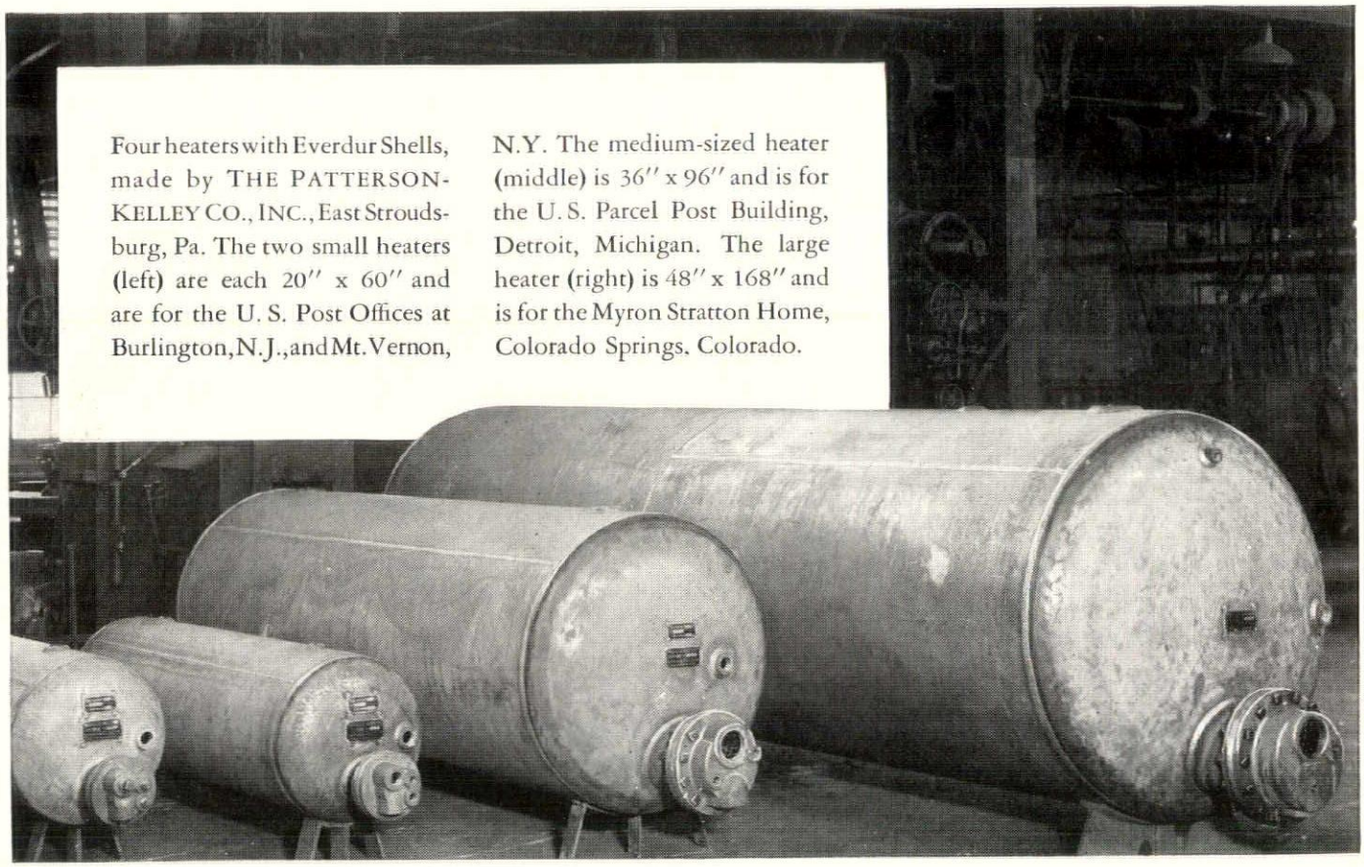
AMERICAN ARCHITECT and ARCHITECTURE

August 1936 • The Better House • No. 4 Concrete Construction



Four heaters with Everdur Shells, made by THE PATTERSON-KELLEY CO., INC., East Stroudsburg, Pa. The two small heaters (left) are each 20″ x 60″ and are for the U. S. Post Offices at Burlington, N.J., and Mt. Vernon, N.Y. The medium-sized heater (middle) is 36″ x 96″ and is for the U. S. Parcel Post Building, Detroit, Michigan. The large heater (right) is 48″ x 168″ and is for the Myron Stratton Home, Colorado Springs, Colorado.

NON-RUST STORAGE HEATERS OF

EVERDUR METAL . . . *Strengthened Copper*

reduce maintenance costs . . . assure rust-free water indefinitely

These four Patterson Combined Hot Water Service and Storage Heaters . . . all with solid Everdur shells . . . are destined for buildings in four different states. Proof again of the growing acceptance of Everdur as the ideal metal for non-rust water heater shells!

From small residential range boilers to giant storage heaters for hotels, laundries, hospitals, etc. . . thousands of Everdur tanks are giving rust-free, repair-free service—saving money for owners because Everdur *cannot* rust. This rugged copper-silicon alloy possesses remarkable corrosion-resistance, yet it has the strength of steel . . . and is readily welded by all usual methods. Our new publication E-10 contains complete information on Everdur Metal for tanks and heaters.

* * *

Equally logical and satisfactory are many other uses for Everdur. Among them: air-conditioning equipment, masonry anchors, drains and ducts, electrical conduit. Additional data on any use of Everdur gladly sent on request.

ANACONDA
from mine to consumer

EVERDUR METAL
"Everdur" is a registered trade-mark identifying products of The American Brass Co. made from alloys of copper, silicon and other elements.

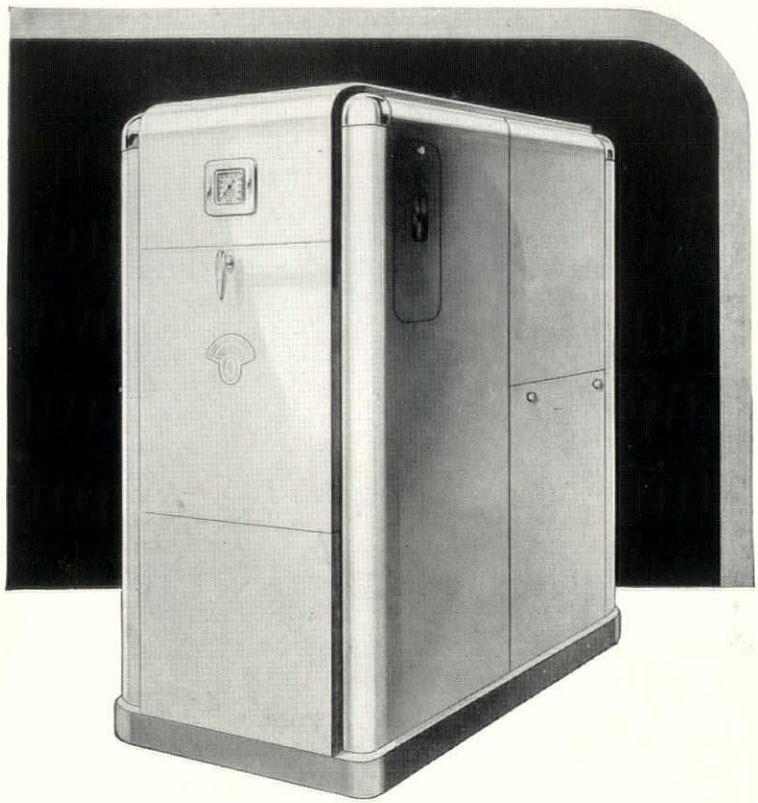
36131-A

THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Connecticut
Offices and Agencies in Principal Cities
In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.

EVERDUR METAL *for* TANKS

A COPPER ALLOY WITH THE STRENGTH OF STEEL

FITZGIBBONS *presents* *maximum boiler value!* *in the* OIL-EIGHTY AUTOMATIC



Points that home owners appreciate!

* * *

- Beautiful streamlined, enamel-finished jacket that harmonizes with the plan of any basement recreation room.

* * *

- ***Without increasing the length of the jacket,*** space is provided behind easily removable panels for the oil burner, which is thus protected from dust, dirt, careless feet, prying fingers. All accessories are also enclosed.

* * *

- With this boiler, ***no hot water storage tank*** is required. The Fitzgibbons TANK-SAVER, a copper coil submerged within the boiler, provides clean hot water for every tap, summer and winter.

* * *

- The OIL-EIGHTY is easily cleaned when necessary through readily accessible flue passages—an unusual feature in a residence boiler.

* * *

- Remarkably quick pick-up, when the burner goes on, thus providing maximum heat from every gallon of fuel, with high efficiency and low flue gas temperature—in short, low operating cost. Exclusive features enable the OIL-EIGHTY to meet every condition of oil firing—***to cooperate with any burner.***

* * *

- Lastly, the Fitzgibbons reputation of ***fifty years of building soundly designed steel boilers.***

"In advising the selection of the Oil-Eighty, I know my reputation will be protected," says the architect. This is the feeling of security which is back of the multitude of Oil-Eighty installations. Needless to say, the Fitzgibbons organization will continue to bend every effort to maintain the high standing of its products, and to cooperate closely with any dealer, contractor or architect to meet every condition which may arise in the installation or operation of the Oil-Eighty Automatic — the maximum boiler value of today.

●

WRITE FOR THE NEW OIL-EIGHTY CATALOG

Every architect should have the new Oil-Eighty Catalog at hand. This profusely illustrated book has helped to sell many automatic heating installations. Write today for your copy.

Fitzgibbons Boiler Company, Inc.

General Offices:
ARCHITECTS BLDG., 101 PARK AVE., NEW YORK, N. Y.
Works: OSWEGO, N. Y.
BRANCHES AND REPRESENTATIVES IN PRINCIPAL CITIES

American Architect and Architecture, published monthly by Hearst Magazines, Inc., 572 Madison Avenue, New York, N. Y. $3.00 per year; Canada, $4.00; Foreign, $5.00. Entered as second class matter April 5th, 1926, at the Post Office at New York, N. Y., under the act of March 3rd, 1879. Issue 2648, dated August, 1936.

"CORROSION STUDY"

shows uses for

Wrought Iron

● During recent years we have been the focal point in the collection of much data on current installations and comparative pipe service records.

Although leading architects and engineers tell us this work has been invaluable to them as a guide in selecting the correct pipe material, we have felt that its scope should be broadened.

Now we will gladly cooperate with architects and engineers in a "corrosion study" of local water, soil and gases in order to determine the exact conditions under which pipe must serve.

With this additional assistance "Pipe Prescription" became a more complete engineering procedure, incorporating an analysis of local conditions plus the experience of the building profession in using wrought iron during the last half century. Note in the examples illustrated that wrought iron is specified for those corrosive conditions where its record proves it longer lived and more economical.

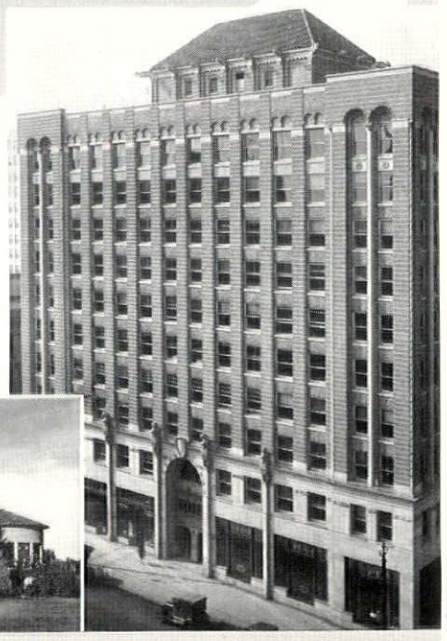
Send your requests for assistance in making a "corrosion study of local conditions" to our nearest Division Office or our Engineering Service Department in Pittsburgh.

A. M. Byers Company. Established 1864. Pittsburgh, Boston, New York, Washington, Chicago, St. Louis, Houston.

Examples by

WILLIAM E. FISHER & ARTHUR A. FISHER

Denver Architects



● Byers Genuine Wrought Iron pipe was specified in the Security Building, Denver, for hot and cold water lines, concealed waste lines, and drains; also for heating supply and return lines.

● In the residence of Mr. and Mrs. L. M. Hughes, Denver, Byers Genuine Wrought Iron pipe was specified for main supply, hot, cold and drinking water lines and vents.

● Byers Genuine Wrought Iron pipe was specified in Midland Savings Building for hot and cold water; waste lines and drains; also for heating supply and return lines.

BYERS GENUINE WROUGHT IRON PRODUCTS

PIPE - WELDING FITTINGS - RIVETS - SPECIAL BENDING PIPE - O. D. TUBES
PLATES - SHEETS - CULVERTS - FORGING BILLETS - STRUCTURALS - BAR IRON

Specify Byers Genuine Wrought Iron Pipe for corrosive services and Byers Steel Pipe for your other requirements

AMERICAN ARCHITECT and ARCHITECTURE

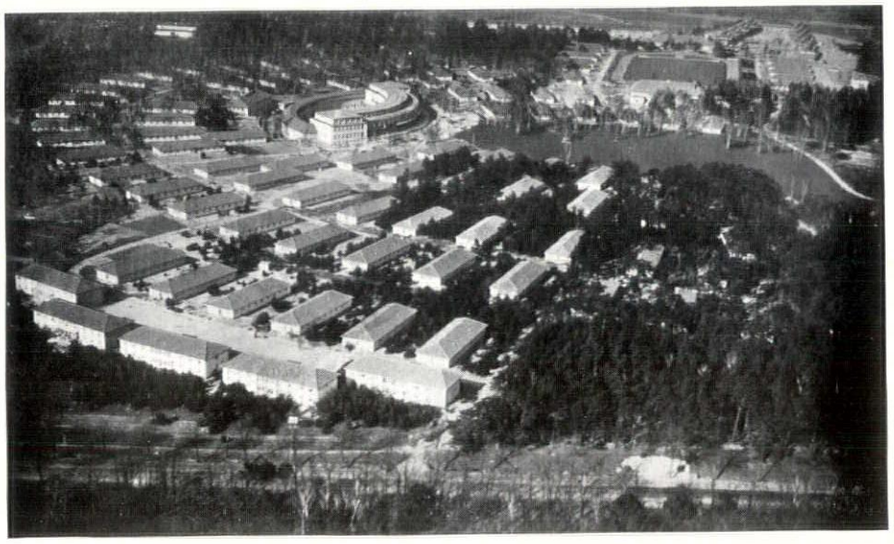
CONTENTS
AUGUST, 1936

Vol. CXLIX No. 2648

AMERICAN ARCHITECT (Trade-Mark Reg. U. S. Patent Office), with which is combined ARCHITECTURE (Reg. U. S. Patent Office). Published monthly by Hearst Magazines, Inc., 572 Madison Avenue, New York. Other Offices: 919 N. Michigan Avenue, Chicago; General Motors Bldg., Detroit; 132 Newbury Street, Boston. William Randolph Hearst, President; Richard E. Berlin, Executive Vice President; John Randolph Hearst, Vice President; Earle H. McHugh, Vice President; R. F. Gardner, Vice President; T. W. Towler, Vice President; W. R. Peters, Treasurer; Arthur S. Moore, Secretary. Copyright, 1936, by Hearst Magazines, Inc. Single copies, $1.00. Subscription: United States and Possessions, $3.00 per year; Canada, $4.00; Foreign, $5.00. Entered as second class matter, April 5, 1926, at Post Office, New York, under Act of March 3, 1879.

TRENDS

NEWS • EVENTS • FACTS • FACES • IDEAS • OPINIONS • COMMENTS



COURTESY: GERMAN RAILROADS INFORMATION OFFICE

Olympic athletes live in the 140-house village at Doeberitz, ten miles from the Reich Sport Field, where the contests are held. There are trees and shrubbery in profusion, a charming lake and a natural outdoor ampitheatre, a large auditorium for motion pictues and meetings near the village. A complete training field as well as a monster dining hall, containing a special kitchen and dining room for every participating nation are also part of the development. This project was built for permanency by the German army and will revert to it after the contests. (Below) a "Sauna" or Finnish bathhouse which has been erected in the Olympic Village

Housing Holiday

A lot of Congressmen, a lot of newspaper and syndicate writers, a lot of lobbyists, and a lot of political hangers-on moved out of Washington last month, signifying that another session of Congress had come to an end. Thus ended, for the time being at least, the housing dream of Senator Robert F. Wagner. For after months of blowing first hot and then cold on building promotion, housing, in the last analysis, became just one of those things that Congress didn't do.

It may or may not be significant that most of these Congressmen, writers and lobbyists had scarcely shaken the dirt of Washington from their feet before they were thinking in terms of housing again—making plans for a bigger and better attack on "reluctants" next fall.

There is no particular secret about the fact that business and industry would look with a good bit more favor on housing and housing bills if these measures were sponsored by a Republican Congress or administration. Both business and industry can see how housing would be beneficial to their interests. Nevertheless, both continue to look on any measure bearing the New Deal banner as a risk—as a possible intrusion on their private rights. This attitude, right or wrong, will be the biggest single obstacle that any housing bill will have to overcome at the next session of Congress.

It is also fairly obvious that housing will get an even bigger push from its supporters when next it comes up for consideration. In addition, it will have more and stauncher allies.

For nearly a year magazine and newspaper publishers in the consumer fields have been grooming for the expected national splurge. Nearly all have building editors. Why? Because for the first time building is going to be "heavy-sugar" in national advertising. Air conditioning, electrification, etc. are all nationally advertised and each consumer magazine is vitally interested in upping the sales of these commodities through a national housing boom.

Consequently, when the housing forces line up next fall it is a better than even bet that newspapers and magazines will be on the side of any housing bill that does not have obvious shortcomings. Certainly, too, nothing could do so much for the quick passage of a housing bill as widespread publicity in magazines of all kinds. So, despite the current failure of the Wagner Bill, it seems now "that the fight will not have been in vain."

3,000,000 New Homes

Ever since the World War, England and Wales have been carrying on a conscientious housing program. Last month a milestone in this campaign was reached. The 3,000,000th new house was completed. Before the war there were about 7,500,000 houses in England. These 3,000,000 new homes, therefore, represent an increase of approximately 40 per cent in seventeen years. Even in the last six months 176,609 new homes have been completed.

Selling Housing

Discussions of housing problems in the United States have been so rampant during the last few months that most observers have lost sight of the real scope of this problem. Housing has long since passed from its purely national aspects and now appears to be as much of an international problem as tariff, treaties, or even war.

Nearly every nation right now is confronted with a housing problem that is at least as acute as our own. Only one,

WHERE YOU SPECIFY "JOINED BY WELDING"

YOU can be sure that your client will have a piping system that is permanently leakproof if you specify oxy-acetylene welding as the method for joining the pipe. Air conditioning ducts, also, can be made "jointless" by welding.

Oxy-acetylene welds have the full strength of the pipe or sheet metal. Welds take up less space than any other type of joint, look neater and involve no additional cost or time for construction. Pipe and ducts of all sizes and of any metal can be joined by the oxy-acetylene welding process.

Linde engineers, from their welding experience on many millions of feet of building pipe, have prepared technical data especially for those interested in designing and specifying "Piping Joined by Welding." Ask the Linde Office in your city for complete details before writing specifications. The Linde Air Products Company, Unit of Union Carbide and Carbon Corporation, New York and Principal Cities.

Everything for Oxy-Acetylene Welding and Cutting

LINDE OXYGEN • PREST-O-LITE ACETYLENE • OXWELD APPARATUS AND SUPPLIES FROM PRODUCTS OF UNITS OF UCC UNION CARBIDE AND CARBON CORPORATION LINDE UNION CARBIDE

TRENDS

NEWS • EVENTS • FACTS • FACES • IDEAS • OPINIONS • COMMENTS

PHOTO: MCLAUGHLIN AERIAL SURVEYS FROM WIDE WORLD

The unique and highly complicated system of ramps and roadways keeps traffic moving without interruption on New York's $63,000,000 Triboro Bridge. This huge structure of roadways and bridges totalling 17½ miles in length was recently opened by President Roosevelt

Great Britain, has made any real progress toward solution. Following closely in the footsteps of the parent country, however, is Canada. Because of its proximity, because its problems are much the same as ours, it might be well for American planners to keep their eyes on the Dominion.

Right now conservative estimates place the number of homes needed in Canada at 70,000. All of the causes that have contributed to the housing shortage here have also played their part in Canada. One fundamental difference remains: The Canadian government, through the Housing Act, has already taken concrete steps to remedy the housing shortage. Yet, even after this legislation has been enacted, Canada is no closer to a solution to this problem than the United States.

Looking at Canada's problem it becomes at once apparent that the lack of a solution to the housing problem is definitely not the fault of the Housing Act. Modeled after the British measure, the Canadian legislation leaves little to be desired. It works like this: If a man were interested in building a home to cost $5,000 (a fair figure for Canada), he first puts up $1,000 and receives a loan for $4,000 at 5 per cent interest. His easy interest terms make it practically easier than paying rent. He pays interest on the loan at 5 per cent and amortizes it at the rate of $26.15 per month for 240 months. Then the home is his. To the Canadian who is now paying $45 per month rent (also a fair figure) this proposition looks like a real opportunity. Why, as facts demonstrate, aren't more people taking advantage of it?

First, because mortgage money isn't plentiful. But the big reason is that Canadians, like all Americans, have had a five or six year course in pinching pennies and anything that looks like an investment is definitely out. So even though Canada's population is increasing at the rate of 175,000 annually—875,000 in the last five years—even though the Dominion Housing Act has been passed and has made available 49 million dollars for home building, Canada today is little closer to a happy ending to housing problems than we.

Naturally this strange backwardness among potential home-buyers has aroused considerable comment in Canadian business circles. It has been pointed out that sales of bonds in the last five years have risen from $52 per capita to $74 per capita. Per capita ownership of automobiles, and other luxury products, has similarly increased. Yet during this same period residential construction has decreased 50.62 per cent!

How can the Canadian government or Canadian business interest its potential home-owners in building now? Here is the problem that is facing housing in Canada. And more and more often the same answer is thundering out: publicity and advertising.

For so skillful are the present day sales efforts of manufacturers of cars, refrigerators, radios, etc., that today the home is basically in competition with these products. Canada is rapidly coming to the conclusion that the prospective home builder must be reached with informative straight talk that "will sell him to action." Says one man foremost in the housing fight: "Advertising is the only force that can sell a nation. There's publicity, but let it be emphasized again that THIS IS A SELLING JOB."

In the fact that Canada has available a fund of fifty million dollars for housing that no one is using, lies a significant truth for housing experts in this country. All through our talk of housing there has been smug assurance that the American public is "watering at the mouth" for an opportunity to build homes. We, like the Canadians, have assumed that only money is needed. All of which brings home with a thud the fact that in any future "Wagner Bill" there must be provision for "merchandising" housing even as you would a bag of salt or a pound of butter. Not only must funds be made available but people must be "sold" on its easy availability and on the fact that now, and now only, is the time to build.

In this respect, one American housing agency, The Federal Housing Administration, has done an admirable job. Even in the earliest days of FHA part of their funds were set aside for advertising and publicity. FHA bought billboard space at strategic locations in virtually all of the large cities in the country. Car-cards in subways, elevateds and street cars advised that through FHA money at low interest rates could be easily procured. And FHA's record of successful modernization and mortgage insurance fully justifies these expenditures.

During the next few months it will be not only interesting, but instructive to watch the campaign that undoubtedly will be mapped out in Canada to "sell" the public on "early building of homes for all." Even though our first task lies in getting suitable legislation enacted by Congress, no harm can come from keeping an eye on Canada. Housing experts here may get a sound approach to the problem of "Housing salesmanship."

(Continued on page 8)

Maybe These Architects Are Plumb Crazy Then Again Maybe They Are Not

[Not That It Matters]

Not so far back, an architect in a big up North city was asked to do a bank. One of those top-rung ones that would throw out bait for the tall-hats, especially the fems.

After a whole passel of pow-wowing on what it should be built of, the architect stuck to it that brick it must be. And so brick it was and is.

Some of the bank's big-wigs, so am told, had a notion it ought to have sort of a staid old look, as if somebody's grandfather had laid the cornerstone or something, way back there in early Colonial days.

After doing a powerful lot of looking at various brick, some of which so rumor has it, were made from Virginia "mud-clay," the conclusion was that none of them would do.

About then, our Old Virginians came into the picture. Their color, natural off-shapeness (just enough, not too much) and their born-old look kinda' got 'em. But when they heard that the freight from down here to up there, was nigh as much as the cost of the brick, understand there was quite a to-do.

Well, to make a short story still shorter, our Old Virginian shale-clay brick won out. They wanted a certain color and an age-old effect. So as no other brick we ever heard tell about can quite do it, we fired up a kiln and made up a batch and the bank was built.

About that same time, some folks up Cleveland way, and several in Detroit, seemed to feel the same way about it, and up and ordered some for buildings of a like considerable importance.

Every once in a while you hear of a feller who imports brick from Holland. When you come to make inquiries, he imported them because they were the brick he wanted. Nothing else would do.

That's mostly the reason most folks buy our Old Virginians. Being a brick maker with these bricks for sale, somehow it seems almost intelligent to me.

HENRY GARDEN
Brick Maker for
OLD VIRGINIA BRICK CO.
with Mr. Jefferson as a Guide

P.S. Don't forget we make both Standard and Jefferson size. Likewise hand-mades and mould-mades.

OLD VIRGINIA BRICK

Old Virginia Brick Company
Salem, Virginia

TRENDS

NEWS • EVENTS • FACTS • FACES • IDEAS • OPINIONS • COMMENTS

PHOTO: PICTURES, INC.

Model of proposed central airport and railroad station for Vienna designed by Frau Ingenieur Brigitte Kundl, one of the few women architects in Austria

Quietus on "Quoddy"

Unless there is more of the same presidential magic that started the Passamaquoddy tide harnessing project in Eastport, Maine, this development is doomed to end sometime around the fifteenth of August. Thus, the world's greatest plan to make the ocean's tides form electricity for man's use will be at least temporarily stowed away.

Originally, President Roosevelt allocated $7,000,000 to "Quoddy"—this amount coming from the $4,800,000,000 relief appropriation for 1935. Now, since the seven million has been spent, and there is strong congressional opposition to further appropriation, the project faces a "close-down" unless the President can obtain more funds.

Even though the project is suspended, certain tangible and intangible assets will remain. These will include four small dams, completely built to stand in place indefinitely; a model housing development, constructed originally to house the administrative workers; and a handsome administration building, as well as a quantity of tools and construction equipment.

In the opinion of the engineers, however, the greatest single asset is largely intangible. This includes the engineering reports and specifications, the research that went into the solution of the tide harnessing problem. These data, elaborately compiled at a cost of probably $1,500,000, will be invaluable in future projects of a similar nature—such as the proposed harnessing of the tides of the Bay of Fundy.

Theoretically, the dollars and cents cost of postponement should not be large. On the other hand, engineers feel that despite the fact that buildings and structures should have a useful life of at least fifteen years, the cost of dispersing and then attempting to reassemble the expert staff, familiar with all details of the problem, would be tremendous.

Naturally the citizens of Eastport, in fact the whole eastern coast of Maine, feel strongly about the "Quoddy" shutdown. For a number of years this section of Maine has been going through a gradual process of retrogression. The "Quoddy" project has been viewed by all as the stimulus needed to bring new vitality to this section.

President Roosevelt, whose vacation home in Campobello (Canada) is only a few sailing miles from Eastport, has long taken a sort of paternal interest in the "Quoddy" project. His is a familiar figure on the streets of Eastport, and even now with the end for "Quoddy" almost in sight, citizens feel that he will pull an eleventh hour miracle and save it.

Undoubtedly President Roosevelt would like to do just that. But so strong is congressional disapproval, so powerful is the urge to economize on the eve of election, that it is practically a certainty that "Quoddy" is just about gasping its last breath.

Better Business

"How's business?" Anyone seeking an answer to this perennial question gets a truly surprising response. There have been droughts, threatening labor difficulties, politics. Yet, with all of these obstacles, the business outlook for the remainder of 1936 continues favorable. Industrial activity is still at its highest point since 1930. Wages are going up; payrolls being expanded. "Business Week," in fact, estimates that the national income this year will exceed $60,000,000,000 as against $53,587,000,000 in 1935.

Naturally this better business also means increased activity in the home building field. Even though automobile sales are way ahead of last year even though retail sales are constantly gaining, building is still leading the parade. The highest volume of public projects of the year and the highest volume of home construction since May 1931, lifted June construction totals to $233,054,600—8 per cent better than May and 57 per cent ahead of a year ago. In the first half of 1936, residential construction has gained 61 per cent over the same months of 1935. Non-residential building is up 89 per cent. Public works and utilities are 76 per cent ahead. Total awards of $1,237,731,000 are 78 per cent ahead.

With this really remarkable upturn in business of all kinds, few people find occasion to grumble about price increases, although there is definitely a trend toward 1929 price levels. At the present time the cost of food, which increased five per cent between May and June, is 86 per cent of the 1929 scale. Rents are more than keeping pace with food increases.

Wary Veterans' Dollars

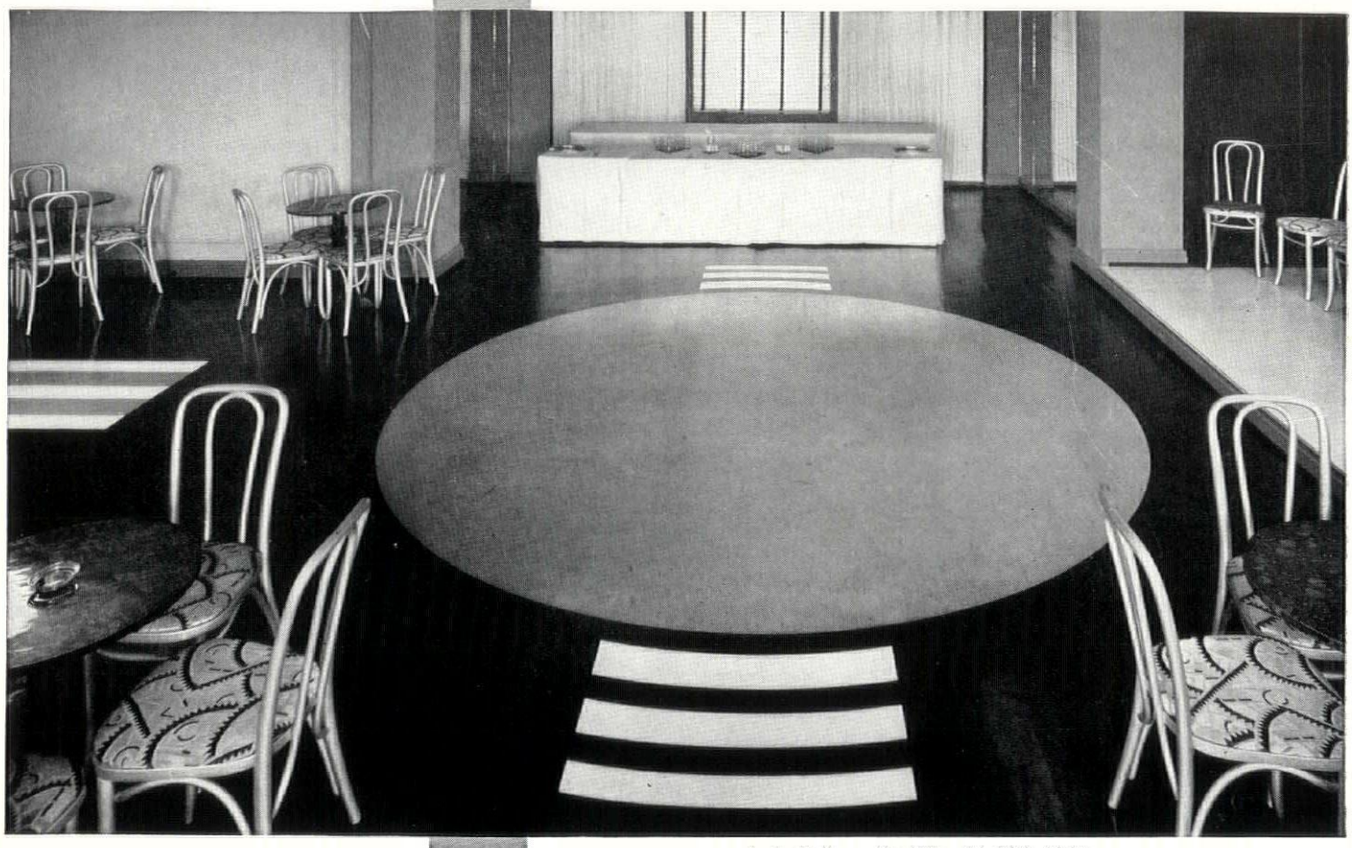
Responsibility for the biggest disappointment of recent weeks undoubtedly goes to bonus money. Such a tremendous build-up had been given this so-called "1936 gold rush" that the actual results were distinctly anti-climactical.

For weeks promoters had been seeking shares of the veterans' dollars. Automobiles, clothing, household equipment, even homes were suggested to the ex-soldiers as proper purchases. Now, a month or so after checks have been circulated, more than one retail store, shop, or furnishing establishment is wondering what happened to the potential "boom."

What did happen to the bonus money? Checking up in a few states it can be seen that the bulk of this cash went for paying (*Continued on page* 12)

A Linoleum SYMPHONY

IN RED, WHITE & BLACK



Junior Ballroom, Hotel Warwick, Philadelphia

N. Snellenburg & Co., the flooring contractors, have been good enough to say the following about this installation: "The design for this linoleum was of a very interesting character. The field is solid black, the circular design is brilliant red, and the horizontal stripes white. It illustrates one of the many decorative ideas which can be created with various colored linoleums especially adapted to modern treatments. The services and cooperation of Sloane-Blabon Corporation were very helpful in creating the design, character and color of this flooring."

THE richness and clearness of the many distinctive Sloane-Blabon colors—Azure Blue, Flame Orange, Sunshine Yellow, Ocean Green, Burgundy Red, Clear White, Jet Black, to name a few—make them particularly effective wherever a modern treatment is called for.

The Junior Ballroom of The Warwick, Philadelphia residential hotel, is a case in point. The colors selected—Burgundy Red, Clear White and Jet Black—harmonize beautifully and help create a room that is distinctly modern without being in the least bit blatant.

The Hotel Warwick is but one of many recent outstanding Sloane-Blabon installations. We shall be glad to send you a list of others, together with linoleum samples and our new Linoleum Handbook. Write W. & J. Sloane, Selling Agents Division, 295 Fifth Ave., N. Y.

SLOANE-BLABON

LINOLEUM

. . . "Grit got my goat" . . .

Says President of
University of Venusia*

Tells how he cured himself of Scratchitus

"AS a psychological study we gave half a class ordinary pencils for 10 days, the other half Venus Pencils.

"The students were of equal dumbness and did not suspect our test. I know what Venus pencils have done for me, saving me from more than death.

"So I wanted to watch, laboratorily, the reactions of those less intelligent than I.

"But the experiment had to be curtailed at the end of the first day—the users of ordinary pencils as a group became unmanageable.

"It seems that Scratchitus, which comes from gritty pencils, is suffered in silence by countless individuals, but as a group disease it almost causes rioting.

"Our experiment proves conclusively that groups such as office people cannot get along using ordinary pencils, unless coerced. Venus Pencils, we find, are uniformly smooth, never gritty, never scratch."

** Copies of the President's findings, unabridged, unexpurgated, will be sent upon request. But today buy some Venus Pencils and save yourself from Scratchitus.*

for the best in colored pencils ask for VENUS COLORING—thin, strong, smooth.

VENUS
PENCILS 10¢
17 SHADES OF BLACK

• *This advertisement appears in Collier's and Time.*

The column advertisement on the left is one of a series, written to the general public, stressing the smoothness of Venus Pencils.

Professional men, such as you, will be far more interested in another feature of Venus Pencils—uniform grading.

This absolute precision in grading makes each one of the 17 shades of black always identical.

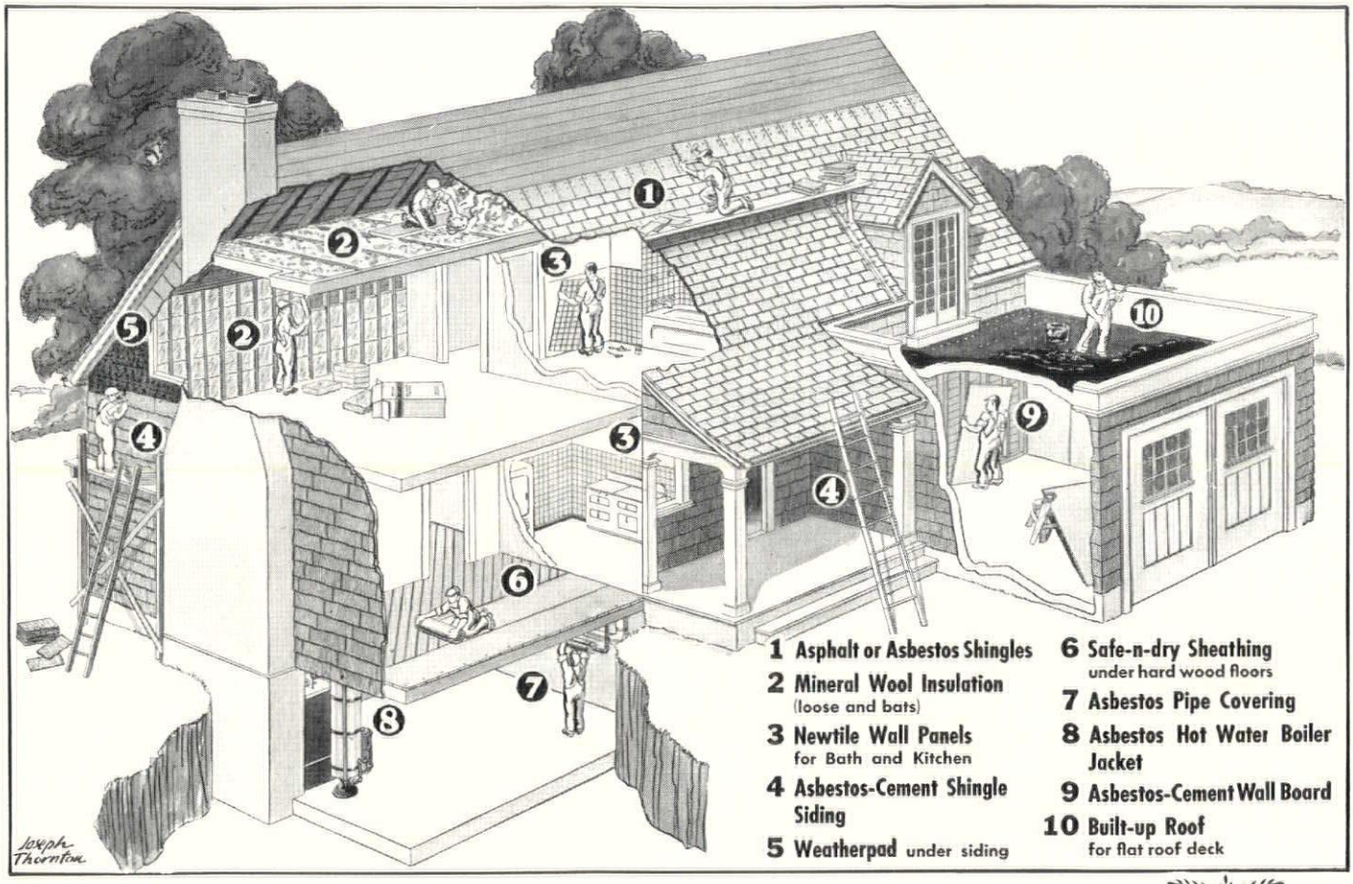
Elaborate supervision and a costly system of tests guard this Venus superiority, so important to you.

It is just one of the reasons why Venus is the largest selling quality pencil in the world.

Venus Pencils are also made in Toronto, Canada, by the Venus Pencil Company, Ltd., and in London, England, by the Venus Pencil Company, Limited.

AMERICAN PENCIL CO. HOBOKEN, N. J.

10 RU-BER-OID PRODUCTS
THAT ASSURE BETTER BUILT HOMES



PICTURED are 10 RU-BER-OID Building Products that play an important role in the construction of well-built homes. In every home you plan, regardless of price range, several of these products will efficiently and economically fulfill your ideas of good construction.

Most RU-BER-OID Building Products combine the features of beauty and protection. Some are solely for increased comfort. All reduce the home owner's upkeep expense . . . . . an important factor in home ownership.

You can always specify RU-BER-OID Products with confidence. For more than 50 years, every RU-BER-OID Product has been made to meet an inflexible standard of quality. This exacting policy has been reflected in the service records of RU-BER-OID Products the world over.

Check, in the coupon below, the RU-BER-OID Building Products that interest you most. There is a real story behind each of these products which should be in your files. Clip and mail the coupon today.

RU-BER-OID ARCHITECTURAL PRODUCTS

- BUILT-UP ROOFS
- ASBESTOS SHINGLES
- ASBESTOS SIDINGS
- ASPHALT SHINGLES
- MINERAL WOOL HOUSE INSULATION
- ASBESTOS PIPE COVERINGS
- WATERPROOF SHEATHINGS
- NEWTILE
- NEWMARBLE

RU-BER-OID
ROOFING AND BUILDING PRODUCTS

A.A. 8

The RUBEROID Co., 500 Fifth Avenue, New York, N. Y.

Please send specification data covering the Ruberoid Products checked.

Asbestos-Cement Shingles ☐ Asphalt Shingles ☐ Asbestos-Cement Sidings ☐ Newtile Wall Panels ☐
Built-up Roofs ☐ Safe-n-Dry Sheathing ☐ Mineral Wool House Insulation ☐ Asbestos Pipe Coverings ☐

Name _____

Address _____

TRENDS

NEWS • EVENTS • FACTS • FACES • IDEAS • OPINIONS • COMMENTS

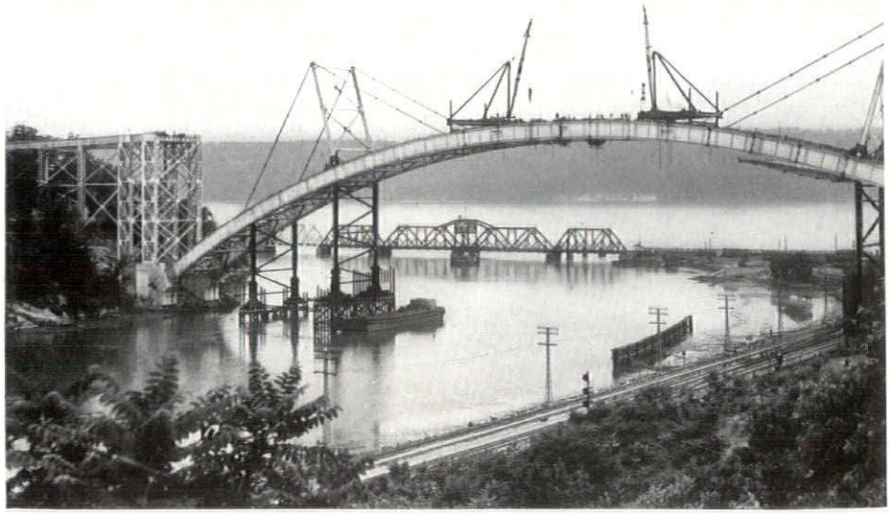


PHOTO: WIDE WORLD

The new single arched Henry Hudson Bridge over the Harlem Ship Canal at Spuyten Duyvil is nearing completion as another link in New York's new traffic system

debts. Then, a considerable proportion went into savings banks. The veterans were attacked from so many sources that they were unable to choose.

One question remains. What happened to all of the fine homes designed by FHA for the bonus money?

FSLA Grows

The Federal Savings and Loan Association system, authorized by Congress only three years ago, has compiled an enviable record during its brief tenure. According to a report issued by the Federal Home Loan Bank Board there are now 1,118 member institutions in forty-four states. Of the total, 631 have been organized since June 1933, and 487 are converted associations or state-chartered institutions which existed before establishment of the system and later adopted Federal charters. Today there are more than 600,000 shareholders, having aggregate resources given as $618,161,783. These statistics show the process of growth:

	Number	*Assets*
December 31, 1933..	59	$ 393,160
December 31, 1934..	639	119,678,007
December 31, 1935..	1023	473,471,105
June 13, 1936.....	1118	618,161,783

According to the Federal Home Loan Bank Board these Federal associations were organized to give greater protection to savings and to lower the cost of home loans by increasing the volume of funds available in districts where local funds are inadequate. Backing up this assertion FHLBB points out that in June of 1933 only 1,518 of the 3,072 counties in the United States had local mortgage facilities. Today more than 2,800 counties have this service.

Last check-up on May 31, 1936 showed that the 1,006 reporting federal associations held a total of $404,721,811 in outstanding mortgage loans. During the first five months of this year loans were split up in this manner: New home construction 29 per cent; reconditioning 6.6 per cent; home purchases 22.2 per cent; mortgage financing 33 per cent; other mortgages 9.2 per cent.

The federal system has many advantages. Probably first among these is the fact that the federal charter goes a long way towards regaining public confidence, establishes new faith in uniformity of mortgage policies and practices. Besides these safeguards to borrowers, all of the usual extra features—investment insurance, attractive dividends, long-term amortization—are included in the federal system.

Perpetual Building

Ever since March 1, date of the beginning of the Perpetual Building Association of Washington, D. C., many architects have been watching with interest this novel combining of banking, real estate and architecture. Now, five months after the association was formed, members feel that a suitable period of trial has passed, and practically all agree that the plan can be called a success.

Here's how Mr. E. C. Baltz, secretary of the association (also Second Vice President of the United States Building and Loan League), described the progress of the association in his article in the Federal Home Loan Bank Review.

"The Perpetual Building Association inaugurated a Home Building Service Department March 1, 1936. This step was taken after careful consideration of various means of bettering the quality of our mortgage investments, reducing the percentage of loan rejections resulting from incompetent treatment of plan, design, or specifications, and of increasing our volume of loans on choice small home properties.

With the aid of the Federal Home Loan Bank Board national sponsors of the program, and the Washington Chapter of the American Institute of Architects, a mutual agreement for technical service was worked out between a group of registered local architects (Architects Small House Service of Washington) and our association. A number of attractive architectural designs for small homes were drawn by each architect and placed on display at our offices. The architects stood by to provide an advisory and supervisory service, including examination of the building site, adaptation of prepared plans to the prospects' home requirements, complete and detailed working drawings and specifications, taking of competitive bids and a specified number of visits to the site to inspect materials and to supervise construction.

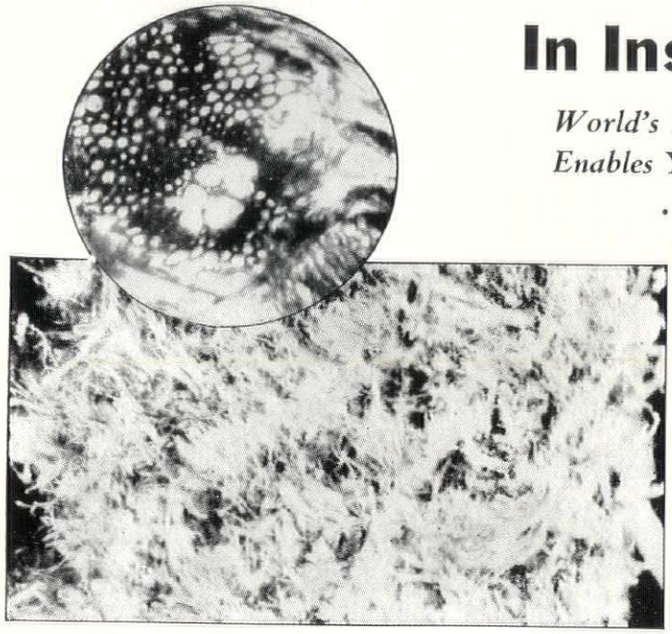
To acquaint the public with the program, a series of advertisements featuring the Plan was published in the five leading Washington dailies—advertisements appearing weekly both in financial sections and in the real estate and building sections of the Saturday and Sunday papers. A descriptive pamphlet was also prepared for distribution over the counter.

On May 30, 1936, after three months operation, over 1,000 persons had visited our offices in response to newspaper advertising. Of this total some 273 were recorded as prospective home builders—having a lot or cash and an active desire to proceed immediately with their homes. Some 184 prospects had revisited the Association for further information, and some 65 prospects had reached the conference stage with the architects.

About 20 prospects had reached the stage where architectural plans, complete specifications and competitive construction bids had been submitted to us with formal application for construction loan. We feel that the great

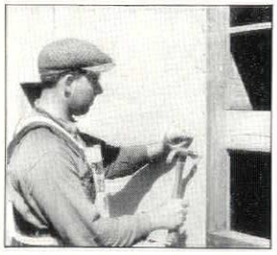
Read Why
ONE INCH OF CELOTEX EQUALS 3 FEET OF CONCRETE
In Insulating Efficiency

World's Most Widely-Used Building Insulation
Enables You to Deliver Better, Stronger Homes
. . . Faster . . . At Lower Cost!

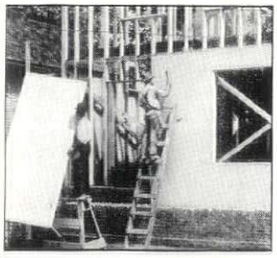


(Above) *Millions of sealed air cells* within *the fibres of Celotex are a natural bar to heat transmission. Open network of strong Celotex fibres means increased air space—increased insulating efficiency.*

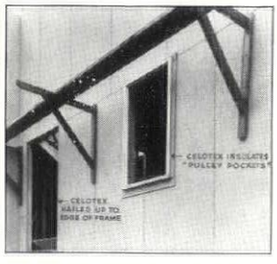
Celotex is easily cut and fitted with ordinary tools—nails firmly into place—stays put permanently.



Celotex sheathing spans four studs—meets on the stud—provides a stronger, better-braced, more wind-tight wall.



Celotex insulates right up to the frame—including pulley sockets which cannot be protected by fill-type insulation.



WHEREVER building insulation is desired, Celotex enables you to build better—build stronger—build at lower cost. For Celotex is more than just a strong, permanent, easily handled building material. It also supplies lasting insulation at the same time. It builds and insulates, *both*—at *one* material cost.

A single inch of Celotex equals 4½ inches of plaster board—15 inches of brick or 3 feet of concrete in insulating value

With this tried and proved material—already used to insulate more homes than any other form of building insulation—both you and your clients will be better satisfied. For Celotex is a better insulation because:

FIRST Celotex is naturally good insulation, as the microscope proves. Millions of tiny dead-air cells within the strong, close-matted fibres, as well as between them, offer a permanent bar against heat transmission.

SECOND Celotex is a far better insulation *structurally.* It is easily applied. It can't settle, shift or shrink because it's nailed where you want it and stays there. It insulates pulley sockets. It stops wind infiltration—eliminating knot-holes and unbacked joints. And it's waterproofed for permanent protection against waterlogging and consequent loss of efficiency.

Let us send you further facts about this strong, lasting material used as sheathing lath interior finish that builds and insulates both—at ONE material cost. There's no obligation, of course.

The Celotex Corporation, 919 N. Michigan Ave., Chicago, Ill.
Sales Distributors in Principal Cities Throughout the World

CELOTEX
BRAND
Reg. U. S. Pat. Off.

Celotex Cane Fibre Products are manufactured under the Ferox Process (patented) and resist damage by Fungus Growth, Dry Rot, Termites (white ants). Look for the brand name. Accept no substitutes.

TRENDS

NEWS • EVENTS • FACTS • FACES • IDEAS • OPINIONS • COMMENTS

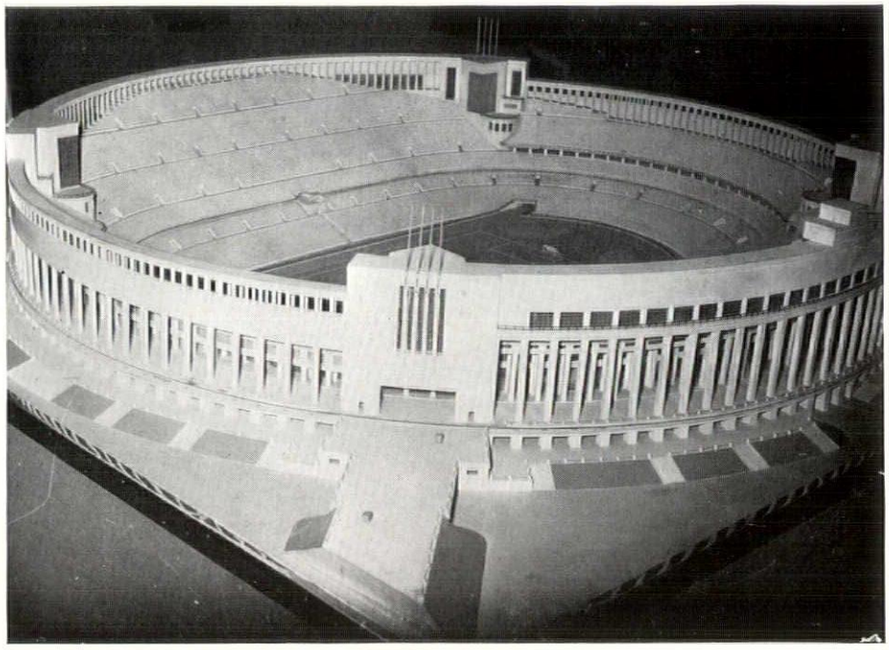


PHOTO: PICTURES, INC.

This model exhibited at the Olympic Art Exhibition in Berlin shows the model stadium being erected in Rome at a cost of 75 million liras to seat 150,000 persons. It is being built as Italy's initial bid for the 1944 Olympics. The architect is the Italian engineer Guilio Arata who is also in charge of Italy's Olympic city

majority of applications developed under the service will materialize into actual loans—and that the percentage of acceptable applications will be considerably higher than on our regular run-of-the-mill applications for construction loans, where, in many cases, poor design or unsuitable, and insufficient specifications account for a restricted commitment, or a flat rejection.

In addition to the new business attracted directly to the Home Building Service Department, our advertising campaign has evidently increased our regular construction activities, as evidenced by actual construction loans made. . . . . "

"Although it is apparent that the permanent benefits of the service are accumulative, Perpetual feels that the results to date amply justify the time, effort, and money invested."

On the surface the success of this plan would appear to be primarily due to a skillful advertising program. Certainly, at least part of the results must be attributed to this promotional effort. But Perpetual justifiably feels that some measure of acclaim must be given to the technical personnel (architects) on hand to answer preliminary questions and guide the prospect over the first and most difficult hurdles. Naturally this scheme is not unique. Small House Associates of New York have a similar plan. Undoubtedly there are other such organizations throughout the country. But to the majority of architects there is plenty of room for speculation in this idea now being so successfully worked in a number of cities. It gives rise to a very pointed question: "Is the future of architecture in the small house field definitely tied to co-operative ventures?"

Reorganized Procurement Division

If you were in charge of 500 construction contracts for federal buildings ranging from $50,000 to $10,000,000 in cost, if you had 3,000 buildings to keep in repair throughout the United States and its islands, you would certainly want a capable, and above all adequate architectural and engineering staff, wouldn't you?

That's the question that Rear Admiral C. J. Peoples of the Procurement Division of the U. S. Treasury Department asked himself last month, and since he does have this manifold responsibility it is no wonder that he came up with an affirmative answer. The result? The engineering department in particular, although the set-up of the architectural division has also undergone change, has been subjected to an extensive process of reorganization.

Assigned to the task of putting the divisions in smoother running order was Neal A. Melick, an Ohio engineer associated with public works activities since 1909. Under the title of supervising engineer, Mr. Melick has set up a decentralized organization in the field, employing more than 400 construction engineers—this in addition to the headquarters staff in Washington where fifty more engineers are employed.

To facilitate this work the country has been divided into eight districts. Each district is in charge of an engineer whose past experience has qualified him particularly for such responsibilities. These district engineers are not subjected to control from headquarters except on matters of policy controversy. This particular feature is designed to prevent costly decision delays.

In the Washington office design has been completely divorced from construction. Thus the architectural division, under the direction of L. A. Simon, supervising architect, is altogether detached. Mr. Simon has equal rank with the supervising engineer.

Also remaining active in the architectural division is the consulting board, an advisory committee on design. This group is made up of the following widely known architects: Charles Z. Klauder, chairman, Philadelphia; Aymar Embury II, New York; Philip Maher, Chicago; and Robert Shepley, Boston. Mr. Simon also sits as a member of this board.

Directly under Mr. Simon is W. G. Noll, who serves as superintendent of Architecture. T. C. Brooks is superintendent of structural engineering. N. S. Thompson is superintendent of mechanical engineering, while J. W. Ginder superintends the architectural engineering work.

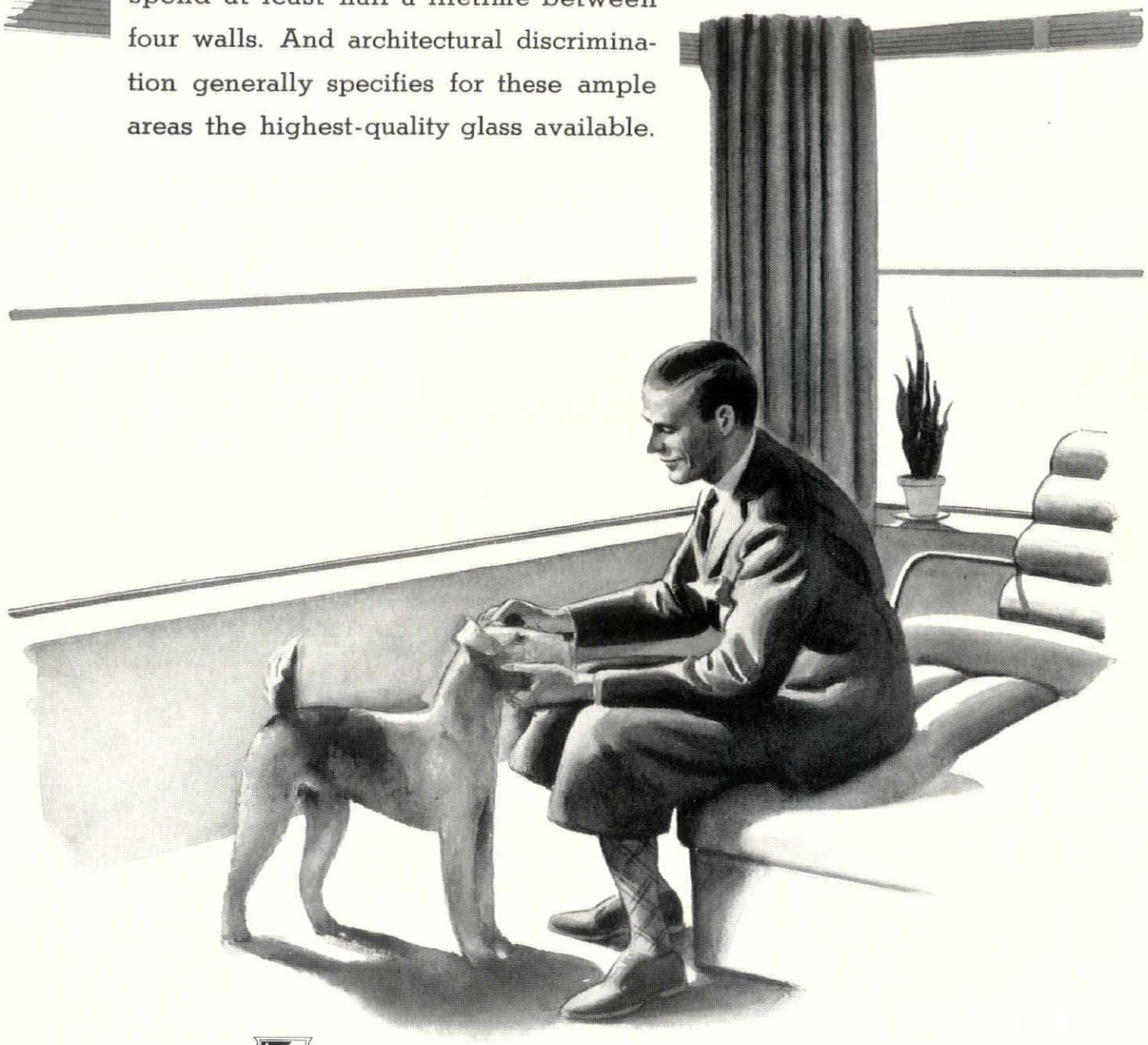
From this organization, probably the largest of its kind, come designs and complete working drawings and specifications for all federal post offices, court houses, Public Health service hospitals and quarantine stations, as well as work for other departments. Naturally, it also takes charge of the preparation of working drawings and specifications under contract by private architects and performs all other necessary work preliminary to the award of construction contracts.

Emergency Constuction Fund

The $60,000,000 Emergency Construction Fund will finance at least three hundred and twenty one public building projects in the near future This became a certainty last month when Secretary of the Treasury Morgenthau gave final approval of the projects, money to come from the fund authorized under the First Deficiency Act passed by Congress.

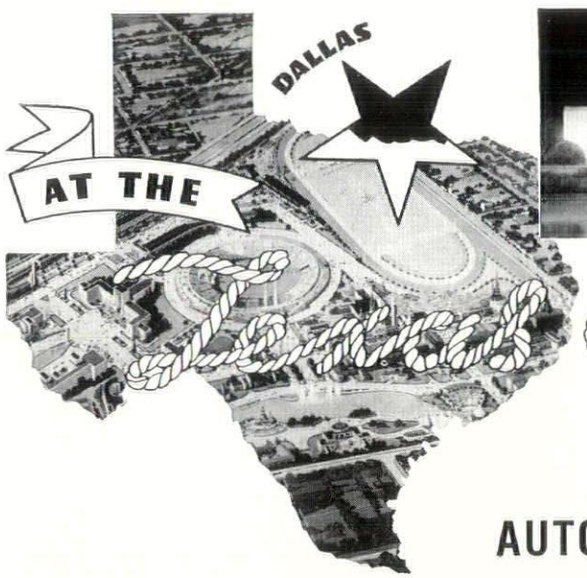
Biggest number of projects went to New York with 21. Projects in many cases, are post offices.

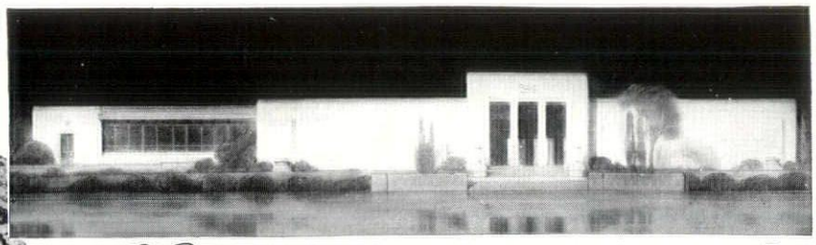
Architectural ingenuity, expressed in larger glass areas, is bringing the boon of light and air to thousands of new home owners who, like the average person, spend at least half a lifetime between four walls. And architectural discrimination generally specifies for these ample areas the highest-quality glass available.



LIBBEY·OWENS·FORD *Quality Glass*

Libbey-Owens-Ford Glass Company, Toledo, Ohio manufactures a complete line of flat glass, including Flat Drawn Window Glass...Polished Plate Glass, both clear and in colors...Heavy Sheet Glass...Greenhouse Glass...Safety Glass...Tuf-Flex tempered plate glass...Vitrolite opaque structural glass... Aklo heat-absorbing glass...and distributes the Figured and Wire Glass manufactured by the Blue Ridge Glass Corporation of Kingsport, Tennessee.



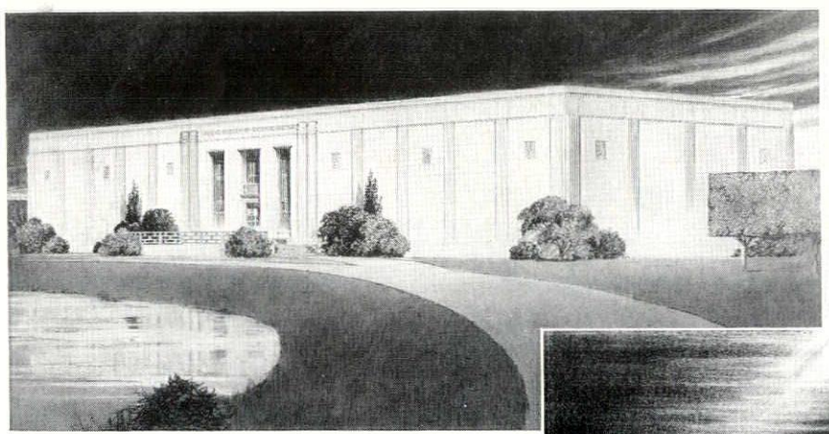


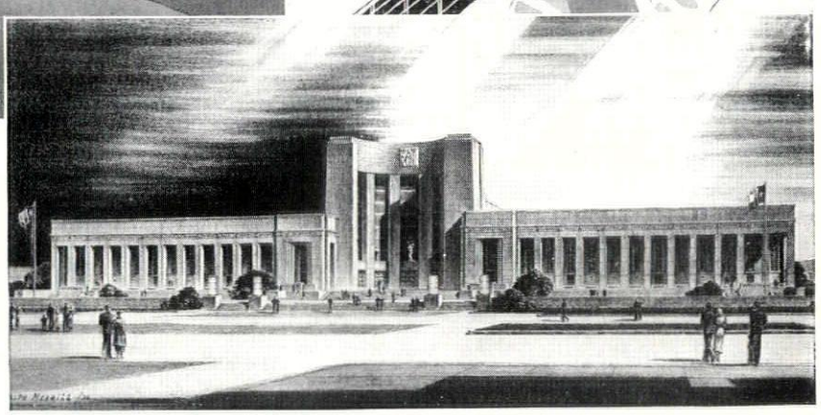
Centennial

JOHNSON
AUTOMATIC TEMPERATURE REGULATION

The architectural renderings show three of the permanent buildings at the Texas Centennial which will beautify the exposition grounds at Dallas for years to come. These buildings represent careful selection of materials and equipment with a view to modernity, convenience, and dependability. JOHNSON automatic temperature regulation devices perform the important function of controlling the temperatures produced by the blast heating apparatus—silently, effectively and economically. The JOHNSON organization celebrated last year its "semi-centennial"—half a century devoted to this one line of business. Whatever the temperature or humidity control problem—heating, cooling, ventilating, air conditioning—JOHNSON apparatus is the answer.

Johnson Service Company, Milwaukee, Wisconsin.
Direct branch offices in all principal cities.





At Top: Hall of Fine Arts.
Ralph Bryan, Henry Coke Knight, De Witt & Washburn, Herbert M. Greene, La Roche & Dahl, associated architects.

Above: Museum of Natural History.
Mark Lemmon, C. H. Griesenbeck, Frank Kean & John Danna, architects.

At Right: Texas Hall of State.
Texas Centennial Architects Associated, Inc., and Adams & Adams, associate architects.

Park Board Architect: W. Brown Fowler.
Mechanical Engineers: Kribs & Landauer.

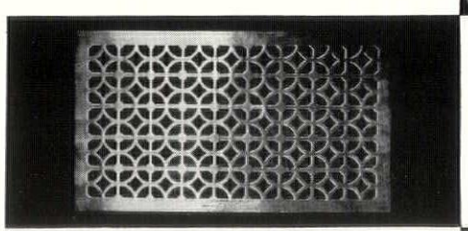
JOHNSON AUTOMATIC HEAT & HUMIDITY CONTROL
for Heating · · · · Cooling · · · · Ventilating · · · · Air Conditioning

AS Practical AS IT IS *Beautiful*

FOR beautifying commercial and public buildings, there is no more attractive material than gleaming USS Stainless Steel trimming in polished or satin luster.

This wondrous new metal is as practical as it is beautiful. Lustrous stainless trimming cleans easily, saves cleaning expense. Its high strength permits the use of lighter sections . . . a metal saving which tends to offset the extra cost-per-pound, and offers an excellent means to lighten or strengthen heavy canopies and hangings. And because it is tarnish-proof USS Stainless trimming will keep your building young. A damp sponge will always restore that same sparkling newness you see today.

Don't overlook the advantages of specifying "USS" Stainless Steel for your stainless trim. As America's largest group of steel producers, we have the experience and the facilities to offer you a wide variety of shapes and dimensions — quickest delivery — and uniform dependable stainless steels which will look as brilliantly spotless in the years to come as they do today.



THIS GRAND STAIRCASE in Radio City's Music Hall is an excellent example of permanent beauty and dignity achieved through USS Stainless trimming. At the other end of the scale is this utilitarian ventilator grill, where the most important reasons for specifying USS Stainless were ease of cleaning and corrosion-resistance.

USS STAINLESS STEEL

CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*
With which has been consolidated American Sheet and Tin Plate Company
AMERICAN STEEL & WIRE COMPANY, *Chicago and New York*
NATIONAL TUBE COMPANY, *Pittsburgh*

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

PHOTO: DELL & WAINWRIGHT

COURTESY OF THE MUSEUM OF MODER

A HOUSE OF CONCRETE ON THE COAST OF CORNWALL, ENGLAND . . . by MARSHALL SISSON, F.R.I.B.A.

SITE PLANNING AND SUNLIGHT

as developed by HENRY WRIGHT

The orientation of most buildings in relation to sunlight has been haphazard, executed by mistaken rules of thumb. In the Town Planning Studio at Columbia University sunlight-control on a scientific basis affects both site planning and architectural form

IN a characteristically thorough manner, Henry Wright investigated every factor that has a direct bearing on the proper planning of buildings and communities. For years, he made studies of the way in which people live, the best arrangements of space for better living, the engineering problems of providing services, the economic and financial factors and building costs, transportation and traffic safety and all the other elements that must be considered in producing a better environment.

During the last year, he bent much of his effort to developing the technique of the study of sunlight in site planning. Through the facilities of his Studio at Columbia, he and his collaborators were able to develop both techniques and data which may have further influence on both architectural form and community planning than at first seemed apparent. These studies were but a part of his ideal of so integrating architectural study as to produce a keener appreciation of three-dimensional form and of qualities of space organization, and a realization of their social, economic and cultural implications. He wished to open the minds of the architects to the possibilities of service beyond the mere ability to produce a set of working plans and specifications.

The study of sunlight and shadow in relation to particular projects has been greatly facilitated by the use of the Heliodon. This "sun machine" can be adjusted to show the direction of sunlight and shadow for any day of the year and any hour of the day in any latitude. By placing three-dimensional scale models in the light of the miniature sun, either single buildings or groups of buildings may be studied with minimum effort to determine their sunlight relationships. Of course, it is possible to make drawings in plan, section or perspective on which the angle of the sun may be plotted for different seasons and hours, but this is a laborious process which few architects would consider worth the time and effort. The use of the "sun machine" has made possible a quicker and more simplified technique.

The technique developed is first to make a negative contour mold of the existing site. From this negative mold, several positive contour molds may be cast upon which experimental work in site planning may be done. The next step is to carve the positive contour model as seems advisable in laying out the street or road pattern, and to place the tentative mass of the building or group of buildings, at scale, on the site-model. The model, with its buildings in place, is then studied under all sunlight conditions with the aid of the Heliodon. This will usually show very quickly and positively where improvements can be made as far as sunlight relationships are concerned. Two examples of the way in which this technique works out in practice are shown on the following pages. The first, a community of low cost row houses, and the second, a single commercial structure.

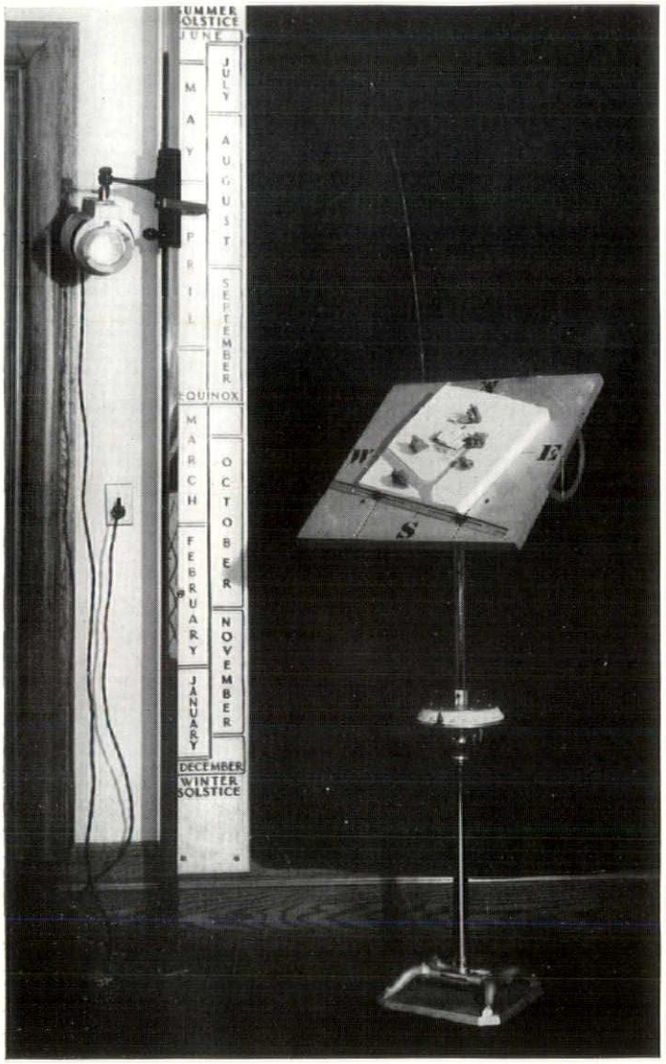
As a result of the studies made under Henry Wright's direction, even the despised cornice may come back to its architectural own, exonerated and validated by practical engineering analysis. The function of the cornice as an element in the control of undesirable hot, direct sunlight may recommend it to modern and eclectic alike. Its aesthetic form is, of course, scientifically unimportant, but its position, projection and relation to openings and wall surfaces are being studied anew in relation to the characteristics of sunlight at different latitudes and at different times of the year. We may even find a renaissance of the wide, flat projecting cornice of the "prairie" architecture of that other famous Wright, Frank Lloyd. In its new guise, however, it will be recognized perhaps more for its practical function than for its aesthetic appeal.

Air conditioning gives new impetus to the further study of controlling direct sunlight. The load on summer air cooling apparatus may be considerably reduced by shielding wall and window surfaces from the direct rays of the sun, by incorporating cornices or cantilevered horizontal projections in the design of the building.

Luckily, in this latitude, such projections can produce shade from the undesirable hot sun in the summer—yet, due to the lower angle of the sun in winter, the projections then do not eliminate wholly the warming sunlight penetration.

Modern architecture, with its larger expanses of glass, and with its lack of inhibitions regarding horizontal projections, offers a fertile field for the direct application of sunlight control through orientation and form. While traditionalists may hesitate to use desirable sunlight shields, the functionalists would grasp the opportunity to produce a more comfortable building by analyzing the sunlight conditions for suitable control, and by building accordingly.

Of course, venetian blinds, louvers, window shades and blinds can be used, instead of employing permanent projections, as they can be adjusted. This is an advantage for the days when there is no direct sunlight. Awnings too are an easily adjustable means of controlling undesirable summer sun. Natural or landscape planning is also useful in sun control. One of the students in Mr. Wright's studio was able to shade the terrace of his house and several vital windows by studying the shadow patterns of existing trees on the property and by so placing his house in relation to them to ameliorate the effects of the hot western sun in the late afternoon.



PHOTOS SCHALL

THE HELIODON

Doubles for the Sun, in miniature

The "Heliodon," or sun machine, is used in studying the fall of sunlight and shadow on scale models. The relationship of the building-model to the sun can be altered to correspond with any day, hour, latitude, and orientation. A spotlight representing the sun is set on the scale (shown at the left of the picture above) to give the angle of the sun on any date. In actual operation the standard, on which the model is placed, is located accurately some eight feet from the vertical mounting of the "sun"-lamp. The model to be studied is set on the table top, as shown, with the proper compass points. The top is tipped from the horizontal to an angle corresponding to that indicated by the latitude. The model is then revolved about a vertical axis to show the shadows cast because of the sun's angle at various hours during the day. On the circular scale between the table top and the base of the standard the hours are correspondingly marked. Henry Wright, Jr. constructed this Heliodon for Columbia University.

A HOUSING PROJECT PLANNED FOR SUNLIGHT

AN actual site of some 17 acres of rolling land near Flushing, Long Island was chosen for a thorough site-planning study. The New York World's Fair of 1939 will be nearby. Low-cost row-housing was determined upon as a solution of the problem.

The method pursued in the solution of the physical problem was to first make a "negative-contour" model of the existing property. On one of the casts made from this negative model, studies of street layout were made in relation to probable best orientation and to economy of roads and utilities. Through the many studies of sunlight carried on in Henry Wright's studio of Town Planning at Columbia University, the most advantageous orientation of buildings for various locations had been determined in general. The masses of the carefully-studied small row-houses in block form, were then placed on the model for the detailed study of sunlight relationships.

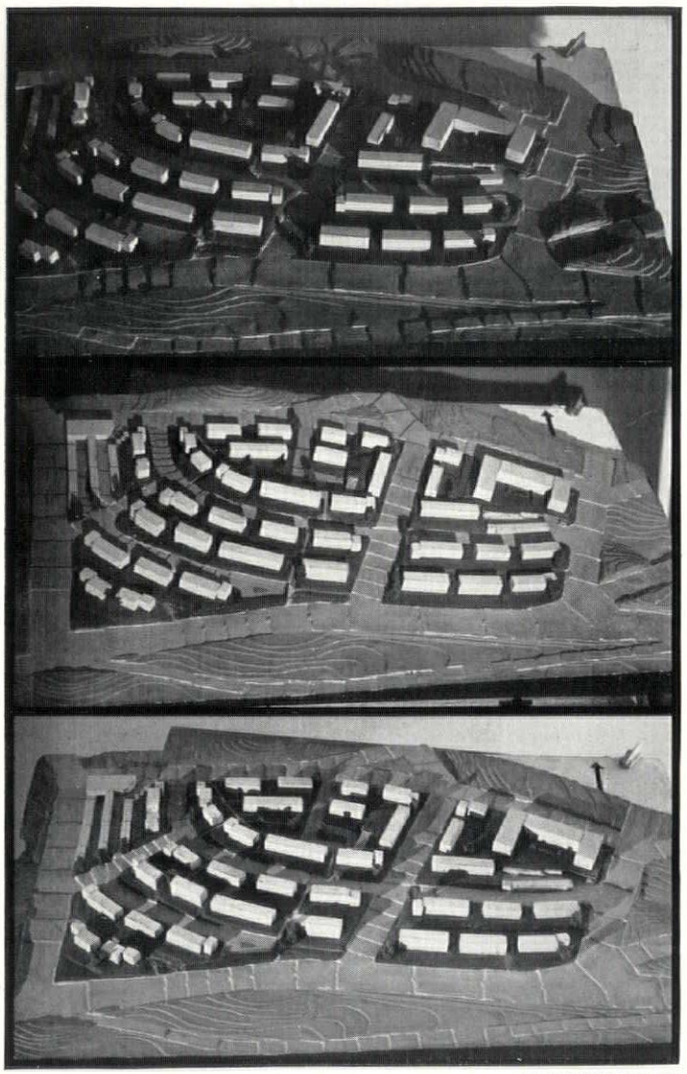
The street plan adopted is carefully related to the contours of the site and at the same time provides for the desirable southwestern exposure for the principal rooms of the majority of the houses. The garages are grouped in the least desirable portion of the property both regarding outlook and orientation. A large apartment house is placed on the highest part of the property where it has a commanding view, looks over the low houses and garages to the south, and where it does not interfere with the sunlight or view of its neighbors.

Photographs were taken of the model giving conditions of minimum sunlight (December 21st) and maximum sunlight (June 21st) to show whether or not one building might be robbing another of its sunlight. In this way, an accurate plan was developed to provide the maximum desirable sunlight for all buildings by slightly altering their positions, elevations or the spaces between them. A study of the photographs of the model taken on the Heliodon show the extent and direction of the shadows cast by the buildings. Remarkably little shadow is cast by one building on another even at the most unfavorable time (December 21st). This is due to the careful study of the problem in three dimensions to take full advantage of the contours of the property.

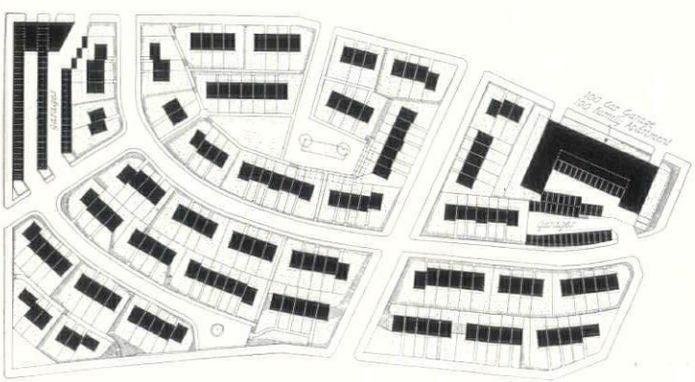
This study was developed by Harmon Hendricks Goldstone as the subject of his thesis and is a concrete demonstration of the possibilities of three dimensional site-planning with the Heliodon as a practical, direct, and time-saving tool for architectural and community planners.

The rows of houses were made up of the units of small houses having two or three bedrooms each (as shown in plan on page 26). As an economy there is no basement except for the heating pits which are shown in this section. Each pit is equipped with an oil burner, and from the pit

SUNLIGHT IN **JUNE**
AND IN **DECEMBER**



PHOTOS: HENRY WRIGHT, JR.



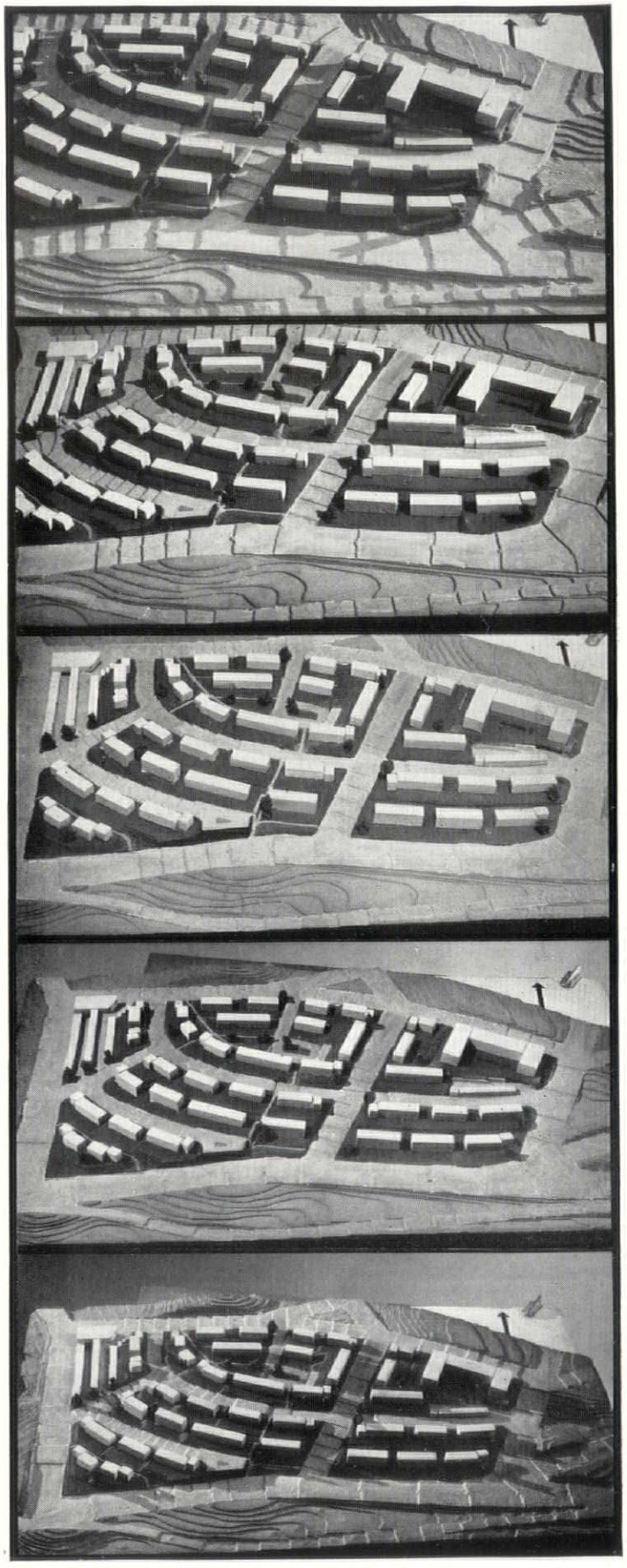
6 AM

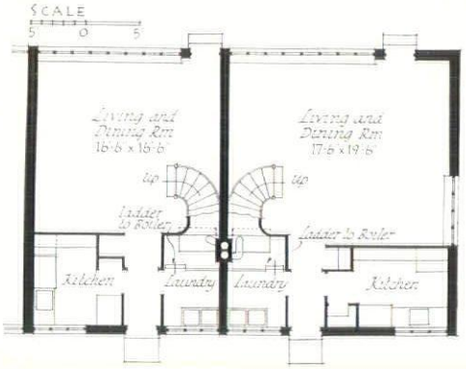
9 AM

12 N

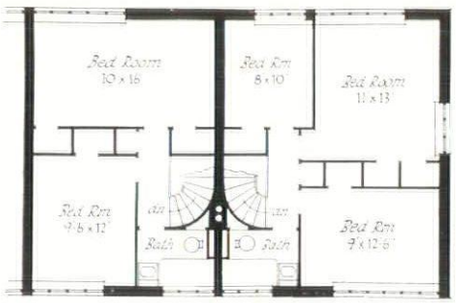
3 PM

6 PM

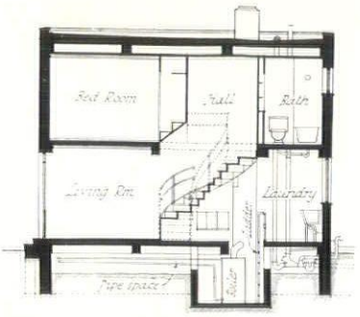




FIRST FLOOR

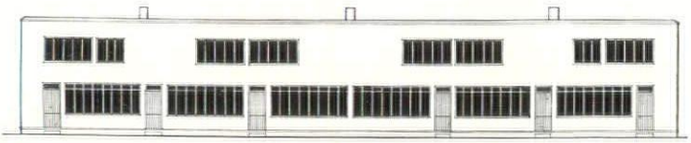


SECOND FLOOR

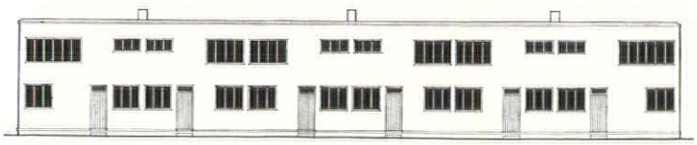


SECTION

access may be had to both heating and plumbing pipes. For economy also, the utilities are concentrated on the party wall without any sacrifice of convenience. The exterior walls are 8" hollow cinder concrete block, waterproofed and stuccoed. All parapets are capped with standard salt-glazed tile copings with socket joints, and extend above the roof to receive the flashing. Roof and floor construction is of 4" cinder concrete on steel. The roof surface is of a 10 year guaranteed roll roofing. Partitions are of 2" gypsum plank. Doors are of wood. Interior finish, 3-coat plaster on metal lath and furring. Party walls, 2 coat plaster; Gypsum partitions are finished with Kanite. Finished floors; battleship linoleum over wood flooring on sleepers. Venetian blinds are called for at all windows having south or southwest exposures so that sunlight may be controlled.



FRONT ELEVATION



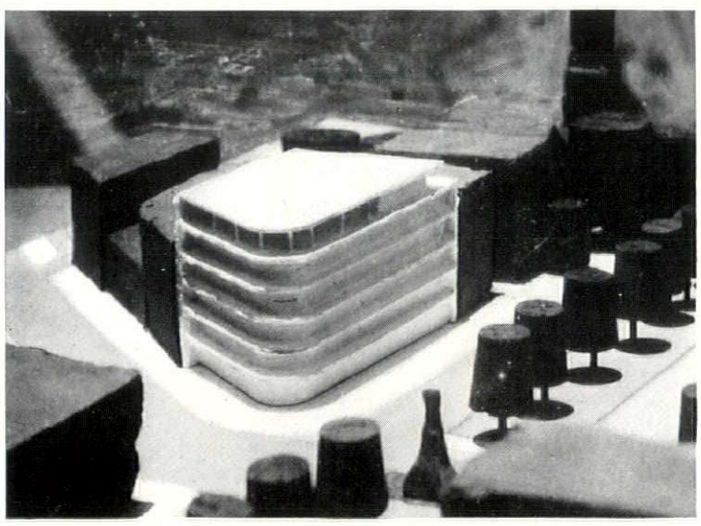
REAR ELEVATION

A COMMERCIAL APPLICATION OF SITE-PLANNING WITH SUNLIGHT

The photographs below are of models designed for an office building in Macon, Ga. The form of the building with its candidly projecting planes is accurately designed to shield the fenestration from hot direct sunlight in summer months and to take advantage of the warming sun in the winter. The illustration at the left shows the sunlight condition at noon on December 21st; that at the right shows the welcome shadows at noon on June 21st. These are but part of the complete study made of this building from the standpoint of architecture, economics and engineering by Logan Stanley Chappell as a thesis in Henry Wright's studio at Columbia University. It is designed for an actual site and shows a practical problem and a solution designed to minimize undesirable direct sunlight in the summer.

Noon, Dec. 21st.

SUNLIGHT.... AND .... SHADE



Noon, June 21st.

HENRY WRIGHT

1878 - 1936

HENRY WRIGHT was like a flame that suddenly lighted up and thus clarified and simplified what seemed complicated problems. He was an original. His reasoning was his own—based on his own experience and observation. A varied experience in architectural, site, landscape, and subdivision planning formed the sound basis of his conclusions. His was an unusually active mind—an inquisitive, analytical mind—that constantly drove him on from one problem to another, and from one solution to a still better solution of a problem. His ingenuity forced him to follow his reasoning to its ultimate conclusion and to fight for that conclusion. No matter what sacrifice was needed, financial or otherwise, he made them for his beliefs. He was always big enough and brave enough to attack his own past opinions when he found a better means of attaining the end towards which he was working.

His objectives did not change. Most architects have many unrelated jobs; from the time Henry came to see clearly what he wanted to attain, he had one job. This was the building of better communities—the rehousing of urban Americans in more desirable communities in a practical way. It was all one job—the planning of Sunnyside, Radburn and Chatham Village; his ceaseless analytic writing; his reports on city and state planning; his teaching at various universities.

Henry Wright dealt with essentials. He never had patience with the endless details that lie between conception and ultimate execution, though he carefully considered all the factors of each problem. His flame went on to light up other problems. That active mind of his was constantly driving him ahead. It drove Henry on to new tasks—searching always for means to a simpler and finer way of living in modern communities. His mind jumped with intuitive speed from needs and facts to conclusions and conceptions of form and arrangement.

He had what seemed a supernatural sense of site and the possibilities of relating buildings and living to the facts of nature—to the sun, the winds, the views, but, above all, to the form of the land—so as to get the maximum use in terms of good living, of open spaces, attractive views, quiet and safety at a minimum expenditure for roads, foundations, and yard work.

This apparent intuitive sense grew out of the fact that he combined the training of an architect with the long experience of a landscape and site planner. He served his apprenticeship as architectural draftsman in the office of Root & Siemens in Kansas City before and after taking the course in Architecture at the University of Pennsylvania. In 1902 he worked on the landscape plans for the Louisiana Exposition under George Kessler. Wright stayed on with him and became chief designer of extensive projects of park planning and land subdivision.

Subdivision work had a particular fascination for Wright. Here his architectural vision of future homes combined with his training in landscape planning. Subdivision was, at that time, wholly a matter of dividing a piece of land into a maximum number of salable lots with as many front feet as possible available for sale. The ultimate location of house in relation to site and to its neighbors and to the ultimate cost of public utilities, finished roads, and of grading or yard work was always left for the future. Henry Wright, even then, as a young man, could not see things that way. Land, road utilities, grading, house were all one—must be conceived of as an integrated unit to serve living, not selling. It sounds simple to us now after these years of housing education, but it was revolutionary then. So many of Henry Wright's other conceptions in the years that followed seemed revolutionary, but were ultimately accepted as the common sense basis for practical attainment.

To have freedom to carry out his work in his own way, Wright set up his own office in 1909. It was a brave thing to do. Henry was married and had two children. He gave up a secure position and a good salary so that he might try to carry out his own conceptions. Again and again in the future he was to do the same thing—to risk all for the attainment of an ideal: to try out what seemed to him a better, more logical way of using land and building to improve living. Mrs. Wright always shared with Henry a willingness to sacrifice comfort and gain for beliefs.

Wright had the opportunity to plan a number of small suburban developments outside of St. Louis with house and land development related, and in certain cases he was architect of house as well as site planner. These were homes of the wealthy or modestly wealthy and were too limited in scope, so he turned to civic affairs. He helped to organize, and was secretary of, the St. Louis City Plan Association, 1909-10. He urged the St. Louis Chapter of the A.I.A. to study the critical city plan situation in 1916, and directed the study and exhibition of the Chapter which laid the foundation for a forward-looking city planning program.

His real opportunity to make practical application of his theories of community development came soon afterwards as a town planner for the Housing Division of the Emergency Fleet Corporation in 1918. The Production Division under Robert Kohn, with Frederick Ackerman in charge of design, had the difficult task of trying to harness civil engineer, landscape architect, and architect as a team to design towns. Wright, with his background as house designer, city and site planner, and subdivider, was invaluable. He was greatly influenced, at this time, by the theories and reasoning of Raymond Unwin, as expressed in "Town Planning in Practice." With the war over the work ceased, but enough had been done in Chester, Pa., Newburgh, N. Y., and elsewhere, to give Henry Wright confidence in his approach to the problem of community development and for him to determine that his future work must be in connection with providing better homes and communities for the large masses of the people.

There was then no chance of carrying on private practice to

attain this end. He returned to St. Louis and, as architect for the City Plan Commission, prepared and administered rules for land subdivision control. He attempted to guide the subdividers to relate their plans more closely to the requirements of better living at moderate cost. But more and more he saw that the slow, unrelated processes of land subdivision and speculation, followed by scattered building of houses, was inexcusably wasteful and antagonistic to the attainment of desirable housing. At this time, he wrote a report for St. Louis on the economics of land subdivision that contained the seed of much of his future thinking, writing and work.

I became acquainted with Henry at that time as a result of our association on the Committee on Community Planning of the A.I.A., and our work with Charles Whitaker on the Journal of the A.I.A., and finally, in 1921, in planning a small industrial workers' community. This project was not carried out. But by working together we found that we were interested in the same objectives, although we had quite different contributions to make in their attainment. We found that we could not fit our conceptions into the pattern of the existing city, its manner of physical growth and the economic or social methods of bringing about that growth. We turned to Ebenezer Howard's Garden City as fundamentally the most valid answer to the problem of American city development.

Garden Cities, we felt, must be built in America to meet American ways of living. In 1923, Alexander Bing (a man of vision and leadership with practical experience in large operations), Henry Wright and I co-operated in the plan of a small self-contained community within the boundaries of New York. This development would have exemplified, on a small scale, most of the principles of the Garden City; the retention of the land increment by the community; large scale, organized, comprehensive and related planning, construction, and management; industry and business within walking distance of the homes; the elimination of costly though unessential elements which were customary in American city planning. It was impossible to secure sufficient finances for this project, but as a result of these studies the City Housing Corporation was formed, Sunnyside was built, and ultimately a major step toward the future rebuilding of America with modern communities was made in the conception and partial creation of Radburn.

Wright wrote of the Radburn Idea for which he was to such a large extent responsible—

> "The application of this social plan to Radburn was an event, in my judgment equal in significance to that other 'social' plan of Ebenezer Howard (1898). The Garden City Plan (1898) fitted into the old condition of its day, but Radburn (1928) had to meet an entirely new set of conditions. City Planning had been engrossed in the solution of traffic movement, adjusting old time street systems to new demands of the motor car, but no completely new town had recognized the necessity of meeting the human problems of danger, noise, and nuisance accompanying the convenience of the new vehicle. The 'Radburn Idea' attacked the problem as a related whole." *

Those were busy years for Henry Wright. He became consultant to the New York State Commission of Housing and Regional Planning, and in the report on a Plan for the State of New York he did pioneering work in this country. The report was a masterly analysis of past, present, and possible future physical developments of the State. It blazed the way for the many subsequent State plans.

This report was merely one sign of the broadening scope of Henry's life work. Although he continued with the study of the detailed problems of plan organization of apartment and house units and their relation to each other to the site, his main interest was the broader picture.

His thinking was stimulated by a group of men who sometimes came together as the Regional Planning Association of America and who approached, from a variety of angles, the problem that absorbed Henry. There was Frederick Ackerman, Lewis Mumford, Stuart Chase, John Bright, Frederick Bigger, Henry Klaber, Benton MacKaye, Robert Kohn, Charles Whitaker, Alexander Bing, among others. Henry's original angle on all that was discussed was always provocative and stimulating. The apparent solution never satisfied him. If it were generally accepted, he immediately questioned it. He had to get at the roots or foundations and see how the whole works built up and why. He never got over the boy's inquisitive taking apart the works of a watch, but he always found a new and original and generally a better way to put it together.

Writing and public speaking at first were difficult for Henry Wright. But he felt the need of passing on his experience particularly to the younger generation. He lectured at a number of universities. His unassuming mastery of his subject and his simple sincerity in time made him an easy speaker. He spoke first as a technician in the architectural schools. But this did not satisfy him. His subject was broader than architecture or site planning or city planning. He gathered around him professors and students of economics, sociology, government, engineering, as well as architecture and city planning, and with them discussed the broader problems of community building.

So that he might have more constant contact with them, for a number of summers he invited a group of younger instructors and advanced students to his simple farm in New Jersey. They worked out projects in community planning and in their spare time remodeled the old mill to serve as drafting room and dormitory. In the evening they discussed endlessly, spurred on by the provocative mind of Henry Wright.

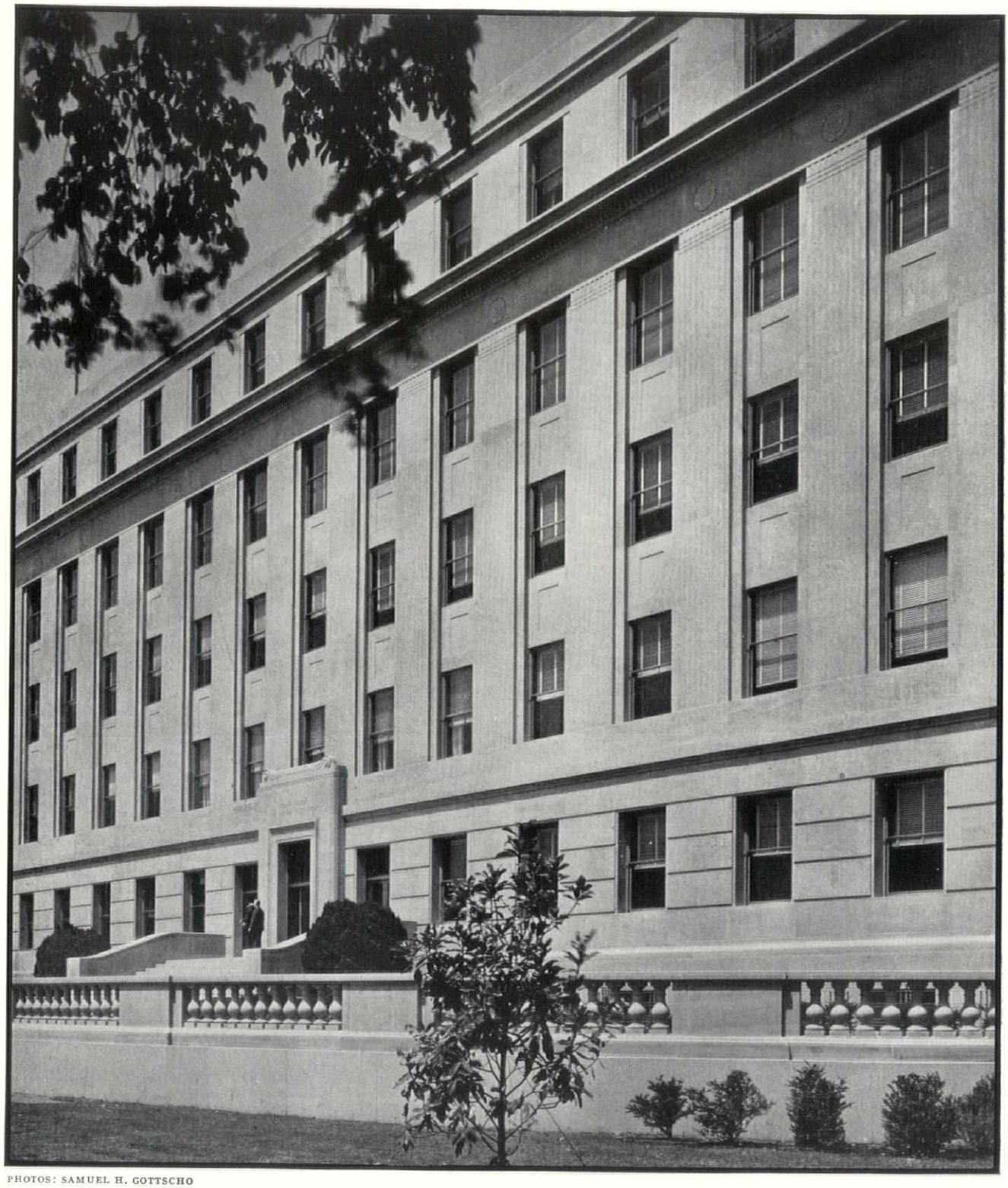
His book, "Rehousing Urban America," was published by the Columbia University Press early in 1935. It is unquestionably the best technical book on housing in America. A volume that was to sum up Henry Wright's experience and point of view on housing never could be finished. His mind and imagination flew ahead of his pen. The first part of the book was always obsolete for him before the end was reached no matter how fresh it might be for others.

He started the Housing Study Guild in association with Albert Mayer, Carol Aronovici, Henry Churchill and Lewis Mumford for the clarification and development of thinking in regard to housing through discussion and research. Last year he was appointed Associate Professor at the Columbia School of Architecture for a term of four years, and was given the freedom to carry on his work with his students according to the methods he had developed at his farm.

Most of our lives have no plot. Henry Wright's life had a definite theme. He devoted his life to a cause with a singleness of purpose. But he was never a propagandist: he preached no cure-all. His ever youthful, searching mind and his integrity would not permit him to freeze his point of view and become doctrinaire. He once said to me, "If I had my way, over the gate of every university, I would carve a great question mark." Technically and intuitively he probably knew more about housing than anyone in this country. But he always remained the seeker after new truth whose brilliant flashes constantly lighted the way for those of us who were fortunate enough to work with him.

Clarence S. Stein.

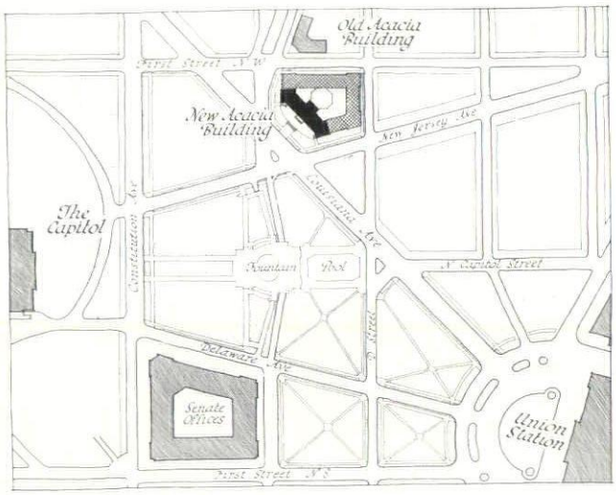
* "The Autobiography of Another Idea," *The Western Architect*, 1930.



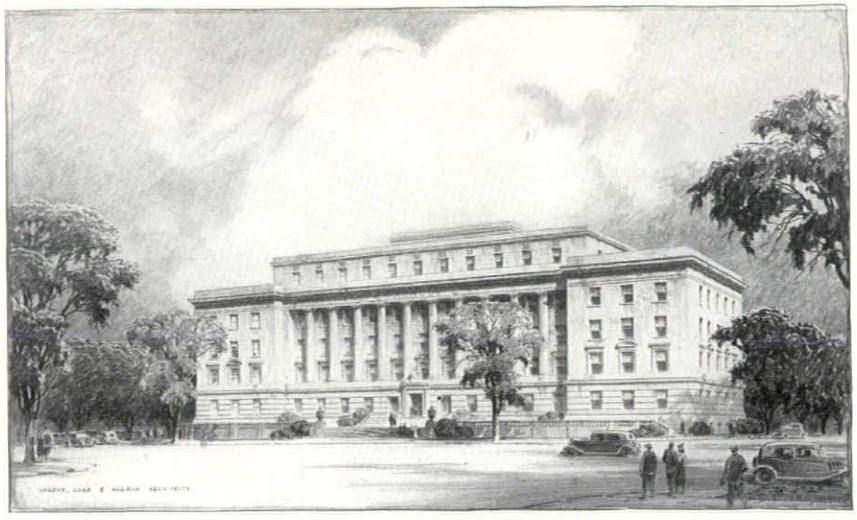
PHOTOS: SAMUEL H. GOTTSCHO

THE ACACIA MUTUAL LIFE INSURANCE COMPANY'S HOME OFFICE BUILDING, WASHINGTON, D. C.

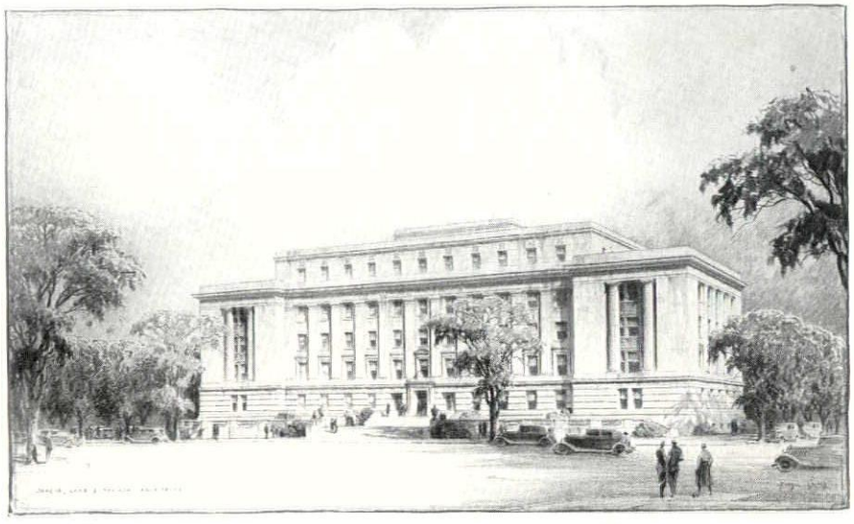
SHREVE, LAMB & HARMON, ARCHITECTS



The ordinary requirements of an office building were in this case subordinated to the civic responsibilities laid upon the owner of this particular site. In the first stage the portion of the plan shown in black was built; eventually, expansion will require the completion of the pentagonal form



The first in a series of perspective studies, with a columnar treatment



A study in which the columns are used only in the end bays

THE problem presented to the architects had three major elements: first, the building of a home office for the Acacia that would embody all that the modern science of building could offer, in comfort, adaptability to minor changes of plan, and fireproof construction; second, the ultilization of a low site through which flows the Tiber Creek sewer; and third, the creation, through its architectural dress, of a building worthy of taking a place with other notable structures grouped about the Capitol of the United States.

As to the first of these considerations, the building, from the entrance floor throughout its height, has been designed without interior structural columns. There is thus gained the utmost freedom in planning departmental arrangements and their inevitable revision from time to time. Moreover, the pentagonal plan, following the perimeter of the irregular plot, with a central court, gives a building that can utilize daylight to the utmost from both sides of a comparatively narrow span.

Expansion for future growth, in an insurance company building as in a bank, is a factor that can be plotted with reasonable accuracy. Eventually, the full pentagonal building will probably be needed; for the present, the southeast side will serve, but naturally the architects have endeavored to give this first stage an appearance of completion in itself. The next addition will take the form of an extension along New Jersey Avenue to D Street. The arrangement of walls and steel is such that this addition and later ones can be made without structural changes other than the removal of an end wall of the present building.

In the matter of construction, there has been none of the usual pressure to cut first costs to the bone. In this case the aim has been to arrive at the proper means which would provide a minimum of continuing maintenance charges, without undue increase of the capital investment. Granite and limestone were used for the exterior. All exterior window and door frames, interior door frames, doors, trim and departmental sub-

divisions are either steel or bronze, except where, on the executive floor, wood paneling has been used to mark the importance of certain rooms. The entrance lobby and the elevator lobbies have been finished in various marbles and Virginia Greenstone. Stair treads throughout are of this same stone.

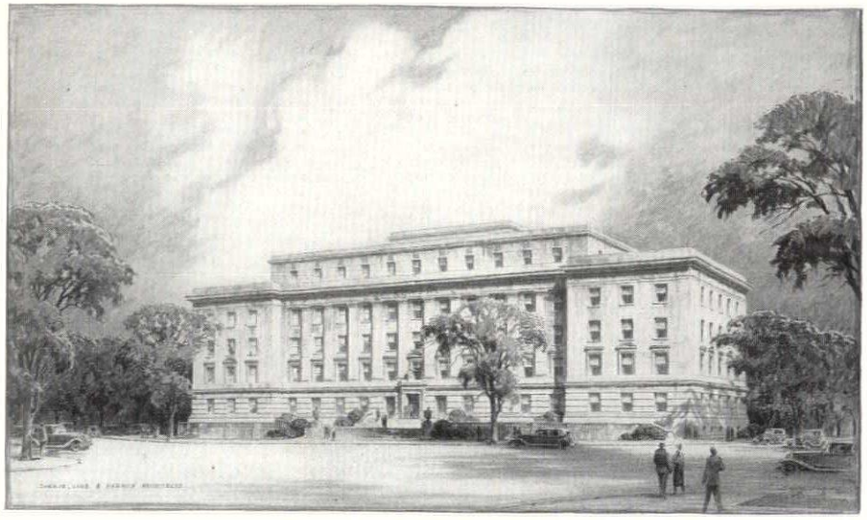
Above the basement the entire building has been air-conditioned and all ceilings have been acoustically treated. There is a low-pressure steam heating system, thermostatically controlled, with all radiators concealed within the thickness of the exterior walls.

The site is comparatively level, but the grounds of Capitol Park rise slowly to the southeast, so that at a point somewhat over 500 ft. to the east the grade is about 18 ft. higher. Less than 8 ft. below the first floor of the building is the top of the Tiber Creek sewer. Both of these facts pointed to a solution in which the second floor becomes the main entrance floor, approached by a wide flight of steps and a broad terrace along the facade parallel to Louisiana Avenue. There was another advantage gained by thus establishing a higher base for the building: the height was limited to 90 ft., measured from the top of the curb on the central line of the front; obviously, then, this limitation would permit a more efficient use of the site if it could be reckoned near the highest point of the curb, which is at the corner of New Jersey and Louisiana Avenues.

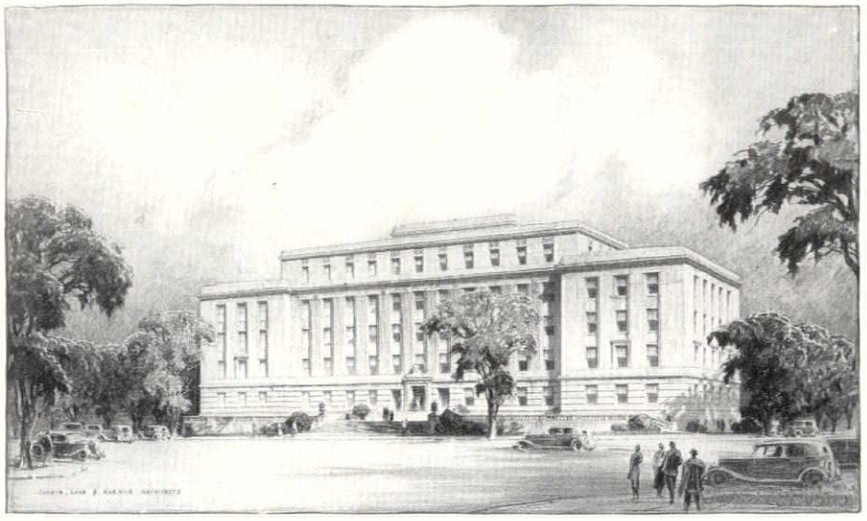
The placing of the front terrace to establish a higher base for the building had a further and eminently practical advantage. If the building had been erected nearer to the Louisiana lot line, the elevators would have been over the sewer, with no possibility of their reaching the basement, and some difficulty of arranging them to serve even the first floor.

Elimination of interior columns brought a new problem in the provision for an acceptable distribution of conditioned air and heat. Closely coupled with this problem was the need for a choice between six stories and seven in the limited height. Weighing, therefore, the factors of light penetration through greater ceiling heights with larger windows, the possibility of using the girder web spaces for air ducts, and a better scale for the facade, as against the additional story with one or even two rows of interior columns to cut down the beam depth, the six-story building was chosen.

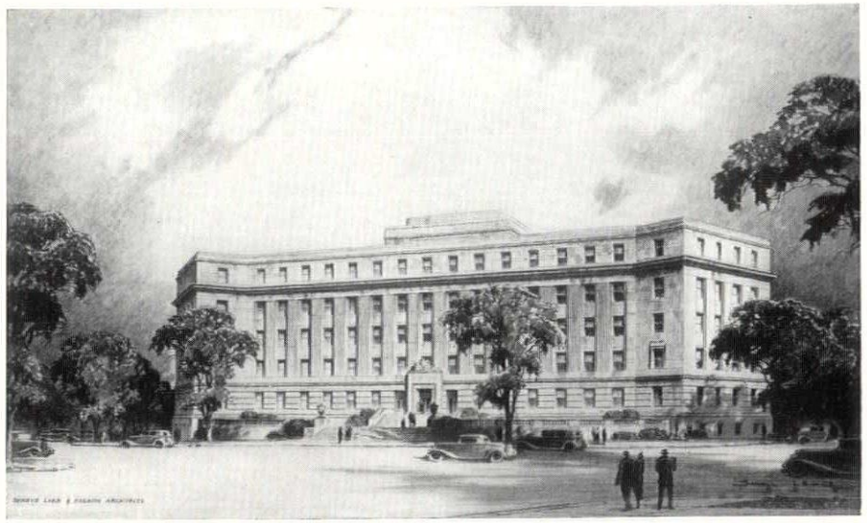
In the plot plan on the facing page, it will be noticed that a unit of hexagonal plan is indicated, projecting into the interior court. An auditorium or a cafeteria may occupy this space in a one-story building, or both in a two-story building, without encroaching unduly upon the court's light-producing function.



The columns have gone; pilasters still mark the main central mass



Verticality of fenestration achieved by reveals in central mass and bays



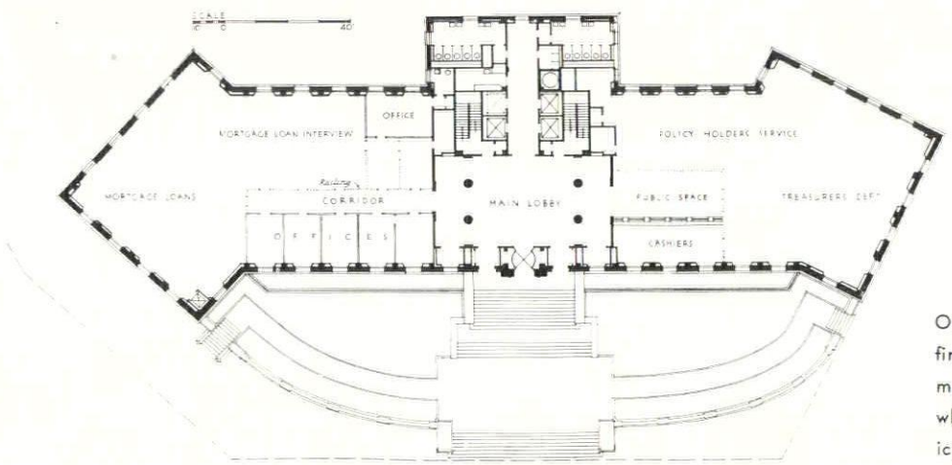
A final shift in plan, permitting better use of the irregular plot and more pleasing stages in the expansion

Granite and limestone help to bring Acacia into harmonious relationship with the other notable structures grouped about Capitol Hill. The building is as nearly fireproof as modern knowledge could devise. Main entrance lobby, finished in various marbles and Virginia Greenstone (facing page)

THE ACACIA LIFE INSURANCE COMPANY'S HOME OFFICE BUILDING,

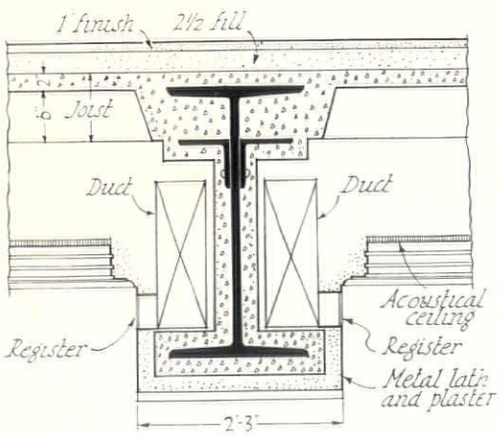
WASHINGTON, D. C. SHREVE, LAMB & HARMON, ARCHITECTS

The president's office, temporarily equipped with furniture from his former office; new furniture has been designed by the architects. In the director's room (facing page) as in the president's office the walls are finished in dark woods, the ceilings in acoustical tile

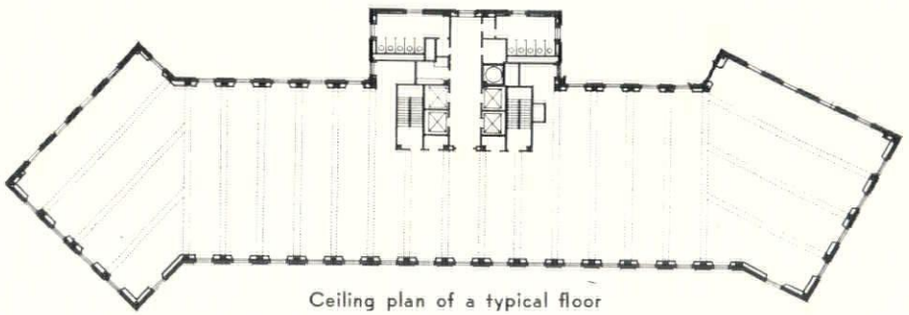


On the main floor—the second—the visitor finds, flanking the entrance lobby, the two main departments of the institution with which he is likely to have contact—policy holders' service, and mortgage loans

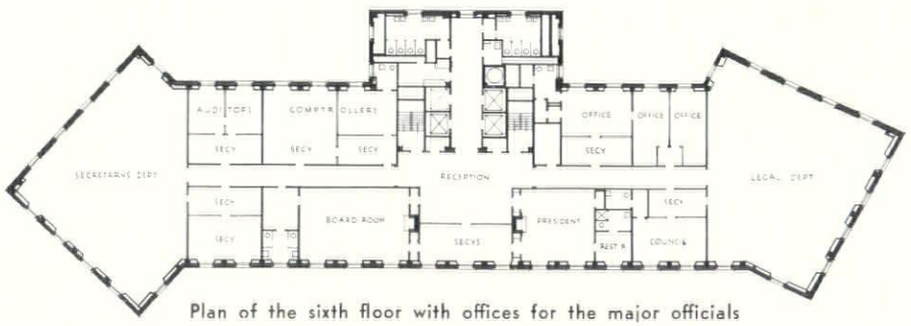
THE ACACIA LIFE INSURANCE COMPANY'S HOME OFFICE BUILDING WASHINGTON, D. C. SHREVE, LAMB & HARMON, ARCHITECTS



There are no intermediate columns intruding upon the open floor space, so that rearrangement of partitions is greatly simplified. Air-conditioning ducts and their registers are carried along the webs of the steel beams. There is a supplementary low-pressure steam heating system, with radiators concealed in the exterior walls



Ceiling plan of a typical floor



Plan of the sixth floor with offices for the major officials

THE ACACIA LIFE INSURANCE COMPANY'S HOME OFFICE BUILDING WASHINGTON, D. C. SHREVE, LAMB & HARMON, ARCHITECTS

Above, a typical floor, unobstructed by partitions or columns, and generously lighted from all sides. Flanking the broad entrance steps leading up to the southeast terrace are these stone griffins — symbols of watchfulness and guardianship. . . . Edmond Amateis, sculptor

PHOTOS: DEVEREUX BUTCHER

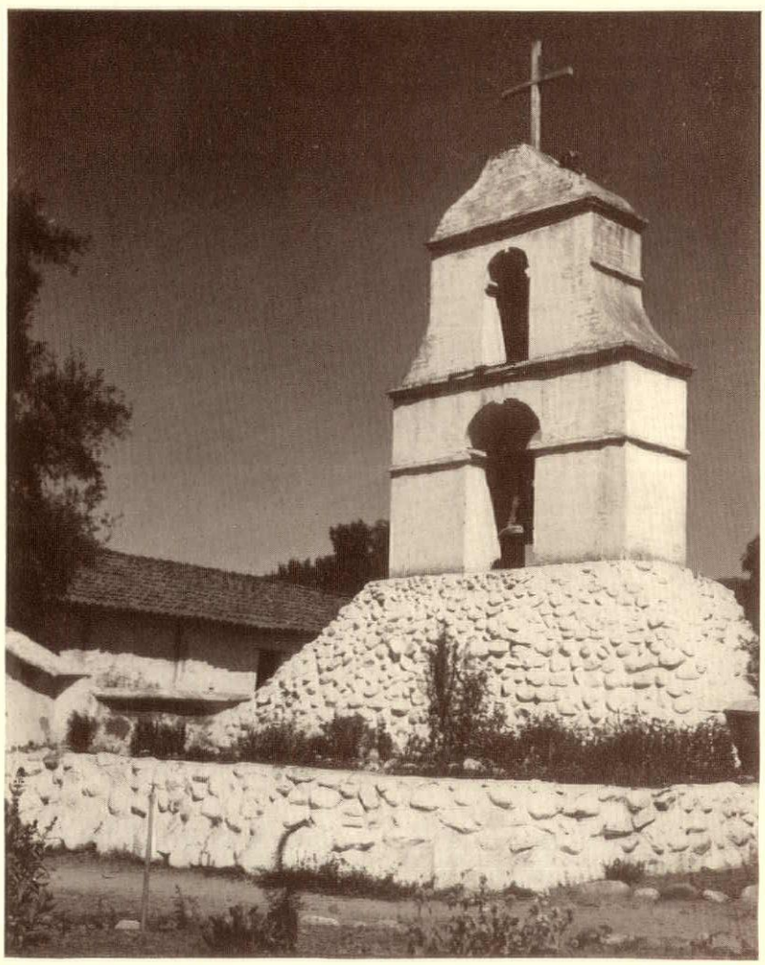
OLD MISSION BUILDINGS IN CALIFORNIA

Twenty-four important missions built by the Franciscans were once linked by only the fragile 600-mile thread of the "King's Highway." Today all but three of them remain as splendid architectural relics of Spanish imperialism. Stories of the privations, journeys and the difficulties of constructing these buildings, which marked the efforts of the padres to colonize and convert the Indians to Christianity, portray this as one of the most colorful periods in American history

SAN LUIS REY, 1798 . . . Once the richest of all the Californian missions, with 3,500 Indians living within its boundaries at the time of secularization in 1835, the San Luis Rey Mission was returned to the possession of the Franciscans in 1894

SAN ANTONIO DE PALA, 1816

This mission (above and right) is located in the picturesque mountains twenty miles northeast of San Luis Rey of which it is an *asistencia*. Descendants of the early converts still worship here

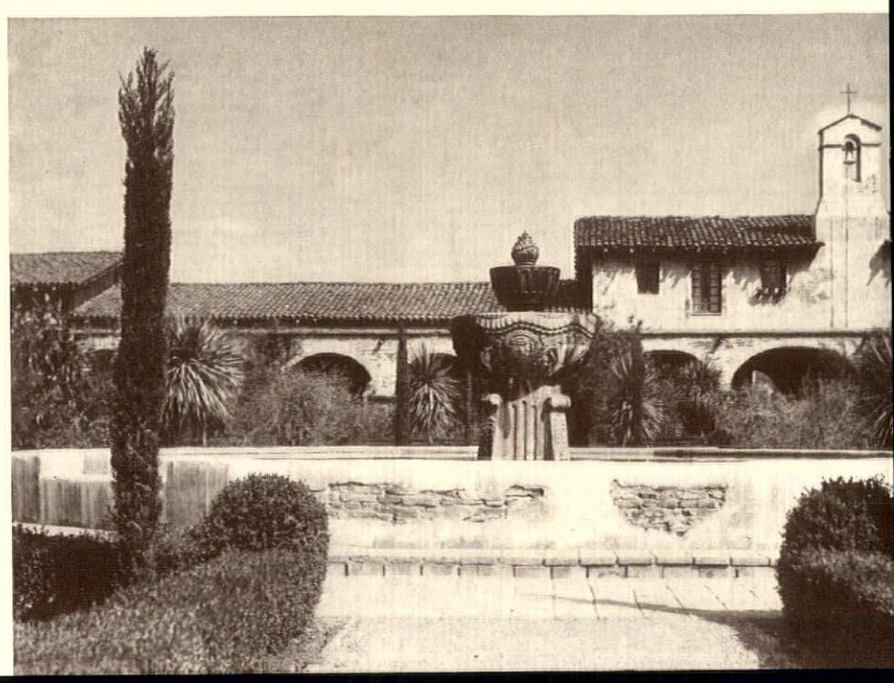


SAN DIEGO, 1769

The campanile of the first California mission. After many Indian uprisings, prosperity finally came to this mission in 1830, yet after secularization five years later, Richard Henry Dana in "Two Years Before the Mast" wrote: "We drove into the open square in which the stillness of death reigned"

SAN FERNANDO, 1797

This old monastery stands amid shading pepper trees. The statue in the foreground is that of Junipero Serra, leader of the missionaries sent from Mexico. The first gold discovery in California was made in a canyon on the property of the Mission

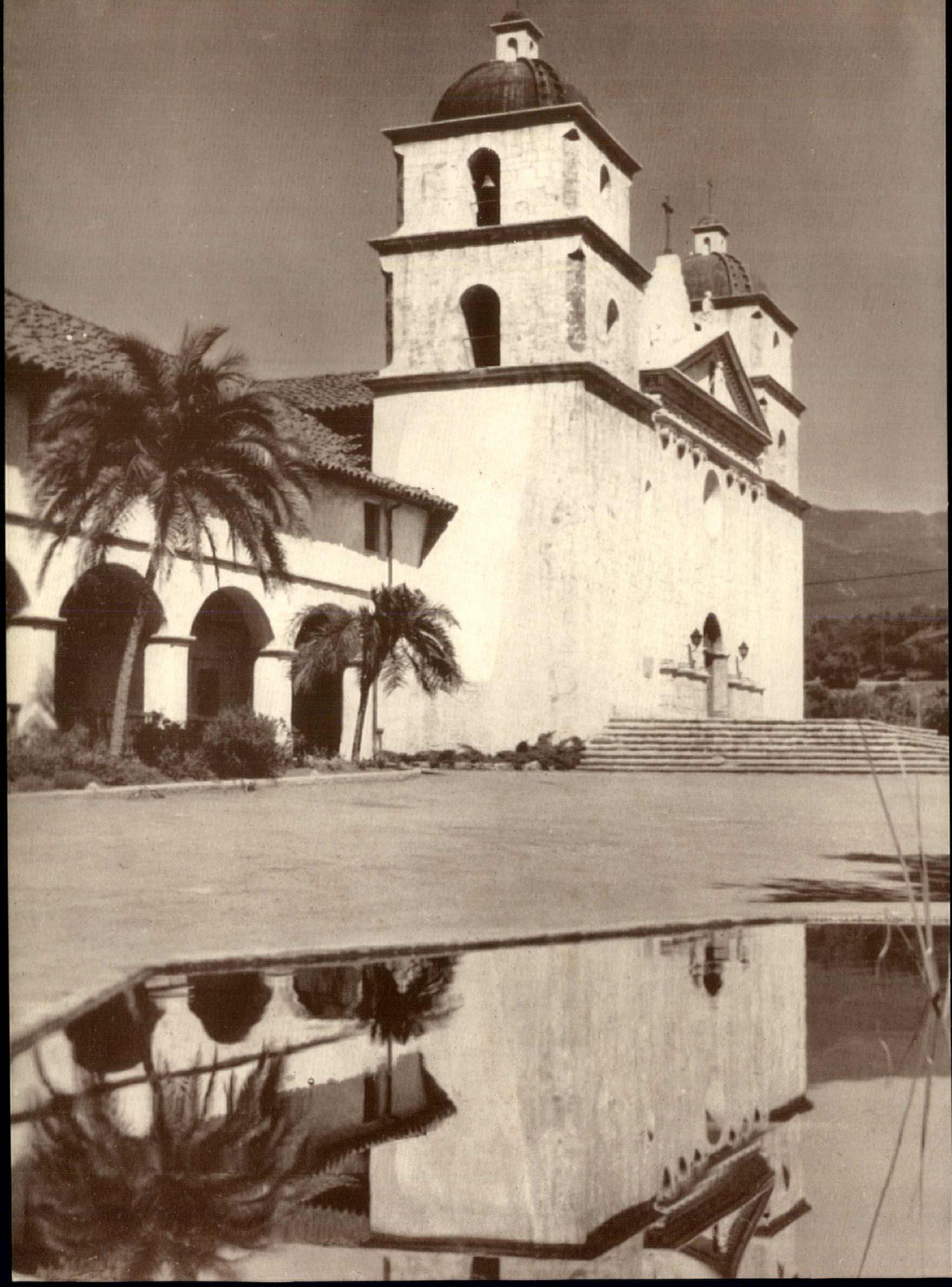


SAN JUAN CAPISTRANO, 1777

Masons were brought from Culiacan to build a stone church (right and opposite page), the first one in the chain of missions. San Juan prospered until 1812, at which time an earthquake reduced the building to ruins

SAN ANTONIO DE PADUA, 1771

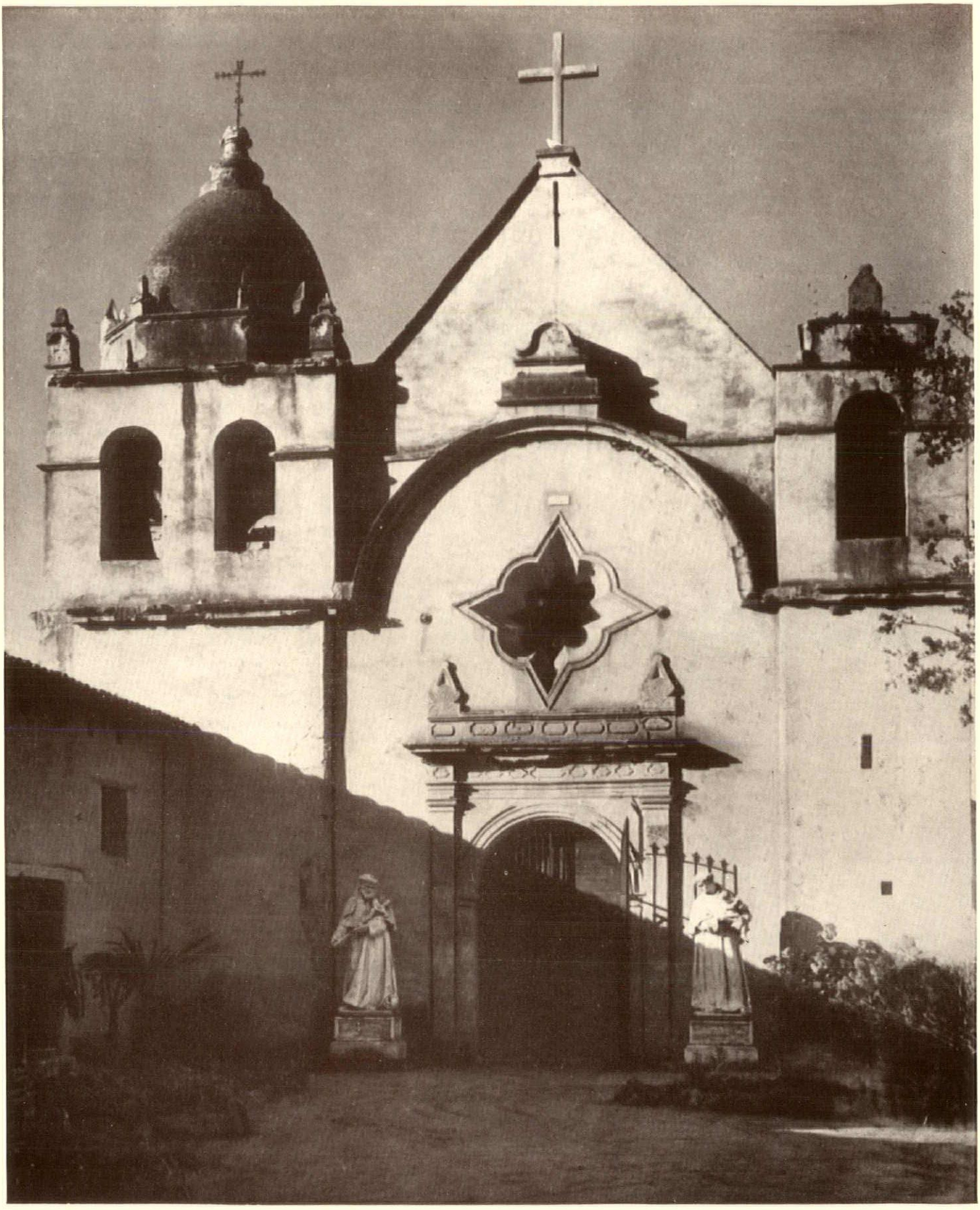
In the valley of Los Robles, amid the Sierra Santa Lucia, stands the brick and adobe ruins of California's third mission. About the old church are still to be found traces of many buildings and an extensive water system. The land is now part of the William Randolph Hearst ranch



SAN BUENAVENTURA, 1783

San Buenaventura, in Ventura, was the last mission to be founded by Junipero Serra. Santa Barbara (opposite page) is the only mission that has been served continuously since its founding by the Franciscans

SANTA BARBARA, 1786



SAN CARLOS IN CARMEL, 1771 . . . This building is unusual in the Moorish architectural influence on the stone domed bell tower and the star window. Located near Monterey, which was once the capital of California, this mission attained importance as the home of the President of the Missions

REALISTIC OR VISIONARY?

YOUTH must be served, and the youth of the architectural profession is serious in its attack on the problems facing the profession. It is not satisfied, and should not be satisfied, with things as they are. The younger men look upon architecture as a profession which should play a leading part in shaping the physical environment in which we live. They resent any implication that architects are merely plan-drawing stylists of buildings. Several young architects who attended the recent Convention of the A.I.A. left it with the distinct feeling that, as an organization, the profession was failing to face realistically the problems of today and tomorrow and that it was rather harking back to the good old days which the younger men had never known.

Youth does well to cherish the high hope that it can really make the profession of greater service to society. It is believed that through a broader vision and a clearer understanding of the social and economic aspects of architecture and city-and-community-planning, the profession will be more competent to offer better solutions to the physical problems and will create more advantageous environments. The training—and the thinking—of the younger men differs in many ways from that of their predecessors. The leading architectural schools of the country are placing emphasis on a more rational approach to the problems of architecture and are fostering inquisitive straight-thinking methods of attack.

Specifically, youth takes issue with the present "pussy-footing" methods and would like to see a realistic facing of the problems of the profession. In the list of subjects that occupy the discussion of the younger groups may be listed:

The necessity for community planning, city planning, economic land usage and the study of trends to determine the actual need for buildings of various types.

The relationship of individual buildings to their neighbors, and to the city pattern, is assumed by right to be a proper sphere for analysis by the architect. There is less interest in the individual building as an unrelated entity.

Youth would be more frank in the matter of architectural fees or commissions, and would come out flat-footed to recognize the lump-sum fee as well as the cost-plus fee and the familiar percentage type, with its variation of 5 per cent up or down.

Likewise, organized publicity and advertising would find their place in architectural thinking and action, for potential clients must be made aware of the competence of the architect to plan, efficiently and economically as well as aesthetically.

To increase this competence, the younger men can see no reason for the lack of a central bureau which would provide scientific, accurate, unprejudiced facts regarding building materials and equipment, so that architects would know definitely and with assurance the best products for each particular purpose.

By establishing standards through such a bureau, it would not be a difficult task to bring about a uniformity of building codes,—codes based on the performance of materials and building methods, instead of the present codes which constitute, in so large a measure, mandatory specifications for certain obsolete practices.

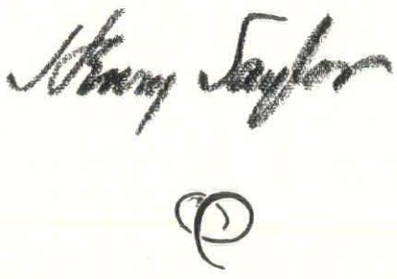
Fully realizing that an open competition for a large building brings with it an expenditure of time and money on the part of the majority of competitors, the younger men feel that it still may constitute the only way in which they can gain recognition for their ability as designers. They believe that the stimulation to better design which is inherent in architectural competitions is worth the apparent waste to the profession, to say nothing of the possibilities of increasing public interest in the value of architectural services.

These are but a few of the major themes that are in the minds and conversations of the newer generation of architects, just as they engaged the attention of the men who have gone before. The question is, will the new phalanx be better able to penetrate the wall of professional and public inertia which discouraged the older shock-troops? If zeal, courage, intelligence, and honesty of purpose count,—we believe the answer is "yes".

Kenneth K. Stowell

EDITOR

THE DIARY



Wednesday, July 1.—What may quite possibly turn out to be a milestone event in building progress transpired a few days ago, when K. P. Billner demonstrated for a number of us a new technique in casting a double concrete wall for use in house construction. Hitherto, the problem of casting a wall in successive layers horizontally has been complicated by the fact that, in order to prevent slumps, forms had to be left in place for a considerable period. Billner's device sucks the surplus water out of the concrete immediately after it has been poured, and at the same time uses the convenient and easily applied atmospheric pressure to hold the concrete in place. Incidentally, he uses forms of paper to provide an interior air space. Wall openings are easily achieved by fitting wooden bucks into the forms and covering the faces of these with paper. Outside and inside forms consist merely of the canvas suction blanket stiffened with boards slipped in at intervals between bottom and top ledge pieces. An hour after the wet concrete has been poured and the suction applied, the blanket forms are removed, and stepped up to another two-foot course upon a wall that is already hard enough to resist indentation by the edge of a coin.

Thursday, July 2.—Of particular interest to those who hold the theory that this country has reached a stage where its building needs include less factories and more recreational buildings, comes the year book of the National Recreation Association. It contains a ten-year review of leisure activities, and indicates a marked increase in architectural types that contribute to the enjoyment of leisure. Bathing beaches, public golf courses, skating rinks, and swimming pools doubled in number between 1925 and 1936. Schools and other buildings used in part as recreation centers tripled. The number of buildings used entirely for recreation increased four times in the ten years.

Friday, July 3.—A significant straw in the wind is the shifting of the ratio between the amount of money being spent for refinancing of maturing mortgages on the one hand, and the amount being spent for new construction and reconditioning of homes. In April of last year 55 per cent of all loans by the Federal savings and loan associations were for refinancing of maturing mortgages. At present the advances for refinancing have dropped to 32.4 per cent of the total. In other words, distress borrowing is shifting rapidly to progress borrowing.

Saturday, July 4.—Carl F. Gould, having finished his arduous labors as Architectural Advisor to the Oregon State Capitol Commission in its recent competition, had luncheon with us just before sailing for Europe the other day. I always thought Gould knew how to live, but am more convinced of it than ever, for he and Mrs. Gould and their son and their daughter are enrolled for the summer school at Fontainebleau, after which they will return in September to new battles.

Sunday, July 5.—NPHC, which are the letters indicating the National Public Housing Conference, is putting some sparks into its publication, "Public Housing Progress." One of the sparks calls attention to a recent decision in the Federal Court of Appeals condemning the Bound Brook, N. J. resettlement project: "The Constitution will be scanned in vain for a power conferred upon the Federal government to regulate 'housing' or to 'resettle population.'" On that basis, the Editor suggests that the Supreme Court itself may find that the rehousing of its own nine members in a twelve-million-dollar building, while millions of people are still living in slums and illegal habitations, may of itself be unconstitutional.

Tuesday, July 7.—W. L. Wood, who edits *The Architect and Building News* of London, has hit on what seems to me an excellent idea. He publishes from time to time obituaries of buildings. One of these was the north side of Brunswick Square, and now he publishes a side of Mecklenburgh Square, the old houses of which are to be destroyed. As part of the obituary, there is a photograph of the work as it stands, together with plans and carefully measured details.

Thursday, July 9.—Out of an air-cooled sleeper into the scorching streets of Washington to find out what is going on in the Resettlement Administration. The famous and architecturally somewhat infamous house of the late Senator Walsh, in which some of the department's personnel is quartered, suggests nothing so much as a palace of old Russia taken over by the Soviets. There are rather more than four hundred men and women working in the old mansion, surrounded by frescoes, carved wood, marble statues, silk damask wall hangings, and an interior that resembles no other structure quite so closely as one of the old North German Lloyd boats.

After a busy morning with the architectural and town planning heads of the four resettlement projects, Greenbrook, Greendale, Greenbelt, and Greenhills, we lunched with J. S. Lansill, assistant administrator, who gave us a very comprehensive picture of the aims and policies of these patterns for rebuilding America.

Out to see Greenbelt in Berwyn, Md., almost mid-way between Baltimore and Washington where Douglas Ellington and Hale Walker showed us the various types of dwelling units in progressive stages from foundation to plastering. There is a great story in these concentrated efforts to develop better housing, but the story is far too long to tell here.

Back to Washington for a further accumulation of data in the resettlement projects, and then met Edwin Morris, William Dewey Foster, Eric Kebbon, and A. S. Thorne for dinner on a roof where there seemed to be some breeze even over a parched city.

News of Henry Wright's untimely death reached us at the Resettlement offices, and saddened the whole organization. Here was, indeed, a man who pushed straight forward on his course from college days to the end. He not only accumulated advanced knowledge about housing here and abroad, but with his keen and orderly mind, brought a vast accumulation of techniques into a form in which these aids were being made available for his many pupils, disciples, and followers. Henry Wright, in the last months of his life, must have had a real sense of satisfaction and achievement in seeing the growth of the better housing idea during his brief span of years.

Saturday, July 11.—The evidence as to the economic absurdity of slums piles up. In Indianapolis a blighted area containing 10% of the city's population used 26% of the city's money devoted to service. To put it in another way, taxpayers in Indianapolis are spending $27.29 for the maintenance of each person in this blighted area as against $4.00 per person in other areas.

Again in Cleveland, in a certain blighted area in the city, the tax income was $225,035, whereas the cost of service in that section of the city was $1,972,437. If Cleveland were to put into construction this yearly loss, she would have at the end of twenty years 7300 new four-room dwelling units.

Monday, July 13.—Lunched a few days ago with several members of the Small House Associates representing New York City's effort to bring architectural service into the small house field. While the Washington group and the Boston group, both working closely in co-operation with lending agencies, are apparently making good progress, the New York group is finding the going rather hard. Applicants who come to this office seem to require work of a somewhat larger scale than the standardized designs, and seek a more extensive type of service than was contemplated. Apparently there must be a very clear line of demarcation between the limited architectural service furnished with standardized plans on the one hand, and full architectural service at a ten per cent fee on the other hand. Any tendency to bring these two fields closer together seems inevitably to promise that the more expensive branch will be dragged down to the lower level. I have an idea that the Boston crowd probably solved a real problem when they decided that the designs offered as standards were to be taken as they were, save for very minor changes, and these latter paid for. As contrasted with this policy one entered upon by the New York group, in which each client was to have a house designed for him—even though on the basis of one of the standardized plans—involves the architect so nearly in a full service that he must, in self defense, receive eight or ten per cent for it.

Wednesday, July 15.—Mark Daniels, Editor of *California Arts and Architecture*, who is one of the few architectural writers whose words we sit up late at night to devour, says he is a hardware drunkard. "I can no more resist a pair of polished steel calipers glinting seductively in the window of a merciless hardware dealer than a forty-year alcoholic can turn his nose away from a glass of sixteen-year-old bourbon." I am another one, and I think we ought to form a guild. In my particular form of besottedness, however, there are two temptations: the hardware store window, and the photographic equipment window. The only way of resisting the temptation to spend all of one's available means on either of these forms of dissipation is to sight these windows from afar, and cross the street, passing by on the other side.

Friday, July 17.—Walter Meigs over from Philadelphia a few days ago for a social and professional call, in which we became deeply entangled in a discussion concerning some of the national philosophy of architecture. Meigs is considerably exercised over the fact that whereas architecture in the past was developed from above, there are those who now argue that it should develop from below. In a word, there seems to be the view in some circles that we are building, occasionally, residences based on architectural forms that have been developed for the commercial building, warehouse, and factory. All of the architecture we regard as great in past eras has been enforced from above—sometimes by the church, the government, the wealthy patron, the feudal lord. It had, at least, the merit of being inspired by the better educated minds. Of course, any discussion along these lines inevitably leads to the broader question of just how well a democracy works.

Tuesday, July 21.—Radio, after having been put to work to open garage doors, has been given another job. It serves to light up a show window when the passerby approaches. The presence of the additional electric capacity in the body of the observer is sufficient to react upon a delicately adjusted aerial along the top of the window so as to trip a switch. When the window is otherwise dark, an illuminated sign appears reading "Approach this window, and you will light it up."

Wednesday, July 22.—Lunched with Harry Ahrens, who has taken Joe Hautman's place as head draftsman in the Park Department's Division of Design, Hautman having been taken over by the World's Fair group. There are still many architects, draftsmen, and landscape technicians in the Park Department work, but the number is slowly but steadily being decreased as private industry offers its opportunities. The problem of security, as it presents itself to the architectural draftsman these days, is a staggering one. The up-and-down movement of building activity is a perpetual threat to the security of all but a very few long established men. Nor does the alternative of public work offer a haven of rest. Appropriations for public work are sure to be co-ordinated with the demands of private industry, so that as the latter increases, public work decreases and with it the opportunities for the technician. The prophet who will tell the architectural draftsman how to secure a job and hold it for the rest of his life would not be without honor in his own country or elsewhere.

Thursday, July 23.—Jerry Geerlings back from the West where he has been spending six weeks designing plumbing fixtures. There apparently is a deep satisfaction in simplifying the curves of a piece of brassware so that the saving in the buffing process alone amounts to a fraction of a cent. The thousandth part of a cent saving on one comparatively insignificant item may mean a saving of thousands of dollars a year. Geerlings says that after a study of the intricacies of design for the machine, the working out of architectural details seems like kindergarten work.

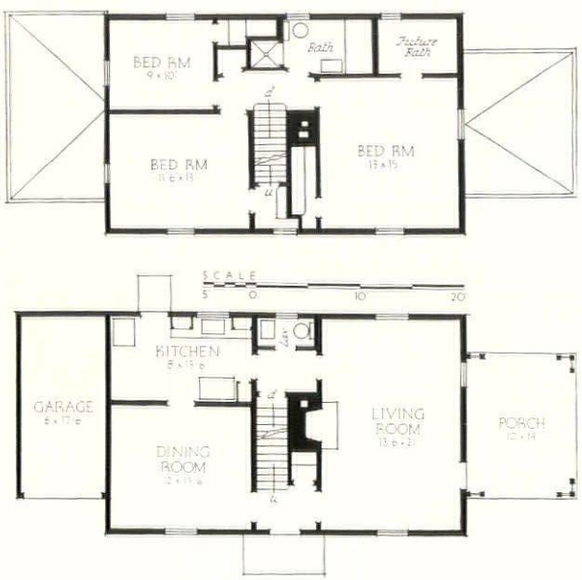
Monday, July 27.—It is amusing to consider the paradox presented by the fact that functional simplicity at present is a luxury that can be afforded only by the wealthy, while the poor, who need it most, cannot buy it. Of course, the reason is that any breaking away from the regular current into experimental design entails expense. Functional simplicity may eventually be within the reach of those who need it, but not for a while yet.

Wednesday, July 29.—Modern refrigeration in domestic units has made amazing leaps in recent years. The industry has now reached a stage where replacements are assuming a far larger ratio as compared with new installations. Apparently the time is not far off when, as in the automobile industry, replacements will exceed new sales.

FOURTEEN EXAMPLES OF THE

PHOTO: GUSTAV ANDERSON

The neo-classic style (above) finds a satisfactory expression in painted stucco over frame construction. Cellar floor is 6" concrete slab, waterproofed; foundation walls are poured concrete and concrete block are used for garage. Trim is of painted wood and the roofing is random width slate

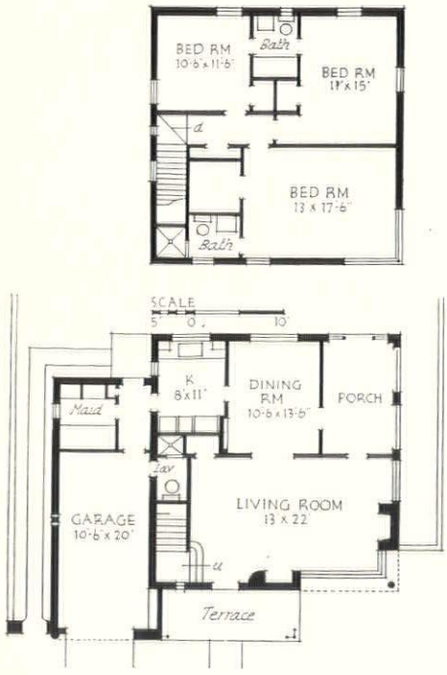


The overhanging eaves offer excellent sun protection in this house of concrete block with a painted stucco finish (opposite page). Foundation is 12" x 30" spread concrete footings; floor, mesh reinforced concrete slab on fill. The artificial chimney is used as a water storage tank

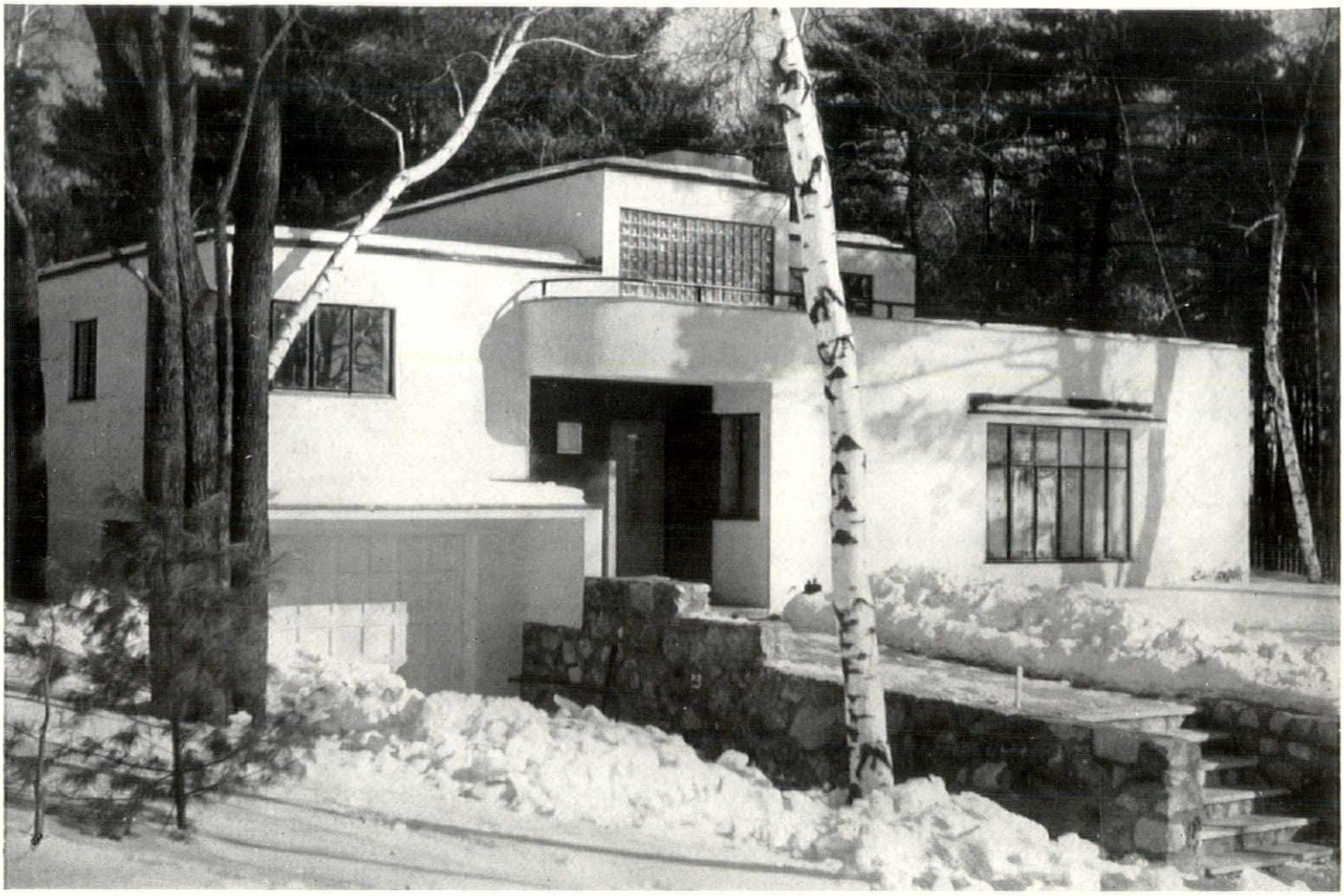
HOUSE IN NASSAU SHORES, LONG ISLAND, NEW YORK. RANDOLPH EVANS, ARCHITECT

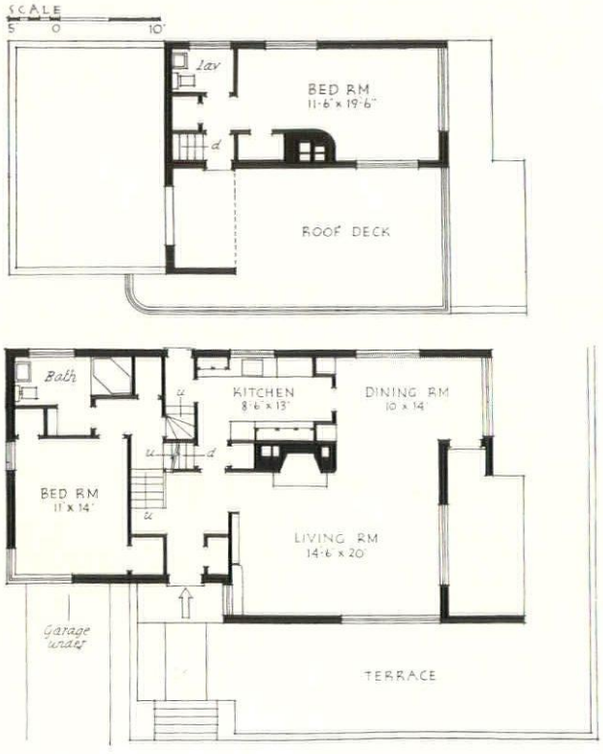
BETTER HOUSE OF CONCRETE

PHOTOS: SAMUEL H. GOTTSCHO



HOUSE OF L. MURRAY DIXON, MIAMI BEACH, FLORIDA. L. MURRAY DIXON, ARCHITECT



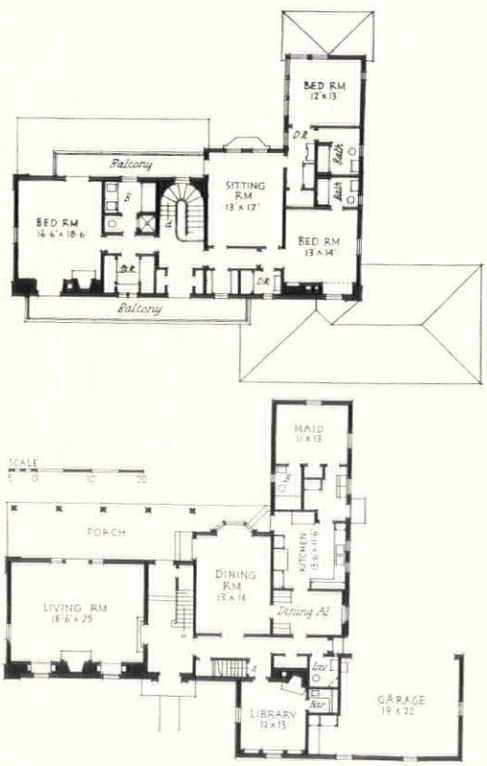


Stucco finish on cinder concrete block has the precise surface quality required for modern architecture (above). Concrete is used for roof and floor slabs, and joists. A basement recreation room is executed in colored concrete. Cost $9,000 in 1935

Stucco and brick, over frame construction, combine to lend textural interest to this California "Colonial" house (opposite page). Roof is hand split red cedar shingles. Bookcases in the deep window reveals of the living room are interesting

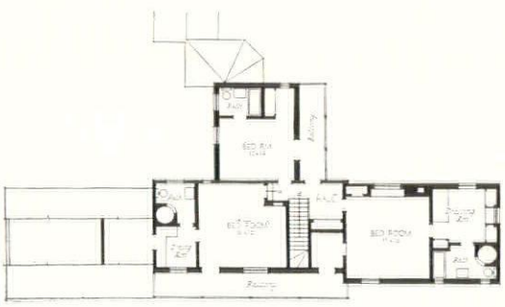
HOUSE OF N. L. DUNCAN, READING, MASSACHUSETTS. SAMUEL GLASER, ARCHITECT

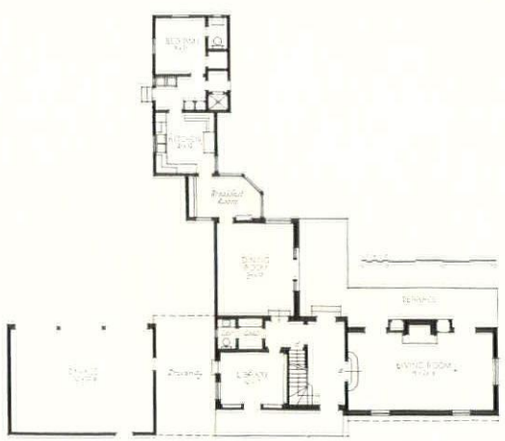
PHOTOS: GEORGE D. HAIGHT

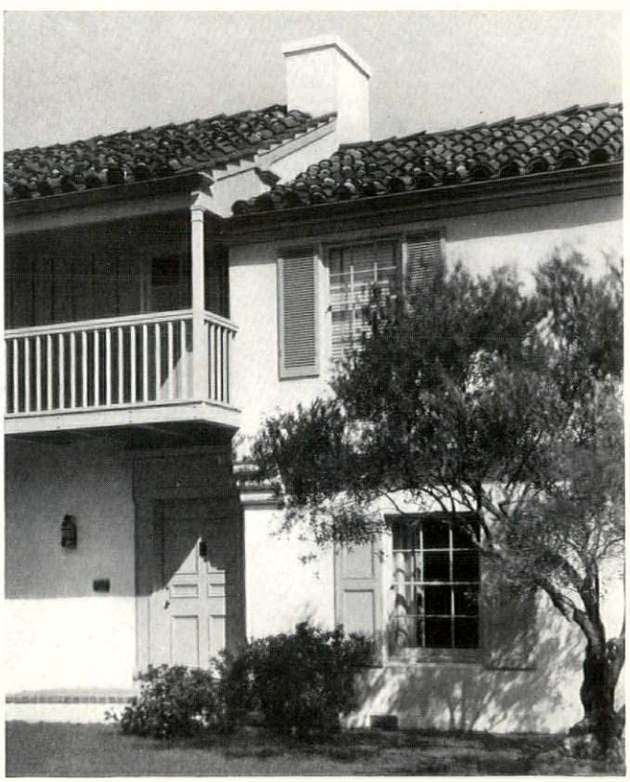


HOUSE OF HAROLD H. PATTERSON, WEST LOS ANGELES, CALIFORNIA. H. ROY KELLEY, ARCHITECT

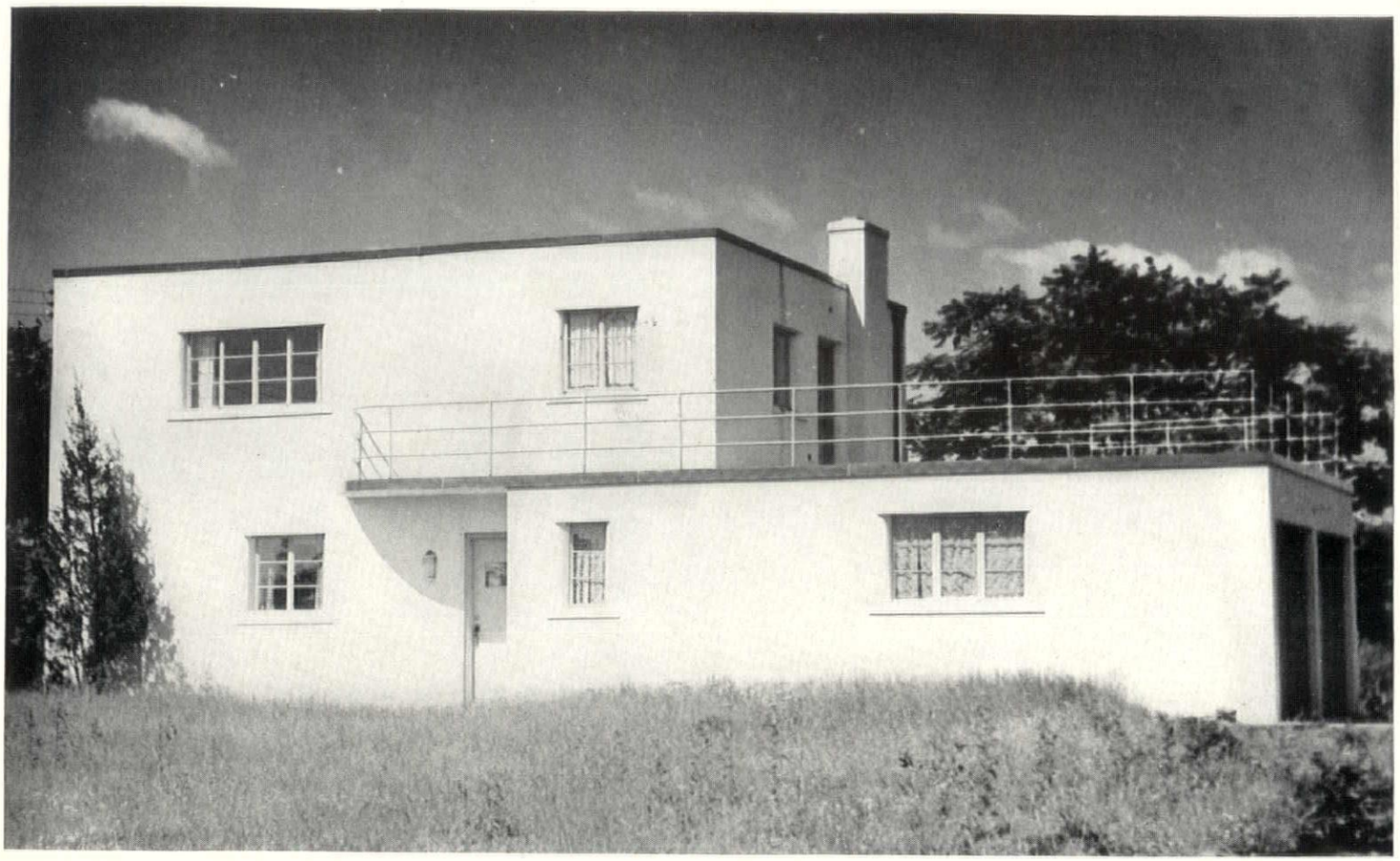
PHOTOS: MILES BERNÉ



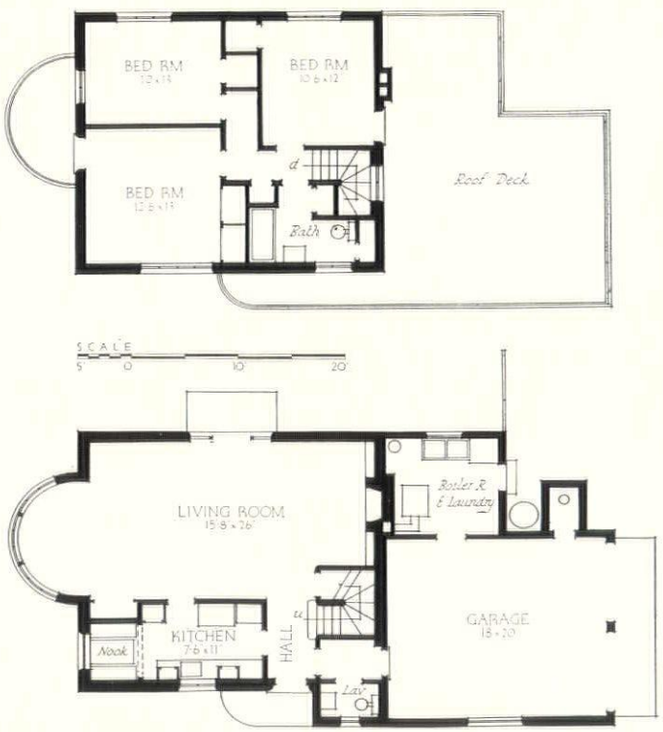




HOUSE OF C. E. VESY, SANTA MONICA, CALIFORNIA. JOHN BYERS, ARCHITECT

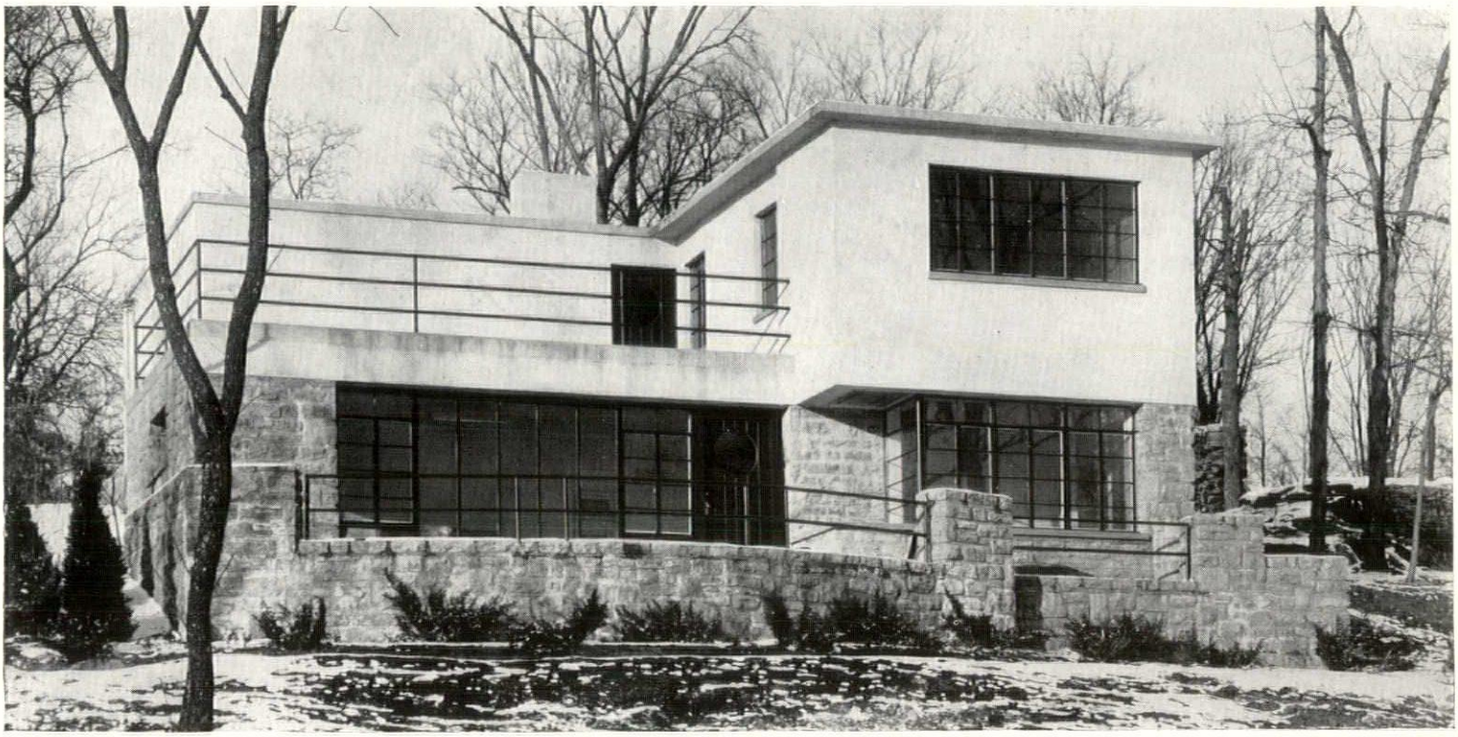


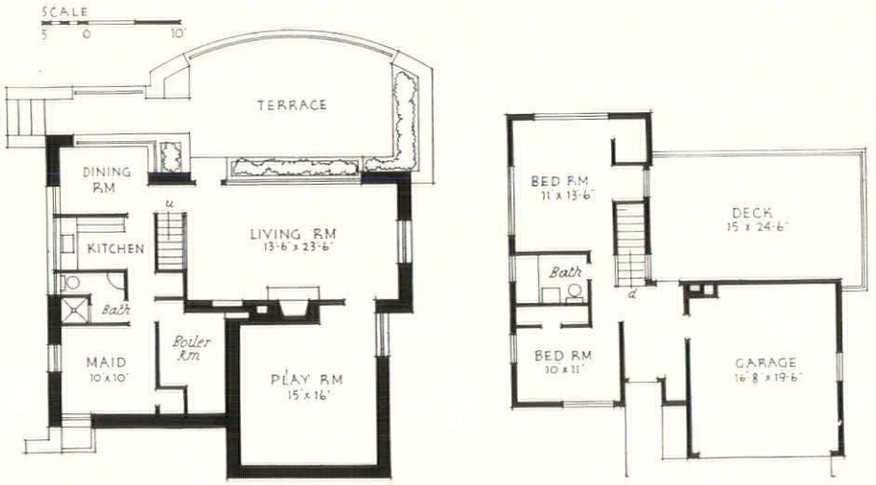
Stucco finished concrete walls effectively recall the charm of the early type California ranch houses (opposite page). The roof is of tile, and Mexican tiles are used for floors on the first floor. Edna Muir was associated with the architect

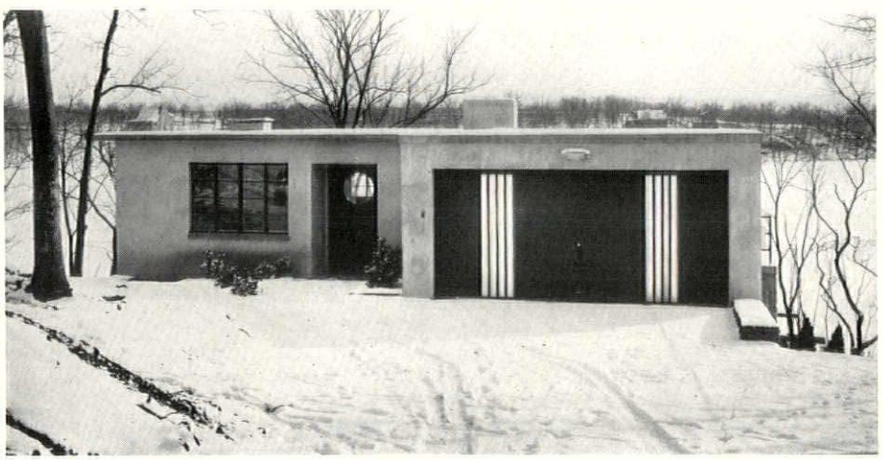


Stuccoed cinder concrete block walls on concrete foundations are an excellent medium for modern design (above). Roofing is four-ply built up, on concrete slab over steel-truss joist. Insulation, rock wool. The windows are all-steel casements

HOUSE OF GEORGE KIEYE, ORANGE, CONNECTICUT. SCHILLING & GOLDBECKER, ARCHITECTS

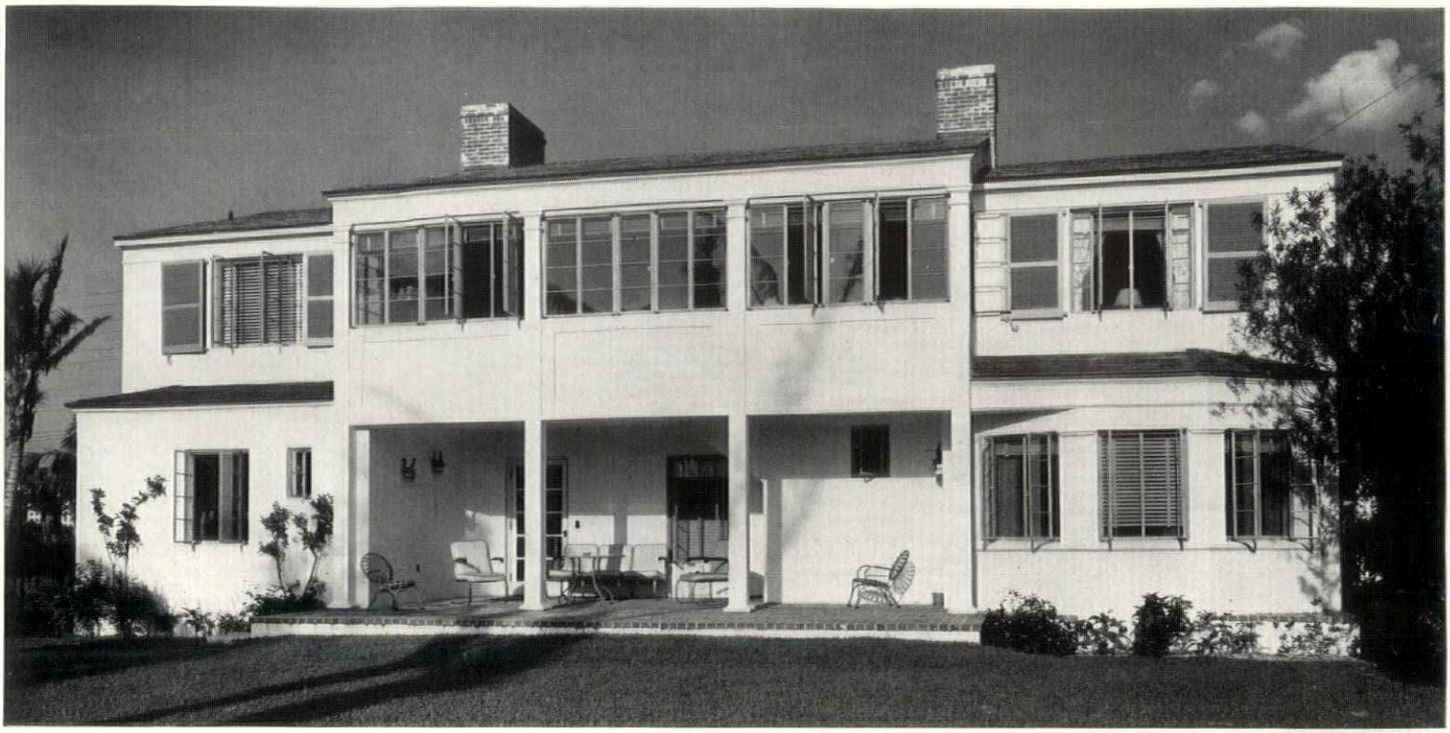




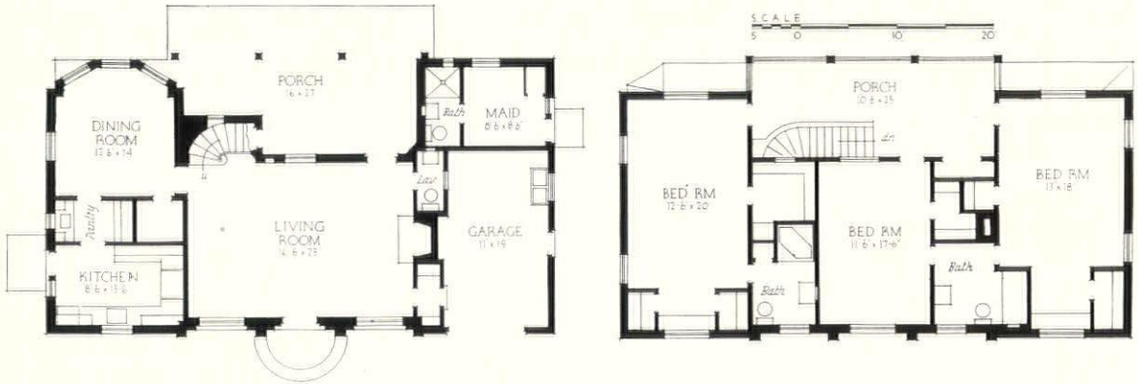


Native stone is used for the first story and foundation walls, while stucco finished concrete block is used for the second story walls. Floors and roof are of concrete slab. Windows are steel casement. All interior walls have plaster finish except in playroom where stone is pointed with white cement joints

HOUSE OF ALLAN SUNDERLAND, LAKE LOTAWACCA, MISSOURI. ROBERT E. JENKS, ARCHITECT



PHOTOS: SAMUEL H. GOTTSCHO

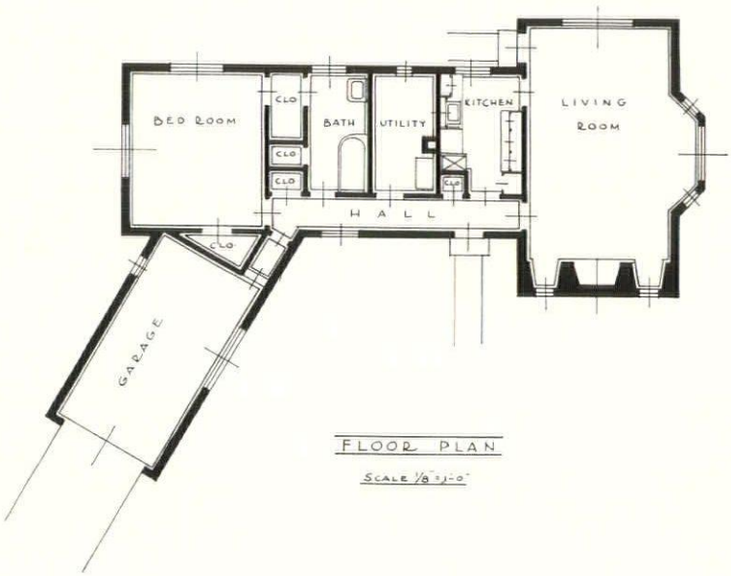


A modernized Colonial type house of reinforced concrete block with a stucco finish and run stucco molds. The roof is of black asbestos shingle and sash is of steel. The open porch has a brick floor and the glazed second story porch floor is of tile

HOUSE OF C. H. HECKER, JR., MIAMI BEACH, FLORIDA. SCHOEPPL & SOUTHWELL, ARCHITECTS

PHOTOS: JOHN GASS

A one-story house of simple design, has an effectively textured surface in painted cinder concrete block. The interior walls are insulated and plastered. Cost $4,200

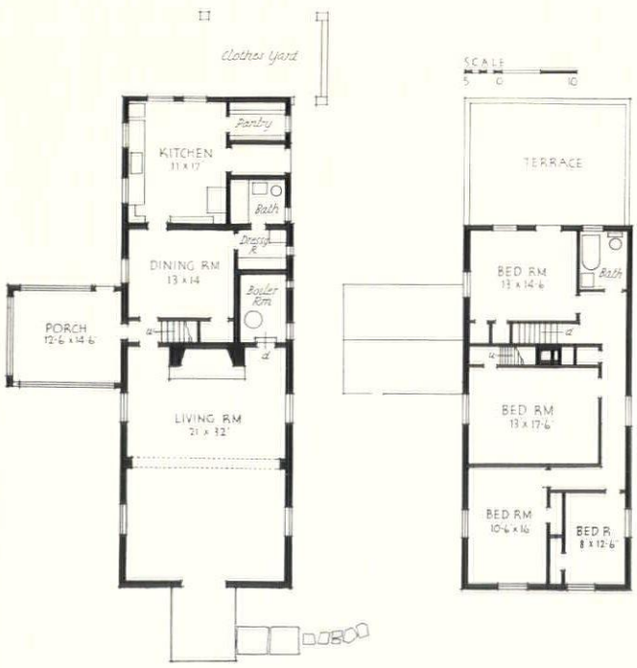


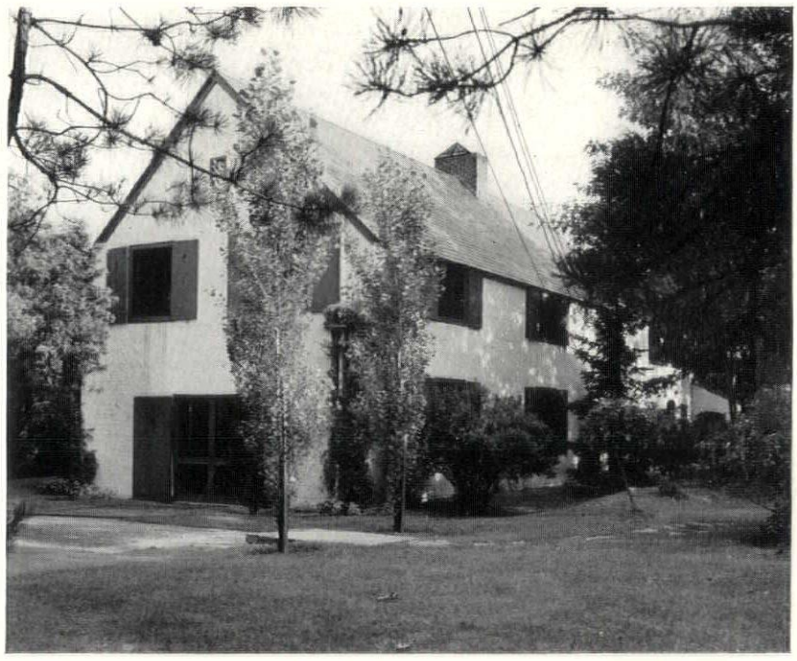
FLOOR PLAN

SCALE 1/8"=1'-0"

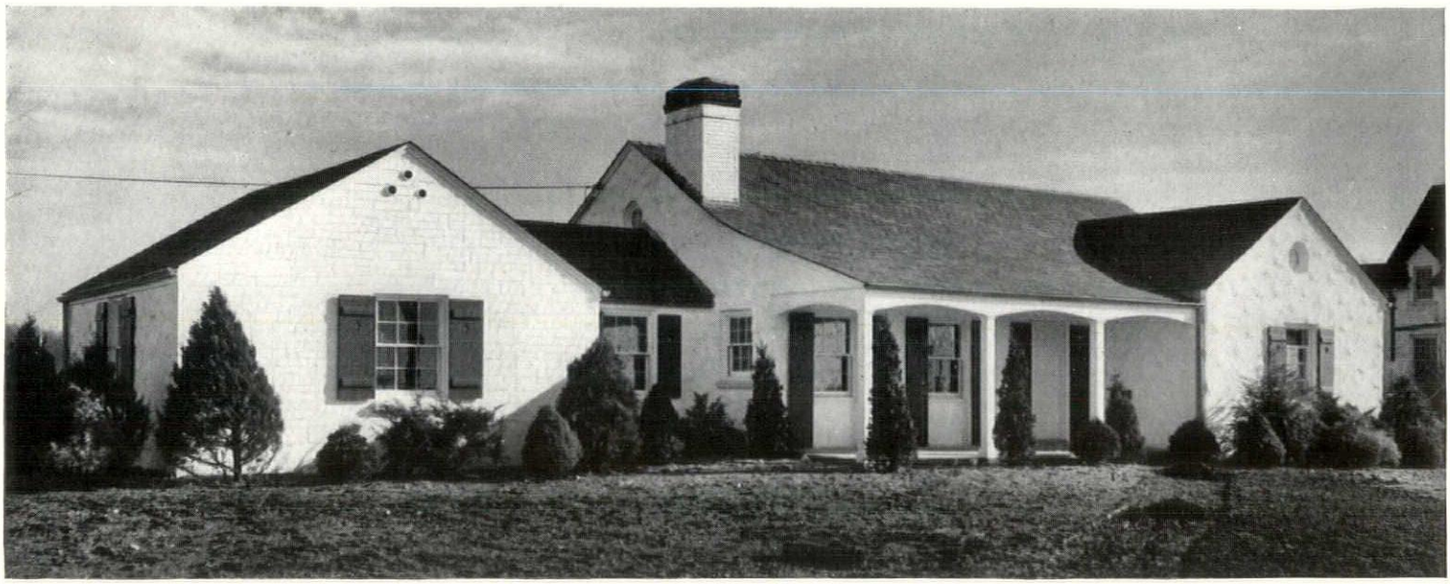
HOUSE OF RALPH SEYMOUR, DARIEN, CONNECTICUT. FREDERICK JENKINS WALLIS, ARCHITECT

This house of painted concrete block was built in three stages. The terrace over the kitchen is a reinforced concrete panel waterproofed with asphalt and finished with slate

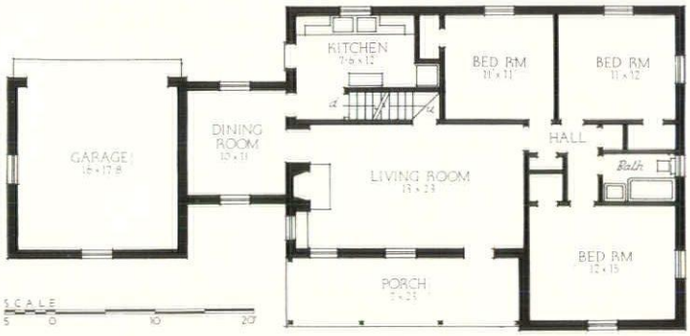




HOUSE OF JOHN V. VAN PELT, PATCHOGUE, NEW YORK. JOHN V. VAN PELT, ARCHITECT



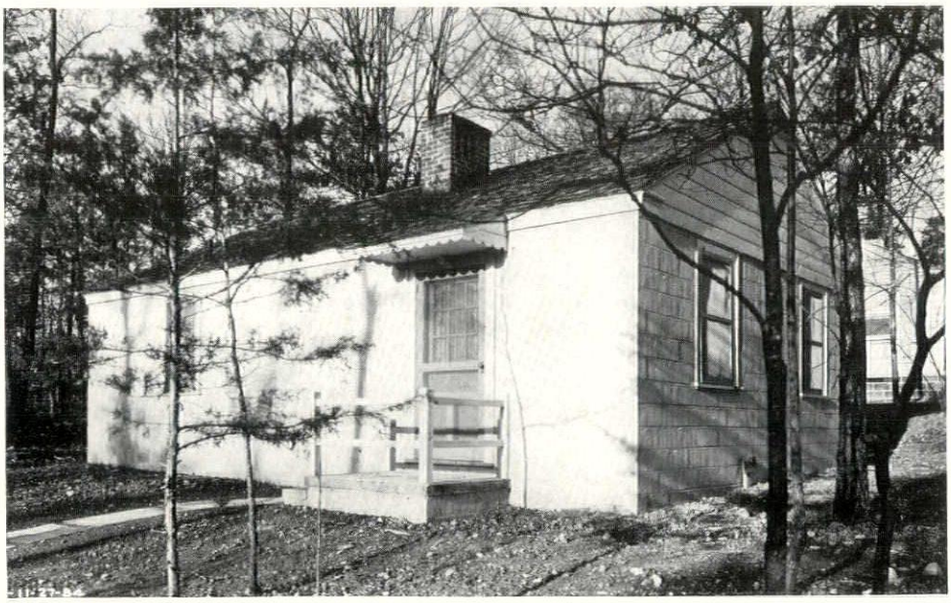
PHOTOS: JOHN GASS

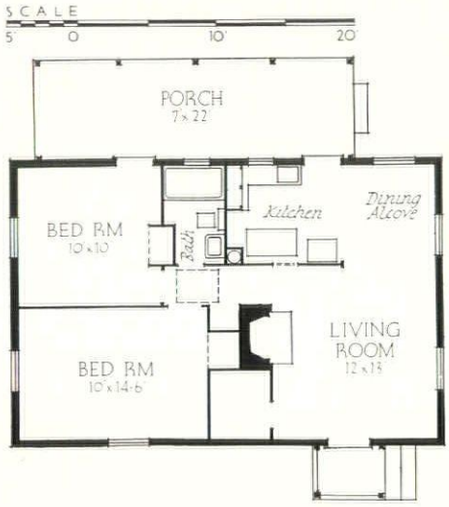


Built of concrete block laid in a coursed ashlar pattern, this house has one wing finished with stucco. Cost approximately $8,500

MAYFAIR ACRES, ELMSFORD, N. Y.

EARL NELSON, ARCHITECT





A cinder concrete block house finished with cement paint. Floors and joists are of precast concrete. The ceilings are insulated and roofing is of hand split shingles. Cost $2,506

HOUSE IN NORRIS, TENNESSEE. DIVISION OF LAND PLANNING AND HOUSING, TENNESSEE VALLEY AUTHORITY

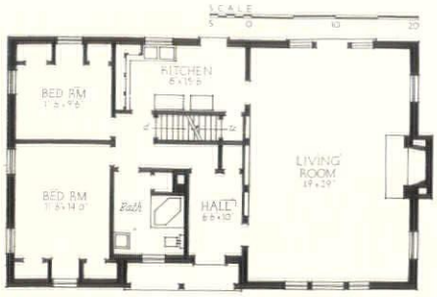
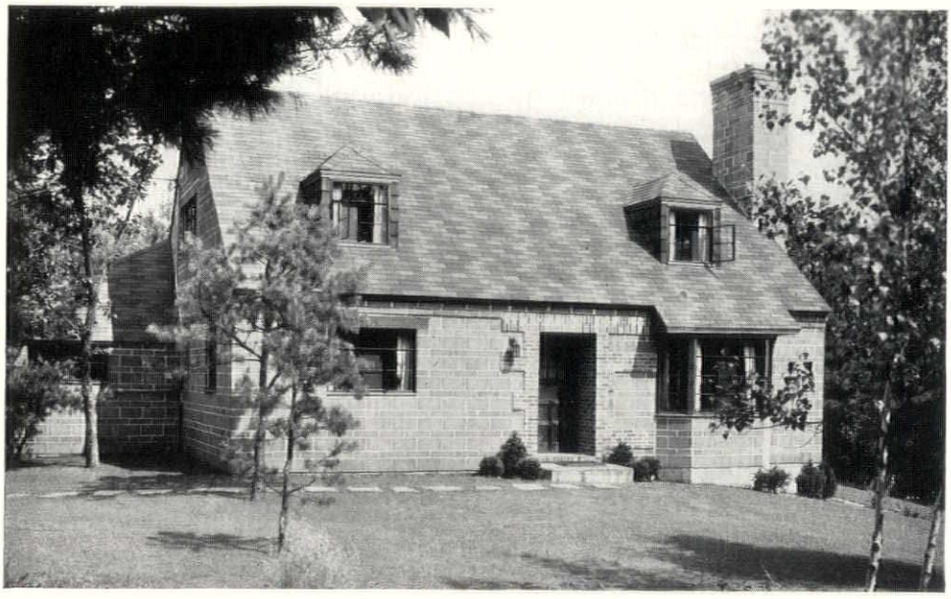
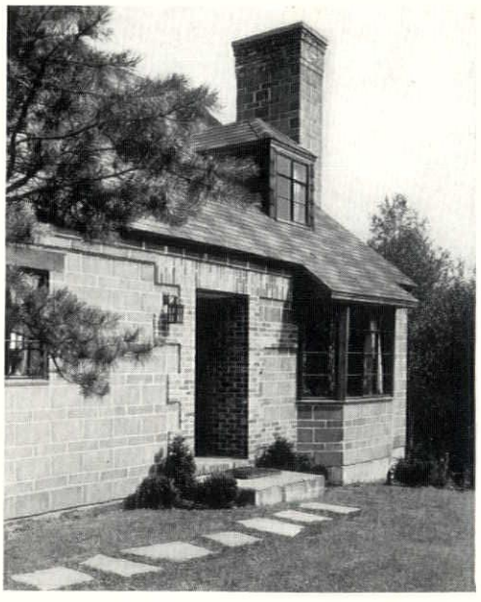


PHOTO: NORTON & PEEL

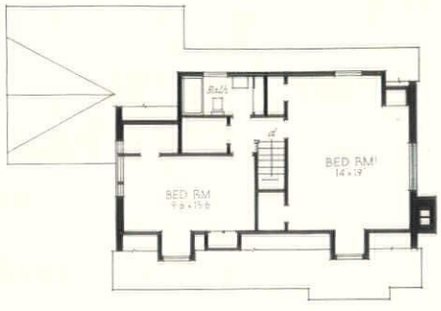
Foundation walls are of concrete masonry and the exterior walls are of concrete block laid in a random ashlar pattern, left untreated. Cost about 25¢ per cubic foot

HOUSE OF DR. ALLEN HEMPEL, ST. PAUL, MINNESOTA. DESIGNED BY MRS. ALLEN HEMPEL





8" and 4" cinder-concrete blocks, unpainted, form an interesting horizontal pattern. Joists are 8" precast concrete. Cost $7,200



HOUSE OF R. L. SNELL, SHARON, CONNECTICUT. SAMUEL GLASER, ARCHITECT

BETTER CONSTRUCTION IN CONCRETE

Whether masonry units or monolithic construction be used, there is a growing fund of dependable technique, familiarity with which will make better houses

BY WILLIAM F. LOCKHARDT*

IMPROVEMENTS in methods of using concrete in residential construction have increased its attractiveness, made it more adaptable to varying architectural requirements, and lowered its cost. The economic pressure of the last seven years has fostered an interest in substantial construction. While building budgets are still on the conservative side, there is a strong demand for minimum-upkeep types of construction, as well as the low first-cost dictated by financial considerations. Concrete appears to reconcile the somewhat contradictory demands of the home builder for beauty, economy, durability, adaptability, structural strength, fire resistance, immunity to termite attack, etc.

The concrete house today is usually of one of the three following types:

(1) Concrete Masonry. (Factory made units—block or tile; one-man size; generally laid by brick mason.)

(2) Monolithic (reinforced) Concrete. (Concrete structure cast in place at site.)

(3) Prefabricated. (Factory made units; larger than one-man size.)

The majority of houses being built today are of type (1),concrete masonry construction. The modern concrete block or tile, made according to exacting standards of uniformity in quality and dimensions by high-production machinery, is not only the cheapest way of using concrete, but in many cases is the least expensive of any form of masonry wall, solid, hollow, or veneer.

This low cost is the resultant of several factors: Large size (a standard 8″ block equals 12 brick); light weight (a 30 lb. block); speed in laying (175 to 200 blocks per mason per day, equivalent to 2100 to 2400 brick); local manufacture, etc.

In line with current practice of using materials frankly for what they are, concrete block is most extensively used today in the form of coursed or random ashlar, instead of as a base for stucco, or backup for brick veneer, as formerly. This has not only resulted in a substantial reduction in wall costs, but has made possible many new and attractive interior and exterior wall treatments.

For ashlar walls, the block may be colored or textured, or both; or the wall may be finished by painting with cement or oil paints, to obtain "whitewashed" effects.

As a base for portland cement stucco, the concrete masonry wall has the advantage of being similar to the applied finish in composition, with consequent freedom from the cracking, blotching, bulging, peeling, etc. sometimes encountered when the stucco is applied over walls of other materials of essentially different composition and physical characteristics.

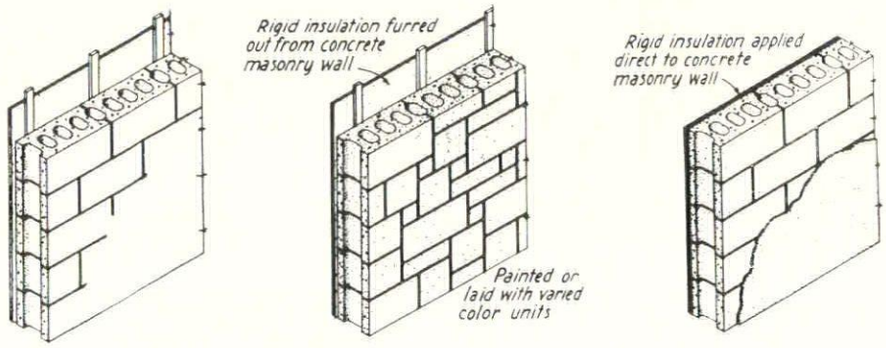


Figure 1. From left to right: ordinary bond with plaster on furring; random ashlar pattern; ordinary bond with stucco

Manufacture: Concrete masonry units (block; tile) are made of portland cement and any of the following aggregates: Sand only (if properly graded and sufficiently coarse); sand and gravel or crushed stone; cinders; proprietary lightweight aggregates such as Haydite (burned shale), and Pottsco (especially processed slag).

While some plants make block by a "wet-cast" process, the majority of manufacturers employ automatic or semi-automatic machines in which the moist concrete is subjected to heavy tamping or compression. After the "green" block has been removed from the machine, it is placed in curing (not drying) chambers, and subjected to a combination of heat and moist air approaching 100% humidity for 12 to 36 hours, depending upon the season and other conditions, to accelerate the hardening process.

Sizes: The standard unit is the "block"; nominal size 8″ (three brick courses) high; 16″ long; 8, 10 and 12 inches wide. Partition and veneer block are made in 3, 4 and 6-inch widths. Actual height and length are usually about ¼″ scant to allow for mortar joint.

Concrete "tile," made in some parts of the country, is lighter and smaller. Usually handled by the mason with one hand without having to lay down his trowel, they are speedily laid and economical. Common sizes are 5″ x 12″ face, and 3½″ x 12″ face, in 8″ width. The 5″ unit is two brick courses high; and the 3½″ unit lays up two courses to three courses of brick.

All three types of unit, including the "specials"—corner jamb and joist block, etc.,—are shown in Figures 2 and 3. Most plants furnish sills, and reinforced lintels necessary for complete wall construction.

Weights: Not all manufacturers make block with the same size cores or voids, these vary from 33% to 50% of the volume of the block. Roughly, light-

*Portland Cement Association.

weight aggregate blocks 8″ x 8″ x 16″ size, run from 28 to 35 lbs. each (.9 sq. ft. of wall). A sand and gravel block of the same size will weigh approximately 50 lbs.

If the weight of the unit is likely to affect the structural design of supporting members, check with local manufacturers.

Quality: Building Code requirements for strength vary, but generally range between 700 and 800 lbs. per square inch, gross area, in compression, for load-bearing units. For non-load-bearing (partition) block, strength requirement is usually waived.

Absorption limit is usually set at 10% or 12% (frequently expressed in number of pounds of water which may be absorbed for each cubic foot of concrete actually contained in the unit).

In the absence of existing Building Code standards of quality, American Concrete Institute Specification P-1A-29S,[1] or A. S. T. M. Specification C90-34T[1] may be used. In the event that the American Concrete Institute Specification is used, it is advisable to include the following paragraph under Absorption, based on a clause in the A. S. T. M. Specification:

"The average percentage of moisture in the units at the time of delivery shall not exceed 40% of the total absorption of the units."

The purpose of this clause is to prevent the delivery of saturated block, which by shrinking slightly in drying out, might cause cracking in the wall. As a corollary, it is well to specify that stock piles at job be kept dry by covering them with waterproof building paper or tarpaulins at night and in wet weather. As in brickwork, the top of the unfinished wall should be protected by covering at the end of the day.

Wall Thickness: The following table of wall thickness recommended in the Report of the Building Code Committee, U. S. Bureau of Standards, 1925, applies to residences and buildings up to four stories. In special cases the Bureau of Standards recommends a 12″ wall throughout in four-story buildings.

WALL THICKNESS

(Recommended Thickness in Inches of Walls, in Residences and Buildings up to Four Stories High)

No. of Stories	Basement	1st Story	2nd Story	3rd Story	4th Story
1	12	8	..	..	..
2	12	8	8	..	..
3	12	12	12	8	..
4	16	16	12	12	12

(1) Both specifications are contained in the Manual "Concrete Masonry Construction" which may be obtained free of charge from the Portland Cement Association.

Ashlar Walls: The pre-depression concrete masonry wall was customarily stuccoed outside; furred, lathed and plastered inside. It is possible to use the block exposed in ashlar patterns,—to use colored units, and whitewashed masonry effects, plus the texture of interesting surfaces, and an endless variety of joint patterns. The saving in the cost of the stucco is not all clear gain, however, as the use of fractional block increases the cost of the material; the larger number of pieces to be handled, and the greater care required in laying, also increase the labor cost. Coupled with the use of ashlar interiors, however, this method offers opportunities for real economies without sacrifice of appearance or quality of construction.

True random walls are rarely attempted. The usual procedure is to adopt a pattern or "repeat" covering twelve or fifteen square feet of wall area, which is laid over and over again. Owing to the interposition of door and window openings, corners, etc., it is practically impossible to detect a well designed "repeat" in the finished wall.

Figures 4 and 5 show several typical patterns for coursed and random ashlar; others can readily be evolved, using the block sizes shown in Figures 2 and 3. A construction "kink" which helps to lower the cost of these walls, by avoiding the waste of mason's time involved in constant reference to blueprints to check on the pattern, is to have the "repeat" painted full size on a large piece of wall board, which is set up just inside the wall, where the mason can follow it until the pattern unit is completed, whereupon the board is shifted along the wall and built again.

Color: Variety in color is obtained by adding small percentages of non-fading mineral pigments to the mix[2] or by the use of chemical stains, applied to

(2) Lists of Manufacturers of Mineral Pigments may be obtained from Portland Cement Association.

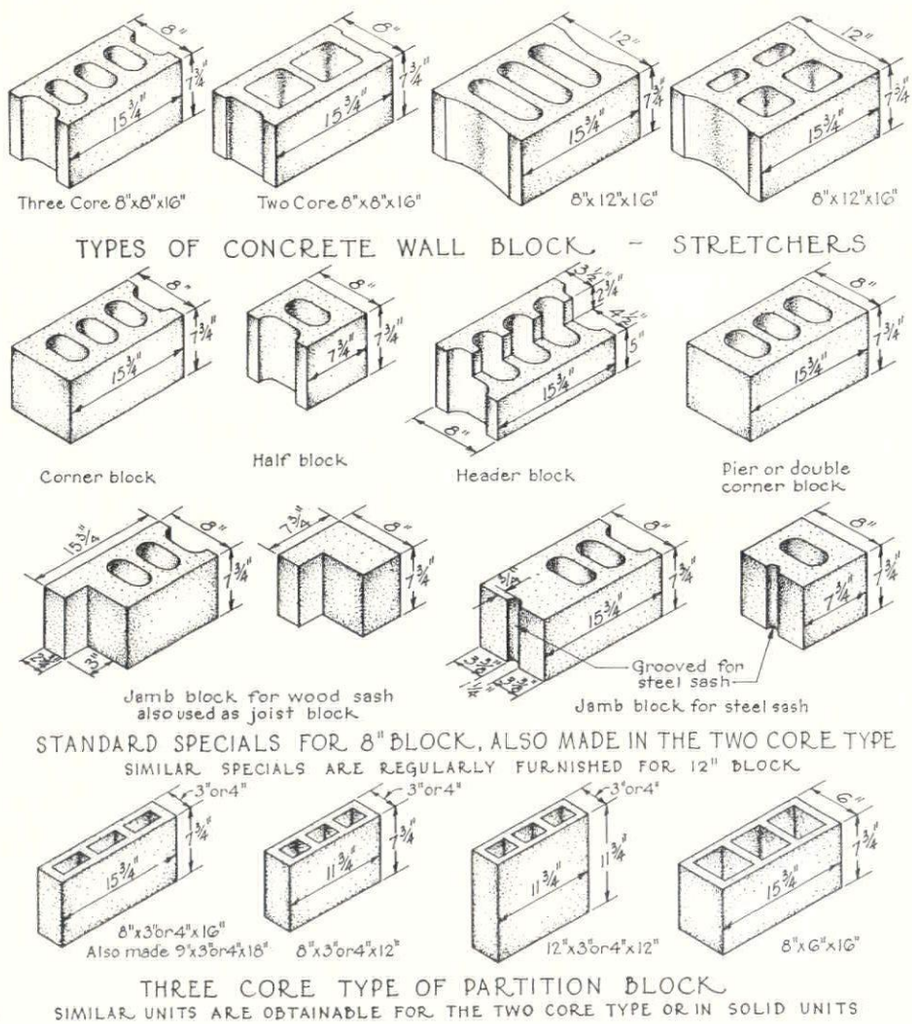


Figure 2

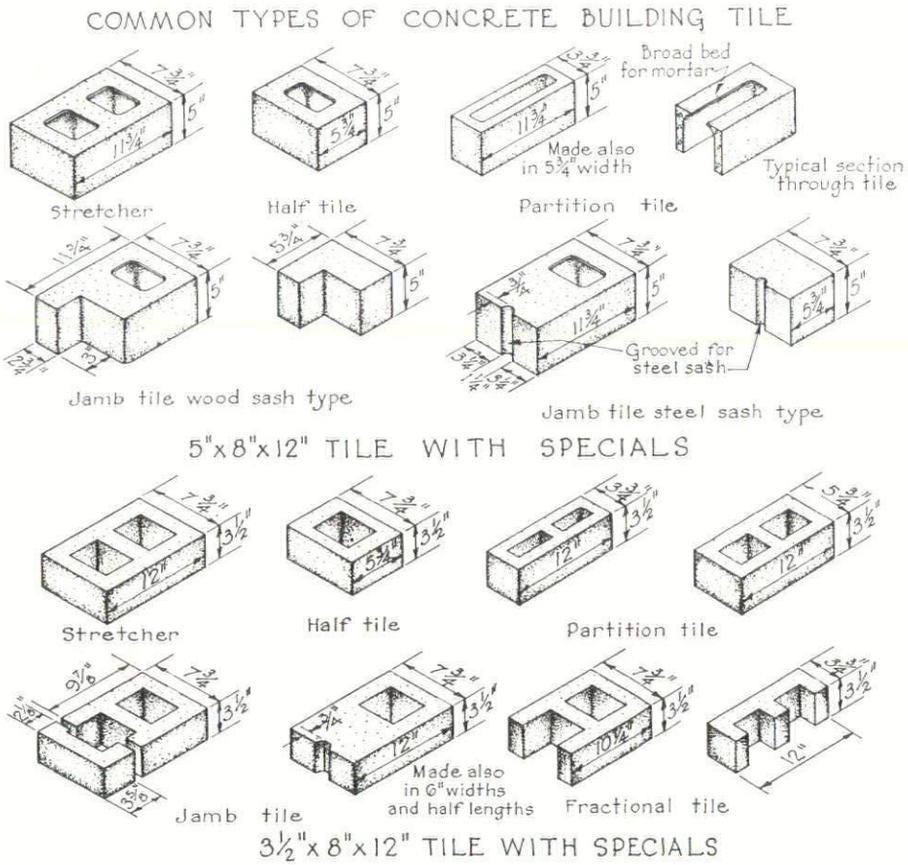


Figure 3

the "green" block at the factory. Mortar joints are usually cut flush, and the wall finished with portland cement paint, or lead and oil paint after proper preparation. (See Painting.)

Textures are obtained by wire-brushing or combing the block as they leave the machine, or by subjecting to a fine, high-pressure water spray which will lightly erode the surface, and expose the coarse aggregate in the mix.

In general, light-weight aggregate block has an agreeable, coarse texture, needs no special treatment, and is more attractive if painted. These units are eminently suited for obtaining "whitewashed" ashlar wall effects. Block may be left appropriately exposed for ashlar effects for interiors in the same architectural types. Reference Table II will show the economy of this treatment; insulation values for such construction are given in Table I. A relatively fine-textured block is most satisfactory for such use.

Paints: Cement Paints. The use of two coats of portland cement paint is recommended on ashlar walls to seal the masonry and the joints. On colored ashlar walls, clear waterproofings are desirable as a final finish for the same reasons.

Portland cement paint consists essentially of portland cement, especially prepared and ground with other materials, lime, sunproof pigments, etc. It is sold in dry powder form to be mixed with water before applying. Portland cement paint should not be confused with ordinary cold-water paints sometimes referred to as "cement paints," which contain large proportions of hydrated lime, casein or glues, many of which offer little resistance to the weather. For outdoors, and locations subject to moisture, only paints should be used which the manufacturer can definitely show have stood up under similar conditions.

Portland cement paint can be applied successfully to masonry surfaces that are damp; in fact, all surfaces must be damp when this paint is applied. It can therefore be applied to concrete immediately after the forms have been removed, or to fresh cement plaster or stucco.

It is essential that surfaces be uniformly damp to obtain even absorption. If paint be applied with a brush, first coat should be sufficiently heavy to seal the wall, and should be well brushed, or better, scrubbed into the surface of the block. If applied with a spray gun, the nozzle should be held so that the spray jut strikes the wall from several different angles successively, so that the paint actually enters and seals all voids.

After the first coat has hardened sufficiently to prevent injury to the surface, it should be moistened, and should be again wetted down just before applying the second coat. This in turn should be moistened with a fine spray just as soon as the paint has hardened enough to prevent marring the surface, and kept damp as long as practicable. During warm or windy weather the wall needs frequent rewetting.

Oil Paints: If it is desired to use an oil paint, concrete work should be given at least 8 to 10 weeks to dry before the paint is applied.

It then should be given a neutralizing wash to prevent saponification of the oils. A solution consisting of 2 to 3 lbs. of zinc sulphate crystals per gallon of water, or a solution containing 2 lbs. magnesium fluosilicate per gallon of water may be used. A small amount of pigment may be added to the wash so it will be seen when applied, preventing the skipping of areas. At least 48 hours should be allowed for the solution to dry. When thoroughly dry, all protruding crystal should be removed by brushing. This treatment is not necessary on old concrete or old stucco.

Then the concrete surface should be given a binding and suction-killing treatment, consisting of one or more coats of oil or varnish carrying some pigment. A suitable primer may be made by mixing one gallon of oil paint, one-half gallon of china wood oil spar varnish and one quart of turpentine or similar thinner. Special china wood oil priming paints for concrete are also available. The prime coats should be allowed to dry thoroughly, after which paint can be applied in accordance with the manufacturers' directions.

Insulation: In cold climates walls of sand-and-gravel concrete block should not be plastered direct, because of heat losses and the likelihood of condensation. With regard to block made with lightweight aggregates, practice has been less uniform.

During 1935 a series of tests was run at the University of Minnesota to determine the heat transmission of various types of concrete masonry residence walls.[3]

From Table I it will be seen that a cement painted or stuccoed wall of 8″

(3) The tests were under the sponsorship of the American Society of Heating and Ventilating Engineers in co-operation with the Portland Cement Association. Table I is based on an article, "Thermal Properties of Concrete Construction," by F. B. Rowley, A. B. Algren, and Clifford Carlson of the Engineering Experiment Station staff, published in January, 1936, issue of "Heating, Piping and Air Conditioning."

cinder block with ½" plaster on metal lath, furred, has a coefficient of transmission "U" of .25. (.27 without cement paint or stucco.) For comparison, the following are taken from the current "Guide" of the American Society of Heating and Ventilating Engineers:

Wood frame construction, wood siding or clapboards, ¾" plaster on metal lath.....	.26
Wood frame construction, brick veneer, ¾" plaster on metal lath.....	.27
Wood frame construction, stuccoed, ¾" plaster on metal lath.....	.30

Where added insulation is desired, the use of rigid insulation as a plaster base, furred out from the masonry, is effective in lowering heat losses.

The most remarkable results, however, are apparently obtained by the simple expedient of filling the cores in the blocks with insulation such as regranulated cork, rock or mineral wool, expanded micaceous shale, etc. Granular insulating materials, costing from 12 to 20 cents per cubic foot, can be poured down through several courses of block after they have been laid. About one-quarter cubic foot is required per square foot of wall.

Table No. II is a rating chart for comparing the cost and insulating efficiency of a few of the various wall constructions shown in Table No. I. For each of the five types of wall, construction costs have been estimated for both light- and heavy-aggregate block, with cores filled and unfilled, and with the units laid either as exposed ashlar, to be cement-painted, or as base for stucco. (Ashlar walls cost more to lay). It is immediately apparent from

TABLE I. HEAT TRANSMISSION OF VARIOUS TYPES OF CONCRETE MASONRY RESIDENCE WALLS

Based on data obtained in co-operative research sponsored by the American Society of Heating and Ventilating Engineers in co-operation with the Portland Cement Association and the University of Minnesota. The report was published in the January 1936 issue of Heating, Piping and Air Conditioning under the title "Thermal Properties of Concrete Construction," by F. B. Rowley, A. B. Algren and Clifford Carlson of the Engineering Experiment Station staff.

COEFFICIENT OF TRANSMISSION "U" OF CONCRETE MASONRY WALLS, WIND VELOCITY 15 MILES PER HOUR

Basic Wall Construction	No Interior Finish	Interior Finish—½" Plaster On Wall	Metal Lath Furred	½" rigid Insulation Furred	1" rigid Insulation Furred
8" Walls					
Hollow Cinder Block	.40	.37	.27	.20	.16
Hollow Concrete Block	.53	.49	.32	.24	.17
Hollow Haydite Block	.36	.34	.25	.19	.15
12" Walls					
Hollow Cinder Block	.34	.32	.24	.19	.15
Hollow Concrete Block	.48	.45	.31	.23	.17
Hollow Haydite Block	.29	.27	.21	.17	.14
12" Walls; 4" Brick, 8" Concrete Masonry					
Hollow Cinder Block Backup	.34	.32	.24	.19	.15
Hollow Concrete Block Backup	.42	.39	.28	.21	.16
Hollow Haydite Block Backup	.31	.30	.23	.18	.14
Granular or loose fill* placed in cores of Hollow Units (¼ cu. ft. per sq. ft.)					
8" Walls					
Cinder Block—filled cores	.20	.19	.17	.14	.11
Concrete Block—filled cores	.30	.29	.22	.18	.14
Haydite Block—filled cores	.18	.18	.15	.13	.11
12" Walls					
Cinder Block—filled cores	.17	.17	.14	.12	.10
Concrete Block—filled cores	.29	.27	.21	.17	.14
Haydite Block—filled cores	.15	.15	.13	.11	.10
12" Walls; 4" Brick, 8" Concrete Masonry					
Cinder Block Backup—filled cores	.18	.18	.15	.13	.11
Concrete Block Backup—filled cores	.27	.25	.20	.16	.13
Haydite Block Backup—filled cores	.17	.16	.14	.12	.10

* Regranulated cork, rock or mineral wool, expanded micaceous shale or other suitable materials with similar "k" values.

Note: Portland cement stucco, or two coats of portland cement paint applied to exterior of 8" plain block walls generally reduce the heat loss values .02 to .03 Btu.

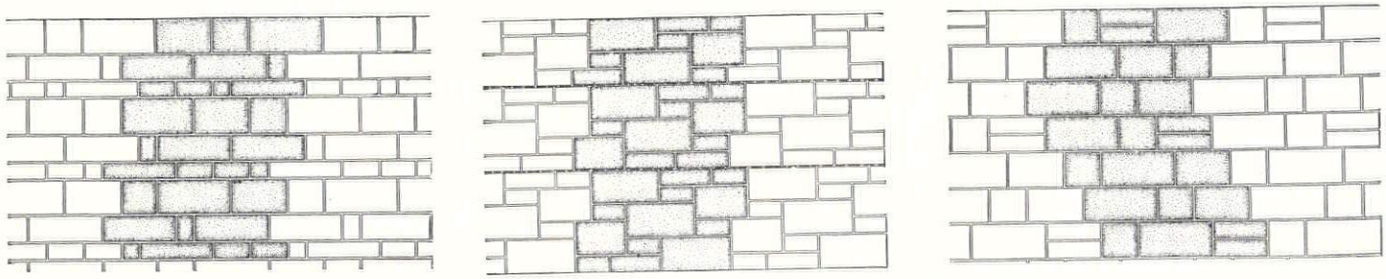


Figure 4. Coursed ashlar 4", 6", and 8" high; coursed ashlar with continuous horizontal joints at definite intervals; coursed ashlar with joints continuous on 8" centers

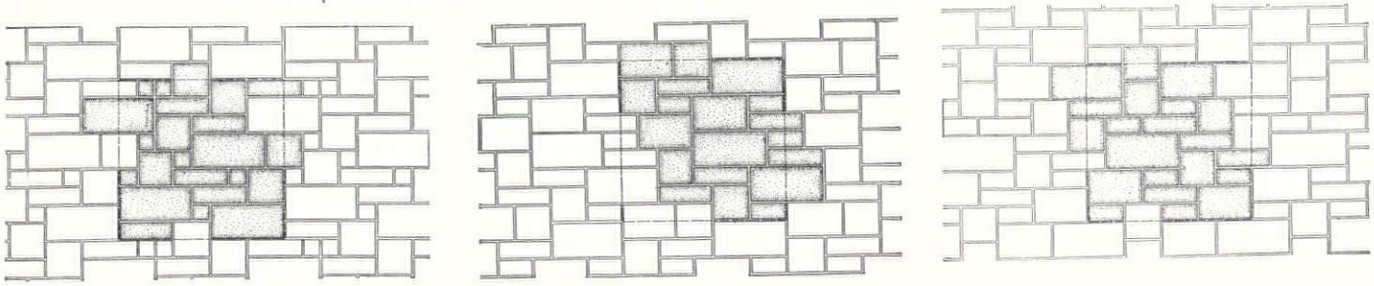


Figure. 5. Random ashlar with pattern requiring only four sizes; random ashlar requiring five sizes; and another pattern with five sizes, repeating for every square yard

	NO INTERIOR FINISH				½" PLASTER DIRECT ON WALL				½" PLASTER ON METAL LATH, FURRED				½" PLASTER on ½" RIGID INSULATION, FURRED				½" PLASTER on 1" RIGID INSULATION, FURRED			
	Cores unfilled		Cores filled		Cores unfilled		Cores filled		Cores unfilled		Cores filled		Cores unfilled		Cores filled		Cores unfilled		Cores filled	
	8" Cinder Block	8" Concrete Block	8" Cinder Block	8" Concrete Block	8" Cinder Block	8" Concrete Block	8" Cinder Block	8" Concrete Block	8" Cinder Block	8" Concrete Block	8" Cinder Block	8" Concrete Block	8" Cinder Block	8" Concrete Block	8" Cinder Block	8" Concrete Block	8" Cinder Block	8" Concrete Block	8" Cinder Block	8" Concrete Block
COST OF BLOCK	.16 / **.16**	.14 / **.14**	.16 / **.16**	.14 / **.14**	.16 / **.16**	.14 / **.14**	.16 / **.16**	.14 / **.14**	.16 / **.16**	.14 / **.14**	.16 / **.16**	.14 / **.14**	.16 / **.16**	.14 / **.14**	.16 / **.16**	.14 / **.14**	.16 / **.16**	.14 / **.14**	.16 / **.16**	.14 / **.14**
LABOR, MORTAR and SCAFFOLDING	.13 / **.10**	.14 / **.11**	.13 / **.10**	.14 / **.11**	.12 / **.09**	.13 / **.10**	.12 / **.09**	.13 / **.10**	.12 / **.09**	.13 / **.10**	.12 / **.09**	.13 / **.10**	.12 / **.09**	.13 / **.10**	.12 / **.09**	.13 / **.10**	.12 / **.09**	.13 / **.10**	.12 / **.09**	.13 / **.10**
EXTERIOR FINISH, P/C PAINT or 3 COAT P/C STUCCO	.05 / **.20**	.05 / **.20**	.05 / **.20**	.05 / **.20**	.05 / **.20**	.05 / **.20**	.05 / **.20**	.05 / **.20**	.05 / **.20**	.05 / **.20**	.05 / **.20**	.05 / **.20**	.05 / **.20**	.05 / **.20**	.05 / **.20**	.05 / **.20**	.05 / **.20**	.05 / **.20**	.05 / **.20**	.05 / **.20**
FURRING LATH and PLASTER	/	/	/	/	.07 / **.07**	.07 / **.07**	.07 / **.07**	.07 / **.07**	.12 / **.12**	.12 / **.12**	.12 / **.12**	.12 / **.12**	.16 / **.16**	.16 / **.16**	.16 / **.16**	.16 / **.16**	.19 / **.19**	.19 / **.19**	.19 / **.19**	.19 / **.19**
CORE INSULATION	/	/	.06 / **.06**	.06 / **.06**	/	/	.06 / **.06**	.06 / **.06**	/	/	.06 / **.06**	.06 / **.06**	/	/	.06 / **.06**	.06 / **.06**	/	/	.06 / **.06**	.06 / **.06**
TOTAL COST ¢ *per #*	.34 / **.46**	.33 / **.45**	.40 / **.52**	.39 / **.51**	.40 / **.52**	.39 / **.51**	.46 / **.58**	.45 / **.57**	.45 / **.57**	.44 / **.56**	.51 / **.63**	.50 / **.62**	.49 / **.61**	.48 / **.60**	.55 / **.67**	.54 / **.66**	.52 / **.64**	.51 / **.63**	.58 / **.70**	.57 / **.69**
RATING IN ORDER OF LOW COST	2 / **7**	1 / **6**	4 / **12**	3 / **11**	4 / **12**	3 / **11**	7 / **17**	6 / **16**	6 / **16**	5 / **15**	11 / **21**	10 / **20**	9 / **19**	8 / **18**	14 / **24**	13 / **23**	12 / **22**	11 / **21**	17 / **26**	16 / **25**
RATING IN ORDER OF INSULATING VALUE	15	17	7	12	14	16	6	11	10	13	4	8	7	9	2	5	3	4	1	2
COEFFICIENT OF HEAT TRANSMISSION "U"	.38	.51	.18	.28	.35	.47	.17	.27	.25	.30	.15	.20	.18	.22	.12	.16	.14	.15	.09	.12

Table II. Rating chart for relative cost and relative insulating efficiency. The upper light-faced figures represent costs for common bond painted; the lower heavy-faced figures, common bond covered with stucco

this table that the walls which are low in construction cost are not efficient, from the standpoint of insulation, but by comparison of walls having the same cost ratings, it will be found that some represent much better insulation "buys" than others.

(Exact costs will have to be determined by the user for each locality; figures used in the table are fair averages, but are neither minimum nor maximum prices.)

Laying: As in all masonry, proper mortar mix, and competent workmanship in laying, are of paramount importance for satisfactory performance.

In the matter of mortar mix, specification errors are usually on the side of too high a cement content (1 part cement, 3 parts sand, 10% hydrated lime by volume). Tests show that bond developed between concrete units and cement mortar is three or four times as great as bond between clay products and cement mortar. Excessive bond in effect results in the equivalent of a hollow monolithic wall unreinforced for temperature stresses. A weaker mortar avoids this. A mix consisting of 1 cu. ft. cement, 1 cu. ft. hydrated lime, 6 cu. ft. sand possesses ample bonding strength, plasticity, waterproofness.

The mortar bed should be spread only on the longitudinal or face shells of the block, and *not* on the cross webs. Then, if water enters a joint, it will not be drawn through the wall by capillarity in the mortar bed.

Raked, stripped and struck joints greatly increase the chance of developing leaks. Cut joints also are likely to be torn and drawn away from the units. If these joints be used, adequate means of waterproofing or parging should be provided, or special attention given to the selection of materials and tooling of joints.

Weathered, concave and "V" joints afford the best protection against leaks and are recommended in preference to other types as they shed water. Their formation requires a pressure sufficient to compress the mortar and create a firm bond between the mortar and the units.

Thin mortar joints are best, producing a stronger, more watertight wall. Unless precautions are taken to make the wall surface tight when the joints are more than ½" thick, watertightness may be sacrificed for appearance.

Waterproofing: Admixtures and integral waterproofings in the block rarely add to the watertight qualities of the wall.

Walls most frequently leak through faulty mortar joints, particularly the vertical joints; rarely through the units themselves. Failure to provide adequate drip-moldings at sills, belt courses, copings and other poor detailing is responsible for many leaks. The water follows back along the underside of the projecting member and then into the wall through a defective mortar joint so frequently found under large or heavy elements such as sills. Rowlock brick sills, or sills having intermediate vertical joints, should be laid in flashing. Lintel construction sometimes requires flashing to prevent the entry of water. Coping and parapet flashing should follow only best current practice.

Special Considerations: Concrete Masonry requires little special consideration in design. Pipe chases and ducts in outside walls should be formed by using 4" block where required instead of cutting slots in 8" walls after they have been laid. See Figure 6. At such points of weakened section it is well to minimize the possibility of cracking by having masons lay ¼" or ⅜" reinforcing rods in the mortar beds extending approximately 2 feet either side of the weakened section. Rods should be kept at least 1" back of the face of the mortar to avoid rusting through.

In furred walls, wiring can usually be run in flexible conduit in the furring space. Where exposed ashlar walls are planned inside and the wiring must be built into the wall, rigid conduit must be employed and can usually be handled most easily by running horizontally in a bed joint.

Furring strips can be nailed directly to light-weight aggregate units; where walls are heavy-aggregate block, furring strips are nailed to mortar joints soon after walls are laid. Certain types of insulation, such as cork board, can be applied direct to the wall in an asphaltic binder without furring.

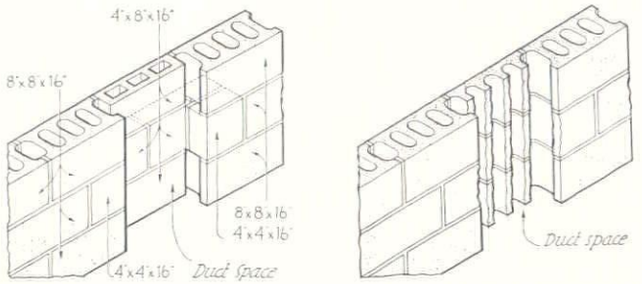


Figure 6. Right and wrong methods of forming duct spacers and pipe chases

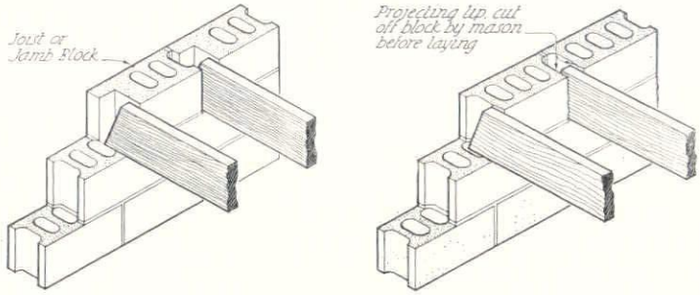


Figure 7. Two methods of providing a bearing for floor joists; the one at the left resulting in a more workmanlike job

Rafters are usually spiked to a wooden plate secured to the top of the wall by bolts, lower ends of which extend down two courses in cores in the block which have been filled with concrete.

Most plants supply special jamb block for wood and steel sash. Such block are essential for exposed ashlar work, and should be specified.

Provision for floor beams is usually made by using a unit similar to the jamb block; or the projecting lip at the ends of the ordinary block can be broken by the mason before laying, to form the desired opening between adjoining block to receive the joist. See Figure 7. In ashlar construction it is sometimes necessary to build the joist course of two tiers of 4" block, to maintain the desired joint pattern or bond on the face of the wall.

MONOLITHIC (REINFORCED) CONCRETE

While the reinforced concrete house has been somewhat overshadowed by the rapid growth of block construction, it appeals to many owners because of its exceptional structural stability, especially in localities subject to flood, hurricane, earthquake, etc.

Three types of wall construction commonly used are shown in Figure 8. Many other types have been developed, but are not in as general use as those shown.

Wall Thickness: Recommended wall thickness for various conditions are given in Table III, which is self explanatory.

Forms: Form costs are an important element in the monolithic house. Forms for the ribbed wall can be built on the job if necessary, but there are several proprietary forms on the market designed for this type of construction, which can be bought or rented.[4]

Either metal or plywood on steel frames or job-fabricated wooden forms can be used for solid wall construction. Metal or plywood panel forms[5] can be bought or rented.

Wood forms can be built of ship-lap or tongue-and-groove sheathing lumber or roofers, but tighter forms can be made by using the special plywoods[6] developed for concrete forms, or the hard-surfaced water-resistant composition boards like "temperd presdwood"[7] with consequent improvement in the appearance of the finished concrete surfaces.

Forms may be bolted together, or plain rods used with special clamps.[8] Bolts and rods should be clean and straight, or they cannot be driven out of the set concrete. Wires should be avoided as ties, since they will rust through unless cut off at least 1" back from the face of the wall, which is almost never done in actual practice. Special devices are on the market to overcome some of these difficulties in tying forms.[8]

Handholes should be provided at the bottom of deep forms, or other provision made for cleaning out prior to placing concrete.

Ornament: This construction offers unusual opportunities for the introduction of decoration, through the same form-technique as is used in monumental structures of Architectural Concrete.[9]

Briefly, reinforced concrete wall surfaces may be enlivened by the use of shaped or corrugated metal for forms, or by the application of various molded strips to the forms to create flutes, reed moldings, stepped planes, and curved or warped surfaces. Band courses, spandrels or panels can be ornamented to any desired degree by the introduction into the forms of suitable waste-molds of plaster at slight additional cost.[10]

Much of the present bare and frequently uninteresting post-war architecture stems from European precedent, where the elimination of ornament was

(4) Simplex Concrete Form Co., 210 West 7th St., Los Angeles, Calif.
(5) Metal Forms Corp., 3304 N. Booth St., Milwaukee, Wis. Universal Form Clamp Co., 972 Montana St., Chicago, Ill.
(6) Harbor Plywood Co., Hoguian Wash., Oregon-Washington Plywood Co., Chicago, Ill. U. S. Plywood Co., 103 Park Ave., New York, N. Y.
(7) Masonite Corp., 551 Fifth Ave., New York, N. Y.
(8) Arro-Tie Co., 423 W. 5th St., Kansas City, Mo. Richmond Screw Anchor Co., 243 Bush St., Brooklyn, N. Y.
(9) "Beauty in Walls of Architectural Concrete," published free by Portland Cement Association.
(10) "Forms for Architectural Concrete," published free by Portland Cement Association.

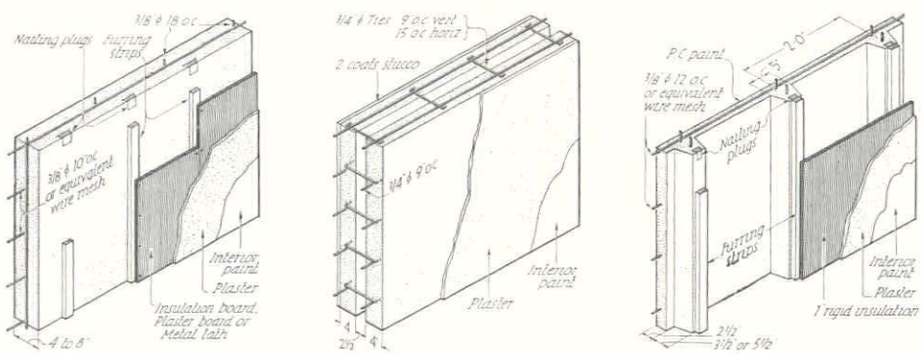


Figure 8. Three types of reinforced concrete walls. Additional reinforcement required at sill, lintel, and jamb lines is not shown

dictated as much by financial consideration as by an enlightened aesthetic outlook.

Reinforcement: Proper distribution and placing of reinforcing steel is important. Figure 9 shows typical bar steel reinforcement for solid wall construction. Mesh reinforcement of equivalent effective area may be substituted if desired. Attention is particularly directed to the necessity of providing adequate reinforcement over, under, and in the jambs of door and window openings; note also the diagonal corner bars at openings.

Mix: Maximum economy will be obtained by producing a concrete wall of such character that it can be left exposed, with no other finish than a brush coat of portland cement paint. Such a wall presupposes a properly designed concrete mix, carefully placed to avoid segregation and honeycombing.

Concrete can be mixed on the job, or ready-mixed concrete from a central plant may be used. Care must be exercised in the selection of aggregates, proportioning of mix and amount of mixing water, so that the concrete may be readily placed in the forms to produce a dense, strong, watertight mass.

For walls 6″ or less in thickness, aggregate should not be larger than 1″. Not more than 7 gallons of mixing water per sack of cement should be used. Generally, a mix of 1 part cement, 2¼ parts fine aggregate, and 3 to 3½ parts of coarse aggregate will be satisfactory. Mixes either too dry or too wet should be avoided.

Placing: Before placing concrete, forms should be carefully cleaned out to remove all dirt, chips, shavings, etc. Hardened scum or laitance should be chopped off, exposing clean sound concrete. Old concrete should be well wet down, and excess water allowed to drain off. (Old concrete should be damp, but should not have water standing on it, when fresh concrete is deposited).

The first batch deposited on the old concrete should have half, or even all, of the coarse aggregate omitted. This will make a tighter seal with the old work, and minimize chances of honeycomb. Concrete should be placed evenly around the structure, not dumped in one place in the hope that it will flow the rest of the way. It will not, unless it be far too sloppy, in which case a badly streaked, and probably leaky, wall will result. Each batch should be well puddled with slice bars or long poles to consolidate it with concrete already placed.

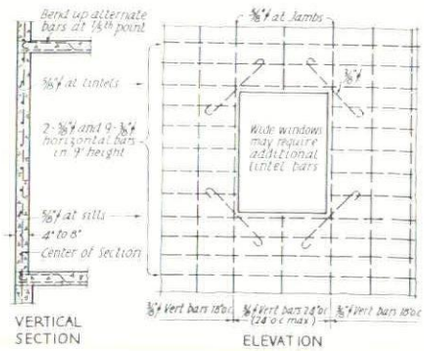


Figure 9. Reinforcement in solid concrete walls. Diagonal bars are effective in preventing cracking at openings, and should be used where wall thickness permits

When work is stopped for the day, it is advisable to end at tops of window or door openings, to permit settlement. Excess water which has come to the top should be worked to a low place and bailed out, leaving only good concrete, free of muck or laitance, to receive the next fill. (Laitance—the hardened chalk-like scum on top of concrete which has been placed too wet—has no strength; will not weather; new concrete will not bond to it).

Exterior Finishes: If the concrete wall is in good condition when the forms are removed, it will be necessary only to rub down lightly with a fine carborundum brick to eliminate evidences of form joints, and apply the cement paint. Honeycomb, if any, will have to be pointed up. Bolt holes are closed by driving in one or two corks dipped in white lead paste, and then pointing with cement mortar.

Cement paint should be applied preferably while the concrete is still green. Stucco can also best be applied at this time. If it is not going to be possible to apply the scratch coat as soon as forms are stripped, a bonding surface may be obtained by coating the forms with a compound[11] which will check the set of the film of cement next to the forms, making it possible to brush it off the next day, leaving the aggregate exposed to receive the stucco. If stucco is to be applied to concrete, forms should not be soaped or oiled.

On hardened concrete, hacking or brush-hammering may be required for bond. Some plasterers bond stucco by first applying a thin grout, dashed on with considerable force, and allowed to set.

Veneers of concrete masonry ashlar or brick can be secured to the wall with wire ties tacked to the forms before con-

(11) "Con-Tex"—Concrete Surfaces Corp., 405 Lexington Ave., New York, N. Y.

TABLE III—RECOMMENDED MINIMUM THICKNESSES OF REINFORCED CONCRETE WALLS

FOREWORD—The following recommended wall thicknesses will be conservative with usual conditions of design and loads in one- and two-story houses. Load bearing walls should be not less than 4″ thick. Walls, floors and partitions should be securely connected at intersections. However, rigid floor to wall connections such as produce fixed end conditions should be avoided unless the wall is reinforced for the bending stresses thus produced.

EXTERIOR WALL

Type of Wall	Type of Loading (1)	One-Story Houses: Basement Walls (2)	One-Story Houses: 1st Story Walls	One-Story Houses: Gable Ends	Two-Story Houses: Basem't. Walls (2)	Two-Story Houses: 1st Story Walls	Two-Story Houses: 2nd Story Walls	Two-Story Houses: Gable Ends
Solid	Axial	8″	4″ (3)	4″	8″	6″	4″(3)	4″
	Eccentric	8″	6″	6″	8″	6″	6″	6″
Ribbed	Axial	8″	6″	6″	8″	6″	6″	6″
	Eccentric	8″	6″	6″	8″	8″	6″	6″
Hollow Double (4)	Axial	8″ solid or 4″+6″	4″	4″	8″ solid or 4″+6″	4″	4″	4″

NOTES:

(1) If eccentric distance exceeds 1″ in 6″ walls, stresses should be investigated. 4″ walls should have axial loading.
It is assumed that the insulated and hollow double types will be axially loaded on inner wall component.

(2) The 8″ thickness is usually required by codes. If reinforced a 6″ wall usually will analyze satisfactorily.

(3) Unsupported length of 4″ walls should not exceed 20 ft. Offsets of 24″ or more or connected intersecting walls are considered as suitable supports.

(4) Except as noted (5) thicknesses apply to the inner wall.

PARTITIONS:

Load bearing partitions should be at least 4″ thick. In one-story houses, L. B. partitions should be 6″ in basement and 4″ in 1st story.
In two-story houses, L. B. partitions should be 6″ in basement, 4″ to 6″ in 1st story and 4″ in 2nd story. Non-load bearing partitions may be 3″ thick.

creting, or metal keyways can be set in the forms to leave slots to engage anchors.

Insulation: Insulation is required for monolithic concrete walls in northerly climates. Double-wall construction has apparently been satisfactory without insulation in the center air space, but is much more efficient if filled. See Table IV.

With the ribbed wall construction, lath or insulating board can be fastened to wooden strips or nailing plugs cast in the projecting ribs. Except under the most severe conditions this will be as satisfactory as other uninsulated types of construction.

In solid wall construction, nailing strips or plugs are cast in the wall, to which furring can be nailed, and the lath or insulating board applied in the usual manner; or cork board can be set against the concrete in an asphaltic binder.

Floors: Concrete floors of the tin-pan, and solid-slab types can be constructed along with the wall, as in industrial building practice. Where precast concrete joists are to be used, they can either be set in place in the forms and concreted in, or removable boxes built into the forms at the proper points, and the joists set afterwards.

Special Considerations: Wiring has to be run in rigid conduit, if built into the forms, to conform to Underwriters

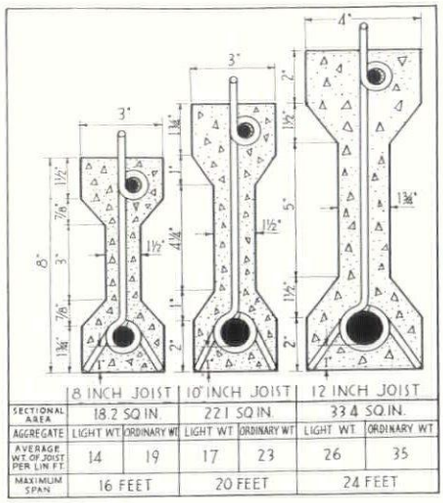


Figure 10. Pre-cast concrete joist cross-sections

requirements in most localities. It is often possible to avoid this by running flexible conduit in interior partitions or in furring spaces.

Ducts, chases and radiator recesses can be formed where desired in the walls, but attention should be given to the reinforcement[12] at these points to avoid the possibility of cracking at weakened sections. Where wiring or piping enters or leaves the house, sleeves should be set in the forms, sloped to the outside, to prevent moisture entering around faulty pointing.

Nailing plugs or inserts should be provided for furring, trim, etc. Careful study of these points, and adequate detailing, will avoid costly cutting and drilling after the structure is concreted.

CONCRETE RESIDENCE FLOORS

Concrete structural floors for residences are fireproof and immune to the attacks of termites. Such floors are not subject to shrinkage; there is no settlement of the walls or partitions they carry, and no cracked plaster and out-of-square door and window frames. The absence of vibration and squeaks, and the fact that concrete floors form an effective barrier against the passage of odors, smoke and dust make them pleasant to live with.

Residence floors of the solid-slab, and "tin-pan" types have usually proved too expensive for the moderate cost house. The construction of special forms, lumber wastes, etc., has kept the cost close to 50 cents per square foot. To reduce this figure, there has been developed recently a precast, reinforced concrete I-beam, which for ordinary spans is light enough to be handled and set by two men. Depending on the size of the

(12) "Reinforced Concrete Houses-Construction Details," published by Portland Cement Association. Page 143.

TABLE IV. THERMAL INSULATION OF REINFORCED CONCRETE WALLS
COEFFICIENTS OF TRANSMISSION (U) OF MONOLITHIC WALLS [1]

Coefficients are expressed in Btu. per hr. per sq. ft. per deg. F. diff. in temp. between the air on the two sides and are based on a wind velocity of 15 mph.

INTERIOR FINISH OR SUPPLEMENTARY INSULATION
Col. A Plain Walls—Unfinished or painted.
" B Plaster (3/4") on metal lath—furred.
" C " (1/2") " plaster b'd. (3/8")—furred.
" D " (1/2") " rigid insul. b'd. (1/2")—furred.
" E " (1/2") " rigid insul. b'd. (1")—furred.
" F Air space unfilled—plaster (1/2") on wall.
" G " " filled[2]—Plaster (1/2") on wall.
" H Ribbed Wall. Col. C plus regranulated cork fill.

Type of Wall	Wall Thickness, Inches	a	b	c	A	B	C	D	E	F	G	H
SOLID	4				0.89	0.45	0.42	0.27	0.19			
	6				0.79	0.42	0.39	0.26	0.19			
	8				0.70	0.39	0.37	0.25	0.18			
HOLLOW DOUBLE 7/8" x 1/2"		a	b	c								
	4	2 1/2	4		0.42					0.40	0.11	
	4	1	4		0.42					0.40	0.21	
	4	2 1/2	6		0.40					0.38	0.11	
RIBBED 7/8" x 3/8"		a	b									
	2 1/2	3 1/2			1.02	0.47	0.44	0.28	0.20			0.13

(1) Computed values based on data given in A. S. H. & V. E. Guide.
(2) Porous light weight material such as regranulated cork, rock wool, etc., with conductivity value of 0.33.
NOTE: U value for standard frame construction is 0.25.

THERMAL INSULATION OF FLAT CONCRETE RESIDENCE ROOFS
COEFFICIENTS OF TRANSMISSION (U) [3]

Coefficients are expressed in Btu. per hr. per sq. ft per degree F. diff. in temp. between the air on the two sides and are based on a wind velocity of 15 mph.

TYPES OF PLAIN AND BUILT-UP ROOFING
Col. A Plain: no roofing and no insulation.
" B Plain concrete, no insulation.
" C Rigid insul. b'd. (1/2")[4] applied on concrete.
" D Rigid insul. b'd. (1")[4].
" E Rigid insul. b'd. (1 1/2")[4].
" F Rigid insul. b'd. (2")[4].
" G Col. D plus 3/4" plaster on metal lath—furred[5].
" H Col. C plus 1/2" plaster on plaster b'd (3/8")[5].
" I Col. B plus 1/2" plaster on rigid insul. (1/2")[5].

Type of Roof	Roof Thickness "t" Inches	A	B	C	D	E	F	G	H	I
SOLID	2	1.06	0.82	0.37	0.22	0.17	0.14	0.18	0.26	0.19
RIBBED	4	0.89	0.72	0.34	0.23	0.17	0.13	0.18	0.25	0.18
Solid, ribbed or precast joist	6	0.79	0.64	0.33	0.22	0.16	0.13	0.18	0.23	0.18

(3) Computed values based on data given in A. S. H. & V. E. Guide.
(4) Rigid insulation with conductivity value of 0.33.
(5) Air space assumed between underside of roof deck and ceiling construction.

job, and its proximity to a concrete products plant making joists, a floor of this type can usually be constructed for thirty or thirty-five cents per square foot, (figures exclusive of wood or other coverings). Figure 10.

Formwork for the 2″ or 2½″ slab has been simplified, and is carried by the joists themselves without posting or shoring except in spans longer than 15 feet, when one row of shores is used: Figure 11. Lumber waste is negligible. Reinforcement is extremely simple and can be rods or mesh.

The joists are made by the larger concrete products plants throughout the country to standard designs.[13]

Framing details at openings, under partitions, etc., follow wood framing practice, joists being doubled, and steel stirrup joist hangers used in the conventional manner. Joists are spaced from 24″ to 30″ on centers, however.

Hung ceilings can be added at a cost of approximately 10 cents per square foot in some parts of the New York area. Because of the clean ceiling surfaces (especially if plywood forms are used for the slab), the absence of bridging, and the uniformity of the joists themselves, it is quite customary to leave the construction exposed. Suitable color combinations are then developed for the ceiling treatment, sometimes with the addition of stencilled ornament on the beam soffits.

The most economical floor finish is of course simply to trowel the slab to a smooth hard surface, and then stain with a chemical preparation[14] and wax, or treat with a good floor paint after neutralizing the concrete, as described in the notes on Painting.

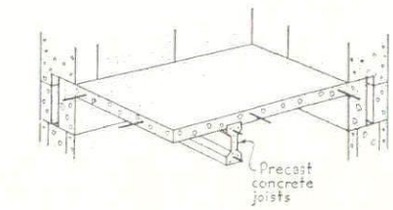
A terrazzo finish has many advantages, but price will depend upon size and location of job. It offers unfading color, the beauty of the marble aggregates, the decorative metal strips in pattern, ease of cleaning, resistance to marring.

Strip or plank floors of wood can be laid on sleepers, fastened to clips or anchors set in the concrete, or wired to the stirrups which project above the top of the joists. A more compact method is the use of blocks of strip flooring, 6¾″, 9″ or 11¼″ square, which are bedded in mastic directly on top of the finished concrete slab. Other finishes include cork, asphalt and rubber tile, "presdwood," linoleum, carpet, wall to wall carpeting, etc.

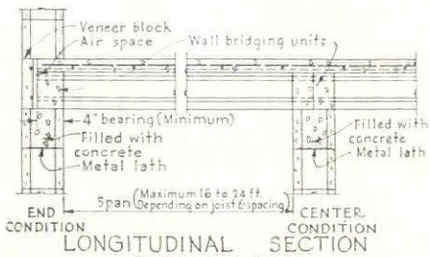
A few average prices follow—these are general figures, and will vary somewhat in a quotation on a specific job:

Asphalt tile.....16c per sq. ft. up
Wood block in mastic..20c per sq. ft. up
Rubber tile.....65c per sq. ft. up
Linoleum ...53⅓c per sq. ft. without felt
Broadloom carpet
$1.41⅔ per sq. ft. over 36 oz. lining

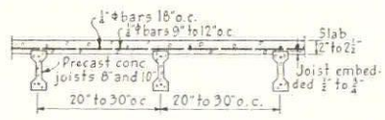
Special Considerations: Openings for pipes, ducts, etc. should be carefully noted on the drawings so that sleeves can be set in the forms. Wiring in the slab must be run in rigid conduit. Where horizontal pipe runs must be carried through the joists and cannot be slung underneath, joist manufacturers will provide opening in web of joist if given required information before joists are cast. If, for any reason, it is necessary to drill a hole through the slab or through a joist, hole should be worked from *both* sides; otherwise large and unsightly spall is likely to be driven off far side from drill.



PERSPECTIVE



LONGITUDINAL SECTION THROUGH SLAB



CROSS SECTION

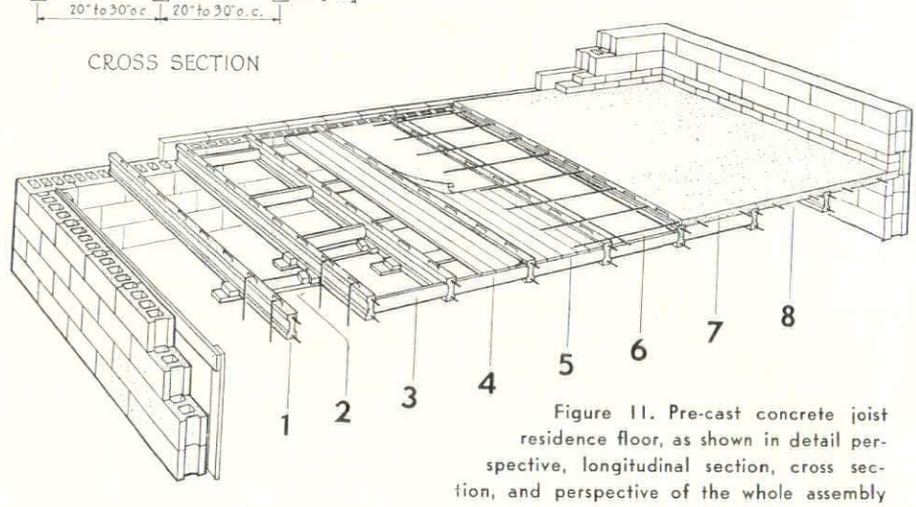


Figure 11. Pre-cast concrete joist residence floor, as shown in detail perspective, longitudinal section, cross section, and perspective of the whole assembly

(13) Tables of allowable safe loads for various spans, and standard reinforcing details, are contained in the booklet "Precast Joist Concrete Floor Construction Details," published by the Portland Cement Association, sent without charge.

(14) "Keramik," made by A. C. Horn & Co., Long Island City, N. Y. "Dy-crome," made by Master Builders Co., Cleveland, O.

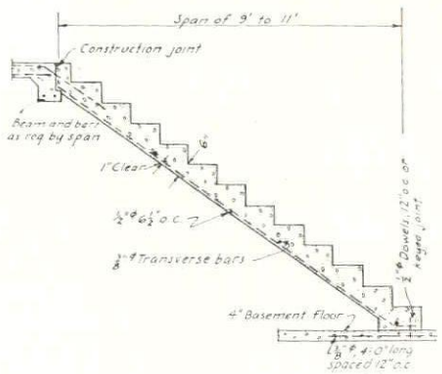


Figure 12. Reinforced concrete stairs designed as a beam simply supported by the cross beam at the top and the floor at the bottom. L.L. equals 40 lbs. per sq. ft.

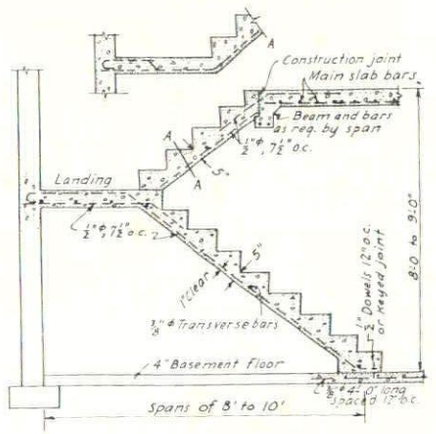


Figure 13. Reinforced concrete stairs, both flights designed as simple beams. L.L. equals 40 lbs. per sq. ft. For convenience, the same amount of reinforcement is used in the shorter top flight span as in the bottom one

PORTFOLIO OF GARDEN ENCLOSURES

NUMBER 118

IN A SERIES OF COLLECTIONS OF PHOTOGRAPHS
ILLUSTRATING VARIOUS MINOR ARCHITECTURAL DETAILS

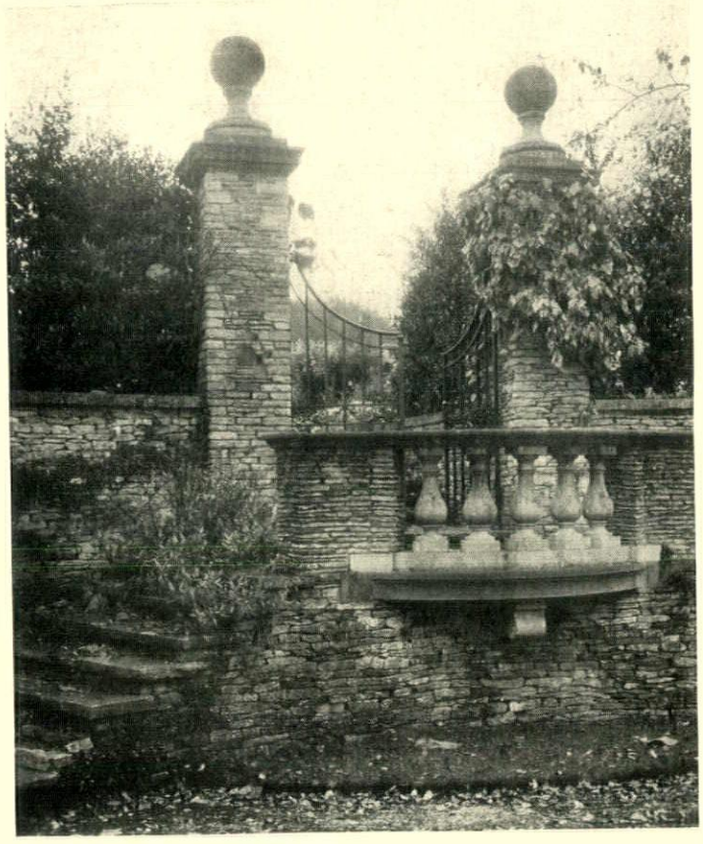
A garden enclosure in Broadway, Worcestershire

PORTFOLIOS IN PREPARATION:

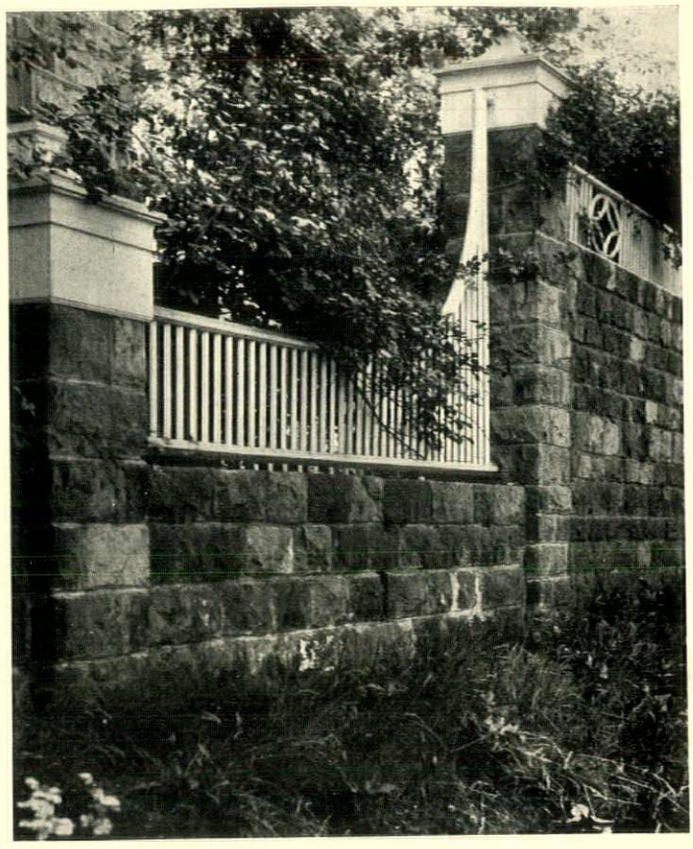
(The Editors welcome photographs of these subjects; but the forms close six weeks in advance of publication)

Church Lighting Fixtures	**September**
Oriel Windows	**October**
Memorial Tablets	**November**
Cast-Iron Treillage	**December**

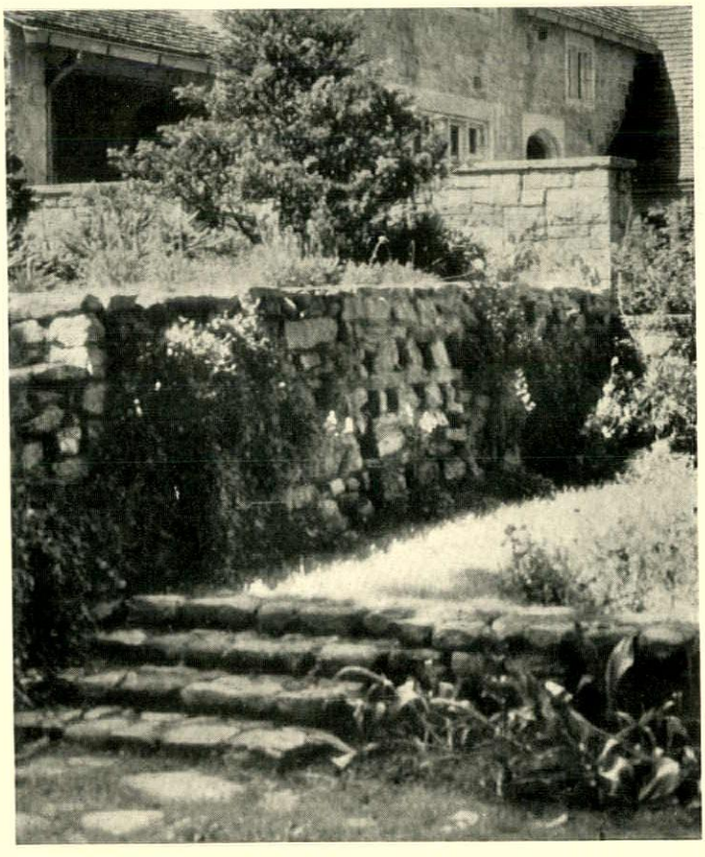
NOTE: A list of the Portfolio subjects that have appeared is printed on page 69 of the July issue. Certain of these past Portfolios are available to subscribers at 25 cents each



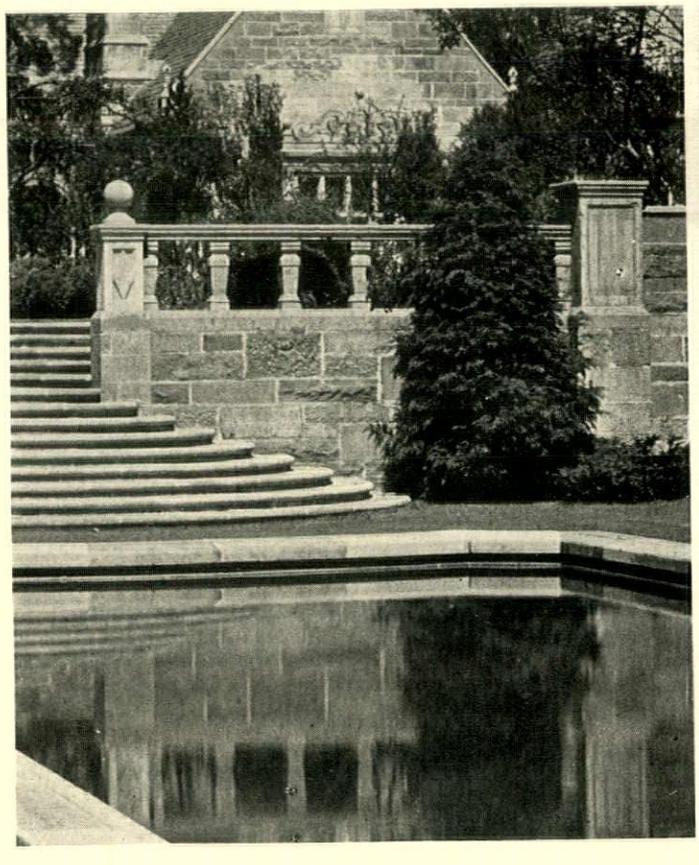
Eyford Park, Gloucestershire, England
E. Guy Dawber



Leonia, N. J.
Rutherford Boyd



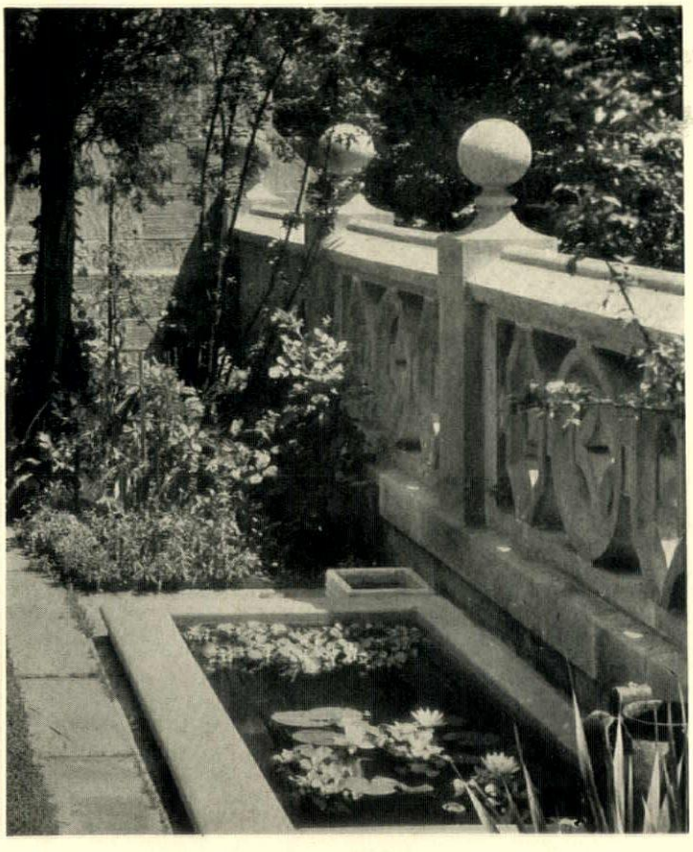
New Canaan, Conn.
Alfred Mausolff



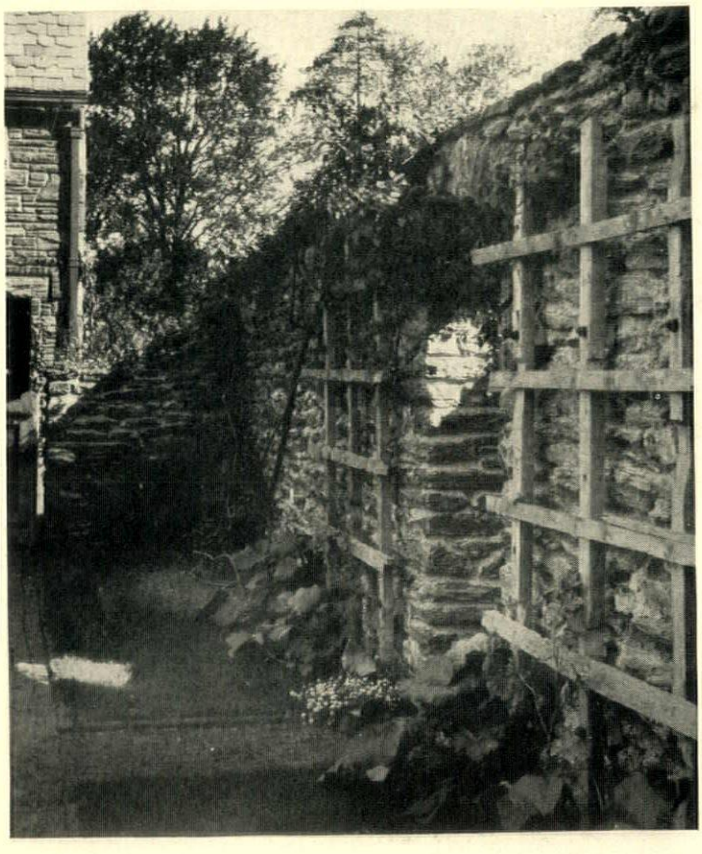
Glen Head, N. Y.
Roger H. Bullard

Broadway, Worcestershire
England

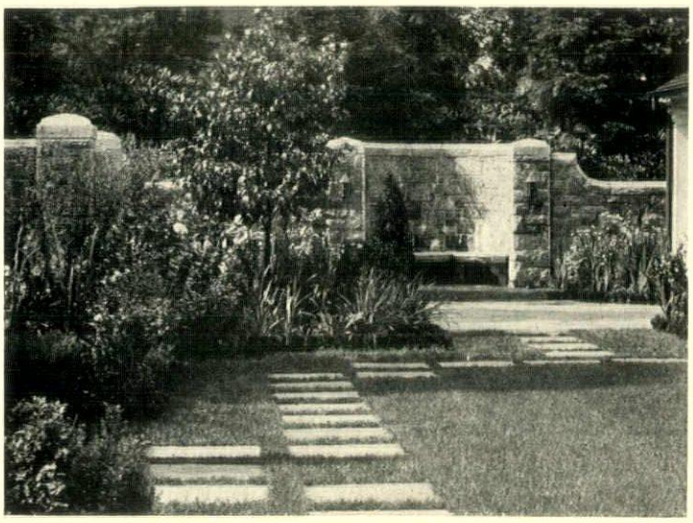
Leonia, N. J.
Rutherford Boyd



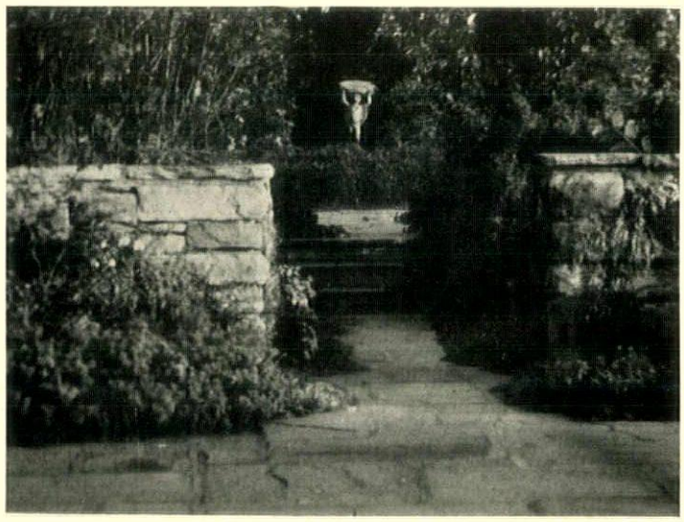
Princeton, N. J.
Alfred Hopkins



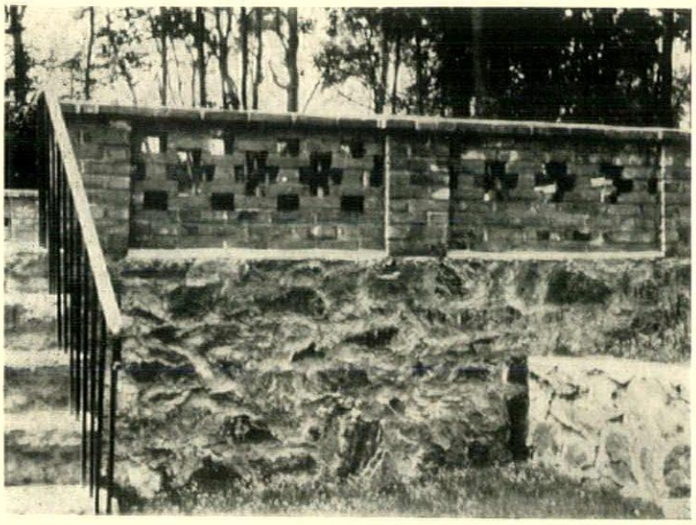
Chestnut Hill, Pa.
Walter T. Karcher & Livingston Smith



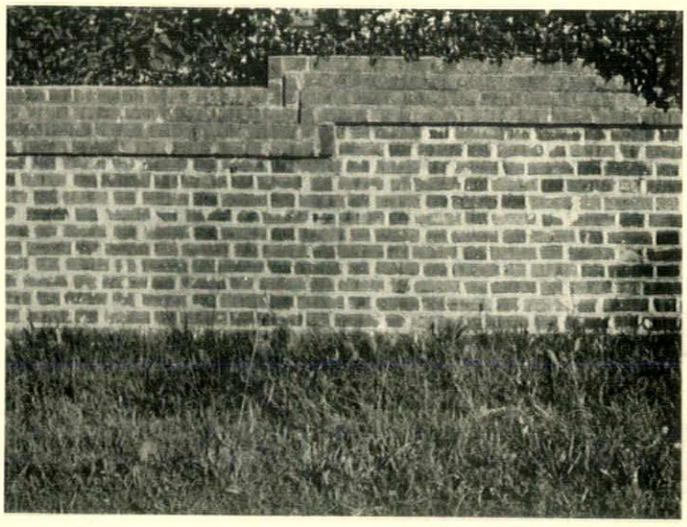
Scarsdale, N. Y.
Jacob John Spoon



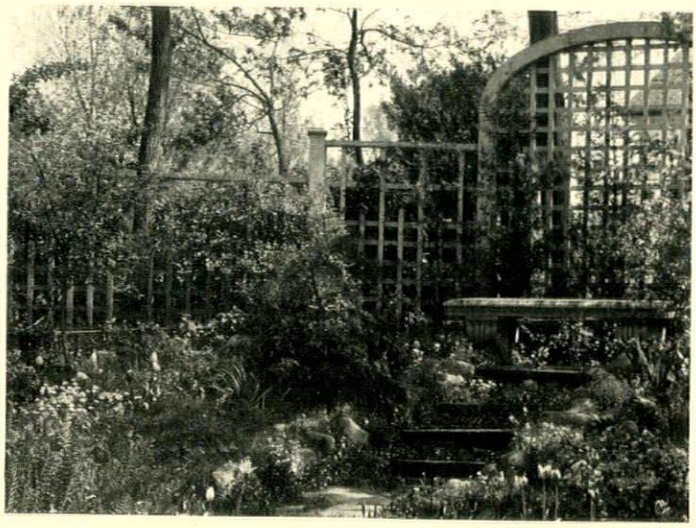
Sewickley Heights, Pa.
William Pitkin, Jr. & Seward H. Mott



Open brickwork on a
stone base

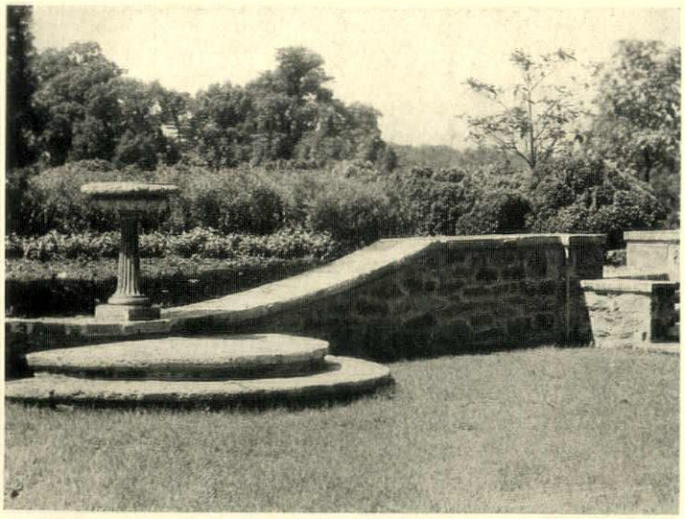


From the Nelson House
Yorktown, Va.

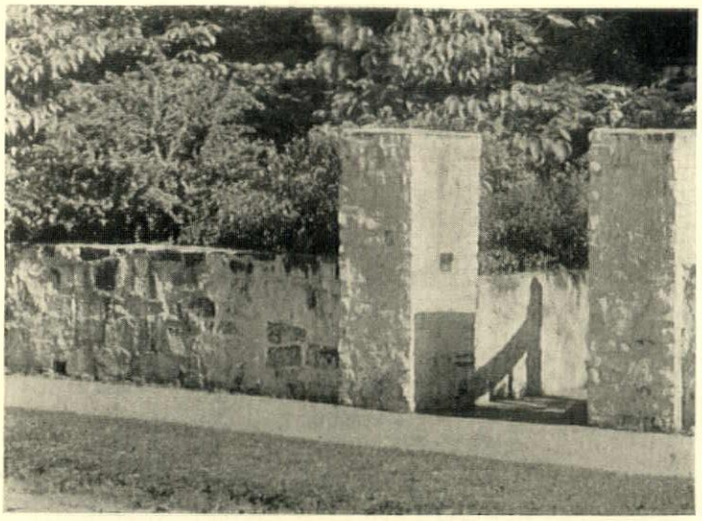


Wood trellis
Great Neck, N. Y.

Palm Beach, Fla.
Wyeth & King

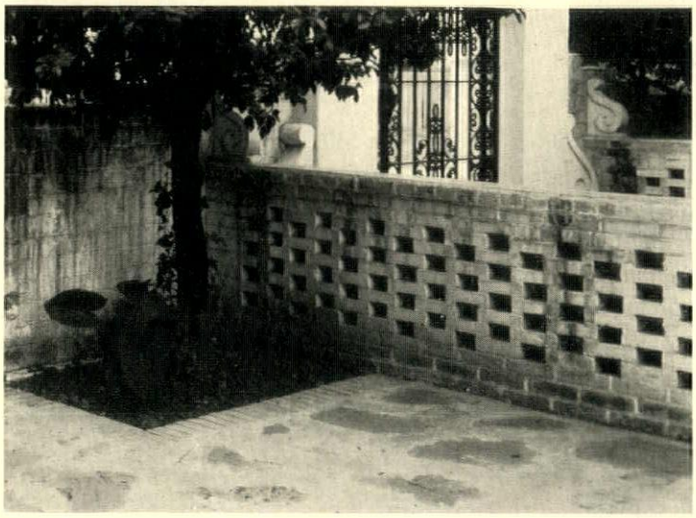


Rockville, Md.
Office of John Russell Pope

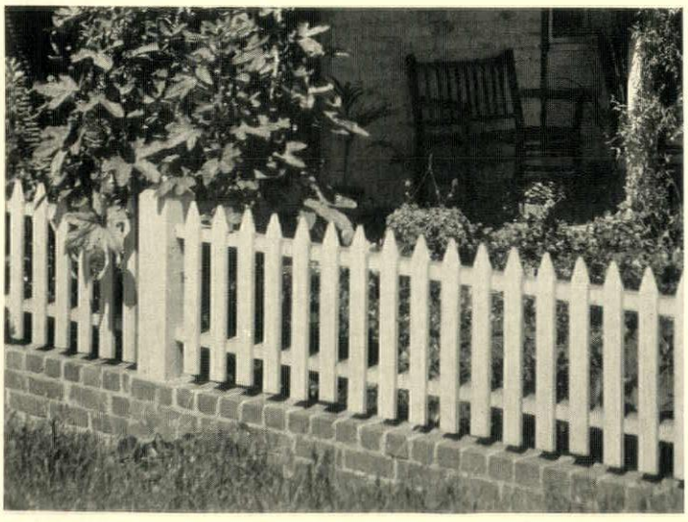


New Haven, Conn.
Frank J. Forster

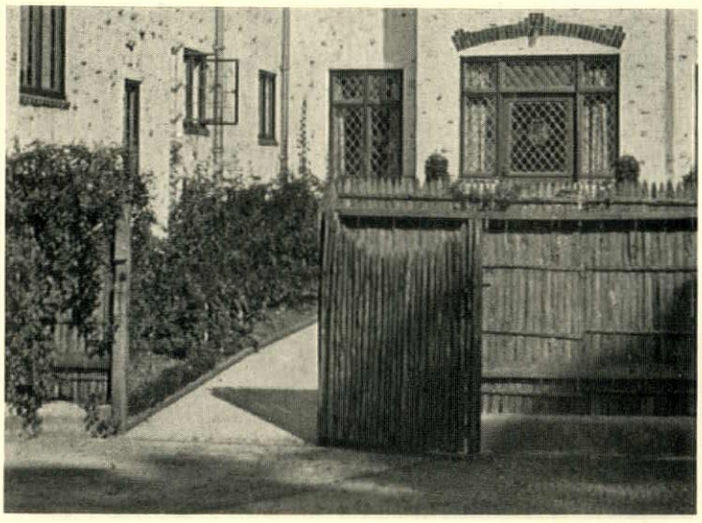
Miami Beach Fla.
John N. Bullen



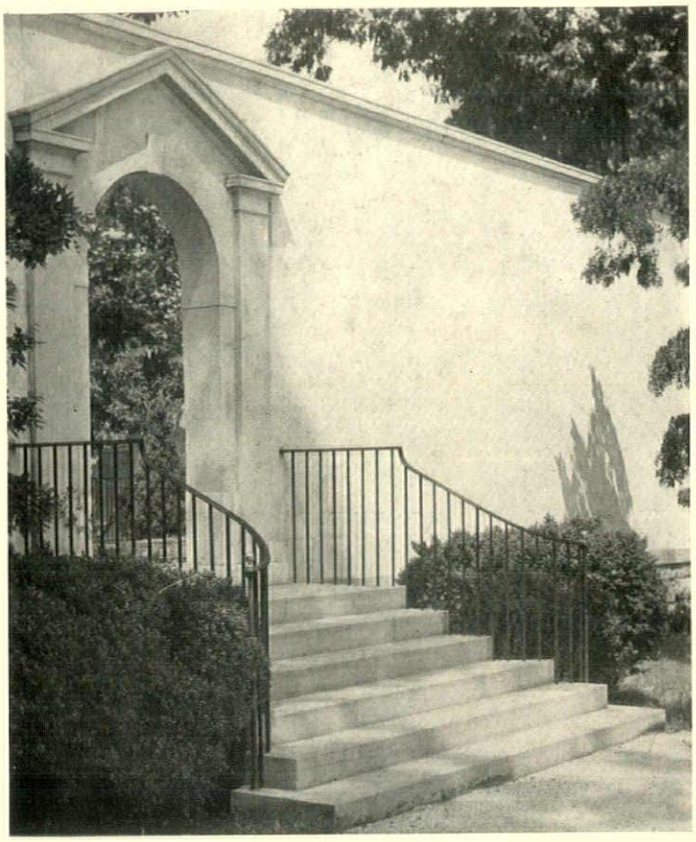
Laredo, Tex.
L. S. Sanderson



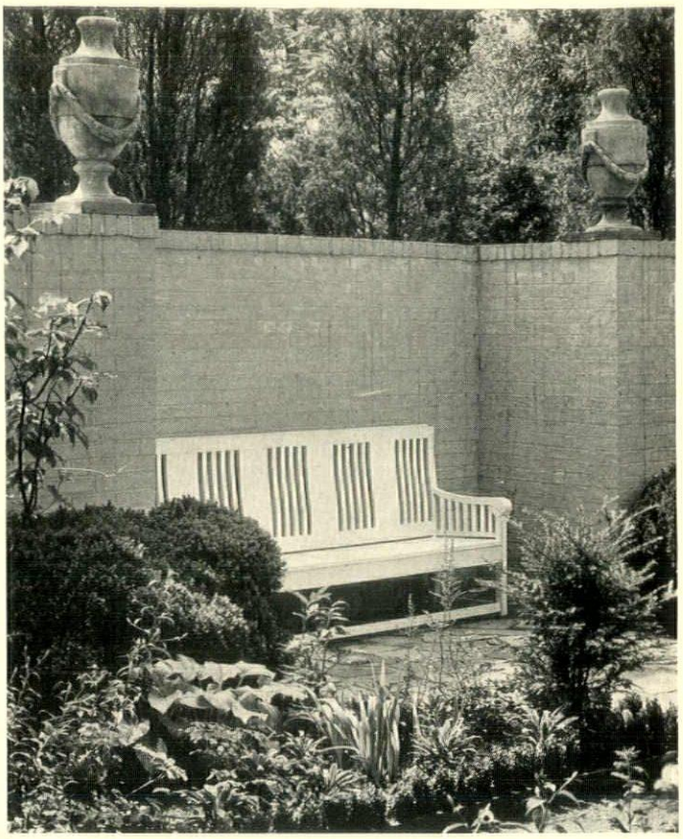
Los Angeles, Calif.
Charles R. Fargo



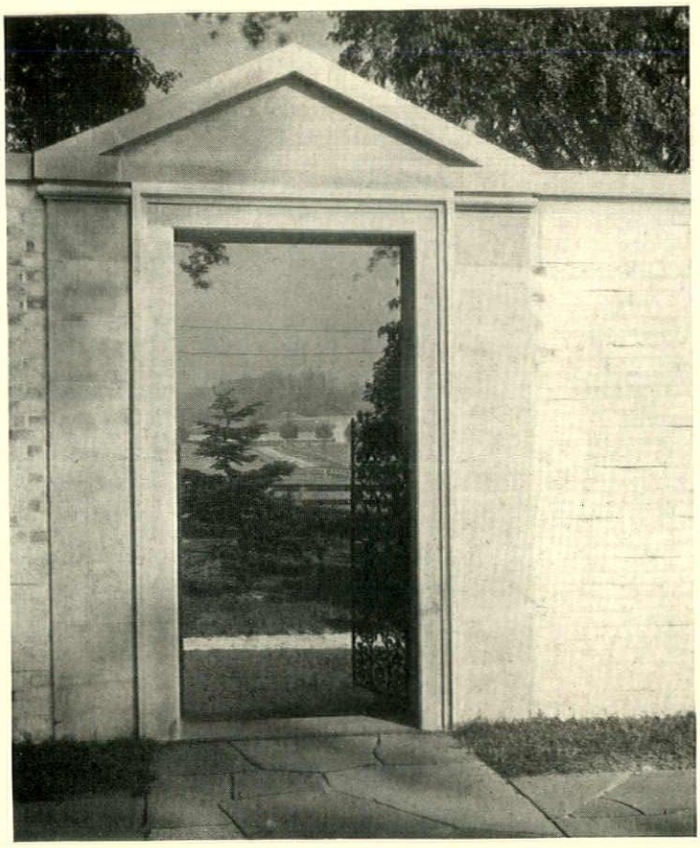
Newark, N. J.
Guilbert & Betelle



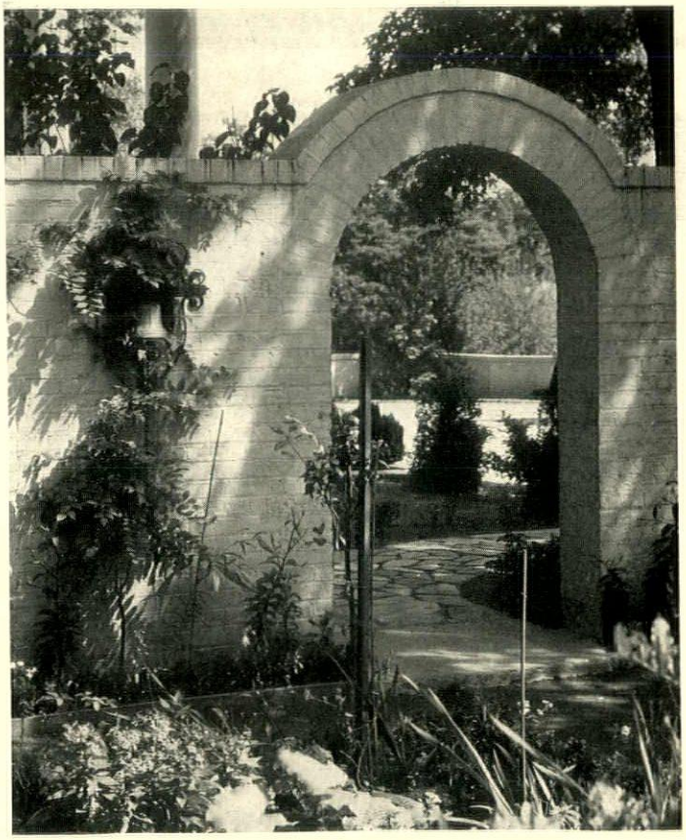
Syosset, N. Y.
Delano & Aldrich



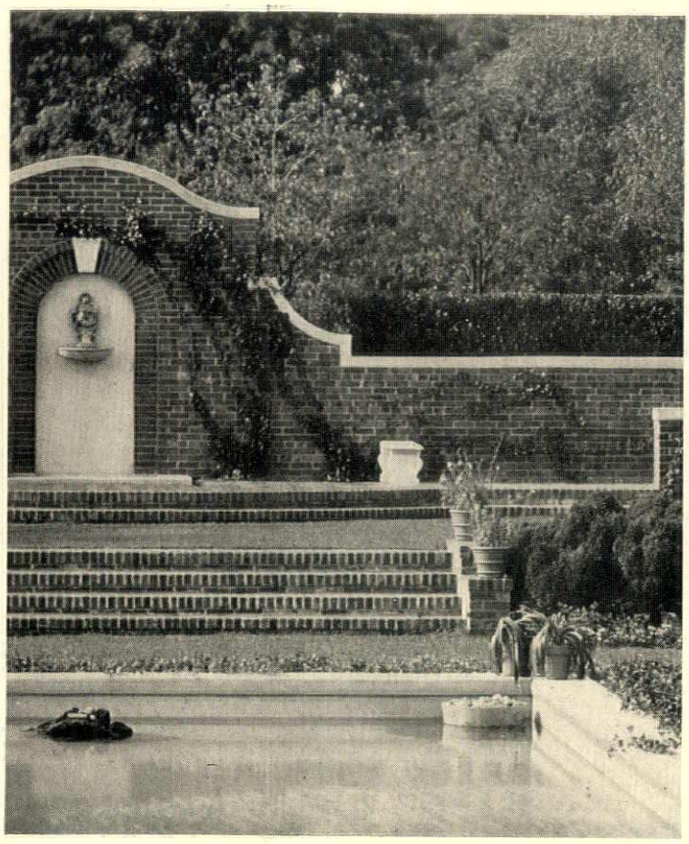
Westbury, N. Y.
Office of John Russell Pope



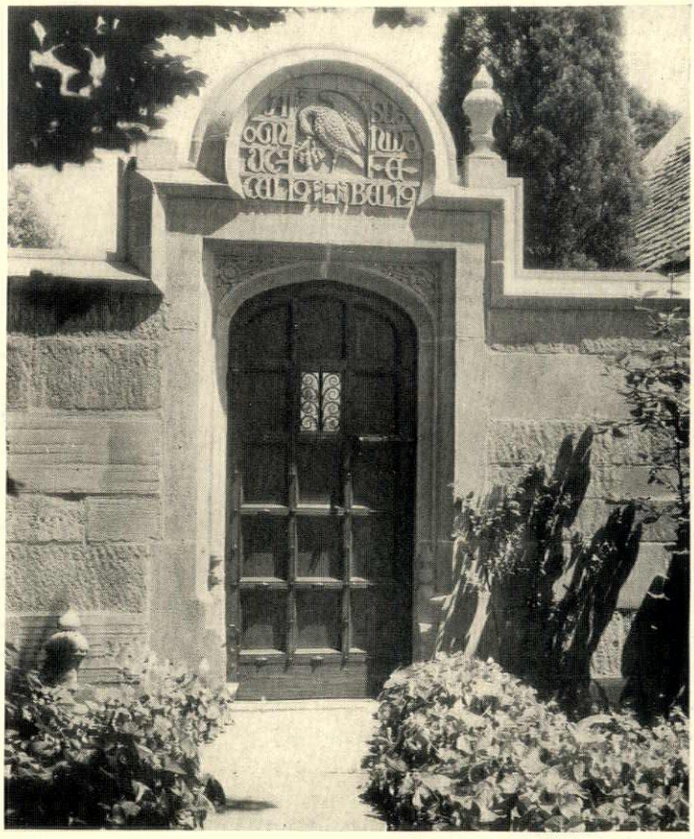
Middletown, N. J.
Charles H. Higgins



Westbury, N. Y.
Office of John Russell Pope



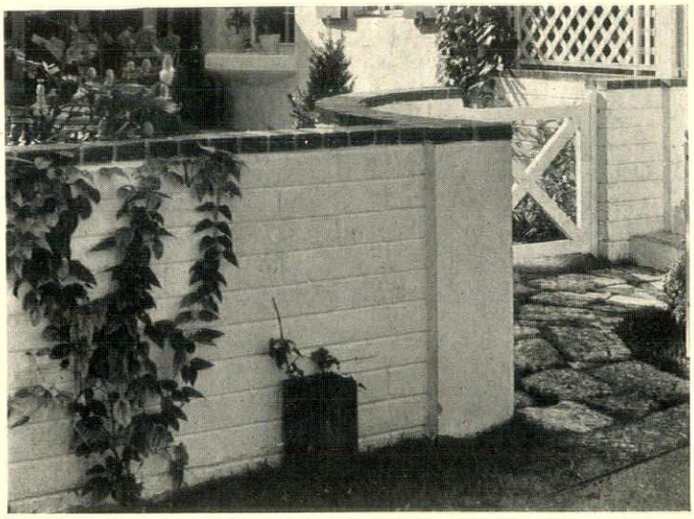
Southampton, N. Y.
Annette Hoyt Flanders



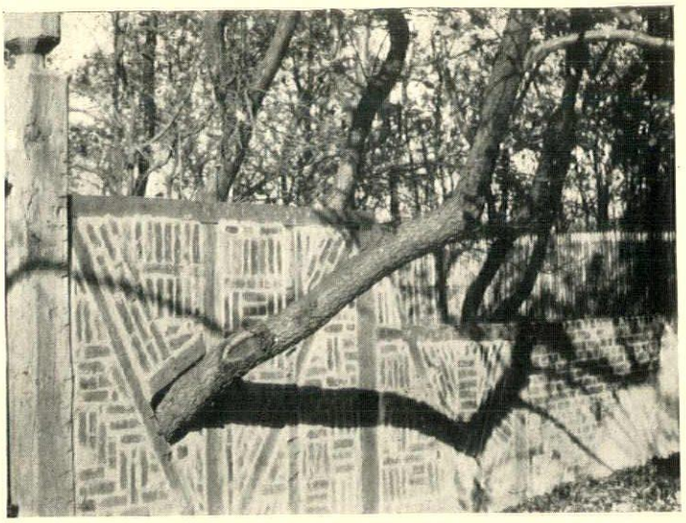
Princeton, N. J.
Alfred Hopkins

Cleveland, O.
William Pitkin, Jr. & Seward H. Mott; Dunn & Copper

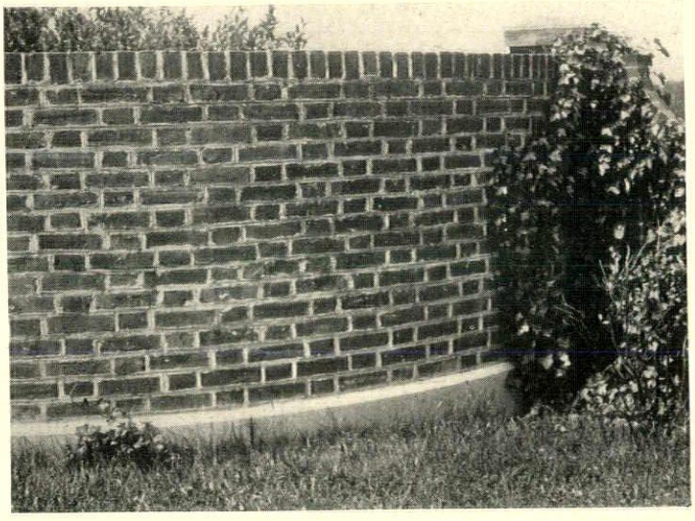
Los Angeles, Calif.
Stone tile, whitewashed



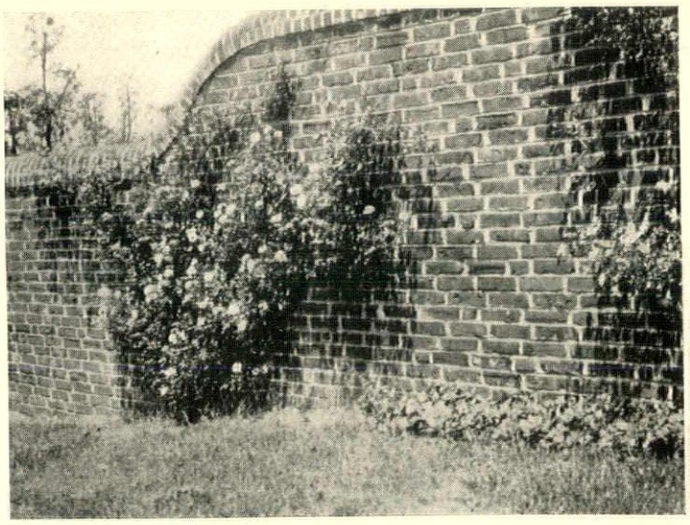
Miami Beach, Fla.
Paist & Steward



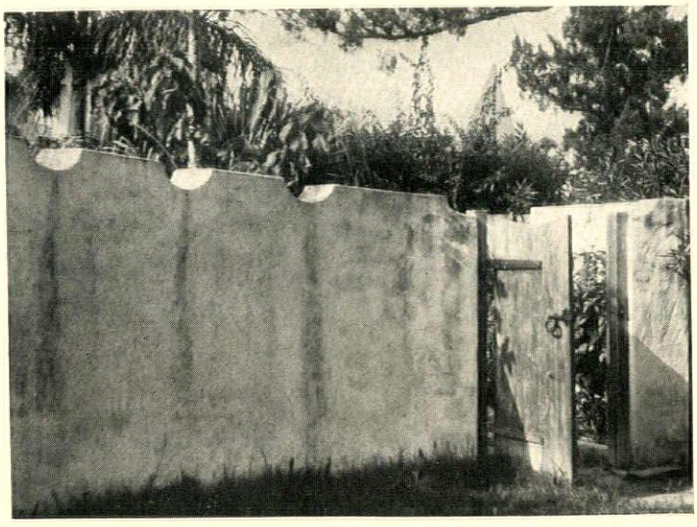
Sands Point, N. Y.
Timber and brick nogging



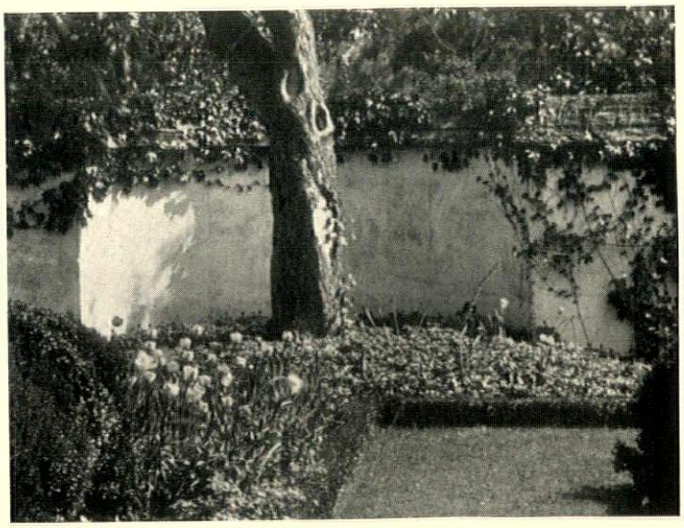
Pohick, Va.



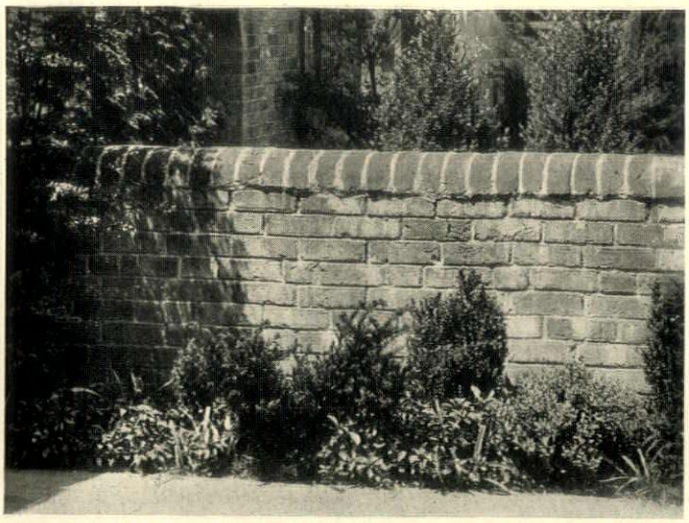
Wheatley Hills, N. Y.



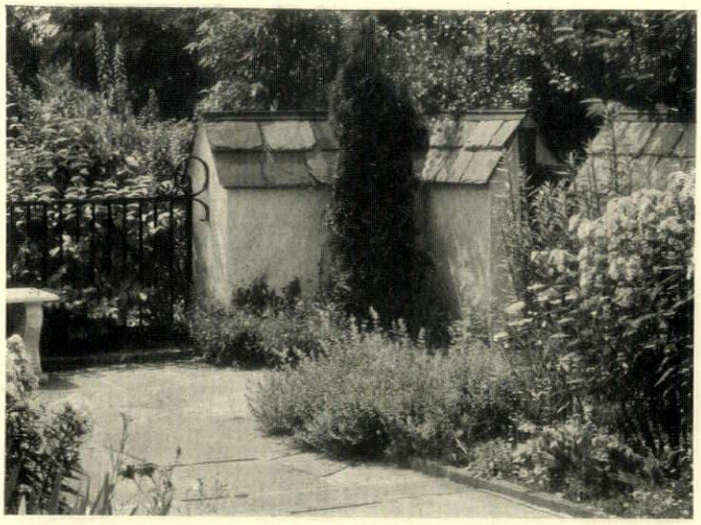
Bermuda



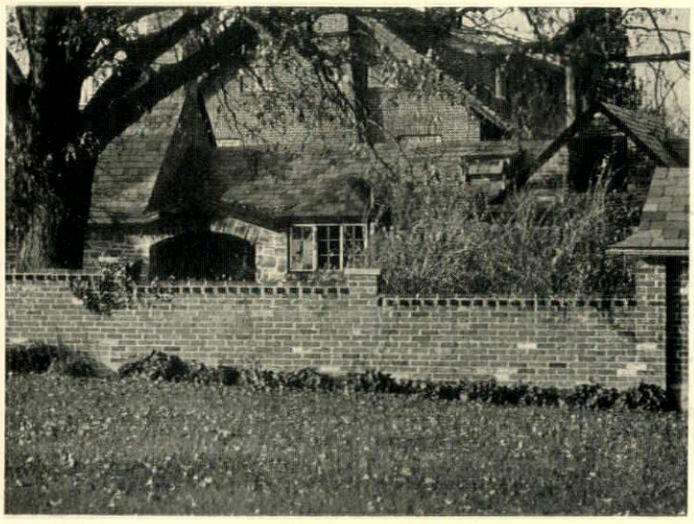
Glen Head, N. Y.
Annette Hoyt Flanders



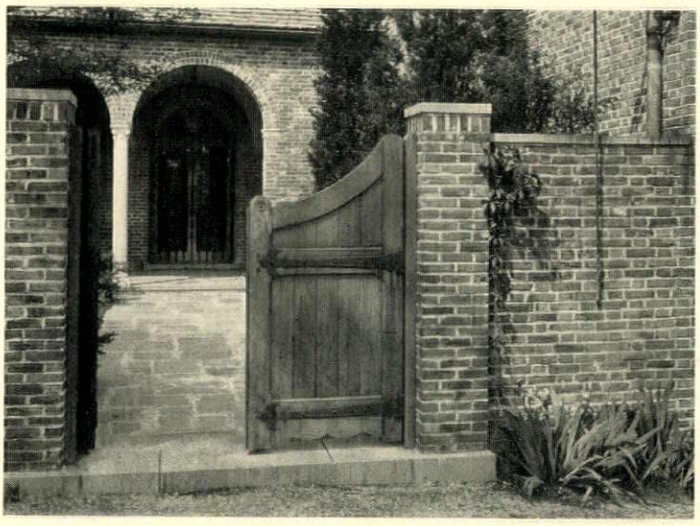
Hackensack, N. J.
Wesley Sherwood Bessell



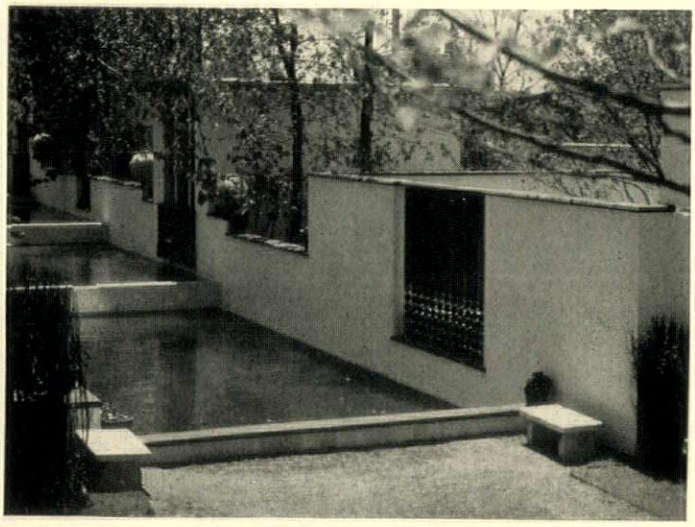
Kalamazoo, Mich.
William Pitkin, Jr. & Seward H. Mott



Washington, D. C.
Victor Mindeleff

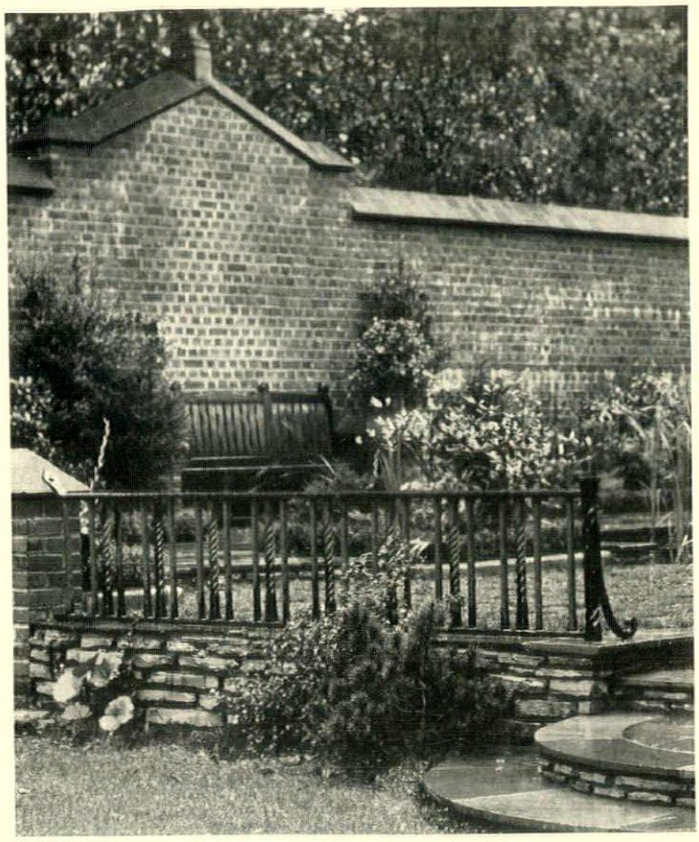


Irvington-on-the-Hudson, N. Y.
Delano & Aldrich; Robert L. Fowler, Jr.

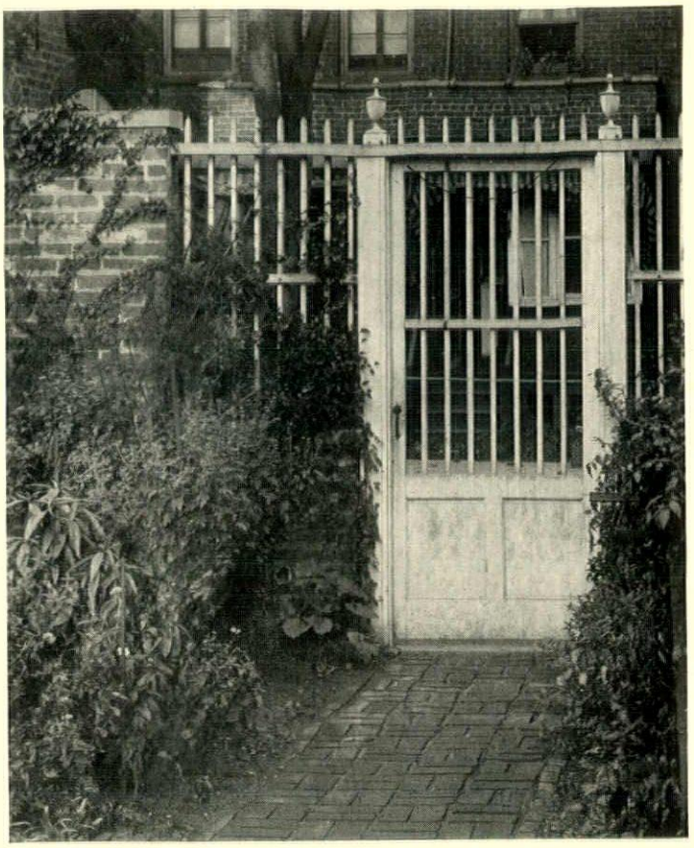


Century of Progress, Chicago, Ill.
Hood & Fouilhoux

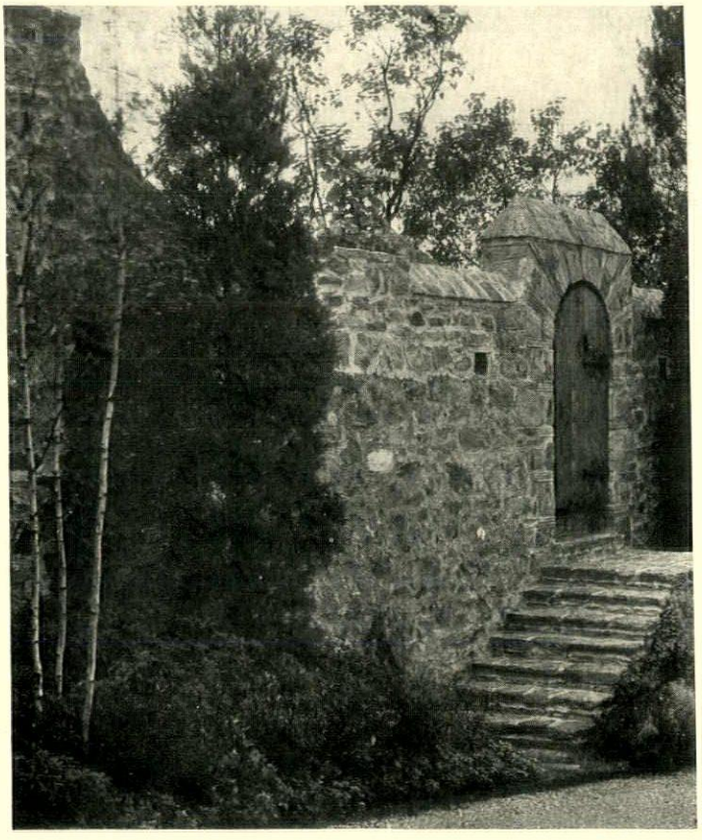
Harrison, N. Y.
Frank J. Forster; R. A. Gallimore



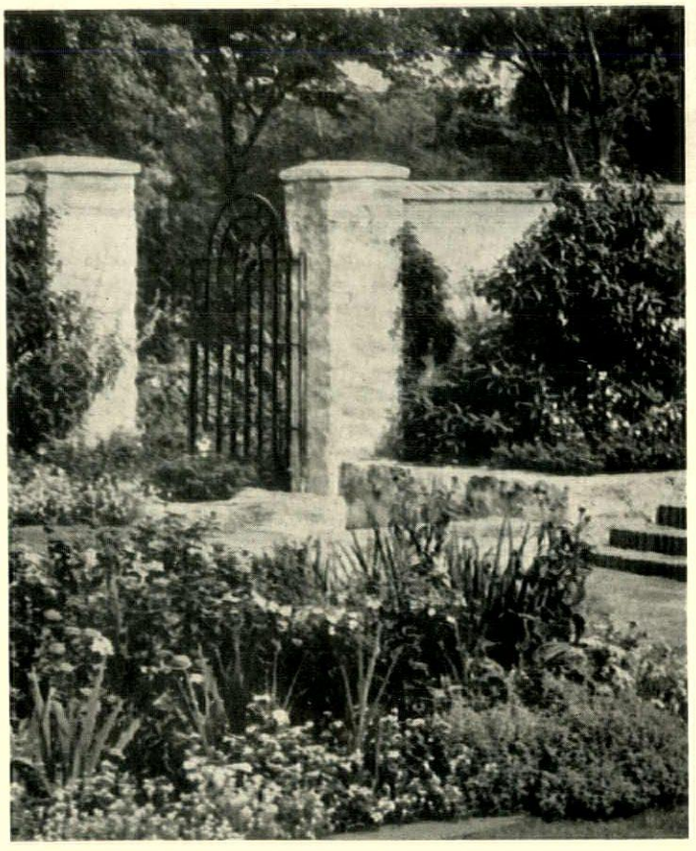
Buffalo, N. Y.
Eric J. Reeves



Brooklyn, N. Y.
Dwight James Baum

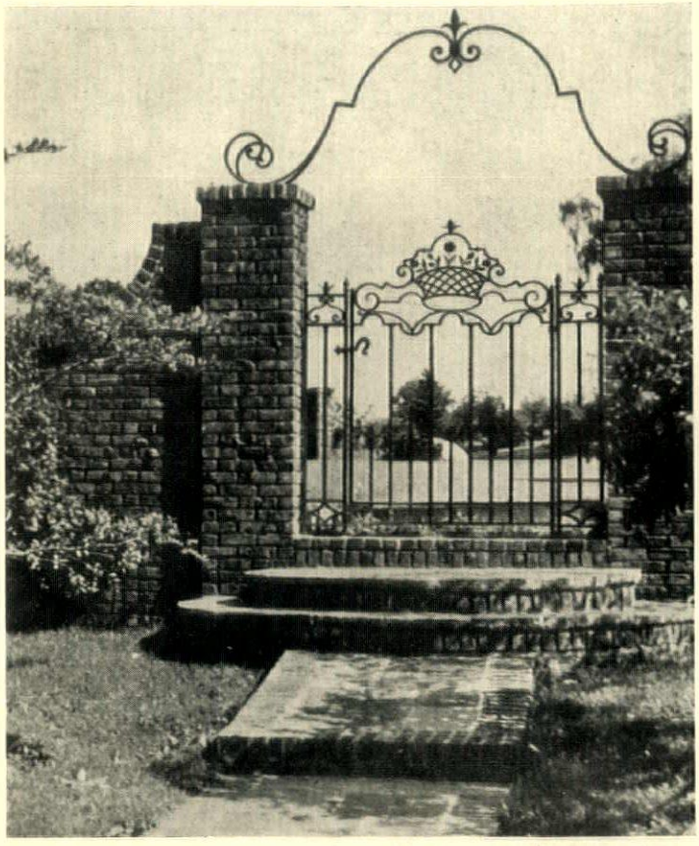


Bronxville, N. Y.
Lewis Bowman



New Rochelle, N. Y.
Clarence Fowler

New Rochelle, N. Y.
Frederick G. Frost



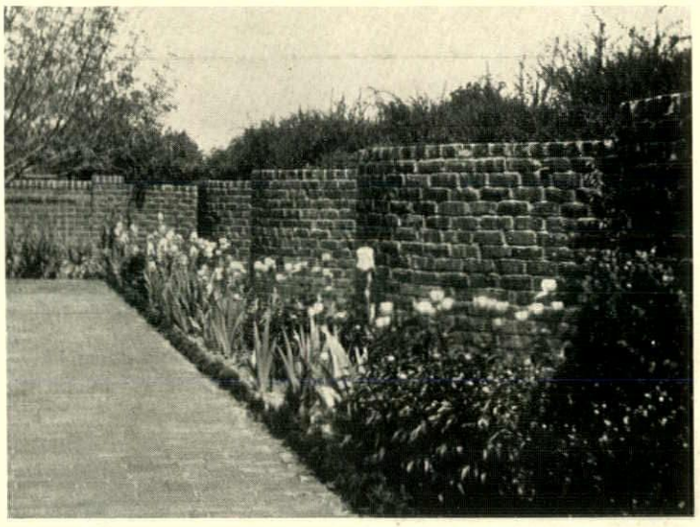
Great Neck, N. Y.
Mann & MacNeille

Laredo, Tex.
L. S. Sanderson

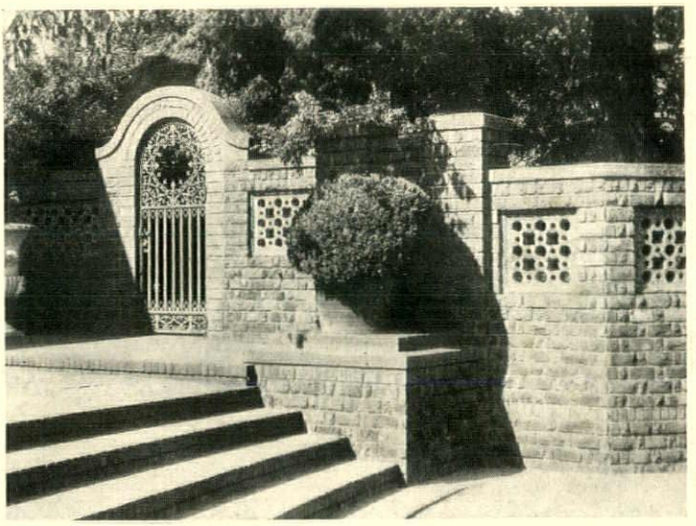
William Pitkin, Jr. &
Seward H. Mott

Larchmont, N. Y.
Office of John Russell Pope

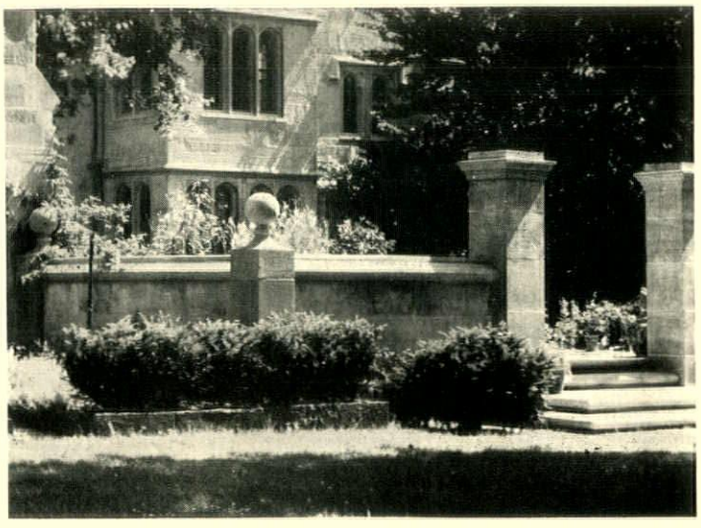
Sewickley Heights, Pa.
William Pitkin, Jr. & Seward H. Mott



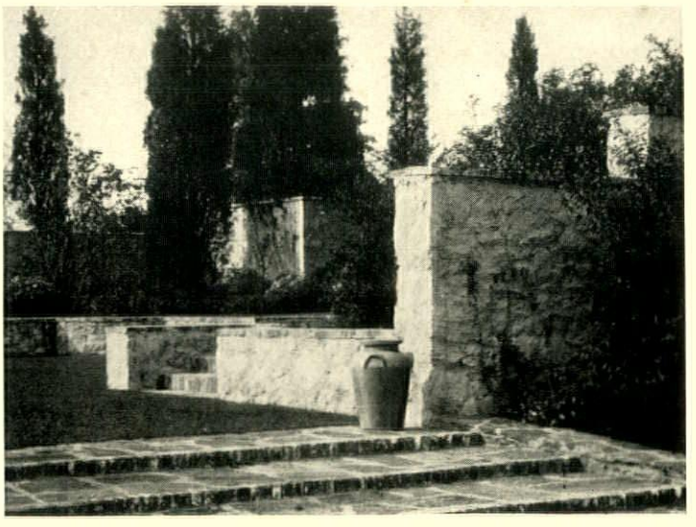
Serpentine wall
Salem, Va.



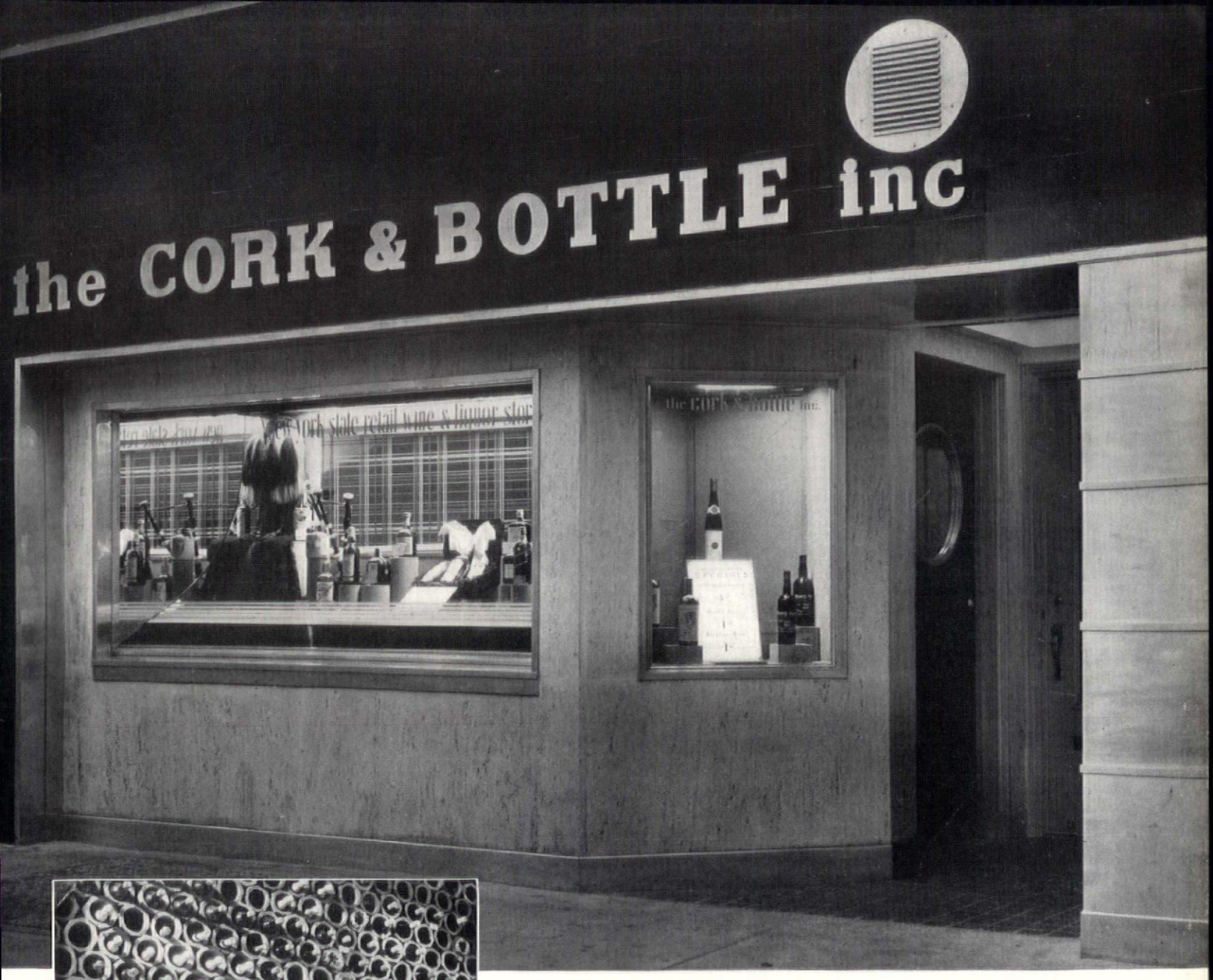
Southampton, N. Y.
Grosvenor Atterbury

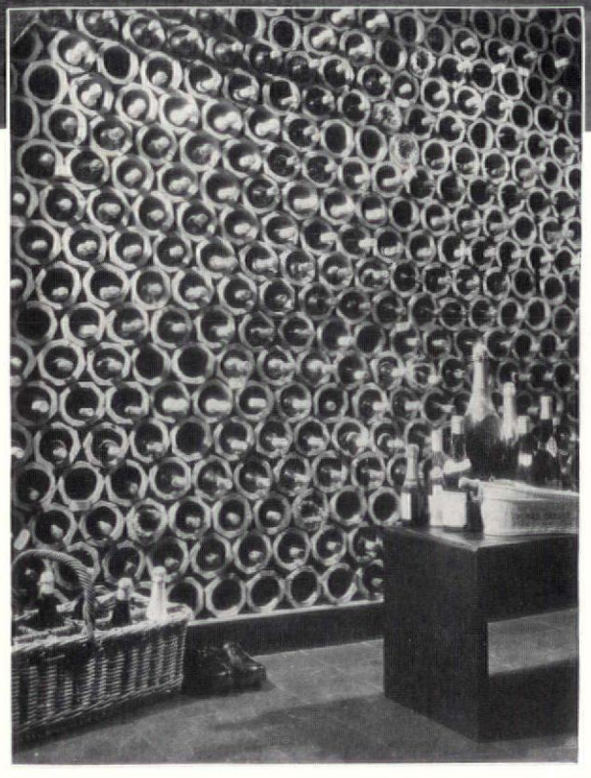


Princeton, N. J.
Alfred Hopkins



Harrison, N. Y.
Clarence Fowler



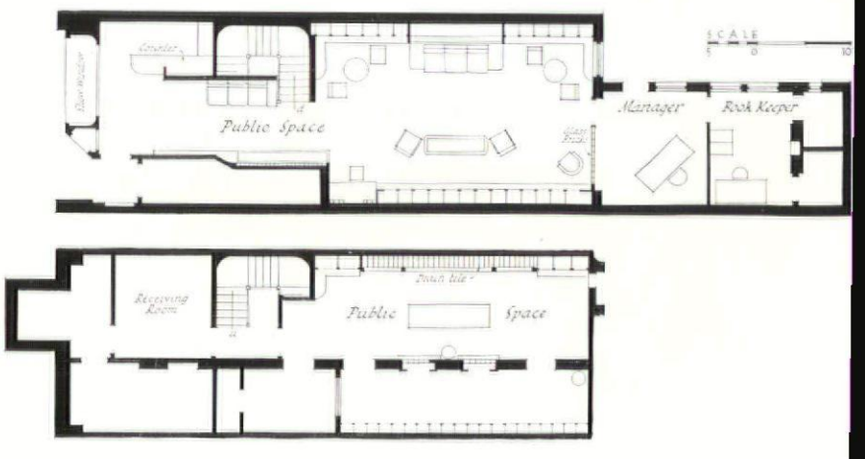


PHOTOS: RICHARD GARRISON

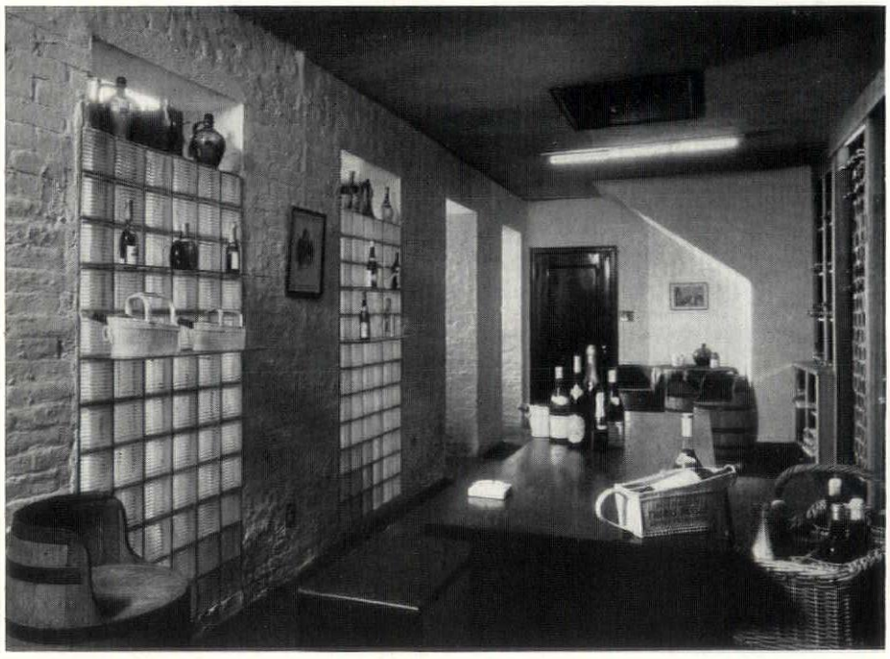
A LIQUOR STORE IN NEW YORK
MORRIS SANDERS, ARCHITECT

A customer-attracting shop front that quickly conveys an impression of the type of merchandise sold and the name of the seller. This is accomplished by means of framing an invisible glass window with white metal and travertine, and mounting aluminum letters on black tile. The effect of a frame within a frame created by the setback and contrast of materials, and the window for specials, in the angle near the entrance, have added merchandising value. (Left) Wine bottles in the cellar are kept in drain tiles

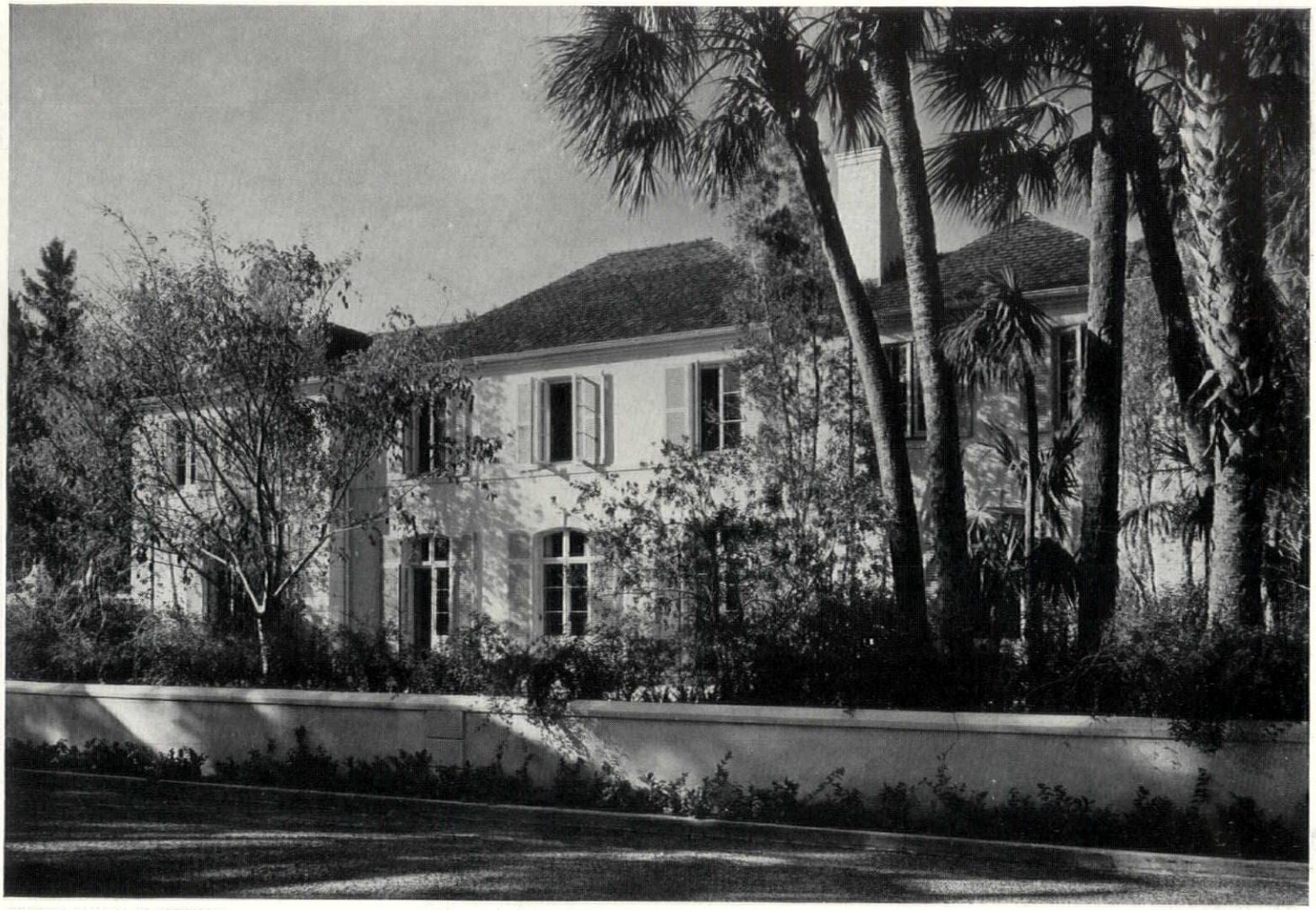
THE CORK AND BOTTLE, INC., NEW YORK, N. Y



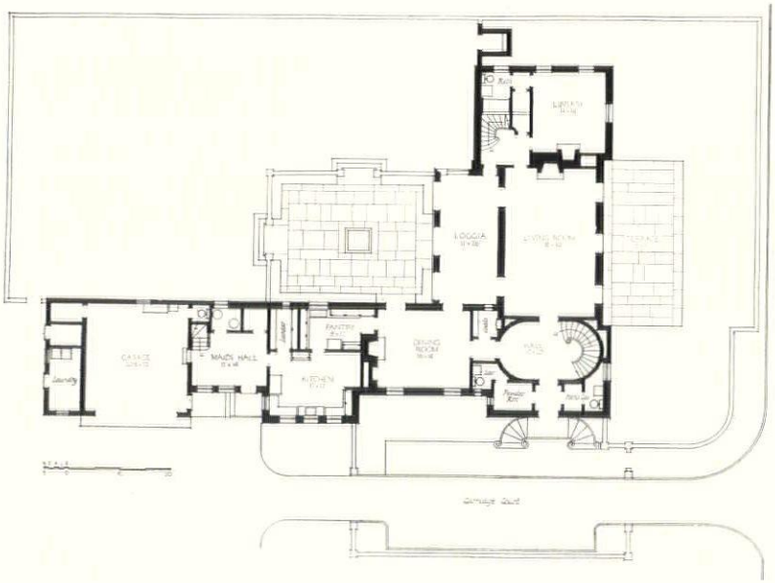
MORRIS SANDERS, ARCHITECT

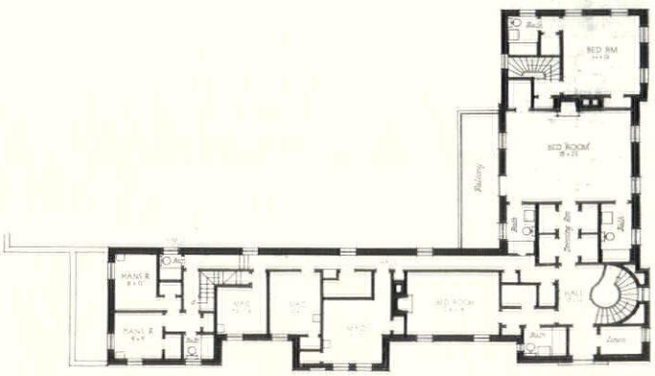


The ingenious plan arrangement, effective displays and a clever handling of materials create a masculine and dignified atmosphere in the interior. Cork tile is used for flooring and certain wall surfaces; other walls are plaster, and the cabinets are of pine. Mirrored solid glass bricks are used as display backgrounds and other glass bricks are used as interior partitions. View toward the front of the shop (opposite page, top). View of the rear of the shop showing a glass brick partition (above). The wine cellar (right)



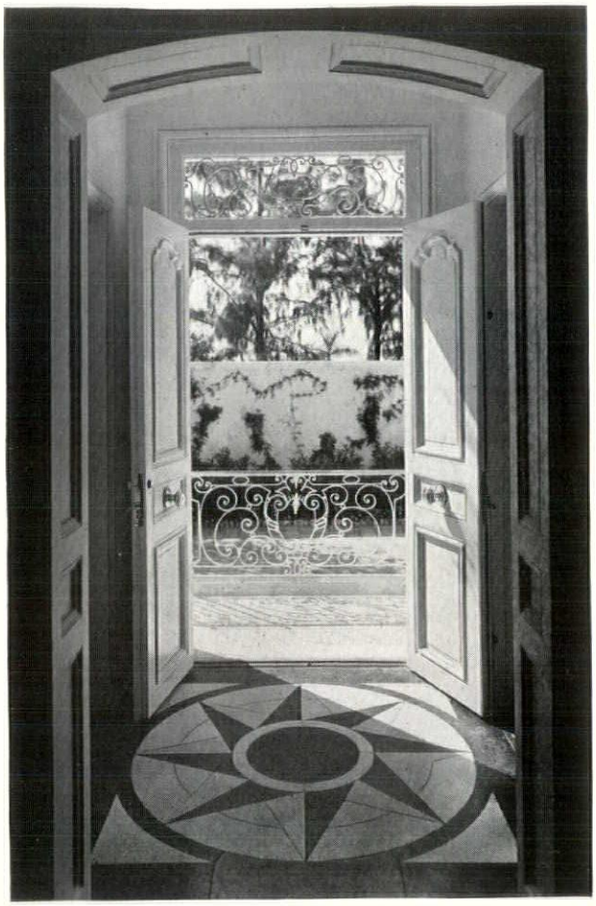
PHOTOS: SAMUEL H. GOTTSCHO

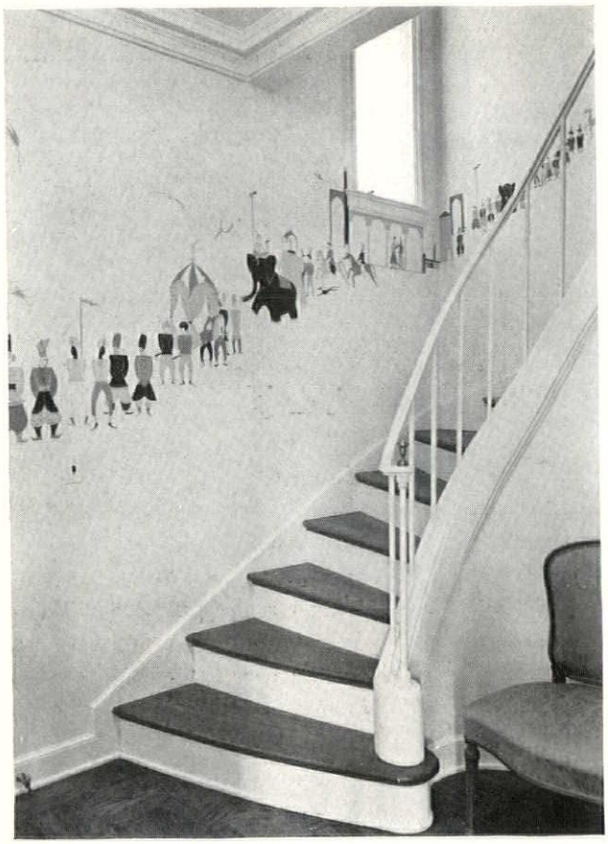




Constructed of 8" interlocking hollow tile on poured concrete foundation walls and footings, this house has an unusual safeguard against high winds, a reinforced concrete collar, 12" deep and the width of the tile walls, extending around the entire exterior perimeter of the house at the second story

HOUSE OF FRANK N. HORTON, PALM BEACH, FLORIDA. WYETH & KING, ARCHITECTS





Quoins and hand courses are of run cement, steps are quarry keystone and the walk is of old brick. Iron work, gutters and leaders are painted the same oyster white as the house and handrails are of brass (above). The floor of the entry hall is black and white (above, left). The Persian procession was painted on the walls of the back stairs (left) by Richard Jones

HOUSE OF FRANK N. HORTON PALM BEACH, FLORIDA
WYETH & KING, ARCHITECTS

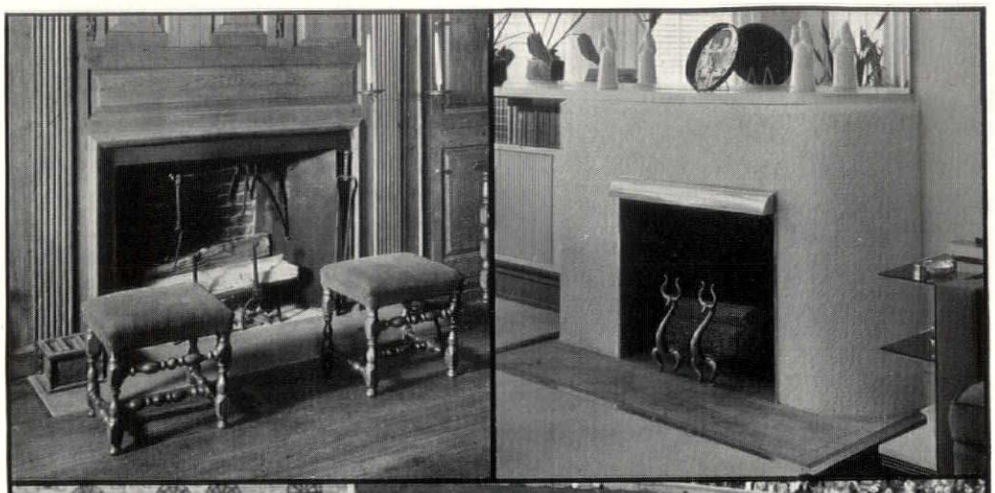
The patio (above) is paved with quarry keystone and the loggia with white marble. Shutters are a warmer white than the walls and the roof shingle tiles grade from light salmon at the ridges to deep wine red at the eaves. The graceful stair recalls the essentially French character of the house. The painting in the dining room (right) is also by Richard Jones. Norma Sears, Decorator

HOUSE OF FRANK N. HORTON, PALM BEACH, FLORIDA
WYETH & KING, ARCHITECTS

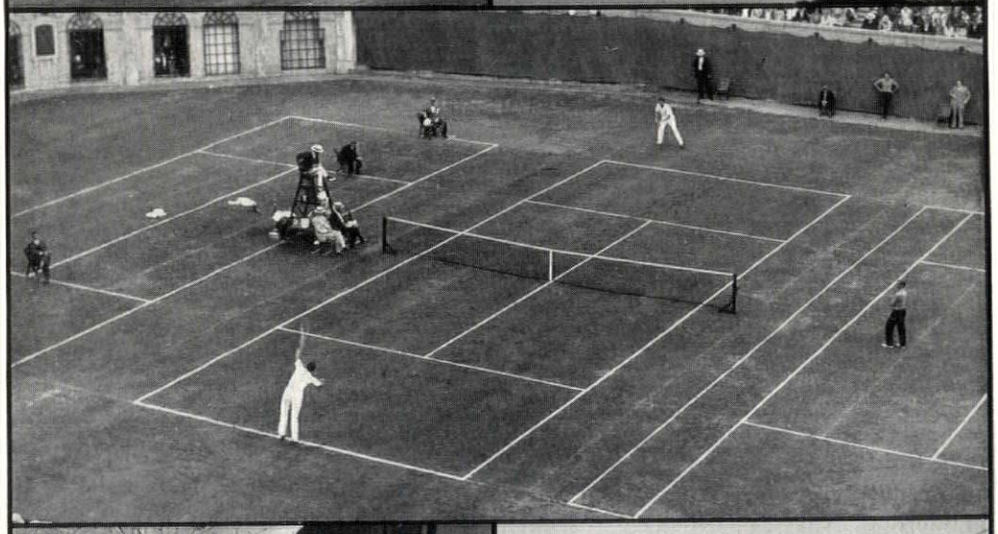
The simple yet formal air of the exterior is repeated in the interior. Marble mantels, trim, doors and hardware are all in the manner of Louis XVI

HOUSE OF FRANK N. HORTON, PALM BEACH, FLORIDA . . . WYETH & KING, ARCHITECTS

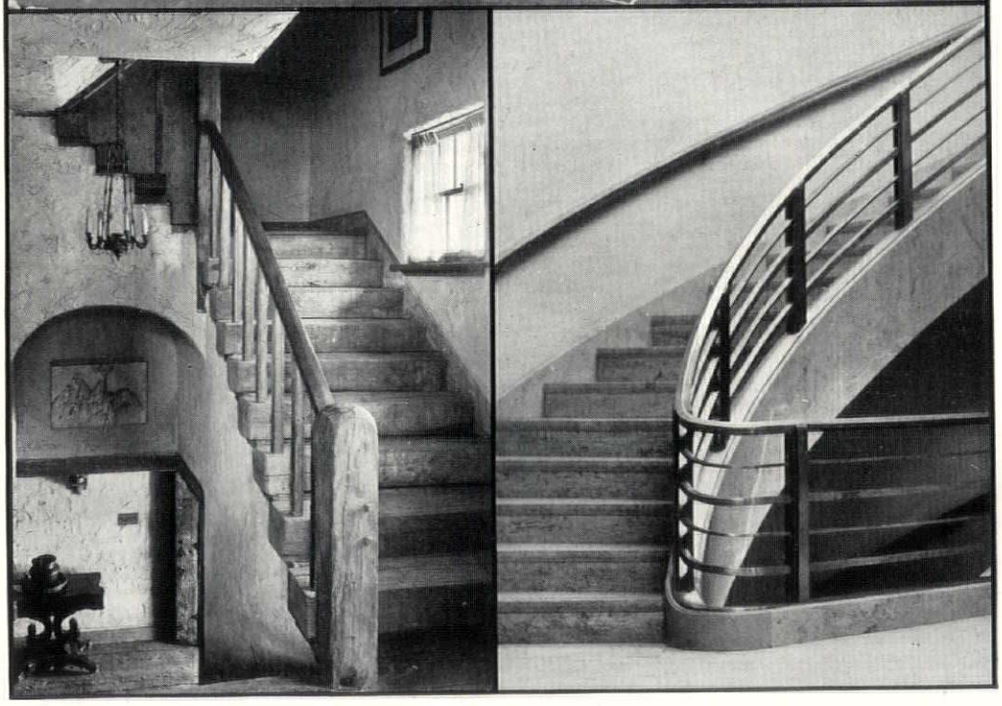
TIME-SAVER STANDARDS



FIREPLACE DESIGN



OUTDOOR TENNIS COURTS



STAIRS
Tread and Riser Data

AMERICAN ARCHITECT
TIME-SAVER STANDARDS

Serial No. 54
AUGUST, 1936

FIREPLACE DESIGN

PURPOSE

Correct proportions and mandatory requirements for the design of interior fireplaces, smoke chambers and fireplace flues are indicated on this sheet.

GENERAL

Dimensions of correctly designed fireplaces are proportional within certain limits, the basis for proper proportions being the width of the fireplace opening. The accompanying table includes simple formulae for various widths. When followed within the limits indicated, adequate draft is assured, thus eliminating the smoke nuisance always present in poorly designed fireplaces.

CONSTRUCTION DETAILS

Fireplace. Design practice common to some localities has produced fireplaces with proportions other than those recommended on this sheet. Much variation, however, from the proportions indicated here will tend to interfere with proper draft. These dimensions are also recommended for the construction of fireplaces designed to throw a maximum of heat into the room. For fireplaces larger than 84 inches similar proportions should obtain. However, such fireplaces usually require metal hoods to lower the effective height (H). The same result may be obtained by raising the back hearth. Lowering the back hearth from 2″ to 4″ will aid in keeping ashes within the back-hearth area. Effective height of the fireplace (H) is always height of clear opening.

The reflecting wall at the back should always be built as a plane surface sloping up into the lower edge of the throat and terminating slightly above the level of the lintel. When the back is built in a vertical curve, air currents are deflected under the lintel, thus causing smoke to roll past the throat and into the room.

Throat. This should extend the full width of the fireplace opening. Limiting dimensions for throats are given in the table. Unless a metal throat (see below) or masonry arch is used, iron or steel is usually required to support masonry lintels. Maximum thickness of masonry at the lintel in front of the opening ranges from 4 to 6 inches depending on the material used.

Smoke Shelf (also called "wind shelf"). This element is required in all fireplaces to prevent downdraft in the chimney from destroying the updraft and thus blowing smoke into the room. In all cases, parging on the smoke shelf is recommended as indicated in the detail. When this is done the normal downdraft tends to circle up, to mingle with hot gases and aid updraft through the chimney flue. Otherwise, a pocket may be formed within the smoke chamber which may produce uneven, turbulent downdraft currents and consequently, a smoky fireplace.

A smoke chamber is an essential part of fireplace construction. It provides space for the smoke to mix with cold chimney air before the flue is sufficiently heated to carry heated gases up the chimney through normal convection. Actual construction will vary with the type of throat and the size of the fireplace. In all cases, however, the smoke chamber should be constructed with a 60° slope from throat to chimney flue as indicated in the accompanying drawings, and should have a smooth interior surface so as not to impede drafts.

Flues. The proper size of flue has an important bearing on efficient operation of the fireplace. When possible, round flues are preferable to square or oblong flues; and a flue lining is recommended for use with fireplaces of all types and sizes. Unlined flues are usually rough. Deposits of inflammable creosote distilled from fireplace fuels tend to form on rough surfaces, producing a constant fire hazard which should be avoided. Effective areas of flues, particularly the rectangular type, are always less than the actual cross-sectional inside area. Sizes of square and round flue linings and of unlined flues are shown in the accompanying table of recommended flue dimensions.

Ash dumps and pits. The ash dump should be fitted with a hinged cast-iron cover. It is common practice to locate the ash dump in the center of the back hearth. However, in certain cases where sub-construction makes it possible, the ash dump may be conveniently located on either side of the back hearth. The passage from ash dump to pit should be lined with at least an 8½″ x 8½″ flue tile if the pit is to serve more than one fireplace, or if it is not possible to construct a straight passage. Any bend in the ash passage should not be less than 60° to avoid the possibility of clogging. Floors of ash pits should be parged with mortar or otherwise sloped to a cast-iron cleanout door for convenience in removing ashes. The bottom of a cleanout door should be at least 8″ above the cellar floor to permit use of an ash receptacle when the pit is being cleaned.

Wood framing members must be kept at least 2″ away from all fireplace or chimney masonry. In addition, it is recommended that wood mantels and trim be kept 8″ back from the fireplace opening at the sides and 12″ clear above the opening, although custom or local ordinances often permit much less clearance.

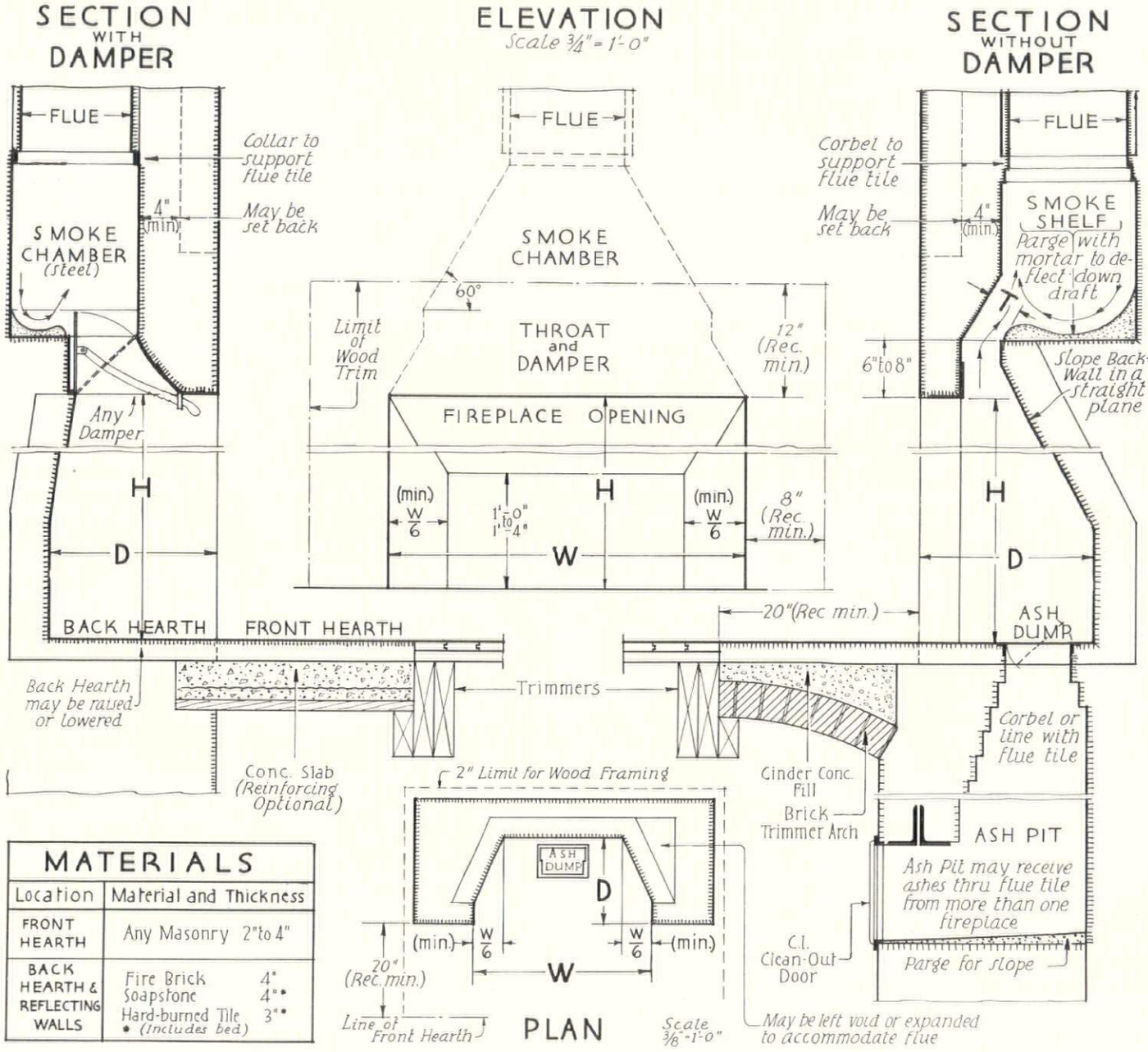
Prefabricated fireplace equipment. All dimensions and details of construction shown on this sheet may be subject to some adjustment to conform to installation requirements of prefabricated metal dampers, throats, smoke chamber linings, ash dumps and cleanout doors. Each of these units is manufactured in a number of types. No common standard of dimensions has been established and manufacturers' data should be consulted in all cases prior to a selection for specific use.

Heating systems for fireplaces are also manufactured in a variety of types and sizes. Installation requirements of these units are also subject to variations noted and proportional dimensions given here should be carefully adjusted to their use in accordance with manufacturers' data.

AMERICAN ARCHITECT
TIME-SAVER STANDARDS

Serial No. 54
AUGUST, 1936

FIREPLACE DESIGN



MATERIALS

Location	Material and Thickness
FRONT HEARTH	Any Masonry 2" to 4"
BACK HEARTH & REFLECTING WALLS	Fire Brick 4" Soapstone 4"* Hard-burned Tile 3"* * (Includes bed)

FIREPLACE DIMENSIONS (*In Inches*)

W	24 to 84
H	2/3 to 3/4 W
D	1/2 to 2/3 H {16 to 24 (Rec.) for Coal; 18 to 24 (Rec.) for Wood}
FLUE (*Effective Area*)	1/8 WH for unlined flue 1/10 WH for rectangular lining 1/12 WH for circular lining
T (*Area*)	5/4 to 3/2 FLUE AREA
T (*Width*)	3" minimum to 4 1/2" maximum

RECOMMENDED FLUE SIZES (*In Inches*)

FIREPLACE WIDTH W	RECTANGULAR FLUES			EQUIVALENT ROUND	
	Nominal or Outside Dimension	Inside Dimension	Effective Area	Inside Diameter	Effective Area
24	8½ x 8½	7¼ x 7¼	41""	8	50.3""
30 to 34	8½ X 13	7 X 11½	70""	10	78.54""
36 to 44	13 X 13	11¼ X 11¼	99""	12	113.0""
46 to 56	13 X 18	11¼ X 6¼	156""	15	176.7""
58 to 68	18 X 18	15¾ X 5¾	195""	18	254.4""
70 to 84	20 X 24	17 X 21	278""	22	380.13""

AMERICAN ARCHITECT
TIME-SAVER STANDARDS

Serial No. 55
AUGUST, 1936

STAIRS—Tread and Riser Data

PURPOSE

Data on this sheet make possible the quick solution of any stair problem ordinarily encountered in architectural practice. These data include a chart of proportional treads and risers and tabular material giving handrail heights, headroom, and stair gradients for stairs with risers from 5 to 9 inches.

Material on this sheet has been adapted to its present form from data originally developed by Ernest Irving Freese and published in American Architect, partly in the July, 1933 issue, and partly in the March, 1934 issue.

PROPORTIONAL TREAD AND RISER DIAGRAM

It has been found that dimensions of stair treads and risers are proportional to one another and can be plotted on a hyperbola, reproduced here in the form of a working chart. Rules for its use are given in the caption. No formulae are required to produce results desired, for dimensions are accurate to the nearest ⅛ in., a tolerance that is not ordinarily excessive in building practice. For mathematical accuracy, however, the following formulae can be solved to determine correct proportions of either tread or risers when one or the other is fixed.

T = Tread. R = Riser.

When T is fixed:

$$R = 9 - \sqrt{1/7\,(T-8)\,(T-2)}$$

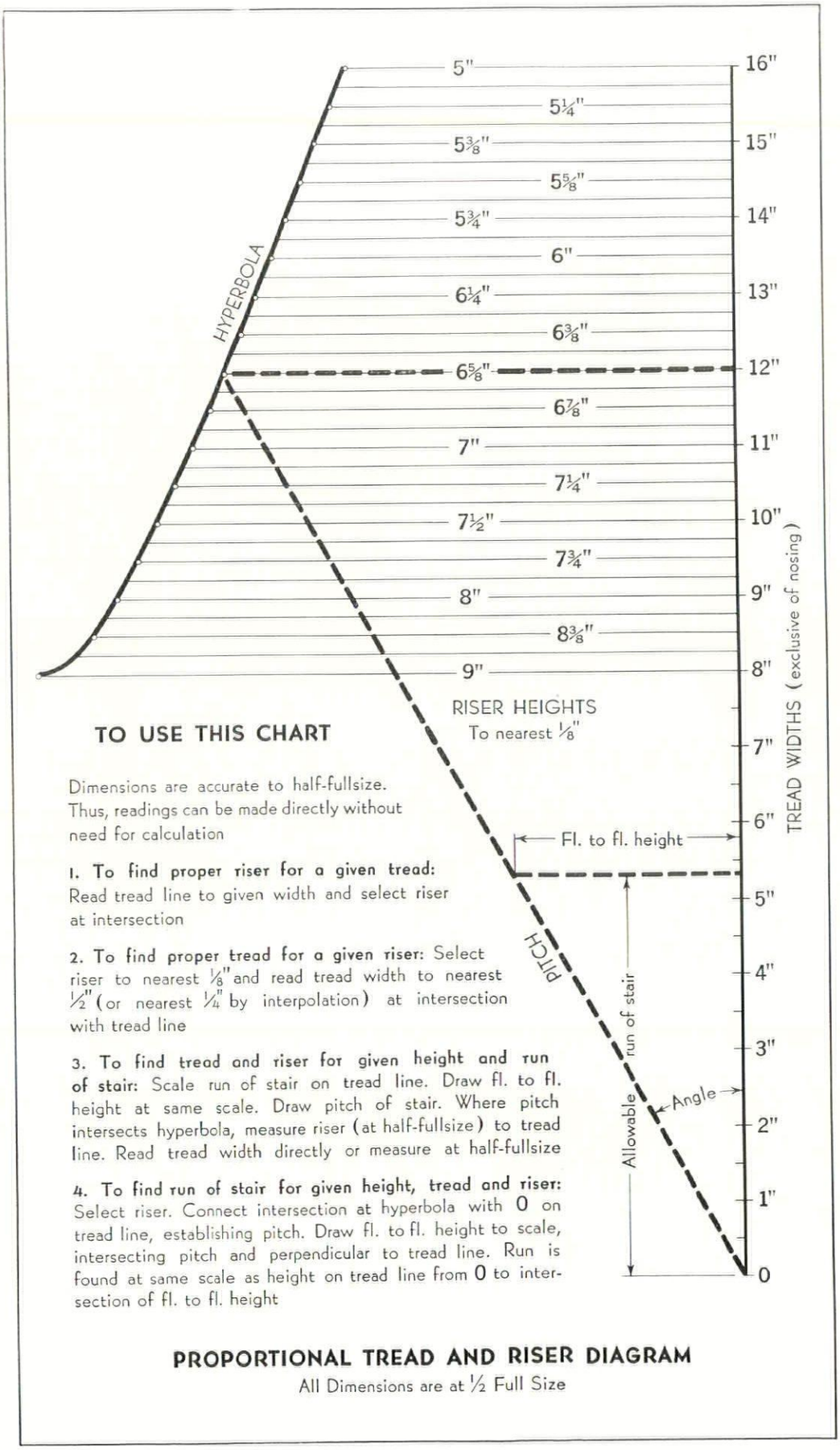
When R is fixed:

$$T = 5 + \sqrt{1/7\,(9-R)^2 + 9}$$

In all cases the width of tread is exclusive of a nosing.

Use of this diagram makes unnecessary any adherence to former "rules" for proportioning of tread and riser. Both usual rules for stair layout are violated in the diagram. These are, "the sum of tread and riser shall not exceed 17½ in." and, "the product of tread and riser shall not exceed 75."

However, the average of the risers shown, 7 in., is proportional to a tread of 11 in., a combination that produces a stair which is comfortable to use and generally economical of floor space. At the lower extreme, a riser of 5 in. produces a tread of 16 in. which approximates the proportions of a brick step with a tread equal to two stretchers and a rise equal to two courses.



TO USE THIS CHART

Dimensions are accurate to half-fullsize. Thus, readings can be made directly without need for calculation

1. To find proper riser for a given tread: Read tread line to given width and select riser at intersection

2. To find proper tread for a given riser: Select riser to nearest ⅛" and read tread width to nearest ½" (or nearest ¼" by interpolation) at intersection with tread line

3. To find tread and riser for given height and run of stair: Scale run of stair on tread line. Draw fl. to fl. height at same scale. Draw pitch of stair. Where pitch intersects hyperbola, measure riser (at half-fullsize) to tread line. Read tread width directly or measure at half-fullsize

4. To find run of stair for given height, tread and riser: Select riser. Connect intersection at hyperbola with 0 on tread line, establishing pitch. Draw fl. to fl. height to scale, intersecting pitch and perpendicular to tread line. Run is found at same scale as height on tread line from 0 to intersection of fl. to fl. height

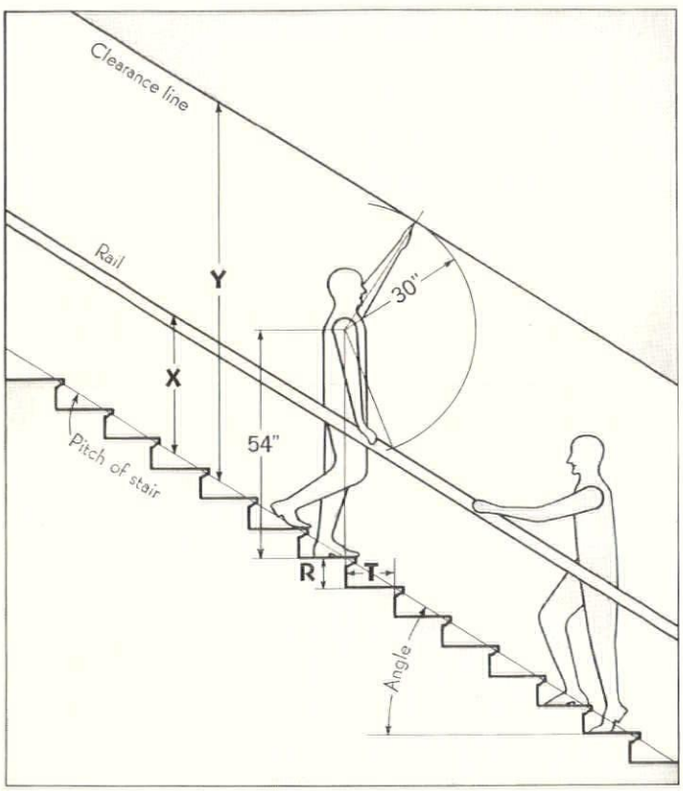
PROPORTIONAL TREAD AND RISER DIAGRAM

All Dimensions are at ½ Full Size

AMERICAN ARCHITECT
TIME-SAVER STANDARDS

STAIRS—Tread and Riser Data

Serial No. 55
AUGUST, 1936



STAIRWAY LAYOUTS

Comfortable stairways cannot be designed except in relation to dimensions of the average human figure. These are indicated in detail on T-S.S. Serial No. 38, February, 1936 (A5.1.1). As applied to stairways these dimensions and the equivalent of the average comfortable walking stride of about 24 in. fixes the gradient of stairways, the proportional relation of treads and risers, the height of the handrail and the minimum necessary headroom.

The accompanying diagram indicates the influence of human figure dimensions and suggests the desirability of varying ceiling clearances and handrail heights according to variations in stair gradients. These variations are included in the table as related to dimensions of treads and risers developed from the Proportional Tread and Riser Diagram.

For the sake of practical classification a stairway can be defined as follows:

"A stepped footway having a gradient not less than 5:16 *pitch, or* 31¼ *per cent, or an angle of* 17 *degrees and* 21 *minutes; and not greater than* 9:8 *pitch or* 112½ *per cent, or an angle of* 48 *degrees and* 22 *minutes."*

Below these limits, footways become ramps; above them step-ladders. Both types of footways are subject to rules similar to those applicable to stairway design.

DIMENSIONS FOR STAIRWAYS

Step dimensions		Gradient designations		Headroom	Handrail height	NOTES
Riser **R** in inches	Tread **T** in inches	Per cent grade	Angle in degrees, minutes	**Y** in inches	**X** in inches	
5	16	31.25	17 - 21	85	33½	1. 7" by 11" is the proportion by which all steps are laid out
5¼	15½	33.87	18 - 43	86		2. Risers from 5" to 6½" are suitable for exterior and "grand" interior stairs
5½	14¾	37.28	20 - 27			
5¾	14	41.07	22 - 20			
6	13½	44.44	23 - 58	87	33	3. Risers from 6⅜" to 7⅝" are most comfortable and most suitable for interior stairs
6¼	13	48.07	25 - 40			
6½	12¼	53.06	27 - 57	88		4. Risers for cellar and attic stairs may be up to 9" high
6¾	11¾	57.44	29 - 52			
7	11	63.63	32 - 28	89		5. Width - minimum for single-file travel, 30"
7¼	10½	69.04	34 - 37	90		
7½	10	75	36 - 52	91		6. Width - minimum for comfort, 36"
7¾	9½	81.57	39 - 12	93	33½	
8	9	88.88	41 - 38	94		7. Width - desirable (for furniture passage etc.), 42"
8¼	8½	97.05	44 - 9	96		
8½	8¼	103.02	45 - 51	97		8. Consult local building codes on all stair problems
8¾	8⅛	107.07	46 - 57	98	34	
9	8	112.5	48 - 22	99		

AMERICAN ARCHITECT
TIME-SAVER STANDARDS

Serial No. 56
AUGUST, 1936

OUTDOOR TENNIS COURTS

PURPOSE

Details and diagrams on this sheet illustrate approved layouts, construction types and utility arrangements for outdoor tennis courts. The text outlines recommended technical procedure relating directly to the subjects covered by the drawings. Data have been adapted from the Official Code of the International Lawn Tennis Federation, of which the U. S. Lawn Tennis Association is a member, and the published experience of recognized experts.

GENERAL

Most desirable location of the court is an open, unshaded area with good natural drainage. Orientation should protect players from directly facing the sun. For greatest use in Northern states the long axis should run east of north and west of south. For morning play the axis should run northeast and southwest; for afternoon play, northwest and southeast.

Minimum dimensions for the court area within backnets of wire or wood lattice are 108′ x 48′. Average recommended dimensions are 120′ x 60′. Championship court dimensions are 130′ x 66′, at least one of which should be included in every battery of two or more courts. Usual height for backnets is 10′. Those enclosing ends of championship courts should be at least 12′ high, preferably 14′.

DRAINAGE

Natural seepage through porous finishing materials and grading the playing area as indicated on the drawing, together with border drainage trenches, will provide a good playing surface at all times. Subsurface drainage is necessary, particularly under impervious court surfaces, to prevent excessive damage by freezing and thawing weather.

Subsurface drainage lines should be spaced no less than 10 ft. in heavy clay subsoil and 15 ft. in light clay or sandy loam. Tiles can be 4 in. laid with open joints at a pitch of at least ⅛ in. and preferably ¼ in. to the foot. Depth should be at least 1 ft. below court construction for heavy soils and about half that for light, porous soils. Collection lines from lateral tiles can be 6 in. vitrified sewer pipe laid with cement joints at a pitch of ¼ in. to the foot. Surrounding drainage trenches should be partially filled with cinders tamped in layers about 4 in. thick.

CONSTRUCTION

Courts can be surfaced with grass, dirt, clay, wood, concrete, or special types of quick-draining materials.

Dirt. When firm, well-drained subsoil exists, stone or slag foundations are not necessary for inexpensive dirt courts. Remove topsoil and level subsoil by rolling and filling. Surface with at least a 2 in. covering of clay, sand and salt as noted below for clay courts. Subsoil should be raked prior to surfacing to bond the clay mixture to the dirt foundation.

Clay. Remove topsoil and soft earth a foot below grade of finished court. Grade to drain, roll (preferably with a 4-ton roller) and install drain tile as indicated. Necessary filling should be installed in layers of 4 in., thoroughly wetted and rolled. On prepared subgrade spread cinders or good gravel, then wet and thoroughly roll to a finished thickness of 5 in. Next, spread a layer of 1½ in. slag, crushed stone or coarse gravel to a rolled and finished depth of 3 in. Fill voids of the gravel surface with a layer of washed gravel or slag of about ¾ in. screen, well wetted and rolled. Set net posts of wood (cypress, locust or chestnut, creosoted below ground) or pipe in 8 in. vitrified sewer tile sunk to a depth of 3 ft. and filled with concrete to secure posts. Posts can be installed for removal by setting a sleeve within the tile.

Next, apply clay foundation course. Use stiff clay, of ¾ or 1 in. screen to a 3 in. depth. Before rolling spread a 1 in. surface course consisting of stiff clay pulverized through ¼ in. mesh, clean sharp sand of ⅛ in. mesh, and common farmer's salt. Proportions recommended are: clay, 50 per cent, sand 50 per cent *by weight*, to which should be added one part of salt *by weight* to 40 or 50 parts clay. Before mixing with sand, natural clay should contain from 25 to 35 per cent silt and from 75 to 65 per cent pure clay with no sand or organic matter.

When surface course is spread, compact carefully with a 400-500 lb. lawn roller. Allowance should be made for about 25 per cent shrinkage from rolling when spreading clay courses. After rolling check grades with a long straight-edge and level. Then spray until a film of water covers the court. Roll again until all water disappears.

Wood. The detail indicates a high grade construction for wood courts. A less elaborate, but less permanent, construction is satisfactory for ordinary courts. Level the playing area and cover with cinders to about a 5 in. depth. Roll thoroughly and lay cypress mud sills lengthwise of the court to support cross beams. These beams should also be cypress, 4 x 4 in., 20 in. o.c. Over these nail 1 x 3 in. cypress flooring set with a ¼ in. space between each board. Net posts should be set in cement as described for clay courts.

Such courts can be used with no additional treatment or can be covered with painted canvas. Canvas should be stretched by ropes through pulleys at each corner of the court.

Concrete. Structural requirements are indicated in the detail. A 1 in. expansion joint the full depth of slab should be provided at the net line. This can be filled with tar, prepared felt or other elastic material. Troweling of the court surface should be minimized. Slabs should be cured by covering with damp sand or earth sprinkled at intervals with water for at least ten days.

Quick-drying and special surfaces. Solid construction with layers of stone or slag, cinders, gravel and fine stone dust, produces a very porous and quick-drying, but firm surface. Other quick-drying surfaces are available as proprietary compounds. Special surfaces include asphalt, macadam, marl dust, all of which are satisfactory.

MISCELLANEOUS

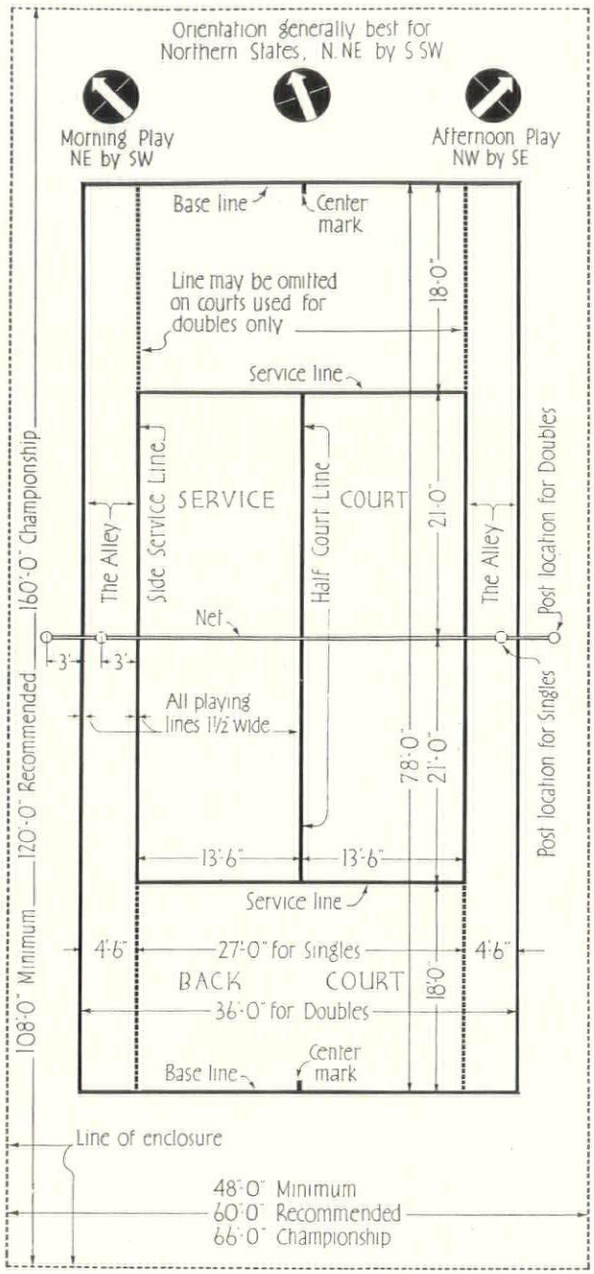
Lighting. The multiple-court diagram indicates minimum requirements for lighting—two 2,000 or 1,500 watt projectors on 40-foot poles on each side of court. Recommended lighting for single court includes five 1,500 watt lamps on each side spaced so that one pole is at the net, one at each service line and one slightly behind base line, or 26 ft. from service line. Lights are carried on bracket arms extending over court, 30 ft. above playing surface. For lighting of multiple courts for championship play, advice of a qualified lighting engineer should be sought.

Water. Essential water outlets are indicated in the multiple court diagram. Faucets with hose connection and outlets of ¾ or ⅝ in. are preferable. Each should be well outside playing area and can best be placed below grade in a small concrete box with a hinged cover flush with turf. Each outlet should be supplied with a drain.

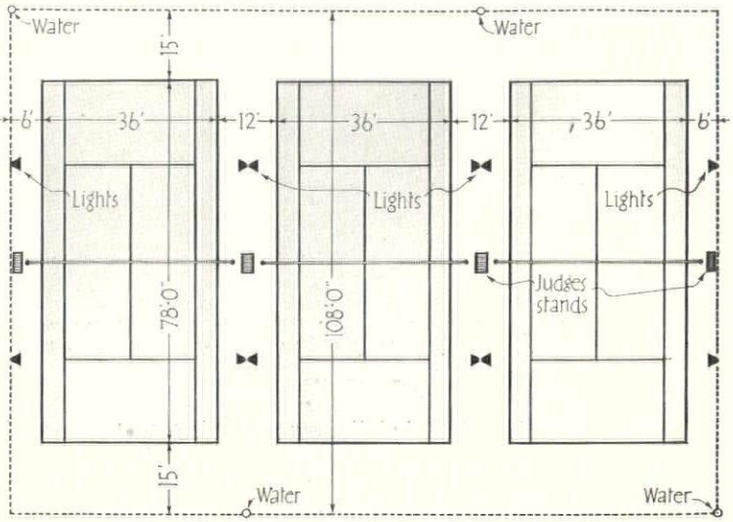
AMERICAN ARCHITECT
TIME-SAVER STANDARDS

OUTDOOR TENNIS COURTS

Serial No. 56
AUGUST, 1936



DOUBLE or SINGLE COURT



MULTIPLE COURTS *(Minimum dimensions)*

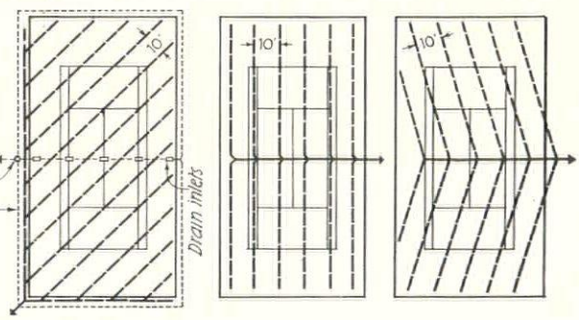
SUB-DRAINAGE

Install flow lines approx 2'-6" below fin grade

Catch basin

Optional drainage trench for excessive seepage from sub-soil surrounding court. Applicable to any scheme

Drain inlets



SURFACE DRAINAGE

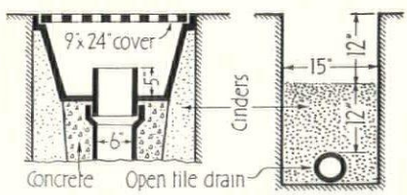
Courts should be graded to pitch in one of the following ways.

From long axis to outside of playing area max 1½", total

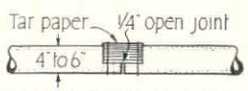
From both axes to outside of playing area max 1" total

From one end of playing field to opposite end max 4" total

From ends of playing field to net or reverse max 2" total

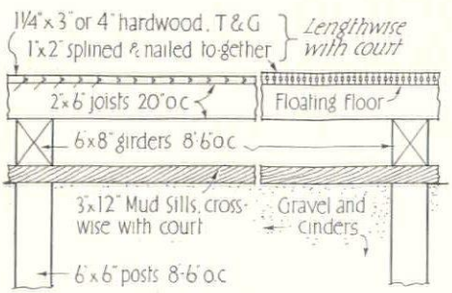


SURFACE INLET *DRAINAGE TRENCH*

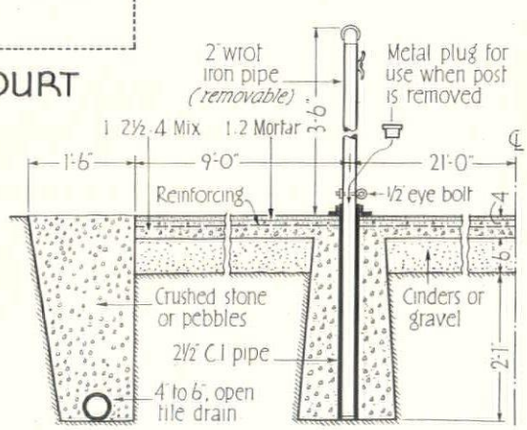


DRAIN TILE

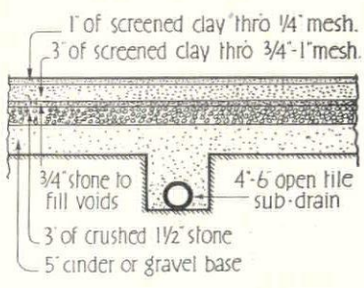
DRAINAGE DETAILS



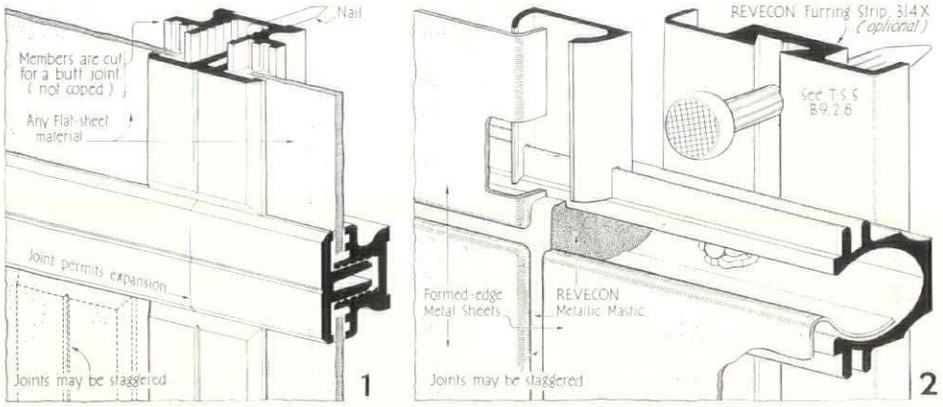
WOOD COURT



CONCRETE COURT



CLAY COURT



Details of the two basic Revecon System assemblies. Left, Capped-joint construction using flat sheet materials. Right, Pointed-joint construction using formed-edge metal sheets

PANEL CONSTRUCTION UP-TO-DATE

The majority of modern buildings require a simple, straightforward surfacing of rigid sheet materials. A new system designed for this purpose, combining ease of erection, permanency and flexibility, is produced by Revere Copper and Brass, Incorporated. The Revecon System employs a framework of extruded aluminum sections that hold in place any type of rigid sheet finishing material and thus produce plane, curved or angular facings over both solid and skeleton construction.

The sections interlock to form an integral structural unit but are so fashioned that each element of an assembly is free to expand and contract without distortion. Assemblies are light in weight, are quickly erected and dismantled. Thus alterations are easily made. Maintenance is minimized since sections require no painting and nearly any desired combination of surface color or texture can be had through the use of various sorts of flat sheet materials.

Elements of Construction—The Revecon System is considered primarily as a means of surfacing or enclosing and requires some sort of structural support for its use. Its three main elements are: (1) Revecon members, (2) Finishing materials, used as flat sheets or as pre-formed panels, and (3) Revecon Metallic Mastic, used at all joints to render the construction both air- and water-tight.

Revecon members are extruded from a strong aluminum alloy in sections that include various types of interlocking holding members and channels, gripping members and cap members and furring strips. Holding members, gripping members and furring strips are designed for attachment by nails or screws to supporting construction. Caps are anchored by friction to serrated inside surfaces of gripping members. All sections may be alumilited in various colors upon order and require no painting or other maintenance.

Finishing materials include any kind of flat sheet, not over ½ in. thick which is sufficiently rigid to support itself on edge. A partial list of such materials would embrace plain sheets of copper, tin, iron, steel, or lead; sheets of copper coated with lead, chromium or porcelain enamel; sheets of bronze or brass, aluminum alloy, nickel, or stainless steel, monel metal and porcelain enameled iron or steel. Non-metallic materials include glass of many types, translucent or opaque marble, plastics, asbestos cement, wall boards of all sorts and those insulation or acoustical materials which are manufactured in sheet form. These materials can be used singly or in combination with one another to form panels with an impervious surface and a backing of some insulating membrane.

Revecon Metallic Mastic not only seals the entire construction against the weather but also allows movement within joints resulting from contraction and expansion of panel materials and metallic members. The base of the mastic is a non-mineral substance with a binder of asbestos fibre. It contains aluminum powder which "leafs out" upon exposure and keeps other ingredients permanently plastic by protecting them against oxidation and light rays.

Types of Revecon Construction — A great number and variety of assemblies are possible because Revecon sections are available in a wide range of interlocking types and sizes for use with varying types and thicknesses of panel materials.

All combinations, however, are based upon two fundamental types of Revecon construction. These, shown in the accompanying diagrams, are 1. Capped-joint Construction and, 2. Pointed-joint Construction. A third, Combination Construction, results when these two are used in one installation.

In Capped-joint Construction, rigid, flat-sheet materials are held in place as panels by metal caps which are set into gripping members, framed both vertically and horizontally. Gripping members may be attached directly to whatever construction supports the Revecon System or may ride in holding members, set either vertically or horizontally depending upon job conditions.

Pointed-joint Construction involves use of metal panels with edges formed to press into the holding members, which are set horizontally and with channels set vertically. Joints are filled with mastic. No Revecon Members are visible on finished surfaces. Only formed-edge materials can be used for panels in Pointed-joint Construction, with Capped Construction, any type of flat sheet material may be employed.

In combination construction, gripping members holding flat sheets ride in the same holding member to which the curved edge of the formed sheet is locked.

Installation of the Revecon System requires few tools, a slotted screwdriver, and possibly a wrench or hammer, since members can be attached to supporting construction by bolts, screws or nails.

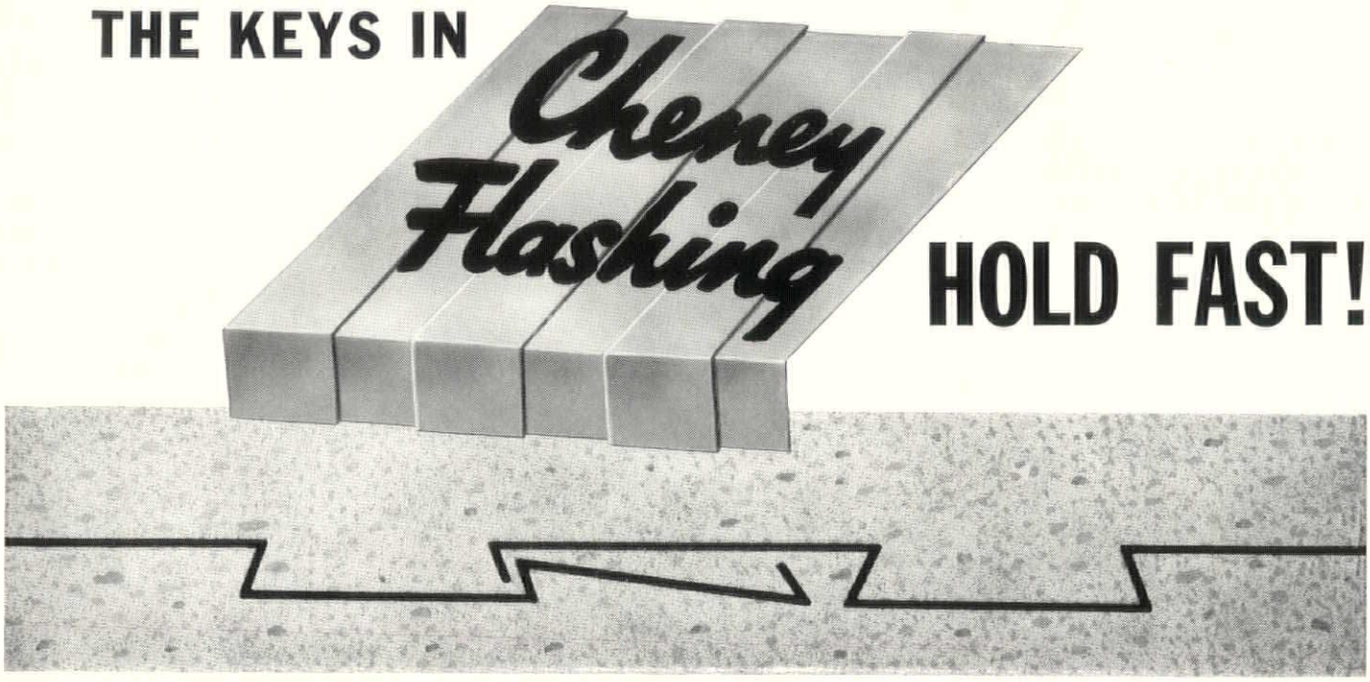
Range of Uses— It is evident that any simple, light-weight, yet strong system of this kind has very wide possibilities for use on both old and new structures and for interior and exterior problems. One of the most obvious applications is over old buildings, as an exterior facing, or for the redecoration of interior walls and ceilings. When so applied over an exterior structure, thickness of the Revecon System is only 1 in. when Pointed-joint Construction is employed and from ⅜ in. to 1 in. when Capped-joints are used. Light interior construction requires a clearance little more than ⅛ in.

Thus, the adaptability of the paneled sections for exterior reconstruction of stores, theatres, office-buildings and many other commercial buildings can be readily seen. Since members can be applied over furring strips or other types of skeleton construction, panels can be installed to cover rough surfaced walls as well as other types. Apparently the Revecon technique can be

(*Continued on page* 94)

LIKE A DOVETAIL JOINT

THE KEYS IN Cheney Flashing HOLD FAST!



CHENEY FLASHING gives complete protection to buildings on two important counts: 1. It provides perfect drainage, preventing leakage and seepage that would otherwise weaken and disfigure the structure. 2. It bonds in every direction within the mortar bed, its "Z" bends gripping the mortar like a dove-tail joint — at the same time automatically compensating for expansion and contraction.

The rigid counter-flashing face hugs the wall smoothly over the base flashing, assuring a neat job.

Use Cheney Flashing under coping stones, just above the roof line, over tops of cornices, through penthouse and rising walls, over doors and windows, under window sills, over concrete foundations where the first courses of stone or brick start upward, at all spandrel beams, and at all projecting belt courses. Cheney Flashing is supplied in standard sheets of even widths from 6 to 60 inches, length 42 inches, providing a 2-inch interlocking overlap which requires no soldering. Or it can be furnished formed and bent to shape at small extra cost. Packed 30 flashings to the case.

Patented Revere Thru-Wall Flashing may also be had at moderate prices. This is an effective as well as economical flashing, providing a bond in all lateral directions. Furnished in sheet form for cutting and forming to meet requirements.

Revere Copper *and* Brass

FOUNDED BY PAUL REVERE 1801

INCORPORATED

EXECUTIVE OFFICES: 230 PARK AVENUE, NEW YORK CITY · MILLS: BALTIMORE, MD. · TAUNTON, MASS.
NEW BEDFORD, MASS. · ROME, N. Y. · DETROIT, MICH. · CHICAGO, ILL. · SALES OFFICES IN PRINCIPAL CITIES

applied to any surfacing or enclosing problem without regard to size, type, condition or use. Thus, it would be as applicable to enclosures for boilers and to the construction of signs, spandrels or lighting fixtures as it would to refinishing a store front or installing a counter or show-case.

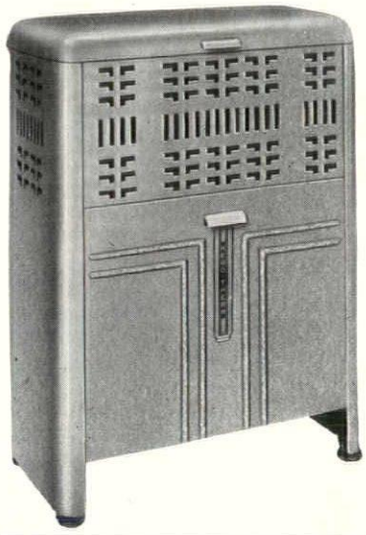
As applied to residential construction, the Revecon System appears to offer possibilities of potentially far-reaching importance. Its application to interior resurfacing follows from its similar employment in the commercial field. It seems also possible that sections might be employed with light weight framing members to form a double-walled structure meeting every present requirement of residential construction.

Many such applications remain to be tested in the field before they can be stamped as generally practical. But the Revecon technique is apparently well-directed along the trend toward the simplification of building practices and the coordinated utilization of building elements thus far considered as a series of isolated products.

The Revecon System has been in actual use for several years but the official announcement of its availability through Revere Copper and Brass, Incorporated, has just been made, concurrently with the publication of the first seven of a comprehensive series of Time-Saver Standards of Advertised Products, prepared by the Technical Service Staff of AMERICAN ARCHITECT AND ARCHITECTURE. Complete design information is contained in these Time-Saver Standards, which will also be republished in bound form. **655M**

CABINET HEATERS

Newest addition to the line of modern oil burning appliances manufactured by the Heater Division of Motor Wheel Corp., is a complete line of kerosene burning cabinet heaters of modern design. The new Kero-Therm units are offered in six models and are available in both double and single burner sizes—including two combination heater and cooker models. Black crackled baked enamel finish with chrome trim and a new bronze baked enamel finish are available. Features include extra heavy gauge steel casings, baked enamel inside and out, automatic wickless type burners of extra large capacity, handy leg levelers, visible spirit levels. **656M**



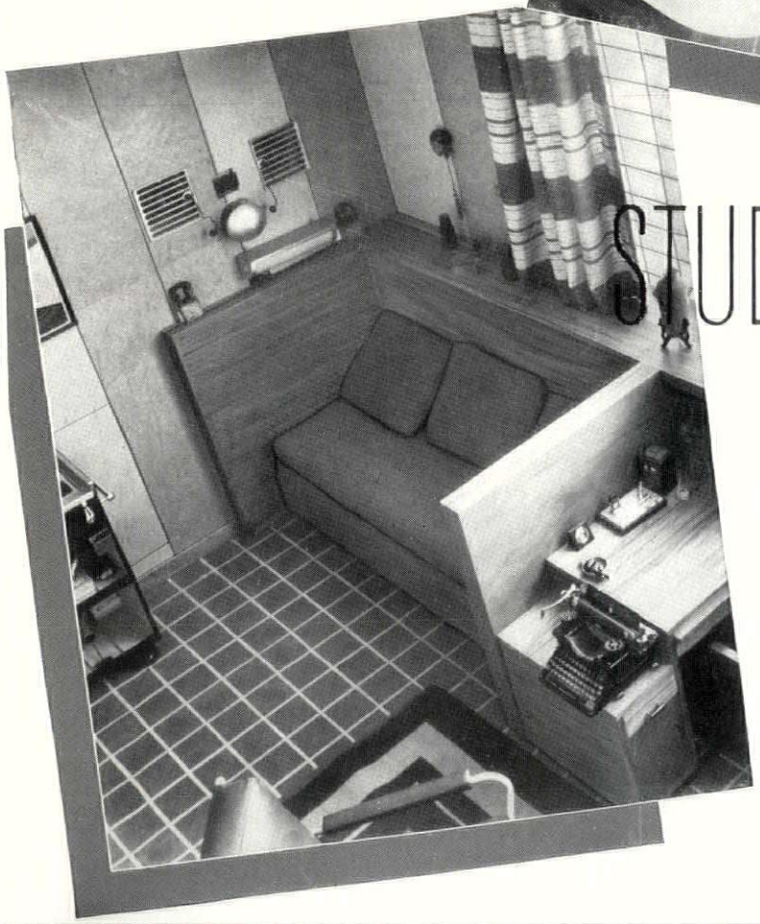
VENT VALVES

American Radiator Company, New York has announced the development of a new radiator vent valve with adjustable vent port for balancing the distribution of heat throughout the house, and a new quick vent valve for rapid venting of steam mains. Both valves are made for either one-pipe steam or vacuum systems. By setting the valves of the radiators nearest the boilers so that they vent air slowly, and by opening the valves on the radiators at a more distant point from the boiler, and increasing this opening as the distance increases so that they vent more quickly, all radiators are filled simultaneously with their quota of steam and heat is

(*Continued on page* 100)

Jovial Gregariousness

NU-WOOD—the multiple-purpose wall and ceiling treatment—enhances the gay informality of this private bar. Notice how the architect has combined Nu-Wood Tile and Nu-Wood Wainscot to make an interestingly varied pattern. Soft, glowing, distinctive colors and rich texture distinguish Nu-Wood from other wall and ceiling materials.



STUDIOUS SOLITUDE

NU-WOOD Tile as the wall treatment brings *quiet* to this modern study. For Nu-Wood has remarkable sound-absorbing qualities—and it is an efficient insulating material, as well! Nu-Wood is permanent . . . needs only occasional cleaning to keep it bright and new looking. And don't forget that it costs amazingly little applied!

NU-WOOD

MADE BY THE MAKERS OF BALSAM-WOOL

WOOD CONVERSION COMPANY

Room 159, First National Bank Bldg., St. Paul, Minn.

I want to know more about Nu-Wood. Please send me, without obligation on my part, information and illustrations.

*Name*_____

*Address*_____

*City*_____ *State*_____

CUTTING COSTS IN CONCRETE-FRAME ERECTION

To render a design faithfully, at minimum cost, requires maximum re-use of forms and elimination of costly delays. This is often difficult to achieve, because of the non-productive time consumed while ordinary Portland cement becomes self-supporting.

Through a basic advance in cement-making, 'Incor'* 24-Hour Cement cures or hardens thoroughly, in one-fifth the usual time. That means working strengths in 24 to 48 hours, instead of 5 to 10 days. Forms are released, ready for re-use, 4 to 8 days sooner. Form requirements are reduced, construction is simplified, non-productive time is eliminated. Substantial savings result. And these savings afford the designer greater opportunity to realize the utmost in beauty and utility within a given total cost.

For simple method of calculating savings through the use of 'Incor' on buildings of 1 to 16 stories, write for free copy of new, illustrated book, "Cutting Construction Costs." Address Lone Star Cement Corporation (subsidiary of International Cement Corporation), Room 2211, 342 Madison Avenue, New York. Illustrated above is Kavanagh Building, Buenos Aires, world's tallest reinforced concrete building—cement furnished by International's Argentine subsidiary.

*Reg. U. S. Pat. Off.

'INCOR' 24-HOUR CEMENT

NEW CATALOGS...

Readers of AMERICAN ARCHITECT and ARCHITECTURE may secure without cost any or all of the manufacturers' catalogs described on this and the following page by mailing the prepaid post card printed below after writing the numbers of the catalogs wanted. Distribution of catalogs to draftsmen and students is optional with the manufacturers

Plumbing and Heating

1054 . . . "Planned Plumbing and Heating for Better Living" is a new illustrated booklet issued by Kohler Co., Kohler, Wis. Several Kohler bathrooms, a lavette and a kitchen—with floor plans—are shown in color. Text discusses not only the fixtures but alternative materials for walls and floor. Illustrations and descriptions of Kohler boilers for solid fuels are also included.

Interior Finishes

1055 . . . The new insulating Temlok De Luxe Interior Finishes, available in the form of boards, planks, panels and tiles, are presented in an 8-page catalog issued by Armstrong Cork Products Company, Lancaster, Pa. Installation data, sizes, and illustrations, in natural reproduction, showing the colors available are included.

Basement Recreation and Utility Rooms

1056 . . . A pictorial presentation of basement hobby, play, utility, study, rumpus and sports rooms in existing homes designed and executed by Parsons School is contained in a 48-page brochure published by American Radiator Company, New York. The booklet comprises a series of before-and-after pictures of basements, and gives costs for conversion after installation of conditioning equipment.

Revolving Doors

1057 . . . The general construction and operation of Van Kannel Revolving Doors are described in a 16-page filing-sized catalog issued by Van Kannel Revolving Door Co., New York. Suggested applications to various entrances, details of construction and specifications are also included.

Gas Boilers

1058 . . . The complete line of Ideal Gas Boilers for heating and domestic hot water supply is described and illustrated in a new 24-page filing-sized catalog (Form 8080) just released by American Gas Products Corp., New York. Ratings, dimensions and specifications are given.

Concrete Frame Construction

1059 . . . "Cutting Costs in Concrete Frame Construction" is the title of a new brochure issued by International Cement Corp., New York. It contains a discussion of the fundamentals of job planning, gives an erection cost analysis, and offers suggestions for good concreting. Brief data on the qualities of Incor 24-Hour Cement are also included.

Stable Fixtures

1060 . . . A complete catalog of stable fixtures in iron, brass, bronze and aluminum has been issued by J. W. Fiske Iron Works, New York. Stall guards and rails, hay racks and mangers, troughs, stall drains, posts and cesspools are but a few of the many items cataloged. Filing size; A.I.A. File 35-L-3.

Lighting Fixtures

1061 . . . A handbook covering a review of the new Miller line of residential lighting fixtures has been prepared by The Miller Company, Meriden, Conn. Each model in the line is illustrated and described, and dimensional data are given.

School Wardrobes

1062 . . . A four-page folder has been issued by American Car and Foundry Co., New York, which presents data on and illustrations of typical installations of its Fairhurst School Wardrobes. Filing size; A. I. A. File 28-B-33.

Knob, Tube and Cleat Wiring

1063 . . . A compact manual in folder form has been prepared by Standard Electrical Porcelain Manufacturers, Chicago, which explains the advantages of porcelain knob and tube wiring and gives installation suggestions and details.

Air Filters

1064 . . . The principles of design, construction and operating mechanism of the Staynew Automatic Impingement Type Air Filter for all ventilating purposes are discussed in Bulletin 120, an 8-page booklet issued by Staynew Filter Corp., Rochester, N. Y. Filing size; 30-D-3.

Lead Shower Pans

1065 . . . An illustrated four-page leaflet giving step-by-step detailed information on the correct installation of lead shower pans, has been issued by the Lead Industries Association, New York. Drawings of correctly installed shower pans and bathtub flashing and a discussion of the advantages of this type of waterproofing are also included.

Safety Window Fixtures

1066 . . . General descriptions, architectural details and specifications for the new Howard Safety Window Fixtures are contained in an 8-page filing sized catalog recently published by Howard Safety Window Co., Milwaukee, Wis.

Fire Control Equipment

1067 . . . Garrison Engineering Corp., Great Barrington, Mass., has issued a new 36-page brochure on fire control. It opens with a complete statement of the meaning and causes of fire, in an ingenious question-and-answer form, and explains in detail how to go about the control of fire. The closing section is devoted to illustrations and descriptions of Garrison fire control equipment.

NO POSTAGE REQUIRED ON THIS CARD

AMERICAN ARCHITECT and ARCHITECTURE August, 1936

New York, N. Y.

Please have the following catalogs reviewed in this issue sent to me.

Numbers .....

.....

• I also desire further information about the new products described in this month's "Techniques." . . . (See pages immediately following this insert.)

Numbers .....

• I would like to have catalogs and information concerning the following products advertised in this issue. (Write page number or name.)

.....

☐ Check here for FREE copy of "WHEN YOU BUILD" booklet.

Name .....

Firm name .....

Address .....

City .....

Occupation .....

These NEW Catalogs may be obtained through AMERICAN ARCHITECT and ARCHITECTURE

Heating Specialties

1068 . . . The various types of heating specialties for vapor and vacuum heating systems are presented in a 16-page catalog issued by Sarco Co., Inc., New York. Roughing-in diagrams, capacity tables and mechanical specifications are given. Filing size; A. I. A. File 30-C-24.

Remote Control Systems

1069 . . . The WT series of data sheets on the Te-Lek-Tor Remotely Controlled Sound Systems for residences has been issued in portfolio form by Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y. Each sheet contains complete descriptions, installation data and details for individual parts or combinations of the systems. Filing size; A. I. A. File 31-i-7.

Stoker

1070 . . . The Stokol automatic coal burner for all types of domestic and commercial heating plants is described and illustrated in an 8-page booklet issued by Schwitzer-Cummins Co., Indianapolis.

Oil Burners

1071 . . . A new bulletin (No. CF-2) presenting the new Bethlehem-Doe Oil Burners has been published by Bethlehem Foundry & Machine Co., Bethlehem, Pa. It describes in detail the oil burner that has applied the "monitor-top refrigerator" principle in its design.

Liquid Soap Dispensers

1072 . . . Illustrations and descriptions of the various types of liquid soap dispensers manufactured by Clifton Chemical Co., Inc., New York, are contained in a new 4-page folder.

Grilles and Registers

1073 . . . Barber-Coleman Company, Rockford, Illinois, has issued a 26-page spiral-bound booklet giving complete data on its line of Uni-flo Grilles and Registers for all types of heating, ventilating and air conditioning systems. Construction details, charts for determining the proper size of grille or register, and many illustrations are included.

Wood Preservative

1074 . . . Facts on wood preservation with Grasselli Chromated Zinc Chloride are interestingly presented in a new booklet issued by The Grasselli Chemical Co., Cleveland, Ohio. A few of the many uses suited to Chromated Zinc Chloride treated lumber are demonstrated by illustrations of typical installations. Filing size; A. I. A. File 19-A-3.

Unit Heater

1075 . . . Grinnell Company, Inc., Providence, R. I., has issued a 40-page catalog which illustrates and describes the Thermolier Unit Heater. Capacities, dimensions, piping connections, wiring diagrams and other essential data are given. A few typical installations are illustrated. Filing size; A. I. A. File 30-D-11.

Air Conditioning

1076 . . . An engineering manual for Sunbeam Air Conditioning Systems has been issued by The Fox Furnace Company, Elyria, Ohio. It gives a quick accurate method of calculating the air conditioning requirements for any residence using this equipment.

Windows

1077 . . . Andersen Casement Window, a complete unit including frame, sash, hardware, screen, double glass, weatherstripping, is described and illustrated in a 16-page, filing-sized catalog issued by Andersen Frame Corp., Bayport, Minn. Details of standard and special applications, tables of sizes and suggested specifications are included. Details and descriptive text on the Andersen Narroline Double Hung Window and the Andersen Basement Window are also given. Typical installations are illustrated.

Lighting Equipment

1078 . . . The Holophane Company, New York announces the publication of a new 44-page catalog on lighting facts called "Datalog." This book contains illustrations and descriptions of the complete Holophane line of equipment for scientific lighting. Classification of the contents has been prepared to facilitate reference.

Household Water Conditioning

1079 . . . A new 20-page booklet published by The Permutit Company, New York, gives factual information on its line of water softening and purifying equipment. Typical specifications, a water conditioning data chart, and numerous capacity tables are included. Filing size; A. I. A. File 29-D-3.

Ceiling Fans

1080 . . . A 16-page filing-sized catalog illustrating and describing all types of ceiling fans manufactured by The Emerson Electric Mfg. Company, St. Louis, has been released. Detailed information regarding unit glassware and ceiling type lighting fixtures is included, together with wiring diagrams for installations requiring wall switch control.

Air Cooling Equipment

1081 . . . A spiral-bound booklet issued by Baker Ice Machine Co., Inc., Omaha, Nebraska, describes the features and characteristics of Baker air conditioning for commercial and residential applications, and illustrates a variety of typical installations.

Lighting Fixtures

1082 . . . Many new modernly designed Alabax Porcelain Lighting Fixtures are illustrated and described in the new lighting fixture catalog AL-2 which has recently been published by Pass & Seymour, Inc., Syracuse, N. Y.

Anthracite Burning Equipment

1083 . . . Laboratory Bulletin No. 23 issued by The Anthracite Institute, Primos, Pa. pertains to a discussion of "Securing a Maximum of Satisfaction from Anthracite Burning Equipment" and contains heating inspection charts for steam, vapor, hot water and warm air.

Basement Designs

1084 . . . The twenty-nine plans which were prize winners in the Iron Fireman-Pencil Points Architectural Competition for designs of present day homes with special attention to the most effective use of the basement, have been embodied in a 32-page filing-sized booklet issued by Iron Fireman Mfg. Company, Cleveland, Ohio.

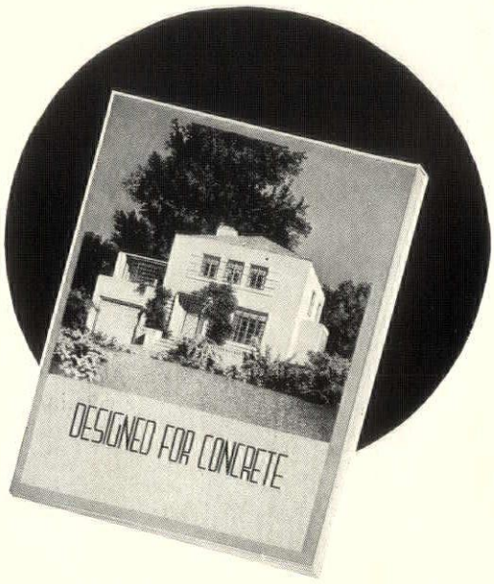
FIRST CLASS
PERMIT NO. 5
(Sec. 510 P L & R)
NEW YORK, N. Y.

BUSINESS REPLY CARD
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

2c. POSTAGE WILL BE PAID BY

AMERICAN ARCHITECT and ARCHITECTURE

572 Madison Avenue
New York, N. Y.



The Firesafe Concrete Home
Impressively States Its Case

• • •

A booklet for home prospects that should do much to foster higher construction standards and encourage an appreciation of good architecture in small homes

IN publishing "*Designed for Concrete*," the Portland Cement Association reaffirms its confidence that the trend toward permanent, firesafe houses will continue because of its economic soundness. The booklet presents 55 selected designs from the 1936 *Pencil Points*-Portland Cement Association competition for the design of firesafe concrete houses; photographs; and an appraisal of the advantages of concrete.

Home prospects everywhere will receive this booklet, including several thousand monthly who inquire through our national advertising for more facts about firesafe concrete homes.

"*Designed for Concrete*" also reaffirms our confidence in the growing importance of the architect in the residence field. His touch is needed if beauty is to survive current modes and be part of the permanence people want today. This booklet asks those who are seriously interested in any of the houses shown to consult the designer for working drawings, and counsels the reader to employ an architect in planning a home to meet individual needs and tastes.

These are significant days for concrete. Designers are giving its possibilities much creative attention. More and more builders are becoming concrete craftsmen. And home buyers, perhaps you've noticed, are awakening to concrete as a source of beauty, comfort, and sound value at low cost per year.

Let us send you a file copy of "*Designed for Concrete*."

PORTLAND CEMENT ASSOCIATION

Dept. A8-2, 33 West Grand Ave., Chicago, Ill.

evenly distributed to all rooms. The quick vent valve on the end of the steam main allows steam to be supplied almost instantly to the riser connections leading to the more remote radiators as well as the ones adjacent to the boiler. Both types of valves offer a wide range of venting rates and can be easily adjusted by removing the protective cap on top of the valve and turning the adjustment dial. 657M

ELECTRIC RANGE

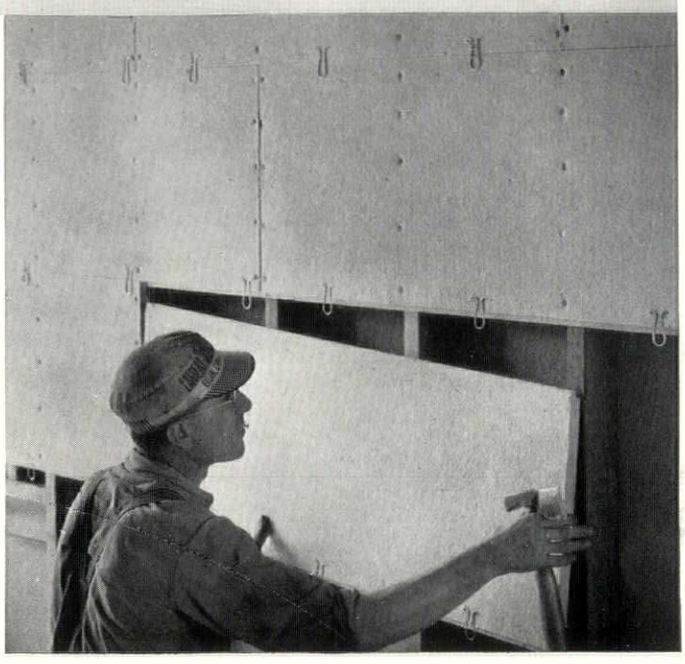
A new apartment house electric range known as "The Mate" measures 20 15/16 inches wide and 24 3/32 inches in depth. The cooking top is 36 inches from the floor. Oven is equipped with two sliding shelves and hydraulic type oven temperature control. A porcelain broiler pan with wire rack is included. Standard equipment includes three Hi-Speed Calrod units. The Mate is approved by the underwriters for installation with the back flush against the rear wall and may be installed with sides flush against adjacent metal cabinets. The range includes a one-piece cooking top and back splasher furnished in stain

resisting porcelain enamel. Oven vents are provided in front of the back splasher to prevent discoloration of walls. The range is base type provided with standard toe space and equipped with a full size oven including a newly designed 3000 watt open coil unit. Announcement of this new unit was received from the Appliance and Merchandise Department of General Electric Company, Nela Park, Cleveland, Ohio. 658M

VALVES FOR COPPER PIPING

Jenkins Bros., New York, have introduced a complete line of Jenkins "Solder-End" Valves for 150 lbs. service on copper lines. Available at the same price are both the plain sweated and Mueller "Streamline" type ends, the latter being manufactured by Jenkins under licence of Mueller Brass Co. With the exception of the ends, these new valves are identical with the standard Jenkins Valves used for threaded installations. 659M

The Insulite wall of PROTECTION GIVES DOUBLE INSULATION



Bildrite SHEATHING on the outside

(AN INSULITE PRODUCT)

No matter what kind of a house you design, Bildrite Sheathing will fit into the picture—assure stronger, windproof walls—a home that will bring greater comfort and satisfaction to your clients. Only Bildrite Sheathing offers all these advantages:

1. **Four times the bracing strength of horizontal eight inch shiplap.**
2. **Far more insulation than lumber.**
3. **No open joints or knotholes.**
4. **Lower application costs.**
5. **One solid piece—No laminated courses to split.**
6. **Moderately priced.**

PROTECTED BY THE TERMILITE PROCESS — THE SAFE PERMANENT TREATMENT AGAINST TERMITES, ROT, FUNGI

Insulite products are treated against termites, rot and fungi.

LOK-JOINT LATH inside the framework

(AN INSULITE PRODUCT)

You'll assure lasting beauty of plastered interiors when you specify Lok-Joint Lath. The patented Lok-Joint forms a more rigid base—the safest base for plaster. Only Lok-Joint Lath affords all these advantages:

1. **Eliminates lath marks on walls and ceilings.**
2. **Reduces the passage of sound through walls and ceilings.**
3. **Insulates.**
4. **Assures greater freedom from plaster cracks.**
5. **Low cost.**

WRITE FOR LITERATURE and SAMPLES

THE INSULITE COMPANY

Department AA-56, Builders Exchange Building • Minneapolis, Minnesota

THE WALL OF THE AGE... *meets every need!*

IN ADVERTISEMENTS TO PROSPECTIVE BUILDERS WE SAY "IT WILL PAY YOU TO SEE AN ARCHITECT WHEN YOU BUILD OR REMODEL"

NEW ELEVATOR CONTROL

Notable progress in elevator control methods has been made with the development by Otis Elevator Company of push-button ("finger-tip") control for all classes of elevators, including low speed, geared-type passenger and freight elevators as well as high-speed gearless machines.

Until recently only the latter class of modern elevators, such as are familiar in all modern skyscrapers and important buildings, could be controlled in a fully automatic manner which eliminates the vagaries of the human element. Now the car operator functions as a monitor or attendant, transmitting the passengers' orders for floor stops to a wholly automatic mechanism by merely pressing buttons. Car movement is started and stopped, and doors are opened and closed, by properly coordinated devices. In addition, of course, waiting passengers may command the car to stop by pressing the usual buttons at each floor.

The new development makes it possible to convert existing Otis elevators having a speed of 250 to 400 ft. per minute to fully automatic push button control without drastic changes in machinery, cab or shaft. Geared-type elevators in these lower speed ranges are now offered for new structures where the higher speeds of gearless machines are not needed. Thus any building may have the elevator service advantages hitherto practical only in large modern structures.

Significant corollary to this development is the further announcement that Otis has adopted "finger-tip" or push button control as standard for all new and modernization equipment they will hereafter produce (unless old style control is arbitrarily specified).

Seven types of elevator installations are now subject to "finger-tip" control, eliminating the hand operated car switch and the irregularities of service incident to unskilled or indifferent manual stopping and starting. Three types are used for passenger service; the same three are also used for freight service with appropriate modifications, and the seventh type is exclusively for freight elevators. The primary types are:

Signal Control is the highest type of automatic elevator operation with an attendant in the car. It employs a panel of push buttons in the cab as well as "up" and "down" buttons on each floor. The operator in the cab presses buttons for all floors desired by passengers. When a stop is reached car doors open automatically; they close automatically when the operator releases them—and the car then starts automatically. Operation of any floor button, either within the cab or from the floor itself, commands the car to stop at that floor when traveling in the indicated direction. Micro-self-leveling is inherent in this system.

Collective Control represents the highest type of automatic elevator operation without an attendant. An attendant may be used during day time if desired and passengers operate the car by themselves in the slack periods of night service, or as in apartment houses the passengers may use the elevators at all times without the need for an operator. Push buttons in the cab as well as at each floor govern car operation as with ordinary Signal Control, and the Collective feature makes the car stop at each called floor in sequence according to the direction in which it is traveling. For example, when a car is rising in the shaft a passenger on an upper floor will press his "down" button. The car may pass this floor on its rise, but will pick up the call on its return trip. Micro-self-

(*Continued on page* 104)

7 YEARS OF CONSTANT SERVICE
7 YEARS OF PERSONAL PROOF—

IN SHACHNOW & BROWN PROPERTIES

ELECTROLUX

assures permanent silence . . . low maintenance cost

1929—*One of the first of the buildings equipped with Electrolux at 666 East 233rd St., Bronx, by Shachnow & Brown. These refrigerators are still on the job today!*

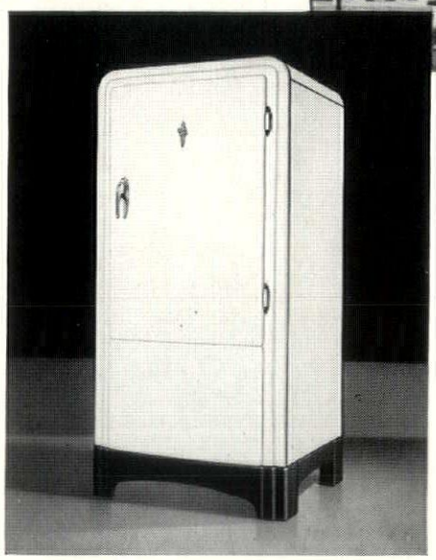
1935—*Latest of the Shachnow & Brown properties in which Electrolux has been installed. This building is at 635 East 211th Street, Bronx.*

Well-known New York builders choose Air-Cooled Electrolux for latest building because of continued satisfaction with gas refrigerators installed in 1929!

MORE than 7 years ago, the first Electrolux refrigerators went into the properties of Shachnow & Brown, Builders and General Contractors, of 527 Fifth Avenue, New York City. And this firm has continued to install this modern gas refrigerator ever since! Writes Mr. M. Shachnow, President, in a letter to Consolidated Edison Co., of New York:

1,000 Electrolux Installed

"Since 1929, we have been installing Electrolux in our properties. The latest of our buildings to be equipped with this refrigerator was opened just last fall at 635 East 211th Street, Bronx, N. Y. And it is a real pleasure to tell you that our Electrolux Refrigerators, including those installed some 7 years ago in our 137 apartments in premises 666 East 233rd Street and 667 East 232nd St., Bronx, have *continually* afforded completely efficient performance and unusually low maintenance. We also wish to thank your company for its courtesy and dependable servicing of our one thousand (1000) gas refrigerators.



Valuable Rental Appeals

"I recall that when we first purchased Electrolux we did so because we agreed (1) that a refrigerator without moving parts to wear promised bigger benefits in the way of long life and economical upkeep; (2) that the low operating cost and silence of Electrolux would appeal strongly to tenants. *Experience has proved that we were right on both counts.* Naturally, therefore, we do not hesitate to recommend Electrolux heartily to any builder or owner."

It will pay *you* to investigate Electrolux carefully before choosing any new refrigerators for your properties. See the beautiful models on display at your gas company. Servel, Inc., Electrolux Refrigerator Sales Division, Evansville, Indiana.

SERVEL ELECTROLUX

THE *Gas* REFRIGERATOR

leveling and automatic car gates are necessarily included in this fully automatic selective system.

Single-Call Control requires no operator and leaves the command of the car movement entirely to the passenger. The car will respond to a call at any floor unless otherwise in use, and then may be operated up or down from that floor by the passenger. This method is frequently employed in apartment buildings and certain classes of freight service.

The three foregoing systems, as noted previously, apply to both passenger and freight equipment. In actuality they therefore represent six classes of elevator control.

The other types are for Freight Service:

Double Button consists of two buttons in the cab and on each floor. To operate the cab the up or down button is pressed and held until the desired level is reached. Removing the pressure stops the car. It is a modern and much safer version of the old rope control for freight elevators.

Dualite Control is an improved form of Double Button operation. There are Up and Down buttons in the car, and it is operated from there in the same manner as Double Button. However, there is only one button on each floor, pressure on which calls the car to that floor from either direction, and where it stops automatically. With each floor button there are two lights, one to indicate when the car is in use, and the other to indicate that the car is at that floor and the doors there may be opened.

The technical advances achieved by Otis in applying "finger-tip" control to all classes of elevator service and to all geared as well as gearless machines is far more significant than this summary indicates. Vertical transportation at any speed in common use is now placed on parity with the most modern high speed equipment in terms of efficiency, convenience and reliability. Small buildings may be as modern in elevator equipment as large structures. Old buildings can be brought up to date without replacement of old types of drives that are still in good working order.

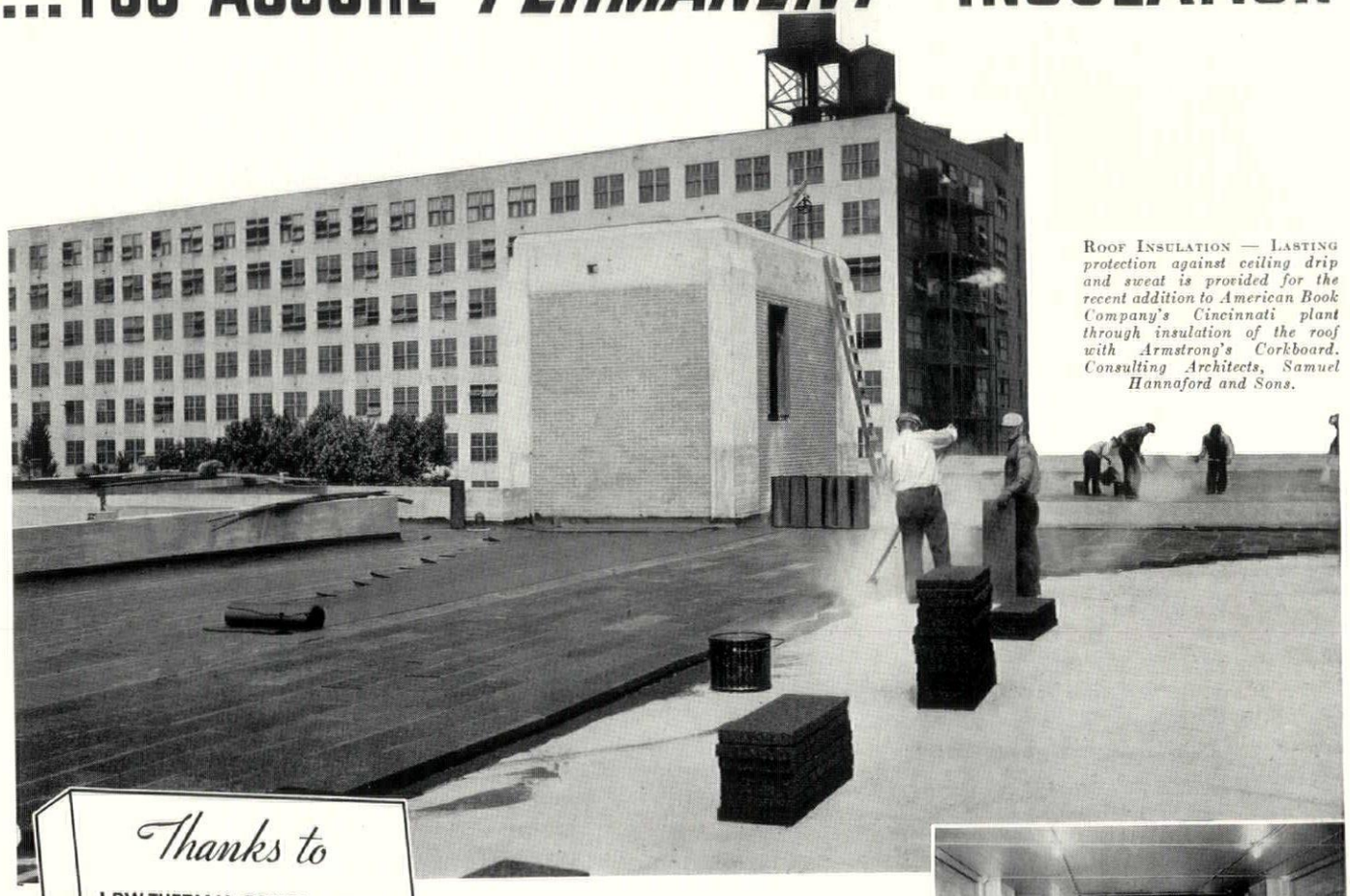
MULTIPLE FELLOWSHIP AT MELLON INSTITUTE

Dr. Edward R. Weidlein, Director, Mellon Institute of Industrial Research, Pittsburgh, Pa., has announced that the Pittsburgh Plate Glass Company has founded a Multiple Industrial Fellowship in that institution. This Fellowship will study fundamental problems in the various fields covered by the activities of the Pittsburgh Plate Glass Company.

These activities include the production of plate glass, window glass, safety glass, special glasses, heavy chemicals, paints, varnishes and lacquers. It is interesting that these products which have a close economic interrelationship are also technically closely allied, so that investigation into the technology of one can become of value in its application to another.

Dr. Frederick W. Adams, who has been selected as senior incumbent of this Fellowship, comes to Mellon Institute from the Massachusetts Institute of Technology where for the past fourteen years he has been a member of the Chemical Engineering Department, devoting most of his time to the School of Chemical Engineering Practice. His staff on the Fellowship includes specialists in various lines of research, whose experience adapts them to a scientific investigation of the problems involved. Dr. John D. Jenkins, who took his undergraduate work at Oregon State College and received

WHEN YOU SPECIFY ARMSTRONG'S CORKBOARD ...YOU ASSURE *PERMANENT* INSULATION



ROOF INSULATION — LASTING *protection against ceiling drip and sweat is provided for the recent addition to American Book Company's Cincinnati plant through insulation of the roof with Armstrong's Corkboard. Consulting Architects, Samuel Hannaford and Sons.*

Thanks to

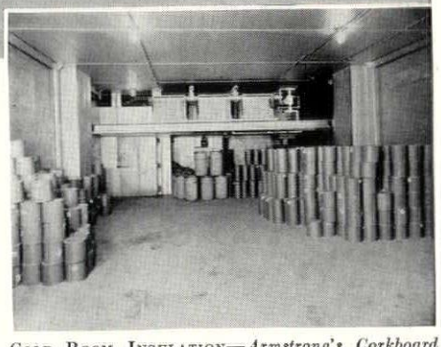
LOW THERMAL CONDUCTIVITY AND HIGH MOISTURE RESISTANCE, THIS PURE CORK MATERIAL REMAINS EFFICIENT THROUGHOUT LONG YEARS OF SERVICE.

CHOICE of Armstrong's Corkboard for all types of normally-heated and air conditioned buildings—as well as for insulation of all low temperature rooms—gives you positive assurance that your clients will be free from insulation worries for many years to come. Installations of this material made as long ago as 1904, and even earlier, are still *on the job* . . . still serving faithfully and economically.

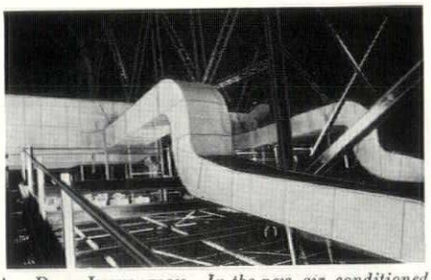
The dependable service of Armstrong's Corkboard is the result of cork's unique cellular structure. Viewed under a microscope, cork shows millions of tiny cells, and entrapped in each cell is a minute quantity of still air. This structure not only provides an effective barrier to the passage of heat, but also resists the efficiency-destroying effects of moisture—thus insuring *permanence.*

For cold lines, Armstrong's Cork Covering offers the same kind of *lasting* protection. Careful machining of inside surfaces permits a snug fit against the pipe and eliminates moisture-catching air pockets.

Armstrong's Architectural Service Bureau is available to assist you on any insulation job. For full information about Armstrong's Corkboard and Cork Covering, see your current Sweet's Catalog or write direct to Armstrong Cork Products Co., Building Materials Division, 926 Concord St., Lancaster, Penna.



COLD ROOM INSULATION—*Armstrong's Corkboard insures continued low refrigeration costs for this cold room in new Syracuse plant of the General Ice Cream Corporation. Architects, M. L. and H. A. King.*



AIR DUCT INSULATION—*In the new air conditioned St. Louis Municipal Auditorium, air ducts are insulated for permanent efficiency with Armstrong's Corkboard. Architects, Plaza Commission, Inc.*

Armstrong's CORKBOARD AND CORK COVERING

his Ph.D. from University of Wisconsin, majoring in physical chemistry, comes to Mellon Institute from the Ditzler Color Company, a subsidiary of Pittsburgh Plate Glass Company in Detroit, where he has been engaged in the development and production of lacquers and industrial finishes. Dr. Harold E. Simpson, after receiving his Ph.D. at Ohio State University and spending a year in teaching at Rutgers University, has been research engineer in ceramics for the last six years at Battelle Memorial Institute. Dr. Lee Devol graduated from Marietta College and after several years of industrial experience with Westinghouse Electric and Manufacturing Company and the Union Switch and Signal Company, completed graduate studies at the University of Pittsburgh where he received his Ph.D. in physics. Dr. Kenneth R. McAlpine matriculated at the University of Buffalo, received his Ph.D. at Princeton majoring in physical chemistry, and spent several years with the Republic Steel Company at Youngstown before joining the staff of this Fellowship. Mr. Phillip W. Crist graduated this year in physics from Carnegie Institute of Technology.

Work on the various projects which are being started includes basic studies in the technology of glass, heavy chemicals, paints, varnishes and lacquers.

NEW COURSES AT NEW SCHOOL

The broader aspects of housing and the more specific aspects of architecture will be discussed in courses to be offered by the New School for Social Research in the fall term beginning September 28th. Charles Abrams, counsel to the New York City Housing Authority, has arranged a series of twelve lectures on Public Housing: Problems and Solutions. Jan Ruhtenberg, formerly associated with Miës van der Rohe and with the School of Architecture at Columbia University, will discuss Elements of Architecture for Artists, Draughtsmen and Clients.

Mr. Abrams has recruited the most eminent housing authorities to lecture on the aspects of the subject with which they are now associated: Langdon W. Post, tenement house commissioner and chairman of the New York City Housing Authority, will discuss the social and economic backgrounds of the housing problems. Edith Elmer Wood, consultant to the housing division of the PWA will discuss the social aspects of housing; George Gove, executive secretary of the State Board of Housing, the limited dividend corporation as a solution; Coleman Woodbury, director of the National Association of Public Housing Officials, public housing as a solution; B. Charney Vladeck, member of the New York City Housing Authority, European solutions; Rexford G. Tugwell, under secretary of agriculture and resettlement administrator, resettlement as a solution.

Mr. Abrams will discuss legal and legislative problems; Ernest J. Bohn, President of the National Association of Housing Officials, politics and housing; Frederick L. Ackerman, technical director of the New York City Housing Authority, technical problems; Evans Clark, economic adviser to the Housing Authority, financing public housing; Joseph Milner, real estate adviser to the Authority, the real estate problem of housing: Donald Slesinger, formerly dean of the division of social sciences, University of Chicago, management of public housing.

Mr. Ruhtenberg in his course will present a comparative outline of European and American architecture of today and tomorrow, illustrated by slides of outstanding architectural creations directing and influencing the architecture of the

future. It will be shown what are the mutable elements in architecture, why architecture had to break away from traditions in its expression, as well as to change old construction for new. Sociological, artistic and technical developments will be discussed, likewise what may be expected of the architect beyond his knowledge of building and the use of contemporary construction methods and materials.

DESIGNERS-CRAFTSMEN ORGANIZE

The Society of Designer-Craftsmen was organized recently in New York for the purpose of maintaining high standards of craftsmanship and design in the architectural and decorative arts fields: to promote co-operation among those engaged in craft, architectural and art organizations: to represent the interests of the Designer-Craftsmen in major public issues: to establish a code of ethics in design and craft competitions: to promote sound education in the crafts: to maintain a high standard of ethics in professional practice in and with business firms. The Board of the organization consists of Oscar Bach, Waylande Gregory, Maurice Heaton, Walter Kantack, Hildreth Meiere, Karl Schmeig, Eugene Schoen and Giles Whiting. Inquiries should be addressed to the Society of Designer-Craftsmen, 115 East 40th St., New York City.

ERRATA

Due to incorrect information furnished with the photograph of the model of the Ford Building used on page 55 of the July issue, Albert Kahn was incorrectly credited as architect. This building was designed by Walter Dorwin Teague. Albert Kahn, Inc., made the working drawings.

ANNOUNCEMENTS

Harry F. Cunningham, Architect, announces the removal of his office to 1707 Eye St., North West, Washington, D. C.

T. F. Bellamy, Architect, announces the removal of his office to 524 Boylston Ave., North, Seattle, Washington.

Logan V. Gallaher, Architect, announces the opening of an office at 428 Alfred Street, Kingston, Ontario.

Anthony Thormin, Supervising Architect of Great Lakes Exposition, announces the opening of an office at 1227 Prospect Avenue, Cleveland, Ohio. He requests manufacturers' samples and catalogs.

Russell Seymour, Architect, announces the removal of his office to 205 Mitchell Building, Jacksonville, Florida.

OBITUARIES

Michael Joseph O'Connor, retired architect, died recently at his home in Mount Kisco, N. Y. He was 75 years old. Mr. O'Connor was born in San Francisco and attended school in New York. He was graduated from the School of Mines of Columbia University and from the University's School of Architecture. He was a partner in the firm of Little & O'Connor for more than forty years. This firm designed the College of Pharmacy Building at Columbia University, the Scranton (Pa.) High School, and a number of residences including those for H. H. Flagler, Harry Gilbert and William Brokaw.

George Provot, Architect, died recently in New York after a long illness. He was 68 years old. Born in New York, he studied in France, where he received his Bachelor of Science Degree in 1886. Three years later he graduated in architecture from Columbia University. For some years he was a member of the architectural firm of Welch, Smith & Provot from which he resigned to practice alone. He was the architect of the old French Hospital and for extensive alterations for the Hotel Brevoort. Mr. Provot was also active in real estate and was secretary, treasurer and director of the Potter & Provot Realty Company, secretary and director of the Vauban Realty Corporation, and a director of the Gerbereux Company. He was an associate member of the American Institute of Architects, a member of the French Benevolent Society, the Columbia University Club and the French Club.

George W. Phillips, retired architect, builder and inventor, died recently at his home in Suffern, New York. He was 91 years old. Mr. Phillips was born in Oxford, England, where he studied Gothic and collegiate architecture. He later attended King's College, London. Shortly after the Civil War he came to America where he, together with Frank Melville, introduced the teaching of drawing in New York public schools. It is said that Mr. Phillips was the first man to obtain a patent on the folding steamer chair. He designed houses and interiors for a number of clients including Spencer Trask, the Paulist Fathers and the post office department. Mr. Phillips was one of the oldest members of the General Society of Mechanics and Tradesmen and of the New York Society of Architects.

BOOKS

HISTORY OF HOMES AND GARDENS OF TENNESSEE. Compiled by The Garden Study Club of Nashville, Mrs. John Trotwood Moore, collaborating. Edited by Roberta Seawell Brandau. 503 pages, 10 by 13½ inches. Illustrations from photographs and drawings. Nashville, Tenn.: 1936: The Parthenon Press. $10.

America's literature relating to gardens is being slowly but steadily augmented by regional contributions. The compilation of these volumes is being started at a rather late period, in which the compilers are heavily handicapped by the difficulties in securing information and illustrations regarding the plantings of a hundred years or more ago. In this particular volume an effort has been made to combine with the specific garden material, photographs and drawings bearing upon the history and scenic beauty of the State of Tennessee itself.

ARCHITECTURAL GRAPHIC STANDARDS FOR ARCHITECTS, ENGINEERS, DECORATORS, BUILDERS AND DRAFTSMEN. By Charles George Ramsey and Harold Reeve Sleeper. Foreword by Frederick L. Ackerman. 284 pages, 9¼ by 11½ inches. Illustrations from line drawings. New York: 1936: John Wiley & Sons, Inc. $6.

The first edition of this work, published several years ago, constituted a milestone among architectural reference books. It seemed at that time that additions and improvements would be made only with great difficulty, if at all. Nevertheless, the present volume has been thoroughly revised, improved, and added to in further practical aid of the architectural office. There seems to be every indication that Messrs. Ramsey and Sleeper will be saddled with a responsibility for continuing production very much as was the late F. E. Kidder in connection with his Handbook.

A SMALL HOUSE IN THE SUN. The Visage of Rural New England. Photographs and comment by Samuel Chamberlain. 96 pages, 9¼ by 12¼ inches. Illustrations from photographs. New York: 1936: Hastings House. $4.

Whatever Samuel Chamberlain has to offer the profession, whether in pencil drawings, etchings, or photographs, is always more than welcome. His insatiable urge for expression has in recent months been satisfied more frequently with camera than with pencil or stylus. The present volume is a pictorial characterization of rural New England.

AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS GUIDE, 1936. Vol. 14. 1143 pages, 6 by 9 inches. Illustrations from diagrams. New York: 1936: American Society of Heating and Ventilating Engineers. $5.

This annual handbook, as it appears year after year, seems to improve with its lengthening stride. Here are authoritative synopses of improvements in various branches of the industry. The guide offers a convenient means by which the architect and engineer can keep abreast of a forward marching science.

THE PENCIL. Its History, Manufacture and Use. Described by Clarence C. Fleming and Arthur L. Guptill. 46 pages, 8½ by 5½ inches. Illustrations from pencil drawings. Pamphlet binding. New York: 1936: Koh-I-Noor Pencil Company, Inc. 25 cents.

Here is a little book which will in all probability tell the architect a great many things that he has never known about the tool most frequently in his hands. From back in 1565, when an oak tree was up-rooted by a storm, revealing a graphite deposit, pencil making has marched steadily onward in both quality and quantity. Arthur L. Guptill, who should know, tells how he would—and you should—select drawings materials. (*Continued on page* 110)

(*Continued from page* 109)

THE EVOLVING HOUSE. Volume III: Rational Design. By Albert Farwell Bemis. 625 pages, 6¼ by 9 inches. Illustrations from line drawings. Cambridge, Mass.: 1936: The Technology Press. $4.

Here is the final volume in the late Albert Farwell Bemis's stupendous effort to trace the building of shelter from its beginnings and start it into a rational future. He develops the modular theory not only in two dimensions, but in cubical form, as the fundamental basis of the way we should build. There is much here that reflects the knowledge and experience of machine production in the automotive and other fields, but no one, surely, has ever carried the theory of standarized design of structure throughout its many ramifications so far as have Mr. Bemis and his collaborators. There is added to this final volume a brief summary, with drawings, of most of the standardized building efforts being made in this country and abroad, whether in actual production or merely in an experimental form.

CONSTRUCTION MATERIALS INDEX. Compiled, classified and edited by E. L. Norberg. 204 pages, 8¼ by 11 inches. Pamphlet binding. San Francisco: 1936: Construction Materials Research Company. $10.

An elaborate attempt to bring together a directory of manufacturers in the building materials field; a bibliography of technical data as published in books and magazines; a list of certified architects in California, one of structural engineers, and one of general contractors.

SLUMS AND HOUSING. With special Reference to New York City History, Conditions, Policy. By James Ford, with the collaboration of Katherine Morrow and George N. Thompson. An appendix by I. N. Phelps Stokes. Two volumes, 1033 pages, 7¼ by 10½ inches. Illustrations from maps, photographs, drawings, and old prints. Cambridge, Mass.: 1936: Harvard University Press. $10.

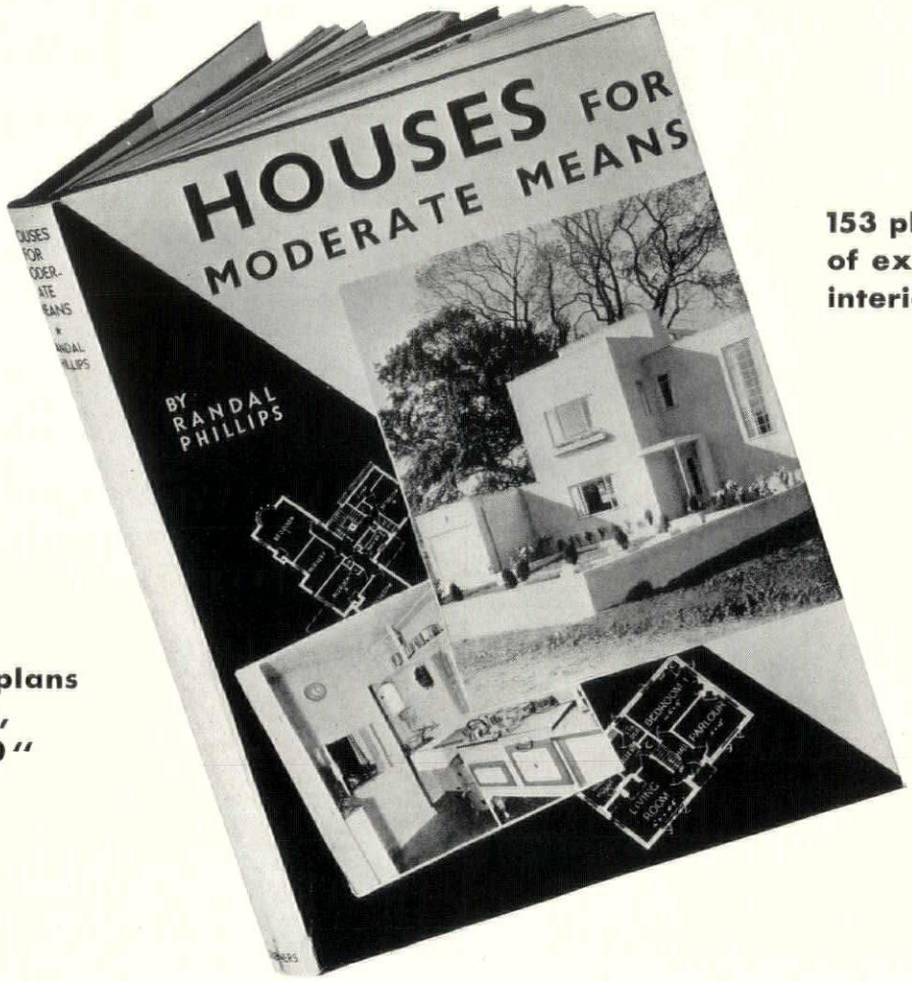
It will perhaps be somewhat surprising to the casual reader to learn that the whole history of housing could be recorded in such comprehensive detail within the limitations of a single community. Nevertheless, the city of New York seems to have run through the whole gamut of experience in mankind's slow and bungling efforts to provide for himself better shelter and better environment. Mr. Ford, it will be recalled, served as General Editor with John M. Gries of the group of volumes recording the findings of President Hoover's Conference on Home Building and Home Ownership. His knowledge of the subject and his opportunities for observing its ramifications are exceptional. The present volumes have had the great advantage of illustrative and factual aid from I. N. Phelps Stokes and his unique collection of inconography.

THE 1936 BOOK OF SMALL HOUSES. By the Editors of *The Architectural Forum*. 256 pages, 9 by 12 inches. Illustrations from photographs and plans. New York: 1936: Simon & Schuster, Inc. $1.96.

A reprint in board covers of *The Architectural Forum's* collection of small houses of recent construction in America. There is with each an outline indicating materials and costs, which latter range from $5,000 to $20,000.

THE DONLEY BOOK OF SUCCESSFUL FIREPLACES. 64 pages, 9 by 11½ inches. Illustrations from drawings and photographs. Pamphlet binding. Cleveland, O.: 1936: The Donley Brothers Company. 25 cents; 35 cents west of the Mississippi and Canada; free to architects on business letterhead requests.

Prefacing the detail description of a manufacturer's products, there is an outline of fireplace history in which is brought together many facts not widely known, even to the architect.



153 photographs of exteriors and interiors

151 floor plans
112 pages,
7½" x 10"

HOUSES for MODERATE MEANS

by R. Randal Phillips, *author of "Small Family Houses," etc.*

The seventy selected modern English homes illustrated and described in this book all fall within the $2500 to $7500 price range. The styles are many and various—including numerous examples of the most modern expression with flat roofs, horizontal windows and large unbroken expanses of wall surface, the traditional English country cottage style and the formal Georgian house. Besides the profusion of photographs and floor plans there is a helpful introduction in which style, materials, equipment and building costs are considered, and a description of each house with sufficient details to guide the architect or intending house owner. Builders, architects and prospective owners of small homes will find the book of immediate interest and value. $2.75.

Charles Scribner's Sons, 597 Fifth Avenue, New York

INDEX TO ADVERTISERS

This index is an editorial feature, maintained for the convenience of readers. It is not a part of the Advertisers' contract and American Architect and Architecture assumes no responsibility for its correctness.

A. I. A. FILE No. 30G-1

The Story of Heat and Air-Conditioning at a Moderate Price

In the past when the question of moderate priced air conditioning came up, architects have thrown up their hands.

For some years we have been alive to the ever-growing necessity for a moderately priced combination of both heat and air conditioning. QUIET MAY Scientists and engineers never stopped work on the problem until they solved it with the QUIET MAY "Heat-an-Aire" Conditioner. Briefly speaking, QUIET MAY "Heat-an-Aire" does this:

It heats by both steam radiation and conditioned warm air; it automatically provides domestic hot water all year around by a tankless heater of unique type.

It cleans and circulates the air in winter as part of its air conditioning function and in summer to produce the cooling effect of a gentle breeze.

Especially for architects we have prepared a complete, comprehensive file on the QUIET MAY "Heat-an-Aire" Conditioner. It covers all phases of this really remarkable equipment and it's yours for the asking. Use coupon below.

MAY OIL BURNER CORPORATION
BALTIMORE, MARYLAND

Please send QUIET MAY "Heat-an-Aire" Conditioner T-S. S. N3. 3. 1.

Name.....

Address..... *City*.....

MILCOR METAL LATH AND EXPANSION BUILDING MATERIALS

PLASTER plays the most important part in the construction of walls and ceilings; but plaster is dependent upon plaster base and as a rule a plastering job is just about as good as the plaster base used.

It is an accepted fact that Metal Lath is the finest plaster base available. There has never been any base invented which can approach its many advantages.

Kuehn's Specialmesh, because of the new meaning it has given to Metal Lath, is accepted by many as the best Metal Lath manufactured. It is fully described on page 5 of the Milcor Manual in "Sweet's". (Section 14/7).

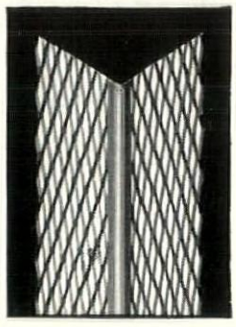
Milcor Expansion Corner Bead and Casing, because they perform their particular functions as well as does Metal Lath, are outstanding products.

Write for information or refer to the Milcor Manual in "Sweet's".

KUEHN'S SPECIAL MESH

(A)

Kuehn's Specialmesh Metal Lath has unusual strength and rigidity. Its design . . . a *Milcor* patent . . . affords the maximum protection against plaster cracks.



(C)

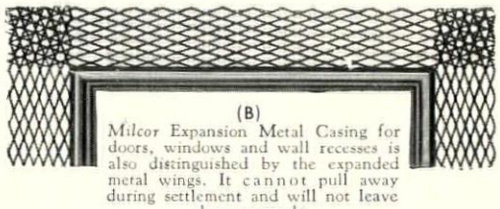
Milcor Expansion Corner Bead is distinguished by its expanded metal wings . . . This feature . . . a *Milcor* patent . . . permits a perfect grip upon the plaster and prevents chipping off from unavoidable abuse.

MILCOR
Expanded Metal Building Products are Available in

TONCAN COPPER
Mo-lyb-den-um IRON

ARMCO Ingot Iron

Copperalloy Steel



(B)

Milcor Expansion Metal Casing for doors, windows and wall recesses is also distinguished by the expanded metal wings. It cannot pull away during settlement and will not leave cleavage cracks.

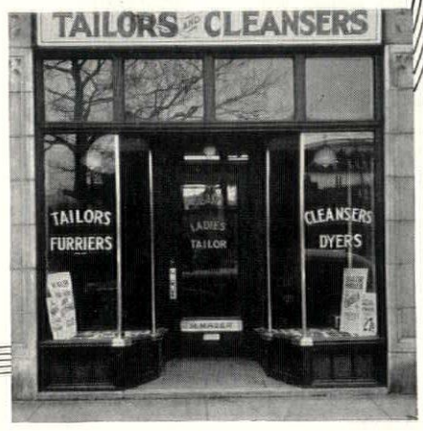
MILCOR PRODUCTS
Save with Steel — TONCAN — ARMCO — ANACONDA — Copperalloy Steel

MILCOR STEEL COMPANY

MILWAUKEE, WIS. — **CANTON, OHIO**

CHICAGO, ILL. — KANSAS CITY, MO. — LA CROSSE, WIS.

Now... NEW FREEDOM IN STORE FRONT DESIGN



BY UTILIZING Pittco Store Front Products, architects and designers gain new freedom in store front design. These pictures show how Patriarca Store Fixtures, Inc., transformed a store in Boston, Mass., by designing and installing an attractive and effective Pittco Store Front. For perfect execution of the store fronts you design, specify Pittco Store Front Products.

PITTCO Store Front Products impose very few limitations upon the architect's imagination. When you design an original, attractive and distinctive store front, you can be pretty certain that Pittco Store Front Products will enable you to build it exactly as designed. For these glass and paint products combine beauty with utility so well . . . they are so versatile, so readily adaptable to different handlings and combinations . . . that they really enlarge the scope of possibilities for store front design.

Undoubtedly, many merchants and property owners in your community will be taking advantage of the Pittsburgh Time Payment Plan (which includes provision for an architect's fee) to remodel with new Pittco Store Fronts. When you are retained on projects of this nature, design your fronts with Pittco Store Front Products in mind. You'll find them thoroughly satisfactory in every way, not only to you but to your clients.

Each month, our staff of store front experts, maintained to cooperate with architects on problems of construction and product application, prepare a style suggestion on some type of front. Clip the coupon below . . . now . . . and have your name entered on our architect's list to receive our "Design of the Month" service.

CARRARA STRUCTURAL GLASS
PITTCO STORE FRONT METAL
PITTSBURGH MIRRORS

PITTCO
STORE FRONTS
glass... metal... paint

PITTSBURGH PAINT PRODUCTS
POLISHED PLATE GLASS
TAPESTRY GLASS

PRODUCTS OF
Paint { PITTSBURGH PLATE GLASS COMPANY } Glass

Pittsburgh Plate Glass Company,
2289-BGrant Bldg., Pittsburgh, Pa.

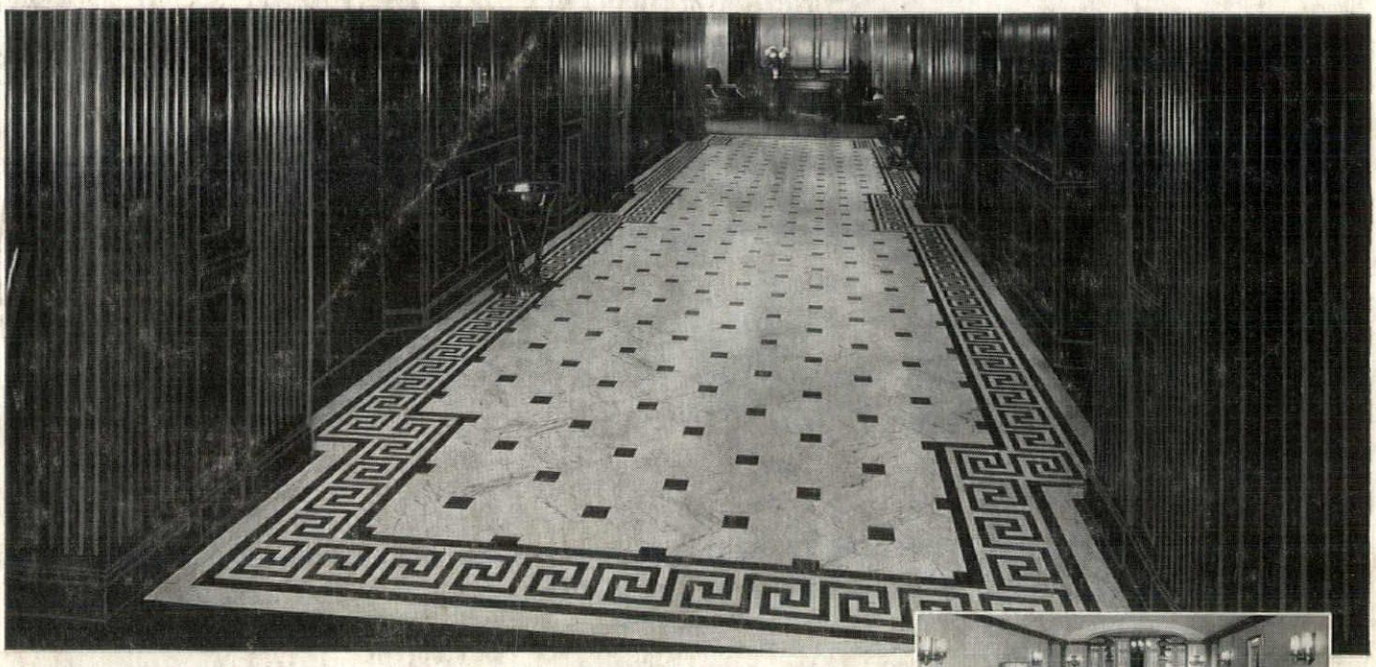
Please enter my name on your list of architects who will receive your store front "Design of the Month" suggestion regularly each month during 1936.

Name.....

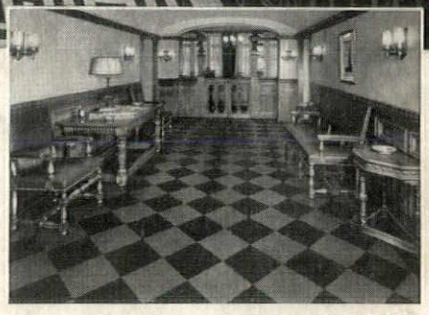
Street.....

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

Seagram's COMPLETES OFFICE DECORATIONS WITH ATTRACTIVE *Armstrong Floors*



Reception Hall, Seagram Distillers Corp., Chrysler Bldg., N. Y. City. Floor is Armstrong's Rubber Tile in No. 400 White Marble with No. 455 Verde Antique squares. Border is No. 410 Oyster and No. 480 Black.



In the lobby of the Seagram executive offices, a luxurious floor of Armstrong's Cork Tile, in two shades of brown, insures freedom from noise. Layout of the office is by Ross-Frankel, Inc., N. Y. C.

FOR the floors of Seagram's new executive offices in the Chrysler Building, Architect Morris Lapidus had very definite requirements to meet. Seagram's wanted floors that would not only reflect the character, dignity, and luxury of the interior scheme, but would also give long service and be easy to maintain. Mr. Lapidus found exactly what was needed in Armstrong's Rubber Tile, Cork Tile, and Linoleum.

Armstrong offers the only complete line of resilient floors. Among them you'll find materials to suit every pocketbook. *Linotile*—an exclusive Armstrong product—is a long-wearing floor twice as resistant to indentation as Battleship Linoleum. *Rubber Tile* is a specially-reinforced tile with a beautiful high finish. *Cork Tile* is a rich, comfortable floor possessing high sound-deadening qualities. *Accotile*—a low-cost moisture-resistant tile—is for use wherever floors are in direct contact with the ground. And there are hundreds of Armstrong's *Linoleum* patterns for every type of building.

With this complete line of resilient floors, the Armstrong Architectural Service Bureau can give unbiased suggestions on the correct type for any building. For more complete information, see Sweet's or write direct to Armstrong Cork Products Company, Building Materials Division, 1201 State Street, Lancaster, Pennsylvania.

General Offices at Seagram's. The No. 05 Brown Marbelle Armstrong's Linoleum Floor insures underfoot comfort and quiet for busy employees.

ARMSTRONG'S *Linoleum* *and* RESILIENT TILE FLOORS

LINOTILE · ACCOTILE · CORK TILE · RUBBER TILE · LINOWALL · ACOUSTICAL CEILINGS