

# AMERICAN BUILDER

## THE WORLD'S GREATEST BUILDING PAPER

Vol. 43.

CONTENTS FOR JUNE, 1927

No. 3.

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**PROTECTION FOR OUR READERS**—The publishers of the AMERICAN BUILDER reserve the right to decline any advertising they believe is detrimental to the interest of its readers; to edit advertising copy and to change or eliminate any statements that reflect injuriously or cast discredit upon other building products, machinery, equipment, supplies or tools.

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## May We Give You a New Book?

**W**E have a brand new book for you —“Vol. II of the Most Popular Homes in America.” It is a book of home designs in colors. Also fifteen complete sets of building plans are included.

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We want every reader of the *AMERICAN BUILDER* to have a copy of this remarkable book. The first edition — de luxe — on heavy enamel stock and with twenty full page plates in full colors—we are setting aside for *AMERICAN BUILDER* readers. We will send you a copy of this book absolutely free, postage prepaid, if you will fill out the coupon on page 160 and send it to us at Chicago, along with your subscription, either new or renewal, to the *AMERICAN BUILDER*.

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“Vol. II Most Popular Homes in America” is a reliable book of home building instruction for builders and dealers; an inspiration to architects and draftsmen; and a practical working guide and a delight to intending home builders, especially

those who want the latest ideas and the best architectural designs.

Fifteen of the popular home designs in this wonderful collection impressed us as being so good that we have had complete working drawings prepared of them, the building plans from which each of these Prize Homes can be actually constructed!—and these building plans complete are presented in this book! Also we have had each of these Prize Homes illustrated in full colors!

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More than three thousand dollars' worth of architectural service is included in this wonderful home building book. We are offering this to you free with your subscription to the *AMERICAN BUILDER*. It will save you money and make money for you.

Turn to pages 159 and 160.

Editor *AMERICAN BUILDER*

### WHAT THIS UNUSUAL BOOK CONTAINS:

**Twenty-five Most Popular Home Designs—**  
fifteen of them in full colors and with complete working plans.

**Twenty Pages in Full Colors**  
illustrating the latest and most popular home designs.

**Fifteen Sets of Complete Building Plans—**  
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**Sixty Full-Page Construction and Detail Plates**  
illustrating clearly every item and feature of present-day home design, construction, equipment and finish—a wonderful text book, both for those in the building business and also for the general home-building public. Take advantage of the best information. Save money and make your homes better and more complete.

The following home designs and helpful departments are presented in this new book:

- |   |   |
|---|---|
| <b>THE PURITAN.</b>   | Space-Saving Beds.  |
| <b>THE ALLGOOD.</b>   | Hardware for the Small House.                               |
| With Perspective in Full Colors and Working Plans to Scale. | Colonial Stairway.  |
| America, the Land of Comfortable Homes.                     | The Argo, a Honeymoon Cottage.                              |
| <b>THE ALPHA.</b>   | New Plastic Wall Finishes.                                  |
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| Modern Floors.  | Making Furnace Installation Dustless.                       |
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| A Modern Brick Home.  | With Perspective in Full Colors and Working Plans to Scale. |
| <b>THE ARCHDALE.</b>  | <b>THE ANTLERS.</b>   |
| A Five-Room Home.   | With Perspective in Full Colors and Working Plans to Scale. |
| Veneered Interior Trim.                                     | Adequate Electric Wiring.                                   |
| <b>THE FAIRHAVEN.</b>                                       | New Uses for the Basement.                                  |
| With Perspective in Full Colors and Working Plans to Scale. | <b>THE ARMSTRONG.</b>                                       |
| <b>THE ALTURAS.</b>   | A Five-Room Brick House.                                    |
| With Perspective in Full Colors and Working Plans to Scale. | Gypsum and Wood Prove Fire-Resisting.                       |
| Modern Kitchen Conveniences.                                | Trimming the House in Stone.                                |
| A Crystal Garden for the Home.                              | <b>THE ASHTABULA.</b>                                       |
| <b>THE LOWELL.</b>  | <b>THE ATWELL.</b>  |
| With Perspective in Full Colors and Working Plans to Scale. | <b>THE AUGUSTA.</b>   |
| <b>THE KEYESPORT.</b>                                       | With Perspective in Full Colors and Working Plans to Scale. |
| With Perspective in Full Colors and Working Plans to Scale. | <b>THE ALLEGHENY.</b>                                       |
|   | <b>THE ALMIRA.</b>  |



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706 Este Avenue, Cincinnati, Ohio

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*2 in 1 Interior Wall Finish*

# AMERICAN BUILDER



Formerly AMERICAN CARPENTER AND BUILDER

1827 Prairie Ave., Chicago—250 Park Ave., New York City

## 1927 Building Surpasses 1925

**A**PRIL was another big month in volume of building and engineering contracts, according to F. W. Dodge Corporation. The contract total for the 37 states east of the Rocky Mountains (including about 91 per cent of the country's total building volume) was \$604,390,700. This was only 3 per cent under the record volume of the preceding month and was 6 per cent over April, 1926.

Last month's record brought the total of new construction started since the first of the year up to \$2,003,166,800, which is only 1½ per cent behind the corresponding period of 1926, and is 19 per cent ahead of the first four months of 1925.

Last month's record included the following important items: \$267,416,900, or 44 per cent of all construction, for residential buildings under contract, but this total is very much larger when all residential building is included—at least 65 per cent of the total; \$116,264,400, or 19 per cent, for public works and utilities; \$80,753,600, or 13 per cent, for commercial buildings; \$44,601,900, or 7 per cent, for industrial buildings; and \$35,678,100, or 6 per cent, for educational buildings.

Contemplated new construction reported for the 37 states during April amounted to \$863,990,200, this being 28 per cent less than the amount reported in March and 5 per cent less than the amount reported in April of last year.

The Central West led all other regions with \$165,790,900, surpassing by several millions the total for New York state and northern New Jersey.



## Modern Regional Planning

**"C**ITY planning and building is rapidly erasing the imaginary corporate boundaries," said Robert Kingery, secretary and assistant treasurer of the Chicago Regional Planning Association, at a recent civic development meeting in Washington, D. C. "The region, whether it be a few miles around a small community or 50 or 60 miles around a metropolitan city, is now the unit for planning instead of the city itself.

"Almost over night have sprung up a number of regional planning bodies which are solving many of the planning problems in the great metropolitan centers throughout the United States. In the region of Chicago a different science from the usual city planning scheme is being evolved and in two years has operated most successfully.

"Here the regional planners have forecast, first, the expected population in all parts of the region as far ahead as 1950; next, they have brought together the federal, state, county, city and village highway authorities to perfect a master highway and street plan which is being designed scientifically to care for the expected population.

"Similarly, subdividers, local city planners, surveyors and others have put into effect in over half the 8,000 square miles in the region a requirement that these broad rights of way be dedicated by the subdividers when the land is platted.

"Discovering that the amount of business property in use is directly in proportion to the population, the standard of

50 front feet of business property per 100 people has been adopted by subdividers and by zoning authorities to prevent the excess platting of retail business property and to keep it in relation to the expected population.

"Park areas are being located and playground areas designed in the right location for the expected population. These general facts have been assembled by the Regional Planning Association and are being made available to every community as they fit their individual plans together into a master regional plan."



## Draftsmen Study Construction

**C**LOSER contact between architects and the building industry is planned by the New York Chapter of the American Institute of Architects. The drafting staffs in the offices of the architects will visit the shops of the arts and crafts engaged in construction in order that first hand knowledge of all the actual problems of building may be gained. Expeditions of draftsmen are already under way.

Better buildings, it is believed, will result from schooling the draftsmen in all the realities of building through a first hand study of the crafts. The expeditions will cover buildings under construction and shops such as cut stone, terra cotta, marble and mosaic, decorative plastering, bronze and iron work, woodworking and decorating and mural painting.



## Hardwood Reforestation

**P**ERHAPS because the depletion of hardwood has not been so obvious as that of softwood commercial reforestation has been confined to coniferous trees. Besides this hardwood land is usually excellent agricultural land while that on which coniferous trees grow is more often not.

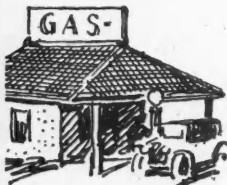
The first, large, commercial, hardwood reforestation project ever undertaken in the United States is being carried out by the Thistlewaite Lumber Company in reforesting hardwood lands in St. Landry Parish, Louisiana. This work was begun by the late Lote Thistlewaite and is being carried forward by his brother, John R. Thistlewaite.

The Thistlewaite project is considered significant in that it inaugurates the interest of practical lumbermen in hardwood reforestation. The company estimates the minimum annual growth, on its 11,300-acre tract, at 500 board feet per acre. The normal diameter growth at present is averaging half an inch a year and the maximum over 1 inch. The growth is distributed between red oak, white oak, hickory and ash. No artificial planting is being done, fire protection and scientific thinning being the only aids to natural replanting. The total cost of the new forest is figured at \$26.60 per acre including the original land valuation of \$5 an acre.

An example of the possibilities of reforestation are shown by an examination showing that 40 to 45 per cent of the hardwood logs 16 inches and over in diameter are 50 years or under in age. According to Mr. Thistlewaite, hardwood reforestation is, from the findings of experience, even more feasible, less expensive and less dangerous than softwood timber growing.



Sidewalks



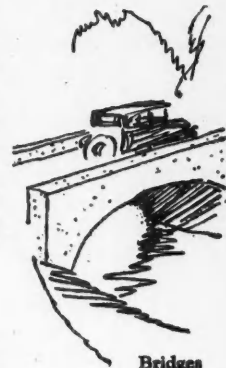
Commercial Driveways



Foundations



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Bridges



Farm Improvements

No matter what kind of job you are handling, if it is a rush job or a job calling for better-than-ordinary concrete — or both — you can use *High-Early-Strength Universal Concrete* to advantage. The *usual* sand, the *usual* pebbles or crushed stone, the *usual* labor and equipment and standard — not special — Universal cement — all used according to fully tested methods — give you strong concrete in 3 days.

This concrete, having a higher *ultimate* strength, is also permanently *better* and *stronger* than concrete as ordinarily placed. Thus you get better concrete when you get *High-Early-Strength Universal Concrete* and you get a high early strength when you get better concrete — in short, you get both when you get either.

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Without cost or obligation send me book showing attractive stucco finishes made with standard *Universal* cement.

Name \_\_\_\_\_

Address \_\_\_\_\_

A.B. 6-27

**The background shows**  
**Universal Cement Stucco - Italian Travertine Texture -**  
*Made with Universal cement - a standard cement for universal use*

# Everybody's Business

By FLOYD W. PARSONS

**S**TRANGER than fiction! Even that but weakly describes current developments in world industry. Nowhere on earth is there anything that equals in dramatic value today the simple facts of scientific achievement. A piece of cheese tossed by one workman at another during the lunch hour missed its mark and dropped into the plating bath used in the production of copper disks from which wax phonograph records were stamped. Later the disks from that bath were found to be far superior to the others, and an investigation revealed that the casein in the cheese had done the trick. This disclosed a possible improvement worth several thousand dollars.

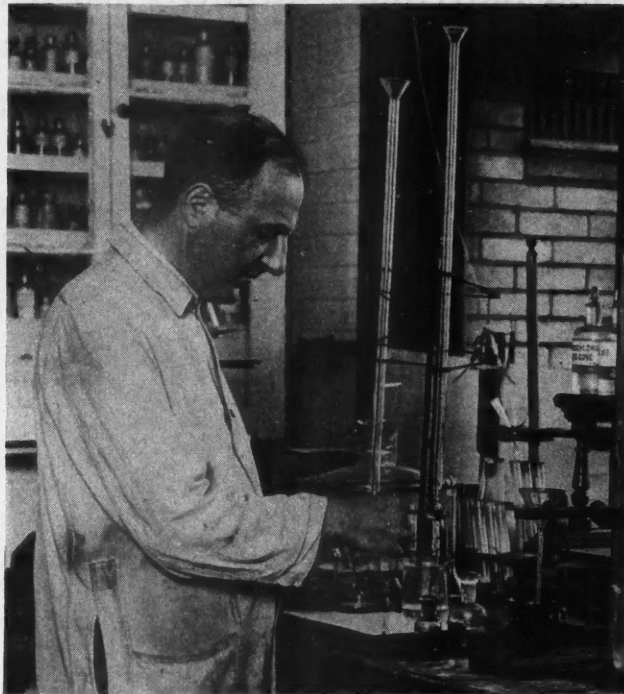
The top of a salt cellar fell off, and the outcome was a new flux for welding permalloy, making possible a six-fold increase in the speed with which we can send messages by cable. By inadvertently opening the wrong valve, a French scientist found the answer to the long search for liquid oxygen. Again an accident created an industry and gave us an explosive safer and mightier than dynamite.

The spraying of dissolved guncotton as a substitute for the hand painting of automobile bodies has saved one manufacturer alone ten million dollars which he would otherwise have had to invest. The mere discovery that seventeen drops of solder and not eighteen were needed in closing a can saved an oil company \$40,000 last year.

A great corporation ordered its industrial chemists to produce a paint that could be applied quickly, would dry rapidly, and be tough, hard and resistant to the elements. It had to have some of the properties of glass and yet not crack, and it had to be proof against the action of oil, grease, and acid.

Everything went well up to the point of finding a way to keep the solution in a liquid condition so that it could be applied with a brush. All efforts to solve this problem failed until one day the machinery broke down and the material had to stand for days in the tank until the repairs were completed. When work started again, the chemists were amazed to find that the paint now retained its liquid form. The long-sought secret had finally been discovered, and an accident had again shaped the destiny of a business.

I remember a few years ago when I commenced to write stories about the pity of our having to live and work behind glass windows that shut out the life-giving ultra-violet rays of sunshine. Soon technical minds were giving attention to this vital need and a glass was produced from fused quartz that would allow the short rays to pass through. Several hospitals and sanitariums put in a few



Nowhere on Earth Is There Anything that Equals in Dramatic Value Today the Simple Facts of Scientific Achievement.

of these windows at a cost of thousands of dollars. Such glass, however, was entirely out of the reach of the common people. But investigation continued and now several companies are manufacturing varieties of glass that are nominal in price and admit 40 per cent or more of the vital rays of sunshine. It will be only a short time until sales arguments will include the statement that this house or that automobile has windows which admit ultra-violet light, and you and I will listen to this call to better health and will buy glass only from those companies that have kept step with progress.

The results of experiments in Germany appear to indicate that the answer to the long search for a perfect fuel for dirigibles may be carbureted hydrogen gas. As a mere statement of fact this arouses our interest because the commercialization of such a development not only means greater safety for people who travel by air, but also means radical alterations in ship designs, because the specific weight of the new gas will be the same as air, so no change in the weight of the dirigible will be experienced as a result of the consumption of fuel. However, we must not restrict our imaginations to these few considerations. There comes the bigger thought that gas companies tomorrow may provide the filling stations for the thousands of great ships that will carry freight and passengers through the lanes of the air.

Hardly have we become accustomed to the idea of getting sugar from beets and corn before we are told that it is possible to get sugar from native artichokes at 2c a pound. These artichokes are not the fancy kind that are a table luxury, but are weeds of the aster family. The artichoke is not so easily perishable as beets or sugar cane, and this holds forth the hope that the sugar mills of the future will save millions of dollars through being able to operate on the basis of a much longer season.

I might go on and tell how Dr. Coolidge's new cathode ray tube makes possible the production of a mysterious stream of energy that causes rocks to glow, turns gas to yellow powder and kills germs and insects instantly. Or I might write about a hundred other marvels running all the way from present plans to transmit radio programs over the lines of electric light and power companies to successful experiments in using artificial fogs to protect crops from frost.

Suffice it to say that the future is hopeless for the man who has not recognized the necessity of taking his imagination out for a healthy round of exercise every day of every week throughout the year.

# An Excellent Example of the Small City Bank Building

HOGGSON BROTHERS, Architects and Builders

**I**T is an established fact that the business life of a community radiates from the financial center of that community. This is just as true in the small town of four corners as it is in Wall Street. It is true in Oshkosh, too, and the First National Bank, its newest and largest financial center, is the product of a long-felt need in that thriving city of about 40,000 inhabitants.

From the concrete piers to the tip of the flagstaff the architects and builders have moulded with the products of the mill, mine, and forest and quarry, a structure which will withstand time and elements and still retain an appearance that will make it pleasing to the eye. Hoggson Brothers of New York and Chicago are the architects and builders of the structure.

The exterior of the building is of Bedford stone, and its marble-white texture causes it to attractively stand out from the surrounding buildings of darker material. It is the tower type, eight stories in height, and the first of the kind in that city. The building is simple in design, yet artistic and stable. Concrete, poured upon structural steel, rigidly reinforced, was used in the construction and insures practical indestructibility and fireproofing.

The frontage along Main Street measures 92 feet, and the side extends along Washington Boulevard 119 feet. The tower, which rises above the bank proper, is 45 feet wide and about 125 feet high. The two side wings to the right and left of the tower are provided with a sufficient number of skylights to insure efficient and proper lighting in the banking lobby and working compartments.

There are two entrances to the building, one from the front leading directly into the elevator lobby, main banking lobby and the stairway to the safe deposit vaults in the basement. The second entrance is on the street-side of the bank and leads directly into the lobbies of the First Trust Company, the First Investment Company and the main banking lobby.

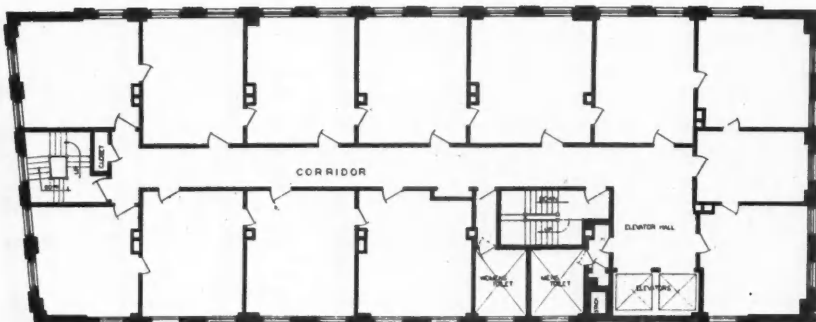


Only a Few Years Ago Such a Building Could Have Been Found Only in One of Our Largest Cities, Today It Is Being Built in Oshkosh, Wis., a City of About 40,000, an Example of the New Era in Building Which Has Established New and Higher Standards.

Ample working space and room for valuables have been provided in the basement. The several vaults and storage rooms are of the most approved design and are entirely protected with burglar alarms.

The same careful attention to detail and thought in providing the best in equipment and facilities has been extended throughout the remainder of the building, with the definite idea of creating suites of offices that offer the business man or woman the maximum of comfort.

Rapid elevator service, roomy corridors and conveniently located lavatories on every floor, wash bowls with hot and cold running water and cool drinking water, pumped from an artesian well, are a few of the features to be found on the office floors. Every suite in the building has outside windows to permit natural lighting throughout the major portion of the day.



Here Is a Typical Floor Plan of the Upper Stories of This Bank Building Which Are Cut Up Into Offices and Suites.



# Australia's New Seat of Federal Government

By LILLIAN G. KNOWLES

*Division of Regional Information, U. S. Department of Commerce.*



The New Australian Parliament House, at Canberra, Has Been Described as a Spartan Building of Great Spread, Blocky and Staid Externally but, Internally, Simple and Dignified. Walter Burley Griffin, of Chicago, Architect.

**C**ANBERRA, the new federal capital of Australia, is eagerly looking forward to May 9, this year, when it is to be formally opened by H. R. H. the Duke of York. At the moment the new capital bears little resemblance to a modern city, approximately one-half of the population of 6,000, it is stated, consisting of temporary laborers, artisans, and others engaged in preparing the city for its official duties. Building operations are being pushed rapidly, however, and in anticipation of the inaugural crowds it is proposed to erect a huge canvas town as emergency shelter for visitors to the formal opening.

## Commonwealth Only 27 Years Old

Although Australia as a British colony is 139 years old, the Federation of Australian States has only existed for 27 years. It was in July, 1900, that the people of New South Wales,



Pumping Station on Murrumbidgee River, at the Confluence of Cotter River, About 10 Miles West of the Canberra City District, a Part of the Federal Water System for the New Australian Capital.

Victoria, Queensland, South Australia, Western Australia and Tasmania assented to the Commonwealth of Australia Constitution Act, which united them as a Federal Commonwealth under the Crown of the United Kingdom of Great Britain and Ireland. One of the last official acts of the late Queen Victoria was her proclamation of September 17, 1900, ratifying the will of the Australian people. Following the royal proclamation, on May 9, 1901, the first Australian Federal Parliament was opened at Melbourne, the temporary capital of the new commonwealth, by the then Duke of York, now His Majesty King George V.

## Canberra Selected as Most Desirable Capital Site

The act of Parliament creating the Commonwealth of Australia provided that its permanent seat of government should be in territory granted to or acquired

by the commonwealth, and should be not less than 100 miles distant from Sydney. After years of consideration, Canberra, in the district of Yass, in the southern portion of New South Wales, was accepted as the most desirable site for the new capital. Located 209 miles from Sydney, New South Wales; 429 miles from Melbourne, Victoria; 912 miles from Adelaide, South Australia; 929 miles from Brisbane, Queensland; and 2,607 miles from Perth, Western Australia, Canberra is said to combine all the qualities of the ideal site.

In March, 1913, the foundation stones of the new capitol were laid, with appropriate ceremonies, but the World War delayed its completion. At that time about 5,000 people gathered by horse and buggy to witness the laying of the foundation stone, while for the ceremony this year it is estimated that 50,000 motor cars will bring visitors from all parts of the commonwealth, and hotels as far from the scene as 60 miles are being rapidly booked up.

**Total Area 900 Square Miles**

The total area of the Federal Territory of Canberra approximates 900 square miles, or 576,000 acres. An area of 12 square miles is set apart

**NEW AUSTRALIA  
CAPITAL OPENED  
BY DUKE OF YORK**

CANBERRA, Australia, May 9.—[Monday]—(AP)—The climax of the duke of York's tour came today when he formally opened the temporary parliament building in the new federal capital in the presence of 50,000 people.

The ceremonies were elaborate and picturesque. The formal dedication was attended by special representatives of the British dominions as well as representatives from every Australian state. The duke, whose speech was broadcast by radio, spoke of the achievements since the foundation of the government and read a message of congratulations from his father, the king.

The duchess of York was present, Lord Stonehaven, governor general, and Prime Minister Stanley M. Bruce were in attendance, and 2,000,000 persons listened by radio to descriptions of the affair broadcast throughout the dominion. Mme. Melba sang the national anthem, troops paraded and airplanes droned overhead.

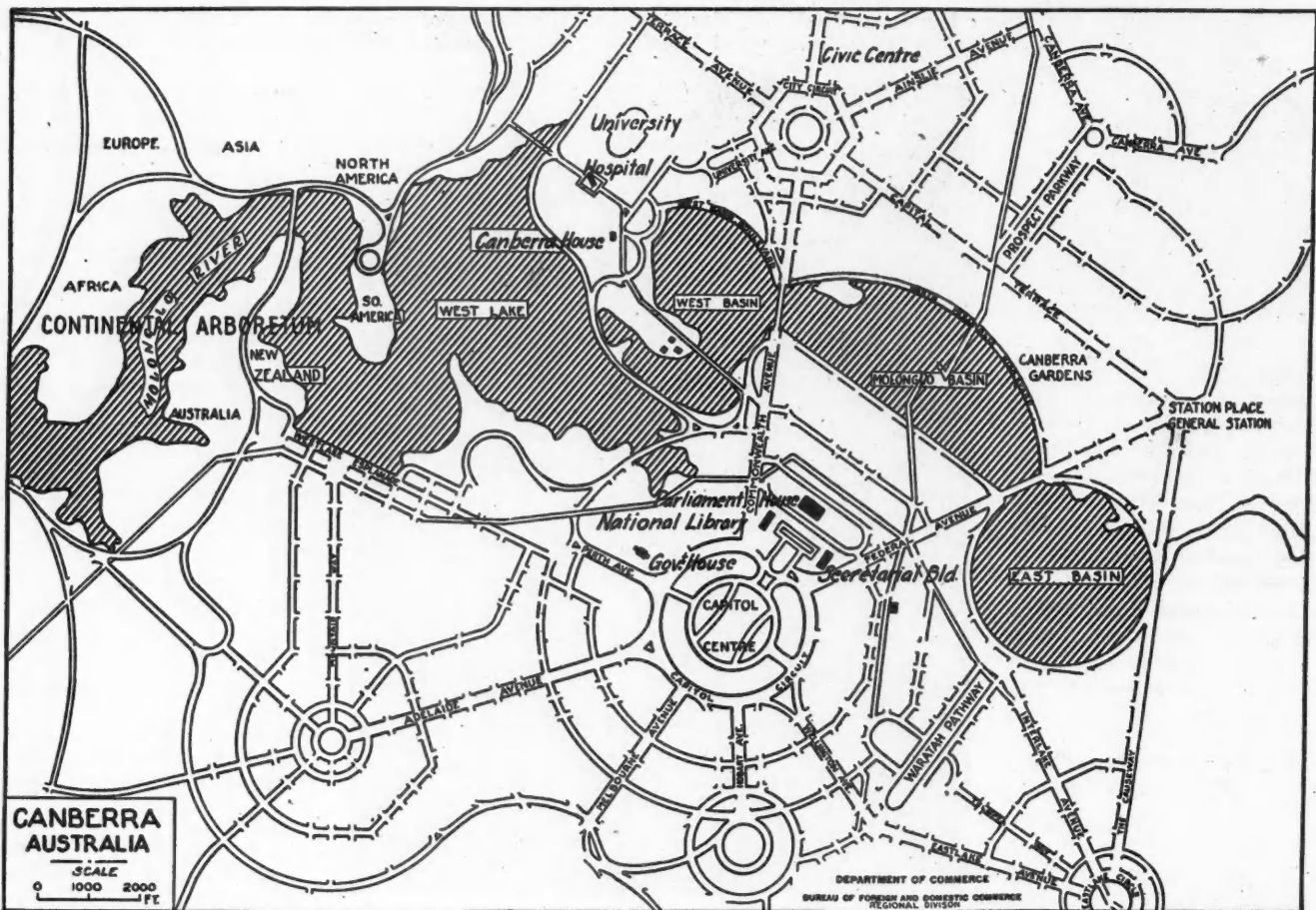
for the site of the city proper, with further reservations of 100,000 acres for parks, boulevards, and roads, an extensive arboretum, and Duntoon Military College, the West Point of Australia. Australia's Naval College, corresponding to Annapolis in the United States, which was formerly located at Geelong, was transferred in 1915 to Jervis Bay, 123 miles from the new capital.

**City Designed by Americans**

It is of interest to Americans to know that Australia's new capital is laid out according to the design submitted by an American architect, Mr. Walter Burley Griffin, of Chicago, and its pattern is strikingly suggestive, in general arrangement and outline, of that of Washington, the capital of the United States. In a report of a former American trade commission at Sydney, Canberra's site is described as generally level, at an altitude of 1,840 feet above the sea, with hilly country close at hand, and flanked by mountains nearer the horizon. "Like Washington," he writes, "it is a city of magnificent distances."

**Extensive Construction and Improvements Since 1921**

Actual construction of Canberra's



The Plan of Canberra, Australia's New Capital City, Which Was Taken from a Design by an American Architect, Walter Burley Griffin, of Chicago, Is Suggestive in General Arrangement and Outline of the Plan of the Capital of the United States, Washington, D. C.

buildings began as far back as 1914, but due to the war all activities were practically at a standstill from 1916 to 1921. Since that time remarkable development has taken place. Good roads have been laid for miles around, and sewerage, water, and lighting systems are for the most part ready for use. Many of the main avenues are double, with garden tracts between. Most of the federal buildings have been completed. Parliament House, begun in 1924, has been described as a Spartan building of great spread, blocky and staid externally, but, internally, simple and dignified. There are no street cars nor overhead wires within the city limits. Transportation is to be provided by busses of the Federal Capital Commission.

### Land Title Rests in Government—Population

Land in Canberra can not be held in fee simple, the title always residing in the government. A maximum lease of 99 years, however, may be obtained by bid at auction, and upon payment of the government rental at the rate of 3 per cent on the unimproved capital value of the land as fixed by the final bid. The first sale of leases took place in December, 1924. The land ordinances prevent speculation. Erection of building by the lessee must begin within two years and be completed within three years of the day of the lease. Buildings must be constructed in accordance with plans previously submitted for approval, and no lease may be transferred until they have been erected as prescribed. Every care is taken to preserve the uniformity of the city as outlined in the original plans. The first reappraisal of the land is to take place in 20 years, and a new reappraisal will be made every 10 years thereafter.

Canberra's present population is between 5,000 and 6,000, but with the inflow of all Federal Government employes from Melbourne prior to May 9 it is estimated that the permanent population by the end of 1927 will approximate 12,000.

### Regulations to Protect Health—Model Traffic Ordinances

The social structure of the town has been carefully planned by experts.

The requirements of a large population have been considered, and no slum areas of any type will be permitted. All kinds of food will be under strict supervision. An expert from New Zealand, who recently reported on a system of municipal control of milk for Melbourne, has been engaged upon a similar investigation at Canberra. An abattoir for the whole of the Territory is located 5 miles from the city. No meat will be allowed to be used in the Territory unless killed at this abattoir, and a rigid tubercular test of all dairy cows will be made.

Motor-traffic ordinances were put into effect in February.

They are said to constitute the most up-to-date code of motor-traffic laws in Australia. Provisions are made for granting licenses, restricting the age of motor cyclists to over 16, and that of drivers of motor vehicles to over 17, but drivers of motor busses have to be 21. Each license will cost 10s.

### Canberra's Rapid Growth Expected

To date, more than £5,000,000 have been expended in the city of Canberra, and before the capital is finally completed many additional millions will be spent in beautifying it and in making it comfortable. Once the seat of government has actually been moved and the actual migration has taken place, Canberra may be expected to grow very rapidly, and within the next few years to occupy a prominent place among the cities of Australia, not perhaps, as regards population, but in comforts, convenience, and beauty.



### Forestry Resolution

THE following Forestry Resolution was adopted by the National Lumber Manufacturers Association at its recent meeting in Chicago:

"Awake not only to the importance of protecting and wisely using all of the country's mature timber supply, but also to the importance of reforestation to keep all true forest land permanently productive, we appreciate the constructive interest being taken by President Coolidge and the director of the budget both to strengthen and correlate the forest protective activities of government departments

and to promote fuller federal co-operation with states and private agencies, under the Clarke-McNary law, to effect better fire and tax conditions that will warrant private as well as public forest-growing enterprise. It is notable that many states are also taking similar encouraging steps and that there is great increase in the number of progressive lumbermen seeking and responding to every opportunity afforded them to keep their lands on a permanently productive basis. We urge continuance of this interest and co-operation, both public and private, to bring about sound conditions for perpetuating our forest resources and our forest industry. And to the same end we endorse the McSweeney bill, representing the program of federal forest research proposed by the National Forestry Program Committee; also urge the further acquisition by states and government of land for reforestation purposes since this task can never adequately be borne by private industry alone."



THE United States Civil Service Commission states that it has not received enough applications for positions of architects and engineers to meet the needs of the Supervising Architect in connection with the \$165,000,000 public buildings program recently authorized by Congress.



Looking Down from the Nearby Mount Ainslee, Upon the Ainslee Residential Section of the Canberra City District.

# The Wide Range of Textured Wall Finishes

By E. M. OREN

**A**RCHITETURAL precedent for the use of rough-textured wall finishes is found in virtually all the so-called "period" styles. Even the Ancient Greeks employed a distinctive texture. So it was with the Italians, the Spaniards, the French, the English and others. An interesting thing about these rough textures, as they were employed in the Old World, and in the early settlements of the new, is that the textures were rough because they couldn't be made smooth. The tools available for the application of plastic finishes in Greece, for example, were capable of smoothness only to the degree smoothness was obtained. Italian tools differed from the Greek, Spanish from the Italian, and so on.

The Old World then got rough textures because it couldn't get smooth walls, and all unconsciously developed a variety of interior beauty that we of these times are learning to exploit in full worth. We have discovered, too, in our development of the rough-textured wall, two qualities the rough-texture possesses in addition to beauty. One of these is that it breaks up and softens light waves and thus "tones" the interior in which it is used. The other is that it breaks up sound waves and in consequence improves the acoustical properties of a room.

Whether or not the rough-textures through the interior

of a home should be in complete harmony with the architectural style still remains a debated question. Purists argue that an English Cottage style home, for example, should be limited to what is called the "English trowel finish"—so-called because of its character and use in the typical English cottage. The same argument is extended, of course, to all the other period architectural styles—Italian, French, Spanish, Mission and Colonial.

Liberalists, however, argue that a home should be the expression of the person building it and that a variety of textures is permissible under the canons of good taste if the builder wants variety. Others argue for variety solely on the merits of variety in giving distinction to the individual rooms within a home.

But whichever may be the home-builder's attitude—purism or liberalism—he will find in modern decorating materials a texture-range and flexibility that will enable him to obtain precisely the effect or effects he desires. Examples of these modern decorating materials are the plastic paints, which come in the form of a white powder and only require the addition of water and color. Application is with a large brush and the majority of textures are developed while the plastic paint is still "tacky"—that is, before it has hardened.

As has been said, the varieties of textures and texture-



A Travertine Marble Interior Effect Which Has Here Been Developed in Plastic Paint Is Well Set Off by the Harmonizing Iron Grille Gate and Wrought Lantern at Either Side.



Mission Texture Developed in Plastic Paint in the Hall of the Lehman Estate, Lake Villa, Ill.

and-color combinations are virtually endless. In the main, textures are produced with such commonplace instruments as the back of a kitchen spoon, a crumpled piece of paper, a sponge and a stippling brush. Textures peculiar to the individual applying the material can be obtained at will by simply varying the stroke of the brush, for the plastic paint will not go on smoothly.

Among the simpler of the textures is the brush-swirl, made by manipulating a 4-inch paint brush in small circles over the surface of the wet plastic paints. Tinted glaze applied over the surface then produces an effect of unusual richness.

Perhaps one of the loveliest of the rough-textured effects is what is called "The Medici," an adaptation of the Italian palm finish. This finish is obtained by applying the plastic paint with a brush and then working in the smoothed effect with a 4-inch scraper knife or some convenient tool. Various colors may be used with this texture.

The effect of Travertine marble is easily obtained with plastic paint. This texture effect serves excellently in large halls, or public or semi-public rooms. It is obtained by tinting the plastic paint a light ivory color. The mix then is applied and stippled with a painter's stippling block. While the surface still is wet, greenspar sand is blown into it, the decorator simply taking a quantity of the sand on a piece of paper and "puffing" it onto the walls. Then the surface is smoothed with a celluloid triangle in horizontal strokes to produce the "pits" and pores that are found in Travertine marble. The following day, the plastic paint having thoroughly dried, the wall is scored off to mark joints between the stones.

A typical English texture can be obtained by first applying the plastic paint in its natural white color. This is stippled and then brushed



Brush-Swirl Texture in Plastic Paint as Seen in the Carlton Terrace Apartments, Chicago.

with a 4-inch brush to create a "tooled" effect. The color is produced by tinting especially prepared size with rottenstone. This mix is applied with a brush and then wiped with a rag to give an antique effect. The foregoing are but a few of the decorative effects possible with plastic paint. In addition to the great variety of textures, glazed and sized effects, stencils and semi-relief may be obtained through the use of ordinary oiled paper stencils that have been shellacked to prevent moisture from curling them. Still another unusual effect is the sand-swirl, which is obtained through the blowing of tinted sands into the wet plastic paint.



The Development of Travertine Marble Finish in Plastic Paint. While the paint is still "tacky" it is stippled with a stippling brush. Then the triangle is dragged across the surface, leveling the stipple and leaving the "pits."

# Thorough Insulation

Its Value to the Home Owner and Builder

By H. S. ASHENHURST

**F**OR the past few years I have been devoting all of my time to observing the effect of insulation when applied not only in homes but in buildings of all kinds. The purpose of this article is not only to give first hand information as to its value but to try to interest others in this the most important development in modern building construction. As a matter of fact it is perhaps the only real radical development that has taken place since houses were built in this country.

In this story I will confine myself to that class of insulation known as bulk insulation — that is insulation poured in place at the job. For such an installation a special gypsum product is used which is delivered to the job in handy paper bags. Water is poured into a container and this gypsum powder poured into the water. The batch is then mixed and as soon as stirring starts the mass begins to swell, increasing in bulk from six to seven times. It is easily poured into place between the studs, filling the entire space  $3\frac{1}{2}$  inches thick, being held in place by light forms during the process of setting. In 30 minutes the forms are removed and the wall carried on up to the roof or ceiling. This fills the space with a porous mass containing millions of tiny air cells and making the ideal insulation condition. The walls are then lathed and plastered in the usual way. This same process is applied to the upper roof rafters or it is poured 4 inches thick on top of the lath and plaster between the attic floor joists. The rising action of the material fills even the smallest crevice, completely sealing in the walls and roof of the house, making them practically impervious to the passage of heat or cold and in addition making practically a fireproof building out of a frame structure.

And now we will suppose you are building a new home, and have insulated it thoroughly with cellular gypsum as above described. The first surprise will come when your heating engineer submits you the figures showing the size of heating plant required. He finds that when he begins to figure the heat losses through the walls they are just about one-fourth that of the loss had the walls not been insulated. The ceilings show a still greater saving—the loss only being about one-ninth as much with the thorough insulation as it would have been had the ceiling not been insulated. In the ordinary house this saving in reduced radiation and heating plant runs from 35 to 40 per cent. This means that instead of putting in a boiler with a rating of 2,000 feet, a boiler rated at only 1,200 feet will do the work better, and that instead of using radiators having a surface of 1,000 square feet you can get along with only

600 feet and have a better heated house than you would have had with the larger heating plants in the non-insulated building. This also leads to another rather surprising condition. In many cases the saving in the size of the heating plant will very nearly pay for the insulation.

This reduced radiation feature is the outstanding development in the heating industry today. Heating engineers all over the United States are accepting the new heating constants where thorough insulation is applied, and houses are being heated better than they have ever been heated before using boilers and radiators of the small size that have been ordinarily used for heating garages or furnishing the domestic hot water supply for two and three-flat apartment buildings. In my own home, which was thoroughly insulated, I cut the radiation and boiler capacity over 50 per cent of the amount required had the house not been insulated. I am now in my second winter and my heating plant has never been used to capacity even with temperature of 16 below zero.

The small heating plant and the practically heat proof walls and roofs lead to another interesting development. If you have been wanting to get away from the solid fuels and using an automatic feed fuel like oil or gas you will find that you can use these fuels at no more cost than your coal would have been had the house not been thoroughly

insulated. In my own home I am spending no more to heat the house with gas than my neighbors in their non-insulated homes are spending for anthracite coal. The gas companies in all parts of the United States are unanimously recognizing this new insulation development and are recommending the use of thorough insulation in their literature. Many of them are outspoken in stating that insulation has advanced house heating with gas at least ten years.

Suppose now that you have insulated the house as described and have moved in. If you happen to move in in the midst of one of the sub-zero spells that comes often in the northern latitudes you will at once notice the extreme comfort with which the house can be heated even on the coldest and windiest days. You will notice that drafts have been eliminated and that all portions of the house seem to be practically the same temperature. The evenness of heating that prevails in the insulated house is one of its most striking characteristics over the non-insulated house. Furthermore, where people are firing with solid fuel like coal or coke the report always is that they can run in the coldest weather with the fires banked. One party living in one of the Chicago suburbs reported to me a few days ago when I asked him about firing his coal furnace



With This Bulk Insulation the Entire Space Between the Studs Is Filled with the Light, Porous, Gypsum Material.

in his insulated house that the only way he could keep the fire low enough in the coldest weather without overheating the house was to use a double damper in the smoke pipe. He stated that he had lived in many houses but that this was the first one where the house was warm enough to dress in comfortably on cold mornings.

I have been telling you about the ease of firing and the comfort that comes in the home. What is the next feature. Thorough insulation is the only thing that you can install in your home that begins to pay you large dividends in actual cash as soon as the heating season starts, and that continues to pay dividends every year that the house is occupied. A thoroughly insulated house requires very much less fuel to keep the building warm than a similar building not insulated. The result is that year after year the occupant has just that much more money either to put away or to spend on other things. Insulation frequently pays from 30 to 15 per cent each year on the investment. Some of the loan companies are beginning to take this fact into account. They are considering the insulated house a better risk than the non-insulated because the saving in fuel helps to pay the installments on the house. The occupants of the insulated house are more comfortable than those in the non-insulated and are more likely to pay out without any difficulty.

That this fuel saving is a real tangible asset has been proved many times in cases that have come under my direct observation during the past few years. Take the case in my own home. One of my neighbors has a one-story house of smaller floor space than mine. His house is heated with gas. His gas bill during the month of December, 1926, was \$49.27. My house heating bill with gas for the same period, with a 20 per cent greater floor area and two stories, was \$30.97, a difference in one month of \$18.30 in my favor. He has no insulation.

Or let us compare two houses in a Chicago suburb. Both of these houses are heated by gas using a hot water plant. The houses were built by the same builder and are identical in area. One of them is insulated thoroughly with cellular gypsum, the other is only partially insulated. The gas bill in the thoroughly insulated house ran for one month \$45.30. In the other house \$58.65, a difference of 30 per cent in favor of the thoroughly insulated house.

When the facts about thorough insulation become generally known the builder who prides himself on his ability to build good houses cannot do other than thoroughly insulate all of the homes he builds. As a builder I would not be able to face a client with a non-insulated house and turn it over to him knowing that he was to be penalized during his occupancy of the house with drafts, uncomfortable conditions winter and summer, and a 30 to 40 per cent greater fuel bill. We hear a great many builders talk about a well-built house. The fact is that all houses are equally uncom-

fortable winter and summer unless they are thoroughly insulated.

So far I have said nothing about the comfort that comes in the summer time to the occupants of the insulated home. You who have to occupy upstairs sleeping rooms in the heated summer season know the discomfort that comes from the heat that radiates from the heated roof until late into the night. I can best express the difference between the insulated house and the non-insulated house by stating that in the insulated house the upstairs rooms are just as comfortable during the hottest weather as the rooms downstairs. In the insulated house you can have your upstairs

windows closed during the hottest days and at nights when they are opened up the upstairs has stayed delightfully cool all day. Compare this with the stifling condition generally prevalent when you have been away from home during the day and have kept the upstairs windows closed. There is no excuse for uncomfortable sleeping rooms during the heated summer season because thorough insulation solves the problem.

What about insulation in the house that is already built? In the case of an old house

side wall insulation is impracticable. It is possible, however, to produce a great change for the better in the heating conditions in these homes by pouring between the attic floor joists 3 to 4 inches of this cellular gypsum insulation. This has been done in thousands of homes in the United States and Canada today. When this work is done in the summer the occupants report that the discomfort of hot sleeping rooms is eliminated, and that bedrooms that before in hot weather would not cool off until nearly morning are as comfortable as the downstairs rooms. The occupants of one-story houses who have heretofore had stifling conditions in hot weather report that their homes are now comfortable.

In addition to summer comfort, ceiling insulation in old houses helps tremendously in winter comfort. Its installation turns the house from a hard-to-heat proposition into a home that requires the lightest kind of furnace firing in the coldest weather. The drafty condition that prevails around the floors in the ordinary house in the coldest weather disappears, and the house is comfortable always. Ceiling insulation also cuts fuel costs materially. In some tests made by the People's Gas Company of Chicago, where ceilings were insulated after occupancy for several years, the savings in some bungalows ran close to \$100 over former seasons. Ordinarily the insulation of a ceiling in a one-story building will cut fuel costs about 30 per cent. In a two-story building ceiling insulation will cut fuel costs about 16 per cent. The report we always get where ceilings have been insulated in old houses is that the house is so much easier to heat than before the ceiling insulation was applied.



**Bulk Insulation Is Poured Between the Studs and Held in Place by Means of Light Forms Until It Has Set, Which Requires about 30 Minutes.**

# Handy Andy Builds Business

An Advertising Idea Which Attracts, Coupled with Service That Satisfies, Brings Profitable Business to a Milwaukee Lumber Dealer

**"L**ET Handy Andy Do It." This is the keynote of an advertising and service idea which keeps Milwaukee contractors and carpenters busy and Milwaukee householders and business men happy the year round and sells lumber and building materials galore for the John Schroeder Lumber Company, the largest concern of its kind in the city.

Handy Andy's is one of the best known faces in Milwaukee. He looks down kindly on the riders in the street cars, he greets prospective customers from the pages of their favorite newspapers and catches husbands and wives together to talk over his possibilities from the pages of theater programs. And always he offers service, offers to build the needed shelves, replace the worn out and disreputable desk top, build the garage for the new car or do any other known construction job.

The idea for Handy Andy was evolved by B. F. Springer, secretary of the John Schroeder Company.

"There are thousands of jobs the year round," Mr. Springer reasoned, "which often are overlooked. Jobs like laying new floors, finishing attics, building needed shelves, partitioning basements, repairs to store windows, partitioning and rearranging office space.



**Ask Handy Andy**

— how wallboard and a good carpenter can solve your indoor remodeling problems!

Phone Lincoln 5720

**John Schroeder  
Lumber Company**

A Dozen Boards or a Dozen Carloads  
Foot of Walnut St. Milwaukee, Wis.

In the Milwaukee Newspapers Handy Andy Is as Familiar a Figure as He Is in the Street Car Advertising.

"All of these things require lumber and building materials and provide work for our contractors and other contractors who might be made loyal to the John Schroeder Lumber Company if we could throw work their way.

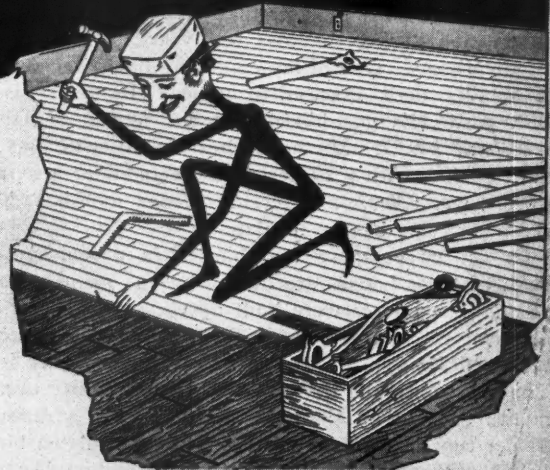
"But those who have such jobs do not know where to turn to have them done. Even if they call our company, they do not know who to get in touch with. Time is lost and irritation aroused while prospective customers are put in touch with the right employee. We will put a new man on the list of workers, if not on the payroll. And we will educate the public to call on Handy Andy for anything and everything. It will sell lumber, make friends and help the contractors."

Handy Andy has done all of the things expected of him. He now has his own department, and it is one of the most important in the business of this lumber company, which operates its own sawmills, does a wholesale and retail lumber business and has timber holdings from Canada to Florida.

Handy Andy made his first bow to the public in 1923. Now his history is written in fat record books and ledgers filled with profitable figures. The record of accomplishments ranges all of the way from extracting squeaks from

## Handy Andy Says:

**"Let me do your Indoor Repair and Carpenter Work during Winter Weather"**



## JOHN SCHROEDER LUMBER COMPANY

A DOZEN BOARDS OR A DOZEN CARLOADS

Whatever the Job that Is to Be Done Handy Andy, Representing the John Schroeder Lumber Company, Is Ready to Take Care of It and Street Car Cards Like This, as Well as Newspaper and Theater Program Advertising, Are Letting the People of Milwaukee Know Just Where to Call for Help on All Kinds of Construction Problems.



floors to moving houses. And within that range is a lot of profitable business, including a number of residences built through Andy's contacts with persons on the verge of building their own homes. For Handy Andy is delighted to plan a home or find an architect or contractor who will take charge of the event.

In practice, the plan works like this:

A householder sees Handy Andy's offer to care for repairs and improvements and calls the telephone number which connects him with the instrument always right at Handy Andy's elbow. Handy Andy answers in the person of an eager young man who knows building and building materials, and is learning more all the time.

Details of the required work are gleaned over the telephone and the prospective customer is assured that Handy Andy will be on the job at once. And a phone call, from Handy Andy this time, puts a contractor on the trail of a job. The work is inspected, an estimate given, and if this proves satisfactory (it is pleasing to note that most of these are non-competitive bids), the work starts.

One of the largest fields opened by Handy Andy is the finishing of attics and the building of sun porches. Much of his work comes from the remodeling of stores and offices. When the house was moved (Handy Andy had some trouble persuading a contractor to take that job) there was a new foundation and basement and repair work which ran into four figures.

But garages are Handy Andy's delight. He knows more about building garages than Coolidge knows about keeping silent. He can quote the difference in prices between a garage built in one block and the next, charging the difference to added wear on the water pipes to carry the water that far for the concrete. For Handy Andy's record book is filled with garage jobs, each one running into hundreds of dollars.

If this idea has been highly profitable to an immense business concern, an adaptation of it should help building material firms and contractors wherever thousands of small jobs which take work and materials are being overlooked.

THEODORE BOYLE STUTZMAN.

Need a Good Carpenter Quick?  
Ask  
Handy Andy

JOHN SCHROEDER LUMBER COMPANY  
A DOZEN BOARDS OR A DOZEN CARLOADS

If a Carpenter Is Needed Handy Andy Will Put You in Touch with the Right Man and, Needless to Say, Carpenters Receiving Such Calls Become Fast Friends of the John Schroeder Lumber Company.

### Thorough Insulation

(Continued from page 117)

If you are not sure about the necessity of ceiling insulation observe how the snow melts on your roof and that of your neighbor after a snow storm. It will still be lying on the roofs of the unheated garages long after it has disappeared from the roofs of the houses. The heat of the house coming through the roof has melted it. The snow on my own roof always lies for a long time after it has disappeared from the neighbors' roofs. Look at your own roof after a heavy frost. The frost soon melts on the roof except at the eaves. You are using good fuel to melt that frost. At the same time you are probably complaining of your fuel bill. Insulation with cellular gypsum will stop this heat loss.

One important thing in insulation is to put the insulation in thick—never less than 3 or 4 inches. Follow the lead of the cold storage man. He never thinks of building walls with less than 3 to 4 inches of insulation. He has been in the business for years and is certainly working from a practical basis. The problem in the home is just as severe as his. It means taking care at times of 80 degrees difference in temperature between the inside and outside.

I hope I have been able in the space at my disposal to get my readers thinking about insulation. Its thorough application is the only method to secure comfort in homes winter and summer. If you are a builder and pride yourself on good building you get a good building through insulation. If you are thinking of buying a home you should not penalize yourself by having to occupy a heat-leaking, fuel-consuming shell that in five years will be out of date if it is not insulated.



IT has just been announced that the twenty-fourth annual convention of the American Concrete Institute will be held at the Benjamin Franklin Hotel, in Philadelphia, Pa., February 28 and 29 and March 1, 1928. This will be the first convention of the Institute to be held in the East since 1919.

Ask Handy Andy  
how wallboard  
and a good carpenter  
can solve your  
remodeling problem

JOHN SCHROEDER LUMBER COMPANY  
A DOZEN BOARDS OR A DOZEN CARLOADS

The Remodeling of Stores and Offices Is One of the Favorite Jobs for Which Handy Andy Is Called Upon and He Has Been in on Every Other Sort of Work Too from Taking the Squeak Out of a Floor to Moving a House.



# DETAILS OF HOME BUILDING

## Characteristics of Italian Style

By V. L. SHERMAN,  
*Lewis Institute of Technology*

“GREECE appears to me to be the fountain of knowledge; Rome of elegance.” This is no discussion of the changes wrought in Italy on Greek architecture. We will skip the superfluous detail of that time and observe that after the Renaissance art and literature spread so thoroughly beyond the Alps that Shakespeare became one of Italy’s “leading” poets; and that for two succeeding centuries the Italian vogue was very strong. The quotation is English, dating 1780; and down to recent years we still find intense interest in the rebuilding and extensions of Italian villas.

The last word, “elegance” is the key. “Beauty as resulting from the complete absence of that which deforms or impresses unpleasantly.” The word implies art, not nature, and the elegance of Italian architecture is all the more pronounced when art, imposed on natural surroundings, becomes luxury. It might follow then to say that Italian style should never be indulged except to the full, expense and pains uncounted. But we cannot all be dukes.

Let’s try again. To be Italian properly an exterior must be free from deformities, simply pleasing, and as near to beautiful as it can be. Rather a hard prescription some times. Fig. 4 is shown as an example of what can be done and, if Mr. Dwight James Baum will pardon the inadequate sketch, I should like to extol the merits of this design. The low hip roof is balanced, uncut in outline, and flanked by chimneys equally attractive. The lines above the eaves are proportioned precisely with their height above the ground. And the roof is not heavily tiled, a point in its favor. The overhang is sufficient to produce a marked shadow which drops with the spouts short of the edges of the building. No excess.

The whole front is halved by a string and the sides are strengthened. The windows are balanced and the doorway is an entrance. Why is it Italian? It could contain all its parts, hip roof, plastered chimneys, arched and shuttered door; but without its grace the result might be anything. The proportions must be right.

The hip roof is an Italian mark as shown on the porch, Fig. 2, and in Fig. 3. But it is not absolute. In Fig. 1 we have a parapet above a regular block wall with integral chimney. Except for a show of porch-roof tile to the left and a deep door there is nothing on the face before the elaborate arched windows. Such a feature is distinctly Italian. It is comparable in its concentration to some of the featured doors of our Colonial builders. Detail could not be extravagantly used but some portion might be favored to advantage. There are some Italian walls as blank as paper with a rich medallion, set perhaps over a door, to give the most pleasing effect. A fair rule would be to leave out all you may want to and be careful what you put in.

There is a wide enough breach between the styles of homes and of public buildings in any type of architecture

to save any but the unwary. This is mentioned in connection with Fig. 2, which shows a high roofed porch. It seems to be a drive as well but surely the casements to the right are a little close. The roof is tiled and quite marked, though directly above rises a wall with arches that would favor a street corner. It seems an exception.

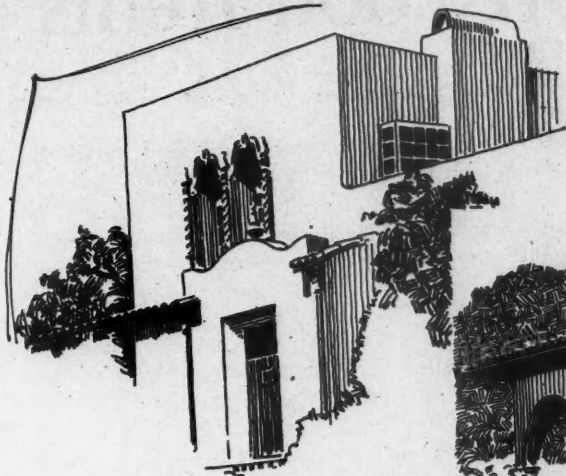
Never approach the Italian style without firm resolution in trees and gardens. If the house can be introduced through trees so much the better. If the trees are to be limited make the most of flowers. The style is essentially cultivated and would suffer by rugged surroundings. Here is the place to use paths, terraces, benches, bird-baths. Cement fixtures go well, especially when decorative. Fig. 5 shows a garden entrance that belongs with this style. The columns are nothing elaborate but are capped with flowers and joined by forged gates.

In Fig. 5 is shown the chances in a rear plot. At the rear of a German home is a carefully planned garden. There are not too many trees. From the rear of the house a wall is run to the rear of the plot. At the end of the drive and beyond the wall in the picture is a garage. On the near side is a simple “classic” porch fronting terraces and the garden. Tables and chairs and what goes with them make a very pleasant picture. The fact is that the Italian style is so simple and available that its relatively little use is surprising. In this layout, Fig. 5, unpleasant impressions are certainly avoided at small expense. There is not a great deal in building and the cultivation includes gardens, porch and wall.

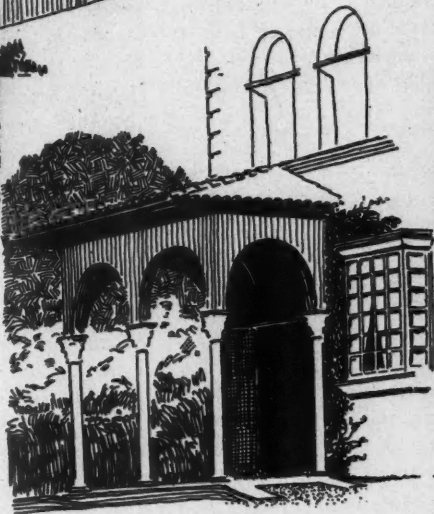
Figs. 6 and 8, were for sermon. There are no particular features in either but the main ideas are so different that they can be brought out. A home of any form or style should be comfortable and pleasant. Convenience is served well with both qualities. The Italian home is, as we say, more in art than most types, but not so much as some of us are told. We still go to Italy to see the work of the masters and coming away a few are carried away on the “classical” idea. The idea may become fixed to the utter discomfort of the devotee and all those under his influence.

At the right, Fig. 6, a stairhall in a modern home in classic strain. Simplicity to an unpardonable degree. Tile floor, flush door highly polished, stairs rising away from the wall. You feel you have to go up them on low gear it looks so like a ramp. The space between wall and stairs is to give proportions and is of no use except for a radiator which is left out. With the overhead corners and consequent designs in shadows making a futuristic scheme it would seem that the idea of classical elegance had turned upon itself.

In Fig. 8, there is a beamed ceiling, a wide open door, a couple of steps down from the hall and a wrought iron rail for convenience and protection. Comfort is there.



**FIG. 1.**  
THE ADVANTAGE OF RELATIVELY  
LITTLE DETAIL ON A SIMPLE  
GROUND.



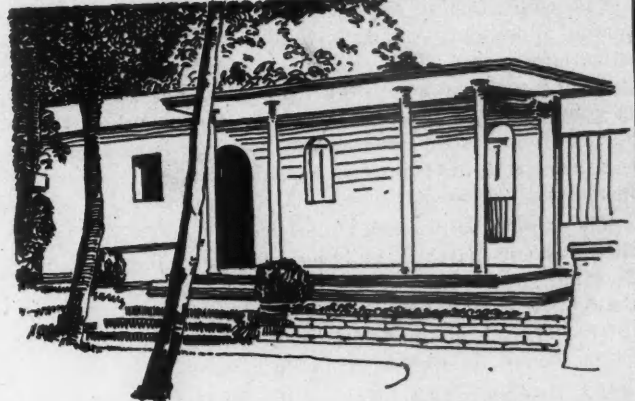
**FIG. 2.**  
A HIGH ARCHED PORCH



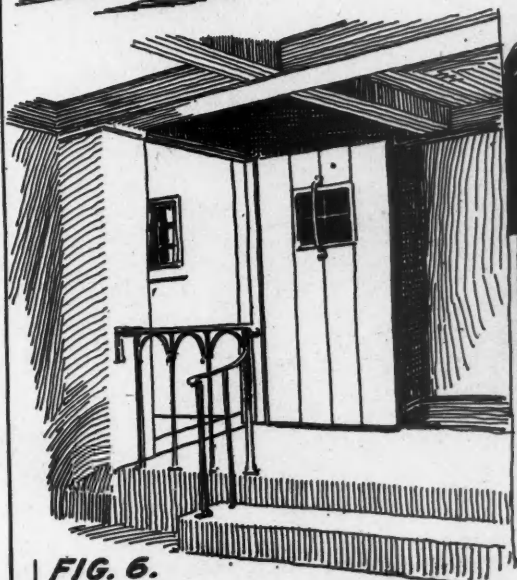
**FIG. 3.** A SUITABLE COMPLIMENT  
IN WALKS AND FOLIAGE.



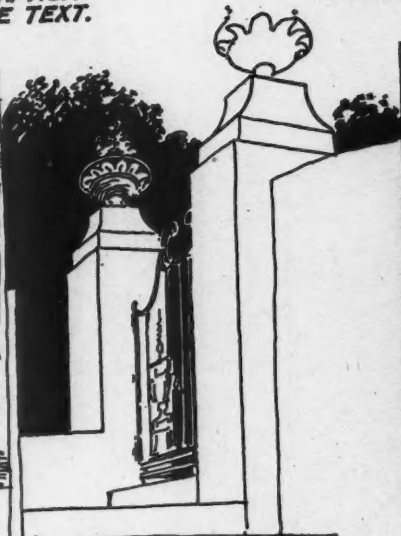
**FIG. 4.** A THOROUGH  
ADAPTION—  
SEE TEXT.



**FIG. 5.** A GERMAN "CLASSIC" GARDEN PORCH.  
THE GARAGE, WALL AND DOOR, MAY BE  
SEEN AT LEFT. DRIVE BACK OF PORCH.



**FIG. 6.**



**FIG. 7.** A GARDEN GATE.



**FIG. 8.** A CONTINENTAL  
STAIR HALL "CLASSIC".  
U. L. Herman 5-4-27.

Characteristic of the Italian Style.

# End-Matched Softwood Items

By J. F. CARTER

[NOTE: This is the last of a series of three articles by Mr. Carter on the utilization of short length lumber.—EDITOR.]

**E**ND-MATCHED softwood flooring, especially that known as Southern pine or yellow pine, is here to stay. It is an economic necessity, is perfectly logical from whatever point it may be viewed, and for these reasons the manufacturers, once they start producing this item, do not stop.

The retail lumberman need have no fear as regards a production of end-matched flooring in Southern or yellow pine. He will have it so long as he is in business, without regard to the talk about longevity of yellow pine. Yellow pine will be cut and sold in the long years after the present lumbermen are dead.

It is true that not all manufacturers of softwood flooring are making it end-matched, but a very large number of them will very shortly come to it, driven to it by the demand on the part of the building public, and there is already a large enough production of the end-matched flooring to take care of present demands.

But, when we consider other items of end-matched lumber we do not find any considerable production. The end-matching of flooring is old. It is known by all builders. The hardwood floorings have been end-matched for years.

The end-matching of ceiling, drop-siding, six inch center match and shiplap, and of boards of various widths is something new. The sawmill men, the producers, are chary of such an innovation. They do not know how it is going to catch on, though at least three of them (themselves producers of end-matched flooring) have been making tests and have produced some of these other items in a small commercial way.

They have built entire houses of short length lumber that was end-matched, building with no ceiling, sheathing, flooring, sub-flooring or boards longer than six feet. And they have shown to themselves what a success the use of short length end-matched items is from the contractors' point of view, as well as from their own.

If a previous article by the writer on the use and savings in end-matched ceiling, drop-siding and boards has carried any conviction, the builders and contractors and the architects should very shortly commence demanding end-

matched short length items from their retailers. Then what will be the saving to the retailer?

In the beginning, he will save yard room. That is an item worth while. He is already trying to save yard room by thinking seriously of co-operative warehousing of certain "side line" items. At the present time he has separate bins for the different lengths of the different grades of the different faces of flooring, and the same is true of the other items. This subject of end-matched items takes him away from the necessity of binning the different lengths.

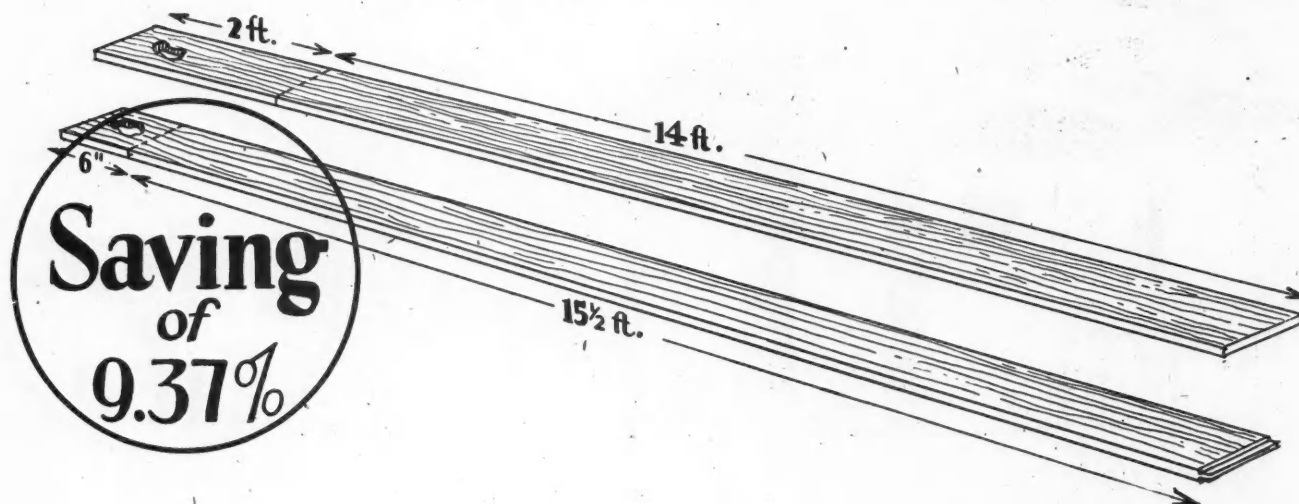
There is no such thing as length as a consideration when one uses end-matched lumber. And, if the retailer gets to a point where he stocks short lengths, end-matched, he will find that more than 30 per cent of his total will be in short lengths. The fact is, there is nothing gained in using long or standard length end-matched items. The real saving comes in the use of short lengths, thinking of short lengths as all lengths up to 8 feet.

The retailer has a saving in investment. He does not need to carry as large a stock when the item is end-matched. First, because there is less waste and he does not have to carry that extra lumber which is actually wasted, cut off and thrown away. Next, as the matter of lengths is eliminated, he does not have to burden his order sheet with certain lengths of which he is getting short.

A smaller stock carried means a quicker turnover per dollar invested. His dollars earn more because they are turning faster. His necessity for bank arrangements become less to that same extent.

In addition, he gets a better actual profit per thousand feet of lumber sold when stocking and selling short lengths.

There is a money-making feature to short-lengths of end-matched which is reflected in standard lengths. It is this: Today lumber is cut on the even foot basis. That is, 10, 12, 14 and 16 feet long. If a piece of ceiling is going through the manufacturing plant with a defect at one end of a piece that is 16 feet long, the defect being about five inches, then the sawmill cuts it back to 14 feet,



With End Matched Lumber a Defect Near One End Is Cut Off as Closely as Possible. Here only 6 inches need be cut off; 1½ feet are saved, making an actual saving of 9.37 per cent of the original board which, with standard length lumber, would have gone into the waste burner.

losing one foot and seven inches. Through the odd-length end-matched method he would merely cut off the five inch defect and ship the piece to its full length. The sawmill gets money at the same grade price for that extra foot and seven inches, the retailer suffers no loss by it, for he pays for what he gets, the customer suffers no loss, not even an inch, and the retailer puts all lengths into the same bin.

This means the raising of grades. The raising of grades means the building of houses with better lumber. When a sawmill man can cut out a small defect and raise the grade in the piece of lumber, he will do it, making two profits, one on the extra lumber in the odd-length piece, and one on the raise in grade.

In letters which I have seen from those who have built entire houses with short-length end-matched items of sheathing, drop-siding, ceiling and flooring, the statement has been made that the saving in labor in putting up the house was \$5.00 per thousand feet. That was the saving in labor alone in erecting the house.

I have read other letters, and have some in my possession, wherein the contractors or builders say they have saved 18 per cent in labor. In one case with which I am acquainted I have seen a saving in labor laying a short-length end-matched floor of yellow pine, edge-grain, narrow width, of 42 per cent. I have letters stating that savings effected by the writers were from 25 to 35 per cent on flooring.

A point that is well worth considering is this, and it applies quite strongly to the farmer element: Less efficiency is demanded in laying up end-matched items than in laying up butt-end items. This, of course, is more true of flooring than of the other items, yet the item of drop-siding is one which is important. When laying a floor with butt-end material, the piece must be cut square at the joist. And the piece which butts it must be perfectly square. Otherwise there is an opening or crack between the two ends. Very, very few carpenters can do such work properly and do it every time. In the use of end-matched material there is not the necessity for anything but nailing, for when a piece needs to be cut, the end is going to be hidden under something else, and it may be crooked or out of square.

A veritable amateur can lay an end-matched floor and get it down well. Of course, he will not get as fine workmanship out of the whole job as a trained carpenter, but he will get the surface of the floor in as good shape as the best of carpenters. There is no way for him to avoid it except by deliberately failing to knock or hit or kick the matches, the tongues and grooves, together.

There will be those, naturally, who will say that the strength does not exist. This has been disproved in test after test on flooring, and the tests made on flooring will

hold good in the other items.

Where is any more strength or durability expected than in a box car? The lining of a box car must be strong, must be durable. It receives all sorts of shock, is under many different kinds of stress. Something is battering it and trying to get out every time a box car goes around a curve or comes to a stop or is started again. Yet, the time is only a very short distance away when the builders of box cars will be using short lengths of end-matched material for lining their cars. They will do it because it shows a saving in money, both in material and in labor. The savings to the builders of box cars will be the same

as the savings to those who lay floors. When one turns a box car on its side, the lining is nothing more or less than a floor.

Farmers will buy farm boards of end-matched material because there is a distinct saving in price, and they suffer no waste. The farmer of this country is a saver. When this end-matched item is shown to him he will use it. What is necessary is but a little demonstration.

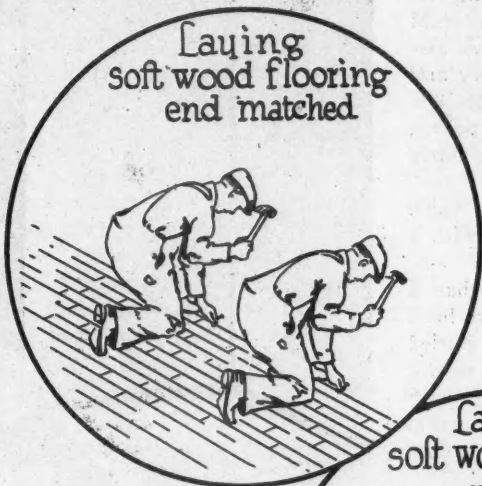
Among those who have been studying the question of end-matched lumber there is mention of finish and interior trim in some numbers being end-matched. There is the possibility this will develop, but such a development is quite a time away.

At the present time the Southern pine manufacturers are leading the way in the making of

end-matched items, but it will not be a far cry to the production of other softwoods in end-matched numbers. The need for it exists because of rising prices in lumber, these rising prices in lumber being caused, to some extent, by the cutting away of the forests. There is conservation of the greatest kind in the use of short length, end-matched lumber. However, I am not entering into any discussion of conservation of our forests, but rather, the conservation of the builder's funds and the retailer's investment. That sort of conservation is quite attractive. It is better understood.

At Washington there is a Committee on Wood Utilization which is working on the same subject, that of utilizing the wood to a greater extent. One of its studies is that of the use of end-matched material, and quite recently the Forest Products Laboratory at Madison, Wis., in a booklet on short length material, paid its respects to the end-matched idea, though briefly.

As I see it, the subject is of paramount importance to the user of lumber, the contractor, the builder, and it is also of great interest to the architect as the friend of his clients. These are the people whose acceptance of the idea will make it a success. And the reason I suggest their earnest consideration and their acceptance of the idea is strictly a selfish one for them—it saves them actual dollars in every piece of construction.



An Average Saving of 33 1/3%

Contractors and Builders Who Have Used End Matched Flooring State That They Have Saved from 18 to 43 Per Cent on Labor Costs, an Average Saving of About 33 1/3 Per Cent Being General.

# New Decorative Possibilities In Unique Structural Material

Designers Can Gain Rich New Interior Effects with This Lasting, Sanitary Material

**I**MAGINE, if you can, entering a suite of rooms with a new kind of enduring beauty. Subdued, colored lights reflected from the polished walls. The feet move, with unarrested freedom, over tile-patterned floors and walls and ceiling attract the eye with conventional designs of great beauty, executed in rich, inlaid colors. Here we have lustrous black at the base; above, we have jade and ivory and just a touch of vivid coloring in the conventional designs which break the wall surface into panels. At other points, we have beautiful filigree in the grilles in the corners, above the cased openings or encasing the radiators.

The spacious vestibule through which you enter has walls, floors and ceiling executed in black, jade and ivory with a decorative mosaic in gold, red and blue.

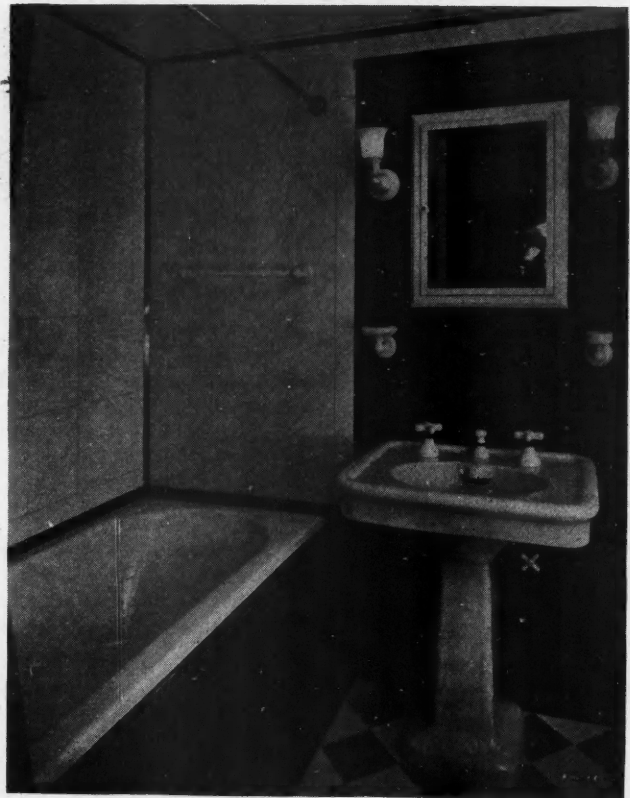
From here you enter a Pompeian room which has a ceiling with an out-of-doors effect, such as might have been found in an ancient bathing pool before Vesuvius buried it. Concealed, overhead lights give a soft brilliance to the room. The walls are finished in black and ivory with decorations in bright colors, but with delicate ornamental details. The floor is of alternate squares of polished and mat surface jade color.

One corner of this room is shown in accompanying illustration.

From here you enter a room which might be a dining room, a directors' room or a fine living room. The walls are a soft gray, paneled in green. The principal decorative motives are carved grilles in the manner of Chinese carv-



The Lustrous Black Below and the Ivory Tint of Wainscot and Walls Are Clearly Indicated in This Picture. Heat from radiators under the windows is vented through artistic grille work. The artistic designs are inlaid in colors.



Walls, Floors and Ceiling of This Bathroom are Attractively Finished with Slabs of a Sanitary Structural Material Which Is Fired Under a Heat of 1400 Degrees Fahrenheit and Which Cannot Be Spotted or Discolored.

ings in ivory, using conventionalized plant and animal forms. The floor is a black and white diamond pattern and the grilles in the corners are backed with mirrors, while, over the casing opening, they seem to be open to the adjoining room.

Beyond these rooms are bathroom and kitchen finished in the same lustrous material, which is also used for lining the refrigerators and cases.

This unique building material is described as a non-porous, acid-proof, opaque material, made in slab form with a fired, polished surface. In its manufacture, feldspar, flourspar, china clay, sand, kryolith, managenese and twenty other minerals are fused under tremendous heat, rolled into slabs of required thickness and tempered in annealing ovens until they become hard as steel, smooth as crystal and strong as granite. The usual thicknesses are  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$  and  $1\frac{1}{4}$  inch.

This material is said to combine the desirable qualities of marble, glass and porcelain and that it cannot warp, swell or pull apart, nor is it possible to mark or write upon it. It is also said to be the easiest of all materials to clean, the stroke of a damp cloth being all that is required to keep it spotless. It cannot be stained or discolored.

These characteristics give it marked sanitary qualities and they also insure that a beautiful interior lined with this material will retain its beauty unimpaired for an indefinite period—beyond the life of the best-built structure. Therefore, in the long run, it is an economical material

to use. It can be had in black, ivory, jade, lavender or pure milk-white.

The method of inlaying the patterns and color decorations is interesting. The material is so hard and dense and so unaffected by acids that the only way in which it can be marked is by powerful sandblast. A service department works out any desired decorative effect and stencils are made of the designs. The sand blasting is done through these stencils and then gone over with special colored lacquers, which leaves the color in the depressions.

Special textures have recently been developed which provide deep texture effects. Just how this is done is difficult to describe, but it involves the use of a special glue which has the effect of separating the crystals and leaving a pattern in the material somewhat similar to the frost marks on a window. Some exceedingly beautiful effects are obtained and the depressions—and consequently the shadows—are quite deep.

This material, in the lustrous finish, has a great variety of uses in the building field, particularly where the best sanitary qualities are desirable; as, for instance, in soda fountains and lunch room counters; as wainscoting and partitions in wash rooms, toilet compartments and shower baths of public and private buildings. It is especially appropriate and pleasing in kitchens and bathrooms of any residential buildings and, for refrigerators, it is said to be the ideal sanitary surface.

Architects and builders are beginning to use it exten-

sively for bank counters, grilles, walls and floors. Ink spots can be instantly removed from it with a wet cloth, leaving no stain. Hospital authorities have found it especially desirable for operating and maternity rooms, in the jade color, as it eliminates the glare of the bright operating lights and gives colors their true value.

For restaurants, confectioneries, barber shops, meat markets and other shop interiors, it is said to have many excellent qualities. It is also recommended for vestibules, dining rooms, sun parlors, breakfast rooms and fireplaces in private dwellings, in addition to its use in bathrooms and kitchens.

The pleasing decorative effects described in this article are not mere fancy. They have been actually worked out and are shown in all the effects mentioned. In fact, the rooms described are those of an actual exhibit on display on the sixth floor of the Chamber of Commerce Building, Chicago, where any visitor can see for himself the wonderfully artistic effects described and attendants are on hand to give any desired information.

This vitreous slab material has been found satisfactory for lavatory tops in ocean liners, because of its resistance to salt water, and is being sold in considerable quantities for this purpose.

Companies that sell and construct installations of this material are located in the principal cities of the United States and foreign countries. Important installations are being made in England, Norway, Mexico, Japan and Australia. In Japan it is used very extensively.



Walls, Ceiling and Floor of This Attractive Kitchen Have the Sanitary Finish Described in This Article, with a Decorated Cap in Bright Colors. A wet cloth will keep the kitchen spottlessly clean at all times, it is said, the finish will never stain, discolor or lose its lustre.



### The Kitchen Exhibit

Husband (to clerk): "Will you show my wife a cooking range, please?"

Clerk: "Pleased to, sir. What kind would you want?"

Husband: "Oh, we don't want to buy. I just want her to see what one is like."



### Dealing in Futures

"Say, Joe, you're a broker, can't you give me a tip?"

"I know something that is now about twenty and within six months I can guarantee it to be over ninety."

"Sounds fine! What is it?"

"The temperature."



### Landscape Expert

A hobo knocked at our front door and asked us if we would be willing to pay 50 cents to improve the looks of our front yard and when we said yes he said he would move down to the next block for half a dollar.



### What a \$3 Ad Did

An Oklahoma girl advertised for a husband, and landed one within a very short time. The advertisement cost \$3. She paid the wedding expenses, \$9. In less than a year the husband died, says the Atchison Globe, and left his widow an \$11,000 insurance policy.

Now will you admit that it pays to advertise?—*Team Work.*



### The Acid Test

He may have a greasy hat and the seat of his pants may be shiny, but if his children have their noses flattened against the window pane a half-hour before he is due home for supper, you can trust him with anything you have.



### Whistle Listeners

Builders' Foreman: "Excuse me, but are you the lady wot's singing?"

Lady: "Yes, I was singing. Why?"

Builders' Foreman: "Well, might I ask you not to hang on that top note so long. The men have knocked off twice already, mistaking it for the dinner whistle."—*Passing Show.*

### Bargains in Paint

Kurt: "Can you tell me how to get green paint off my hands?"

Verne: "Have you tried selling it at a reduced price?"—*B. C. A. News.*



### Dark Ethics

Sambo—Nigger, when's you gwine pay me that \$25 you gave me that note for six months ago. If you don't pay me pretty soon I'se gwine get mad and tear it up.

Rastus—Black boy, if you'se tear that note up you'se gwine have the biggest law suit you ever heard of on your hands, for I'll shore file suit against you.



### It May Deserve It

"My husband is plain spoken, he calls a spade a spade."

"So is mine, but I won't say what he calls the lawn mower."



### Now at Rest

"Was your old man in comfortable circumstances when he died, Mrs. Murphy?"

"No, Mrs. Flanagan, he was half way under a train."



### A Good Selection

Irate Landlord—I'll give you just three days to pay your rent.

Tenant—Thanks. I'll take New Years, Fourth of July and Christmas.



### True to Form

Farmer—An' 'ow be Lawyer Barnes doin', Doctor?

Doctor—Poor fellow! He's lying at death's door.

Farmer—There's grit for 'ee—at death's door an' still lyin'!—*London Humorist.*



It isn't good luck that gets a guy across; the boys who can get by make their own good luck.—*Wood Construction.*



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Pat. March 15, 1921, and Sept. 30, 1924.  
ColorKeed Plan Patent Pending

# COLORKEED

## HOME PLANS

TRADE MARK

*"The Real Estate Man and the Investment Builder Find That Home Buyers Are Getting Particular — They Insist on Quality in Materials and Equipment"*

*—William A. Radford*

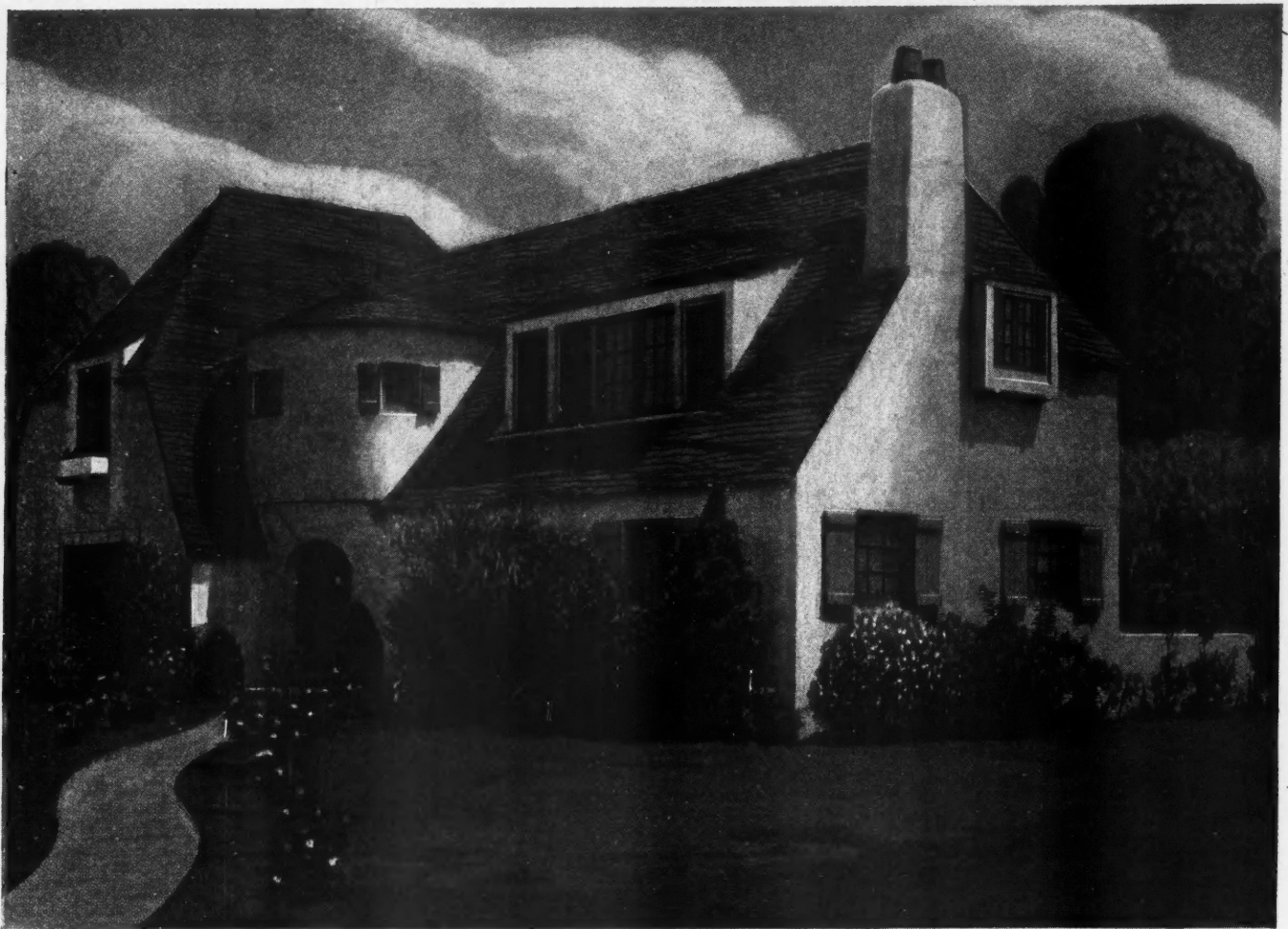
**I**MMEDIATELY following the War when there was an actual shortage in shelter almost any sort of a house found ready sale. But today in most places this is not so. The home shortage has been made up, new home buyers have grown particular. They are interested in the new designs and in the new features of labor saving equipment in the new home. They are willing to pay for style and service. They favor designs that are smart and small—the home that is complete in every appointment.

Interpreting this trend in what the home buyers want we present this collection of ColorKeed Homes. They are salable and livable, a good investment and a satisfaction both to the builder and the buyer.

Several of these ColorKeed Homes have been built as model demonstration homes and they have commanded the instant attention of the prospective home buyers. The standard items of equipment for the demonstration homes which make such homes so attractive to the general public have been included in these ColorKeed Home Plans. You will notice our recommendations for these items of equipment. They are indicated by numbered circles on the floor plans, and the numbers are explained in the accompanying Key.

If you are planning to build either for your own use or for sale it makes no difference, you want to put up a modern, easily salable home, which will increase in value.





## The HUGO

This French Normandy design illustrated in colors above and with ColorKeep Plans on the page opposite is regarded by many as the latest word in smart home style

**I**N the search for novelty in home design public taste has favored in turn the Western bungalow, the Colonial, the Spanish, the English cottage and now is turning to the French. The Normandy design has the round tower entrance at the inner corner with two wings set at right angles, roof prominent, windows square and massive, the entire structure having a heavy, very substantial appearance.

These houses look larger than they really are. The design illustrated above, for instance, measures only 30 x 34 feet and contains six rooms and bath; yet the impression is of a much larger house.

A living room with light on three sides is a delightful

feature of this style house. The living room occupies all of the wing to the right with windows toward the street and to the side and with double French doors opening out into a garden terrace at the rear. This leaves the left hand wing for the dining room, breakfast alcove and kitchen; with the reception hall and stairs occupying the center of the plan.

The second floor works out equally well with one fine large bedroom with windows on three sides and two smaller bedrooms. The bathroom is in the tower.

Studying the ColorKeep Plans we see how clearly each room and every part of this design stands out. This house can be tested in imagination—really lived in

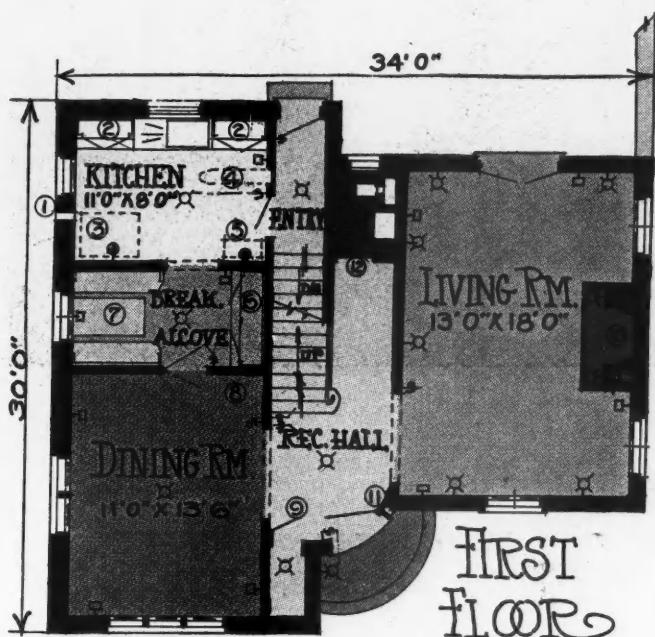
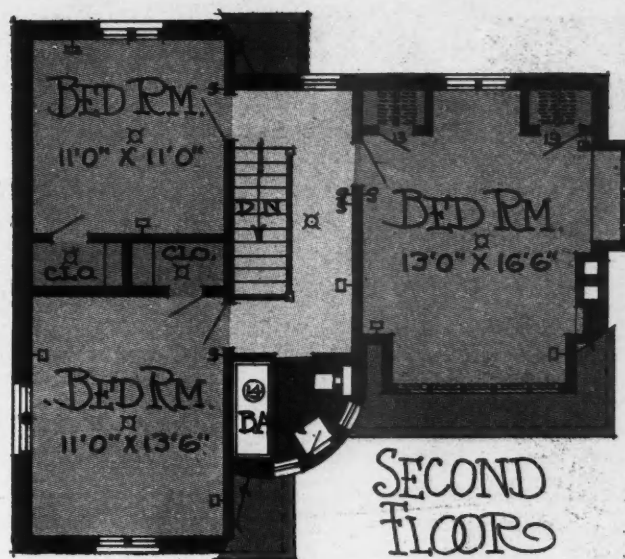


Detail of Entrance

# ColorKeeD Floor Plans of "The HUGO"

before it is built, and that is the advantage of having an architectural plan presented in this unique and exclusive manner. The colors are all explained in the Color Key and the items of recommended equipment are made plain in the Key to Equipment.

Notice in particular the basement plan with its important items of heating plant, of the laundry, etc. The basement is perhaps the most important part of every modern home and the ideas contained in this basement plan can very well be utilized for all of the designs in this book.



## Key to Equipment

- |                               |                     |
|-------------------------------|---------------------|
| ① Ventilating Fan             | ⑭ Electric Ironer   |
| ② Kitchen Cabinets            | ⑮ Laundry Tubs      |
| ③ Range                       | ⑯ Washing Machine   |
| ④ Built-in Ironing Board      | ⑰ Heating Plant     |
| ⑤ Electric Refrigerator       | ⑱ Water Softener    |
| ⑥ China Cupboard              | ⑲ Water Heater      |
| ⑦ Pullman Nook                | ⑳ Coal Chute        |
| ⑧ Thermostat                  | Weatherstrips       |
| ⑨ Mirror Door                 | Electric Panel      |
| ⑩ Fireplace Throat and Damper | Storm Sash          |
| ⑪ Built-in Mail Box           | Screen              |
| ⑫ Mirror Door                 | Lighting Fixtures   |
| ⑬ Efficiency Wardrobes        | Convenience Outlets |
| ⑭ Tub Shower                  | Water Supply System |
| ⑮ Laundry Stove               | Radiant Gas Heaters |
| ⑯ Clothes Drier               | Casement Windows    |

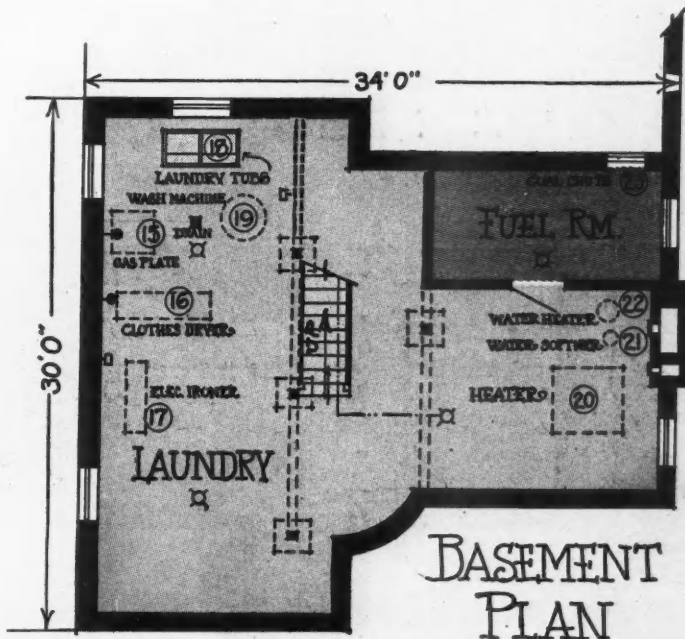
## KEY TO ELECTRICAL SYMBOLS

- CEILING OUTLET    ▣ FLOOR RECEPTACLE  
 ▤ CRACKET OUTLET    ● SPECIAL OUTLET  
 ▥ CONVENIENCE OUTLET    ⚡ SWITCH

## COLORKEED HOME PLANS

### Color Key to Plans

- Living Room
- Dining Room
- Kitchen
- Pantry
- Halls
- Closet
- Bed Room
- Bath and Lav.
- Porch
- Roof
- Basement
- Fruit Cellar
- Fuel Room
- Stairs



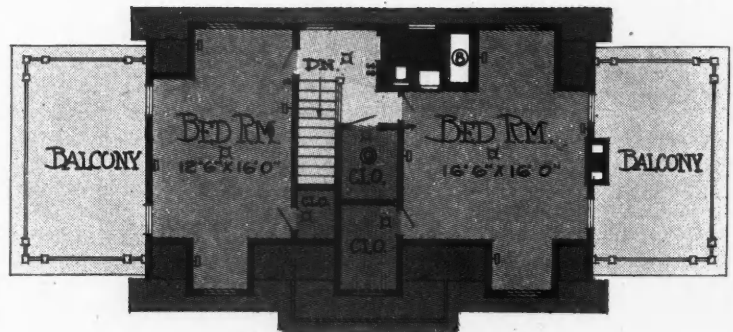


## The HADDONFIELD

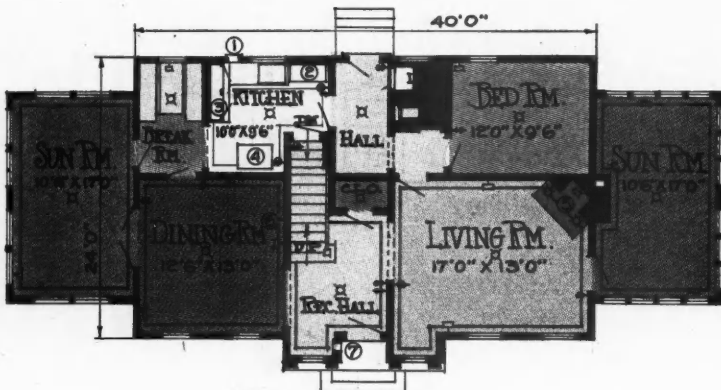
A COLONIAL home of quaint simplicity flanked either side with modern sun rooms of generous dimensions. Six rooms, two baths and an abundance of closet space are provided.

**COLORKEY**  
HOME PLANS  
TRADE MARK

	Living Room		Closet
	Dining Room		Bed Room
	Kitchen		Bath and Lav.
	Pantry		Porch
	Halls		Roof



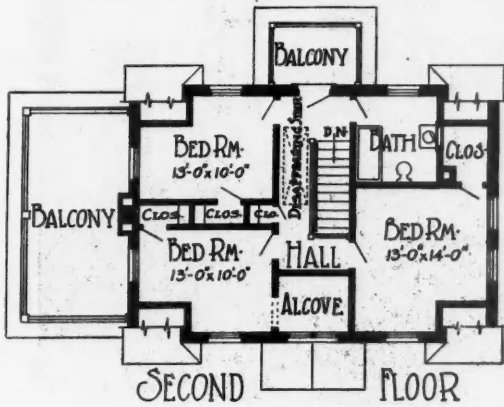
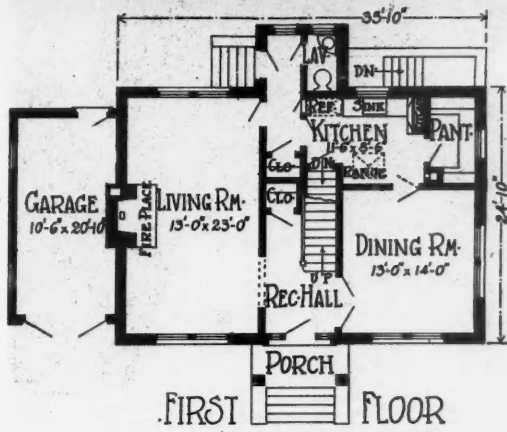
SECOND FLOOR



FIRST FLOOR

### Key to Equipment

- |                               |                     |
|-------------------------------|---------------------|
| ① Ventilating Fan             | Lighting Fixtures   |
| ② Electric Refrigerator       | Convenience Outlets |
| ③ Kitchen Cabinet             | Electric Panel      |
| ④ Range                       | Washing Machine     |
| ⑤ Fireplace Throat and Damper | Clothes Drier       |
| ⑥ Thermostat                  | Coal Chute          |
| ⑦ Built-in Mail Box           | Heating Plant       |
| ⑧ Tub Shower                  | Water Supply System |
| ⑨ Cedar Lined Closet          | Hot Water Supply    |
| Weatherstrips                 | Water Softener      |
| Storm Sash                    | Radiant Gas Heaters |
| Screens                       | Casement Windows    |



## The HAMILTON

A COMPACT city type home with attached garage. Six principal rooms are provided with some very desirable space on the third floor made available by the disappearing stair operating out of the ceiling of the second floor hall. The exterior design of this home follows the approved Colonial style, brightened up with the many-colored shingles and the white trim and blue shutters outlined against the brickwork.



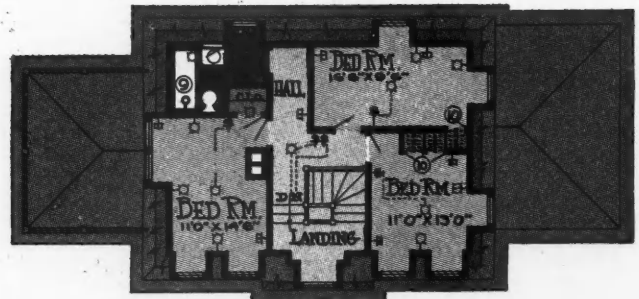


## The HARRISON

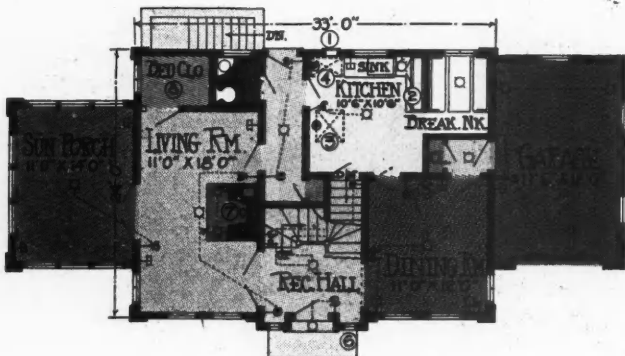
A MODERN French adaptation of the Mansard roof style, for a home of moderate size. The attached garage balances the big sun porch; and six other rooms with all conveniences are provided.

### COLORKEY HOME PLANS TRADE MARK

	Living Room		Closet
	Dining Room		Bed Room
	Kitchen		Bath and Lav.
	Pantry		Porch
	Halls		Roof



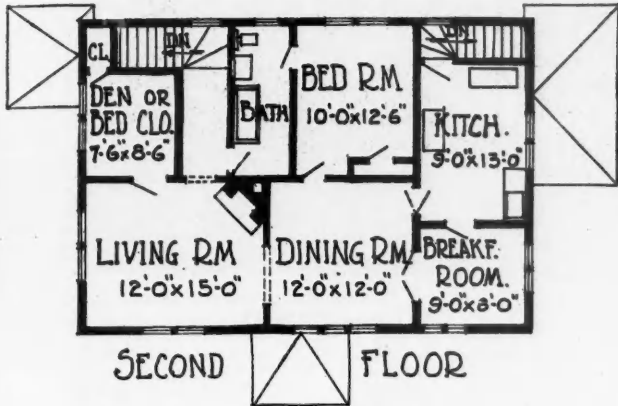
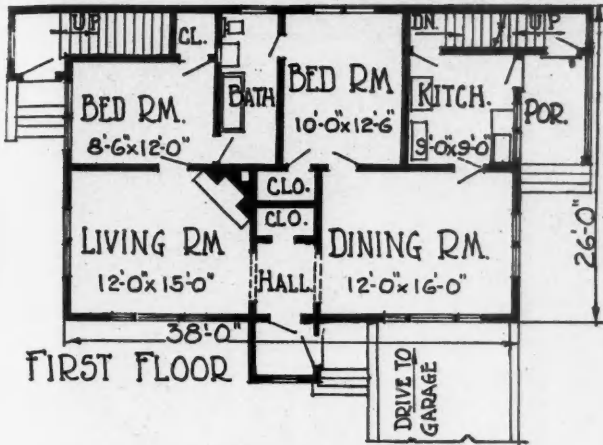
SECOND FLOOR



FIRST FLOOR

### Key to Equipment

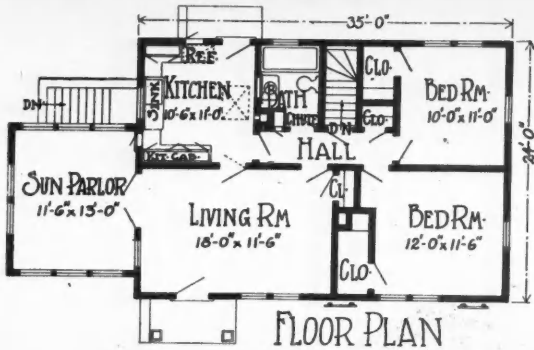
- |  |                     |
|--|---------------------|
| ① Ventilating Fan                      | Screens             |
| ② Kitchen Cabinet                      | Lighting Fixtures   |
| ③ Range                                | Convenience Outlets |
| ④ Electric Refrigerator                | Electric Panel      |
| ⑤ Thermostat                           | Washing Machine     |
| ⑥ Built-in Mail Box                    | Clothes Drier       |
| ⑦ Fireplace Throat and Damper          | Coal Chute          |
| ⑧ Dressing Closet for Disappearing Bed | Heating Plant       |
| ⑨ Tub Shower                           | Water Supply System |
| ⑩ Efficiency Wardrobes                 | Hot Water Supply    |
| Weatherstrips                          | Water Softener      |
| Storm Sash                             | Radiant Gas Heater  |
|  | Casement Windows    |



## The HARTWELL

THIS is a duplex or two-family house with front entrances separated. Five rooms and bath are provided on each floor. The rear stairway is enclosed within the lines of the house. A two-car garage is provided in part of the basement. This building makes an excellent income home which will pay for itself in a few years.



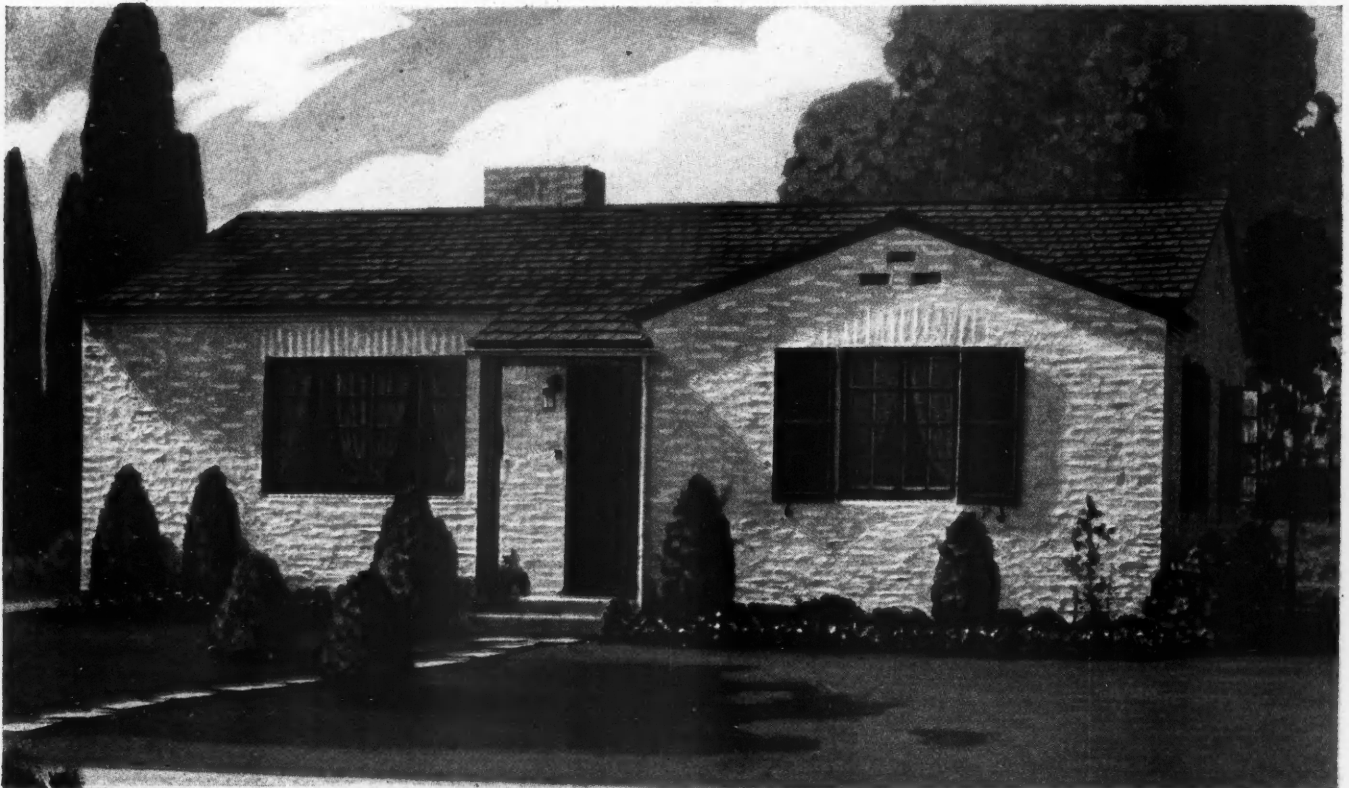
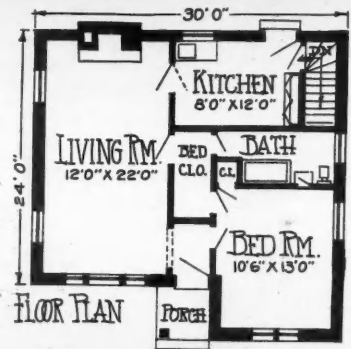


### The HASKELL

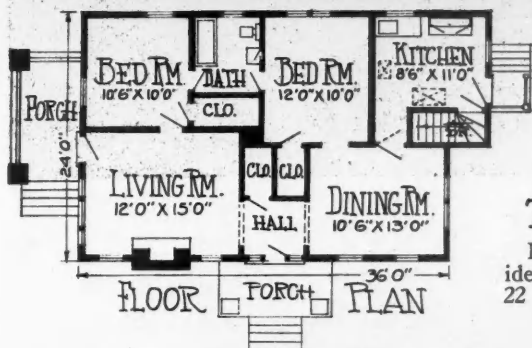
Above and to the left is this beautiful shingled bungalow; four rooms, bath and big sun parlor.

### The HAVEN

Below and to the right is an interesting cottage of whitewashed common brick. Three rooms and bath are arranged to give almost five-room efficiency.





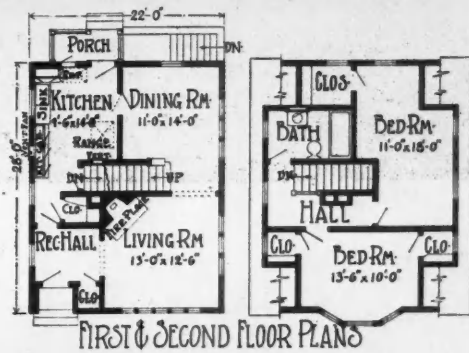


**The HAWLEY**

Above and to the left is a delightful five-room bungalow.

**The HAYWARD**

Below and to the right is an ideal narrow lot five-room home, 22 x 28 feet.



FIRST & SECOND FLOOR PLANS



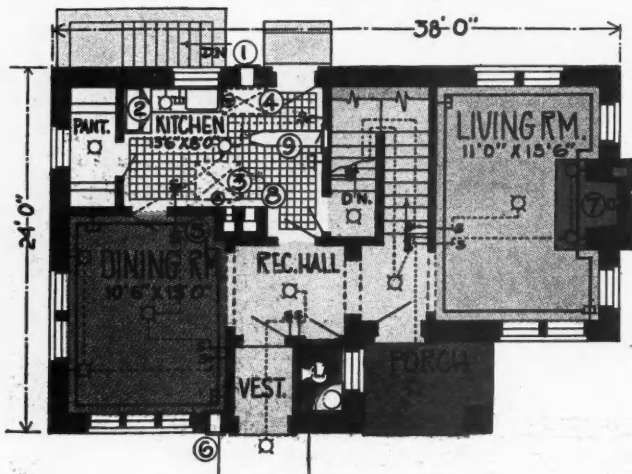


## The HENDRIX

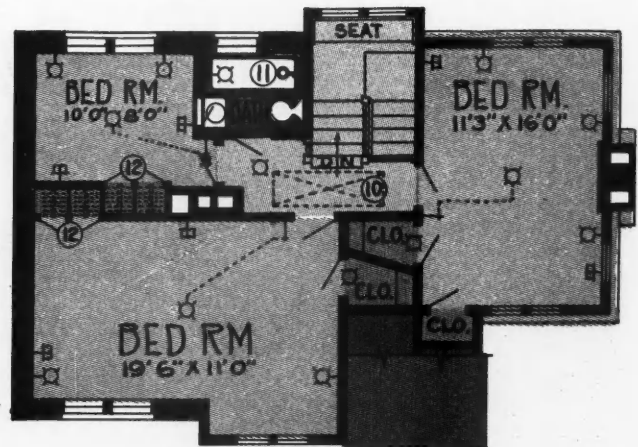
A FINE home with a strong English accent. The brown brick relieved by stone work around the entrance and the gable paneling in timber work and stucco, and appropriately roofed with blue-black natural slate presents a delightful picture. The six large rooms with all modern conveniences make good the promise of the exterior design.

### COLORKEY HOME PLANS TRADE MARK D

- |  |             |  |               |
|--|-------------|--|---------------|
|  | Living Room |  | Closet        |
|  | Dining Room |  | Bed Room      |
|  | Kitchen     |  | Bath and Lav. |
|  | Pantry      |  | Porch         |
|  | Halls       |  | Roof          |

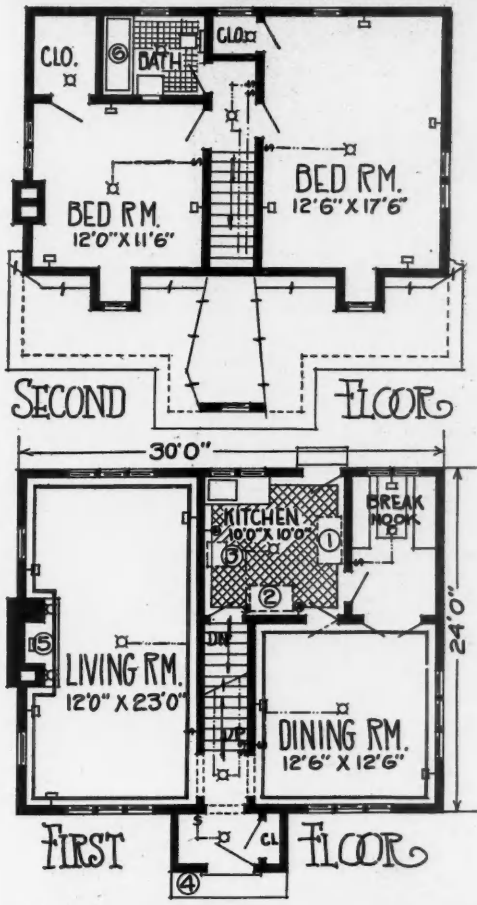


FIRST FLOOR



### SECOND FLOOR Key to Equipment

- |                               |                        |                     |
|-------------------------------|------------------------|---------------------|
| ① Fan Ventilator              | ⑨ Ironing Board        | Electric Panel      |
| ② Kitchen Cabinet             | ⑩ Disappearing Stair   | Washing Machine     |
| ③ Range                       | ⑪ Tub Shower           | Clothes Drier       |
| ④ Electric Refrigerator       | ⑫ Efficiency Wardrobes | Coal Chute          |
| ⑤ Thermostat                  | Weatherstrips          | Heating Plant       |
| ⑥ Built-in Mail Box           | Storm Sash Screens     | Water Supply System |
| ⑦ Fireplace Throat and Damper | Lighting Fixtures      | Hot Water Supply    |
| ⑧ Incinerator                 | Convenience Outlets    | Water Softener      |
|                               |                        | Radiant Gas Heaters |
|                               |                        | Casement Windows    |



### The HEPBURN

THIS is a house of most striking and distinctive appearance often used as a demonstration model home. The tinted stucco over masonry and the brick trim at the corners and around the entrance combine with the casement windows and the multi-colored roof shingles to make an attractive picture. The interior is laid out for five rooms, breakfast nook and bath. The recommended features of equipment are indicated. 1 being a kitchen cabinet, 2 the gas or electric range, 3 the electric refrigerator, 4 the built-in mail box, 5 the fireplace equipment and 6 the popular tub shower.





At any season of the year the sun parlor, conservatory or solarium is a delight, a source of health and well being, and invariably "the most used room in the house." It is the room where the outdoors is brought inside. Photographs above present some good suggestions.

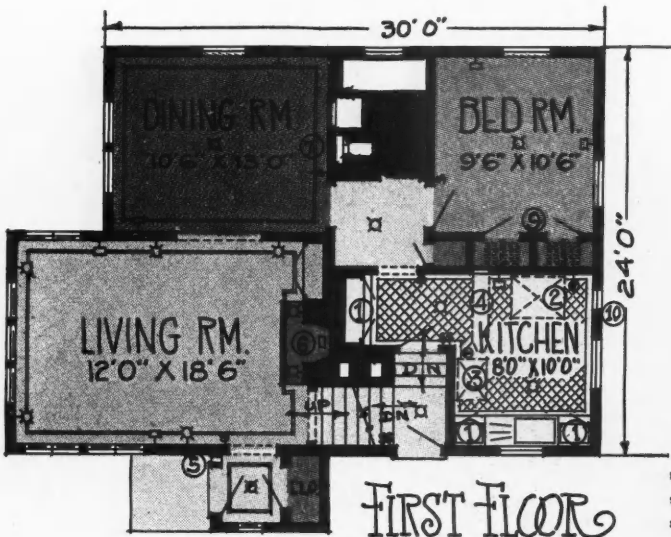


**F**OR the summer season the open porch has an irresistible appeal. We no longer place these toward the street, for no one cares to watch the cars roll by; rather we face the open porch toward the garden with its restfulness and quiet beauty. Whether large or small the new home should have its open porch.



## The HICKORY

THIS is a unique little home of six rooms and two baths. The size is only 24 x 30 feet, plus the sun parlor extension of the living room. The downstairs bedroom and bath make an unusual feature in a home of this size.



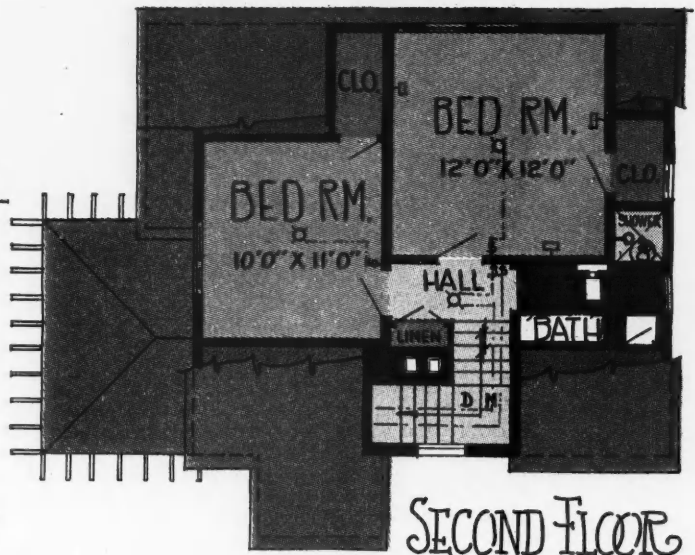
FIRST FLOOR

### Key to Equipment

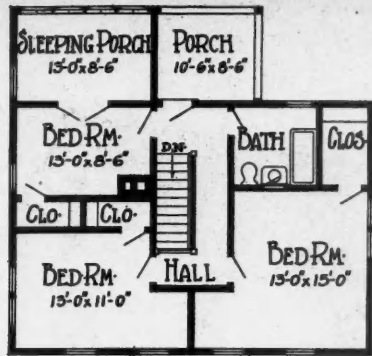
- |                                  |                             |                          |
|----------------------------------|-----------------------------|--------------------------|
| ① Kitchen Cabinets               | ⑥ Shower Bath               | Washing Machine          |
| ② Range                          | ⑦ Efficiency Ward-<br>robes | Clothes Drier            |
| ③ Electric Refrig-<br>erator     | ⑩ Ventilating Fan           | Coal Chute               |
| ④ Ironing Board                  | Weatherstrips               | Heating Plant            |
| ⑤ Built-in Mail<br>Box           | Storm Sash                  | Water Supply Sys-<br>tem |
| ⑥ Fireplace Throat<br>and Damper | Screens                     | Hot Water Supply         |
| ⑦ Thermostat                     | Lighting Fixtures           | Water Softener           |
|                                  | Convenience Outlets         | Radiant Gas Heaters      |
|                                  | Electric Panel              | Casement Windows         |

## COLORKEY HOME PLANS TRADE MARK

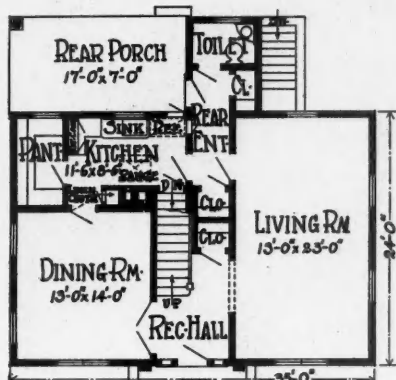
- |  |             |  |               |
|--|-------------|--|---------------|
|  | Living Room |  | Closet        |
|  | Dining Room |  | Bed Room      |
|  | Kitchen     |  | Bath and Lav. |
|  | Pantry      |  | Porch         |
|  | Halls       |  | Roof          |



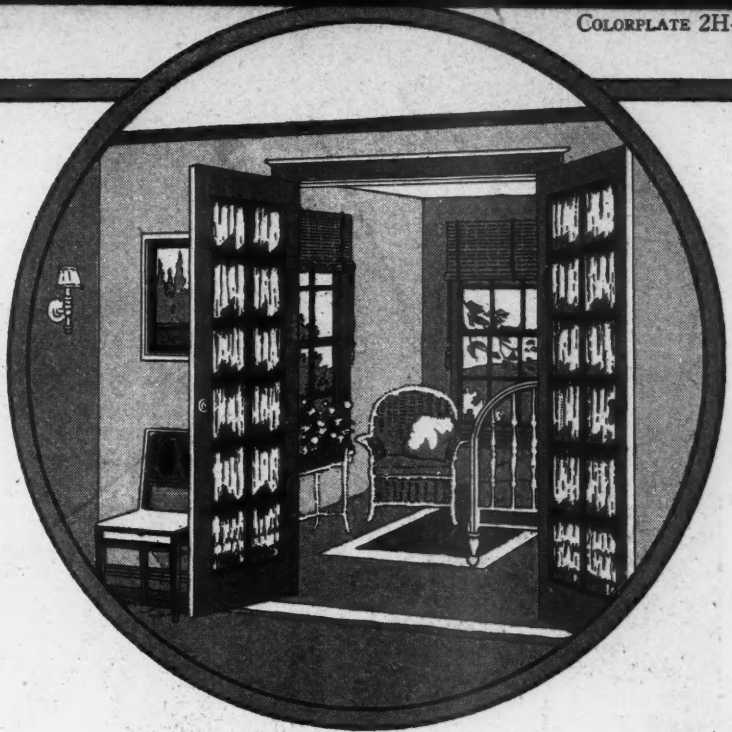
SECOND FLOOR



SECOND FLOOR



FIRST FLOOR



### The HOBART

A BEAUTIFUL and dignified Colonial home, 24 x 35 feet for the main house. Six large rooms and bath are provided besides the sleeping porch. The arrangement follows the approved Colonial lines with central reception and stair hall, living room to one side and dining room and kitchen to the other. The sketch above gives a glimpse of the sleeping porch opening with double doors from the rear bedroom.



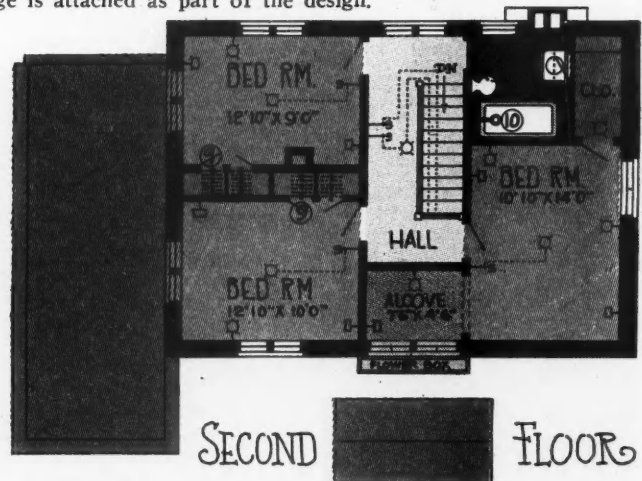
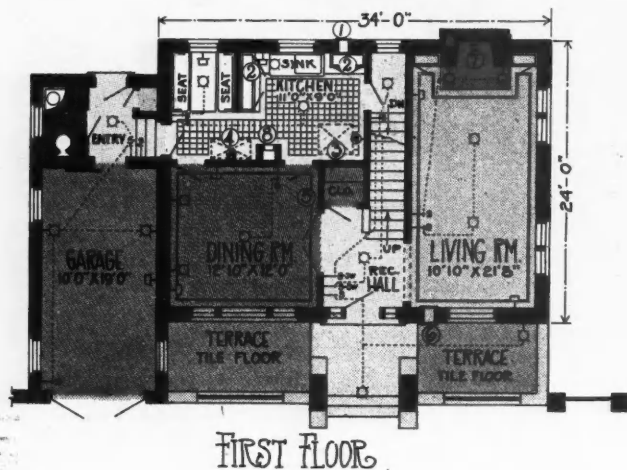


## The HIALEAH

A VERY interesting Spanish type home such as is favored in the American Tropics. While the exterior is foreign, the interior is modern American in the very latest sense. Six rooms and bath are provided and the garage is attached as part of the design.

### COLORKEED HOME PLANS

- |  |             |  |               |
|--|-------------|--|---------------|
|  | Living Room |  | Closet        |
|  | Dining Room |  | Bed Room      |
|  | Kitchen     |  | Bath and Lav. |
|  | Pantry      |  | Porch         |
|  | Halls       |  | Roof          |



### Key to Equipment

- |                               |                          |                     |
|-------------------------------|--------------------------|---------------------|
| ① Ventilating Fan             | ⑨ Efficiency Ward- robes | Clothes Drier       |
| ② Kitchen Cabinets            | ⑩ Tub Shower             | Coal Chute          |
| ③ Range                       | Weatherstrips            | Heating Plant       |
| ④ Electric Refrigerator       | Storm Sash               | Water Supply System |
| ⑤ Thermostat                  | Screens                  | Hot Water Supply    |
| ⑥ Built-in Mail Box           | Lighting Fixtures        | Water Softener      |
| ⑦ Fireplace Throat and Damper | Convenience Outlets      | Radiant Gas Heaters |
| ⑧ Incinerator                 | Electric Panel           | Casement Windows    |
|                               | Washing Machine          |                     |





*The French Cottage Affords an Excellent Model for the Development of a Charming Home Design*

**T**HE present trend of popularity is toward the French style of architecture, adapted to modern American requirements, and here, in Our Front Cover Home, is presented an excellent example of what this adaptation can produce when handled by a skilled designer. The exterior is wholly in the spirit of the French style for, though the round, tower-like corner is distinctly Norman, it is in no manner out of harmony with the strictly French character of the design.

There is something rather refreshing about a home of this sort after the extensive, not to say excessive, use of the Spanish or Mediterranean style which has swept over the country during the past few years. Nor does its sole value lie in this contrast for its fundamental simplicity and graceful lines assure the owner that his home will always possess enduring charm. It will never appear old fashioned for it is truly artistic and the truly artistic is always in fashion.

In spite of its simplicity, this home can never be accused of plainness for there are a number of ornamental touches

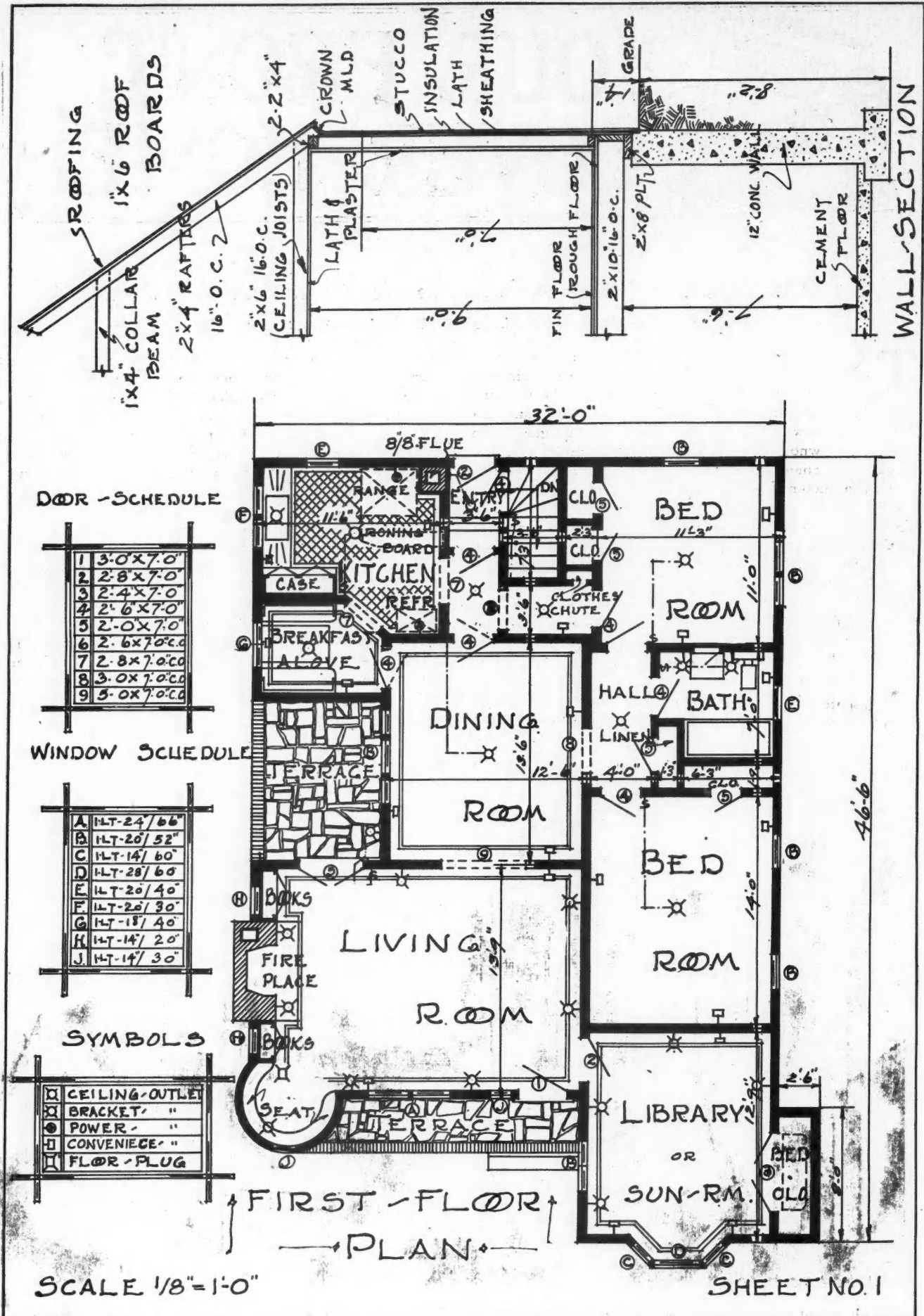
adding much to the charm of its exterior, the deeply recessed casement window in the tower, the long French windows of the living room, small leaded panes, the tiny dormers breaking the roof, the cupola and interesting chimney pot, and the wood grill beside the front entrance.

This entrance as well as that from the flagged terrace at the side, opens directly into the living room where a home-like atmosphere is created by the open fireplace, built-in bookcases and cozy seat set into the towered corner. Opening off this room is another which on the plan is marked "library or sun room," but which, with its bed closet, may be called upon to serve as an auxiliary sleeping room.

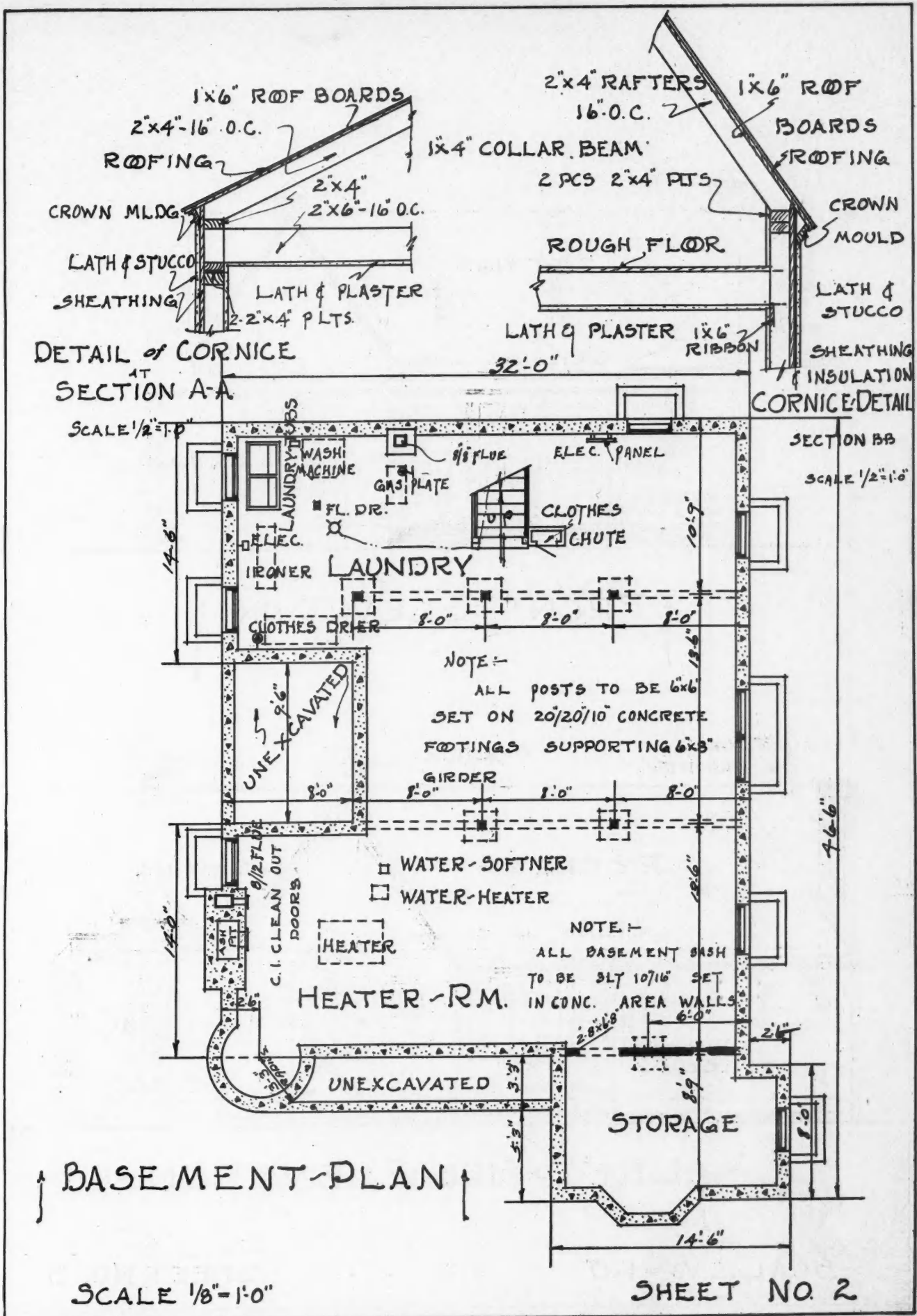
The two regular bedrooms are reached through the dining room and a hall giving access, also, to the bath while beyond the dining room, at the rear, we find a breakfast alcove, kitchen, rear hallway and entrance and the basement stairs. On the whole the plans, illustrated on the pages which follow this, will meet every need of the average family.



This Front Cover Home, in the French Style with a Touch of the Norman in the Towerlike Corner, Offers the Prospective Builder an Opportunity to Get Away from the Commonplace and Achieve a Home Both Beautiful and Distinctive.



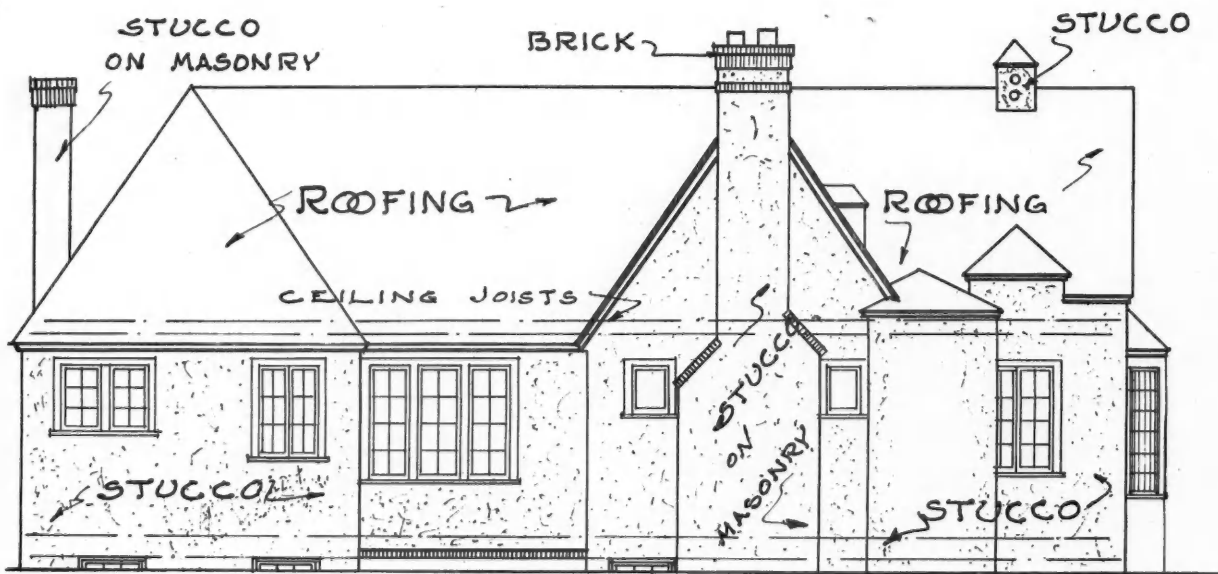
Here Is Offered a Floor Plan for Our Front Cover Home Together with a Sectional View Which Shows the Construction of Foundation, Walls, Floors and Roof.



The Basement Plan and Cornice Details Should Prove Interesting to Any One Planning to Build While Further Information Can Be Had from the Following Pages.



↑ FRONT-ELEVATION ↑

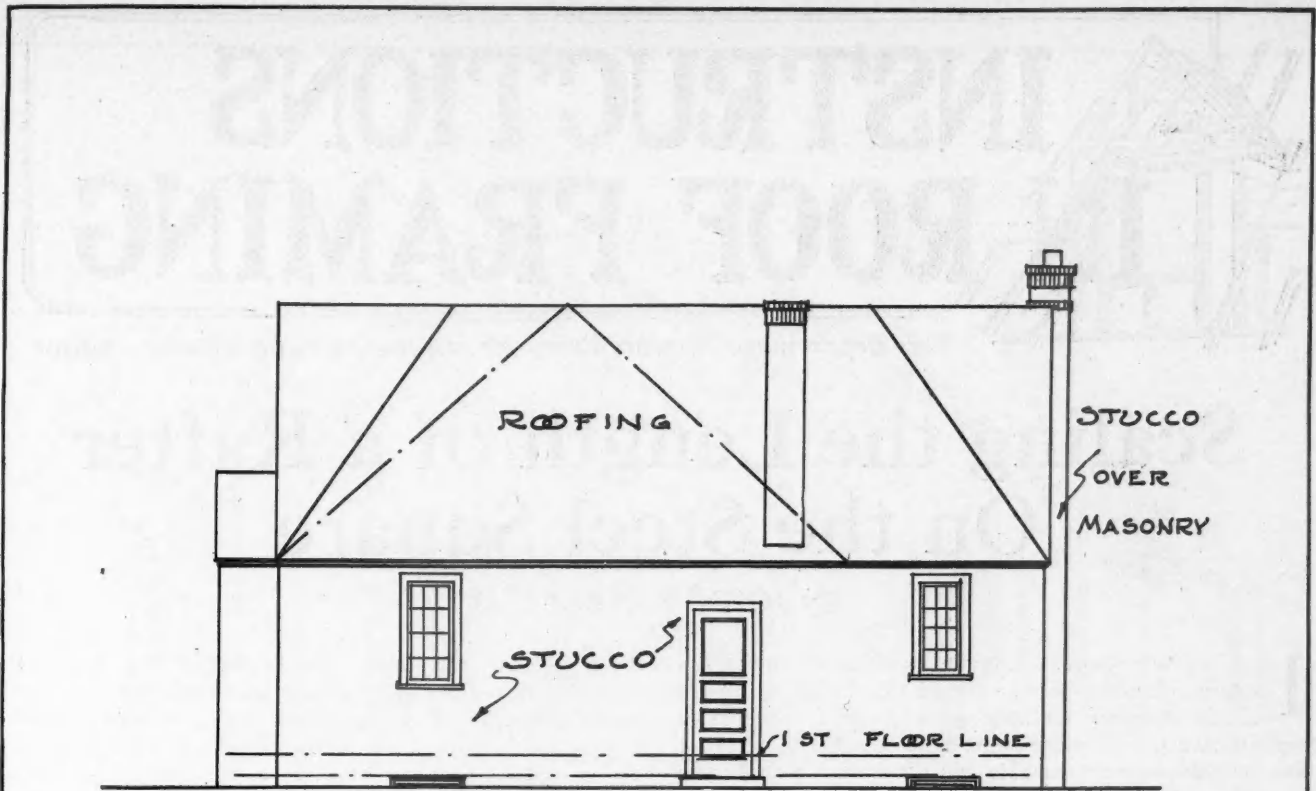


↑ LEFT-SIDE-ELEVATION ↑

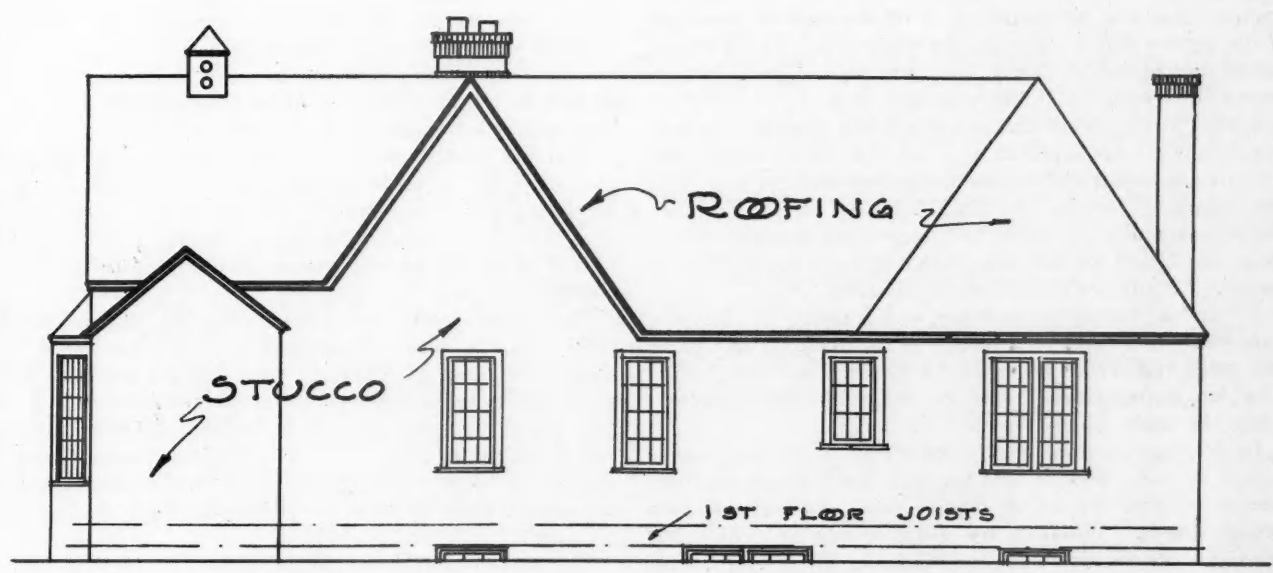
SCALE 1/8" = 1'-0"

SHEET NO. 3

Front and Left Side Elevations of Our Front Cover Home Bring Out a Number of Important Structural Points as Well as Giving Idea of the Form of the House.



↑ REAR - ELEVATION ↓



↑ RIGHT - SIDE - ELEVATION ↓

SCALE 1/8" = 1'-0"

SHEET No. 4

With the Rear and Right Side Elevations This Series of Plans, Drawn to Scale, Is Completed.



# INSTRUCTIONS IN ROOF FRAMING

*This Department Appears Every Month in American Builder—Editor*

## Scaling the Length of a Rafter On the Steel Square

By JOHN T. NEUFELD

**I**N a previous lesson different methods of finding the lengths of rafters were referred to. In all, about five or six different methods were given. In order to explain each one of these methods in detail it is necessary that we take a direct example and illustrate the application of each method. The simpler methods must be taken up first.

The illustration of the framework for the combination roof which we show is drawn somewhat out of proportion. That is, the rafters are not placed so close together as they would be placed on an ordinary roof. We have done this in order to keep the drawing more clear.

By scaling the length of a rafter we mean to measure across the steel square to find the length of the rafter. In doing this, one foot is represented by one inch on the square. The run of the rafter is represented on one arm of the square and the rise on the other arm. The distance across the square between the two points gives us the length to a scale of 1 inch equals 1 foot.

Rafter "A" in the illustration has 2-foot run and a 1-foot rise. In this case the run and the rise are so small that we can use actual dimensions for measuring the length on the square. That is, we take 24 inches on the body of the square and 12 inches on the tongue and measure across to get the length of the rafter which in this case is  $26\frac{13}{16}$  inches. This is the actual length of rafter "A."

Rafter "B" has a run of 4 feet and a rise of 6 feet. We have, therefore, taken four inches on the blade of the square and measured across the square between these two points. The length measures  $7\frac{3}{12}$  or scales 7 feet 3 inches, using the scale 1 inch equals 1 foot.

In scaling the length of a rafter it is well to use a square or rule that is divided into twelfths of an inch because one-twelfth of an inch is then equal to one inch actual length. Whereas, by using a rule in which the divisions are in sixteenths of an inch, the actual length has to be figured out.

Rafter "C" has a run of 8 feet and a rise of 8 feet. Therefore, we measure the distance between the 8-inch point on the body and the 8-inch point on the tongue of the square. The distance is  $11\frac{4}{12}$  inches. Therefore the rafter length is 11 feet 4 inches.

Rafter "D" has a run of 12 feet and a rise of 12 feet. Therefore we measure between points twelve and twelve on this square. As this length measures 17 inches, the length of the rafter is 17 feet.

At the bottom of the sheet we have shown how the

rafter "J" may be scaled. We have used two squares to illustrate this. The first square represents the two horizontal dimensions forming a right angle. A second square represents the run of the valley rafter and the rise of the valley rafter. The distance measured across the points eight and eight on this square gives the length of the valley rafter to the center of the ridge.

The cutting of this valley rafter will be taken up in a discussion later on in connection with hip rafters.

### Laying Out the Cuts for Rafters A and B

Rafter "A" has a one-foot rise in two feet of run or in other words a 6-inch rise per foot run. Therefore the numbers 6 and 12 on the square will give the top cut for this rafter. The cut at the lower end of this rafter where it joins the rafter "B" however, must be obtained in a different way. We have illustrated in the lower left-hand corner of the sheet how the two pieces of material may be laid on a steel square in order to obtain the cut at the joint of these two rafters.

Here the smaller piece is first laid across the square so that the edge of each coincides with the points 12 and 6 on the square. Then the piece for the lower rafters is laid over the square so that its edge coincides with the points 12 and 18 on the square because this rafter has an 18-inch rise per foot run.

The rafter pieces are placed over the square in this manner in the same position as they would be on the roof, that is, the point at which they cross forms the same angle as is made by the rafters in actual construction. If we now mark the crossing points of each edge, that is, mark where the upper edge of the lower rafter crosses the upper edge of the short rafter and also mark where the lower edge is crossed, then we have the points to which the cut must be made.

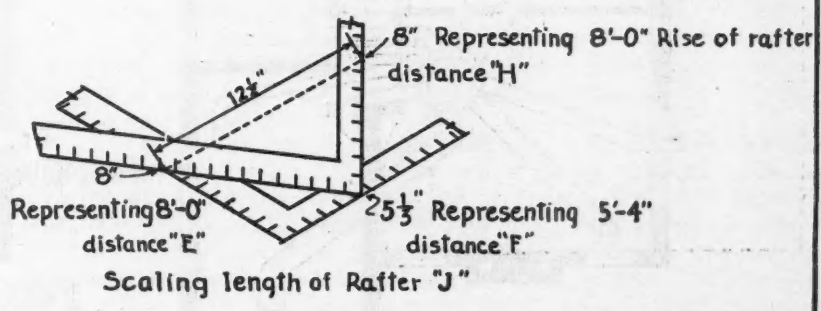
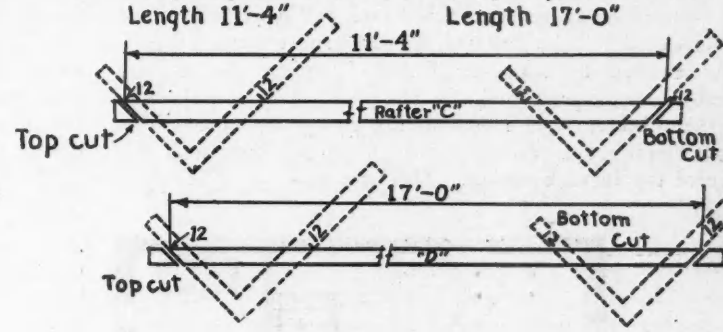
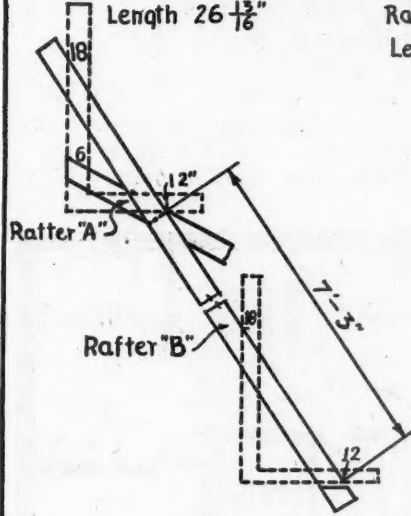
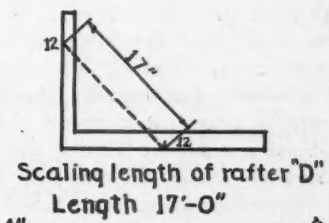
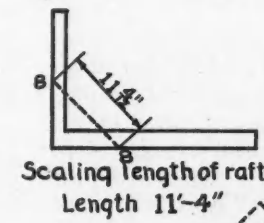
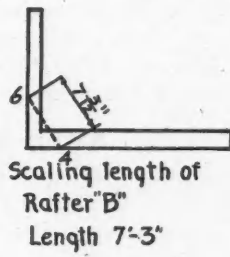
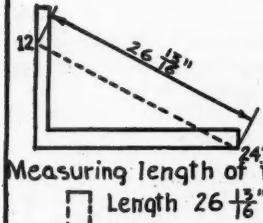
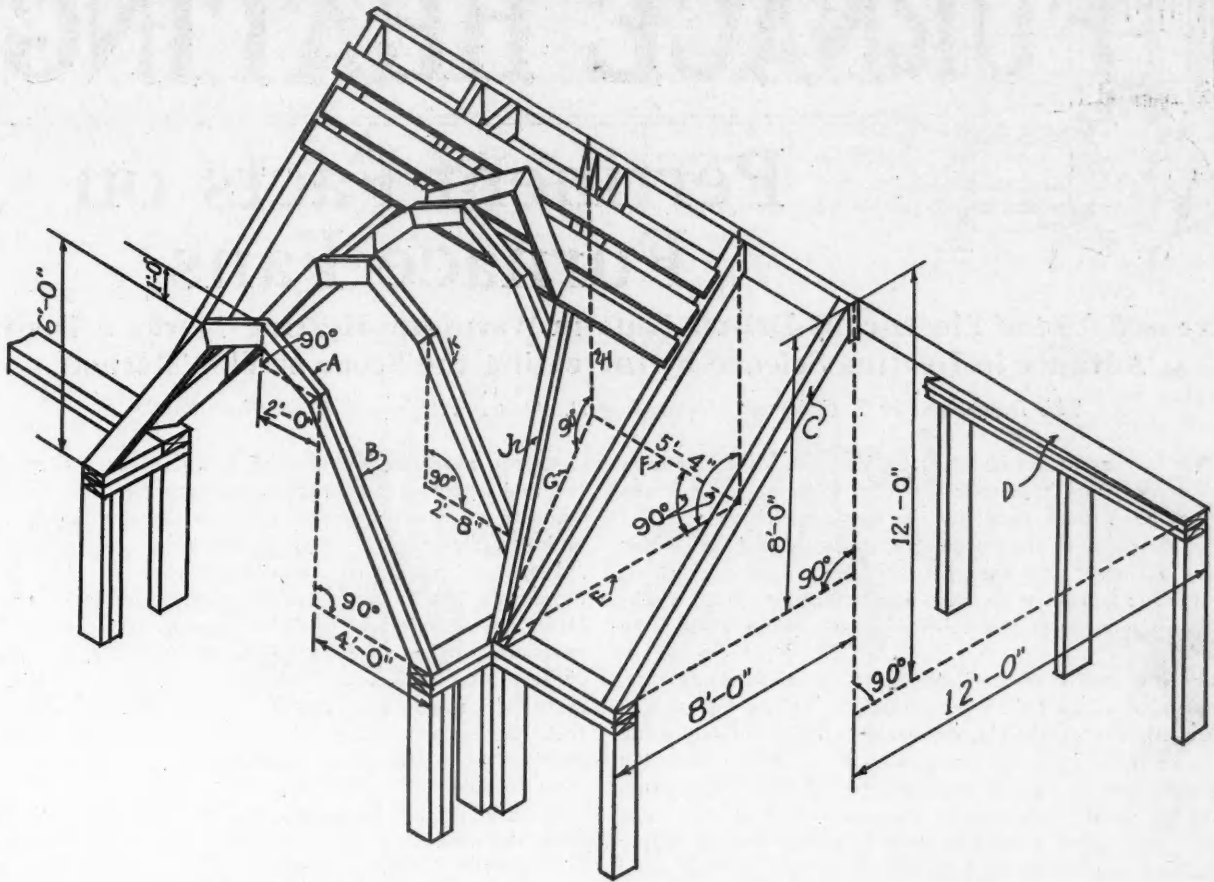
The cut at the lower end of rafter "B" is laid out by using 12 inches on one arm of the square and 18 inches on the other arm, as the rise per foot run is 18 inches.

### Cuts for Rafters C and D

Rafter "C" rises 8 feet in 8 feet of run. Therefore, it has a rise of one foot or 12 inches per foot run. The numbers 12 on the body and 12 on the tongue of the square therefore will lay out the top and bottom cuts for this rafter.

Rafter "D" rises 12 feet in 12 feet of run. Therefore

*(Continued to page 152)*



**FINDING LENGTH OF RAFTERS BY SCALING ON THE SQUARE**

Rafters in the Construction Illustrated Above and How to Find Their Proper Length by Means of Scaling on the Steel Square.



# FURNACE HEATING

## Pertinent Facts on Furnace Fans

**Increased Use of Electrically Driven Fans in Warm-air Heating Marks a Distinct Advance in Heating Science by Increasing the Scope of This Method**

*This Department by R. C. Nason, Heating Expert, appears every month in American Builder*

**T**HE current trend favoring the use of electrically driven fans in connection with furnaces is an omen of good times ahead for this method of heating. Not only is the scope of the furnace increased thereby but better heating at lower cost may be had. These considerations, among others, promise to make booster fans standard equipment and in universal use before many years shall have passed.

Take the matter of fresh-air supply as a single feature. Unless a fan is used the opening to the cold-air box should be towards the northwest, or direction of prevailing wind. When so faced it is not unlikely that on certain days the air supply will be almost negligible. Circulation, therefore, it will be noted, is dependent to some extent on favorable winds. Yet, when a mechanical fan is used the air supply is positive regardless of how strong is the outside wind or in what direction it blows.

No new principles are involved in the application of fans in furnace heating, but rather the readaptation of an old principle, that forming the basis of hot-blast heating, so widely prevalent a quarter of a century ago. In the hot-blast method the heating agent is a bank of steam coils or sections. The air supply is drawn or blown over the hot sections by large, mechanical fans and delivered, to the various rooms to be warmed, through sheet metal ducts.

As applied to warm-air furnace heating the heating agent is the furnace and the warm air is driven through the heat leaders and risers to the rooms by means of a small electric fan placed in the air supply duct near the base of the furnace casing. The heat may be driven long

distances, a feature not true of furnaces when there is no fan, and when several forced-air furnaces are used they may compete successfully with unit heaters employing steam or hot-water as the heating element.

Instances are by no means rare where large, rambling structures like country clubs, suburban estates and old farms are successfully heated by the warm-air method and cases are on record of installations involving heat leaders 75 feet long and return air pipes of similar length. Installations minus fans require leaders to be less than 30 feet long, which tends to confine the heating range of such plants to structures whose maximum dimension is not over 60 feet.

If buildings are large or rambling, two gravity furnaces may be needed, each performing one-half of the work. The advent of the fan furnace, therefore, has opened to warm air a class of heating not generally considered within its range. In this field might be included industrial buildings, garages, clubs, shops, car sheds, warehouses, stores, multi-family houses and similar buildings.

### Saving in Cellar Space

Considerable saving in basement space may be had with fan-equipped furnaces as compared with gravity plants. The accompanying illustration, Fig. 1, shows how a mechanical fan may be attached to an existing furnace system which originally has been installed in the center of the basement floor to equalize the length of leaders. The design shown is a familiar sight to most readers.

The plant occupies the most valuable portion of the

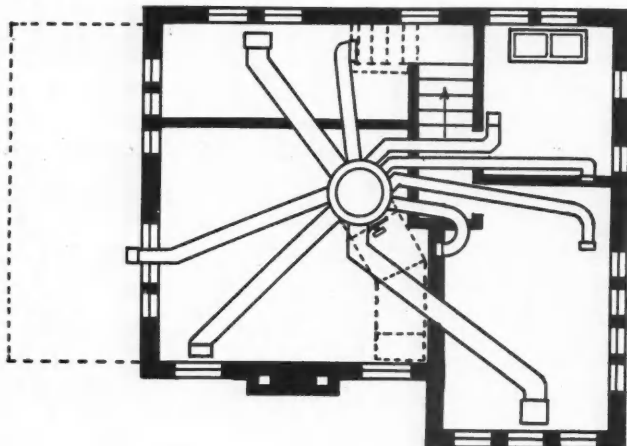


Fig. 1. Plan of a Typical Warm Air Gravity System Equipped with a Furnace Fan to Increase the Efficiency and Heating Capacity of the Furnace.

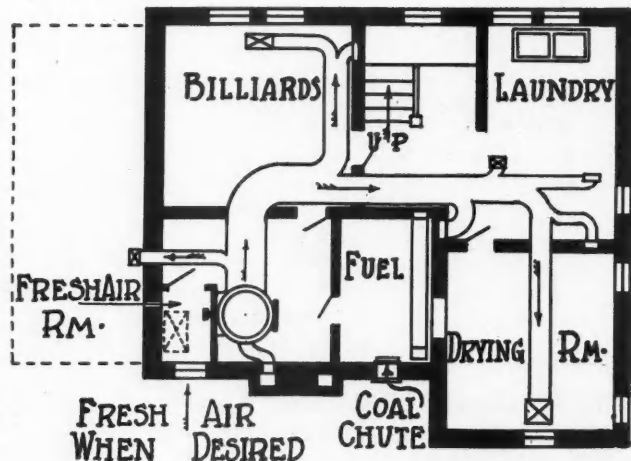


Fig. 2. A Modern Forced Air System Equipped with a Furnace Fan and a Rectangular Trunk Line Duct Close to the Ceiling and Out of the Way. Note the position of the furnace.



cellar and its distributing ducts lead in all directions. This method of arrangement is practically a necessity. The warm-air leaders emerge from the furnace bonnet and pitch upward to the base of the stacks, or first-floor, registers. The plant is centered not from convenience but from the practical reason that the central position minimizes length of piping runs and permits delivery of the heat to all parts of the house.

Notice Fig. 2 by comparison. Here the furnace is located in a corner near the coal bin and a rectangular, warm-air trunk duct, installed close to the ceiling, carries heat to branch pipes which, in turn, feed heat to stacks in the manner shown in Fig. 1, but with great economy in head room. As the heater is placed in a separate room other parts of the basement may be used for billiards, a laundry and a clothes drying room.

## A Cherished Hope Realized

The rectangular warm-air duct close to the ceiling has long been a cherished desire of furnace installers, but only in rare instances have installers ventured the arrangement because the great frictional resistance of the rectangular ducts reduces the temperature of the heat supply as well as its volume. When a fan is connected to the system, however, frictional resistance of the ducts may be overcome easily without substantial loss in efficiency. The distributing system resembles that of a planing mill exhaust or a hot-blast system. Branch duct sizes, their design and location are scientifically worked out to provide delivery into each duct of the portion of the total supply required to warm the particular rooms to which they are connected.

## A Cool House in Summer

One of the often expressed hopes of engineers is the cooling of buildings in summer. The end sought in both heating and cooling is that of human comfort and, it might be added, one is as logical and sensible as the other. Summer cooling may be obtained by use of the mechanical fan. Connected as it is in furnace heating to the piping system, which reaches practically all rooms, the distributing system may be used in summer for cooling merely by operating the fan. A current of cool air is driven into all rooms and cooling accomplished in this way. Thus the equipment becomes an all-year-round plant. No other method of heating can offer this inducement, not even the piped, gravity, warm air plant without a fan.

A cardinal factor in any system of heating is correct distribution of warmth. Steam and hot water plants are designed to throw up curtains of heat at or near sources of heat loss, principally windows and entrances. Both of these methods of heating are effective, as is generally known. The method of warm air heating is somewhat different in that the supply of heat is delivered into the rooms through registers, usually located at interior points. The supply passes to the ceiling first, then drops to the floor as it cools. As the room is under a slight outward pressure heat loss through exposed walls and windows is over-

come. When properly designed there is no better method. In all cases, nevertheless, circulation of heat is of the utmost importance.

One of the criticisms most often directed against the warm-air method of heating is that of weak, incomplete circulation. That is, the warm-air supply is liable not to reach all points of the rooms such, for example, as windows and exposed walls. The remedy employed to correct faulty circulation is the addition of another warm-air leader or a return-air grille and its piping, at the critical points to provide for the withdrawal of the cold air and offer additional heat.

It is significant that at present "sick" furnace installations

are often "cured" by means of the installation of a mechanical fan to boost the circulation and exhaust the cool air from the rooms inadequately warmed. This is evidence of the value of the mechanical fan. As with the Orientals, whose doctors are paid a retaining fee to keep their patients well, if the furnace fan can "cure" "sick" furnace installations surely the time is not far distant when these devices will be universally installed in the beginning to prevent

## Where the Heating Dollar Goes

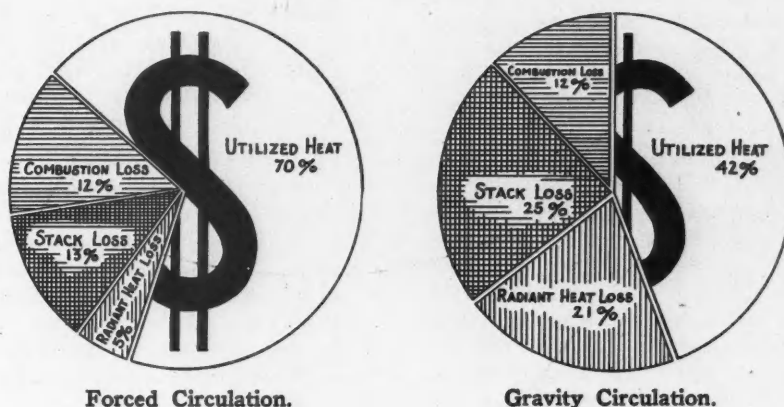


Fig. 3. With Forced Circulation 70 Per Cent of Every Dollar Spent for Fuel Is Utilized and but 30 Per Cent Is Wasted. With gravity circulation only 42 per cent of the heat is utilized while 58 per cent is wasted.

shortcomings in design before they occur.

## The Automatic Thermostat

Heating science has come more and more to recognize the value of automatic thermostats for regulating the heat supply. Unless such regulators are used in fan installations it is necessary to start the fan by hand operated switches placed in living rooms or at other points. When heat is required one snaps the switch and starts the furnace fan. Similarly, when the rooms become too warm the switch is again operated, if one is not too busy to attend to it, or does not forget it, and the fan motor is stopped, thus diminishing the heat supply.

The modern way is to permit mechanical apparatus to do this duty, and this involves the automatic thermostat. This instrument has a thermometer and is set by hand at from 68 to 70 degrees. When this temperature is exceeded by two degrees the fan motor is automatically stopped and when room temperature becomes lower than two degrees below the temperature at which the thermostat is set the fan is automatically started. It is asserted on good authority that regulators effect a fuel saving of something over 15 per cent per annum.

The forced circulation system, with automatically controlled fan, may mean substantial economy as compared with a hand-operated gravity plant. Without mechanical circulation about 12 per cent of the heating dollar is wasted by incomplete combustion, 25 per cent more goes up the flue in smoke or is lost by radiation from the chimney, from heating stacks and from similar causes. Further loss of heat, to the amount of about 21 per cent, occurs in the cellar through radiation from the heater, bonnet and warm-air pipes, with the result that only about 42 per cent of a dollar's worth of fuel actually goes for heating.

By contrast in the automatically controlled, furnace fan

system combustion loss is about the same but chimney loss is reduced to about 13 per cent because of more efficient transmission of heat from the combustion chamber of the furnace to the air supply passing over the hot surfaces. Basement loss is reduced in a like manner to about 5 per cent because of more rapid circulation of air supply, with the net result that almost 70 per cent of the fuel dollar is utilized. How this looks graphically is shown in Fig. 3.

It is the aim of heating installers to keep down the temperature of the heat delivered at the registers and increase its volume so that the total number of heat units supplied will be the same. It was formerly the custom to deliver the warm-air supply through the registers at 225 degrees or higher. From this fact came the odious name of "hot air" as applied to furnace heating. The folly of this, in the rapid deterioration of the furnace and in other directions, became known several years ago, consequently of late it has been the aim of installers to restrict the temperature of the warm-air supply to 180 degrees or lower, increasing its volume correspondingly to supply adequate warmth.

That high temperatures usually mean an inefficient heating plant was demonstrated by certain tests made at the University of Illinois and described in its Bulletin 120 wherein it is asserted that the efficiency of warm-air furnaces at register temperatures of 180 degrees is 60 per cent and at 220 degrees only 47 per cent.

The loss in efficiency is due to two chief causes, loss of heat through the stack and by radiation through the furnace casing and the warm air pipes. In another bulletin from the same source we learn that it is possible to obtain 70 per cent efficiency through the use of a booster fan as against 58 per cent by gravity flow at register temperatures below 190 degrees.

In another series of tests on the subject it appears that a certain furnace at a given register temperature was made to provide 328,000 B.t.u. (heat units) with forced circulation, as against 114,000 B.t.u. with natural circulation. This condition is, of course, extreme performance because the air supply was tripled, but it is shown that with one-half of the first volume, or an increase of only 40 per cent over that of gravity plant, we should have a corresponding increase in heat units over those provided by natural circulation.

Building owners who have hesitated to install warm-air systems equipped with fans by reason of the added initial investment need not do so when it is demonstrated that their cost is made up several times over in lessened fuel expense and longer life of the plant. Occasionally it is declared that when fans are to be used a smaller plant can be installed to accomplish the same results as would be gained from a larger furnace operated on the gravity circulation plan. Caution would best be exercised on this point for it is not recommended that the plant be a smaller one when fan fed. It is true that equal results may be secured with a smaller plant through use of the fan but should repairs to the fan motor be required—and like most mechanical things repairs may be expected—and the fan be unable to operate there would best be sufficient capacity to operate the heater as a gravity unit.

It is, therefore, suggested that the size of plant be estimated on the same basis as a gravity installation. With the fan connected there then remains reserve capacity and the system will be adequate for any emergency. It might be recalled, too, that a heater with a little reserve capacity has longer life, less likelihood of burning out, lower register-air temperatures and other advantages.

The fan, while a valuable assistant, cannot accomplish the impossible, nor is it a cure-all for any and all furnace system ills. When confined to its duty of providing positive flow of heat regardless of exterior weather conditions,

offering greater plant economy, reduced fuel costs and a more flexible unit, ready to respond to changing heat requirements, a mechanical fan will usually live up to expectations.



### Instructions in Roof Framing

(Continued from page 148)

it also has a 12-inch rise per foot run and the numbers 12 and 12 taken on the square will lay out the top and bottom cuts for this rafter.

### Questions

The problems in this case will be based on some points explained in this lesson as well as some of the elementary principles taken up previously.

1. What is the pitch of rafter "A" expressed as a ratio of the rise to the span?
2. What is the pitch of rafter "B"?
3. What is the pitch of rafters "C" and "D"?
4. What other numbers could be used on the squares to lay out the bottom cut of rafter "B"?
5. Find the length of rafter "K."

### Answers

1. This rafter rises 1 foot in 2 feet of run and therefore would have a rise of 1 foot for a 4-foot span, making the pitch 1/4.
2. Rafter "B" rises 6 feet in 4 feet or would have a rise of 6 feet for a span of 8 feet. Therefore the pitch is 6/8 or 3/4.
3. Rafters "C" and "D" both rise 1 foot for each foot of run or one foot in two feet of span. Therefore the pitch is 1/2.
4. As rafter "B" has a 4-foot run and a 6-foot rise we can use the numbers 4 on one arm of the square and 6 on the other arm to obtain the bottom cut.
5. Rafter "K" has a run of 2 feet 8 inches. The rise per foot run is the same as for rafter "B." Therefore the total rise would be 2 2/3 times 18 equals 48 inches. The length as scaled across the square between the points 2 5/12 and 4 would be 4 feet 10 inches.



### Publish New Timber Grade Rules

AN announcement from the Southern Pine Association states that its "Southern Yellow Pine Timber Grades" book is now being corrected and will be reissued in the near future to conform with the new grading rules as approved by subscribers at the recent annual convention in New Orleans. These new grading rules for timbers are designed to meet the demands and requirements of the building profession. As approved they divide timbers into two groups.

The first, a general utility group does not disturb three of the grades which existed and were recognized in Southern pine manufacturing practice prior to the changes. The second, a structural group, introduces two structural grades and supplies intermediate grades absent from the former rules.

Under the latter heading is listed "Structural Square Edge and Sound" which differs from "Square Edge and Sound" in that the former has knot limitations and high density requirements. After these rules are practiced by the mills, engineers and architects will be able to assign specific stress values to all grades of Southern Pine timbers, providing structural grades which are rarely found in other woods.

It is also stated that the adoption of the new rules meets the demands of technical users who, for quite a while, have felt the lack of definite stress values in timbers for important undertakings. The new grades of "Structural Square Edge and Sound" and "Dense Heart" are in conformity with the copyrighted standards adopted by the American Society for Testing Materials.

# Filling Station Design

## PART III—Plan of the Building—Driveway Canopy—Accessories Department—Lubrication Equipment

*A series of four articles prepared by a member of the American Institute of Architects for S. F. Bowser & Co., pioneer manufacturers of gasoline pumps and other filling station equipment.—Editor.*

(Continued from page 194, May issue.)

**T**HE plan of the building is dependent on several things, viz.: First, the area available for it with relation to the drives and property lines and building restrictions; second, the number of rooms required; and third, the amount of space needed for the office and sales room.

The advantages of a well-designed building should not be overlooked, for it is just that added touch which swings the balance in its favor. That this is being recognized is shown by many of the new filling stations, especially those of the oil companies, who are spending thousands of dollars in making their buildings and grounds vertiable beauty spots.

One feature which the owner must determine for himself is whether or not a canopy over the drives is to be used, and, if it is, whether it should be over one drive or two. When the station has two drives only and a canopy is desired, it should extend over but one drive, so that large trucks may be served in the open drive without running the chance of wrecking the canopy. While the clearance between the canopy and drive should not be less than 9 feet yet the type of gasoline pumps used quite often determines this. When the canopy is over one drive only, with the outside support resting on the pump island, the supporting beam comes directly over the pumps, making it necessary to keep the beam high enough to allow proper clearance for the pumps. In the case of piston-type pumps a clear height of 10 feet above the pump island is usually sufficient, but in the case of the visible type pump a clear height of 11 feet is desirable. When the canopy extends over two drives, with the pump island between the drives, the beam may be dropped lower, as the clear ceiling height is then the determining factor.

The necessity for a canopy is generally dependent on climatic conditions. In parts of the country where there is considerable rainfall during the year, or where the heat of the sun is such as to make the need of a canopy desirable, as in the southern states, it is an advantage. It may also be needed to some extent in the northern states where the snowfall is heavy. In most of the sections, however, the need of a canopy is questionable, since it requires more room for drives where space is at a premium, adds to the cost of the building and unless handled well detracts from the looks of the station.

Within the last year or so many stations have gone very extensively into the handling of accessories, and, to do this profitably some method of display must be used. This is usually done by means of a display window. In connection with the display window some stations are putting self-measuring oil pumps directly back of the bulkhead in order that the customer may see the operation of the pumps and know that he is getting the kind of oil wanted. Pumps should bear markers with the name and grade of oil. When this is done the tanks may be placed in the basement, or if there is no basement, in a vault under the floor making them accessible and keeping



A Filling Station of the Type Which Provides a Canopy Over the Driveway Sheltering the Cars that Drive Up for Gas and Oil Service.

them warm. The tanks may be filled from the outside through fill pipes or from the inside of the building direct. This is a very good way to handle oil because it does away with greasy tanks. The drip pans directly under the nozzles return all drippings and excess oil.

When desired, single unit type of outfits may be secured and placed on the sales room floor. These have all the advantages of the basement type except that more floor space is required.

In some stations the oil pumps are placed in a recess in the front of the building with glass doors in front which can be folded back out of the way in the day time and closed at night or in cold weather. In cold weather entrance is obtained through a door from the sales room at the side or back of the display room.

A great many companies have developed the business of draining crank cases and filling them with fresh oil to such an extent that buildings have been erected to take care of this feature. The name "lube-serv-atory" has been coined for this type of building. It is very often combined with the filling station under one roof and at other times placed by itself on some other part of the lot. The ends of the lube-serv-atory are open, the openings being high enough to allow large trucks to pass through and the floor is usually of reinforced concrete with runways in it for the wheels. There may be several runways side by side with concrete islands separating them, each runway long enough to accommodate two or more cars, with openings in the floor between the tracks or crank case draining. The larger lube-serv-atories have basements and when the car owner drives into the building he stops his car so that the engine is above one of the floor openings. An attendant in the basement attends to the draining of the crank case while one on the runway floor puts in the fresh oil.

[The next article of this series will be presented in an early issue of American Builder.]

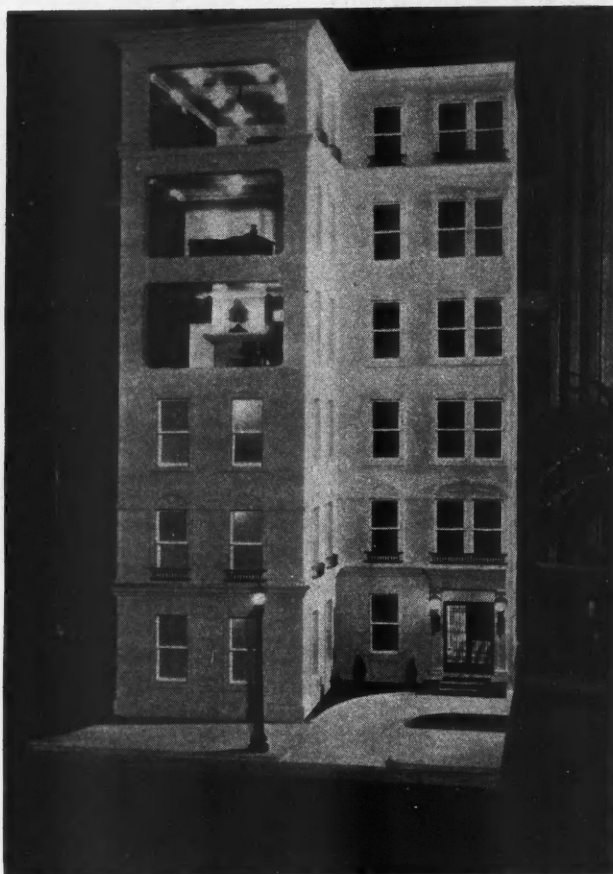
# Electrified Building Model Is Fully Equipped

**I**N order to display, properly, the numerous electrical products and their varied applications, the Westinghouse Electric & Manufacturing Company designed and constructed an entire apartment building in miniature, equipped with exact size models of apparatus. Each piece of equipment was in its proper place, performing its designated functions, driving pumps, lighting rooms, operating elevators, exhausting air, providing refrigeration, producing heat for warmth, as well as for cooking and ironing, and doing many other jobs.

The model, built on the scale of one inch to the foot, represents a modern six-story apartment building in which large and small apartments are provided with all the comforts and conveniences of electricity. The drawings and plans were made by a New York architect, in order to assure accuracy and faithfulness in the construction and design of the miniature building, and also, that the architecture and building practice would be thoroughly modern.

The elevator equipment and layout was planned by Westinghouse engineers, in conjunction with an elevator builder. The lighting arrangements were the result of close collaboration between the illumination bureau and Westinghouse lighting specialists. The layout of the machinery in the basement was planned by the engineering department.

The building, itself, and the models in it, were manufactured by the most prominent model builders in the



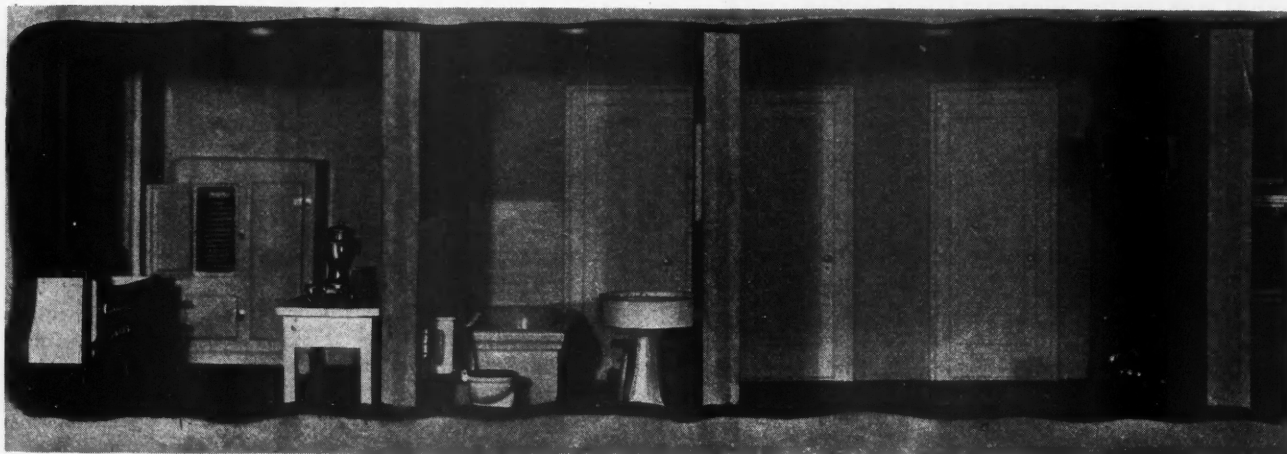
The Electrified Building Model Showing Both Exterior and Interior Lighting of This Elaborately Equipped Miniature. The scale is one inch to the foot.

United States, the workers, themselves, being skilled artisans who have devoted a lifetime to work of this kind, many having served their apprenticeship in England, where this art is better known and more generally practiced than in our own country. The building, itself, is accurate in detail and provides a good setting for the models of the apparatus.

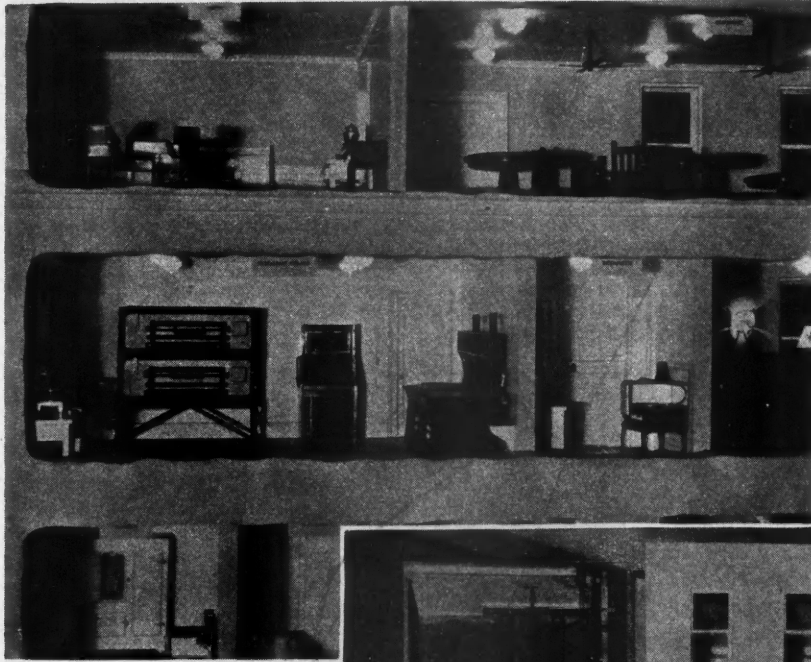
The illustrations show the excellent manner in which the exterior lighting fixtures are used to portray not only the utility, but also the ornamental value of the commercial type brackets, emphasizing proper illumination wherever possible by showing ornamental street lamps in front of the building. Reflectors in the basement, indirect lighting in the halls, side brackets, table lamps, and standing lamps in the apartments even to the reproduction of interior lighting units and tiny switches are used in their proper places.

Perhaps the most interesting part of the model is the basement because here electricity finds its most important uses by providing apparatus for the conversion, distribution and utilization of electric power. Here may be seen entrance switches, circuit breakers, transformers, switchboard, motor generator, and motors, with their starters and safety switches for driving pumps, blowers and refrigeration machinery.

The masterpiece of the building is the switchboard. Here, by expert craftsmanship, a most accurate miniature switchboard was made, which has sixty-six pieces of appar-



Here the Wall of the Miniature Building Is Cut Away from One Section of the Building to Display the Electrical Appliances for Kitchen and Bathroom, Including a Range, Refrigerator, Percolator, Toaster and Glow Heater. The wall fixtures are also clearly seen.



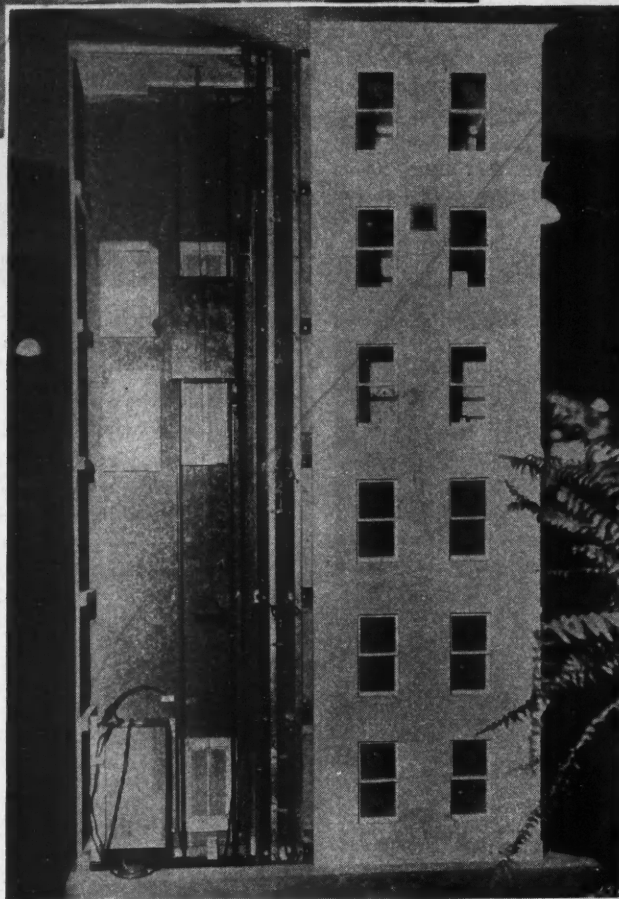
Another Cut-Away View Showing the Electrically Equipped Apartments and Also a Restaurant, Restaurant Kitchen and Pantry in This Interesting Model Building.

atus mounted on it, such as meters, circuit breakers, switches, fuses, and rheostats, each perfect in detail, yet the whole being barely larger than the human hand.

The elevator equipment in the pent house, which consists of two gearless traction units, with their required motor generators and control panels, is, perhaps, no less remarkable than the switchboard. The control panels are so accurate in minute details that not only are the relays quite lifelike, but even the contactors and arc splitters are easily discernible.

In order to provide an opportunity for the display of commercial kitchen equipment, the apartment building was designed with a public dining room and a restaurant kitchen. In the kitchen are shown two of the new commercial ranges, a broiler, a bake oven, exhaust fan (actually operating), a motor-driven meat grinder, and a three-unit waffle iron.

Some idea of the painstaking detail in the apparatus may be gathered from the fact that the thermometers on the oven are actually graduated, clearly showing the red level of the mercury. A pantry adjoining the dining room gives opportunity for the display of a hot table, and also a motor-driven dish washer. In the dining room are shown two ceiling fans, revolving, although more slowly than in actual practice.



There Is Even an Elevator Shaft with Its Electrically Operated Elevator All in Plain View Where the Rear Wall Is Cut Away.



Probably the Most Elaborate and Interesting Part of the Whole Model Is the Basement, Which Contains a Complete Switchboard as Well as All the Other Machinery Required for Such a Building.

The various rooms of the apartment are equipped with such appliances as a bathroom heater, cozy glow, percolator, toaster, junior cabinet range, and an electric iron three-eighths of an inch high.

In all, the miniature building shows 112 models of electrical products. There are about fifty distinctly separate models and remainder are duplicates, it being necessary to show such items as fixture, switches, and starters as often as their proper presentation demanded.

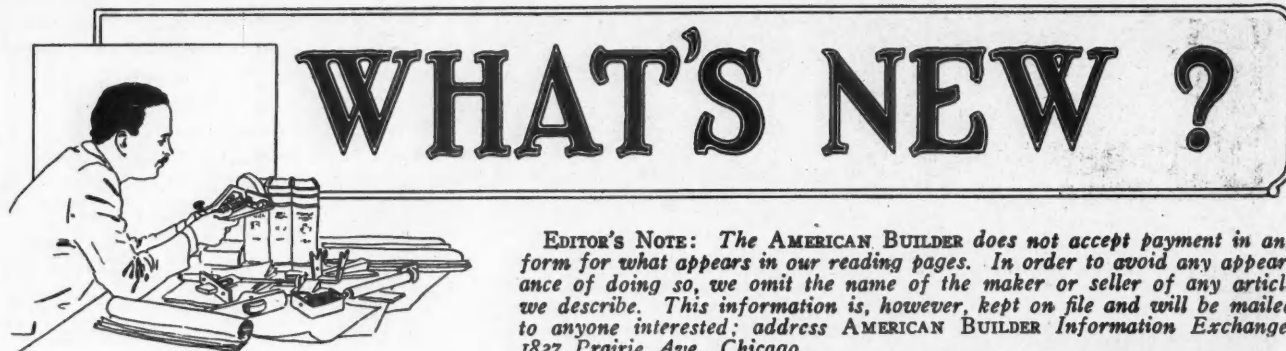


## Education in Using Lumber

**M**ANUAL training teachers in the schools of the country and leaders in the Boy Scouts, Camp Fire Girls and other organizations which conduct manual training classes have been called upon by the Forest Service of the United States Department of Agriculture to aid in the education for economical use of lumber.

In much of the work done in manual training courses cheap grades of lumber can be used to just as good purpose as absolutely clear stocks. The small pieces called for by much of the manual training work can be cut from low grade lumber containing knots and other defects. To do so would help the movement for better utilization of low grade and short length lumber and would afford a valuable training for future users of lumber in the utilization of low grades and short lengths.



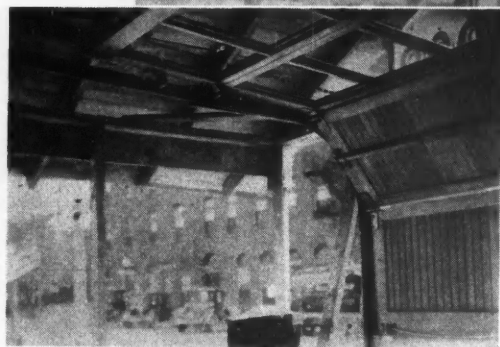


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### Disappearing Garage Doors

**I**N the illustration is shown the operating mechanism of a type of door which has gained a steadily increasing favor not only for private garages but also for many other buildings including factories and warehouses.

This door is in the form of horizontal panels, the number depending upon the height of the doorway, which slide up and back, overhead, when the door is opened. In this way no space, either inside or outside, is required for the opened door, which is completely out of the way overhead. Up and down pressure only is required for opening and closing and this pressure can be so adjusted that the door is easily operated by a child. It operates on ball bearing rollers guided in a steel track in such a manner that it is



**Operating Mechanism of the Garage Door that Disappears Overhead.**

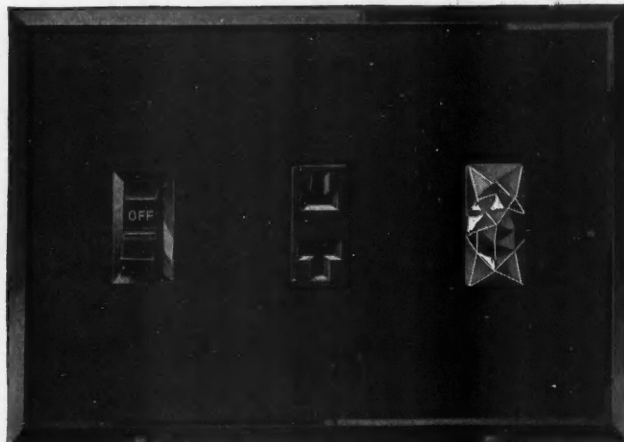
impossible for the rollers to leave the track. It is counter-balanced by an adjustable spring.

Because of the position inside a garage the door is protected from banging open and from the effects of rain or snow which might cause it to warp or swell and interfere with its operation and it cannot be blocked from opening by ice or snow as with outswinging doors. These doors may now be had to operate automatically by means of an electric control with opening and closing switches at any number of desired positions.



### Screwless Switch Plates

**T**HE switch plate illustrated is one of a complete line of switch plates molded of Bakelite and having no screws or other external fastenings to mar their finish and beauty. The absence of metal screws also insures perfect insulation of the plate surface from the mechanism. A steel under-



**Screwless Switch Plates of Bakelite Are Finished to Match Any Color Scheme.**

plate carries the switch or receptacle and facilitates mounting, especially when used in gangs.

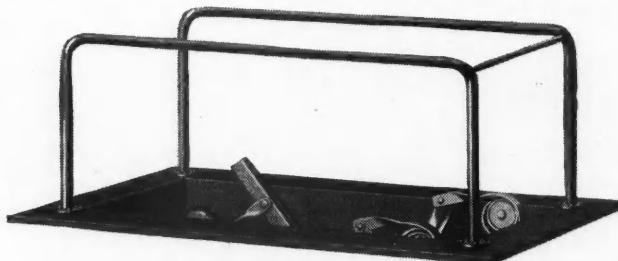
With these plates there is no building up of switches and receptacles required to bring them up to the plaster line. This, together with the screwless feature, saves time in installing. The switch or receptacle is first wired in the usual way, then, while it is still out of the wall box the metal under-plate is secured to it with screws provided for the purpose, pulling the plate up tight. Then the switch or receptacle is fastened to the wall box in the usual way.

Unless otherwise specified these plates are furnished in the natural brown Bakelite color but may also be obtained in a wide variety of permanent enamel finishes to match the color scheme of any room.



### Practical Stairway Guard

**O**NE of the leading manufacturers of disappearing stairways has lately placed on the market a stairway guard of the type shown in the illustration. This guard is a practical, economical and strong protection for stairway openings. It is made of 1½-inch tubing and comes in three parts, two sides and end bar, is easily put together, and will fit any of the stairways made by this company:



**Here Is a Practical and Economical Protection for Stairway Openings by a Manufacturer of Disappearing Stairs.**

### Adjustable Closet Hanger Rods

**T**HE old system of hooks placed around the walls of a closet was always a nuisance. The garment one wanted was always found, after much hunting, hung under



Here Is a Simple Hanger Rod Which Is Adjustable in Length to Fit Any Closet.

several others and clothes became mussed and wrinkled. Any closet may be modernized by the installation of a simple hanger rod, adjustable to the size of the closet, which permits clothes to be hung neatly and without crushing upon clothes hangers of standard pattern.

This hanger rod is made in five sizes. These are adjustable for closets from 12 to 18 inches wide, 18 to 30 inches wide, 24 to 38 inches wide and 36 to 54 inches wide. It is made of heavy gage steel and is strong and durable. It is neatly finished in pale gold bronze. To install, the rod is merely extended to fit the width of the closet and fastened to the wall boards by means of two wood screws at each end. The screws are furnished with the rod.

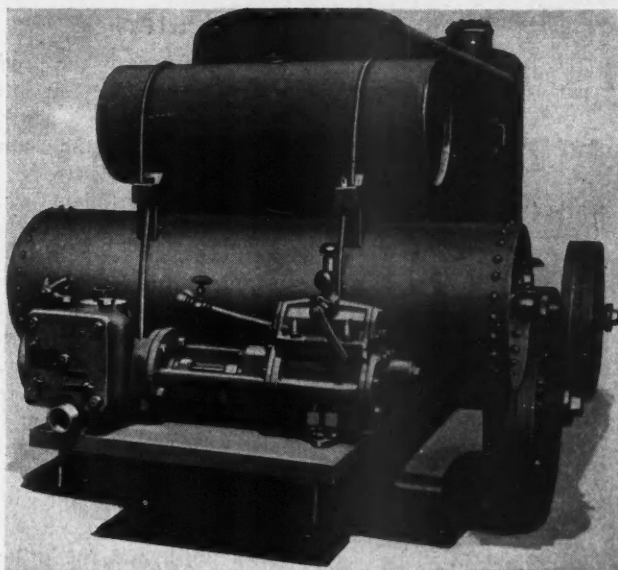


### Portable Compressor Pump Outfit

**T**HERE has been perfected a new combined, portable, air compressor and water pump outfit. It consists of a standard, gasoline engine-driven, portable compressor and an air driven pump. It is particularly suitable for dewatering jobs and can be used successfully for the elevation of water, for removing the overnight accumulation in ditches and excavations, for cement gun service, for furnishing water to concrete mixers and all similar work. The portable compressor, in addition to supplying air for the pump, will run such air tools as rock drills, paving breakers, clay diggers, portable hoists and drill steel sharpeners.

This new outfit was designed to meet the demand for a truly portable pump, one that could be moved easily from place to place as needed. As the illustration shows, the outfit is portable in every sense of the word, the pump being mounted on the frame of the compressor adjacent to its source of power. The pump is positive in action, starting up just as soon as the air is turned on. It requires no priming and will handle very muddy water. It can also be regulated to any desired capacity within its maximum rating by adjusting the amount of air admitted.

Practically all the pumping equipment in use today by contractors consists of a pump and some form of prime mover, usually a single cylinder gas or oil engine. This means two pieces of machinery to be moved and set up each time the pump is needed and two pieces to be kept in condition, ready for work. Most jobs now require compressed air and a compressor is therefore generally available. The advantage of having an air driven pump mounted right on the compressor is that this arrangement eliminates the gas or oil engine which was formerly used



This Combined Portable Air Compressor and Water Pump Is Well Adapted to Handle Various Jobs.

to drive the pump. With this new outfit the pump is ready for work whenever the compressor starts up and the unit can be moved from place to place, easily, as the occasion demands.

Several sizes of this compressor-pump outfit are available. It is also possible to obtain the pump alone, together with the parts necessary for attaching it to any of this company's portables now in use.

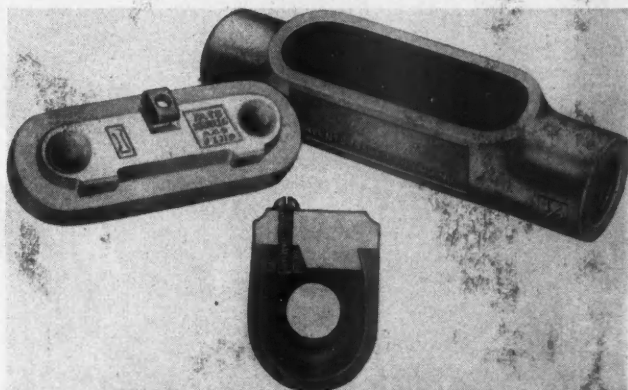


### Better Conduit Outlets

**A** PROMINENT manufacturer has announced a new line of conduit outlets that incorporates many practical and time-saving features, based on a new method for fastening covers and wiring devices to the conduit outlet, known as the wedge-nut fastener. A few turns of the screw driver and the cover or wiring device is on and on to stay. It can not become loosened by vibration.

With this new form of construction there are no screws projecting inward to injure the conductors. Because of the unobstructed cover opening, conductors may be pulled easily without injury to them, for there are no projecting lugs. The unobstructed cover opening and large wiring chamber makes splicing and taping easy.

Another outstanding feature is that the covers and wiring devices may be conveniently installed even in difficult places as they can be turned so as to bring the fastening screws into an accessible position. Being complete units, no parts of cover or wiring devices can be lost during installation. The conduit outlets are made in many different types for all required uses.



A New Type of Conduit Outlet Which Incorporates a Number of Improved Features.

### New Circulating Heater

**T**HE new circulating heater illustrated here is the product of a well-known manufacturer, designed to fit into the home as a fine piece of furniture and, at the same time, actually to provide a complete heating plant with a capacity to keep several rooms warm and comfortable at a remarkably low fuel cost. It is stated that where old fashioned stoves merely radiate heat for a short distance only, this heater circulates heat not only in the room in which it is installed but also in adjoining rooms.



**This Attractive Heater Is a Complete Heating Plant for Several Rooms.**

The cabinet has a beautifully grained walnut, vitreous enamel finish and the gridded top and entire front panel are cast with the side and rear panels of heavy steel. All inside parts are heavy cast iron and grates are duplex and reversible for burning either coal or wood. This heater stands 44 inches high, 25 inches wide and has a depth of 18 inches.



### Corner Bead Setter

**T**HE accompanying illustration shows the application of an expanded metal corner bead by means of a patented bead setter manufactured by the company which produces this corner bead. According to the manufacturers a man can set many times as much bead when using this setter, but of even greater importance is the fact that every bead can be set absolutely straight and true by one man without using the clumsy and unsatisfactory plumb line method which usually requires two men.

This setter has seven spring grips which grasp the nose of the bead. Two spirit levels are arranged conveniently near the center of the bead setter, one as a guide for truing up longitudinal corners and one for horizontal corners. The grips are disengaged easily after the bead is fastened in the proper position.

The extra wide wings on this expanded corner bead

make it possible to true up corners which are considerably off the proper alignment. The fact that plaster keys through the expanded metal, embedding the entire corner bead, is an important factor in making such corners strong and crack proof. On big jobs these bead setters can be employed in series, speeding up the work to such an extent that surprisingly large savings can be made, it is said.

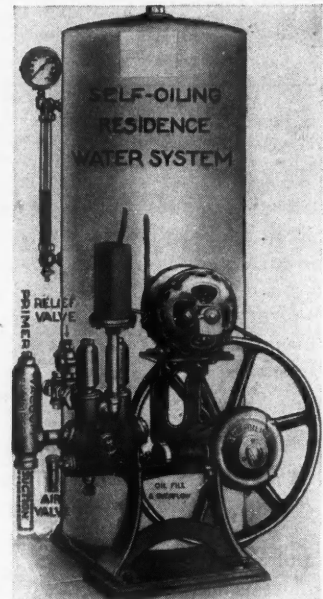
The manufacturer of this corner bead and bead setter has recently announced that all of its metal lath products are now available in Armco ingot iron. Until recently only one manufacturer was authorized to make metal lath of this material, but now this manufacturer has also been authorized to do so.



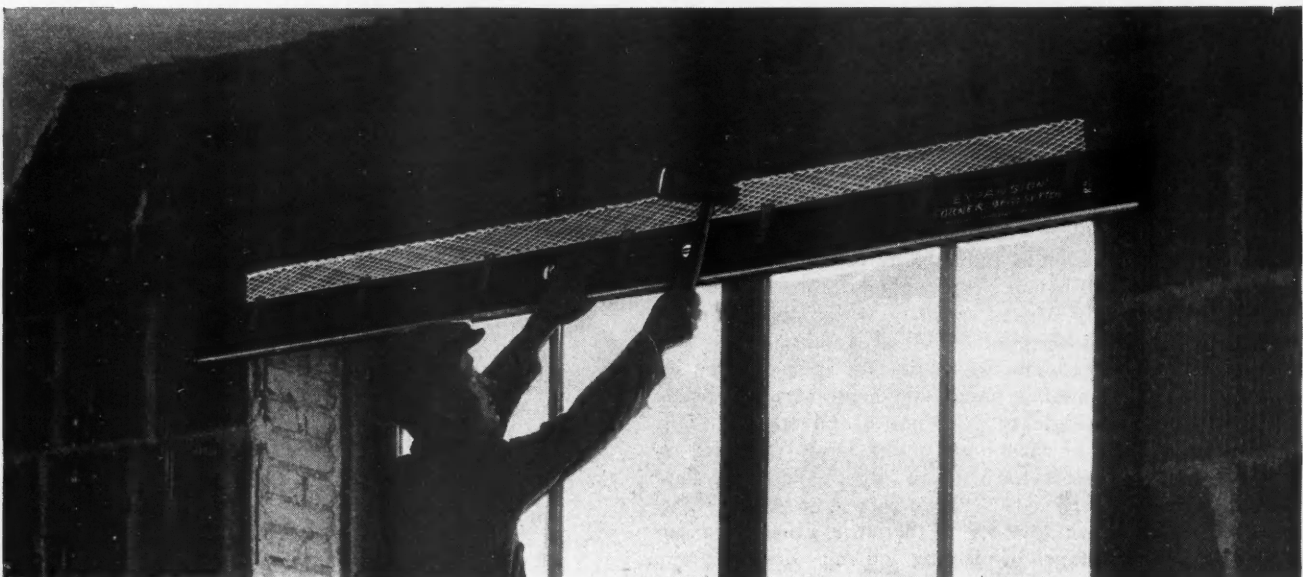
### Complete Water Supply System

**S**UBURBAN and country homes, summer cottages and farms, beyond the range of city water supply systems no longer need do without the convenience of running water for complete water supply systems of sizes to fit every possible requirement are nowadays available at prices which place them within the reach of all. One manufacturer is turning out a complete line for private water service up to 10,000 gallons per hour and these systems incorporate many features and refinements which make them outstanding in their field.

The illustration shows one of this line which is designed for use with shallow wells and cisterns and operates electrically from any kind of city current or from farm lighting and power plants. It comes in two sizes with capacities of 200 to 300 gallons per hour and is automatically controlled so that a sure water supply is always assured. It is furnished complete in every respect ready for installation and is particularly adapted for residence installations.



**One of a Line of Water Supply Systems Designed to Meet All Requirements.**



**Using This Bead Setter with Spring Clips Which Grasp the Nose of the Corner Bead, It Can Be Set Straight and True by One Man Without a Plumb Line.**



**New Jointer Perfected**

A 12-inch, ball bearing jointer which is said to be not only up-to-date but distinctly in advance of general practice, has just been perfected by a leading manufacturer of woodworking machinery. This machine is described as being of pleasing design, free from obstruction to the operator, with three point floor contact which insures against rocking, with tilting table and a guard that meets the most rigid requirements of safety regulations.

The frame is cast in one piece, with widespread feet at the feeding-out end and one central leg at the feeding-in end, so as to give clear foot room for the operator. The tables are heavily ribbed and accurately finished. The feeding-in table is 48 inches long and the feeding-out table is 36 inches long. The former may be tilted to an angle of five degrees from the horizontal for pattern draft or other taper work by means of a crank. The tables are fitted



This Jointer Which Is Newly Placed on the Market Is Said to Be a Greatly Improved Type of Machine.

with steel lips but will be furnished plain, if desired; at less cost.

The safety guard is something new in design and is marked by three principal features. When in its operating position the guard covers the head close up to the work passing through, adjusting itself to any width. It can be held open by means of a latch when its use is not desired. It can be thrown over entirely out of the way for rabbetting without removing it from the machine and when brought back into position it is instantly ready for service. A coil compensating spring neutralizes its weight when thrown over.

This machine can be converted from a motor to a belt drive or from a belt drive to a motor drive, and if preferred may be equipped with babbitted bearings for belt drive only. For connection to a factory exhaust system a cast iron hood or chute is fastened to the under side of the yoke inside of the base to which an exhaust pipe may be connected. For individual exhaust a specially designed fan is placed inside of the frame and is driven by a small belt from the head shaft to the fan pulley just outside the frame.

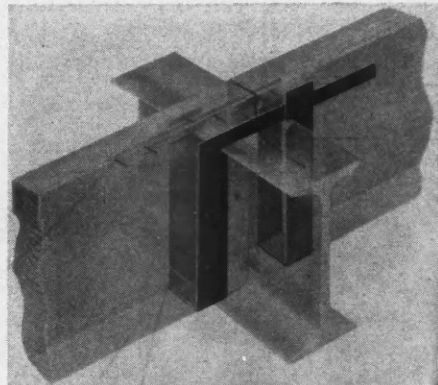


**Two Improved Joist Hangers**

THERE is a general movement to improve the quality of building construction, especially as applied to residences and apartments. It has been found that many small items which have been overlooked or neglected in the past are very important to good construction and lately considerable thought, time and attention has been given to these specialties. Two specialties, developed as a result of such study are illustrated here. These are a hanger

for hanging wood joists on I-beams and another for hanging joists on wood framing.

In many cases steel I-beams are used for supporting wood joists in houses and apartments, and these have been connected, in the past, by means of wood strips bolted to the I-beams on which the joists have been toenailed, or by riveting steel shelf angles to the I-beams for the same purpose. There has been a demand, among architects and contractors, for a satisfactory method of connecting the joists



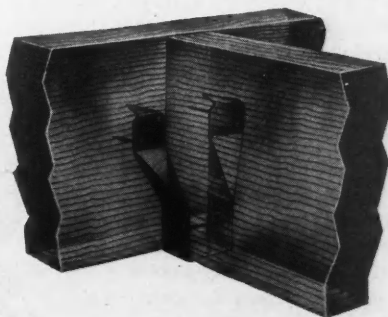
This Hanger Supports Joists on I-Beams Without Connection to the I-Beam and Ties Them Securely.

securely together across the I-beams to make a practically continuous joist.

This is accomplished by the new hanger which not only supports the joists on the I-beams without any connection to the I-beam but also ties the joists securely together across the I-beam. These hangers also eliminate trouble heretofore caused by shrinkage, especially where a wood shelf was used which meant double shrinkage and splitting of the joist where it was notched at the I-beam.

This is all taken care of by the new hanger and with hangers in stock it is not necessary to wait for I-beams to be drilled or punched or shelf angles to be installed. Simply order I-beams cut to the necessary length. With these hangers, joists can be installed in any location and after being securely nailed to the joist they take care of all shrinkage problems and prevent sagging of the floors at this point, an important point where partitions rest on the floor over the I-beam, and also prevent plaster cracks which result from the sagging of floors and settlement of partitions.

A quick, economical and satisfactory joist hanger, the second type illustrated, is now being furnished also, for hanging joists on wood framing. This hanger can be used for all sizes of joists and has two sharp, steel prongs at the end of the hanger which are driven into the side of the header and securely support the joist in any desired position. These hangers are quickly and easily applied and after they are installed the architect, contractor and owner can rest assured that settlement at this point has been completely avoided and that the floor will be just as rigid at these openings as elsewhere.



For Hanging Joists on Wood Framing This Hanger is Quick, Economical and Satisfactory.

The trouble formerly experienced with floors settling on account of these connections being made by nails, which afterward split out or pull out on account of the shrinkage of the joist, has been eliminated. Contractors who have used these hangers report that they not only make for better construction but also that they have proved to be quite economical for this framing.

### A Space Saving Feature

**A** DISAPPEARING stairway has been perfected which is so perfectly balanced that a child can open or close it. When not in use, it disappears into the ceiling above, leaving in view only an ornamental wood panel in the ceiling.

The space saved in an ordinary house by eliminating



By the Use of This Disappearing Stair to the Attic, the Cost of Building a Home Is Reduced and More Room Is Available.

a fixed stairway to the attic reduces the cost of the house or allows larger rooms. It also adds to the value of a house to have the attic space conveniently available.

The stairway shown weighs 185 pounds and has a panel of yellow pine or of hardwood at a small extra cost. This is painted white on the underside or it may be finished to match the woodwork in hall or room. It may be had in stock sizes from 7 feet 7 inches to 12 feet 7 inches, floor to floor. For fireproof buildings, an all-steel stairway is furnished which works on the same principle.



### Equipment for Better Closets

**I**MPROVED equipment for the home has been extensively developed in the last few years and has reached even into the closet, the catch-all which formerly received our clothes when we wanted them out of the way and then returned them to us mused and wrinkled after an exasperated pawing over of the disorderly contents. The modern closet need not be a place of disorder and the clothes placed in it may be kept neat, unwrinkled and easily accessible at all times. The picture shows the equipment which makes this possible.

First there is the hanger arm made either to reach across the closet from wall to wall or to extend from one wall only. With it special hangers are used which slide back and forth as desired in a slot at the bottom. They can not be knocked off but can be released by a simple movement, lifting through an opening at the side. Above the hanger rod hat racks can be installed. These keep the hats out of the dust and where they will not be crushed by other things being piled onto the shelves with them.

On the doors are placed racks for shoes on which may also be hung umbrellas, ties and

the many other articles which are ordinarily placed in a closet. With such equipment the capacity of the closet is doubled and it becomes a convenient usable storage place instead of the dark hole in which everything was dumped and lost in confusion which always resulted.



### New Shallow Well Pump

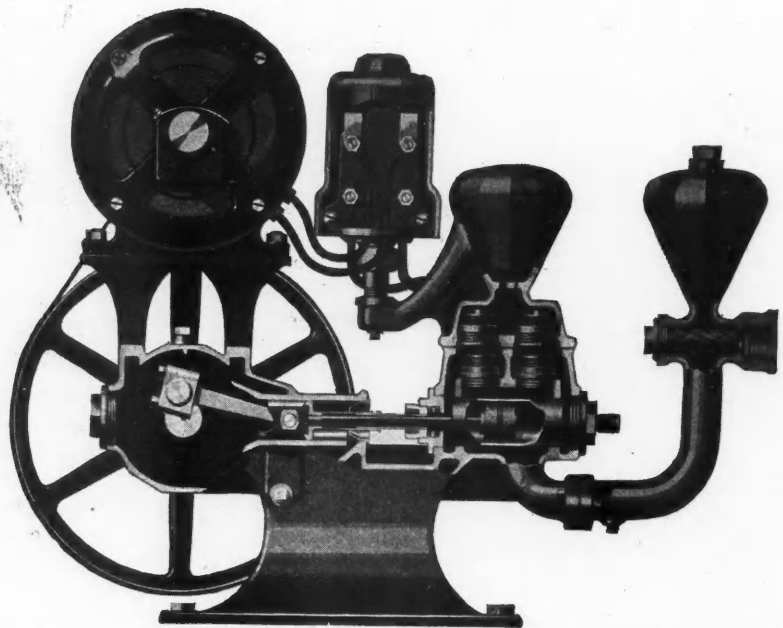
**A** NEW shallow well pump and complete systems having a capacity of 275 gal-



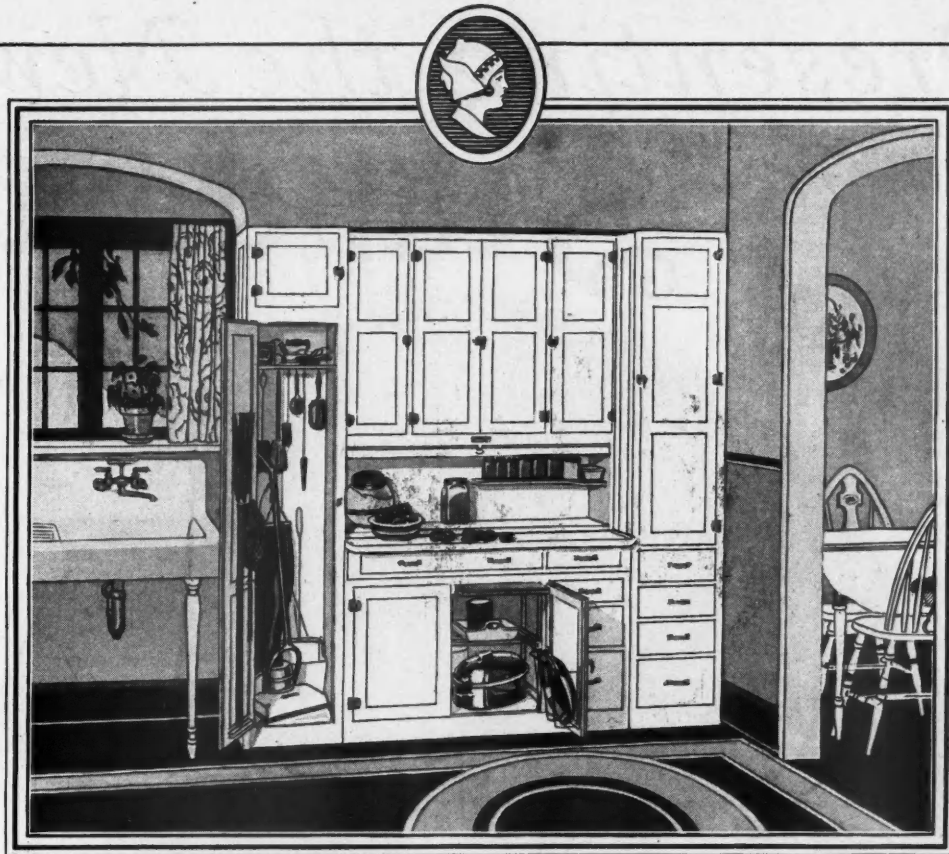
Equipped Like This the Closet Ceases to Be a Cluttered Catch-All and Becomes a Convenient Storage Place.

lons per hour, has been added to a line of automatic electric pumps, water systems and water softeners made by a well-known manufacturer. A sectional view of this pump is shown in the accompanying illustration at the bottom of this page.

According to the manufacturers the big bugaboo of water getting into the crank case and floating out the oil cannot happen with this design. The patented, exclusive, all-brass sleeve guard on the piston rods of pumps which they make absolutely prevents this trouble, which is considered the most deadly hazard of ruining all pump bearings. The rigid, all-brass construction of this feature eliminates any possibility of deterioration or displacement. It keeps the piston rod free from dirt or grit, prevents accidental marling and insures long life.



This Shallow Well Pump Has Just Been Added to a Well Known Line of Automatic Pumps. Its capacity is 275 gallons an hour.



## Units to Fit *Any* Space — Combinations for *Every* Purpose

**T**HERE is a Napanee unit or combination of units for any size space—for any arrangement of doors and windows. No other line offers a greater variety of practical unit styles and sizes than the Napanee.

And from the broad, flexible Napanee line you can make a combination to meet every purpose—from simple storage to centralization of all kitchen and pantry equipment—from refrigerating—to cooking.

In the combination pictured above, convenience is emphasized. Cutlery, utensils, flour, condiments, food staples are centralized in workable fashion in the 48½ inch cabinet, with the cleaner, broom, iron, brushes and cleansers in the 16½

inch broom closet. Dishes are kept in the 16½ inch dish cupboard which also has four roomy linen drawers. The overall width of the combination is 81½ inches; height, 85½ inches; depth of base, 21 inches; depth of porcelain top, 25¾ inches; depth of cabinet top, 12 inches; depth of side units, 21 inches.

The Napanee line is the finest money can buy. Built like fine furniture with *all hardwood construction* plus a host of hidden details which characterize Napanee as a distinctly superior product.

A Napanee equipped kitchen enhances the value of any home or apartment far beyond the cost of the installation—making for readier rentals and quick sales.

COPPES BROS. & ZOOK, Napanee, Ind.

# NAPANEE

## DUTCH KITCHENET

*Built Like Fine Furniture*

OUR GOLDEN ANNIVERSARY YEAR

COPPES BROS. & ZOOK, Napanee, Ind.

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Please send me your catalog illustrating different styles and sizes of cabinets, cupboards, side units, refrigerators, stoves, etc. (Please check square.) I am a  Builder  Architect  Owner

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# Presenting the New "Standard"



T E M P L E T O N

Patents  
applied for

"Standard" has made of the lavatory a thing of beauty—endowed it with the distinctiveness of a period dressing table. The difficulties, seemingly insurmountable, of modeling and firing designs as large as these of genuine vitreous china in one piece, have been overcome by the master potters of "Standard". They are drawn from the kiln with lines straight and true and all the gracefulness of perfect symmetry. "Standard" metal smiths have wrought the fittings in designs as original as the lavatories.

**"Standard"**  
PLUMBING FIXTURES

*The "Templeton," made in one piece of genuine vitreous china combines the distinction and convenience of a dressing table. The spacious top is 36 inches long and 20 inches from back to front. Oval bowl 19 inches long and 12 inches wide with dual overflow. Tapered legs of clearest crystal. Hand wrought fittings.*

# Lavatories



Patent  
applied for

**P E M B E R T O N**

So that the distinctive motif may be carried out in other bathroom fixtures, fittings for them are available in the same design as the lavatory fittings. This is beauty that transcends artisanship; that brings to the bathroom its long deserved note of individuality. Two models, the "Pemberton" and the "Templeton," are being exhibited after June 1st at "Standard" showrooms in principal cities. They are exclusive designs with the trademark "Standard" fired in them. Booklet, with color illustrations, will be mailed on request.

Standard Sanitary Mfg. Co. • Pittsburgh

*The "Pemberton," dignified straight-line effect in one piece of genuine vitreous china. Roomy top 36 inches long and 20 inches from back to front. The square bowl is 17 inches long and 12 inches wide. Legs of china and metal with crystal ball feet. Roominess underneath permits the dressing bench to be drawn comfortably close.*

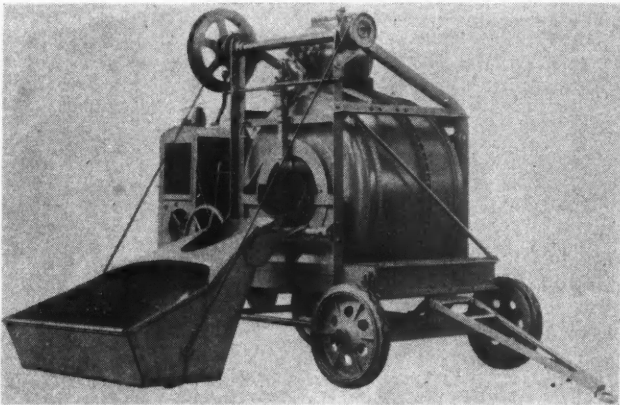
**"Standard"**  
PLUMBING FIXTURES

### Improved Two-Bag Mixer

**T**HERE has just been placed on the market a mixer that will take a full two-bag batch on a 1-2-5 mix. This machine is something entirely new in the mixer line. Its designers have made several departures from the usual engineering features found in this type of machine.

This mixer has no countershaft. The engine clutches, drum drive hoist and power take-off have been incorporated in one unit assembly. This has been accomplished with case enclosed, cut tooth gears that are constantly running in oil and take power directly from the engine. An automotive type, 10-horsepower, four-cylinder, gasoline engine completes the unit and is responsible for eliminating a great share of the unnecessary vibration.

For a quick even flow of water a new type of valve has been selected. Practically no dribble is possible when



This Mixer Incorporates Several Radical Departures from the Usual Features.

shutting off the water with the new type valve. Greater towing and handling ease than before has been made possible by a new front axle construction of four-inch I-beams. The rear wheels are mounted in automotive fashion to turn on a shorter radius.

By an extensive use of malleable castings and pressed steel rollers this machine has been reduced in weight, according to reports to about a half ton less than other mixers of this size. Construction, of course, again figures considerably in reducing the weight. Pressed steel drum rollers, free floating on bronze bushings, have replaced castings. Other castings where great strength and long life were required have been changed from cast iron to certified malleable iron.

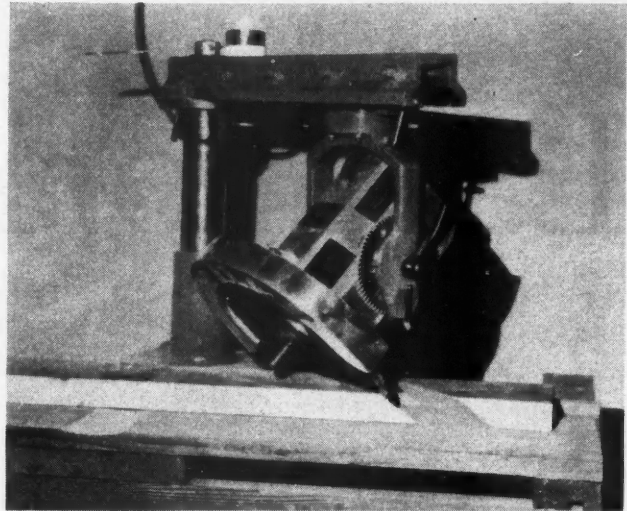


### Overhead Direct Drive Woodworker

**A**N electric woodworker that is said to do all kinds of woodworking jobs six times faster than they can be done by hand, is attracting favorable attention in the building trade. It is claimed that any builder can save, easily, \$100 per house by the use of this machine.

It is only necessary to set a guide and then sail right through the pieces to be cut one after another. It will make a jack rafter cut with one motion or rout a complete stair of 14 risers in 12 minutes. With it, it is possible to make door and window casings right on the job and it will work up waste pieces into usable material. Any type floor can be mitered with this machine six times as fast as by hand, it is said, and for interior trim it miters and dresses moulding and fits windows and doors perfectly.

This machine is compact but sturdy and is also portable. Two men can carry it anywhere. The cross arm swings in a complete circle and the motor raises and lowers and tilts to any angle, and also swings in a complete circle. All tools mount directly to the motor drive and can be changed in 30 seconds. A yoke, carrying the motor, moves back



An Overhead Woodworker Which Offers a High Degree of Flexibility.

and forth on a slide block in a covered track, protected from rust. The motor is as flexible as a person's wrist but when locked in position stays rigidly in that exact spot. This machine is said to be the only overhead, direct drive, universal woodworking machine on the market.

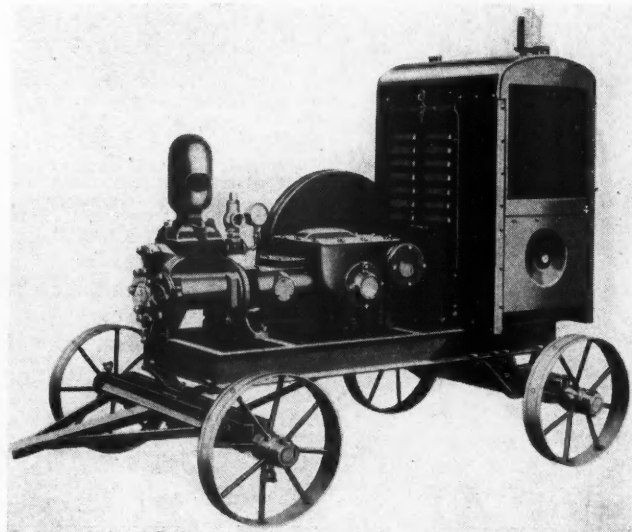


### Pumps Automatically Lubricated

**A** PROMINENT manufacturer is now offering new, enclosed, self-oiling, one-, two- and three-cylinder piston pumps. The single- and two-cylinder pumps are double acting, inside packed type, powered with a one- or two-cylinder gasoline engine or an electric motor. All working parts, gears, pinions, crosshead and bearings are automatically lubricated and run in a bath of oil.

The three-cylinder pump is particularly for road builders' use, being the proper size to operate with the paver manufactured by this same company. It has a capacity up to 70 gallons per minute at 500 pounds pressure and is powered with the company's own 25-horsepower, four-cylinder engine, and mounted on a steel truck.

In the past paver methods of handling and apportioning aggregates, sub-grader and finisher have received the most attention. Now the water supply unit, one of the most important pieces of equipment on road jobs, has been improved by this company in accordance with its high standard of design and manufacture.



A Pump Designed to Improve the Water Supply Methods in Mixing Aggregates.

# Celotexed homes are easy homes to sell

**The new comfort and fuel economy provided by Celotex will increase the demand for your homes . . .**

**F**ROM the time you start a job, till long after the house is occupied, Celotex can help you. For Celotex saves labor, makes the finished house easier to sell, and adds to your reputation by making the owner more comfortable all year 'round.

Properly applied to any home, Celotex shuts out summer's heat and winter's cold—saves about  $\frac{1}{3}$  the fuel bill. This means thoroughly satisfied buyers whose enthusiasm is soon reflected in increased business and profits for you.

The many practical advantages of Celotex make it easy to work with. Light, strong boards of Celotex are exceptionally easy to

handle and apply. Celotex is sawed, erected and nailed just like wood lumber, only with less work. Used as sheathing or under plaster, broad Celotex boards brace a wall stronger than narrow wood sheathing or lath.

Celotex boards are always uniform—4' wide, 7' to 12' long, 7-16" thick, and weigh about 60 pounds per 100 square feet. There are no short pieces or odd sizes; every board is usable—free from cracks, knot-holes or stain.

Because Celotex is not an extra

item in building it adds little or nothing to costs. As sheathing it replaces wood lumber; under plaster it replaces wood lath.

There are many other Celotex uses that bring in extra profits on every building job.

Interiors finished with Celotex combine attractive appearance with greater comfort. Attics or basements lined with Celotex cut fuel bills and make homes more livable. Celotex makes an ideal garage lining, too.

All lumber dealers can supply Celotex. Mail the coupon for the Celotex Building Book and Specifications showing how to apply it.

*"Celotex not only gives me better houses, and helps me sell them, but actually saves money on construction," says Eugene E. Cornell, Woodmere, Long Island, N. Y., builder. "By using Celotex I can give my customer a thoroughly protected house, affording consistent comfort at all seasons of the year, without adding one penny to his purchase price."*



## CELOTEX

THE CELOTEX COMPANY, CHICAGO, ILLINOIS

Mills: New Orleans, Louisiana

Branch Sales Offices in many principal cities (See telephone books for addresses)  
Sales Distributors throughout the World

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Am. Bldr.—6-27

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Please send me the Celotex Building Book and Specification Book showing how to apply Celotex.

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Street .....

City ..... State .....

### A Complete Shower Compartment

THE builder who wishes to be assured of high class shower compartments which will aid in making his houses or apartments more salable, will do well to investigate the complete shower compartment illustrated here. This compartment is furnished, ready for quick and easy installation, in two parts. These two parts consist of the receptor and the compartment wall.

The receptor is formed from the finest quality, waterproof, white cement and Vermont marble chips. These are thoroughly tamped and puddled in a steel form and placed in a curing room for 30 days after which the receptor is hand polished to a smooth but non-slippery surface. The black marble inlay on the white cement produces an attractive effect which harmonizes with any type of bathroom finish. A



A Complete Shower Compartment with a Reinforced Base Ready to Install.

$\frac{1}{2}$ -inch, expanded steel mesh, reinforcing extends across the entire receptor and a 4-inch galvanized steel plate, thoroughly embedded, reinforces the side walls. A  $4\frac{1}{2}$ -inch, flat head, white metal strainer and drain, with removable face is set flush with the floor, and allows for inside caulking of the 2-inch waste pipe.

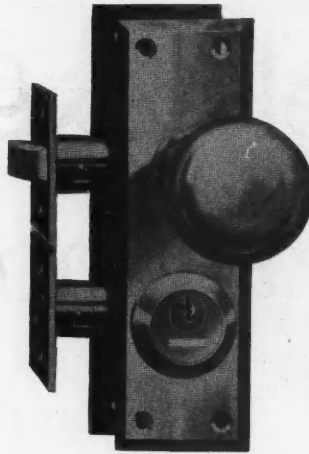
The compartment is of rust resisting steel and forms a rigid, full length, water-tight stall. The wall corners are slightly rounded making it easy to keep clean and sanitary. It will not discolor, or stain, nor easily mar. It is furnished with a heavy coat of especially prepared, gray waterproof paint which adheres without peeling or chipping and can be finished, after installing in any color to harmonize with the bathroom.

Where marble or similar walls are specified for the shower compartment, this complete unit may be used and the steel walls enclosing the marble or other material will insure a thoroughly water-tight job. The receptor is not built-in as a part of the floor on which it rests nor of the room walls and this prevents any possibility of cracking as a result of the settlement or vibration of the building, walls or floor. The steel walls are secured directly to the 1-inch extension of the steel plate embedded in the receptor. Compartments may be obtained in five different sizes.



### Tubular Latch and Lock

SIMPLICITY of construction that allows little possibility of getting out of order, positiveness of action and the facility with which it can be installed, are the outstanding characteristics of the tubular lock and latch shown in the illustration. It is a well-made latch such as may be used for practically any door in the house and contains a minimum of working parts, all contained, with the exception of the spindle of course, in a tubular case.



Simplicity of Construction and Installation Is the Outstanding Characteristic of These Tubular Latches and Locks.

To install this latch all that is necessary is the boring of two holes, one to contain the bolt assembly and the other for the spindle to pass through. This eliminates the necessity of all mortising and saves a considerable amount of time. Then, too, the operation is so simple that in the installation of this latch, it is not necessary to employ skilled and expensive labor, a fact which effects an additional saving of expense.

Bit guides which insure boring the holes straight and in proper relation to each other are furnished by the manufacturers to facilitate installation.

These tubular latches are made in a wide variety of models, suitable for interior, exterior, French and screen doors and also for cupboard doors. Tubular locks embody the same features of simplicity and quick installation.



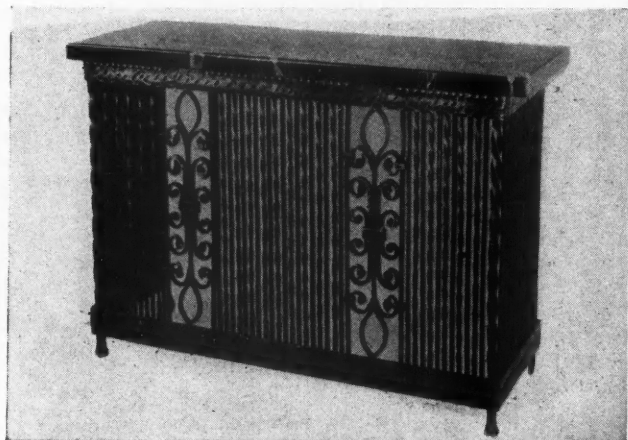
### Humidifying Radiator Covers

THE ordinary radiator is a very useful piece of equipment but it has several serious faults. It takes up space (even in summer when it serves no useful purpose) is often unsightly, soils the walls, decorations and draperies. Then, too, it dries out the air until the furniture deteriorates rapidly. All these faults may be overcome, however, by the installation of the metal radiator covers.

These covers are made of heavy gauge steel in simple and attractive designs and are finished to match either oak, walnut or mahogany or in white or ivory. The finish is of many coats of the best enamel baked on. The front and side panels are rod grilles or imitation of cane.

With these covers installed, low, under the window type radiators become attractive window seats, well insulated by the water reservoir under the top. High radiators can be used as consoles, tables, book or radio stands and the formerly unsightly radiator becomes an attractive and useful piece of furniture.

The water reservoir under the top keeps the room at the proper humidity for health. With the correct humidity a temperature of 68 degrees gives comfort while with low humidity several degrees higher is required, and the dry air is injurious to health.



Metal Radiator Covers that Supply Proper Humidity and Are Decorative.





## Massillon Bar Joists—Used in the Finest Buildings Are Revolutionizing The Building Standards for Smaller Buildings

Practical in every respect—Massillon Bar Joist Floor and Roof Construction is built into the smaller store and apartment buildings at a cost per square foot approaching that obtained in the largest buildings. Two factors have made this possible: *All materials shipped from stock—no forms or special plant equipment required.* Any contractor can build a Massillon building without previous experience.

### With Massillon Fireproof Floor and Roof Construction—

You are not limited by the size, shape or type of building.

You get the same fine construction that is specified by leading architects.

You can capitalize on this added value in building to rent or sell.

Increased bank loans usually let you do this without any additional investment on the part of the owner.

Our engineers prepare layout drawings and estimates without obligation. We furnish a complete service in structural steel, metal lath, steel windows and reinforcing bars. Send us a sketch or set of plans for your building.

## THE MACOMBER STEEL COMPANY

*Successors to The Massillon Steel Joist Company*

909 Belden Ave., N. E.

CANTON, OHIO

Canadian Manufacturing and Sales Agents: Sarnia Bridge Co., Ltd., Sarnia, Ont.

### Disappearing Attic Stairs

**I**N providing for an attic stairway in the modern small home it is often necessary to sacrifice room or closet space which is expensive and seriously needed. And yet the storage space of the attic is too valuable to be wasted and may even, at a later date, be wanted to provide an extra room for recreational or other purposes. It must therefore be accessible. This problem is solved by means of the disappearing stairway, illustrated here, which occupies no space on the lower floor, when not in use, and very little space in the attic.

This stair consists of a strongly built flight of stairs, with rigid hand rail, mounted on a solid panel that closes into a frame set into the ceiling. When the stairs are not in use they are entirely out of the way in the attic, no part of the equipment being visible from the floor below except the panel in the ceiling. A slight pull on a short chain hanging from one end of the panel causes it to swing down toward the floor and the stairs are then slid down the panel.



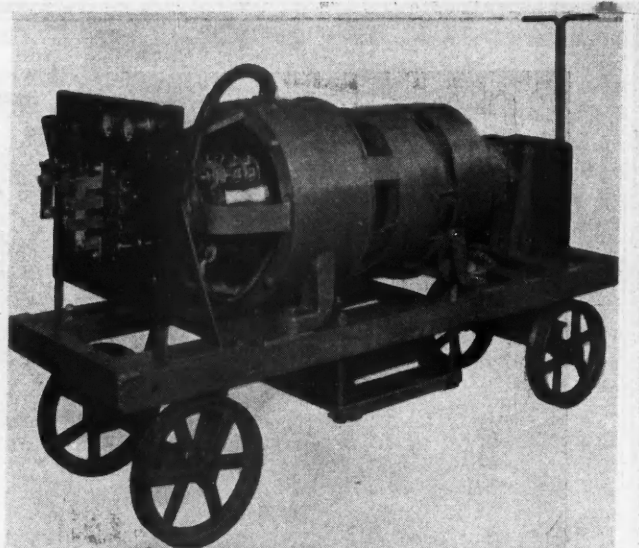
**With a Disappearing Stairway the Attic is Easily Accessible but None of the Valuable Space of the Small House Is Wasted.**

The action of both panel and stairs is controlled by powerful counterbalancing springs that prevent any sudden movement. When the stairs are no longer required a gentle push sends them back into the attic, the panel closes and is held tightly in place by the springs. This stairway is furnished complete ready to install and can be placed in an old home in a day's time and in a new house in a few hours. Simple instructions are furnished with each stair.



### All Welded Steel Welder

**A**MONG the many interesting developments in the machinery building field is the substitution of welded structural steel in place of gray iron castings. In the 1927 model of a well known, 300 ampere, alternating current electric arc welder this welded idea has been carried to its logical conclusion. In this machine, shown in the accompanying illustration, there are only two gray iron castings, weighing together about 15 pounds, on the outfit which have not been replaced with welded steel construction.



**An Electric Welding Machine of All Welded Construction Carries the Welded Idea to Its Logical Conclusion.**

Other sizes and types are being changed over to the steel construction as rapidly as possible by this company.

The underlying idea in the application of the principles of welded steel construction to this welding outfit was to meet the severe conditions to which portable welding equipment is subjected. Failure in operation of a welding machine is, in many cases, a serious matter. It is claimed that the steel construction, due to the fact that it will bend rather than break, reduces the liability of failure for the reason that the bent parts may be straightened and the equipment put in operation without waiting for replacement castings.

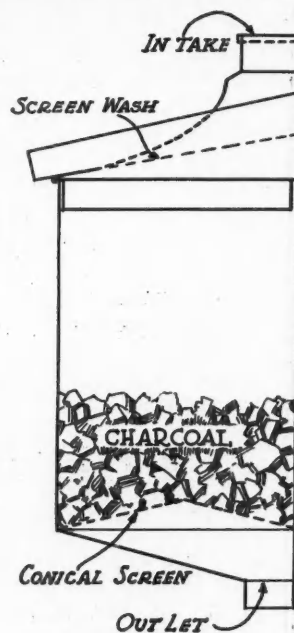


### A New Rain Water Filter

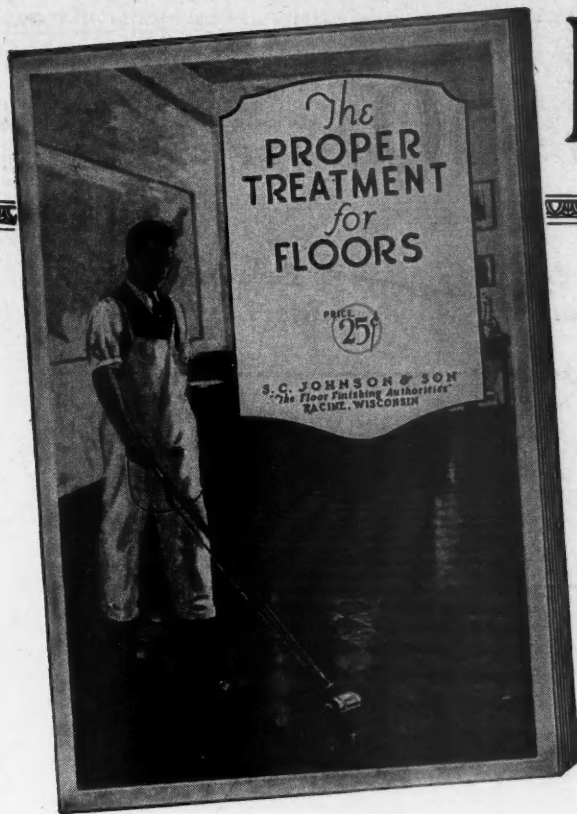
**A** NEW type of rain water filter which has recently been developed and placed on the market is illustrated in the accompanying sketch which gives a very clear idea of its construction. It is made of galvanized iron. The main feature is the open top strainer which is of brass strainer cloth backed up with heavy mesh galvanized wire to prevent anything from breaking through the brass strainer cloth.

This strainer has a slight pitch which makes it self-cleaning. This point can be seen from the illustration. The bottom is an offset pitched bottom with an extra heavy wire mesh, pitched strainer to prevent the charcoal from running into the cistern drain. The pitched bottom makes the filter dry at all times and will not rot out like other types of flat bottom filters.

If the pipe that leads into the cistern is out from the building no greater distance than the diameter of the filter, the filter can be readily adjusted by placing the filter outlet in the cistern drain and turning until the filter fits up against the building in a vertical position.



**In This New Type of Rain Water Filter Nothing Can Break Through the Brass Strainer Cloth.**



# FLOORS

Hard-wood, Soft-wood  
Open-grain, Close-grain

*Dance Floors*

*Linoleums Rubber Tile*

*Cork Carpet*

*Cork Tile Magnesite*

*Mastic Terrazzo*

*Cement*

## ALL FLOORS

**A**LL possible treatments. Where and When and WHY to use Filler, Varnish, Wax, Shellac, Oil, etc. Covering capacities, proper methods of cleaning and refinishing. A gold-mine of practical information for every Builder.

### JOHNSON'S INTERIOR FINISHES

*Varnishes*

*Fillers*

*Waxes*

*Wood Dyes*

*Enamels*

*Undercoats*

*Wall Finishes*

**FREE** This new Johnson Book is free to the building trade. USE THIS COUPON NOW.

*Clip to your business card or letter-head, please.*


S. C. JOHNSON & SON, Dept. A. B. 6, RACINE, WIS.  
*"The Wood Finishing Authorities"*

- Please mail me immediately the new Johnson Floor Book—no charge—no obligation.
- We do our own finishing and are also interested in Wholesale Price List on Johnson Finishes and your FREE offer on the new Johnson Electric Floor Polisher.

Signed \_\_\_\_\_

(Address given on attached card or letter-head)

# HOW DAN DOES IT



*A Department for Passing "Life Savers" along to other Builders*

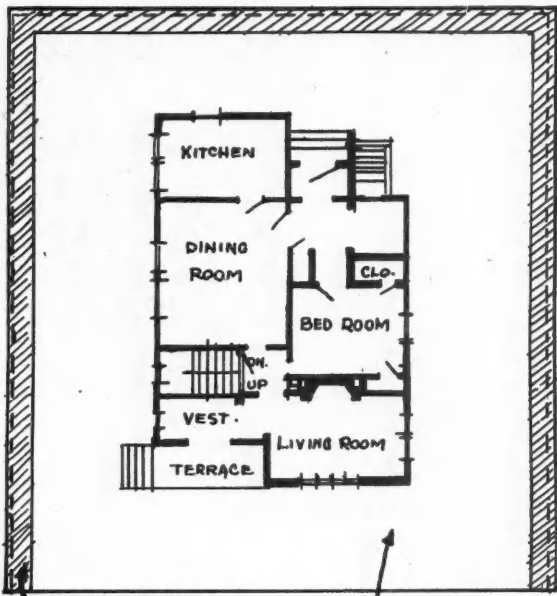
**\$2 for an Idea**

Dan is an ingenious cuss. Nothing ever stumps him. He always knows the way out when he runs into a tough problem out on the job or in the office. Dan is the editor of this Department and will pay \$2.00 each for every good idea he can use here to show and tell other builders "how to do it." Send him a rough sketch and a short description of what the tough job was and how you handled it.

Address Dan-Do-It, care of American Builder 1827 Prairie Avenue, Chicago, Ill.

## For Handling Blue Prints

**B**LUE prints are always hard to handle out on the job, they get dirty and when there is a wind are blown around and often get torn. A method of handling blue prints which overcomes all these difficulties is to make a mounting of wallboard just a little larger than the largest



**TAPE BINDING      CELLULOID COVER**

With a Piece of Transparent Celluloid, a Piece of Wallboard and Some Tape, Torn and Soiled Blue Prints May Be Avoided.

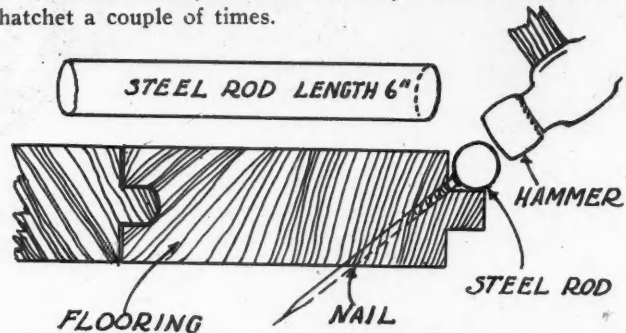
sheet you will need to handle. A piece of transparent celluloid, of the same size as the wallboard is also needed. A strip of tape about 2 inches wide is sewed along three sides of the celluloid. The celluloid is then placed on the wallboard and the tape is glued to the back of the wallboard. This binds the celluloid and wallboard together on three edges leaving the other edge open. The plans can then be slipped between the wallboard and celluloid and are easily read through the latter.

ALFRED SCHUZE, Killeen, Texas.

## For Laying Flooring

**I** HAVE for years used the kink illustrated for laying floors and every mechanic I have ever laid floor with has adopted it so others may also be interested. It simply

consists of a piece of round steel rod, 6 or 7 inches long, which is laid along the tongue of the flooring, one end over the nail head, and truck smartly with the hammer or hatchet a couple of times.



**A Simple but Useful Bit of Steel Rod Which Simplifies and Speeds Up the Work of Laying Flooring.**

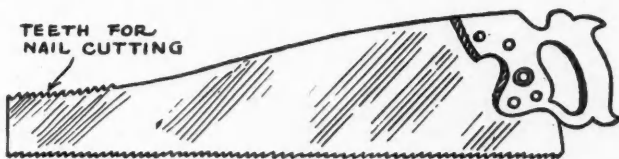
The nail may project nearly 1/2 inch when the rod is used. The only caution necessary is to make sure you have a rod of suitable diameter for the work being done. It is important that the center of the rod should lie below the top edge of the flooring when placed on the tongue. In other words, the radius of the rod should be slightly less than the distance from the top of the tongue to the top edge of the flooring.

This is a life saver on hardwood floors, particularly maple, which comes together hard. It is not to be compared with a nail set which merely sets the nail and is much slower, as this method draws the floor and nail up together resulting in a much tighter and better laid floor.

ERNEST GUSTAFSON, 31 Spruce Ave., Kane, Pa.

## For Cutting Nails

**T**HE sketch shows an idea which I find very convenient. Instead of carrying a nail-cutting-saw around in my tool kit I just file small teeth on the back of my saw for about eight



**Save Your Saw and Always Have a Handy Means of Cutting Nails by Filing Teeth in the Back of the Saw.**

inches at the end. When it is necessary to cut through a nail this serves just as effectively as a regular nail saw and you do not have to bother with that one extra tool to carry around.—W. J. GRANTHAM, Irving, Ill.

# Lightweight! The Saw for Today's Sawing

*Lighter in weight; less width to the blade;  
yet as keen, as sharp, as lasting.*

**A** SAW-MAKING feat! To give carpenters the lighter, narrower saw, that they wanted,—yet to retain all the strength, the toughness, the hardness in the blade.

Disston steel makers (with 70 years of experience to guide them) developed a steel to do it.

Disston saw makers gave those narrow blades spring and life; set and sharpened them to cut fast,—to run easy; balanced blade and handle to “hang” just right.

Today . . . your hardware dealer has practically every Disston Saw in the Lightweight (Ship Pattern) Model.

See them and try them. If he does not have your favorite model, write us, mentioning his name.



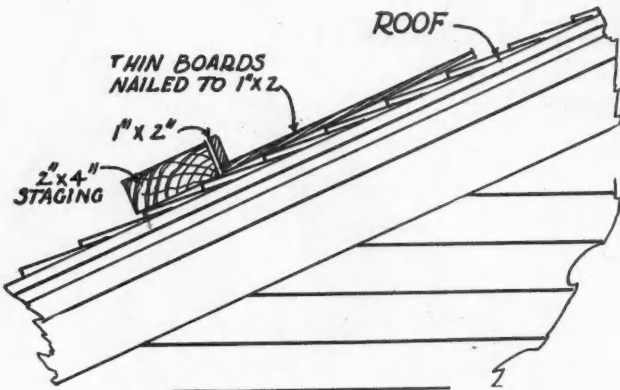
HENRY DISSTON & SONS, Inc., Phila., U. S. A.  
Makers of "The Saw Most Carpenters Use"

# DISSTON

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

**Laying Asphalt Shingles**

**M**OST everyone who has done roofing work has found that asphalt shingles are very easily marred and that the whole appearance of a roof may be ruined by toe



Asphalt Shingles May Be Injured in Laying but Not If You Will Use the Sort of Protection Shown Here.

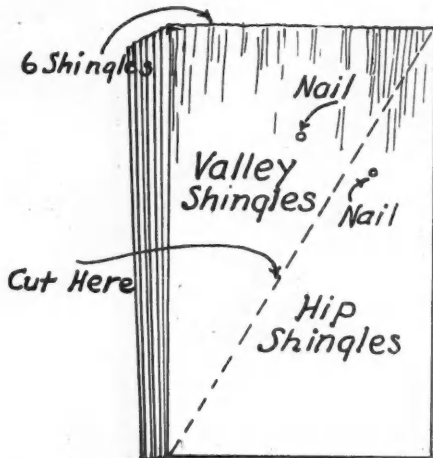
marks if it is not protected in some way while being laid when the weather is warm. Here is a simple means of protection:

I take the boards which are used in packing bundles of shingles, and cut them in two, which makes them about 11 inches long. These pieces are nailed onto the edge of a 1 by 2 strip, leaving not more than 1/2-inch space between them. This is laid on the roof above the staging, as shown in the sketch and furnishes ample protection while you are shingling. These pieces do not need to be fastened to the staging and can be moved up from one staging to another quite quickly. I usually make several of these in lengths from 4 to 10 feet which makes them easy to handle and suitable for either long or short runs.

WILLIAM H. BLAKE, White Hall, Illinois.

**Hip and Valley Shingles**

**I**N shingling a large house with many hips and valleys, I found that I had considerable hand sawing to do on the hip and valley shingles. I had a circular saw, rip and cross cut on the job so I figured roughly how many hip and valley shingles I would need. I then took the best shingles out of the bundles, and nailed them together in bunches of six with shingle nails. One nail in the portion which would be the hip and another in the portion for the valley. I then cut a pattern of the valley (one shingle) with the hand saw and marked the bunches by this pattern. It was then a simple matter to cut all the bunches on the cross cut power saw, following the mark. This worked fine and no shingles were broken.



Cutting the Hip and Valley Shingles with a Power Saw Saves Time and Much Hard Work and Is Quite Simple When You Know How.

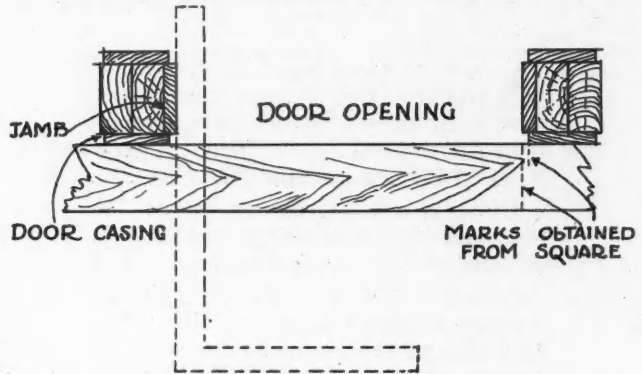
This worked fine and no shingles were broken.

THOS. J. RYAN, Sleepy Eye, Minn.

**Marking the Threshold Board**

**H**ERE is an accurate way to mark off a threshold for a door opening when the door jambs are out of plumb. Take a straight piece of board and place it against the door casing as shown in the illustration. Place your square on the board, first against the jamb and then against the edge of the casing and make marks on the board at both ends of the opening. This gives you the correct length and the different angles on the board.

Now place the threshold alongside the board and mark



Even Though the Jambs May Be Out of Plumb the Threshold Can Be Cut to Fit Perfectly if This Method Is Used.

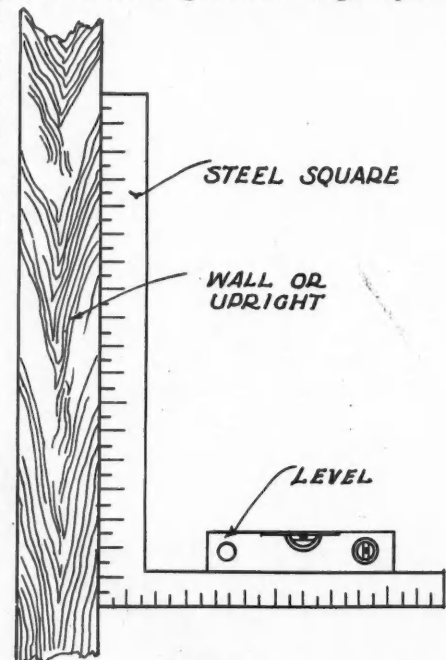
it off in the same manner as you made the marks from the opening. Be sure that you place the threshold on the same side of the board on which the opening was in the first marking. If you follow these instructions you should get a perfect fit whether or not the jambs are square.

CARL JOHNSON, P. O. Box 251, New Britain, Conn.

**This Youngster Solves His Own Problems**

**I** READ your magazine regularly and first of all the "How Dan Does It" department. I am 12 years old and would like to know whether this idea that I have worked out is all right or not. I was making a desk and some other things but could not get them straight up and down as I had no level with both horizontal and vertical gauges. I did have an ordinary horizontal level and a square, so figured I could get them plumb with these. I placed the square against the upright with the level on the arm of the square as shown in the drawing. By getting this level in two directions I can get the upright plumb.

RICHARD NAUGLE, 211 Summit Ave., Ligonier, Pa.



This Lad Worked Out His Own Method of Plumbing and Made a Start Toward Solving the Bigger Problems that He Will Run into Later.



# The first thing the buyer sees

WHEN you lead a prospective customer to a new house, the roof looms large among those important first impressions that so often make or break a sale.

A roof with the distinctive beauty of Johns-Manville Hexagonal Asbestos Shingles becomes a big selling asset. The pleasing broken line effect is a

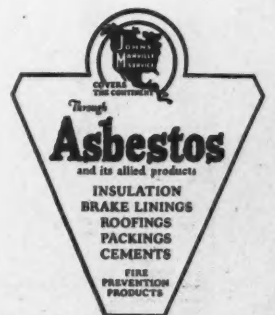
refreshing departure from the stiff uniformity of ordinary shingles. The name of the maker is an old advertising friend. It is hardly necessary for you to emphasize that these shingles are fire-proof and truly everlasting.

The cost of these hexagonal shingles is not great. They will pay their own way.

JOHNS-MANVILLE CORP., 292 Madison Avenue, at 41st Street, New York  
Branches in all large cities. For Canada: CANADIAN JOHNS-MANVILLE CO., LTD., Toronto

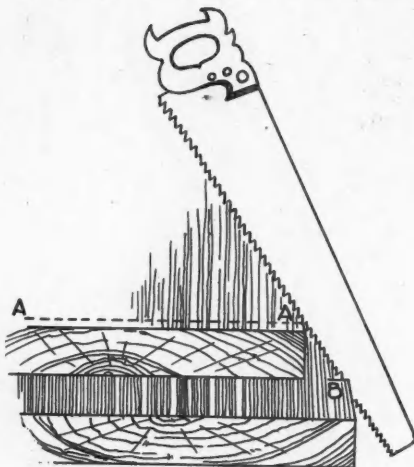
# JOHNS-MANVILLE Asbestos Shingles

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



### How to Trim a Board

WHEN a board has been cut just a trifle too long, instead of using a block plane it can be quickly and easily made the right length by sawing in the manner



By Using a Saw in This Way You Can Save the Time and Work of Planing a Board That Has Been Cut Too Long.

The saw must be sharp and it is best to have one filed as for use in soft lumber.

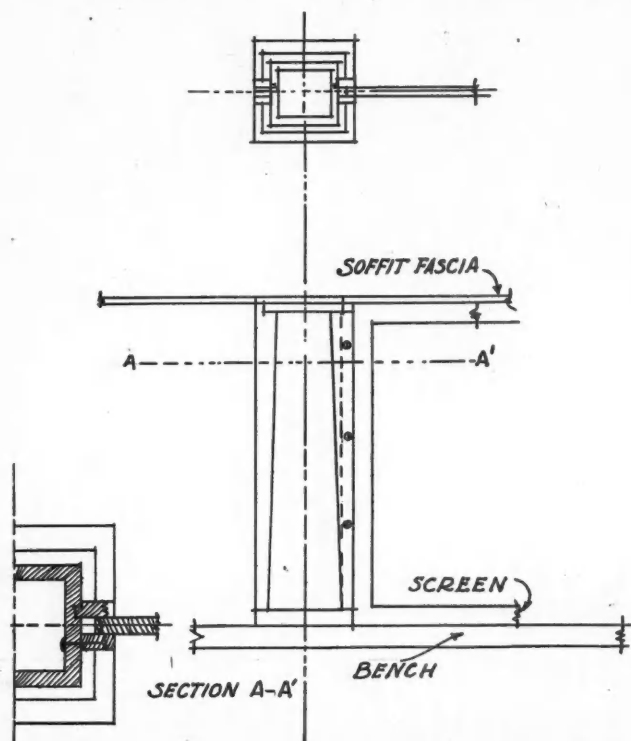
JOHN C. STILLE, Eagle Point, Ore.

shown in the sketch. With a knife or sharp pencil mark the amount to be sawed off, A-A in the illustration, place another piece of board under it, allowing the bottom board to project beyond the end to be cut off and beyond the side at which the cut is to start. Start the saw in the bottom board, at "B" in the sketch, and saw along the line in the usual way.

### Fitting Porch Screens

THE carpenter is often confronted with the problem of fitting screens to the tapered posts of a porch. The screen must fit tightly, make a neat appearance and be easily removable. This is really not a difficult thing to do if you will use the method illustrated in the sketch which is self-explanatory.

A tapered guide is fastened to the column so that the edge away from the column is vertical. The size of this guide depends upon the size of the column. On a post



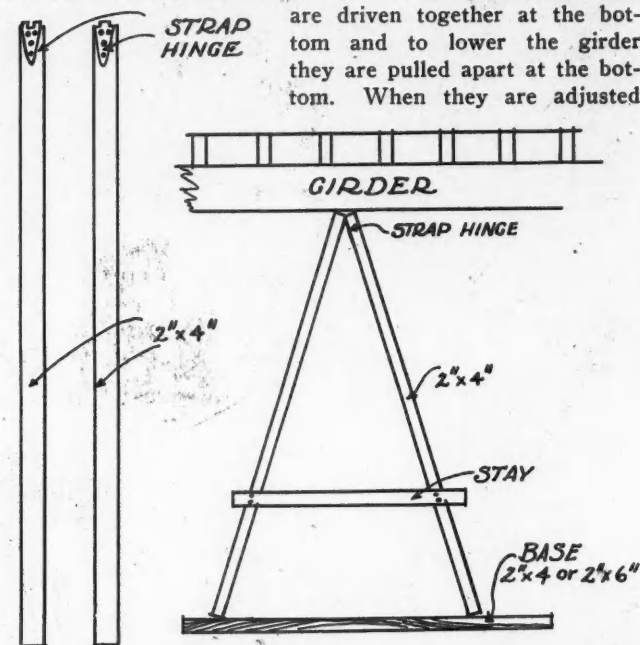
This Sketch Plainly Illustrates a Method of Fitting Porch Screens Where the Posts Are Tapered.

with a  $\frac{3}{8}$ -inch taper a guide  $1\frac{1}{2}$  inches wide at the base is suitable. A cleat is fastened to each side of guide, the outside cleat being permanently nailed while the inside cleat is secured with a rabbet joint and screws so that it is easily removed when the time comes to put up or take down the screens. The screens are then fitted to the frames by the guides, in the ordinary way.

CLARENCE JOHNSON, Brule, Neb.

### Temporary Girder Support

HERE is a sketch of the system I use to support girders temporarily, as is sometimes necessary. I take two pieces of 2 by 4 a little longer than the distance between the basement floor and the girder and attach a strap hinge



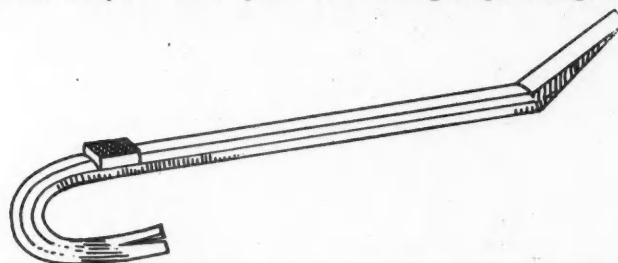
Where a Temporary Support for Girders Is Required This Will Be Found a Practical and Convenient Method.

to the desired height, I simply nail a stay across the two legs and they hold their position rigidly.

N. S. L., Herried, S. D.

### Improving Your Ripping Bar

THE sketch shows a ripping bar that can not be bought. When pulling down a scaffold and clearing the lumber of nails, I conceived the idea of putting a "pole," similar to that of a light hand ax, on the back of the hooked end of my ripping bar. The blacksmith who did the job for me made the pole from a piece of a shoeing rasp, dulling the



Another "Improved" Ripping Bar with a "Pole" for Driving Back Nails and Similar Purposes.

file cuts considerably, of course, and I have found the remodeled bar a wonderful convenience. Not only can a man strike a tremendous blow with it but it is always on hand to drive back nails before pulling. Have your ripping bar remodeled like this and you will be pleased with it.

L. M. HODGE, 1815 E. Glenock Blvd., Glendale, Calif.



# Fire Blazes Atop Skyscraper

Spectacular New York Fire Proves Need of Protecting Buildings Under Construction

**A** FIRE, at night, atop a 38-story skyscraper, is a spectacular sight. On the night of April 13, New Yorkers were thrilled by just such a fire which started about 7:45 P. M., in the scaffolding on the tower of the new Sherry-Netherlands Apartment Hotel, under construction at 5th Avenue and 59th Street, New York City. Before the fire had burned itself out, nine hours later, five fire alarms were turned in. The firemen were unable to fight the blaze effectively and it finally died merely from lack of fuel.

Quoting from the report of this fire by the Bureau of Surveys of the New York Board of Fire Underwriters, "The damage was confined chiefly to the exterior of the building except for the complete destruction of the elevator machinery at the top of the tower. . . . The fire burned the material, brick, runways and scaffolding down as far as the 13th floor. . . . The four-inch brick facing on the north side in the court from the 13th floor to the top of the tower, as well as the terra cotta trim and window sills, were quite badly spalled and cracked by the heat or broken by falling timbers.

"An ornamental terra cotta finished arch across the court at the 23rd floor level was damaged by a timber falling from above. At least three eight inch 'H' columns at the top of the tower, which had not yet been covered with fireproofing, buckled either because of the heat or because of an extra stress placed upon them when other diagonal members expanded, and will probably have to be replaced. Damage to adjacent buildings is chiefly to roofs, skylights and windows and is negligible in comparison with the damage sustained by the hotel building.

"The building is owned by the Sherry-Netherlands Corporation and was insured to the extent of \$2,000,000. The loss has not been settled and the extent of the damage is not known. Estimates place the loss in the neighborhood of \$200,000. Claims on adjacent property are more or less minor.

"One of the features of the fire," says the underwriter's report, "is the absence of damage to the interior of the building except for that already stated. The reason for this is probably that the court acted as a flue and after the windows in the court were broken, air was supplied to the flames from the inside of the building in such a manner that the draft prevented flames or smoke from entering any of the floors to any great degree. Water, however, damaged construction materials located on the various floors of the building."

In drawing its conclusions the report offers suggestions for future protection against similar occurrences.

"The practice of erecting large combustible hoistways, scaffolding or similar structures either within or on the outside of a building of such height as is generally employed in the construction of new buildings or in the alteration of old buildings, with little thought to fire preventive or fire extinguishing equipment, is deplorable. . . . The amount of flammable material piled upon the various floors of high buildings in course of construction as well as the more or less common use of open salamanders and other portable fire heated appliances and practically a universal practice of smoking by the workmen should be



Thousands of New Yorkers Were Thrilled by the Spectacle of a Fire at the Top of This New 38-Story Skyscraper, at 5th Avenue and 59th Street, New York City.

sufficient alone to require some reasonable, portable, fire fighting apparatus and the maintenance of a fully enclosed elevator or hoist so that such apparatus could be quickly sent to any point where it might be needed. . . . It is a recognized and undisputable fact that the first few minutes are the all-important ones in fire fighting and while a 40-gallon portable chemical may be all that is necessary to extinguish a fire in its incipency, it may require the best efforts of the fire department and its equipment to extinguish it later. Had it been possible to utilize such equipment in this instance, this fire would probably have been extinguished before it had reached serious proportions.

(Continued to page 184)



# MOTOR TRUCKS AND TRAILERS

## Answers to the Driver Problem

**E**VERY owner of a building or contracting business knows that his drivers will make or break the success of his truck transportation system.

How can you select men that will help rather than hinder the service? How can you help them to take interest in their work? What discipline system is the best.

These are important questions. They are questions that are receiving a great deal of new thought among the larger builders and contractors today. Many plans have been tried out and many have been successful, while others have been discarded.

### Points on Choosing Drivers

The best method of securing and holding the best drivers is to set a wage a little above the average for your locality. Then you can afford to demand more of the applicant.

In one company every applicant who makes a favorable impression in an interview with the personnel officer of the company and gives surface indications of being likely material, must submit a list of his previous activities as far as employment is concerned for a period of five years. The truck superintendent, through letters and personal inquiry, checks up on the record of the applicant, not in a casual, incidental way, but in a systematic and thorough manner. Preference is invariably given to married men.

The two salient things that are looked for in the analysis of an applicant center around the questions:

1. "Is he of a nature to yield to training and discipline, and to recognize and assume responsibility?"
2. "Does he actually want permanent employment?"

Experience as a driver is a minor factor in considering an applicant's qualifications. This company's system calls for a thorough course of schooling before a man is given charge of a truck, and while previous experience in handling automotive equipment is of value to him, it is not essential.

When an applicant has been found, after inquiry, to be worthy of employment he then is required to pass a complete physical examination.

Every driver should be examined for imperfect vision, poor hearing or any other physical ailments, such as heart trouble, nervous disorders, etc. Next his character and home life should be carefully scrutinized. A man who has an unhappy home environment will not make an efficient driver. A married man between the ages of 24 and 40 is the most dependable.

General intelligence is the driver's most important asset

and it is extremely unprofitable to hire a driver who lacks ordinary intelligence. Some concerns are using psychological tests which may be applied to the driver applicant in a few minutes. These tests reveal whether the driver is cautious or careless, what his general standard of intelligence is and whether he is dependable in a crisis. Shortcomings in any of these qualities are sufficient reason for ineligibility.

One test is designed to find out the applicant's power of attention, observation, memory and ability to follow directions, etc. He is required to glance over a sheet containing various figures, to describe them, to divide lines into various portions, to recognize opposites and similar problems. The applicant need not be intellectually a giant but he must be able to carry out simple directions, recognize objects under unusual conditions, learn simple things and have a normal memory.

However, intelligence is not the only qualification for a safe driver. A man may have a very alert mind and at the same time be habitually careless or reckless. These two failings are largely a matter of habit and lack of training. To test the driver's "bump of caution," he is taken into a room and told to handle certain objects and perform certain operations. The manner in which he follows direction and the time he requires to fully grasp the situation are carefully noted. To determine his presence of mind, he is told to operate an electrical board which is designed to give him an unexpected scare. He is cautioned beforehand that should anything unusual develop to shut off the switch and step on what corresponds to the brake of a truck. The driver's quickness and steadiness under the emergencies of modern street traffic are thus determined.

### Right and Wrong Discipline

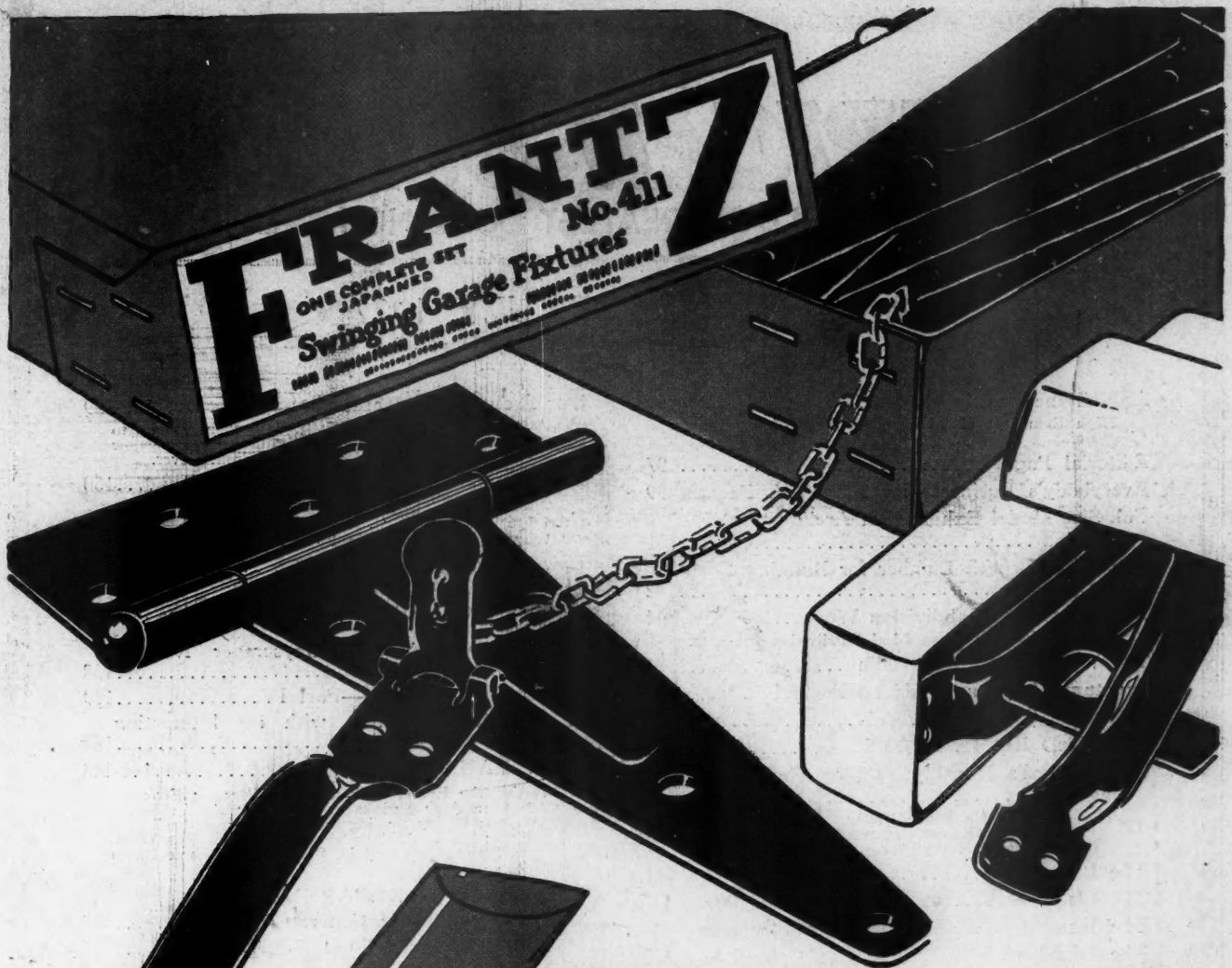
The right kind of discipline needs a firm hand and cannot be compromised with soft-hearted methods.

A case of point is that of a concern in a large eastern city. This concern found that it was losing money through looseness in the direction of its driver personnel. The drivers at this time were under the direct supervision of a manager who knew his business thoroughly but lacked the proper executive ability to get 100 per cent efficiency from his force. The manager was entirely too good-hearted.

Of course the drivers termed him a "good fellow," and vowed they would do anything within their power for him. But therein lay the difficulty. Their good intentions ended with their avowals.



This Man Who Drives Your Truck Can Make or Break Your Transportation System.



## Why it Pays to Look for Frantz Red Labels

The Frantz Hardware illustrated on this page is a set of popular No. 411 Garage Door Fixtures, one of the items in the Frantz Line that has been a factor in building up the reputation that makes the Red Labels stand for the best.

Frantz Red Labels are your guide to the best in Builders' Hardware—an assurance of perfect satisfaction both to you and your customers.

Back of every label lies not only a guarantee of expert workmanship and highest quality materials but a reputation, 15 years old, that has been built up by constantly giving the best the human skill can produce.

Each Frantz product is carefully designed to fit the work for which it is intended, to do the work efficiently and to give long, satisfactory service.

Look for Frantz Red Labels on your Dealer's shelves—ask him for a demonstration of one or more items. Your own judgment will convince you of their many superior features. Send for your copy of the handy wall hanger that illustrates the entire Frantz line of Guaranteed Builders' Hardware. Hang it in a conveniently seen location as you will find it a great help in specifying or estimating the hardware for any home, garage or barn.

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