Manufacturers of Higgin All-Metal Weatherstrips and Higgin All-Metal Screens

See our catalog in SWEET'S

lions; residential buildings by 221 millions. All of these classes are large consumers of slate in its many forms—blackboards, which are used not only in schools, but in factories, sales offices, newspaper buildings, religious and other public institutions; electrical, for switchboards, panels, fuse boxes, etc., and the various kinds of sanitary and structural slate, steps, risers, wainscoting, baseboards, plinths, etc. From the reports of the producers, the July production of blackboard slate has exceeded the demand by over 10 per cent, but there was available in stock on hand August 1st more than 200,000 square feet of blackboard slate in excess of unfilled orders.



Rocbond Co. Erects Stucco Plant at Harrisburg, Pa.

THE Rocbond Company will soon begin operating its new Eastern factory, one of the most modern magnesite stucco plants in the country, located at Harrisburg, Pa.

Harrisburg was chosen as a location after an exhaustive survey of the Eastern section and its requirements, because of its nearness and accessibility to the pick of raw materials, particularly high-grade silicia sands which are all-important to the structural success of an exterior plastic construction.

The rail facilities provided by Harrisburg are unexcelled, every point in Eastern territory being within one to five days freight haul.

The Rocbond plant is new from the ground up. It is located in North Harrisburg on the P. R. R. main lines. The plant has 565 feet of track frontage which provides unusually good siding and switching facilities. The main building, which is of concrete, heavy frame, and steel covered with Rocbond Stucco, stands car door high for its entire length with a loading platform from end to end.

The Harrisburg plant will be under the management of Mr. H. S. Webster, long identified with the stucco industry.



George W. Lukens Deceased

GEORGE W. LUKENS, who was in charge of the Architectural Service Bureau of the Paint Department of E. I. du Pont de Nemours & Company, died recently, after a short illness, at his home in Philadelphia.

Mr. Lukens was formerly connected with the Bridgeport Wood Finishing Company and had a wide acquaintance among the architectural and building trades.



Hardwood Institute Now Located in Chicago

ANNOUNCEMENT is made by the Hardwood Manufacturers Institute of the removal of their offices from Memphis, Tennessee, to 1020 S. Wabash Avenue, Chicago. The change gives the organization the benefits of a more central location and saves interested parties, who usually are brought to Chicago on other business, from making a special trip to Memphis only to get in touch with the secretary and other officials. The new quarters afford more room. They are well arranged and furnished.

Landon C. Bell, chairman of the press and publicity committee of the Hardwood Manufacturers Institute, has recently issued a lengthy and thoro statement about the organization, its purposes and accomplishments. The statement points out that considerable misunderstanding exists as to the work and aims of the organization and as to who can be members and what benefits are afforded the members. These and many other points are well and interestingly answered by Mr. Bell. Considerable space is given to the question of standardizing lumber sizes, qualities and nomenclature as outlined by Secretary of Commerce Hoover.

Ambler Asbestos Shingles

combine the two great essentials of a modern roof:

- (1) *Protection against fire.*
- (2) *Permanence—elimination of replacement, repair and painting.*

Home-planners have been receiving a great deal of education on better building. They will approve your judgment when you recommend an Ambler Asbestos Shingle roof.

May we show application to the building in which you are interested?

Asbestos Shingle, Slate & Sheathing Company

Dept. A, Ambler, Pennsylvania

Branch Offices: Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Detroit, Minneapolis, New York, Omaha, Philadelphia, Pittsburgh, Washington, Wilkes-Barre, Montreal, Canada, Toronto, Canada

Western Distributor: J. A. Drummond, San Francisco, Los Angeles, Fresno

Southwestern Distributor: R. V. Aycock Company, Kansas City, St. Louis, Tulsa, Houston

Other distributors throughout the country

Fireproof
Permanent
Attractive
Paint-Saving

Three Shapes, for laying in American, French or Honeycomb styles. Four Permanent colors—Newport Gray, Blue-Black, Moss Green & Indian Red

AMBLER 1 in. ASBESTOS BUILDING LUMBER

AMBLER 1/2 in ASBESTOS BUILDING LUMBER

AMBLER 1/4 in ASBESTOS BUILDING LUMBER

AMBLER LINASBESTOS WALLBOARD

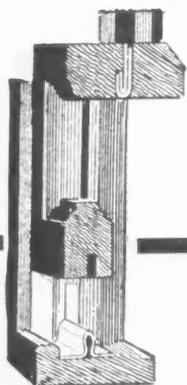
For Inside Work Only
Offices, Libraries, Bath-rooms, Kitchens, Game-rooms, Third Floor Rooms, Wainscoting, Etc.
Permanent Buff Color.

For Outside Work
Panelling, Trim, also for
Fire-Doors, Partitions, Etc.

AMBLER ASBESTOS CORRUGATED SHEATHING

For Factories
Warehouses
Farm Buildings, Etc.

Carpenters - Contractors Dealers in Building Materials



There's only one

Allmetal Weatherstrip

Become Our Weatherstrip Agents

Good Profits to the Contractor-Agent. Hundreds Have Won Success

There are a lot of reasons why our carpenter-agents have made good. A superior article is behind them—a weatherstrip that always shows up better in contrast—simple in design—uniform—mechanically perfect in construction.

Allmetal is 100% efficient—easily and economically installed—guarantees smoothly operated windows—prevents all leakage of air, dust and rain—saves fuel bills.

Big Demand for Weatherstrip

Building is breaking all records now and will continue for months to come. Architects and contractors are including more and more weatherstrip in their plans. Property owners are easily shown that weatherstrip is a money saving equipment. High coal bills are cut down.

Carpenters--Contractors—we have a proven plan of cooperation that will set you up in business, in a field that will make you real money. Weatherstripping is your opportunity. Allmetal is your strip to install. If we do not have a representative in your territory there is a splendid opportunity open to you for a good business with fine profits.

Clip the coupon and get our plan

Allmetal Weatherstrip Company

124 West Kinzie Street, Chicago, Ill.

Without obligation send your agency proposition and complete information on Allmetal Weatherstrip.

Name.....
Address.....
Town and State.....

Best Brick Homes to be Decided

THE Philadelphia Brick Manufacturers' Association announce that the end of this year they will award four bronze tablets for those four buildings in Philadelphia and its suburbs which are selected by the Committee of Award as being those in which, in the opinion of the Committee, the most appropriate and attractive use has been made of brick produced in Philadelphia.

The awards will be as follows:

One tablet in triplicate to the architect, the builder and the owner of a private residence costing less than approximately \$10,000.

One tablet in triplicate to the architect, the builder and the owner of a private residence costing over approximately \$20,000.

One tablet in duplicate to the designer and the builder of an "Operation" house.

One tablet in triplicate to the architect, the builder and the owner of an industrial building.

The tablets will be suitably designed and each will bear the name of the recipient.

It is hoped that the award of these tablets will encourage architects, engineers and constructors to investigate and become more generally familiar with the characteristics of Philadelphia made bricks and the artistic effects obtainable thru their use.

JOSEPH T. BYRNE,
Secretary.



Increased Interest in Re-Forestation in Southern States

IN CONNECTION with an announcement of increased activity by the Southern Pine Association in forestry matters, Secretary-Manager J. E. Rhodes states that Albert R. Israel, publicity manager of the Association, along with his other duties, has been assigned to assist the Association's Forestry Committee, of which John L. Kaul, of Birmingham, Ala., is chairman.

The Southern Pine Association and many individual members have taken a leading part in shaping plans and policies calculated to aid in reforestation of cut-over timber lands and insure a permanent supply of lumber in the Southern states.

The committee of the association is engaged in collecting comprehensive information and data concerning the most practical and feasible practices in lumbering that will be most conducive to promotion of forestry, ascertaining particular conditions in each Southern state and endeavoring to determine the needs in each of the states with respect to securing effective co-operation among lumbermen, the public and governmental agencies and also to determine what are the essential features of legislation needed in the states to bring about reforestation of cut-over and denuded areas.



Conveyors Corporation Appoints Sioux City Representative

THE Younglove Construction Co., United Bank Bldg., Sioux City, Ia., has been appointed representatives of the Conveyors Corporation of America, 326 W. Madison St., Chicago, Ill., for the sale of American Trolley Carriers in northwestern Iowa and in South Dakota. The American Trolley Carrier is equipment for handling coal from cars to storage pile or overhead silos by means of monorail and self-dumping buckets.

The new representatives are well and favorably known in that section of the country as designers and builders of grain elevators, flour mills, transfer houses and coal pockets.



MULE-HIDE COR-DU-ROY PANEL STRIP SHINGLES

(Patent Applied for)

Distinctive Individuality—

That always indicates good taste quietly, yet surely.

Sound Reliability—

Is positively assured because of logical advantages plus its honest construction.

Unusual Weather Resistance—

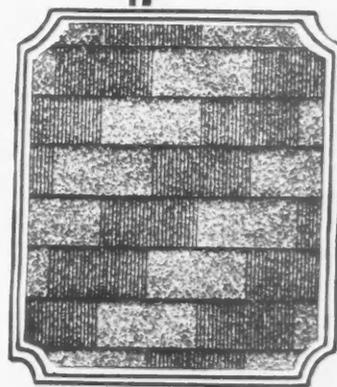
Pledging years of satisfying service in keeping with its service record.

“NOT A KICK IN A MILLION FEET”

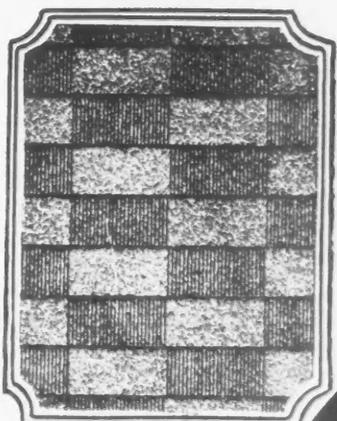
Warping, curling, blowing up in the wind, common bugears of the asphalt shingle have been eliminated by the solid block construction peculiar to

COR-DU-ROY PANEL STRIP SHINGLES

The diagonal shadow pattern or the checkered effect are two popular methods of laying COR-DU-ROY PANEL STRIP SHINGLES.



DIAGONAL EFFECT



CHECKERED EFFECT

THE LEHON COMPANY
Dept. A.B. 44th-45th on Oakley, CHICAGO

Send me literature and sample of Mule-Hide Cor-Du-Roy Panel Strip Shingles.

Check whether—

- Dealer
- Contractor
- Architect

Name.....

Town.....

State.....

Mule-Hide Cor-Du-Roy Panel Strip is 10"x32". There are 112 strips to the square which weighs 230 lbs. This will give a double thickness over the entire roof with 4" to the weather. The Super Mule-Hide Cor-Du-Roy Panel Strip is 12 3/4"x32". There are 112 strips to the square which weighs 285 lbs. The super strip assures three thicknesses over the entire roof with 4" to the weather.

In addition to the red and green surfacing we have a blue-black surfacing which is in great demand.

Crown the beautiful homes you sell or build with Cor-Du-Roy Panel Strip—the Roof Superlative!

THE LEHON COMPANY

44th-45th on Oakley Ave. CHICAGO, ILL.

BOOKS, BOOKLETS and CATALOGS RECEIVED



THE literature and publications listed below are now being distributed and the publishers will be glad to send any of our readers copies who will write and ask them.

"Color Harmony in Floors" is an interesting and instructive pamphlet on the use of maple, beech and birch in building floors and in gaining color variations between the different pieces of flooring. It is well illustrated and contains twenty-four pages printed on excellent paper. The Maple Flooring Manufacturers' Association, Stock Exchange Building, Chicago, issue the booklet.

"Knots, Splices and Rope Work" is the title of a new book by A. Hyatt Verrill that will prove very helpful and useful to anyone who uses or handles ropes for any purpose. It gives complete and simple directions for making all the most useful and ornamental knots in common use, with chapters on splicing, pointing, seizing, serving, etc. There are 156 original cuts showing how each knot, tie or splice is formed and its appearance when complete. It is a handy pocket size, 4½ by 6¾, containing about 150 pages and is firmly bound. The book may be ordered from the publishers, the Norman W. Henley Publishing Company, 2 West 45th Street, New York, for one dollar.

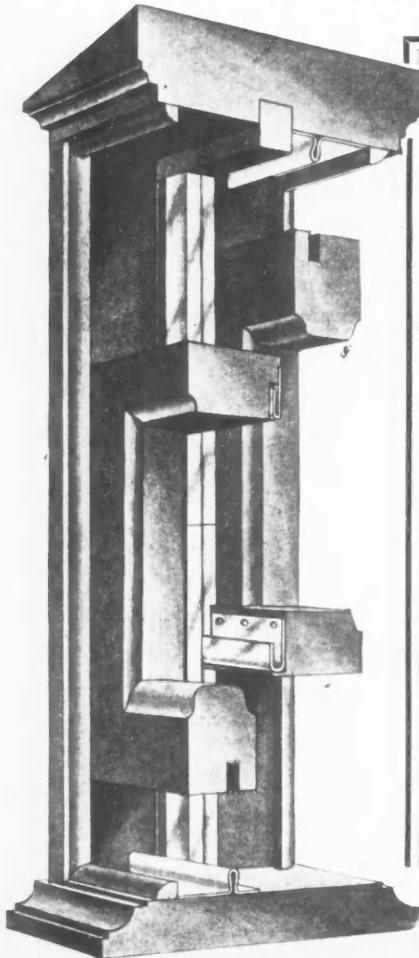
"Specialties for All Steam Heating and Power Plants" is an excellent catalog issued by the McAlear Manufacturing Company, 1901-7 South Western Avenue, Chicago. This catalog, No. 27, is clearly and fully illustrated, showing McAlear's line of pumps, valves, radiator traps, and other specialties for steam heating and power plants. The booklet is printed on excellent paper, has 128 pages and is 6 by 9 inches in size.

The Western Pump Company, Davenport, Iowa, have recently issued a clearly printed and illustrated booklet called "How Things Have Changed," which simply and fully describes the Westco tankless pumps and water systems, manufactured by them. It consists of twelve pages, attractively printed and is 8½ by 11 inches in size.

"Compo-Board" is an interesting pamphlet published by the Compo-Board Company, Minneapolis, Minn. It tells what Compo-Board is, how it is made and outlines its many uses and possibilities. It is attractively illustrated and is of convenient pocket size, 5 by 7½ inches.

The Chicago Technical College, 2721 South Michigan Avenue, Chicago, has issued its annual catalog containing the announcements for the school year 1922-23. This institution offers day, evening and correspondence instruction in civil, mechanical and electrical engineering, architecture, drafting, designing and allied subjects; and the catalog has much interesting information for anyone planning to study any of these courses.

"Architectural Drawing" is a new text and reference book by W. B. Field, assistant professor of engineering drawing at Ohio State University. The author working from a combined experience as a practicing architect and instructor of drawing, has brought together those fundamental subjects in drawing that should be studied by the prospective draftsman and architect, putting them in such form that he may readily refer to them as he works over



Your Answer To This Advertisement May Add \$5000.00 Per Year to Your Present Income

We want a man in every locality who will maintain a selling and installing Agency for

Sager Metal Weatherstrip

A Real Opportunity is afforded with the establishment of our agency, because it offers to you, not an old, much copied idea in weatherstripping but a new and different construction principle that thoroughly weatherstrips and at the same time eliminates all rattling whether the window be opened or closed.

The Sager Agency offers other exclusive features that positively create its own demand. You will not meet severe competition for SAGER has its greatest strength where other strips fail.

Here is a Golden Opportunity for a progressive man with a very small investment to cash in big on the present coal situation. Never was the demand greater.

Building Material Dealers and Contractors here is your chance. Write us and let us get together to our mutual advantage.

Sager Metal Weatherstrip Company

162 West Austin Avenue, CHICAGO

Kellastone's High Plasticity Is Scientifically Regulated

NO one of experience will gain-say the statement that the plasticity, or lack of it, in a stucco, governs the life and character of the finished work.

In ordinary stucco, for instance, it has been found that it is impossible to maintain the degree of plasticity necessary to good workmanship without at the same time creating a mix so rich that early cracking is the inevitable result.

On the other hand, long experience has proved that **Kellastone** magnesite stucco retains a desirably high plasticity even when the amount of magnesite present is held within the limits necessary to give low volume change.

Furthermore, the plasticity of **Kellastone** can be regulated by the addition of certain fibrous inorganic mineral fillers. And as it is well known that only the most expert workman can handle a non-plastic mix on a vertical surface, this easy working property of **Kellastone** practically assures superior workmanship.

Kellastone Interior Plaster is also highly plastic. It is immune to internal shrinkage stresses, works easily and freely and is much lighter and more durable than lime or gypsum.

Kellastone literature represents the most advanced thought in modern construction materials. Write for it.

NATIONAL KELLASTONE COMPANY

Room 515, 155 EAST SUPERIOR STREET :: :: CHICAGO, ILLINOIS

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342 Madison Avenue

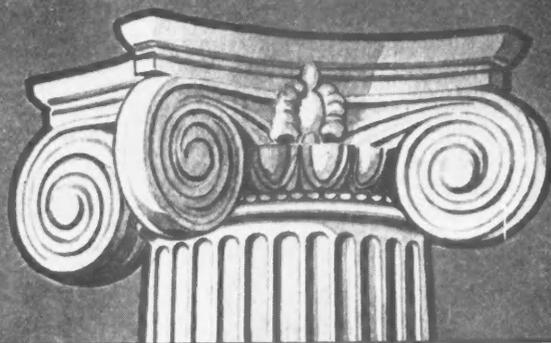
Pacific Coast Office
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Porterville, California

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IMPERISHABLE STUCCO



UNION METAL PORCH COLUMNS

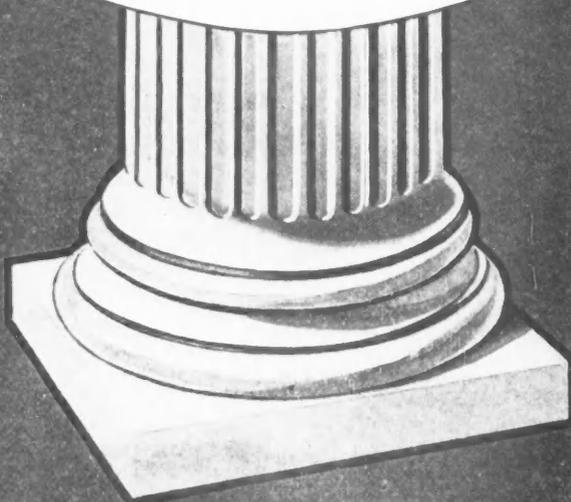
WILL not split, check, rot, warp, or open up at the joints, as all wood columns do.

They are made in ten classical designs from enduring, copper bearing, galvanized steel.

All sizes from 8 inch to 36 inch diameters, and all heights from 5 feet to 32 feet. Suitable for all types of construction, from the modest cottage to large public buildings.

If you would learn the royal road to column satisfaction, write today for our Catalog No. 26.

The Union Metal Manufacturing Co.
CANTON, OHIO



his designs on the board. A few of the chapter headings indicate his method of treatment: Graphic Method of Representation; Drawing Instruments and Their Use; Preliminary Sketches; Scale Drawings; Detail Drawings; Architectural Lettering; and Architectural and Building Terms.

The book is well written and edited and illustrated effectively and clearly. It contains 161 pages, 79 cuts, is 9 by 12 inches in size and is well printed and firmly covered and bound. It is published by the McGraw-Hill Book Company, Inc., 370 Seventh Avenue, New York, and sells for \$4.00 a copy.

"An Appeal to the World for a Chapel in Every Home" is the title of a very interesting, unusual and appealing book written and published by Joseph R. Wilson, 1525 Spruce Street, Philadelphia. The author believes that the home and family life is the corner stone on which rests national life and progress and that a small room should be set apart in every home for prayer. He has launched this national movement for "A Chapel in Every Home" and it has the support and backing of prominent cardinals, bishops and ministers, of all denominations and religious organizations, presidents of universities and educators, newspapers and many prominent laymen.

This movement will probably bring about later on considerable building or remodeling in homes thruout the country and members of the building industry will find the book well worthwhile reading. It contains 128 pages, is printed on good quality book paper and is 7½ by 10½ inches in size. There is no price listed upon the book and we believe it is sent free or for a small postage charge upon request.

"Trumbull Cheer" is a monthly magazine of handy size and interesting contents issued by the Trumbull Electric Manufacturing Company, Plainville, Conn. The August issue has an inspiring poem by Edgar Guest, a strong editorial and some very specific and useful information on devices made by the company for the electrical field.

"Copper—The Ideal Roof" is a new publication issued by the Copper and Brass Research Association, 25 Broadway, New York. The book will be issued in popular form and will not interfere with the technical publications on similar subjects. The author is C. Matlack Price, the well known architectural writer. The book is illustrated with a number of pen and ink drawings. The frontispiece shows Christ Church, Philadelphia, with its copper roof now 172 years old. Grand Central Terminal, New York, with its copper roof is also shown. More than 10,000 copies have been requested before the book went to press. A run of 100,000 will be, it is thought, quickly exhausted.

The Ideal Electric Dumbwaiter Company, Buffalo, N. Y., have issued a complete catalog describing their push button dumb waiters. Pictures of the device are shown, also cross sections. Complete information on capacities and sizes are given.

Simplex Boilers are described in detail with interesting illustrations, in colors, in a booklet issued by the Simplex Boilers Distributing Company, 1909 Conway Building, Chicago, Ill. The book gives detailed information and illustrations of the portable firebox and the return tubular boilers. Considerable mention is given to the space-saving feature of the product.

"The Right Angle" is a publication of The General Fireproofing Company, Youngstown, Ohio. The Small House Number issued under date of August is remarkably notable for the excellence and number of beautiful and permanent residences pictured. Pictures of sixteen homes, including several of the California type are shown besides construction pictures showing how the company's product is used.

"Once Upon a Time" is a picture booklet issued by the Copper and Brass Research Association, 25 Broadway, New

THE MEASURE OF QUALITY



THE old armorer was tempering and retempering the blade. His apprentice impatiently urged that it was already better tempered than most steel. "Yes," was the answer, "but no blade I make can be short of the best, for no one knows which blade may stand between man and death."

OUT from the Atlas Mills in a never-ending stream, millions each month, go bags of Atlas Portland Cement. Some destined for giant locks or bridges, some for the crowded city, some for the open country—no one can possibly foretell in the making where the finished cement will be used.

The Atlas Portland Cement Company has the same problem as that old time armorer—and there is only one answer. Every sack of cement that leaves an Atlas plant must be of quality unquestioned.

For over a quarter century Atlas Portland Cement has been tested in every type of modern construction. For over a quarter century it has been deservedly known as "the Standard by which all other makes are measured."

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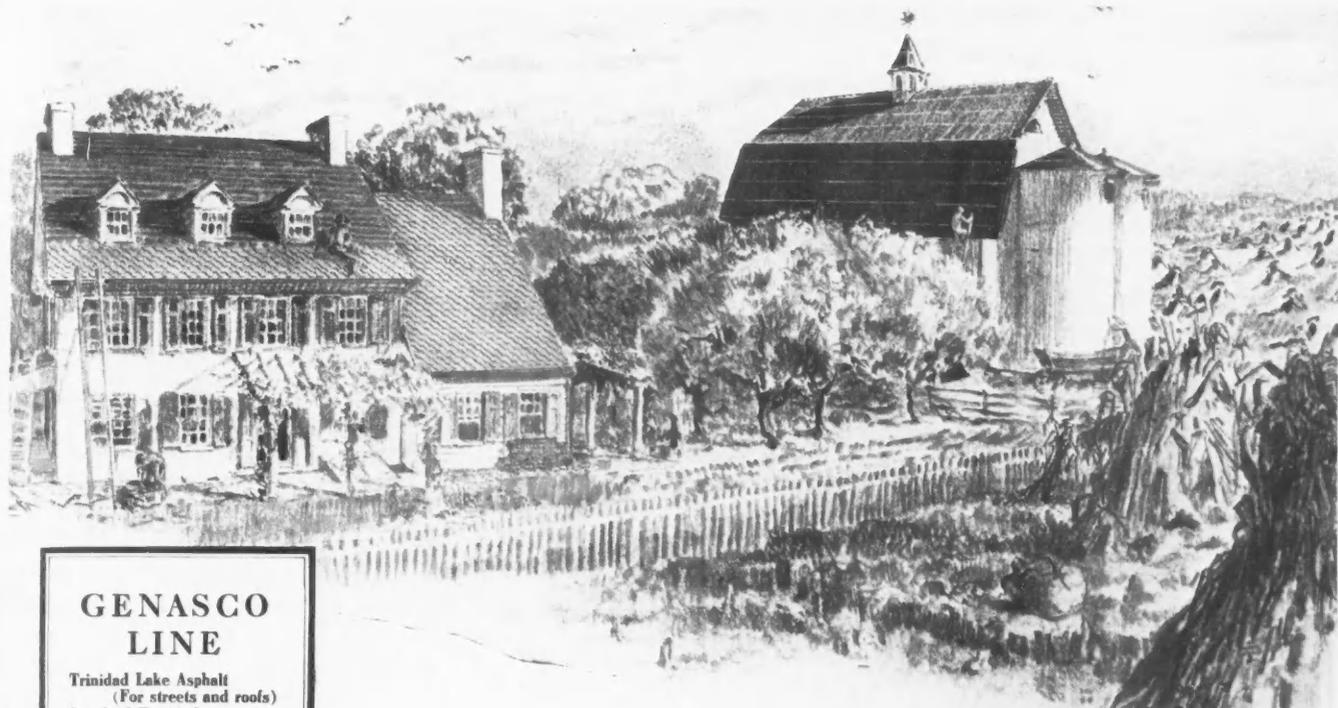
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Built-Up Roofing
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(For road building)
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Here's big business you should get now

With good crops, money in the bank, and the menace of winter just ahead, every farmer in your community with a leaky, worn-out or unsatisfactory roof in now a live roofing prospect.

Why not go after and get this business? You can do it with Genasco Ready Roofings just as easily and profitably as thousands of builders elsewhere.

Genasco Roofings are QUALITY products — with exclusive, patented features that appeal strongly to building owners. And they provide a right type of roofing for any type of building.

Genasco Latite Shingles—"The shingles that lock on"—are ideal for the farm home. They are beautiful in coloring, artistic in shape, easy to lay, and will last for years.

Genasco Roll Roofing—slate or smooth surface—meets the demand for a leak-proof, fire-resisting, low-cost roof for the barn and other buildings.

Builders who use and recommend Genasco Roofings play safe. They know Genasco roofs give *lasting* protection from the weather—therefore insure them the continued good will and patronage of their clients.

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5,000 Concrete Seats Added to New Stadium

ANOTHER section of 5,000 concrete seats is being added to the stadium at Camp Randall, the athletic field of the University of Wisconsin, at Madison, Wis.

When this is completed, the stadium will seat 27,000 including temporary and wooden seats. The final goal is a concrete stadium to seat 63,000.

Each addition to the new stadium and all the improvements are being built out of proceeds from the gate receipts of the Conference football games.

Besides this new section, the hill on the west side is to be further terraced and graded and a decorative iron fence with brick posts will be placed on the Breeze Terrace side. Last summer three new entrances were built, and ten entrances

are now being built, one at each aisle of the bleachers, to accommodate the crowds.

The new section of the stadium now contains 22 rows of seats, but the final plan calls for 28 more rows to form a double decked structure.

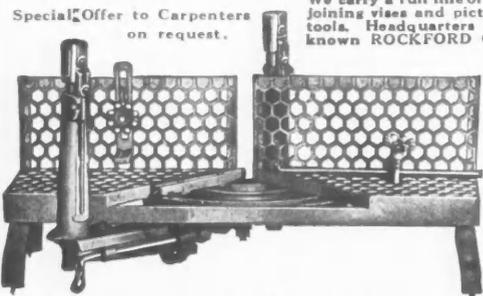
The stadium plan is much like that of Ohio State university which is superior to the Yale bowl and which is shown and described in detail in an extensive article on page 104. In the past five years about \$100,000 has been invested in the Wisconsin stadium, all obtained from gate receipts. The Wisconsin University expects to build a new concrete stadium at a later date.

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Special Offer to Carpenters on request.

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HOME BUILDERS, DRIP EDGE



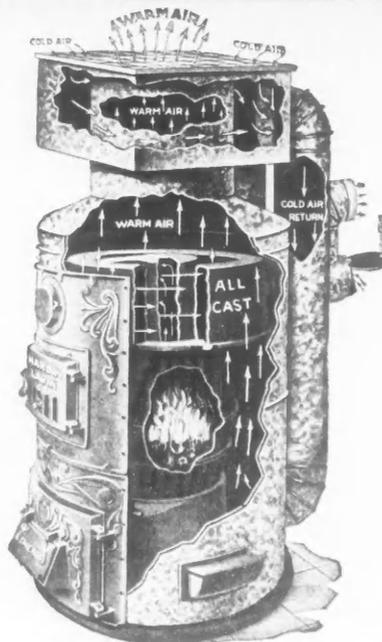
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Other furnaces take the cold air down inside an outer casing. Notice we take the cold air down through two large separate cold air ducts outside of casing at rear of furnace. This distinctly better method of cold air circulation prevents back draft, warped casings, dust in your home, etc.

SPECIAL ATTRACTIVE PRICES TO BUILDERS

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SEE OUR FULL PAGE ADV. ON PAGE 206

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More Truth Than Poetry

WE must never forget—the sweetness of low price never equals the bitterness of poor quality.”—Tom Lehon in “Tuff Stuff.”



Radio Stations Come High

TO erect a real, first-class, high-powered radio broadcasting station now costs \$50,000, and merely to operate such a station the first year will cost \$100,000 or more, without any allowance for the salaries of artists or entertainers, David Sarnoff, general manager of the Radio Corporation of America, recently declared before the Electrical Supply Jobbers' Association at Hot Springs, Va.



Over 7,000,000 Homes Wired

ACCORDING to a recent survey completed by the Society for Electrical Development, the number of homes wired with electricity in the United States is 7,636,469. However, the number of homes reached by electric service is 13,000,000. The survey further indicates that there are 8,145,126 homes in the country not reached by electric service and that 13,508,657 homes are not wired.

These figures indicate there still is a big field for electrical wiring and development and that there are millions of the people in the country today who do not enjoy the advantages of electricity.



May Have Motorless Airplanes

WHILE experimenting with motorless airplanes a young German engineering student was able to rise to a height of 600 feet, remain in the air for more than six hours and sail six miles in a straight line.

Domed Church Built by One Man

L. D. CORNUELLE, an artisan of Sierra Madre, California, has built an unusual and attractive church, Bethany Temple, located in that city. The building and temple have attracted nationwide attention since the entire construction work was done by this one man and he has incorporated in its wide dome, windows and cornice decorations many interesting features of both Norman and Greek architecture. It required a year and one-half to build the church and all the materials were taken from nearby sources. In building this himself Mr. Cornuelle had to adopt unusual

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Write for prices and full information

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BUILDING MATERIALS

Holds in Any Wall



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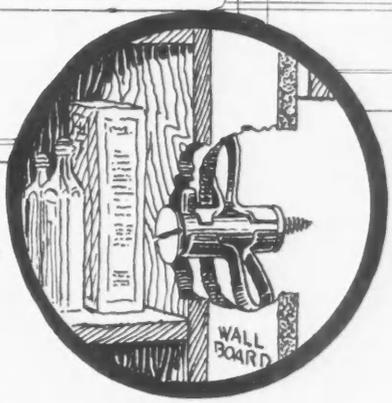
Beaver Board Will Hold Anything if Fastened to it With ANKYRA ANKOR BOLTS

The above illustration shows a few of the many uses for this exceptional bolt in connection with wall board construction. Any fixture in the home can be fastened securely and permanently on any wall, whether it is wall board, glazed or hollow tile, stucco, concrete lath-and-plaster, expanded or hollow tile. Once installed, these fixtures stay put even on the weakest wall and yet fixtures can be removed and replaced quickly without defacing the wall.

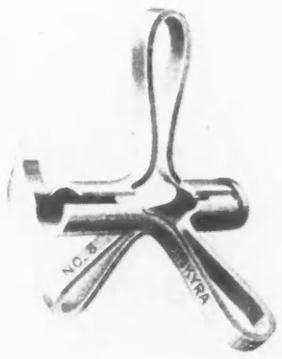
The countless advantages and the economy of this bolt make it a very popular building accessory for buildings of all kinds. Builders all over the country are using them because they give absolute satisfaction. Every builder and architect should be thoroughly acquainted with ANKYRA. Our booklet, sent upon request, describes in full the uses of ANKYRA ANKOR BOLTS.

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No. 8M—Collapsed (Full Size)



No. 8—Collapsed (Full Size)



Full Size "ANKYRA" Bolt. Made in the following sizes, No. 8, 10, 12, 14, 16 and 18 for wood screws

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methods both in constructing the dome and in scaffolding. The temple is 52 feet in diameter and 30 feet high. The second building, which contains the Sunday school, is 57 feet in diameter and 18 feet high.



Have Chinese Typesetting Machines

THE CHINESE alphabet, which has always been considered so complicated and confusing that it would be impossible to completely master it, has finally been simplified sufficiently to be placed on a typesetting machine. The alphabet being used on the monotype is known as "Chu Yin." It is composed of 39 characters of which 24 are classed as initial, 3 as medials and 12 as finals. Broadly speaking, these characters may be used separately or in combination.



Building Improving in France

THERE is a marked improvement in the iron, steel and building industries in France, according to the latest bulletin from the U. S. Department of Commerce. Production of cement, lime, tile, bricks and other building materials is increasing, and the future is bright, owing to the resumption of construction work in the devastated regions and to the extensive public works planned in various parts of France.



Building Hotels for Autoists

A CHAIN of twenty hotels for the convenience of motorists, extending from Vancouver, B. C., thru Washington, Oregon, California and Nevada, is being built. These hotels will be one day's automobile run apart and will be constructed on the unit plan. In addition to the hotel service they will also provide the motorist with food supplies, auto equipment and repair shops.

BOMMER

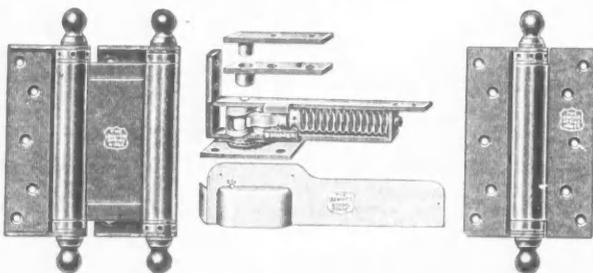
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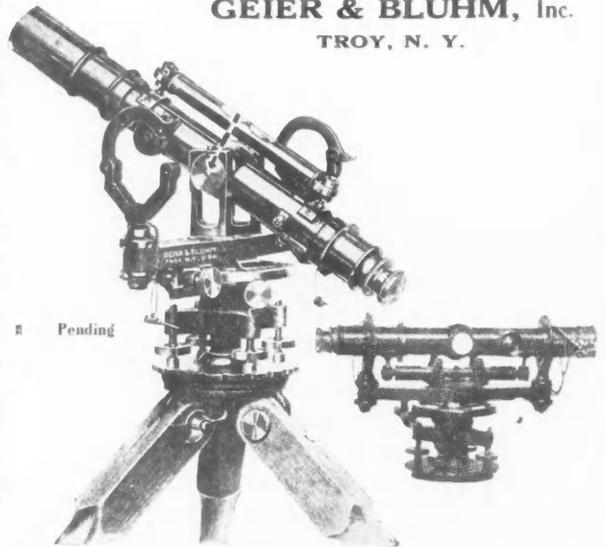
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G. & B. Convertible Levels

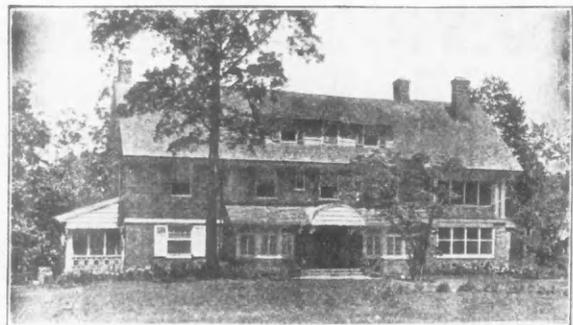
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Stained with Cabot's Creosote Stains.
B. V. White, Architect, New York

Save Half Your Painting Bill

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Cabot's Creosote Stains

Instead of paint, on shingles, siding and all similar outside wood-work. The colors are rich and handsome, not "painty." They wear as long as the best paint and wear better, and they are made of creosote, which penetrates the wood and thoroughly preserves it

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