

**AMERICAN BUILDER
and
BUILDING AGE**

**IS THE BUSINESS
JOURNAL OF THE
ACTIVE MEN OF THE
BUILDING INDUSTRY**

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AMERICAN BUILDER
and
BUILDING AGE

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53rd Year

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LOOKING AHEAD
WITH THE EDITORS

July, 1931

We Were Surprised—

. . . . when we discovered the really sizable volume of home building that is going forward right now in many localities!

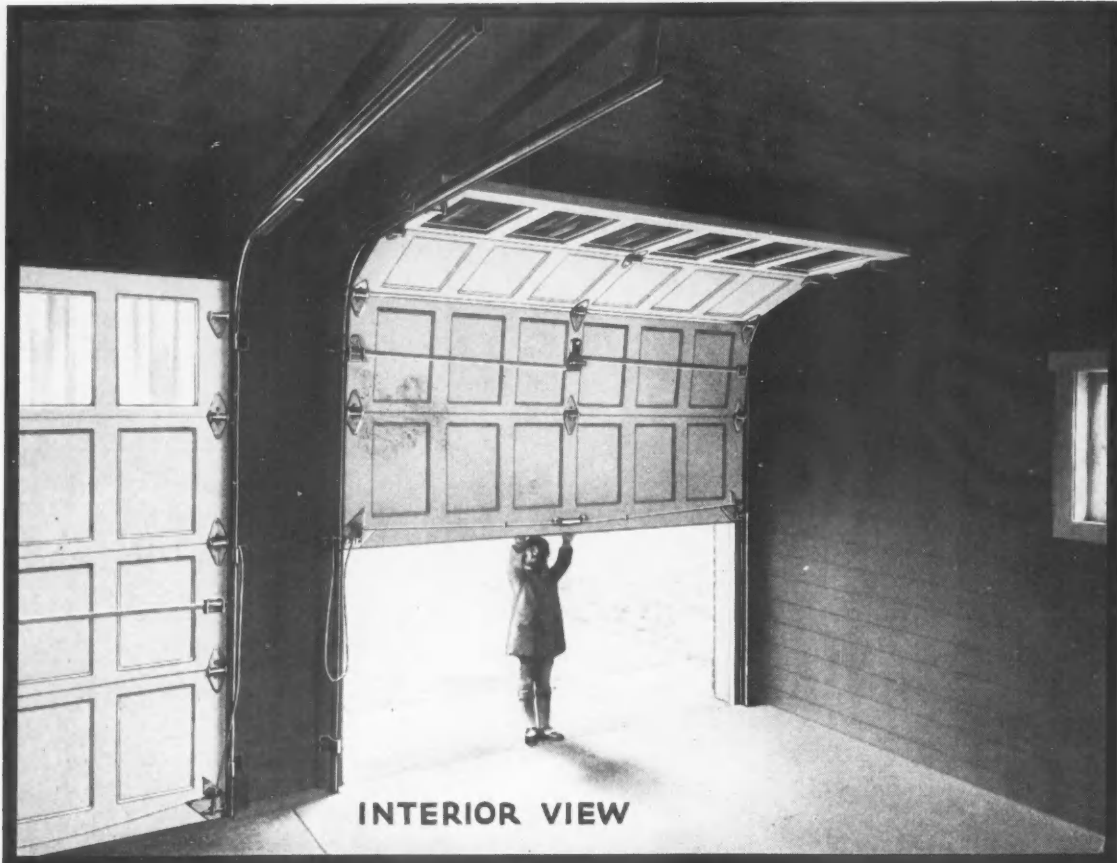
A survey by our editorial staff has brought to light dozens of "hot spots" where home building in quantities for sale is now under way and where the market is greedily absorbing all the new homes that are offered. "Give the people what they want and they will buy," these successful builders report. How their home building developments are being planned, promoted, financed, constructed and sold will be told in July American Builder and Building Age.

Low Cost Housing

Then, too, there will be more in July on the industry's "big problem"—low cost housing.

Read the first installment this month (starting on page 80) to get the underlying factors in housing costs. The second installment gets into the novel and radical methods of home building construction which are being offered to reduce home building costs. Keep in touch with these changes, for the old order may pass sooner than you expect!

Home modernizing, financing, details of good construction apartment house planning and design and a wealth of intriguing home plans of popular size and cost make up this July issue. There are articles on business management, cost cutting methods and labor-saving equipment. You will be pleased with the contents of July.—The Editors.



INTERIOR VIEW

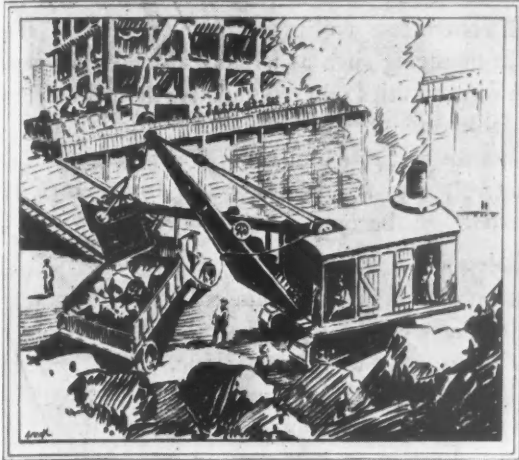
Note the compact neatness of this typical "Overhead Door" installation, the sturdiness of construction, the extreme simplicity—another reason why The "Overhead Door" operates so perfectly.

The buying public of America is "sold" on The "Overhead Door." Contractors who specify this modern door for the modern garage find their clients entirely receptive to the idea. For years the story of The "Overhead Door" has been told in national publications over and over and over again—is still being told. Home owners, home builders everywhere not only have a high respect for the product, but for the contractor who is sufficiently in step with the times to write it into his specifications. Insist that your clients have this modern door for their garages—you will be pleasantly surprised to find that they know all about it, have long wanted it, and, with you, are anxious to have it installed—and the increasing number of installations is a tribute not only to national progress, but to the alertness of the American contractor in recognizing a better product and a finer service.



For Ten Years — The Standard of Comparison

FOR ADVERTISERS' INDEX SEE NEXT TO LAST PAGE



AMERICAN BUILDER AND BUILDING AGE

DEALERS CAN PROMOTE HOME BUILDING

But They Should Leave the Actual Construction to Builders

REPEATEDLY through the pages of *AMERICAN BUILDER AND BUILDING AGE*, we have argued the very real advantage of selecting a reliable, straight-shooting building supply dealer and sticking by him. We have pointed out the danger of "shopping around," which exposes the builder to sharp practices, poor materials, irresponsibility, and lack of support in time of need. Our contact with builders has shown that the most successful ones limit their dealings to one or two, or in some cases three or four, reliable concerns.

We have advocated and still do advocate the maintenance of a friendly, co-operative spirit between the builder and the supply dealer, with each living up to his part of agreements entered into, and helping the other whenever he can. In such a relationship both profit; for the dealer has a steady, safe outlet for his products, and the builder obtains advantages in service, price, and quality that can accrue only to a customer of long and respected standing.

Upsetting a Friendly Relationship

What happens to this desirable situation when a building supply dealer goes into the contracting business, as more than a few have in recent years? The local building industry is completely and thoroughly upset and war is declared between those very persons who should be working together for the common good.

How any dealer can enter into competition with his best customers and still expect to keep their business and friendship is more than we can see. And we might add, it is more than the builders in communities where it has been tried have been able to see, for they have rightly risen in holy wrath and smitten the offending dealer. In every case, the builders have taken their business to

competing concerns, and have in every way possible withdrawn their support from the dealer who thought he could make a little easy money by going into contracting.

In the same way, too, contractors have in some instances secured a dealer rating and have tried to be both builder and dealer. This has proved disappointing, bringing more grief than profits. Such tactics on the part of contractors are destructive to any real teamwork between builders and dealers, and should be stopped. The building supply business is complicated and exacting and it does not mix well with the responsibilities of actual construction.

Likewise, any dealer who believes that running a building business on the side is an easy way to make money has a lot to learn! He will not be long in finding out that this is a specialized profession requiring long training, more than ordinary ability, and a quantity of hard work.

The greatest evil of the building industry today is that it is already overcrowded, and dealers who enter into it are not only letting themselves in for much trouble, but are causing real hardship for others. The history of the past few years illustrates very well that there are not only too many in the business, but too many who are inefficient and inexperienced. Builders who are not well enough organized to know their costs create universal hardship by unbusinesslike underselling. They are losing money and don't know it, and while no one would care if it hurt only them, the truth is it hurts the respectable and reliable builder who knows his costs and does a good job at a fair profit.

They Rob Themselves

Some building supply dealers who have gone into contracting have, in competitive conditions, figured their materials in at cost, in spite of the fact that this detracts from the profits of their building supply business. Such

a dealer may think he is being pretty smart in under-selling his contractor competitors, but as a matter of fact he is just robbing himself. Again we say, no one would object if that were the only result, but unfortunately such a practice results in price-cutting and a price-war that is destructive to the entire building industry.

Every study that has ever been made of the business of the building supply dealer has shown that the only firms that make any real profit are those who hold down their expenses. Dealers who branch out into construction soon find that the increased costs and increased grief they have taken on are not any help to them.

Teamwork, Not Competition, Is Needed

Great alarm has been caused by the new competition in home-building from nationally organized mail order companies. This is a menace every builder and every supply dealer must fight to the last ditch. But we do not see any benefit in replacing this evil with one equally bad, which is what some dealers are doing by going into construction. The success of the mail order companies is mainly due to establishing confidence. Their customers believe in their one price, and that for the intended purpose the quality is suitable. Many times these out of town firms have been known to secure business at higher prices than the local firms ask, when in alarm they have cut their prices until all profit is gone. A better understanding between dealers and contractors would correct this.

There are, moreover, many functions the building supply dealer can wisely perform without competing with his builder customers. His office can be made a headquarters for building information; he can stimulate construction, give advice, exert leadership if he will.

His material and equipment display can and should be one to which contractors will bring their customers. He can engage in financing such as is being done by aggressive firms in communities where funds for homebuilding are not available on sufficient or liberal terms. In many other ways he can *promote* and *assist* construction without going actively into it. Builders and contractors, if properly treated, will become his best salesmen.

Builders as Salesmen

A mistaken notion is held by some that the contractor-builder is a poor salesman. Long and intimate contact has proved to us that this is not true. The builder always has been and probably always will be the aggressive salesman of the building industry, getting out among home-seekers in an enterprising way, promoting new projects, contacting investors, and stimulating construction progress in the community. It is this man the building supply dealer needs as a friend and booster rather than as a competitor.

Instead of the increasingly bitter competition which can be the only result of dealer building let us have greater co-operation. Get acquainted, you supply men, with your best customers, your local builders. Talk to them sometime without trying to sell them anything. Discuss your mutual problems over a luncheon table, or in your homes. The construction industry needs more friendship and less fighting. Builders, architects, dealers, subs, financial institutions, realtors must all work together. So why not do it with a maximum of good feeling? Let every division stick to its own field, do a good job, have a good word for the others, and help promote the welfare of the whole. When that is done, we will all be better off.

Dealer Leaders Are "For and Against"

*W*ISHING to be entirely fair to all sides of this builder-dealer question, we mailed advance proofs of this editorial to some of the lumber dealer association officials. Here are their replies:

Collier Endorses

Thank you for your letter of May 2nd containing advanced proof of the editorial to be presented in the June American Builder and Building Age. I have read this over with much interest and thoroughly approve of your discussion of the subject. It is of interest to both dealers and builders.

We will probably refer to your statements in our publication, "The Lumber Co-operator." I do not know just what I want to say for publication at this moment but I do feel that it will be a favorable comment. I hope everyone reads your excellent material.

Northeastern Retail Lumbermen's Assn., Paul S. Collier, Secretary-Manager, Rochester, N. Y.

Mail Order Competition Bringing Dealers and Builders Together: Pfund

Our own observation has indicated to us that never before were these two important factors—the builders and dealers—in such close and harmonious relations as today.

Often conflicting parties are brought together into real co-operation when they are confronted by a common foe. In this case it is the mail order houses; and certainly their tactics in our opinion have brought dealers and builders very close together.

Dealers, particularly, have been harmed by the statements of mail order houses, couched in the alleged language of consumers, that you can save from \$500 to \$2,000 by building your home the mail order house way as compared with dealing with the local dealer. Contractors have been hurt by the fact that instead of occupying the normal position of general con-

tractor, they have been hired by the mail order houses to do the erection work on practically a wage scale basis, or as one contractor put it to us—"on a starvation basis."

Obviously it was necessary that the prospective home owner be contacted in an effective way in order that the local dealer and builder interests would have a fair show. It is not surprising, therefore, that dealers and contractors began to confer as to how this might best be done. In many cases the dealer has advertised so as to bring the prospective home builder to his yard and also he has practiced consumer contact selling. This procedure has substantially improved the situation and has gained for local dealers and contractors much business which otherwise might have gone the mail order way. Once the consumer has been interested, the deal is closed by a three-party procedure—the dealer, the builder and the prospective home

(Continued to page 112)

THE ISSUE OF JUNE, 1931

COLOSSAL SYMBOL OF A MIGHTY INDUSTRY

The Co-operative Creation of
ARCHITECT and ENGINEER
BUILDER and ARTISAN



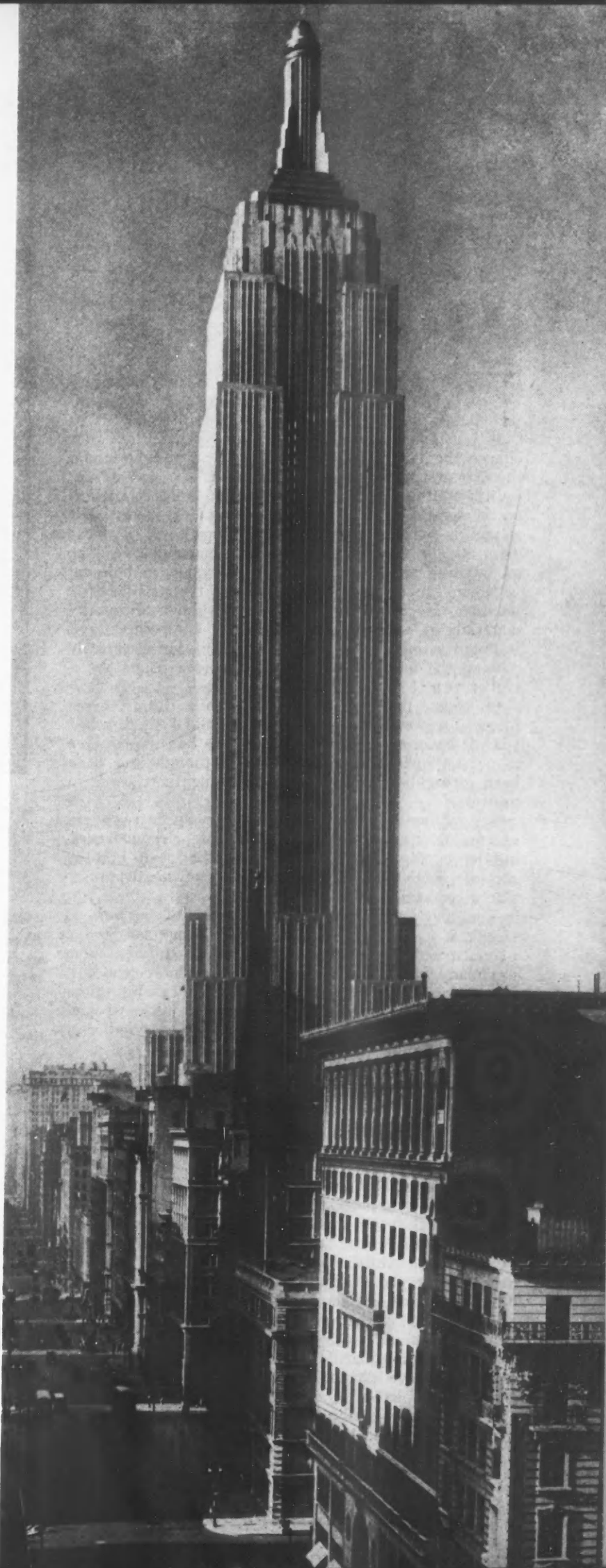
EMPIRE STATE BUILDING
New York City

SHREVE, LAMB AND HARMON
Architects

STARRETT BROTHERS & EKEN, INC.
Builders

In this photo we look down Fifth Avenue, New York, toward the tallest structure in the world, the Empire State Building, 85 stories in height, 1,250 feet above the pavement. The mooring mast for dirigibles on the top accounts for 200 feet. The next highest building is the Chrysler, 77 stories and 1,046 feet high. The Empire State Building was formally opened on May 1, 1931. It took 3,400 men less than a year to build it. The cost was approximately \$55,000,000, including the land.

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QUALITY AT A FAIR PRICE
OR CUT-THROAT BIDDING
WITH LOSS TO ALL.....
WHICH SHALL IT BE?

THESE are two ways of going about the selling of homes. One is to tell prospects you are giving them a bargain at a cut-rate price; the other is to show customers the importance of **QUALITY**, and charge them a price which allows you to give them the best and still make a decent profit.

In a southwestern city a prominent builder operates on the second principle. He is making local history and attracting wide attention from competitors, business men, and prospective buyers by the unusual procedure of boasting about his high prices. He is capitalizing what, in the ordinary run of things, is considered a liability. He is selling quality homes built of quality materials at a higher price than his competitors and is broadcasting that fact far and wide. He is actually making the local townsmen *like* the idea of paying a higher price!

Of course this isn't a new idea at all. But from the financial reports of builders we've talked to this last year, it looks as though very few have had the courage to pursue such a policy. It looks as though they have been giving houses away and throwing their work in gratis.

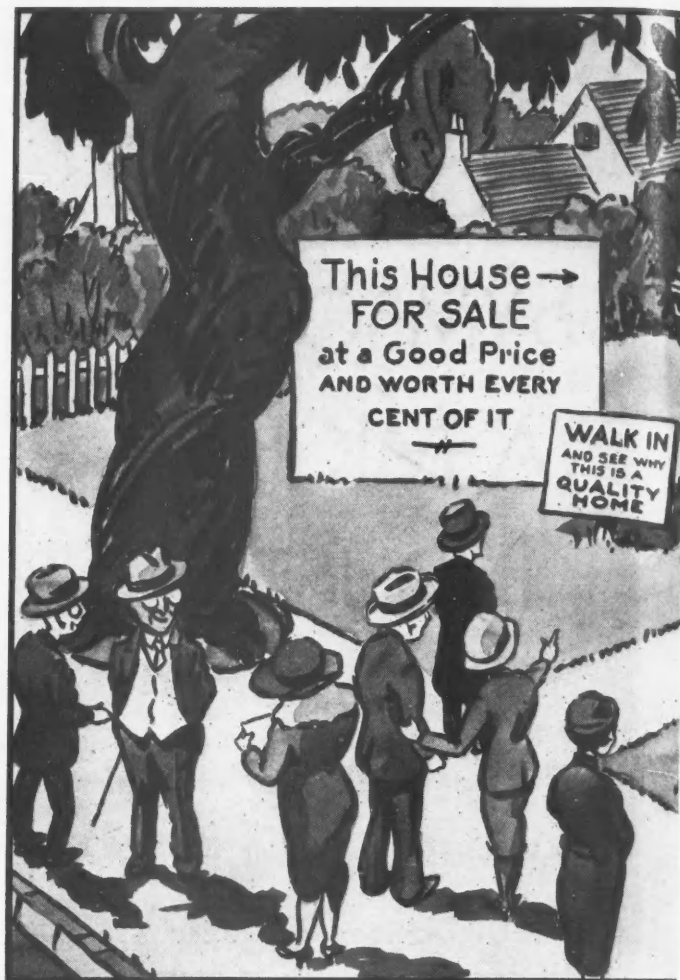
Scrambling for low bids may produce a certain amount of trade for men in desperate circumstances, but let us say right here and now that it is not the sort of practice that will build up a permanently profitable construction industry.

The only sound basis for a successful business is selling at a fair profit based on a thorough knowledge of construction costs. The industry has suffered from too many inefficient, uninformed individuals who lost money for themselves and everyone else by rashly jumping into home building (as well as other types of construction) without a thorough analysis of what they could or couldn't do for a given price.

The building boom preceding the depression brought into the industry too many inexperienced would-be builders who thought that anyone could build a house and make money at it. With no idea of cost they made outrageously low bids, persuaded some lumber dealer anxious to get business to extend credit and proceeded to rush through a lot of shoddy work that gave the entire industry a black eye.

The usual result was that the lumber dealer had to complete the job, the customer got a patched-up house which permanently soured him on builders and the reputable, responsible contractors were blamed for something that was not their fault.

In a sense, perhaps, it was not their fault; but in another sense, it was, for if steps had been taken to organize and advertise the responsible element this would not have happened. We should have been spared the painful picture of a crop of new builders starting on a shoe-string each spring and disappearing amid a cloud of liens and bad debts in the fall.



DON'T WORK

Right now we are at the beginning of a new era, and let us hope that history will not repeat itself in this case. Local, responsible builders must organize to prevent it, for they are the ones who suffer. "A good job at a fair profit," should be the slogan from now on.

How can the low-bidding evil be avoided? By adopting the policy of the builder mentioned at the beginning of this article; by selling **QUALITY**, not price. In direct-by-mail and newspaper advertising, stress the importance of quality and educate the public in the details of good construction.

The average prospective home buyer, although he knows more than he did formerly, still has a very vague notion about what makes a good house good. He will buy a radio, an automobile, or an electric refrigerator that through extensive advertising has been sold him on the basis of quality and beauty without worrying much about the price. Yet when this same man considers buying a house he will haggle over the price of materials and the contractor's figure as though he were trading with a Shylock.

Why does he haggle over building prices? Because

Builder advertising stress is recommended in this American Builder and lish descriptions of coming sample advertisements. articles



K FOR NOTHING!

he is ignorant of the grade of materials and their influence on price; because he does not know what a difference good craftsmanship and reliable workmanship can make.

An example of this is what took place in the town where the quality builder mentioned operates. In going after a certain job, he found that three other bids had been

made, one of which was so low that it was apparent good work could not be done. He called up the prospective owner.

"Have you got the specifications in front of you?" he asked.

"Yes," said the home seeker. "What about it?"

"Well," said the builder, "just to satisfy my own curiosity, would you mind telling me what kind of sheathing you are to have?"

"One by eight N. C. shiplap," was the reply.

"Yes, but what thickness?"

"One by eight," said the owner testily. "Just plain one by eight!"

The builder did some rapid calculating. "Well," he said, "you're buying on price, and that probably means 11/16 sheathing. That means your house will have 6½

per cent less framing strength than it would with the thickness I would recommend. Wouldn't it be well to know a little more about what you're getting before you sign a contract at that low figure?"

"I guess it would," said the prospective owner a trifle breathlessly. "I'd like to have you look over the rest of these specifications."

After the builder had talked it over with him, he concluded that it was worth paying more to have the job done in a first-class manner. This is the usual result

He Is Making Local History by Boasting About His High Quality and High Prices.

a responsible builder achieves when he has an opportunity to go into the matter of quality versus low bidding with a customer.

Responsible builders should go directly to the public with an advertising campaign that will give concrete evidence of worth. So many persons have used the phrase "quality construction" loosely that it does not mean anything unless backed up with practical facts. The American people can be interested in the technical details of home building. They can be interested in the "innards" of a house.

The thing that will do more than anything else to prevent the return of irresponsible here-today-and-gone-tomorrow pseudo-builders is extensive advertising to educate people about the technique of good home building. A co-operative advertising campaign conducted by the local building industry representing builders, architects, supply men, subs, realtors, financing institutions, is the most effective way. Or a group of builders of established reputation banded together as a "quality group" could conduct an advertising campaign that would be of immense value to the individual members.

Stressing the quality idea, together with presentation of educational facts, is the logical theme for individual builders to use in their advertising. Setting down in black and white the specific items in which your construction is better than your competitor's (referred to as "ordinary building," "mail order type," or "competitor A") is very effective. Features of your quality construction can be listed in one column, and opposite each one the inferior type of the competition. After listing a dozen or so "quality points" your advertisement can conclude with: "These are the reasons our price is higher—you are assured of a better job."

Certify the Quality

As part of the program to make prospective home buyers price-conscious, a good policy is to issue an attractive framed and attested "Certificate of Quality" when the house is completed and turned over to the customer. Or the "quality mark" may be built into the face of the foundation wall with your guarantee permanently engraved. Some builders are going still farther, and issuing a surety bond as evidence that they are willing to back up the quality of their work for a reasonable length of time. The "Certificate of Quality" justifies a higher price, enables the purchaser to get more for the house in case he wishes to sell it and has a definite value with the loan companies.

Much depends on the action of builders this season in determining the future of the building industry. If we are to have a return to the price-cutting, bid-peddling, cut-throat, let-the-buyer-beware, practices of the post-war era, God help the industry, for no one else will! On the other hand, if an intelligent, sincere attempt is made to organize, advertise and build up the respect and esteem of builders, a brilliant future is to be expected. The place to begin is the individual community and the time is NOW.

ress
this
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cam
ents.
icles

ing quality at a fair price article. The editors of Building Age wish to publish campaigns of this type, show-\$35.00 will be paid for accepted.

Exhibited at The Architectural and Allied Arts Exposition, New York

ALUMINAIRE—A New Departure in R

CURRENT trends in architecture and the allied arts were revealed at the Architectural and Allied Arts Exposition held at the Grand Central Palace, New York, April 18-25. Models, photos, and drawings of many different types of structures were on display. An important feature of the exposition was the industrial division, where new fittings and house equipment of various kinds were exhibited. New decorative elements, bathroom and kitchen fixtures and equipment, utilitarians and ornamental fittings made of new metal alloys, modern types of insulation, heating, ventilating, and refrigeration were all displayed in special booths.

One of the most interesting features of the whole exposition to builders and homeseekers alike was the model glass and metal house erected in full size on the exposition floor. Two purposes actuated the designers: (1) To produce a type of construction that would be suited to standardization and mass production and which would be economical in price. (2) To provide mechanical conveniences and efficiency of arrangement. The result is illustrated on the opposite page.

This house, called Aluminaire, is built with exterior walls of aluminum (the first all-metal house attempted in America) and has insulation that is said to make the three-inch exterior more effective than the usual wall of masonry.

There are no supporting outside walls as in the case of the usual brick-built dwelling. The supports are six

slender columns of aluminum that are within the area of the house. These columns uphold cantilever beams from which the outside walls are suspended. The windows may be placed where wanted.

The structure of the house is largely of aluminum beams or girders that in turn support a steel deck floor, insulated and surfaced with rubber and linoleum flooring. The house is fireproof and of extreme lightness.

This house is said to be unique in that it is built entirely of materials that are available as standard products, such as metals of light weight or non-staining qualities, sponge rubber, wall boards, and deck floors.

The floor plans reproduced herewith show the layout of the metal house. The ground floor serves for entrance, hallway, heater room and garage. Within this ground area there is also a porch related to the garden. The house may be entered through the garage or by the front doorway. The garage door is of the overhead type. The heating system on this floor distributes heat into units on each floor that operate by the convection principle.

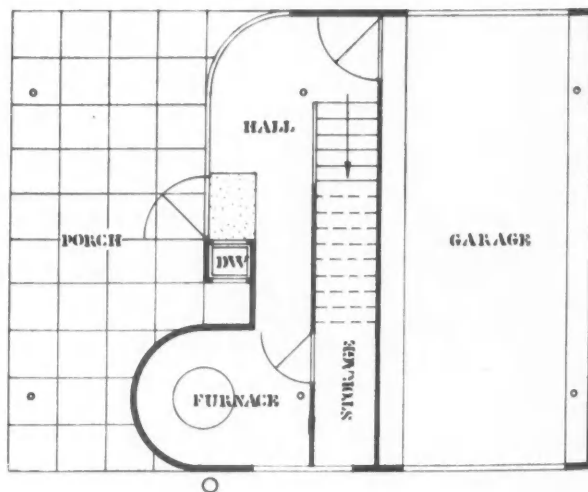
The second story contains the living and dining room, kitchen, bathroom and bedroom. One end of the living room is two stories in height and is entirely glazed with ultra violet glass, extending from floor to ceiling height of 17 feet. At the other end is the dining area which can, if desired, be converted into additional living space. This large room is illuminated by neon lighting, with tubes that parallel the head of the window so that the night lighting corresponds in its source to daylighting. By the turn of a dial one can obtain a clear white light, an ultra-violet light, or a selection of color.

Bedroom, exercise room, and bathroom are separated by a folding partition composed of heavy felt, covered with fabrikoid. This partition is shown in floor plan number 2 by a broken semi-circle. The whole side of this combination room is glazed with a window 22 feet in length. Closets have been worked out as special units, one as typical for men and the other for women. There

COMPANIES AND MANUFACTURERS SUPPLYING MATERIALS FOR THE EXHIBITION HOUSE

McClintic-Marshall Corporation (Steel Framing); Truscon Steel Company (Steel Windows and Floor); Aluminum Company of America (Aluminum Walls, Flashings, etc.); Jones and Laughlin Steel Corp., (Stair Channels, Junior Beams); Vitreous Marble and Slate Co., (Vitrolite for Bath and Shower Rooms); Crane Company (Plumbing Fixtures, Bath and Toilet Accessories); Folding Products Corporation (Sliding Door); Sedgwick Machine Works (Dumbwaiter); Alberene Stone Company (Porch and Hall Paving); The Peelle Company (Dumbwaiter Door); Claude Neon Lights, Inc., Erikson Electric Co., (Lighting); Protex Glass Company (Skylights); Ferro-Co Corporation (Toilet Cabinet); American Window Glass Co., (Glass); The International Nickel Company (Monel Metal Kitchen Sink); The Trane Company (Convection Heaters); J. W. Fiske Iron Works (Stairs); Westinghouse Elec. & Mfg. Co., (Electric Range, Sun Lamp, Refrigerator, Fans, Wall Facing, Meter); Bryant Electric Company (Wiring Devices); Pittsburgh Plate Glass Co., (Window and Table Top Glass); Garwood Engineering Company (Heating Unit); Janes & Kirtland, Inc. (Kitchen Cabinet); Celluloid Corporation (Panels of Toilet Cabinet); Overhead Door Company (Garage Door); Cehret Company, Inc., (Wire Guard); Mississippi Glass Co. (Opaque Glass); Thermax Corporation (Floor Insulation); Armstrong Cork Company (Floor Coverings); E. I. DuPont DeNemours & Co. (Chairs); London Dressers, (Closets); R. C. A. Victor (Built-in Radio); Simmons Co., (Beds); Josam Manufacturing Company (Drains); Flexwood Corporation (Wall Surfacing); Lewyt Metal Products Co., (Furniture Metal Work); Ten Eyck & Dahlander Flooring Co., (Sponge Rubber Flooring); Para Manufacturing Company (Shower Curtains).

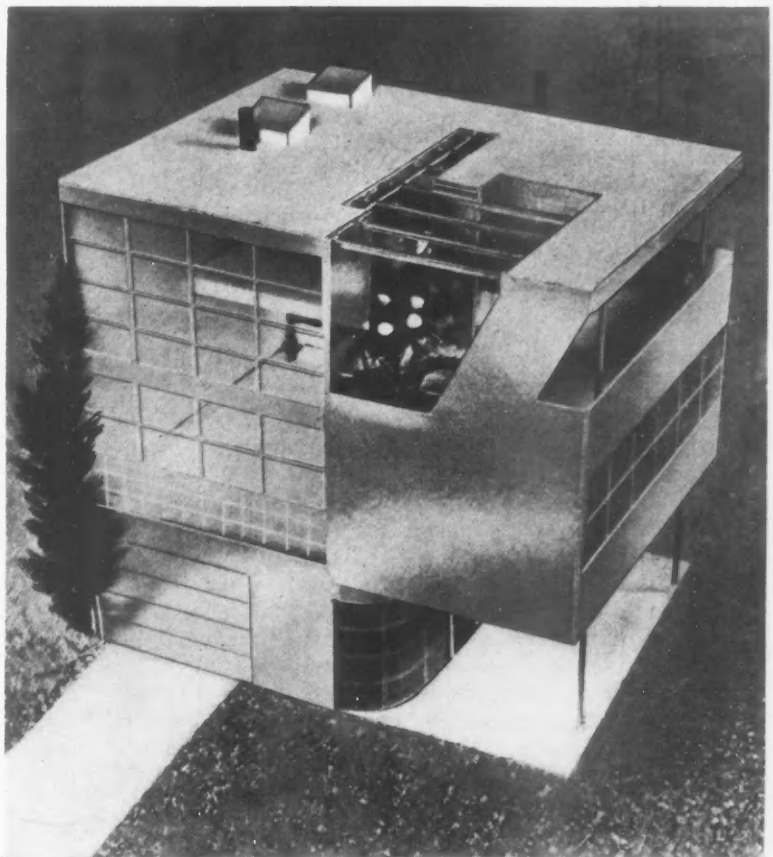
FLOOR ONE



in Residential Design and Construction

WILL HOMES LIKE THIS BECOME POPULAR?

This house was erected in full size (22' by 28'9" by 27' high) at the Architectural and Allied Arts Exposition, held in New York City, April 18-25. Six solid aluminum columns rise in full height of the house and to these are bolted cantilever beams. The framework is composed of steel units (girders, beams and studs), all bolted together. From the girders are hung the outside walls, composed of thin aluminum sheets, backed by an insulating board 3 inches thick. Steel windows, of ultra violet glass, extend the entire width of the house and one window unit is two stories in height. There is no cellar.



Designers

A. LAWRENCE KOCHER
and ALBERT FREY

is a door access to the dumbwaiter for sending the laundry bag to the lower floor.

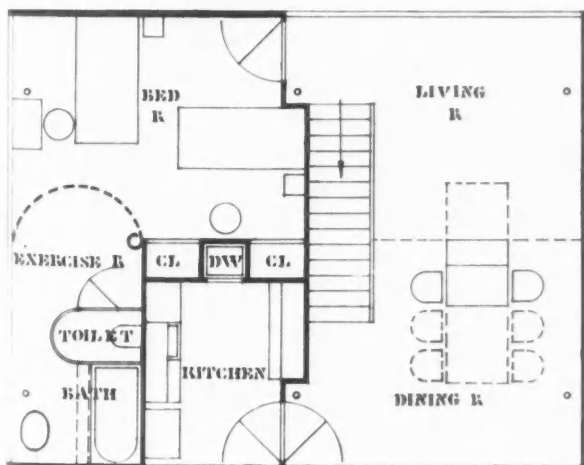
On the third floor is a library, terrace, toilet and shower room. The library is about half the area of the living room and is lighted by skylight. The roof terrace is partly covered and partly open to the sky. The architects have exposed the roof framing above the roof garden in a truthful manner.

The designers describe this creation as "The House for Contemporary Life." It is a serious attempt to

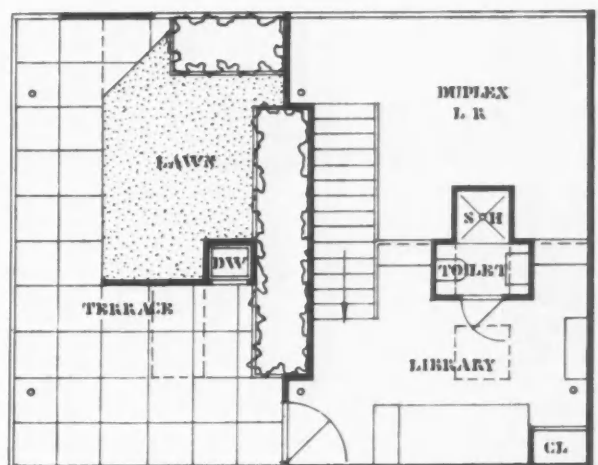
solve the problem of a low cost, single family dwelling which may be fabricated by mass production methods and assembled on the job. There are four important features with regard to this house which must yet be proven: (1) Its low cost (2) popularity of design (3) feasibility of construction method (4) livability under various climatic conditions.

It is reported that this house may be erected this summer in the vicinity of New York, so that these factors can be tested out.

FLOOR TWO



FLOOR THREE



The Construction Industry CAN and MUST Help Itself

Speakers at Meeting of American Construction Council Demand Definite Action to Revive Building Activity

American Construction Council Proposes Plan to Make Money Available for the Rebuilding of City Slums

THAT money *must* be made available for building construction was the dominant theme of an all-day session of the American Construction Council in the Hotel Biltmore, New York City on Monday, May 11. The time for action has come! was the thought directly or indirectly expressed by most of the speakers. At the end of the session Dwight L. Hoopin-garner, Executive and Assistant Treasurer of the Council, proposed a plan to finance the rebuilding of slums and blighted areas by raising \$250,000,000 to be placed in a construction investment fund from which equity money could be supplied for the rehabilitation or modernization of run-down tenement districts and the construction of new and economically sound housing. This proposal will be immediately referred to the advisory committee of the Council for consideration and action.

The proposal came at the close of a program of frank and outspoken discussion of the factors involved in the building depression, particularly the financial factor.

"Construction depends on real estate and real estate depends on financing," were the words of the first speaker, Philip W. Kniskern, Chairman Building Finance Committee of the American Construction Council and Vice-President of the Continental Mortgage Guarantee Company. In Mr. Kniskern's opinion, the building industry can't *create* a demand for its product but can do a great deal to promote confidence and understanding by bringing out facts, dispelling fear and hence encouraging people to act.

No Help from the Banks

The next speaker, Lawrence B. Cummings, Vice-President of the Douglas L. Elliman & Co., Inc., of New York, deplored the attitude of the banks in the present depression. "It is unfortunate," he said, "that bankers have so much power and so little understanding and sympathy with the problems of the real estate owner." The banker had withheld his help either through lack of knowledge or timidity, he felt. That real estate was one of the soundest investments in the country and that the actual facts regarding New York City office buildings and apartments did not warrant the extreme marking down of values that had taken place, was the main theme of Mr. Cummings' talk. Among 406 apartment buildings in New York there was only a 9.2 per cent vacancy while the normal average in ordinary times is 10 per cent, he said. Unsold co-operative apartments show a 2½ per cent vacancy, according to Mr. Cummings. Stories tending to show a high vacancy rate are misleading, because a survey of 300 apartments revealed a vacancy of only 8½ per cent. A fair market value in the appraisal of real estate

is essential if we are to get real estate on a permanent basis of prosperity, was his contention. A fairer attitude on the part of bankers and better appraising

were the two principles of his formula for relieving the depression.

"The construction industry is taking its licking lying down" was the challenge flung out by Oscar W. Rosenthal of Chicago, President of the National Association of Building Trades Employers. The building industry has always suffered itself to be led up to the peak of activity then dropped with a thud into the cellar of depression without lifting a finger to help itself, was his charge. He decried the relentless destruction of real estate values that had taken place throughout the country at large and said that the real estate bond had lost the confidence of the public although it was one of the best methods ever devised to bring small sums of money into use for large enterprises.

"I am decidedly against the idea of wage reduction in the building industry," said Mr. Rosenthal. "I do not believe that the question of wage reduction is involved in present conditions at all. Building costs are low now. Why depress existing values any further by drastically lowering reproduction costs?"

That there might have been a slight overproduction of buildings, Mr. Rosenthal admitted, but he looked upon a normal vacancy of 8 per cent to 10 per cent as almost necessary to provide reasonable selective possibilities to satisfy many different demands. That we must make money available for building construction was apparent, Mr. Rosenthal held.

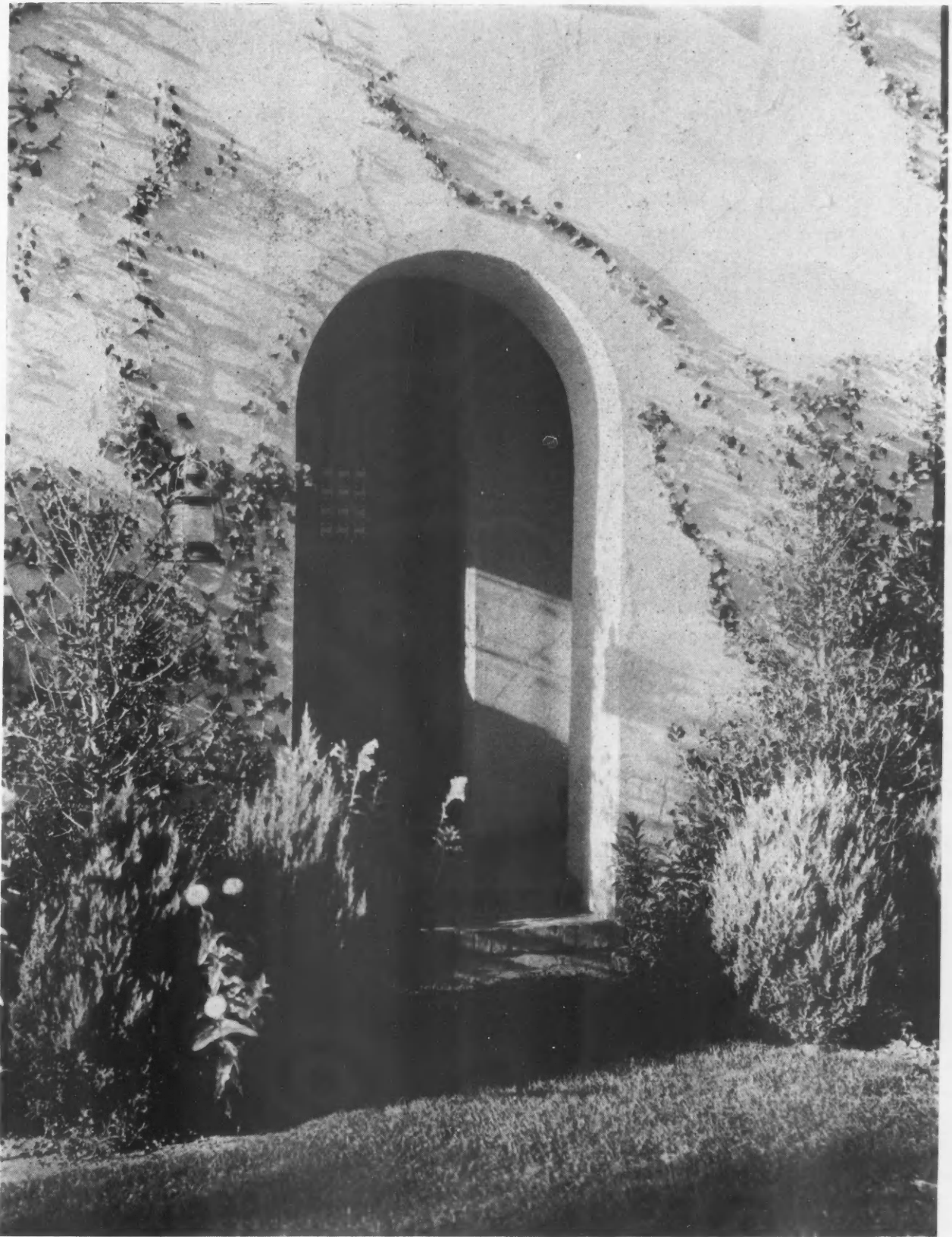
Since we can expect no immediate help from lending institutions, he proposed the establishment of a construction investment fund to be raised by selling shares to all elements in the industry including builders, architects, realtors, materialmen, employees. Only until the construction industry controls its own financing will it have control over its destiny, Mr. Rosenthal concluded.

A Big Potential Market

Charles H. Watts, General Chairman, National Advisory Committee on Slum Clearance and President of the Beneficial Industrial Loan Corporation saw no absence of a market for better shelter. His intimate contact with thousands of consumers had shown him definitely that 85 per cent of the people were strongly desirous of getting into better houses and of securing better living conditions through better homes. "This vast market is waiting for the builder," he said, "it remains for you to find a way to satisfy these human aspirations and needs."

The practical obstacles that must be overcome if slum

(Continued to page 120)



MOTT Photo

Inviting Homes

Twelve Designs of Popular Style
and Size That Carry a Wealth of
Suggestion for Those Who Plan



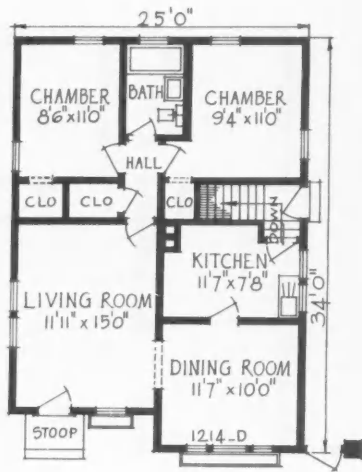
The Furniture Was a Happy Combination of English Abbey and French Provincial Periods, Expertly Done.

For the Annual Small Homes Exposition the House on the Opposite Page Was Completely Furnished Throughout.



An Exhibition Interior, Too

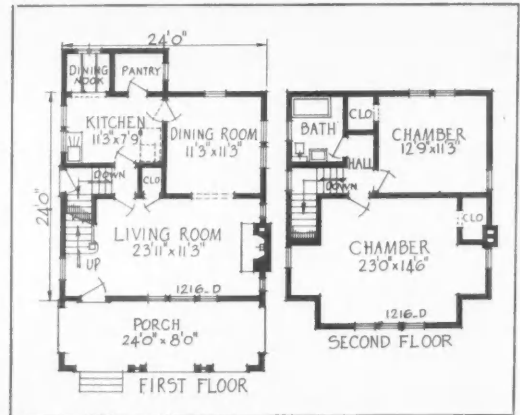
All the exhibition homes in the Annual Small Homes Exposition at Leimert Park, Los Angeles, were shown and offered for sale completely furnished but, if disposed of unfurnished, draperies and floor coverings were included in the price. This one complete with electrical installation, rugs and hangings, was priced at \$14,000.

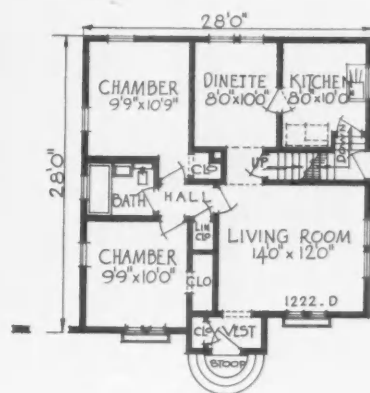
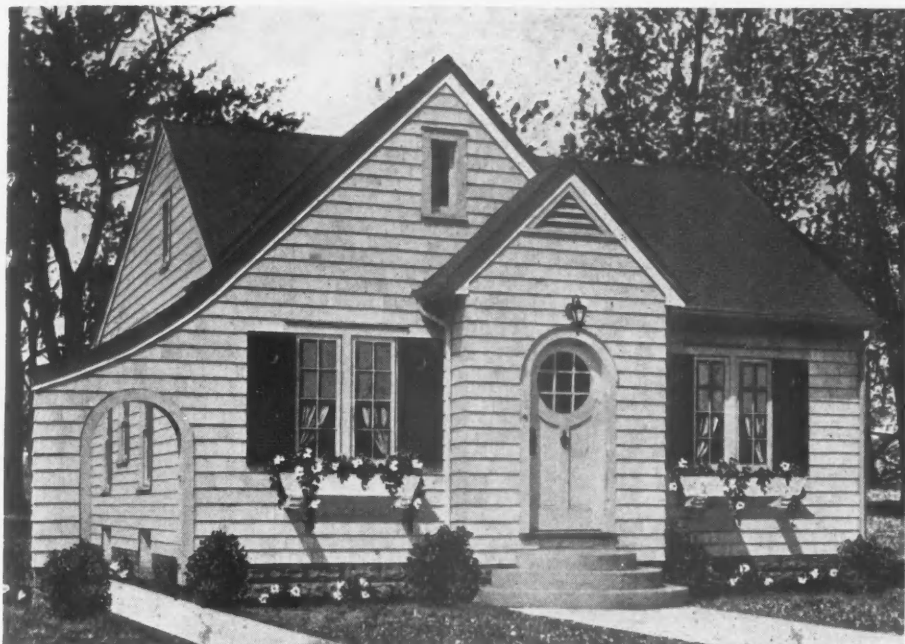


NATIONAL PLAN SERVICE Designs, Chicago

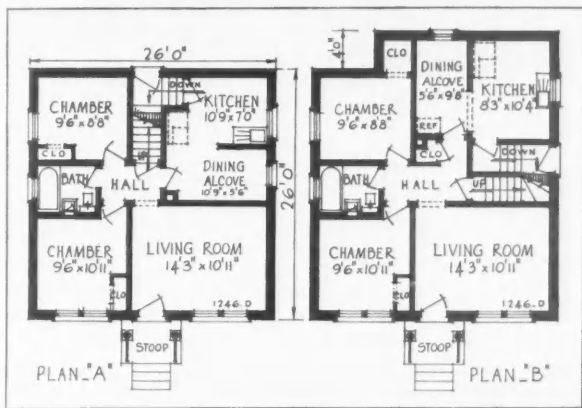
Sentiment, Not Size Makes the Home

When Recommending a Home Design to a Client or When Planning a Home for Sale, Remember the Real Money Value Today of Good Architecture. It is even more important in the small house than in the large.





NATIONAL PLAN SERVICE Designs, Chicago



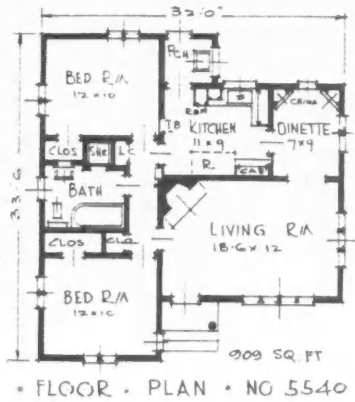
Welcoming Those Who Would a Home Acquire

How Much Better It Is to be Paying on a Little Home of Your Own Than Paying Rent! Such snug little places as these encourage building because of their low first cost and small maintenance and upkeep expense.



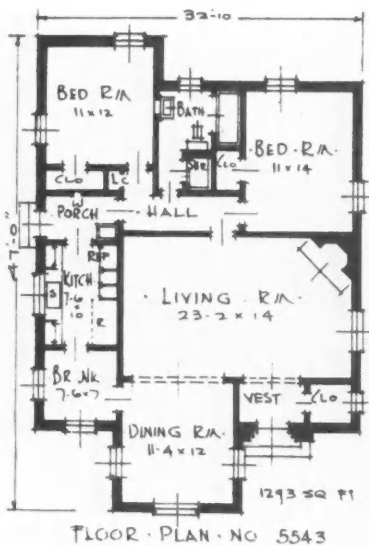


A. B. CLEVELAND Designs, Los Angeles



Popular in the West

Two California Designs Are Presented. Charm, dignity and restraint are exhibited above in this cottage home of five rooms. While its walls are sober its roof is of colored patent shingles. Cedar shingles may be substituted for these. Below we have a characteristic design. The living room of this brick home has the advantage of a beautifully arched window that overlooks a row of rose trees. The high, gabled roof has hand-split shakes for a covering.



Selling Homes On Approval

at "Mountain Lakes" New Jersey

MANY people prefer to try out a community before definitely committing themselves to the purchase of a home. Realizing that this is a reasonable and prudent attitude, the Belhall Company, developers of "Mountain Lakes," New Jersey, allow any prospective buyer to rent the home he likes for a tryout period, with an option to buy it if the tryout is satisfactory. At the end of this period the buyer is in a position to decide confidently—sure of his neighborhood, sure of his house, and no chance for after-regrets.

The developers further allow a substantial portion of the rent paid during the try-out period as a credit towards the purchase of the home, if the decision is favorable.

Such a policy—to allow a prospective buyer to apply the actual test of living to the house before he buys—reflects the full confidence of the developers that both the community and the house will stand up favorably.

The rent charged is 11 per cent of the listed price of each house. For example, on a \$12,500 house, the annual rental would be \$1,375, or \$114.58 per month.

The lease is a straight lease in the usual form for a minimum of two years, or a maximum of three years.

The lease carries with it an option to buy the house at the listed purchase price plus a leasing surcharge. The option may be exercised at any time during the term of the lease. The terms of purchase—mortgages, method of payment, etc.—are stipulated in advance in the option.

To rent the house instead of selling it, to carry it and take the risk of abuse, and finally to sell it after the value of the land has been enhanced by normal growth of values—all these things deserve compensation. The Belhall Company, therefore, adds a leasing surcharge to the option price. This surcharge amounts to 2½ per cent in case the option is exercised during the first year, and 5 per cent if exercised thereafter.

For example, on a \$12,500 house, if the option is exercised in the first year, the surcharge would be \$312.50, and the price would be \$12,812.50. If the option were exercised after the first year, the surcharge would be \$625, and the price \$13,125.

If the option to buy is exercised, the buyer receives a cash credit of four-elevenths of all the rentals paid during the tryout period. (From this credit is deducted the actual cost of repairs, improvements, alterations, re-decorating, etc. This should be negligible in a new house with careful usage.)

This unusual home development known as "Mountain Lakes" is located in Northern New Jersey—a chain of small lakes among the hills. It is being developed by the Belhall Company, and the sales and managing agents are Mansfield & Swett, Inc., both companies having their offices in an administration building on the property.



MOUNTAIN LAKES

Over 500 homes—over 3,000 people—are in this photograph!

Here the camera's camera is pointed toward the north, with Devilsville just in the picture at the upper left corner, and the Hackensack River Country Club golf course along the top margin. The Lackawanna Railroad main line is in the foreground, where it is climbing upward from the Jersey Islands to cut through the mountains on its way westward.

Between the railroad station in the center and the lake lies a high hill, (unfortunately most land looks flat from the air) and another even higher rises from the further shore of the lake and separates it from the valley beyond where the golf links are seen.

The swimming boats and canoe landings of the Mountain Lakes Club are seen at the end of the big lake.

Here is no real estate "development". Here is no summer resort "colony". This is an established, well-rounded community where suburban life is complete in every phase and enjoyed twelve months of the year.

The properties, offered by the Belhall Company, comprise no particular section of Mountain Lakes. An acreage to the original developers of the Borough, they offer properties scattered throughout the entire borough—streetfront lots—hill-top lots, new houses and used houses.

WHY NOT DRIVE OUT AND SEE IT?
Return the enclosed postcard for complete information and photos of Mountain Lakes.

MANSFIELD & SWETT
MANAGING AGENTS
2 Boulevard East Phone Boonton 1500 Mountain Lakes, N. J.

THE BELHALL COMPANY - OWNERS AND DEVELOPERS

At the present time "Mountain Lakes" consists of little over 500 homes, providing living accommodations for over 3,000 people. It is located within commuting distance of a number of Northern New Jersey's industrial centers and is not too far for commuting to New York City.

The policy of the owners of this development, started eight years ago, has been to build slowly and constantly, keeping slightly ahead of the demand. The style of the houses varies in architecture and size, no two of them being alike. On account of the curving roads, many irregular plots occur. The houses are placed so that the utmost in view is obtained. Most of the houses have attached garages.

Operate Own Architectural and Construction Departments

The developers operate their own architectural department and all plans are prepared by them. These, of course, are prepared in every detail in accordance with the restrictions. An owner may buy a piece of ground and make his own selection of builder and architect; the design, however, is subject to the approval of the developers. They employ their own engineering and construction crews.

The restriction providing that considerable space be left between adjoining houses has made this a community of small estates rather than a "town." Unlike



Home Building in Planned Groups—Expertly Designed, Economically Constructed and Soundly Financed—Offered to Buyers on Attractive Terms, is Growing in Public Favor.

the real estate pages are used and the copy is frequently changed. Signboards, circulars, form letters, etc., are also used.

Road directions are given in every advertisement, telling prospects how to reach this delightful development easily in their own cars.

When prospects visit the property they are, of course, shown the different houses for sale and the various attractions. As each house is visited a neat four-page circular is handed the prospect; this shows the exterior view, floor plans and plot diagram. A list of the different features is included, as are also prices and terms.

When the prospects go home they have in these circulars something tangible to refer to and do not have to depend on memory when discussing the different houses they visited. They can study the floor plans and figure out where the different pieces of furniture can be placed and how the garden may be laid out. This is one of the clever advertising features used.

Other booklets issued from time to time contain views of the neighborhood, airplane view, road map, etc. One of their recent advertising folders was printed in roto-gravure and contained pictures of the railroad station, schools, church, residences, and a number of views showing residents enjoying themselves at various sports.

The advertising used by the developers is prepared under the direction of United Service Advertising, Newark, N. J., who received first prize for their attractive display of Mountain Lakes advertising exhibited at a recent convention of the New Jersey Real Estate Boards.

most developments, there are no sidewalks; simply a well-paved country road. The roads slope to a center gutter and there are no curbs.

Contacts with prospects are made principally by advertisements placed in the different newspapers of the surrounding cities and towns. Small advertisements on

A little four-page folder, size 3 1/4 by 6 inches, is prepared to illustrate each home offered for sale. This is handed to prospects as they inspect the house, and gives them in convenient form for study all details of price, terms, room sizes, specifications, and location on lot.

Price and Terms
(House No. 649)

PRICE \$15,500

Cash	\$5,000
First Mortgage	5,000
Second Mortgage	5,500

The first mortgage is an installment or bank mortgage, requiring no amortization, and bears interest at 6%.

The second mortgage also at 6%, but for three years. The principal is payable in installments.

While the price is a strictly one-price, cash offer, we allow a 10% discount for any cash in excess of the above stated \$5,000. For example, if you pay all cash above the first mortgage, you would receive a discount of \$500, or 3% of \$15,500.

Every buyer has his own particular financial condition. The amount of cash immediately available, the present income, the expectation of investment or other income—all these things are taken into consideration and the mortgage and repayment adapted to fit.

In accepting the above purchase plan, therefore, we are illustrating a possible method. Other methods may be evolved in the near particular condition. We would be glad to discuss it with you.

Marshall & Swift, Inc.
Manager Agents
2 Boulevard East, Mountain Lakes, N. J.
THE BELMALL COMPANY - DEVELOPERS

DUTCH COLONIAL HOME
10 ROOMS, 2 1/2 BATHS
ON FULL-DEVELOPED LOT
MOUNTAIN LAKES
NEW JERSEY

First Floor Plan

Second Floor Plan

Details

1. Attractive front and rear porches
2. Full size picture window on front porch
3. Full size picture window on rear porch
4. Full size picture window on side porch
5. Full size picture window on side porch
6. Full size picture window on side porch
7. Full size picture window on side porch
8. Full size picture window on side porch
9. Full size picture window on side porch
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29. Full size picture window on side porch
30. Full size picture window on side porch

SCENERY PLANS COUNSEL: Show you the large room, entrance, stairs, well-placed and more.

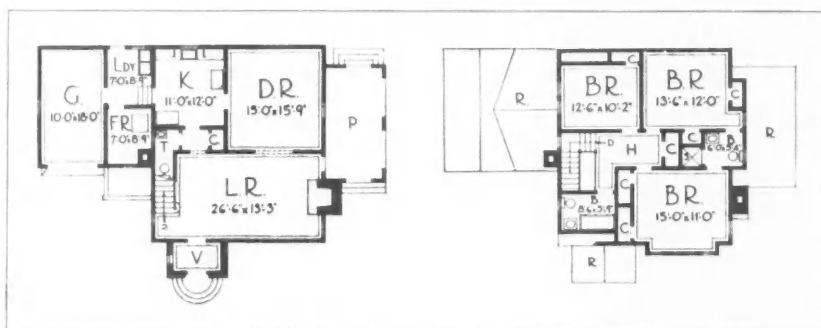
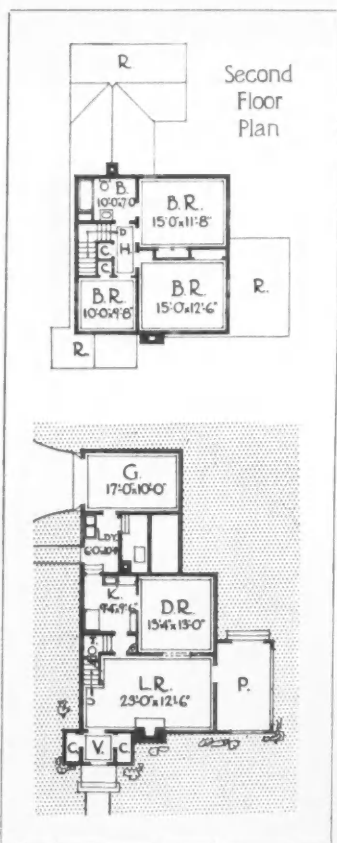
KENILWORTH ROAD

BEECHWAY



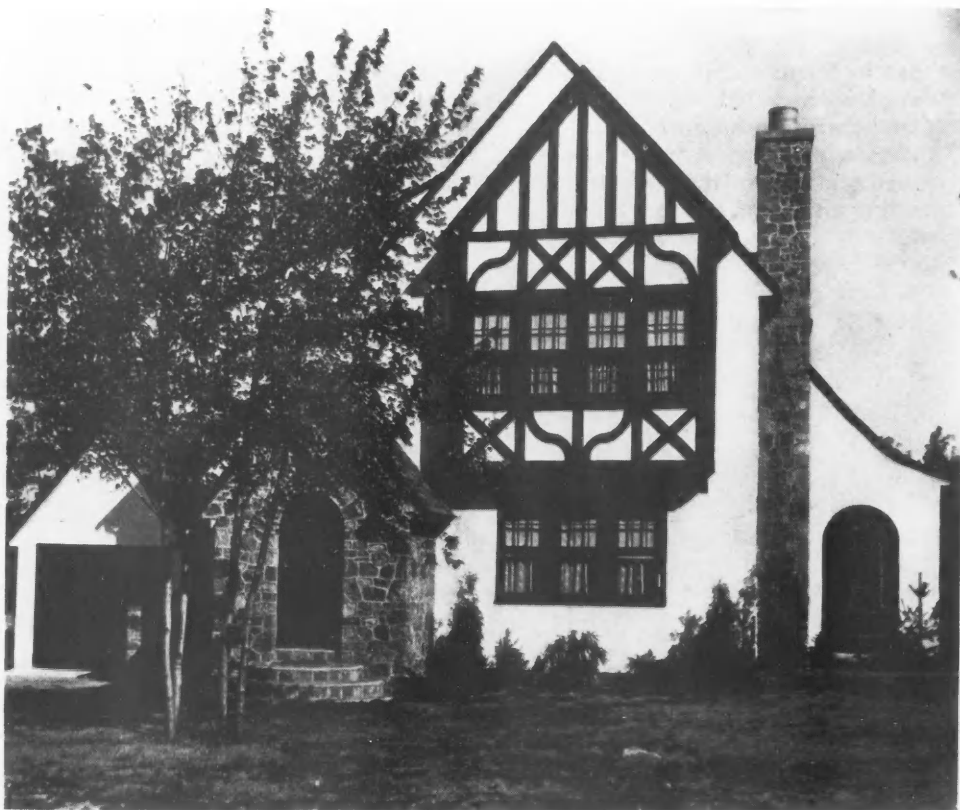
Colonial Type Home Built at "Mountain Lakes," N. J., to Sell at \$13,375, of Which \$2,875 Is Cash, \$7,500 Six Per Cent First Mortgage, and \$3,000 Six Per Cent Second Mortgage, Payable in Three Years Through Monthly Installments.

These Homes Designed and Built by The Belhall Company, Owners and Developers.



All-Season Homes

To Right Is a "Mountain Lakes" Home of Character, Six Rooms, Two Baths and Attached Garage, on a Plot 100 by 150 Feet, Built to Sell at \$17,250.

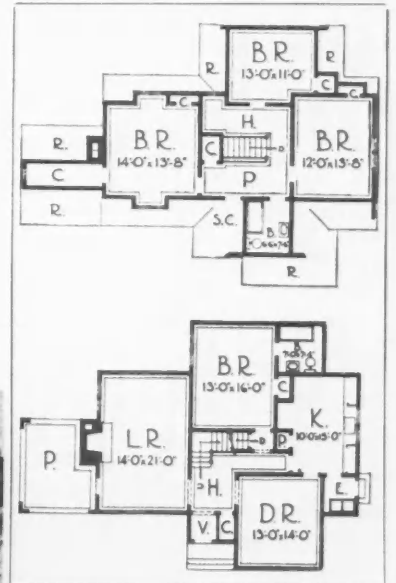
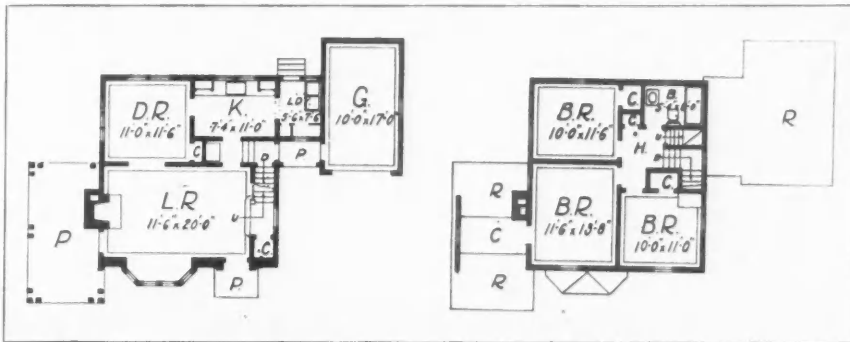


Old English Type Home of Stucco Construction on Metal Lath Built at "Mountain Lakes", N. J., and Offered for Sale on 250-Foot Lake Shore Lot at \$17,875. Ten per cent discount is allowed for any cash in excess of the regular down payment of \$4,375.



These Homes Designed and Built by The Belhall Company, Owners and Developers.

at "Mountain Lakes"



To Left Is Colonial Farmhouse Type Home of Field Stone and Frame Construction Built on a Wooded Site 90 by 160 Feet and Now Offered for Sale at \$13,500.

Cost Record System Big Asset In Murphey Co. Business

By LEO B. KEITH

Sec'y-Treas., John B. Murphey Bldg. Co.

NEXT to intelligent handling of men, the most important feature of a builder's business is his cost record system. To operate successfully, a builder must be able to tell at all times what it costs him to do the various types of building operations. That means recording construction costs as work is done and saving them in convenient form for reference and comparison.

Our system is as simple as we could make it, and can be described around three main points, namely: (1) accurate labor and material charges made frequently and allotted to individual job. (2) all charges recorded in one book which we call a "Distribution Book" each day as made. (3) all charges to a given job copied from Distribution Book on Cost Analysis Sheets and placed in special file pocket for that job, together with other data concerning job.

Taking up each of these points, it can be seen how simple our cost system is.

Foremen carry time books and keep track of labor on each project, which is given a number when started. The foreman's time sheet of the weekly payroll of which they are in charge is turned in every Friday night, and is immediately entered in the Distribution Book. Materials used on a job are signed for by foremen or truck drivers and priced at the office and then entered in Distribution Book. Nothing goes into a house without being recorded.

The Distribution Book is our own invention, and is a big volume which might be called a sort of diary of our daily business. In it we record all checks issued, all materials purchased, invoices and all other expenditures with the number of the job to which they are to be charged. This book is in addition to our regular book-keeping system and is merely a convenient method of

THIS IS THE SECOND of two articles by Leo B. Keith, Sec.-Treas. of the John W. Murphey Building Company of Tucson, Arizona, in which a careful analysis is made of factors in the success of this company which builds 100 houses a year. Last month Mr. Keith took up handling men; in this article he gives an especially worthwhile analysis of the cost record system used by his company.

putting down charges so that they can be available for assembling cost data on every job.

The third step in our system revolves around the file pocket (illustrated on opposite page) in which everything concerning a given job is placed. The file pocket is given the job number and placed in a regular file cabinet according to that number. It is a big enough pocket to hold all the papers, correspondence, permits, contracts, and documents concerning the job.

In this file pocket is placed the cost analysis of the job, made up from entries which have been recorded in the Distribution Book. This cost analysis of a job is really a very simple affair. We bind together about two dozen sheets of ordinary 8½ x 11 inch ruled note paper. Each sheet is numbered and then we turn to the Distribution Book and copy upon these sheets the entries concerning the job as found there. These entries are put down on the Cost Analysis Sheets just as they occur in the Distribution Book and give the data, page of Distribution Book on which they were entered, check or invoice number, description of charge (such as carpenter labor, brick, hardware, etc.), and finally amount of charge.

By the time a job is completed, our bookkeeper has entered all the charges made against it in the Cost Analysis Sheets. A few months after completion, when we are sure all charges are in, we divide the charges



The Murphey Company Office Occupies a Prominent Downtown Location and Is Very Attractive. Warehouse and shops are in separate location.

One File Pocket Holds All Data About the Job

WHEN A JOB is started it is given a number and a roomy folder like the one below; it holds, 1—Cost analysis sheets (see right) on which are entered all charges against job. Charges are then totalled under various headings to show what each type of work cost. 2—Building permits and certificates. 3—Water and utilities receipts. 4—Assignment of contract. 5—Report of inspections and progress. 6—Correspondence, deeds, abstracts, notes, etc.

Job #205

Cost Analysis of Job

F. J. James

Lot 14-Block 2 Old World Addition

1841 East Lee St.

Completed Nov. 25-1930

Analysis of Job #205				Page #2
PAGE IN DISTRIBUTION BOOK	DATE	CHECK OR INVOICE NO.	ITEM	TOTAL AMOUNT
167	1/25/30	259	City Elect. Dept.	3.40
169	1/31/30	270	Frank Turner Millwork	1.75
			Painter Payroll	5.25

Analysis of Job #205				Page #3
PAGE IN DISTRIBUTION BOOK	DATE	CHECK OR INVOICE NO.	ITEM	TOTAL AMOUNT
137	10/13/30	11075	Bricklayer's Payroll	76.49
139	10/13/30	"	Laborer's	9.49
140	10/13/30	11179	P. A. Ingraham Blacksmith	1.60
	10/20/30	"	Carpenters Payroll	99.00
			Electricians	8.00
			"	4.68

Synopsis of Cost on Job No. 205

Page #18

Category	Amount
WORKMENS PAYROLL	
Bricklayer's Payroll	371.54
Carpenters Payroll	732.13
Cement Finisher's Payroll	26.50
Electricians Payroll	41.00
Laborer's Payroll	180.00
Plumber's Payroll	35.49
SUB-CONTRACT WORK	
Adobe Making	113.00
Cleaning	37.50
Plastering	622.50
Sandsealing	45.77
Roofing	101.35
Sanding floors	33.55
Teaming & Excavating	30.00
MATERIAL	
Brick	113.00
Cement Blocks	None
Electric Supplies	37.50
Electric Fixtures	48.82
Hardware (including Ferrass)	362.70
Lumber	
Paint	
Plumbing Supplies	
Rock	

205 - F. J. JAMES
 LOT-14, BLOCK 2 - O.W.A.
 1841 EAST LEE ST.

Applied for Cess Pool Inspection	9/25/30
" " Plumbing	10/24/30
" " Garage	10/26/30
" " Final Dwelling	#3771 12/15/30
" " Final Garage	#28-166 12/15/30

This Expansable File Pocket Holds All Data Concerning a Job. It is given the job number and filed according to that number; thus all cost data, contracts, permits, correspondence and valuable papers are always easily available. Pocket fits a standard 9 x 12 filing cabinet.

into important classes of labor and material and figure up how much each one came to and how much the whole job cost. Dividing the charges can be carried out as far as desired; we keep ours fairly simple, as shown on the Synopsis of Cost Sheet on page 75. Under the title "Workmen's Payroll" we enter bricklayers' payroll, carpenters' payroll, cement finishers' payroll, painters' payroll, etc. Under "Material" we record the total cost of brick, cement blocks, electric supplies and fixtures, lumber, tile etc.

Thus after rearranging the charges under such convenient heads, we are able to make up a Synopsis of Cost on the job that shows us exactly what each type of work on that house cost. It is right there in black and white for easy reference, and after a number of houses have been analyzed in this way, we can tell pretty closely what a given operation on a certain type of house should cost.

This is where the value of the Cost Analysis comes in. It enables us to check our costs accurately from job to job. Frequently we get the foremen together and carefully analyze two jobs that are practically the same, and try to find out reasons for any variations in the cost.

If the painting cost, for instance, is higher on one job, we get the foreman to explain why, and that makes him investigate pretty carefully. He may find that the extra cost was the result of inefficient or lazy workmen; if so, he will see that the next job is done by the good workmen and the inefficient ones weeded out. Or we may find that an excessive finishing labor charge was due to a certain type of cabinet; we can then use the simpler type in future if equally satisfactory.

Our cost record is extremely valuable in checking what few sub-contracts we let. As work progresses and figures come in, we are able to check against previous figures and thus keep our costs within reason.

Of course, the Cost Analysis is especially valuable in estimating new work. Many of our houses are somewhat similar in design; very often we build several from the same floor plan with slightly different exteriors. With the Cost Analysis before us we can tell a customer almost immediately what a particular type of house will cost him. Actual estimating of costs is done by our architect, who is constantly in touch with material prices and new developments in building products.

On special work or installations we usually get an

additional check on costs by asking for estimates from several firms who might get the material or sub-contract order. All our office work is handled by a bookkeeper, an accountant and one stenographer.

In every way possible we keep our building costs down in order to keep houses within reach of the average buyer. We do not seek sharp corners that are in any way detrimental to sound building. Although Tucson has a new and rigid building code, our own practice is considerably above it. Our chief means of saving is continuous work and quantity buying. We build continuously and keep men constantly employed. They become expert at their given jobs and do them at a minimum cost.

Sound financial condition makes it possible for us to do quantity buying that is very profitable. Long ago John W. Murphey discovered the advantage of co-operating with one reliable building supply dealer. At the time he started in the building business he commenced purchasing of the O'Malley Lumber Company, and has continued his friendly relations with the company to this day. By dealing with one reliable firm, your success becomes more or less intermingled with it, and the continued co-operation becomes mutually profitable.

We buy metal lath in carload lots and stock it in our warehouse, with only the expense of unloading it. In some single months during the past year our purchases have been as high as five carloads of cement, and approximately the same quantity of roofing tile, brick, etc. There is no doubt we have a real advantage in being able to buy and store materials in large quantities.

To give our houses distinction, we try to obtain exclusive use of many specialties, electric lighting fixtures, iron work, etc., which we also get in quantities, and which appear only in our houses.

Most of our work is done by our own men, but occasionally we let sub-contracts. Floor sanding, for example, is done by Frank Hagel, who has splendid equipment and does the work better and cheaper than we can do it ourselves. Plastering too is done by a sub-contractor, Martin Pomeroy, who does the best work in town. In this very dry climate plastering is ticklish work; it is very hard to avoid cracks, and the work of an expert is required.

What makes a building business succeed? I have named *handling men and cost records* as two most im-

(Continued to page 118)

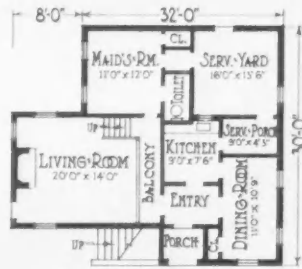
PAY ROLL WEEK ENDING		JOHN W. MURPHEY BUILDING COMPANY		Labor Payroll														
5/16 1921		211 N. 4TH AVENUE. TUCSON, ARIZONA																
NAME	CLASS	S	M	T	W	Th	F	Days	Hrs.	Rate	Amount	Check	pl 266	pl 268	pl 264	pl 264	pl 272	
R.A. Smith	Lab.	X	X	8	8	8	8	8	5	0	80	40.00	✓	40.00				
E. Porter	"	X	X	8	8	8	8	8	5	0	30	15.00	✓	15.00				
L.P. Hayes	"	8	X	10	8	8	8	8	6	2	50	21.88	✓	5.25	9.63	1.75		5.25
S. Zwick	"	8	X	8	8	8	8	8	5	4	30	16.50	✓		10.50			6.00
H.F. Clark	"	4	X	10	8	8	8	8	5	6	30	17.25	✓	15.38			1.87	
H.F. Cook	"	8	X	8	8	4	8	8	5	4	30	19.25	✓		12.25			7.00
V. Conner	"	8	X	8	8	4	8	8	5	4	30	19.25	✓		12.25			7.00
J. Fisher	"	8	X	8	8	4	8	8	5	4	30	16.50	✓		10.00			6.50
J.C. Morrison	"	8	X	8	8	Pk			3	0	250	7.50	✓		7.50			
J. Hargis	"	8	6	8	8	8	8	8	6	2	20	12.00	✓	4.00		4.00	4.50	
M. Crabbe	"	4	6	8	8	8	8	8	6	2	20	12.00	✓	3.50		3.00		6.00

J. James
Labor Foreman

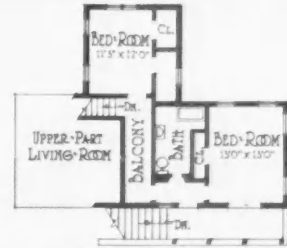
A Payroll Report Similar to This Is Turned in by Each Foreman on Friday Night; Men Are Paid Saturday Noon. Each job is charged for work done on it so that costs can be computed.



This 2-Story House Was Sold with Lot for \$12,000. Plans above, right.



• FIRST FLOOR PLAN •

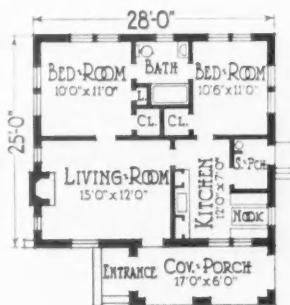


• SECOND FLOOR PLAN •

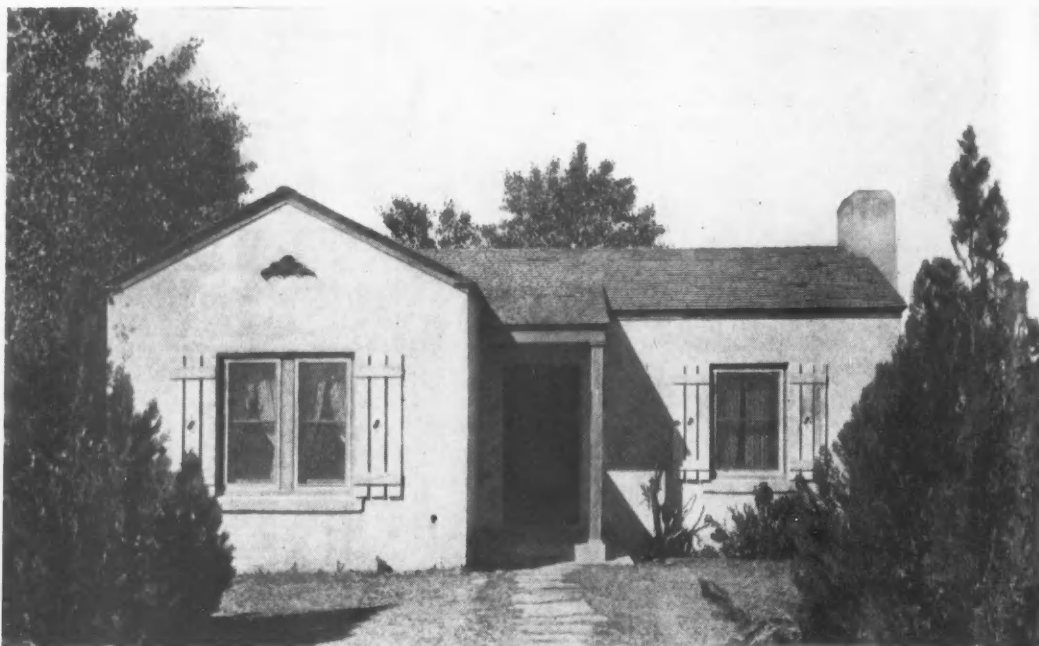
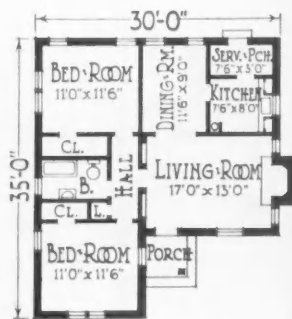


Including Lot, This House Sold for Only \$4,100 (Plan left).

MURPHEY HOMES



Two Attractive Murphey Built Houses Sold at the Low Figure of \$7,400 (above) and \$10,000 (left) including lot on important Tucson thoroughfare.



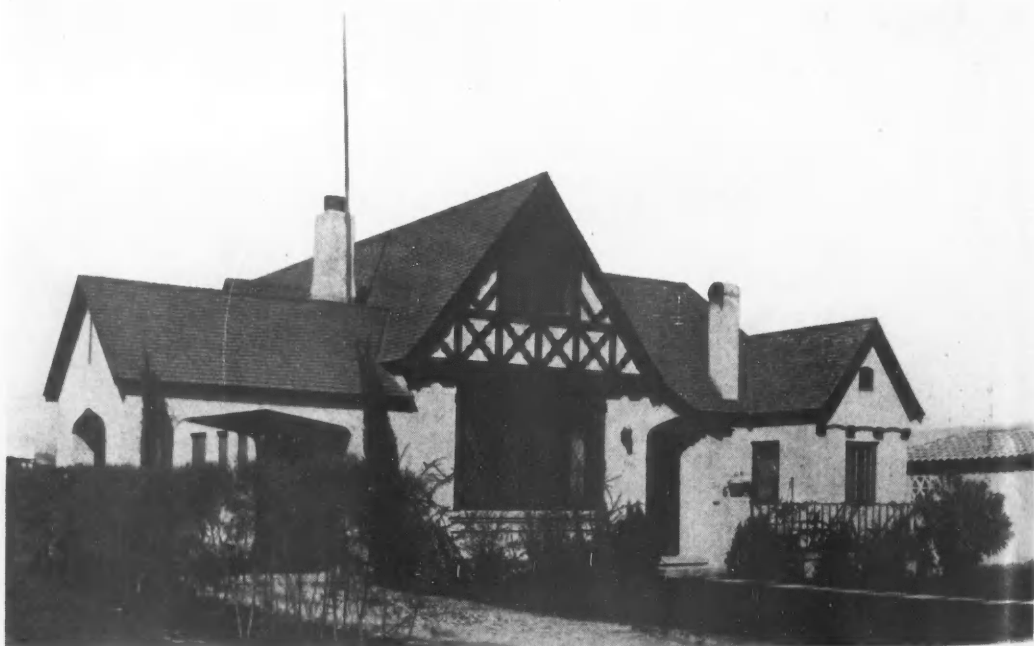
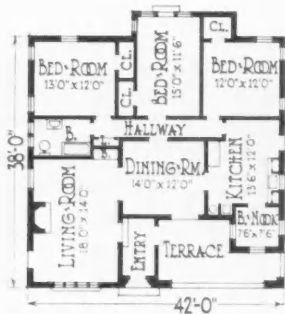
A Small House of Pleasant Appearance and Good Plan Priced at \$4,450 with Lot. The compactness of an apartment has been achieved without sacrifice of comfort. Exterior is of dark gray stucco.

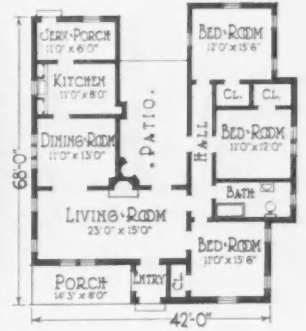


Six Murphey

An Unusual Exterior for This Region, But Well Liked. Sale price was \$8,800 with lot. The central hallway, terrace, well placed breakfast nook and attractive living room are good features.

This Is a Popular Style Sold with Lot for \$8,800.





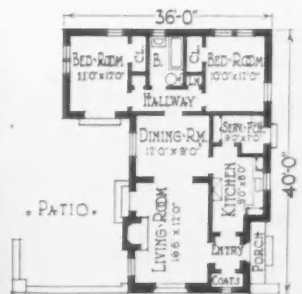
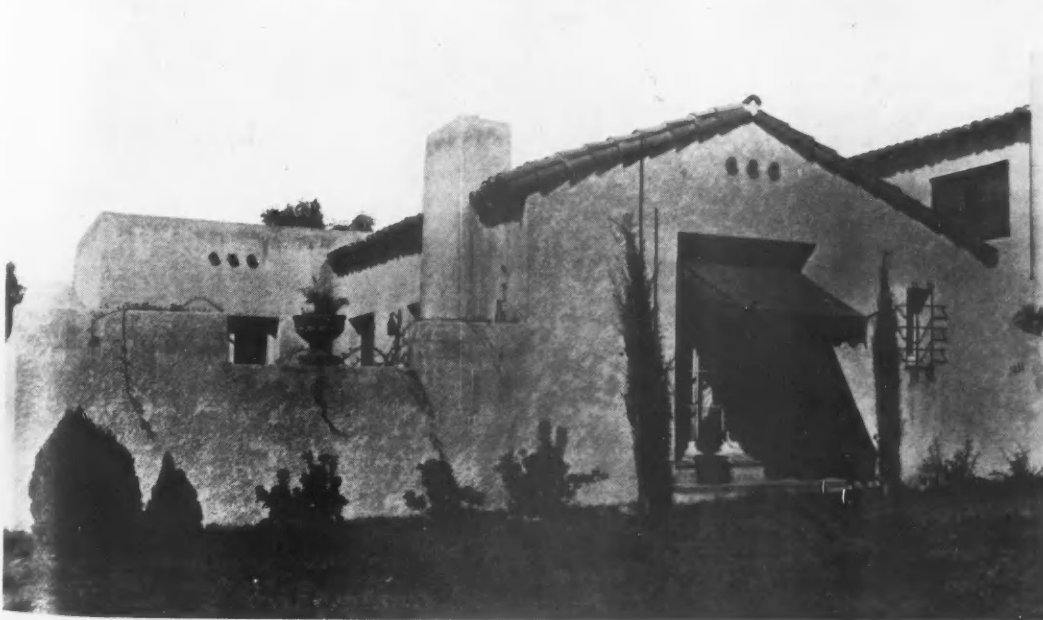
This Is an Especially Popular Type in Tucson and Is Inexpensive, Selling at Only \$6,615 with Lot. The pleasant porch and small patio with outside fireplace are desirable; also small back porch.

Built Houses

Priced at \$6,800 with Lot, This House Has Many Desirable Features. Large window, patio, compact kitchen are good. Heating plant is located in small porch off of kitchen, a common practice.

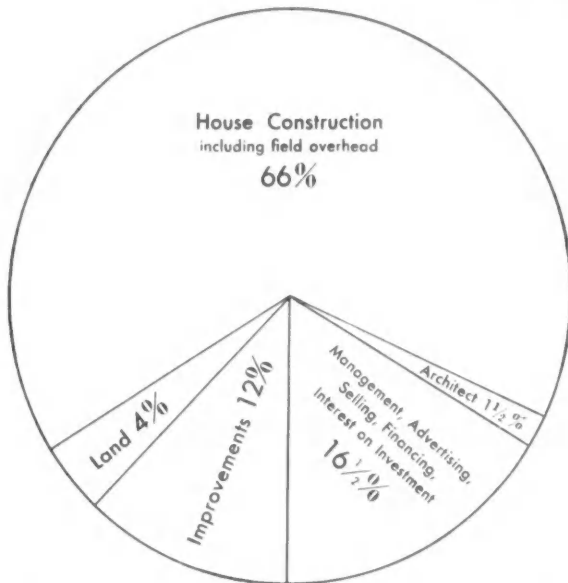


Detail of Garage Wing, Country Home.



THE PRODUCTION OF

Critics of the Building Industry Say That Builders Must Reduce the Cost of Homes to the Point Where the Average Man Can Buy One. How? Must We Develop Some Radically New Method of Construction? Must Financing Costs Be Reduced? How About the Cost of Land? What Can the Individual Builder Do to Cut His Costs? These and Other Phases of the Problem Will Be Taken Up in a Series of Three Staff Articles to Give a Broad View of the Important Trends in Low Cost Housing Today



Division of the Construction Dollar in a Group of 20 Homes in a Housing Project on the Eastern Seaboard. Construction has not been skimped, a good share of the dollar has gone into the house itself. The other costs, that account for the remainder of the dollar, are taken up and considered separately in this article.

THE INDUSTRY'S BIGGEST PROBLEM

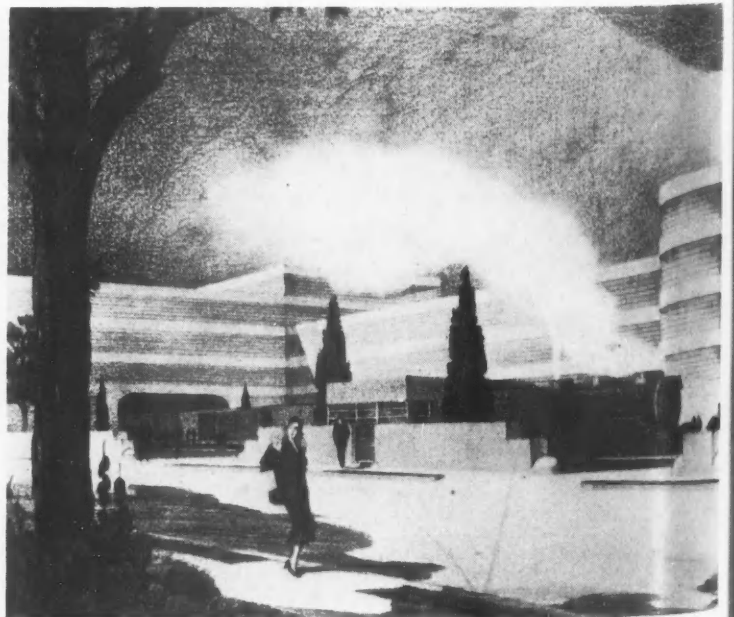
The whole question of low cost housing is of interest to every builder at the present time. It is a problem that must be approached from every angle, no factor can be considered except in the light of other elements involved. AMERICAN BUILDER AND BUILDING AGE will treat this subject comprehensively in a series of three articles, of which this is the first.

In order to give a good general picture of the factors involved in housing costs, the author deals this month with land values, improvement costs, financing charges and taxation. The second article of the series will take up revolutionary methods of construction that have been advocated as a solution of the problem and will also deal with the practical problems that builders have to face in satisfying popular demand. The third and final article of the series will analyze the ways in which builders can reduce costs and will describe and illustrate successful projects where these methods have been used.

IN an Eastern town of about 50,000 inhabitants, a builder was approached by a prospect who wanted a house of six rooms and a bath with sun porch and garage. The builder showed him one of his houses and quoted a price of \$10,500. "No," the buyer said, "I want to get a house for \$7,500." A few days later, the builder talked with another prospect who wanted a \$7,500 house for \$5,000. At the present time this builder would be very grateful to any magician that can tell him a way to produce a \$10,000 house for \$7,500. In this sense, he is very much interested in "low cost housing," but he is not talking the same language as the housing "expert". The latter is interested in housing, the builder is interested in houses. One is interested in "the public"; the other is interested in certain definite prospects. One is interested in getting housing down below a certain price range, say \$5,000; the other is interested in meeting a prevailing market price over several ranges of cost.

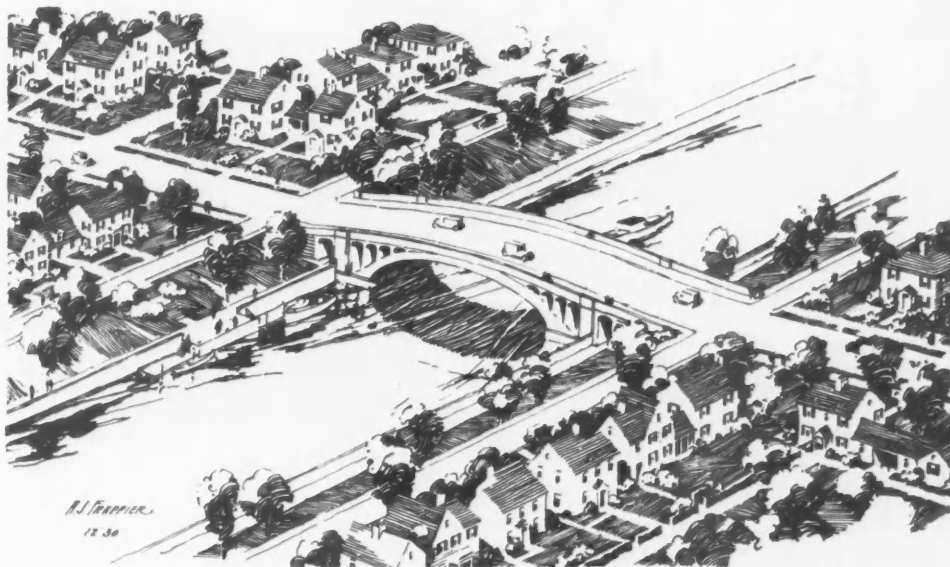
Yet there is no one that has really a greater stake in the production of low cost housing than the builder. He is more interested than anyone else in opening up the great potential market for homes that lies in the lower price ranges. Lately, he has been hearing a lot of talk about reducing building costs in order to get the price of homes down where people can buy them and he has seen a lot of statements in the public press which make him pause and wonder whether or not he is in imminent danger of being put out of business by some factory or factories where homes are produced like Ford produces automobiles.

He picks up his evening paper and reads: "CHANGES LOOM IN BUILDING COSTS." Reading further he finds that this headline refers to a meet-



LOW COST HOUSING

Is It Possible to Produce Single, Detached Homes in Good Surroundings at a Price That the Average Man Can Afford? The sketch on the right shows a proposed development, by the Regional Plan of New York, for the low-lying Hackensack Meadows near New York City. A system of canals and parkways is part of the proposal. One way to cut down home costs is to get cheap land near large cities by reclaiming swamp and meadow areas.



Courtesy Regional Plan of New York.

ing of an international bureau of research in the city of Brussels, Belgium. "New building methods and materials," it says, "will bring costs of construction down to levels that will attract capital into much-needed building fields." And these new methods and materials are expected to evolve from the creation and operation of the international bureau of research. "Maybe they will," says the builder, "but meanwhile we must produce something with what we already have and what I want to know is, how am I going to do it for the prices people want to pay nowadays? The trouble is that money is too tight! People can't get it and what they do get costs too much. The high cost of financing is to blame!"

"Oh, yes?" queries the banker, "well, let me quote you a little piece from a news letter I received recently from a big New York bank. Here it is:

"The methods of building small houses have not kept pace with the development of mass production in other lines or with methods in other kinds of building operations. The mail order houses have made a beginning in mass production of building parts; structural steel man-

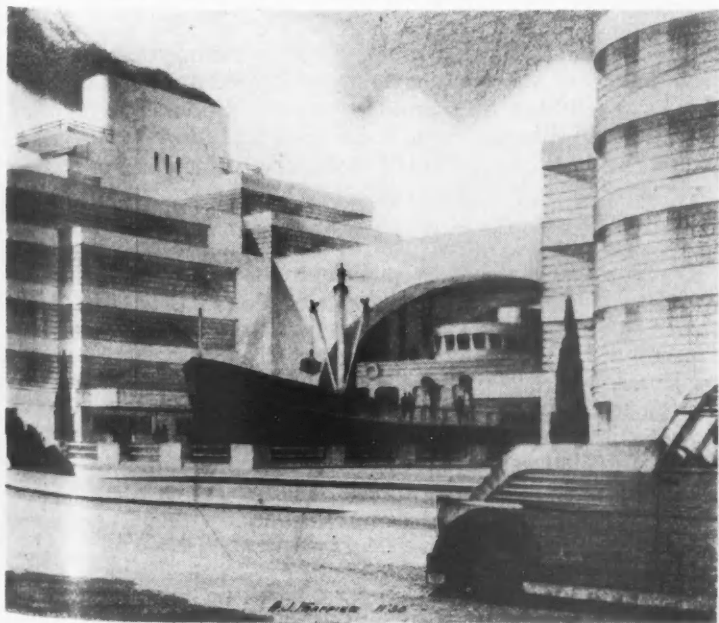
ufacturers are experimenting with this class of materials, and it may be expected that rather radical innovations will be developed. It is not too much to say that the greatest boon that could come to the mass of wage workers would be the development of methods by which their housing accommodations could be decidedly cheapened and improved.' Now, Mr. Builder, I guess that puts the blame where it belongs!"

"Both of you are wrong," chimes in the housing "expert." "The trouble is that we haven't considered this problem of shelter in all its phases. Take the cost of land, for example, a factor that neither of you have mentioned. Land values are inflated, in many sections, and until we reduce the burden of taxation on the land, until we plan our cities as a whole, learn to save money on street improvements by subdividing efficiently and get the price of home sites down to where people can buy them, the production of low cost houses will be indefinitely postponed. True enough, the factors you mention are important but they are important, not by themselves, but only as part of the whole problem. I cannot emphasize too much that we must consider this problem in the light of all of its aspects and not merely a few of them."

And we have to admit that Mr. "Expert" is right for once. We can easily get a twisted picture of the situation (and a great many people have) by laying too much emphasis on one element or factor to the exclusion of other factors. To get a well-balanced view, we must consider not only the high cost of mortgage money but also the cost of land, the cost of construction, the cost of improvements, the cost of selling, the cost of advertising, the cost of everything that goes to produce the finished home, and put all these factors in proper perspective.

It is quite understandable that individuals or organizations in search of a solution to the housing problem

Radical Changes in Construction Methods, Materials and Design Are Predicted for the Future. Industrial and commercial buildings will change first, it is said, then apartments, then houses. An ideal industrial city, proposed for Hackensack Meadows, New York, by the Regional Plan of New York, is envisioned on the left.



Courtesy Regional Plan of New York.

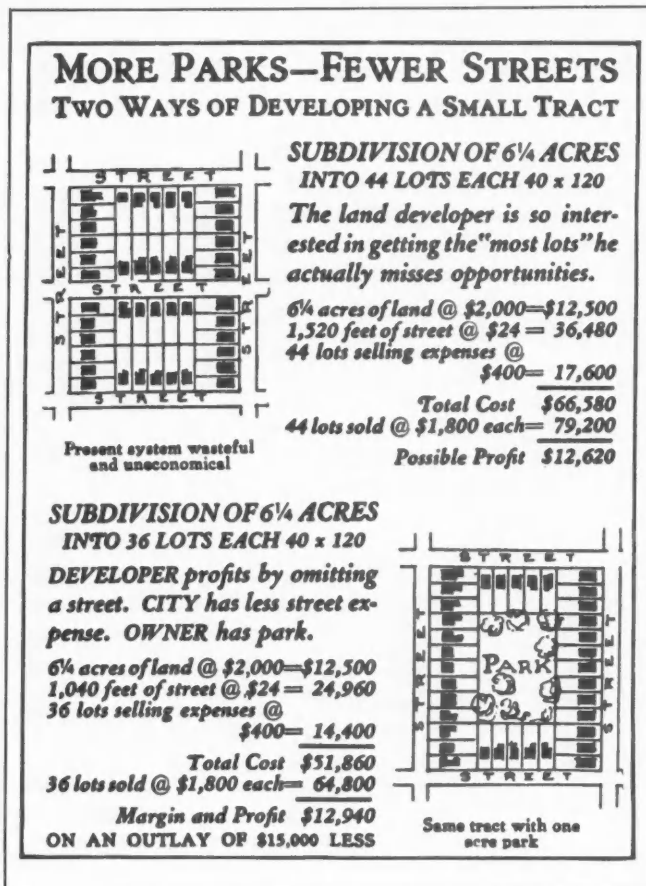


Chart by Henry Wright, Architect and City Planner, Showing How Land Costs May Be Cut by Efficient Subdivision.

should be inclined to throw more stress on one or two of these factors than upon the others. But it is time that the public understood that these housing questions are not solely a problem of cutting down the cost of construction, as if the builder were to blame because homes cannot be bought as cheaply as autos. Other factors are equally important—the cost of the land on which the house is built, the cost of the mortgage money, the cost of the improvements in the street are three of the most important.

Let us list these factors so as to make sure that we do not neglect a single one of them:

1. Cost of Land
2. Cost of Improvements
3. Cost of Financing
4. Cost of House

Let us look into the relative proportions of these factors of cost. One significant thing about them is that they vary so widely:

Land may cost from	5%	to	10%	of the total
Improvements from	5%	to	15%	of the total
Financing from	2%	to	12%	of the total
House itself from	50%	to	70%	of the total

If this table is correct, or even only approximately correct, it will be immediately seen that, although the cost of construction is the largest item of expense, the other parts of the total cost are so substantial that they can, by no means, escape from taking their share of any blame attached to the high cost of homes.

When one of these factors becomes abnormally high then one of the other elements suffers and it is usually construction. Here are two examples that illustrate this clearly:

\$10,000 House—Well Financed
(\$6,500 First Mortgage, \$3,500 Cash)

Cost of land (including improvements)	\$2,000	20%
Architect's fee	200	2%
Builders' profit	1,000	10%
Insurance	90	0.9%
Cost of financing	195	2%
Cost of house	6,515	65.1%
	\$10,000	100.0%

\$10,000 House—Badly Financed
(\$6,000 First Mortgage, \$3,250 Second Mortgage, \$750 Cash)

Cost of land (including improvements)	\$2,000	20%
Architect's fee	200	2%
Builders' profit	1,400	14%
Insurance	90	.9%
Cost of financing	860	8.6%
Cost of house	5,450	54.5%
	\$10,000	100.0%

In the house that was well-financed, note the much greater value given to construction.

Now let us consider these factors of cost in greater detail. Since land is so often bought with improvements installed we will consider the cost of the land and the cost of improvements together, and will also take up under this heading the question of taxation.

Next we will consider the problem of financing, and finally, the question of construction costs.

First, the problem of Land and Improvement Costs.

The Cost of Land and Improvements

If it is true that the "average" family in this country cannot afford to pay more than \$500 a year for housing and less than \$5,000 for a home, it is apparent that the proportion of this amount which can be devoted to the cost of the land is not very high.

One solution of this problem that has been advocated is for municipal authorities to take over land, particularly in the suburbs and outlying districts, as is done in some cities of Europe, put in improvements and then distribute it at non-speculative prices through an intermediary channel.

But this is a semi-socialistic solution. All along, in connection with this whole problem, we are confronted with the necessity of finding a good solution of the question on a private business basis or of adopting some more or less disguised form of governmental assistance. Which shall it be?

There are students of the problem who say that it must be the latter. Let us hear what the New York Regional Plan Committee has to say on this score: "Looking ahead, we doubt if public authorities can avoid the necessity of acquiring and developing vacant land as a means of securing good conditions for the cheapest dwellings. Such acquisition and development could be carried on sound economic principles. We believe that this . . . policy . . . is more tenable and financially sound as a government activity than house building. A great deal of valuable assistance has been given to housing by public purchase and development of land, where the building of houses has been left to private operators (italics ours) including prospective home owners aided by building and loan associations."

But, in order to reduce the cost of home sites by what is felt to be the more preferable method,—private business initiative,—we turn then to another possibility which, to date, seems to offer the best point of attack, i.e., the efficient planning of land subdivision so that the utmost value is secured from the land without overcrowding it.

For a long time, Henry Wright, one of the country's most expert city planners and architects, has been point-

ing out that most existing methods of subdivision are economically unsound and he has proved by a series of charts that the cost of home sites in any particular area of land can be reduced, and the environment made much more attractive, by subdividing scientifically. His plans have been materialized in the city of Radburn, New Jersey, The Town for the Motor Age, where the land is divided into large blocks with the perimeters intensively used for residences and with central cores of open park land at the most economical location.

The cost of land and improvements on the basis of this system of subdivision would be approximately 15 per cent of the selling price of the house. It is true, of course, that in some subdivisions the cost of the land and improvements is as low as 10 per cent of the selling price of the house but, in such cases, not all the improvements are offered that are provided in the scientific method of subdivision.

But how are we to apply such methods of subdivision over the country as a whole? The only method that has been found so far is the attempt to educate municipalities and developers through city planning studies and propaganda.

City plans, zoning regulations that will control densities on central portions, control of land speculation, object lessons for developers in model communities,—all have been held up as ways and means of helping to reduce the cost of land.

Meanwhile, such factors as high taxation, land speculation, inefficient subdivision, inadequate control of population densities, all contribute to the high price of land for the average builder who buys one or two lots at a time, and for the average home owner who wants to buy an ordinary size lot, 50' x 100' or thereabouts.

Shrewd Land Buying

Under present conditions, there is really only one way that the average builder or home seeker can cut down on the cost of his land and that is to use good judgment in the selection of a plot, area or site. Because he knew when and where to buy, many a builder has procured land at a comparatively low figure for later sale or for erecting homes for sale. "Stick to the territories with which you are familiar", is the advice that one successful real estate man gives. "Buy property which has several possible uses. As a rule it does not

pay to gamble in real estate and for that reason it is usually better to wait until public improvements are well under way, rather than to buy too far in advance and face the possibility of having to wait years to get your money back. Develop your property gradually and sell as you go along, for by following this procedure you can keep your overhead charges and tax bills down."

Close watch of suburban development and population trends, continual lookout for bargains in favored residential territories, is the only means that the average builder can use to keep down the cost of the land he buys. But it is surprising what alert watchfulness and intelligent study of residential properties will do for the builder who takes the trouble to look for value.

Excess Taxation on Real Estate

Excess taxation on real estate not only affects the original price for a home site but militates against the maintenance of a home on the property after it has been bought.

Although less than 20% of the money spent by the average town or city government may be expended for the welfare and benefit of real estate 80 to 90% of the cost of the local government if loaded on the shoulders of the man who is a home owner.

Obviously, the burden of taxation is an important factor in the problem that we are discussing. What is being done about it?

In a recent number of AMERICAN BUILDER AND BUILDING AGE there was reported the formation of a countrywide organization composed of real estate interests and property owners that are fighting for a fair distribution of the tax burden throughout the nation. Local organizations in this national movement have been active for some time and, unquestionably, they will eventually be successful in modifying, to some extent at least, the load of taxation now held by the home owner. In the meantime, there is the ever-present cost of financing.

The Cost of Financing

Two years ago, Stephen Yates, past president of the New York State Association of Real Estate Boards made a survey of his section of the country. He found a class of buyer who wanted a home but wasn't in the market for one because he couldn't get a financial plan

(Continued to page 116)

Aerial View of Radburn, New Jersey, The Town for the Motor Age, Where School Children Do Not Have to Cross Streets to Go to School and Where the Land Has Been Subdivided to Give a Maximum of Open, Park Area with a Minimum of Expenditure for Paving, and Other Improvement Costs. Each house is pro-rated for its share of public improvement and park costs. Financing costs are very low, the buyer needing only 10 per cent equity. This community is the creation of the City Housing Company, operating on a limited dividend basis under the laws of New York State.



Courtesy City Housing Corporation.



PRIZE WINNING APARTMENT

GRAND STREET CO-OPERATIVE APARTMENTS

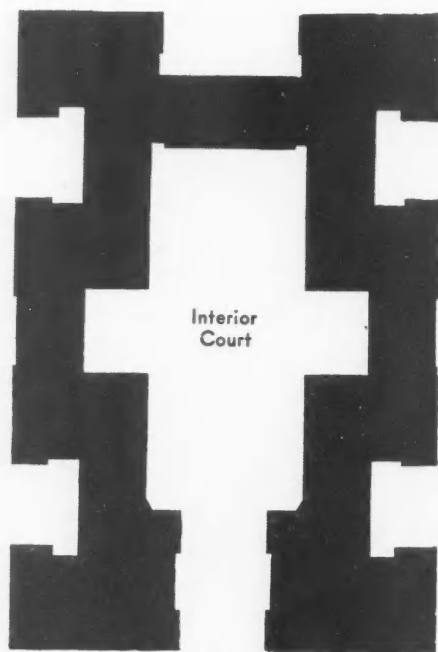
GRAND STREET, NEW YORK

Winner Apartment House Medal of New York Chapter, American Institute of Architects

AMALGAMATED DWELLINGS, INC.
Builder

SPRINGSTEEN & GOLDHAMMER
Architects

General excellence in design and plan determined the award of an architectural medal to this apartment. The dwellings are six stories in height, including basement, with stores on one street front and community rooms in the basement under the stores. The structure is built around a large interior court which is improved with a fountain pool, grass plots, planting of shrubs and walks.



BLOCK PLAN

Every room has a desirable exposure, either with a street view or a view of the great central court. The distribution of open spaces in the plan is a commendable feature, outer courts having been so arranged that they open alternately towards the street and the large central court. Only 60 per cent of the ground area is covered by the apartment buildings, assuring ample light and air for the occupants of every suite.

(See following page for construction data)



TYPICAL FLOOR PLAN

The portion of floor plan shown here represents one quarter of the development, which has a total area of 35,800 square feet. There are no one, or two room, apartments in the building; the number of rooms varies from three to five, and every layout is planned for comfort and convenience, both from the standpoint of size and arrangement. The utilization of corridors and foyers in the plan permits circulation within individual apartments without the necessity of passing through any one room.

(See following page for construction data)



"Skill in handling materials in masses" is shown in this apartment. Judges praised the architects for "the complete elimination of meaningless ornament and the sincerity with which they have used the essential elements of design to achieve esthetic results". The handling of the brick work is commended, "particularly the treatment of the horizontal courses of projecting brick and the use of the horizontal bands of stucco at the corners." The architectural style combines brick and stone in a manner reminiscent of recent Swedish and Viennese work.

GRAND STREET CO-OPERATIVE APARTMENTS

Planned and Erected Under the New York State Housing Law

THE medal-winning apartments, described and illustrated on preceding pages, were constructed under the provisions of the New York State Housing Law which exempts such undertakings from local taxation for a period of years.

"Primarily, the purpose of the undertaking is to furnish inexpensive housing to wage earners who are able to make a minimum cash investment of \$150 per room on a total equity of \$500 per room and pro rata equity in the ground," says George W. Springsteen, head of the architectural firm that designed the buildings. Purchasers who are unable to pay the entire sum of \$500 per room have been financed through a fund created by Lieutenant-Governor Herbert H. Lehman and Aaron Rabinowitz, member of the State Board of Housing. The purchase capital advanced from this fund is to be amortized during a period of ten years with 6 per cent interest. The operating and maintenance expense is paid by the charge of \$12.50 per room per month to each tenant owner.

"It is interesting to note," continues Mr. Springsteen, "that this low cost of maintenance and operation for this project is due to the fact that, being constructed by a limited dividend corporation, it is exempt from city taxes and fees . . . and . . . must operate with a maximum return limited to 6 per cent per annum on the invested capital. All surplus over the minimum permitted to insure the security of the project must be passed on to the tenants in the form of rent reduction,"

making possible "the same high standards of housing that are associated with high-priced living quarters, for those who can afford to pay from \$9 to \$12.50 per month."

The building is equipped with an adequate steam boiler and hot water service plant. The heating system is of the two-pipe vacuum type. Brass pipe is provided for the hot water service and branches from the cold water service. The bathrooms are finished with tile floors and wainscoting. The bath tubs are of built-in type, provided with shower bath apparatus and curtain rods.

Pedestal type lavatories, siphon jet water closets, medicine cabinets and the usual toilet room accessories are provided. Metal trim is provided for all windows and interior doors, floors and baseboards are made of wood. Incinerator receptacles are provided in each stair hall.

The corridors and stairways are of fireproof construction, the floors finished in terrazzo. The entrance door to each apartment is provided with a peep-hole fixture which enables the occupant to observe the person in the corridor without opening the door. The kitchen equipment consists of a gas range, sinks, electrical refrigeration, and clothes rack of the usual pattern. The entire construction of the building is substantial, and the mechanical equipment is of good quality. The structure contains a large laundry, community auditorium and a recreational roof garden for the children.

DESCRIPTIVE DATA AND FEATURES OF PLAN

GRAND STREET COOPERATIVE APARTMENTS, GRAND ST., NEW YORK

(For illustrations see preceding pages)

Data of completion:	October, 1930
Area of land, square feet:	60,000
Area of building, square feet:	35,800
Ground coverage:	60%
Cubage, cubic feet:	2,800,000
Cost of construction:	40 cents per cubic foot
Total number of apartments:	231
Total number of apartments per floor:	36
Number of rooms per apartment:	3, 3½*, 4, 4½*, 5
Total number of rooms:	906½
Apportionment of apartments throughout building	
44—3's.....	19%
65—3½'s.....	28%
26—4's.....	11%
74—4½'s.....	32%
22—5's.....	10%
	100%

Average area of living rooms:	204 sq. ft.
Average area of dining rooms:	200 sq. ft.
Average area of chambers:	160 sq. ft.
Average area of kitchens (including dining alcoves):	129 sq. ft.
Average monthly rental per room:	\$12.50
Minimum monthly rental per room:	\$10.00
Total number of stores:	15
Area of stores:	6,820 sq. ft. each
Elevators:	8 push-button automatic
Average area per room of building area:	250 sq. ft.
Average area per room of lot area:	412 sq. ft.
Height of ceilings:	8' 9"

(*Dining alcove is ½ room)

Are Apartments Taking People Away From Single-Family Houses?

If you are a successful builder of one-family dwellings in a good-sized town where apartment houses are comparatively unknown, you will answer "No!" to the above question.

But, in suburban towns, where fairly good-sized apartment houses have been put up, the builder of single-family houses may have reason to wonder whether his fellow-builder, the man who constructs apartment houses, isn't satisfying an increasing demand for apartment house living on the part of American families.

It all depends on what your local sentiment is and how close you are to large centers of population.

During the past few years there is no question that apartment houses have burst out beyond city limits and are now occupying sites far out in the suburban countryside where they necessarily compete with single-family houses. Not that there isn't room and a reason for both types of housing. But if there is a definite trend away from the single-family house toward the multi-family dwelling, then it is important to see this trend in time and take account of it.

Three years ago, in 1928, for the first time, more families were provided for in new apartment construction than were provided for in new single-family and two-family dwellings combined.

At that time, opinions were freely expressed that the apartment house was superseding the single-family house and that the American people were showing an increasing preference for living in apartment structures.

Conditions in and out of the building industry, however, have altered the advancing trend of apartment building and for the past two years the apartment house ratio has receded, as will be seen in the accompanying chart.

Since 1921, however, the apartment house has shown a steady encroachment on single and two-family territory and there are still plenty of observers who believe that apartment house living will become more and more popular, rather than less so.

A number of reasons are advanced to support this theory. First, it is claimed that apartment house living is "easier," more convenient, less worrisome. Second, it is said that an increasing number of families are unable to afford homes and hence must rent apartment suites of some kind. Third, it is contended that the cost, per family, is less for apartment construction and that, *therefore* the apartment is most economic housing.

To these arguments the single-family house adherents reply that only in the single, detached house, placed a reasonable distance away from its neighbors, can the family—and particularly the children—secure the light, air and outdoor environment that are essential. Furthermore, they say, the single-family house is cheaper in the long run because, if properly constructed, its maintenance is less than rent.

Most of the joys of home living, they contend, are found in the well-designed and constructed single-family house.

And so the controversy continues. Meanwhile, residential building this year seems to favor the construction of single-family houses in many localities. Whether the money lenders will, in the future, favor apartment house construction, rather than single-family construction, for reasons of their own, is a question. Just where the proper balance lies between apartment housing and single-family housing, nobody knows. Many of the most advanced community developers construct multi-family dwellings on their projects as well as single-family dwellings and often have been surprised at the increasing preference shown for apartment house living.

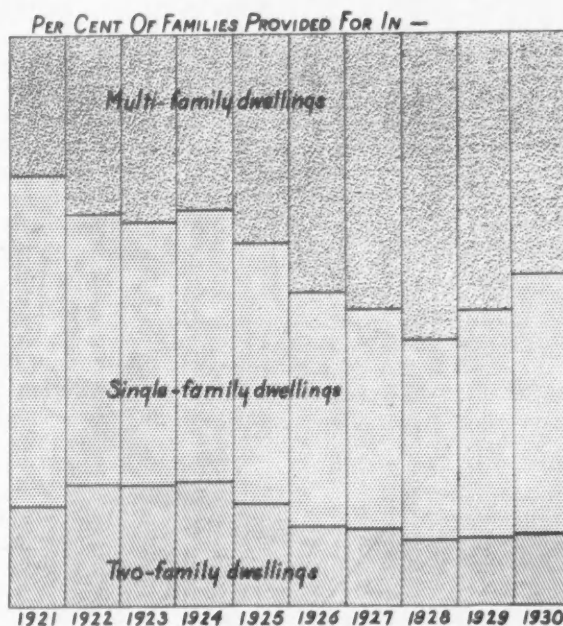
Row housing, too, has come to the front in recent years as an economical way to supply

cheap housing. The fact that builders of row houses have been able to equip each of the home units in the row with the latest and most popular kitchen and bathroom accessories and to specify sumptuous interior fittings of all kinds and yet keep prices low has meant success for them in many localities.

But the builder of the single-family house still offers to the public: good design, comparative isolation and independence, and actual ownership of a house distinguished from all others, complete in itself.

In some communities the apartment house has encroached deeply into the territory of the single-family house. In many localities certain land sites may logically be occupied by well-planned and financed apartment buildings; in other cases, zoning restrictions should prevent the erection of apartments in territory almost exclusively occupied by good single- and two-family houses where apartment construction would tend to lower property values. In the next few years, it will not be so easy to erect weakly financed apartment structures as formerly.

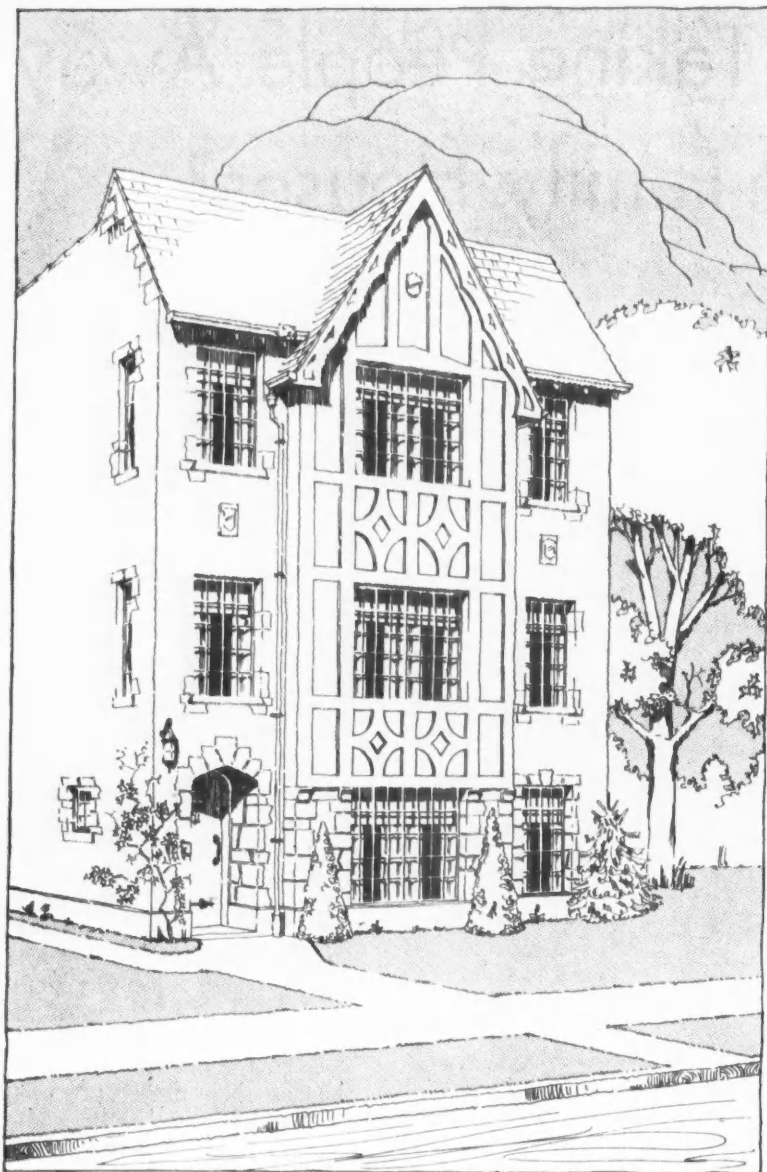
This may help to cut down the ratio of apartment construction.



Showing Per Cent of Families Provided for in New Dwellings in 257 Identical Cities from 1921 to 1930. Chart based on figures from Bureau of Labor Statistics.

Opportunities Today

By WILLIAM G. KRIEG



comes become better or at least more stable, conditions will reverse themselves and again we will hear about the housing shortage; but it may still take some time. Meanwhile architects and builders must find work; and it is in the field of small buildings, where overhead and operating expenses can be cut to a minimum, and where the units are of a size that will avoid loss from vacancies, that some immediate work can be found.

In studying this problem we found that buildings offering small apartments for rent either furnished or unfurnished, having fifty to one hundred rooms were always partly vacant, enough so to make operation costs proportionately too high. Some such buildings show but little, if any, income. We also found it to be a general condition that a proportion of the occupants were steady customers or tenants of the establishment, having been with the same for years. Incorporating these ideas in our plans resulted in the so-called "Midget" or "Tom Thumb" hotel, which caters to a limited number with little overhead expense and wherein the personal contact, which really makes a home, becomes a governing factor.

Design A—Providing Renting Units for Students; Six Suites on Two Floors with Common Room and Service on the Ground Floor.

AFTER the war, following an eighteen month shut-down in building, there was an immediate shortage in housing facilities; although during this period thousands of houses had been erected under industrial housing projects. Now, twelve years later, with an increased population, following a general building shut-down of over two years there still seems to be an overproduction of homes and apartments.

In my opinion, both situations represent abnormal conditions. On the one hand, right after the war, general business resumed with a rush, incomes increased and as a natural result, there was a greater demand for better housing conditions, causing an apparent building shortage; however, this movement was at the expense of the older structures which remained idle. At that time everyone seemed to be after a new apartment and had the money to pay for it.

Now, on the other hand, following the late general business depression, with less employment and smaller incomes, a retrenchment of expenditures had to follow; and cheaper housing facilities, found mostly in the older structures, were in demand; but this movement had been at the expense of the newer and higher priced structures which remained vacant, thereby indicating the apparent overproduction of such buildings.

Now, when employment is on the increase and in-



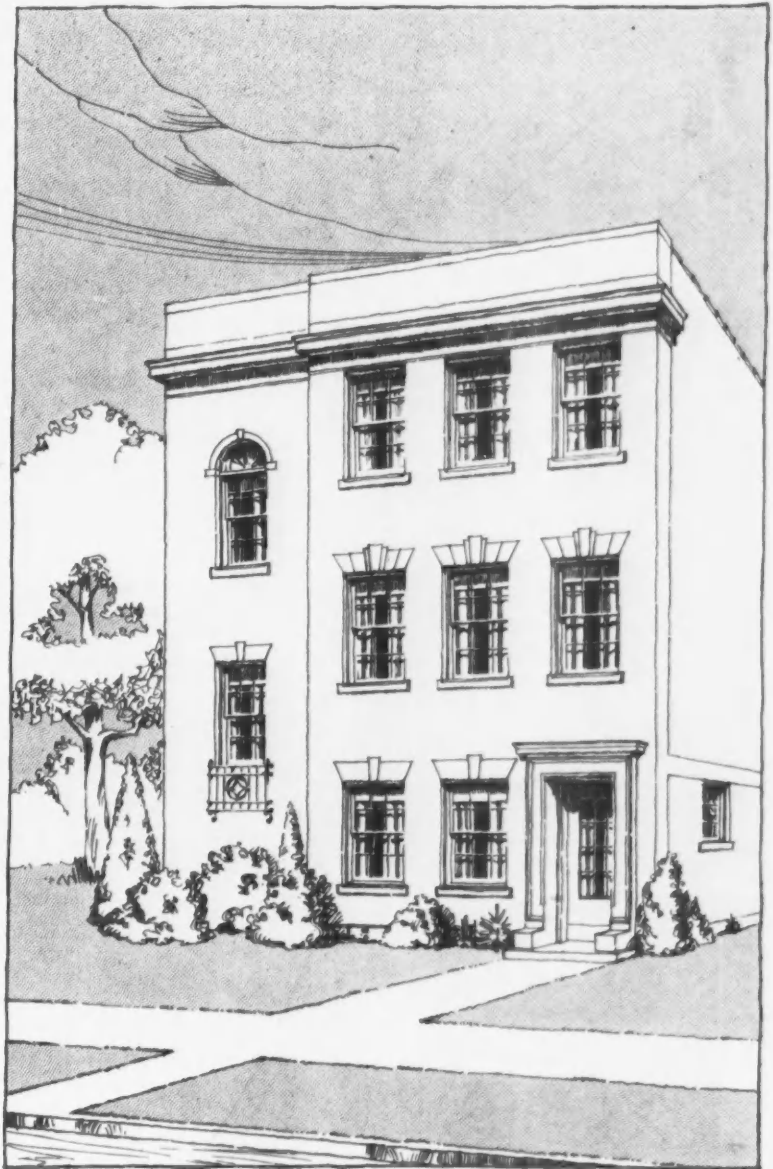
Plan in Rooming House Hotels

The general character of these buildings is illustrated in the accompanying plans "A" and "B" which seem to be the most popular type and mostly in demand.

Plan "A" is to be erected near an educational institution. It is a modification of the apartment hotel type of building. There are six complete renting units on two floors with a general club room or parlor on the ground floor.

Although small, each unit as arranged functions as living room, kitchen, dining room and two bed rooms with connecting bath, giving the efficiency of the ordinary five-room apartment.

For the convenience of the occupants, a wall bed is provided in the living room to take care of the occasional guest, a complete kitchenette cabinet with electric refrigerator, gas or electric range, sink and cupboards is placed in a recess adjoining the wall bed. Garbage is disposed of through a brick incinerator with doors in service hall on each floor. The bath room is located between the two main rooms so as to afford privacy when both rooms are used as chambers. A parcel receiver for each



Design B—A Rooming House Project for Men Located Near a Large Industrial Plant, Offering 16 Renting Units.



apartment is provided at the rear end of the corridor for deliveries via the service stairs. A store room for trunks, etc., is in the basement and each apartment has the use of the laundry.

The club room is for the general use of all tenants. Card parties and entertainments that overtax the capacity of the suites are held in this room.

The front and rear vestibule doors are operated with spring latches and door closers and operate by electric push button control from each apartment. Call bells and speaking tubes connect the vestibules with the foyer of each apartment. Janitor service is provided for keeping up heat and hot water and for cleaning the corridors, play room and basement.

A building of this type can be rented either furnished or unfurnished, as a whole or in separate units.

Plan "B" is a rooming house project for men, near a large industrial establishment. It has a capacity of sixteen to twenty-four boarders in sixteen guest rooms on the two upper floors. The ground floor has a general lounging room, a kitchen and dining room for the preparation and serving of morning and evening meals and the housekeeper's living quarters, back of which are located the laundry, heating equipment and space for linen and trunk storage.

A central corridor connecting with the main and
(Continued to page 120)



Views of Apartment Unit in the Bolton Square Hotel, Cleveland, Redecorated with Scenic Wallpaper by Edith Huntley Thompson—Rental Value Increased Seventeen Per Cent Because of Greatly Increased Apparent Size of the Rooms and Their Added Charm and Character.

What Scenic Wallpapers Can Do To Increase Rentability

Builders do not give as much thought to wall surfaces as they should considering the fact that the walls of a room are its most prominent feature. A little money invested in an attractive, individual and out-of-the-ordinary wall covering or decorative scheme may produce surprising results in increased salability of homes and increased rentability of apartments and hotel suites.

A recent demonstration of this principle occurred in the Bolton Square Hotel, Cleveland, when one of the suites was redecorated with a special scenic wallpaper. Immediately this apartment took on such added value that the management has a waiting list of tenants for it, bidding against each other and willing to pay a substantial increased rental.

Compared with similar suites in this same hotel, the scenic walls have made the rooms in this apartment seem a third larger. It is as though the walls were pushed back. There is an impression of breadth and airiness, like being out of doors.



EDITH HUNTLEY THOMPSON, Decorator

The fact of increased rentability here discovered would apply equally, it would seem, for increasing the salability of homes. Alert builders will not be slow to take advantage of such improved materials.

These scenic wallpapers are produced in a Cleveland shop and come in sheets eighty inches high by forty inches wide. Four or five sheets, depending on the design, are required to complete the pattern, and then they repeat. Lithographed on tough paper and given a wax finish, walls finished in this way are washable.

An extensive selection of designs is available suited to various rooms and color schemes. The colors are beautiful, soft and non-fading, and the charm and rhythm of the designs themselves proclaim them the work of real artists. It is surprising that such results in home beautifying can be secured so easily and at so small a cost.

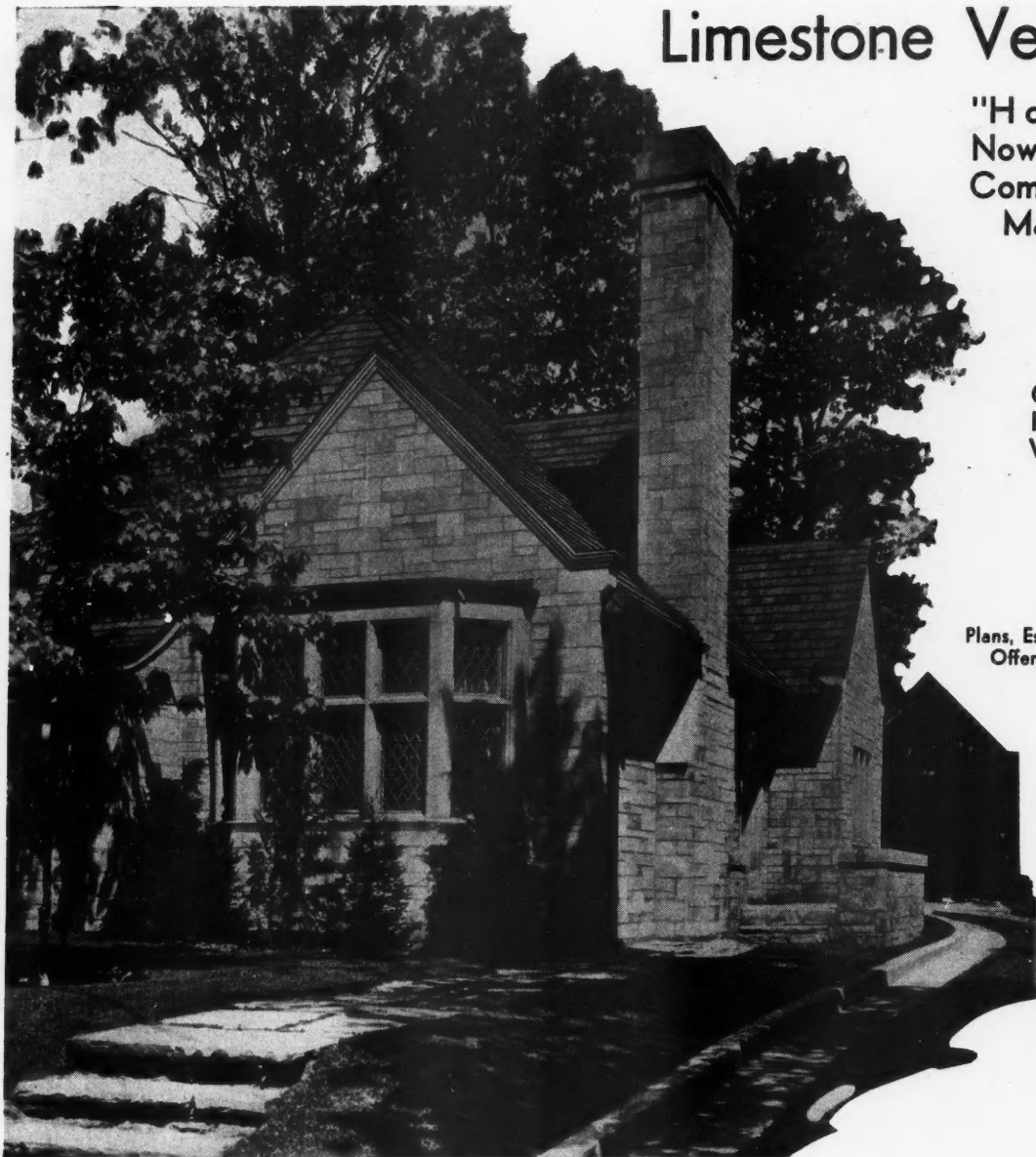
“The rooms seem a Third Larger—it is as though the walls were pushed back.”

Limestone Veneer Offers

"Houses of Stone"
Now Being Built to
Compete with Other
Masonry Materials

QUARRYMEN ENLARG-
ING DEMAND by AD-
VERTISING TO HOME-
BUYING PUBLIC

Plans, Estimates and Technical Service
Offered Architects and Builders



A Little Home of Indi-
ana Lime Stone, Buff
Old Gothic Random
Ashlar; Geo. Webb,
Contractor; D. E. Kert-
land, Architect.

“LIMESTONE lumber” is the name which the people of the Bedford-Bloomington, Indiana, stone district often give to sawed strips of limestone when produced to be used as outside veneer surface material for residence or other building construction.

An interesting story lies behind this modern form of stone construction—interesting not only because of the way “limestone lumber” originated, but because its low price is bound to make it more and more a factor in general building the country over.

The visitor to the huge quarries in Lawrence and Monroe counties, southern Indiana, from which comes practically the entire output of limestone for building purposes, is invariably impressed with the huge piles of stone which lie all about. “What is the matter with these blocks?” he asks. “They look as good as those you haul away.”

“They are just as good limestone,” is the reply, “but they are odd sizes and shapes which makes them uneconomical to fabricate for *cut* stone.”

It was for the purpose, therefore, of using what is actually a by-product of the limestone industry, that the quarrymen began sawing these blocks up into strips and offering them at low price to builders for facing residences, store-fronts, and for general building purposes.

As a matter of fact, this limestone is of the finest

quality. It is exactly the same quality stone as is used on the big office buildings, but sawed to convenient lengths to handle easily.

The way this limestone veneer material is prepared explains why it can be offered at low cost. The blocks of stone are taken into the mills where batteries of saws slice them into strips in surprisingly short time. So easily worked is this stone and so tremendous is the equipment for sawing it up that huge quantities can be turned out at small expense.

The strips of limestone as they come from the mills vary in length from 3 feet 6 inches to 6 feet 5 inches. They are of uniform thickness, usually four inches. They are sawed on four sides and are of various heights. The strips are carefully assorted as to colors and textures of stone. One of the chief secrets of the quick success which this stone has attained lies in the care which its producer uses to insure a wall pattern of varied colors and harmonious design.

The strips are loaded on freight cars as ordered by the builder and are shipped direct to the building site. There the sole fabrication needed is to break and trim the pieces to length. Breaking is a simple matter. The old way was to strike a joint line across the stone by a few blows of a hammer on a broad chisel and then break the strip by striking it on the back with a mason’s hammer.

Attractive Opportunities

The newer, and more accurate way, is to use an ordinary cross-cut saw or a bucksaw to groove the face of the stone strips with the lines on which they are to be broken. Then turn them over and break with a tap of a hammer. Some builders use an electric portable saw to make the slight cut necessary for easy breaking. One man thus equipped usually can keep six masons busy.

The pieces of limestone are laid up in the wall as a facing over hollow tile or brick, or as a veneer over stud-frame. When the latter, the usual way to tie the stone to the wall is to chip a notch in the upper surface, then drive a nail into the studding and bend the head down into the notch or groove. The mortar seals the nail head in its position. Strips of proper sizes for band stone, jamb stone, etc., are also furnished.

Four simple jointing schemes are found most popular. These are of 2-, 3-, or 4-height units, the heights being 4", 8½" and 13". Innumerable combinations have been devised for producing random ashlar or range work. All of these are fully explained in the literature which the quarries supply to their customers.

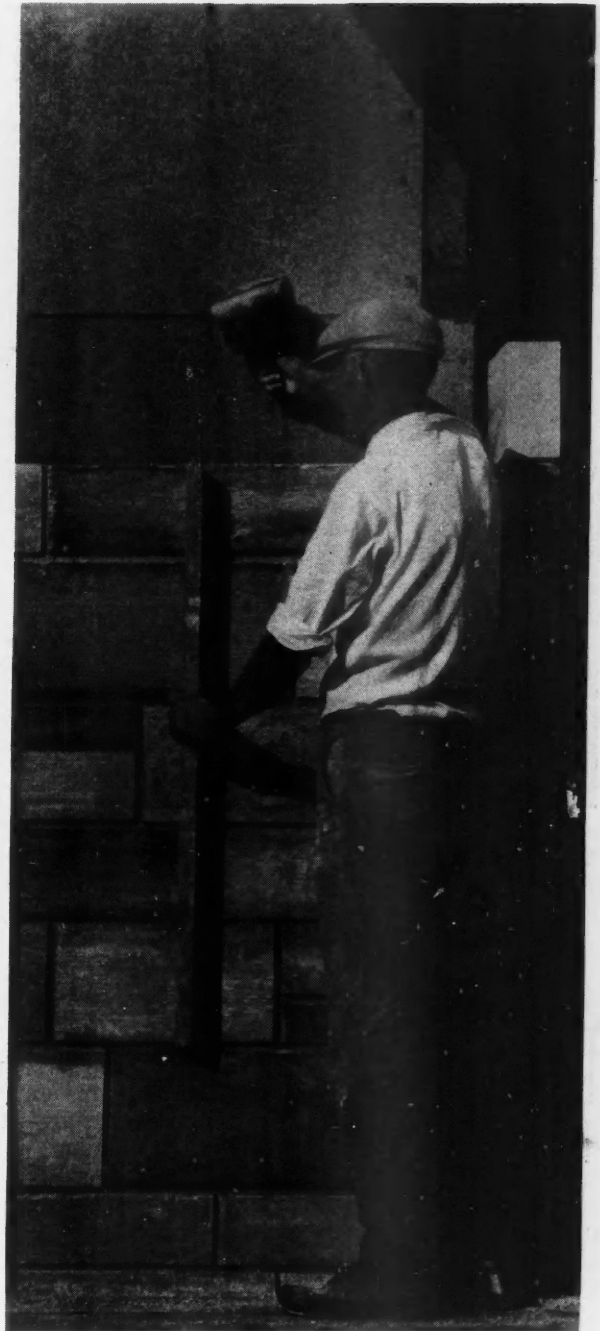
In order to make it easy for builders to use Indiana limestone produced in this form, the producers provide manuals covering all technical matters involved and at least one prominent company has organized an efficient service department which collaborates with builders who lack experience in using the stone.

The moderate price of limestone facing together with the undeniably attractive results obtained has resulted in great interest in its use on the part of builders. Experience has enabled many to offer comparative figures on its cost if used in place of other masonry materials.

For example, one Ohio builder who has completed two limestone contracts within the past year on church buildings, one running over 10,000 cubic feet of stone and the other around 4,500, has found his costs uniform enough so that he is making a standing offer on stone facing in the following terms: Whenever brick costing \$26 or more per thousand is specified for the job, he



Scoring Stone Slabs with Power Saw for Breaking to Length.



Laying Up the 4-inch Veneer in Random Ashlar Pattern, Over Stud Frame and Fiber-board Sheathing Metal ties fasten stone to studs.

will furnish limestone for the same price as the brick on a laid-in-the-wall basis.

This builder's experience is typical of that of others who have found limestone amazingly easy to use and that it is possible to attain great speed in building with it.

The producers of Indiana limestone have realized the need of educating the prospective home-builder to the advantages of limestone used in the method described in this article. They have conducted an extensive advertising campaign in leading magazines reaching the home-building part of the public. The magazines include *House & Garden*, *House Beautiful* and *Country Life*. The response has indicated to them the desire of the public for stone construction. Thousands of inquiries have been received. These have been turned over to builders in the vicinities from which they came. The company also collaborates with architects and builders in the effort to make it easy for both to use this modern, low-priced variety of limestone facing.

INSULATION OFFERS

Potential Market for Insulating Materials—Methods of Application—Sound Deadening and Acoustical Treatment



The Various Mineral Wool Materials Are Often Applied by Hand and Can Be Tucked Into Every Crack and Crevice Around Openings.

Taking only 10 per cent of this total potential market as the annual market in existing buildings, gives a total of 7,437,500,000 square feet.

Based on the average volume of new construction over a five year period, and a conservative estimate of amount of insulation required for each type of new building, the following annual market for insulation in new buildings was estimated:

Residential buildings	3,000,000,000 Sq. Ft.
Private garages	400,000,000 "
Non-residential buildings	500,000,000 "
Rural buildings	400,000,000 "
Total	4,300,000,000 "

This makes a total annual market, in existing and new buildings, for 11,737,500,000 square feet of insulating materials. It is safe to say that not over 10 per cent of this annual market is actually being sold.

But even this tremendous total does not represent the entire market for insulating materials. Many of these same materials are used for sound insulation or deadening, and for acoustical treatment. While the market for these purposes is not so large as that for thermal insulation, it is of considerable proportions and will undoubtedly increase as the importance of noise abatement is more fully appreciated.

For thermal insulation, the methods of applying the various types of materials are quite simple. As stated in the preceding article, insulating materials are of three types—rigid board materials, flexible blanket materials, and loose fill materials. Methods of application apply to all brands within each group.

One of the chief advantages to the builder in using the rigid board materials is their ease and economy of application. They are light and easily handled. They are made in standard sizes to fit the studs, joists, raf-

THE statement has been made that the market for insulating materials has hardly been scratched. This is based on actual facts and figures on new and existing buildings. It has already been shown that proper insulation, of practically any building, is an economy measure. All new building falls within the potential market for insulating materials. Insulation can be applied to existing buildings also, and is equally valuable when these buildings are sufficiently sound to justify modernization.

The Research and Marketing Division of the AMERICAN BUILDER AND BUILDING AGE has estimated the potential, annual market for insulating materials. Taking the number of existing buildings which can be modernized profitably, and making a conservative estimate of the number of square feet of insulating material required to insulate the average building of each type, the total potential market in existing buildings was estimated as follows:

Residential buildings	45,000,000,000 Sq. Ft.
Private garages	3,375,000,000 "
Non-residential buildings	10,000,000,000 "
Rural buildings	16,000,000,000 "
Total.....	74,375,000,000 "



Flexible Blanket Insulating Materials Are Most Effective When Applied Between Studs, Joists, or Rafters, Dividing the Enclosed Air Space.

A BIG MARKET

The Second of Two Articles

By American Builder and Building Age
Editorial Staff

ters, and furring strips to which they are nailed.

These board materials are commonly applied to interiors against the studs and ceiling joists, or to furring strips over masonry, and serve as the plaster base. This is considered good practice and affords a satisfactory degree of insulation under ordinary conditions. They are also used under finish flooring of all kinds.

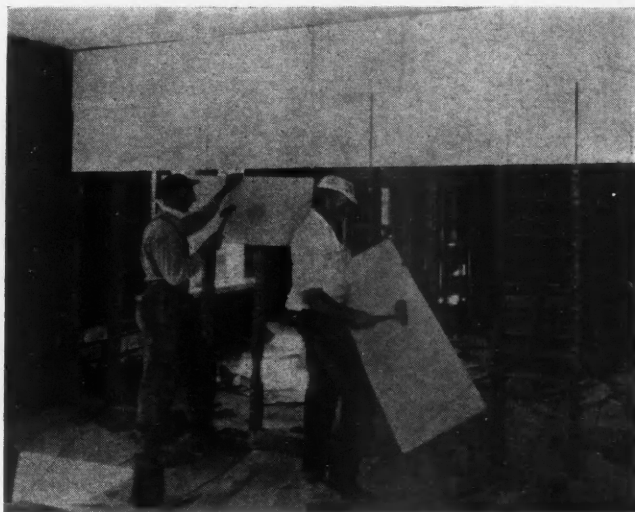
Rigid boards are also used as interior finish without plaster, either in their natural state or painted and decorated. This is not only an economical type of construction but also offers interesting and attractive decorative effects. If not painted in such a way as to destroy the porous quality of the surface it provides acoustical treatment also.

When insulating effect only is considered, the best practice with any insulating material is to apply it in addition to all other regular structural materials.

Insulating boards are frequently used to replace wood sheathing in frame construction. Though many of these boards have a high degree of structural strength and are excellent sheathing materials, when so used they cannot be considered as insulating materials. Their insulating value is not sufficiently greater than the wood sheathing they replace to make an important difference in actual insulation.

The flexible blanket materials are all strictly insulating materials and are not used structurally to replace other materials. They are often applied to the studs, joists and rafters, like the board materials, but, of course, cannot be used as plaster base. The labor cost of this application is less than that of applying between the studs, or joists, but some of the insulating effect is lost.

The best method of application is between the studs, joists or rafters, dividing the air space within the wall and creating two air spaces, each of which has about



The Rigid Board Materials Are Light, of Convenient Size and Easy to Handle with Minimum Labor Cost. Plaster base size illustrated.

the same insulating value as the original space. The blanket materials are made in sizes to fit readily between studs with the edges turned up for nailing against the sides of the studs. Wood lath is usually laid along the edges of the blanket and the nails are driven through the lath.

An exceptionally good job of insulation can be obtained by using both a flexible blanket material and a rigid board. The flexible blanket is placed between the studs, dividing the air space, and the board is used over the studs to serve as a plaster base.

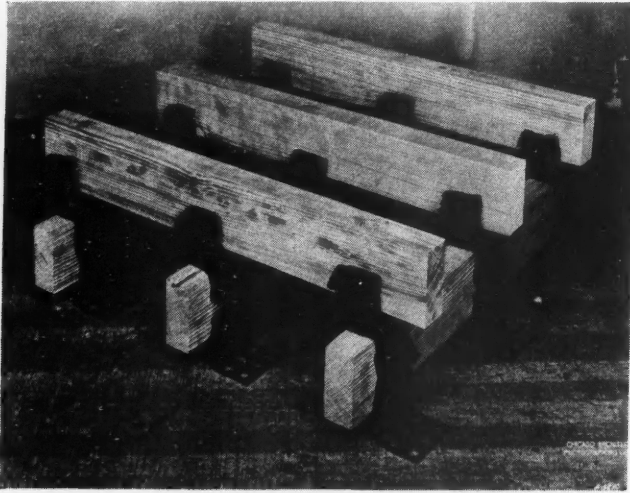
Both board and blanket materials can be applied in new construction at all points that require insulation. In existing buildings, however, they cannot be applied to walls unless extensive remodeling is undertaken, involving the removal of the original interior wall finish. They can be applied to old building on or between the roof rafters, or the attic floor joists.

It is interesting to note, in line with the recent trend toward greater thicknesses in insulating materials, that one of the boards is being offered in thickness great enough to fill the entire space between studs. Another of the materials placed in the board classification is a corrugated paper board material which is bent into a form resembling a hollow I-beam. It fits between the studs, filling the space and dividing it into three air spaces. Each section is headed to prevent air circulation vertically.

Loose fill materials, as their name suggests, are used to fill the entire space between studs, joists, or rafters. They are the logical materials for application to the walls of existing buildings, and can also be applied equally well to new construction. In order to insulate the walls of existing buildings with a loose fill material, it is only necessary to remove a strip of siding near the top of the wall, pour or blow the material



Insulating Boards Are Applied to Concrete or Steel Deck Roofs with Asphalt and Covered with Built-up Roofing of Various Types.



A Sound Deadening System in Which Vibration Is Absorbed by Felt Cushions.

in, and replace the strip of siding. In new construction the mineral wools are often applied by hand and can be stuffed into every crack and crevice.

It should be noted that the use of insulating materials should not eliminate the use of building paper in the regular way, any more than it should replace any of the structural materials. Insulation and building paper serve two distinct purposes, though they both contribute to the same end—the conserving of heat within the building. While insulation reduces the heat loss through the walls or roof, building paper seals the walls and roof against penetration of wind.

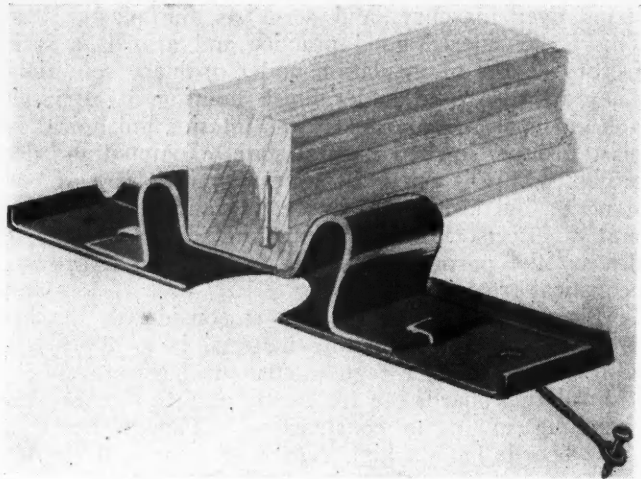
Sound Deadening

Just as thermal insulation is concerned with reducing the transfer of heat from one region to another, so sound insulation, or sound deadening, is concerned with reducing the transfer of sound from one region to another. While the principles of thermal insulation have been quite fully established and methods developed, less progress has been made with the problem of sound deadening due largely to the fact that its importance has only recently been recognized.

Noise, in the home, and in the place of business is

not merely an annoyance. It has been definitely established that noise seriously reduces working efficiency in the office or factory and is injurious to health at all times. With the excess of noise which accompanies modern metropolitan conditions, including apartment house living, the importance of sound deadening is rapidly gaining recognition, and its principles and methods are being studied.

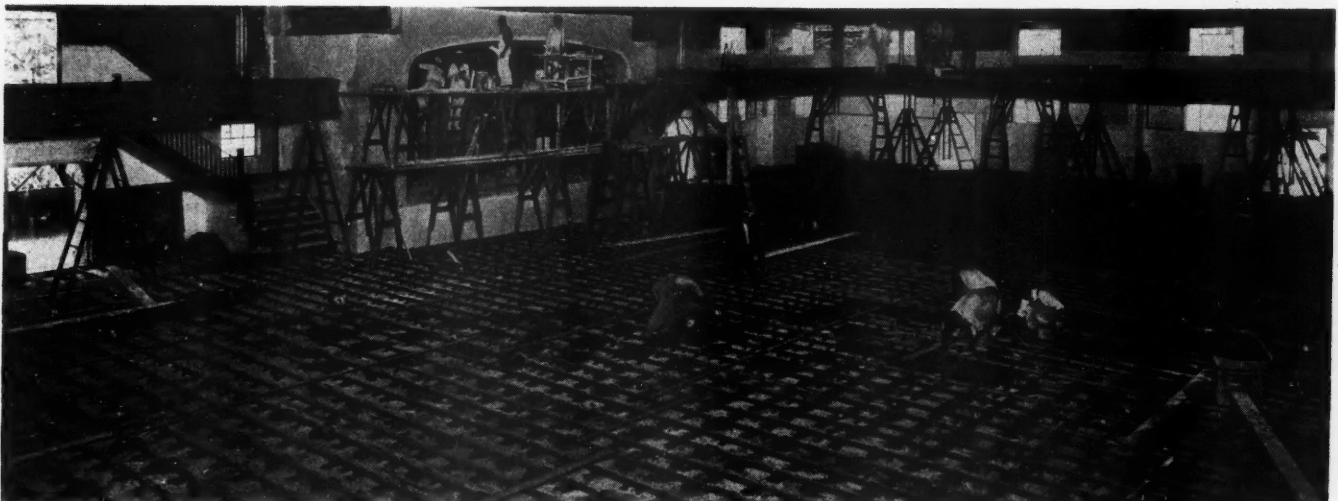
Sound is transmitted from one region to another in three ways—by molecular conductivity, by diaphragmatic action, and by the leakage of air-borne sound waves through openings such as transoms, cracks and crevices, keyholes and so on.



In This System Floors, Walls, and Ceiling Are "Floated" on Vibration Absorbing Clips.

Molecular conductivity is the transmission of sound from one molecule of a substance to another. It is illustrated by a common experience. A person may stand by a railroad track and hear no sound of a train. If he places his ear against the rail he will hear a train which may be a mile or more away. The sound is carried, in this case, by molecular conductivity.

This type of sound transmission occurs in buildings where a pipe or some similar equipment passes through a partition wall, or floor, from one portion of the building to another. The correction of such transmis-



For Sound Deadening the Flooring Is Laid on Sleepers Which Are "Floated" on Felt or Spring Metal Supports Spaced at Suitable Intervals to Carry the Required Load.

sion is entirely a matter of design and construction. Care should be taken to avoid direct connection of any portion of a building for which sound isolation is desired, by heating pipes or similar equipment.

The prevention of leakage or air-borne sound through openings is, again, a matter of design and construction. Points to be guarded are transoms, air vents with more than one connection on one floor, actual cracks in walls, and cracks around doors and windows.

Diaphragmatic action is the most important phase of sound transmission so far as the study of sound insulation is concerned. At the same time, the effectiveness of treatment to overcome diaphragmatic action may be largely destroyed by neglect of the other two phases of the problem.

Sound is transmitted from its source in waves, extending outward in all directions, much as waves spread in a circle from a stone thrown in the water. When these sound waves strike against any surface, such as a partition wall, they set the entire wall in vibration. The vibration of the wall, in turn, transmits the sound waves to the air on the opposite side and the sound is heard, in modified form, in the room or region adjoining its point of origin.

In the process of transmission from air to wall and then to air again, a certain amount of the sound energy is absorbed and the intensity of the sound is reduced. The problem of sound insulation or sound deadening is to obtain a wall, ceiling and floor construction which will reduce this diaphragmatic transmission to a point where it is negligible. It is not necessary to eliminate transmission entirely. It is only necessary to reduce the intensity to a level where it is masked by ordinary sounds in the room which is to be insulated.

As already stated, a certain amount of sound energy is absorbed in passing through the wall. The amount so absorbed depends upon the construction and materials of which the wall is built. Certain materials absorb more of the sound energy than others, and on this fact is based the claims of sound deadening value which are made by most of the manufacturers of thermal insulating materials described in the preceding article. Under certain conditions the sound absorption of a well-built and thermally insulated wall is ample for all



Perforated Metal Tile, Filled with Sound Absorbing Material, Are Used for Acoustical Correction, and Permit Painting or Other Decoration.

practical purposes. Under other conditions a greater degree of sound deadening is required. The most conspicuous example of construction where the highest degree of sound deadening is necessary is the modern radio broadcasting station.

For sound insulation of broadcasting stations and similar buildings or rooms, special methods are required. Two leading manufacturers of building materials have developed such special methods and have used them with great success. Both methods are based on the same principle—that of the absorption of vibration by a spring or cushion.

Since the transmission of sound is due to vibration of walls, floors and ceilings, it is necessary to eliminate this vibration. This is done by floating the interior of the room which is to be insulated, the walls, floor and ceiling, on springs or cushions which take up the vibrations from adjoining spaces.

In one system the vibration is taken up by means of saddle-like springs on which the floor, walls, and ceiling of the room are carried. In the other system the vibrations are taken up by cushions of felt or some similar materials on which the walls, floor and ceiling of the room are carried. Both of these systems are illustrated.

Another factor in the elimination of noise is acoustical control. Acoustical treatment is something entirely different from sound insulation. It is, however, frequently associated with the problem of sound insulation because the two are so closely allied in the non-technical sense, and because many of the materials used for thermal and sound insulation are also used for acoustical treatment.



An Example of the Use of Fiber Insulating Board as an Interior Finish and Acoustical Material with Satisfactory Decorative Effect

New Type Concealed
Radiation Under the
Window.



Selecting a Home Heating Plant

By ROBERT C. NASON

SENTIMENT is not the impelling motive that urges building contractors to include heating plants in their estimates for residential construction. They do so rather in the hope and expectation that homes so equipped will possess added value, thus making them more acceptable to prospective owners.

A prime consideration in selecting a heater is its popularity in the particular location where it is to be installed. Steam, hot-water, vapor and warm air each has its army of adherents. Homes that are well built should secure good heating with any of these. A warm air plant responds quickly to heat demand. Hot-water heaters retain their heat the longest with a failing fire. Steam has earned deserved favoritism in many localities by its reliable and economical service. One cannot pick out any particular method and say that it alone is perfect, for perfection does not exist.

Warm air registers require less space than radiators that are not recessed, whereas in the basement the steam plant requires the least space and the warm air furnace the most.

So far as initial cost is concerned hot-water heaters usually cost the most, steam next and warm air the least; although this may not follow when mechanical circulating fans and other auxiliaries are included. Pipeless, warm air furnaces should be installed only in small, compact buildings. The low initial cost of some furnace installations has worked out to its advantage; while in many cases its cheapness has been taken by home seekers as an argument against it without regard to its qualifications. The opening cost, that is, fuel and maintenance, is about the same for all systems when efficiently handled.

It is a fact that prospective purchasers of homes look to building contractors for guidance in the choice of equipment. Many builders employ engineers who plan the installation of all mechanical apparatus. Others employ outside counsel, that is, consulting engineers, capable of commanding high service fees. This is rather general practice when ten or more homes are being considered, as in group construction. In this way purchasers have secured the advice of specialists who are familiar with all kinds of equipment.

It pleases home seekers when they see heating systems already installed in houses they examine; for thus

they obtain an accurate presentation of a ready-to-occupy building. Manufacturers of heating plants deserve considerable credit for the many changes in exterior appearance of their products to meet the requirements of builders. Changes include redesign resulting in regular rather than irregular lines, substitution of handsome colors for flat, black paint or none at all, burnished trimmings and like features. Every effort is made nowadays to improve the attractiveness, therefore the salability of home heaters. Now, rather than being objects to hide because of their ugliness, they have been converted to devices that would not appear out of place in living rooms. The changes have been effected, too, without loss of mechanical efficiency.

The nationwide publicity of manufacturers of heating auxiliaries has aroused interest in refinements like automatic thermostats that control room temperatures without useless basement trips, oil burners, air moisteners, gas burners, radiator cabinets and other features that increase the effectiveness and completeness of a modern heating system. The cost of adding such appurtenances is not heavy and when home seekers observe them already installed a most satisfactory impression is given.

There still exists some reluctance to include heating apparatus in unsold buildings from the feeling that fixed ideas of prospects may not have been met with regard to method, design and make. If this position is sound, then the idea might well be carried to practically all kinds of equipment including mechanical refrigerators, laundry dryers, ranges, even lighting fixtures. In point of fact, nevertheless, it has been rather definitely shown that absence of equipment does not enhance the salability of unoccupied residences.

Builders may make a substantial saving in the cost of the heating plant and, at the same time, assure their customers snug winter comfort if they will insulate walls, roof and attic floors. It is suggested also that studding spaces be closed top and bottom, windows weatherstripped and tightness be forwarded as much as possible. Insulate all steam and hot-water lines with air-cell asbestos. Fulfillment of the foregoing recommendations permits the installation of a heater of about 15 per cent less capacity than otherwise would be necessary. Without diminishing comfort, the contractor thus saves in the cost of his heater.



The House of the Month

Shingled Cottage with an English Swing
to the Gable and an Irish Lilt to the
Ridge Selected as Most Interesting

THE longer we have to do with home plans and the likes and dislikes of homeseekers, the surer we are that no one design—no matter how meritorious it may be—is going to suit everyone. Economists talk of standardizing homes in order to reduce their cost of production; and some of the big developers, serving populous markets, have been able to a remarkable degree to perfect and standardize their offerings in six- and seven-room houses until the point of real efficiency and economy has been reached; and enough buyers present themselves who are satisfied with such stock homes to make the developer's venture a success.

Nevertheless, the great majority of homeseekers want to incorporate some of their own ideas into their new homes. Their requirements, they think, are *different*. And while the house is being built, why not change it here and there to work in these features? This seems a natural question; and architects and builders have been adept for generations in providing its answer for

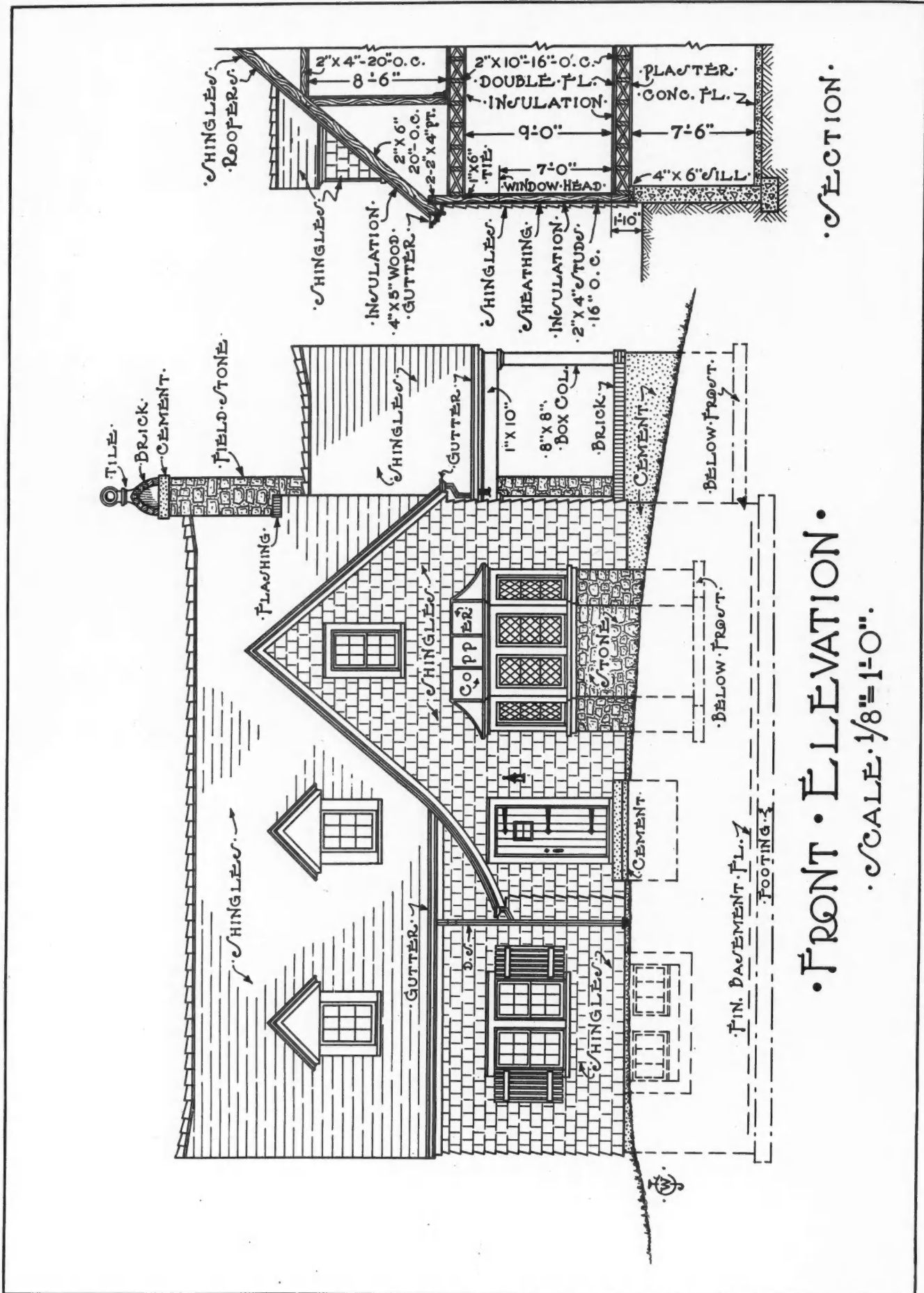
the great American home building public.

For these reasons, almost any plan or home design that is presented must be offered not as a model nor as a panacea to cure all the ills of all prospective home builders, but merely as a suggestion or a group of suggestions which readers of this publication are invited to take and use as they please in their own home planning and home building work.

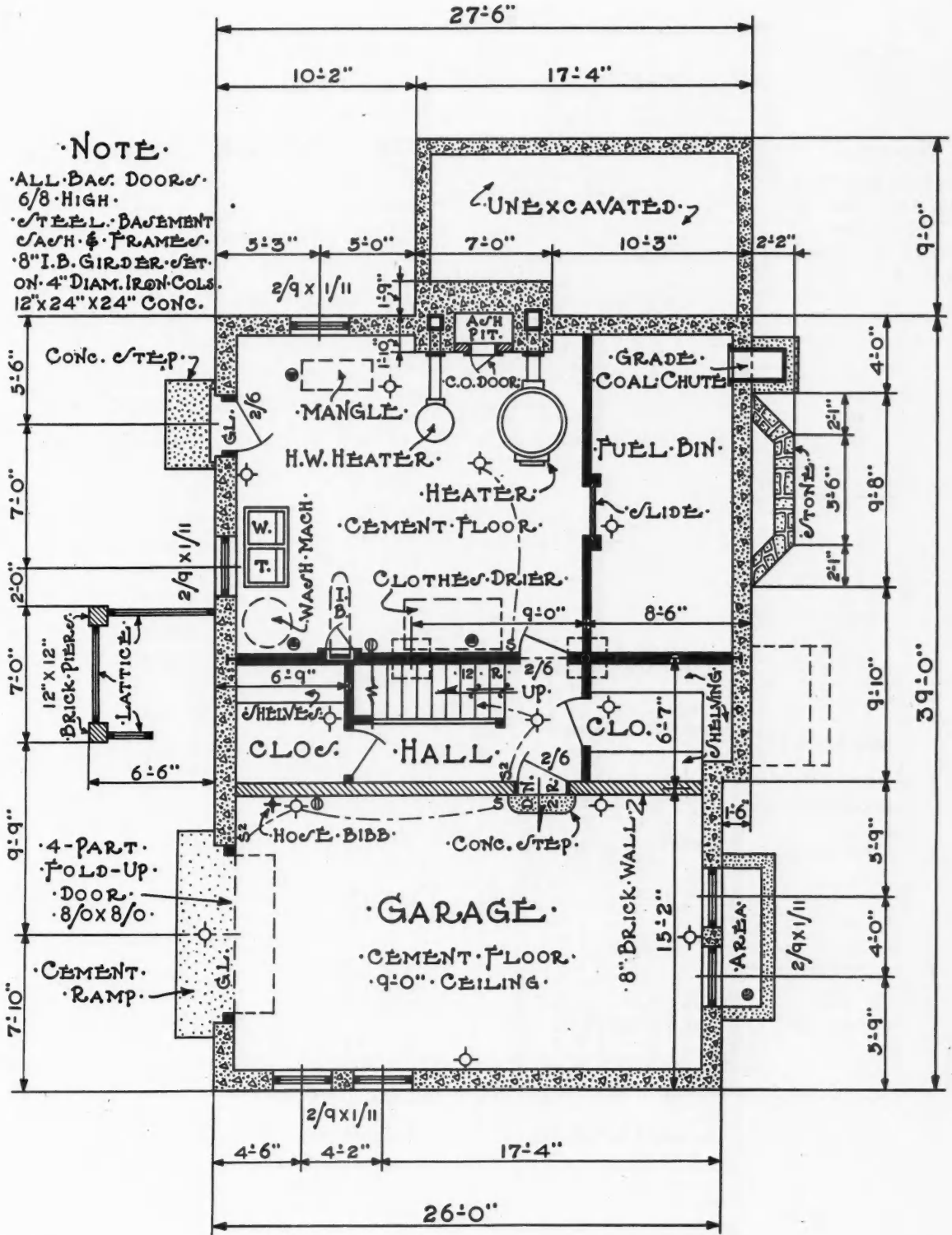
So it is that we offer this June "House of the Month." June is the month of brides and roses; and it is our belief that this present design is good looking enough to turn the yearning thought of many newly-weds to the wise and happy course of home building.

Study the plans and see how conveniently and yet how economically this little dwelling is arranged. There is a sense of thriftiness in the building of a home along such lines—snug, compact, easy to heat if built well; and it is easy to build such a design well, for there is nothing about it to deteriorate with the passing years.

WORKING DRAWINGS OF THIS HOME ON THE NEXT FOUR PAGES



While the June "House of the Month" has an economical rectangular plan, the elevations have been handled in a way to impart grace and individuality.

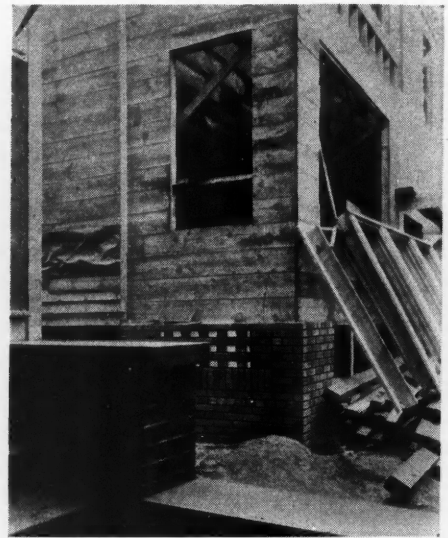
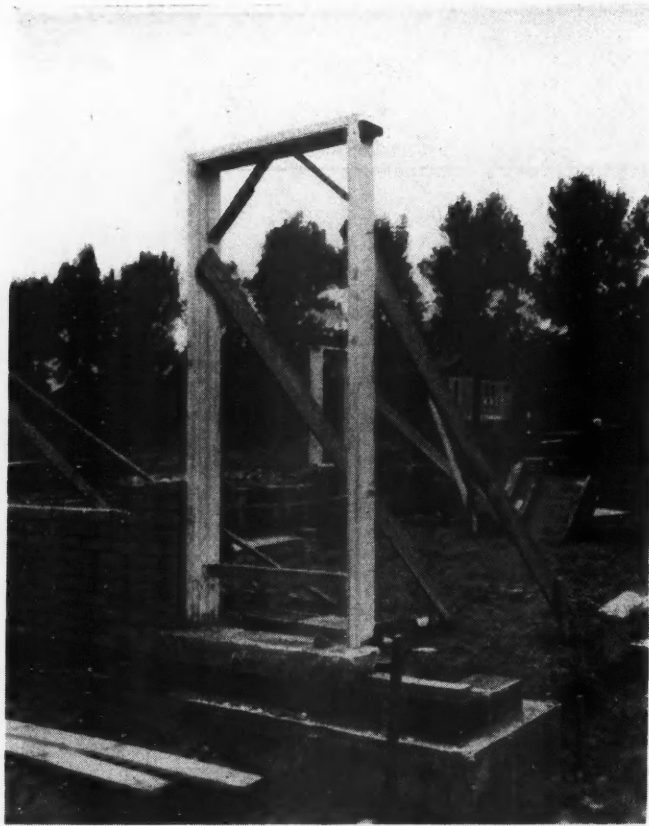


NOTE.
 ALL BAS. DOORS
 6/8 HIGH.
 STEEL BASEMENT
 SASH & FRAMES.
 8" I.B. GIRDER SET
 ON 4" DIAM. IRON COLS.
 12" X 24" X 24" CONC.

• BASEMENT PLAN •

• SCALE 1/8" = 1'-0" •

Twenty-six by thirty-nine feet is the size of the main excavation. A slightly rolling site makes the basement garage very practical.

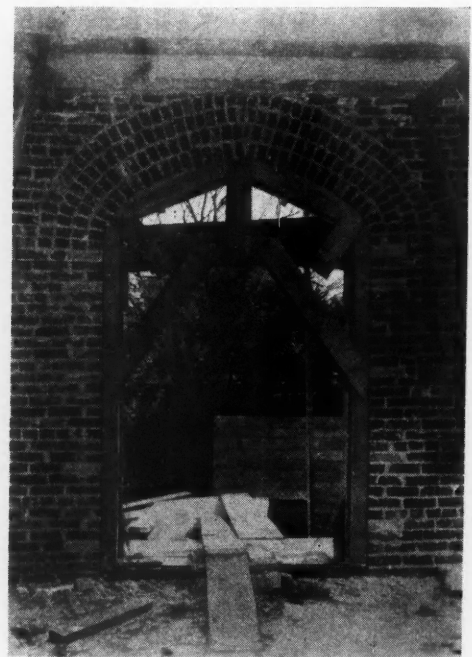
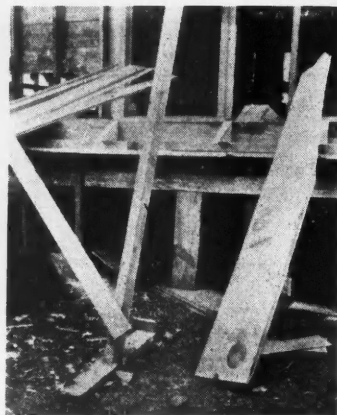


Frame Held Plumb (Left) by Diagonal Braces on Job of L. Pople, Peoria, Ill. Above: Schneider & Heyman, Newark, N. J., Brace Window Opening as Shown Until Frame Is Set

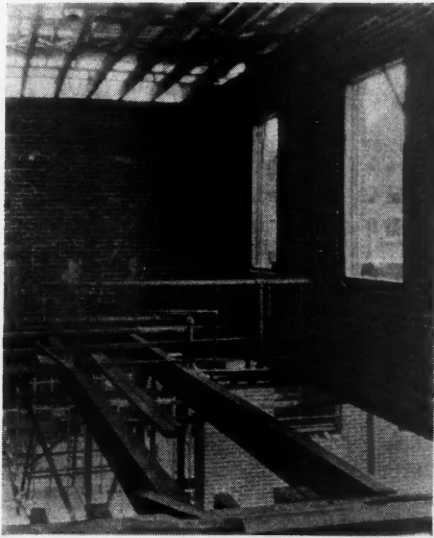
On The Job—



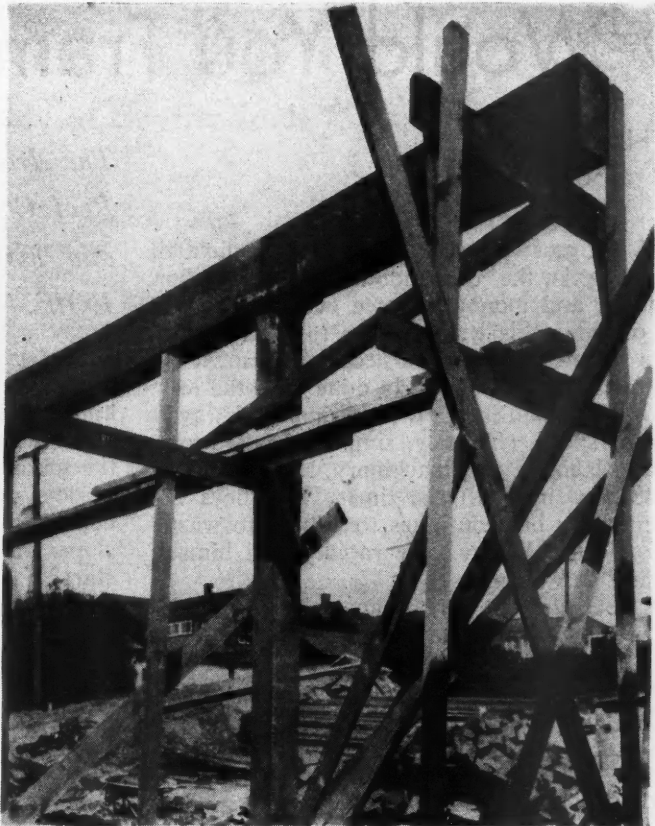
Supports Keep Frames in Position for Bricklayers on City Co. Job, Baltimore.
At Right Above: Canopy Braces



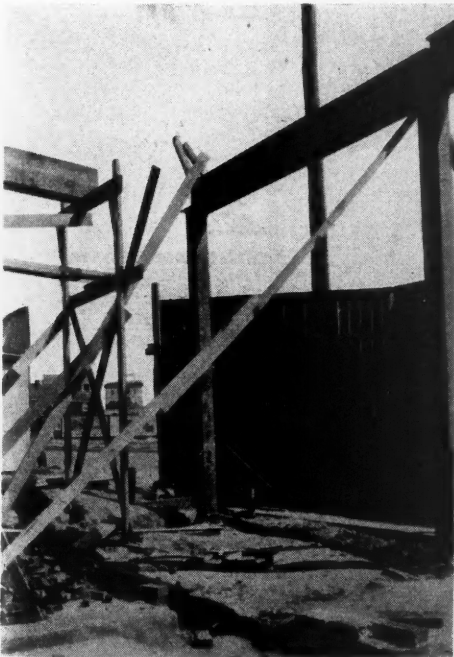
Centering for Gothic Arch, Gerbich & Hougard. At Left Below: How Canopy Supports Are Braced, Callan & Skipworth



Plumbing Temporarily Supported on Job at White Plains, N. Y., by J. C. Farrell. At Right: Heavy Wood Girders as Held in Place by Braces for Escherick Bros., Los Angeles



TEMPORARY BRACES



Steel Girder Held by Braces. At Right above: Temporary Tie for Porch Girder as Used by Quality Builders, Kansas City



Beam Supported at End, Rubin & Cohen. At Left Below: John Grandy, San Francisco, on Job with Photographer

How Would You Frame This Roof?

By L. PERTH

PERHAPS the most pathetic picture in the field of home building is the tremendous waste in labor, time, material and money you see everywhere. In the majority of cases this waste is due to the fact that the operatives on the job lack the necessary knowledge of how the work should be properly done with the least expenditure of effort and in the most economical way.

In this age of speed, efficiency, simplified operations, and of time and labor-saving machinery, the individual, who does not keep up with the times, who does not improve his methods but continues to adhere to wasteful practices of the old, may very rapidly find himself headed for the scrap heap.

Today it is not sufficient for a man to have gained a reputation of a good workman. There are multitudes of good, conscientious workmen who were engaged in their trade for many years who can do the work and do it well if someone else more competent will show them how, and lay it out for them.

Here is where the big difference lies. The boss is constantly on the lookout for the man who can do things in the best, easiest, and quickest way; who knows how to effect a saving in time, materials and labor; who is able and not afraid to take the responsibility and who does not require constant instruction and supervision.

Roof framing is one of the provinces of building construction where so many carpenters very frequently find themselves not equal to the situation. Many will admit their shortcomings, while others endeavor to conceal their incompetence by trying to get by and tackle the work, just trusting to luck. They are doing what you might call a free-hand job. They do not suspect that in roof framing they are confronted by a mathematical proposition; and only the ignorance of this fact supplies them the courage to approach the task.

Since they have no basis to depart from, they usually cut the roof members in a manner that seems to them right. They try to fit them to each other, and since they invariably do not fit, the only thing to do is to "cut and try" again. Here is where the inexcusable waste of time and materials is prominently due to the incompetence of the workman.

Some carpenters, after going through a continuous process of cutting and trying eventually succeed in putting the roof members together in such a manner as to be able to nail them, even though they do not bear against each other. Such a roof is a menace to the building. For in a properly constructed roof all the members should bear snugly against each other so that when assembled all parts are rigidly united, which alone insures the stability of the structure.

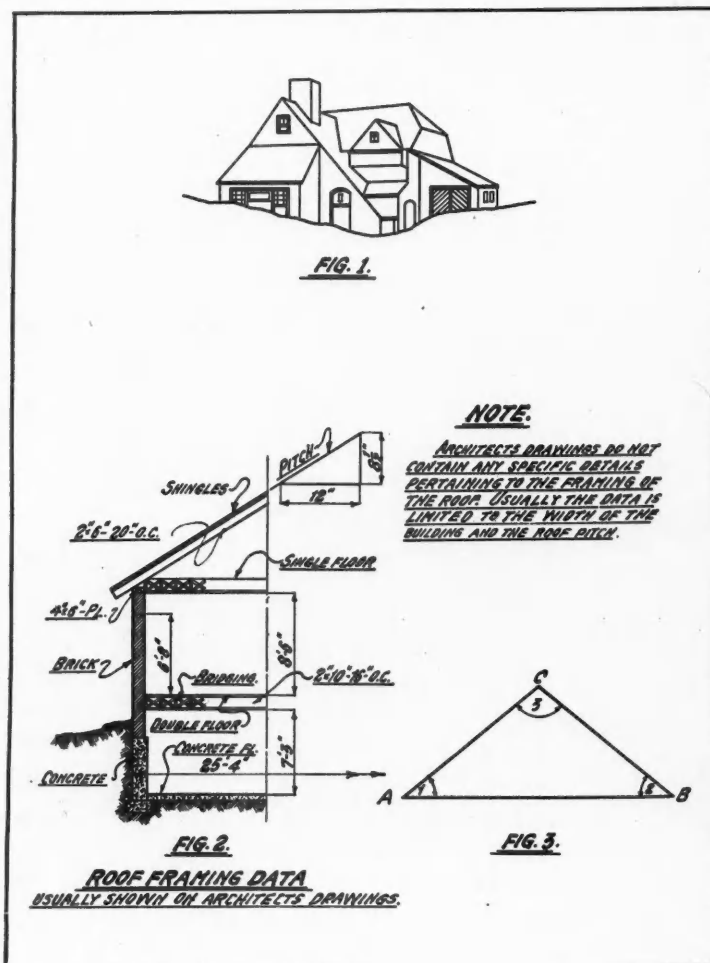
Here Is a Roof Framing Problem to Test Your Skill—More Will Follow.

The Architect's Plans do not give the Details of Roof Construction—It is up to the Carpenter and his Steel Square! This Series will tell HOW.—More money for those who know!

How many of you will admit the fact that you "don't know it all" in roof framing? Now don't delude yourself. How would you go about it if you were given the job of constructing the roof frame shown in Fig. 1? It does not appear like an easy task. It is pretty well cut up with hips and valleys, gables and dormers, fancy slopes and rather irregular pitches. Where would you start?

You know well that it's the carpenter's job to frame the roof, and if you ever had a chance to examine a set of working drawings you also know that no architect ever supplies any details pertaining to the framing of the roof. All the information on this subject furnished by the architect is limited to the dimensions expressing the width of the building and the pitch of the roof in addition to the size of material to be employed, as shown in Fig. 2. And with this meager information the carpenter is expected to complete the job.

In roof framing it is not the mechanical skill of the workman that is essential. It is the ability to determine
(Continued to page 120)



Power Tools Are Highly Valued

Big Contractors Utilize a Wide Variety of Electric Tools and Provide Special Case for Them

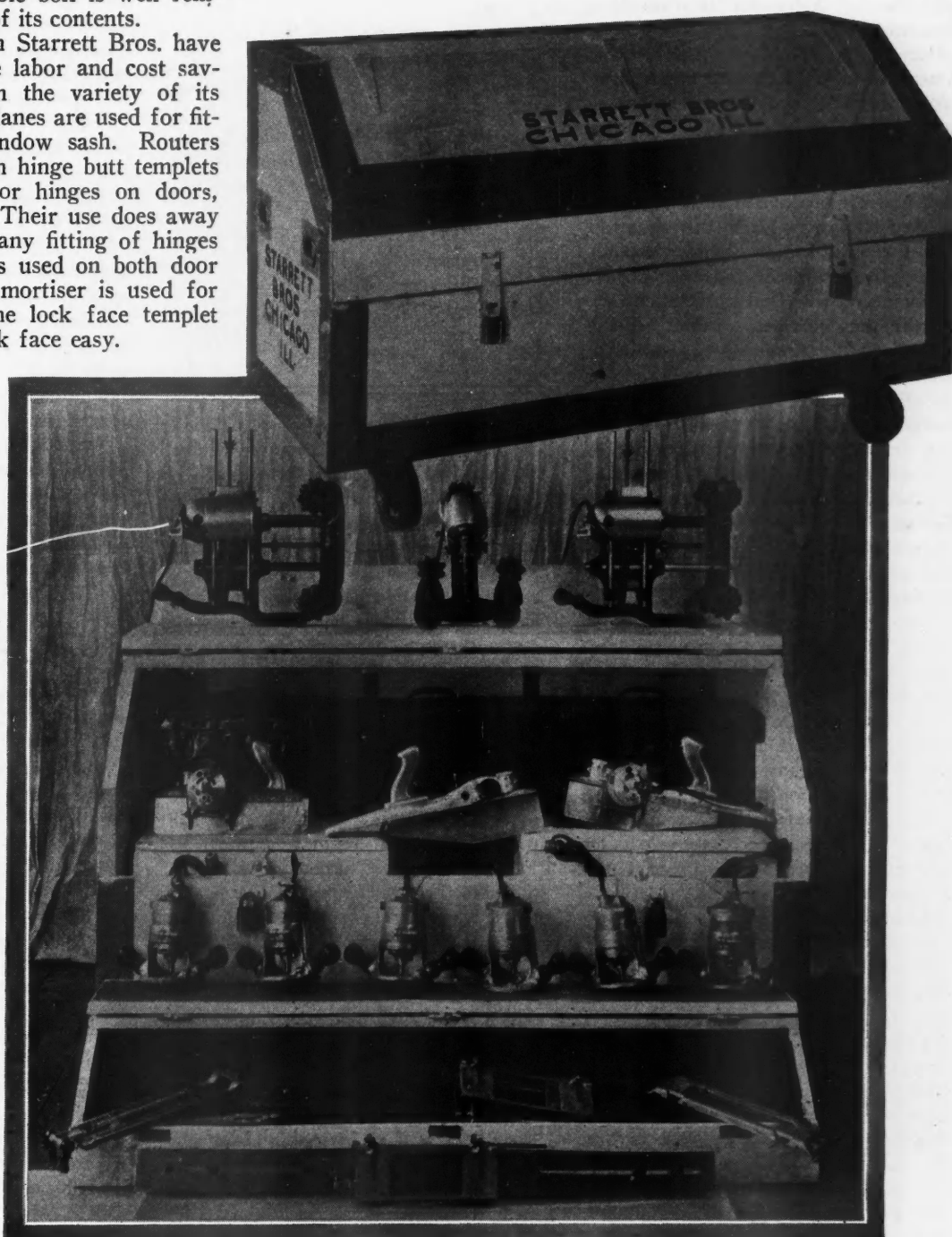
POWER hand tools are an important part of the equipment of Starrett Bros., one of the largest contracting organizations in Chicago, and known throughout the country. Starrett Bros. employs a large assortment of these tools on its jobs and the value placed upon them is demonstrated by the special care which is given them.

This company has built a special box for storing and transporting these tools. This box, shown in the illustration, is strongly built, with sturdy locks and large casters so that it can be moved from place to place easily. Heavy handles are provided for easy handling in transportation and the whole box is well reinforced for protection of its contents.

The extent to which Starrett Bros. have gone in utilizing these labor and cost saving tools is shown in the variety of its equipment. Electric planes are used for fitting all door and window sash. Routers are used, together with hinge butt templates to cut the mortises for hinges on doors, jambs and transoms. Their use does away with the necessity of any fitting of hinges as the same templet is used on both door and jamb. The lock mortiser is used for setting locks, while the lock face templet makes cuts for the lock face easy.

Extra bits and cutters make it easy to produce odd pieces of trim or to make finish cuts on any type of woodwork. Through the use of grinding pencils, that may be chucked in the tools, it is a simple matter to keep bits and cutters sharp on the job.

One of the manufacturers furnishing this type of power tools offers an inspection and check up service to its users which increases the efficiency and economy of using such equipment. This company will put its tools in proper running condition, making no charge for the labor, only charging for new parts installed.



This Special Tool Box, Built by Starrett Bros. Is Evidence of the Value Placed on Power Tool Equipment by This Nationally Known Contracting Company.

Building Activities

The Month's News of the Industry

Detroit Building Interests Organize to Promote New Building

AT a dinner meeting, held May 5, three hundred persons, representing all organizations in Detroit, Mich., which are interested directly or indirectly in building, launched a new organization for the co-operative stimulation of building in the Detroit area. This meeting was inspired by, and the plan of organization based on, the co-operative program advocated editorially by the *AMERICAN BUILDER AND BUILDING AGE* during the past year.

Bernard L. Johnson, editor of the *AMERICAN BUILDER AND BUILDING AGE*, addressed the meeting on the importance of co-operative action and the timeliness of the "build now" program. Clair M. Ditchy, speaking for the Detroit Chapter of the American Institute of Architects, analyzed the situation from the architect's and builder's standpoint, and Judson Bradway, a past president of the Detroit Real Estate Board, presented an outline of the objects of the proposed organization.

As a result of this meeting, each organization has appointed a representative to act on a committee which will perfect a permanent organization comprising all the building interests of Detroit. W. H. Hall, vice-president of Palmer Plan Homes, Inc., a well known Detroit building organization, was a prime mover in planning and putting over this meeting which was sponsored by the Detroit Real Estate Board, the Greater Detroit Builders' Association, the Michigan Society of Architects, the Detroit Chapter of the American Institute of Architects, the Builder & Traders Exchange, and the Associated Building Employers of Detroit. Organizations of mortgage bankers, building materials dealers, manufacturers, newspapers, city planning and civic organizations will be invited to join the movement.

J. Lee Baker, president of the Detroit Real Estate Board, and former judge Arthur L. Lacy, were elected temporary president and secretary, respectively, of the new organization.

The proposed plan is to organize a non-profit corporation which will include in its membership individuals, private corporations, through appointed representatives; trade associations, through their secretaries or other officers; civic associations, through their officers; and city officials by appointment of the mayor. A suggested list

Coming Events

- June 3-4, 1931—National Lime Association, Greenbriar Hotel, White Sulphur Springs, W. Va.
- June 22-26, 1931—American Society for Testing Materials, Stevens Hotel, Chicago.
- June 23-26, 1931—American Society of Heating and Ventilating Engineers, Semi-annual, New Ocean House, Swampscott, Mass.
- July 8-9, 1931—Southern Pine Association, Summer Meeting, Deshler and Wallick Hotels, Columbus, Ohio.
- July 16-17, 1931—Carolina Retail Lumber & Building Supply Dealers' Association, Summer Convention, Asheville, N. C.
- Aug. 10-15, 1931—United States Building & Loan League, Annual, Bellevue-Stratford Hotel, Philadelphia, Pa.
- Sept. 17-18, 1931—National Hardwood Lumber Association, Annual, Hotel Sherman, Chicago.
- Oct. 13-16, 1931—Illuminating Engineering Society, Annual, William Penn Hotel, Pittsburgh, Pa.

of thirty-one organizations includes every organization and business whose interests are in any way forwarded by the stimulation of building.

As suggested at the first meeting, the purposes of the new organization will be to promote home ownership, new building and modernizing; improve financing methods; decrease building costs through research to improve methods and materials; establish minimum standards of construction and certification of quality construction; to promote better architecture and community planning; to carry on co-operative advertising to promote home building; to maintain a public information bureau and building exhibit; to maintain a rating bureau; and to coordinate the activities of all groups for the advancement of general building and home ownership.

It is expected that some of these activities can be made self-supporting. The cost of maintaining the organization office and of the proposed advertising campaign will be met by stock subscriptions of the member organizations. The amount of individual subscriptions will be determined by the ability of the member to pay and the benefits which would accrue to the member from the successful activities of the corporation.

For some time, the *AMERICAN BUILDER AND BUILDING AGE* has been advocating co-operative organization of the building interests of individual communities for the advancement of their mutual interests, both in the promotion of business in general, and in meeting the competition of outside interests. The Detroit organization has been projected along just these lines. Its enthusiastic reception by all interests concerned, assures its accomplishment and its success will demonstrate the practical value of such co-operation.

Perfect Wrought Iron Welding Elbows

A JOINT announcement by The Locomotive Terminal Improvement Company, of Chicago, and A. M. Byers Company, wrought iron manufacturers, apparently answers the long felt need for wrought iron welding elbows. These new elbows, known as weldells, range in size from 2 inches to 12 inches and are manufactured with the same radius, and center to face measurements as standard radius fittings.

In the forging of these elbows, a tangent is formed on each end, making weldells interchangeable with standard fittings and the ends are beveled 45 degrees for welding. Stock sizes include both standard and light weight (10 gauge) sections. Weldells are forged from wrought iron plate with a smooth, uniform internal diameter and a reinforcing rib along both the outer and inner curvature of the radius. The process permits weldells to be made from the same material as the balance of the piping system.

Appoint New Secretary

R. B. Walborn, formerly secretary of the Michigan Retail Lumber Dealers' Association, has resigned to accept a position on the sales staff of the National Plan Service, Inc., 1315 W. Congress St., Chicago. He will make his headquarters at Romeo, Mich.

Mr. Walborn has been succeeded by Hunter Gaines, formerly suburban secretary of the Detroit dealers association. He will maintain his office at the state association headquarters in Lansing.

Thermax Moves to Chicago

ON April first the offices of the Thermax Corporation, formerly located in Seattle, Wash., were moved to Chicago, and are now located at 228 N. La Salle St., in the Builder's Building.

CURRENT CONSTRUCTION FIGURES

April Permits Better Than April Contracts

IN the face of a decline in building contracts awarded during April, considerable encouragement is found in the fact that permits for the month showed an increase, and that there is a conspicuous activity in the smaller communities and rural districts which are not covered in the contract reports.

The monthly survey of building permits made by S. W. Straus & Co., shows a gain of 7 per cent in April over March. When compared with an anticipated decline of approximately 2.7 per cent between the two months this can be taken as a favorable condition. In addition to this, April permits in the 25 cities reporting the largest volume showed a gain of 8 per cent over March and 13 per cent over April, 1930.

On the other hand, the total of contracts during April, both reported and unreported, reached a figure of \$455,367,417, according to estimates by A. B. & B. A.; a loss of 9.8 per cent from March; although a small seasonal gain between the two months is considered normal. Residential construction, which showed a steady increase during the first quarter, also declined but not to as great an extent as the total construction, the loss being only 7.9 per cent.

The month's total of \$455,367,417, in contracts awarded, was divided between the various classes of construction as follows:

Residential Buildings.....	\$192,678,834
Commercial Buildings.....	28,931,107
Factories	12,318,417
Educational Buildings.....	25,094,198
Hospitals and Institutions.	22,123,948
Public Buildings	10,620,306
Religious and Memorial...	5,874,991
Social and Recreational...	12,763,028
Public Works and Utilities	144,962,588

Total Construction...\$455,367,417

The total volume of contracts awarded in the entire country, as estimated by the AMERICAN BUILDER AND BUILDING AGE, is included in these figures. The estimate is based on the figures for contracts awarded in the 37 states east of the Rocky Mountains, as reported by the F. W. Dodge Corporation. To these figures, factors to provide for building in the 11 Rocky Mountain and Pacific Coast states, and for the smaller unreported projects not covered by the Dodge reports were added.

In the 11 western states the normal building volume is about 10 per cent of the total for the rest of the coun-

try. Building permits in these states during April, as reported by S. W. Straus & Co., amounted to only 9.9 per cent of the total for the other states. Because of this showing 9 per cent was added in this estimate to account for the western states.

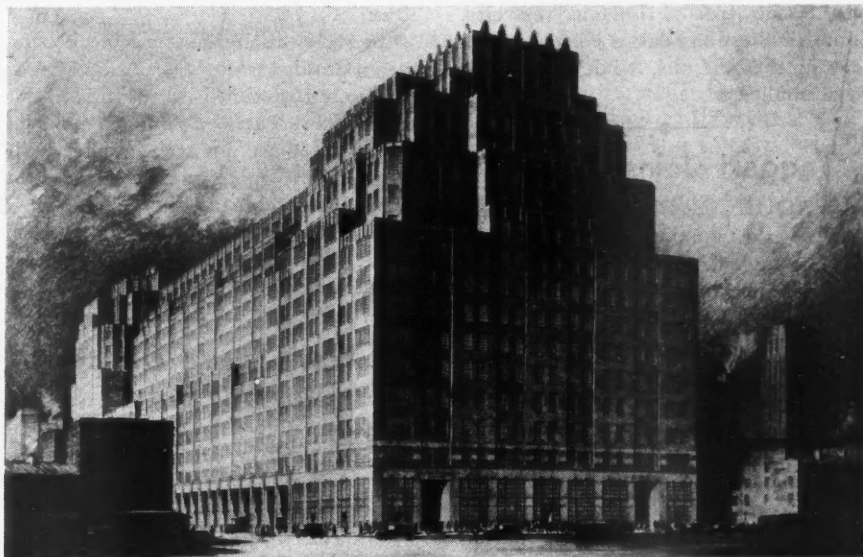
The Dodge reports cover only a portion of new building, modernizing and repair projects of less than \$5,000 each. These small, unreported contracts make up a large proportion of the entire building activity of the country. They represent much of the work done in the smaller communities and rural districts. Observation shows that this type of work is going forward at the present time at a satisfactory rate.

This work is usually estimated at about 25 per cent of the total construction for the country. Because of the general falling off of construction during April, however, 24 per cent has been taken as a conservative factor. Since practically all this unreported work is home building, it has been classified under Residential Buildings in the Tabulation.

Second Largest Building

THE largest building in New York City, and the second largest in the world, is being erected by the Port of New York Authority. It will be known as "Union Terminal No. 1," and will serve as a motor truck terminal for the incoming and outgoing, less-than-carload freight of 12 leading railroads.

With a ground area of 164,000 square feet, and occupying 38,000,000 cubic feet of space, this massive structure will have 67 acres of floor space, 480



Union Terminal No. 1, Now Being Erected in New York City to Handle Less-Than-Carload Freight of 12 Railroads Will Be the World's Second Largest Building.

truck berths, and a capacity to handle 680,000 tons of merchandise a year. It was designed by Abbott, Merkt & Co., architect-engineers, who are also supervising its construction. It is surpassed, in size, only by the Merchandise Mart, in Chicago.

Adopt Certification Plan

IT has been announced, by Erwin M. Lurie, executive secretary of the Associated Metal Lath Manufacturers, that the members of the organization have, both individually and as a trade association, approved the Certification Plan of the Department of Commerce, Bureau of Standards, Washington, D. C. This is the first national association connected with building materials, the membership of which has adopted this plan one hundred per cent. Among other organizations in the building field which have adopted certification for their industries are the Common Brick Manufacturers Association, the National Lumber Manufacturers Association, the Hardware Manufacturers Institute, and the Sand-Lime Brick Association.

Under the Certification Plan, any architect, contractor, building owner or public official, who desires uniformity of bidding and the assurance of high quality products, merely requests the manufacturers to state in their bids that they are "willing to certify" that their products will conform with the Federal Master Specifications which govern metal bases for plaster and stucco. He will then request the successful bidder, who has given this assurance, to tag materials indicating that they are manufactured in accordance with the Federal Master Specification. Shipments which do not conform with this specification are rejected.

Home Building Active in Eastern States

LONG ISLAND is experiencing one of the most active home building periods it has ever known, according to the New York Herald Tribune. It is said that builders are actually finding it difficult to keep up with the demand for moderate priced dwellings. Several thousand houses in this class are now under construction on the island, the bulk being in the Queens section where houses are being put up in groups of 100, 200 and 500.

Newspaper estimates place \$5,000,000 per week as the sum being invested, in this section, in small homes. One building firm reports an average of several house sales per week, the sales price being about \$7,000 each.

Financing seems to be readily available for these houses and it is reported that the present buying movement is more substantially financed than those of previous years because buyers are paying larger equities.

Plans for new construction to the amount of \$15,000,000 or more have been recorded in Westchester County, N. Y., since the first of the year. Of this total, approximately 60 per cent, or \$9,000,000 represents investment in residential building.

The Philadelphia Public Ledger reports that dwelling construction is showing a decided improvement according to permits issued together with announcements of developments in various suburbs which are not reflected in the city permits. While Philadelphia is not experiencing the activity of a few years ago, there is a distinct upward trend, with operative builders again entering the field. Philadelphia builders and contractors are also interested in a number of projects to be erected outside the city. Some of these are large jobs that will cost in the millions, while others are on a smaller scale.

Taggart Joins Dunbrik

ANNOUNCEMENT has been made of the appointment of A. D. (Pat) Taggart, Cement City, Mich., as regional director of the Dunbrik Industry, in Michigan. Mr. Taggart will have charge of promotional work among architects and engineers in connection with the development of this industry, and also co-operate with plants already established and new ones now starting.

Mr. Taggart, subsequent to his wide experience in the sale of sand-lime building units, was manager of the Jackson Brick Co. At a former time he also was active in the sales end of concrete products and was identified

with the promotional work of portland cement plants. He will, for the present, maintain headquarters in Cement City.

Tallest in Memphis

THE recently completed Sterick Building, is the newest and tallest building in Memphis, Tenn., rising to a height of 367 feet above the street level. The principal owner is R. S. Sterling, oil man, banker and capitalist



The Sterick Building, Newest and Tallest in Memphis, Tenn.

of Houston, Tex. Wyatt C. Dedrick, his son-in-law, was the architect. The building was erected by the Bellows & Maclay Construction Co., of Dallas, Tex.

In style the Sterick Building is basically Gothic while the American set back construction is used. This building incorporates a number of features which are not seen in office buildings of the more northern cities but which are important in a southern locality. These include adjustable, venetian blinds at all windows, and four blade ceiling fans in every office.

Nash Made Director

CHARLES B. NASH, vice president of the Standard Sanitary Mfg. Co., Pittsburgh, and director of publicity of the American Radiator & Standard Sanitary Corporation, New York, has been elected a director of the Heating & Plumbing Finance Corporation, a subsidiary of the American Radiator & Standard Sanitary Corporation.

French Mission Studies American Building

THE French Building Mission to the United States, officially organized by the National Federation of French Industries, spent part of the months of April and May in a study of the American process of construction. The Mission, headed by Colonel Joseph Mornet, one of the foremost engineers and builders in the French army, representing the French Ministry of War on this mission, visited New York, Boston, Buffalo, Niagara Falls, Detroit, Washington and Philadelphia.

The French Building Mission had as its object according to Raymond Treuil, Secretary of the National Federation of French Industries in the United States, "the study of the American process of construction in order to blend with the strong traditions of old Europe the audacity of conception and the genius of organization of young America.

"Our mission is interested in building materials, in the organization of the building-yards, in labor saving devices and machinery, in sanitary and comfort devices of the dwellings, in domestic utensils, in the financing and income of real estate investments, and in city works."

Mr. Treuil also stated that members of the mission would be very glad to receive, at their addresses in France, any catalogs, documents or literature pertaining to these objects of their visit.

Miami Beach Development

AN example of recent progress in Florida construction is seen in the announcement of a new, thirty-unit apartment building which has recently been started at Miami Beach. This building will cost \$180,000 and with the site will represent an investment of \$250,000, is being built by William Whitman, president of the Excelsior Printing Company, of Chicago, and an extensive Miami Beach property owner.

The architect, Roy F. France, of Chicago, stated that contracts for piling and other construction work would be let the last part of May and work would start immediately.

Study Masonry Weathering

A SYMPOSIUM on the weathering characteristics of masonry materials will be one of the important features of the Thirty-fourth Annual Meeting of the American Society for Testing Materials, to be held at the Hotel Stevens, Chicago, June 22.

INTER-CITY INVESTMENTS LIMITED
1 ST. CLAIR AVENUE EAST
TORONTO

February 26, 1931.

Messrs. Kent Ockley, Ltd.,
200 Madison Ave.,
Toronto, Ont.

Gentlemen:

We take this opportunity of expressing our entire satisfaction with 26 Crawford Overhead Doors which you have installed for us.

They operate with perfect ease and certainly solve the garage door troubles previously experienced with the swinging type and, should anyone want a recommendation, do not hesitate to put them in touch with us.

Yours very truly,
[Signature]
President.

TELEPHONE ELGIN 1886

E. D. MAGUIRE LIMITED
BUILDERS
TORONTO

March 9th, 1931

Kent Ockley Limited,
200 Madison Ave.,
Toronto, Ont.

Gentlemen:

The doors installed by you at 60 Anderson Ave., have given me the greatest satisfaction and on account of the width of the garage, they enabled me to use the same as a two-car garage in place of a one-car garage. The only thing I can say about the doors is that they have been very satisfactory. The doors supplied by you for E. D. Maguire Limited on Millwood Road, have also given us the greatest satisfaction. As you know, you have supplied twenty-eight sets of doors with hardware, and as yet, we have had no breakage whatsoever. This certainly is a record for rented apartments.

I have sold my residence at 60 Anderson Avenue and have moved to 74 Oriole Road. I would be glad if you would call and give me your quotation on the doors at that address.

Yours very truly,
E. D. MAGUIRE LIMITED
For *[Signature]*
Secretary-Treasurer.

HERE'S PROOF



This illustration shows part of an installation of 52 Crawford Doors made by Kent Ockley, Ltd., in Toronto, Ontario. The Crawford one-piece construction permits an unlimited selection of doors to harmonize with any type of architecture. Wide doors for two- and three-car garages cut costs as much as 20%. Get details at once.

... that rental property owners appreciate the exclusive advantages of
CRAWFORD DOORS

THE Crawford Door story is a story of satisfied customers, told by the customers themselves. And no wonder! The secret lies in *silent, patented one-piece* operation. Just a two-inch lift straight up to clear ice and snow — then the door slides overhead out of the way. A tight, weather-stripped fit all around. Warping, twisting and rattling is utterly impossible. Just imagine the sales possibilities for live dealers, especially since Crawford Doors are equally applicable to new and old garages, *with widths up to sixteen feet.*

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Crawford Door Co.,
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Please send me complete information on the new Crawford Overhead Doors.

Name.....

Address.....

Architect Lumber Dealer Builder

Prospective Owner A-5

What Dealer Leaders Say about Builder Relations

(Continued from page 56)

owner. This procedure gives the consumer the best possible home and permits for the dealer and the builder a margin of net profit commensurate with the valuable services they render.

This is a procedure we thoroughly endorse and believe that today it represents the kind of friendly and efficient co-operation which should exist to the largest possible extent between dealers and builders.

In some cases it happens that the lumber dealer in proceeding in this way takes the contract from the prospective home owner. Technically that would make him a general contractor but in the vast majority of cases he then turns the contract over to a general contractor, one whom he can conscientiously recommend and who is agreeable to the prospective home owner. This is entirely different from the proposition on which you take issue in your editorial where you assail the dealer who maintains his own construction crews. This latter class of dealer is so infinitesimally small that I seriously doubt the justification of making him an issue.

I could not name you five dealers in the United States that do this sort of thing. I am trying right now to think of several and in every case it is a dealer who was originally a contractor and expanded his operations into the yard business field. There may be cases which are the reverse but offhand I cannot name you a single one.

Really I believe that builders and dealers are working together better today than ever before, and I believe that fact should have emphasis. An editorial along these lines would help a great deal, whereas singling out the extremely exceptional case for the subject of editorial comment, in my opinion, would work the other way.

National Retail Lumber Dealers Assn., Adolph Pfund, Secretary-Manager, Chicago, Ill.

Dealer Must Sell Completed Building: Montgomery

I have read carefully the advance proof of your editorial. I can agree with a number of your statements, and I believe that the whole purpose of your editorial is intended to be constructive, but there are other statements in your editorial with which I do not agree, and with which I do not believe many retailers will agree.

Conditions in different parts of the country differ as to the overlapping of dealers and contractors in the other

fellow's field of activities, but it seems to me that there are more contractors who have gotten into the lumber and building material business in this section, than there are dealers who have gotten into the contracting business.

The trend of thought among many of the closest students of the retail lumber and building material industry is that the dealer must sell the completed building to the owner. The criticism of many of those outside of the building industry is that the person desiring to build a home must contact at least a dozen or fifteen different branches of the building industry.

Whether the dealer must get into the actual contracting business, or at least sublet his contracting, the fact remains that the trend is in the direction of the dealers selling the completed building.

We deplore any ill will or bitter feeling between the dealer and the contractor just as much as you do. Undoubtedly the way out is, as suggested in your first paragraph, of the contractor selecting a reliable dealer and sticking by him, co-operating harmoniously with him, instead of bearing down on three or four dealers, playing one against the other in the bitter process of finding out who can "sharpen the pencil" the sharpest. You well know the tremendous amount of damage and injury contractors have caused dealers in this nefarious practice.

Wisconsin Retail Lumbermen's Association, D. S. Montgomery, Secretary, Milwaukee, Wis.

Southwestern Dealers Favor Team Work: Woods

I was very much interested in the editorial proof you sent me a few days ago.

We are holding a large sized line yard group gathering tomorrow and the next day. I am going to take the privilege of presenting your angles of this subject for their consideration. I have very clear ideas in regard to it myself and am frank to state that I lean strongly in your direction.

I will be glad to write you what seems to be the view of this group after the conference is over.

Southwestern Lumbermen's Association, E. E. Woods, Secretary-Manager, Kansas City, Mo.

"Home Financing the Key," Says Marckres

In talking with a national bank examiner a few days ago, I asked him how he regarded the retail lumberman from a credit standpoint. He told me that they stood at the top of the list. Building financing is probably the biggest problem in the promotion of building. If the contractors will provide a solution of that problem that promises better results than the dealer can offer, I do not believe there will be any disposition on the part of the dealer to encroach upon such contractor's preserves.

Chas. D. Marckres, Secretary, Iowa Lumber and Material Dealers' Association, Des Moines, Iowa.

Texas for Let-Live Policies

The article on how "Dealers Can Promote Home Building" is a splendid one and to the point.

The retailer and the contractor together are many times the laughing stock of the mail order salesmen and of contractors who are equally interested in building but are not interested in contracts or construction which do not pay a reasonable profit. This was recently brought home to me in connection with the construction of some barns. The retailer thought that the mail order house was bidding upon the material for these barns and that they should cut the price in order to obtain the business; but the confidence of the owner was so shaken by the vast difference between the mail order house's quotation and the retailer's quotation that he took the higher of the two bids, and the mail order house obtained the business.

In our good State, a lumber company cannot be incorporated to do a retail and wholesale lumber business and at the same time do a building business. They must be separate corporations, therefore, very few of such combined corporations exist; however, we get in the building business in this way: The commitment for a loan is assigned to the lumber dealer, or a materialman's lien is assigned to the lumber dealer as collateral paper. From this standpoint alone, we become automatically in the building and financing (banking) business.

If we could get away from the banking business, the lumber dealer standing upon his own record as one operating economically, and the contractor using safe and sane methods of estimating with a profit to himself, the construction field would be a whole



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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER AND BUILDING AGE

What Dealer Leaders Say about Builder Relations

(Continued from page 112)

lot better off and more prosperous. This thought could be analyzed in this way, that the contractor does not wish to see the lumber industry sustain a financial loss; for when it does, the buying power of the nation is reduced. As a general rule the retail lumber industry pays good wages. The retail lumber dealers should want the contractor to make a reasonable profit, for if he does not, there can be no stabilizing of prices for building materials.

We greatly appreciate your sending us a proof of the article to be carried in your June magazine, and we are only too glad, at any time, to lend our best efforts for promoting good friendship and fellowship among lumbermen and contractors.

R. G. Hyett, Secretary, Lumbermen's Association of Texas, Houston, Texas.

Torrence Says Dealers Are Forced to It

I have studied carefully the proof of the Editorial on the impropriety of retail dealers entering the contracting business—upon which you asked my opinion—and I regret to say that I am not wholly in accord with you, in the position reflected in this Editorial.

The fact of the matter is that the centralizing trend in all industries—forced by economic pressure—is compelling retail lumber dealers of the more progressive type everywhere, to do the type of merchandising at which your editorial evidently strikes.

Though the conditions do not apply everywhere, and are not applicable where there are bona fide contractors well financed and responsible, the fact of the matter is that in many localities the dealer has been reluctantly forced into quoting turnkey jobs.

First—by the practice of contractors to peddle bills for price, without any recognition of quality and dependable service.

Second—by their tendency to buy direct from manufacturers and wholesalers.

Third—by their inability or reluctance to do real creative selling.

Fourth—by the financial irresponsibility and poor credit reputation of some seventy-five per cent of the gentry who call themselves contractors.

Dealers who are doing a so-called contracting, or at least quoting customers on turnkey jobs, have demonstrated—

First—that this does not work a hardship upon the contractor. Many

of their contractor customers find it more profitable to get their jobs from the lumber dealers than from the customers direct.

Second—this has been an advantage to the consuming public, in the fact that the lumber dealer is in better position than the layman—the ultimate builder—to see that only responsible and competent contractors are entrusted with the work.

Third—the speculative jerry builder who has ruthlessly robbed the consuming public, discredited the entire building industry and made our cities look so ugly, will never be gotten out of the picture, until the permanent and responsible factors in the industry stop letting him do the selling job for them.

The Ohio Assn. of Retail Lumber Dealers, Findley M. Torrence, Sec., Xenia, Ohio.

Quality Builders and Quality Dealers Have Interests in Common: Art Hood

I have carefully read your editorial, "Dealers Can Promote Home Building" and think you have cast considerable light on a difficult question.

My own thought and effort has been devoted for six years to the segregation of the Quality Manufacturer, the Quality Building Material Dealer, and the Quality Small Home Contractors from the sub-standard factors in the building industry and working out a plan whereby the three quality factors may co-operate to advantage and to the disadvantage of the sub-standard factors.

I am now convinced that a national financing plan is the only basis upon which these three quality factors can be organized and I am doing my best to set up such a financing plan.

On the problem you discuss in your editorial, I think possibly still further light could be shed by segregating the small home construction field from the other fields of construction activity and instead of calling the small home constructor, a contractor, to start a movement to have him known as a Home Builder.

There are two kinds of contracts, as I see it, in providing for the "lock and key" home job to a consumer—a sales contract and a building contract.

In my opinion, the building contract should be handled by the home builder, and the sales contract could be eco-

nomically handled by either the home builder or the quality building material retailer. Local conditions and the sales promotion capacity of the home builder from an advertising, merchandising and financing viewpoint should govern each sales contract.

One thing is certain in my mind, and that is that there is nothing competitive or antagonistic between the high grade building material retailers and the builder who wants to do a good job for the consumer.

In the past the retailer has been content to have the home builder perform the sales promotion function as well as to take the building contract.

Not from lack of sales ability on the part of the home builder but from lack of financial strength to put on an aggressive home promotion movement, home building has lagged with disastrous results to both the building material dealer and the home builder.

Now certain aggressive and progressive building material retailers have sensed the fact that they should not throw the whole burden of sales promotion work upon the shoulders of the home builder and are out promoting and co-operating in the sale of homes to the consumer. The wisest of these dealers are in turn content with a sales contract and are delighted to have the home builder secure the building contract.

Furthermore, the progressive building material dealer of today sees the economy of confining his shopping around for building contract figures to quality builders only and *seeing that they get a profit on their work.*

If the quality home builder and the high grade building material retailer will unite in a co-operative program to see that each secures a fair profit and if building contracts are always awarded to builders, I see no reason why they should quarrel over who should undertake the sales contract but when either has made the sale of a home the other should be delighted because it will mean profits for both of them.

I would like nothing better than to see yourself and the American Builder and Building Age undertake a strong position along the above lines and I am of the opinion that it would have a *constructive* effect on the entire home building industry, relieving a great deal of uncertainty that exists in the minds of both the dealers and contractors.

Associated Leaders of Lumber and Fuel Dealers of America, Arthur A. Hood, President, Chicago, Ill.

REVOLUTIONIZING TRUCK VALUES

ANNOUNCING THE NEW

1 1/2 TON REO

By actual comparison the new SPEED WAGONS surpass all commercial vehicles in the lowest price 1 1/2-ton field!

Equipped with heavy, powerful truck type 4 or 6 cylinder engines!—each having *more* bearings and *larger* bearings than any competitive engine! And Reo's maximum piston displacements give abundant power!

The REO cylinder blocks are cast of chrome nickel iron, actually *7 times longer wearing* than the usual grey iron! Pressure lubrication forces oil constantly to all vital engine parts, *even to the piston pins!* Frames in the new SPEED WAGONS are 7" deep! The brakes are *hydraulic*, fully enclosed, weatherproof, safe!

Compare specifications with REO'S. Drive the new SPEED WAGONS. Load them with

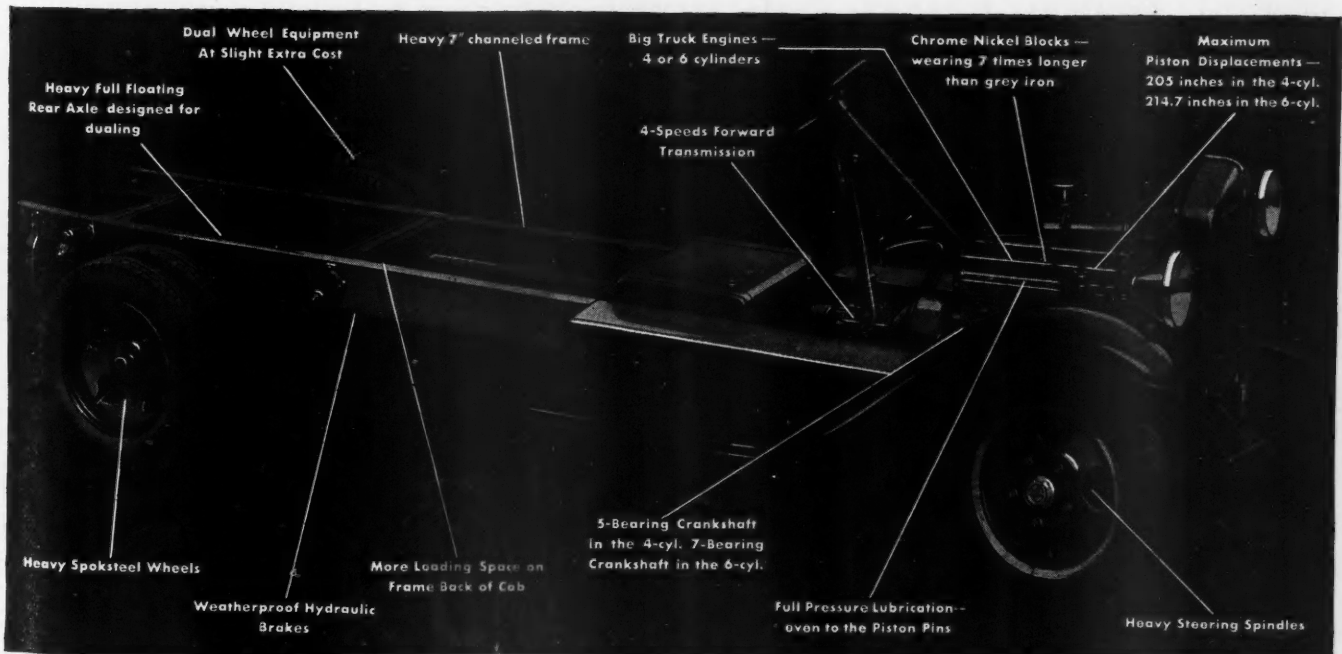
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Chassis f. o. b. Lansing, Michigan
DUAL WHEELS EXTRA

your own loads—test them on your own particular haulage routes. Then you will realize that these remarkable new trucks truly uphold the finest of Reo traditions—*quality throughout.*

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER AND BUILDING AGE

The Production of Low Cost Housing

(Continued from page 83)

that met the following requirements:

1. A low initial payment, approximately 10 per cent of the purchase price or less.
2. A purchase price not largely increased by finance costs and charges.
3. No renewals of mortgages and the elimination of renewal charges.
4. Amortization of mortgages over a longer period of time with consequently smaller payments.
5. Convenient monthly payments that cover all costs, including amortization.

"I know", said Mr. Yates at that time, "that plans meeting similar requirements are in existence today, but they are applied only to purchases made in particular home developments. What is needed is a plan meeting the requirements above that has a universal application, making it possible for the purchaser to buy a home of his own selection anywhere in the territory served."

Since Mr. Yates made this statement there have been at least two attempts to furnish financing on a country-wide scale that would supply the home seeker with 75% of the mortgage money.

One of these attempts, made by mail order houses, cannot, in the nature of the case, provide financing except with strings attached to it. The mail order house is selling materials, products and house equipment; and in order to get the money, the home seeker must buy what they have to sell; and therefore the ideas and desires of the prospect must be strictly limited to what is offered by the money lender in the way of design and equipment selection. This one fact has kept a great many people from ordering mail order houses. They want something *different* than the mail order house will offer.

Revenue Sources of Four Leading Industrial States in Percentages

Showing variations by states and years

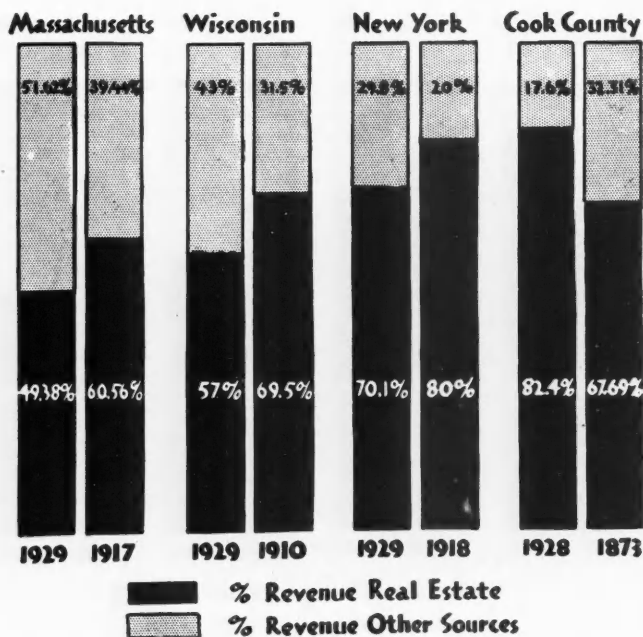


Chart prepared by the Association of Real Estate Tax Payers of Illinois.

The cost of mail order financing is about \$8.66 per month on each \$1,000 and includes 6 per cent interest with amortization of the principal in 15 years.

Financing Through Lumber Dealers

The other recent attempt that has been made to establish a home financing method throughout the country as a whole is yet in the course of development and it may be too early to gauge its real value. It is an attempt on the part of the lumber dealers of the country to meet mail order financing competition and to provide financial assistance to home seekers through loans that will total up to 75% of the cost of the house. Under this plan the owner would pay about \$8.44 per month for every thousand dollars borrowed, and this payment would cover all charges, including interest. It is planned to make these loans available through certain lumber dealers in localities throughout the country and have them cover house as well as lot.

Neither of these plans meets the specifications laid down by Mr. Yates who wanted to see an initial payment of 10% or less. Such a plan is in operation in the development of Radburn, New Jersey, where the home buyer pays down 10% of the price and is given loans, covered by first and second mortgages, for the remaining 90% of the purchase price. These loans extend for 14½ years, only 6% interest is charged on both loans, and the service fee for mortgaging is \$10 per 1,000.

Regular Sources of Money

Mortgage money has always been available, in limited quantities, through sources that everyone knows about such as banks, building and loan associations, insurance companies and mortgage concerns. The complaint has always been, however, that enough money could not be obtained from these sources and that it has been necessary to obtain additional funds through second mortgages at extremely high rates of interest.

Local attempts have been made to extend credit to prospective home builders beyond the amounts available from ordinary sources and development companies have devised a variety of financing plans whereby the purchaser puts down a low first payment and pays up his second mortgage and interest money in a series of extended monthly payments. The criticism of such schemes in the past has been that the high cost of discounting second mortgage paper has made it necessary for the developer to regain the money lost through discounting by putting in a poorer grade of construction and materials.

Unquestionably, the development of better financing methods, not only in the loaning of money to home seekers, but also in extensions of credit throughout the whole building industry would greatly benefit building professionals as well as home builders. Subsequent financing articles in AMERICAN BUILDER AND BUILDING AGE will go into this subject in much greater detail, but, in the meantime, the Yates specifications, noted at the beginning of this part of the discussion, still stand as the ideal to be met.

Lines of Progress

Progressive trends in financing methods seem to be in the nature of setting up of loan systems countrywide in scope, operated by trade interests and by associations that are not primarily interested in the financial return but more directly in the return from products bought with the loaned money. The ideal is to provide financ-

(Continued to page 118)

NOW.. International Quality At Low Price—a New 1½-ton International with 4 Speeds

Only \$675

136-inch wheelbase chassis, standard equipment, f. o. b. factory



MODEL A-2 FEATURES

- 4 forward speeds.
- 22 ball and roller bearings.
- Powerful engine, L-head type;
3½ in. bore, 4½ in. stroke;
ample power with unusual
fuel economy.
- Cam-and-lever steering gear.
- Vibration-dampened clutch.
- 2 wheelbases: 136 and 160 in.

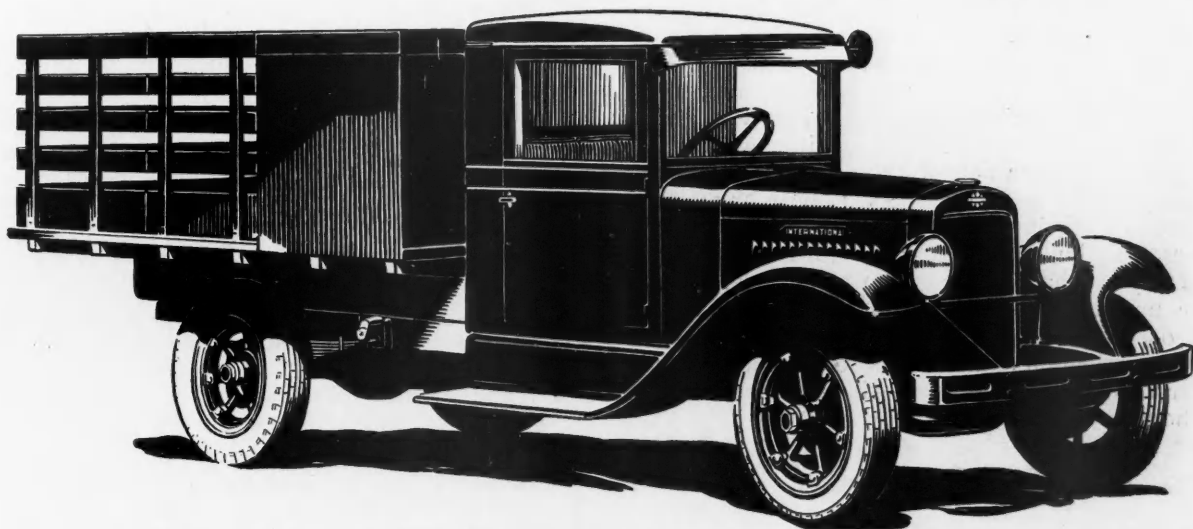
International Harvester announces a new 1½-ton, 4-speed, 136-inch wheelbase truck—the Model A-2. A better truck with more power than International has ever been able to offer at the low price of \$675 f. o. b. factory. It is a true International from front bumper to tail-light—of the same high quality and backed by the same Company-owned service that has made Internationals famous for low-cost hauling.

Here are power, speed, stamina, attractive lines, and all-around dependability. Here also is abso-

lute assurance of low upkeep expense and unusual operating economy for many years.

Ask for a demonstration of this new truck. Drive it. In no other way can you appreciate the quality that has been built into the Model A-2. It is another International achievement that will add to the ever-increasing popularity of the International line. Internationals are built in ¾-ton to 5-ton capacities. Sizes for all needs. There are 183 International Company-owned branches. Call on the nearest branch.

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



INTERNATIONAL TRUCKS

The Production of Low Cost Housing

(Continued from page 116)

ing assistance that will take care of everything involved in the production of a home, from the purchase of the land to insurance on the finished dwelling. In other words, we want to make it possible for the home seeker to buy every service and material involved in the construction of a home, in a single operation. Such a plan has been worked out locally in some communities and is based on a stipulated monthly payment to some trust or local association, this monthly payment covering all expenses necessary for purchase.

The Committee on Regional Plan of New York and Its Environs has this to say on the subject of home financing:

" . . . a large group of students of the housing problem have been driven to the belief that in easier credit lies the solution of the problem. Their belief usually expresses itself in five general directions: (1) Encouraging the expansion of building and loan associations, (2) Persuading large lending institutions to devote more of their means to housing, (3) Organizing second mortgage companies, (4) Exemption from taxation of income from mortgages and (5) State aid in the form of easy credit. If these fail, they see no alternative but direct government housing".

Financing Costs High

Meanwhile, the cost of financing homes raises from 2% to 12% of the total cost of the home, and the builder must take what money he can get on his projects and on whatever terms are allowed him. There has been criticism in the past of mortgage companies who have not scrutinized very closely the type of project on which money was to be lent. High class builders often feel that the builder who does not always follow the best practice but who has been well advertised and whose houses sell fairly fast, often gets a better deal from the banks and from the mortgage companies. The men who are sent out from mortgage companies to inspect and pass on projects do not know construction, is the complaint of some builders.

Whether this is true or not, the fact remains that the best the builder can hope to do on his financing charges is in the neighborhood of about six or seven per cent. Skill in reducing financing costs largely consists in holding commitments at any one time down to the minimum and thus keeping carrying charges down. In financing, as in the purchase of land, no more than a few statements of general advice can be given. Each specific situation must be handled on its own merits, and whether it is a question of cutting down the carrying charges on land or on the finished house or whether it is a question of dovetailing loan payments with expenditures, the builder must learn to handle money so that carrying charges are cut to a minimum.

In the meantime, a fourth and final factor in the problem of producing low cost housing is receiving a great deal of attention and it is this fourth factor which most nearly concerns the builder—the cost of constructing the house.

(In the second article of this series, the author will describe radical methods of construction that have been advocated to reduce the cost of constructing homes and will discuss some of the factors that make this problem difficult of solution.)

Cost Record System Big Asset to Murphey

(Continued from page 76)

portant features. The third one, in my opinion, is *inspection*. Our construction work is so closely followed that it is practically impossible for things to go wrong. John W. Murphey personally inspects each job every day. Henry G. Doe, Superintendent, is on every job every day and usually makes several visits. As described in my previous article, foremen work right with their men and exercise close supervision. Our architect makes frequent visits to each job and sees that plans are properly followed. I myself visit every job every day, and keep a record of these visits on a special card, with notations recording progress, suggestions made, etc. This card is kept in the job file pocket along with all other data pertaining to the job.

Seeing the foremen daily as we do, we talk with them about various phases of the work, materials ordered for delivery, costs, difficult problems, etc. As mentioned before, the foremen meet with us every Wednesday evening for a general council.

In closing, perhaps I should mention some of the construction features we have found suitable for this climate.

The patio, of course, is indispensable, and we provide also where possible a number of open porches. We rarely dig basements, as the hard baked ground, called *caliche*, is expensive to handle. We place the heating plant (usually hot water) in a small room off the kitchen or back porch. A good system for a five or six room house runs around six to eight hundred dollars.

Foundations are of concrete 18 inches wide and 12 inches deep; we have no frost here. Exterior walls are of brick or adobe, which cost about the same. We make brick walls 9 inches thick and adobe 12 inches thick, before plaster is applied. Most houses here are one story with flat, well-insulated roofs to protect against the heat.

Composition roofs are popular, and we use exclusively a 105 pound, ten-year guaranteed, roof of a well-known type which is sub-contracted to the local representative of the manufacturer. We recommend insulation under the roof to keep out the intense heat of summer, and have tried several types with success.

Floors are usually of 13/16th No. 1 oak, which looks well and wears well. In some houses we lay cement ruled off into squares. The labor cost on our houses is approximately one-half of the total cost. Material prices here are fairly steady, but at the present time are slightly lower than usual.

A type of architecture which might be called modified Spanish is the favorite in this region. Since land is on the whole inexpensive, houses tend to spread out, and two-story structures are very rare. People here simply will not climb stairs. Heavy walls, arched doorways, "picture windows" which give a beautiful view of mountains and desert, are popular features of our houses. Our architect has spent considerable time in Spain and Mexico, and has successfully adapted the architecture of these countries to this region.

The most popular arrangement is the large living-room with narrow wings at each end, porch front and rear, and patio in the enclosed portion. This provides plenty of light and air, and protection from the sun. While our style of architecture with its stucco exteriors in whites, grays, and creams is particularly suited to this region, I feel it has many advantages and could be adapted equally as well to other parts of the country.

Leakproof!

This new Box Frame saves on fuel bills

Mortar clinch groove...exclusive Andersen feature... makes weathertight union with wall

FOR your next masonry job, use the new Andersen Master Box Frame—the self caulking frame which cuts air leakage 42 %.

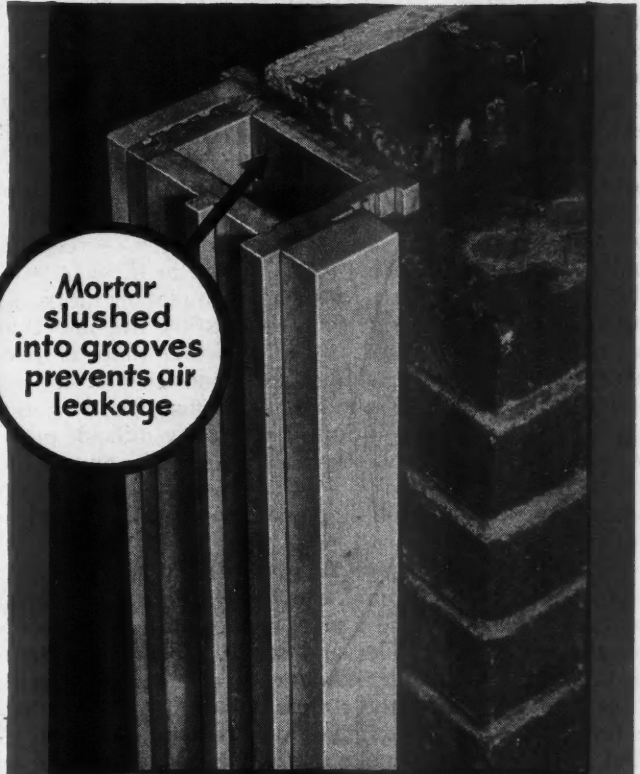
Engineers at University of Wisconsin tested this frame, with mortar slushed into the clinch grooves, and estimated a saving of one-third pound of coal per day per opening, under average conditions.

You can save on labor costs with this frame because you can fit all sash and cut trim at the bench. Pulleys are guaranteed ... they pass a test equal to 183 years' wear.

Drop us a note and we'll arrange a free demonstration of our new frame, made of genuine White Pine and also of Pongosa Pine. The Pongosa Frame has a special priming on all important joints—another Andersen invention which gives the builder better service ... at lower cost.

THE ANDERSEN FRAME CORPORATION
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Andersen MASTER Frames



Mortar slushed into grooves prevents air leakage

When mortar is slushed into the specially designed groove around Andersen Master Box Frames, it forms a leakproof union with the wall.



Clyde Manor Apartments, Kansas City, Missouri, Architect, P. J. Bette; Snyder Real Estate & Investment Co., Builders, Andersen Master Frames No. 672 furnished by Rust Sash & Door Co.

for a leakproof installation.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER AND BUILDING AGE

How Would You Frame This Roof?

(Continued from page 106)

correctly the proper lengths of the various roof members and to establish their bevels and angles to which their ends are to be cut that is most important.

A roof frame is built in the shape of a triangle. A triangle, as we all know, is a geometrical figure having three sides and three angles. These six elements of a triangle are inter-dependent. That means that we cannot change the value representing one of these elements without changing the others. Therefore it is evident that if we do not obtain the proper top or bottom cut of the rafter we change the angles, and that in turn changes the shape of the roof and affects the lengths of the rafters. Fig. 3.

It is plain that roof framing is a "mathematical job," and since carpenters are not expected to be mathematicians, an instrument known as the steel square was perfected. Most every carpenter carries one in his tool kit but its common use is to square timbers; and for this purpose most anyone can use it. It is very regrettable, indeed, that the mission of this device in the hands of the majority is limited to such a simple operation as squaring timbers only. Very few realize the fact that among all the tools used by the carpenter there is, perhaps, none so useful, simple and indispensable as the steel square. There is not a tool that may be so readily applied to the quick solution of the many difficult problems of laying out work as the steel square; and in the hands of one who knows how to use it this instrument becomes a simple calculating device of the most wonderful capacity.

There is a theory prevailing among carpenters that one must have a profound knowledge of mathematics in order to be able to use a steel square with all its complicated markings, tables and scales. This is an erroneous idea. The understanding of a few simple principles that enter into the construction of the square and a few elementary rules governing its application are all that are necessary to make the whole subject clear to an astonishing degree.

Every carpenter and builder will find it a great advantage to have a thorough knowledge of the capabilities of this instrument and it is to help them to easily acquire this knowledge applied to roof framing that this series of articles on this subject is being presented here.

The Construction Industry Can and Must Help Itself

(Continued from page 62)

clearance is to get actively under way were taken up in a discussion led by John Taylor Boyd, Jr., Architect and Chairman of the American Construction Council's Committee on Plan and Design in Slum Clearance.

Mr. Boyd directed the deliberations of the meeting exclusively in the direction of practical and realizable objectives. "The time for action has come," said Orrin C. Lester, Chairman of the Board, East Side Chamber of Commerce and Vice-President of the Bowery Savings Bank. He pointed out that there had been a great deal of talk and little accomplishment in the field of better housing and called for some hard thinking based on knowledge of economic law and an unwillingness to get sentimental about the matter. Four essential components in the success of any slum clearance project he outlined as follows:

1. *The co-operation of the city government in the adoption of, and adherence to, a definite and well-conceived plan of improvement, with streets, park and*

school locations definitely mapped.

2. *The co-operation of the builder and his willingness to work within the limits of a scheme that will cut down excess profit.*
3. *The co-operation of loaning agencies.*
4. *The presence of a controlling agency to co-ordinate the rehabilitating and construction activity.*

Successful Demonstration of Slum Clearances

That slum clearance is no longer a matter of theory but has been carried out in actual practice and at a fair profit to the individuals who were willing to give their support, was the hopeful message brought by George Gove, Secretary of the State Board of Housing of New York. The operation of the New York State Housing Law allows tax exemption on slum clearance projects and limits the dividends of the operation to 6 per cent. Through the working of this law, model apartments have been erected in New York City on Grand Street through financial support afforded by Lieutenant Governor Lehman and Aaron Rabinowitz. (The Grand Street Apartments referred to and which were later visited by the delegates to the meeting are illustrated and described in a complete article elsewhere in this issue.)

In Mr. Gove's opinion the essential requirement for slum clearance is a definite plan, to which the city will adhere, and which takes into account the short and long-term factors in connection with transit, parks, schools and streets, and, of course, housing accommodations. "If we had such a plan we would not have to worry about money as there would be plenty available," was his conclusion.

During the course of the meeting, a message was read from Governor Roosevelt of New York praising the Council for its efforts toward slum clearance and home modernizing.

Opportunities Today in Rooming House Hotels

(Continued from page 89)

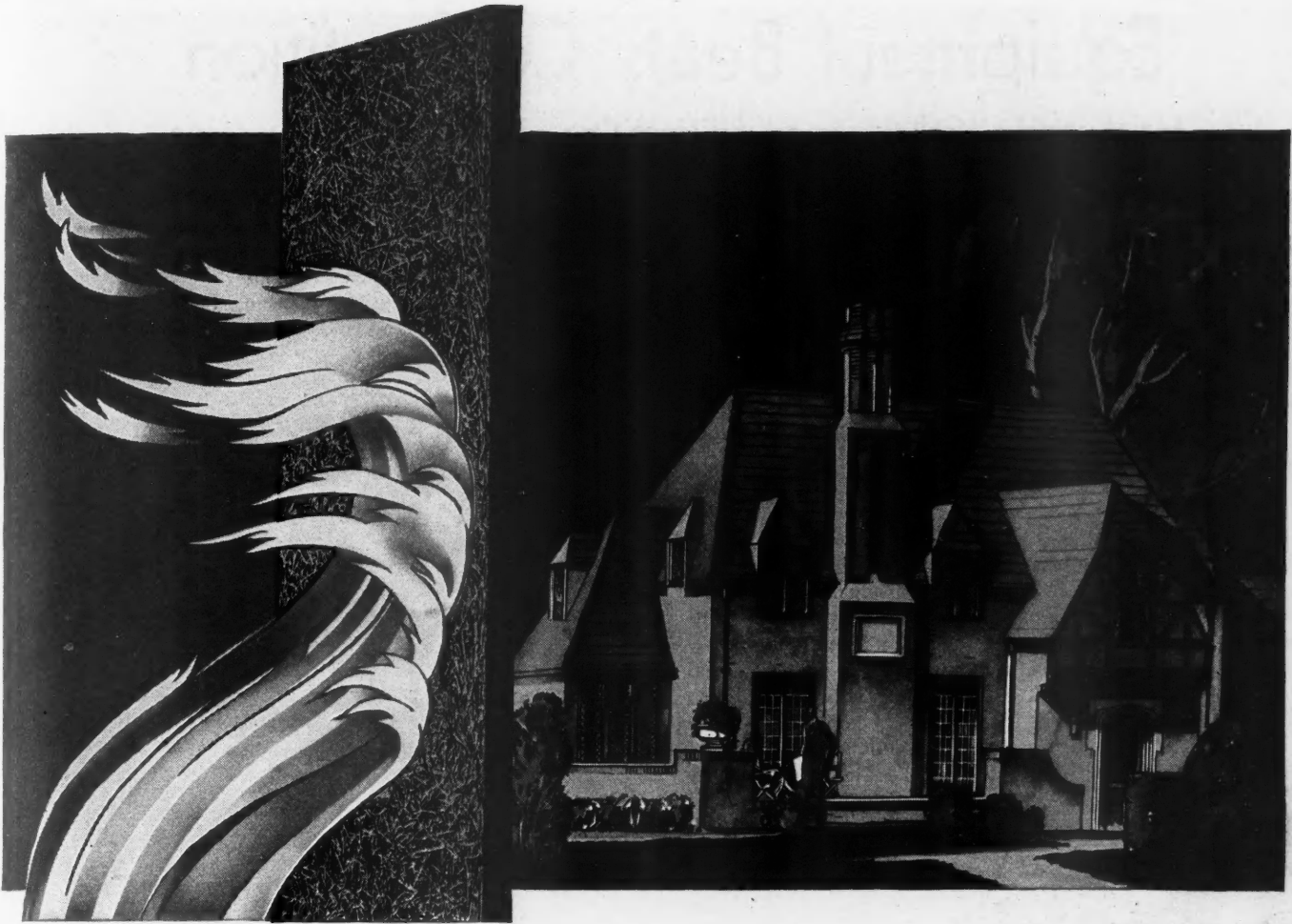
service stairs extends through each floor with windows for light and ventilation. Part of the service stair case is arranged with large windows to form an open-air balcony in summer or a sun room in winter. Each room has outside light and air, a coat closet and lavatory and each pair or suite of rooms, a shower bath and toilet. Cross ventilation of rooms is arranged for through hinged transoms over the corridor doors. The building is heated by hot water through an oil fired boiler and a gas fired incinerator disposes of the garbage and supplies hot water for use in kitchens, baths and lavatories.

A building of this type is generally built for the party who will operate the same and due to its compact arrangement it can be furnished with neat serviceable furniture at a very low cost and operated at a profit with but little, if any, outside help.

The dining room in this type of building must be made a self sustaining unit, otherwise the space should be used to better advantage as living rooms.

In area and cost, both of these buildings compare favorably with the ordinary two-family apartment, but they produce more income, making them sound real estate investments in a field that is not as yet overbuilt.

This type of building is gradually replacing the remodelled residential rooming house by offering better and more sanitary living quarters at a reasonable rental and can be built either two or three stories high as shown; or a combination of the two types can be incorporated in one building, if so desired.



Not only HEAT, but FIRE is turned back by this Fireproofing Insulation



PROVABLE FACTS ABOUT THERMAX

- ① **Insulation:** Thermax combines real insulation with fireproofing; qualifications possessed by no other insulation board.
- ② **Fireproofing:** Thermax, tested in accordance with the standard fire test specifications of the American Society for Testing Materials, meets requirements for Class A fireproof construction.
- ③ **Structurally Strong:** Thermax satisfies code requirements for self-supporting insulated roof decks, and non-bearing partitions.
- ④ **Sound-Deadening:** Thermax 2-inch partitions transmit less than one-fifth of one percent of sound.

THE primary purpose of insulation is to prevent the passage of heat. But here is an insulation that is an effective barrier against *fire* as well as heat. Thermax is insulation *plus* fireproofing. It not only makes homes comfortable and easy to heat, but helps to make them firesafe as well.

Thermax is not a new, untried product. It has been used for years in Europe. Now manufactured in America, it is available to builders all over the country. Made of treated wood and minerals, it has all the desirable features of a good building material. It is vermin proof, odorless, permanent, structurally strong and of light weight. It can be sawed and nailed like wood, and used instead of sheathing or as a plaster base instead of lath.

Thermax is economical. It has the thickness necessary to give real thermal insulation. Thermax gives more for your client's insulation dollar. Write today for specification data and sample of Thermax. Address Thermax Corporation, Dept. "A", 228 N. La Salle St., Chicago, Illinois.

THERMAX

Insulation *Plus* Fireproofing

Equipment Beats Competition

Maintaining a Well Equipped, Efficient Organization Is Profit Insurance for Any Contractor or Builder

ANY builder or contractor can meet and beat the keenest competition, and secure a fair profit by doing better work at lower cost. This means he must develop and maintain a highly efficient organization and provide it with efficient and economical equipment.

Manufacturers of contractors' equipment are constantly improving their products and developing new ones to obtain greater efficiency and reduce operating costs. The builder who keeps himself informed in regard to these new developments will profit by his effort. During recent weeks a number of contractors' equipment announcements, which are of interest, have been made.

Something New in Saw Rigs

One of the most interesting announcements comes from a manufacturer who has pioneered in the production of sanders and portable saws operating on the one-moving-part principle. This company has now brought out a new idea in saw

rigs in which unusual flexibility has been accomplished by a unique design.

The adjustable circular table, which can be seen in the illustration, rotates on ball bearings, and provides an instant change from a stationary ripping to a swing cut-off from any angle. This makes it possible to cut jack rafters, or other compound cuts, with one stroke of the pedal. A small hand wheel, at the front, provides accurate adjustment for ripping and dado work.

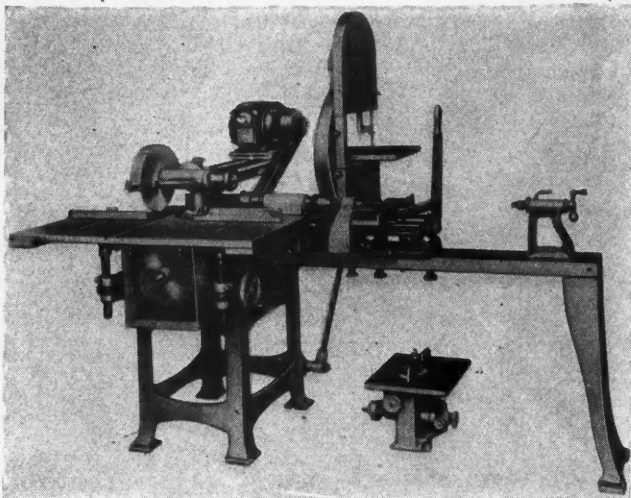
This saw rig is designed to handle blades up to 12-inch size, which will rip 3/4-inch material. In the swing position the mechanism is so accurately balanced that a child can swing it, which greatly reduces the effort of operation and tends to increase production. In this position the saw will cut up to 3 by 14 or 4 by 10-inch material.

The sturdy framework is made entirely of electrically welded steel construction. The ball bearing arbor housing holds a year's supply of oil, reducing the attention to keep the rig lubricated. This saw rig is well adapted to the work required by contractors, lumber dealers or anyone who handles lumber and is offered at a really low price.

Here's a Portable Woodworking Shop

Another type of woodworking machine which has been the subject of recent development work, is the complete woodworker, a single machine which provides a complete shop equipment in a single unit. The illustration shows one of the new machines of this type which, in addition to being suitable shop equipment, is also readily portable and can be taken to the job and placed wherever wanted.

Each unit of this machine is individually driven by the same motor, yet there are no power wasting countershafts, idler pulleys, or multiple beltings. The whole machine is clean-cut and compactly built for speed. It consists of the most modern slide saw for cross-cutting, mitering, dadoing



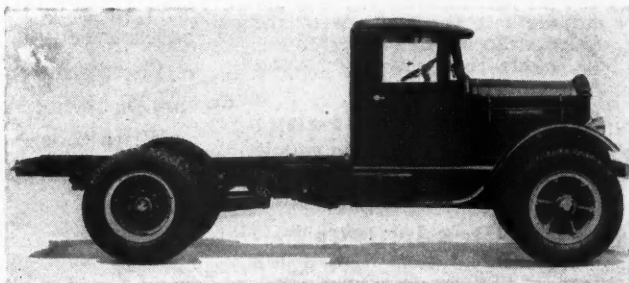
Here Is a Complete Woodworking Shop in One Machine, Which Is Also Readily Portable.

and tenoning; an underslung rip, groove, and plough saw; an accurate 4-inch or 6-inch jointer; a 14-inch or 16-inch precision built band saw with tilting table; a hollow chisel mortiser; a reversible shaper; a boring machine; and a two-speed, 36-inch lathe.

This machine can be furnished complete or, if not all the units are desired, a selection of units can be obtained and other units added later if required. The foundation of the complete machine is a well known woodworker to which the other units are attached. The complete outfit is furnished with a 10-year guarantee against imperfect materials or workmanship.

Trucks for the Contractor

When woodworking machines and other pieces of heavy equipment are to be transported to the job, the builder must, of course, be equipped with a suitable truck. The same truck equipment, when properly selected for flexibility and adaptability, is used for all types of transportation in building construction. A new line of flexible, medium and heavy duty trucks, offered by one of the long established manufacturers,



One of a New Line of Medium and Heavy Duty Trucks with a Range Covering a Wide Variety of Requirements.



This New Saw Rig Has an Adjustable Rotating Table.



The RUBEROID Co. SERVES YOUR CUSTOMERS AS WELL AS THE WORLD'S LARGEST BUILDING

THERE is a RU-BER-OID Roofing Product for every type of building. From cozy cottage to imposing mansion, from shed to mammoth factory, RU-BER-OID offers your buildings the same dependable roof protection as the great Merchandise Mart of Chicago.

For residential work, there are RU-BER-OID Shingles in various styles, weights and colors that meet all architectural demands, please any taste and pocketbook. All these roofs are fire resistant and approved by the Underwriters' Laboratories, Inc.—and bear their label.

The widespread acceptance of RU-BER-OID Products may be attributed to the energies of The Ruberoid Co.'s personnel, which for 40 years have been wholly centered on producing the finest roofing and building products that your dollar can buy. Thousands of RU-BER-OID Roofs have stood the test of time for 20 to 30 years—convincing testimony of RU-BER-OID'S long life and economy. Behind their service record lies the world's confidence in RU-BER-OID Products.

Over 12,000 dealers selected for their integrity and known

Chicago Merchandise Mart, Chicago, Ill. Roofed with 211,900 square feet Built-up Roofing, manufactured by H. F. Watson Mills, Sales Division of The Ruberoid Co.

responsibility to their community recommend and sell RU-BER-OID Products. See your RU-BER-OID dealer—see his roofing display—or write the nearest office listed below and samples and literature will be promptly furnished.

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ROOFING MANUFACTURERS FOR OVER FORTY YEARS

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CONTINENTAL ROOFING MILLS—SAFEPACK MILLS
H. F. WATSON MILLS—ETERNIT

ASPHALT SHINGLES AND ROLL ROOFINGS—ASBESTOS-CEMENT SHINGLES AND CORRUGATED SHEETS—ASBESTOS, ASPHALT, COAL TAR PITCH AND FELT BUILT-UP ROOFS—ASBESTOS SHEATHINGS, FELTS, MILL BOARD, PIPE COVERINGS—KRAFT WATERPROOF PAPERS—COAL TAR AND ASPHALT FELTS AND SHEATHINGS—ASPHALT WATERPROOFING PAINTS AND CEMENTS—DRY FELTS AND SHEATHINGS.

Offices & Factories: New York, N. Y. — Chicago, Ill. Millis, Mass. — Erie, Pa. — Baltimore, Md. — Mobile, Ala.

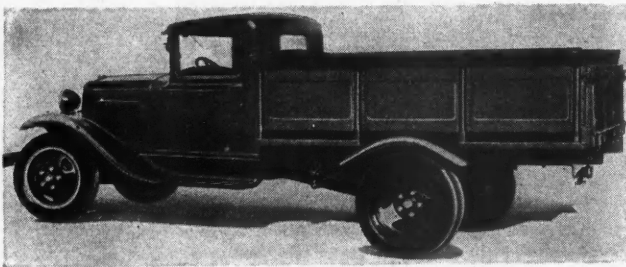
is especially well adapted to meet construction requirements.

This new line includes five models with a range of two, three, five, and eight-ton capacity, and a special eight-ton, six-wheeler for extra heavy duty. Wheelbases ranging from 150 inches to 204 inches are available. All of the engines are six-cylinder, of varying horsepower.

Transmission is of the four speed type, four speeds forward and one reverse. Powerful four-wheel brakes assure ample protection under all conditions. The frame is exceptionally sturdy, designed for strength and toughness. Full equipment is included and an all-steel cab, with seats adjustable to three positions is available at extra cost. Bodies are furnished to specification.

New Bodies for Light Trucks

Under certain conditions the lighter types of trucks are best suited to the work required. One of the manufacturers of light trucks has brought out several new body types that are especially adapted to the needs of contractors and build-



A New Line of Bodies for 1½-Ton Trucks Includes Express, Platform and Hydraulic Dump.

ers. These include regular and heavy duty, hydraulic dump bodies, standard and heavy duty express bodies, and also stake and platform bodies. They are all mounted on the regular 1½-ton chassis and are available with dual rear wheels.

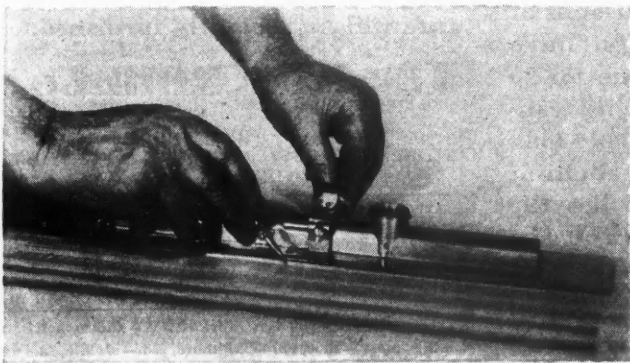
The hydraulic dump bodies are 84 x 60 inches with 14½-inch sides. They are made of 10-gauge, blue annealed steel. The end gate is double-acting and is controlled by a manual control lever near the cab. When the clutch is released, or if the motor accidentally stalls, the hoist locks instantaneously, in any position, regardless of load.

The heavy duty express body is designed for a large number of hauling purposes where the load does not require full protection from the weather. The body is of steel over wood, the sides being 18 inches high, with wide flareboards. Extra wide fenders are provided for dual rear wheels.

Stake and platform bodies, with either open or closed cabs, and with either 131½-inch or 157-inch wheelbase, are also included in the standard line.

Drafting Room Equipment

Long before the time for hauling construction machinery to the job, however, plans must be prepared. With many



Speed and Accuracy in Drafting Are Obtained with This Instrument.

builders maintaining their own planning and drafting service these days, special time saving equipment for the drafting room is to be considered. Such a time saving instrument, a micrometer, rolling, parallel rule, is shown in use.

The principle merit in this rule lies in the fact that it is a time and eyesight saver. It saves eyesight because the smallest graduations may be read with the unaided eye with no more strain than in reading a newspaper. It saves time because many spacings may be made or many lines spaced and drawn in the time that one spacing is being made in the ordinary way with scale and dividers.

The Transit-Level Is Improved

After plans have been prepared the first step in construction is to lay out the building on its site. Instruments for this purpose are being constantly improved and simplified to facilitate the work. One of the leading instrument manufacturers has recently brought out a transit-level of new design for which a number of distinct advantages are claimed.

This instrument resembles a transit in design, construction and appearance, but it can be adjusted in the same manner and as easily and quickly as a wye level. It has a maximum tilt of 110 degrees, 55 degrees above and 55 degrees below horizontal. The horizontal or graduated circle has a vernier reading to single minutes.

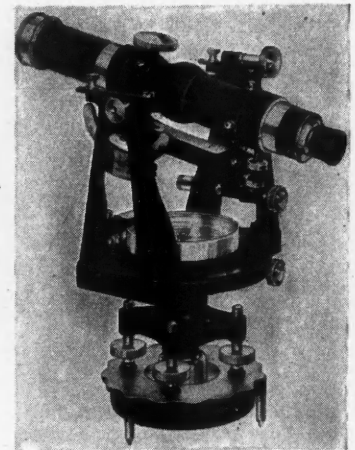
The telescope, with level attached, is provided with a clamp and tangent for quickly and accurately taking level readings. It has lenses with a magnifying power of 22 diameters and a special combination which makes possible a sharp sight as close as 4 feet from the center of the instrument. There is a full ¾-inch tilt on the tripod plate.

This new transit-level was developed to meet an increasing demand for an accurate and dependable combination instrument to be used for both transit and level work, without the necessity of changing the instrument in any way. It is compactly built and is packed in a substantial, hardwood carrying case, and comes complete with trivet, plumb bob, reading glass, sunshade and tripod.

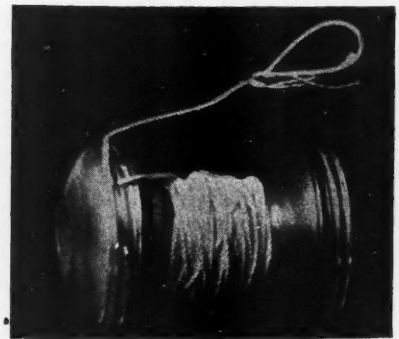
A Handy Spool for Chalk and Line

Not all the useful items of equipment which are being devised for the builders are powerful machinery or delicate instruments. Some of the small, simple devices are equally important in their way, for example, the chalk line spool shown in the illustration. The chalk line is in universal use but usually it is merely wound around a piece of wood, and there is no convenient way to take care of the chalk.

This chalk line spool is of a convenient size, 3¾ inches long, and holds 100 feet of the ordinary size line. It



Before Actual Construction Begins a Good Transit-Level Is Needed.



This Spool for Line and Chalk Is Handy and Saves the Workman's Time.

BETTER TIMES

are here for owners of AMERICAN Machines

You needn't stand in line for a job. Be your own boss. AMERICAN machines are making good money for thousands of owners even in slack times. . . . No matter what your occupation is or was, you can earn big profits the year round with these AMERICAN machines.

These Men Are Earning \$25 a Day

Floor Surfacing Pays

We teach you and furnish everything—advertising matter, circulars, cards, stationery. No experience necessary. Men like Fred Cunningham of Detroit started with one machine—the AMERICAN High Production Floor Sander shown in the first picture at the left. Today the Cunningham Floor Company is a big firm and operates more than a dozen AMERICAN machines. The Handy Sander shown in the second picture is smaller but just as efficient.



Extra Profits in Floor Maintenance

AMERICAN Floor Maintenance machines enable you to wax, polish, clean, scrub any type of floor. A complete service. We teach you and start you.

Slack Time Profits

for all. Don't sit idle waiting for business to come back. Go out and get new business and extra profits with these money-making AMERICAN machines. The coupon will bring you facts and valuable information.

Send It Now!

The AMERICAN FLOOR SURFACING MACHINE COMPANY

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Carpenters,
Cabinet Makers,
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THE ELECTRIC CARPENTER

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Big money making screens, trellises, built-in cabinets, book cases, furniture, toys, repairs. We will send FREE "250 Things to Make of Wood" and tell you how to get plans, blue-prints, etc.

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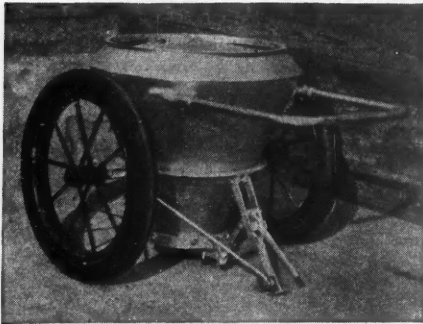
Business or Occupation

is made of zinc, to resist rust, and there is a screw cap on each end. A cake of carpenter's chalk can be placed in each end when the caps are unscrewed. There is also a clip at one end, to hold the end of the line after it has been wound onto the spool. The line is also drawn under the clip when in use to save the bother of tying.

With this spool the line never comes unwound and tangled in the tool box and the chalk is protected from breaking. The spool is reinforced where the hardest wear comes and, with ordinary use, will last a lifetime.

Cart Handles Cement Economically

In certain types of construction work there is a considerable saving through the use of bulk cement if the contractor is



Economy in Handling Bulk Cement Is Secured by Using This Cart.

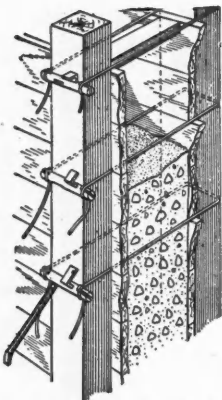
properly equipped for handling it economically. The accompanying illustration shows a cement cart which has been designed to assist the contractor to handle bulk cement in the most economical way and take advantage of this saving.

The cart is of galvanized steel construction with smooth, steep sides, free from internal valleys, permitting a fast, uniform flow of the cement. A toggle locked valve provides a bottom discharge which, when used with a canvas spout, avoids the splashing and blowing of cement caused by dumping a tip-over cart into a truck compartment. The valve is tripped and the cement pours into the compartment.

Filling of this cart is speeded up by the large top opening and the support which permits tilting the cart and lowering the shoveling height. A survey by the manufacturers of this cart shows that the cart system is the most economical method of handling bulk cement.

Wire Clamps Aid in Form Work

In concrete work much of the expense is in the concrete form work and anything which reduces the labor and cost of



Labor and Costs on Concrete Forms Are Reduced by Using These Wire Clamps.

building forms is a material aid in assuring profit on the job. For this reason the wire clamps shown here are finding a ready market among builders. They are simple to use, and save time, labor and material, it is stated.

To use these clamps, the clamp is placed against the studding or timber. The wires are laid in the slots at each end and the handle is inserted in the center slot. Turning the handle down draws the form into place. When the wires are taut, the clamp is locked by dropping an angle iron into the next slot above the handle.

The only tool required is the handle, and one handle is furnished with every 100 clamps. This clamp is furnished in two sizes and the smaller size to be used on 2 by 4, or 2 by 6-inch studding, and the larger size to be used on 2 by 4, 2 by 6,

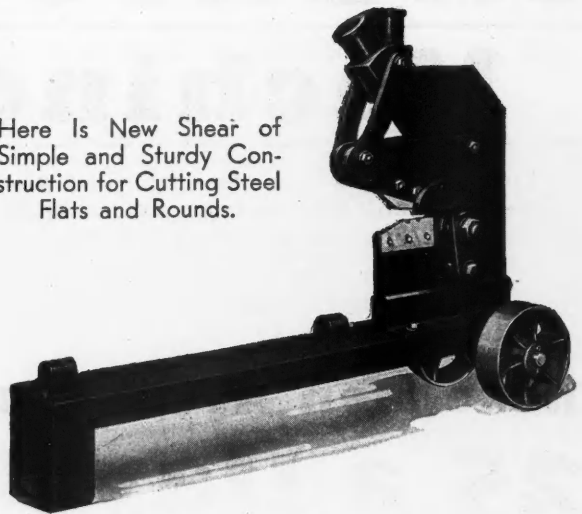
4 by 4, 4 by 6, or 4 by 8-inch studding.

This Shear Cuts Steel Flats and Rounds

Wherever construction work calls for the cutting of steel flats and rounds a special cutting tool is economy equipment. A powerful, hand operated shear for this purpose has been announced. This shear is easily moved from place to place, wherever it is needed, saving much handling of material.

The sturdy frame is guaranteed against breakage and the all steel truck and pipe handle will stand exceptionally hard use. The pipe handle is used both as an operating lever and as a truck handle for moving the shear. Although the leverage is simple, it is powerfully compounded and has no parts to get out of order. A stripper on the side prevents binding.

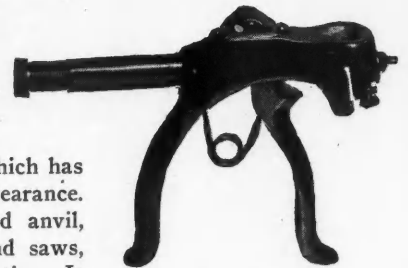
Here Is New Shear of Simple and Sturdy Construction for Cutting Steel Flats and Rounds.



New Saw Set Keeps Saws in Condition

When it comes to a matter of tools, one of the most important things for any builder to remember is that tools must be kept in good condition. Tools that are kept in good condition render good time-saving service, but if neglected they cause lost time and increased expense. Saw must be kept properly sharpened and properly set if good work and fast work is expected.

The proper setting of saws is facilitated by the use of an ingenious new saw set which has recently made its appearance. This is a hammer and anvil, pistol grip set for hand saws, with an easy trigger action. It is so compact that it can be carried easily in the tool box. But in spite of its light weight, small size and low cost, it is remarkably efficient.



Correct Setting of Saws Is Easy with This New Saw Set.

The real hammer and anvil action of this set is, according to the manufacturers, the only action by which a perfect set can be obtained. A light pressure on the trigger draws the hammer back against the spring, which is compressed, and then released by a small dog. When released the hammer strikes the saw tooth with a sharp blow. The result is a perfect, uniform set, regardless of whether the saw has soft or hard spots.

There is an adjustment screw on the end of the barrel that holds the spring to obtain more or less set depending on the size of the teeth or how much set is desired. This set can be used on all sizes and kinds of saws, from three to sixteen points to the inch. The pistol grip type of handle permits holding the set with the arm in a natural position.

MILLION-DOLLAR CONCERNS HAVE TESTED THESE TRUCKS FOR YOU



Million-dollar concerns in the Contracting Industry and in all leading industries . . . the country over have proved the merit of Dodge Trucks for you. Million-dollar concerns with hauling work similar to your own, and with a desire—identical with yours—for low cost, dependability and ability. Million-dollar concerns who continue year to year to increase their already large fleets of dependable Dodge Trucks. » » Your Dodge Dealer will gladly show you the impressive testimonies of the well-known concerns who have put their millions of dollars in Dodge Trucks. He will gladly place a Dodge Truck at your disposal

for inspection, test and comparison. You will find its price exceptionally low. You will find that balanced design and precision manufacture insure typical Dodge dependability, long life and economy.

THE COMPLETE LINE OF DODGE TRUCKS RANGES IN PAYLOAD CAPACITIES FROM 1,200 TO 11,175 POUNDS—PRICED, CHASSIS F. O. B. DETROIT, FROM \$435 TO \$2695, INCLUDING THE 1 1/2-TON CHASSIS AT **\$595**

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Send your Operating Record Book. I understand there is no obligation.
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DEPENDABLE DODGE TRUCKS

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER AND BUILDING AGE

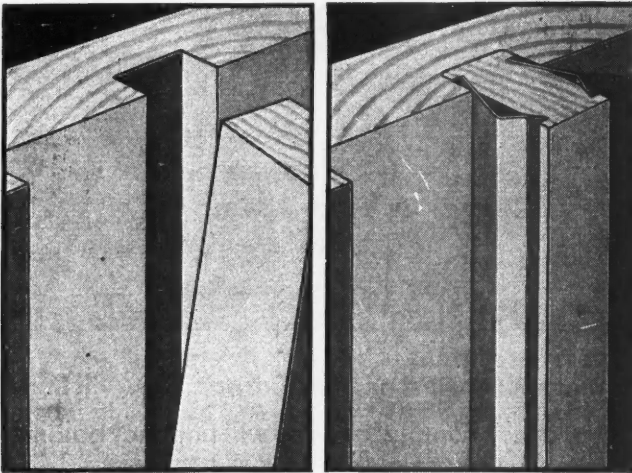
Keeping Up with New Products

Is a Profitable Investment of Time for
Builders and Contractors Who Are
Out After Business

TO anyone interested in the construction and merchandising of new buildings, there is no more interesting reading than the announcements of new and improved building products. It requires a little time to keep well posted but, that it is time well spent is amply demonstrated by the fact that successful builders and contractors everywhere take great pains to keep their files of information on materials and equipment up to date.

Weatherstrip Easy to Apply

Running through the announcements of the past few weeks, we find a number of items which will repay investigation. For instance; one of the best known manufacturers of window frames has just brought out a metal weatherstrip which can be installed in its double-hung windows, no special frames or sash being needed.



Weatherstrip Parting Stops of the New Style Shown to Right Can Be Slipped Into Any Double-Hung Window Frame.

This weatherstrip can be slipped into place either in the shop or out on the job. It is only necessary to take out the parting stop on any of this company's double-hung frames and slip in the new weatherstrip parting stop for sides and head. No routing, rabbeting or nailing on the sash or frame is required.

The manufacturers state that this weatherstrip cuts the air leakage 86 per cent. The secret of this performance is a strip of phosphor bronze specially die stamped to give double tension. This bronze strip is attached to the new parting stop at the factory, making a complete unit that slips into place easily and snugly.

A Garage Door for Quality Jobs

Another product which immediately catches the eye is an upward-acting garage door. The upward-acting type of garage door is attracting a lot of attention these days and is winning great favor. The particular door referred to has been designed with the idea of offering a quality product for the best type of installation. It is a sectional door, with counter-balancing springs the tension of which can be adjusted easily.

The simplicity of the counter-balance insures ease of operation, freedom from noise, and long trouble-free service. The doors themselves are made of thoroughly dried and



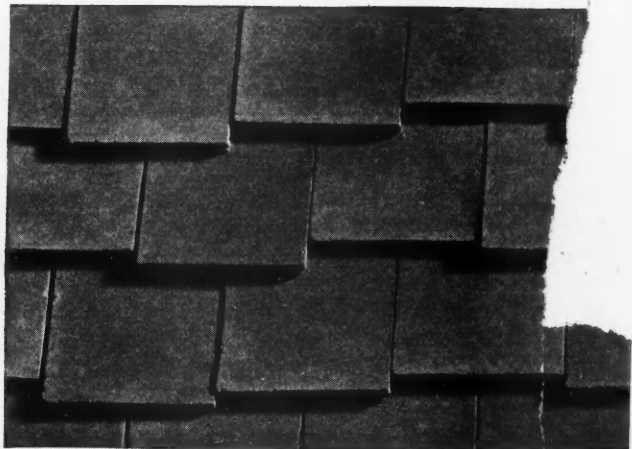
The Popular, Upward-Acting Garage Door Mechanism Is Used to Operate These Doors.

treated California redwood, built up in laminated panels. They are proof against warping, shrinking, twisting and swelling, regardless of weather.

New Asbestos Shingles Are Distinctive

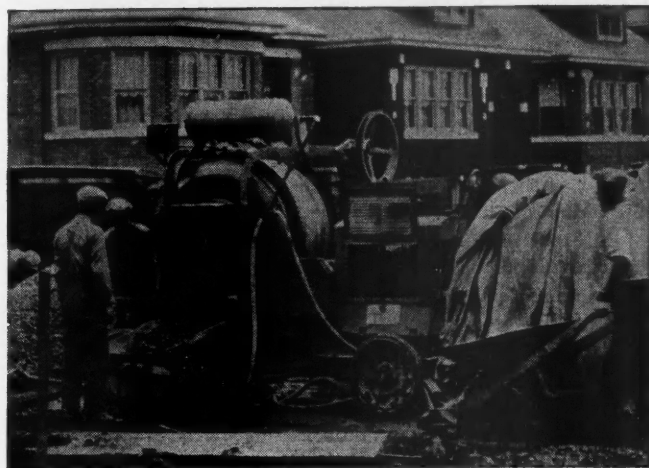
Among the products designed to add to the appearance of the home, is a new tapered asbestos shingle. It is built to meet the increasingly exacting public demand for beauty in roofs both as to color tones and massiveness, and to afford long life, fire resistance, and strength at moderate cost.

The colors in which this shingle is offered, Colonial gray, tile red, jade green and quarry blue, have life, depth, and richness. On the roof, the beauty of the colors is enhanced by deep shadow lines from the extra thick butts. Because of the method of punching the nail holes in these shingles they may be laid in either the usual, regular style or staggered as shown in the illustration, affording an opportunity for producing distinctive roofs.



Color and Deep Shadow Lines Produced with New Asbestos Shingles Make Handsome Roofs.

**KOEHRING
DANDIE**



**Fast-charging and
Fast-discharging!**

FAST! Fast because of low high speed charging skip that shoots material into the drum in a swift, clean slide.

—because of high, narrow drum that pours a big volume into the discharge chute. No dribbling. Instant cut-off of discharge, a shovelful or the whole batch.

Fast because of liberal drum capacity. Worm drum drive on roller bearings in oil bath.

Get the Dandie Catalog

Send today! Know more about this outstanding mixer that's a fast money-maker. Tell us where to mail the catalog.

**National Equipment
Corporation** 

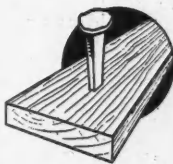
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A5282 1/2

**TRIPPING
down the
BOARDWALK**



Folks can trip down the Boardwalk without danger of tripping over loose boards if Reading Cut Nails were used to lay the walk. Even after decades of service, these four-sided, wedge-shaped nails keep every board firmly anchored. That's why Reading Cut Nails are used on America's prominent outdoor promenades. For every type of outdoor construction where wear is a factor, Reading Cut Nails, with their 72.74% greater holding power, mean lasting durability and satisfaction. We'll be glad to put you in touch with our nearest distributor. These are hard nails for hard floors.



For best results drive a Reading Cut Nail with the two tapering sides parallel to the grain, NOT across it.

Reading Cut Nails are obtainable through authorized distributors

READING IRON COMPANY

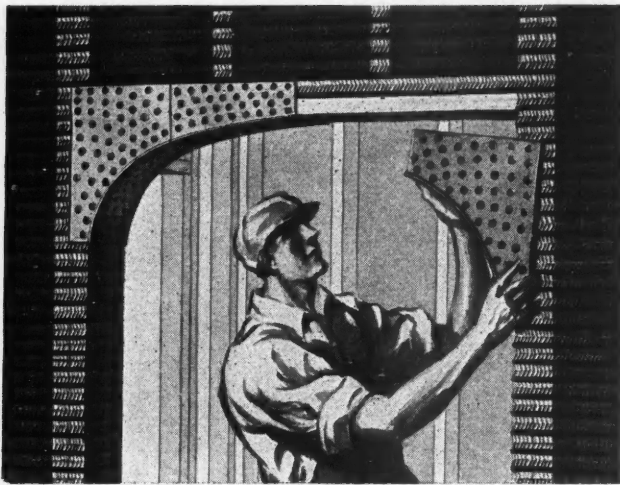
Reading, Pennsylvania

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Baltimore	Detroit	Pittsburgh	Seattle
Boston	Houston	St. Louis	Philadelphia
Buffalo	Los Angeles	Tulsa	Kansas City
Chicago			

**READING
CUT NAILS
CUT FROM SOLID PLATE**

Metal Units for Arched Openings

In line with interior beauty, anything which assists in maintaining the appearance of a house, or any building, over a period of years has an outstanding value. With



Metal Form and Plaster Base for the Arched Opening. All in One Unit, Assures Good work.

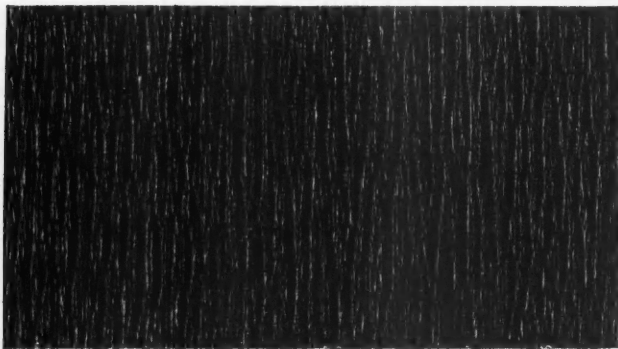
arched doors at the height of popularity, as they are today, a new metal arch should be much in demand. It simplifies the work of the contractor in the building of arched openings and so helps to reduce the cost of building.

These arches, which come in six sizes, are galvanized steel forms which provide a unit plaster base. They are nailed to the rough bucks over the lath and in one operation the plastering base and corner bead are in place, ready for the plasterer. In this way the labor of constructing curved wooden forms and forming corner bead is eliminated, as is patched metal work.

Crinkled Building Paper Does Not Tear

Speaking of materials which produce better buildings and at the same time simplify the work of the builder, the new types of building paper should not be overlooked. These papers are meeting with much favor because they overcome the difficulty and delay occasioned by tearing and pulling away from the nails, both during construction and when the building is subjected to strains, settling, and shrinkage.

The paper shown here is particularly resilient. Its construction permits it to stretch and contract as much as 11 per cent, in any direction, and so meet the strains imposed upon it, with an unbroken surface. It is composed of two sheets of heavy kraft paper, made moisture-proof by impregnation. The two sheets are then cemented together with asphalt and crinkled, forming a very strong, tough, waterproof, resilient sheet with a high degree of protective value.



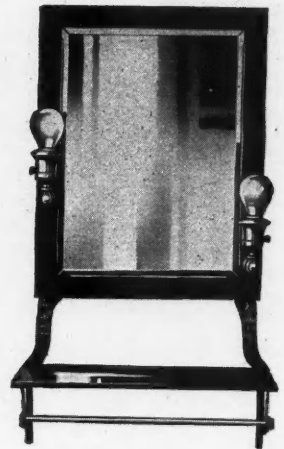
This Crinkled, Asphalt Cemented Building Paper Is Moisture-Proof and Stretches Under Strain.

Mirrors Have Adjustable Lighting

The home interior has not been neglected, either, in the development of more attractive and convenient equipment. Often in the home, apartment or hotel, a bathroom or lavatory mirror is required where a complete bathroom cabinet is not needed. Such a mirror, with a handy shelf below, is illustrated here. This is a new model of a product which has already won much favor; it is a mirror with an adjustable lighting equipment.

Bathroom cabinets with mirrors equipped with adjustable lighting were the original product of this company. The adjustable lighting is, of course, the conspicuous feature. There are two lamps which are a part of the frame and which slide in slots along the sides and bottom of the frame to whatever position may be desired to afford complete and satisfactory lighting, without shadows on any part of the face.

The unit is complete in itself and is mounted directly on the wall by means of four screws which are hidden behind the mirror. Only one electrical connection is needed, making installation simple. The unit is offered in a variety of colors.



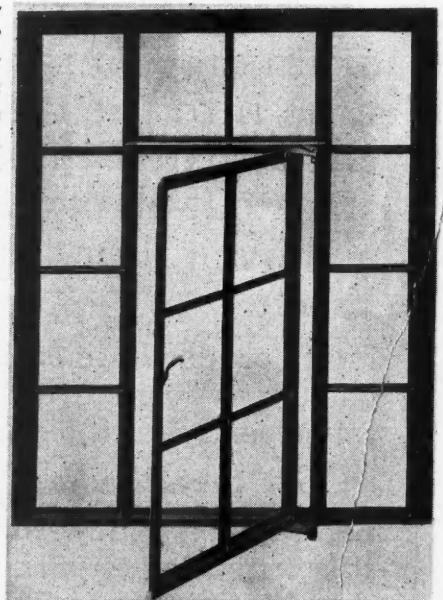
Perfect Lighting Is Provided by Movable Lights.

Steel Casements Are Weatherstripped

While good building paper will prevent a great deal of air leakage from outdoors, it is also important to have windows properly weatherstripped.

For those who want steel casement windows, the type shown in the illustration will be found excellent because of the fact that it is provided with weatherstripping which is built in at the factory. This is a special wool felt fastened, in a steel casing, to the frame sections. It shuts out not only cold air, but also dust, dirt, and soot.

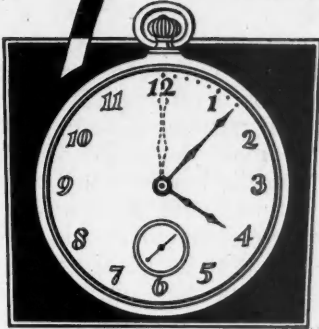
Because this window is constructed with a wide flange frame of one piece of metal, it can be built in as an integral part of the wall construction. It is equipped with adjustable friction hinges, of the extended cleaner type, which provide access to outside of the sash from the inside.



This Steel Casement, Weatherstripped at the Factory, Excludes Wind, Dust, Dirt, and Soot Effectively.

PINE CRAFT

In **7** minutes



You can Assemble a
PINE CRAFT
Wedge-Joint Frame

When PINE CRAFT wedge-joint frames were designed, we didn't forget that a carpenter's time is worth real money.

So PINE CRAFT frames were made to be assembled in seven minutes or less . . . with ease! The self-aligning wedge joints fit like a glove, forming a permanent weather-tight joint.

PINE CRAFT is a friendly frame . . . and understandable frame . . . one that will help you complete today's job quickly . . . and land another one for tomorrow.

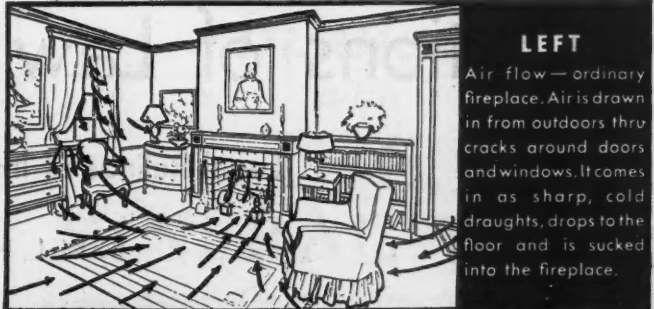
ASK YOUR DEALER



Besides being the world's largest producer of pine sash and frames, the PINE CRAFT plant makes screens, mouldings and trim, box shooks and toy stock.

Wedge-Joint Frames

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LEFT

Air flow—ordinary fireplace. Air is drawn in from outdoors thru cracks around doors and windows. It comes in as sharp, cold draughts, drops to the floor and is sucked into the fireplace.



RIGHT

Air flow—Bennett Bonded Fireplace. Air is drawn in from outdoors through heating chambers in the Bennett Unit. It enters warm, and is evenly distributed—circulated.

About face with respect to fireplaces

RECENT developments completely revolutionize the entire conception of the fireplace, its functions, and its part in the scheme of the home.

No longer is the fireplace justified merely as a beautiful ornament. Today, in addition to its beauty, it can render useful and practical services that are of new and important value to the home owner. All as a result of the development of the unit which creates the



This Fireplace alone fills two essential needs which are gaining recognition day by day. They are— [1] proper air control, or ventilation, in the home in winter; [2] supplementary heating to level off the comfort in the home all year round. The Bennett Bonded Fireplace accomplishes both of these services with the utmost efficiency, at a cost far below that of any other method. . . In respect to these recognized needs, it changes the fireplace from an expense into a decided economy—and so fits into today's requirements exactly

There is an about face with respect to fireplaces—and you should know all about it. Send the handy coupon for full information.

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Questions of Law Clearly Answered

Legal Rulings of Interest to All Builders

By M. L. HAYWARD

Holding the Agent Liable

"YOU need some extra insurance on your shop."
"Yes, I have been intending to place more insurance as soon as I got around to it," the builder agreed.
"No time like the present. You've got an account against me for \$100. You square the account and I'll use the money to get you insured in a good company," the agent suggested.

"It's a bargain," the builder concurred, and marked the agent's account "paid." Later his shop was burned, and then the builder ascertained that the agent had not placed additional insurance.

"If you'd carried out your agreement I could have collected \$500 more on my loss," the builder averred, and sued the agent for that amount.

"All you can collect is the premium which you paid me—in this case you can collect my \$100 account, but no more," the agent argued.

The court ruled in favor of the builder, however, as the Indiana, Minnesota, Missouri, New Hampshire, New York, South Dakota and Wisconsin courts have laid down the rule that the measure of damages in such cases is the insurance which might have been collected if the policy had been procured as agreed.

A Contract Affirmed

A CALIFORNIA contractor sold his business, received part cash, and two notes for the balance, one secured by a mortgage on the land sold, later the buyer claimed that he had been defrauded.

"I just learned of the fraud this morning," the buyer averred.

"There was no fraud, your notes are overdue, and what are you going to do about it?" the contractor demanded.

The result was that the buyer paid part of the balance by deeding a lot of land to the contractor, gave a new note and mortgage for the remainder, the new note was not paid, the note and mortgage were renewed, and then the buyer resisted payment of the last note on the ground of fraud in the original contract.

"You're too late, even if there was fraud. What you did after discovering the alleged fraud was an affirmation of the original contract," the contractor argued, and the California courts decided in his favor in *Ruhl vs. Mott*, 120 Cal. 668.

Agreement Not Binding

A BUILDER had made an agreement with the state to locate and construct a road between two points at a certain price per mile, "by the nearest, cheapest and most suitable route," and the board of trade of a certain town strongly urged that the road be located to pass through its town.

"It'll cost more money to put the road through there," the builder pointed out.

"What do you care—the state's paying, and when the road goes through our town we'll pay you a bonus of \$20,000," the board offered. When built the road passed through that particular town.

Having got the road, the board of trade refused to pay the bonus, and the builder sued.

"The agreement was void, as it was really an agreement by an employee to violate his obligation to his employer, the state," the board of trade contended, and the United States Supreme Court ruled that the point was well taken in a case reported in 129 U. S. 643.

Complaint Too Late

A NEW YORK builder was building a house. The owner frequently inspected the work, and checked it with the specifications. He decided that some of the specifications were not being complied with, but said nothing about it.

From time to time the owner made payments, when the building was completed (as the builder claimed), the owner made a further payment.

"What about the balance?" the builder queried.

"Have it for you next week," the owner promised. "Next week" arrived, and the owner refused to pay.

"I've got particulars of every instance where you deviated from the specifications, and I'll offset that against the balance of the contract price," the owner stated.

"Admitting, for the sake of argument, that there are defects in the building, your failure to object when you knew it, paying part of the contract price, and promising to pay the balance, waives the objection. In other words, you're too late," the builder maintained, and the New York Supreme Court ruled in his favor in the case reported in 62 N. Y. S. 1080.

No Certificate

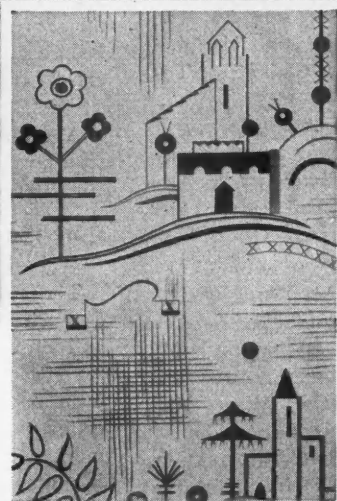
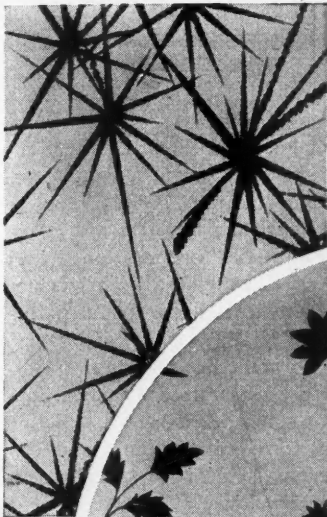
"THE final payment hereunder shall not be due nor payable unless and until the architect has given a certificate that the work has been completed according to the contract, plans and specifications," a New York building contract provided.

"As I am spending the winter in Florida, and the time for the completion of the building expired yesterday, I would be glad to have your report," the owner wrote, to the architect.

"The building has not been completed according to the specifications in certain respects which I shall point out, but if I were the owner I would accept the building as it stands," the architect replied, the owner refused to pay, the builder sued, and contended that the architect's letter was a sufficient certificate to entitle him to recover.

"A mere letter stating that the building has not been completed according to the contract cannot possibly be construed as a certificate that it has," said the N. Y. courts in deciding against the builder.

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The Builder's Library

Miscellaneous Publications

"Things to Make of Wood"

The American Floor Surfacing Machine Company, 514 S. St. Clair St., Toledo, Ohio, will send free of charge a valuable list of 250 practical and salable articles to make of wood, as well as information on obtaining plans, blueprints and instructions for making these articles.

"Care and Repair of the House"

This is a new book by V. B. Phelan, of the Division of Housing, U. S. Department of Commerce, which contains 120 pages of useful information on how to keep houses and their equipment in the most serviceable condition. Price 20 cents, from the Supt. of Documents, Government Printing Office, Washington, D. C.

Tax Legislation

"Legislative Programs on Taxation and Legislation" is the title of an address by Arthur J. Lacy, Chairman of the Property Owners' Division of the National Association of Real Estate Boards, which has been published in booklet form by the Property Owners' Division of the Detroit Real Estate Board.

Equipment for Buildings

Lighting

The Westinghouse Lamp Co., 150 Broadway, New York City, has published two new booklets on light under the titles "Skylines Beyond the Twilight Zone" and "Banishing the Twilight Zone."

Boilers

"The Boiler Burner Book" is the title of a new catalog presented by the H. B. Smith Company, Westfield, Mass., which contains a separate booklet of engineering information.

Decorative Lighting

"Decoration and Illumination" is a new booklet from Curtis Lighting, Inc., 1123 W. Jackson Blvd., Chicago, presenting some of this company's decorative lighting equipment.

Plumbing Equipment

Under the title "Kohler Plumbing for the Home," the Kohler Company, Kohler, Wis., has issued a small catalog of its fixtures designed for harmony of equipment.

Lighting Equipment

A "Special Value Catalog" of lighting equipment is offered by the Lightolier Company, 569-575 Broadway, New York City. It contains many handsome illustrations, in both black and white and in colors, of this line of fixtures.

Check These Items Every Month and Write for Those You Need to Keep Your Files Up to Date. Any Item Listed Will Be Sent Free on Request Except Where a Price Is Noted. The American Builder and Building Age Should Be Mentioned When Writing for These Publications.

Barn Equipment

A new catalog, bound in stiff covers, has been published by the Clay Equipment Corp., Cedar Falls, Iowa. It lists this company's complete line of barn plans and equipment.

Garbage Incinerators

A folder, describing the "Little Mann" garbage incinerator has been issued by Kellogg Mann & Co., 315 Grote St., Buffalo, N. Y.

Contractors' Equipment

"Slack Time Profits"

An illustrated folder, showing how builders and contractors can earn slack time profits with a combination wood-working machine called the Electric Carpenter, will be sent free by The American Floor Surfacing Machine Company, 514 S. St. Clair St., Toledo, Ohio.

Transits and Levels

A new 1931 catalog of its engineering and surveying instruments, including builders transits and levels, has been issued by the Warren-Knight Co., 136 N. 12th St., Philadelphia.

Cement Block Machines

The "Dunbrik Manufacturing Digest," prepared especially for the guidance of Dunbrik manufacturers by the W. E. Dunn Mfg. Co., West 24th St., Holland, Mich., is a new booklet containing complete information on this highly profitable business.

Air Compressors

"4 Air Compressors Went to School" is the title of a new bulletin just issued by the Davey Compressor Co., Inc., Kent, Ohio.

Construction Materials

Properties of Woods

"The Distribution and the Mechanical Properties of Alaska Woods" is the title of Technical Bulletin No. 226, of the U. S. Department of Agriculture. Price 20 cents from the Supt. of Documents, Washington, D. C.

Insulation

The Flax-li-num Insulating Co., St. Paul, Minn., has issued a broadside on the subject of its product Bi-Flax, which combines thermal insulation with a metal lath plaster base.

Lead Fittings

"Adapting Leaden Fittings to the Modern House," is the title of a booklet published by the Lead Industries Association, 420 Lexington Ave., New York City, containing a reprint of an article by Berhardt E. Muller, A. I. A.

Bakelite Finishes

The Bakelite Corporation, 247 Park Ave., New York City, offers a new booklet under the title "Bakelite Synthetic Resins for Quick-Drying Durable Finishes."

Insulating Materials

The Thermax Corporation, 1411 Fourth Ave., Seattle, Wash., has issued a new folder on its fireproof insulating material.

Concrete Construction

A "Code of Standard Practice" applying to concrete joist construction and floor forms, has been issued by the Concrete Reinforcing Steel Institute, Tribune Tower, Chicago.

Reinforced Concrete

The Bellefontaine Bridge & Steel Co., Bellefontaine, Ohio, has issued a second edition of its "Loading Tables for Sereff Self-sustaining Fabricated Reinforcing System of Reinforced Concrete Construction."

Metal Cornice Lath

A folder, describing its new expansion cornice lath is offered by the Milcor Steel Company, Milwaukee, Wis.

Offered by Book Publishers

"Lumber and Its Uses"

The sub-title of this book, by Royal S. Kellogg, offered in a fourth, revised and enlarged edition, describes it as "A Practical Treatise Describing in Non-Technical Language the Properties and Uses of the Principal Commercial Species of Wood Which Are Manufactured into Lumber." Published by the Scientific Book Corporation, 15 E. 26th St., New York City. Price \$4.00.

"Handbook of Oil Burning"

This book by Harry F. Tapp, has been published by the American Oil Burner Association, 342 Madison Ave., New York City, for the purpose of presenting facts and authoritative information pertaining to oil burning, in a reference to be used in everyday commercial practice. Price \$3.00.

"Concrete Design and Construction"

This book has been prepared as "A practical handbook on concrete, including mixtures, tests, beam and slab design, construction work, retaining walls, etc." by Walter Loring Webb, and W. Herbert Gibson, and published by the American Technical Society. Price \$2.50.



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53rd Year

Vol. 51—No. 4

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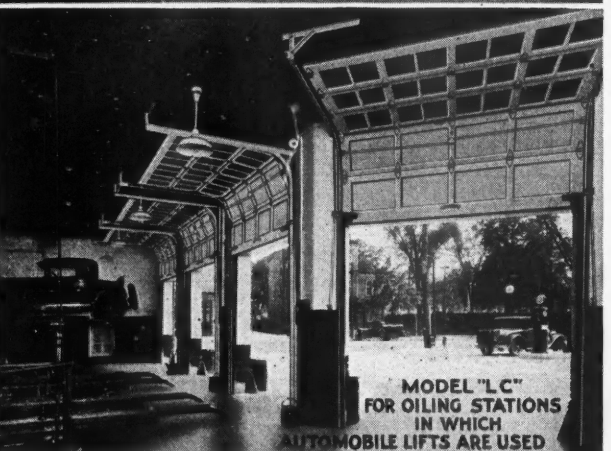
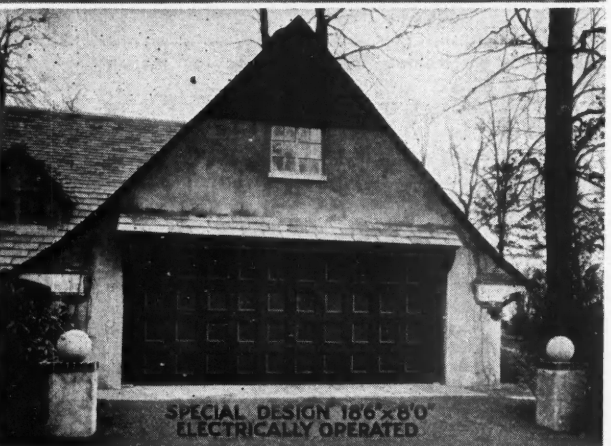
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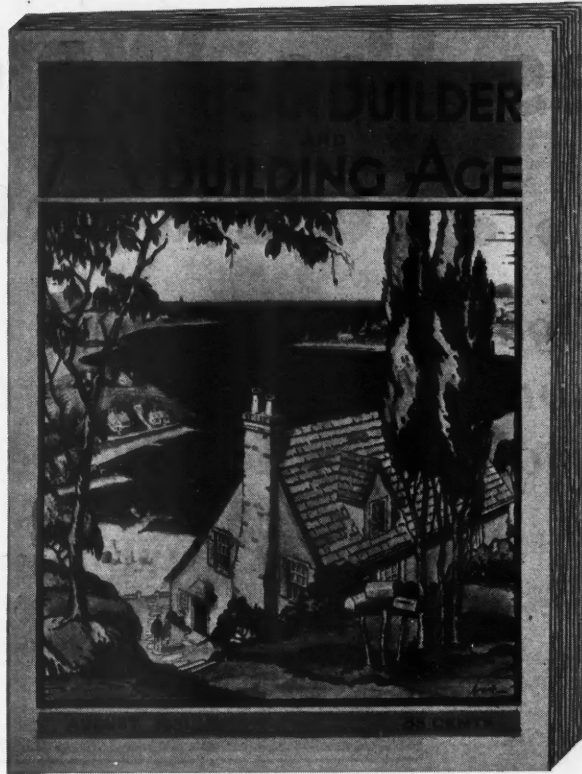
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in Garage Door Design, Operation and Construction



LOOKING AHEAD
WITH THE EDITORS

August, 1931

Twelve Ways to Cut Costs—

WE hope that every subscriber to this publication is following closely the important and timely series which started last month, entitled "The Production of Low-Cost Housing." In the current installment, the author, R. H. Mathewson, our Eastern Editor, is reviewing some very interesting home building history showing how the building industry has for twenty years been trying out and testing many novel and revolutionary schemes for new methods and mass production of homes to reduce building costs.

Next month, to conclude this series, we will show twelve ways by which the builder of today, following traditional lines of construction, can reduce his costs and still make a salable house. These are

methods that are in actual use and are succeeding in a practical way out on the job. We will illustrate and describe a number of projects where different combinations of these methods have accomplished the desired ends.

For the August magazine, we also have for you a specially selected group of home designs, both small and of larger size—also several interesting apartment and business building designs full of suggestions for those who plan and build.

The leading editorial for August, "Must Building Wages Come Down?" throws some constructive light on this much debated question. Whether you are receiving building wages or paying them out to others, you will not want to miss this paper.

—The Editors.

Reduces the WEIGHT of ... reduces your

*Yet Douglas Fir Plywood costs
no more per surface foot than
small-dimension lumber*



*Panels of Real Lumber
in Sizes up to 4 feet
wide and 8 feet long*

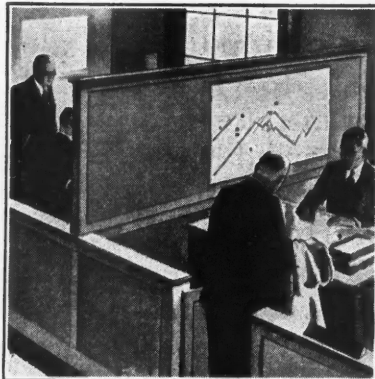
ECONOMIES you never thought possible are now offered you by Douglas Fir Plywood — the lumber that's cut from giant logs and built up in plies for extra size and strength.

It gives you greater speed in carpentry — greater strength and permanency — at no extra cost.

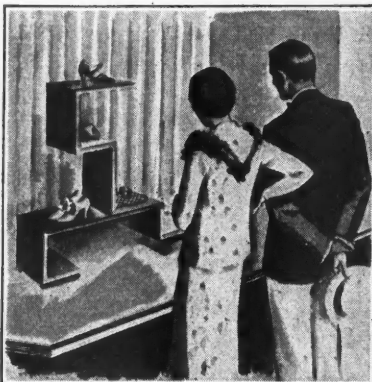
Ask your up-to-date lumber dealer to show you Douglas Fir Plywood of various thicknesses — as thin as 3/16" or as thick as a plank. Test it yourself. Discover its amazing strength and toughness. See how easily it saws in any direction, and how firmly it holds nails at the edge without splitting. Then try it on a job to *prove* its money-making possibilities for you!

PROVE to yourself the advantages of these wider, stronger boards for concrete forms, sheathing, wallboard, sub-flooring, doors, partitions, and built-ins of every kind.

OFFICE PARTITIONS: Douglas Fir Plywood is a real money-maker for installations like these—real wood panels, quick and easy to put in place, strong, neat-looking, and readily finished.



WINDOW AND STORE FIXTURES: Jobs impossible with ordinary lumber are often easy with Douglas Fir Plywood — panels as thin as you want them, with no danger of splitting or breaking.



CEILING AND WALLBOARD: Douglas Fir Plywood will not buckle, twist, shrink, swell, or break at the corners. It is stiff, light in weight, easy to handle, and takes any finish.



AUTO CAMP KITS: Only one of a number of lightweight, unbreakable cabinets easy to make with Douglas Fir Plywood. Why not build a number to order this summer? The plans are free.