

AMERICAN BUILDER

THE WORLD'S GREATEST BUILDING PAPER

Vol. 44.

CONTENTS FOR FEBRUARY, 1928

No. 5.

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

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AROUND *the* FAMILY TABLE



“Architectural Forum” Predicts Big Year

IN January of 1927 The Architectural Forum issued a forecast that building activity for the year would be ten to twelve per cent less than in 1926. Events have proven this forecast to have been more than safely conservative because the actual building construction, not including public works and utilities, was evidently only about six per cent less than in 1926.

In attempting to establish this forecast of building activity for the year 1928 we face an unusual and paradoxical condition. On one hand we hear many casually or even thoughtfully expressed opinions indicating that there will be less building activity in 1928 than in several past years. On the other hand, The Forum's survey is based on work on architects' boards or seriously contemplated for the year 1928, as testified to by 1,793 individual confidential reports from architects.

These figures indicate that building will continue in 1928 at least in the same volume if not reaching even greater totals than 1927.

The national percentages indicated for 1928 by the “Forum” survey show greater activity in the construction of automotive buildings, residential buildings of all kinds, public buildings and welfare buildings. There is evidently to be a decrease in the amount of bank buildings, club, and fraternal buildings, community buildings, churches and office buildings. Hotels and apartment hotels are evidently to develop approximately the same volume. School buildings will be approximately the same, while the demand for theaters shows a slight-falling off.

Examining comparative conditions of demand for new buildings in the different geographical sections of the country we find the more striking changes to include a developed demand for automotive buildings in the northeastern states with a considerable increase in the North Atlantic and southwestern states. We find the requirements for bank buildings falling off everywhere except in the southwestern states.

The figures for apartment buildings indicate a sharp drop in requirements in the northeastern states to almost half the total of last year.

On the other hand, in the North Atlantic and in the western states there is a slight increase in requirements. Apartment hotels show a sharp falling off in the North Atlantic states but double the 1927 re-

quirements in the Middle Atlantic states. While the demand for apartment buildings has fallen off sharply in the northeastern states, the requirements for individual dwellings of all types have increased materially, particularly for dwellings under \$20,000.

In the hotel field the northeastern and North Atlantic states indicate an increased demand in spite of the great activity which has taken place in this section of the country. There is an increased demand in the northwestern states for new hotels but a sharp falling off in western states. The total indicates exactly the same percentages for 1928 as shown in 1927, which is somewhat unexpected as the hotel industry has not been looking forward to as much building activity in 1928 as in 1927.

Of course, it may be that economic conditions in the hotel field will prevent the carrying out of a number of projected operations, but, on the other hand, there will unquestionably be the greatest volume of remodeling ever known to this particular industry.

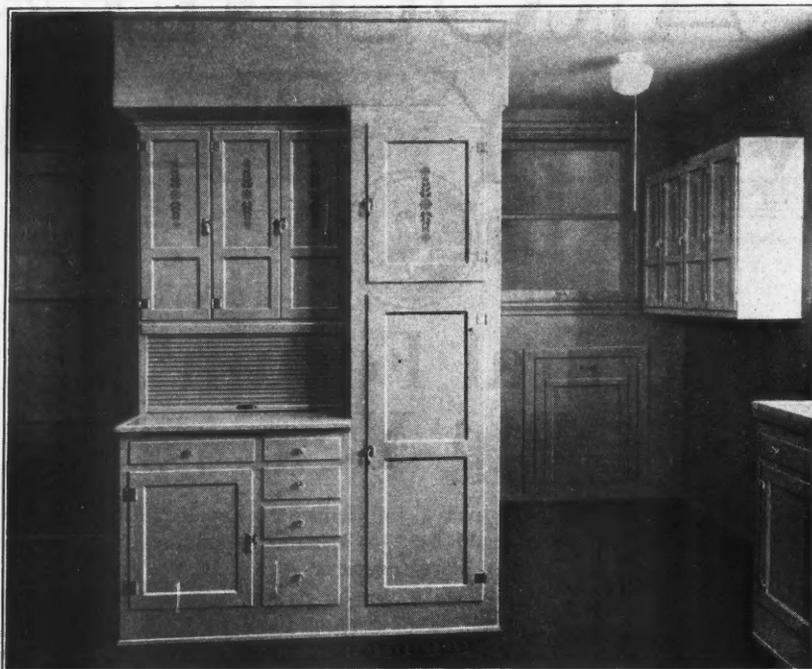
Other interesting comparisons are found in studying the figures for the various types of buildings. For instance, the southeastern states indicate a greatly increased demand for school buildings, while in the northeastern and middle states there has evidently been a falling off of requirements for educational structures.

It is predicted that building activity during the year 1928 will carry along in a much stronger manner than has been generally anticipated and that any decrease in volume which might be the result of lessened activities on the part of speculative builders will in turn be offset by a number of large investment and institutional projects which have been held in abeyance during 1926 and 1927.

SUPPLY OF BUILDINGS, BY TYPES, IN CITIES AND SECTIONS

Section and Size of City	Single Family Dwellings			Apartments			Business		
	Normal	Short-age	Over-built	Normal	Short-age	Over-built	Normal	Short-age	Over-built
Total United States and Canada.	48%	28%	24%	43%	32%	25%	57%	13%	30%
New England.....	38%	29%	33%	28%	39%	33%	50%	11%	39%
Middle Atlantic.....	60%	12%	28%	49%	16%	35%	58%	5%	37%
E. N. Central.....	60%	15%	25%	51%	29%	21%	64%	7%	29%
W. N. Central.....	50%	25%	25%	38%	33%	29%	52%	20%	28%
South Atlantic.....	20%	48%	32%	32%	36%	32%	52%	9%	39%
E. S. Central.....	29%	29%	42%	25%	50%	25%	71%	.....	29%
W. S. Central.....	55%	35%	10%	53%	33%	14%	65%	15%	20%
Mountain.....	36%	43%	21%	58%	17%	25%	50%	17%	33%
Pacific.....	42%	42%	16%	42%	38%	20%	55%	22%	33%
Canada.....	50%	50%	.....	50%	17%	33%	40%	60%	.....
Over 500,000.....	38%	25%	37%	11%	.....	89%	29%	14%	57%
200,000-500,000.....	45%	.....	55%	37%	5%	58%	39%	6%	55%
100,000-200,000.....	58%	11%	31%	43%	19%	38%	43%	30%	27%
25,000-100,000.....	61%	10%	29%	53%	23%	34%	65%	9%	26%
Under 25,000.....	45%	42%	13%	47%	45%	8%	67%	19%	14%
District.....	55%	39%	6%	48%	45%	7%	60%	23%	17%

"SELLERS" means *the Best* to millions of women



A Beautiful Sellers Sectional Installation in a \$50,000 California Home

THE practical aspects of Sellers Sectional Equipment, combined with its beauty, quality and fine workmanship, are evident in this photograph of a new Beverly Hills kitchen. Exquisite colorings and the many specialized time—and the labor-saving features found only in Sellers Kitchen Cabinets cannot, of course, be seen.

The Sellers "Sectional" Line for building-in contains 40 different units—from which the simplest or most elaborate kitchen can be perfectly and *stylishly* equipped—without extra millwork. Installation is simple, quickly done and very substantial. Merely set a few bolts in holes provided and draw up tight. Only a simple quarter round is needed to finish. And the cost is no higher than for any average "built-in" equipment and often less.

Send for our special book described to the left.

G. I. SELLERS & SONS CO., Dept. 802, Elwood, Ind.



**The
whole story
in detail
to fit your file**

This file-size, red book contains complete assortment of Sellers Sectional Units with illustrations, combinations, specifications, etc. A copy will be sent free upon request. It is sized to fit your file for ready reference.

SELLERS

Sectional

Kitchen Equipment



Formerly AMERICAN CARPENTER AND BUILDER

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

Insulation Code Adopted

AS a result of the tremendous interest which has developed in house insulation during the last few years and in the heating economy and comfort which it makes available not only to the luxurious dwelling but also to the most unpretentious home, many insulating materials of varying types have been offered to the public. The result has been, in many cases, a confusion of understanding which has made it difficult for the prospective home builder to select to his best advantage. Now a definite step has been taken toward bringing order out of the confusion.

To aid home builders to buy intelligently the type and style of insulating materials which they desire and require. 19 companies making nearly 85 per cent of the insulating materials produced in this country have agreed to base their advertising and selling upon a uniform code. They have agreed that to be fair to the consumer and to competition, each company should advertise and sell its products in conformity to general standards of trade practice.

The National Better Business Bureau, after a careful two-year survey of insulation advertising, formulated these standards and presented them to the industry at large for discussion. They were carefully considered by the leading executives of the industry and when adopted represented the advertising and selling code of the industry.

The manufacturers who have approved the code have pledged themselves to a program of fair play. The protection afforded the consumer centers upon accuracy in advertising and the avoidance of conflicting and confusing claims. The National Better Business Bureau will help the industry to maintain the high standards of practice as set forth in the code through periodical surveys of insulation advertising which, in the final analysis, will benefit both the industry and the public.



Construction Volume is High

THE 1927 construction volume was the second highest in the history of the country, according to the F. W. Dodge Corporation. Contracts let on new building and engineering work in 37 states during the past year reached a total of \$6,303,055,100, which was a drop of only one per cent from the record total of 1926 and an increase of five per cent over the total for the year 1925. For the entire country the total 1927 construction volume was estimated at a little over \$6,800,000,000, being a loss of three per cent from 1926.

There was \$477,363,800 worth of new construction started in December in these 37 states, which was a gain of three per cent over the total for the preceding month and a drop of 11 per cent from the total for December, 1926. Included in the December record were: \$207,280,600, or 43 per cent of all construction, for residential buildings; \$92,657,000, or 19 per cent, for public works and utilities; \$86,933,100, or 18 per cent, for commercial buildings; \$29,988,800, or six per cent, for industrial projects; and \$23,247,600, or five per cent, for educational projects.

Contemplated construction projects were reported in this territory to the amount of \$988,915,100 in December. This figure shows gains of 20 per cent over the amount reported in November, 1927, and nine per cent over the amount reported in December, 1926.



Pass 130 Forestry Laws

ONE hundred thirty new forestry laws, or amendments to prior acts, relating to forest taxation, fire prevention and reforestation, were passed by the state legislatures during the year 1927, it is shown by a survey recently compiled by the National Lumber Manufacturers Association. California was the most active state in such legislation, followed closely by Wisconsin and Minnesota.

New laws or amendments of old statutes, relating to the problem of forest taxation, were passed by nine states, Maine, Michigan, North Carolina, Minnesota, New Hampshire, New York, Ohio, Wisconsin, and Indiana. Six states enacted laws providing for the establishment of state boards of forestry and state foresters. They are Florida, Rhode Island, South Carolina, West Virginia, Delaware and Kansas.



Ask Tax Law Amendments

SEVERAL important amendments affecting real estate are incorporated in the Federal Revenue Bill for 1928 which has already passed the House and will come before the Senate. These amendments, administrative in their nature, were asked by the National Association of Real Estate Boards in order that the requirements of the act might conform more justly to the actual conditions of real estate business practice and in order to modify requirements directly or indirectly increasing the cost of home ownership. These changes relate to installment and deferred payment sales, co-operative apartment ownership or tenancy, taxation of real estate boards, real estate syndicates and trusts and deductions from tax returns in case of sale and repurchase. They have been explained in a report from the Ways and Means Committee which is being quoted for public information in a circular prepared by the National Association of Real Estate Boards.



Direct Lumber Cooperation

DIRECT cooperation with large consumers of lumber has been undertaken by the trade extension department of the National Lumber Manufacturers Association as a result of a questionnaire to leading contractors, engineers, architects and purchasing agents asking how the department can best meet their needs. Approximately 18,000 cards requesting this information were distributed recently and the replies received thus far indicate a wide and varied interest in the trade extension work. The suggestions, covering a wide range, present as a whole a comprehensive cross section of the problems of lumber consumers.

Eat Your Cake and Have It Too

THERE is an old saying that you cannot eat your cake and have it too, and it's true of most things. Nearly all commodities are consumed in use. Food is consumed. Clothing is consumed.

But there is a product used but not consumed. Cement is used in making concrete, and concrete is permanent. It grows stronger with age. It cannot rust, rot or burn. It endures.

Concrete highways connect city and country. Well-paved streets and alleys are built of concrete. A grid-iron of hundreds of thousands of miles of concrete sidewalks in the United States makes walking easy. Railroads are large users of concrete. Modern buildings are of reinforced concrete. Concrete goes into many farm structures. Almost everything from chicken coops to skyscrapers rests on a concrete foundation.

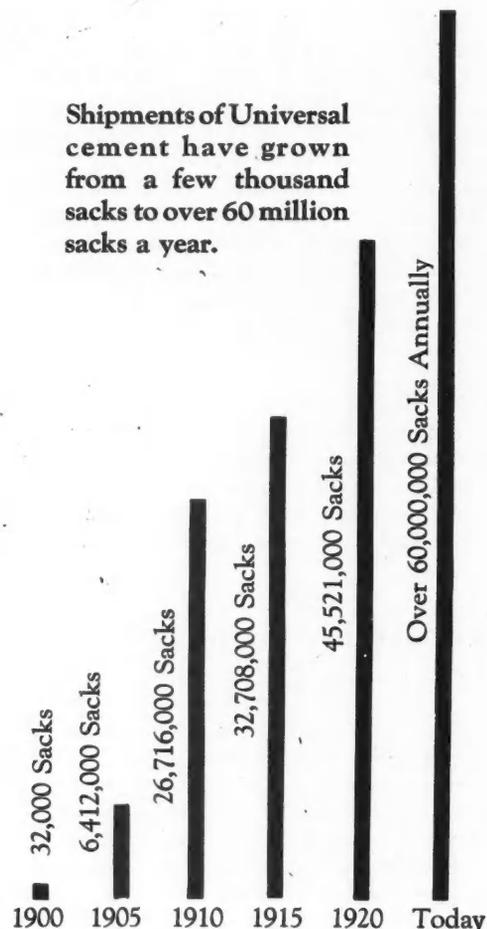
The Universal Portland Cement Co. has shipped a total of nearly a billion sacks or nearly 50 million tons of cement. This would fill about one and a quarter million box cars, each holding over 800 sacks, making a train over 9000 miles long and requiring over 30,000 locomotives to move it. This is enough cement to build a system of permanent concrete roads radiating from Chicago to the capital of every state in the Union.

Practically all this Universal cement—nearly a billion sacks—still

serves a useful purpose. It has not been consumed but has been transformed into houses, industrial buildings, improved highways, modern city streets, water-power developments and other valuable improvements that form additions to the permanent taxable wealth of the country as well as tools for production of additional wealth.

Universal cement, unlike the cake one cannot eat and also have, is used but not consumed.

Shipments of Universal cement have grown from a few thousand sacks to over 60 million sacks a year.



Universal Portland Cement Co.

Chicago Pittsburgh Minneapolis Duluth Cleveland Columbus New York

Concrete for Permanence

FOR ADVERTISERS' INDEX SEE NEXT TO LAST PAGE

EVERYBODY'S BUSINESS



Some Essentials of Business Success

By FLOYD W. PARSONS

INDUSTRY is cursed with executive loafers drawing large salaries. The fellow who comes to his office early and stays late has become a business novelty. Work has become a painful necessity instead of a sacred duty. Corporation officials once died in their office chairs—now the popular place for cashing in is the golf course or the verandah of a resort hotel.

Labor-saving devices have revolutionized not only our methods but our ideas. The greater part of the time released by improved machines is being devoted to pleasure instead of being utilized to take care of additional work. About the only person who does any real labor is the private secretary of the boss. If the secretaries had a union and went on strike, a lot of business would go to pot in short order. The time of many managers today is devoted almost entirely to attend endless conventions, conferences, luncheons and dinners.

Noon-hour lunch clubs are now numbered in the thousands, and this means hundreds of thousands of man-hours given over to listening to many speeches that represent a complete waste of time. Also many bosses appropriate far more hours to trudging over the links of five thousand American golf clubs than are necessitated for the requirements of health. The short summer vacation that was once the vogue is no longer considered sufficient. Months of absence from the office are now as common as weeks were a generation ago.

Take a walk through any large office and inquire for the whereabouts of the different heads of departments. It is a two-to-one bet that the sales manager, the purchasing agent or the fellow who handles the advertising is away at some trade or association meeting. It is also conservative to say that while frank exchanges of opinion today are necessary in industry, we have carried the conference idea to such an extreme that hardly one man in three returns from these pow-wows with value received for money and time expended.

Profits have come so easily in recent times that many businesses have gone on making profits through accumulated momentum without having received anything more than

routine attention from the men occupying the positions of authority. A lot of foolish executives believe this condition will continue, and have kidded themselves into accepting the idea that success is due to the exercise of their own genius. As a result of this condition, human effort has been reduced as fast as mechanical effort has been increased.

This spirit has extended on down from the big bosses to the members of skilled trades and as a result we must now spend \$50,000 to build a \$20,000 house.

Before long there will be a show-down and it will be disclosed to modern business executives that instead of being easier, the task set for them today is far more difficult than in the past. Years ago it was only necessary to keep sales stimulated and watch costs in order to insure continued success. Now a change in thought or custom on the part of a fickle public may darken the whole outlook for the best organized corporation in less than a

week's time. An upset in one industry spreads rapidly to a dozen other lines of business.

The wide use of the automobile has been largely responsible for a material drop in the consumption of men's shoes. The vogue of short skirts has helped to balance this loss by increasing the footwear purchases of the ladies. The growth of the big baking companies has almost put an end to the making of bread in the home and has changed the entire market outlook for the milling companies that produce and sell flour. Instead of millions of householders, a few score agents now purchase more than half of the flour produced in the United States.

A short time ago chief emphasis was placed on thrift and economy. Today the note sounded loudest by the advertiser has to do with comfort, convenience and the gratification of human desires. The old arguments concerning the advantages of low first costs have been relegated to the rear by the present plethora of money. Each passing day is now likely to disclose some new change that is needed in selling appeal of a product, and all of this indicates that disaster lies ahead for managements that insist on traveling a beaten road.

Of course it is true that changes have always been taking



© Knickerbocker Photo Service.

The Modern Lunch Counter.

place in our industrial life. But those of yesterday took place so slowly that business had plenty of time and notice to bring about the needed modifications of policy or practice. Now there is a small opportunity to exercise deliberation in the interpretation of market signs. The modern executive must literally sleep with his hat on in order to be ready to meet the effects of an unexpected discovery. Markets now dry up over night and the accepted method of one week is obsolete the next. Hand-me-out lunch counters at soda fountains have nearly ruined the restaurants, while selling on the part-payment plan has played havoc with many of the sellers for cash.

Never has business required so much attention from the men higher up, and never has it received so little. Nor has there ever been a time when such a premium was placed on originality of thought and action. A thousand sellers now surround each consumer and battle fiercely for the largest share of his dollar. The fellow with a little business which he has nursed and watched for years wakes up to find himself crowded out by a big consolidation that makes it impossible for him to compete.

The only way to beat the game in business today is for management to produce an unending variety of fresh ideas. Although competition is bitter, the opportunities to improve practices were never greater. The manager of a department store announced a "night telephone sale" comprising twelve articles. This innovation caused a rush which kept ten telephone operators busy from six to nine o'clock in the evening, the hours of the sale.

An aggressive store manager in an establishment located at a busy transfer corner required one of his clerks to memorize the street-car schedules and make announcements of the expected arrival and departure of cars. This permits customers to shop up to the last moment. A bulletin board is provided to record telephone calls and messages for patrons, and there is a free bus service for customers who find it impossible to park their automobiles in the immediate neighborhood. The bus travels over a route covering sections of the city where unlimited parking is permitted.

Anyone who will investigate carefully will find that successful management is due nearly always to the observance of a multitude of little things that are so simple and obvious one wonders how they could be overlooked by any watchful executive. In one store customers discontinued their patronage and the boss goes around wondering why. Next door, or across the street, when the same thing happens, the manager starts an investigation and finds that 20 per cent of the discontinuances were due to errors in delivery, and he takes steps immediately to remedy the trouble. The first manager is a sort of fatalist and assumes that nothing can be done. The second manager corrects all possible deficiencies and even goes so far as to send a letter expressing regret and signed personally by himself to each customer who has not made a purchase within recent months.

I know of an auto-accessory dealer who got the jump on his competitors by merely introducing a self-service system. The different automobile parts were arranged on long stands and customers picked out what they needed. With this plan three clerks were able to take care of 60 customers. I also know a restaurant manager who experienced difficulty in taking care of his trade because so many patrons lingered to chat or smoke. He was the sort of fellow who always searches for an answer to every question, so he got an idea one day and immediately set

the big clock in his restaurant ten minutes fast. This scheme not only speeded up his regular patrons, but proved to be a permanent incentive to quick motion on the part of transients.

A store manager in New England arranged a prize contest for useful suggestions from employes and secured 21 practical ideas out of 83 plans submitted. Among the schemes were proposals for the appointment of a public style adviser, lectures on styles in local newspapers, a mailing list of students about to enter college, a searchlight on the roof, free telephone service to customers, electric directories over the elevators and a cage of monkeys to serve as a display attraction.

A retailer of hardware has a clerk tie a tag on every battered ashcan that is found along the street. The card reads, "You can get a new can at moderate prices from Smith, 84 Main Street." Another dealer succeeded in developing a feeling of business reciprocity by having a slip printed and attached to all checks that he sent out in payment of bills. The slip is printed on red paper and suggests to the person receiving it that if he believes in reciprocal trade, some of his business will find its way to the store of the dealer whose check is inclosed. An automobile agency helped sales by establishing a school for the owners of its make of cars, and for all prospective buyers.

No matter in what realm of business it may be, the opportunity to show originality and exercise ingenuity always exists. A company standardized its samples of automobile tires by substituting one-inch samples for the five-inch variety and the resultant saving was \$5,000 the first year. Another concern came to the conclusion that we have entered a picture age and in accordance with this thought it substituted the colored photograph for the sample case and has effected a material economy in transportation charges and sample-room rentals as a result of this departure. The boss of a big corporation started nosing around and discovered that as many as 50 of his workers were absent from their posts in the main office at one time, delivering messages or interviewing people in other departments. He quickly issued the dictum: "Say it, but write it," and then took steps to install an efficient system of distributing inter-departmental mail.

What we are going to need before long in many companies is a return to work. Thousands of managers are going to be busy effecting reduction in the volume of credit business handled. Others will be giving attention to shortening the time on charge accounts, working out budget systems and finding ways and means to substitute automatic devices for hand labor. The executives who will safely weather the next period of readjustment will be those who have not departed too far from the old idea that eight hours a day and eternal vigilance are still the two chief essentials of business success.



Three Million Dollar Shedd Aquarium, Chicago. Perspective drawing by the Architects, Graham, Anderson, Probst and White, shows how the Aquarium will look on completion. It will have a most appropriate setting in Grant Park, partially surrounded by the waters of Lake Michigan.

Advertising Speeds The Builder's Turn-over

by
Marc N. Goodnow

Good Merchandising Is Just as Important to the Builder as to Any Other Manufacturer with a Product to Sell

THERE was an unnatural gloom about my friend Jacobson that Monday morning when I called to look over his new house. The length of his dark countenance somehow spoke volumes. He looked as if he had lost his last friend.

"Haven't sold yet," I volunteered, for it seemed an obvious explanation of his dejected appearance.

"No," he admitted, "somehow they're not buying houses."

But that wasn't right, for two houses a block away had sold the day before. The salesman, whom I knew, had just told me. Jacobson gave a queer shrug when I broke the news to him.

"How do they do it?" he asked.

"They advertise."

A cynical smile broke over his face, as he asked, "Where?"

"In the newspapers. Don't you read them?"

"Sure I do."

"But not the classified ads."

"No, not often."

"That's how you've missed it. You've been passing up a good bet. Depending on your two by four 'For Sale' signs."

"But I've advertised before—and it never got me anything."

"What did you say?"

"Well, I gave the number of rooms and style of the house and the inside finish and a few other things like that."

"How much did you spend?"

"Oh, not much. Advertising costs like the devil."

"So does interest, Jake."

"Now what do you mean?"

He looked puzzled.

"Well, you're carrying a loan of, say, \$3,000 on this house. At 6 per cent that costs you \$3.46 a week, to say nothing of an equal amount of interest on your own money tied up in both the house and lot. About \$7 or \$8 a week in interest. You put up a sign and wait how long to sell?"

"Maybe two weeks; sometimes a month."

"While you're waiting to sell, the interest amounts to from \$16 to \$32—and all be-

cause you think it extravagant to spend about half that amount and probably get your buyer right away. Do you call that good business?"

"I don't know; I never thought about it."

"Neither did I, before now, Jake, but it sounds reasonable, doesn't it?"

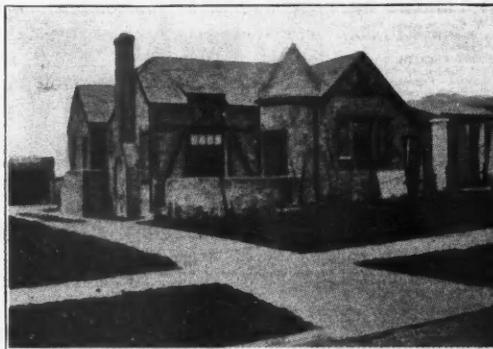
I left Jacobson to his own reflections on the steps of his new house and forgot about the incident until the following Sunday when I happened to be in the same neighborhood. As I pulled up to the curb a stranger came out of the front door and from him I learned he had just bought the house. I could not resist asking how he learned of it, and my respect for Jake's good sense was

rewarded when he replied:

"Oh, I saw it advertised in the paper, and it 'listened' so good I came out to look it over. And here I am."

It is too much to expect every builder to be an advertising man, but it is not unreasonable to expect him to devote some thought to the sale of his houses or the service he renders. In fact, the most successful builders today are good merchandisers; they have learned not only how to build good houses, but how to dispose of them quickly and with the least expense. Present day financing costs rapidly eat into profit and if a house stands for an undue length of time the "velvet" is gone and the builder wonders why he can't make money.

Sooner or later every builder is faced with the necessity of selling his product. He is also more or less constantly approached by advertising solicitors for newspapers, magazines, programs, billboards, radio, direct mail, booklets, folders and even specialties. All of them seem to have good points, but all of them cost real money. He must make some kind of a decision not only as to whether or not he will advertise, but as between the mediums offered. He finds that to avoid costly mistakes he either must know something about these mediums or



A Beautiful New Home In A New Section FOR SALE

Located at 2117 Prosser Ave., Westwood (3 blocks South of Santa Monica Blvd.). Near Fox Studios (on the high ground.)

This beautiful home just completed—Lawn and shrubs all in. Six rooms, Old English Stucco Bungalow—3 Bedrooms, tile bath and shower. Gas furnace, automatic heater, tile sink, linoleum floor in kitchen, hardwood floors throughout. Beautifully decorated. Cedar closet, large closets in other rooms, city gas, lights and water, double garage. Street lights on beautiful new street in a fast growing section of Westwood. Grammar school three blocks. High school one mile, new high school building being built adjoining tract.

You know Westwood is the new home for the University of Southern California.

The price of this beautiful new Bungalow is \$7,850, trades considered. Terms \$500.00 down, \$75.00 per month including interest.

Inquire of owner

O. E. WERN, 332 N. Van Ness Ave.

Phone HE. 4331

P. S.—When making inquiries present this advertisement to owner and if you buy this place, this advertisement is good for \$100.00 off the price.

Newspaper Advertising That Pays. It costs a little more than the other kind, but nothing like the cost of the interest on your investment while waiting a month to sell the house.

else stay out of them altogether. And if he stays out, there is an after-feeling that he has passed up a good chance to promote his business.

I have found the opinion among many builders that "a good house will sell itself." And so it will, if there is not too much competition and if the builder can afford to pay the interest charges while he waits. But "ifs" in business are uncertain factors at best. A good merchant doesn't wait for goods to sell themselves; he is too much interested in rapid turn-overs. In fact, his success depends upon it; goods that gather dust on his shelves he regards as an actual liability—certainly they return him no profit, and what is business for except for profit? Therefore, he is not interested merely in having goods in stock, but in effecting a quick sale for whatever margin above their cost will give him his needed profit.

Too few builders have that conception of their business. Instead of regarding their houses as a staple, the sale of which is to be promoted like any other staple article, they regard merchandising as largely a matter of luck. If people are buying houses, they build. If they are not buying, these builders restrict their operations or lay off altogether until another wave of buying strikes the community. Just what economic loss the building fraternity suffers from this kind of reasoning would be hard to say, but it is fairly certain that it is considerable. It is still more certain that because of it, the building industry is one that has never yet successfully leveled out the peaks and valleys in its chart of progress.

The individual builder cannot correct this condition by his own efforts. But he can at least realize that with proper promotion methods to induce quicker turn-over of his product he has an opportunity to keep just a little busier than he does by means of his present method of "watchful waiting."

Jacobson, for example, usually built several houses at a time and one or two of them would remain unsold for perhaps a month each. He could not go on with his program until he had gotten his money out of these two houses. If, by advertising, he sold these same houses in a week or two weeks instead of a month, his money was released for more houses just that much sooner.

By means of quicker turn-over, he would be able to build and sell ten or a dozen houses in a year instead of the usual six or seven. Consequently, his profit would be increased one-half, perhaps doubled. And all for the price of a few lines or inches of newspaper advertising or some other form of sales promotion.

In contrast to the example of Jacobson is that of Berger, who is not only a good builder but a good merchandiser. Berger works on the quota basis, with a budget for advertising. He plans each year to build and sell at least two more houses than the year before. He works on a small capital with one-fourth of the selling price invested in each of his houses.

Berger expects to spend 2 per cent of his invested capital on the sale of his houses. If that capital is, say, \$3,000, he will set aside \$60 for advertising in some form to promote the sale of the house. He might have to go beyond that, but usually he does it with much less. Even at 2 per cent he is 'way under the selling cost of the average business concern. But the important thing is that Berger thinks in terms of promotion and that he actually devotes this percentage of his investment to selling purposes.

Berger is far from a wizard in advertising, but he has been exceptionally successful in quick selling. I have watched his advertising carefully and I am convinced that I have discovered the secret of his success. It is this: "Full description copy." That is the newspaper's term for advertising of that character and it means simply that Berger gives all the details, covers up nothing that might interest the home-buyer and makes his house as attractive as it can be made in a classified advertisement, regardless of the number of lines. You would almost think that he throws his money away, but the fact remains that Berger seldom has an unsold house more than a week or ten days old.

To illustrate quite clearly just how this builder gets results, I am going to quote one of his classified advertisements that brought a total of 311 people to the house in 91 automobiles and sold the house at 1:15 p. m. on the Sunday that it was advertised. Incidentally, Berger had seven other opportunities to sell the same property after the original

purchaser bought it.

\$6,500—REFERENCES REQUIRED \$500 DOWN

Magnificent 6-rm. stucco bung. Pompeian type, just completed; hwd. frs. throughout. Paneled bedrms., hand-painted tiffanied walls; radio cove and outlets, vault and Khyam ceilings, wrought iron fixtures, tapestry and statuary niches, novel reception entrance, tile sink and sunken bath with shower, lovely breakfast rm. with 6-piece set, large laundry rm. with auto. heater, walled patio with fountain, many built-in features; garage, drive, lawn, etc.; level fenced lot; all street imp. in and paid for. Will be sold only to reputable people.

(Continued to page 134)

100,000⁰⁰ Worth of Homes at Your Own Price



515 N. Palm Dr.
Beverly Hills

N. of Santa Monica Blvd.
9 rooms, 4 baths, extra lavatory, 3 dressing rooms, 3 linen closets, cedar closet, fur safe, Frigidaire, 4 unit furnace. Lot 88x150.

Subject to \$11,500 @ 5 1/2 %

HAVE YOU SOME REAL CASH?

We want our equity out in cash

See these homes and tell us what you will pay for them. As evidence of your good faith BRING YOUR CHECK.

These homes are guaranteed by Toolen & Hinds. But we are unloading.

YOU NAME THE PRICE

6601 Lindenhurst Ave.

N. W. Cor. Sweetser Ave. 3 blocks N. of Wilshire, 3 blocks W. of Fairfax.

2-STORY ENGLISH, 8 rooms, 3 colored tile baths, 2 separate tile showers, Frigidaire, Unit heat, Sanitas on all walls. Wonderful living room with beam ceiling. Master bedroom 14x20. Sprinklers all over the place. Lawn and shrubs. Modern to the minute.

Subject to \$8000, 1st @ 7%, \$3800, 2nd @ 7%



Bungalows and 2 Story Homes

6637 Maryland Drive

2-STORY SPANISH, 8 ROOMS, 3 baths, Frigidaire, unit heat, Sanitas on all walls, wonderful living room, 10x27; master bedroom with dressing room and bath in colored tile.

Subject to \$7800 1st @ 7%, \$3850 2nd @ 8%

1029 Keniston Avenue

2 blocks West of L. A. High School
7-ROOM SPANISH BUNGALOW. High ground, large deep lot, wonderful shrubs and lawns. A well-built comfortable home.

Subject to \$4800 1st @ 6%, \$2600 2nd @ 7%

6616 Lindenhurst Avenue

7-ROOM ENGLISH BUNGALOW, 3 baths, unit heat, Sanitas on all walls, sprinklers front and rear, good lawn and shrubs, up to the minute.

Subject to \$5780 1st @ 7%

352 S. Almont Drive, Beverly Hills

2 blocks South of Wilshire, 2 blocks East of DeSoto
8-ROOM SPANISH BUNGALOW. This is the best bungalow we have built, wonderful decorating and unusually attractive large rooms, unit heat, all walls covered with Sanitas.

Subject to \$5000 1st @ 7%, \$3500 2nd @ 8%

No Trades

We Also Build to Suit

No Brokers

TOOLEN & HINDS

6636 West 5th Street

ORegon 9361.

Another Example of Newspaper Advertising That Puts the Builders in Touch with People Interested in and Able to Buy and, by Speeding Turn-Over, Increased the Profits.

What Do Skyscrapers Cost?

THIS question was recently asked by a Chicago newspaper which endeavored to obtain the most comprehensive figures available.

Thirty-five per cent of the total construction cost of the modern skyscraper goes into the pockets of labor, thus showing that labor has shared and is sharing in American prosperity. Labor's dividend in Chicago, for example, amounted to \$630,000,000 out of a total building program of \$1,800,000,000 in the city from 1922 to September 1, 1927. This is on the basis of building permits issued in Chicago during the last five years. Considering the varying conditions of building costs between suburban construction and construction of major projects in the business district, experts have figured that labor's dividend might be even higher, according to the class of construction, overtime and other factors.

Figures on one skyscraper show that the bill for carpentry amounted to \$360,000; brick masonry, including foundations, \$428,000; structural steel, \$568,000; plumbing, \$164,000. These interesting figures are reflected in a cost analysis of a modern office building prepared under the direction of Leo. J. Sheridan, Vice-President in charge of loans for S. W. Straus & Co., by the engineering department. All

percentages are based on actual operations, but the total costs of the buildings considered were purposely varied because of the particular type of fiduciary relationship that exists between the bankers who financed the projects and the borrowers.

On one operation running \$2,500,000 in bare construction cost, the payroll at the job averaged 35 per cent. On another building costing \$4,000,000 to erect, the field payroll averaged 37.4 per cent. These figures reflect local labor's share of construction cost at the job. Were the analysis carried further to include the cost of labor at the mines, quarries, factories and railroads covering the fabrication and transportation of materials to the site, it is probable that not less than 80 per cent of the total cost of a modern skyscraper would be made up of labor payrolls.

The analysis shown on this page gives the cost distribution over the various lines of work, covering bare construction cost and cost of land, financing and carrying charges.

In discussing this chart, Mr. Sheridan pointed out that the element of greatest expense was masonry, including the foundation, caissons, brick work, tile arches and partitions, fireproofing and facing

OFFICE BUILDING INVESTMENT ANALYSIS		
BARE BUILDING COST \$4,000,000		
LAND, FINANCING AND CARRYING \$1,945,000		
	Sub Contract Amounts \$	COMMERCIAL OFFICE BUILDING Percentage of Total Bldg. Cost
General conditions	\$ 96,000	2.4
Wrecking and excavating	324,000	8.1
Piling or Caissons—Foundations	In masonry	
Water and damp-proofing	428,000	10.7
Brick masonry	44,000	1.1
Cut stone and granite	96,000	2.4
Architectural terra cotta	In masonry	
Reinforced concrete	240,000	6.0
Tile fire-proofing	360,000	9.0
Carpentry	152,000	3.8
Lathing and plastering	52,000	1.3
Fireproof doors and windows and steel sash	16,000	.4
Sheet metal work	8,000	.2
Roofing	212,000	5.3
Tile, marble and terrazzo	44,000	1.1
Glazing	36,000	.9
Painting	568,000	14.2
Structural Steel	168,000	4.2
Ornamental iron and bronze	24,000	.6
Hardware	164,000	4.1
Plumbing	284,000	7.1
Heating and ventilating	156,000	3.9
Electric wiring	16,000	.4
Light fixtures	160,000	4.0
Elevators	1,000	.1
Miscellaneous	348,000	8.7
Vault and vault equipment contractor's fee		
Total building cost including contractor's fee	\$4,000,000	100.0
Percentage of building cost to total investment		67.3
Architect's fees	200,000	3.4
Land	1,250,000	21.0
Financing, taxes, insurance and interest during construction	445,000	7.5
Miscellaneous carrying charges	50,000	.8
Total cost	\$5,945,000	100.0

(Continued to page 93)



Bird's-eye View Looking North from the New Pittsfield Building Tower, at Wabash Avenue and Washington Street, Chicago. This photograph was taken by Herbert P. Zilmer, who, while an enthusiastic photographer in his leisure hours at his home in West Chicago, is an employee in the Chicago office of the Pacific Fruit Express. To get the camera in the best position, a daring climb was necessary to the upper levels of the partly completed tower.

Beauty, Permanence and Utility in Telephone Exchange

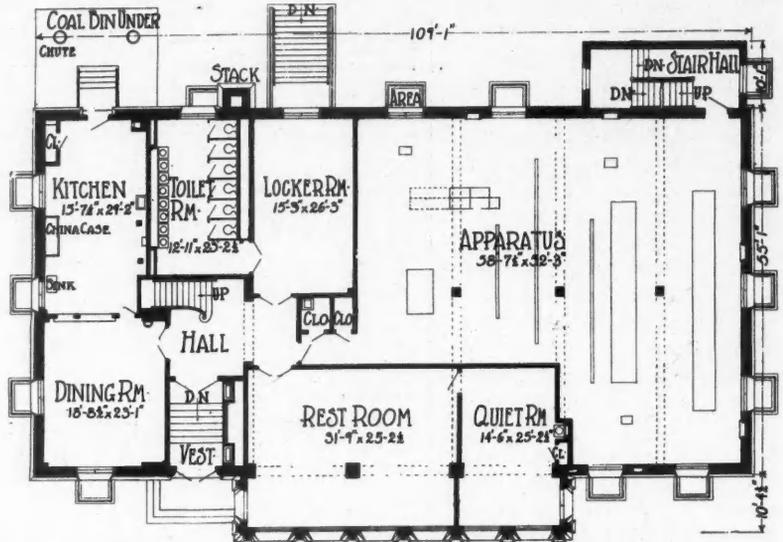
RECENT years have been marked by an ever increasing appreciation of value of combining beauty, permanence and utility in the design and construction of public or semi-public buildings and also in purely commercial structures. Nor is this value exclusively an aesthetic one for when full consideration is given to all these qualities actual values are created and maintained over long periods of years.

A special significance has been given to these factors in the building of exchanges by the American Telephone and Telegraph Company due to the fact that in a large portion of its construction work this company is confronted with a problem which is complicated by the fact that many of its exchanges must be built in the residential sections of the various cities. Probably no city has been more fortunate than Cincinnati, Ohio, in the type of building which the telephone company has erected and it now is able to boast a number of truly noteworthy telephone buildings.

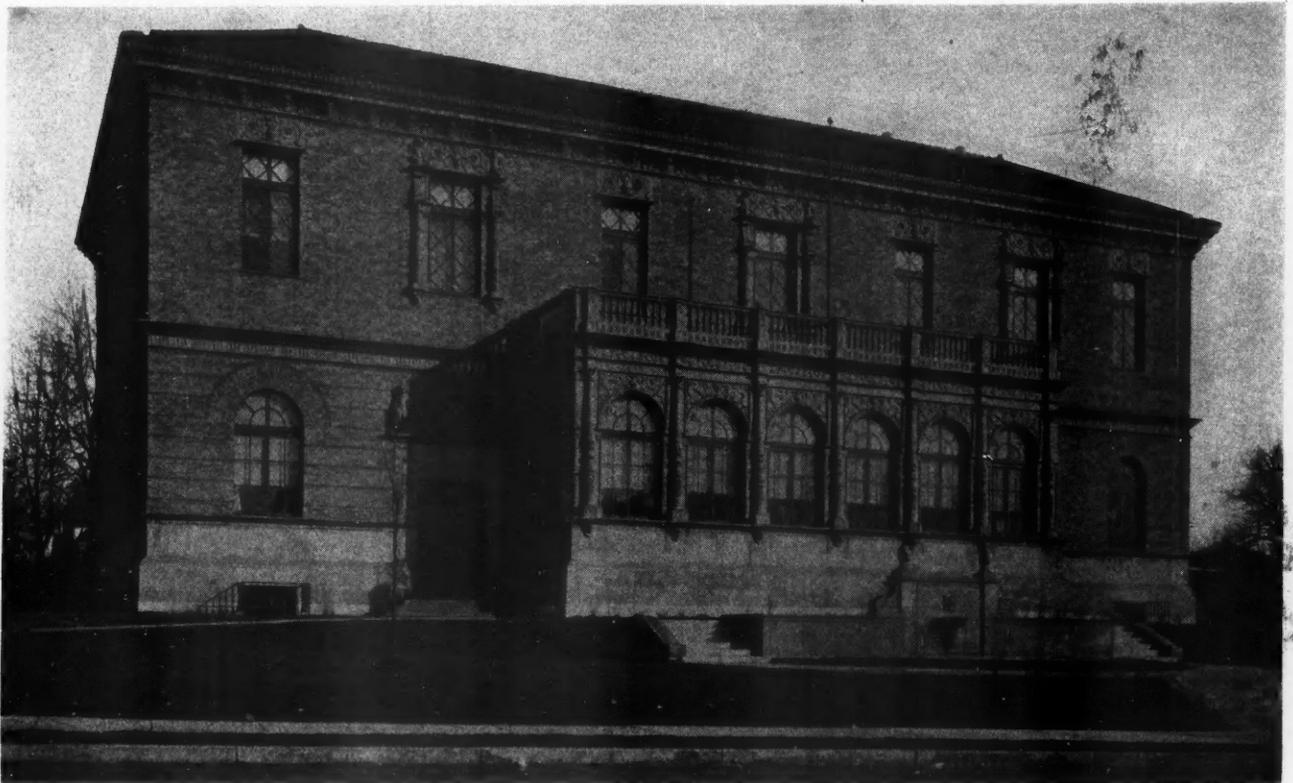
Among the finest of these is the recently completed Harrison Exchange, illustrated on these pages. It is without doubt an excellent example of what can be done in the construction of necessary commercial building within residential neighborhoods without in any manner detracting from the attractiveness of the neighborhood for residential purposes. In fact this building is

a valuable addition to its neighborhood, adding to the permanent values of the property surrounding it.

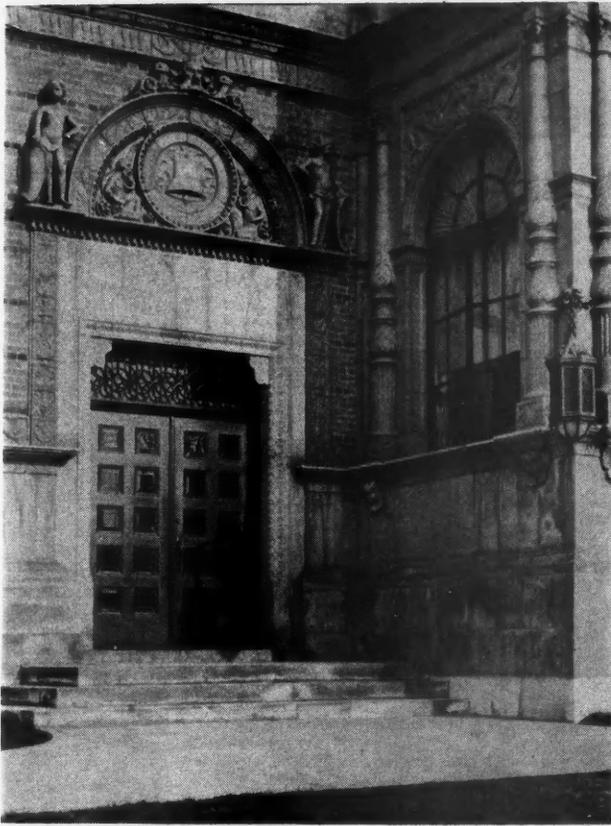
The Harrison Exchange is located in Westwood, one of the finest residential sections of Cincinnati, with its main entrance on Harrison Avenue. The building is rectangular in form with a frontage of 109 feet and a depth of 55 feet. It is set back on the lot with a grassy lawn



The First Floor Contains Complete Provision for the Comfort and Welfare of the Operators, a Most Important Consideration in the Planning of Telephone Exchanges.



The Harrison Exchange of the Cincinnati and Suburban Bell Telephone Company Is Located in One of the Best Residential Sections of the City and Is Representative of the Architectural Beauty Which the Telephone Company Is Building Into Its Exchanges to the Permanent Advantage of the City.



The Exterior of the Harrison Telephone Exchange Carries Little Suggestion of a Building for Commercial Purposes and This Entrance Detail Is Sufficiently Impressive to Belong to a Fine Club or Public Building.

in front and at both sides and in passing one would hardly suspect it of being devoted to purely commercial purposes. One would, rather, take it for a fine club house or library building. This outward appearance does not, however, in any way interfere with the thoroughly practical arrangement of the interior.

Set upon a slight elevation, this building holds a commanding position in a broad open space at the intersection of three important streets and its architecture, of the Spanish Renaissance style, is fully worthy of its conspicuous position. The base is of gray Indiana limestone and above it rise walls faced with buff colored rug brick and ornamented with terra cotta. An artistic fountain, at the front, adds much to the effectiveness of the building while the main entrance is truly noteworthy. Both the fountain and the wainscoting of the vestibule are of Rookwood tile, noted for its beautiful coloring.

Within this building is a model modern telephone exchange. The basement and upper floors are devoted to such purpose as heating plant and operating rooms and about half of the first floor is used for an apparatus room. The rest of the first floor is devoted to the em-

ployes, providing everything for the convenience and comfort of the girls who carry on the nerve-taxing work of operating the switchboards.

Directly at the front, in the projecting portion of the building, are a large rest room and a quiet room where the operators may retire during their rest periods. Large windows across the entire front of these rooms give them the cheerful atmosphere of a sun room and they are attractively furnished. Across from these is a large locker room to provide for the employes' wraps and off of it the toilet.

Passing through the entrance hall a dining room is found with a kitchen to the rear of it. Here meals are served so that the employes can be assured of good, wholesome food at a reasonable price. This feature is one of particular importance in many telephone exchanges. Because of their location in residential districts, good restaurants are frequently lacking in the immediate vicinity of these buildings and good lunches must be provided to hold the best operators and also to obtain the best services from the operators.

WARFIELD WEBB.



What Do Skyscrapers Cost

(Continued from page 91)

materials and that the largest single item is the cost of the steel frame—the skeleton which makes possible the soaring skyscrapers of the present day.

Carpentry work, comprising about 10 per cent of the total construction cost, shows a distribution of 40 per cent to labor and 60 per cent to material. Masonry comprises about 11 per cent of the total cost distributed about 50 per cent each to labor and material. Structural steel comprises 14 per cent of the total cost with a distribution of 23 per cent to labor and 77 per cent to material.

Few people outside the trade realize the large proportion of cost of work done below the street level. In the case of a large number of Chicago loop office buildings erected to the height limit of 265 feet, exclusive of tower, the building is built more than half as high below the ground as above. This condition varies according to foundation and soil conditions in different cities. In Chicago it is found necessary to go more than 100 feet below datum to reach bedrock. In New York, Cleveland and other cities, rock is outcropping at various points, often requiring blasting in the preparation of the necessary foundation conditions.



San Diego Passes License Law

THE city of San Diego, Calif., has recently passed a contractors' license law which requires of contractors a penal surety bond, graduated from \$1,000 to \$10,000, according to the class of work being done. This ordinance was sponsored by O. G. Knecht, the San Diego building inspector, and was passed after several months' consideration during which public hearings were held to get the views of the contractors.



Another Detail Demonstrating the Quality of Design Seen in This Telephone Exchange, Making It a Credit to Any Locality.

A Church School for Week Days and Sundays

TILGHMAN-MOYER COMPANY, Architects and Engineers, Allentown, Pa.

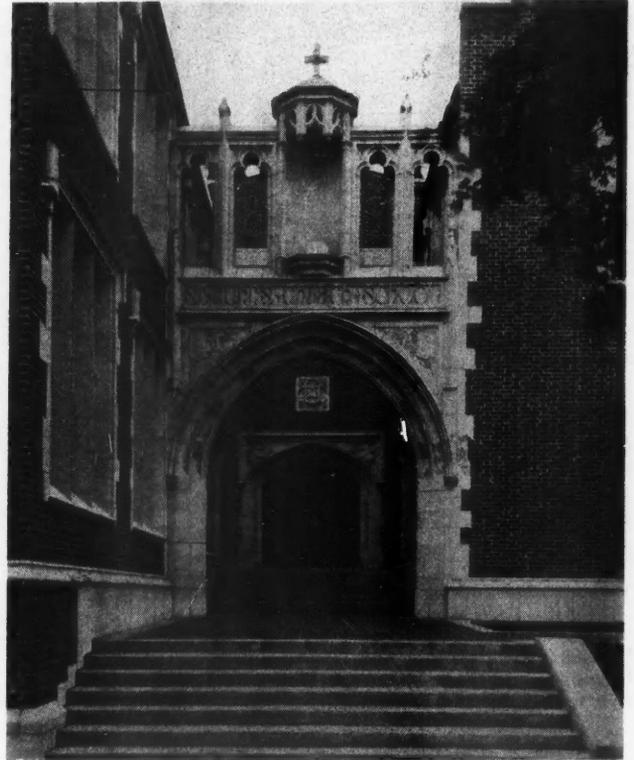
THE church school pictured on this page was dedicated recently at Allentown, Pennsylvania, where it is said to be teaching Americanism and patriotism to the children of 18 nationalities under the able direction of the Reverend W. C. Schaeffer, pastor of St. John's Evangelical Lutheran Church. Floor plans of the first and second floors on an adjoining page show an interesting arrangement of class rooms, auditorium, gymnasium and other features.

The architecture of the building is a graceful combination of Gothic and later English. The building is of brick and steel with trim of artificial stone. Both the brick and the artificial stone were produced locally.

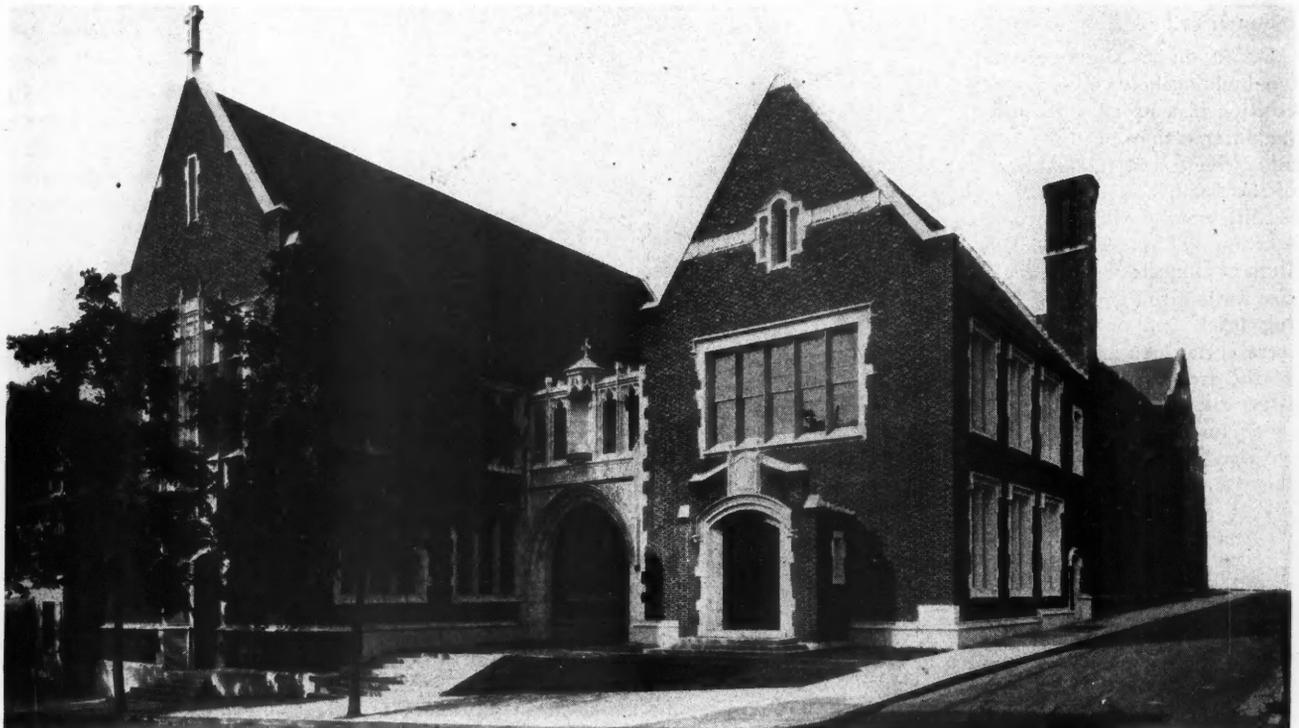
The designing of this building involved several problems difficult of solution. The edifice had to be as practical as any modern school, beautiful as a church and of durable, fireproof materials with low upkeep cost. Steel sash have been used for the windows and the interior walls are of sand finish plaster and the interior woodwork has been kept to a minimum. The class room floors are of maple, treated with a wood floor preservative and hardener, which, it is said, requires no renewing.

The corridor floors are of concrete, also treated for extra hardness. The stairways are of iron, built especially rigid and with compressed cork treads, to avoid undue noise. It is proposed, if funds become available, to decorate the kindergarten room with a wainscot of bible stories executed in tile, in the simple and forceful manner which can be so beautifully achieved in this material.

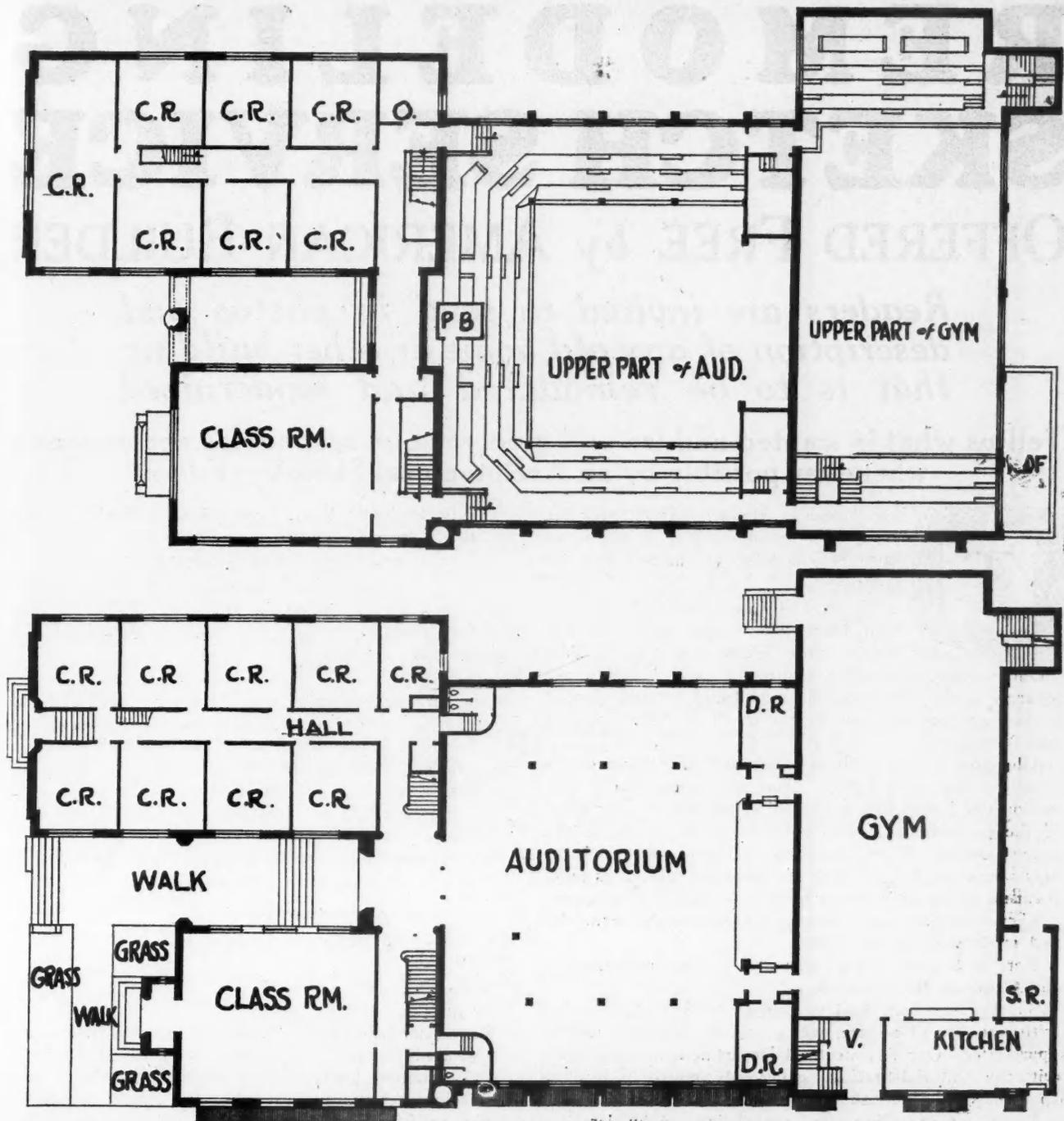
The forecourt between the two wings of this building serves the double purpose of making the auditorium entrance seem easier of access from the street and of giving ample light to the class rooms.



Forecourt and Entrance of St. John's Lutheran Evangelical Church School, Allentown, Pennsylvania, Showing Decorative Arches and Trim of Artificial Stone.



Exterior View of the Recently Dedicated St. John's Church School. Several difficult architectural problems were solved in the design of this school, to combine successfully the functions of church and day school in a practical, safe and attractive way.



The Floor Plans of St. John's Evangelical Lutheran Church School, Allentown, Pennsylvania, Are Shown Above, With the Exception of the Basement, Part of Which Is Unexcavated. The fifteen class rooms are on the first and second floors at the front of the building, connected by iron stairways. There is a large auditorium and gymnasium at the rear and a recreation room and boys' and girls' shower rooms in the basement. Tilghman and Moyer Company, Allentown, Architects and Engineers.

Inexpensive Road Improvement

A NEW use for cotton fabrics in the construction of improved country highways has been reported to the New Uses Section of The Cotton-Textile Institute, Inc. The fabric provides a "membrane" that is imbedded in the material used in surfacing the road.

To test this method of construction a section of road was selected which is known locally as a top-soil road. It consisted principally of small size gravel with a mixture of sand and clay as binding material. On it a bituminous surface treatment was applied.

The first step was to scarify the surface of the road. As it gradually rebonded under traffic the surface was kept smooth by the use of scrapers or drags. Then a prime

coat of light tar was applied and allowed to "set" partially. The next day an open weave cotton fabric, having a yarn count of 7 x 7 in both warp and filling and weighing approximately 7 ounces per yard, was spread over the sticky tar. Hot asphalt of 150 to 200 penetration was then applied to the fabric and the asphalt was covered with coarse sand to give a wearing surface.

The road was ready for traffic immediately after the surface treatment had been completed. It is stated that after nearly a year this section of highway shows very little if any wear. When engineers made an examination recently they found the cotton membrane was performing its function admirably, the materials used in surfacing the road had been kept in place.

REMODELING SKETCH SERVICE OFFERED FREE *by* AMERICAN BUILDER

Readers are invited to send in photos and description of any old home or other building that is to be remodeled and modernized

Tell us what is wanted and we will give you our best advice accompanied whenever possible by an Architectural Sketch—Editor



THE American Builder has for several years been prominent and active in the cause of remodeling and modernizing old homes.

We have illustrated hundreds of practical ideas that would make the old houses more livable and more salable.

Our readers, the active contractors and builders, are squarely in the center of this remodeling picture, since it is they who are in actual charge of all of the remodeling that is done.

All signs now point to a much greater volume of remodeling than ever before. There are more than twenty million old homes in the United States that fall far short of the present-day standards. Their style is wrong and their plumbing, *if any*, is wrong. Their structural members are sound, but the lack of modern conveniences make them no longer satisfactory to their owners and occupants.

Thousands of these old homes are going to be remodeled and modernized during 1928.

Here is a great opportunity and a great responsibility for AMERICAN BUILDER readers.

So the American Builder comes forward at this time with an offer of service, which we are confident will be appreciated. Our Architectural Department in cooperation with the Editorial Staff has generously offered its facilities to form **The American Builder Remodeling Service.**

Write us regarding any remodeling or modernizing project. We will give you freely and without charge our best expert advice in every instance; and if you can send a photo of the old house our recommendation may take the form of an architectural sketch, as in case of the Angola, Ind., job illustrated here.

As an example of what the American Builder Remodeling Service can do and is glad to do for our readers to assist them in their remodeling enterprises, we reproduce herewith a letter and our answer, together with the photograph sent us and our architectural sketch showing how this house can

be easily modernized and restored to a livable, salable condition.

MASCOT COAL COMPANY
E. W. Henwood, Prop.
Angola, Ind.

American Builder,
Chicago, Ill.

Jan. 16, 1928.

Gentlemen:

I am sending you under separate cover picture of house. Would like for you to place same in hands of some one who could give me an idea as to how this could be made to look more modern; cut-in porch to be made into sun parlor; entrance in main body.

Trouble has been in arranging roof. Don't care as to expense just so it looks good.

Kindly assist me. Return picture. Send expense bill.

(Signed) E. W. Henwood.

To which we replied as follows:

Mr. E. W. Henwood,
Mascot Coal Co.,
Angola, Ind.

Jan. 18, 1928.

Dear Sir:

Your remodeling project has had our attention and we are pleased to hand you herewith a sketch showing proposed changes. Quite a little work is involved in the remodeling scheme proposed but the results would certainly justify the expenditure. This old-fashioned upright and wing house has been transformed into a modern English style residence.

In explanation of the remodeling plan, we have raised the main ridge but have kept the old plate, which gives us a steeper slope to the roof. This roof is then brought down in a long sweep to cover the old porch, which has been transformed into a sun room with five casement windows. The ridge of the wing has been raised up even with the plate, and an attractive gable added facing the street.

Notice from the floor plan that the jog in the wall line



The Old Home as It Is at Present. Compare this photo with remodeling sketch on opposite page.



This Smartly Styled English Home Is Easily Made From the Old-fashioned Home Illustrated in the Photo Opposite. Send in your photos for similar attention. The American Builder Remodeling Service will help you.

has been moved to the right so that the sun porch will line up with the front of the house.

One of the old windows in the upright has been made into the entrance door, the other window remaining unchanged. On the second floor the two windows have been brought together. The window in the wing has been moved about a foot to the right so as to center in this space and under the new gable. A small third story window has been added, and all of the windows except the group of casements provided with ornamental shutters.

The entrance recommended is of Colonial style with brick steps and wrought iron hand rails. An ornamental flower box under the sun parlor casements and a close Colonial style cornice with proper returns complete this picture.

Much of the old siding could doubtless be saved for re-use or the entire house could be overcoated with stained shingles applied over the clapboards.

Very sincerely yours,
Editor American Builder Remodeling Service.



FREE INFORMATION SERVICE *for* Home Planners *and* Home Builders

THE ColorKeed Home Plans presented in this magazine have many special points of excellence which are of particular importance and timeliness to those of our readers who right now are facing the home building question—with its joys and its problems.

We illustrate these home designs and show the room arrangements, but our space for description is so limited that we are not able to cover all points. We know there is much additional information desired by subscribers about to build, which would be very valuable to them. Since we have all data pertaining to these ColorKeed Homes we are glad to offer our readers a free service of information, whether questions pertain to the estimated cost, the method of construction, suitable materials to use, special equipment or features, or any other information whatsoever.

Limited space in the magazine prevents publishing all this information; but if you will write AMERICAN BUILDER Home Planning Service, 1827 Prairie Ave., Chicago, we will be very glad to give you direct by mail any information desired.

COLORKEED HOMES

FOR STYLE AND VALUE

TRADE MARK
Registered in U. S. Patent Office.

Welcoming Those Who Would a Home Acquire

By William A. Radford,
President and Editor-in-Chief of the American Builder.

SOME fifteen years ago in a certain prosperous and fast growing suburb there stood the office of a prominent realtor-builder and lettered prominently above the door these words, "We welcome those who would a home acquire."

Back in those days this was an unusual invitation. Home seekers reading this sign responded to it. They accepted

the welcome at its face value. They entered, investigated and bought. They became home owners.

Today the home building industry is better organized, so that this spirit of welcome and encouragement is not so rare. Builders generally have learned the value of making it easy for home seekers to finance, plan and build. There are now many experts at the service of home builders and it is easy to acquire a new home these days, at least a whole lot easier than it was when every man had to be his own architect and contractor, and manufacture his own building materials. Today everything possible is being done to make it easy to acquire a comfortable and attractive home.

First of all the new house has to be financed. There are any number of organizations which specialize on the financing of new home building or of building repairs and remodeling. Look at the remarkable growth of the building and loan associations and there can be no question of the success with which these financing plans are being applied. Also the easy payment system has been extended and broadened to meet every requirement of the home builder.

Once the problem of financing the house has been disposed of there are other experts waiting to carry on the development of the home idea. Assistance is there for selecting a design to express the individuality of the owner and work out a plan which will incorporate every feature of his "dream home." This means a great deal for it is not always easy for the average person to put his ideas into words that will make the architect or contractor see the house that is in his mind.

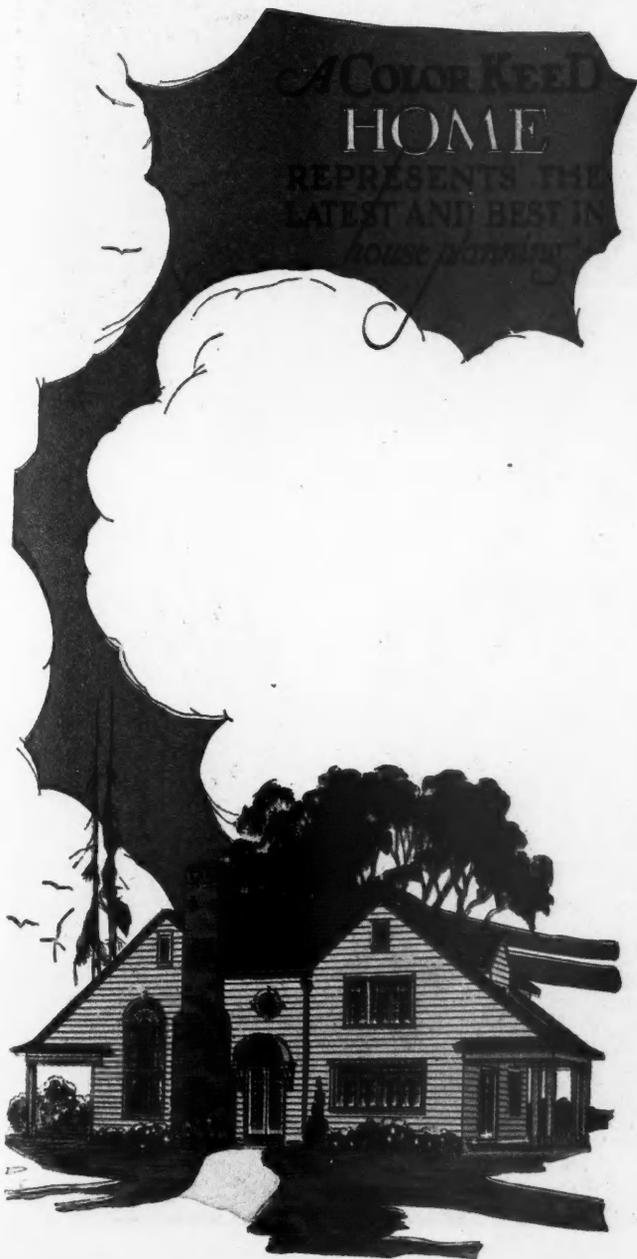
But this is really no difficulty. There are always available suggestive plans and beautifully colored views. An inspection of these will furnish examples to illustrate every want. How simple it is to point out, "Here is about the way I want the rooms arranged if you can just make a few changes; and this exterior is just the style I had in mind."

Then after the plans are made and the specification drawn up there are the manufacturers who are constantly busy turning out every sort of material and appliance which can be required for the construction of the house and equipping it for comfort and convenience. Manufacturing processes have reduced costs to the point where there is an infinite variety of choice for every size of pocket book.

Finally there are the contractors who, with their trained workmen, take the brick and stone, lumber, cement and roofing and rapidly put together a structure ready for those who in turn apply the plumbing, the electric fixtures, the paint and paper and all the specialties which are a part of the modern home. Even after the house itself is completed there are other experts who are prepared to do their part toward making it more liveable with draperies and furniture, within and landscape gardening without.

Our ColorKeeD Homes are full of encouragement and of suggestion for those who would build wisely, yet not at too great a price. These designs have the charm of good architecture—even the smallest of them is truly a delightful little place; and other designs are presented for the needs of the larger family and the larger pocket book.

These home designs supplemented by the detailed descriptions and specifications of all needed building materials and equipment as contained in the AMERICAN BUILDER advertising pages constitute a home builders' service which is the best and most reliable we know of.





The PARIS

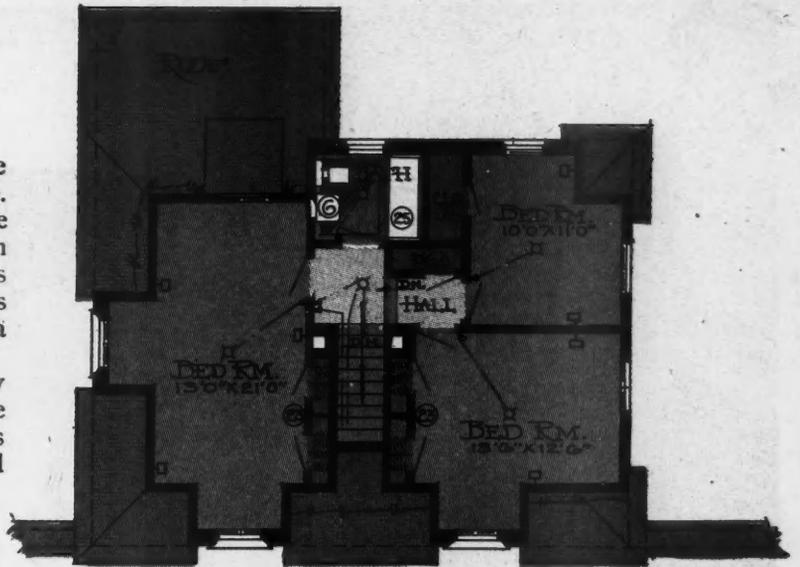
Imported from France This Home is Strikingly Different

An overseas gate keeper's lodge was the inspiration for this charming home. With its rugged slate roof, massive chimney, graceful dormers, wrought iron eave brackets and canopy supports, its casement windows and flanking walls, this home blends into its wooded setting like a thing of nature.

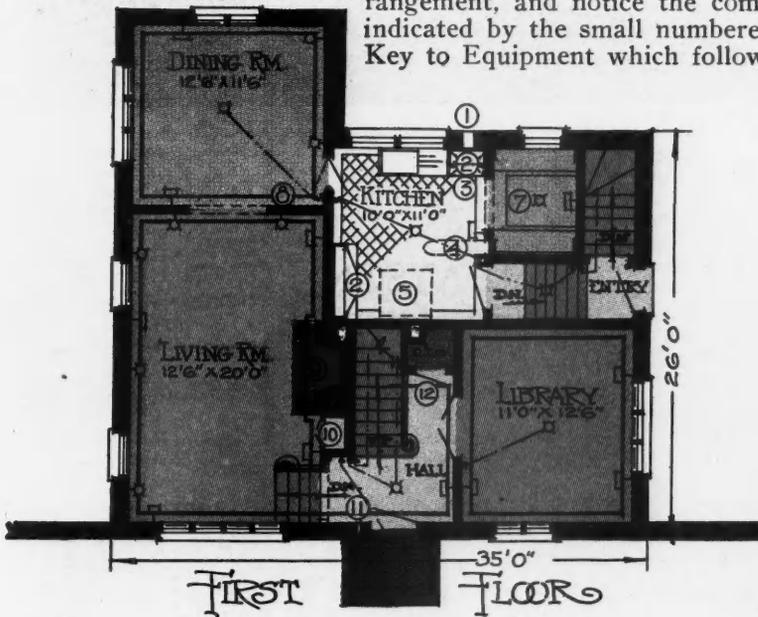
The interior is arranged very practically with four rooms on the main floor and three bedrooms and bath upstairs. Full use is made of the basement, with a garage worked in under the library and reception hall, which rooms on the first floor are five steps up from the level of the other first floor rooms, thus providing necessary ceiling height for the garage although the

garage floor is seven steps above the floor level of the basement proper.

Study the ColorKeeD Home Plans on this page for details of the arrangement, and notice the complete modern equipment we recommend as indicated by the small numbered circles which in turn are identified in the Key to Equipment which follows.



SECOND FLOOR



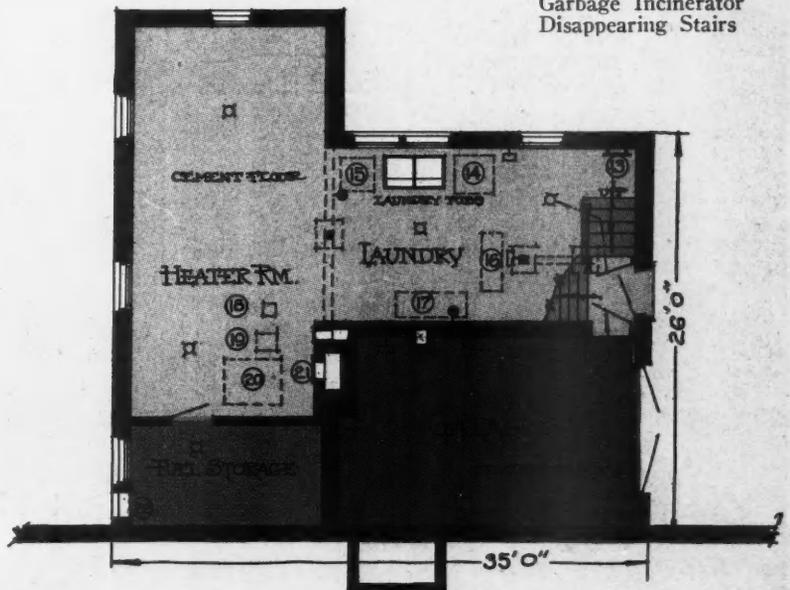
FIRST FLOOR

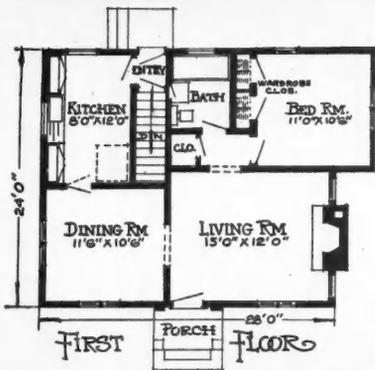
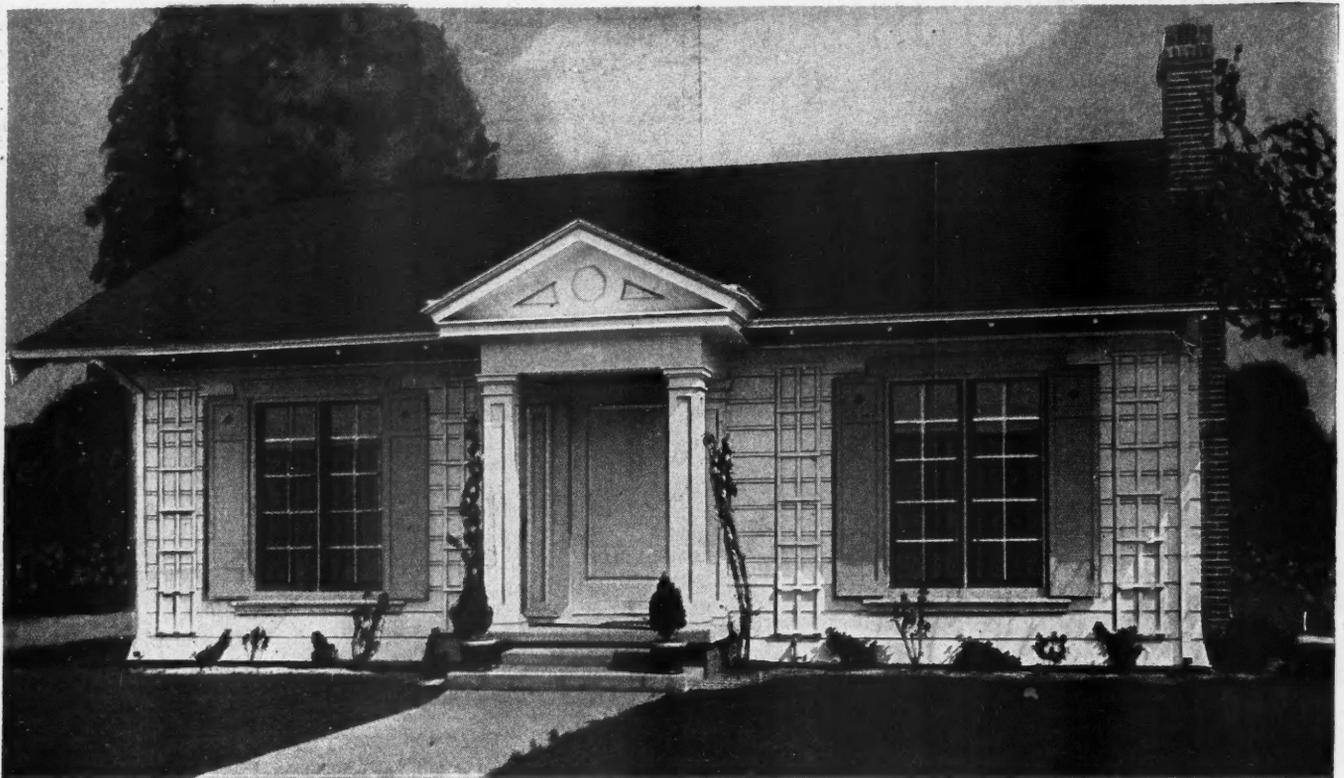
Key to Equipment

- | | |
|-------------------------------|----------------------------|
| ① Ventilating Fan | ⑱ Water Heater |
| ② Kitchen Cabinet | ⑲ Water Softener |
| ③ Refrigerator | ⑳ Heating Plant |
| ④ Built-in Ironing Board | ㉑ Cast Iron Cleanout Doors |
| ⑤ Gas or Electric Range | ㉒ Fuel Chute |
| ⑥ Medicine Case | ㉓ Space-Saving Wardrobe |
| ⑦ Breakfast Nook | ㉔ Moth Proof Closet |
| ⑧ Thermostat | ㉕ Tub Shower |
| ⑨ Fireplace Throat and Damper | Weatherstrips |
| ⑩ Built-in Book Case | Storm Sash |
| ⑪ Built-in Mail Box | Screens |
| ⑫ Mirror Door | Lighting Fixtures |
| ⑬ Electric Panel | Convenience Outlets |
| ⑭ Washing Machine | Oil Burner |
| ⑮ Laundry Stove | Water Supply System |
| ⑯ Ironing Machine | Radiant Gas Heaters |
| ⑰ Laundry Drier | Casement Windows |
| | Dishwashing Sink |
| | Automatic Cellar Drainer |
| | Garbage Incinerator |
| | Disappearing Stairs |

COLORKEED HOME PLANS

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



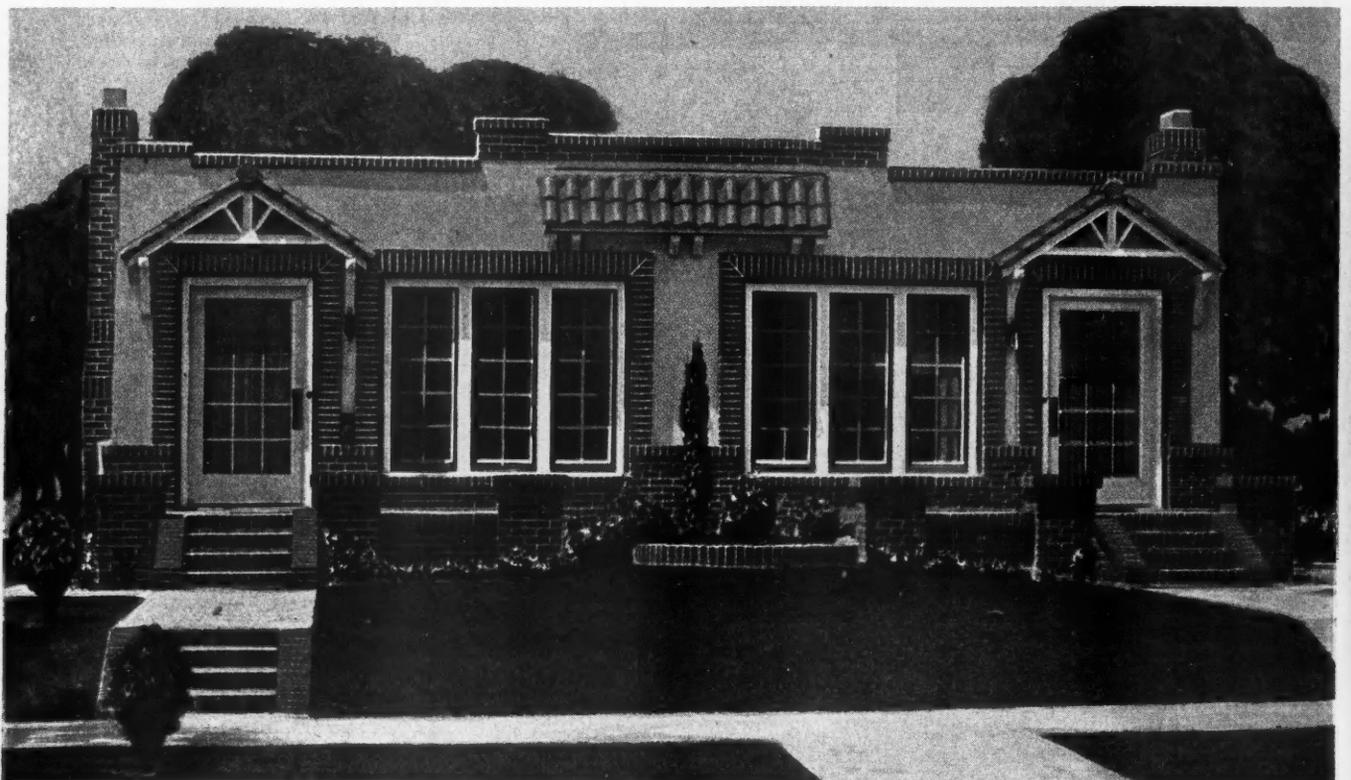
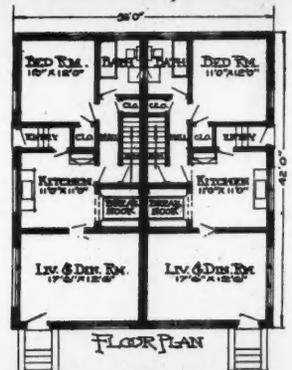


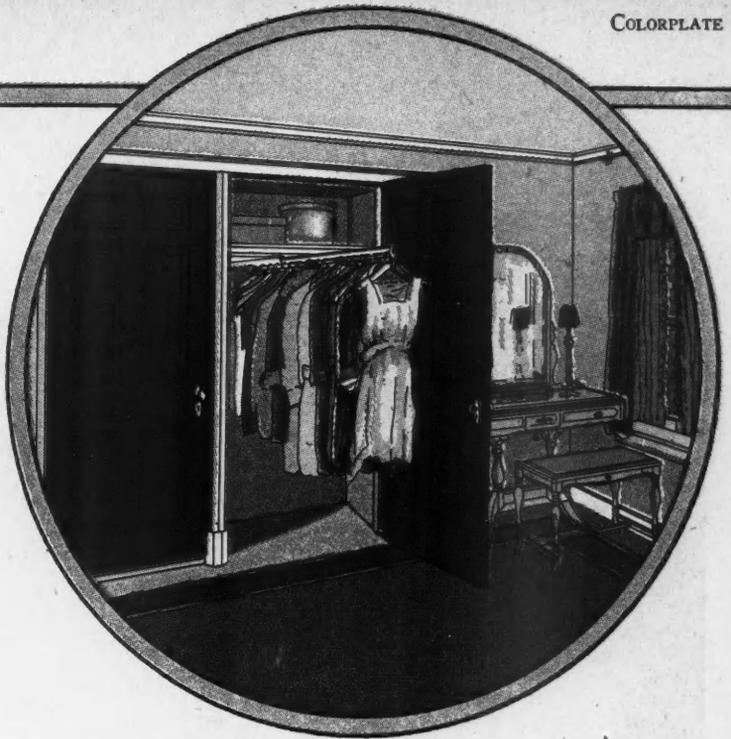
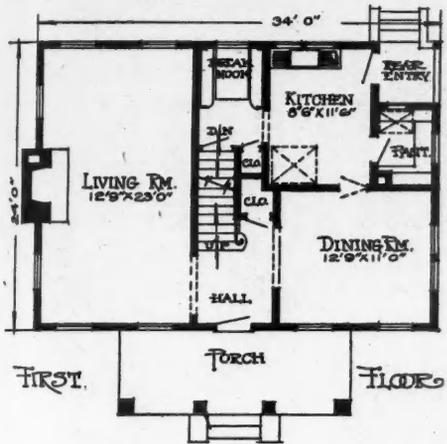
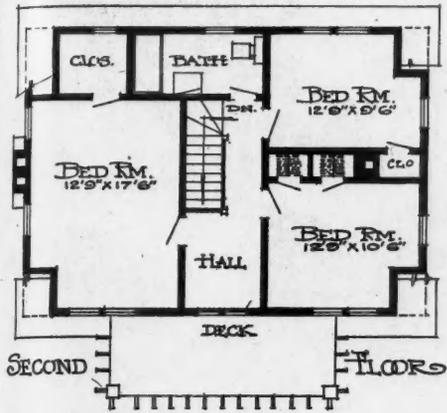
The PARTLOW

ABOVE and to the left we present a four room and bath bungalow in the Colonial style.

The PAYSON

BELOW and to the right is a double bungalow, three rooms, breakfast nook and bath on each side. Building overall is 36x42 feet. A paying investment.





The PEACE DALE

A MODIFIED Dutch Colonial home is illustrated, this one with extra large front porch. Within, the arrangement is the conventional one which has proved so satisfactory—center hall with big living room at the left and the diningroom kitchen unit to the right. The breakfast nook worked in back of the stairs is an added feature of this plan.

On the second floor we find one large bedroom and two smaller bedrooms. A bathroom opens from the hall.

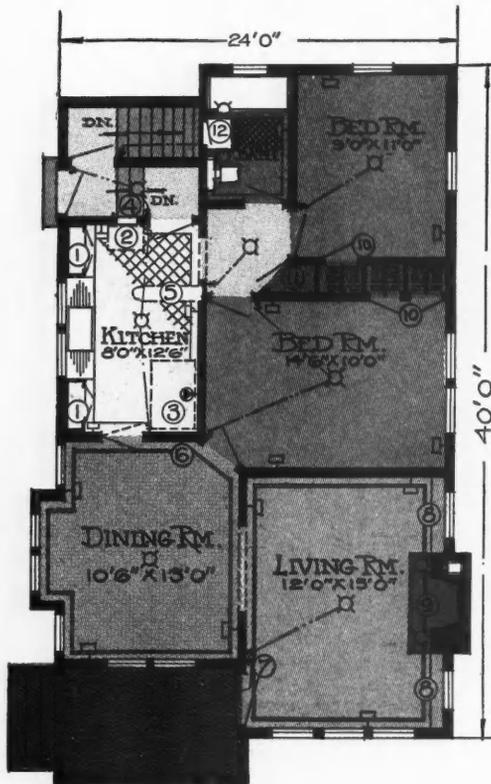
The color sketch in the circle above shows the great convenience of the double wardrobe with space-saving telescopic garment hangers which are provided in connection with one of the bedrooms.





The PEMBROKE

A FIVE-ROOM and bath Colonial cottage of individual lines and great interior convenience.



FLOOR PLAN

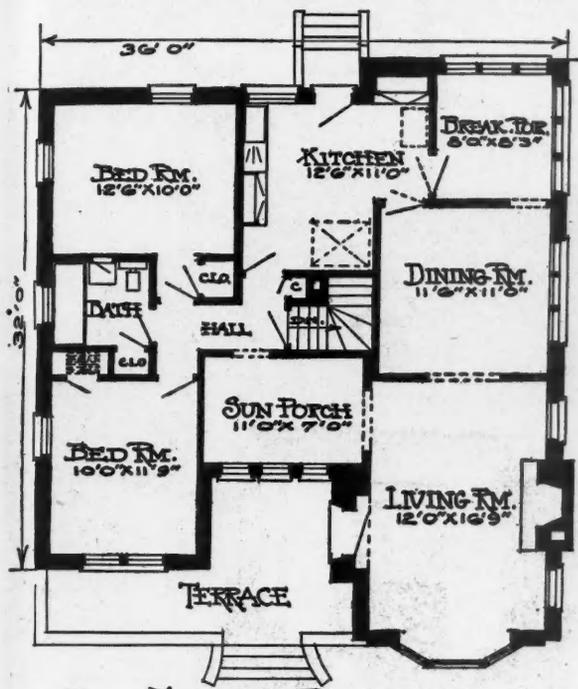
COLORKEED HOME PLANS

TRADE MARK

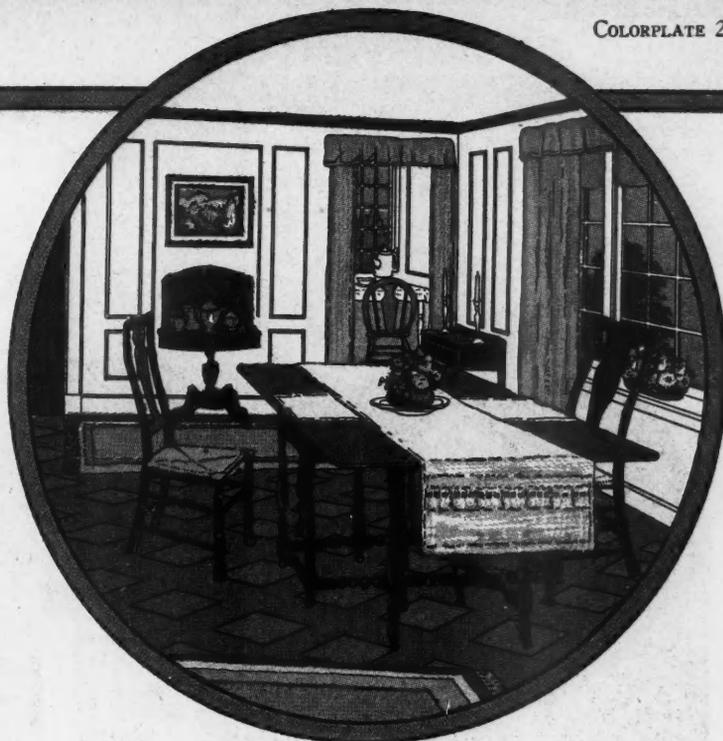
	Living Room		Closet
	Dining Room		Bed Room
	Kitchen		Bath and Lav.
	Pantry		Porch
	Halls		Roof

Key to Equipment

- | | |
|-------------------------------|--------------------------|
| ① Kitchen Cabinets | Lighting Fixtures |
| ② Refrigerator | Convenience Outlets |
| ③ Gas or Electric Range | Electric Panel |
| ④ Outside Icing Door | Washing Machine |
| ⑤ Built-in Ironing Board | Ironing Machine |
| ⑥ Thermostat | Clothes Drier |
| ⑦ Built-in Mail Box | Coal Chute |
| ⑧ Book Cases | Heating Plant |
| ⑨ Fireplace Throat and Damper | Oil Burner |
| ⑩ Space-Saving Wardrobes | Water Supply System |
| ⑪ Linen Closet | Hot Water Supply |
| ⑫ Medicine Case | Water Softener |
| Weatherstrips | Radiant Gas Heaters |
| Storm Sash | Casement Windows |
| Screens | Dishwashing Sink |
| | Automatic Cellar Drainer |
| | Garbage Incinerator |
| | Disappearing Stairs |



FLOOR PLAN



The PENRYN

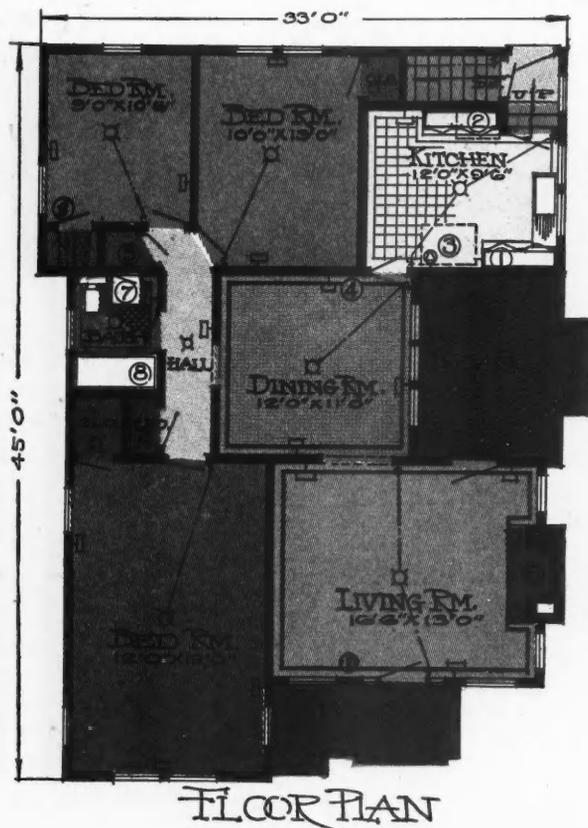
HERE is a substantial well built home of face brick in reds and browns, and an unusual roof of natural slate or rigid asbestos in a variety of colors. The floor plan shows seven rooms and bath if we count the sun porch and the breakfast porch. It is a layout of generous size and equally generous comfort.





The PHOENIX

A HOME of elegance and distinction is presented in this six-room bungalow of concrete construction.



COLORKEY HOME PLANS

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

Key to Equipment

- | | |
|-------------------------------|--------------------------|
| ① Kitchen Cabinet | Electric Panel |
| ② Refrigerator | Washing Machine |
| ③ Gas or Electric Range | Ironing Machine |
| ④ Thermostat | Clothes Drier |
| ⑤ Linen Closet | Coal Chute |
| ⑥ Fireplace Throat and Damper | Heating Plant |
| ⑦ Medicine Case | Oil Burner |
| ⑧ Tub Shower | Water Supply System |
| ⑨ Space - Saving Wardrobe | Hot Water Supply |
| ⑩ Built-in Mail Box | Water Softener |
| Weatherstrips | Radiant Gas Heaters |
| Storm Sash | Casement Windows |
| Screens | Dishwashing Sink |
| Lighting Fixtures | Automatic Cellar Drainer |
| Convenience Outlets | Garbage Incinerator |
| | Disappearing Stairs |

OUR FRONT COVER HOME



A Colonial Home Possessing All the Atmosphere of Old New England But Providing Everything in Modern Convenience

THE comfortable looking dwelling pictured in colors as our Front Cover Home is modeled after the staid New England Colonial homes of long ago. Outwardly it preserves all that the best tradition has associated with the period but in fact affords much in comfort that the houses of that earlier day lacked.

There is an air of quiet elegance in this pleasing design that bespeaks of comfortable rooms within. Viewed in its summer glory, one cannot help but feel that even when the blustering storms of winter come, and snow covers the earth in its white mantle, there will be cheeriness, comfort and a welcome beyond the inviting entrance door.

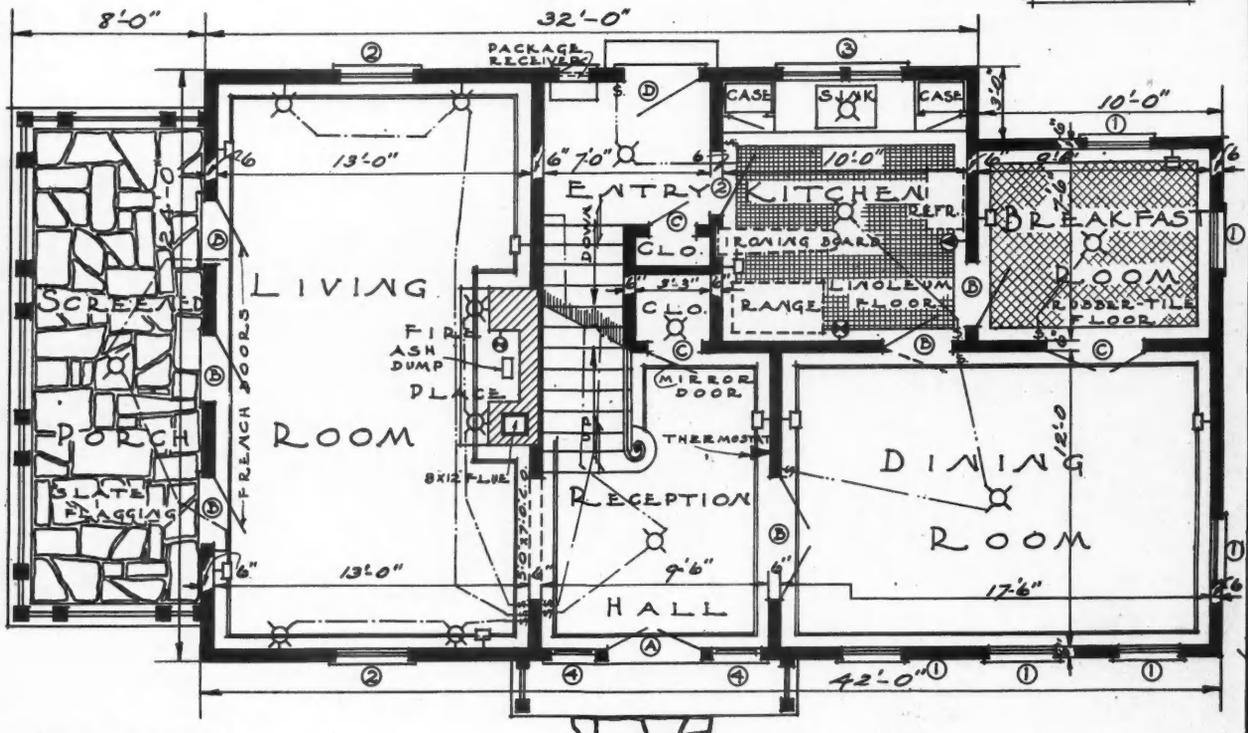
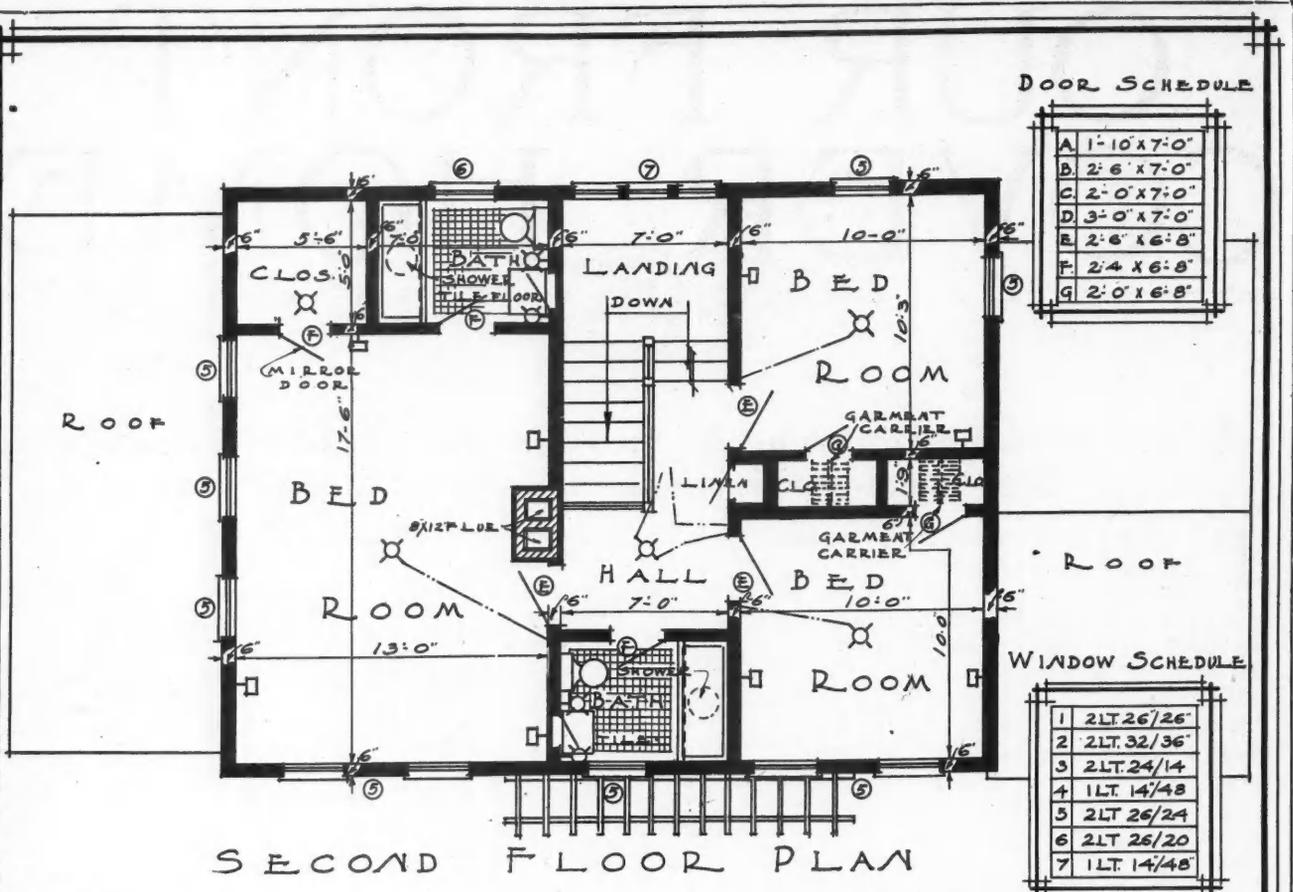
Wide clap boards or shingles side the house, and of course these should be painted white for true appearance to type, with the shutters in the blue green of Colonial days. The chimney brick may either be left in the varying shades of its own natural state, or may be whitewashed; both methods were used by our New England forefathers.

The roof should be of wood shingles where the true atmosphere is desired, and this would best be left weathering to a natural gray, or if preferred, stained a green or brown. Either color would be in harmonious combination with the rest of the house.

The floor plan of this house is an ideal combination of the hospitality of our old New England homes combined with modern conveniences. The inside reception hall is there with its graceful, inviting staircase. The living room is of good size, with a large open fireplace, and off to one side is a large screen porch; this is something our forefathers never thought of enjoying—we do progress in the art of comfortable living. The kitchen is an entirely different affair than was ever used by our sturdy Pilgrim housewives, but were they around today they certainly would be thankful that such attractive homes can be had all ready built, by our modern builders. All that is necessary is to move in!

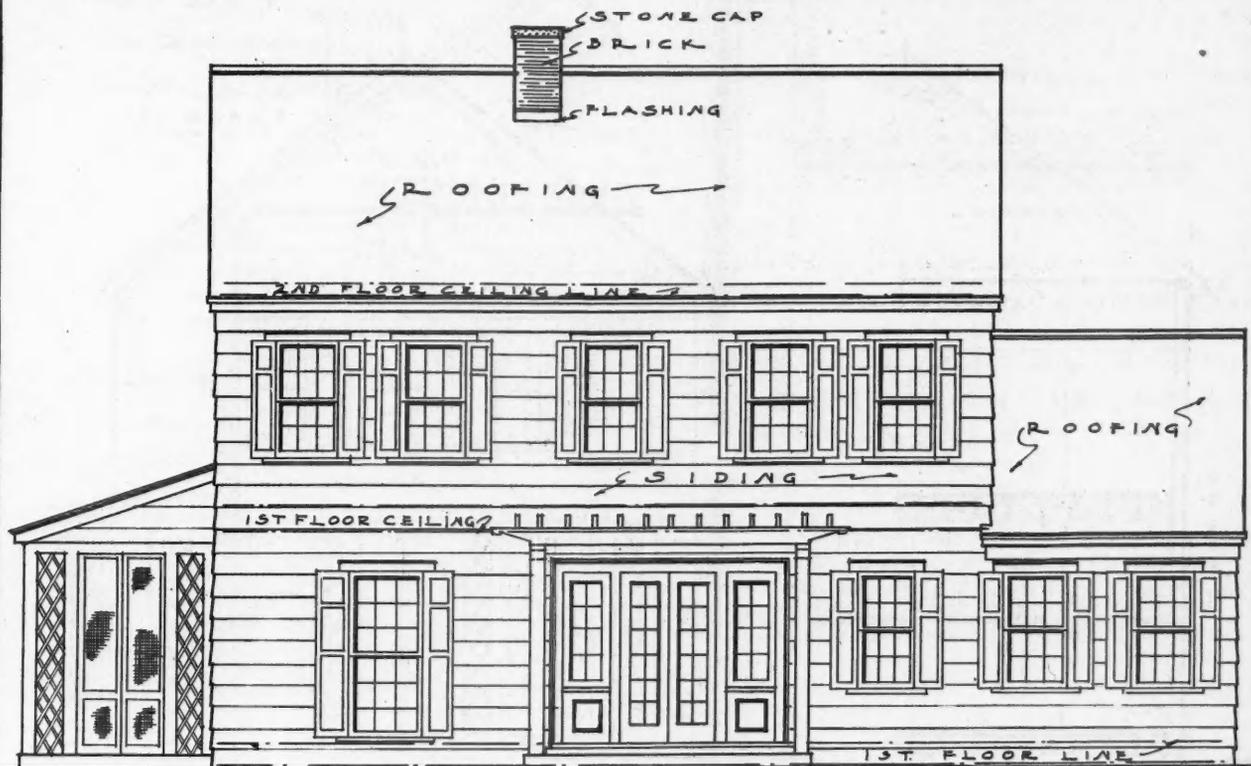


A Comfortable New England Colonial Has Been Chosen for Our Front Cover Home and Its Many Points of Excellency May Be Observed from the Plans, Drawn to Scale and Reproduced on the Pages Which Follow.

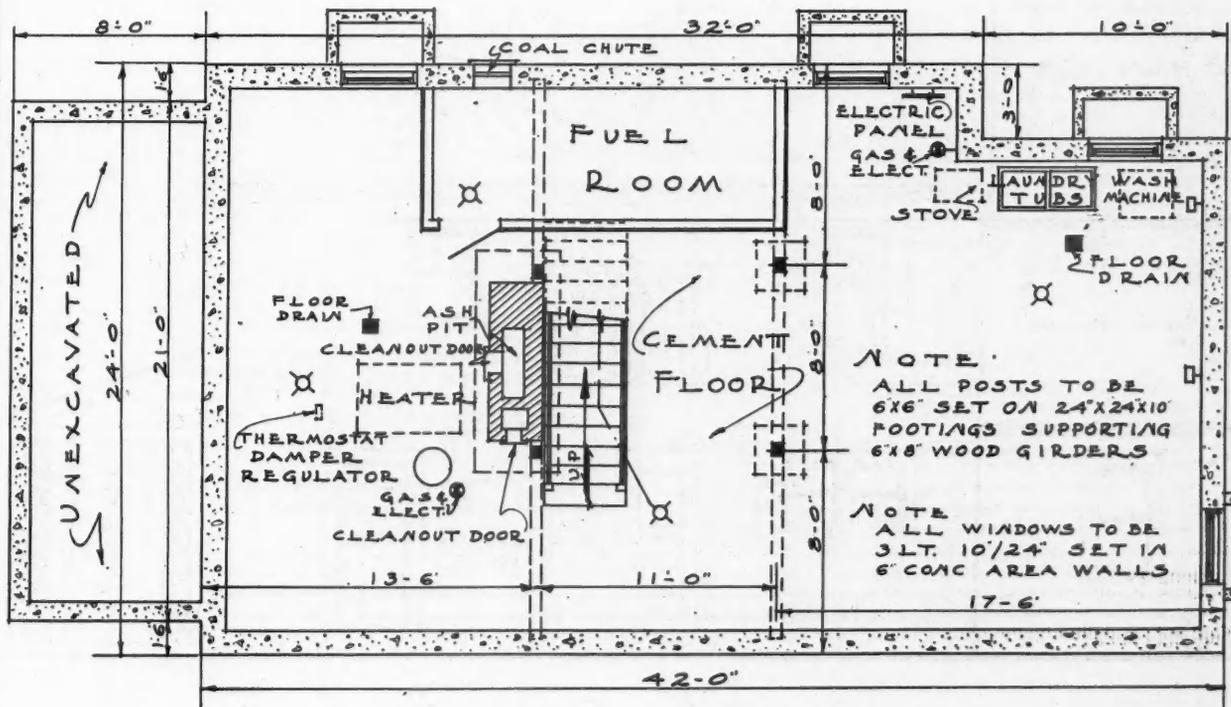


SHEET NO. 1

The Floor Plan of Our Front Cover Come Is Typically That of an Old New England Home with All the Modern Conveniences Added.



FRONT ELEVATION

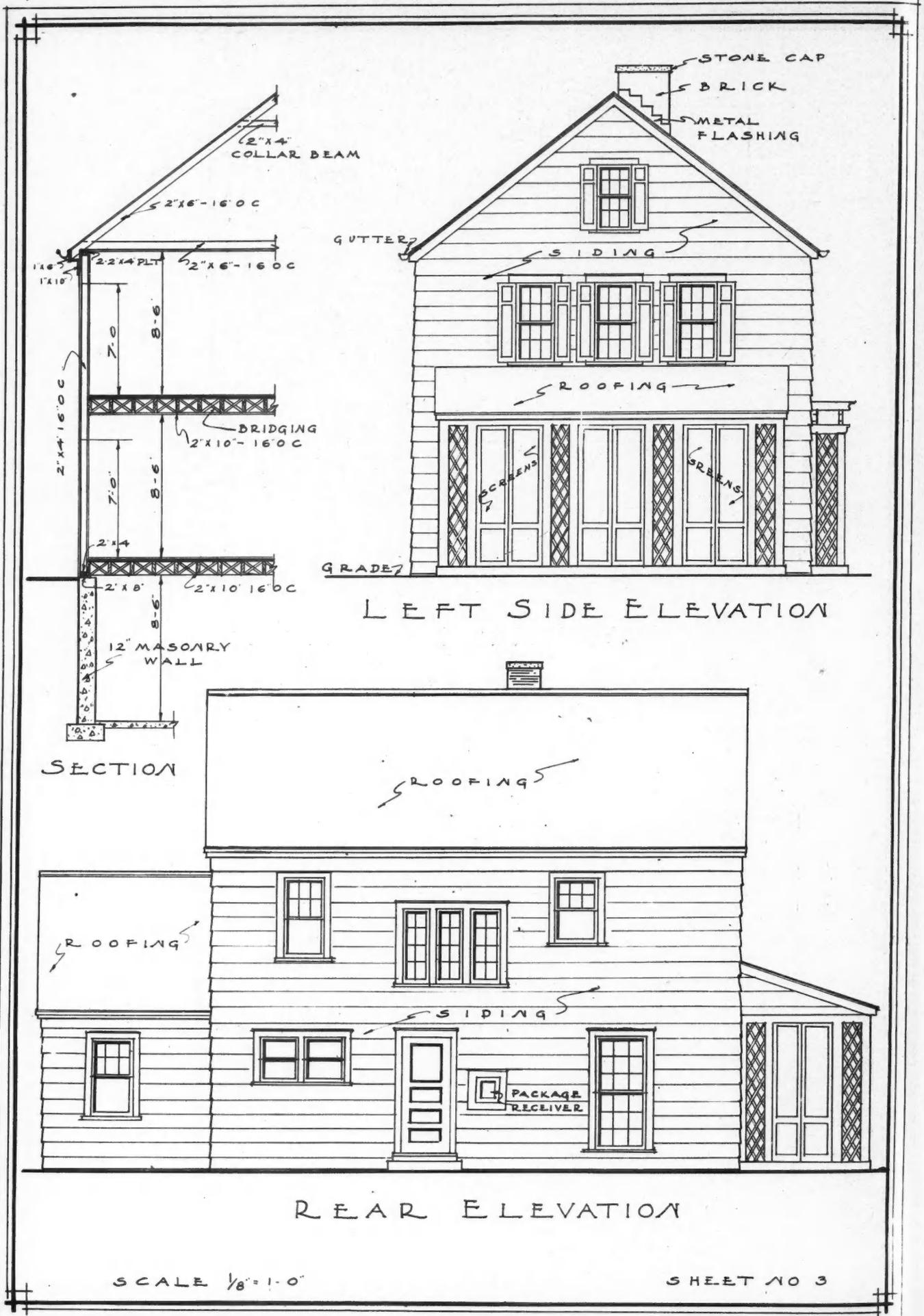


BASEMENT PLAN

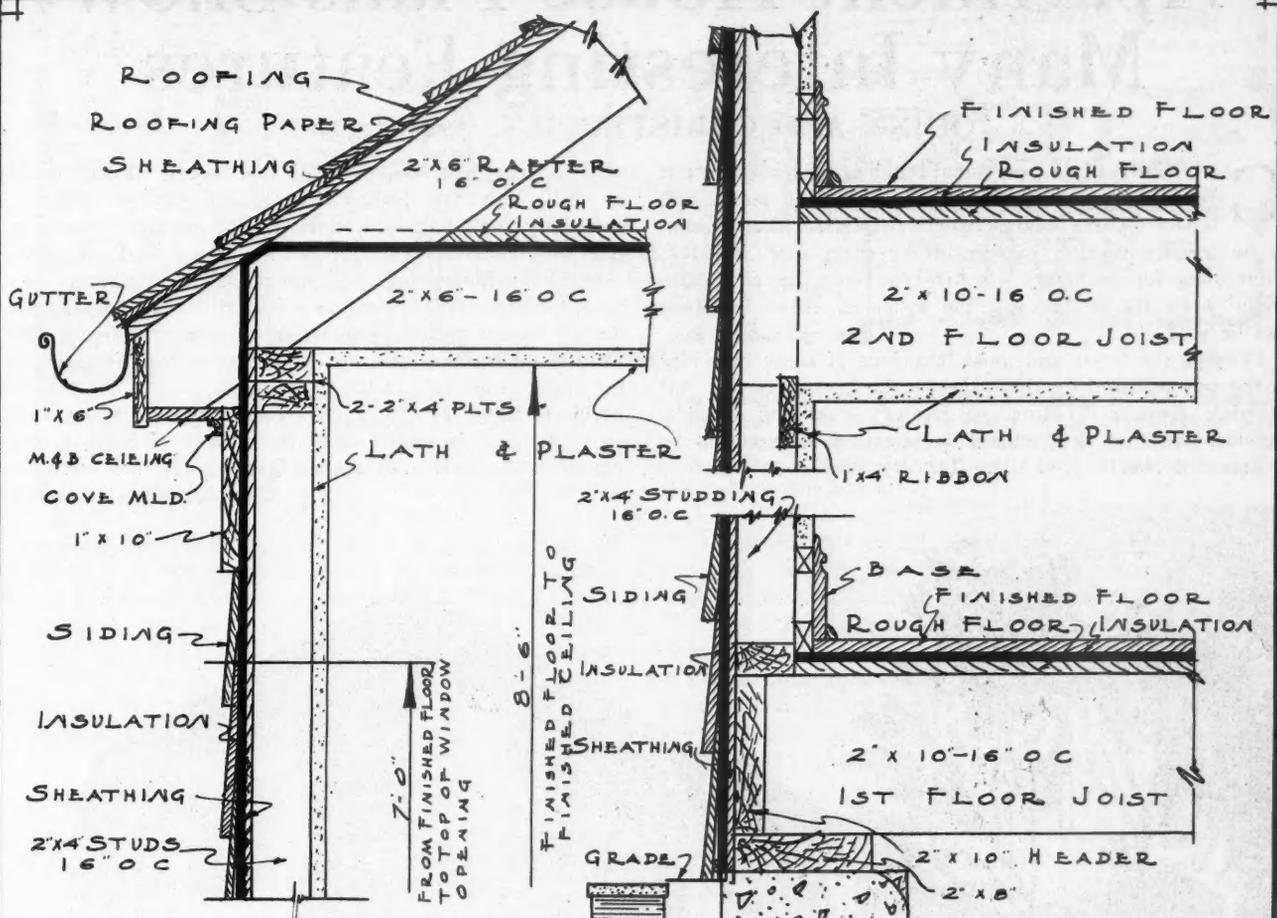
SCALE 1/8" = 1'-0"

SHEET NO 2.

The Laundry Space Is Well Separated from the Dirt of the Heating Plant and Fuel Room. Other plans on the following pages.



Two Elevations of Our Front Cover Home and a Sectional Drawing Indicating the General Construction.

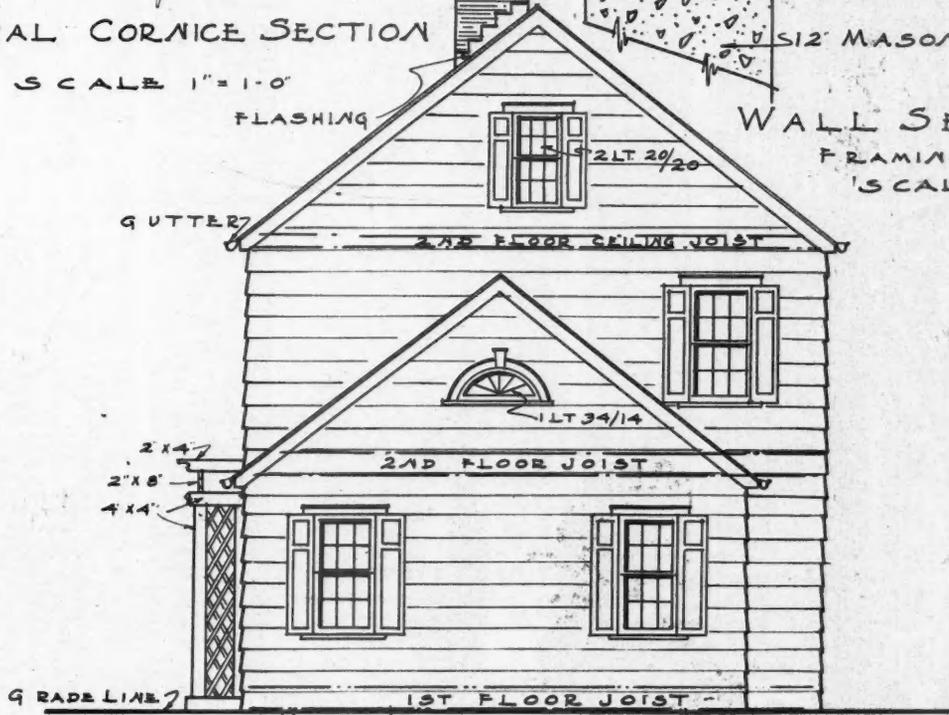


TYPICAL CORNICE SECTION

SCALE 1" = 1'-0"

WALL SECTION

FRAMING DETAILS
SCALE 1" = 1'-0"



RIGHT SIDE ELEVATION

SCALE 1/8" = 1'-0"

SHEET NO 4

Here We Find, Together with the Last of the Elevations, Details of Cornice and Wall Section.

Apartment House Plans Show Many Interesting Features

QUINN AND CHRISTIANSEN, Architects

CO-OPERATIVE apartment building projects continue to gain in favor both with the investing public and tenant-owners in large American cities. Chicago seems to be forging to the front in this respect with its lake-front sites for buildings of this type and the ease with which both the bonds and the space in these buildings can be sold.

Perhaps the latest and most luxurious of these buildings is the one pictured on this page—to be known as the "431 Oakdale Avenue Building"—a 15-story steel and concrete building with its symmetrical architecture surmounted by a mansard roof of red tile. This type of roof design is

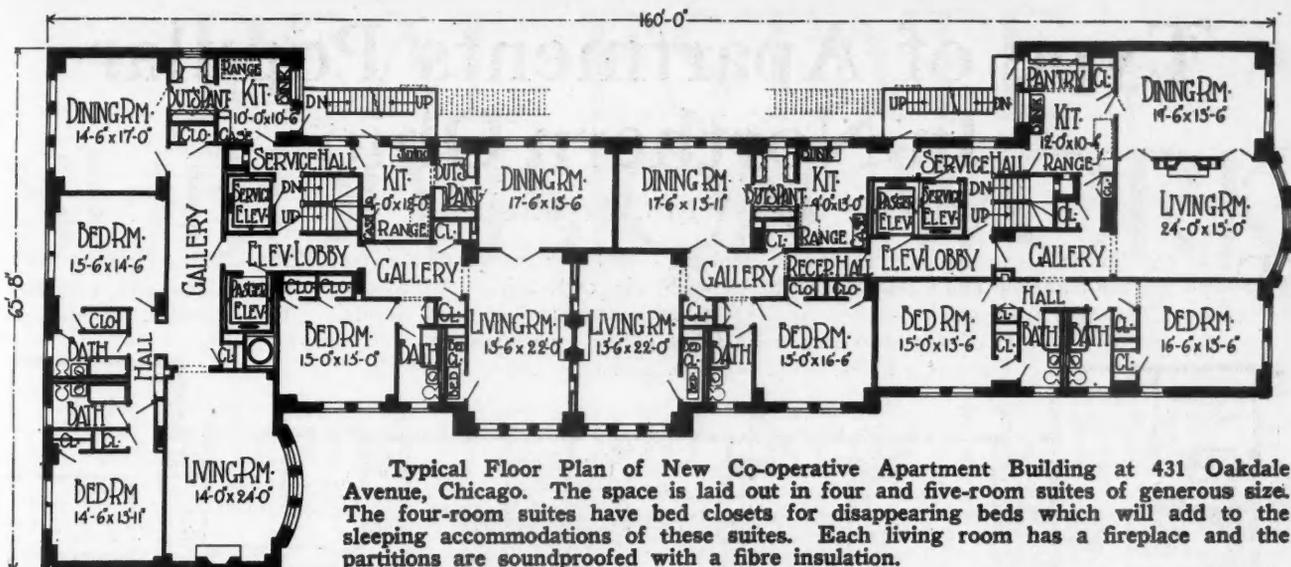
new to apartment buildings of the Middle West but fits in well with the Italian Renaissance design which is extremely well balanced, having just enough ornamentation to present an exterior both pleasing and distinctive.

In the planning and equipment of this building, there are provided many interesting features well calculated to attract tenant-owners who want the acme of living comfort for themselves and adequate recreational facilities for the children as well as the grown-ups.

The building is situated on a corner, with windows overlooking Lake Michigan and free access of light and air on all four sides. An arched gateway to the south but



Fifteen-Story Co-operative Building to Be Known as 431 Oakdale Avenue, One of Chicago's Latest and Best Equipped Buildings of This Type. It is provided with a children's play yard enclosed by a garden wall, a paved courtyard entrance where a fountain will play and a recreation room on the top floor with handball, racquet and tennis courts as well as gymnasium apparatus.



Typical Floor Plan of New Co-operative Apartment Building at 431 Oakdale Avenue, Chicago. The space is laid out in four and five-room suites of generous size. The four-room suites have bed closets for disappearing beds which will add to the sleeping accommodations of these suites. Each living room has a fireplace and the partitions are soundproofed with a fibre insulation.

facing the east gives access to a cloistered Italian courtyard paved with flagstones and bordered by grass and shrubbery. Opposite the main entrance to the building, a fountain will play. Past this fountain, a walk through the courtyard leads past the main entrance to a children's play yard. This play yard is commanded by the windows of the building on two sides and sequestered from the street by a stone wall of ornamental design. Here there is to be an equipment of sand boxes, slides and swings and the children can play happily out of doors in privacy and protected from street traffic.

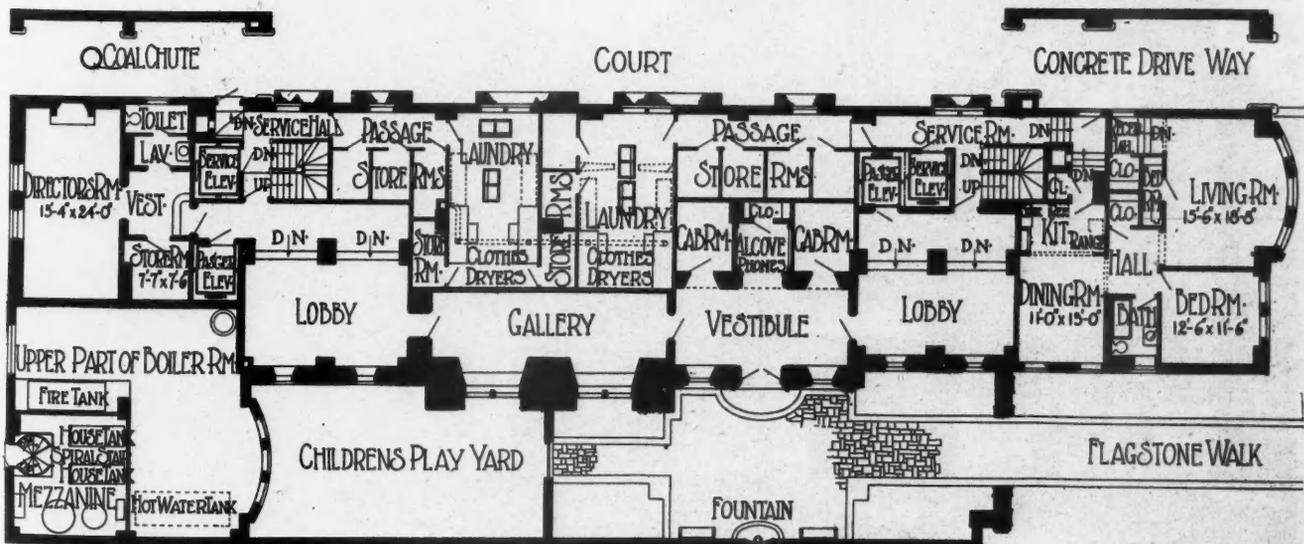
Recreation for the grown folks is provided in a recreation room at the top of the building where there will be racquet, tennis, croquet and handball courts, as well as gymnastic apparatus. The windows of this solarium will be of a special type of glass which admits the health-giving, ultra-violet rays of the sun which are excluded, the scientists say, by ordinary glass.

Reference to the ground and typical floor plans, published herewith, reveals some features worthy of comment. On the ground floor there are two cab rooms, near the main entrance, for the storage of baby buggies. There are also two completely equipped laundry rooms with gas-heated clothes dryers, a janitor's suite, storage and service rooms and a directors' room.

A recessed court to the north provides convenient space for the fire escapes and also for service entrances at grade besides providing a light court of ample dimensions in case a high building should be erected alongside. On the ground floor, doors from this court provide access to service and storage rooms as well as service elevators. Passenger elevators are conveniently placed to serve apartments at each end of the building.

The typical floor plan shows four and five-room suites with rooms of generous size. All of the five-room suites have two bathrooms apiece and five closets, one of which is to be cedar lined. All kitchens are to be equipped with electric washing machines and electric dish-washing sinks. Living and dining rooms are to be handsomely paneled in wood. In addition to the features already described, there will be butler's pantries, built-in wardrobes, bookcases and fireplaces. Floors will be of hardwood throughout except in the kitchens which are to be composition and in bathrooms where they will be of tile.

The cost of the completed building will be \$1,120,000 and the site has been appraised at \$135,000. The bond issue is for \$725,000, bonds to bear 6% interest, offered by the National Republic Mortgage Company, National Bank of the Republic, trustee. The tenant-owners will take title as the 431 Oakdale Building Corporation.



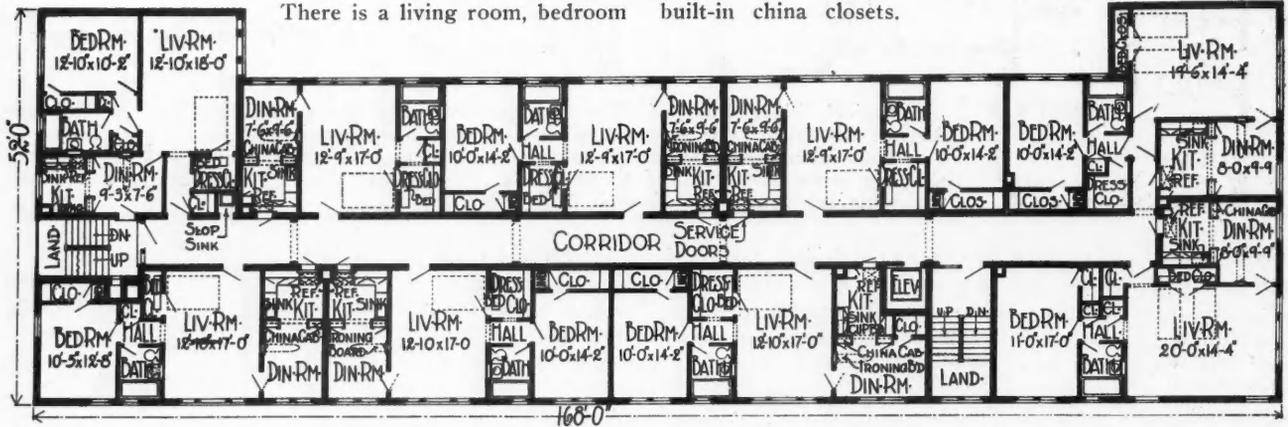
The Ground Floor Plan of This Building Shows a Liberal Space at the Side of the Building Laid Out as a Play Yard for the Children with Slides, Swings and Sand Piles. Adjoining the play yard is a paved court yard entrance with grass and shrubbery borders and a fountain at one side. Entrance is through an ornamental archway at the front, a flagstone walk leading through the courtyard to the main vestibule.

Type of Apartments Popular In Northern Ohio

MAX WEIS, Architect

THE "Shelburne" is a 33-suite apartment building with English basement and a central corridor on each floor. This is a type which has been quite popular in Cleveland and northern Ohio. There is a living room, bedroom

and combination dining room with kitchenette compartment in each suite. All living rooms are equipped with disappearing beds and closets. All kitchenettes are equipped with refrigerators and diners with built-in china closets.



Typical Floor Plan of the "Shelburne" Apartment Building.



An Apartment Building, the "Shelburne," with English Basement and Central Corridors, a Type Popular in Cleveland and Northern Ohio. The suites consist of three rooms and bath and there is a disappearing bed and closet in connection with each living room. Dining rooms have kitchenette compartments and are fully equipped. Max Weis, architect; M. Teplitz, owner and builder.

REAL ESTATE *and* SUBDIVISION WORK



Building 15,000 New Homes

SOME forty years ago, a mighty transoceanic ship brought from Russia to these United States the merest slip of a baby boy cuddled away in the crowded congestion of the steerage section.

Another family of Russian emigrants sought freedom in remarkable America and the Cafritz, young and old, had embarked on their first sea voyage, hoping against hope that a pot of gold awaited them at the end of the rainbow.

This dream of a "castle in Spain" has been hatched into reality by Morris Cafritz, the infant who arrived in New York in the dead of winter.

The courageous parents by hard work and honest effort found comfort and contentment in Washington, where the father eventually built a sterling reputation and accumulated a competency in the grocery business. The son, Morris, has continued the forward march and today ranks among the leading builders of the Atlantic seaboard.



Morris Cafritz, Prominent Washington, D. C., Builder.

The trail of diversification in business activity qualified Morris Cafritz as a successful captain of modern construction. A graduate of Technical High School in Washington, Morris Cafritz subsequently won a diploma at the National Law School, working by day in order to earn expense money to pay for his schooling by night. Young Cafritz capitalized his legal training as an efficient aid in business advancement. His gamut of activities ran the range from clerking in stores to owning and managing several of the largest bowling alleys in our national capital. He saved his earnings, made wise investments and eventually engaged in row house construction.

At the termination of the World War when Washington had gained fame as a center of international politics, financing and statesmanship, Mr. Cafritz mobilized his assets and embarked in the building business. At that time, Washington was one of the most underbuilt cities on the face of the world's map.



The Cafritz Organization Has Specialized in the Construction of Row Houses and Has Erected Over 1,500, of Which These Are Typical, in the Last Seven Years.

From a center of government, where lived some 375,000 residents, Washington forged forward into a city of more than half a million inhabitants. A dearth of housing facilities pressed into service all available builders. Cafritz was different from some of his associates. He entered the construction game as a permanent business to remain on its roster through weal and woe.

Washington's youngest builder did not hitch his wagon to a star as a guide to future destiny, but he did tie to an appropriate slogan. "There is always a demand for what's good," preached this new leader to his subordinates. His first order and all subsequent orders issued to his foremen have been: "Build whatever you build as strong and substantially as you can. Cut costs by reducing the sizes of the houses, but never skimp on the use of good material and the employment of the best workmanship."

Scanning the home building potentialities in Washington, Mr. Cafritz decided to specialize in the construction of row houses. A careful survey which he made in the capital city showed that these low-priced homes were in greatest demand. He found that it cost from \$3,000 to \$5,000 less to build a row house as compared with a detached house of similar dimensions. The row house not only costs less to build, but it is cheaper to heat, the upkeep is smaller and there is less lawn and garden space to be cared for.

Morris Cafritz began operations by building 30 row houses in the Petworth section of the District of Columbia. This construction campaign was successful. The houses, sold on terms to suit the purchasers at prices ranging from \$7,950 to \$11,950, were quickly marketed to government clerks, small tradesmen and army and navy officers stationed in Washington. The demand for the row houses was so keen that Mr. Cafritz began a quiet search of the Washington suburbs for a large tract of land suitably adapted and satisfactorily located for such construction.

The hunt for unoccupied property finally resulted in a remarkable "find." The Argyle Golf Club, which had developed a fine tract of 80 acres as a links, wished to move farther into the country where taxes would be lower and a more extensive property could be secured. As soon as he heard of this, Mr. Cafritz arranged a meeting with the golf club officials and purchased the large well located acreage on the spot before any of his competitors had opportunity to make offers.



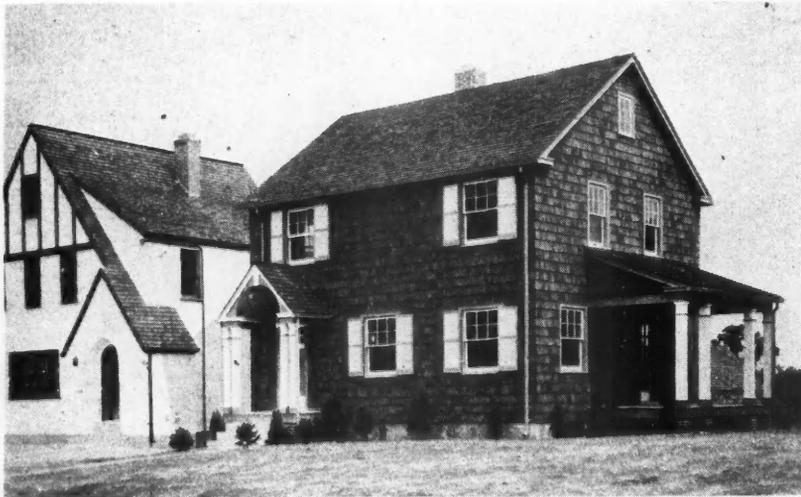
This Handsome, Spanish Type, Mansion Is One of Two Houses of This Class Recently Built to Test Out the Possibilities in the Construction and Sale of Expensive Homes on an Extensive Scale.

This 80-acre tract was graded immediately and was developed as the scene of the most important row house erection enterprise in the history of the city. During the last seven years, Mr. Cafritz has built and sold more than 1,500 row houses at prices ranging from \$8,000 to \$15,000. These homes have been sold on easy terms to all classes of white home seekers. A little city of row houses in itself, with its essential quota of neighboring stores and shops, has arisen as though by magic on the ground where Washington golfers formerly matched their skill against the mythical Colonel Bogey and General Par.

Mr. Cafritz has also built and sold 500 detached homes in some of the best residential sections of Washington. Chevy Chase Terrace, one of his latest developments, consists of 30 detached homes on large lots in the country club section of the District of Columbia. Many of these houses which were sold for from \$13,950 to \$15,950 overlook the notable Chevy Chase Golf Club, one of the oldest and most exclusive organizations of its kind in the Middle and South Atlantic States.

Two exhibition Spanish homes of concrete, steel and stucco, on exclusive Upper Sixteenth Street, built recently by Mr. Cafritz, rank among the finest modern style residences in the city. They were experimental in that Mr. Cafritz wished to test out the possibilities of such costly mansions before he engaged in their construction on an extensive scale. The smaller of these mansions of Madrid and Venetian style sold for \$60,000, while the larger house brought \$115,000. Both were replete in patios and loggias, the ornamental gardens and hidden nooks and corners which typify that style of construction.

There is an ever-increasing migration from all our larger cities and leading states to Washington. People of wealth as well as those in comfortable circumstances are coming to Washington in numbers to spend their sunset years on the banks of the peaceful Potomac. Washington, one of the most beautiful cities in all the world, now ranking as the world's capital of capitals. With its scenic attractions, libraries, museums, federal headquarters and other national assets like a mighty magnet, it is increasing its permanent population by drawing new residents from all parts of the country.



A Group of Homes in Chevy Chase Terrace, Another Cafritz Development in Which Detached Houses Predominate.



The Headquarters of the Cafritz Organization, in Washington, D. C., Is a Handsome Building in Keeping with the Quality of Construction for Which This Builder Stands.

The majority of these newcomers buy or build homes while Washington's large floating population lives in apartments and hotels. The apparent "over-construction" of hotels and apartment hotels in Washington would be excessive in any other American city of comparable size, but in our national capital it serves unusual needs. Washington per 1,000 of population has more hotel rooms than any other city in this or any other country. The fact that it is a convention center and a core of national and international tourist travel is self-explanatory in this regard. Furthermore, a multitude of congressmen, senators, army and navy officers, government executives, diplomats, lobbyists and the national representatives of leading industries and sciences live in hotels instead of private homes.

"Hasn't the saturation point been about reached in Washington home building?" was our inquiry when we talked with Mr. Cafritz.

"There is no saturation point for honest value," was the prompt reply.

Then in an extended discussion this builder told us that future building operations in Washington would be larger than ever before in that city's history. His opinion is that a temporary lull in building will occur during the next eighteen months. It will be the lull before the storm of vastly increased activity. A monumental building campaign planned by the U. S. Government which will sum up to the expenditure of many millions will coincide with correspondingly great commercial building.

The Fine Arts Commission of Washington and the National Planning Board have mapped out a wrecking and improvement campaign which will make picturesque Pennsylvania Avenue, extending from the U. S. Capitol to the White House, one of the most beautiful boulevards in the world. All the buildings, stores, houses, hotels and office structures on the south side of the avenue, totaling more than 300 edifices, are to be razed to the ground in order that the land may be merged into Washington's chain of parks system. A business belt fifteen blocks in length and from one to three blocks in width will be condemned and transformed into a marvelous parkway

and site for statues and memorials to our national heroes and celebrities.

This destruction of some twenty-four square blocks of business and residence property will expedite building. It will simply mean that, in addition to a number of imposing government buildings which are to be constructed on contiguous sites, accommodations for those who have to sacrifice their property along Pennsylvania Avenue will have to be provided in other sections of Washington. A construction campaign which will cover a period of ten years will shortly begin its era of building turmoil at our seat of federal government.

One of the largest apartment houses in the East, Hill Top Manor in Washington, is another of the Cafritz consummations. It is a mammoth structure of concrete, steel and brick built to defy the attacks of time, wind and weather. Hill Top Manor contains 246 apartments under one roof, the majority of its apartments being from three to five rooms. Corcoran Courts is another of the Cafritz apartments which has proved particularly popular due to its splendid location overlooking the Potomac River, Lincoln Memorial, the new Arlington Bridge now under construction and a distant skyline speckled with government buildings.

Altogether, during his eighty-four months of active production in the building business, Mr. Cafritz has built twenty-five apartment houses in Washington whose average capacity is 60 families. His has also been the master mind which has guided to successful completion a number of the largest commercial garages and automobile sales agencies in the city. Several of these indestructible garages accommodate upwards of 250 motor cars.

An organization which was formed originally to devote its energies to the construction of row houses is now engaged actively in all ramifications of modern construction. Mr. Cafritz, a champion of the slogan, "quality counts," only very rarely sublets a contract. He maintains a flexible army of builders which ranges according to season from 1,500 to 3,500 regular employees. With this skilled working force at his service and trained in his methods, this master-builder continues to shatter building records. During the last seven summers, the Cafritz organization has built and sold more than \$40,000,000 worth of homes. GEO. H. DACY.



Corcoran Courts, Built and Owned by Mr. Cafritz, and One of Twenty-five Apartment Buildings Which He Has Constructed in Washington, Overlooks the Potomac River and the Lincoln Memorial.

Plywood in Building Construction

By LAWRENCE OTTINGER

PLYWOOD (veneered paneling) is a product whose use is increasing with greater rapidity than that of any other material in the woodworking industry. Wood will expand and contract, check and warp across the grain. With the grain it has practically none of these disadvantages. A plywood panel of three, five or more plies is so manufactured that the grain of each lamination runs at right angles to that which is next to it. Being held together with a strong glue, the panel is of practically equal strength in all directions; will not warp, split or check. The impregnation of the glue into the wood, under pressure, greatly increases the strength.

Plywood can be obtained in sheets of large size entirely free of defect and although it is a manufactured article its cost is relatively low. This is, in part, due to the fact that the veneers are obtained from the log by cutting with a knife and frequently rotary cutting, so that the waste of the saw kerf and the waste of producing rectangular boards from a round log is eliminated. Furthermore, the woods of lesser value are used on the core or inside of the panel and those of greater value and beauty are on the surface on either one or both sides. In this way the most beautiful logs are saved for the surface and, as the veneer may be turned either way to make the compensating figure, very

beautiful results are obtained. When it is considered that pianos, phonographs, radios and furniture generally, with so small exception that it is negligible, are made of plywood, the intrinsic merit of this material will be understood.

Many types of plywood, such as Douglas fir and white pine or unselected gum, are extremely low in price, so that their use in dining rooms, living rooms, nurseries and frequently in bedrooms is less expensive than the ordinary plastered walls, when the cost of plastering and painting or papering is taken into consideration. In fact, the cost of the fir plywood, at the present market, is so close to that of pulp for paper boards that the difference in cost per room is very small and the plywood panel can be scraped and refinished as often as necessary and will last as long as the building, and reflect the natural beauty, figure and grain of the lumber.

There are plywood distributing houses for shipment in small quantities in all of the larger centers of the country. Plywood in $\frac{5}{8}$ -inch or $\frac{3}{4}$ -inch, in widths up to 36 inches and wider, are obtainable at a price very close to the price of rough lumber in the same dimensions, especially in the Western woods, such as fir and white pine. This material is being used to a great extent for shelving and other purposes, for which lumber is ordinarily used.



This Picture Shows Clearly the Rich Effect Gained by the Use of Plywood Panels as a Wainscot. The natural beauty of fine woods is unsurpassed for interior finish. Styles change but this type of finish dates back to antiquity and is still to be found in the best buildings and is popular with people of good taste.

Plywood flooring is also on the market in squares of uniform color which is easily laid, and because of the size of the sheets and because they will not shrink, cracks will not open up due to steam or other heat.

One of the very marked improvements in plywood manufacture, which has increased the use of this material, is waterproof glue. Glues of this type were developed in conjunction with the United States Government during the war for the building of aircraft, and plywood is largely used for that purpose today, because it is the strongest material per unit of weight known to science. The waterproof glue not only possesses immense strength but it is unaffected by atmospheric moisture, and, in fact, will stand actual immersion in water for considerable periods of time. For this reason plywood today is used in steamships, refrigerators and many other such industries where a non-waterproof panel could not satisfactorily be used.

Ninety percent of the doors manufactured are made with plywood panels and they have innumerable uses for drawer bottoms, ceilings and other purposes where a smooth clean surface, free of defect, is desired. Plywood made from aromatic cedar for closet lining presents the advantage of being easily and quickly applied and is insect-proof.

The leading plywood houses publish catalogs showing thicknesses, sizes, kinds of wood and prices.



A Corner of the Directors' Room of the American Society of Civil Engineers, New York City, Showing the Beauty of the Crotch Mahogany Paneling. These panels extend the full height of the room.



View Showing Fine Woodwork Paneling in a Los Angeles Residence. Roy L. Smith, architect. A room finished in this way will probably never need refinishing and is easy to keep clean.

Consider the Refrigerator When Planning Homes

ELECTRIC refrigeration is a new feature which architects and builders are now able to offer to anybody who wants to own a strictly modern home.

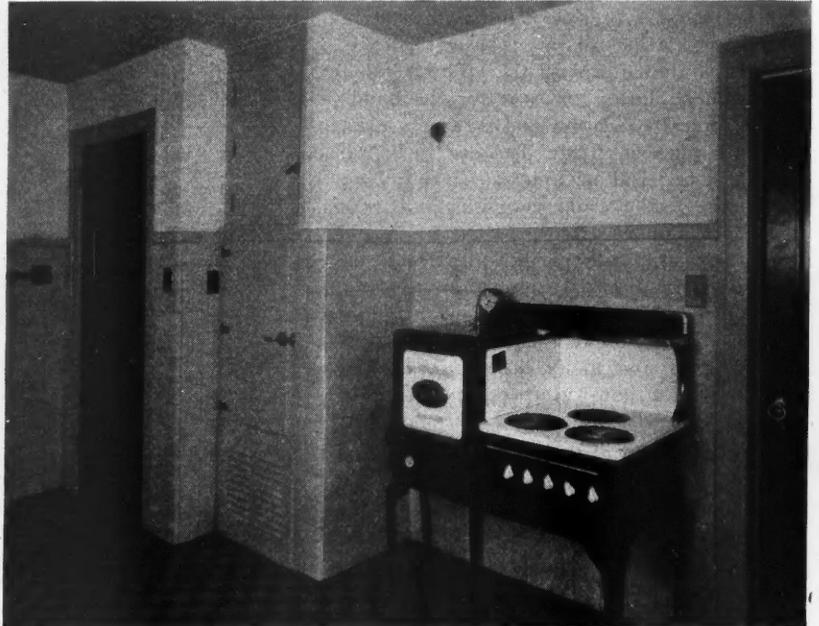
Getting the electric refrigerator placed where it will do the most good and provide the most satisfaction to the proud housewife is a simpler matter, but it is one which can well receive a bit of consideration.

Accessibility for the iceman was the first consideration, aside from the fact that usually the housewife wanted the icebox placed indoors, where it could be locked away from vandals or anybody who had no scruples about "snooping" around other people's ice-chests.

So in planning the kitchen, pantry or service entry, we allotted valuable space to the ice-box, without enough regard to the fact that it might be a whole lot handier for the housewife, herself, if placed somewhere else. Of course you realize what a difference there is in the step-saving afforded by one arrangement of the kitchen equipment, as compared with another. But have you any idea how far a woman can walk in a day in a poorly arranged kitchen?

A Home Demonstration Agent told the other day of having placed a pedometer on a woman whose kitchen was poorly arranged. A pedometer, you know, is an instrument which, fastened to a person's belt, will tell how far they walk while wearing it.

The H. D. A. looked his hearer squarely in the eye and declared that that poor housewife had walked a dis-



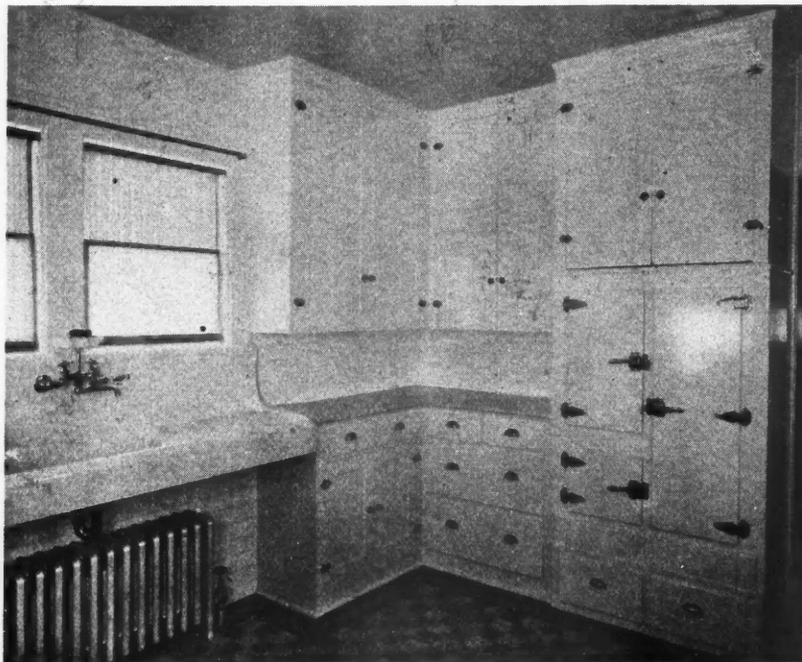
Only a Few Years Ago, It Would Have Been Considered Almost Impossible to Place the Refrigerator Next to the Cooking Range. But now it is being done by means of a wing wall or alcove and saves many steps for those preparing meals. The one shown is an electric refrigerator which gives economical, efficient refrigeration.

tance of eleven miles in making a single lemon pie. Judged by all reasonable standards, that distance was at least ten and fifteen-sixteenths miles too far, even if she had to go to the barn and gather the eggs for the pie. The reliability of that pedometer is open to doubt, but even so there is

room for a lot of improvement in the arrangement of many kitchens, from the standpoint of saving steps for the housewife.

The electric refrigerator is one piece of kitchen equipment which is destined to help immensely in that regard. If it is placed handy for the mistress of the kitchen, it won't take up any more floor space than if it is located in some awkward spot. It furnishes its own cold and no regard need be given to the question of reaching it from the outside. It is established in the space allotted to it, and there it stays. It will fit into the kitchen plan as easily as does the range, the sink or the pantry case. It can be built in, readily, with any pantry case or cupboard arrangement, and the housewife thus has her refrigerator within easy reach. A step or two carries her from one point to another and her labor is lessened because she is working efficiently, with little waste effort.

It should be determined, when the kitchen plans are in the making, what will be the dimensions of the refrigerator cabinet, width, depth and height. The refrigerating mechanism can be placed in any cabinet, but it is well to know, beforehand, the important dimensions, so that disappointments and changes may be avoided.



Here We See the Refrigerator Effectively Built in Along with the Kitchen Cases and Flanked by the Sink Making an Efficient Arrangement Which Appeals to Many Housewives. Here she has at hand the food, the water, the utensils and table top. With this electric refrigerator, the entire mechanism is in the basement.

A complete electric refrigerator is one where the refrigerating mechanism and the cabinet are built together at the factory, coming to the user as a single unit. When such an installation is to be used, the manufacturer will furnish a detailed floor plan giving all dimensions and locations of openings, so that the equipment can be set right in place and connected up. Provision and allowance must be made for necessary plumbing, where the cooling of the refrigerant is done with water. An electrical connection must also be provided. With air-cooled models, no plumbing will be necessary, of course, and only the electrical connection is required.

Automatic refrigeration is of two general types—that in which compression is secured by the use of an electric motor and that in which evaporation is set up by heating the refrigerant in the circulating systems by means of a gas flame. Both types are successful for small dwellings as well as large apartment buildings. Gas operated refrigerating systems are noiseless as well as automatic in their operation. The electric types are also automatic and can be set to maintain any desired degree of cold in the cabinet.

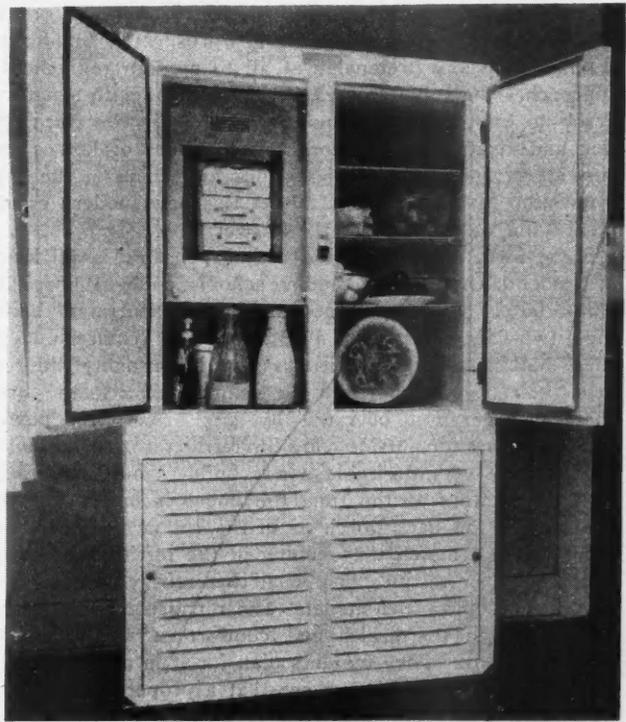
When a complete unit of cabinet and mechanism is installed, the compressor and motor will be placed, usually, in the base of the cabinet. Where the refrigerating mechanism goes into a box of another manufacture, or perhaps the owner's own ice-chest, the compressor and motor will be placed in the basement, where it will occupy little space and be just as easy of access as if it were in the base of the cabinet itself.

If a very quiet job is desired, a V-shaped hole is made in the floor, and is lined with two inches of corkboard. The rest of the hole is filled with cement and the compressor placed on top. The cork acts as an absorber for practically all vibration.

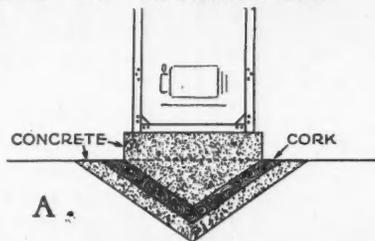
The accompanying sketches illustrate two types of compressor bases, used to mount the large compressors, and both designed to eliminate noise and vibration. The sketch marked "A" is particularly adapted for this, showing the cork insulation which absorbs vibration and makes a very quiet job.

The larger sketch shows a model installation of a household job, with the compressor in the cellar beneath the cabinet.

On the subject of automatic refrigeration for

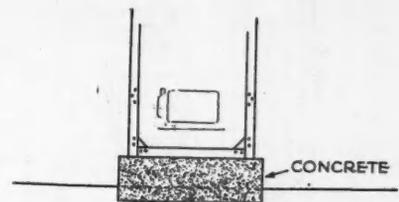


The Motor and Mechanism for This Electric Refrigerator Are in the Base of the Cabinet. Through the open doors of this refrigerator, we see porcelain lining, the convenient shelving and the small drawers at the left where cubes of ice can be frozen.



A

A Piece of Cork Inset in the Concrete Floor Under the Compressor and Motor of a Large Electric Refrigerator Is Said to Make It Noiseless in Operation.



B

Rubber Feet Under the Compressor Are Usually Sufficient to Insure Noiseless Operation of a Small Electric Refrigerator When Set on Concrete.



Here Is a Somewhat Larger Model Electric Refrigerator with Three Separate Storage Compartments. Enough of this kitchen can be seen to show that it is quite modern and well equipped. Some cases are built around this refrigerator but there are others which do not show in the picture.

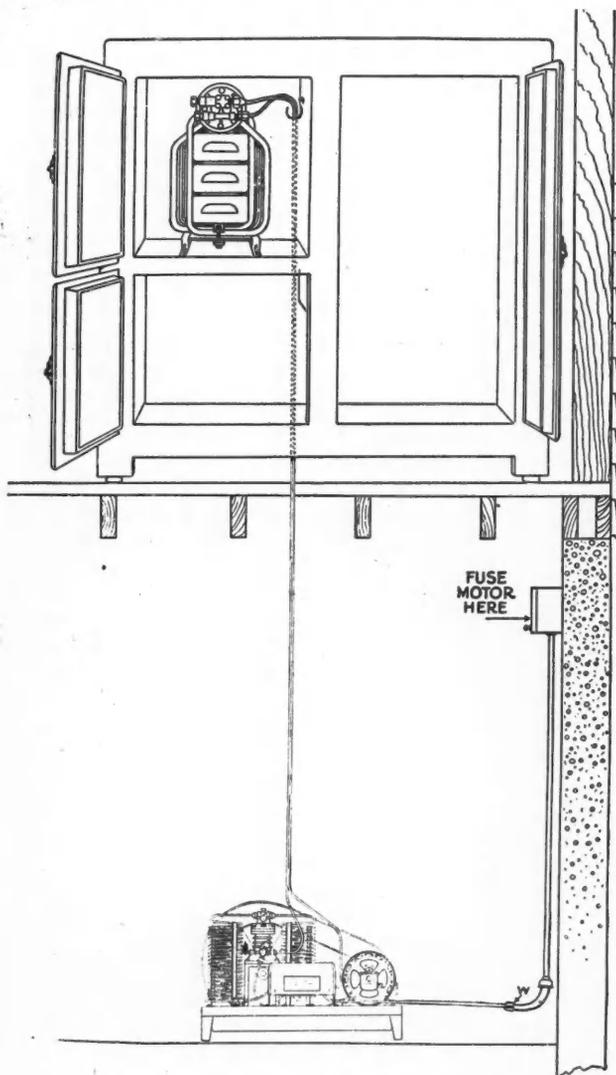
large apartment buildings, there is quite a division of opinion among designers as to whether a central gas or electric refrigeration plant is better than separate automatic units for each apartment. Large hotels, apartment hotels and kitchenette apartment buildings quite often have centrally operated plants by employees of the building, whose duty it is to keep them in continuous operation. In these buildings, it is possible to give tenants the advantage of iced running water, there being a separate faucet over the sink for this supply.

Electric refrigeration provides automatic, continuous cold, a chill of proper temperature for the foods in the food compartments, and ice cubes frozen in the freezing trays. It does all this, continuously, day in and day out, just as long as the electric switch is kept turned on. The cooling coils in the cooling compartment of an electric refrigerator have been aptly compared to a large cake of ice that never melts.

The idea of electric refrigeration has an appeal to every housewife and home owner who once get the idea of what electric refrigeration really means and what it does

in the home. People are seeing electric refrigerators in the homes of their friends and every prospective builder, of a home with any pretension at all to modern refinements, approaches the subject of kitchen equipment with a natural desire to know about the possibilities of electric refrigeration and electric refrigerators. The builder of homes can answer the questions of his friends and clients if he gets a question in his own mind about this new modern equipment—and then hunts for the answer.

Some form of refrigeration is indispensable in all kinds of residential buildings, including schools, colleges, hospitals, clubs, hotels and restaurants, as well as apartment buildings, two-flats and private dwellings. The requirements of these buildings are so varied as to call for many different types of refrigeration—from the simple icebox to the automatic refrigeration operated by gas or electric power. Arrangements for outside icing for refrigerators using delivered ice are very desirable where builders buy and install the refrigerators at the time the house is built. In fact, the opening on back porch or in the entryway for outside icing will not match the opening in the refrigerator unless it is known in advance just what that refrigerator is going to be—size, make and model. The refrigerator contributes so greatly to the health and comfort of any household that most progressive builders plan for it in advance and if delivered ice is to be used, see that a proper drain is provided for it and outside icing, as well. Drip pans which



Any Refrigerator Cabinet Can Be Adapted to Electrical Operation by Placing the Motor and Mechanism in the Basement and Running the Required Connections to the Floor Above, as Shown.

wet the floor when they overflow are an unmitigated nuisance and quite apt to warp a wooden floor.

Certainly, a modern hygienic efficient refrigerator with easily cleaned porcelain or enameled surfaces and convenient shelving racks and compartments properly connected for dry cold air is an attractive feature in renting or selling any house or apartment building.



Suggestions for Care of Circular Saws

By T. A. CARROLL

PRACTICALLY all trouble experienced with circular saws for ripping and cross-cutting is due to improper gumming, setting and filing. Careful attention to the points mentioned in the following will be the means of avoiding all the troubles usually incurred with circular saws.

(1) **Filing**—In filing a saw it is very important to secure the proper pitch and shape of tooth. A dull tooth properly shaped will give less trouble than a sharp tooth improperly shaped. Nearly all the

wear is on the underside of the teeth, consequently most of the filing should be done on the underside. Don't file rip saws beveling on the face of the tooth, or with one side of the back higher than the other. File all teeth square and uniform. Avoid sharp angles in the gullets; they will cause any saw to crack. Gullets should be round and kept in the same shape with a round file as when the saw leaves the factory.

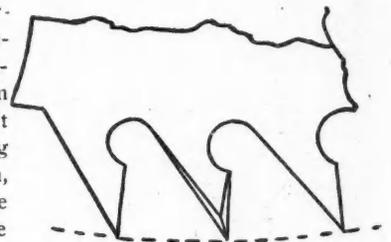


Fig. 1. Saw Filed Correctly.

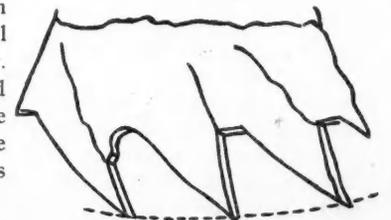


Fig. 2. Saw Filed Incorrectly.

(2) **Setting** — Saws should be set only enough to clear the blade and prevent friction. The set should not extend too far into the body of the tooth, neither should the set be too close to the point.

(3) The set must be uniform, that is, the depth of the set in each tooth should be the same, and the amount of set or kerf should be the same on each tooth.

(4) **Gumming**—When saws are gummed with an emery wheel, the operation should be performed by going around the saw several times. Doing too much gumming on one tooth at one time will cause the saw to heat and stretch the rim. This removes the tension from the saw, and it will not run properly without re-hammering. Crowding the emery wheel also case-hardens the saw and causes cracks to appear.

(5) Fig. No. 1 shows the teeth of a circular cut-off saw. These teeth are correctly shaped, and in filing be sure to keep the gullets of same shape as seen in illustration.

(6) Fig. No. 2 shows incorrect use of the file, which makes sharp or square corners in the gullets of the teeth. Teeth filed in this manner will cause the blade to develop cracks and thus render the saw useless.

(7) Every man who operates circular rip or cut-off saws should provide himself with proper tools for keeping them sharp and set, so as to do good work, namely, an 8 or 10-inch mill bastard file, round file and a good saw set.

If any of our readers desire to learn more about saw tools and saws, our Editor will be glad to send them free upon request two booklets, "Tools in the Filing Room" and "Saws in the Filing Room."

Eliminates Form Work for Concrete Floors and Roofs

A Type of Steel Reinforcing Which Is Also Useful for Ceilings and Partitions

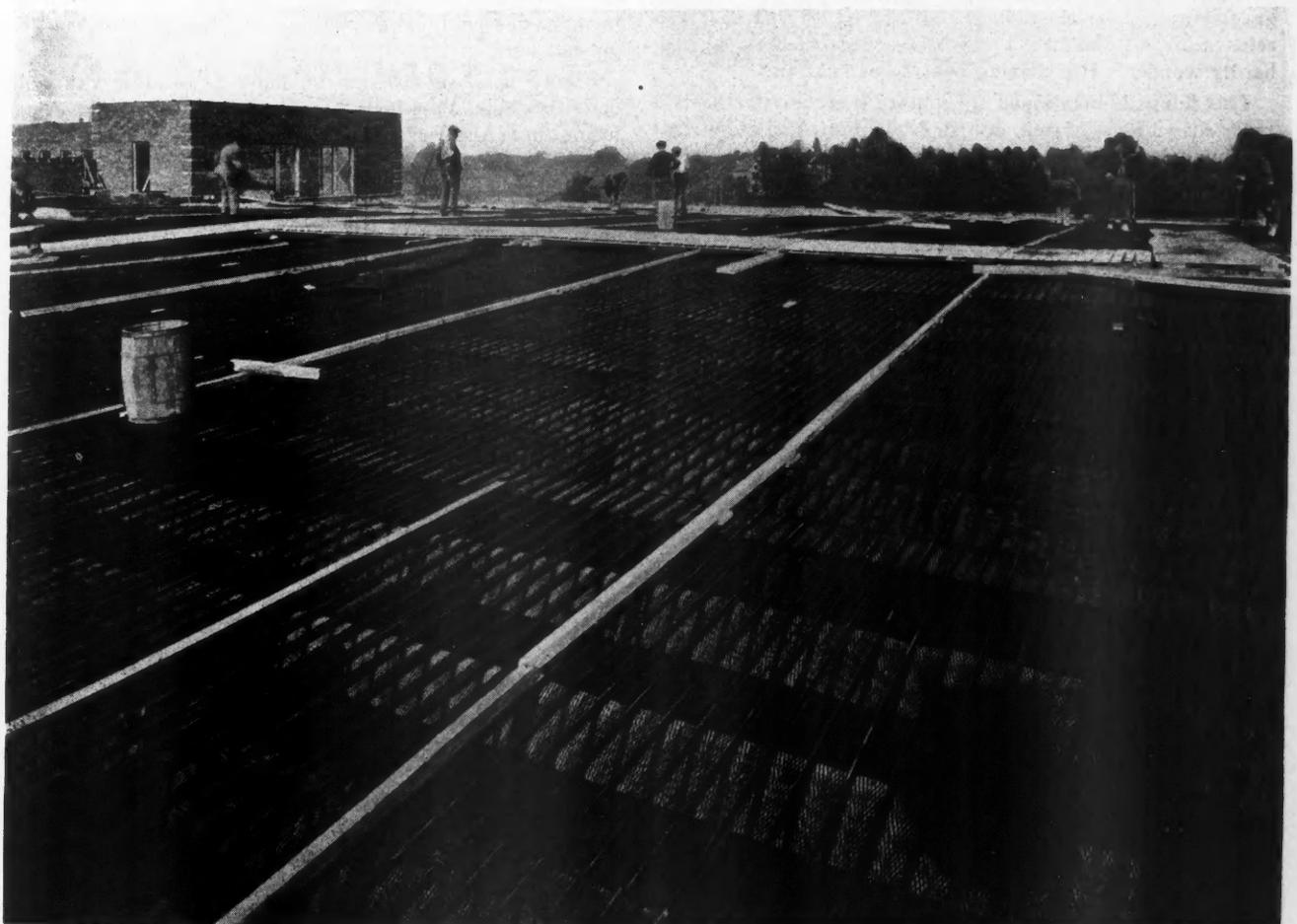
A LARGE proportion of the expense of concrete floors and roofs has, in the past, been due to the necessity of erecting wooden forms. A style of steel reinforcing is now obtainable which eliminates practically all this expense. It consists of expanded metal sheets strengthened with a series of heavy, cold-drawn ribs, 11/16 inch high, spaced 3 3/8 inches center to center. A sheet of this material 29 inches wide contains nine of these ribs, which gives it considerable structural strength and great reinforcing value. For instance, a 3-inch concrete slab with this reinforcement, set on a span of 10 feet, provides for a live load of 41 pounds per square foot, after taking care of the dead load of floor and plastered ceiling underneath. Three weights are furnished, which will take care of the spans shown in the following table:

The diamond shaped mesh of this material has an opening which allows only enough concrete through to form a good bond, provided a rather dry mixture is used. Such concrete contains more cement and is correspondingly stronger than a wet mixture.

Curved or arched floor and ceiling construction is recognized by all engineers as the strongest, but the expense of curved wooden form work is almost prohibitive. With the style of reinforcement described, arched or curved construction is possible with little or no extra expense, as the sheets are curved at the factory for any radius desired.

This rib-strengthened metal is also efficient for ceilings and partitions as well as floors and roofs. Our illustration shows this material being used as a combined form and concrete roof reinforcement on a large school building at Ironton, Ohio.

Thickness of Slabs Above Mesh	Weight Metal Lath Per Square Foot	Max. Stress in Concrete Lbs. Per Sq. In.	Moment of Resistance Per Ft. of Width	Span in Feet										
				3	4	5	6	7	8	9	10	11		
2"	.56 lb.	700	4557	392	207	122	75	48	29	...	...	...	...	...
	.65 lb.	700	4774	412	219	129	80	51	32	...	...	...	...	...
	.75 lb.	700	4984	431	229	136	85	55	35	...	...	...	...	...
2 1/2"	.56 lb.	630	6144	532	283	168	106	68	44	27	...	...	...	...
	.65 lb.	690	7052	...	332	199	127	84	56	37	...	...	...	...
	.75 lb.	700	7525	...	356	215	138	92	62	41	...	...	...	...
3"	.56 lb.	560	7551	...	352	210	133	86	56	36	...	...	...	...
	.65 lb.	610	8657	...	408	247	158	106	71	46	30	...	...	...
	.75 lb.	670	9939	...	475	289	188	127	87	60	41	...	...	...
3 1/2"	.56 lb.	510	8964	...	419	251	160	104	69	44	27	...	...	...
	.65 lb.	555	10290	...	487	295	190	127	86	58	38	...	...	...
	.75 lb.	605	11797	...	...	346	226	153	106	73	50	...	...	...
4"	.56 lb.	470	10377	...	...	292	186	123	81	53	32	...	...	...
	.65 lb.	515	11926	...	...	343	222	149	101	69	45	...	...	...
	.75 lb.	555	13672	...	...	492	264	178	124	87	60	...	...	...



Roof of a Large School Building Under Construction at Ironton, Ohio, Using a Special Ribbed Expanded Metal for the Double Purpose of Form Work and Reinforcement. This concrete roof will be absolutely fire-safe.

DETAILS *f* HOME BUILDING



The Bungalow—Cottage Type

By V. L. SHERMAN,
Lewis Institute of Technology

LONG before the term bungalow came into common use to describe the purely one-story type of home "cottages" were quite the fashion in the older and smaller communities. How close the two types are associated in the public mind is readily seen when one of the cottages which is well past its prime is rebuilt bungalow fashion. I have in mind one very recent instance of a small six-room cottage of low corniced roof which proved an attractive "buy." Everything about the place was stout, but its new and crowding neighbors set too great a contrast. The owner altered the floor plans a trifle, put in a simple hot-water heating system, replaced two double-hung windows at the front with a frame of casements, laid silky gray shingles over the siding, added a bright roof and then refused to sell. Since I saw the transformation, I can hardly wonder. His coaxing became persuasion.

This house is mentioned to indicate how closely the two types may be associated, and it is mentioned to show that the bungalow of the cottage type, that is, the bungalow which while not western is still a purely one-story affair has greater attraction by far than the pseudo-California building of excrescences. The so-called California type is not taken up here since it is of an entirely different form, and in its natural form as beautiful as it is different. There is some tendency to jibe the two types and add a second story. The result is joggling.

Figures 1 and 2 are of homes with medium pitched roofs of short span. Little besides storage space is available or wanted above the ceiling. The extra cubage is inconsiderable and the effect is desirable. These two, one of stucco finish and one of shingle or siding are nearly identical except in appearance. They are really both cottages, but are quite removed from the more early design shown in Fig. 3.

Before going further a little digression into the settings or modest landscapings might be in order. Bungalows of any sort when taken collectively are drab affairs. The same bungalows taken singly and in sympathetic surroundings are enlivening. The difference between the American bungalow and the European suburban cottage may be only a matter of trees and shrubs. And the string of uniform and barren bungalows is more of a desolation than a row of semi-detached houses near a foreign coaling port. The one-story house cannot stand bareness, but it can better help a small, well-planted lot than a two-story home. Both Figs. 1 and 2 would profit by more planting.

Figure 3 is of the type mentioned at the start. The roof conforms to the early cottage except for the sweep at the corner and the covering of the bay. The chimney is partly obscured but its location away from the center of the

house indicates recent building or a new chimney. The central chimney is really to be preferred over such a cottage roof to preserve a natural balance.

In regard to chimneys it is well to contrast those in Figs. 3 and 5. Fig. 5 is of the New England type, part field-stone and part frame. The field-stone wall is a continuation of the house wall and with the low structure gives a great ground spread. But the chimney is distended. A chimney of the daubed-log size is not a necessity and is not as attractive as a smaller square brick or stone chimney. The large chimney throws all out of kilter in such a case. The chimneys in Figs. 1 and 2 are of a different mould on a different type of roof, but if prescribed in Fig. 5 would look, perhaps, just as awkward as the present one.

Figure 6 is an attempt to show a trend in "the old-country" building which has somewhat influenced American. Since the war and with the increase in costs foreign houses of the smaller type have increased in number. But the builder and the owner have carried into them many of the features of the larger homes, which, when applied to the smaller ones, have become artificial additions. A rear bay or a bay on a sunny corner of a larger house, a sort of jog out-of-line along with some other jogs, is not unusual. But a severe exterior, such as many of the smaller houses may have, is not softened, but is hardened, by such an addition. Small houses should not be sleek, and severity of line is not modesty.

Speaking of sleekness, we must show one exception to prove the rule. This is in Fig. 4, a one-story Spanish style. There is nothing quite so smooth as a real Spanish bungalow. The less it depends on modesty the more grace it attains, and in its western origin it is the very opposite of the conservative East. But the merits of design in both are so generally recognized that they are very likely to be next door neighbors. However, both require individual settings and both are pleasing only when grown in separate gardens.

Unless a bungalow of the cottage type can be easily classified, unless its style is simple, it is likely to have no style at all. Pretensions to size do not improve its design one whit, although its ground area may be uncommonly large. Such a bungalow is at the present time one of the preferred "buys" among owners who have had previous building or buying experience, especially the wives. The one-floor idea easily compensates for imposing bulk, and the cottage-bungalow inspires the legion members of the garden clubs.

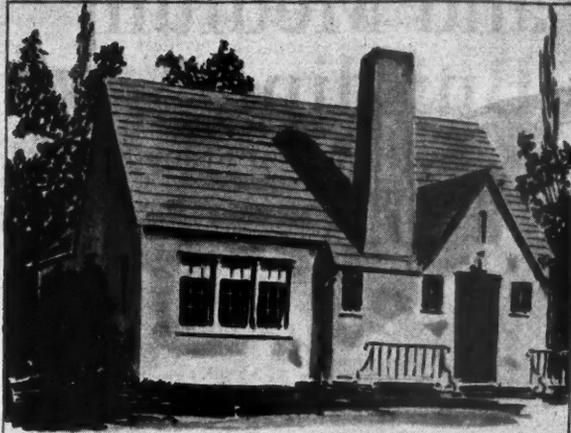


FIG. 1 THE SMALL HOUSE OF FRENCH LINES.



FIG. 2 AMERICANIZED IN THE SHINGLE DRESS.



FIG. 4 THE SPANISH STYLE IS SINGLE-STOREY HOMES HAS THE GREATEST OF OPPORTUNITIES FOR DISTINCTIVE STYLE. BUT IT MUST BE FROM WHOLE HEARTED DESIGN.

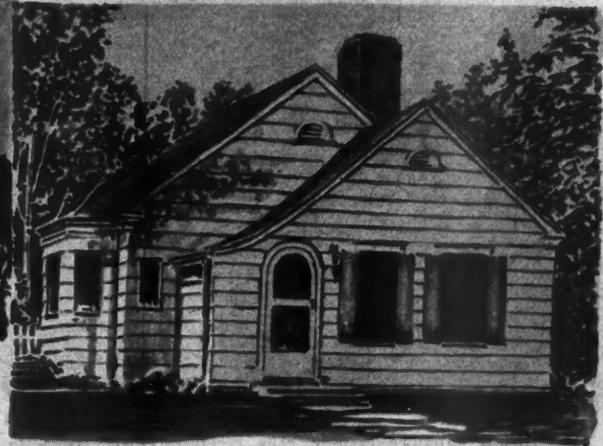


FIG. 3. THE REAL COTTAGE IS NEVER OF BARREN APPEARANCE OR BARREN OF TENANTS.

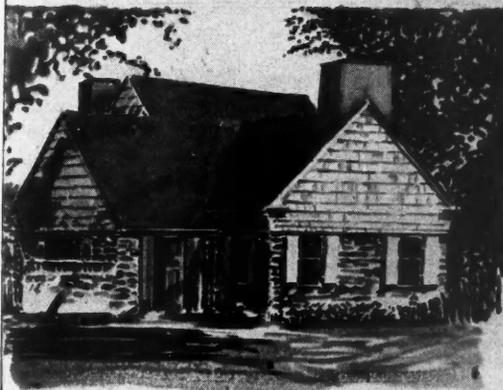


FIG. 5 IN COTTAGE DESIGN OF THE NEW ENGLAND STONE AND SPLIT-SHINGLE PERIOD CARE MUST BE TAKEN TO AVOID ANY SORT OF EXAGGERATION. THE OVERSIZED STUCCOED CHIMNEY IN THE ABOVE SKETCH IS AN EXAMPLE OF SUCH CARELESSNESS.



FIG. 6 THE MODERN TENDENCY IN EUROPEAN SMALL HOMES IS QUITE THE OPPOSITE TO THAT IN AMERICA. FROM THE OLDER SOFT LINES, MOULDED ROOF, AND EASY CORNER THE PRESENT HAS TURNED TO ELABORATED PLAINNESS. THE RESULTING ARTIFICIAL APPEARANCE FITS THE SMALL HOME LEAST OF ALL.

U. L. Sherman 1-4-20.

Stone for Small and Medium Sized Home Building

Some Houses Which Demonstrate the Little Known Fact That Stone Houses Are Available At Modern Cost

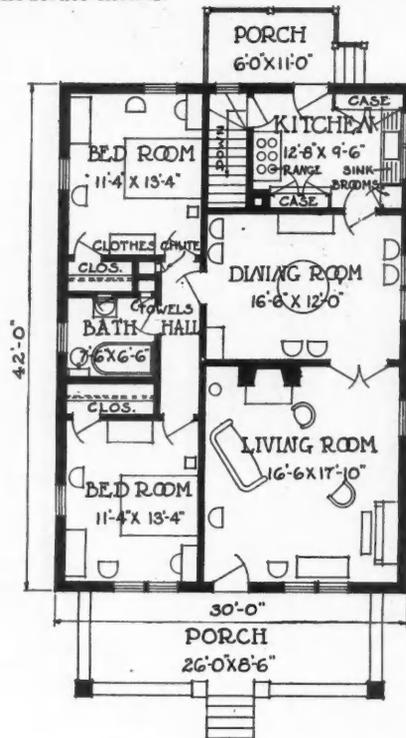


This Small Cottage House Has Been Given a Striking Air of Dignity and Permanence by Building It of Stone. Nor Has This Added to Its Cost to a Degree to Place it Beyond the Means of the Family Who Would Ordinarily Build a House of This Size and Style. This is one of a considerable group of similar houses which have been built in Bedford, Indiana, and are occupied by families of moderate means.

THERE seems to be a very general impression that stone houses are an expensive luxury far beyond the reach of all but the very wealthy. The prospective builder of a small or medium sized home seldom even considers the possibilities of stone. That this idea is a misconception has been thoroughly demonstrated in the building of the homes illustrated here and many others of similar size and type. These houses were built at a cost which compares favorably with the cost of good construction in other materials.

As will be noted, the first of these is a small cottage or bungalow of a type quite commonly seen in cities throughout the country. It was built in Bedford, Indiana, and the material is limestone laid in the style known as random ashlar.

The floor plan shows it to be a typical small home of five rooms and bath. The plan might be that of any of thousands of such houses which are built by owners having limited resources and requiring the most complete utilization of space. Built of stone this cottage takes on a dignity and air of permanence difficult to duplicate with other



FLOOR PLAN

The House Illustrated Above Is a Typical Five-Room Bungalow Such as Can Be Seen in Any City.

materials and assures the owner of a home which will demand the minimum in expense for upkeep.

The qualities of limestone as used in a large proportion of our modern big buildings are too familiar to require description. It is a stone which offers a high degree of resistance to the elements and the beauty of which is only enhanced by the weathering process of the passing years. It offers a considerable variety in exterior treatment through the various types of cutting, shapes of individual stones and in mortar joints. This is clearly shown by contrasting the two houses illustrated.

The second, and larger house, is of Old Gothic random ashlar with a sawed finish. For a house of this size and type this slightly more formal finish is thoroughly appropriate, while for the small cottage the more informal finish is more in harmony with the design.

The larger house was designed by C. T. Myers, architect, and built in Indianapolis, Indiana. Though the picture as reproduced shows little of the neighboring houses there can be no question but that this house stands out from those surrounding it as something strikingly solid and permanent. To

anyone passing along the street such a house would be instantly singled out as an unusually fine home and few would realize that it did not represent an investment far in excess of the other houses of similar size but more familiar construction.

Though referred to here as a larger house, this is still in the small house class, of a size appropriate to the average American family. The plans indicate a six-room house of the most modern type and with an attached garage just the sort of home which is associated with our substantial middle class American family. An investigation of construction cost will demonstrate that such a house is easily within the means of just such a family.



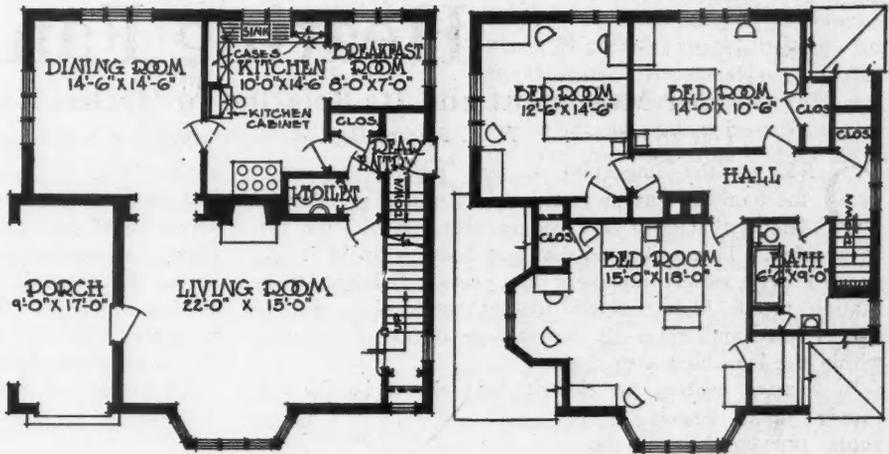
Real Estate Courses Offered

THERE are 67 colleges and universities in the United States which are now offering courses in the field of land economics and real estate, according to a tabulation of such courses presented at the recent annual meeting of the American Economic Association. The tabulation was made by a committee appointed a year ago to make a survey of college and university curricula in real estate and was presented by Arthur J. Mertzke, of Chicago, director of the department of research and education of the National Association of Real Estate Boards.

An aggregate of 190 courses are offered in the 67 universities and colleges, the report shows, 116 of them in the regular full time day program, 54 as evening courses, and 20 through extension divisions. Ten years ago none of the subjects covered in the survey were to be found in any college catalog in America. Now a growing number of institutions not merely have well rounded curriculum in the field but offer the work as one of their major graduate and under-graduate courses.



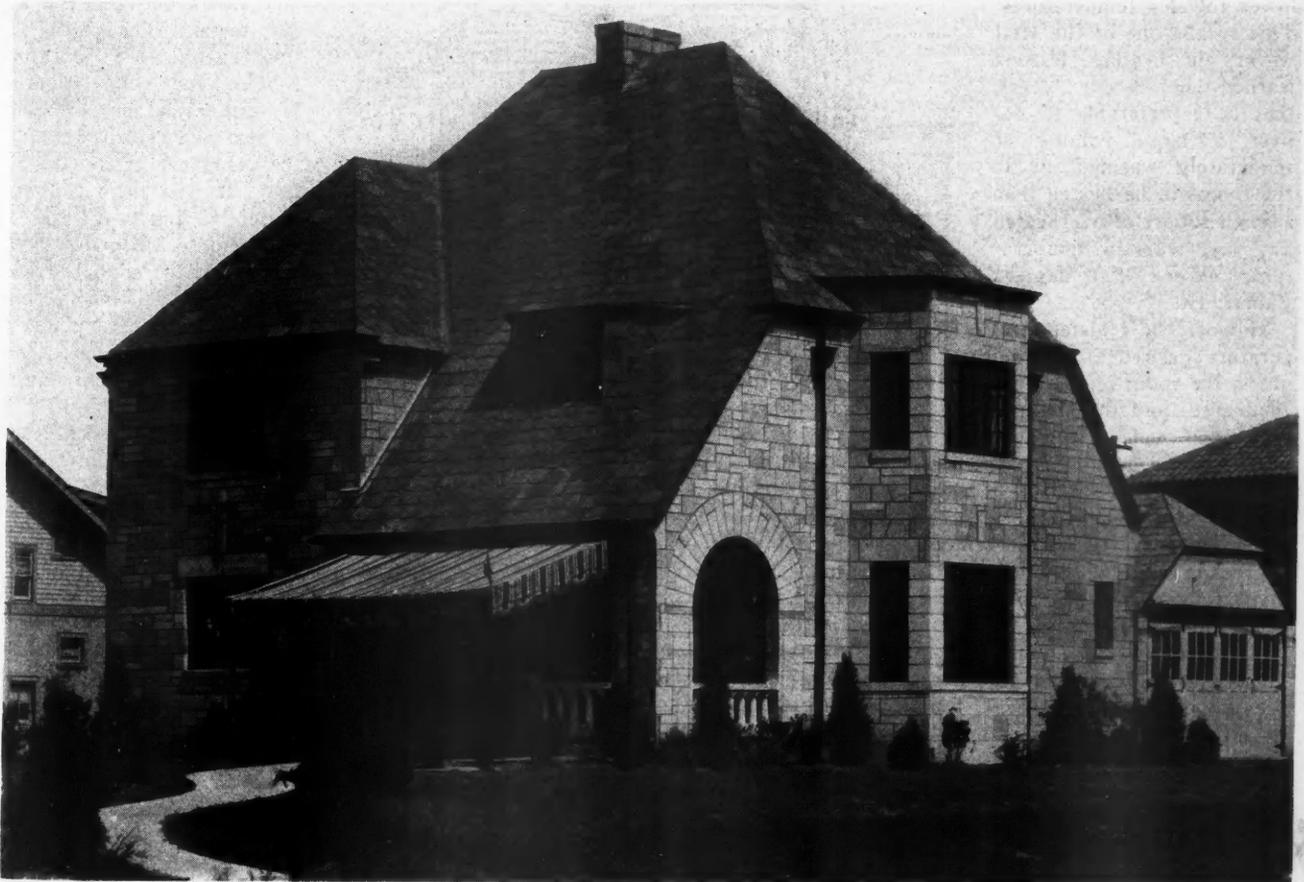
"Western Red Cedar" is the title of an interesting new booklet published by the West Coast Lumber Trade Extension Bureau, 5562 Stuart Bldg., Seattle Wash., describing and illustrating the varied uses of this wood.



FIRST FLOOR PLAN

SECOND FLOOR PLAN

These Floor Plans Show a Six-Room House, Thoroughly Modern in Every Respect and Typical of the Homes Which Are Being Built by Average American Families.



At Only a Small Additional Cost the Owner of This Indianapolis Home Has Built of Limestone and Obtained a Home of Outstanding Beauty and Distinction. It was designed by C. T. Myers, architect, who was familiar with the all too little known fact that a stone house is not a luxury limited only to the wealthy.

FURNACE HEATING



Choosing the Forced-Air Heating Fan

Air Movement and Its Relation to Mechanical Heating Fans

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

ONE of the important factors tending to make mechanical fans in warm air heating popular of late is that with this system heat stratification can be avoided. This evil condition and how to avoid it has puzzled even expert installers for years. Briefly, stratification means high temperatures at the ceiling, due to rise of heat, and, reversely, low temperatures at the floor within the breathing area.

In furnace heating an electric fan, placed in the air-supply duct, largely prevents uneven heating because heaters thereby are able to deliver two and in some cases three times as great a supply of warm air as in a gravity system with lower register temperatures. This recalls one of the vital warm air heating lessons learned in recent years, that it is preferable to deliver a large volume of moderately warmed air to the rooms to be heated than a small supply of overheated air, say, wherein temperatures exceed 190 degrees Fahrenheit.

Suppose the register temperature desired is 180 degrees, the room temperature 70 degrees and the air supply 2,000 cubic feet per minute. The heating increment is 110 degrees. To warm this requires: $2,000 \div 55 \times 110 = 4,000$ B.t.u. per minute.

If the volume of warm air were increased, say, to 6,000 cubic feet per minute, a temperature rise of only 36.6 degrees is required or, the needed warmth may be delivered at 106.6 degrees. In both cases proper heating results. The larger air supply, however, presents stratification.

Those who are familiar with fans and blowers doubtless know that there are two distinct classes of these, namely, the propeller, and the cased, types. The former picks up its air from directly behind and sends it forward in the same direction similar to the ordinary desk fan and as shown in Fig. 1. In contrast, the cased fan takes in air through the side of the casing and discharges it off the ends of the paddles, or vanes as shown in Fig. 2. In average air handling work the propeller fan commonly is used when the pressure desired is low whereas cased fans may be used to exert pressure of nearly one pound per square inch.

In selecting the fan for a particular installation manu-

facturer's tables should be consulted to learn which type will furnish the desired quantity of air with the least expenditure of power, comparative first costs, motor speeds, absence of mechanical noise and other practical considerations. In general, both air and heat supply are moved at slow velocities. The air current, nevertheless, must be moved fast enough to overcome the resistance encountered within all sheet metal ducts and the heater.

To explain, it might be said that when air is forced

through sheet metal ducts the common belief is that the current has a cork screw motion. As the stream of air in a warm air heating system, therefore, passes along it is evident that contact exists between the air and metal. The resistance thus encountered is called rubbing, or skin, friction. In estimating proper sizes of heat and return-air ducts the resistance offered to air flow, likewise the power required to move the air at sufficient velocity to overcome the frictional resistance must be known. The most satisfactory plan of checking up estimated values is reference to engineering tables similar to Fig. 3.

This reveals the resistance,

measured in inches water gauge, encountered in forcing various quantities of air through different sizes of round duct per 100 feet.

Let us suppose, as an example, it is desired to supply 3,000 cubic feet of return-air to the furnace per minute through a 20-inch diameter round duct. From Table 1 it is noted the loss in pressure per 100 feet is 0.2 inch. Were the duct only 50 feet long, however, the loss in pressure will be only one half of the loss for 100 feet, or 0.1 inch. Other lengths may be calculated in relation to 100 foot lengths and their losses shown, pro rata.

In estimating the total pressure loss in a furnace system one must take the size and length of the individual pipes, the volume of air it is desired to pass through each, the resistance within the heater casing and add 10 to 20 per cent as a safety factor. The fan must deliver its quota of air at sufficient force to overcome the total loss in pressure, all duct and heater loss being included.

Elbows and other bends in a duct system offer greater resistance than does straight pipe and this is also true of

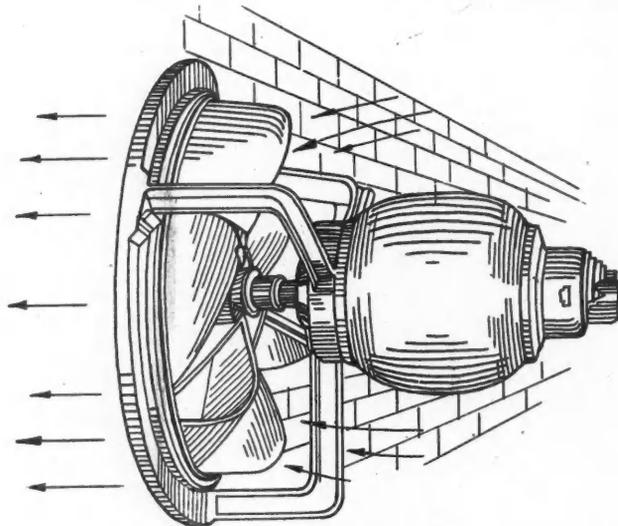


Fig. 1. Direct Connected Propeller Fan. The arrows indicate the direction of air-flow.

rectangular ducts, in which the resistance is greater than in round and oval ones. For this reason all bends in piping should be of the long sweep design with generous throat areas. In ascertaining the total pressure loss due to friction one must estimate the loss within elbows each as equivalent to the loss in 10 diameters of straight pipe of the same size. Another good rule is to take the elbow loss as equivalent to as many feet of straight pipe as the diameter of the pipe in inches. The resistance of an elbow in a 20-inch duct accordingly would equal that of a 20-foot straight duct. It will rarely be found that the total friction loss in a warm air heating installation is greater than 1 inch water gauge. With the broadened scope of the warm air method of heating these days long ducts and numerous branches are becoming less uncommon, there sometimes being 15 or 20 different branches instead of seven as in previous years.

Although the sizes of heat leaders and risers are governed largely by the demand for heat in the rooms, exposure, and other factors, the volumes of air passing through the ducts and their correct sizes may be checked from the three equations following:

$$\frac{\text{Vol.}}{A} = \text{Vel.} \quad \text{Vol.} \times A = \text{Vol.} \quad \frac{\text{Vol.}}{\text{Vel.}} = A$$

In which Vol. is volume of air in cubic feet per minute, Vel. is air velocity in linear feet per minute and A. is area of opening (duct) through which the air passes, in square inches.

Thus, if the volume of air flowing in the duct, in cubic feet per minute is divided by the area of the duct in inches the velocity of the air in linear feet per minute is known. And, if the velocity of the air flowing through the duct is multiplied by the area of the duct the result is the volume of air flowing. Also, if the volume of air flowing is divided by its velocity the area of the duct permitting the volume of air to flow through is ascertained.

The preceding formulae permit us to check, first, the velocity of air when its volume and the size of duct are known; second, the volume of air which will flow in a given size duct when its velocity is known and, third, the area of the duct necessary to permit any desired volume of air to flow at a stated velocity.

As the capacities of various fans vary according to their design and speed it is difficult to give accurate performance of fans and their required power consumption here. It is well, nevertheless, as a precautionary measure, to take catalogue estimates with a safety factor added for the reason that many published

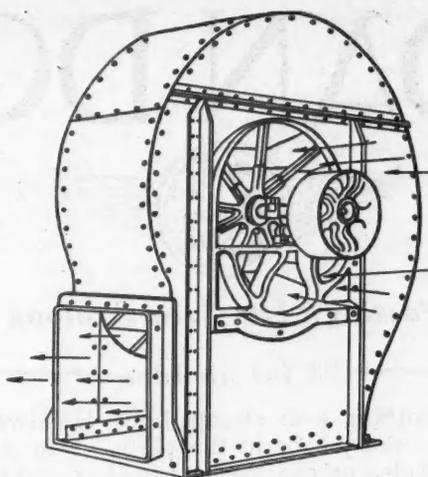


Fig. 2. Pulley Driven, Cased Fan. Air is sucked in at the side and delivered at the ends of the blades. The fan wheel resembles a water wheel.

tables fail to regard back pressure and assume that the fan is to discharge as freely as if it were installed in a window and had no duct attached to it. The volume of air handled by a fan of the propeller type is less when there is resistance to the flow of air. Sometimes the capacity is cut down by one-half under such conditions.

In most air handling work, especially large heating and ventilating systems, with long and numerous ducts, likewise material conveying layouts, it is customary to figure about 20 per cent surplus capacity for the fan over the catalog estimated required volume. Some engineers make it 25 per cent. The extra capacity may prove valuable and its extra first cost may in the end prove a decided economy.

Suppose, for example, a fan furnace system has been installed and the fan put in too small, that is, only equal to the estimated required volume. Later a solarium is added to the building or, under severe weather conditions, a certain room needs more heat than was originally estimated as necessary. If the fan has no surplus capacity it will have to be removed and another installed in its place. Yet, if the fan has extra capacity and it is found that the surplus is not needed the speed of the motor may be reduced—in direct current—or dampers partially closed to afford the correct flow of heat to the individual rooms.

Other Factors

Other factors entering into furnace heating with fan assistance are, briefly, minimum power to drive the fan, freedom from noise and unobstructed air flow. There is often the temptation to use an 18-inch diameter fan when a 20-inch one will give equal air delivery with less power consumption. The smaller fan, too, might have to operate at high speed, with likelihood of mechanical noise being transmitted to the floors above. Mechanical sounds which are considered "noisy" by some might not be noticed by other persons. The noise feature is one of the most exacting phases of forced fan heating. It is unnecessary to add that slow moving machinery of any kind will generally outwear equipment operating at high speed. Motors made to run at speed above 1,150 r.p.m. must be used with caution.

Mounting Fans to Restrict Noise

Mechanical noise often may be controlled by mounting combined fans and motors on insulating material. If the centrifugal, or blower, type of fan is to be used it is wise to bolt it to a 1-inch thick cork slab or a piece of 1½-inch

(Continued to page 178)

CU. FT. OF AIR PER MIN.	FRICTION LOSS PER 100 FT. STRAIGHT PIPE						
	.10"	.15"	.20"	.25"	.30"	.35"	.40"
100	6	5½	5	5	5	4½	4½
200	7½	7	6½	6½	6	6	6
300	9	8	8	7½	7½	7	7
400	10	9½	9	8½	8	7½	7½
600	11½	11	10½	10	9½	9	9
800	13½	12	11½	11	10½	10½	10
1,000	14½	13½	12½	12	11½	11½	11
1,200	15½	14	13½	13	12½	12	11½
1,400	16½	15	14	13½	13	13	12½
1,600	17½	16	15	14½	14	13½	13
1,800	18	17	16	15½	15	14	14
2,000	19	17½	17	16	15½	15	14½
2,500	21	19	18	17	17	16	16
3,000	23	21	20	19	18	17	17
3,500	24	22	21	20	19	18	18
4,000	25	23	22	21	20	19	19
4,500	26	24	23	22	21	20	20
5,000	27	25	24	23	22	21	21
5,500	28	26	25	24	23	22	21
6,000	29	27	26	25	24	23	22
6,500	30	28	26	25	25	24	23
7,000	31	29	27	26	25	24	24
7,500	32	30	28	27	26	25	25
8,000	33	31	29	27	27	26	25
8,500	34	31	29	28	27	26	26
9,000	35	32	30	29	28	27	26
9,500	35	32	31	29	29	28	27
10,000	36	33	31	30	29	28	27

Fig. 3. Table of Pipe Sizes for Various Volumes and Friction Losses. The figures in the body of the table are pipe sizes in inches.

HOW DAN DOES IT



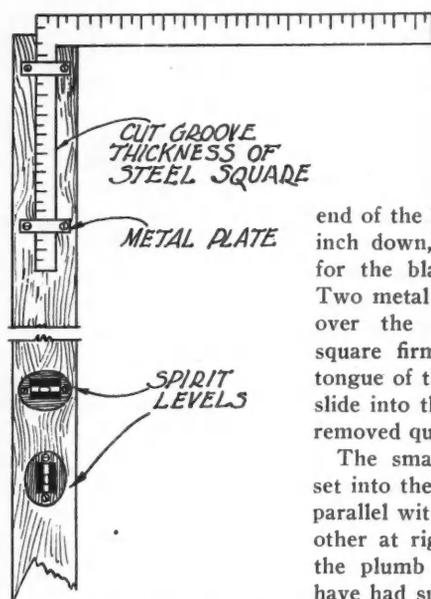
A Department for Passing "Life Savers" along to other Builders

\$2 for an Idea

Dan is an ingenious cuss. Nothing ever stumps him. He always knows the way out when he runs into a tough problem out on the job or in the office. Dan is editor of this Department and will pay \$2.00 each for every good idea he can use here to show and tell other builders "how to do it." Send him a rough sketch and a short description of what the tough job was and how you handled it. Address Dan-Do-It, care of American Builder, 1827 Prairie Avenue, Chicago, Ill.

A Useful Straight-Edge

I ENCLOSE herewith a sketch of a straight-edge which I have found very useful for leveling and plumbing small buildings, setting door jambs, grounds, furring, etc. A slot is cut into the side of the straight-edge to receive the tongue of the steel square.



Combination of Straight-edge, Steel Square and Levels Which Is Found Useful.

ALFRED RUIS, 1029 Hearst Ave., Berkeley, Cal.

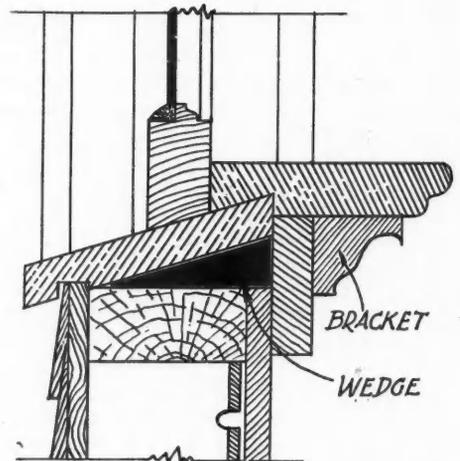
Better Window Framing

IT has been my experience that the first point at which poor work shows up in the ordinary house is on the window frames. It is quite common to see, on the outside, the sills sagging down away from the side jambs and casings and, on the inside, the stools leaning downward. Here is a way of handling this work to overcome such faults.

Wedge up the window sills with one wedge close to each jamb and, on oriel and large windows, put one or two in the center of the sill. These wedges should fit snugly as shown in the sketch, supporting the sill clear across its width instead of merely at the inner edge, as is commonly done.

I set my window stools in white lead on the sill and

spring the apron hard up to the stool. On wide stools it is better to use brackets glued and nailed well on the apron and stool. — L. JOHNSGARD, Sedgwick, Alberta, Canada.



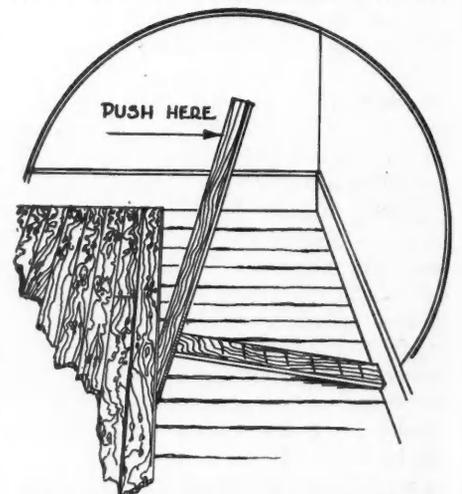
A Wedge, as Indicated in Black, Assures Against Sagging Sills and Leaning Stools.

How to Lay Warped Flooring

SOME time ago I had a new maple floor to lay over an old floor in a kitchen. Some of the new flooring was badly warped and was hard to bring to place. The accompanying sketch shows a simple method that was used to facilitate the work that proved effective.

Two pieces of board are all that is needed. One piece is about four feet long and the other is as long as the room is wide. This piece is sawed off every time a new floor board is laid. This piece is used as a prop between the baseboard and the board used as a pry. By shortening the prop just the width of the flooring each time a board is laid across the room it can be used for the entire floor. —

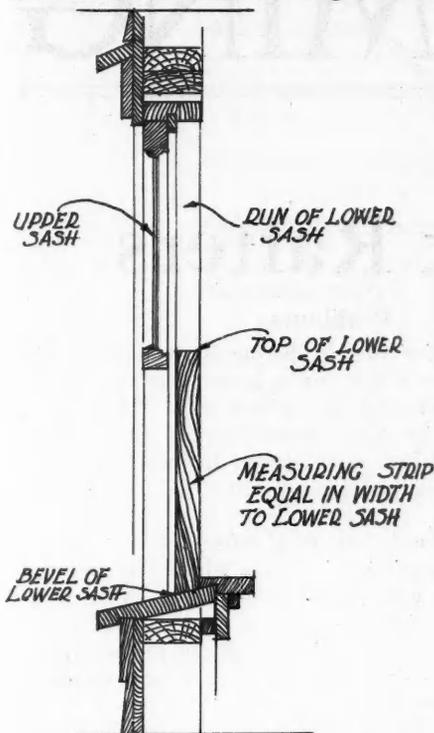
HAROLD JACKSON, Box 141, Kankakee, Ill.



With Two Boards Used as a Pry, Warped Flooring Can Be Laid Straight.

To Fit Double Hung Sash

THE following method of fitting double hung window sash I have found not only quick but very convenient, especially where the outside is not easily accessible for scribing. First fit the top sash and secure it in its proper position in the frame. Then take a strip equal in width to the thickness of the sash and bevel one end to fit the window sill when standing perfectly plumb. Set this



Here Is a Method of Fitting Double Hung Windows Which Simplifies the Work.

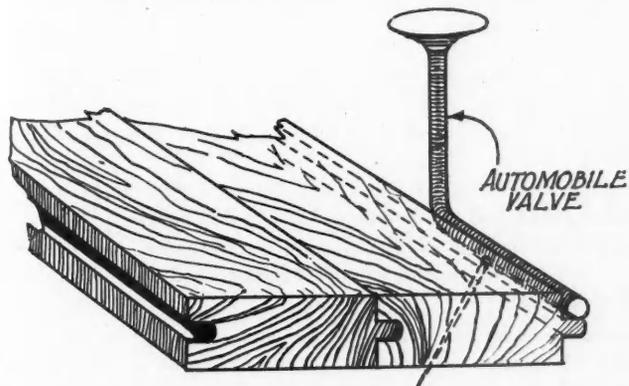
accurately marked for fitting.

Where the width of the window does not exceed the height of the lower sash, the width may be marked on the strip, allowing, of course, the desired clearance, and all windows of this size may be fitted at the bench ready to set in place. It is well to fit the longest windows first and the same strip can then be cut off for the shorter ones in turn.

L. M. HODGE, 1815 E. Glenoaks Blvd., Glendale, Cal.

Another Floor Nail Set

THE idea of using a piece of steel rod with a handle for laying flooring, as described by O. H. Quimby, in the November issue of AMERICAN BUILDER, is very good but the making of such a tool is too much trouble when there



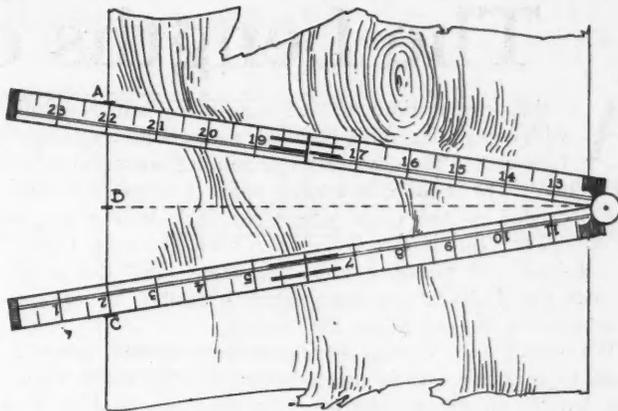
A Valve, Bent to a Right Angle, Makes a Nail Set, With a Convenient Handle, for Flooring Nails.

is something similar which will answer equally well. I take an old valve, such as used in a Ford engine, and bend the stem to a right angle. The stem serves to place against the nail and the head of the valve makes an excellent handle. I have used this for some time and find it very helpful on floor work.

MATTHEW HATZENBECKER, 610 Sixth St., Bismarck, N. D.

Squaring Boards with a Ruler

I AM enclosing a sketch showing a method of squaring a board with a two-foot ruler, when a square does not happen to be handy. Every carpenter carries a rule in his pocket so it is always at hand. First, place three marks on the edge of the board spaced at an equal distance apart, as A, B, and C, in the sketch. Now take the rule and



An Ordinary Two-Foot Rule Can Be Used for Squaring a Board if a Square Does Not Happen to be Handy.

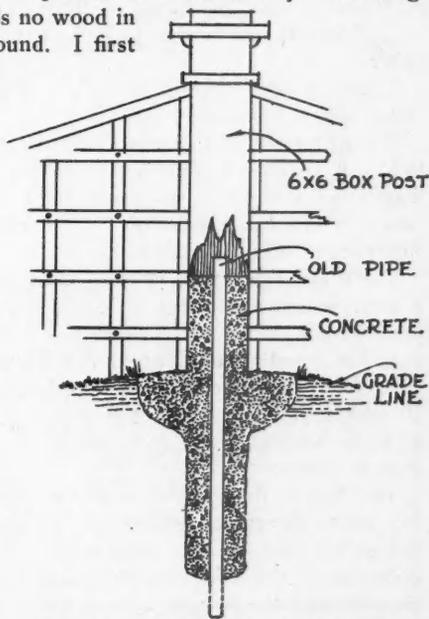
place the figure 2 and 22, as shown in the sketch, and 21 and 3, on the marks A and C. Place your pencil in the angle of the ruler and mark. Now draw a line from this mark to B. This line will be exactly at right angles to the edge of the board.

J. S. UTLEY, 236 22nd St. West, Prince Albert, Sask., Can.

Keeping Post Off the Ground

WHEN lattice posts are set in the ground the moisture soon causes them to rot so that they have to be frequently repaired, or replaced. I have a way of setting such posts so there is no wood in contact with the ground. I first

paint the inside of the post about one-third of the way up from the bottom. I then drive a length of old pipe into the bottom of the post hole and fill the hole up to the grade with concrete. Next I brace the post in the proper position with the pipe projecting up inside of it and fill it, from the top, with concrete, to about 18 inches above the grade line.—J.



Posts for a Lattice Fence, When Set in This Manner, Are Kept from Contact with the Ground and Protected Against Decay.

A. CRANDALL, 1607 S. Water St., Wichita, Kan.

INSTRUCTIONS in ROOF FRAMING



The Lengths of Jack Rafters

AT the present time we see very many garages built with hip roofs. This eliminates all gables and therefore makes the cornice work simpler, and also saves on siding. The trouble generally appears when the work has proceeded to the point where the jack rafters are to be cut. The "Builds His Own" man then generally resorts to all kinds of guessing and measuring, and the result is that the jack rafters are spaced irregular, or are set crooked and do not fit at the hip.

We might say without hesitation that a jack rafter is hard to measure. It is much better and easier to figure the length mathematically than to measure it after the hip rafters are set.

Jack rafters lie in the same plane with the common rafters. They may be and should be considered as "common rafters, cut off."

Jack rafters have the same seat cut as the common rafter.

Jack rafters have the same plumb cut at the upper end as the common rafters.

Jack rafters have the same "length per foot run" as the common rafters.

Jack rafters differ from common rafters in that they usually require a side cut at either the top or bottom or sometimes at both ends.

Our illustration shows the different kinds of jack rafters. A, B and C are "hip jacks," as they frame to a hip rafter.

E, F and H are "valley jacks," as they frame to a valley rafter.

G and K are "cripple jacks," as they frame to both a valley and a hip rafter.

The rafters in this case are spaced 16 inches on centers. We will assume a rise per foot run of 9 inches. The length per foot run then would be 15 inches (taken from tables). The common rafter "D" would be $15 \times 5\frac{1}{2}$ equals 80 inches or 6 feet 8 inches.

There are three jack rafters. The longest has a run of 4 feet, which is 1 foot 4 inches less than the run of the common rafter. If the run is 1 foot 4 inches difference then the length would be $15 \times 1\frac{1}{3}$ equals 20 inches less. Therefore, the difference in length of the jack rafters is 20 inches, if spaced 1 foot 4 inches apart. We can then find the lengths of all jack rafters as shown in the illustration, method No. 2.

The length thus found is to the center of the hip, and we must, therefore, deduct for the hip. If we measure the jack rafter on the longest side, then it will fit fairly accurate, as the difference in length between the center of the jack and the longest side of the jack is about the same as the amount to be deducted for one-half the thickness of the hip.

The side cuts of the jack rafter will be taken up in detail in a future article.

Problems

- (1) Assume a roof similar to the one illustrated but with a 10-inch rise per foot run and a length per foot run of 15.62 inches, and find the length of the rafter "D."
- (2) What would be the difference in the length of the jack rafters if the rafters were spaced 16 inches apart?
- (3) What would be the length of rafter "B" for the above problem?
- (4) What would be the length of rafter "H"?
- (5) A roof has a pitch of $\frac{3}{8}$, or 9-inch rise per foot run, and the rafters are spaced 2 feet apart. What would be the difference in the length of the jack rafters?
- (6) What is the difference in the length of jack rafters for a roof with a 10-inch rise per foot run, with rafters spaced 2 feet on centers?
- (7) What would be the length of the shortest jack rafter for the roof of problem 6, if the rafter was set 2 feet from the corner of the roof?
- (8) What would be the length of the second rafter?
- (9) How does the run of a jack rafter compare with the distance it sets from the corner of the roof?
- (10) A jack rafter is set 5 feet 6 inches from the corner of a roof, and the length per foot run is 14.42 inches. What is the length of this rafter?

Answers

- (1) The length of rafter "D" is $15.62 \times 5\frac{1}{2}$ equals 83.31 inches.
- (2) The difference in the length of the jack rafters is $15.62 \times 1\frac{1}{3}$ equals 20.826 or $20\frac{7}{8}$ inches.
- (3) The length of rafter "B" would be 20.826×2 equals 41.652 or 3 feet $5\frac{3}{4}$ inches.
- (4) Rafter "H" has a 4-foot run. The length is 15.62×4 equals 62.48 inches or 5 feet $2\frac{1}{2}$ inches.
- (5) A roof having a 9-inch rise per foot run has a length per foot run of 15 inches. If the jack rafters are spaced 2 feet on centers than the difference in the lengths of the jack rafters is 15×2 equals 30 inches.
- (6) For a 10-inch rise per foot run the length per foot run is 15.62 inches. The difference in length for rafters spaced 2 feet on centers would be 15.62×2 equals 31.24 inches.
- (7) If the rafter is set 2 feet from the corner then the run is 2 feet and the length is 15.62×2 equals 31.24 inches.
- (8) The length of the second rafter from the corner would be twice the length of the first or 31.24×2 equals 62.48 inches.
- (9) On even pitched roofs the run of the jack rafter is always the same as the distance it sets from the corner of the roof.
- (10) The length of this rafter would be $14.42 \times 5\frac{1}{2}$ equals 79.31 inches or 6 feet $7\frac{1}{16}$ inches.

Advertising Speeds the Builder's Turn-over

(Continued from page 90)

Most unique home in city. Restricted, close in, ½ blk. carline, schools, markets and churches. \$6,500, \$500 dn. Bal. \$50 mo. inc. int. 500 Drummond Pl., bet. Fulton and Pierce. Owner on premises or AB. 0694.

Note particularly that headline, "References Required," and the statement in the body of the advertisement, "Will be sold only to reputable people." This was clearly an effort to put the house in the class of better properties and to surround it with an atmosphere of prestige which the ordinary house lacks. Furthermore, it intimated to the reader that this house was worth the money and the builder couldn't afford to play with it. It is just such small things that attract a better class of buyers than statements that have no restrictions of any kind.

The price of the house was a fair price; the down payment was average for the community. Neither offered any special inducement, so that it can hardly be claimed that the price or the terms sold the house. Besides, this house stood in a block in which there were no other houses for sale, so that it cannot justly be claimed that other houses attracted buyers for Berger.

Berger might not analyze his copy or method in the way that I do, but it seems quite clear to me that he made people want to see this house. After they came it was up to him to make the actual sale. As it turned out, eight people wanted it, though only one could buy it. Without realizing it, perhaps, Berger knows quite a bit about human nature; he has glimpsed the fact that people who are looking for houses to buy are ready to read quite a good deal about them. Just a two or three-line advertisement will not satisfy them; it will not whet their appetites because it does not give them enough information.

Information, after all, is the thing that counts. And as the price of the article increases the demand for information concerning it increases in a direct ratio. When you spend a nickel for a package of chewing gum or a pencil, you do not ask many questions. Not that you do not care much about the product, but because it costs only five cents and you could afford to throw it away and buy something else if you didn't like your first purchase. But when you buy an automobile or a house, you face a different set of factors. The price is highly important and it requires a great deal of information to provide a mental background to justify your expenditure of so much money.

The difficult thing nowadays is to get people to come to see the house you have for sale. They usually have had some little experience in reading advertising and in house hunting; sometimes they have been bitten, "taken in," by the advertising or even by the house, and are a bit skeptical.

The only way of reducing that skepticism is by laying the cards on the table, showing them what you have, mentioning the various distinctive features of the house and even naming the branded articles of equipment that have been installed. This establishes the reader's confidence in your truthfulness, for it says to him, in effect, "if you don't believe it, come out and see for yourself."

The nationally advertised brand of material or equipment carries its own recommendation and should, of course, be named in advertising any house in which it has been installed. The public immediately recognizes its worth and unconsciously associates that worth with the house, just as it associates the value of a nationally known automobile part or accessory with the car itself. Thus, such an advertisement gives the reader a yard stick to measure what you have against what he wants; that is one of the fundamentals of advertising and selling.

Few people, of course, can be made to buy what they do not want. It is only personal selling methods that sometimes attempt to force the issue upon unwilling buyers; advertising never does. With the latter, you simply broadcast your message to thousands of people who on this particular day may be looking through the paper. Only those who have some sort of interest in a new house will take the trouble to drive out to see the house. That simplifies the whole process for you as a builder. You are talking to callers who have seen your advertisement, who have read what you have to offer, who already know something about the house. Those who don't want to know stay away; which saves time all around.

Of course, there will always be the idle curious—people who want to take a look but have no serious intention of buying and no means with which to buy if they did have the desire. Advertising sometimes does attract them. But even they have their uses; they carry the message to others in radiating circles and sometimes even those who are most remote become the real buyers. Berger's classified advertisement, for example, attracted a total of 311 people, only eight of whom seriously considered purchasing his house, something like 2½ per cent. But Berger would have kept on showing the house if there had been 1,000 callers, for he had to sell the house. Besides, the 311 came all in one day and there was no dreary wait for his money.

In some instances, I have found, advertisers would be more willing to use what is called "full description copy" if they did not feel that the newspapers were trying to "pad" their receipts. The builder believes he knows what he wants to say, and perhaps he does. But the newspaper is just as sure to know what readers want and what they will respond to.

An established newspaper must be interested primarily in getting results for its advertisers, and since it cannot do this in one or two classified lines it naturally advocates whenever possible the use of complete information in the advertisement, even though the cost increases. In order to secure adequate results for its patrons, it even goes to the expense of maintaining a service department which will prepare classified copy for advertisers.

There are, in fact, many instances in which the newspaper's copy has sold more goods than the advertiser's copy. The reason is that the professional advertising writer makes a very intimate study of the subject and puts into his copy those ideas or suggestions that will appeal to the reader. The builder who regards the preparation of classified copy as irksome or beyond his ken will do well to call at the newspaper office and ask for help. He will be surprised how cheerfully it will be given and how effective the copy will usually be.

Newspaper advertising, of course, is not the only medium open to the builder. In certain situations it may not even be the most effective. There are times, no doubt, when a folder or booklet illustrating the work of the builder would be more resultful. But expenditures for folders, booklets and direct mail letters are to be seriously questioned unless they reach people who are genuine prospects. They cannot be used for free distribution in any such way as classified or display advertising can, because of the expense involved.

Only a few days ago the writer came upon a builder, one corner of whose office was piled high with booklets which he told me had cost him 25 cents each. In them he had illustrated his houses and told an attractive story of his service for many home owners.

When I asked how he expected to distribute them he replied that he hadn't thought of that until they were printed and now he was not quite sure what could be done; he had no names of prospects, and callers at the office amounted to only a score a week.

The predicament of this builder was simply the result of

thoughtlessness, but it was expensive. His investment in the books amounted to a little more than \$250 and it would cost another \$100 to get them into the mail properly addressed to genuine prospects.

It should be apparent from this example that some forms of advertising must not be indulged in without a considerable amount of preliminary groundwork. Obviously, the most beautiful book in the world is of little value if there is no one to whom to send it. And it is just as obvious that the book fails of its mission if it comes into the possession of one who is not genuinely interested in the article or service offered.

An experienced advertising man would advise against mailing such a book to anyone until a thoroughly refined list of prospects had been secured from an unimpeachable source. This could be secured through coupons clipped from advertisements or it might be a list of some group that was known to be in the market for new homes.

Names of owners of cleared lots are frequently used by builders as a prospect list, on the theory that these persons are or will soon be in the market for homes. But the theory is not always tenable, for in many instances lot buyers are holding for an increase in values and have no intention of building. The cost of securing such lists is generally too great for the smaller builder, especially in the larger cities. This type of promotion is used successfully, however, by the large firms. Its chief value, perhaps, lies in the fact that the prospects do own their lots and to that extent at least are a little farther along on the road to building than those who own no property at all.

But regardless of the kind of list or the manner in which it is secured, it must always be remembered that its purity and genuineness will absolutely determine its value. Failing in those two vital essentials it will likely not be worth the paper on which it is written.

The first thought of every builder who advertises should be to get his message, if at all possible, before people whom he knows to be interested in a new home or those whom he feels can be interested. He may have to broadcast his seed to some extent to raise such a crop, but once he has it his running time and his expense will be cut down considerably.

This, in particular, is the service rendered by any medium or any department of a medium that appeals to a specific class of buyers. Such mediums or departments are generally read by persons in the market for articles or service in the special field covered, which means that there is a willingness to buy as well as a certain buying power. Such a combination offers the builder a better opportunity to market his wares quickly than any medium in which he must rely on his ability to educate people to want his goods.

A year ago I met a builder who had just arrived in a large western city from a long residence in Mexico. His only capital at that time was a pair of skilled hands and a willingness to go to work. All he needed was a start,

and I advised him to "run his face" for a small advertisement in a local home-building publication, which he did.

Just last week I met him again and learned that his little announcement about his ability to design and build houses of the Spanish, Mexican and Indian type had netted him two jobs, from which sprang orders for eight other houses ranging in price from \$15,000 to \$25,000 each. In a single year he had built \$150,000 worth of homes—and all at a cost for advertising of \$12 a month!



Foundation Walls Omitted from Small Buildings

FOUNDATION walls may be omitted from minor one-story buildings such as private garages, recreation buildings, small paint or machine shops, sheds, stables, granaries, hencoops and other buildings of a similar size. These buildings are light in weight and may easily be supported on a concrete floor. If the width of the building does not exceed 12 or 14 feet the quantity of concrete required for the floor may be no greater than would be required for a foundation wall of the usual type. This saving in material and labor means a considerable reduction in cost.

There is a further saving because of the elimination of trenching and the simplicity of form-work required. As indicated in the illustration, a single line of 8-inch form boards around the building is the only form-work needed.

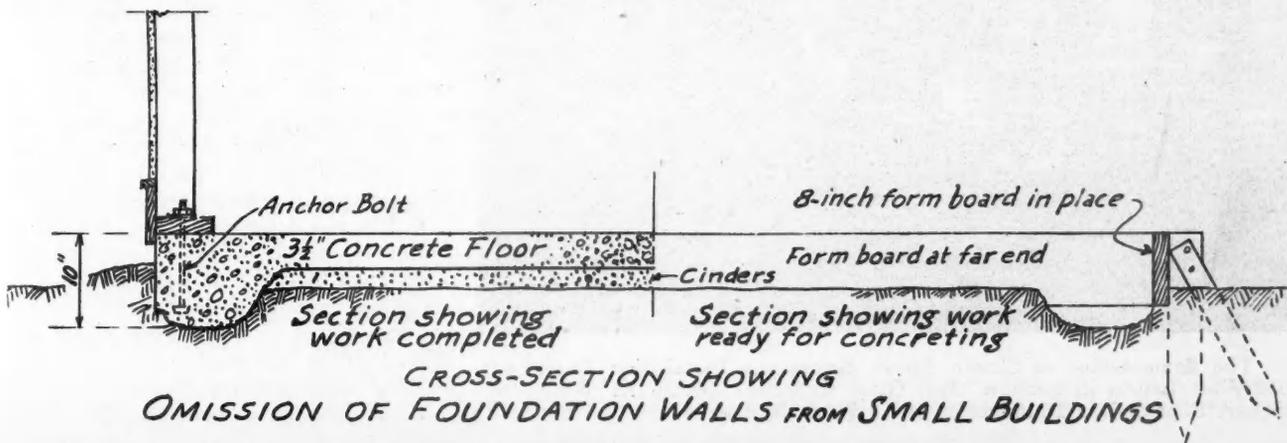
The work may be started by placing the form boards so that the top of the boards will be at the future floor level. A shallow trench must be dug for the purpose. The trench should then be deepened to 10 or 12 inches just inside the boards, so that the concrete along the outer edge of the floor will have greater depth. The particular purpose of this detail is to provide something akin to a footing under the outside wall, and to have sufficient depth of concrete to hold the bolts to which the sill will be anchored. These details may be seen more clearly in the drawing.

If the superstructure wall is of masonry or concrete, the trench around the edge of the floor should be increased in depth, so as to provide a more substantial footing for the wall. But even in that case it is not necessary to go deeper than to firm soil.

After the sub-grade is leveled off, preferably with a layer of cinders, the concrete floor is placed and the work is ready for the superstructure. The concrete has been utilized to the best possible advantage, for it provides the building with a floor as well as a footing.

The building regulations of many cities now permit this form of foundation for private garages; but the privilege might well be extended to small one-story buildings intended for other uses. All minor buildings could in this way be provided with concrete floors through a more effective use of the material that ordinarily goes into the foundation wall.

NORMAN M. STINEMAN.



CROSS-SECTION SHOWING OMISSION OF FOUNDATION WALLS FROM SMALL BUILDINGS

Detail Construction Sketch of Low Cost Foundation for Concrete Floored Small Buildings.

The WHY and HOW of Correct Office Lighting

By Wm. W. AYRE

ALL office work is undeniably accomplished by the medium of the eyes . . . therefore, the lighting of office space is, or should be, a matter of prime importance to the business executive and to the architect and builder.

Good office lighting is an essential, for several purely economic reasons. It aids materially to increased production or the amount of work turned out in any office by the clerical staff. It keeps down the amount of spoiled work which has to be done over. It reduces the amount of time lost by the office force, due to fatigue, eye strain and sick headaches. Consciously or unconsciously those working in well-lighted offices are better satisfied, and are therefore better workers. The general appearance of the premises is greatly improved by good lighting, which aids business.

Those interested in this very important part of office planning might ask: "Where has good office lighting been given the closest consideration?"

This, undoubtedly, has been done by the large insurance companies, which represent the most important group of office building property owners in the country. Incidentally, these companies as a group, are perhaps the largest employers of clerical help.

They are also in the best position to realize the value of good lighting because of their statistical and investigative departments which have made careful studies and know precisely the relationship between good ventilation or good



An Office Well Lighted by the Installation of 200-Watt Lamps Giving 2.35 Watts Per Square Foot and an Illumination of 11.6 Foot Candles:

lighting and the loss of time of clerks, attributable to defects in these systems. These three reasons have caused this group to make extensive studies, tests and investigations, and as a general rule their office space is better lighted than the average office.

A vice-president of one of the best known New York life insurance companies, upon being asked his reasons for having such a pronounced interest in the subject of office lighting, replied:

"We insurance men know more about the importance of good office lighting than perhaps any other particular interests in the country. I base my assertion on the following premises, in proof of this claim:

1. We are the largest property owners in the country and know, from actual experience, that we can secure good tenants and hold them by adequate lighting. Moreover, we demand and receive higher rentals due to this essential requirement.

2. We are among the largest employers of clerical help, and we actually know that errors, illness, loss of time, and high labor turnover are immediately decreased when improved lighting is installed. Production is, of course, increased.

3. The advantages of good lighting referred to, are not guesses on our part. They are a matter of fact and record. Our statistical department checks these matters constantly, and we actually know that good office lighting is one of the most essential parts of office building service.

It is popularly believed that ample



The Same Office as Shown Above Before the Installation Described; 100-Watt Lamps in Shallow Opal Glass Reflectors Giving 1.1 Watts Per Square Foot and an Illumination of 2.8 Foot Candles.



Built Expressly For You

YOU will welcome the new Johnson's De Luxe electric floor polisher—a machine built expressly for contractors.

The big eight-inch brush, larger motor and other improvements enable you to wax-polish any surface two and one-half times faster than with the standard household model, which up to now has been the fastest, most efficient polisher made. The new machine saves time and money and does better work.

Special care was given to the selection of every bit of material used in the Johnson De Luxe Polisher. Design and construction are along the most approved lines. Brushes, bearings, belts, every part has been placed under severe and exacting tests. This machine has made good under extreme conditions.

Special Offer to Contractors

The De Luxe polisher can easily become the most profitable piece of equipment you own. The regular price of this big, husky machine is \$68.50, but we have an attractive Special offer to make all building contractors. As this Special offer is to contractors only, please enclose your letterhead or business card with the coupon below—*mail it today.*

S. C. JOHNSON & SON

"The Floor Finishing Authorities"

Branches in 19 Principal Cities

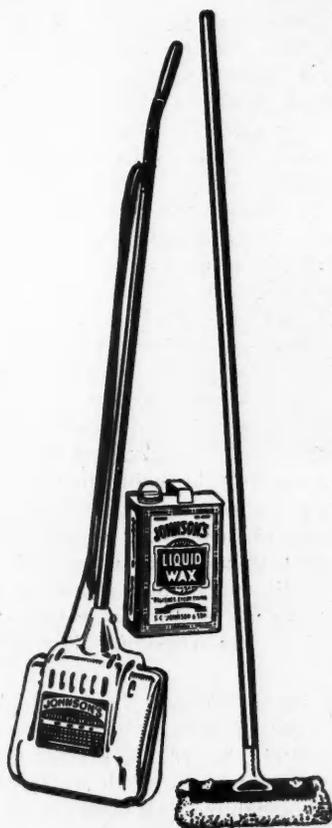
Clip to your letter head or business card.

S. C. JOHNSON & SON, Dept. AB-2, Racine, Wis.

Please send me complete details of your special offer on the Johnson De Luxe Polisher.

Name.....

Address.....



Complete Equipment Free

With each Johnson's De Luxe electric floor polisher, we include free, a lambs wool mop for applying the wax and a half gallon of liquid wax. Mail the coupon today for full information.

window space and freedom from shadows of neighboring buildings obviates the necessity for having well-planned artificial lighting.

This is far from being the case. The U. S. Weather Bureau has issued figures showing that in New York, for example, there were but 11 days that might be termed "clear" out of the entire year; and that some cities have not as good a showing as this. Only a small percentage of the total amount of office space faces the east and south, which points are favored with the greatest amount of sunshine.

In Baltimore, the Weather Bureau records indicated that the sun shone only 55 per cent of the possible time. In other words, 1,157 hours or 45 per cent of the 2,578 working hours between 7:00 A.M. and 5 P.M., allowing for Sundays, holidays and Saturday half-days, were cloudy. In the early morning and later afternoon for the first and last four months of the year, 570 hours were cloudy.

The smoke nuisance, which exists in almost all large cities, also cuts down the sunlight on even bright days. It is said that sunlight recorders, recently placed in five points in New York City, proved that much of the city is losing 31 per cent of the sunlight it could have if it could banish the pall of smoke hanging over it. Thus, it is to be appreciated that good artificial lighting is a necessity in some offices some of the time; that it is an essential in many offices all the time.

What are the essentials of good office lighting?

Sufficient intensity, satisfactory uniformity of illumination throughout the room, good diffusion for the reduction of shadow, complete protection from glare. Briefly, the above are the engineering considerations. The economic considerations are not first cost alone, but cost of the installation during its useful life. This includes four factors:

1. Interest on the initial investment.
2. Maintenance cost (cleaning).
3. Operating cost (energy).
4. Obsolescence (how long will it be modern?).

The last three factors added together, should bear at least three to five times the weight of the first factor in

the minds of those buying the installation and using it.

Dim or inadequate light on working planes causes eyestrain. While the mazda lamp used may be of the right size, if poorly designed directing and controlling mediums are employed a large proportion of the light of the electric lamp is wasted on the sides of walls, on the ceiling, and only a small fraction of it reaches the desks and other working surfaces. Eyestrain inevitably causes injury to the optic nerve, followed by sick headaches, nervousness, errors and eventually loss of time on the part of the employe.

Glare, usually resulting from high-powered tungsten lamps unshaded or poorly shaded, also wears the optic nerve. Tests conducted by the Department of psychology,

of the Johns-Hopkins School of Hygiene and Public Health, and other authorities show conclusively that when the eye is exposed to a glaring light, objects in the vicinity of the light are not clearly seen.

There are few things as painful to the sensitive eye as glare created by the unshaded white-hot filament of the modern tungsten lamp. All the above indicates the importance of properly designed controlling and directing apparatus used directly in conjunction with the light source, the electric lamp.

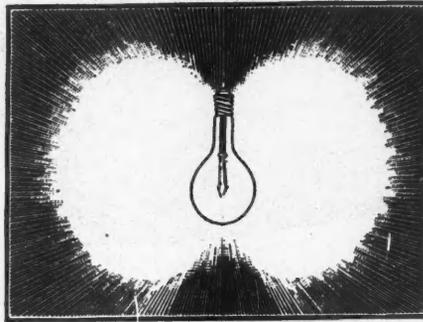
The question of office lighting can be compared with that of school lighting, where the Eye Conservation Council of America after careful study found that 25 per cent of our school children were suffering from defective vision, which in a large proportion of cases was directly attributable to poor artificial lighting.

Physicians advise that under ordinary conditions the eye function utilizes approximately 15 per cent of the body nerve force; under strained conditions it is necessary for the eyes to draw on 50 per cent of the available nerve energy. When the eyes work under such forced conditions either one of the two things may happen. The quality of the work may suffer, or concentrated effort may have to be stopped entirely for a rest period.

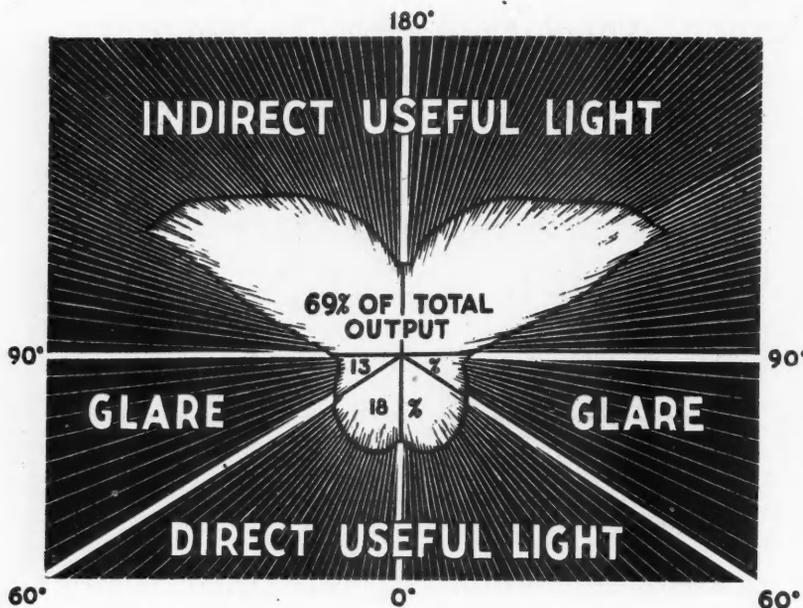
The interior decoration of any office is directly related to the efficiency of the lighting. This is particularly true where semi-indirect lighting is employed where it is very important that walls have a white mat finish. These surfaces should be repainted at frequent intervals. When new, such colors have a reflecting efficiency of only about 60 per cent 80 per cent of the light directed upon them and in a city even as clean as New York this reflecting efficiency falls off as much as 25 per cent to 35 per cent during the first year. Such walls and ceilings should be washed thoroughly at least twice a year, and repainted no less frequently than every two years.

We have outlined the essentials of a good lighting system, but these are mere generalities. In order to provide the essentials referred to it is desirable that the fixture or lighting unit which envelopes the lamp may have the following characteristics:

1. Semi-indirect light distribution approximately three parts upward to one part downward to eliminate contrast, shadow and glare.
2. The unit should be absolutely smooth on the outside to reduce dust and dirt accumulation with tight-fitting fixtures.



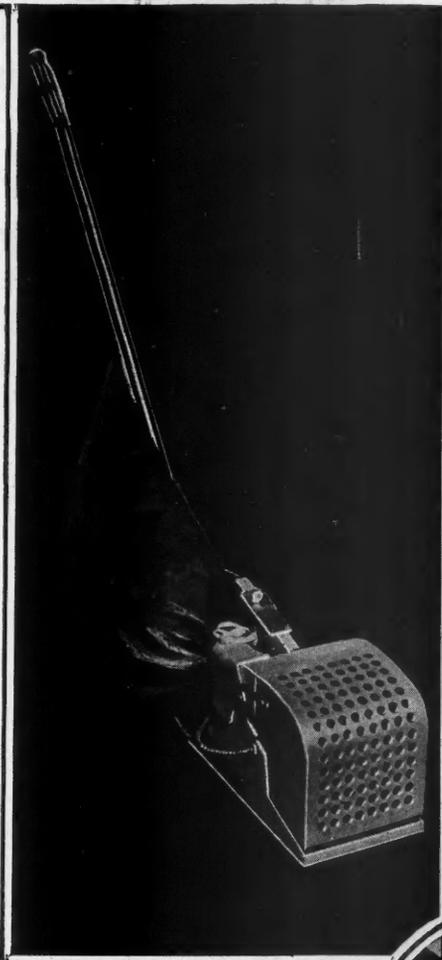
Bare Lamps Distribute Light in This Wasteful Fashion.



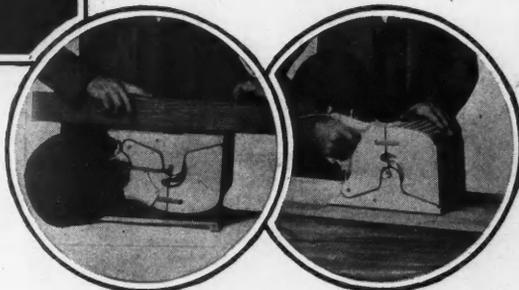
This Diagram Shows How the Light of the Bare Lamp Is Properly Controlled and Directed by an Efficient Unit.

New

The Reid-Way Vacuum Convertible SANDER



The Reid-Way is precision-built of the finest materials throughout. Its low price is due entirely to its remarkable **SIMPLICITY**



The revolving field motor, exclusive Reid-Way feature, has one moving part! No belts, chains, gears. No friction. No lost power!

As a floor surfacer, the Reid-Way has many distinct advantages. Strong and sturdy, it is built for continuous, hard service—dependable

THE popular Reid-Way Convertible Sander, now made **DUSTLESS** by exclusive new vacuum principle, is meeting with tremendous enthusiasm everywhere. Contractors acclaim it as the ideal light sanding machine. Light in weight—easily transported from job to job. Plugs in any light socket—needs no special wiring. Convertible—used as bench sander, jointer, or floor surfacer. Economical—low first cost and negligible operating expense. The Reid-Way is a time and money-saving machine at a price everyone can afford. Write for new circular.

The REID-WAY Co.

704 North 16th Street

Cedar Rapids, Iowa

REID-WAY CO.,
704 No. 16th St.,
CEDAR RAPIDS, IOWA

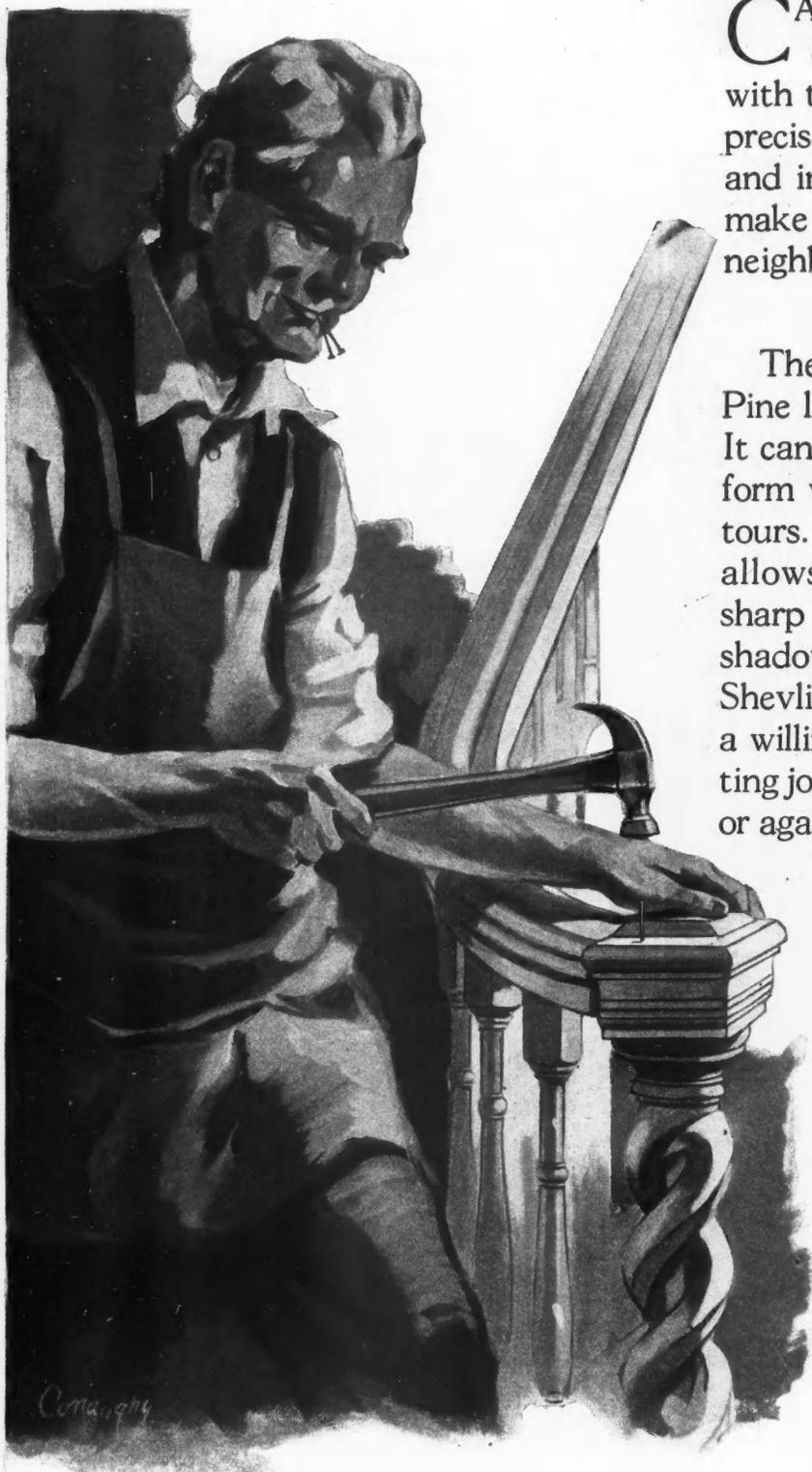
With no obligation on my part you may send circular describing the new Reid-Way Vacuum Sander.

Name _____

Address _____

Just clip this to your letterhead if more convenient.

Shevlin Pine Works



CARPENTERS like to work with Shevlin Pine because it works with them. It helps them to produce precise work even on the most difficult and intricate jobs. It helps them to make every part fit tightly with its neighboring piece.

Gives Fine Sharp Lines

The soft, even texture of Shevlin Pine lends itself to artistic treatment. It can be moulded smoothly into any form with clean-cut profiles and contours. The uniformly even grain allows the cutting tool to produce sharp edges which cast contrasting shadows to accentuate the design. Shevlin Pine fashions under tools with a willingness that produces tight-fitting joints and it can be cut readily with or against the grain without chipping.

The Tested Wood of Our Ancestors

Our ancestors early recognized the workable qualities of Pine. Colonial architects and builders gained effects by using Pine that are today considered especially desirable.

The "housewright" of the Webb House at Wethersfield, Connecticut used Pine to produce this attractive stairway and wall panelling. He knew that only Pine could be easily moulded into the desired result.



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With the Carpenter

We know that he also built well, for this home erected about 1753 has withstood the elements for almost two centuries.

Throughout the home today, Shevlin Pine answers the requirements of construction that endures. Its easy working qualities make it especially desirable



Detail of stairway and hall on the first floor level of the Webb House which was built about 1753 at Wethersfield, Connecticut. (From the White Pine Series of Architectural Monographs)

for exterior trim, porch work, exterior and interior doors, built-in-pieces, interior finish and trim, moldings and panelling.

Gives an Air of Refinement

The smooth surface of Shevlin Pine and its ability to take and retain attractive painting and staining effects brings an atmosphere of beauty and refinement to any home.

Nor is this air of distinction marred by the irritations of woodwork joints that open up, windows that stick or doors that jam, because Shevlin Pine "stays put," keeping woodwork accurate.

Leading lumber dealers can furnish Shevlin Pine in five varieties: Shevlin Pondosa Pine, Shevlin California White Pine, Shevlin Norway Pine, Shevlin California Sugar Pine and Shevlin Northern White Pine.

You will find each variety always finely milled, properly seasoned and rigidly graded.

Write for Booklet

We recently prepared a booklet giving the characteristics, physical properties, allowable stresses and other information in relation to Pine. If you will simply send us the coupon below, we will be pleased to mail you a copy.

Shevlin, Carpenter & Clarke Company

903 First National-Soo Line Bldg., Minneapolis, Minn.

Chicago Sales Office: 1866 Continental and Commercial Bank Bldg.

San Francisco Sales Office: 1028 Monadnock Building

Sold in New York by N. H. Morgan, Graybar Building



Shevlin, Carpenter & Clarke Company
903 First National-Soo Line Bldg.,
Minneapolis, Minn.

Please send me the booklet, "Specify Shevlin Pine."

NAME _____

BUSINESS _____

ADDRESS _____

CITY _____

SHEVLIN PINE

No ventilation is necessary with ordinary size lamps.

3. Units, such as those of prismatic design, which correctly control the direction of the light rays are better than those which merely diffuse the rays equally in all directions.

4. The brilliancy of the lighted unit should be low, and of approximately the same brightness as its background, the lighted ceiling.

5. The design of the unit should be simple, but dignified to conform to refined office surroundings. It must be remembered that the present modern incandescent lamp generates light efficiency, but distributes this light very inefficiently; in fact, something like the diagram in Fig. 1.

What should interest the large office owner or manager is not how efficiently raw light is generated at its source—the incandescent lamp—but rather how efficiently that raw light is refined and redirected to useful planes, the desk tops. This type of unit described above redistributes the light directly from the lamp to the ceiling and the ceiling reflects this light to the points where it is actually needed, Fig. 2.

The directing and control of light, essential for economical, efficient and safe illumination in the office means that a large proportion of the rays of the lamp must be turned back from wastrel paths to those where they are useful in assisting office workers in their daily tasks. This reflecting and deflecting of light can best be accomplished by causing the light rays to pass through prismatic refractors.

The accompanying photographs showing examples of good and bad lighting have not been distorted nor idealized in any way. They are actual photographs of conditions found in offices in every city in the country. In which office would you personally prefer to work? It is certain that you would throw in your lot with the cheerful, well-lighted office, where lighting hygiene guarantees safety, comfort and good work. The architect and builder can do much toward encouraging better working conditions in offices by making sure the lighting equipment is adequate according to modern standards and requirements.

Size of Floor Joists for Given Span and Loading

A SPECIAL section on Handy Reference Data was published in the April, 1927, number of the AMERICAN BUILDER. On page 250, a table showed the sizes of floor joists for a given weight and span, based on the use of longleaf pine. At the top of the table, a statement was made that Douglas fir has only about two-thirds the strength of longleaf pine.

Since this table was published, data has come to us through recent publications of the American Railway Engineering Ass'n, the American Society for Testing Materials, and the Building Code Committee of the U. S. Dept. of Commerce, which shows that the U. S. Department of Agriculture, Forest Service, Forest Products Laboratory, Madison, Wisconsin, recommends equal values for working unit stresses for Douglas fir and Southern yellow pine of equal structural quality as specified by American Lumber Standards, in bending and deflection. In shear, recommended values are proportional to weights, Douglas fir being lighter at equal bending strength and stiffness.

In order that our readers may have the latest information in regard to timber construction, we have revised the table printed on page 250 of the April, 1927, number. We suggest that a notation be made to this effect in that number.

The following revised table is based upon the use of Douglas fir or Southern yellow pine of a No. 1 Common grade. The sizes are calculated on a strength in bending basis and not on deflection as assumed in the table at the bottom of page 250. The stresses used are those recommended by the Forest Products Laboratory, Madison, Wis., for a quality of stock meeting the American Lumber Standards specification for "Common" grade of structural lumber and timbers. The designer using this table should check with the local building officials to make sure that stress values for timber construction have been revised in the local building code to agree with those recommended by the Building Code Committee of the U. S. Dept. of Commerce.

This table will be found useful to indicate at a glance the sizes of floor joists which should be used for various spacings with total loads varying from 40 lbs. per sq. ft., up to 60 lbs., per sq. ft. These are the floor loads most commonly specified by building ordinances for several classes of buildings. (See table printed in April, 1926, Reference Number, page 624, which shows the live load requirements in sixteen of the leading cities of the United States for practically all classes of buildings.)

For loads between 50 and 60 lbs. per sq. ft. (total), the sizes shown in this table may be compared with those

shown in the table at the bottom of page 250, to see that they are sufficiently large to prevent a deflection in the joists which might cause a plastered ceiling to crack.

Size of Floor Joists for Given Span and Loading

Span in Feet	Joists Spaced 12" Apart	Joists Spaced 14" Apart	Joists Spaced 16" Apart	Joists Spaced 18" Apart
When Total Load is 40 Pounds per Square Foot				
8	2x 6	2x 6	2x 6	2x 6
10	2x 8	2x 8	2x 8	2x 8
12	2x 8	2x 8	2x 8	2x10
14	2x10	2x10	2x10	2x10
16	2x10	2x10	2x10	2x12
18	2x12	2x12	2x12	2x14
20	2x12	2x12	2x14	2x14
22	2x14	2x14	2x14	2x14
24	2x14	3x14	3x14	3x14
When Total Load is 45 Pounds per Square Foot				
8	2x 6	2x 6	2x 6	2x 6
10	2x 8	2x 8	2x 8	2x 8
12	2x 8	2x 8	2x 8	2x10
14	2x10	2x10	2x10	2x10
16	2x10	2x10	2x12	2x12
18	2x12	2x12	2x12	2x12
20	2x12	2x14	2x14	2x14
22	2x14	2x14	2x14	3x14
24	3x14	3x14	3x14	....
When Total Load is 50 Pounds per Square Foot				
8	2x 6	2x 6	2x 6	2x 6
10	2x 8	2x 8	2x 8	2x 8
12	2x 8	2x 8	2x 8	2x10
14	2x10	2x10	2x10	2x10
16	2x10	2x12	2x12	2x12
18	2x12	2x12	2x12	2x14
20	2x12	2x14	2x14	2x14
22	2x14	2x14	3x14	3x14
24	3x14	3x14	3x14	....
When Total Load is 60 Pounds per Square Foot				
8	2x 6	2x 6	2x 6	2x 8
10	2x 8	2x 8	2x 8	2x 8
12	2x 8	2x10	2x10	2x10
14	2x10	2x10	2x10	2x12
16	2x12	2x12	2x12	2x12
18	2x12	2x14	2x14	2x14
20	2x14	2x14	2x14	3x14
22	2x14	3x14	3x14	....
24	3x14	....	....	....

A New Tilting-Level for the Contractor and Builder



No. 385
Gurley
Tilting
Level

Accuracy,
Durability,
Speed,
Permanence
of
Adjustment

Gives "Line and Grade" from the same "set-up"

Light weight, durably constructed. Telescope focusses distinctly, close to instrument and reads clearly at a distance. Particularly good when used indoors under poor light conditions. Simple and rapid to use, either as a level or a transit, without removing the telescope from its bearings. Transverse adjustment and level vial so that Tilting-Level will plumb as accurately as an Engineer's Transit.

Precision parts with positive adjustments which are remarkably permanent. Horizontal circle for laying off angles. Furnished complete with a substantial Tripod, Plummet, Mahogany Carrying Case, Adjusting Pins and complete instructions for handling. Made and guaranteed by the Oldest Instrument Makers in America.

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WHAT'S NEW ?



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

Portable Six-Inch Jointer

THE illustration shows a portable machine particularly well adapted to the use of the contractor. It is a direct drive machine powered by a 1/2 H.P. motor. There are no couplings and ball bearings are used throughout. The machine is easily moved from job to job and is suitable for accurate work in wood, fiber, asbestos, carbon or soft metal.



A guard is provided which assures perfect safety and the machine is notably easy to operate. It is provided with a three-knife cutter head, a long table and tilting fence. The cutter head is 6 3/4 inches wide and the table measures 33 by 8 inches. The height of of the table when used with the base, is 33 inches, but the machine is also available as a bench machine. It operates at a speed of 3,600 R.P.M.

Easy Portability and Operation Are the Features of this Six-Inch Jointer.

Steel Square Simplifies Work

THERE has recently been placed on the market an improved type of steel square designed to enable the carpenter to get all angles and degrees from one to 90 without the use of protractors, bevel protractors or combination sets of any kind. This is made possible by a degree graduation which is run on with the inch graduation or, in other words, associating degrees with inches on the regular steel square. It is simple so that it may be applied by anyone familiar with the steel square and should simplify much of the work for which the steel square is used. It gives the seat cut, top cut and rise to foot run without any calculation.

This square has been graduated on the even inch, showing what each inch equals in degrees. This is done to get

63	26	23	62	27	22	61	23	21	60	17	20	59	2	19	57	44	18	56	19	17	54	47	16	53
LENGTH OF COMMON RAFTER PER FOOT RUN												21	63	20	60	20	60							
OF HIP OR VALLEY RAFTER PER FOOT RUN												24	76	24	64	23	34							
DIFFERENCE IN LENGTH OF JACKS 16 INCHES CENTERS												2	4 1/2	2	3 1/2	2 1/2	2							
FIGURES GIVING SIDE CUT OF JACKS												10	18	8	14	9	15							
OF HIP OR VALLEY RAFTERS												11	16	7	10	8	11							
CUT OF SHEATHING IN VALLEY OR HIP												18	10	14	8	15	9							
22	21	20	19	18	17	16	15	14																

The Sketch Shows a Portion of the Blade of the New Steel Square Marked with Degrees to Enable the Carpenter to Obtain All Angles from One to 90.

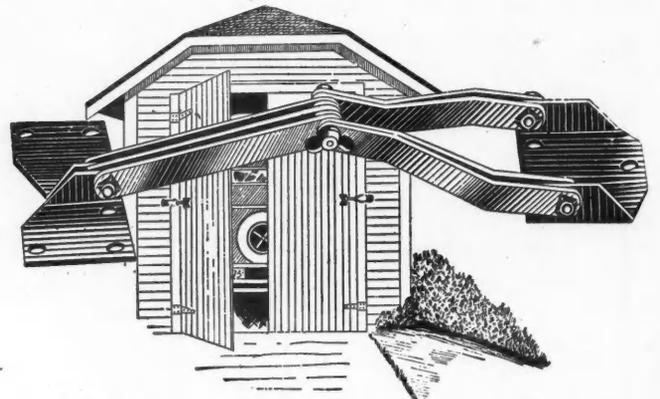
away from the complication of figures on the blade and tongue which might be confusing. For example, at one inch is marked four degrees and forty-six minutes, at two inches nine degrees and twenty-eight minutes, and so on. To get the degrees between the even inches is simple, 3/16 of an inch equalling one degree up to eight inches and 1/4 inch to the degree from eight inches up.

The illustration shows a portion of the blade of this square with the markings. The square itself is a quality product, finished in black with all markings in white and very distinct.



Effective Garage Door Stops

THE illustration shows a door stop which is simple, strong and effective. It is simply and quickly installed on any garage door and will serve ably on other large doors where it is desired to open the door and have it remain stationary at a certain position regardless of wind. These stops come in pairs and are usually installed one on



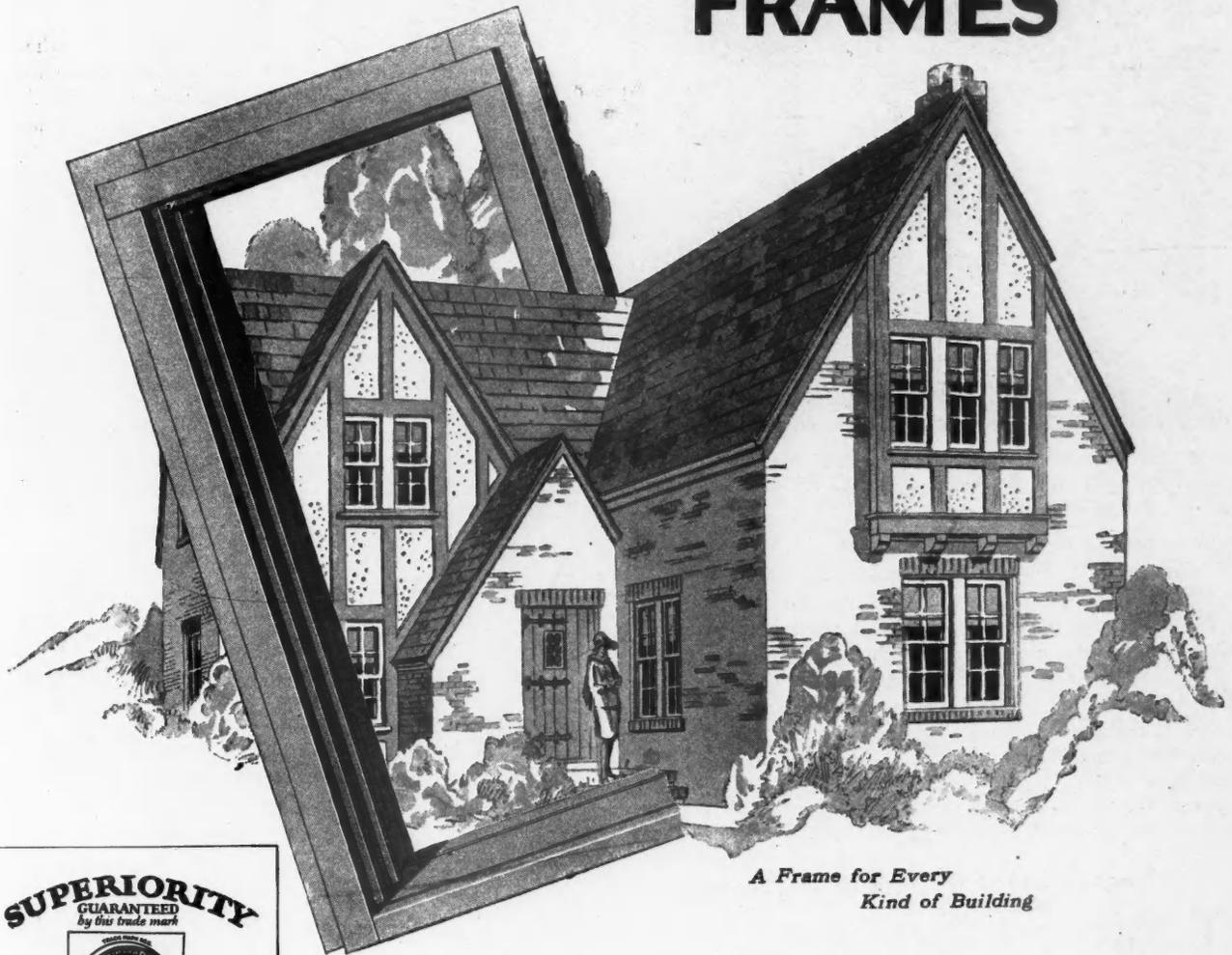
This Sturdy Garage Door Stop May Also be Obtained Incorporated with a Hinge and Either Holds the Door in Any Position.

each door about midway between the two hinges. The illustration shows the installation on garage doors as well as a close up view of the stop.

It is stated that this stop can not possibly get out of order and will positively prevent banging of doors in any wind. When it is installed the doors can be opened as much as desired and will stay open at any angle yet is instantly flexible to the touch of the hand. What is more, these stops do not squeak.

A stop, of the same construction, is also made by this company, incorporated with a strong sturdy hinge. This is used in place of ordinary hinges on new buildings or to replace old hinges. It gives rigid support to heavy doors and prevents sagging as well as having the same merits as the separate stop to prevent banging in the wind. It is recommended for use on new construction as being more economical than plain hinges plus the separate stops.

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A Frame for Every
Kind of Building

SUPERIORITY
GUARANTEED
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HOME builders are eager to deal with contractors who have a reputation for delivering well built houses—houses that make comfortable homes through the years.

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Andersen Genuine White Pine Window Frames* are just exactly what you want if you are a contractor striving to increase your business and profits by building your reputation. Make us prove it. Send the coupon below.

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- 1 Patented, noiseless, long wearing Andersen pulleys used exclusively.
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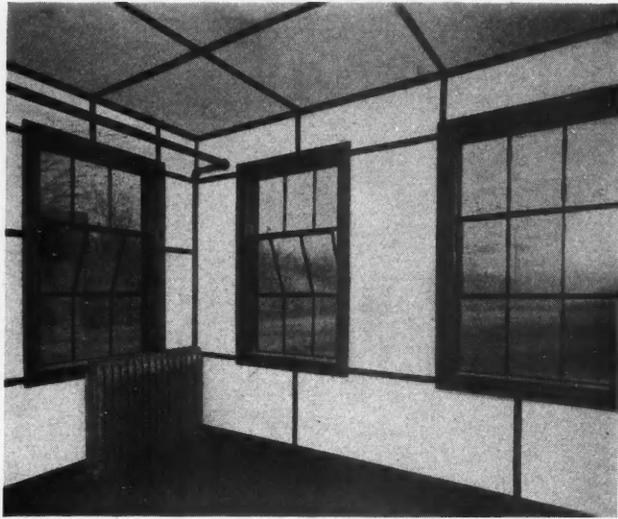
Set of folders describing construction and uses of Andersen Frames.
 "How to Make Your New Home More Comfortable"—an illustrated booklet of interest to all home builders.

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Puttyless Steel Windows

HERE is a steel window for use in small stores, warehouses, barns, shops, high basements, filling stations, portable school houses and residential garages. It opens in at the top and sheds all rain even when open, keeping the inside dry. It is equipped with a patented clip which



These Complete Steel Windows Can be Used Equally Well with Frame, Brick or Concrete Block Construction, and Are Inexpensive.

eliminates the need for putty and holds standard size glass against a weatherproof cushion of cork.

There is no putty to stay soft or run or to dig out in case a pane of glass is broken and must be replaced. It is a simple matter to set a new pane and this can be done in a few minutes' time. This feature allows the removal of the glass in summer and the insertion of a size 16 mesh screen, making an outside screen. In the fall the screen can be replaced with glass making a storm sash. This window is inexpensive and is available in two standard sizes. It fits frame, brick or concrete block construction.



Treated Oak Flooring Perfected

THERE is now available to the building public throughout the country an oak floor, which, because of a new treatment, is guaranteed not to cup, buckle or shrink, if laid according to standard practice and if it is not subjected to extreme moisture, atmospheric or temperature conditions. Under extreme conditions, cupping, buckling or shrinkage, if they occur, will be of slight character. It is also guaranteed against attack of wood-boring insects such as termites, white ants, or Lyctus powder post beetles, all of which often seriously damage floors and other interior woodwork.

While this product has only recently been placed on the market the process is a development of 17 years of experiment and samples which have been buried for 14 years, and others exposed to the air for the same period, show no sign of change in the wood or the chemicals contained therein. The flooring is treated by immersion, a chemical solution being forced into the wood by electrical action.

Flooring treated in this manner is available in all grades, widths and thicknesses and also in fabricated blocks for parquetry floors.

The manufacturers of this flooring list its advantages as follows: Under normal conditions cupping and buckling of the treated flooring because of

moisture absorption is not found. For this reason it may be laid before the plaster or cement in the building dries, definitely advancing the time for laying floors. The flooring will not shrink and leave unsightly cracks between boards.

Under normal storage conditions it is protected against absorption of moisture and remains as manufactured. The treatment changes the cell structure of the wood in such a way that no type of insect life can live on it. The treated flooring is easier to lay, while retaining its snug fit it goes together more easily and will not split as readily as untreated flooring.

Nailing is easier due to less splitting and to the fact that the treatment acts as a lubricant similar to the waxing or soaping that carpenters sometimes give their nails on fine finish work to prevent splitting. The treated flooring requires less scraping than untreated flooring and at the same time is easier to scrape and sand. When sanding machines are used there is less gumming of sandpaper.

The treated flooring takes filler, varnish, lacquer, shellac, wax and other finishing materials readily but is more economical of the materials. The finished appearance is superior to that of untreated flooring because it takes a higher polish readily. It is a better insulator against heat, cold and sound than untreated flooring because of the chemical and physical changes in the wood cells due to the process.

The treated flooring is less inflammable than untreated flooring and less apt to be damaged by fire.

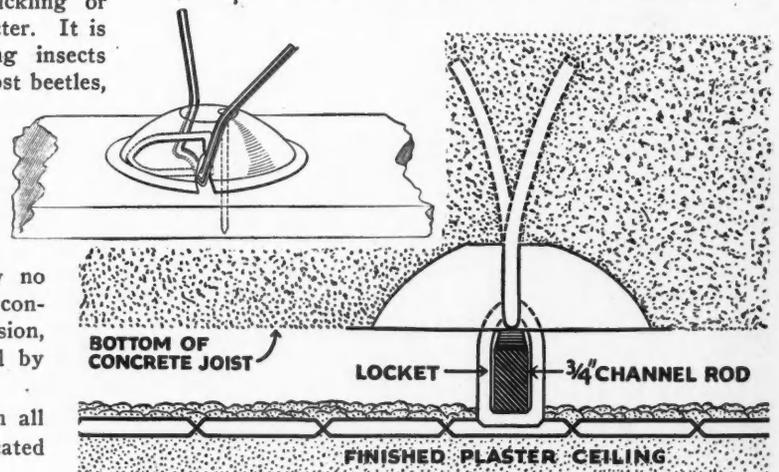


A New Ceiling Hanger

A COMPANY manufacturing an extensive line of building specialties has recently announced an addition to its line in the form of a ceiling hanger for suspending metal lath. This hanger consists of a metal cup with a nail hole for nailing to the form before the concrete is poured, and a piece of No. 9 wire bent to fit the metal cup and to form an anchorage after the concrete is poured.

A small locket hangs from the wire, being concealed under the cup until the forms are removed, as in the illustration, when it drops down as shown in the larger sketch and the channel or pencil rod may be threaded through it with ease. The locket is furnished in two sizes, one for channel rods and one for pencil rods, fitting all sizes of rods.

This system eliminates all tying wires and assures a perfectly smooth and even ceiling and a saving on material and labor. It was placed under severe tests while in the development stage and withstood overloads equal to six times those required under regular working conditions.



This Sketch Shows the New Hanger Supporting Metal Lath Ceiling by Means of Running a Channel Rod Through the Locket. The insert shows the position of the locket before the forms are removed.



For this Genuine Jaeger
All-Purpose Mixer...
NEVER BEFORE such
Quality at this Price!

CAPACITY: A full half-bag size, 3½ cubic feet mixed concrete to a batch. Also mixes mortar.

HIGH SPEED: Famous Jaeger "Flat Spot" Drum - more batches of thoro mixed concrete per day. Discharges clean in 5 seconds.

PORTABLE: Balanced - one man handles it. Trails anywhere a Ford will go. Roller bearing disc wheels with rubber tires furnished at above low price - steel wheels at still lower price.

POWERFUL: Husky 2 h. p. F. & J. engine with Wico magneto, completely housed.

Check these specifications! Look again at the price! Only Jaeger, the world leader in size and sales, can make you a mixer like this one to sell at this price. Convenient terms if you want them.

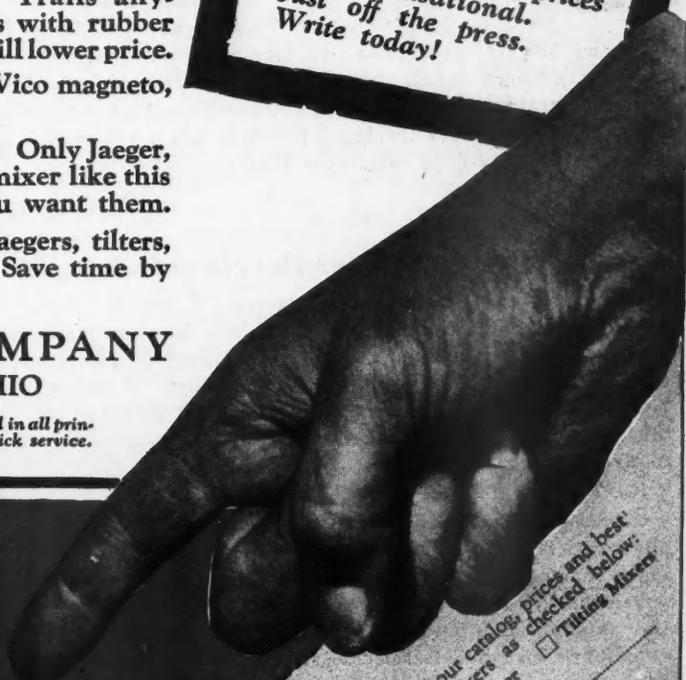
Get the whole story about it and other genuine Jaegers, tilters, non-tilters, and plaster mixers, up to 28 ft. sizes. Save time by sending the coupon - right today!

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Over 100 Jaeger service stations, distributors and branches are located in all principal cities - no delays - Standardize on Jaeger and profit by our quick service.

**YOU WANT THIS
NEW Catalog.
SEND TODAY!**

No one will buy mixers until they've seen Jaeger's NEW Catalog - Tilters, Non-Tilters and Plaster Mixers - all sizes - at prices almost sensational. Just off the press. Write today!



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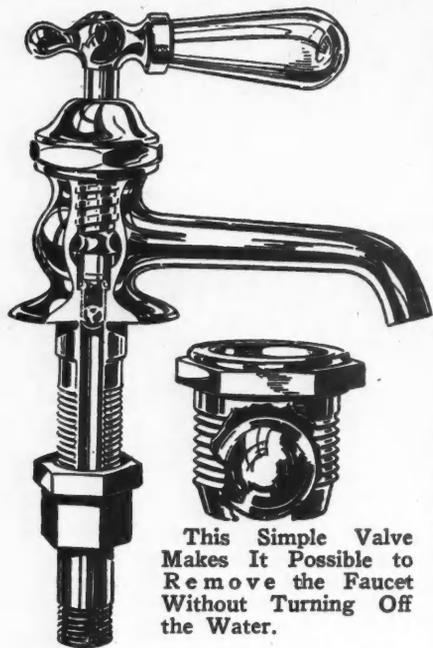
Please send by return mail, your catalog, prices and best terms on Genuine Jaeger Mixers as checked below:

Non-Tilt Mixers Plaster Mixer Tiling Mixers

Name _____
Address _____
City _____
State _____

New Valve Improves Faucets

IT is now possible to equip water faucets so that they may be removed to replace the gasket or to install a new seat without shutting the water off. To those who know the delay and inconvenience of going to the basement to shut off water, returning to make one of the replacements mentioned, going back to the basement to turn the water on again, and then perhaps finding that the whole thing must be done over, this device will be most welcome. It has already met with great favor particularly from hotels where such repairs are frequent and the inconvenience of shutting off the water is great.



This Simple Valve Makes It Possible to Remove the Faucet Without Turning Off the Water.

The illustration shows this device and how it is installed in the faucet. It can be used with any type of faucet and conforms to the most modern plumbing practice. The device consists of three parts. There is a brass housing threaded to screw into the faucet, forming the seat. This housing contains a non-corrosive steel ball, which is forced up by the pressure of water against an air tight seat (in the brass housing) and automatically

stops the flow of water when the faucet is removed for repairing. There is also a specially constructed non-corrosive, steel pin which takes the place of the gasket screw and extends down into the brass housing, which serves to hold the ball away from the seat in the brass housing while the faucet is in use.

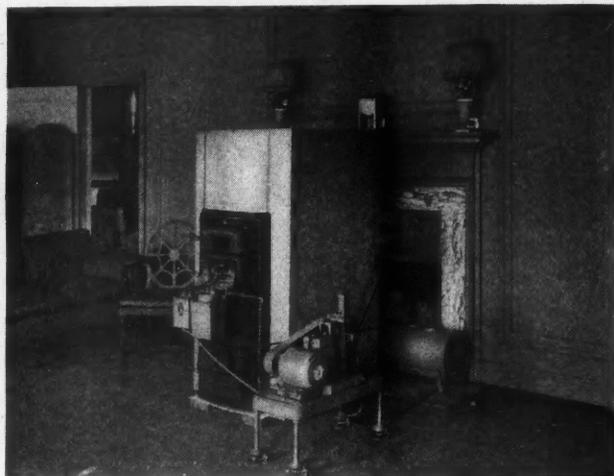


New Oil Burner Developed

AFTER more than a year and a half of research and development work, a company which has for many years been prominent in the field of specialized automotive equipment, is now placing on the market a new oil burner. Numerous features of this burner, wherein it differs from other burners on the market, show distinctly the automotive influence.

For example, this burner makes use of the vacuum tank, a carburetor nozzle adjustment, a nozzle which automatically restricts the flow of fuel as it heats up and a two-cylinder compressor and vacuum pump of the type originally developed to meet the grueling pump requirements of the automotive industry. The electrical control system consists of instruments selected on the basis of reputation, performance and national distribution regardless of price.

The quarter-horse power motor is described as one of the latest developments in electricity, an enlarged edition of the repulsion-start induction motor developed for domestic refrigeration. The spark for igniting the burner is furnished from two plugs, with single wires, that are stream-lined to prevent carbonizing and which are across the jet of atomized oil. A current of 10,000 volts is furnished to the plugs by a transformer that steps up ordinary house current.



A New Domestic Oil Burner Incorporating a Number of Entirely New Features.

The arrangement of the burner is as unusual as its various parts. The firing unit, consisting of a vacuum tank, nozzle, spark plugs and transformer, is bolted into the fire door so that in an emergency the three pipe lines may be disconnected at the door and the furnace fired with coal or wood.

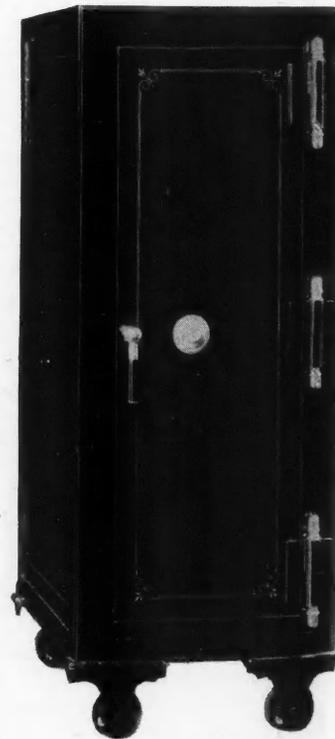


A Vault for the Home

A COMPANY which has been manufacturing vaults for over 50 years has recently brought out a vault for the home, for the protection of furs, clothing, silver-ware and other valuables. This vault is so constructed that it may be rolled into a closet, placed in attic or built into the wall. It has walls, top and bottom of steel, and an extra thick door. The door is equipped with a Yale combination, bank lock, checked by cold rolled, steel bolts, one inch thick, and there is an auxiliary, anti-dynamite locking device.

The vault is air-tight, and has a cedar lining as a protection against moths. It is equipped with a roller bearing, pull hanger at the top for clothing. The dial is of brass and there are brass hinge-tips and a rubber grip drop handle. The finish is in maroon, olive green, French gray or any standard color and is striped for decoration so that the vault makes an attractive appearing piece of furniture harmonizing with the furnishings of any room.

It is stated that all the insurance companies recognize the burglar protection which this vault provides and allow a special vault rating where it is installed, which reduces the burglar insurance premium about two thirds.



This Cedar Lined Steel Vault Protects Against Burglars, Fire and Moths.

From a Father to his Son



Dear Bill,
 Your Mother and I enjoyed your long letter so much and we are interested in your plans to enter the floor surfacing business. You did well to choose an "American Universal." I have seen them work and they are unquestionably the best on the market.
 The reason we were especially interested in your business venture is because I long ago awoke to the mistake I made in not specializing. I have been just a carpenter all my life but a man can't get very far ahead just working at the trade. It's the specialist that gets the money these days. By doing nothing but surfacing floors, you get a reputation for fine work and then more and more business comes to you. You write that you can make \$20.00 to \$40.00 a day. That's a whole lot more than your Dad ever made. I'm getting a bit old for new ventures, myself, but I tell every young man I talk to, not to make my mistake but to get a special business of his own as fast as he can. So I am glad, son, you have taken up the floor surfacing business. It's a big field, summer and winter. Nice clean, easy work and I'm sure you will make a big success. Write and tell me how you get along.
 Your Father
 "Carpenter Jim"



Clip and mail this Coupon TO-DAY!

 THE AMERICAN FLOOR SURFACING MACHINE CO.
 515 So. St. Clair St., Toledo, Ohio

Without obligation, send complete information at once about the "American Universal" floor surfacing machine.

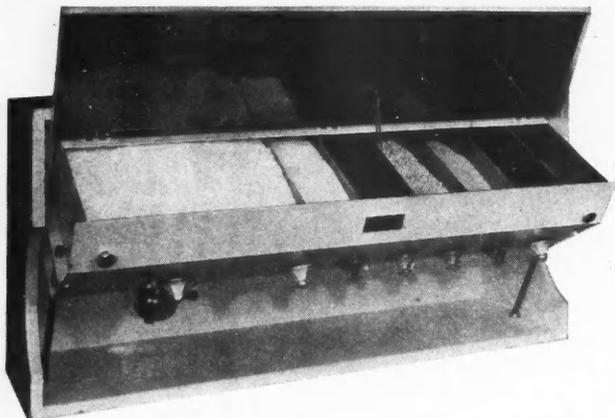
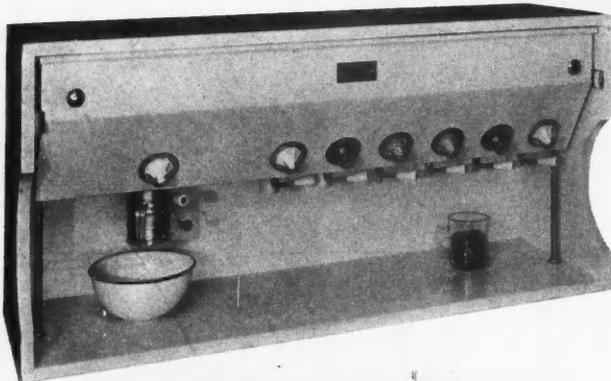
- I am a building contractor.
- I am interested in floor surfacing as a business.

Name.....
 Address.....
 City.....
 State.....

Complete Pantry in One Unit

AN entirely new, patented piece of kitchen equipment has recently made its appearance on the market. It is a compact, sanitary metal container for the staple, dry groceries in the kitchens of homes and apartments. It serves the purpose of a pantry but occupies only a fraction of the space. It replaces the innumerable bags, cans and jars usually distributed about the kitchen and is at once attractive, convenient and economical.

Builders and owners, it is stated, find that this fixture adds to the rentability and salability of houses and apart-



This Compact Unit Affords a Convenient and Sanitary Food Container for Installation in the Modern Small Kitchen.

ments. It can be installed in any standard shelving at a moderate cost and without changes of the original plans. It is made in five different lengths from 32 inches to 48 inches, with a depth of 11 $\frac{5}{8}$ inches and height of 15 to 21 inches. The number of bins provided varies from five to nine and the space required for installing is $\frac{1}{2}$ inch more, for each size, than the length of the fixture.

The accompanying illustration shows how this fixture is used as well as its general appearance. There are glass indicators in the front of the bins showing at a glance the amount which they contain and the contents are released by turning the throttle handle underneath the bin.

This fixture is built of 20 gauge coke tin metal. The outside finish is two coats of baked enamel. The inside is treated with baked sanitary lacquer to prevent rust and corrosion. Any color can be furnished. The fixtures are nickel plated and the throttle handles are of porcelain.



Load Bearing Gypsum Tile

ALOAD bearing, gypsum tile has just been announced. These tile have hollow cores and are designed for the erection of exterior walls and bearing partitions in residences, garages and other light occupancy buildings. They are designed to withstand loads of 1,000 pounds per square inch gross area, and are rugged enough to be shipped and handled without excessive chipping.



The House Under Construction Here Is Being Built of a New, Hollow, Load Bearing, Gypsum Tile.

These tile are manufactured from a well known type of cement which is extensively used in poured masonry construction and can be obtained in standard 8 by 8 by 16 inch and 8 by 6 by 16 inch patterns. They may also be obtained in 8 by 12 by 16 inch and 6 by 12 by 16 inch sizes. None of the patterns weigh more than 35 pounds. According to the manufacturers' announcement, the tile are kiln dried and are uniform in size, strength and weight.

Because they are manufactured from gypsum these tile are incombustible. The manufacturer claims that they effectively retard the passage of sound as well as heat and that construction economies are obtained by the use of the tile as a result of the ease with which the units are erected.

Further advantages claimed are that the tile can be nailed, sawed and fitted with the ease of soft wood, that they provide a true surface for exterior stucco, that brick veneer is easily laid up over the tile and that, with the tile reinforced tile lintels are easily made on the job.



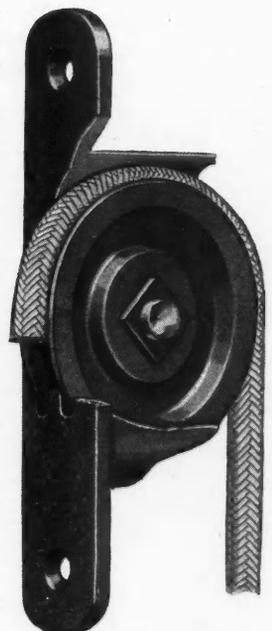
Sash-Pulleys Are Noiseless

THE noiseless, long wearing sash pulleys made by a prominent manufacturer for use on this company's own sash have proved so satisfactory, it is stated, that the company has decided to make and sell these pulleys in a variety of sizes and finishes and they are now available to the trade for every sash pulley requirement.

This pulley is made of cast gray iron, with turned wheel and polished, face. The noiseless, wearproof, axle bearing is patented. It is made of hard white maple saturated with a non-drying lubricant which insures quiet operation and long life. The specially designed housing prevents the cord from slipping off the wheel and reduces the air leakage around the cord. Also there is a tongue on the face of the pulley to reduce air leakage through the groove under the wheel.

There is an unlimited guarantee that this pulley will be noiseless in operation and will function perfectly for an unlimited period. It is supplied in three standard sizes and seven standard finishes and special materials and finishes are supplied on special order.

The illustration shows the construction of the pulley.



A New and Noiseless Type of Sash Pulley Now Offered to the Trade.

1000 houses in one operation roofed with
Johns-Manville Asbestos Shingles



On these houses selling at \$7950
Johns-Manville Asbestos Shingles
are proving a real investment

AT Sunshine City, Woodridge, New Jersey, Charles H. Reis, Incorporated, is building 1,000 houses to sell at \$7950 each. Every house has a roof of Johns-Manville Rigid Asbestos Shingles—fireproof, permanent, beautiful.

Mr. Reis could have saved nearly \$60 per house, or a total of \$60,000 by using asphalt shingles.

Why did Mr. Reis, an experienced operator, spend \$60 more per house to get Johns-Manville Rigid Asbestos Shingles?

Here is what Mr. Reis himself has to say:

"The advertising of the leading manufacturers of building materials can be made a direct part of the selling effort of builders.

"Johns-Manville Rigid Asbestos Shingles are instantly recognized by our prospects. The use of Johns-Manville Asbestos Shingles makes it easier to sell

our houses and insures us against complaints later."

Whether you are building one house or a thousand, it will pay you, just as it has paid Mr. Reis, to use Johns-Manville Rigid Asbestos Shingles.

That they are fire-proof, everlasting, beautiful, and easy to apply, is important to you, but only half the story.

And the other half is that the public is coming to know better and better every day that Johns-Manville Rigid Asbestos Shingles are fire-proof, everlasting and beautiful.

It is the public appreciation of Johns-Manville Rigid Asbestos Shingles that ends the argument. Send the coupon for full information. Plan to use Johns-Manville Rigid Asbestos Shingles on your next operation.

Johns-Manville Corp., Dept. R-3
New York, Chicago, Cleveland,
San Francisco. (Mail coupon to
nearest branch.)

Please send me full particulars in
regard to Johns-Manville Rigid
Asbestos Shingles.

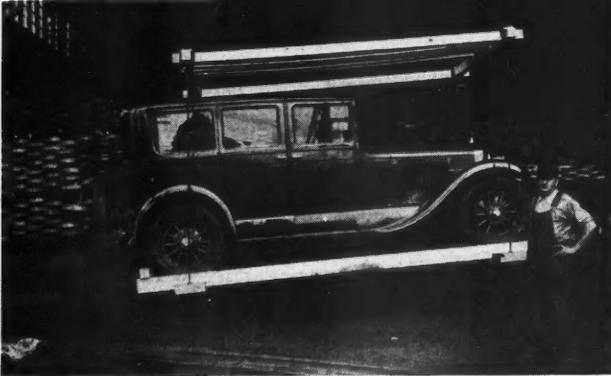
Name.....
Address.....
City.....
State.....

Johns-Manville
Shingles and Insulations
of Fireproof Asbestos

A Hammer Head That Sticks

THE always difficult problem of securely fastening the head of a hammer to the handle seems to have been very effectively overcome by the manufacturer whose hammer is shown in the photograph. This company's method is to drive all the moisture out of the wood handle and replace it with a solution that permanently closes the pores of the wood in such a way that no further moisture can enter to cause swelling and shrinking under varying atmospheric conditions. The eye of the hammer is tapered and corrugated, the handle is closely fitted, forcibly driven and securely wedged, with wedges of special design.

Placed on a testing machine it was found that a pull in excess of 6,000 pounds was required to move the head on the handle, far more than any pull exerted in normal use. Desiring to demonstrate this in a graphic manner the idea of suspending a Cadillac car from the head of the hammer was suggested. The car was placed on a cradle and the cradle suspended by



This Test Speaks for Itself. The insert at the upper left shows how the car was suspended from this tight hammer head.

ropes from rings placed over the claw and head of the hammer. The handle of the hammer was clamped to the cable of the crane and with this rig the car was lifted 2 feet from the ground. The car weighed 4,600 pounds, the cradle and rigging 600 pounds, making a total dead weight of 5,200 pounds suspended from the head of the hammer without the slightest movement of the head.

Asphalt Roofing Material

THERE is a certain asphalt roofing material which possesses a number of distinct qualities and is suitable for either new roofs or reroofing on all types of construction, residences, factories, churches, schools, garages, etc. It forms a permanent asphalt surface which becomes almost as hard as cement and, therefore, will not run under the most intense heat, it is claimed. This quality adapts it to uses where many roofs dry out, crack and peel off.

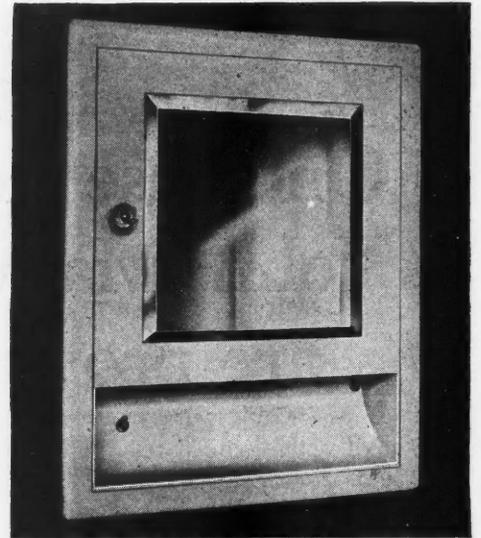
This material will not crack or become brittle during cold weather and it can be applied with a whitewash brush or mop by workmen without particular training. For large roof areas it can be applied most economically with a power spray. It is of a rich black color which is retained indefinitely. Because it is impossible to color asphalt permanently, where color is essential the manufacturers recommend using the liquid and sifting onto it permanently colored, crushed stone which can be had in ten colors. These colors will withstand rain, snow, sleet and sun.



A Perfectly Lighted Mirror

HERE is a bathroom cabinet which is distinguished from all others by a device for perfectly lighting the mirror. The cabinet measures up to the best standards for bathroom cabinets. It is made of white enameled, pressed steel and is equipped with concealed hinges, glass shelves, and bevel mirror.

The lighting device consists of a lamp and reflector so arranged that the light from the lamp, shaded from the eye, is thrown upward onto the face. At the same time the lamp is concealed from view so that the cabinet varies



A Bathroom Mirror That Is Really Lighted Would Prove a Boon to Both Men, for Shaving, and to Women.

little in appearances from the more familiar types. Such light is described as indispensable for men who shave themselves and will most certainly be appreciated by all who have attempted to shave by the poor light ordinarily found in bathrooms. It is equally useful to women in making their toilet and is especially appreciated by theatrical people for making up. The cabinets are made in several different models to meet varying requirements.



Device to Drain Wash Machines

HERE is a device for filling or draining any kind of a receptacle, which is being put out by a company widely known for its cellar drains, water gauges, carburetors and similar devices. Primarily this device will be used mostly by the women of the household and mostly in the laundry. By attaching it to the faucet and attaching a short length of $\frac{3}{4}$ -inch garden hose, either cold or hot water, or both, can be conveyed to the washing machine.

By merely turning a valve the action of the water coming from the faucet will pull the dirty water out of the machine or other receptacle, even a bucket or tub set down on the floor. Its advantages are in its universal use, the quick neat way in which it either fills or drains, its simplicity and its low cost.



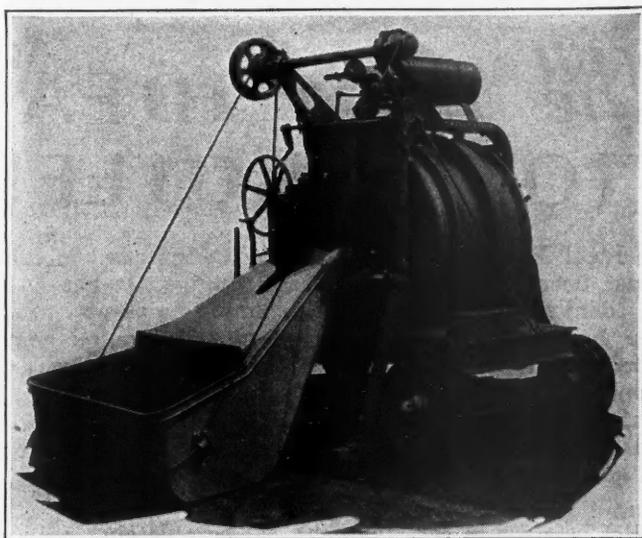
Attached to a Faucet This Device Will Either Fill or Empty the Wash Machine or Tub.

Improved Two Bag Mixer

ADVANCED features of speed and other improvements in design are incorporated in a new 10-S mixer having a two-bag capacity of 1:2:5 concrete. This size has been added to this line to give the contractor the portability and low cost of smaller mixers with large enough capacity for use on the majority of work.

Several improvements of design and new mechanical features include a large drum, built in accordance with the recommendations of the Standardization Committee of the Mixer Manufacturers' Bureau of the A. G. C., a stream line power loading skip, discharge chute of special design, Timken bearings in the drum rollers and stronger frame construction.

The extra large discharge opening of the improved power loading, stream line skip facilitates the quick flow of the charging materials. Within eight seconds from the time the skip starts to leave the ground the entire batch is discharged into the drum. The cover plate is flared out so that no material can spill out.



A Two Bag Mixer Designed to Give Portability and Low Cost with a Large Enough Capacity for Most Jobs.

Seven broad blades and seven buckets provide the mixing action and their unusual width gives a fast action and lengthens the life of the drum. Speed in discharge is also obtained by means of a large discharge opening and specially designed chute. Ten seconds or less is required. One man control is effected by placing banked levers at the side of the machine and this also permits the use of the machine in crowded quarters. Power is furnished by either a two-cylinder or four-cylinder gasoline engine ranging from 6 to 10 horsepower with a choice of two popular makes offered.



Custom Built Radiator Covers

ALINE of custom built, radiator covers is available in a variety of styles and finishes to meet every requirement for the hiding of unsightly radiators and artistic decoration of the home or other building. They are made of 16-gauge steel and finished in any color to match woodwork or general color scheme or in wood grain, walnut, circassian walnut, mahogany and oak, being the most popular.

These radiator covers have hinged tops which give access to large capacity, copper tanks which, when filled with water, moisten the heated air and provide for the proper humidification of the room. This humidifying feature is, however, optional with the purchaser.

In addition to the radiator cover, which is already a

well known and recognized fixture for homes, schools, churches, public and other buildings, this company supplies ornamental grilles, of similar construction for covering unsightly heating pipes and risers in any building where exposed heating pipes are used. They also offer simple tops for installation where



Styles and Finishes to Meet Every Requirement Are Available in These Radiator Covers With or Without Humidifying Tanks.

the appearance of the heating unit is of less importance, but it is wished to avoid the soiling of walls and ceiling which results from exposed radiators. This protection of room decoration is also one of the important features of the regular radiator covers and offers an economy in redecoration which helps to set-off the expense of the original cost.

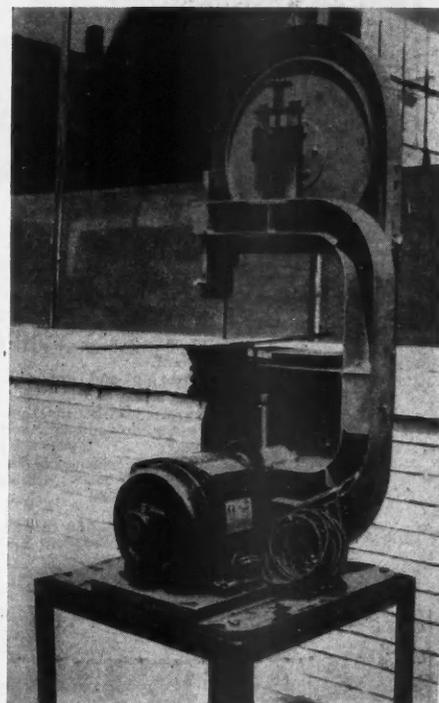


This Band Saw Is Portable

THIS band saw can be moved to any job at will. Its light weight, 135 pounds, permits one man to move the machine without difficulty and it is adaptable to construction work, small shops, factory departments and even home workshops. Its low price also adds to its availability.

A saw blade seven feet long runs on rubber tired, disc wheels. The rubber is ground to shape after being in place, insuring maximum accuracy. Abrasive action between the wheel and blade is prevented by the cushion surface. Power is provided by a $\frac{1}{3}$ to $\frac{1}{2}$ horsepower, electric motor, directly geared to the lower wheel. This direct drive permits maximum speed to be reached in two seconds, as compared with 20 to 30 seconds for a belt-driven machine, it is stated. A tilting, steel table, 18 inches square, provides a rest for work.

This saw can be mounted on a bench, it being but 39½ inches high. An angle iron stand is provided for floor mounting. Metal-cutting blades can be used as well as those designed for wood working. The machine contains all approved safety features. The blade is exposed only at one point, directly below the guide.



Here Is a Portable Band Saw Readily Moved, by One Man, to Any Point Where It is Needed.

W. E. BURTON.

Now! at

A complete New and Hot Water Equip-



**TAPPED
FOR
EXCELSE
HEATER**

**Ratings
Fuel**

1. Perfected design—long double flue gallery—highly efficient.
 2. Thoroughly and indestructibly insulated.
 3. Equipped with mechanical regulation and all accessories.
 4. Clean and permanently beautiful—all doors porcelain enamel finish.
- | | |
|--|---------------|
| Steam | 350 to 17,900 |
| Water | 600 to 29,400 |
| Hard or Soft Coal,
Coke, Oil or Gas | |

The NEW IDEAL SECTIONAL BOILER

THE new Ideal Red Jacket Boiler has been built to meet the new demands of our day. The time has come when the public expects and demands products not only of the utmost mechanical perfection, but products which are beautiful as well. The Ideal Red Jacket Boiler offers both.

The new Boiler is made in sectional design with long double flue gallery to give high efficiency; and with its low water

line it may be installed in cellars with low ceilings. It has an unusually quick pick-up heating capacity, insuring quick heating and abundant warmth on cold winter mornings. Inside the beautiful and indestructible cabinet exterior is a one-inch, corrugated, air-cell asbestos lining, to prevent radiation heat loss. The boiler is completely equipped with mechanical regulation and all accessories. *Yet it costs no more than ordinary equipment!*

20 Distinct and Important Features

Compare them point by point with any other boiler on the market

1. Shaking mechanism, flexible, easily operated, durable.
2. Ashpit of ample proportions for easy caretaking with cast iron base of strong, trussed construction.
3. Porcelain enamel finished doors of enduring lustre and beauty.
4. Special grates allow use of small size coal, such as Buckwheat and Pea. Triangular top construction grinds clinkers when grates are shaken, facilitating caretaking. Reinforced trussed construction.
5. Jacket, indestructible sheet steel, baked enamel finish.
6. Large, scientifically proportioned fuel chamber of abundant coal-carrying capacity for long firing periods and easy caretaking.
7. All contact surfaces on doors and plate work ground to smooth finish for dust-proof construction.
8. Long, double gallery flue for hot gas travel secures high operating economy.
9. Blow-off conveniently located in front for cleaning.
10. Steam gauge and all other accessories provided with steam boiler. Water boiler also completely equipped.
11. Safety valve.
12. New, sensitive Arco Mechanical Regulation.
13. Water gauge glass with brass fittings, easily read.
14. Latest improved type air cell asbestos insulation permanently prevents radiation heat loss.
15. Flue door with curved baffle lining, insures easy gas travel with minimum draft.
16. Side metal jacket, indestructible and finished with beautiful red baked enamel.
17. New, sealed, seepage-proof construction between all sections.
18. Sturdy fire door with special baffle lining containing secondary air distributor.
19. Primary Draft Inlet.
20. Note substantial construction of all doors, plate fittings, hinge pins, etc., all porcelain enamel finished, for permanent beauty.

AMERICAN RADIATOR

Popular Prices....

Line of Heating ment for Every Need

The New Ideal Gas Water Heater

with Porcelain Enamel Top and Base

THIS is the lowest priced, completely equipped automatic storage heater on the market. It operates with the highest degree of efficiency attainable for practical service. To the owner, it gives hot water in abundance, day or night, on the turn of a faucet.

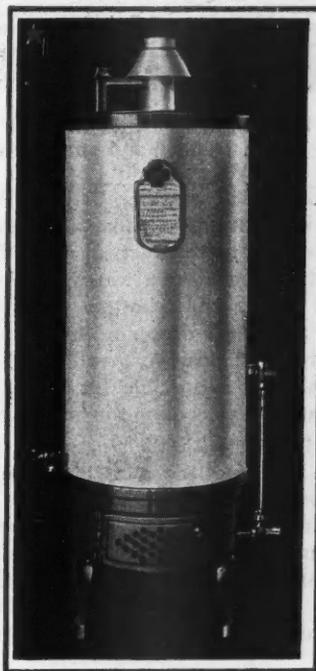
price brings it within the reach of every home.

Send for Literature

National advertising carries the message of these new heating products to millions of home owners and prospective home owners. You can tie up with this advertising; and by equipping buildings with these new products insure not only complete and lasting satisfaction but also add materially to the salability of the house.

Ideal for Model Homes

With green porcelain enamel top and base and pearl gray jacket, this Heater is a product any woman would be proud to own. Its beauty is enduring; and its unparalleled low



THE AMERICAN CORTO *The Radiator Classic*

with "American" Precision Accessories

In order to meet the demands of the public, the Corto was adopted as the standard "American" Radiator. With our factories equipped to produce in volume we are now able to offer the Corto in a complete line of sizes and at popular prices.

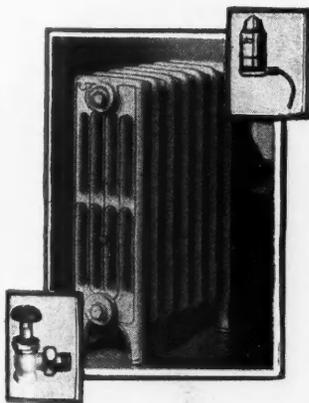
With Corto Radiators equipped with Arco Packless Valves and Airid Air Valves; and with an Ideal Sectional Boiler in the cellar—an All-American Heating Plant—the house owner is assured of the best in heating that can be obtained.

\$55

and up
according to size
as advertised

F.O.B. Buffalo N.Y.

★ Approved by Good Housekeeping Institute and American Gas Association.



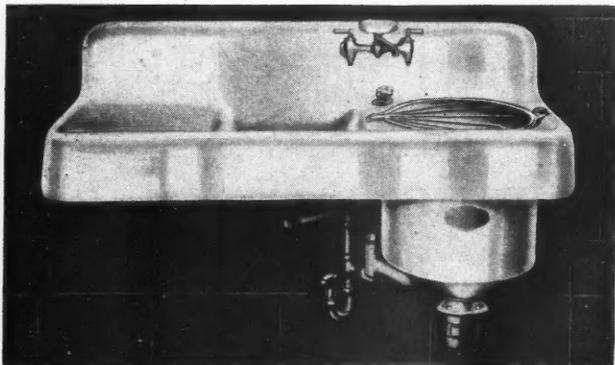
COMPANY

AMERICAN RADIATOR COMPANY
Advertising Dept., 40 West 40th St., N. Y. City
Amer. Bldr. 2-28
Please send me literature describing your new Ideal Boiler and Water Heater.
Name.....
Address.....
City.....
State.....

Improved Model Dishwashers

DISHWASHING machines are too well known to require that their advantages be pointed out, the saving of time and labor, elimination of working with the hands in dishwater and so forth. Improvements in dishwashing equipment are of great interest to everyone concerned with the planning of homes, however, and recently one of the best known makers of dishwashing machines has brought out new and more highly perfected models.

These machines, which in the past have been made in right-hand models only, may now be had with the dishwashing unit at either right or left. A new motor and dasher assembly of more simple design, the dasher being the only moving part in these machines, give a better and



A Well-known Dishwasher Sink in New Models Which Have Been Refined and Improved in a Number of Ways.

more efficient water action. With the exception of one model, all these sinks are eight inches deep and a new cover of more practical and efficient design has been provided as well as a water inlet directly into the machine on all models and a bottom tray which prevents the possibility of any silver dropping into the dasher. There is a trouble-proof and positive overflow which eliminates the float and makes it impossible for the operator to get in too much water, overloading the machine.

In line with the vogue for color in the kitchen, which is replacing the all white kitchen equipment and decoration of the immediate past, a model is included designed with a flat rim so that it can be built into a cupboard, flush, with slightly sloping drainboards of vitreous tile, ash, plastic cement or rubber tile. The tile can be secured in almost any color so that it will harmonize with the decoration of the rest of the kitchen.



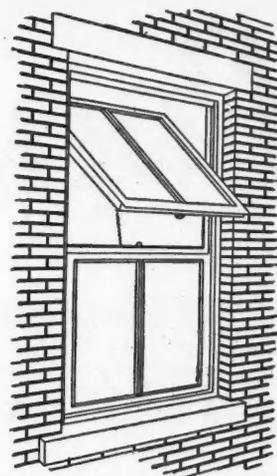
New Line of Metal Windows

WITH the idea of giving its dealers an opportunity of getting the metal window business on jobs where other items in its line are sold, a leading manufacturer of sheet metal building products, has decided to add metal windows to its line. These windows all carry the label of the Underwriters' Laboratories, indicating that they have passed the rigid test required for approval and each is inspected by an engineer of the Underwriters' Laboratories before leaving the factory.

All standard sizes of window are available from stock, made up from special stock, No. 24 gauge, galvanized, flat, sheet steel, only the best sheets being used. The cutting and forming operations are done by skilled workmen with the aid of specially designed machinery. These windows are available in pivoted, hinged, stationary, double-hung and counter-balanced types. The pivoted, hinged and stationary types are made with one, two or three sashes to the window.

The double-hung and counter-balanced types are made with two sashes only. Combination windows are made on order in two or three sashes and in any size up to five feet by nine feet.

All types of these windows are made in two patterns, the regular, old style pattern and the new, "day-light" pattern. The frames of the latter are formed under greater pressure and are more solid than the old style windows. The frames do not take up so much space as the old style and consequently more glass area is provided and more light is allowed to enter.



Metal Windows Added to a Line of Metal Lath and Similar Products Round Out the Line.



Strong Copper Steel Roofing

THE copper steel roofing material, installation of which is shown in the photograph reproduced here, has overlapping sides and ends, need not be pierced in fastening and makes a watertight roof. The insulation placed over it keeps out heat and cold. The built-up roofing or other waterproofing completes the roof. The sheets are made of rust-resisting copper steel and are furnished painted, galvanized or treated as desired.

Under ordinary roof loads the sheets will span six feet between purlins if made of 24-gauge and eight feet if made of 22-gauge steel. It can be made of any thickness up to 18 gauge and any length to which standard sheets are rolled. This roofing can be placed on any type of roof and covered with any material that can be fastened to a wood deck roof. Fastening clips and other appurtenances take care of even unusual conditions. It is light in weight and economical as a roof which will not burn and has been pronounced by engineers to meet all requirements of city codes for all purposes for which it is intended.

It has a good appearance from below and great strength due to the ribs which are two inches deep and spaced eight inches on centers. It will permit the use of light trusses, reducing the cost of the structural portion of the roof.



Watertight Roofs of Copper Steel Roofing Which Does Not Need to Be Pierced for Fastening in Place Are Used with Built-up Roofing or Other Waterproofing.

The CROMAR Co.

SUCCESSORS TO



THE CROOKS-DITTMAR CO.

MANUFACTURERS OF CROMAR FACTORY FINISHED OAK FLOORING
L A I D A N D U S E D T H E S A M E D A Y

By making our company name the same as that of our product, we simply give you one less name to remember.
There is no change whatever in ownership, policy or management.

WILLIAMSPORT, PA.

January 15, 1928

CROMAR LAUNCHES ANOTHER
ADVERTISING CAMPAIGN —

To the publications which in the past have carried the story of Factory Finished Oak Flooring to the Home Owners and Home Builders of America, is now added The Saturday Evening Post.

This additional Advertising Campaign is no half-hearted affair. Without a break, month for month, The Saturday Evening Post will carry the Cromar message into more than Three Million (3,000,000) Homes. Watch for the first advertisement — in the February 18th issue!

The great majority of the space will be Full Pages — so that the full and complete story of Cromar can be effectively presented.

That story is an amazing one. Cromar is an oak flooring which is scraped, sanded, filled, varnished, waxed, rubbed and moisture-proofed at the factory — by patented machines. When the Cromar strips reach the job, crated in compact bundles, there is nothing left to do but nail them down! There is no other flooring like Cromar in the world. And a Cromar Oak Floor cannot possibly be equalled, in beauty and wear-resistance, by any hand-finished hardwood floor.

To you, the new advertising campaign in The Saturday Evening Post, added to the other forms of consumer advertising which have in the past helped to build the impressive Cromar success, means this:

A greater number of flooring jobs handled with the same number of men, more and better satisfied customers, New and Bigger Profits — if you handle and push Cromar Factory Finished Oak Flooring.

Write me for full details of the manufacture and sale of Cromar — and the energetic co-operation the Cromar Company is glad to give you.

Sincerely,

W. D. Crook

Sales Manager

The Cromar Company,
Williamsport, Pa.

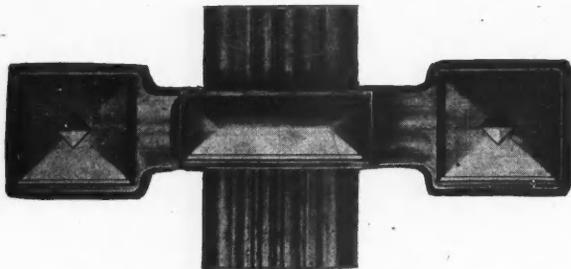
ALL QUOTATIONS BASED ON FLOORING MEASURE

Leader and Gutter Straps

THE illustrations show two new products for the improvement of roof draining equipment. One of these is a leader strap made from one piece of metal and said to be more economical than the old-fashioned, hand made, three-piece straps, as they can be bent and formed by hand, on the job. No solder mars the attractiveness of their appearance, and it is stated that they are cheaper



A Metal Strap Gutter Hanger Available in Galvanized Iron or Copper.



A Leader Strap Made of One Piece of Metal Is Said to Be Both Ornamental and Economical.

nished in 4, 4½, 5 and 6-inch sizes, and can be used like all other strap hangers but, to firmly lock the bead, should be applied as indicated by the manufacturers' instructions. It is easily adjusted, locks the bead and holds the gutter firmly in position by reason of its snug fit all around.

Improved Electric Fixtures

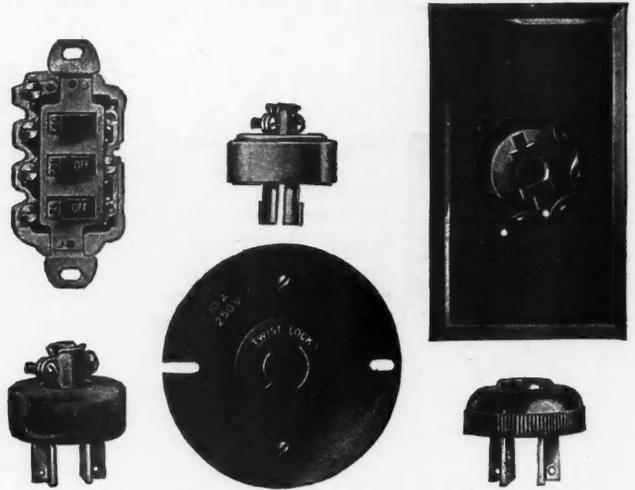
ONE of the leading companies manufacturing electric fixtures has recently added several new and interesting items to its line, all of which are illustrated here. The double "T" steel armored cap and bakelite cap have been added to the attachment plug line because of a demand for a stronger, firmer plug cap for offices using electric adding machines, folding equipment and printing equipment, vacuum cleaners and for beauty parlors, hotels, garages and plants using electrical appliances and equipment.

The twist lock flush receptacle, as standard equipment, offers the assurance of permanent contact. The construction of the blades combined with the locking feature adds unlimited strength and it is only necessary to plug the cap into the receptacle, give it a slight turn and the two are securely locked together.

The combination switch and outlet is a convenience outlet and flush wall switch. A quarter turn of the tap, which is a switch, and the lights are on. A quarter turn to the left and the lights are off. It is small enough to fit any single gang outlet box.

than any other ornamental leader strap. They are made in two styles and in either copper, to be used with copper leaders, or zinc, to be used with zinc or galvanized leaders. They are amply strong to hold the leader firmly in place without the use of hooks, and can be used with either square or round, plain or corrugated leader.

The second device shown is a metal, strap gutter hanger made of heavy galvanized iron or of copper. It is fur-



These New Items Added to a Well-known Line of Electric Fixtures Include a Double "T" Steel Armored Cap and Bakelite Cap, Twist Lock Flush Receptacle, Combination Switch and Outlet and Duplex and Triplex Switches.

Duplex and triplex switches offer a new and distinctive principle in switch construction. They employ simplification that embodies economy of materials and installation and convenience to the ultimate user. Each switch consists of a small, quality, trigger action, toggle switch movement made up in gangs of two or three, mounted in a single porcelain box which is small enough to be installed in standard single outlet box. All switches in the gang have a common terminal on one side which simplifies the wiring as compared with the ordinary three-gang installation.



Hack Saw Cuts Round Holes

TO enable the mechanic to cut a round hole in one one-tenth the time required by other methods, a rotary hack saw has been placed on the market. This saw will cut through wood, steel, sheet metal, slate, plaster or bakelite and will make holes varying in size from ¼ inch to four inches in diameter. It can be operated either by hand or with an electric drill or a drill press.

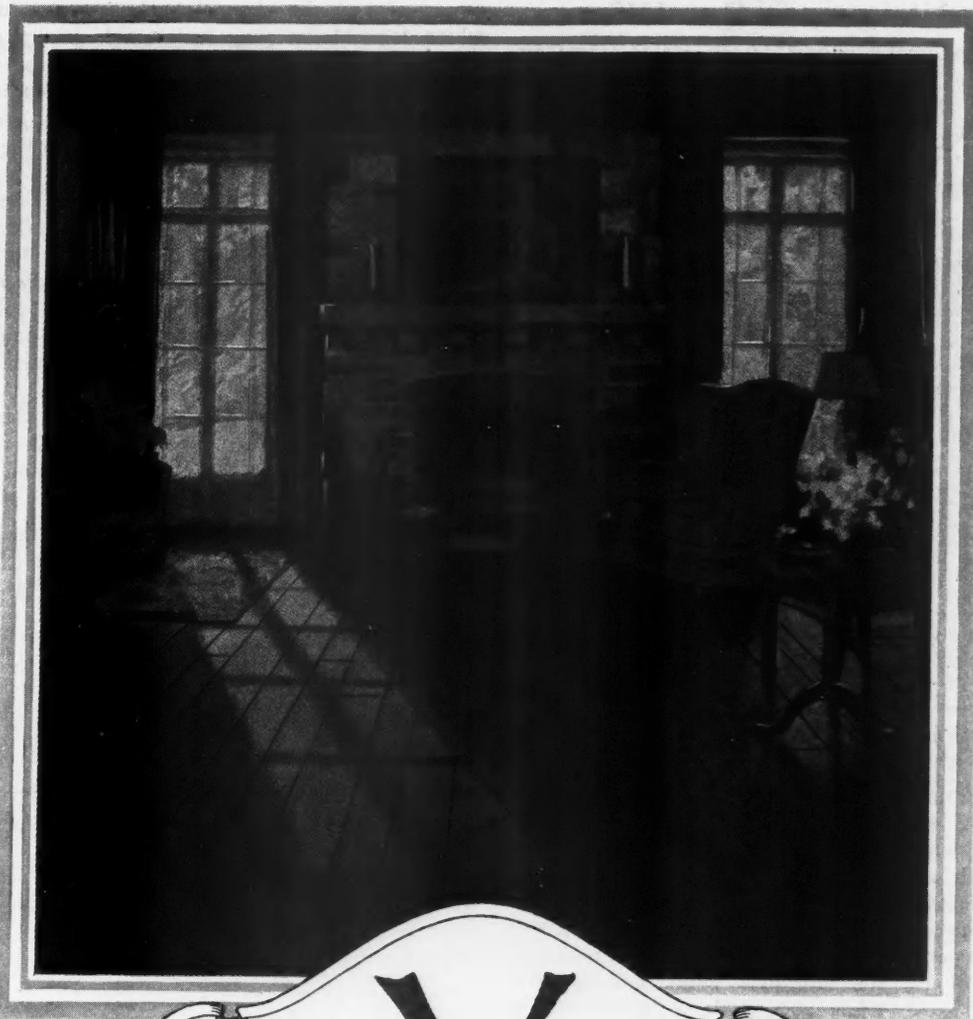
This saw cuts a clean finished round hole to a depth of ¼ inch less than the depth of the blade used, ¼ inch of the blade being taken up by the holder. The blades are the highest grade tempered material rolled to proper size. Special tools can be produced by the manufacturer of this saw to cut any required diameter.

M. R. G.
THACKWELL



Round Holes May Be Cut in Wood, Steel, Sheet Metal and Other Materials in Minimum Time with This Hack Saw.

Bru-CELL-ized flooring is damp-proof and insect proof. It is easier to lay, scrape and sand. More durable, and takes a superior finish



YOU can now furnish

real plank floors of Solid Oak at a cost no longer Prohibitive for Average Homes

EXTRA sales—extra profits are yours, in this opportunity to supply distinctive Colonial floors, at reasonable cost. People want plank floors, because they are different, but the expense has been too great for any but the most pretentious homes. This is due to costly methods of manufacture, such as laminating or veneering, and other precautions needed to prevent shrinking or swelling.

Bru-CELL-izing, a remarkable chemical process perfected in the Bruce laboratories, now makes possible the use of solid oak planks, because it stabilizes the wood and absolutely prevents cupping, buckling, or shrinking. Laminating or veneering is unnecessary.

As a result, Bru-CELL-ized planks may be laid without extra precautions. They may be blind-nailed like strip flooring, and need no screws, plugs, or

butterfly keys to hold them in place.

Solid oak planks are the most profitable flooring item a dealer can handle. Write today for full details and illustrated literature.

E. L. Bruce Co.
MEMPHIS, TENNESSEE
Largest makers of oak flooring in the world



Bru CELL ized Oak Flooring

PLANK • FABRICATED BLOCK • DESIGN • STRIP

Write for this book
How Bru-CELL-izing solves the plank floor problem is fully explained in this book: "Colonial Distinction in Plank Floors." It is free.

Improved Automatic Humidifier

HERE is an automatic humidifier for use in warm air furnaces, the feature of which is the prevention of lime deposits on the float valve, a condition which is a common cause of trouble with automatic humidifying devices. The float valve reservoir is entirely separate from the evaporating pan and the circulation of hot water is cut off by means of a trap cast in the float valve reservoir.



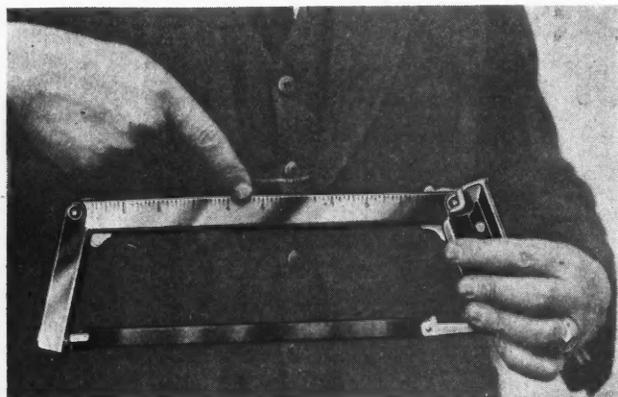
For Use with Warm Air Furnaces This Humidifier Is Automatic in Operation and Is Said to be Trouble Free.

In developing this device the manufacturers state that they have made extensive experiments and found that cast aluminum, while somewhat more expensive, evaporates water much better than cast iron, also that to maintain a relative humidity of 50 per cent the average eight-room house requires the evaporation of 12 or 13 gallons of water daily. Experiments have shown that, if the humidity is forced too near the saturation point, moisture will condense on the furniture and walls. Therefore, the manufacturer has fixed upon 50 per cent humidity as the ideal condition for the home.

Being automatic, this humidifier needs no attention and operates only when the furnace is in operation. It requires no fine adjustments and is ready to operate when shipped from the factory. It can be installed in any furnace, old or new, and the furnace does not have to be changed in any way. Simply cut a hole in the bonnet, insert the humidifier and connect with the water system and the humidifier is ready for service.

Folding Hack Saw Is Convenient

A MOST convenient little tool for all those who work with wood or metal is the folding hack saw seen here. It uses standard hack saw blades which can be purchased



Here Is a Folding Hack Saw for Wood or Metal Work Which Should Prove a Convenient Tool.

anywhere and the channel back serves as a magazine in which four blades may be carried, giving a selection of medium, coarse or fine blades for various types of work. When closed this saw takes up less room in the tool kit than a hammer, when open it has a pistol grip which gives perfect design for enabling fast work with the least effort in the horizontal or vertical position.

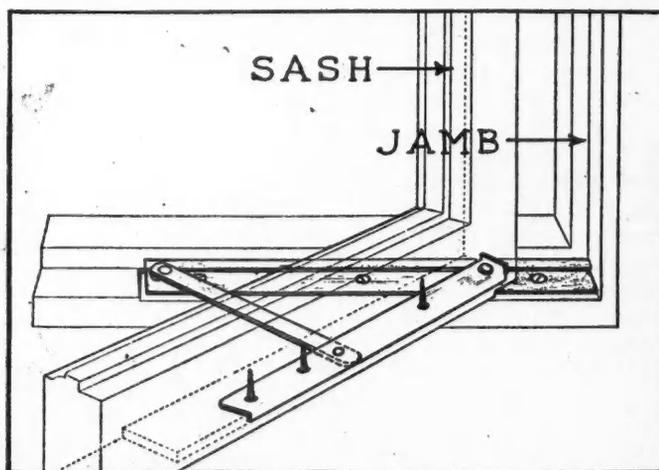
The channel back will not bend or spring out of shape when tensioning the blade, which is done by means of conveniently arranged tension bolt and nut. All rivets, bushings and threaded parts are absolutely rust proof and the saw is made of the highest grade of cold rolled steel. It has a bright finish, weighs about one pound and comes equipped with one blade. A rule is conveniently provided on the channel back.

This saw may also be used with the blade fastened in a triangular, or keyhole, position. When folded the end pieces fit snugly over the channel back and the grip over these, making a small, compact device with the blade magazine fully protected.

R. G. THACKWELL

Reversible Hardware for Windows

IN the reversible window hardware illustrated here, adjustable, frictional discs are provided to keep the windows fixed at any angle. The following features are particularly pointed out by the manufacturers. First, there are no hinges or adjusters required. Second, there is perfect control of the sash and of ventilation. Third, the mechanism will not balk or stick. Fourth, this hardware is quickly and easily applied to wood members.



This Reversible Window Hardware Should Interest Housewives as It Makes Window Washing Easy and Safe as Shown in the Small Illustration.

This window hardware should be particularly attractive to housewives and to building owners. It protects the housewife from all danger of accident in washing windows and makes that work decidedly easier. For the building owner, in the same manner, it saves time, labor and hence expense in window washing. With it installed both sides of the glass are easily cleaned from within and without climbing up onto the window sill or hanging out of the window, as is commonly done with the ordinary double hung window.

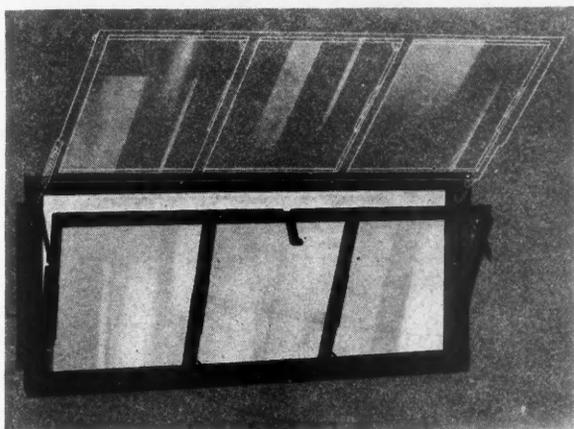
These fixtures are made in seven sizes to meet varying requirements from 14 to 54 inches and in nickel silver and Sherardized steel.

Vento

PUTTYLESS

Steel Basement Windows

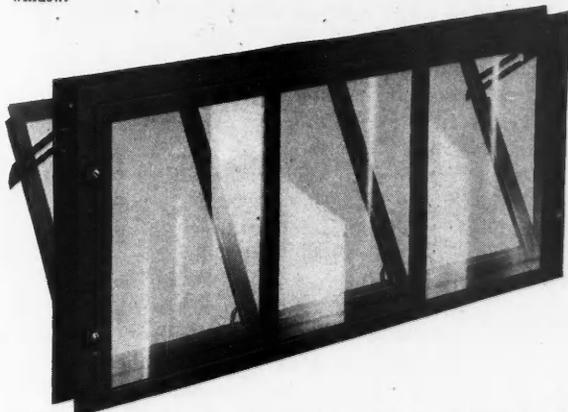
Should Be in Every Home You Build



The "Vento" Basement Window is the only window that opens freely in the winter as well as summer. Construction is such that in opening window from top, ice and snow is broken loose at bottom. Outside watershed at all times.



"Vento" Metal Screens are made to fit "Vento" Windows—large 16-mesh metal bound screen installed from outside—covering all the window.



Every "Vento" window is drilled and tapped ready to be fitted with "Vento" Storm Window or Outside Screen. Anyone can make the change in just a few moments. "Vento" is the only steel window that can be fitted with a storm window—this can be changed in spring to an outside screen.

See them today at your dealers and compare the advantages of the 12 exclusive features which make "Vento" the outstanding basement window.

- "Vento" Steel Frames are made of heavy 12-gauge steel—welded into one solid piece, extra strong; no rivets.
- "Vento" Basement Windows have a safety lock.
- "Vento" Basement Windows open in at top for ventilating, also lift up and open full.
- "Vento" frames make windows absolutely weather-proof and water-tight. Will not sag or bind.
- "Vento" windows are easy to install. Fits perfectly into concrete blocks, frame, brick or cement construction.
- "Vento" Basement Windows are puttyless. Glass is held by patented clips against an air and water-tight cushion of cork.
- "Vento" Steel Basement Windows cannot warp, stick or sag and are vermin-proof.

VENTO STEEL SASH CO.
Muskegon Hgts., Mich.

VENTO STEEL SASH CO., Muskegon Hgts, Mich.
Please send us full information of VENTO Puttyless Steel Basement Windows.

Name

Address

State

My Dealer

1928
**Can Be
 a more Profitable
 year for Building
 Contractors**

BUT to make profits—you must have something besides just equipment for the job, important as that is. The extra profits, the kind that turn a small margin into a very satisfactory balance are made by the use of labor and time saving features such as only

WANDER
 THE BEST TILTING
MIXERS

can give you.

If you are interested in bigger profits this year, send for this big, new book, plumb full of helps and suggestions. It's absolutely free for the asking.

Construction Machinery Co.
 Waterloo, Iowa



103
 CONSTRUCTION MACHINERY CO.
 I would certainly be glad to know how to increase my profits this year—send me your book and any other information on the following equipment that I may be interested in.
LOADER MODELS
 3½-S 5-S 7-S 3-S 3½-S
 10-S 14-S Hoists Pumps
 Name
 City State

Complete Incinerator Line

THE incinerator is now an accepted part of the equipment of the modern house or apartment and the advantages of this type of clean, sanitary, convenient and immediate refuse disposal are too well known to require repeating. One manufacturer of incinerators has provided models which meet the requirements of every installation.

The first of these models, the one illustrated here, is an offset chute type unit with the stack on a separate foundation from the incinerator. The combustion chamber is set apart from the stack and employs a secondary draft.

Primarily the object of the secondary stack is to equalize the flow of oxygen in the combustion chamber; also it has a tendency to draw air directly up through the body. All incoming air is delivered through the primary shaft ports indicated by squares below the grate line.

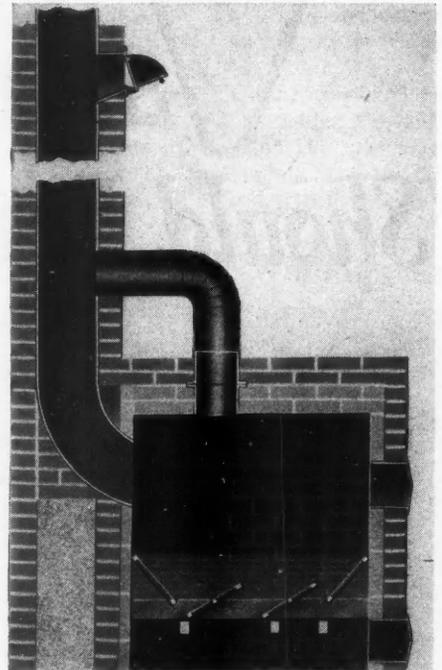
The floor of this incinerator is not a full grate floor. Instead it is approximately 50 per cent grate and 50 per cent sloping hearth.

Falling garbage drops upon the clay hearth then rolls into the grate. The top is of arched design. Ordinarily this incinerator, without the use of secondary fuel, delivers an almost entirely odorless and smokeless destruction. Firing periods are short and the chute stack does not get as hot as in ordinary incinerators, it is stated. This unit also can be supplied with gas burning grates.

The second model is a unit that builds into the base of a fireplace, chimney. Feed doors and clean-out doors are in the basement. This unit provides a combustion chamber 17 inches square by 36 inches high. It is built in both gas and gasless types. The inner construction comprises a cast iron basket of four sides which are put together with bolts. The grate is a rocking grate and will dump the ordinary five pound can.

In the gasless unit this grate is just an ordinary grate in construction. In the gas unit the grate serves as both grate and gas burner. The body of the grate is cored out and the gas is fed into the center of the grate, appearing underneath the grate bar through ½-inch orifices.

Another unit in this line is identical with the one just described but is designed to be installed in any position on any available flue in the basement though best results are obtained with it where a chimney breast serves as a back wall. There is also a model of the conventional chute type with the stack above the combustion chamber. All the incinerators manufactured by this company employ the company's exclusive, secondary, air supply port feature, air being delivered beneath the grate line through 2¾-inch ports at front and back and distributed evenly through and around the garbage body.



An Offset Chute Type of Incinerator, One of a Complete Line Designed to Meet Every Requirement.



Found out! *the joker in the "cheap" paint can*

THE high cost of "cheap" paint is no news to architects and builders. But now the public, too, knows there is a *joker* in the "cheap" paint can. All through 1928, in magazines reaching millions of people over the country, powerful SWP vs. "Cheap" Paint ads will go on telling the simple truths about the low cost of SWP House Paint . . . convincing people that on the wall "cheap" paint costs two and one-half times as much as fine old SWP.

Up-to-date homebuilders agree with you when you specify SWP for the job. They want a paint that looks better, covers more, and endures longer. They know that SWP fills the bill.

More people every day are realizing that the Sherwin-Williams scientifically "balanced" formula assures full share of white lead and zinc, the recognized base of good paint. The pigment content of SWP is 90 per cent white lead carbonate, white lead sulphate, and zinc oxide. The "cheap" paint formula discloses but 50 per cent of these basic



Trade-mark Registered

materials. That's why "cheap" paint doesn't cost much . . . also why it isn't worth much.

It's the "Master Touch," too, that your clients recognize in SWP—the development of quality that 60 years of scientists' study and practical experience have attained. *The "Master Touch" is Sherwin-Williams.*

Using standard products pays

Standard products used in the homes you build will inspire confidence—help to sell them. In the present day national advertising makes the public acquainted with the worth-while products. In the paint field that means SWP House Paint—for beauty, permanence and economy.

May we send you the Sherwin-Williams Architects' Painting Guide and other interesting information?

THE SHERWIN-WILLIAMS CO.

Largest Paint and Varnish Makers in the World
CLEVELAND, OHIO

SHERWIN-WILLIAMS SWP HOUSE PAINT

PAINTS • VARNISHES • ENAMELS • OPEX LACQUERS

MOTOR TRUCKS *and* TRAILERS



Motor Trucks and Tractors Aid Economical Lumber Production

MOTOR trucks and tractors are playing an important part, which is not generally known, in the economical production of lumber for building. There are many small forest areas in the South the timber on which, because of the size of the tracts, cannot be cut profitably by the usual methods and equipment. But the total available timber on these small tracts is enormous. In these areas portable sawmill outfits, operated by kerosene tractors are being employed to produce lumber at low cost.

Because of the ability of the operator to move easily from place to place, the tractor providing power for moving the outfit as well as operating it, tractor-operated sawmills are especially well suited for such work. Frequently farmers, who own tractors, are able to add to their income in off seasons both in their own wood lots and for neighbors.

In South Carolina quite a number of tractor-operated outfits are in use. Since almost 8,500,000 acres—out of a total area for the state of over 19,500,000 acres—are classed as wooded, it can readily be seen that there is quite a field for portable tractor-operated sawmills in the state.

A typical mill operated by a kerosene farm tractor in the Texas area consists usually of 48-inch or 50-inch saw, 25-foot to 50-foot sawdust elevator, edger, and an overhead swinging cut-off saw, set at a right angle to the main saw and driven by a belt from a pulley placed on the power take-off shaft of the tractor. The cost of producing ties and lumber with such an outfit varies, depending on the distance from the railroad and condition of roads, but the average operating costs, not including those for depreciation and other fixed items, are about as follows in East Texas:



A Portable Sawmill Operated by Two Tractors in East Texas. When one tractor is used the output is from 10,000 to 15,000 feet per day. The extra tractor enables the operator to double his output and may be used, whenever necessary, for miscellaneous hauling, skidding logs and for road work.

In the Building Industry



— for hauling lumber and building materials, or for excavating, contracting, construction work—or what have you?—they vote for—

INTERNATIONAL TRUCKS

GOOD LOOKS in every model, from the $\frac{3}{4}$ -ton Special Delivery up to the big dump units. **STAMINA** to match the looks and then some, as proved by our many and long-standing records among *the builders*. **EXPERIENCE** in truck development back of the trucks—for International Harvester has been building better and better trucks for 24 years. **SERVICE** “around the corner” for every truck in the line, wherever its owner or its job takes it; International Harvester now maintains

160 COMPANY-OWNED branches in the United States and Canada. If you want references beyond our sound reputation, you will find loyal votes for International wherever there are loads to be hauled.

Sizes and models for every type of load—the Special Delivery for $\frac{3}{4}$ -ton loads; Speed Trucks, 4 and 6-cylinder, $1\frac{1}{4}$, $1\frac{1}{2}$, and 2-ton; Heavy Duties, double-reduction and chain drive, to 5-ton.

See the trucks at the nearest display room. We will send you folders on request.

INTERNATIONAL HARVESTER COMPANY
606 So. Michigan Ave. **OF AMERICA** **Chicago, Ill.**
(Incorporated)

Dear Sirs:

... Beg to advise that I have been using International heavy-duty and speed trucks for about three years, and they have given me perfect satisfaction. I have other heavy-duty trucks, but my books will show that the Internationals will operate on half the gasoline and oil required by the other heavy trucks in my fleet. I take pleasure in recommending your truck, both speed and heavy-duty models, to any prospective purchaser.

Yours very truly,

A. CERRETANI, New Canaan, Conn.

*He likes both the
“Speeds” and
the “Heavy-Duties”*

Mr. Cerretani's fleet is shown below.



	Per M
Cutting the timber (log scale).....	\$1.00
Logging (hauling to mill).....	2.50
Milling (labor, fuel and oil).....	2.25
Hauling lumber to railroad 5 or 6 miles	2.70
Loading on cars.....	.75
	\$9.20

With such an outfit and a crew of eight men, from 10,000 to 15,000 feet of lumber can be turned out in a 10-hour day.

"The average price paid for the lumber is \$17.00, f.o.b. cars," said one Texas operator of a portable tractor-operated mill. "Timber prices vary greatly. The price seems to be determined by how badly the owner wishes to sell. However, enough timber can usually be purchased for from \$600.00 to \$1,000.00 to keep a portable mill busy for a year."

With a production of only 10,000 feet, then, \$170.00 worth of lumber may be turned out in a day. If enough timber is available to keep the outfit working steadily and not force the operators to move around too frequently, it can be readily seen that a tractor-operated portable outfit can be worked with considerable profit.

In some cases, two tractors may be used to advantage to operate a portable mill, and then with the addition of one or two men and using a 50-inch to 54-inch saw, the output can be practically doubled. With two tractors, also, the larger logs can be cut with more facility.

In the accompanying illustration is shown a portable mill in East Texas operated by two tractors. These are called triple-power tractors in that they provide power by belt, at the drawbar, and by a power take-off shaft. The latter is a distinctive feature and enables the operator to drive various types of auxiliary apparatus both in drawbar and belt work. It is especially valuable in sawmill operation for driving the cut-off saw, which runs at right angles to the large saw.

The two tractors make a very flexible power plant, for one tractor can be kept at work driving the mill at fairly good capacity while the other may be used when necessary as a "pinch hitter" on hauling and skidding jobs. In the lumber sections of East Texas, the roads are often very bad. An extra tractor can be used to particularly good advantage in pulling a grader and thus put the roads in



A Tractor-Operated Sawmill, Owned by J. M. Sikes, of St. Mathews, S. C., Which Averaged 150,000 Feet of Lumber a Month and Made 15 Moves in a Period of Nine Months.

shape so trucks can haul out ties and timber more easily.

Men who have used outfits similar to the one shown are enthusiastic over the features already mentioned, and also over the greater ease with which the entire rig can be moved when necessary, as compared with the heavy portable boilers and engines. With outfits such as the one illustrated, timber is logged over a radius of about half a mile, and then the whole rig is moved by tractor power to a new location. This helps cut the cost of the work.

Another advantage of the kerosene tractor in many cases is in its small consumption of water, for the providing of water suitable for steam boilers in many localities is a difficult and expensive problem.

In other timber-producing states, available timber supplies are continually becoming more inaccessible and at the same time operating costs for logging work are mounting higher and higher. More and more, the use of power and various types of mechanical equipment are being employed to take the place of expensive labor and slow-moving animals.

How to move the cut timber to sawmills or railroad sidings at lowest possible cost is a problem that is particularly besetting logging operators these days. Heavy-duty motor trucks, because of their plentitude of power, rugged construction, flexibility, and ability to travel up steep grades and over all kinds of rough roads, are increasingly providing a ready solution to this bothersome problem. They are able to make frequent trips and thus speed up the movement of heavy timber. That means time saved and time nowadays means money. Motor trucks can be worked long hours—day and night if necessary. They make it possible to haul timber at low cost.

In the accompanying illustration is shown a motor truck that is doing speedy, efficient low-cost hauling work for the Little & Paul Company, of Boise, Idaho. This is one of a fleet of 28 trucks employed by this concern in its logging operations.



Banks Favor Real Estate Securities

STATISTICS compiled by the Chase National Bank show that in the 10 years since 1918 the national banks of the country have increased their real estate security holdings from \$185,117,000 to \$725,452,000, almost quadrupling the 1918 total.



One of a Fleet of 28 Motor Trucks Operated by Little & Paul Company, Boise, Idaho, in Its Logging Operations Where the Saving of Time Means Economy of Production.

for Economical Transportation



The World's Greatest Combination of Power, Dependability and Economy

Rugged, dependable and extremely economical to maintain and operate—the Chevrolet Utility Truck outsold every other gearshift truck in the world in 1927. . . unmistakable proof of its superior ability to meet every demand for a haulage unit of this capacity.

With greater power than ever before . . . with its dependability assured by rugged construction in every unit . . . and with its ability to provide the world's lowest ton-mile cost proved by thousands upon thousands of users—this sensational truck is ideally fitted for use in the building industry.

Ask your Chevrolet dealer for a test-load demonstration of the Chevrolet Utility Truck. You will find that it provides the world's greatest combination of power, dependability and economy—and at an amazing low price!

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN
Division of General Motors Corporation

*at this
low price!*

\$495

(Chassis Only)

f. o. b. Flint, Mich.

This price now includes
30 x 5 balloon tires on all
four wheels.

Also
Light Delivery

\$375

(Chassis Only)

f. o. b. Flint, Mich.

Q U A L I T Y A T L O W C O S T

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

NEWS of the FIELD



Establish Chicago Warehouse

THE American Cable Company, 215 N. Michigan Ave., Chicago, has announced the establishment of a large storage warehouse in Chicago which will permit the carrying of complete stocks of all sizes of Tru-Lay wire rope and Tru-Loc fittings and result in practically immediate service to wire rope users.

First Montreal Builders Show

THE first Builders Show to be held in the City of Montreal, Canada, will take place in the Windsor Hotel, March 6 to 10, inclusive. It will be sponsored by the Retail Lumber Merchants Association, the Wholesale Lumber Dealers Association and the Supply Section of the Lumber Exchange and will include exhibits of everything required for the construction of modern buildings of all types. Every exhibit will be required to be of standard approved quality and in addition to materials and equipment of all

kinds model rooms and new designs will be featured. The annual provincial convention of the Retail Lumbermen's Associations will be held from March 8 to 10 at the Windsor Hotel in conjunction with the Show.

Edward L. Ryerson Passes Away

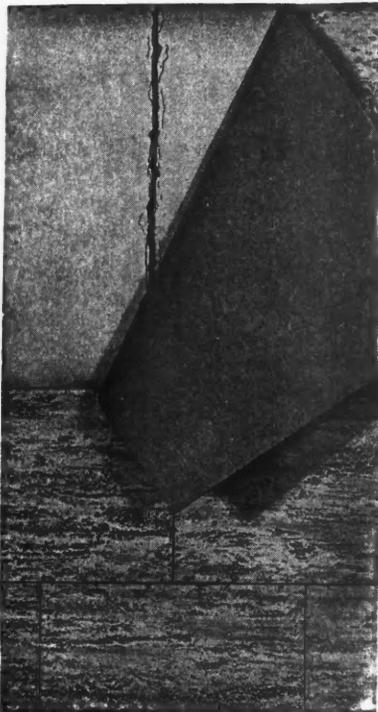
EDWARD T. RYERSON, Chairman of the Board of Directors of Joseph T. Ryerson & Son, Inc., died January 19, at his home at 38 Banks St., Chicago. Death followed a stroke of apoplexy. Mr. Ryerson was the youngest son of Joseph Turner Ryerson, founder of the business with which he had been associated since 1876. The present officers of the company are: Joseph T. Ryerson, president; Donald M. Ryerson, vice-president and general manager; Edward L. Ryerson, Jr., E. L. Hartig and G. G. Moody, vice-presidents.



Edward L. Ryerson, Who Passed Away January 19, in Chicago.

U. S. G. Sell Last Retail Business

THE last of the retail businesses acquired by the United States Gypsum Company, of Chicago, in 1921 when the company purchased the J. B. King and Company and its string of retail establishments in the east, has now been sold. The business just sold was the Windsor Cement Company, of Boston.



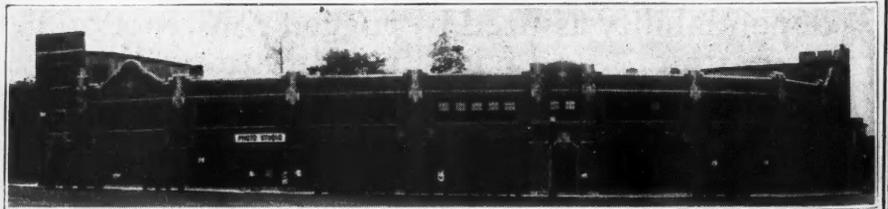
Italian Travertine

This New Wall Covering Applied to Plaster or Wall Board Makes a Permanent Wall

*Inexpensive—Easily Applied—Washable—Decorative
Built Up in Linseed Oil—No Surface Cracks*

Travrtile fabric—imitation Italian Travertine Marble—made in any color, satisfying every taste. Applied like wall paper.
Non-repeating pattern of blocks removes the usual mechanical effect. Duplication of line on both sides of sheet saves labor and worry in application.

Travrtile on all walls assures permanency and beauty. Desirable for hotels, apartment houses, banks, public halls, stores, offices, etc.
Contractors and Builders, investigate Travrtile.
Send at once for samples and free literature. Also name of your wall paper supplier.



Nelson M. Ayres, Owner, West Englewood, N. J., 18 Stores with offices and corridors. Travrtile was used on all side walls, and Lincrusta-Walton pattern No. 290 for ceilings.

What Mr. Ayres says about Lincrusta-Walton:—"It is the most decorative, most economical and satisfactory decoration I have ever seen. The tenants are well pleased and have had many favorable comments. Have specified Lincrusta-Walton on several business blocks and a 300-family apartment house about to be started."

Signed: Nelson M. Ayres.

Lincrusta-Walton was used in this building applied over sheet rock, in preference to metal ceilings—Travrtile applied on the side-walls over plaster—Produced a perfect insulation against heat and cold and also deadened sound. Lincrusta-Walton wall coverings are made in a great variety of patterns appropriate for private homes and public places.

LINCRUSTA-WALTON COMPANY

Hackensack, New Jersey

Division Tait Paper and Color Industries, Inc.



Ceiling Pattern No. 290

l. The
men's
Wind-

PLUGGING LEAKS

in Contractors' Profits

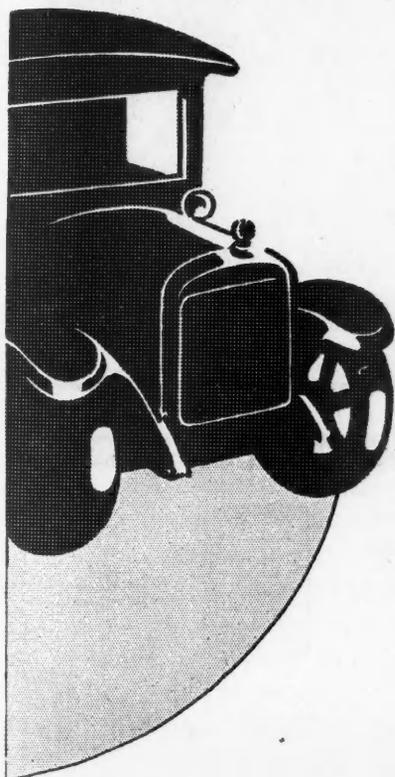
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G. G.

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Your net profit represents a small percentage of your gross business. Operating costs and overhead have to be watched all along the line or this profit shrinks alarmingly.

Haulage costs can eat up profits at an astonishing rate if the trucks you operate are not exactly suited to your needs.

The great Federal line was designed with the specific needs of some twenty major businesses in mind. Your business was among the number. Even more than this; 42 chassis ranging from 1 ton to 7½ ton capacities and scores of variations in body type and design insure that you can find a Federal that not only meets the needs of your particular industry but the needs of your particular community and establishment as well. Federal trucks are designed and built to earn profits for owners.

FEDERAL MOTOR TRUCK COMPANY
5842 Federal Ave., - - - Detroit, Michigan

FEDERAL

ALL SIZES TRUCKS FOURS & SIXES (153)

In addition to specialized and custom-built service at production prices to every major industry, Federal offers this to buyers of haulage equipment: Always trucks that are all trucks. Fore and aft, inside and out, top to bottom;

—every part of every Federal Truck is a Federal Truck part—designed for Federal, and made for truck service. Federal never has compromised and never will compromise with other types of automotive construction.

Forced-Air Heating

(Continued from page 129)

woolen felt. As a further precaution the fan delivery collar would best not be connected to metal ducts unless the connection can be made so tight as to be practically integral. This is rarely possible, so it would be well to interpose a 6-inch canvas connection between fan and duct. If the fan frame must be bolted to the sheet metal, rubber or felt washers are recommended and these would best be at least 1/2 inch thick on both sides of the sheet metal.

Suggestion on Motor

Direct-connected fan and motor units are desirable with both propeller and cased fans, as they require little floor area and make compact apparatus. Such rigs, particularly with cased fans, often cannot be obtained for operation on alternating current because of inability and unwillingness of motor manufacturers to manufacture special speed motors, nor can some desirable speeds be obtained at any price. Under such conditions it becomes necessary to connect the fan and its motor with a belt.

Belted fan and motors make satisfactory arrangements when there is sufficient floor area. By changing pulley sizes practically any desired speed of the fan may be obtained, noise is not so likely to be transmitted to the building reached by the heat ducts, standard motors may be used in all cases, with low first cost. The ratio of fan and motor pulleys should not exceed 6 to 1 and the distance between the two pulleys would best not be greater than 2 1/2 times the diameter of the largest pulley.

On alternating current motors there must be a starting switch but controlled speed of rotation is rarely possible unless a variable speed motor is used at some extra expense.

In direct current, on the contrary, regulating rheostats are the rule and permit about 50 per cent reduction in speed.



Merger Under Way

PLANS for the merging of the J. L. Mott Company, of New York and Trenton, N. J., the Laib Company and the Columbia Sanitary Manufacturing Company, both of Louisville, Ky., were recently announced and the merger is now in process. The group which will also include seven subsidiary companies, will be known as the J. L. Mott Company, Incorporated, and with the manufacturing facilities of the merged companies the new \$10,000,000 concern will be one of the largest and most complete in the industry. George H. Laib, president of the Laib Company will head the new concern.



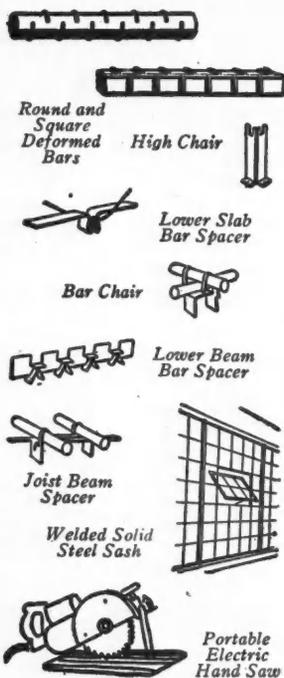
To Market Wood Preservative

AN announcement states that C. Marshall Taylor has been appointed Vice-president and General Manager of the Curtin-Howe Corporation, 11 Park Place, New York City, which company holds the commercial rights to the new wood preservative developed by the Engineering Laboratories of the Western Union Telegraph Company. This preservative is a zinc meta-arsenic. It is permanently fixed in the wood without affecting its natural color and can be used on all type of construction, both exterior and interior, and can be readily painted over.



C. Marshall Taylor, Vice-President and General Manager of the Curtin-Howe Corp.

Unusual Service for the Contractor



Ryerson combined service on all steel products saves time, money and trouble

The Special Contractors and Builders Division of Ryerson Steel-Service is without parallel in the building fields.

This department has its own warehouses and provides complete service on all reinforcing for concrete, Steel Joist, Metal Lath, Steel Sash, and all the various steel building products are also included.

In addition, structurals, bars, plates, sheets, rivets, bolts, wire, etc., are furnished from the general steel departments. Trench braces, jacks, electric drills, and hundreds of other tools needed on every job are supplied by the machinery and small tool departments.

Contractors use the Ryerson Warehouses as if they were their own. Reinforcing steel, lath, sash and other miscellaneous materials are kept under cover until they are ready to use each item. Delivery is according to their schedule.

Large fleets of trucks and private switch tracks help provide service unequalled by any other source of supply.

All types of jobs are figured and lump sum or pound price quotations prepared.

Write for Complete Information.

JOSEPH T. RYERSON & SON INC.

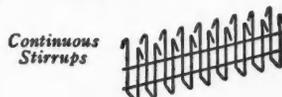
CHICAGO
CINCINNATI
BUFFALO

MILWAUKEE
DETROIT
JERSEY CITY

ST. LOUIS
CLEVELAND
BOSTON



Triangle Wire Mesh Reinforcing



Continuous Stirrups



Step Reinforcement



Spirals



Expanded Metal Reinforcement



Expanded Metal Lath

RYERSON REINFORCING-SERVICE

These washable window shades cut replacement costs



MINERVA COURT APARTMENTS, UPPER DARBY, PA.

YOU are specifying for your buildings the best and at the same time the most economical equipment throughout.

Du Pont Tontine, the washable window shade, cuts replacement costs for this important item. An installation of Du Pont Tontine is an investment which lasts through the years, always new, always clean, never cracked or faded.

And yet even the first cost of Du Pont Tontine is not high. In a very few seasons it more than pays for itself.

There's no secret in the washable

quality of Tontine. It is simply a pyroxylin impregnated material, made by the makers of that famous pyroxylin finish, Duco, which has brought enduring beauty to so many fields of industry.

Du Pont Tontine will bring added beauty and distinction to your building, and will save replacement costs for many years.

Inquiries are cordially invited.

E. I. DU PONT DE NEMOURS & CO., Inc.
NEWBURGH, N. Y.

Canadian Distributors:
CANADIAN FABRIKOID Limited
New Toronto, Ontario, Canada



TONTINE

REG. U. S. PAT. OFF.

THE WASHABLE WINDOW SHADE

E. I. DU PONT DE NEMOURS & CO., INC.
Desk AB-14, Newburgh, N. Y.

Please send me complete and full information about Tontine, the washable window shade.

Name.....

Address.....

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Open San Francisco Branch

THE American Floor Surfacing Machine Company, of Toledo, Ohio, has established a new, direct factory branch office at 3645 Geary St., San Francisco, Cal. This is the twentieth sales and service office established by this company so that contractors in every section of the country may have the benefit of rush service on floor surfacing machinery and supplies. C. A. Hibbard is the branch manager at the new office which will serve the entire northern half of California.

+

Build Factory in South

THE Bates Valve Bag Corporation, of Chicago, has announced the building of a new factory in Birmingham, Ala., for the purpose of supplying the rapidly increasing demand for its products throughout the southern section of the country. The initial unit of the new plant, a one-story factory 60 feet wide by 250 feet long, will be devoted to the manufacture of this company's multi-wall paper bag used as a container for cement, plaster, lime and other rock products, and will also contain space for warehousing the companies other products, including bag filling machinery, wire ties and spare parts.



The New Branch Office of the American Floor Surfacing Machine Company, in San Francisco.

Will Pay Transportation Charges

IN the 1928 catalog which the Goldblatt Tool Company, Kansas City, Mo., is now mailing to its customers, this company announces that it is again paying transportation charges on tools. This was the policy of the company for 15 years following the establishment of the parcel post system and was abandoned about three years ago when rising costs made it necessary to do so to avoid increasing prices. The present move fulfills the promise made at that time to re-establish the practice as soon as possible.

+

Buys Heater Company

RICHARDSON & BOYNTON Company, New York City, has bought the Utica Heater Company, of Utica, N. Y., one of the merged members of the National Radiator Corporation. The Richardson & Boynton Company will take over the plant of the Utica company and also its line of furnaces and cooking and heating apparatus. However, the National Radiator Corporation will retain the Utica company's line of boilers and super-smokeless boilers. The plant equipment pertaining to the boiler division will be moved to other plants of the National Radiator Corporation.

Painting the modern, improved DeVilbiss way

Insures BIGGER PROFITS for You

How to provide for a worth-while increase in your profits: the easier, improved DeVilbiss way of painting will most successfully solve that part of your business problem.

Use of the DeVilbiss Spray-painting System enables you (1) to do more work, without increasing labor costs; (2) to give your customers an improved and cleaner class of work, on a greatly speeded-up schedule; (3) to make the work easier for your men, while increasing the production of each; (4) to become recognized as the progressive, outstanding painting contractor in your community.

There is further assurance of bigger profits in using the DeVilbiss Spray-painting System. DeVilbiss equipment is correct and complete in every detail; is built of highest quality materials by skilled workmen; is simple and dependable in every operation; is warranted to give long and satisfactory service. Then there is available to you at all times the unequalled DeVilbiss engineering and service facilities, developed out of over 35 years' manufacturing experience.

Investigate now the increased profits to be made painting the DeVilbiss way. Complete facts will be promptly mailed to you. Address—

THE DEVILBISS COMPANY

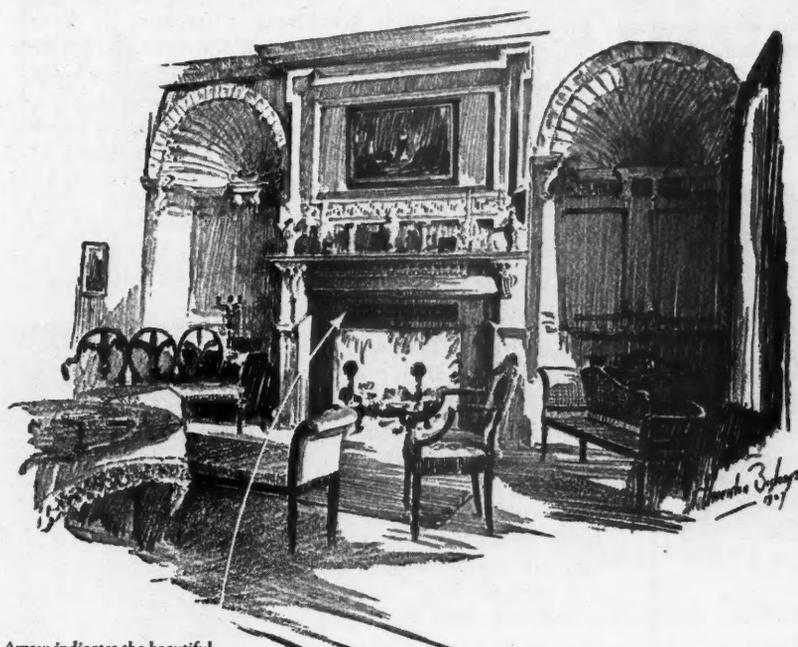
238 Phillips Ave. TOLEDO, OHIO

New York—Philadelphia—Chicago—Detroit
Indianapolis—San Francisco—Pittsburgh—Cleveland
Cincinnati—Milwaukee—Minneapolis—St. Louis
Windsor, Ontario



DeVilbiss
Spray-painting System

FIREPLACE CHARM WITH FURNACE-LIKE HEAT



Arrow indicates the beautiful bronze grille register of the Heatilator. Grilles may be obtained in a number of attractive stock designs, or made to order.

THERE'S A WIDESPREAD DEMAND FOR HEATILATORS IN NEW HOMES!

1,300,000 well-to-do families, interested in new homes, are learning to appreciate the advantages of the Heatilator Fireplace Unit. Full column or full page advertisements appear regularly in powerful home magazines, teaching the readers to look for Heatilators in the homes they buy.

- | | |
|-----------------------------------|-------------------------|
| AMERICAN BUILDER | GARDEN AND HOME BUILDER |
| ARCHITECTURAL RECORD | KEITH'S BEAUTIFUL HOMES |
| BETTER HOMES AND GARDENS | HOUSE AND GARDEN |
| BUILDING AGE & NATIONAL BUILDER | HOUSE BEAUTIFUL |
| EASTERN STATES BUILDING DEVELOPER | HOME BUILDING |

Thousands of inquiries from prospective home owners have been received. And the hundreds of completely successful installations have led us to make this extraordinary guarantee:

We guarantee complete satisfaction, good draft, with ventilation, no smoke, double heat from same fuel—or the entire cost of the Heatilator back with up to \$20 extra to cover bona fide cost of removal and return. This guarantee is good—ask your own bank, Dun's or Bradstreet's—about our credit rating.

The Heatilator costs only \$78 delivered (U. S. A.). Fully half this amount is saved in labor and material alone—the rest in fuel. You can't afford to omit the Heatilator from the house you build! Mail coupon for full information; or have us ship prepaid to your nearest freight station.

HEATILATOR COMPANY
611 Glen Avenue, Colvin Sta., Syracuse, N. Y.

Heatilator Fireplace Unit

HEATILATOR COMPANY,
611 Glen Avenue, Colvin Station, Syracuse, N. Y.

- Please send me full information without charge.
- Enclosed find \$78.00 for which send Heatilator subject to your guarantee of complete satisfaction with extra payment in case of return, or \$25.00 deposit, balance C. O. D. plus collection cost.
- Please send Heatilator on open account. I attach dealer's name or bank reference.

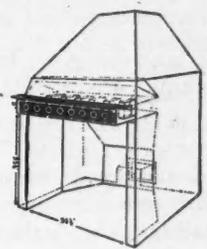
Name Address

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

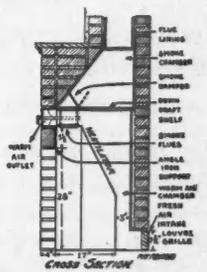
BRIEFLY . . .

The Heatilator is a ready-built fireplace, complete up to chimney flue, intended to be installed in any ornamental material desired, such as brick, tile or stone. Its scientific design assures perfect, smokeless operation of the completed fireplace. In addition, it creates a new source of heat and ventilation. It is a heavy boiler-plate form with double walls that act as a heating chamber over and around the fire. Fresh outdoor air comes into this chamber, is heated, and delivered into the room through a bronze grille register. Heat hitherto wasted—equal in volume to that of a warm air furnace—is thus utilized.

With a Heatilator, any mason can build or rebuild a fireplace in a few hours, saving time, material and labor, with guaranteed assurance of perfect fireplace satisfaction.



Phantom-view. Note how fire-box walls are shaped to give maximum heat radiation and how the double-wall construction forms a warm air chamber over and around the fire.



Cross-section. Unit is made of three-sixteenth inch boiler plate, with welded seams—making it a one piece form. No assembling is necessary. Shipped ready to install.

DEALERS

We have an attractive proposition for dealers who wish to make money by cooperating with the extensive Heatilator sales campaign. For dealers terms, attach coupon to your business letterhead.

Inside Stuff



Residence of Frank Lewis, Truro, Nova Scotia. Insulated with Cabot's Quilt. Andrew W. Cobb, Architect, Halifax, N. S.

We are going to let you in with us on something worthwhile.

So listen!

A house insulated with Cabot's Quilt can be built more cheaply than one without any insulation. The Quilt by itself is extremely reasonable in cost. When it goes into a house, it cuts down the heat losses so effectively that you can reduce radiator pipe and builder sizes.

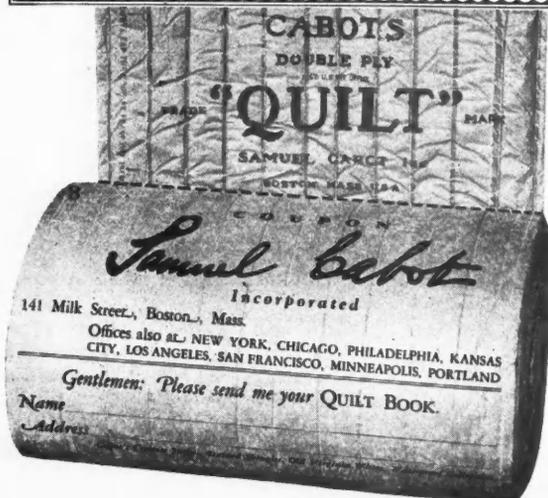
What you save on heating-system and plastering (another saving) *more than pays for the Quilt!*

Then there is an annual fuel saving, too.

The Insulation Material that Costs You Nothing and Pays You Dividends.

Cabot's Quilt

IN SUCCESSFUL USE FOR OVER 30 YEARS



Appoint Eastern Sales Manager

THE Construction Machinery Company, of Waterloo, Iowa, has announced the appointment of Charles E. Funk, who has been connected with the company for the last 15 years, as Eastern Sales Manager with headquarters at 236 N. 23rd St., Philadelphia, Pa. The broad knowledge which Mr. Funk has gained through many years of field work among equipment dealers will be used to assist the company's eastern sales distributors.

Heating Company Elects Officers

AT a recent meeting of the Board of Directors of the Richardson & Boynton Company, 260 Fifth Ave., New York City, the executive personnel was increased by the election of two additional vice-presidents. This increase was made because of the enlargement of the company's activities arising from the recent purchase of the Utica Heater Company and the rapid growth in business. The officers elected were: D. Rait Richardson, president; H. T. Richardson, vice-president in charge of sales; Roger Williams, vice-president in charge of promotion; D. S. Richardson and A. P. Richardson, vice-presidents; Joseph Loskill, secretary, and Arthur Nichols, treasurer.



D. Rait Richardson, President of the Richardson & Boynton Company.

Holding Company Organized

THE National Equipment Corporation, a Delaware corporation, has been organized by Milwaukee financial interests for the purpose of purchasing and holding a controlling interest in several non-competing construction equipment companies in various parts of the country. The new company already holds an option for a controlling interest in The T. L. Smith Company, Milwaukee, manufacturers of concrete mixers, which will be exercised immediately. Negotiations are now in progress to purchase control in several other construction equipment companies. The officers and directors of The T. L. Smith Company will continue as before and the company will operate on a more vigorous scale.

Electric Tool Companies United

AN announcement has recently been made that The Black & Decker Manufacturing Company, of Towson, Md., has acquired The Van Dorn Electric Tool Company of Cleveland, Ohio, bringing together two important organizations which have specialized in separate branches of electric tool manufacture. There will be no changes in the personnel or general activities of the two organizations.

Open Two Branch Offices

THE Detroit Steel Products Company, Detroit, Mich., manufacturers of Fenestra steel windows, recently announced the opening of two new direct factory branch offices, in Cleveland, Ohio, and Pittsburgh, Pa. Harry W. Eisenhart is the manager of the Pittsburgh office and Sherman M. Hathaway is at the head of the Cleveland office.



Blue Print Plans and 24 Page Book "How to Read Blue Prints" Sent FREE

Our gift to every man in the building game. Sent absolutely free. For we want you to see for yourself . . . at our expense how easily and quickly you learn to read blue prints . . . and can get the knowledge that will make you more money. Don't send a penny. Just mail the coupon.

The Book Tells How

"How to Read Blue Prints" is written in plain, every day English. It is easy to understand . . . and will prove to you immediately how quickly you can get the training that has given other men the chance to work with their heads . . . and to make more money than just the wage scale.

We know this is true. For 22 years we have been training men . . . in their spare time, at home . . . to advance and succeed in the building field. Many have now got good contracting or building businesses of their own. Many are salaried men, foremen or superintendents.

This book is really a Free Trial Lesson in Plan Reading . . . written by a practical building expert. It costs you nothing . . . will teach you how to read Blue Prints . . . and may point the way for you to big money. It will show you how easy our instruction is . . . how quickly you can become an expert . . . can get the practical knowledge that you must have to get ahead quick.

Another Book FREE

We will send you also a book about the Chicago Technical School for Builders. It is free, too. It tells you all about our method of training by correspondence. It shows you how you can make your spare time pay you a handsome profit in a very short while. It tells all about our practical instructors . . . shows every branch and department of our Builder's Courses . . . gives you photographs of our men and departments . . . tells what others have done and what you can expect to do.

Chicago Technical School for Builders is one of the oldest and best equipped schools of its kind in America. Many big builders owe their first step to success to our training. Hundreds of practical men from the building trades attend our day and evening classes at our school for builders here in Chicago. You get this same training . . . from the same practical instructors . . . in your own home by mail.

Train by Mail

Go right on with your work. Your spare time . . . as little or as much as you wish . . . is all you need. Our practical lessons and actual blue print building plans come to you by mail. And the cost is little.

Send the coupon . . . today.

It will bring you with the free Blue Print Plans and the two books, full information about the Chicago Technical School for Builders. Shows what we have done for hundreds of other men, gives the facts about their success. Tells how some became superintendents in a few months. How others established contracting businesses of their own. Gives all details of this practical builder's course with descriptions, photographs and illustrations.

Start now. It costs you nothing to find out what this practical builder's course is . . . and what it can do for you. If you want to make more money in the building game . . . get the facts about the Chicago Technical School for Builders.

Mail the Coupon—NOW

CHICAGO TECHNICAL SCHOOL FOR BUILDERS

Dept. B-121, Chicago Tech. Bldg.,
116 East 26th St., Chicago, Ill.

Please send me your Free Books and Blue Prints for men in the Building Trades. Send postpaid to my address below. It is understood that no salesman will call on me.

Name.....
Address.....
City..... State.....

You Can Become a Building Expert

Plan Reading. Every man who has got very far ahead in any building trade can read blue prints. No man can expect to be a first rate foreman or superintendent until he knows what every line on a plan means and how to lay out and direct work from the architect's plans. By the Chicago Tech. Method you quickly learn to read any plan as easily as you read these words.

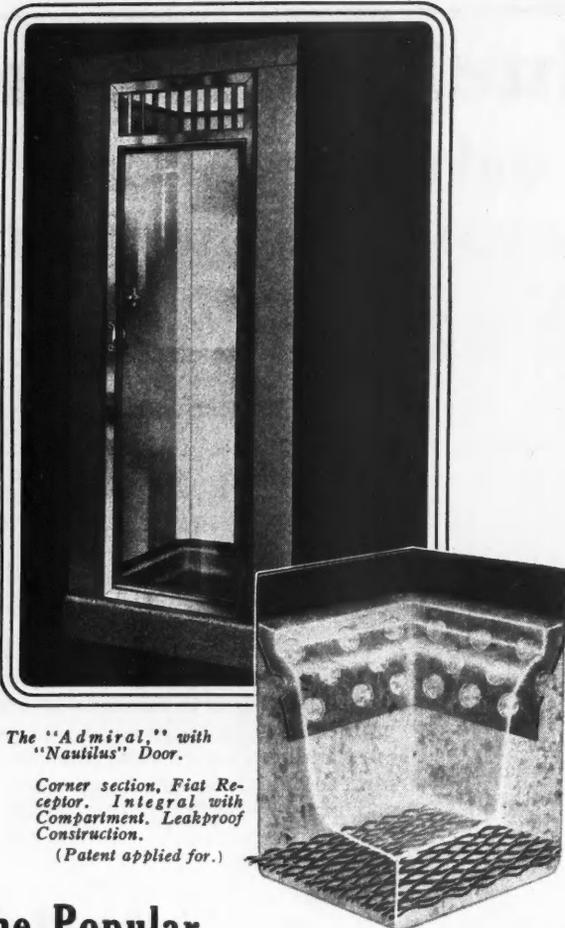
Estimating. Of course a man who wants to be a contractor or to hold a big job in a contracting organization must know how to figure costs of labor, material, and everything else that goes into any kind of building. The Chicago Tech. Course covers every detail of this important branch—shows you just how it is done from actual blue print plans.

Superintending. How to hire and direct men, how to keep track of every detail of construction as it goes on, how to get the work done in the least time at the lowest cost is also fully covered in the Chicago Tech. Builders' Course.

Also special courses in Architectural Drafting for builders, taught by practical men. These explained in Special Catalog "D" sent on request.

CHICAGO TECHNICAL SCHOOL FOR BUILDERS

Dept. B-121, Chicago Tech. Building, 116 E. 26th St., Chicago, Ill.



The "Admiral" with "Nautilus" Door.

Corner section, Fiat Receptor. Integral with Compartment. Leakproof Construction. (Patent applied for.)

The Popular Bath Made Practical

Fiat

SHOWER BATH COMPARTMENTS

The public is educated to and demands showers and a FIAT Shower Bath Compartment is the last word in bathing facilities. It greatly simplifies the problems of installation and cost. Every residence, apartment, summer home, etc., should have one.

The FIAT Shower Bath Compartment represents the greatest progress made in shower enclosures. Selling points galore: Doubles the bathing facilities of the home—construction positively leakproof—no trouble from building settling—rigidly built and distinctively finished—sanitary throughout—slipproof floors—a complete unit within itself—shipped knockdown—installed in minimum space—adaptable to new or old buildings. Furnished with glass doors or shower curtains. Sold exclusively through plumbing trade—complete installation by plumber.

For information on the additional good points about FIAT Shower Bath Compartments, send the coupon for a free copy of our beautiful, illustrated 32-page catalog.

FIAT METAL MFG. CO.
1201 Roscoe St., Chicago, Ill.

FIAT METAL MANUFACTURING CO.
1201 Roscoe St., Chicago, Ill.

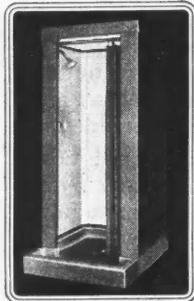
Please send me full information regarding Fiat Shower Bath Compartments.

Name.....

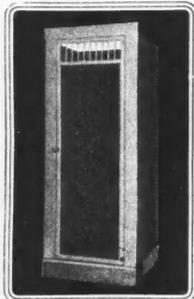
Street.....

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

Please check—I am a Contractor , Plumber , Architect , Dealer , Realtor , Home Owner



The "Admiral" with Extended Receptor.



The "Ensign" with "Marine" Door.

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.

"Specifications for a Hospital," with notes and comments by Wilfred W. Beach, published by the Pencil Point Press, Inc., 419 4th Ave., New York City, is a handsomely gotten up book containing the specifications of the Chester County Hospital and Nurses' Home, at West Chester, Pa., York-Sawyer, architects, as an experiment in presenting a model for better specification writing. It is the first of a series of books now being prepared, presenting actual specifications for various types of buildings, produced in leading architectural offices. Price, \$6. By error the price of this book was omitted in listing in the January issue.

"Steel Joists" is a recently prepared book by the Gen-fire Steel Company, Youngstown, Ohio, covering very completely the subject indicated, with detail drawings, specifications and tables.

The Consolidated Concrete Machinery Corp., Adrian, Mich., offers a new pamphlet under the title, "The Ideal Products Plant Mixer."

"Lupton Casement Windows" is the title of a new booklet published by David Lupton's Sons Co., 2203j—E. Allegheny Ave., Philadelphia, Pa., very handsomely gotten up and full of valuable details and specifications. This company also offers a booklet under the title, "Steel Windows for Standard Openings Reduce Building Costs."

"The Book of Lawn Furniture" is a new booklet published by The Long-Bell Lumber Company, Kansas City, Mo., illustrating a wide variety of wooden furniture, pergolas and wood ornaments for the lawn, Price 25 cents. This price was omitted, by error, from the January listing of this booklet.

"The Essence of Architecture" by William Roger Greely, published by the D. Van Nostrand Company, Inc., 8 Warren St., New York City, is a new book intended to aid in a study of the distinctive elements of architecture in order to reveal some general laws of art, composition and proportion. Price, \$2.50.

The Bates Valve Bag Corporation, 35 E. Wacker Drive, Chicago, has prepared a pamphlet presenting the advantages of the Bates Multi-Wall paper bag for cement and plaster.

The Weatherbest Stained Shingle Co., Inc., 134 Main St., North Tonawanda, N. Y., has prepared a poster announcing the results of its recent remodeling contest. It also offers an interesting booklet on its Old Colony, hand rived, red, cedar shakes.

The Rossman Corporation, 160 E. 56th St., New York City, offers a pamphlet descriptive of its line of Nubian black tiles and trim as a decorative medium.

The United States Radiator Corporation, Detroit, Mich., offers a small booklet of its Capitol radiator with a standardized ratings for 1928.

The Marietta Mfg. Co., Indianapolis, Ind., has published a very handsome catalog, illustrating in colors the application of its Sani Onyx, vitreous marble, in the finish and decoration of buildings of all types.

The Metropolitan Electric Mfg. Co., Boulevard at 14th St., Long Island City, N. Y., has issued a new catalog of its complete line of Facealite mirrors and bath room cabinets.

The Pole and Tube Works, Inc., Ave. D and Murray St., Newark, N. J., offers a complete illustrated catalog and price list of its steel tubular flag poles.

The Universal Electric Stage Lighting Co., Inc., 321 W. 50th St., New York City, presents its complete line of lighting specialties for stage, theater, studios, show rooms, schools, exhibitions and similar purposes, in its catalog M.

A Combination Bath Tub

Regular Bath, Shower Bath, Seat Bath, Foot Bath, Child's Bath
All in one piece, Patented

Semi-Vitreous Porcelain and Enameled Iron Ware



PLATE 10-E

Enameled Iron Ware, 44x30 inches to tile in recess, only. Enameled white front. Waste in foot section either right or left hand end. Only one size made.



PLATE 11-E

Enameled Iron Ware, 44x30 inches to tile in right or left hand corner. Enameled white all exposed parts. Only one size made.



PLATE 30-E

Semi-Vitreous Porcelain Ware, 44x30 inches to tile in right or left hand corner, or in recess. Glazed white all sides. Only one size made.

The COMBINATION BATH is an entirely new departure in the development of modern sanitary comfort, comprising, as it does, a SEAT, FOOT, SHOWER and CHILD'S bath, all in one.

It possesses many essential common sense features not found in any other types. For instance, it is more comfortable and less wasteful of water; it is possible to bathe and treat the feet without the removal of all clothing, by having only a small amount of water in the foot section. The ledges on the end and both sides of the foot section enable one to treat the feet conveniently, while the dimensions of the foot section allow ample space for the feet when standing or sitting. The Mother or maid can bathe a child in comfort under ideal conditions. The child can be bathed on the seat section, and then, if desired, dipped in the water filled foot section.

Remember, when you are considering the length of the COMBINATION BATH in comparison with other kinds or styles, that you do not assume a half reclining position when using the COMBINATION BATH, but instead a sitting position; so that your length from the knee down does not count in the length of the space required as it does when using the ordinary bath; also that the uncomfortable, cramped position assumed in the latter case is entirely removed and supplanted by a natural, comfortable posture, such as experienced when sitting in an easy, comfortable chair with just as much room in every direction as a person would have in using the ordinary bath of greater length.

Furthermore, when the COMBINATION BATH is used as a shower bath it is equal to any standard type shower receptor.

The arrangement of the seat and foot bath permits the taking of a head or body shower bath, the latter without wetting the hair. This commends it, and is a feature which should not be too lightly regarded; in fact, we strongly recommend installation of showers in connection with the COMBINATION BATH.

When one desires to get out of the COMBINATION BATH, he can do so without the aid of grip-rails or even the use of his hands, by merely standing up—just like arising from a chair.

Water can be turned on and off or discharged without changing from a sitting position, instead of being obliged to slide along the bottom of the tub, in order to reach the valves, as is necessary when using any other type bath.

In planning bath rooms, space saving is oftentimes a most important problem, which can be readily and satisfactorily solved by the adoption of the COMBINATION BATH. This is all accomplished without encroaching on the space required for persons weighing as much as 250 pounds to an extent that comfort is sacrificed in any degree.

Tone will be given the bath room wherein such a distinctly attractive and meritorious fixture as the COMBINATION BATH has been installed—an added attraction fully appreciated and not likely to be overlooked by your guests.

We furnish plans for installing the COMBINATION BATH, avoiding the necessity for having any part of the waste fittings extended through the ceiling below the bath room, requiring a suspended ceiling; which, in many cases, would prove undesirable.

These plans provide for raising the bath about four inches above the floor level, and filling in the open space with tile. This increases the extreme height of the tub from floor to top to about twenty-one inches, which is slightly less than the height of a staple bath on legs or base.

Many of the COMBINATION BATHS have been installed in this manner, and have proven entirely satisfactory.

WRITE US FOR DESCRIPTIVE BOOKLET GIVING MEASUREMENTS AND OTHER DETAILS

WHEELING SANITARY MFG. CO., Wheeling, W. Va.

VITREOUS CHINA—Water Closet Bowls, Flush Tanks, Lavatories. SEMI-VITREOUS PORCELAIN—Bath Tubs, Lavatories, Drinking Fountains, Kitchen Sinks, Laundry Trays, Urinal Stalls. ENAMELED IRON—Bath Tubs on feet and on base, Lavatories and Kitchen Sinks.

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.

Harvey Hubbell, Inc., Bridgeport, Conn., has issued several new sheets for its loose leaf catalog.

The Lawrence Cement Company, New York City, has just issued a new booklet on the subject of its Dragon Super-Cement.

The American Institute of Steel Construction, Inc., 285 Madison Ave., New York City, has published its "Report of Proceedings of the 1927 Annual Convention," also two booklets "Tensile Working Stress for Rivets," by C. R. Young, B. A. Sc. C. E. and "Practical Design of Wind Bracing" by Clyde T. Morris, and the following speeches presented at the convention: "Profits and the New Competition" by O. H. Cheney. "Structural Steel for Strength and Security," by Harry E. Detwiler, "The Skyscraper and Congestion," by George Henry Payne. "Stabilizing Business" by Truman S. Morgan.

"The Ironite Method of Waterproofing" is presented by the Central Ironite Waterproofing Company, Inc., 111 W. Washington St., Chicago, in a filing folder form.

"Maintenance of Interior Marble" is the title of a brochure treating the subject of cleaning and maintaining marble, prepared by Dr. D. W. Kessler and published by the National Association of Marble Dealers, 648 Rockefeller Bldg., Cleveland, Ohio, and distributed by the Alabama Marble Company, of Birmingham, Ala.

The Taylor System of Color Harmony, Inc., 425 Fifth Ave., New York City, is publishing a house magazine under the title "Color Craft," which is of interest to all concerned with the use of colors.



The Massillon Nailer Joist

is a steel joist designed for nailing wood flooring or roof decking directly to the wood nailing screed forming part of the top member of the joist. Normal shipments are made from stock and the joists rapidly placed without cutting or fitting on the job. Metal lath and plaster, plaster board, or other standard ceilings are readily attached to the bottom bars.

Strength, elimination of shrinkage and warping, open web for piping and a high degree of fire resistance are features of the construction—all at a cost approaching and at times less than the cost of wood joist floors.

Construction details and loading tables will be mailed on request. Send us your plans in asking for quotation.

THE MACOMBER STEEL CO.
909 Belden Ave., Canton, Ohio

Manufacturers of

Massillon Bar Joists, Massillon Steel Roof Trusses and other Standardized Steel Building Products

The Concrete Steel Company, 42 Broadway, New York City, has issued a pamphlet on the use of the Havemeyer truss in the new state hospital buildings at Orangeburg, New York.

"Concrete in Architecture" is the title of a new book published by the Portland Cement Association, 33 W. Grand Ave., Chicago, which is most handsomely gotten up, profusely illustrated and contains a number of illustrations in full colors.

The Portland Cement Association, 33 W. Grand Ave., Chicago, has just issued a revised multigraph of its "Proposed Building Ordinance," intended for the smaller municipalities, which has been rewritten to take full advantage, through adoption by reference, of the reports issued by the Department of Commerce Building Code Commission and other national organizations.

David Lupton's Sons Company, 2203-n E. Allegheny Ave., Philadelphia, Pa., has published a booklet under the title "Steel Windows for Standard Openings Reduce Building Costs," which covers the subject of this company's simplification of three types of steel windows to fit interchangeably 50 standard openings.

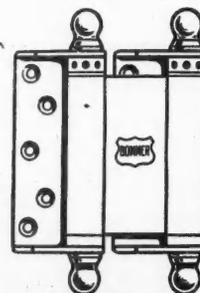
The Asbestos Shingle, Slate & Sheathing Company, Ambler, Pa., has prepared a general catalog of its fireproof asbestos building products for its subsidiary the Ambler Asbestos Company of Cuba, Habana, Cuba, which contains very complete information in both English and Spanish.



Oil Burner Convention

THE Fifth Annual Convention and Exposition of the American Oil Burner Association will be held at the Hotel Stevens, Chicago, on April 3, 4 and 5, 1928. One of the features of the convention will be a report on the work of the Oil Heating Institute, established a year ago by the association to conduct an educational campaign.

They
are
the best



They
are
the best

Millions and Millions

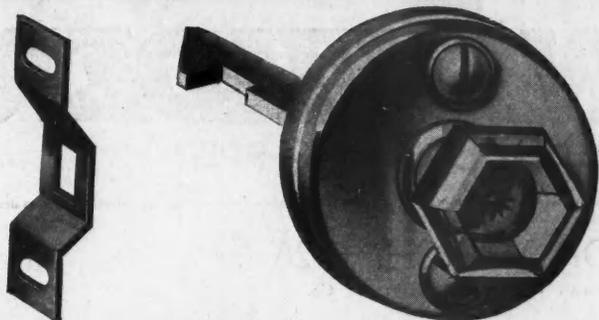
of People are Pushing

BOMMER SPRING HINGES

when opening doors

*Follow the line of least resistance
Your Dealer handles them*

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A Cupboard Catch that is More than an Ornament

YOU need only to examine this unique Cupboard Catch for a moment to discover that in addition to its simple beauty its mechanical construction insures quick installation and easy adjustment for positive latching.

Bore one hole, sink four screws! That's all there is to installing a No. 330 Cupboard Catch. It not only affords a simple and effective means for latching but also adds charm and beauty to any door on which it is used.

Less than one-tenth turn of the glass knob, either to the right or to the left, unlatches the catch. Merely pushing the door shut locks it. The No. 330 Catch is adaptable to any position of the door without changes or additional boring.

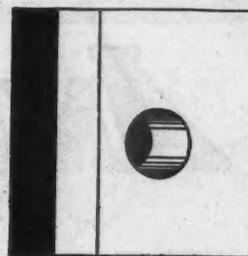
The No. 330 Cupboard Catch can be used on doors from $\frac{1}{2}$ " to $1\frac{1}{8}$ " in thickness without making any adjustments or changes.

Ask to see a sample of this unique Catch at your Hardware Dealer's Store. Write Department A-3 for your copy of the Frantz Wall Hanger illustrating the full line of Guaranteed Builders' Hardware.

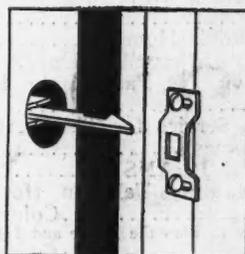
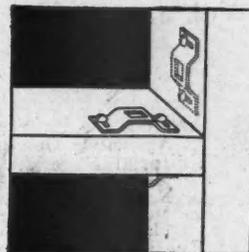
FRANTZ MANUFACTURING COMPANY
STERLING, ILLINOIS



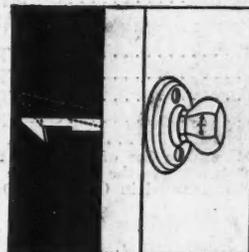
Installing the No. 330 Catch is simple—bore one hole and sink four screws. No troublesome mortising or chiseling is necessary.



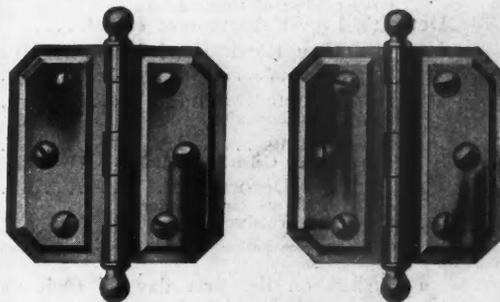
The No. 330 Catch is so constructed that it can be installed with the strike on the shelf, under the shelf, on the door stop or any other desired location without adjustments of any kind.



The screw holes in the strike are slotted to allow an adjustment to a perfect latching position should the screws be slightly misplaced when the installation is made.



A slight turn, either to the right or to the left unlatches the No. 330 Catch. When the door is pushed shut the catch locks automatically.



Cabinet set No. 799 is comprised of a pair of Embossed Ball Tip full surface Butts and a No. 330 Catch. The hinges are made of cold rolled steel and can be furnished in any desired finish. This set is ideal for use on all types of cupboards, cabinets and chests.

"No Hardware Is Genuine FRANTZ QUALITY Without the Red Label"

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