

# AMERICAN BUILDER

## THE WORLD'S GREATEST BUILDING PAPER

Vol. 40.

CONTENTS FOR OCTOBER, 1925

No. 1.

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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 projects, machinery, equipment, supplies or tools.

Be sure in writing to advertisers to say: "I saw your advertisement in the AMERICAN BUILDER."

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MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS

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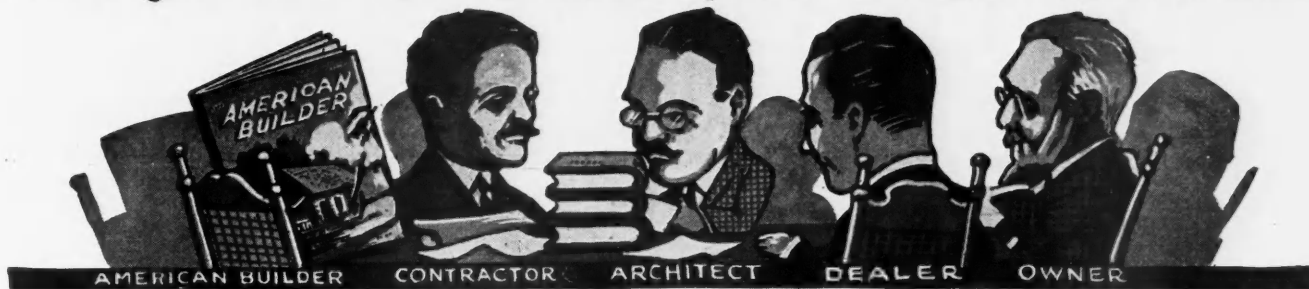
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# AROUND THE FAMILY TABLE



## 1925 Annual Well Received

**CLEVELAND, OHIO**  
July 14, 1925.

**AMERICAN BUILDER:**  
We take pleasure in acknowledging the de luxe copy of the June AMERICAN BUILDER, which we have looked through with a great deal of interest.  
Allow us to compliment you on the nice job that you have put out with the particularly attractive embossed front cover.  
This will be kept in our permanent library and used as a reference for our sales department.  
THE KELLY ISLAND LIME & TRANSPORT CO.,  
William Comstock,  
Sales Department.

**GRAND RAPIDS, MICH.**  
July 14, 1925.

**AMERICAN BUILDER:**  
We are in receipt of de luxe copy of your June number and for which kindly accept our most heartfelt thanks, and assure you that same will be put to very good use.  
NATIONAL BRASS COMPANY,  
E. B. Neuman,  
Sales Mgr.

**DETROIT, MICH.**  
July 14, 1925.

**AMERICAN BUILDER:**  
The de luxe copy of the June AMERICAN BUILDER has been received and we want to thank you for this book.  
UNITED STATES RADIATOR CORPORATION,  
C. B. Hammond,  
General Sales Department.

**CHICAGO, ILL.**  
June 19, 1925.

**AMERICAN BUILDER:**  
This is a mighty fine publication in every way and I think will do a lot of good.  
ILLINOIS LUMBER & MATERIAL DEALERS' ASSN.,  
J. F. Bryan, Secretary.

**WASHINGTON, D. C.**  
June 17, 1925.

**AMERICAN BUILDER:**  
The AMERICAN BUILDER annual number for 1925 I find attractive in appearance and which contains many useful articles and illustrations.  
DEPARTMENT OF COMMERCE,  
John M. Gries,  
Chief, Division of Building and Housing.

**NEW YORK, N. Y.**  
June 17, 1925.

**AMERICAN BUILDER:**  
The June issue of AMERICAN BUILDER is a splendid piece of work. Allow me to congratulate you on behalf of the members of the Society's staff as well as myself personally.  
THE SOC. FOR ELECTRICAL DEVELOPMENT, INC.,  
Wm. L. Goodwin,  
Operating Vice-Pres.

**CHICAGO, ILL.**  
June 19, 1925.

**AMERICAN BUILDER:**  
The AMERICAN BUILDER annual number for 1925 is splendid and you deserve the greatest credit for this real contribution to the building history of the year.  
We find it to be replete with information of value and interest to us.  
THE GYPSUM INDUSTRIES,  
H. H. Macdonald, Secy.

**VANCOUVER, B. C.**  
June 17, 1925.

**AMERICAN BUILDER:**  
We must indeed congratulate you on this number, which is high class in every respect and seems to cover the entire field of American building, and we thank you very much for placing this copy in our hands.  
EDGE-CUMBE-NEWHAM CO., LTD.,  
A. E. Roberts, Sales Mgr.

**BOSTON, MASS.**  
June 19, 1925.

**AMERICAN BUILDER:**  
The AMERICAN BUILDER annual is certainly a publication that yourself and your associates may well be proud of and you are certainly doing a service to building interests of the country which ought to be fully appreciated by them.  
FRANKLYN P. SHUMWAY CO.,  
Franklin P. Shumway.

**HOLLAND, MICH.**  
June 22, 1925.

**AMERICAN BUILDER:**  
Your favor of the 17th received; also your very fine June number, for which I thank you. The fact that we have used space in your magazine for so many years is evidence that we like your publication and also that it pays to use it.  
HOLLAND FURNACE COMPANY,  
A. H. Landwehr.

**ROCHESTER, N. Y.**  
June 22, 1925.

**AMERICAN BUILDER:**  
Thank you for sending us a copy of the AMERICAN BUILDER annual number for 1925. This is a splendid publication which is not only interesting but should be very serviceable to your readers and to those seeking information on building subjects. As usual, you have set a new high water mark of quality which reflects great credit upon your publication.  
NORTHEASTERN RETAIL LUMBERMEN'S ASSN.,  
Paul S. Collier, Secretary-Manager.

**TRENTON, N. J.**  
June 22, 1925.

**AMERICAN BUILDER:**  
The writer wishes to thank you for the annual number of the AMERICAN BUILDER which was received this date. After going through the paper only hurriedly, I was very much impressed with its colorful array of ads and suggestive building plans and can assure you that it will be greatly appreciated by the writer after having an opportunity to go through it more carefully.  
CIRCLE F MFG. CO.,  
Ray L. Speicher.

**NEW YORK, N. Y.**  
June 23, 1925.

**AMERICAN BUILDER:**  
We want to thank you for your copy of the AMERICAN BUILDER annual number which we have forwarded on to our architectural department for their information and use. We appreciate your sending this on to us.  
DEVOE & RAYNOLDS CO., INC.,  
H. L. Stephen,  
Asst. Advertising Mgr.

**PROCTOR, VT.**  
June 24, 1925.

**AMERICAN BUILDER:**  
The special number of the AMERICAN BUILDER which you mailed on June 15 reached us this morning. It is a very interesting publication. No doubt it will be received with special favor by those who are directly connected with building projects.  
VERMONT MARBLE COMPANY,  
D. C. Gale, Advtising Dept.

**SENECA FALLS, N. Y.**  
July 14, 1925.

**AMERICAN BUILDER:**  
This is indeed an interesting publication and we believe will prove invaluable for reference, etc. Its handsome appearance is evidence of the work as accomplished by the AMERICAN BUILDER.  
THE GOULDS MANUFACTURING CO.,  
J. B. Trotman,  
Manager Commercial Pump Sales.

**PHILADELPHIA, PA.**  
June 25, 1925.

**AMERICAN BUILDER:**  
The annual number for 1925 of your publication referred to in your letter dated June 16 has just been received. The writer has gone over this issue and finds it a very complete, attractive and instructive one.  
THE EUGENE MCGUCKIN COMPANY,  
Secretary.

**PHILADELPHIA, PA.**  
June 25, 1925.

**AMERICAN BUILDER:**  
Mr. Ernest T. Trigg, our president, has given the writer your annual number for 1925. Mr. Trigg was much interested and we thank you for the copy sent and congratulate you on its appearance and make-up.  
JOHN LUCAS & CO., INC.,  
Walter H. Price.

**EASTON, PA.**  
July 15, 1925.

**AMERICAN BUILDER:**  
The leather-bound copy of the June issue of the AMERICAN BUILDER came to us today in good condition and it will find a useful place in our office library.  
ALPHA PORTLAND CEMENT COMPANY,  
F. W. McElroy,  
Service Department.

**SAGINAW, MICH.**  
July 20, 1925.

**AMERICAN BUILDER:**  
We feel that the June issue is a book of which you may well be proud.  
THE LUFKIN RULE CO.,  
N. A. Ellis,  
Sales Department.

**PHILADELPHIA, PA.**  
July 20, 1925.

**AMERICAN BUILDER:**  
The issue does you great credit.  
NORTH BROS. MFG. CO.,  
A. C. Albrecht,  
President.

**BEATRICE, NEB.**  
July 14, 1925.

**AMERICAN BUILDER:**  
This book will be filed for its permanent reference value. Although I have just glanced through it, it looks to me like the most complete book you have ever put out.  
Next year we shall try to use a little more space than we did this year in the de luxe copy.  
F. F. KEES MFG. CO.,  
A. G. Phillips,  
Ass't Secy.

**BOSTON, MASS.**  
July 16, 1925.

**AMERICAN BUILDER:**  
The entire issue is one for which you are to be congratulated.  
SAMUEL CAROT, INC.,  
March G. Bennett,  
General Manager.

**CLEVELAND, OHIO**  
July 14, 1925.

**AMERICAN BUILDER:**  
We are indeed pleased to advise you that this volume has been received and it surely does measure up to all advance notices.  
We are more than pleased to advise you that this book will be placed in a prominent location in our office and it will always be a pleasure to refer to this volume for information.  
THE SANDUSKY CEMENT CO.,  
A. T. McCormack,  
General Sales Mgr.

Horse Head Zinc conductor pipes, eaves-troughs, gutters, and roofing are for moderate priced homes as well as for pretentious dwellings. To the owners of both, they make the same appeal—long life, low cost, and uninterrupted service.



Horse Head Zinc is durable—it will last a lifetime. Being durable, its first cost is the only cost. No repairs; no replacements.

And the first cost is surprisingly low—lower than that of any other comparable permanent metal.

Horse Head Zinc conductor pipes, eaves-troughs, gutters, and fittings in all standard shapes and sizes are always available through your local sheet metal contractor.

**The New Jersey Zinc Company**

*Established 1848*

*Products Distributed by*

**The New Jersey Zinc Sales Company**

160 Front Street, New York City

CHICAGO • PITTSBURGH • CLEVELAND • SAN FRANCISCO



# AMERICAN BUILDER

Formerly AMERICAN CARPENTER AND BUILDER

## Community Conference Board

**T**HE Community Conference Board of Rochester, N. Y., recently made public a report of the progress it has made in stabilizing conditions and in reducing seasonal unemployment in the building trades.

The Board was organized in 1921 at the suggestion of George Eastman, chairman of the Eastman Kodak Company. It consists of two representatives of the Chamber of Commerce, two building contractors, three representatives of the building trades unions and one each from the city planning commission, the real estate board, the local society of architects and the Rochester association. There are also two representatives of the municipal government—the fire marshal and the superintendent of school buildings.

The board meets once a month. It acts as a fact-finding body and works largely through newspaper publicity. An employment survey is made out monthly from questionnaires sent to the employers who employ approximately 80 per cent of the construction labor in the city. Following are some of the definite advantages of the work of such a board in any community:

1. It helps to provide steady all-year employment for trade workers.
2. It enables the contractor to reduce his overhead by furnishing continuous work.
3. It aids the architect by at least partially cutting down seasonal peaks in his office.
4. It helps the merchants by providing steady work to some of their customers; a steady worker is a steady buyer.
5. By stabilizing conditions it tends to attract apprentices to the industry and helps to keep good mechanics in the community.



## City Zoning Increases

**T**HERE has been an increase of more than 130 per cent in the number of people living in zoned cities and towns in the United States during the past four years, according to a recent report by the U. S. Department of Commerce. By the first of July this year more than 26,000,000 people were living in 366 zoned municipalities as against less than 11,000,000 people in 48 zoned cities and towns in September 1921. The number of zoned municipalities thus increased more than seven times during the four year period. These statistics were compiled by the Division of Building and Housing of the U. S. Department of Commerce.



## Foreclosure Insurance

**I**NABILITY to pay off the mortgage on the home always has been the cause of much human misery. But the public is rapidly being educated up to protection against almost every kind of loss, so the foreclosure disaster is occurring less frequently. Just as the necessity for protection against fire is generally recognized, so the insurance which guarantees the payment of the mortgage, in event of the death of the breadwinner, is becoming important.

"As fire insurance provides for the covering of losses from fire, so can life insurance be written to provide for the payment of a mortgage in event of the death of the

person whose property is so burdened," said F. A. B. Page, of the Prudential Ordinary Issue Department. "The property is thus left free and clear for his heirs."

"Term insurance, familiar to every business man, is now written for the purpose of mortgage redemption. The man who has planned to pay off his mortgage during the coming ten years may not be able to afford to pay the regular premiums on other forms of insurance for an amount as large as he would wish. While he has the mortgage interest and installments to meet, term insurance will give him the necessary protection at a minimum expense."



## Construction Record Broken

**A**UGUST had the highest total of construction contracts on record, according to F. W. Dodge Corporation. New construction work started in the 36 states (which include about seven-eighths of the total construction volume of the country), amounting to \$589,690,200. The previous high record was in March of this year, with a total of \$546,970,700. The August increase over July was 11 per cent; over August, 1924, 66 per cent.

Construction started in the 36 states during the past eight months has reached a total of \$3,778,792,000, an increase of 25 percent over the corresponding period of 1924, and by far the largest amount for any similar period of any year. At the end of June, this year was 15 per cent ahead of 1924; at the end of July 20 per cent ahead; and at the end of August 25 per cent ahead. This shows the rapidity of the rise in building activity during the past few months.

The big August volume was to an extent due to largely increased activity in and around New York City, where, up to July 1, this year's building activity was comparatively low. August was a record month in building contracts in New York and vicinity, as well as in the entire territory covered.

Last month's building contract record included: \$263,485,000, or 45 per cent of all construction, for residential buildings; \$105,848,900, or 18 per cent, for commercial buildings; \$33,667,200, or 6 per cent, for educational buildings; \$32,472,200, or 6 per cent, for social and recreational projects; and \$22,692,800, or 4 per cent, for industrial buildings.

Contemplated new work reported for the 36 states in August amounted to \$820,602,200, which also broke all records.



## To Expand Apprentice Training

**T**HE success in vocational training which the plastering contractors began in 1922, with a night school class at Cass Technical High School, Detroit, and which blossomed in 1924 into day classes for bricklaying, plastering and art tile setting, will result in classes in plumbing, carpentry, roofing and others of the twenty-one basic building trades being added to the apprentice school if present plans go through.

On June 17, this year, the first graduates of the bricklaying and plastering classes received "Certificates of Accomplishment" at the first annual commencement of the Detroit Continuation and Trade Schools. Twenty apprentice plasterers thus became full-fledged journeymen. These graduates have obtained excellent jobs and some of them are now holding positions as foremen and superintendents.

# "Why we bought an Autocar

*when we were absolutely not  
in the market for a truck"*

By E. L. Anderson, Pres., Anderson-Davidson Lumber Company, Indianapolis, Ind.

"AT the time we purchased this truck, we were absolutely not in the market for truck equipment. Your salesman happened along with a KA model Autocar, five roller body, asking us for permission to demonstrate the truck. I thought the best way to get rid of the salesman was to give him an over capacity load and let him deliver it to a place I was confident he could not get to. The consequence was, we loaded about 4800 feet of lumber on this truck and delivered it to a job where we had to back into a building lot over a ten inch curb to a distance of about 150 feet. I, personally, went along with the truck to see how it would perform, and to my amazement, I never saw a truck handle a load as easily as this Autocar did.

"Your salesman allowed us the privilege of using the truck two or three days. This gave us ample opportunity to find out under all delivery conditions how the truck would operate, and we certainly gave it a work-out.

"This KA model Autocar can be manoeuvred around our yard with much more ease than any other type of truck on account of the distinctive short wheelbase. Another feature we like very well is the body and



4-cylinder KA model Autocar. The extra long wheelbase and engine-under-the-seat design give maximum body space for extra long loads yet keep the turning radius at a minimum.

the 34-inch wheels which are not high and unhandy like the majority of trucks, and, as to power, it is indeed remarkable how this truck can pull. Having been in the building and material business for twenty-five years, I have had the opportunity of using many differ-

ent makes of trucks. I feel confident that the Autocar is one of the best designed trucks for the lumber business.

"Our yard capacity is about three million feet. We are located in the Northeast section of Indianapolis, and our business consists of deliveries to all points in Marion County. The majority of our deliveries are in new sub-divisions where it is very difficult for a truck to operate. Also in stock piling lumber at the job, we are always called upon to place it in the most unhandy place.

"We find that the Autocar is so constructed that we do not have much side-sway, so that in hauling frames and inside finish on the truck there is no damage from scarring our mill work.

"We take pride in delivering our work in first-class condition and this the Autocar does to our entire satisfaction."



This picture illustrates how easily the Autocar can manoeuvre into a difficult building operation and deliver its load right on the job where it is needed.

**The Autocar Company**

ESTABLISHED 1897

Ardmore, Pa.

Branches in 50 Cities

**Autocar**  
gas and electric trucks

EITHER OR BOTH - AS YOUR WORK REQUIRES

# Architect, Wife and Mother

Mrs. Delight Sweney Trimble, of Westfield, New Jersey, Is Capable and Charming Home Designer

**W**HO is so well qualified to design a home as the queen of the household—especially when she is an experienced and capable architect? That is the case with the subject of this sketch, who has just reached the end of one chapter and the opening of a better one, known to all writers as "living happily ever after."

Mrs. Trimble is as modest as she is capable and declares there is nothing unusual about her career, even although there are so few women who become successful licensed architects. She received her training in the Architectural Department of the University of Michigan and then spent a year in Arizona getting practical experience in the employment of an architect. Her work was mostly on theaters, apartments, churches and schools. This experience was supplemented by a further training under an eminent engineer, Mr. A. G. McGregor, one of the greatest copper smelter engineers in the country. In this drafting room, Mrs. Trimble—then Miss Sweney—was the only woman draftsman, there being nineteen men. Here she gained a valuable experience in structural designing.

From Arizona back to the East "was but a step to be made" when fate was calling, so this enterprising young woman architect secured the work of designing all the houses in a 40-acre suburban development near one of our large eastern cities.

Two years ago she applied for her license and became



This Portrait of Mrs. Trimble Shows Her to Be Truly Feminine Even Though a Successful Architect.



Mrs. Trimble's Home in Westfield, N. J., Built from Her Own Plans. It is attractive and comfortable within and without. The walls are of hollow tile with stucco which has been given a special rough texture.



Looking from the Living Room Into the Stair Hall. Note the brick stairway and the phone booth under smaller arch.

a registered architect at the age of twenty-five. At that time there were but three women architects registered in the state—one acting in an advisory capacity, one connected with a magazine—Mrs. Trimble being the only one actively engaged in the practice of architecture. In the regular practice of her profession she has designed other types of buildings, but says she prefers to design homes and thinks a woman is better fitted for that phase of the work. In fact, she has between sixty and seventy homes completed in the states of New Jersey and Michigan and a school in Arizona.

When she draws plans for builders, Mrs. Trimble says that supervision is not required, but she does supervise for clients building for themselves. Asked in regard to her experience in the supervision of building, Mrs. Trimble replied:

"I found that by keeping my mouth shut and eyes open, I learned a great many practical things while on the job that I never heard of in school and to my amazement found that, on occasion, I could tell old timers things they had never heard of that I had learned in school."

Mrs. Trimble says that is about all there is to her career:

"Except that I like it and have a husband, house and month-old son and cook my own meals, in spite of my career."

We think our readers will agree that the "exceptions" are indeed notable and reveal that

Mrs. Trimble is truly domestic as well as free from artificiality and pose. Nor will she sacrifice her home life for her career, but manages to make a success of both.

In the design of her own home, Mrs. Trimble has been able to give rein to her personal ideas as to arrangement, size, materials and finish. The lot on which she has built is delightfully wooded and the lines, proportions, color and texture of the exterior are pleasing and appropriate. The walls are of hollow tile with a special rough texture stucco finish, all the stucco finish work being done by one man to insure uniform style of treatment. The roof is covered with copper shingles and all flashings, leaders and leader heads are of copper. Steel casement windows have been installed throughout. The front door is a special design, of oak. The best grade of door and window hardware has been installed throughout. The floors of porch, hall, stair landing and kitchen are of red 10 by 10-inch tile and all other floors are of red oak. The wall finish in the main living rooms and the upper and lower halls is tinted rough texture plaster and in bedrooms sand finish plaster.

One rather novel feature is the arched brick stairway to second floor, which shows clearly in one of our illustrations and fits in well with the arched openings, the wrought iron stair rail, the absence of wood trim and the style of architecture.

There is special millwork in the kitchen cup-



The Corridor Vista Out of the Dining Room Toward the Entrance Vestibule.



boards, linen closet, hat closet and built-in desk and bookshelves in Mrs. Trimble's own studio.

"This room," Mrs. Trimble said, "I believe would appeal to any professional person, as it has a built-in desk with drawers, a fireplace, bookshelves and a place for storing magazines."

Another rather unusual feature in this original house is a bathroom in the attic, where there are three finished rooms.

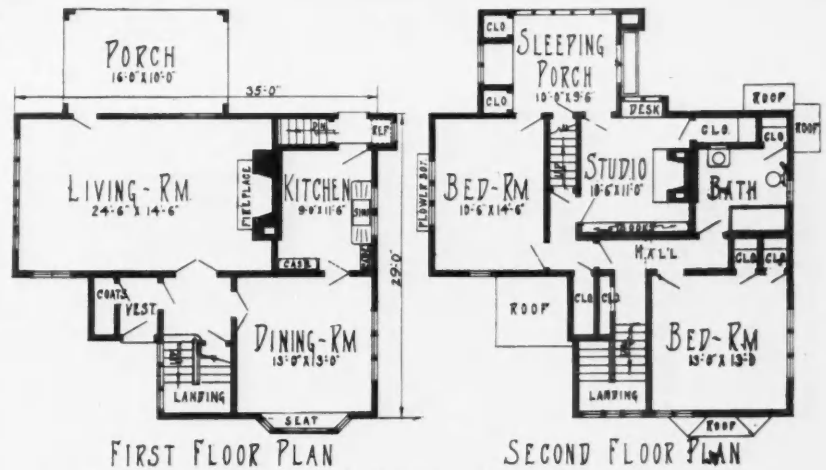
The dining room is square except for a bay window and is the same size as the bedroom directly above it, 13 by 13 feet. The living room is large, but not extreme in size, 24 feet 6 inches by 14 feet 6 inches, and has a large fireplace built of boulders.

The design of this attractive home is after the English style of architecture and the monotony of the stucco finish has been relieved by the use of a few groups of boulders set in odd patterns in several places in the walls. Even the chimney is so placed as to break the roof line, with its flue pots just showing above the peak of the roof.

Westfield has reason to feel proud of its woman architect.

**To Study "Cubing of Buildings"**

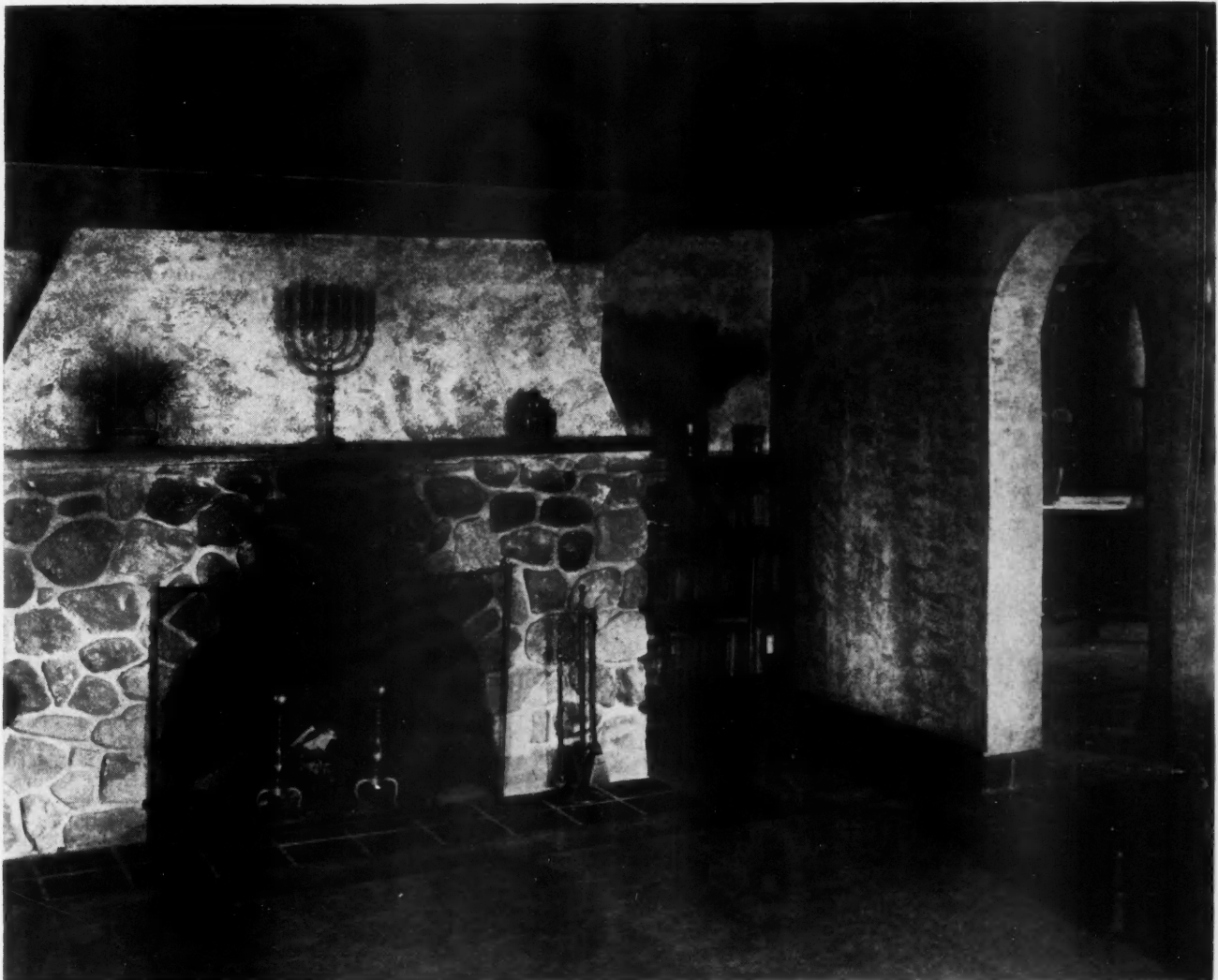
**R**EALIZING that differences now exist among architects, contractors, appraisal organizations, bonding companies, and others concerned with the size and approximate cost



These Floor Plans Reveal a Well-Designed and Comfortable House.

of building as to the methods used in determining the cubical contents of any structure for estimating, appraisal and other purposes, the American Institute of Architects has appointed a committee to ascertain, codify and review the various methods now in use and prepare a report to the Scientific Research Department of the Institute.

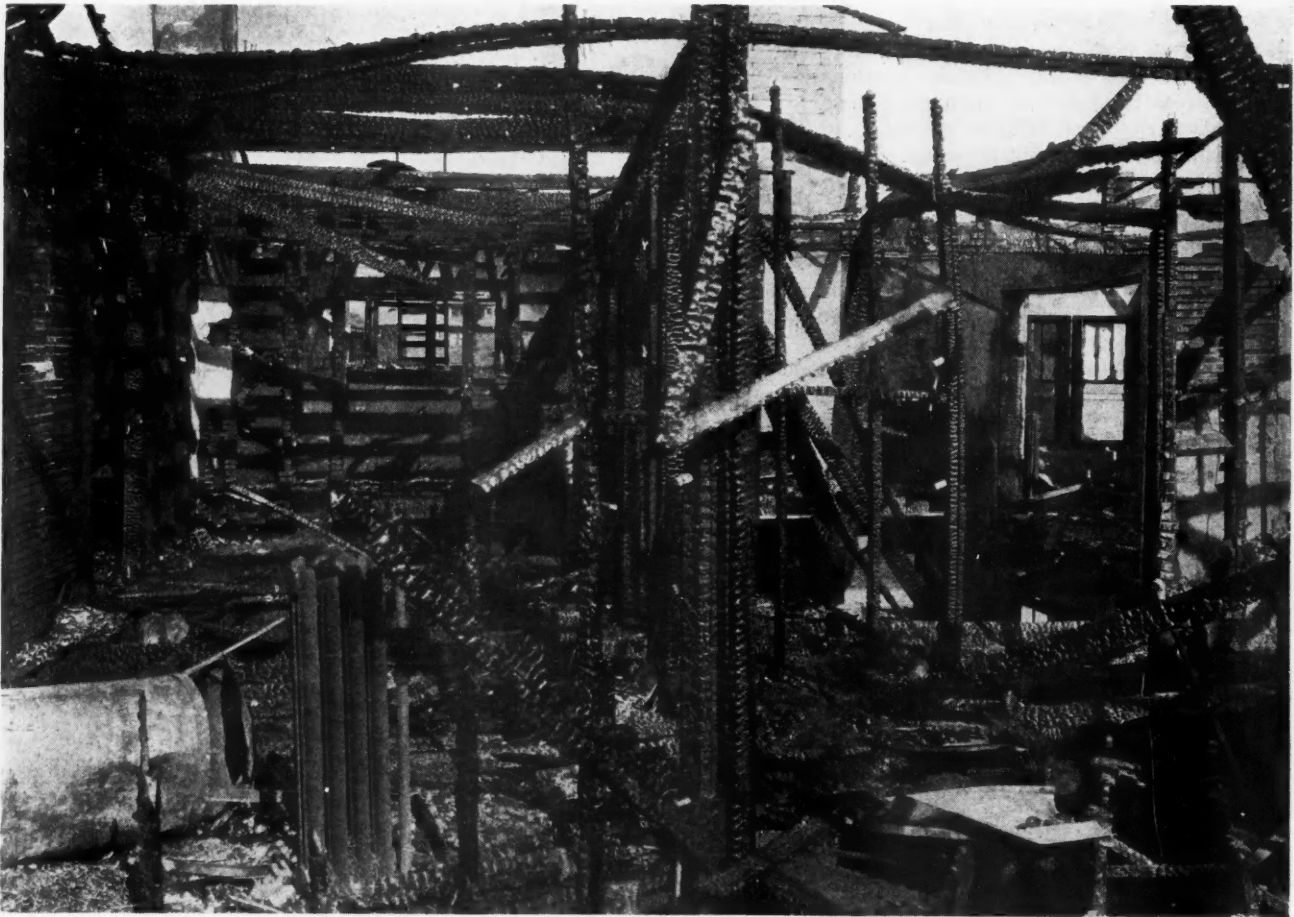
It is the desire of the committee to receive the cooperation of all Associations, Companies and individual authorities in developing methods of cubing various buildings which may be accepted by the building industry and used by all as common basic factors.



The Fireplace in the Living Room with Glimpse of Dining Room Beyond. Note the old English beamed ceiling.

# It Can Be Prevented!

By J. E. WILDER



**A Large Proportion of the More Than Half a Million Fires Which Annually Take Their Toll of Property and Lives in This Country Are Either Preventable or Could Be Controlled with Little Loss. Proper consideration of fire risk in construction would save millions of dollars each year in spite of the carelessness which is the cause of most fires.**

**W**HEN Jason Goodenuf carelessly dropped an unextinguished match into a pile of rubbish in one corner of his apartment building basement, he unwittingly trapped Mrs. Amelia Grieve and her children in their third floor flat. Fortunately for the Grieves the fire department was at home at the moment and amidst cheers of the multitude carried the family down the fire ladder.

Not long ago when Billy Sunday's home went up in smoke the noted evangelist was heard to exclaim, "The Lord giveth; and the Lord taketh away." Practically every newspaper in the country carried that statement of the eminent Billy's as a headline. But very few of them said anything about the carelessness of the neighbors who had raked leaves and fired them when there was a high wind blowing.

These fires caused national and local attention. Not because they were fires, but because they were spectacular. In the quarter hour that Mrs. Grieve was coming down the ladder and Billy Sunday was making his statement, at least fifteen other fires occurred in this country; one fire a minute. Most of these fires were not heard of; the public didn't have time to read about all of them. Every time your watch ticked off one minute there was a fire of some sort in this country last year; fifteen hundred fires every twenty-four hours; 547,500 fires in the one year!

Such is the price we pay for carelessness, for practically every fire is the result of carelessness of some sort, whether

of construction or habits. It is certain that carelessness will never be legislated out of existence—not so long as the 7:54 leaves just in time to bring you to the office at opening time and neighbors drop in on the day selected to clean the rubbish out of the basement and attic.

In 1924, fire loss stood us \$1,344 every minute, \$548,000,000 for the one year. Perhaps you figure that the house, the apartment building, the industrial structure you built did not catch fire last year will not next year. Perhaps you figure that you will continue to be lucky. Hundreds of thousands of others figured the same way last year and lost.

Or perhaps you figure that because you are a builder you do not pay for this loss unless you actually own the building destroyed. Wrong again, for you paid, we all paid, every man, woman and child paid, and paid to the tune of \$5.00 apiece. You paid through higher insurance rates, increased cost of the commodities of life, and through increased cost of the materials and equipment you use in your business. Perhaps you did not pay for your own carelessness, but you did pay for someone else's carelessness and negligence.

When George Williamson went to bed with a pipe in his mouth he did not think he would fall asleep. But he did. George barely got out with his life. And while he was making a dash for the little red box on the corner a compatriot of his threw a still burning match onto the floor of his attic when he had found the last summer's

straw hat he went looking for. His roof was completely gutted. Williamson and his brethren with their matches and smoking were responsible for about \$30,000,000 of the 1924 national fire loss.

Probably men will go to bed to smoke and throw matches till time ends. And so long as they do the public must expect to pay for their negligence. But these persons who take chances are not the only source of fire loss. There is also the carelessness which comes from allowing shoddy construction. Builders can build good structures and want to do so, but good construction, like good anything else, must be paid for.

Most of this huge annual loss comes from small faults which could easily be remedied, could indeed be remedied at no additional cost if reputable construction were permitted.

Millions of dollars are lost every year from faulty electric wiring or the owner's insistence upon cheap materials. Use of electricity and electric power in the city and on the farm is increasing at a tremendous rate. Thousands of industrial and home fires originate in cheap materials and demanded cheap construction by the owner. Our builders today can build so that electricity is as harmless as hidden pieces of twine. Insulators through all material, cables where there is stress on the wires, good materials, these will prevent fire.

Henry Berkey wanted to save money on his house. The contractor told Henry that an extra wall around the chimney to carry the floor joists was approved construction. But Henry wanted to save a few dollars and insisted that the joists be carried in the chimney proper. It wasn't long before the chimney dried out and a small crack appeared under one of the joists. The joists, too, dried and one day Henry was hurriedly called home to find the entire first floor in the basement. Had he listened to his builder he would have saved hundreds of dollars. Lining chimneys with sewer tile instead of flue lining to save a few dollars leads to the same end and good builders will not risk their reputation on this sort of work.

And there is another fertile source of fire which is



**There Are Five School House Fires Every Day in This Country. It is folly to advocate better teaching and recreation and yet subject our children to hazards such as are shown in this picture. Nine out of every ten fires are preventable through sane construction.**



**A Small Fire and a Strong Wind and the Roof Is Lost. So also may be the other surrounding buildings which are exposed to flying sparks.**

often overlooked in the desire to cut costs. That is the furnace room. Here is housed one of the principal causes of fire; the furnace itself, the hot ashes, the heat, and spilled coal. It costs only a few dollars to put metal lath on the walls and ceiling of the room and good plaster on the lath. Tests have proved that furnace rooms so protected seldom get afire and when this room is so protected the rest of the house is also. In the five-year period from 1915 to 1919, defective chimneys and flues, stoves, furnaces, boilers, hot ashes and coals, caused a loss of more than \$123,000,000; about \$25,000,000 annually. These losses were only on insured property; probably twice that amount really was lost because of carelessness in protecting the furnace room.

Fire causes might be cited endlessly for the enormous loss the country suffers every year is made up of 80 per cent carelessness and 20 per cent act of God. The men who do our building can erect structures that will prevent carelessness from destroying itself. Fires start from five or six principal causes. By building these out of the structures most of the fire loss will be eliminated.

The remedies are simple and easily installed. For example, in wooden houses fire stopping has been recognized for years as an effective and easily installed fire barrier. And it doesn't cost much money, either. Fire stopping simply means closing all the open spaces that lead into the walls. When this is done fire cannot spread up or down through the walls and from them to all parts of the building. The best authorities recommend fire stopping and for the average sized house it will cost from \$75 to \$150.

It is easy to insulate the walls, no matter what material they are built of. If they are masonry, brick, tile, concrete block or concrete tile, they cannot burn and need not be insulated. And on studding insulating lumber or paper will almost eliminate the danger of fire penetration. Not only does this insulation save money, but it makes the house easier and more economical to heat in winter and keeps it cool in summer.

Stairways, whether in homes or industrial buildings, because they form vertical openings from bottom to top, provide draft for fire. Fire cannot always be kept out of them, but they can be so built either by noncombustible materials or plaster on metal lath that they will confine the fire and heat within and not allow it to spread to other parts of the building.

And then there are the roofs. There is tile, slate, concrete, composition, wooden shingles and so on. When properly laid most roofs are good. When poorly laid all

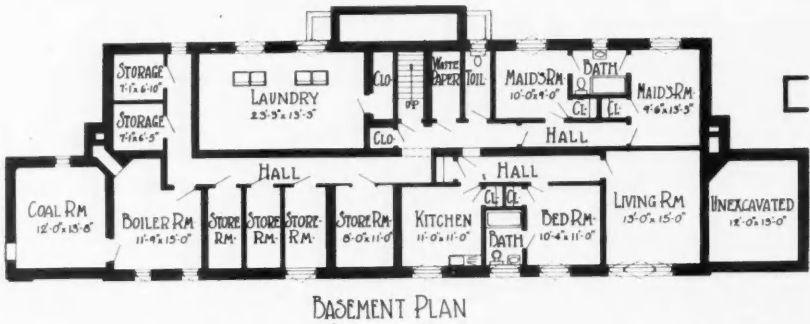
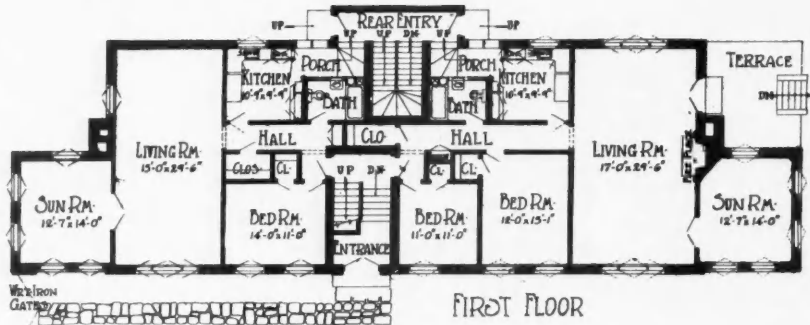
*(Continued to page 178.)*

# This Apartment Building Attracts The Best Class of Tenants

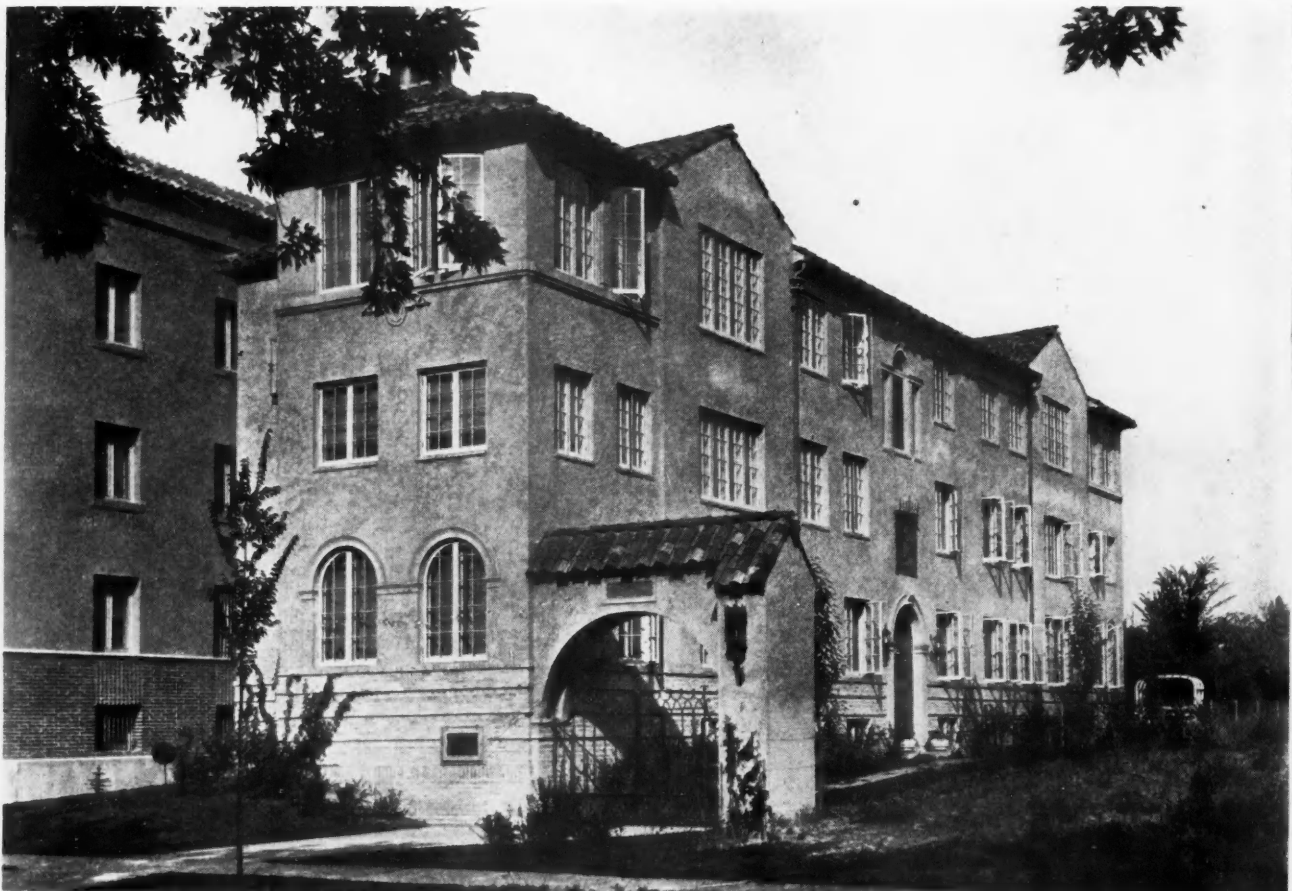
By THEODORE M. FISHER

A SMALL apartment building that should afford the owners a comfortable home, of a kind to attract the highest grade of tenants, and—far from being an incidental consideration—be so distinctive in appearance that it would be a real contribution to Denver's architectural beautification, these were the basic ideas of Mr. and Mrs. Halsted Ritter when they gave the architects their commission. As the pictures of the completed structure, here shown, indicate, it is truly a civic asset as well as an example for other builders.

The situation at 844 Humboldt Street, with the open spaces of Cheeseman Park, which it adjoins at the back, adds materially to the charm of the whole scheme. The style is Italian, very simply handled, with the effect achieved through excellence of mass, window styles and placing and, appropriately, a minimum of decorative detail. The entrance gateway, paneled oak entrance doors, and a touch of wrought iron in the flanking lamps, in the grill of the stairway window over it, as well as in the two balconies, sums up the decoration, strictly speaking.



There Are Two Apartments on Each of the Three Floors, While Maids' Rooms and Janitor's Apartment Are Provided in the Basement.



This Small Apartment Building Is a Real Contribution to the Architectural Beautification of Denver, Colo. It is of the Italian style, handled in a very simple manner and is finished in a rough cast stucco of a buff and pink tone.



The Entrance Gateway of the Ritter Apartments, Denver, Colo., Is Particularly Striking. With its tiled roof, wrought iron gate and lamps, it gives an air of quiet exclusiveness which is appreciated by the type of tenants for whom the building was planned.



One End of the Large Living Room Serves as a Dining Room and in Actual Use the Arrangement has Proven Most Satisfactory.

Color is a material element in the scheme of the building. The rough cast stucco, laid on basic brick, is a buff and pink tone; the heavy Spanish roof tiles are in tones of dark red, with now and then a blackish lavender; the wooden casement is a deep ivory with window casings painted a dark robin's egg blue. The high basement course is of light brown face brick.

The lot is 50 by 168 feet, with the building set as near the north line as possible, allowing room only for a cemented walk to the service entrances on this side. The plan was worked out to make the most of the east, west and south exposures. On the latter side the wide strip allowed for the entrance path insures unrestricted light even when the adjoining lot shall have been built on. This walk, by the way, is of large, random sized flagstones, with grass growing between and edged with a hedge on the lot line.

There are two apartments on each of the three floors, those on the street front with one bedroom and those facing the park with two. The outstanding features of the plan are the extremely large living rooms, each 18 by 30 feet in size, with exposure on three sides. Dining rooms, in the usual sense, are eliminated, the idea being to throw space otherwise devoted to them into the very generous living rooms, making these serve the dual purpose. A large company of guests may in this way be comfortably entertained. The adjoining sun room is available for guests whenever it is desirable to clear the living room to set the table for meals. Prospective tenants at first did not take to this innovation, but in actual use it has proved decidedly satisfactory.



A Large Sun Room, Off the Opposite End of the Living Room, Is Available for Guests While Dinner Is Being Laid.

basement has plastered wall finish, ample ceiling height and, in addition to the usual storage and heating arrangements, provision of a small apartment for the janitor. There is, too, a common laundry for the occupants and two maids' rooms for such tenants as need them.

It will be noted from the plan that the owner's apartment at the east end of the first floor has immediate access to the garden through the French windows of the sun room and a brick stairway leading down.



### Elevator Interlocks

THE importance of the work which the Bureau of Standards, Department of Commerce, is conducting on elevator interlocks is forcibly illustrated by the fact that the National Bureau of Casualty and Surety Underwriters, one of the largest groups of this kind in the United States, has recently granted a reduction in insurance rates on elevators equipped with interlocks which have passed the Bureau of Standards' tests.



Paneled Oak Entrance Doors, Flanked by Wrought Iron Lamps, and the Wrought Iron Grill Over the Stair Window Above Are Touches Which Carry Out the Italian Tone of the Ritter Apartments, Denver, Colo.

# Artistic Display Draws Trade

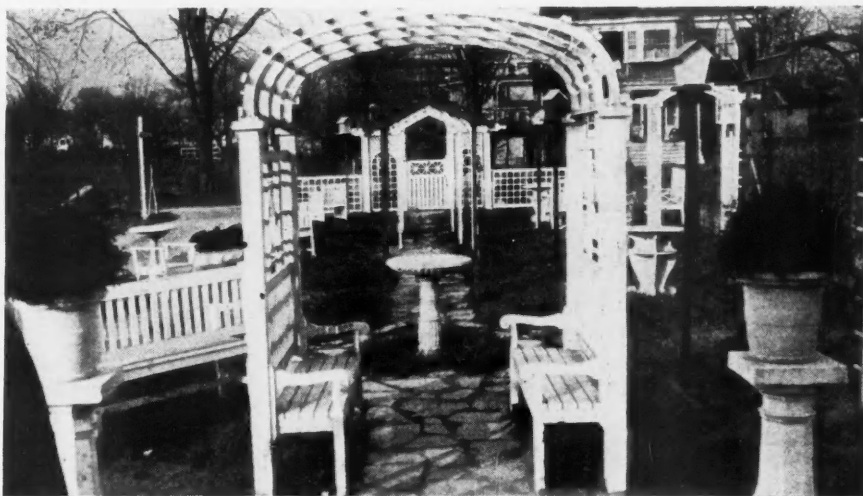
By FRANK HARAZIM

**M**OTORISTS driving on Northern Boulevard in the neighborhood of Flushing, N. Y., unavoidably notice the striking beauty of a little house in a pretty landscape effect with a large variety of garden furniture. The house to all appearances is a home with a garden arranged with great artistry, from the rockery with ferns before the stately-appearing white woodwork entrance, the broken-stone path to the house arched over by pretty arbors with settee arrangement, to the house itself on whose roof a cat and dog lead each other a merry chase.

In reality this scene is the sales-rooms, office and factory of the Flushing Art Woodwork Shops, Inc. The landscape is a valuable advertisement for the Flushing Nurseries Landscape Department which has joined the art woodworkers in their novel plan.

The artistry of the two organizations involved is only partly shown by the photographs as only the constructional beauty is apparent. No less beautiful, however, is the color effect of the brown house, green and white furniture, varicolored animal novelties and bird-houses and the fernery in the white stone vases and boxes.

The wisdom of this novel method of advertising is proven by the gratifying number of sales of furniture, novel figures and landscape decorations. The need for a striking display along an automobile road is apparent when it is considered that the motorist gets just a fleeting glimpse of any par-



A Rough Stone Path, Arched by Arbors with Settee Arrangement, Leads from the Entrance Gate Past a Variety of Bird Houses, Fern Boxes, Stone Vases and Bird Baths.

ticular spot. That the location along an automobile road is also a happy choice is evident because of the fact that the automobile owner is also a home owner and is therefore the most likely purchaser of garden and landscape accessories.



## Homes and Automobiles

**S**TATISTICS show that in the states where the percentage of home owners is highest there are also the greatest number of automobile owners.



The Entrance to the Flushing Art Woodwork Shops, Inc., Is a Striking Piece of White Woodwork with Arched Top and Even the Sign Which Announces This Interesting Exhibit, Is Artistic, Harmonizing Perfectly with the Effect of This Well-Planned Garden.

# New Coney Island Hotel on Board Walk to Cost \$2,500,000

A Salt Water Swimming Pool and Salt Baths in Every Room Are Features

By **BERNARD L. JOHNSON**

*Editor, American Builder*

**W**E are now living in an area of wonderful prosperity under the Stars and Stripes. If other evidence of this were lacking, we would still see it reflected in the great number of expensive resort hotels which have been built, especially in Florida—our winter playground. The latest one, however, is almost at the doors of our chief metropolis. The architects, George B. Post & Sons, have designed a structure worthy of the Riviera and have succeeded by their design in creating an atmosphere suggestive of beaches dotted with bathers, the blue rollers of the Atlantic, gaiety and recreation.

The other perspective presented this month are of great merit and make a beautiful showing in the blended tints of our special duotone process. The Receiving Hospital and Nurses' Home, at Detroit, will be particularly impressive. The architects have produced in this design a notable achievement in orientation, as well as beauty of line.

## **The Receiving Hospital and Nurses Home, Detroit, Mich.**

**Carey & Esselstyne, Architects**

This fine design by Carey & Esselstyne shows the ultimate appearance of the hospital when all portions have been completed. Only five stories will be built at the present time. The architecture is Renaissance of a simplified type. The exterior walls are to be of cream-colored brick with trim of Indiana limestone. The first four floors and basement are allotted to Emergency, Out-Patients and Psychopathic departments; while the fifth floor and above will be the Nurses' Home and their recreation facilities.

Some of the details of finish and equipment of the hospital are interesting. The psychopathic wards have linoleum floors; disturbed patients' wards have mastic floors; dining and day rooms have terrazzo floors; the operating rooms have terrazzo floors; corridors have rubber tile with terrazzo border and base; the main waiting room has terrazzo floor, ceramic inserts, marble wainscot, scagliola columns, plaster beam ceiling and cornices. The hospital in general has all-metal trim and red gum doors. The operating rooms have tiled wainscot, door head high and one operating room has a students' amphitheater. All radiators throughout the building are enclosed in grilles. The Nurses' Home is to be exceptionally well equipped and will have a big living room with balcony and fireplace. There will be a gymnasium with locker space, showers, etc., and, on each floor, there will be a small laundry, kitchenette and sewing room.

## **The Roosevelt Apartment Building, Boston, Mass.**

**Ralph Harrington Doane, Architect**

Close by the Museum of Fine Arts and a number of medical, dental and musical colleges in Boston, this fine, large apartment building, to be known as "The Roosevelt," will be erected. It will be constructed in a "U" shape around a very attractive and beautifully landscaped court. The building will be five stories and basement in height and will be served by three elevators. The exterior walls will be of the best quality of face brick with limestone base and trim. The Huntingdon Avenue frontage will have

a number of stores, for which there is a strong demand.

There will be approximately ninety-five housekeeping apartments in the building, each floor having about 15,000 square feet of space divided into apartments of one to four rooms each. The apartment layout has been arranged so that every room in the building will be an outside room facing on either one of the three streets frontages or the courts in the center and rear of the building. All apartments will be equipped with the most modern conveniences and appliances, including gas ranges, refrigerators, etc.

## **Coney Island Hotel, Coney Island, N. Y.**

**George B. Post & Sons, Architects**

The design and style of this building will be modified Spanish Renaissance, the lower story being faced with decorative terra cotta and the main shaft or tower of the building being of a warm-toned gray buff tapestry brick. The main roof will be covered with handmade Spanish tile and the roof terrace will be embellished with trees, shrubbery and gaily colored awnings. The building is so designed as to produce the most pleasing pyramidal effect when seen from any viewpoint. The main rectangular structure of the building is to be flanked on each side by two lower wings and the entire composition culminates in a handsome tower rising to a height of 225 feet above the Boardwalk. This tower will be roofed with a dome covered with golden colored tile. It is planned to have the dome floodlighted at night, making it visible for miles up and down the coast, as well as from the city proper.

The new hotel will face the Boardwalk; will have 400 guest rooms, all outside rooms, each with hot and cold fresh and salt water baths. A feature of the building will be an indoor swimming pool for all-year-around salt water bathing.

The interior of the building will be decorated in the characteristic Spanish Renaissance style, with hand-modeled stucco walls, decorated wood ceilings, wrought iron balustrades and colorful lighting fixtures. When finally completed, the hotel will cost approximately \$2,400,000.

## **Lehman High School, Canton, Ohio**

**A. L. Thayer & Rowland M. Johnson  
of Cleveland, Architects**

The development of the Lehman High School, at Canton, Ohio, represents an ideal solution of the high school problem. It is located in a high part of the city, on a sloping lot, bounded on all sides by streets. The main facade, which faces towards the city, overlooks the playing field, with the bleachers forming a terraced base for the building. This, of course, lends added height and impressiveness.

To the rear of the building and facing the other street, is located the auditorium, which has a seating capacity for 1,200 people, and the gymnasium with a playing floor and bleachers for five hundred people. A driveway encircles the building on the upper level and, from this, access is obtained to the shops and manual training rooms. In addition to the special rooms, there are about forty class rooms, each equipped to meet the requirements of the class and provide locker space for the pupils.

The building is of fireproof construction throughout, except for the wood floors in the class rooms.

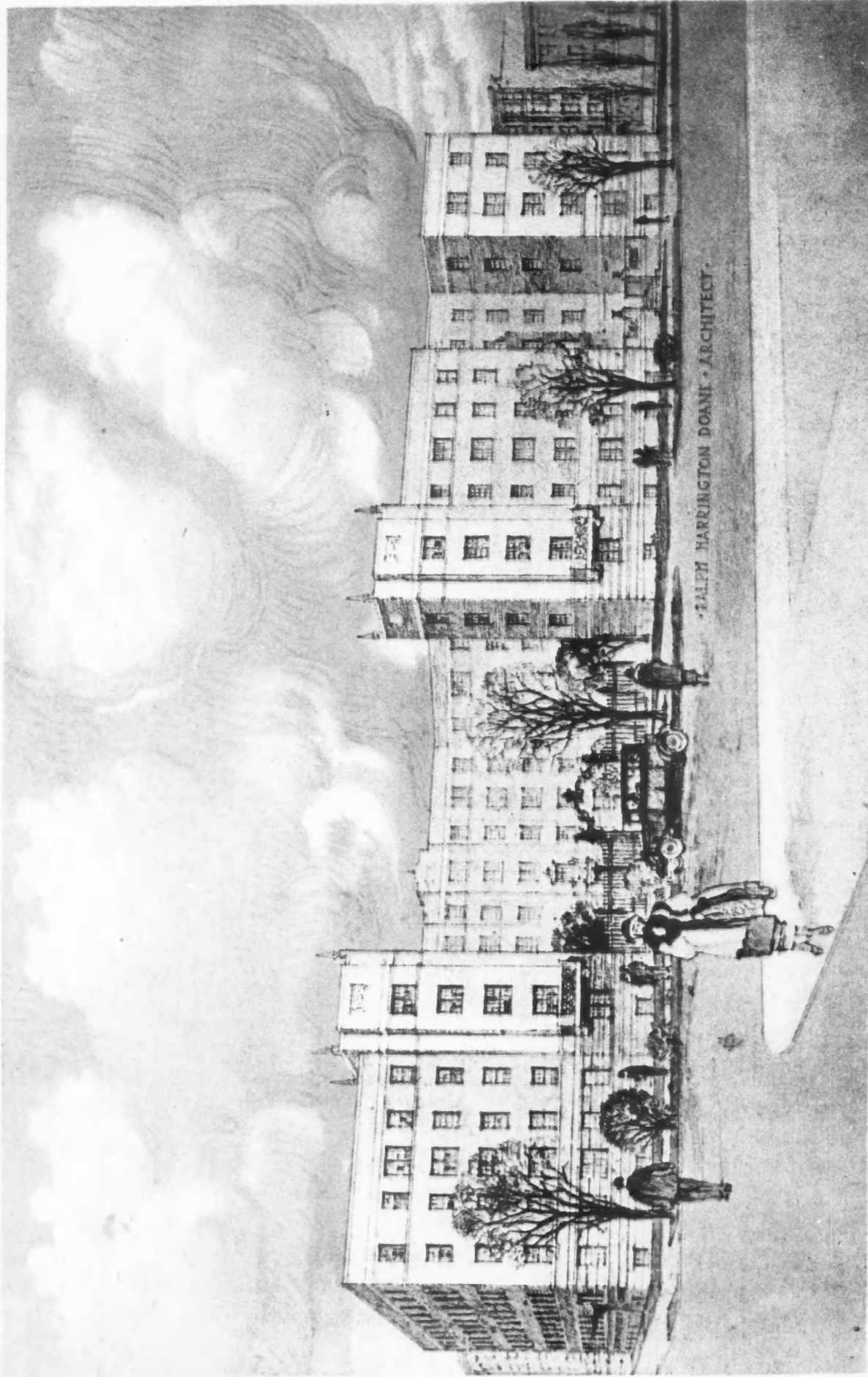


# ART SUPPLEMENT *of* NOTABLE ARCHITECTURE



PLATE 53

*The RECEIVING HOSPITAL AND NURSES' HOME, Detroit, Mich.,  
Carey & Esselstyn, Detroit, Architects.*

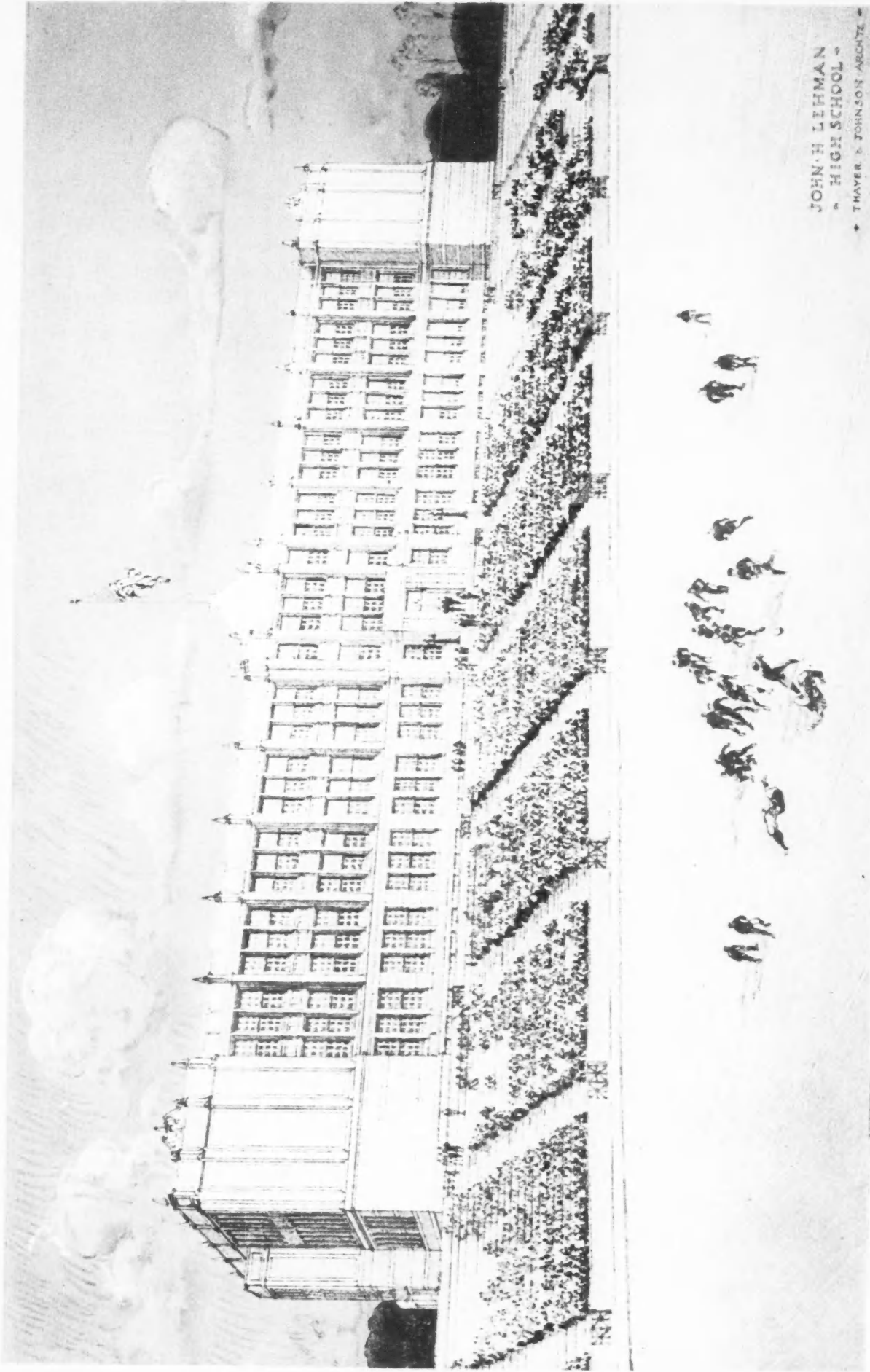


*The ROOSEVELT APARTMENT BUILDING, on Huntington Ave., Boston, Mass.;  
Ralph Harrington Doane, of Boston, Architect.*

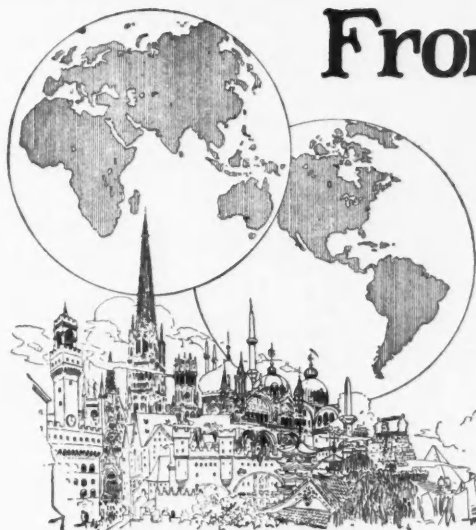


PLATE 55

*The CONEY ISLAND HOTEL*, on the Boardwalk at 29th Street, Coney Island, New York;  
Geo. B. Post & Sons, of New York, Architects.

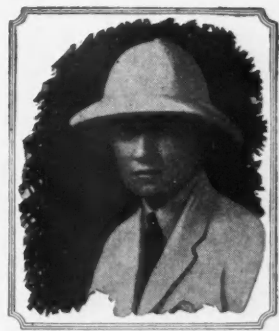


*The* LEHMAN HIGH SCHOOL, Canton, Ohio; A. L. Thayer and Rowland M. Johnson, of Cleveland, Architects.



# From Our Daily FOREIGN MAIL

Conducted by Wm A Radford, Jr.



William A. Radford, Jr., Vice-President of the Radford Publications, in a two-year investigation, has personally visited forty-nine foreign countries in the interest of the American Builder and World Trade for our advertisers.

## BY AIR MAIL FROM SIAM

**AMERICAN BUILDER:** Bangkok, Siam.  
In handing you the enclosed subscription to the AMERICAN BUILDER we shall feel with much oblige and thanks if you will be kind to hand the enclosed coupons to their manufacturers, and would like you to help us connect with the veneer machinery makers as we wish to have a complete set of veneer machines for our workshop.

(Signed) C. KIM HAH & Co.,  
Architect, Building and Quarry Contractor,  
Dom Rong Rak Road, Bangkok, Siam.

**NOTE:** Stamp collectors among our readers would no doubt be interested to see the air mail stamps of Siam, but a Federal law prevents us from illustrating this stamp.

As an interesting sidelight on this letter we might also mention that it was at Bangkok that our Mr. William A. Radford, Jr., was laid up with Asiatic fever when on his business tour a few years ago in behalf of foreign trade for AMERICAN BUILDER advertisers—EDITOR.

## FROM SOUTHERN RHODESIA

**AMERICAN BUILDER:** Bulawayo, Southern Rhodesia.  
I should be very pleased if you would send me catalogs of your publications connected with the building trade. I am anxiously awaiting the first copy of the AMERICAN BUILDER.

(Signed) E. MONSEAIR,  
Works Foreman, Beira & Mashonland Ry.

## FROM BRAZIL

**AMERICAN BUILDER:** Pernambuco, Brazil.  
We have looked over the current issue of the AMERICAN BUILDER and have found much in it to interest us. We are in the market right now for a large variety of building materials, heating, plumbing and lighting equipment, mechanics' tools and power shop and contractors' equipment. Home conveniences are interesting to us and we want information on all apparatus, etc., for optical and physical laboratories.

(Signed) ESTEVAM DE OLIVEIRA & PETRIBO,  
Ltd.

## FROM GERMANY

**AMERICAN BUILDER:** Braunschweig, Brunswick, Germany.  
We thank you for your letter of April 16th and copy of the AMERICAN BUILDER which we find very interesting. We have the intention to try to import doors and windows of the U. S. A. and should be greatly indebted to you if you could furnish us with some general information as to the present state of the market of these articles in your country and whether you think it possible that American manufacturers are in a position to make prices favorable for the market over here.

Looking forward with great interest to your early answer, we beg to remain  
(Signed) RICHARD BECKERS,  
Turen und Fenster.

## FROM CONSTANTINOPLE

**AMERICAN BUILDER:** Stamboul, Constantinople, Turkey.  
We have received your letter, together with copy of the AMERICAN BUILDER, which you have been so kind to send us and thank you. With pleasure we have noted that your information bureau is always at our disposal.

We are interested in all kinds of cotton goods, especially gray sheetings. We are also interested in all kinds of leathers, especially black and brown patent leathers. We should be indeed very glad if you could recommend to us such kind of manufacturers, as exclusive agents, in our market.

(Signed) M. LEVY & CIE.

## FROM PERU

(Translated from the Spanish)  
H: da Chiclin, Peru.

**AMERICAN BUILDER:**  
I am interested in your architectural review, the AMERICAN BUILDER, which is received, and want to be entered as a subscriber. Please inform me of price of subscription and manner of payment.

(Signed) ABEL FERNANDEZ.

## FROM BULGARIA

**AMERICAN BUILDER:** Philippople, Bulgaria.

We are very much interested in the copy of your magazine which you recently sent us. Would like to get in correspondence with American manufacturers of the following commodities: drills, gas engines, kerosene engines, steam engines, tractors, typewriters, rubbing machines, woodworking machinery (hand and foot power), house pumps, grain elevators, outside icing refrigerators, washing machines, automobiles, motor trucks, rope, conveying machinery and telephone sets. Also all kinds of agricultural implements and machines used in textile industry.

(Signed) BUREAU TECHNIQUE ET AGRONOMIQUE, AGRARIA.

## FROM PALESTINE

**AMERICAN BUILDER:** Jaffa, Palestine.

We are very much interested in your publication and the service you are offering us in behalf of the American manufacturers. We are returning your checking sheet with the articles marked which are of interest to us. We shall be greatly obliged for your kindness to indicate our name to the exporters of these articles: Hardwood flooring, linseed oil, paints and varnishes, steel pipe, canvas roofing, roll roofing, asbestos shingles, typewriters, plumbing supplies, disappearing beds, outside icing refrigerators, phonographs, pitch pine wood and white cement for floor tiles.

(Signed) THE ROUMANIAN-PALESTINE TRADING & INDUSTRY Co., Ltd.

## FROM CHINA

**AMERICAN BUILDER:** Shanghai, China.

Thank you for your letter, together with copy of the AMERICAN BUILDER.

We are interested in the import of all kinds of machinery and have noted on your information checking sheet a few items in which we are interested. (Steam engines, contractors' pumps, saw rigs.)

(Signed) ELBROOK, INC.

## FROM SINGAPORE

**AMERICAN BUILDER:** Singaport, Straits Settlements.

We are obliged to you for your letter and copy of your publication. We have put a mark against the various items on your list which we are interested in. (Art glass, building paper, metal ceilings, metal columns, ready roll roofing, screen cloth, fireproof shutters, store fronts, wallboard, casement windows, shower baths, electric light fixtures, electric lighting plants, opera chairs, library shelving, rolling partitions, wire fencing, prism lights, disappearing beds, disappearing stairs, automobiles, motor trucks, restaurant equipment, store fixtures and show cases.)

(Signed) CENTRAL ENGINE WORKS, INC.,  
Dealers, Building Contractors and Engineers,  
By E. M. Ellis, Manager, Import Dept.

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Barranquilla, Rep. of Colombia,  
South America.

**AMERICAN BUILDER:**  
As one of the leading hardware stores in this Republic, carrying shipbuilding materials, kitchen and home conveniences, we are interested in almost any article of our branch. Many of the items illustrated in American catalogs will not be ordered yet, since this country is not yet ripe for all such articles which in the U. S. A. already find a good market. We believe, however, in having catalogs of everything in our line since one never knows when an article may eventually find a market in this country. It is always good to be prepared.

(Signed) A. HELD,  
Dealer.

## FROM TURKEY

**AMERICAN BUILDER:** Constantinople, Turkey.

We have your letter of the 9th and thank you for the copy of AMERICAN BUILDER which we have looked over with a great deal of pleasure. Would like to see additional copies.

(Signed) GEORGES J. PSALTY,  
Maison Psalty, Importers and Exporters of  
Marbles, Tapestries and Art Objects.

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**AMERICAN BUILDER:** Piraeus, Greece.

Will you give me the name of one of the largest shippers of American Pitch Pine and who you consider fully able to compete with American Pitch Pine Company who now have practically an exclusive hold of this market? I wish to have full detail of prices, etc., on pitch pine floor boards and also on woods suitable for manufacturing furniture. These prices C.I.F. Piraeus. Payment would be against a New York credit.

(Signed) ERNEST H. MILL,  
36 Vati Building.

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**AMERICAN BUILDER:** Brisbane, Australia.

We have received a copy of the AMERICAN BUILDER, for which we thank you.

We will go carefully through this magazine and if anything is of sufficient interest will write the advertisers for full information as suggested by you.

(Signed) JOHN REID & NEPHEWS.

## WANTS HARDWARE AGENCY

**AMERICAN BUILDER:** Brisbane, Australia.

We find the AMERICAN BUILDER very interesting. We are communicating with one of your advertisers (Vincent Whitney Company) with a view to obtaining their agency for casement hardware.

(Signed) BERNAYS & ANDERSON,  
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**AMERICAN BUILDER:** Shanghai, China.

We are interested in securing information and quotations on the items checked on your information sheet. (Air compressors, drills, borers, heating systems of all kinds, plumbing supplies, complete line.)

(Signed) EASTERN ENGINEERING WORKS, LTD.,  
General Contractors,  
25B Avenue Edward VII.

**Note: For the benefit of our advertisers we will, without charge, translate any foreign language letters referred to us.**

**AMERICAN BUILDER.**

# Double Bungalow Homes

Presenting Five Plans for Small Homes of a Type Which Is Earning Popularity by Its Economy of Construction

FOR some years the kitchenette apartment and the apartment hotel have had their innings, especially in the larger cities. Construction of this type occupied the center of the stage and the old-fashioned house, the dwelling place of a single family, received scant attention. But this year there has been a change in the statistical reports which list the number of contracts awarded, building permits granted and work under construction.

Statistics are usually dry and uninteresting but, if the necessary amount of interpretive imagination is applied to them, they are often found to be not only valuable but interesting. When read intelligently the recent statistics tells us that, for some reason, the rush to apartments has slackened, that "Own Your Own Home" has taken hold more strongly than at any time in a number of years, that the building of single family residences has assumed a position it has not held since before the war and that suburban homes are the order of the day.

By far the greater number of these homes being built today are of the smaller type. The day of the large rambling house has passed, the modern home must be small and compact. Even among those to whom cost is of little importance the small house is most popular and there is very good reason behind this.

Immediately after the war there was a serious shortage of housing accommodations and also of servants. Cities had been making a remarkable growth, while building operations were virtually suspended, and city dwellers were demanding dwellings which would reduce the house care to a minimum. Quick provision of small dwellings natur-

ally produced the kitchenette apartment and it has now established a definite place for itself in our cities.

Many people, however, have been learning that the city



The Floor Plan Is Simple and Convenient with a Most Effective Utilization of the Available Space.



A Simple Frame Cottage Which Will Accommodate Two Families in Perfect Comfort and Privacy. The well-designed entrances, with their arched roofs, are tied together by the tall narrow windows, overcoming the duplex suggestion of the double entrance.



The Casual Passer-by Would Hardly Notice the Two Doors Which Indicate That This Is a Double Bungalow and the Whole Effect Is That of a Charming, Small, Single Family Residence. The arrangement of rooms is shown in the floor plan below.

apartment does not provide the sort of home which they really want and which is adapted to their needs. Especially is this true of the families where there are children requiring a place to play out of doors, with plenty of fresh air and sunshine. Even to the adult members of the family there are many advantages to the home removed from the dirt and noise of the city, with a yard for the children, a large amount of privacy, a fresh green landscape and the freedom of ownership.

Another element which has contributed to the increasing popularity of suburban locations is the development of good roads and the remarkably increased distribution of automobiles. This development has brought an extensive new area within the limits which are available for the residence of city workers by greatly increasing the means and speed of transportation.

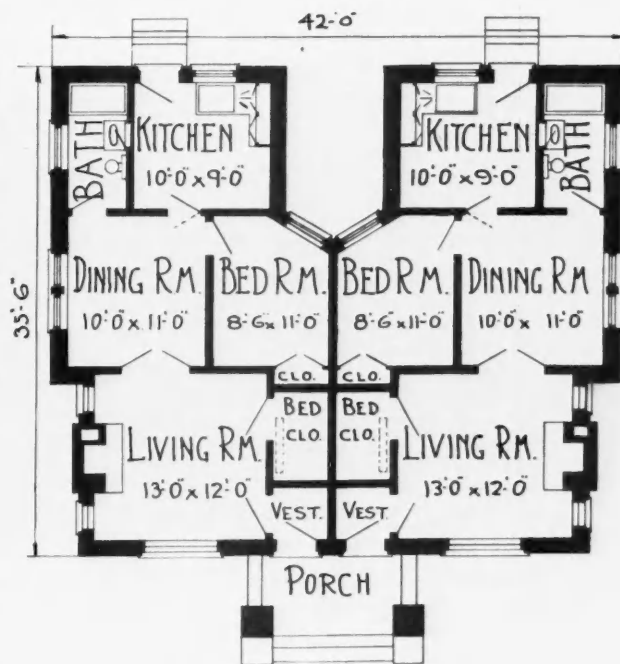
But the influence of the modern small apartment is plainly seen in the design of the houses of today. Of course the increased costs of construction has had a tremendous influence in reducing the size of houses, but the kitchenette apartment has shown how little space is really required for comfortable living when the space is used to the best advantage. The small, compact dwelling, with the many built-in conveniences of the kitchenette apartment, requires much less labor in its care, and with servants almost unobtainable, it is the first choice of the

prospective home builder.

There are many families for which the building of even a small house may be too serious a financial problem to be undertaken. These may, however, satisfy their desire to get out of the confines of the city and into a home of their own. For these there is nothing better than the type of two-family dwelling which is illustrated on these pages. The construction of houses of this sort makes a very material saving in the original cost and places a home within the reach of all. There has been marked evidence in recent months that the attention of large numbers of prospective home builders has been drawn to the two-family dwelling.

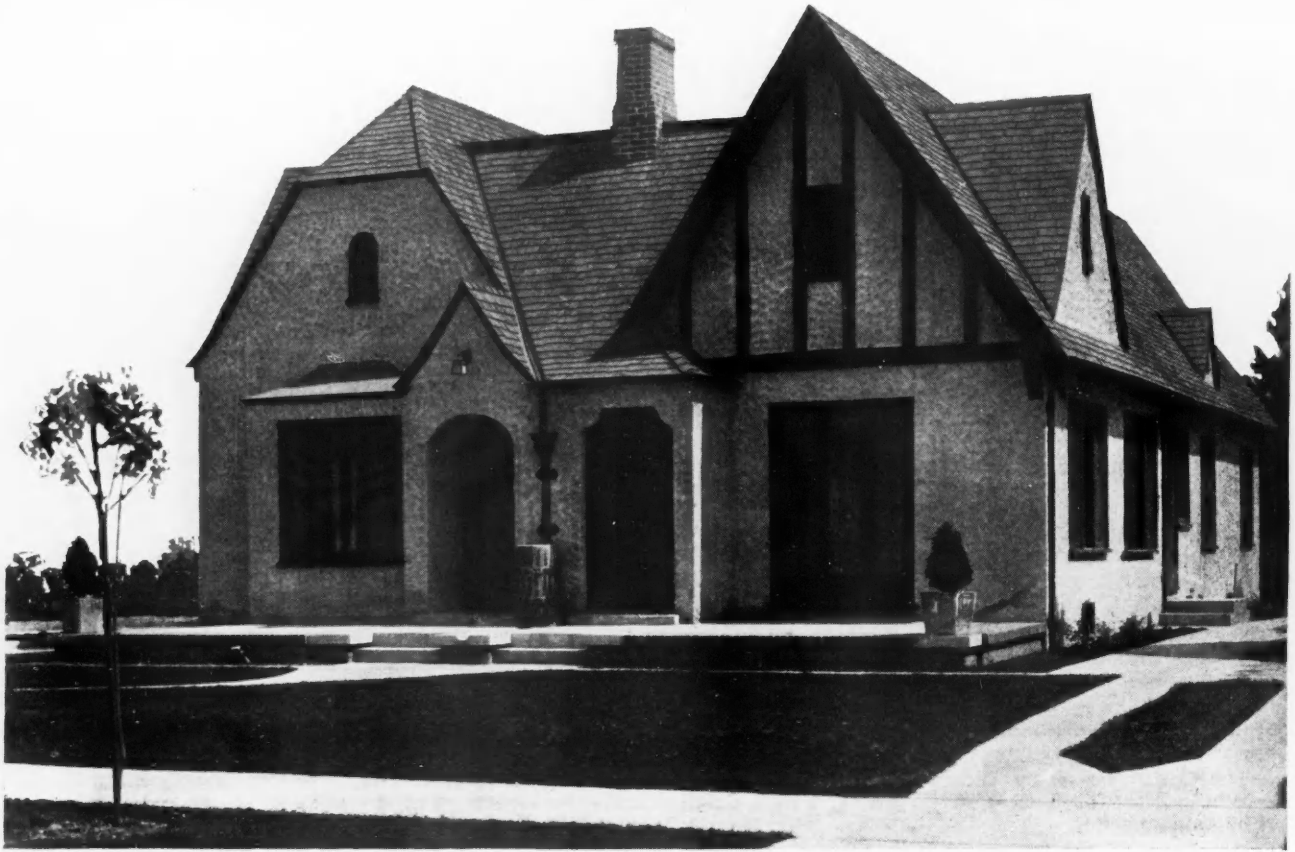
Care has been taken in planning the houses shown so that they avoid what is probably the chief objection to the ordinary duplex house. That objection is the lack of privacy and the obvious duplex appearance. Each of these houses is an attractive little home which might easily be mistaken for a single house by the casual passer and which offers a high degree of privacy to each of the families by which it is occupied.

A wide variety of styles are shown to fit the requirements of location and taste and the floor plans are sufficiently varied to suit the purposes of varying sized building lots and varying family needs. Each is of the bungalow type which of recent years has been so widely used for small homes and which possesses an ever-



## FLOOR PLAN

Here Is a Room Arrangement Which Is Given an Increased Sleeping Capacity by the Addition of a Bed Closet Off the Living Room. Perhaps some would prefer to change the positions of bath and kitchen.



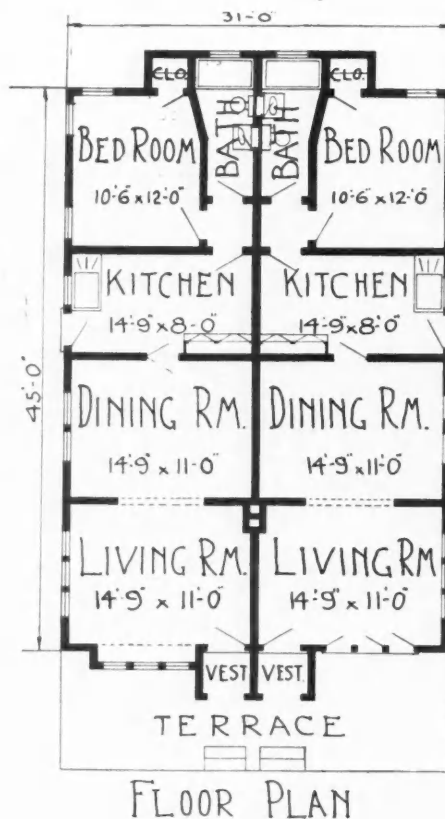
The English Cottage Style Is Seen in This Most Attractive Home Which Offers a Low Cost Dwelling Place for Two Families. There is an interesting element of variety in the exterior treatment without any loss of unity.

constant appeal to the housekeeper because there are no stairs to climb innumerable times a day.

Each plan is drawn to make the most complete utilization of all available space, and, by compact arrangement, to reduce the labor of house-keeping to the minimum. All of the dwellings are four-room homes, but in one case the sleeping accommodations have been increased by the application of a disappearing bed in the living room and in another this same type of bed has been used to replace a separate bedroom where the fourth room is designed as a sun parlor.

The house shown on the first page of this series is a frame cottage which, with its well placed shrubbery and vines, presents a most attractive front. Twin entrances open from small porches made attractive by ornamental brick work. Each door is covered by a well designed, simple, arched roof effect, and they are held together by the placing of two tall narrow windows between. These windows, probably more than anything else, serve to over-ride the duplex appearance of the building giving the effect of a single house.

The front entrances lead directly into the living rooms which are nearly square, as are also the two dining rooms. The floor plans are the same



This House Is Designed for the Deep Narrow Lot and the Room Arrangement Is of the Simplest Possible.

on both sides except for being reversed from side to side. The dining room is placed just back of the living room and is connected with it by a wide doorway.

Back of the dining room, and opening off of it, are a bedroom and bath and the kitchen. The latter is long and narrow in shape and has the carefully planned arrangement of the modern small kitchen which with its built-in equipment simplifies the preparation of meals. There is a rear door from the kitchen.

The bedroom is placed in a side projection which breaks the otherwise exactly rectangular shape of the building, and has an exposure on three sides which gives it plenty of light and ventilation. Just at the entrance of this room are doors to the closet and the bathroom.

The casual observer would take the house shown on the second page for a simple brick bungalow, but a second glance shows that there are two doors opening off of the front porch and each of these is the entrance to a separate dwelling. Here again the floor plans are identical except for being reversed and the same will be seen to be true of all of these houses.

This house is a most attractive brick with board siding in the gable above the ceiling line, and in the gable of the porch. The porch is of



cement and is low, being reached by three low steps. The foundation line of the house is completely hidden by small shrubbery and the front presents a perfectly balanced appearance.

From the front entrance the living room is reached through a small vestibule which is closed by an inner door. At one side of the living room is a fireplace flanked by two small windows. The chimney is the outside style and is of the same brick construction as the outer walls. At the opposite side of this room, directly back of the vestibule, is a large bed closet, big enough to serve as a dressing room and practically adding an extra room to this house.

A door from the living room leads to the dining room back of it, which is a well lighted and cheerful, outside room. Beside the dining room and opening off of it is a bedroom which is lighted by a window on a court-like opening between the two halves of the house, at the rear. Two doors at the rear of the dining room give access to the bathroom and the kitchen. The kitchen, which is provided with a rear entrance, is 9 by 10 feet and well arranged with the sink placed under a rear window.

This house is best suited for a rather wide lot being 42 feet wide and 35½ feet deep. The house shown on the next page, however, is designed for the narrower lot, being only 31 feet wide and 45 feet deep and rectangular in shape. In the latter the rooms run back in a line, living room, dining room, kitchen and bedroom and bath.

The exterior appearance is that of the English cottage with a rather high roof with several gables. The finish is stucco and one of the gables is half timbered. The two sides of the front have been treated in a manner which offers a touch of interesting variety. The gable at one side is half timbered while at the other side it is cut off at the peak and is finished in stucco all the way up broken by a small arched window. At one side French doors open from the porch into the living room while at the other side casement windows are set in a bay. The entrances, placed close together, are also different in treatment and the whole effect eliminates the duplex appearance in a most unusual manner.

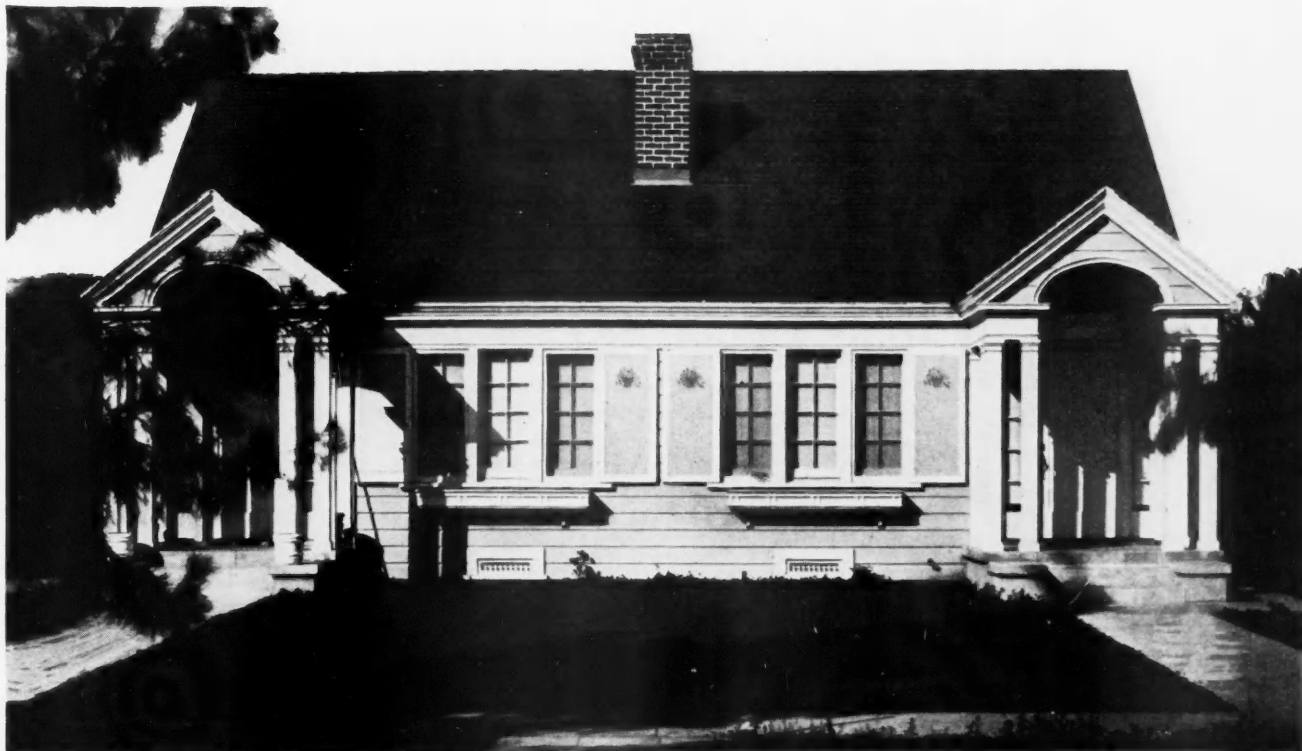
The porch is of the low terrace style with ornamental brick about the edges and small trees in tubs at each



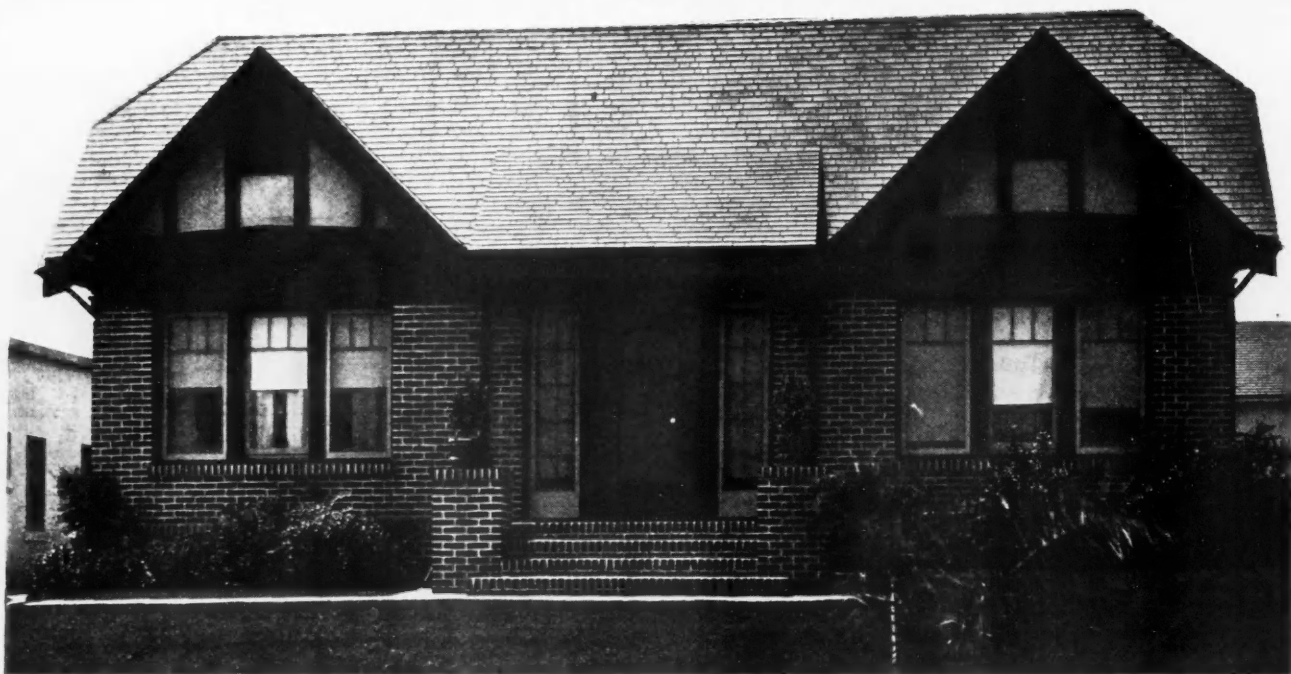
Another Excellent Arrangement of Rooms Which Takes Advantage of Outside Light Where It Is Most Desired and Offers a Large Living Room.

corner. The entrances are placed inside of small vestibules and open directly into the living rooms, which are 14 feet 9 inches by 11 feet. The dining rooms are of the same dimensions while the kitchens are only eight feet deep. There is an outside door which serves each kitchen from the side of the building.

Back of the kitchen a tiny square hallway is provided with doors opening into the bedroom and the bath room. The bedroom is in the corner of the building with windows on two sides providing for ample light and air. A closet is placed at the rear.



Here the Front Entrances Are Separated, at the Ends of the Building, but Even So the House Does Not Carry That Characteristic Duplex Appearance Which Most of Us Wish to Avoid in This Type of Double Bungalow.



Perhaps the Most Complete Avoidance of the Duplex Style Is Seen Here. No one could ever tell that this attractive house was built for two families until he stepped inside the entry way.

On the fourth page is seen another frame house which, with the two entrances placed at opposite ends of the building, perhaps looks more like a duplex than any of the others. And yet it has been handled in such a manner that this in no way detracts from the pleasing effect or desirability. Each entrance is approached through a small gabled porch and leads directly into the living room. The living room windows extend across the entire front of the building, between the doors, and are provided with ornamental wooden shutters and window boxes which add much to the charm of the whole.

The living room is larger than in the other homes described here, being 17 feet long and 11½ feet deep. From it two doors open into the dining room, which is an outside room made cheerful by two large windows, and an inner bedroom. The bath room opens off of the latter, at the rear. At the rear of the dining room is the kitchen which is provided with a back door. This kitchen is of the type now popular, small and longer than it is wide.

A small court space breaks into the rectangular shape of this building at the rear making possible a good window for each bedroom. The entire building measures only 36 feet wide and 34 feet deep, exclusive of the front porches.

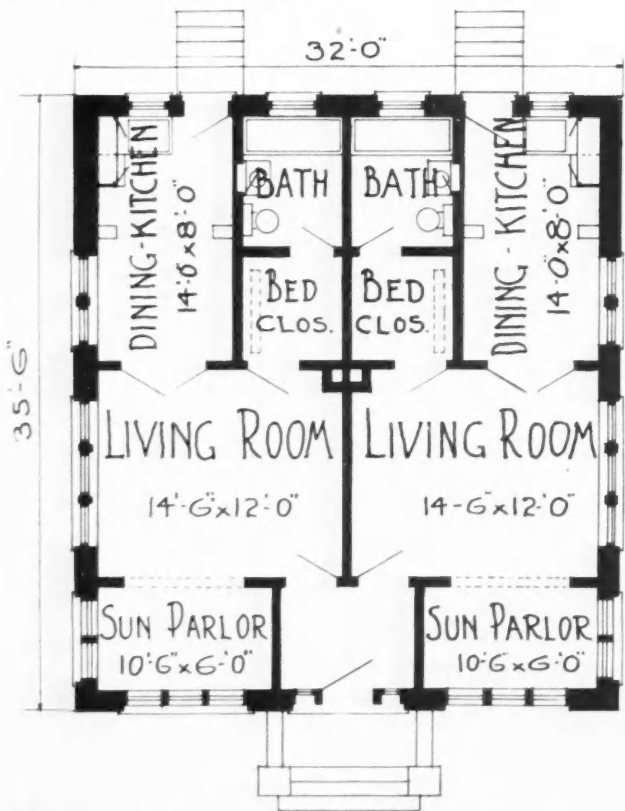
Of this entire series the last house shown avoids the duplex appearance most completely. In fact there is no way of telling, from the outside, that this is a double house. Also its plan follows most closely the type of design used in the modern kitchenette apartment.

This building is an attractive brick structure with half-timbered stucco in the gables at the front. The foundation line is well hidden with shrubbery and the roof is attractively finished in shingles. The front entrance, placed in the center, opens into a vestibule which serves both of the homes included under the one roof. In each case a door opens into the living room of the home.

The living room is 14½ feet wide and 12 feet deep and in front of it is a sun parlor which measures 10½ feet wide by 6 feet deep. There is a wide opening between the sun parlor and living room and both are made cheerful by many windows.

Back of the living room and on the outside of the building is a dining-kitchen, the sort which is found in the small one and two-room apartments. The whole space is eight feet wide and 14 feet deep. The forward part of it is used as a dining room and is separated from the kitchen space at the rear by a china cabinet at either side, extending only part way to the ceiling. There is a rear entrance into the kitchen.

Also back of the living room, but on the inside of the building, is a large bed closet and back of it the bath room. The bed closet hides the sleeping arrangements during the day and at night the living room is converted into sleeping quarters. The closet is amply large to serve as closet and dressing room and a door connects it directly with the bath room at the rear.



The Floor Plan Carries Out the Promise of the Attractive Exterior Shown Above. Each of these twin dwellings is a thoroughly livable sort of home.

# A Distinctive Stucco Home in Spanish Style

**H**ERE is shown a little Spanish-style house that is especially distinctive in outside appearance, particularly with reference to wall finish and color scheme, and also, to some extent, in detail work. Like the usual house of this type, its walls are of stucco, over metal lath and frame construction. This stucco, however, while brought to a smooth sand finish, is troweled to a surface that, in unevenness, may be said to resemble crinkly parchment. It is further somewhat suggestive of old parchment in coloring, although its colors run to much deeper shades, consisting of browns, tan and amber in evenly blended mottle effect.

Aside from the walls, the color scheme of the exterior comprises a tile roof in a variegation of dull-toned reds, browns, greens and blues, and wood trimming done in a rubbed coat of grayish blue over dark red.

Interesting detail work is seen in the arched style of a pair of front windows, in the oddly designed and grilled window of the entrance vestibule, in the arched gateway at the extreme left, and also in the placing of the composition ornament over the three French windows looking upon the front terrace.

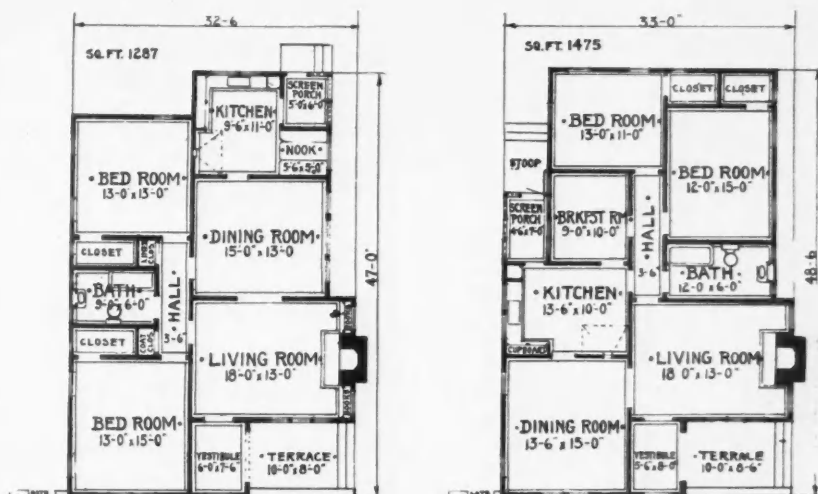
The front entrance is designed with a small vestibule, entry to which is provided through an open arched doorway off one end of the terrace, and which leads to the living room through a door that is also arched.

Two different floor plans for the house are included in the illustrations. One has a floor area of 1,287 square feet, and contains living room, dining room, two bedrooms, bath room and kitchen, while the other plan covered an area of 1,475 square feet, and has the same rooms with a small breakfast room additional.

The closets and built-in features of the former arrangement include bookcases at either side of the living room fireplace, both a linen closet and a closet for wraps in the hall, a windowed closet for each bed room, a medicine-cabinet in the bath room, and excellent cupboards, a hood for the range and the other usual features in the kitchen, besides a delightful little breakfast nook equipped with built-in seats and table. The larger plan has the same equipment, except for the bookcases in the living room and the breakfast nook off the kitchen.

The house here photographed is built on the larger scale. This house is built in Los Angeles, California, and the plans are by Floyd A. Dernier, of that city.



Charles Alma Byers.



The Builder of This House Is Offered a Choice of Two Different Floor Plans to Suit His Taste. In one the dining room is at the front, while the other gives this position to one of the bedrooms.



The Exterior of This Spanish Home Presents a Number of Distinctive Details. The stucco finish gives the effect of crinkled parchment, the vestibule window is most unusual in design and the design of the other windows is strikingly individual.

	<p><b>LANDSCAPE ARCHITECTURE</b> AND <b>THE HOME</b></p> <p>A DEPARTMENT CONDUCTED BY</p> <p><b>F.A.CUSHING SMITH</b> LANDSCAPE ARCHITECT CHICAGO</p>	
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## Color in the Garden

This Is Number Eight of a Series of Articles

By F. A. CUSHING SMITH, Landscape Architect

**N**O true garden exists for aught save the pleasure which we derive from the vari-colored flowers within its borders, for they are to the garden what the furnishings, the hangings, tapestries, and bits of color are to the well-appointed interior. For this reason the plants to be grown should receive the same care in their selection that is accorded to even the simplest home furnishing.

Brilliant colors in gardens as in gowns are dangerous playthings. We think of red as a color denoting warmth, and yet seldom do we find in a quiet home a red wall-paper on the walls of a north room. Yellow is a color which suggests cheer, and yet we need to use it cautiously on the walls or in the hangings of our east dining rooms.

Among my readers are many who have long known that gowns of certain colors are more becoming to some women than to others. Orchid shades or yellow and cloth of gold are neither adapted to all occasions nor to all

women. Your eye unconsciously goes to the accent of color which may be placed upon a simple rich gown, or which may be secured by a corsage bouquet or by a fan of brilliant hue.

So in planning for our garden color effect, remember that the brighter reds and yellows are the spots to which the eye is first attracted. Perhaps that is the reason why on some of the entrances to our public parks long beds of red cannas, or parterre designs made up of vari-colored foliage plants in reds and yellows are so effective. In the garden, the brighter color notes should be in the vicinity of an architectural feature—a summer house, a seat, a gateway arch which has been covered with red rambler roses, or near a quiet pool, where the gorgeous colors are enhanced by their reflection in the calm water.

Would you have greater depth to your property? Plant the blue-green foliage shrubs, such as viburnum, lantana, the wayfaring tree, or the blue-green evergreen needles of



A Touch of Color Furnished by Well-Selected Flowers Gives Life and Charm to the Outdoor "Living Room" Which Greatly Enhances the Pleasure to be Derived from This Important, Integral Part of the Home.

the yew with its dwarf habit, or the blue-flowered delphinium and some of the iris in the distance away from the portal. If you have a long, straight, flower-bordered turf panel or walk you can also increase the apparent depth of the lot by slightly narrowing the width of the walk at the far end, in addition to the variation in the foliage or blooms.

Use with caution such colors as mauve and some of the magenta and lavender shades. There are few colors which will blend well with them, unless it be the orange tones. Red is also a difficult color to handle, as evidenced by the restless and fatal effect secured in planting red salvia or rose or carmen or scarlet cannas against a red brick house.

When in search of flowers for a garden which is to contain but one color in pre-dominance throughout the entire season, it is well to remember that the green of the turf or the green of the foliage of the perennials themselves somewhat neutralize the color effect which you may be seeking. It is well to try to select plants which will bloom throughout the entire season, so that at one time is the effect being sought entirely lost. The garden must be large enough and the flower border wide enough so that masses of each different variety can be planted. Small groups of bloom are entirely lost in the green of the foliage, and further give a spotty effect to the color mass, which distresses all visitors.

To encourage some of my readers to experiment with gardens of different colors, I am going to give you the names of a few plants, perennials which come up each year, for gardens of a special color. If space on your lot warrants it you might have two small gardens and thus try out two of the color gardens here suggested.

### The Spring Garden of Blue and Lavender

Among the many perennials which would be splendid for use in a blue and lavender garden for spring bloom are the Rocky Mountain columbine with its erect habit, and fine blooms. The iris family also affords us many varieties, among them being crested iris, the German iris, and the European dwarf iris. These plants are fine for edging, and for use about a pool, or along a rippling brook. No



The Color of Flowers Is a Useful Means of Centering the Attention on Any Particular Feature of the Garden.

blue garden would be complete in the spring without the bluebell, which blooms so profusely even under quite dense shade. The forget-me-not can also be depended upon for a long season of bloom, and the perennial flax will give a bloom of real interest for cutting. The tufted pansy and the scented violet should be planted in quantity for edging the borders.

### The Summer Garden of Yellow

For those who do not have the opportunity of going to the north woods for the summer vacation, a garden of summer flowers brings much comfort and pleasure. Yellow flowers seem to be very common until you attempt to have a yellow garden in the summer, and then the few perennials and annuals which meet the requirements of hot summer days are not many. The yellow millfoil, the yellow hollyhock, the hardy marguerite, are all found in the old-fashioned gardens. Coreopsis or tickseed is one of the long-blooming perennials which no garden should be without. The yellow foxglove and the brown and yellow blanket flower or gaillardia are also sturdy yellow bloomers, which provide an abundance of bloom for the table.

### The Fall Garden of Pink and Crimson

If the perennial border has been carefully cultivated and watered during the summer, the following suggestions for the fall garden will assure you an autumn color effect seldom seen in our home grounds. The aster family affords many varieties which have pink and crimson flowers, with Perry's favorite, the red flowering New England aster, and Perry's pink the most outstanding varieties. Another perennial sometimes confounded with the aster is the *Boltonia latisuama*, with its erectly borne, flat-headed blossoms, and the red-hot poker plant, with its strange spikes of brilliant color gives an added originality to the border.

Many annuals might be included in the above lists, if a greater mass of bloom is desired, and if during the first year the perennials do not all bloom well. For a of continuous bloom, we can select a few of the kinds of plants mentioned which will look well together, and which will give us bloom in spring, summer and fall. Avoid small groups of one variety, so as to secure not a specimen garden, but one which gives flowers throughout the season and plant together those which belong to the same color family.

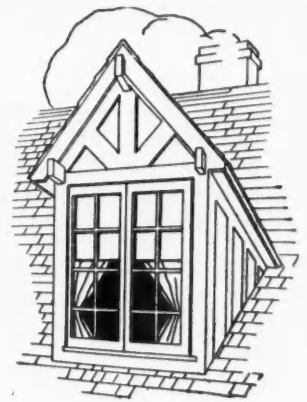


Rightly Selected Plants, with Their Vari-Colored Blooms, Form a Perfect Setting for the Well-Designed Garden Gate.



# DETAILS of HOME BUILDING

by V. L. SHERMAN  
Lewis Institute of Technology



## Detail 7—The Fireplace

IT has been said that mankind in general can forgive all of the improvements in the design of the home if the fireplace is left. And that was not said by a brick manufacturer. The fireplace, after a short period of rest on the advent of the gas-log, has come back to its own. The open fire is the one thing left that hooks us up with the pleasures of the gods through Prometheus and the stolen fire. That is not so far-fetched either. One season of cold weather deprived of a real fireplace may convince you.

The subject is a rather broad one to begin with and even antedates chimneys; it is connected with many phases of building; and it is so truly a matter of sentiment that we will cast the sentiment aside for serious business in order to get the best results.

The chimney is one of the main features of a home. Its construction should not be arrived at without some care in the design. For the smaller houses which we are considering one chimney should be enough for the necessary two flues for the heater and the fireplace. In localities where masonry is relatively cheap two chimneys may give added attraction from the outside, but between one large homely chimney and two smaller ones it is better to take the first.

Fireplaces are meant for warmth, and even for heat, first. They are meant as an element of decoration, a very important point. And they are meant for ventilation. They may easily be made to embody all three provisions. They may range from the humblest of hobs to the most imposing, tall, smoke-bemantled structures. Somewhere within the range is the size and type to fit.

Figure 1 is the important figure on the opposite page. This sketch represents an average fireplace in section. The chimney or fireplace base starts just below the hearth and shows the ash-dump opening. The chimney proper rises from its foundation free of the house, and we will suppose that one side carries the flue from the heater, and that the remainder is empty enough to provide ash space for the winter.

The chimney is free of the house but the hearth should rest firmly on an arch and against a two-membered header. The ash-dump should be placed well back and flush with the hearth. The cheeks, base and back of the fireplace are shown in fire-brick. This is largely a matter of choice although there are some ordinances against the use of anything except fire-brick. The back of the fireplace tilts forward to meet the throat which should be long and narrow. The throat should be pretty well toward the face and provided with a damper, which can be operated by means of a screw or a poker.

The damper plays a very important role. It will regulate the draft and consequently the heat, it will stop a windy chimney when its howl isn't part of the chorus,

and it will protect the house against flies in the summer time. There is another feature also to be noted. If by chance the smoke or wind shelf is inadequate, the damper will protect the hearth and floor against sooty ink spots during a hard rain.

This leads to the smoke shelf. As a matter of fact if coal is burned it should be called the soot shelf. The theory is that when a fire is started and the warmed air rises from the fire it must overcome countering cold air in the chimney. Also, when the air is gusty some drafts find their way down the flue. Unless some shelf and baffle is provided, the cold air, rain, soot, smoke and heat may emerge into the room and make things uncomfortable. It is to be regretted that such things happen only too often when they should not happen at all. The arrows in Fig. 1 show why a damper and smoke shelf are such important points.

Proportions have a great deal to do with the success of a fireplace. So far as appearances go, proportions may be settled to the taste, but there is a definite minimum in the ratio between the opening of the fireplace and the size of the flue. The opening should not be more than ten times the flue cross section. Some say twelve to one, but there are so many other elements of obstruction likely to enter in that I should say the ten to one ratio is better.

The cross section of the throat should be as large in area as the flue or larger, and as wide as it can be made. The lines of the draft should not converge before passing the damper. The ratio of hearth depth to breadth is only to be determined in a general way. The shallower the hearth the more certain must good draft be, and the necessity of an offset back of the throat.

If the hearth is shallow the height must be considered, for, if the arch is high, enough unheated air will be taken into the chimney to check the rising current of air. That would mean smoke drifting into the room with every little vagrant breeze across the chimney top. As a matter of fact a gale of wind might cause less trouble since the chimney would take on the qualities of a Pitot tube and pull the wanted heat out of the room below.

Flues should be lined, all of the smoke chamber should be smoothed off with good lining. The flue should not have any kinks or turns. Unlined flues of chimneys, rough flues and poorly built flues are soot collectors. If the chimney is hot enough the soot will burn, and like smouldering roots in timber tracts these soot filled leaks are likely to make a great mess. This is not exaggerating. I have seen it happen a number of times and I am not a member of the fire department. Line the flues, and brick between.

A cold flue should not rest against a warming one. While on the subject of soot collection it might do to add that round chimney pots are not the best to cap a rectangular

(Continued to page 174.)

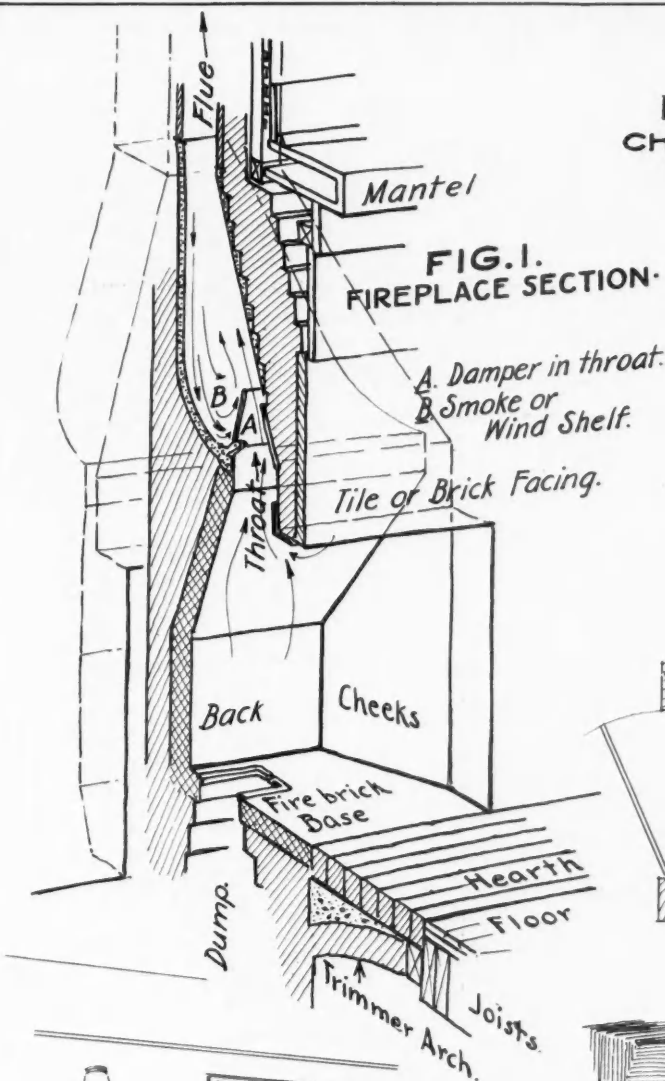


FIG. 2.  
CHIMNEY  
FORM

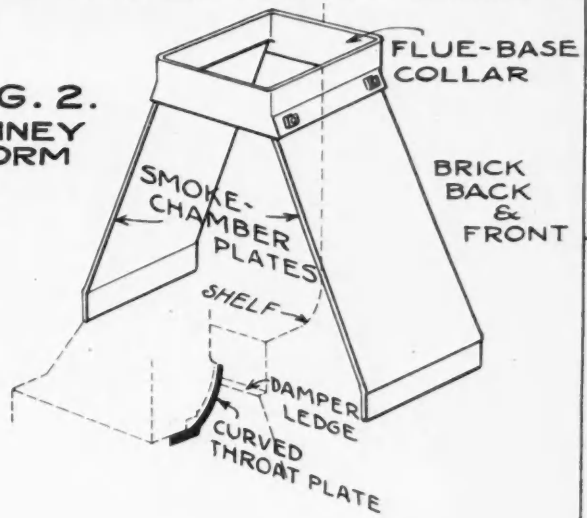


FIG. 3.  
WALL SET CHIMNEY.

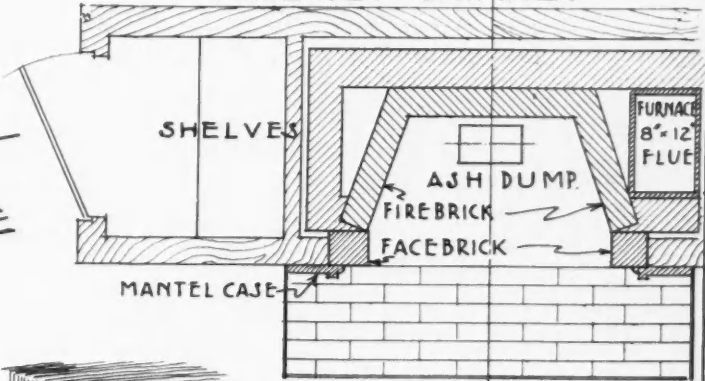
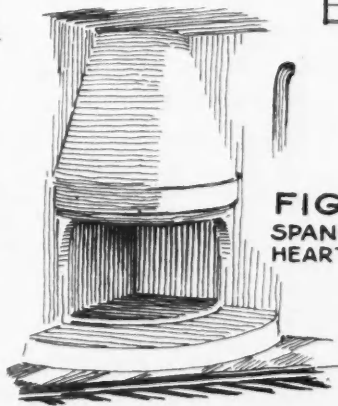


FIG. 5.  
SPANISH  
HEARTH.



REMEMBER TO HAVE CHIMNEY CAP 2 FEET ABOVE HIGH RIDGE, & TO KEEP FLUE STRAIGHT. HAVE PLENTY OF SMOKE SHELF BACK OF LONG & NARROW THROAT. HAVE FLUE SECTION  $\frac{1}{10}$  FIRE PLACE OPENING OR MORE. USE A DAMPER. AND BE SURE THAT ALL OF FLUE IS CLEAR OF THE LEAST OBSTRUCTION.

FIG. 4. THE FORMAL MANTELPIECE.

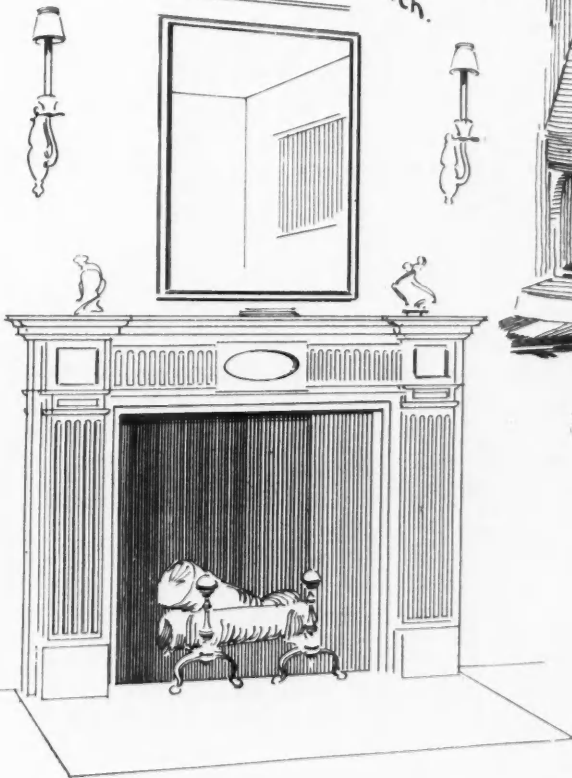
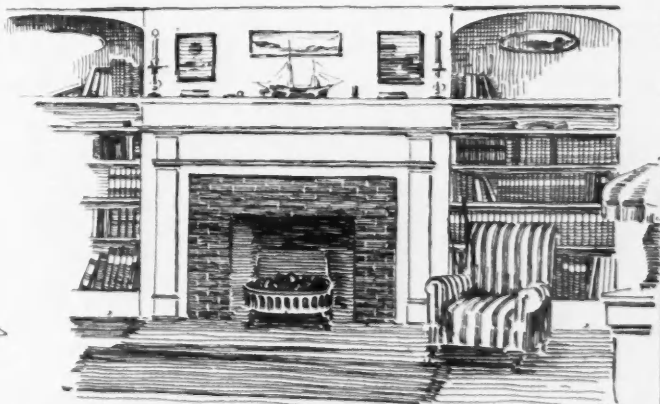


FIG. 6. THE DOMESTIC FIREPLACE



W. H. W. 9-5-20

# The Cost of Loose Windows

By CLYDE A. MANN

**P**UTTING a price on the size of window cracks and reducing to pounds of coal and dollars the looseness of loose windows—this has been done in a way to encourage every builder who has advocated and used storm sash and weatherstrips in the building of new homes or larger buildings. Authoritative tests under different wind pressures have shown that loose windows cost much more than most home builders realize; even more than practical contractors have estimated in the past.

The Research Laboratories at the Bureau of Mines in Pittsburgh now have reported results of tests made under supervision of the American Society of Heating and Ventilating Engineers in a way to be most useful to home owners and builders. F. C. Houghton, of New York City, and C. C. Schrader, of Pittsburgh, conducted the tests and embodied their appraisal of window cracks as a liability in a report: "Air Leakage Through the Openings of Buildings." No such proof heretofore has been available of the importance of reducing the loss of heat outgoing and of the result of infiltrated cold. Many of the conclusions are startling. Summarized the report serves to show:

That one plain unlocked window without weatherstrips and with cracks  $\frac{1}{16}$  to  $\frac{1}{4}$  inch wide, having a perimeter of about  $18\frac{1}{2}$  feet, costs no less than 1,357 lbs. of anthracite coal during the heating season.

That the locking of windows with good hardware serves materially to reduce the loss of heat.

That weatherstrips of two general types—such as are produced by many manufacturers in varying quality and values—when the crack is  $\frac{1}{4}$  inch reduce the window fuel cost from 1,357 lbs. to 531 lbs. and 295 lbs. respectively. When the crack averages  $\frac{1}{16}$  of an inch the fuel cost is reduced to 266 lbs. in one case and 207 lbs. in another when the average wind velocity is 14.4 miles per hour—the average prevailing in a large part of the United States. When the average wind pressure is as high as 24.9 miles per hour, according to this report, the costs are as follows:

Plain window, unlocked, cracks  $\frac{1}{16}$  to  $\frac{1}{4}$  inch, fuel cost per season, 2,215 lbs. of anthracite.

Same window improved by ribbed type of weatherstrip shows fuel cost reduced to 1,062 lbs.

Same window equipped with an interlocking type, when new, shows reduction of fuel cost to 605 lbs.

When the window cracks are  $\frac{1}{16}$  instead of  $\frac{1}{4}$  inch the ribbed stripped window shows a fuel cost of 590 lbs., the interlocking stripped window 472 lbs. of anthracite.

Stated in another way the report shows that a window crack  $\frac{1}{16}$  to  $\frac{1}{4}$  inch, when not weather stripped or protected with storm windows costs for a heating season 310 lbs. per running foot. When the same window wears a ribbed type of strip the cost per foot is 74.7. When the interlocking type is used the cost per foot is reduced to 41.4 lbs.

These tests have had comparison with actual results ascertained in about 100 buildings and the results so far as the plain window and the window ribbed type of weather strip were verified by experience. The Code prepared by the Society of Heating and Ventilating Engineers for adoption or final revision at the annual meeting next January, expressed the comparative heat losses when subjected to a 15-mile wind, as follows:

Plain window 47.5 cubic feet per minute of cold air.

Window with interlocking type of weather strip 7.8 cubic feet per minute of cold air.

We have throughout this article translated this lingo of the engineer to the equivalent quantity of coal needed to produce the heat displaced by the incoming cold air. The comparisons are these:

B.t.u. loss per hour under 15-mile wind—

Plain window 2,500 B.t.u. equals 1,357 lbs. anthracite.

Ribbed type weatherstripped windows— $\frac{1}{16}$ -inch crack, 488 B.t.u. equals 266 lbs.

Interlocking weatherstrip,  $\frac{1}{16}$ -inch crack, 380 B.t.u. equals 207 lbs.

The new Code specifies that in computing "window losses" only half the windows shall be considered and these figures shall be reduced by 20 per cent, an important revision.

"It is a curious fact not generally understood," said an engineer, who is one of the country's foremost authorities on air leakage at windows, "that we find every home is surrounded with an envelope of warm air passing outward at a rate to offset a

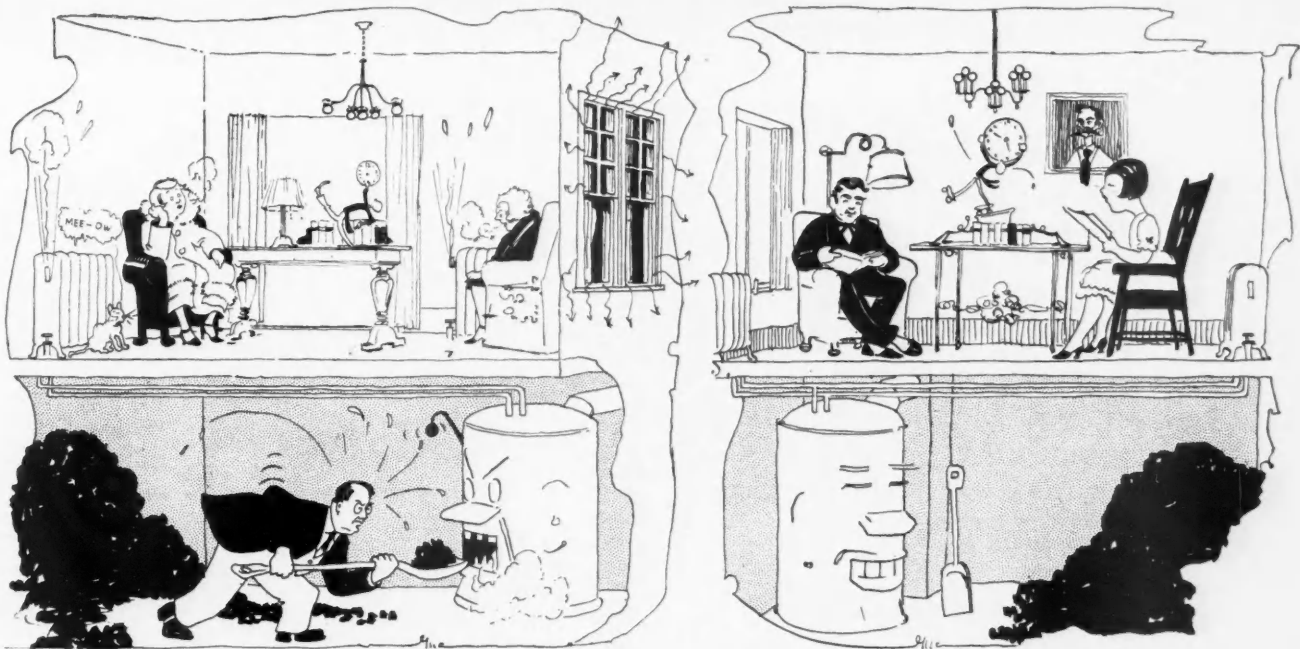
6-mile wind. This we call exfiltration—outward pressure of expanded warm air escaping from windows, and it is only when wind exceeds 6 miles an hour that it drives through the enveloping warm air and enters through window cracks as well as through the cracks around the window frames. This outward pressure of expanded air causes a continuous loss and a heavy loss when the windows are at all loose, as most windows are. So it is evident that weather strips are even more useful to a building owner than the data on infiltration goes to show. The cold air which is driven in has been accounted for; there is in addition a constant loss by exfiltration which must be considered."

The country over, it has been found that the wind velocity averages 13 miles per hour, that the window cracks amount to  $\frac{1}{16}$  inch, and that the use of weatherstrips reduce the air leakage by  $\frac{4}{5}$ ths to  $\frac{8}{9}$ ths of the usual air leakage. With these facts in mind it is as interesting as a cross word puzzle to estimate the total number of billions of dollars which annually go to waste from the 26 million homes in the United States as a result of air leakage. This explains why heating engineers have laid such stress on the wind velocity in the location where the building stands. Prof. J. D. Hoffman, of Purdue University, gave



Winter Winds That Enter Through Uncalked Window Frames Amount in Coal to 75 Pounds Per Foot of Crack  $\frac{1}{4}$  Inch Wide Where Average Winds Are 15 Miles Per Hour.





In the House with Uncalked Windows Only the Man Who Stokes the Furnace Can Keep Warm, as the Warm Air Leaks Out and the Cold Winds Blow in, but with Weatherstripping Installed Everyone Is Comfortable and Even the Furnace Wears the Smile That Comes from Handling Its Job with Ease.

this as an illustration of what it means to the coal piles in millions of homes throughout the country:

Take a 3-window living room 13 by 15 feet and a 10-foot ceiling with a total window perimeter of 50 feet, a crack 1/16th inch around each window and a 15-mile wind striking the window. There will be 7,300 cubic feet of outside air enter the room per hour around the windows. That is to say 3.75 room volumes of air must be heated from zero to 70 degrees every hour at an expenditure of 9,280 B.t.u. With soft coal at \$10 per ton (average price used by Fuel Administration) and 12,000 B.t.u per lb., burned at 60 per cent efficiency, there will be an expenditure of 15.5 cents per zero day of 24 hours solely for heating the window in-leakage in this one room. Some of this expenditure should be charged up as loss, because no matter how hard builders exert themselves to make a well insulated job there will still be some in-leakage. It is also desirable that a certain amount of outside air enter the houses to insure healthful room conditions. Ventilation, however, may be accomplished in a better way, by the opening of windows or through specially prepared ventilating ducts.

Most data on fuel cost of windows fails to take account of the old-fashioned storm sash—a very useful asset to every owner. The transmission loss through glass is high, and it can be cut in two by the use of storm sash as the two thicknesses of glass (with atmosphere between) reduces the rate of loss full 50 per cent. Figuring the window area of a home, the reduced heat loss and consequent reduction of fuel soon pays for the cost of the storm sash over and over again, while the added heatability insures safety against cold floors for the children and the dangerous "forcing" of furnace fires. Half the winter fires in homes are caused by overheated chimneys, pipes and plants, because of forced fires, a fact which gives storm sash a new value as protection of lives and property as well as the fuel dollars.

Builders, including "home merchants" who build to sell, have learned the importance not only of weatherstrips but of the proper installation of weatherstrips so that windows will not stick and so that the job may be tight. Recent innovations in the designs of windows have included types which have special design to shut out cold winds. Some of these have semi-weather strip features as well as the convenience in washing the glass; others provide a leverage to force the sash tightly into place. Builders do well who

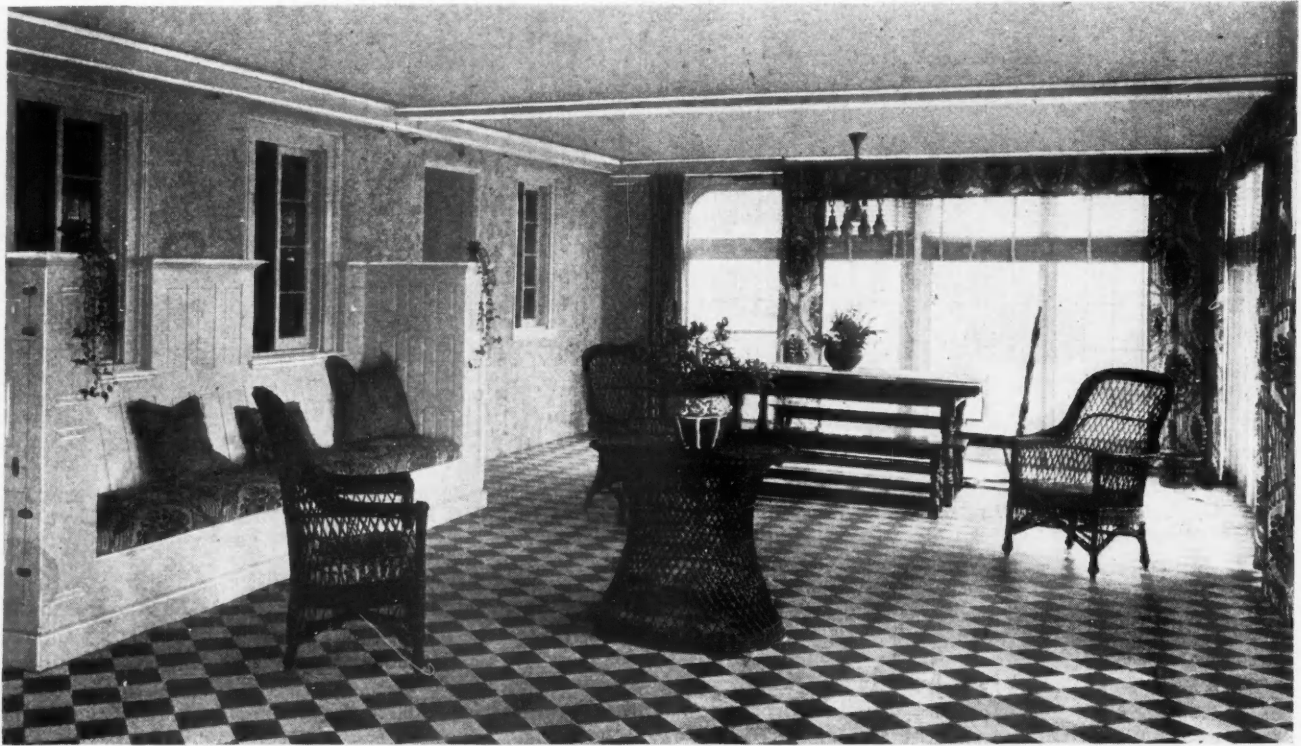
consider what the fuel costs will be of the windows not only when installed but five years later. As frame sash are sure to shrink, some provision must be made to tighten them; since the years increase the air leakage unless they are well weatherstripped. The five-year-cost factor of well weatherstripped building has importance far beyond the comprehension of most people, especially when shown in dollars and tons for ten years and longer periods. On that basis the home buyer could afford to pay almost double—although he would not have to—for a home with tight windows equipped with storm sash. In comparison to the house in which the windows rattle at every gust of wind and in which the doors shrink away from the sill a half inch or more on sides of a building exposed to winter winds, such a home is far more easily paid for.

Moreover there is a saving in the reduced amount of radiation needed to heat a tight home, a saving which goes far to cover the cost of the weatherstripping. This saving will be from \$15 to \$25 for each window weatherstripped if \$2 per square foot installed be taken as the basis of cost of radiation.

The annual saving in fuel is one which any builder can use to advantage in reselling an investment made to insure tight windows. "Figure it out yourself," said a heating engineer, "with the loose windows each costing needlessly some 400 lbs. of anthracite coal each year—a total of 4 tons wasted for the house. This represents close to \$80 in one year and in 10 years almost \$800, repaying over and over again in money spent for prevention of air leakage in addition to which there is comfort, satisfaction and safety. In many cases the saving amounts to 20 to 40 per cent. Is that worth while? I'll say that it is, emphatically.

As no city building department can spare a minute from the problems of structural strength and fire safety to give home builders any help on heatability, it has become the particular hobby of many contractors to see that the houses they erect and finish can make a good showing in the matter of fuel cost and comfort. The subject has become a pressing one among realtors who have found they can sell buildings with "comfort built in" at a profit in money as well as satisfaction. The National Association of Real Estate Boards endorsed the proposal that houses be "certified" as to materials and workmanship.

# New Pattern Floors Are Practical as Well as Beautiful



Nothing Could Be Smarter or More Serviceable for the Sun Porch or Hallway Than a Marble Tile Linoleum Properly Cemented Over Builders' Deadening Felt to Form a Permanent Floor.

ONCE upon a time floors were just something to be walked on. In the baron's castle, the earth itself served as a floor, and rushes were strewn to make the mediaeval hall a little more livable. Not so many years ago the better floors of wood made possible more pleasing rooms, but even then floors had not yet become an important factor in home decoration.

Today, however, the floor itself is accepted as the logical starting point for color and design in the home. Builders are coming to recognize and use the influence of the floor in swaying the hesitant buyer. Attractively papered walls play their part in helping the prospective purchaser visualize cheerful rooms. So, too, do floors warmed by color and pattern.

Among the many floor materials which afford color and design, the least expensive to install and perhaps the most practical to keep clean and new-looking, is linoleum.

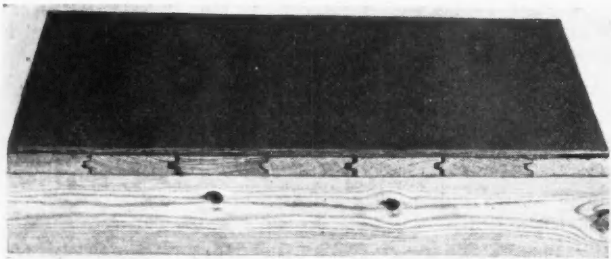
There are many different designs which will fill the need of any decorative condition. Take, for instance, the dining room of a fine American home. The furniture is old

Spanish. No factor in its setting could be more important than a tiled floor.

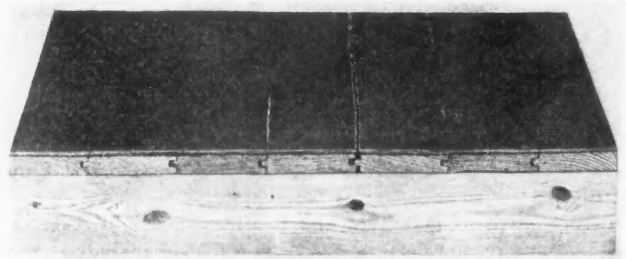
Yet to build such a floor to fit the furniture would be a radical step. There was always the possibility that the house might change hands within a few years, and what if the next owner brought furniture of entirely different character?

So, instead of laying a floor of hard tile, linoleum of tile pattern is used. Cemented over builders' felt, this makes a floor that will last probably as long as hard tile itself. If, because of a complete change of furnishings or decorative scheme, it should ever be necessary to remove this linoleum floor, such a change can be accomplished without undue expense.

Even though a properly installed linoleum floor is a permanent floor because it is firmly cemented over builders' deadening felt, such a floor can be taken up without damage to the underfloor. However, by a proper selection of colors such as neutral gray or brown Jaspe, and designs that are not too ornate, or tied up to any set decorative scheme,



When Linoleum Is Laid Over Deadening Felt, the Expansion and Contraction of the Underfloor Is Taken Up by the Felt Without Damage to the Linoleum.



Moisture in Summer and Dry Heat in Winter Cause the Underfloor to Expand and Contract Which Results in Broken or Cracked Linoleum if Not Properly Laid.

it is easily possible to install a linoleum floor that will merge in with any decorative plan, and satisfy practically every home buyer.

Although many designs of linoleum are in natural marble and tile effects, there are also many equally attractive designs that can be had only in linoleum. The new soft ripple effect called Jaspé is one of these. Moulded effects in soft colorings also afford the builder many new suggestions for making the floors of his house as attractive as the hardware, the woodwork and the modern built-in fixtures, all of which have an important bearing on the sale of the house.

There is, too, an added effect. Although it has the fine appearance of tile, it has the added advantages of being easy to walk on and a good heat insulator, for linoleum is made of oxydized linseed oil and cork firmly pressed onto a burlap back—and cemented into place.

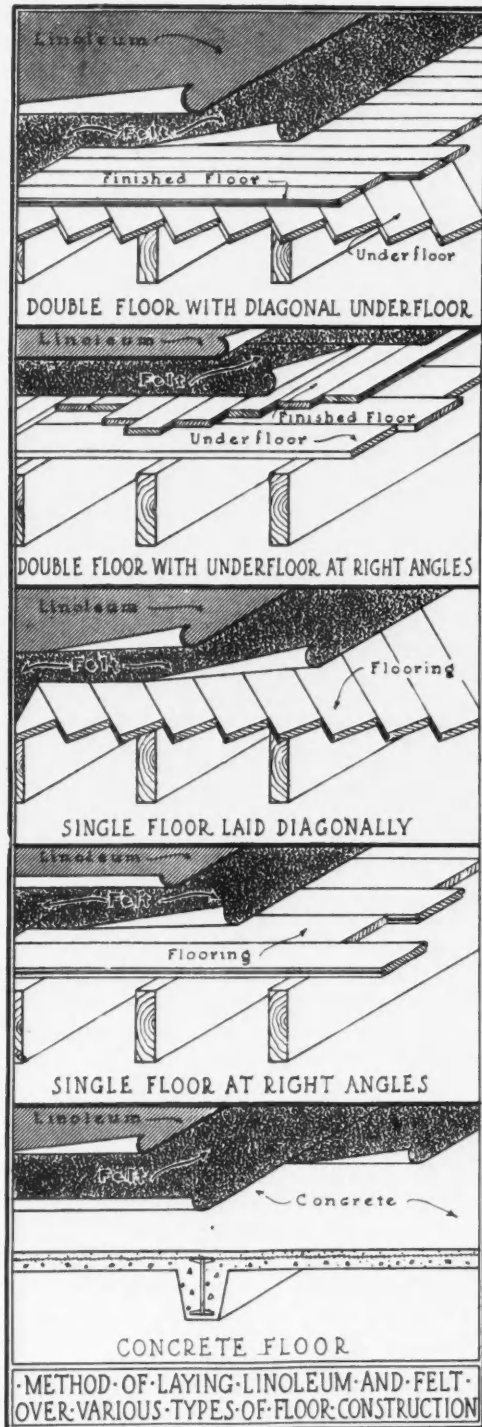
In both new homes and those which require new floors, the linoleum floor can be installed quickly and with minimum of trouble and expense. Experienced layers have learned how to cut linoleum so as to avoid waste and how to lay it to prevent buckling and cracking, conditions which result from faulty workmanship.

Insist that linoleum be laid right. If the merchant does not employ skilled mechanics to do this work, go to one who has a staff of layers and who will guarantee his laying. He will make a charge for the cost of labor and materials, but, in the long run, it will prove greater economy to pay well to have linoleum laid properly than to have the laying done in a makeshift manner in order to save a few cents a yard.

When you purchase a good grade of linoleum to be installed in your living room or dining room, or even in the kitchen or bathroom, you naturally desire to have it put down as a permanent floor. The most satisfactory way to install linoleum is to cement it down solidly over a lining of builders' deadening felt. This will give a permanent floor, smooth and firm, without cracks or crevices to mar it.

Owing to the variations in the moisture conditions, and the dry furnace heat to which most homes are subjected, wood underflooring expands in summer and dries out in winter, leaving cracks. Linoleum cannot be cemented directly to such a wood underflooring without possibility of damage. One of the chief advantages of the felt lining is that it tends to take up this expansion and contraction, thus saving the linoleum floor from breaking or cracking. In addition, the felt acts as a cushion, deadening sound and adding to the warmth and comfort of the floor, making it delightful to walk or stand on.

Furthermore, should it become necessary to remove linoleum cemented over felt, this can be done easily, without damage to the linoleum.



**If Instructions, as Illustrated Here, Are Followed, a Floor of High-Grade Linoleum Should Give Many Years of Service.**

Leading contract linoleum layers and good stores are prepared to lay linoleum by cementing over the felt lining and recommend its use to their customers. A brief description is given here of this method in order that you may understand how the work should be done. If the merchants in your city are not yet equipped to lay linoleum by this method, you can obtain complete details from a layer's handbook, "Detailed Directions for Laying and Caring for Linoleum," published by one of the leading linoleum manufacturers. This book lists all of the materials and equipment needed, and includes illustrations showing the several steps in laying linoleum by this improved method. This handbook is furnished without charge, upon request.

In cementing linoleum down over deadening felt, the felt is first cut into strips to go across the room, opposite to the way the floor boards run. The quarter-round floor moulding is removed, and both ends of the felt strips fitted properly against the baseboards. Linoleum paste is then applied to the floor and the felt is put down and rolled until it adheres firmly to the floor.

Strips of linoleum are next matched, cut, and pressed in position, also crosswise to the direction of the floor boards. The layer must be careful, however, to see that the seams in the linoleum do not come exactly over the seams of the felt. One strip of linoleum is laid at a time. The surface of the felt under each strip of linoleum is well coated with paste, except for four to six inches along the ends and next to the seams, which spaces are left bare. The linoleum is put down, matched, and rolled. After the paste has set, the free edges of the linoleum (if there is no pattern) are trimmed to fit neatly at all points. Then these free edges of the linoleum strips are lifted and waterproof linoleum cement is applied to the felt under the linoleum back to the pasted portions. This cement seals the seams and makes the floor perfectly water-tight. Finally the linoleum is well rolled with a heavy roller to insure perfect adhesion.

Weights, such as face brick or sand bags, are placed against each other lengthwise along all edges and seams to press the linoleum firmly against the felt while the cement dries. After the bricks are removed the moulding is put back into place, and the floor is cleaned thoroughly. If plain or inlaid linoleum has been laid, it should be waxed at once and polished.

The only way to fasten linoleum to concrete in a laundry, entry-way, bathroom, or any other concrete floor, is by means of paste and waterproof cement. Here, again, it is advisable to have the linoleum cemented down over a lining of deadening felt, according to the method previously described.

The only way to fasten linoleum to concrete in a laundry, entry-way, bathroom, or any other concrete floor, is by means of paste and waterproof cement. Here, again, it is advisable to have the linoleum cemented down over a lining of deadening felt, according to the method previously described.



# Homes in COLORS

## Home Building An Immense Business

By WILLIAM A. RADFORD,  
President and Editor-in-Chief of American Builder

**W**E who are in the building business are apt to lose sight of some things that are very apparent to those on the outside. We are too close; and it often needs the viewpoint of an outsider to give us the true perspective.

For instance, how many of us realize that home-building is today America's biggest industry, surpassing even the automobile business?

It has remained for George W. Hinman, the well-known financial writer of the Hearst newspapers, to bring out the facts regarding home-building as compared with other important items on America's annual budget of expenditures.

In his feature column of Sept. 16 Mr. Hinman sets forth his findings under this strong heading, "Home-Making a Huge American Business Just Now. Nothing Like It Heretofore. Five Years of Progress." Then he proceeds to paint a vivid picture in his characteristic way of what home-building and home-furnishing mean today in our national industry.

Home-building and home-furnishing together, he says, make up a colossal business enterprise in the United States just now.

America's bill for automobiles last year, says a trade journal, was \$2,500,000,000; for tobacco, \$1,200,000,000; for confectionery, \$1,250,000,000. Their idea is that the extravagance eats up too much money and accounts largely for an alleged decline in home-making.

Those are vast sums. At that, the estimates seem too low. The automobile bill of the American people was at lowest three billions. The tobacco bill for all sorts of smoking and chewing was at least as large. And candy, cakes, soda water, ice cream and so on are usually bought by the American people at the rate of two billions a year.

The American people are even more extravagant than the trade journal imagines. For the few items in question they must spend about eight or nine billions a year. And these few items are far from exhausting the list.

For instance, the writer has before him an estimate that in the last few years a billion and a half has been put into golf courses and golf clubs and that the yearly investment in golf is increasing rapidly. But at that do the American people neglect—are they neglecting—the great business of home-building? Apparently not.

There are no exact figures as yet, but there are estimates and good guesses. Roughly calculated, the total amount of building in the United States this year will be about six billions. Roughly figured again, about 60 per

cent of this building will be what is called "residential," that is, for homes.

### Still We Make Homes

Sixty per cent of six billions is \$3,600,000,000. This means that home-making, even without the furnishing of the home, is a larger business enterprise in the United States than the automobile business or the tobacco business. If home-furnishing were to be included, home-making would top the list, far and away above any one of them.

Any man who travels across the country can see many things to fortify the foregoing estimates. Around the large cities, the subdividing of farms and the building of homes go ahead today with little less speed than in California and Florida. In hundreds of little villages the same progress can be noticed.

The writer last month saw any number of little subdivisions near villages of 2,000 or 2,500 inhabitants. All the usual signs and advertisements were scattered across the frontage and five or six room houses were being constructed on the plots that formerly were cow pastures or cabbage patches. In fact, if there is anything that should impress the tourist more than another, as he passes across the country, it is the vast amount of home-building.

Five years ago, about 11,000,000 American homes were owned by the persons who lived in them. Since then perhaps ten billions have been invested in home-building.

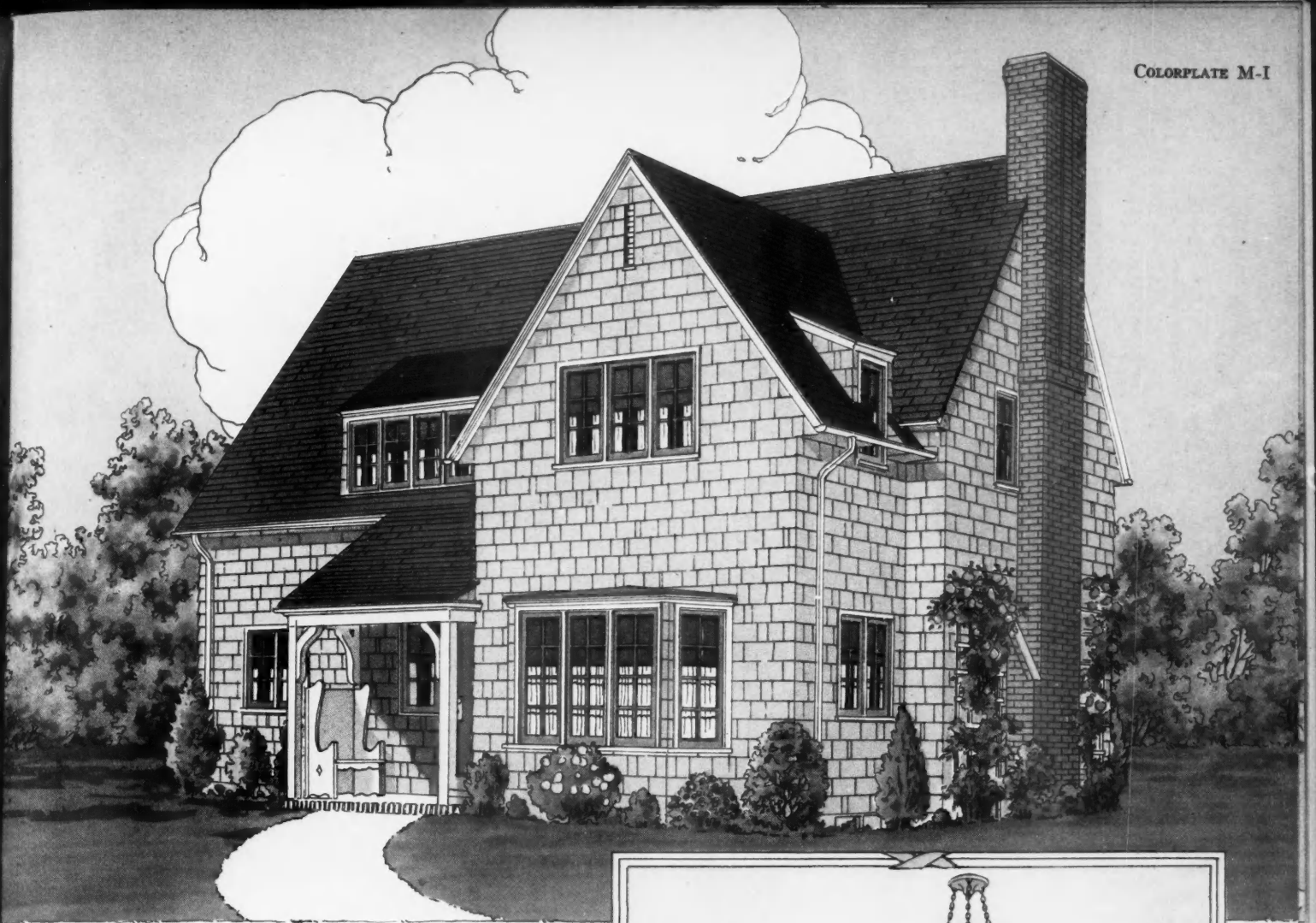
How many of the new homes are owned by the families that live in them? Nobody can know exactly, for the figures have to wait upon the census takers. But here, too, a guess would fix the number around 3,000,000.

This means that at least 14,000,000 American families are living in their own homes today. But are not many of the homes mortgaged? Of course—they always are—yet they are owned and furnished by the owners, nevertheless, and they are part of the new business and new home life of the country just the same.

### A Cheerful Lesson

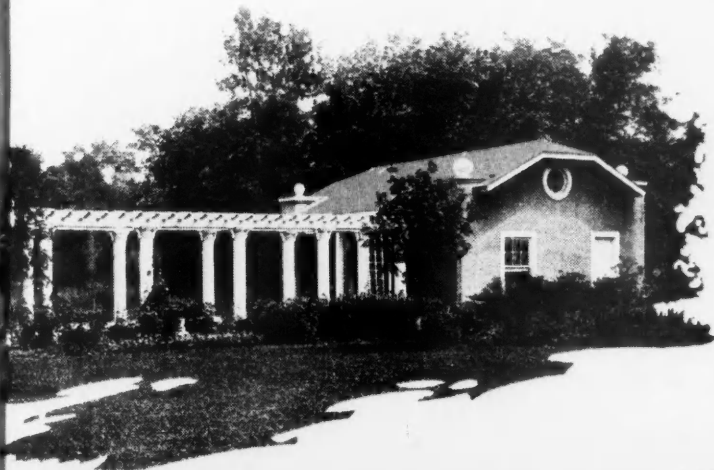
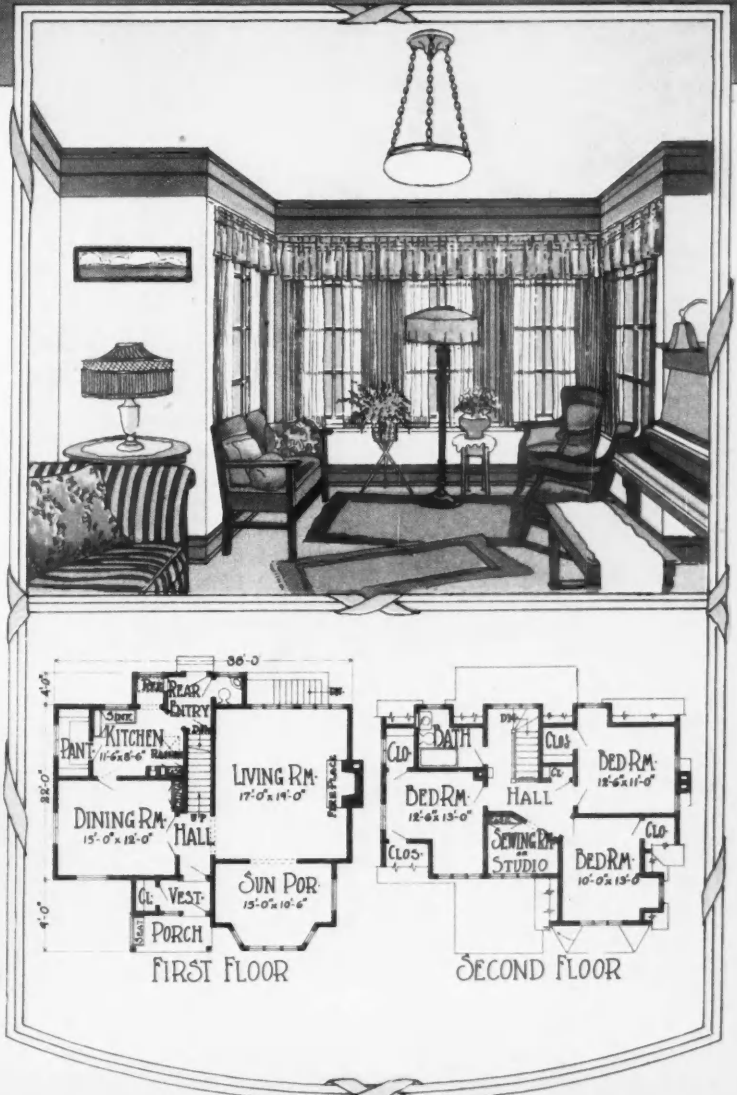
What is the lesson? Only that though they smoke and drink soft drinks, eat candy and ride in automobiles more furiously than any other nation on earth, the American people are still behaving with sense, are still preserving the habits of good business and good citizenship as well now as previously, and, though extravagant in some of their pleasures, are still thrifty in those things which strengthen and perpetuate the deeper foundations of the republic and its prosperity.

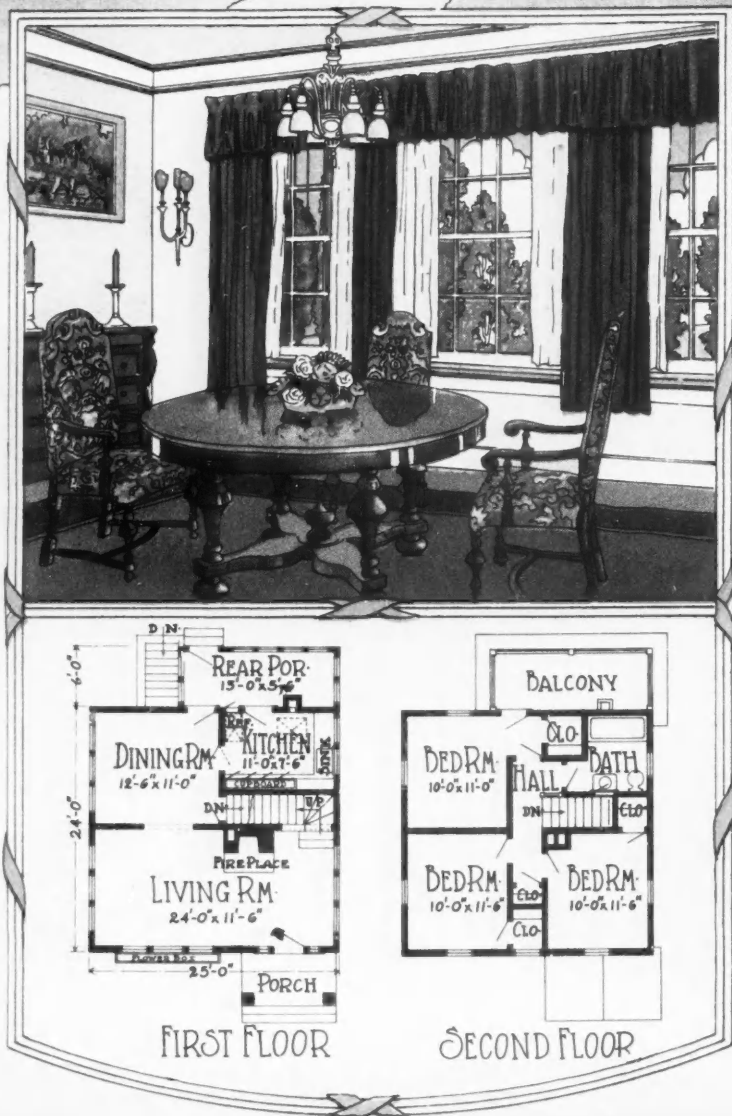
Check through the advertising pages of this magazine and take note of all the different concerns that are offering samples and books, catalogs and circular matter calculated to interest the home building public. Write to these manufacturers; you will be surprised and pleased at the help they stand ready to give you in your big job of selling, planning and constructing homes and other buildings.



## The MARLBORO

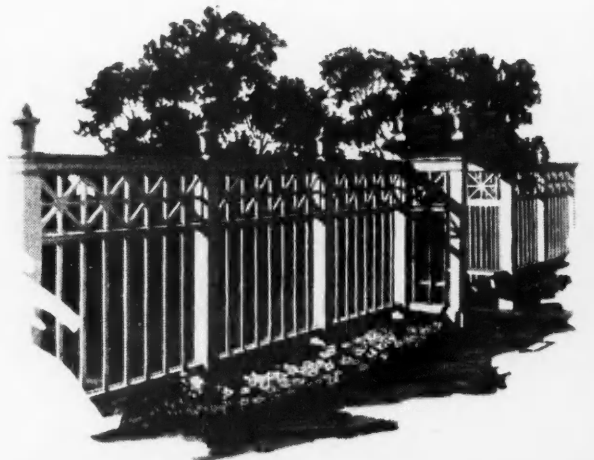
AN English house of eight rooms very cleverly arranged. Prominent gables and roof dormers set the style for this design. Color sketch to right shows appropriate furnishings for the large sun room.

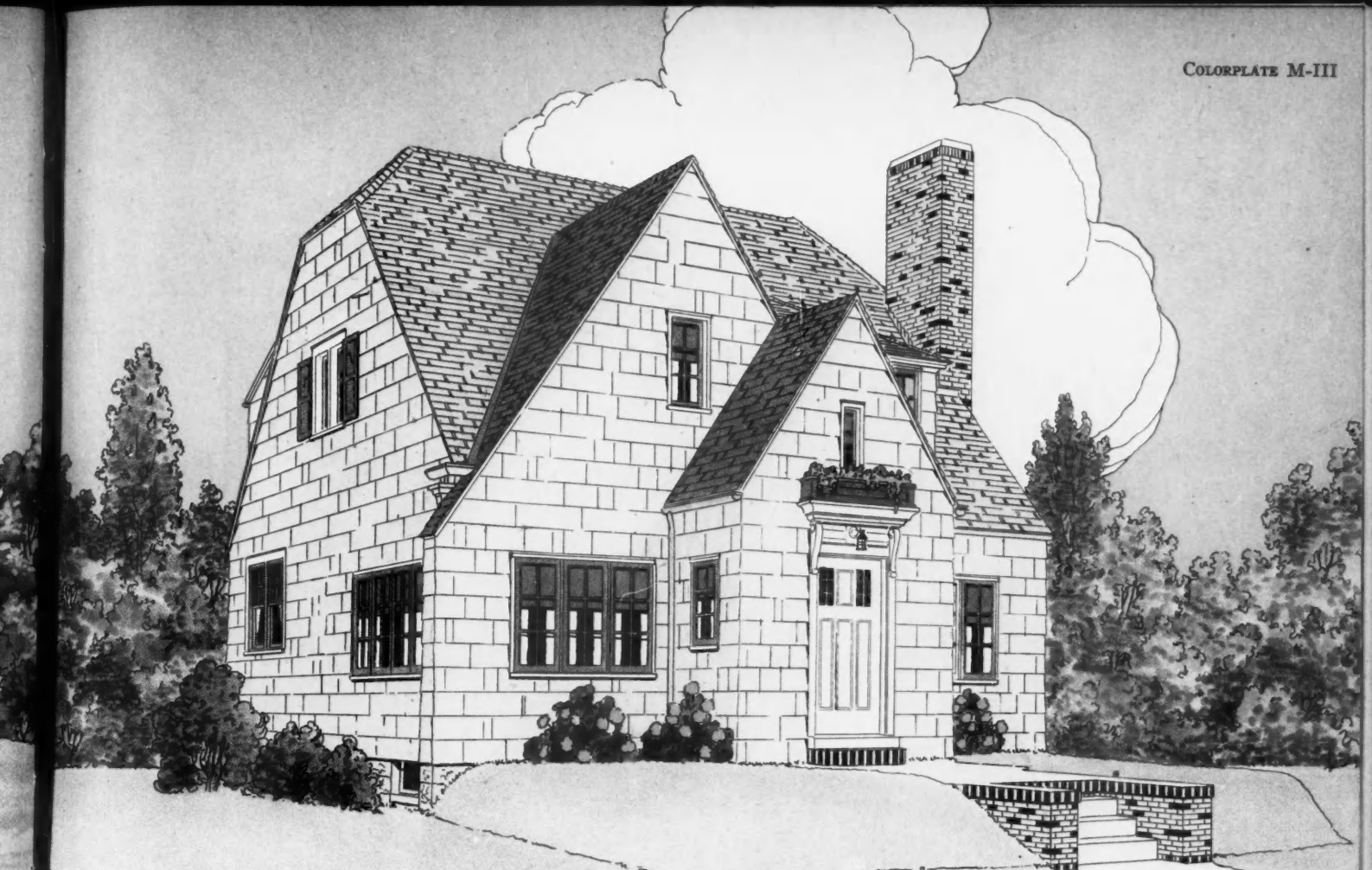




## The MANOR HILL

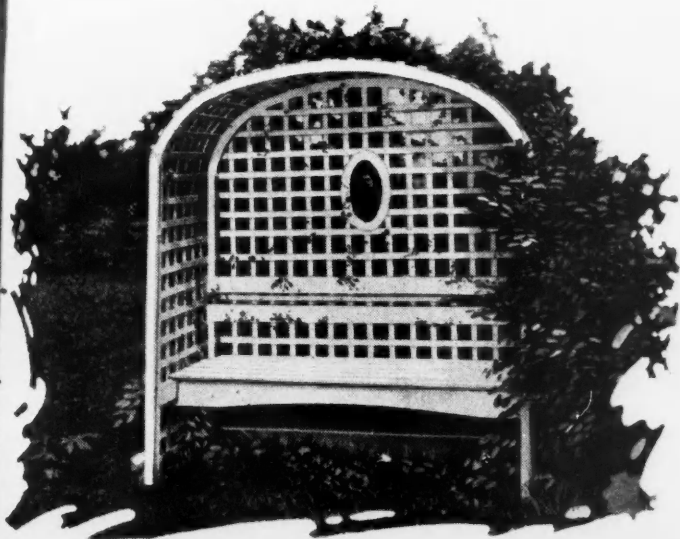
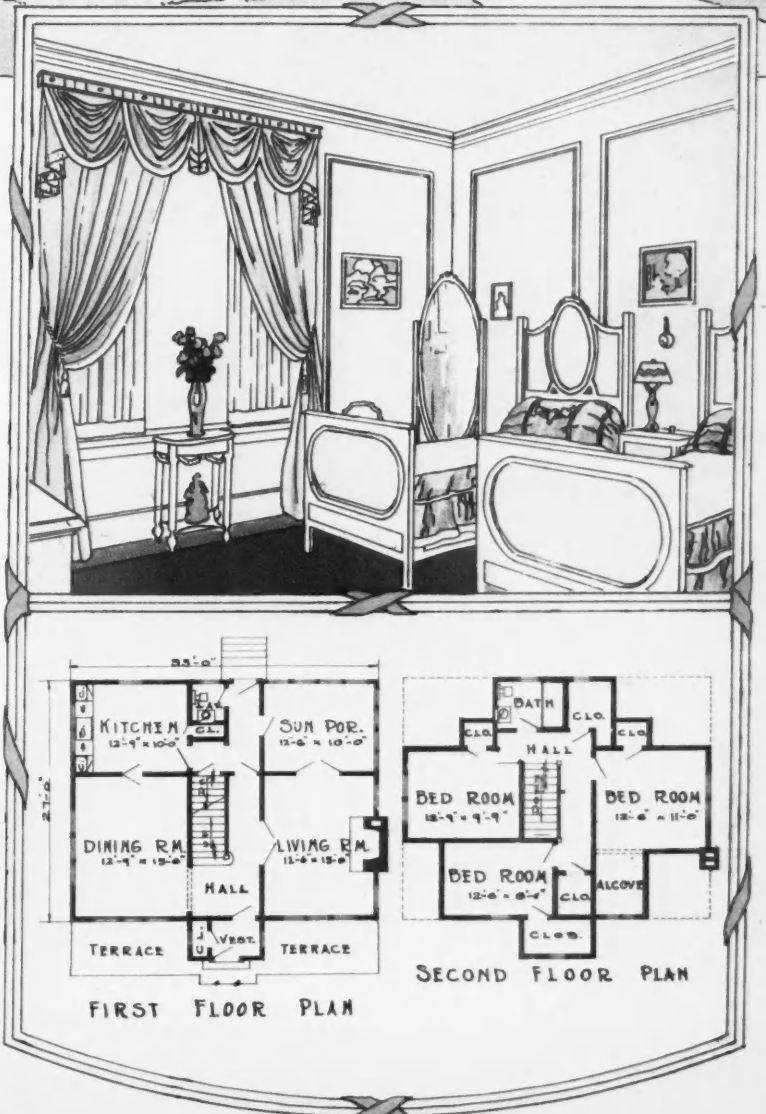
AN economical square type home of Colonial lines. There are three square bedrooms and bath on the second floor, while downstairs the big living room, connecting dining room and the convenient kitchen take up the space. The glassed rear porch opening from both dining room and kitchen is a popular part of this home. Color sketch to left suggests modern draperies and furniture for the library.





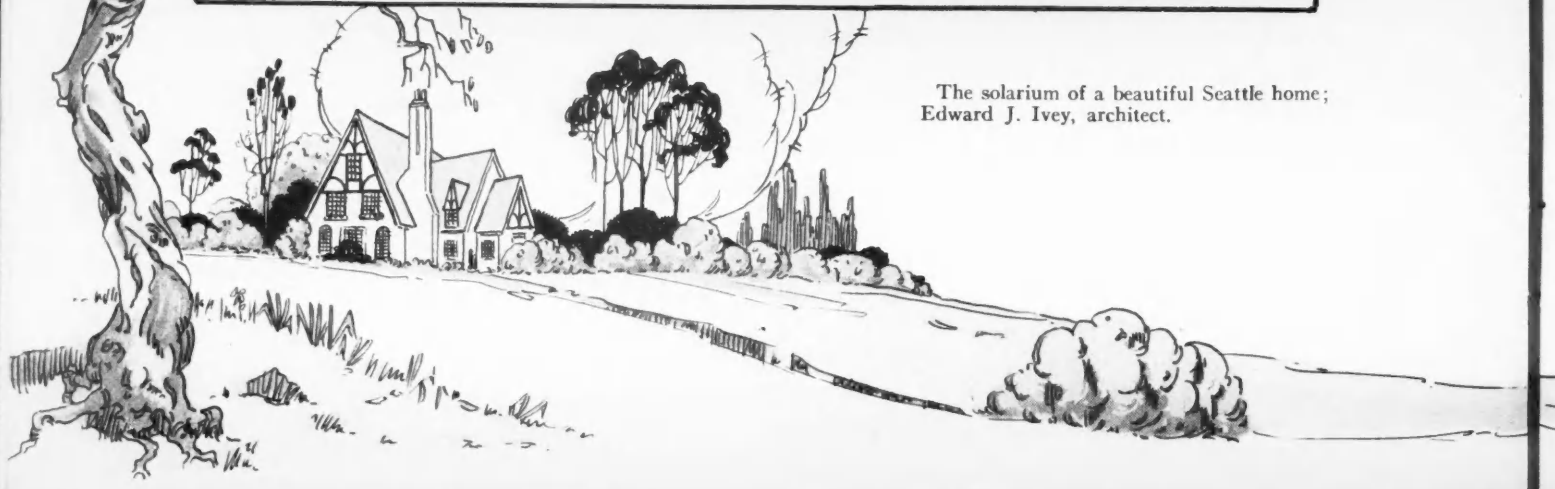
## The MARQUETTE

AN interesting cottage of English ancestry with shingled side walls and a quaint assortment of gables. The room arrangement is really very practical presenting six rooms and bath besides the large sun porch. Color sketch to right shows decoration scheme for one of the bedrooms.



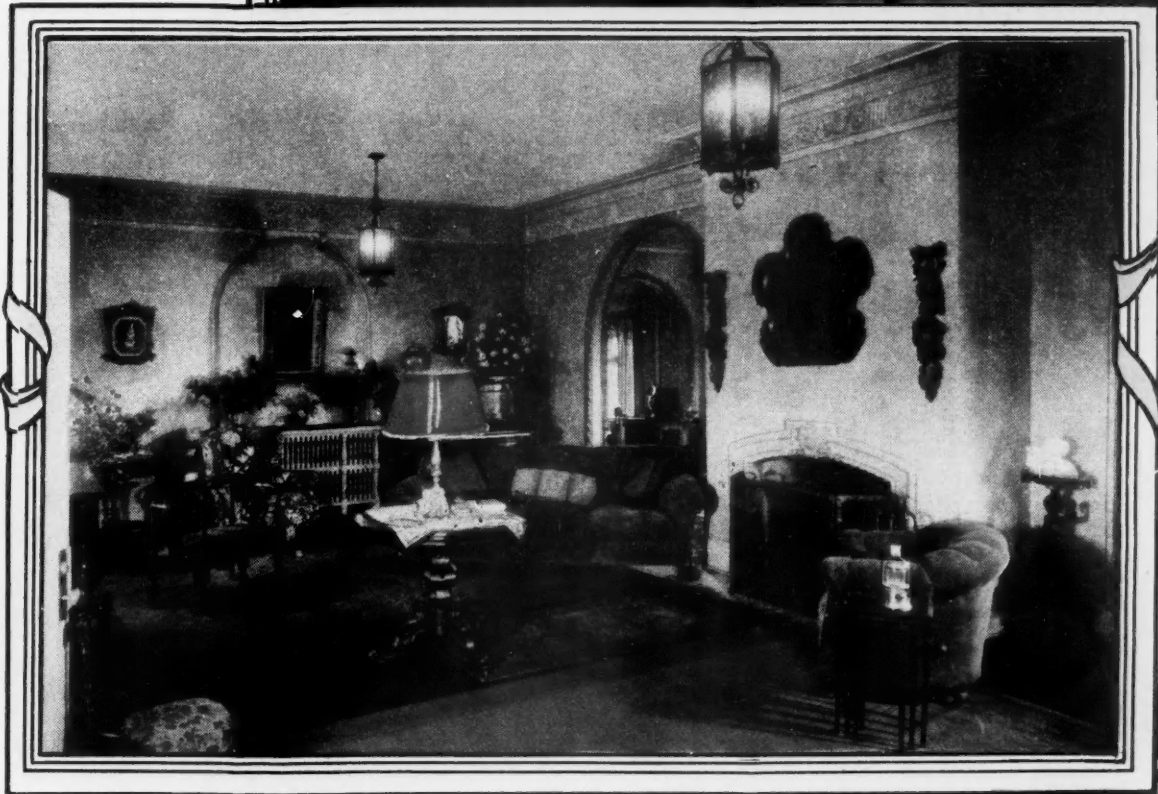


The solarium of a beautiful Seattle home; Edward J. Ivey, architect.

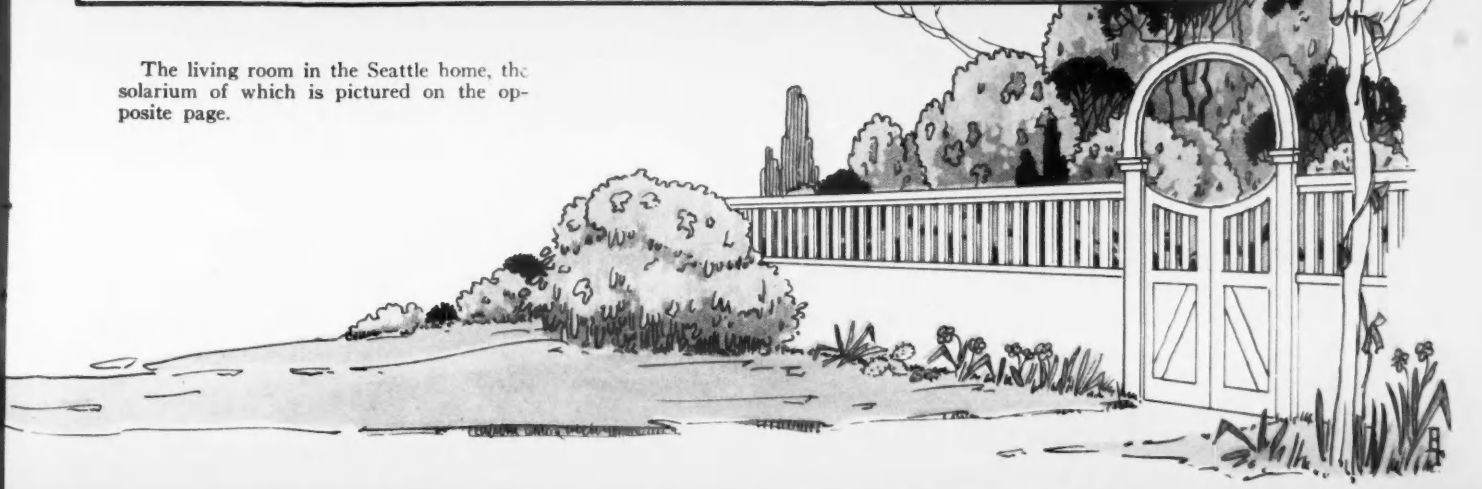


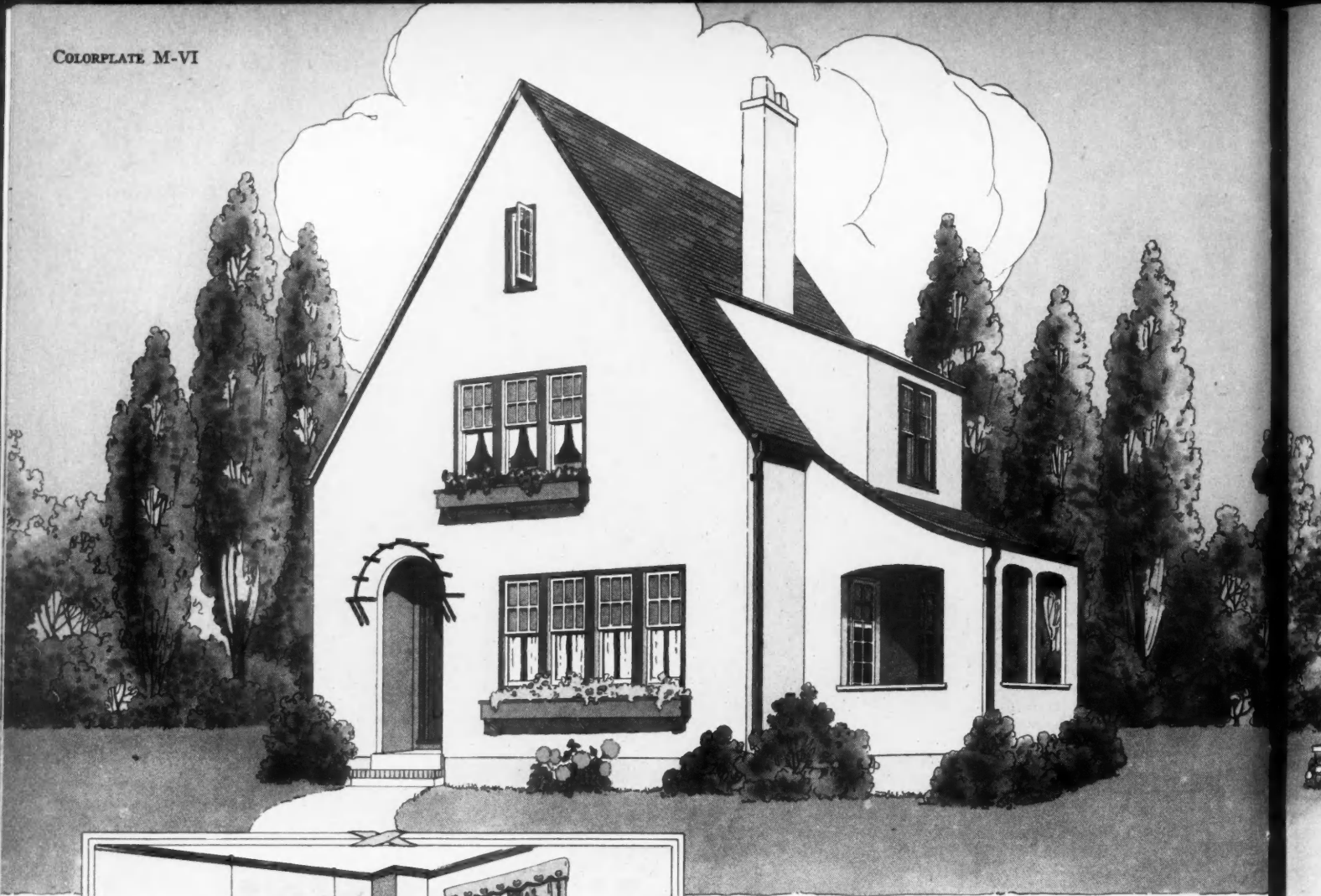


Dignity, richness and grace characterize this beautiful Eastern dining room.



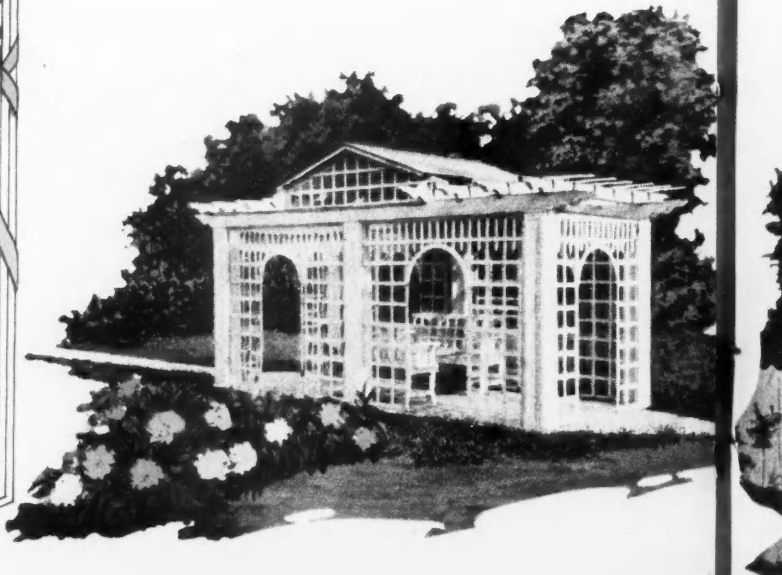
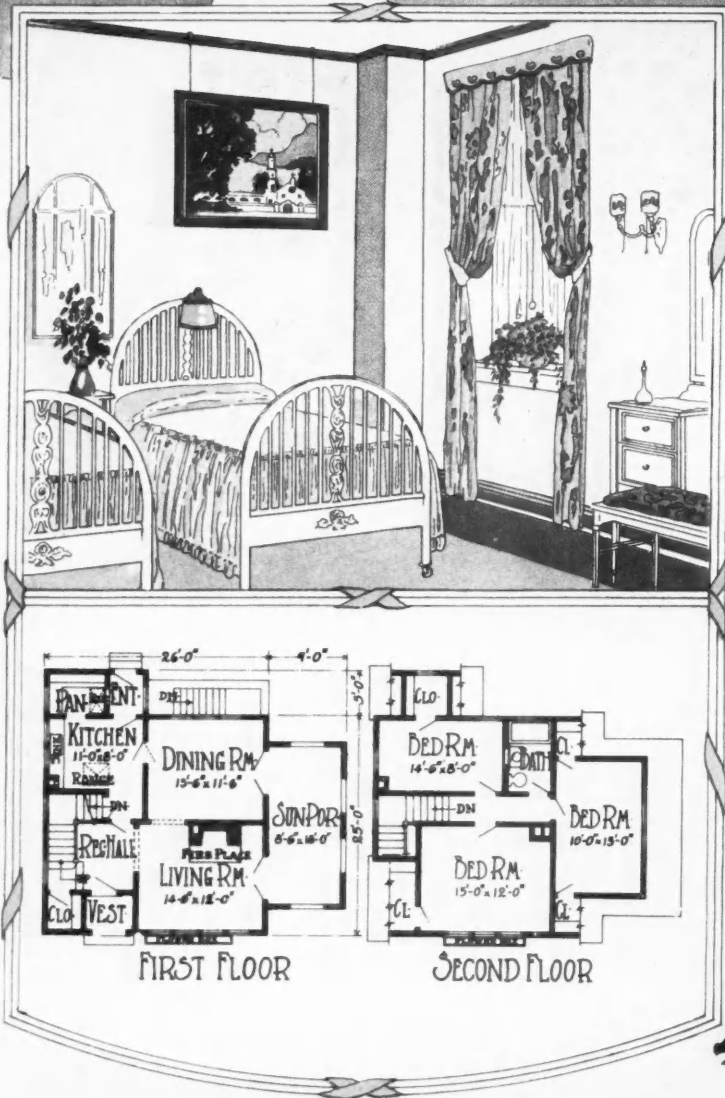
The living room in the Seattle home, the solarium of which is pictured on the opposite page.





## The MALVERN

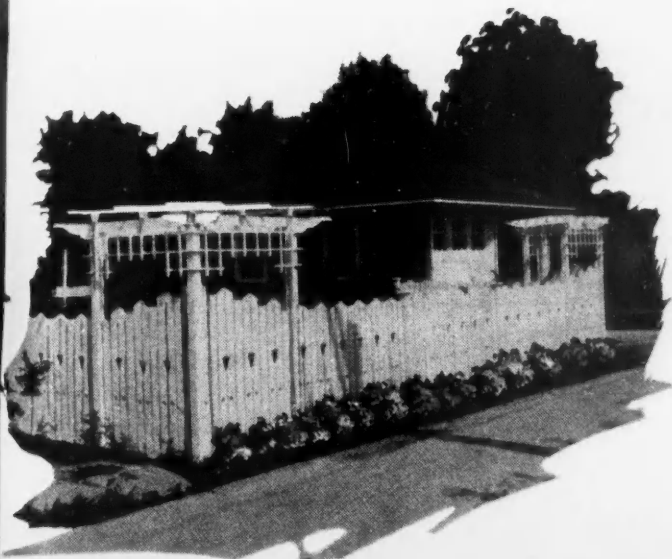
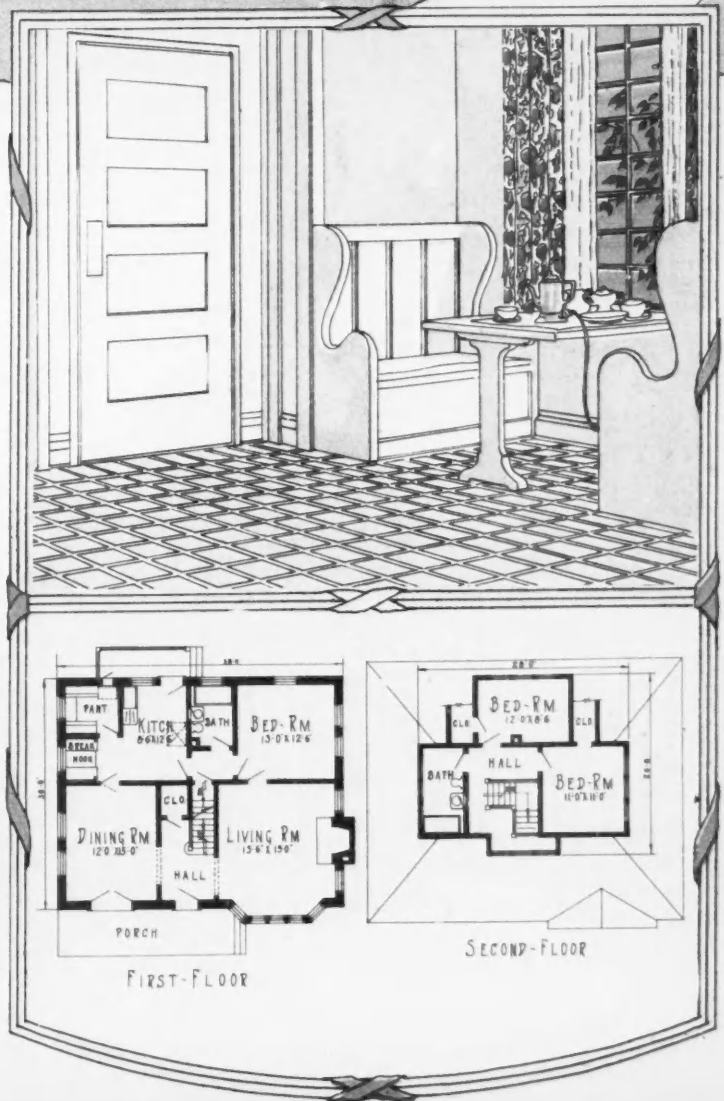
A QUAIN little stucco home of six rooms with prominent porch for screening and glazing. Color sketch at the left shows a very graceful design in twin beds and window drapes for a bedroom.

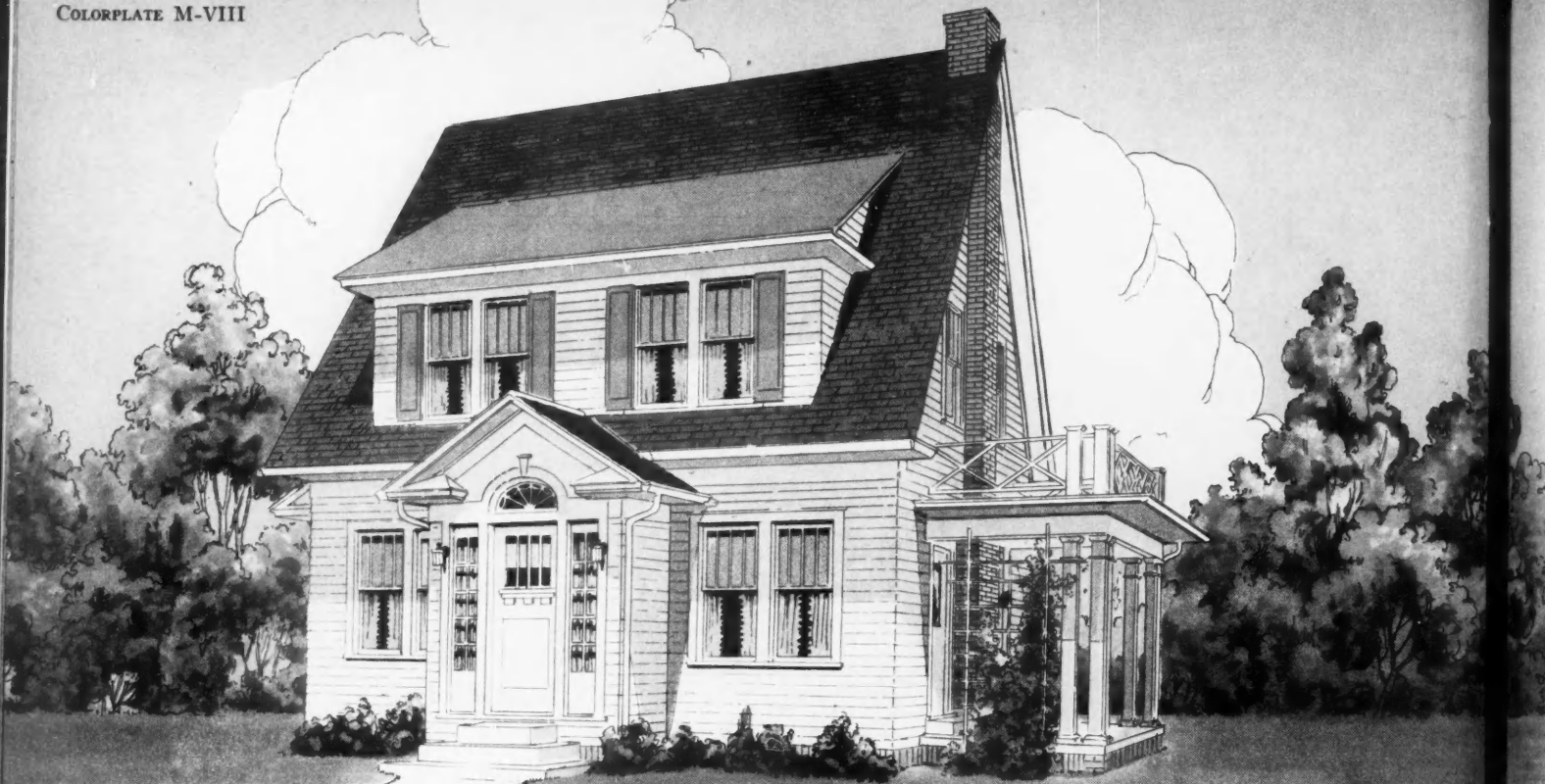




## The MELROSE

A DELIGHTFUL brick cottage in the English style with four rooms, including bedroom and bath, downstairs and two bedrooms and bath above. Color sketch to right shows the dainty and convenient breakfast nook which is part of the kitchen.

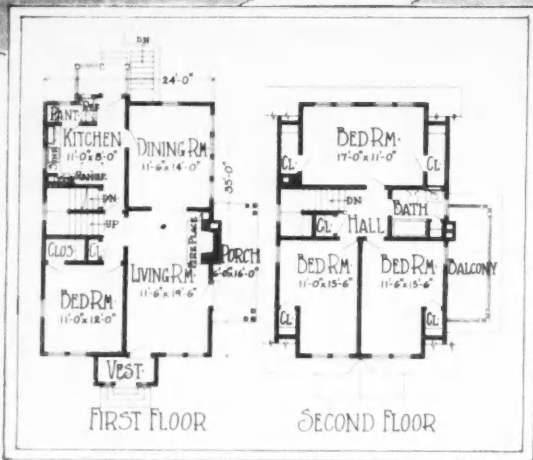




(Above)

**The MEDFORD**

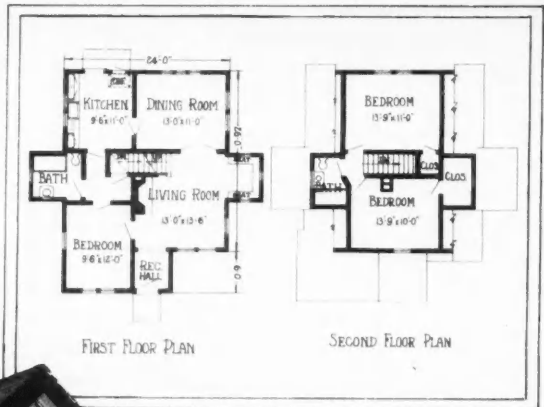
A narrow lot house, 24 by 35 feet, seven rooms, is illustrated in floor plans to left.

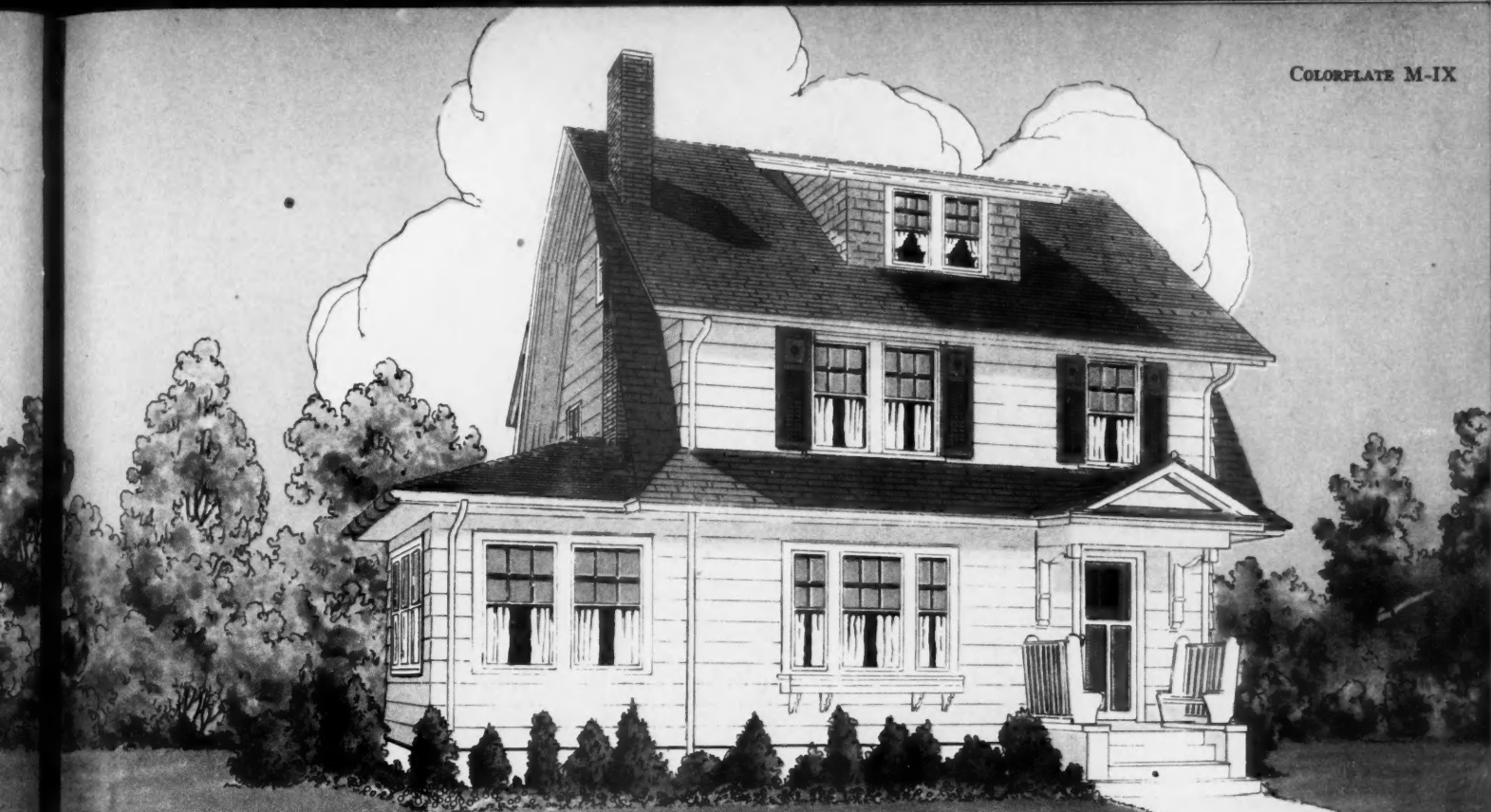


(Below)

**The MARYSVILLE**

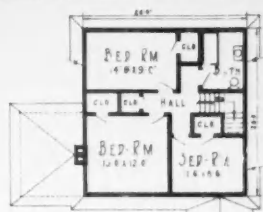
A story-and-a-half cottage of six rooms is illustrated in floor plans to right.



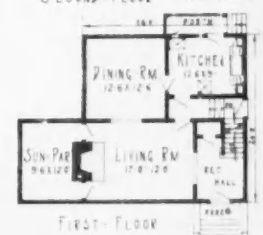


(Above)  
**The MARSHALL**  
 FLOOR plans to right show arrangement of this six-room and sun-parlor home of Dutch Colonial design.

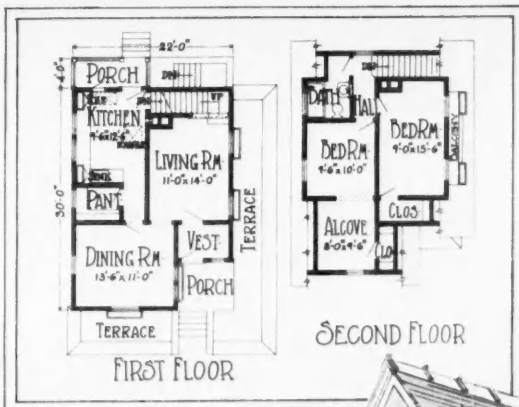
(Below)  
**The MANHATTAN**  
 FLOOR plans to left show arrangement of this narrow lot English house of six rooms.



SECOND-FLOOR



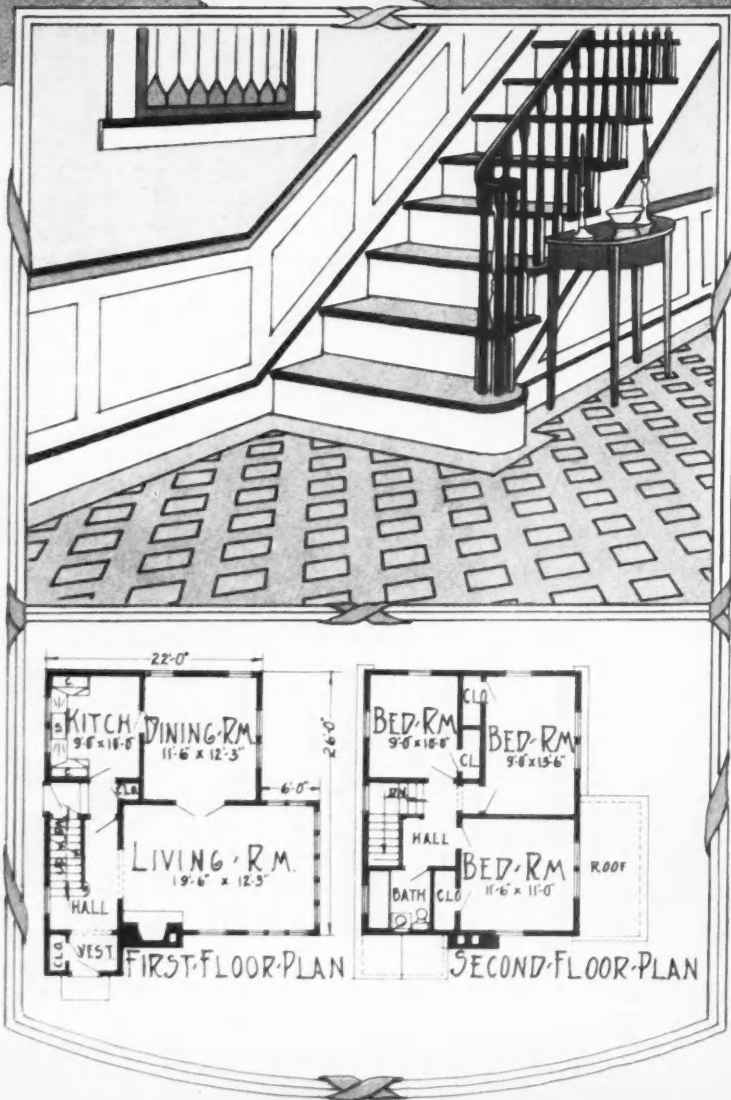
FIRST-FLOOR



SECOND FLOOR

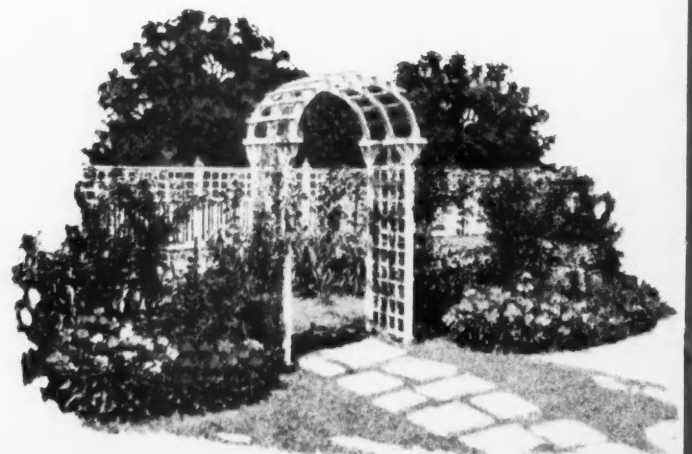
FIRST FLOOR





## The MAYFIELD

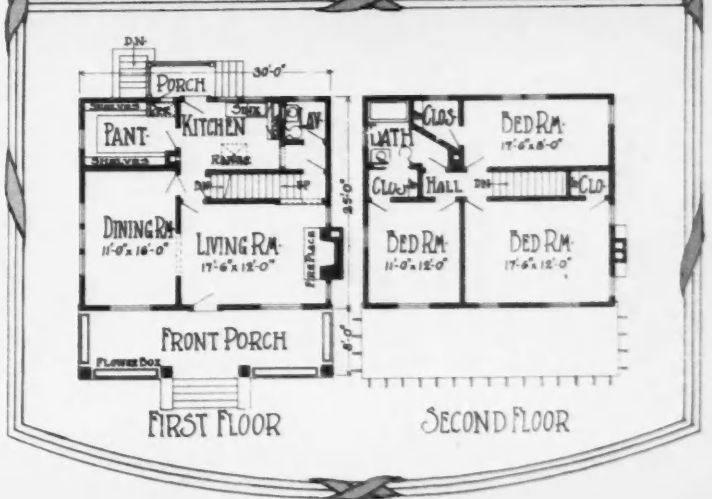
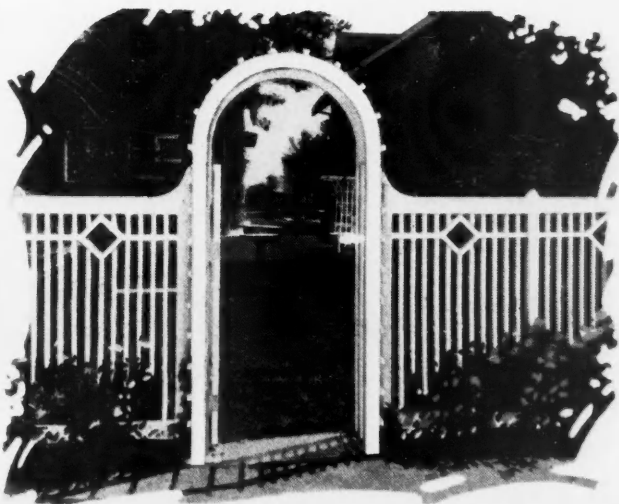
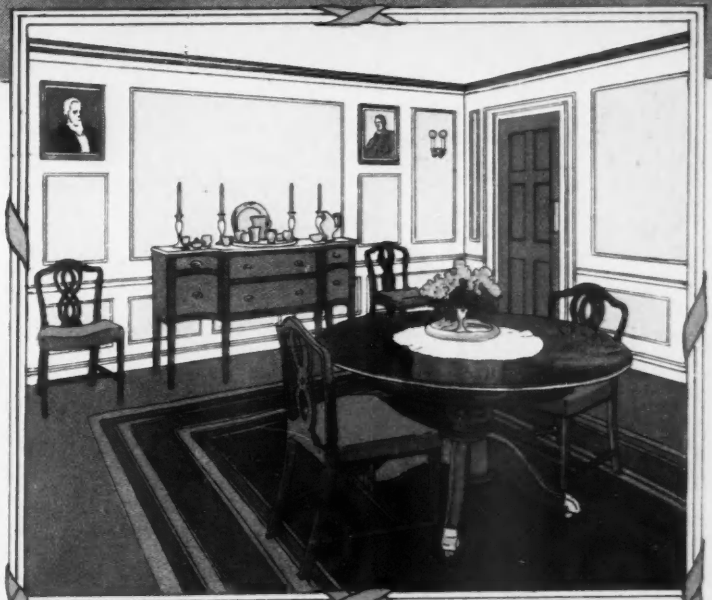
A HOME of distinction and charm in the English manner is pictured above, and the floor plans show a delightful modern arrangement of three rooms on each floor. Where many small houses fail is in cramping too much the size of vestibule and stair hall. The distinguished proportions of this important part of The Mayfield are illustrated in the color sketch.

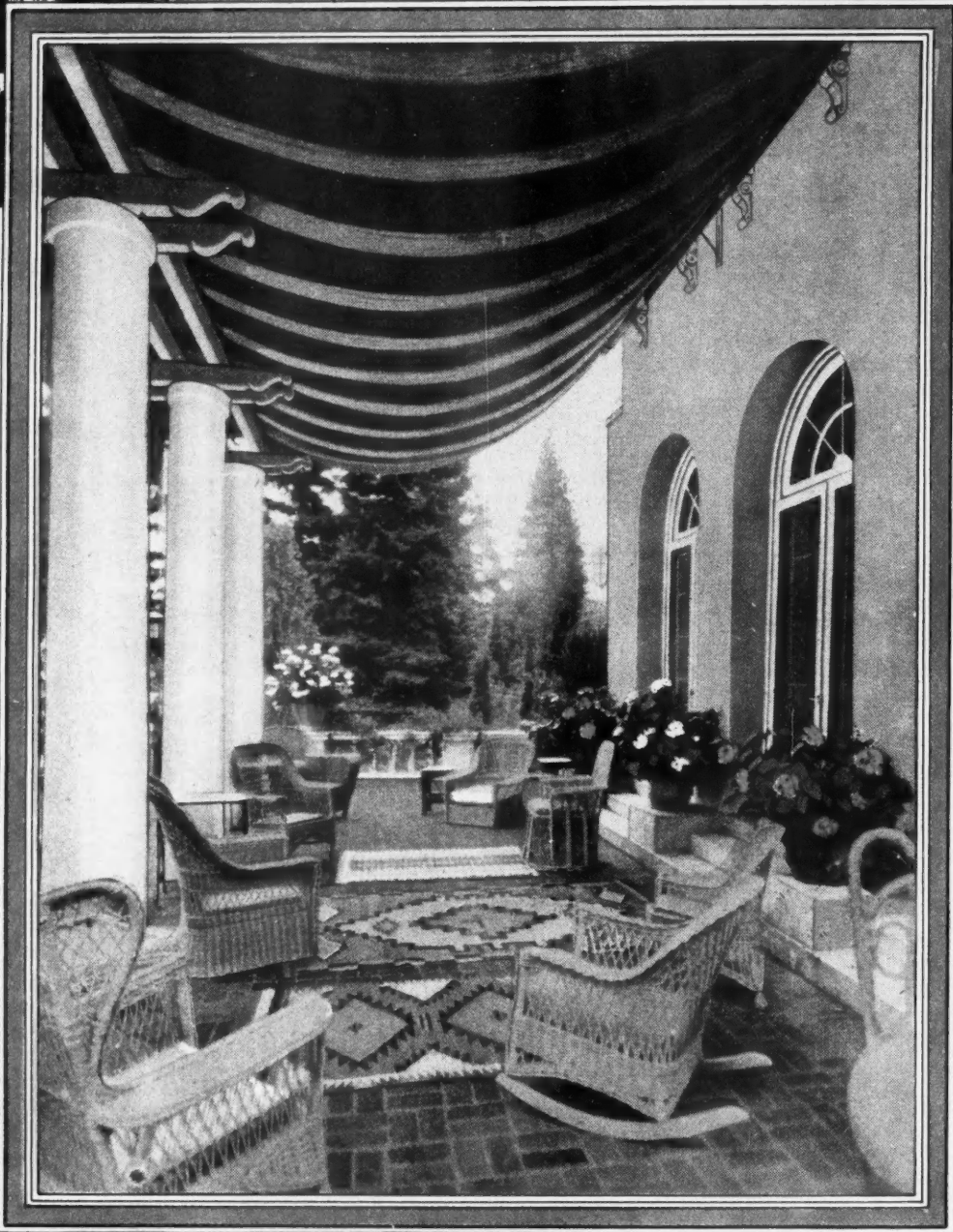




## The MAPLETON

A COLONIAL home of hospitable air and containing six fine rooms, is presented herewith. Color sketch to right shows attractive furnishings for the large dining room.





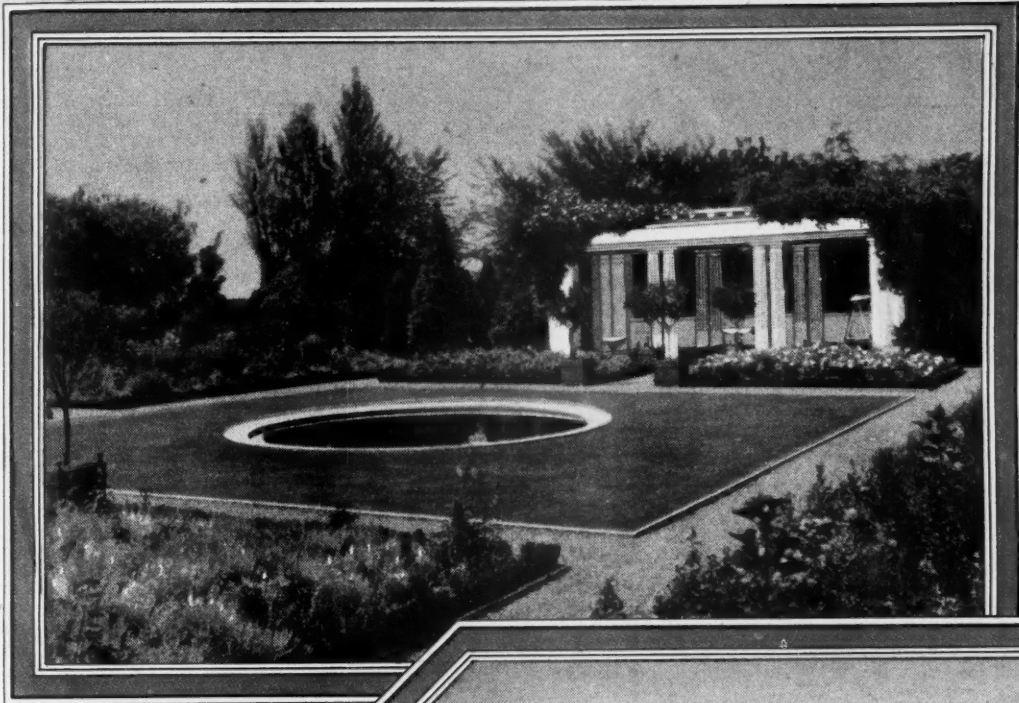
LOGGIA or sun porch in a beautiful residence near Tacoma, Washington.

R  
wo  
try

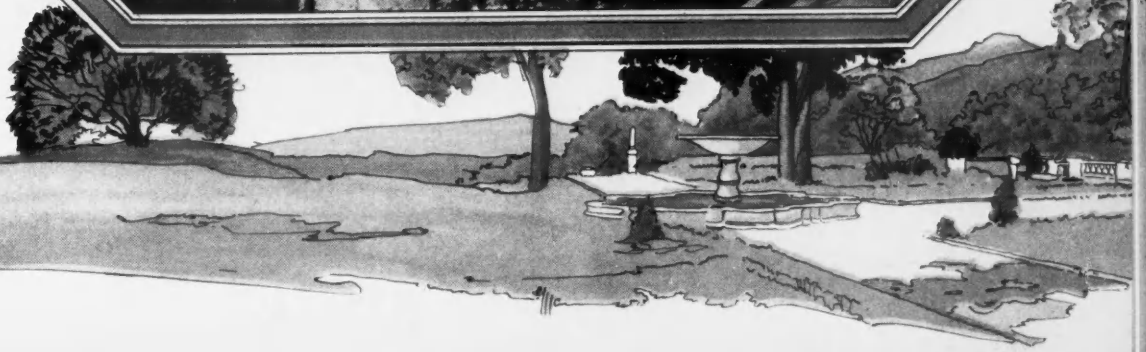
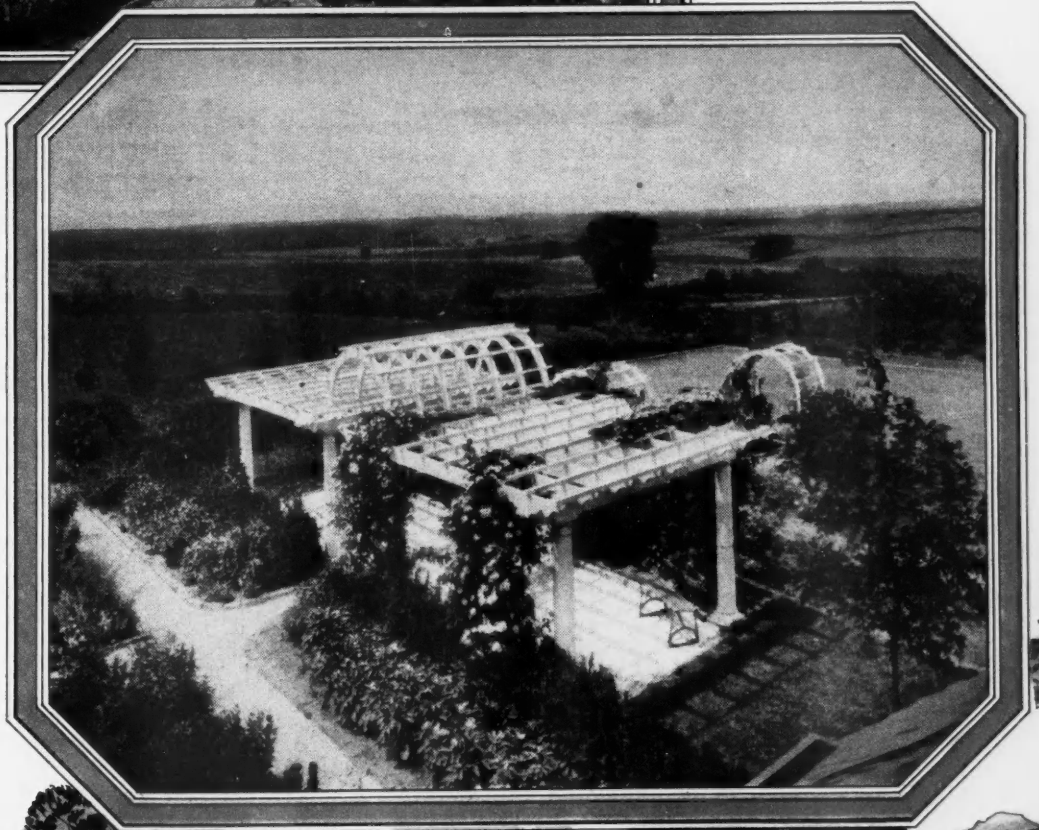


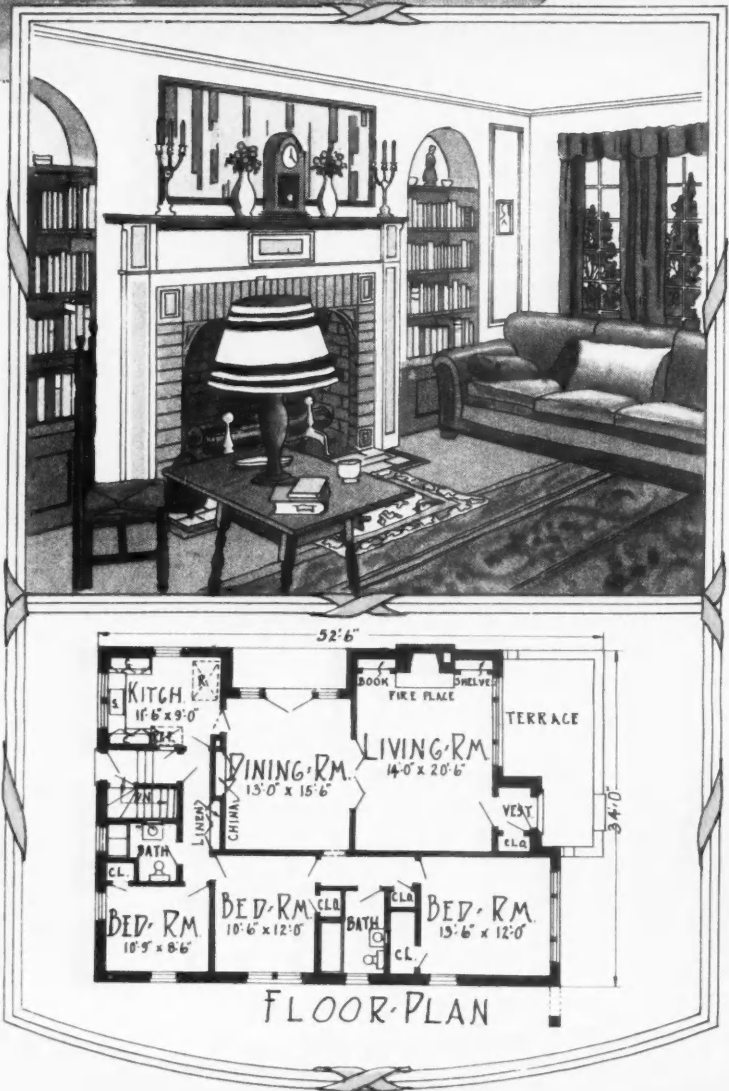


**G**ARDEN pool and shelter which adorn the grounds of a beautiful home near Seattle, Washington.



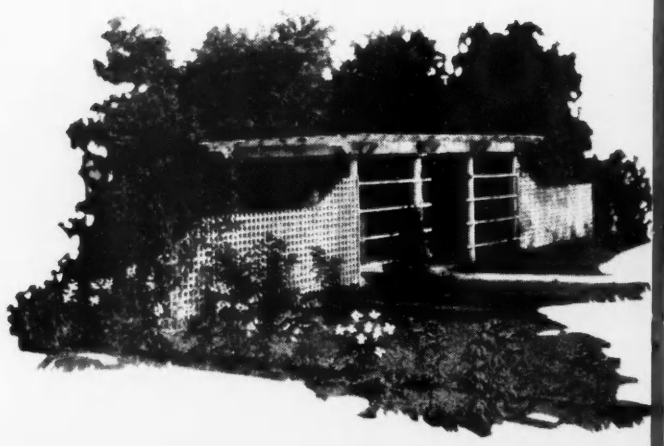
**R**OSE garden with graceful pergola shelter and a wonderful view of the country near Omaha, Nebraska.



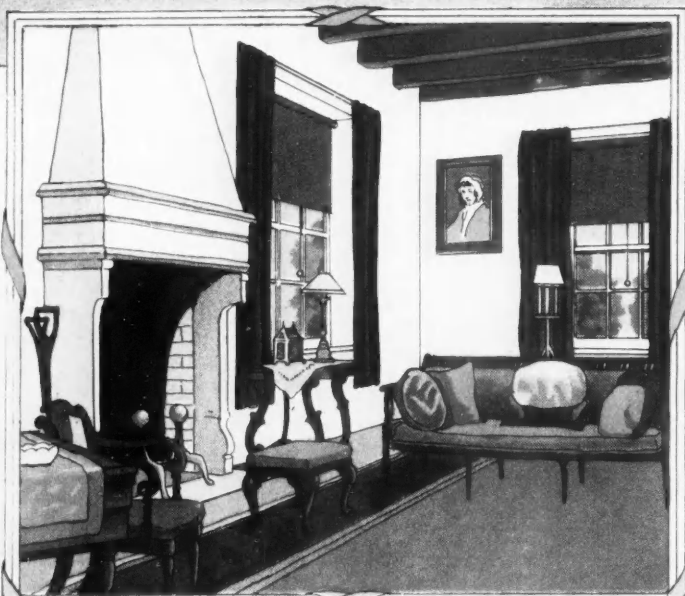


## The MIAMI

A SPANISH design of unique charm, featuring two wonderful window groups and an inviting entrance. Inside is a modern bungalow with three bed-rooms, two baths, a large living room, a delightful dining room and a convenient kitchen. Color sketch to left shows interesting interior treatment of the fireplace—bookcase end of the living room.

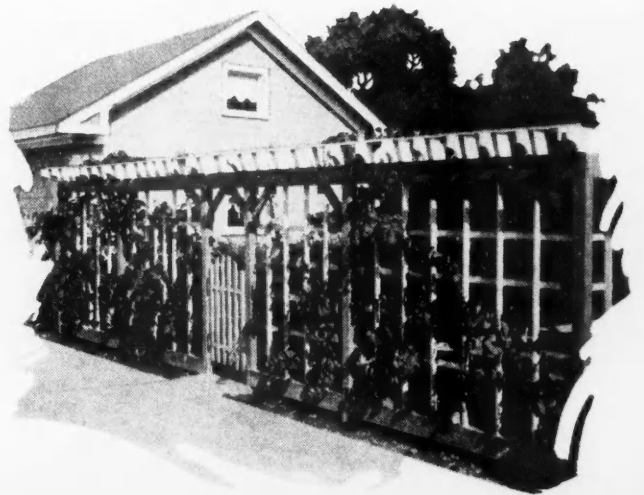
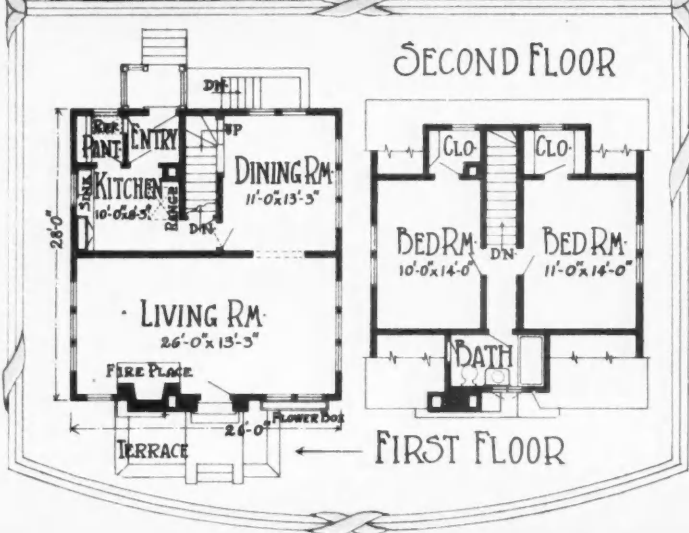




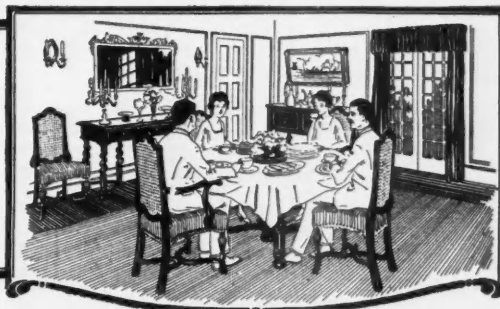


## The MANSFIELD

FIVE roomfuls of convenience and an exterior so artistic that the local artists will all want to set up their easels in front of it! The best part of it too, is that this artistic charm costs no money, but adds greatly to the selling value of this house! Color sketch suggests interesting interior for the big living room.



# OUR FRONT COVER HOME



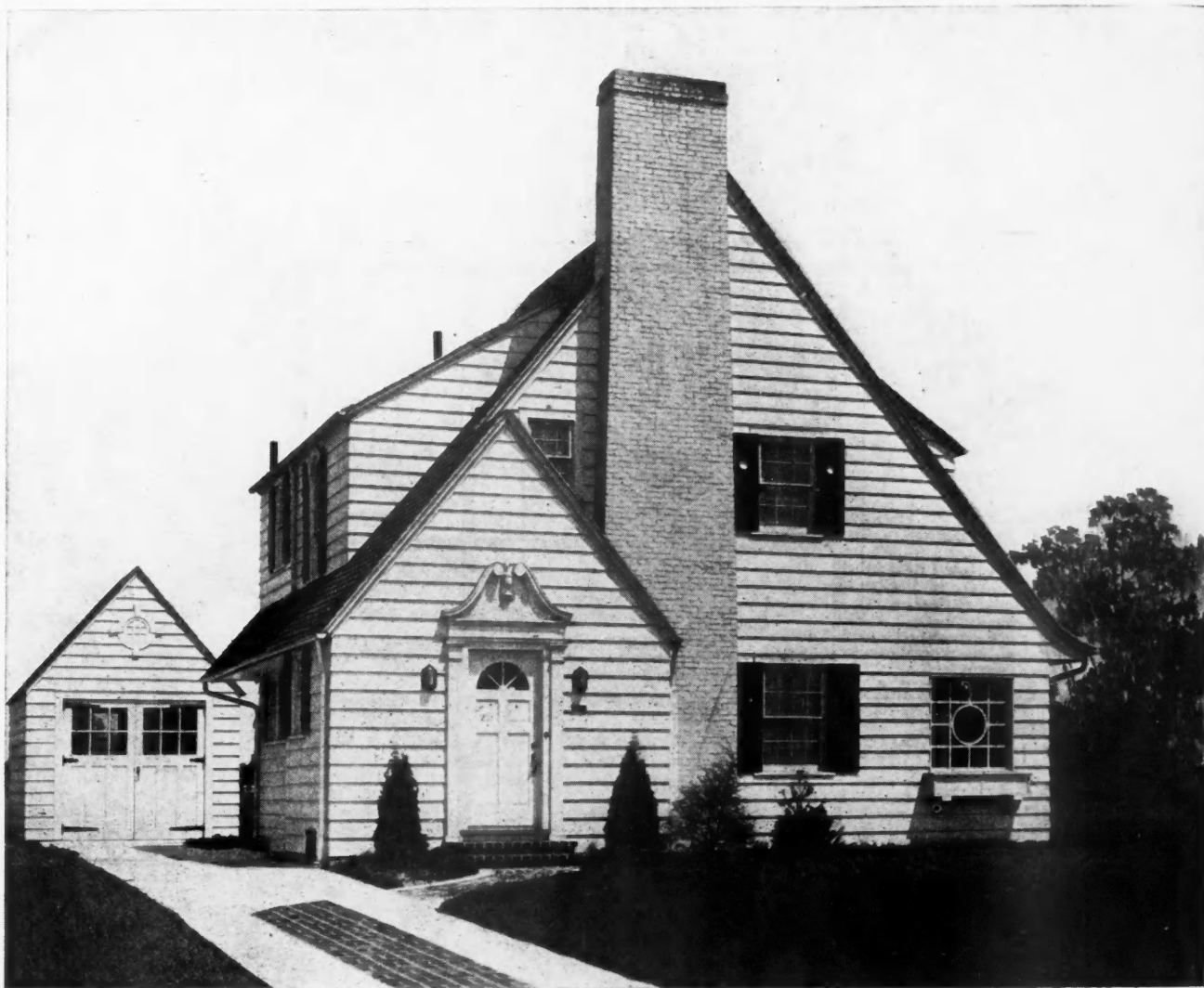
## *An English Cottage Which Presents An Inviting Front Backed Up By An Equally Attractive And Convenient Interior*

**W**ITH its walls of clapboard, laid with wide exposure to the weather, extending down to the grade level, its large, plain but handsomely proportioned chimney and its attractively designed entrance, this charming English cottage seems almost to have sprung from the ground on which it stands, so much a part is it of its surroundings. The combined cement and brick walk and drive, as well as the entrance with its low brick steps, present an invitation to all who approach and even the garage, harmonizing with the style of the house, carries decorative rather than a utilitarian tone.

No less satisfactory is the interior, as will be seen by an inspection of the plans and elevations shown on the four

pages which follow this. There are six rooms, in addition to a sun parlor and enclosed porch. The arrangement has been planned with due consideration for compact and convenient grouping and such a house would be most easily cared for. Besides the sun parlor and porch, there is a living room, dining room and kitchen on the first floor, the latter being reached by a service entrance at the side as well as from the reception hall.

The reception and stair hall is provided with a large coat closet and leads into the living room where is found a fireplace with an unusual location near one corner of the room. Living room, porch, dining room and sun parlor are all separated by French doors.

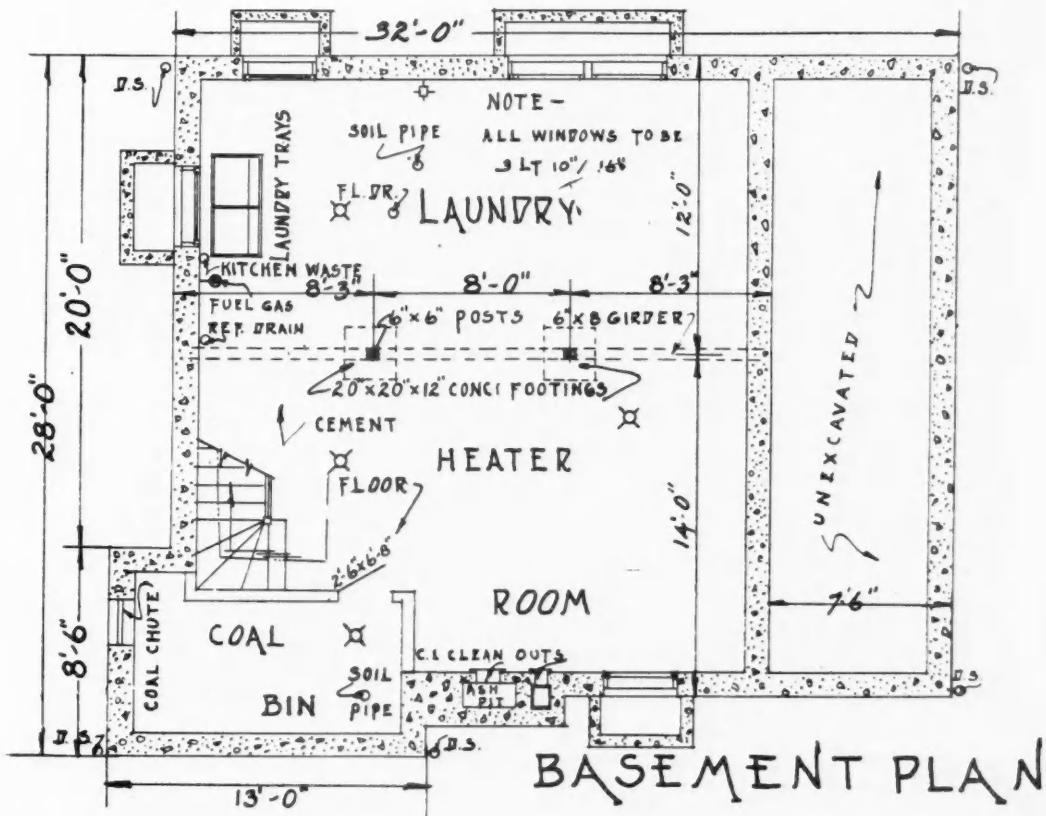


A Charmingly Inviting Little House Is Our Front Cover Home and One Which Holds a Strong Appeal as a Living Place for All the Family. The complete plans are shown on the next following pages.





LEFT SIDE ELEVATION



BASEMENT PLAN

SCALE 1/8" = 1'-0"

SHEET NO-2

Even the Basement Is Well Arranged and the Left Elevation Gives an Interesting Idea of the Shutters and Side Entrance While on the Next Two Pages Will Be Found Other Elevations and Details.



RIGHT SIDE ELEVATION

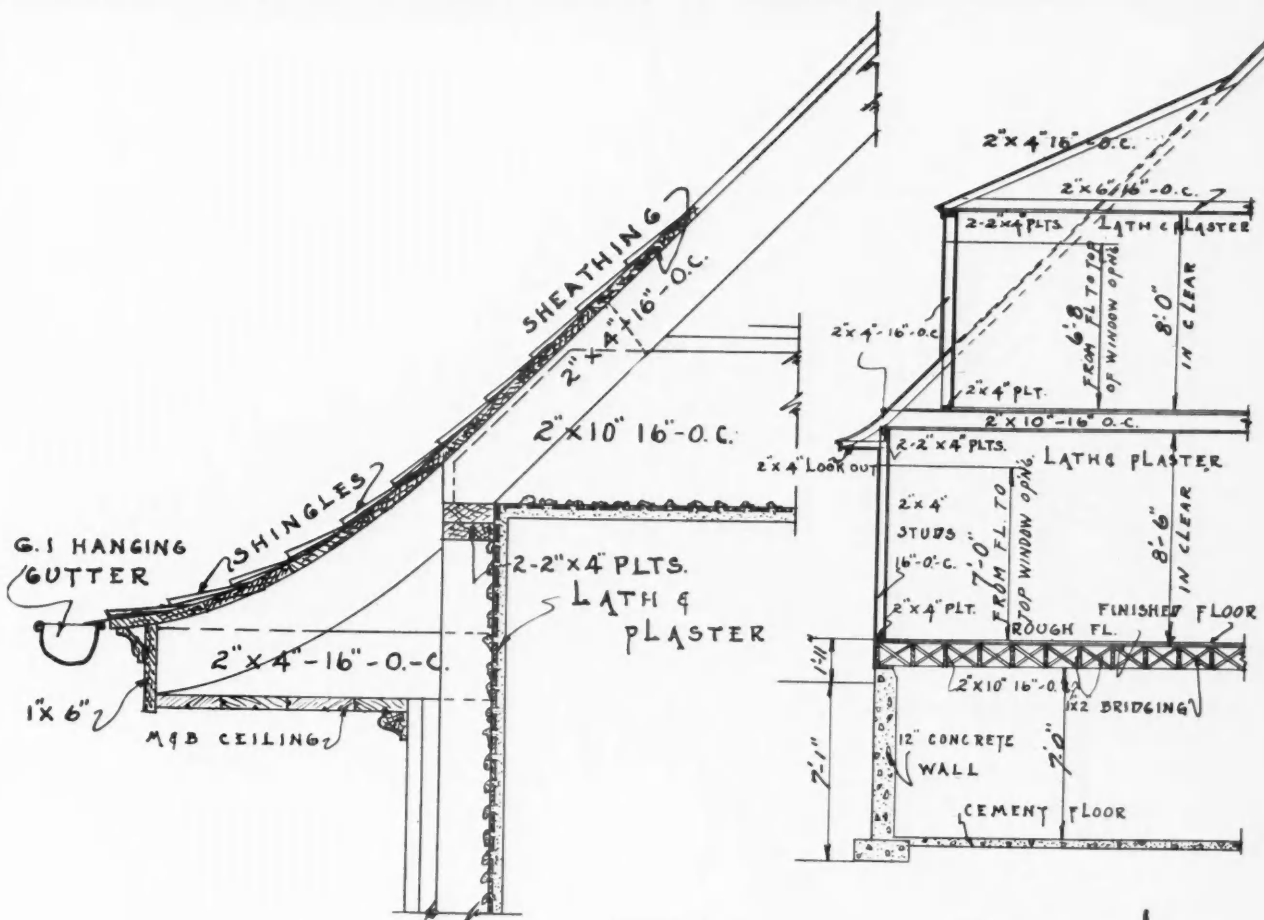


FRONT ELEVATION

SCALE 1/8"=1'-0"

SHEET NO-3



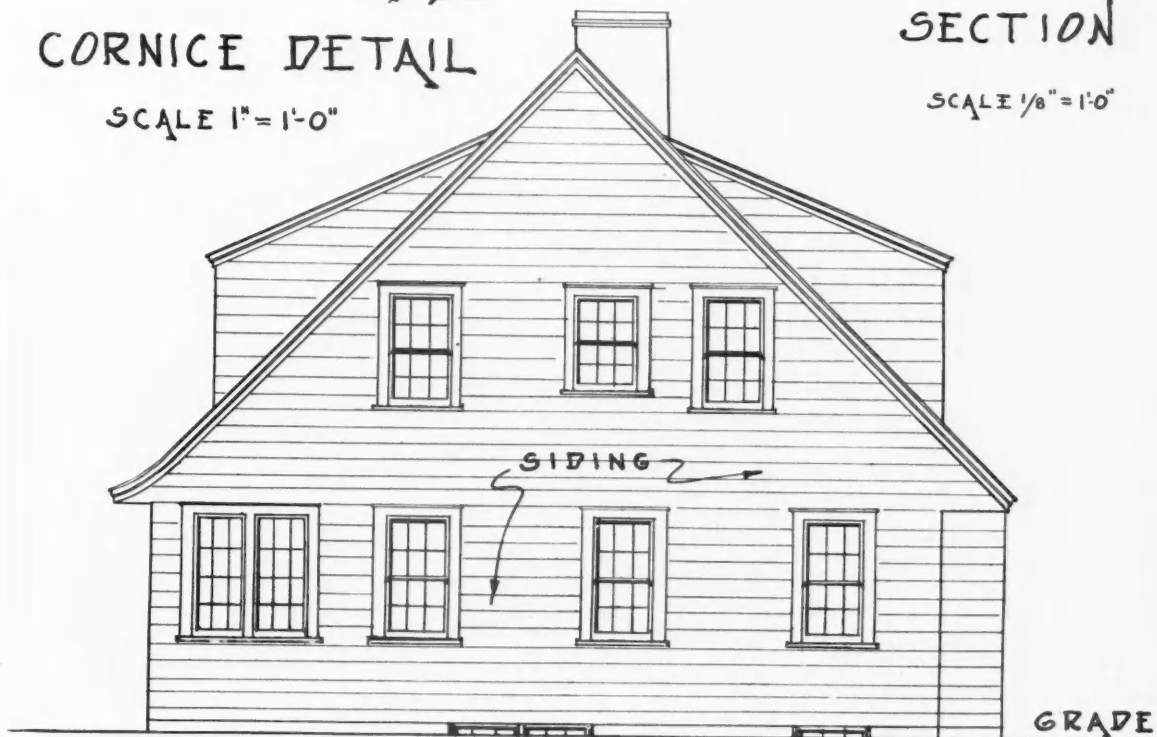


CORNICE DETAIL

SCALE 1" = 1'-0"

SECTION

SCALE 1/8" = 1'-0"



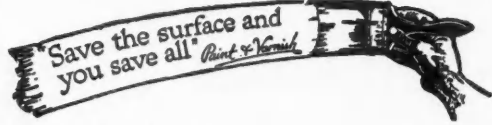
REAR ELEVATION

SCALE 1/8" = 1'-0"

SHEET NO-4

And Here Are the Rear Elevation, Sectional View and Detail of the Cornice Which Overhangs the Porch and Sun Parlor of Our Front Cover Home.

# SAVE THE SURFACE DEPARTMENT



Written, Illustrated and Edited by the Headquarters  
Staff, SAVE THE SURFACE CAMPAIGN

## How Weathering and Decay Differ

By F. L. BROWNE

*United States Forest Products Laboratory*

**A** GREAT many people confuse the weathering of wood with decay. The two phenomena are quite distinct and are brought about in very different ways. It is important that this be recognized because the methods used for their prevention are not the same. Wood does not rot unless it is infected with fungi.

Decay or rot in wood is the result of the activity of certain living organisms, wood destroying fungi, which obtain their food from the wood substance. To accomplish this they send fine threads or mycelia throughout the wood structure. The wood may become infected while the tree is still standing, in the woods after felling, in the mill or lumber yard, or after it is in service. The growth of the decay-producing fungi depends upon the prevalence

of certain favorable conditions, the most important of which are moisture, air and the right temperature.

Air is nearly always present in wood and the temperature is usually favorable to decay during a large part of the time. Moisture is therefore generally the controlling factor. Wood will not rot if kept saturated with water or if kept reasonably dry, the "half-dry" condition alone being open to decay. Unfortunately the conditions under which a very large part of our wood is used necessarily keep it in the half-dry state much of the time. The most practical method of preventing or retarding decay in wood that must be kept half dry much of the time, is to see that substances poisonous to fungi are distributed throughout the wood or at least throughout a thick outer shell of the



Lumber in Contact with the Earth Becomes Infected with Rot Fungi, Unless Protected. When steps and porch boards rot because of inadequate protection, the home owner is put to much unnecessary trouble and expense which could be avoided by the use of paint.

wood extending over all sides. Some woods naturally contain such poisonous substances, principally in the heart-wood, and are therefore relatively durable even when subjected to conditions very favorable to decay. Most of the other woods can be treated with materials such as creosote or zinc chloride which will prolong their time of service very greatly.

The practice of wood preservation for railroad crossings, fence posts and mine timbers is already saving important amounts of timber, but it should be very greatly extended, not only among these classes of wood uses, but in many others as well. The Forest Products Laboratory at Madison, Wis., has been at work on this problem for many years, and is able to furnish the wood user advice as to when it is profitable to use preservative treatments, what preservatives to use and how to apply them.

Weathering of wood is not the same as decay. The weathering of wood is the result of exposure to repeated changes in moisture content, as a consequence of which wood is constantly swelling or shrinking. It has nothing to do with rot except as it opens cracks in the surface of the wood and affords a better place for the fungous spores to lodge and germinate. Even when wood shrinks fairly slowly and evenly in seasoning or kiln drying, the appearance of season checks and end checks is very common. This is due to the unequal rate of drying and of shrinking

in the different direction of the grain which develops internal stresses in the wood.

Unprotected wood in structures exposed to the weather is subjected to very much more rapidly varying moisture conditions, and, being fastened in place, is not free to expand and contract as it changes in moisture content. The result is that in time it checks, cracks, warps and pulls loose from its fastenings, to say nothing of becoming rough, discolored and dirty.

Such deterioration can be prevented by the application of protective coatings of paint or varnish followed up by repainting at reasonable intervals as the old coatings wear out.

The homes in the residential sections of our cities, as a rule, are satisfactorily protected from weathering by paint, but they constitute only a small proportion of the total number of buildings requiring paint. Even a casual inspection of the wooden buildings on farms will show that enormous areas of exposed wooden surfaces are kept entirely innocent of paint after the original paint coating applied at the time of construction has failed. While it is not possible to give figures showing the savings in lumber that could be brought about by the more widespread protection of wood against weathering, there can be no doubt that it is enough to constitute a real help in meeting the impending shortage of timber.

## Roofs That Last

**T**HE durability of a roof is an item as important to the builder as it is to the home owner. A roof that sags and leaks within a short time does much to arouse suspicions as to the builder's reliability. As a matter of fact, the chances are that the owner has neglected to paint the roof rather than that the builder has failed to put up an adequate roof. Sometimes the builder can anticipate future roof troubles by advising the owner to keep it painted.

If the roof is neglected, leaks begin. Damages to ceilings, walls and furnishings are as expensive to the builder's reputation as to the owner's purse and disposition.

A coat of paint or stain seals the cracks in the roof, prevents leaks, increases security, makes the roofing materials last almost indefinitely and vastly improves the appearance of the building.

Roofs of dwellings are commonly of two materials—shingles or tin. The roof is exposed to all the elements, consequently both those materials are in daily danger. Wooden shingles are subject to rot; tin is subject to rust. Both are at the mercy of their enemies unless they have paint protection.

Tin should be coated on both sides with a paint especially adapted to the purpose, before being put in place. Future trouble will be avoided by painting the upper surface every two or three years.

The butt ends of shingles should be dipped for six or eight inches of their length in stain or paint of the preferred color, then placed in a trough to drain and dry for a day before being put on. Another coat of paint is applied when the roof is complete. A shingled roof will give adequate protection if re-painted or re-stained every fourth or fifth year.

All timber framework supporting the roofing materials should be coated with paint before the outer covering is laid on. Valleys, gutters and down spouts should be painted as soon as they are placed.

People have come to favor the use of paint for roof finish. They have found that it is both durable and attrac-



**The Way of All Neglected Roofs.** Paint would have kept off decay but now the owner must bear the cost of an entire new roof.

tive. More than that, special fire-retardant paints may be used on shingled roofs. This paint will resist much heat.

While the quality and care of the roof are important problems, the decorative aspect must not be overlooked. With paint as a medium any color under the sun is possible; it remains for taste to decide which one it shall be.

A roof should be in harmony with the rest of the color scheme of the house, but need not repeat any of the colors used elsewhere. A red roof atop a white house with green or blue trim is good—likewise a dull blue roof atop a house of soft yellow with ivory trim. If a house is surrounded by trees and other foliage, the color choice is wider than if the house is dark and alone. The color of neighboring roofs is another matter to consider. A red roof between two bright salmon pink roofs is unfortunate, to say the least.

Bright colors, wisely selected, add much to the appearance of a house. The death knell for the old-time dull brown and drab gray roof has been rung.

# Appropriate Decorations for a Demonstration House

ONE of the most practical ways of arousing interest and desire in prospective buyers is to visualize for them their future home by means of a demonstration house, fully decorated. Nearly everyone wants an ideal home, but few know how to go about achieving it. Attractive finishing touches, like unusual wall finishes, or distinctive floors, have a way of deciding wavering prospects in favor of the new home. Women, especially, are apt to be more susceptible to well decorated rooms than to any discourse upon the solidity of prospective foundations.

Such a house might be built on any of the popular approved styles, but New England Colonial and Dutch Colonial make better demonstrations for they have a look of permanence of style due, no doubt, to their very honorable pedigree and long years of prominence in American architecture.

Assuming that a six-room New England Colonial house is selected, here are some suggestions for the decoration—interior and exterior. Any color scheme, or any finish will not do, for people are often first intrigued by the decorations and thus led into an investigation of the structural beauties of the house.

Every type of house, and every variation of that type, is designed by the architect to carry certain colors. Before deciding upon the exterior color scheme for the demonstration house, consult the architect—and take his advice. Tradition and taste have it that New England Colonial houses be painted ivory, cream, light yellow or gray, with contrasting trim. Any of these body colors are appropriate. Perhaps cream with blue trim is the most interesting and unusual combination—but ivory with green trim, yellow with white trim or gray with white or lighter gray trim, are all appropriate and attractive.

The house, let us assume, has a center hall with a wide, curving staircase, a large living room with fireplace, dining room, breakfast nook, kitchen, three bedrooms and a bath.

The increasing popularity of paint for interior decoration and the infinite possibilities of the medium, make it desirable for the sample house. It has many selling points, too, for painted walls are sanitary and easy to keep clean. They endure long, and, when it is necessary to redecorate, a new

finishing coat is all that is ordinarily needed. Keeping painted walls fresh and attractive is considerably cheaper than replacing any other type of wall decoration after it becomes worn or dirty.

Although the hall is the first place one sees in a house, its color scheme should be the last to be decided. A hall is a transition space between rooms and should harmonize in tone and color with all those chambers that lead into it.

The living room should be cheerful and attractive. If it is on the north side of the house, a rough textured wall,



**A Handsome New Wall Finish Achieved with Paint and a Special Spray Brush. The effect is pleasing and the wall has the added advantage of being washable.**

achieved through the use of the new wall materials which combine texture and color, is appropriate, for it modifies the severe lines of the room and the austerity of the sunless light. Monochrome buff or warm cream are excellent in the living room. The wood trim should be light cream and the floor stained or varnished. Panels of cream moulding break up the wall space. Remember that living room furniture and decoration is more or less colorful so that the walls may be fairly plain.

If the living room receives much sun, gray makes an attractive wall scheme.

Multicolor panels are excellent for the dining room. The main walls may be gray or buff and the panels mottled—vermillion, Prussian blue, green and chrome yellow. The finish coat may be transparent gray or buff through which the brilliant colors may be seen.

The breakfast nook would be attractive if painted a sunny yellow and decorated with stencil patterns of cups and saucers or steaming tea pots, done in green, blue and red.

The decorative aspect of the kitchen is ordinarily overlooked. Of late housewives have found that kitchens need not be white and that paint of any color is as sanitary as that of the hospital. Paint the lower half of the kitchen wall a delft blue and the upper half cream. Run a narrow stencilled border of orange, reds and greens at the dividing point. Paint the inside of the closets and cupboards a cheerful yellow.

Spatter and misted effects are excellent for the bedrooms. Paint the master's bedroom cream and mist it with blue and orange. This will produce a vivacious and warm effect that is not obstreperous.



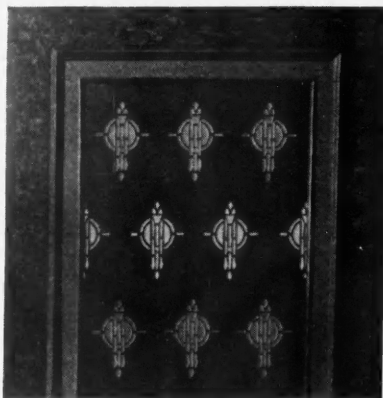
**Stencilled Panel Pattern for the Space Over a Fireplace. The ground is a mottled finish. Much of the beauty of this type of decoration depends on the color scheme.**

The second bedroom might be done in rose with gray painted floor and wood trim. Shaded rose walls, varying from the richest rose shade to the most delicate tint, would be charming. Another scheme for this room would be gray green walls stippled with yellow. Cream trim should be used.

White tile or enameled dado is appropriate for the bath room. Instead of painting the upper half of the wall white, or blue, try pale green, or light yellow, depending on the exposure of the bathroom. A stencil border of water lilies is attractive and adds a touch of individuality.

Assume that the remaining bedroom is a children's room, for such delightful decorative schemes are possible in it that it will be the show place of the house.

Very pale gray or gray blue is an excellent body color for the walls. Stencil, in a hit or miss sort of way all over the walls, tiny figures of children, animals, Mother Goose



Another Panel Arrangement Suited to Dining Room Walls. The figures are stenciled and the field is a two-tone effect mottled with wads of paper or rag.

strong rough textures are beautiful in their place, but is not in the New England Colonial house such as we are describing.

characters and other figures. The lower half of the wall might be darker gray or blue and be covered with the figures while the upper half is plain light gray, or else the entire wall may be gray or blue and spotted all over with the bright figures.

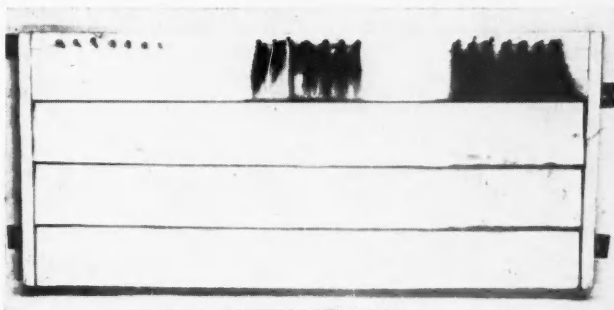
The lower hall problem may be solved by paneling it, painting the wall field buff and the panels blue, yellow, vermillion and green, mottled with a small sponge. The trim should be white.

The upstairs hall may be plain buff. In decorating a Colonial house it is well to remember that wall pattern should not be compelling. Tints, shades, tones—two or three color effects with spraying or stippling—prim little stencil patterns—these are appropriate. Heavy mottled effects, stenciled panels and

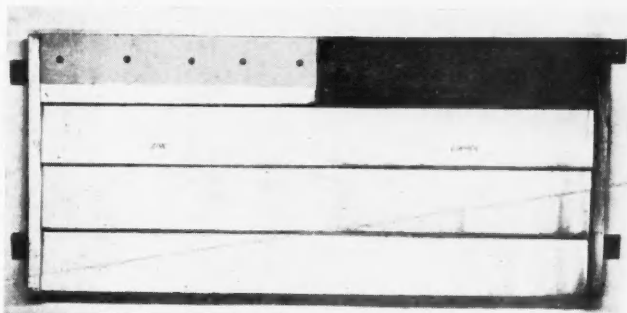
## How to Prevent Metal Stains

**S**INCE copper has come into substantial usage for flashing, leaders, cornices, copings, screens and similar exposed building construction, the problem of decorating it and of preventing stains has become very important.

Although it is often claimed that copper needs no protective coating, facts point the other way. It has been found that a house painted white and provided with unprotected copper flashing or copper screens, will, after a time, become disfigured with brown or green stains. The copper parts show a slight surface corrosion and it is this that runs down over the surface of the house and causes the stains. A coat of exterior varnish on the screening,



Test Panels Showing How Unpainted Nails, at the Right, Stain Clap-boarding, While the Painted Ones, at the Left Make No Stain.



Test Panel Showing How the Metal Cornice Where Unpainted, at the Right, Stains Wood While the Painted Section, at the Left, Causes No Stain.



The Unsightly Stains Which Mar This Figure Could Have Been Prevented If a Metal Protective Paint Had Been Used on All the Metal Parts.

or two coats of metal protective paint on the cornice or gutter, will prevent such defects. The copper must be thoroughly clean before the paint or varnish is applied.

In order to ascertain the necessity for painting copper parts, some test panels were prepared by experimenters, photographs of which appear on this page.

Into one panel a number of nails were hammered. One group of nails was painted, the other groups were unpainted. The other panel contained a painted and an unpainted metal cornice. Both panels were exposed to the weather for a stated period of time.

It was found that the unpainted nails had corroded and

stained the wood panel in a very unsightly manner, while the painted nails remained intact. The unpainted cornice also showed stains.

Every metal that is exposed to the elements requires a surface protection in order to prevent rust and corrosions.

An attractive house, fresh and new, may in a year or two, become streaked and stained, until its charm has vanished. Permanency of effect as well as of structure

is too often overlooked these days, yet every one knows what happens to the repute of a builder whose houses become unsightly and unsafe after a few years of usage.

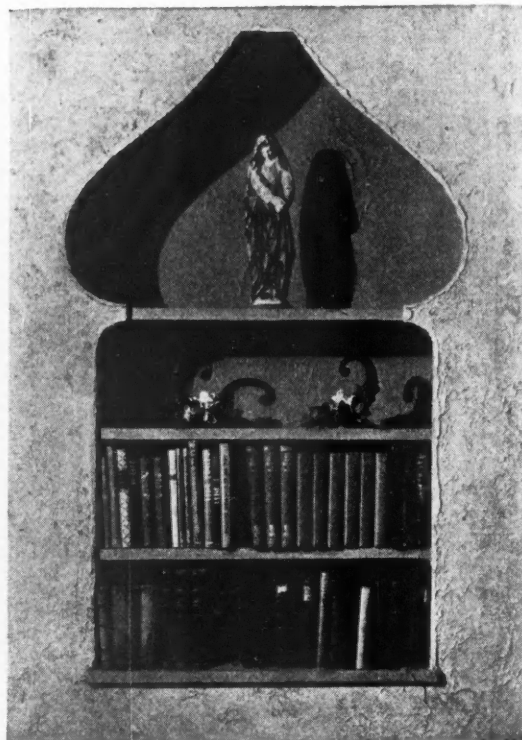
The prevention of metal stains comes under the general heading of thoughtful planning and sound building. It is a matter that experts have studied for a long while. Their conclusions are available to everyone who wishes to use and profit by them.

## Colorful Book Niches

THE number of small innovations in home building and decorating has increased considerably of late and the attractiveness of modern homes has developed proportionately. Book niches, built directly into the wall and painted some alluring color, are among the most practical as well as artistic of all the new assets a house may have.

The niche pictured here is very simple, yet its fine design and beautiful color make it as distinctive as an expensive piece of furniture. Cream colored walls of rough texture form the background, while the niche itself is painted lacquer red. Other attractive color schemes are gray walls with an orange niche, gray green walls with a yellow niche or tan walls with a blue niche built into them.

These little niches are excellent space savers as they do not protrude into the room, and they are of such decorative value that no other wall ornament is needed. So much of their at-



Much of the Charm of This Book Niche Depends Upon Its Color. Cream walls and red lacquer make it a beautiful and distinctive ornament.

traction depends upon the color of the niches that considerable thought should be given to that. Bright colors carry well in this instance, for the niche is small enough and the colored space sufficiently limited to make brilliance of color permissible.

Be sure that the shelves are painted on both sides, as a book niche is more than a receptacle; it is a decoration and the underside will often be visible when the shelves are not filled.

The little things about a house are what attract women prospects. Their husbands may be more interested in strength of the foundations or the ways of the furnace, but a woman has a keen eye for beauty and is greatly influenced by it.

Nowadays even people of modest means desire the unusual and the beautiful in their little houses. Variety of color schemes and design can transform the book niches of a dozen houses into separate and distinctive ornaments, totally unlike each other.

## How Color Affects Temperature

IF you would have a cool house during the summer months, consider its color.

This is neither a superstition nor a fad, but an actual fact, long studied by scientists and finally reduced to figures and demonstration. Experiments were recently made by a Washington laboratory that showed conclusively that the temperature of the interior of structures during the summer months will depend to a marked extent on the color of the exterior surface. Most uncoated structures will be warmer in summer than those painted in white or a light tint.

In a cool fall day the difference of 10 to 20 degrees Fahrenheit seems of little importance, but in the summer, under a broiling sun, those figures may represent the difference between comfort and misery.

The experiments which brought the matter of color and temperature to a showdown were conducted with metal containers, wood panels and iron panels, all painted different colors. Thermometers were inserted deeply into the ends of the panels and containers and readings taken regularly. All panels were exposed on the roof of the laboratory on a day when the official temperature of the air was 82 degrees Fahrenheit.

In this way the temperature of all materials and all colors was taken under the same conditions and the results listed in the accompanying table. It will be noticed that darker colors are as much as 10 degrees warmer than the lighter ones.

Table Showing Temperatures of Some Building Materials

	Air in metal structure. Degrees F.	Interior of wood panel. Degrees F.	Interior of iron panel. Degrees F.
Not painted .....	102	114	126
Painted white .....	102	104	106
Painted cream .....	103	110	110
Painted aluminum .....	104	114	114
Painted orange .....	107	118	118
Painted red .....	108	126	122
Painted gray .....	110	122	120
Painted blue .....	108	120	122
Painted green .....	109	124	126
Painted black .....	114	130	130

This fact is especially useful in planning the color schemes of new houses, many of which tend to alleviate the most intense summer heat. Call prospect's attention to the facts of the case—that an unshaded house painted white will be far cooler in summer than one painted brown or some other dark color.

# Better Plastering

## Preparation of Plaster to Meet Special Conditions

*This Is the Sixth of a Series of Authoritative Articles on This Subject*

**P**LASTER, when called upon to meet peculiarly trying conditions, often needs properties not necessary to its success under ordinary conditions. Some of these conditions will be discussed here, with the chief consideration for Keene's cement and portland cement plasters.

Keene's cement is a gypsum product but differs in its properties from the regular gypsum plasters. Calcined gypsum regularly is made by heating the gypsum to such a temperature that three-fourths of its water is driven off. If the temperature is raised higher or the heating continued for a longer time, all of the water will be driven off. This gives a product, dead burned gypsum, which, when mixed with water, will recrystallize in the form of gypsum, and develop hardness due to a special interlocking of the crystals. This reaction takes place very slowly because of the fact that the product is nearly insoluble.

A small amount of some chemical, such as alum, is added as an accelerator. When the product hardens the result is much the same as that obtained from calcined gypsum.

Keene's cement is used a great deal to gauge lime plaster, since this gives an added hardness to the material. While it long has been used as a finishing plaster, either neat or mixed with lime, it now has its advocates for use in all three coats of a plaster wall.

Several grades of Keene's cement are made, the different manufacturers having their own designations for these grades. Usually the regular grade is the one used for all ordinary plastering work. Another grade is made of selected rock to insure purity of color and is ground somewhat finer than the regular grade. This is used for wainscote, finishing columns and in making Caen stone and Travertine finish. It is also used to back up Scagliola or artificial marble. Another grade of the material is made to set with special rapidity and is used for casings, running mouldings, and other forms of ornamental work where quick setting is advantageous. Another form of the material is ground very finely and is used only for facing artificial marble.

Where Keene's cement is used to gauge lime plaster for three-

coat work, on metal lath or on wood, the following proportions are recommended:

For the scratch coat, to 160 pounds of lime putty is added 700 pounds of sand and good well-beaten hair or fiber binder. This is gauged with 100 pounds of regular Keene's cement. For the brown coat 1,050 pounds of sand (63 No. 2 shovels) is added to 180 pounds of lime putty which is gauged with 100 pounds of Keene's cement. Finish coats will be taken up later.

For two-coat work on tile, brick or gypsum block, the base coat shall be mixed of 100 pounds of lime putty, 1,000 pounds of sand and 100 pounds of Keene's cement.

For the regular smooth finish coat, 80 pounds of lime putty is added to 100 pounds of Keene's cement. For a sand float finish 120 pounds of lime putty is mixed with 400 pounds of sand and this is gauged with 100 pounds of Keene's cement.

When an especially smooth, hard finish is desirable, as in bathroom wainscots and kitchen wainscots the finish coat is mixed in the proportions of 100 pounds of lime putty to 400 pounds of Keene's Cement. If an extra hard surface must be had, Keene's cement may be used neat,

without the addition of any lime.

In places such as bathrooms and kitchens, where the plaster must meet conditions which are more trying than in sections of the home where constant exposure to steam and dampness are not encountered, the base is especially important. It is in these places that it is almost imperative, as pointed out in previous articles, that the base be permanent and rigid. Metal lath is the material which should be recommended.

Special care should be observed in using mixtures of Keene's cement over concrete walls and ceilings. The new concrete should not be plastered until it is dry, and all dust and loose particles should be removed from the surface by brushing with wire brush. The surface should be washed with clean water and kept moist (but without surface water) while the plaster is being applied. When concrete surfaces are oily or

*(Continued to page 202.)*



**Under Conditions Where Ordinary Plaster Would Not Meet the Requirements, Keene's Cement Is Used. This includes such work as wainscote, finishing columns, and making Caen stone and Travertine finish.**

# Sheet Metal Details

## Sheet 12—Around Terra Cotta Projections and Dowels, Rods and Anchors

**EDITOR'S NOTE:** This is the tenth of a series of articles, presenting authentic details for flashing and metal work problems in building. The drawings, presented on the opposite page, were prepared by the Copper and Brass Research Association, and may be applied in the use of all roofing metals. The first of this series was published in the November issue

of the AMERICAN BUILDER. Readers will remember that the drawings are intended to show the details of construction for every trade involved and are suitable for use by the drafting room in designing details. The distortion of the drawings will be apparent at a glance, but this purposely has been done that the methods may be made more clear.

### NOTES FOR DRAWINGS ON OPPOSITE PAGE

**FIG. 63.** A method of flashing a projecting terra-cotta balcony enclosed by a metal rail, with a door or window opening to it, is shown in Fig. 63. Particular attention is called to the method of fastening the outer edge of the metal work to the terra cotta as shown in detail in the lower left-hand corner.

When designing the terra cotta, provision should be made for a step  $1\frac{3}{4}$  inches or more in height above the top molding. When the terra cotta is cast, and while it is still in a plastic state, a row of holes is punched in the face of this step about  $\frac{3}{8}$  of an inch in diameter,  $1\frac{1}{2}$  inches deep, and 8 or 9 inches apart. Before the metal is placed there should be inserted into these holes cylinders of sheet lead of a length about  $\frac{1}{8}$  inch less than the depth of the hole and a diameter the same as that of the hole. The edge of the flashing, containing a row of holes corresponding to the holes in the terra cotta, is then turned down over the step at least 1 inch.

A No. 12 round-head brass wood-screw is inserted through the copper and into the lead cylinder. As the screw is driven home it expands the lead cylinder, forcing it against the sides of the hole in the terra cotta, forming in effect an expansion bolt, and making a tight and secure fastening. It is generally not necessary to solder over the top of the screw-heads, but if much water will come over the edge of the step it is good practice to solder. After being thus secured at the outer edge the sheet metal is laid over the floor of the balcony, using soldered lock seams where necessary, and then turned up against the masonry at least 4 inches where it is lapped by the cap flashing. When the flashing is penetrated by upright posts such as the corner posts of the balcony rail, in this instance, this place where such penetration occurs must be carefully protected by some means such as described in detail in Fig. 66. The regular flashing being the first completed, then penetrated as required, and the corner post secured to the masonry, the metal cap is formed around the post or slipped over it, soldered to the flashing and filled with waterproofing compound. (See Fig. 66 for a complete description of this method.)

The cap flashing is placed before the terra-cotta sill, the wood sill, or the balcony-floor flashing are in position. It is made wide enough so that on completion it will lap the floor flashing 4 inches, extend through the wall under the terra-cotta sill, and up and under the wood sill. After the cap flashing is in place the terra-cotta sill is placed; then the wood sill. Some prefer to make the flashing wide enough so that it will even extend up in back of the wood sill, but if a water-bar is used this is not necessary. The use of a copper water-bar at the joint between the wood and terra-cotta sills is recommended. A complete description of this feature and the method of its application may be found in the drawing and description of Fig. 11.

**Fig. 64.** When a terra-cotta balcony or similar projecting feature serves as the base for columns, pilasters, or other projections above the floor of the balcony, the flashing is applied as shown in Fig. 64. It is placed in a similar manner to that described for Fig. 63 except that the cap flashing placed under the terra-cotta window sill is also carried around under the column bases, into the

joints of which it is set (as shown by the section in the lower left-hand corner), and built in as the masonry progresses, and before the base flashing and that of the balcony floor is in position. Afterwards the cap flashing is turned down over the base flashing at least 1 inch and the seam soldered.

**Fig. 65.** A projecting window-cap or cornice of terra cotta surmounted by a terra-cotta balustrade is flashed and the rail steadied and secured to the roof as shown in Fig. 65. Attention is called to the method of avoiding movement of the rail by bracing it from the roof with bronze rods. For this purpose a  $\frac{3}{8}$ -inch bronze bar extending the length of the rail is placed on top of the balusters and connected by vertical rods to the steel framing below and also to a stay rod from the main roof. It is important that the points where the ends of these rods are fastened to the main roof be well flashed. A complete description and a drawing of a suggested means of doing this is given in Fig. 28.

**Fig. 66.** The left-hand side of the lower part of Fig. 66 shows a half-section and the right-hand side shows a half-elevation of a method of forming a flashing cap of copper and securing it to the regular roof flashing at such places as it may be necessary to penetrate the roof flashing to permit the passage of rods, dowels, anchors or similar metal shapes. In the illustration the cap is shown round, but it may be of any shape, and it should conform roughly to the contour of the penetrating member.

The regular flashing sheet is cut at the points of penetration and the surplus metal turned up against the rod. After the regular flashing is completed the cap is placed in position. The cap is made out of a flat piece of metal with a lower edge turned out. This piece is either bent around the rod and the ends lapped and soldered or the ends soldered first and slipped over the top of the rod. The lower edge (previously turned out) is then soldered to the flashing. Upon completion the cap is filled with waterproofing compound. The cap must be made large enough so the sides will clear the rods, etc., at least 1 inch. The examples of the use of this cap are shown in Figs. 63 and 65.



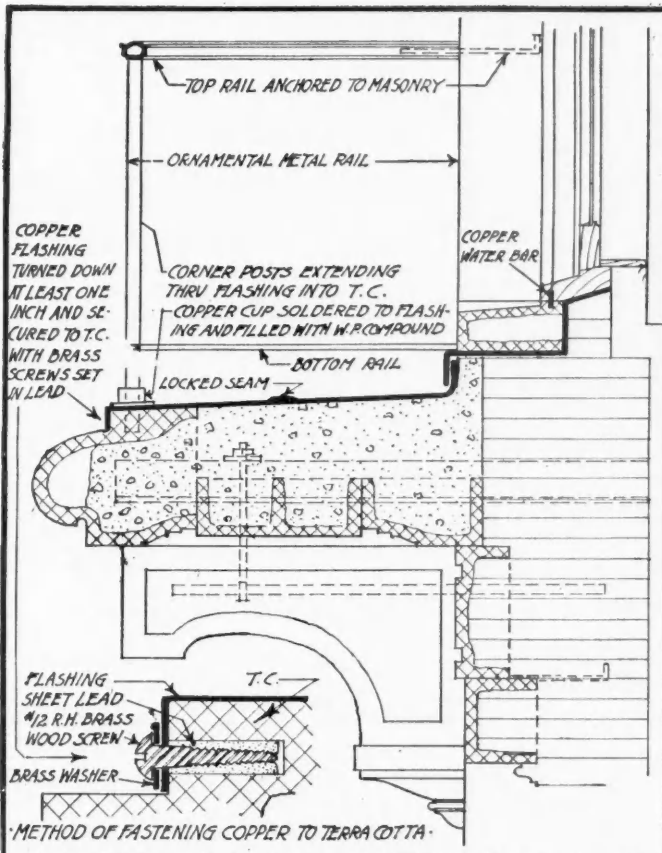
### It Can Be Prevented!

(Continued from page 125.)

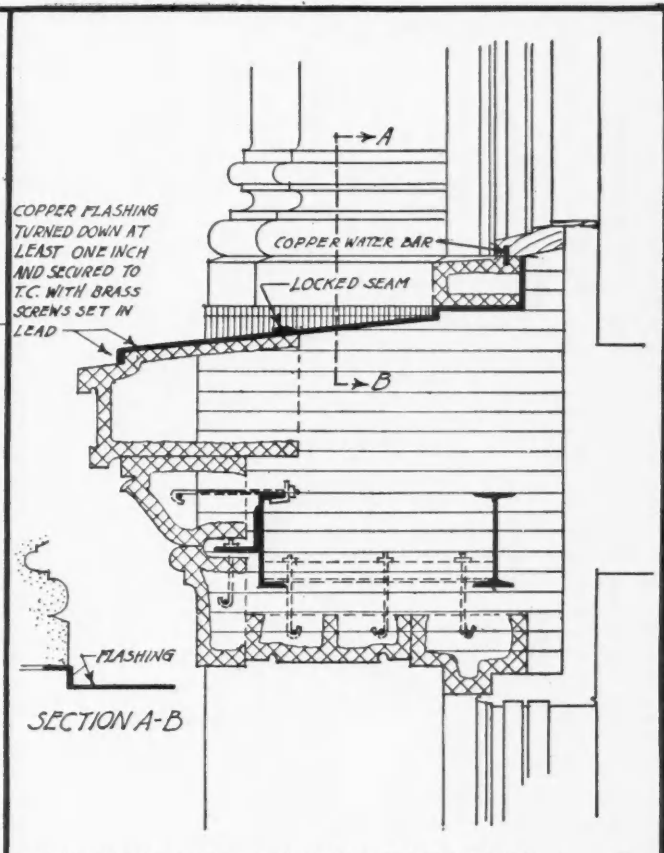
roofs are bad. They can't be just slapped on any old fashion, but must be laid as instructed by the maker. Fires on roofs last year caused a loss of \$17,000,000, which we all paid. Had most of these roofs been properly laid and built with recommended materials much of this loss would not have occurred.

Industrial buildings, office buildings, large structures of all kinds have pretty well learned the lesson of building construction which is resistive of fire. Houses must follow suit or climb higher in the scale of losses. In these larger structures, noncombustible materials, sprinkler systems, constant inspection and unrelenting vigilance against carelessness go far to keep the losses down. In homes much of this work is not practicable, but by building in approved fashion in the first place much of the necessity for this watchfulness can be eliminated.

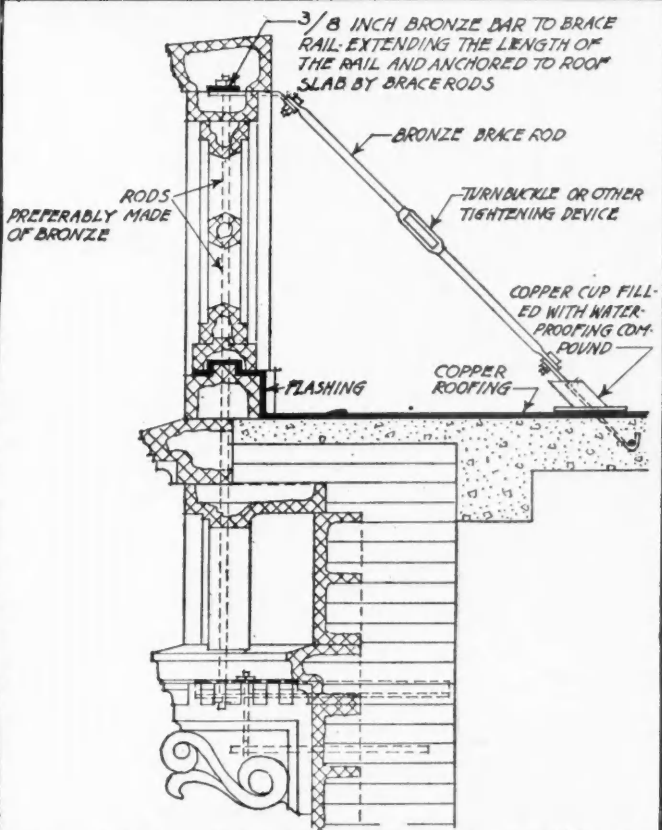




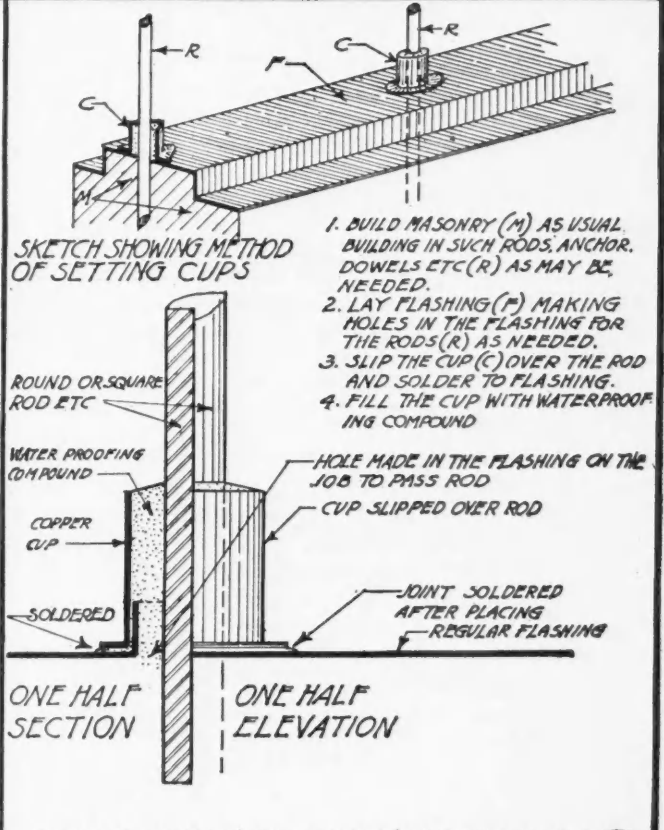
FLASHING FOR A METAL RAILING OVER A TERRA COTTA BALCONY (63)



FLASHING FOR COLUMN BASE OVER A TERRA COTTA CORNICE (64)



FLASHING AND BRACING OF TERRA COTTA BALUSTRADE ABOVE CORNICE (65)



COPPER CUP TO BE USED WHEN FLASHING OR ROOFING IS PIERCED BY RODS ETC (66)



# HEAVY TIMBER MILL CONSTRUCTION

*Details prepared and copyrighted by  
The National Lumber Manufacturers Ass'n*



## Plate No. 2 of a Series of Six

With Explanation and Discussion by Dudley F. Holtman, Construction Engineer  
of the National Lumber Manufacturers' Association

**M**ANY designers consider the pintle type of construction superior to the best post cap type as the columns are self-releasing and the ends of beams or girders rest directly over the column, which post cap construction will not permit.

Scuppers and waterproof floors are required only in warehouses and where high valued stock, particularly susceptible to water damage, is located on the floors below, or where flash fires are particularly prevalent. Experience has shown that water-tight floors cannot be secured by the use of tarred building paper mopped with asphalt. Where waterproof floors are desired a mastic or wood block pavement with waterproof felt beneath, flashed up at the walls and columns, is advised.

Tying of the building in a direction opposite to the floor beams is not necessary, as the floor planking does this satisfactorily.

Scuppers where used should be placed over windows in order not to decrease the effective area of the piers. With the use of scuppers in concrete construction, however, where spandrel beams are shallow, the location of scuppers over windows often seriously weakens the beam.

Wherever possible the tops of windows should be as close to the floor plank as possible to provide the maximum amount of lighting.

Waterproof paper between layers of floors is considered by some to be of little value as the nail holes through the paper permit considerable leakage.

Double beams and laminated flooring when used over weave rooms or paper machine rooms where there is considerable moisture should be treated to guard against dry rot.

Two types of pintles are shown on Plate No. 2. The one at the left is the type preferred for timber columns and the type at the right for steel or cast iron columns. A recessed bearing should not be used for timber columns as the pocket holds moisture and allows rotting of the wood.

Scuppers are stock and standard. Floors are generally level. Water would not collect on a level floor. In most buildings it would be impracticable to slope the floor.

### Exterior Walls, Fire Walls and Enclosures

Mill construction buildings must be so constructed that fire will pass as slowly as possible from one part of the structure to another, and in addition, when located in the closely built districts of cities, must be fire resistive to external conflagration. Careful attention must be given to the construction of external walls, the location and construction of fire walls, the enclosing of stairways, the protection of openings in fire and enclosure walls and also of openings in exterior walls exposed to external fire hazards, in order that the advantages of mill construction may be secured.

City building ordinances as well as the recommendations of the insurance underwriters generally, specify exterior walls of incombustible material, such as hard-burned brick,

stone laid in cement mortar, or concrete. The pilastered form of brick or re-enforced concrete wall gives large window areas and furnishes support to the main girders of the floors where needed, but may lack the rigidity of a solid wall. This general type of construction may be carried out either in the form of curtain walls or panel walls at the choice of the designer. Panels of reinforced concrete have been used in a few recent cases. In this way an economical and fireproof lintel is secured which may be used with a good architectural effect.

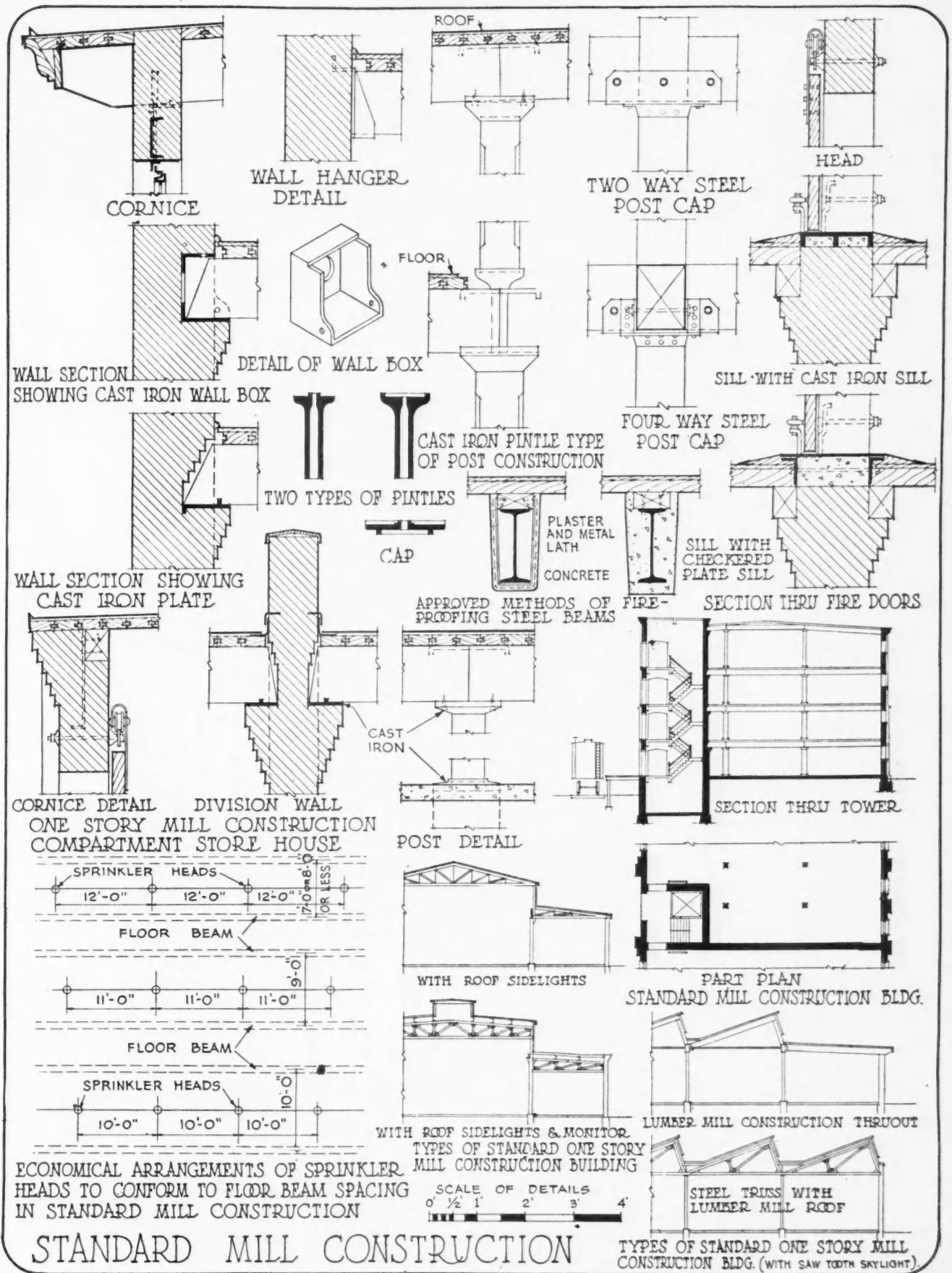
Exterior walls exposed to fire from without should be carried 3 feet above the roof and be provided with a coping of durable material. If monitors or roof lanterns are near the walls, higher parapets will be necessary. Exterior openings, vertically over each other, unless protected by approved automatic fire windows or doors, should have at least 3 feet of solid masonry between the top of any openings and the bottom of the one above. Lintels should be provided over all openings and if of steel and over 4-foot span, should be properly fireproofed.

Practically all large communities specify in their building ordinance the thickness of the walls for any given case. When excessively heavy loads are carried, it may be necessary to increase the thickness of these requirements for brick walls in order that the allowable crushing strength of the mortar be not exceeded. It is well to remember that brick walls properly bonded and the joints flushed full with cement mortar are generally recognized as being as strong as poorer walls 4 inches thicker. In the absence of a local building ordinance, it is suggested that the sizes given in the building code recommended by the National Board of Fire Underwriters be followed.

In small buildings or structures located well out of conflagration districts and separated from the other buildings, exterior walls are occasionally made of heavy timber construction as in the case of floors. The posts which are to form the exterior framing should be of a size needed to carry the load from the floor above, but should not be less than 10 inches by 10 inches. These posts should be spaced from 8 to 10 feet apart as in the case of the floor girders, and should be thoroughly braced at the corners of the building and around openings to provide stiffness.

The walls may be of plank 2 inches or more in thickness. Tongued and grooved or splined material is placed vertically and nailed to horizontal girths extending between the posts. Square-edged plank may be used by covering the cracks with ½-inch battens. If metal siding or slate is to be used as an exterior finish, the planks should be placed horizontally and fastened to the posts. If necessary intermediate studs should be provided. Planks nailed diagonally will aid in stiffening the building, but there is a small waste of material involved. All interior surfaces should be left exposed so that water may reach them easily in case of fire.

*(Continued in November American Builder.)*



MILL CONSTRUCTION DETAILS—PLATE NO. 2.

Presenting the Various Standard Types of Mill Construction Buildings, Together with Details of Fire Wall Openings, Post Connections, Beam Supports, Etc.

# WHAT'S NEW?

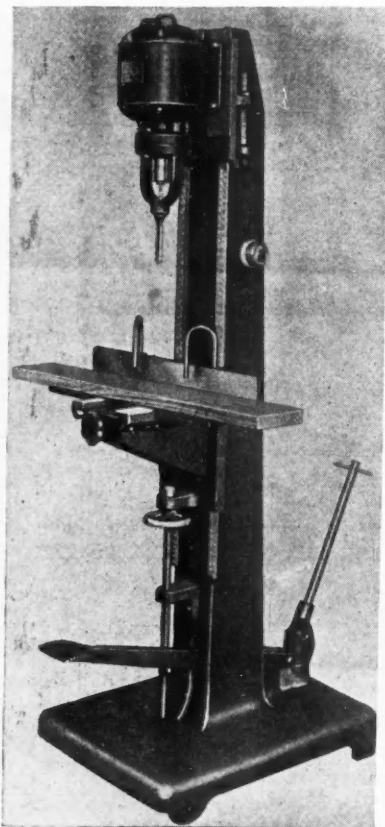


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## Portable Mortising Machine

**T**HIS hollow chisel mortising and boring machine has been designed to fill the need for high grade, accurate machines at a price which is within the reach of anyone. They are built of the very best materials and with the greatest care as to details of design and workmanship. When purchased as a hollow point mortising machine it can be quickly and conveniently converted into a plain vertical boring machine by removing the chisel holder. When boring work only is to be done it can be furnished as a vertical boring machine without the hollow chisel and chisel holder at a corresponding reduction in price.

Any lamp socket will serve as a power supply line to operate the  $\frac{1}{2}$  horsepower motor which is regularly furnished with this machine. For extra heavy work or to take care of peculiar conditions, it is possible to use a 1 horsepower motor furnished at a suitable difference in price, but these motors must be connected to a power line instead of a lamp socket.



Furnished Either as a Mortising or Boring Machine or Convertible, to Be Used for Both Kinds of Work, by a Simple Adjustment.

The table may be adjusted for height on the frame and has an in and out movement of  $4\frac{3}{4}$  inches operated by a screw feed. It is of hardwood, mounted on a heavy casting, to insure bits against damage, and has clamps provided for holding the work down. A compound table can be furnished as an extra when desired and when mounted on the standard table, provides means for feed-

ing work, which has been clamped in position, for the successive cuts ordinarily required in mortise work.

Angular adjustment of the table to 45 degrees either side of horizontal is provided and vertical adjustment is by means of a rapid, accurate lead screw. Portability is provided by means of a truck type base and when the handle at the rear is thrown against the column the machine rests solidly on the floor. When pulled forward to serve as a handle the cam action throws the weight onto a swivel roller bearing so that one man can move the machine easily. Lag screw holes are provided for use when it is desired to have the machine fixed permanently in position.

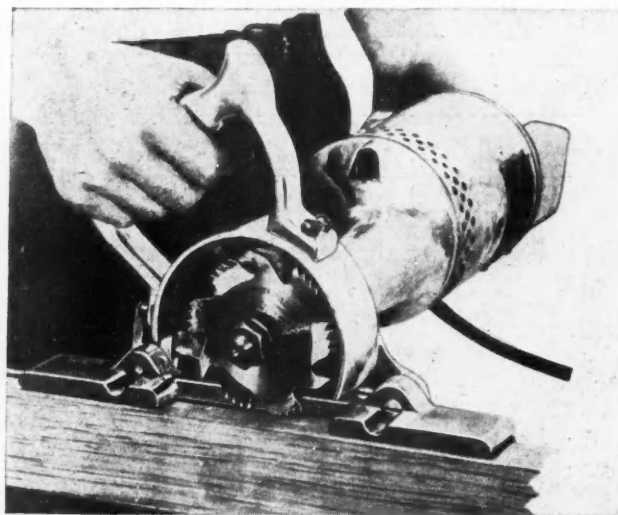


## Portable Electric Groover

**M**ANY builders will be interested in learning of a new, portable, electric tool for cutting grooves in wood. This tool was designed especially for installers of metal weatherstrips. It is simple in design and construction, anyone can operate it. There are only two adjustments necessary, one for the depth and the other for the location of the groove, the guides will do the rest.

The motor is designed to operate on both alternating and direct current, 110-volt, which is standard for light circuits practically everywhere. The tool is fitted with ball bearings throughout and weighs only 16 pounds, complete. The switch is conveniently located in the "D" handle and can easily be turned on or off without the operator changing his grip. Two sizes of  $3\frac{1}{2}$ -inch diameter, solid plate, patented grooving saws are furnished as regular equipment.

With this groover, the manufacturers claim, one man can now do the work of five using the old-fashioned grooving plane and at the same time do a better job. A very efficient motor has been designed for this tool which will withstand severe use and overloads.



Operating the Electric Groover Which Makes Possible Very Rapid and Accurate Work at Small Cost.

# WAX FLOORS the New ELECTRIC WAY

**T**AKE all the labor out of floor polishing. Get a beautiful burnished lustre impossible to obtain by hand. Finish floors many times faster—save time, labor and money.

Waxed floors have always been one of the best selling points a building or home could have. Wax gives the finest, most beautiful and serviceable floors. Now waxed floors are **easiest**.

## JOHNSON'S WAX *Electric floor Polisher*



**Simple** A small electric polisher that operates as easily as the ordinary vacuum cleaner. Fast enough for the big job, yet handy enough to use on the smallest. Nothing to take care of. Nothing to get out of order. Runs quietly. Can be carried anywhere—simply plug in any electric connection.

**Efficient** Does the work with amazing speed. Puts on a hard long-lasting polish impossible to obtain any other way. Requires no effort.

**Economical** Saves hours of hard labor. Will pay for itself in time saved on the first few jobs.

**Inexpensive** Not a big cumbersome machine requiring large investment but a handy, every-day tool that every builder, floor finisher, painter, and building manager needs.

**Ask For Our Special Offer to  
Builders and Contractors**

S. C. JOHNSON & SON, Dept. AB10. RACINE, WIS.  
"The Wood Finishing Authorities"

Please send complete details of the Johnson Electric Floor Polisher and your special offer on it to contractors and building managers.

Name.....

Address.....

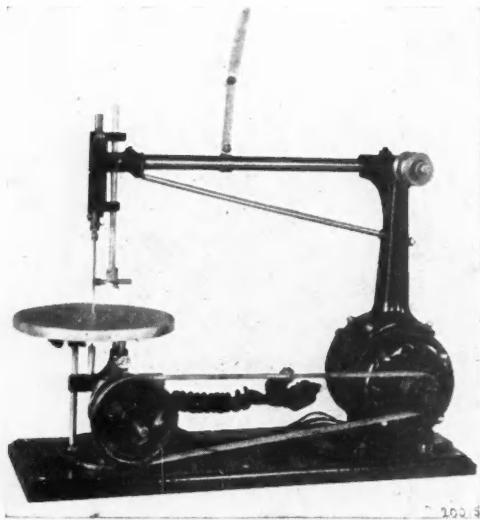
City and State.....

1-5 H. P. Universal Motor. (Works on either alternating or direct current.)  
Weight 9 lbs.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

### Saw, Drill Press, Filing Machine

"TIME, money and space saving" when descriptive of new equipment, is a never failing lure to the interest of shop owner or mechanic. The manufacturer of the



This Combination Jig-Saw, Drill Press and Filing Machine Is Intended for Either the Large or Small Shop, Is Easily Portable and Can Be Operated from an Ordinary Light Socket.

intended for small or large shops, is portable, being driven by a one-fourth H. P. motor that may be attached to any ordinary light socket. It will drill or cut wood, fiber, bakelite and soft metals, and will tool steel up to one inch in thickness. It will also cut keyways in small pulleys, etc. All parts of the mechanism are accurately machined and built to precision for constant service.

The best of material is used, and the motor is a quality motor, thereby insuring long life and correct operation. From the base to top of table measures  $7\frac{1}{4}$  inches. Diameter of table is  $8\frac{1}{2}$  inches and tilts to right or left angle for beveling. The stroke of the blade is  $1\frac{1}{2}$  inches.



Here Is a New Lighting Unit Which Eliminates Glare and Sharp Shadows.

### New Type Lighting Fixture

A NEW type of lighting unit which eliminates the glare and sharp shadows caused by varying intensities of illumination is being extensively used in schools and for similar installations. These units are made of a special diffusing glass having a minimum light absorption. The design of the units blends with the design of the various rooms and hallways and brings out the interior beauty of the building. In addition the units are dust proof, being entirely enclosed, and are economical in upkeep.

### Slide Rule Is Simplified

A DECIDED improvement has been made in a well-known slide rule by way of simplifying the reading. The words "Read Here" and an arrow are stamped in red on the top section of the rule, indicating where the inside measurement is to be read.

When the rule is closed and then extended to the right, beginning with the bottom section, you read the words "Inside Measure," and an arrow, stamped in red, on the 9-inch space, and on the 10-inch space you read the words

"Follow Arrow," stamped in red. On each successive section you find the words "Inside Measure" stamped in red, indicating the direction in which to read the inside measurement. The marking of the inside measurement side of the rule with red arrows is an improvement which makes the rule much more easily read and understood.

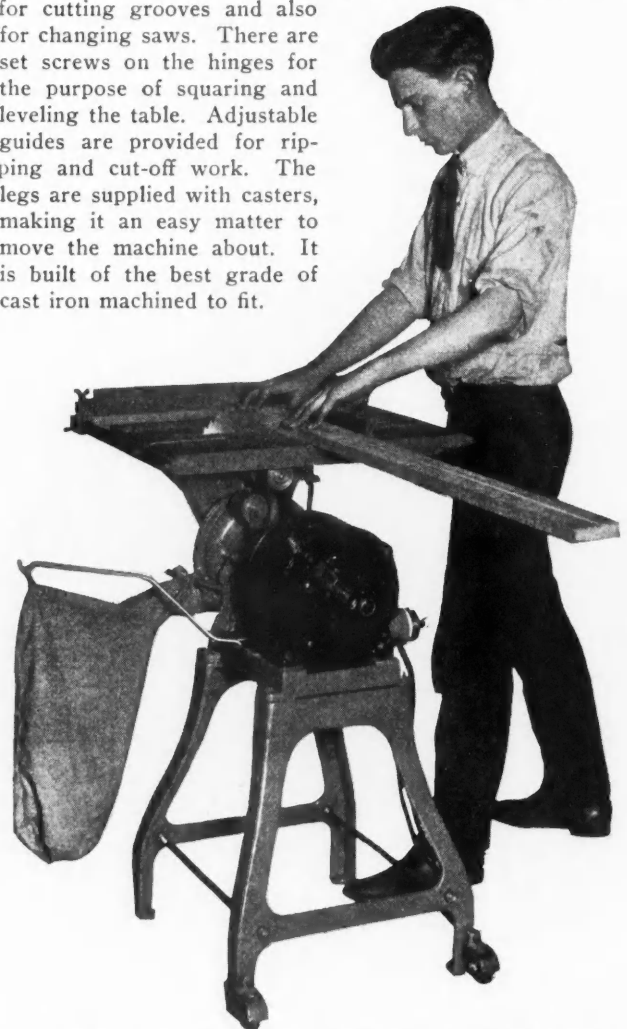
The side marked for taking ordinary outside measurement is stamped with the words "Outside Measure" in black, on each section. The clamps holding the sections together have also been strengthened and improved. With these two improvements the rule is particularly valuable for all kinds of inside measurements—that is, hard-to-get-at places. It is also very handy for all outside or ordinary measurements as it opens and closes easily and rapidly.



### Portable Motor Saw

A PORTABLE motor-driven sawing rig which can be connected with any light socket is being produced by a leading electrical company. This machine is equipped with a  $\frac{3}{4}$  horse power repulsion type motor, 60 cycle, single phase, 110-220 volt. The saw table top is  $14\frac{1}{2}$  by  $22\frac{1}{2}$  inches. It is provided with a ball-bearing arbor shaft. A suction fan is connected directly to the motor and a cloth bag collects and holds the dust. The motor is controlled by a snap switch and is supplied with a 25-foot, heavy, rubber insulated cord and an attachment plug.

The table is provided with hinges so that it can be raised for cutting grooves and also for changing saws. There are set screws on the hinges for the purpose of squaring and leveling the table. Adjustable guides are provided for ripping and cut-off work. The legs are supplied with casters, making it an easy matter to move the machine about. It is built of the best grade of cast iron machined to fit.



Set Upon Castered Legs, This Sawing Jig Can Be Quickly and Easily Moved to Any Point Where It is Desired to Use It and Operated by Power Taken from the Most Convenient Light Socket.

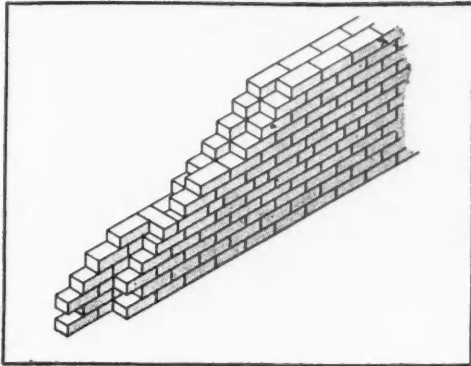
# Four Brick Walls *and* Four Prices

**P**EOPL**E** want brick homes. They sell easier—they look better—and they offer a range in price to meet every purse. Burned clay is the builder's best friend.

With the new Economy wall, you offer brick construction at the cost of frame.

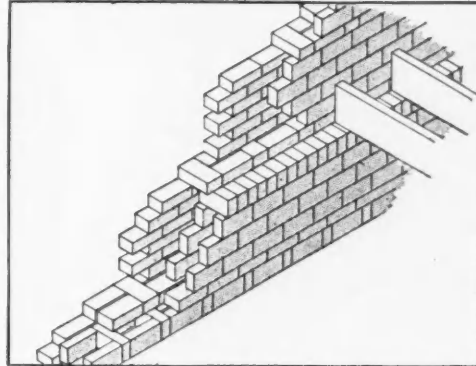
Next is the Ideal all-rolok hollow wall made of standard size brick, costing only a little more.

Another type of Ideal wall is the Ideal rolok-bak. Then there is the solid brick wall, the highest standard masonry construction of the ages.



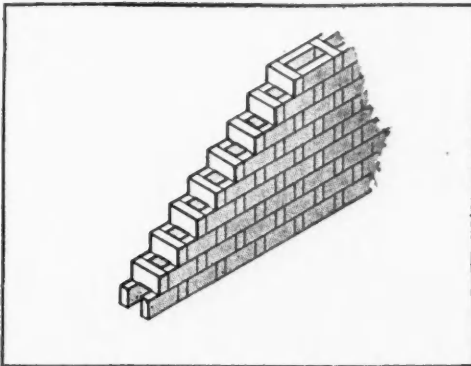
**The Solid Brick Wall**

You can build an ordinary six-room house of solid brickwork for as little as four or five hundred dollars more than for frame. The added price you can get for the brick home is much greater than its small additional cost. A wall of solid brickwork offers greatest fire protection and keeps the house cooler in summer and warmer in winter.



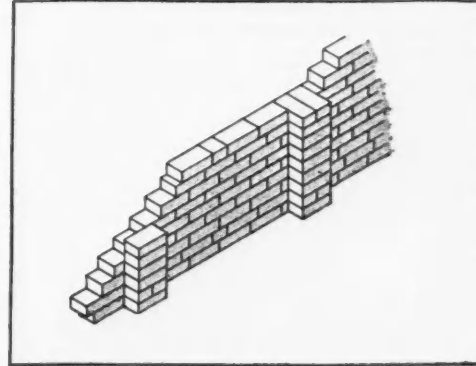
**The Ideal Rolo-Bak Wall**

This type of construction costs less than hollow unit back-up. It requires only 3½ brick on edge per sq. ft. for the back-up in an 8-inch wall. To prove the economy in material in this back-up, multiply your price of brick by .35. Bricklayers lay 600 brick on edge per day in the 8-inch wall, and 1100 with the 12-inch wall. These figures have been exceeded on actual construction.



**The 8-inch Ideal Wall**

By actual, practical performance the Ideal all-rolok brick wall is the lowest cost hollow wall. 9 brick per sq. foot are required for an 8-inch Ideal all-rolok wall. To prove the economy in material in this wall, multiply your price of brick by .9. A test wall recently laid by an official committee of Detroit Union bricklayers indicated a production of 1150 brick per day per man, and the Detroit Union has officially approved 1000 as easily possible.



**The Economy Wall**

Actually with the Economy wall, first cost for a brick home is no more than for less enduring types of construction. Its exterior appearance is the same as any brick wall. It is safe, strong and dry with all the known economies of brick in freedom from painting and repair. Economy wall is suitable for small homes, garages, filling stations, industrial housing and other light construction.

Send for folders describing these walls.

**THE COMMON BRICK MANUFACTURERS' ASSOCIATION of AMERICA**  
2131 Guarantee Title Building, Cleveland

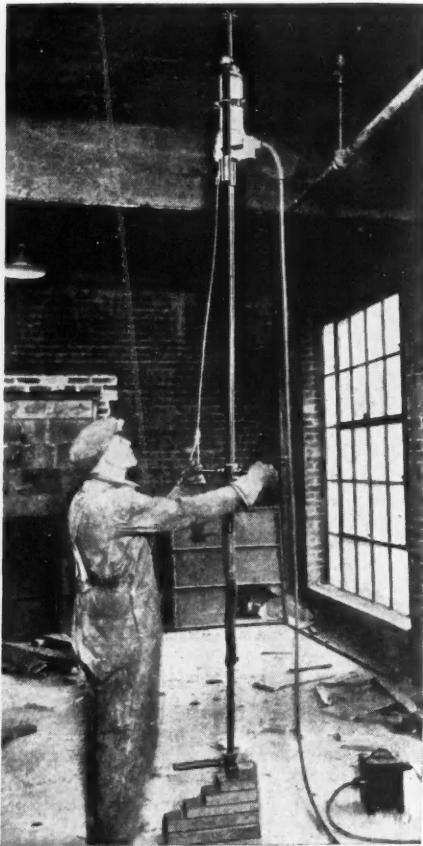
Chicago . Chamber of Commerce Bldg.  
Denver . . . . . 1735 Stout St.  
Detroit, Mich.  
400 U. S. Mortgage Trust Bldg.  
Hartford, Conn. . . . . 226 Pearl St.  
Los Angeles . . . . . 342 Douglas Bldg.

Nashville, Tenn. . . Harry Nichol Bldg.  
New Orleans, La. 904 Carondelet Bldg.  
New York City  
1710 Grand Central Terminal Bldg.  
Philadelphia . . . . . City Centre Bldg.  
Portland, Ore. . . . . 906 Lewis Bldg.

Salt Lake City . . . . . 301 Atlas Bldg.  
San Francisco . . . . . 811 Sharon Bldg.  
Seattle, Wash. . . . . 524 Burke Bldg.  
St. Louis, Mo. . . . . 605 Wainwright Bldg.  
Springfield, Mass.  
301 Tarbell-Watters Bldg.

### Overhead Drilling Stand

**T**HE constantly increasing use of concrete in industrial construction has brought with it many new problems—how to drill up-holes economically is one of them. Hundreds of thousands of such holes must be drilled every year—to hang shafting, to strap electric conduit, to run sprinkler lines, to fasten partitions and steel sash, to anchor conveyors.



The Work of Drilling Overhead Holes in Concrete Is Greatly Simplified by the Use of This Device, Which May Also Be Obtained Mounted on a Wheelbarrow Stand for Easy Moving.

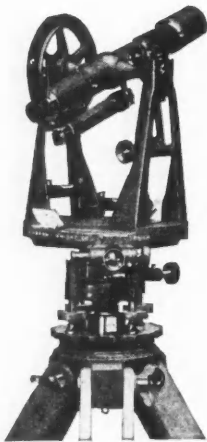
control is conveniently provided by running a draw wire from the trigger switch to the handle position.

A coil spring below the telescoping point on the tubing provides the means of maintaining the steady pressure needed to make the drill bite in. The up-drilling stand is provided for use with or without a wheelbarrow, transporting attachment. With this attachment, however, much time and effort is saved to the operator. It so simplifies the work of moving to the next "spot" that, on test, a single workman drilled 125 up-holes on three floors without any assistance.



### New Surveying Instrument

**A** WELL-KNOWN manufacturer of transits and levels announces that one of its most popular models of transit, which has formerly been supplied only on special order to city officials is now being carried in stock. This is a high grade surveying instrument of unusual strength, rigidity and durability. One of the features of this



Special Transit Which Is Now Being Supplied from Stock Though Formerly Furnished Only to City Officials on Special Order.

instrument is described by the manufacturers as a standard of hard bronze with deep "L" section designed to afford great strength and rigidity, making possible the use of cylindrical axle bearings.

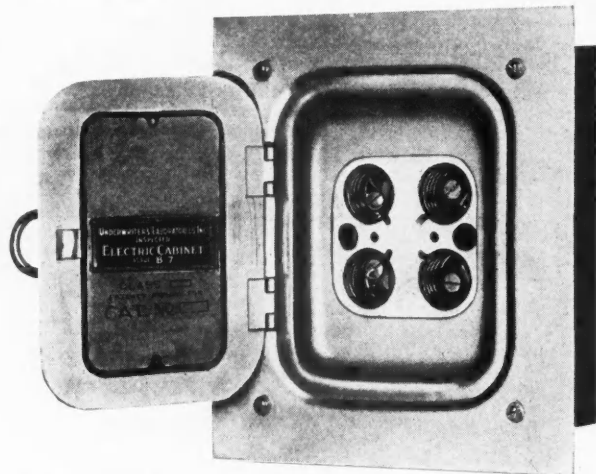
The combination of these standards with specially ribbed top plate gives all the advantages of the U-shaped standard without any of its disadvantages. The adjustment of the axle is effected by use of opposing capstan nuts, which feature, combined with the cylindrical bearings, insures true motion of the telescope axle in making the vertical plane adjustment as well as permanence of this adjustment when made. It has a leather capped screw for adjusting the tension of the axle bearings.

This instrument is supplied in models either with or without the compass but the manufacturers say that they are selling a larger proportion of transits without the compass today than with it. They suggest that this is due to the fact that city engineers have established convenient reference points from which construction engineers and builders can work and also that the increasing use of electricity makes it more and more difficult to rely on compass readings.



### New Safety Fuse Box

**N**O longer will it be necessary for the occupants of homes and other buildings to stumble into dark cellars or search in inaccessible closets to replace a blown-out fuse. The long-standing demand for some method of eliminating the dangers and inconveniences attendant upon replacing fuses in remote parts of buildings and where floors may be damp has at last been met. A firm known for its pro-



Safety and Convenience Are the Outstanding Features of This New Fuse Box Which Is an Ornamental, Luminized Case Designed to Install Flush with the Wall Surface and Is Visible in the Dimmest Light.

duction of dependable safety switches and switchboards has just announced an outstanding electrical improvement.

The new article is at the same time an attractive home convenience and an ingenious solution to the problems mentioned above. It is, in brief, an ornamental, luminized case designed to be installed flush with the wall surface in any room, hall or stairway of a building—wherever most accessible for the replacement of a fuse.

Its safety comes from a design that leaves no exposed "live" parts, from its "luminized" finish that has a 70 per cent reflective power, making the fuse box visible in even the dimmest light and finally from its being placed in a location easily reached. It is as easy and as safe to replace a fuse as to renew a light bulb in a lamp.

The quantity production upon which this manufacturing company has entered insures so low a price that an electrical installation in even the smallest home can be given this added safety and convenience at a low cost.





COMMODORE APARTMENTS  
 Cleveland, Ohio  
 Architect  
 W. S. FERGUSON CO., Cleveland  
 Contractor  
 JULIUS MILLER, Cleveland  
 All brick work and terra cotta laid  
 up in Carney

**THERE'S BUT ONE WAY TO MIX CARNEY**  
*—that's the right way!*

If there is any one feature in Carney, besides its unyielding bonding quality, that architects and contractors never stop praising, it's this—"Carney can't go wrong on the job." The instant too much sand is added, Carney reacts with barometric precision. Its smooth plasticity is immediately affected, making troweling difficult.

Here is a wonderful "check valve"—a wonderful security for the man who wants

relief from detail. With Carney on the job, the mortar is bound to be right—it can't be otherwise.

*THINGS YOU'LL WANT TO KNOW ABOUT CARNEY*

Carney works perfectly with 4 parts sand and water—no lime needed.

Carney saves labor at the mixer and on the wall.

The natural color of Carney adds materially to the finished appearance of a building.

*Carney is the perfected cement for brick and tile mortar.*

**THE CARNEY COMPANY**

*Cement Makers Since 1883*  
**MANKATO, MINNESOTA**

Mills at [ Mankato, ] Minn.  
 Carney, ]

DISTRICT SALES OFFICES: Leader News Building, Cleveland; Chamber of Commerce Building, Chicago; Omaha National Bank Building, Omaha; Syndicate Trust Building, St. Louis; Book Building, Detroit; Builders' Exchange, Minneapolis.

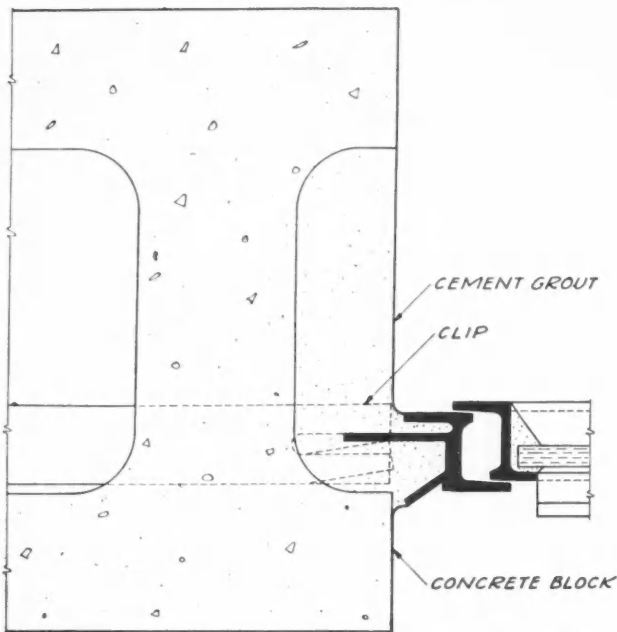
*Specifications: 1 part Carney to 4 parts sand.*

**CARNEY**  
*for Brick and Tile Mortar*

### Positive Anchorage for Steel Basement Windows

**A**NCHORING steel basement windows by means of metal clips set into the joints between concrete blocks is the method devised by a leading steel sash manufacturer for use in localities where blocks are not available with ends especially slotted to receive the jamb of the window.

The clip used is an inch wide and eight inches long, with one split end. This split end projects toward the window, and the fin at the jamb of the latter fits into it. Four clips are provided with each window—two for each end. They hold the window firmly upright until the concave ends of the blocks can be filled in with cement grout, to finish the job.



Where Slotted Concrete Blocks Are Not Available This Method of Anchoring Steel Basement Windows by Means of Metal Clips Can Be Used.

The window should be so located in the wall that the flaring leg on the outside face of the jamb meets the offset of the block, as shown in the sketch. Neatness and a tightly sealed joint between window and masonry are obtained by using the anchor clips in the manner described.

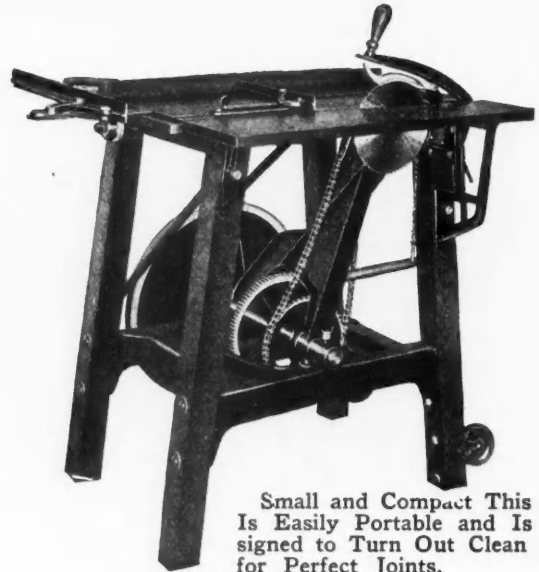


### Clean, Accurate Sawing

**T**HIS portable electric saw is a complete, powerful machine, designed for contractors, cabinet makers and others needing a small, compact, portable saw for speedy and accurate work. It is light in weight but sturdily built and can be readily moved from place to place and operated from any ordinary light socket. Power and momentum is developed through a patented gear arrangement, a solid, 40-pound, accurately and perfectly balanced flywheel, from a motor that is regular equipment.

Each saw is equipped with a complete and accurately graduated machine-steel mitre device which enables the operator to cut perfectly-fitting mitres up to 90 degrees either right or left. Precise machine work on all parts makes it possible to turn out perfect joints. The cuts are clean and are ready to be nailed or screwed in position as the material leaves the saw. It will mitre pieces up to two by four inches to a perfect fit at 45 degrees, using the graduated mitre gauge, and will cut finished or unfinished lumber up to two inches thick.

The swing arm on which the saw is mounted has a swing of nine inches and in addition to this the lumber may be slid along the table by the use of the sliding gauge, this enabling the operator to saw lumber of almost any width, and



Small and Compact This Saw Is Easily Portable and Is Designed to Turn Out Clean Cuts for Perfect Joints.

it can be used for cutting off the ends of doors.

For ripping, the swing arm is locked rigidly in the upright position by the use of a steel pin attachment, and the handle is thrown back out of the way. The material is then slid along the ripping gauge.

The framework is a combination of iron and thoroughly seasoned hardwood, firmly bolted together. The entire outfit weighs only 180 pounds and can be wheeled from place to place by the use of heavy iron casters on the legs. Its width permits it to pass through any ordinary door.



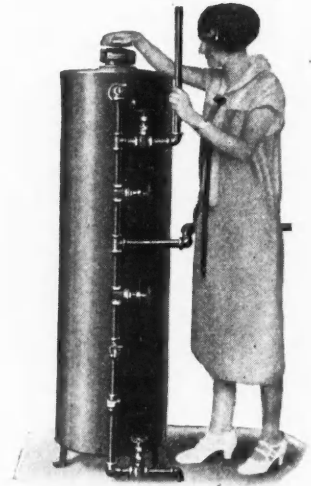
### Improved Water Softener

**A** WELL-KNOWN company, which has been building water systems for many years, has just announced a new type of water softener. Engineers have designed a simple, inexpensive and long lived outfit, eliminating all complicated mechanism or processes.

The mineral is of high capacity which permits small sized tanks. A special non-clog distributor mat provides perfect distribution without the use of sand or gravel. All suspended matter is filtered from the water before it reaches the mineral bed, hence the sediment collects at the drain where it is easily washed to sewer when back flushing. A sediment trap at the bottom of the tank accomplishes this. Regeneration is extremely simple.

The tank is high grade rust-resisting steel with a three-coat enamel finish. These softeners are very conservatively rated and will deliver their rated capacity of soft water at zero hardness. The smallest has a 24,000 grain capacity which will deliver 1,200 gallons of soft water between regeneration periods.

The type "A" softeners are of the upward flow type. The hard water enters at the bottom of the tank and is thoroughly distributed through a patented filter mat located on the inside which keeps the mineral bed constantly agitated and insures against channeling.



This New Type of Water Softener Eliminates All Complicated Mechanisms and Processes and Is Also Inexpensive.



Contractors  
Reyburn  
Engineering and  
Construction Co.  
Kansas City, Mo.

CLARK ESTATE OFFICE BUILDING  
Kansas City, Mo.

Architects  
Geo. B. Post & Sons  
New York City  
and Kansas City

## *We offer you a thousand silent partners*

WHAT prevents you from putting up your building? Finances? The Miller Plan is waiting to bring to you financial aid from a thousand silent partners. Business executives, salaried workers and professional people—men and women in all walks of life—who extend to the builders and owners of hotels, office structures and apartment buildings financial help by investing in Miller First Mortgage Bonds.

Each year the number of owners and builders who complete new constructions and make them successful, income-earning buildings with the aid of this Miller Plan increases vastly. And naturally too.

The Miller Plan of Financing offers you many attractive advantages:

1. Periodic disbursements are made as the building is constructed.
2. Building is sufficiently financed at the outset.
3. This financing is secured by a first mortgage on the land and building.
4. Convenient payments, out of income from the completed structure, take care of interest and reduce amount of indebtedness.
5. Financing less expensive under the Miller Plan. No shopping for money. No renewals of short-term mortgages.
6. Best type of building is produced. The architect's ideas are carried out.
7. By the simple operation of the Miller Plan, the owner is relieved of the worrisome details of the ordinary loan.

The success of the structure you build depends to a great extent upon the manner in which it is financed. The Miller Plan assures this success, as owners who have availed themselves of this financing plan will tell you.

*\$250,000 to \$1,000,000 and more*

We are ready to place at your disposal any amount from \$250,000 to \$1,000,000 and more, which will be secured by a first mortgage on your land, building and equipment.

Find out more about this Miller Plan of Financing. Let us send you letters from owners and builders for whom we have negotiated first mortgage bond issues. Write for the details of the "Miller Plan of Financing." Ask for Booklet L-1400.

# G. L. MILLER & CO.

INCORPORATED

Northern Headquarters  
30 East 42nd Street  
New York City

Southern Headquarters  
Hurt Building  
Atlanta, Ga.

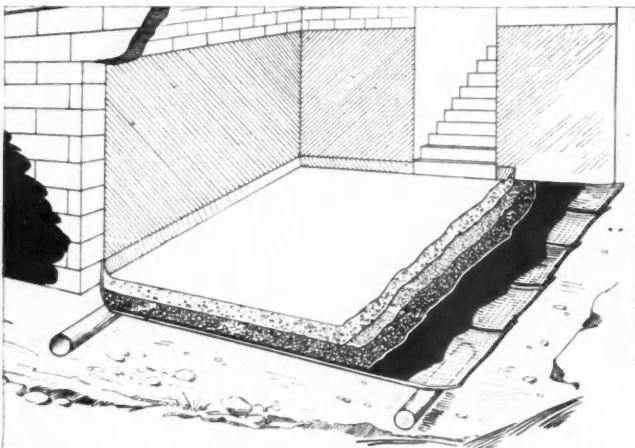
### Permanent Waterproof Basement

A GREAT deal of inconvenience and actual loss is caused by unsanitary and damp basements, and this trouble comes from not having the basement construction thoroughly and permanently waterproofed.

A successful method of thoroughly damp-proofing a basement has recently come to our attention and which we illustrate herewith. It has been found that dampness comes into the basement not only through the basement walls, but also to an even greater extent, through the basement floors. This method shuts out the dampness from the soil underneath the foundation as well as at the sides of the foundation.

This method uses immediately over the soil, sheets of saturated asphalt paper which are overlapped from 12 to 18 inches. On this, by brush application, is placed a impervious coating which prevents the seepage water from working through. On top of this coated paper is placed the regular aggregate commonly used in floors of this character and immediately on top of this is sprinkled a solution of a tacky consistency which binds and crystalizes the grout to the finish coat of cement which waterproofs the same from underneath.

When the finish coat is placed on top of this, you will have a floor that is absolutely impervious to moisture of any kind. The foundation walls on the outside are also



An Effective Means of Making the Basement Absolutely Waterproof and Dampproof at a Very Small Cost.

treated to a coat of damp-proofing which seals the outside from water entry.

The expense of buying this material and applying is so small that no one building can afford to forego the slight expense.

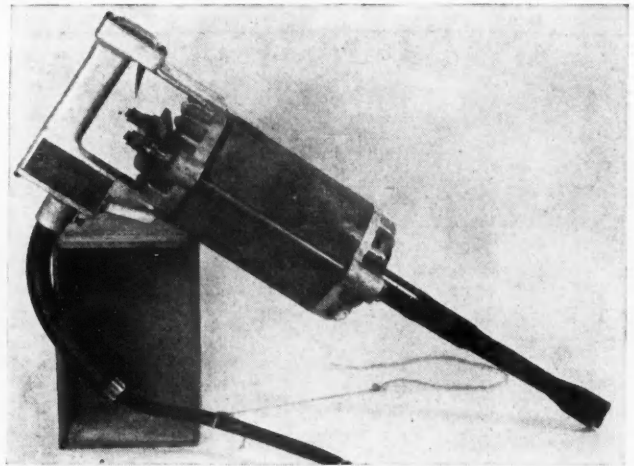


### Magnetic Electric Hammer

A NEW model has been added to one line of electric hammers by a company which for several years has been producing portable electric hammers for drilling and chipping masonry, and other work where the steady, rapid blows of a hammer are needed. There were three styles or sizes in the line, weighing 9, 17 and 25 pounds. The fourth style weighs 29 pounds, and develops 10 to 15 per cent more power while consuming 25 per cent less electric current—about 9.5 amps.

This hammer contains no motor or gears. The operating force is solely magnetic. The hammer consists of a bronze barrel or cylinder around the opposite ends of which windings are placed. A steel piston is confined in this cylinder and is drawn back and forth as the windings around the cylinder are alternately energized by the electric current. This alternate energization is controlled in an unusual way.

Alternating current from the average light socket passes through a small control box, which is part of the outfit. In this control box, the electronic tubes so modify the



This Electric Hammer Contains No Motor or Gears, the Piston Being Operated Solely by Magnetic Force

current that its pulsations are alternately directed first to the solenoid or winding at one end of the cylinder and then to the other winding. Thus the piston is drawn rapidly back and forth within the cylinder. On the down stroke the piston strikes the shank of the inserted tool, and on the up stroke it strikes a recoil spring. This action is regular and unvarying, as the flow of current. In 60-cycle current this piston strikes 3,600 blows a minute. It is notable, also, that the piston is the only moving part in the hammer.

This hammer is very effective in operation, because of its speed, and is used with a variety of tools. When used with a star drill it is regularly rated to drill concrete to a depth of three inches per minute.

The new hammer differs from the other style in several respects. Because of the heavier work which this hammer will be called upon to do, these changes will add greatly to its service life.



### Imported Hand Wrought Lanterns

RECENTLY there has been an especial interest in Spanish and Italian architecture in the South and in the lighting fixtures which are appropriate to these designs. Handsome hand-wrought fixtures are essential to the completion of the beautiful Spanish or Italian exterior and interior and the same is also true of other styles which are widely followed in this country, notably the English, in all its many variations.

One company has specialized in the production of these beautiful hand-wrought fixtures and an example of their work is shown in the accompanying illustration. This is only one of many styles which they have available for the completion of homes in all styles of architecture and this company is in a position to furnish expert advice in the selection of lighting equipment of this sort.



An Imported, Hand Wrought Italian Renaissance Lantern Representative of This Beautiful Line of Fixtures.



## Why Pay Six Men For One Man's Job?

An American Universal Floor Surfacing Machine actually does the work of six men and does it better. Just stop to think what it would add to your income over a period of a year if you took six men off your pay roll who are now earning good wages on their hands and knees scraping floors.

It may be hard to realize that the "American Universal" machine has actually cut the cost of floor scraping eighty per cent, but hundreds of users are proving it by actual tests every day.

Builders and contractors who are now using American Universals are not only surfacing floors for about one-fifth the cost of hand scraping, but are turning out better work.

One unskilled man with an

### **American Universal** FLOOR SURFACING MACHINE

can positively do as much work as five or six fast hand scrapers and he can produce a beautiful, smooth, clear, perfect surface which is impossible to produce by the slow and costly hand scraping method.

#### **Add \$5,000 to \$10,000 More to Your Profits**

Scores of builders and contractors have added from \$5,000 to \$10,000 to their yearly profits by using an American Universal Floor Surfacing

Machine not only during the busy season but in off months when business is slack. A number of them keep from five to ten American Universals busy every day in the year on jobs for other contractors and their own work.

#### **Write Us for Free Details**

and full particulars regarding the wonderful, money-saving, profit-building possibilities "American Universal" machines offer to the live contractor and builder. Have us send you descriptive literature and letters from dozens of enthusiastic users.

#### **The American Floor Surfacing Machine Co.**

515 So. St. Clair Street, Toledo, Ohio

#### **CUT OUT AND MAIL THIS COUPON TODAY**

The American Floor Surfacing Machine Co.,  
515 South St. Clair Street, Toledo, Ohio

Please send me without any obligation on my part full information about the "American Universal" Floor Surfacing Machine.

- I am a building contractor.  
 I am interested in becoming a floor surfacing contractor.

Name .....

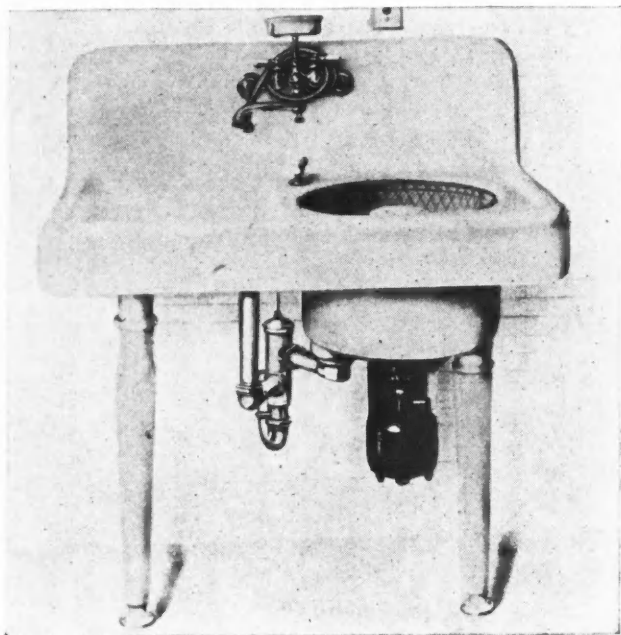
Street .....

City .....

State .....

### Electric Dishwasher-Sink

A NEW dishwashing device, now in production, is designed for household operation in a kitchen sink and eliminates hand washing and drying. The unit is sold in the form of a combination sink and washer, or as a washer only. It is electrically operated and models are made for any standard voltage, frequency or phases, either direct or alternating current.



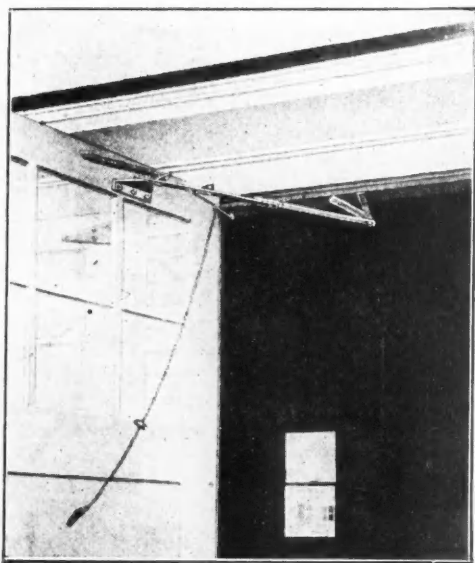
An Electrical Dishwashing Sink Which Can Be Operated on Any Standard Wiring System.

To operate, dirty dishes are placed in the well, a button is depressed and the washing takes place. The dishes are then flushed with hot water with a spray provided for the purpose and automatically dried by heated air.

All exposed parts are either porcelain, copper or nicked steel. The motor is of General Electric manufacture and is rated  $\frac{1}{4}$  horsepower.

### Steel Garage Door Holder

THE device shown in the illustration is a new, wrought steel garage door holder designed to hold the door open at an angle, locking it there securely against jar or wind. It



This Garage Door Holder Will Hold the Door at Any Desired Angle and Is Easily Operated by a Chain Pull.

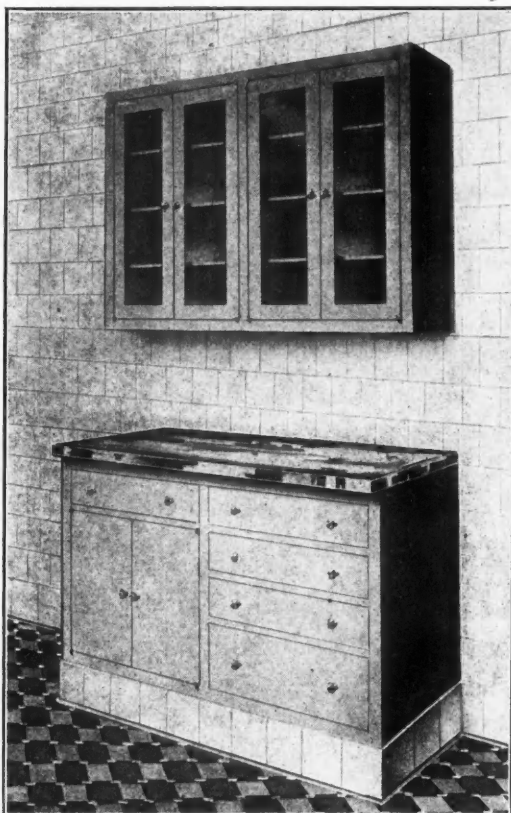
finds its position and locks itself automatically. The door cannot rattle as there is no slack or back-lash anywhere in the holder. No force, applied directly to the door, can move it, yet a slight pull on the chain both unlocks the holder and closes the door.

If the door has been left

unlatched through neglect, this holder will keep it closed. It is proof against all weather conditions, rain, ice or dust, and is rigid, strong and durable.

### Unit Steel Kitchen Cabinet

A QUALITY line of sectional, white enameled, steel, kitchen cabinets consists of two types which are known as dressers and units. Dressers are complete kitchen cabinets or working centers and include sliding counters, complete fittings and equipment. The units are bare cabinets which are intended to be fastened to the wall or built in, in varying combinations.



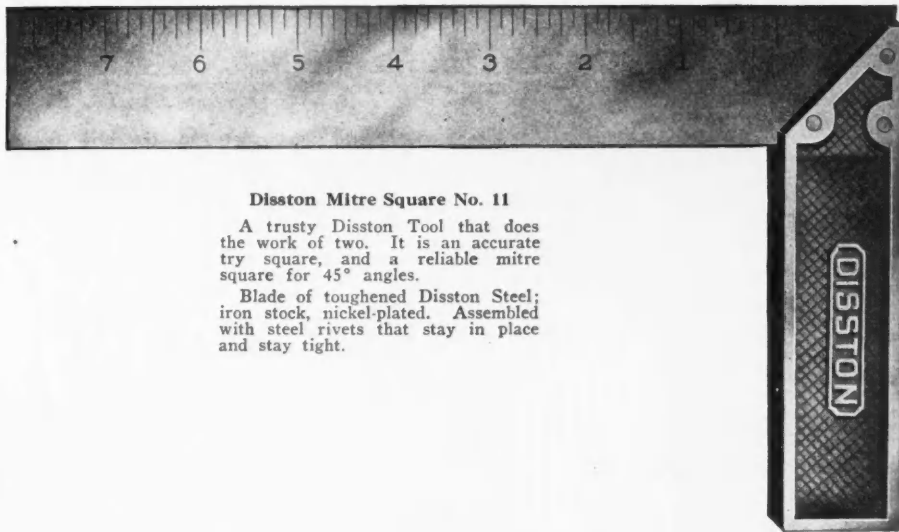
Upper and Base Sections of the Unit Steel Kitchen Cabinet. The base unit is on a tile face sub-base.

These latter consist of upper sections and base sections, much after the fashion of sectional bookcases, and are built in various widths and depths to fill practically any given space. They are furnished either with or without legs and stationary counters.

All of these cabinets are fabricated from Armco rust-resisting, first grade, stretcher leveled, furniture steel in 20 and 22 gauge and are electrically welded throughout. The frames of doors and drawers are rabbeted to make a flush front which facilitates cleaning and adds to the appearance. Door and drawer fronts are  $\frac{7}{16}$  inch thick of double construction reinforced with steel channels, making them perfectly rigid. The doors are hung on semi-concealed, cast brass hinges and have bullet catches.

Five coats of the most durable white enamel, with each coat thoroughly rubbed, are used on all cabinets. This surface will not crack, craze or chip and is absolutely waterproof. Boiling water, soaps, alkalis and acids will not affect it nor will climatic changes impare its wearing qualities.

All doors and drawers have glass knobs, shelves are white enamel and adjustable, legs are of malleable iron finished the same as the cabinet. These legs are 6 inches high and are equipped with silent sliding casters. The units may also be set on a sub-base with a facing of tile, linoleum or other material to match the flooring.



**Disston Mitre Square No. 11**

A trusty Disston Tool that does the work of two. It is an accurate try square, and a reliable mitre square for 45° angles.

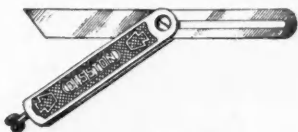
Blade of toughened Disston Steel; iron stock, nickel-plated. Assembled with steel rivets that stay in place and stay tight.

## Made to the order of the carpenter



**Disston No. 1 Try Square**

Genuine rosewood stock. Toughened Disston-made Steel blade, blued. Brass face plate. A carefully made, dependable tool.



**Disston No. 3 Bevel**

Blade of toughened Disston-made Steel. Iron stock is nickel-plated. Disston invention locks the blade at any angle by a quarter turn of the thumb-screw. Blade will not slip. Knocks or jars do not disturb adjustment.



*"The Saw Most Carpenters Use"*

**D**ISSTON SAWS won the carpenters of America on quality alone.

Carpenters realized a new standard had been set. They said: "You have given us a better saw. Now make us tools as good as the Disston Saw."

And with the same care Disston went about this task . . . selecting materials, developing time- and labor-saving features, setting up standards of workmanship . . . to give them tools as good as their saw.

The men who worked with tools soon learned that the Disston name on any tool meant "Disston Saw" quality in that tool.

You can get Disston Tools where you buy your Disston Saws.

**Henry Disson & Sons, Inc.**

*Makers of "The Saw Most Carpenters Use"*

Philadelphia, U. S. A.

# DISSTON

## SAWS TOOLS FILES

# MOTOR TRUCKS and TRAILERS



## Driving and Maintenance

**T**HE factor which determines the ultimate economy of truck operation is the human one, and by the human factor we mean the man who drives the truck and the man who takes care of its maintenance. These two determine operating costs, truck life and the degree to which the unit remains in continuous service.

It is, of course, essential that every truck should be the best piece of machinery which the money will buy and that it should be selected with careful consideration of the work which it is to perform, so that it will be of the type best adapted to the work. But even with well selected equipment economy of operation is not yet assured, it will depend upon the men who are responsible for the operation.

Without proper maintenance no piece of machinery will remain long in continuous operation nor will it operate economically. This is true even under the most advantageous conditions, such as those which surround the use of stationary engines. The contractor's truck, on the other hand, seldom if ever operates under ideal condition, nor even conditions which might be considered ideal for mobile machinery. Heavy and varying loads, rough weather, from

extreme heat to cold, poor roads and worse traction conditions in and about building operations and in undeveloped subdivisions, emergency demands, these are the things which put the truck to its most severe test. They make even more forceful the necessity of regular, efficient maintenance.

It has been suggested, in an earlier article, that the driver, if qualified, might be depended upon for minor repairs and adjustments. It should be understood, however, that it only applies if the driver is a properly qualified mechanic and applies only to minor repairs and adjustments. If there is the least doubt as to the qualification of a driver for this work he should be treated like every other driver who is not a regular automobile mechanic. That means that he should be absolutely instructed that his job is to drive the truck only and he is to keep his hands off of any attempt at repairs. Unskilled hands can do more damage in a few minutes than skilled hands can repair in many hours.

This "hands off" instruction should apply to all ordinary drivers and it should be accompanied by strict driving rules.



Two Methods of Handling Large Tile Which Have Proved Practical and Economical. For such loads as this, however, there is probably greater economy in the tractor-trailer unit in front than in the single truck loads behind, especially as there is probably no rush element involved in this delivery.



E. H. SCHWARTZ, 7108 Southwest Ave., St. Louis, Mo.  
Standardizes on

# INTERNATIONAL TRUCKS

International Harvester has built motor trucks for 20 years. Mr. Schwartz is a veteran of 20 years' experience in the building supply business. Today they work together—that is, a fleet of International Trucks does the hauling for the Schwartz Material Supply Co.

Mr. Schwartz has tried out various kinds of trucks in the past and has now standardized on Internationals, adding new ones as business increases. Nine trucks are now at work, three 5-ton, three 3-ton, two 2-ton, and one 1-ton capacities.

Mr. Schwartz has built a fine reputation for efficiency and service, having quadrupled his business in ten years. His opinion of International Trucks will have weight with building supply dealers and contractors in general.

International Truck owners are served by 111 branch houses, the largest Company-owned motor truck service organization in the world. Study International construction—such details as life-guaranteed ball-bearing crankshaft, steer-easy steering gear, removable cylinders, auxiliary rear springs, etc. The International line includes the 2000-lb. Speed Truck and Heavy-Duty Trucks of 3000 to 10,000-lb. maximum capacities. Motor Coaches for all requirements. Write for catalog, and address of nearest salesroom.

## INTERNATIONAL HARVESTER COMPANY

606 So. Michigan Ave. of America  
(Incorporated) Chicago, Ill.



E. H. SCHWARTZ, ESQ., of St. Louis

In the view below are two of the Internationals. Showing also the up-to-date heavy-duty crane which loads 50 tons of sand or gravel an hour and works at that speed for months on end. That sort of efficiency fits in with International standards and has led to standardization on International Trucks.



---

# Lower ~ and Better

Graham Brothers second price reduction in four months, announced September 9th, is simply a reflection of the public's confidence in Graham Brothers Trucks.

The new 1-ton Truck chassis price, f. o. b. Detroit, is—

**\$995**

Without greatly increased production this latest exceptional cut would have been impossible—except for a sacrifice of the quality that has brought Graham Brothers so quickly to first position among the world's exclusive manufacturers of motor trucks.

The fact is that Graham Brothers Trucks are better than they ever were—and any owner will tell you they have always been remarkably good.

**GRAHAM BROTHERS**

Detroit — Evansville — Stockton

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GRAHAM BROTHERS (CANADA) LIMITED - TORONTO, ONTARIO

# GRAHAM BROTHERS TRUCKS

*SOLD BY DODGE BROTHERS  
DEALERS EVERYWHERE*



# Look Ahead!

The truck you now have, or the truck you now buy is the one on which you must depend for cold weather hauling and delivery.

Just ahead lies winter. Soon will come rain, snow, ice and bitter cold—factors which will affect your delivery service.

The man who uses a Ford truck to meet these conditions has a decided advantage in securing rapid and sure transportation. The starter gives a quick turn-over to the engine despite the cold; the absence of excess weight reduces skidding to a minimum; parking is simple and operation is dependable.

Look ahead now and be prepared. See your nearest Authorized Ford Dealer and plan now to put your transportation system on a Ford basis thereby continuing first class delivery service throughout the winter.

*Recent improvements in Ford Car designs add greater convenience to driving and service. The action of the brakes is smoother and more positive; brake and clutch pedals are newly designed and more conveniently spaced.*

Ford One Ton Truck Chassis.....\$365 f. o. b. Detroit  
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 Starting equipment \$65 extra

*Ford Motor Company*  
 Detroit

# Ford

CARS · TRUCKS · TRACTORS

# INSTRUCTIONS IN ROOF FRAMING

*This Department Appears Every Month in American Builder*

## Study of the Square, Hexagon and Octagon Roof by Comparison

By JOHN T. NEUFELD

A COMPARISON of the square, the hexagon and the octagon roof will illustrate or clear up many of the seemingly perplexing problems connected with roofs other than square cornered. There are many things that these roofs have in common and many things that are different.

### Kinds of Rafters

The framing parts of these roofs are practically the same, being composed of common rafters, hip rafters and jack rafters. The common rafter is the same in all respects in each of these roofs that is for a roof of given span and pitch the run, length and angle of cut of the common rafter will be the same. Figs. 32, 33 and 34 illustrate by single lines the outline of each of the three roofs in plan.

### Angles in the Three Roofs

The hips of any roof divide it into different parts similar to dividing a circle or a piece of pie.

On a square roof the hip rafters divide the roof into four parts, each part being one-fourth of a circle, or  $\frac{1}{4}$  of  $360 = 90$  degrees. The hip rafter and the common rafter again make an angle of 45 degrees.

On the hexagon roof the six-hip rafters divide the roof

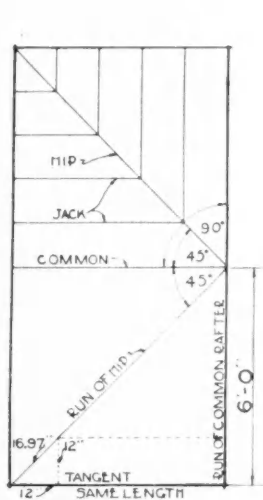
into six parts and therefore the angle between two hips on a hexagon is  $\frac{1}{6}$  of  $360 = 60$  degrees. The hip rafter and the common rafter again make an angle one-half as great or  $\frac{1}{2}$  of  $60 = 30$  degrees.

On an octagon roof the hip rafters divide the roof into eight parts and two adjacent hips make an angle of  $\frac{1}{8}$  of  $360 = 45$  degrees. The hip and the common rafters form an angle of  $\frac{1}{2}$  of  $45 = 22\frac{1}{2}$  degrees.

### The Tangent

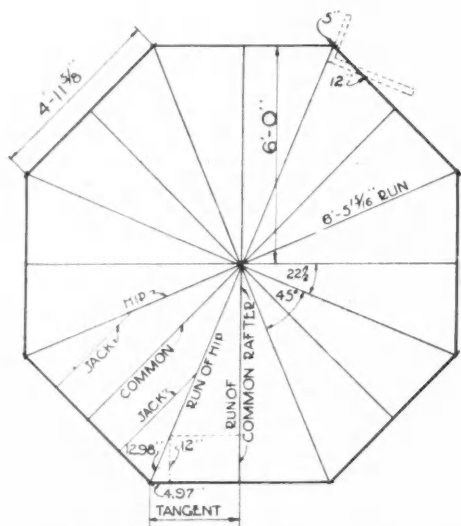
In geometry we learn that a line that is at right angles to another line is tangent to that line, thus the plate of a roof is tangent to the common rafter. Therefore we call the distance from the foot of the first common rafter to the corner of the plate "the tangent," as is shown in the three illustrations, 32, 33 and 34.

On a square-cornered building the tangent is the same as the run of the common rafter, therefore we have so many rules in roof framing in which the run of the rafter gives a number to be used on the square to obtain the side cut of a rafter. For example, we have the rule stating that to obtain the side cut of the jack rafter we must take the run of the common rafter on one arm of the square and the length of the common rafter on the other arm. Fig. 35



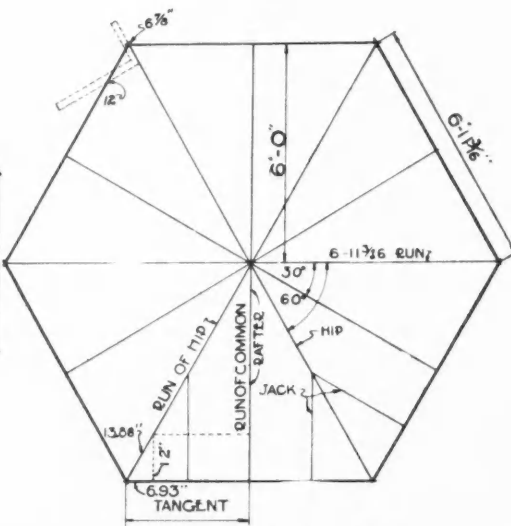
SQUARE CORNERED ROOF

Fig. 32.



OCTAGON OR EIGHT SIDED ROOF

Fig. 33.



HEXAGON OR SIX SIDED ROOF

Fig. 34.

These Three Sketches Afford a Comparison of the Square-Cornered Roof with the Octagon and Hexagon Roofs, the Framing of All of Which Is Practically the Same.



## The "Genasco Way" is the easy way to get re-roofing business

The "Genasco Way" enables property owners to get strong, leak-proof Genasco Latite Shingles right over their old wood shingles and pay for the improvement in ten months.

It enables you—the builder, contractor or roofer—to offer your customers deferred payments *and still get cash on completion of each job.* The finance company assures all risks of collection.

Nation-wide advertising has made the advantages of Genasco Latite Shingles known everywhere. With this high-quality roofing and the new Genasco Time-Payment Plan you can double and triple your re-roofing business this Autumn.

Write at once for full details.

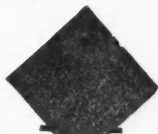


Reg. U. S. Pat. Off.

**The Barber Asphalt Company**

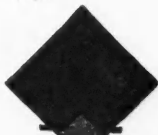
New York, Chicago, Pittsburgh, Philadelphia, St. Louis, Kansas City, San Francisco

Front View



Front and back views of a Genasco Latite Shingle showing the "key"—invisible on the completed roof—that locks each shingle tightly to those underneath. This is the exclusive feature that makes these shingles especially well adapted for laying over old, worn-out wood shingles. Made in three colors—red, green and blue-black.

Back View



# Genasco Latite Shingles

Reg. U. S. Pat. Off.

shows that it is really the tangent and the length of the common rafter that give the side cut for the jack rafter.

As stated, the tangent is the same as the run of the common rafter on a square-cornered roof, but on a six-sided or hexagon roof this is not the case. The hip rafter on a hexagon roof makes an angle of 30 degrees and the tangent for this angle is .57735 parts of the run (taken from trigonometry). Generally the length of the tangent (length of plate) per foot of run is given; thus for a one-foot run, or 12 inches, the tangent length is .57735 of 12 = 6.93 inches. This is shown in Fig. 34.

On the octagon roof the hip makes an angle of  $22\frac{1}{2}$  degrees with the common rafters. The tangent for this angle is given as .41421 parts of the run. For a one-foot run, or 12 inches, the tangent is  $.41421 \times 12 = 4.97$  inches.

### Length of Plate

The tangent value just found gives us a chance to find the length of plate for any size roof given. We note that one length is two times the tangent. The roof in the illustration has a run of 6 feet and we have just found that on a hexagon the tangent is 6.93 inches for every foot of run, therefore the length of tangent is  $6.93 \times 6 = 41.58$  inches and the plate on each side is twice as long or  $41.58 \times 2 = 83.16$  inches = 6 feet  $11\frac{3}{16}$  inches. As the span is twice as long as the run it is easiest to multiply the tangent length per foot run by the span to get the length of the plate for one side. The span in this case is 12 feet and the tangent length per foot run is 6.93. The length of plate is  $6.93 \times 12 = 83.16$  inches = 6 feet  $11\frac{3}{16}$  inches.

The same method can be used to find the plate length of the octagon roof. The tangent length per foot run is 4.97 inches and the span is 12 feet, therefore the length of the plate for each side is  $4.97 \times 12 = 59.64$  inches = 4 feet  $11\frac{3}{8}$  inches.

If we take the number giving the tangent length on the tongue of the square and 12 inches on the blade we obtain the angle for the cut of the plate at the corner. Thus, for the hexagon the number 6.93 or  $6\frac{7}{8}$  inches and 12 inches will give the cut of the plate. On the octagon roof the numbers 4.97 or 5 inches and 12 inches give the cut for the plate.

### Run of Hip Rafter

We have previously found that on a square roof the run of the hip rafter per foot run of common rafter is 16.97 inches. We may also find the run of the hexagon and also of the octagon hip rafter after we have found the tangent length per foot of run.

The run of the common rafter and the tangent form a right angle of which the run of the hip rafter is the hypotenuse. Using the principle of the right triangle we find the run of hip per foot run of common by squaring the lengths of the two sides of the triangle, adding them together and extracting the square root. Thus the run of hip per foot run of common is equal to the square root of (tangent<sup>2</sup> + run of common<sup>2</sup>). For the hexagon this is as follows:

Run of hip per foot run of common  $\sqrt{6.93^2 + 12^2} = 13.86$  inches.

After we have the run of hip per foot run of common we can easily find the total run by multiplying by 6, as the run is 6 feet. Run of hip =  $6 \times 13.86 = 83.16$  inches = 6 feet  $11\frac{3}{16}$  inches. The run for the octagon hip per foot run of common rafter is found in the same way.

Run of hip =  $\sqrt{4.97^2 + 12^2} = 12.99$  inches.

The total run of the octagon hip for the roof shown is  $6 \times 12.99 = 77.94$  inches = 6 feet  $5\frac{15}{16}$  inches.

### Length of Hip Rafter

On a square-cornered building we find the length of the hip rafter by solving for the hypotenuse of the right triangle, made by the run of the hip and the rise. This can also be done on the hexagon or on the octagon roof. As an example, we will assume that the roofs shown each have a rise of 10 feet.

The length of the hip rafter for the hexagon roof will be the square root of (run<sup>2</sup> + rise<sup>2</sup>). The run of the hip for the hexagon we have found to be 83.16 inches or 6.925 feet. The length of hip, therefore, is  $\sqrt{6.925^2 + 10^2} = 12.164$

feet = 12 feet  $11\frac{3}{16}$  inches. The total run of the octagon hip rafter is 77.94 inches or 6.495 feet. The length of the octagon hip is equal to  $\sqrt{6.495^2 + 10^2} = 11.92$  feet = 11 feet  $11\frac{1}{2}$  inches. The length of the octagon hip and jack rafter may also be found by the length per foot run method, taking the length per foot run from tables.

### Cutting the Hip Rafter

The plumb and seat cuts of a hip rafter are always obtained by taking the "run of the hip per foot run of common rafter" on the

blade and the rise per foot run on the tongue.

The roof illustrated has a total rise of 10 feet and a 6-foot run. This makes  $10 \div 6 = 1\frac{2}{3}$  inch rise per foot run.

The cut of the hip rafter for the square-cornered building then would be 17 and 20.

The cut of the hip rafter for the hexagon roof would be  $13\frac{7}{8}$  and 20, and the cut of the octagon hip would be 13 and 20.

### Problems

1. A hexagon roof has a span of 16 feet. What is the length of the plate on a side?
2. What is the total run of the hip rafter for the roof in problem 1?
3. If the total run of the common rafter on an octagon roof is 12 feet, what would be the run of the hip rafter?
4. What is the length of the plate for one side of the octagon roof of problem 3?
5. How long is the hip rafter for problem 3 if the rise is 6 feet?

### Answers

1. We have found that the length of plate is equal to the "tangent length per foot run" times the span in feet, therefore the length of plate for a hexagon roof with a 16-foot span would be  $6.93 \times 16 = 110.88$  inches = 9 feet  $2\frac{7}{8}$  inches.
2. The run of hip per foot run of common rafter is 13.86 inches and the run of common rafter is 8 feet. The total run of hip is  $13.86 \times 8 = 110.88$  inches = 9 feet  $2\frac{7}{8}$  inches. Note that the run of the hip rafter and the length of each piece of the plate are the same.
3. The total run of the hip rafter is  $12.98 \times 12 = 155.76$  inches = 12 feet  $11\frac{3}{4}$  inches.
4. The length of one side of the plate is  $4.97 \times 24 = 119.28$  inches = 9 feet  $11\frac{3}{4}$  inches.
5. The length of the hip rafter will be the square root of (the run<sup>2</sup> + rise<sup>2</sup>). The run of hip is 155.76 inches = 12.98 feet. Therefore the length of hip =  $\sqrt{12.98^2 + 6^2} = \sqrt{204.4804} = 14.299$  feet = 14 feet  $3\frac{3}{16}$  inches.

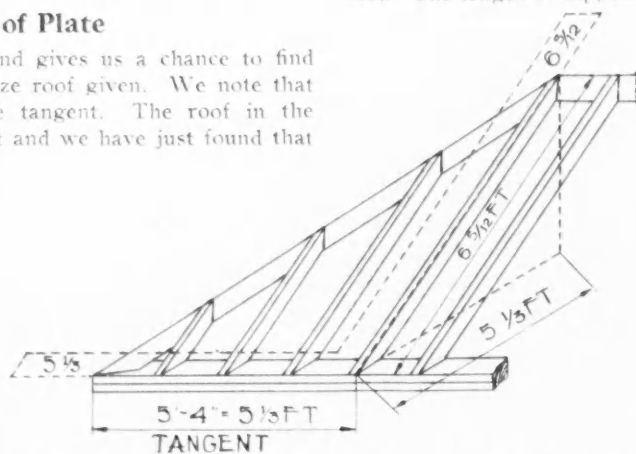


Fig. 35. This Shows How the Length of the Common Rafter and Its Tangent Give the Numbers to Be Used for the Side Cut of the Jack Rafter.

# COLORBLENDE ASBESTOS SHINGLES



*Colorblende Asbestos Shingle Roof on one of many houses erected by Realtor G. A. Nichols, Oklahoma City, Oklahoma.*

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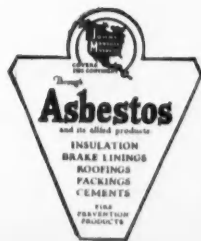
He knows that the beauty these shingles give a house inspires an immediate desire for possession in every home seeker.

And he knows their fire-safety appeals to the home seeker's instinctive desire for the greatest protection for his family and property.

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# JOHNS-MANVILLE Asbestos Shingles

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

(Continued from page 177.)

gummy they should be washed in a 10 per cent solution of muriatic acid and water and rinsed with clean water within twenty minutes after the acid bath is applied.

The base coat should be applied with particular pains. It should be laid in one operation, with a trowel or wooden float. After it is applied it should not be touched again except to knock off the rough edges with the trowel or float. If the coat is moved after it is applied the bond is broken. It is not practical to apply a finish coat of this material direct on concrete.

For the base coat on concrete 600 pounds of Keene's cement are mixed with 480 pounds of aged lime putty and one cubic yard of sand. The lime putty may be made from 250 pounds of hydrated lime or 160 pounds of lump lime.

The Keene's cement first is mixed in a dry box with an equal amount of sand and plenty of clean water is added. The initial set is broken up. Sand and water are added to the lime putty and the two piles are pulled together, adding sand and water until the proper consistency and proportions are reached. If more of the cement is needed it should be mixed dry with the sand and then mixed with the mortar. The mortar should be stiff enough not to drop behind the lath.

In applying the finish coat it is recommended that if lime is added it be in a proportion not greater than two parts of lime to three parts of Keene's cement. The finish is roughed on and allowed to set until a trowel rings when passed over it. It is then troweled smooth, using as little water as possible. The finish should be applied thin, so it will spread evenly without curling and should be applied immediately after the second coat has set and before suction has set in. If the brown coat is bone dry it should be sprinkled with water before the finish is applied.

Special precautions should be observed in plastering

for wainscoting. This portion of the wall should be as strong as possible to withstand the rough usage to which it may be subjected. It is usually the best practice for the base and cap moulds to be run first, and usually a finer and harder grade of Keene's cement is used here. The space between is filled in later.

To lay off wainscots in imitation of tiling the finish should be sufficiently hard to allow the marking tool to cut sharply defined lines without tearing the wall. As a general rule this may be done twelve to fourteen hours after the finish is applied. Often the handle end of the file may be used for marking if no other tool is available. Another method of obtaining a tile finish is to allow the plaster to become thoroughly dry, then mark it off in blocks of the required size with a blue pencil, making the lines about one-eighth of an inch thick. The work then is finished with two or three coats of a good transparent varnish, which makes the pencil marks appear like tiling mortar.

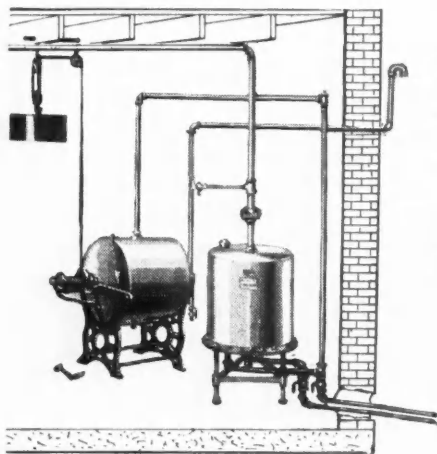
Keene's cement is not a waterproof plaster, although it will stand a great deal of dampness. Where it is desirable to wash the wainscoting and walls frequently, they should be enameled or covered with a waterproof material.

Where it is desired to use a plaster which will be subjected to water and dampness constantly, as in shower baths and like places, Portland cement plaster is recommended. Portland cement uses a large amount of water in its hardening process and for complete hydration a sufficient supply of water must be maintained for many days. For this reason the material is peculiarly well adapted for use under continuously and excessively damp conditions.

Portland cement for the scratch coat should be one part by volume to three parts of sand. The same proportions are used for the following coat. In general the same rules are followed as are used to guide the plasterer in applying portland cement stucco.



Safe—Clean  
Economical



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This complete individual gas plant is compact, economical, odorless and dependable. It is built on tested engineering principles which guarantee absolute safety and satisfaction, and produces over 800 heat units per cubic feet, of the finest quality gas obtainable.

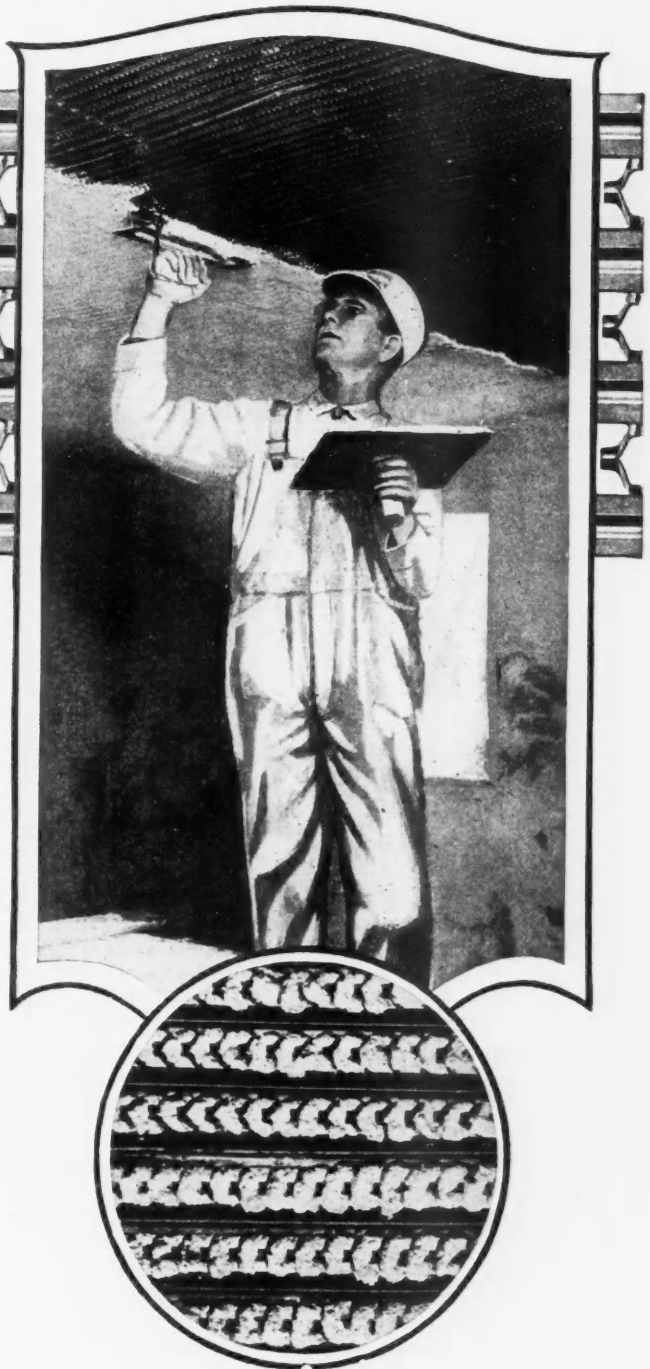
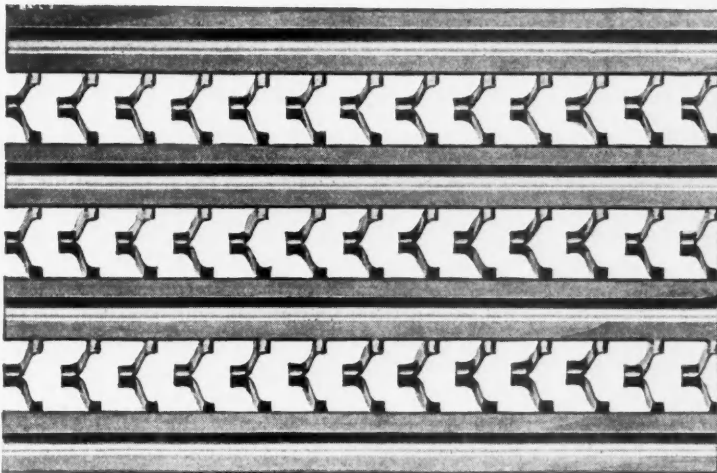
The installation cost is low; the operating expense is no greater than the cheapest City gas; there is no maintenance cost. Operation is automatic, requiring little or no attention; the regulator is permanently set, assuring the constant production of gas of uniform quality.

In a class by itself for efficiency, you can recommend the Detroit Combination Gas Machine to your customers with the knowledge that for over 50 years it has been made on merit and sold on performance. Suburban Gas means more comfort, more efficiency, greater fuel economy, less manual labor.

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### Wood Samples to Be Replaced

**I**N a recent fire which destroyed its engineering buildings, the University of Saskatchewan lost a very fine collection of samples of various kinds of wood, and has requested the Security Lumber Company of Saskatoon, Saskatchewan, Canada, to assist them in replacing the collection. The Security company is at a loss to know just where the samples can be secured and will appreciate any assistance which can be given them.

The collection consisted of pieces of each kind of wood  $\frac{3}{8}$  inch thick,  $1\frac{1}{2}$  or 2 inches wide and 6 or 8 inches long.

### Upson Increases Capital

**A**NNOUNCEMENT has just been made from Albany of an increase in the authorized capitalization of the Upson Company of Lockport, N. Y., from \$2,000,000 to \$5,750,000.

The history of the Upson Company is a most interesting example of continuous and persistent effort. Starting ten years ago with a small rented plant—representing a capital of \$25,000—in the face of most severe competition, the

Upson Company has forged steadily ahead until today it is said to be one of the largest, if not the largest, producer of fiber wallboard in the country. But instead of a little ramshackle plant, it possesses what engineers declare to be one of the finest and largest plants of its kind in the world.

### Special Library Directory

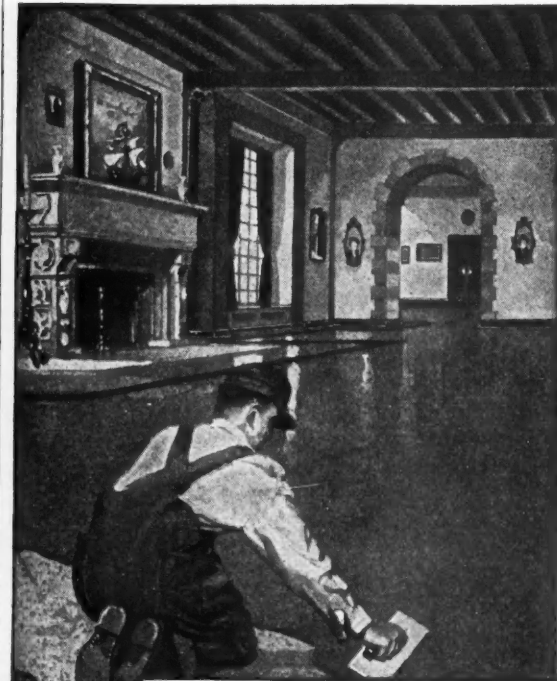
**M**ARKED progress in the development of library service to engineering is indicated by the second nation-wide survey of special and technical libraries recently completed by the National Special Libraries' Association.

The results of the survey have been published in the form of a national directory of special libraries, compiled by May Wilson, Librarian of the New York Merchants' Association and edited by Rebecca B. Rankin, librarian of the New York Municipal Reference Library. An interesting introduction is contributed by John Cotton Dana, librarian of the Newark Free Public Library.

The directory describes American special libraries and lists them according to general subject covered. It reveals a wealth of specialized information sources on every subject. Ready reference is facilitated by means of title, subject and geographic indexes. Copies of the directory may be purchased from Gertrude D. Peterkin, treasurer of the association, Room 2513, 195 Broadway, New York City.

### Heads Water Softener Department

**A**PPPOINTMENT of Eskel Nordell, formerly technical director and head of the chemical laboratory of the Wayne Tank & Pump Company, to have charge of the water softener department of the company, has just been announced. Mr. Nordell, who is considered one of the foremost water-treating authorities in the country and who has been associated with the Wayne company since 1922, succeeds W. J. Hughes. Mr. Nordell is well known for his writings and lectures on water-softening subjects.



## Make More Money Laying a MagneStone Floor

There is a greater profit for you in laying MagneStone Flooring than there is in laying cement or any other type of floor. And you not only make a greater money profit, but your client gets a better floor.

In fact, MagneStone has been used on thousands of jobs all over the country and in every instance, whether it was laid over an old floor or put down as a new floor, the job has proved more than satisfactory.

### MagneStone Is Easy to Lay

over any foundation. You can lay it without any trouble in kitchens, bathrooms and sun parlors, or in schools, stores, factories, hospitals, anywhere—the larger the job, the greater your profits.

MagneStone is sanitary, comfortable to stand on, noiseless, easy to clean, non-slippery and warm. It is laid one-half inch thick over new or old wood or concrete foundation. Trowel finished like cement, you have choice of eleven attractive colors.

*Write now for our MagneStone Flooring Proposition and Samples—no obligation.*

### AMERICAN MAGNESTONE CORPORATION Division of Floors

Also manufacturers of MagneStone Quality Stucco,  
Mortar Colors and Plaster

**GENERAL OFFICES: SPRINGFIELD, ILLINOIS**  
Plants and Sales Offices:

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COMPOSITION FLOORING

# *Fenestra Casement Windows*



## *Sell The Housewife and You Sell the House*

Men buy houses, but women buy homes—homey homes, modern homes fully equipped with all the new, up-to-date features and conveniences. Sell the housewife and you sell the house.

Right now, women are interested in Fenestra Casement windows. They like the cozy home-like appearance; the increased light; the better control of ventilation. They like the easy washing feature that does away with sitting on the sill; they like the

easy operation with no sticking, warping or binding.

At the same price you pay for wood windows you can build in these new, modern features that women like. It's a big step toward quicker sales and better satisfied buyers.

We'll be glad to send you complete details on Fenestra Casement, Basement and Garage windows. You can get them through your dealer and have them delivered with the rest of your building material.

DETROIT STEEL PRODUCTS COMPANY, A-2260 E. Grand Blvd., Detroit, Mich.

Factories in Detroit, Mich., Oakland, Calif., and Toronto, Ont., Canada.

For Canada: Canadian Metal Window & Steel Products, Ltd.  
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# *Fenestra*

*for* homes, large and small  
shops and small factories  
garages and service stations  
stores and other buildings

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

### Changes in Organization

A NUMBER of important changes in the personnel of the Hockenbury System, Incorporated, hotel financialists of Harrisburg, Pa., have been announced, following a meeting of the board of directors of that corporation.

Owing to the increasing demand on the time of E. J. Hockenbury, president and general manager of the concern, from subsidiary and associated companies, E. A. Stoll, vice-president, has been named vice-president and general manager, with A. L. Aderton as secretary and assistant general manager.

The rapid growth of the country has made necessary a more extensive departmentalizing of the business, and as a result, A. L. Aderton has been placed at the head of the Hotel Financing Department, Marshall H. Dean has been made manager of the Industrial Department, and George A. Selig manager of the Garage Department.

Another important change is the districting of the United States into six divisions.

The growth of the Hockenbury organization has also made necessary the increasing of their present office space on the top floor of the Penn-Harris Trust Building, and construction is now under way.

For the last six years the Hockenbury organization has been specializing in the financing of modern hotels, and, to date, about 100 hotels have been financed, the locations including nearly every State in the Union and a number in Canada.

### Reports Personnel Changes

THE Bridgeport Brass Company, Bridgeport, Conn., announces that Mr. A. D. Merwin, formerly connected with the Steele & Johnson Manufacturing Company, of Waterbury, Conn., has joined its organization as sales manager of the Fabricating Division. Mr. W. F. Blythe,

for 19 years associated with the American Brass Company of Waterbury, Conn., has been made sales manager of the Mill Products Division of the company.

### New R. & B. Office in Boston

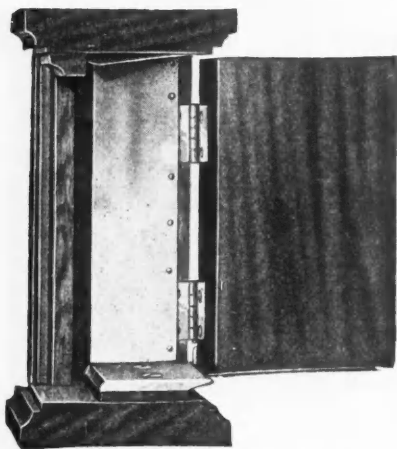
THE Boston office of the Richardson & Boynton Company has recently been moved from 60 High Street to much larger and better equipped quarters on the ground floor of the Chamber of Commerce Building at 94 Federal Street.

The new place has exceptional space for showroom purposes and a complete line of all the company's products is carried. There are several men on the floor all day to explain details and show clients what is best suited to their needs.

### Architectural Competition

A COMPETITION in the architectural design of moderate cost fire-safe, concrete masonry houses and bungalows, which is open to all architects, draftsmen and students, is being conducted for the Lehigh Portland Cement Company by the Architectural Forum. The competition is in two classes of dwelling, Class A, a six-room, two-story house, and Class B, a five-room bungalow. Four prizes of \$500, \$300, \$200 and \$100, will be awarded in each class and ten competitors receiving honorable mention in each class will each receive a prize of \$5.

An additional grand prize of \$1,000 will be awarded to the competitor whose entries in both classes may together rank the highest. Competitors may submit any number of designs and these must be in not later than noon of November 10, 1925. The competition will be judged by five accredited members of the architectural profession who will act as jury.



Illustrating Brass Threshold and Spring Bronze Equipment for Doors.

## ALLMETAL WEATHERSTRIP

### *More Profit—Quick Sales*

for the agent—greater satisfaction and economy in fuel costs for the building owner (with its resulting good will) are a few good reasons why you should consider and install

### *Allmetal Weatherstrip*

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### AGENTS WANTED NOW

There is plenty of work right in your own neighborhood. Our prompt service makes it unnecessary to carry a stock of material on hand as all orders are filled and shipped within twenty-four hours.

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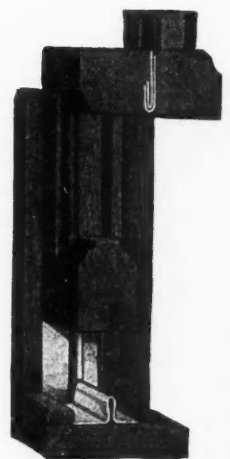
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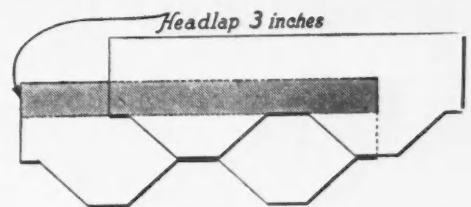
**W**HEN you are considering a roofing or re-roofing job use Ruberoid Hex-strips. Their attractiveness and moderate cost make them ideal for the purpose.

Hex-strips are easily laid over old wood shingles. They have 50% more head-lap than the usual strip-shingle, and provide three thicknesses where the wear is most severe. Only three nails are required to the strip.

There is not a shingle on the market, selling at anywhere near their price, which can equal Ruberoid Hex-strips. Only absolute perfection of design, eliminating all manufacturing waste, makes it possible to sell a shingle of their quality at the price Ruberoid distributors are asking.

Ruberoid Hex-strips are surfaced with granules of sage-green, tiled, and steel-blue natural crushed slate. They are packed two bundles to the square, weighing 165 to 175 pounds—43 strips to the bundle.

Use the coupon below. It will bring you full information regarding Ruberoid Hex-strips.



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# RUBEROID

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**The RUBEROID Co., Dept. 1  
95 Madison Ave., New York**

Gentlemen: Please send me samples and full information regarding Ruberoid Hex-strips.

Name.....

Address.....

### Books, Bulletins and Catalogs for You

**T**HE literature and publications listed here are available to readers of the American Builder. They may be obtained from the firms mentioned and will be forwarded without cost except where a price is noted.

The **Roddis Lumber & Veneer Company**, Marshfield, Wis., is publishing a new periodical, "Roddis Doorman," the first issue of which appeared in May, 1925. This company also offers special booklets on its doors for hotels, hospitals, flush doors and a more complete book on flush and French doors which is handsomely illustrated in colors.

**United Conveyor Corporation**, 1535 Old Colony Building, Chicago, Ill., has published a bulletin, "Material Design and Construction of United Steam Jet Conveyors," fully illustrated with photographs and drawings.

"**Tentative Standards**," is the title of a pamphlet published by the Clay Products Association, 111 W. Washington Street, Chicago, Ill., in the interest of cost reduction through standardization.

The **U. S. Forest Products Laboratory**, Madison, Wis., has issued its new "Program of Work" for 1925-1926 containing a description of its active research projects, a summary of results obtained, and a plan of work for the present year.

"**Architecture and Anthracite**," is a booklet which has been issued by the Structural Service Bureau, 112 S. Sixteenth Street, Philadelphia, in collaboration with Anthracite Coal Service, to make available all information possible on the combustion of hard coal and related subjects.

The **U. S. Department of Commerce** has published a small bulletin on the subject, "Grade Marks on Lumber Are the Customer's Guarantee." It is prepared by Axel H. Oxholm, Chief of the Lumber Division.

"**Problems in Architectural Drawing**," by Clinton V. Bush and Edgar D. Townsley, published by the Bruce Publish-

ing Company, 354 Milwaukee Street, Milwaukee, Wis., is a valuable book for the student of architectural drawing. It comprises a series of related problems. Price, \$1.08.

The **Hawthorne Roofing Tile Company**, Cicero, Ill., has issued a new catalog, for the special use of architects, builders and contractors, which is handsomely illustrated in colors. Full detailed drawings show the correct application of its French and Spanish roofing tile, which is interlocking and needs no nailing after the wooden hanger strips are in place.

The **W. E. Dunn Manufacturing Company**, Holland, Mich., has prepared a most attractive booklet, under the title "Duntile Builds Better Buildings Cheaper." It fully describes and illustrates the application of Duntile to all types of building construction.

"**From Forest to Floor**," the Indiana Flooring Company, 234 Rider Avenue, New York City, is a booklet, prepared in filing form, containing beautiful colored illustrations of many styles of floor together with descriptive text.

The **Lehigh Portland Cement Company**, Allentown, Pa., has issued a folder of concrete masonry dwelling construction containing architectural details and specification data for the design and construction of portland cement stucco on concrete block or tile walls.

"**The Finishing Touch**" is a booklet prepared by the Abram Cement Tool Company, 3818 Grand River Avenue, Detroit, Mich., covering company matters of general interest and cataloging its line of cement tools.

The **American Abrasive Metals Company**, 50 Church Street, New York City, presents a series of detail sheets covering its line of anti-slip stair treads, elevator saddles, plates and similar products.

The **Campbell Machine Company**, Wollaston, Mass., has issued a new 1925-1926 catalog of its line of floor grinding and polishing machines.



## Advantages of High Speed and Low Cost Spray-painting

One DeVilbiss spray operator does the work of 4 to 5 brush painters. This high speed of spray-painting effects a substantial reduction in labor costs per job—it makes possible doing more jobs in present working time.

Additional advantages painting the DeVilbiss way are: a thorough coating of the entire surface to be painted; no brush marks or other defects; no dripping and spattering of paint; painting more easily done.

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**I**F your client thinks IMPERIAL Roofing Tiles a luxury, remind him of their eventual economy. They reduce fire insurance premiums, make homes less expensive to heat, and assure life-long freedom from repairs. Because they thus repay their cost, he actually pays nothing for the greater beauty and distinction of tiles.

The Ludowici-Celadon Company is the world's largest manufacturer of roofing tiles. The product of our three great plants represents generations of tile-making experience. Thus our imprint on every piece of tile we produce is a guarantee of lasting satisfaction.

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### Books, Bulletins and Catalogs for You

THE literature and publications listed here are available to the readers of American Builder. They may be obtained from the firms mentioned and will be forwarded without cost except where a price is noted.

The Detroit Steel Products Company, 2250 E. Grand Boulevard, Detroit, Mich., offers a new edition of its catalog, Casement Windows—Steel—Fenestra Casement Windows, illustrated with photographs and detail drawings.

Richards-Wilcox Manufacturing Company, Aurora, Ill., Catalog No. 42, is now available and covers the company's line of special purpose hinges. It is prepared for A. I. A. filing.

"Bathroom Beautifiers," is the title of a booklet put out by the American Enameled Products Company, Twenty-first Street and Indiana Avenue, Chicago, Ill., cataloging its line of "Sno-White" bathroom fixtures.

Toch Brothers, 110 E. Forty-second Street, New York City, have issued a complete specifications book for damp-proofing, water-proofing, enameling and technical painting. They also offer a pamphlet, "Shall Anything Be Added to Portland Cement?" covering the use of their coloring pigments.

Associated Tile Manufacturers, Beaver Falls, Pa., has published a portfolio of plates furnishing illustrations and dimensioned details of an exhibit of tile work prepared for the Architectural and Allied Arts Exposition, held in New York City last spring.

Carter Bloxonend Flooring Company, 332 S. Michigan Avenue, Chicago, Ill., has prepared a folder for use with the A. I. A. filing system containing detailed information for specification writing and drafting and including methods for gymnasiums, armories, auditoriums and similar installations.

The Monarch Engineering Company, Dayton, Ohio, has

issued a new bulletin, No. 160, describing its water softeners with new single valve control, sold at a reduced price.

"The Syntron," is the name of a new house organ which is being published monthly by the National Electric Manufacturing Company, of Pittsburgh, Pa.

The Pyramid Company, 231 S. Wells Street, Chicago, has issued a folder describing Pyramid mortar colors, a new line recently added to its products.

The Detroit Show Case Company, Detroit, Mich., has published a booklet on copper store front construction which is fully illustrated with halftones and diagrams.

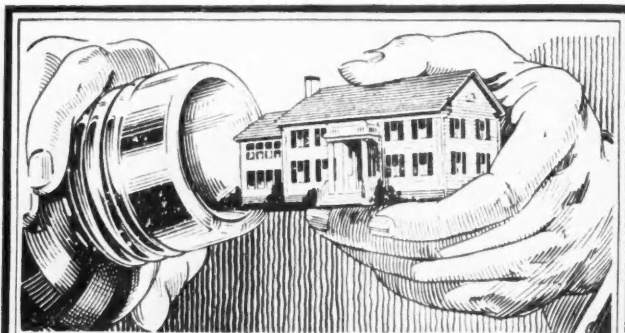
The Bishopric Manufacturing Company, 216 Estes Avenue, Cincinnati, Ohio, has issued a folder on Bishopric sun-fast finish, which is a second supplement to its "Bishopric for All Times and Climes."

The Maple Flooring Manufacturers' Association, Stock Exchange Building, Chicago, Ill., offers three booklets under the titles, "Three Native Hardwoods of Sterling Work," "The Floors of Your Home," "Color Harmony in Floors" and "How to Lay and Finish Maple, Beech and Birch Floors."

"Labor Relations in Industry," by Dwight Lowell Hoopengartner, published by A. W. Shaw Company, Chicago, Ill., is a complete and authoritative work on this subject from the standpoint of industry as a whole rather than of individual plant organization. Price, \$6.00.

"Concrete, Plain and Reinforced," by Frederick W. Taylor, Sanford E. Thompson and Edward Smulski, published by John Wiley & Sons, Inc., New York City, is the title of Volume I of a three-volume series on concrete. A fourth edition of this volume has just come off the press. Price, \$8.00.

The Casement Hardware Company, 230 E. Ohio Street, Chicago, Ill., has issued a booklet, "Things You Ought to Know About Casement Windows," which furnishes useful information on its line of casement window hardware.



## Put your whole House in a Thermos Bottle

Thermos bottles keep things hot because the heat cannot escape, or cold because the heat can't get in. They insulate the heat.

### CABOT'S Heat ~ "QUILT" Insulating

insulates your whole house. Prevents heat-waste and saves coal. It is not a mere felt or paper, but a thick, flexible cushion of air-spaces. One layer of Quilt is as warm as 28 to 40 layers of cheap building paper. It will save about one-third of your coal bill every year—and make your house cooler in summer.

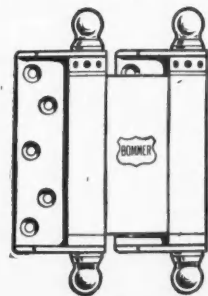
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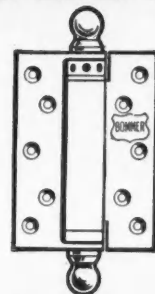
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Sterling, Illinois



**Made in two types**

Glide No. 1—Flexible; Glide No. 2—Adjustable  
Packed in strong fibre carton, complete with belts, lag screws, end stops for tracks, socket wrench, name plates, and direction sheet.



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**GARAGE HARDWARE**



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