

THE ARCHITECTURAL
FORUM

MAY 1941

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MAY 1941

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VOLUME 74—NUMBER FIVE

THE MONTH IN BUILDING

BUILDING TRENDS. Volume of building permits issued during February dipped slightly below January's score, principally because of continuing erratic fluctuations in the non-residential curve. Covering defense factories, for which permits may be bunched in some months more than in others, this curve (see tabulation, right) again dropped below its preceding month's level, but was up 74 per cent over last year's mark. Construction contracts statistics likewise testify big strides forward: running \$479.9 million in March, they bring the first quarter's volume to \$1,055 million, the largest since 1929.

PERMITS

(Source: U. S. Department of Labor)

	Monthly Data			First Two Months	
	Feb. 1941 (millions)	Comparison with Jan. '41	Feb. '40	1941 (millions)	Comparison with 1940
Residential.....	\$ 86.8	- 1%	+11%	\$174.1	+23%
Non-residential.....	63.2	-11	+74	134.3	+93
Additions, repairs.....	23.7	+ 1		47.4	+ 8
Total.....	173.7	- 5	+25	355.8	+40

KICKBACK INNOVATION. Small houses raise many a knotty problem in cost accounting. One of the knottiest concerns the architect's commission. To the profession: is the fee sufficient to be worth the effort? To owners and lending institutions: are the architects worth these charges? The question has long been moot, but now comes a definite opinion—backed by cold cash.

Confident that a house designed and supervised by an architect is better mortgage security than the unblessed brand, THE FORUM recently put the matter before President Gardner W. Taylor of New York City's First Federal Savings & Loan Assn. He immediately looked over his portfolio, picked out a liberal sprinkling of each type of mortgage, reappraised these samples, discovered that the architecturalized loans showed up to far better advantage. In the current market the architect-designed houses have a consistently higher resale value, an important consideration to any financing institution.

Impressed by this finding, First Federal decided forthwith to take up THE FORUM's suggestion that a premium be paid to get loans of this sort. Hereafter, on houses designed and supervised by architects in the New York area, a third of the architectural fee will be refunded to the owners as soon as construction is complete. The offer holds good on all new houses costing up to \$10,000 where the mortgage application originates with the architect or owner. And, what is more, although many lending institutions refuse to reckon the architect's fee as a legitimate part of the house cost, First Federal henceforth will adjust its appraisals to do so.

This is not the first time that First Federal's President Taylor has set the pace for the rest of the country. Missouri-born, he grew up in Minnesota, lumberjacked and invested his earnings until he became owner of a string of Eastern lumber yards, later owner of a wholesale lumber company bearing his name and several scattered allied businesses. When the Reynolds Metals Co. came into the building field in 1935 via aluminum foil, he was vice presi-

dent of both it and the Reynolds Fiscal Corp. Year before this happened he launched First Federal.

Schooled in savings and loan work through active participation in New York's Bronxville Savings and Loan Assn., Taylor was wide awake to the possibilities which opened up when Congress passed an amendment to the Home Loan Act permitting the establishment of Federal savings and loan associations in cities where adequate mortgage money was not available for home building. Gist of this legislation was that any group granted a Federal charter could call on the U. S. Treasury for stock subscriptions up to an amount equal to three times that planked out by private capital. Taylor rounded up more than 20 manufacturers and distributors of building materials (including such shining names as American Radiator and Standard Sanitary Corp., American Brass Co., Devoe & Reynolds, Hanley Brick Co., Reynolds Metals Co., Yale & Towne, Gilbert & Barker Mfg. Co., Morgan Millwork Co., and Asbestos, Ltd.), persuaded them to pool \$250,000 to be matched three-to-one by the Government in his new lending association, soon began making loans to

home builders in Long Island, Westchester County, New Jersey and even Manhattan Island. From that modest beginning First Federal sprouted rapidly until at 1940's end it had received investments totaling \$8,668,723, had made \$8,546,261 in loans.

EUSTACE TILLEY, M.D. Megalopolis has a bad headache and does not quite know what to do about it. The *New Yorker*, weekly raconteur of megalopolitan fancies and foibles, has become downright serious about the migraine and issued a pamphlet, yecept "This Island's Problem," which attempts both a diagnosis and a cure.

The symptoms: Forty years ago Manhattan was for all practical purposes New York City—for a larger population than the four other boroughs combined. Today it is home for only 20 per cent of the city's people. While the other boroughs and suburban counties have grown impressively, Manhattan is smaller by over a half million than it was in 1910. Nevertheless, big new buildings still go up on the island—60 in 1939, 45 last year, even more this year. On the surface, Manhattan's better residential neighborhoods seem to be in good economic health. Actually, they are afflicted by a spotty blight—not the kind which "stares at you from the slums" but the kind which is "none the less genuine because it wears a silk hat and a boiled shirt." Behind the smartly uniformed doormen are floors of unprofitable unused space.

Diagnosis: The paradoxical new buildings are designed to meet the demands of people looking not merely for an apartment but for the "last word" in an apartment. Standards of elegant living change faster than existing buildings decay. The restless quest for more fashionable quarters empties the older suites, leaving blight behind. Meanwhile, each year many turn to the suburbs or country because they fail to find what they are seeking on Manhattan. Tipping the scales against the city, says the *New Yorker*, are a lack of localized play space for children, inadequate schools, economy motives, boredom compar-



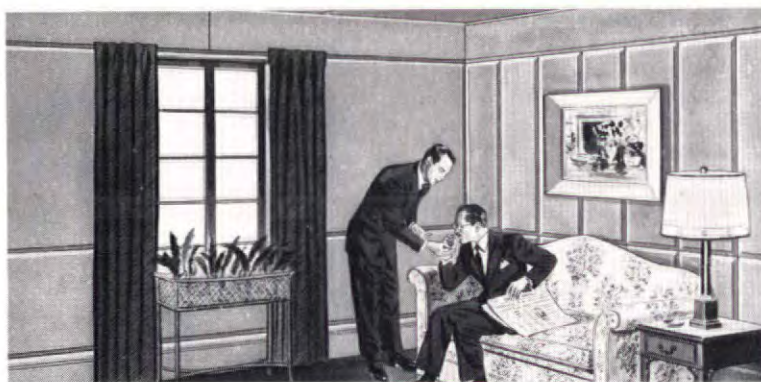
Life—George Strock

First Federal's Gardner W. Taylor

AN ARCHITECT ACHIEVES a MODERN background for PERIOD furniture!



• It's hard to believe that these charming walls and ceilings, so reminiscent of colonial days, are actually made of one of today's most versatile, most modern building materials. And yet, William Hamby, a leading New York residential architect, has designed these lovely panels of durable, economical Tempered Presdwood, a Masonite wood-fibre hardboard which, in this case, is merely waxed to a high, lustrous sheen.




• The secret of Mr. Hamby's wall design lies in using panels of Tempered Presdwood with a combination of interesting joint treatments in which the panels are separated by fluted wood sticking. Notice particularly the deep, soft shadows between panels. The edges of the Tempered Presdwood may safely be nailed or glued to the sticking because this grainless board does not warp, chip, split or crack when applied according to instructions.



• Here in the "dining" end of this smart living room-dining room unit, Mr. Hamby has made horizontal Tempered Presdwood paneling the predominant note in wall treatment. Tempered Presdwood can be cut or sawed with ordinary tools. It can be painted, enameled, waxed or left natural. Its marble-smooth surface is unusually easy to keep clean, and the board is as permanent as the building itself. Mail coupon at right for free sample.

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THE MONTH IN BUILDING

cramped quarters, desire for accommodations free from dark and sunless rooms.

Proposed cure: To revitalize Manhattan real estate, there must be prescribed something somewhere between the perfect city of the dreamers and the city drifting along in random confusion. As a starter, the *New Yorker* suggests individual city blocks organized into more livable residential communities. This calls for legislation 1) to enable property owners to form block agreements for the purchase of idle or obsolete property, 2) to assure low land valuations and low taxes on such property if made available as open spaces. When this is done, then replanning can proceed. Not all blocks would be revamped alike. Some should be encouraged to preserve their original character. Others might be cleared to provide pleasant interior pedestrian malls paralleling the main avenues, or utilized for underground garages with landscaped roof terraces.

Consensus: Stirred to a crusading zeal by its findings, the *New Yorker* has called a consultation of skilled specialists—city fathers, insurance company bigwigs, bankers, real estate brokers, building managers, architects. Out of this professional powwow has emerged a companion pamphlet, "What Others Think About This Island's Problem." The sages recognize Manhattan's blight as country-wide. Little cities as well as big have the problem of periphery areas sapping populations away from the nucleus. The continuing construction of swankier dwellings in face of such spreading blight is made possible, it is pointed out, by the drastic drop in land values which permits builders to meet the "last word" demand with lower prices. Underlying the whole problem is the question of municipal finances. As Banker Robert Louis Hogue observes, "The city lives on taxes, and taxes can be paid only out of real estate that produces an income." But Manhattan's exodus has left realty assessments at twice the market value. Comments Architect Emery Roth: "Unfortunately the city's borrowing capacity is based on the total assessments. It therefore dares not reduce the assessments or take the alternative of raising the tax rate." All the experts agree, however, that something must be done. Viewed with desperate hope is the proposed Urban Redevelopment Corporations Law, sponsored by the New York Merchants' Assn., which is intended to provide the legal machinery for replanning blighted neighborhoods.

BOOMTOWN MASQUERADE.

Quite naturally in a period of emergency, Defense Housing hogs the stage while Public Housing is shoved into the wings. Now comes New York's canny State Housing Commissioner Edward Weinfeld with an

annual report which aims to push Public Housing back into the spotlight fully garbed as Defense Housing.

Gist of the Weinfeld proposal: During the emergency, State-financed housing projects should be made available to wage earners in industrial centers who can afford to pay the prevailing economic rent but for whom private enterprise cannot build a sufficient supply of decent dwellings. Such projects would be designed, constructed and operated to meet all the usual housing requirements. Only difference would be a higher rent to the tenant in line with his increased ability to pay. Thus, no cash subsidy would be required from either the State or the community during this period. After the emergency, the projects could be used for low-income families in need of subsidized housing. Subsidy payments should then be less than customary, since a reserve over and above the amount required for carrying charges presumably would have accumulated during the period when tenants paid the economic rent. Or, if desired, the reserve could be used to fix rents substantially below the point possible with even a maximum subsidy.

Aside from the legerdemain with subsidies, the scheme offers the virtue of providing additional dwellings needed for defense workers without thereby creating an excess of housing which might turn into a herd of white elephants in the post-emergency area.

FIRE DEFENSE. With neat coincidence, the National Board of Fire Underwriters rolls up to its 75th yearpost at a time when the nation is more aware than ever of the need for conserving its resources. Appropriately, the nearly 200 capital stock fire insurance companies comprising the Board have decided to keynote the anniversary celebration this month to the importance of insuring our national defense against fire.

Press blurbs, broadcasts and speakers at a two-day windup at New York's Waldorf-Astoria (May 27, 28) will stress fact that millions of dollars annually go up in smoke. Last year property worth an estimated \$300 million was destroyed—not to mention the loss in lives. This year the problem is magnified still more by new potential fire losses. Cantonments, shipyards, aircraft factories, munitions plants, warehouses—all these require special protection against holocausts. As in World War I, the Board is again lending the services of its outstanding fire protection engineers to the Army and Navy, calls on the American people to assist in wiping out all possible loss by fire.

Past experience well fits the Board for such emergency work. Launched originally

as a means of pegging fire insurance rates, it abandoned this function in 1888. Since then it has become increasingly a public service institution, concentrating its activities on reducing the possibility of fire and in suggesting ways in which fire, when it does strike, can be combatted.

WAR HAVOC. Good news out of war-racked Europe is scant these days. Doubly welcome therefore are the tidings that Nazi bombers have caused far less damage to private homes in England than was expected. Statistics compiled by the British building societies (equivalent of our savings and loan associations) confirm this fact. One large society with a portfolio of about 300,000 mortgages, reports the Federal Home Loan Bank Review, had 7,000 of its houses slightly damaged, some 2,000 badly damaged but repairable, only 480 completely destroyed at year's end. A smaller society holding 15,000 mortgages had only 87 properties seriously damaged or destroyed. Reason for this good showing: the societies have their 1,500,000 loans invested over a wide area. Even the complete destruction of a single city touches only a relatively small percentage of the mortgages held by an institution.

Reports also indicate that mortgage borrowers have been keeping up with their payments surprisingly well. One building society states that 95 per cent of its clients whose houses have been blasted continue to meet their obligations. For this the societies undoubtedly have the British Parliament to thank. Steps are being taken to have taxpayers share losses through compulsory property insurance so that damage will not fall too heavily on the few home owners unlucky enough to be bombed out of their domiciles. The Government's bomb-insurance scheme generously calls for a maximum grant of £800 to each bombed householder in advance of full post-war compensation.

The building societies, properly elated over their statistical record, expect to play an important role in England's rebuilding. On this front likewise comes news of progress. Reconstruction plans for devastated Coventry, Birmingham and Bristol are already being prepared in the new Ministry of Works & Buildings, headed by the formidably dour Lord Reith.*

Notoriously averse to publicity and public functions despite fact that he was once British Broadcasting Co.'s dynamic prime-mover, Reith made his first public debut as royal building boss last month at a literary luncheon, spoke on building a new London, passionately exclaimed:

"God Almighty help us! Is this our civilization? Are we to plan our cities for future totalitarian wars? Are we to have reversible signs marked garage on one side and air raid shelter on the other? Are we always to have public trenches as well as public lavatories? Somebody has got to answer that before we plan our cities."

* Profiled in the December 1940 ARCH. FORUM, p. 2.

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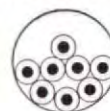
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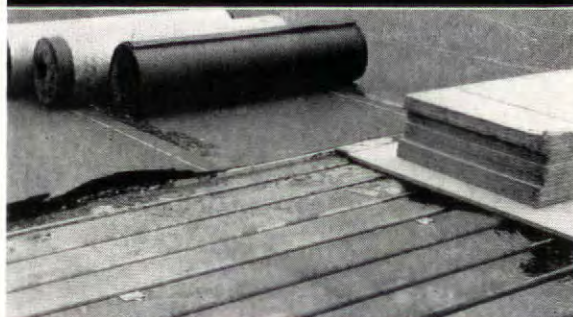
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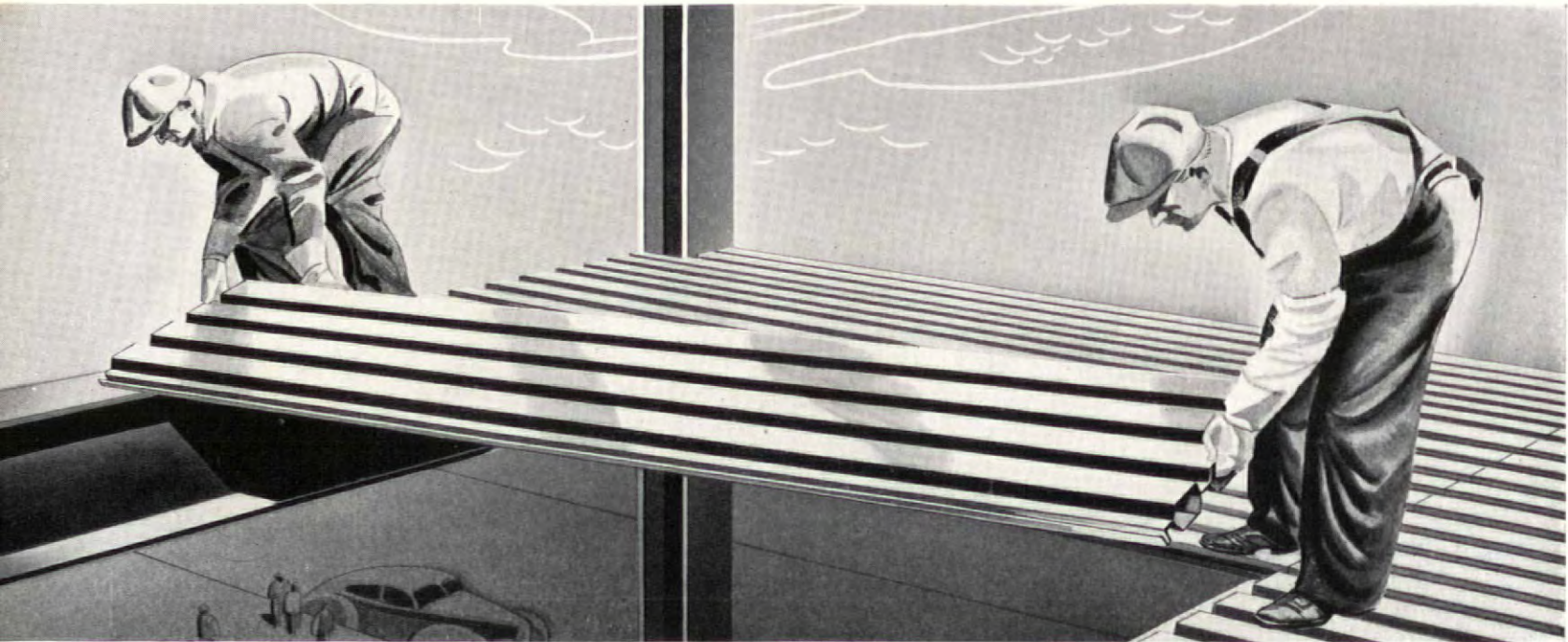
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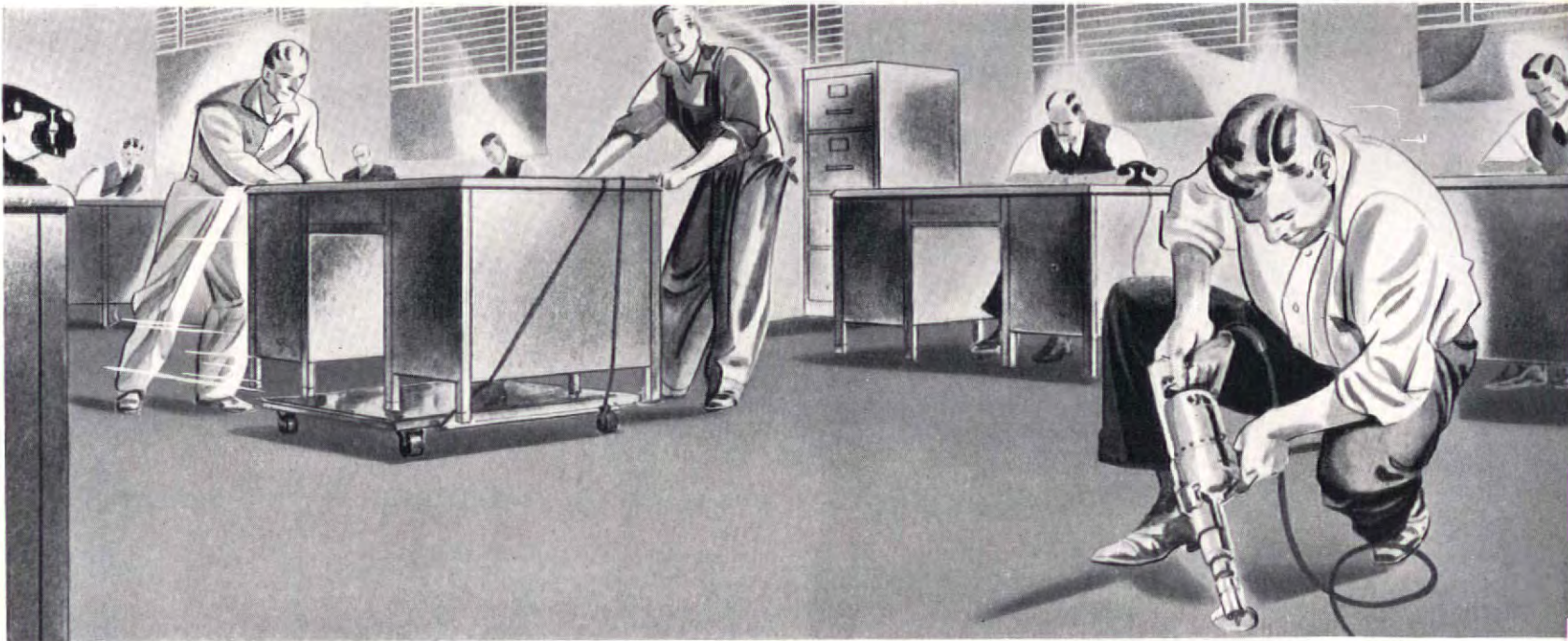
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H. H. ROBERTSON COMPANY · Farmers Bank Building · Pittsburgh, Pa.

QUICK-IN

ROBERTSON

QUICK-CHANGE FLOORS



QUICK-CHANGE!

Electrical outlets any place... this year, next year and all the years after...

A modern building—one that will stay modern and never become obsolete—must provide for electrical floor outlets exactly where they are needed, and for electrical changes anywhere, any time.

Q-Floors are the cure for obsolescence and the cue for quick changes. Q-Floors provide in themselves a series of protected steel wireways which permit quick and easy access in any 6 inch square over the entire floor area. In 25 minutes, at low cost, electricians can provide your clients with electrical outlets wherever and whenever they are needed—low or high tension wiring for telephone, office equipment, or machinery.

Details?

If you, your engineers, draftsmen or specification writers should desire engineering details, construction data, cost estimates or specifications, information is easily and quickly available through literature, catalogs or personal presentations by Robertson Engineers. Contact the nearest office... there are Robertson Organizations and Sales Agencies in principal cities.

H. H. ROBERTSON COMPANY · Farmers Bank Building · Pittsburgh, Pa.

Q—FLOORS

QUICK-CHANGE

*It's surprising
how the RIGHT
paint cuts down
on maintenance!*



Boyd Hill, Architect

ARCHITECTS are making a discovery about paint...
So are builders and maintenance men...

They are finding that when they standardize on Eagle White Lead mixed in linseed oil, they are not bothered with premature paint failures.

The explanation is simple: Pure white lead paint is practically foolproof. It brushes out into a tough paint film that wears and wears. Its elasticity protects against cracking and scaling. It weathers slowly and evenly—leaving a perfect surface for eventual repainting.

Cost records will show you that Eagle White Lead is a safe, economical specification for all properties.

**Do you specify
two-coat paint jobs?**

*If you do, you'll want the new
booklet, "Quick Facts About
Two-Coat Painting." Write
for free copy.*

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THE EAGLE-PICHER LEAD COMPANY • CINCINNATI, OHIO



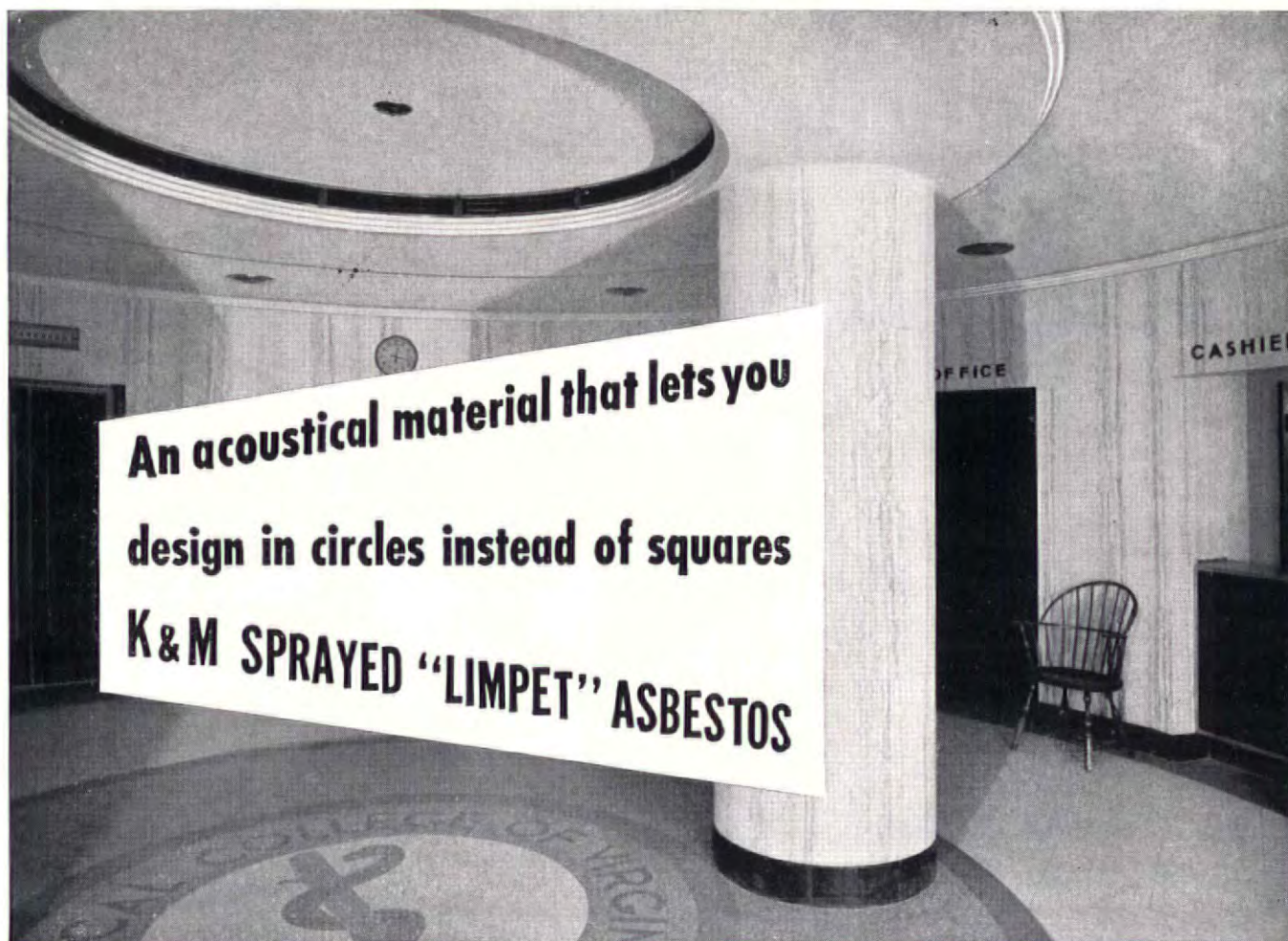
**EAGLE
WHITE LEAD**

EAGLE
EP
PICHER

★ ★

You're money ahead when you paint with
White Lead





**An acoustical material that lets you
design in circles instead of squares
K&M SPRAYED "LIMPET" ASBESTOS**

Entrance hall in the new eighteen story hospital building of the Medical College of Virginia, Richmond, Va. Acoustical ceiling of K&M Sprayed "Limpet" Asbestos. 83,000 sq. ft. of "Limpet" used in this one hospital. Architects: Baskervill and Son.

Sometimes an architect wants to design in circles. But if Keasbey & Mattison Sprayed "Limpet" Asbestos merely substituted circles for squares, or tied you down to *any* geometrical pattern . . . you'd scarcely be interested. Instead, Sprayed "Limpet" brings you an acoustical material which is as architecturally adaptable as plaster.

The proof lies in the room illustrated here . . . the entrance hall of the new 18 story hospital of the Medical College of Virginia, in Richmond, which has an acoustical ceiling of K&M Sprayed "Limpet." You can see at a glance how "Limpet" unties an architect's hands.

83,000 square feet of "Limpet" are used in this one hospital, where it silences all hallways and corridors and many of the rooms as well. Three years ago, this

hospital used "Limpet" in a new clinic building. It has required no maintenance, and it still looks so nearly like new that "Limpet" was selected without question for the large new hospital application.

Sprayed "Limpet" is applied by spraying from a "gun." It sticks tight to any clean surface, regardless of shape or composition, without the need of gadgets or mechanical systems. It may be built up to any practical thickness to provide the specified degree of sound absorption per square foot. It can be painted over and over again without impairing, to any great extent, its acoustical value. "Limpet" is also an efficient heat insulator, and is highly fire-resistant.

free . . . write
Dept. 23 for new
A. I. A. Catalogue
giving full details
on "Limpet."

KEASBEY & MATTISON

COMPANY, AMBLER, PENNSYLVANIA



flexwood

| WOOD IN FACILE FORM |

FOR MODERN WOOD TREATMENT



Sapeli Flexwood treatment, Living room, residence of ESQUIRE'S David Smart, Glenview, Ill., G. McStay Jackson, Designer.

Using Sapeli Flexwood for its color value and the suitability of its straight stripe, G. McStay Jackson, Designer, created a room which is severely simple but suave and elegant. Large unbroken wall surfaces, curved and flat, in a residence such as this, modern in every detail, call for Flexwood. Sapeli and Rift Oak, about 3,000 sq. ft. in all, were used for the living-room, loggia, playroom, stairways and hall, powder room, master and one other bedroom. The ease and speed with which Flexwood is applied make it possible to enjoy the luxurious beauty of genuine woods at low cost. Choosing from 40 rare and exotic woods the architect or designer can select color and graining to fit any desired mood or scheme.



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CORPORATION**

103 Park Avenue, New York

Manufacturers of Flexglass

Flexwood and Flexglass are manufactured and marketed jointly by The Mengel Co., Louisville, Kentucky, and the United States Plywood Corporation, New York.



Color-Toning

**MAKES THE
ROOF YOU CREATE ON PAPER
COME TRUE ON THE FINISHED HOUSE**

K&M "Century" Color-Toning virtually revolutionizes the handling of residential roofs. Built around Keasbey & Mattison "Century" asbestos-cement roofing shingles in the specially developed range of tones shown here . . . Color-Toning brings you the means of creating exactly the blend you want on paper, and insures the faithful reproduction of your conception by the roofer.

With the K&M Architects' Color-Tone Work Kit, you can blend or combine the nine soft mellow tones of these shingles in exactly the proportions you desire. Small colored replicas of the shingles on gummed paper enable you to design a roof in miniature . . . show the client how it will look . . . and give the roofer specifications that can't go wrong. Color-Toning alone offers all these advantages.

In addition to the satisfaction you derive from the entirely new palette which Color-Toning places in your

hands, your clients enjoy a wholly new type of beauty and individuality in their homes. They are sure, also, of maintenance-free, fire-resisting, weather-resisting roofs, with the lifetime economy of asbestos-cement. Builders find Color-Toning an inexpensive new way to obtain further architectural variety in residential operations.

Color-Toning is exclusive with K&M "Century" No. 92 roofing shingles. Other K&M "Century" asbestos-cement shingles, both roofing and siding, insure enduring beauty, and protection against fire and the elements, at even lower cost.

FREE — Architects' Work Kit for the visualization of Color-Toned Roofs. Write Keasbey & Mattison Co. . . . Address Dept. 01.



KEASBEY & MATTISON COMPANY
AMBLER, PENNA.

...AND LASTING BEAUTY UNDER FOOT WITH

Terrazzo



A SCENE of immaculate beauty in the Sacred Heart Cathedral at Raleigh, N. C., to which Terrazzo adds its full share of rich color.

Here is a striking example of the freedom of design and color *FINE TERRAZZO* offers you for every floor plan. Made with white portland cement — Atlas White — it allows you to reproduce any pattern in any combination of colors you want. Colors with life and fire — or softly glowing tints and shades appear under foot exactly according to specification. And they last a lifetime — with practically no maintenance cost — even under heavy wear.

Your next job may not be a church. But whether it's hotel, apartment house, school, hospital or theatre, plan on *FINE TERRAZZO* to give your client a distinctive, modern floor. With it specify Atlas White cement, plain or waterproofed. Turn to Sweet's Catalog for more details and 24 true-color illustrations of *FINE TERRAZZO* or write us for free book. Universal Atlas Cement Co. (United States Steel Corp. Subsidiary), Chrysler Bldg., N. Y. C.

OFFICES: New York, Chicago, Philadelphia, Boston, Albany, Pittsburgh, Cleveland, Minneapolis, Duluth, St. Louis, Kansas City, Des Moines, Birmingham, Waco.



Beautiful floor in the Sacred Heart Cathedral, Raleigh, N. C. Marble aggregates used were: domestic white; Belgian Black with black pigment; Royal Green; Red Rosa with red pigment; and red fused enamel. Architect, F. Frimmer, St. Petersburg, Fla.; Terrazzo Contractor, Atlantic Marble and Tile Co., Inc., Charlotte, N. C.

FOR *FINE TERRAZZO* SPECIFY

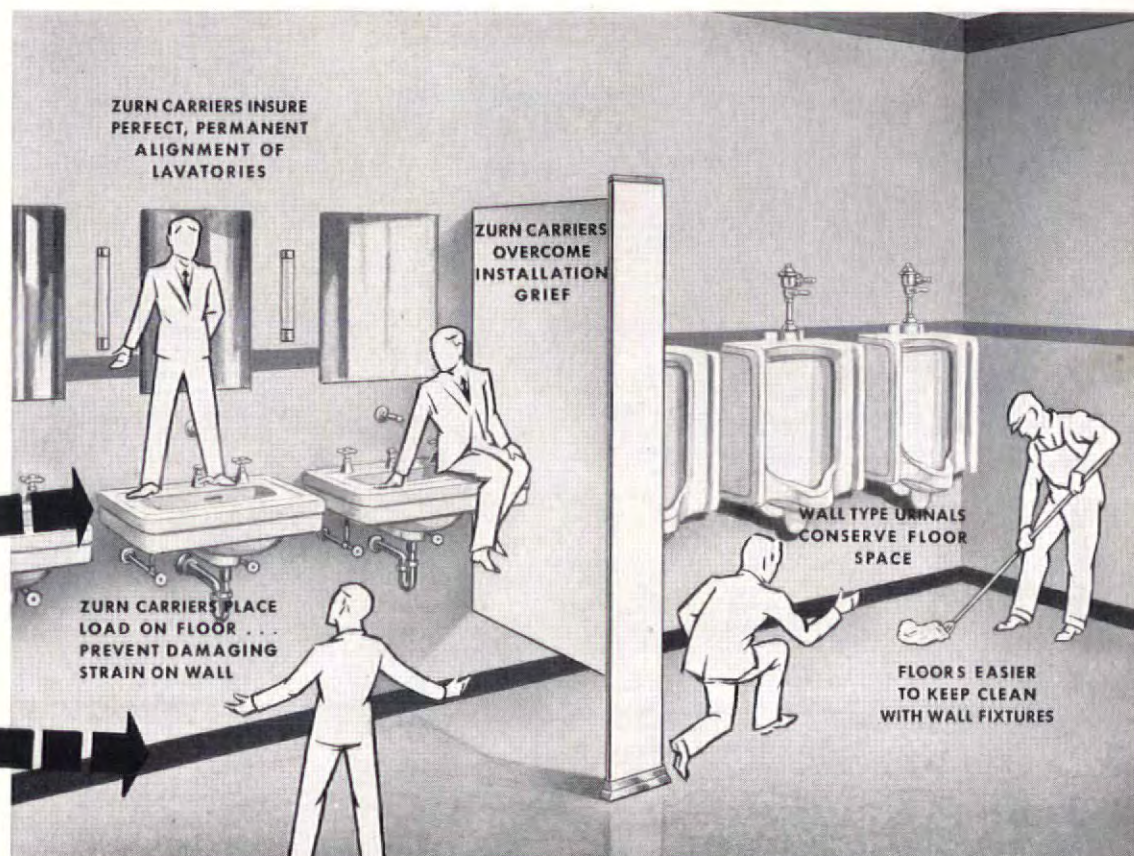
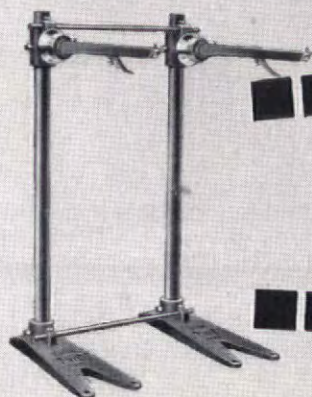


ATLAS WHITE PORTLAND CEMENT

4-Way Protection

ON WALL FIXTURE INSTALLATIONS That "Half-Way" Specifications Leave to Chance

WHEN YOU SPECIFY WALL
TYPE LAVATORIES AND
URINALS ALWAYS SPECIFY
ZURN ENGINEERED
CARRIERS
TO SUPPORT THEM



Only in Zurn Engineered Carriers will you find these tested mechanical features that definitely put an end to the risk and deficiencies usually incurred when "half-way" specifications permit the use of common contrivances, and ordinary methods of supporting wall type urinals and lavatories.

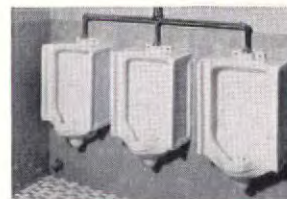
1. Cantilever construction
2. Positive horizontal and vertical adjustment
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Among the 25 different styles of Zurn Engineered Carriers, there is one for supporting every type and make of wall fixture. The complete line and its applications are described in the Zurn Carrier Catalog. If you do not have a copy—use the coupon and get yours today.

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THERE IS A ZURN ENGINEERED CARRIER FOR SUPPORTING EVERY TYPE AND MAKE OF WALL FIXTURE



Zurn Carriers Forestall Damaging Strain on the Wall.



Wall Fixtures Release Additional Floor Space You Can Use.



Zurn Carriers end Installation Grief.



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ROOF TO BASEMENT**

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Please send me a copy of the Zurn Carrier Catalog.

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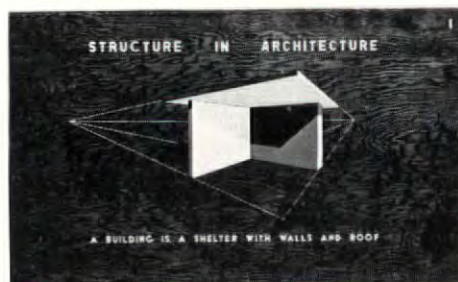
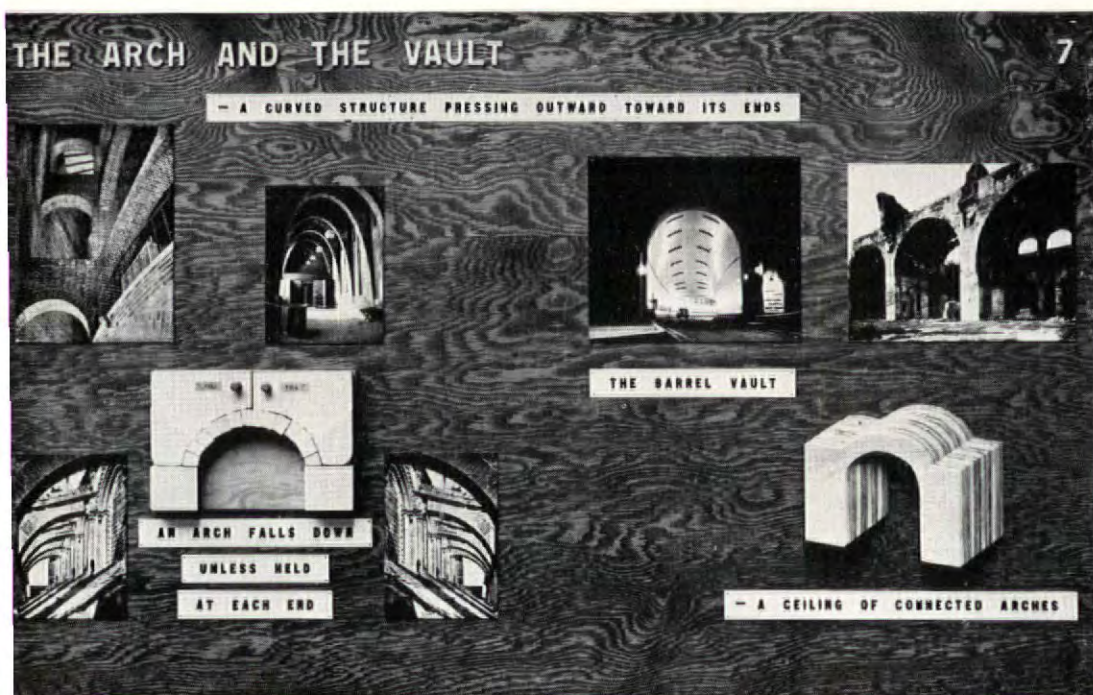
CITY AND STATE _____

P. S. Please attach to your business letterhead.

FORUM OF EVENTS

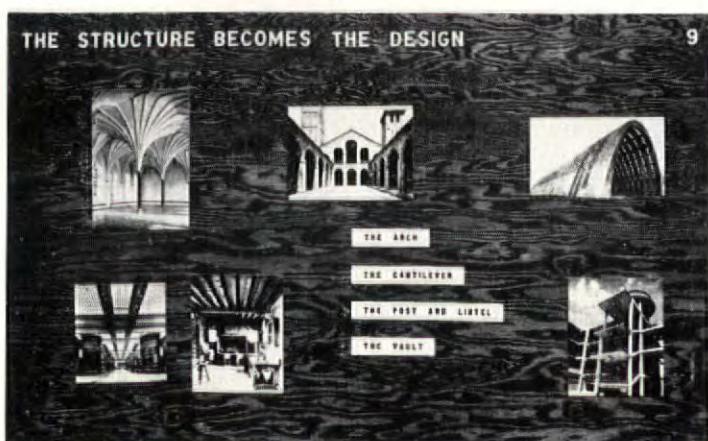
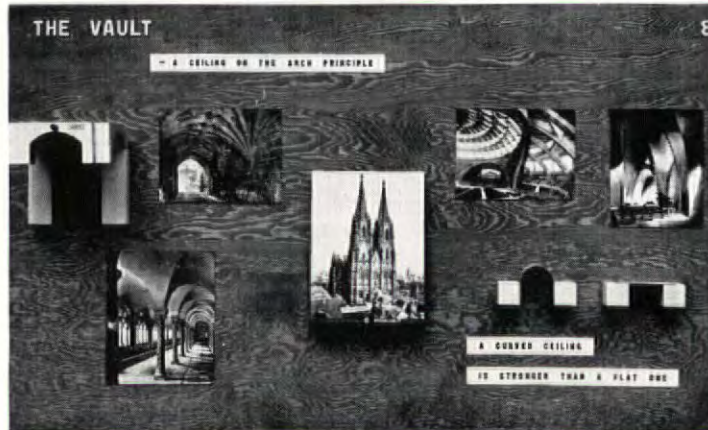
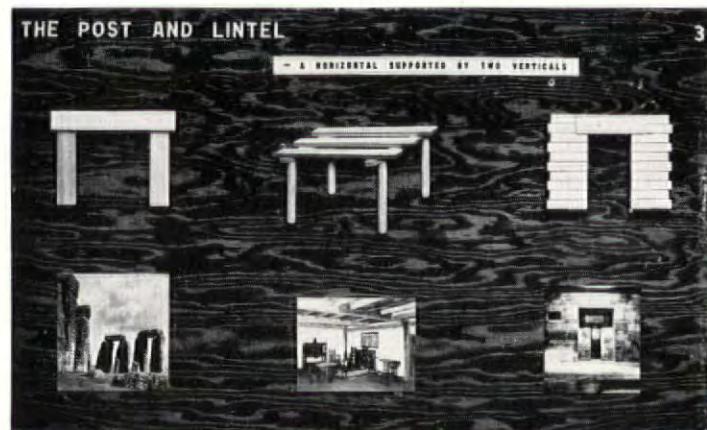
Architecture Exhibitions.

Recent months have brought forth a surprising number of shows of architecture, an even more surprising number of top-notch display jobs. Heading the list is Addison Gallery Director Bartlett Hayes' "What is a Building?", opening at Phillips Academy, Andover, on June 6. Panels from the first section of the exhibit are shown here. With unsurpassed clarity, with the use of both old and new examples, and with an irreducible minimum of words, they tell the complete story of the bones of building.



Many of the panel exhibits can be worked by the visitor. Above, an arch whose wooden keystones are threaded together with dental floss. On panel 5, below, a block of wood in a clamp demonstrates the strength

of the cantilever. To its right is a solidified section of a mushroom emphasizing the point that many structural forms used in building are often expressed with striking clarity and economy in nature.



(Continued on page 20)



HOW TO ELIMINATE UNSIGHTLY STORE FRONT AWNINGS

▶ No matter how useful awnings may be, they're often a nuisance when not in actual use. For they can easily destroy the attractiveness of the front, even before they become weatherbeaten and stained. The photograph below shows a conventional awning installation at the left, and a neat ZOURI Concealed Awning Bar* in the complete front at right.

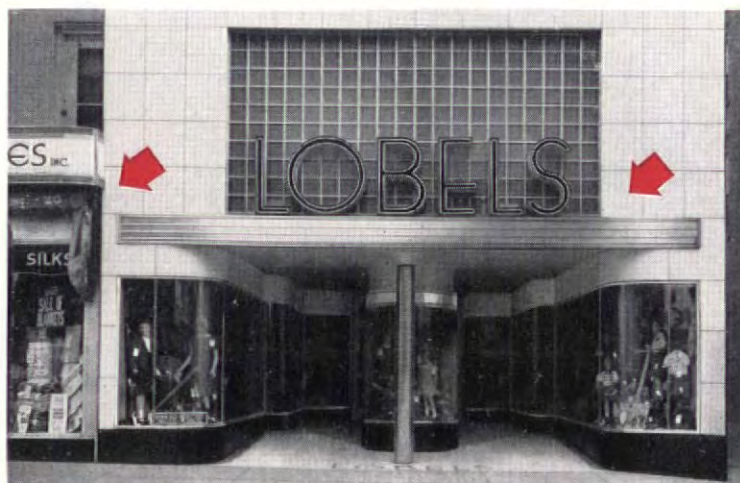
With this type of awning box, recessed back of the building line, the awning is completely out of sight when not in use, and the front is enriched by the addi-

*Hood and Recessed types also available.

tion of a lustrous metal moulding.

ZOURI Rolled Construction, in Bronze, Stainless Steel, or Aluminum with the durable Alumilite Finish, is complete and up-to-date—designed for easy installation and lasting beauty. Sash and bars hold plate glass with a full cushion grip that assures safety and minimum chance of glass breakage. Other shapes offer many decorative possibilities.

Details are shown in SWEETS, and full size details may be obtained by writing ZOURI STORE FRONTS, NILES, MICH.



ZOURI

STORE FRONTS

ILLUSTRATED STORE FRONT MAGAZINE, THE ZOURI NEWS, IS YOURS FOR THE ASKING

FORUM OF EVENTS

(Continued from page 18)

Architecture Exhibits



Last month a group of the younger architects showed their work in "40 Architects Under 40," a show held by the New York Architectural League in collaboration with THE ARCHITECTURAL FORUM. An ingenious arrangement of panels and models made the most of a limited display area. Facing the entering visitor was a handsomely designed but practically illegible manifesto (upper left) which disclaimed responsibility for the New York skyline and the Triangle in Washington, emphasized the group's effort to overcome the prejudices of an outworn eclecticism. Entrance to the show necessitated crossing a series of hurdles representing the obstacles between the client and his completed modern house. Typical of the publicity consciousness of the younger generation is the photograph above, made with the help of several toothsome Bundlers for Britain, and released to the press at the opening.

More ambitious in its scope was the housing exhibition at the Walker Art Center in Minneapolis, illustrated by the three photographs below and at the right. Displays included models of nine contemporary houses, movies, colored slides, a full-sized furnished 1885 interior, button-manipulated exhibits, a trailer.



(Continued on page 22)



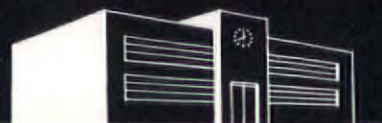
"Fuel cost . . . low"



"We are sold on it"



"Well satisfied"



What do users think of **RADIANT HEATING?**

here are some ANSWERS

Although radiant heating has been successfully used abroad for a number of years, many conservative architects and engineers have reserved judgment until records of performance under America's varying climatic conditions were available. The comments which follow, citing users' experiences in the various types of buildings noted, certainly indicate that properly engineered and installed systems are not only completely practical, but highly desirable.

A LARGE MID-WESTERN OFFICE BUILDING. An executive writes, in part: "Frankly, we have had no trouble with our heating system, nor have we made any but minor adjustments to it since it was installed. We are well satisfied with its operation from all angles."

AN INDUSTRIAL PLANT ADMINISTRATIVE BUILDING. "All of us believe that this is the most comfortable building that we have ever worked in," the general manager reports, ". . . we are sold on it."

TWO SMALL HOMES. The occupant of a Connecticut residence states: "My fuel cost in comparison to other oil burner units in this locality is extremely low. Two of my friends with houses of comparable size, recently built, for the month of January . . . averaged \$20.80 and \$22.00 respectively. My cost for the same period was \$13.13 . . . Makes me and my pocketbook feel very good, though I have felt that way ever since moving in, for real warmth and comfort in winter weather is mine for the first time . . ."

A Pennsylvania owner comments: "My own reactions are that it is by far the most even, pleasant type of heat I have encountered as yet . . . The living room is almost completely carpeted, but we have not noticed that this has reduced our radiation at all. In spite of the tremendous glass area, this room is always comfortable."

PIPING IS IMPORTANT. To assure long-continued satisfaction with radiant heating systems, piping materials must be carefully selected with especial reference to corrosion resistance, thermal properties, and ease of fabrication. Byers Wrought Iron offers an unusually high combination of the necessary qualities. It resists corrosion from within and without; its thermal expansion is the same as that of the concrete or plaster in which it is imbedded; and it can be easily, inexpensively fabricated. Write for our Bulletin, "Byers Wrought Iron in Radiant Heating Installations," for the complete story.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Chicago, St. Louis, Houston, Seattle, San Francisco.

BYERS WROUGHT IRON

FOR *EXTRA SERVICE*

IN *CORROSIVE APPLICATIONS*

CORROSION COSTS YOU MORE THAN WROUGHT IRON

FORUM OF EVENTS

(Continued from page 20)

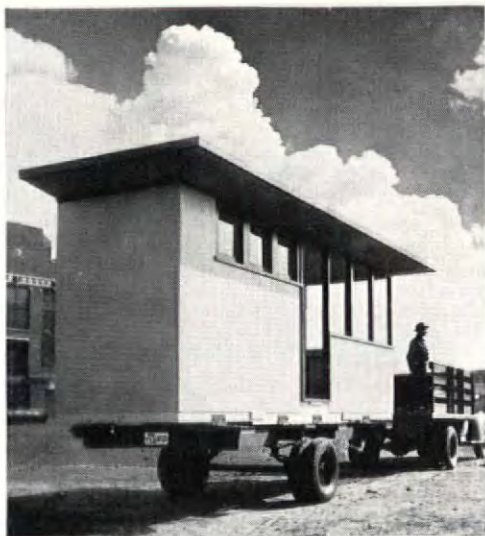
Demountable Houses. Not only has the prefabricated house received a much-needed shot in the arm from U. S. war preparations, but its perennial twin, the demountable house, at long last seems to be making a serious bid for attention. Most promising of the many claimants seems to be TVA's new portable cottage, originated by Louis Grandgent when he was head of the Architectural Section and subsequently developed by the architectural staff under the supervision of Carroll Towne. Six of these houses have been turned out to date, and are being used as tourist cottages. The houses are built in units, weighing three tons each, and the sections arrive complete down to light bulbs and screens. Construction is wood frame with exterior of weatherproof insulating fiberboard, and the sections are bolted together on the job. Assembly takes about four hours, and dismantling is carried out equally quickly. TVA offers its newest creation for "defense or emergency housing. Large groups could be easily removed from a location after the need for them had been satisfied, and made available to areas where housing deficiencies existed."



1.

2.

1. Cottage section on the assembly line. 2. On the road. No special trucking permit is needed. 3. A hand hoist drops the section on a rail foundation, similar to those in the shop. 4. Cottage complete. Note cantilevered floor.



3.

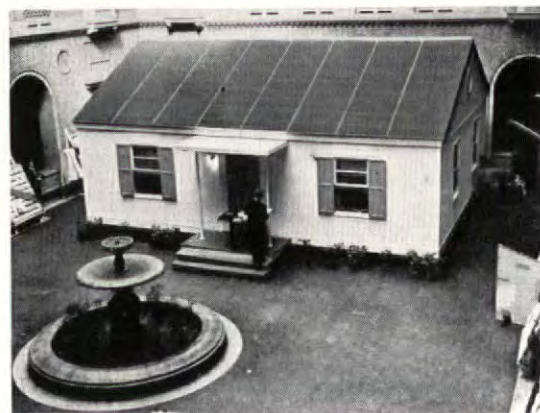


4.



Wide World

Cotton house. Also demountable is the Department of Agriculture's latest solution for the cotton problem, a plywood panel house with cotton pasted on to all walls and ceilings. It is hopefully claimed that cotton provides a "perfect" base for interior and exterior finishes, ignoring the fact that plywood by itself is not so bad and is that much cheaper. Insulation is also cotton. Opening gun in the cotton campaign was the erection of the house in Agriculture's gloomy patio; later guns will include demonstrations in the larger cities.



Acme

(Continued on page 68)

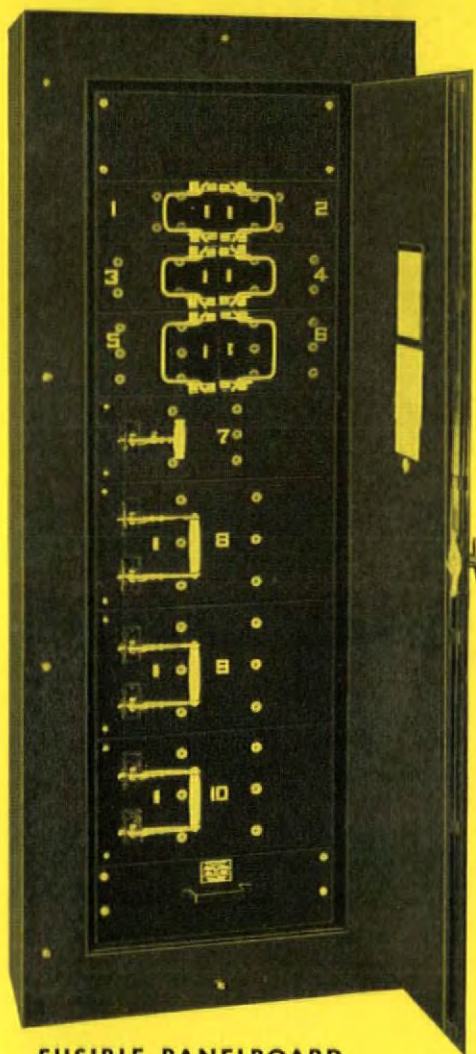


PENBERTHY INJECTOR COMPANY

Manufacturers of QUALITY PRODUCTS Since 1886
DETROIT, MICHIGAN • Canadian Plant, Windsor, Ont.

Less cost... Less space

WITH THE NEW **SQUARE D** MH **MULTI-BREAKER PANELBOARDS**



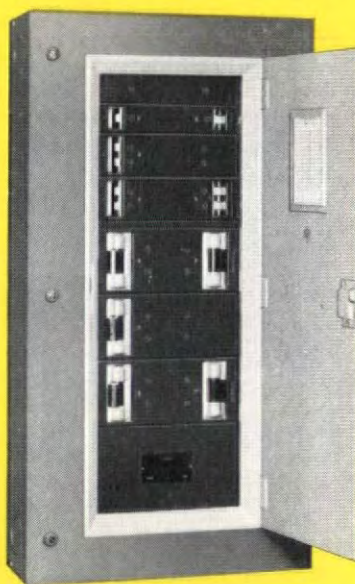
FUSIBLE PANELBOARD

Illustrated above is a standard fusible distribution panel for power and light.

Industrial Architects — **PLEASE NOTE!**

● Space is a vital factor in modern industrial and commercial building design. And that being true, industrial architects will be quick to appreciate the inherent advantages of these new and extremely compact Multi-breaker distribution panelboards.

Contrast the two panels illustrated and you'll have the answer to your next problem of providing protection for power and lighting circuits in a limited space.



NEW MH PANELBOARD

Illustrations show comparable size. The MH takes just about half the space — does the same job. Breakers are furnished in 15 to 100 ampere capacities—2 or 3 pole, for 115 or 230 volt, single phase and 3-phase systems.

Your industrial and commercial clients are well aware of the advantages of circuit breakers over fusible panels. High cost often has prevented the selection of circuit breakers. The new Multi-breaker distribution panel with its low cost becomes the logical choice for 115 or 230 volt systems in modern industrial and commercial buildings.

For further information see our catalog in SWEET'S ²³/₁₁—or write for Bulletin 5200.



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... NOT JUST "WINDOW GLASS"**

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PENNVERNON WINDOW GLASS
PITTSBURGH PLATE GLASS COMPANY

"PITTSBURGH" stands for Quality Glass and Paint



Let the daylight in!

WITH TRUSCON STEEL WINDOWS



Toledo Scale Company, Toledo, Ohio

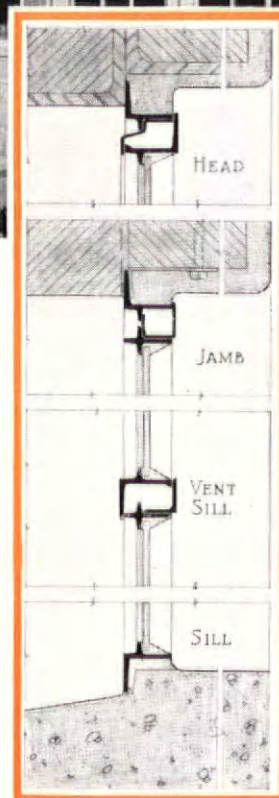
Albert Kahn, Inc., Architects & Engineers

A. Bentley & Son, General Contractor

Buildings with windows are so basically sound that no innovations can ever displace them. • Buildings with windows, all factors considered, cost less to build and less to maintain. • Buildings with windows are more flexible in respect to room-by-room control of natural lighting and ventilation. • Buildings with windows are friendly buildings, courteous to those who would enter, cheerful to those who reside or work within their windowed walls. • Yet, in the face of a foe, buildings with windows can now be made as invisible as buildings of solid masonry. The cost of equipment to convert a windowed building into a temporary, windowless

building is surprisingly moderate.

• Truscon's complete line of Steel Windows and auxiliary equipment makes it possible for you to plan windowed buildings of every description...convertible into windowless buildings...and as easily convertible to their original friendly windowed state. • Full particulars will be sent to you promptly upon request.



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Back-to-Normal Production Will Demand FREE Light and Ventilation!



This topsy-turvy world *will* go back to normal! When it does, American industry will again be faced with everyday problems of peacetime production . . . economy of manufacture, good working conditions for employees, and particularly the free use of natural daylight and fresh air. ● Prepare for that day too, in the defense plants you design or build! ● Whatever lies ahead, Ceco (Bonderized) Industrial Steel Windows are your best bet. They give you low first cost and minimum upkeep costs (a mighty important point when tightened operating budgets are again the order of the day!) ● Ceco engineers in 22 principal cities will assist you in saving time and labor in your defense projects!

CECO STEEL PRODUCTS CORPORATION
Manufacturing Division, 5701 W. 26th St., Chicago

Prompt Ceco Warehouse Service . . .

In 22 strategically located industrial cities, Ceco warehouses are carrying ample stocks of Ceco products needed for the construction of defense plants. Rush delivery, keyed to the needs of stepped-up defense production schedules, is Ceco's bit in the national defense program. Depend on Ceco!

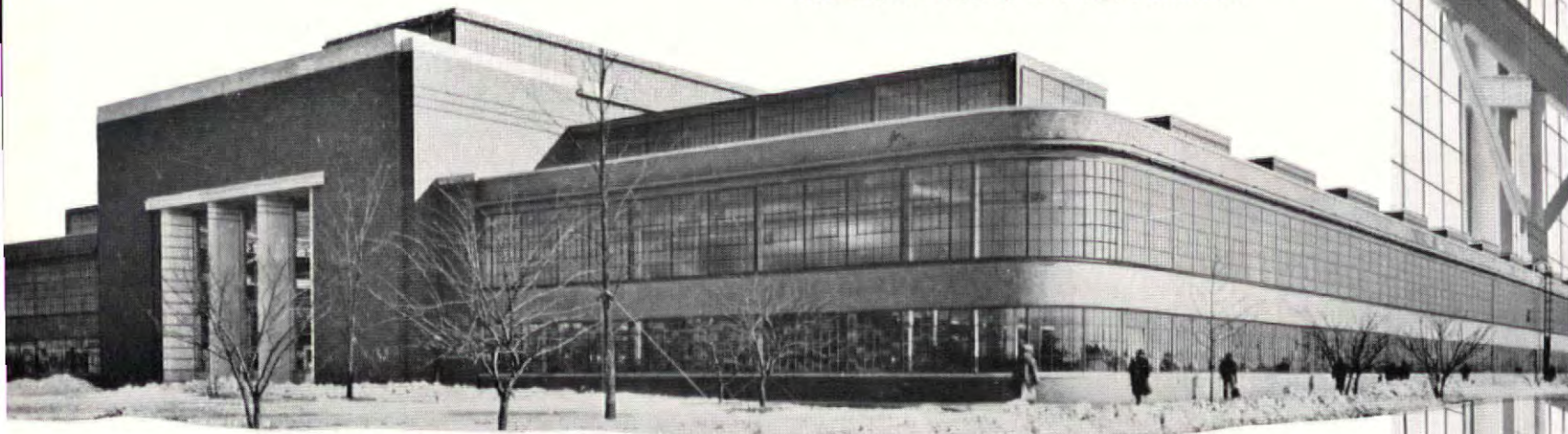
★ (Shown above) Central Steel & Wire Company, Chicago. Alfred A. Alschuler, architects, engineers and contractors.

Ceco Industrial Steel Windows

**OTHER CECO
DEFENSE CONSTRUCTION
PRODUCTS:**

INDUSTRIAL STEEL DOORS • METAL FRAME SCREENS • STEEL ROOF DECK • STEEL JOISTS • CONCRETE REINFORCING BARS • WELDED FABRIC • MEYER STEELFORMS • ADJUSTABLE SHORES & COLUMN CLAMPS • METAL LATH & ACCESSORIES

Tool and Die Shop, Ford Motor Company, Dearborn, Michigan. Giffels & Vallet, Inc., Engineers; Louis Rossetti, Architect; J. A. Utley, Contractor.



How this NEW

STEEL SASH SYSTEM gives you

Lower Cost Defense Plants . . .

● Some 20 years ago, in collaboration with the Engineering Research Department of the University of Michigan, Fenestra Engineers began a sustained series of studies. These involved the problems of the needs, the supply and the control of natural light and ventilation in industrial buildings. The program to date has cost upward of \$200,000, and has culminated in new window systems for scientific daylighting and fresh air ventilation. The savings effected for plant owners by these Fenestra Window Systems are estimated to total several millions of dollars.

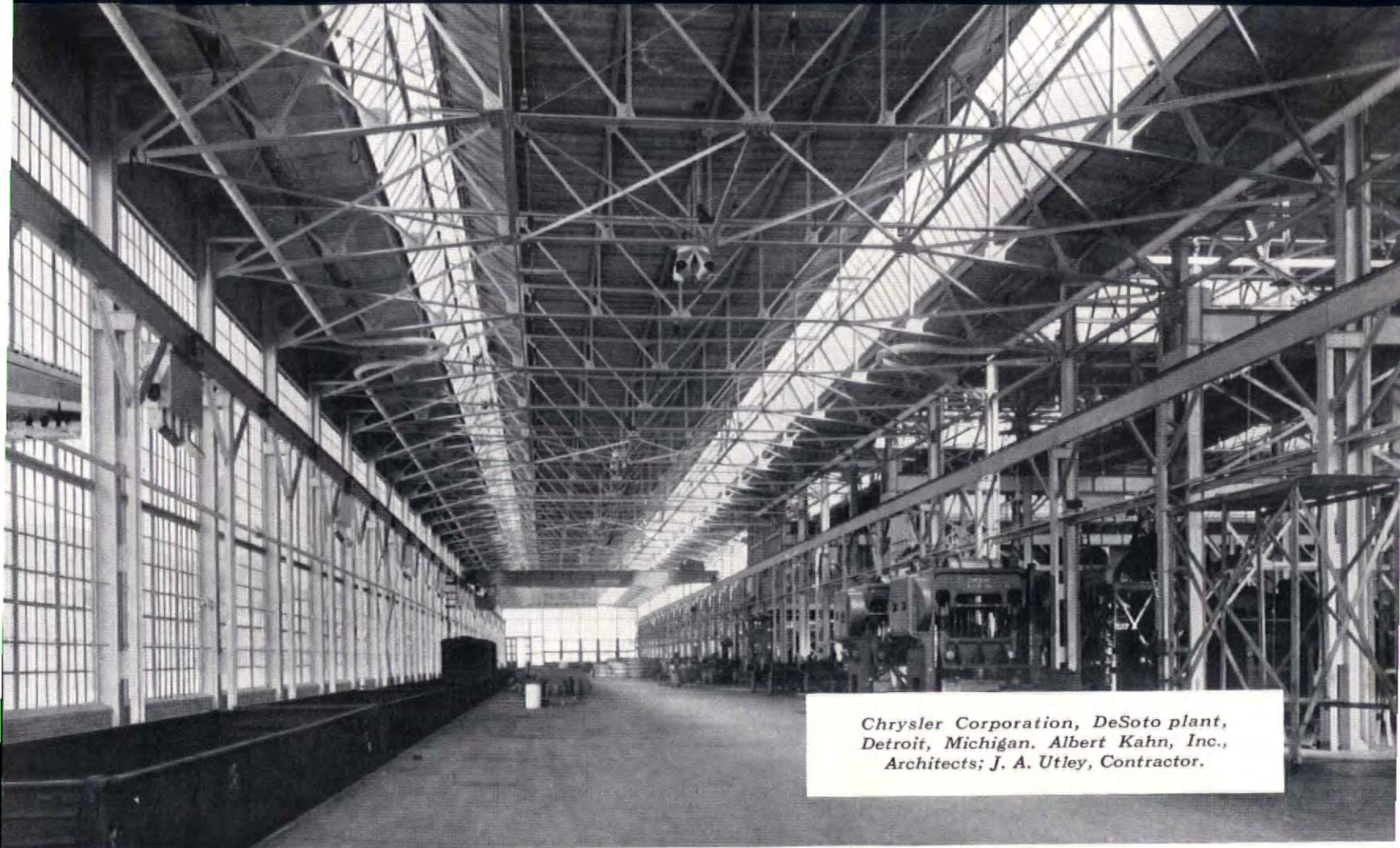
LOWER COST—The properly fenestrated defense building effects very large savings over other designs, in five major categories: (a) in building construction cost, (b) in building equipment cost, (c) in plant operating cost, (d) in plant maintenance cost, and (e) in post-emergency conversion cost.

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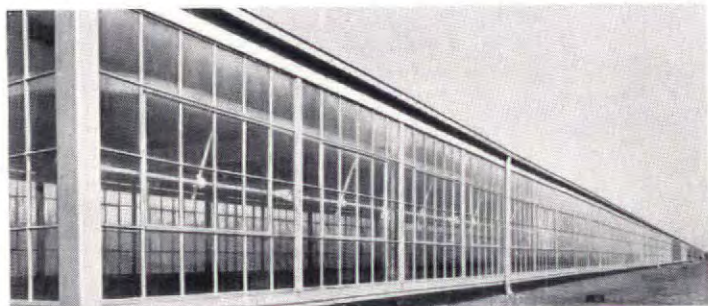
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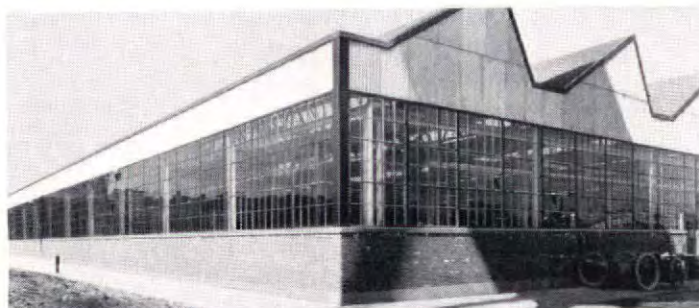


*Chrysler Corporation, DeSoto plant,
Detroit, Michigan. Albert Kahn, Inc.,
Architects; J. A. Utley, Contractor.*

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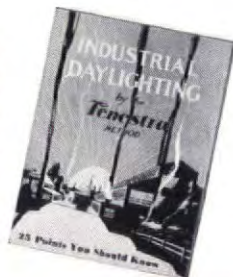
*Kelsey-Hayes Wheel Company plant, Plymouth,
Michigan. Giffels & Vallet, Inc., Engineers; Louis
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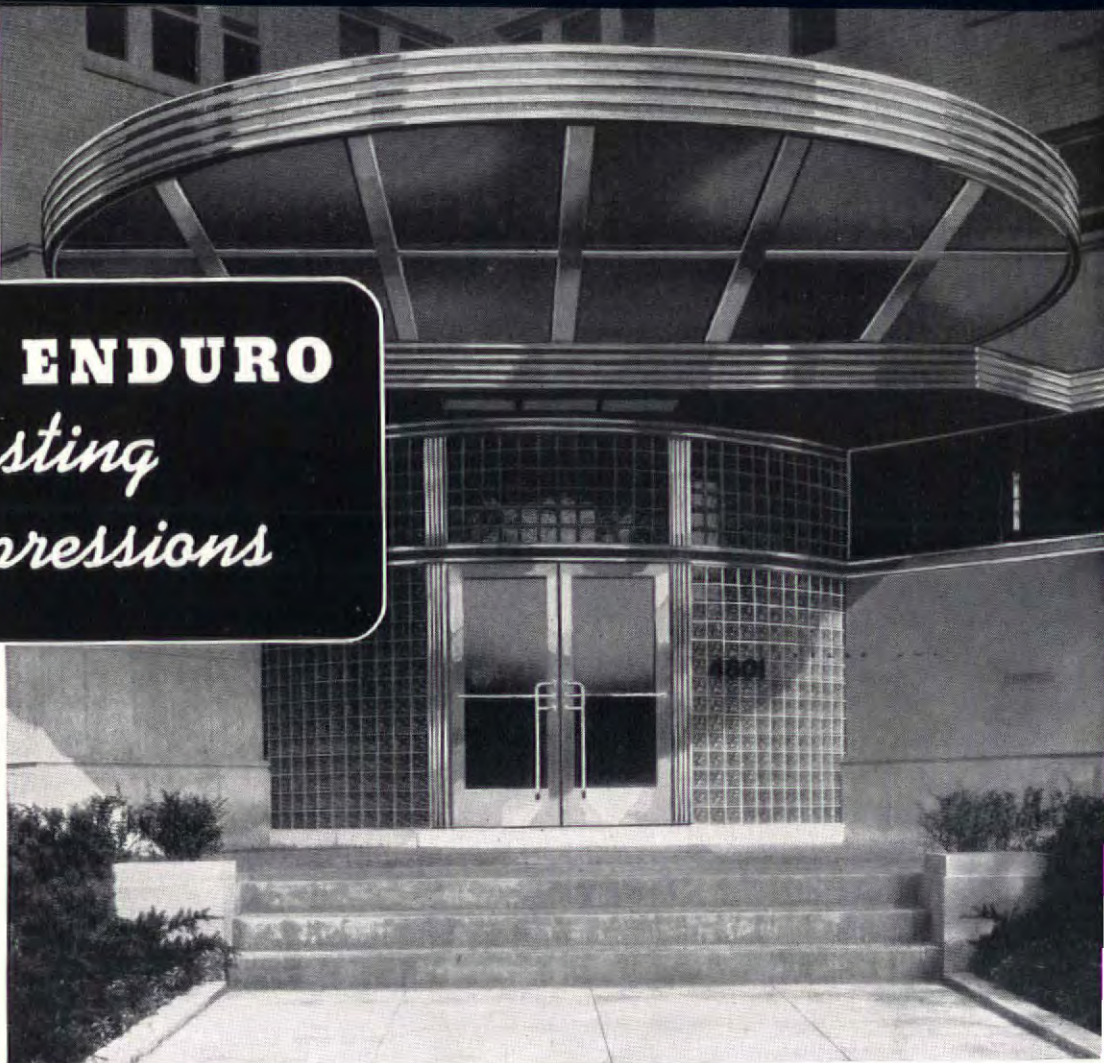
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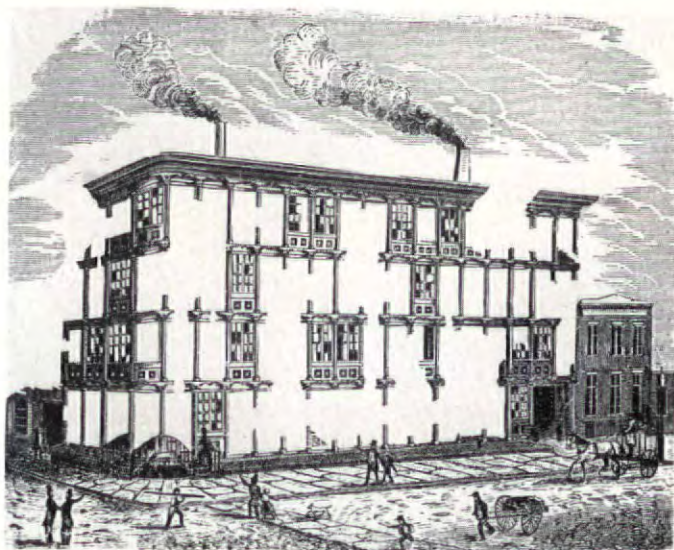
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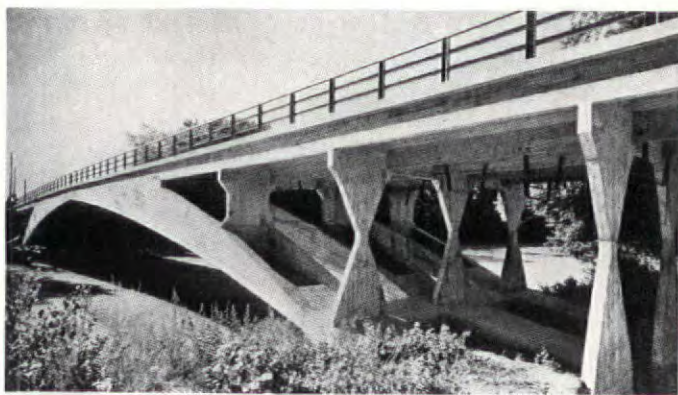
BOOKS



BEDFORD PLACE, LONDON, 1800.



DESIGN TO SHOW STRENGTH OF CAST IRON FRAME. JAMES BOGARDUS, 1856.



BRIDGE NEAR GENEVA, BY ROBERT MAILLART, 1937.
(BELOW) STREET IN AMSTERDAM.



SPACE, TIME AND ARCHITECTURE, by Sigfried Giedion. The Harvard University Press. 601 pp., illustrated. 8½ by 10. \$5.00.

Sigfried Giedion is a busy Swiss art historian who espoused the cause of modern art some twenty years ago. He has since written indefatigably on its various manifestations, has been one of the guiding lights of the International Congress of Modern Architecture, and in the winter of 1938-9 he came to this country to deliver the Charles Eliot Norton lectures at Harvard. This book is an outgrowth of the lectures. Like so many books which attempt to discuss one phase or another of contemporary civilization, "Space, Time and Architecture" opens with the comforting statement that it is intended "for those who are alarmed by the present state of our culture and anxious to find a way out of the apparent chaos of its contradictory tendencies." If the book falls somewhat short of its grandiose objective, it is nonetheless a critical and historical survey of the first importance, one of the few contemporary works to present successfully a picture of the modern scene and its historical background as a consistently developing process.

The story, which takes almost 600 pages in the telling, is not a complete one; it is the first point of divergence from the conventional history that the book does not begin with the sun-baked brick architecture of Mesopotamia and end with the Golden Gate bridge. Certain periods have been selected for investigation, and as it happens these are periods which are of special interest in connection with present-day trends. Thus the Baroque period for instance, is discussed at length, although most histories have tended to dismiss its productions as a vulgarization of earlier Renaissance forms. To Giedion, "the last phases of the Baroque development are the true inheritance of the epoch out of which we grow." Baroque is presented as a universal world outlook, as consistently expressed in the work of Pascal and Newton as in the churches of Borromini and Guarini. Its great achievements in architecture were the undulating wall and the flexible ground plan, both features which have undergone significant development.

The approach established in the section on Baroque continues through the book, whether the subject is Versailles or Telford's bridge designs. In every instance the object is to extract those characteristics of basic importance (called "constituent facts") from the surrounding mass of insignificant elements ("transient facts"). To any scientist worthy of his salt this method is so obvious that it deserves no mention; applied to the history of architecture it is still news. The value of a book based on a more or less scientific approach is related closely to the facts selected and the use made of them. The result, in this case, is that by his selection and emphasis, the author has presented the clearest picture of the trends leading to modern architecture that has yet appeared.

The components of this trend are numerous and varied. They range from Borromini's curving walls to Wright's prairie houses. They include Chicago architecture of the nineteenth century, London squares, the Victorian uses of cast iron, Art Nouveau, American machine design, LeCorbusier's competition projects and a host of others. In fact, the real interest in this book, which is far from easy to get through, lies not in its attempt to guide the reader through the "apparent chaos" of the present time, but in the vast amount of little-known information which it presents. Certainly the sections on work in the nineteenth century,

(Continued on page 88)



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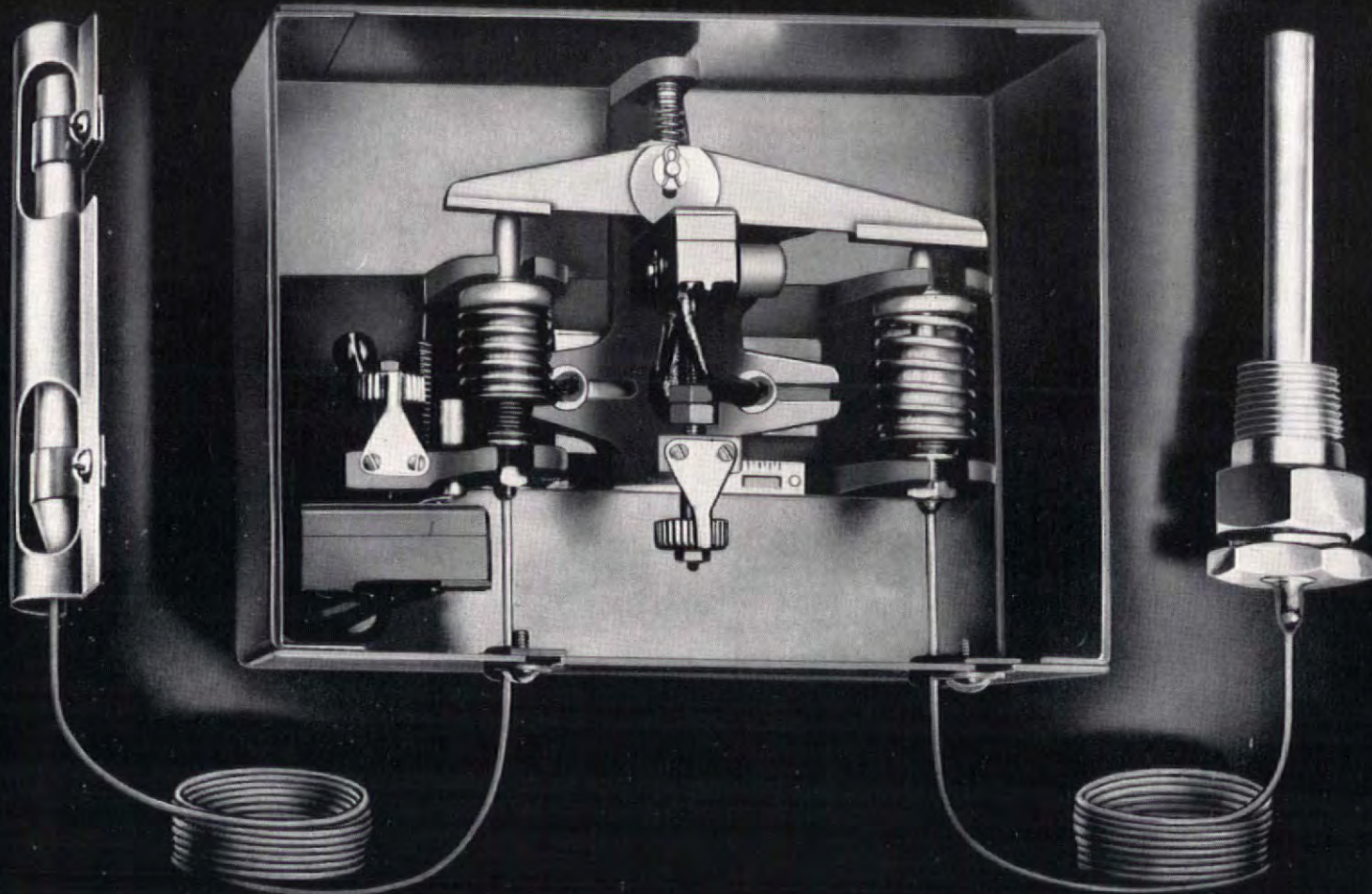
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2. Edmond Meany Hotel, Seattle, R. C. Reamer.
3. Shangri-La Apartments, Santa Monica, Wm. E. Foster.
4. San Diego City Hall, Louis J. Gill.
5. Los Angeles Union Station, J. H. Christie, Johnson, Richard S. Regua and Sam W. Hamill.
6. All Souls Church, Alhambra, Calif., H. C. Newton.
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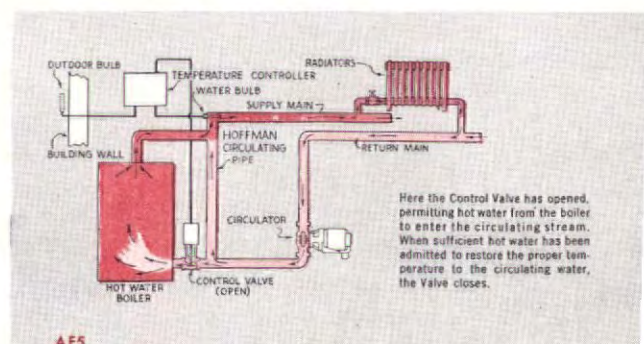
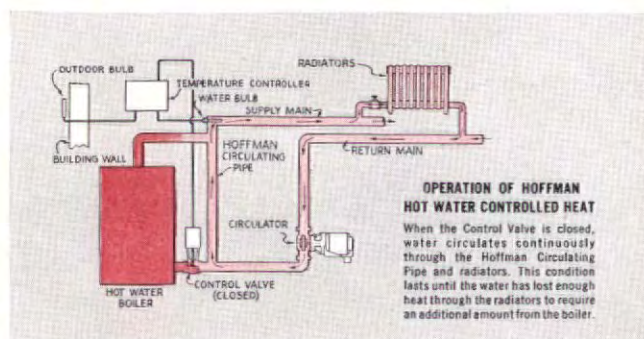
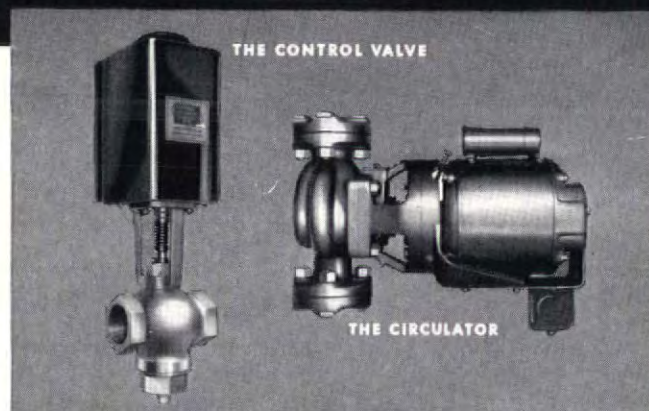
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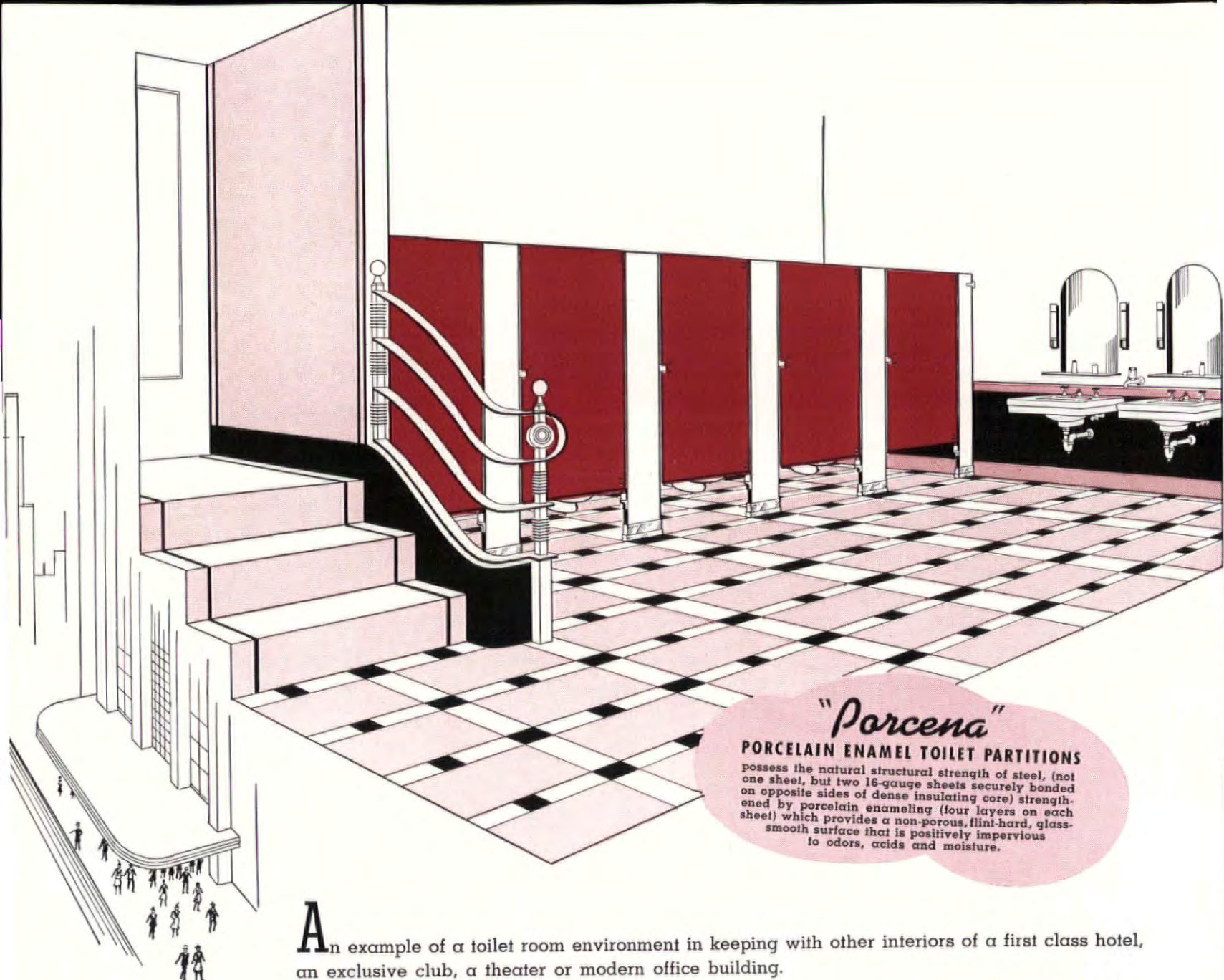


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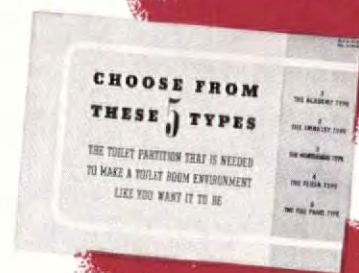
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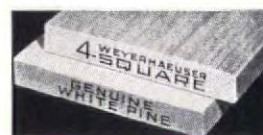
His dad told the architect to design the kind of room that he had dreamed of when he was a boy, a room he would like to come to and hate to leave. They decided to use Genuine White Pine for paneling, ceiling and trim, because it is so friendly and pleasant to live with. Its beautiful soft even texture and straight grain helped to create that rugged naturalness which the nautical touch demanded.

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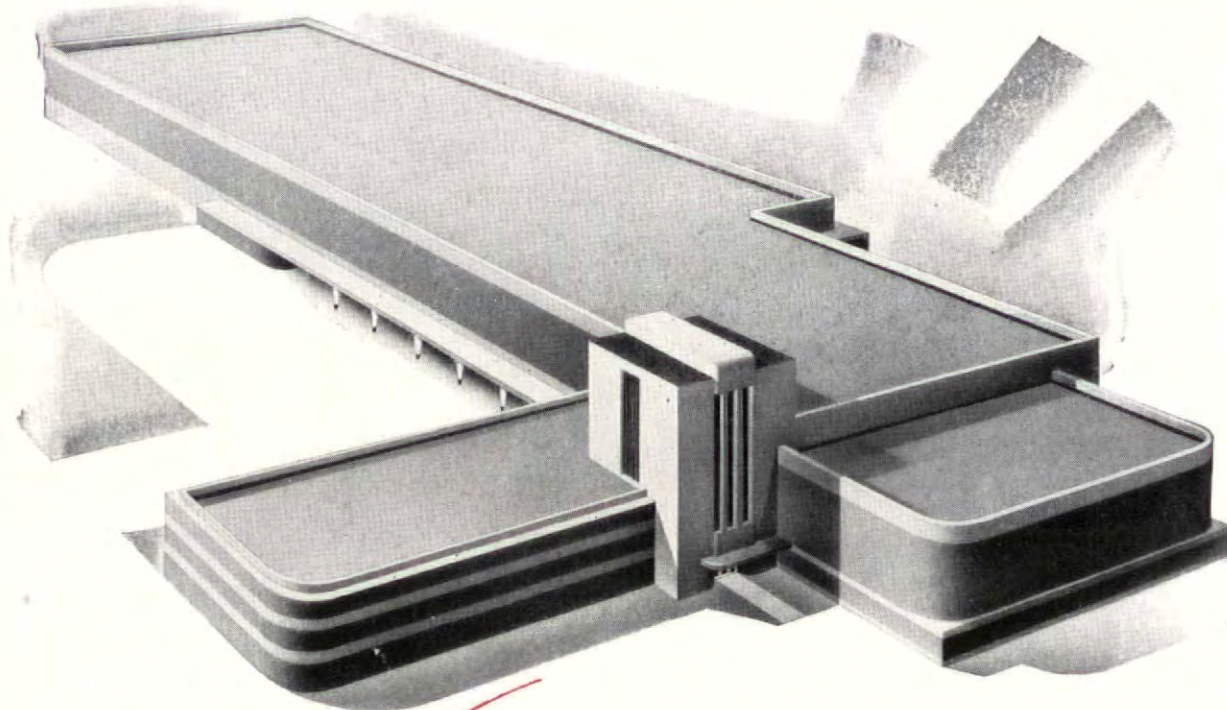
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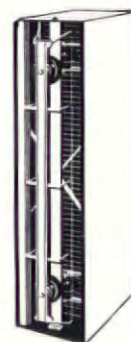
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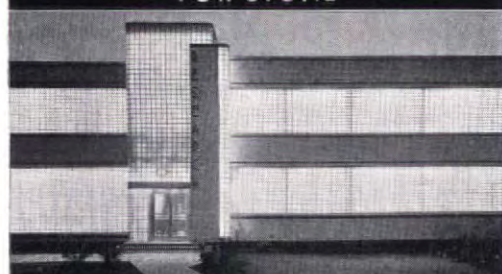
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LETTERS

DEFENSE HOUSING cont'd

The pages of a monthly magazine provide a regrettably pedestrian platform for debating a program which is marked—or should be—by action. However blinding the speed of defense housing, it does not blur the fact that neither the housing nor the site plans for it are designed by private local architects but by a Government Bureau in Washington, that few of these projects are being constructed by experienced, local house builders but by out-of-town general contractors unaccustomed as they are to public housing, and finally that successful prefabricating are only now inching into daylight. Much defense housing remains to be built. Nothing in the accomplishment to date precludes a change in procedure. Nothing in the changes proposed is likely to lower the standard or lessen the speed.—Ed.

Forum:

As you know there are 2,554 dwelling units now under construction in San Antonio which are being built under the USHA; this work was spread among a large group of San Antonio architects. Inasmuch as reference was made in Mr. Carmody's letter to an overall cost of between \$2,000 and \$3,000 per dwelling unit you may be interested in the cost of these San Antonio units.

The units being built in San Antonio are strictly fireproof, the only wood used being the doors; foundations being poured reinforced concrete pile, average depth 25 ft. All floor slabs and roof slabs are reinforced concrete. Ample ventilation is provided under the first floors, the walls are built of vertical cell clay tile, stuccoed outside, and plastered inside with Portland cement plaster. The exterior stucco is generally in four colors. The entire interiors, except the floors are painted. All windows are metal casements, screened, all door bucks are metal as is all shelving.

As you know the requirements set up by USHA stipulate the type of construction that will give the maximum amount of service (60 years) with a minimum upkeep or maintenance.

Our costs in San Antonio reflect a sincere effort on the part of the architects, and a close study by them of materials and their use.

The average size dwelling unit in San Antonio is 4.6 rooms, except Project Tex. 6-1A which is composed entirely of 5½ convertible type dwelling units. By convertible type is meant that one-half of these units can be converted to 4½ or 6½ room units by use of inter-communicating doors.

The costs on these five projects are as follows:

The overall cost per dwelling unit, which includes the general construction contract, the demolition and site improvement contracts, water heaters, kitchen ranges and space heaters is \$3,020. The site improvements include new streets and paving, curbs and walks, storm sewers, new electrical services throughout, gas, water, sewers, playgrounds, walls, fencing, landscaping and planting.

The cost per dwelling unit, excluding water heaters, kitchen ranges and space heaters is \$2,720.

The cost per dwelling unit, excluding site improvements and outside utilities is \$2,389.

The total cost including all administrative overhead by the Local Housing Authority, traveling expenses for USHA employees visiting San Antonio, cost of appraisals, land costs, attorneys' fees and other fees was \$3,996.86.

The land purchased for these projects was generally in very densely populated slum areas.

We note with interest, and what would be amusement if it were not so alarming, the last paragraph of Mr. Carmody's letter in which he states, "The army is one of our large clients." This reflects the aims of this bureau, wherein they set themselves up as an individual practitioner would and solicit work to maintain their bureaus in the same manner that the private architects are doing.

In conclusion, we would like to state that it is our belief that if an investigation could be made of some of the Emergency Housing Projects being done by the Procurement Division with a view of comparing the value of the buildings obtained under the Procurement Division as against the value of the buildings obtained by the USHA through the use of private architects, that the Emergency Housing would not reflect a great deal of credit to the Procurement Division, or to the head of the Federal Works Agency. . . .

PEYTON G. COOPER, *Secretary*
West Texas Chapter A. I. A.
San Antonio, Texas

Forum:

. . . Having been close to the Procurement Division and the Federal Works Agency, I can appreciate to some measure the points which they have as regards centralizing the work in Washington. Certain advantages do accrue in type design by such a procedure, and when a good design is boiled down it can be used in many different instances and save a great deal of duplication of effort in having a

number of people attempt to go through the same procedure. This we did find in the design of the type post office, which once developed, probably arrived at a more perfect solution than could be done by a great many individual architects going through the same motions. They would approach the problem as a new one and it takes a good deal of study to develop a perfect and efficient unit.

There are of course many cases where the private architect would operate better than a Washington agency, and this would come into play where local conditions demanded a different solution. It would be my feeling that the right way to approach this problem would be for some central agency to develop a perfected system of unit design as a suggestion of the standards required by the Army or Navy, and then turn this information over to private architects to develop into projects and adapt to local conditions. It seems ridiculous to me that one central agency should attempt to handle all the work in the country. . . .

PHILIP B. MAHER

Chicago, Ill.

Forum:

. . . *The Federal Architect* mentions building in the \$2,500 range. With due respect to the government's experts, we do not see any mountain in that particular mole-hill. If one house can be built for permanent owner-occupancy for \$3,000, and look well, we do not see why several hundred for non-permanent occupancy cannot be built for considerably less and still look well. We have developed a scheme for low cost rental units of four rooms and bath that can be built in groups of four for approximately \$1,500 a unit, and with Minnesota blizzards in mind. We are not ashamed of their appearance. . . .

FROST & LOFSTROM

Willmar, Minn.

Forum:

I have read your words on Defense Housing with a certain nostalgia. I say nostalgia because I know the picture fairly well from both sides, as a former member of the Branch of Initiation, PWA Housing Division in 1936 and as a private architect in search for housing work in 1941.

There is no doubt in my mind but that the vested housing authorities in Washington have erected a pretty strong barrier against the solicitations of private architects. This, from my experience, is nothing new. It is the fault of both parties; of the authorities because as controllers of the purse strings they feel a sense of power which, especially in younger men,

(Continued on page 58)

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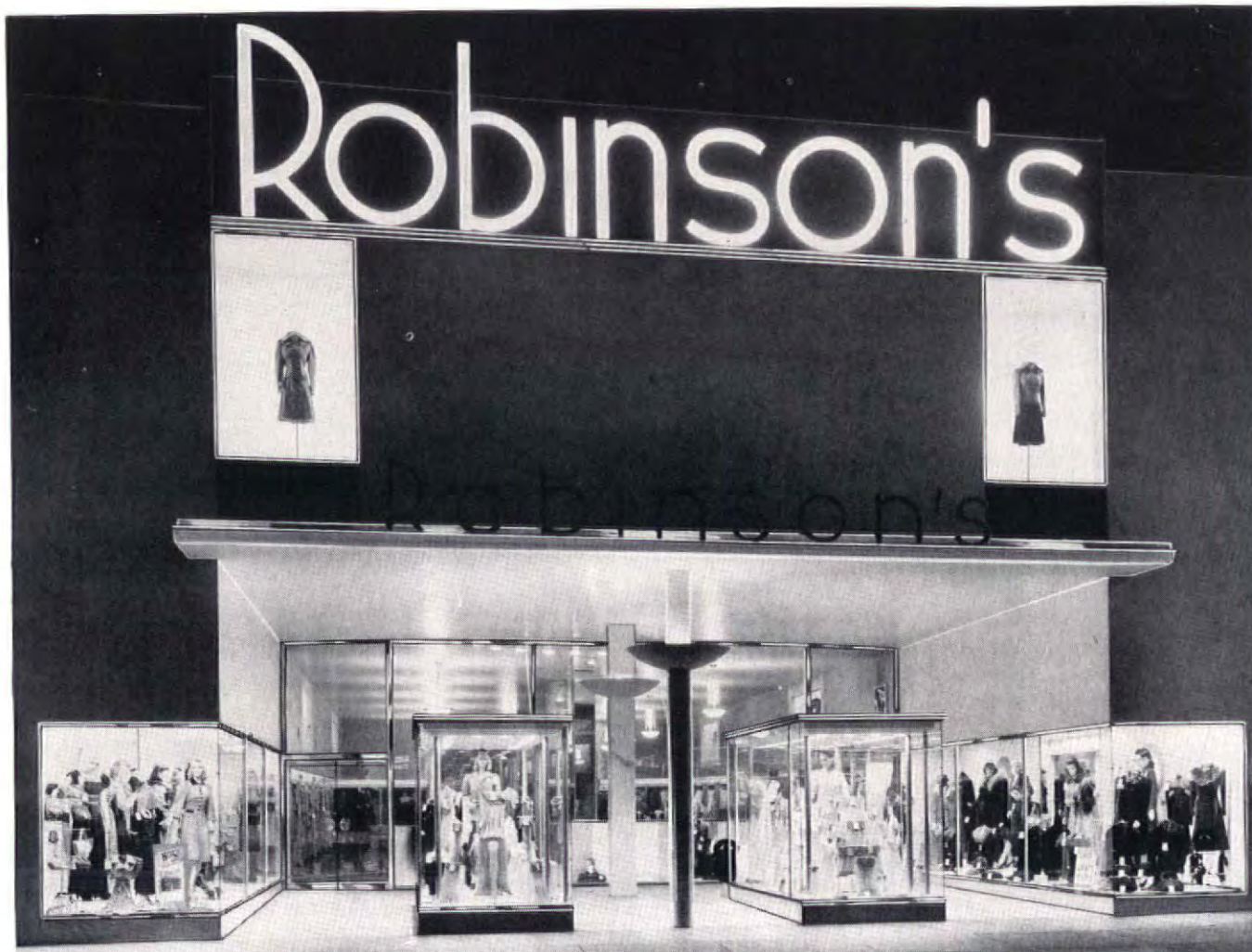
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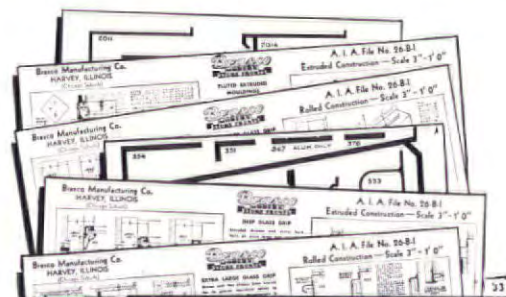
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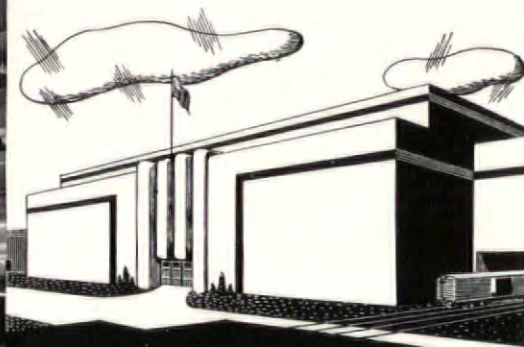
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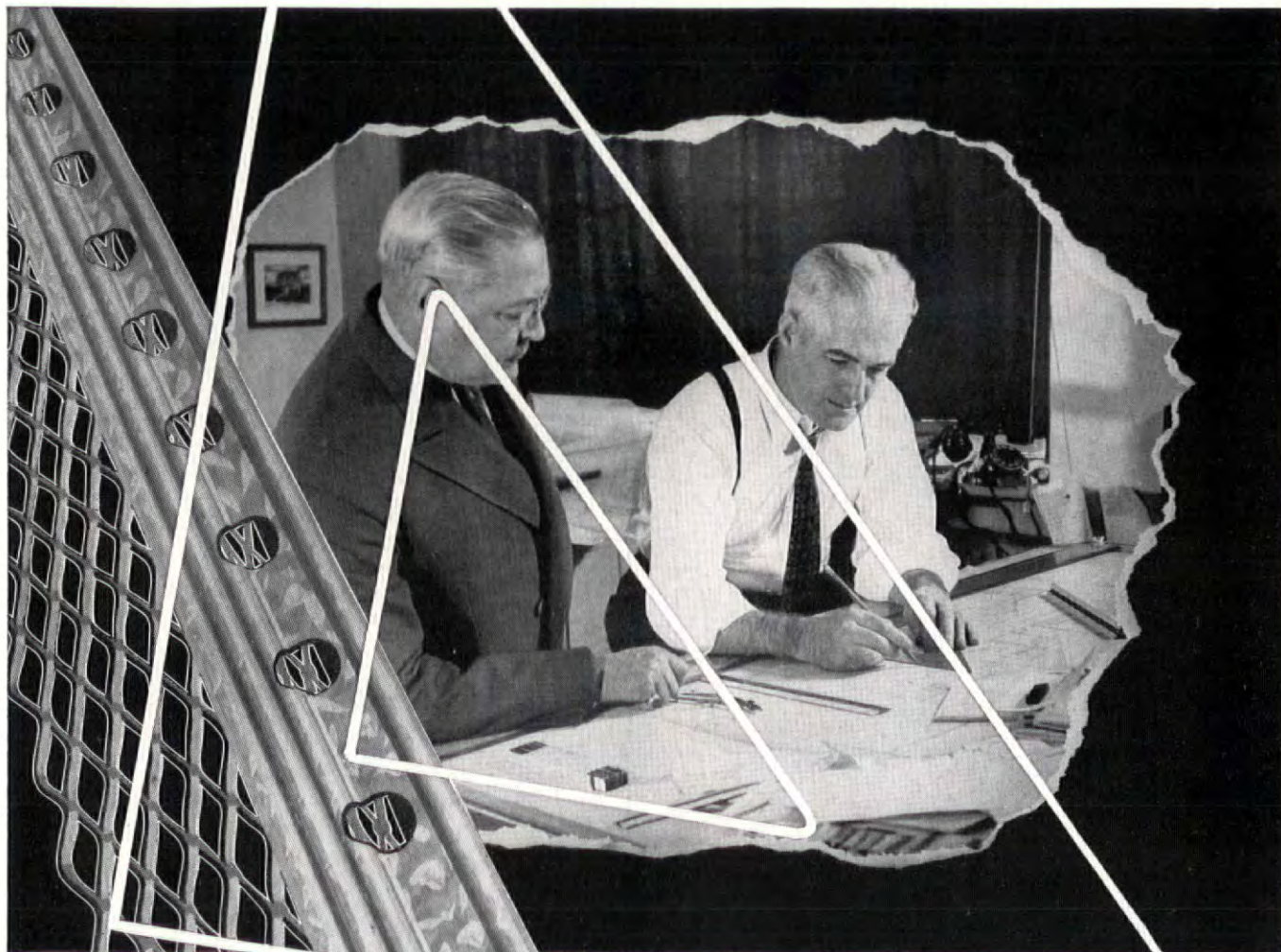
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In Time of War Prepare for Peace

The United States is justly proud of its industrial progress, of the managers, technicians and workers who have brought it about. We make everything well except the circumstances of our lives. Man puts his foot out of bed in the morning with reasonable certainty that neither the day nor the year will produce any substantial improvement in his environment. This is not an indictment of democracy but of a mistaken idea that planning for the future (which of course implies some measure of control) is not the democratic way. Surely as a people we have now reached the point of national maturity which no longer will tolerate avoidable waste of the technical skills and instruments we have worked so hard to master. Therefore, the Editors of THE FORUM believe it will serve a useful purpose if thought is now given to the part Building* must assume at the close of the War. Presented here and on the page following is not a plan but an outline of the key problems. Study and discussion of these subjects are essential for ultimate development of a plan for reshaping America. To stimulate such study and discussion THE FORUM will publish a series of feature articles exploring each of the subjects which form the basis of the following synopsis.

POST-WAR PATTERN

The building business more than any other has been the unenviable recipient of violent booms and depressions for more than a century. The regularity of its cyclical pattern has persisted so long that this situation has been widely accepted as inevitable. Now, however, some are tempted to challenge this condition and to consider ways and means of producing a less hazardous future.

The social, political and economic dislocations which are the inevitable end product of a world war must be anticipated. There is a growing realization that Building may be destined to assume the major role of cushioning the aftermath of the war. The very size of the Building industry, its capacity to absorb labor counted in millions and to use constructively capital counted in billions are among the factors which single out Building. Equally important is the value of Building in providing an improved physical environment which can substantially promote nationally acceptable social relationships. Add to these desired objectives the need for rehousing a large portion of our people and of rehabilitating the blighted areas of our cities and towns. Thus we find a happy conspiracy of factors which give validity to Building's opportunity and responsibility in the reconstruction period.

This very combination of favorable influences constitutes the danger that Building will face the future complacently and, therefore, a grave reason why the facts should now be fully explored. Any assumption that Building as it has been organized and practiced in the past is going to be able to meet adequately the post-war problems must fail to define those needs.

Building's post-war problems are already with us; the war period will further aggravate them. Let us briefly examine the major situations which will appear in more acute form in the post-war building scene:

1. **CITIES.** As devastating to the life of any city as the deadliest air raids are the penalties of unplanned growth. Our cities, not a few of them but a great many of them, face social and financial bankruptcy. They are beyond the point where homeopathic remedies can cure the ill. Needed is complete replanning, rehabilitation, and rebuilding of large areas to make the city the most attractive place to work in and to live in for those who logically belong there. No lesser approach can meet the urban problem.
2. **TOWNS.** What has happened to the city has happened to many a town and village. The physical condition of buildings is so often bad, community amenities so deficient, that such places no longer provide an anchorage for those whose ability and age prod them to look elsewhere for a richer life.
3. **HOUSING.** Right this minute the U. S. needs housing in fantastic quantities, housing not alone

*Because our language supplies none better, the word "Building" is used in an all-inclusive sense, embracing planning, zoning, design, construction, financing, etc.—ED.

for the underprivileged but for millions of others who now live in quarters completely below acceptable standards. This condition holds with equal force for those who live in cities, towns, villages and on the farms.

If these are the major problems, in what shape is Building to deal with them?

The picture is mixed. It is better than many think. More than a little progress has been made in the past few years in many directions. But it is still an essentially bad picture with numerous basic problems needing correction before the work of reconstructing America can be undertaken successfully.

Let us note a few of the major improvements which have been applied to the building process recently:

1. The financing of homes through the widespread adoption of the long-term amortized mortgage, often Government insured, stands as a major reform.
2. The elimination of building rackets in some localities has established a pattern for meeting this problem and a conviction that it can be met.
3. Architecture is proving its mastery of modern conditions and is rejecting old solutions to new problems. Notable advances have been made in the small house, the school, the hospital, the factory and the store.
4. There is less piecemeal planning. There is a trend toward large-scale building of integrated neighborhoods.
5. Important new techniques, materials and equipment are finding a more receptive market.
6. Costs, particularly of small houses, are lower for a better house than heretofore.
7. Low rent housing and slum clearance have made a start as a national program, are recognized as a limited public purpose.

Thus, for an "industry" which traditionally exhibits more of the characteristics of agriculture than of big business, Building's recent past is not without accomplishment. It loses lustre only when measured by its responsibilities and by comparison with truly industrialized activities. Measured thus Building still has far to go.

What are some of the further correctives which Building must apply?

1. Building must work to a plan—each house to its neighbors, the neighborhood to its community, the community to its region and ultimately the regions to the nation.
2. It must adopt rational standardization to gain economies.
3. It must further integrate and enlarge operations to bring about a responsible leadership and a more intelligent collaboration of those who plan, those who build, those who finance, those who deal in land, and those who make and supply materials and equipment.
4. It must solve the problem of the really low cost house, not by producing a stripped down, compressed shell, but by affording complete modern living amenities at decreasing cost of purchase and maintenance or of rent.

5. It must remove every unnatural restraint practiced by any branch of Building. This purge must include obsolete codes and ideas quite as completely as illegal practices.

6. It must face the fact that Building continues low in public opinion, and carry out a large-scale program of constructing a new and favorable national concept of Building. Building must not only live right but must make sure the public knows it does.

7. It must expose the entire building process to intensive, broadminded research covering not only technology but thorough exploration of the major factors which will improve the quality of its services to the public and the stability of building itself.

8. It must work for an effective control of land use. Zoning ordinances must be made adequate.

9. It must work for a rationalization of taxation to attract capital interested in a secure, reasonable return.

10. It must encourage the further study of planned public works as a means of shockproofing depressions and providing continuous employment of men, materials and money.

11. It must recognize that technological advances will come more rapidly in the future and it must therefore provide lower cost and more flexible buildings. The approach must gradually shift to the most modern standards attainable. Building must advocate what industry has long practiced—a willingness to depreciate structures before the period of physical obsolescence has been reached. The facilities, existing and to be created, recently described by the President as "Democracy's Arsenal," may be converted to constructive post-war use in this program.

12. It must rationalize its labor problem. Building labor needs a higher annual wage but a lower hourly rate. Plans which meet this objective and which eliminate jurisdictional strikes and similar costly restraints must be evolved. Opposition is great, but so would be the gains.

13. It must redefine its relations with Government. The present tendency of Government to absorb various building functions must be converted to a policy of effective collaboration between Government and private enterprise, and the creation of a national atmosphere in which private enterprise will reach its maximum useful capacity.

If all these matters were to be summed up in a single thought, it would be this: Until recently America has been characterized by unplanned expansion. With population stabilized, with few new frontiers to open and with millions of decrepit structures, we now enter an extended period of *replanning*, *rehabilitation* and *rebuilding*. Tomorrow's horizons are not over the brow of the hill; they are right in our own backyard. And as we approach the task, we must look to the past, but chiefly for its mistakes. We must not only replace but we must vastly improve each time we build. First and last we must plan, plan wisely and with uncanny vision, for in the hands and the heads and the hearts of our planners lies our destiny.

APARTMENT BUILDINGS

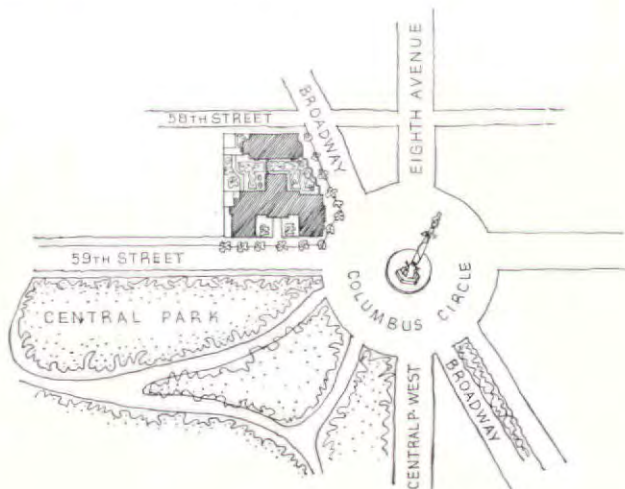
240 CENTRAL PARK SOUTH, NEW YORK CITY. MAYER AND WHITTLESEY, ARCHITECTS



Richard Garrison

240 CENTRAL PARK SOUTH, NEW YORK CITY

MAYER AND WHITTLESEY, ARCHITECTS



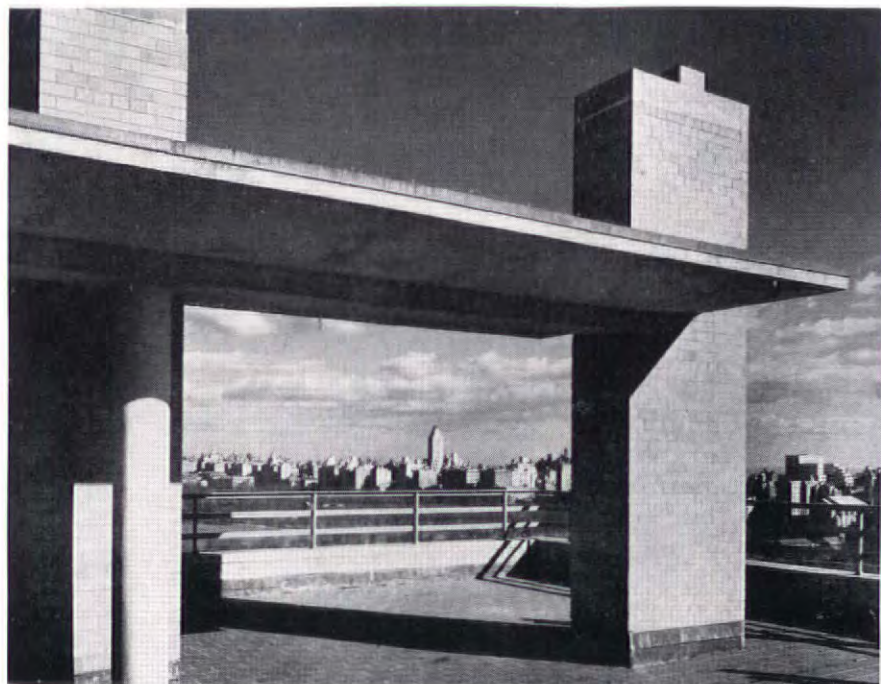
Richard Garrison

This building is presented as important, though it is by no means a revolutionary departure from current practice. The newest of a long line of big apartment houses in the city's more favored locations, it was built to satisfy—at a price—the New Yorker's craving for a view of grass and sky. It is cleaner than its neighbors, makes better use of the site, has a gay pattern of living balconies, and the windows are large. It shows a host of improvements which taken together add up to one of the best apartment buildings yet produced.

Most noticeable of these features is the lobby, which looks to the park through glass walls, a striking departure from the usual practice of hiding this space behind a small and forbidding entrance. Treated in the current modern manner, it has pleasing variations of color and texture: walls of plaster, tile and copper, and planting beds which bring the garden inside. A few modernistic clichés have crept in, which would offend no one if they crept out. They have little effect on the general appearance of the spaces, which are of competent design. More significant than details of interior or exterior design is the plan, which shows an admirably worked out scheme for a difficult site. The solution is notable for the skill with which a maximum number of rooms have been given a view of the park, and for the flexibility with which various types of living units have been fitted into a standardized structural layout.

Following the Rockefeller Center precedent, the architects used a substantial sum for collaborating artists. Unfortunately the money spent makes little impression. Ozenfant's mosaic panels, nostalgically entitled "The Quiet City," are the most important commission and occupy the space directly over the entrance. Against the huge front wall they are lost and ineffective.

The significance of this building lies not in the use of collaborating artists, not in the general design, not even in the excellent plan, but in its very clear indication of how the standards in a field marked by its general lack of design quality may be raised all along the line. It should be remembered that the fundamental decisions in apartment house design do not rest with the architect. The same pot of hot liquid in which the real estate operator boils—its chief ingredients taxes and obsolete codes—flows over to scald the architect. In urban locations he is completely unable to approach a desirably low density. Fundamental improvements in the multi-family dwelling could be made tomorrow, but the schemes will remain on paper until conditions beyond the architects' control are drastically improved.



Richard Garrison

ROOF TERRACE AND TYPICAL BALCONY



Mattie E. Hewitt

The architects describe the background of their project as follows:

"The project was the resultant of two lines of force. The architects, essentially city fellows, and essentially New York City fellows, had formulated certain ideas—and actual plans—as to how people might live and would want to live, if they preferred to live in the inner city, rather than in the suburbs, or if they could be convinced that the city had something less stony and court-yardy to offer than the inner cores of our cities have generally known.

"Their ideas of what inner city living needs included the romantic vistas that our cities afford, but usually give only to the top few floors of their tallest buildings. They included a pattern of gardens, of open-air dining, of solariums, not only for the few fantastically priced pent-houses and terraces, but for all who decided to live in their buildings. And also an intimation of these, a sense of greenery and openness and refreshment even to passers-by.

"If it could be proved that these seeming intangibles had tangible economic value, to attract and to keep tenants, then you ought to be able to find a client who would invest in this kind of project, and maybe you would start a trend that others would follow and carry further, and maybe one day you would have a reasonably gracious, a reasonably reasonable inner city.

"The architects pushed their ideas and plans with various potential owners, and after a few years found one with whom their set of ideas clicked, who chose a site facing a park and two wide streets, a very central site with practically perfect transportation, and within walking distance of shopping, business and theaters. The site was just under an acre in size, large for

a central city plot, though small for any large or imaginative choice as to possible site plans."

The design process on any large apartment structure is a rather special one, due to the weight of economic factors combined with the necessity of producing a series of home-like dwelling units which meet a great variety of living requirements. In this respect the architects' comments are of interest: "We had what amounted to a design board consisting of the architects, the owner, operating manager, the rental agent and the builder, together with such engineers as might have to be called in from time to time. This was an excellent set-up, representing all the economic and living factors involved. The presence of the builder and the operating manager served to balance questions of first cost versus operating cost. The operating manager had a wealth of experience on what had and had not worked in the dozen-odd large structures which the owning group had erected. The operating manager and rental manager interpreted the needs and desires of the anonymous 325 families who, it was hoped, were going to want to live in the building. The architects undertook to fuse these elements and to add new elements which seemed to them to accord with the future of urban living. Generally speaking, the one person whose viewpoint was considered paramount was the rental manager. However, all decisions were agreed decisions, and we do not recall any appreciable number of cases where the views of one person had to be sharply overridden."

In their study of the project's possibilities and limitations, the architects and their collaborators adopted three major lines of approach. The basic consideration was in-

variably economic: how many rooms at a given rental will produce the necessary income? The architects, working in the new tradition of low rental housing, posed the question the opposite way: how few rooms could produce this income, having in mind the better and more stable income that fewer rooms and a better plan and site plan might produce? Second point was the attempt to arrive at a plan in advance of current standards. Third was the provision of features desirable from the civic viewpoint, such as low lot coverage and off-street loading. In the matter of coverage the architects were remarkably successful: the buildings cover 48 per cent of the property; most similar structures occupy half as much again. In essence, all three of these approaches were economic. Superior planning, which means more flexible apartment layouts, easily furnished rooms, good views and similar amenities, naturally influences the rent obtainable per room, which in turn has an effect on the number of rooms needed and hence on site coverage. Similarly, any socially desirable elements in the scheme are again favorably reflected in rentals and tenant turnover. The degree of success attained by the architects, obviously, must be evaluated in terms of New York conditions and New York practice. To point out one simple example, the lot coverage of 48 per cent would be considered excessive in communities where land costs and taxes were lower. It should be noted as a common central urban phenomenon that the architects could go no further in this direction because of high land assessment, about twice as high as the price paid for the land. This is a tragic factor in the discouraging inner-urban situation that exists today.

Bound up with the three general problems

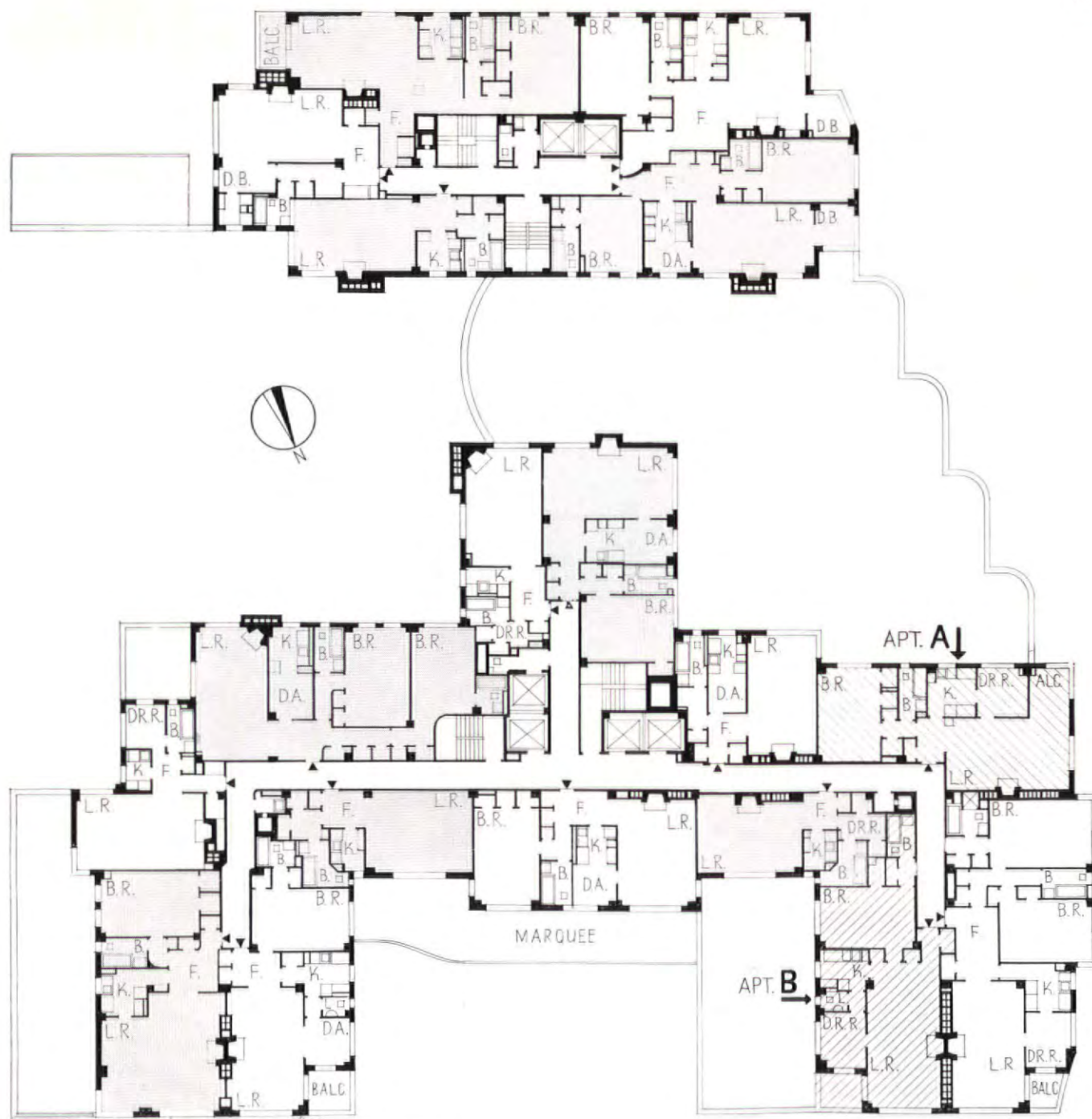
240 CENTRAL PARK SOUTH, NEW YORK CITY



TOWER PLAN



Mattie E. Hewitt



TYPICAL FLOOR PLAN

mentioned was a more immediate one, indicated by the small site plan on page 312. The property faces Central Park on the north, and high business buildings on the south. It was necessary to give a park view to as many apartments as possible, and at the same time to salvage what southern exposure might be obtained for the others. This double consideration played an important part in the planning process.

The owner's first scheme envisaged complete air conditioning, with the high room density made possible in this manner. After study it was discarded because it produced a lower net return than a plan with natural ventilation and more vistas. Later schemes show two buildings on the one-acre lot, each 19 stories in height. Objections which arose here were based on the small number of units facing the park and the relatively high ground coverage. In subsequent studies the north building was made taller; final heights established were 28 stories for the north building and 15 for the unit at the rear. The top limit was established by the elevators, which would have had to be increased in number if more stories were added. Checked against the requirements already mentioned, the solution seems most successful. A large number of apartments face the park, and the breaks in the sides of the buildings give good views to those rooms not on the front. The low rear unit admits sunlight to most of the apartments in the large building. The number of rooms required to make the venture profitable was reached without undue crowding of the available land.

In any project of this size, where a typical floor is repeated over and over, standardization naturally enters the picture. The architects, however, state most emphatically that standardization is desirable only to the degree necessary for economy. Whether it is low or high rental housing, and no matter how much research is done, no single solution will be found to meet all needs and desires. In a large project several solutions can be afforded without sacrifice in economy, as long as the requirements of structural standardization are respected, as well as standardization in such items as windows, doors, kitchen units, etc., to the extent of providing a sufficient minimum number of one type. Within these limitations, the position is well illustrated by the variety of apartment types developed. Possibly the best example is to be found in the fenestration, which has been studied very completely. Where there is a view, as in the side facing Central Park, windows are maximum, their size being limited only by the feasibility of cleaning the fixed plate glass panel from within the rooms. Where there is no view, as in the case of the rooms in the smaller building which faces large office structures, the windows are small, and broken up into more units. Corner windows appear only where their use makes sense. A fourth type



LIVING ROOM

Richard Garrison

A APARTMENT



B APARTMENT



DINING ALCOVE

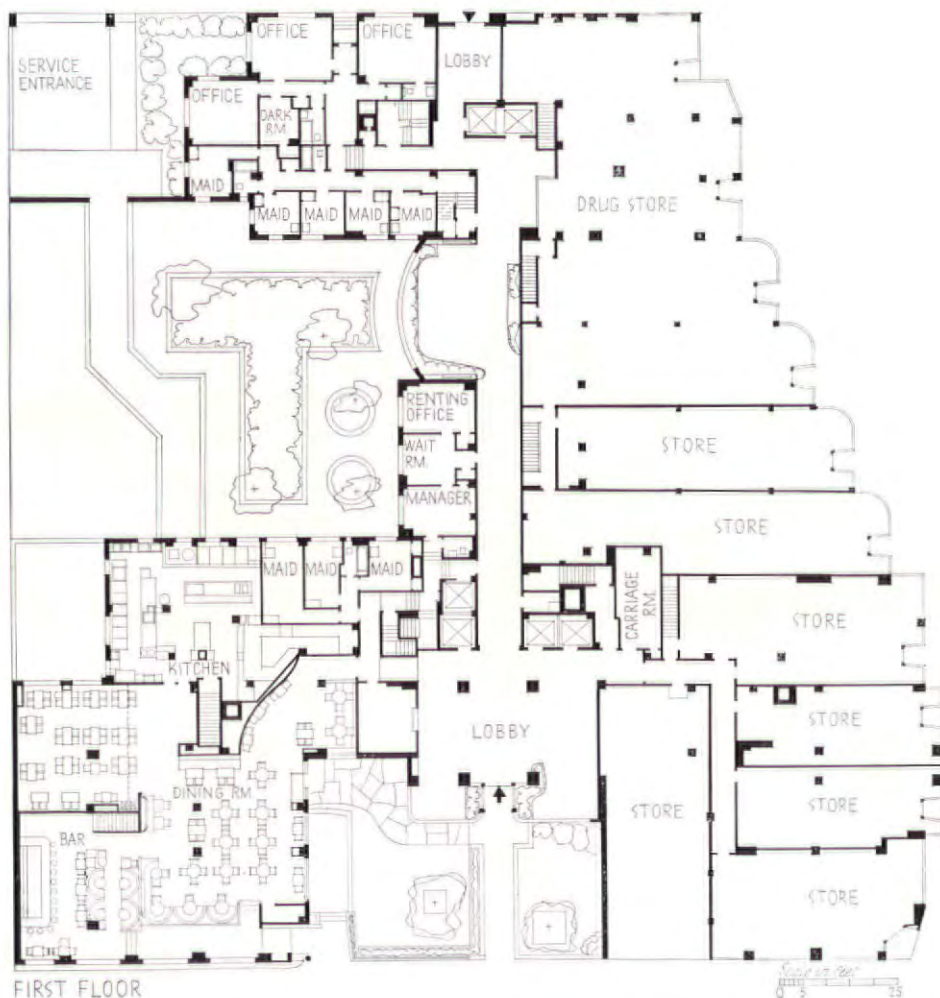


Richard Garrison



LOBBY: VIEW TOWARD ELEVATORS

Mattie E. Hewitt



FIRST FLOOR

has a high sill, with room for furniture below, and it is used where cross-ventilation only is required. Due to the mass of the buildings, and to the absence of any superimposed verticals or horizontals on the facades, the changes in window shape and size are scarcely noticeable. Once the pattern is established on these large surfaces, it is remarkable what variations can be attained without disturbing the pattern, and without resorting to fake fenestration by means of black glass, black brick, or other devices.

It is in the plans that the operation of the principle of standardization combined with flexibility appears most clearly. Actually the flexibility of the plan is greater than that of the materials permitted by the building code. Where the code still requires masonry blocks or wire lath partitions finished in plaster, a physical alteration still involves an unholy mess, noise disturbance to neighbors, and the waste of demolished materials. Within the limits of certain standard layouts there are frequently as many as three or four different arrangements. The variations on apartments A and B illustrate this clearly. In other apartment types variations occur because of a change in conditions outside the building. One type of plan, for example, has a dining alcove associated with the living room, with the kitchen looking out at the adjoining business building. Another similar layout, however, incorporates the dining alcove with the kitchen, giving the dining space rather than the kitchen the view of the park. Similar examples will be found elsewhere. It was also discovered that flexibility of use is extremely important in designing apartments for easy renting. Some apartments, for instance, have a small room which can be used as a dining or bedroom, or as a dressing room; planning for this variety of possible uses naturally met quite varied requirements, and the apartments in these groups were among the first to be taken.

The architectural character of these buildings stems directly from the plans as developed on different levels, and the fenestration. There is no applied "architecture." The exterior walls are flush, of a brick somewhat darker than the white concrete balcony slabs, whose sharp alternation of light and shadow constitutes the main decorative element of the exterior. It should be noted that in all cases the balconies are so placed that adjoining rooms are not robbed of light; in all cases a major window in the second wall of the room gives unobstructed light. On the lower stories, where street noises might be disagreeable, the balconies disappear, being replaced by rooms with corner windows.

The location of the building, within easy reach of both the theater and midtown business districts, offered the alternatives of an apartment house or an apartment hotel. The solution was a compromise, with plans calling for standard apartment house facilities in the living units, but with the addition of a restaurant, a solar-



LOBBY: VIEW TOWARD MAIN ENTRANCE

Richard Garrison

LOBBY: VIEW SHOWING INDOOR GARDEN



Mattie E. Hewitt

MAIN ENTRANCE



Richard Garrison

ELEANOR ROBERTSON PAEPCKE,
CYNTHIA WILEY,
LANDSCAPE ARCHITECTS



ENTRANCE VESTIBULE OF RESTAURANT

Mattie E. Hewitt

BAR IN RESTAURANT



Richard Garrison

ium, roof terraces, shops and garage service. In the case of shops there was no alternative, since there was no other suitable use for the ground floor. The design of these shops is interesting. Set back of the building line, they permitted the enlargement of the normal sidewalk area into a kind of concourse. The sawtooth arrangement of the fronts adds display space to each shop while attracting interest because of improved visibility for the passers-by. They also provide backwater spaces where people can window-shop without being jostled by those walking by. In short, they tempt people to use their side of the street rather than the opposite side. One story in height, they constitute a link between the front and rear buildings, and serve as a base for one of the gardens. The various planted areas, which occur within as well as outside the buildings, are more than a designer's whim, as they add materially to the rentability of apartments on the lower floors.

Technically the buildings present a number of interesting features. Sound insulation, for example, was the subject of much study. The noise of elevators was first avoided—by keeping bedrooms away from the shafts whenever possible or by using closets as buffers—and then reduced by the use of walls free of the elevator columns and beams. Some innovations were made in the elevator machinery itself, and a number of moving parts ordinarily constructed of metal were replaced with leather. The carpeting of all corridors has proven an economical and successful means of reducing noise transmission. Power plant noises were reduced by the use of isolated machine foundations, flexible pipe connections, and insulated hung ceilings. Heat insulation of boiler and incinerator flues is accomplished by the simple expedient of furnishing a continuous air space, vented at the top, around the flues.

A private power plant was installed after a very detailed study of cost differentials between the various alternatives offered, and it was decided that the savings that could be effected justified the investment in a separate plant. The plant consists of steam boilers, two steam turbines and a Diesel, with a total capacity of 625 KW. In winter the steam needed for heat and hot water passes through the turbines, and during this period the current costs nothing. In summer the Diesel, which is a very efficient power producer, is used, and the steam turbines are run only to the extent that steam is needed for heating water. Complete continuity of service is assured by a stand-by boiler and generator.



SHOPS

Richard Garrison

MAYER AND WHITTLESEY, ARCHITECTS

LOADING PLATFORM



CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—4 in. face brick, Belden Stark, 6 in. cinder back-up block, N. J. Hollow Tile Co. Interior partitions—gypsum block, U. S. Gypsum Co.; Gypsteel, American Cyanamid Co. and Gold Bond plaster materials—National Gypsum Co. Metal lath and channels—Pennsylvania Metal Co. Cement—Penn-Dixie Cement Corp. Lime—National Gypsum Co. Acoustical plaster—California Stucco Co. Sills—slate, Bangor Co. Balconies—concrete cement, Atlas Portland Cement Corp. Structural steel—Bethlehem Steel Corp. Floor construction—cinder concrete slabs between fireproofed steel beams.

ROOF: Covered with red quarry tile, Ludowici Celadon Co., 5-ply built-up, Flintkote Co., or slag roofing.

SHEET METAL WORK: Flashing and gutters—copper, Chase Brass & Copper Co. Ducts—galvanized iron, Republic Steel Co.

SOUND INSULATION: Walls between apts.—Holmes soundproofing system; Electrical Research Products, Inc., engineers.

WINDOWS: Sash—Fenwrought steel casement, Detroit Steel Products Co. Glass—American Window Glass Co., Pittsburgh Plate Glass Co. and Pennsylvania Wire Glass Co. Glass blocks—Owens-Illinois Glass Co. Store fronts—Capitol Store Front Co.; Metal—Chase Brass & Copper Co.

ELEVATORS: Four passenger and two service each built for carrying 2,500 lbs. each, Westinghouse Electric & Mfg. Co.

FLOOR COVERINGS: All main rooms—oak strip, W. M. Ritter Flooring Co. Kitchens—linoleum, Bonafide Mills, Inc. Bathrooms—tile, Crescent Tile Co. and Robertson Tile Co. Public halls—carpets, Francis T. Miller, Designer; Ozite lining, Clinton Carpet Co. Restaurant—carpets, Bigelow-Sanford Carpet Co. Entrance court—Carlyle Tile Co.

WALL COVERINGS: First floor halls, conservatory, etc., copper, Bronzecraft Co., marble, Cullo & Co., architectural terra cotta, Atlantic Terra Cotta Co. Restaurant—oak plywood and Farlite, U. S. Plywood Co., plate glass and Formica, Formica Insulation Co.

FURNISHINGS: Lobby—light oak and walnut, Bartos Bros. Tables and chairs (restaurant)—Thonet Bros. Bar, wall panels, flower boxes, etc.—Jacob Froehlich.

WOOD AND METAL TRIM: Trim—steel, Superior Fireproof Sash & Door Co. Doors—wood, Weisberg, Baer Co.; glass, Pittsburgh Plate Glass Co.

HARDWARE: By Russell & Erwin Mfg. Co.

PAINTS: By Keystone Paint & Varnish Co., Pittsburgh Plate Glass Co., John W. Masury & Son, Ilsley & Held, Thomson Wood Finishing Co.

ELECTRICAL INSTALLATION: Wire system—Kearnton & Nagel. Switches—Koehler Electric Supply. Panel boards—Cole Electric Supply Co. Fixtures—Lightolier Co., Beaux Arts Lighting Co., Kurt Versen, Inc. Telephone equipment—L. J. Loeffler. Annunciators, intercommunicating telephone and switchboard—Auth Electric Specialties. Radio equipment—Harrison F. Thornell.

PLUMBING: Fixtures—Kohler Co. Soil pipes—cast iron, Central Foundry Co. Steel pipes—Bethlehem Steel Co. Drain fittings—Grinnell Co. Hot and cold water pipes—Anaconda brass, American Brass Co. Kitchen equipment: Ranges—Henry Waterman & Bro. Corp. Cabinets—steel, United Metal Box Co. Refrigerators—General Electric Co. and Frigidaire Corp.

HEATING AND AIR CONDITIONING: Forced circulating hot water system. Air conditioning (restaurant and drug store)—all year system, Abbott Lester & Co. Boilers—Union Iron Works. Oil burners—Todd Oil Burner Co. Radiators—American Radiator Co. Grilles—D. & W. Metal Products Co. and Tuttle & Bailey. Thermostats—Minneapolis-Honeywell Regulator Co. Valves—Kennedy Valve Mfg. Co. and Marsh Valve Co. Water heater—Patterson & Kelly. Circulation pumps—Union Steam Pump Co. Incinerator—Kernerator Co.

COUNTRY CLUB GARDENS, DENVER, COLO.



O. Roach

Obviously influenced by the planning methods developed in recent public housing work, the scheme of this privately financed, suburban apartment development is excellent both as to the disposition of the buildings on the site and the arrangement of individual units. Garages are grouped in a compact, T-shaped compound at the rear of the plot, the uniform three-story buildings arranged in an irregular pattern creating a series of generous, landscaped courts opening on the adjoining streets. There are no public corridors; instead, entrance stairways each serving six apartment units and corresponding service stairways for direct access to the kitchens are provided. The carefully studied unit plans range in size from three to five rooms by half-room steps, feature well-lighted kitchens, generous room sizes, and plenty of closet space. In a number of cases, open-air balconies are provided—a commendable practice which in this instance contributes the principal architectural feature. As indicated in the construction outline, equipment is exceptionally complete. Average rent per room per month \$16.



Mile High Photo Co.



O. Roach

CONSTRUCTION OUTLINE

FOUNDATION: Reinforced concrete. Waterproofing—emulsified asphalt, Western Elaterite Co.

STRUCTURE: Exterior walls—4 in. brick, 8 in. cinder block, Cinder Blox Co., mortar and gypsum plaster. Window bands—buff hollow clay tile, Denver Pressed Brick Co. Interior partitions—studs, rocklath, U. S. Gypsum Co. and gypsum plaster. Apartments soundproofed by U. S. Gypsum Co. floating wall system and resilient clip ceilings. Floor construction—termite treated sub-floor, oak finish.

ROOF AND DECKS: Covered with 6-ply burlap reinforced roll roofing, Western Elaterite Co.

SHEET METAL WORK: Flashing and gutters—28 gauge galvanized iron.

INSULATION: Attic floor—6 in. mineral wool. Roof— $\frac{1}{2}$ in. insulation board. Weatherstripping—Chamberlin Metal Weather Strip Co.

WINDOWS: Sash—Fenestra steel casements, Detroit Steel Products Co. Glass—double strength, quality A, Libbey-Owens-Ford Glass Co.

STAIRS: Main and service—steel.

FLOOR COVERINGS: Main rooms—oak. Stair halls—asphalt tile. Kitchen—linoleum, Sloane-Blabon Corp.

WOODWORK: Trim, cabinets and doors—pine or birch, Hallack & Howard. Garage doors—overhead.

HARDWARE: By Yale & Towne Mfg. Co.

PAINTS: By McMurtry Paint & Mfg. Co.

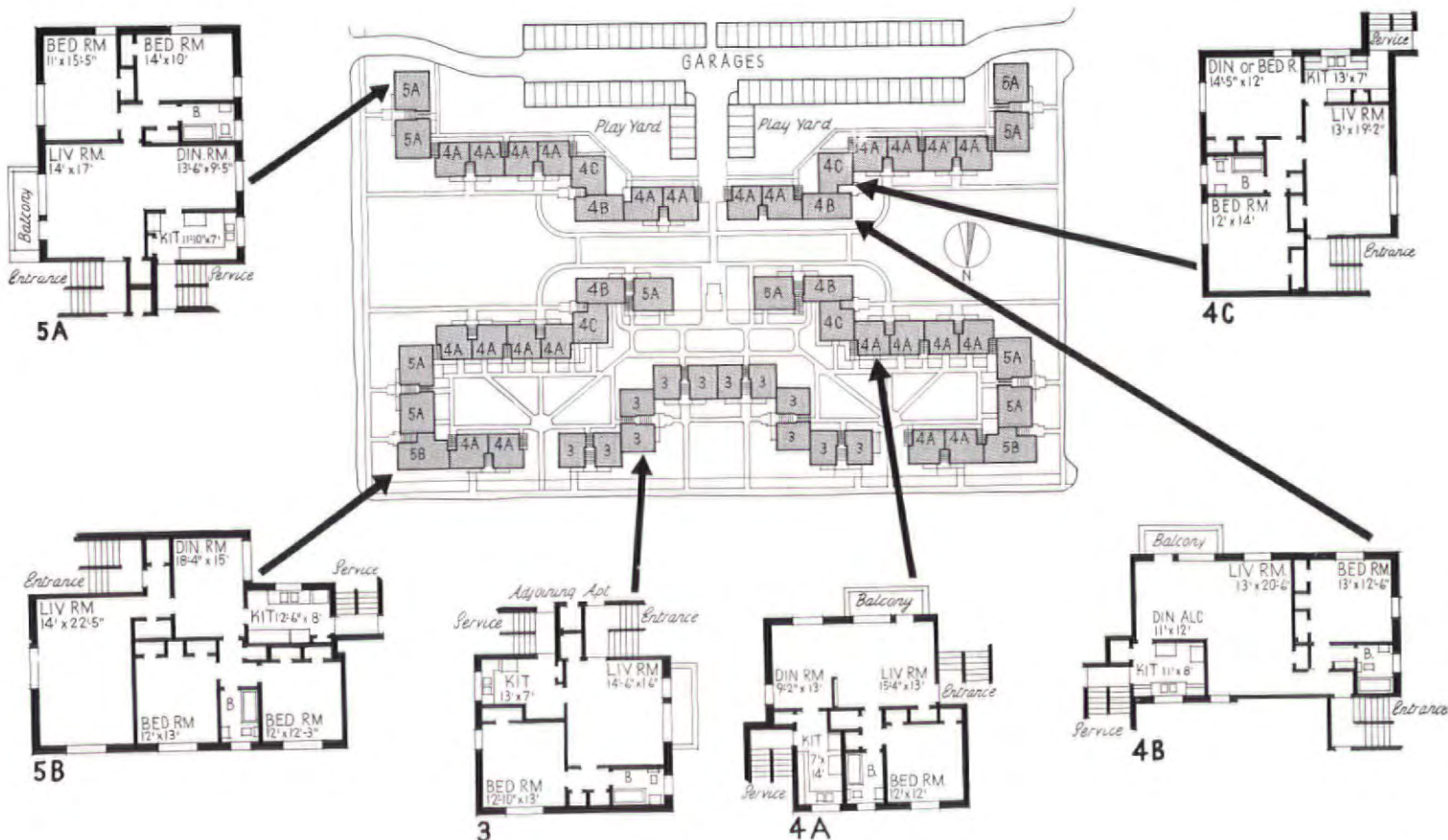
ELECTRICAL INSTALLATION: Wiring system—Sturgeon Electric Co. Switches—General Electric Co. Fixtures—Sechrist Mfg. Co.

KITCHEN EQUIPMENT: Range and refrigerator—Norge Corp. Cabinets—Hallack & Howard.

BATHROOM EQUIPMENT: By Crane Co. Cabinets—Hallensheid & McDonald Co.

PLUMBING: All pipes—galvanized iron.

HEATING: Closed hot water system. Bell & Gossett continuous circulating pumps from 240° boiler water; Monoflow one-pipe system, Monoflow fittings on mains. Boilers—Burnham Boiler Co. Automatic gas and oil burner, S. T. Johnson Co. Valves—Crane Co., Sarco Co., Inc. and Jas. P. Marsh Corp. Thermostat—Hoffman Specialty Co.



GOVERNOR SHEPHERD APARTMENTS, WASHINGTON, D. C.

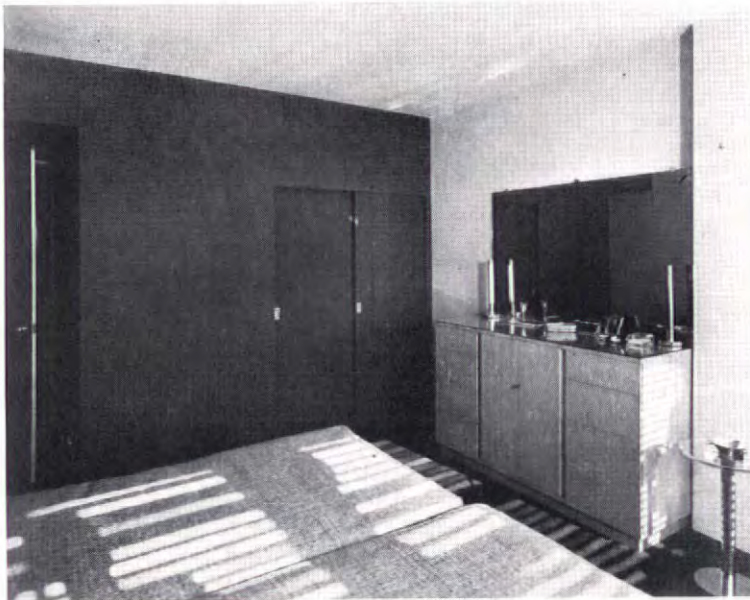


Horydsak Photos

LOBBY



Washington's chronic housing shortage, now intensified by National Defense, has produced this building to solve a specialized aspect of the problem: the need for small, "efficiency" apartments for childless couples and new government workers who have not yet brought their families to the capital. The solution is both unusual and ingenious. Except in the few instances where separate bedrooms are provided, most of the units have an outside solarium fitted with a closet for a folding bed. Borrowed light from this space illuminates the living rooms. Dressing rooms, opening on outside baths, furnish needed privacy; kitchenettes, which are evidently not expected to receive regular use, are in most cases inside. Four apartments on each floor have open-air balconies; all are guaranteed through ventilation by a number of air shafts opening on the central corridor. Total construction cost \$480,000. Average rent per room per month \$25.



BEDROOM of apartment on southeast corner



LIVING ROOM

JOHN J. McINERNEY, GENERAL CONTRACTOR
M. S. RICH, STRUCTURAL ENGINEER
GEORGE MILLER, HEATING ENGINEER

CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—(1st floor) faced with Va. black serpentine, Alberene Stone Corp.; remainder—4 in. face brick, parged on back, 8 in. tile backup; inside—plaster. Masonry products by United Clay Products Co. Spandrels—porcelain enamel, Toledohio Porcelain Co. Interior partitions—hollow clay tile and Machite. Floor construction—reinforced concrete.

ROOF: Covered with 5-ply Barrett Co.

SHEET METAL WORK: Flashing and ducts—galvanized iron, Armco, American Rolling Mill Co.

INSULATION: Roofs—2 in. insulation board, Johns-Manville. Sound insulation—rockwool and resilient clips for ceilings; rocklath for walls, U. S. Gypsum Co.

WINDOWS: Sash-wood, double hung, Barber & Ross. Glass—single strength, quality A, Libbey-Owens-Ford Glass Co. Glass screens—crystal sheet, Pittsburgh Plate Glass Co.

STAIRS AND ELEVATORS: Stairs—reinforced concrete. Elevators—Westinghouse Electric & Mfg. Co. Doors and cabs—Dahlstrom Metallic Door Co. and Globe Van-Doren.

FLOOR COVERINGS: Main rooms—wood blocks, E. L. Bruce Co. Kitchens—linoleum, Armstrong Cork Co. Bathrooms—ceramic tile. Corridors—carpet, Alexander-Smith & Sons Carpet Co. Lobby—rug, A. & M. Karagheusian, Inc.

WOOD AND METAL TRIM: Trim—steel, Bilt-well Steel Products Co. Hollow aluminum doors—Kawneer Co.

HARDWARE: By P. & F. Corbin Co.

ELECTRICAL INSTALLATION: Wiring system—rigid conduit. Switches—Pass & Seymour. Fixtures—Russel Hayes, Inc.

PLUMBING: Hot and cold water pipes—Arco copper, Bridgeport Brass Co. Toilet fixtures—American Radiator-Standard Sanitary Corp. Kitchen equipment—Westinghouse Electric & Mfg. Co. refrigerator; American Stove Co. Magic Chef range.

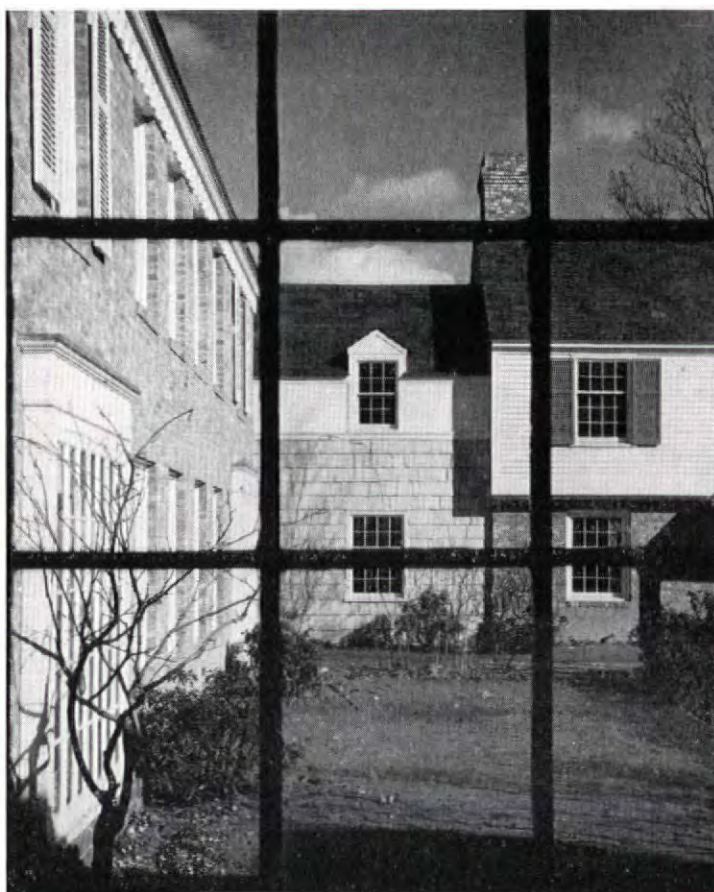
HEATING: Differential vacuum-vapor system; unit including radiators, grilles, controls and valves by C. A. Dunham Co.



COUNTRY GARDENS, RYE, N. Y.



Rudolph Edward Leppert Photos

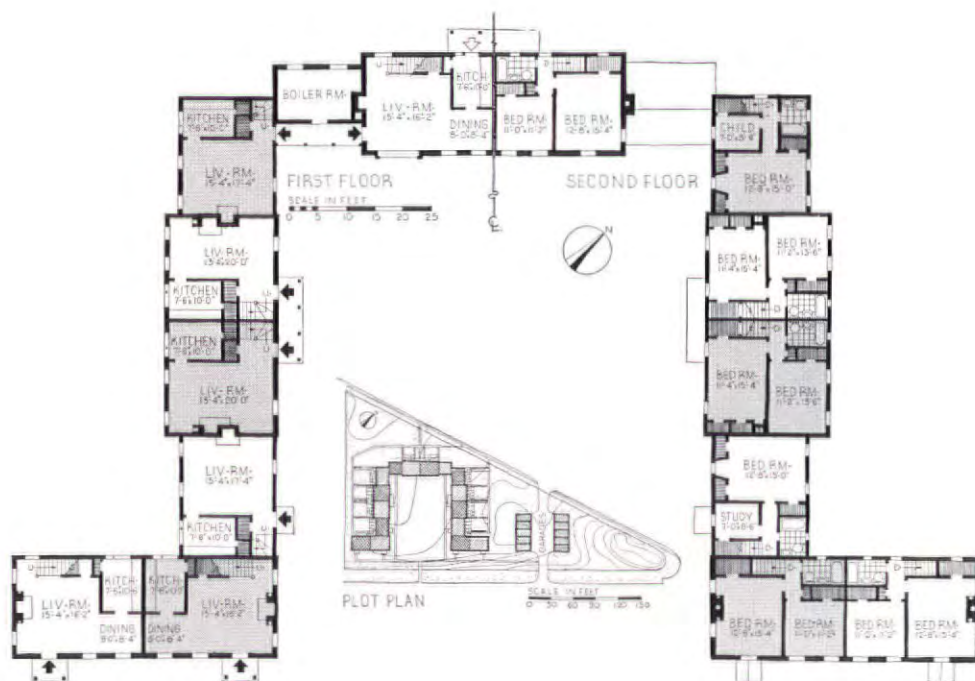




All of the units in this suburban garden apartment occupy two floors. There are consequently no public stairways and each of the apartments has its own private entrance, private terrace and garden at the back. The units are uniformly small ($3\frac{1}{2}$, 4, and $4\frac{1}{2}$ rooms), but room sizes, particularly in the case of bedrooms, are generous. Like the unit plans, the treatment of the exteriors shows a high degree of competence and familiarity with the problem, albeit a somewhat romantic approach. The simple site plan is demonstrative of the ability of this type of development to cope with otherwise difficult, irregular plots. Total construction and landscaping cost \$77,200. Average rent per room per month \$22.

CONSTRUCTION OUTLINE

FOUNDATION: Concrete block.
STRUCTURE: Exterior walls—brick and hand split shingles, siding on frame; inside—studs, plaster on metal lath. Floor construction—sub-floor, select oak finish.
ROOF: Covered with slate.
FIREPLACE: Damper—H. W. Covert Co.
SHEET METAL WORK: Flashing—16 oz. copper.
INSULATION: Attic floor—4 in. Air-met. Weatherstripping—Curtis Co.'s. Sound insulation—6 in. staggered stud partitions, filled with rockwool between apartments.
WINDOWS: Sash—Silentite, double hung, Curtis Co.'s. Glass—quality B and plate.
STAIRS: Treads—oak. Risers—clear pine. Attic—Bessler Disappearing Stairway Co.
FLOOR COVERINGS: Main rooms—oak. Kitchen and bathrooms—linoleum, Congoleum-Nairn, Inc. and Armstrong Cork Co.
WALL COVERINGS: Living room and bedrooms—some knotty or clear pine. Bathrooms—Linowall, Armstrong Cork Co.
WOODWORK: Trim—Curtis Co.'s. Doors—Curtis Co.'s and Morgan Sash & Door Co.
HARDWARE: By Russell & Erwin Mfg. Co.
PAINTS: By Pratt & Lambert, Inc.
ELECTRICAL INSTALLATION: Wiring system—BX. Switches—Pass & Seymour. Fixtures—Port Chester Lighting Co.
KITCHEN EQUIPMENT: Refrigerator—Westinghouse Electric & Mfg. Co.
BATHROOM EQUIPMENT: Fixtures by American Radiator-Standard Sanitary Corp. Cabinets—Columbia Metal Box Co.
PLUMBING: Soil and vent pipes—cast iron. Waste pipes—steel. Hot and cold water pipes—red brass.
HEATING: Hot water system. Boiler—Fitzgibbon Boiler Co. Radiators and convectors—American Radiator-Standard Sanitary Corp. Thermostat—Minneapolis-Honeywell Regulator Co.

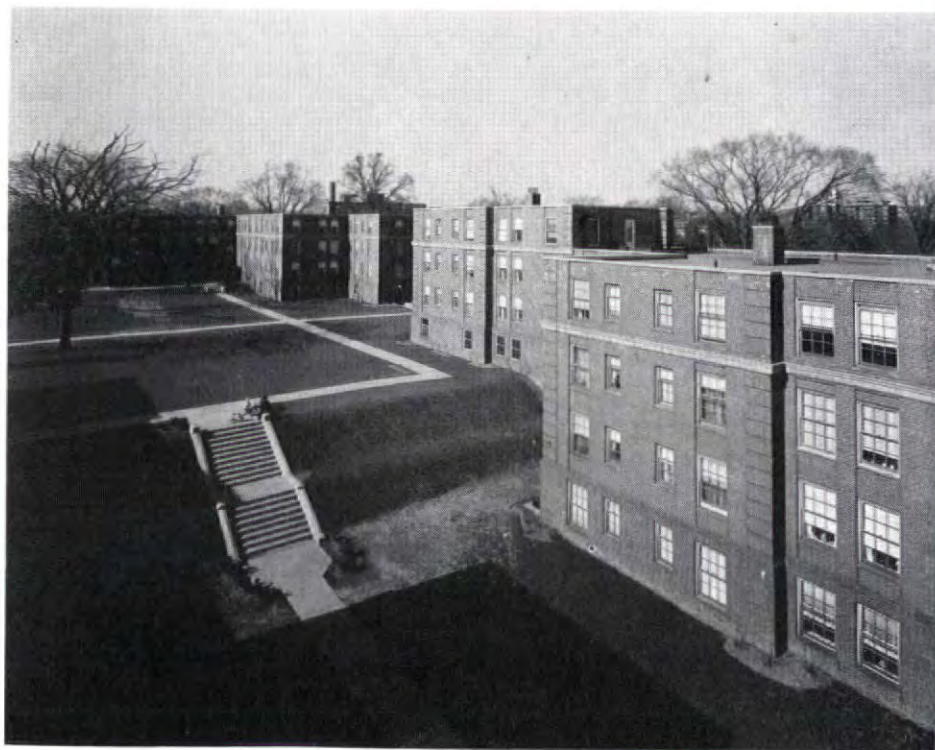


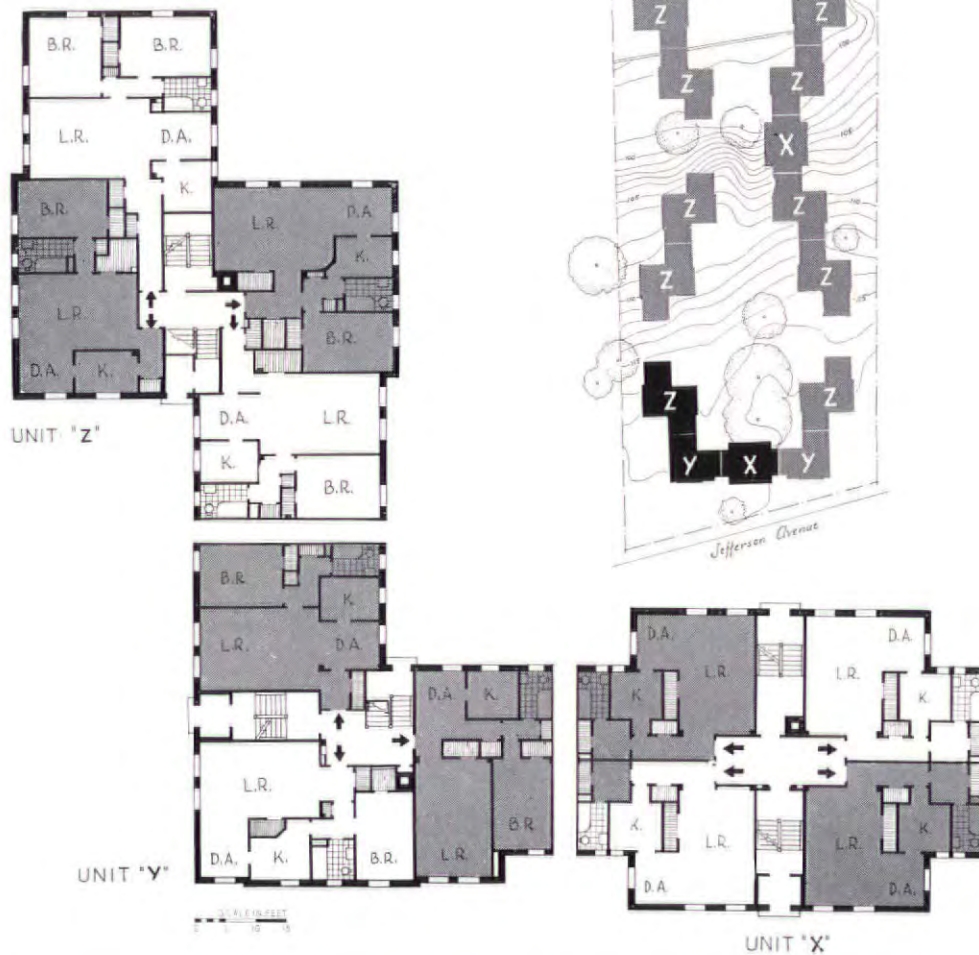
RIVER TERRACE, DETROIT, MICH.



Arthur S. Siegel Photos

Located on a site which backs on the Detroit River, these 3½-story apartment buildings are arranged in the shape of a deep U, with the open end toward the river, downhill end of the plot. Three basic unit plans are employed, and eight apartment plans, ranging in size from 2½ to 5 rooms. In all cases apartments are entered directly from the stairhall, there being no corridors or separate service entrances. All of the plans, without exception, provide definite dining alcoves which add to the generous living area. Construction cost per room \$1,456. Average rent per room, \$22 per month.





CONSTRUCTION OUTLINE

FOUNDATION: Poured concrete and concrete block.

STRUCTURE: Exterior walls—face brick, Wyandotte Clay Products Co., cinder block backup; partitions—hollow tile, gypsum tile and plaster. Floor construction—hollow tile and concrete joist, wood tile laid in mastic.

ROOF: Covered with Zonolite fill, F. C. Schundler Co., and composition roofing.

SHEET METAL WORK: Leaders—iron. Flashing—copper.

WINDOWS: Sash and screens—wood double hung, Superior Sash & Screen Co. Glass—double strength, sheet and plate.

FLOOR COVERINGS: Main rooms—wood tiles laid in mastic, National Wood Products Div., Evans Products Co. Entrance hall and stairs—asphalt tile, Johns-Manville Corp. Kitchen—linoleum, Congoleum-Nairn, Inc., or Chromatite, Bird & Son, Inc. Bathrooms—ceramic tile, National Tile Co.

HARDWARE: By Lockwood Hardware Mfg. Co.

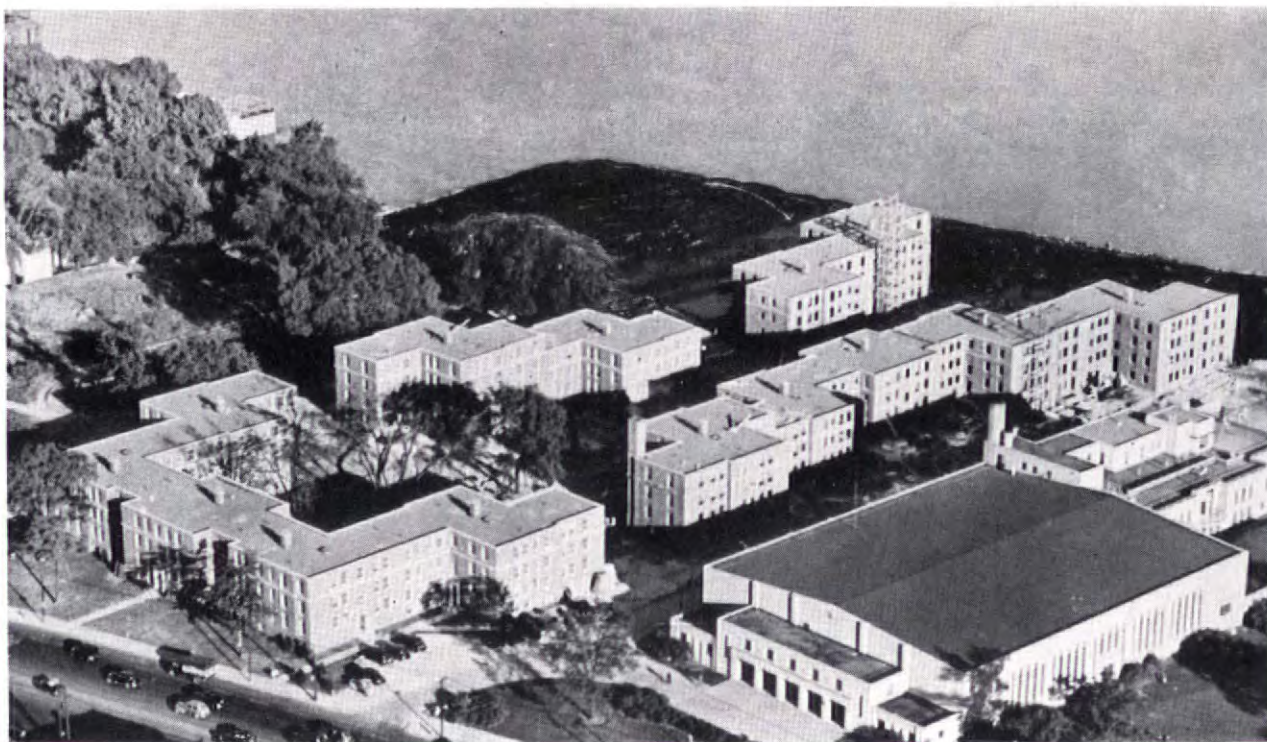
ELECTRICAL INSTALLATION: Wiring system—steel conduit. Switches—toggle.

KITCHEN EQUIPMENT: Range—Electromaster, Inc. Refrigerator—Frigidaire Div., General Motors Corp. Cabinets—metal, St. Charles Mfg. Co.

BATHROOM EQUIPMENT: By American Radiator-Standard Sanitary Corp.

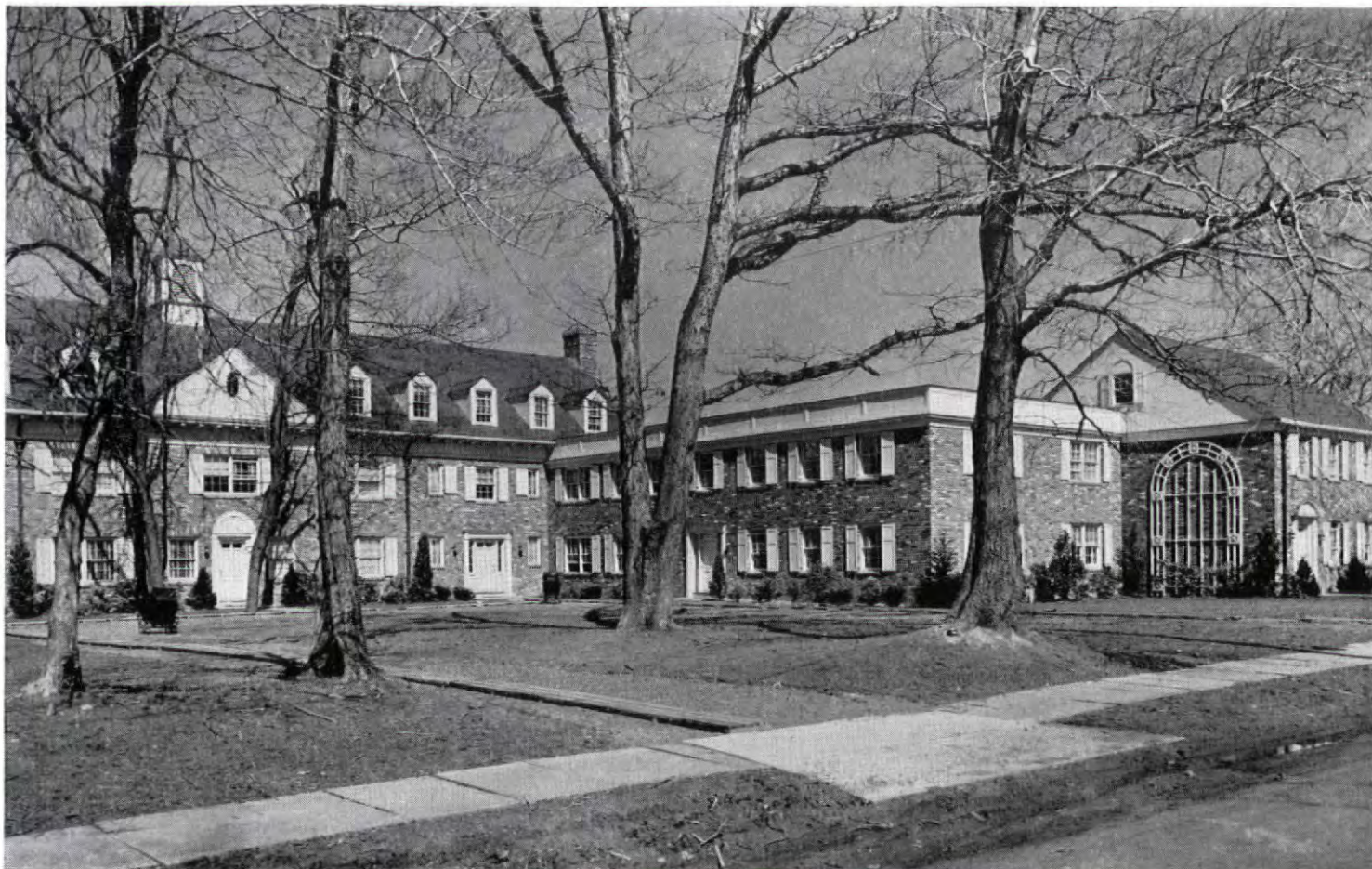
PLUMBING: Soil pipes—cast iron. Hot and cold water pipes—copper.

HEATING: Vacuum steam system. Valves—C. A. Dunham Co.



Manning Bros.

MANLEY COURT, SUMMIT, N. J.



Samuel H. Gottscho Photos



This moderate-rental garden development, one of the four Elmer N. Rinhart developments designed by the same architects in suburban New Jersey, includes both duplex apartments and smaller, single-floor units arranged four to a stair hall. The site plan has been worked out to preserve as much as possible the natural advantages of the plot, especially existing trees. Garages are located in a compound at the back of the plot, ingeniously arranged so that their rear walls produce a walled-garden effect, from the facing apartments. Unit plans are simple and efficient, rooms small but not cut up by space-destroying openings. Closet space is generous. In most of the apartments without separate dining rooms, L-shaped living rooms have been used to produce a definite area for dining. Circulation has been extremely well thought out. Bedroom and bath units can be shut off from general circulation and living rooms, with the exception of those in duplex units, are not used for passageways. Exterior treatment, while somewhat heavy and vaguely institutional in flavor, is carefully studied and well-organized, particularly in the contrasting use of flat and pitched roofs. Total construction cost \$475,000. Average rent per room, about \$20 a month.



4½ ROOM APT.

CONSTRUCTION OUTLINE

FOUNDATION: Concrete blocks. Waterproofing—Anti-Hydro Waterproofing Co.

STRUCTURE: Exterior walls—frame, brick veneer; inside—studs, Gold Bond board and Red Top plaster, National Gypsum Co. Floor construction—sub-floor and oak finish.

ROOF: Covered with slate. Deck—covered with 4-ply roofing.

SHEET METAL WORK: Flashing and leaders—copper.

INSULATION: Attic floor, roof and sound insulation between apartments—rockwool.

WINDOWS: Sash—white pine, Unique Window Balance Co. Glass—Pittsburgh Plate Glass Co. and Libbey-Owens-Ford Glass Co.

FLOOR COVERINGS: Main rooms—oak. Kitchen—linoleum. Bathrooms—tile.

WALL COVERINGS: Living room and bedrooms—wallpaper.

WOODWORK: Trim—Ponderosa pine. Cabinets—United Metal Steel Cabinet Co. Doors—6-panel fir. Garage doors—pine.

HARDWARE: By Schlage Lock Co.

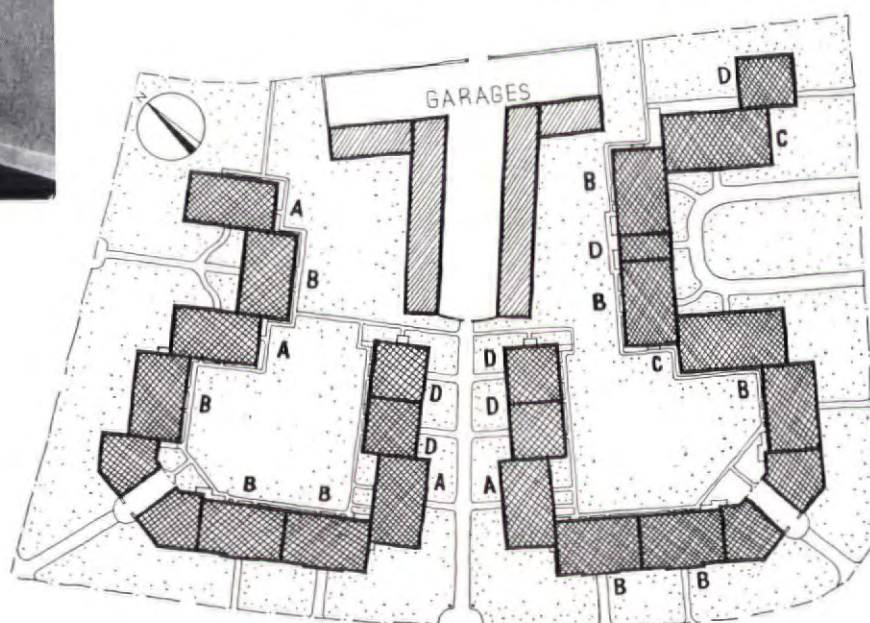
ELECTRICAL INSTALLATION: Wiring system—BX. Switches—tumbler. Fixtures—Lightolier Co.

KITCHEN EQUIPMENT: Range—gas. Refrigerator—Electrolux, Servel, Inc. Cabinets—metal.

BATHROOM EQUIPMENT: Briggs Beautyware, Briggs Mfg. Co.

PLUMBING: Soil pipes—cast iron. Hot and cold water pipes—copper, Anaconda, American Brass Co.

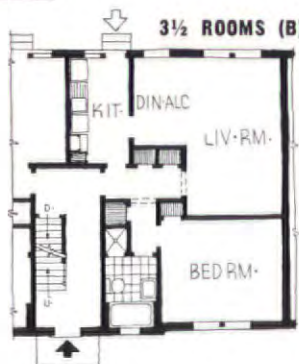
HEATING: One and two pipe vapor system. Boiler—Fitzgibbon Boiler Co. Radiators—Weil McLain Co. Thermostat—Minneapolis-Honeywell Regulator Co.



3 ROOMS (A)



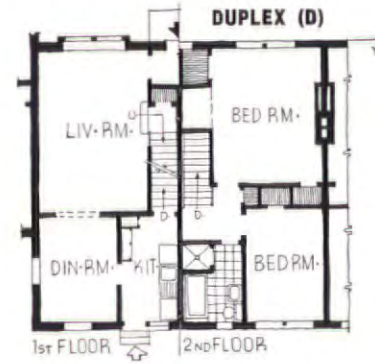
3½ ROOMS (B)



4½ ROOMS (C)



DUPLEX (D)



2601 PARKWAY

This huge, 512 apartment unit is the third largest* under one roof in the U.S., an exceptional undertaking for Philadelphia where large apartment buildings are uncommon. Above the ground floor it is actually three separate buildings joined together, each section having its own elevators and fire-exit stairways. Wings are similar, but not identical in plan; unusual service facilities on the common ground floor include a restaurant, laundry, commissary, maids' dormitory, and individual photographic dark rooms; adjoining is a two level garage. Units range in size from 1 to 6 rooms, with a wide variety of plan arrangement. In order to provide still further adjustment to individual needs construction and planning have been worked out to facilitate alterations, a theory which has already proved in practice to add considerably to rentability. Exterior treatment is direct and quite successful. Total construction cost \$3,000,000. Average monthly rental \$28 per room.

* New York claims the two largest: London Terrace with 1,665 units, Knickerbocker Village with one building of 800 units.

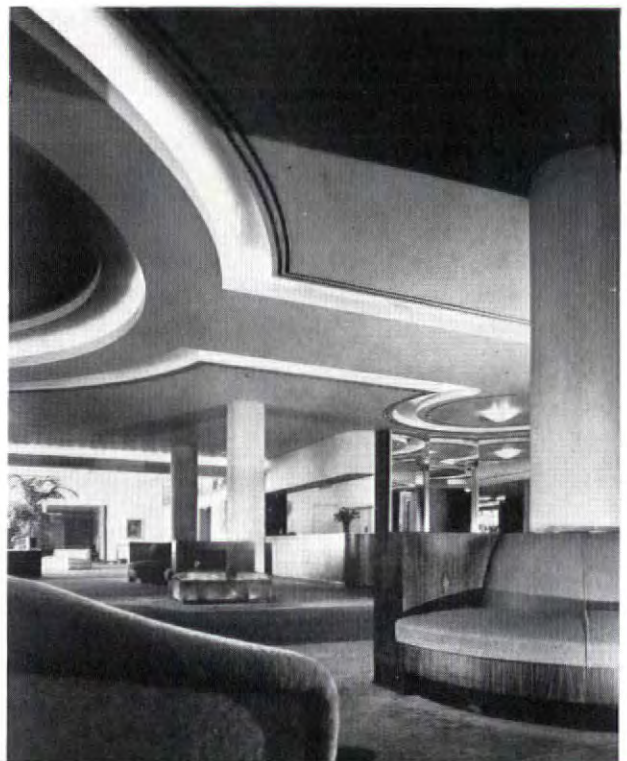


Robert M. Damora Photos

RESTAURANT



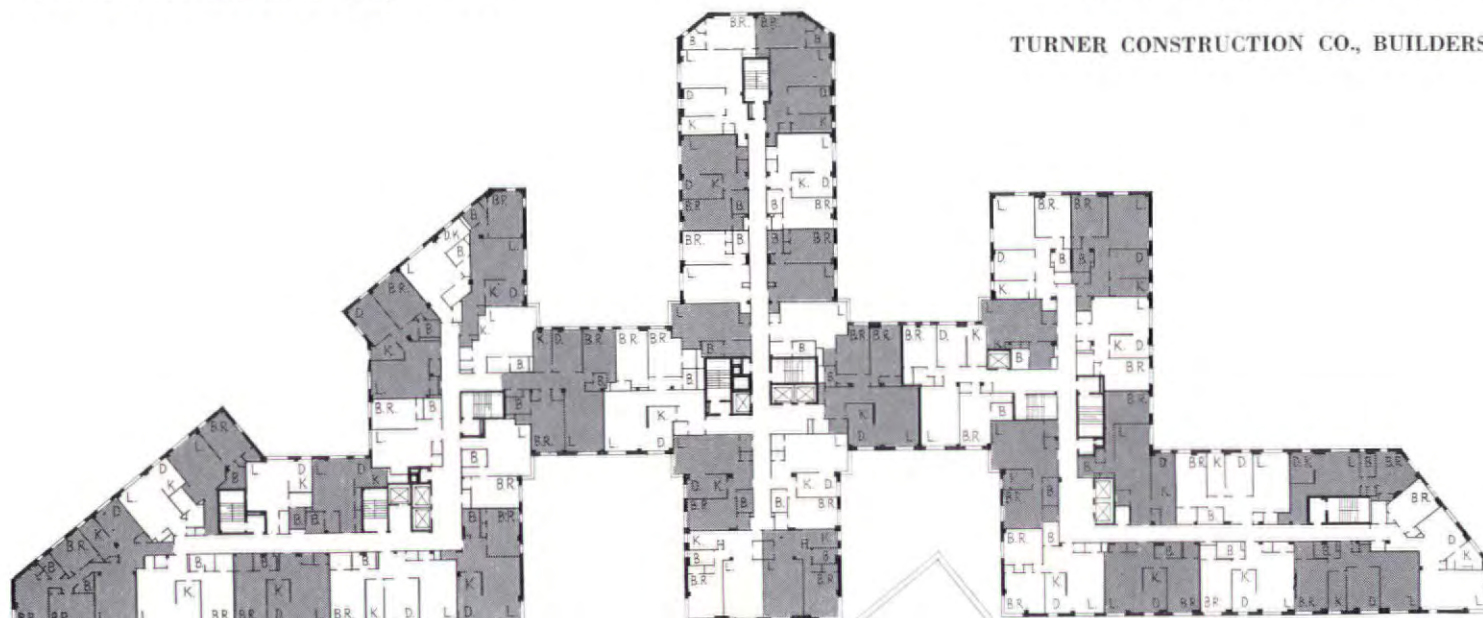
LOBBY



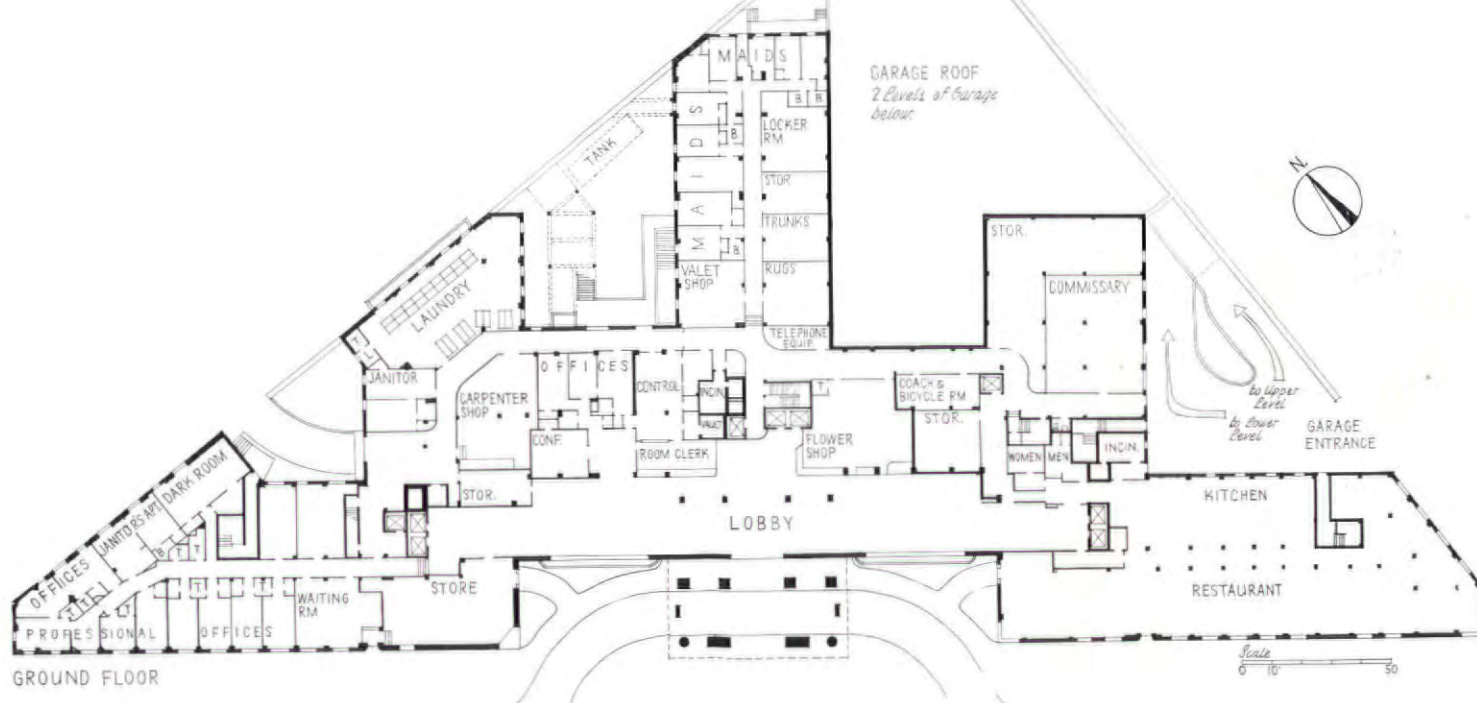
PHILADELPHIA, PA.

AARON COLISH, ARCHITECT

TURNER CONSTRUCTION CO., BUILDERS



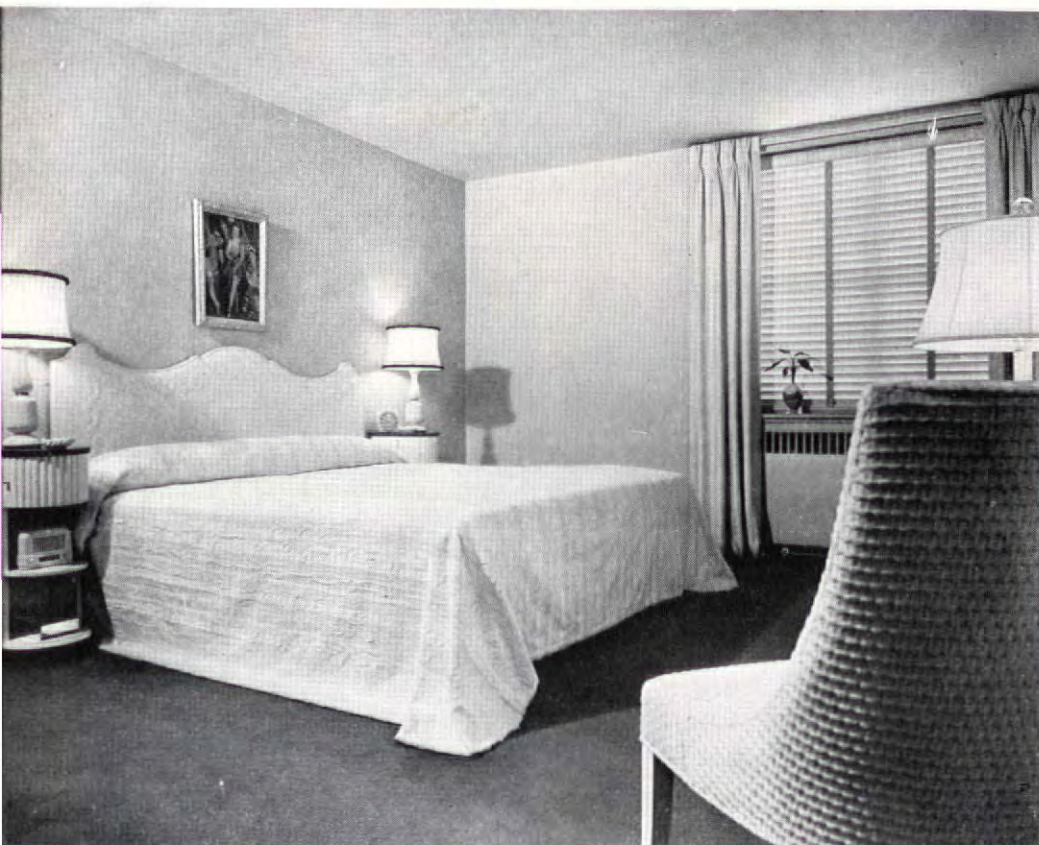
TYPICAL FLOOR PLAN 2ND TO 10TH



GROUND FLOOR

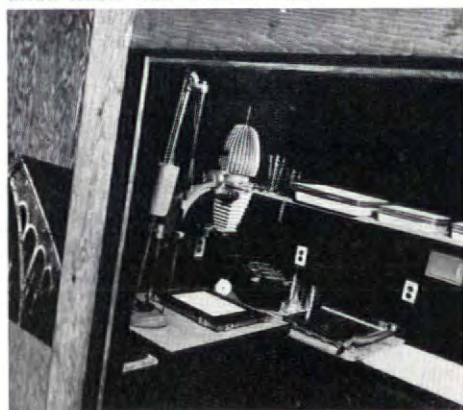
LIVING—DINING ROOM





Interiors are sleek and simple, kitchens and bathrooms well-fitted. Photographic dark rooms for tenant use (below) are completely equipped, furnished free of charge to all tenants who care to use them.

DARK ROOM AND BARBER SHOP



CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—9 in. brick curtain wall on continuous steel lintel, Willard Kitanning face brick backed by Natco hollow tile, National Fireproofing Co.; inside—furring, rocklath and plaster. Interior partitions (between rooms)—2 in. solid plaster; (between apts.)—4 in. hollow partitions made by two sets of channels 18 in. o.c. and staggered. Floor construction—concrete slab on ribbed lath attached by clips to Truscon Steel Co.'s bar joists 2 ft. o.c. Plastering materials—U. S. Gypsum Co. Channels, lath and clips—Milcor Steel Co. and Truscon Steel Co.

ROOF: Covered with 4-ply slag, Barrett Co. Decks covered with 4-ply and Celotex Corp. Traffic Top.

CHIMNEY: Common brick lined with 4 in. fire brick, Robinson Clay Products Co. Incinerators—Vent-O-Matic.

SHEET METAL WORK: Flashing—Anaconda copper, American Brass Co. Ducts—Republic Steel Co. Door bucks—World Steel Products Corp. Exterior doors—Dahlstrom Metallic Door Co. and International Revolving Door Co.

WINDOWS: Sash and screens—Truscon Steel Co. Glass—Lustraglass and double strength, quality A, American Window Glass Co. Glass blocks—Insulux, Owens-Illinois Glass Co.

FLOOR COVERINGS: Main rooms—white

oak, Robbins Flooring Co. Lobby and public corridors—carpets, Alexander Smith & Sons Carpet Co. Kitchens—linoleum, Armstrong Cork Co. Bathrooms—Wenzel Tile Co.

DOORS: Johns-Manville Corp.

HARDWARE: By Schlage Lock Co. and Norton Lasier Co.

PAINTS: By E. I. Du Pont de Nemours, Inc. and Sonneborn Bros.

KITCHEN EQUIPMENT: Range—Roberts & Manders. Refrigerator—Kelvinator Div., Nash-Kelvinator Corp.

BATHROOM EQUIPMENT: By Kohler Co.

PLUMBING: Automatic water system—Chicago Pump Co. Pipes: copper, American Brass Co. and Revere Copper & Brass Co.; galvanized, Republic Steel Co. Fittings—Mueller Brass Co. and Sommerville Iron Works. Valves—Northern Indiana Brass Co. Drains—Josam Mfg. Co.

HEATING AND AIR CONDITIONING: Vapor vacuum system. Boilers and convectors—U. S. Radiator Corp. Convector enclosures—Radiant Steel Products Co. Valves, traps, etc.—Warren-Webster Co. Regulators—Minneapolis-Honeywell Regulator Co. Vacuum pump—Nash Engineering Co. Pipe and boiler insulation—Philip Carey Co. Oil burners—Enterprise Combustion Engineering Co. Fans—Lehigh Fan & Blower Co. Air conditioning in restaurant and administration offices—Carrier Corp.



WINDOWED *vs.* WINDOWLESS BUILDINGS



Robert M. Damora

Next to the notion that buildings should be underground, nothing is dearer to the Sunday feature-writer's heart than the idea that the "building of the future" will dispense entirely with windows. The reasoning behind this theory is ultra-simple: buildings have always had windows; therefore, windows are old-fashioned; therefore, to be truly up-to-date a building must be windowless. Confident articles expressing this point of view have appeared for years, with little visible effect. With \$100 million worth of windowless defense plants built and building in a dozen States,* however, it is evident that there must be more to windowless construction than sheer perversity—more that building professionals should certainly know about, analyze, and thoughtfully consider.

Many have been quick to attribute this lusty development to a single factor: the possible danger of air raids and a consequent desire for automatic blackout protection. Undoubtedly this consideration may have tipped the scales in favor of windowless in a number of cases, but it is certainly not the only, or even the most important factor which was weighed. Biggest talking point of the proponents of the windowless industrial building has always been its adaptability to multiple-shift operation, and the

Windowed plant: Chevrolet Motor and Axle Division, General Motors Corp., Albert Kahn Inc., Architects and Engineers. Windowless plant (with "vision slot" for executive offices, drafting room, and employees' cafeteria): an Eastern aircraft factory by The Austin Co., Designers and Builders.

consequent increase in production this makes possible with a given amount of plant and equipment. The urgency and certainty of defense orders has rendered this consideration doubly significant. A host of other factors assume more or less importance in every particular instance; even within a general classification such as defense plants the switch to windowless is confined to certain types of manufacture, certain geographic conditions, certain attitudes toward questions of overall policy and prognostications as to future use. Even where similar conditions seemingly prevail, both windowed and windowless plants are being built, the former much more frequently than the latter. In all probability the question is not whether—as has been the case with theaters, motion picture and broadcasting studios, and department stores—there will be a general shift to windowless construction in the industrial and office building classifications. Rather, it is apparent that changing conditions have made a thorough consideration of the arguments for and against windows (and other types of light-admitting and/or ventilating openings) important in every particular instance, and more important than ever before. The debate-in-print on the following pages, in which these arguments are stated from the point of view of both sides, is designed to provide the general basis for such consideration and to indicate those aspects of the question which warrant detailed evaluation in terms of a particular problem before a decision is made.

*Allison Division, General Motors Corp., Indianapolis, Ind.; Collins Radio Co., Cedar Rapids, Iowa; Consolidated Aircraft, Fort Worth, Texas; Douglas Aircraft, Long Beach, Calif. and Tulsa, Okla.; General Electric Co., Everett, Mass.; Grumman Aircraft Engineering Corp., Bethpage, L. I.; Lukas-Harold Co., Indianapolis, Ind.; North American Aviation, Dallas, Texas and Kansas City, Mo.; Otis Elevator Co., Harrison, N. J.; Studebaker Corp., Chicago, Ill.; Fort Wayne, Ind., and South Bend, Ind. These jobs total but 5 per cent of current windowed defense construction.

LIGHTING

Artificial illumination in the windowless building results in the same lighting at all times of the day or night, in all seasons of the year. There are no alternate periods of glare and gloom. There is no need to switch lights on and off. Well spaced and properly shielded fixtures provide non-directional, shadowless illumination without glare; lighting is uniformly good in all parts of the building; higher intensities are easily obtainable wherever and whenever they are found necessary.

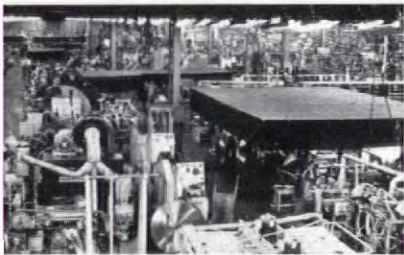
Lighting installation costs are little, if any more than for comparable windowed plants or offices since adequate artificial lighting must be provided anyway and is required constantly in some parts of many buildings and frequently throughout. Maintenance of the lighting system is simplified, due to the increased predictability of lamp life and the fact that all fixtures and lamps receive uniform use.

Artificial lighting, especially where the new fluorescent lamps are employed, puts a smaller load on air conditioning equipment than ordinarily results from the combined use of artificial and natural illumination. The expense and annoyance of maintaining windows, monitors, skylights, etc., is entirely eliminated.



Jones

ARTIFICIAL LIGHTING in the windowless plant is uniformly distributed and all ways at the same high intensity. Illustration shows fluorescent lighting installation in an aircraft engine plant (J. Lloyd Allen & John R. Kelly, Architects) in which three-lamp fixtures and three-phase wiring were employed to minimize stroboscopic effect.



SPECIALIZED LIGHTING may be installed at just the right point in the assembly line. Beneath the canopy in the Simonds Saw & Steel plant (above and right) smiths work by "artificial northlight" that is constant and unvarying.



HEATING & COOLING

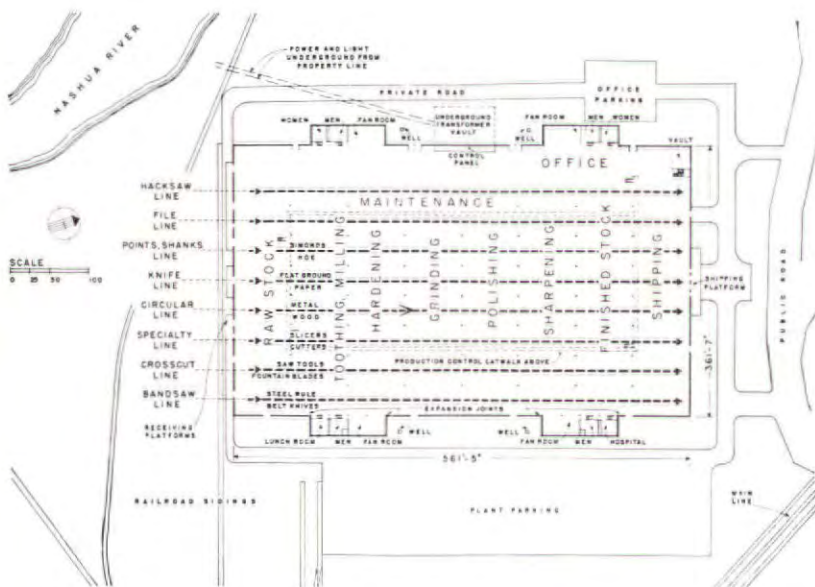
Control of temperature and humidity regardless of outside weather assures uniform working conditions at all times, and may increase productivity and reduce spoilage. Already considered desirable in the "process" industries, such as chemical, textile, and printing, such "controlled conditions" are presently proving their value in new fields, such as the manufacture of aircraft engines, where precise machine work demands freedom from expansion and contraction due to temperature changes, and rust due to perspiration is sufficient to spoil delicate parts. When cooling costs are low, as in aircraft assembly plants where the machine load is light and wherever well water is available, increased productivity during the summer months more than compensates for the relatively low cooling cost. Windowless construction minimizes the expense of heating and cooling by cutting down heat loss through glass and cracks, keeping out solar heat, and by eliminating the excessive cubage of monitors, high bays, etc. Outside dust and dirt are positively excluded, considerably reducing cleaning costs, especially in office buildings.

LAYOUT

Simplified plant and office layout results from having all portions of the building equally well lighted. In multi-story buildings, valuable ground space need not be sacrificed for light courts; within the building equipment may be placed irrespective of windows, cold spots, etc. Wall space is made available for shelving and files.

The windowless industrial plant is adapted to modern "straight line" production, with any required combination of equipment. With proper acoustical treatment and air conditioning all processes, including noisy operations and those which produce quantities of heat, may be placed according to their proper production sequence in a single, unbroken line.

Because all of the space in the windowless building is equally valuable, it can be used with greater efficiency and changes in layout resulting from changed manufacturing methods or expansion are more readily made. Additions can be made at any point without interfering with the lighting of existing portions of the building.



LAYOUT in the Simonds plant is strictly according to the production sequence, with noisy operations, those which produce heat, and those which require specialized lighting each at their proper point in the production line, and acoustical treatment, air conditioning, and lighting carefully worked out to provide optimum conditions throughout.

WINDOWED

Natural lighting can and should be designed to accomplish a desired purpose, whatever that purpose may be. Where it is important to secure a uniform, high level of overhead illumination throughout a wide area—as in the modern, single-story industrial plant—this can be accomplished by a system of properly proportioned "sawtooth," monitors, or "high-low bays." For multi-storied structures, where light must come from the side-walls, building width is seldom so great that adequate daylighting cannot be provided through properly proportioned windows. Special glasses and light-controlling glass block can be used to refract light against the ceiling and throw it deep into the room. Properly controlled sunlight and light from the sky are still the standard of lighting quality and color, and diffuse daylight the ideal light source. It is normally present in such abundance that it is not at all difficult to achieve an even distribution of 50 or more foot-candles of natural light through an enclosure under average operating conditions. Research has made available data which permit accurate forecasting of daylight conditions and provision for the amount needed. Stress is often laid on the fluctuations of natural light which accompany changes in sky brightness. These changes are not as great as is commonly supposed. An overcast, "cloudy" sky is more often than not **brighter** than the clear blue sky of a sunny day, and clouds must be definitely black before they hinder, rather than help daylighting through northern windows. A properly planned window system pre-supposes minimum sky brightness; extra-bright days simply mean more light than is actually required.

Natural ventilation, like natural light, can be predetermined and controlled so as to produce almost any desired result. Heat originating within the building can be collected and carried off by gravity without appreciably raising temperature. And natural ventilation, like natural light, can be provided at a fraction of the cost of artificial ventilation, both from the standpoint of first cost and from that of maintenance. Also, in the spring and fall, when air conditioned buildings often require heating in one part, cooling in another, natural ventilation usually provides adequately for all parts. Where air conditioning is essential, heat absorbing glass and glass block, or other glass coverings are available to cut down the additional load which light-admitting openings may place on cooling and heating equipment. Solar heat gain is a potent factor in reducing heating cost in winter; it can easily be controlled to avoid increasing cooling cost in summer.

Since most modern industrial buildings are of single-story construction, natural overhead lighting is feasible over unlimited areas. Efficient layout and straight-line production can therefore easily be provided in buildings lighted by sawtooth or monitor roofs. In addition to overhead windows which flood a wide area with diffuse daylight at better than average intensity, modern windowed plants are usually provided with sidewall windows which furnish several hundred foot-candles of diffuse illumination for bench work adjacent to the window wall. Windowed buildings are adapted to changes in manufacturing and easy and economical to alter. Window walls are readily demountable, with 100 per cent salvage value, and easy to set up again when additions are made. The modern windowed plant, which relies principally on overhead lighting, may be expanded in any direction.

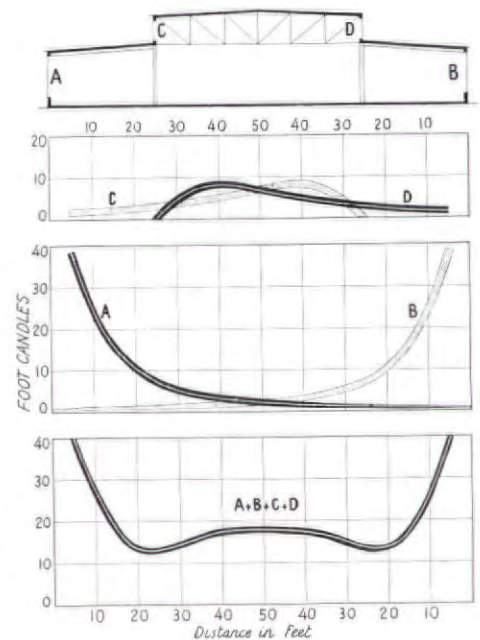


Max Tatch

NATURAL LIGHTING is low in cost, high in quality when scientifically planned to produce a desired result. The modern sawtooth or monitor roof, in combination with the rigid frame, is capable of producing uniform, high intensity illumination throughout wide areas under normal operating conditions. Illustration shows an aircraft parts factory by the Austin Co.



DAYLIGHT ENGINEERING for the industrial plant has been developed to a high point by the Detroit Steel Products Co. Diagram at the right shows their analysis of lighting conditions in a typical monitor-type plant, made in advance of construction and later confirmed by actual measurements. Upper curves show light provided by each of the various windows (A, B, C, & D), lower curve the combined effect of all 4. Calculations take into account the normal accumulation of dirt on the glass.



SIDEWALL LIGHTING for deep rooms in multi-story structures may be vastly improved by the use of special glass or directional glass block (diagram below) placed above eye-level to prevent glare.



VISION

Much is made of the fact that the worker in the windowless plant or office building may feel "shut in." So far as the factory worker is concerned, this objection is largely imaginary. The huge spaces in a modern industrial plant provide plenty to look at without looking out of the window, plenty of distant views on which to refocus the eyes. Even in windowed plants, sidewall windows are usually too far away, too dirty, and the view beyond too uninspiring to provide much of an attraction. More good can be accomplished by improving the view *within* the building than by providing windows for this sole purpose. In smaller spaces such as offices and drafting rooms, and in rooms used for relaxation, such as employees' cafeterias, the "windowless" building is meeting this objection by the provision of "vision slots"—high-silled, low-headed openings designed solely for seeing out of the building. These may be double glazed and, where blackout is a factor, are readily closed by shutters.

APPEARANCE

Because buildings have always had windows is no reason that they must always continue to have them. Many a windowless structure has been considered beautiful; architects have admired cold storage buildings, warehouses, and grain elevators precisely because the absence of windows has preserved their utter simplicity, given the overall masses a chance to stand out. The windowless plant or office building is a new architectural problem, but by no means an insoluble one.

COST

The true cost of an industrial plant can only be expressed in terms of the value of goods produced in a given building complete with equipment. Due to its more efficient utilization, the windowless plant is frequently considerably smaller than a windowed plant of comparable *hourly* capacity; where multiple shifts can be employed, the cost of a windowless plant may be decidedly less than for a windowed structure of the same productive capacity that operates at full efficiency only during daylight hours. This also results in similar saving on equipment, since less machinery is required, and more productive capacity used up before it becomes obsolete. Like the windowless industrial plant, windowless office buildings provide more useful space within a given area than buildings where the added desirability of "outside" space complicates layout. Where land is at a premium, it can be fully covered without loss of light and air. On the basis of the number of desks accommodated the windowless office building may be no more expensive than the conventional type.

BLACKOUT

Safeguarding industrial buildings vital to national defense against aerial attack has not yet been made an official part of the defense program, but the War Department has urged that new plants make provision for blackout protection to be installed at a later date. Windowless buildings are inherently "blacked out," and considerably easier to camouflage against daytime raids and flares than buildings with staggered roof lines and light-reflecting windows. Masonry sidewalls are readily made proof against bomb fragments and flying debris from anything less than an extremely well-placed hit. The absence of openings in the roof protects the plant against falling fragments of anti-aircraft shells.

Workers in windowless factories and office buildings can go through minor raids with the knowledge that they are as safe as they can be outside of a bombproof shelter. What is even more important, they are relieved of the mental hazard which the aerial blitz is designed to create. Blackout, while not in itself a sufficient reason for windowless construction, is an important corollary advantage which cannot be ignored.



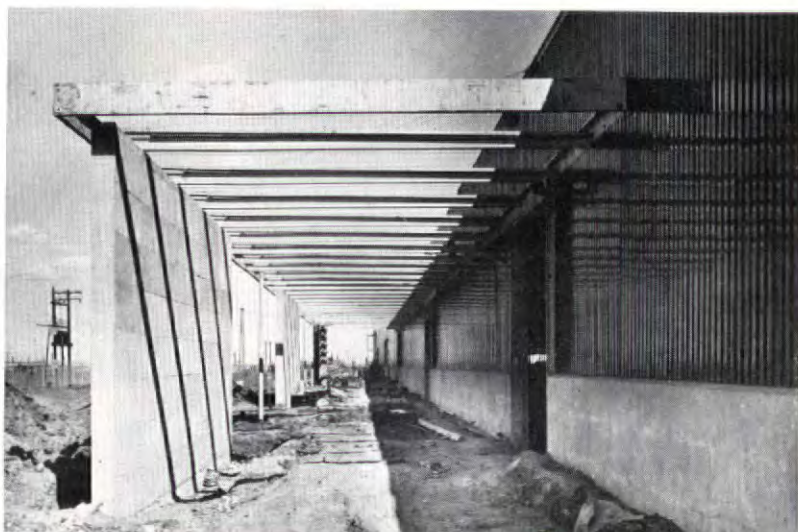
Fairchild Aerial Surveys

ALMOST INVISIBLE from the air even without deliberate camouflage, this windowless motor plant could readily be concealed in time of war. Revealing features which remain to be obscured are the characteristic engine test cells and employees' parked cars. The latter could easily be arranged in sinuous lines and broken up by planting; trees and shrubs on the roof would do much to blend the building with its surroundings.



Aerial Photo Service

BLASTPROOFED against nearby bomb explosions by heavy reinforcement of the lower part of the walls and blastwalls in front of all doorways, this southwestern aircraft plant (above and below, J. Lloyd Allen & John R. Kelly, Architects, J. G. Turnbull, Consultant) is among the first to make actual provision for raids as a part of original construction. Hangars and other adjoining structures, however, have not been specially treated and look hard to conceal.



Courtesy, James Stewart & Co.

WINDOWED

Everybody likes to look out the window—or at least, the feeling that he can look out if he wants to. Not the least disadvantage of the windowless plant or office building is that those who work inside have no way of knowing (unless they are informed by flashing signs or a public address system) whether they should have brought their rubbers or the picnic is going to come off after all.

The presence or absence of windows has a profound psychological effect on most people. Air conditioning may provide the windowless room with dust-free air at exactly the correct temperature, humidity, and rate of movement; to those who must live or work in it, it is still "stuffy." Almost everyone is more or less affected by claustrophobia, few would not forego the virtues of an engineer's "ideal environment" for a spot of sunshine now and then and a glimpse of the outside world. Moreover, eyestrain and its resulting slowdown of efficiency are sometimes directly traceable to lack of relief through momentary extended vision.

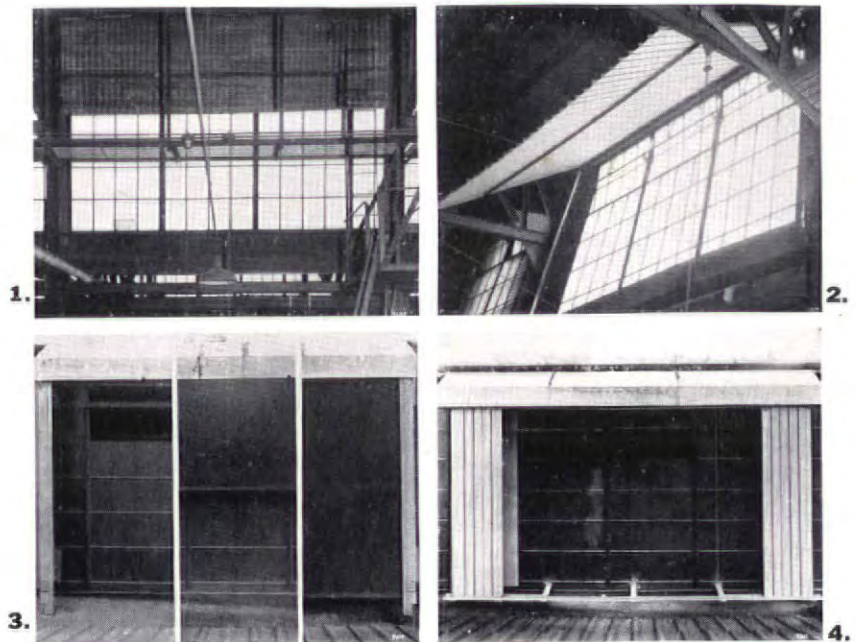
Windows have always provided architecture with its human scale, given a clue to function which has helped to retrieve the worst of architectural errors and reenforced the greatest successes. Whatever the theory of windowless vs. windowed architecture, the fact is that most people have rejected unadorned blank walls as "forbidding." Result has been the addition of decorative panels, meaningless contrasting bands, and similar gee-gaws that are far from satisfying.

Modern, well-designed and well-built industrial buildings frequently cost less than \$2.50 per sq. ft. of floor area to construct. Window walls are so economical and quickly erected that they are often used in preference to masonry even where light is not needed. The manufacturer who elects to build a windowless plant must invest considerably more than for a windowed plant of the same area. He must continue to pay high operating costs justified by multiple-shift operations even when the plant is running only during daylight hours. In periods when economic conditions force him to shut down altogether, fixed charges remain at the same high level.

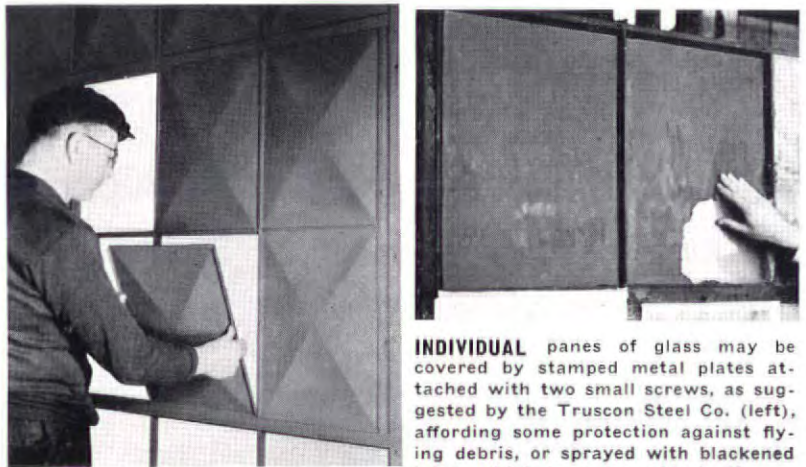
Even in windowed office buildings, which normally are in use only during daylight hours, lighting costs are an important component of rent. In the windowless building they are much higher. It is doubtful whether the saving in heating costs resulting from windowless construction can be made to balance the cost of lighting and cooling the windowless building.

Blackout protection for the windowed plant, when and if required, can be achieved without sacrifice of natural ventilation or the surrender of natural light during daytime production. English experience has abundantly demonstrated that the steel-frame, windowed plant with its relatively light sidewalls is subject to less damage from concussion, even in the event of direct hits, than a solid-wall structure, particularly of the wall-bearing type. Repairs are easily made and may be begun immediately, without waiting for resumption of power service. Shipments can continue to be made, and many operations carried on even though there is total power failure. During severe raids, when buildings of all sorts become untenable, windows providing either partial or complete opening can be opened wide, thus minimizing the damage from concussion. Explosion-type hardware can be installed to allow windows to fly open and relieve pressure in case of unexpected explosions.

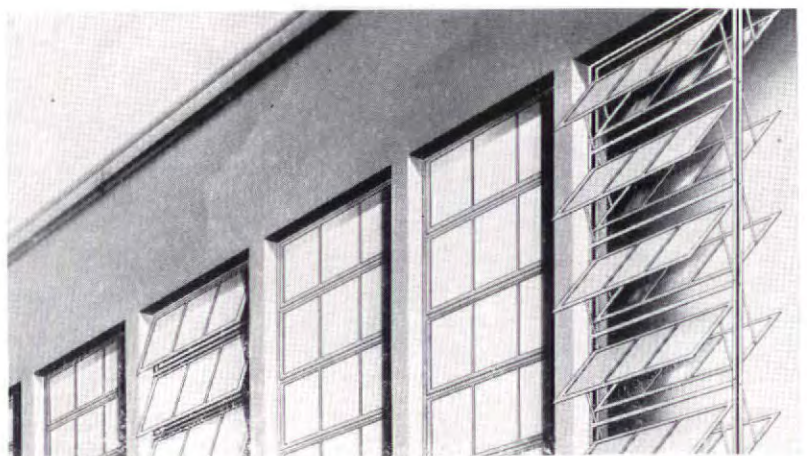
Windows can be protected against fragments of anti-aircraft shells by slightly overhanging eaves, glazed with wire glass to prevent damage by flying splinters, and equipped with operable blackout shutters which allow for natural ventilation.



BLACKOUT treatments for windowed plants. **1.** Shows experimental installation of interior rolling curtain applied to an overhead window in a sawtooth roof. **2.** Shows the same window equipped with an interior shutter, **3.** and **4.** use of exterior curtain and horizontally sliding steel panels. In all of the methods, which have been developed by the Detroit Steel Products Co., windows are free to open, providing ventilation during blackout periods. Similar shutters and blinds may be used with glass block panels.



INDIVIDUAL panes of glass may be covered by stamped metal plates attached with two small screws, as suggested by the Truscon Steel Co. (left), affording some protection against flying debris, or sprayed with blackened latex, which is easily rubbed off.



DOUBLE WINDOW with the outer sash "glazed" with metal plates, developed by Truscon for defense buildings in southern climates where maximum ventilation is essential. Sash have common crank operator, may be opened slightly without permitting light to escape. At full opening during daylight hours a considerable amount of light is admitted.

BUILDING FOR DEFENSE

HEADWAY AND HEADACHES

STATE OF THE PROGRAM

Briefs of newsworthy developments on the building-for-defense front.

► Building's historian of World War I, veteran Engineer Francis Blossom yields his place on the Construction Advisory Committee to youthful Engineer Richard Henry Tatlow III. (p. 340, col. 1).

► Twenty-seven other private enterprisers—architects, engineers and contractors—have been hired by the Army to facilitate its emergency construction program via nine-zone decentralization (p. 338, col. 3). Meanwhile, OPManger William S. Knudsen announced that Army and Navy troop housing construction was "over half behind us"—44,500 buildings and 95,000 tent frames and utilities are nearing completion.

► Other Knudsen numbers: 302 Government-financed plants are abuilding—most of them (97) for airplane and engine production (p. 338, col. 2).

► Recent additional Government construction contracts have been topped by the \$24.3 million one let to Glenn L. Martin Co., Baltimore's bomber-builder, which will spend \$15.1 of the total for construction, the balance for equipment.

► Mirroring the industrial building boom, industrial building costs during 1941's first quarter jumped 5 per cent to within a hair's breadth of the 1926 average (p. 340, col. 2).

► To police these and other costs President Roosevelt added OPACS to the defense program's alphabetical menage, put price expert Leon Henderson in charge. (p. 339, col. 1).

► Reviewing his Federal defense housing progress, FWAdministrator John M. Carmody claimed that the program was 92.5 per cent on schedule, prompted observers to add that, if true, the schedule was slow. (p. 351 et seq.) There was no question, however, about the speed of the FWA project at Camden, N. J. where 105 houses were framed in five days time. (p. 341 et seq.)

► To give private builders a fairer chance to help produce defense housing, the President signed Title VI to the NHAAct, gave FHA \$10 million with which to insure \$100 million worth of defense housing mortgages (p. 346). During the program's first two days, 340 private builders snapped up \$1.2 million of the available insurance, warned others that they must move fast to catch the bandwagon.

POWDER PLANT FACTS

Under construction in Charlestown, Ind., one of the fastest growing communities in the U. S., is a huge powder plant, one of the defense program's largest construction projects. Size and significance of this single development are difficult to grasp even with the aid of this long list of hard facts: 5,500 acres of farm land . . . \$88 million . . . 571 new and separate buildings . . . 110,000 ft. of new water lines . . . 12 miles of sewer lines . . . 44 miles of roads . . . 61 miles of new railroad . . . 13 miles of enclosing fence . . . 65 subcontractors located in 13 States and the District of Columbia . . . eight subcontracts in excess of \$1 million . . . 25,000 site employees . . . a special post office to handle their 10,000 pieces of daily mail . . . 5,000 automobiles parked in the employees' lot . . . license plates from 36 different States . . . 300,000 lbs. of lintens a day to supply the plant when complete and operating—enough cotton string to race two kites to the moon.

HOUSING MANAGEMENT

Rather than trust the operation of the hundreds of public defense housing projects to the seven different agencies that are building them, FWAdministrator John M. Carmody indicated last month that a central management division would be established. Top manager will be Assistant FWAdministrator Clark Foreman; under him will be management experts borrowed from the various housing agencies. Seated already in this important group are FSA's Sherwood L. Reeder, erstwhile manager Wisconsin's "Greenbelt" housing project, and USHA's Morris Miller.

As an increasing number of defense housing projects enter the "completed" column each month, Foreman's small central organization is hard pressed for competent local project managers who, among other things, will help collect the \$3 million which will eventually flow into FWA's rent coffers, will see that no one but defense workers move into the projects.

CONTRACT BREAKDOWN

Appearing before the House Committee on Appropriations, OPManger William S. Knudsen at mid-March brought the Representatives up to date on the progress of the national defense plant expansion program, announced that since last June Government had contracted for \$12.6 billion for material alone, and has spent or con-

tracted for \$1.6 billion worth of Government plants which will help fill these orders.

Covering the cost of new equipment as well as new construction, this total has been divided between 302 establishments: 11 aircraft engine plants, 20 plane plants and 66 aircraft parts and accessory plants; 11 for the production of explosives, 3 for small arms ammunition, 18 for shells, bombs and torpedoes and 9 munitions loading plants; 27 are for artillery, 5 for machine guns, 2 for other small arms; 40 shipbuilding establishments have been started or enlarged; 5 new plants for tank production, 12 for armor plate and heavy forgings, 20 for machine tools, 9 for optical instruments, 5 for such miscellaneous items as chemicals; 7 more are for the production of metals, 5 for pumps and blowers, 3 for ship engines and propelling machinery and 5 for unclassified miscellaneous defense items. Also in the total are 19 existing arsenals which are being thoroughly rehabilitated. All 302 construction jobs are scheduled for completion by July, when additional Government funds for operation of the Lease-Lend program will have gone into construction.

Atop the Government statistics discussed above are piled \$171 million for 61 British-financed plants and \$393 million for 421 Government-certified privately financed plants. Total: \$2.138 million, of which about \$1.100 million is for construction, exclusive of land and machinery.

ZONE ARCHITECTS

To facilitate its emergency construction program, the Army's office of Quartermaster General has divided the U. S. into nine zones coinciding with the long established nine Corps Areas, has placed a Zone Constructing quartermaster in charge of each and has assigned each of these nine Army officers a trio of civilian experts in architecture, engineering and operations. Herewith the headquarters of the nine zones and their honored appointees.

Zone I, Boston: Maj. R. G. Richards. Architect: Henry R. Shepley of Boston. Engineer: W. G. Grove of Hartford. Operations: Contractor Peter F. Connolly of New York.

Zone II, New York City: Lt. Col. M. A. McFadden. Architect: Robert Bernard O'Connor of New York City. Engineer: Enoch R. Needles of New York City. Operations: Civil Engineer Herbert M. Hale of Orient, Long Island.

Zone III, Baltimore: Maj. J. H. Burgheim.

Architect: Louis McLane Fisher of Baltimore. Engineer: Charles H. Stevens of Philadelphia. Operations: Civil Engineer E. C. Macy of Philadelphia.

Zone IV, Atlanta: Col. H. L. Green. Architect: J. W. Humphrey of Atlanta. Engineer: Edward S. Bres of New Orleans. Operations: Engineer-Contractor E. O. Korsmo of Memphis.

Zone V, Columbus: Maj. B. F. Vandervoort. Architect: Joseph Lewis Weinburg of Cleveland. Engineer: Camden Page Fortney of Charleston (W. Va.). Operations: Contractor Thomas Bentley of Toledo.

Zone VI, Chicago: Maj. E. C. Hayden. Architect: C. Herrick Hammond of Chicago. Engineer: Robert Isham Randolph of RIVERSIDE (Ill.). Operations: unappointed.

Zone VII, Omaha: Maj. M. E. Townes. Architect: Eugene S. Klein of St. Louis. Engineer: Harry E. Frech of St. Louis. Operations: Contractor C. R. Conkey of Minneapolis.

Zone VIII, San Antonio: Lt. Col. E. V. Dunstan. Architect: Maj. Roy Leible, a reserve officer of San Antonio. Engineer: Edward N. Noyes of Corpus Christi. Operations: Engineer: F. G. Chamberlain of San Antonio.

Zone IX, San Francisco: Lt. Col. E. M. George. Architect: Timothy L. Pflueger of San Francisco. Engineer: Harry W. Dennis of Los Angeles. Operations: Contractor Edward T. Foley of Pasadena.

PRICE BOSS

Latest addition to the New Deal family of alphabetical agencies is OPACS—the Office of Price Administration and Civilian Supply—whose broad powers under the administration of Government Price Expert Leon Henderson will touch Building

along with all other industries. Combining the functions of the NDAC Price Stabilization Division and Consumer Division, the new agency is directed by the President to “take all lawful and appropriate” steps 1) to prevent price spiraling, living cost rises, profiteering and inflation which may result from the defense program’s demand on the nation’s resources, 2) to prevent the speculative accumulation and hoarding of commodities, 3) to stimulate the provision supplies necessary for civilian use in such a manner as not to conflict with defense requirements and 4) to provide for the equitable distribution among civilian consumers of excess defense supplies. A Price Administration Committee comprised of Henderson, the two OPM heads and several other high Government officials will make recommendations for studies of civilian requirements and will advise on needed legislation.

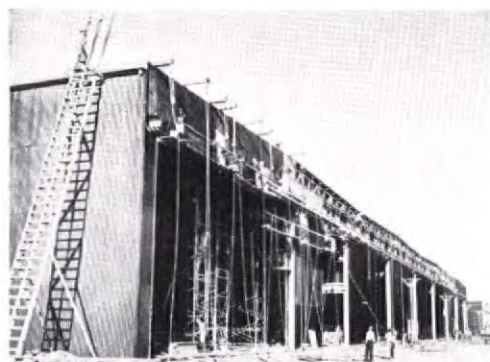
While OPACS has no more power than the combined total of those possessed by its two predecessors, its creation is significant. It indicates that the Administration believes the U. S. economy has reached the point where further increases in prices should be met with stiffer resistance, and OPAdministrator Henderson is directed to ask for whatever legislative machinery he considers necessary to price stabilization.

Questioned concerning his attitude toward rents, Henderson in press conference last month announced that this kind of price was still in the hands of Consumer Specialist Harriet Elliott (see pp. 344-5), that he was more interested in the matter of increasing production. Noteworthy, however, was Henderson’s mention of building materials in the same breath with steel, drugs, textiles and chemical as items with whose price trend he, himself, is particu-

larly concerned. Theory is that if the prices of industrial goods can be kept in line, the consumer price trend (including rents) will take care of itself. Reassuring for the building industry is the fact that wholesale building material prices, while they shot abruptly up during the fall and winter, have recently been better behaved.

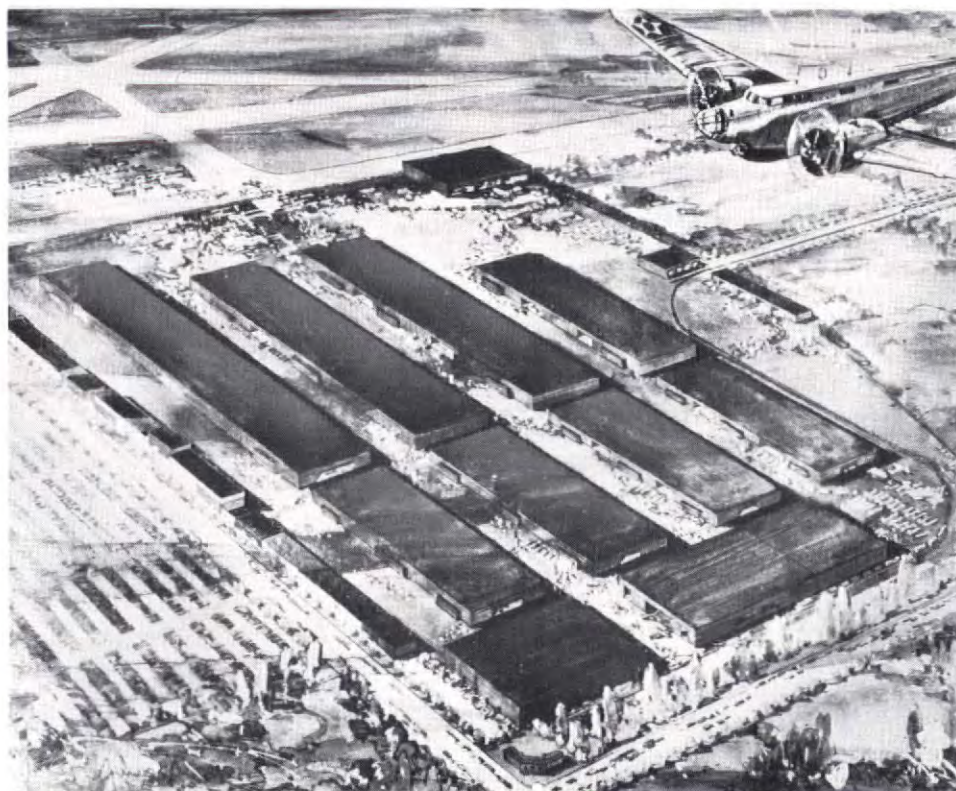
INDIAN HEAD

Last month PBA let the last contract for the prefabrication “demonstration project” near the booming Navy arsenal at Indian Head, Md. Several new participants were added to the list, and practically all of the original contracts were altered to cover a greater number of houses each, thus raising the total to the project’s 650 quota. Herewith, the roster of Indian Head prefabricators and the parts they are playing: 1) E. F. Hauserman Co. of Cleveland, 20 units; 2) Standard Housing Corp. of Chicago, 57 units; 3) National Homes Corp. of Lafayette, Ind., 63 units; 4) Allied Housing Associates of Langhorne, Pa. (a Homasote prefabricator), 77 units; 5) Humphrey-Horsley Co. of New York City, 61 units; 6) Harwood-Nebel Co. of Washington, 70 units; 7) PHC Housing Corp. of New York City, and Berkey & Gay Furniture Co. of Grand Rapids, 64 units; 8) Tennessee Coal Iron & Railroad Co. of Birmingham, Ala., 58 units; 9) T. Calvin Owens of Bethesda, Md., 65 units; 10) Lockwall Houses, Inc., of New York City, 65 units; 11) Home Building Corp. of Kansas City, Mo., 50 units. Many of these units will be contained in two-family “twin” houses. According to the prefabricators’ bids, average cost of the units, exclusive of land and site utilities will approximate \$2,357 each, comfortably



Wide World

Black-out plant for Douglas Aircraft Co. nears completion in record time at Long Beach, Calif. Some 3,700 tons of structural steel were raised and riveted in place in only 32 working days. Shown above is the end of a raw working and storage unit—one of the project’s eleven separate buildings shown in the bird’s-eye rendering to the right. Like the other buildings, this unit is colored to blend with the landscape, is fireproof, windowless and air conditioned. For further protection against possible air raids, underground vaults are provided for the storage of essential materials; bombproof shelters, for personnel. Located on a 200 acre site, the buildings will cost an estimated \$12 million including manufacturing machinery. Architect-Engineers: Edward Gray Taylor and Ellis Wing Taylor. Contractor: P. J. Walker Co.



below the average for the conventionally built part of the program and the statutory maximum average of \$3,000.

Conspicuous by their absence from this list are such big prefabrication names as Gunnison, American Houses, Pease-Way, Sears-Roebuck, and the twelve affiliates of Willis-Way. Indication that they may still be offered Government contracts with terms to their liking is the fact that FW Administrator John M. Carmody last month transferred to his office Allen W. Stephens, formerly in charge of PBA's prefabrication negotiations. All prefabricators found him sympathetic to their propositions, hold that he did as good a job as possible in view of his lack of policy-making powers. In Carmody's office he will have more power, and Prefabrication may anticipate a bigger part in the defense housing program yet to come (see p. 340, col. 2). And, if nothing else, Stephens' shift is a frank admission that old-line PBA bureaucrats bungled an opportunity by not giving the prefabrication industry an early chance to prove its claims. (For an example of prefabrication at its speediest, see pp. 341 et seq.).

TATLOW FOR BLOSSOM

Facing the searching probes of a Congressional investigation into the letting of War Department construction contracts, Engineer Francis Blossom last month resigned as Chairman of the Construction Advisory Committee of the Quartermaster Corps' Construction Division, thus substantiated the rumor that the door to the Committee's office would soon be relettered (AF, Mar. 1941, p. 10).

While 70-year-old Blossom assigned ill health as the reason for his resignation, critics pointed to the fact that his New York City engineering firm of Sanderson & Porter has been awarded a \$1.1 million fee in connection with the construction of a shell loading plant at Elwood, Ind. Actually, the Construction Advisory Committee has little to do with the awarding of contracts, per se: It merely interviews con-

tractors, analyzes their qualifications and usually recommends three for each job. The Construction Division selects one. Moreover, while Blossom sees no wrong in awarding a contract to a firm which is represented among the Army's expert civilian advisers and believes it proper for such an adviser to take his Government salary (Blossom's was \$6,500 per year) as well as his share in his company's profits, he has announced that he will not pocket any of Sanderson & Porter's 1940-41 profits. Finally, Blossom proved that he had asked Secretary of War Stimson to excuse him from any consideration of the Indiana project in which his company was interested. Thus, Engineer Blossom appears no more guilty of misadministration than OP Manager Knudsen whose General Motors Corp. is making tanks for the Army, or Priority Expert Stettinius whose U. S. Steel Corp. is making steel for defense purposes or a thousand others.

To replace the man who gave the advisory body its popular name, "Blossom Committee," the War Department immediately moved up young Engineer Richard Henry Tatlow III from his post as assistant to the Chief of the Quartermaster General's Engineering Branch. In that capacity since July 1940, Tatlow has primed himself for work on the Construction Advisory Committee by directing the investigation and analysis of architect-engineering firms and construction contractors undertaken by the Quartermaster General's Office. Prior to that, Tatlow was a partner in the Kansas City engineering firm of Harrington & Cortelyou.

BUILDING COSTS

Since 1913, the Austin Co. in the course of its large scale industrial engineering and building has kept tabs on the construction cost of a one-story steel frame, monitor type plant. At the Depression low of 1933, Austin found that cost had dropped to about 62 per cent of the 1926 average, from which it worked steadily upward to about 93 per cent in the "little prosperity" year of 1937. In 1939, it hit another bottom at about 81 per cent, has been climbing ever since. Last month Austin's President George A. Bryant announced that his index had jumped up 5 points during 1941's first quarter to 99 per cent, that, "while construction costs are bound to advance still further, the rise to date has been orderly and does little more than cover added pay roll expenses all down the line."

Austin's index is not yet within gunshot of the World War I peak of 135 per cent or the all-time high of 155 per cent recorded in 1920. (For the trend of residential buildings costs, see p. 377.)

LANHAM ACT II

Bottlenecked by the Congressional spring recess last month was the eventually certain passage of Lanham Act II which would give FWA another \$150 million for defense housing construction. Fortnight ago both branches of Congress had passed the bill,

but in two quite different versions. Final enactment awaited the agreement of a joint Congressional committee on a mutually satisfactory version.

Principal item of disagreement between the two bills was an amendment sponsored by Ohio's Senator Taft. When entertaining presidential aspirations last fall, Taft argued long and loud for Government penny-pinching and budget-balancing, but apparently has since lapsed into politicking of another variety. Thus, advancing fireproof permanency and lumber shortages as his argument, Senator Taft persuaded the Senate to raise the maximum average unit cost of Federal defense dwellings from the \$3,000 prescribed by Lanham Act I to \$3,500 in the new legislation. Impartial observers knew that Senator Taft had his tongue in his cheek, his thoughts on the folks back home in Ohio, one of the most important brick and tile producing States in the nation.

SAN LUIS OBISPO

To see what the defense program is doing to and for some of its smaller constituents, the American Municipal Assn. last month put San Luis Obispo, Calif. under the microscope, found:

► Now abuilding in the county, which contains only one other community—Paso Robles—are two Army camps whose population by mid-summer will reach 50,000.

► Some 5,800 laborers are building the 20,000-man camp four miles from San Luis Obispo.

► The town's population is now double its 8,881 pre-defense level.

► Hotels, rooming houses and trailer camps are bulging, and the 100 new houses under construction are being rented or sold before the plaster dries.

► Rents are soaring despite the efforts of city officials, the chamber of commerce, merchants and private citizens.

► Three policemen had been added to the force within the preceding month.

► At month's end the city planned to vote on a proposed 5-cent tax to provide mass recreation facilities.

► City Council has denied several applications for taxi dance halls, but is encouraging private capital to invest in bowling alleys, a skating rink and tennis and badminton courts.

► The civic auditorium is being remodeled to serve as an amusement center with a dance floor, restaurant, assembly room and an information center for visitors and soldiers.

► Six oil companies have agreed to open their gasoline station rest rooms to soldiers. Additional public toilet facilities are being installed in the city hall.

► Most urgently needed public works project is a new sewage disposal plant. But, the mayor says the community should not bond itself for the entire \$60,000 cost since the plant would become a white elephant with the passing of the national emergency.



Richard Henry Tatlow III

BUILDING FOR DEFENSE . . . GOVERNMENT HOUSING IN A HURRY

for 500 shipyard workers. FWA encloses 20 houses a day with the aid of prefabrication, gives AFL 56 units to hammer and saw. A close-up of the biggest house factory.



All photos, Earl W. Reinhold

"Defense workers, the eyes of the world are upon us—let us do a first class job." Thus reads a large red, white and blue sign atop the field office of the Wheeler Engineering Co. at the humming site of a huge defense housing project near Camden, N. J. And, as far as speed is concerned, the 1,150 workmen engaged in the production of this 500-unit project are heeding their boss' sign to the letter. On February 5 the \$1.4 million cost-plus-fixed-fee contract was negotiated, a week later ground was broken, by April 9 foundations for the 500 basementless houses had been laid up, and during the next five working days 102 dwelling units had been framed with the able assistance of prefabrication. Fortnight ago the project was abreast of its ambitious, split-second schedule which called for the occupancy of the first house by May 3, the last house by June 1.

Named for the late great bird fancier, Audubon Village in the village of Audubon is no typical Federal defense housing project. In the first place, it is almost twice as large as the program's 295-unit average, and it is certainly going up twice as fast. Unlike the others, which have been entrusted to any one of a dozen Government agencies for construction (see p. 351), Audubon Village is under the direction of Col. Lawrence Westbrook, a "one-man Government building agency" and special assistant to Federal Works Administrator John M. Carmody. Moreover, the project is one in which private architects have had a hand and in which prefabrication has been given an opportunity to show its stuff.*

Site. Of all the States in the Union, little New Jersey has been awarded the greatest dollar volume of defense contracts. Most of them cover ship construction, and most of the ships are being built in the Camden



area. Axiomatic, therefore, is the tremendous influx of defense workers, the attendant housing shortage and Government's reason for deciding to step in and supplement the private residential building business. Conditions are much the same as in World War I when Government financed the construction of now-famous Yorkship Village, a 1,360-unit project by Architect Electus D. Litchfield about a mile and a half inland from the sprawling yards of the New York Shipbuilding Co.

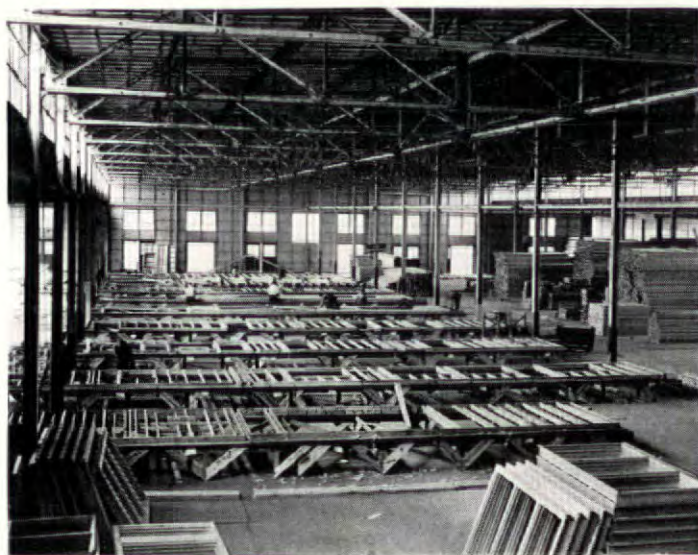
A hefty stone's throw from this 22-year-old garden apartment trail-blazer, now privately and individually owned, is the site of Audubon Village. Comprised of 100 acres of moderately rolling land bounded by two highways and an overgrown creek, the site was treeless except for a fringe of growth along the water's edge, and therefore lent itself to almost any kind of layout. In the hands of Col. Westbrook's consultant—Burns Roensch, the platting of the property took on a commendable pattern. One street circles around the inside of the tract, and from it sprout 26 small cul-de-sacs on which most of the houses will face. Result: through-traffic will be discouraged and

minimized; that which goes through the Village will not disturb the bulk of the families in their somewhat isolated houses.

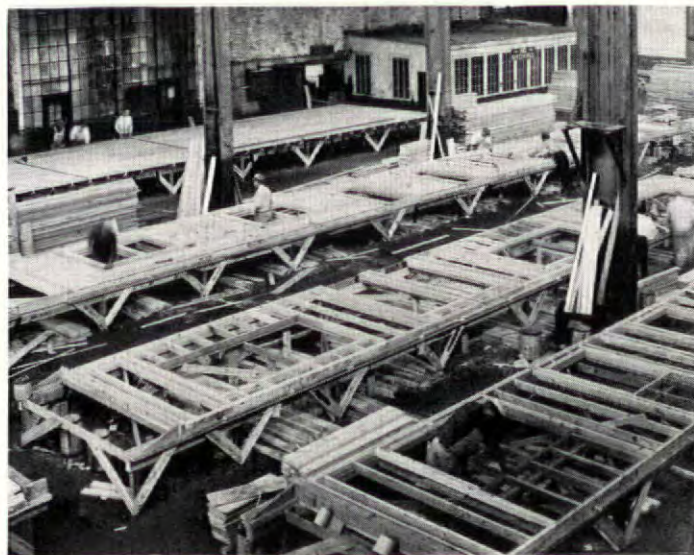
Houses. While practically all of the 128 FWA-financed defense housing projects now under construction are springing from blueprints turned out by the Public Buildings Administration's "design factory," Audubon Village has been blessed with the private architectural service of Associates Joseph N. Hettel and Oscar Stonorov. From their Camden office have come the complete plans and specifications for six types of buildings ranging from a one-story, two-family building to a two-story, four-family building. These are now being repeated 183½ times (one detached house will round out the 500 units) to produce 95 three-room units, 137 four-room units and 268 four-and-one-half- and five-room units—a total of 2,173 rooms plus 112 attached garages.

Most of the buildings (47½) will be of the twin three-room house variety; other building types will be repeated from 25 to 28 times. While it would have been cheaper to stick to one building type, it was felt that the use of several sizes, shapes

* THE FORUM realizes that the word "prefabrication" covers a multitude of construction systems which account for anywhere from 10 to 90 per cent of a project. The system discussed on these pages must be classed near the lower end of this scale.



House factory which supplies wall and roof sections for Audubon Village is a converted American Radiator-Standard Sanitary Corp. plant on the shores of the Delaware River, about 2 miles from the site. Not yet in operation, these jig tables have just been completed. Note window frames in foreground, precut lumber, right.



Jig tables for a two-story house cover the floor of another wing of the Day Housing Corp. plant. Worker at lower table is nailing framing members together. Window frames have been dropped in place on next table. Sheathing boards are being nailed to the frames on the third table. Roof sections are being prefabricated in background.



and heights would be worth the increased cost from the standpoint of the overall appearance of the project. Elaborate planting under the guidance of local Landscape Architect Cyrus D. Morse will also add interest to the comparatively level site and the standardized house designs.

Most noteworthy detail in the planning of the houses is the fenestration. There is a generous, over-average area of glass in each dwelling unit, and the location of windows has obviously been dictated by probable furniture arrangements. Some are combined in strips, while single windows have frequently been placed in the corners of rooms which are rendered useless to furniture by the location of a closet in the same corner. Result: large uninterrupted wall areas—particularly desirable in small living and bedrooms.

Prefabrication. Since the ship building labor which will eventually live in Audubon Village is predominantly CIO, it was quite natural for CIO to demand that its recently organized construction workers union be given a part in the building of the project. And, since CIO several



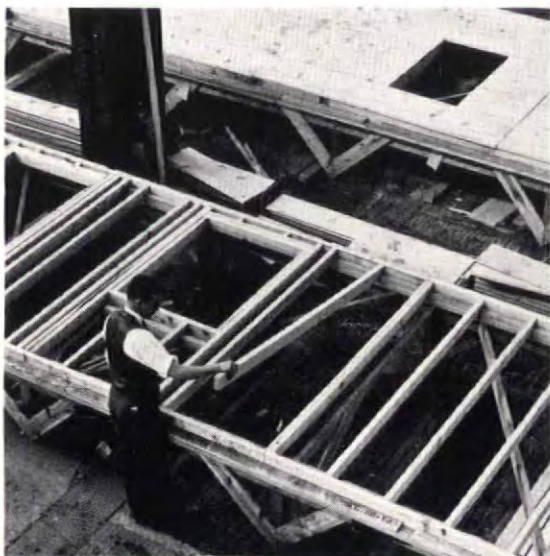
months ago hopped on the prefabrication bandwagon as a means of riding into AFL's closely guarded construction field, it was quite natural for CIO to suggest that its project be prefabricated. Under this pressure, General Contractor Wheeler Engineering Co. invited prefabricators to bid on the basic framework of the houses. When advised that the contract would call for the establishment of a CIO organized plant near the site, top-flight prefabricator American Houses, Inc., which operates an open shop in Kearny, N. J. (100 miles away), backed away. Forthwith, famed Real Estate Auctioneer Joseph P. Day, who had been in charge of American Houses' sales organization, formed his own prefabricating company, submitted the winning bid, went to work in a huge, long-idle and musty factory rented from the American Radiator-Standard Sanitary Corp.

With the aid of the architects' plans, Day Housing Corp. divided the buildings into easily fabricated and easily handled wall and roof sections (seventeen and sixteen, respectively, for the two-family building), and designed jig tables on

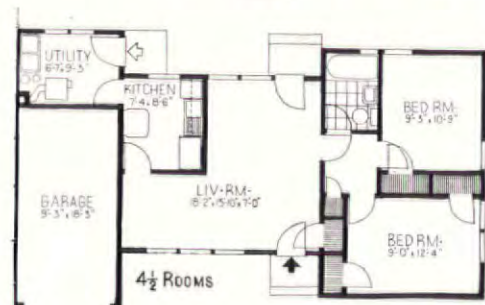
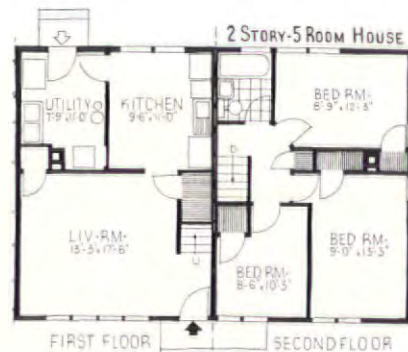
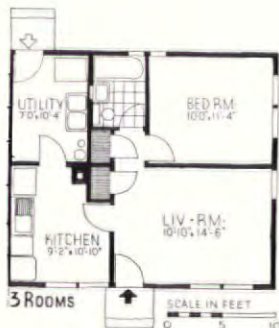


which they were to be produced. Built of lumber to tolerances of about 1/16 in., these tables are cut and notched to receive and accurately align all the framing pieces of the sections—2 x 4 in. sills, studs, and plates, pre-assembled window and door frames, rafters, ridge pieces, etc. One continuous table serves as the "mold" for all the interior partition sections which are laid end to end in a horizontal position. On another long table all the exterior wall sections for one complete house take shape, and a third table produces this house's quota of roof panels.

Construction of jig tables has been the only bottleneck in the Day Housing Corp.'s plant, for this operation alone requires skilled labor, and it takes time. About one week is required to build the one set of jigs used for the prefabrication of each type of house. Once the plant is "tooled up," it goes into immediate production. Drawing upon a huge stock pile of lumber, power saw operators cut all framing members to exact dimensions. One crew of laborers picks up the precut, keyed members, drops them in their keyed places on the jig tables. A second crew



Jig detail shows how framing members drop into place, are automatically aligned by notches. Note that, while no nails have as yet been used, the wall frame has taken on its shape. Jig tables are carefully constructed to tolerances of 1/16 in., require one week to build.



walks along the table nailing the members to one another, while crew No. 1 drops the window and door frames in place, covers the tables with 12 in. sheathing boards pre-cut to fit the lengths of the exterior wall and roof sections. (Partitions are finished with the nailing of their framing members.) A third crew lifts the finished sections from the tables, loads them on awaiting trucks (one dwelling unit per truck) or stores them for future delivery.

With a payroll of about 150, three sets of jig tables, several dozen hammers and a few power saws, Day Housing turns out fifteen to twenty dwelling units per day, has been in production since March 17 when the first building was lifted from the jigs and assembled in the plant to reveal any wrinkles in its sectional design. Pending the preparation of the foundations at the site, which was delayed by two weeks of inclement weather and a strike (see below), a backlog of seventy units was built up in the plant until the first building moved out on April 9. According to schedule and unless further defense housing orders are forthcoming,

the Day plant will have served its purpose and closed down by mid-May.

Field construction. Up to the level of the rough horizontally laid flooring, construction of the Audubon houses is conventional: poured concrete footings, cinder block foundation walls to which the platform of 3 x 8 in. joists is bolted. Once the location of interior partitions has been marked on the rough floor, the erection of the house takes place without the aid of blueprints. A crew of about ten men, most of whom are common laborers whose only requirement is that they be able to lift the sections, first raises the partitions, nails them together and to the floor and then follows with the exterior wall sections. Where sections come together, abutting 1 x 2's and 2 x 4's are nailed together. Wall sections are further secured in place by nailing through the sills into the floors and through the projecting sheathing of one section into the end stud of the adjacent section. Prefabricated gable ends and gable trusses atop each party wall complete the erection of vertical members of the house.

(Continued on page 344)

Three hours' work by a crew of ten completely enclosed this two-family building. Note that partition sections are erected first (far left), then exterior wall sections and, finally, after ceiling joists are in place, the roof sections. If concentrated upon, this building could be easily completed in about four more work days. **Below**, the result of three hours of labor on one of the 28 buildings being constructed by AFL's conventional hammer-and-saw methods. Only the sill has been nailed in place and the plate cut and laid upon it. Note stack of uncut lumber (rather than wall sections) in foreground.



Once the walls are up, precut ceiling joists are spiked to the plates, and roof sections are raised in place from alternate sides of the house. Rafters of each section are notched to receive the plates which, along with nails, check the outward thrust of the sections when their abutting ridge pieces are nailed together. For the same purpose, 1 x 6 in. collar beams secure every third rafter. In the project's smallest, two-family building, erection of the shell is accomplished comfortably in three hours, and project engineers boast a record time of less than one hour.

Interestingly, the AFL erection crews take to this new system of construction with enthusiasm, have unofficially launched an inter-crew competition for speed. While not sold on the calibre of house it produces, they nonetheless admit that it is a time-saving innovation and therefore a boon to emergency defense housing. Their enthusiasm is indicated by the shouts of "nail it" from the common laborers even before they have lifted a prefabricated wall section to within a foot of its proper place. Obvious conclusion is that the rank and file of AFLabor are not as much opposed to prefabrication as the blanket protests of their dues-collecting chiefs would lead the public to believe.

In fact, these chieftains brought their protests forcefully to the attention of Au-



EXTERIOR FINISH: asbestos side shingles; asphalt roof shingles

dubon Village's contractors when they ordered their men out on strike the day the erection operations were to begin. Professed reason: AFL was not interested in erecting CIO-prefabricated sections. To keep AFL leaders happy, the project directors designated 28 two-family buildings to be built entirely by conventional hammer-and-saw methods in the field. Good bet is that AFL will build these houses like

expensive furniture so that their construction will outshine that of their prefabricated neighbors.

Actually, the biggest part of all 500 houses is being built conventionally, for the finish and equipment of the houses involve no new materials nor methods. Exteriors are covered with building paper and asbestos shingles; roofs, with paper

(Continued on page 52)

BUILDING FOR DEFENSE . . . RESTRICTIVE RENT LAWS LOOM

over Washington and defense-jammed States. Model bill prepared by consumer experts.

As inevitably as the chain of events in a Rube Goldberg cartoon, it follows that when 1) war catapults industrial centers into a dither of activity, then 2) hundreds of new workers move in, thereby 3) creating local housing shortages, which 4) local builders try to meet, whereupon 5) local landlords lick their chops, 6) rentals skyrocket, 7) scorched tenants squawk, thus 8) causing sensitive-eared legislators to enact rent controls, which 9) continue to operate long after the war ends, while 10) rival self-interests continue to wrangle, until finally 11) housing supply and demand again reach an equilibrium, and 12) all is sweetness and light—before another war starts the cycle off anew. So it happened in World War I; so the pattern unfolds once more.

Already pending in Congress is a bill to prevent rent profiteering in the nation's capital, again busting its seams with an influx of new Government employees. Most State legislatures are not now in session, but New York illustrates what may be expected when those with defense industry constituencies do convene. Under consideration at Albany last month were two bills calling for a permanent State rent control board and the freezing of rentals.

In the usual last-minute adjournment shuffle, this proposed legislation got lost, will doubtless be introduced again in the next session.

Convinced that a raft of rent-control bills are in the legislative offing and that most of these will themselves need some sort of control, in light of World War I experiences, bright boys in NDAC's Consumer and Price Stabilization Divisions have prepared a model emergency fair rent bill. Issued as a report by Consumer Commissioner Harriet Elliott*, it has red-taped its way to NDAC's Division on State and Local Cooperation. In its quiet, dignified manner, this Division is suggesting to State Defense Commissions that similar legislation be introduced in their States. So far the only response has come from New York, Connecticut and California; States in the agricultural belt or where no trouble from voracious landlords is anticipated are obviously not concerned.

Model. To Building, the chief significance of NDAC's proposed bill is its recognition

* Whose division has since been transferred to Leon Henderson's new Office of Price Administration and Civilian Supply.

of the fact that pegging rentals does not solve the basic problem. As stated in Commissioner Elliott's report, the true remedy for a housing shortage is the construction of new dwellings, either permanent or temporary. Until sufficient new houses can be built, however, regulation of restless landlords may be necessary as a purely interim measure for the protection of tenants. To achieve this goal without, at the same time, checking needed construction, the bill specifically calls for the exemption of new dwellings.

Thus, one of the main objections to rent-control legislation in the past is neatly countered. Since construction costs tend to rise in war time, opponents have argued that there is less and less incentive for builders to provide new housing when returns are limited by law. Building then slumps to a standstill, but workers continue to pour into town, intensifying the local housing shortages and prolonging the need for rent controls far beyond the war's end. It is no secret that FHA officials have been worried about this possibility occurring again. They have even taken the view that if rent control is noised too much, private construction may dry up. By eliminating new buildings

from the bill's provisions, NDAC goes far toward soothing FHA's feelings.

The proposed bill aims to do more than forestall any local downward construction spirals, however. It is designed to give an administrative flexibility which may make actual rent control unnecessary. To this end it suggests two separate steps: 1) the creation of a five-member State rent commission, appointed by the governor, with power to designate certain regions within the State as emergency areas; 2) the creation of five-member regional boards, likewise appointed by the governor, to determine "fair and reasonable rents" and to apply them within those areas.

In short, if a State adopts this bill, it does not mean that rent controls immediately go into effect in every locality. The State rent commission's prime duty is to keep its eyes cocked on hot spots. The mere fact that it is on the job may serve to keep rents from becoming unruly. Only when a serious condition is found to exist would the commission invoke its full power and move toward step No. 2 by staking out the emergency area and specifying the classes of dwellings to be regulated. If a regional board is then set up, the control of rents within this area becomes an emergency measure which lasts only as long as the State rent commission declares an emergency to exist. (Main reason for stipulating this sort of time limit: the lawyers know that otherwise they would be overstepping the constitutional powers of Government.)

Regionalism. NDAC bill advocates claim another advantage for the State rent commission approach insofar as it permits more than one city to be encompassed within the emergency area. Chances are that an entire region will be affected by rising rents. With a regional administration cutting across local boundaries, rent controls can be applied more equitably and promptly at all sore points than would be possible with a loose assortment of separate municipal rent boards. Besides, most cities do not have the power to create such control boards. Enabling State legislation would be necessary in any event.

Leases made prior to a "normal rent date" (to be determined by the State rent commission) are not subject to revision under the suggested bill. Leases made thereafter may have higher or lower rents, as decreed by the regional boards. If increased, the tenant has the option of moving out. If lowered, he cannot be evicted so long as he meets the prescribed payments or unless the landlord requires possession for personal occupancy or rebuilding. Either tenant or landlord may petition for rent revision, or a board may act on its own initiative. If landlords continue to scrooge their tenants after the board sets its schedule of fair rentals, they become liable for double the excess collected plus a stiff fine (up to \$1,000).

Opponents of rent control legislation in

any form will be quick to point out that NDAC's streamlined paragon still has some shortcomings. Biggest headache in store is the problem of tenants who become landlords by subletting. It would take a small army of investigators to go around ringing doorbells to check violations in houses letting out rooms.

Furthermore, in metropolitan areas like New York, Philadelphia and Washington, which spread across several State lines, complete control would be difficult unless each State legislature enacted the same law and regional rent boards were set up to function jointly all at the same time. The principle of regionalism cuts thick as well as thin. If the rent boards did not act in concert, then builders in a do-nothing State would have a competitive advantage over those in the other abutting States. Net result would be a rising chorus of complaints from jealous builders in any State in the metropolitan area attempting to put the brakes on rising rents—to say nothing of the sharp overtones coming from tweaked landlords.

Bellwether. As in World War I, Washington again faces a housing problem of increasingly serious proportions, again sets the pace for the rest of the country in wrestling with rent-control legislation. But, whatever its virtues or faults, the NDAC proposal has not yet had any noticeable recognition among the lawmakers on Capitol Hill who watch over the District of Columbia's welfare. Instead, a much more drastic measure is up for consideration.

Introduced by Congressman Randolph, this bill seeks to freeze all rents immediately and to establish a permanent Federal rent commission of three, appointed by the President for five-year terms at \$10,000 a year, who would then proceed to determine a fair rent schedule. Immediate registration of all rental property would be required, to be followed with periodic statements from landlords as to profits and operating costs. The commission would also be empowered to prescribe standard forms of leases for renting space.



Associated Press

Consumer Commissioner Harriet Elliott

Howls of protest at such provisions are to be expected from all property owners. In this case, however, the landlords find support from an unexpected quarter—the Washington Housing Assn. Despite its belief that the housing shortage in Washington calls for rent control, the Association is unable to swallow the Randolph bill. As Editor Helen Duey Hoffman points out in the Association's current Housing Letter, this bill attempts to put residential property in the category of a public utility and to regulate rentals as if they were utility rates. By requiring registration of even single rooms in private households, it would discourage families who are willing to rent rooms, thereby magnifying the housing shortage still further. Aside from proposing to create a permanent commission whose functioning is not dependent on the existence of an emergency, the bill does not specifically exempt new construction. Inevitable effect would be for the District's builders and investors to transfer their activities to suburban communities in nearby Maryland and Virginia.

Meanwhile, preliminary hearings on the Randolph bill before the Congressional House District Committee have put Washington's problem of rent control in a fresh light. There is scant question that housing facilities are strained. Virtually a company town for Federal employees who are pouring in at a rate averaging 3,000 a month, to be followed after a brief time lag by approximately the same number of new workers in the service trades and a horde of migrant job hunters, the capital has grown from 663,000 to 735,000 since last spring. Another 100,000 are expected before year's end.

Although there is no scarcity of high rental dwellings, evidence of overcrowding in the lower price range (under \$50 a month) is abundant. Single rooms are being occupied by several unrelated persons, housing investigators report. Even an empty bed is now called a vacancy. Always high, rents have shot up out of all reason.

At the same time, it is disclosed that much of Washington's rent control clamor arises from newcomers unfamiliar with living conditions in large cities. They are reluctant to move into suburban neighborhoods, prefer living within walking distance of their work. Result is an ample supply of desirable rooms going almost begging in outlying areas while less desirable quarters closer to town are packed to the transoms. House renters likewise scorn attractive suburbs in the north-eastern and southeastern quadrants where rents are modest in favor of the more ritzy Cleveland Park and Chevy Chase districts. The atmosphere could be cleared considerably, argue rent-control opponents, by educating these critical newcomers on the opportunities for more economical housing in other parts of the city. For this purpose a central listing

(Continued on page 54)

BUILDING FOR DEFENSE . . . FHA BOOSTS PRIVATE HOUSING

via its Title VI. New financing mechanism gives builders a break in defense-boomed areas, gives defense workers low cost houses for nothing down.

While the private home building industry has built more defense housing than all the Federal building agencies put together, not until last month had it been given a chance to do its utmost. Lacking was financial mechanism which would make it possible to operate in defense-boomed localities at less risk than under normal conditions. But, in early April the mechanism was provided when Congress and President added Title VI to FHA's National Housing Act. The most significant piece of housing legislation since the defense program's beginning, it enables private builders, via liberalized mortgage insurance terms, to produce low cost housing in congested defense areas with small capital investment, with still smaller risk and at the same time enables home-seeking defense workers to move in without cash down payments. If private enterprise reacts as anticipated, this new \$100 million twist in FHA's mortgage insurance program means at least 25,000 much-needed defense houses by fall and, no doubt, a follow-up program of at least the same size.

In most respects, the new defense housing insurance program is like the regular FHA program which it complements. But its several salient variations are of vital significance to the FHA, the builder, the financier and the public.

The FHA in its regular (Title II, Section 203) program, insures monthly payment mortgages covering 90 per cent of the value of *owner-occupied* one-family properties (houses and lots), provided the principal amount does not exceed \$5,400 per dwelling unit. Under the new amendment (Title VI, Section 603), FHA will insure five-to-twenty-year monthly payment mortgages covering 90 per cent of the value of *builder-owned properties* in specified localities, provided the principal amounts do not exceed \$4,000 on a one-family house, \$6,000 on a two-family house, \$8,000 on a three-family house and \$10,500 on a four-family house. Object of these changes is to encourage builders to produce low cost dwellings which they may either rent or sell on a down-payment-accumulation plan to defense workers.

To safeguard FHA's regular Mutual Mortgage Insurance Fund, against the likely foreclosure of a greater proportion of defense mortgages than regular mortgages, the new legislation sets up a separate Defense Housing Insurance Fund with \$10 million of RFC money. This fund will foot the operating costs of the program and will back up FHA's guarantee to reimburse mortgagees for those defense housing loans that turn sour.

For the present, FHA is authorized to insure only \$100 million of defense housing mortgages. All of them must be written by FHA-approved mortgagees, assumed by FHA-approved builders as mortgagors and secured by houses located in areas approved by the President. Month ago Roosevelt approved 146 communities and their suburbs (in 37 States and four territories) as eligible for defense housing mortgage insurance, left it up to FHA's field offices to determine the eligibility of particular sites in these general localities. (FHA's Washington office will handle directly only those proposed projects which involve mortgage insurance totaling more than \$200,000 — roughly 50 dwelling units.)

But FHA's Washington office will keep careful tabs on the defense program's general progress to see that no community gets more insured defense housing than the market will stand and to make certain that the total \$100 million authorization is not exceeded. The brakes will probably be applied once the \$90 million level has been reached, and this should not be long — FHA's regular program is currently running about \$100 million per month. But, both Congress and the White House have already indicated their willingness to double the maximum defense housing insurance authorization or even raise it to \$225 million provided, of course, the present authorization produces the desired results.

The builder, as has usually been the case in the regular FHA program, will be the initiator of insured defense housing. His first move is to obtain an option on a site approved by the local FHA office, have his site plan, floor plans and specifications prepared, submit them to local FHA officials. If his credit and reputation are good and his proposal meets FHA's regulations and standards, he will be given a mortgage insurance commitment. Since the program's keynote is speed, chances are that a builder proposing to build only one or two defense houses will be politely turned down.

As far as eligibility of individual properties is concerned, most of FHA's regular neighborhood, land planning and minimum construction requirements will hold for defense housing. Major exception: although all these houses must be built for permanent markets, local FHA officials have been instructed to relax a little on the degree of importance they normally attach to the "continued marketability" phase of their mortgage rating system.

Other grounds for rejection are high costs. Maximum mortgages and valua-

tions (the latter will usually approximate the sales prices) on the four types of eligible properties will be the controlling factors:

Property	Maximum Mortgage	Maximum Valuation
One-family	\$4,000	\$4,444
Two-family	6,000	6,666
Three-family	8,000	8,888
Four-family	10,500	11,666

Thus, the approximate maximum value per dwelling unit for these four types of properties decreases from \$4,444 for the one-family house to \$3,333 for the two-family building, to \$2,962 for the three-family building, to \$2,917 for the four-family building. Since the new legislation was made retroactive to January 1, 1940, a builder may submit for defense mortgage insurance any otherwise eligible house which has been built and has remained unoccupied since that date.

Valuations listed above are, of course, all inclusive—house, lot, utilities, architect's fee, builder's overhead and profit, etc. Since proceeds of the maximum mortgage will cover only 90 per cent, the owner-builder must ante the 10 per cent balance either in cash, land, profit or a combination of any. (Regular program requirements are that the equity investment by the owner-occupant be made in either cash or land or both.) Chances are that most builders will choose the last alternative, offer their 5-10 per cent profits and a little cash (if necessary) as equities and recoup them in rents or down payment installments.

Once builders and their projects have been approved and mortgage insurance commitments have been made, they must go to work quickly. Reason: while these commitments are normally good for eight months, FHA has ruled that to speed the program all commitments on defense projects will be voidable if construction is not begun within *two months* of their issuance.

When the houses in a project are complete, the FHA-insured mortgages are assumed by the builder who remains the mortgagor on each house until its title is transferred to an FHA-approved purchaser. The houses may be sold immediately for 10 per cent cash down payments or they may be rented for whatever charge the builder chooses to make, or they may be disposed of on some sort of rental-purchase or no-down-payment plan whereby the tenant-purchaser's monthly payment includes, in addition to his rent, an installment on his equity investment. When

(Continued on page 56)

Defense housing by private enterprise, even without FHA's new Title VI, has bettered the Federal program in numbers, approached it in costs. Some random examples.

During the past nine months private enterprise has begun the construction of 110,000 dwelling units under FHA's regular mortgage insurance program, and about 85 per cent of these houses are located in defense-boomed areas. (Since passage of the enabling legislation last fall, Government has begun the construction of 51,000 units—see p. 351.) While all of these private defense houses will not be occupied by actual defense workers, they all further the program by relieving local housing shortages. Those built in defense are unquestionably selling at prices substantially below the FHA average of about \$5,300 including land, utilities, etc. (Government's average will approximate \$3,000 plus the cost of land and utilities.) Presented on this page are random examples of what private enterprise has already contributed to the defense housing program. Most of them would meet the requirements for FHA's new Title VI program.



Mayfield

Dayton, Ohio. Small houses in this attractive subdivision sell for \$3,250 to \$3,900 complete with land, have been purchased in six out of ten cases by families whose breadwinners are defense workers. Many are employed at Wright Field and at General Motors.



McCurry

Sacramento, Calif. One of many houses in a subdivision near the Sacramento Army Air Depot. Costs: \$3,500.



Maryland. Owner of this \$3,760 property is a inspector at Glenn Martin's plant, one mile distant.



Herbert R. Fitch

San Diego, Calif. This \$2,900 house and lot was purchased by an aviation metalsmith working for the Navy. For San Diego Federal houses, see page 352.



George E. Meyers, Inc.

East Hartford, Conn. Cost: \$4,550. Mortgage: \$4,000. Monthly payment: \$30. Owner: United Aircraft foreman.



Norfolk, Va. A 17-year employee at the Naval Base, owner of this \$4,000 house pays \$21 a month.



Charleston, S. C. Owner of this \$2,950 property is a worker in the nearby Navy Yard. All of the houses presented on this page were financed under FHA.



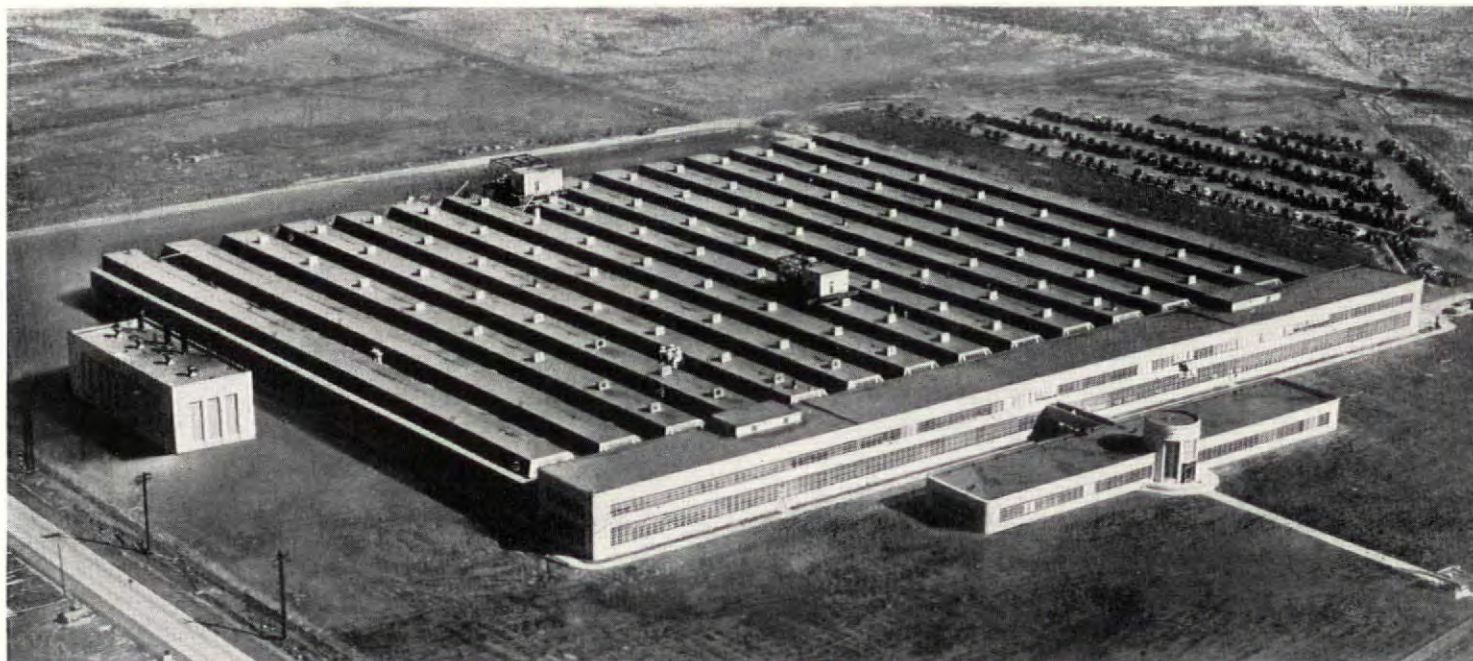
Cradock, Va. This \$2,950 property is being paid for at \$26 per month by a machinist in the nearby Navy Yard.



Indianapolis, Ind. Like 70 of its 100 neighbors, this \$3,225 unit is owned by a defense worker.

BUILDING FOR DEFENSE . . . A PROPELLER PLANT IN 68 DAYS

helps widen the airplane production bottleneck. Architect Albert Kahn, Contractor John W. Ryan and Curtiss-Wright team up in a relay race against time.



Three years ago it took only 111 men to operate the one small, 17,000 sq. ft. plant of the Curtiss-Wright Corp.'s Propeller Division. Then came an abrupt expansion of the normal airplane market, followed closely by World War II, the U. S. defense program, a flood of warplane orders. Today, C-W's Propeller Division employs close to 4,000 men in four plants whose combined floor area is 1 million sq. ft. Latest addition to this impressive and still-growing total (a fifth plant now under construction will boost it to 1.3 million sq. ft. by late summer) is the Propeller Division's new headquarters, dedicated fortnight ago at Caldwell, N. J. More than a machine shop, this 380,000 sq. ft. defense project is an integrated combination of administrative offices, factory offices, dining facilities, engineering, production and testing facilities, a power plant, a sewage disposal plant and a small water works.

Diary of the speedy construction of the Caldwell project makes interesting reading, should bring a smile to the corporate face of the defense program's Office of Production Management. Excerpts: Just one year ago, C-W decided to locate this plant on a portion of its extensive land holdings between two of New Jersey's miniature mountain ranges. Forthwith, Industrial Architect Albert Kahn was handed the design requirements. Within one week his firm had turned out the structural steel drawings; and, three weeks after the approval of sketches, architectural drawings were complete. Mechanical

plans came four weeks after C-W had outlined its manufacturing requirements. Meanwhile, on July 8 Contractor John W. Ryan Co. broke ground.

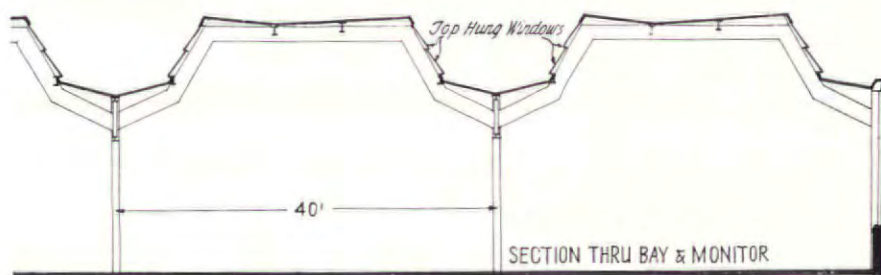
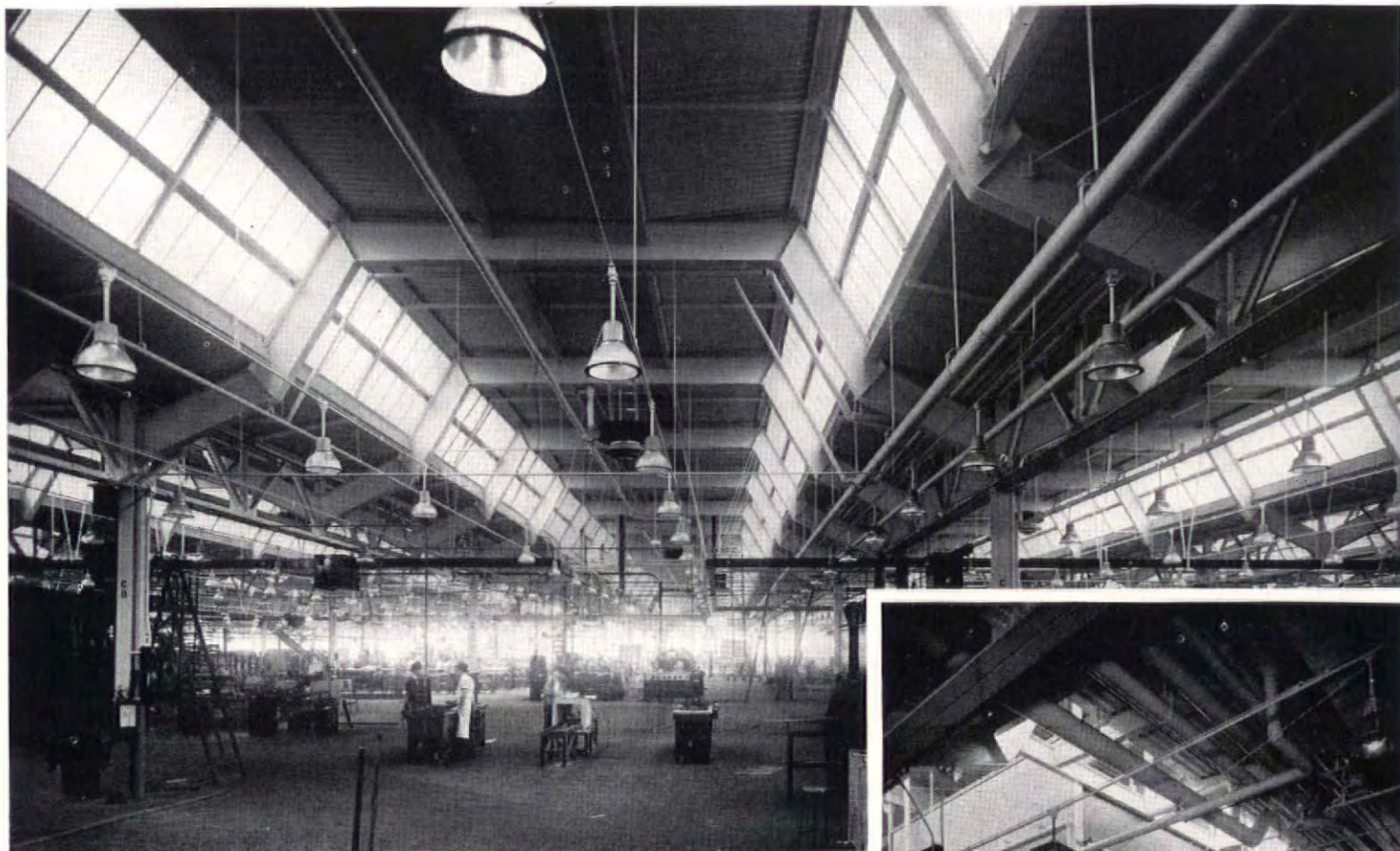
By September 10, only 38 work days later, the steel frame had been erected atop poured concrete foundations. On September 24 (another twelve work days) the factory and factory office sections of the plant were fully enclosed with buff brick masonry walls, large strip windows and a monitor-type roof; concrete sub-floors were laid and partially covered with wood-block flooring; pieces of heavy production machinery were already in place. On October 11 (only 68 work days—96 calendar days—after turning the first shovelful of earth) production of propeller parts began, while Contractor Ryan was adding a 200 ft. extension to the rear of the original plant. On February 28, the last of Ryan's construction laborers left the site, and C-W awaited only the delivery of more machine tools before stepping up its labor force from 1,000 to the estimated full complement of about 4,500.

Site and Utilities. The Caldwell site was selected for several convincing reasons: 1) It and plenty of room for expansion were owned by C-W. 2) It is level. 3) A C-W airport—engine service, propeller and engine experimentation and pilot training—is immediately adjacent. 4) The Township of Caldwell (pop. 5,000) is only nine miles from Paterson, a machine tool labor center and home of the Wright Aeronautical Corp., C-W's engine manufacturing subsidiary.

Another advantage of the site was the natural water supply beneath it. C-W dug three deep artesian wells which now supply cool, clear water for its drinking fountains and the controlled humidification system which serves all office areas. The latter is a big water consumer, and the private wells are considerably cheaper sources of cooler water than the local water company which supplies the plant's boiler house. Offsetting this saving, however, is the site's one disadvantage—the absence of nearby public sewage lines. Result: C-W was obliged to provide its own sewage disposal system and purification plant, efficient enough to avoid contamination of the Paterson water supply two miles distant.

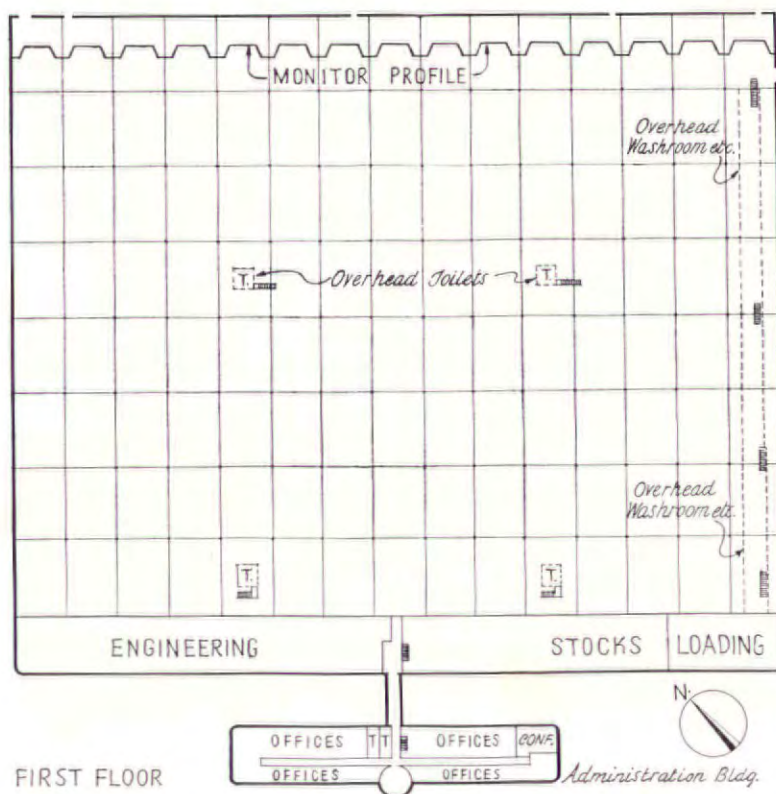
The company buys electricity for lighting purposes and the bulk of its power requirements, but generates its own steam for the heating of the buildings and the plating tanks and for the operation of the air conditioning system and some shop machinery.

Plan and design. General layout of the Caldwell plant follows closely the typical Kahn factory pattern. Featuring an entrance rotunda 31 ft. high and 25 ft. in diameter, the symmetrical one-story administration building measures 46 x 259 ft., contains lavish reception and waiting rooms and a large board room as well as abundant office space. It is connected to the balance of the plant by an enclosed passage. Parallel to the administration building runs the 46 x 602 ft. factory office building which is actually one end of the

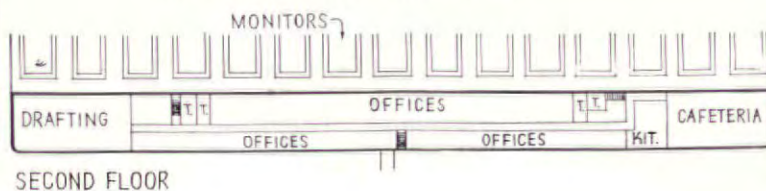


Overhead toilet (above) and washroom.

BOILER
HOUSE



FIRST FLOOR



SECOND FLOOR

shop. Its first floor provides space for the experimental, engineering and testing departments, stock storage, telephone equipment, first aid station, reception and waiting room, service school, the truck well and unloading platforms and other shop auxiliary facilities. On the second floor are a large engineering department drafting room, a private dining room, a cafeteria, a kitchen and numerous offices for those in charge of design, production, plant operation, Government inspection, etc. Behind this building comes the shop or factory, comprised of 120 40 x 60 ft. bays. Should further plant expansion become necessary, C-W can extend the shop up to about three times its present 527 ft. depth, rearrange its production lines to conform to the new rectangular shape. Sideways expansion is not contemplated.

More newsworthy than the plant's general layout are several of its design details:

► Toilet facilities, spotted throughout the shop, are hung under the monitors to conserve space. Their steel floors measure about 34 x 36 ft., are about level with the lower chords of the roof trusses, are reached via steel staircases of 26 risers.

► To facilitate control, only one major opening has been provided for the entrance and exit of shop labor. It is adjacent to the truck well, where deliveries of rough materials are received, and is only a short distance from the largest of four guard houses and the employees' automobile park.

► Inside this labor entrance are stairs to a coat and washroom hung below the first monitor, like the toilet facilities. Carrying lockers, showers, wash stands and water closets, this mezzanine platform is 23 ft. wide and extends almost the full depth of the shop.

► The cafeteria is located on the second floor of the factory office section over the truck well, is connected with both the office corridor and the mezzanine coat and

washroom, is thus convenient to workers from both parts of the plant.

► Roof monitors are of the bent-beam type whose added initial cost is claimed to be offset by its numerous advantages: the absence of cross beams eliminates shadows, improves natural lighting of the shop, permits greater floor-to-ceiling clearance (minimum: 18 ft., 6 in.) and thus affords greater flexibility of machine arrangement.

► Shop floor is wood block laid on poured concrete. Reason: while higher in cost, this floor finish is expected 1) to reduce the breakage and damage of delicate tools, instruments and propeller parts, 2) to offer better insulation and 3) to be comparatively easy on the feet of workmen who must stand beside their machines most of the day.

Heat and ventilation. Steam for the operation of part of the shop's machinery and (as a by-product) for the entire heating system is generated in a detached boiler house whose three oil-fired boilers are each capable of producing 33,000 lbs. of steam

per hour. This high-pressure steam first goes to the plant's compressors which incidentally act as reducing valves between the boilers and the heating system. Conventional radiators and convectors serve the office and dining areas, while overhead unit heaters (one to about every 200 sq. ft.) serve the shop.

Adequate ventilation of the shop is assured by the location of power-driven ventilators in the monitor tops (one to each bay, see air view, p. 348), and by two rows of movable sash in the strip windows.

Lighting and wiring. C-W installed at 10 ft. intervals 300 watt incandescent fixtures throughout most of the shop. Similarly spaced 200 watt double fluorescent fixtures are used only over sections of the shop where men must use their eyes as measuring instruments and where reflections would therefore prove particularly annoying. Thus, men shaping shiny propeller blades must sight along their

(Continued on page 56)



Samuel H. Gottscho Photos

BUILDING FOR DEFENSE . . . A PROGRESS REPORT ON HOUSING

shows 6,000 Federally financed dwelling units on hand, 68,000 more on order. Seven agencies vie for honors in a \$285 million program: Navy leads in speed; PBA, in number of projects. Status: more new laws and houses than at the end of World War 1.

After seven months of necessary preliminaries and unnecessary puttering, the U. S. last month had something to show for the \$285 million it is spending on Federal defense housing. Under construction in most every part of the country were 160 projects to accommodate 51,000 families of men in the armed forces and vital defense industries. Indeed 6,000 of these families had already moved into 30 partially completed projects. And, by looking at Government records, the U.S. could see 23,000 other dwelling units "on order" in 90 additional projects for which funds had been definitely earmarked.

At mid-month only a few unallocated dollars rattled around in the Federal housing defense chest, but Government housers still saw an urgent need for many more dwelling units. Result: Congress prepared to pass Lanham Act II, which would drop another \$150 million in the till, and added Title VI to the National Housing Act which will help private enterprise devote more of its currently booming house production to national defense (p. 346). Exclusive of these two new additions, the defense housing program has belatedly reached the scheduled half-way mark. Timely, then, is this detailed review and analysis of progress to date.

LEGISLATION

Official recognition of the problem of housing the families of men serving the Army, the Navy and their industrial suppliers came August 19 when the President put Atlanta's 48-year-old Charles Forrest Palmer in the National Defense Advisory Commission's office of Defense Housing Coordinator. Long before Palmer and title were elevated on January 12 to the all-powerful Office of Production Management, Congress passed several laws to give him something to coordinate:

USHA, established in 1937 to finance and direct the \$800 million slum clearance and public housing program, was the subject of the first defense housing legislation. In the interests of national defense, Congress on June 28 temporarily lifted USHA's limitations on low rents, low income tenants and slum clearance, gave it permission 1) to produce defense housing either with or without the assistance of local authorities, the Army and Navy and 2) with the approval of local authorities, to draft "for the duration" any regular project which was then planned, abuilding or completed. Projects in this head-start category have boosted USHA's defense housing record,

made it incomparable with the records of other Government defense housing agencies. In addition to the drafting of completed projects, USHA will contribute about \$30 million from its slum clearance fund to the construction of defense housing which will later revert to the regular low rent public housing program.

Army and Navy entered the defense housing picture on September 9 when Congress gave the President \$100 million to be divided between these two agencies and the Maritime Commission. As soon as the Army received its \$49 million, it turned the funds over to the Federal Works Agency for the construction of housing under the terms of the Lanham Act. The Maritime Commission gave its comparatively small share to the Navy. Thus, the Navy is building directly the remaining \$51 million worth of housing.

Lanham Act I on October 15 gave the Federal Works Agency \$140 million to be allocated to its various construction subsidiaries and \$10 million earmarked for the Reconstruction Finance Corp. to serve as working capital for its Defense Homes Corp. (see below). Individual cost limits for Lanham Act housing, which also cover the Army, Navy and Maritime Commission housing, are \$3,950 per unit within continental U. S., \$4,750 outside. But, average cost for the program as a whole may not exceed \$3,000 per unit inside, \$4,000 outside. (All cost limitations are exclusive of land, utility, administrative and community facility expenses.)

Lanham Act II, scheduled for passage by April's end, would add another \$150 million to the FWA's program and may up the average cost limits by about \$500 per unit.

Defense Homes Corp. was organized on October 23 by the RFC and provided with \$10 million of working capital by Lanham Act I (see above). Purpose of this capital is to supply 20 per cent cash equity investments in self-supporting rental housing projects which will be built by DHC in defense areas and financed with a total of \$40 million of FHA-insured mortgages written by RFC. Hope is that, once the projects are successfully built and operating, private investors will take over the equity and mortgage investments, thus bail Government completely out of this phase of the defense housing program.

Temporary housing. While some of the housing to be provided under the legislation dis-

cussed above will be of a temporary nature, Congress at the end of March gave the President an additional \$5 million to be spent specifically for this purpose—trailers and dormitories for both families and single defense workers. Upon the advice of Coordinator Palmer, the President will entrust the production and management of most of this housing to the Farm Security Administration.

OPERATION

From the foregoing synopsis of laws and appropriations, it is seen that Government agencies have a total of about \$435 million with which to produce defense housing—including the \$150 million of Lanham Act II money which may have been added to the pile, but too recently to have produced any results. Herewith an agency-by-agency accounting of the other \$285 million:

USHA, as explained above, beat the gun in the defense housing race, got its enabling legislation first and was permitted to adapt long-planned and existing slum clearance projects to defense purposes. Not surprising therefore, is the statistical brilliance of USHA's defense housing record. Month ago, as shown in the tabulation on page 353, USHA funds had completed 2,001 dwelling units in nine different projects. Discounting USHA's apparent progress is the fact



Acme

Stop-gap housing on wheels, these 225 trailers are en route to Wilmington, N. C. where they will serve as temporary homes for the families of shipyard workers. When permanent projects have been completed in this locality, the mobile units will move on to another housing hot spot. The first of some 2,000 to be purchased and managed by the Farm Security Administration, these trailers are part of a delivery from a Michigan manufacturer, were photographed as they passed in review before Government officials in Washington, D. C. The temporary housing program is being financed by a \$5 million appropriation which will also cover the construction of some 2,900 dormitory units for unmarried defense workers plus the reconditioning and conversion of several ancient river boats into floating dormitories. (See text above and p. 354.)



Biggest Government project is this 3,000 house community now going up near San Diego. Contractors McNeil Construction Co. and Zoss Construction Co. of Los Angeles are building it for PBA at an estimated cost of \$9.1 million plus a fixed fee of \$300,000. Operations began January 21; some units are now nearing completion. Air view shows a portion of the sprawling, rolling 800-acre site which has been informally subdivided—note winding rows of foundations in upper right corner. Typical one-family house (immediately above) is merely one of 1,704 buildings which are conventionally framed with lumber, covered with chicken wire and stucco and roofed with asphalt shingles. Project takes on appearance of a Cantonese village while under construction, (top).



that many of its total of 22 projects were approved or shifted to defense last summer and fall. Thus: two in June, five in July, ten in August, three in September, one in December and one in February.

Interestingly, USHA has entrusted the construction of two of its projects to the Navy—600 units at the Mare Island (Calif.) Navy Yard and 600 units at the Portsmouth (N.H.) Navy Yard. These communities are without local housing authorities which, along with private architects and competitive-bidding contractors, are developing all other USHA defense (and non-defense) projects. The Navy has already completed 144 of these units.

In review, USHA has approved 22 projects (in 21 communities) containing 7,544 dwelling units which will cost an estimated \$24 million. All but three projects are under construction, and 2,001 units in nine projects are occupied—primarily by the families of Navy enlisted and civilian personnel. Only about \$6 million more USHA funds are available for new defense housing construction, although chances are that additional slum clearance projects now complete or abuilding will be temporarily called to the colors. (USHA is also playing a big part in the FWA defense housing program—see below.)

NAVY. With justifiable pride, the Navy points to its defense housing accomplishments. Almost all of its \$51 million funds were under contract at January's end, and month ago 43 of its 45 projects were under construction in 42 localities for the eventual accommodation of 14,535 families. In fact,

2,211 units in fourteen projects were already occupied—just seven months after the appropriation of funds.

Factors contributing to the speed of the Navy program: 1) Unlike the Army, the Navy was not burdened by cantonment construction and therefore had time to tackle the housing problem itself, did not have to entrust it to red-tape-entangled Government bureaus. 2) Majority of the projects are going up on Navy-owned land and were not therefore delayed by lengthy land purchase and condemnation proceedings. 3) The Bureau of Yards and Docks was well supplied with stock designs for various types of dwelling units, had only to take them from the shelf, hand them to cost-plus-fixed-fee contractors. On the other hand, when PBA was charged with production of the Army's defense housing, it had never before designed a house. 4) The Navy immediately called in six leading producers of prefabricated houses, negotiated contracts with them for some 4,000 dwelling units—about 27 per cent of the program's total—(see ARCH. FORUM, Feb. 1941, p. 84). Most important, the Navy reached its decisions quickly and moved accordingly.

By the end of July—after eleven months' work—the Bureau of Yards and Docks' Admiral Ben Moreell expects to have the last of his 14,630 dwelling units ready for occupancy, expects to retire from the defense housing picture. Reason: indication is that all future housing for Navy families will be handled by FWA and its slow-going construction agencies. (Additional Lanham Act funds will build some Navy houses.)

FWA. A "holding company" for several Government building agencies, the Federal Works Administration is directing the entire \$49 million Army program plus the entire \$140 million Lanham Act program. To his assistant, Col. Lawrence Westbrook who is acting as a one-man building agency, FWAdministrator John Carmody has entrusted three of the latter's program's projects—all for defense industrial workers: 700 units in Clark, N. J.; 500 at Camden, N. J. and 300 at Dallas, Tex. Most significant of the Westbrook trio is the Camden project which will be comprised of houses prefabricated in the nearby plant of the recently organized (Joseph P.) Day Housing Corp. and will be rented to shipyard workers who may acquire stock in the project and eventually own it. (See p. 341).

Balance of FWA's defense housing responsibilities have been dumped on a half-dozen sub-agencies for execution:

PBA. Formerly known as the Office of Supervising Architect, builder of post offices and other public buildings and admittedly a housing novice, Public Buildings Administration is handling practically all of the Army-financed projects in areas (most of them are on or near Army posts) designated by the War Department. Moreover, PBA is spending by far the biggest slice of the Lanham Act I fund. All told, it has been allotted 111 projects to contain 26,032 units.

Among the first approved and the first to be opened for occupancy (a few units on February 8) the 300-unit Fort Knox.

Ky. project is the only sizable PBA project which is nearly completed (AF., Mar. 1941, p. 173). Three smaller ones are fully occupied: 100 units at the Albuquerque, N. M. municipal airport, 50 at Fort Clark, Tex., and 30 at Fort Harachuca, Ariz. Well-advanced and biggest of all PBA projects is the 3,000 unit, \$9.4 million community now abuilding in San Diego, Calif. (See cuts, p. 352).

Most of the 66 PBA projects (16,205 units) under construction and all four of those completed are the 67 projects approved during the last week in October—about six and a half months ago. Second biggest group of approvals (32) came in February. On the average PBA has taken about two months and 24 days to move its projects from the approval stage through the design, land acquisition (always by condemnation) and contract-letting stages to the breaking of ground. The extremes have been as little as sixteen days, as much as five months and six days.

Most interesting of all PBA projects is Indian Head, Md., where eleven different prefabrication companies are currently erecting 650 units in a belated "demonstration" of the industry's abilities (see p. 339, col. 3).

USHA. In addition to its own defense housing program (see above) has been assigned the second largest part of the FWA program—43 projects containing 13,355 units. However, since most of them were approved only a comparatively short time ago, (nine in November, eight in January, 23 in February, and three in March), it is not surprising that only thirteen projects are currently under construction. And, two of these are completed USHA slum clearance projects which the Government has purchased for defense purposes—700 units in Baltimore, 660 in Boston. Average spread between project approval date and ground breaking is about three months and four days. Comparison of this spread with the two months and 24 days spread of the PBA program is obviously inconclusive. However, under USHA guidance, local housing authorities, local architects and local competitive-bidding contractors produce the housing, a procedure which preserves local private enterprise and does so without time-loss to the program.

LHAs. Apparently FWAdministrator Carmody has more faith in some of USHA's local authorities than in others, for he has singled out three to serve directly (without USHA as middleman) as construction agents of the Government. The Akron (O.) Housing Authority will build 300 units; the Cincinnati (O.) Housing Authority, 350 units; and the Alley Dwelling Authority (D.C.), 200 units.

FSA. Government's most successful builder of farm houses and migratory labor camps, the Farm Security Administra-

tion has broken into the FWA family circle from its place in the Agriculture Department, has been handed four projects in which to build 1,350 defense units. Biggest of the quartet is a 1,000-unit addition to the planned community of Greenbelt, Md. which FSA's predecessor completed in 1937. Like the existing community, the new units will house Government office workers employed in near-by Washington, D. C. But like two other FSA projects, the Greenbelt addition has not yet reached the contract stage. Located near the new Radford, Va. powder plant, the fourth FSA project went into construction five weeks ago.

FSA will produce and manage most of the trailer and dormitory projects being provided by the temporary housing program (see below).

TVA. Another agency outside the FWA circle, Tennessee Valley Authority has gained much experience in the design and construction of housing for the workmen who build its huge dams and for tourists who come to gape at them. Small wonder, therefore, that when FWA wanted 250 units in two defense housing projects in this neck of the woods, (Alabama), it turned to TVA. One project went into construction in early March, one month after the assignments were made.

NAVY. While PBA is handling the construction of all other FWA housing scheduled for U.S. island possessions, one \$3.6 million, 1,000-unit project at Oahu, Hawaii, was put under Navy supervision in late October, under construction at February's end.

All told, these FWA allocations to it-

self, PBA, USHA, LHAs, FSA, TVA and Navy cover 44,337 units in 165 projects. Month ago, after more than a half-year's work, only a little more than half of the dwelling units were going up. Sadder still is the fact that only 1,717 units or about 4 per cent of the total were ready for occupancy. FWA, itself, admits that this is a sad statistic, for its program is already behind the completion schedule drawn up only two months ago:

UNITS COMPLETED—CUMULATIVE

	Schedule	Actual
February	305	330
March	837	380
April	2,037	1,840*
May	6,213	
June	11,707	
July	19,302	
August	27,079	
September	34,422	
October	37,653	
November	39,391	

According to this official but over-optimistic schedule, August with 7,777 units will be the peak month for the completion of FWA housing financed by Army and Lanham Act I funds.

DHC. Working quietly and without power of condemnation, Defense Homes Corp. has allocated funds for 14 large scale rental housing projects in as many communities. Scheduled to provide 3,000 dwelling units, these projects will cost about \$10 million, 20 per cent of which will come from DHC's \$10 million equity

* As of April 12—includes 1,360 units in two completed USHA slum clearance projects purchased by FWA for defense housing purposes.

FEDERAL DEFENSE HOUSING BY AGENCIES

Progress by dwelling units (and projects) — Mar. 8-Apr. 12

FWA FUNDS allocated to	Officially Approved		Under Construction		Opened for Occupancy	
	March 8	April 12	March 8	April 12	March 8	April 12
PBA	25,940 (105)	26,032 (111)	12,331 (53)	16,205 (66)	330 (2)	357 (4)
USHA	12,778 (34)†	13,355 (43)‡	1,000 (3)†	5,322 (13)‡	660 (1)†	1,360 (2)‡
FSA	1,350 (3)	1,350 (4)	(0)	100 (1)	(0)	(0)
FWA	1,500 (3)	1,500 (3)	500 (1)	800 (2)	(0)	(0)
LHAs*	850 (3)	850 (3)	(0)	350 (1)	(0)	(0)
NAVY	1,000 (1)	1,000 (1)	1,000 (1)	1,000 (1)	(0)	(0)
TVA	250 (1)	250 (2)	(0)	200 (1)	(0)	(0)
TOTAL	43,668 (150)	44,337 (165)	14,831 (58)	23,977 (85)	990 (3)	1,717 (6)
USHA FUNDS#						
USHA	6,344 (20)	6,344 (20)	5,110 (17)	5,110 (17)	1,560 (6)‡	1,857 (8)
NAVY	1,200 (2)	1,200 (2)	1,200 (2)	1,200 (2)	144 (1)	144 (1)
TOTAL	7,544 (22)	7,544 (22)	6,310 (19)	6,310 (19)	1,704 (7)	2,001 (9)
NAVY FUNDS						
NAVY	14,630 (45)	14,630 (45)	14,535 (43)	14,535 (43)	626 (8)	2,211 (14)

FOOTNOTES: Figures in parenthesis represent the number of projects in each category. March 8 figures have been revised.

* Local housing authorities without USHA assistance.

Many of these slum clearance funds were allocated prior to the national emergency.

† Includes one completed slum clearance project purchased for defense housing purposes.

‡ Includes two completed slum clearance projects purchased for defense housing purposes.

investment fund, the balance from the proceeds of FHA-insured RFC mortgages. Three projects are being built by American Houses, Inc., a top-notch prefabricator; all projects will be self-supporting in that full economic rents will be required of their industrial defense worker tenants. Month ago 2,434 units were abuilding.

Temporary housing. At mid-March the President approved for nine localities dormitory and trailer housing projects which will about exhaust his \$5 million appropriation for this purpose. A stop-gap program, this housing will be provided in localities which are temporarily overcrowded by the influx of large forces of construction workers or are suffering from an acute housing shortage which will eventually be relieved by permanent housing.

Allocations to date indicate that bulk of temporary housing will take the form of dormitories (converted ships as well as buildings) for single men. Thus, of the 4,935 units approved in March 2,900 were included in dormitories, while the balance was comprised of 2,035 family trailers. Good index of the temporary housing demand is this list of the nine communities scheduled as the first stop of the temporary, mobile housing program: New London, Conn., 400 units; Erie Pa., 200; Sidney, N. Y., 135; Baltimore, Md., 625; Orange, Tex., 400; Nashville, Tenn., 650; San Diego, Calif., 1,500; Bremerton, Wash., 700; Wilmington, N. C., 325. In all but one of these localities (Wilmington) funds have also been earmarked for "permanent" defense housing projects, some of which are already under construction.

Placed under the jurisdiction of the Farm Security Administration, the temporary housing program already boasts 1,859 trailers purchased, 2,201 dormitory units under construction.

Recapitulation. Exclusive of the regular USHA program and the pending Lanham Act II, the U. S. today has 4,972 Federally financed defense houses on hand, 42,487 more under construction and 26,711 more "on order"—the product of six months' work and \$255 million.

Delays, not always of their own making, show Government houses to be neither speedsters nor sluggards. Shifts in procedure and personnel recently effected, pending and hoped for presage better performance. But, compared to World War I housing accomplishments, the current program is commendable—nary a Government-financed house was completed prior to the signing of the Armistice in 1918.

While it is too early to permit a thorough and authoritative critique on Federal defense housing, two aspects of the program provoke immediate questioning: 1) Of the 57 projects approved for industrial workers, only thirteen have been pushed into construction. 2) The experience of private architects and seasoned house builders has been largely and sadly neglected.

FEDERAL DEFENSE HOUSING BY STATES

	PROJECTS UNDER CONSTRUCTION ¹			APPROVED ²		TENANTS CLASS OF ³	AGENCIES ⁴ IN CHARGE
	NO.	UNITS	COST (\$000)	NO.	UNITS		
ALA.	4	1,124	\$2,389 ⁵	3	700	AEC, IND	PBA, TVA, USHA
ARIZ.	2	165	514	....	....	AE	PBA
CALIF.	13	7,863	24,298	6	768	AEC, NEC, IND	N, PBA, USHA
COLO.	2	175	572	....	....	AE	PBA
CONN.	3	1,400	4,873	3	1,200	NE, IND	N, PBA, USHA
DELA.	1	20	71	....	....	AE	PBA
D.C.	1	600	1,900	1	200	NEC	ADA, N
FLA.	10	1,730	4,829	2	300	AE, NEC	N, PBA, USHA
GA.	5	1,287	3,934	1	100	AEC, IND	PBA, USHA
IDAHO	1	100	342	....	....	AE	PBA
ILL.	9	1,536	5,368	1	100	AEC, NE, IND	N, PBA, USHA
IND.	....	....	....	4	750	IND	PBA
KAN.	1	125	425	1	400	AE, IND	PBA
KY.	1	700	2,016	2	250	AE, IND	PBA
LA.	....	....	....	3	544	AE	PBA
ME.	1	150	470	....	50	AE	PBA
MD.	11	2,620	6,971 ⁶	4	2,600	AE, NEC, IND	FSA, N, PBA, USHA
MASS.	5	1,373	1,903 ⁷	1	177	AE, NEC	N, PBA, USHA
MICH.	2	380	1,238	1	300	AE, IND	PBA
MISS.	2	750	2,157	....	....	AE, IND	N, PBA
MO.	....	....	....	1	250	AEC	PBA
NEV.	1	50	*	1	50	NE	N
N. H.	1	1,400	4,732	....	....	NE, IND	N, PBA
N. J.	5	1,015	3,125	4	1,500	AE, NE, IND	FWA, N, PBS, USHA
N. M.	1	100	300	....	....	AE	PBA
N. Y.	2	220	853	7	2,250	AE, NE, IND	PBA, USHA
N. C.	1	550	1,610	2	375	AE	PBS, USHA
OHIO	2	550	1,612	2	600	IND	AHA, CHA, PBA, USHA
OKLA.	1	150	488	....	....	AE	PBA
PA.	3	1,130	3,893	9	2,405	AEC, NC, IND	PBA, USHA
R. I.	4	1,362	4,025	1	538	NEC	N, USHA
S. C.	5	1,600	4,357	1	350	AEC, NEC	N, PBA, USHA
S. D.	1	35	129	....	....	AE	PBA
TENN.	....	....	....	1	300	IND	USHA
TEX.	13	3,350	9,618	2	250	AE, NEC, IND	FWA, N, PBA, USHA
UTAH	....	....	....	1	150	AC	PBA
VA.	18	5,227	14,643	7	1,265	AE, NEC, IND	FSA, N, PBA, USHA
WASH.	5	1,340	4,205	4	720	AE, NEC, IND	PBA, USHA
W. VA.	1	450	1,527	....	....	NEC	N
WIS.	....	....	....	1	400	IND	PBA
ALASKA	3	450	1,575	1	325	AE, NEC	A, N
C. Z.	2	1,400	4,224	1	825	AEC, NEC	A, N
CUBA	1	200	642	....	....	NEC	N
P. I.	....	....	....	1	50	NE	N
P. R.	5	1,042	3,659	1	88	AE, NEC	N, PBA
T. H.	7	3,362	11,391	....	....	AE, NEC	N, PBA
V. I.	1	50	163	....	....	NE	N

FOOTNOTES:

1—Includes a few projects under contract but not yet under construction. Costs include original construction estimates plus contractor's fees and architects' fees, if any, but exclude land costs and costs of changes, extras, etc. All statistics are as of April 12.

2—Statistics cover projects (in addition to those abuilding) for which funds have been allocated.

3—Abbreviations: AE, Army enlisted personnel; AC, Army civilian employees; AEC, both Army enlisted and civilian personnel; NE, NC and NEC, same as foregoing but for Navy; IND, industrial workers.

4—Abbreviations: A, Army; ADA, Army Dwelling Authority; AHA, Akron Housing Authority; CHA, Cincinnati Housing Authority; FSA, Farm Security Administration; FWA, Federal Works Agency (direct); N, Navy; PBA, Public Buildings Administration; TVA, Tennessee Valley Authority; USHA, U. S. Housing Authority.

5—Plus force account work on 1 200-unit project.

6—Includes cost of utilities for the approved units in 2 projects.

7—Excludes cost of 873-unit project completed in 1939 by USHA and cost of one Navy project.

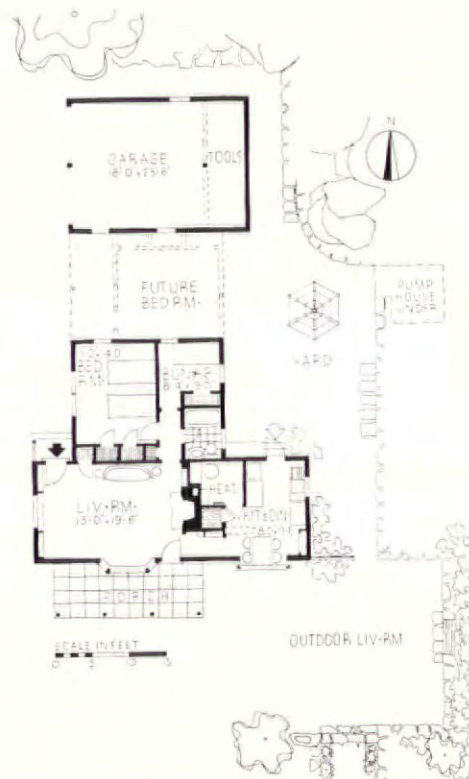
*—Some cost data not available.

HOUSES

HOUSE IN RIDGEFIELD, CONN. GEORGE KOSMAK, ARCHITECT; CYNTHIA WILEY, LANDSCAPE ARCHITECT



The architect comments: "This house was designed for summer and week-end use by a couple who demanded all the conveniences of the New York City apartment to which they were accustomed. The plan includes a future bedroom and bath and provision for a future heating system. All rooms are now heated through ducts from the fireplace." Cost: \$8,500 exclusive of landscaping. Cubage: 22,633.



Richard Garrison Photos

THREE BEDROOMS, TWO BATHS, BREAKFAST ROOM, OFFICE, ATTACHED GARAGE

NEWTON CENTER, MASS.

ELEANOR RAYMOND, ARCHITECT

This house was built by a contractor for his own use, and includes an office which adjoins the front entrance. A built-in estimating desk in this room is illustrated in the photograph below. It will be noted that the architect has followed the plan so frequently seen in Colonial houses of this type, the main change being the substitution of the office for a dining room. The upper floor has two baths, ample wall space for beds and other furniture, and adequate closets. Cost (excluding architect's fee): \$12,500. Cubage: 28,500.

CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—studs, boarding, white pine boards and battens 1st. story; (2nd)—red cedar shingles; inside—U. S. Gypsum Co. Red Top plaster on wood lath.

ROOF: Covered with Vermont slate.

INSULATION: Outside walls and attic floor—Type B metal, Reynolds Metals Co.

WINDOWS: Sash—wood, double hung. Glass—single strength, quality A.

WALL COVERINGS: Main rooms—wallpaper, Katzenbach & Warren and Richard E. Thibaut Co.

HARDWARE: By Russell & Erwin Mfg. Co. and W. C. Vaughan Co.

PAINTS: By E. I. DuPont de Nemours Co., Inc. and Samuel Cabot, Inc.

KITCHEN EQUIPMENT: Range—Westinghouse Electric & Mfg. Co. Refrigerator—Gibson Electric Refrigerator Co. Sink—Elkay Mfg. Co.

BATHROOM EQUIPMENT: By American Radiator-Standard Sanitary Corp. Cabinets—Columbia Metal Box Co.

HEATING AND AIR CONDITIONING: Indirect air conditioner, filtering and humidifying. Boiler—Fitzgibbons Boiler Co., Inc. Grilles—Tuttle & Bailey Mfg. Co. Thermostat—Minneapolis-Honeywell Regulator Co.

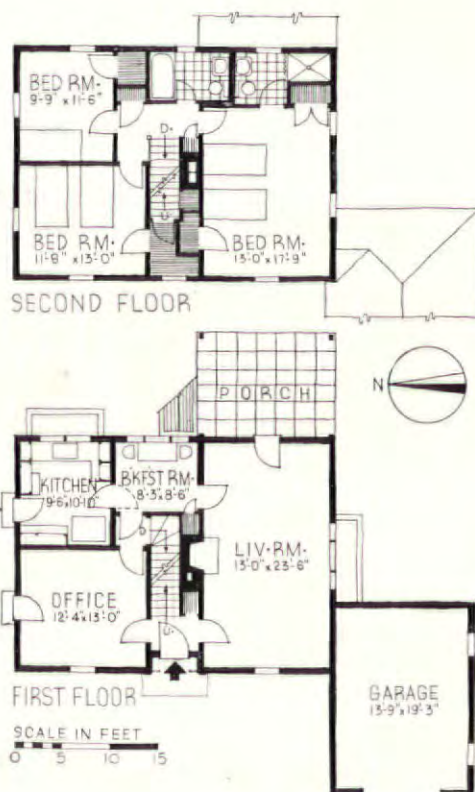


Paul J. Weber



George H. Davis Photos

Paul J. Weber



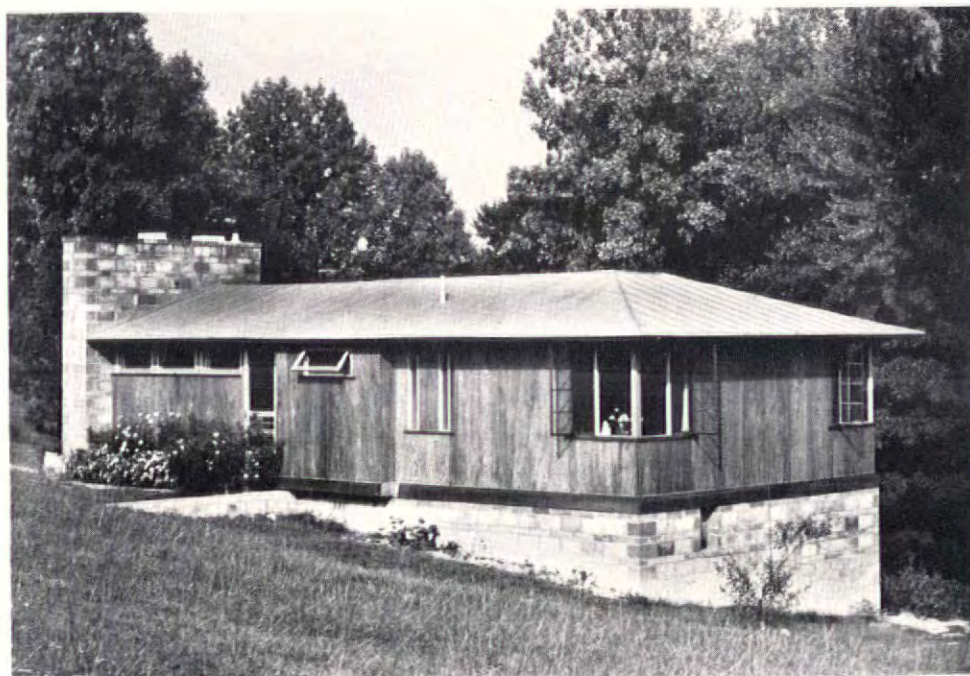
LIVING-DINING ROOM, TWO BEDROOMS, BATH, PORCH



SPRING HILL, W. VA.

DONALD THOMPSON, DESIGNER

The owner, who was also the designer and builder, submits this residence as an example of the "hand-made house." The structure consists chiefly of 4 x 8 plywood panels, built in the basement of another house and subsequently assembled on the job. Roof and floor framing is conventional. Both plan and exteriors are straightforward expressions, with the attractive use of simple materials an outstanding characteristic of the design as a whole. Cost: \$3,100. Cubage: 10,000. The cost does not include any allowance for time put in by the owner.



Ray Conrad Photos

CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—prefabricated; $\frac{3}{8}$ in. redwood Super-Harbord, Harbor Plywood Corp., casein-glued to studs; California pine plywood interior. Interior partitions— $\frac{1}{4}$ in. Calif. pine plywood casein-glued to studs. Floor construction— $\frac{5}{8}$ in. sheathing plywood on No. 1 yellow pine joists. Ceilings—Weatherwood, U. S. Gypsum Co.

ROOF: Covered with 40 lb. tin, Follansbee Bros.

INSULATION: Outside walls—aluminum foil, Reynolds Metals Co. Roof—rockwool, Barrett Co.

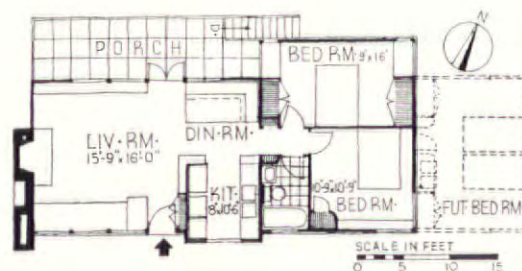
WINDOWS: Sash—steel casement, Truscon Steel Corp. Glass—quality A, Pittsburgh Plate Glass Co.

KITCHEN EQUIPMENT: Range—Sears Roebuck & Co. Refrigerator—General Electric Co. Sink—Ebco Mfg. Co. Washing machine—Bendix Home Appliance, Inc.

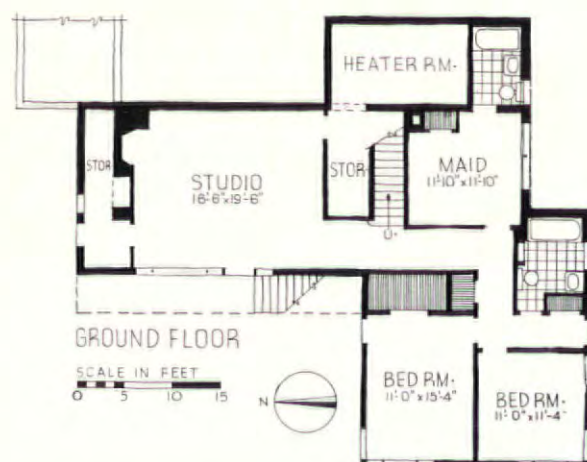
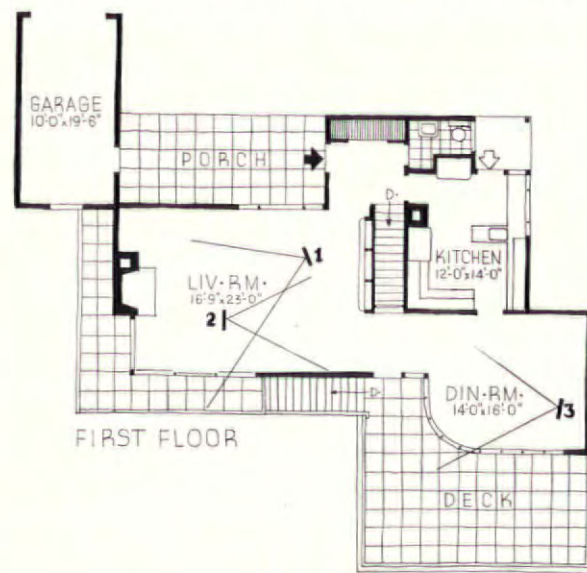
BATHROOM EQUIPMENT: Lavatory and toilet—W. A. Case & Son. Tub—Kohler Co. Shower—Speakman Co.

PLUMBING: Hot and cold water pipes—copper, Mueller Brass Co.

HEATING: Warm air floor furnace, Sears-Roebuck & Co. Thermostat—General Controls Co. Bathroom heater—Thermador Electric Mfg. Co.



TWO BEDROOMS, MAID'S ROOM, TWO BATHS, LAVATORY, STUDIO, DECK, TERRACE





VIEW 1.

All photos, Richard Garrison



VIEW 2.

An unconventionally designed country residence in which site contours and view were controlling factors in deciding the room arrangement. The main living rooms are on the upper level, with a porch, deck and balcony providing ample outdoor living space. These areas are supplemented by a large terrace below which can be reached directly from the deck by an outside stair. The white exterior, unrelieved by any accents save the windows, does not appear to best advantage in its winter setting, and illustrates one of the problems which many architects are attempting to solve by the use of warmer colors and natural materials. Cubage: 32,000.

CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—siding, V-joint boarding, Sheathing, Celotex Corp. Vaporseal and lath, studs; inside—plaster. Interior partitions—U. S. Gypsum Co. rock-lath and plaster; some plywood.

ROOF: Covered with 4-ply and gravel, Barrett Co. Deck—covered with Traffic Top, Celotex Corp.

FIREPLACE: Damper—H. W. Covert Co.

INSULATION: Outside walls and roof—Celotex Corp.

WINDOWS: Sash—wood casements. Glass—double strength, quality A, Libbey-Owens-Ford Glass Co.

FLOOR COVERINGS: Bedrooms, kitchen and bathrooms—linoleum, Armstrong Cork Co.

WOODWORK: Trim and cabinets—white pine and plywood. Garage doors—Overhead Door Co.

HARDWARE: By Ostrander & Eshleman.

PAINTS: By Pittsburgh Plate Glass Co.

ELECTRICAL INSTALLATION: Switches—Pass & Seymour. Fixtures—Lightolier Co.

KITCHEN EQUIPMENT: Range—Pyrofax, Carbide & Carbon Chemical Corp. Refrigerator—Philco Radio and Television Corp.

BATHROOM EQUIPMENT: By American Radiator-Standard Sanitary Corp. Shower—Speakman Co. Cabinets—Charles Parker Co.

PLUMBING: Soil pipes—cast iron. Waste and vent pipes—galvanized steel. Hot and cold water pipes—brass, Chase Brass & Copper Co.

HEATING: Humidified warm air system, Holland Furnace Co. Water heater—Ruud Mfg. Co.

VIEW 3.



TWO BEDROOMS, ONE BATH, MAID'S ROOM AND BATH, ATTACHED GARAGE

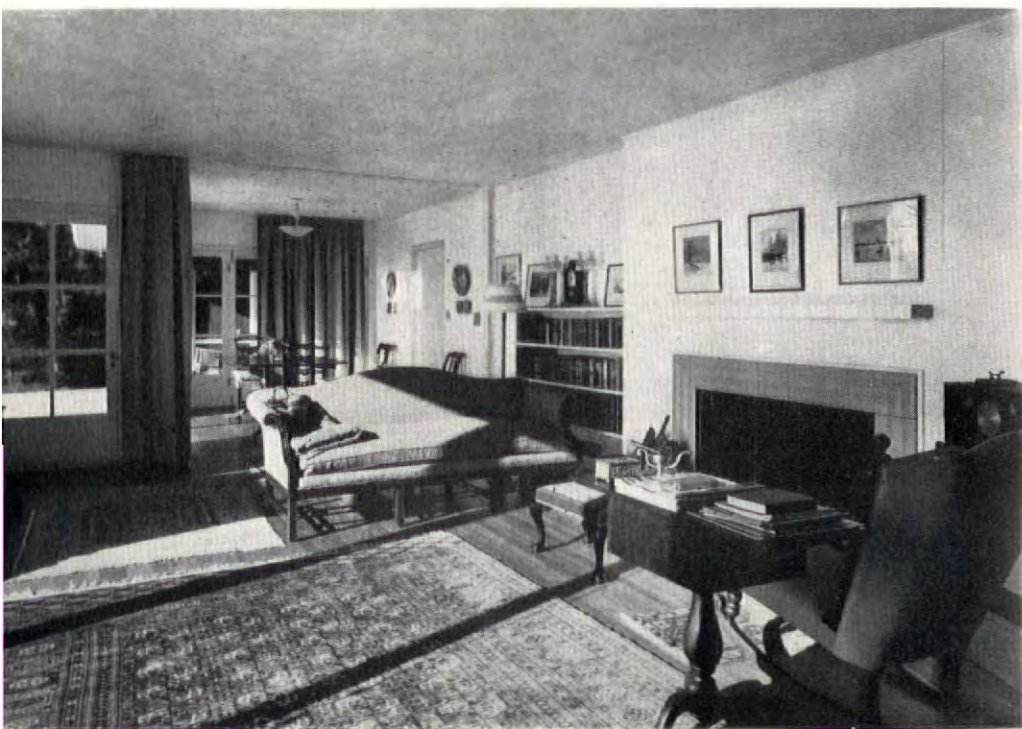
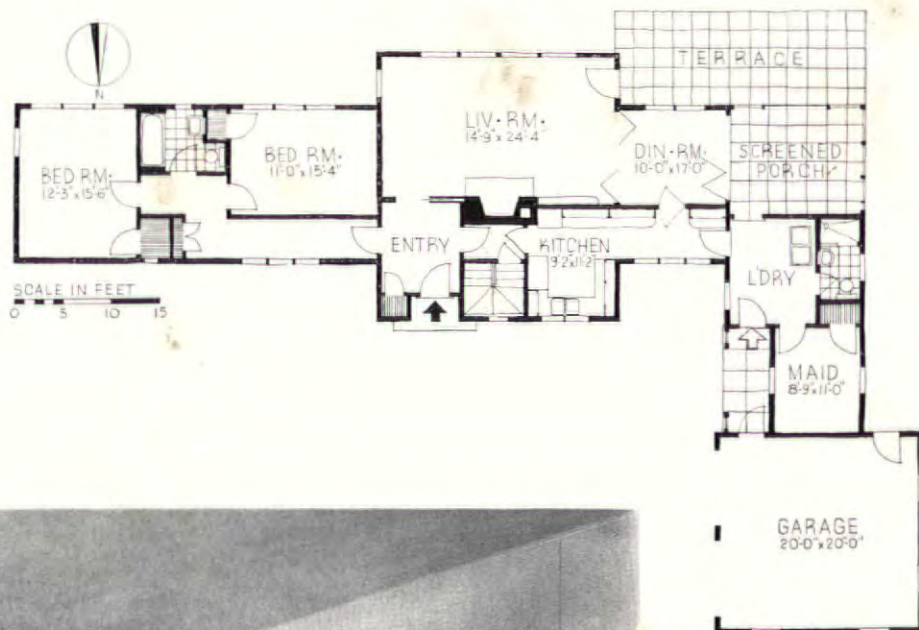


Boychuck Photos

VANCOUVER, WASH.

GLENN STANTON, ARCHITECT

The character of much new residential work in the Pacific Northwest is interestingly shown in this example. The long, clean lines in both plan and exterior, the intelligent use of fixed sash, and the emphasis on simple construction and materials are typical. Orientation of the house is definitely to the south, with all important rooms and large glass areas concentrated on this side. In the plan there is the desirable isolation of sleeping rooms, combined with easy access from the front hall. The kitchen is similarly accessible. An unusual amount of space has been devoted to the various services. Cost: \$8,750. Cubage: 35,337.



CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—fir studs and shiplap sheathing, building paper; inside—plaster on wood lath. Floor construction—wood joists, shiplap, sub-floor, oak finish.

ROOF: Covered with cedar shingles. Deck—covered with 26 gauge galvanized iron.

INSULATION: Attic floor—spun glass, U. S. Gypsum Co. Weatherstripping—Chamberlin Metal Weather Strip Co.

WINDOWS: Sash—wood, double hung. Glass—double strength, quality A, Libbey-Owens-Ford Glass Co.

WOODWORK: Trim and doors—fir to detail. Garage doors—Frantz Mfg. Co.

HARDWARE: By Russell & Erwin Mfg. Co.

ELECTRICAL INSTALLATION: Wiring system—BX flexible conduit. Switches—Bryant Electric Co.

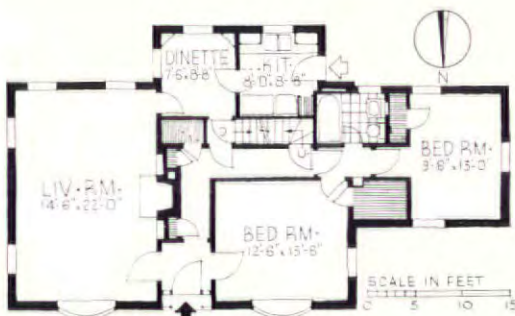
BATHROOM EQUIPMENT: By American Radiator-Standard Sanitary Corp. Cabinets—Hallensheid & McDonald Co.

HEATING: Forced warm air system, filtering, Norge Heating & Conditioning Div., Borg-Warner Corp.

GUEST HOUSE, TWO BEDROOMS, BATH, DINETTE



Rodney McCay Morgan Photos



NEW CANAAN, CONN.

ALEXANDER HOUSES, INC.,

WILL RICE AMON, ARCHITECT

W. H. MARTIN, ENGINEER

The formal manner in which the exterior of this house has been treated, while uncommon in dwellings of this size, is nevertheless most effective in establishing its character as a guest house. The symmetrical facade, large bays and ornamental ironwork all suggest the proximity of a larger residence. In old plantation houses of the South a similar approach is found in the imposing treatment of kitchens and other isolated service units. In other respects the house does not differ appreciably from the standard arrangements for small dwellings. Cubage: 20,765.



CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—brick veneer, air space, 15 lb. felt, sheathing; inside—studs, 2 in. insulation between, U. S. Gypsum Co. rocklath and plaster.

WINDOWS: Sash—white pine; balances, Unique Window Balance Co., Inc. Glass—quality B, Libbey-Owens-Ford Glass Co.

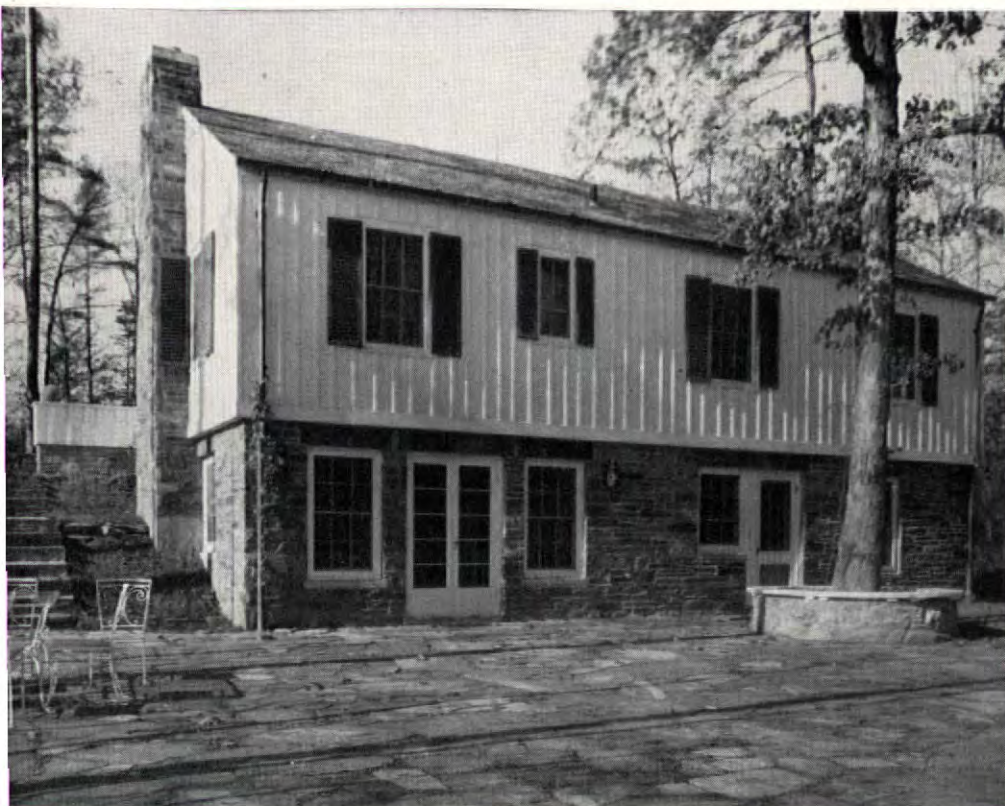
FLOOR COVERINGS: Main rooms—oak. Kitchen, bath—linoleum, Armstrong Cork Co. **PAINTS:** By Sherwin-Williams Co., National Lead Co. and The Reardon Co.

KITCHEN EQUIPMENT: Range—A. J. Lindemann & Hoverson Co. Refrigerator—General Electric Co.

BATHROOM EQUIPMENT: By American Radiator-Standard Sanitary Corp. Cabinets—Charles Parker Co.

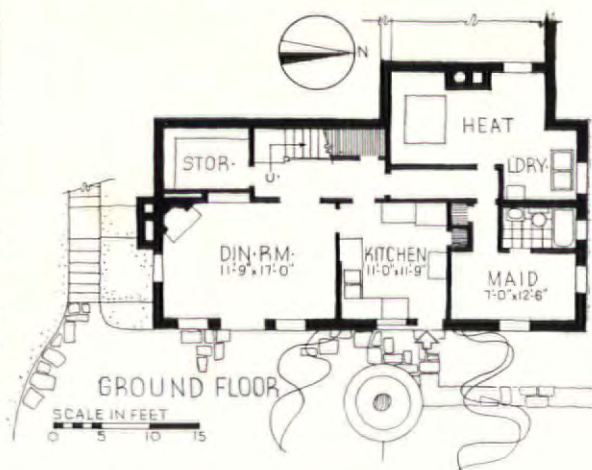
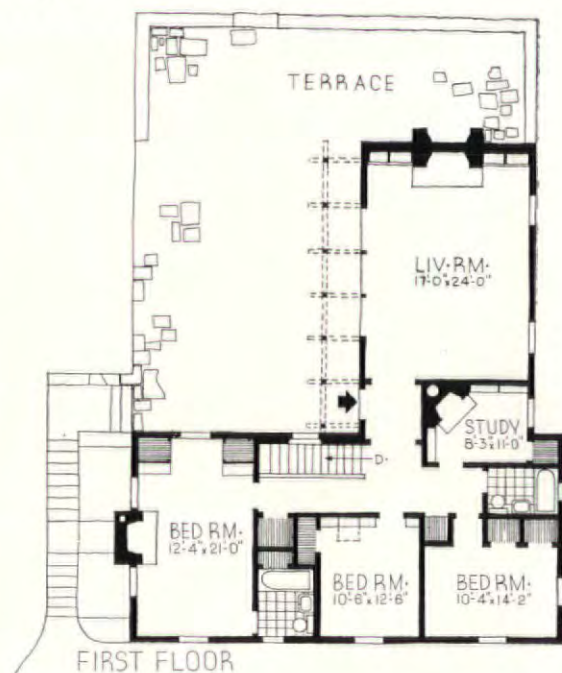
HEATING: Fox Sunbeam furnace, Fox Furnace Co., filters, spray humidifier. Humidistat—Julian P. Friez & Son. Thermostat—Minneapolis-Honeywell Regulator Co.

THREE BEDROOMS, MAID'S ROOM, TWO BATHS, STUDY



McLEAN, VA. OLIVIA C. FOUNTAIN, ARCHITECT

A house on a sloping site with the living and dining rooms separated on two levels. The scheme has many advantages, as it permits the placing of the bedrooms on the upper level where they enjoy the privacy and outlook of second floor rooms. The plan also results in a good placing of the service rooms, while the large paved terrace is suitable for outdoor dining. The separation of the living and dining rooms gives an impression of space not customarily found in houses of this size, and it fully satisfies the owners' request for a plan adapted to the requirements of entertaining. Cost: \$14,900. Cubage: 34,900.



CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls (1st floor)—12 in. stone, cement parged, painted 1 coat asphalt paint, furred and plastered; (2nd)—cypress clapboards and boards and battens, building paper; inside—studs, metal lath and plaster. Floor construction (1st)—reinforced concrete slab; others—wood sleepers with white oak finish.

ROOF: Covered with Vermont slate shingles.

FIREPLACE: Damper—H. W. Covert Co.

SHEET METAL WORK: Ducts—galvanized iron. Remainder—16 oz. copper.

INSULATION: Outside walls, attic floor and roof—4 in. rockwool.

WINDOWS: Sash—white pine, double hung and casement. Glass—quality B, double strength.

FLOOR COVERINGS: Kitchen and one bathroom—linoleum. Other bathroom—ceramic tile.

WOODWORK: Trim, cabinets and doors—white pine.

HARDWARE: By Yale & Towne Mfg. Co.

PAINTS: By Benjamin Moore Paint Co.

KITCHEN EQUIPMENT: Range, refrigerator and garbage disposal unit — General Electric Co.

BATHROOM EQUIPMENT: By Crane Co.

PLUMBING: Hot and cold water pipes—galvanized iron; brass below concrete floor slab.

HEATING AND AIR CONDITIONING: Forced warm air from hot water boiler and central air conditioner. Summer cooling by circulating well water. Boiler—Arco, American Radiator Co. Grilles—Tuttle & Bailey.





PORTFOLIO OF HOUSES

by GARDNER A. DAILEY

Roger Sturtevant

"Contemporary architecture, it seems to me, has in recent years been advancing more or less by the trial and error method—some all trial, some all error.

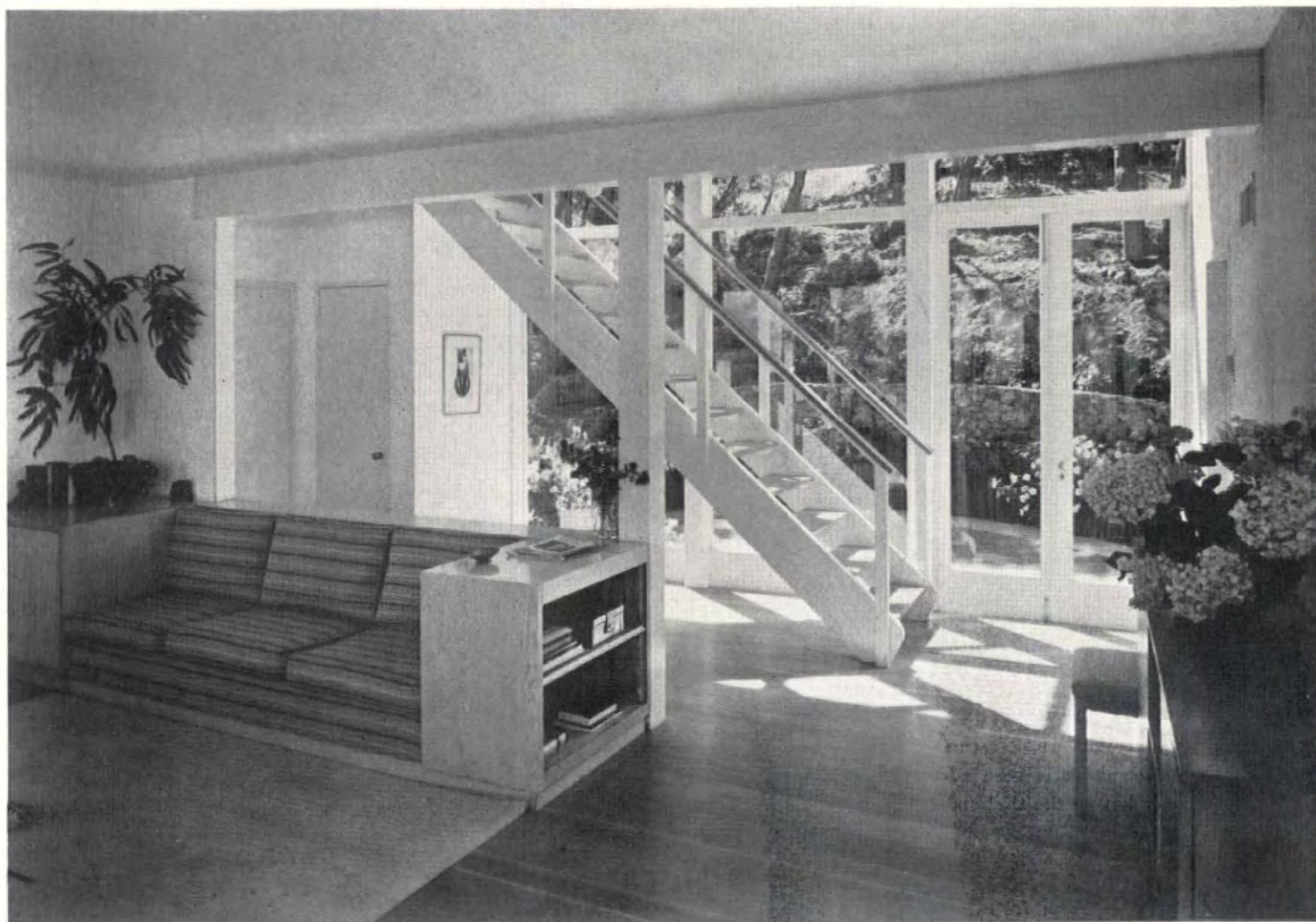
"We start out with Form following Function, only to discover that Form, instead of following, is being pushed. New Forms become new foibles (if not actually phony). That which stimulates today, tomorrow seems a little stale. Perhaps this is a sign that our architecture is becoming human. I hope so!

"Out of this confusion, however, some good is born and will survive. Some theories will perhaps not be carried far enough and others will go too far. We now find, for instance, that "Bringing the Out-of-doors In" often brings in a few things that are not so desirable—unpleasant glare, loss of sense of enclosure, and even mosquitoes. The Free Plan too has been abused with the subsequent violation of privacy.

"Such things will of course in time be corrected and a new sense of values will be uncovered. But in the meantime, with a fuller understanding of the *wants of man* and an appreciation of the *beauty implicit in materials*, we are at last gaining directional stability."



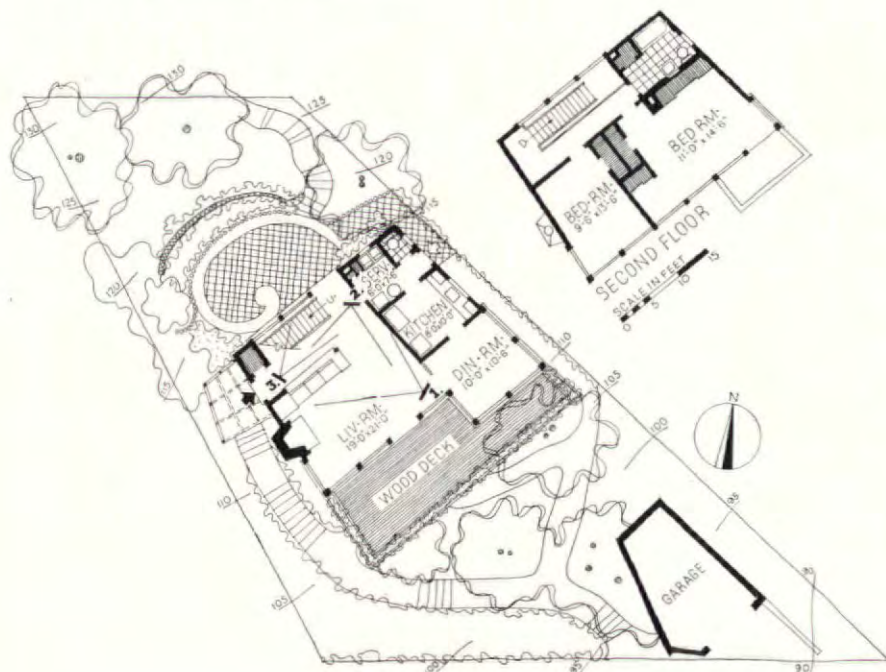
HOUSE IN SAUSALITO, CALIF.

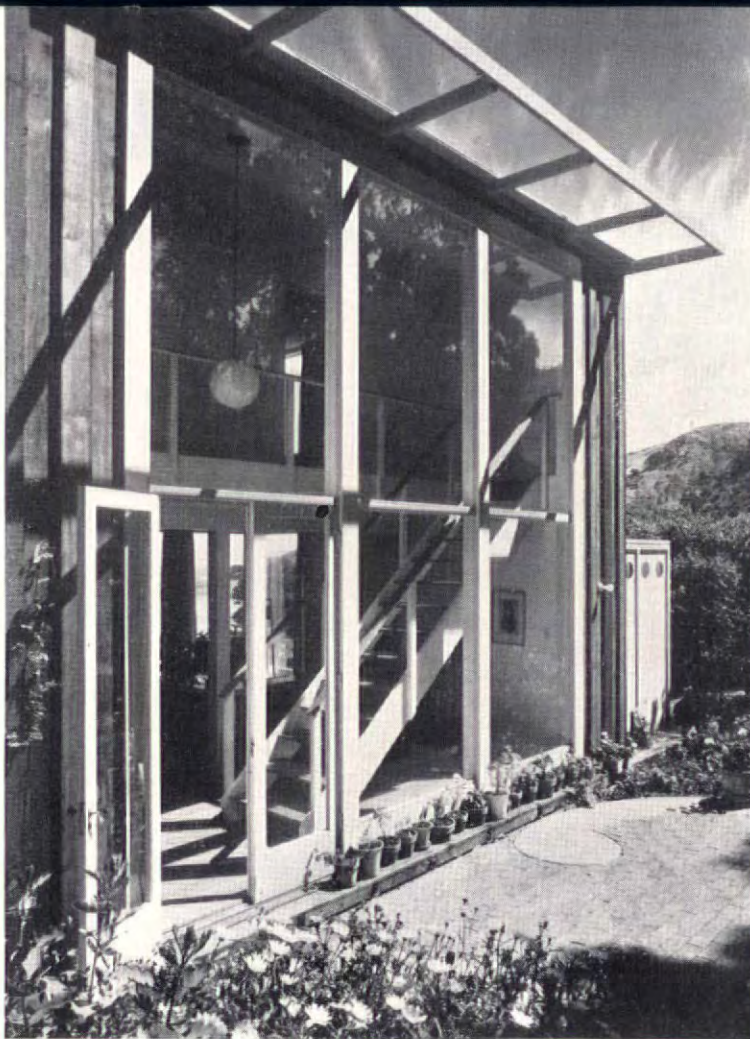


All photos, Roger Sturtevant

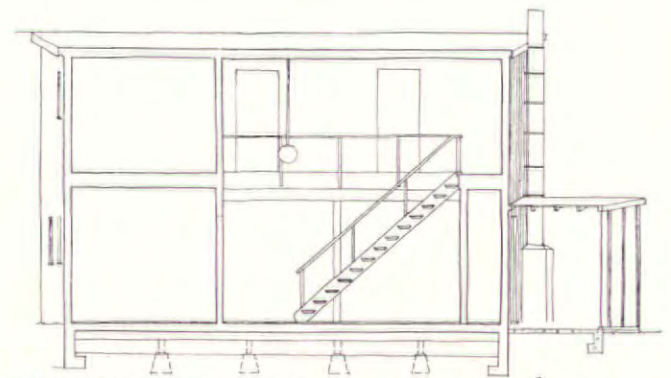
VIEW 1.

MARIE HARBECK, LANDSCAPE ARCHITECT
MAURICE SANDS, DECORATOR

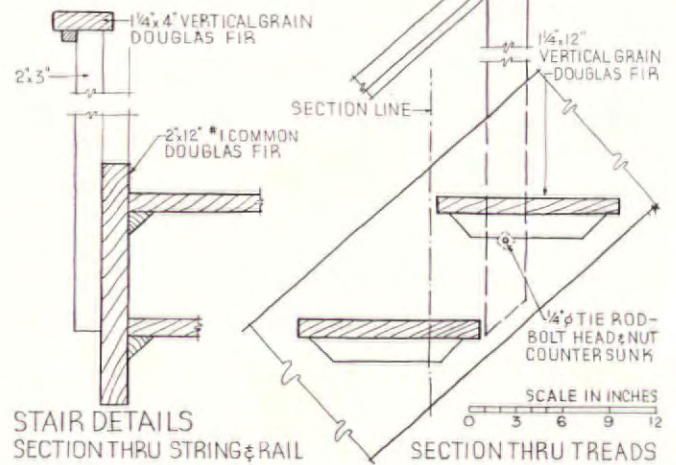




REAR WALL



LONGITUDINAL SECTION

SCALE IN FEET
0 2 4 6 8 10

STAIR DETAILS

SECTION THRU STRING & RAIL

SECTION THRU TREADS

VIEW 2.



VIEW 3.

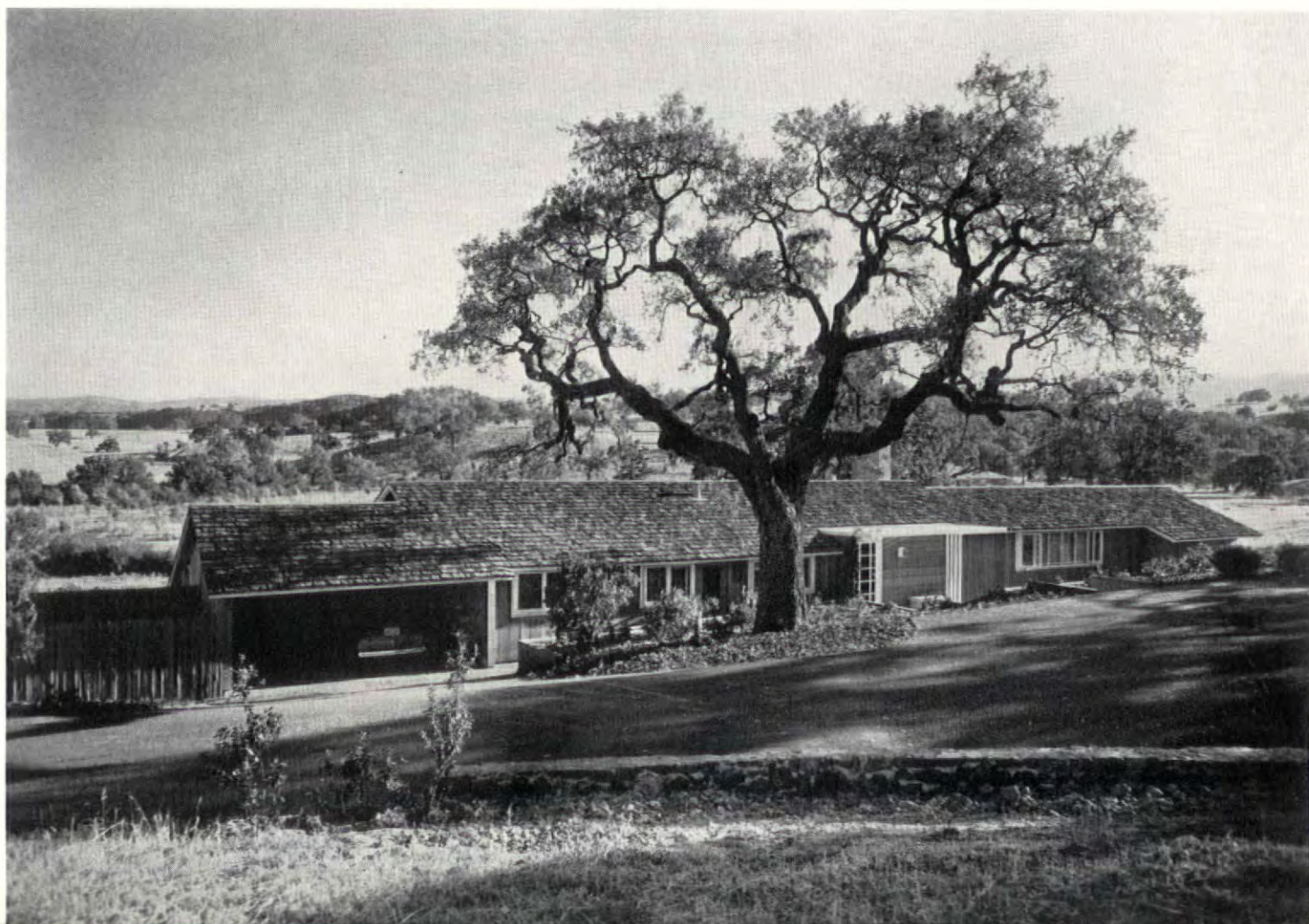


A very small house, placed on a narrow and steep site overlooking San Francisco Bay; its shape, as shown on the plan, is not quite square since the end walls parallel the sides of the property. The house has views at both front and rear, one overlooking the bay and the other facing a small garden and a wooded hillside above. Two-story walls of glass on each side afford complete enjoyment of the views and create a sense of space all out of proportion to the actual size of the house. Construction materials are of the simplest, with millwork reduced to a minimum. Doors are hung directly on studs, the stairs were designed to permit their construction by carpenters, etc. Cost: 32 cents per cu. ft.

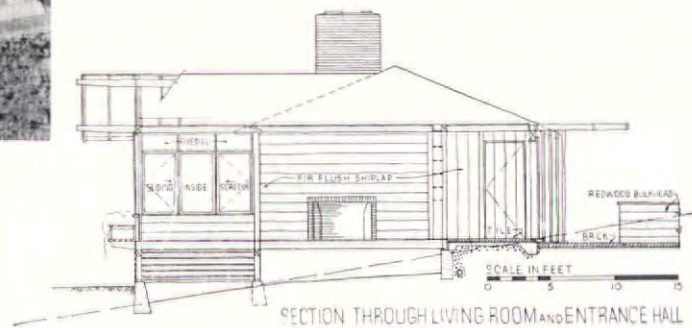
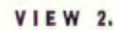
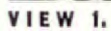
HOUSE IN WOODSIDE, CALIF.



All photos, Roger Sturtevant



THOMAS D. CHURCH, LANDSCAPE ARCHITECT



This is a detailed floor plan of a single-story house. The plan includes the following rooms and features:

- Bedrooms:** Four bedrooms are shown with dimensions: 9'-0" x 11'-0", 10'-0" x 13'-0", 11'-0" x 12'-0", and 11'-0" x 13'-0".
- Bathrooms:** Two bathrooms are indicated by standard fixtures.
- Living Room:** 18'-0" x 23'-0", featuring a fireplace and a large window.
- Dining Room:** 12'-0" x 18'-0", with a window seat.
- Kitchen:** 11'-0" x 14'-0", including a sink, stove, and refrigerator.
- Laundry (LDRY):** 10'-0" x 12'-0", with a washer and dryer area.
- Garage:** 18'-0" x 24'-0", with a storage area.
- Other Features:** A redwood bulkhead, stairs, a porch, a terrace, and a scale in feet (0 to 15).

HOUSE IN MODESTO, CALIF.



GARDEN COURT

All photos, Roger Sturtevant

VIEW 1.



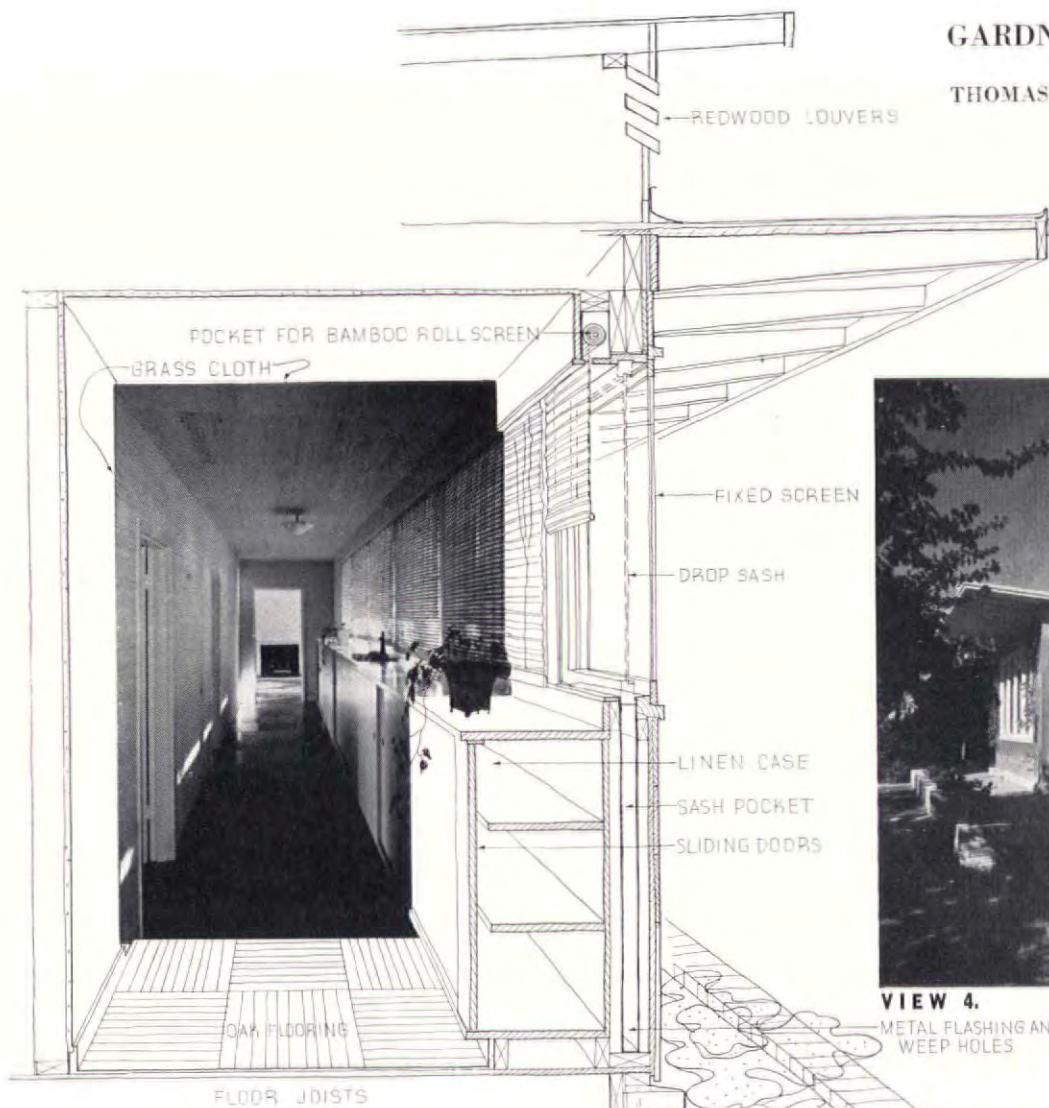
VIEW 2.



GARDNER A. DAILEY, ARCHITECT

THOMAS D. CHURCH, LANDSCAPE ARCHITECT

FRANCIS ELKINS, DECORATOR

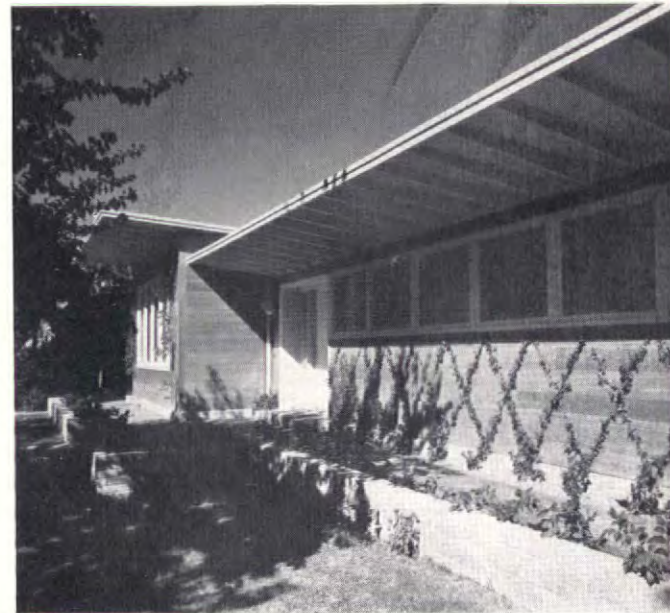


BEDROOM WING - HALL VIEW 3.

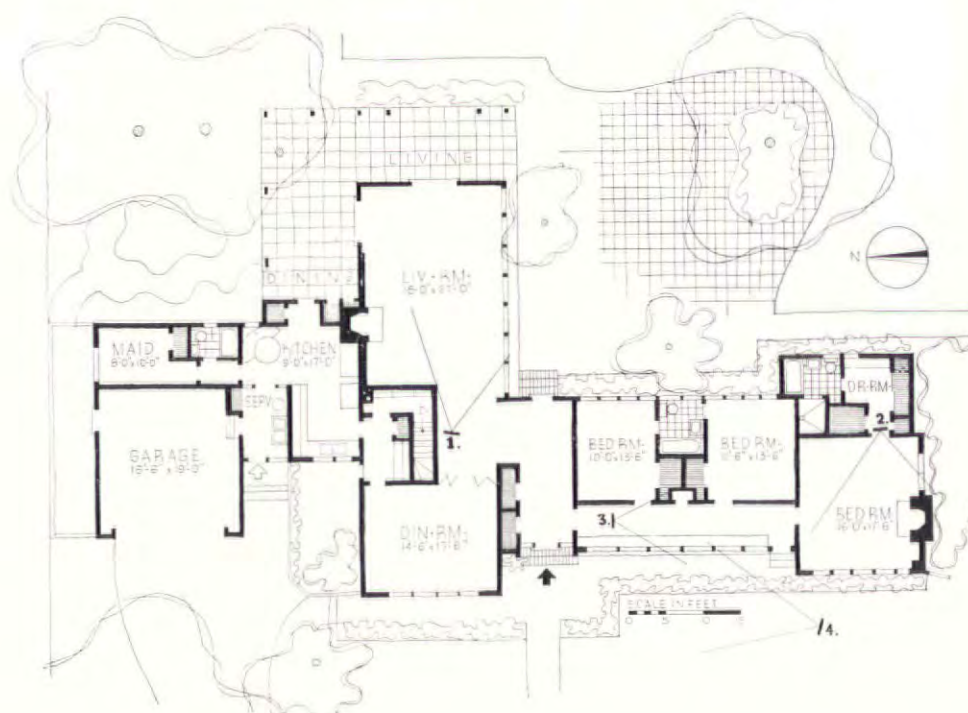
The architect comments: "This house is located in the flat San Joaquin Valley where the summer climate occasionally reaches heat wave temperatures. For this reason ventilation was of prime importance. The roof is constructed as an overhanging suspended lid extending outward to keep the sun's rays away from walls and windows. To get the benefit of summer breezes the house was planned to gain all possible cross and through ventilation in every room. Sash in the bedroom hall drops entirely clear of the openings, and special fabrics woven from fabric and split bamboo were used to give privacy without stopping the passage of air.

"It will be noted that a separate entrance has been provided near the master bedroom. This is to permit the owner, who is a doctor, to come and go at all hours without upsetting the routine of the house.

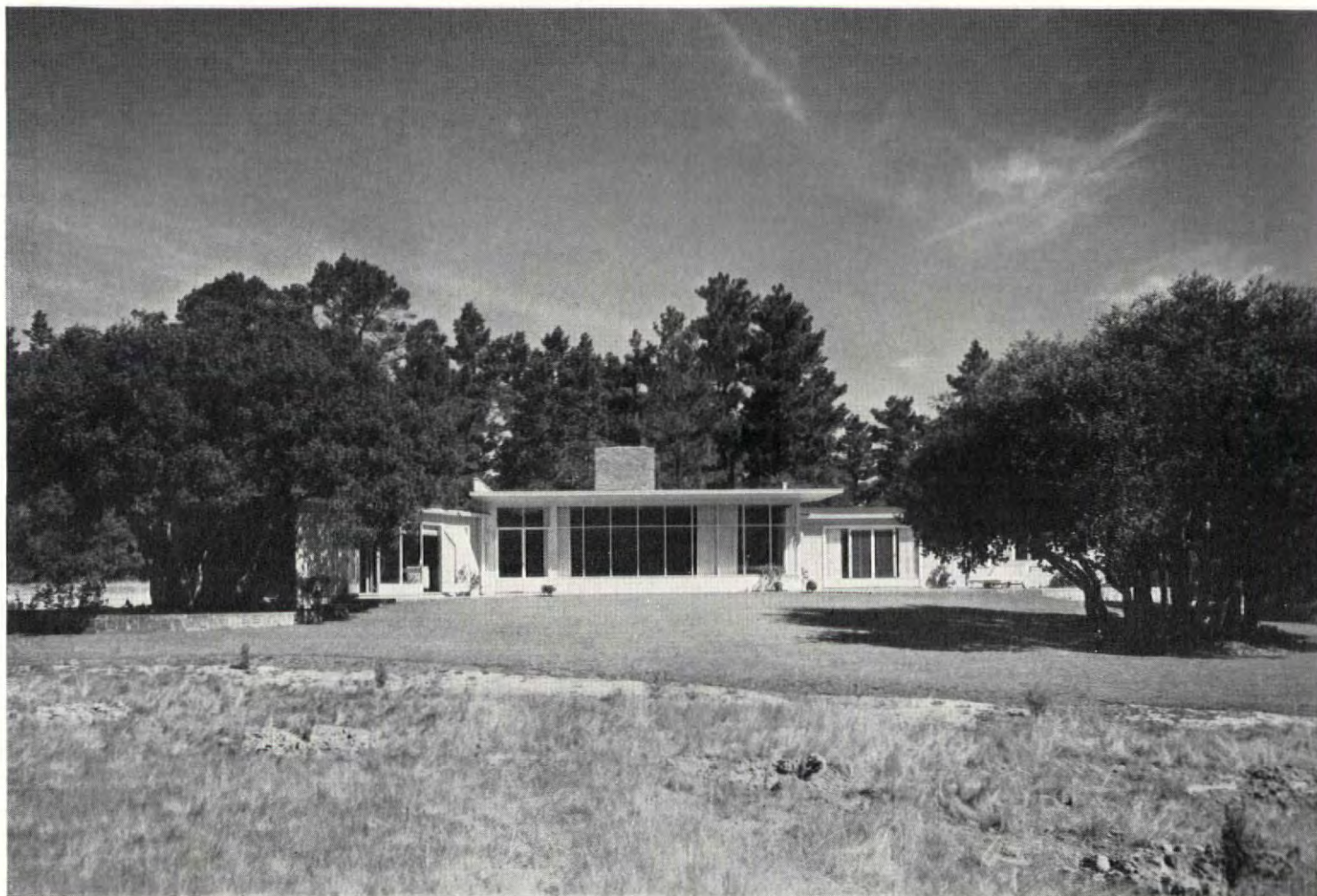
"Reflected glare was eliminated by the use of natural oiled redwood exterior walls and by redwood block paving." Cost: \$4.50 per sq. ft. (about 42 cents per cu. ft.)



VIEW 4.
METAL FLASHING AND
WEEP HOLES



HOUSE IN MONTEREY, CALIF.



SOUTH ELEVATION

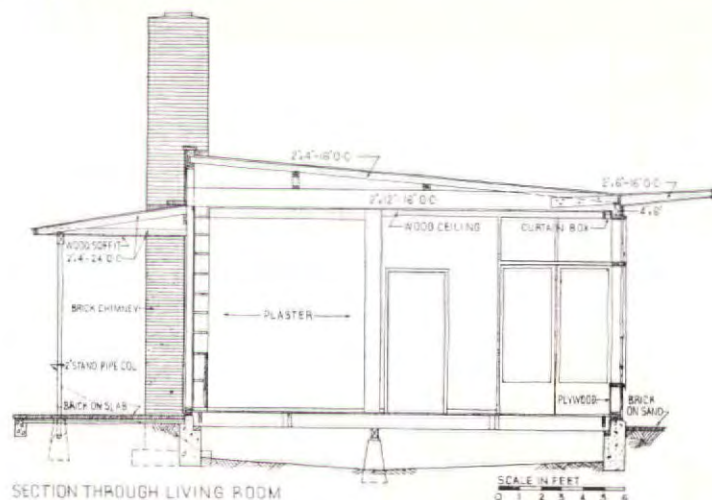
All photos, Roger Sturtevant

VIEW 1.

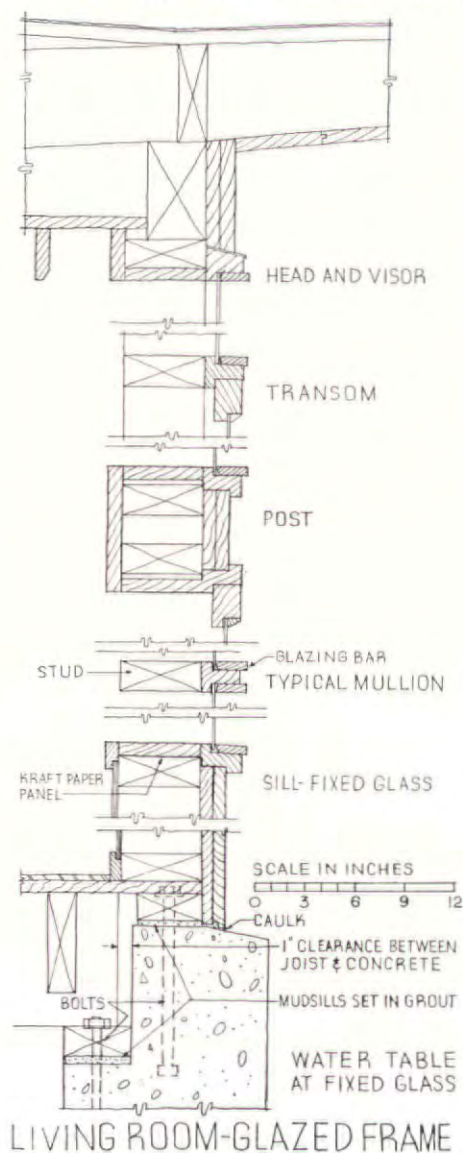




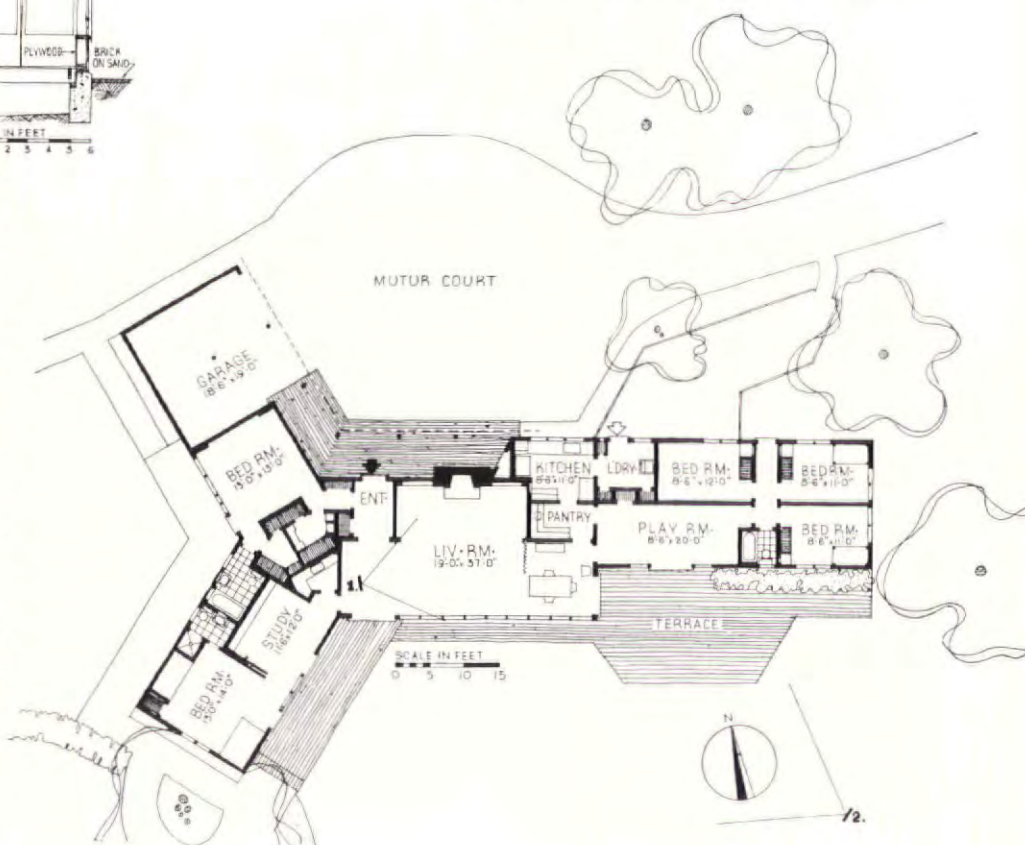
VIEW 2.



This house is located on the edge of a golf course, with a view of mountains beyond. The view dictated the placing of a glass wall in the living room. It will be noted in the plan that sleeping quarters are located in two separate wings; one is occupied by the children, who have a private establishment of their own, and the other contains bedrooms for the parents and guests. The master bedroom wing was turned so that it might screen the south terrace from prevailing winds. For all its apparent luxury, the house is constructed of the simplest materials, the glass wall, for instance, being merely a stud frame with stops which take either glass, sash or doors. Exterior walls are painted a deep gray-pink to reduce glare and direct sunlight is kept off the living room windows by means of a visor. Cost: 38 cents per cu. ft.



LIVING ROOM-GLAZED FRAME



	HOUSE IN SAUSALITO	HOUSE IN WOODSIDE	HOUSE IN MODESTO	HOUSE IN MONTEREY
STRUCTURE	Exterior walls — redwood boards over Douglas fir studs; inside — gypsum plaster and 3-ply white pine plywood. Floor construction—Douglas fir joists and plywood.	Exterior walls—redwood over Douglas fir frame; inside—plaster over wood lath. Floor construction—oak, brick, tile and cement finishes.	(For both houses) Exterior walls—redwood over Douglas fir studs; inside—plaster over rocklath, U. S. Gypsum Co. Floor construction—Douglas fir joists, oak finish.	
ROOF	Covered with 4-ply composition and pea gravel. Deck (over living room)—Douglas fir boards; (over bedroom)—mineral surface cap sheet over 4-ply composition.	Covered with cedar shingles.	Covered with 3-ply composition roofing and pea gravel.	Composition roofing covered with mineral surfaced cap sheet.
SHEET METAL WORK	(For all houses) 26 gauge galvanized iron.			
INSULATION	(For two houses) Roofs—4 in. mineral wool. Weatherstripping—Chamberlin Metal Weather Strip Co.			
WINDOWS	Sash—sugar pine, casement. Glass — crystal sheet and quality B, single strength.	Sash—sugar pine, casement. Glass—double strength, quality B and selected sheet.	Sash—sugar pine casement. Glass—double strength, quality A and sheet. Libbey-Owens-Ford Glass Co.	Sash—sugar pine, casement. Glass — double strength, quality B and sheet.
FLOORS	Main rooms — Douglas fir. Kitchen and bathrooms — linoleum.	Living room and bedrooms—oak. Halls — brick tile. Kitchen—cement over concrete slab. Bathrooms — linoleum.	Main rooms—oak. Kitchen—linoleum. Bathrooms—rubber tile. Both by Armstrong Cork Co.	Main rooms—oak. Remainder —linoleum, Armstrong Cork Co.
WALL COVERINGS	One wall of living room white pine plywood; remainder — plaster.	Living room and hall—vertical grain Douglas fir; remainder—plaster.	Living room—3-ply plywood. Remainder—plaster.	Study — 3-ply Philippine wood. Remainder — plaster.
WOODWORK	Trim and doors—Douglas fir. Garage doors—redwood over Douglas fir frame.	Vertical grain Douglas fir throughout.	(Both houses) Exterior doors—sugar pine. Remainder — Douglas fir.	
HARDWARE	(For all houses) By Sargent & Co.			
PAINTS	(For all houses) By Pratt & Lambert			
ELECTRICAL INSTALLATION	Wiring system — knob and tube. Switches—toggle, Hart & Hegeman. Fixtures—Kurt Versen, Inc.	Wiring system — knob and tube.	Wiring system — knob and tube. Switches—toggle. Fixtures—indirect.	Wiring system — knob and tube.
KITCHEN EQUIPMENT	By Sears, Roebuck & Co.	Range — gas. Refrigerator — electric.	Range — gas. Refrigerator — electric. Washing machine—Bendix Home Appliance, Inc.	Range and refrigerator — electric.
BATHROOM EQUIPMENT	Kohler Co.	American Radiator-Standard Sanitary Corp.	Kohler Co.	Kohler Co.
PLUMBING	(For all houses) Soil pipes—cast iron. Cold water pipes—galvanized steel. Hot water pipes—copper tubing.			
HEATING	Warm air furnace. Water heater — Pittsburgh Water Heater Corp.	Sunbeam warm air furnace, Fox Furnace Co. Water heater — Pittsburgh Water Heater Co.	Warm air system. Water heater — Pittsburgh Water Heater Corp.	Warm air system, oil fired unit supplying both heat and hot water, Crans Co.

BUILDING MONEY



ONE BASIC FLOOR PLAN PLUS 72 VARIATIONS

equals big business for a quartet of New Haven building professionals. Standardization at its best.

Standardization may either break or make a subdivision. When carried to an extreme, it produces monotonously identical houses which may prove difficult to sell in less stereotyped communities than Philadelphia, Baltimore, Washington, Queens, etc. And, the added selling and carrying costs may well offset the construction economies inherent in a repetitious building operation. On the other hand, a high degree of intelligent standardization may unify the appearance of a subdivision's houses, cut their costs to an attractive, quick-selling level.

Along with several other potent factors, standardization has made Wilmot, a booming small-house subdivision to be completed this month on the northern outskirts of New Haven, Conn. Each of its 72 houses measures 24 x 30 ft. excluding its kitchen bay; each is identical in profile except for such facial features as entrance hoods and dormers; and practically all of them spring with minor variations from two basic floor plans. Yet no Wilmot house has a twin.

Principals. Sold out in eleven months, this subdivision owes its success to the inter-related activities of four local building professionals: 1) a building material dealer who recognized the potentialities of the locally untapped low cost house market and conceived and launched Wilmot as a vehicle for his wares, 2) an architect who produced the flexibly planned, attractively designed basic houses and stayed with the

project until his 72nd variation was carried out, 3) a builder who capitalized on standardized construction to shave the price of the basic full-basement, five room-and-garage house to \$5,150 including lot, 4) a realtor who sold his consumer preference knowledge to the architect and builder and sold the houses to the public. Seldom do subdivisions in any price bracket benefit from such complete professional service. Consequently, few are as successful and newsworthy as Wilmot.*

One of New Haven's top-flight building material and equipment dealers, DeForest & Hotchkiss Co. early last year considered the possibility of initiating a low cost housing project. Conviction was that, despite the fact that nationwide trend toward lower cost housing had not yet hit New Haven, the local small house market was extensive. This opinion was substantiated by W. T. Beazley, a leader in the local real estate field who had closely followed the trend toward lower costs and was called in to advise DeForest & Hotchkiss. Forthwith, Contractor Thomas A. Laydon was lined up, land was purchased, and DeForest & Hotchkiss retired from the picture with an agreement, of course, that all material and equipment orders for the project would come their way.

Fourth principal behind Wilmot's development is Architect Thure E. Olsen of recent Yale Architectural School vintage—a happy complement to Builder Laydon who for twenty years had been concentra-

*Named for a local World War I hero.



ing on the diminishing business of building comparatively high-priced tailor-made residences. Today, the energetic young architect is on the builder's payroll.

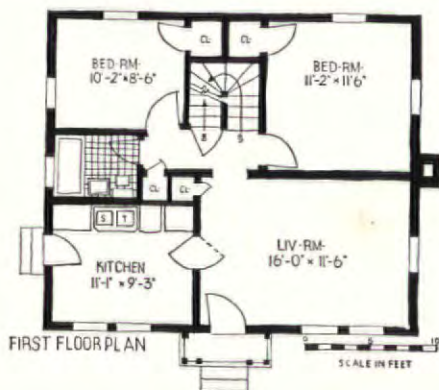
Land planning. When operations began last spring, Wilmot was an odd-shaped 17.8-acre patch of treeless farm land about five miles north of New Haven's center in the small (25,000 pop.) satellite community of Hamden. But, with the aid of FHA's land-planning experts, it was quickly transformed into 72 building lots of various sizes and shapes separated by about 3,400 ft. of 50 ft. wide streets and two small island parks (see site plan, above). Ranging from 50 to 80 ft. in width and from 80 to 255 ft. in depth, the lots were assigned an FHA-approved valuation of \$350 each to cover the cost of raw land, general grading, macadam road surfacing,

concrete curbing around the parks and all site utilities.

In placing houses on the lots, the subdividers were guided by more than the municipal regulation that at least 20 per cent of the width of each lot be reserved for side yards and that these side yards be at least 15 ft. wide. Orientation of each house was studied in relation to its neighbors. Thus, while building lines were set 20 and 25 ft. back from the streets, they were not arbitrarily followed—houses are informally staggered, some of them being placed as far as 60 ft. from the street. Moreover, when facing a straight street, houses were frequently cocked at a slight angle to enhance the appearance of the row and to permit the ends of one house to overlook the yards of its neighbors—a particularly important benefit when the living room end of one house is adjacent to the service end of the next.

Floor planning. As in the project layout, the opinions of the architect, realtor and builder were considered in the planning of the houses. In fact, Realtor Beazley figures that his 4 per cent commission per house was earned as much by his advice on consumer preferences as by his selling efforts. Having listened to the housing desires of thousands of local home seekers in the course of his ten-year old brokerage business, Beazley was in a position to counsel the architect and builder who were just entering the mass housing market.

Consensus was that the compactly efficient floor plan developed by the National Lumber Manufacturers Assn. for its 1940 promotional campaign (ARCH. FORUM, Aug. 1940 p. 142) would just about fill the bill at Wilmot. It featured four rooms and a bath on the rectangular first floor and a U-shaped staircase leading to the unfinished attic without need for a dormer



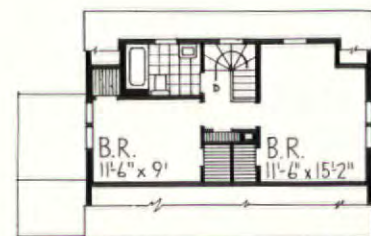
(see plan, above). Maintaining the main outside dimensions at 24 x 30 ft. to take advantage of standard lumber lengths, Architect Olsen moved most of the kitchen into an additional wing, transformed the extra inside area into dining space, eliminated the partition separating it from the living room. Result: a more comfortable five-room house expandable to seven rooms by finishing the attic—a house which Builder Laydon figured he could sell for \$5,150 with lot and garage and with about a 10 per cent profit for himself.

Standardization. Under-estimating the marketability of his low cost houses and the whims of the house-buying public, Laydon changed his tactics several times during Wilmot's development. He originally judged the project as a three-year undertaking, planned to carry the standardized package idea close to its extreme by duplicating the one basic house 72 times with only minor exterior design variations and several alternate garage positions. But this policy was carried no further than the first dozen units he built on speculation. They went fast enough to indicate that Wilmot would be sold out in much less than three years, but would have gone still faster had the prospects been permitted to alter the floor plan to their liking.

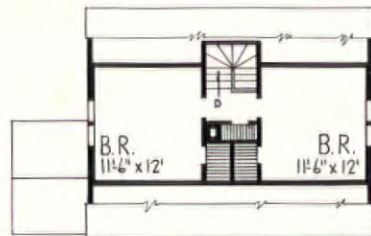
Once under way, Wilmot's sales kept well ahead of construction, and Laydon went back to speculative building only during one or two slack sales periods to develop the least attractive portion of the tract. The rigid standardization policy was also modified. In response to consumer demand, Architect Olsen designed several variations of the original basic plan (see plans, right and p. 376), developed within the same 24 x 30 ft. dimensions an entirely new plan to please those families that desired a central-hall house (Less popular, this plan is not illustrated herein.) And, at no extra cost above the standard \$5,150 price for both houses, Olsen moved or removed partitions further to suit the purchasers. Finally, Olsen and Laydon worked out sixteen optional extras ranging from a \$50 exterior basement stair and hatch to the provision of two finished bedrooms, a bath and a hall on the second floor at \$800, gave Realtor Beazley's salesmen a complete "accessory" price list (see p. 376). Purchase of these extras boosted the sales price of the average house to \$5,565.

Cost of three other changes in the original basic specifications were footed by Builder Laydon himself, subtracted from his original 10 per cent profit: 1) Poured concrete was substituted for cinder block in the foundations—sand for the mix came from the houses' excavations. 2) Overhead-type garage doors were replaced by a more substantial variety of the same type. 3) Entrance hoods and supports of various designs were added to all subsequent houses—original purchasers complained that when the front door was opened either rain blew in or dripped off the door onto the living room floor. This third item cut the builder's profit an average of about \$40 per house.

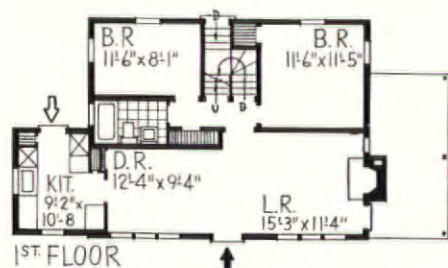
While Wilmot's houses were tailored enough to suit their purchasers, they are actually highly standardized. Main wing of each measured 24 x 30 ft., permitted Builder Laydon to use one set of footing and foundation forms for the entire project. Wall footing forms were bolted together and cross-braced with lumber members which automatically aligned the lally column footing forms, eliminated all measuring and cutting, thus permitted the use of only semi-skilled labor. Standardization al-



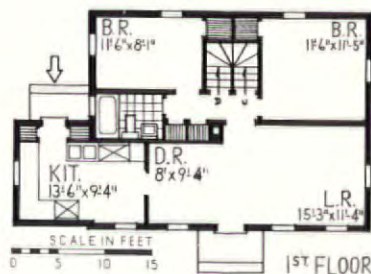
2ND FLOOR



2ND FLOOR



1ST FLOOR



1ST FLOOR

so made possible the cutting and marking (for joist locations) of all sill members from one set of patterns. Likewise, the rafters, for all roofs are of the same pitch; and most of the studs, for all houses are of the same height. Joists were used in their standard lengths. The entire lumber requirement for each house was delivered to its lot, and then all framing elements were pre-cut by one man with portable electric saws in seven hours. Other time and money-saving operations also came with standardization. Example: after their ends and leader tops had been soldered in the tinner's shop, each copper gutter was delivered in two sections, hung and soldered together—one site soldering operation per gutter instead of the conventional three.

To give his standardized houses individualized sales appeal, Architect Olsen varied their color (exterior shingle walls and trim as well as asphalt shingle roofs), fenestration, window trim, front door design, entrance shelters (hoods and supports), landscaping and garage design and location (see small photographs, right and p. 376). Result: while all Wilmot houses are near enough alike to present a unified appearance, no two are identical.

(Text continued on page 376)



Wilmot's basic house springs from the standard plan shown to the left (below). One of the subdivision's trail-blazers, this house is without entrance hood, a detail added without cost to subsequent houses to meet consumer demand. Exterior design of this \$5,150 basic model and the variations which surround it speak well for the use of complete architectural service in small house subdivisions. Impossible to portray in black and white are the many pleasant variations in the houses' colors—asphalt roof shingles, side walls and shutters. Main element of each house rests on a 24 x 30 ft. foundation. Interior plan details are varied (see drawings, left) to suit individual purchasers and only at extra cost (see tabulation, p. 376). The small shed dormer makes way for larger and better ventilated second floor rooms; a larger dormer provides space for two bedrooms and a bath.





Sales. Having but one comparatively small "war baby" industry, the New Haven area has not been boomed by the national defense program and its housing demand is only a normal one. Consequently, Wilmot's houses had to be sold—they did not sell themselves as similarly priced units in other communities frequently do.

Most trusty sales tool in the hands of Realtor Beazley was a model house completely furnished by a local furniture store. Sales shot up when it was first opened to the public; dropped off during each interval between the closing of one model and the opening of another. Biggest sales fillip came in June when the New Haven *Register* devoted an entire section of one Sunday edition to Wilmot, highlighted three pages of editorial copy with a half-page photograph of a current model house, sold the other seven pages (for some \$10,000-12,000) to those whose products and services figured in Wilmot's development. (About twice each year the newspaper selects a new house, dubs it the "Register Model" and ballyhoos it in proportion to the advertising revenue collected.) Salesman Beazley estimates that the special Wilmot section brought from 1,500 to 2,000 visitors to the subdivision during the following week. Consumer interest was subsequently maintained by an energetic program of classified and display newspaper advertising. All told, the subdividers spent about \$25 per house on advertising and promotion.

Permanent financing of the houses was handled by the mortgage department of the W. T. Beazley Co. which made (and will service) 25-year FHA-insured loans on behalf of the Connecticut General Life Insurance Co. as mortgagee. On the basic \$5,150 property, a cash down payment of \$550 was required. Monthly payments total \$36.36—\$8.25 for average taxes, 62 cents for fire insurance, \$25.58 for interest and amortization charges on the \$4,600 mortgage and \$1.91 for FHA mortgage insurance. Since \$15.33 of the monthly payment is applied on the average to the reduction of the mortgage, Beazley's promotional literature plugged the \$21.03 balance as the "net monthly expense" of buying the house.

Wilmot's financing plan was none too easy, however, for most of the purchasers were just able to scrape together the necessary cash down payment. Most of them

(Continued on page 50)

COST BREAKDOWN of a basic house

Labor	\$ 988.95
Excavation	45.00
Foundations	142.41
Concrete & bricks	65.29
Lumber, etc.	1,932.58
Plumbing contract	407.00
Electrical contract	105.45
Painting & floor finish	51.72
Linoleum contract	44.55
Sheet metal contract	42.72
Wall paper	9.60
Weatherstripping	8.00
Shades	5.25
Bathroom accessories	4.73

SUB-TOTAL

\$3,853.25

FHA commitment	\$ 13.50
Blueprints	5.00
Building permit	8.50
Survey	5.00
Construction loan fee	30.00
Interest on loan	33.77
Fire insurance	1.47
Liability insurance	1.75
Workmen's compensation ins.	32.11
Social security	9.89
State unemployment ins.	29.67
State business tax	51.50

SUB-TOTAL

\$4,075.41

Lot, grading, site utilities & road	\$ 350.00
Landscaping, etc.	55.00

SUB-TOTAL

\$4,480.41

Advertising	\$ 25.00
Sales & closing fees	252.05

SUB-TOTAL

\$4,757.46

Overhead	\$ 50.00
Profit	342.54

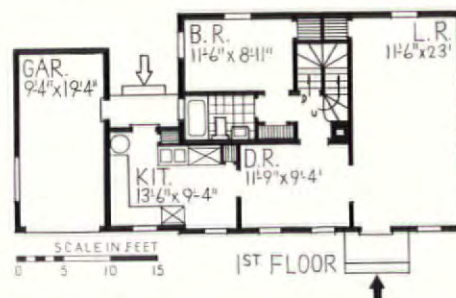
TOTAL

\$5,150.00

OPTIONAL EXTRAS over \$5,150 basic price

Outside basement stairs & hatch	\$ 50.00
Brick veneer front	80.00
Storm & screen door combination	95.00
Vestibule	100.00
Bay window	130.00
Fireplace	185.00
Porch	200.00
Plumbing lines for 2nd fl. bath	112.00
Shed dormer & windows, 2nd fl.	180.00
Finish 2nd fl. hall	78.00
Finish 1 room, 2nd fl.	310.00
Finish 2 rooms & hall, 2nd fl.	650.00
Extra large dormer, 2nd fl.	210.00
Bathroom, 2nd fl.	150.00
Finish third bedroom, 2nd fl.	130.00
Toilet & lavatory, 1st fl.	214.00

Extreme variations in Wilmot's basic floor plan produced a few more expensive houses such as these. Note, however, that the main element of the house still measures the standard and economical 24 x 30 ft. Clearly apparent in the photograph to the right is the wide range of paint colors used on the subdivision's 72 houses—it is a barn red and may be seen again in the street view on page 373.



CONSTRUCTION OUTLINE

FOUNDATION: Walls—12 in. poured concrete.
STRUCTURE: Exterior walls—red cedar shingles, Johns-Manville 15 lb. felt sheathing; inside—National Gypsum Co. rock-foam and plaster. Floor construction—sub-floor, Rubberoid Co. 1 in. deadening felt, E. L. Bruce & Co. oak finish.

ROOF: Covered with Johns-Manville asphalt shingles or Perfection red cedar shingles.

FIREPLACE: Damper—H. W. Covert Co.

SHEET METAL WORK: Flashing, gutters and leaders—copper, C. G. Hussey.

INSULATION: Attic floor—rockwool batts, Johns-Manville Co. Weatherstripping—Curtis Cos.

WINDOWS: Sash—Silentite, Curtis Cos. Glass—single strength, quality B, Lustraglass, American Window Glass Co.

STAIRS: Treads—oak. Remainder—N. C. pine.

FLOOR COVERINGS: Main rooms—oak. Kitchen and bathrooms—linoleum and rubber base.

WOODWORK: Trim and exterior doors—Curtis Cos. Cabinets—plywood. Interior doors—5-panel fir, Harbord Plywood Co. Garage doors—Overhead Door Co.

HARDWARE: By Sargent & Co.

PAINTS: By Bowens Co., Chemical Compounding Co. and Creo Dint Co., Inc.

ELECTRICAL INSTALLATION: Wiring system—BX. Switches—Arrow-Hart & Heppman Co. Fixtures—Chase Brass & Copper Co., Lightolier Co. and Lincoln Co.

BATHROOM EQUIPMENT: By American Radiator—Standard Sanitary Corp. Seat—Standard Tank & Seat Co. Cabinets and accessories—Charles Parker Co.

PLUMBING: Soil pipes—cast iron. Cold and hot water pipes—Anaconda copper, American Brass Co.

HEATING: Steam system. Boiler and Thermostat—York Oil Burner Co. Radiators—U. S. Radiator Corp. Valves—Jas. P. Marsh Co. and Hoffman Specialty Co.

FORUM COST INDEX records nation-wide rise, spots reaction in eight cities.

No news is the fact that residential building costs the country over have risen sharply since last summer in tune with defense activity. News indeed, however, is the fact that in recent months this advance has lost momentum. Thus, while all 81 cities covered in the index below have reported higher costs than a year ago, in eight cities the current trend is down. And, average cost for all 81 cities

advanced only 1 per cent (to 114.6 per cent of the 1936 national average) during February—the smallest fillip since last August. Interestingly, bulk of the larger year-to-year cost increases have taken place in the South where most of the Army's cantonments are abuilding. Biggest individual increase: 24.1 per cent in Baltimore, Md. Next biggest: 21.5 per cent in Birmingham, Ala.

STATE	CITY	LATEST REPORT	PRECEDING REPORT	YEAR AGO	STATE	CITY	LATEST REPORT	PRECEDING REPORT	YEAR AGO
ALA. ¹	Birmingham	115.5	110.0	94.0	NEV. ²	Reno	126.6	121.8	121.9
ARIZ. ²	Phoenix	124.7	122.4	112.1	N. H. ¹	Manchester	104.9	103.9	97.4
ARK. ²	Little Rock	93.9	94.3	93.6	N. J. ³	Atlantic City	127.5	111.6	113.2
CALIF. ²	Los Angeles	99.7	99.5	95.0		Camden	115.9	113.1	107.4
	San Diego	109.7	110.3	98.0		Newark	109.5	103.6	103.1
	San Francisco	115.0	114.8	114.0	N. M. ²	Albuquerque	126.1	122.2	113.2
COLO. ¹	Denver	117.5	114.4	112.5	N. Y. ³	Albany	111.7	102.7	101.6
CONN. ¹	Hartford	116.1	113.2	107.3		Buffalo	111.2	103.8	102.7
	New Haven	113.7	111.7	105.7		Utica	110.9	108.7	105.3
DEL. ²	Wilmington	113.2	109.0	97.4		White Plains	114.0	101.2	101.2
D. C. ¹	Washington	112.7	116.0	103.8	N. C. ¹	Asheville	104.0	96.1	90.3
FLA. ¹	Tampa	111.9	109.8	103.7		Raleigh	99.0	94.8	90.6
	West Palm Beach	118.4	121.7	105.3		Salisbury	85.2	81.2	87.9
GA. ¹	Atlanta	105.7	100.1	89.0	N. D. ²	Fargo	111.3	104.8	106.0
IDAHO ³	Boise	118.8	116.3	112.4	OHIO ²	Cincinnati	103.6	103.8	99.9
ILL. ¹	Chicago	128.2	124.7	122.7		Cleveland	124.3	125.6	122.8
	Peoria	131.4	129.4	127.0		Columbus	107.3	106.9	104.8
	Springfield	134.9	134.0	127.8	OKLA. ¹	Oklahoma City	119.1	115.5	109.4
IND. ²	Evansville	117.7	114.2	110.6	ORE. ²	Portland	97.6	102.0	96.6
	Indianapolis	115.2	100.4	100.9	PENNA. ²	Harrisburg	121.8	118.5	106.3
	South Bend	117.6	100.9	104.9		Philadelphia	114.0	114.0	101.0
IOWA ³	Des Moines	121.0	115.7	114.6		Pittsburgh	122.5	116.3	113.0
KAN. ¹	Wichita	104.7	103.3	104.1	R. I. ¹	Providence	113.5	112.5	109.1
KY. ²	Lexington	100.4	99.1	106.7	S. C. ¹	Columbia	100.1	98.6	85.5
	Louisville	113.6	98.4	97.8	S. D. ²	Sioux Falls	110.1	111.9	110.2
LA. ²	New Orleans	109.9	108.0	105.4	TENN. ²	Memphis	110.4	101.0	97.6
ME. ¹	Portland	97.1	95.3	95.0		Nashville	100.1	95.8	90.0
MD. ¹	Baltimore	110.0	102.3	85.9	TEXAS ²	Dallas	119.7	108.9	97.9
	Cumberland	109.5	105.4	101.8		Houston	119.7	117.5	107.1
MASS. ¹	Boston	122.2	102.5	117.3		San Antonio	118.8	105.5	101.0
	Worcester	....	....	103.3	UTAH ³	Salt Lake City	114.9	110.0	109.1
MICH. ³	Detroit	112.1	108.7	105.1	VT. ¹	Rutland	106.3	98.4	96.2
	Grand Rapids	115.7	106.4	99.2	VA. ¹	Richmond	100.7	98.0	87.6
MINN. ²	Duluth	113.2	111.3	112.0		Roanoke	108.8	103.3	94.0
	St. Paul	119.5	117.6	117.9	WASH. ³	Seattle	124.0	116.7	114.1
MISS. ²	Jackson	109.6	107.1	109.1		Spokane	124.6	....	114.1
MO. ²	Kansas City	117.8	104.8	108.9	W. VA. ²	Charleston	110.9	107.8	105.6
	St. Louis	104.6	101.3	101.6		Wheeling	116.2	117.9	114.3
MONT. ³	Great Falls	129.2	124.5	125.7	WIS. ¹	Milwaukee	126.8	120.7	109.6
NEB. ¹	Omaha	111.1	107.9	111.3		Oshkosh	120.2	113.4	106.7
					WYO. ³	Casper	116.9	108.9	116.3

FOOTNOTES.

1 Latest report—Mar. 1941; preceding report—Dec. 1940; year ago—Mar. 1940.

2 Latest report—Feb. 1941; preceding year—Nov. 1940; year ago—Feb. 1940.

3 Latest report—Jan. 1941; preceding report—Oct. 1940; year ago—Jan. 1940.

Based on Federal Home Loan Bank Board statistics covering the cost of building the same typical house in each city. This typical or standard house has six rooms, a total volume of 24,000 cu. ft. On the first floor are living and dining rooms, kitchen and lavatory; on the second floor, three bedrooms and bath. Exterior finish is wide-board siding with brick and stucco as features of design. Included in the cost of the standard house are all fundamental structural elements, an attached one-car garage, unfinished cellar and attic, fireplace, insulation, and all essential plumbing, heating and wiring. Only cost variables are materials and labor; compensation insurance, overhead and profit are included as constants. Excluded from the cost of the standard house are all items of finish and equipment such as wallpaper, lighting fixtures, refrigerator, window shades, etc. Costs do not include land, landscaping, walks and driveways, architect's fee, building permit, financing charges, etc. For a more detailed explanation, see ARCH. FORUM, Dec. 1939, p. 474.

PURPOSE OF INDEX

1. To show the trend of residential building costs in each city by comparison of the first figure for that city (the "latest report") with the figures for the preceding month and the corresponding month of the preceding year.
2. To emphasize variations between cities in the cost of building the same house. Since all figures are percentages of the 1936 national average, they are directly comparable and indicate intercity cost differentials.
3. To provide a ready means of roughly estimating the cost of building a house in one city when the cost of building it in another is known. Thus, to estimate the cost on City B of a house built in City A for \$5,000, multiply the "latest report" for City B (900) by the known cost of the house in City A. The result is 450,000. Then, divide 450,000 by the "latest report" for City A (110.0). The resultant \$4,090 is the approximate cost of the house in City B.

Use of the index for this purpose is limited by the definition of the standard house upon which it is based (see left). The index applies to medium-to-small houses, not to large ones replete with expensive equipment. Neither does it apply to costs which include land; usually the value of a lot runs about 15 per cent of the value of the house and lot.



ANTIQUE HOUSE REPRODUCTIONS sidestep standardization, satisfy a frustrated clientele. 100 unusual row houses in Alexandria, Va. at \$6,000 up.

A new residential community may take the form of row housing for one of two reasons: 1) It is unquestionably the most economical form of construction because its party walls serve a double structural purpose and eliminate many costly wall openings, its site utilities are reduced to a minimum, and it lends itself to a high degree of standardization. 2) Row housing may be the local tradition. Reason No. 2 is the controlling factor behind the appearance of Yates Gardens, an unusual Alexandria, Va. project of 100 row houses whose design heritage goes back to the pre-Revolutionary days of the community. Tossing aside at its inception the cost-reducing possibilities of design standardization, the subdivider has developed his property with rows of individually designed Colonial town houses which closely resemble their 150-year-old ancestors.

While most modern designers would frown on the business of antique house reproduction, the subdivision's sales record speaks well for its investment character: 41 houses have been built and sold for \$6,000 to \$9,250 during the past twelve months, and indication is that the entire subdivision will be developed and sold out by year-end.

During his twenty years in the real estate, building and subdividing business Washington's Edward R. Carr has launched a garden apartment project and five subdivisions whose houses have blanketed the design field from Colonial to Spanish and the cost field up to \$50,000. Meanwhile, he has witnessed the frustration of "literally hundreds" of people who have desired to purchase and recondition old houses in the Washington area but have been stumped by a combination of their scarcity, their sales prices and the cost of rehabilitating them. Hence, Yates Gardens.

Since Subdivider Carr decided to ape the housing pattern and atmosphere of old Alexandria and Georgetown, he quite naturally went there in search of a suitable site. He found what he wanted in the former community—a tract comprised of two complete blocks and several facing frontages. Streets and utilities were complete, but the site was otherwise undeveloped, except for a 100 x 180 ft. piece of one block on which stood the erstwhile Yates Gardens Tavern, long since remodeled into a swank residence. Working around this



All photos, Horydezak



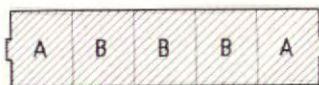
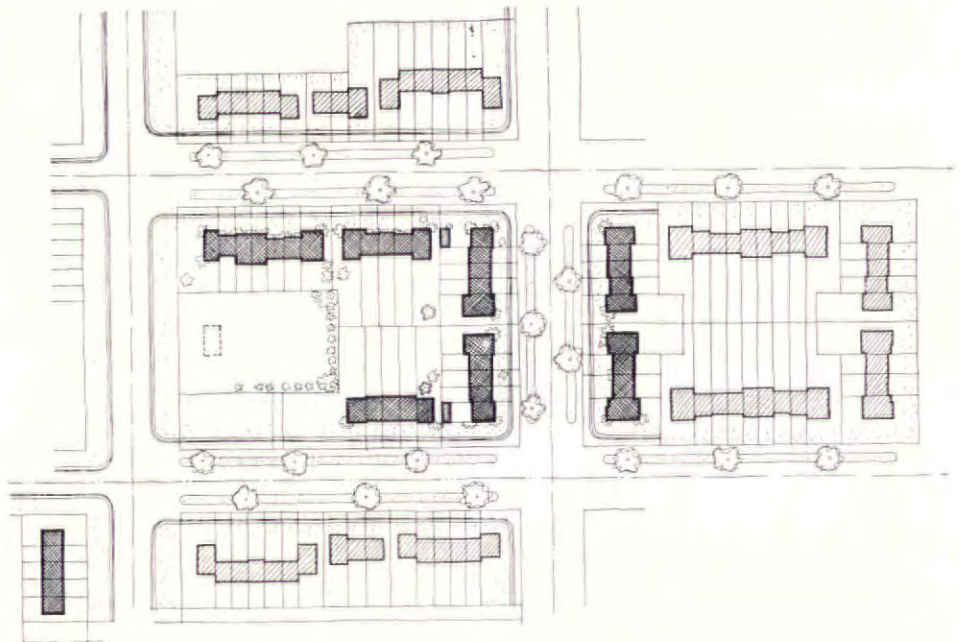


landmark, from which the project takes its name, Subdivider Carr laid out 100 lots varying from 20 to 30 ft. in width, from 70 to 120 ft. in depth.

As shown on the site plan (right), the row houses are grouped in eighteen buildings and staggered at various distances from the street—a more interesting but more costly arrangement than the straight-line, continuous row. Only a few private garages are included in the project layout, but their absence is offset by the provision of parking and secondary traffic lanes on either side of the main thoroughfares and separated from them by 10 ft. wide planting strips.

As for exterior design of the houses, the accompanying photographs speak for themselves. Almost every house is radically different from its neighbors, a purpose achieved by staggering adjacent floor levels, by varying roof lines and materials, by laying up the brick exterior walls in different ways and painting some of them white and gray, by using a wide variety of window sizes, shapes and trim and, finally, by commissioning several unaffiliated architects, William Harris, Louis R. Moss and Kirkhuff & Bagley, to work on different sections of the project.

First floor levels in many houses are several feet above grade to facilitate natural lighting of the basement kitchens and dining rooms. All rooms feature larger-than-average windows and high ceilings as solutions to the problem of lighting houses with only two exposures. While such in-



terior details as Colonial fireplace trim and random width flooring closely follow tradition, all bathrooms and kitchens are, of course, "streamlined" in the accepted sales-sealing fashion.

Priced at \$6,000 complete, Yates Gardens' cheapest four-and-a-half-room house sells for \$600 cash plus \$38 per month to cover taxes, insurance and interest on and amortization of the 25-year \$5,400 FHA-insured mortgage. Other houses run as large as five-and-a-half rooms, are priced as high as \$9,250. Some have been financed with 5 per cent long-term uninsured mortgages covering two-thirds of the sales price plus the balance in cash or (in a half-dozen cases) a 6 per cent second trust taken by Yates Gardens Co. and amortized monthly over a five-year term.

Although the project was undertaken as a speculative venture, Realtor-Builder Carr has thus far been unable to keep his production abreast of sales. Each new group of houses has been sold long before completion and is frequently altered (minor details) to meet the owners' specifications. Since the first units were placed on the market a year ago, 41 houses have been completed and occupied, sixteen more have gone into construction and month ago many of these were sold. Another batch of sixteen will be launched as soon as plans are complete, and expectation is that the remaining 27 lots will be developed by year-end.

Meanwhile, Yates Gardens has already justified its departure from current design trends in favor of antique town house reproduction, has thus given Modernists another consumer preference case history to ponder.

CONSTRUCTION OUTLINE

FOUNDATION: Cement block.

STRUCTURE: Exterior walls—brick, cement block back-up, furring strips; inside—rocklath and plaster, U. S. Gypsum Co. Floor construction—sub-floor, 15 lb. felt, pre-finished oak, Allspline Corp.

ROOF: Covered with slate or 40 lb. tin, Follansbee Bros.

SHEET METAL WORK: Flashing—copper, American Brass Co. Remainder—Armco ingot iron, American Rolling Mill Co.

INSULATION: Roof—rockwool, Shenandoah Mineral Wool Co.

FLOOR COVERINGS: Kitchen—linoleum, Armstrong Cork Co.

WOODWORK: Doors—Anson & Gilkey. Frames and interior trim—Barber & Ross Co. Colonial stairwork—Coffman Stair Co.

HARDWARE: By National Brass Co.

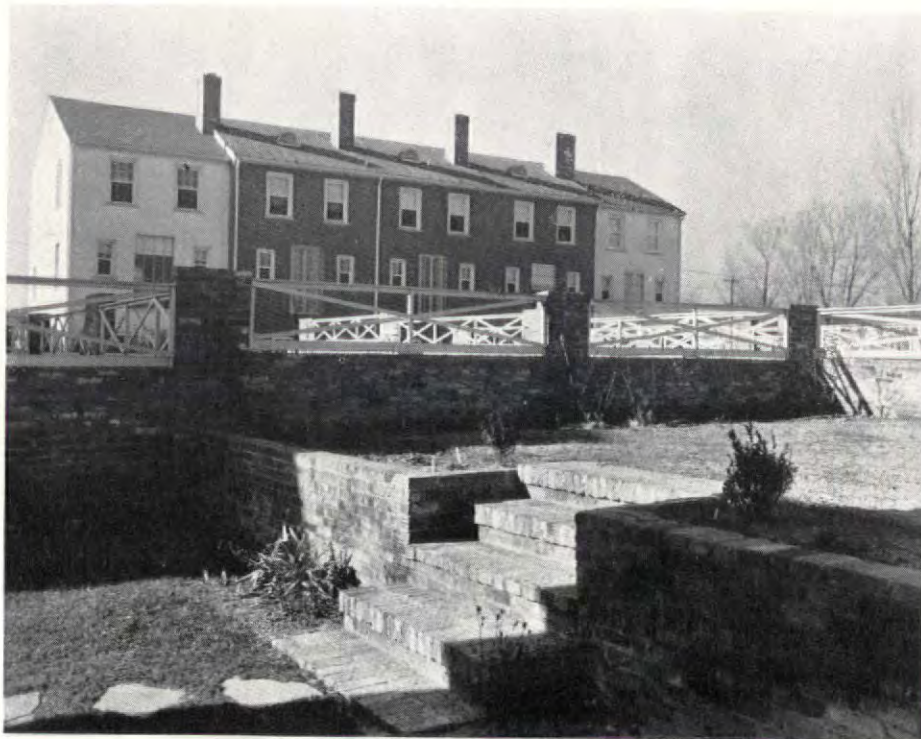
PAINTS: By Benjamin Moore Paint Co. and Sherwin-Williams Co.

ELECTRICAL INSTALLATION: Wiring system and switches—Westinghouse Electric & Mfg. Co. and General Electric Co. Fixtures—Lightolier Co.

KITCHEN EQUIPMENT: Cabinets and sinks—metal, Youngstown Steel Co. Range—gas, Harry C. Weiskittel. Refrigerator—Edison, General Electric Appliance Co.

BATHROOM EQUIPMENT: By American Radiator—Standard Sanitary Corp.

HEATING: Oil fired warm air system, filtering, humidifying. Furnaces—Dowagiac Steel Furnace Co. and Premier Furnace Co. Oil burners—Delco Appliance Corp. and Bettendorf. Controls—Minneapolis-Honeywell Regulator Co. and Delco Appliance Corp.



*"Is it really
OUR business to
recommend air
conditioning?"*

"SOMETIMES I wonder just how far my responsibility toward our clients goes. Air conditioning is one thing that comes up more and more often. Is it really my business to recommend it?"

"Our job is to see that a sound building is designed . . . a building designed for use. I guess back in the old days, architects used to wonder if it was their responsibility to recommend central heating plants . . . or even washrooms!"

We wouldn't venture to tell any architect that he has a direct responsibility to recommend air conditioning—but in the broad interest of his client he often feels that he should . . . and we know that most architects often do.

In fact, the competition for business today has almost made it necessary that most stores install air conditioning. And every architect knows that the cost of air conditioning is much greater after a building is up than when it is included in the plans. That's a service architects can give to their clients that's really worth something!

When you consider refrigerants for an air conditioning system, you'll be interested in knowing these things about "Freon"* refrigerants: (1) they are *safe*; (2) they permit lower first costs; and (3) they save on operating costs.

Equipment using "Freon" refrigerants is light-weight and compact, occupying but little floor space and low headroom. It operates at low

pressure, permitting lighter castings. These are among the factors contributing to lower first cost.

Operating costs are low, because "Freon" refrigerants have no corrosive action on any of the metals used in refrigerating machinery. This permits selection of materials which provide maximum heat transfer and efficiency.

"Freon" refrigerants are used almost exclusively in new air conditioning installations because of their unique safety. They meet the safety

specifications set by the Underwriters' Laboratories of Chicago. Use of "Freon" refrigerants avoids any possibility of penalty to your client in insurance rates, and promotes safety of life and property.



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A MESSAGE TO THE ARCHITECTS OF AMERICA

From the ORIGINATORS of the Steel Interlocking-slat Rolling Door

You have a *right* to be proud of the far-reaching progress that is evident in today's architecture . . .

Especially so because that progress is the result of a desire to achieve something *better* — not just something different.

We think we have a right to be proud too . . . proud of the close association we have had with so many architects during the past fifty years. We are even a bit boastful, now and then, of the fact that Kinnear Doors have so *often* been specified, for *so many* of the outstanding projects in this country and abroad.

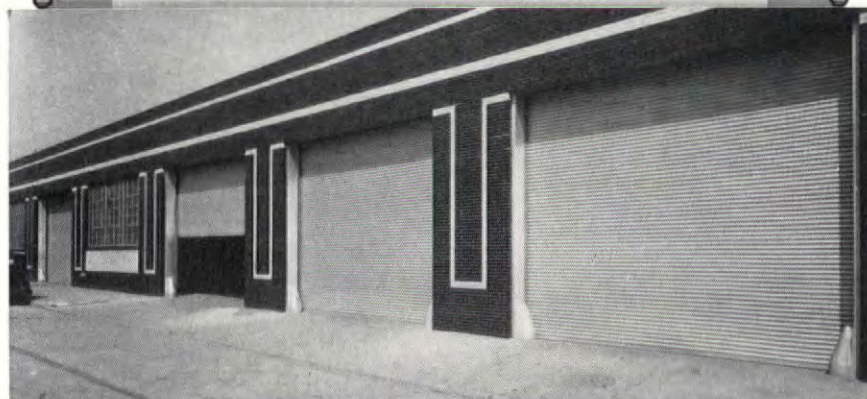
It is particularly gratifying to know that architects *specify* these famous doors for much the same reasons that Kinnear *originated and developed* them — because they were *better*, and not merely *different*.

Better? Yes! There is nearly *half a century* of actual performance, under almost every conceivable condition, to prove it. The smooth, easy, *coiling upward action* of the space-saving Kinnear Rolling Door is the ultimate in *lasting* convenience and economy.

Architects gain, too, when they specify Kinnear. They get the full cooperation of one of the most complete door planning and installation services ever offered. They know that the distinctive design of the interlocking-slat curtain will harmonize with *any* architectural treatment. And they have the assurance that Kinnear Rolling Doors are backed by a *nation-wide* service organization.

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KINNEAR

ROLLING DOORS

STANDARDIZED HOUSES

(Continued from page 376)

are employees of local telephone, railroad and utility companies and formerly lived in two- and three-family buildings. Purchasers have an average age of about 38 years.

Since all lots were priced the same and were sold (for immediate development only) on a first-come-first-served basis, the order in which they were taken is an interesting commentary on consumer preference. First to go were those facing the two small parks; next, those located on the street curves, next, those located in the northeast corner of the tract where the grade is steepest and the view most attractive.

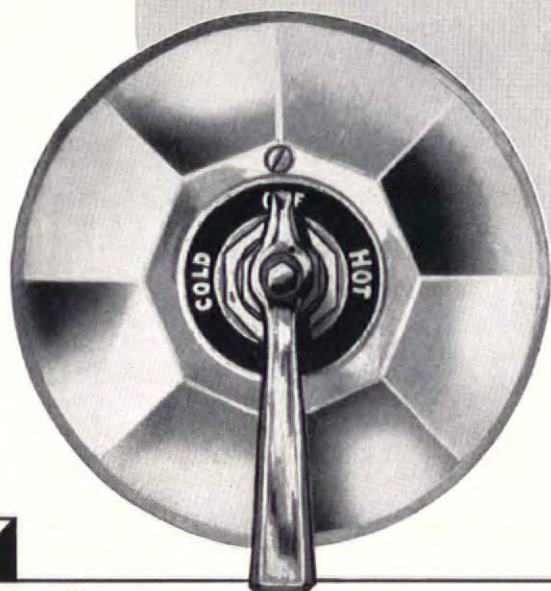
Lessons. While Builder Laydon's first sally into the low cost field has been a success, he has admittedly made some mistakes, learned some lessons. Now in the planning stage, his second subdivision will benefit accordingly: 1) More island parks will be provided, because Laydon is certain that their added cost will be more than offset by the speed they will contribute to the sales program. 2) Integral concrete curbs and gutters about 3 ft. wide will border all streets to enhance the appearance of the development, improve the drainage of the tract, provide walking and roller skating areas for the residents, protect front yards from careless automobile drivers and forestall the criticism of competitive subdividers which adversely affected sales at Wilmot. The curbing will be low and sloped so that it will not be necessary to change its profile where a driveway intersects the street. 3) These improvements will be made as soon as possible, and public areas will be paved or planted early to impress even the first home seekers who visit the new site. Builder Laydon has learned that the provision and appearance of public facilities go a long way toward selling the houses quickly and therefore cheaply. 4) Plans and specifications will be made a part of each sales contract—even for speculatively built houses. This was not done at Wilmot, and several initial purchasers have hounded Laydon to install in their houses some of his later improvements.

It remains to be seen whether or not the fifth contemplated change—the assumption by the builder of the sales program—will be an improvement. Realtor Beazley, of course, believes not, but worries little about the loss of the business. He will continue to handle all financing details in the new Laydon subdivision and will be busy enough with other low cost house sales activities. Since he broke from realty tradition and decided to take a 4 per cent commission on volume business—an action which automatically ousted him from the local real estate board of 5 per centers—Beazley and his associates have assumed the sales programs at a half dozen low cost subdivisions, last year earned the distinction of having sold more houses than any other New Haven realtor.



LEADERSHIP

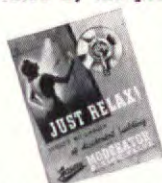
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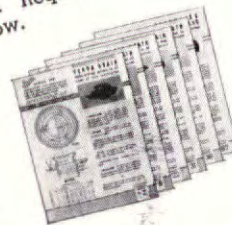
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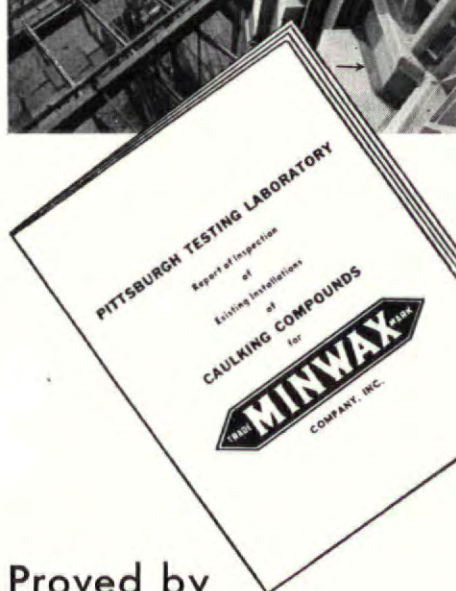
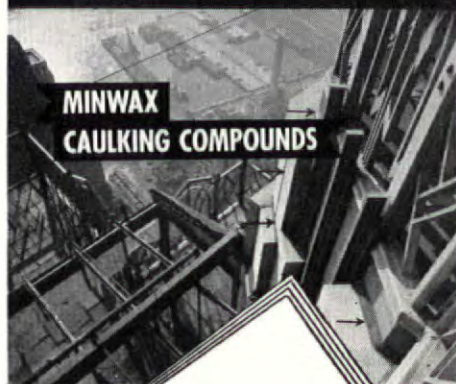
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AUDUBON VILLAGE

(Continued from page 344)

and asphalt shingles. Inside, once conventional wiring, plumbing and warm air heating systems have been installed, the walls and ceilings are lathed and plastered, and floors are finished with oak. (Exception: utility room floors, concrete; kitchen and baths, linoleum.)

With Wheeler Engineering Co. employing 632 workmen fortnight ago and WPA supplying some 350 others for grading, paving and landscaping, Col. Westbrook hopes to move in the first shipyard worker family by May 3, the last family by June 1—less than four months after the construction contract was awarded.

Critique. From the standpoint of production speed, booming Audubon Village is a distinct credit to Col. Westbrook, Consultant Roensch, Architects Hettel and Stonorov, Wheeling Engineering Co., Day Housing Corp., the project engineers and FWA's defense housing program. Impartial observers may feel that speed has been bought at some expense in construction techniques.

Wall and partition sections which comprise the basic structure of the houses are not completely prefabricated, do not therefore have the rigidity that most prefabricators give to their products. It is obviously true that sections which are reinforced with short lengths of horizontally applied sheathing boards cannot take the same punishment that similar plywood sheathed sections will withstand. Day Housing Corp. counters that board sheathing is structurally adequate, is easier to obtain, is cheaper in first cost and involves less waste. (Waste estimate for Audubon Village's prefabricated framing: ½ per cent as compared with about 6 per cent in conventionally framed houses.)

There appears to be unnecessary carelessness upon the part of site laborers in that sections are not carried and rested in a flat position which is essential to the maintaining of their strength and shape. Moreover, by walking upon the sections, the laborers frequently damage the window and door trim. Finally, the sections suffer from excessive handling because they are not always stacked in the inverse order of their use. It would appear that a little more care in the handling of sections between their fabrication and erection, while it might require a little more time, would justify the effort.

As far as Audubon Village is concerned, prefabrication rests its case on its contribution to the speed of the development and to its cost. Without it, the project would have cost about \$3,500 a dwelling unit exclusive of land and utilities (based on the average bid of ten conventional construction sub-contractors) and could not have gone ahead. Prefabrication brought the estimate below the \$3,000 average set by Congress as the unit-cost ceiling for the Lanham Act I program.



ARE *You* SAFETY MINDED?

Safety-minded officials and traffic officers are increasing their efforts to eliminate avoidable causes of accidents *outdoors*.

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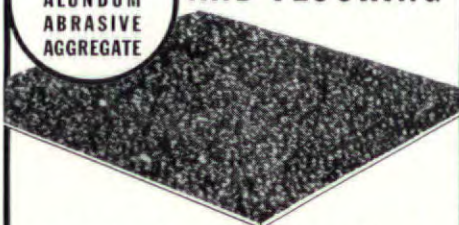
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The non-slip efficiency of ORCO SAFETY TREADS AND FLOORING is obtained by the uniform distribution of Norton Alundum Abrasive Aggregate in a base of resilient, sound-absorbing rubber. Orco Treads are non-slip throughout nosings. Even when wet, Orco Treads and Flooring retain their abrasive, non-slip quality.

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STAINLESS Steel and Porcelain enamel are bringing new freedom of design to modern bathrooms. No longer are you restricted by the limitations of conventional materials.

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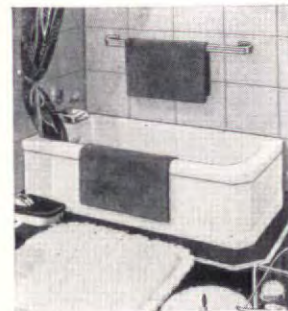
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These two materials have been thoroughly proved in service. They will last as long as the house and still look new. Water and soap will not harm them.

Write in for further details and the names of fabricators in your locality.



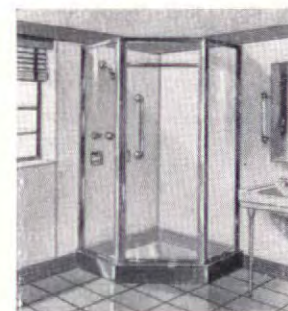
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Steel windows — narrow ones on each side of the medicine cabinet furnish a pleasing variation in style.



Shower stall of porcelain enamel on U·S·S VITRENAMEL. Comes ready for installation. Saves time and money.



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RENT CONTROL

(Continued from page 345)

service of rental properties in conjunction with a room registration service is proposed.

Progeny. Although the Randolph bill is intended only for the District of Columbia, its significance extends beyond. It may spawn a spate of similar bills in the State legislatures. In fact, the two which New York's law makers had under consideration last month show a strong filial resemblance. These also attempted to freeze rentals and to set up a permanent State rent-control board which would require semi-annual reports from landlords. Main differences: exemption of high rental properties, discontinuance of rent controls when vacancies rise to 5 per cent or more.

Appraisal. If it becomes necessary to snag runaway rents, clearly legislation of the sort suggested by NDAC is the more desirable. But it is difficult to see how Building can benefit from any kind of rent control law. All such measures are essentially negative in purpose.

Two years ago the Citizens' Housing Council of New York made an elaborate study of earlier attempts to regulate rents, concluded that an entirely new approach to the problem is necessary. Rent control laws of the 1920's succeeded only in stopping the worst excesses. They suffered from poor administration, did nothing in anticipation of future emergencies. To resurrect these old laws and renovate them is not wise, the Council warns. Instead, it calls for legislation which 1) can be applied to both particular and general situations as they arise, 2) establishes a permanent general administrative agency, 3) sets up a specialized landlord and tenant court, 4) provides a scientific basis for determining fair rents. In the same breath the Council's report admits that rent control measures do not remove the housing shortage which sends rents soaring.

Here is the nub of the knotty rent control problem. Despite superficial similarities to World War I's pattern of events, conditions today are vastly different. Non-existent then but operating now are positive measures designed to keep rents properly corralled by eliminating local shortages—FHA's Title I and new Title VI, the slum clearance agencies, the Lanham Act, and other pieces of legislation appropriating large sums for emergency defense housing. Really owners too are more aware of the repercussions that may fall on their necks if rents are allowed to run hog-wild. Registration services and educational programs can do much to secure better distribution of available housing facilities in boom towns. All these factors demand consideration along with any rent control proposals.

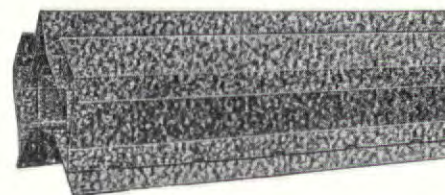


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MANY an old Colonial dwelling that echoed to the midnight cry of Paul Revere still stands today . . . an eloquent reminder that our forefathers knew how to defend their homes against the attacks of weather as well as of martial foes.

Safely through the storms of two centuries these historic homesteads have come down to us—gleaming monuments to those early Americans who planned them well and wisely protected them with pure white lead.

Today not only "every Middlesex village and farm" but a whole nation of homes knows white lead as its first line of home defense against the elements. And America's architects have played an important part in spreading the tradition of white lead's excellence in protecting and beautifying property.

They know that Dutch Boy Pure White Lead is the dependable ally of the man who plans for the future. That it means paint which sturdily resists the onslaughts of rain and snow and sun . . . keeping homes and other buildings young in appearance and guarded well. Paint which wears slowly, smoothly—instead of cracking and scaling—thus saving the expense of burning and scraping when it finally does become time to repaint.

And now the Dutch Boy offers architects two important new developments: a *Triple-Improved Dutch Boy Paste White Lead*—better than ever in whiteness, body, hiding; and the new *Dutch Boy Ready-to-Brush Pure White Lead Paint*.

Both are worthy of your proudest work.

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eliminate need of post-holes, pouring concrete and waiting for it to set. They permit installation of fence in any weather and hold the fence permanently in line in any type soil. These anchors, deep-driven to correct angles for maximum bracing and strength, keep the posts rigid despite frosts, thaws, stresses, strains. Permit the fence to be moved, too, without loss.

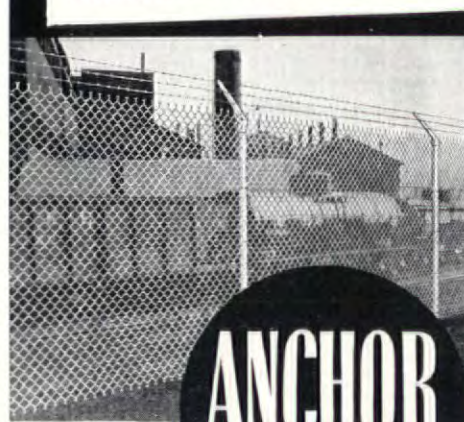


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FHA's TITLE VI.

(Continued from page 346)

these installments amount to 10 per cent of the property's original value, the tenant takes title to the property and assumes the mortgage. As long as the builder is mortgagor under the rental and rental-purchase plans, he makes all the usual mortgage payments including the mortgage insurance premium, which in this case is $\frac{3}{4}$ per cent— $\frac{1}{4}$ per cent more than the regular premium. But, when title is transferred to an owner-occupant, the insurance premium on his FHA-insured mortgage is the regular $\frac{1}{2}$ per cent.

The monthly mortgage payments covering interest and amortization remain substantially the same during the first sixty months (five years) and will then decrease to about five-sixths the amount of the 60th payment. On a 20-year $4\frac{1}{2}$ per cent defense housing mortgage, these payments, exclusive of mortgage insurance premiums, will approximate \$7.11 per \$1,000 per month (\$28.44 on a maximum one-family house mortgage of \$4,000) for the first 60 months and \$5.93 per \$1,000 thereafter (\$23.72 on a \$4,000 mortgage). While Title VI sets 5 per cent as the general maximum interest rate on these mortgages and authorizes the FHA administrator to approve a rate as high as 6 per cent for particularly risky mortgages, FHA has ruled that no defense mortgages may bear more than $4\frac{1}{2}$ per cent interest—the present maximum for the regular program.

The financier. Any financial institution approved for participation in the regular FHA program may lend money on defense houses. And, for the time being, these institutions will find no difference between the operation of the two programs except that a special form of mortgage and note is required for the defense program. Only major variation is in the foreclosure proceedings. To encourage financiers to lend money on the admittedly more risky defense projects, FHA has broadened its liability in the event of foreclosure. Thus, if the unpaid principal of a foreclosed mortgage exceeds 80 per cent of the property's original appraised value, FHA in addition to its regular insurance payment (made, as usual, in Government-guaranteed $2\frac{3}{4}$ per cent debentures) will help foot the foreclosure costs with an additional debenture payment not exceeding 2 per cent of the unpaid mortgage principal (up to \$75) or not exceeding two-thirds of the foreclosure cost, whichever is greater.

The public. Anyone may move into a FHA-insured defense house, whether or not he is actually participating in the defense program. FHA has no control over the houses once it has approved their construction, will be happy as long as the builder makes his monthly payments to

the financier. Being the sole administrator of his project, a builder may rent or sell his houses to anyone at any price.

The tenant or tenant-purchaser need not originally be a qualified FHA mortgagor, for FHA's interest in the occupant's status begins only when title to the property is transferred from the builder. At that time the prospective owner must have acquired a 10 per cent equity in the property and must live up to FHA's comparatively lenient credit requirements for defense housing mortgage insurance. Since, with the exception of length of the amortization period, mortgage terms will be the same for owner-occupants under either FHA's regular or defense program, chances are that but few would-be owners will submit themselves to the more stringent credit examination that goes with the former.

The houses. While one to four-family buildings are eligible for insured defense mortgages, FHA officials are confident that at least 95 per cent of the program's estimated 25,000 dwelling units will be contained in one-family houses and that, despite their inherent construction economics, row houses will account for but a small part of the total.

PROPELLER PLANT

(Continued from page 350)

edges to gauge the accuracy of their work.

Most of the machine tools used in the production of the 675 parts which comprise a three-bladed controllable pitch, full feathering, reversible airplane propeller are electrically operated. To permit maximum flexibility in the arrangement of these machines, a network of ceiling-hung continuous bus bars was installed.

Protection. Effective day-time camouflage would, admittedly, be well nigh impossible, but a night-time blackout would be comparatively easy to accomplish by covering all windows with metal pans. Sufficient shop ventilation would be obtained by opening the lower row of movable sash in the strip windows and by turning on all roof ventilators.

Meanwhile, anti-sabotage precautions are already in effect: 1) A heavy barbed-wire-topped mesh fence surrounds the property. 2) Its four gates are manned by a staff of husky plant police who question all comers and continually survey the grounds from trim, glass-enclosed guard houses. 3) Powerful floodlights mounted atop the plant's roof are controlled by "electric eyes" which automatically switch them off and on when daylight goes above and below a pre-determined intensity. 4) All visitors must be American citizens and must be continually accompanied by a company official who, like all C-W employees, must plainly display his identification badge.

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**...new materials, new
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Flintkote Cold Process Roofing, introduced in 1940, is the result of more than 10 years of extensive research, product development and field testing. This is the first practical system for *cold application* of roofing materials... the first *bonded cold-applied built-up roof*.

To everyone concerned with flat roof construction and roof maintenance, Flintkote Cold Process Roofing is of vital interest. All Cold Process Roofing materials are packaged... uniformly factory-packed to assure uniform results. The fire hazard during installation is eliminated because no heating equipment is required.

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Cold Process Roof. Static Asphalt outlasts any other type of bituminous coating exposed to the weather. It will not "alligator," crack, slip, flow or support combustion. It contains no volatile materials.

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ATLANTA • WACO • LOS ANGELES

LETTERS

(Continued from page 42)

is too heady to be just; of private architects because as a body they have not the guts nor the organization to stand up for their professional rights. It is not a question of knowing all about low cost housing. Nobody knows very much. But the private architect of average intelligence knows that he doesn't know the proper answer and is willing and eager to try and find out. The Federal housing

architect I am afraid hasn't yet reached that point.

I do not quite understand to what "chance to help" the *Federal Architect* refers. It would seem to consist in advice to sit back and not criticize. The architectural profession does not criticize the "very uninteresting exterior design" except in passing. It should, however, criticize incompetent bureaucracy when evident. It should criticize the unwarranted elimination of a profession from the only service it can contribute to national defense. It should criticize, unless it has become impotent, the *Federal Architect's* attempt to cloak a certain amount of bungling and

a slap in the face to a profession which sincerely wants to help by maintaining that it is the patriotic duty of every architect to let government agencies perform all housing functions unhindered by the profession itself. . . .

WINSTON ELTING

Chicago, Ill.

Forum:

Your March issue prints an account of a prefabricated house. This house, sponsored by the Willis-Way Construction Co., is typical of many structures of this kind which have found their way into the pages of THE ARCHITECTURAL FORUM.

For editorial convenience, the editors have called houses of this type "prefabricated." But close examination of the examples which they publish, show that while they are sometimes pre-cut, prefabricated or prebuilt, they are almost always sponsored by a manufacturer of one material and that each example contains an excessive amount of that material.

We admire the zeal and determination with which these companies seek to correct the weaknesses of their several materials in order to make them serve *all*, or almost all structural and finishing purposes in houses. We admire the skill with which the editors adapt the style of *Time Magazine* to describe the prefabricated characteristics of these products.

But on page 531 of the December 1940 issue it is admitted that "With well-padded, undocumented production figures, prefabricators have boasted their ability to beat conventional house builders in speed, volume, cost, quality and a host of other factors. A few leaders have actually fulfilled a few of these boasts in a few isolated projects, but the unconvincing accomplishments of the industry as a whole have prompted many observers to rhyme prefabrication with prevarication."

After reading this damaging admission in the December 1940 issue, we *do not* admire the train of thought by which the March 1941 issue concludes that the government's failure to buy thousands of these "prefabricated" houses is due primarily to the sinister influence of the American Federation of Labor. This is the remarkable conclusion you draw on page 178 following an embittered consideration of the fate of the Willis-Way house—one which has yet to receive the approval of government officials. You say the "A.F.L. is the biggest barrier between prefabrication and defense housing, for the A.F.L., well entrenched in the construction field, influences the attitude of the contractors which, in turn influences Public Buildings Administration. Moreover, that the A.F.L. has learned that it can directly influence government.

"Example: the union has seen to it that the prevailing wage clause which helped kill FHA's rental housing program, has been written into every public building law including the Lanham Defense Housing Act. Out to save its neck at the risk of

(Continued on page 64)

Maybe this Answers Your Question...

Fleisher Engineering & Construction Co.
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PORT KNOX, KY.
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REPORTS
P.O. BOX 1789
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March 4, 1941

Grand Rapids Hardware Company,
Grand Rapids,
Michigan.

Re: Defense Housing Project
Fort Knox, Kentucky

Gentlemen:

We are rapidly completing the installation of 7,000 sets of your Invisible Sash Balances for the Defense Housing Project which we are constructing at Fort Knox, Kentucky, for the Public Buildings Administration.

We are so pleased with the manner in which these Invisible Sash Balances are operating that we want to express our satisfaction with your product.

We have found the Grand Rapids Invisible Sash Balances very easy and simple to install. We are exceedingly well pleased with the fact that we have not had to replace any of your sash balances. This is contrary to our experience on other Projects with other balances.

On other jobs where we have used different sash balances, we have found it necessary to replace a large percentage of them even before we are able to obtain acceptance of our work.

We hope that we will be able to obtain another Project using sash balances. We can assure you that we will use the Grand Rapids Invisible Sash Balances if the design is such that double hung windows are used.

Very truly yours,

FLEISHER ENGINEERING & CONSTRUCTION CO.

R. W. Taylor
Construction Manager

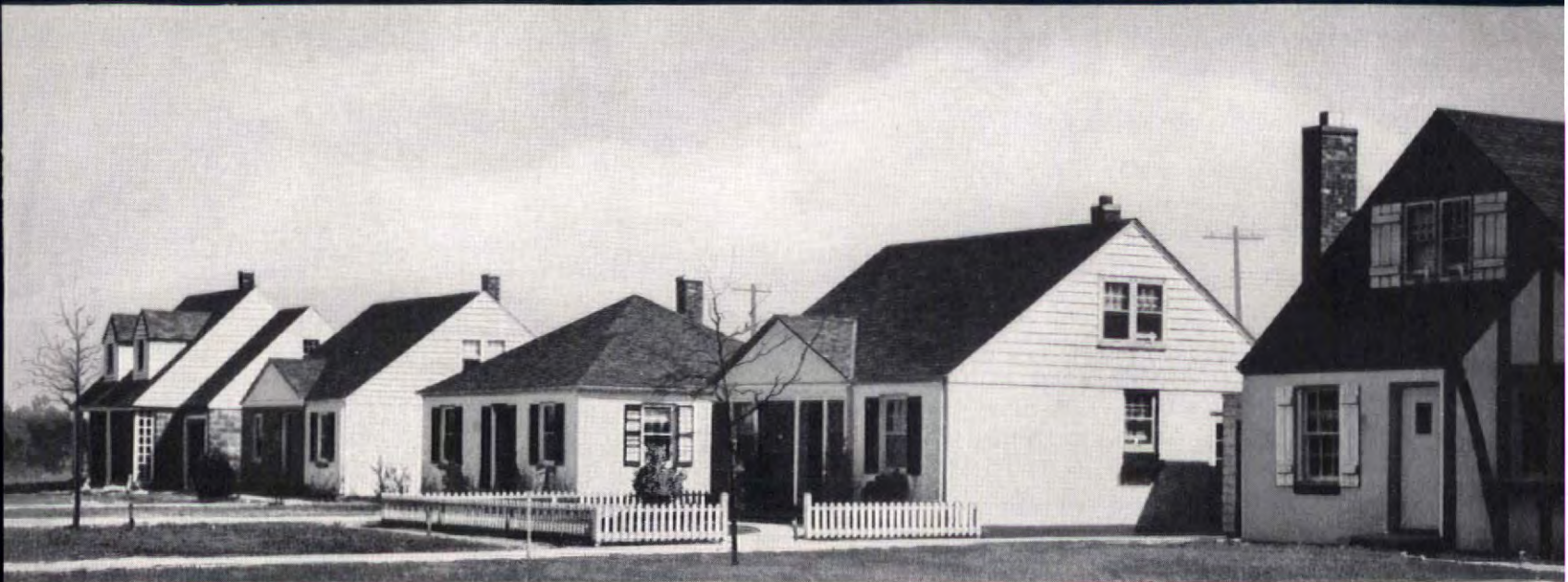
RWT:I

... as to which Balance is Best!

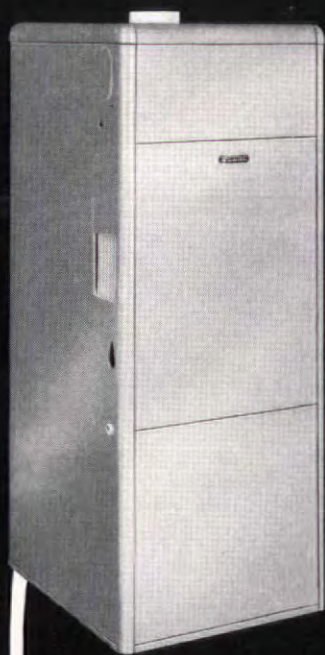
Write for CATALOG 41-SB-1, illustrating and describing the "GRAND RAPIDS INVISIBLE" Sash Balance, with detail drawings of window installations, with and without weather stripping.

GRAND RAPIDS
Invisible
SASH BALANCE

GRAND RAPIDS HARDWARE COMPANY
GRAND RAPIDS, MICHIGAN

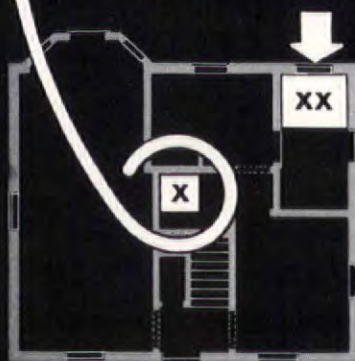


How \$600 Saved with JANITROL heat resulted in one of America's Finest Home Projects



Area X, under stairway, contains entire heating plant where basement stairway used to be.

Area XX contains laundry and is only space required to replace entire basement.



R. C. Dewey of Buffalo, New York, has realized the hope of a lifetime in the building business. He can now deliver to a new home buyer about \$600 greater living space and equipment values than was possible before the development of his new type homes.

Dewey now puts into these beautiful small homes spaciousness, comfort and conveniences heretofore possible only in homes of larger size at greater cost. He has set a standard of "More home for the money" that builders throughout the land can well imitate both for quick sale and big value to the home owner. They are small homes but of quality and workmanship found generally in high-priced homes only.

Entirely New Architectural Conception Really Gives "More Home for the Money"

"It was Gas Fired Janitrol Heat," says Mr. Dewey, "that made that development possible." The Janitrol Unit, not much bigger than a steamer trunk, is tucked into a small closet under the stairway. Right there we completely eliminate all need for space-wasting heavy furnaces and fuel storage. By a new method of air circulation Dewey eliminates great amounts of pipe and conduit work. The heat in these homes is astonishingly even and uniform from floor to ceiling, from inner to outer wall. Eliminating basements saved \$500. Lower furnace and

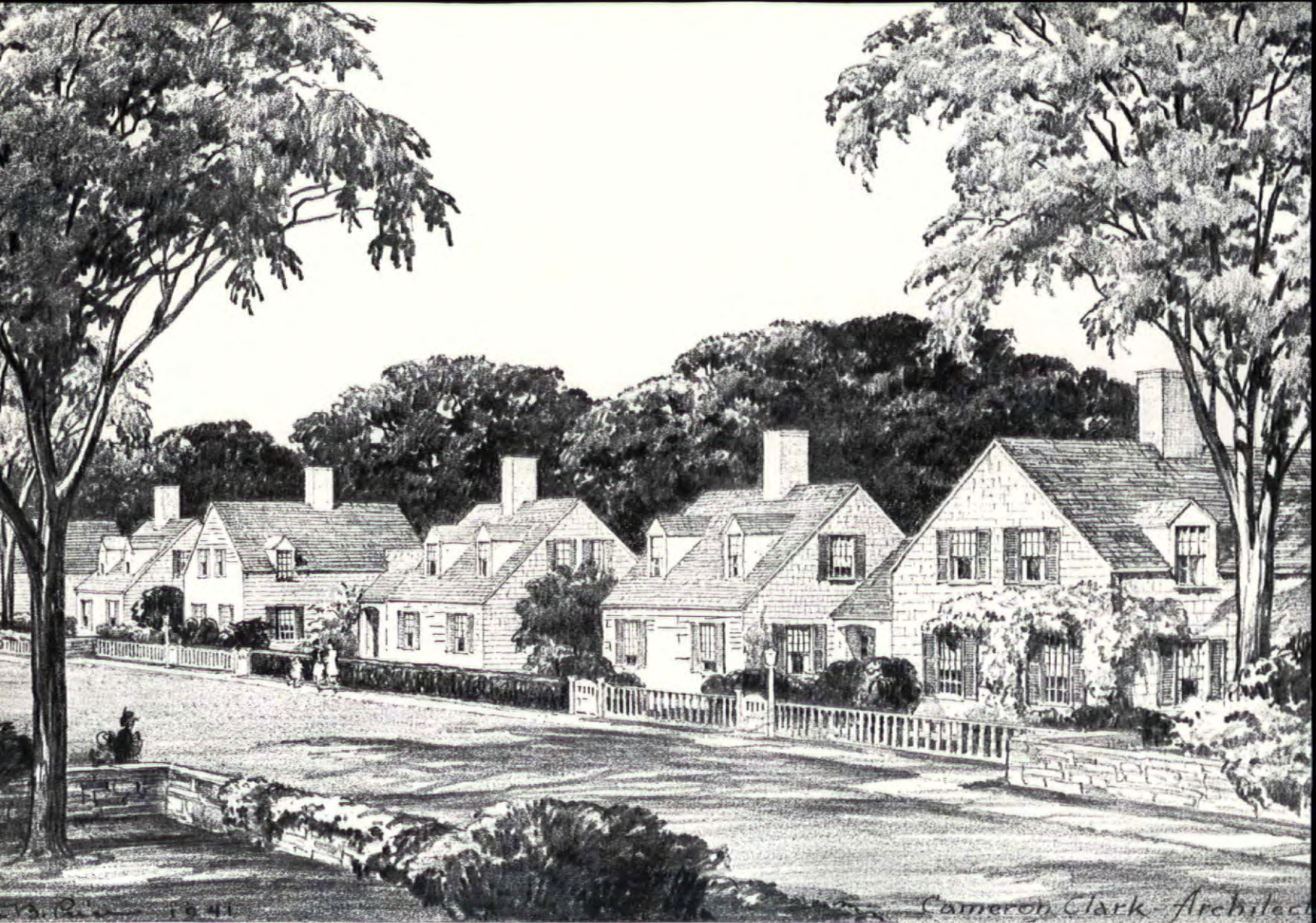
installation costs saved \$100. That money went into more usable room, a model little laundry and other devices. Architecturally sound, beautifully constructed, these homes have really set a pattern for the small home builders of America.

Use the Years of Heating Experience That Made These Homes Possible

The heating unit around which the architects designed and Mr. Dewey built these homes was the result of years of space-heating experience. Trained men with benefit of that experience are available to builders or owners who build where gas for heating is available. Wire, phone or write for consultation with a Surface Combustion Heating Engineer. He will gladly advise you, whether your project is large or small, in home or commercial heating.

SURFACE COMBUSTION CORPORATION, TOLEDO, OHIO





STUDY

FOR A SMALL HOME COMMUNITY-PROJECT

By CAMERON CLARK

for the United States Gypsum Company

* * *

The object of this study is twofold. First, to encourage, recognize and publicize original design thinking. Second, to show how new materials and construction methods which have been developed by research provide strength, fire protection, comfort, safety and decoration plus faster application and lower costs for every type of building.

This is the second of such studies. The first appeared in the March FORUM. In future issues, you'll see other studies of timely problems by well known architects. The United States Gypsum Company solicits your comments on this and other studies.

* * *

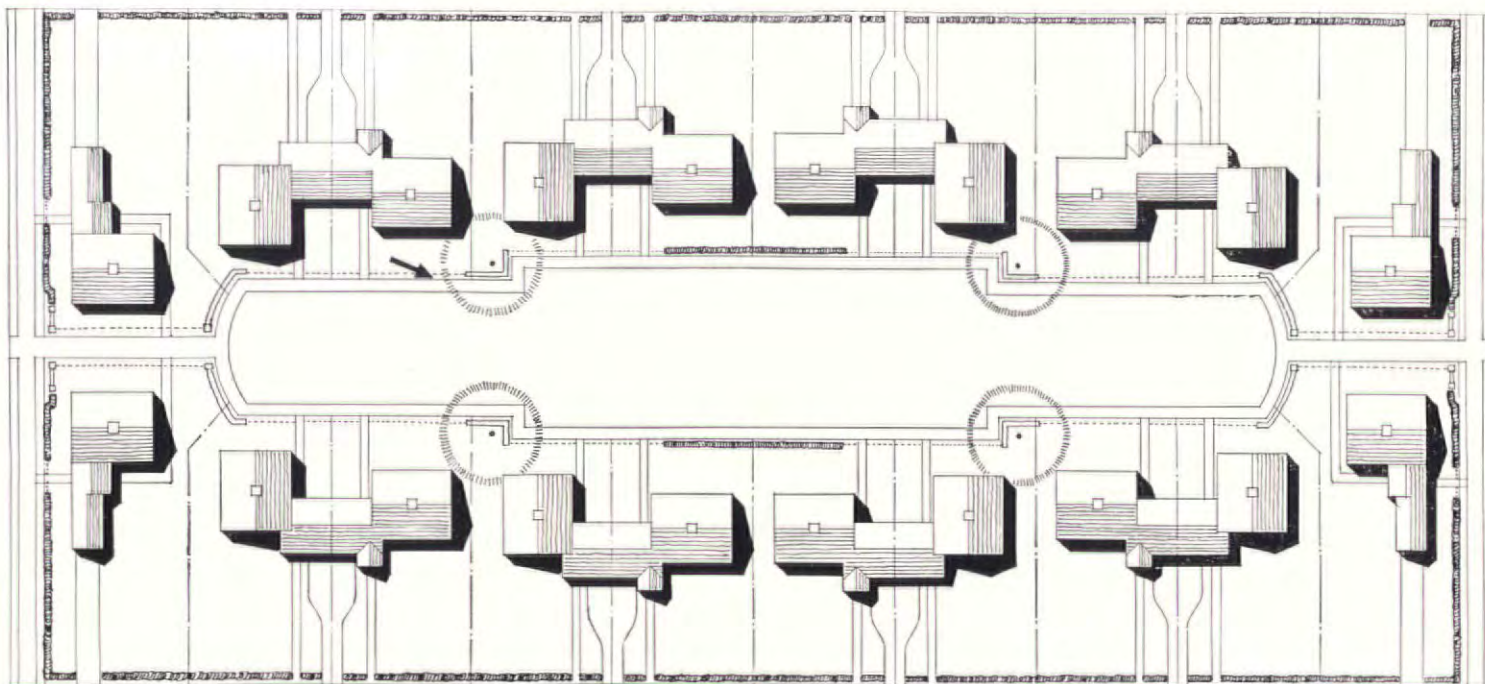


Cameron Clark studied architecture at Massachusetts Institute of Technology. He won the Rotch Traveling Scholarship and spent two years studying in Europe, including a period at the American Academy in Rome. The Rotch Scholarship was the first traveling scholarship established in America.

Mr. Clark has been practicing architecture since 1916 and is regarded as an authority on colonial architecture. He is registered in the states of Connecticut, New York, New Jersey and Pennsylvania.

(Advertisement)





SMALL House design has received much attention from architects and real estate developers in recent years. Decided improvement can be observed in small house design. But the problem of arranging these houses attractively in plots for modern living remains still a problem. In this study I have tried to contribute something of interest as well as a suggestion to plot developers.

In a rectangular block of the gridiron plan, a common layout in city or suburb planning, the customary solution is still largely a dull, uninspired row of unrelated shapes. The rear areas of the lots are catch-alls for various objects often subject to desecration by careless householders to the detriment of the more discerning. But why not dedicate this area as a sort of common—a plot so attractive and useful that it will not be marred by unthinking owners? Make it a secluded and protected spot, both useful and beautiful, away from the highway and the dangers of traffic. Use planned shrubbery to enclose it attractively. Compose the roof lines of the houses themselves with regard to

each other. Face the garages toward the street. Place the homes to exclude traffic from the common. In short, design the entire block as an attractive group—a compact community.

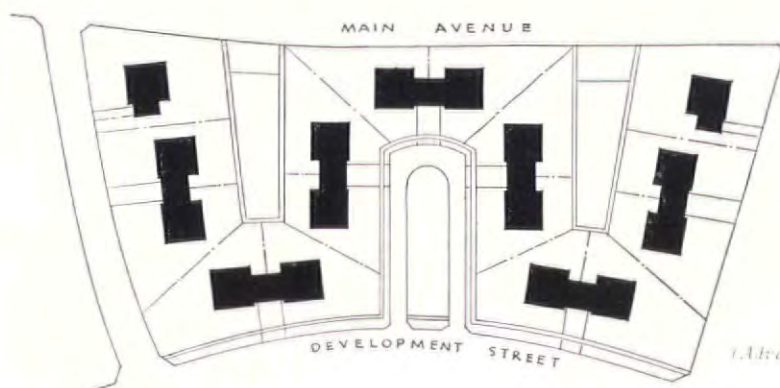
Group variations can be provided by planning small park-like spaces instead of interior play areas. Curved street lines and angular bends in the street layout are other diverting arrangements. Winding roads slow the speed of traffic and reduce noise.

I submit these examples as studies toward that end. With the varying requirements of families, small and medium sized houses have to be supplied. This is helpful in the creation of more interesting community compositions. Here we have shown full two-story houses interspersed with single and story-and-a-half structures.

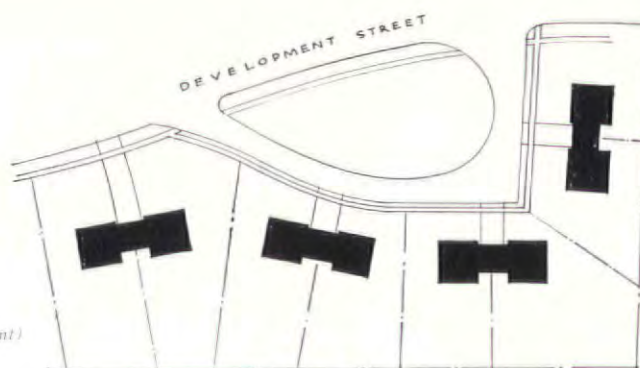
Structurally every home must have: floors, walls, partitions, and a roof; they are the essentials of shelter.

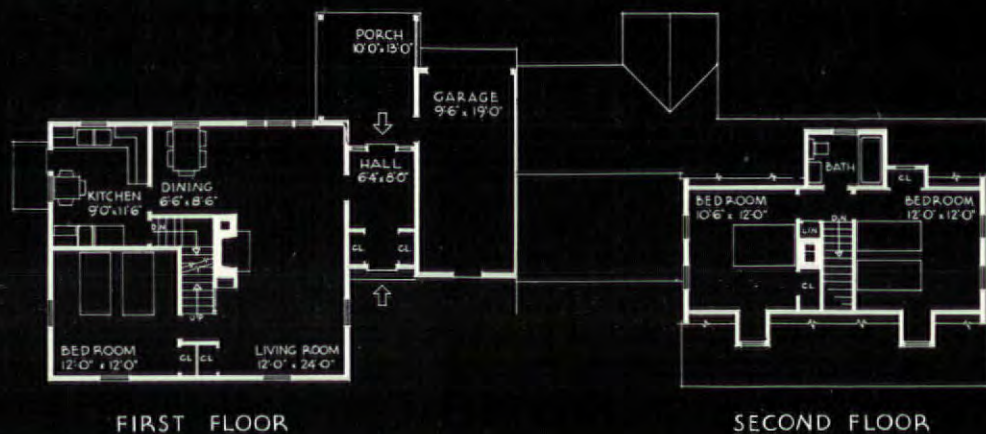
Materials and methods are available for producing these necessities in every home at widely varying costs from the minimum values on which loans can

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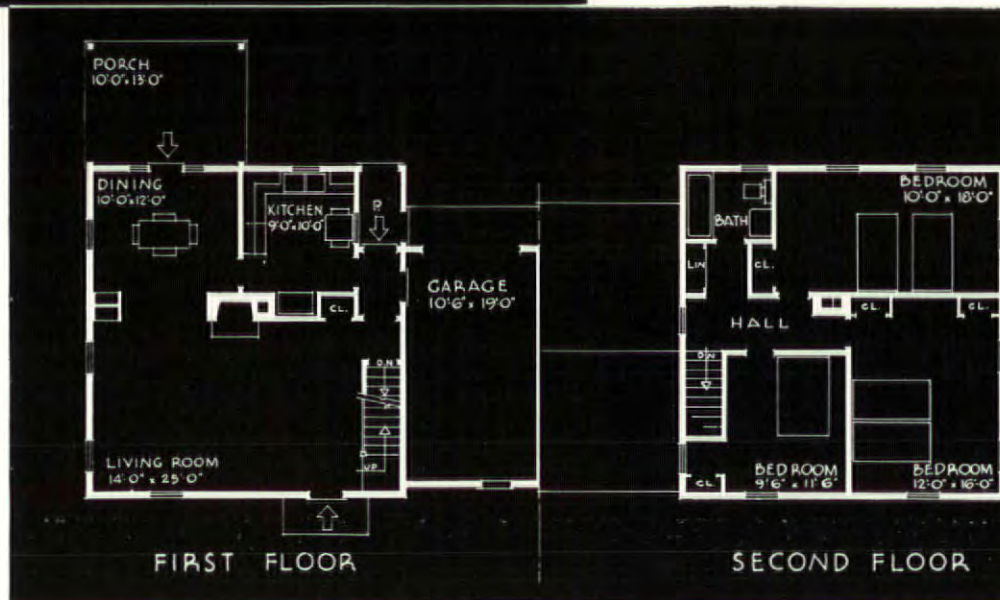
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**POSSIBLE
FIVE
ROOM
HOUSE**

**POSSIBLE
SIX
ROOM
HOUSE**



be negotiated to higher priced constructions that add many comfort features.

The USG Research Laboratory in Chicago has developed 42 different assemblies of their materials which produce 42 distinct varieties of exterior wall constructions. 33 of these assemblies provide both exterior and interior enclosures for wood stud walls. They provide heat insulation in varying degrees and produce widely varying decorative results both without and within. Each assembly has been rated in terms of its cost per unit area; its weight; its heat insulating value; the degree of fire-protection it affords; whether it is self-decorating or must be decorated; how frequently decoration is required, if at all. Then there is a summary of the distinct advantages each assembly provides for any given structure. These assemblies range in use from simple structures, where economy is the feature, to walls that display the maximum in insulation, fire protection, permanence, and low maintenance. There are also nine distinct assemblies for masonry walls, all similarly rated.

But the United States Gypsum Company has not stopped with walls. 17 types of wood stud partitions are available, from the simplest, most economical, and self-decorating, to a partition that will hold back fire for an hour or more. Each of these structures again is

rated according to standards quite similar to those used for exterior walls. The 17 different partition assemblies represent 13 progressive steps in cost. They range from \$1.70* per square yard, including wood studs with both wall faces pre-decorated, to \$3.70* per yard for constructions representing the maximum in sound insulation, fire protection, and crack-freeness. As well, interior partitions of the non-bearing type, which do not have any combustible materials of any sort in them, are available in type and in thickness variations in an equally wide range of prices and values.





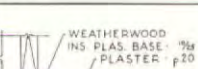

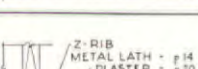
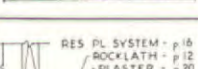
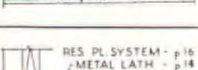
USG has also developed fourteen distinct construction assemblies for the construction of wood joist floors and ceilings and four types for fireproof construction.

On the opposite page a sample section shows how this useful information has been assembled in SWEET'S CATALOG for 1941.

Research intelligently applied to building methods and materials makes it possible for the real estate developer to maintain aesthetic values and true hominess in his plot layouts. He can produce interesting and highly salable communities of moderately priced homes in the \$5,000 to \$10,000 class.

As an example, an average six-room home has about 130 square yards of interior partition work. In such a structure, the difference in cost between the lowest

Construction and Specification Suggestions

	Depth to Face of Finished Ceiling (In.)	Weight Sq. Ft.	Fire Resistance (Minutes)	Heat Conductivity Per Sq. Ft./Hr./" Diff. in B.T.U.'s. (Includes 7/8" Yellow Pine Rough Floor)	Suggested Decoration	Relative Cost	USG Type No.
	7/8	6 lbs.	No test	.28	Texolite, other paint or paper	II	C1
	7/8	5.5 lbs.	No test	.28	Texolite, other paint or paper	II	C2
	7/8	5.5 lbs.	1 hr. with stripped joints	.28	Texolite, other paint or paper	II	C3
	7/8	5.5 lbs.	No test	.21	Texolite, other paint or paper	IV	C4
	1	6.0 lbs.	30	.21	Texolite, other paint or paper	V	C5
	3/4	7.3 lbs.	1 hr.	.30	Texolite, other paint or paper	VI	C6
	3/4	7.3 lbs.	1 hr.	.30	Texolite, other paint or paper	VI	C7
	1 3/8	5.5 lbs.	No test	.28	Texolite, other paint or paper	IX	C8
	1 1/4	7.3 lbs.	No test	.30	Texolite, other paint or paper	X	C9

Section of table comparing various ceiling constructions; complete tables covering walls, partitions, roof decks, paints, etc. can be found in the USG sections of Sweet's 1941 Catalog.

priced minimum assembly developed by the United States Gypsum Company and the highest priced would be about \$260.00* for the building. Similar variances are present in all of the essentials of shelter (partitions, walls, roofs and floors). Even greater variations are present in the selection of interior decoration, plumbing, heating, lighting and cabinet work. All of these items of materials are on a high plane—designed to serve well their function, not cheapened to meet a price demand.

I hope you will see in these perspective sketches an opportunity to obtain pleasing effects by designing houses with related masses and roof lines; houses built of harmonious materials with wall colors carefully selected and with roof tones alike.

I hope this idea will be a contribution to the developer and will lead him in to the highly interesting and I believe entirely practical experiment of designing houses in groups for more enjoyable community living.

*Note: The costs used have been based on current average retail prices estimated in a typical metropolitan market, and are subject to variation with local differences in material and labor rates. The comparisons drawn should maintain approximately the same relationship in any market.

FRAME

Wood studs and joists, concrete foundations and footings.

EXTERIOR WALLS

SHEATHING: USG Gyplap—Costs less than lumber to buy and apply. Will not warp, strong, fireproof. No more economical alternate.

EXTERIOR FINISH: USG Glatex Siding; non-porous, matte glazed, asbestos cement product. Fireproof. Practically no maintenance for life of building. Alternate: painted wood siding.

INTERIOR FACE, EXTERIOR WALLS AND INSULATION: Perforated Rocklath, Red Top Cement Plaster, Brown Coat Floated as finish. 1" Red Top Wool Blanket. Alternate: Weatherwood Insulating Plaster Base (omit wool); lower cost, some sacrifice in fire protection and insulating value. Alternate 2: USG 1/2" Sheetrock and Perf-A-Tape applied horizontally. Advisable where good plaster is not available. Fireproof. Saves about two weeks in completion time.

INTERIOR PARTITIONS

USG Perforated Rocklath. Two coats Red Top Cement Plaster. Brown Coat Floated to sand finish. Alternate: 1/2" Sheetrock. (See Interior Face, Exterior Walls above.)

FLOORS AND CEILINGS

Wood joists rough and finish wood floors.

CEILINGS: Rocklath and Red Top Plaster. (Same as walls.) Alternate: 1/2" Sheetrock.

TOP FLOOR: Perforated Rocklath and Plaster. Thick Red Top Insulating Wool Blanket. Alternate: Top floor ceiling, Weatherwood Insulating Plaster Base. (Omit wool.) Lower price with slight sacrifice in fire protection and insulation. Alternate 2: 1/2" Sheetrock, Perf-A-Tape, Red Top Wool Bats (lower cost) with USG metal Louvers in attic space.

ROOFS

USG Glatex Asbestos Shingles, Dutch Lap method. (Select color.) Alternate: USG Thick Butt Shingles (lower cost).

INTERIOR PAINTING

K-Cemo Primer on all plaster or Sheetrock surfaces, followed by single coat USG Texolite in deep colors, white or pastel shades. Kitchen and bathroom to be enamel.



UNITED STATES GYPSUM COMPANY

300 WEST ADAMS STREET • CHICAGO, ILL.

... where research develops better, safer building materials

(Advertisement)

LETTERS

(Continued from page 58)

delaying the defense program by stifling a budding industry, A.F.L. will do its best to keep prefabrication from getting even a toehold on the defense program."

Persons other than those technically trained or those in the building and construction industry might have believed these words, harsh, intemperate and sav-

age as they are, if you had not printed photographs of the Willis-Way house as a sample product of this "budding industry." One might even believe them if he had a short memory. We remembered what the December 1940 issue said about "the unconvincing accomplishments of the industry as a whole." We remembered especially what was said about "prefabrication and prevarication" in that issue. We urge your readers to look at that Willis-Way house and tell us what they think of its delicate framing and of its joints in the roof running from ridge to eaves. *May we suggest that something inadequate in the*

house itself rather than any sinister influence of the American Federation of Labor might have influenced the judgment of the government officials who inspected the Willis-Way or other prefabricated houses?

Or is the *Building for Defense* section of THE ARCHITECTURAL FORUM just looking for a pretext, *any old excuse to take a crack at Labor?*

We favor inventions which will lower the cost of housing. We do not favor systems which have as their primary aim, the increase of profits to manufacturers through reduction of wages, material and space standards. We urge that the architectural magazines inform us of *all* the factors which enter into the cost of housing, i.e., high interest rates, inefficient and wasteful systems of land subdivision, monopolies in building materials industries, wasteful and mendacious advertising. We plead guilty to joining with other unions in the American Federation of Labor to prevent corporations from foisting upon the government their own materials without regard to their worth in building construction. We condemn the practice of jumping from description of a single prefabricated house toward a condemnation of the American Federation of Labor. We dislike this practice. We condemn the business of using an architectural magazine to broaden the owner's apparent fascist-minded attack upon organized labor.

J. LAWRENCE RAIMIST, *President*

HAROLD C. JONES, *Secretary*

*Architectural & Engineering Guild
New York, N. Y.*

THE FORUM presented the Willis-Way house not so much as an example of prefabrication as an example of a demountable house—the first such house placed on the market. Its construction, essentially the long tried system developed by the Douglas Fir Plywood Assn., is approved by FHA and has been used by local prefabricators the country over.

THE FORUM did not base its case solely on government's rejection of the Willis-Way proposal. The article specifically mentioned ten established prefabrication companies which were tendered identical Government treatment. The accomplishments of these companies (some of which have participated in the Navy's defense housing program) and a few others are convincing. With the phrase "unconvincing accomplishments of the industry as a whole," THE FORUM referred to the dozens of fly-by-night prefabricators which have entered the field during the past ten years, having failed to live up to their boastful advance notices, have promptly folded up. Interestingly, the Federal Works Administration has awarded most of its prefabricated house contracts to newly organized or little-known companies. (For the belated Indian Head, Md. "demonstration project" see page 339). Most leading prefabricators have yet to receive an FWA defense contract.

Name-calling by Readers Raimist and Jones fails to convince THE FORUM that AFLabor has not and is not retarding the development of the prefabricated house industry which promises to speed the defense program and help solve the peace-time low cost housing problem. These promises will look good until AFLabor, by giving the industry a fair chance, proves otherwise.—Ed.

Industry lives in a Glass House



All industrial buildings need a quality Glass. National defense industries DEMAND it!

American industry is expanding **fast**. Defense building moves into high gear — all construction is on the go!

Speed — good workmanship and quality materials are the order of the day. That is why more and more architects, engineers, contractors and plant owners are specifying Pennsylvania Original Corrugated Wire Glass where the utmost economy and safety is required.

Look for these three features in the glass you buy:

Protection . . . translucent finish diffuses light — keeps prying eyes from watching secret operation.

Economy . . . Pennsylvania Corrugated Wire Glass is economical to install and maintain.

Safety . . . Strong wire mesh embedded in glass — an important safety factor. Ideal for skylights, sawtooth and sidewall construction, this original solid corrugated wire glass is the perfect answer to your glass problems.

Write for free 20-page booklet of detailed
installations today or refer to Sweet's
Catalog File Section 718.



PENNSYLVANIA WIRE GLASS CO.

1612 Market Street

Philadelphia, Penna.

FLEXIBILITY FOR ANY WALL DESIGN . . . PERMANENT COLOR

at a practical price!



THIS DISTINCTIVE POWDER ROOM is a striking illustration of the adaptability of *stainproof, fadeproof* and *washable* Nairn Wall Linoleum to unusual walls. Here Nairn Wall Linoleum "Maize," No. 7987 has been installed in the curved walls *without a wrinkle*. The effect of sculptured drapery in Nairn Linoleum "Turquoise" No. 1134 on the recessed wall is obtained with incised lines in the linoleum. Dressing table top is Nairn Linoleum, "Turquoise."

ORDINARY WALLS! UNUSUAL WALLS! Neither present a wall-covering problem when Nairn Wall Linoleum is used. This beautiful, long-wearing material is flexible to the contours of any room. At corners, alcoves and openings it may be smartly rounded, contributing a modern, "streamlined" decorative effect.

Many beautiful patterns — delicate pastels, rich, dark tones, mottled and striated effects—offer unlimited scope for new and unique wall treatments. And, though built to last as long as the house itself, Nairn Wall Linoleum is *low in cost* . . . entirely practical for all *types* of residential installation.

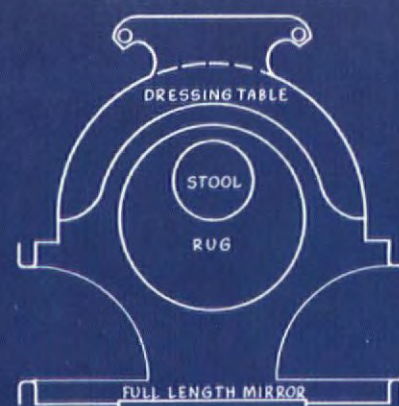
When installed by Authorized Contractors, Nairn Wall Linoleum is fully guaranteed. Write for 16-page *free* booklet, "Nairn Linoleum for Floors and Walls."

CONGOLEUM-NAIRN INC., KEARNY, NEW JERSEY

NAIRN
WALL LINOLEUM



Nairn Wall Linoleum, "Maize," used on curving left-hand wall. This illustration — $\frac{1}{4}$ scale.



ALUMINUM, DEFENSE, AND YOU

2

ANOTHER MONTH!

DEFENSE IS GETTING its aluminum; but priorities are in effect, and many regular users of aluminum are having to do without.

YOU, SIR, may be one of those who have to wait. It *is* a hardship. It *is* awkward. Customer by customer, we are intimately and acutely aware of the dislocation of plans caused by this temporary shortage of metal.

BUT YOUR ALUMINUM *is* on the way. It is a promise.

IN MARCH we produced more than 44,000,000 pounds of new metal. That is 63% more than in the average month of 1939. Enormous new plants, already completed, made this possible.

STILL MORE producing units are coming in as fast as brick and steel and equipment can be put into place. We are getting superb co-operation from suppliers. A capacity of 60,000,000 pounds a month is definitely programmed, by day and date, at this writing.

PRAY FOR RAIN. Good precipitation assures the water power that we need to keep breaking production records. Production of aluminum depends on getting the power.

TWO POUNDS OF ALUMINA are needed for each pound of aluminum. We are jumping Mobile, Ala.,

alumina refining facilities from a million to 2,200,000 pounds a day. That requires among other equipment, 64 precipitating tanks, 24 feet in diameter, standing 80 feet high. They would hold all the wheat grown in Wisconsin.

FORGING EXPANSION is an example of swift increase in fabrication capacity. On the first of January, 1940, we had 47 hammers, presses, and upsetters. Today: 110. Increase: 134%. We await delivery on 26 more units, which will make a total of 136, an increase of almost 200%. Falling weight of the hammers alone is over three times that of January 1, 1940.

ROLLING CAPACITY for wire, rod, bar, and shapes has been increased $2\frac{1}{2}$ times. Expansion in sheet rolling capacity was reported to you last month.

COMPARED TO THE fifty-some years it took the use of aluminum to reach 1939 levels, you might say that the industry is having to more than duplicate itself over the week end.

THESE PARAGRAPHS are factual evidence of our determination that no one shall have to forego the things aluminum does best one minute longer than we can help.

IT IS A PROMISE.

ALUMINUM COMPANY OF AMERICA



★

BUILDERS and TENANTS WHO'VE USED OTHER MAKES WILL TELL YOU... CHANGE TO SERVEL...



BUILDER

Mr. Herman Johnson,
2301 No. Beechwood Dr.,
Hollywood,
California

"I am an apartment house owner and builder, and our experience with another type decided us on Servel. Freezing with no moving parts seems almost too good to be true."



TENANT

Mrs. M. A. Chermak,
2459 E. 21st Street,
Brooklyn,
New York

"I have been using Servel for four years. Operating cost is just as little today as it was when I moved in. Another thing I like about the gas refrigerator is its silence. You never hear a thing."

Different

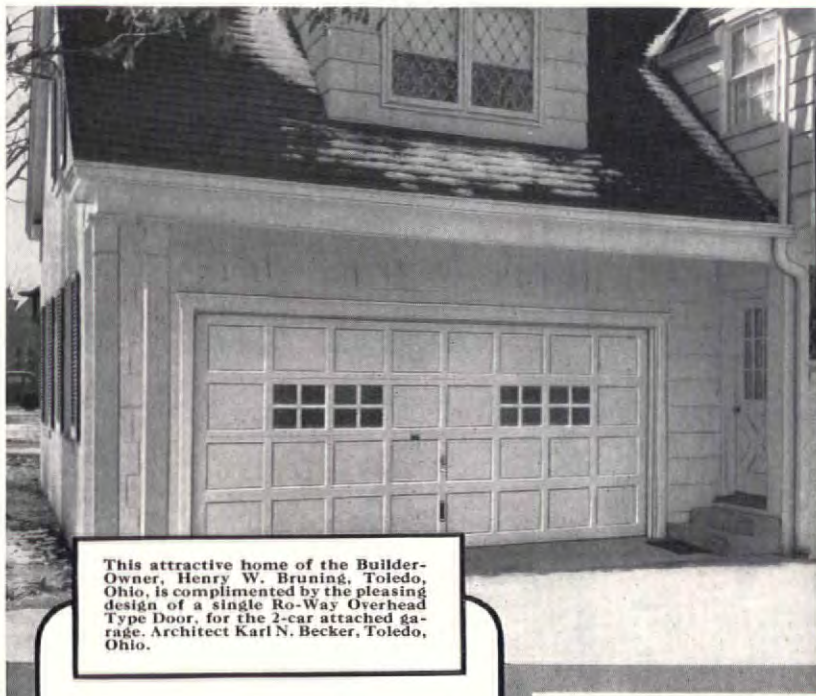
FROM ALL OTHERS...

- NO MOVING PARTS
in its freezing system
- PERMANENT SILENCE
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OPERATING COSTS
- MORE YEARS OF
SATISFACTORY SERVICE
- SAVINGS THAT
PAY FOR IT

Stays silent...lasts longer

SERVEL
ELECTROLUX
Gas
REFRIGERATOR

CHANGE TO SILENCE CHANGE TO SERVEL



This attractive home of the Builder-Owner, Henry W. Bruning, Toledo, Ohio, is complimented by the pleasing design of a single Ro-Way Overhead Type Door, for the 2-car attached garage. Architect Karl N. Becker, Toledo, Ohio.



Syosset Garage, Syosset, Long Island, N. Y., equipped with 4 Model TH Ro-Way Overhead Type Doors, and 3 Sliding Posts. Krebs & Schulz, Contractors.



Eight Ro-Way Overhead Type Doors (Model G-1), serve this American Car & Foundry Plant, St. Louis, Mo. L. O. Stocker Co., Contractors.



Dependability, speed and ease of operation led to the selection of this Ro-Way Overhead Type Garage Door for Bellevue Fire Station, Memphis, Tennessee. Redlinger & Hanson, Contractors.

You Specify

"SATISFACTION"

when You Specify

Ro-Way

OVERHEAD TYPE DOORS

These quiet, trouble-free doors are really designed and built to enable a car owner to forget completely the mechanical parts, just as he is able to do in operating his fine car.

Architects are finding that it pays in the added satisfaction of their clients to add the word "Ro-Way" to the words "Doors of Overhead Type", when specifications are written for any Residential, Industrial, or Commercial job.

Contractors, too, find that by giving Ro-Way's "five extra values without extra cost", they build extra good will. To win the nationwide acceptance enjoyed today by Ro-Way Overhead Type Doors, they had to set the pace in modern engineering, design and construction. They had to make simpler the job of installation. They had to provide maximum protection with a minimum of attention.

Write for the Ro-Way folders. See how new refinements (exclusively Ro-Way) make even the rarely needed adjustment of spring tension a matter of quick convenience.

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Authorized Ro-Way Overhead Type Door Representatives are located in all principal cities. Any Architect wishing further information about these improved Overhead Type Doors for Residence, Commercial, or Industrial installations, is invited to write us. Your request will also bring to your files a copy of our 72-page "Time-saving Specification Book".

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City State

There's a Ro-Way for every Door way!

FORUM OF EVENTS

(Continued from page 22)

COLUMBIA

Last month New York City papers carried a statement by Columbia University's Dean of Architecture Leopold Arnaud, made in reply to an A.I.A. survey: "Architecture takes form according to the needs and ideals of society. Today we are admittedly in the midst of great social change, which is inevitably apparent in contemporary architecture." Same New York papers, around the same time carried pictures of the design for University Hall,



UNIVERSITY HALL

Columbia trustees' answer to the needs and ideals of contemporary society. Com-

pleting a one-story structure now on the campus, the building was designed by famed Charles Follen McKim—in 1896.

MOSES

Few officials in public life dare to express themselves as frankly, or can do it in as pungent English as the New York Commissioner of Parks, Robert Moses. The latest report to shock and amuse the city's breakfast tables concerned museums—probably the hardest-hitting document on the subject in existence. Samples: "The Board of a Museum is not a House of Lords. . . There must be less emphasis on wealth, old family, big game hunting. "Exhibits can be shifted from skylight to

Eisenstaedt—Pix



METROPOLITAN'S MUMMIES

cellar if they don't wear well, but bad architecture frozen into buildings has to be lived with for generations.

"Why should trustees of the Metropolitan take it upon themselves that 1900 or some other magic date represents the end of art, and that the collection of some sour Siennese madonnas is more important than the stimulation of living artists?"

"I can find no excuse for departments of Egyptology in the Museum of Natural History, the Metropolitan, the Brooklyn Museum and the New York Historical Society. There isn't that much interest in Egyptology in any community."

WRIGHT

No less sharp a tongue has Frank Lloyd Wright, who devoted a lecture in Baton Rouge to telling the South where to get off:

"You in the South live with tradition. But some day you must realize that you can't go on living with pediments and porches. The degenerate architecture of your section belongs to the ancient European monarchies. Your columns smack of the soldier at attention, with eyes right and eyes left."

Rumbled "The Sunday Item-Tribune," "Louisianians should not let their feelings be hurt. . . . We don't know how lines convey a feeling of militarism."

(Continued on page 72)

What, Therefore —

Is Top Heavy Heat? How Can It Be Overcome?

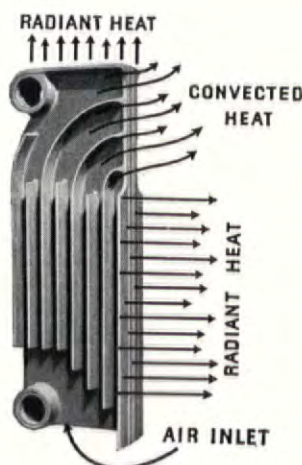


This New Burnham Radiant cabinet type radiator, either free standing or recessed, gives you both radiant and convected heat.

Any heat, wouldn't you say, is a top heavy one, that first must heat the top of a room, and then gradually work down to the bottom? One that heats the floors last.

Warm air systems deliver *only convected heat*. There's no known way of making it also produce the "heat-shine" sun-like radiant heat, that comes from radiators, along with the convected.

It's this radiant heat from radiators, that travels in straight lines heating the floor, walls and lower part of the room. No drafts or currents of air in the least affect it.



Just naturally, a heat that works both from the bottom and the top, at the same time, does a quicker, more evenly balanced job. The floors are free from return cold air currents, caused by the cooled air travelling to return intakes.

The floors are uniformly warm in all parts of the room. Such can be so, only with radiator heating. The height of which is furnished by Burnham equipment. Send for Home Heating Helps.

See Sweet's. See for yourself.

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United States and Canada

Prelude to a Smooth Take-off



Aftermath of Happy Landings



Artists' models as hostesses . . . a menu that makes gourmets lose faith in mother . . . a setting that puts the thrill of air travel in the terminal itself . . . that's the Airlines Terminal Restaurant in New York.

Designed by the Walter M. Ballard Company for Bertram Hines to make sophisticated travellers wish their reservations were ten planes later, the Airlines Terminal Restaurant blends color with

comfort to complete its setting of epicurean perfection. Chosen for the lounge seats was CHASE VELMO upholstery . . . natural selection wherever practical wearability must lie beneath outer attractiveness . . . wherever comfort plays a part in determining the cash-register's contents.

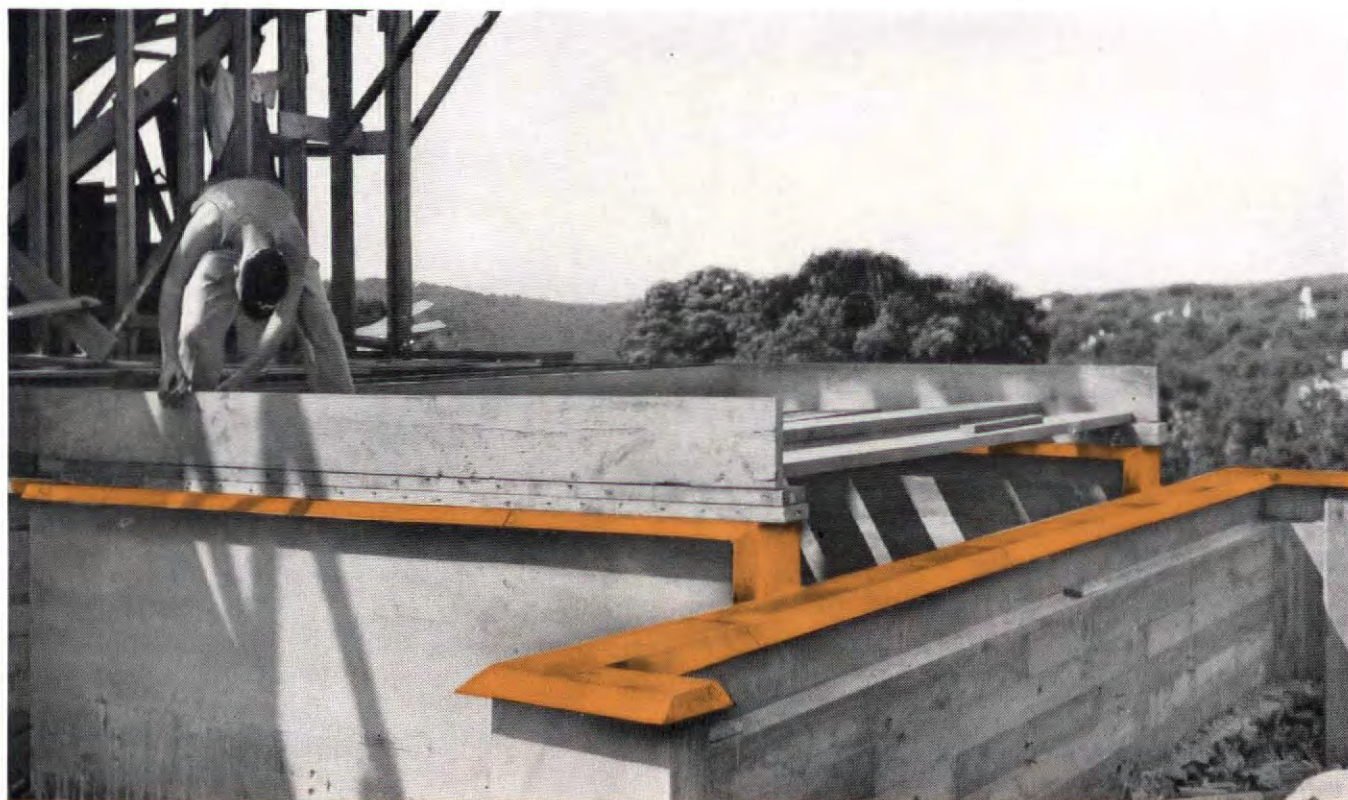
May we send CHASE VELMO suggestion-swatches for the rooms you are designing?

CHASE

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OTHER CHASE FABRICS ARE REDO, CHASE UPHOLSTERY, LEATHERWOVE, ROCOTEEN AND SEAMLOC CARPET.

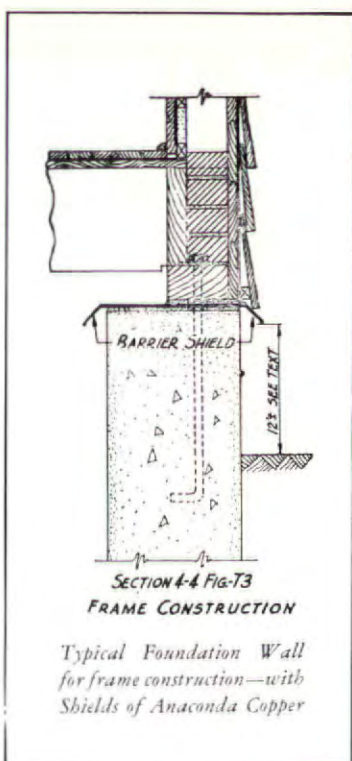
BRANCHES: BOSTON, DETROIT, CHICAGO, LOS ANGELES . . . MILLS: SANFORD, ME., READING, MASS., TROY, N. H.



THWART

RETICULI TERMES* WITH COPPER

* Subterranean termites



Durable copper shields between masonry and wood provide efficient, inexpensive protection against termites

The spread of the wood-eating termite's natural *habitat* has aroused considerable interest . . . particularly in precautionary measures to safeguard building construction against termite damage.

It is generally conceded that properly formed, rustless sheet copper shields offer the most effective and most durable protection. Installation is a relatively simple sheet metal job, the cost being comparable with that of an equal amount of roof flashing.

Highly Informative Booklet—The American Brass Company has published a digest of pertinent information on the use of shields for termite protection. A free copy will be mailed promptly on request.

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Anaconda Copper

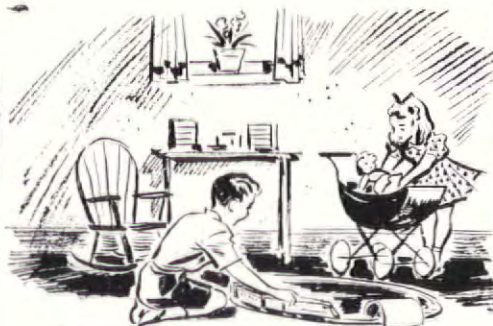
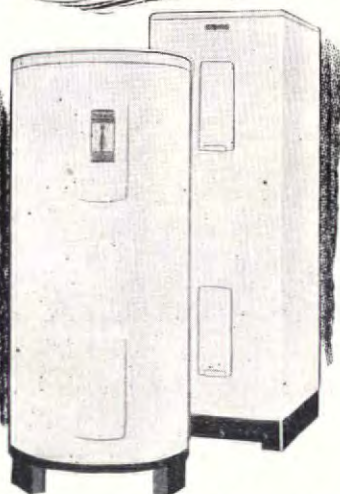
WOULD YOU BELIEVE IT?

FLAT STONES

SERVE AS
WASHBOARDS
FOR CENTRAL
AMERICAN
HOUSEWIVES
ON
"WASHDAY"



"RAIN BATHING"
CONSISTING OF A TROUGH
AND A WOODEN BOX WITH
HOLES BORED IN THE
BOTTOM, WAS THE ORIGIN
OF THE MODERN SHOWER!



Significant News!

You and your clients enjoy these outstanding advantages with the Hotpoint Electric Water Heater: 1. Saves on pipe because it can be safely placed nearest the point of most frequent use. 2. Safe and clean as electric light because it's flameless—no flues required. 3. Controlled heat lengthens life of plumbing fixtures and pipes. 4. Economical to own and operate. Send coupon for complete information. Edison General Electric Appliance Co., Inc., 5651 West Taylor Street, Chicago, Illinois.

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Please send me full information about Hotpoint Auto-
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CL-40 fluorescent luminaires, ceiling-mounted in continuous runs, provide 40 to 45 footcandles of cool, shadowless illumination in this large industrial office.



Spotty, inadequate light before modernization with Westinghouse CL-40 fluorescent luminaires.

Functional Lighting at its Best with Continuous Strip Units

Westinghouse ceiling-mounted CL-40 fluorescent luminaires offer the solution to maximum lighting effectiveness and modern fixture design. These lighting units deliver high intensity, cool, evenly distributed light for easy seeing in offices, shops, restaurants, and similar commercial areas.

CL-40 continuous runs may be as short or as long as desired, and the completed strip appears and performs as a single luminaire. The lighting system assures a power factor of 95 per cent and minimized flicker. A patented, fluted translucent glass provides high light transmission yet provides low surface brightness.

Let Westinghouse help you "supply the answer." Call your nearest Westinghouse Lighting Distributor, or write Westinghouse Electric & Mfg. Company, Edgewater Park, Cleveland, O., for Folder 8504.

117 Westinghouse Electric Supply Company offices and Independent Lighting Distributors provide local stocks and services.

Westinghouse

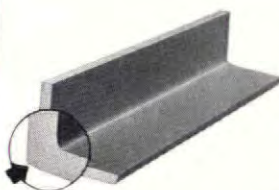
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**2 ALL WEATHERING MEMBERS
HOT ROLLED 1/8" ANGLES**



**3 VERTEX CORNERS ON ALL
WEATHERING MEMBERS**



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Address _____

FORUM OF EVENTS

(Continued from page 68)

CALENDAR

May 7-9. Annual Meeting of the Producers' Council in Chicago. Headquarters, Stevens Hotel.

May 16. Meeting of the State Associations of the Producers' Council in Yosemite, California.

May 17-19. Seventy-third annual convention of the American Institute of Architects, Yosemite Valley, California. Sessions of the Producers' Council will be held in conjunction with this.

May 21-26. The Southern California Chapter of the American Institute of Architects and the State Association of California Architects will act as hosts to the delegates to the Convention in a two-day program in Los Angeles, followed by a visit to Santa Barbara on May 24, Del Monte on May 25 and San Francisco on May 26. The San Francisco program will be in charge of the Northern California Chapter and the Northern Section of the State Association of California Architects.

AWARDS

To TIFFANY & Co., the gold medal of the Fifth Avenue Association for the best new building in New York's Fifth Avenue sec-

tion during 1940. Architects Cross & Cross and the Turner Construction Company were the recipients of certificates of merit.



Wurts Bros.

(Plans and photographs of the building will appear in the June, 1941 FORUM.)

EXHIBITIONS

DOMESTIC AND NON-DOMESTIC ARCHITECTURE, an exhibit of the architectural photographs of Samuel H. Gottscho, on view at the Architectural League, New York City, from April 28 to May 9. Seventy-five photographs, chronologically arranged, give a picture of architectural work in New York and environs from 1925 through 1940.

DESIGN DECADE, at the Baltimore Museum, from April 18 to May 25. Taking its theme from THE FORUM's "Design Decade" issue (October, 1940), the Museum is presenting actual objects to illustrate the advances made in American design from 1930 to 1940. In conjunction with this there will be an exhibit of the industrial designs of Walter Dorwin Teague.

RELIGIOUS ART EXHIBIT, at the Parzinger Gallery, New York City, from April 8 through May 15. A collection of contemporary work in sculpture, painting, stained glass, fabrics, etc.

MISCELLANEOUS

An Architects' Committee for War Relief in Greece has been formed. The Committee, which is affiliated with Greek War Relief Association, Inc., is headed by Frederick G. Frost as Honorary Chairman and W. Stuart Thompson, Executive Chairman. Eric Gugler, New York, is treasurer.

ERRATA

In the presentation of the College Heights Housing Project at Knoxville, in the March FORUM, p. 148, the columns supporting the porch roofs were erroneously described as steel, enveloped by wood pilasters. The columns are of cast iron, painted.

(Continued on page 76)



**WOULD YOU LIKE TO
ACTUALLY SEE**
Ing-Rich
PORCELAIN WALL PANELS?

Let us send you **AN ACTUAL SAMPLE WITH COMPLETE DETAILS OF INSTALLATION**
✓ **NO REPRESENTATIVE WILL CALL**
✓ **NO OBLIGATION**

This is your opportunity to actually see and handle this newest of bathroom wall finishes and have a complete description with installation instructions. See how lustrous, harmonious colors in porcelain panels originate new design possibilities . . . how well-conceived installation features adjust to every floor plan . . . how refinishing is eliminated and installation time cut to a minimum. Why not learn first-hand about this new way to add permanent beauty and utility to bathrooms?



Just a note on your letterhead will bring you an actual sample by return mail along with complete details. There is no obligation and no representative will call. Take the time today to dictate, "Please send sample and complete details," we'll do the rest.

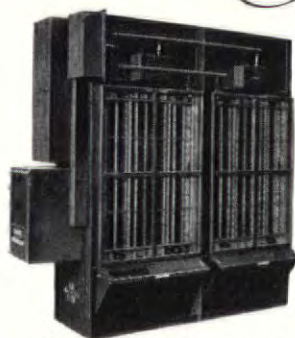
Ing-Rich
INGRAM-RICHARDSON MANUFACTURING CO.
BEAVER FALLS,
PENNSYLVANIA

MODERN DUST CONTROL

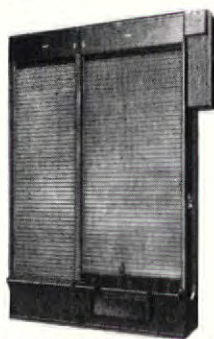
is Essential

IN ALL INDUSTRIAL BUILDINGS

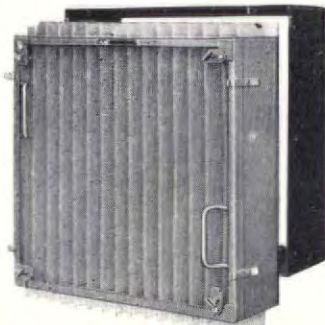
Regardless of Type



ELECTRO-MATIC air filter combines electrical precipitation with automatic air filtration to obtain highest efficiency in the removal of atmospheric dust, smoke, vapors and welding fumes. Bulletin 250-C



AMERICAN AUTOMATIC self-cleaning filter is ideal for most large ventilating and air conditioning installations. Provides multi-stage air cleaning by means of filter media of graduated density. Bulletin 241



AIRMAT TYPE PL dry filter is designed for ventilating and air conditioning service where dust concentration is not abnormal. Its advantages of high cleaning efficiency, low initial resistance, and large dust holding capacity make it applicable to more types of air cleaning service than any other filter. Bulletin 230 B

Today's increased industrial activity has imposed new problems on all manufacturing plants — especially with regard to maintaining ideal atmospheric working conditions.

Air contamination, resulting from both air borne impurities usually found in industrial areas, and process dusts created by manufacturing operations, must be controlled.

Shown on this page are some of the many American Air products now used by industry for the protection of workers and processes against the sabotage of destructive dust, smoke, oil vapors and fumes.

The development by AAF engineers of a practical application of electrical precipitation to dust control has brought modern air cleaning one step closer to the ultimate goal of dust free air.

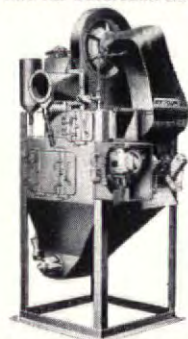
Mechanical filters, both viscous impingement and dry types, have been proved by many years of service to be entirely adequate for most air cleaning applications. They remove the objectionable dust which normally settles out of the air. Their effectiveness is limited, however, to particle sizes having sufficient mass to be filtered out of the air. Since the introduction of electrical precipitation, it has become possible to remove high percentages of particles as small as tobacco smoke, which averages about .27 microns in size.

In many industrial applications where process dust presents a difficult air cleaning problem, the use of Roto-Clones or Airmat Dust Collectors for collecting process dusts at their source, has effected economies in both the initial cost of air cleaning equipment, and in its operating cost.

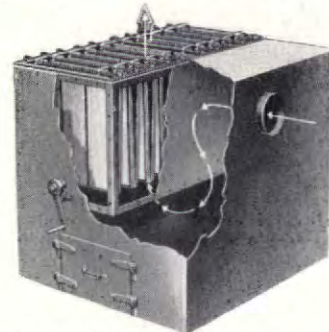
Bulletins describing the application of all American Air products are available on request. Please ask for them by number. Address 188 Central Avenue, Louisville, Ky.



ROTO-CLONE TYPE "D"—for collecting process dust in dry form combines fan and dust collector in a single unit—eliminating expensive piping and high installation cost. Available in all sizes and capacities, also as self-contained unit including dust hopper and a filter to clean the exhaust air for recirculation into the workroom. Bulletin 272



ROTO-CLONE TYPE "W" collects process dust in wet form delivering it as sludge. Combines scrubbing effect of water sprays with dynamic precipitation. Collects finely divided materials more efficiently, especially in the chemical, ceramic and foundry industries. Bulletin 274 A



AIRMAT DUST ARRESTER is available as a Dust Box with fan unit for the collection of fibrous and flaky process dusts. Requires only piping and electrical connections to be ready to operate. Uses standard Airmat filtering material with proven performance and economy advantages. Bulletin 280

AAF

AMERICAN AIR FILTER CO., INC.

INCORPORATED

LOUISVILLE, KENTUCKY

IN CANADA: DARLING BROS. LTD., MONTREAL, P. Q.

What a restaurateur says about his "stainless" equipment

The Wheel Cafe Co.

537 Walnut Street
Cincinnati, Ohio

January 22, 1941

The American Rolling Mill Company
Middletown, Ohio

Gentlemen:

Just a line to let you know about the new \$2,500 Armco Stainless Steel counter installation we plan to make later this month. This will make a total of \$17,500 we've invested in stainless steel equipment and outside trim during the past five years.

We consider every cent of it money well spent. We're convinced that once stainless steel is installed, upkeep and replacement worries may be forgotten. During the past five years the Armco Stainless installed in our restaurant has received exceptionally hard usage, yet has never failed nor given trouble of any kind.

All our behind-the-counter men are stainless boosters. They report these counter surfaces easy to keep clean and sanitary.

Another thing we like about stainless is the way it dresses up our establishment. Every time we have put in new stainless equipment, customers have commented about the way we keep our restaurant right up-to-the-minute. They like it because it continues to look bright, clean and inviting.

Probably most unique about our place is the extensive use of stainless steel outside. We found it so easy to keep clean and bright inside that we wanted a stainless front that would reflect the same inviting and spotlessly sanitary appearance to passersby. We called in designer Kurt Steinbach, presented the problem, and asked him to draw plans.

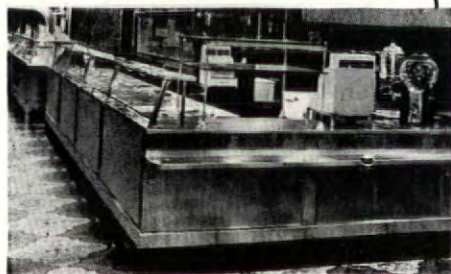
The completed job has proven itself a real business-booster; in fact, it is everything that we had hoped for.

Yours very truly,

Abe Silverglade Pres
The Wheel Cafe Company



• ARMCO Stainless Steel gives the front of The Wheel Cafe a smart, modern and spotless appearance. It invites hungry people inside for good food.



• These counters, of ARMCO Stainless Steel, cannot be stained by food acids. They can take abuse and are easy to keep clean — important to a restaurant's reputation.

THIS LETTER speaks for itself. For further information on architectural uses of ARMCO Stainless Steel, write to The American Rolling Mill Company, 1321 Curtis Street, Middletown, Ohio.



**THIS FLOORING SURE HAS A
REAL FINISH—
AND IT LAYS FAST TOO . .**

**YES, AND MY CLIENTS CERTAINLY
LIKE TO GET ITS EXTRA BEAUTY
AND WEAR—AT NO EXTRA COST**



Investigate **BRUCE STREAMLINE** Flooring . . **Factory-Finish Resists Scratches . . . Assures Beautiful Floors!**

There's *no guesswork* when you specify Bruce Factory-Finished Streamline Flooring. Every square inch has been uniformly finished at the Bruce Plant on special machines. The finish *penetrates the pores of the wood!* Unlike ordinary finishes, it stubbornly resists scratches, chipping and peeling. Requires no sanding, polishing or additional finishing on the job. Ready for use the instant it's laid! Your

clients can move in several days sooner.

And yet, with all these advantages, factory-finished Bruce Streamline Flooring usually costs less than ordinary flooring finished on the job. Available in Oak, Maple, Beech. Three sizes: 25/32" x 3 1/4", 1/2" x 2 1/2", and 3/8" x 2". Laid like ordinary strip flooring. Nationally advertised. Mail coupon for complete information and free "scratch test" panel *today*.



MAKE THIS SCRATCH TEST!

Dramatically proves the superiority of the finish on Streamline Floors. Half is finished the new "Bruce-Way"—other half is finished the ordinary surface way. Scrape a coin across both finishes. See how the ordinary surface finish chips away, while the "Bruce-Way" finish is unharmed!

E. L. BRUCE CO., 1668 Thomas St., Memphis, Tenn.



STREAMLINE

Trade Mark Reg. U. S. Pat. Off.

F L O O R I N G

FLOOR FINISHES • TERMINIX • LUMBER PRODUCTS

FREE OFFER . . . MAIL COUPON!

E. L. BRUCE CO., 1668 Thomas Street, Memphis, Tenn.
Gentlemen: Please send FREE "scratch-test" panel and full details about Bruce Streamline Flooring.

Name

Address

City State

FORUM OF EVENTS

(Continued from page 72)

COMPETITIONS

THE UNITED STATES CIVIL SERVICE COMMISSION has announced an examination for architect positions paying from \$2,000 to \$4,600 a year, and for engineering positions from \$2,600 to \$5,600. Architects may qualify in design, specifications, or estimating. Applications must be filed at the Commission's Washington office not later than May 7, 1941. Engineering applications will be received until June 30, 1942.

THE MUSEUM OF MODERN ART announces the opening of a competition for Posters for National Defense, with prizes totalling \$3,000. The competition is split into three groups, calling for posters for Army Recruiting, Defense Savings Bonds, and Travel in the American Republics. Competitors may enter in any one or more groups, each of which offers a first prize of \$500 with \$500 more to be awarded as the jury may decide. The jury will be composed of members of the staff of the Museum of Modern Art. Programs and full information may be had by writing to Eliot F. Noyes, Department of Industrial Design, Museum of Modern Art, 11 West 53d Street, New York City.

EDUCATIONAL

THE CRANBROOK ACADEMY OF ART announces that it will award a limited number of resident scholarships, on a competitive basis, for study in its Advanced Departments of Architecture, Sculpture, and Painting for the school year 1941-1942. For further information address Richard P. Raseman, Executive Secretary, Bloomfield Hills, Michigan, before June 2, 1941.

Announcements of summer sessions in architecture and allied fields have been received from HARVARD UNIVERSITY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, SYRACUSE UNIVERSITY, and the SCHOOL OF DESIGN in Chicago.

THE UNIVERSITY OF PENNSYLVANIA'S School of Fine Arts will offer a six-year course, leading to a degree of bachelor of arts at the end of the fourth year and bachelor of architecture at the end of the sixth year, to replace the present seven-year course. The new course, which will be offered in the school year 1941-42, will also provide opportunity for studies of business subjects. Students completing this course will be eligible for the University's one-year graduate course in architecture, including advanced studies in design and research in city and regional planning, leading to a degree of master of architecture. A new course in industrial design will be given in collaboration with the Philadelphia Museum School of Industrial Art. The WASHINGTON UNIVERSITY School of Architecture is sponsoring, with the Ipsamboul Chapter, Scarab Fraternity, an exhibition affording a graphic representation of an architect's education. The exhibition will be presented in the galleries of the City Art Museum, St. Louis, from May 15 to June 1.

Fernand Leger will teach courses in painting at the MILLS COLLEGE Summer Session from June 29 to August 8. An exhibition of Leger's work will be featured at the College Art Gallery throughout the summer.

PERSONALS

The Decorators Service Company has taken new offices at 10 East 49th Street, New York City. They offer a resident buying and shopping service for architects and interior decorators.

Gruenbaum and Krummeck, designers, announce the addition of Michael Auer to the firm as a partner. The offices of Gruenbaum, Krummeck and Auer have been moved to 125 East 26th Street, New York City.

Artek-Pascoe announces the appointment of Hans Knoll, 444 Madison Avenue, New York City, as sales representative to decorators and architects for Artek-Pascoe furniture. Retail sales will continue to be handled through the company's show room at 640 Madison Avenue, New York.

(Continued on page 80)



"THE COMPRESSOR that Can be Hung from the Roof" . . . the York V/W Freon Compressor, gives new freedom to architects and contractors in planning and installing air conditioning. York's exclusive V/W design produces a machine in such perfect static and dynamic balance as to be vibration-free. It thus requires no special foundation. It may be mounted anywhere, is frequently placed on upper

floors, platforms, or suspended from roof trusses. It is more compact than any previous air conditioning compressor. All parts subject to wear are easily replaceable. It is available in a wide range of capacities. York Ice Machinery Corporation, York, Pa. Branches and Distributors throughout the world.



YORK REFRIGERATION AND AIR CONDITIONING

"Headquarters for Mechanical Cooling Since 1885"



STUDLESS BAR-X-PARTITIONS



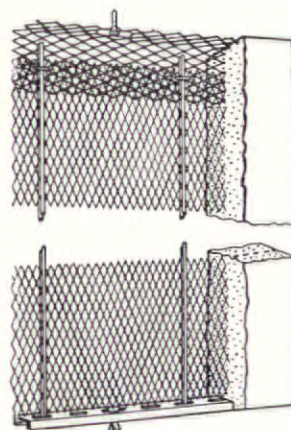
Effect Important Savings in Firesafe Construction

For non-bearing walls, Steelcrete Studless Bar-X-Plastered 2" solid Partitions offer many advantages. They are simple in design and can be quickly erected. They consist of Steelcrete Bar-X-Lath, a ceiling runner of Expanded Metal and a slotted channel floor runner. The Bar-X-Lath is erected vertically. Its patented design (with four pairs of No. 11 rods welded to each other through the meshes in each sheet) provides extra rigidity needed for this type of construction. Steelcrete Studless Bar-X-Partitions not only show a saving in first cost, in the cost of materials and erection, but are also sound and fire resistant. Literature containing detailed drawings and specifications will be sent upon request.

"IT'S WHEELING STEEL"

Listen to the Mill Whistle! Every Sunday, 4 P. M.—E. S. T.
—the Musical Steelmakers—coast to coast Mutual Broadcasting System.

Steelcrete Studless Bar-X-Partitions were used in the new St. Johns Nurses Training School, Cleveland, Ohio. Architect: Wm. Koehl, Cleveland Heights, Ohio. Contractor: H. H. Deter Plastering Co., Cleveland, Ohio.



There are only three pieces to erect in constructing a studless partition with Steelcrete Bar-X-Lath. They are—(1) Expanded Metal Ceiling Runner — (2) Slotted Channel Floor Runner and (3) Bar-X-Lath. The extended rods of Steelcrete Bar-X-Lath are inserted in slotted holes in the floor runner. The top of the lath is wired to the ceiling runner. For Studless Partitions, the Steelcrete Bar-X-Lath is available with the rods projecting about $\frac{3}{4}$ " to 1" beyond the mesh at either or both ends of the lath and the sheets can be had in any length up to 110'.

THE CONSOLIDATED EXPANDED METAL COMPANIES WHEELING, WEST VIRGINIA

Branch Offices and Warehouses:

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Export Office: 330 West 42nd Street, New York, N. Y.

HOW DO YOU
GET A PAINT WITH

Gumption?



WE MINERS DIG
THE LEAD GOOD
PAINTERS USE IN
LONG-WEARING PAINT

If you want your work to keep its good looks, it must be protected against the attacks of weather—and that means you need a long-lasting paint.

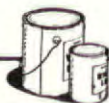
To get this enduring protection, know how much white lead is in the paint you specify. For experience proves *paints made with pure white lead resist weather better*. And it's a safe rule to follow—*the more white lead, the better the paint!* You can't, for example, get a more durable paint than a 100% white lead paint.

As a matter of fact, white lead pigment is made from lead—and everybody knows that's one of the toughest metals in fighting off weather. White lead jobs stay neat and attractive through heat, cold and moisture. They don't crack and scale; they wear down slowly and evenly.

Remember, using white lead doesn't restrict your choice of colors. White lead paint can be tinted to almost any shade you desire.

Its weatherproof protection and long life are sure to please clients—as well as embellish your work with an enduring beauty. Best of all, white lead costs no more than regular quality paints. Here, at least, is one case where the best is cheapest!

LEAD INDUSTRIES ASSOCIATION
420 Lexington Avenue, New York, N.Y.



NEW WAY TO BUY

In addition to the regular paste, pure white lead is now obtainable as a ready-to-brush paint, in convenient, popular-size containers, at dealers' everywhere. This new paint is a timesaver for your builders and contractors.

You're money ahead when you paint with

White Lead



HOW MANY
COLORS CAN
YOU GET WITH
WHITE LEAD?

—You'll find
the answer to
this and other

interesting paint questions in a free booklet, "WHAT TO EXPECT FROM WHITE LEAD PAINT." Write for your copy today.

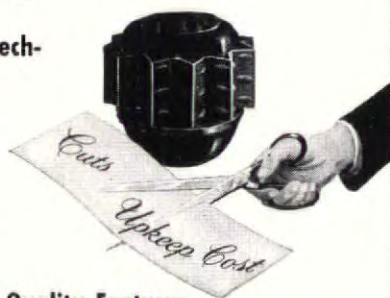


There's extra Value—at no extra cost... in Every Frigidaire!



One-piece all-steel cabinet—Quality built from top to base. No cracks where moisture can seep in and make insulation useless. And every Frigidaire cabinet has an *All-Porcelain* interior—including the inside of the door. Every one gives extra value inside and out!

Simplest refrigerating mechanism ever built. The famous Frigidaire Meter-Miser has more power than ever, costs less to run. It's self-oiled, self-cooled, permanently sealed. Saves money on upkeep year after year. Only Frigidaire has it!



Additional Quality Features in Every Frigidaire Regardless of Price

- Super-Safe F-114 Refrigerant
- Famous Quickcube Tray
- Built-in Tray Release
- Fast Ice Freezing
- Automatic Interior Light
- All-Porcelain Interior—including inside of door
- Large Super-Freezer
- Ample Frozen Storage Space
- 5-Year Protection Plan



Lifetime Porcelain, inside and out. One-piece cabinet has no bolts, screws, separate panels or rivets to break or warp. No crevices in the one-piece top! Every Frigidaire Range gives the extra value of a one-piece cabinet.

Exclusive, New Radiantube Cooking Units are a feature of every Frigidaire Range. These give 18% greater speed than previous models, are 15% more efficient and cost less to use. Test after test proves they're built for long life—to save money on upkeep, year after year.



Every Model Offers These Additional Advantages

- Big Thrifty Oven
- 5 Practical Cooking Speeds
- Automatic Oven Temperature Control
- High-Speed Broiler
- Switch Controls on front panel
- Stainless Porcelain Cooking Top
- Convenience Outlet

Specify the favorite -
Specify Frigidaire
... over 6 million built and sold

Free! Architect's File Folder

Clip this coupon, attach to your letterhead and mail to Frigidaire Division, General Motors Sales Corp., Dayton, Ohio. Folder gives complete specifications on all Frigidaire Household Appliances—Electric Refrigerators, Ranges and Water Heaters; also a complete set of "General Specifications" on Electric Refrigerators and Electric Ranges for Architectural use. Send for it today!

(Continued from page 76)

CHEESECAKE AND THE WAR

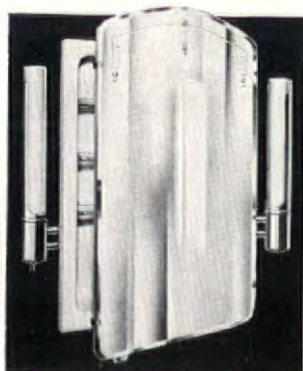
World War I saw some use of the female form divine to spur on the weary and shame the unwilling. In the intervening two decades publicity men have learned a lot, especially about changing their pace with the times, and how to use girls. Theme of the moment, in both U.S. and England, seems to be "War is really something of a lark." Typical sample comes from the publicity on Seattle's first blackout: a discreetly garbed model holds a brush and

waves an excellent leg while the gentleman in overalls does the work. The table shelter is Britain's newest, is being promoted by the Ministry of Home Security. This bulky contraption has been thoroughly tested and affords some degree of protection if walls and roof should collapse during a raid. First of the two illustrations shows its use as a table, with three imperturbable Britons drinking their tea with as much aplomb as if the table were the family's prize Hepplewhite. In the second photo four smiling lasses give the im-

pression of preferring their armored rabbit-hutch to a roller coaster. The New Jersey Garden Club's flower shop made the papers with this Anderson-type shelter. Interesting if unimportant is the fact that flowers are growing where the sandbags belong, and vice versa. The inevitable blonde is demonstrating what the well-dressed air raidee should wear, carries the latest in gas masks.

"It's Charming,"
say your Clients

And
they will Praise
the Bathroom
-with its **LAWSON "Time-Proof" Cabinet**




HERE'S the complete line of higher-quality Vitreous Porcelain Finished Bathroom Cabinets you've been seeking—at baked enamel price levels.

Commemorating Lawson's Century and a Quarter Anniversary, Lawson's "Time Proof" Cabinets offer many distinctive features that every architect will recognize instantly as more than just "talking points."

The complete line, showing various designs, styles and sizes of not only the Vitreous Porcelain Finished Cabinets, but also of the lower-priced baked enamel line for maids' rooms, servants' quarters, low-priced housing projects, etc., may be found in the new Sweet's, Section 27, Catalog 84.

THE F. H. LAWSON COMPANY
Bathroom Cabinet Division, Cincinnati, Ohio

World's Largest Builders  of Bathroom Cabinets

SOLD EXCLUSIVELY THROUGH WHOLESALE OUTLETS



SEATTLE BLACKOUT

Associated Press



Pictures, Inc.



TABLE SHELTER

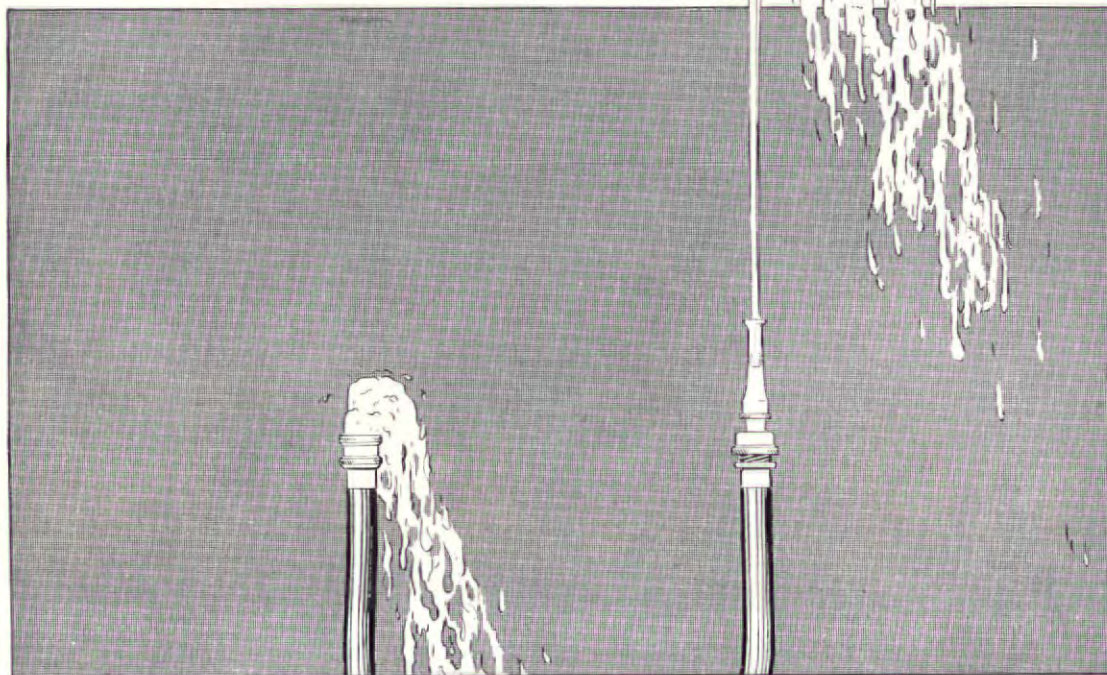
Graphic Union



N. J. GARDEN CLUB SHELTER

Wide World

The Garden Hose Proves a Point for Pacific



Why a nozzle on a garden hose? Necessity for velocity!

How do you get velocity? By reducing the diameter of the orifice!

A simple and well-known principle of hydraulics.

Apply this principle to the well-known fact that the ability of water to absorb heat from a surface is proportional to the velocity of flow of the water across that surface, and you have a picture of the positive circulation feature in the Pacific Steel Heating Boiler.

The Pacific side-connections do the work of the hose nozzle. The steam and hot water, instead

of rising sluggishly through free waterways between the firebox waterjacket and the shell (as in other boilers), is shot up through properly proportioned connecting orifices into the shell and across the boiler tubes at a high velocity.

Result: Steam bubbles that form on and insulate the tubes are "scrubbed" off by this forced circulation. A greater amount of heat is thus absorbed by the water.

There is a Pacific installation for your next building which will give you the maximum in fuel economy with greatest ease in maintenance. Write for literature on all types of installations. Pacific Steel Boilers, Division of United States Radiator Corporation, Detroit, Michigan.

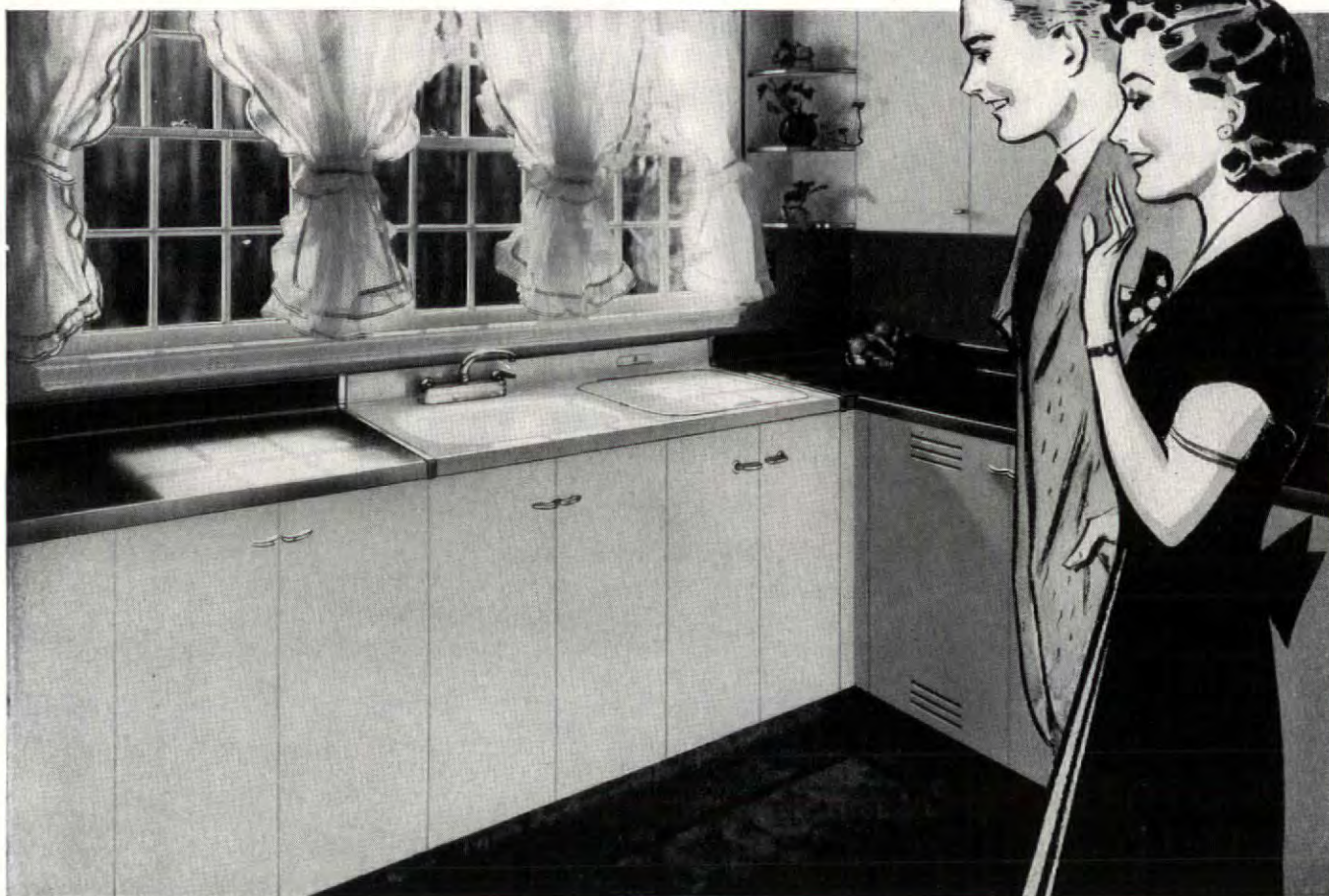


PACIFIC

STEEL HEATING BOILERS

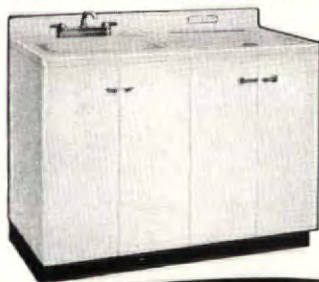
DIVISION OF UNITED STATES RADIATOR CORPORATION, DETROIT, MICH.

Give Them Something to Remember You By!



General Electric Kitchens Are Tops in Good Will Building

**FEATURE THIS! - -
FOR FUTURE BUSINESS**



G-E ELECTRIC SINK

Washes the dishes and disposes of garbage electrically. It's popularity is growing by leaps and bounds! Make the G-E Electric Sink a feature of your homes — it's one of the best "salesmen" you can hire.

One of the best favors you can do for clients — and for yourself — is to include General Electric Kitchen equipment in your house specifications. Good Will constantly accumulates for you as women point with pride to the beauty and convenience features of their G-E All-Steel Kitchen Cabinets, and to the marvelous time-saving, work-saving advantages of the G-E Electric Sink. You'll be remembered — and rewarded!

At today's low prices, almost any home can afford G-E Kitchen equipment. It's easy and inexpensive to install. Why not get all the facts?

You'll Want The New G-E Kitchen Catalog

Illustrates and describes the entire line of G-E Cabinets, with detailed drawings and specifications. Includes information and data on the G-E Electric Sink and on complete G-E "Packaged" Kitchens for small homes and apartments. Phone your G-E Distributor for a copy or mail the handy coupon.



General Electric Co.
Appliance & Mdse. Dept. S-1215
Bridgeport, Conn.

Please send me your new G-E Kitchen Catalog.

Name.....

Firm.....

Address.....

GENERAL  ELECTRIC

"BIG name" Architects
and Interior Designers
rely upon the services
of "*Carpet Counsel*"
for important carpet-
ing jobs like these!

Because Carpet Counsel is the most
economical and dependable service
they have found in years of experience.
Try Carpet Counsel on your next job.

...THINK OF CARPET



...THINK OF BIGELOW

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THE SERT ROOM
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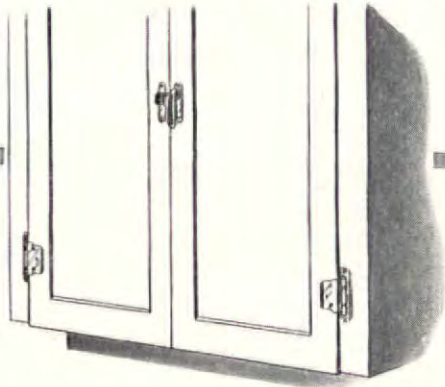
CAFE ROUGE
HOTEL PENNSYLVANIA
New York
The Walter M. Ballard Co.

LOBBY-UTAH HOTEL
Salt Lake City
The Walter M. Ballard Co.

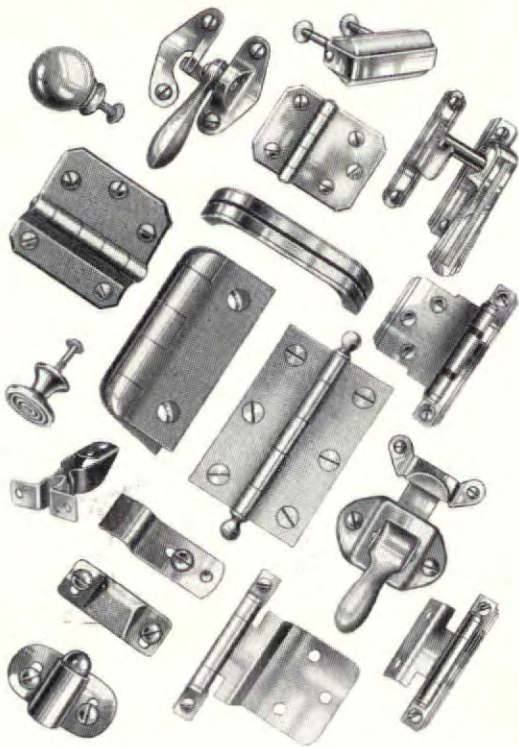
BURDINE'S, INC.
Miami
Eleanor LeMaire

LOBBY-FAMILY CLUB
San Francisco
T. L. Pflueger

STANLEY CABINET HARDWARE



The complete line of Stanley Cabinet Hardware offers a choice for every preference, every application. Included is the complete line of Stanley "Multichrome" Cabinet Hardware, with durable colored inserts which may be had to carry out any color scheme for kitchen or bathroom.



HELPFUL GUIDE IN PREPARING SPECIFICATIONS



Write for your free copy of Stanley Hardware Catalog No. 61. You will find it a real help in guiding you to the right hardware item for any specification. The Stanley Works, New Britain, Connecticut.

STANLEY

HARDWARE FOR CAREFREE DOORS



MODERN TREND IS TO SHOWERS

Owners of this home, after enjoying a Weisway during six years in a rented house, specified this Weisway Cabinet Shower as the only bath in their new home! Note how this in-a-wall Weisway is built into the structure. The small floor area required makes extra baths possible and practical in small homes.



SOLVE THE BATH PROBLEM *in Small Homes* AS WELL AS LARGE

● This typical installation gives striking evidence of the way Weisway Cabinet Showers meet the demand for more and better bath facilities in modern small homes, as well as large. Guaranteed leakproof, easily installed with no special treatment of building walls or floor, Weisways are 4-way protected against rust—*bonderized, galvanized* metal under the gleaming synthetic enamel or by porcelain enamel finish.

Models suitable for every class of construction; even the lowest cost Weisways insure long, trouble-free service. Foot-Grip, No-Slip floor of vitreous porcelain with attractive sea-shell pattern is safe, sanitary.

Send post card or write now for detailed information and specifications of the complete Weisway line, with full color illustrations of actual installations.

HENRY WEIS MFG. CO., INC. (Est. 1878) 502 OAK ST., ELKHART, INDIANA

WEISWAY

Cabinet Showers



Smooth—in appearance, smoother in design! Notice how the Carrier Streamlined★ Duct adds to the appearance of the beautiful hat salon of Famous-Barr & Co., St. Louis, the world's most completely air conditioned department store.

Carrier
Air Conditioning

Announcing NEW STREAMLINED★ DUCTS

- ✓ TIGHTER JOBS
- ✓ BETTER LOOKING
- ✓ MORE HEADROOM
- ✓ ELIMINATES PLASTERING

A FEW OUTSTANDING INSTALLATIONS

Famous-Barr & Company, St. Louis, Mo.
 Rorabaugh-Buck D. G. Co., Wichita, Kansas
 Montgomery-Ward Stores
 Houston, Texas Fresno, Calif.
 Wichita, Kansas Peoria, Ill.
 Kansas City, Kansas
 S. S. Kresge Store, Danville, Ill.
 S. S. Kresge Store, Peoria, Ill.
 Ardis Building, Shreveport, La.
 10 John R. Thompson Restaurants

AT LAST—here's the practical answer to the ductwork problem faced when air conditioning existing office buildings, department stores, hotels, restaurants and other spaces where appearance is important. Carrier Streamlined★ Ducts now perfected after years of experimentation and actual use in leading buildings—are completely free of outside seams or hangers. In appearance they are "almost like a beam"!

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In addition to improved appearance, the new Streamlined★ Ducts eliminate the extra cost of concealing ductwork with metal lath and plaster. Carrier outlets, having removable core, provide easy access for cleaning duct interior. Furthermore, jobs are much tighter, thus automatically making the entire air conditioning system more efficient . . . headroom is increased . . . and a more decorative paint finish can be selected to blend in with existing design. Don't delay. You should get all the facts on this important new development in air conditioning immediately. Call your Carrier Representative, or send in the coupon.

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Company

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We notice a growing respect for the specialist . . .



WAR is bringing home the fact that you either know a little about a lot of things, or a lot about a few. The military aviator and National Gypsum belong in the latter category. Both are *specialists*. Since the day this company started, National has gone down the line for *specialization*. It helped us grow, and it has helped a lot of other fellows, too.

Take the dealer for instance. National has given him a line of superior products to sell at a fair profit under a constructive dealer policy. With gypsum wallboard, for example, National has set new standards for lightweight and strength. The "Gold Bond Floating Wall" is another example. A unique system that minimizes plaster cracks and reduces sound transmission, it's the biggest forward step in wall construction in generations. And it is patented for exclusive sale by the Gold Bond dealer!

Take the builder: National research and specialization has brought him better products, easier handling, surer results, lower costs and larger profits. On big jobs the exclusive 2" Gold Bond solid partition system saves space by the roomful. On small jobs the exclusive Gold Bond arch bead cuts and bends on the job to form perfect arches. And these are just two illustrations!

Take the architect: Gold Bond research is constantly providing him with new techniques and ideas in gypsum, lime, metal lath, sound control, insulation and casein paint products. And what's more he knows that if he specifies Gold Bond for the entire job the responsibility is centered.

Take the owner: He pays the bill, and though he may not know a corner bead from a bag of plaster, he knows that National is 100% responsible when Gold Bond products are used exclusively.

The net of it is this. Gold Bond today is the only manufacturer specializing exclusively in wall and ceiling materials.

The standards for the industry are set in Gold Bond's laboratories and 21 model plants. There is a *better* Gold Bond product for every wall and ceiling problem. And Gold Bond offers you exclusive methods of construction that guarantee better result.

You get the newest and the best from Gold Bond every time. And to make sure, National has a staff of more than 300 trained representatives who can really help you solve your wall and ceiling problems. Write today for 1941 Gold Bond Handbook, describing new methods of wall and ceiling construction. National Gypsum Company, Buffalo, N.Y.

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SAVANNAH, GA. . . . LUCKEY, O. . . . BELLEFONTE, PA. . . . YORK, PA. . . . ORANDA, VA. . . . SALTVILLE, VA.
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GOLD BOND 2" SOLID PARTITION SYSTEM WITH NEW METAL BASE

selected for new

EMORY ROTH APARTMENTS

• Developed first for Red Hook, this exclusive Gold Bond system saved space for 260 *extra* rooms . . . yet cut costs \$300,000! Since then, it has been used for every Federal Housing project in New York City.

Now it's selected for top-grade private construction! These pictures—taken at the new Emory Roth Apartments in Central Park West—show how Architect Emory Roth is using the Gold Bond 2" Solid Partition System with new metal base runner to save as much as 7% in space, cut costs and yet have a sound transmission rating of 39 decibels in the complete Gold Bond wall! Write today for specifications. National Gypsum Company, Buffalo, N. Y.



Metal Base Clip being applied to wood "sleeper," providing nailing base for wood trim. Or, clip can be nailed directly to concrete.



Entire unit cut and bent on the job, using easy-working Gold Bond equipment supplied at low rental.



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Base is securely locked in place, yet can be removed quickly and easily for inspection during construction.



Strong, rigid prongs on ceiling runner are long enough to take care of variations in ceiling height.

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BOOKS

(Continued from page 32)

and especially those parts dealing with the American contributions, are not equalled in the existing literature.

Around any book which attempts a fundamental re-examination of trends in architecture and city planning there is bound to arise a certain amount of controversy. Mr. Giedion's book should prove to be no exception. His anxiety to avoid political and economic issues has seriously weakened many of the arguments, particularly in the sections devoted to city planning. Here the crux of the matter rests on the fundamental questions of land ownership and control, and it always has. Such a statement, of course, does not preclude the existence of other vital influences, but Mr. Giedion seems to think that it does. Rockefeller Center, for example, is discussed at length as one of the few large scale schemes actually carried out. No importance whatever is attached to the fact that the Center was actually carried out because it was possible for an investment group to find three blocks of New York City business property whose ownership was concentrated in the hands of one institution. The author's contention that few such projects are realized "because those in control of building seem usually to lack the vision necessary to provide what our period demands" is one of those beautiful statements which sound fine and mean practically nothing. There is altogether too much of this elaborate phrase-making in the closing sections of the book, and it is unfortunate because it is precisely in connection with the scene today that the kind of clarification promised in the introduction is needed. The tendency to interpret successful creative activity as a function of a mystical "unity of thinking and feeling" in a given epoch is doubtless interesting, but it becomes a fundamental weakness and a source of confusion when the more basic economic and social factors which make possible this unity are almost entirely ignored.

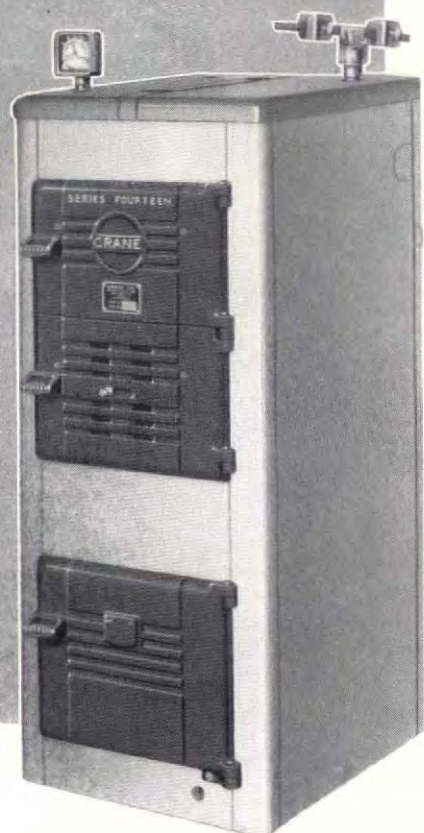
This is not to deny the importance of the achievement, which is a significant advance beyond the usual summary in terms of the production of a few outstanding artists. The book gives full play to Mr. Giedion's very considerable talents as a historian and it might well prove to be an indispensable stepping stone to a more fully rounded treatment of contemporary trends in architecture and city planning. Until this book to end all books appears—and it will probably be quite a while—"Space, Time and Architecture" is urgently recommended as required reading. No review would be complete without mention of Herbert Bayer's splendid typographical job, and his very handsome arrangement of the valuable illustrative material.

WHITE PILLARS, Early Life and Architecture of the Lower Mississippi Valley Country, by J. Frazer Smith. William Helburn, Inc., New York. 252 pp., illustrated. 8 3/4 x 11 1/4. \$6.00.

A book on architecture of the Old South, concerned chiefly with plantation houses and written for the lay reader rather than the professional. Material is grouped geographically, and each building is described in considerable detail. The book includes a map of the region, a section on the manner in which the houses were constructed, an excellent bibliography, and a guide for the tourist. Illustrative material includes some plans, but consists mainly of pen and ink sketches which are of no interest as drawings and distinctly inferior as sources of information.

As a service to interested readers, THE ARCHITECTURAL FORUM will undertake to order copies of books not conveniently obtainable locally, which have been reviewed in this department. Checks and money orders to be made payable to THE ARCHITECTURAL FORUM.

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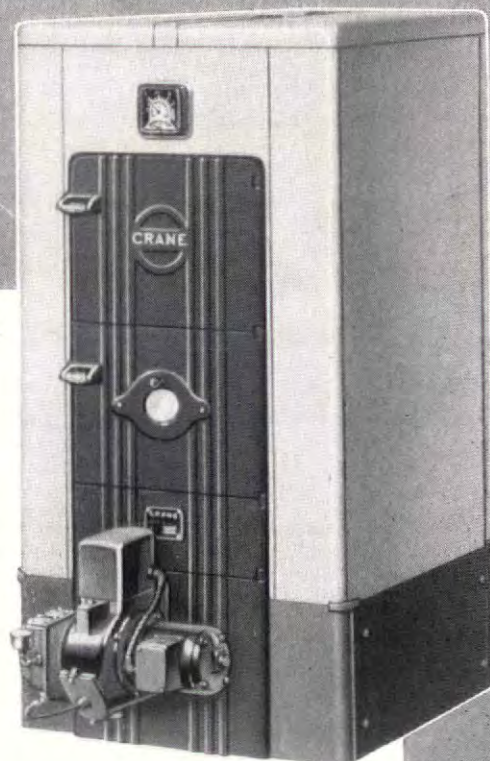
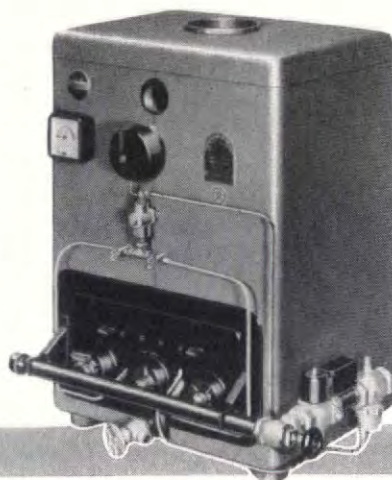


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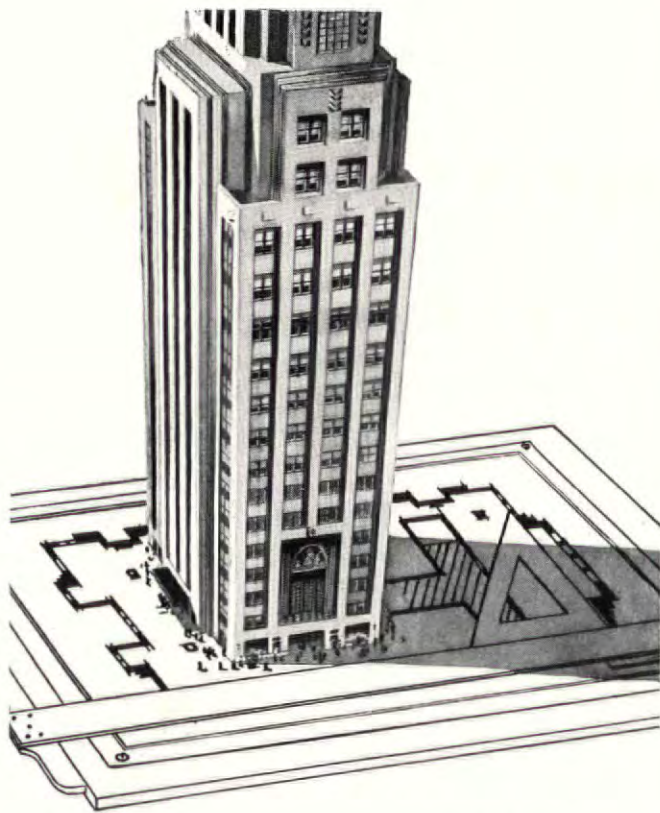
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A building comes to life when it's heated

THE beauty—the strength—the rhythm of lines in the vision of the architect create a monument to his skill. But when does that monument become a habitation?

A building lives when heat tempers it to the uses for which it was conceived—for work, rest or recreation. Since heating, therefore, makes serviceable the creation of the architect, heating becomes with him, his consulting engineer and his client a first consideration.

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*The wind came...
the roof went!*

BECAUSE THE CZC FACTOR OF SAFETY WAS NEGLECTED

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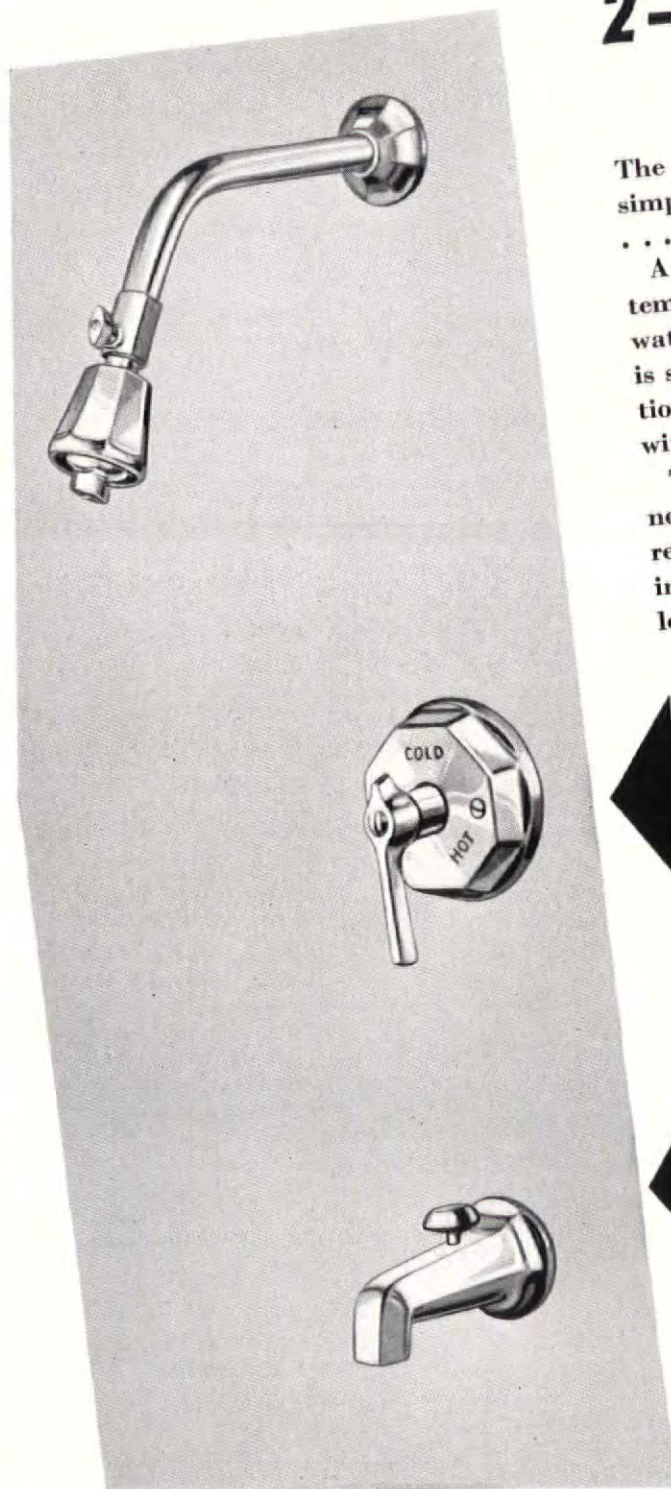


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A single handle mixes water quickly to desired temperature. When the knob on spout is raised, water is diverted to the shower head. When water is shut off, the knob drops back to original position—ready for next user. This feature is exclusive with Kohler.

The mechanism has no "in-the-wall" parts—no springs, washers, packings or levers. Riser pipe remains dry except when shower is in use. Draining of riser pipe vents shower head, thereby causing less drip.

MIX WATER FOR BATH OR SHOWER BY TURNING ONLY ONE VALVE.

Get all the facts NOW, about this and other new Kohler fixtures and fittings. . . . Kohler Co. Founded 1873. Kohler, Wisconsin.

WATER ALWAYS COMES FROM SPOUT FIRST. RAISING KNOB DIRECTS STREAM TO SHOWER. NO UNEXPECTED WETTINGS.

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THEY STILL LOOK NEW*

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Horizontal

- 1—.....
- 2—A four letter abbreviation meaning*
[see below]

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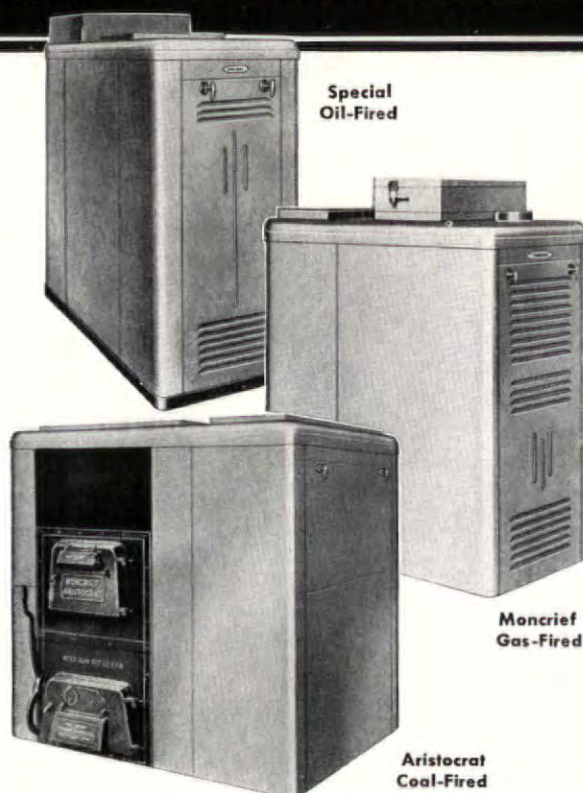
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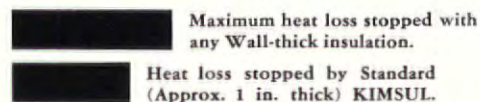
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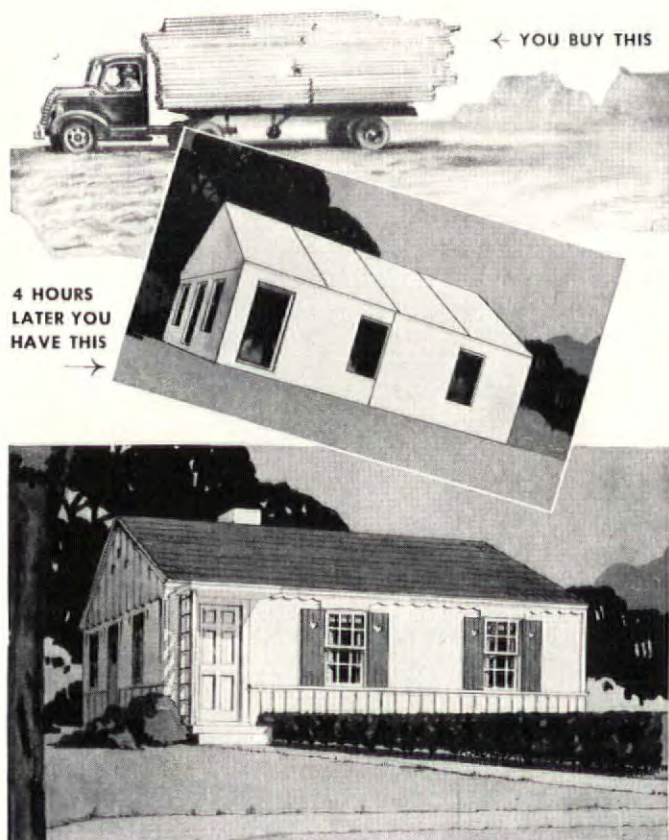
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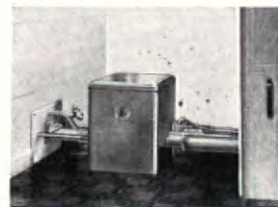
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Feeds coal from bin! Contains built-in Iron Fireman stoker; steel furnace; filters; humidifier; forced circulator.



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BY CURTIS

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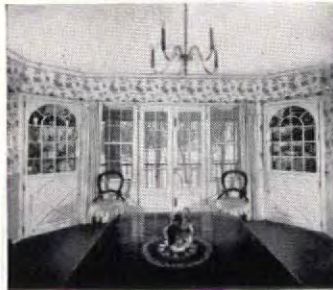
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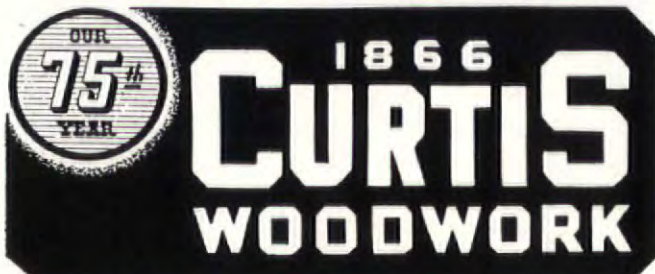
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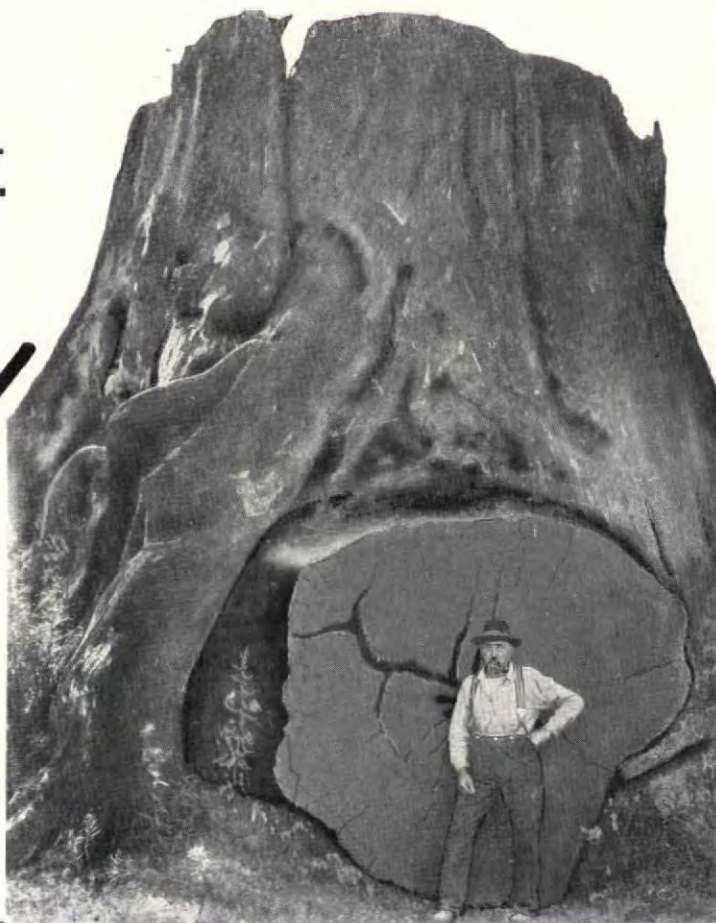
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A *Timely Tip* TO ARCHITECTS— From the Final Authority... *The Woman*



Bathroom by Kohler



Centered over lavatory is Miami cabinet No. 1100 equipped with tubular light brackets No. 5. On each side of this center cabinet is a smaller Miami cabinet No. 901. Under the cabinets are recessed tumbler holders and soap dishes Nos. 6001 and 6000. Between the lavatories and in the wall is a Miami electric bathroom heater with motor-driven fan. Over the tub is recessed shelf No. 904 and recessed soap holder and grab bar No. 6004. In the wall at right of tub is Miami towel supply and utility cabinet No. 510.

SUGGESTED LAYOUT FOR FAMILY BATHROOM

Back wall of alcove above toilet—Carey Towel Supply and Utility Cabinet No. 500; Side wall of alcove above toilet—Recessed Paper Holder No. 6002; Back wall of alcove above tub—Recessed Shelf No. 410; Side wall of alcove above tub—Recessed Combination Soap Holder and Grab Bar No. 6004.
Above lavatory—Miami Cabinet No. 1100, equipped with Tubular Light Brackets No. 6; Extra Cabinets No. 901; Recessed Soap Holder No. 6000 and Recessed Tumbler Holder No. 6001.



Bathroom by Crane

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MIAMI CABINET ENSEMBLE IN MY BATHROOM"

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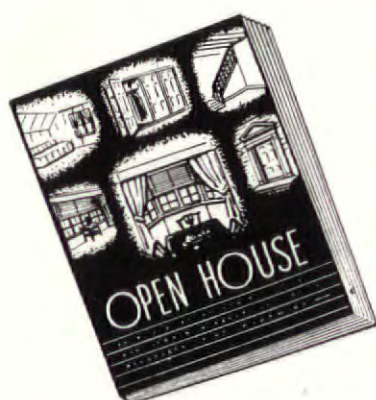
Because "Ponderosa" is so easy to work by hand or machine, better looking, better fitting, better lasting doors and windows are made from it. Its wide use for other woodwork is outstanding testimony to its ability to deliver satisfaction.

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In May issues of national magazines you'll find consumer messages designed to back up your door and window recommendations. These advertisements will give people ideas, too—ideas for better home planning with *more* doors and windows of Ponderosa Pine. Your prospects will see how to get great convenience, how to improve their rooms' appearance. *You* will see *resale* ideas.

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This is the attractive cover of "Open House"—32 pages of practical home building and remodeling ideas showing many uses for doors and windows of Ponderosa Pine.

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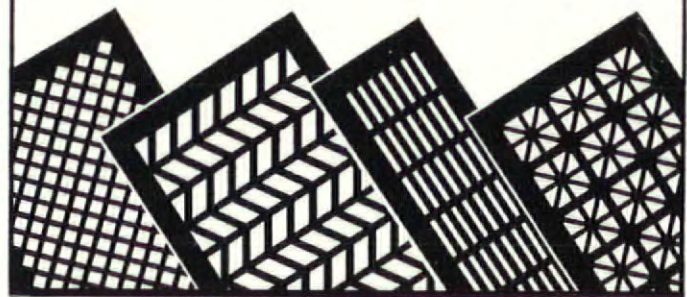
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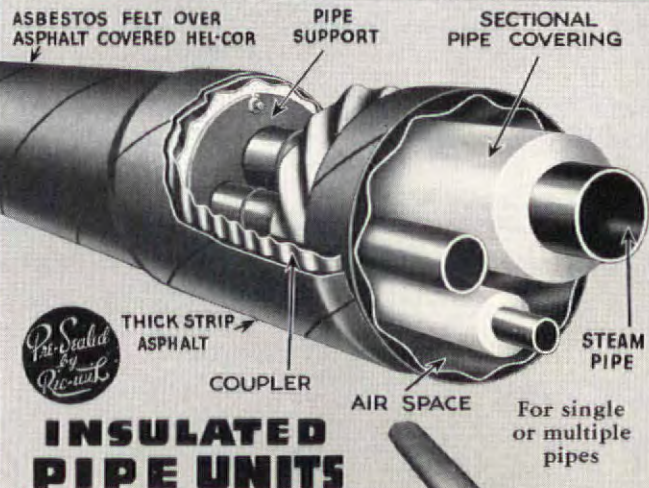
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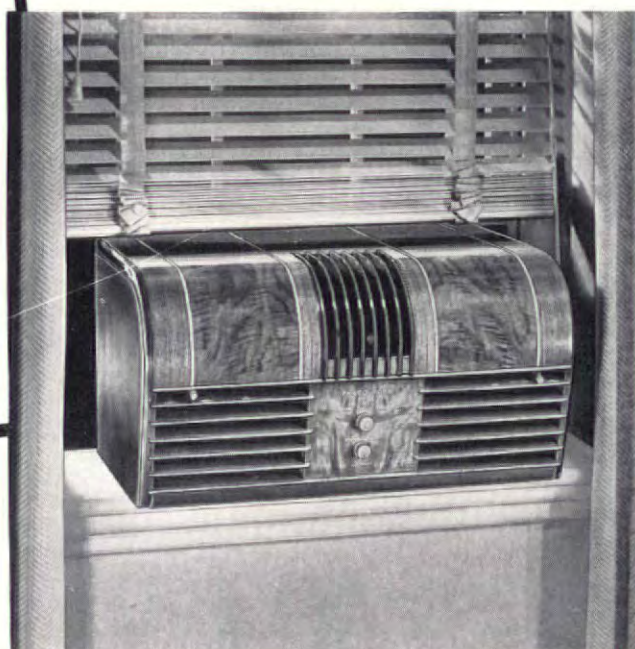
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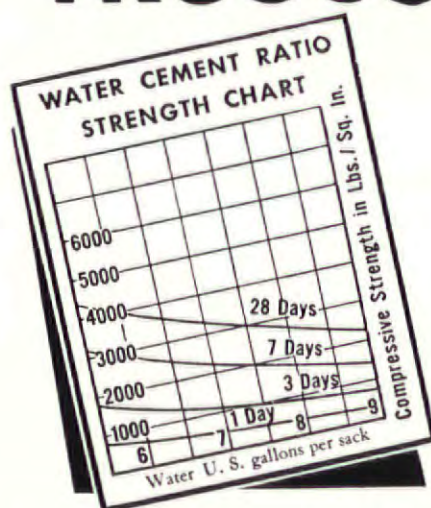
for better
concrete



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THIS IS NOW POSSIBLE THROUGH THE USE OF—

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Truscon Zilicon Waterproofing Paste used in all exterior foundation walls and basement floor slab.



ANNOUNCING THE SPENCER HEATING CLINIC

Here is the start of a great series—new to the building and heating industries—humorous—full of punch—right to the point—the TRUTH about heating troubles and how to avoid them.

The Spencer Clinic digs up the real facts case by case—places the responsibility (the diagnosis).—then recommends the prescription that cures.

You—as an architect or engineer, will enjoy them—laugh over them and we believe—profit accordingly. Below is a typical example. Watch for the others to follow.



CASE

Apartment owner has five janitors in a month---loses fourteen tenants.

DIAGNOSIS

His 40 year old Boiler was tied together with bailing wire and doped with everything from soup to nuts, but still couldn't raise enough steam to make a tea-kettle sing.

PRESCRIPTION

Architects, engineers and big building owners are saving dollars with modern steel Spencer Boilers—the big steel tubular "A's" or the justly famous Magazine Feed Heater. Both can furnish year-round domestic hot water.

There's a special Spencer design for each fuel—oil, gas, anthracite or bituminous.

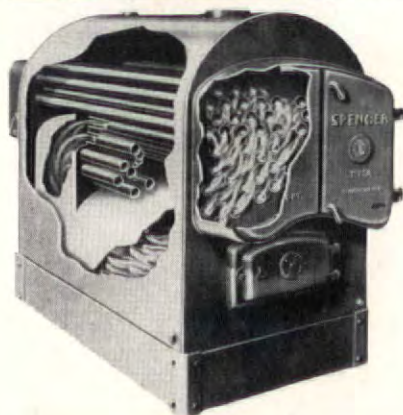
The Spencer Line also includes the "K" for small homes (400 to 600 ft. steam) and the "C" from 700 to 1950 ft. (steam), for larger dwellings. Both are Beauty Jacketed and are especially designed for automatic heat.

Word to the wise! Better do your preparing for next winter now.

Illustrated at left: The "A" type Steel Tubular Spencer ranging up to 42,500 ft. (steam). For oil—stoker—gas, or hand-firing.

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