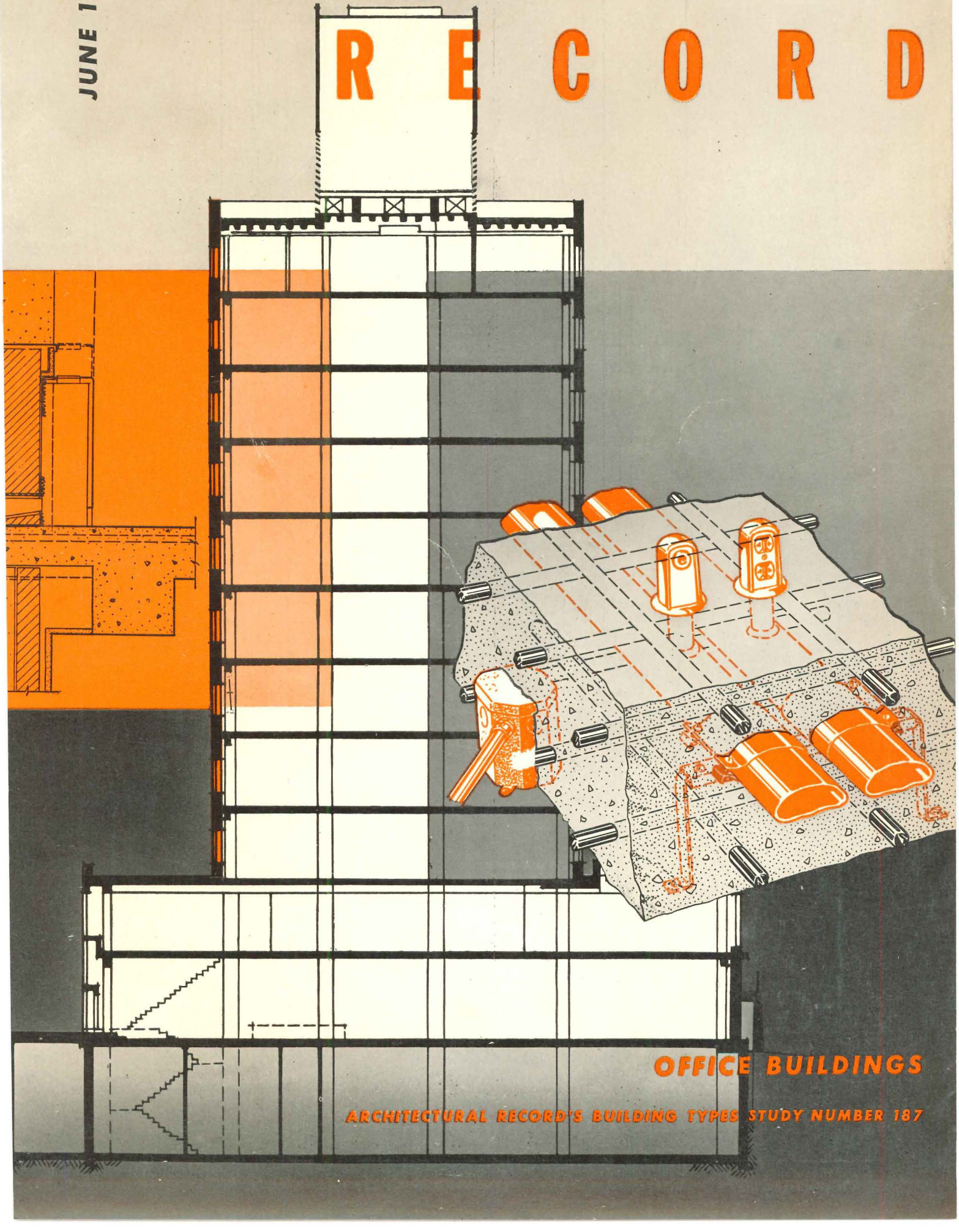
JUNE 1952

ARCHITECTURAL RECORD



OFFICE BUILDINGS

ARCHITECTURAL RECORD'S BUILDING TYPES STUDY NUMBER 187

FOR CLASSY SHOPS

. . . OR BUSY PLANTS

THERMOLIER UNIT HEATERS

The condensed table below is a quick guide to the selection of the correct Thermolier for specific conditions. The capacities, when motors are operating at normal speeds, are based on Standard Basis of Rating: 2 lb. steam pressure and 60° F entering air temperature.

Grinnell Thermoliers are tested and they are rated in strict accordance with rules of the Industrial Unit Heaters Association.

All Thermoliers can be operated at working steam pressures up to 125 psi and steam temp. up to 406° F.

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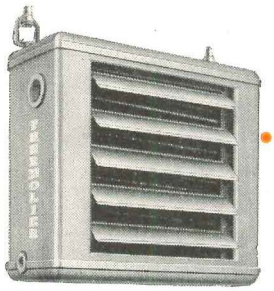
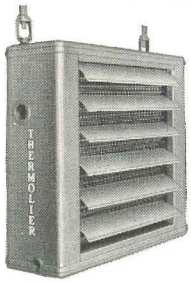
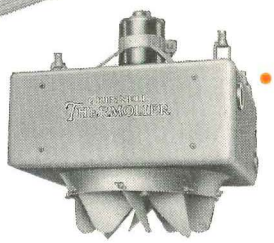


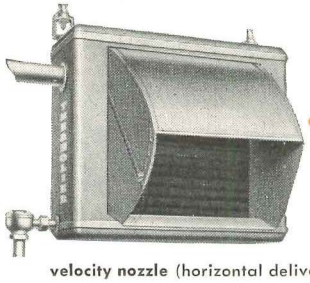
horizontal delivery



textile (horizontal delivery)



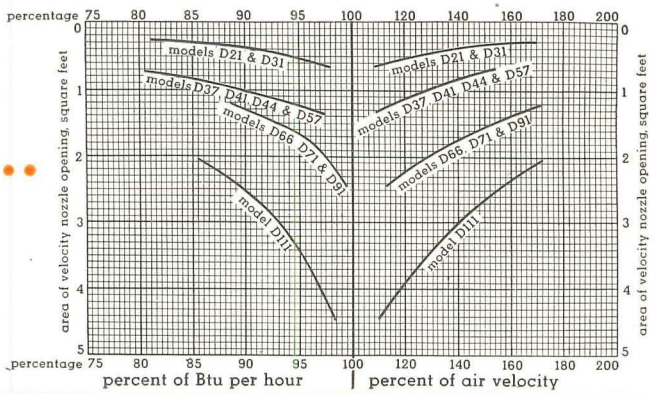
vertical delivery



velocity nozzle (horizontal delivery)

model	total heat delivered, Btu per hr	sq ft edr (nominal)	air velocity at exit, louvers open, lin. ft. per min.
horizontal delivery			
D21	35,600	148	786
D31	48,700	203	851
D37	62,200	259	753
D41	71,000	295	901
D44	84,100	350	887
D57	101,300	422	1016
D66	128,700	536	779
D71	151,700	632	977
D91	196,000	817	985
D111	275,300	1147	1048
Textile			
TX70	69,800	291	826
TX110	113,700	474	877
vertical delivery			
VA1042	50,800	212	1399
VA1045	73,600	307	1287
VA1065	109,400	456	1354
VA1075	145,600	607	1231
VA1101	185,000	770	1495
VA1111	257,000	1071	1631

performance with velocity nozzle ▶



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(Regular Edition)

Entered as second-class matter at the Post Office, Concord, N. H., March 16, 1946, under the Act of March 3, 1879.

Vol. 111 · No. 6 *June 1952*

ARCHITECTURAL RECORD

Architectural Record (combined with American Architect and Architecture) is published monthly by F. W. Dodge Corporation, 10 Ferry St., Concord, N. H., with Editorial and Executive Offices at 119 West 40th Street, New York, N. Y. Western Editorial Office, 2877 Shasta Road, Berkeley 8, Calif. Chairman of the Board, James McV. Breed; Vice-Chairman of the Board, Paul Abbott; President, Thomas S. Holden; Vice-President and Treasurer, Howard Barringer; Secretary, Sanford D. Stockton, Jr.; Vice-Presidents, Irving W. Hadsell, Chauncey L. Williams, H. Judd Payne, T. Oliver Morgan; Assistant Secretaries, George W. Morgan, William C. Breed, Jr.; Assistant Vice-Presidents, Clyde Shute, Clifford G. Dunnells, Jr., Howard M. Thompson, Marc Wayne, Robert F. Marshall; Assistant Treasurers, Walter F. DeSaix, Edwin H. Freed, Irving B. Satin; Regional Vice-Presidents, Carl S. Bennett, Ralph M. Hairston, Julius T. Little, Richard H. Ray. Member Audit Bureau of Circulation and Associated Business Papers Inc. Architectural Record is indexed in Reader's Guide, Art Index, Industrial Arts Index and Engineering Index. Subscription rates: United States and Possessions, Canada, Cuba, Mexico, Central and South America, and Spain, $4.50 the year, $7.50 for two years, $9 for three years; elsewhere, $6.50 the year, $11.50 for two years, $15 for three years. Single copy $2. Circulation Manager: Marshall T. Ginn. Every effort will be made to return material submitted for possible publication (if accompanied by stamped, addressed envelope), but the editors and the corporation will not be responsible for loss or damage. Other Dodge Services: Real Estate Record & Builders' Guide, Sweet's Files, Home Owners' Catalogs, Dodge Reports & Dodge Statistical Research Service.

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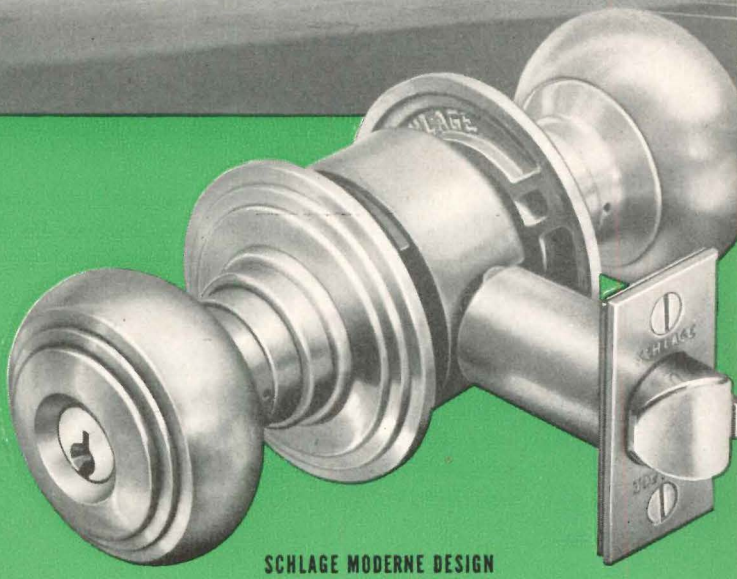

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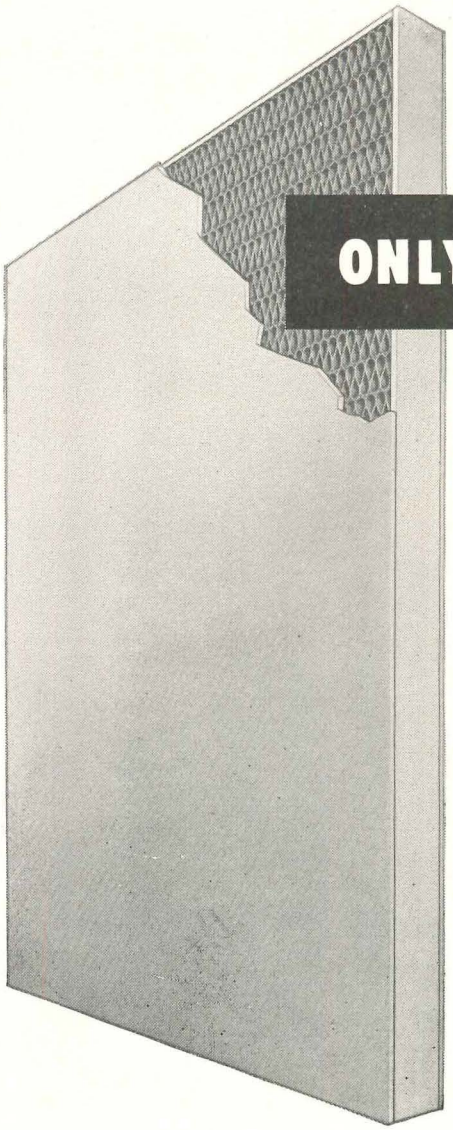

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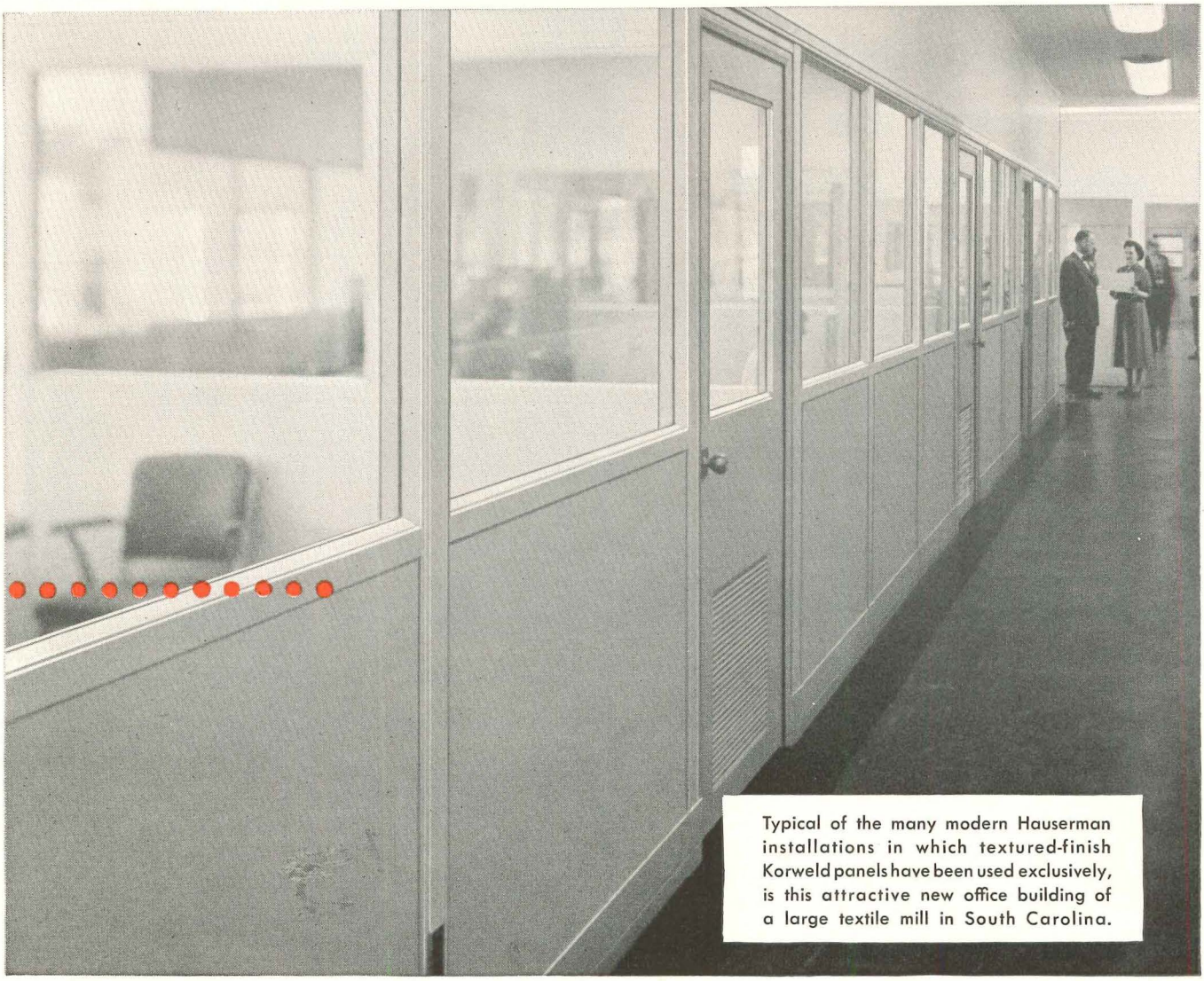

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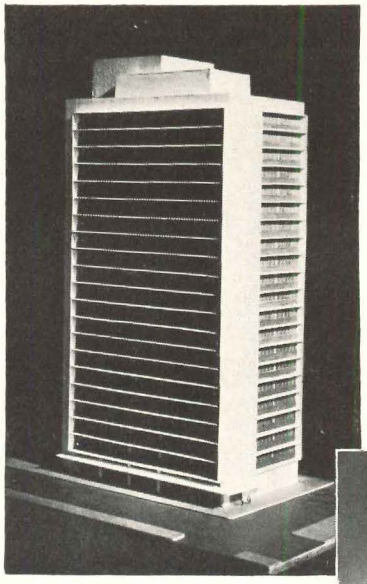

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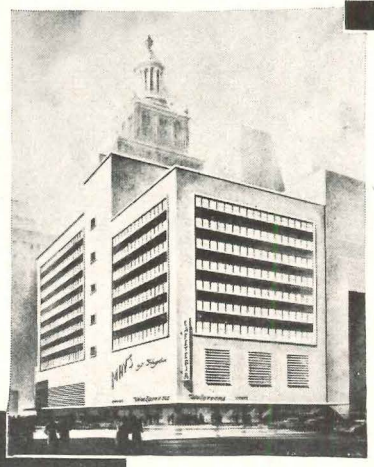
Consulting Engr.: Herman Blum
Elec. Contr.: Hirsh Elec. Co.
Owner: Melvin A. Silverman and Bennett Rose

This new Q-Floor building will always be ready for unforeseen changes in floor arrangements . . . changes that demand new electric outlets.

Bank of Commerce Building→

Architect: Alfred C. Finn, F.A.I.A.
Gen. Contr.: Manhattan Constr. Co. of Texas
Elec. Engr.: Reg. F. Taylor
Elec. Contr.: The Howard P. Foley Co.
Owner: The National Bank of Commerce of Houston

With G-E Q-Floor wiring, electric outlets can be added or relocated quickly — without disturbing this building's tenants.



San Jacinto Building

Architect: Kenneth Franzheim, F.A.I.A.
Gen. Contr.: W. S. Bellows Const. Corp.
Struct. Engr.: Ward Butterwick
Elec. Engr.: Reg. F. Taylor
Elec. Contr.: J. S. Copeland Elec. Co
Owner: Brown-Bellows-Smith, Inc.

Dead load was reduced in the rebuilding of the San Jacinto Hotel into a modern office building. After stripping the building to its original steel frame, the heavy, arched concrete floors were replaced with Q-Floors (steel floor and raceway combined).

Sakowitz Building

Architect: Alfred C. Finn, F.A.I.A.
Interior Architect: Brochsteins Inc.
Gen. Contr.: Tellepsen Constr. Co.
Elec. Engr.: Reg. F. Taylor
Elec. Contr.: J. S. Copeland Electric Co.
Owner: Sakowitz Bros.

G-E Q-Floor wiring gives this department store complete electrical coverage for display window, show case, and office lighting.

You can put your confidence in—

GENERAL ELECTRIC

BAN ON AMUSEMENT BUILDING ENDS JULY 1; HOUSING GETS STRUCTURALS

FOR ARCHITECTS and all of the building industry, the first birthday of the Controlled Materials Plan may well be a day to celebrate.

July 1 is the date set by the National Production Authority for a significant series of relaxations in the basic construction order, CMP Regulation Six, including the revocation of the prohibition on construction of entertainment and amusement projects, oldest (Oct. 27, 1950) of the building curbs.

On the same day, amendment of the housing construction order, NPA M-100, will provide for self-authorization of some structural steel in housing.

Major Changes Listed

These are the major amendments in prospect:

1) Revocation of the ban on amusement construction; per-quarter self-authorization of five tons of carbon steel (not more than two of structurals); 200 lb of copper; 250 lb of aluminum.

2) Increase of per-quarter commercial self-authorization, beginning *October 1*, to 25 tons of carbon steel (no limit on portion of structural shapes); 750 lb of copper; 1000 lb of aluminum.

3) Revocation of restriction of aluminum to industrial and public utility construction only; aluminum to be allowed in all types of construction. From July 1 to October 1, 250 lb may be self-authorized for commercial construction.

4) Reclassification from commercial to industrial category of transportation facilities; public utility systems, water and sewage systems; administration buildings, garages and service buildings for industrial projects when owned and operated as part of the industrial project.

5) Per-project-per-quarter self-authorization of 2000 lb of stainless steel for chemical plant construction.

6) A previously-announced (ARCHITECTURAL RECORD, May 1952, page 11) increase in self-authorization allowances for schools (and roads and highways).

7) Self-authorization for housing construction of 1500 lb of new domestic structural shapes and 250 lb of aluminum in addition to the present allowance of steel and copper.

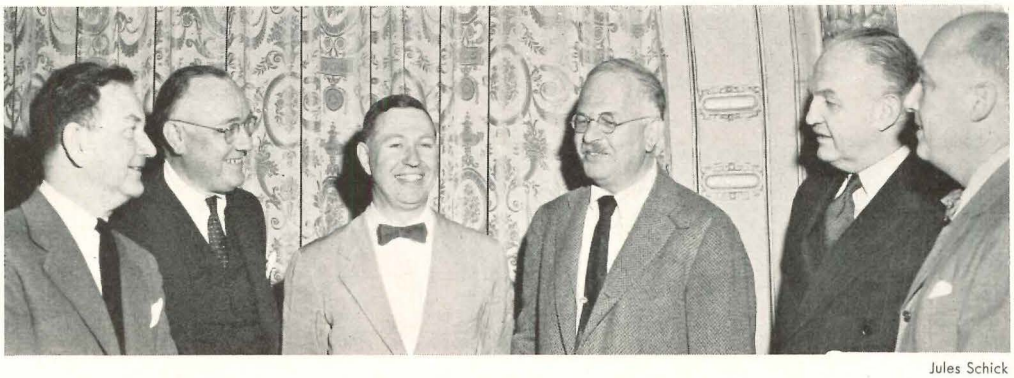
Aluminum Before Steel?

The quickening pace of aluminum decontrol and continuing evidence of easing demand for aluminum products brought reports that aluminum might after all be the first of the controlled materials to be completely "decontrolled," perhaps by Fall. Steel decontrol, once expected by the end of 1952, is now considered unlikely before the first quarter 1953.

Fast Convention News

News of the 84th annual convention of the A.I.A. will get to its members fast in two special issues of *Chicago Construction News*, one of the three F. W. Dodge Corp. newspapers.

An on-the-spot staff headed by Ernest Mickel, Dodge Washington news bureau head, will report convention news in two special issues, June 24 and 30. The first will be distributed at the convention; the second will be mailed to all A.I.A. members.



Jules Schick

Left: symposium on architecture and the arts at A.I.A. Middle Atlantic Regional Conference at Philadelphia (story, p. 28): Roy F. Larson, A.I.A., president, Philadelphia Art Commission; Andrew C. Ritchie, Museum of Modern Art, New York City; Frederick Gutheim, assistant to A.I.A. Executive Director; Ben Shahn, mural painter; Lawrence M. C. Smith, trustee, Philadelphia Museum of Art; Oscar Stonorov, A.I.A., moderator

Right: Conference Chairman Beryl Price, Philadelphia Chapter first vice president, with national A.I.A. officers —Norman J. Schlossman, second vice president, Chicago; Kenneth Wischmeyer, first vice president, St. Louis; C. E. Silling, Middle Atlantic Regional Director, Wheeling, W. Va.; Maurice J. Sullivan, treasurer, Houston

COMPLETE NEW HOME FOR OLD UNIVERSITY TAKES SHAPE

ON THE OUTSKIRTS of Mexico City, the mammoth project known as University City is rapidly taking shape. To be no less than a complete new campus for the University of Mexico, oldest university on the continent, the finished project will include an Olympic stadium for 110,000 spectators, extensive sports and recreational facilities, and all the scholastic, administrative and residential buildings for a faculty and student body of more than 25,000.

Also on the campus will be the National Library of Mexico — to be housed in a windowless 14-story building — a giant swimming pool and a complete system of highways and bridges.

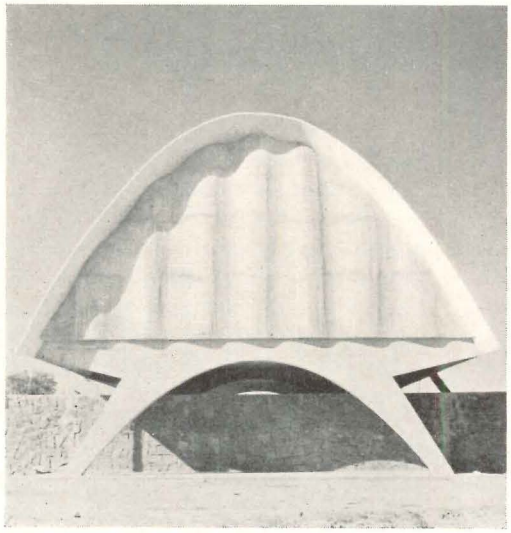
Besides the immense scope of the project, there are several other matters of special interest connected with it. One of these is the speed — a little over two years — with which it will have been completed. Another is the coordinated planning program which enabled a great number of structures in a wide range of designs to be blended into a harmonious whole, without sacrificing the individuality of the particular buildings. Still another point of interest is the age of the participating architects, who range in average age from 25 to 36.

Chief planner and coordinator for University City has been Carlos Lazo, who supervised a group of over 140 architects and engineers. Actual designing of the individual buildings was done by from one to four architects, working with engineers, advisers from the schools to be housed, and the artists engaged to design the murals and mosaics with which the project abounds. Among the artists is Diego Rivera, who is designing what is to be the world's largest mural for the exterior of the giant Olympic stadium.

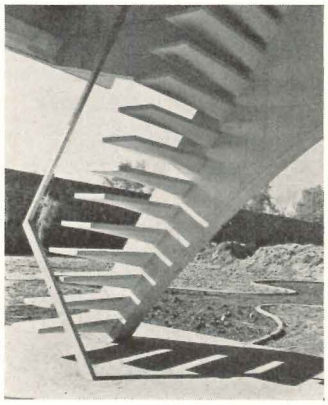
In many of the buildings, extensive use was made of native earth, lava rock and tepetate, resulting in a considerable lowering of costs. The structures were largely built by previously unskilled laborers who were trained by the hundreds especially for the job so that Mexico's building industry would not be crippled by the construction of the huge project.

Major zones for University City include: Scholastic and Administrative, with complete facilities for the sciences,

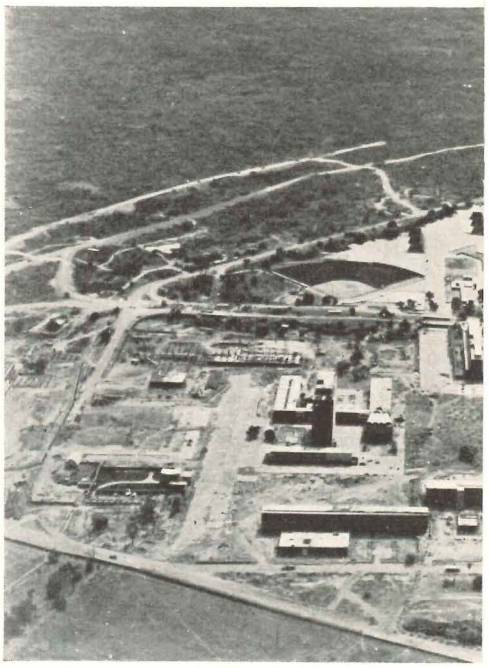
(*Continued on page 364*)



Building for Cosmic Ray Institute, left, shows striking handling of concrete construction. Cantilevered stairs, below left, part of same building, again demonstrate bold technique and imaginativeness of architects

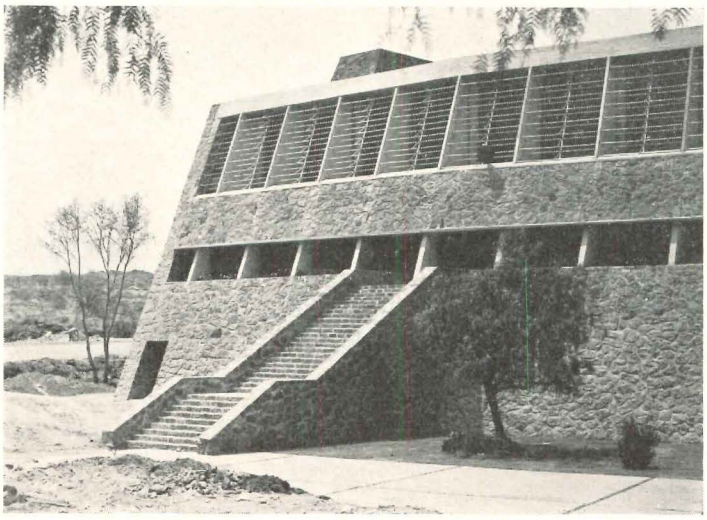


Erwin G. Lang

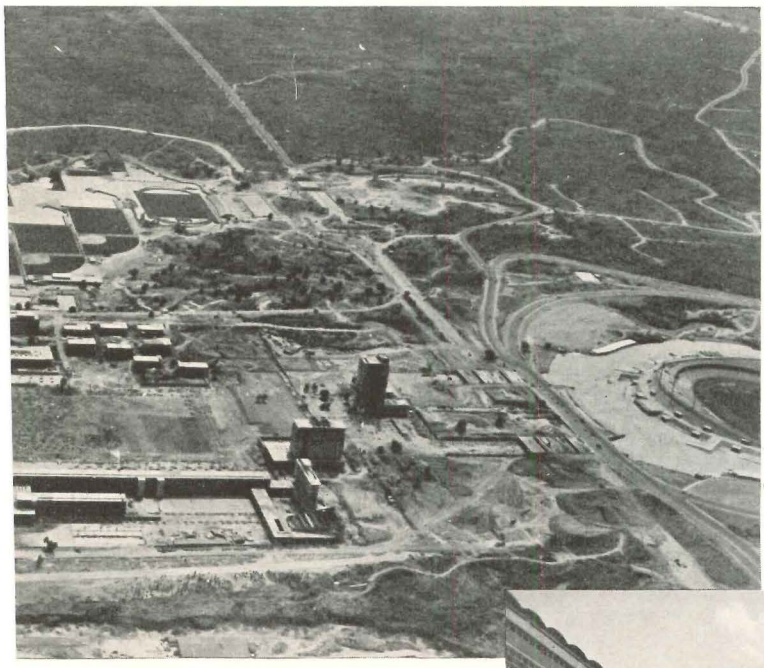


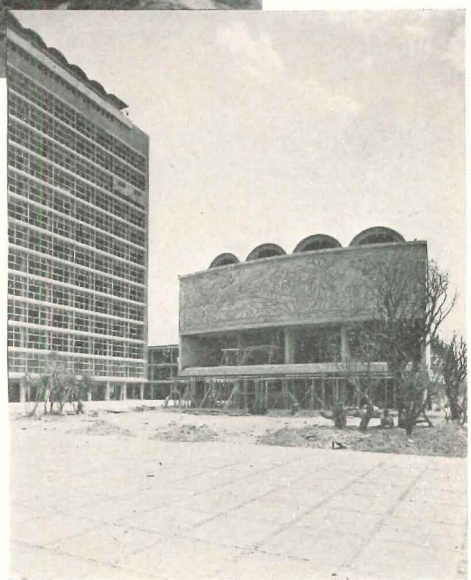
Air view, above, shows entire campus area with Olympic stadium at far right. Photo at left above shows Engineering Laboratories; skylight domes are concrete, with clear insets. Bridge, shown left, serves as connecting ramp between two other engineering buildings

IN MEXICO CITY

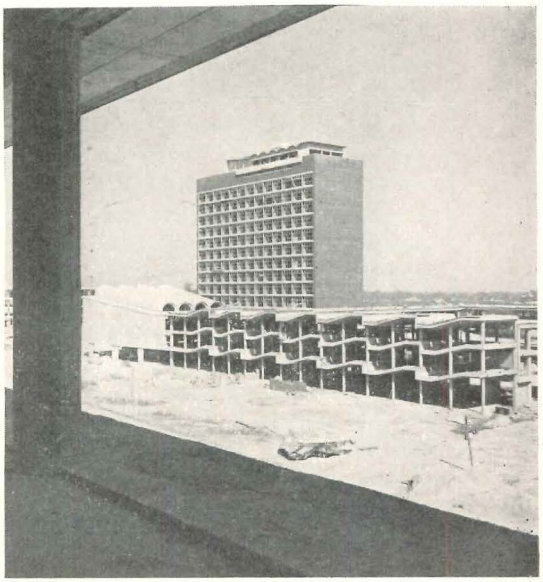


Frontones Building, above left, will be used for dances, meetings, other recreational purposes, has seating capacity of 3000. Like many other buildings in the project, it uses native materials, employs forms reminiscent of ancient Aztec structures. Olympic stadium, above top, seats 110,000, is built up from huge mounds of earth and tepetate. View below shows exterior details. Finished stadium will have Diego Rivera mural around entire outside wall





Large glass-walled building is Tower of Science, with adjoining mural-fronted auditorium. View at far right, taken from opposite side, shows science lecture halls, with auditorium at left and Tower in background



NEW-TYPE ARMORIES ARE DESIGNED FOR EXPANSION

THREE SERIES of flexible master plans for a new type of "expansible" armory for Army Organized Reserve Corps units have been prepared by Reisner & Urbahn, Architects, of New York, for the Army Corps of Engineers to use in its continuing construction program.

The first contracts are now being let at district offices of the Corps of Engineers for construction of 25 units in 24 cities across the country at a cost of approximately $9 million. Completion is scheduled by the middle of 1953.

The new series makes a sharp break from the type of armory constructed in the first phase of the postwar expansion program, which produced 57 units either completed or now under construction.

More Classroom Space

Emphasis on the educational function of the armories as the modern Army requires more and more technical training for reserves is reflected in the curtailment of space given to the drill area in favor of much more space for classroom instruction.

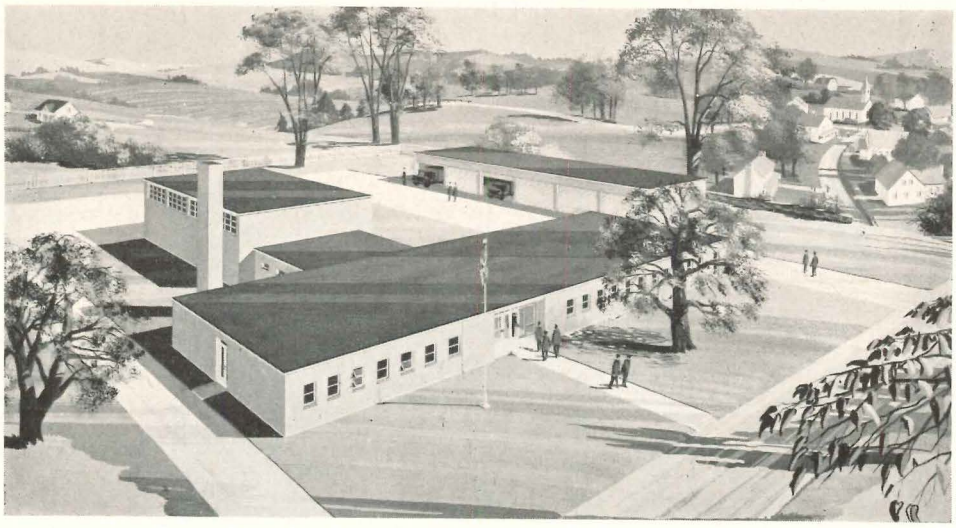
The master plans offered are a 400-man unit, expandable by addition of prescribed sections to serve 600 and 800 men; a 600-man unit, expandable to 800 and 1000; and a 1000-man unit, expandable to 2000.

Basic Plan Is Simple

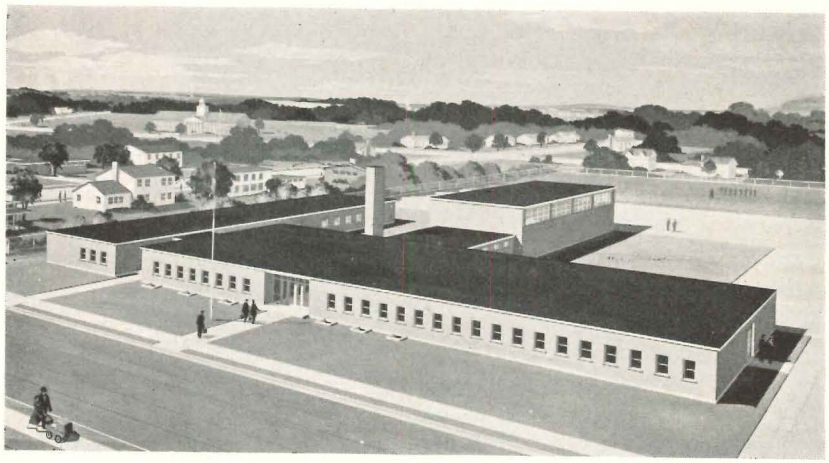
The basic plan provides an "assembly hall" (replacing the old drill hall) 70 by 50 ft and a section 170 by 50 ft which includes offices, classrooms (600 sq ft) and a rifle range 110 by 20 ft with a connecting link containing various service facilities and utility room.

Expansion is accomplished in any of the three series by addition of another "connecting link" and another section. Dimensions of the assembly hall and its connecting link and construction details of the basic units are identical for the first two series; in the third, there are two variations. Framing of the assembly hall in the 1000 unit is planned to permit doubling the size of the hall in the 2000 stage; and the rifle range is made 30 ft wide instead of 20, to permit later expansion from four firing ranges to six.

The plans include numerous variations for adaptation to local requirements — with or without basements; with coal, oil or gas heating systems; of brick or masonry on wood frame construction or (in earthquake areas) reinforced concrete.



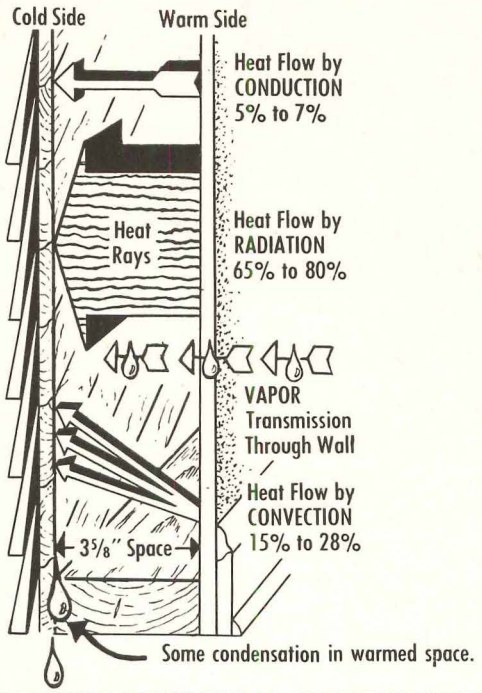
Basic unit in the 400–600–800 man series: assembly hall is at rear. Separate building in center background is motor vehicle shed for tanks, halftracks, field equipment, etc.



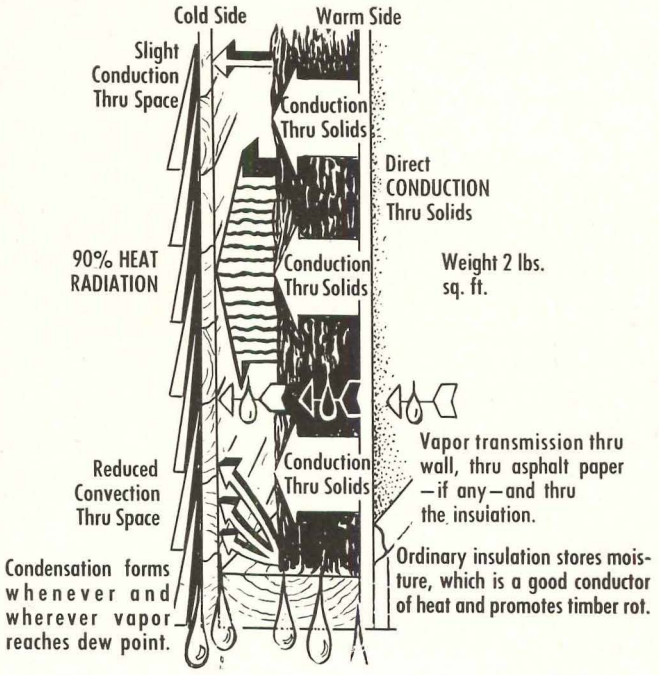
Above: basic unit in the 600–800–1000 man series has larger front section with additional classroom and other facilities in third part at left. Below: basic 1000–2000 man unit

Ken Mitchell

Heat & Vapor Flow Thru Air Spaces In Non-Insulated Wall



Heat & Vapor Flow Thru Wall Space With Ordinary Insulation



For more efficient cooling and heating systems...

Performance failure by insulation unduly burdens heating and air-conditioning plants. Insulation specification is too often automatic.

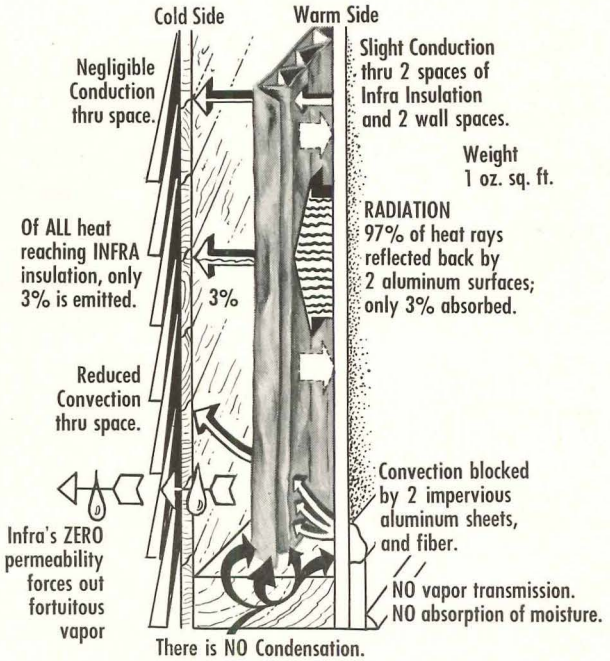
Ordinary insulation also promotes condensation, absorbs and retains moisture. Wet, it is an excellent conductor of heat, and promotes timber rot. Wet insulation tears away at points of fastening, for instance in crawl spaces, leaving the structure uninsulated.

Loose fill insulations settle down, become denser and better conductors of heat. The spaces they leave empty are deprived of the insulation originally planned.

Not all insulations perform with the same efficiency. (Consult the Chart of Thermal Insulation Values in Schwartz's "Simplified Physics of Vapor & Thermal Insulation," sent free on request. The chart shows at a glance *k*, C, R, and U thermal factors, of all insulations, of all thicknesses, their weights, densities, etc.)

Multiple accordion aluminum's rating is especially good, and permanent. Of all heat transferred through structural spaces, 50% to 80% is by Radiation, all but 5% of the rest is Convection. Multiple accordion aluminum sheets throw back 97% of the heat rays which strike them. They block Convection. Their insignificant mass, with multiple air space compartmentation, defeats Conduction.

The permeability of multiple accordion aluminum to water vapor, to cold and warm air and other gases, is zero. Its structure permits no dew-points to be reached on its surfaces or within it. It neither sustains nor retains moisture. It cannot deteriorate, is flame-resistant, repels insects, rodents and mold. Its commercial forms are Infra Insulation, Types 6, 4, and 4 Jr.



Heat & Vapor Flow Thru Wall Space With Multiple Accordion Aluminum

INFRA THERMAL FACTORS. TYPE 6

Up-Heat	**C.089, R 11.23**	**=**	**4⅗" dry rockwool**
Wall-Heat	**C.073, R 13.69**	**=**	**5⅝" dry rockwool**
Down-Heat	**C.044, R 22.72**	**=**	**9" dry rockwool**

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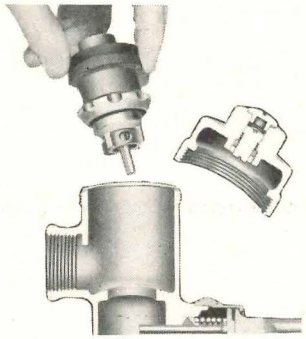
Fine Flush Valves for Fine Buildings

For complete information on Watrous Flush Valves write for catalog No. 449-A



Among Watrous Fine Features

Single Step Servicing . . . . . .

Reduces maintenance time to an absolute minimum. Entire operating unit, including main seat washer, can be lifted out and replaced in a few seconds. No need to take valve off of line to service.

GOVERNMENT ACCOUNTING OFFICE BUILDING

Washington, D.C. There are almost 1000 Watrous Flush Valves installed in this building.

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DIVISION OF DESIGN AND CONSTRUCTION,
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Plumbing Contractors
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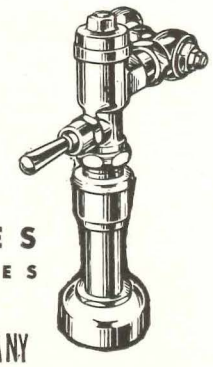
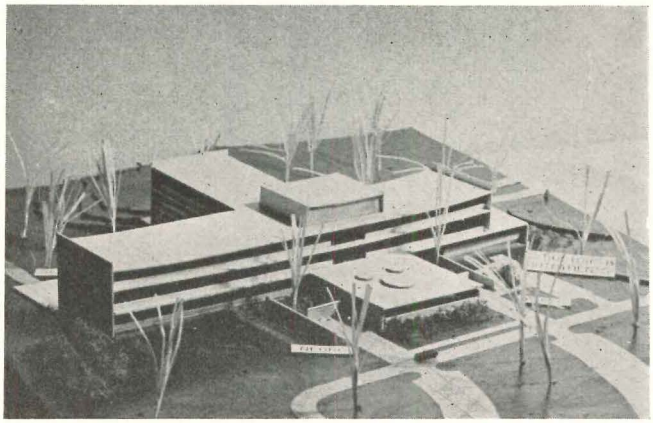


Watrous ADJUSTABLE FLUSH VALVES
BOTH DIAPHRAGM AND PISTON TYPES

THE IMPERIAL BRASS MANUFACTURING COMPANY
1240 West Harrison Street, Chicago 7, Illinois

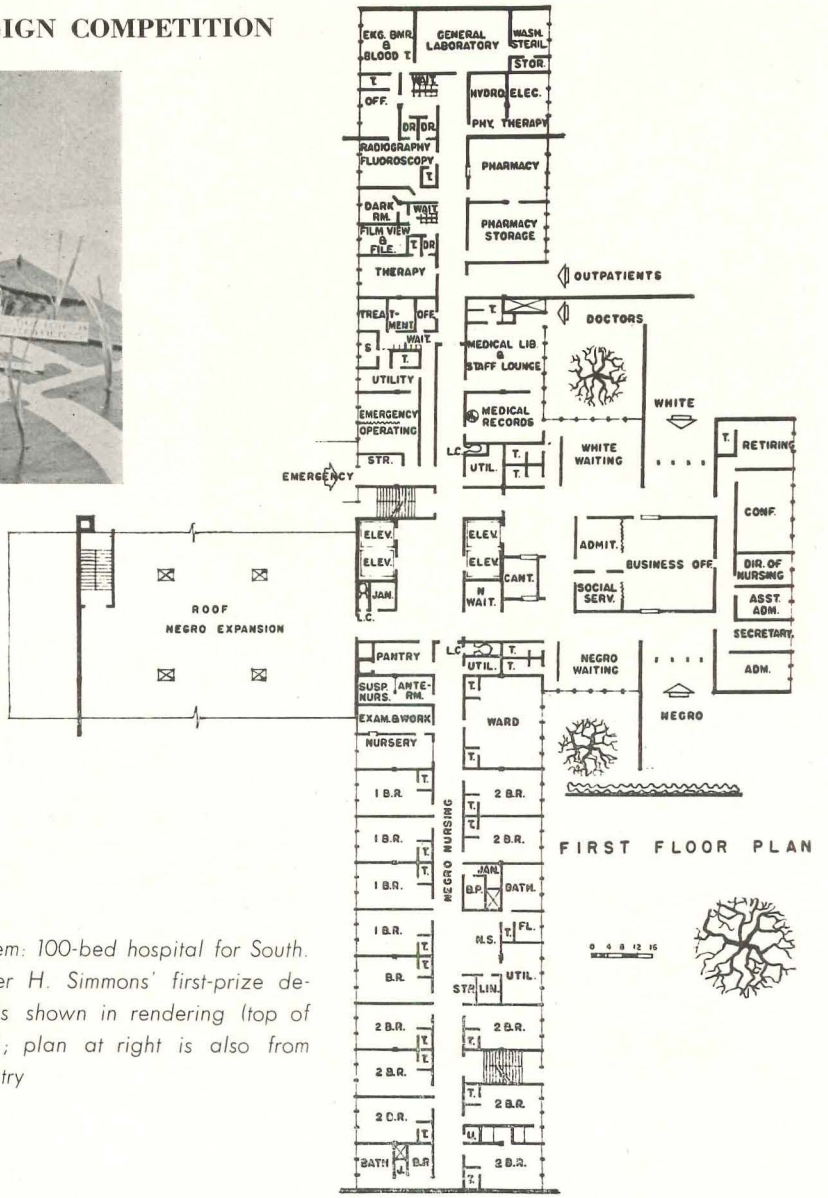
STUDENTS SCORE IN HOSPITAL DESIGN COMPETITION



ARCHITECTS from Virginia, West Virginia and the Carolinas held their first joint session with the 22nd annual meeting of the Carolinas-Virginia Hospital Conference April 24–25 in Roanoke, Va., and one of the high spots was announcement of the student winners of the hospital design competition held under the sponsorship of the American Institute of Architects in schools of architecture of the region.

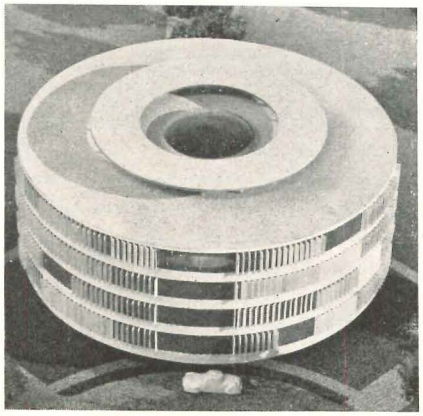
The competition produced some very creditable entries; and in general the prize-winning designs showed evidence of an appreciation of the problems involved in hospital design and reasonable thinking in their solutions.

First prize of $350 was won by Walter H. Simmons, Clemson College; second prize, $200, by Don S. Carpenter, University of Virginia; third prize, $100, William H. Phillips, Virginia Polytechnic Institute. There were seven honorable mentions.

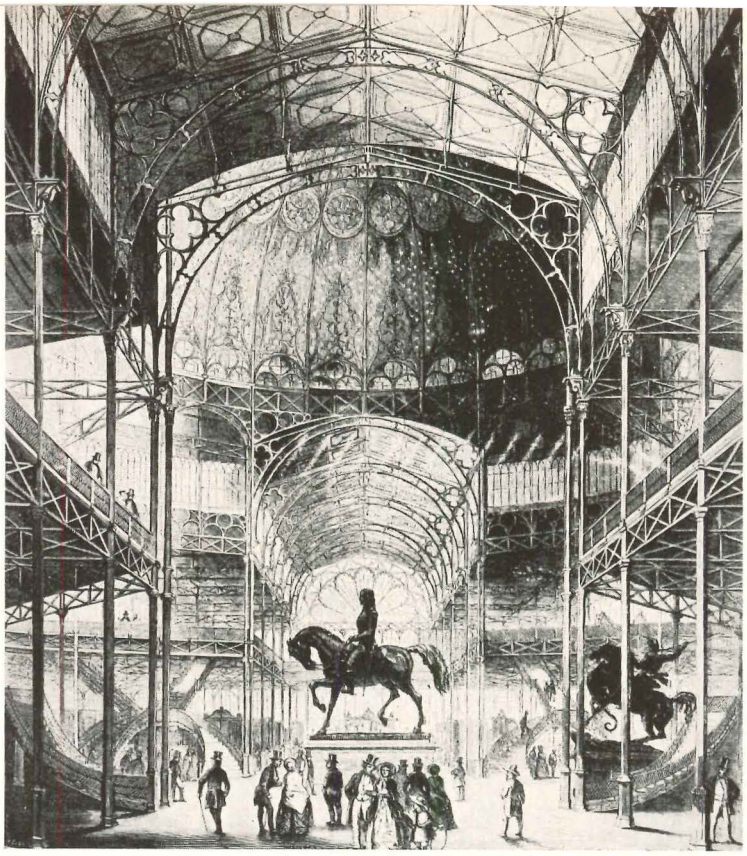


Problem: 100-bed hospital for South. Walter H. Simmons' first-prize design is shown in rendering (top of page); plan at right is also from his entry

Below: it's a design for a hospital, really radial. It brought an honorable mention to Edward Shirley, North Carolina State College



— *Drawn for the* RECORD *by Alan Dunn*



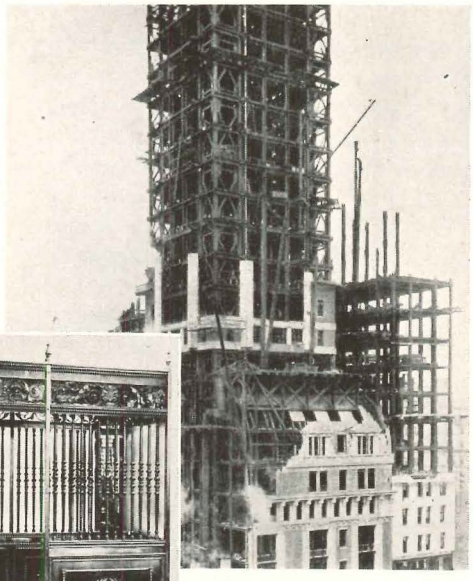
B. Silliman

CAST IRON FRAMING AND GLASS

1853—New York's Crystal Palace, erected on present site of Public Library for exhibition of 1853–54. Architects: Carstensen & Gildemeyer

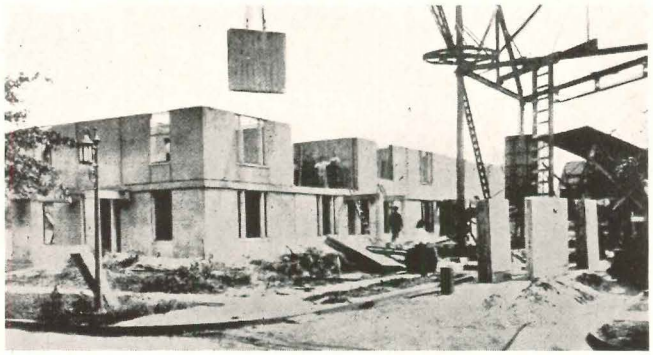
FIRST CONCRETE STRUCTURE IN U. S.

1852—A large barn erected by Horace Greeley in Chappaqua, N. Y., later made into a house



STEEL FRAMING AND THE ELEVATOR

1907—Singer Building, New York City; base of tower, showing wind bracing at corners. Architect: Ernest Flagg. The elevator cab dates to the period 1910–1920



STANDARDIZATION: THE LIFT-SLAB

1919—Forest Hill Gardens, housing built with the "lift-slab" technique developed by the architect, Grosvenor Atterbury

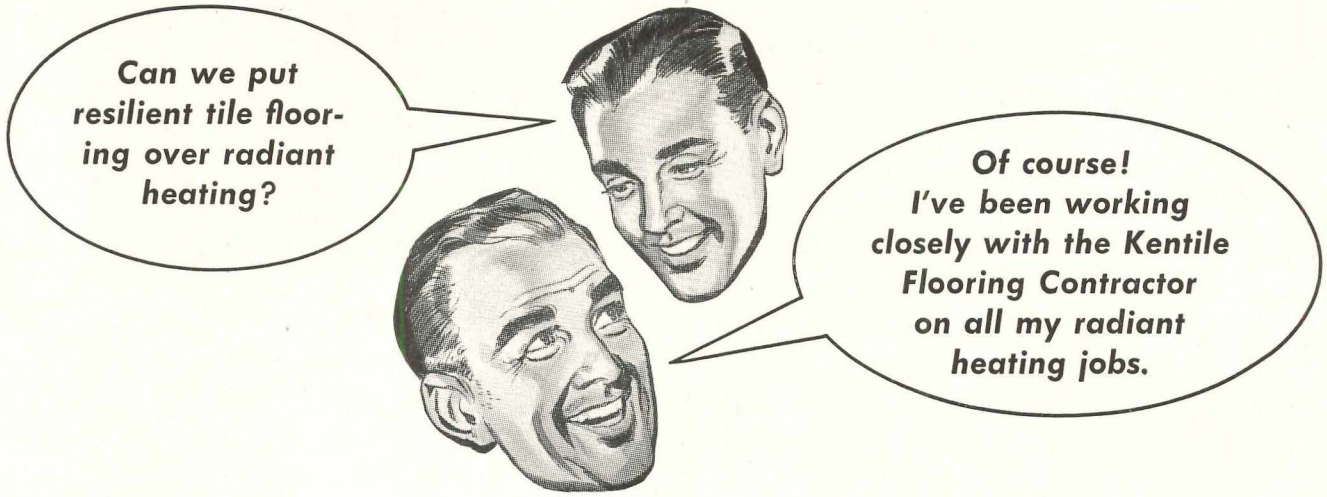
ENGINEERING AND ARCHITECTURE: A.I.A. SCANS 100 YEARS

THE AMERICAN INSTITUTE OF ARCHITECTS has marked its annual convention by assembling an exhibit that spans a significant century of developing collaboration between engineering and architecture.

Dean Leopold Arnaud of the School of Architecture at Columbia University and his committee have approached the staggering task of organizing their subject by establishing six sections, each devoted to a major evolutionary step in building design and construction — cast iron, the steel frame, the elevator, reinforced concrete, glass, and standardization. They have limited themselves strictly to these categories, leaving to another occasion such aspects of the subject as wood, aluminum and prestressed concrete and more technical specialties like plumbing, heating and lighting.

The exhibit will be opened to the public June 10 on the street-level mall of Lever House in an installation designed by Morris Ketchum Jr., of Ketchum, Giná & Sharp, New York architects. Some 200 photographs will be mounted on 42 panels, each 40 in. sq, hung on a series of specially designed metal and wood standards. The whole display is planned to be demountable and packable; and it will be sent to Chicago in the Fall for the Engineering Centennial celebrating the 100th anniversary of the American Society of Civil Engineers.

"The Re-Union of Architecture and Engineering 1852–1952" is the final title; some who see it may wish it had been possible to cover the substance of the original one, "Engineering Contributions to Architecture 1852–1952." Lewis Mumford's text helps to suggest awareness of architecture's "heavy debt to the engineer" as well as its own creative role.



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Specialized flooring problems call for specialized training and experience. And, no man is better qualified to help you solve the problem of selecting and installing specialized flooring than the Kentile Flooring Contractor. His years of working closely with architects and builders have equipped him with the precise knowledge needed to recommend the right floor every time... the one floor that provides the longest wear at the lowest cost ...the greatest maintenance economies.

Even if your problem results from architectural design or construction methods recently developed, the Kentile Flooring Contractor is prepared to give you valuable assistance. For his name, look under FLOORS in the classified phone directory... or write Kentile, Inc., 58 2nd Ave., Brooklyn 15, N. Y.

**KenRubber should not be installed on concrete in contact with the earth.*

THESE "K" FACTORS ARE YOUR GUIDE TO THE CHOICE OF RESILIENT TILE FLOORING FOR USE OVER RADIANT HEATED CONCRETE

KENTILE	KENCORK	KENRUBBER
4.5 BTU/sq. ft./hr./°F/in. thick	0.7 BTU/sq. ft./hr./°F/in. thick	4.5 BTU/sq. ft./hr./°F/in. thick
1/8" 36 BTU/sq. ft./hr./°F	3/16" 3.7 BTU/sq. ft./hr./°F	1/8" 36 BTU/sq. ft./hr./°F
3/16" 24 BTU/sq. ft./hr./°F	5/16" 2.2 BTU/sq. ft./hr./°F	3/16" 24 BTU/sq. ft./hr./°F
	1/2" 1.4 BTU/sq. ft./hr./°F	

Based on the "K" factors at top of each table, heat transmission rates through the various thicknesses of KENTILE, KENCORK and KENRUBBER are shown. The °F means that this is the transmission rate when there is 1°F difference between the top and bottom of tile. The heat transmission rate increases proportionately with an increase in the temperature difference between the top and bottom of the tile; e.g., with ⅛" KENTILE, heat transmission rate would be 180 BTU/sq. ft./hr. if there were 5°F difference between top and bottom of tile.

Write to the nearest office listed below for FREE Folder that summarizes research data prepared to answer your questions about the use of resilient tile flooring over radiant heating.

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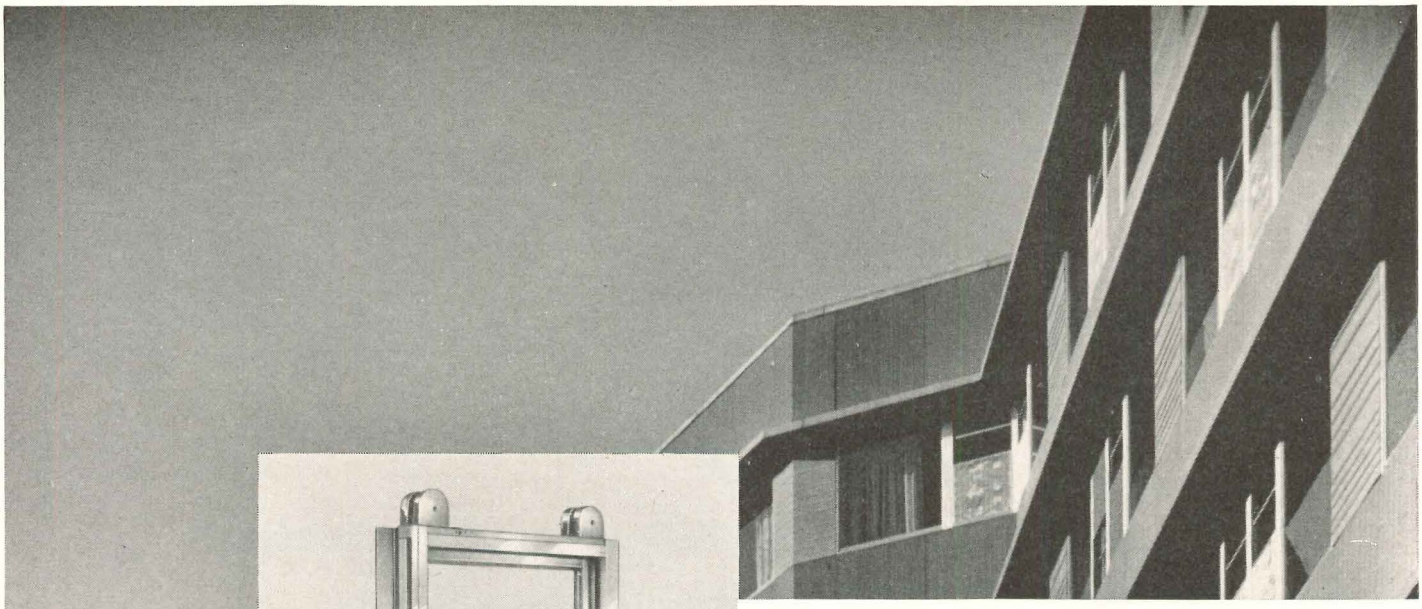

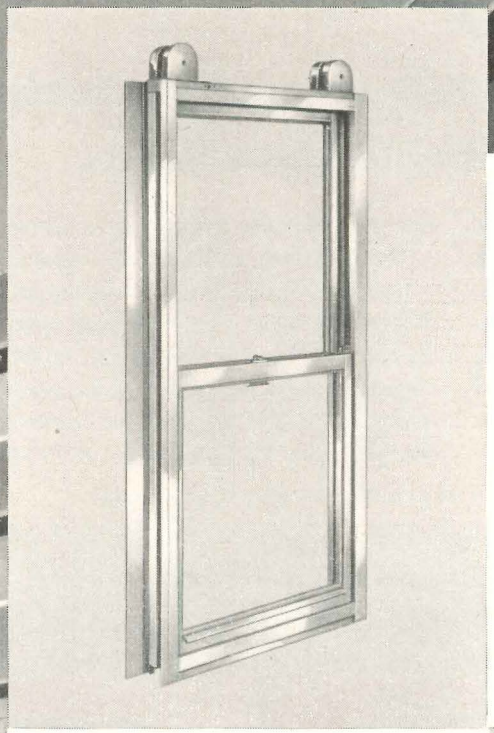

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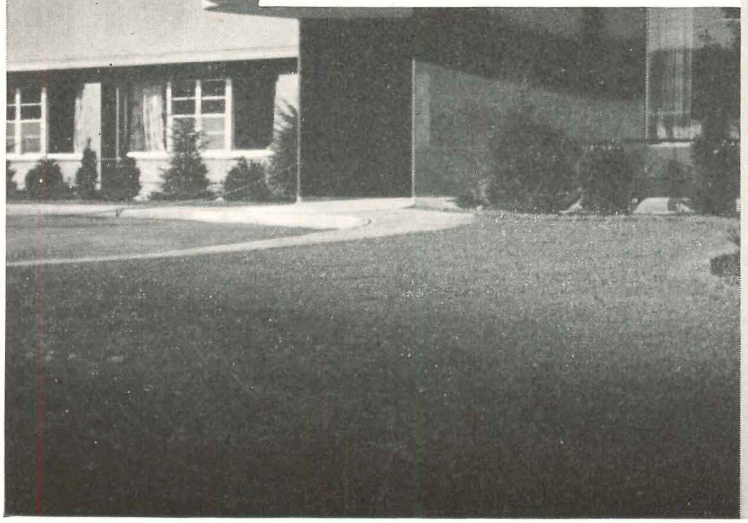
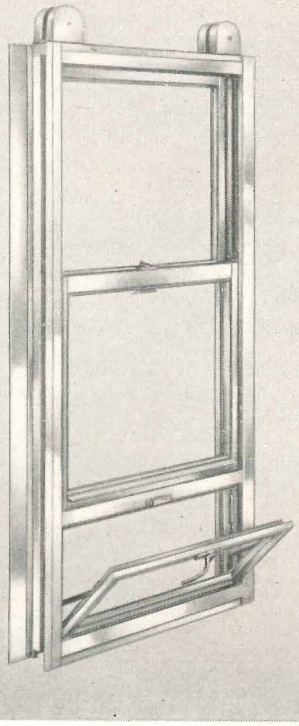
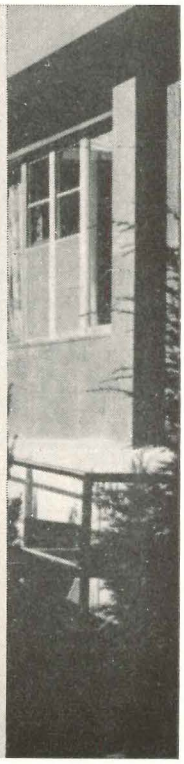
Here is Ceco-Sterling Double-Hung Aluminum Window, Series 200-B used in commercial, monumental, office, and industrial buildings . . . popular for hospitals and schools.

Here is Ceco-Sterling Double-Hung Aluminum Window, Series 200-B with Hopper Vent . . . especially adaptable for hospitals and schools. →



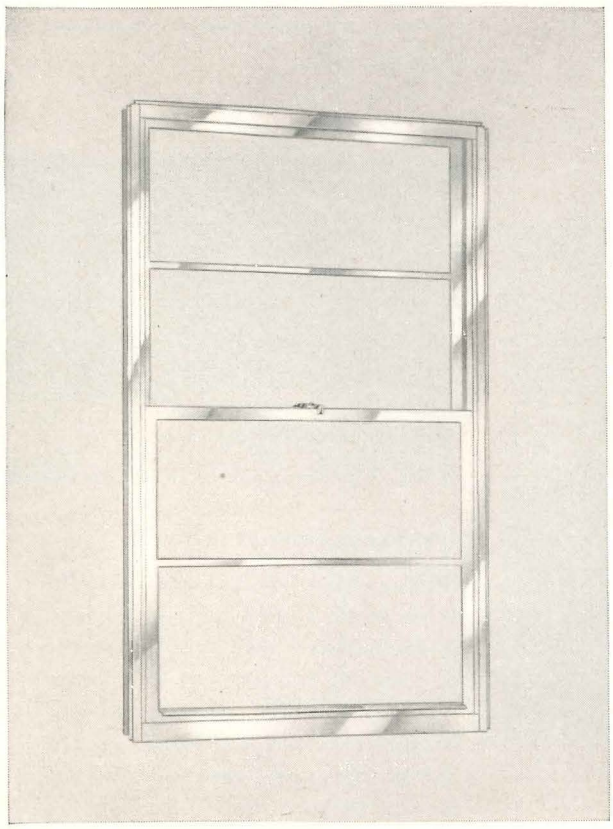




There's a new member in the family of Ceco better-engineered products

We present

CECO-STERLING aluminum windows



Ceco-Sterling Double-Hung Aluminum Window, Series 50-B for residences.

ADDING A NEW MEMBER to our family of building products is something we do with a great deal of thought here at Ceco. Thought of you . . . the architect, engineer, contractor, builder, dealer and of course the owner, too.

So painstaking research guided us in deciding on the new member of our family. Today we offer you Ceco-Sterling Double-Hung Aluminum Windows because you've stated your preference for such a product.

And since there was immediacy in your desire we acquired a product already in manufacture . . . the Sterling Aluminum Window . . . a leader in the field since 1937. Now Ceco precision manufacturing methods are applied to give you a better-than-ever product as we round out our window line with the Ceco-Sterling Aluminum Window.

Here's a window built for performance . . . made to outlast any structure . . . handsome and then some . . . with clean graceful lines . . . slender muntins allowing a generous glass area letting in more light . . . more view. "Quality Approved" for manufacturing excellence, construction and air infiltration requirements. Aluminum windows are made to specifications based on performance standards checked by an independent testing company. When you specify Ceco-Sterling Aluminum Windows you know you specify the very best . . . you're sure of savings, too.

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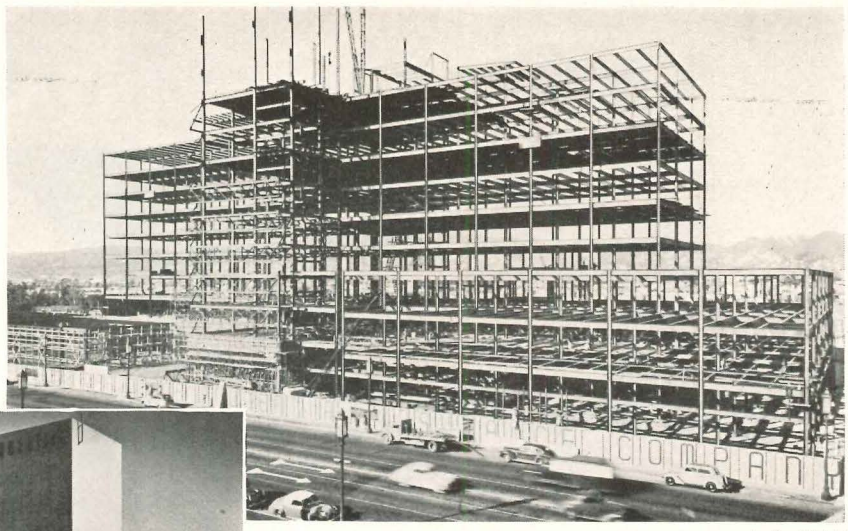
A.I.A. EXHIBIT *(Continued)*

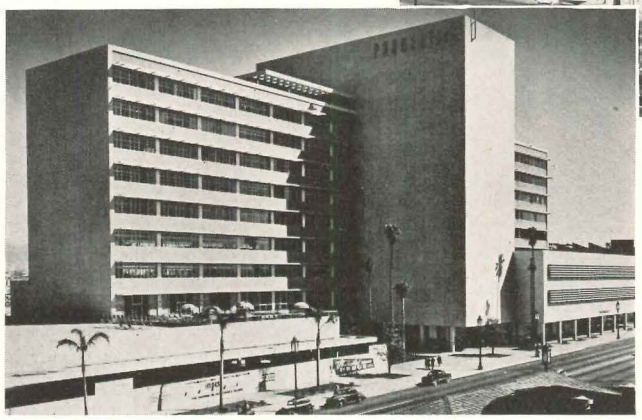
LIGHTWEIGHT STEEL FRAMING

1947—*Construction photograph shows office building for Prudential Life Insurance Company in Los Angeles; completed building below. Architects: Wurdeman and Becket*



Lanfre-Wright

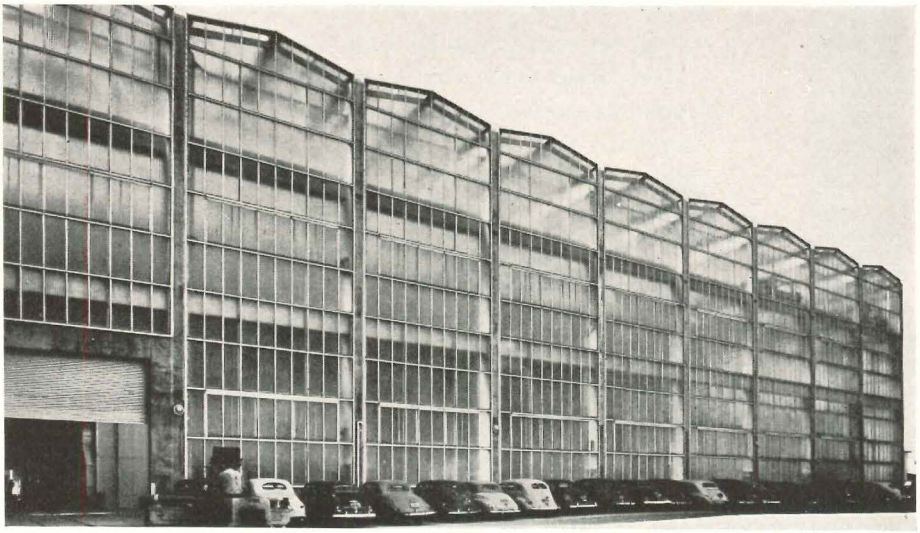
Julius Shulman



GLASS WALLS

1947—*U. S. Navy Ordnance Building, San Francisco (at left below). Architects: Kump and Falk*

Jack Holmes



Roger Sturtevant

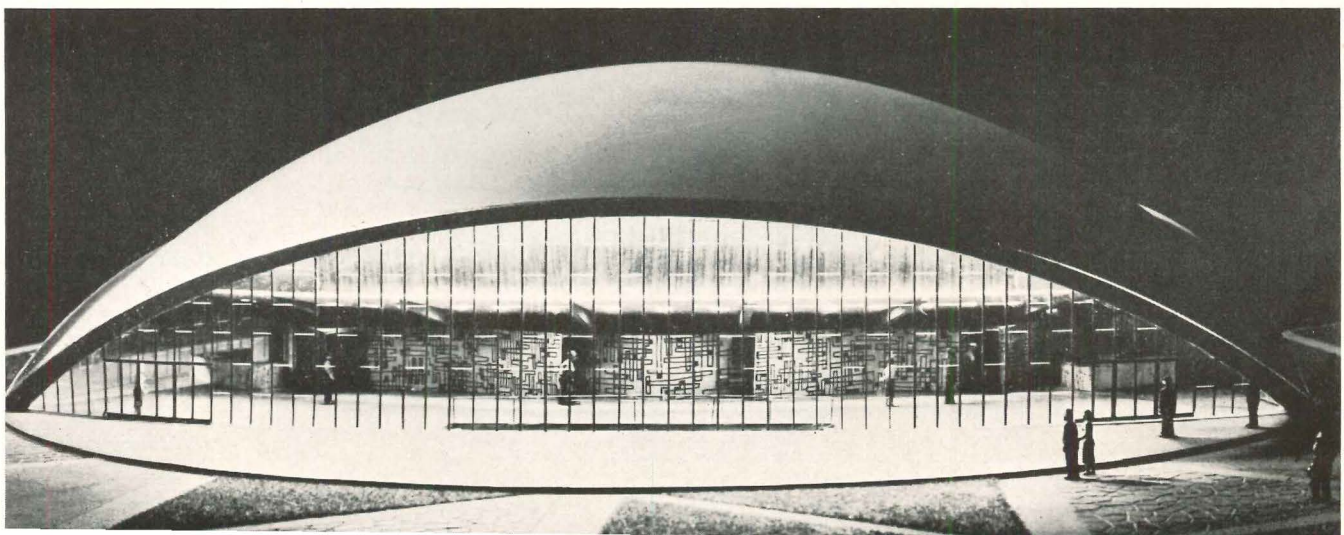
STANDARDIZATION IN PROCESS

1952—*Waffle-like roof slabs 50 by 50 ft are made of 609 precast reinforced concrete blocks 2 ft sq, raised to position by hydraulic jacks on top of columns. Eight of these units comprise completed structure in the scheme for some 40 buildings for Atlas Light Industrial and Warehousing Terminal, Miami, by Laurence Farrant & Walter Harry, Assoc., Consulting Engineers*

REINFORCED CONCRETE DOME, STEEL AND GLASS FAÇADE

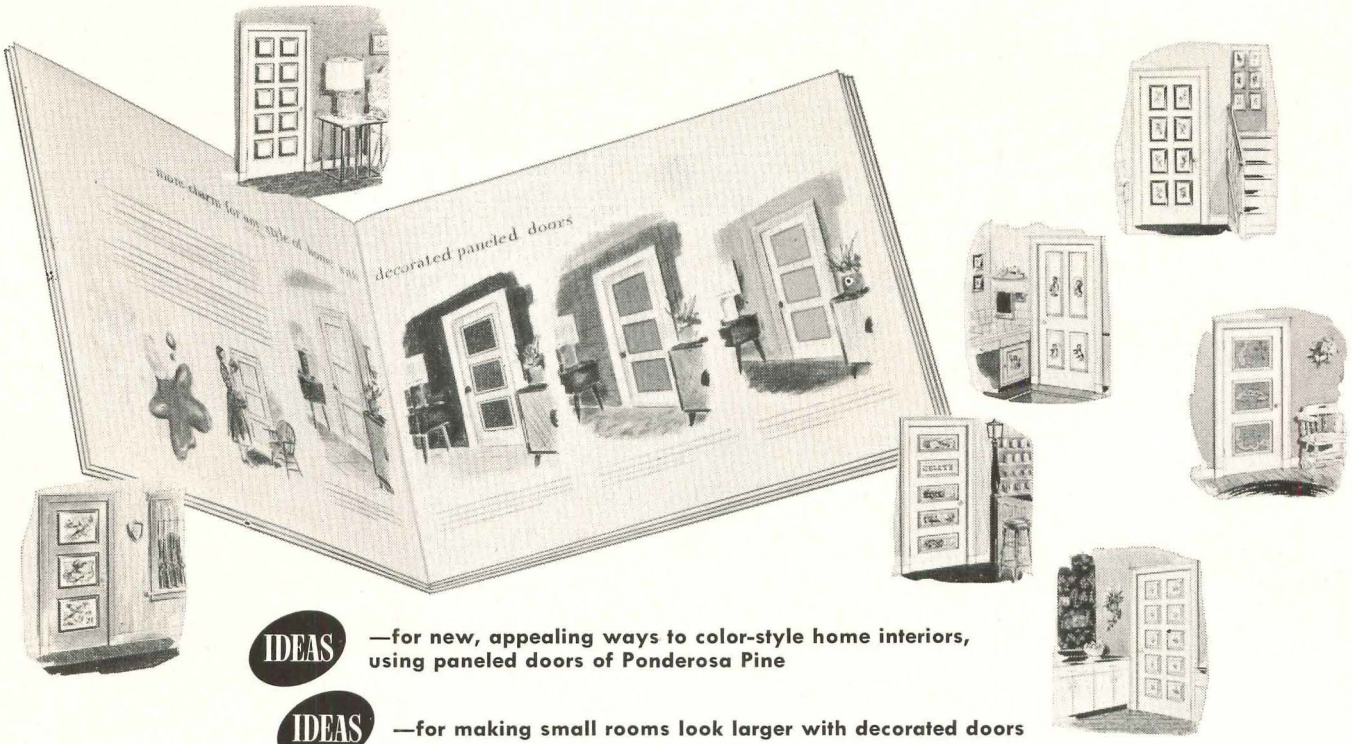
195?—*Eero Saarinen's preliminary design for a new chapel for the Massachusetts Institute of Technology, a project which is still in the development stage*

Richard Shirk



new IDEAS for the homes you plan

...doors that decorate!



IDEAS —for new, appealing ways to color-style home interiors, using paneled doors of Ponderosa Pine

IDEAS —for making small rooms look larger with decorated doors

IDEAS —for creating new interest and personality in individual rooms

IDEAS —for using color to make home exteriors more inviting

IDEAS —new ways to use Dutch, mirror and louver doors—and many more!

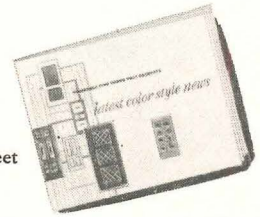
There's something *new* in color styling today—a way of making homes more attractive, more inviting to prospective owners. You do it with decorated doors of Ponderosa Pine—paneled doors that bring new and exciting interest to modern, ranch type or traditional homes. For leading decorators—home magazine editors—and color stylists have discovered almost unlimited possibilities in these satin-smooth paneled doors for expressing the modern trend toward the use of more color.

The whole story of this new trend is told in a full-color, profusely illustrated idea book soon to come off the press.

Ordinarily, we would not offer this book to builders and architects, because it was prepared primarily for consumers. However, its subject is so important—the ideas it contains so new and vital—that we think you should have a copy. Reserve yours now—mail the coupon!

Ponderosa Pine
WOODWORK

Here's your reservation for this new booklet!



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Chicago 3, Illinois

Gentlemen:
Please reserve a copy of your new book, "Latest Color Style News" for me—and send it to me without cost or obligation.

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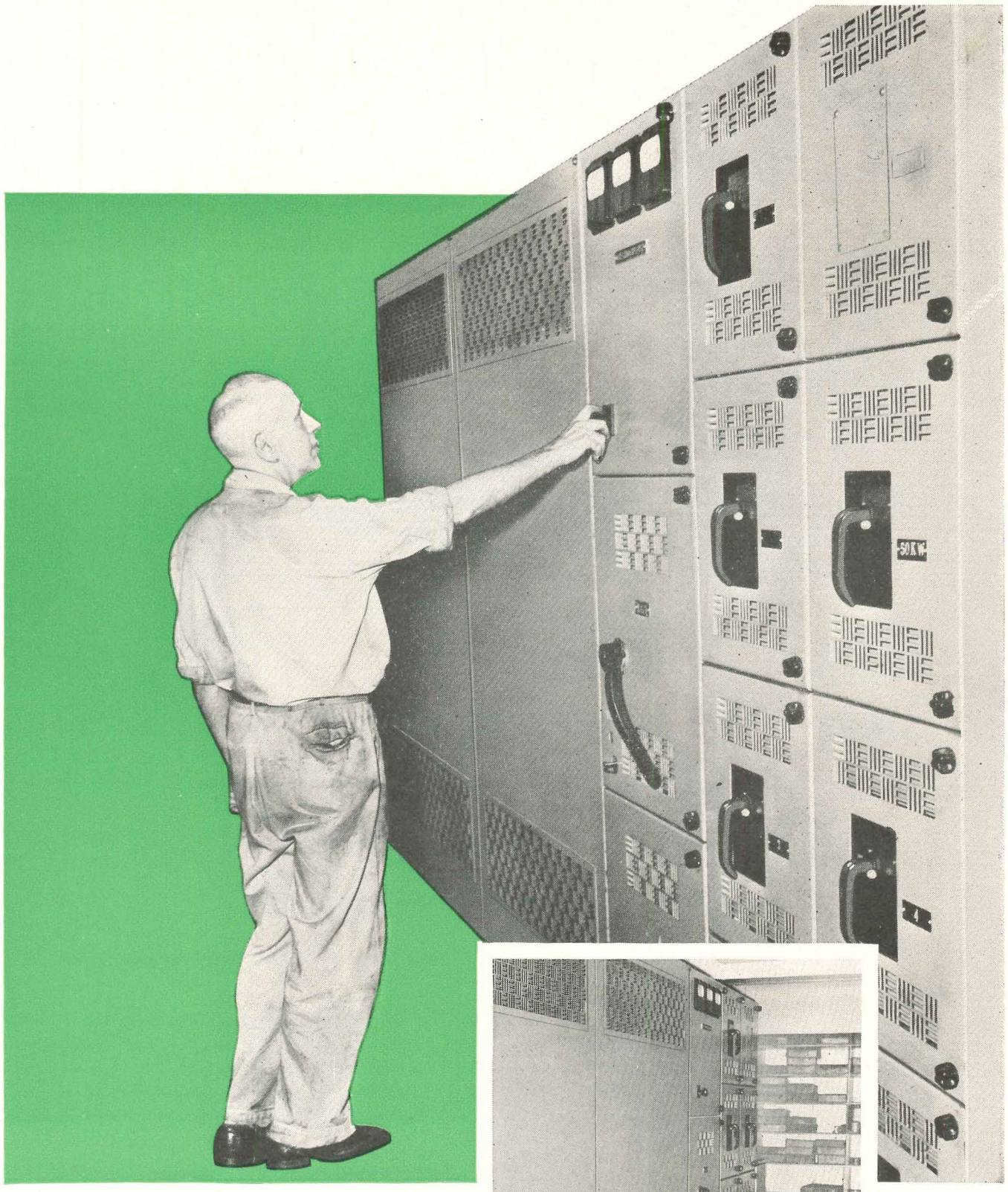

50 K

Westinghouse Power Centers meet SPACE and WEIGHT LIMITATIONS at Kansas City Star

e control room was small—the floor would not port heavy liquid-filled transformers. Confronted h this situation, the Kansas City Star requested ommendations on a power distribution system. e problem was solved with these Westinghouse -Type Power Centers.

wo units are now in operation—with provisions a third unit if load requirements dictate. Complete tomer satisfaction is evidenced by this statement n the Kansas City Star:

"It was desirable to locate the power center adjacent to our press controls. This meant that special consideration be given the problem of protecting our operators from the incoming 15-kv line and connections. The completely enclosed design of the Westinghouse Power Center solved this safety problem.

"We like these units because of their low-maintenance requirements. There is no storing, testing or reconditioning of liquids—no gaskets or gauges to maintain—breaker inspection and replacement are quick and easy."

The Kansas City Star realized many other benefits when they installed Westinghouse Power Centers. For example:

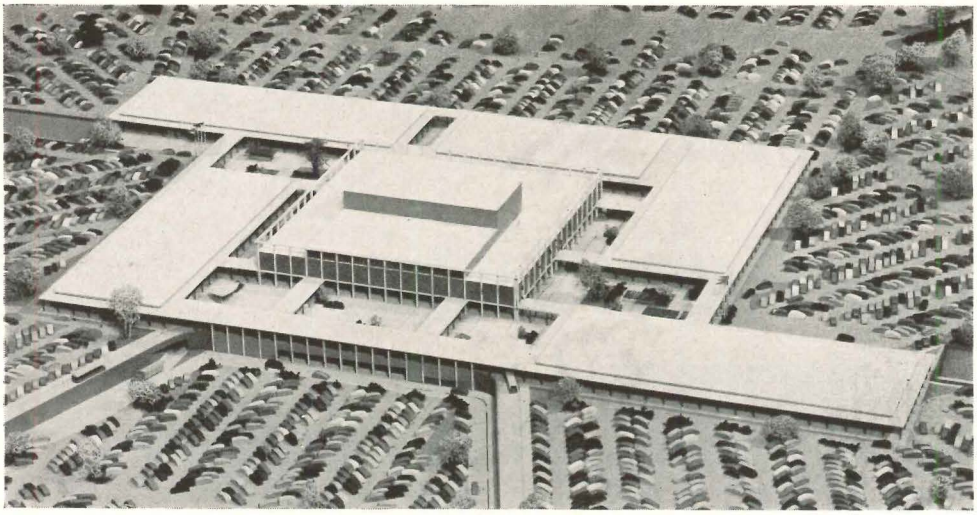
FLEXIBILITY . . . New feeders can be added in minimum time—saving on engineering and labor costs.

ECONOMY . . . Costly vaults eliminated—installed as a unit rather than in separate parts—shorter low-voltage cable runs require less copper.

Westinghouse Power Centers will do a better job of meeting your power distribution needs. These two booklets tell how: The details of Westinghouse Power Centers are discussed in Booklet B-4162 . . . various types of plant distribution systems are covered in Booklet B-4045. Ask your Westinghouse Representative for your free copies, or write direct to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-60768

YOU CAN BE SURE... IF IT'S Westinghouse

POWER CENTERS



Three-story building in center of photo is Hudson branch store, which is planned to provide 480,-000 sq ft of floor space. Tenant stores will have another 500,000 sq ft. Storage facilities will be in basement areas keyed to a system of freight-truck passages, loading platforms and service areas, all underground. Parking area is planned so motorist needs only to keep turning to the right to get in, to park and to leave

Florez, Inc.

HUGE REGIONAL SHOPPING CENTER STARTED NEAR DETROIT

ANOTHER MAMMOTH regional shopping center got under way last month — the J. L. Hudson Company's Northland Center in suburban Detroit.

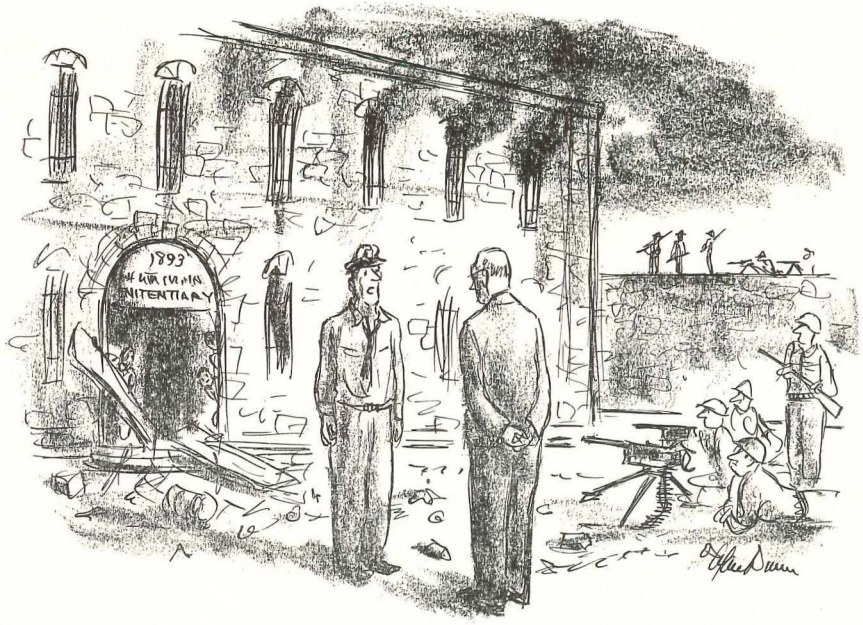
Northland will have Hudson's branch store as the central unit of nearly 1,000,-000 sq ft of floor area with some 70 tenant stores completely surrounded by a 6000-car parking area capable of expansion to provide 5000 additional car spaces. Victor Gruen is the architect.

The Center, which occupies 161 acres of a 409-acre site just north of metropolitan Detroit, is designed as "a complete one-stop center where a customer can fill every shopping need." It will have one-story stores, shops, markets, restaurants, etc., grouped around garden courts and malls. Tenants will include men's, women's and children's apparel stores, a supermarket, drug and variety stores, hardware and furniture stores, a bank, service shops such as cleaners, shoe repair, barber shop.

Facilities for use by community groups have been given a definite place in plans for the Center. An auditorium with entrance both from inside the Hudson branch store and from outside for after-hours use is described as the major community service unit, but it is planned to provide other facilities, as available, for use in community activities.

Extensive surveys of population, income levels, traffic flow and the merchandising pattern in the Detroit area preceded selection of the site, which is said to have a potential trading area of 450,000 residents with family incomes averaging $7100 in the city section and $6000 in the suburban section.

Construction is reinforced concrete.

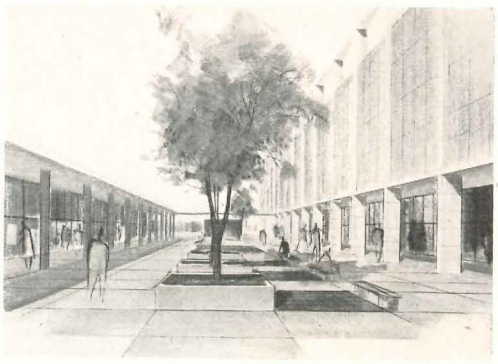


— Drawn for the RECORD by Alan Dunn

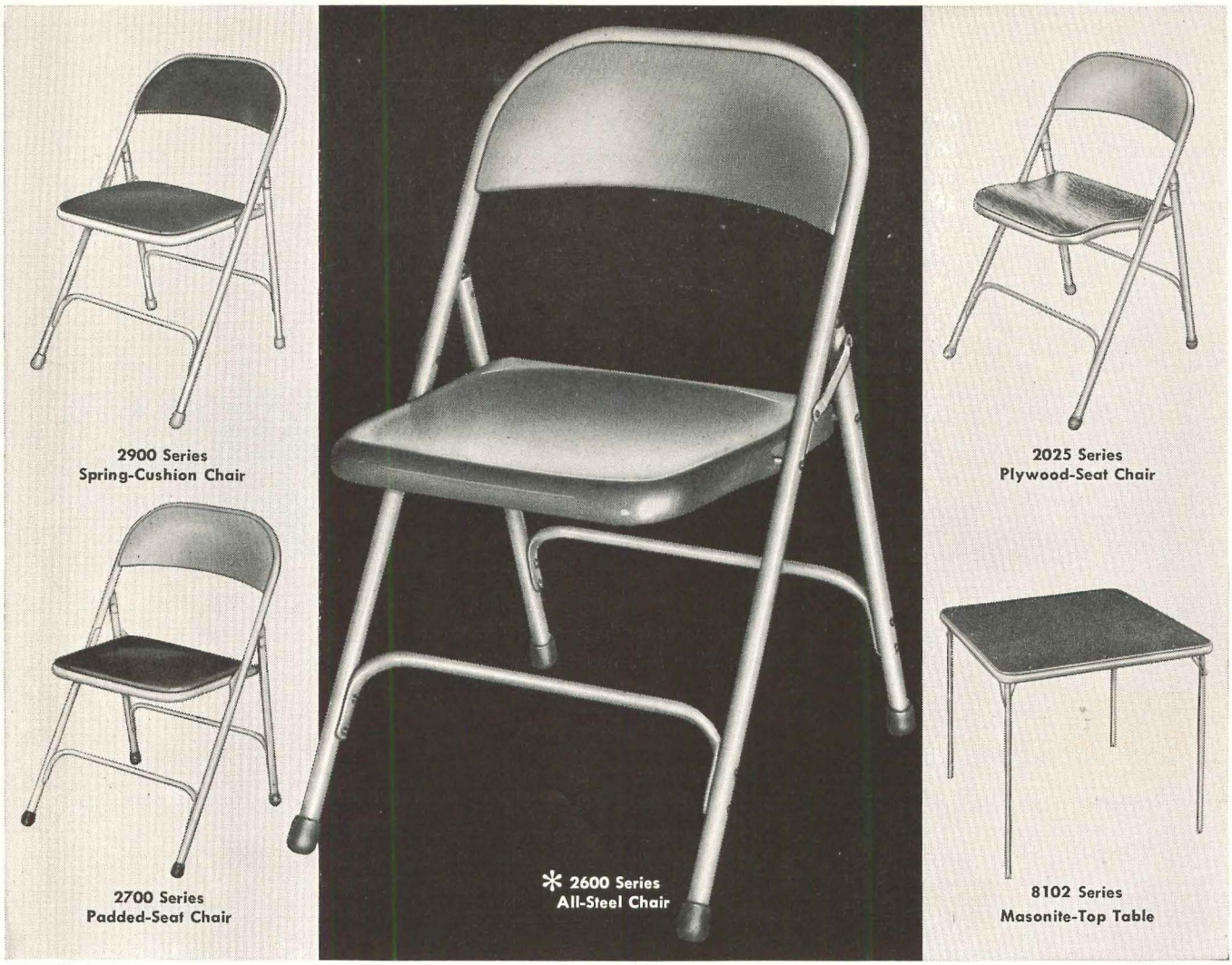
"They want a decontrolled environment, panic locks, better fenestration, indoor-outdoor synthesis . . ."

Shade trees and rest benches will be used to give the court and mall areas a park-like atmosphere. Conveniences like drinking fountains, lockers, mail boxes, directional and orientation maps and restrooms will be provided in all the malls

Photograph House



America's No. 1 Public Seating Buy!



Samson Folding Chairs

TRY IT FREE—
Test America's No. 1 Public Seating Buy Right In Your Own Office!

● Write us on your letterhead, describing your public seating problem. We will send you, express prepaid, for examination *right in your own office*, the amazing new Samson series 2600 folding chair! No obligation. Special low prices on quantity purchases. Ask your Samson distributor for quotation, or write us direct.

Posture-Designed For Extra Comfort! Steel Construction For Extra Strength! Special Folding Action For Extra Safety!

SAMSON FOLDING CHAIRS are definitely your best public seating buy because they offer you: (1) low cost; (2) long life; (3) real comfort; (4) unsurpassed ease of handling!

***Impartial laboratory tests** by Pittsburgh Testing Laboratories found the Samson 2600 series chair: "Substantial, well-balanced, easily set up or folded, storing in the most compact space, weight uniformly distributed, folding mechanism guards against injury, seat rigidly supports framework, back is properly shaped for comfort."

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THERE'S A Samson FOLDING CHAIR FOR EVERY PUBLIC SEATING NEED

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ALSO MAKERS OF FAMOUS SAMSON FOLDAWAY FURNITURE FOR THE HOME AND SMART SAMSONITE LUGGAGE FOR TRAVEL

ARCHITECTURE AND ARTS: "ALLIES" DEBATE SCHISM

Middle Atlantic Regional Conference Is Held by A.I.A. at Philadelphia

ARCHITECTS were on the defensive as the hapless perpetuators of an undeniable schism — the contemporary hiatus between architecture and the "allied arts" — at the lively opening session of the Middle Atlantic Regional Conference of the American Institute of Architects at Philadelphia last month.

Lawrence M. C. Smith, president of the American Federation of Art and a trustee of the Philadelphia Museum of Art, had to modify his bald statement that architects *never* provide for accommodating painting and sculpture; but the familiar plaint was echoed in the statement of Mural Painter Ben Shahn, who said he had yet to see a building where murals are an integral part of the design, rather than mere appliqué.

The cost aspect of the architect's problem was advanced by the architects as one factor in their failure to close a gap they did not deny.

Producers Sponsor Session

One of the later sessions of the conference was sponsored by the Philadelphia Chapter of the Producers' Council. The principal speech, "Research and Better Buildings," by Dr. C. W. Rassweiler, vice chairman of the Board and director of research for the Johns-Manville Corp., focused attention on architecture as a technology in provocative contrast to the opening symposium's approach to architecture as an art.

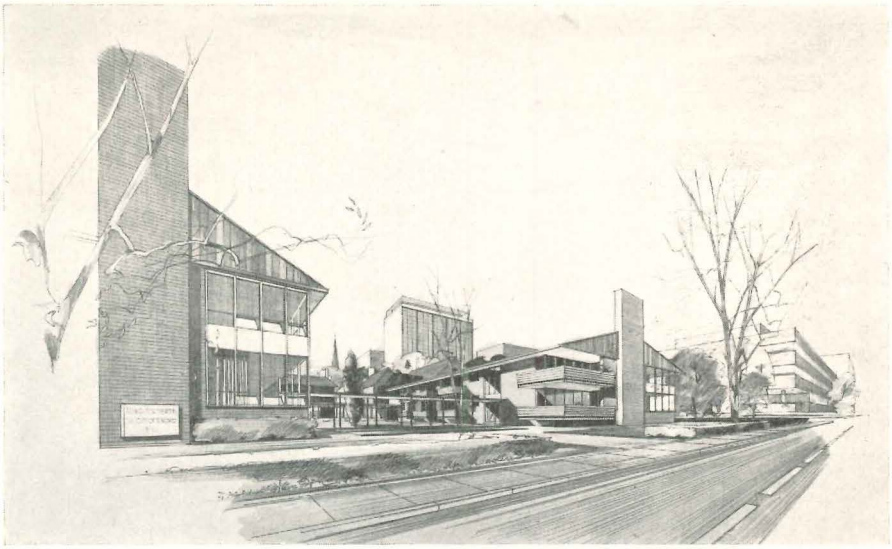
The Producers' Benjamin Franklin Medal, for "the best use of quality building materials to promote new ideas and their application and stimulate imaginative and progressive discussion," was awarded to Sweet & Schwartz, Architects, for Flamingo Apartments, Philadelphia.

One Award on Exhibit

The Pennsylvania Society of Architects Award was given to Vincent Kling "for outstanding work" and particularly for Kimberton Farms School Arts and Crafts Building and School Residence. It was the only award made in connection with the Philadelphia Chapter's convention exhibit at John Wanamaker's Store.

Alfred Bendiner received the Venzie Corporation's award for outstanding work in painting and sculpture by a Philadelphia A.I.A. member.

NEWS FROM CANADA *by John Caulfield Smith*



Warner Brothers

Proposed homes for the aged in Toronto are planned to avoid "institutional atmosphere." Each building is to house 40 walking patients. Construction is scheduled to start sometime this year. Architects, Page & Steele, Toronto

Toronto Moves to Solve Its Problem of Homes for Aged

THE CITY OF TORONTO has begun taking positive steps to ease the pressing problem of providing homes for its aged with the announcement that construction is expected to start later this year on the first units in a new municipal program.

A prime objective will be to avoid as much as possible in the buildings the "institutional atmosphere" usually identified with them.

Currently favored by the committee in charge of considerations for the program are buildings which would house 40 walking patients each; but larger structures of 360 beds each are also being investigated. It is expected that the final solution will lie in a combination of these two types.

Eight different sites in both central and outlying sectors of the city are currently being examined. If possible, the committee would like to place the buildings in series of three or four, near park land.

It is estimated that 30 of the smaller type buildings would cost about $5,400,000 exclusive of land.

Construction Down 21%: Rally Still Forecast

A DISAPPOINTING TOTAL of construction contract awards was chalked up for the first quarter of 1952. The figure of $362.3 million is 21 per cent below the $457.2 million registered for the same period last year. Industrial contracts, which have been leading the field, are down 48 per cent, more than any other category.

Even so, expectations of a construction fall-off for the entire year might be premature. As the building season gets underway, greater activity will undoubtedly begin to be felt.

Nine Per Cent Rise Expected

Department of Trade & Commerce statisticians, who have a reputation for near-infallibility, expect that spending on new construction and equipment will be nine per cent ahead of the 1951 level. There are still nine months left in which to make up current losses and justify this prediction. Still, it may be a tight squeeze.

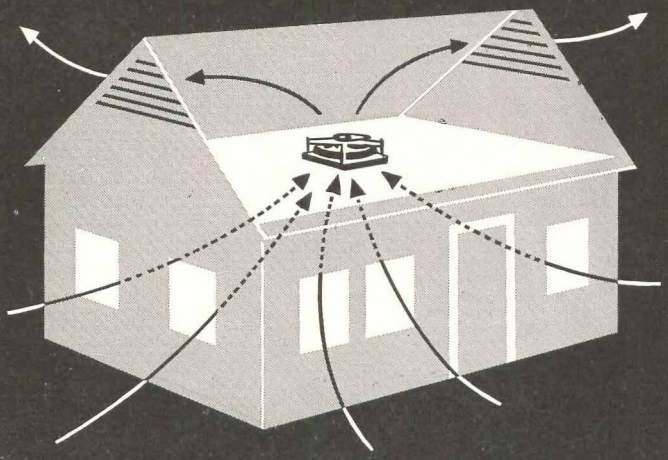
March Second Highest Yet

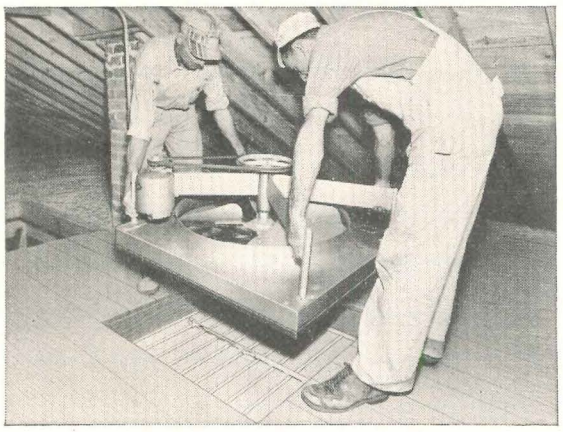
March awards, according to MacLean Building Reports, Ltd., reached the second highest figure ever recorded for the month, with a total of $102.3 million. But even this was 42 per cent under the March 1951 amount. Some consolation lies in the realization, how-

(Continued on page 32)

How to give clients cool comfort at low cost

■ On hot summer days the temperature inside a house gets hotter and hotter as the sun bakes down on walls and roof. At night the *outside* temperature falls—but hot steaming air fills the attic and rooms. A Hunter Attic Fan pulls cool air into the house, circulates gentle breezes, drives pent-up heat from rooms and attic. The house gets cool, stays cool through hot summer nights.





Easily installed—fits any attic

New automatic ceiling shutter

HUNTER ATTIC FAN COOLS THE ENTIRE HOUSE

The new Hunter Attic Fan is a complete home-cooling system. On hot summer days and nights it drives out hot, humid air . . . pulls in fresh, cool breezes. Cools the entire house, not just one or two rooms. Occupants are comfortable in hottest weather.

Easy to Install

Delivered on the job as a compact unit, complete with ceiling shutters and modern metal trim, the Hunter Package Attic Fan is quickly installed in ceiling opening. No suction box to build; no accessories needed. Requires only 17″ attic clearance.

Performance Guaranteed

Quiet, trouble-free operation is assured by Hunter's 65-year experience in manufacturing fans. Hunter Attic Fans are available in capacities to fit any home and any climate. Fan assembly guaranteed 5 years; motor and shutter, 1 year.

For complete data, write
HUNTER FAN AND VENTILATING CO.
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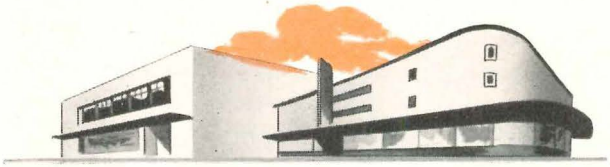
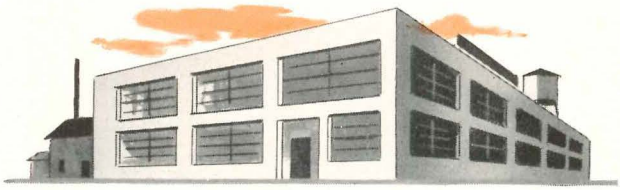


COMMERCIAL



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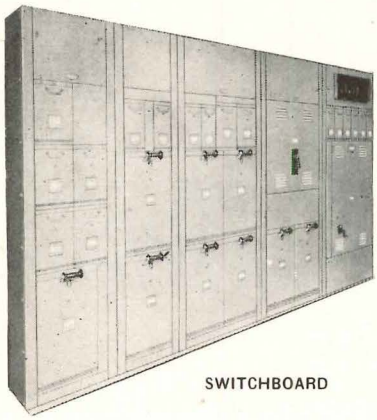
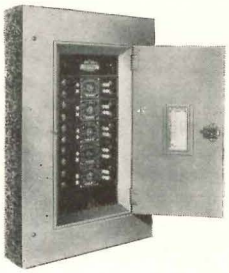
Safe, Dependable Power and Light Control is an absolute necessity in all types of buildings — whether it's a small home, store, office or other commercial building, a large industrial plant, school, hospital or other institution.

FA *Has been Producing Equipment* for the control and distribution of power and light for more than 60 years — electrical products that have been tested and proven to measure up to the highest standards of safety, efficiency and dependability — products that are economical, and will give long-lasting and trouble-free service.

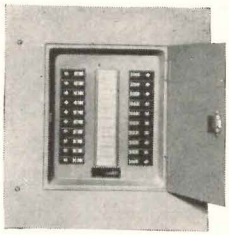
The Next Time a job involves power and light distribution and control — whether it's a small load center or service equipment, or a large switchboard, panelboard, busduct or other unit — use FA. You'll find it pays handsome *service* dividends.



SWITCHBOARD



LNTP PANELBOARD



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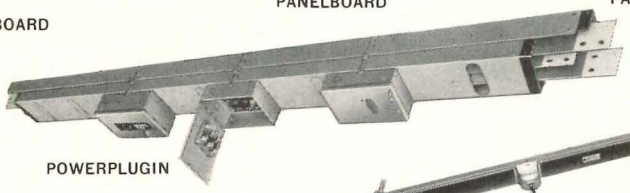
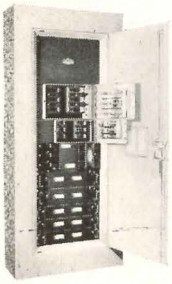
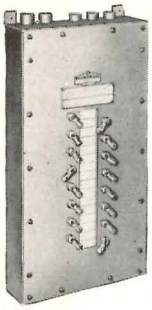


POWERPLUGIN

MIDGET POWERPLUGIN

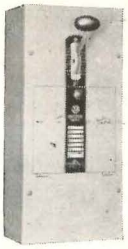


FEEDER PANELBOARD

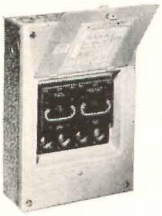


DUSTITE PANELBOARD

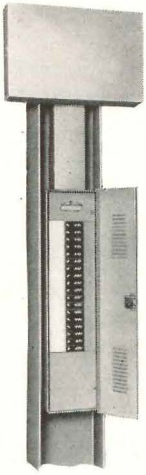
QUIKHETER



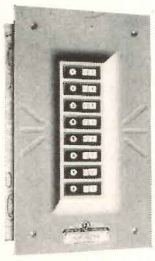
SHUTLBRAK SWITCH



MAIN AND RANGE UNIT



COLUMN TYPE PANELBOARD



ADD-ON LOAD CENTER

The illustrations above are typical of the many (FA) products available for the control and distribution of power and light. While most (FA) products are of a standardized nature, the Company is prepared to provide specialized equipment to meet specific needs.

For further information contact your nearest (FA) representative, listed in Sweets, or write to headquarters.

Frank Adam Electric Co.

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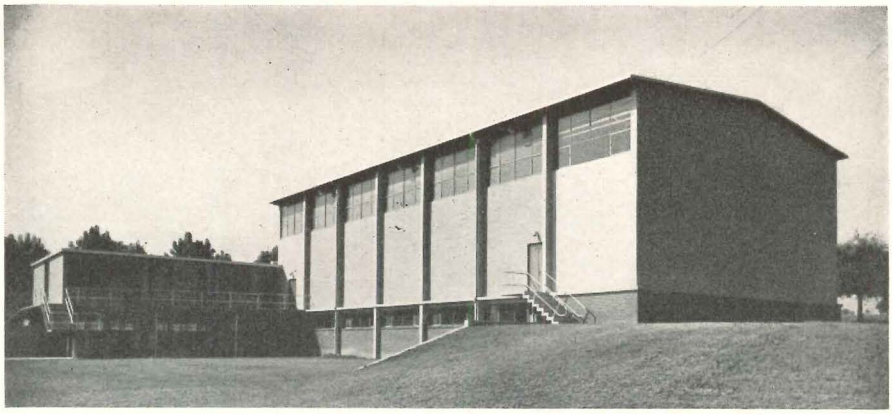
FA TRADE MARK

THE RECORD REPORTS

CANADA

(*Continued from page 28*)



Graham Warrington

Kitsilano War Memorial Community Center, Vancouver, B. C., includes gymnasium, meeting rooms, hobby shops, and a combined banquet hall and lounge. Architects: Semmens & Simpson, Vancouver

ever, that the March 1951 total — $100 million ahead of March 1950 — was unusually high even for a boom year.

Engineering Registers Gain

Engineering was the only type of construction that showed a gain over the first quarter of 1952. Biggest factor in the rise was the start made on the Edmonton-Burnaby pipe line.

While industrial and commercial building both lagged badly, residential construction managed almost to hold its own and needs only slight gains in the coming months to match last year's level.

The sag in March levels was felt not only in all categories but also in all regions. Loss in Ontario amounted to more than $65 million. Greatest loss in other regions was Quebec's $3.5 million.

Industrial Plants Still Lead

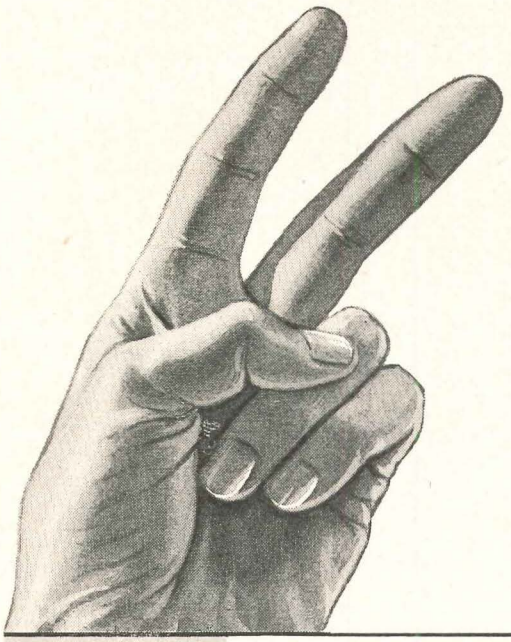
Feature of the big job list for the month was the number of industrial plants included.

The list was headed by a $10 million truck plant in Oshawa, followed by a $4 million pulp plant expansion in Newfoundland, a cable plant expansion in Montreal, a foundry in Hamilton, Ont., a chemical plant in Varennes, Que., an engine plant in Montreal, and a ferro-silicon plant at Beauharnois.

Other jobs on the list were two warehouses and two apartment projects in Montreal, a hospital in the Lake St. John district, and housing developments at Kitimat, B.C., and Ville LaSalle, Que. The rest were defense projects at Downsview, Winnipeg, Trenton and Cold Lake.

On the chart, the total picture of construction contracts awarded in the quarter looks like this:

(*Continued on page 34*)



Only AGITAIR®

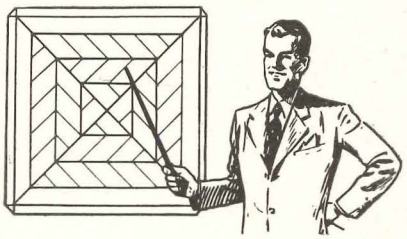
SQUARE & RECTANGULAR AIR DIFFUSERS

Give you these *Two* Important Features

---

1 PATENTED BUILT-IN DIFFUSING VANES

Agitair diffusing vanes really mix the air, insuring rapid diffusion and temperature equalization. This permits the use of higher temperature differentials. It also makes possible the introduction of larger "cfm" quantities which can be limited to shorter "blows."



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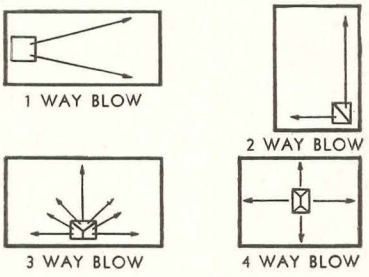
2 TAILOR-MADE FOR 1, 2, 3, AND 4 WAY BLOWS

Agitair square and rectangular diffusers come in a variety of patterns to provide blows in one-two-three- and four directions. Thus 100% air distribution is assured in any shape area, from any location without blank-off's or oversized outlets.

Write for Complete Data

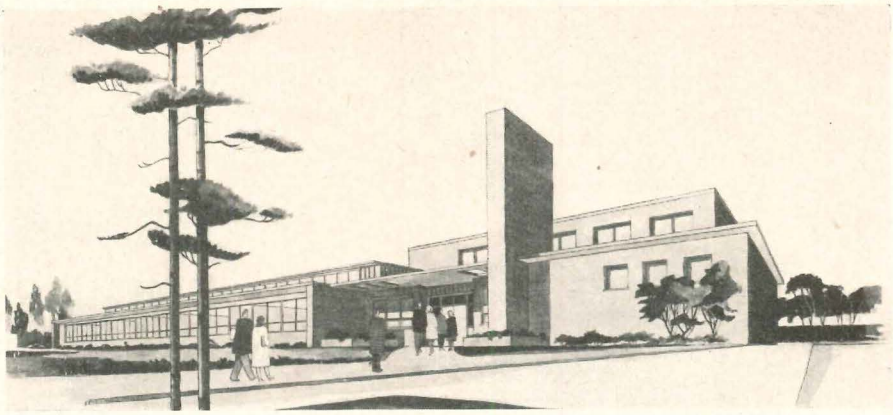


AIR DEVICES Inc. 17 EAST 42nd ST. • NEW YORK 17, N. Y.

AIR DIFFUSERS • AIR FILTERS • ROOF EXHAUSTERS

CANADA

(*Continued from page 32*)



High School in Markdale, Ont., is typical of the contemporary school .work being done by architects Shore & Moffat of Toronto

(MILLIONS of DOLLARS)

	1952	% chge fr 1951
Residential	68.9	− 5
Commercial & Institutional	79.4	−40
Industrial	74.6	−48
Engineering	140.4	−29
Total	**362.3**	**−21**

Visiting R.I.B.A. Officers Feted by Toronto Architects

AMONG recent visitors of note to Toronto were A. Graham Henderson, president of the Royal Institute of British Architects and C.D. Spragg, secretary of the Institute. On their way to attend the annual assembly of the Royal Architectural Institute of Canada in Vancouver, the two were entertained on their stopover at a reception arranged by members of the Ontario Association of Architects.

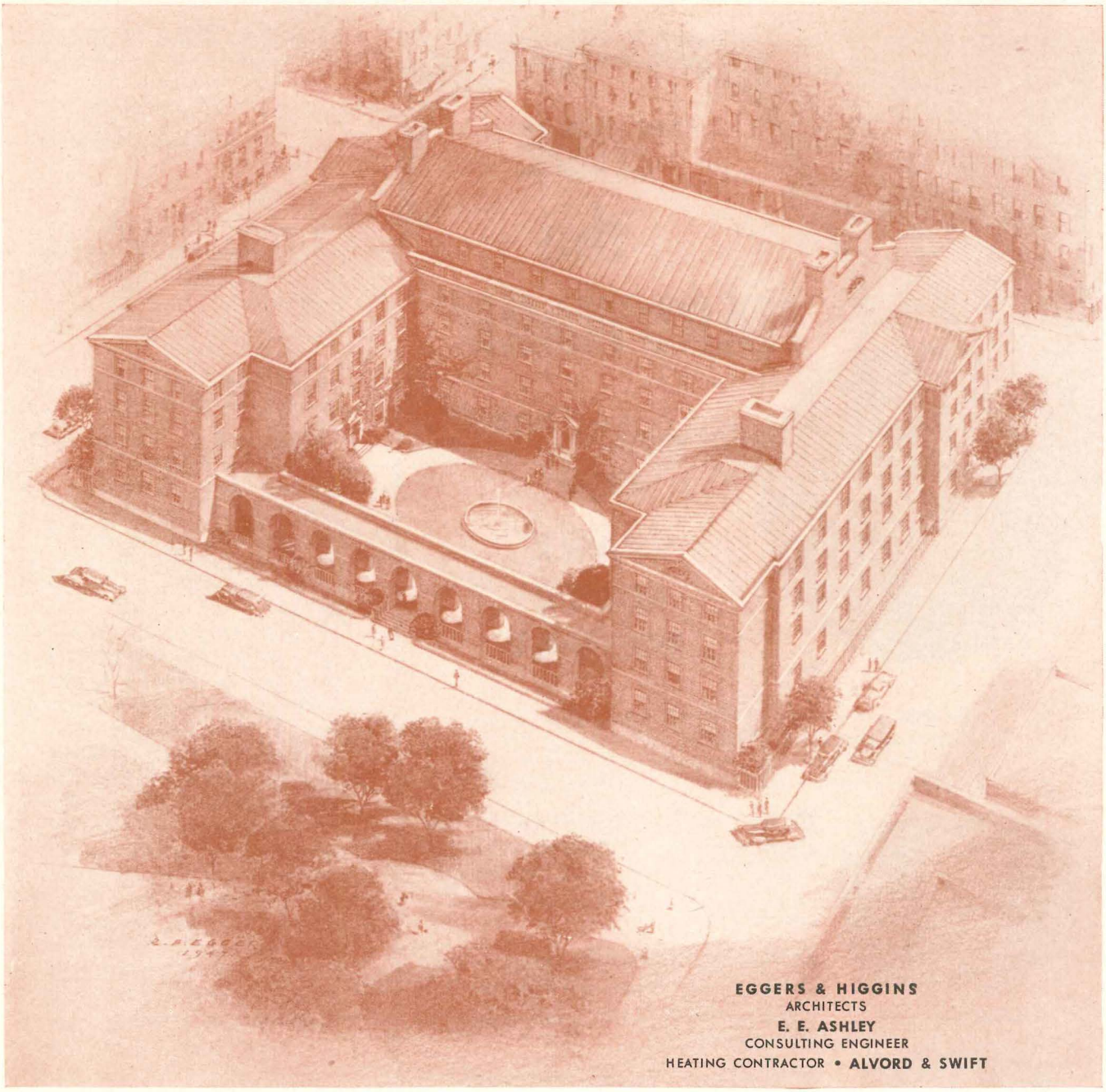
In an interview, Mr. Henderson declared that the foremost fear of British architects was that unemployment might result from current government regulation of the construction industry. Only projects sponsored by the government can go ahead, he said, and relaxation of control "depends entirely on the international situation, since the defense program is closely tied in with our building progress."

House Builders Group Chooses Chief for 1952

At its recent convention in Winnipeg, the National House Builders Association elected W. H. Grisenthwaite of Hamilton, Ont., as its new president.

The new N.H.B.A. president, who is head of Grisenthwaite Construction Co., Ltd. plans an expanded program of

(*Continued on page 36*)



EGGERS & HIGGINS
ARCHITECTS
E. E. ASHLEY
CONSULTING ENGINEER
HEATING CONTRACTOR • ALVORD & SWIFT

NEW YORK UNIVERSITY, LAW COLLEGE, WASHINGTON SQUARE, N. Y.

POWERS CONTROL ®

POWERS **Temperature and Humidity Control** was selected for this distinguished building, outstanding for the excellence of its traditional design.

Here, 199 convectors are controlled by 54 Powers room thermostats. There are 30 complete air conditioning systems for summer cooling and dehumidifying, also winter ventilation and humidification—all are controlled by Powers equipment.

When you wish automatic temperature control which often gives 25 to 40 years of dependable service with a minimum of repairs, specify Powers. Over 60 years experience gained in supplying temperature control for many important buildings may be helpful to you in selecting the type best suited for your requirements. Contact our nearest office, there's no obligation. (a85)

Established in 1891 • **THE POWERS REGULATOR COMPANY** • SKOKIE, ILL. • Offices in Over 50 Cities

THE RECORD REPORTS

CANADA

(*Continued from page 34*)

activities for Canada's home builders and looks forward to the introduction of an official service policy for their customers.

Revised Code May Raise Present Wiring Standards

Revisions in the National Building Code will probably bring recommendations for wiring standards to higher levels than anything conceived in the past. Authority for the prediction is David S. Catton, chairman of the panel on electrical services now working on the code.

Present references to adequate wiring state only that the Canadian Electrical Code is to be followed. In the new version, it is proposed that a qualifying clause be added, stating, in effect, that wiring indicated by the Canadian Electrical Code might not necessarily be adequate for the building concerned.

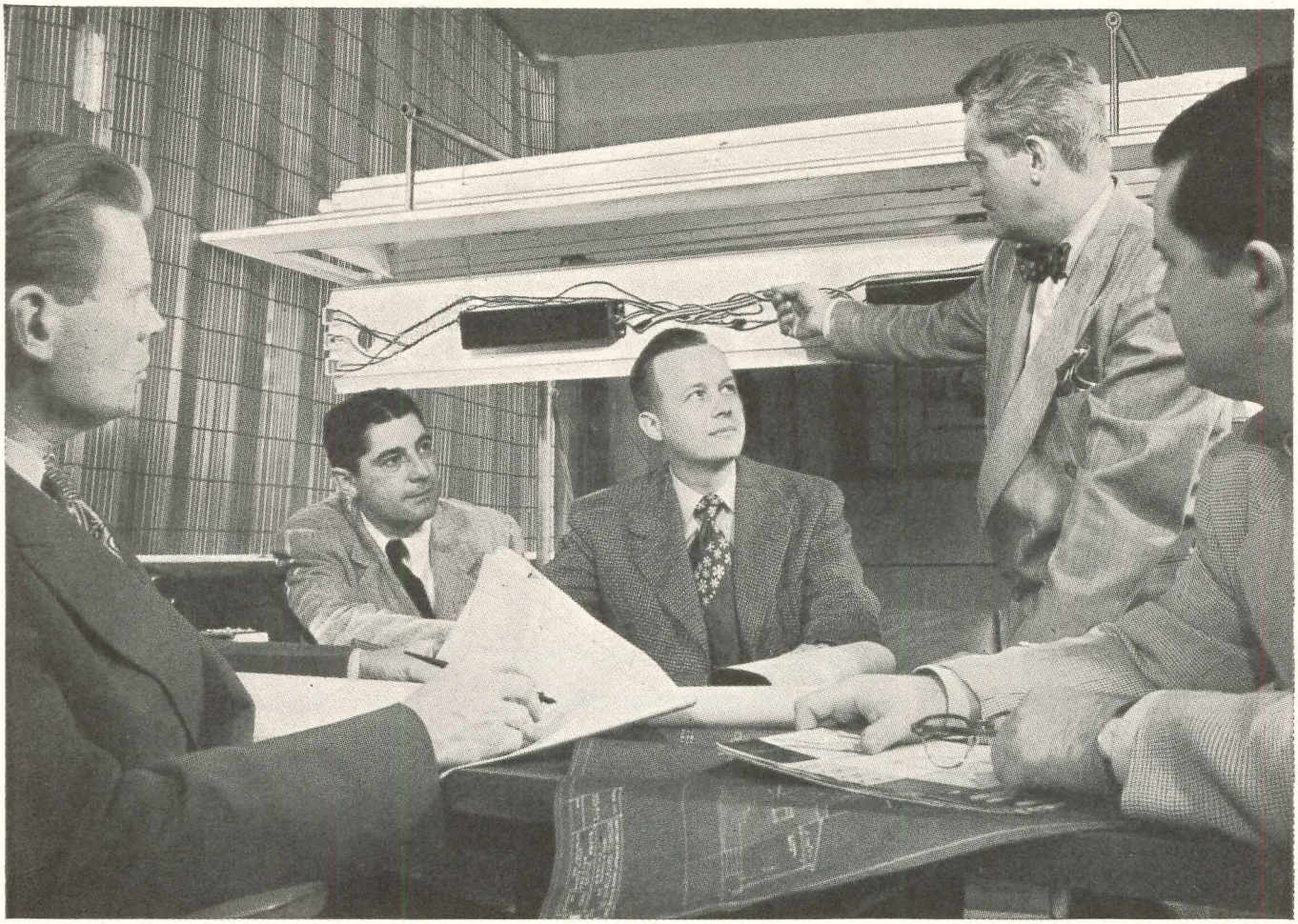
A question is immediately raised, of course, as to what constitutes adequacy. Catton suggests that the answer be given under the "Uses and Functions" section of the revised National Building Code. This section itself will be new to the Code, and will emphasize the importance of considerations of function in building design and specification.

Picture Brightens for 1952 Building Supplies

Further expansion in output of building materials is indicated for 1952, according to a recent survey, with greatest increases expected in such lines as sanitary ware, hot water storage tanks, cement and cement products, and gypsum products.

Actually, there were not too many construction shortages last year either, according to the survey which was recently tabled in the House of Commons by Rt. Hon. C. D. Howe, Minister of Defense Production. The survey, which covered production of building materials, both past and anticipated, demonstrated that average construction time for houses in 1951 was 7.0 months, as compared with an average of 7.1 months in 1950.

—the lid is off the ***most important news in lighting today!***



Announcing the Ultimate in Creative Recessed Lighting

MITCHELL *uni-flow* fluorescent troffers

when you plan for the best in recessed lighting, specify uni-flow

Here is a picture preview of the MITCHELL UNI-FLOW Fluorescent Troffer . . . completely new . . . dramatically different and superior . . . years ahead of anything in the recessed lighting field. What you are looking at is the result of two full years of development work that has paid off in a product so advanced and improved that the architects, contractors, utility men and wholesalers who have had an opportunity to examine it, say unanimously: "*This is it!*"

If you are now planning a recessed lighting installation, you owe it to your customers, your clients and yourself to learn the full facts about MITCHELL UNI-FLOW. Write, phone or wire today for the most important news in recessed fluorescent lighting.

MITCHELL MANUFACTURING COMPANY, 2525 N. CLYBOURN AVE., CHICAGO 14, ILL.

In Canada: Mitchell Mfg. Co., Ltd., 19 Waterman Ave., Toronto

Send for it! *Address Dept. 4-F*

By Ernest Mickel

End of TV Ban Opens Up Field of Station Design

LIFTING OF THE BAN on construction of television stations broadened widely the relatively new field of TV station design for architects.

There were 108 such broadcasting outlets in operation when the Federal Communications Commission swept away the restriction, which had stood for more than three years. Now it is estimated some 3000 new TV transmitters will be erected.

For architects, this decision on the part of FCC offers new opportunities; for many architects it means considerable study of the specialties of television station design. A spokesman for the National Education Association said that up to now only a handful of architects has had any drawing-board experience in the TV field. Meanwhile, the National Association of Radio and TV Broadcasters is conducting a new study which covers the design and construction of stations.

Pending the publication of this more complete treatment of the needs of broadcasters in their physical plants, the N.A.R.T.B. had a few basic suggestions for architects.

Space is first and foremost in the station operator's mind. One association spokesman advised that the architect preparing plans for station and studio should decide on what he considers to be adequate space, then *double* the amount he has arrived at before drawing his final plans.

Space Needs Stressed

One of the biggest headaches for operators of existing TV stations is the lack of adequate space, principally areas for storing large items (used in TV advertising) such as refrigerators, stoves and household equipment. These furnishings sometimes remain at the studios for weeks after they are shown in displays, it was said.

A further requirement stressed by N.A.R.T.B.: provide ample parking space for both employes and visitors. It is recommended that stations be located outside but near cities; and one of the reasons for this is to assure ample parking area.

The broadcasters say that most TV stations consist of two buildings; one for the transmitting equipment, the other for actual broadcasting. The latter, the studio, is the more expensive of the two. It requires extensive soundproofing treatment and intricate wiring systems. The estimated cost of the average station, including all its required equipment, was placed at $385,000.

FCC Allows 2053 Stations

The FCC already has provided for 2053 new stations in 1291 communities throughout the country. These now are assured of clearance and can proceed in their construction phases if and when their material requirements are assured.

It is expected a large volume of new stations will be constructed under the self-authorization procedures of the Controlled Materials Plan. TV and radio stations have been classified as

(*Continued on page 312*)

"Sign up now, boss—it's got Honeywell Controls!"

The *best* way to assure comfort in any building is to insist on Honeywell controls.

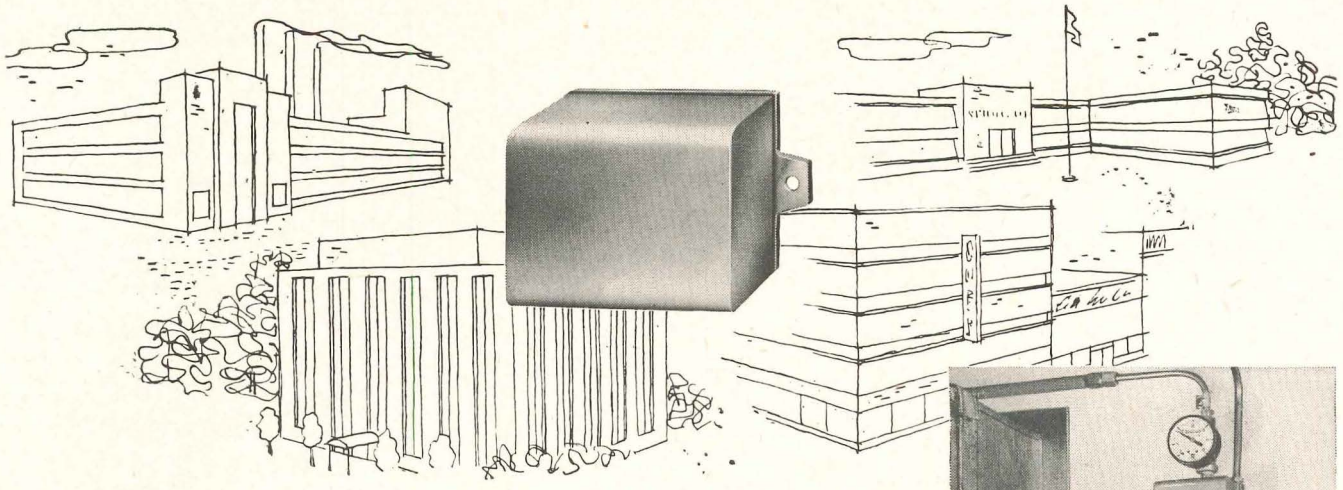
If *you* have a control problem, Honeywell can help provide the proper thermal environment for any client—anywhere—in any kind of structure.

A large staff of well-informed control engineers—in 91 different Honeywell offices across the nation—are experienced in doing just that. Or—there's a lot of literature that's yours for the asking—on the automatic control of heating, ventilating and air conditioning.

So, why not *talk to Honeywell?* Why not *write to Honeywell* about *your* control problem? And why not do it *now?*

H HONEYWELL

For help with any control problem talk to Honeywell



for pin-point control of heating, ventilating and air conditioning

Specify Honeywell Automatic-Reset Pneumatic Relay

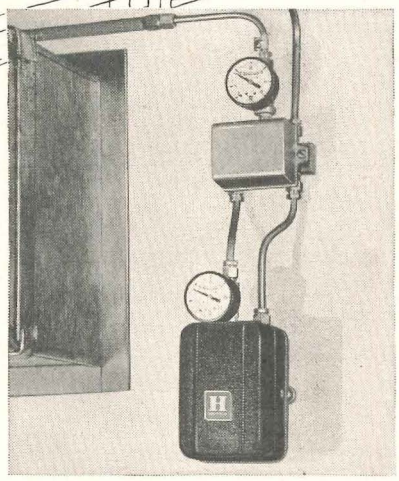
Stop temperature see-sawing and lagging

This magically accurate relay, made only by Honeywell, sets new standards of performance for pneumatic temperature controls. By using it, you can give clients closer temperature control, regardless of weather variations.

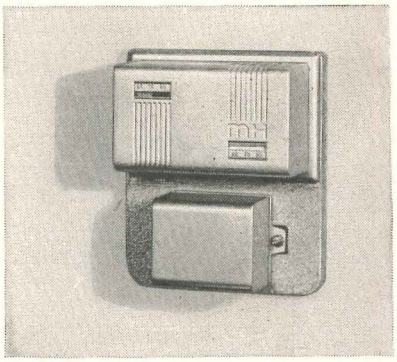
This remarkable Honeywell mechanism virtually *eliminates see-sawing temperatures* because it goes to work the instant the temperature deviates from the thermostat setting.

The Reset-Relay can be installed on any graduate-acting pneumatic system where close temperature control is desirable.

Get the complete story on this exclusive Honeywell control. Call your local Honeywell office or mail coupon below.



This typical installation shows the Honeywell Reset-Relay used with a Honeywell insertion thermostat to control temperature of discharge air.



Here the Reset-Relay adds reset action to a Honeywell Grad-U-Stat, which controls other pneumatic devices such as a damper motor.

MINNEAPOLIS **Honeywell**

First in Controls

"and when I heard (your firm name) designed that building, I decided to move in."

FREE! *Personalized cartoon. For your 8½" x 9" reproduction of this Hoff cartoon (incorporating your name or the name of your firm), fill out and mail coupon today.*

MINNEAPOLIS-HONEYWELL REGULATOR CO.
Dept. AR-6-131, Minneapolis 8, Minnesota

Gentlemen:

☐ Please send me information on your Gradutrol System of pneumatic controls.

☐ Please send me a free, personalized reproduction of the Hoff cartoon, inscribed with this name:

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Name _____

Firm Name _____

Address _____

City _____ *Zone* _____ *State* _____

CONSTRUCTION COST INDEXES

Labor and Materials

United States average 1926–1929 = 100

Presented by Clyde Shute, manager, Statistical and Research Division, F. W. Dodge Corp., from data compiled by E. H. Boeckh & Assocs., Inc.

NEW YORK

Period	Residential		Apts., Hotels Office Bldgs.	Commercial and Factory Bldgs.	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1925	121.5	122.8	111.4	113.3	110.3
1930	127.0	126.7	124.1	128.0	123.6
1935	93.8	91.3	104.7	108.5	105.5
1939	123.5	122.4	130.7	133.4	130.1
1940	126.3	125.1	132.2	135.1	131.4
1946	181.8	182.4	177.2	179.0	174.8
1947	219.3	222.0	207.6	207.5	203.8
1948	250.1	251.6	239.4	242.2	235.6
1949	243.7	240.8	242.8	246.4	240.0
1950	256.2	254.5	249.5	251.5	248.0
1951	273.2	271.3	263.7	265.2	262.2
Jan. 1952	278.5	275.3	270.3	274.2	270.0
Feb. 1952	278.3	275.1	270.1	274.1	270.4
Mar. 1952	277.2	273.7	269.9	274.0	270.1
	% increase over 1939				
Mar. 1952	**124.5**	**123.6**	**106.5**	**105.4**	**107.6**

ATLANTA

Period	Residential		Apts., Hotels Office Bldgs.	Commercial and Factory Bldgs.	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1925	86.4	85.0	88.6	92.5	83.4
1930	82.1	80.9	84.5	86.1	83.6
1935	72.3	67.9	84.0	87.1	85.1
1939	86.3	83.1	95.1	97.4	94.7
1940	91.0	89.0	96.9	98.5	97.5
1946	148.1	149.2	136.8	136.4	135.1
1947	180.4	184.0	158.1	157.1	158.0
1948	199.2	202.5	178.8	178.8	178.8
1949	189.3	189.9	180.6	180.8	177.5
1950	194.3	196.2	185.4	183.7	185.0
1951	212.8	214.6	204.2	202.8	205.0
Jan. 1952	217.5	219.8	210.1	208.1	211.5
Feb. 1952	217.8	220.1	210.5	207.7	211.1
Mar. 1952	217.8	220.1	210.5	207.7	211.1
	% increase over 1939				
Mar. 1952	**152.4**	**164.9**	**121.3**	**113.2**	**122.9**

ST. LOUIS

1925	118.6	118.4	116.3	118.1	114.4
1930	108.9	108.3	112.4	115.3	111.3
1935	95.1	90.1	104.1	108.3	105.4
1939	110.2	107.0	118.7	119.8	119.0
1940	112.6	110.1	119.3	120.3	119.4
1946	167.1	167.4	159.1	161.1	158.1
1947	202.4	203.8	183.9	184.2	184.0
1948	227.9	231.2	207.7	210.0	208.1
1949	221.4	220.7	212.8	215.7	213.6
1950	232.8	230.7	221.9	225.3	222.8
1951	252.0	248.3	238.5	240.9	239.0
Jan. 1952	256.1	252.9	241.9	244.4	242.2
Feb. 1952	255.9	252.7	241.6	244.2	242.0
Mar. 1952	254.8	251.3	241.8	244.2	241.9
	% increase over 1939				
Mar. 1952	**131.2**	**134.9**	**104.9**	**103.8**	**103.3**

SAN FRANCISCO

1925	91.0	86.5	99.5	102.1	98.0
1930	90.8	86.8	100.4	104.9	100.4
1935	89.5	84.5	96.4	103.7	99.7
1939	105.6	99.3	117.4	121.9	116.5
1940	106.4	101.2	116.3	120.1	115.5
1946	159.7	157.5	157.9	159.3	160.0
1947	193.1	191.6	183.7	186.8	186.9
1948	218.9	216.6	208.3	214.7	211.1
1949	213.0	207.1	214.0	219.8	216.1
1950	227.0	223.1	222.4	224.5	222.6
1951	245.2	240.4	239.6	243.1	243.1
Jan. 1952	248.0	242.7	242.6	245.4	245.8
Feb. 1952	247.6	242.3	242.1	245.0	245.4
Mar. 1952	248.0	242.8	242.2	245.0	245.5
	% increase over 1939				
Mar. 1952	**134.8**	**144.5**	**106.3**	**101.0**	**110.7**

The index numbers shown are for combined material and labor costs. The indexes for each separate type of construction relate to the United States average for 1926–29 for that particular type — considered 100.

Cost comparisons, as percentage differences for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.:

index for city A = 110
index for city B = 95

(both indexes must be for the same type of construction).

Then: costs in A are approximately 16 per cent higher than in B.

$$\frac{110-95}{95} = 0.158$$

Conversely: costs in B are approximately 14 per cent lower than in A.

$$\frac{110-95}{110} = 0.136$$

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926–29.

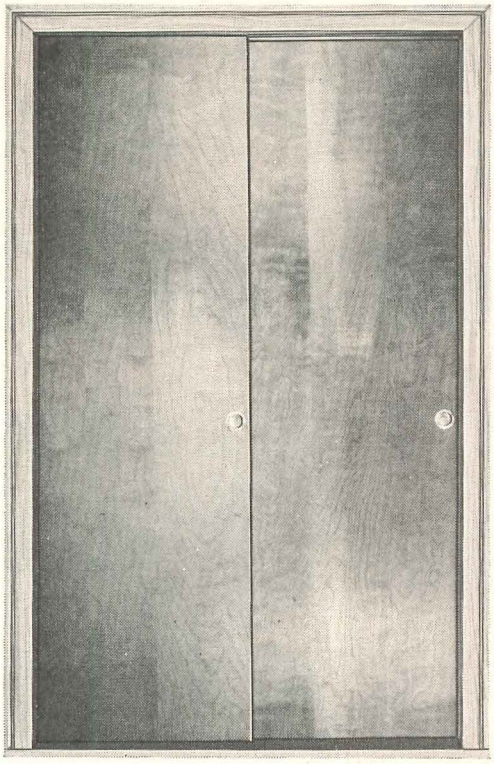
Material prices and wage rates used in the current indexes make no allowance for payments in excess of published list prices, thus indexes reflect minimum costs and not necessarily actual costs.

These index numbers will appear regularly on this page.

another **HOMASOTE FIRST** — *designed to reduce the cost of building*

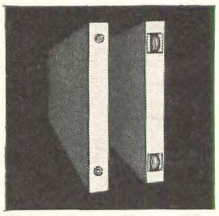
Three years of research and field testing are back of these Nova Roller Doors

Here are the most practical roller doors yet developed. Simple to install, easy to operate, *and economical in every sense*—these high quality, hollow core doors are light, strong and warp-resistant. Gone is all the expensive, overhead hardware—always difficult to install—always noisy. Two rollers revolving on pins act as guides at the top; two vulcanized rubber rollers carry the weight of the door at the bottom—through simple floor guides. There is no floor track. All hardware except floor guides is installed at the factory. Each door—Closet or Passageway—comes complete in one carton. In 30 minutes' time one man makes the installation.

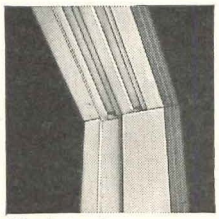


CLOSET DOORS . . . . . .

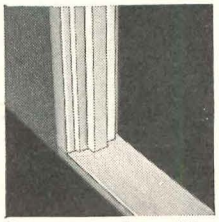
A closet or storage space may be one of the standard sizes—or extend the width of the room. Two or more doors enclose it entirely. Instead of exposing only part of the interior, as with a swinging door, you have full and easy access.
Nine standard opening sizes: 32″, 36″, 40″, 48″, 56″, 60″, 72″, 84″ and 96″.
Five standard heights: 6′0″, 6′6″, 6′8″, 6′10″ and 7′0″.



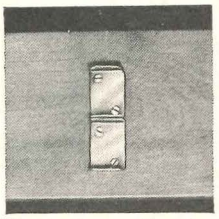
Revolving roller guides operate in head track; vulcanized rubber rollers run on finished floor.



Head tracks are accurately machined for perfect operation of revolving roller guides; side jamb is routed to receive the door.



Passageway door slides easily into wall pocket.



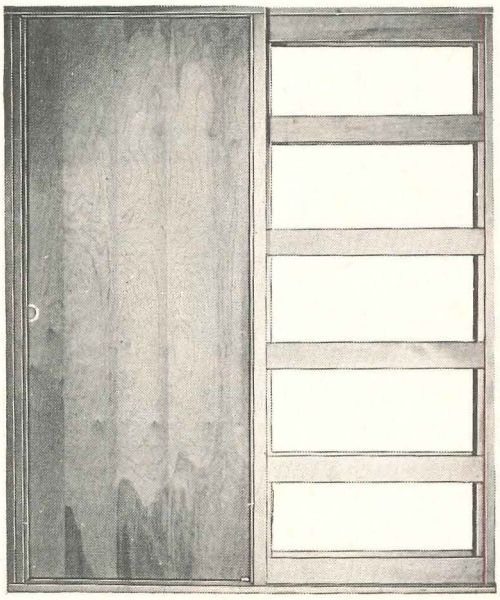
Simple floor guides, installed flush with finished floor, eliminate need for floor track.

PASSAGEWAY DOORS . . .

Each comes assembled in its wall pocket, ready to install for either plaster or dry-wall construction. *Five standard opening sizes:* 2′0″, 2′4″, 2′6″, 2′8″, 3′0″.

Both Passageway and Closet Doors are hollow core flush doors, 1⅜″ thick, regularly sold in unselected gum, paint grade and in select White Gum, and Birch, stain grade. Other faces on special order.

We urge you to write today for the full details. *Kindly include the name of your lumber dealer and address your inquiry to Department 35A.*



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A wholly owned subsidiary of Homasote Company—manufacturers of the oldest and strongest insulating-building board; wood-textured and striated panels; ⅝″ underlayment for ⅛″ linoleum and wall-to-wall carpeting.

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What air conditioning results do you want? Have you a simple cooling problem—or a complex one? Is it small or large? Does the job require only cooling or does it involve the related problems of heating and ventilating?

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Consider these advantages:

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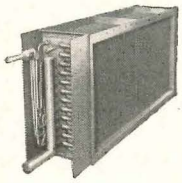
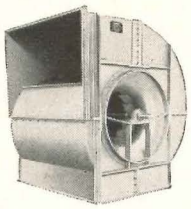
2. ONE SOURCE OF SUPPLY You save time by dealing with one competent specialist — the TRANE sales engineer —instead of many.

3. ONE SET OF CATALOGS From one handy and complete set of catalogs you can select all the equipment you need.

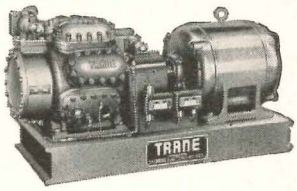
4. COMPLETE FLEXIBILITY There's a wide range of sizes and models. So flexible is the line, you can, for example, create 10 different 50-ton air conditioning systems.



TRANE Cooling Coils . . . Efficient fin-and-tube extended surface. For use with chilled water, well water, or direct expansion refrigerants.

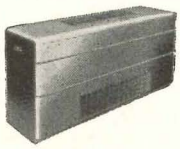


TRANE Centrifugal Fans . . . Class I and II construction with backwardly inclined or forward-curved wheel design. Ruggedly built. Quiet operation.



TRANE Reciprocating Compressor . . . Capacities up to 50 tons. New, automatic cylinder unloading saves power through multi-step reduction.

TRANE Self-Contained Units . . . all-in-one package. 3- to 20-ton capacity. Heating coil optional. 15- and 20-ton available with built-in evaporative condenser.



TRANE UniTrane and Custom-Air Systems . . . Multi-room air conditioning. Individual room control of heating, cooling, humidifying.

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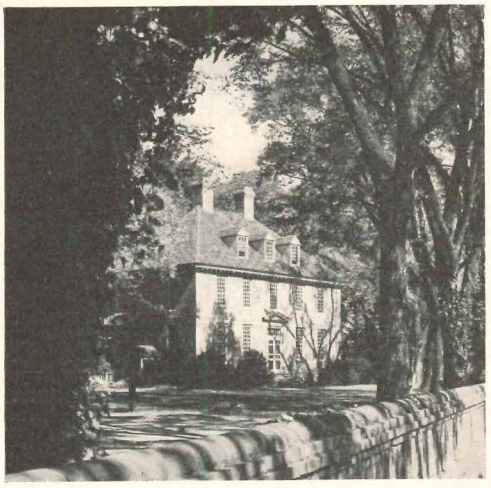
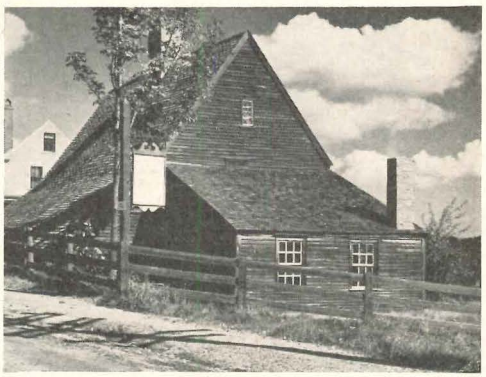
REQUIRED READING

Wayne Andrews



Thomas L. Williams



Samuel Chamberlain

Facade of church, Ranchos de Taos, N. M., 1772 (above). Above, right: Brafferton Hall, College of William and Mary, Williamsburg, Va., 1723. Right: Richard Jackson House, Portsmouth, N. H., 1664

EARLY AMERICAN ARCHITECTURE

Early American Architecture. By Hugh Morrison. Oxford University Press (114 Fifth Ave., New York, N. Y.), 1952. 619 pp., illus. $12.50.

REVIEWED BY WALTER CREESE*

The last two years have given us, in quick succession, a series of extraordinarily careful studies of early American architecture, of which this book is the latest and most complete. First came Rexford Newcomb's *Architecture of the Old Northwest Territory*, then Anthony Garvan's *Architecture and Town Planning in Colonial Connecticut*. A more comprehensive work was *The Dwellings of Colonial America* by the late Thomas T. Waterman. The event of these successive publications is thrown into high relief by the recollection that not since 1922 and Fiske Kimball's monumental *Domestic Architecture of the American Colonies and the Early Republic* has there been any such thoroughgoing effort to present an adequate picture of the periods between the sixteenth and the nineteenth centuries.

Why do we have this sudden feast of reason after a long and unreasonable intellectual drought? Obviously World War II and its aftermath have brought on an intense national curiosity about every aspect of our past culture. Architecture as the physical embodiment of the attitudes of our ancestors has currently the fascination of principles which have concrete reality (since many old buildings still exist), yet need description and exposition because they are not composed of words. The best of this present writing seems to arise from a reawakened conviction that we do not understand our own architectural tradition well enough.

Did we think we sufficiently understood it during the last three decades? The preceding concept seems to have been that our architecture was fundamentally colonial in the derivative sense: provincial and parochial. Mr. Waterman and Professor Morrison have documented and enlarged this assumption to a degree. By carefully tracing to their European sources the Swiss, Swedish, Dutch, Flemish, German, French and Scotch influences on the plan and elevation of the houses along the Atlantic Coast, Mr. Waterman demonstrated that this colonialism, which we had tacitly assumed to be basically English, was derived instead from many roots. Mr. Waterman's earlier studies were mainly in the Virginia and North Carolina areas and he perhaps arrived at this insight more quickly for his previous experience. Professor Morrison was born and brought up in New England and it is upon him that we depend for an interpretation of the English idiom of that region. He discounts the popular conclusion that the first settlers began to exert an original approach to their building problems as soon as they landed in its inhospitable climate and ends his chapter on New England with the following thought:

It is perhaps less remarkable that the first colonists did not build better, than that they built as well as they did. Con-

(Continued on page 48)

** Dr. Walter Creese, of the Faculty of Fine Arts, University of Louisville, is Editor of the Journal of the Society of Architectural Historians.*

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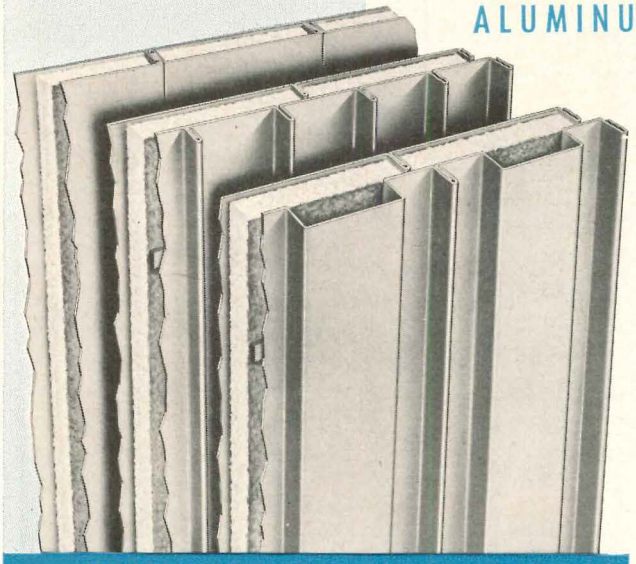

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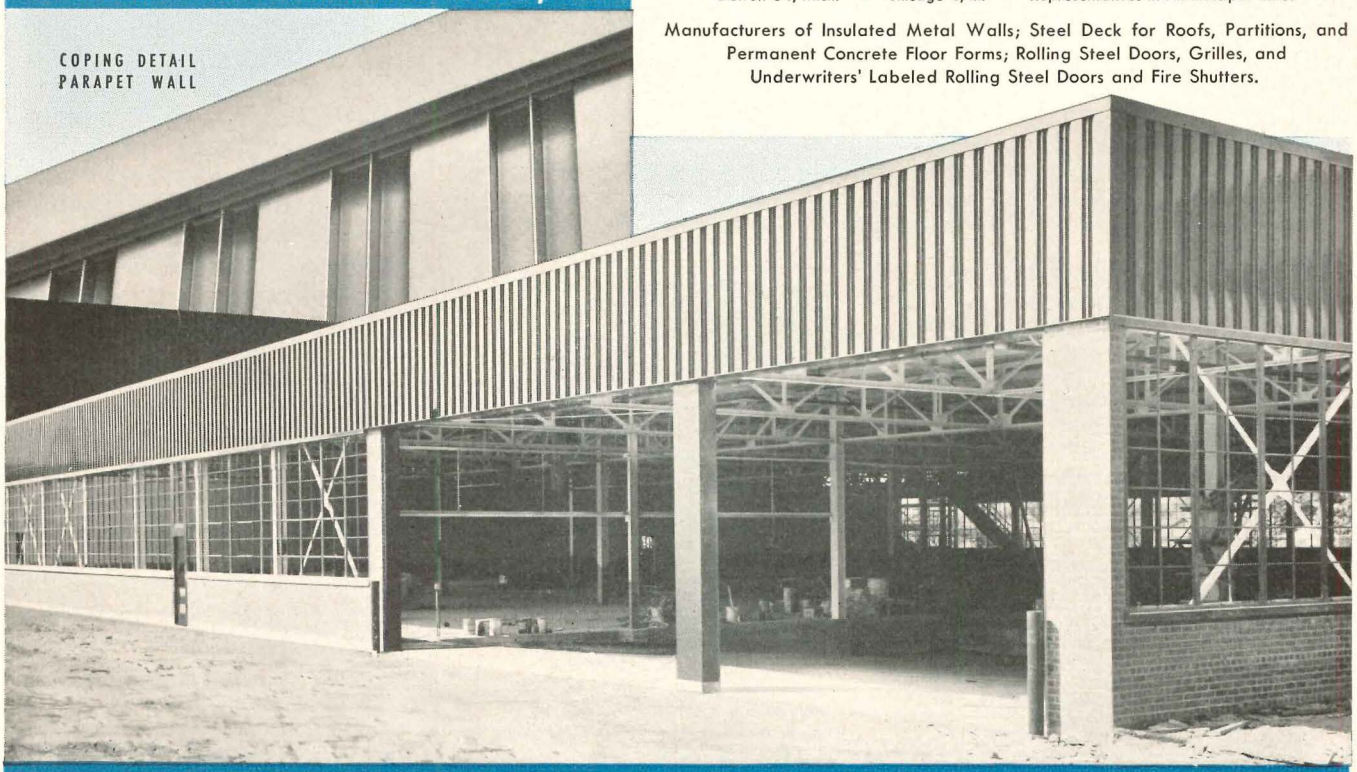

Mahon Insulated Metal Walls and Mahon Steel Deck Roof employed in the construction of a new building for L. A. Young Spring & Wire Corp., Detroit, Mich. Christian W. Brant & Associates, Architects; Barton-Malow Co., General Contractors.

MAHON

REQUIRED READING

(*Continued from page 46*)

fronted by the myriad urgencies and difficulties of a pioneer existence, it was more than enough to equal the standard set by their forebears in a settled society and a secure existence. Civilization has always advanced in established societies, not on their pioneer fringes.

The general impression would seem to be then that our early architecture was only a rough facsimile of what had been done much better on the other side of the ocean in a number of parent countries. Our chief interest in early American architecture would thus have to arise from its location and not its intrinsic quality.

However, our appreciation of its variety began to increase with Mr. Waterman's research along the East Coast. Hugh Morrison includes this coastal strip in his discussion as well as the architecture of Florida and the Spanish Southwest, missions and ranch houses of Alta California, and French Colonial architecture of the Mississippi Valley. He does not confine himself to houses either: churches, forts, log cabins, markets, mills, public buildings, colleges and even the long-neglected barn come into the total view. He teaches us that while we have been searching for historical significance in one dimension, that is, in depth or quality, we should perhaps have been gaining greater satisfaction from another, its breadth or variety. The author has explained his purpose in writing the book as "grimly didactic." It is instead powerfully dramatic in its sweep and scope.

For instance, how many of us have truly realized before that the oldest surviving non-Indian building in the United States is the Palace of the Spanish Governor in Santa Fe (1610–14), that Spanish colonization was carried northward in California with an awareness of the possibility of the Russians moving south, and that the French, through the Ohio and Mississippi river valleys, once had a firm control over the heartland of America and a continuous architectural tradition that stretched from Quebec to the Gulf of Mexico?

Anyone who has consulted Professor Morrison's *Louis Sullivan, Prophet of Modern Architecture* of 1938 would correctly expect this book to be painstaking in its research and presentation. It takes many years and generations of students to acknowledge the large debt such a

(*Continued on page 368*)

a revolutionary new writing medium

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GLASS CRAYON BOARD

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WHAT NU-RITE IS—NU-RITE is a plate glass crayon board with a fused-on vitreous enamel surface. It is used with the EZY-RASE water soluble wax crayons described on the next page. The manufacturing process produces a smooth, permanent writing surface with a flat, glare-free finish. NU-RITE is a companion board to our NUCITE glass chalkboard which has gained wide acceptance in classroom installations the world over.

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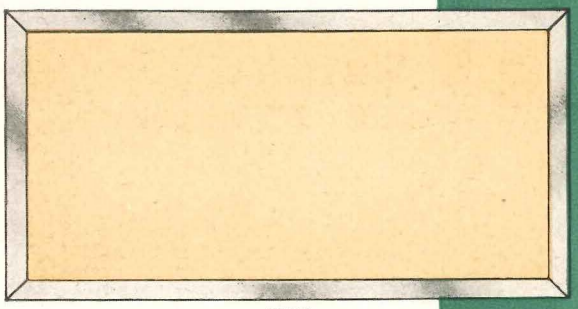
NU-RITE ADVANTAGES—Their delicate, eye-soothing colors and many other distinctive features, make NU-RITE glass crayon boards one of the most satisfactory and versatile writing surfaces for classroom use obtainable today. Colors and other features are described on the reverse side of this page.

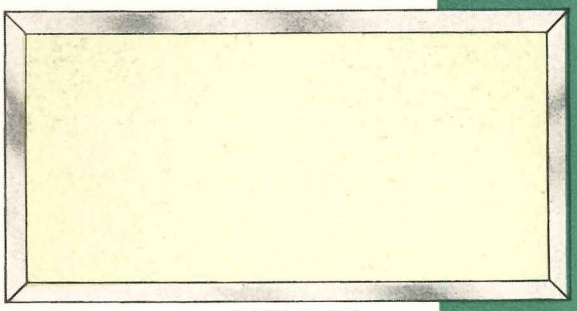
NU-RITE GLASS CRAYON BOARDS

...modernize old classrooms

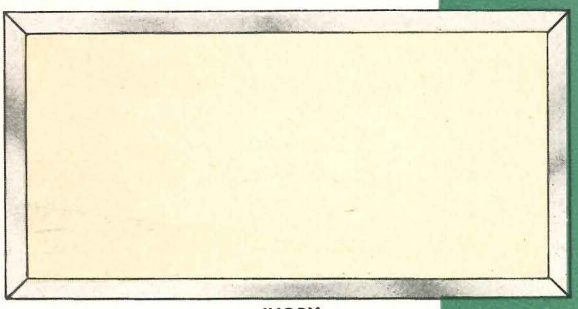
...complement new ones



BUFF



LIGHT GREEN



IVORY

IMPROVED LIGHTING—Laboratory tests show very high light reflectivity for the carefully chosen NU-RITE colors illustrated at left. As a basis of comparison, here are the light reflection factors of NU-RITE crayon boards and NUCITE chalk boards—

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	Light Green	39		Medium Green	18
	Ivory	53			

BETTER ILLUSTRATIVE TECHNIQUES—The variety of EZY-RASE crayon colors—all clearly legible on the three NU-RITE board colors—make possible a wide range of differentiation in charts, diagrams etc.

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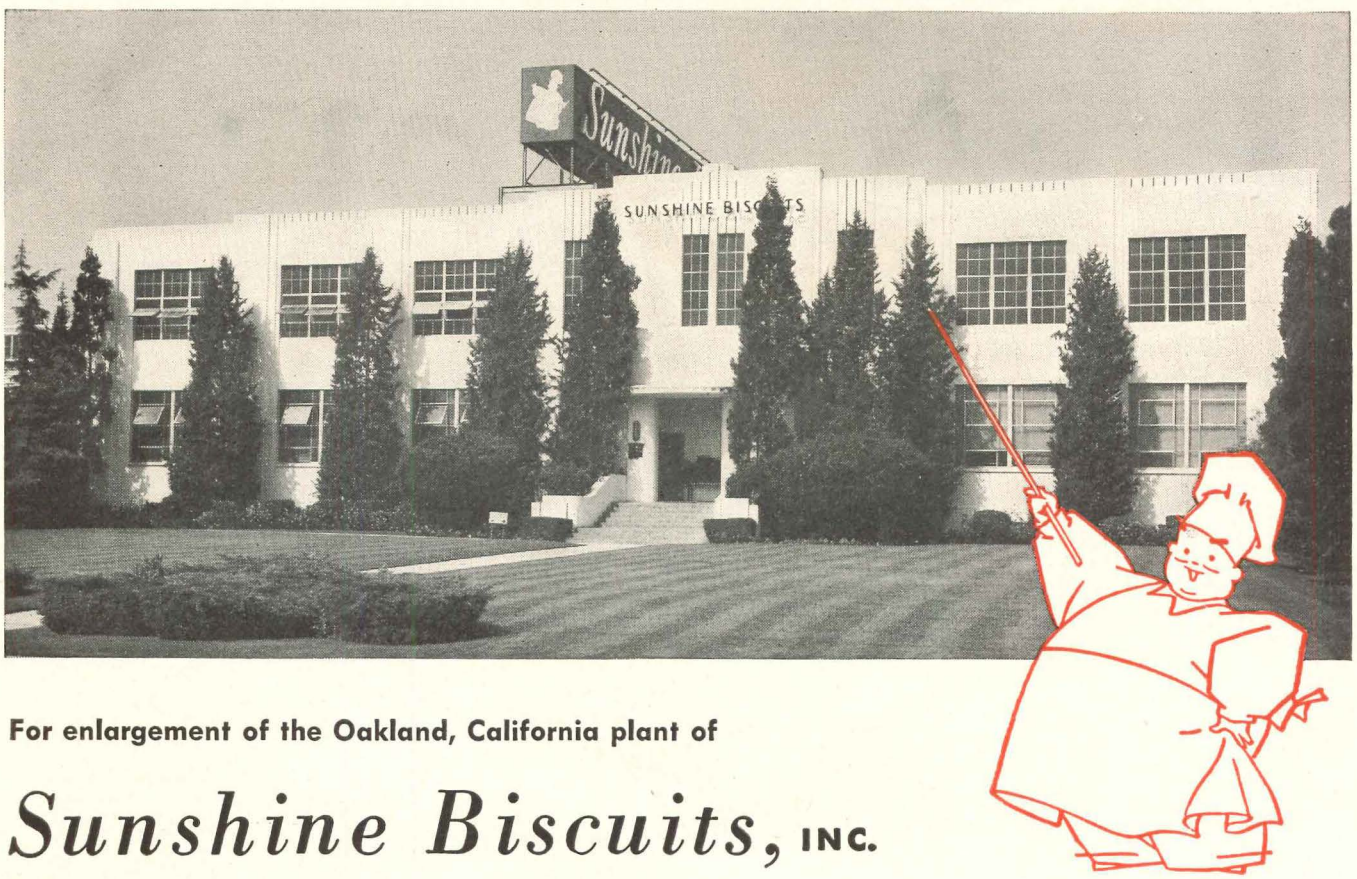

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proved low operating cost

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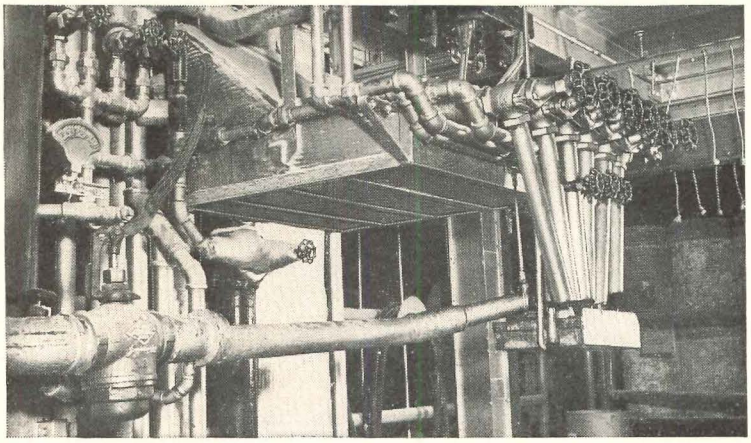

Complex piping like this for distributing heavy syrups and mixes in the Sunshine plant is one of the toughest proving grounds for valves, seeking out the slightest defects in design and construction.

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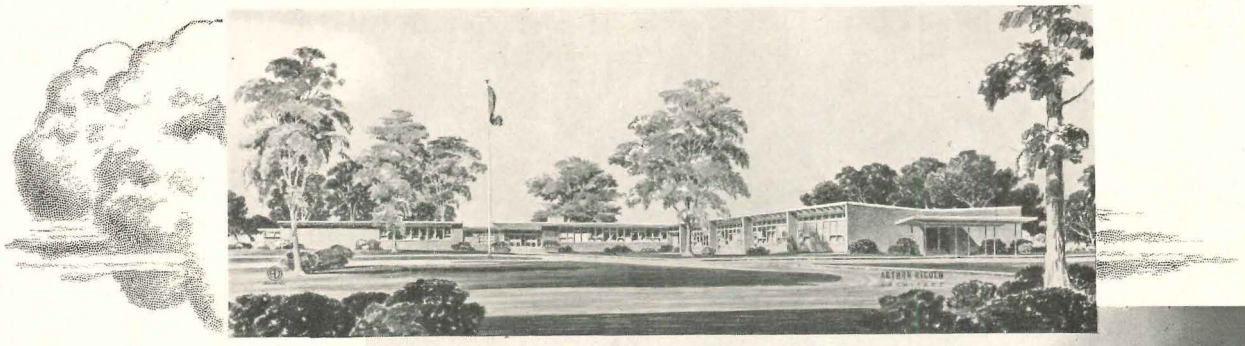
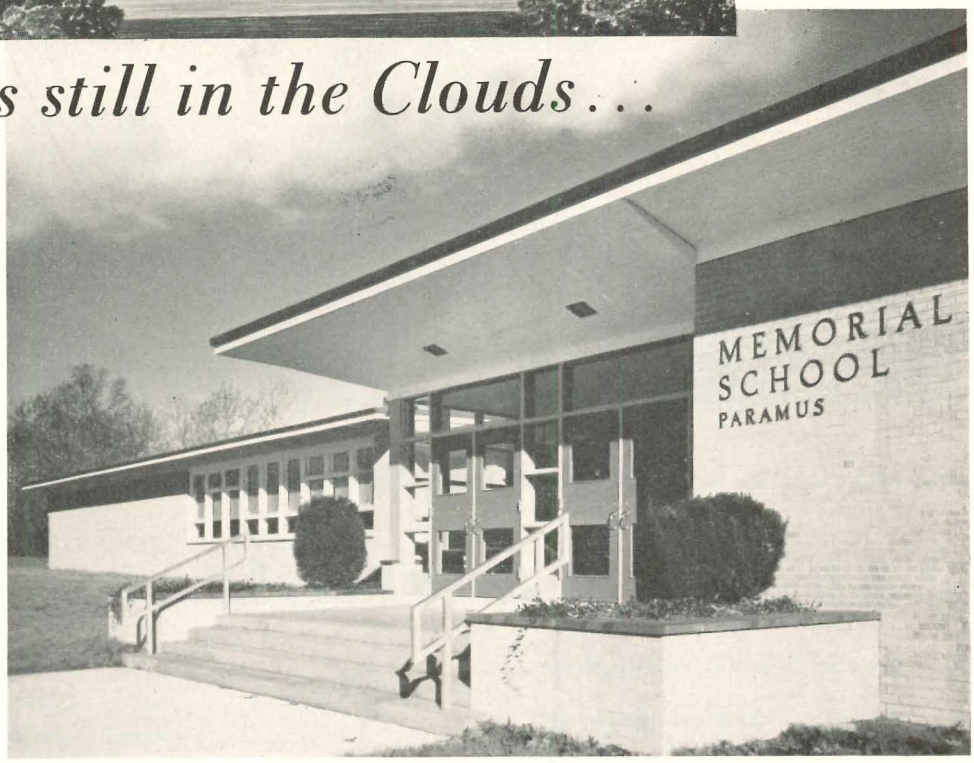


While it's still in the Clouds . . .



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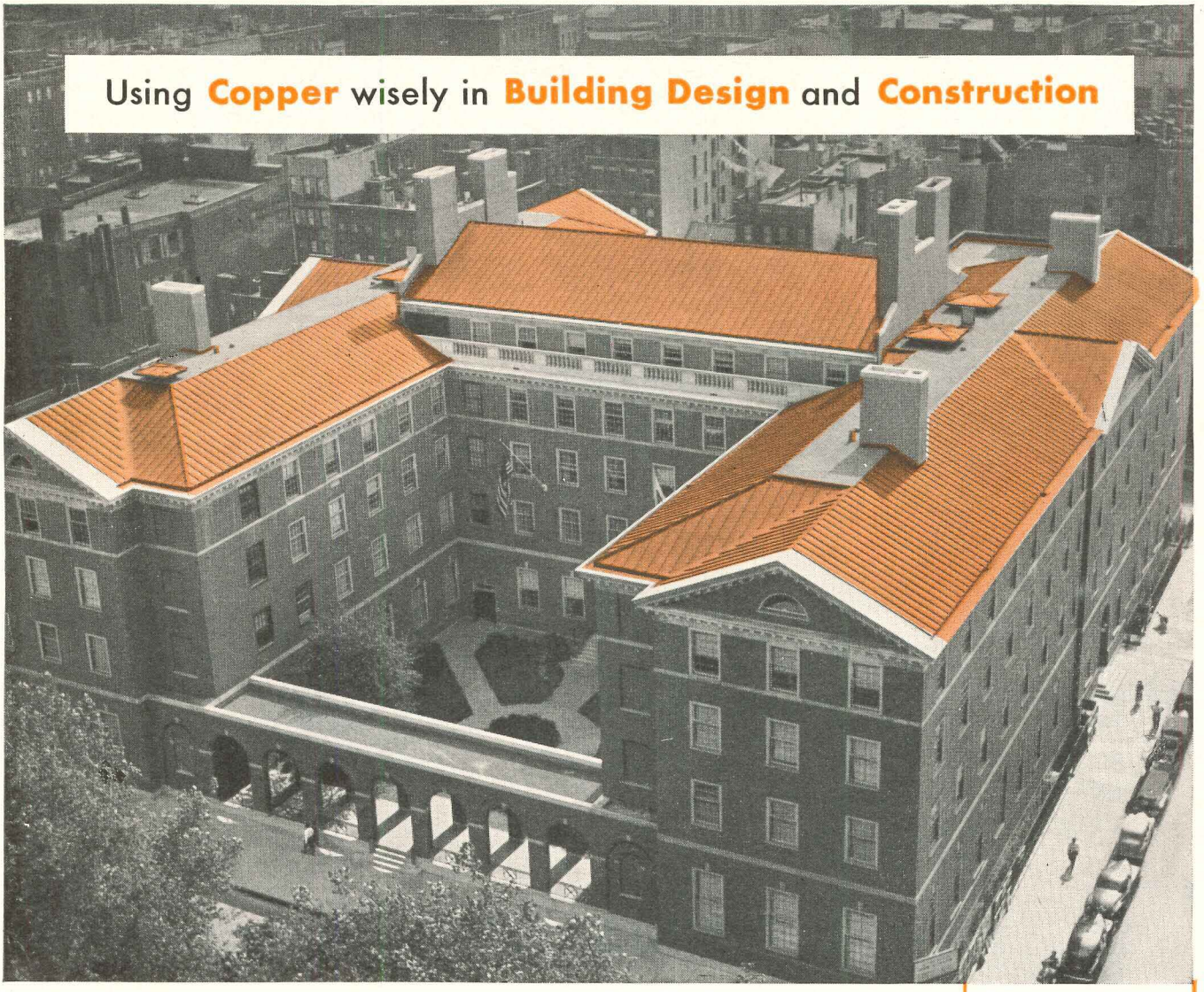

Arthur T. Vanderbilt Hall, new $5,000,000 law center for New York University, faces historic Washington Square in downtown New York City. Architect: Eggers and Higgins; General Contractor: John Lowry, Inc.; Roofer: Zenith Roofing and Sheet Metal Co., Brooklyn, New York.

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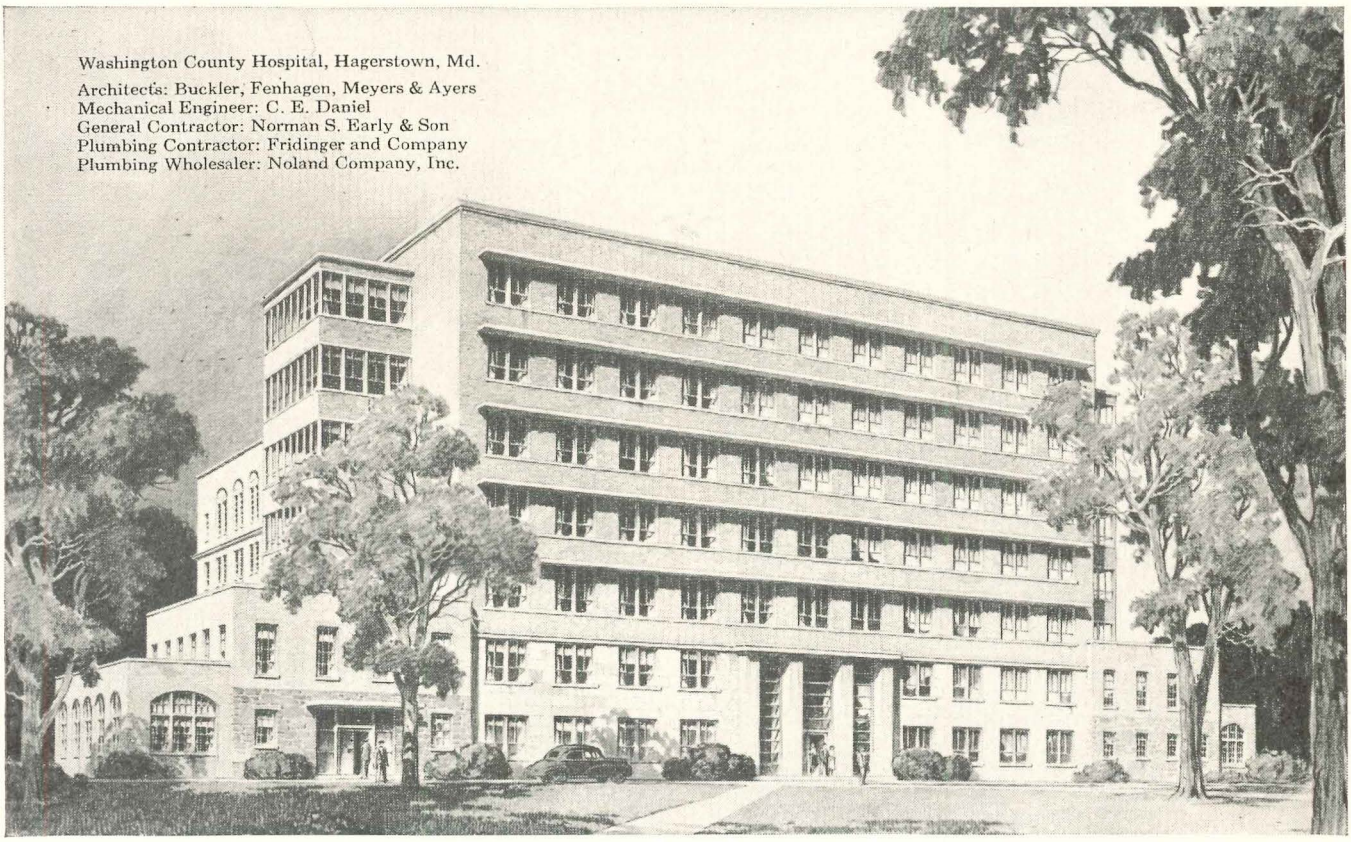

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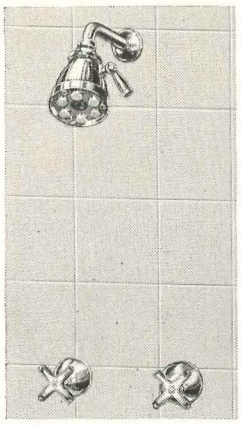

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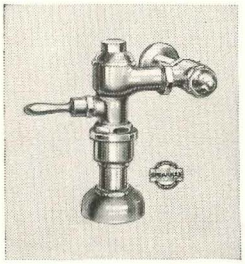

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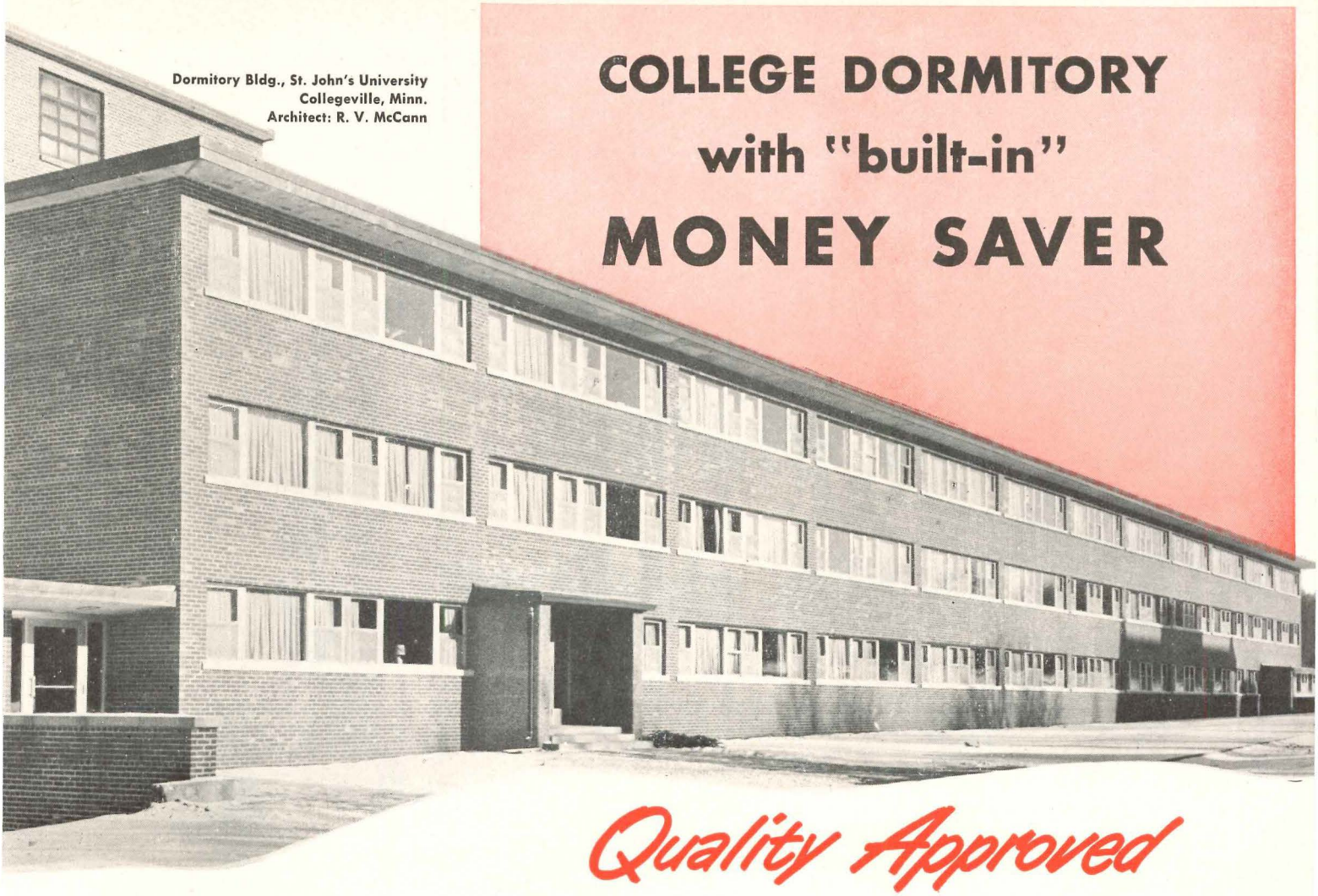


Dormitory Bldg., St. John's University
Collegeville, Minn.
Architect: R. V. McCann

COLLEGE DORMITORY with "built-in" MONEY SAVER

Quality Approved

ALUMINUM WINDOWS

cut maintenance costs in any building

DOUBLE-HUNG

CASEMENT

PROJECTED

AWNING

HOW TO SAVE MONEY on yearly maintenance costs, reduce operating expense—that's the big problem confronting school and hospital boards everywhere.

First step in any maintenance-saving program is to specify "Quality-Approved" aluminum windows for all new buildings or additions. In this way you automatically help clients save money year after year.

Aluminum windows always operate easily, effortlessly, efficiently. They never need painting or costly repairs. They cannot rust or rot. They remain beautiful for the life of the building.

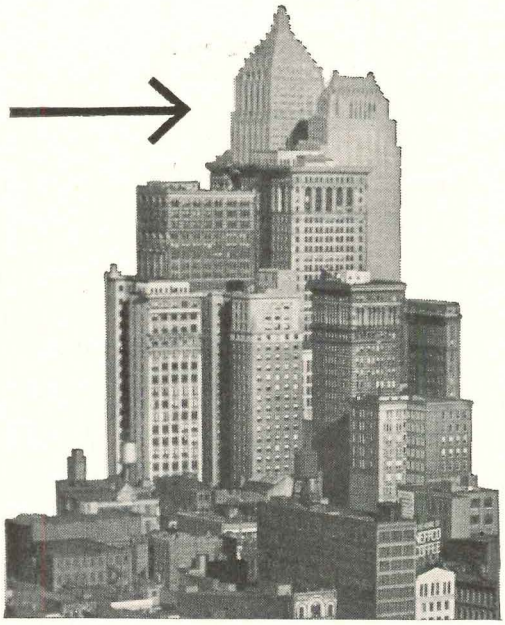
"Quality-Approved" aluminum windows are available through many manufacturers in sizes and styles (double-hung, casement, projected and awning) that fit any plans. For your client's protection insist on "Quality-Approved" windows when you specify. Only windows that have been tested by an independent laboratory and approved for quality of materials, construction, strength of sections and minimum air infiltration are permitted to carry the "Quality-Approved" Seal.

For detailed information and names of "Quality-Approved" manufacturers, consult Sweet's Catalog (Section 17a/ALU) or write for free copy of our new 1952 Aluminum Window Specifications Book. Address Dept. AR-6.

Aluminum Window Manufacturers Association

74 Trinity Place, New York 6, N. Y.

the greatest testimonials in roofing are written in the skylines of America



Barrett* built-up roofs, applied by Barrett Approved Roofers, protect a preponderance of America's great commercial, industrial and public buildings.

We know of no stronger evidence of roofing protection that we or anyone else in the world can offer you.

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ALLIED CHEMICAL & DYE CORPORATION
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Philadelphia 46, Pa.

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In Canada: *The Barrett Company, Ltd.*
5551 St. Hubert St., Montreal, Que.

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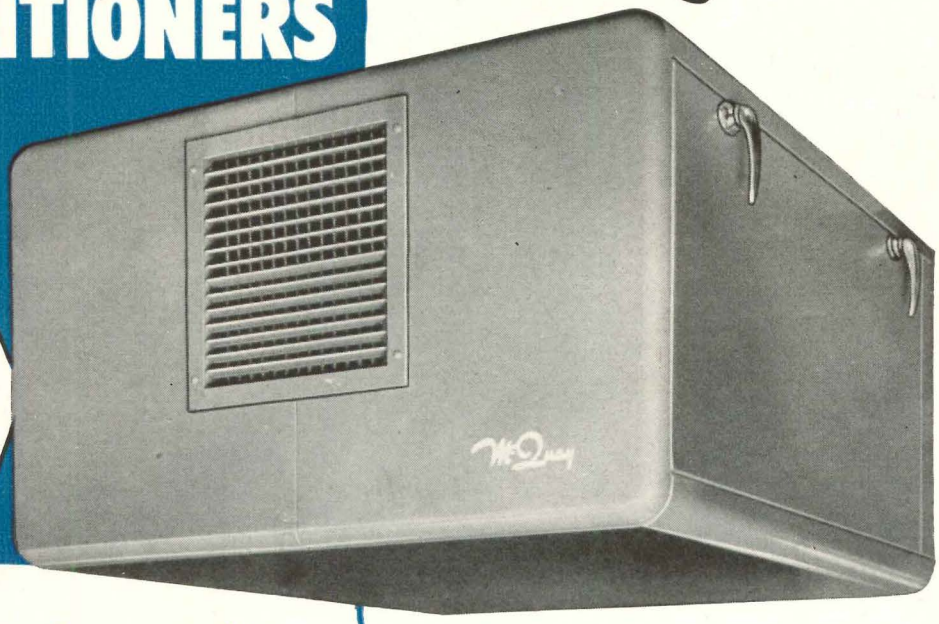
McQuay "RH" AIR CONDITIONERS

for year 'round cooling... heating...

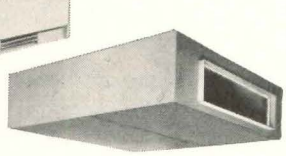


The Dependable Double-Duty Unit

McQuay Seasonmakers

Individual Room Air Conditioners for year 'round service.
(For use with central chilled or heated water or Freon systems)

Floor Type. For free standing mounting beneath a window or along a wall.



Ceiling Type. For suspended mounting.

Also available in basic type for fully recessed installation.

Write for Condensed Bulletin No. 700.

The McQuay "RH" Air Conditioner leads the field for efficient, economical cooling and heating. During hot weather, fresh outside air is filtered, then cooled by either cold water or freon coils. Steam or hot water coils provide warm filtered air for the heating seasons.

For modern shops, stores, offices, beauty parlors, restaurants and taverns, it's a streamlined beauty that can be suspended from the ceiling, mounted on existing fixtures, or installed adjacent to conditioned space.

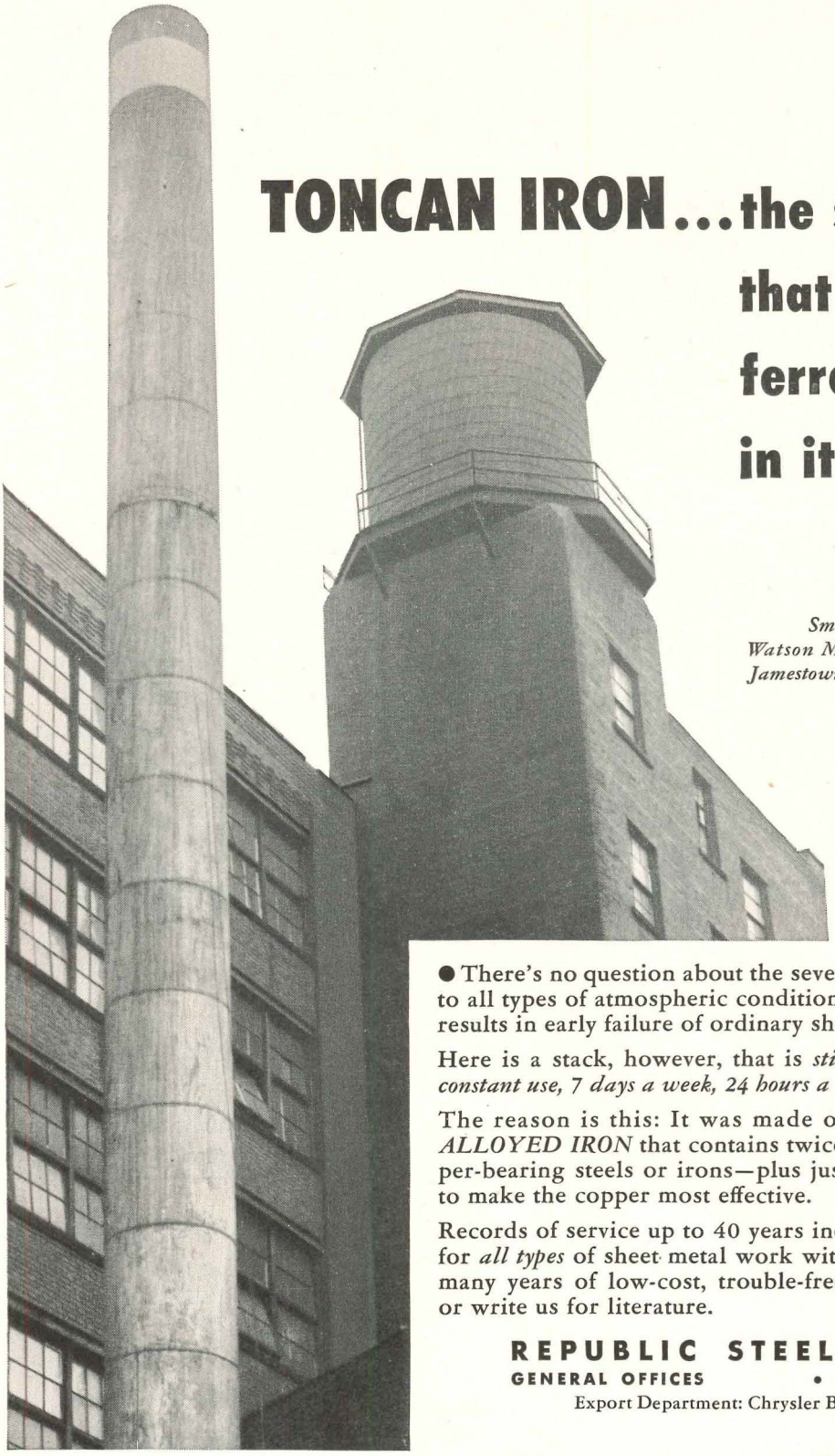
Famous McQuay Ripple-Fin coils with rugged construction throughout assure long dependable service—and customer satisfaction. In 4 sizes to fit a wide range of requirements. Write for catalog No. 97. Representatives in principal cities. McQuay Inc., 1605 Broadway St. N.E., Minneapolis, Minn.

McQuay INC.

REFRIGERATION • AIR CONDITIONING HEATING

MAKE THE SEASONS COME TO YOU

TONCAN IRON...the sheet metal that outlasts other ferrous materials in its price class!



Smokestack on plant of Watson Manufacturing Company, Jamestown, N. Y.—installed in 1937.

● There's no question about the severity of smokestack service. Exposure to all types of atmospheric conditions and to corrosive fumes frequently results in early failure of ordinary sheet metals.

Here is a stack, however, that is *still in good condition after 15 years of constant use, 7 days a week, 24 hours a day.*

The reason is this: It was made of rust-resisting Toncan Iron—the *ALLOYED IRON* that contains twice the copper ordinarily used in copper-bearing steels or irons—plus just the right amount of molybdenum to make the copper most effective.

Records of service up to 40 years indicate that you can use Toncan Iron for *all types* of sheet metal work with full assurance that it will provide many years of low-cost, trouble-free service. Read about it in Sweet's or write us for literature.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N. Y.

TONCAN COPPER MO-LYB-DEN-UM IRON

FOR MORE THAN 40 YEARS . . .
HIGHEST RUST-RESISTANCE OF ALL
FERROUS MATERIALS IN ITS PRICE CLASS

Republic REPUBLIC STEEL®

TONCAN® COPPER MOLYBDENUM IRON

—for ducts, gutters, conductor pipes, roofing, siding, tanks, ventilators, skylights, hoods and other sheet metal applications requiring rust-resistance — and for corrugated metal drainage products.

He knew what he wanted

BUT NEEDED HELP TO GET IT . . .

. . . clients think in terms of end results. They need suggestions for specific materials and methods best suited to develop their plans. The solution calls for your experience and know-how — aided by up-to-the-minute file reference information.

We want you to be familiar with RUBBER Flexi-Flor and Wall-Flex — know the exclusive advantages of cushioned resilience, beauty of color and design range, low maintenance and lifetime durability. Quick reference can suggest applications and utilization that benefits you by assuring jobs of outstanding success and satisfaction.

Take advantage of Flexi-Flor and Wall-Flex in your specifications — R.C.A. is the *only* line for *complete* rubber installations.

Time-tested for:
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walls of rubber. New—exclusive—flexible 1/16" gauge fabric-back rubber in 28 colors. Simple, quick, one-man installation with the advantages of continuous corners and curved surfaces, sanitation, low maintenance and economy. You'll want to include the versatility and colorful beauty of Wall-Flex in your plans.

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floors of rubber. Available in 28 colors, sheet or tile form, 3/32", 1/8" and 3/16" gauges. This complete range meets a diversification of uses in addition to floors—counter tops, display tables, drainboards, desk tops, counter facings, etc.

ACCESSORIES
design-planned to complete the ensemble. Feature strips —borders—cove base—corners—and tread runners in the same 28 colors, stair treads for residential and commercial use — all of the same dependable R.C.A. rubber. Everything you need for complete planning.

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R·C·A

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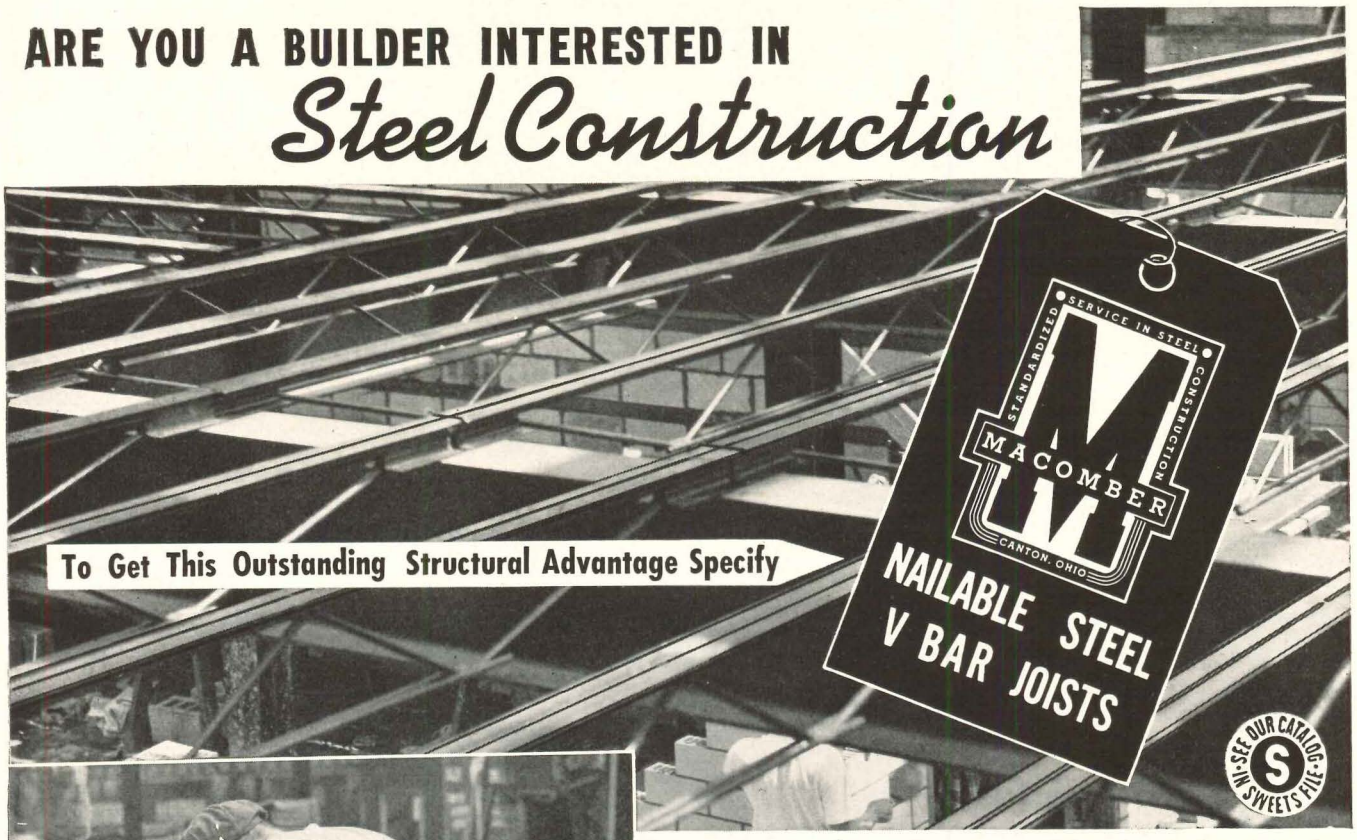
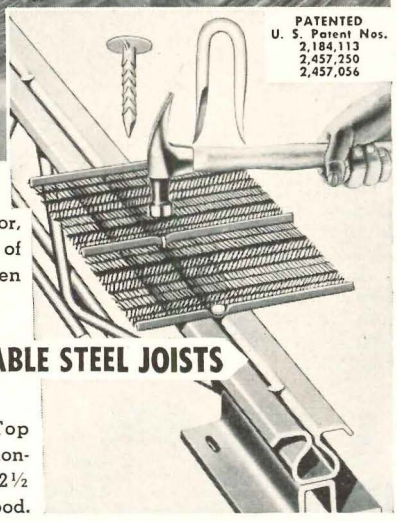
WALL-FLEX WALLS of RUBBER

"the more we're together . . the happier you'll be"

THE R. C. A. RUBBER COMPANY 1849 E. MARKET STREET AKRON 5, OHIO

ARE YOU A BUILDER INTERESTED IN *Steel Construction*





NAILING gives you a solid anchor, prevents deep pockets of wasted concrete between joists.

NAILING into V Joist Steel Top chords gives you a non-combustible anchor 2½ times stronger than wood.

MACOMBER NAILABLE STEEL JOISTS

ARCHITECTS AND BUILDERS who consider fire-safety and the economy of ready-to-install steel members as essential ingredients of good construction have something very special in Macomber Steel Joists.

That special something is NAILABILITY.

These all-steel structural units have a nail gripping power 2½ times that of wood.

Result? You can build fire OUT and safety IN when you specify Macomber Nailable Steel Joists.

In addition you can:

1. Attach centering faster with nails.
2. Prevent pockets of wasted concrete between joists when centering is stretched taut.
3. Build a fire barrier to floors above.
4. Prevent the unsightly results of shrinkage and deflection.

Yes—if you are a builder interested in Steel Construction, you pay no more for the ONE STEEL JOIST that gives you ALL of these advantages. Write us.

STANDARDIZED STEEL BUILDING PRODUCTS

MACOMBER • INCORPORATED

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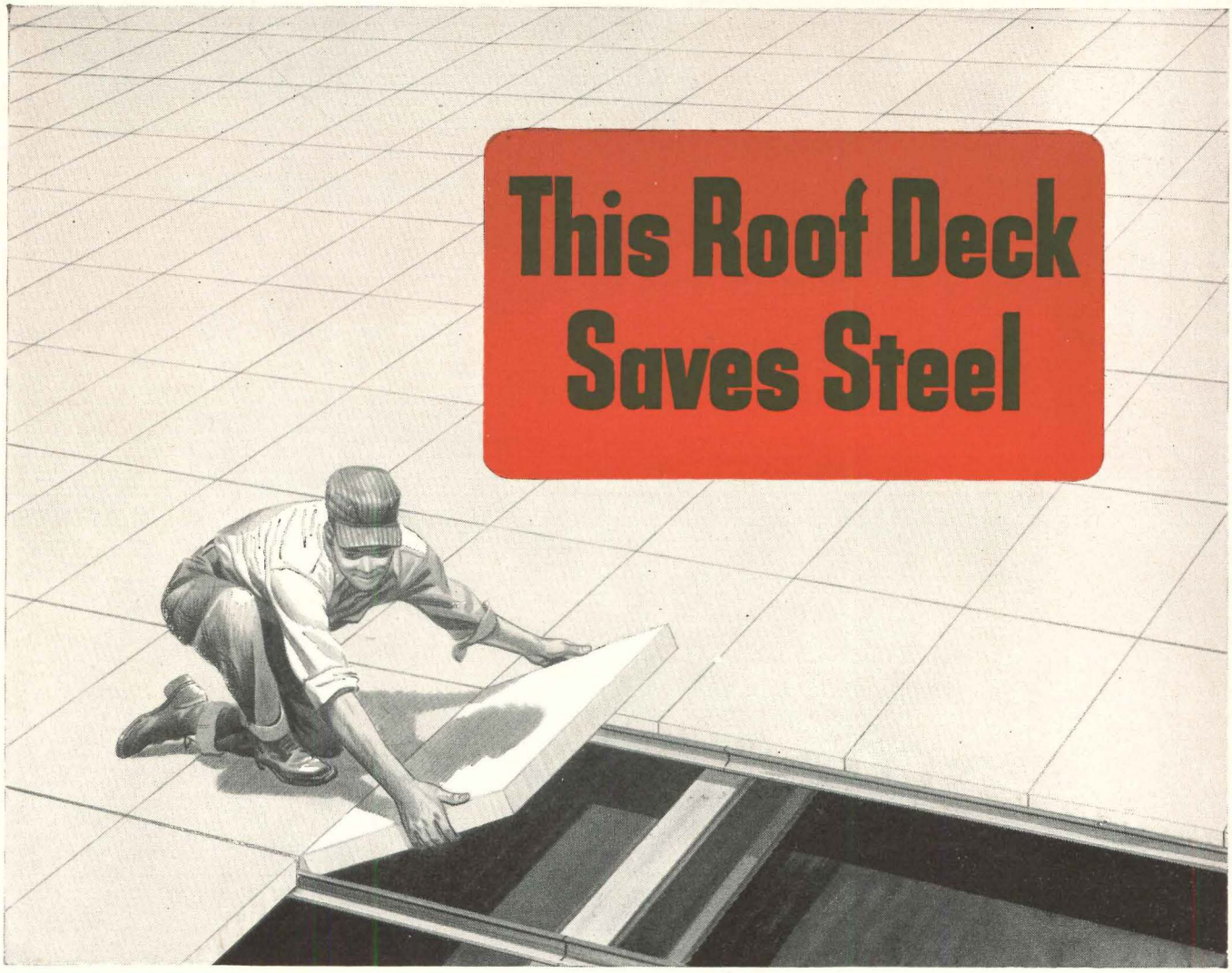
V BAR JOISTS • LONGSPANS • BOWSTRING TRUSSES • STEEL DECK



. . . because Kaylo Roof Tile is so lightweight yet strong
. . . and it also insulates . . . protects against fire

Kaylo Insulating Roof Tile not only conserves steel by eliminating needless building weight—it provides a *better* roof deck. This revolutionary structural material is a hydrous calcium silicate. It has more than adequate strength for typical roof loads, yet a Kaylo deck weighs *only* six pounds per square foot. Therefore, a Kaylo roof deck means a lighter supporting structure–and important savings of steel.

Kaylo Roof Tile has high insulating value to save on heating and cooling costs. Since the tile is also incombustible, fire originating above a Kaylo deck is prevented from producing dangerous temperatures within the building for a period of at least one hour.

And, a Kaylo deck can be erected rapidly. The lightweight Kaylo Insulating Roof Tile is easily handled and placed — forming a permanent, maintenance-free roof deck of simple and economical construction.

WRITE FOR FREE BOOK—"Kaylo Insulating Roof Tile." Address: Dept. N-215, Owens-Illinois Glass Company, Kaylo Division, Toledo 1, Ohio

KAYLO® . . . *first in calcium silicate*

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convector-radiators

making warm friends in New Boston apartment house

* Hundreds of Fedders Convector-Radiators are contributing to the comfort and appearance of Boston's new River House Apartments.

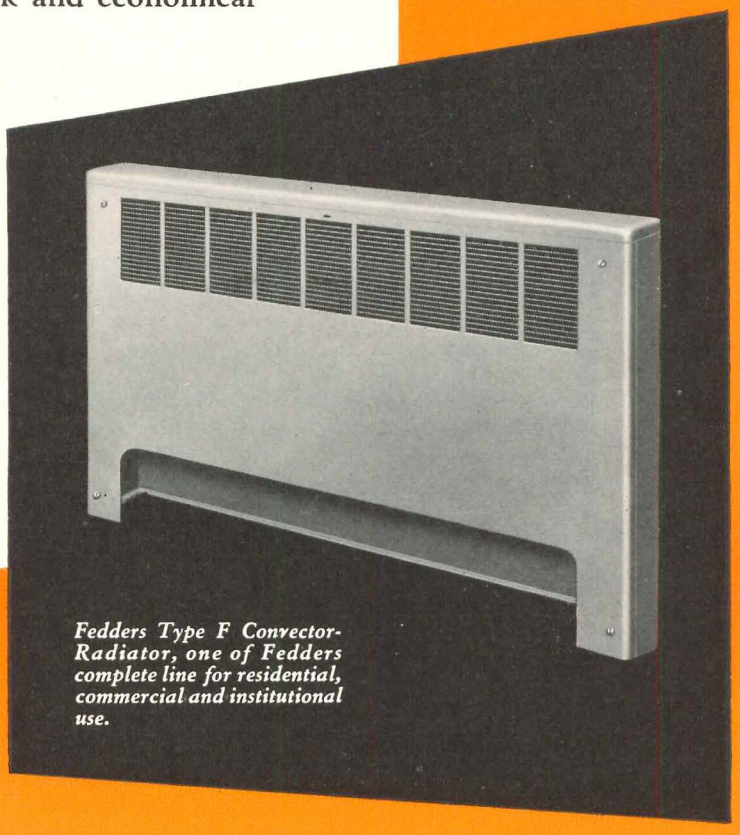
They are in perfect taste with handsome decorative schemes and furniture arrangements.

Architects, interior decorators and contractors are turning to Fedders Convector-Radiators across the nation for uniform floor-to-ceiling temperatures, quick response to modern controls, fuel economy and handsome appearance.

Fedders Convector-Radiators meet standard architectural and roughing-in dimensions . . . they are light in weight . . . compact in size . . . easy to stock and economical to deliver and install.

WRITE FOR CATALOG

The ratings of Fedders Convector-Radiators are in conformance with Commercial Standards CS140-47, as developed cooperatively by the trade and the National Bureau of Standards, U. S. Department of Commerce, and the said ratings have been approved by the Convector Rating Committee.



Fedders Type F Convector-Radiator, one of Fedders complete line for residential, commercial and institutional use.

57 TONAWANDA STREET, BUFFALO 7, NEW YORK

Bigelow adds a "Luxury" touch to the Frederick Martin!

THE new and beautiful Frederick Martin Hotel in Moorhead, Minnesota has rolled out 4,000 yards of Bigelow Carpet to welcome its guests!

From the handsome walnut paneled lobby to the guest rooms and suites to the Tree Top Room for dining, Bigelow adds that touch of "luxury" that only fine carpeting brings to a hotel!

The 4,000 yards of carpeting used was Bigelow's Beauvais, with approximately 2,500 yards in the same pattern.

Again, a modern hotel chooses to select Bigelow for its carpeting job. The reason is obvious: Bigelow provides the unbeatable combination of beauty plus wear plus rock-bottom cost!

This is typical of the hundreds of outstanding installations achieved by Bigelow's Carpet Council every year.

If you have carpet problems on your mind—contact this staff of experts today. They will work with you, your architect or your decorator — and give valuable advice on colors, patterns, and weaves in the price you prefer.

No charge for this service. Just write to Bigelow Carpet Council, 140 Madison Avenue, New York, N. Y. Your inquiry will receive *prompt* attention.

BIGELOW Rugs and Carpets

Beauty you can see . . . quality you can trust . . . since 1825

Cost-wise architects specify

BRIGGS *Beautyware*

. . . because it's free from trouble!

DURING THE A.I.A. CONVENTION, JUNE 24-27—
BE SURE TO VISIT THE BRIGGS BEAUTYWARE
ERNATIONAL SHOWROOM, 101 PARK AVE., NEW YORK

These days, more than ever, the practical architect considers the cost. That's why so many of the leading members of the profession are remembering Briggs Beautyware with increasing frequency when making specifications. The name Briggs Beautyware stands for outstanding quality in plumbing fixtures at a reasonable price. Furthermore, Briggs fixtures are economical to install—because they're trouble-free! All unnecessary dead weight has been eliminated—they're easier to handle. Exact dimensions make them easier to install. The tiling-in flange prevents leaks—cuts costly, time-consuming repairs after installation. Special under-tub framework assures permanent level installation independent of wall support. Home owners really like its beauty, durability and economy! For so many reasons, you *can't go wrong* specifying Briggs Beautyware!

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:AUTIFUL NON-FADING COLORS

.e famous Briggs Beautyware decorator .ors are widely known through advertise-nts in leading magazines across the nation. ve your clients Sky Blue, Sea Green, ory or Sandstone (shown at top). Prices : only slightly higher than plain white.

EASIER TUB INSTALLATION

There is no need to cut and fit adjoining wall tile when installing a Briggs Beautyware bathtub. The newly redesigned Briggs tubs have a perfectly vertical edge at the panel ends—simplifying and speeding installation.

ACID-RESISTANT LUSTER

Briggs makes only one quality — the best. *Every* piece of Briggs Beautyware is thoroughly resistant to medicines, washes, lotions and acids normally found in the home. Fixtures look new longer! Owners are delighted!

as fundamental as
interior trim...

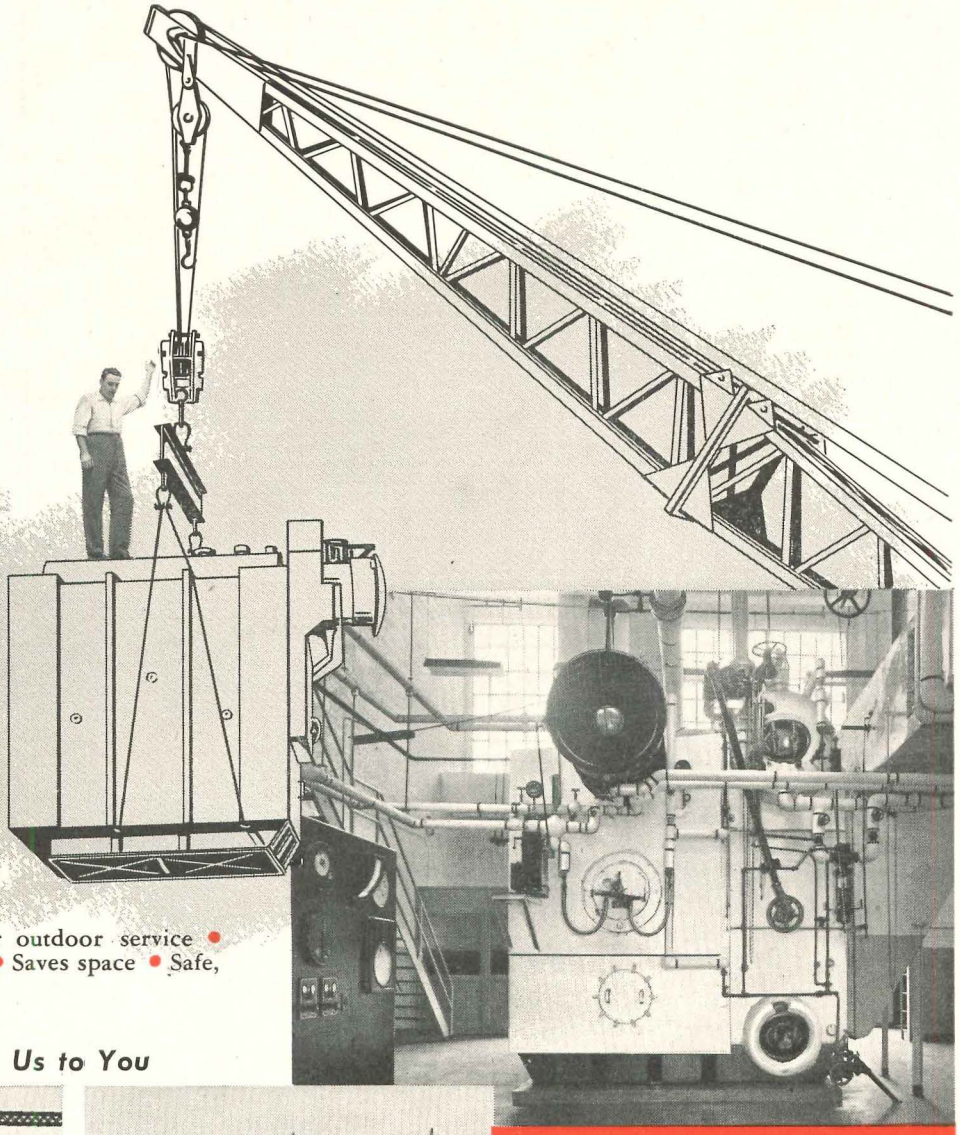
A good plan is always better when it includes symbols for telephone outlets.

Interior details are often the most important details to your clients. And one they'll rate high is concealed telephone wiring. Because raceways, built into the walls during construction, protect the beauty of thoughtfully designed walls and woodwork. Specifying conduit for telephone wires is standard practice with architects today. Your Bell Telephone Company will be glad to help you lay out economical raceway installations. Just call your nearest Business Office.

BELL TELEPHONE SYSTEM

IF YOU WANT TO

Bring Steam Costs Down

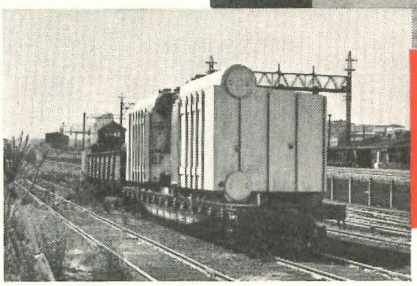


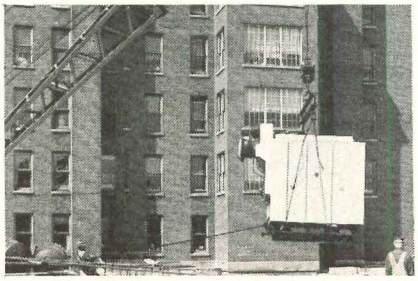
CONSIDER THIS
Factory-assembled, Self-contained B&W Integral-Furnace Boiler, Type FM

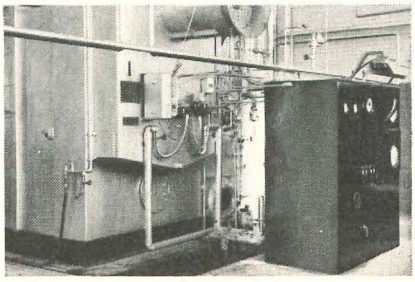
• Saves erection time and cost • Meets wide range of services • Handles quick load changes • Fast steaming • Low maintenance • Easy accessibility • Suitable for outdoor service • Burns oil and or gas • Saves fuel • Saves space • Safe, automatic operation.

It Is Easily Shipped from Us to You

By Truck . . . By Rail







Set it down where you want it . . . Set it up in a hurry

Steam Capacities 2900 to 28,000 lb. per hr. at 15 to 250 psi

There's no law against buying more than one FM unit if you need BIG BOILER capacity. Many companies have, and pocketed the money they would otherwise have spent tearing their buildings apart to put in a large boiler. Ask your nearest B&W man to explain the economical service you can expect from Type FM boilers . . . or send for Bulletin G-76.

THE BABCOCK & WILCOX COMPANY
BOILER DIVISION
85 Liberty Street, New York 6, N. Y.

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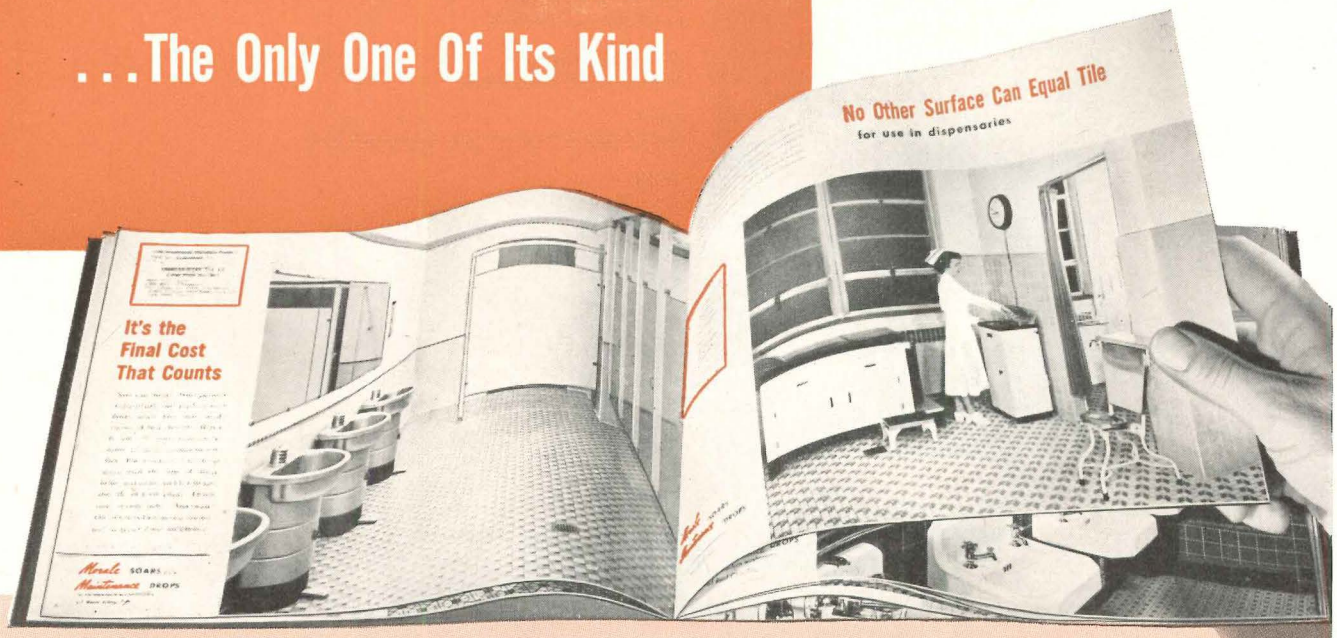
G-564

New High School in Western New York—This recently completed two-story structure, the Williamsville Junior-Senior High School, Williamsville, N. Y., has facilities for 1000 students. The building is 325 ft long and 350 ft deep, and has 30 classrooms, an auditorium, gymnasium, swimming pool, library, industrial arts shop, laboratories, music rooms and cafeteria. Its attractive exterior of red brick and gray limestone covers a 600-ton steel framework of Bethlehem Structural Shapes.

BETHLEHEM STEEL

General Contractor: The John W. Cowper Co., Inc.; *Architect:* Duane Lyman and Associates; *Consulting Engineer:* T. H. McKaig; *Steel Fabricator and Erector:* Buffalo Structural Steel Corp.

A Booklet Architects Will Welcome ...The Only One Of Its Kind



NEW... BOOKLET SHOWS HOW TILE IN INDUSTRY CAN BOOST *Morale* ... CUT *Maintenance*

For some time we have felt that there was need for some literature to which architects could refer when planning tile installations for industrial buildings. Now, for the first time, it's available. American-Olean's new Booklet 300 gives you all the facts, in concise, complete form.

This new booklet shows you how and why plant rest areas can work for management, boosting morale and reducing maintenance costs.

You will find page after page of full color photographs of actual installations in plants such as Esso Standard Oil and Standard Pressed Steel Co. A group of color combinations of floor and wall tile especially selected for industrial and institutional use is shown, complete with specifications.

A copy of this booklet is being mailed direct to most architects. If you have not received yours, or if you would like additional copies, we will be glad to send them to you.

American-Olean Tile Company

AMERICAN-OLEAN TILE COMPANY
930 Kenilworth Avenue, Lansdale, Pa.

Gentlemen:

Please send me, without obligation, my copy of your new booklet on Modern Industrial Washrooms.

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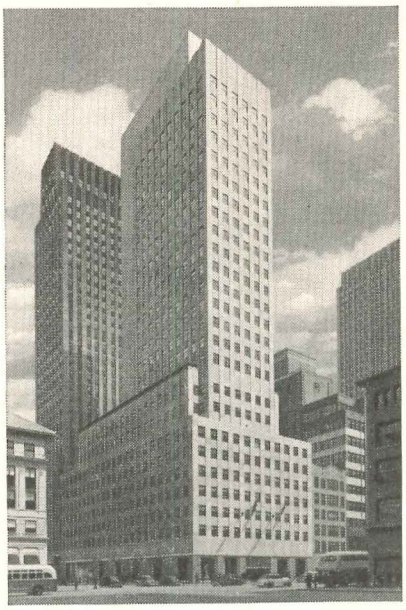

Architects,
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Who has it soft at Sinclair Oil?

In New York City's new 27-story Sinclair Oil Building, just about everybody has it soft. A Carrier Conduit Weathermaster* Air Conditioning System sees to that.

The Conduit Weathermaster System lets each tenant dial the climate level he personally prefers. But even more important, he gets *better air conditioning* than any other system could give him. And this is true because the Conduit Weathermaster System *centralizes control* of temperature, humidity, ventilation, air movement and air cleaning.

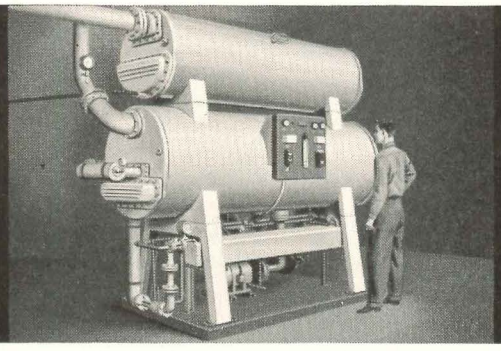
For example, because all functions of year-round air conditioning are centrally controlled, dehumidifying may go on independently of the cooling — unlike various other systems — so occupants are kept comfortable even on the muggiest of days. There are no holes in the walls, or fans or motors in each room. No matter how the wind is blowing outside, building temperature and humidity are controlled on all floors — summer and winter. It's as comfortable on the 27th floor at Sinclair Oil as it is on the 2nd or the 15th.

There's more to the story, of course. The Carrier office nearest you will be glad to tell you the rest. Or our booklet, "Conduit Weathermaster System," will help you. Just write Carrier Corporation, Syracuse, N.Y. . . . *for 50 years — the people who know air conditioning best.*

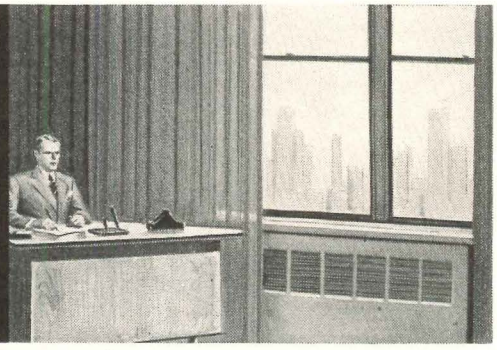
*Reg. U. S. Pat. Off.

Carrier

AIR CONDITIONING
REFRIGERATION
INDUSTRIAL HEATING



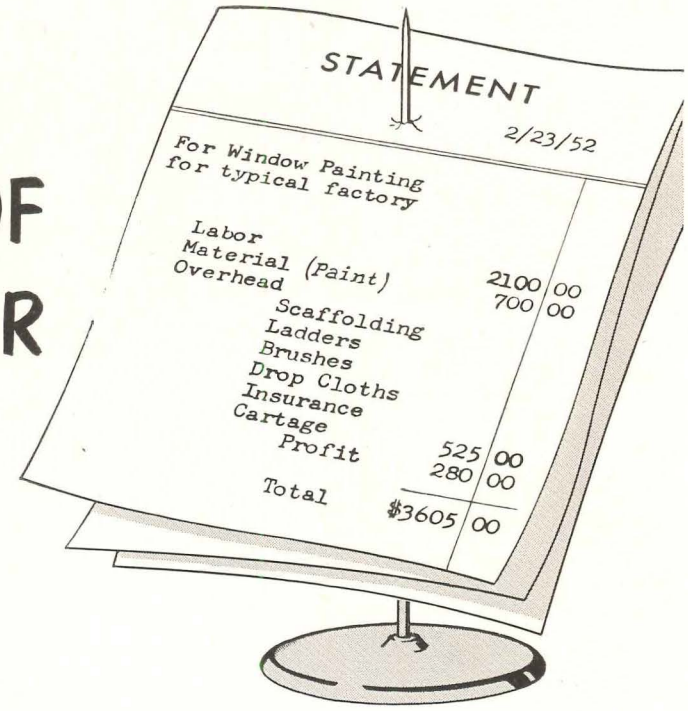
Refrigeration for the new Sinclair Oil Building is supplied by four 275-ton Carrier Absorption Refrigerating Machines (similar to this one) placed on the roof.



849 Weathermaster room units (like this one) give individual, automatic control of climate, prevent drafts the year around.

SAVE THOUSANDS OF DOLLARS EVERY YEAR

...use Fenestra super-galvanized steel windows



No more bills for the expensive time and labor and materials involved in painting windows every few years. Save thousands of dollars every year by insisting on Fenestra* Super Hot-Dip Galvanized Steel Windows!

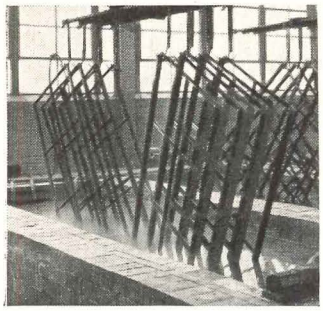
Here's why they are called *Super* Galvanized: Fenestra has developed a Hot-Dip Galvanizing system designed specifically for steel windows, and has built a special plant around it. It is the only one of its kind in America.

Completely automatic controls move Fenestra window assemblies through a series of special tanks where they are cleaned and pickled, rinsed, fluxed, dried, galvanized and Bonderized. Timing, temperatures—every step—is laboratory controlled.

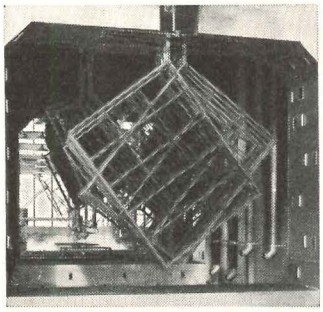
So add Super Hot-Dip Galvanizing to your present list of Fenestra advantages... such as integral ventilator butts that increase window strength, precision machining of window bars for perfectly uniform window size, automatic assembly of ventilators for perfect permanent fit, continuous double contact for weather-tightness all around vent openings, rigid *interlocking* muntin joints.

And, remember, Fenestra's volume production, permitted by standardization of types and sizes, gives you high-quality Fenestra Steel Windows at remarkably low cost.

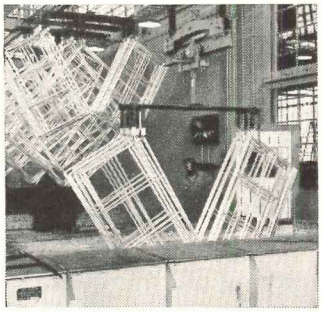
Call your Fenestra Representative or write Detroit Steel Products Company, Dept. AR-6, 2252 East Grand Boulevard, Detroit 11, Michigan. *®



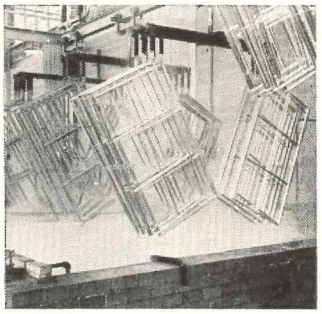
FLUXING. After cleaning, pickling and rinsing, Fenestra Windows dip into a flux bath that provides a film to prevent contamination of the cleaned steel as it passes to galvanizing tank.



DRYING. In this oven, the flux is dried on. Of course, in the galvanizing tank, this protective coat of flux volatilizes on contact with the molten zinc to permit a strong zinc-iron bond.



GALVANIZING. Assemblies dip deep into molten zinc, and come up with a heavy, smooth, uniform coating. Temperature and timing are automatically controlled with laboratory accuracy.

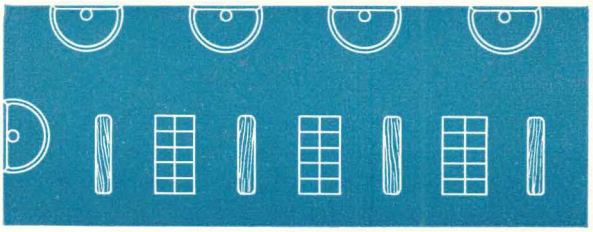


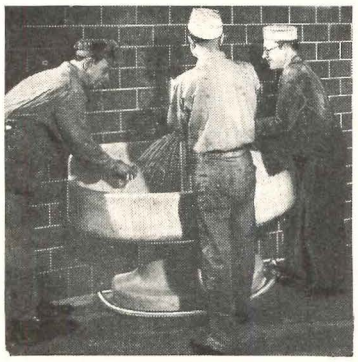
BONDERIZING. Here you see the galvanized assemblies being Bonderized to give the surface a soft silver color and to provide a holding surface for decorative paint, if it is ever desired.

Fenestra SUPER HOT-DIP GALVANIZED STEEL WINDOWS

from America's first plant especially designed to galvanize steel windows

Select The BRADLEYS That Suit Your Needs



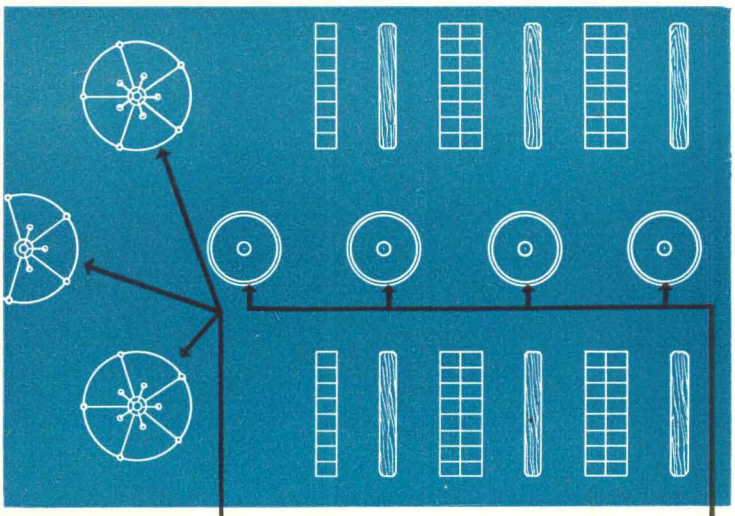


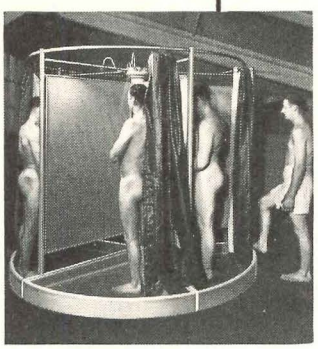
In narrow washroom areas as above—semi-circular or wall type Bradleys are well adapted. Up to six persons are accommodated simultaneously at the 54-in model.

•

At right is a combination of four 54-in. full circle Washfountains, two 5-stall and one 3-stall Bradley Showers.

•





Bradley 5-Stall Group Shower (also furnished as Column Showers without stalls).

Up to 10 persons are served at a 54-in. circular Bradley.

Each Provides The Utmost in Safe, Clean and Sanitary Washing

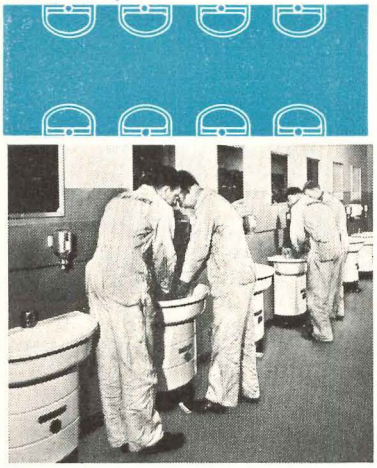
• Whether washing facilities are required for large groups or small, there is a sanitary Bradley Washfountain or Multi-Stall Shower that meets your exact requirement.

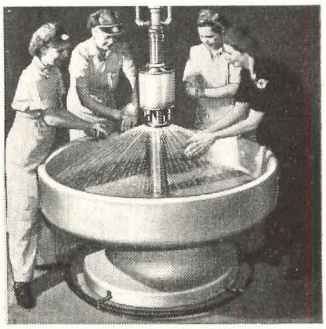
As the illustrations show there are 54-inch full circle models that serve 8 to 10 simultaneously, 36-inch models, wall mounting types, all furnished in various precast stone materials or enamel iron. (Stainless steel not available at present.) All have the central sprayhead in place of faucets, save space and reduce piping connections.

Bradley Multi-Stall Showers are made in 5- and 3-stall models and as a multi-person shower without divided stalls.

For the smaller washroom,—for such locations as cafeterias, laboratories, the Bradley DUO-Washfountain has the sanitary sprayhead and foot-control—(no faucets to touch).

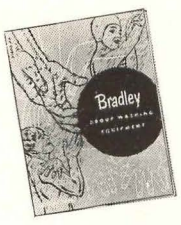
Information and data in our revised Catalog 5204 will help you make your final selection. Copy on request. BRADLEY WASHFOUNTAIN CO., 2227 W. Michigan St., Milwaukee 1, Wis.





Women workers and girls in schools and institutions enjoy the sanitary washing features Bradleys provide. For children, juvenile height pedestals are available.

DUO-Washfountains for smaller washrooms, in groups or singly located in cafeteries, laboratories, etc.



Catalog 5204 mailed on request.

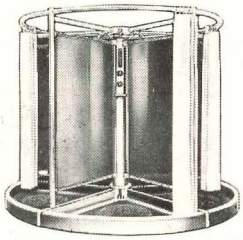
Distributed through Plumbing Wholesalers

BRADLEY *washfountains*

Full circle 36-in. and 54-in.

Semi-circular 36-in. and 54-in.

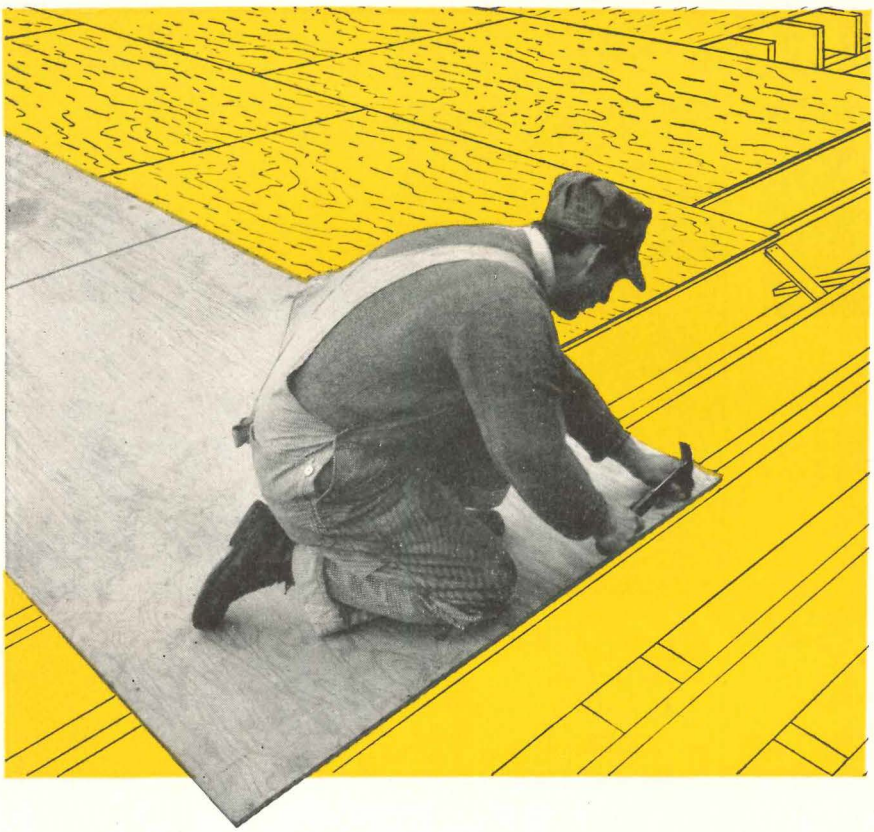
The Duo



Multi-Stall Shower

Column Shower

Drinking Fountain

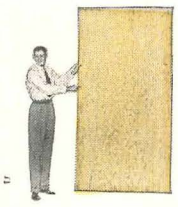


Nail down building costs with PlyScord® Subflooring

THE REAL STORY of construction costs isn't always shown on the bill of materials. It's the *applied* cost that counts! PlyScord subflooring can be laid in less than half the time required for lumber subflooring. Big, work-speeding panels are light, easy to handle . . . cover large areas quickly . . . fit standard joist spacing without wasteful sawing and fitting . . . require far fewer nails.

PlyScord subflooring means *better* construction, too. Plywood's rigid plate-like action protects against violent racking action of wind or earthquake. Strong, rigid panels provide a solid, squeak-free base for finish flooring . . . protect against drafts from below. PlyScord subfloors won't cup, shrink or swell. Result: finish floors look better, last longer.

Plan now to include PlyScord in your next bill of materials—for better construction, for building economy.



Douglas Fir Plywood

AMERICA'S BUSIEST BUILDING MATERIAL

® PlyScord is the unsanded construction grade of Interior-type plywood bonded with highly water resistant glues. For subflooring, sheathing, backing, one-use forms. PlyScord is a registered grade-trademark identifying quality plywood manufactured in accord with U. S. Commercial Standards and inspected by Douglas Fir Plywood Association (DFPA).

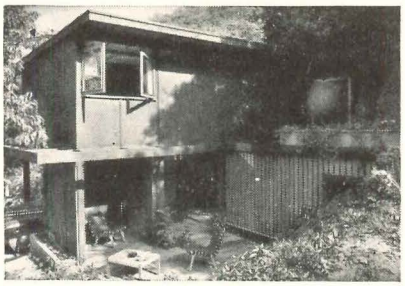
PANEL DISCUSSION

Plywood Creates Unusual Home

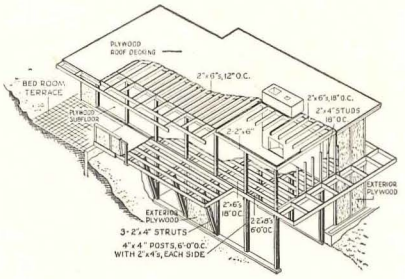
An excellent example of how well Douglas fir plywood lends itself to contemporary design is this award-winning California home by Architect Gordon Drake of Carmel and San Francisco.

"Because plywood is at once a structural material and a finish material, offering both strength and beauty, plywood made possible many building economies in the house," explains Architect Drake. "The material permits new architectural concept which enables the designer to concentrate on essentials without sacrificing beauty, charm or utility."

Plywood imparts needed structural strength and rigidity to the seemingly fragile structure and also serves as attractive exterior siding and interior wall



paneling. The isometric shows elements of post and girder construction which employs plywood as structural diaphragm for floor and roof and as a structural skin for walls.



Shelf-Door Wardrobe

Complete plans and bill of materials for the shelf-door wardrobe which was awarded first prize in the national architectural contest for plywood built-ins may be obtained free of charge from Douglas Fir Plywood Association, Tacoma 2, Wash. Designed by Edward Hanson, Stillwater, Minn., the plywood built-in makes use of shelves and bins on the inner door faces to provide extra storage space. Drawer space is provided both below the main unit and inside the roomy wardrobe section.

advertisement

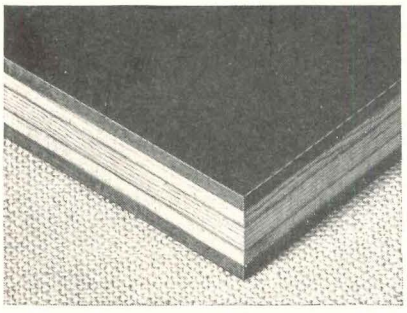
Prefabricator Cuts Costs With Plywood

Douglas fir plywood, which has been synonymous with prefabrication since 1935 when the first "stressed skin" plywood house was built by the U.S. Forest Products Laboratory, today remains the leading material for line production of modern housing.

Evidencing this fact are the comments of H. Arthur Tucker of Southern Mill & Manufacturing Co., Tulsa, Okla. The firm is one of the nation's pioneer prefabricators, having mass-produced houses for over 32 years—largely for petroleum industry housing projects. Says Tucker of plywood: "Plywood wall and roof sheathing and subflooring are, of course, far stronger and more rigid than other materials. But it cuts costs, too. Plywood wall and roof sheathing cost about 85% as much as 1" boards and can be installed in 40% fewer man hours. Considering time, labor and material savings, plywood subfloors cost less, too. Plywood's light weight means an average savings of $30 to $50 per house in shipping costs and greatly speeds site assembly."

New Panel Material

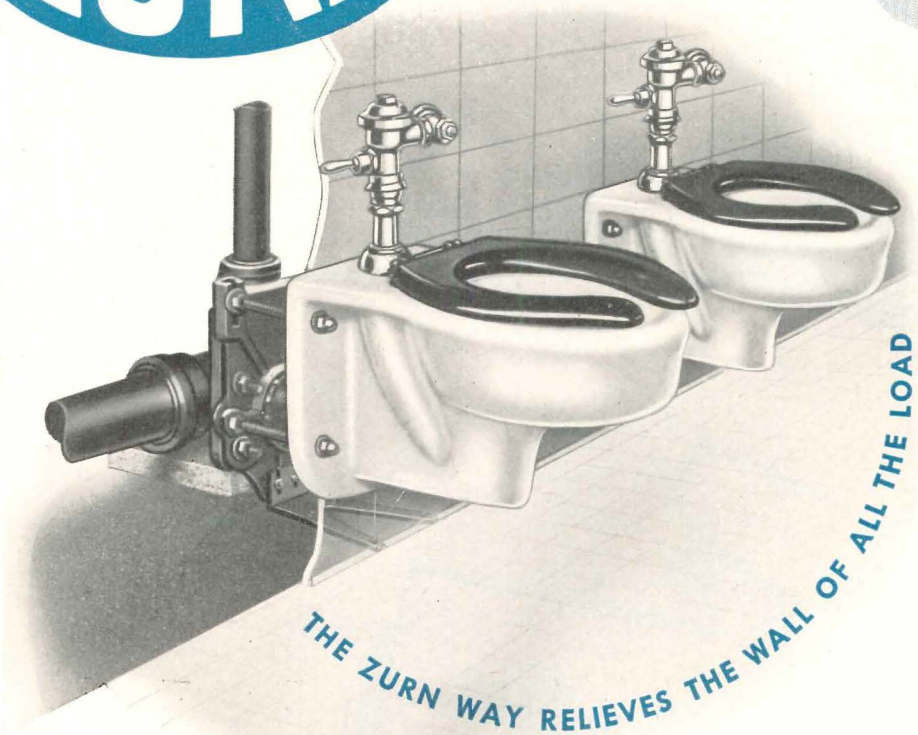
West Coast plywood manufacturers are now mass-producing a new panel material which combines smooth, hard, wear-resistant hardboard surfaces with a backbone of Douglas fir plywood. Named Plyron, the material has already proved successful for such diverse uses as cabinets, concrete forms and flooring. Faced



with hardboard which provides an ideal base for smooth paint finishes, Plyron relies on plywood inner construction to furnish the "muscle," making it puncture-proof, dimensionally stable and relatively light weight. The material has excellent nail holding properties and retains the easy workability of plywood. Rigid industry quality standards have been established for Plyron, similar to those for Douglas fir plywood.

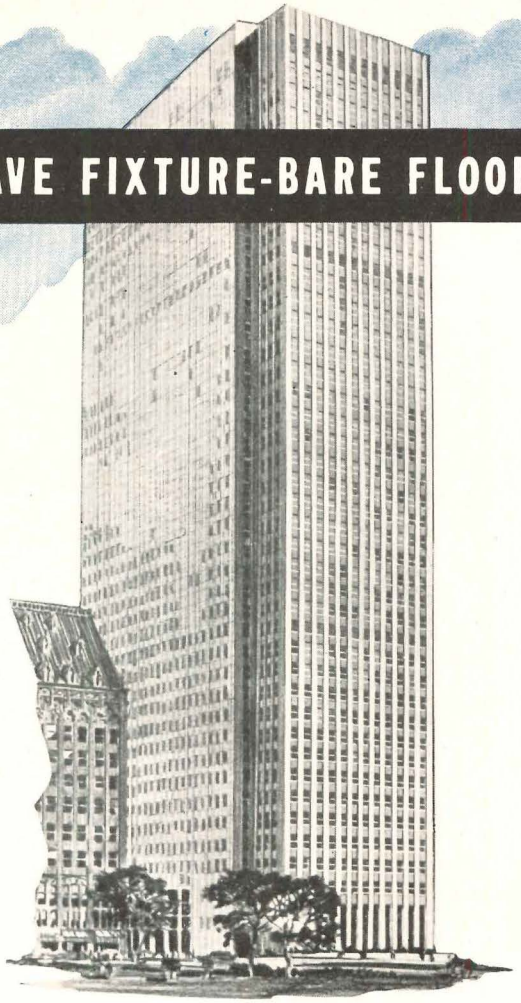
ZURN

TYPE REST ROOMS HAVE FIXTURE-BARE FLOORS



THE ZURN WAY RELIEVES THE WALL OF ALL THE LOAD

Pat. & Pat. Pending



Pittsburgh's new 525 William Penn Place Corporation Building houses the U. S. Steel Company, Mellon National Bank & Trust Co. and T. Mellon and Sons. *Architects:* Harrison & Abramovitz, N. Y.; *Consulting Engineers:* Meyer, Strong & Jones, N. Y.

Perpetual cleanliness in rest rooms of an ultra-modern skyscraper is a must. Immaculate cleanliness is no problem where plumbing fixtures are off the floor, because there is nothing to interrupt the sweep of the broom and the swish of the mop. Fixture-Bare Floors reduce the day-by-day dollar cost of maintenance to an all-time low, while lifting sanitation to a new high. The New Way of building utilizes wall type plumbing fixtures throughout, installed the Zurn Way—the simple, safe way of installing wall type closets, lavatories, sinks, and other fixtures. This New Way saves time and labor, reduces the use of building material and *protects rest rooms from premature obsolescence.* Specify wall type plumbing fixtures installed with Zurn Wall Type Closet Fittings and Carriers. Write for booklet entitled, "You Can Build It (Cubic Foot of Building Space) For Less A New Way".

The hundreds of plumbing fixtures in this building, such as wall type closets, lavatories and sinks, were installed with Zurn Wall Type Closet Fittings and Carriers which give maximum protection against premature obsolescence of sanitary facilities. Zurn Engineered Floor and Roof-Drains and other drainage equipment were also installed in this building.

Write for this booklet. It tells how "*You Can Build It (Cubic Foot of Building Space) For Less A New Way*".

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Please attach coupon to your business letterhead. Dept. AN

Rest Rooms with Fixture-Bare Floors in These Buildings and Hundreds of Others:

OFFICE BUILDINGS: Farmers Mutual Insurance Company, *Madison*, Wis. • New Hampshire Fire Insurance Building, *Manchester*, New Hampshire • Southwestern Bell Telephone Co., Toll Building, *Houston*, Texas • International Business Machines, *Endicott*, N. Y. • General Food Building, *Newark*, N. J. • The Texas Company, *Minneapolis*, Minn. • Humble Oil Company, *New Orleans*, La. • ***EDUCATIONAL BUILDINGS:*** Fisher Memorial Dormitory, University of Notre Dame, *Notre Dame*, Ind. • Maple Heights High School, *Maple Heights*, O. • Dilworth School, *Salt Lake City*, Utah • New Engineering Laboratory, Virginia Polytechnic Institute, *Blacksburg*, Va. • Medical Research Building, University of Michigan, *Ann Arbor*, Mich. • ***INDUSTRIAL BUILDINGS:*** DeLaval Separator Company, *Poughkeepsie*, N. Y. • Houston Lighting and Power Company, *Houston*, Texas • Berkshire Knitting Mill, *Andrews*, N. C. • Minneapolis Honeywell Regulator Co., *Minneapolis*, Minn. • Chrysler Corporation, *Trenton*, Mich. • Dan River Mills, *Philadelphia*, Pa. • Court House and City Hall Building, *Minneapolis*, Minn. • Oregon State Penitentiary, *Salem*, Oregon • ***HOSPITAL BUILDINGS:*** Cuyahoga County Chronic Hospital, *Warrensville*, O. • National Jewish Hospital, *Denver*, Colo. • Terrell State Hospital, *Terrell*, Texas • Memorial Hospital, *Algoma*, Wis. • Central State Hospital, *Petersburg*, Va. • Oakwood Hospital, *Dearborn*, Mich. • ***TERMINAL BUILDINGS:*** New Norfolk and Western R.R. Warehouse, *Roanoke*, Va. • Holland American Line Terminal, *Hoboken*, N. Y. • New Greyhound Terminal, *Phoenix*, Ariz. • ***MERCANTILE BUILDINGS:*** Emporium, *Oakland*, Cal. • Sugarland Shopping Center, *Sugarland*, Texas • Federal Stores, *Cleveland*, O. • Macy's Kansas City Store, *Kansas City*, Kan. • Rexall Drug Company, National Headquarters Building, *Los Angeles*, Cal. •

Attention
Plumbers, Architects, Builders...

TWO PLACES YOU CAN USE COPPER TODAY

1. **For domestic hot and cold water lines,** and process lines, government regulations still permit the use of Chase Copper Water Tube. Made in hard and soft temper, straight lengths and long coils, for solder-joint and flared fittings. Excellent for new installations or replacement work.

2. **For underground installations** exposed to corrosion and frost, use Chase Copper Water Tube, Type K. Soft temper copper tube can be bent around obstructions in the trench, each bend saves cost of fitting. 100 ft. lengths in coils are convenient to handle, require fewer fittings.

Specify Chase Copper Water Tube!

FOR an endurable and versatile piping, try Chase Copper Water Tube. It comes in straight lengths of 20 feet and in coils of 40, 60 and 100 feet. Smooth inside finish of tube and fittings offers no resistance to water pressure. Also add these features: rust-proof, corrosion resistant, readily bent and cut—and you have the perfect material for domestic water lines, process lines, and underground applications.

Chase® BRASS & COPPER

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Boston	Detroit	Minneapolis	Providence	
Chicago	Houston†	Newark	Rochester†	(†sales
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Manufacturing telephone sets at Western Electric's new Indianapolis Plant.

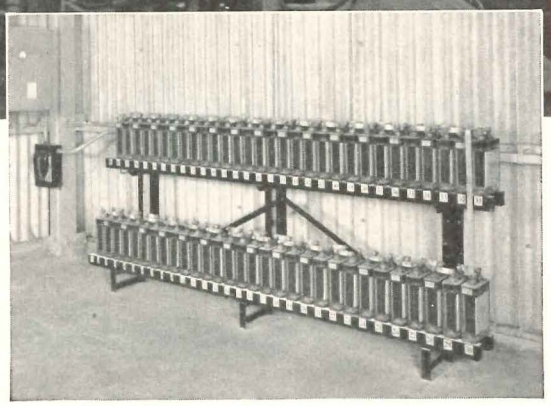
Exide EMERGENCY LIGHTING helps protect new plant of WESTERN ELECTRIC

In this new plant, largest of its kind in the world, the Western Electric Company can produce annually more telephone sets than are currently in use in France or Canada. Architecturally, it embodies the latest advancements in industrial plant design. Every facility has been provided to assure economical production, provide comfort, and protection of plant, personnel and equipment. Among the emergency lighting safeguards used you'll naturally find Exide.

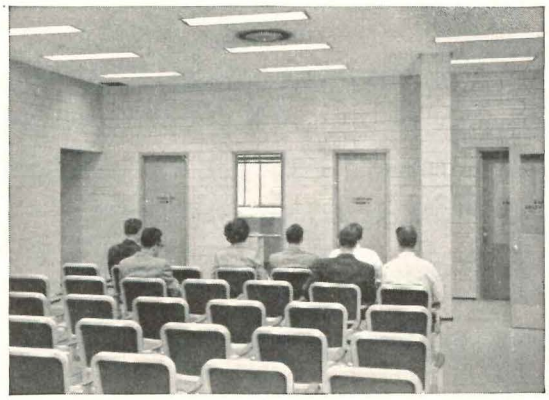
A number of sets are used for emergency lighting in both office and plant areas, including lights for exits, stairways, corridors and other essential locations. In addition, one set of Exide Batteries is used for switchgear operation in the boiler house controlling power circuits.

Specify Exide Emergency Lighting for the buildings you design—hospitals, schools, theaters, stores, factories, public buildings. There are units to fit any lighting need—from a few lights to many, for a single building or a large group.

THE ELECTRIC STORAGE BATTERY COMPANY
Philadelphia 2
Exide Batteries of Canada, Limited, Toronto
"Exide" *Reg. Trade-mark U.S. Pat. Off.*



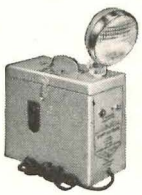
Exide 60 DME-5 battery, one of seven used for emergency lighting.



Hospital reception room, one of the vital locations protected by Exide Emergency Lighting.

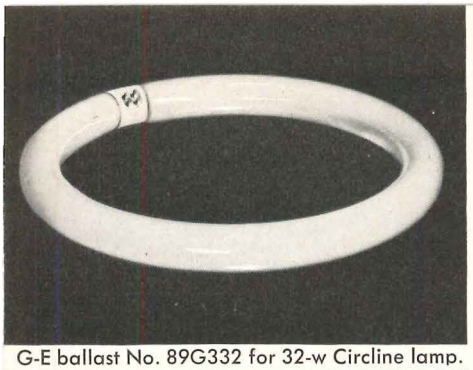
• • •

EXIDE LIGHTGUARD

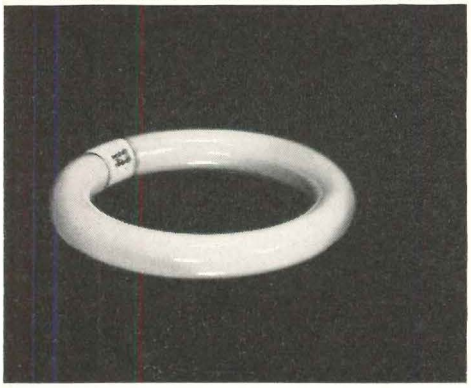


Here's a portable, low cost unit that can be plugged into any A.C. lighting socket. When normal current is cut off, a built-in relay instantly and automatically turns on the powerful floodlight. After normal service is restored, the relay shuts off floodlight and turns on the charging current. The Exide battery is always fully charged ready for immediate action.

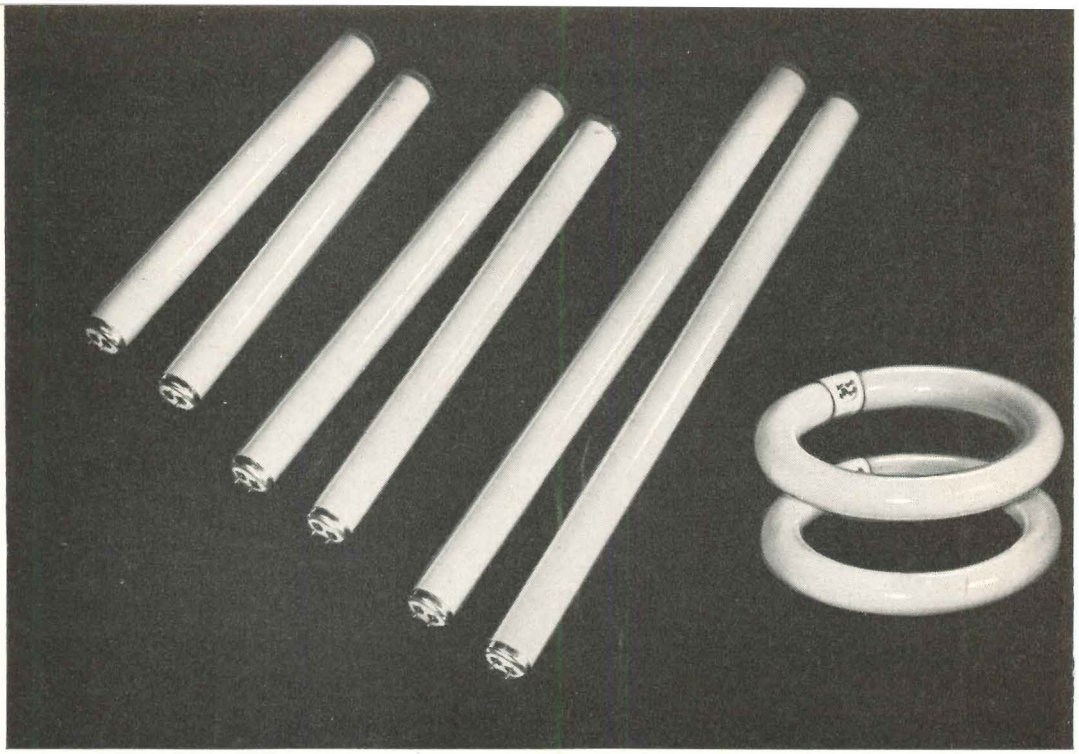
1888 — DEPENDABLE BATTERIES FOR 64 YEARS — 1952



G-E ballast No. 89G332 for 32-w Circline lamp.



NEW: Ballast 89G322 for 22-w Circline lamp.



JUST ONE G-E ballast (89G331) operates two 14, 15, or 20-w lamps, or two 22-w Circline lamps.

More fixture designs possible

Now — make residential fixtures with all the above lamps and combinations — without using starters!

For the first time you can make fixtures using all of the above lamps and lamp combinations—*without using external starters*—with General Electric's expanded line of Trigger-Start Ballasts!

EXPAND YOUR MARKET

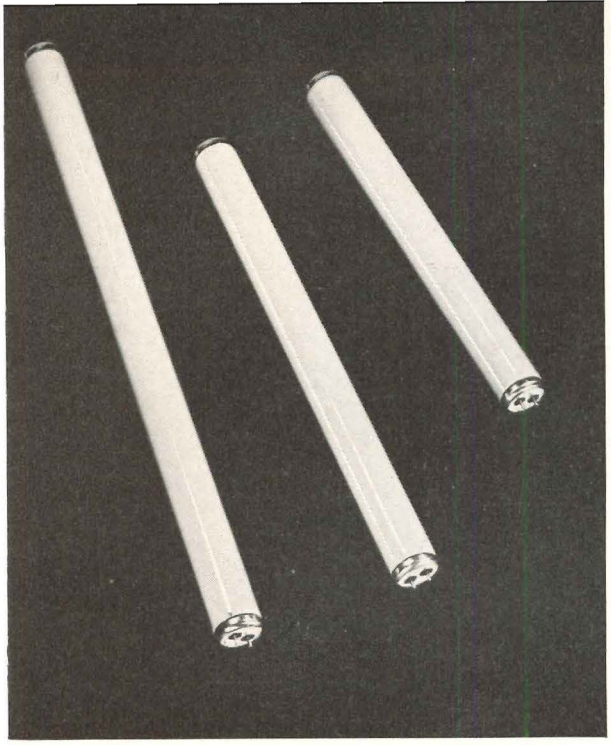
Your fluorescent fixtures will sell easier and faster because of the great customer appeal of G-E Trigger-Start Ballasts. They start lamps instantly without flickering, and they remove the bother of replacing worn-out starters. Moreover, these ballasts conserve lamp life because of their unique operation: electrodes are immediately pre-heated at the flick of the switch, then starting current drops to practically zero when the lamp goes on—almost faster than the eye can see!

REDUCE STOCK PROBLEMS

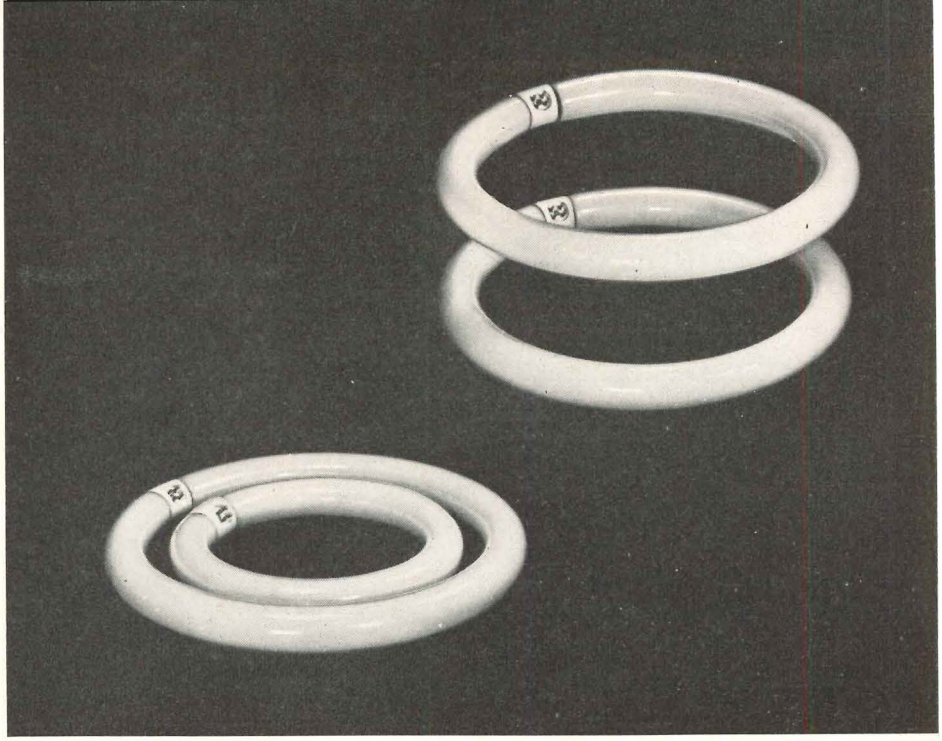
Note that only five different G-E Trigger-Start Ballasts are needed to operate all of the above lamps and combinations. And, of course, there's no need to stock starters for trigger-start ballasts.

For more information on G-E Trigger-Start Ballasts contact your local G-E Sales Office, or write to *Section 412-98A, General Electric Co., Schenectady 5, New York.*

GENERAL ELECTRIC

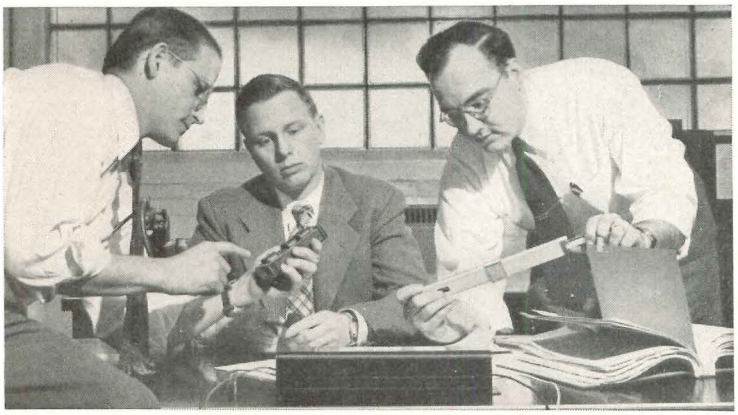


ONE G-E ballast (89G320) for 14, 15, or 20-w lamps.

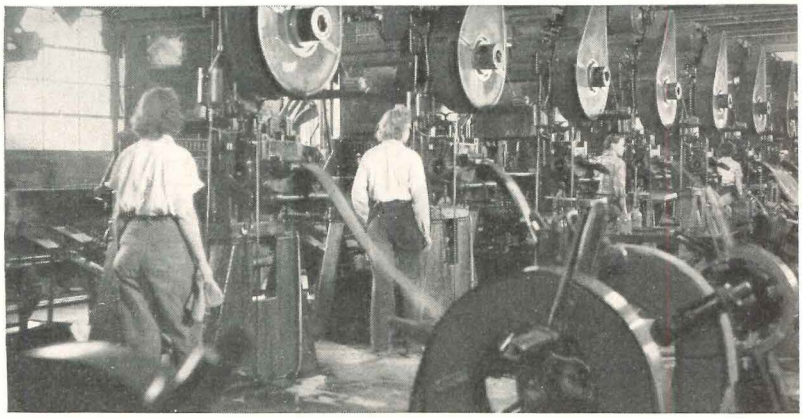


NEW: G-E ballast 89G333 for one 12-inch and one 8½-inch, or two 12-inch Circline lamps.

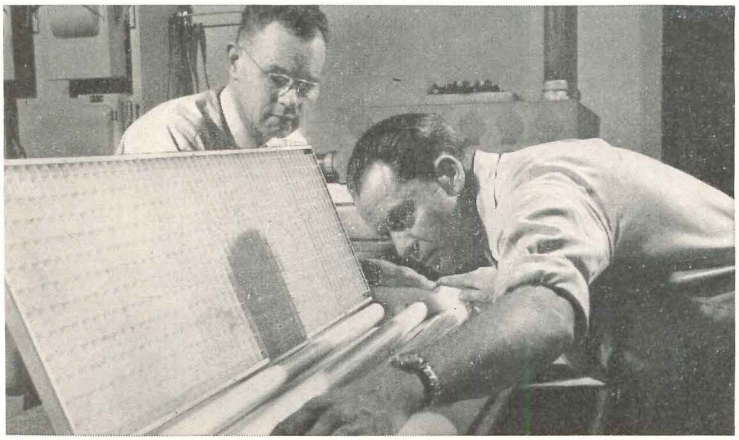
with G-E Trigger-Start Ballasts



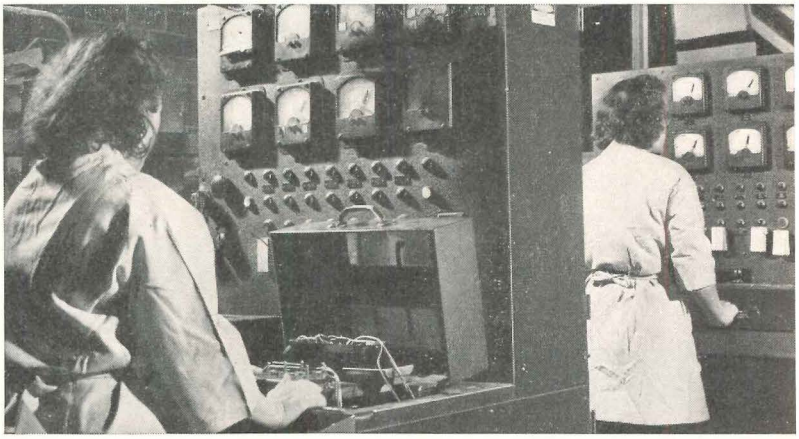
BETTER BALLASTS to help you build your fluorescent trade are continually being developed by General Electric—the world's largest producer of ballasts. Above, G-E engineers work out the design of a new type of ballast.



MORE BALLASTS AT LOWER COST are made possible by General Electric's standardization and mass-production methods. Above are automatic punch presses for cutting core laminations in G-E plant at Danville, Illinois.



TOP PERFORMANCE is the result of a continuing study by General Electric engineers of fixture manufacturers' problems and actual ballast operation.



YOUR ASSURANCE of a good ballast every time that you buy General Electric is this automatic ballast-testing apparatus on the production line.

ASK THE AEROFIN MAN

For the Practical Answer to Your Heat-Exchange Problem . . .

Aerofin is sold only by manufacturers of nationally advertised fan system apparatus. List on request.

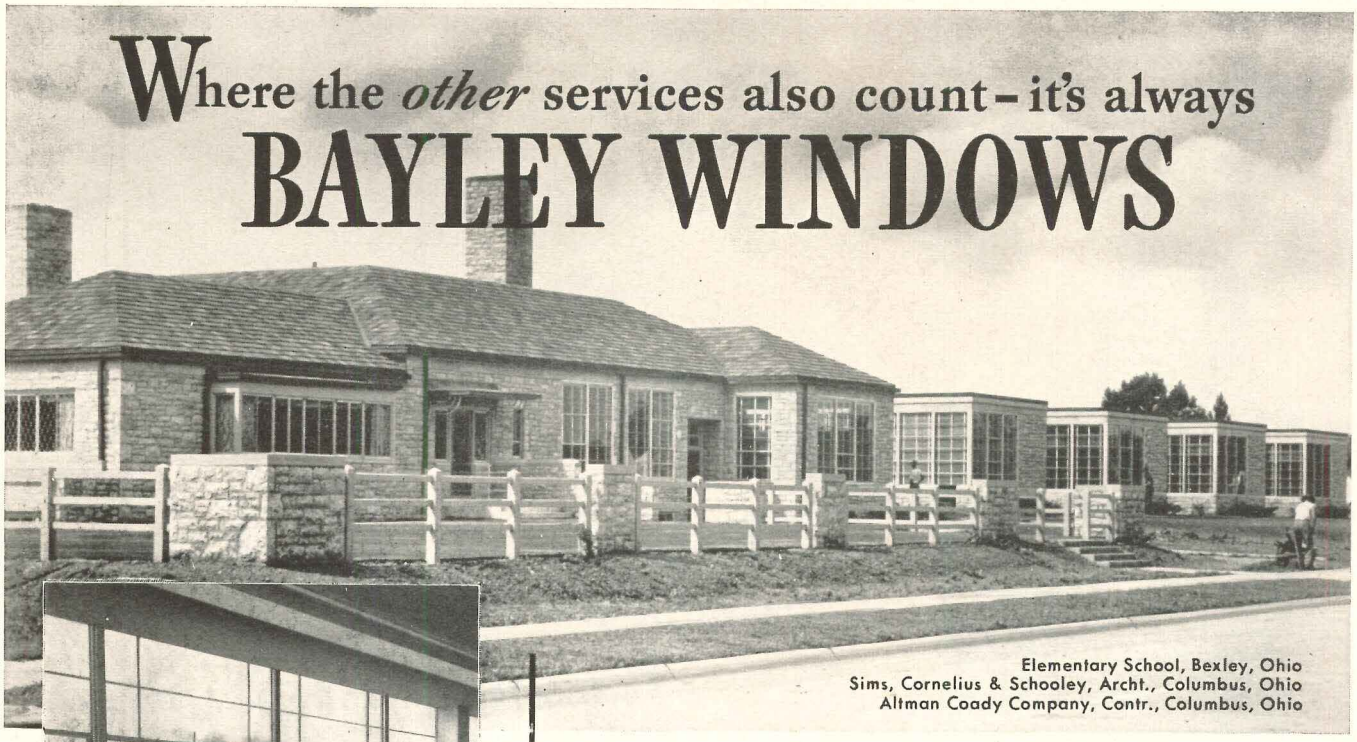
There is a competent Aerofin heat-transfer engineer near you, qualified by intensive training and long experience to find the *right* answer to your own particular heat-exchange problem.

This specialized knowledge is there, ready for you to use to your greatest advantage. Ask the Aerofin man — and be right.

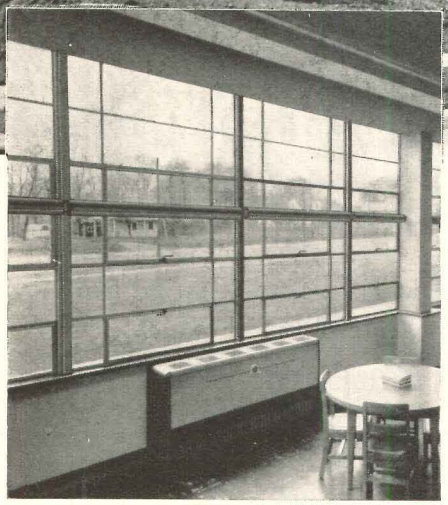
AEROFIN CORPORATION

410 South Geddes St., Syracuse 1, N. Y.

Where the *other* services also count – it's always BAYLEY WINDOWS



Elementary School, Bexley, Ohio
Sims, Cornelius & Schooley, Archt., Columbus, Ohio
Altman Coady Company, Contr., Columbus, Ohio



Highlights of this New Popular BAYLEY Product

- Carries Quality Approved Seal of the Aluminum Window Mfgrs. Ass'n. for materials, construction, strength of sections and air infiltration.
- Modern Appearance.
- Economical — Painting unnecessary.
- Permanent — Long carefree life.
- Simplicity — No complicated mechanism.
- Adaptable to all types of construction.
- Glazing outside — flat surface inside.
- Extra deep sections — Accommodate "Thermopane" or "Twindow" glazing.
- Easily washed from inside.
- Prepared for screens.
- Permits use of accessories, such as draperies, shades, curtains, venetian blinds or awnings.
- Positive acting hardware of white bronze.

QUALITY APPROVED P-A2

73 *Years of* RELIABILITY

Bayley Aluminum Projected Window

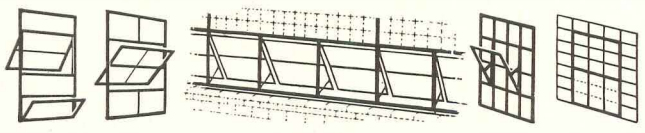
Offers New Features for Modern Schools of All Types

The *first* essential to a truly satisfactory relationship is a fine quality product. But much more is also required. Full appreciation of this fact is the bedrock of Bayley's policy — and is the reason descriminating designers from coast to coast have so highly favored Bayley for so many years.

Bayley's determination to better serve through all the building stages — from the building's inception to its occupancy — is again exemplified in the Bayley Aluminum Projected Window. It represents the culmination of years of conscientious endeavor. First to fully recognize the universal advantages of the projected window, Bayley refined its desirable features in the most enduring construction material developed through long research by the Aluminum Industry. The result is an ideal window for schools, hospitals, institutional and commercial buildings — but equally suited for private living units — that reflects Bayley's years of specialized window experience.

Regardless of window requirements, you too will find *extra values* in discussing your needs with Bayley. Write or phone.

See Bayley in Sweet's. Complete catalogs on aluminum windows, 17a/BA; steel windows, 17b/BAL; Saf-T-Gard Hospital Detention Window, 17b/BAY.



PROJECTED PIVOTED VueLINE GUARD SAF-T-GARD

THE WILLIAM BAYLEY COMPANY

Springfield, Ohio

District Sales Offices:

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"there's an idea here for your next job!"

The idea is Mosaic Tile . . . a beautiful and exceptionally versatile material which dramatizes walls and floors. Study the photograph on the opposite page, then visualize the practical and decorative appeal of Mosaic Tile on walls and floors of your present and future projects!

When you build or remodel, give Mosaic Tile prime consideration. For quick facts, consult your nearest Mosaic office. For helpful literature on the many types of Mosaic Tile, including the new Formfree lines, write Department 30-9, The Mosaic Tile Company, Zanesville, Ohio.

See our catalog in Sweets'

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43 S. E. Salmon Street
Phone: Fillmore 3717

Salt Lake City 8, Utah
560 Gale Street
Phone: 9-8285

Photograph by Ezra Stoller

Specifications: Wall—1″x1″ Faience Mosaics special pattern No. S-34 in new building at Philadelphia Zoo. Harbeson, Hough, Livingston & Larson, Architects. Wm. Watts & Co., Tile Contractor— both of Philadelphia.

THE MOSAIC TILE COMPANY

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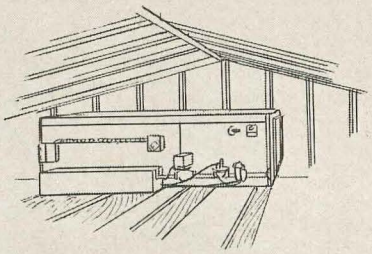
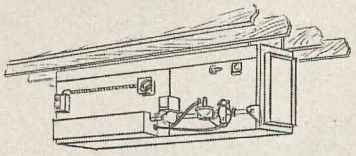
Offices, Showrooms and Warehouses Across the Nation
Over 4000 Tile Contractors to serve you

Here's a new gas-fired horizontal-type heating unit designed to save floor space...

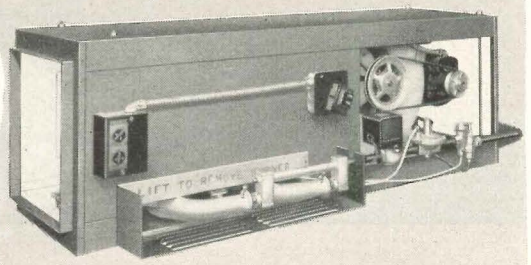


. . . installed in the attic

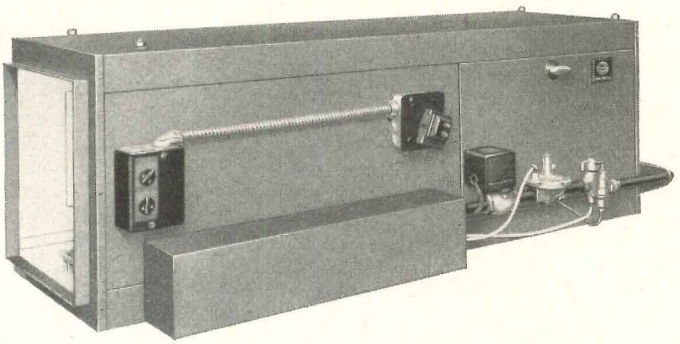


. . . or suspended under the floor

HERE'S THE PAWNEE with access panel removed. The heart of this new horizontal unit is its heavy steel heating element and efficient slotted port-type burner which is especially designed to provide correct amount of heating surface without hot or cold spots. The burner, made with rugged cast iron body, is easily removed for servicing, if necessary. Inside of the Pawnee's jacket is protected by corrosion-resistant reflective high temperature aluminum paint. Flue outlet is designed for maximum flexibility of installation. Draft hood prevents excessive drafts from affecting combustion. Individual controls are the finest available.



The PAWNEE
Winter Air Conditioner



● The new horizontal Pawnee winter air conditioner saves valuable floor space in one-story houses. It can be installed in an attic, suspended under the floor in crawl space, or overhead in a hallway, closet, utility room or similar out of the way place.

In an attic installation the Pawnee may be used as a ventilator to circulate cooler air in summer. No change is necessary, other than a simple by-pass to discharge the air drawn from the living zone into the attic space where it will flow outside.

Installed in the crawl space under a basementless house, the Pawnee allows complete freedom of duct layout . . . any type of system may be used. The warm air registers may be located on either inside or outside walls. This horizontal unit can be easily installed in perimeter heating jobs, too.

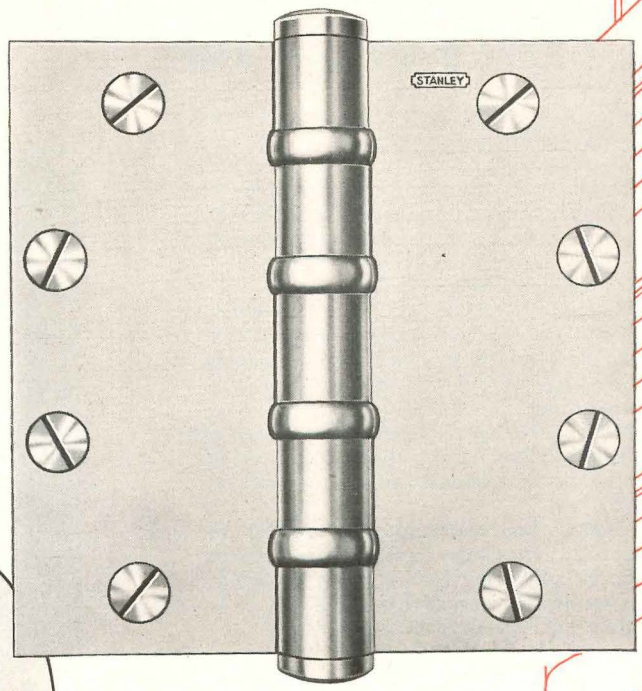
The compact Pawnee winter air conditioner is made in four sizes and burns manufactured, natural, mixed and liquefied petroleum gas. With its smart Forge Red jacket and trim lines, the Pawnee makes a neat, attractive installation. **American Radiator & Standard Sanitary Corporation,** P. O. Box 1226, Pittsburgh 30, Pennsylvania.

AMERICAN-Standard
HEATING

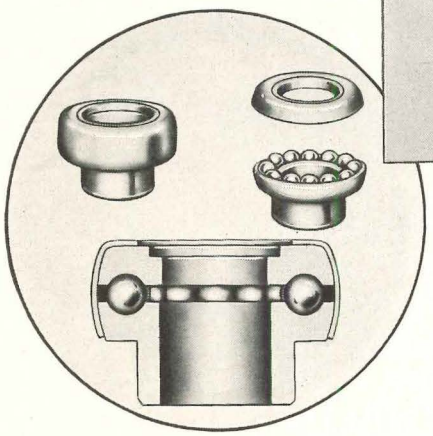
Serving home and industry

AMERICAN-STANDARD · AMERICAN BLOWER · ACME CABINETS · CHURCH SEATS · DETROIT LUBRICATOR · KEWANEE BOILERS · ROSS HEATER · TONAWANDA IRON

a hinge that WON'T wear out



Stanley Full-Jeweled* Ball Bearing Butt Hinge



eliminates lateral as well as vertical wear

Here's a hinge you can specify for heavy doors, exterior doors, and doors receiving high frequency service — with complete confidence that it will last as long as the building.

The ball bearing construction of the Stanley Full-Jeweled* Hinge is designed to take lateral as well as vertical wear. With the load supported both ways on ball bearings, it is practically impossible to wear out this hinge.

Whenever there are heavy or busy doors in any building you design, you will insure your client's investment by specifying Stanley Full-Jeweled Extra Heavy Ball Bearing Butt Hinges†.

Exclusive Full-Jeweled Ball Bearing assembly consists of a movable and fixed raceway. When lateral thrust occurs, the movable raceway transmits the force directly to the bearings, which, in turn are held firmly by the fixed raceway. Thus, the weight of the door is supported both laterally and vertically on ball bearings.

† *All Stanley Extra Heavy Ball Bearing Hinges are equipped with Full-Jeweled Bearings.*

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Reg. U.S. Pat. Off.

HARDWARE • TOOLS • ELECTRIC TOOLS • STEEL STRAPPING • STEEL

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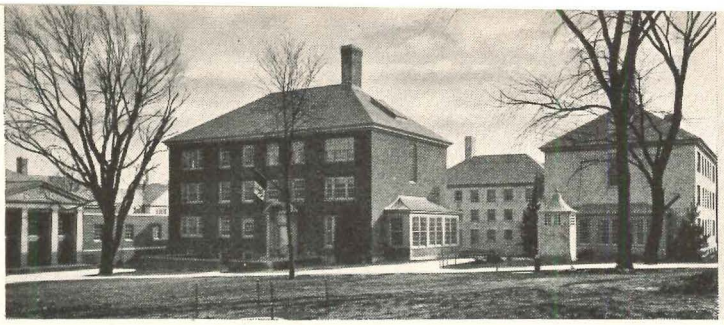
The most famous doors in the world swing on Stanley Hinges

In 9 dormitories and fraternity houses on the new



ARCHITECTS:
Perry, Shaw, Hepburn, Kehoe & Dean . . . Boston

GENERAL CONTRACTOR:
Gilbane Building Co. . . . Providence

ARCHITECTURAL MILLWORK:
L. Vaughn Co. . . . Providence

BROWN UNIVERSITY QUADRANGLE

Atlas Panels and Atlas Doors were used

The wall panels were ¾" hardwood plywood—of several different woods, principally Gum and Birch, according to the design of each room and each particular application.

Interesting features of the dormitory rooms (right) are the cabinets, bureaus, closets, shelving, shoe racks, etc.—all built in after the wall panels were finished. The sections were precut, tongue-and-grooved, edge-stripped.

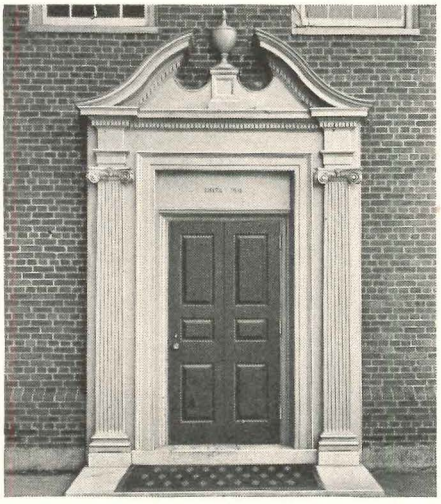
The Atlas Doors are solid core hardwood flush doors—some 1⅜" thick, some 1¾" thick. The core material of these solid core doors is Balsa Wood—inert, proof against stress and warpage. Balsa also has important sound-deadening qualities and provides efficient insulation.

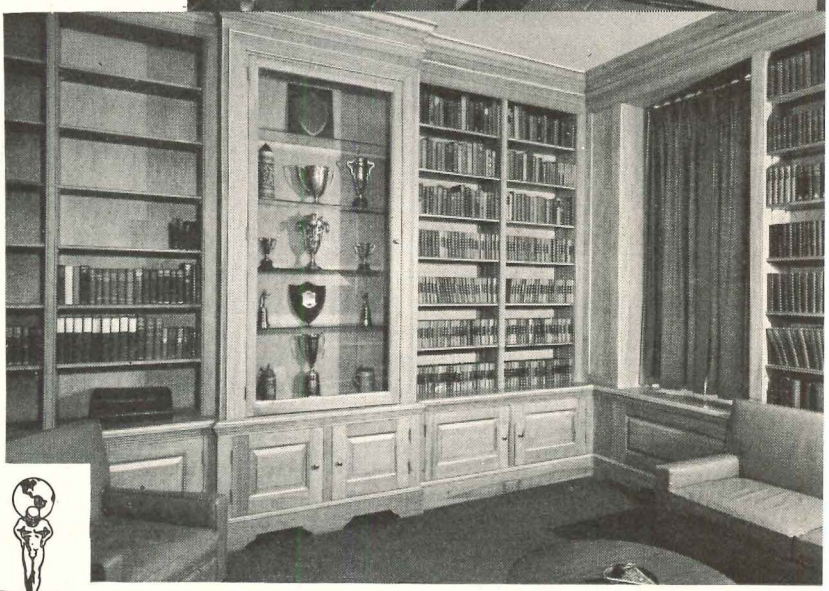
The core pieces are glued together to form a solid mass, then positioned within a kiln-dried frame.

Atlas Plywood Panels are available in every important hard and soft wood, domestic or imported. Atlas Flush Doors—both solid core and hollow core—have exclusive structural features which mean lasting beauty and lasting strength.

Architects, contractors, mill workers and builders specify and use Atlas Panels and Atlas Doors . . . They know that from standing tree to finished product, every panel and every door has been produced under one ownership, one standard of inspection and control, *one responsibility*. Also that every Atlas Product is exactly as graded *or better*.

We'd like you to know more about Atlas Panels and Atlas Flush Doors. For illustrated literature, kindly address your request to Department 80.





ATLAS PANELS 

ATLAS DOORS

18 MANUFACTURING PLANTS

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Laurel, Del.
Brunswick, Ga.
Houlton, Me.
Greenville, Me.
Patten, Me.
Cadillac, Mich.
Gladstone, Mich.
Munising, Mich.
Goldsboro, N. C. (2)
Plymouth, N. C.
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Williamsport, Pa.
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PANEL AND DOOR DIVISION

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PLYWOOD CORPORATION

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To get efficient fluorescent lighting

. . . insist on This Shield on your ballast

There's more to satisfactory fluorescent lighting than lamps and a reflector. There's always a ballast in the fixture . . . and the way it performs determines whether you'll get *full lamp life, rated light output* and *satisfactory performance.*

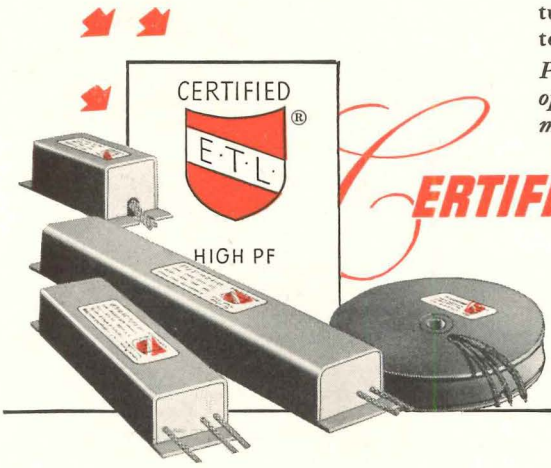
Only CERTIFIED BALLASTS carry the shield that assures best lighting. That's because CERTIFIED BALLASTS are made to precise specifications, then tested by Electrical Testing Laboratories, Inc., which certifies they conform to these high standards.

There's no excuse for inefficient, unsatisfactory fluorescent lighting when CERTIFIED BALLASTS are available.

Be sure every fixture you get has CERTIFIED BALLASTS . . . the ones with the shield.

● Complete information on the types of CERTIFIED BALLASTS available from each participating manufacturer may be obtained from Electrical Testing Laboratories, Inc., East End Ave. at 79th St., New York, N. Y.

Participation in the CERTIFIED BALLAST program is open to any manufacturer who complies with the requirements of CERTIFIED BALLAST MANUFACTURERS.



CERTIFIED BALLAST MANUFACTURERS

Makers of Certified Ballasts for Fluorescent Lighting

2116 KEITH BLDG., CLEVELAND 15, OHIO

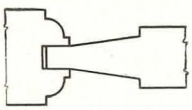
Architecturally Alive. Structurally Sound

This is the MORGAN **TRI-PANEL** Door of Dimension

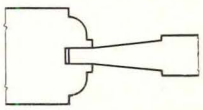
The "Picture Door"

A welcome relief from flat monotony . . . delighting the eye with balanced lines, clean hi-lites, deep soft shadows. Here is the door of depth . . the third dimension, to inspire the Architect, to brighten the Dealer's line, to help the Builder close the sale. Write today for full details on Morgan Tri-Panel, the Door of Dimension . . . of today . . . of tomorrow.

TRI-PANEL blends with every architectural trend



M-117 EXTERIOR DOOR Thickness: 1¾", with 1⅛" hip-raised panels, true ovolo sticking, smoothly sanded overall.



M-1073 INTERIOR DOOR Shown at left. Thickness 1⅛", with ¾" hip-raised panels. Both doors in Standard Sizes.

TRI-PANEL Tri-Panel relieves the wall-like flatness and makes the entrance to a room or a house the focal point, with a changing picture of correctly proportioned, sharply defined panels, ever changing with the source of light and the viewer's angle. Tri-Panel is the "Picture Door."

MORGAN COMPANY • Oshkosh, Wisconsin

A great name in woodwork for 97 years • Doors • Entrances • Stairwork

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MORGAN WOODWORK

New! 4 closet combinations by RICHMOND

The *actual appearance* and *features* of these 4 new closet combinations are your best reasons for specifying and installing them. Their addition to the Richmond line of plumbing fixtures now makes it even more modern, even more complete than ever before.

Whether it's a vitreous china closet combination, lavatory, urinal or an enameled cast iron bathtub, lavatory, sink in "whiter white" or pastel colors, you'll find Richmond offers the widest possible selection in size and style, the finest quality in design, engineering, and manufacturing skill.

PLYMOUTH G-212—14" Close-coupled reverse trap. Round-front bowl, self-draining jet. Tank with fittings and shelf-type cover.

LARCHMONT G-206—12" Close-coupled syphon jet, round-front bowl. Tank with adjustable float valve, brass tank fittings, chrome operating lever and shelf-type cover.

KENT G-218—14" Close-coupled, washdown. Round-front bowl, self-draining jet. Tank with fittings and shelf-type cover.

CORTLAND G-213—12" Close-coupled reverse trap. Elongated bowl, self-draining jet. Tank with fittings and shelf-type cover.

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Richmond Radiator Company AR/6
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Please send me more information and literature on:

☐ G-206—12" ☐ G-212—14"
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No obligation, of course.

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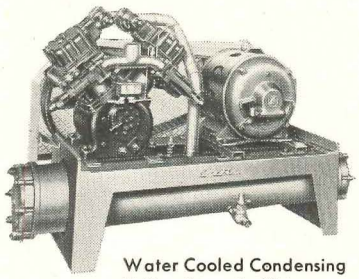
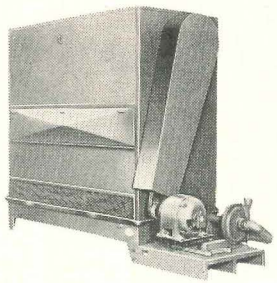
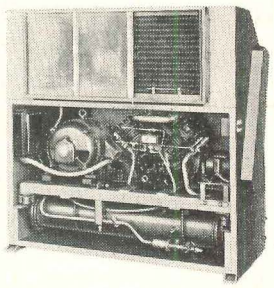
BUILD YOUR AIR CONDITIONING SPECIFICATIONS AROUND Curtis



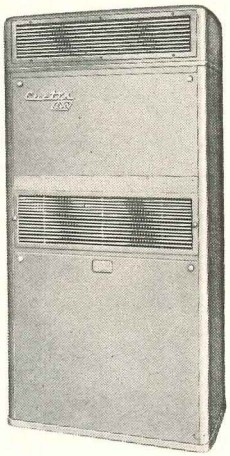
Water Cooled Condensing Units—through 40 tons



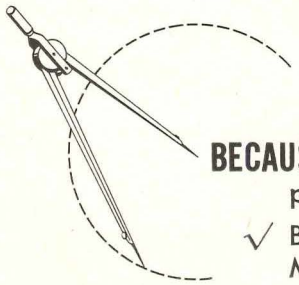
Evaporative condensers—cooling towers — and air handling units to match



Central Type—10-15 Ton Air Conditioning



2, 4, 6, 8 Ton—Packaged Type Air Conditioning



BECAUSE . . . Curtis equipment has an *earned* reputation for performance.

- √ Built by a company with over 98 Years of Successful Manufacturing Experience.
- √ Competitively priced.
- √ Operate economically.
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- √ A new 1952 Curtis Architects Manual will be sent upon request to licensed architects. Use your own letterhead, please.

Curtis REFRIGERATING MACHINE DIVISION
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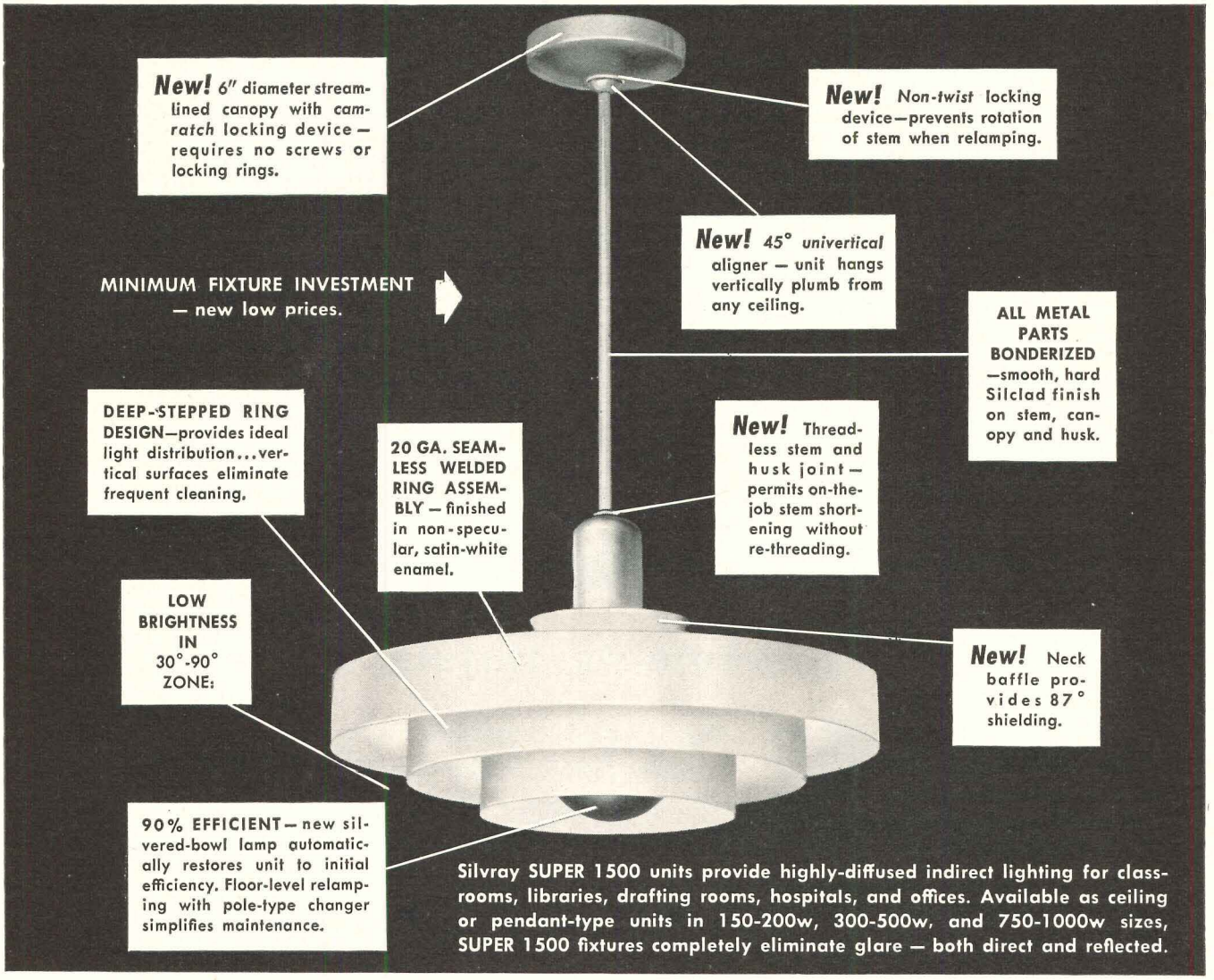
98 Years of Successful Manufacturing

R-52-1

COMPARE!

No other indirect, incandescent fixture offers ALL these features . . .

SILVRAY'S improved SUPER 1500 UNIT



Silvray SUPER 1500 units provide highly-diffused indirect lighting for classrooms, libraries, drafting rooms, hospitals, and offices. Available as ceiling or pendant-type units in 150-200w, 300-500w, and 750-1000w sizes, SUPER 1500 fixtures completely eliminate glare — both direct and reflected.

1927 1952 OUR 25TH YEAR **Silvray** *ALWAYS... the best In lighting*

Smoot-Holman, Inc. of Inglewood, Cal. — west coast licensee.

Get complete details, mail this coupon today!

SILVRAY Lighting, Inc., 102 West Main St., Bound Brook, N. J.

Gentlemen:

Please send me further information on the Silvray SUPER 1500 unit.

Name_____

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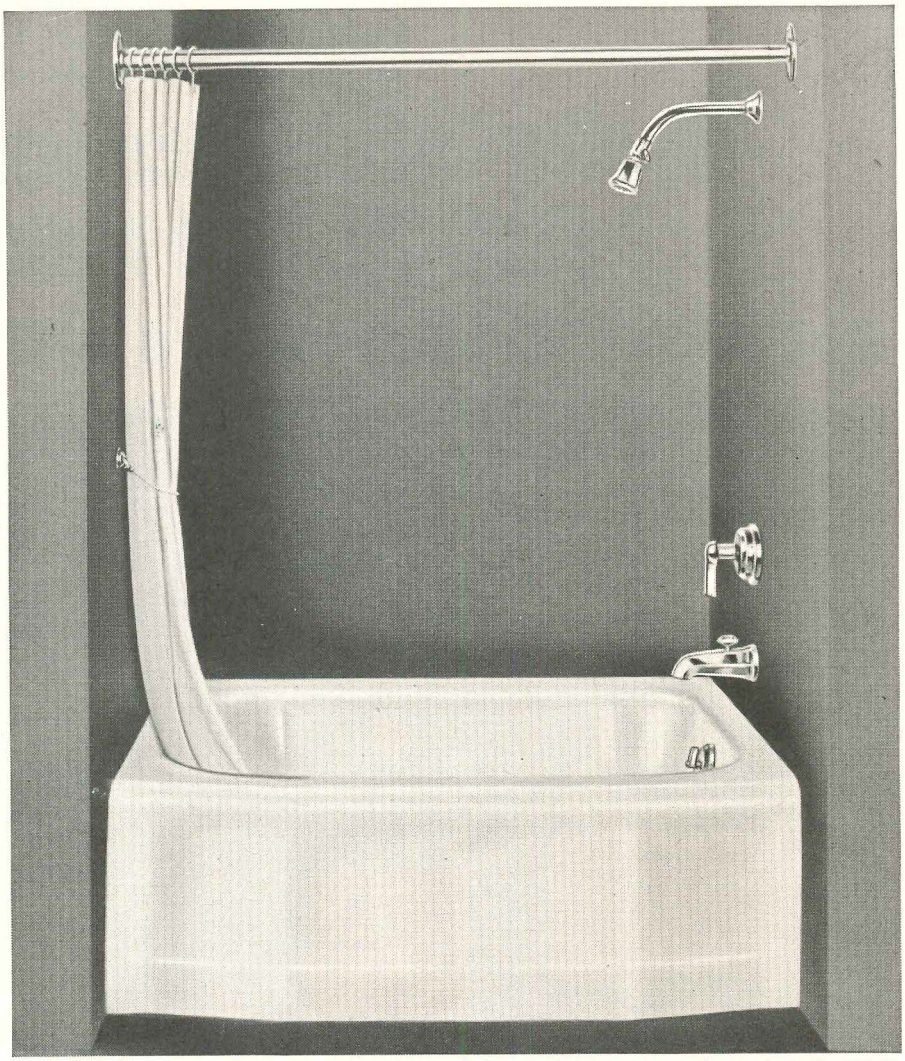
Address_____

City_____ Zone_____ State_____

All concentric-ring fixtures for use with silvered-bowl lamps are covered by U.S. Pat. #2,303,747 owned by Silvray Lighting, Inc.

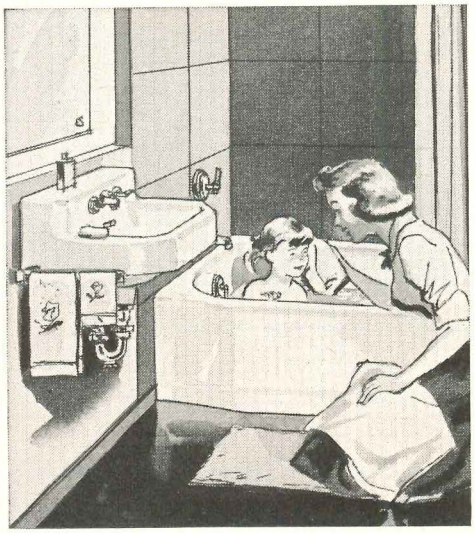
NEW STANDISH SHOWER BATH

42″ x 36″



Kohler Standish enameled iron recess shower bath, K-306-F.

for homes, apartments, hotels, motor courts



Here is a space-conserving bath, practical for the needs of an entire family. Wider than the average bath, with flat bottom, it is roomy for showering and suitable for adult tub bathing. The low front makes it especially useful as a child's bath.

The Standish is 42″ long, 36″ wide at the center, 34″ wide at the ends, 14″ high. Standing area at the bottom is approximately 35″ x 26″. The bench rim is 5″ wide.

The Standish matches the popular Kohler Cosmopolitan. The lustrous enamel is fused to non-flexing iron cast for strength and rigidity. The combination fitting with Niedecken Mixer is chromium-plated, affords easy control of water temperature.

Kohler Co., Kohler, Wisconsin. Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS • AIR-COOLED ENGINES • PRECISION CONTROLS

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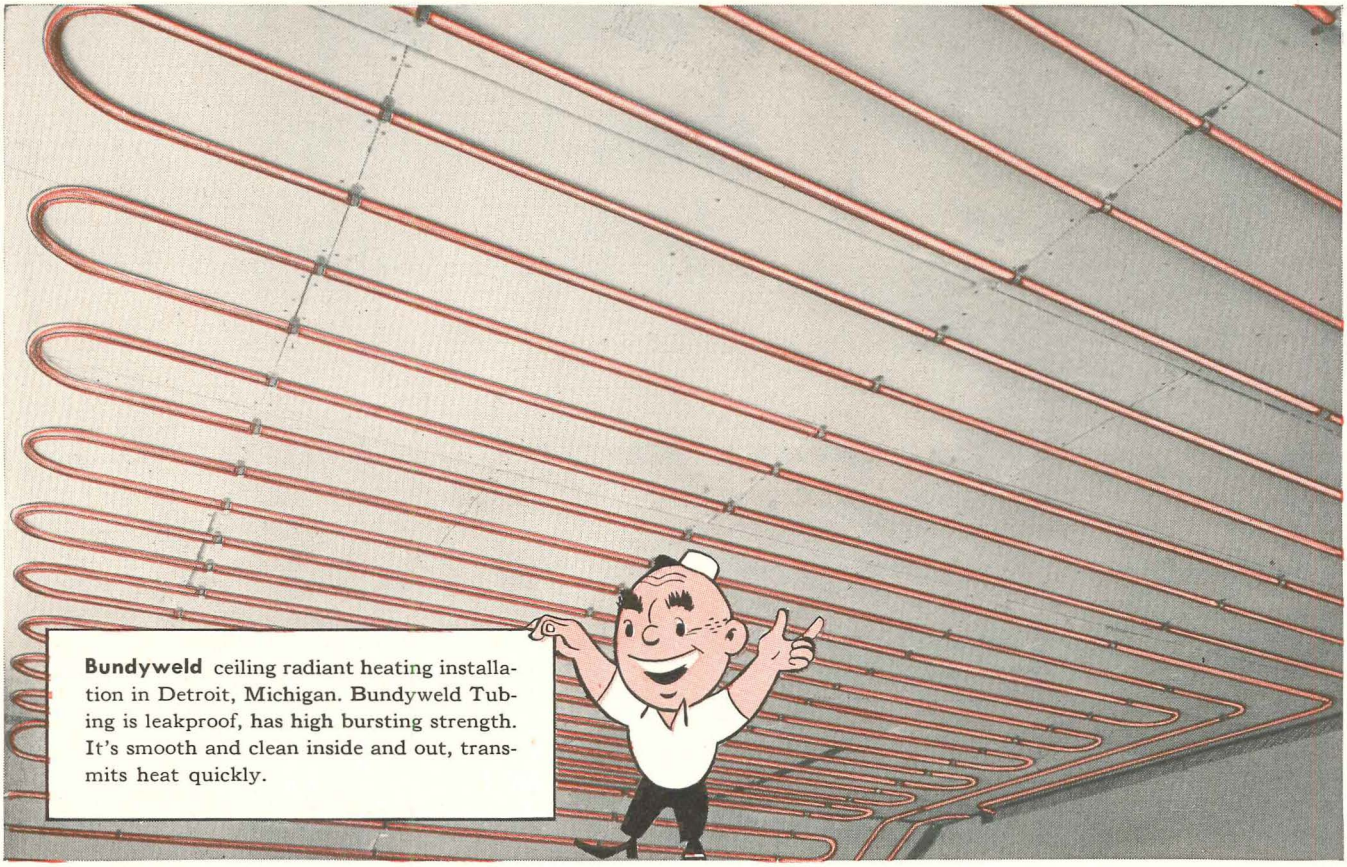
MODERN DOOR CONTROL BY *LCN* · CLOSERS* CONCEALED IN DOOR

THE NORTHERN TRUST COMPANY, CHICAGO, ILLINOIS

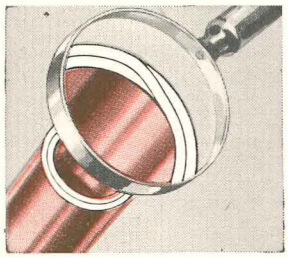
**In this coupon booth installation the closer action has been reversed to OPEN the doors for box holders.*

LCN CATALOG 11-E ON REQUEST OR SEE SWEET'S • LCN CLOSERS, INC., PRINCETON, ILLINOIS



Bundyweld ceiling radiant heating installation in Detroit, Michigan. Bundyweld Tubing is leakproof, has high bursting strength. It's smooth and clean inside and out, transmits heat quickly.

Give your houses the new competitive edge of Bundyweld ceiling radiant heating



Key to Low Cost

Bundyweld is the only tubing double-walled from a single strip. It's steel, copper-coated inside and out. It gives finest radiant heating performance, with savings up to 50% on material costs and installation time.

Standard 20′ or 24′ lengths of Bundyweld are easily formed into coils in shop or on job site. Expanded ends (furnished when specified) are quickly soldered into leakproof union. Joined, lightweight coils are easily mounted onto ceiling, quickly plastered over.

Put your houses years ahead with today's fastest-growing, most advanced heating method.

Thousands of home owners living with Bundyweld ceiling radiant heating will hear of nothing else. They're sold on its unique comfort, convenience, economy, freedom from dirt.

Thousands who read Bundy's ads in *Better Homes & Gardens* and *American Home* send in coupons for literature, write in for names of builders and architects handling Bundyweld ceiling radiant heating. Many of these people are ready prospects for you.

Take advantage of this ready-made, rapidly expanding market. Move out ahead of your competition. Send coupon for details on Bundyweld ceiling radiant heating and on Bundyweld Tubing.

Radiant Heating Division

BUNDY TUBING COMPANY

Detroit 14, Michigan

SEND FOR FREE LITERATURE!

LIKE HAVING THE SUN IN YOUR CEILING

Bundyweld ceiling radiant heating

Radiant Heating Division, Dept. AR-752
Bundy Tubing Company, Detroit 14, Michigan

- ☐ Send me free 20-page nontechnical brochure explaining Bundyweld ceiling radiant heating clearly and fully.
- ☐ Send me Bundy technical radiant heating pamphlet.

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

What brand do you prefer to specify or recommend?

75% SAID "BRUCE"

What brand do most of your clients prefer?

87% SAID "BRUCE"

Survey among architects shows tremendous preference for Bruce Hardwood Floors

Nation-wide survey made by a leading national architectural magazine

There are over 200 different brands of hardwood flooring manufactured in the United States. So, when an independent survey among 5000 architects shows a 75% preference for one brand over all others, that really means something. They voted Bruce Hardwood Floors a 14.6 to 1 favorite over the next leading brand! To make it even better, 87% of these architects said their clients preferred Bruce over all other brands.

Write for color literature and complete data on preferred Bruce Hardwood Floors.

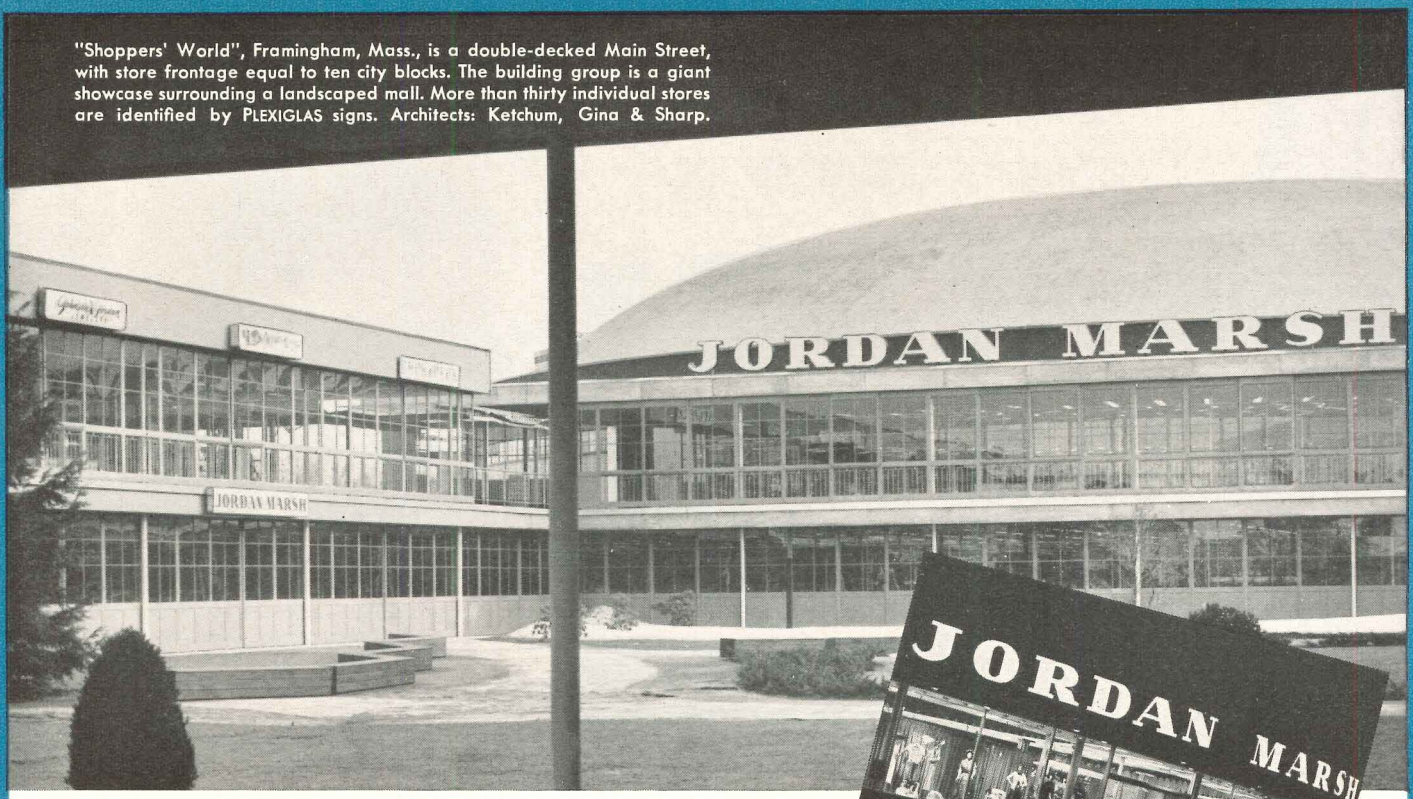
E. L. BRUCE CO., MEMPHIS 1, TENN.
World's Largest Maker of Hardwood Floors

Architects say they prefer Bruce Floors for these 6 principal reasons

- Quality manufacture and grading
- Familiarity with product
- Satisfactory experience
- Variety of types
- Factory finish
- Ease of installation

BRUCE
HARDWOOD FLOORS

BRUCE BLOCK, STRIP, PLANK



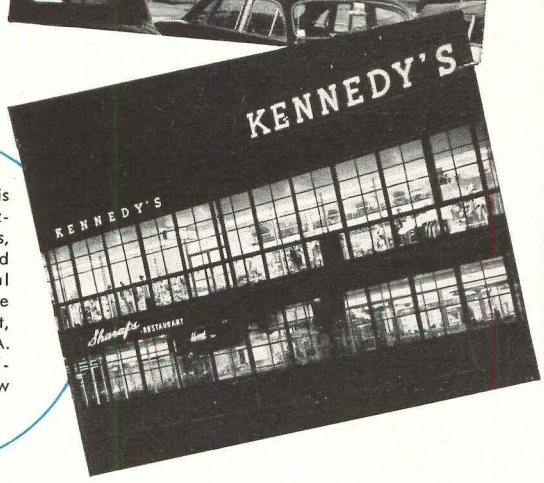
"Shoppers' World", Framingham, Mass., is a double-decked Main Street, with store frontage equal to ten city blocks. The building group is a giant showcase surrounding a landscaped mall. More than thirty individual stores are identified by PLEXIGLAS signs. Architects: Ketchum, Gina & Sharp.

Three-fourths of the Stores at "Shoppers' World" Use PLEXIGLAS Signs

Signs made of PLEXIGLAS identify thirty-three of forty-four stores at this noted shopping center. Customers are attracted by the glare-free, legible, acrylic plastic faces and letters. The pleasing appearance and selling effectiveness of the signs are in keeping with the efficient merchandising design of "Shoppers' World".

Used as a sign material, PLEXIGLAS provides unlimited design possibilities. Broad-stroked letters, large-area backgrounds, three-dimensional trademark reproductions, colorful store facades—PLEXIGLAS makes them distinct and distinctive, day and night. Evenly diffused backlighting, from sources concealed and *protected* by the translucent plastic, makes a sign completely luminous at night, as attractive and easy to read as in daytime. Signs made of this *outdoor* plastic give long service with low maintenance costs.

You should have full information on PLEXIGLAS signs. We'll be glad to send it to you.



CHEMICALS FOR INDUSTRY

ROHM & HAAS COMPANY

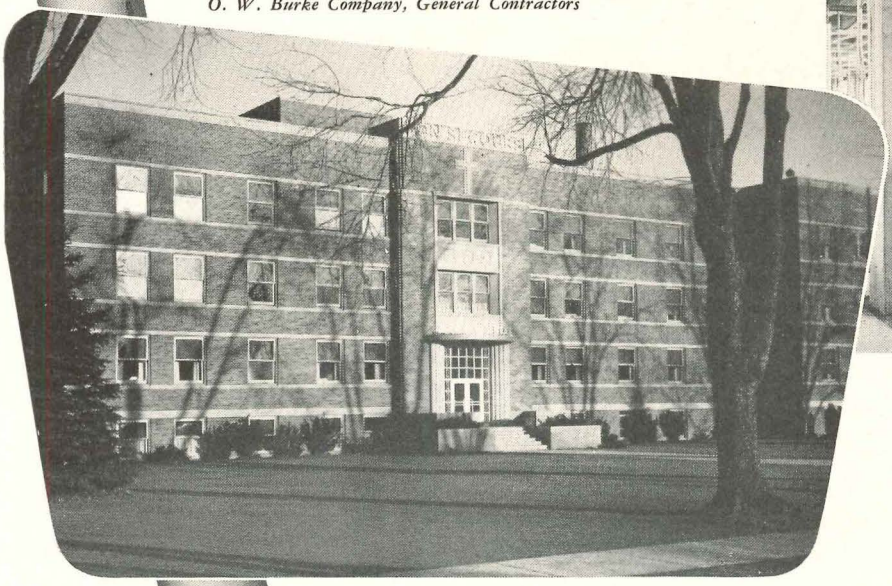
WASHINGTON SQUARE, PHILADELPHIA 5, PA.

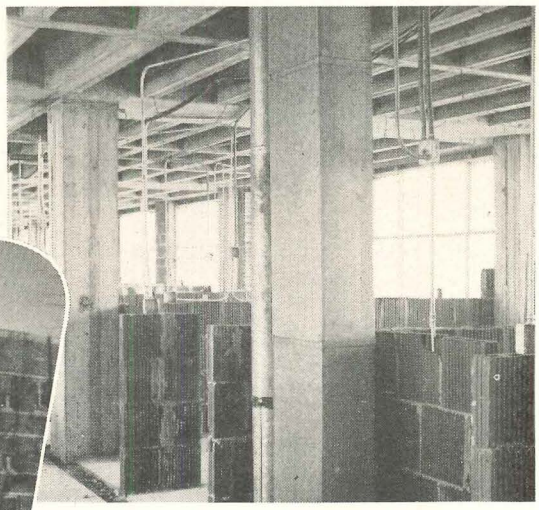
Representatives in principal foreign countries

See how PLEXIGLAS is used for lighting, glazing, shower enclosures, dome skylights, and other architectural applications . . . at the Rohm & Haas exhibit, Booth No. 3, A.I.A. meeting, Waldorf-Astoria Hotel, New York, June 23-27.

Canadian Distributor: *Crystal Glass & Plastics, Ltd., 130 Queen's Quay at Jarvis Street, Toronto, Ontario, Canada*

Bon Secours Hospital, Grosse Pointe, Michigan
Charles Sullivan Association, Architects
Snyder & McLean, Engineers
Hydon-Brand Electric Company, Electrical Contractors
O. W. Burke Company, General Contractors





For all types of circuits in all types of construction, ELECTRUNITE E.M.T. *provides maximum protection, helps keep construction on schedule.*

Hospital Service that is Ever Ready... relies on protective

ELECTRUNITE E.M.T.

● Lighting and communications circuits in this new hospital are steel-protected from fire, moisture, and mechanical damage by Republic ELECTRUNITE E.M.T. (Electrical Metallic Tubing).

This light-and-strong steel raceway is easily installed in all types of buildings . . . for new jobs or relocation of facilities in older buildings. It is inspected by Underwriter's Laboratories and approved by the National Electrical code for concealed, exposed, and concrete installations.

Exclusive "Inch-marked®" lengths and uniform ductility help electricians make smooth, accurate bends. Exclusive inside knurling greatly reduces the job of pulling wires. Compression fittings eliminate threading and permit tight assembly without turning the whole run.

★ ★ ★

Where *extra-severe* corrosion is encountered, consider ELECTRUNITE "Dekoron-Coated" E.M.T. . . . the plastic-armored raceway that is tougher even than severest chemical atmospheres.

REPUBLIC STEEL CORPORATION
STEEL AND TUBES DIVISION
224 EAST 131st ST. • CLEVELAND 8, OHIO

SEE SWEET'S FILE

or write us for detailed information on these Republic Steel Building Products:

Pipe—Sheets—Roofing
Enduro Stainless Steel
Toncan Enameling Iron
Electrunite E.M.T.
Fretz-Moon Rigid Steel Conduit
Taylor Roofing Ternes
Berger Lockers, Bins, Shelving
Berger Cabinets for Kitchens
Truscon Steel Windows, Doors, Joists and other Building Products

REPUBLIC STEEL®

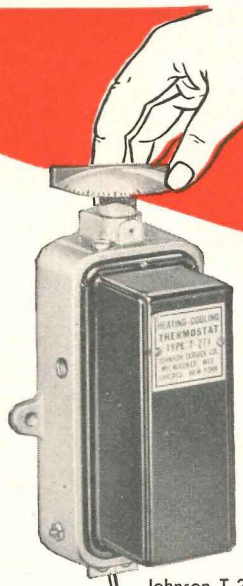
Republic
ELECTRUNITE® E.M.T.

ELECTRUNITE . . . THE ORIGINAL ELECTRICAL METALLIC TUBING

The chances are...

a building like
525 William Penn Place
would be equipped with

Johnson CONTROL



Johnson T-271 Heating-Cooling Thermostat for air conditioning units.

An office in the 525 William Penn Place building, Pittsburgh, Pennsylvania.

Harrison & Abramovitz, New York, and William Y. Cocken, Pittsburgh, architects;

Dravo Corp., Pittsburgh, heating & air conditioning contractors.

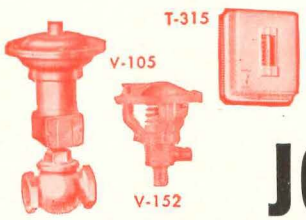
In building after building, Johnson is called upon to furnish and install dependable automatic temperature and humidity control for modern air conditioning systems. No matter what the extent of the problems involved, the chances are that they will be turned over to the nation-wide Johnson organization.

In Pittsburgh's newest skyscraper, 1,650 year-around air conditioning units provide all-weather comfort in each exterior room. A Johnson T-271 Heating-Cooling Thermostat is located in one of the units in each room, with its temperature bulb mounted close behind the recirculating air grille to respond quickly to the average temperature of the air entering the units. Thus, the Johnson V-152 valve, on the hot and cold water supply to the coil in each unit, is operated to determine automatically the heating or cooling effect to be applied.

The interior areas in the building are served by 51 central-type air conditioning systems, and 105 Johnson T-315 Submaster Room Thermostats control Johnson V-105 coil valves on the steam supply to booster heaters.

In addition to the *Individual Room* control, there is comprehensive Johnson Master Control, "behind the scenes", to regulate temperatures and humidities for the 10 systems which supply primary air to the units, as well as the conditioned air delivered by the 51 central systems which serve the booster heaters in the interior sections.

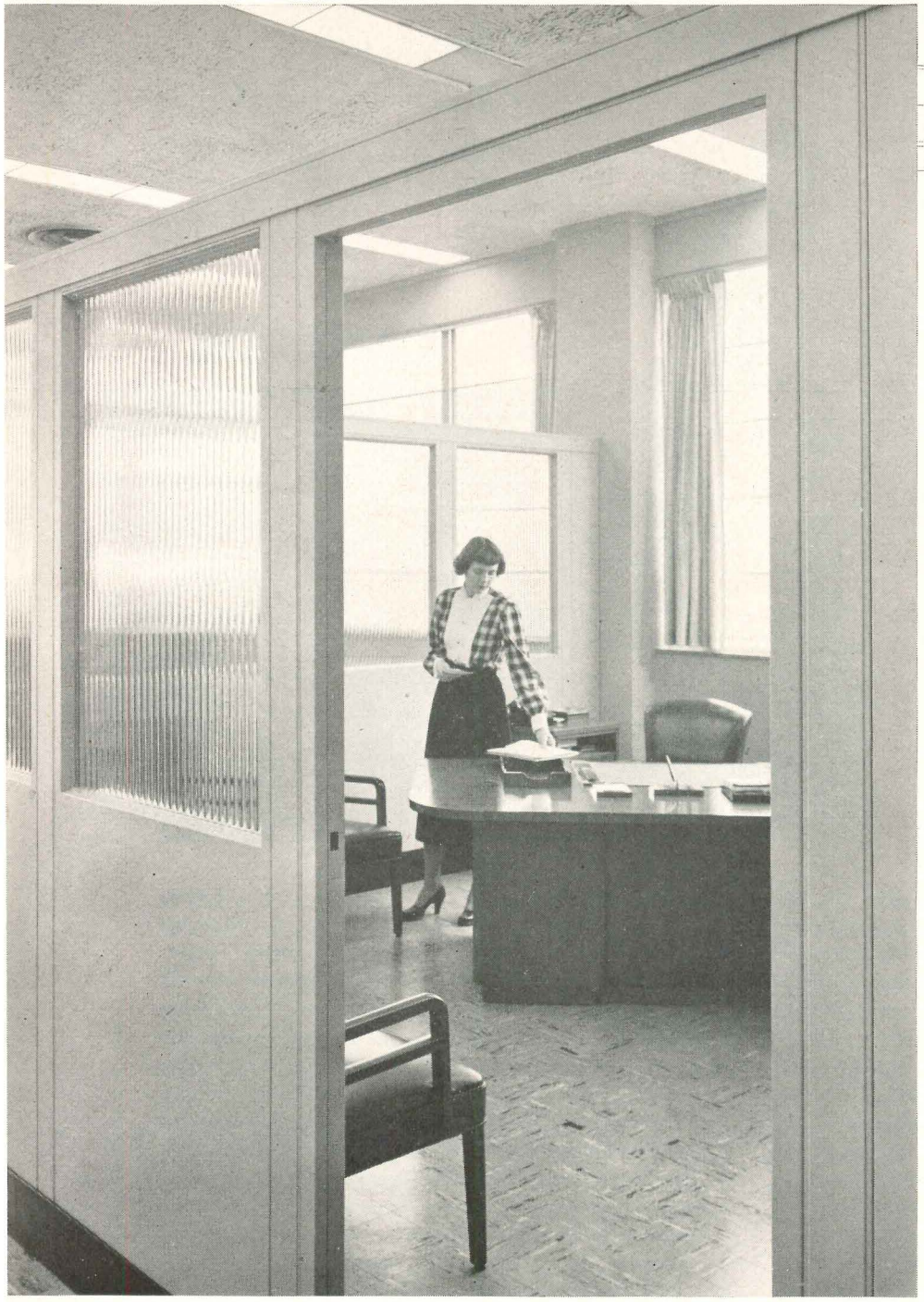
Yes! THE CHANCES ARE that a Johnson engineer from a nearby branch office has the answer to complex temperature control problems such as those encountered at 525 William Penn Place. He is equally conversant with smaller problems, too. A talk with him entails no obligation. Ask him to call on you, any time. JOHNSON SERVICE COMPANY, Milwaukee 2, Wisconsin. Direct Branch Offices in Principal Cities.



JOHNSON *Automatic Temperature and Air Conditioning* CONTROL

MANUFACTURE • APPLICATION • INSTALLATION • SINCE 1885

PORTRAIT OF *Preparedness*



Tinnerman Products, Inc., Cleveland, Ohio
Architects: McGeorge-Hargett & Associates
Builders: The Sam W. Emerson Co.

The new home of SPEED NUT fasteners is a combination of practical planning and architectural artistry, a design-for-efficiency, the last word in modern production and management facilities. But its keynote is an obvious *preparedness* to meet the challenges and opportunities presented by changing economic conditions.

The new Tinnerman building is designed for *flexibility*. Most of its interior space, for offices and factory enclosures, is subdivided by Mills Movable Metal Walls. Pictured at the left is a typical executive office equipped with metal and glass partitions.

Mills Movable Metal Walls are solid, attractive, insulated and soundproofed. Easily erected, they require practically no maintenance and can be moved—*quickly, conveniently and at very low cost*—to fit any new layout or change in space requirements. Changes can usually be made overnight or during a weekend, without interrupting normal business routine.

This maximum mobility with minimum labor is the result of *the demonstrably superior quality* of Mills Movable Metal Walls, developed through more than 30 years of accepting complete responsibility for their design, construction and installation.

MILLS *Movable* **METAL WALLS**

Those who look to you for the answers to their space problems will never be the victims of "frozen space"—an obstacle to *preparedness*—if you equip their buildings with Mills Movable Metal Walls. Write for Mills Catalog No. 51. We will be happy to give you further information upon request.

THE MILLS COMPANY • 954 WAYSIDE ROAD • CLEVELAND 10, OHIO

New Drayton Arms Apartment uses Westinghouse Bus Duct throughout

Two, 1350-ampere, low-impedance bus duct risers carry power conveniently from basement to penthouse in this ultramodern, 198-suite apartment in Savannah, Georgia. Each riser is three phase, 4 wire and feeds half a floor at each level. Power take-offs are through circuit protective devices built into the duct.

Standardized duct sections co-ordinated perfectly with building plans, were quickly and easily installed. The contractor and owner are so pleased with the results that the contractor has selected and ordered similar Westinghouse Bus Duct for the new, 15-story Savannah Bank and Trust Building.

Check the four types of Westinghouse Bus Duct when planning power expansions or new jobs. Up to 5000 amperes it gives more power per pound of equipment than any other means of secondary power distribution. Types are available to handle all load conditions and service requirements.

Call your Westinghouse distributor for complete details or write for B-4272-A. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-30106

BUS DUCT IS FLEXIBLE

DESIGN TESTED AND VERIFIED IN THE Westinghouse HIGH POWER LABORATORY

YOU CAN BE SURE...IF IT'S Westinghouse BUS DUCT

CRANE
chore-center kitchen

"Open House." Space flows together in one unified work-area—a functional, labor-saving heart of the house. Freezer, refrigerator, range, sink, clothes washer, laundry tubs, ironer, sewing machine are all gathered here, built-in for better appearance and usefulness. See details in Crane's "Sketchbook of Ideas."

An unusual idea combining facilities in one work-saving room

The basic idea here is simply this: A kitchen today can be a step-saver where a housewife can do all her chores—sew, wash, and iron as well as store food and prepare meals.

This Chore-Center kitchen is one of forty-eight rooms in the new Crane "Sketchbook of Ideas," one of the key features of Crane's new service to architects who specialize in designing homes. You can use this remarkable book to help your clients visualize and select new arrangements for kitchens, bathrooms, and utility rooms.

If you want information on any of the rooms in the book, we can provide data including suggestions for room arrangements and decorating that will help to relieve you and your staff of much time-consuming detail work.

Ask your Crane Branch or Crane Wholesaler how you can take advantage of this opportunity.

COME TO CRANE FOR IDEAS

CRANE CO.

GENERAL OFFICES: 836 SOUTH MICHIGAN AVE., CHICAGO 5

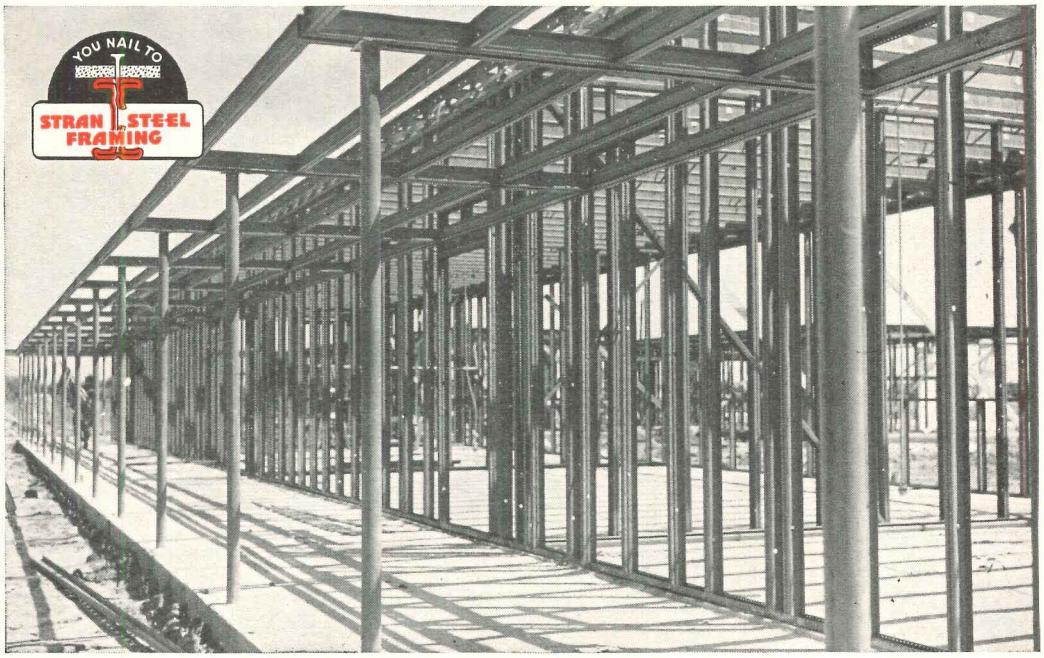
VALVES • FITTINGS • PIPE
PLUMBING AND HEATING

REDUCE

FIRE HAZARDS

SPECIFY

STRAN-STEEL® FRAMING



Fire hazards will be minimized in the Robstown, Texas, Elementary School, because of the use of Stran-Steel framing. Wall finish on the interior will be gypsum plaster on rib lath. On the exterior, brick veneer over Steeltex wall lath with ¾" mortar bond. Benjamin K. Wyatt, San Antonio, is the architect.

***For* Roof Systems**
Floor Joists
Quickly Erected Partitions—
or Complete Structures

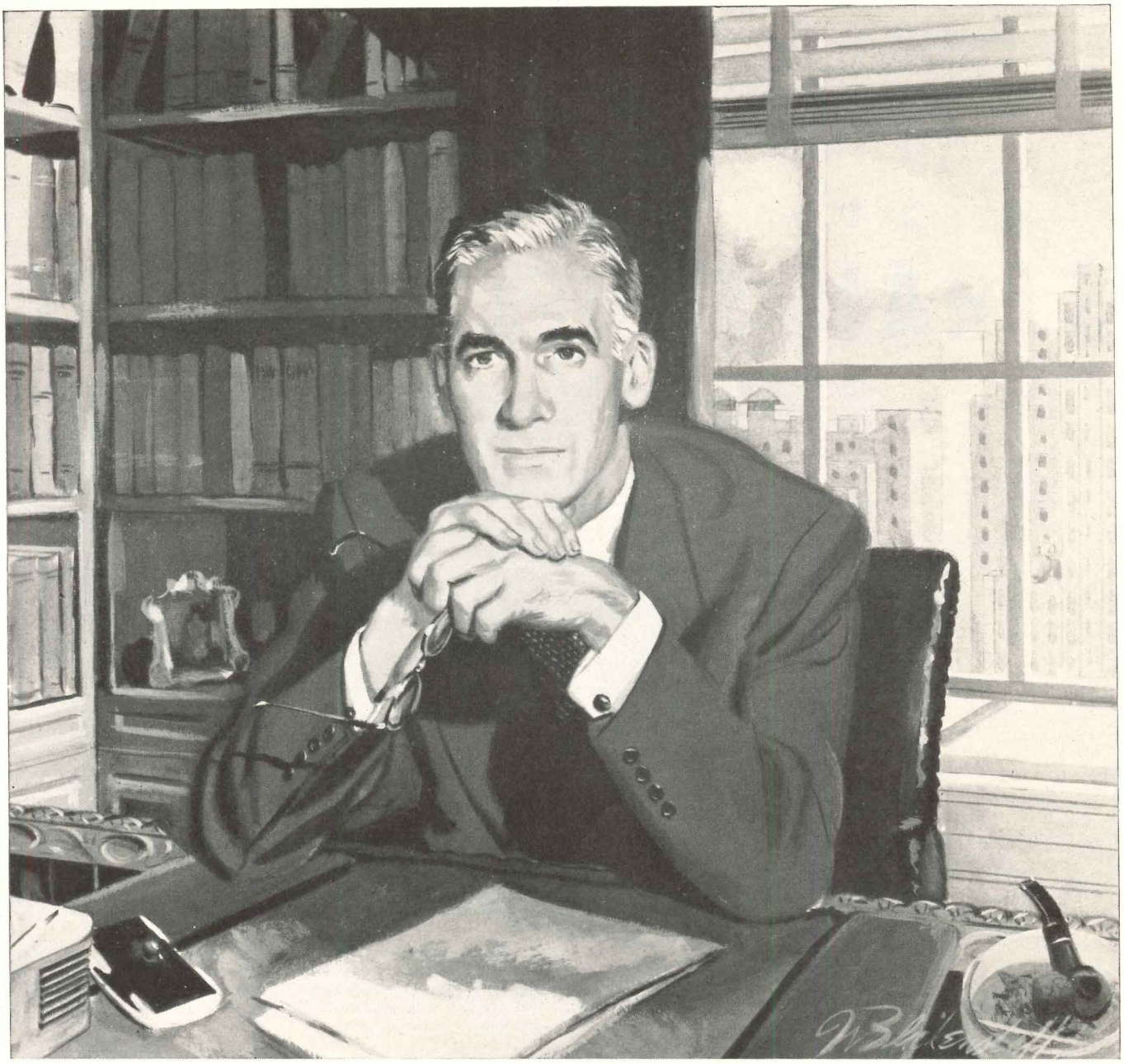
In addition to the many time-saving, money-saving, and structural advantages of Stran-Steel *nailable* framing, architects and their clients will appreciate the permanent protection offered by this *non-combustible* framing material. Specifying Stran-Steel roof systems and floor joists can mean the difference between a costly fire and one that is easily localized and controlled. Also, architects can point to lower insurance costs possible with Stran-Steel framing.

The versatility and strength of Stran-Steel framing make it easily adaptable to the latest trends in design. And the speed with which the precision pre-cut members can be assembled brings a worthwhile reduction of in-place building costs. Close-in time is shortened, and interior work can proceed before exterior completion. The nailability of Stran-Steel framing means additional economy, too, in the application of collateral materials.

If you are planning new industrial or commercial construction, or schools, hospitals and similar structures, it will pay you to investigate Stran-Steel framing. Complete literature available on request, or see Sweet's catalog service, architectural and builders' files.

GREAT LAKES STEEL CORPORATION
Stran-Steel Division Ecorse, Detroit 29, Mich.
NATIONAL STEEL CORPORATION

PRODUCER OF NAX HIGH-TENSILE STEEL



plenty of reason to set you dreaming

This is a time for planning, by business men of vision. The day must come when allocations and priorities will be words of the past . . . when materials will be much easier to get and orders perhaps much harder. Against that day, let some of your dreaming center on stainless steel, the most uniquely useful metal in the book—hard, strong, beautiful, everlasting.

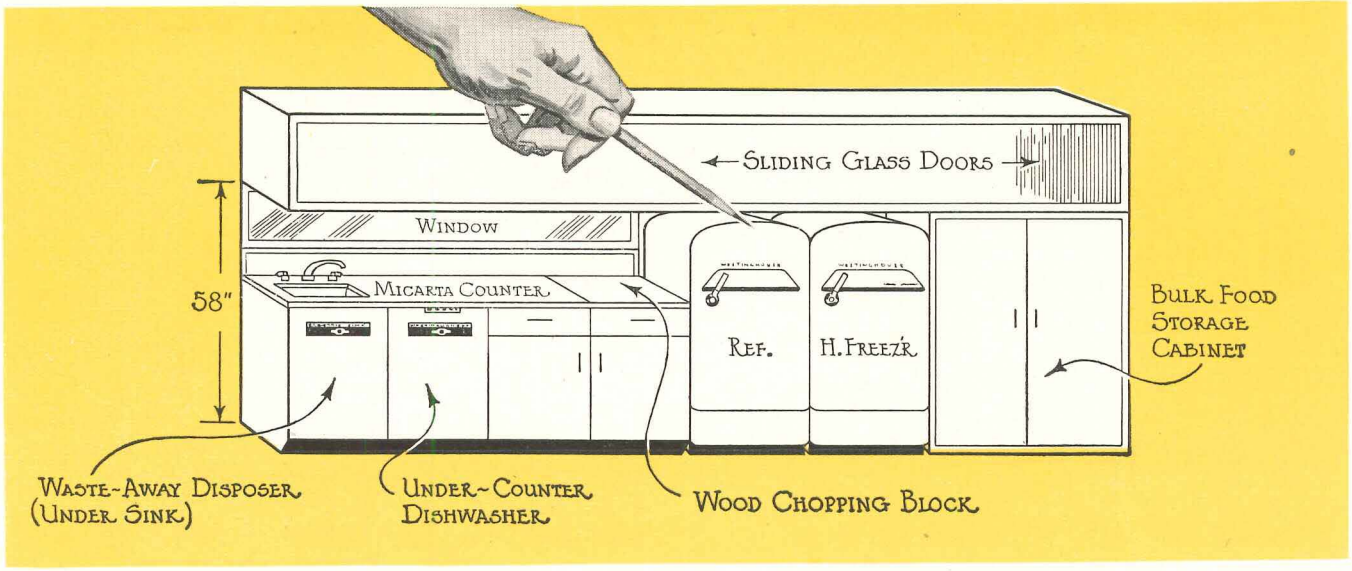
● Our Development Engineers and Research Staff are at your service. Let us work with you. *Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.*

You can make it **BETTER** with

Allegheny Metal

AL
TIME-TESTED STAINLESS STEEL

W&D 4063



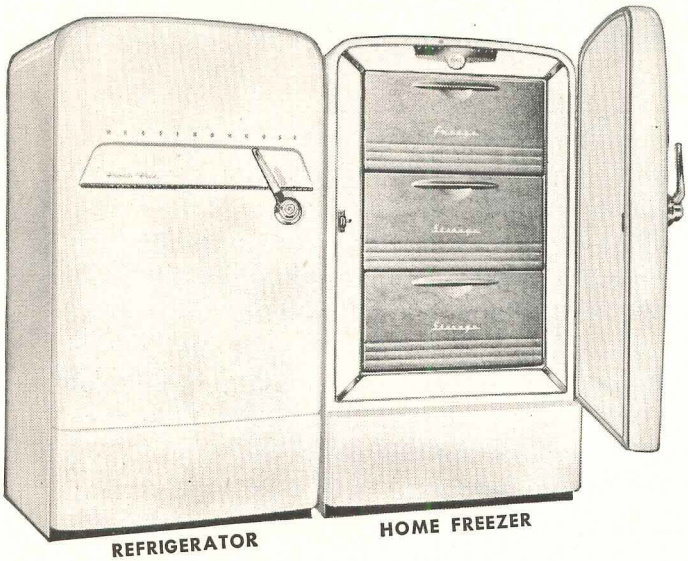
This IDEA will save Thousands of Steps

COMPLETE FOOD STORAGE CENTER SIMPLIFIES MEAL GETTING

Your clients will like the idea of *complete* food storage concentrated in one area of the kitchen.

When frozen, staple and refrigerated foods are together, storage and selection of food is quick and easy. The question of what to prepare for dinner, or what groceries to shop for, can be answered conveniently with a minimum of steps.

The Westinghouse "Upright" Home Freezer makes a food storage center easy to plan into new homes. It takes no more space than a refrigerator of comparable size. By adding only 28¾ lineal inches the Freezer can be included, and its distinctive styling and size make it a twin to the SD-8, DD-8 or DFD-75 Westinghouse Refrigerators. Storage cabinets can be installed above these appliances at convenient height.



You can specify a Westinghouse Refrigerator and Home Freezer with the knowledge that they will give lasting satisfaction. Both are powered with the exclusive Economizer Mechanism that has an unexcelled 23-year record of economical trouble-free performance.

Here, again, is another example of the originality and adaptability of Westinghouse-designed appliances. Look through our new 1952 catalog. You'll find that Westinghouse Appliances offer many opportunities for flexibility in planning homes for electrical living. Send for your free copy.

. . . of course, it's electric!

Westinghouse Electric Corporation
Electric Appliance Division
Mansfield, Ohio

Please send me a copy of your new 1952 Appliance Catalog.

Name _____

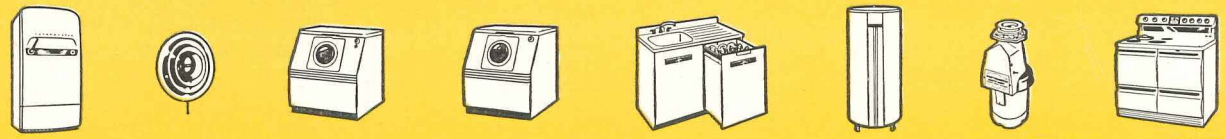
Firm Name _____

Street _____

City & State _____ Zone ____

AR-6

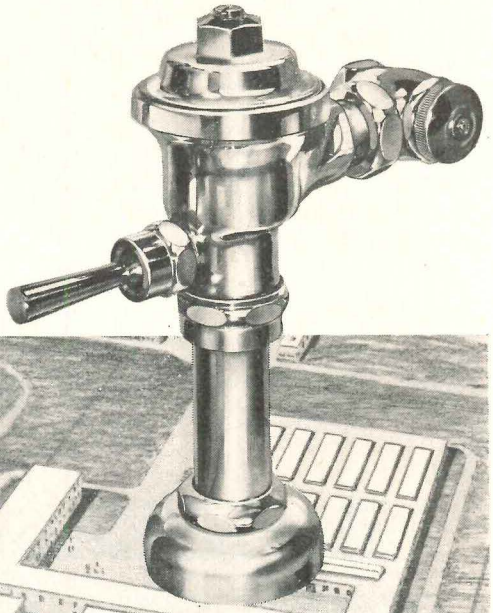
YOU CAN BE SURE..IF IT'S Westinghouse

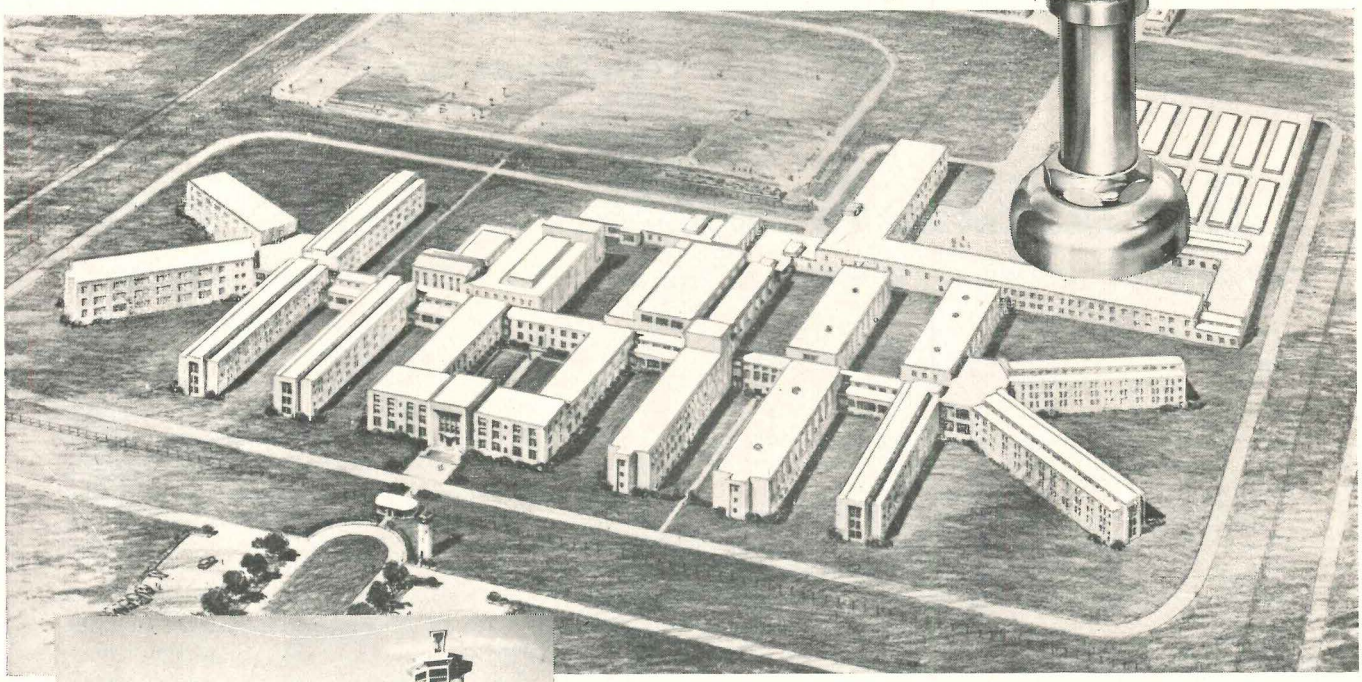


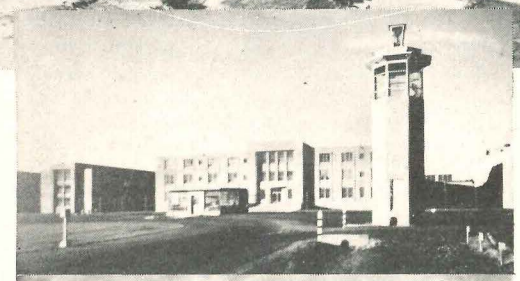
FROST-FREE • VENT FAN • LAUNDROMAT • DRYER • ELECTRIC SINK • WATER HEATER • WASTE-AWAY • RANGE

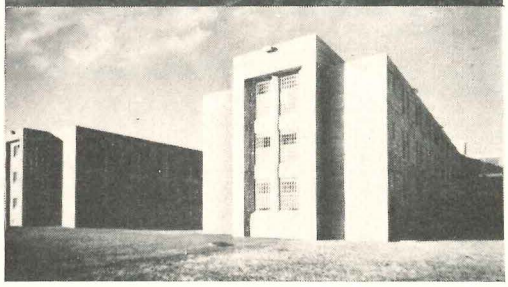
And at Camp Cooke— A FUTURE OF FAULTLESS SERVICE

MAXIMUM SECURITY
DISCIPLINARY BARRACKS,
Camp Cooke, Lompoc, California
ALFRED HOPKINS & ASSOCIATES
architects
GUY B. PANERO
mechanical engineer
MEHRING & HANSEN
PLUMBING & HEATING
plumbing contractor
FAMILIAN PIPE & SUPPLY CO.
wholesale distributor

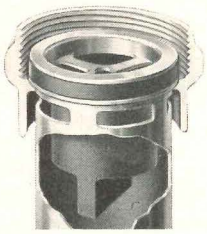








Maximum is an apt descriptive phrase for this huge COYNE & DELANY FLUSH VALVE installation recently completed on the West Coast. Intended for maximum security, it is likely by its very nature to also receive the maximum in abuse. Performing their part in reduced maintenance effort are nearly 1200 diaphragm type DELANY VALVES—rugged and trouble free due to the distilled simplicity of their design. Fine performance is further insured by the use of the pioneer DELANY NO. 50 VACUUM BREAKER — providing the maximum in health protection.



The only vacuum breaker that assures freedom from water polution, at all times, is the DELANY NO. 50 VACUUM BREAKER. Not only will it tell-tale the slightest defect, but, of paramount value, it will function as intended even though neglected. Streamlined, simple in design, with only one moving part, its ease of maintenance is evidenced by the cut-away illustration shown at the left.

COYNE & DELANY CO. • 834 KENT AVE. • BROOKLYN, NEW YORK

IN CANADA: THE JAMES ROBERTSON CO., LTD.

DELANY *Flush* VALVES *Since 1879*

STOP RUST! with RUST-OLEUM®

The Practical Coating!
Beautifies As It Protects!
In All Colors, Aluminum and White!

Cut maintenance costs. Apply RUST-OLEUM directly over rusted surfaces without removing all the rust! Just wirebrush and use sharp scrapers to remove rust scale and loose particles, then apply by brush, dip, or spray. Costly sandblasting and chemical precleaning are not usually required. Specify RUST-OLEUM for every rustable metal surface. Prompt delivery from Industrial Distributors in principal cities.

RUST-OLEUM CORPORATION
2513 Oakton Street, Evanston, Illinois

FREE SURVEY: A RUST-OLEUM specialist will gladly survey your rust problems. He'll make specific tests and recommendations. No cost or obligation. See Sweets for complete catalog and nearest RUST-OLEUM distributor, or write for literature on your company letterhead.

Protects Tanks, Girders Fences, Stacks, Metal Sash, Roofs, Buildings, Marine and Railroad Facilities

Look for this label. Be sure it's genuine RUST-OLEUM!

Stopping Rust with RUST-OLEUM 769 D.P. Red Primer

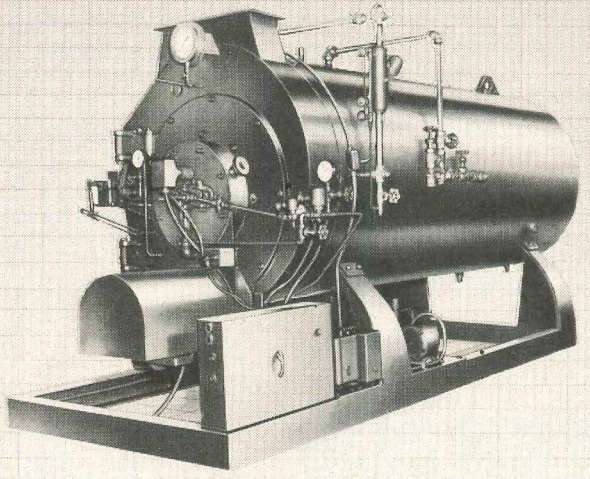
CLIP THIS TO YOUR LETTERHEAD
MAIL TO: RUST-OLEUM CORPORATION
2513 Oakton Street • Evanston, Illinois

- ☐ Have a Qualified Representative Call
- ☐ Full Details on Free Survey
- ☐ Complete Literature
- ☐ Nearest RUST-OLEUM Source

3=5

when you use

Cyclonic Combustion!



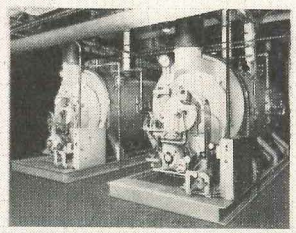
Yes, 3 square feet of heating surface with Cyclonic Combustion equals the 5 square feet of heating surface offered to you by other packaged boiler units.

The Cyclotherm Cyclonic Combustion Principle is an entirely new and amazingly different method of heat transfer in the boiler industry.

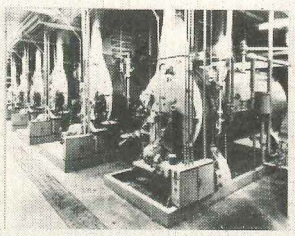
Air enters the combustion chamber at extremely high velocity in a revolving spiral vortex which travels the entire length of the furnace. The fuel is introduced into the entering air where it is slowly consumed as it moves in a cyclonic motion down the combustion chamber. This highly luminous slow burning flame radiating heat to the fire tube through direct radiation and by convection, results in an unusually high rate of heat transfer.

Boilers are designed for oil or gas operation from 18 through 500 HP, 15 to 200 lbs. operating pressure.

Full power operation from a cold start in 15 to 20 minutes. Savings up to 50% on maintenance. Guaranteed 80% efficiency.



When large installation requirements exceed 500 HP, sizable fuel savings can be obtained by battery installations. Based on an analysis of your steam requirements, a number of units would be recommended which collectively add up to your peak steam demand.



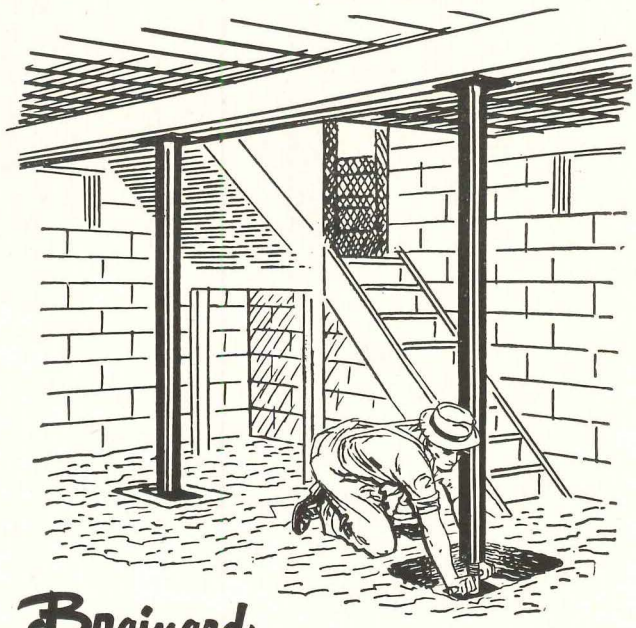
On one typical installation as shown above, a battery of 200 HP Cyclotherms has saved over $12,000 a year in fuel alone. Maintenance and operational cost have been reduced to 75%.

CYCLOTHERM steam generators

CYCLOTHERM DIVISION UNITED STATES RADIATOR CORP.

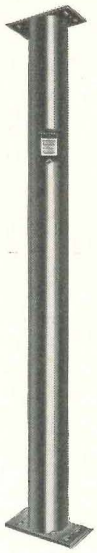
CYCLOTHERM, DEPARTMENT 23, OSWEGO, NEW YORK

cuts installation time!



Brainard

STEEL-STRONG building posts

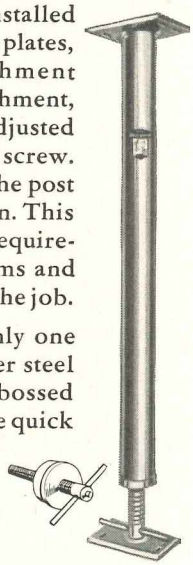


STEEL-STRONG post with standard base plate

STEEL-STRONG posts can be installed quickly with either standard base plates, or with the adjustable attachment (shown above). Using this attachment, the post is set on the footer and adjusted to proper height with the jack screw. Then, when concrete is poured, the post is permanently locked in position. This method (which meets FHA requirements) eliminates the use of shims and saves time-consuming fitting on the job.

STEEL-STRONG posts require only one man for simple installation under steel or wooden beams. Heavy embossed lugs on cap and base plates insure quick line-up, prevent slipping. Plates have holes and slots, for nailing or bolting.

Specify **STEEL-STRONG** for strength, safety, and lowest installation cost.



STEEL-STRONG post with adjustable unit.

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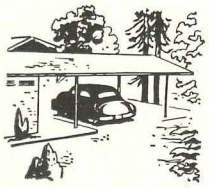

PORCHES

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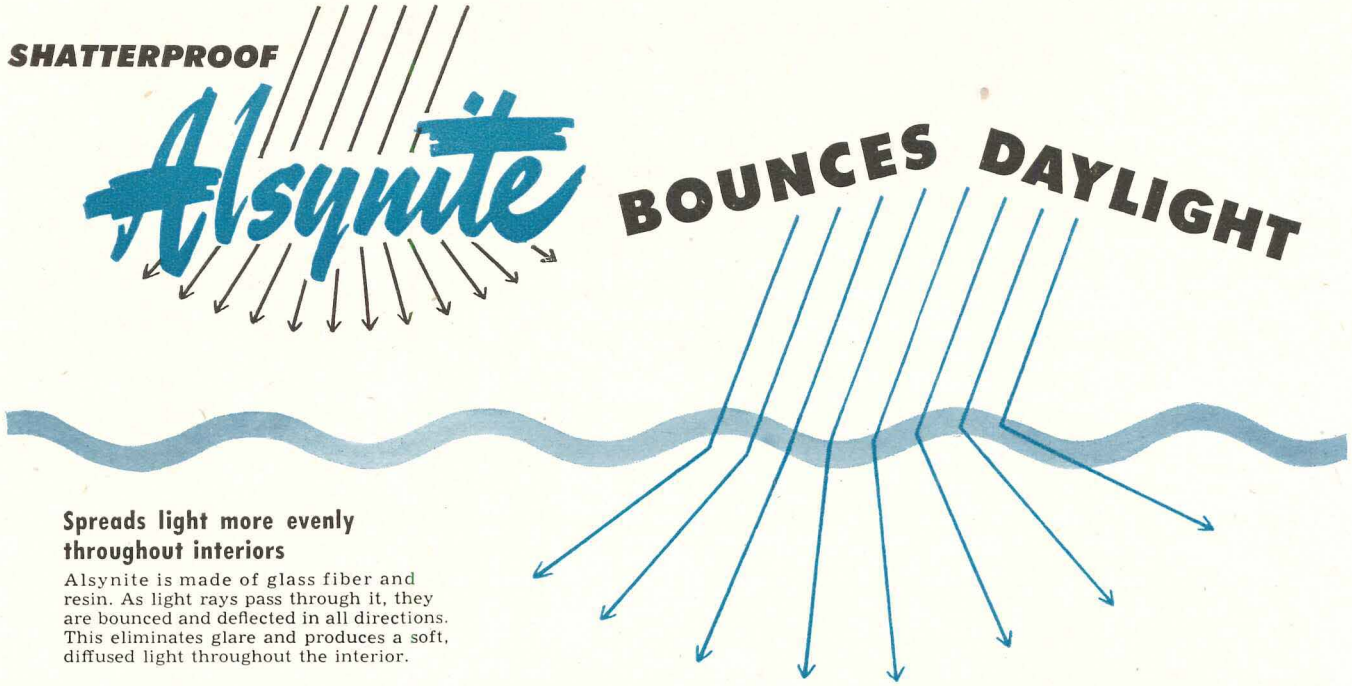
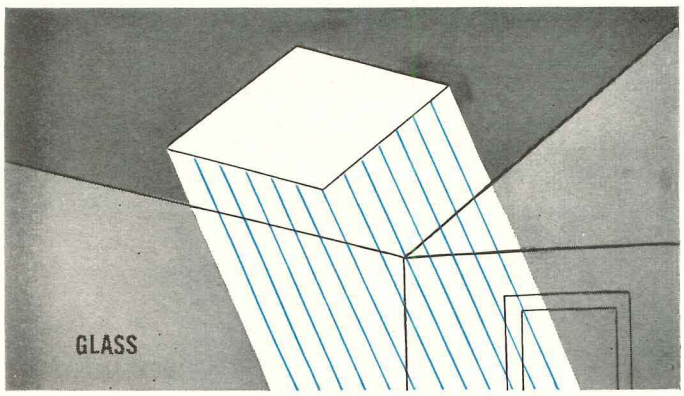
SHATTERPROOF

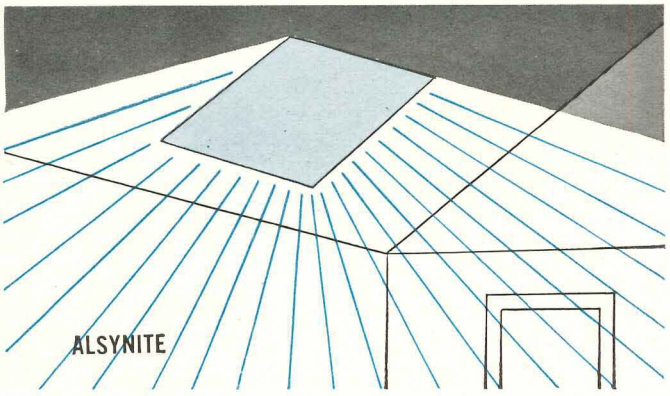
Alsynite BOUNCES DAYLIGHT

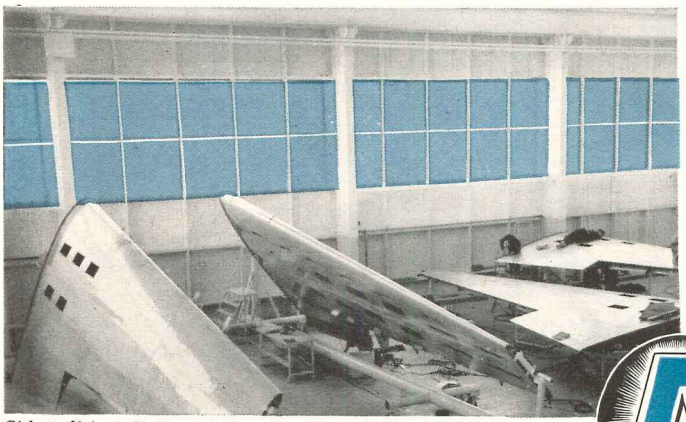


Spreads light more evenly throughout interiors

Alsynite is made of glass fiber and resin. As light rays pass through it, they are bounced and deflected in all directions. This eliminates glare and produces a soft, diffused light throughout the interior.







Sidewall installation at Douglas Aircraft Plant, El Segundo, Calif.—corrugated metal replaced with Alsynite panels. No special framing.

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ALSYNITE is sensational! A new kind of structural glass that is shatterproof, permanent and featherlight (8 oz. per sq. ft.). It can be sawed, nailed... installs exactly like corrugated metal. *Corrugated* Alsynite nests with all standard corrugated roofing and siding. *Flat* Alsynite substitutes for glass in standard windows. Get better light and save money with *shatterproof Alsynite*.

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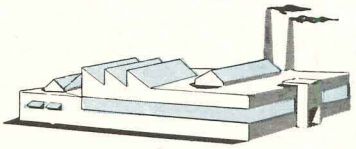
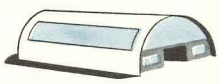
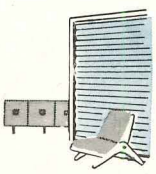


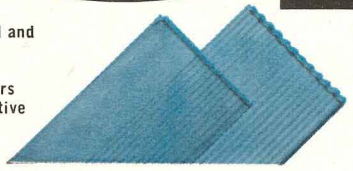




Easy to install in existing buildings as well as in new construction.

Corrugated and flat panels

Seven colors for decorative uses



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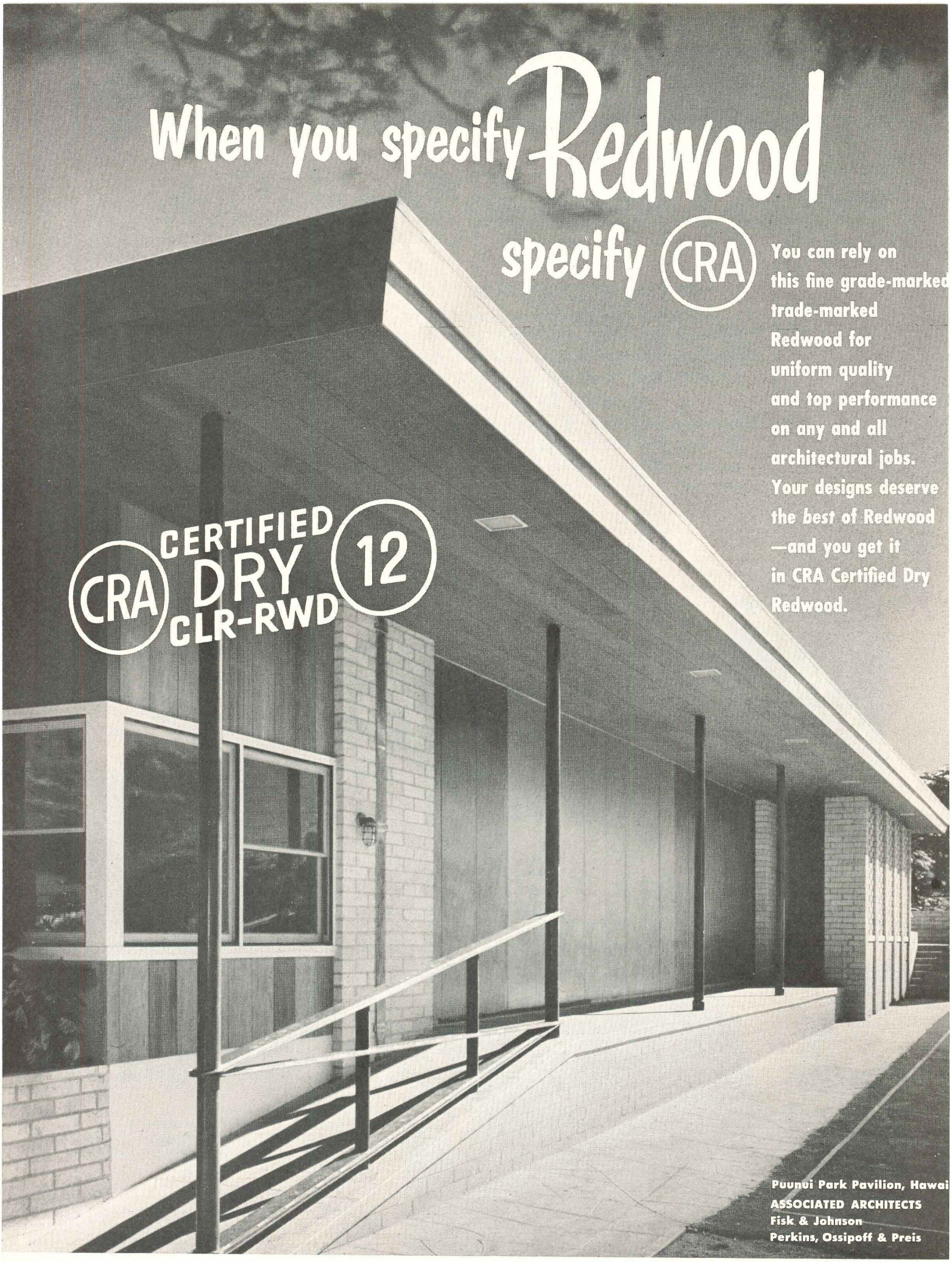

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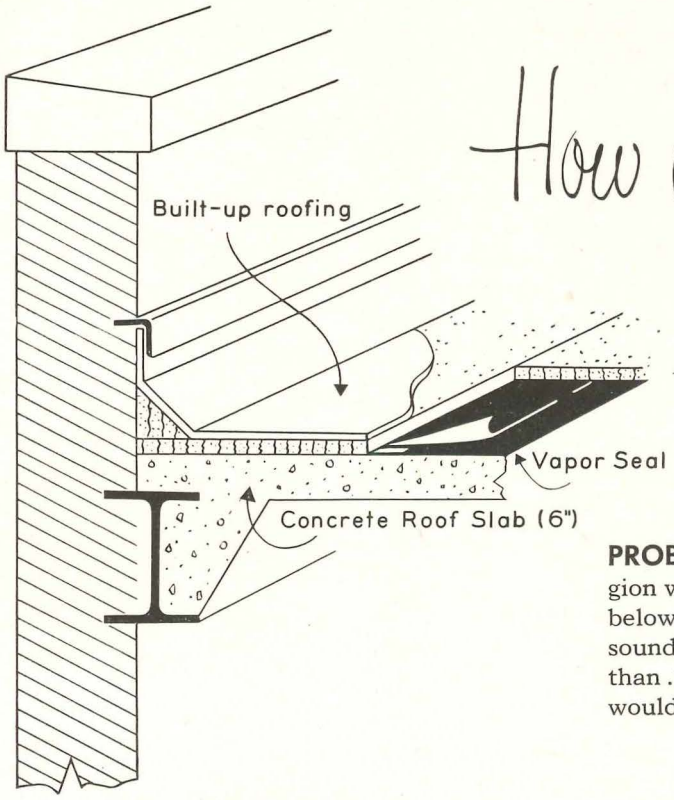

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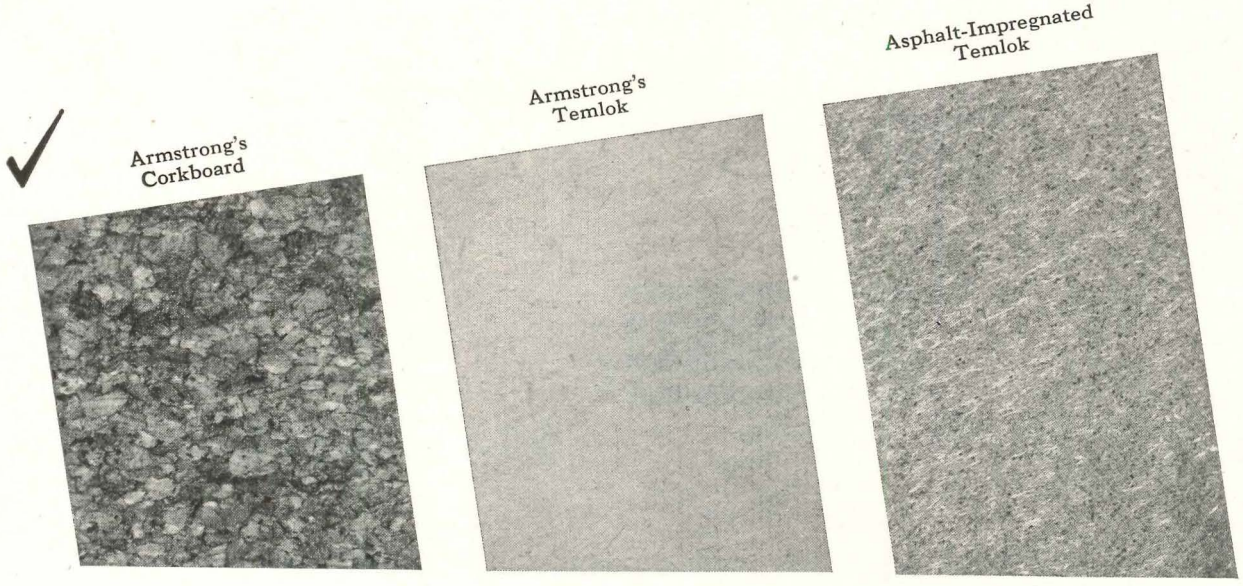
ARMSTRONG'S ROOF INSULATIONS



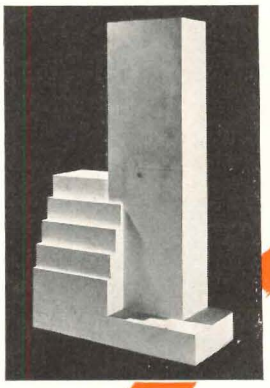
ARCHITECTURAL RECORD'S BUILDING TYPES STUDY NUMBER 187

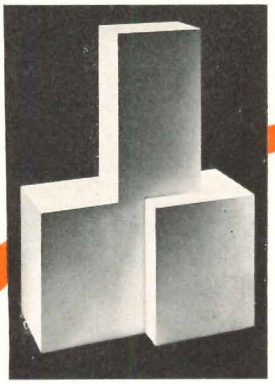
OFFICE BUILDINGS

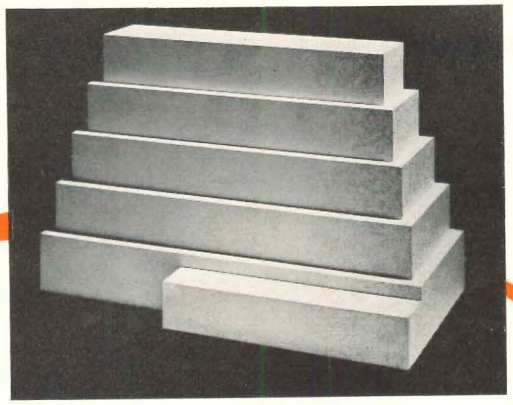
THE OFFICE SPACE within which this country's business is carried on has changed quite radically in recent years. In metropolitan centers the skyscraper concept remains, but the era of bigness for bigness' sake which reached a dubious fruition just at the time of the 1929 market crash does not now exist. Costs of construction and the emergence of different materials, of advanced design techniques, of mechanical equipment whose potentialities were barely foreseen two or three decades ago, are two reasons for the change. The emphasis is increasingly on quality of accommodation at relatively low cost.

The speculatively built office building (that is, one erected for a multiplicity of anonymous tenants) has not pioneered many of these changes. One would hardly expect it to; the speculator, who by definition takes the huge risk of building the structure at all, cannot afford to gamble in the smaller matters. Like the speculative builder of houses for sale, he believes he must employ the tried architectural devices. We find on the other hand that the client who builds for his own use is more bold; his buildings are the pioneers; sometimes, as in the case of Harris Armstrong's American Stove Company Building, in Lever House, the Alcoa Building, the U. N. Secretariat, the Carnegie Building and other recent examples, the private owner sees in these new ideas a means of impressing himself, his company or his product indelibly on the public consciousness. The U. N. Secretariat is also a symbol, of a somewhat different sort.

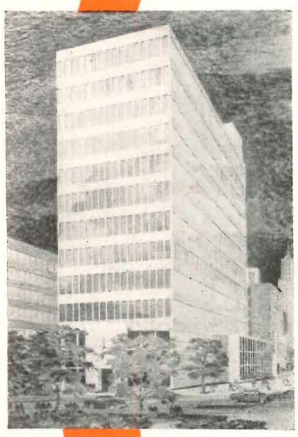
It is also significant that the comfort of the occupants of these pioneer buildings is considered important. The tenant is given light, views, air at its mechanically controlled best; he is transported vertically and his mail is whisked away with automatic precision and speed that are awesome. Something of this filters down from the skyscraper even to the two-story taxpayer; in fact, it is characteristic of smaller office structures that they provide control of sun, glare, heat, cold and air movement or else, generally speaking, their occupancy records are not so good. The demand for economical construction has led to thin membrane walls — some of them hard to justify solely on the basis of economy — and to experimentation with framing systems, even to fairly complete integration of equipment in the structure. One of the most advanced of these concepts is contained in the new building of the Carnegie Endowment for International Peace, an analysis of which is presented in the following pages.

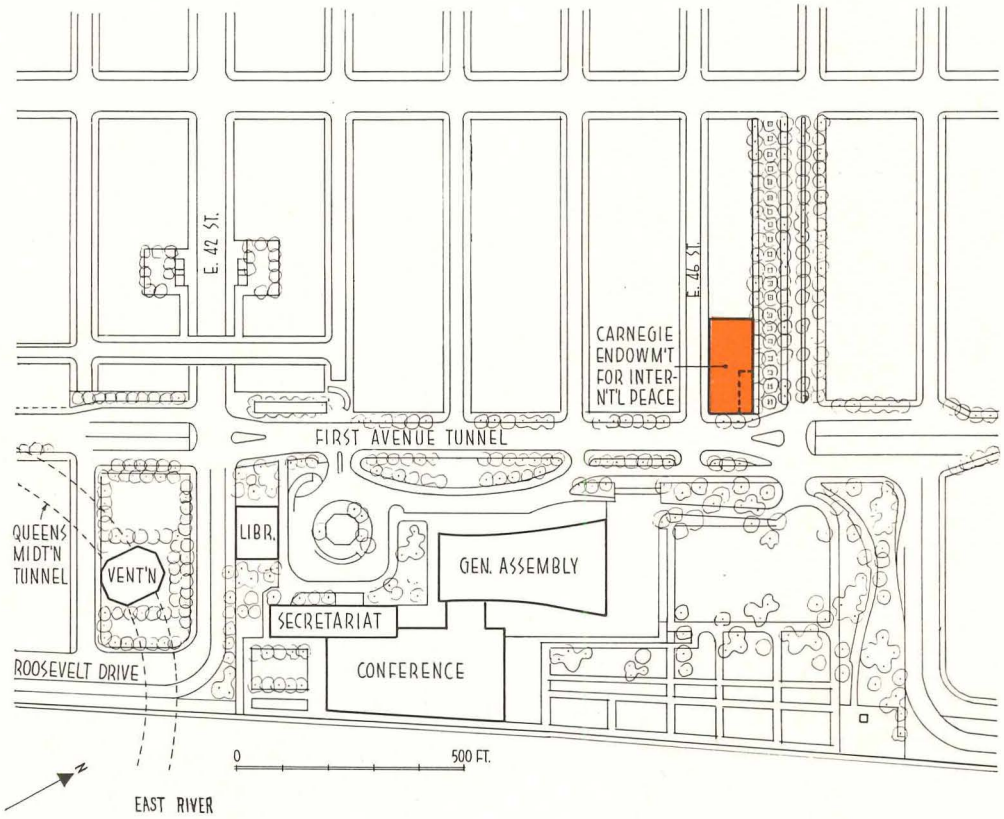


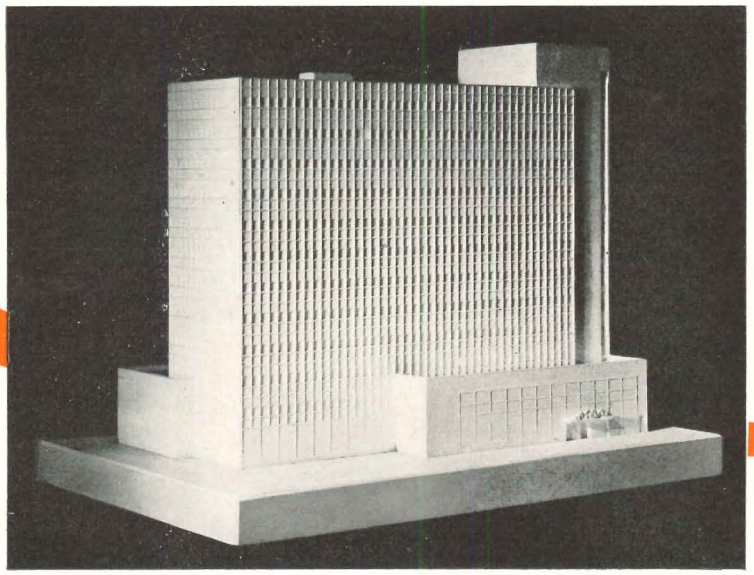




CARNEGIE




E. 42 ST.
E. 46 ST.
CARNEGIE ENDOWM'T FOR INTER-N'T'L PEACE
FIRST AVENUE TUNNEL
QUEENS MIDT'N TUNNEL
VENT'N
LIBR.
GEN. ASSEMBLY
SECRETARIAT
CONFERENCE
ROOSEVELT DRIVE
0
500 FT.
N
EAST RIVER



Harrison & Abramovitz, Goldstone & Abbe, Architects

James Dawson, Supervising Engineer

ENDOWMENT FOR INTERNATIONAL PEACE

Severud, Elstad & Krueger, Structural Engineers

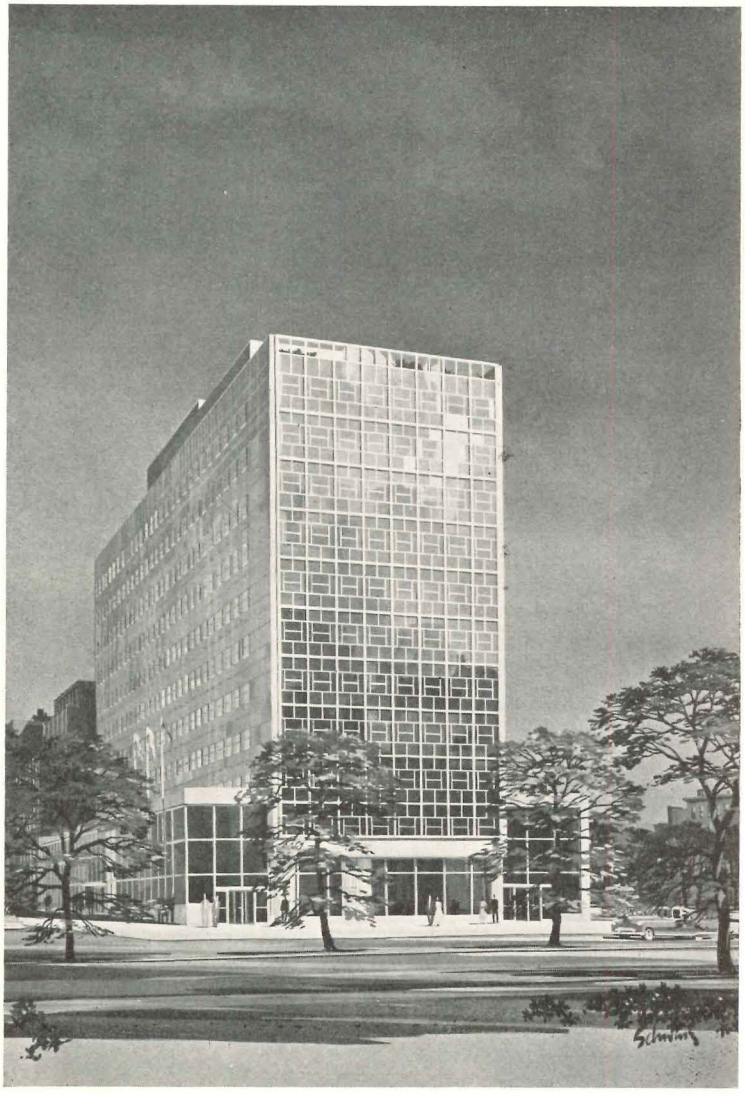
Syska & Hennessy, Mechanical and Electrical Engineers

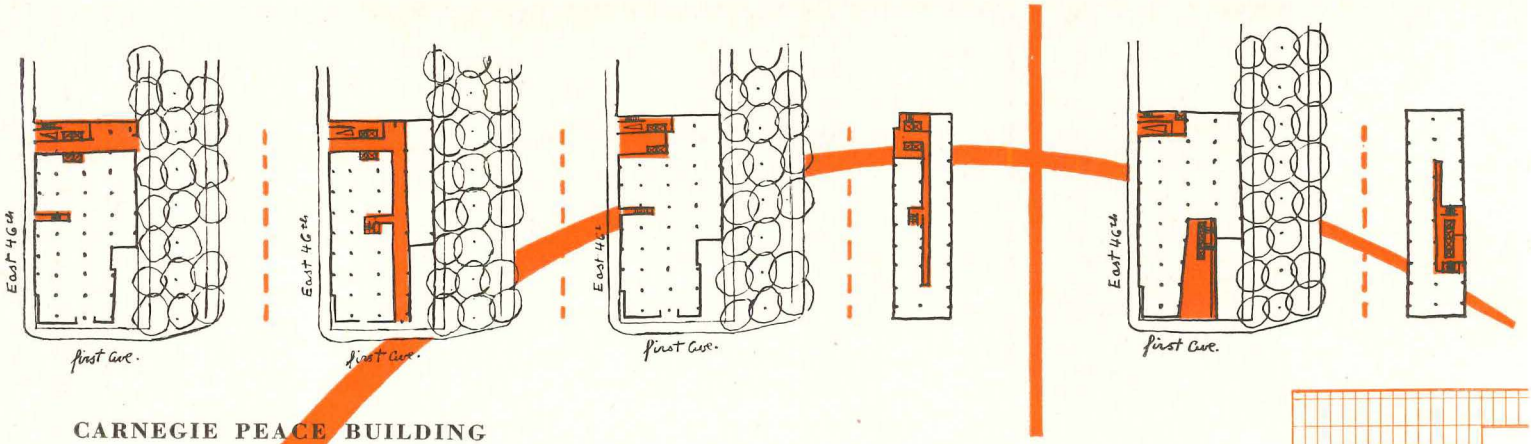
Cauldwell-Wingate Co., General Contractors

THE BUILDING FOR THE CARNEGIE ENDOWMENT for International Peace, now rising opposite the entrance to the United Nations enclave on First Avenue in New York, is unusual in occupancy, site and design. Many of its characteristics are not apparent to the casual observer; almost all of them are important, at least in principle, as concepts for careful study.

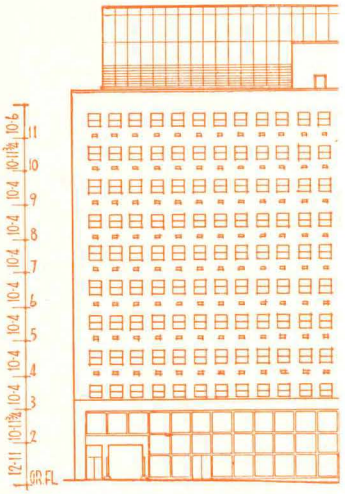
Regarding occupancy: Above the ground floor, the Carnegie Peace Building is to be occupied entirely by international organizations and agencies of non-governmental types — charitable, cultural, professional, social, commercial, etc. — such as the Endowment itself, Rotary International, and many other familiar bodies. These all have a common trait. They are strictly limited as to the amount they can spend for housing their own organizations. Consequently the Carnegie Peace Building had to be designed to squeeze the maximum of rentable floor area out of the minimum building envelope — a factor in designing the average speculative building but here even more potent, and, since the owner was not afraid to pioneer, an actual stimulus to design progress. Also, these organizations are tax-exempt. In order to reduce rentals even further than extreme design economy would permit, it was decided to lease most of the ground floor to commercial tenants; on this portion of income the owner will have to pay taxes. However, the structure is not intended to make a profit.

The site, fronting on First Avenue (United Nations Plaza) and running through from 46th St. to the park-like widening of 47th St. which will form the public approach to the U.N., was assembled like any other real estate holding. Not until design had been completed and excavation begun did the northeast corner lot become available. This helped determine column spacing





CARNEGIE PEACE BUILDING



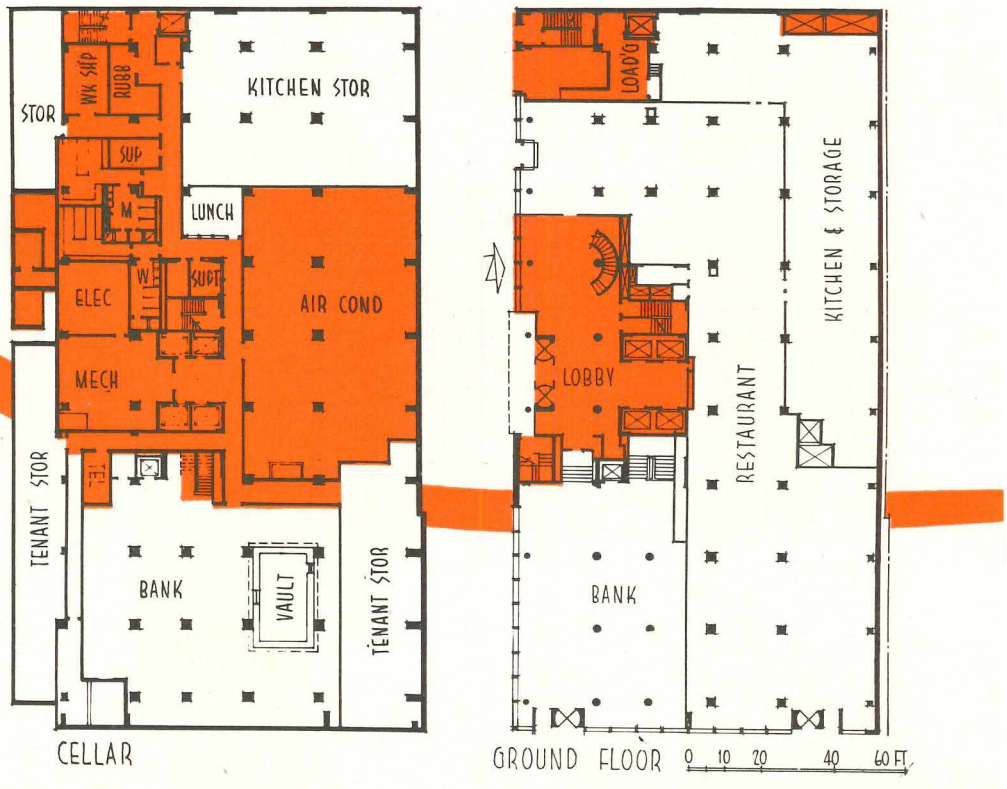
Plan, like the building envelope, underwent many evolutionary steps of which a few (not in exact order) appear above. Left, early first floor scheme with services at west, main entrance on widened 47th St. Next, after 47th St. access was denied: services still at west, entrances on 46th St. and First Ave. Next, another scheme with westerly service core, 46th St. entrance only. Next, typical floor required for all three lower floors to left; note long travel to elevators, secondary stair. Two right-hand sketches, scheme with service core on north side of tower, main entrance on First Ave., minor trucking entrance (primarily for restaurant) on 46th St. This conception sacrificed much of the most valuable ground floor rental space on First Ave. and was abandoned despite advantages

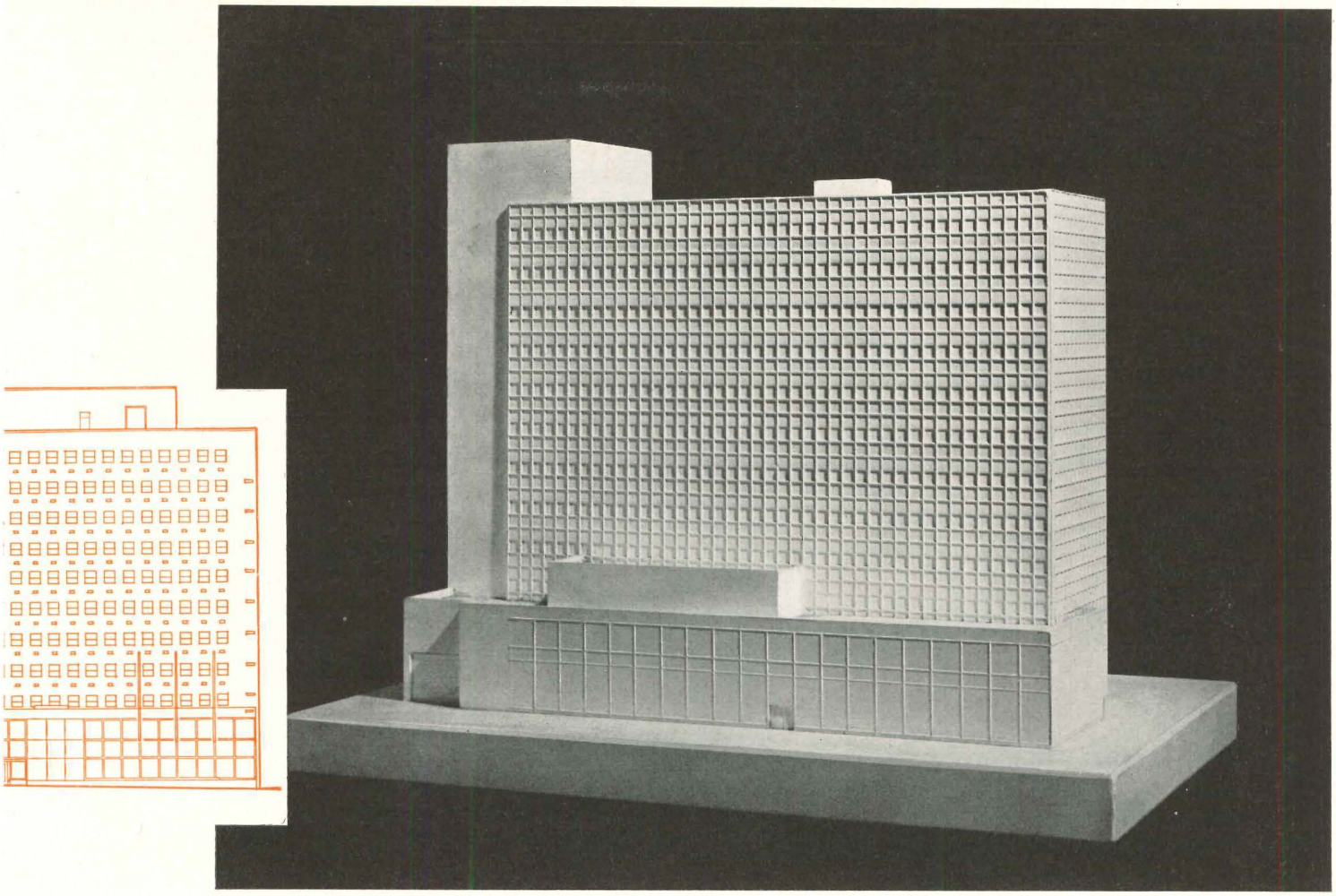
Final plan has main entrance on 46th St., utilizes all First Ave. frontage for commercial rental space. Secondary entrance on 46th St. is for trucks and service to both commercial and private restaurants. The single cellar floor is quite crowded; to obtain even the small amount of tenant storage space sidewalk vaults were necessary. Advantages of final scheme include an impressive 2-story lobby connecting directly with the International Center on the second floor, plus the simplicity of the typical tower floor loft space. In tower, note that service core is concentrated, corridor distances can be at minimum, toilets have outside windows. Carnegie Endowment offices are to be on 11th and penthouse floors. On all tower floors, duct spaces at east and west ends of service core carry the limited air conditioning supplies needed for the few possible interior offices. Column spacing is such that, on the north, single-row offices can be one bay deep; on south, bays accommodate typical anteroom plus private office

and tower placement in plan. At first, the main entrance was to be from 47th St., on the north. However, the city's Park Department, which has jurisdiction over the park strip that widens 47th St., denied the Endowment access (in line with usual city policy) and the plan had to be restudied (see sketches). The location is most important. The agencies housed have fairly close liaison with the U.N.; in fact, at one time in U.N.'s development they were to be accommodated in the northernmost U.N. building, the one which was later eliminated.

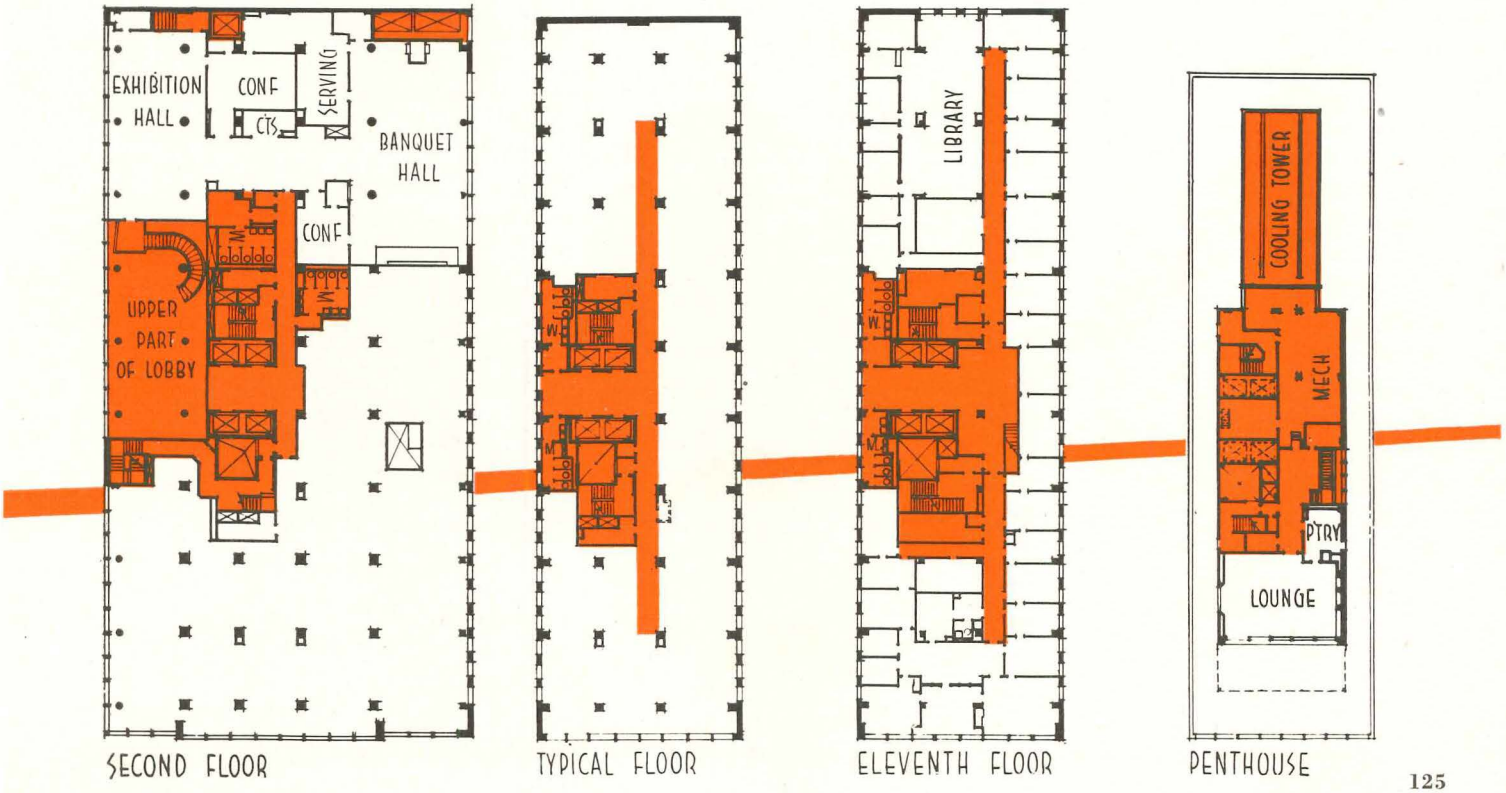
The architects and engineers worked closely in designing the Carnegie Peace Building. Structure, mechanical equipment and electrical systems are thoroughly integrated. In the 9-in. structural flat slab are contained all electrical ducts and conduits;

(*Continued on page 127*)



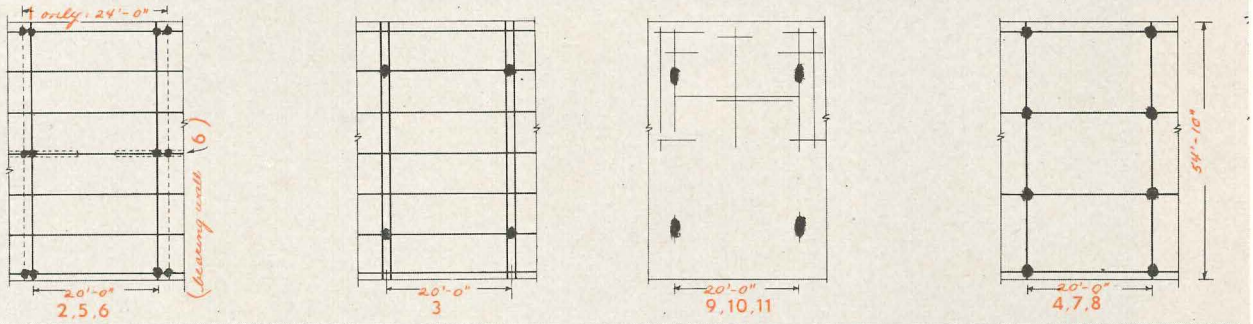


Above, photo of model as it was developed when three sides of building were metal and glass. Left, south elevation (north similar) after these walls were changed to masonry and windows. Two lower floors remain glass, metal

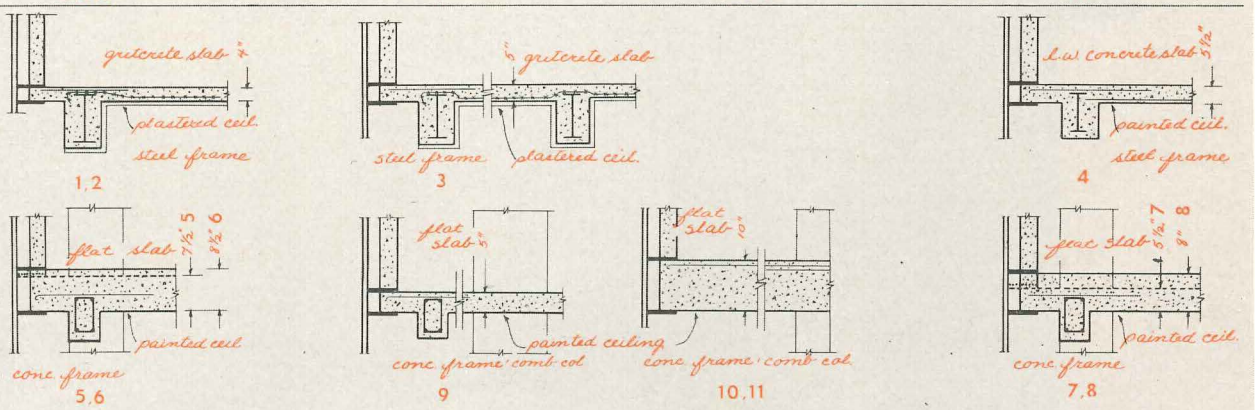


COST ANALYSES OF STRUCTURAL SYSTEMS

TYPICAL BAYS



SPANDREL SECTIONS



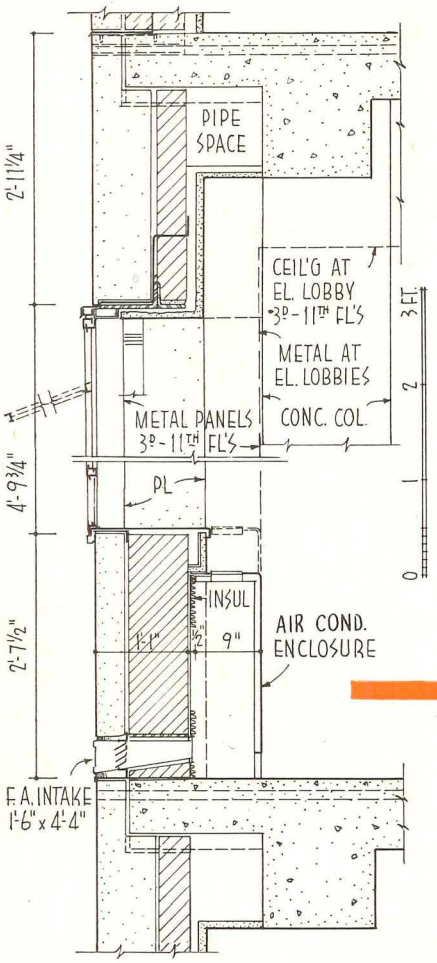
COST DATA

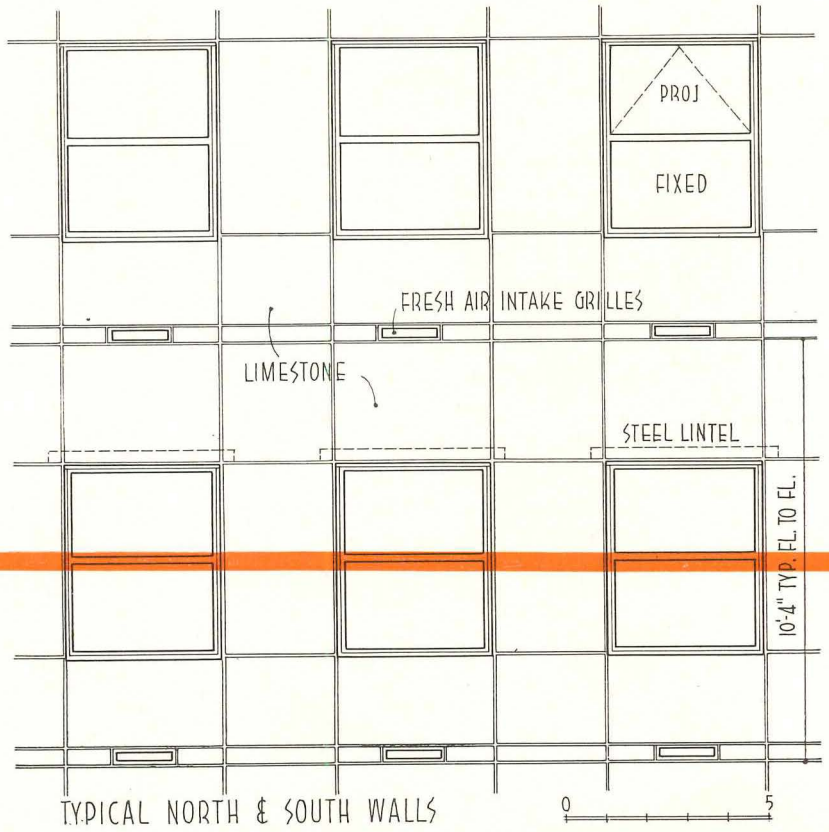
SCHEME NO.		REL. COST
1	(Steel frame grit crete slab)	129.6%
2	(Steel frame grit crete slab)	121.4
5	(3500#/□" Conc.)	118.3
6	(3500#/□" Conc.)	118.7

SCHEME NO.		REL. COST
3	(Steel frame)	121.8%
9	(3000#/□" Conc. and comb. col.)	101.5
10	(3500#/□" Conc. and comb. col.)	119.5
11	(3500#/□" L.W.Conc. and comb. col.)	117.0

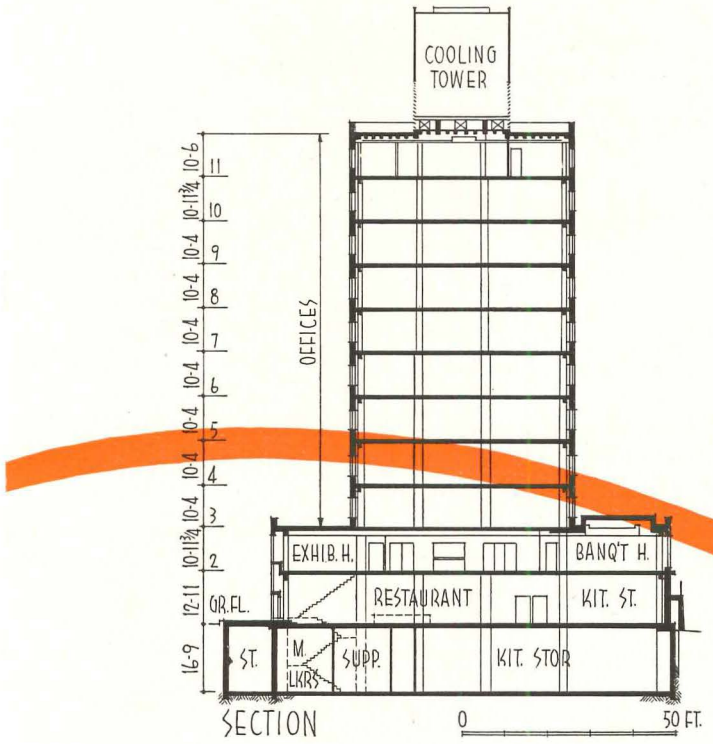
SCHEME NO.		REL. COST
4	(Steel frame L.W.Conc. slab)	112.1%
7	(3000#/□" Conc.)	101.5
8	(3500#/□" flat slab)	100 %

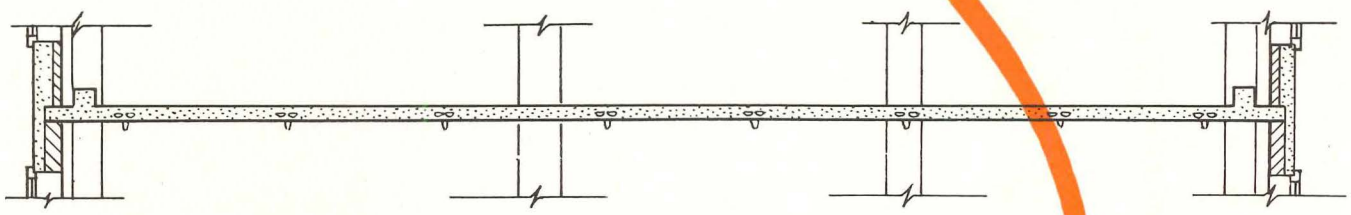
Above, analysis of eleven different structural schemes prepared by the engineers during design process, arranged according to column layout. Cheapest scheme, Number 11, uses concrete columns, an 8-in. flat slab flush on underside except for continuous peripheral beam. When all electrical services were built into structural slab, thickness had to be made 9 in. Left, detail of air conditioners which eliminated most ducts

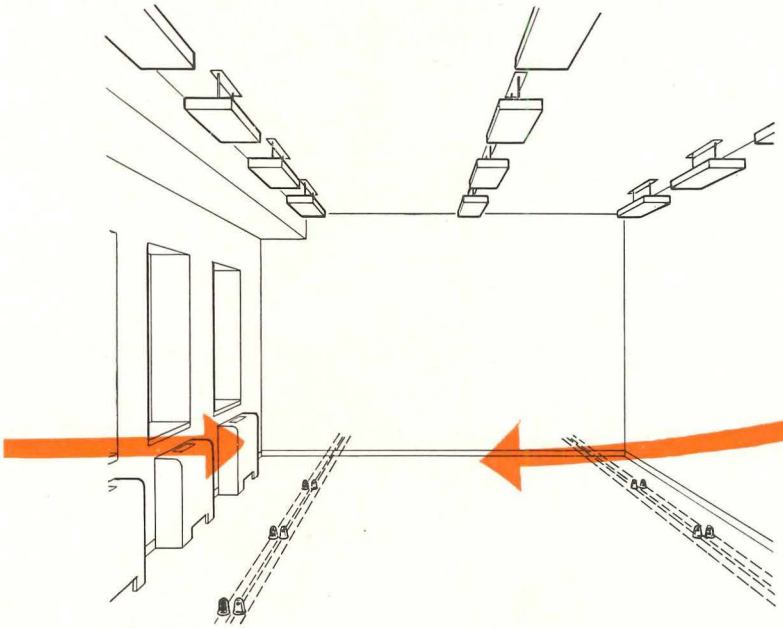


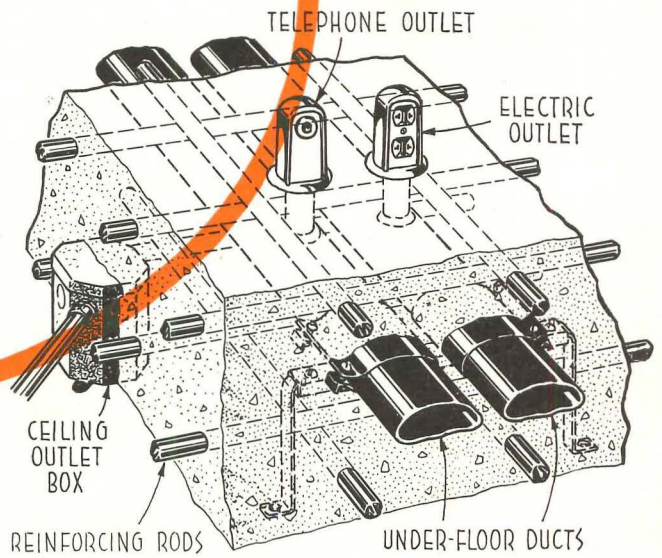


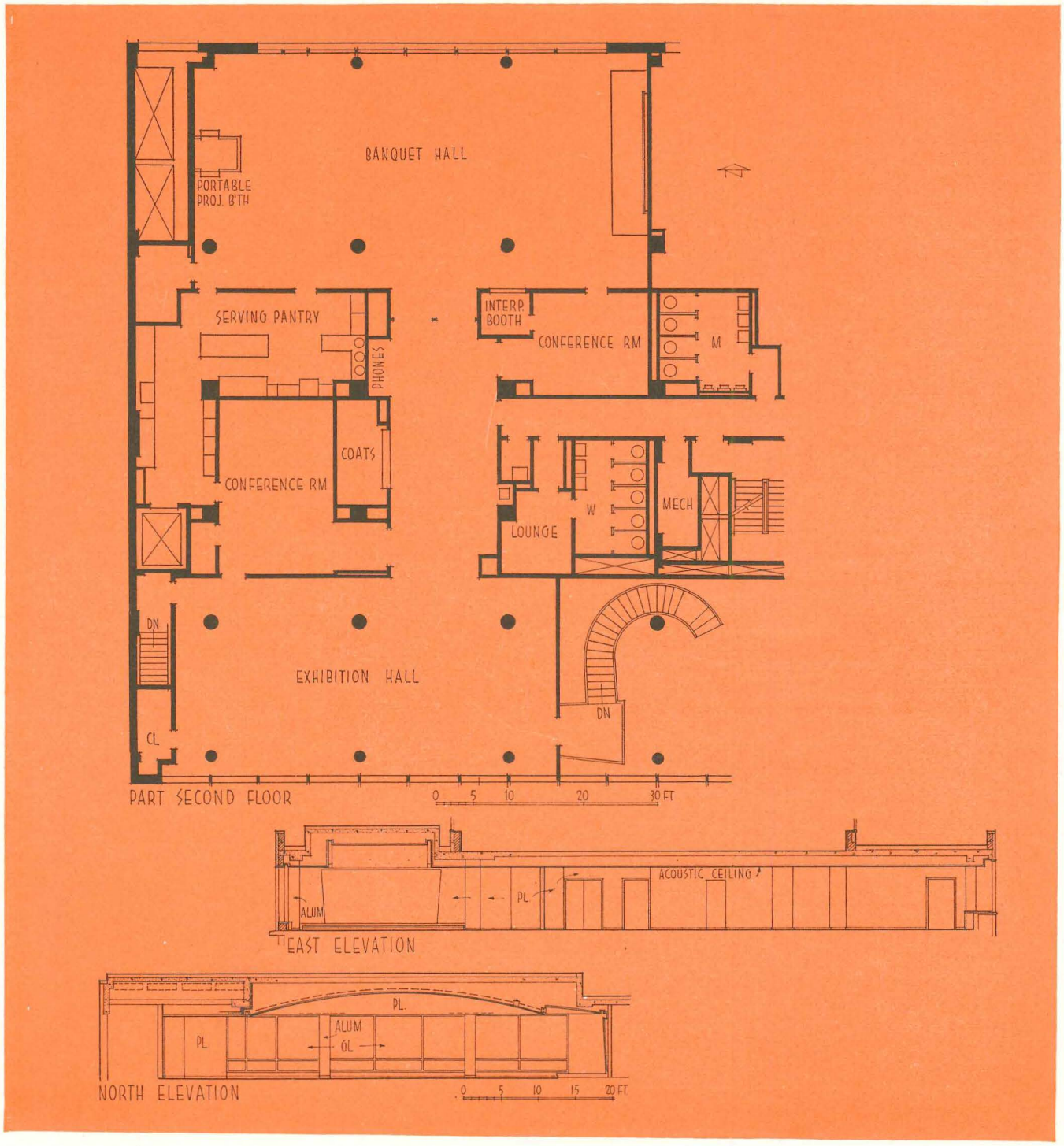
this eliminates floor fill and ceiling finish other than paint directly on the concrete. The individual air conditioners have heating and cooling media piped to them; they draw fresh air directly through north and south walls, which eliminates most air ducts (the small ducts needed for possible conditioning the few interior spaces are supplied from vertical ducts in the service core and demand little depth of ceiling furring). As a result of this coordinated design, floor-to-floor height in the tower is held to 10 ft 4 in. — in contrast to the 11 to 12 ft normally required. Until final estimates, north and south facades as well as the east face were to be metal and glass, like the U.N. Secretariat. Construction cost forced the use of limestone facades on the north and south tower walls; an added benefit of this last evolutionary step was reduction in air conditioning load.

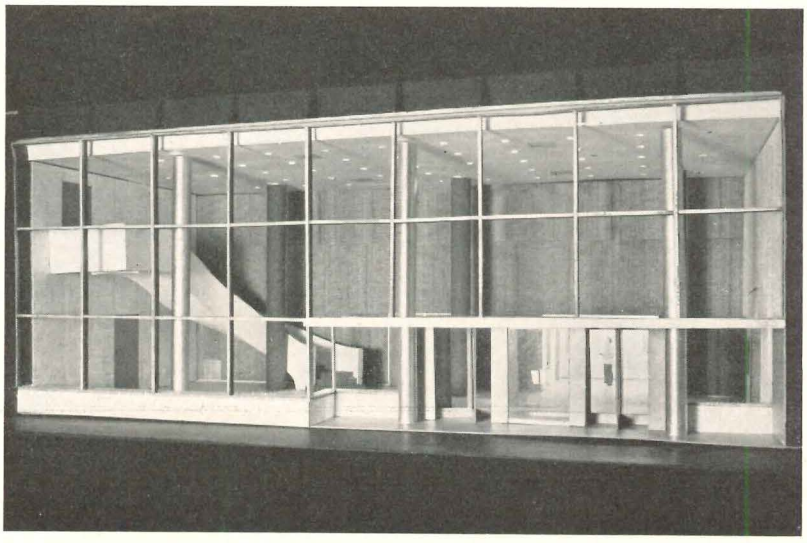








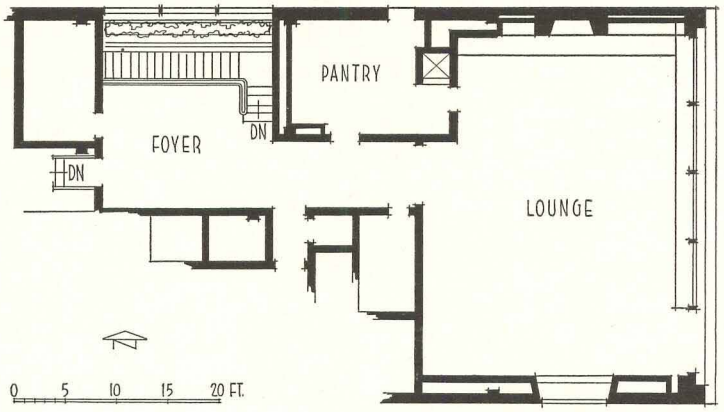




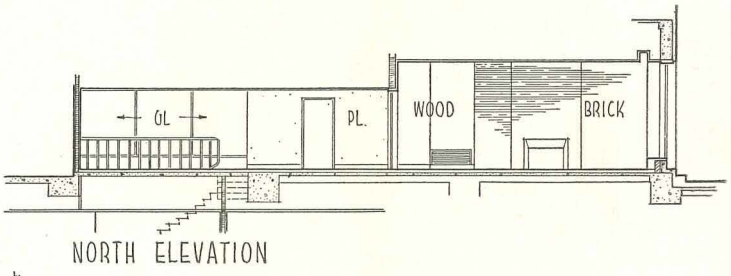
Left, study model, 46th St. Lobby, showing stair to International Center. Probably to be finished in wood, it is intended to have both warmth and scale

CARNEGIE PEACE BUILDING

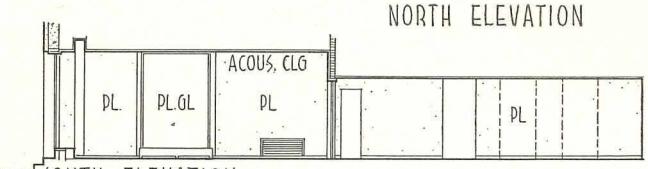
Right, plan and elevations of Carnegie Endowment Lounge on penthouse floor. Interior design has not been finally determined



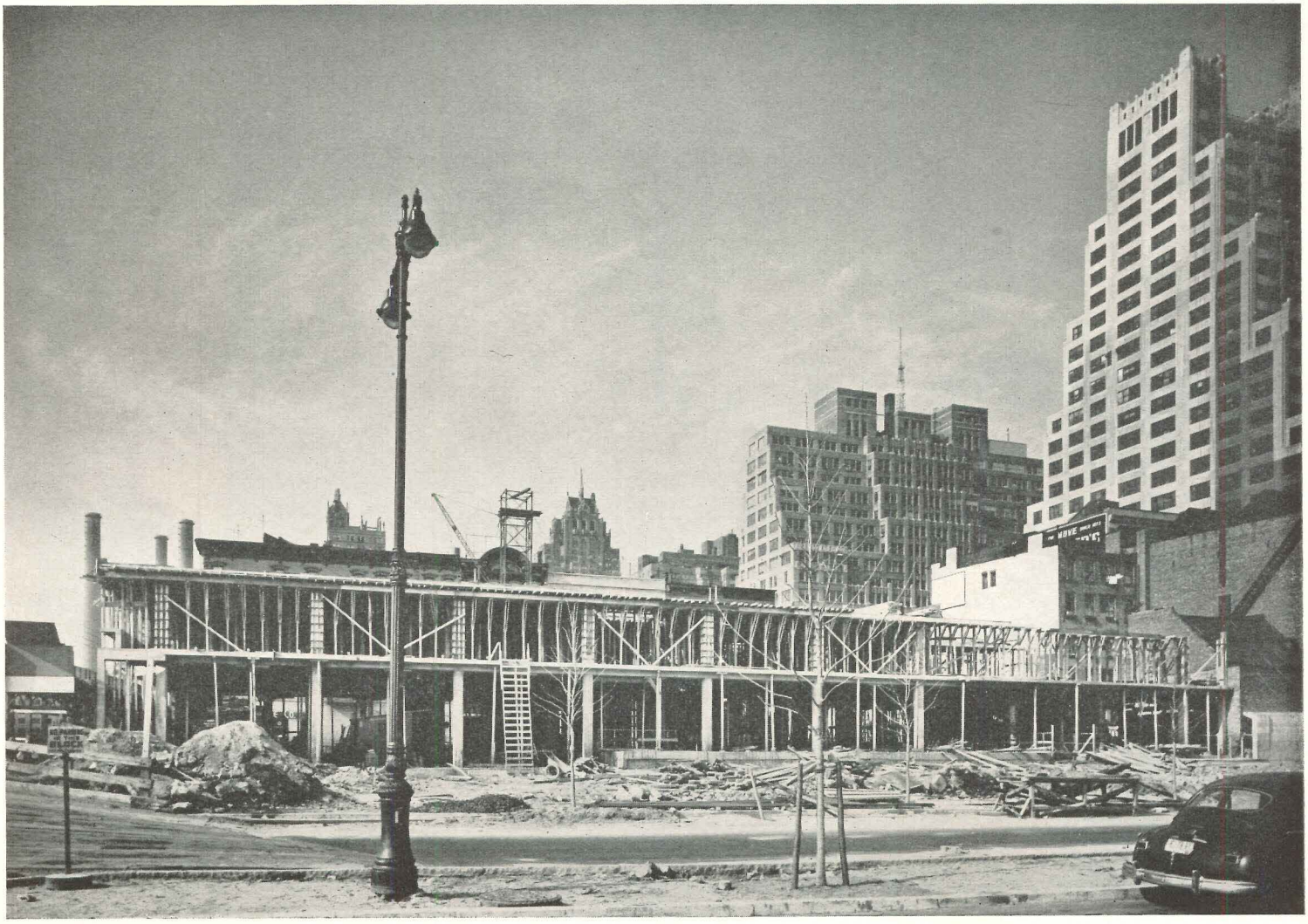
Left, plan and elevations, International Center on second floor. Note the physical connection by stair with the 2-story lobby on the 46th St. side. Service elevator (far left) connects with first-floor service entrance, restaurant kitchen, and kitchen storage in basement. Since these drawings were made the Center has been expanded; a Lounge has been added to the right of the Banquet Hall, with its entrance directly from the elevator lobby (not shown). Below, construction status early in May, 1952

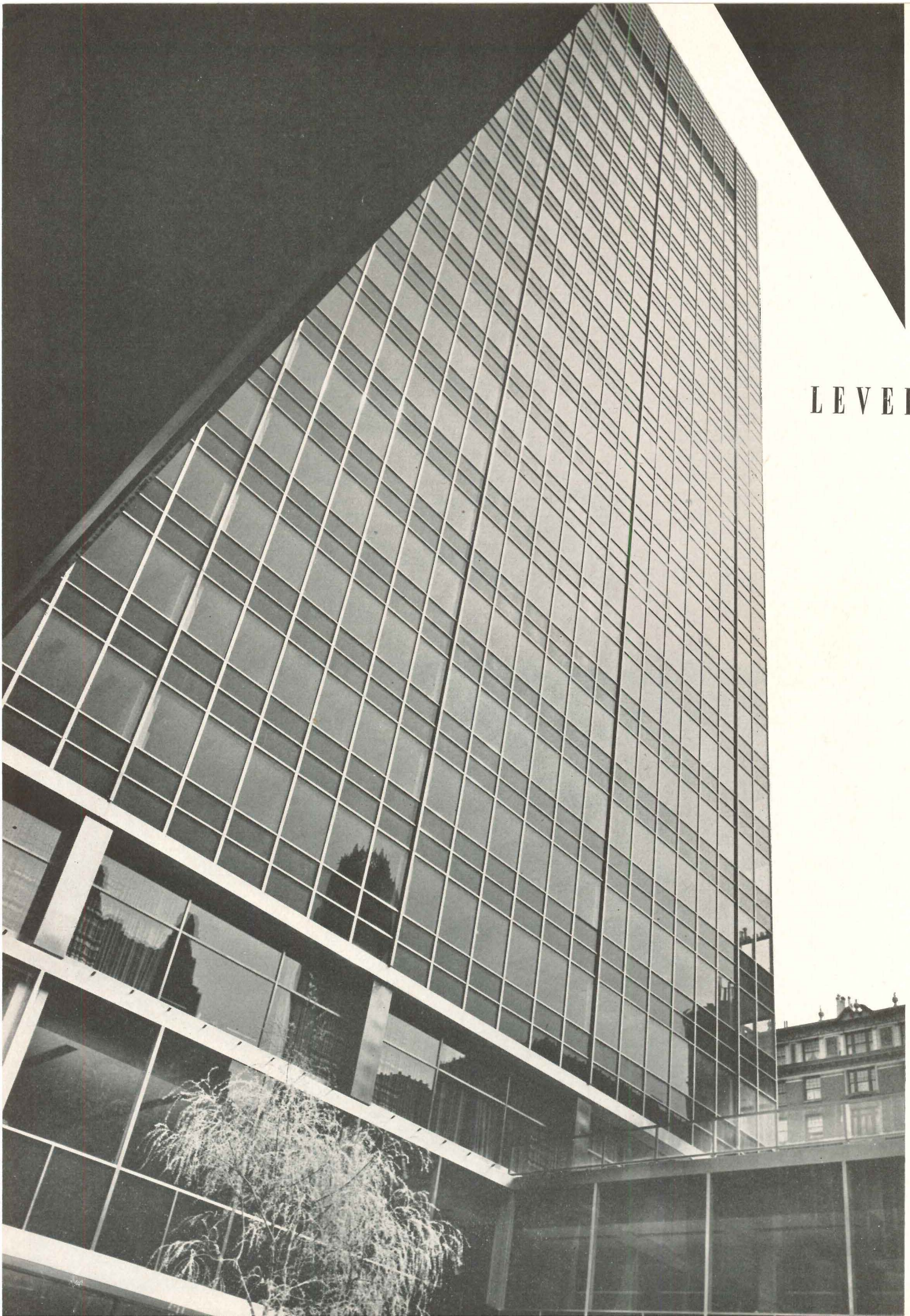


NORTH ELEVATION



SOUTH ELEVATION





LEVER

Architects: Skidmore, Owings & Merrill

Structural Engineers: Weiskopf & Pickworth

Mechanical Engineers: Jaros, Baum & Bolles

HOUSE, NEW YORK: GLASS AND STEEL WALLS

Interior Design: Raymond Loewy Associates

Contractor: George A. Fuller Company

THE EXTERIOR OF LEVER HOUSE — 24 stories of blue-green heat-resistant glass and stainless steel — was a technical design problem which required the joint efforts of architects, engineers, general contractors and sub-contractors. Its glass-paned skin is designed to be kept sparkling clean (Lever Brothers, manufacturers of soaps and detergents, are naturally pleased at this) with minimum difficulty or expense. The building has no openable sash. This not only prevents the entrance of the big city's dirt and grime, but is a means of reducing the total air conditioning load. It also lessens interior maintenance.

The heat-resistant glass likewise reduces both the air conditioning load and sun or sky glare. Wire glass faces the spandrels, which the building code required to be of masonry. The structure itself is of conventional steel frame, with tower bays so laid out that only narrow vertical mullions, formed of paired channel shapes, interrupt the glass. Horizontal mullions and muntins are similarly light in section; all are sheathed with 16-ga Type 302 stainless steel which is secured to the exterior glazing channels with hand-driven screws. Glazing channels were in turn screwed to structural mullions; the operation (see details on following pages) took time and was obviously expensive. However, this office building was designed for sole occupancy by Lever Brothers — even its ground floor has no tenants; a reasonably high construction cost, commensurate with the aim of providing an imposing, almost institutional, edifice, was not inappropriate.

The openness of the ground floor (where much of the area is garden and pedestrian walks with only the essentials enclosed in glass) is also somewhat monumental, if not in expression certainly in its fundamental regard

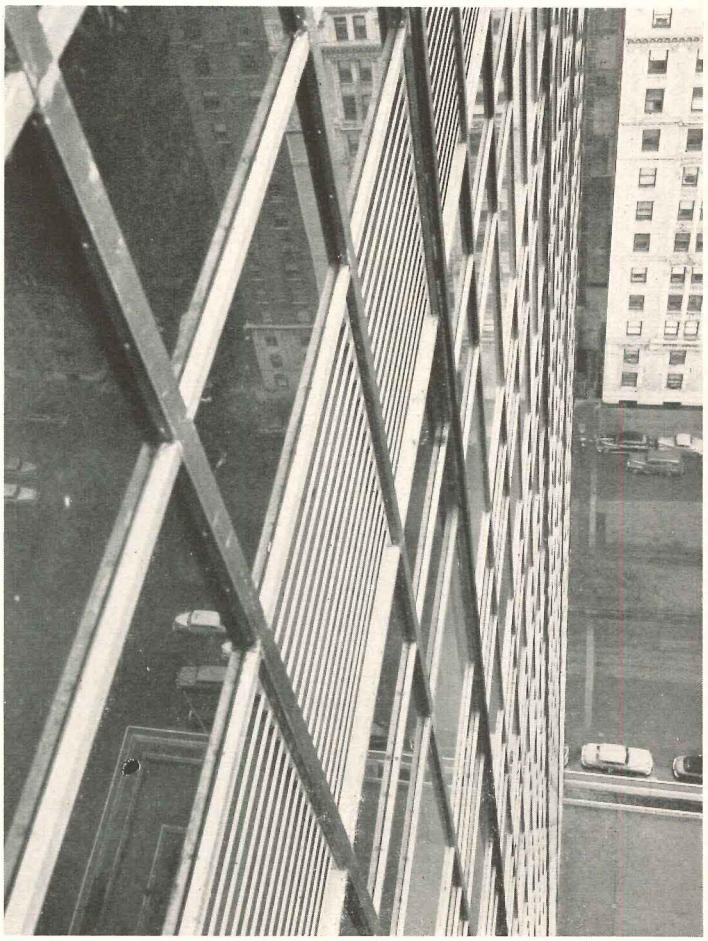
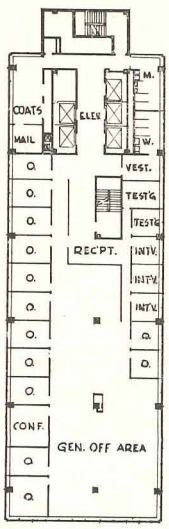
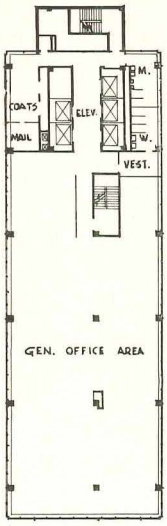


Photo opposite: Ben Schnall

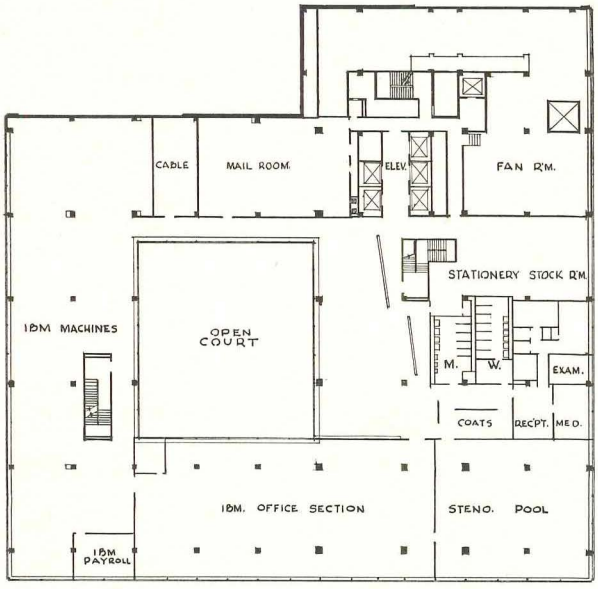
LEVER HOUSE



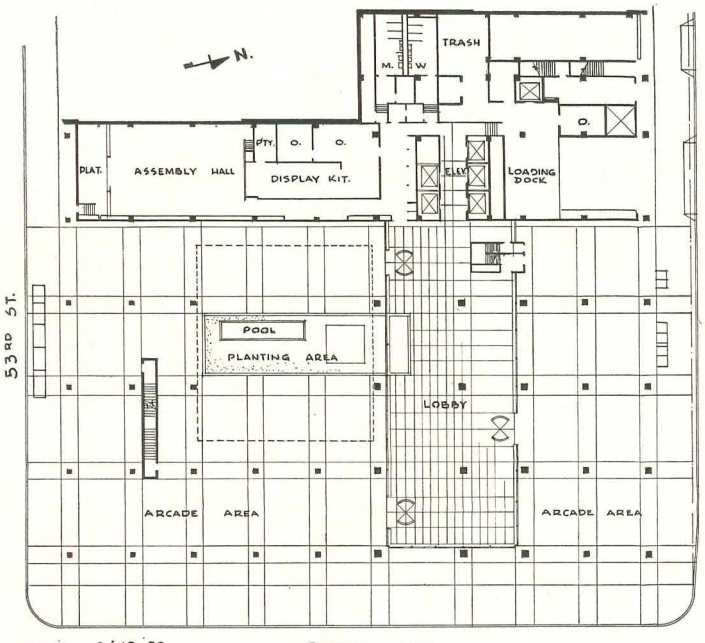
5TH FLOOR



6TH FLOOR



2ND FLOOR



SCALE 0 · 10 · 20 PARK AVE.

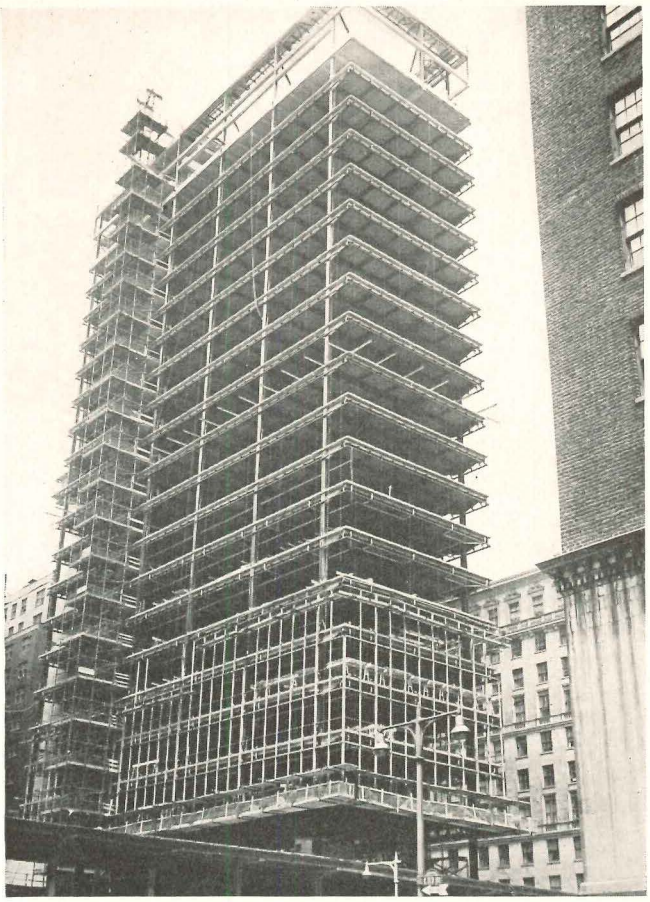
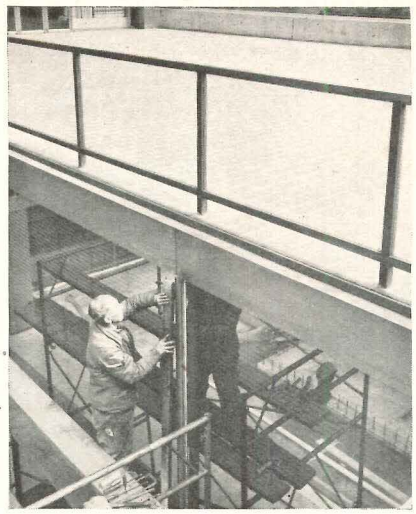
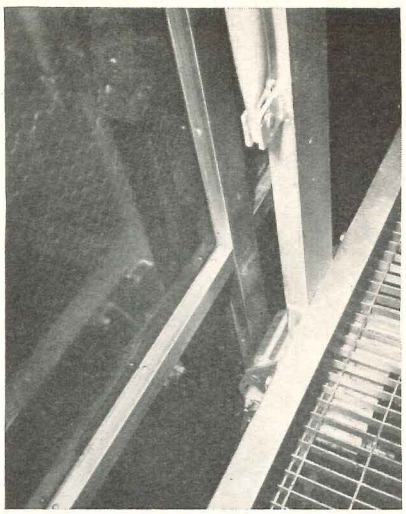


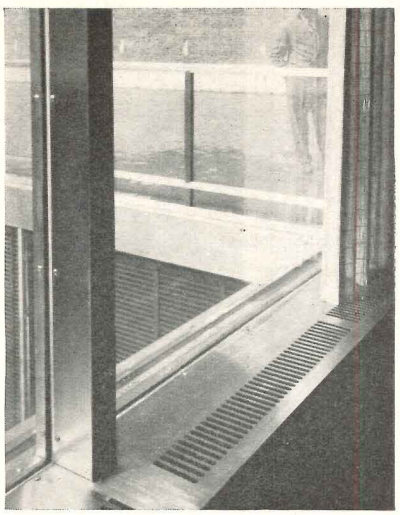
Photo courtesy Geo. A. Fuller Co.

for the citizens of New York. In this aspect, the entire structure is thoughtful, pleasant and a decided advance over the average speculative building. Above the few lower stories the tower is so designed that its slim bulk permits what it can of a city vista — an impression heightened by the contrasting surroundings. This is something to be grateful for. Like the U. N. Secretariat, like the new Carnegie building now under construction (see preceding pages), it is a narrow slab, which means that the typical office floor will contain few dark cubicles. The design is an enlightened venture in public relations, and is to be applauded; the glass and metal skin, also a source of public interest, becomes rather a stunt by comparison.

In plan, the enclosed ground-floor area contains display and reception space, waiting areas for visitors, a demonstration kitchen and an auditorium. On the second floor are employees' lounge, medical suite, general office facilities. On the third floor, lowest of the tower, is the employees' cafeteria overlooking roof terraces. The remaining floors, up through the 21st, house offices of the parent and subsidiary companies. Above are the equivalent of three floors of mechanical equipment. In addition to complete air conditioning, the building is fitted with what has been called "the most modern fire alarm equipment"; and with a conveyor system, newly developed, which not only picks up internal and outside communications and distributes them vertically, but also transports them horizontally to the mail room. In such technical aspects, Lever House is marvelously ingenious.

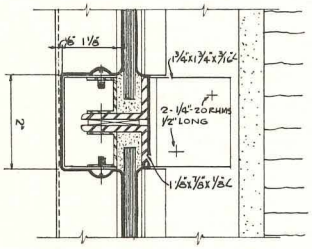




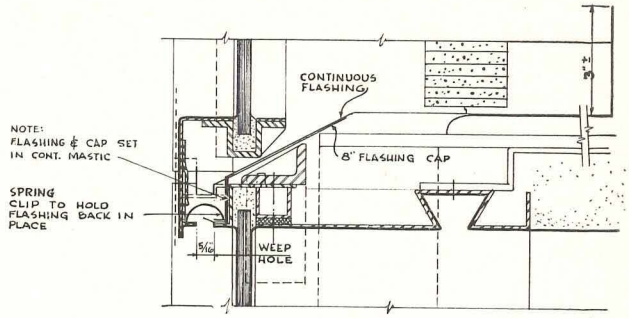


Photos courtesy Lever Brothers

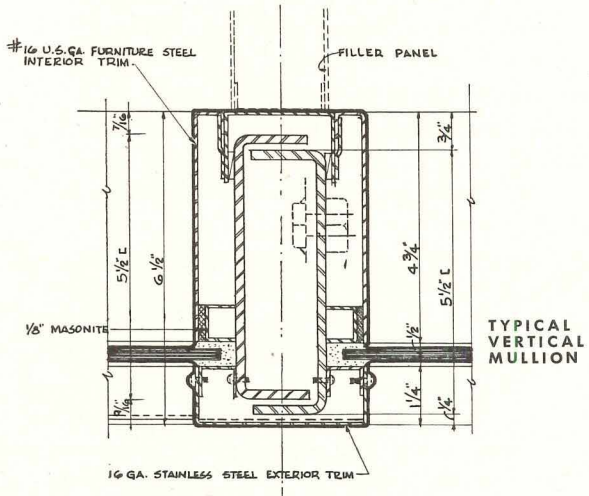
Applying the glass-and-steel skin: facing page, fundamental structure complete, stainless steel being applied, June 1, 1951. Above, left, setting stainless steel (note hand tools bottom of photo); center, close-up at spandrel, viewed from window-washing gondola; right, stainless steel interior sills, flush with spandrel members, are also outlets for high-velocity air conditioning system. In details, note cap, shield and sleeve flashings



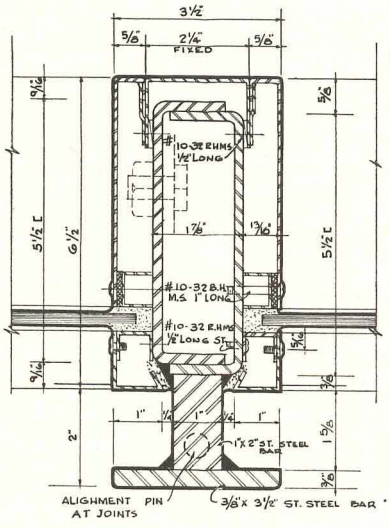
SPANDREL MUNTIN



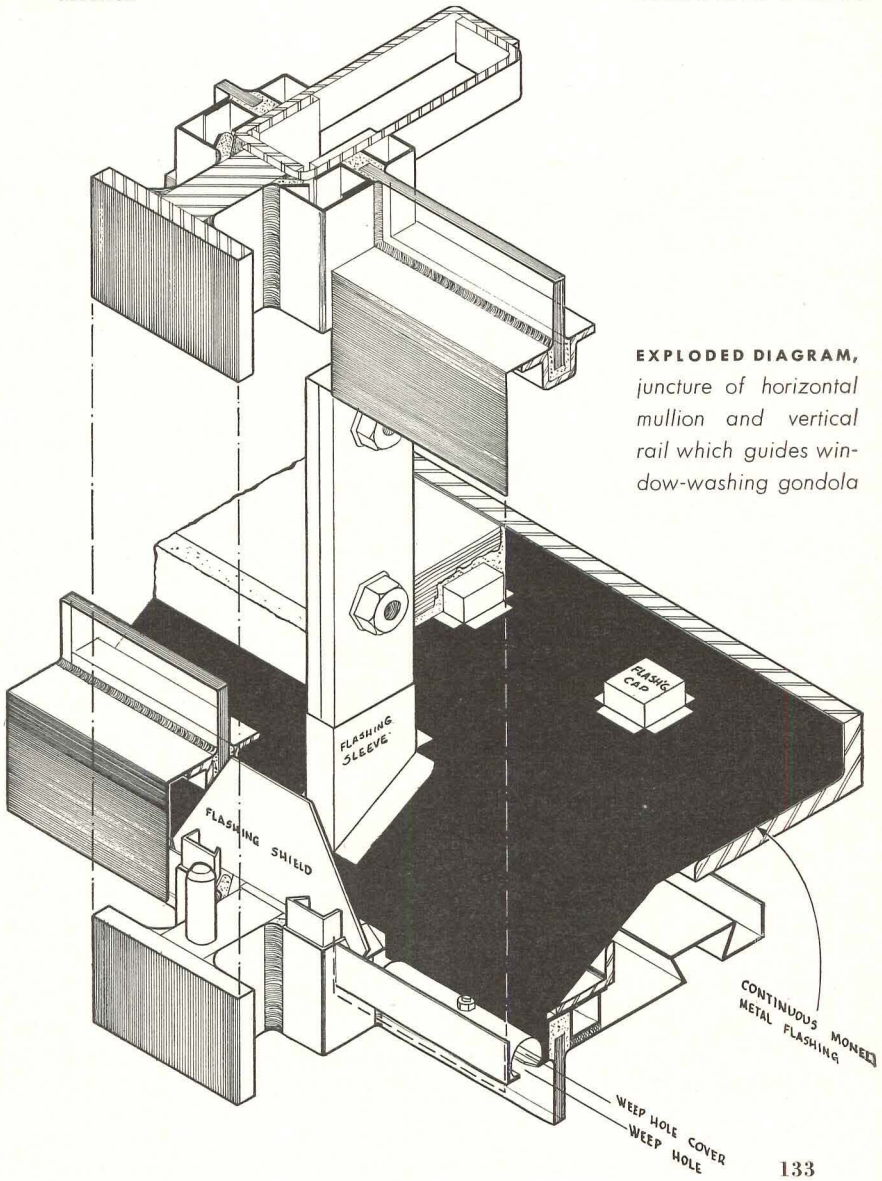
HORIZONTAL MULLION



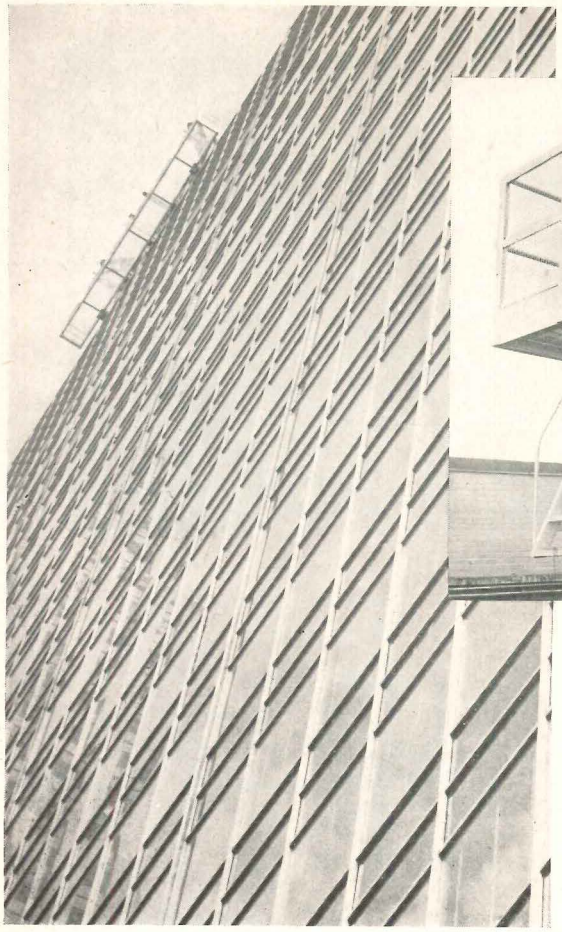
TYPICAL VERTICAL MULLION

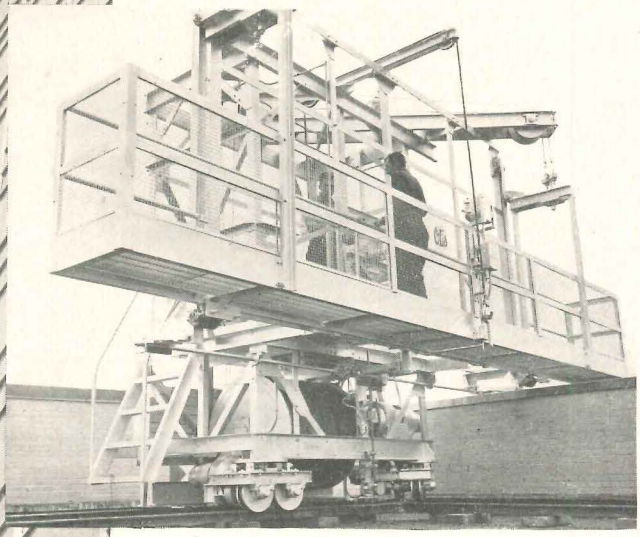


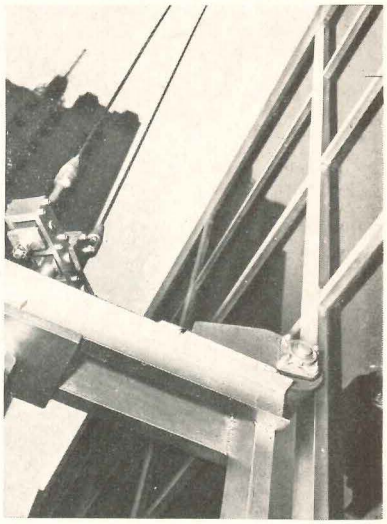
VERTICAL RAIL AND MULLION

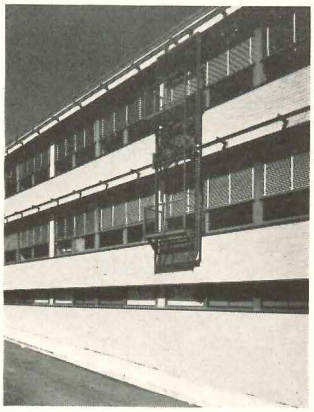


EXPLODED DIAGRAM, *juncture of horizontal mullion and vertical rail which guides window-washing gondola*









Joseph W. Molitor

Heat-resistant glass—1404 panes—and stainless steel members are cleaned by two men with water, detergent and squeegees, from a traveling gondola. Top left, gondola at top of tower; center, 10½ ton power plant travels around perimeter of roof on railroad rails (gondola is being posititioned to go over the parapet); right, flat mullions steady plastic rollers at ends of gondola. Lever House gondola is not the first window-washing machine. Center, left, shows one prototype used on Wake County Office Building, Raleigh, N. C. William H. Dietrick, Architect) published in ARCHITECTURAL RECORD *Sept. 1951, pp. 149–151. Others have been employed in this country and abroad*

Stainless steel is also employed extensively inside the building. Left, stainless steel revolving door and housing, with air conditioning outlet in jamb; above, stainless-steel-sheathed columns at sidewalk arcade; note open ground floor

Photo opposite, Ben Schnall

OFFICE DESIGN

Prepared by Caleb Hornbostel, Architect

DUE TO THE SHORTAGE of office space in most cities since the start of World War II, tenants have gradually accepted the responsibility and cost of alteration in order to obtain satisfactory quarters. The architect found that he was being called in not only when a new structure was planned but also for remodeling and interior redesign. With the continuing heavy demand for office space, his practice may include anything from the layout for a one-room office to altering several floors of a large building and even designing specialized small buildings in situations that are often not satisfactory. Basic layout for office space, be it large or small, usually includes the following areas: reception, waiting or display; main or executive business offices; and subsidiary office space, including work areas, pertinent to the business itself.

An office generally presents much the same requirements as a classroom. The problems in lighting both natural and artificial, of the acoustics of the area as a whole and of soundproofing individual offices, of storage space, of the use of color, and of flexibility in internal arrangements, are common to both. The main design problem usually is to fit the client's office and circulation needs into the limitations imposed by existing conditions. What is interesting is how the difficulties themselves are often turned into design assets.

ORIENTATION

TODAY'S client has become conscious of comfort. In other words, he is now aware how important it is to make his office a pleasant place to work in. Therefore, orientation is the first factor the architect will consider in arriving at his final design. If he may determine the location, he can avoid many of the troubles by selecting a northern or eastern exposure. If the orientation is of necessity southern or western, he must somehow eliminate the effects of solar heat and glare, using perhaps double glazing, heat-resistant glass, drapes or screens, venetian blinds or interior or external louvers, now available in a variety of designs and materials.

Air conditioning, too, is influenced by orientation. For example, southern or western exposures may require a larger number and higher capacity of units than either northern or eastern exposures.

In short, orientation influences the basic pattern for both large aspects and details of office design.

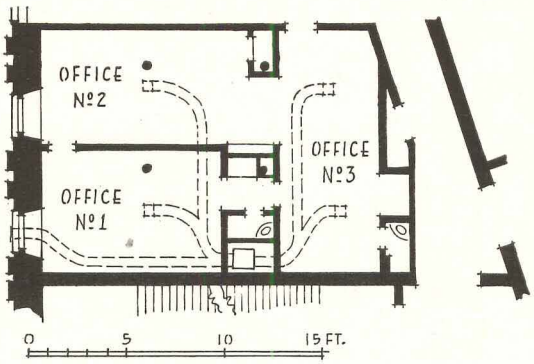
AIR CONDITIONING

AIR conditioning today is usually installed either as localized units or as a central unit with a duct system. The local unit has the advantage of flexibility, but may demand a special power outlet. Some types require water and drainage and therefore are impractical wherever water restrictions exist. Cost is also a factor, depending on how many units are used.

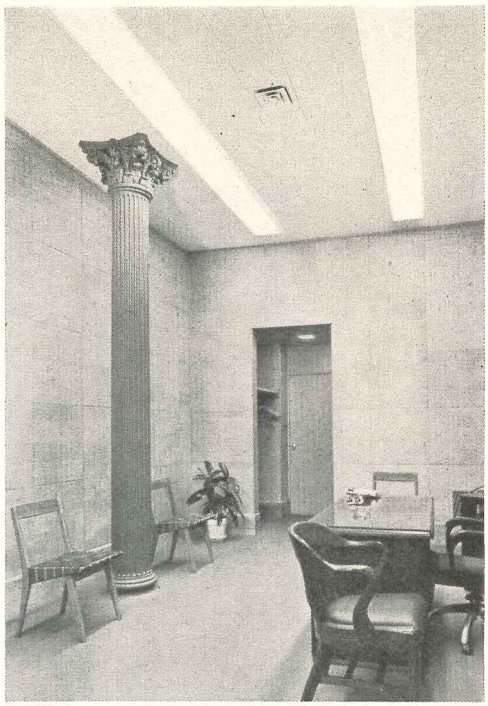
The central unit with a duct system for each office group, although more economical from the viewpoint of equipment costs, can create other problems. First, as a cost factor, the system of ducts has to be distributed throughout the entire office space, and much of the ceiling area often has to be furred. Second, in the design, the ducts must not cut down too much on ceiling height. Finally, localized control for individual conditions within the office is usually ruled out by cost. Nonetheless, the central unit remains the best type for a large yet compact office.

In some of the newer large office buildings a central plant supplies refrigerant and heat to every office area. The advantages of these systems are many; foremost among them are complete flexibility, individual control, and a mechanical simplification of air conditioning equipment, which represents a great reduction in cost.

Extensive research is being done on the "heat pump" type of equipment which will, when we know more about its cost under all conditions, supply atmospheric conditions to order the year around.



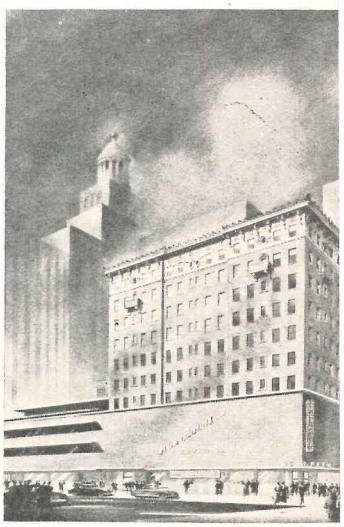
This alteration, a business office for The Cooper Union in New York designed by Esmond Shaw, is uncomplicated and succeeds in using the peculiarities of this old building, one of the first steel structures put up in America, to advantage. Central air conditioning with a duct system helped cut down ceilings — too high to begin with. The cast iron Corinthian column, painted green, is actually one of the original main supporting structural members and not just a decorative note

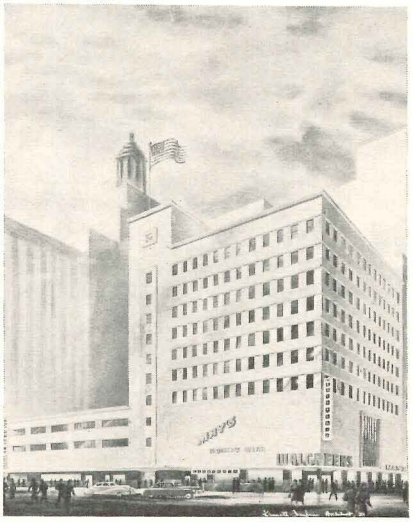


Alexander Demaras

REMODELING

Bob Bailey





THE problems of office alteration are perhaps best explained by taking a specific example, designed by Kenneth Franzheim, Architect, and following the changes made to reach a final scheme (see photos right).

The original San Jacinto Hotel Building, built in 1910, proved a real conversion headache, as original structural drawings were not available and the skeleton had to be exposed before planning could begin.

At the start, the owner, thinking it possible to salvage the upper floors by simply changing the layout from bedrooms to offices, leased the lower four floors with sub-basement, complete from street to street. This forced relocation of elevators to the side street property line. As demolition proceeded, it became evident that only the original structural steel could be salvaged; heavy floor slabs had to go. Since this was in June 1950 when steel was scarce, conversion, instead of rebuilding, went ahead even though the fenestration also proved unsuitable and the entire facade had to be removed.

Office planning within the existing framework and with front location of elevators proved to be unsound economically, as the proportion of rental area to gross area was very low. The owners were then persuaded to extend the building through the block, to bring net rentable area to 80 per cent of the gross. Since the building is air conditioned all year and had good artificial light, the entire lot area was covered, leaving no rear light courts.

This move proved a sound one. The building is almost fully rented at profitable rates, with tenants paying for partitions and individual construction costs.

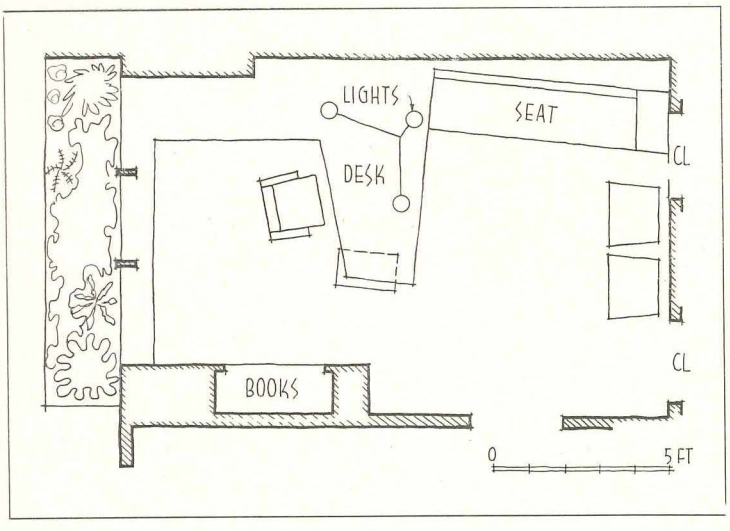
Stuart Wiener

INTERIOR PLANNING OF A

Office for Dean of School of Architecture

University of Southern California

Los Angeles, California



THE STUDENTS IN INDUSTRIAL DESIGN at the University of Southern California undertook the remodeling of their dean's office as an extracurricular project, with results that speak for themselves. What was just a 10 by 15 ft cubicle of office space, with four plaster walls and a narrow strip window at one end, was turned into a very pleasant room. The only set requirement had been a 28 in. high desk with large working surface. Otherwise the design and plan were to be the students' own. The labor was theirs also, as were the design and cabinet work for all the furniture except the two Eames chairs. One wall was faced with ½ by 4 in. oak strips separated by a ½ in. space backed by a strip of industrial cork. This simple device greatly improved the acoustics of the room, which were decidedly poor prior to remodeling. The broad ell-shaped desk with brown plastic top aids the horizontal effect in the very small room. The color scheme is natural oak, brown leather, brown plastic and a blue-green wall opposite the window.

SPATIAL ORGANIZATION

Using furniture to subdivide space

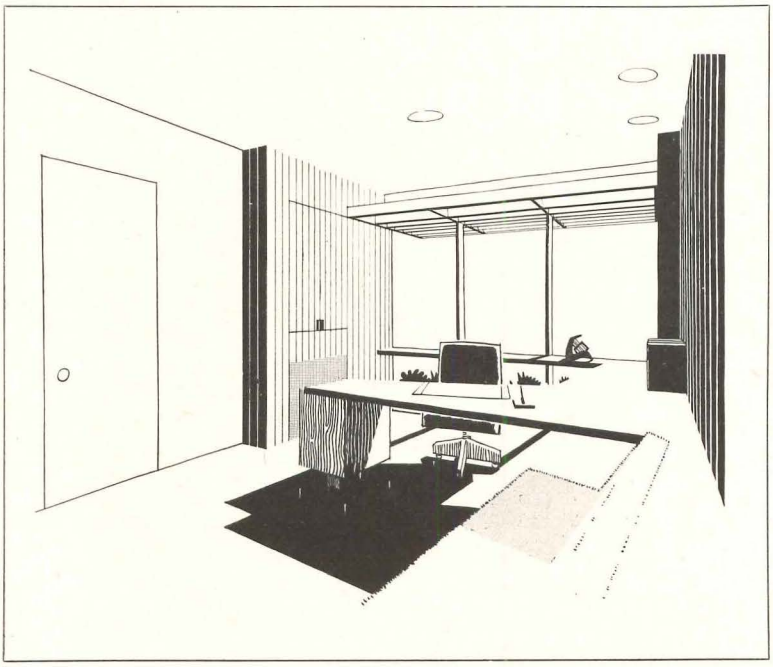
ACOUSTICS

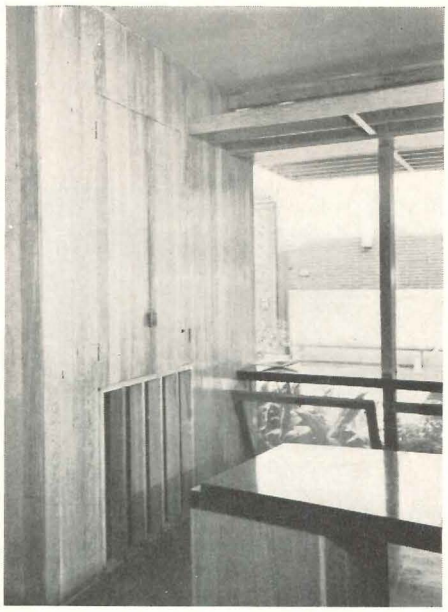
Improved acoustics by clever use of materials

FURNISHINGS

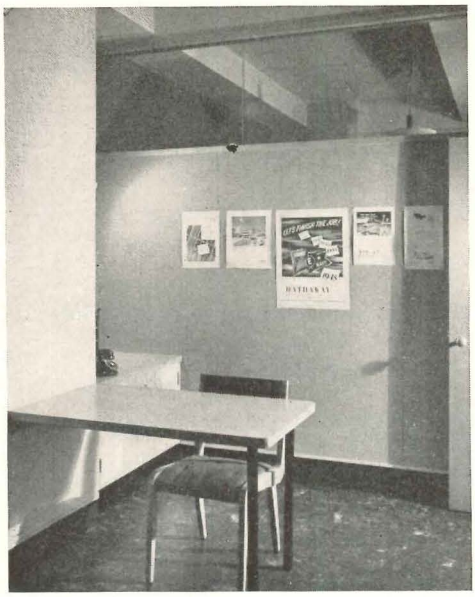
Everything built-in except three chairs

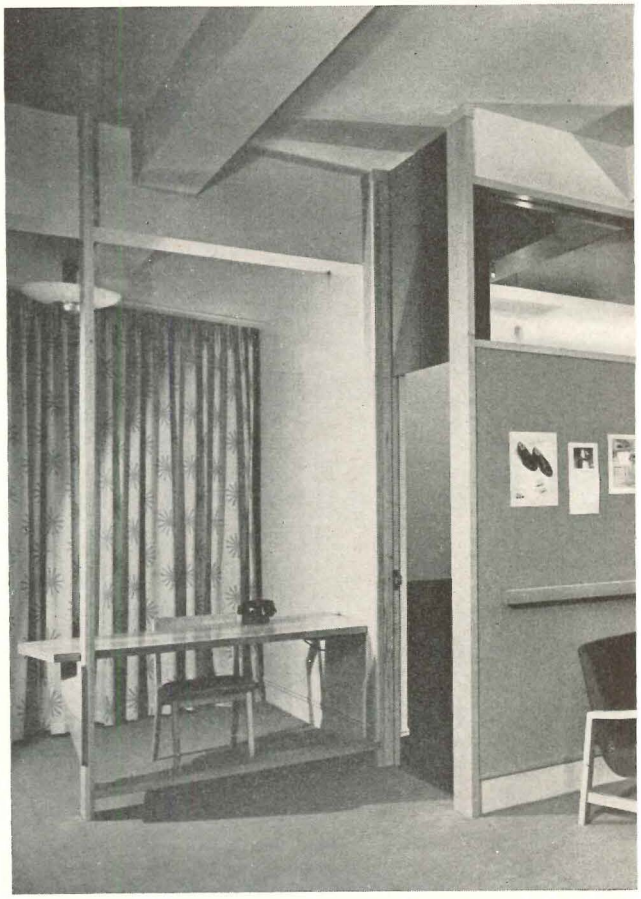
ONE-ROOM OFFICE





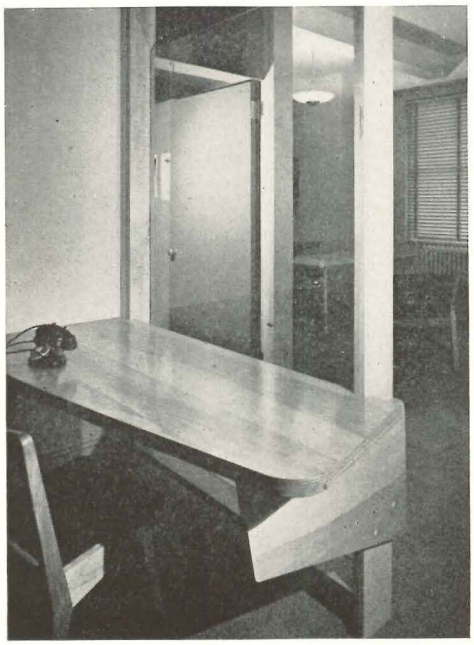
The complete end wall of the office was removed and replaced by a glass wall opening onto a private patio; ventilating units are at the floor and above the trellis at the ceiling. Beyond the glass wall is a planting area in the patio





Gottscho-Schleisner

The tiny lobby and receptionist's area holds only a desk reduced to barest essentials; the switchboard, files and other office needs are concealed in the small alcove to the left. Below is the cantilevered desk in the semiprivate alcove

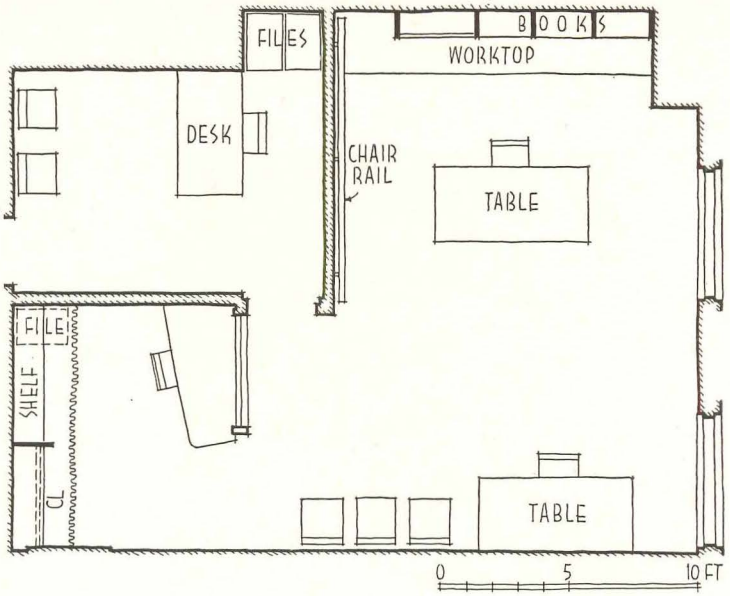


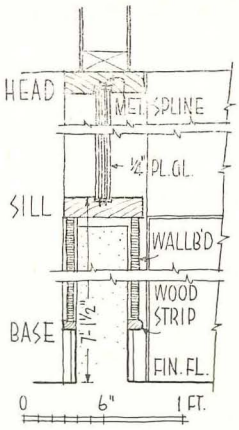
THREE-IN-ONE OFFICE FOR

H. B. Humphrey Company, Inc.

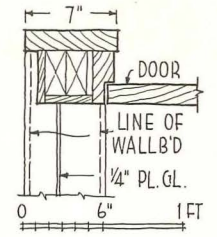
New York, New York

HERE IS AN ADMIRABLY SIMPLE LAYOUT that was worked out for a small commercial office area. Yet this mere "hole in the wall," to use the words of the advertising firm which had its start here (the company has expanded and merged with Alley & Richards, Inc.; it is now H. B. Humphrey, Alley & Richards, Inc.), was so carefully scaled and stripped to the bone that it gives the impression of being much larger than it actually is. The basic requirements for three separate work areas — reception, work and private conference — were met by using only three partitions: one a solid wall; one a screen wall of glass above and fiber board below, which can be

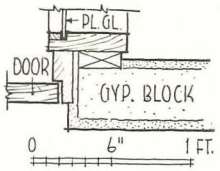




Typical Wall Section



Jamb Details at Partition (above), at Desk (below)



ADVERTISING AGENCY

Ketchum, Gina & Sharp, Architects

used for display on both sides; and one a floor-to-ceiling glass panel between the main working area and the ell of space on the other side of the solid partition setting apart the receptionist's area. This alcove serves for conferences with individual clients and gives a certain amount of privacy. The large work area can also be used for conferences by pushing the two large table desks together to form one long table. The old radiators were left in place and only venetian blinds were added to the windows at the outside wall. The drape across the entire length of the semiprivate alcove hides a coat closet and a surprising amount of storage space.

INTERNAL CIRCULATION

One door controls inside circulation

STORAGE

In existing niche, in hung cabinets and behind a curtain

PARTITION

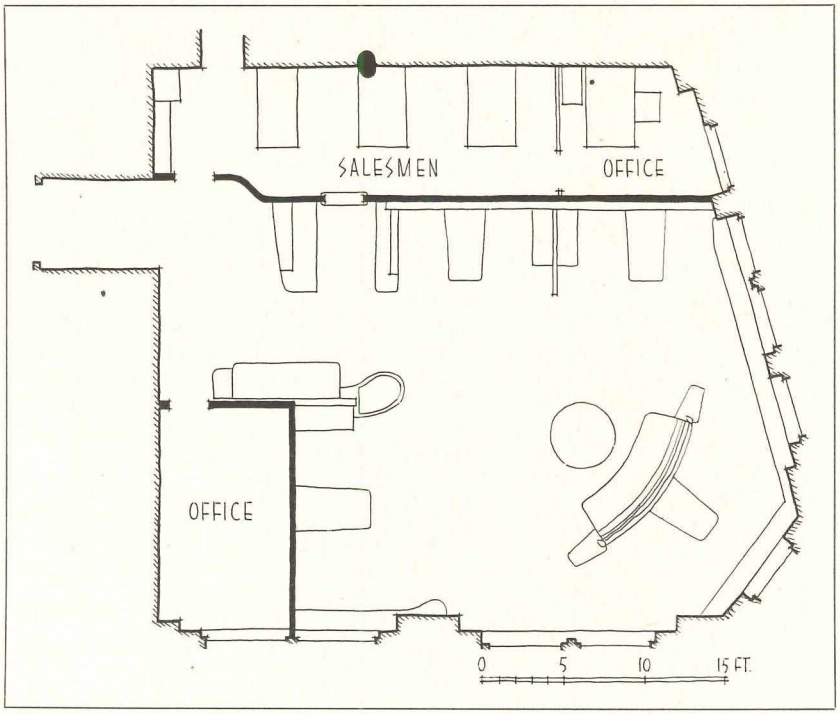
Use of minimum partitions to sub-divide space

SPATIAL ORGANIZATION

Reception, waiting, display and multiple sales booths in one area

AIR CONDITIONING

Local units installed throughout



MULTI-PURPOSE SHOWROOMS AND SALES OFFICE

Ben Schnall

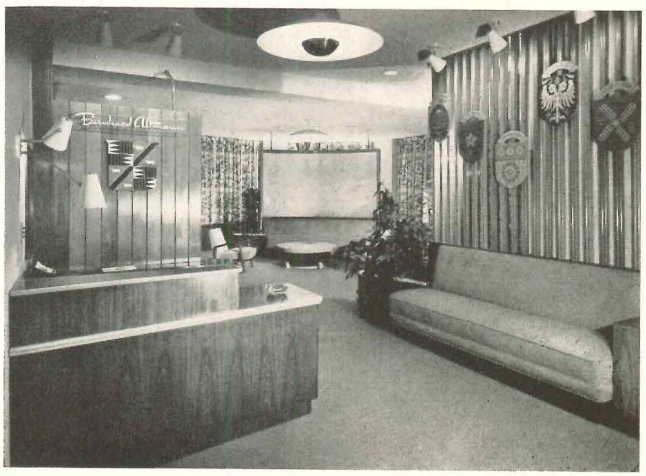
Receptionist's area with sales cubicles behind it, and the view from the entrance into the main showroom

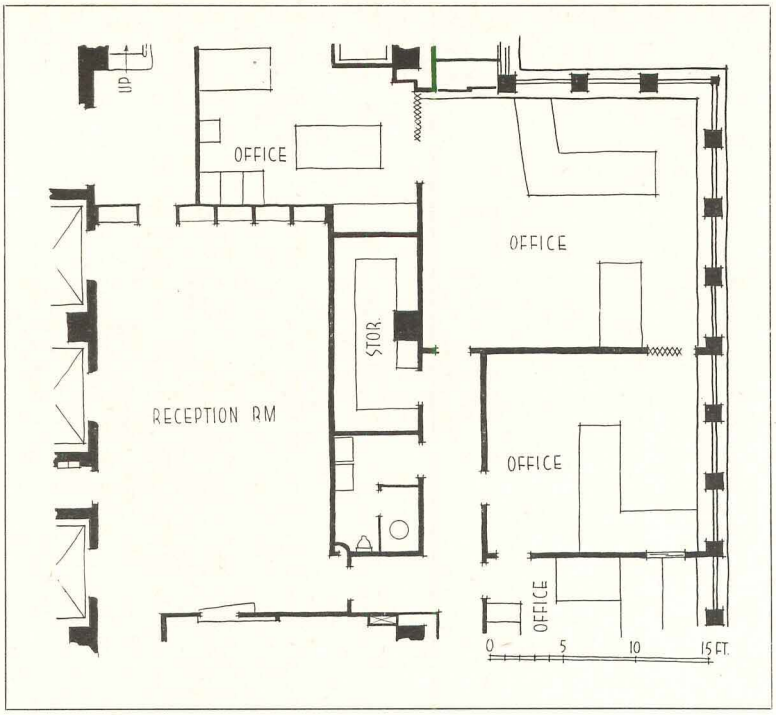
The Bernhard Altmann Corp.

New York, New York

Gerhard E. Karplus, Architect

THE INITIAL DIFFICULTIES lay in basic construction — the removal and conversion of several dentists' offices with their complicated plumbing. The client expressly desired that the main showroom reflect the "luxury and romantic background of cashmere," and seem a relaxing living room rather than a place of business. Therefore soft colors, murals and plants were used. The entire floor area was carpeted, the ceiling was furred and acoustically treated, and existing windows are concealed behind continuous drapes.





AIR CONDITIONING

Supplied by central system in building

LIGHTING

Designed to approximate daylight

PARTITIONS

Use of translucent glass with back lighting

OFFICE DESIGN IN AN AIR CONDITIONED BUILDING

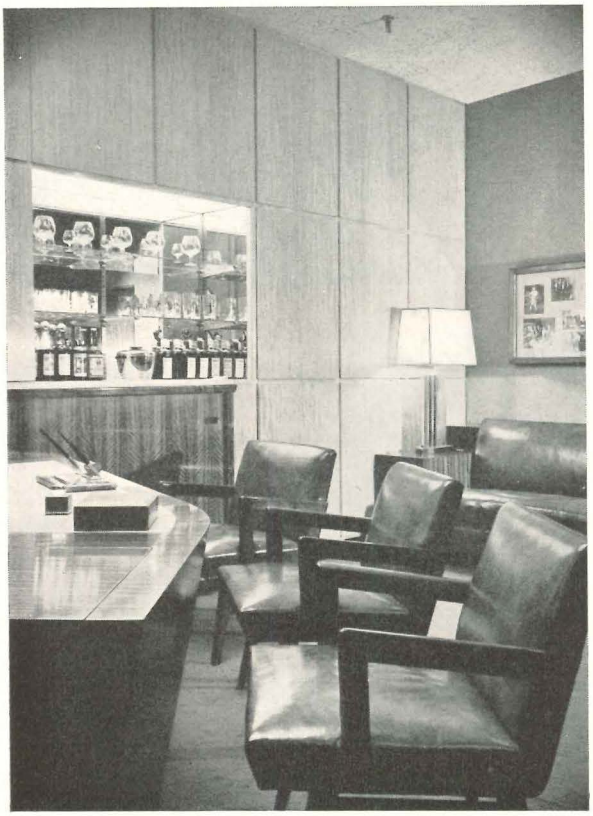
Tishman Realty Company
New York, New York
Seymour Joseph, Architect

IN A NEW BUILDING where air conditioning is supplied, interior office space is as desirable as perimeter locations. The design of the reception area here illustrates this point. Translucent glass partitions and planting boxes add to the open feeling. Unseen advantages in such buildings are twofold — mechanical difficulties and economic factors of air conditioning are no longer the tenant's concern, and the only problems of orientation are to cut down sun glare and control light, a simple matter of drapes and venetian blinds in this office.

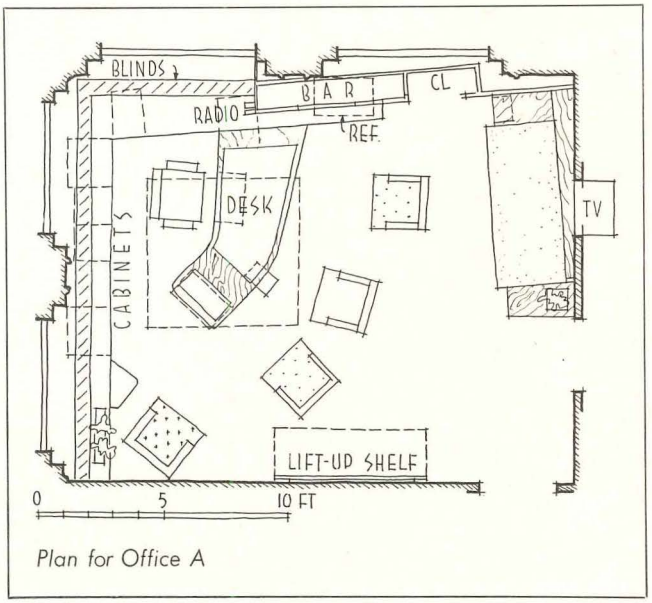
Ben Schnall

EXECUTIVE OFFICES

Gottscho-Schleisner



Corner office, marked A in General Plan, with two false walls. Wood panelled wall holds bar, closet, refrigerator, storage units and air conditioning equipment. Two hinged panels cover bar



Plan for Office A

WITH "PROBLEM" WINDOWS

Offices for Holly Stores, Inc.
New York, New York

Morris Lapidus, Architect

SCREEN WALLS

Three methods of treating poor fenestration

LIGHTING

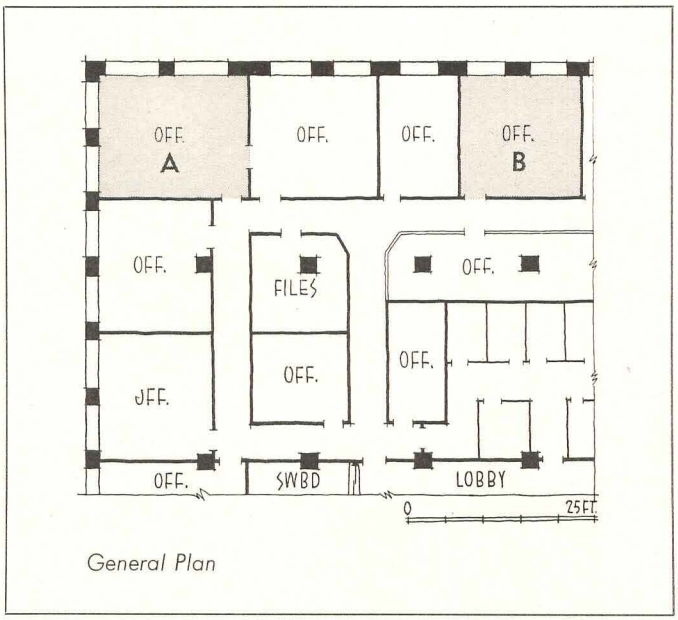
Natural over-all lighting supplemented with skylight-type fixture

EQUIPMENT

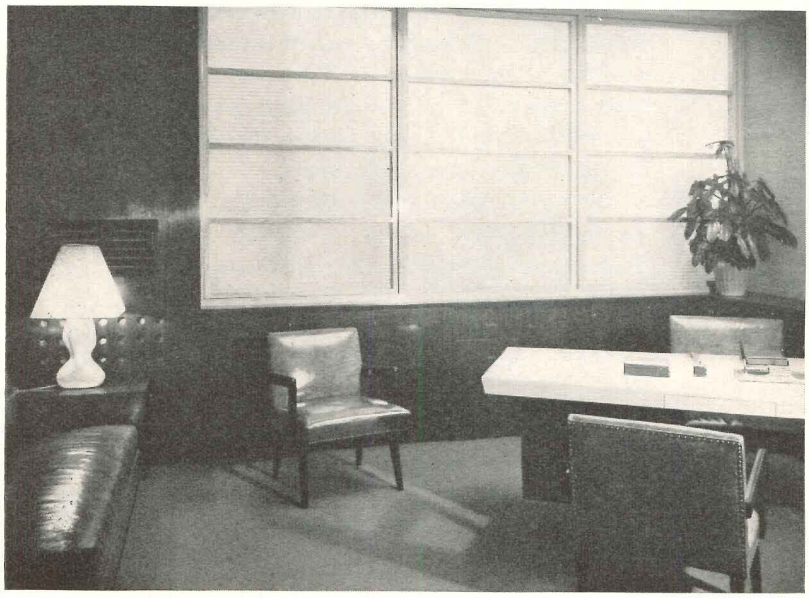
Complex facilities for business, conference and entertaining

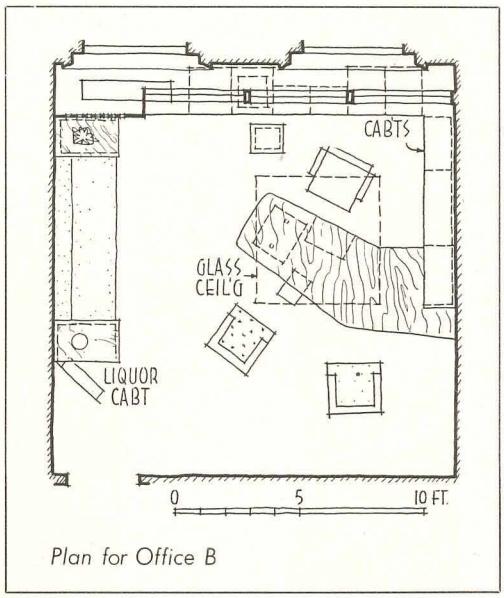
WHERE THE EXTERIOR WINDOWS are as unattractive and badly situated as they were here, and whenever the orientation is poor, the best answer often is to close off the original external walls with false screen walls. These two offices illustrate three different solutions to the problem. In the one office (A in General Plan) shown on the facing page, vertical cloth louvers screen the upper section of one wall and part of the adjoining wall, yet permit daylight to filter through. The lower wood-panelled portion that extends along both false walls holds drawers, storage space and special equipment. In the other office (B in General Plan), there is only one screen wall, back of which are the radiator, air conditioning and additional storage compartments.

Both offices are elaborately appointed to serve the needs of top-level business executives. The larger and more complex of the two (office A) has facilities for business conference and entertaining which include a bar, radio and television. The desks in both offices have been specially designed and integrated with the other fittings of the room. The ceilings are hung acoustical plaster, with skylight-type fixtures over the desks.



General Plan





Plan for Office B

AIR CONDITIONING

Central ceiling area furred and used as plenum for perimeter offices

FURNISHINGS

Basic theme incorporated into design of each item

SPATIAL ORGANIZATION

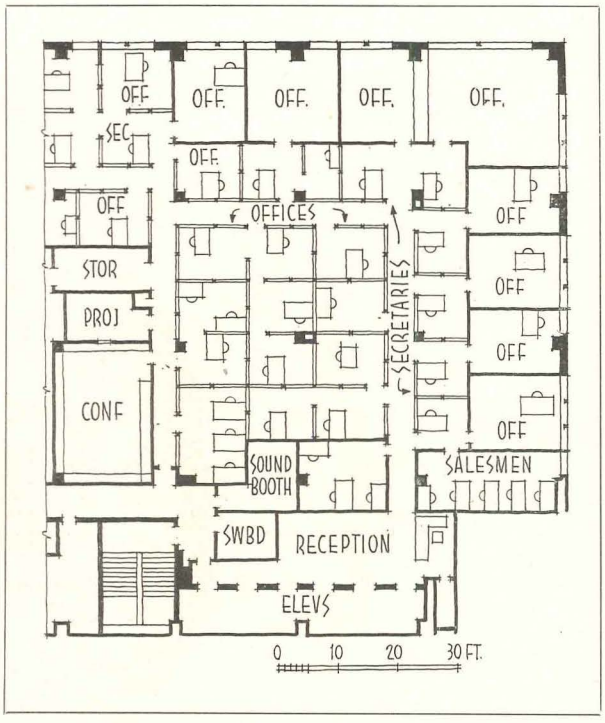
Executive offices surround partitioned central work area

OFFICES FOR A PUBLISHING FIRM

Offices of Henry Holt and Company

New York, New York

Maurice and Joseph Mogulescu and Gerald Luss of Designs For Business, Inc., Designers



ESPECIALLY EFFECTIVE LIGHTING is achieved throughout these offices by the use of a combination of indirect fluorescent lighting, incandescent recessed baffle downlights with baffles painted same as ceiling to conceal the source, and direct light from adjustable pulley-type suspended fixtures for desk work. The result is soft diffused shadowless general illumination and pools of warm light at key desk areas.

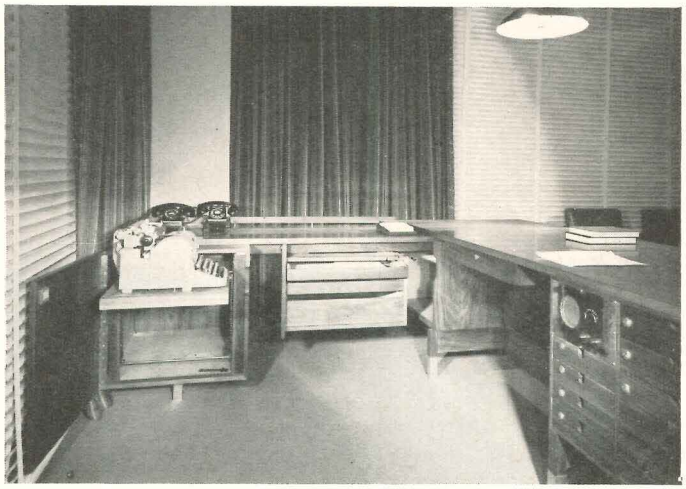
Clear glass and metal form movable partitions which divide individual offices in the central work area. A flush acoustical ceiling reflects light from low-brightness tubes to give 65-ft candle illumination.

The president's office has an interior adapted to the specific working needs of a publisher. The 20-ft desk is broken by its L-shaped contour.

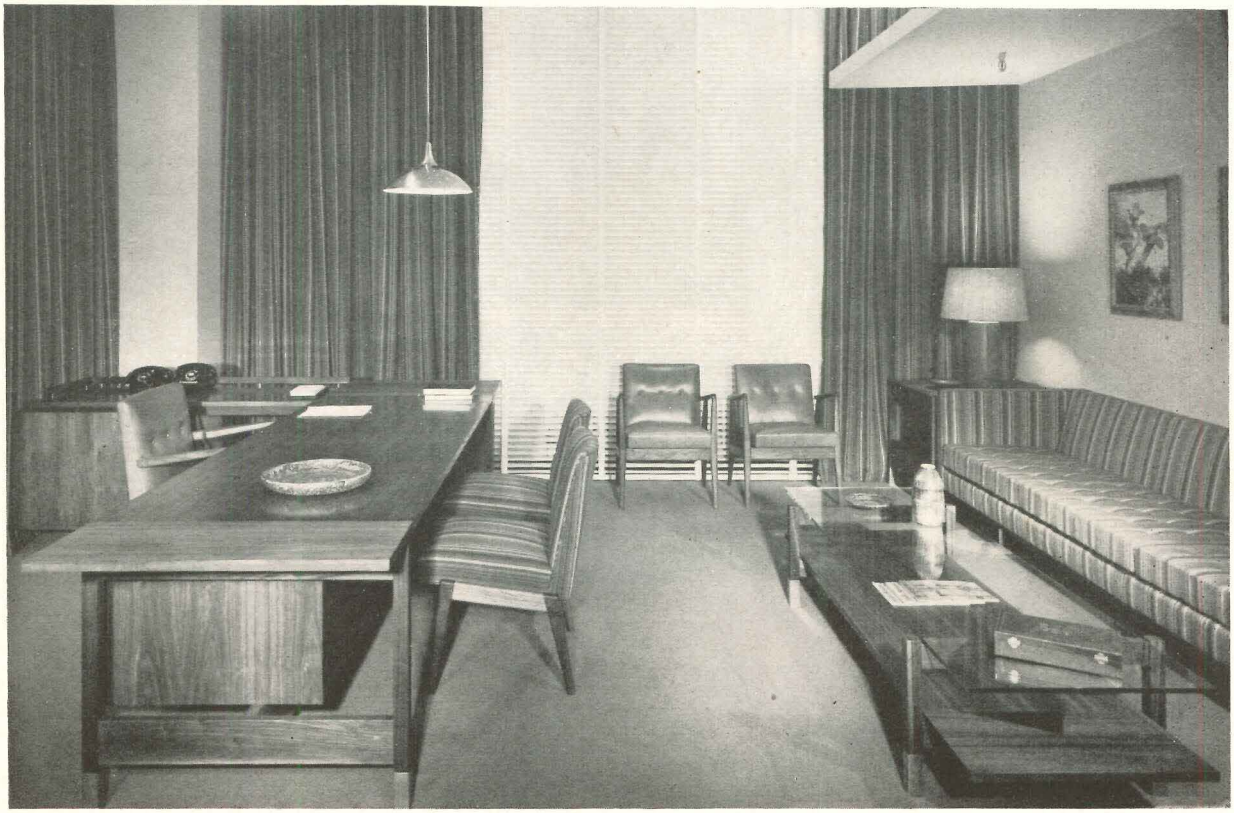
The receptionist's desk repeats the above design. In all the desks any massive feeling is overcome by a system of suspending the working units and floating the desk surface to give a light airy feeling.

The related color scheme uses muted tones ranging from off-white to warm walnut.

Above: Combination library and conference room. Standard steel shelves hold firm's first editions. During conferences sliding walnut panels hide books. Back of one panel is a film projector, and on opposite wall a recessed screen. At right and below: President's office with desk-conference table which houses working equipment



Ben Schnall



DUAL REQUIREMENTS

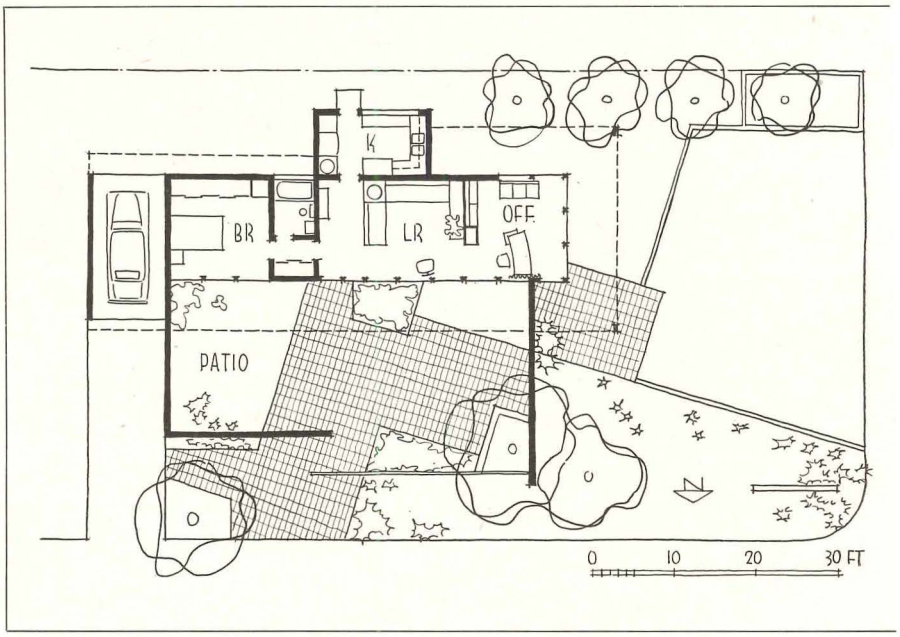
Accessibility for business, seclusion for private living, parking for both

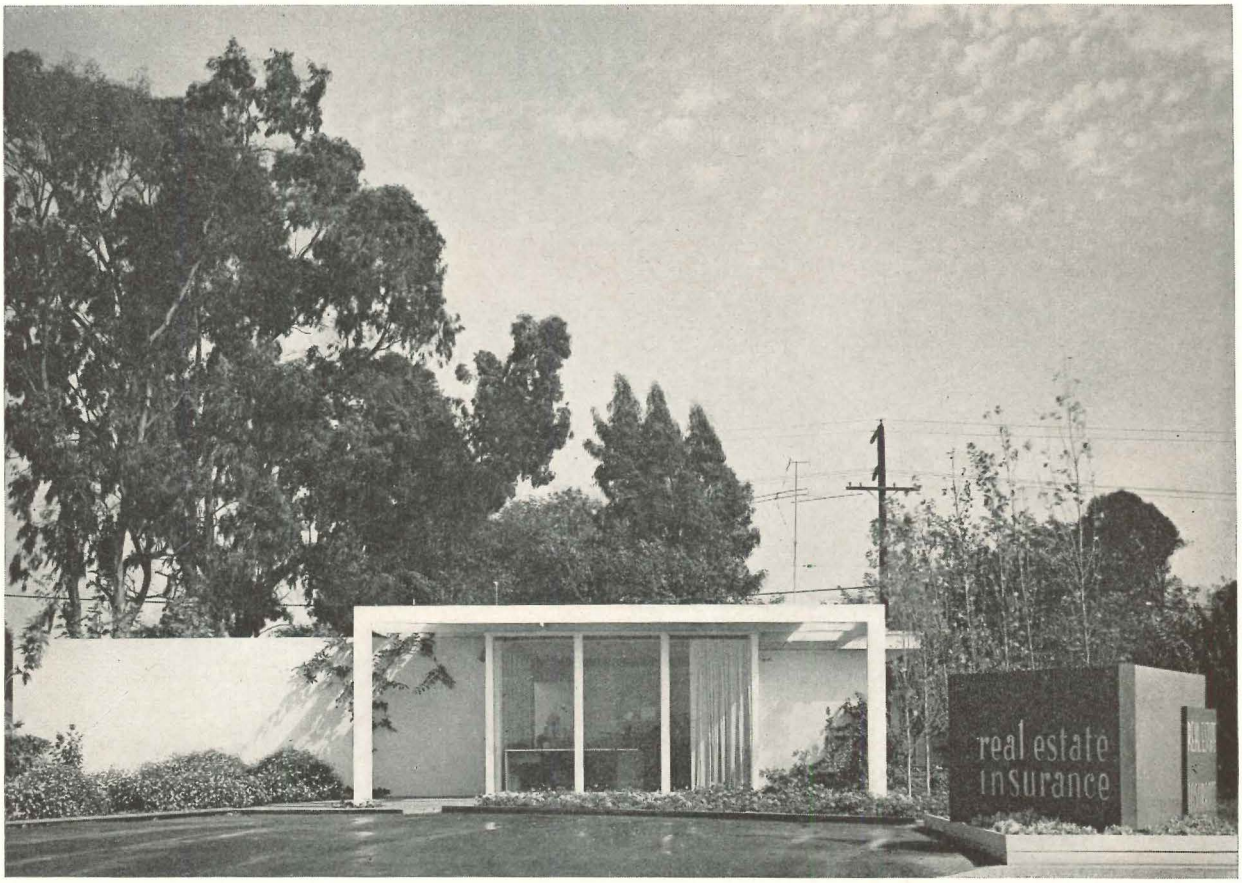
INTERNAL CIRCULATION

Home and office can be kept entirely separate

STORAGE

Home storage concentrated on outside walls
Office storage in dividing wall





Marvin Rand

COMBINATION OF HOME AND OFFICE

The Baird House — *Edward A. Killingsworth, Architect*

Los Alamitos, California

THE PROBLEM HERE was to provide living quarters with attached office facilities for a middle-aged couple who have a small real estate and insurance business. Primary function was living. Budget was a basic factor in the design. The resulting modest structure has much to recommend it — graceful distinction of design, integration of business and private living, simple yet adequate technical details — all on a tiny plot of land and built at rock-bottom cost.

The view from the highway shows the attractive business facade and short stop parking facilities, yet gives no clue to secluded areas for family living. Walls are citron yellow with white trim, face of parking curb and sign are painted grayed turquoise.

Indoor-outdoor views of patio, living room and office

ILLUMINATION

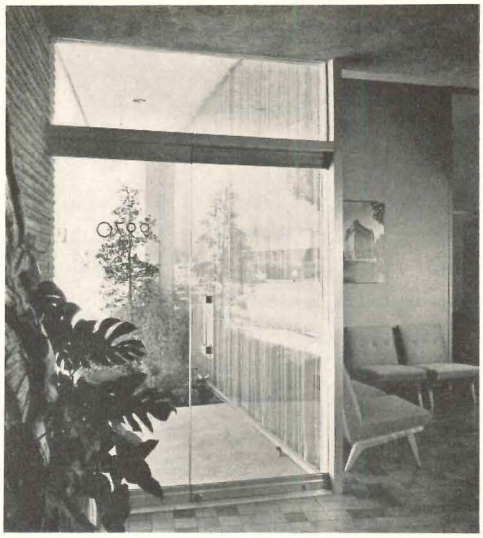
Courtyard used to expand window areas

PARTITIONS

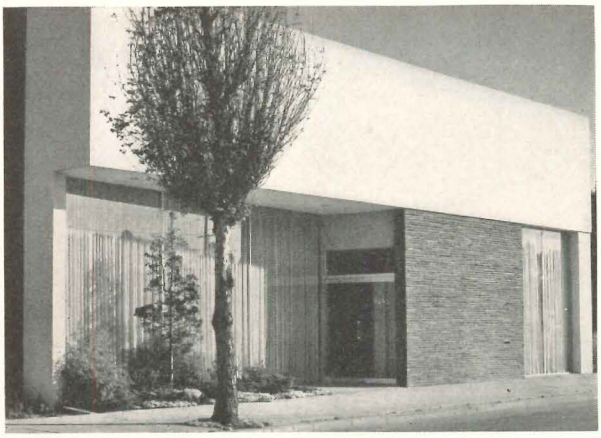
Interesting use of glass to borrow light

OVER-ALL INTEGRATION

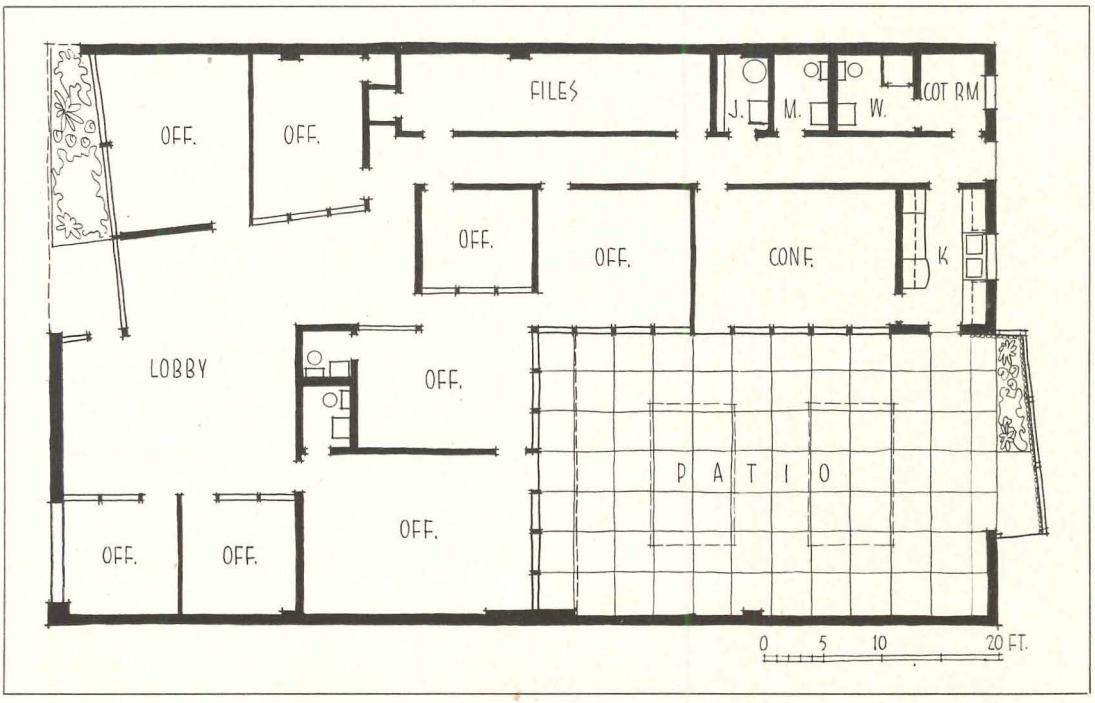
Entire design, exterior and interior, handled by the architects

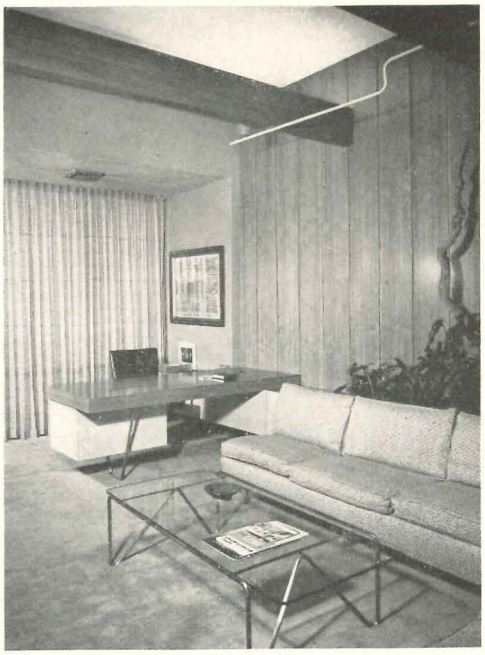


SMALL OFFICE BUILDING ON INTERNAL LOT



THE ELL-SHAPE of this small office building is keyed to the size of the lot. The main concern here was how to get natural illumination into the many separate offices in the building. By planning all of the offices about the large inside court and using glass areas and glass partitions of all types wherever possible, the problem of trapping and diffusing light was answered. A limited number of types of surface materials on the interior and a careful integration of both color and furnishings contribute to a feeling of over-all continuity.





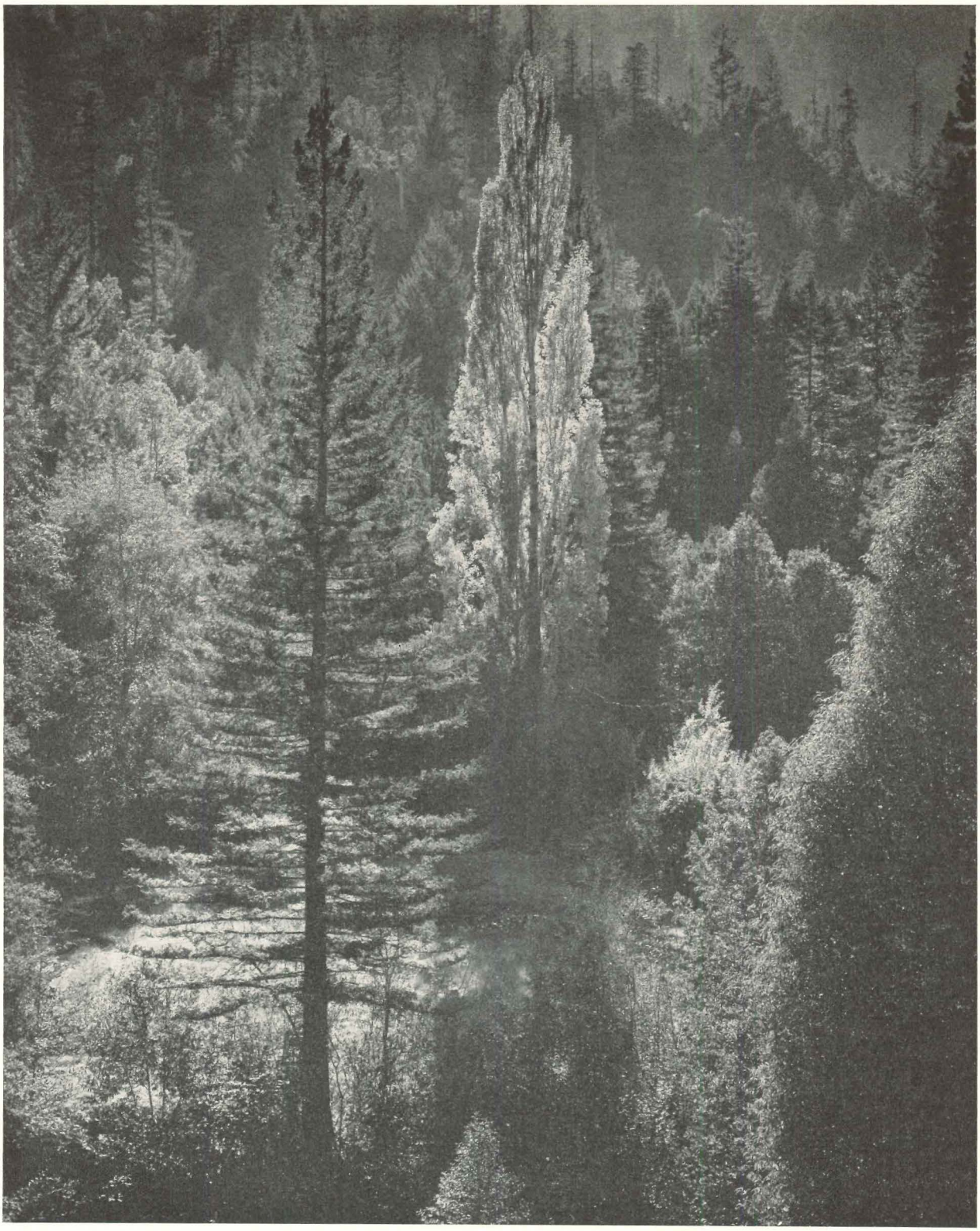
Regional office for Hilton Hotels

Los Angeles, California

Welton Becket and Associates, Architects

Julius Shulman

Interesting use of frankly exposed, painted conduits and three light fixtures create an abstract pattern. Color scheme: beige carpet; beige and natural tweedy fabric; walnut walls, beams and desk top; wall at left and soffit painted bright green; desk chair covered in teal blue, other chairs in rust



Tree in Forest

Morley Baer

THE INDIVIDUAL IN ARCHITECTURE — *Henry Hill*

THE INDIVIDUAL IN ARCHITECTURE

By Henry Hill

THREE-DIMENSIONAL ARCHITECTURE, as every art, is the result of the individual's expression of his beliefs and convictions; if you will, it is his statement of a philosophy. It is, moreover, an expression of the individual's time. His means of expression grow *from* the needs of the human problem and a given environment. The realized concept is completely interwoven with the individual and his personal thinking. Thus, the work of a creative individual is his handwriting, expressing in some ambition and vanity; in others, the warmth and delight of understanding; in some, harshness and boldness; in others, firmness and grace; in so many, the mediocre; in so few, something that adds more to the integrity and dignity of man.

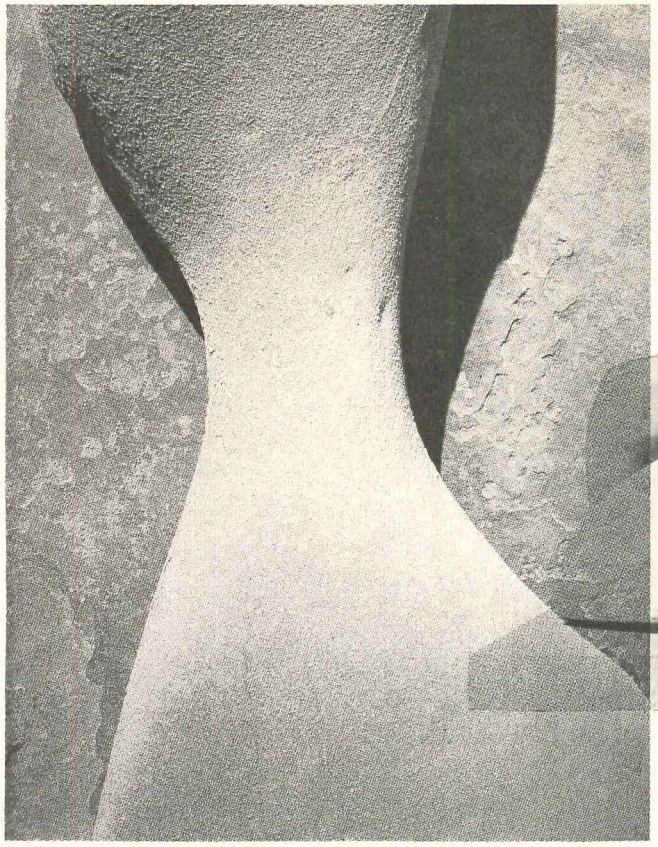
Few are the great leaders; many participate in, and contribute to, the fullest expression of a belief or an idea; the degree of participation or contribution is the measurement of the man. Each individual has the capacity for the expression of a full life. Who has not experienced

Lily in Ferns — Frances Baer

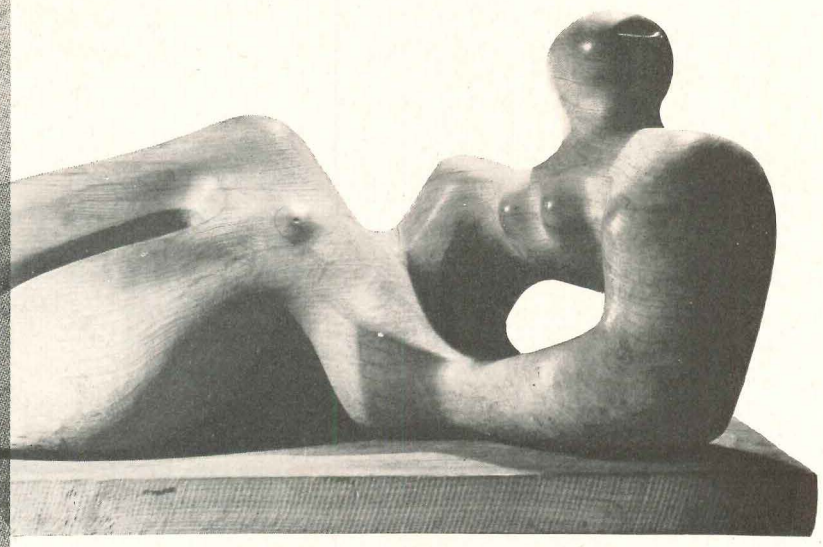
"And may not a man perhaps burst his bonds asunder? May not his spirit, hidden though it be, break forth, and show such form and color of manliness that we shall say: Here is a new flower . . . a new thing of beauty born of untoward surroundings into a needy world."

— *LOUIS SULLIVAN*

Is life sustained by man's intellect or by the very soil on which we live?



Eroded Stone **Morley Baer**



Courtesy Albright Art Gallery

Reclining Figure **Henry Moore**

THE INDIVIDUAL IN ARCHITECTURE — *Henry Hill*

the beauty of a child's wonder, and the delight of his world of imagination? In the very short space of one lifetime too many lose much of their inborn capacity to exercise their imagination.

A young student at Stanford University, in telling why he is taking architecture says: "Whether he is conscious of it or not, a man's profession permeates the whole range of his human activities. It is in accordance with the individual's character; his activities become, so to speak, an exalted version of the person himself. Under opposite circumstances, it is like the permanent presence of an unfriendly law. His work can be a dead weight — or life itself."

Eric Mendelsohn has said:

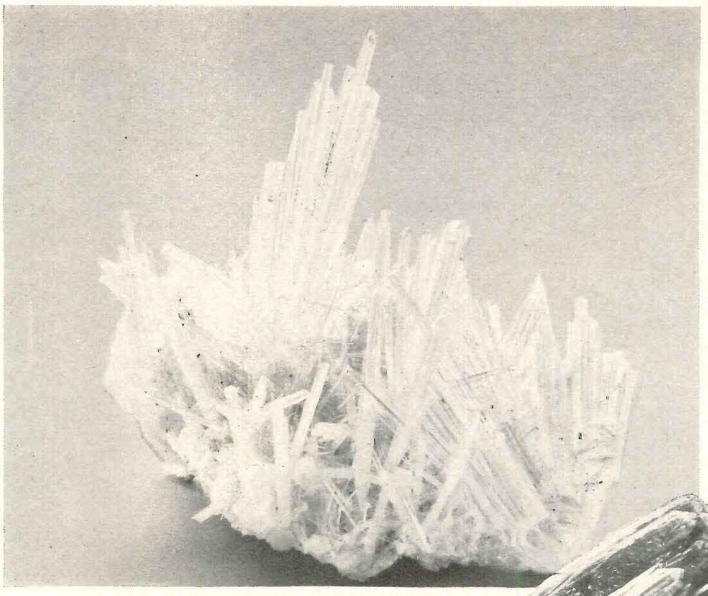
"It is the longing for life, when death is omnipresent;
It is the devotion to truth, when truth is on trial;
It is the courage of action, when values become stagnant *
That remolds the spirit and redirects the march of man."

The factual finalities of a three-dimensional concept make clarified decisions a necessity. Every line that is drawn is a decision. Each expresses the individual's knowledge and understanding — his *knowing* — shared with, and having the confidence of, the human being with whom he is working. The individual stands or falls by this knowledge. Through this knowledge and understanding of the world we live in, the history we have known, he can show the way to the future and show it for people now. In the continuity of history of which we are a part, he must, above all, understand the motivating forces which caused the creations of his past. To do creative work, he must reject the vast heritage of the mediocre, and find the true values within the human expressions of the past. He will then realize that these are the values of all men, all times, and all societies.

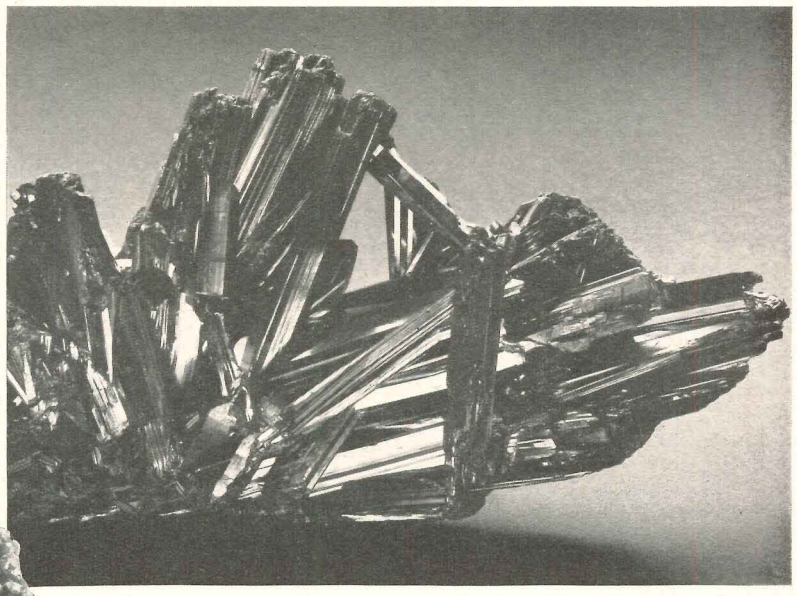
The individual and his work are a part of society, and if the work is to make itself felt, and count, he takes part in the leadership of that society. He leads through his own thoughts, convictions, understanding and beliefs. This is realized in many ways and techniques. There is an infinite variety in these, but are not the fundamentals the same? External factors and forces may change, but do fundamentals?

The technical knowledge related to architecture or design is but the barest hint of architecture. Has not the creative architect much in common with Beethoven? Does he know and understand what Benjamin Britten is composing today? And is he able to measure the extent of their value? Has he experienced what happens when a

Italics the Author's



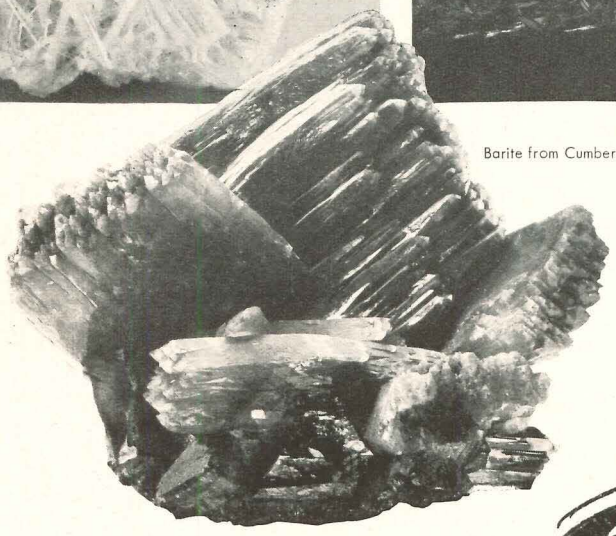
Scolecite from Djupivogur, Iceland

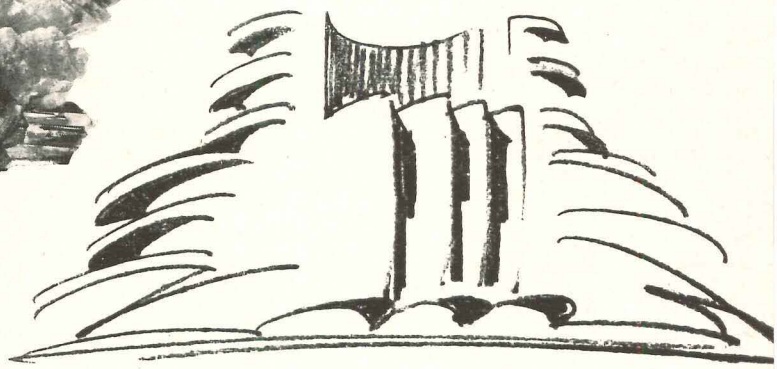


Barite from Cumberland England

Stibnite from Iyo, Japan

John Jago minerals
photographed by Morley Baer

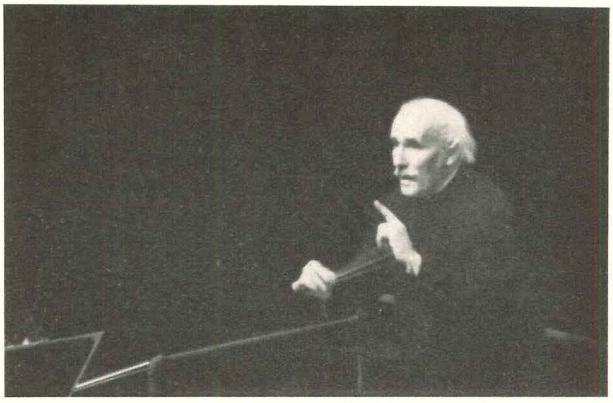




Bach — Toccata in C Major, by Eric Mendelsohn

Kathleen Ferrier recreates Orpheus? And has he shared the perfection of Toscanini's conducting the Ninth Symphony? Does he know the works of Henry Moore, and the few published words we have been given of his writing? Does he really know Louis Sullivan's Kindergarten Chats, and read all of Frank Lloyd Wright, or Lewis Mumford? Has he read Hershey's The Wall, Mann's Dr. Faustus? Mendelsohn's Three Lectures? Churchill's war books? Certainly not all with complete acceptance, but how can there be a rejection of men's thinking without the knowledge of their experience? Surely there must be a depth of understanding before he can create for the use, living and joy of others.

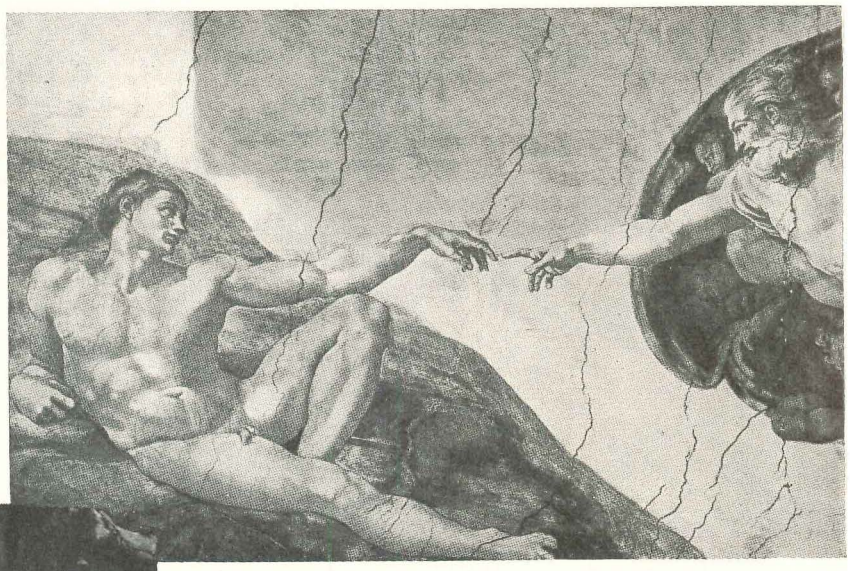
Understanding is often obscured. Around architecture there is wrapped a blanket of words. Why must there be such verbiage and application of labels — "binuclear, functional, utilitarianism, romanticism, warmth, back to nature, inner content, rustic . . ."? In reality, is not this labeling a sign of a basic lack of understanding? Doesn't this only complicate simplicities and result in confusion? Recently, within one week, a national architectural magazine and the New Yorker came out simultaneously with an item of utter confusion. The architectural magazine, showing Breuer's home, led off with: ". . . this shows we can avoid easy rustic blending



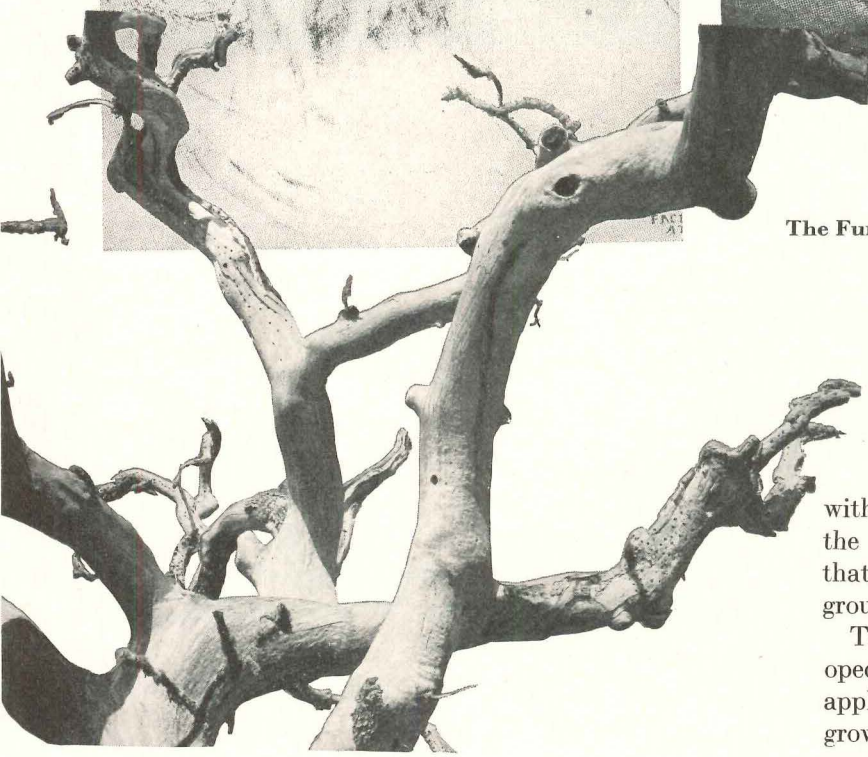
N. B. C. Photo

". . . has he shared the perfection of Toscanini's conducting the Ninth Symphony?"

The Fury Michelangelo



God Creating Adam, in the Sistine Chapel, Michelangelo



Cypress Tree Morley Baer

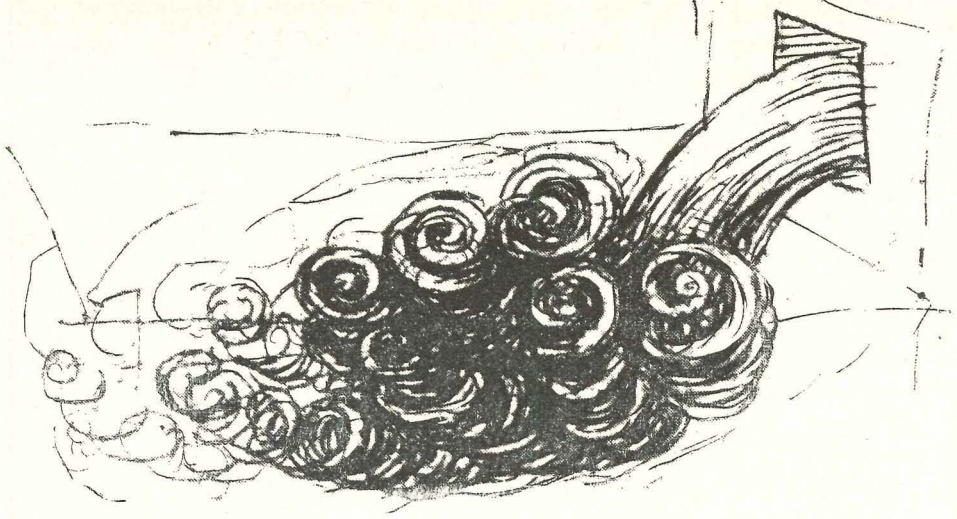
THE INDIVIDUAL IN ARCHITECTURE — *Henry Hill*

with the ground." (Is it easy? Is it to be avoided?) In the New Yorker, Mumford quotes Breuer as saying that we have learned to blend our buildings with the ground . . . !

Today, two distinct methods of approach have developed, each based upon opposing concepts. One is the application of a building *to* the site; the other, its organic growth *from* the site. The first expression has a tremendous appeal to the intellect, but I believe that the individual as a human being is lost and forgotten. Within the physical environment of our cities where conditions are, in fact, already applied, there is a certain justification for this approach, *if* the conditions are recognized and understood.

The second expression, growth *from* the site, is by its very nature an integral part of the development of the human being. To what extent this can be realized is a matter of understanding and degree. Within the basic fallacies of our cities, the degree can be large or small, depending upon the conditions. But even when a larger concept is possible, can we maintain integrity to ourselves and to all men by just accepting the fallacies without showing how to overcome them? Is the "application to" still necessary? Are we not here to express our hopes and beliefs? Is life sustained by man's intellect, or by the very soil on which we live?

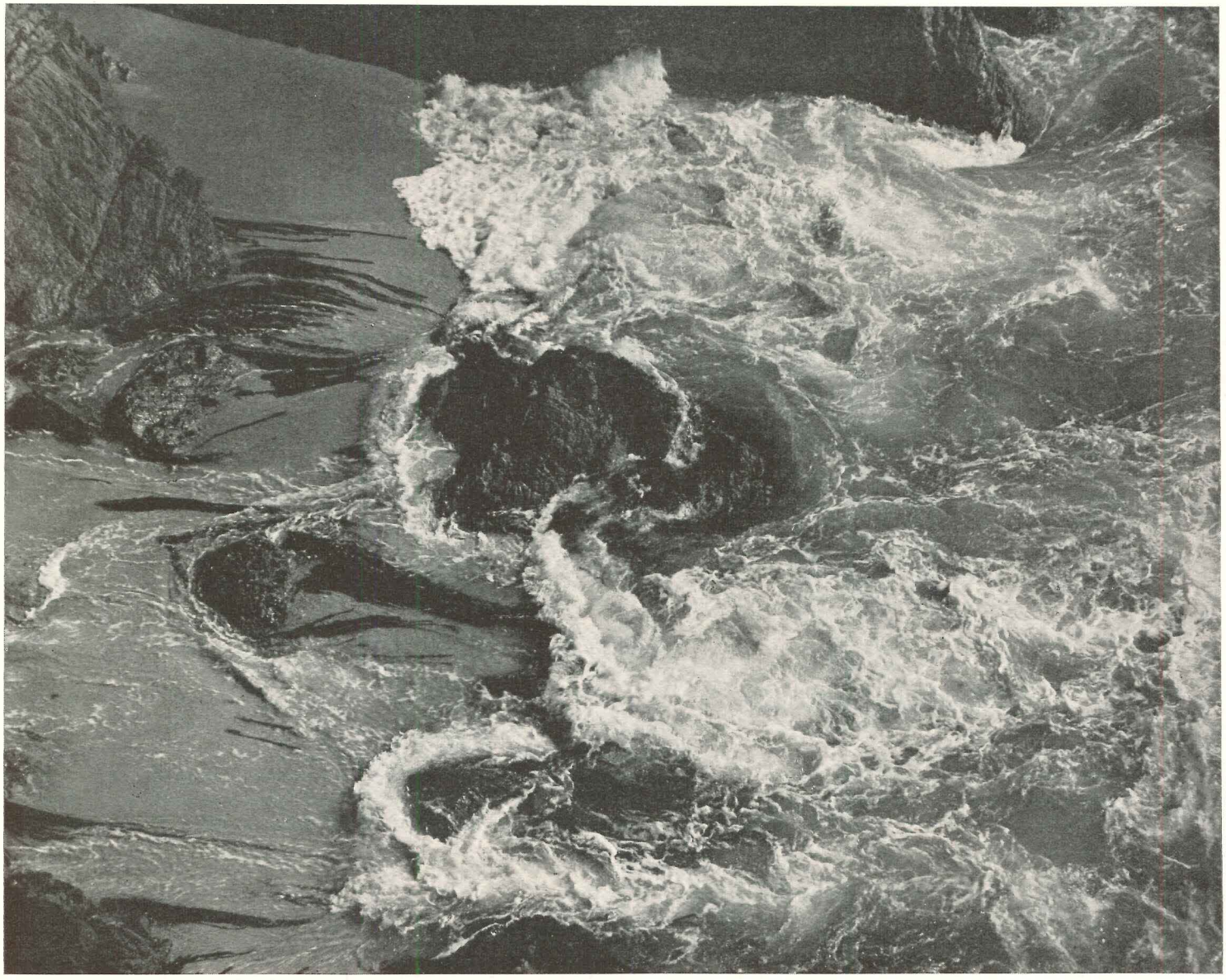
It is within us, and our concept of true values, to create for and with man.

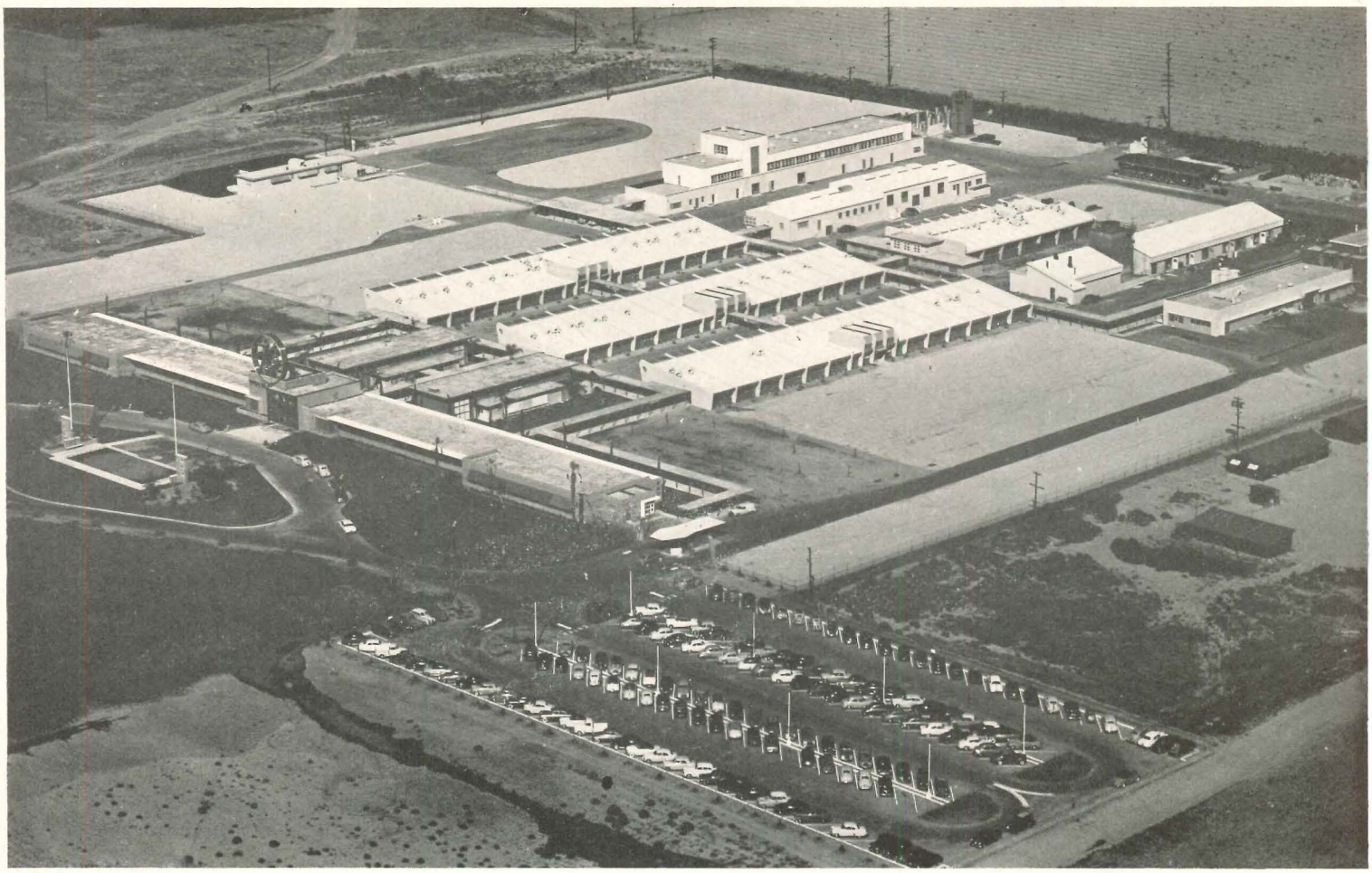


Spirals Formed in Water — Leonardo da Vinci

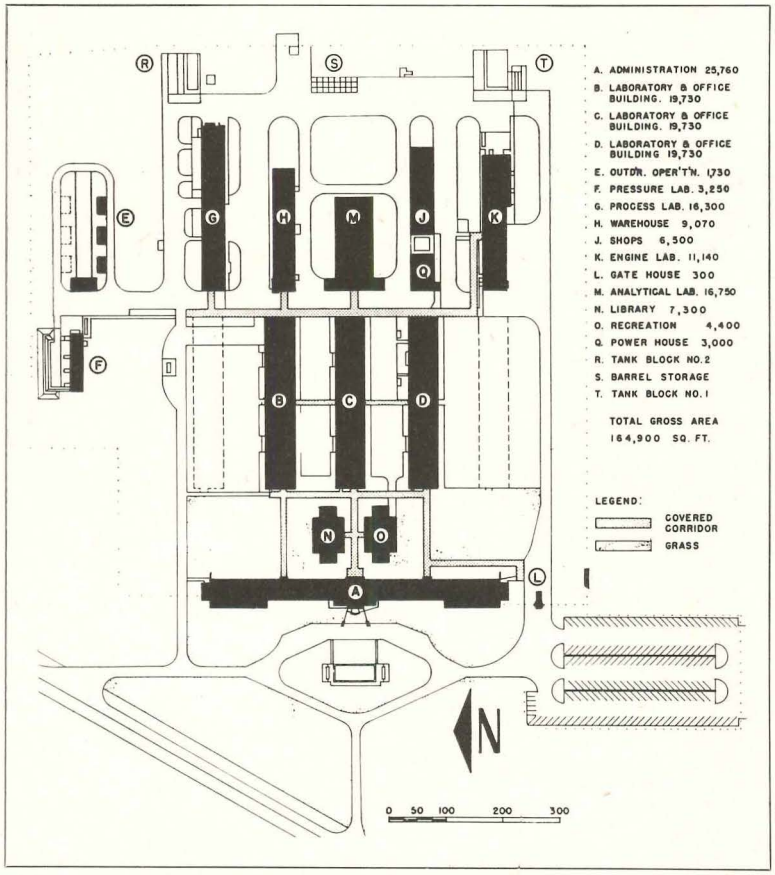
". . . in this the eye surpasses Nature, inasmuch as the works of Nature are finite, while the things which can be accomplished by the handiwork, at the command of the eye, are infinite." *LEONARDO da VINCI*

Pt. Lobos Surf — Edward Weston





Kopec Photo



Rod Daley Photo

RESEARCH CENTER ON THE FINGER PLAN

Research Center for Union Oil Company of California, Brea, Calif.

Austin, Field & Fry, Architects

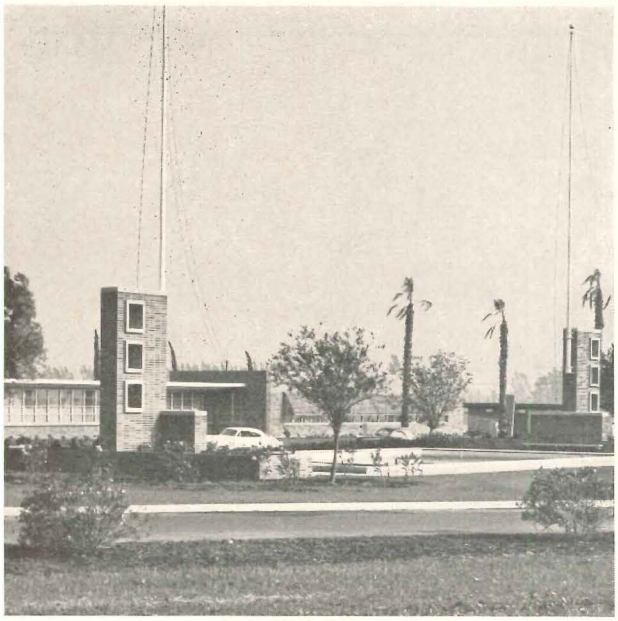
IF THIS doesn't look much like the customary research laboratory, well, it isn't. It makes some rather radical departures, in concept and in design. In part these ideas came from study of the complicated requirements for research and testing of gasoline and oil products, partly they came from a daylighted concept of a laboratory, not unlike that of an elementary school.

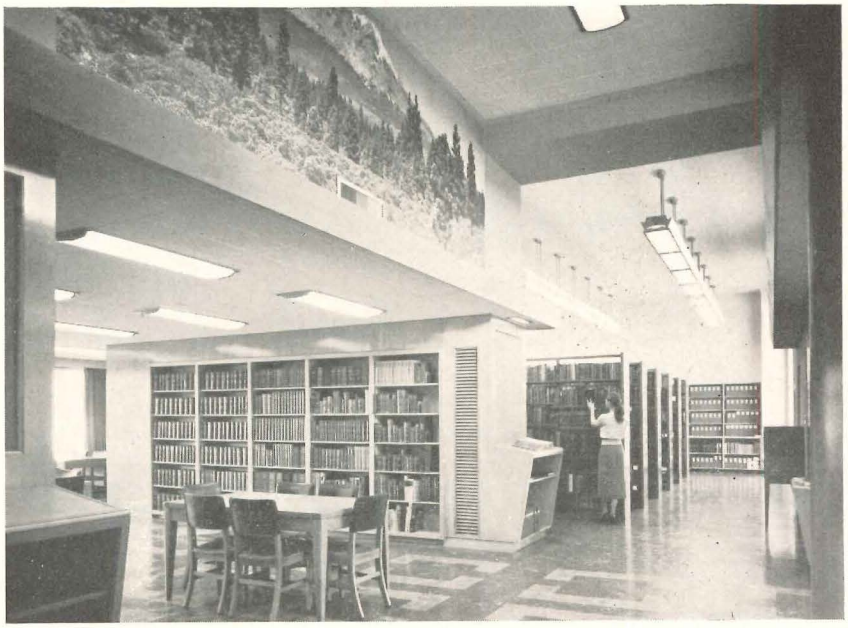
There are fourteen separate buildings, comprising a research center for a host of widely different types of both basic research and product testing, ranging from petrochemical analytical projects to testing fuels in actual engines. Thus the chemical laboratories are about the only typical quarters; the others are all designed to varying requirements. These different requirements, plus their varying hazards, dictated a scattering of the several buildings. Perhaps it was natural, then, to develop a one-story, finger-plan scheme for the chemical laboratories as well as the others, and to develop the daylighted form. At any rate, these buildings look not unlike schools, and the typical laboratory unit, like the classroom, uses a roof sloping upward toward the north light, with sunshades and vertical louver wall continuations to control glare and sunlight.

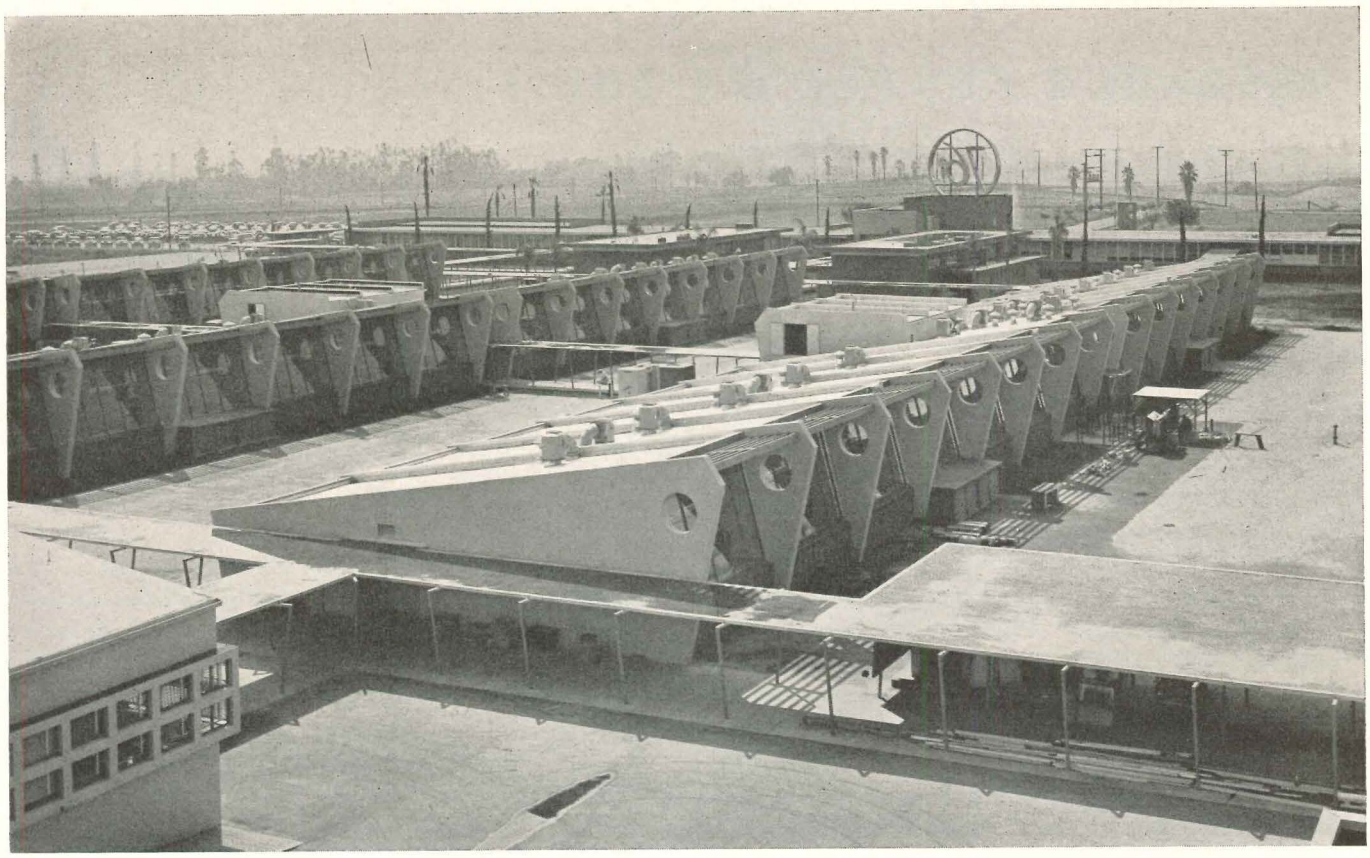
Service piping for the long one-story fingers, is run in tunnels (no basements being required) which extend the length of each building. The tunnels are large enough to accommodate a light service truck throughout their length, so that piping changes can be made as easily as possible.

All buildings have reinforced concrete walls, floors and ceiling beams. Buildings are air conditioned; chemical fume hoods have separate air supply and exhaust.

Research Center comprises fourteen buildings for widely different types of study, from analytical petrochemistry to tests of fuel in engines. Library is separate building (photographs at right)

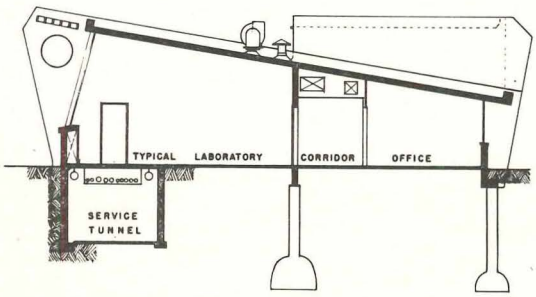




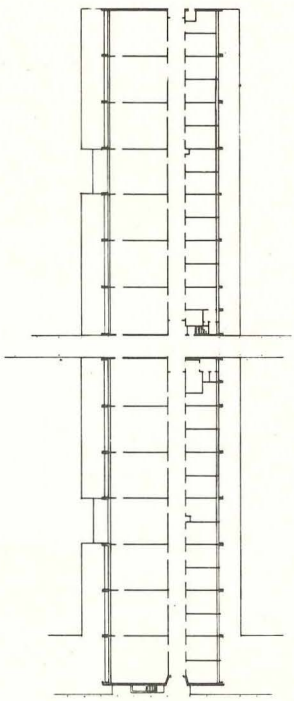


Rod Daley Photo

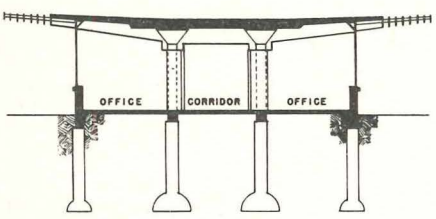
In plan most of the buildings are quite individual, but these are the more typical ones. Notice especially the laboratory building section at the far left, typical for three buildings



LABORATORY BLDG. SECTION

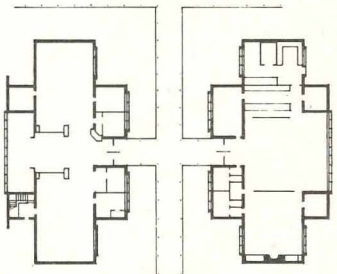


LABORATORY & OFFICE BLDG.



LIBRARY BUILDING

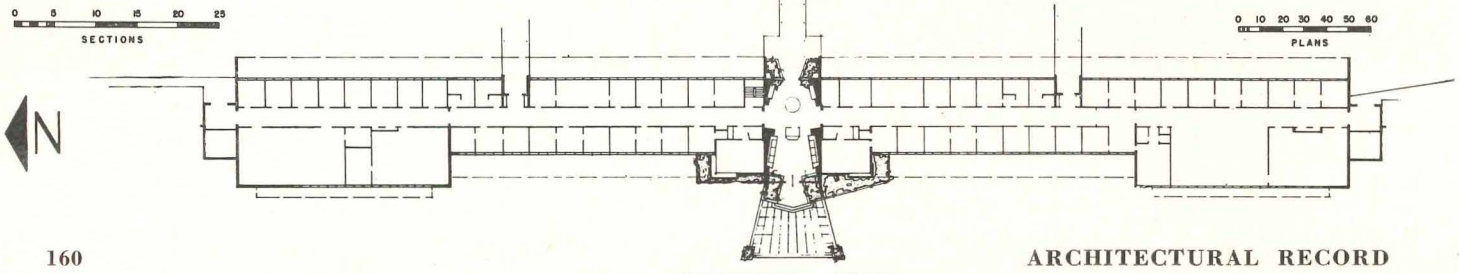
ADMINISTRATION BLDG. SECTION



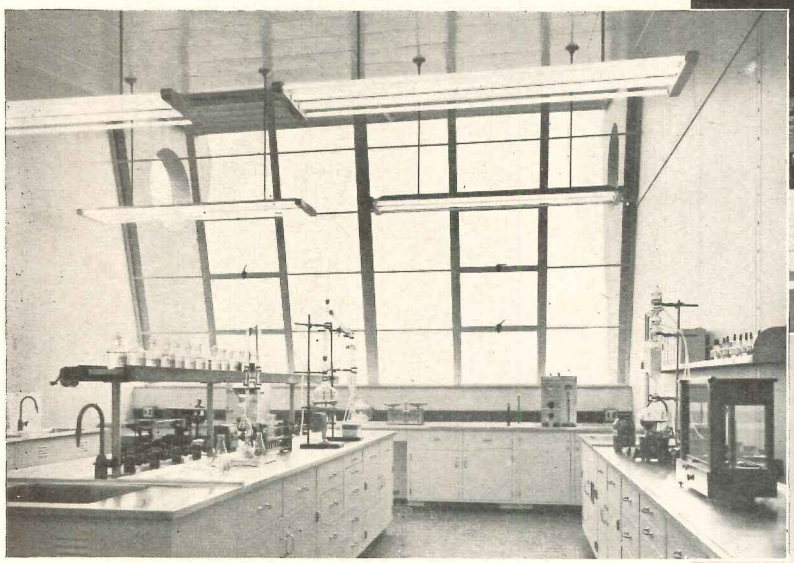
RECREATION BUILDING

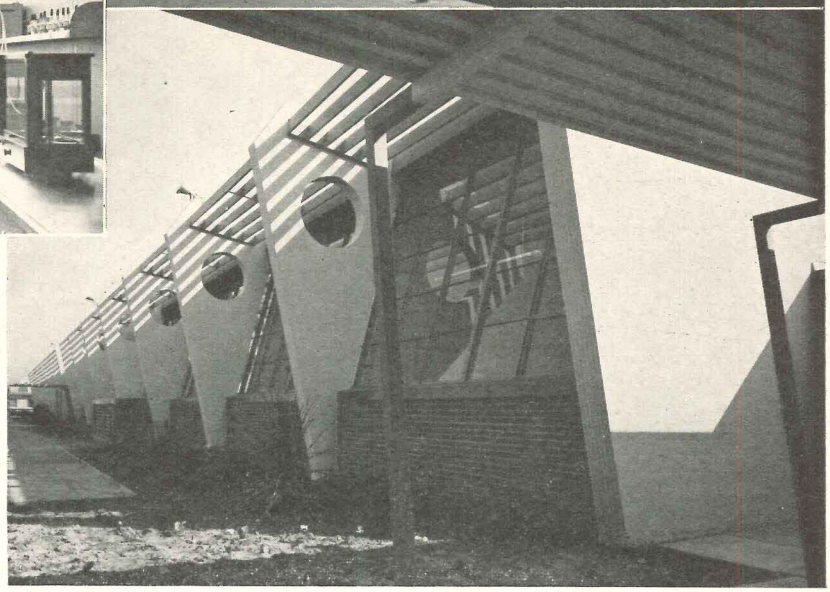
0 5 10 15 20 25
SECTIONS

0 10 20 30 40 50 60
PLANS

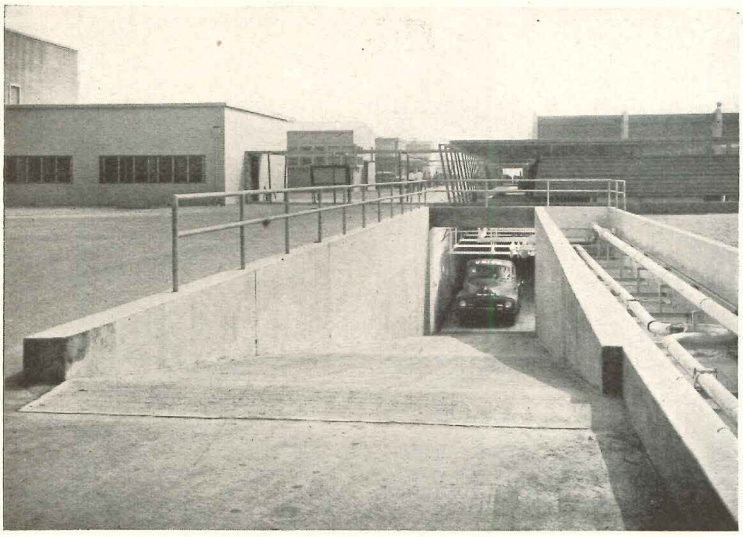


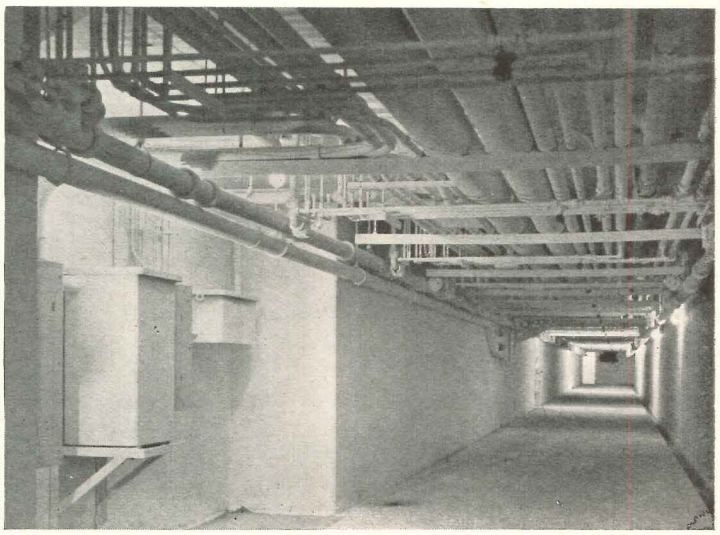
ADMINISTRATION BUILDING



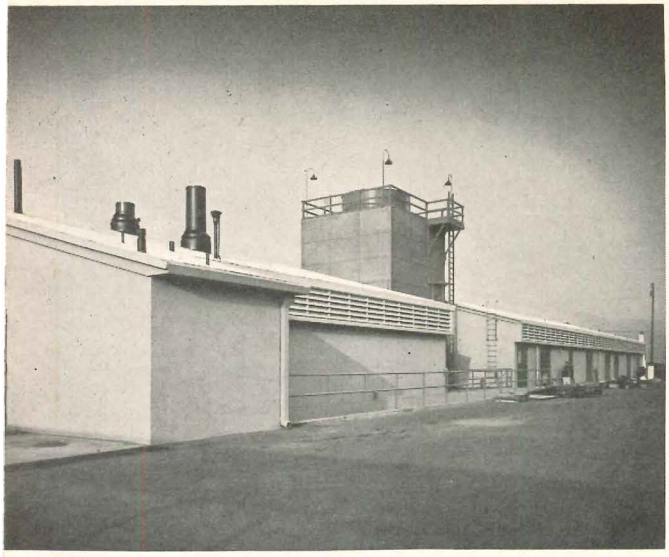


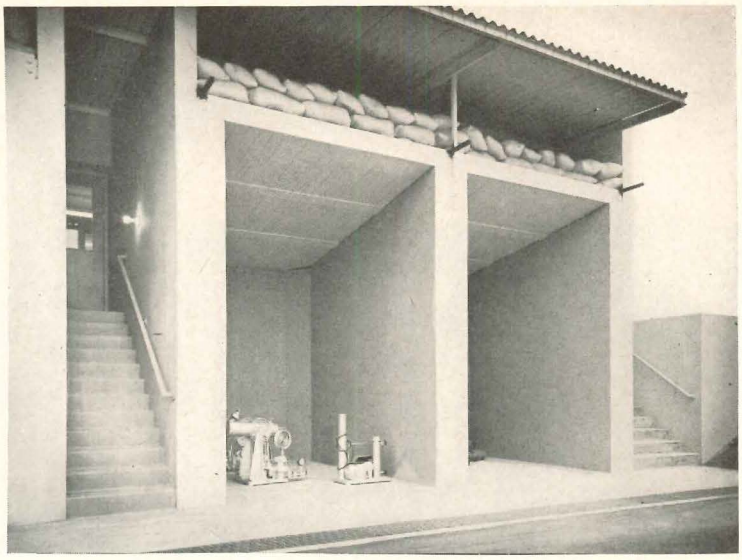
Typical chemical laboratory is designed to make maximum use of daylight, with high north window protected by sunshades and extended walls serving as vertical fins to control glare

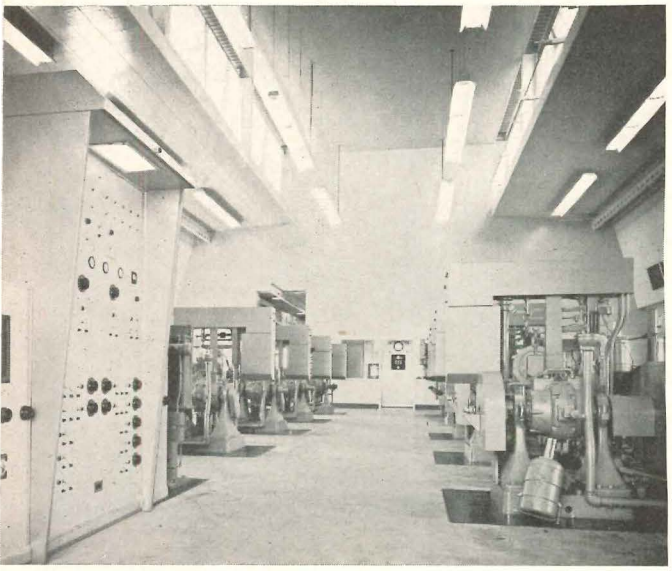




Service piping tunnels under laboratories are large enough to accommodate a maintenance truck







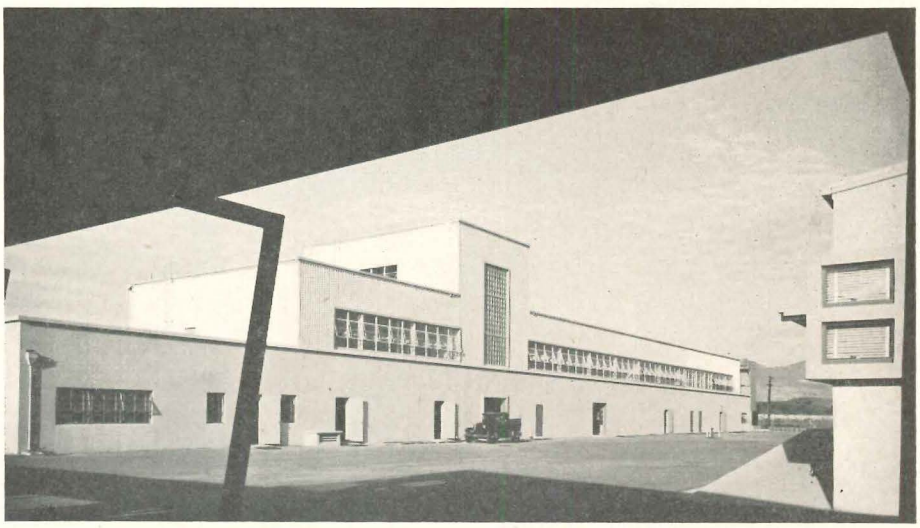
Upper left: south exterior of power house (Q) and shop building (J)

Upper right: north exterior of pressure laboratory building (F)

Center left: interior of engine laboratory building (K) for fuel tests

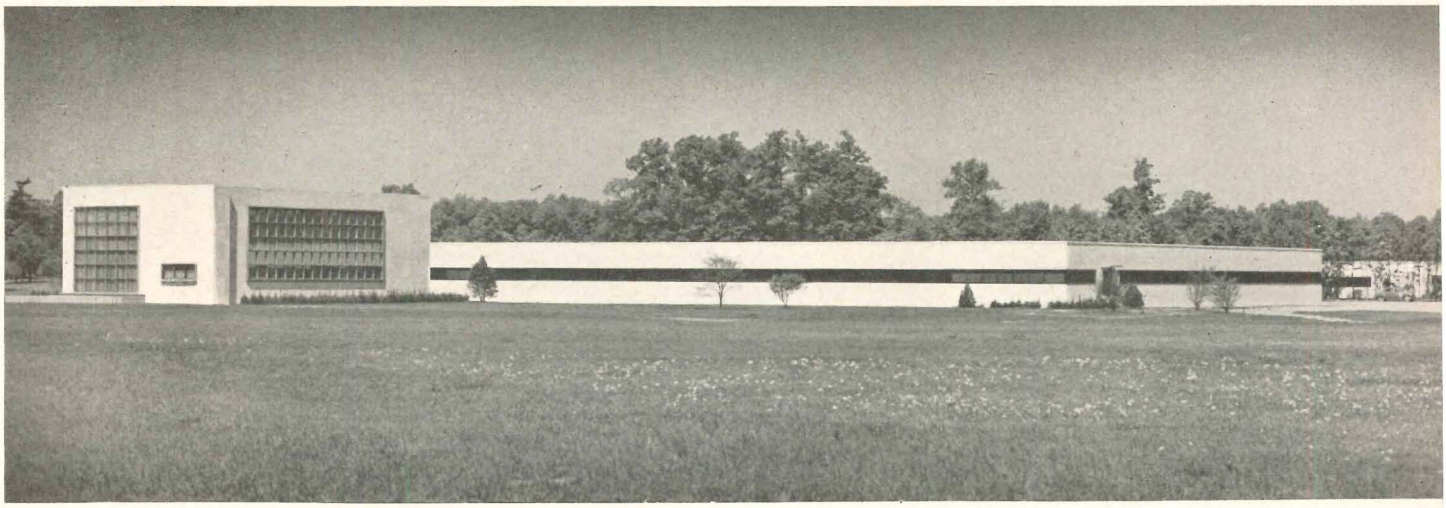
Center right: barrel storage unit (S)

Union Oil Laboratories — Austin, Field & Fry

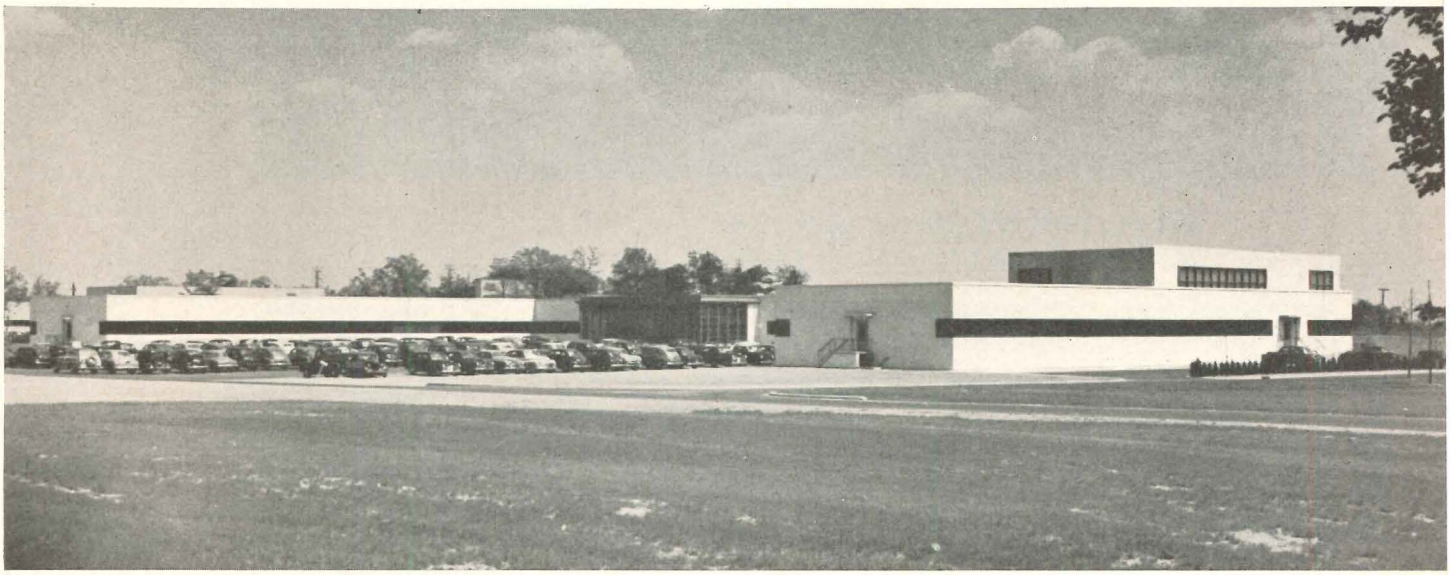


Harry H. Baskerville Jr.

South exterior of process laboratory building (G) looking east



Gottscho-Schleisner



RESEARCH CENTER, WITH FAMILY RESEMBLANCE

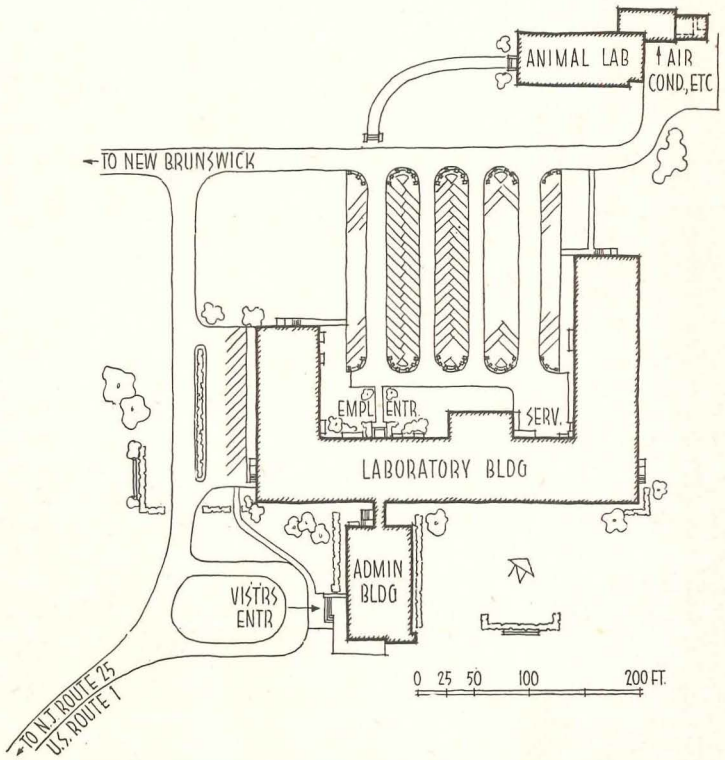
Alexander P. Morgan, Architect

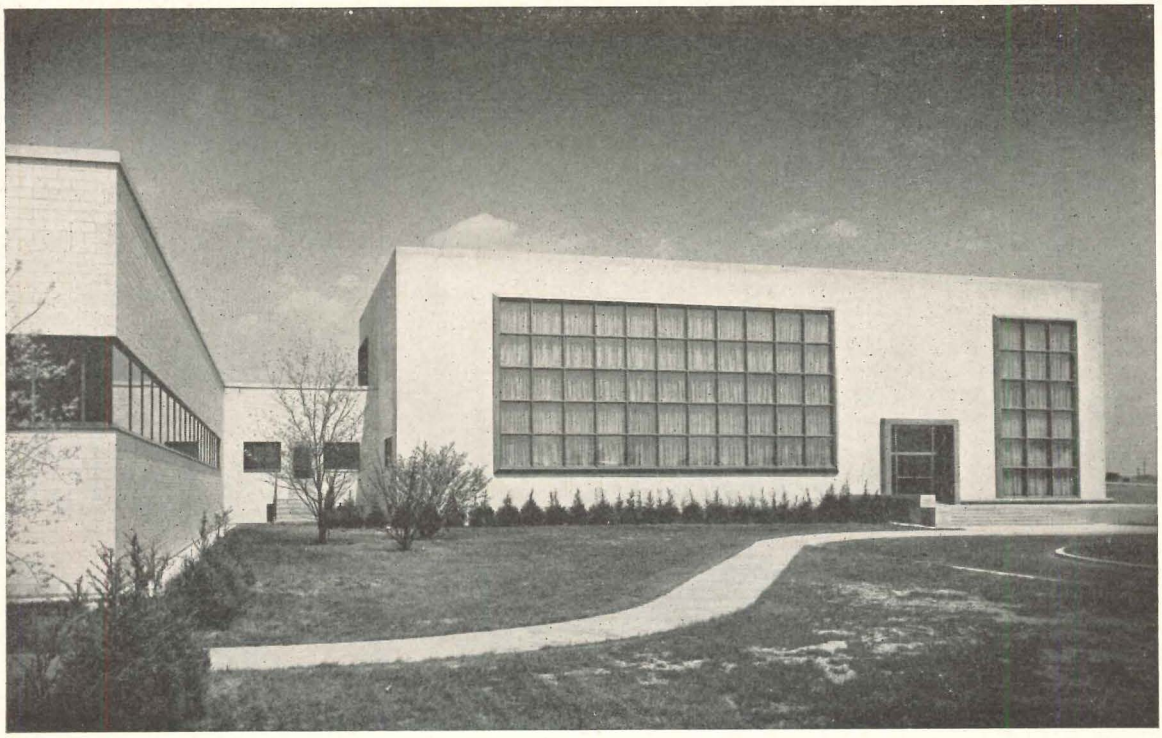
Guy B. Panero, Mechanical Engineers

Johnson & Johnson Research Center, New Brunswick, N. J.

BUILT BY A COMPANY long known for progressive industrial plants, this research center is particularly noteworthy. Its reason-for-being was quite typical — to bring together several divisional research activities which had overgrown scattered laboratory facilities. So the location chosen was near the main plant in New Brunswick, but with sufficient area so that research did not get lost in factory operations.

As in all J & J projects, considerable care was given to appearance, both of buildings and grounds. That was one reason for a long, low building, instead of the more usual several-story building concentrating service piping into shorter runs. In this case, however, while the pipe lines might be longer, general traffic conditions were conducive to the dispersion of a one-story building, for research is divided into several more or less autonomous groups without much inter-traffic. The E form of the





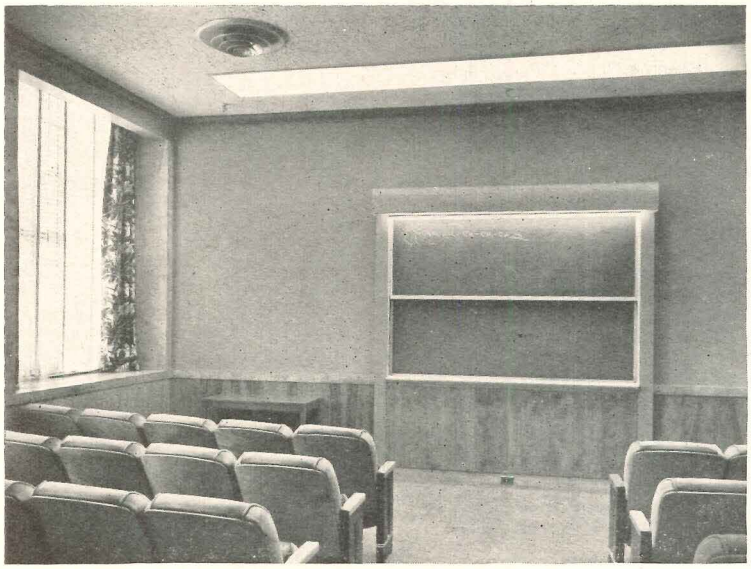
Gottscho-Schleisner

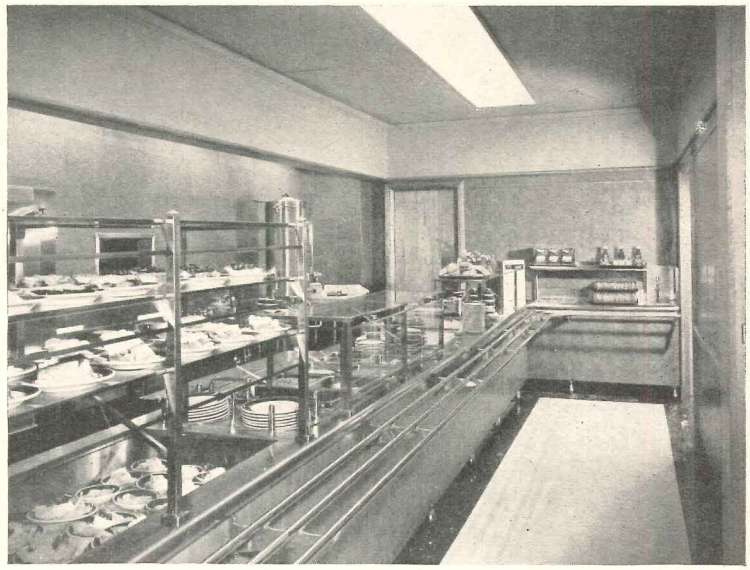
Administration Building was deliberately planned to add a note of monumentality to the center

building came out of long study, as a compromise in the question of spreading out. Another reason was again appearance — the E shape hides parking areas, keeps an attractive landscaped front. The separate little administration building came out of similar thinking; it gave a visual focus, and it set a desired note — something modern and efficient, between a collegiate and an industrial suggestion. The E shape also works out well to put the little glass-shelled pilot plant in the center of things, and to provide points for extending wings without disturbance to the principal front.

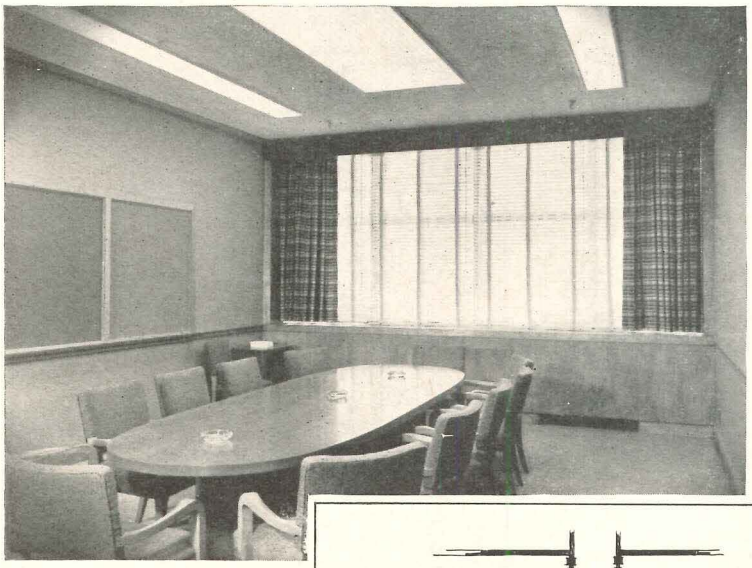
A full basement under the laboratory building serves as a pipe trench, and provides storage, shops, locker and mechanical equipment space. Service piping runs in ceiling of floor below, is brought up through the floor (see details, page 166).

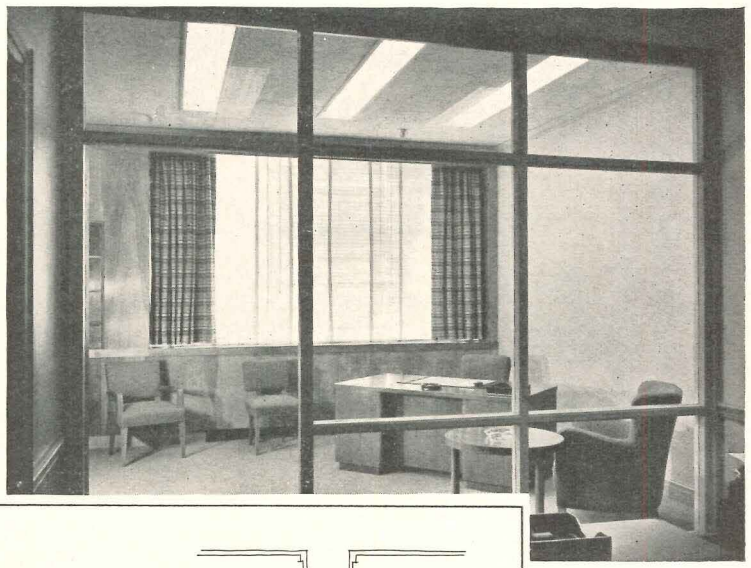
Serving counter (see plan) can be closed off when cafeteria is to serve for formal functions

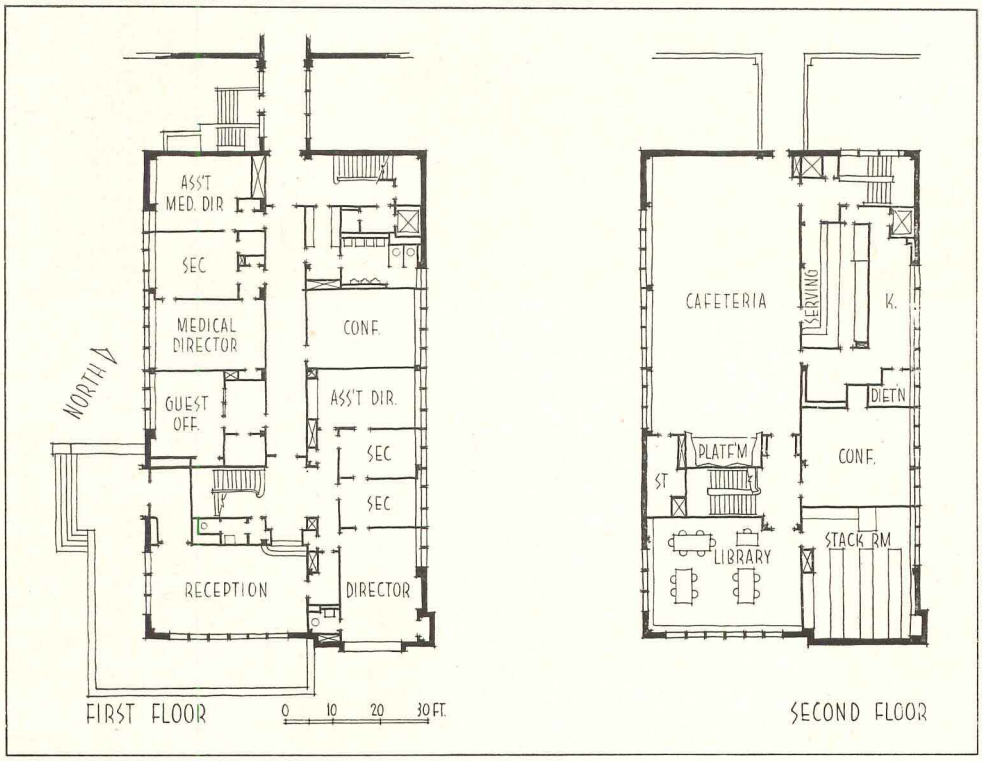


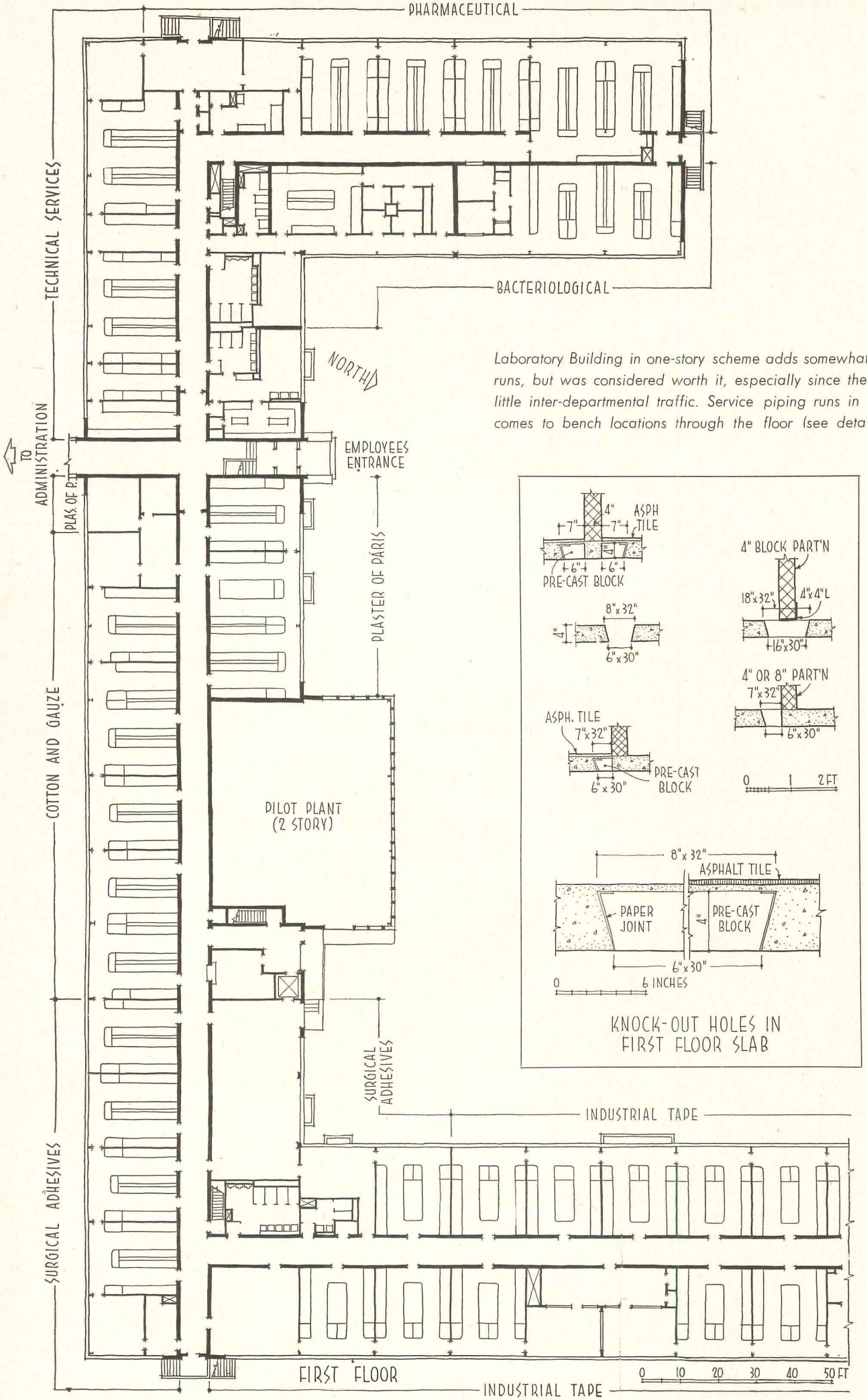


Administration Building interiors were to have a modern feeling but a certain monumentality also



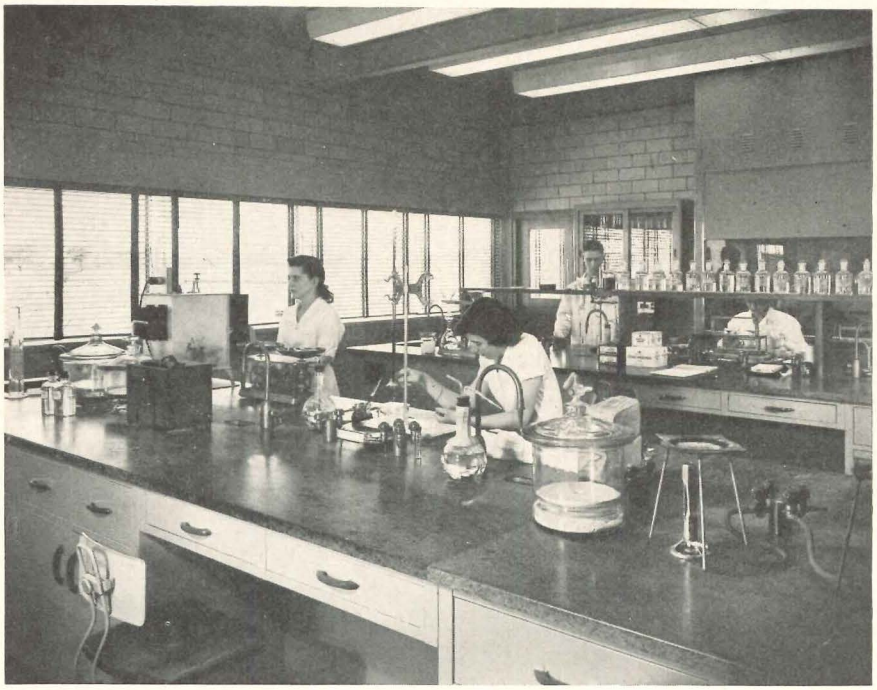




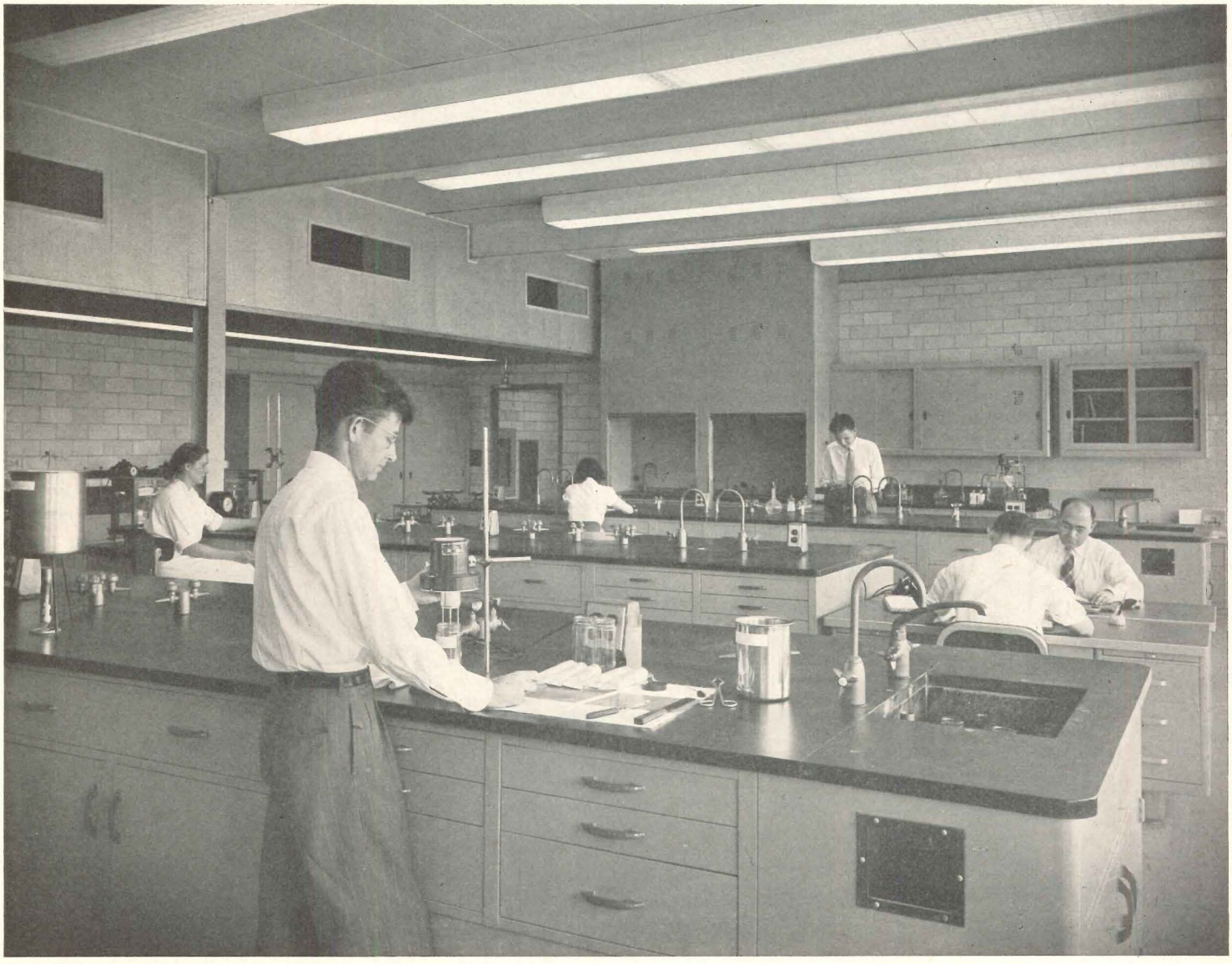


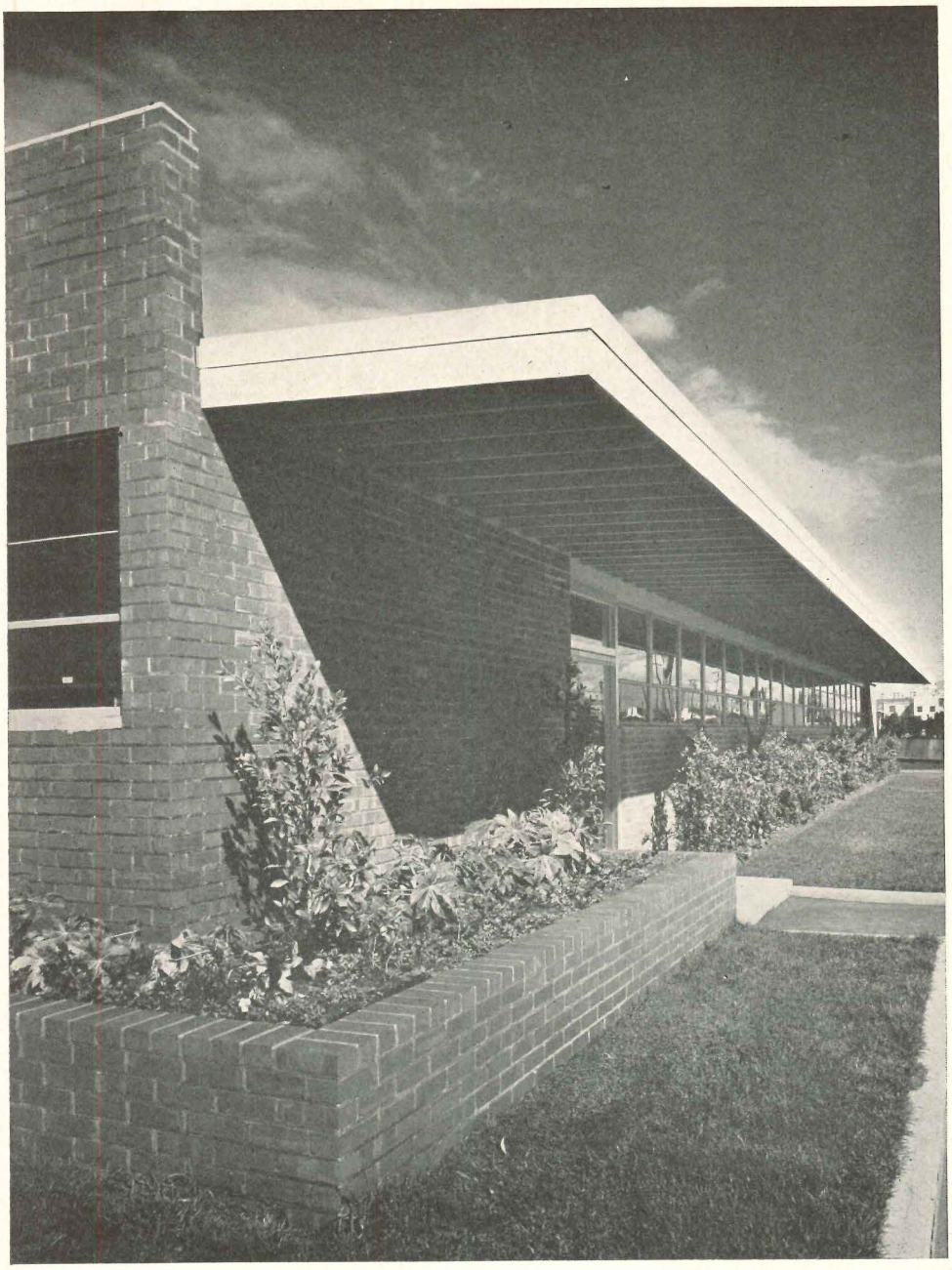
Laboratory Building in one-story scheme adds somewhat to piping runs, but was considered worth it, especially since there will be little inter-departmental traffic. Service piping runs in basement, comes to bench locations through the floor (see details below)

Window area in all laboratories is kept free of fixtures of any kind, and sills are sloped to discourage any use of sill space, all to keep building from having a cluttered appearance from outside. Windows are for outlook, not for daylighting

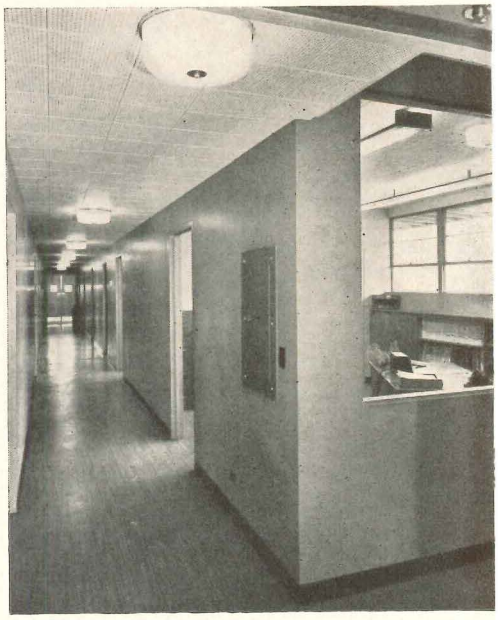


Gottscho-Schleisner

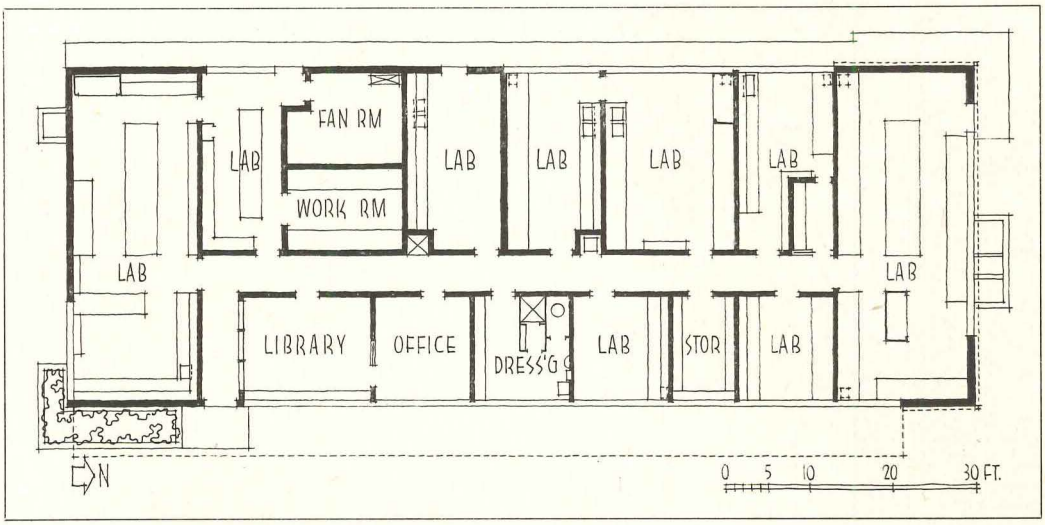


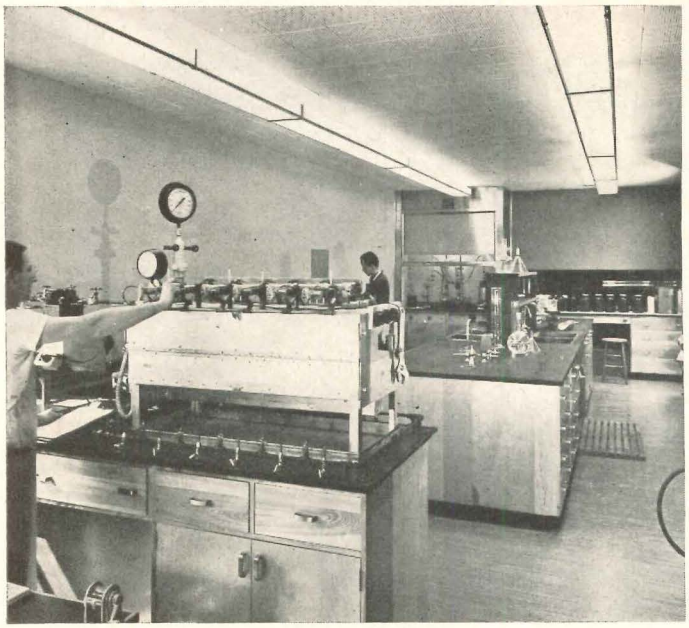


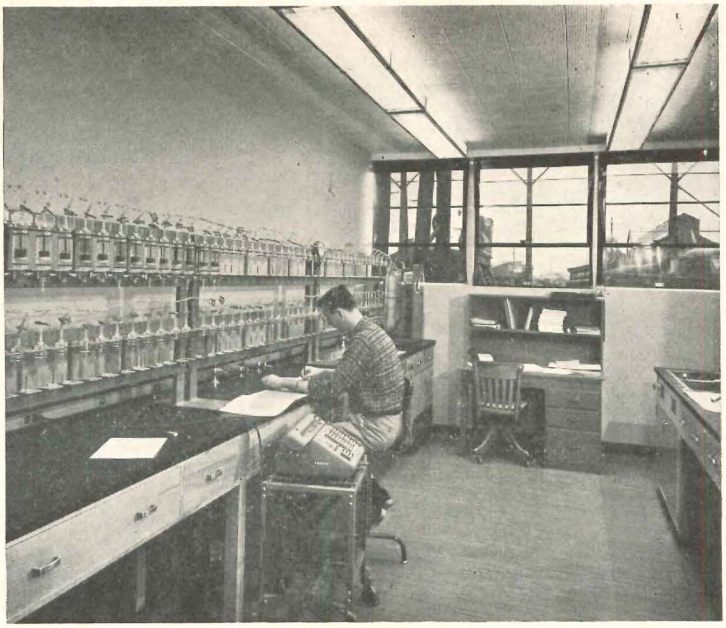
Douglas M. Simmonds



Piping connections to laboratory benches run through a tunnel, six ft deep, under the building. Tunnel is accessible at both ends, and makes possible easy changes in any service connections. Although fire hazard is not especially high, safety measures include emergency shower, fume hoods with sparkproof fans and remote controls





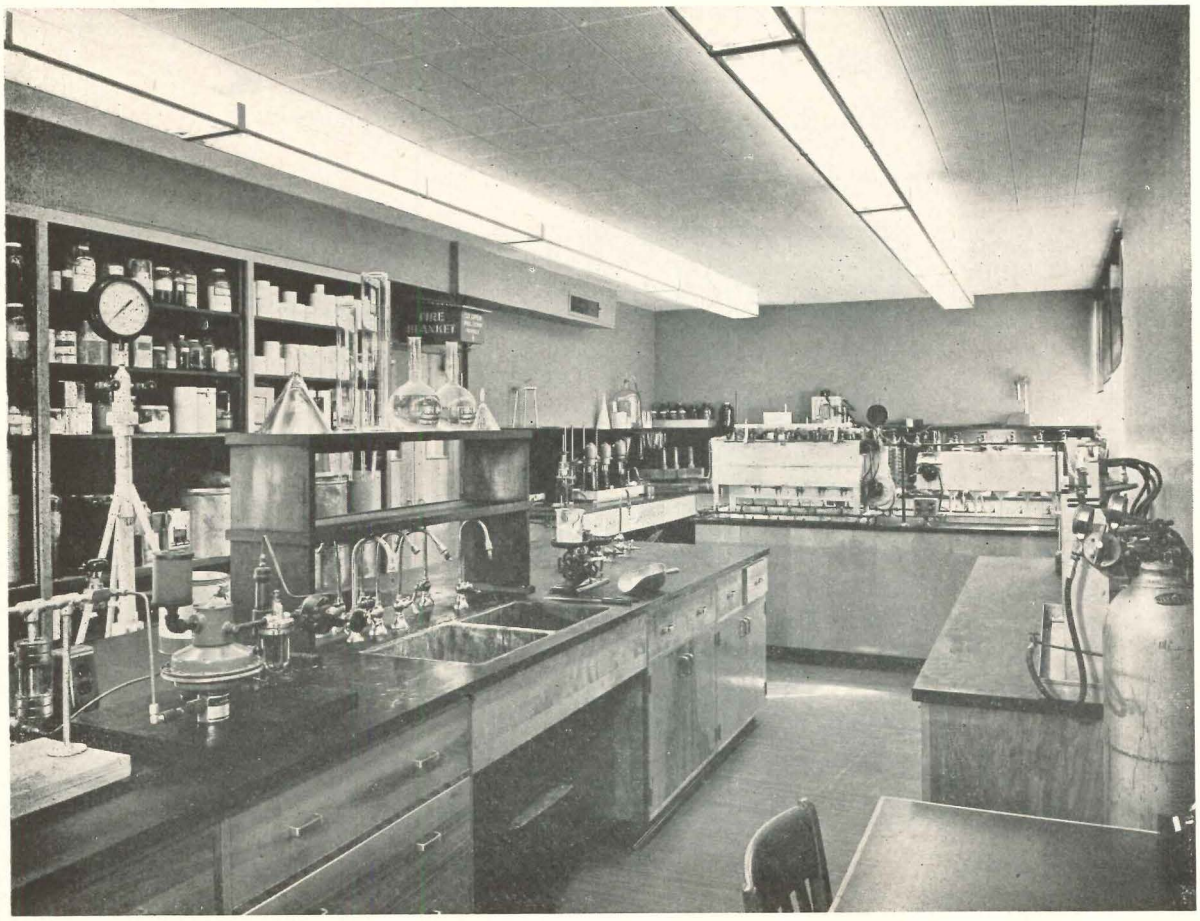


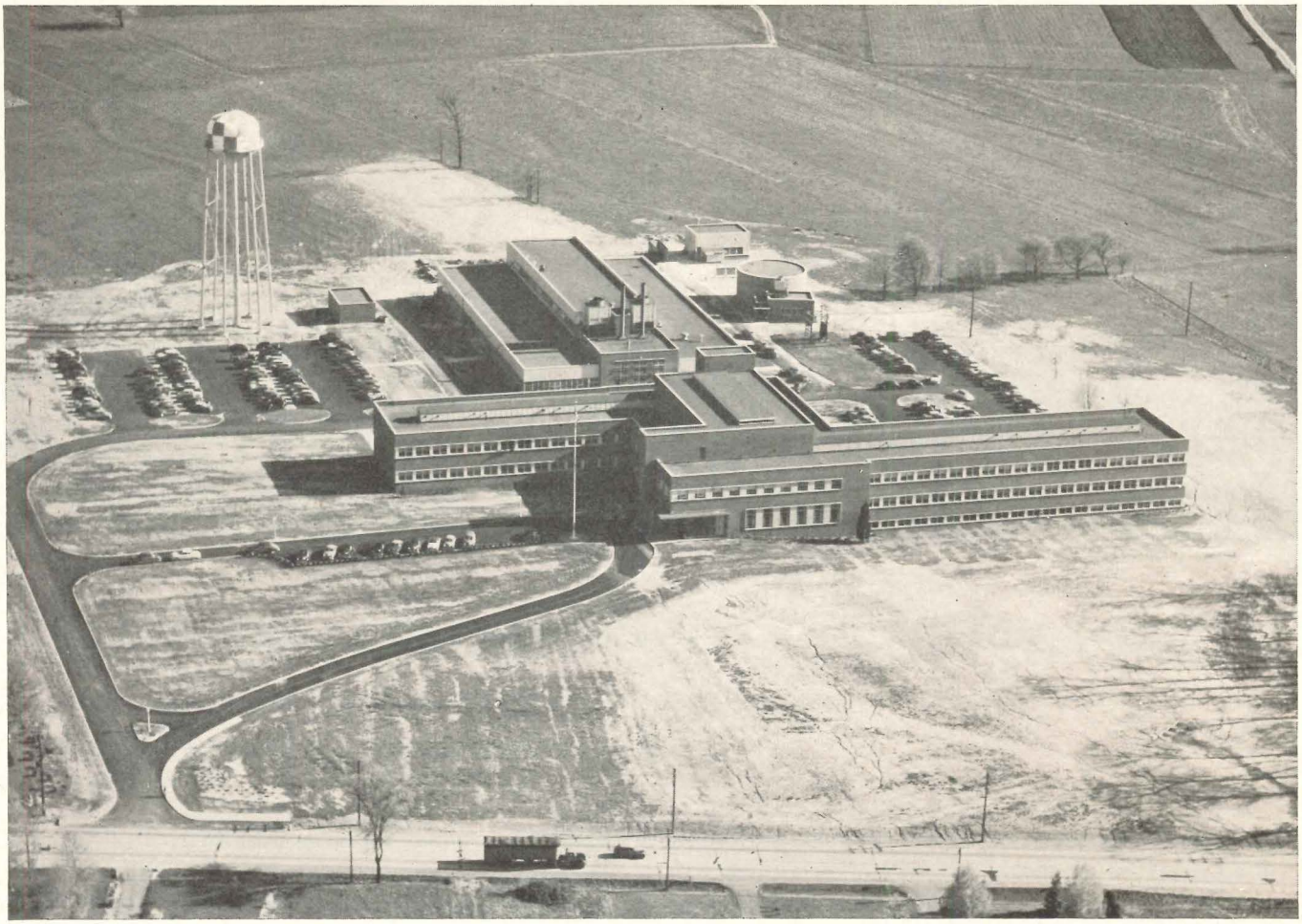
SMALL LABORATORY FOR OIL-WELL RESEARCH

General Petroleum Corporation Laboratory, Los Angeles

Welton Becket and Associates, Architects

THIS MODEST LITTLE LABORATORY provides workmanlike facilities for research in connection with oil well drilling, testing cores and samples, to determine how fast and how much a certain well might produce. Except for the larger laboratories at either end, the building follows the off-set corridor scheme, with offices along the narrow side, piping facilities concentrated in the wider laboratory portion. Rooms are heated and ventilated by a forced air fan system, certain laboratories having floor air exhausts for heavy gases; one laboratory is air conditioned for close temperature control. The Becket firm did all interiors, including even the fixtures.





RESEARCH LABORATORIES FOR ARMSTRONG CORK

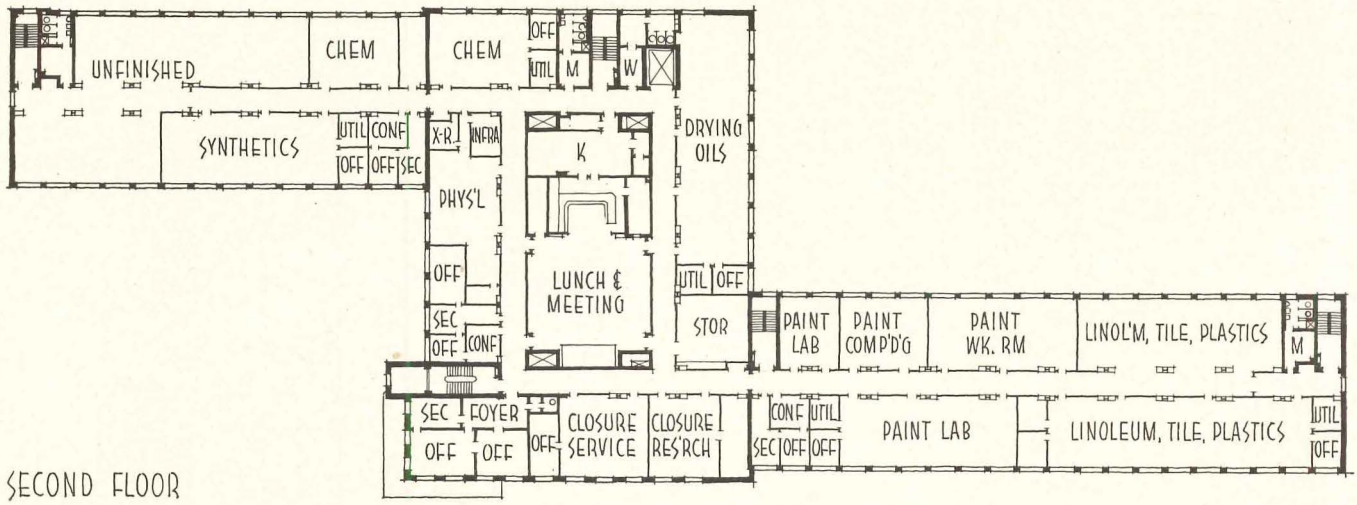
Lincoln Highway Near Lancaster, Pa.

Shreve, Lamb & Harmon Associates, Architects

C. S. Conrad, Jr., Associate Architect

Armstrong Cork's new research laboratories follow a generally typical pattern of one large laboratory building for all research groups, a separate pilot plant, again for all groups. Smaller buildings are for extreme temperature investigations

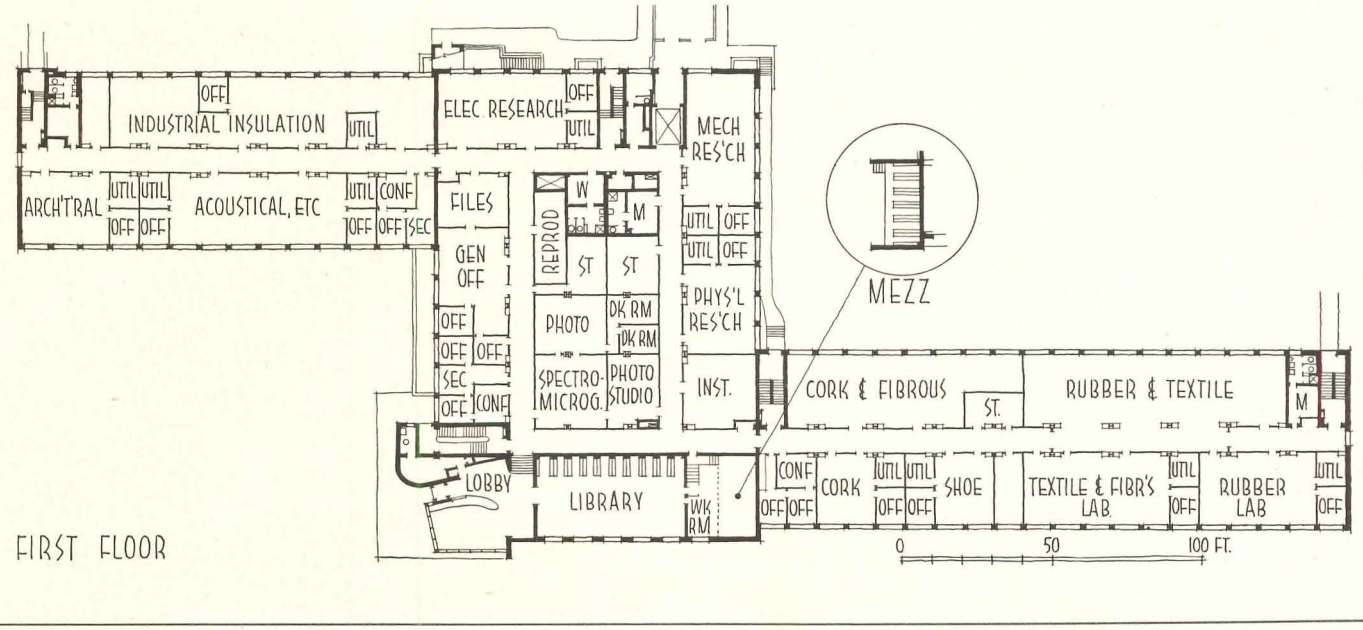
Cortlandt V. D. Hubbard



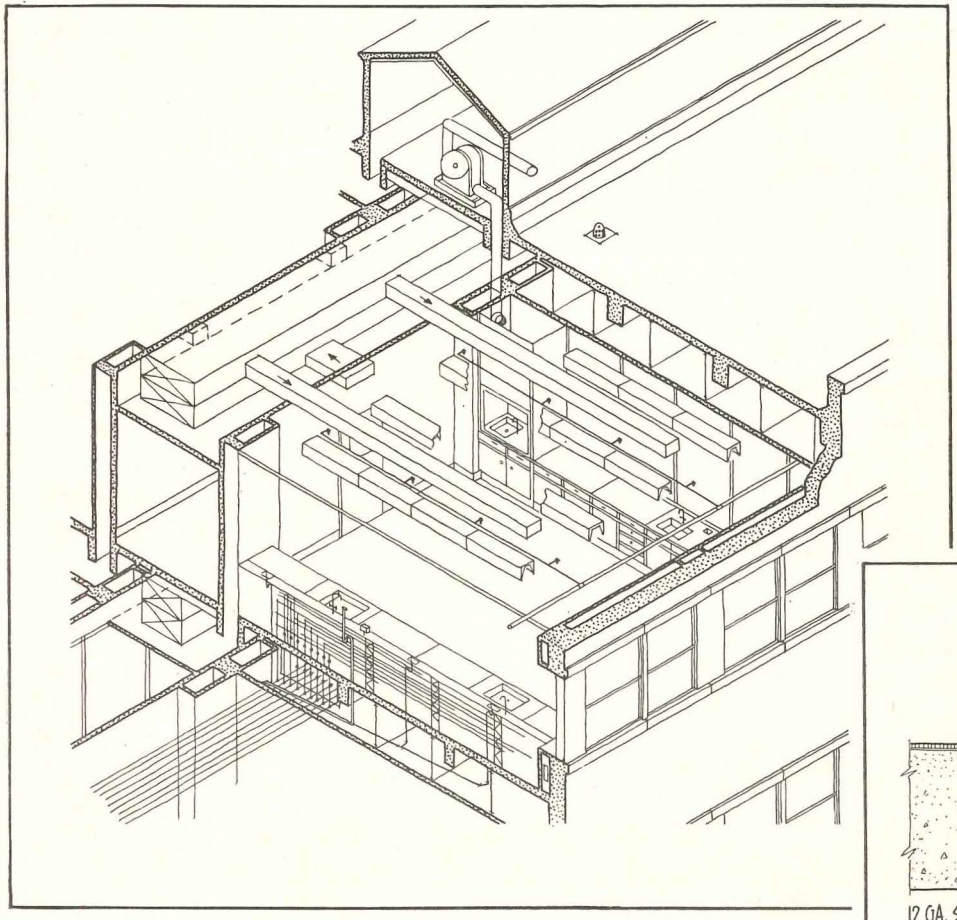
WHAT WAS ORIGINALLY a "postwar project" — a new idealized research center for all Armstrong divisions — came to fruition this spring. Research had been centralized at Lancaster for many years, but the laboratories had outgrown their quarters in converted office and factory buildings. Now only product testing remains at factory locations; all original research, including pilot plant operations, are newly established in a country location four miles out from the home office.

Moving to the quiet location was but one of many questions studied in a lengthy investigation by the architects in cooperation with James Todd Baldwin, A.I.A., of the Armstrong staff. Others included determination of a suitable laboratory module (10 ft was the final decision), immediate and future space requirements by departments, and, perhaps most important, development of a system of service piping for continuity of operation and flexibility for the inevitable changes (see page 172). Also, of course, the study of materials that would best meet the objectives established. A test laboratory unit was erected in an old building to try out ideas in practice.

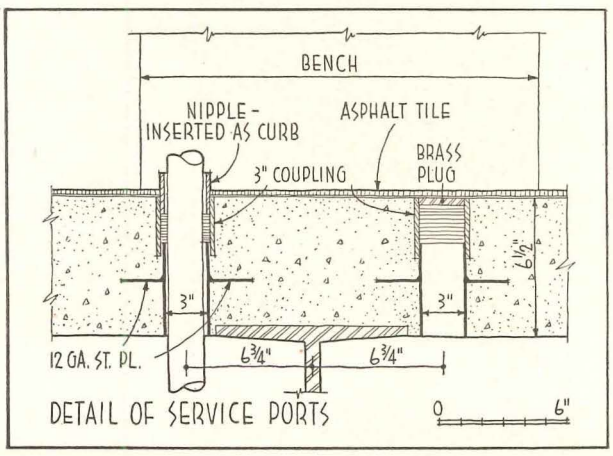
The result is a main laboratory building of two stories and basement, with a large central core (for central services like offices, library, photo and mechanical laboratories, and kitchen and dining room), and two asymmetrical wings for concentrated experimentation. And a separate building in the rear for pilot plant operations, plus smaller buildings for special extreme-temperature experiments.

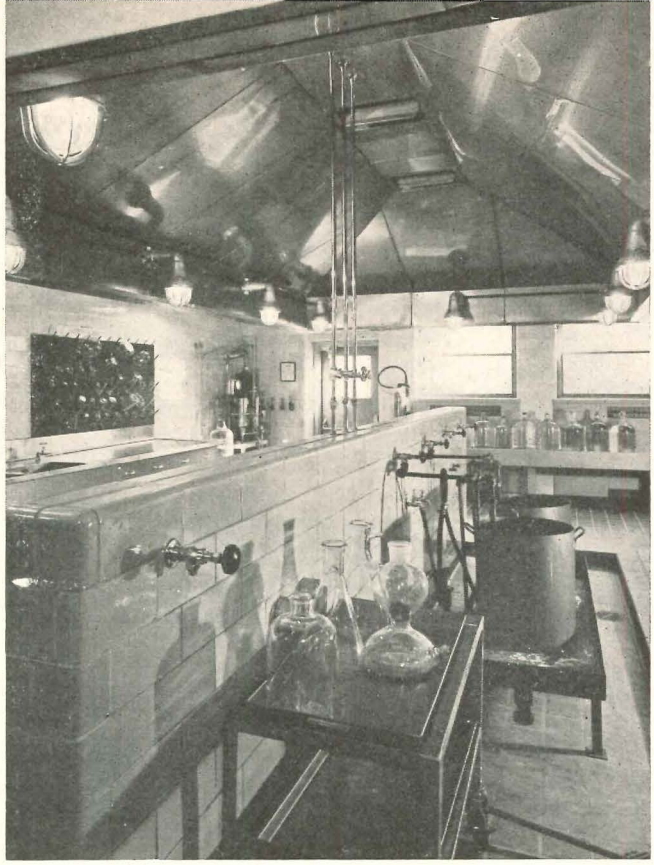


Cortlandt V. D. Hubbard

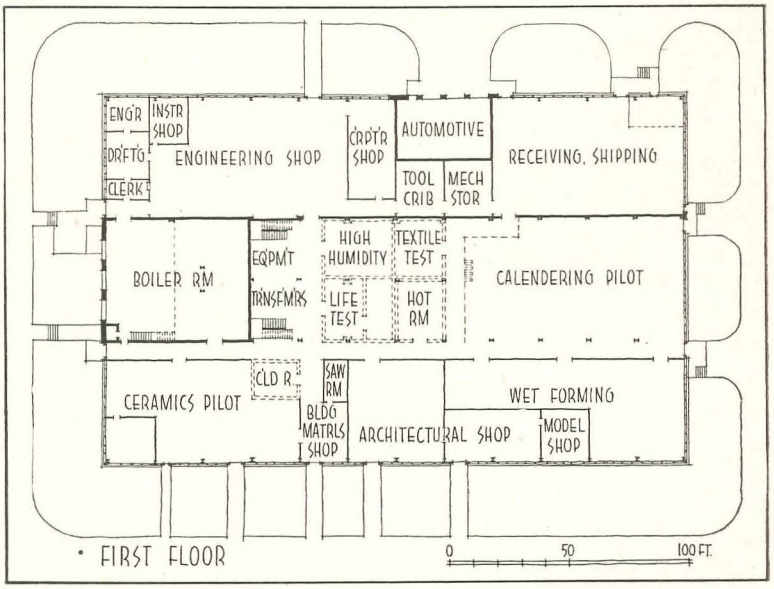


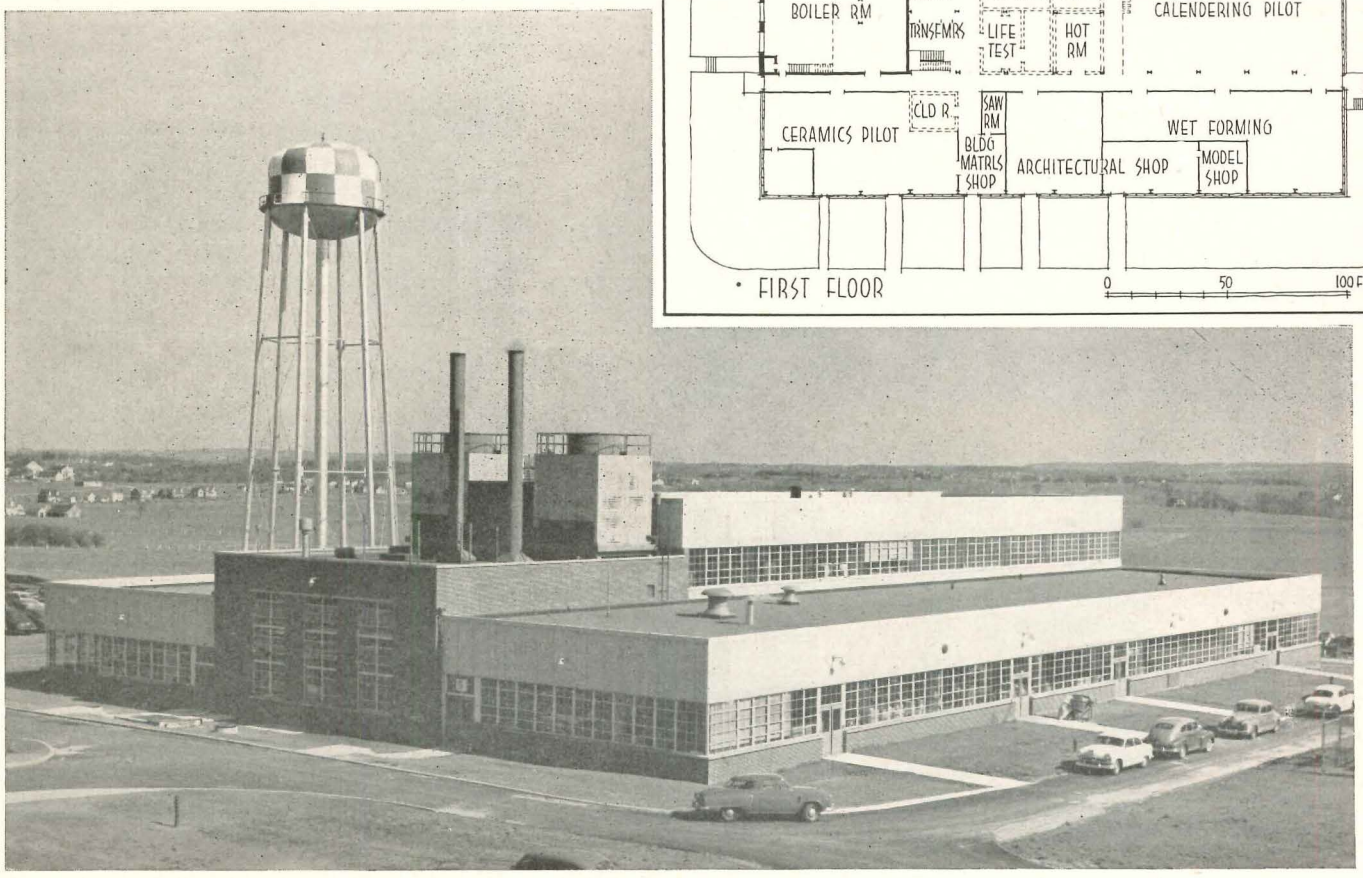
A horizontal system of service distribution was chosen as most economical and flexible. Service mains are looped, feeding in both directions, and valved at every 10 ft, so that piping changes can be made without disturbance to operation. Mains run in the ceiling of the floor below, feed up through pre-set service ports in the floor; ports can be closed if not in use (see detail below)



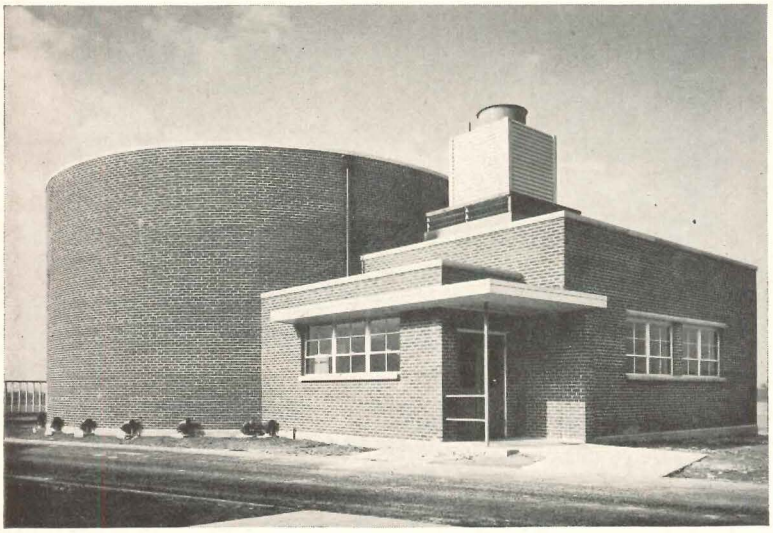


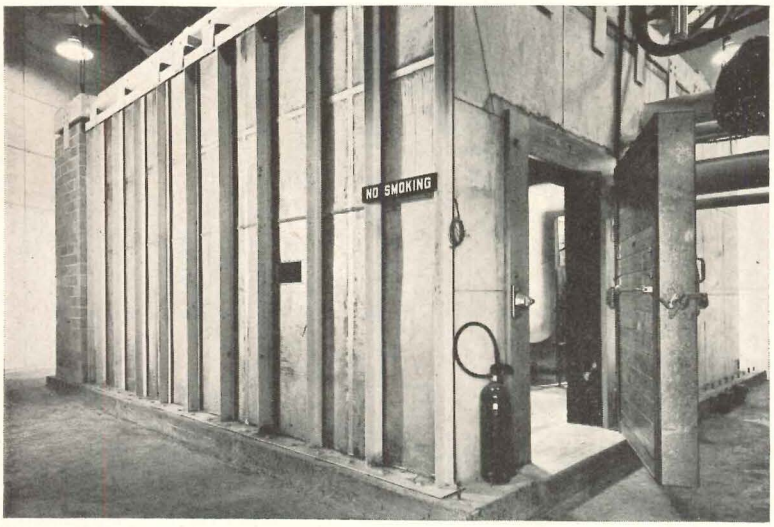
Separate pilot plant accommodates all process tests for the several divisions, also other experiments requiring heavy equipment. Main objective in the plan is flexibility, as frequent changes are the rule in pilot operations

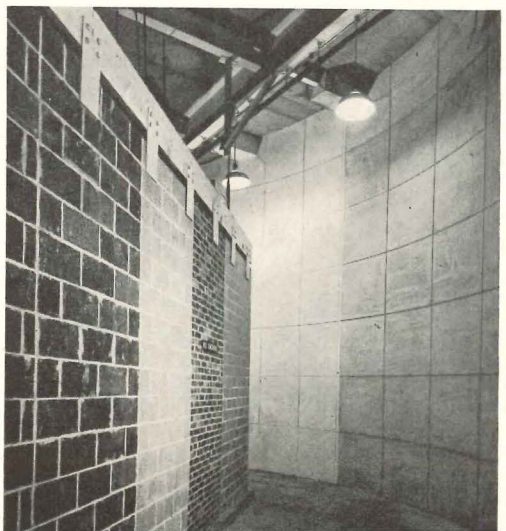




Extreme temperature building (below) for testing products under adverse weather and exposure. The cylindrical form was dictated by exacting air-conditioning requirements



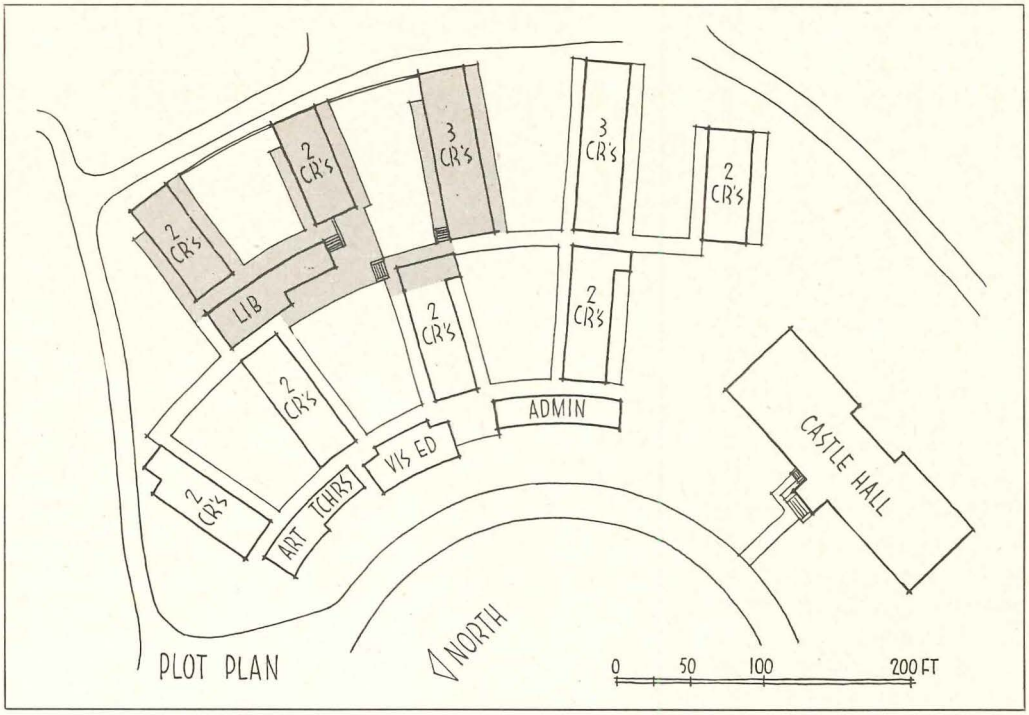




Spacious lobby in the laboratory building (photo strip above) welcomes visitors at grade level, though corridor level is several steps higher. It also manages to exhibit a great many company products

Cortlandt V. D. Hubbard

Library in laboratory section is at ground level, has high ceiling, and therefore accommodates two levels for stack rooms (photo below and across page)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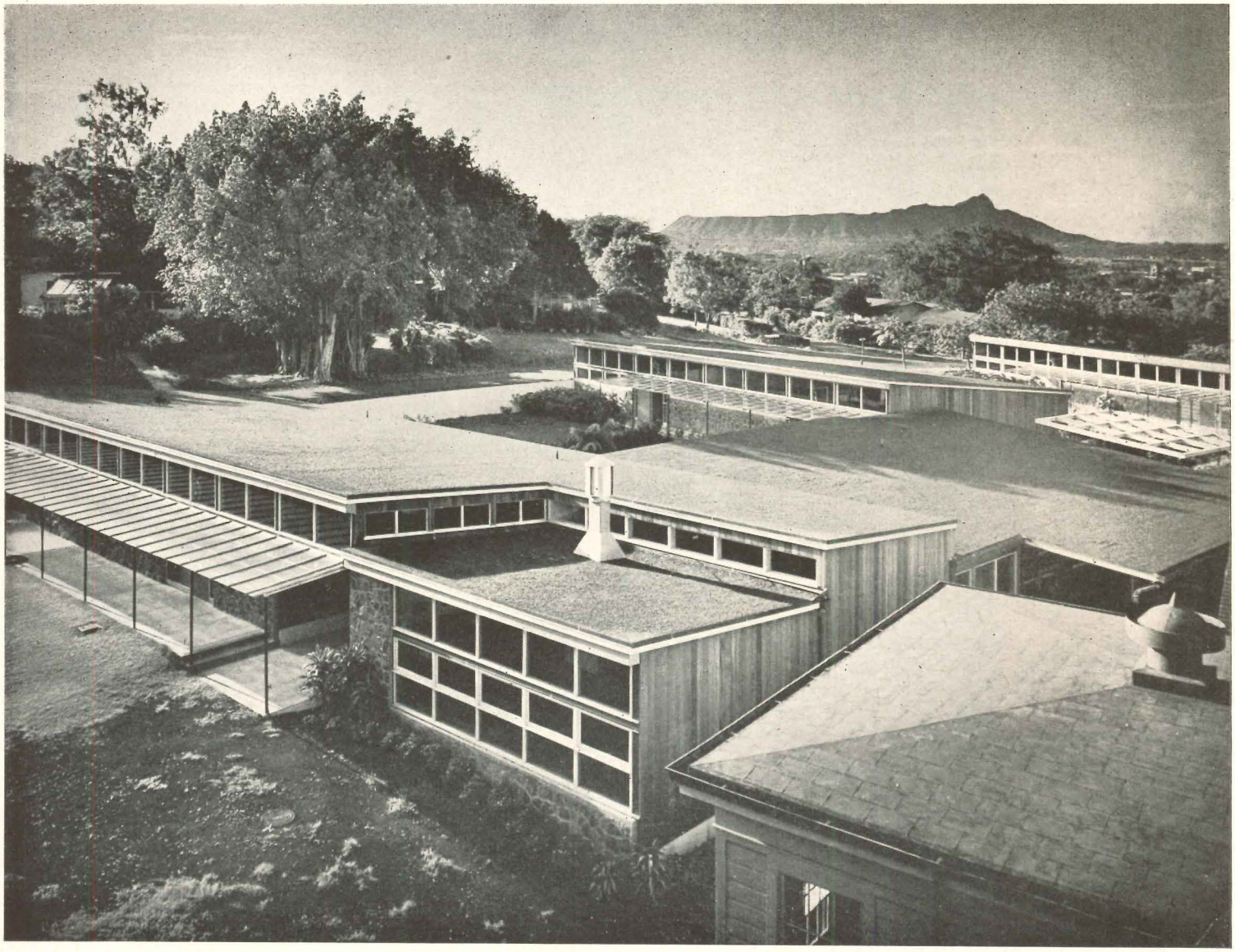
PLOT PLAN



ELEMENTARY SCHOOL IN HAWAIIAN MANNER

Punahou School, Honolulu

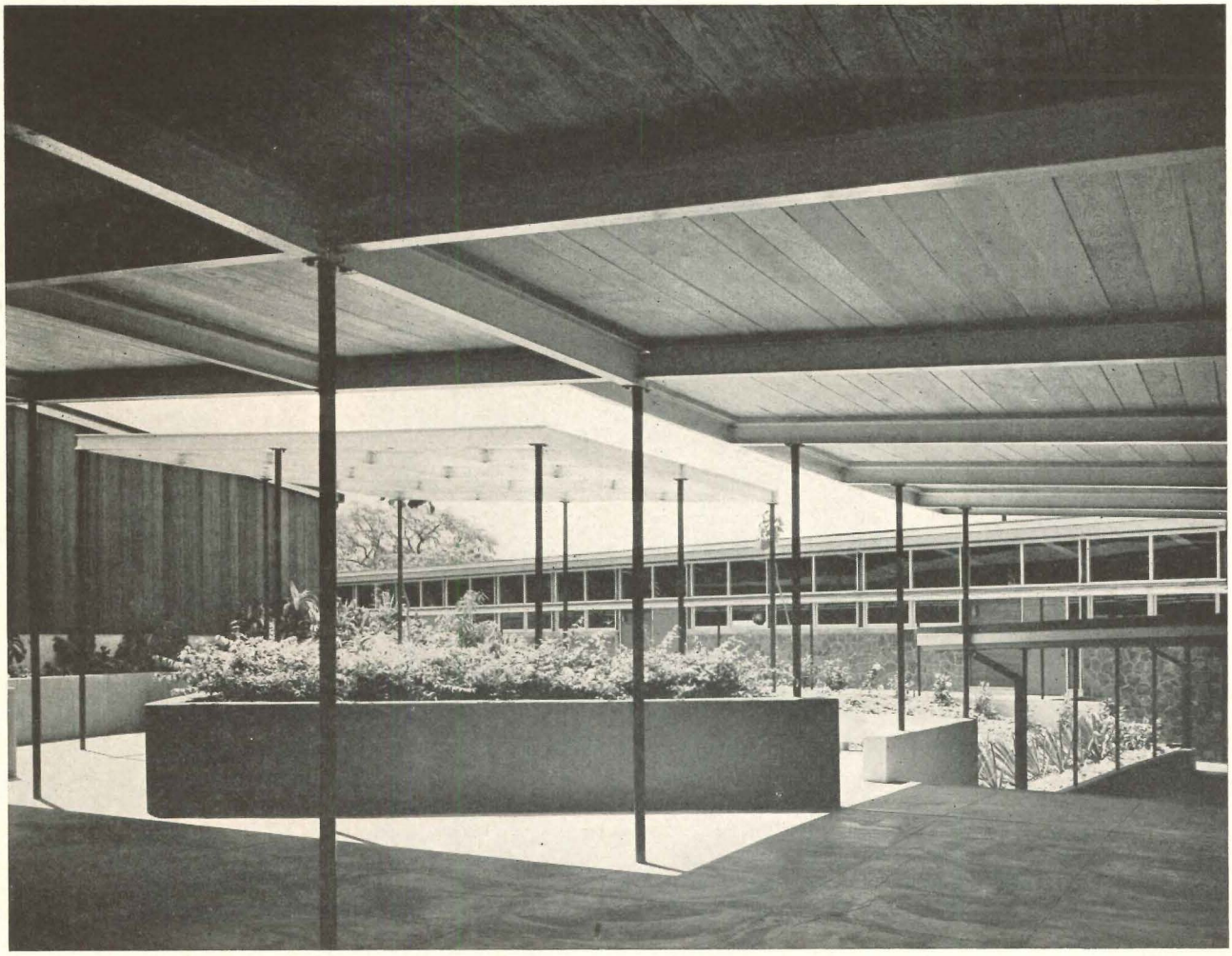
Vladimar Ossipoff, Architect

In the fabulous land of Hawaii there seems to be a great deal of climate, a great deal of activity, and a similar quantity of interesting architecture. Design seems to express something of the welcome extended by the islands to progress and ideas, also of the gaiety and zest so generally associated with Hawaii. And where are such qualities more appropriate than in an elementary school?

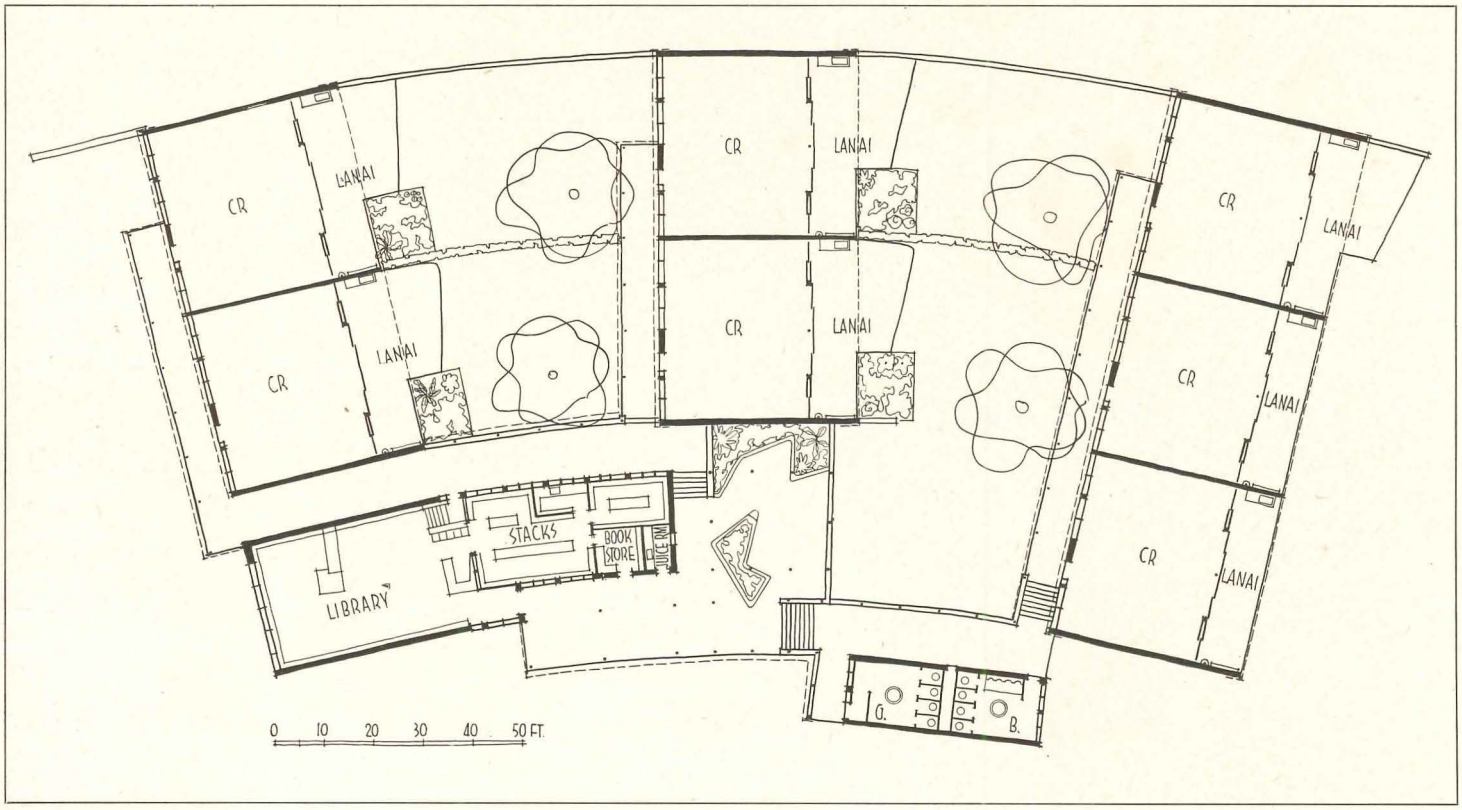
The buildings here shown are but a start on a comprehensive program for the Punahou School. This portion consists of seven class rooms, library wing and toilets in a building to be finished later. When additional funds are available, the existing forty-year-old buildings will be demolished and more buildings erected.

The classrooms are laid out in the finger plan to take advantage of the open climate for outdoor study and recreation areas, with single outdoor corridors, but with plenty of provisions for shade and for protection against heavy rains. Corridors, running generally along the north side, are roofed over with obscure glass, allowing north light to enter the windows below the roof. Windows above the roof have fixed sash, as this side is exposed to the wind and rain; sash below the glass roof swing in for ventilation. Additional ventilation is obtained through the screened soffit of the eave.

The steel arbor seen in the court view will support a spreading Hau tree, which soon will provide shade.



R. Wenkam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JUICE BAR
LIBRARY
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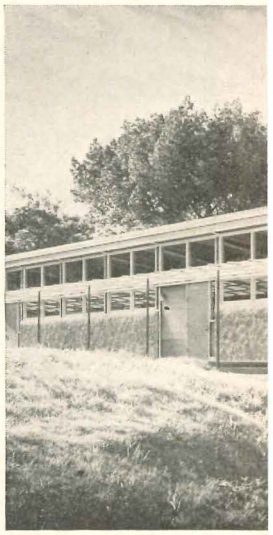
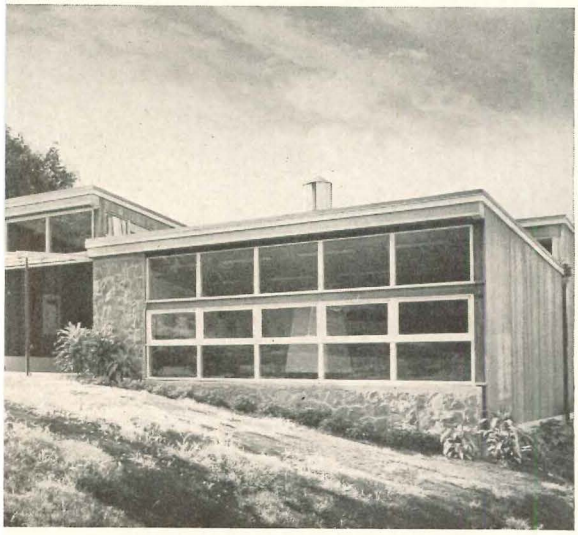
B.
0 10 20 30 40 50 FT.

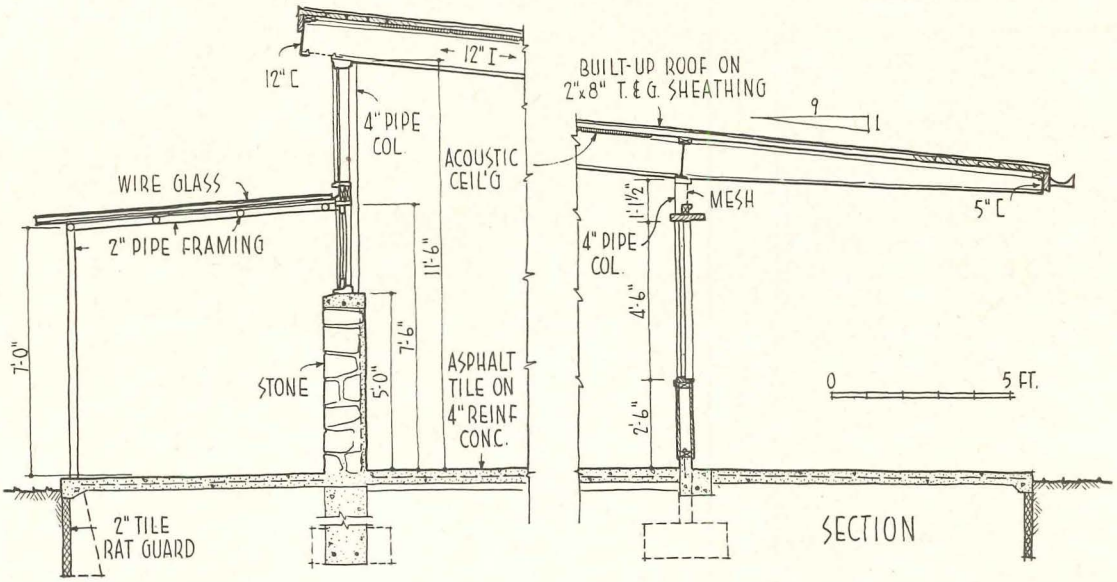
R. Wenkam



Library is fairly large, yet manages to maintain intimate scale and the typical open quality. Fireplace open on four sides sends warmth in all directions on damp days

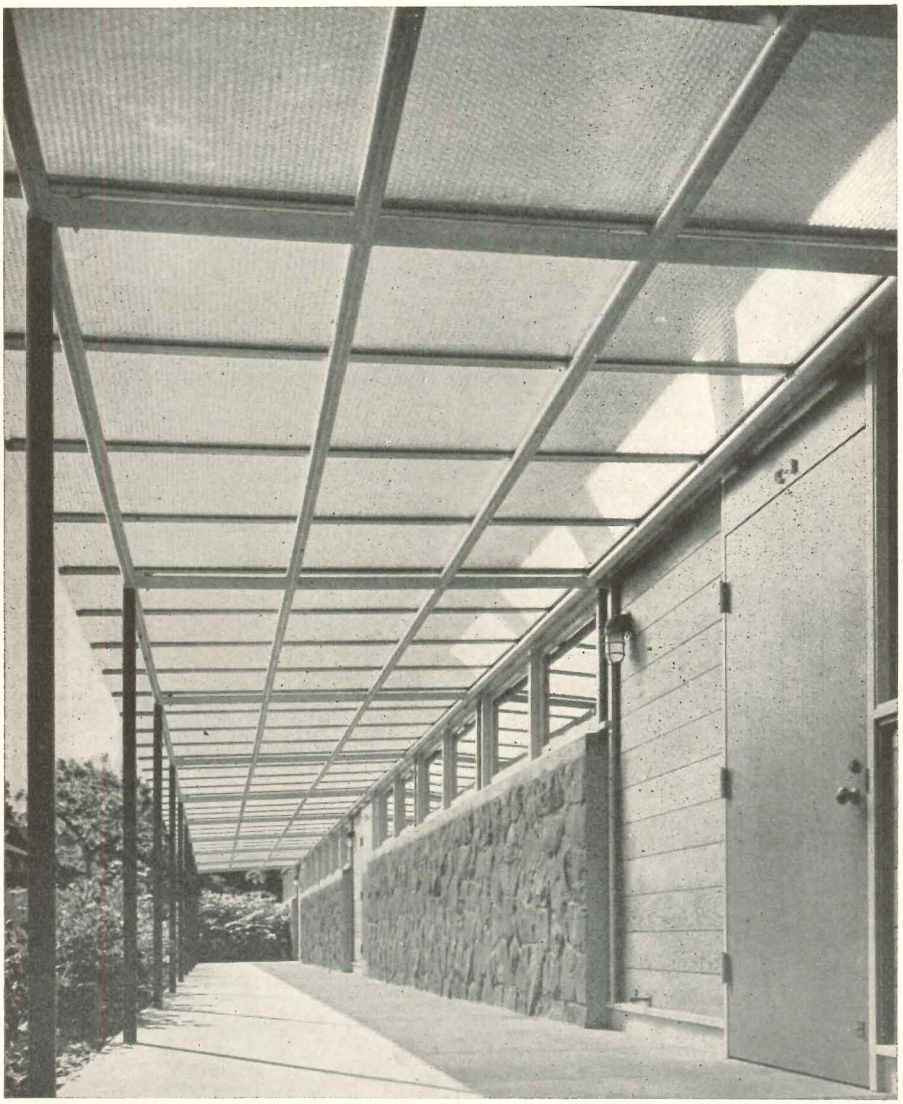
Glass roofed corridor on north side, wide overhangs on south side give protection against wind, rain and strong sunshine, make outdoor space useful no matter what the weather. Sliding doors open classrooms to outdoors. Planting is extensively used for screening as well as for color and visual interest

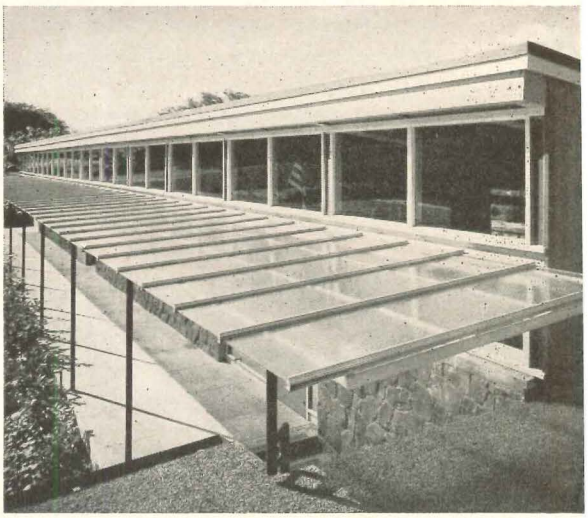




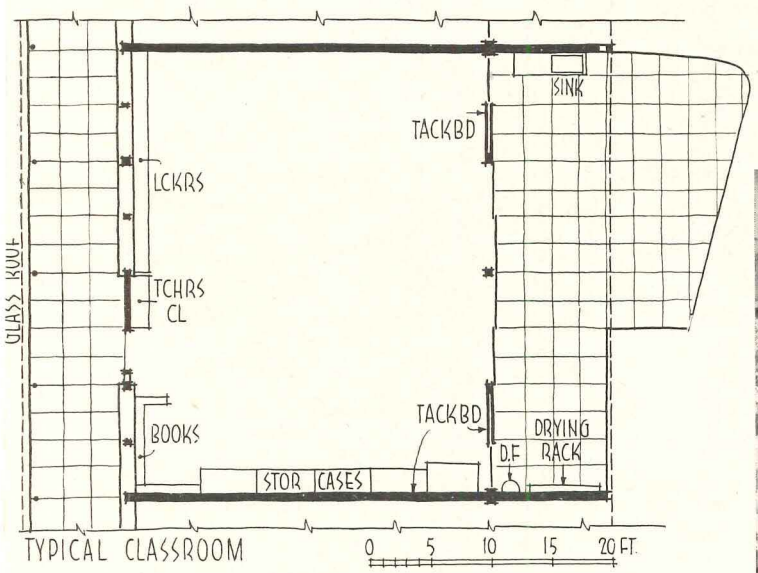
Structure is exposed steel framing supported by pipe columns. Exterior walls are of gray stone and natural redwood. Steel framing is painted an off-white, pipe columns bright red

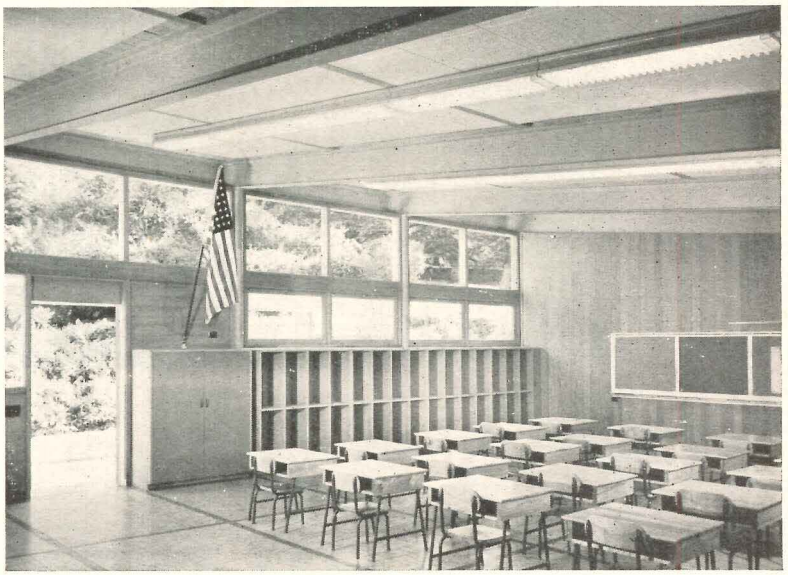
R. Wenkam



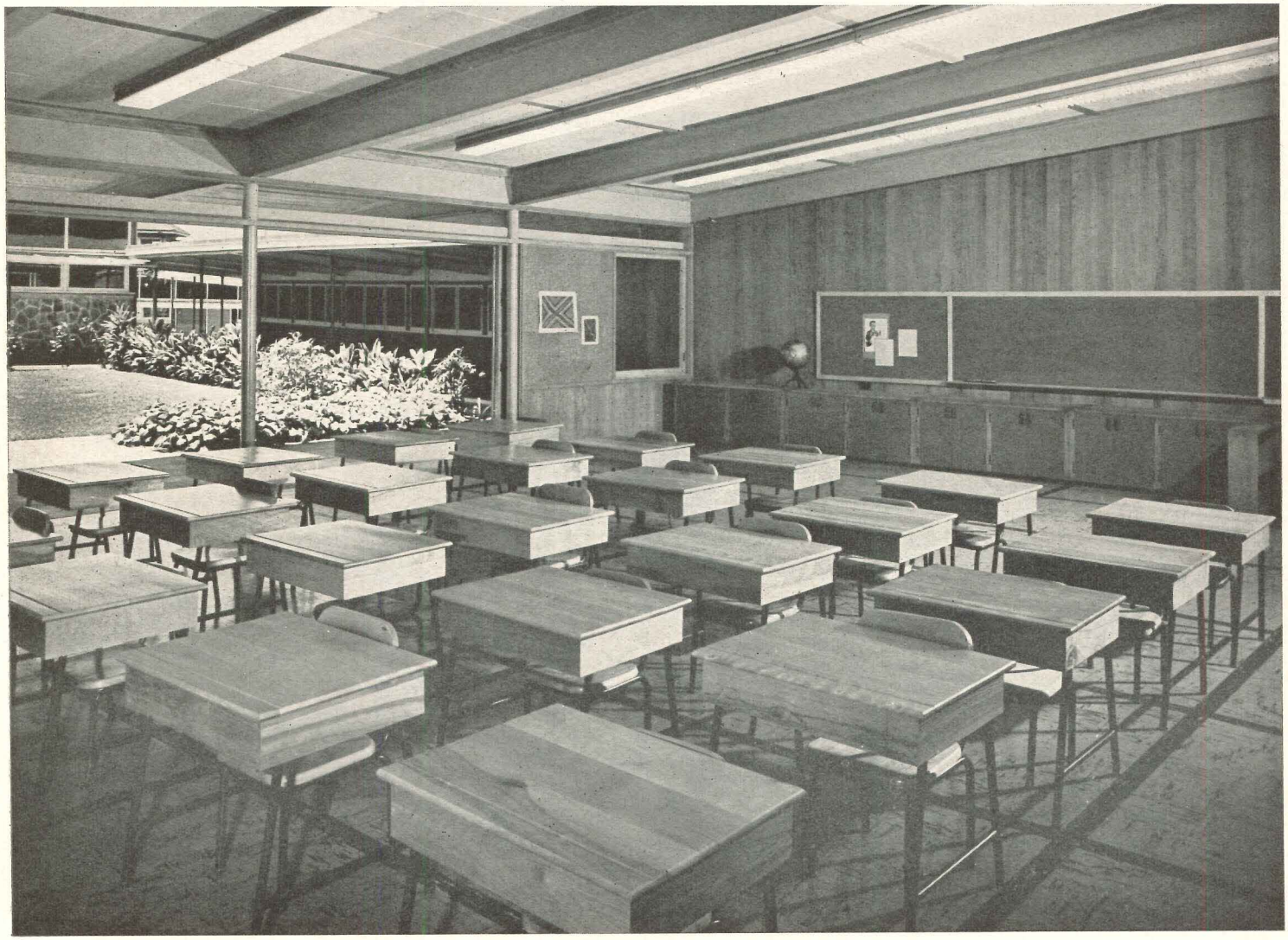


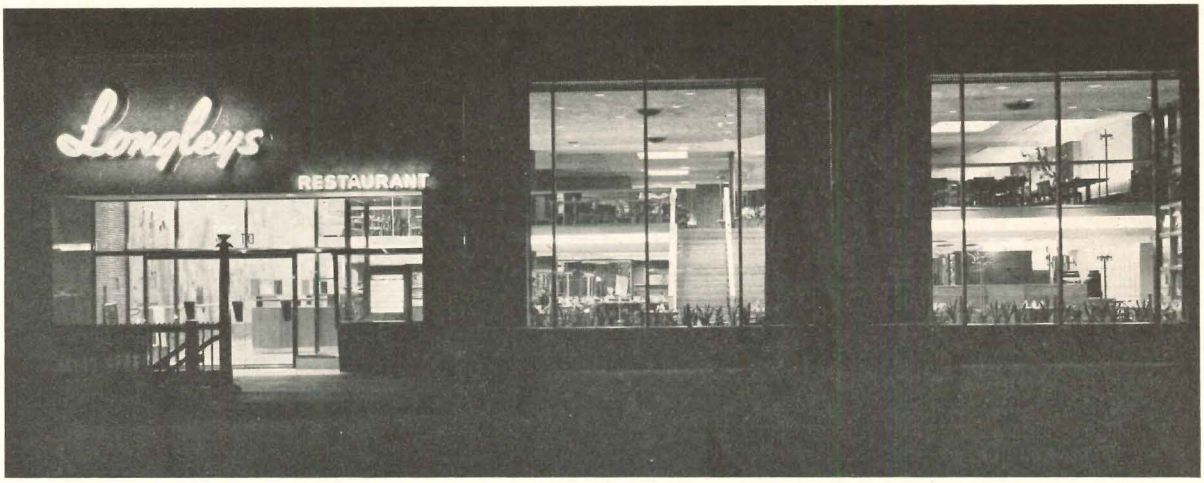
Stone wall provides necessary wall space for lockers on north side. Operable sash below the glass corridor roof, and fixed sash above, combine daylighting with weather protection





Classrooms are daylighted from both sides, but with clerestory windows on north side only. Sliding doors permit room to be virtually completely open to lanai on south side





Cortlandt V. D. Hubbard

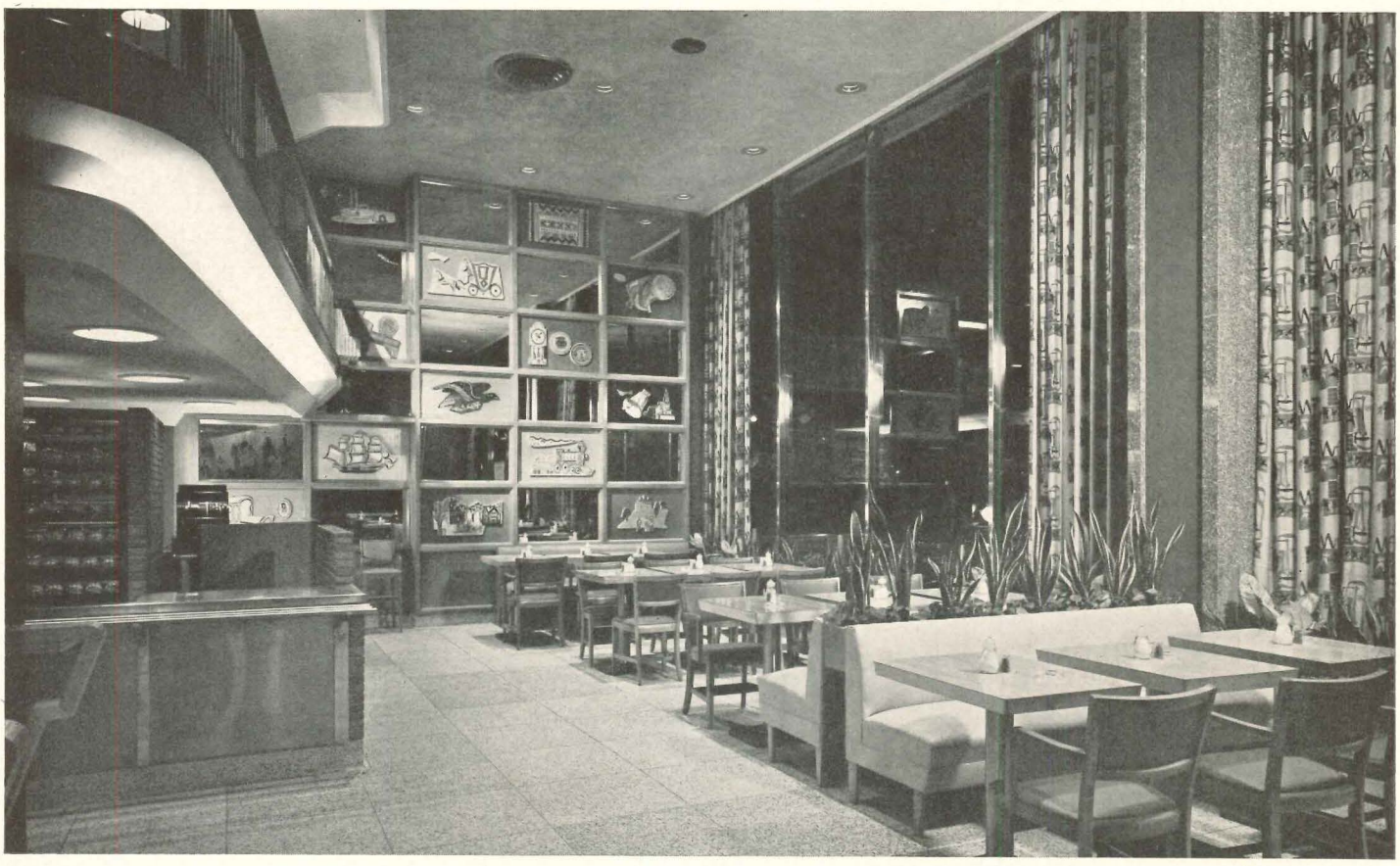
RESTAURANT PLANNED FOR SELF-SERVICE

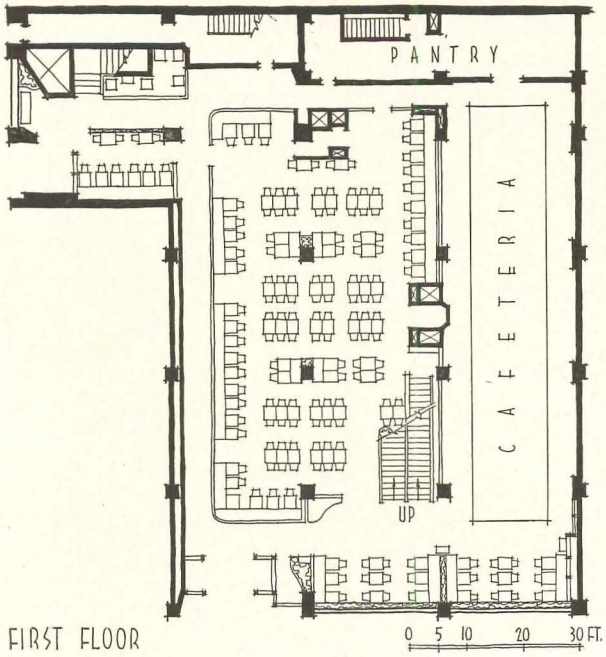
Longleys Restaurant

New York City

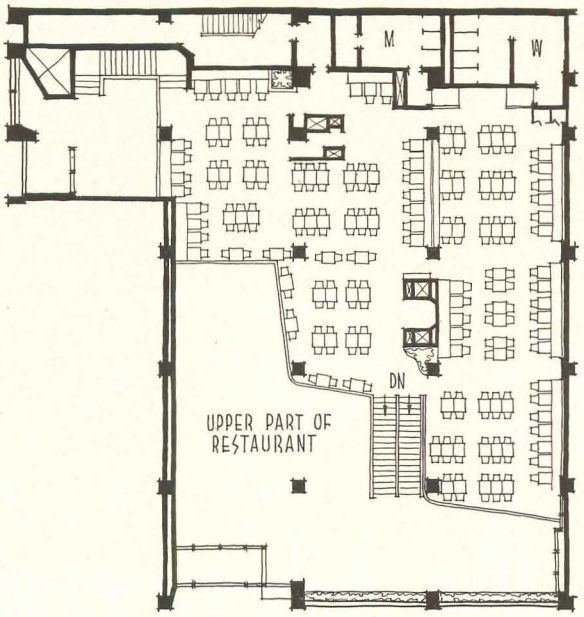
Joseph G. Morgan, Architect

Thomas F. Hennessy, Associate Architect





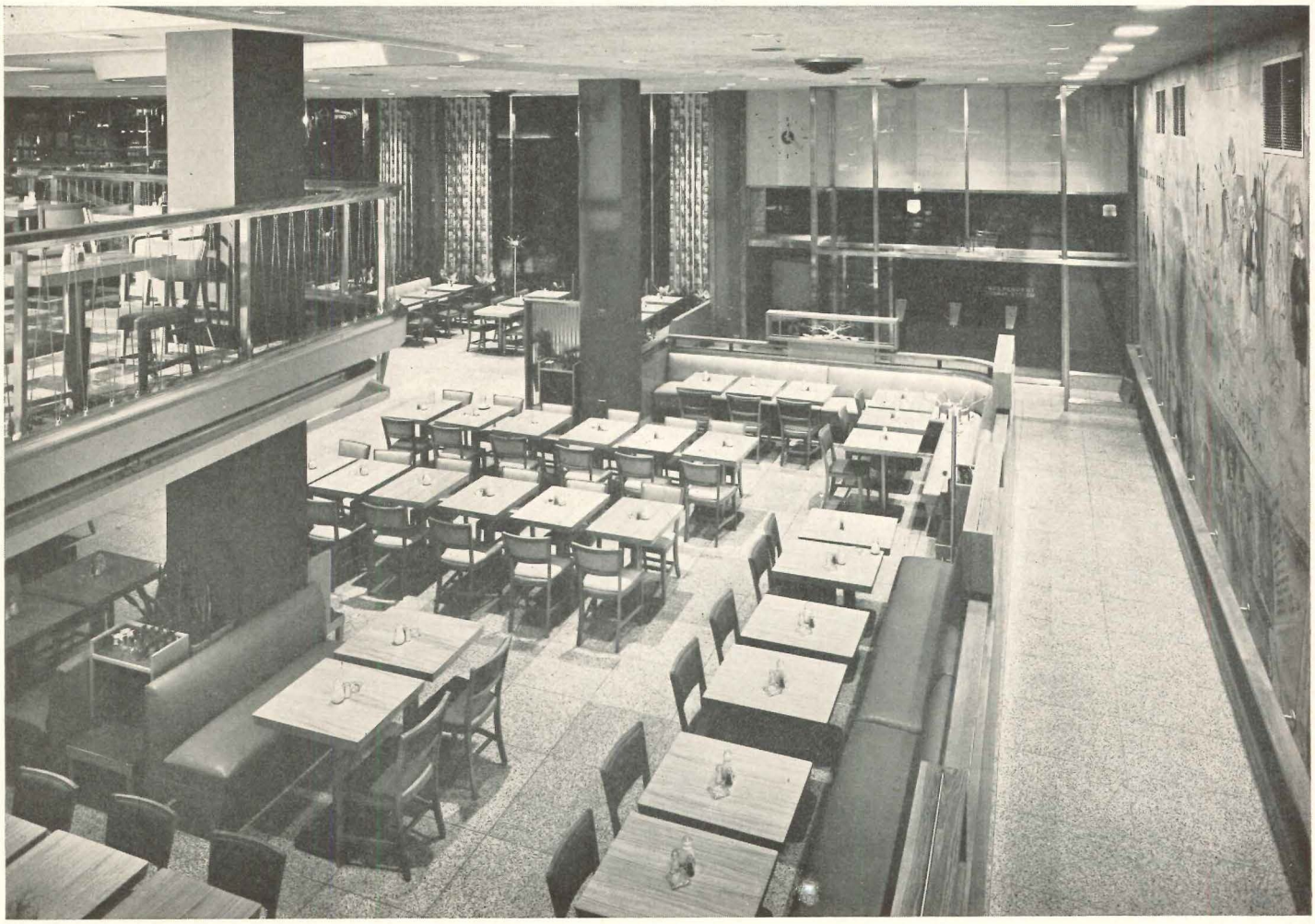
FIRST FLOOR



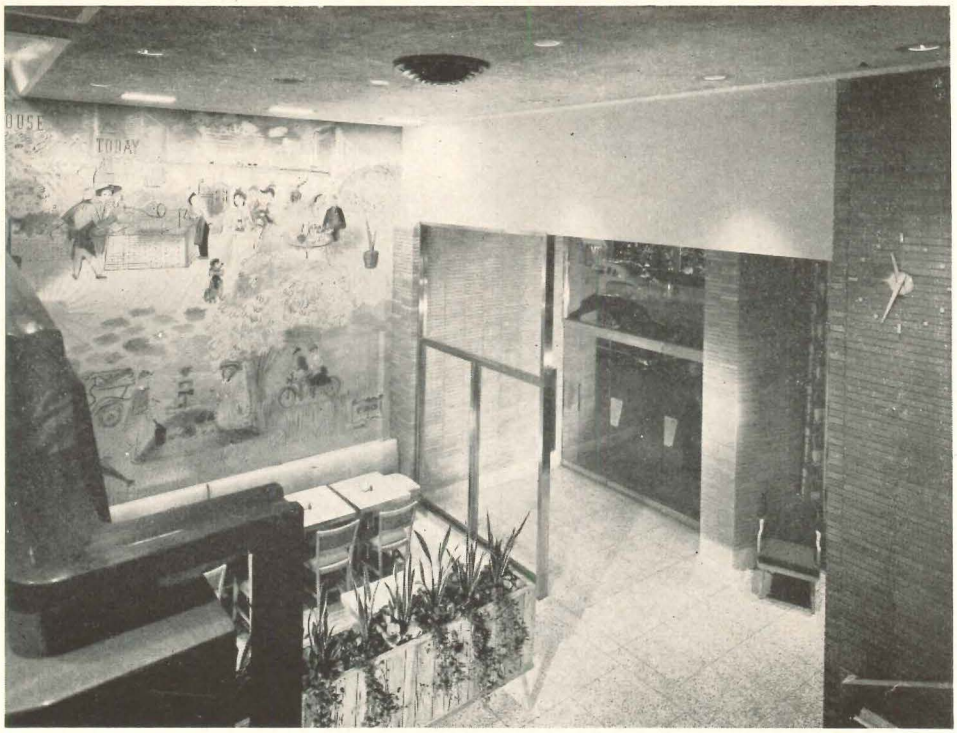
MEZZANINE

THE PROBLEM HERE was to fit a smoothly working self-service restaurant into an existing building. Located opposite Radio City, the property is L-shaped, fronting both on Sixth Avenue and on busy 50th Street. To accommodate the rapid turnover during peak periods, the service station is an island; customers pass along it on either side, passing checker and cashier at end; each line can serve 10 per minute. The flow of customer traffic is kept completely out of the dining area.

A seating capacity of 500 was made possible by the introduction of a balcony seating 300. The low ceiling heights which resulted are minimized visually by indirect lighting panels forming a pattern of 8-ft squares. The irregular shape of the balcony and the open railing of plastic tiller rope and steel also help to counterbalance the low ceilings.

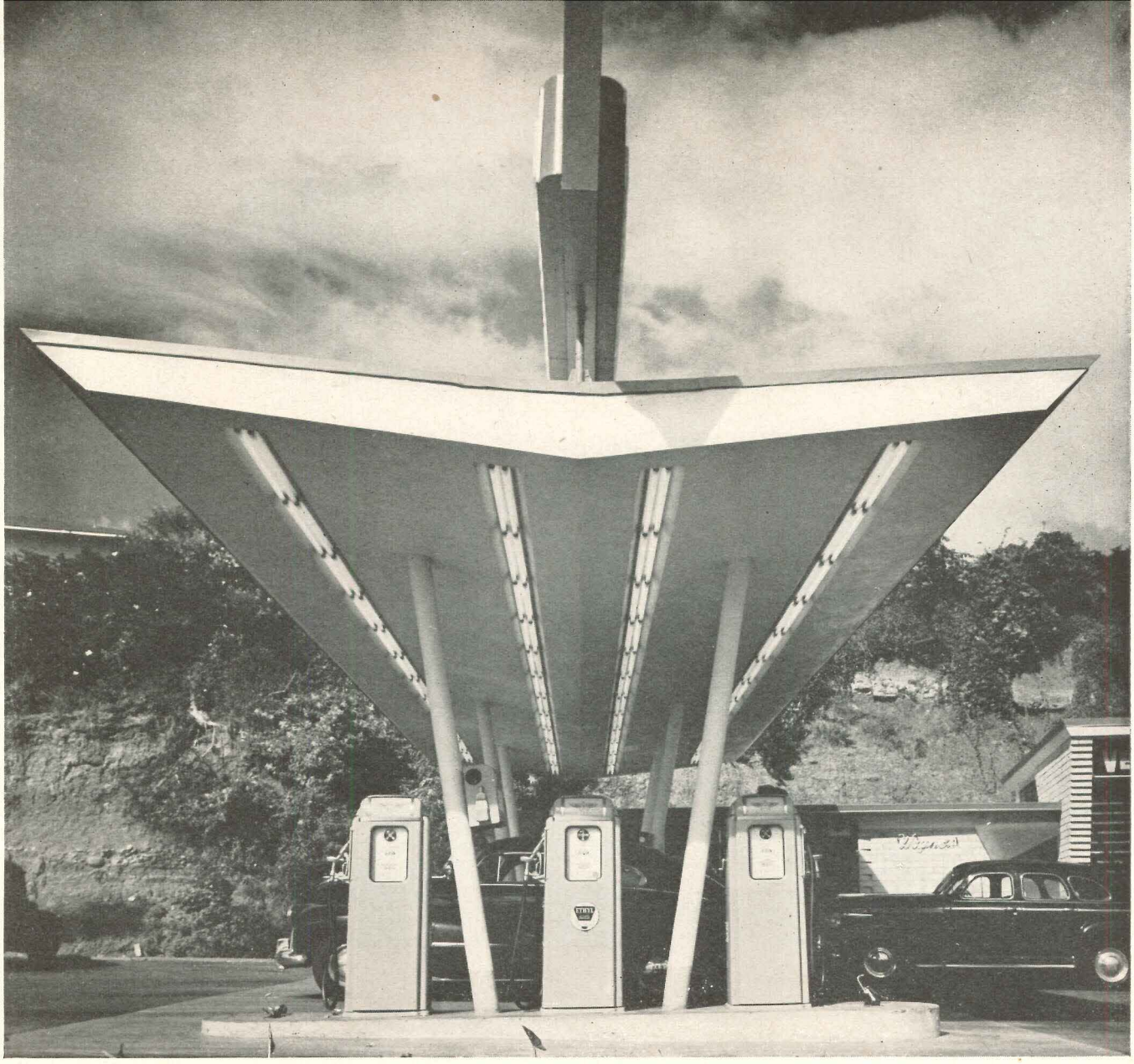


RESTAURANT PLANNED FOR SELF-SERVICE



Public areas are covered with a variety of plastics, completely washable, and with warm tones of brick and wood to blend with huge mural by Cobelle on south wall. Stairs are broad and low, balcony rail is open to help attract customers to upper level

Cortlandt V. D. Hubbard



R. Wenkam

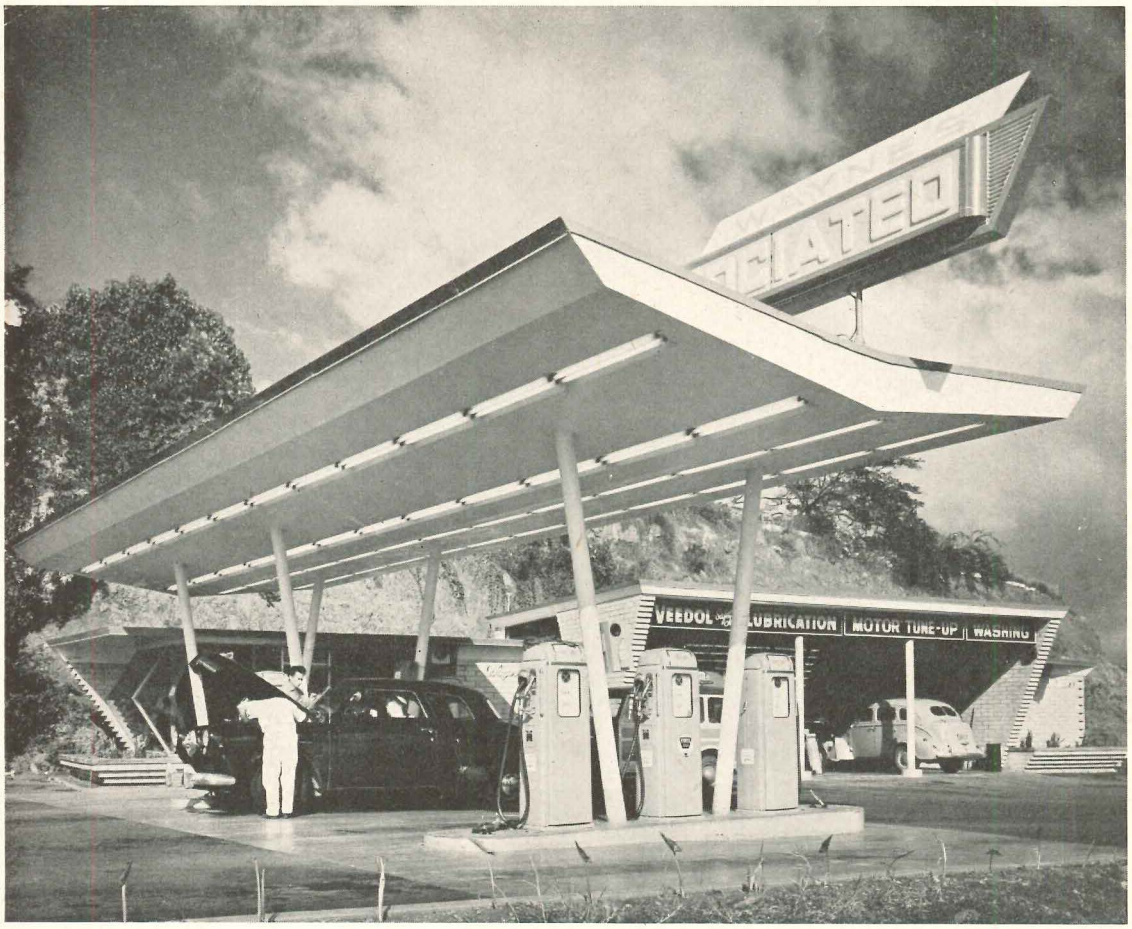
DESIGNED TO ATTRACT ATTENTION

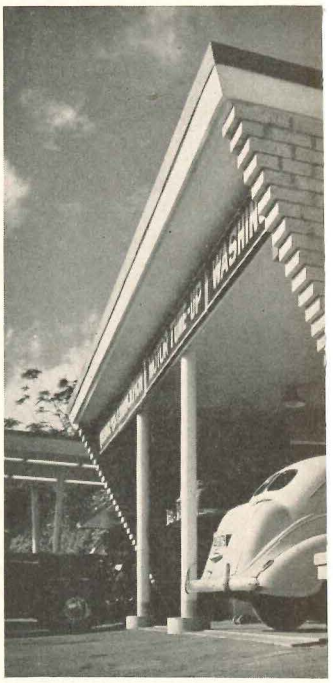
Wayne's Associated Service
Aiea, Oahu, T. H.

Wimberly and Cook, Architects
J. Grant Morgan, Structural Engineer

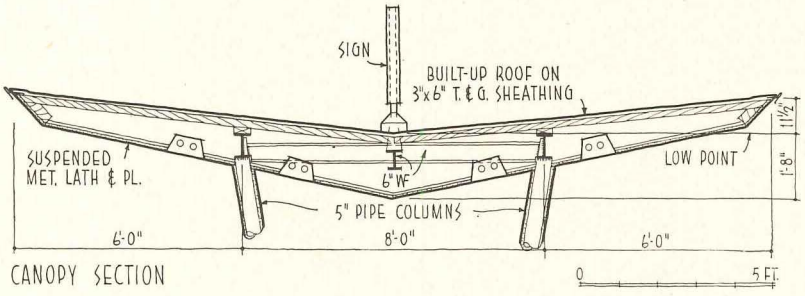
OWNER AND ARCHITECTS agreed at the outset that this service station must be of "eye-arresting design." Located on a main highway near Pearl Harbor, it had to attract attention to compete with several other service stations in the vicinity. Yet economy of construction was a main requirement.

Three major devices were used as attention-getters: a flaring pump canopy, wide open shop and sales areas, and highly unusual show windows (page 187). The canopy is supported by steel pipe frames; construction is of steel wide-flange roof beams with a 3 by 6 T & G roof deck and a suspended lath and plaster ceiling. On top of it is a specially designed sign panel intended to eliminate the possibility of the unattractive signs so frequently used by service stations. Wash rack and lubrication hoist are housed together in a high-ceilinged unit with adjacent storage and toilet facilities. A small office and parts sales room occupy a connecting low wing.

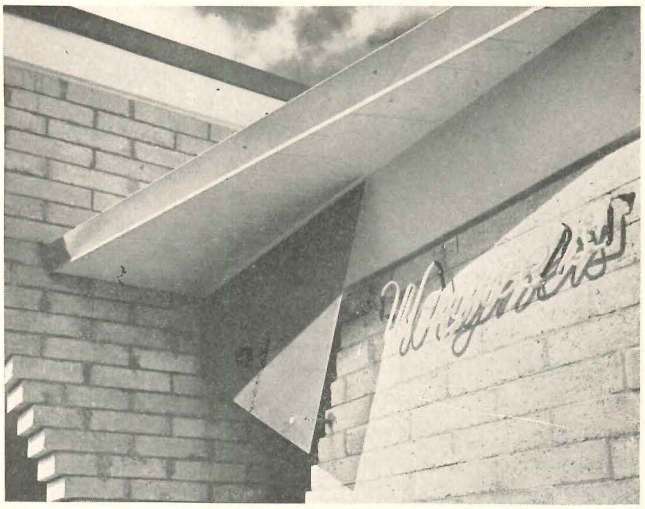


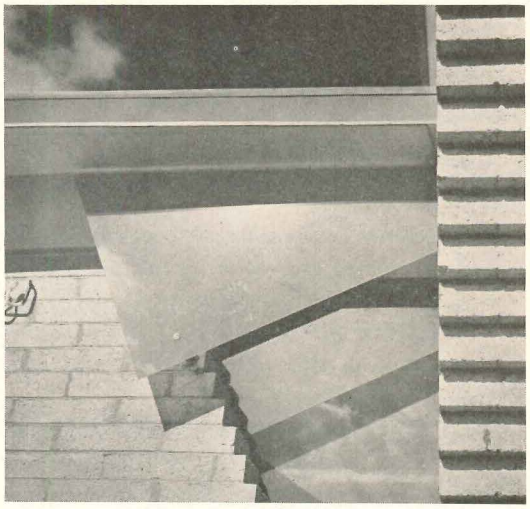


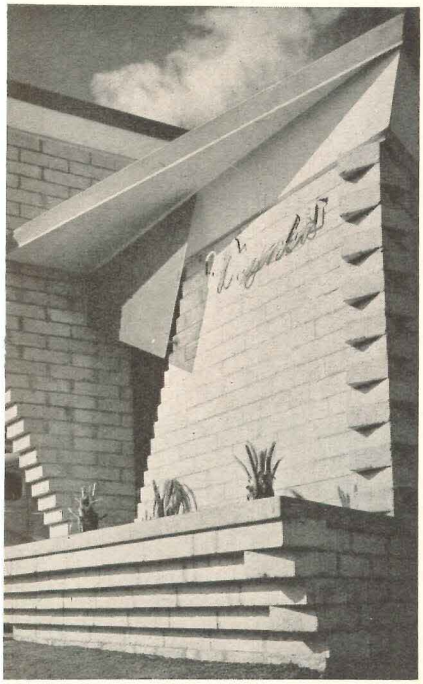
Main structure is of locally made buff-colored concrete block walls with wood roof framing, using steel members for beams in long span. Mild Hawaiian climate eliminated need for doors and heating facilities

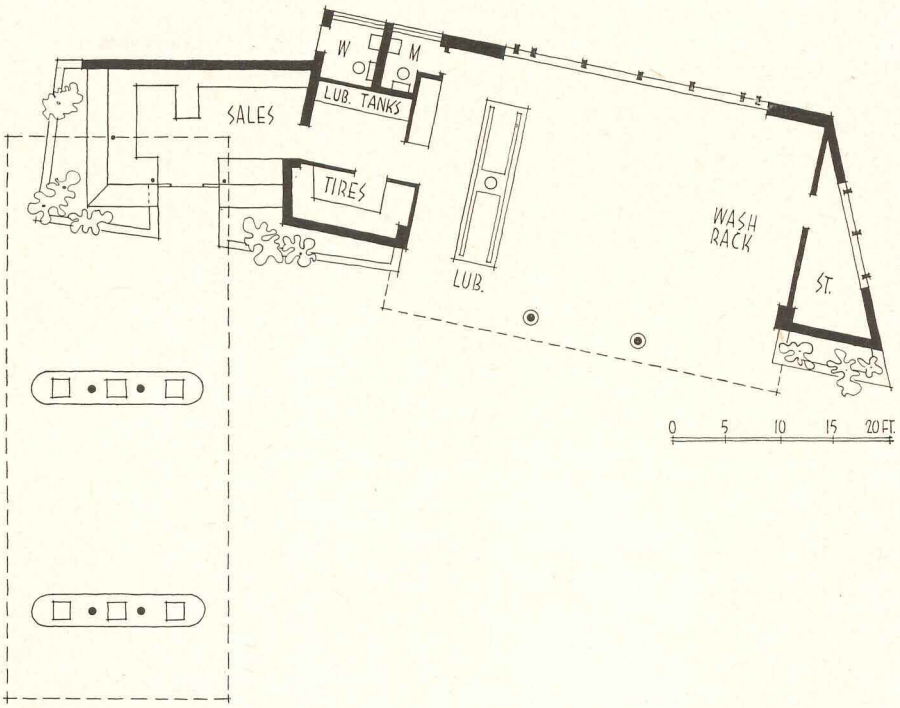


CANOPY SECTION



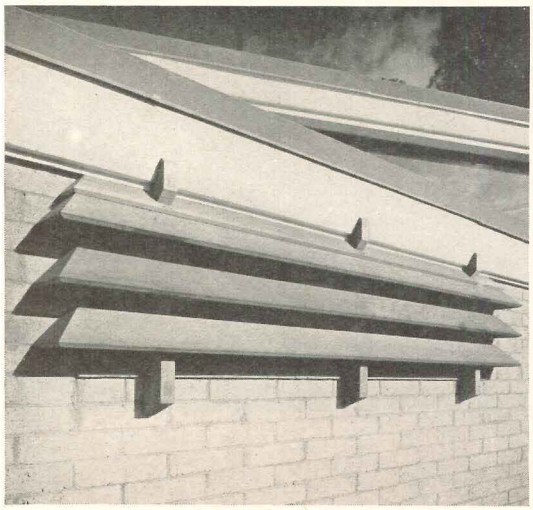


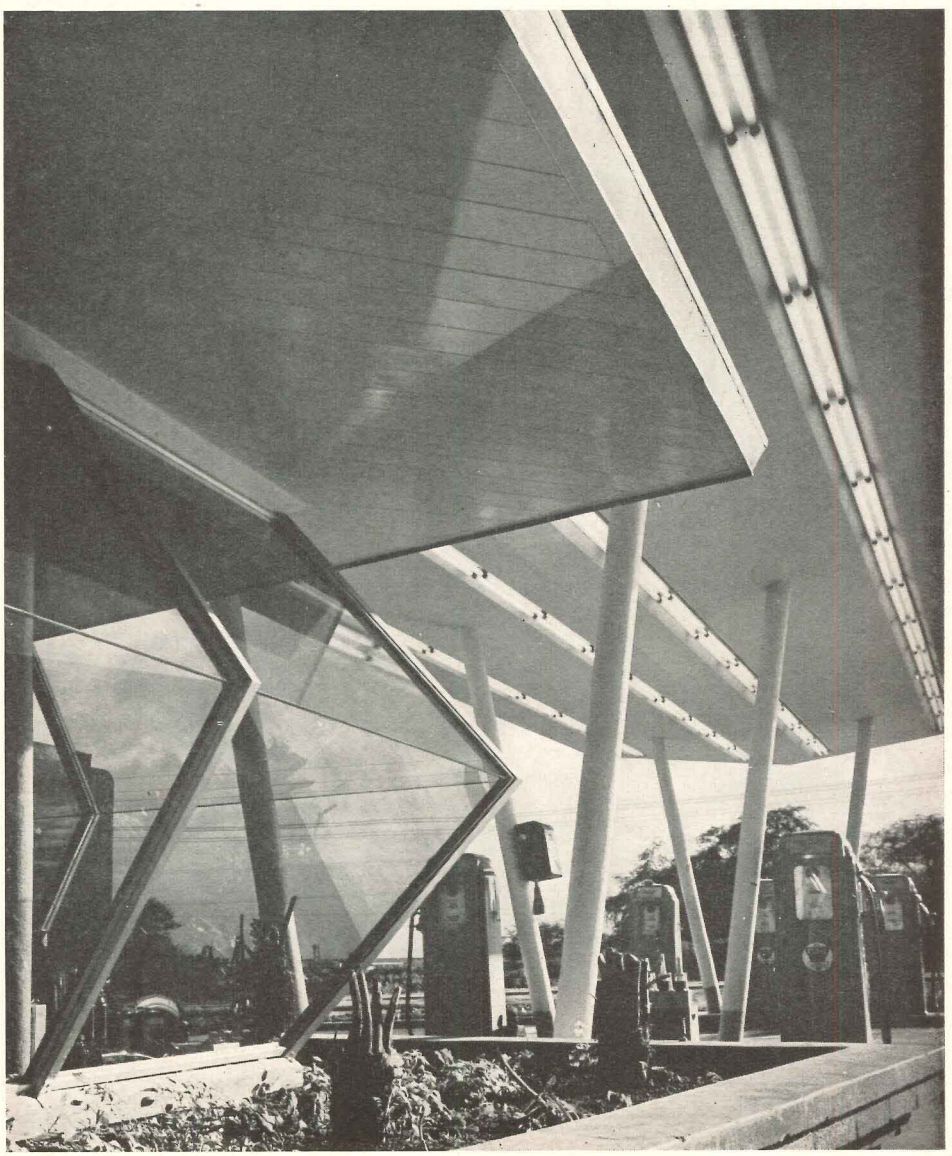




R. Wenkam

Show windows in office wing (right) were constructed of an inexpensive line of store front moldings and heat absorbing glass. Design was deliberately unusual, partly for effect and partly as an experiment in solving problem of show window reflections. Louvers (below) screen storage room windows



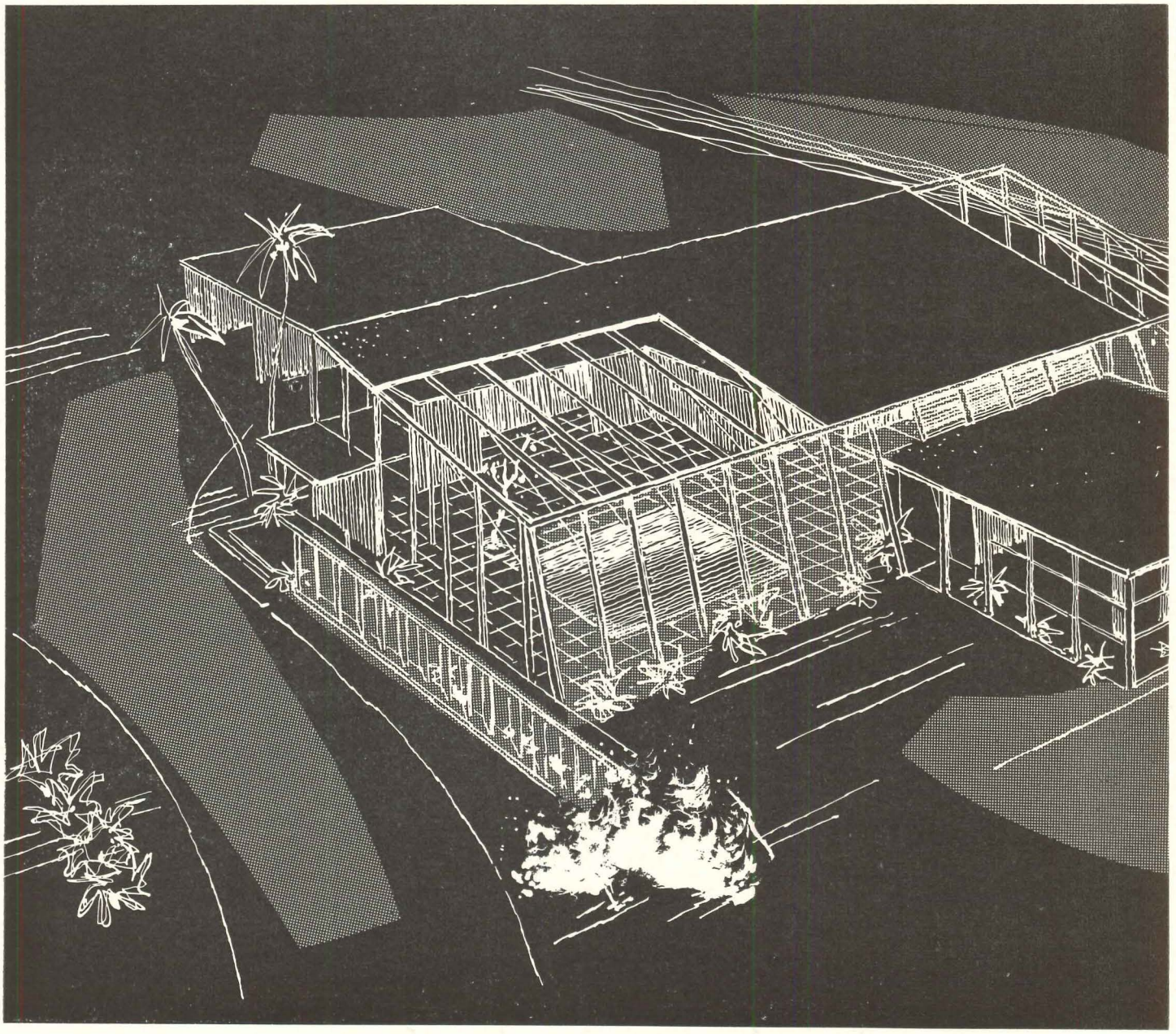


HOUSE DESIGNED FOR

Residence for Mr. and Mrs. Roland Phillips

Miami, Florida

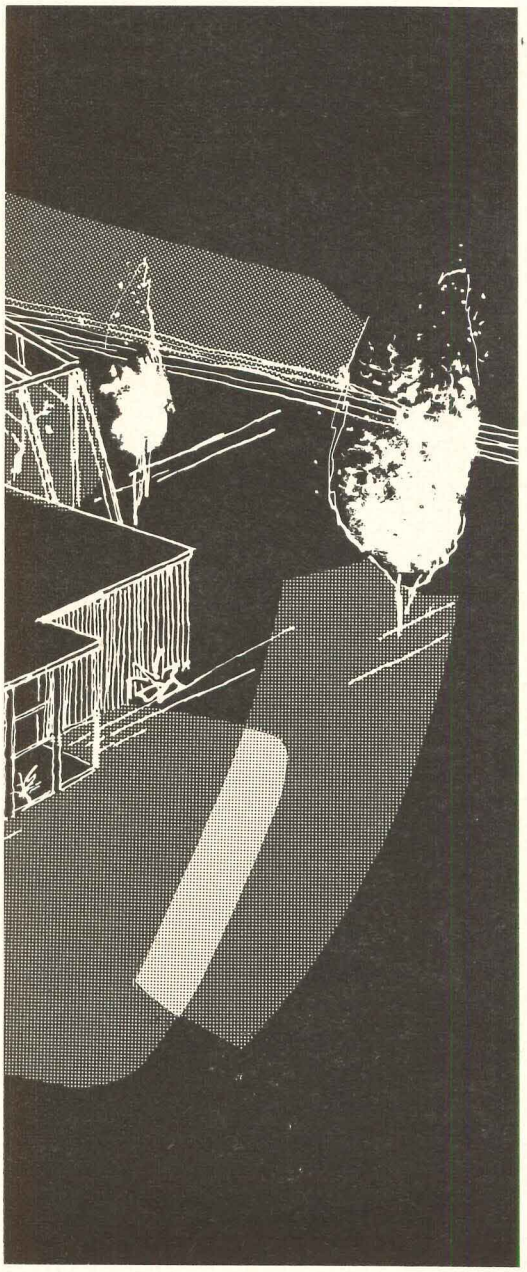
Igor B. Polevitzky, Architect

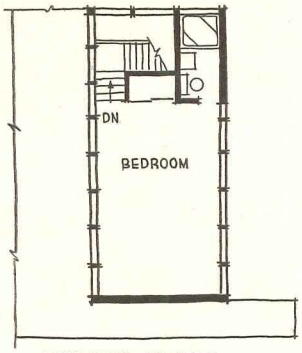


THE SUB-TROPICS

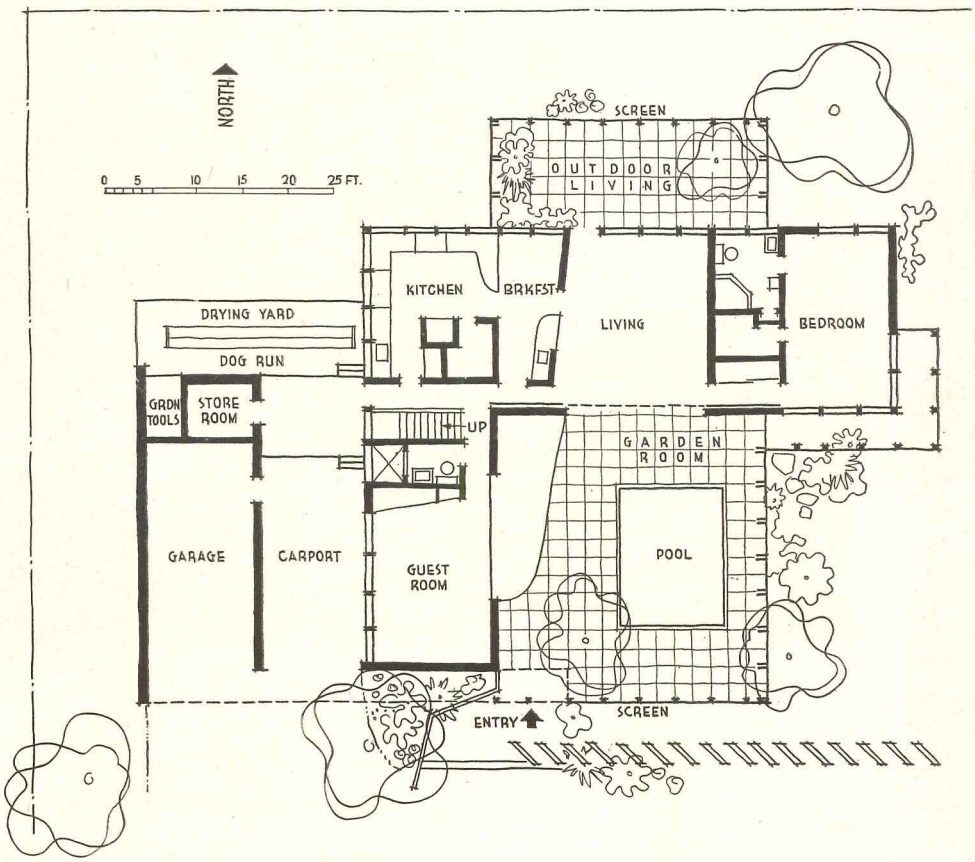
THE unusual character of this Florida house is the result of the architect's great interest in developing large, but inexpensive, semi-protected living areas for houses in sub-tropical climates. In this example, a considerable amount of extra living space is provided by the use of an inexpensive wood frame, partial roofing, and baffle walls for privacy. This screened-in "atmospheric envelope" can reportedly be used for 95 per cent of the weather conditions. A minimum of completely closed-in areas is provided for use during the few really cold days in the area. These rooms are all interconnected, as the occasional cold weather makes it impractical to use only outdoor passageways.

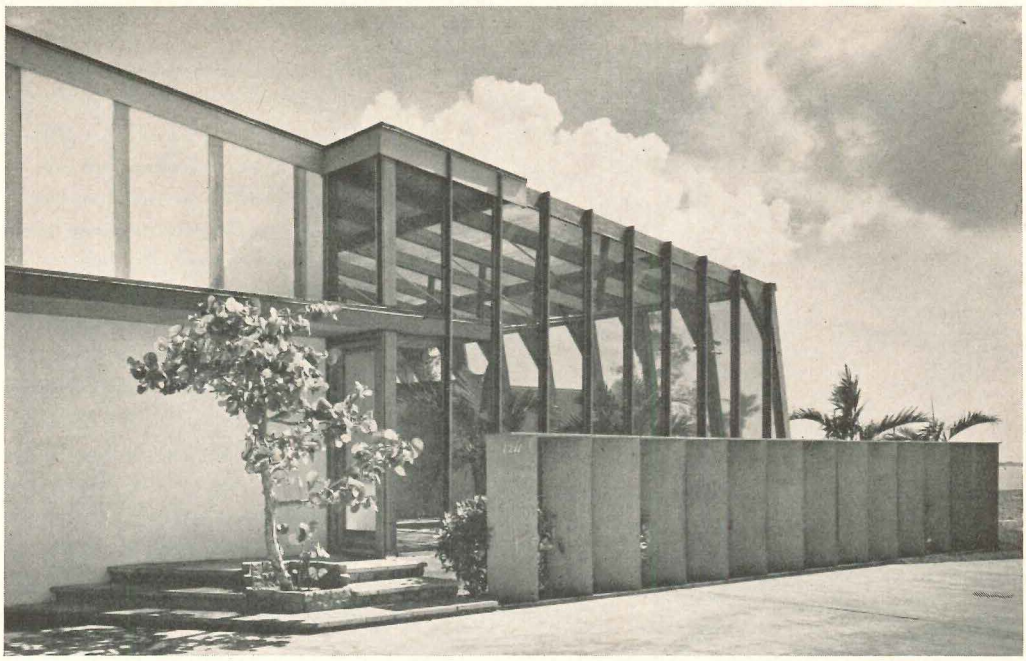
The Douglas Fir frame was designed to withstand hurricane winds of 150 miles per hour, and is anchored in reinforced concrete footings. Exterior walls are concrete block and cement brick; the roof is 2-in. composition board.



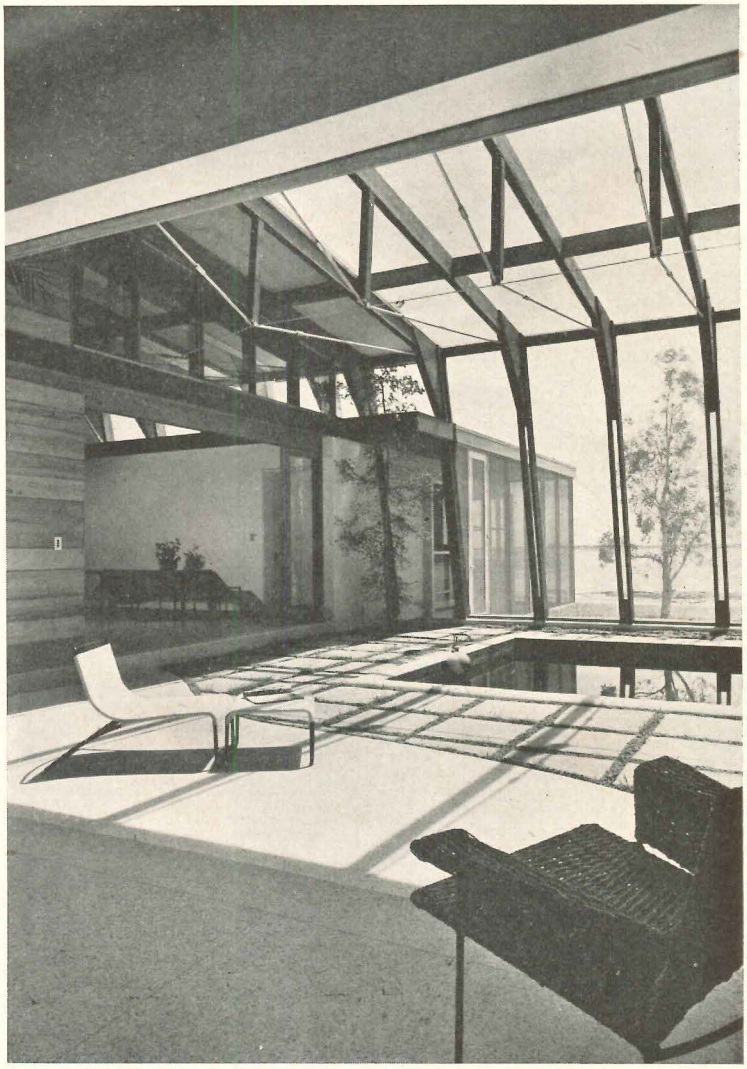


SECOND FLOOR

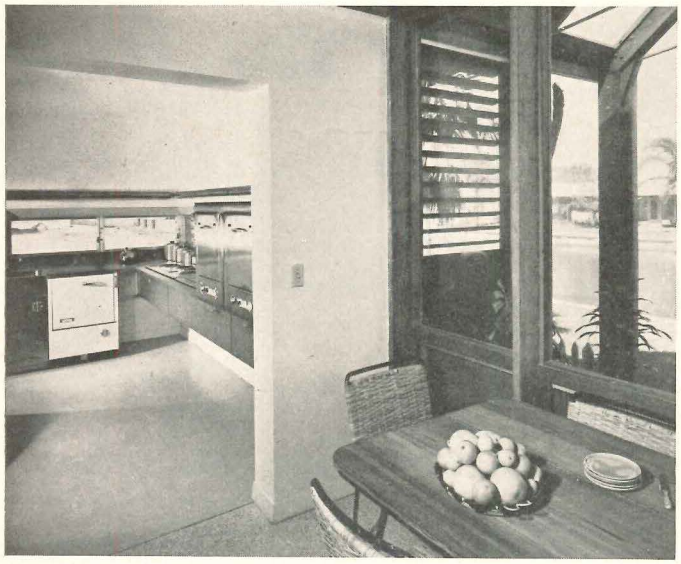




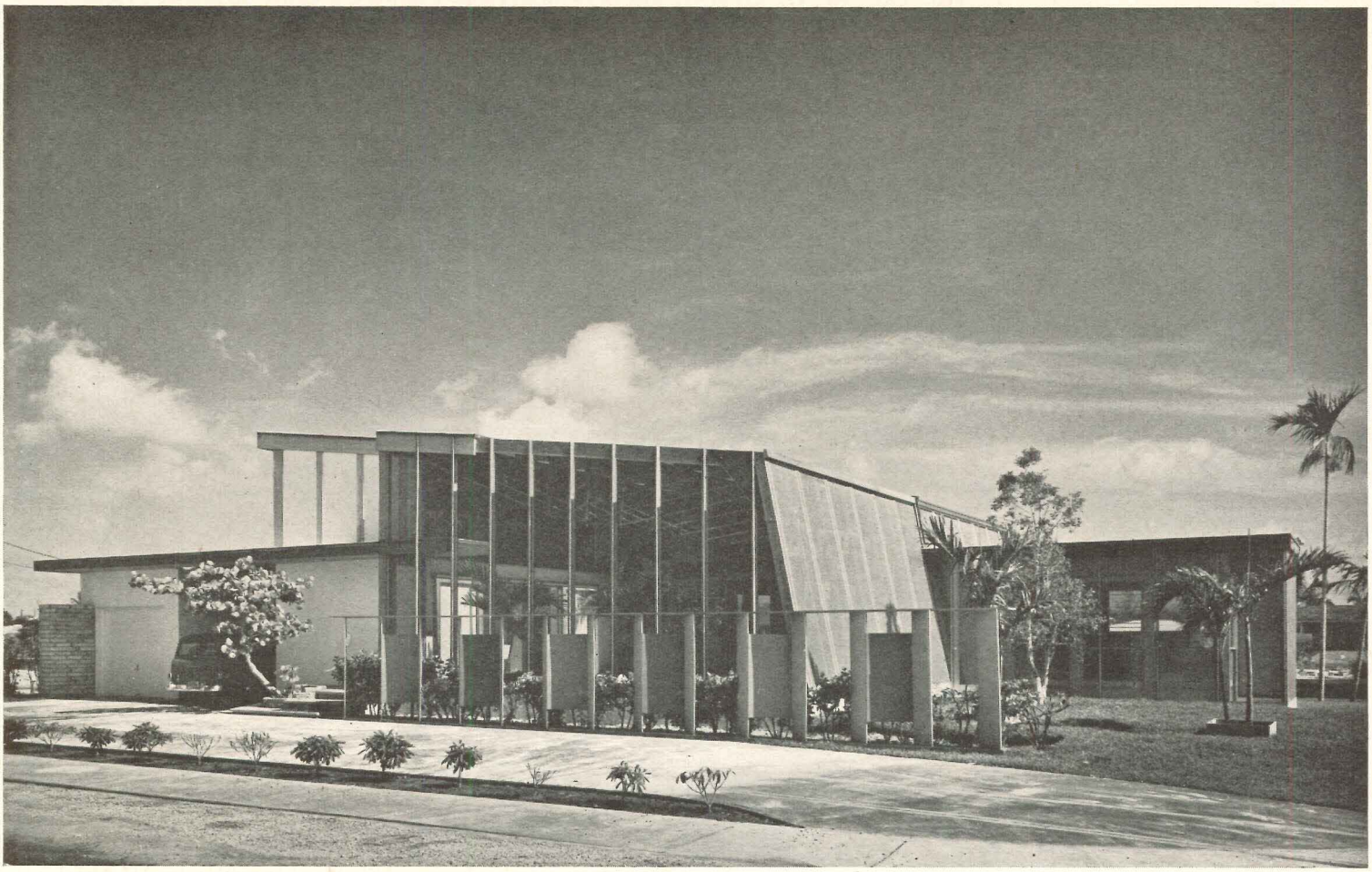
Rudi Rada

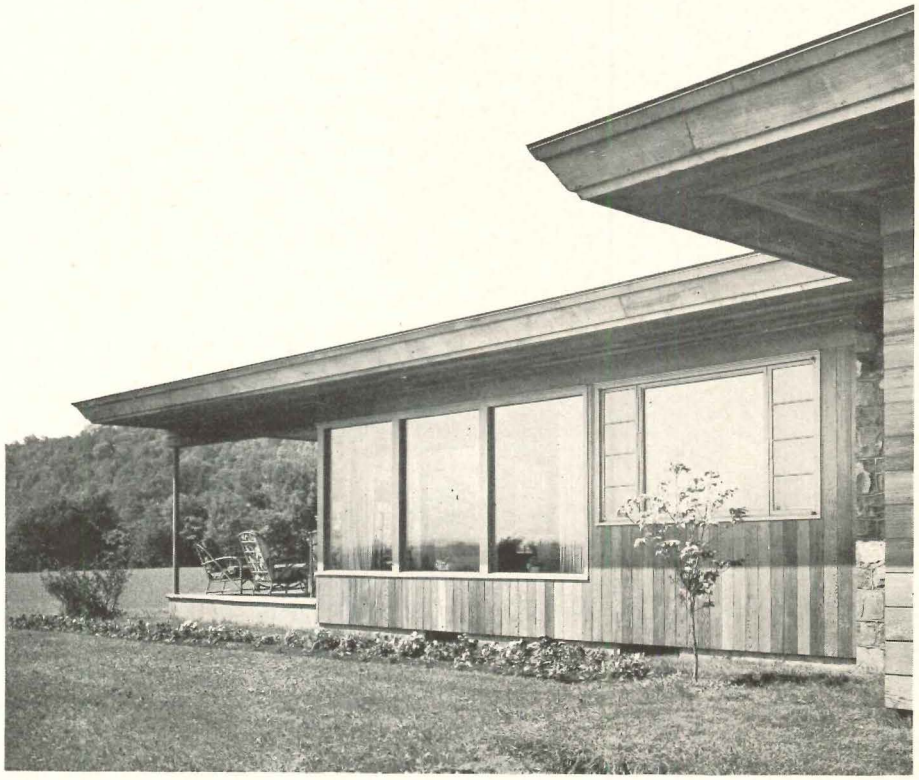


Privacy is gained for screened areas by use of low baffle wall on street side. All windows are fitted with glass or wood jalousies



Floors throughout the house are terrazzo; interior walls are plaster, plywood or cypress. Living room and guest room can be closed off with large sliding doors



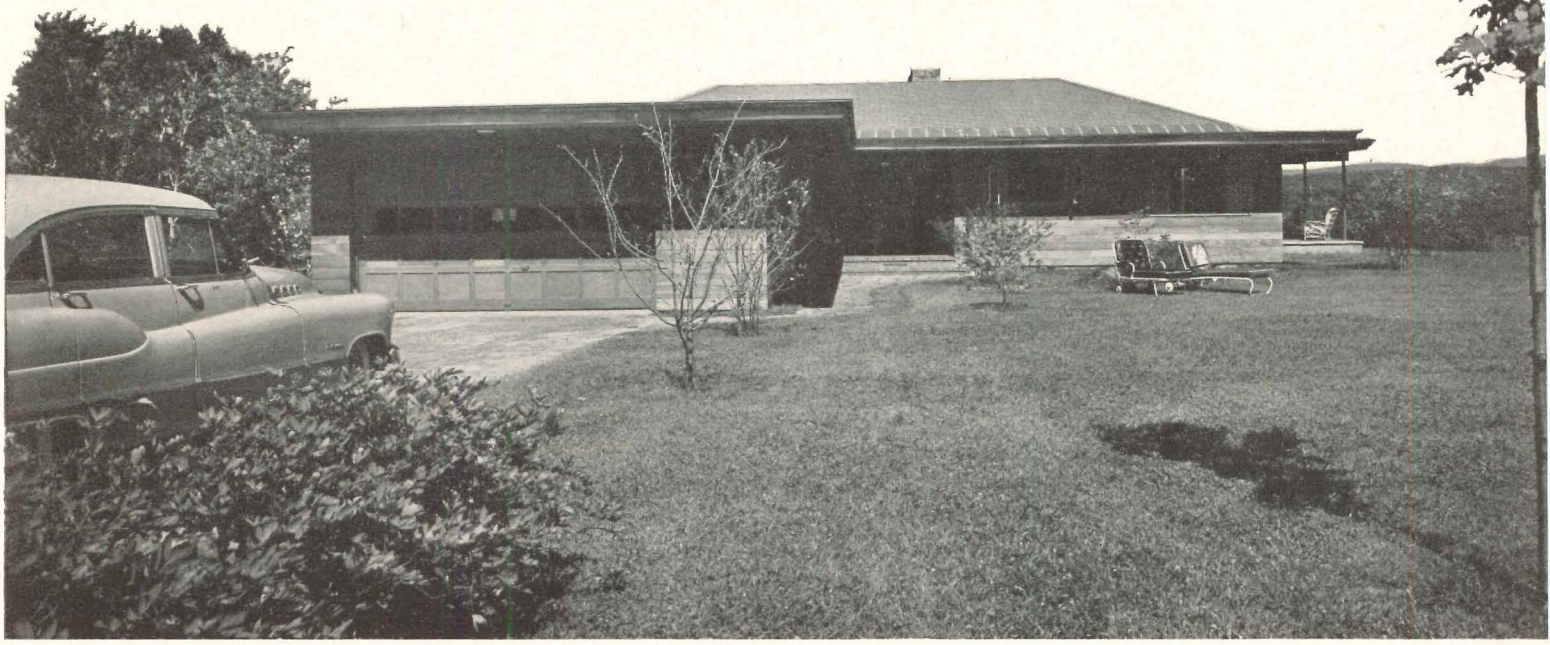


HOUSE ON A NEW ENGLAND HILLTOP

Residence for Mr. and Mrs. George W. Wilcox

Greenfield, Massachusetts

James A. Britton, Architect

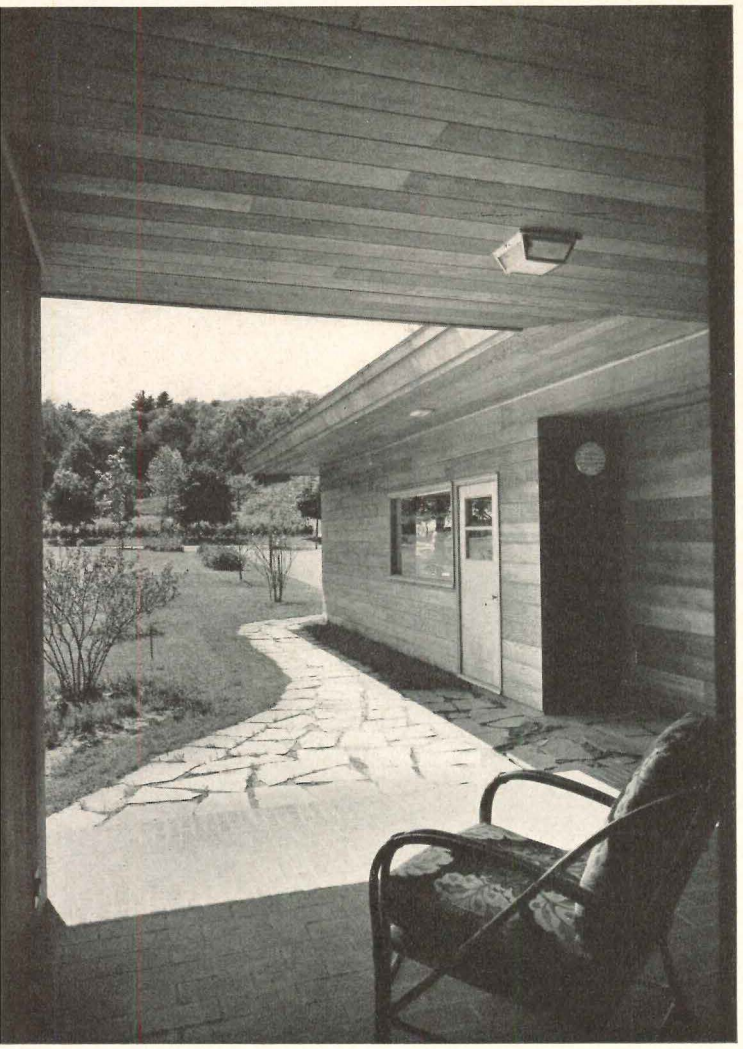


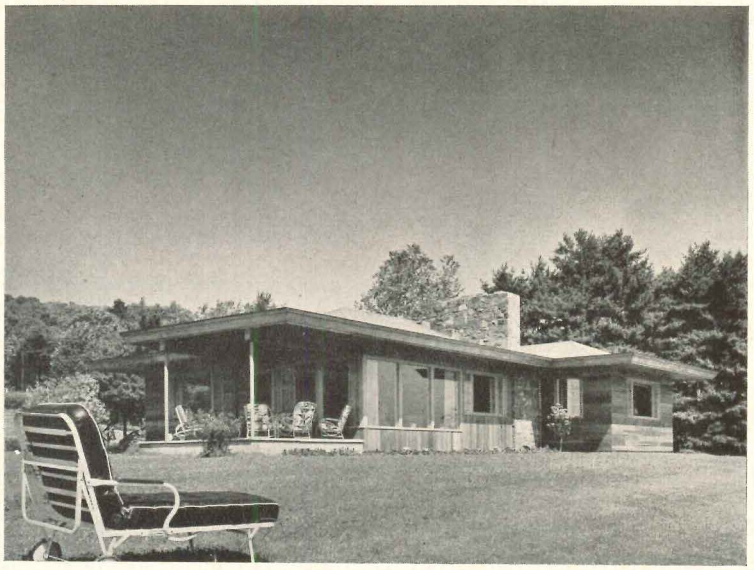
Joseph W. Molitor

A hipped roof, wide overhangs and shaped cornices give a distinctive character to the otherwise simple design of this house. The east front (left) overlooks view; entrance is on west, has good sun protection

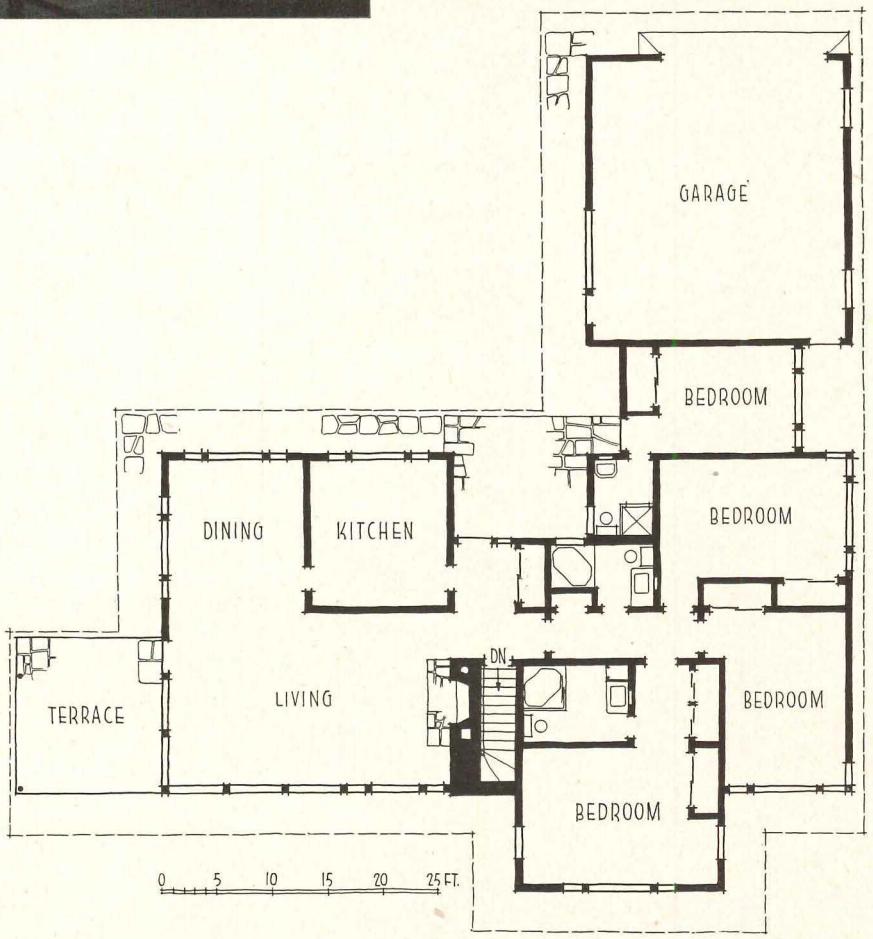
THE COMPACT, SIMPLE DESIGN of this house, with its natural finishes, reflects not only its setting, but also a tempered view towards contemporary design. Such details as shaped cornices and a hipped roof over the main portion of the house considerably soften the external appearance. The east elevation, which overlooks the view, has large windows opening off the major rooms, and a sheltered terrace. The entrance facade, on the other hand, is kept relatively closed and achieves a sense of solidity and privacy.

The house is wood frame, with foundation walls of cinder blocks. Siding is redwood, with a preservative stain finish; the roof is surfaced with asphalt shingles. Interiors are finished with plaster walls, either painted or papered, and oak floors. A full basement is under the main portion of the house, and contains the furnace for the warm air heating system, laundry, and provision for a future recreation room. The basement is lighted by steel areaways with iron grate covers. The large chimney wall is of fieldstone.





Joseph W. Molitor



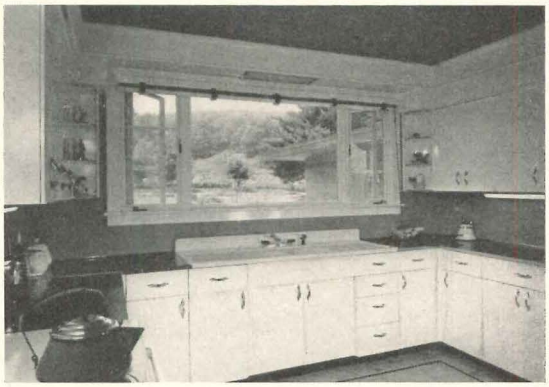
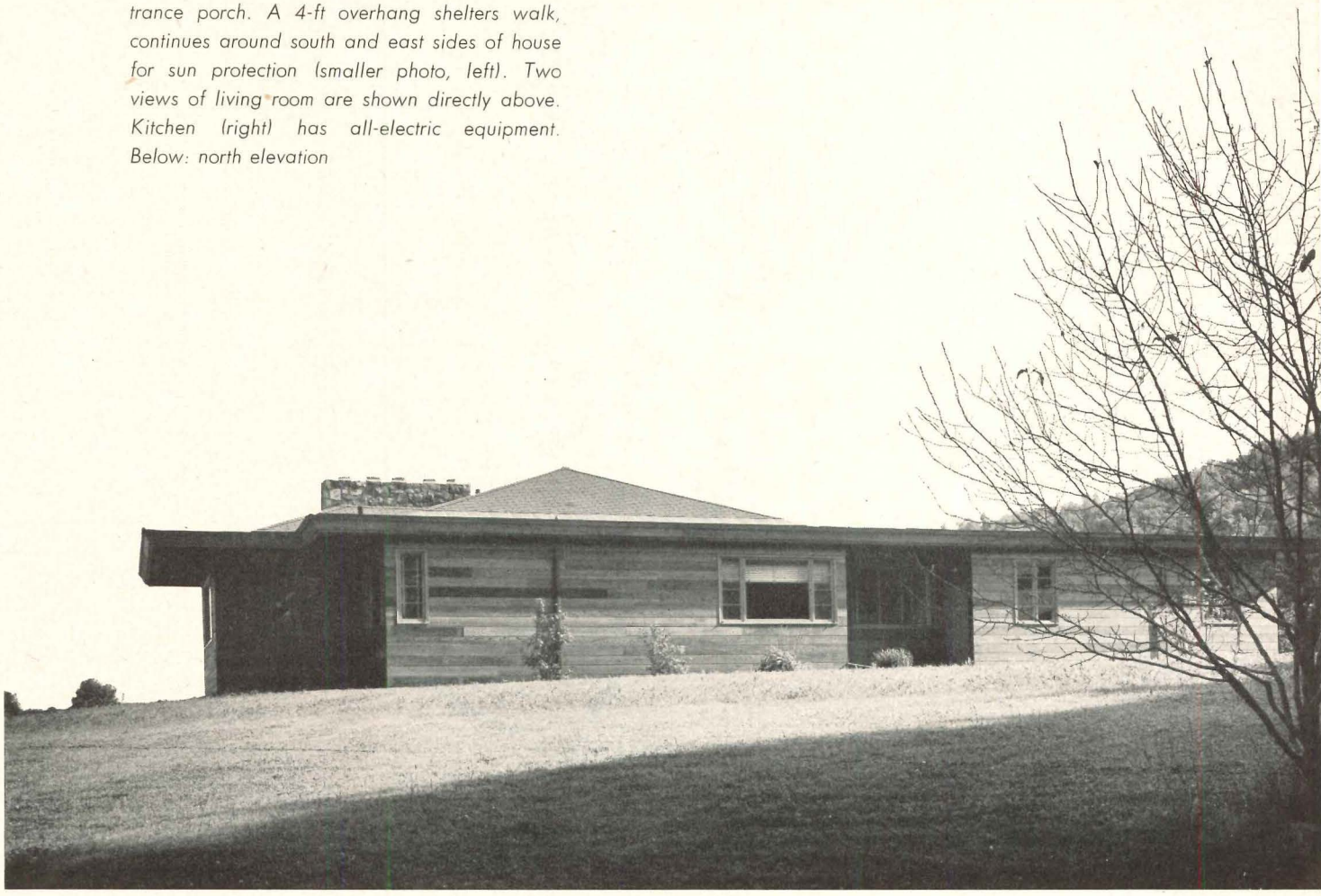
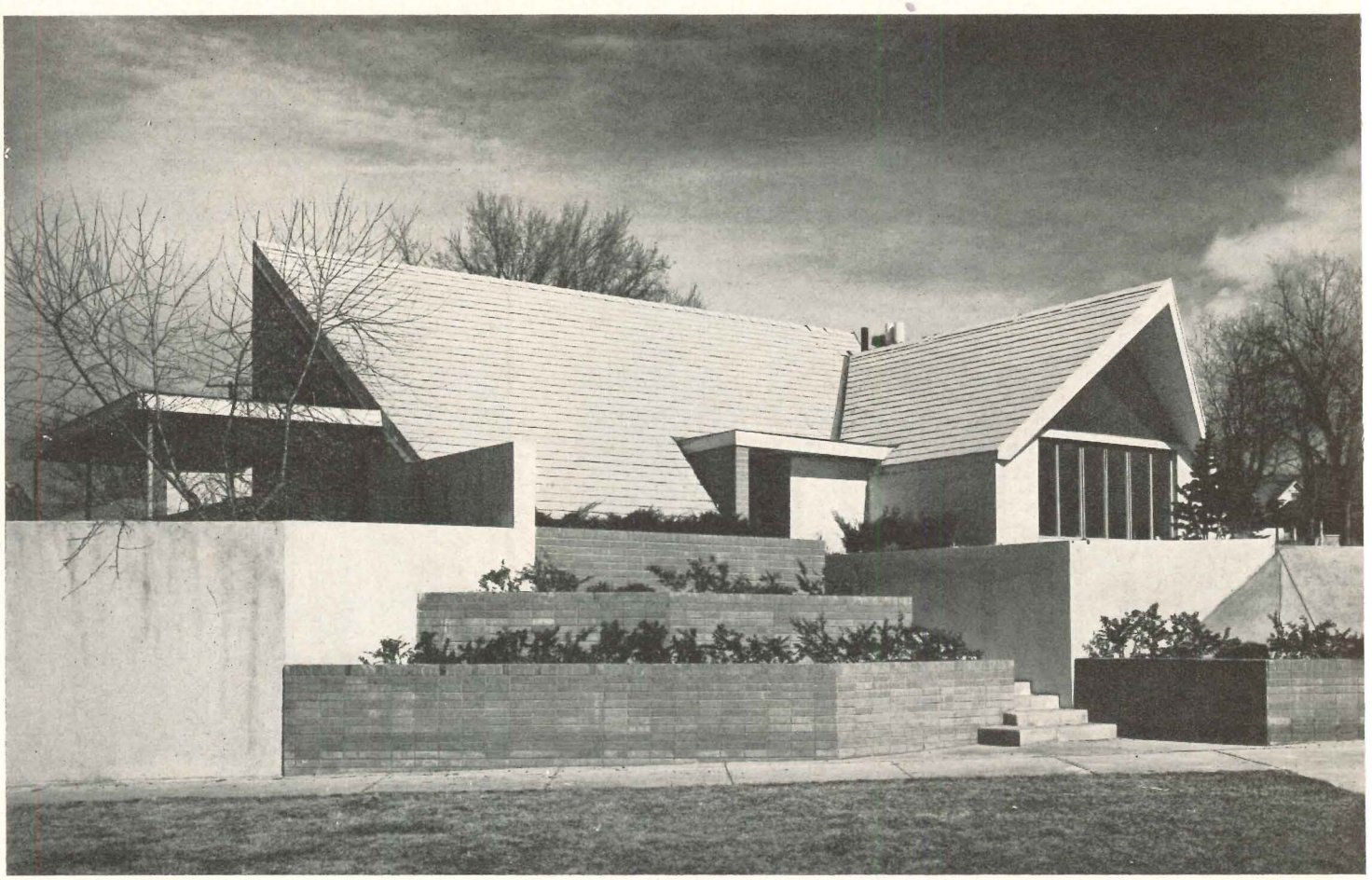
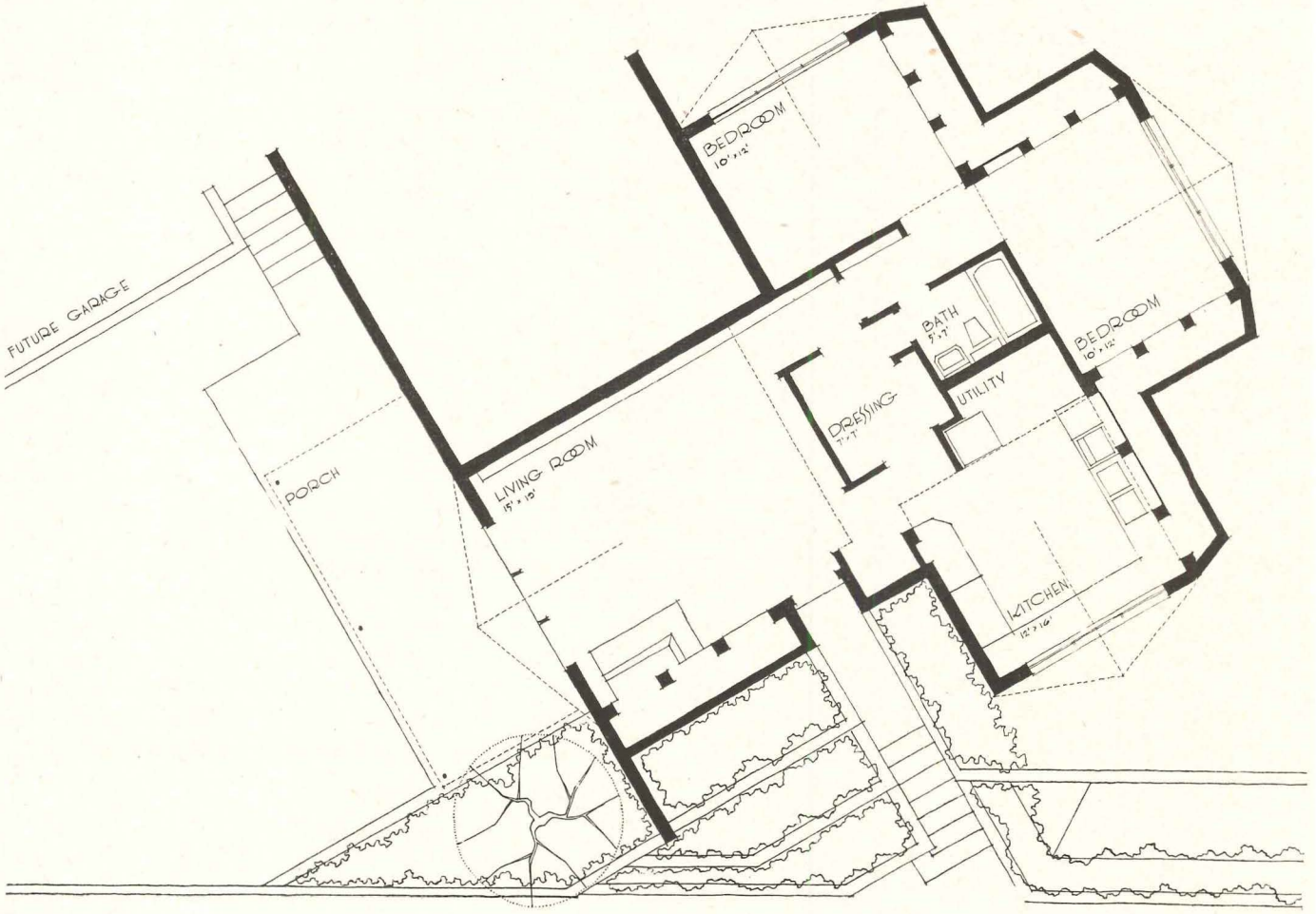


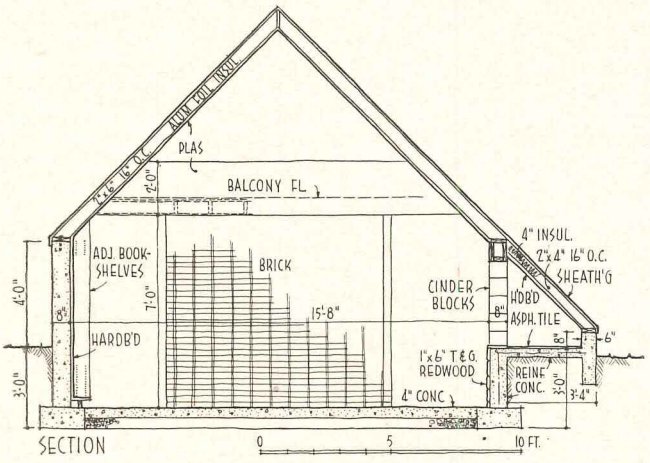
Photo at far left shows garage wing from entrance porch. A 4-ft overhang shelters walk, continues around south and east sides of house for sun protection (smaller photo, left). Two views of living room are shown directly above. Kitchen (right) has all-electric equipment. Below: north elevation

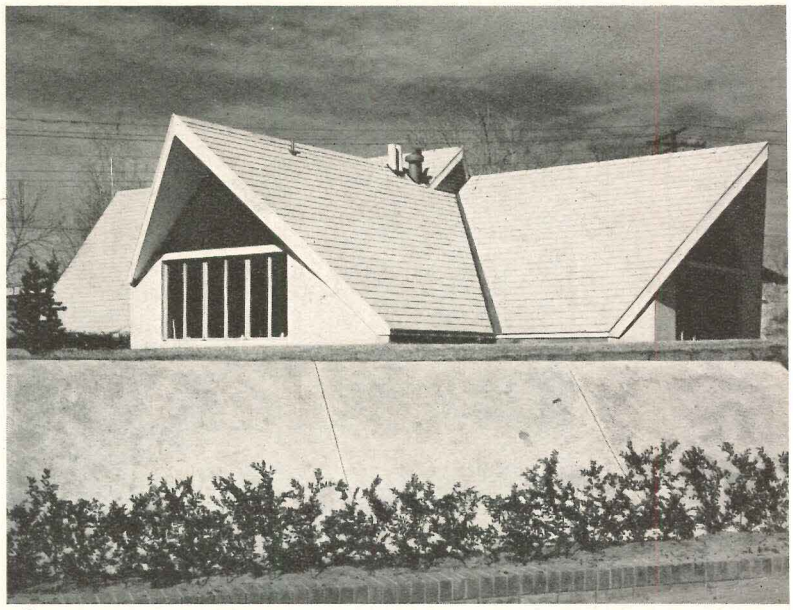




Hedrich-Blessing







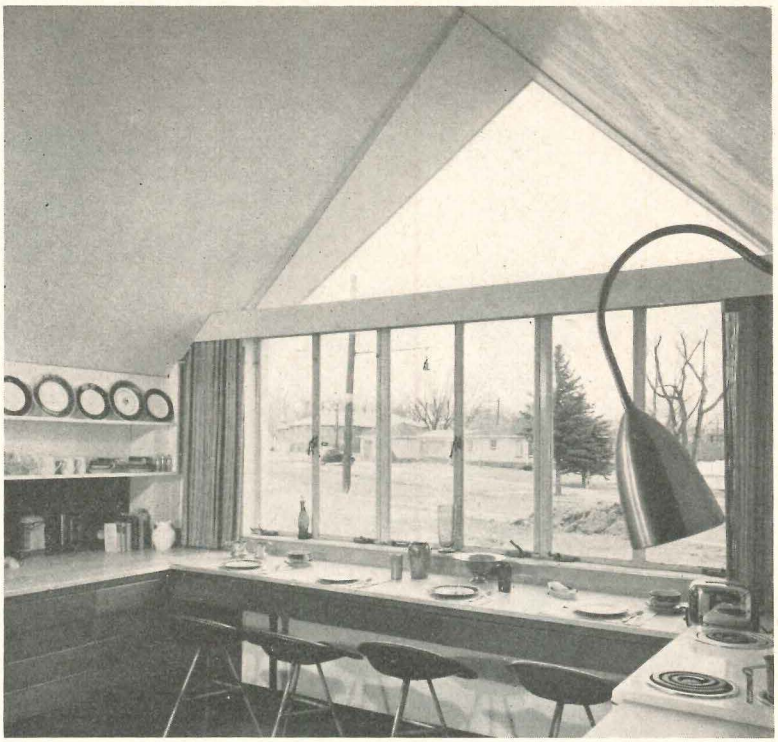
UNIQUE CONCEPT PROVIDES LOW COST HOUSE

Residence of Henry C. Toll, Architect

Denver, Colorado

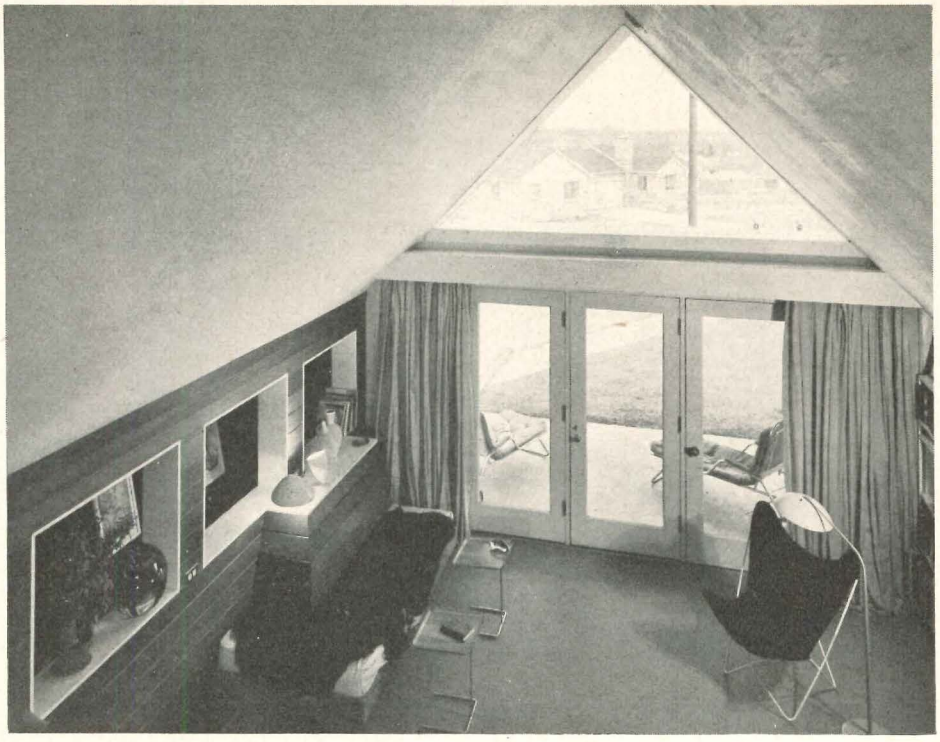
A minimum of walls—in the usual sense—characterizes this house both inside and out; less expensive roofing surfaces most of exterior, central utility core separates interior rooms. Floor slab rests on footing base 2 ft 4 in. below grade (see section above). Terraces are faced with brick and concrete because of water shortage, lack of grass

A NEW APPROACH to the problem of meeting Building Code requirements with low cost construction has been made by Architect Henry Toll in the design of his own house. Two major requirements of the Denver Code are masonry construction, and a footing depth of at least 3 ft below grade. Local investigation, however, proved that roofing was the cheapest exterior finish in that vicinity. These three items were combined to form an extremely interesting structural system for the house. Floor slabs were poured 2 ft 4 in. below grade, level with the top of minimum depth footings. To classify the house as masonry construction, 8 by 8 in. cinder block columns approximately 3 ft high are placed on top of the foundation, and carry a box girder on which the roof joists rest. A slab was poured on grade outside the wall line, and the edge of the slab tied to the back of the box girder. Thus masonry is reduced to about 1/10 of the usual amount, and the exterior is almost entirely roofing. No ceiling is required for a tension member, as the roof thrust goes directly to grade, so a saving was also made on lumber. Rooms are about 6 ft 3 in. high at plate line, 15 ft at center. Orientation and overhangs were carefully studied to reduce sun's heat and glare — a problem even in winter in the Denver area.

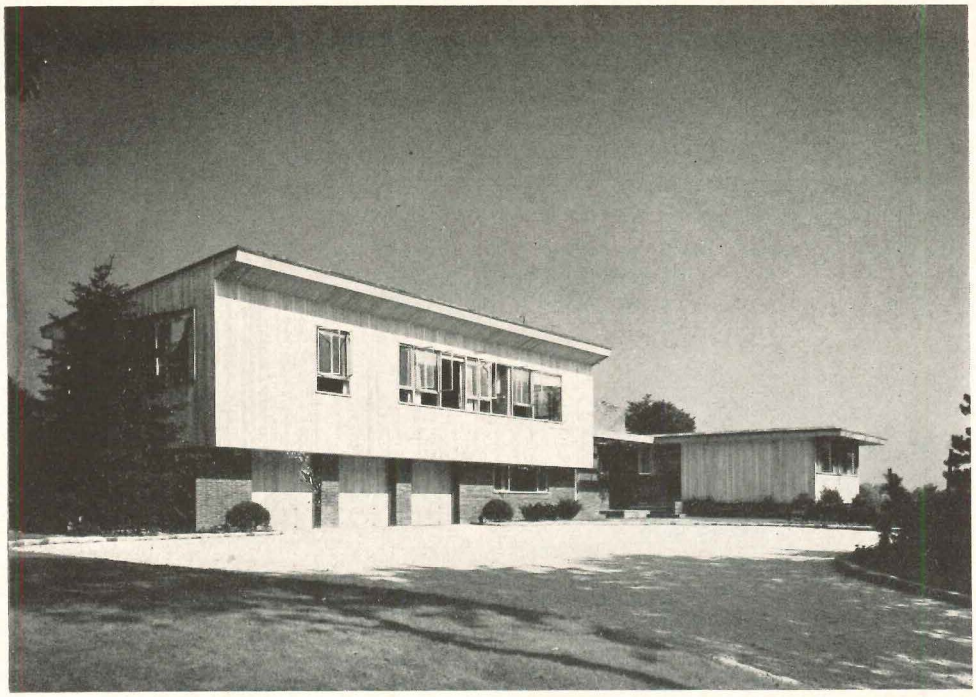


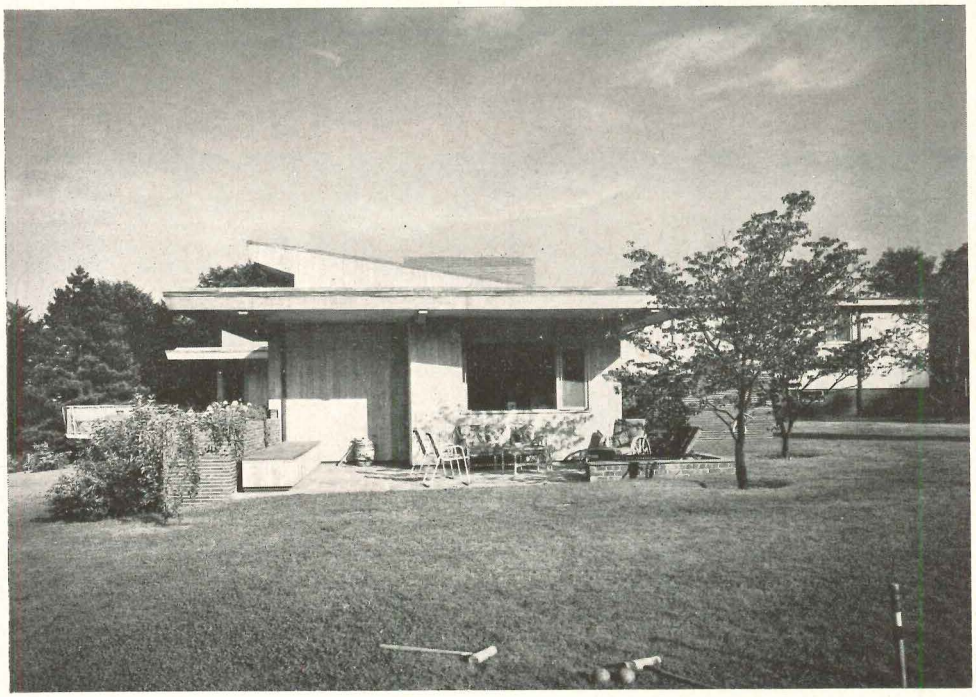
The four gable ends of the house are virtually all glass with ample overhangs for sun control, good provision for cross ventilation. The unique structural system provides much extra storage space at counter height without sacrificing floor space. Ceilings serve as radiant heat panels, have ¼-in. copper pipe embedded in plaster

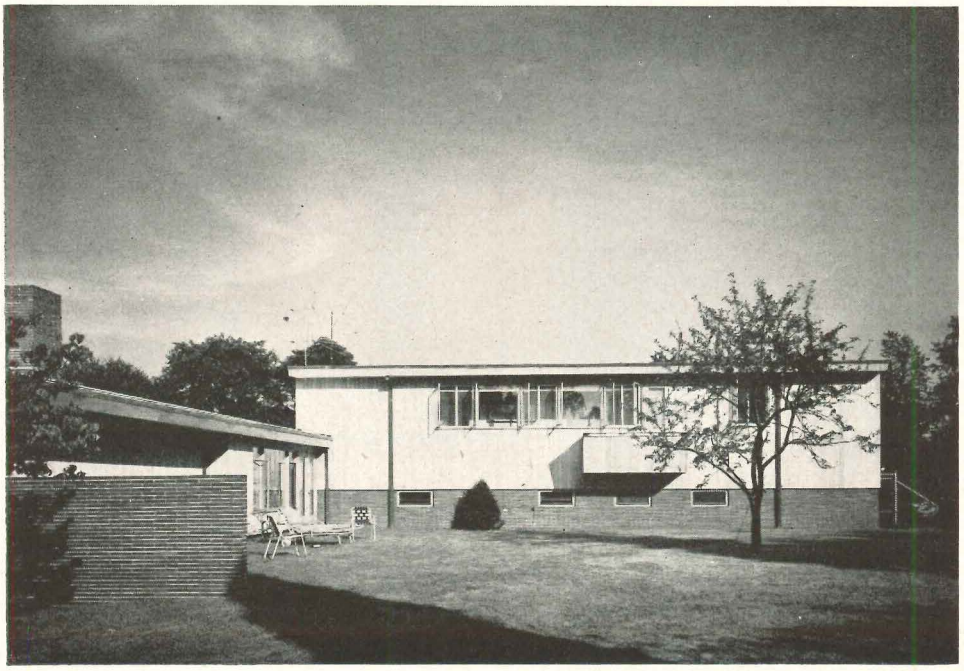
Master bedroom on balcony, visible in photo above, is at roof intersection, overlooks all rooms of house. Walls are redwood, floors asphalt—or green ceramic—tile

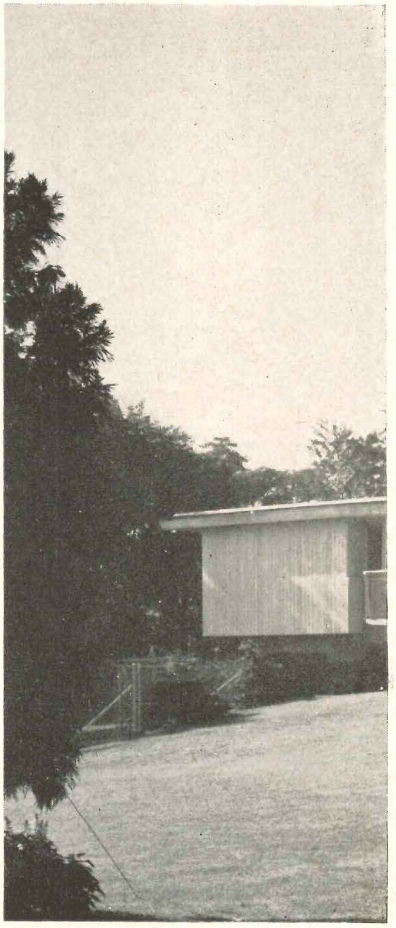


Hedrich-Blessing



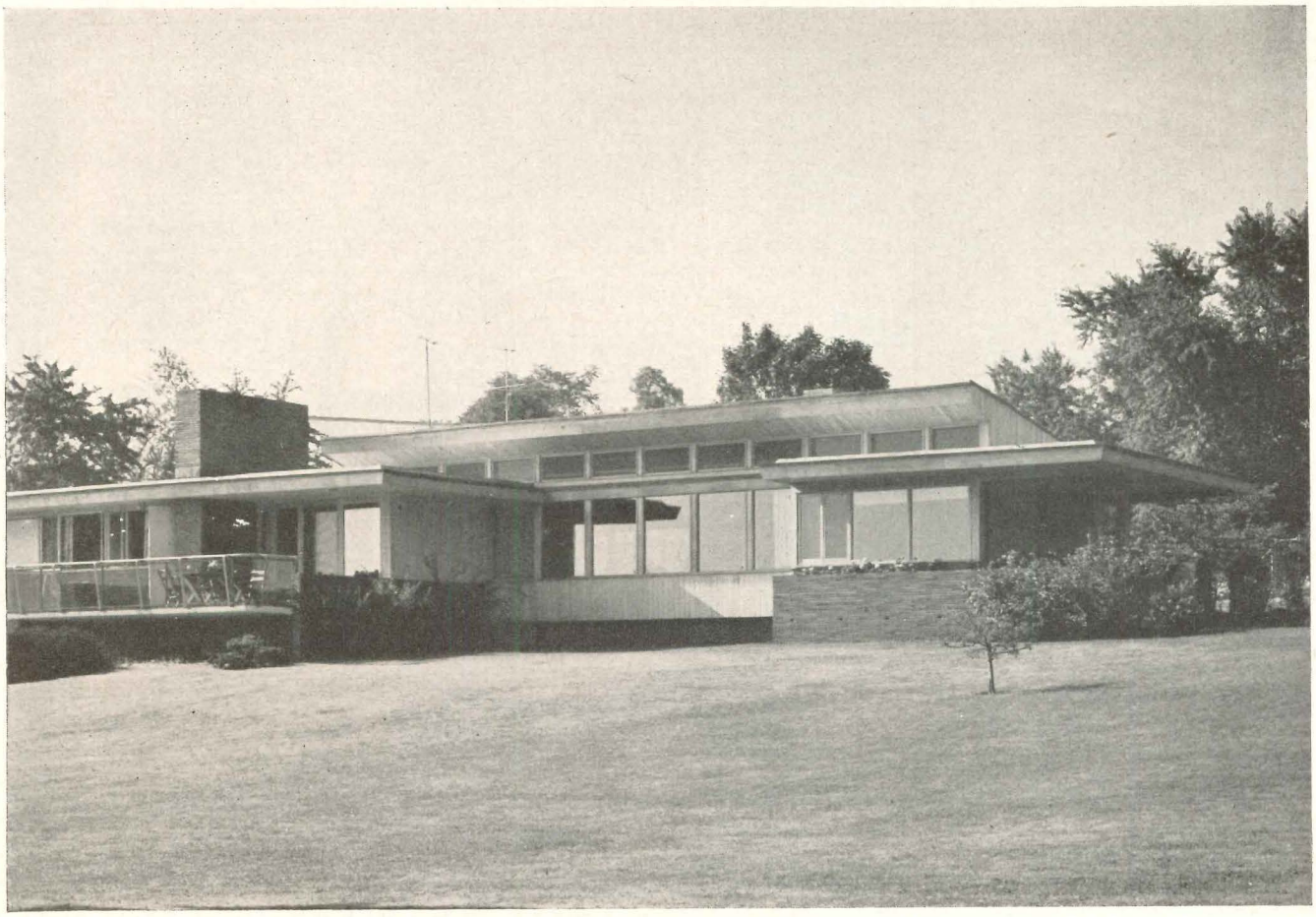






Ezra Stoller

The exterior of the house combines vertical red cypress siding and roman brick. Above: side façade and dining terrace overlook garden and view. Top left: entrance drive at front. The two remaining photos show closeups of the studio and the rear façade



HOUSE FOR AN ACTIVE FAMILY

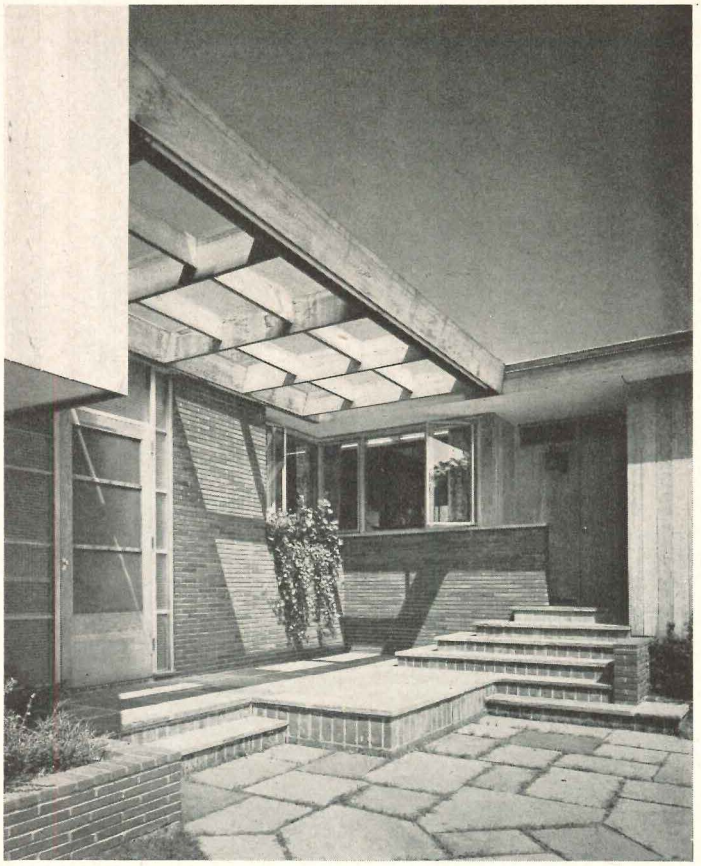
Sands Point, Long Island, New York

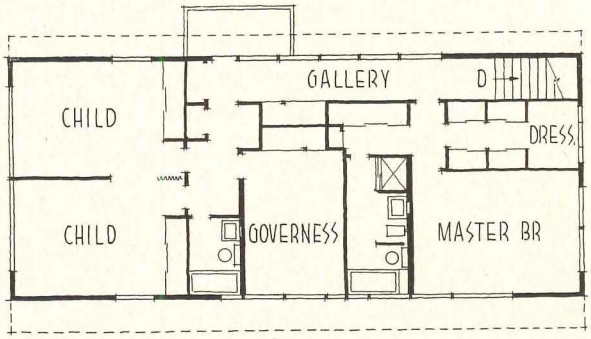
Albert Kennerly, Architect

THIS EXPANSIVE HOUSE was designed to provide for the somewhat formal way of life of a family with an amazing number of interests and activities. The architect was asked to include facilities for painting, sculpture, pottery work, piano playing, ballet practice, ping pong, photography, accommodations for extra guests, a wine and rare foods room, a dog room opening onto two dog runs, parking space for about 20 cars — plus the usual quarters for a family of four and a staff of servants. It was further specified that no family bedroom be on the ground floor level, yet a full stair was not acceptable.

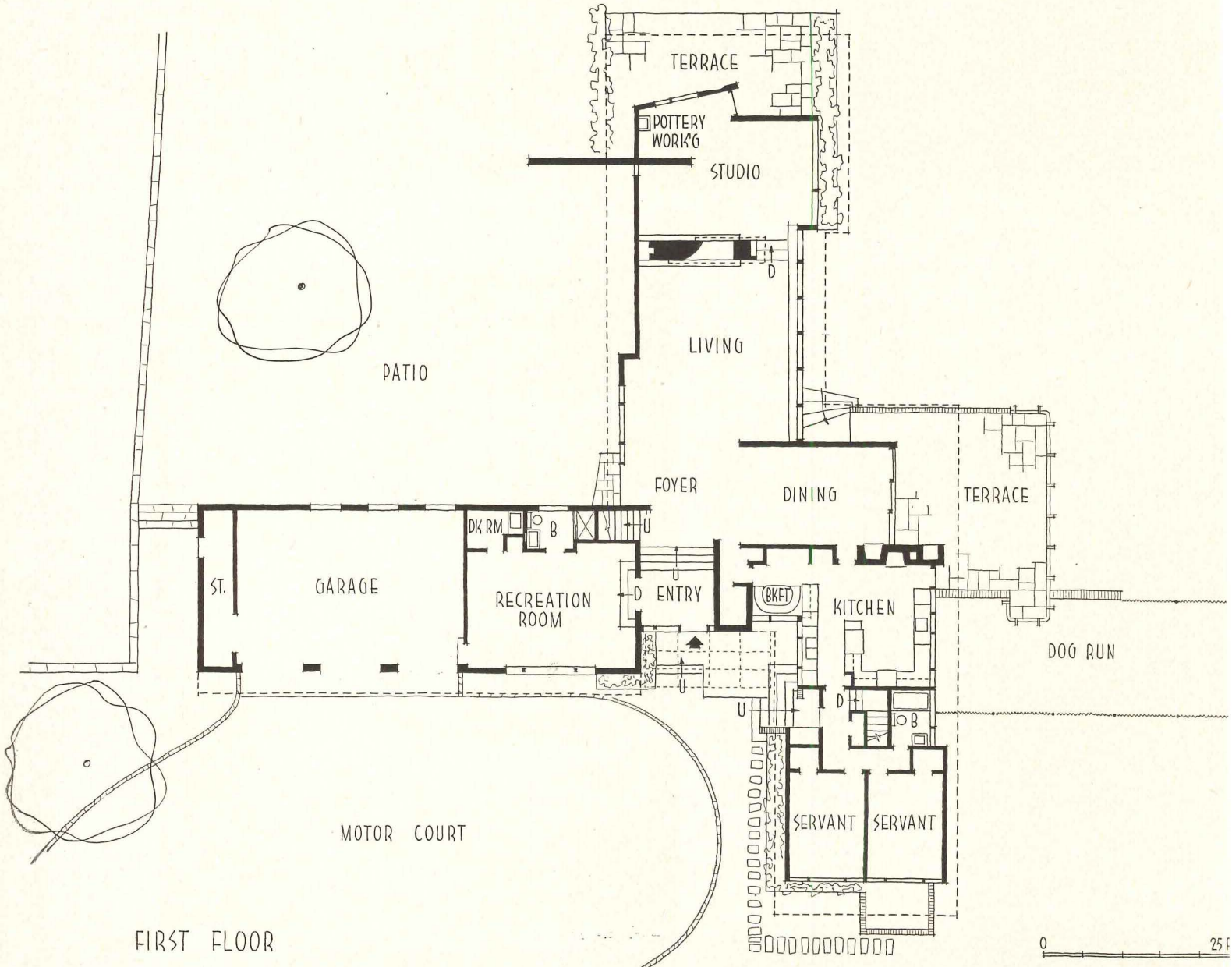
These requirements have been skillfully worked into a very coherent, open plan which also provides a good degree of privacy and segregation for the various activities. The structural frame of the house is of Douglas Fir, with exterior walls of red cypress in a natural, lime-rubbed finish, and red roman brick. Roofing is built-up tar and gravel or white tile. Interior walls are finished in sand float plaster, oak paneling or figured gum. Floors in the main living areas are random-width teak doweled to the sub-floor; others are waxed common brick or asphalt tile. The clients worked very closely with the architect, especially in the design of the interiors and selection of furnishings, textures and colors.

LONG ISLAND HOUSE





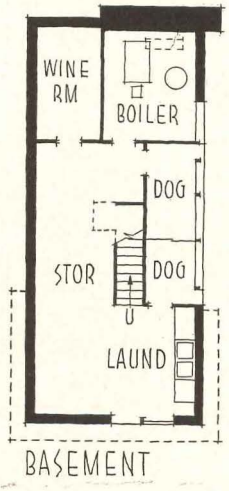
SECOND FLOOR

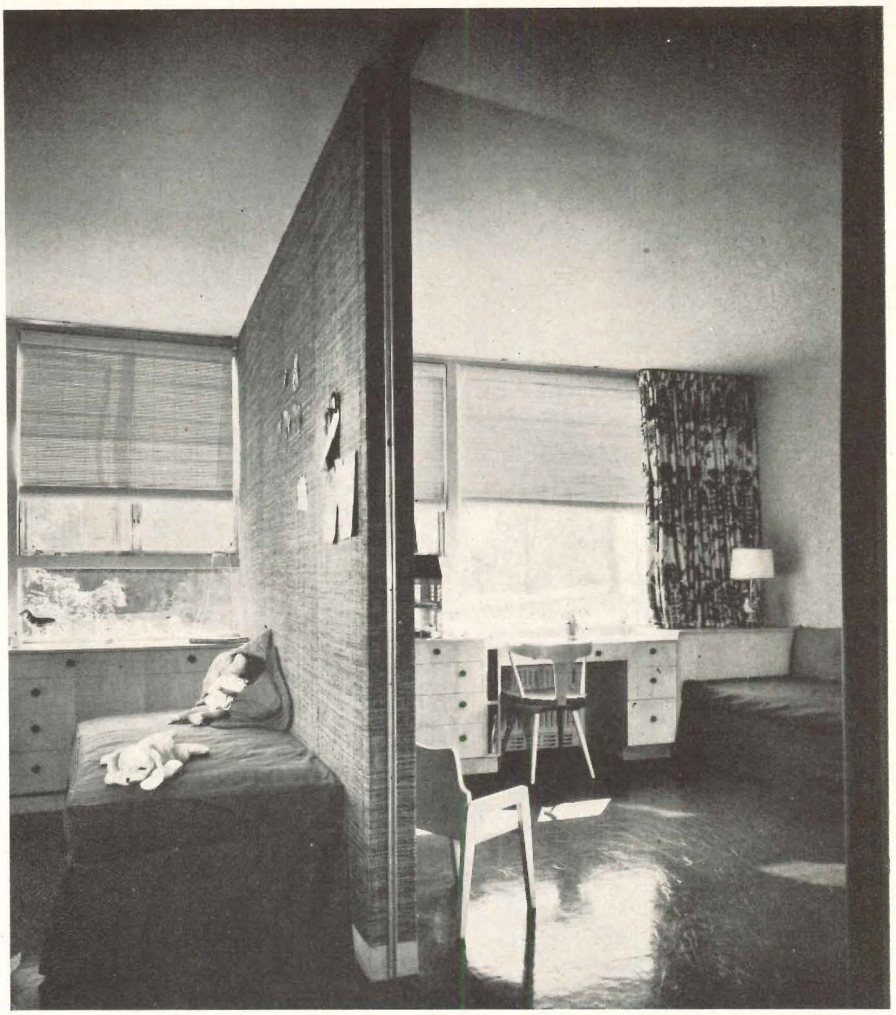


FIRST FLOOR

Ezra Stoller

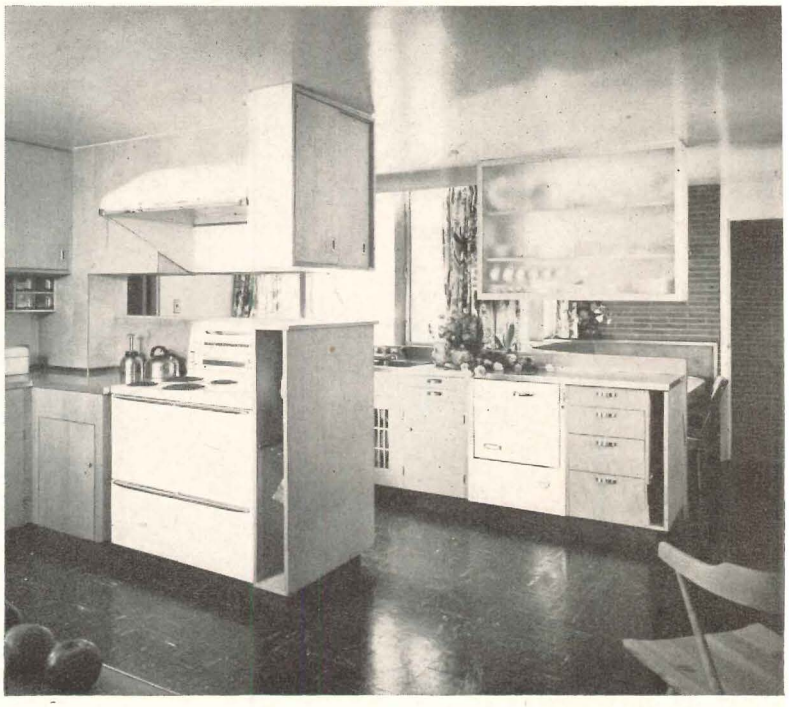
Front entrance (photo far left) is sheltered by trellis; bay directly over door is glazed. Living room (above and right) has textured, warm colored finishes





Second floor bedrooms are only a half flight of stairs above living rooms, due to use of a small entry stair. The two children's rooms (right) are identical, separated by folding door. A governess' room is adjoining. Master bedroom suite is on same level

Ezra Stoller



Kitchen (above) is efficiently planned, has dining nook for 5

BUILDING THE ONE-STORY HOSPITAL

An outline of techniques and materials to encourage sound, economical construction, prepared by an expert on these matters from the Division of Hospital Facilities

by Julian Smariga *

IDEALLY, all the building materials for any hospital should be durable, easily maintained and non-combustible. These are on the market, but, in addition to these desirable functional qualities, the selection of materials is influenced by the question of economy, especially in smaller hospitals. This article presents a number of basic ideas to assist in the selection of materials and construction techniques for the one story hospital from 25 to 100 beds.

1. FOUNDATIONS

Spread footings of concrete will generally be satisfactory for most locations. If the soil conditions of a particular site require a more expensive type of foundation, it may be desirable to consider relocating the building, or even selecting a new site.

2. BASEMENT

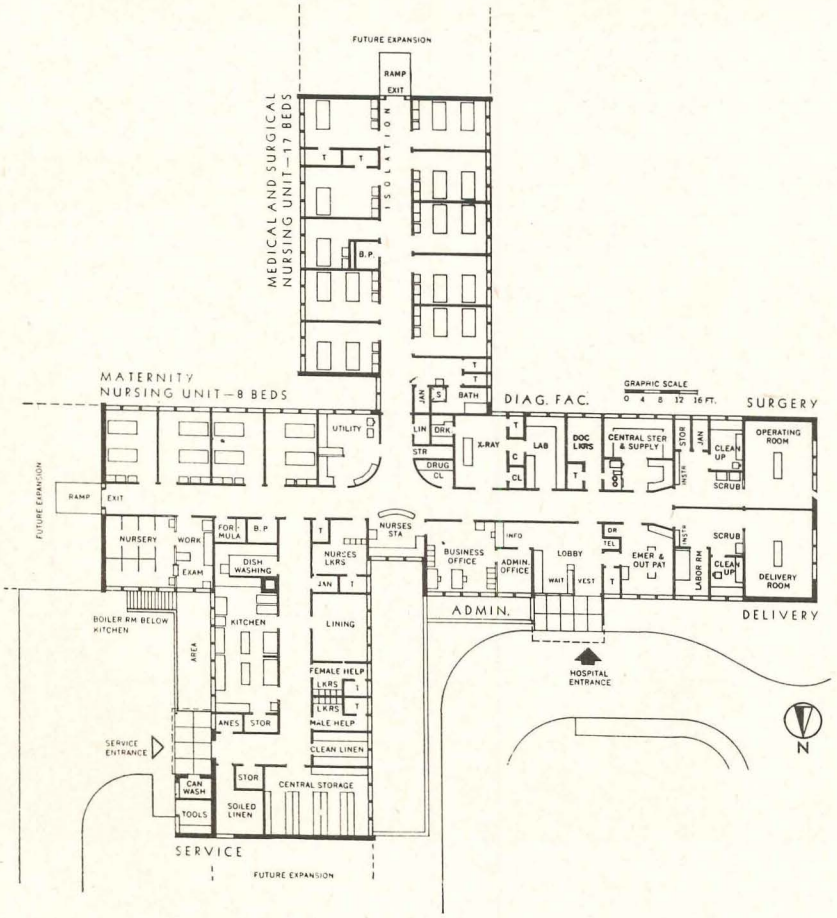
A partial basement provides space for a boiler room, but with favorable site conditions, it may be feasible and desirable to provide a more extensive basement area for additional services. Increased laundry facilities, inactive records storage, central linen supply, general storage, mechanical equipment as well as the boiler room may be placed on the lower level. An elevator will probably be required when so many services are located in the basement. (A hydraulic type is very satisfactory.)

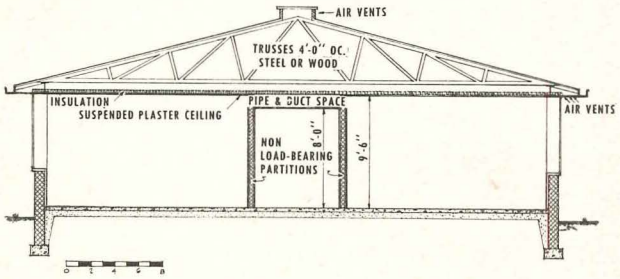
Watertight construction is mandatory for all basement walls.[1] If the basement floor level extends below the ground water line, positive and complete protection from the exterior water must be

* *Structural Engineer, Division of Hospital Facilities, U. S. Public Health Service, Federal Security Agency.*

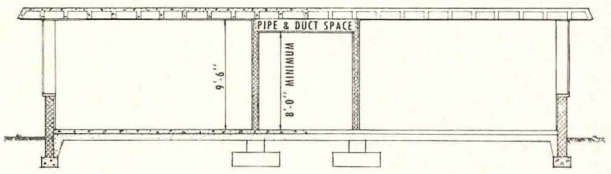
[1] *Prevention of Dampness in Basements, Cyrus C. Fishburn,* Journal of the American Concrete Institute, *Feb. 1948.*

1. Plan for a typical 25-bed, one-story hospital and three possible types of roof construction

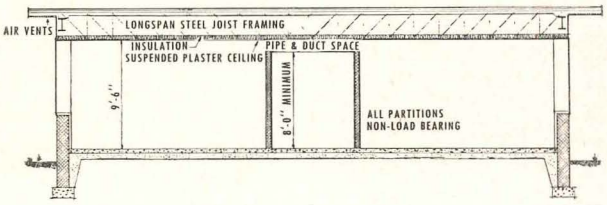




Wood or steel trusses



Concrete girders and beams



Long-span steel joists

The plan shows elements and arrangements typical of one-story hospitals, but 25 beds is not the limit because 100-bed units can be planned and built to work efficiently on one floor

When the roof structure spans between exterior walls, interior partitions can be non-load bearing and construction can be speeded. Only the concrete roof requires interior columns

provided. Fig. 2A shows the use of a membrane type waterproofing for this condition. It is important that all walls be structurally designed to withstand the pressure of the saturated soil and the floor should be able to resist the hydraulic uplift.

If the basement area is extensive and the water level lies appreciably above the basement floor, the cost of positive waterproofing measures (both structural and hydraulic) would probably be excessive.

Figure 2B shows an effective type of construction when the basement floor lies above the ground water level and may be subject only to limited periods of dampness from soaking rains or an occasional rise in the water table.

Alternative protective coatings may consist of three brush coats of grout (cement and fine sand mixture), prepared waterproofing mixtures, or bituminous coatings.

The surface of the ground adjacent to the building should be graded to divert all surface water away from the building. A minimum slope of ¼ in. per ft for a distance of 10 ft from the walls is generally satisfactory. Sodding or paving these sloping areas will help to reduce excessive absorption of surface water. Also, the discharge from roof downspouts should be safely conducted away from the building walls.

Sufficient clearance should be allowed around and also above all equipment in the boiler room for the installation and maintenance of the connecting fittings and controls. A large opening in the exterior wall should be conveniently available for the installation and possible future removal of large sections of mechanical equipment.

Boiler room construction must be fire-resistive. This room should be separated from other hospital sections by suitable masonry walls and any opening in such walls must be protected by a fire door. It is highly desirable to insulate the ceiling to maintain as cool a floor as possible in the rooms directly overhead, especially for kitchen, laundry, other service rooms, or for an air conditioned space such as an operating suite.

An alternate arrangement which may be more desirable in some locations would place the boiler room at grade level adjacent to the service entrance. Better light, ventilation, accessibility and utility could be assured with little or no increase in cost.

3. FLOOR CONSTRUCTION

The floor construction of smaller hospitals may be of two types — (1) suspended or raised type in which the floor is supported by bearing walls or girders, or (2) concrete slab directly on the ground.

With the suspended floor system, the floor construction is elevated to provide a crawl space. Many times it is too small. The crawl space should be large enough to provide access and working space to facilitate the installation and maintenance of conduits, piping and ducts. Good ventilation of the crawl space using well screened openings and proper soil treatment is necessary to prevent dampness and other unsanitary conditions.[2] Floor insulation will generally be required to assure comfortable conditions in cold weather, and such insulation should have a vapor barrier on the warm side of the insulation.

The popular concrete slab on grade can be readily adapted to hospital structures. If the site is fairly level, site preparation can be kept to a minimum. A uniformly compacted subgrade is required to minimize the possibility of settlement cracks in the floor. By utilizing an overhead distribution system for the supply service lines within the building, it is possible to keep all piping except the drainage system from being concealed in the floor. Since the drainage system is made of cast iron or other durable material, the hazard of repair and replacement is minimized. However, an adequate number of cleanouts should be installed in the drainage system to facilitate proper maintenance.

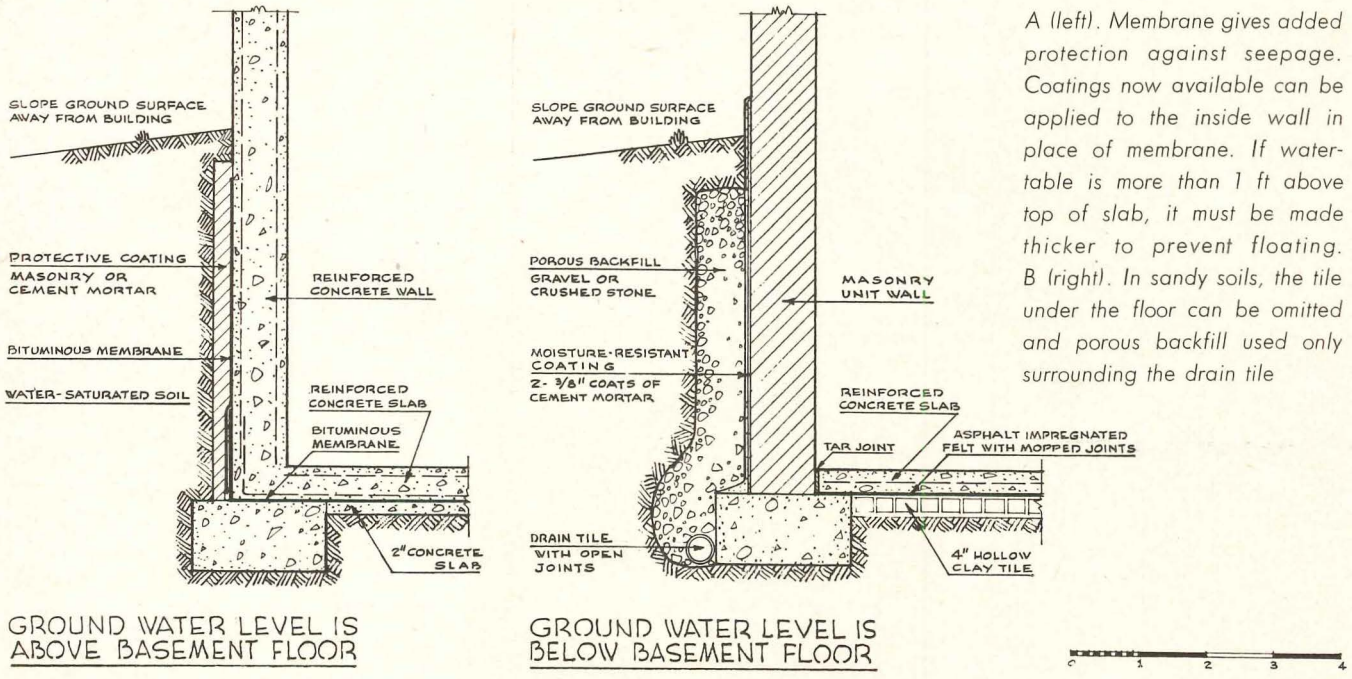
Moisture absorption and condensation on the slab can be avoided by the use of an insulating layer of tile or gravel between the concrete slab and soil.[3]

With a concrete floor slab on grade, the nature of the soil which will underlie the slab should be carefully observed. In some geographical areas, unstable soil formations such as peat pockets, may present difficulties with a floor laid on the ground.

(*Continued on page 230*)

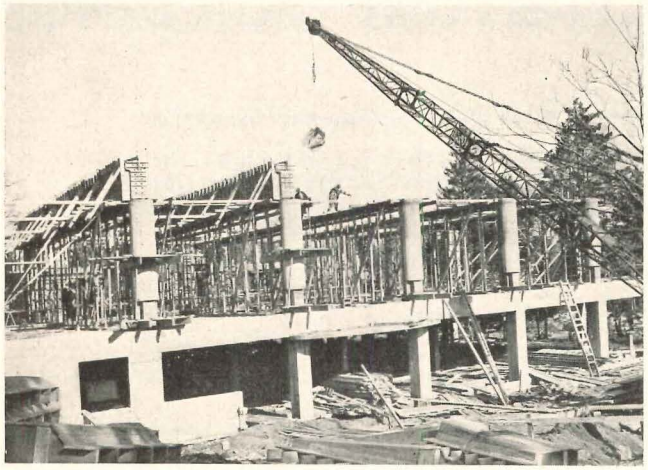
[2] *Controlling Moisture in Buildings*, ARCHITECTURAL RECORD, *August 1948*.
[3] *Insulation of Concrete Floors in Dwellings*, ARCHITECTURAL RECORD, *Jan. 1949*.

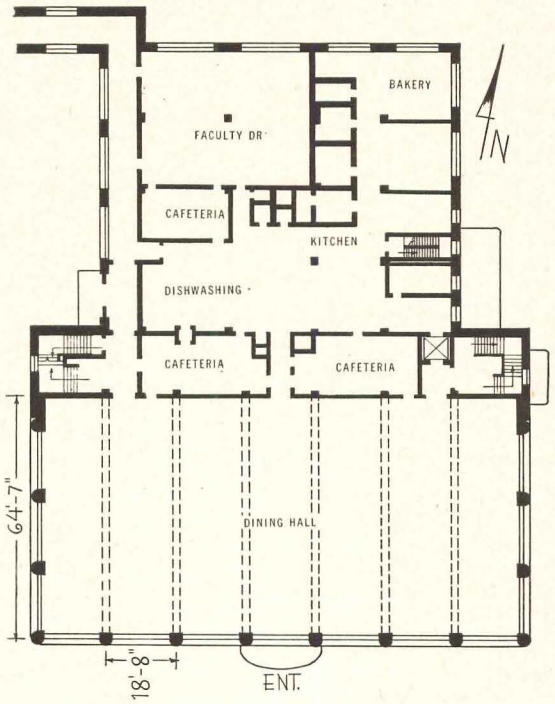
2. Waterproofing basement walls



A (left). Membrane gives added protection against seepage. Coatings now available can be applied to the inside wall in place of membrane. If water-table is more than 1 ft above top of slab, it must be made thicker to prevent floating. B (right). In sandy soils, the tile under the floor can be omitted and porous backfill used only surrounding the drain tile

COLLEGE BUILDING MAKES A SWITCH TO PRESTRESSED CONCRETE





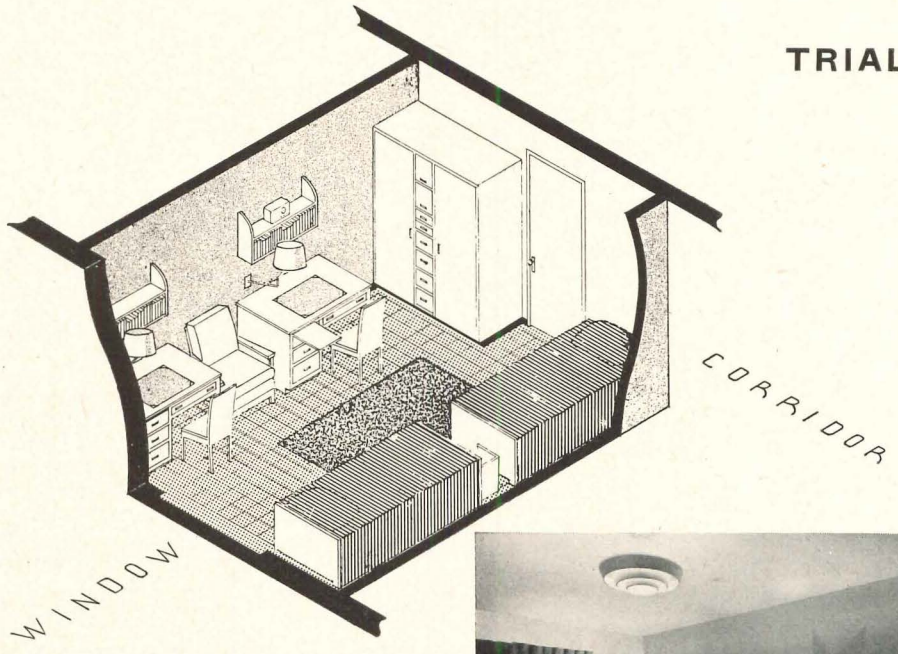
THE application of prestressed concrete girders and beams in this country had just gotten started when the shortage of steel came along. Then architects and engineers had to think about materials other than structural steel — wood, reinforced concrete, or perhaps prestressed concrete — for buildings on which construction was imminent.

Ordinary reinforced concrete worked in some cases, but not all, and one of

(*Continued on page 238*)

At Manhattanville College, the six girders over the dining hall which support the floor of the assembly room were originally planned in steel, but when the shortage came, the architects decided to use prestressed concrete to meet the time limit rather than redesign the building for reinforced concrete

TRIAL-TESTED COLLEGE DORM



Mock-up room at Case Institute of Technology produced cost-saving ideas from the students. Actual room is shown at right. Lighting is inexpensive, neat, and easy on the eyes. Desk lamps were designed specially for adjustability and comfort

CASE Institute of Technology in Cleveland was able to build and furnish a dormitory at the commendable low cost of less than $2000 per student housed, according to a report to ARCHITECTURAL RECORD by J. Trevor Guy, A.I.A., of Case. School officials give the main credit to a three-part study:

1. **A survey** to determine the students' needs, size of building required and expected return from rentals.

2. **A study made of new dormitories** at other schools.

3. **Testing of a flexible mock-up room** to determine the size and interior furnishings of the 154 sleeping-study rooms. After thorough inspection by the student body, two students lived in the room for several weeks.

Results of the research were turned over to the architects, Small, Smith and Reeb for use in planning the dormitory building which was completed in March 1951 at a cost of about $500,000 or $1645 per student housed. Furniture cost was $300,000 or $330 per student

(*Continued on page 242*)

THIN BRICK WALLS ARE THE ONLY SUPPORT IN A DESIGN FOR MULTI-STORY BUILDINGS

By Robert L. Davison of Howard T. Fisher & Associates and Clarence B. Monk of Armour Research Foundation

ARCHITECTURAL RECORD REPORT No. 3. on Housing and Home Finance Agency Research Project No. 1-T-99 with Illinois Institute of Technology
(see p. 216)

Editors Note: The idea of 6-in. brick walls holding up the concrete floors of a building 10 stories high, or even higher, rather staggers the imagination, but that is the gist of the design presented here. It's not just supposition because as much study has been devoted to the principles involved. The ways in which the authors feel such a daring structure will behave under the effects of wind, gravity and earthquake forces are outlined here.

It is beyond the scope of this article to substantiate every premise with a host of formulas and data as would be required for presentation in a technical paper. This is contemplated for the future. Its purpose is to get the core of an idea before you so that the researchers may have the benefit of your thinking.

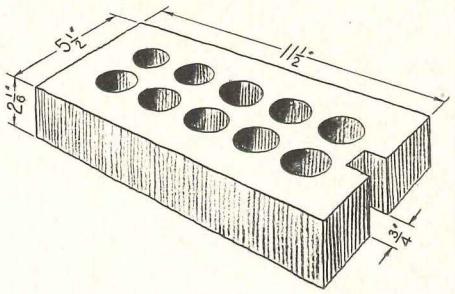
It is too early to guess just how far reaching this scheme could be. It is not impossible that it might rival the development of the steel skeleton frame. The system is efficient in the use of materials — the walls are used structurally as well as for space separation and sound isolation; but they are, of course, fixed once and for all, and they should be directly in line, one over the other.

In an engineering sense, the system is a reversal in the trend toward more complicated structural systems and methods of analysis. It takes the old fashioned bearing wall and puts it within the structure in such a way that it need not get increasingly thicker the closer it is to the foundation, but remains 6 in. thick for the whole height of the building. Actually the engineering problems of a 10-story building are reduced to those posed by a stack of ten one-story buildings.

"SCR Multi-Story Construction," developed by Structural Clay Products Research Foundation, is based upon the use of the new SCR brick, a modular clay unit with nominal dimensions 6 by 12 in. and three courses to 8 in. (see sketch this page; also see ARCHITECTURAL RECORD, May 1952, p. 214). However, the engineering principles could be applied also to buildings using other types of masonry materials.

FEATURES OF THIS NEW STRUCTURAL SYSTEM:

- Dispenses with the conventional skeleton frame of steel or reinforced concrete
- Employs thin partition walls as the sole vertical structural elements, wholly without the use of steel or other reinforcement
- Takes advantage of the inherent prestressing provided by gravity
- Improves sound isolation within the building
- Permits use of inexpensive spread foundations
- Simplifies construction and eliminates costly engineering and detailing



Supporting walls are composed of this new SCR brick having a nominal depth of 6 in.

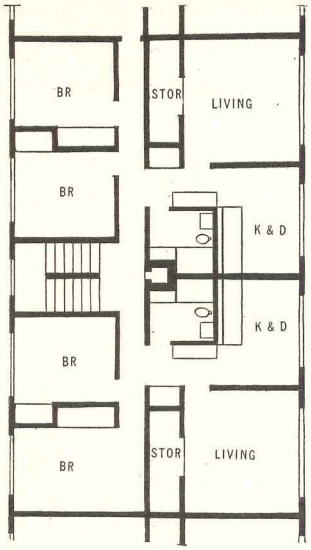
SIX-INCH THICK partition walls of brick, without any added columns, girders, or reinforcing, can theoretically hold up the floors of an apartment building 10 or more stories high. This is accomplished by setting brick walls between rigid, continuous floor slabs to form a discontinuous stack of stories which are held together by the downward pull of gravity. Wind loads are transmitted from exterior walls to the floor slabs, which in turn transfer them by friction to the bearing partition walls.

Thus, "SCR Multi-Story Construction" will be limited in its use to those types of buildings where repetitive bearing walls occur: apartment buildings, for example, and offices, hospitals and hotels. Plan requirements in buildings such as these can allow the weight of the structure to be sustained on the wall lines, instead of on columns, as in skeleton framing.

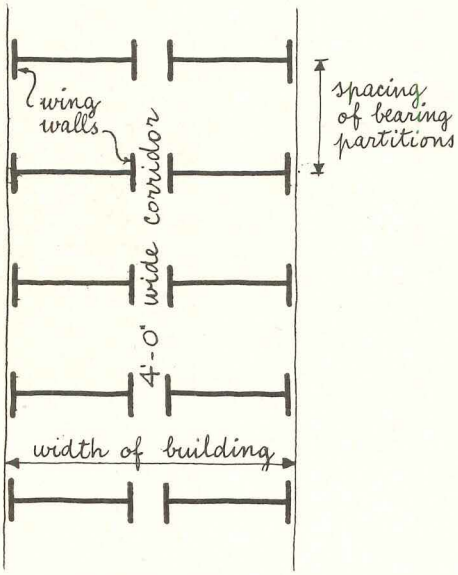
This structural system is one of a number being analyzed on a comparative basis by Illinois Institute of Technology under the Housing and Home Finance Agency contract in an effort to improve residential design and construction in multi-story dwellings.

For demonstration purposes we have taken a typical apartment house floor plan (actually the "basic" plan used in the HHFA Research Project described in ARCHITECTURAL RECORD, December, 1951). This plan might be anywhere from 25 to 55 ft wide overall.

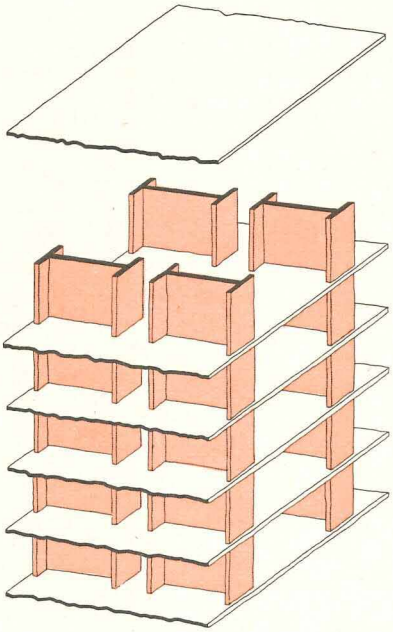
To simplify mathematical calculations, the partition walls in the plan have been reduced to a series of transverse bearing partitions (the space between them could range from 9 to 27 ft) buttressed by wing walls which represent corridor, closet and other longitudinal partitions. Although a simple rectangular structure has been assumed, the construction system is not limited to rectangular buildings, and buildings without continuous corridors would prove much stronger.

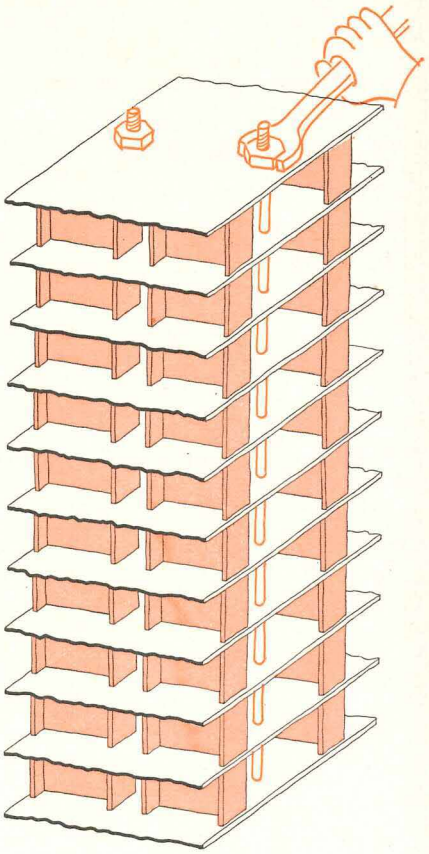


"BASIC" PLAN

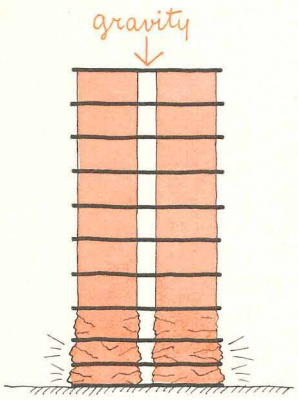


SIMPLIFIED VERSION

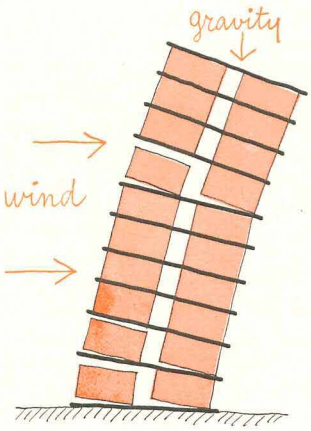




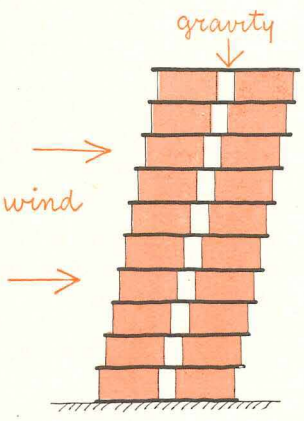
To simplify understanding and analysis of this brick construction system, the "basic" apartment plan used in this research (top left) is idealized into the repetitive series of bearing partitions and wind walls shown at left. In a multi-story building these masonry bearing partitions are interlayered with rigid floor slabs of reinforced concrete (above). Gravity pulls together this stack of floors and bearing walls, so that when subjected to horizontal wind pressure, this structure is analogous to a cantilevered beam prestressed by a long bolt. Below are four types of possible failure investigated



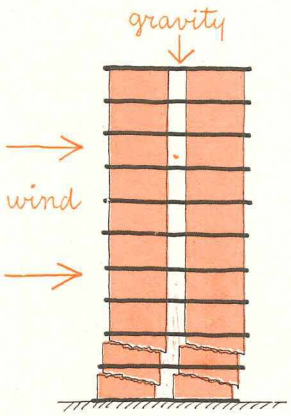
1. excessive compression or bearing



2. opening between walls and floors



3. sliding of walls and floors

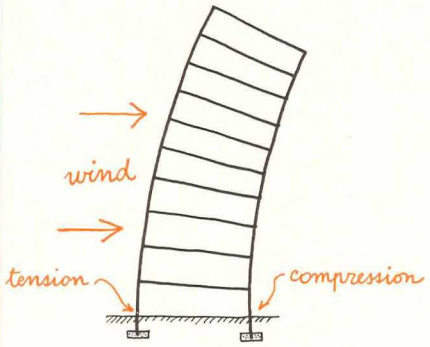


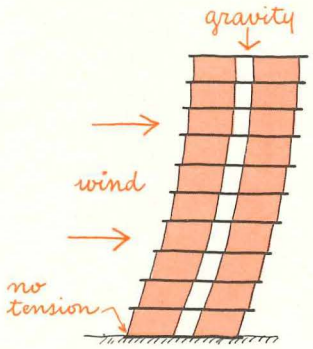
4. excessive diagonal tension

Investigating the building design becomes analogous to investigating a prestressed cantilever beam made up of blocks, gravity being the prestressing force in this case, and wind the load on the beam. It will be necessary to guard against (1) excessive compression within, and bearing between, the walls and floors; (2) opening of the joints between walls and floors; (3) sliding of walls and floors relative to one another; (4) excessive diagonal tension or shearing stress within the walls and floors.

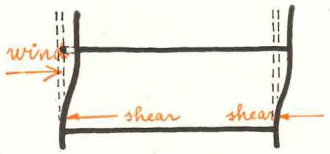
Since the vertically discontinuous brick wall has little strength in tension, it cannot be designed to resist bending forces, but it must resist overturning through dead weight. The deflection in a multi-story building of this type would be due largely to racking (or shear) and would tend to produce a deflection curve the reverse of that normal in skeleton framing (see sketches p. 210). The relative horizontal displacement of one story with respect to another is prevented in a

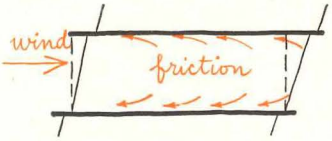
SKELETON FRAME AND BRICK MULTI-STORY CONSTRUCTION: A COMPARISON



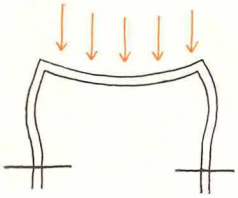


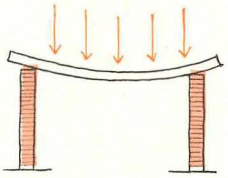
Deflection in the brick multi-story building will be in racking (or shear), and will tend to produce a defection curve the reverse of that normal in skeleton frame construction



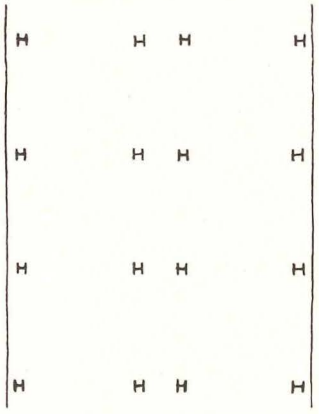


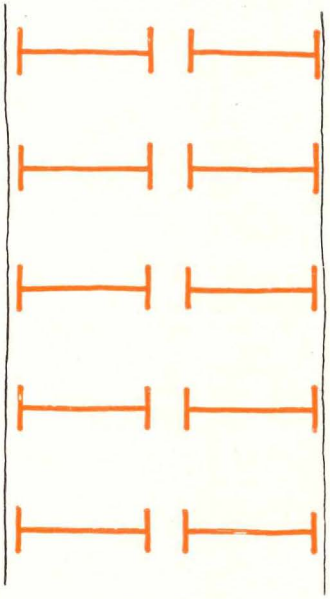
The horizontal displacement of one story relative to the next is prevented in skeleton frame construction by shear across the columns. In the brick wall multi-story construction it is prevented by sliding friction between wall and floors, and by the capacity of the wall itself to resist racking





In skeleton frame construction, because of the continuity of horizontal and vertical elements, the columns must participate in bending. In the brick construction, the floors rest on the brick walls but are not tied into them. So the brick walls do not then have to resist bending





Instead of the point loading typical of skeleton frame construction, the brick walls with their line loading already have their reactions semi-distributed to the soil. In poor soil conditions it would be economical and advisable to use a continuous mat foundation

skeleton frame by shear across the columns; in the brick construction it is prevented by sliding friction between wall and floor, and by the racking capacity of the wall within itself.

Since the resistance of unreinforced masonry walls to bending is limited, it is wise to have the floor system rest on the walls but not tied into them, so that deflections in the floor will not cause the walls to participate in flexture. Theoretically, floors not continuous with the vertical building elements should be thicker than those that are. But because of code requirements or constructional limitations, floors generally are approximately 4 in. thick, in spite of thinner theoretical requirements. In practice, then, the advantages of continuity between horizontal and vertical elements may not be realized.

How far the ponderous weight of the superstructure will clamp the ends of the floor slab to the walls in the lower stories, remains to be investigated. It is important that parts bearing on the walls should not introduce bending into them.

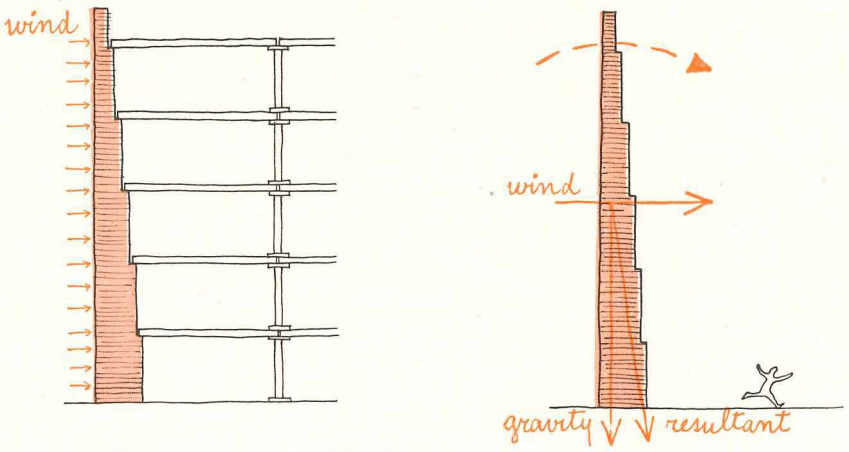
Strength properties and analysis of SCR brick walls

Development of the construction system described in this article has been founded on the strength characteristics of SCR brick walls for home construction. Initially, predictions of wall strength were based on tests of 8 in. solid masonry walls performed at the National Bureau of Standards and reported in *Building Materials and Structures, Report No. 109*. Recommended allowable loads on such walls are summarized in the table at right.

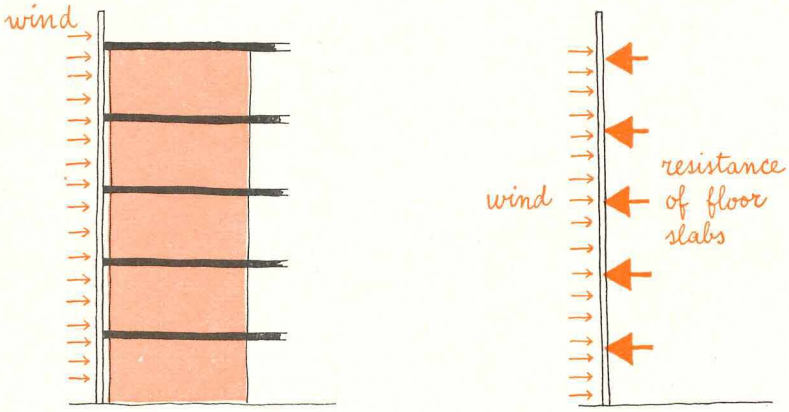
At present, static tests as prescribed by ASTM are being conducted at the Armour Research Foundation to determine experimentally the strength of SCR brick walls for home construction. Indications to date are that the results agree favorably with the allowable loads asumed above.

What factors will determine whether non-reinforced brick walls will be used in multi-story construction as the structural framework? They appear to have a sizable bearing capacity, a useful amount of resistance to racking, and a dead weight which can be turned to advantage. The limitation of non-reinforced brick walls in bending must be faced frankly, and the bearing walls so positioned in the structure that their bending participation will be small.

The bearing capacity of 6-in. brick walls is sufficient to sustain apartment



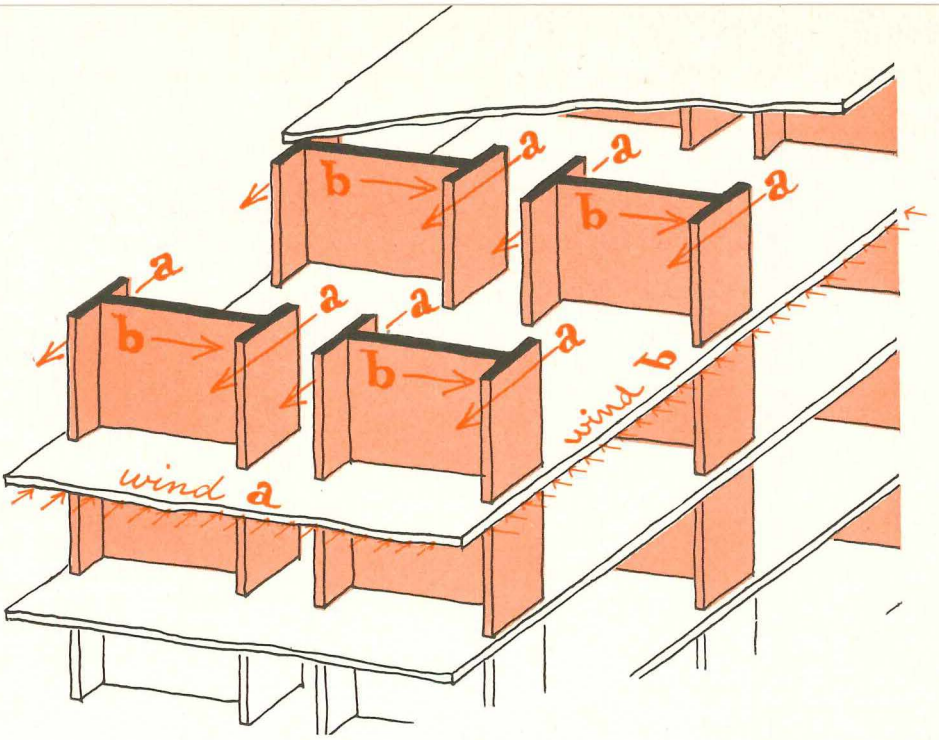
GRAVITY BRICK WALL CONSTRUCTION



SCR BRICK WALL MULTI-STORY CONSTRUCTION

In old-style gravity brick wall construction (which reached its peak in 1891 in the Monadnock Building, Chicago) the exterior wall is designed to resist wind the whole height of the building. The exterior wall also helps to carry the floor load, but the floors give the wall little help in resisting wind load. In the brick wall system of multi-story construction, the exterior walls deliver wind load directly to the floor system at 8 ft intervals, thus minimizing any horizontal loading of the exterior walls

Wall	Compressive Load (height 8′-0″) kips/ft	Transverse Load (span 7′-6″) lbs/ft	Racking Load (8′-0″ by 8′-0″ spec.) kips/ft	Wt. lb/ft
AA, high strength brick; cement mortar; excellent workmanship	99.6	46	2.50	96.00
AB, medium-strength brick; cement-lime mortar; commercial workmanship	21.0	15	2.50	73.90
AC, medium-strength brick; cement-lime mortar; excellent workmanship	36.2	32	2.50	78.90
From these tests and other published experiments the following predicted strength was prognosticated:				
SCR brick	40.0	20.0 (8′-0″ span)	2.0	45.00



Horizontal loading due to wind, from whatever direction it may come, is always transformed, in this construction system, into a racking load (which brick walls can well resist) on the bearing partitions (shown resisting wind b), or on the wing walls (shown resisting wind a) which also add useful buttressing

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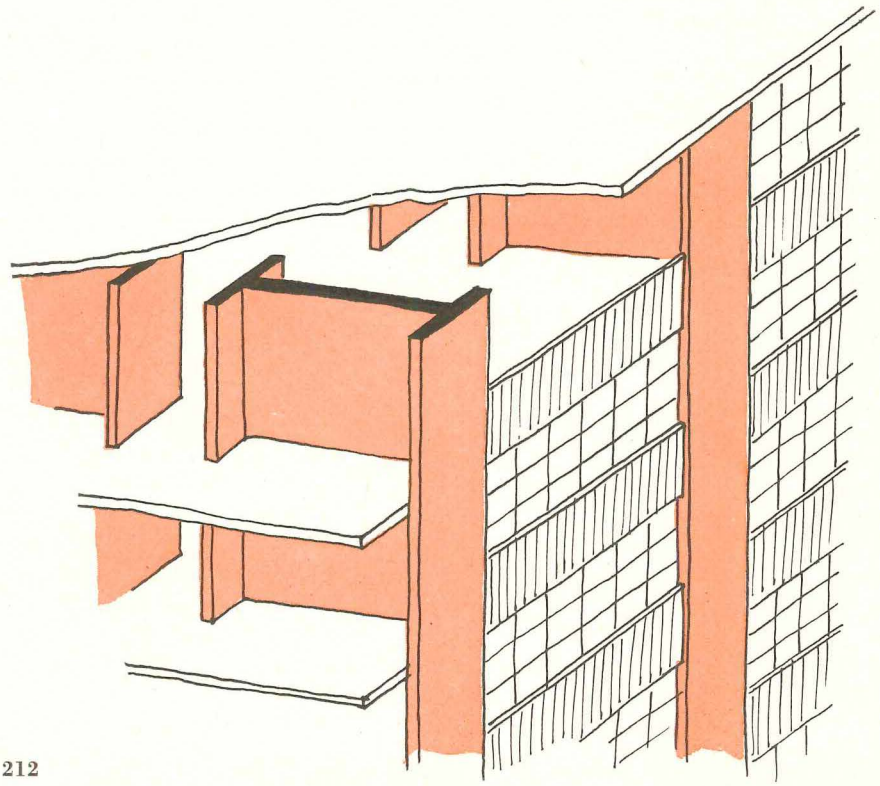
The curtain wall pilasters become identified with the wing walls of the brick bearing partitions. To provide lateral support and prevent buckling, these pilaster walls should be tied into each floor slab. Three additional ties, between one floor slab and the next, would be preferable for help in resisting wind suction or outward acceleration from earthquake



buildings as high as 15 stories even when the increase in pressure, caused by wind, on the leeward side of the building is taken into account. While 40 kips per ft may seem like a tremendous load for such a slender wall, tests indicate that in heights up to 8 ft, there is no tendency for the wall to buckle — failure is a matter of crushing. Naturally, a 6 in. wall, 15 stories high would buckle under its own weight; however, in the proposed structure the floor provides lateral support every 8 feet.

Assuming that SCR brick walls can sustain an allowable bending force of 20 lb per sq ft over a span of 8 ft, they would appear to be suited for use as curtain walls. Theoretically, they could sustain a 75–80 mph wind with a safety factor of 2½.

Instead of the whole exterior wall being designed to resist wind the full height of the building, as in old-style gravity wall construction, the exterior walls deliver their wind reactions directly to the floor system at 8 ft intervals, thus minimizing horizontal loading on the brick wall.

The floor system must deliver its edge forces from wind loading to the transverse bearing walls which are to be the major structural masonry. It is assumed that friction between floor and wall will be sufficient to transfer this load; for multi-story structures such as we are discussing here, the coefficient of friction of masonry on concrete (assumed to be 0.50) is sufficient to prevent sliding.

Actually, the horizontal loading from wind has been introduced into the major structural masonry as a racking load. SCR brick walls are assumed qualified to resist racking loads of 2 kips per ft.* They can therefore resist the accumulated horizontal load that occurs on the bottom story from wind reactions introduced at each story level above. Since horizontal loads from any direction must be allowed for, longitudinal walls (idealized here as wing walls) must also participate in racking resistance. The buttressing action of these longitudinal walls is especially important for earthquake resistance.

Since this scheme consists of a discontinuous stacking of floor and wall elements, is there any danger that the upper stories would tip, or the whole building overturn? In the case of uniform wind pressure, static forces upon the structure are such that the whole

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** The racking test for walls used in home construction under ASTM specifications doesn't simulate accurately the behavior in a multi-story building. Further verification of this figure is planned.*

building would overturn before the upper stories would tip over to the leeward side. Resistance to overturning is achieved through dead weight. Provided there is sufficient dead weight to prevent any tension at the base of the building on the windward side, there will be no danger of overturning.

As shown above, loads are delivered to the main transverse bearing partitions through the floor slab. Dead and live loads are transmitted through bearing. Horizontal wind and earthquake loads are transmitted through friction and racking.

Exterior Walls

Before considering the interior walls, something should be said about structural action of the exterior walls. The wind reaction of the curtain wall is delivered to the floor slab.

The curtain wall sustains its own weight. This is carried through pilaster walls to the foundation. Where windows puncture a curtain wall, the spandrel from window head to window sill may be considered as an integral spandrel beam if the lower courses of masonry are reinforced, making a reinforced brick masonry beam. The spandrel from window head to window sill is deep enough — when reinforced — for spans up to 27 ft. The curtain wall should be securely enough tied into the floor slab to withstand outward suction pressure of at least 10 lb per sq ft and, in earthquake areas outward accelerations of at least 15 lb per sq ft.

The reactions of the integral spandrel beam within the curtain wall are to be sustained by the pilaster wall. Since the accumulated dead weight of curtain walls is relatively light, a minimum pilaster width of 3 ft will be sufficient for buildings up to fifteen stories with spandrel spans up to 27 ft. The pilaster wall should be tied at least every 8 ft (at the floor slab) to provide lateral support against buckling. Three additional ties attaching the pilaster to the partition walls (between each floor slab and the next) would be preferable, to help in resisting wind suction or outward accelerations due to earthquake.

Floor Slabs

While floors are not our primary concern here, they must of necessity be discussed since their weight must be sustained by the walls. To predict the loads on the bearing walls, the dead weight of the floor system as a function of the span has been computed. Designs to date indicate that relatively long reinforced concrete slabs will resist stress requirements.

Engineers, however, are reluctant to design slabs solely on the basis of stress considerations. In addition to normal deflection there is experimental evidence to indicate that long, thin, reinforced concrete slabs will creep measurably under long sustained loads.

To guard against this possibility an arbitrary limitation of an L/D ratio of 40 was imposed on this design. The minimum weight (as determined by stress) was used to compute frictional and stability limitations; the maximum weight (determined by deflection) was used to compute bearing or equivalent static earthquake loading. In other words, that floor slab weight was used which most severely limited the design.

A live load of 40 lb per sq ft has been assumed in all calculations. Requirements for corridor spaces, dead weight of non-load-bearing partitions, storage areas, etc., have been assumed allowed for in the following manner: Because it is improbable that all floors will be loaded simultaneously, it is customary under most building codes to reduce the live load on vertical elements; therefore, based on the New York, Chicago and San Francisco building codes, our calculations use a reduction factor of 65 per cent for all stories.

Ideally the floor slabs should be so designed as to behave as rigid plates. Where breaks at corridors or doorways occur through the main transverse partitions, the floor plate or slab must not be so flexible that the building acts in resisting horizontal loads as two separate parallel structures, separated by the gap at the opening. The floor must be stiff enough to ensure the full building width will act as a whole in resisting lateral load. This assumption has been made in the graphical forecast of story heights to follow. If the floor is not sufficiently stiff, then in the extreme case of continuous corridors on each floor the predicted story heights may be reduced to roughly 50 per cent.

How Tall Can the Building Be?

A statical analysis of the 6-in. brick walls was made to predict how many of the 8 ft-6 in. stories could be stacked up safely, depending on the spacing of the main transverse bearing partitions and the depth of the building. This prediction was based on the following investigations:

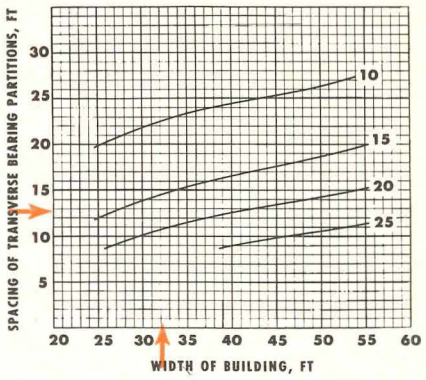
1. The maximum bearing or compressive load on the bottom story.
2. The stabilizing effect of the dead weight against tipping of the building from wind.
3. The frictional force under each story.
4. The racking load on the bottom story due to wind.

The bearing capacity of the brick walls must resist both the vertical dead and live loads plus the additional stresses resulting from wind or other horizontal loading. The limiting condition for stability has been set by permitting no tension at the windward base. Since the total wind load increases in the same proportion as the dead load, progressing from top to bottom of a building, the coefficient of friction required under each story is theoretically the same; that is, the frictional resistance does not depend on the number of stories. Racking was assumed to be a function only of the wind load and depth of building.

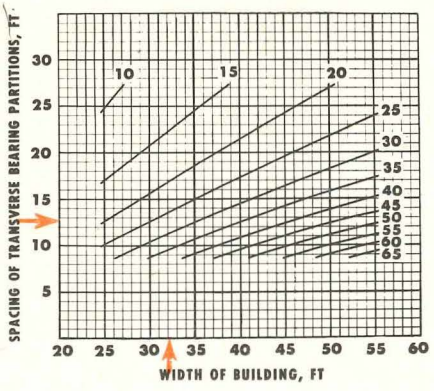
Results of the above investigation have been summarized in the graphs on page 214. All graphs allow for an arbitrary choice of building width and spacing of transverse bearing partitions. On the extreme left of the large graph is the boundary of the region of insufficient friction. Choices falling into this region should not be allowed because the statical friction under each story would be exceeded, allowing it to slide. Fortunately, this region is small and away from the usual building proportion.

Bays ranging from 9 to 27 ft have been considered and building widths ranging from 25 to 55 ft. Each curve is the limit of height for a particular set of dimensions, in terms of 8 ft-6 in. stories, to which the building may go before exceeding (1) the bearing capacity of the walls, (2) the stability of the building, or (3) the racking strength of the bearing partitions. Ideally, the most efficient use of material would be when all three curves coincide, so that the limiting conditions are reached simultaneously. However, based on the assumptions made above, bearing and stability are the two controlling factors. It appears that racking does not govern story heights within the building proportions considered here.

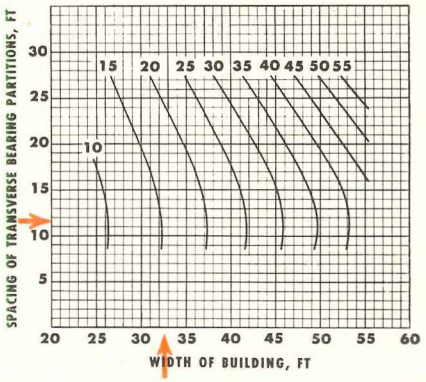
The large graph, therefore, is a composite of bearing and stability curves. The stability and bearing surface intersect along line "I". To the left and below this line stability controls; to the right and above this line bearing controls. As an example, if a building were 32 ft deep, with transverse bearing partitions spaced 12 ft on center, then the maximum height of the building would be about 15 stories. It would be 15 stories as controlled by stability, but 18



AS CONTROLLED BY BEARING

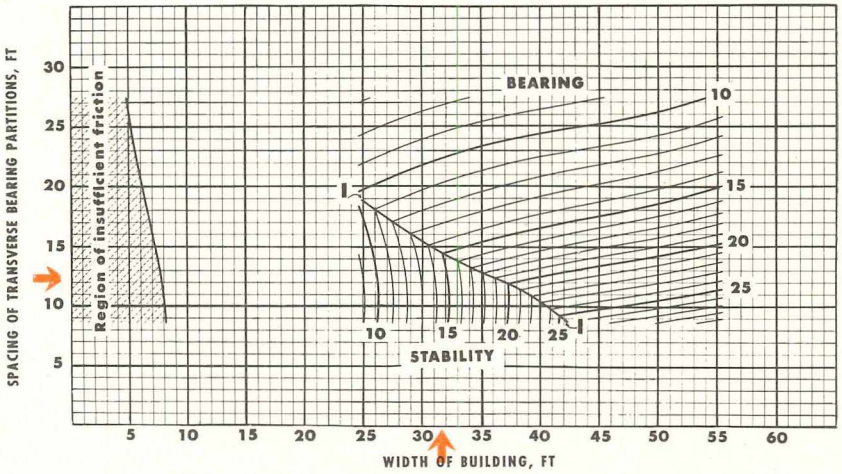


AS CONTROLLED BY RACKING



AS CONTROLLED BY STABILITY

Statical analysis of the brick wall multi-story construction system is summarized in the large graph at right (a combination of the smaller ones above). It will be seen that, for a building 32 ft deep, with transverse bearing partitions 12 ft on center, the maximum permissible height would be about 15 stories. If bearing alone controlled, the limit would be 18 stories, if racking controlled, it would be 27 stories.



ALLOWABLE NUMBER OF 8 FT 6 IN. STORIES IN TYPICAL MULTI-STORY APARTMENT

stories as controlled by bearing, or 27 stories as controlled by racking.

While exact dynamic analyses are most tedious and difficult, West Coast building codes provide the designers with a method for computing horizontal loads which may be applied to the structure statically to produce equivalent seismic effects. Based on the San Francisco Building Code, 1952, and the Uniform Building Code, 1943, an equivalent static analysis was made similar to the above procedure for the 32 ft deep building with bearing partitions 12 ft on center. At the bottom of this page is a tabular summary of results showing the allowable number of 8 ft 6 in. stories:

The unusually high value for racking under the San Francisco code is due to the decidedly lower accelerations provided for in the lower stories. Since earthquake accelerations are more severe in the top stories, the minimum width of building must be 10.6 ft (San Francisco Code) in order to prevent the top story from sliding, as compared to 7.9 ft under static wind load. Vibrations of the walls themselves are a matter of future study.

Foundations Simplified

This multi-story system simplifies foundation problems where soils do not have much bearing capacity. Instead of the point loading typical of skeleton frame construction, the load is distributed along the partition wall line.

Since continuous footings underneath the main bearing partitions are required, and since, in most apartment buildings, partition walls will be spaced 10–15 ft apart, it is calculated that, with poor soil conditions, the footing of one wall would spread almost half way toward the adjoining wall. In such cases it would seem advisable to use a continuous mat foundation. This would also provide bearing for the longitudinal walls which, although not receiving gravity loads, must resist horizontal loading from any direction.

Calculations indicate that if a continuous mat is placed underneath a 10-story SCR building, the load intensity on the soil varies between 1000 and 2000 lb per sq ft. Any but the most adverse soil conditions would be satisfactory for this load.

Historical Perspective

The use of load-bearing masonry in

Limiting Condition	NUMBER OF STORIES		
	Static Loading	Earthquake Loading	
		San Francisco Code	Uniform Building Code
Bearing	18	18	13
Stability	15	15	8
Racking	27	71	11

high multi-story buildings, has been practically abandoned since 1891, completion date of the Monadnock Building in Chicago. The exterior masonry bearing walls in this 16-story building were proportioned by a rule of thumb dating back to the Renaissance: a minimum wall thickness of 12 in., with an increase of 4 in. for every story below the top. The result was that the walls of this building measure 72 in. at the base.

No wonder that the skeleton frame — launched to fame in 1883 by William Jenny's Home Insurance Building in Chicago framed in cast and wrought iron — seemed the ideal structural system for building owners who were already sensitive to the amount of expensive real estate occupied by the structural frame, the square feet that paid no rent.

Jenny's creation was made possible by the contemporary development of iron and steel. The application of this new material was aided by the work of bridge engineers whose experience in building metal structures dated back at least 100 years. Laboratory material testing was now possible. Steel fashioned into strong machines tested itself.

The greatest impetus to structural engineering in recent years has been given by the aircraft industry, where the weight-strength ratio is a maddening challenge for precise structural analysis and efficient structural systems. Complete dependence on the beam, strut, and truss soon gave way to the monocoque system, i.e. the skin, or fuselage of the structure, was called upon to be force-resistant. Creators of automobile bodies are aware of this monocoque principle.

Is the building industry going in this same direction? Rumblings are heard. We speak of rigid diaphragm floors (the flat plate). Cellular, or box-frame, construction of walls — though limited — is a reality. Theoretical tools for analyzing plates, shells, membranes — though tedious at times — are available. Will the contemporary skeleton frame give way to a technique of integrated walls and floors? This multi-story system is a step in this direction.

Masonry construction need no longer be shackled by unreasonable factors of safety. Professor I. O. Baker's "Treatise on Masonry Construction", which had a profound influence on the Chicago Building Code during the reconstruction period after the Great Fire of 1871, recommended a safety factor of ten. This extreme caution was representative of masonry practice throughout the country at the time when the skeleton steel frame was evolving. This position is not tenable today. The minimum safety factor suggested for unreinforced masonry by the National Bureau of Standards is two and one-half.

Application to Apartments

Almost any common type of apartment plan is well suited to this construction system. The strip plan, typical of walk-up apartments, was selected for our research study because it permitted simple analysis and comparison of different materials and construction methods. Such a plan could be used for three-story garden apartments, or, by piling three such garden apartment units one on top of the other and connecting them with a skip-stop elevator, an efficient high-rise building results (see ARCHITECTURAL RECORD, December 1951, page 138).

Construction Details

Construction details for bearing partitions, exterior walls, insulation, windows, doors, etc. are identical for 1, 3, 10 and 15-story buildings. The reason is that the thickness of all bearing walls is constant throughout the height of the structure.

In cooperation with the Structural Clay Products Institute and the Structural Clay Products Research Foundation, Howard T. Fisher & Associates have developed comprehensive details for use of SCR brick for single-story residences. These details take care of corners, windows, doors, lintels, sills, insulation, through-wall flashing, wiring, lath and plaster, or dry wall finish, etc. and are fully applicable to this multi-story system.

Additional details, expecially those required for fireproof floors, stair wells, and fireproof doors to public halls, are now being developed.

Exterior Walls

In contrast to traditional masonry construction, the exterior walls do not carry any floor loads. (The end walls are the single exception; they may be considered as insulated bearing partitions, with window openings kept to a minimum.) The exterior walls are not true curtain walls because they are not supported by the floors.

In some earlier versions of this construction system, the exterior walls were recessed between the floor slabs. However, the pilaster sections were designed to carry the exterior wall load. The dominant reason for setting the exterior wall outside the floor slabs was to reduce the heat loss caused by through-conduction from floors and bearing partitions.

The space between the edge of the floor slab and the exterior wall is filled with a non-combustible insulating material, which will also prevent the passage of sound and fire.

It is suggested that the inside face of the exterior walls be furred out on 2 by 2 in. wood strips. This prevents moisture penetration, facilitates installation of electric wiring, and allows for 1 in. blanket insulation if this is desired. The furring strips are quickly and easily attached by impaling them on special staples in furring clips which are installed by the mason when laying the wall.

There is a wide choice of insulating materials and plaster finishes for use on such a furred wall. The completed wall may have a U-factor ranging from .15 Btu (1 in. blanket insulation, plus $\frac{3}{8}$ in. gypsum lath, plus $\frac{3}{4}$ in. vermiculite plaster) to .25 Btu. ($\frac{1}{2}$ in. gypsum board with aluminum foil back).

Exposed Brick Interior Walls

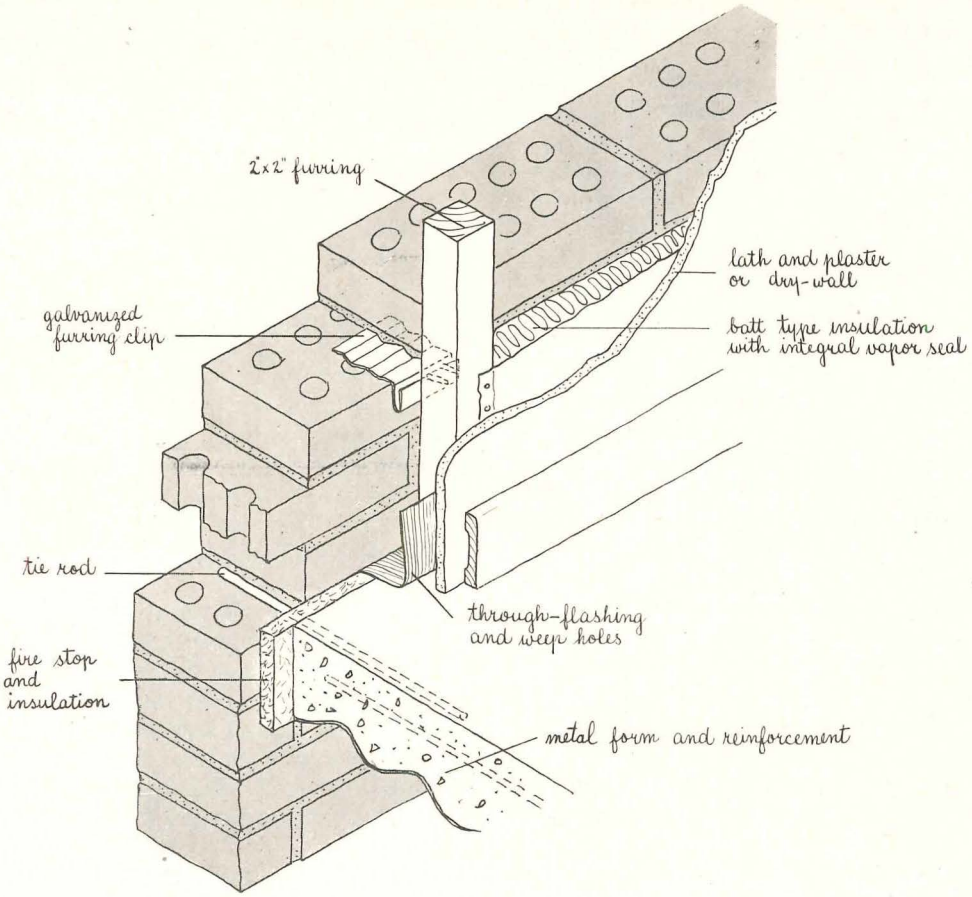
How far it might be desirable to leave the brick partition walls exposed will probably depend upon the location of the wall, the skill of the architect and the variety (size, color, finish, etc.) of the bricks at his disposal; also whether the apartments are subdisized units for low-income families, or competitive, privately-owned rental units.

For kitchens and bathrooms, glazed brick with thin mortar joints would be preferable to plaster, from the standpoint of appearance and sanitary finish; also it would be lower both in first cost and maintenance cost.

Whether brick or plaster were used in the bedroom hall and in closets would make no significant difference to the tenants. The architect's decision in these cases might depend upon whether such walls were required to be bearing partitions.

We do not know what the reaction of local housing authorities would be to apartment designs using exposed brick for interior walls, in living and bed rooms. But the Chicago Housing Authority, who are interested in this HHFA research project, have indicated that they would accept unplastered brick throughout, if it would reduce construction and maintenance costs.

Fire prevention experts are particularly eager for a surface such as exposed brick which does not require painting; for paint can be the means of spreading flash fires.



Suggested construction detail at joint between floor slab and outside wall in the brick wall story construction. Floor and wall are connected at intervals by tie rods, but they are structurally independent and separated one from the other by a layer of insulation. The furred wall shown (U value, including brick, 0.15) is but one of many possibilities

Fire Resistance

Fire tests have not yet been run on a 6 in. brick wall comparable to one made of SCR brick. However, it seems probable, by interpolation of test results gained from 4 in. and 8 in. masonry walls, that the SCR brick wall, unplastered, will have a 2 hour rating, and with furring, lath and plaster on one side a rating of over 4 hours.

Sound Isolation

A high degree of sound isolation is a useful by-product. Theoretical analysis indicates that the 6-in. brick wall without plaster should have a sound attenuation of slightly more than 45 decibels. This is considered satisfactory for dividing walls between one apartment and the next, and it is far above minimum requirements for the partition walls within each apartment.

Construction with SCR Brick

One outstanding advantage possessed by the SCR construction system, when compared with most other new systems, is the immediate and nation-wide availability of the units employed. No special equipment or experience is required for installation; SCR bricks can be laid by any bricklayer.

Resistance to Shock

How would a 10- or 15-story apartment house, built with unreinforced walls of brick behave if subjected to earthquake or atomic blast? Probably the best method of analysis available to the practicing engineer is the use of equivalent static loading, as required by the San Francisco Building Code. Exterior wall bearing masonry buildings at Hiroshima and Nagasaki showed evidence of total collapse. It must be remembered, however, that conventional practice has been primarily to place the major structural masonry on the outside of the building where it is most vulnerable to the bending effects of blasts, wind, or other horizontal loading. Seldom have masonry structures been deliberately engineered to take full advantage of the racking resistance of brick walls in withstanding horizontal loads.

Besides using the dead weight of the brick wall to stabilize the structure and provide useful frictional forces, we position the walls in a multi-story structure so that they will participate in bearing and racking without severe transverse effects.

Conclusion

Before this construction system can be recommended for actual use, certain additional tests must be conducted, and it is assumed that it would be first tried in numerous smaller structures before larger projects are undertaken. The Structural Clay Products Research Foundation intends to continue theoretical and experimental development with the hope that a pilot building can be erected in cooperation with the Housing and Home Finance Agency and one of the municipal housing authorities.

Architectural Record Report No. 3 on Housing and Home Finance Agency Research Project No. 1-T-99 with Illinois Institute of Technology*

* This article is based on a progress report on Housing and Home Finance Agency's Research Project No. 1-T-99 being conducted under contract by Illinois Institute of Technology, Prof. E. I. Fiesenheiser, Project Director; Howard T. Fisher & Associates, Inc., Architects and Industrial Designers, Subcontractor; Chicago Housing Authority, Collaborator.

The construction system presented here is a development of the Sturctural Clay Products Research Foundation, Robert B. Taylor, Research Director. It is the result of that organization's cooperative participation in advancing the research objectives of HHFA Project No. 1-T-99. The research and development work was performed for, and at the sole expense of, the Structural Clay Products Research Foundation by Howard T. Fisher & Associates, Inc. and Armour Research Foundation of Illinois Institute of Technology. The basic concept was developed by Robert L. Davison in September 1950. Formulation of an engineering philosophy was undertaken by Clarence B. Monk in September 1951, based upon the use of "SCR Brick" (Registered Trademark SCPRF: Patents Pending).

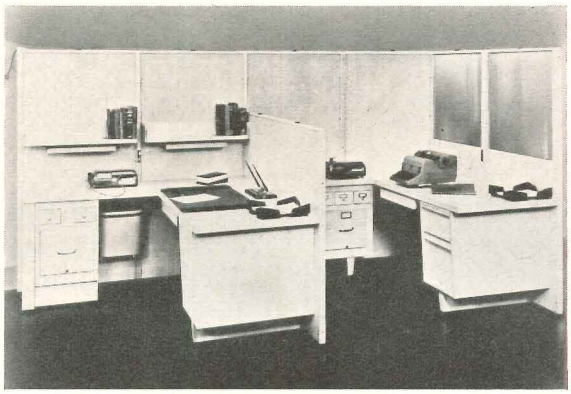
The accuracy of all statement or interpretations is solely the responsibility of the authors. Statements may be altered by further investigation.

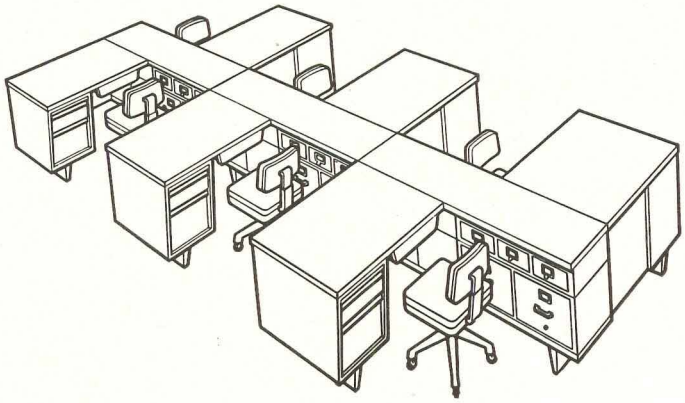
Modular Office Furniture

Designed primarily as a space-saver, but also to afford time-saving efficiency and less clutter in an office, the *Globe-Wernicke Techniplan Modular Office* system is reported to have had successful installations, after having been on the market for less than a year. Consisting of adjustable working surfaces combined with optional partitions, the group also includes various standard sectional units, such as letter files, map and visible record cabinets, and card index cases. Cutting down waste space and adding flexibility, the units make for better organized and improved working facilities. Units are readily interchangeable due to an interlocking keyhole slot principle. Anyone with an ordinary screw driver can assemble them.

Electric wire channels can be run along the top of the partitions so that electrically operated machines may be placed at desired locations. Fluorescent lighting fixtures are attached to the bases of bookshelves, giving added light for detailed work. The Globe-Wernicke Co., Cincinnati 12, Ohio.

Sectional units of office equipment may be assembled in many ways to provide maximum floor space and increased efficiency. Built-in bookshelves and racks for waste baskets are an added attraction

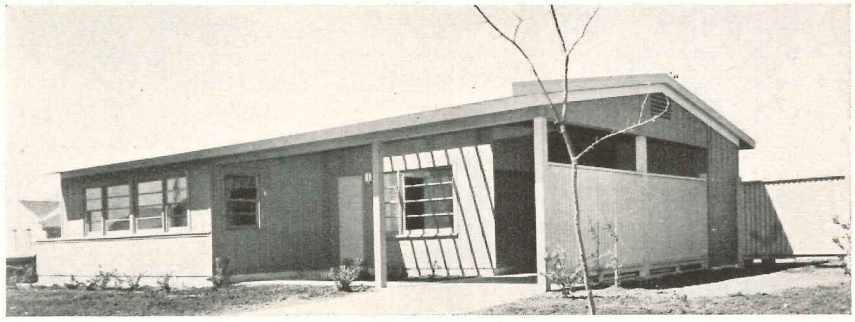




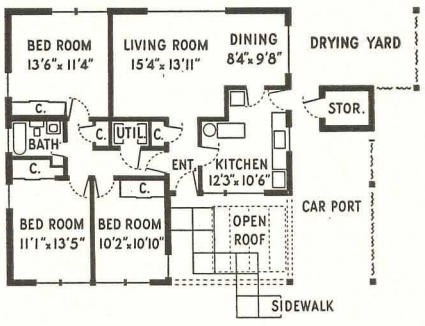
Air Conditioning Package For Low-Cost Housing

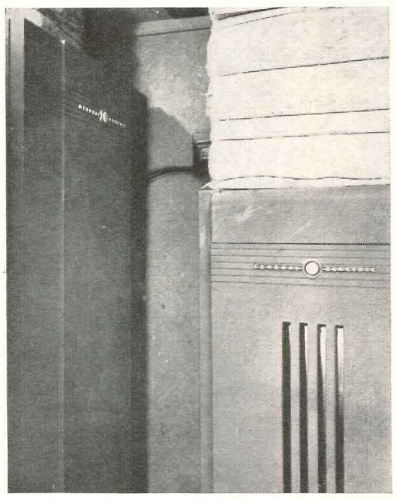
The first houses have been completed for a 210-unit development in Dallas which will reportedly be the first large-scale, low-cost housing project in the country to include complete year-round air conditioning. Designed by George N. Marble, architect, the six-room houses are planned around a new *General Electric* packaged air conditioner tied by a common duct system to a *G-E* warm-air furnace. Both are located in an enclosed central alcove where they can furnish cold or warm air directly into surrounding rooms through a minimum of duct-work. The project is being built by the combined firms of Laughlin & Silver and Lewis & Lamberth, who expect to market the houses for about $12,500. The combined air conditioning and warm-air heating system totals only about 8½ per cent of the cost of the complete house, and annual cost of operation is said to be equally low. The system provides year-round comfort for homes, furnishing

(*Continued on page 252*)

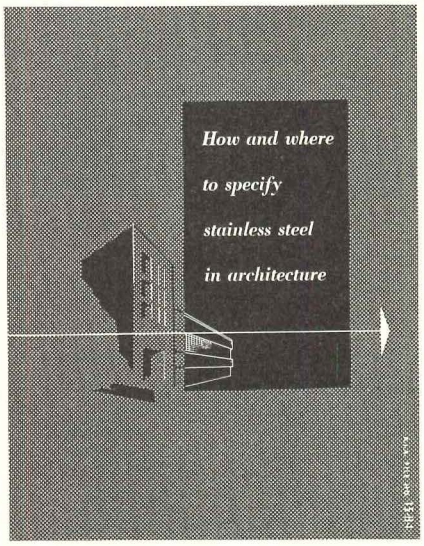


Typical house in new project (above) is planned (below) around centrally located system with packaged air conditioner and warm air furnace (right)





LITERATURE FOR THE OFFICE



Booklet lists over 300 general and specialized applications for stainless steels in construction of many building types

Stainless Steel Applications for Building

How and Where to Specify Stainless Steel in Architecture. Booklet describes types of stainless steels, giving analyses and representative physical and mechanical properties; lists forms and finishes of mill products and types of fabricated products available; shows in tabular form over 300 individual applications for stainless steel in major areas of buildings, including specialized installations. A specification guide is included. 20 pp. United States Steel Co., Pittsburgh, Pa.*

Fire Protection For Moving Stairways

Fire Resistance of Shutters for Moving-Stairway Openings. National Bureau of Standards Building Materials and Structures Report 129. Booklet describes results of one exploratory and two full-scale fire-endurance tests of flexible rolling shutters for closing of moving stairway openings. Photos, graphs and details are included. 9 pp., illus. Price 10 cents. Supt. of Documents, U. S. Govt. Printing Office, Washington 25, D. C.

** Other product information in Sweet's File 1952.*

Tool Steel Reference Manual

Tool Steel Handbook. Designed for engineers, teachers, metallurgists and others interested in tool, die and allied steels, this comprehensive volume is a companion to the previously published "Stainless Steel Handbook" and "Strength of Stainless Steel Structural Members as Function of Design." Contents include charts and tables of data on properties, analyses and applications, descriptions of important grades, discussions of heat treating and handling techniques, information on forms, finishes, weight tables, and other material. 197 pp., illus. Allegheny Ludlum Steel Corp., 2020 Oliver Bldg., Pittsburgh 22, Pa.*

Linoleum Products

1952 Gold Seal Pattern Book. Catalog contains information on entire line of floor and wall coverings, as well as maintenance equipment and suggestions for proper treatment and care. Photographs of all installation equipment are given and product specifications are included. Full page color illustrations of rugs, by-the-yard Congoleum, Congowall, inlaid linoleum (plain and vinyl), asphalt tile, Nairnboard, bulletin board cork and linoleum borders present a pictorial description of various patterns and colors. 208 pp., illus. Congoleum-Nairn Inc., 195 Belgrove Drive, Kearny, N. J.*

Handbook for Homemakers

Everything in it is You. Booklet by Francis DeN. Schroeder gives the reader a brief but adequate sketch of the various periods in the history of furniture design. Drawings help to illustrate examples of each period discussed. Average sizes for bedroom, dining and living room furniture are shown — using a scale of ¼-in. equals one ft. The chapter on colors includes many helpful suggestions and a handy color wheel containing primary, secondary and tertiary colors. Chapters follow on wall, window and light treatment and suggestions for proper use of pictures and accessories conclude the book. 32 pp., illus. Available for 10 cents at John Widdicomb Co., 101 Park Ave., New York, N. Y.

Slide Type Fire Escapes

Potter Slide Type Fire Escapes. Brochure shows variety of typical installations of the manufacturer's tubular and spiral escapes, both interior and exterior. Specifications for both types are given and detail drawings are included. 8 pp., illus. Potter Fire Escape Co., 6107 N. California Ave., Chicago 45, Ill.*

Reflective Insulation

(1) Alumiseal Reflective Insulation and Vapor Barrier Materials; (2) Alumiseal with Alumisatin Finish for Walls and Ceilings. Booklets illustrate features, construction details and typical installations of the manufacturer's insulating material. Specifications are included. 12 pp., 4 pp., both illustrated. Engineering, Design and Installation is done by C. T. Hogan & Co., Inc., Manufacture is by Alumiseal Corp., both of 383 Madison Ave., New York 17, N. Y.

Portable Equipment for Fire Fighting

Rockwood Fire Fighting Products. The manufacturer's line of products for extinguishing fires — including nozzles, valves, applicators, hand lines, pipe, adapters, clips, and chemicals — is illustrated in this catalog. Descriptions of operation and capacities are also listed. 10 pp., illus. Rockwood Sprinkler Co., 38 Harlow St., Worcester 5, Mass.

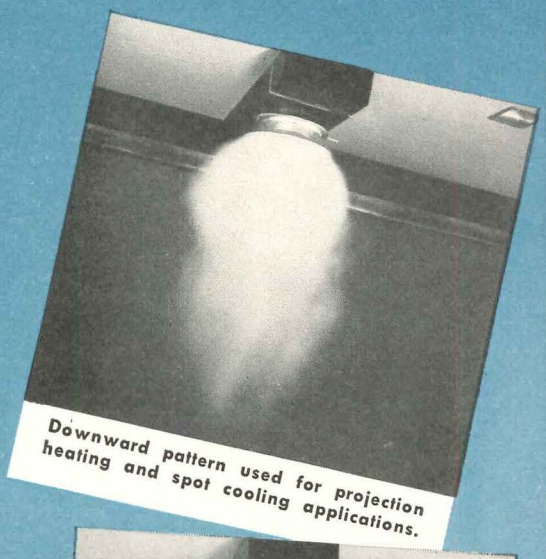
Heating and Air Conditioning

Trane Products, Bulletin No. PB-290. The first complete condensed catalog of the manufacturer's line of air conditioning, heating, ventilating and heat transfer equipment to appear in five years, this booklet supplements some 40 specialized bulletins on the various products shown here. Each is here described and illustrated with photographs of units and component parts, cutaway drawings and construction features. Condensed tables showing capacities, sizes and dimensions are also included. 34 pp., illus. Trane Co., La Crosse, Wis.*

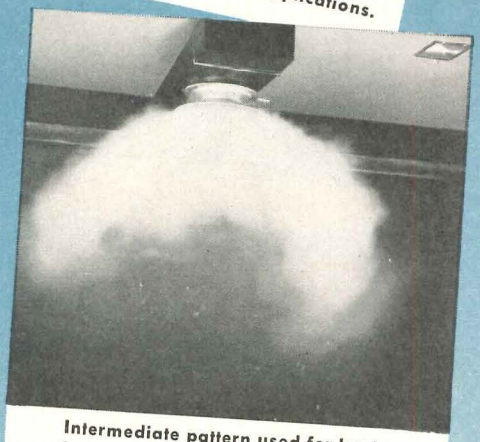
(Continued on page 304)

Anemostat Type C-1
ADJUSTABLE *Air Diffuser*

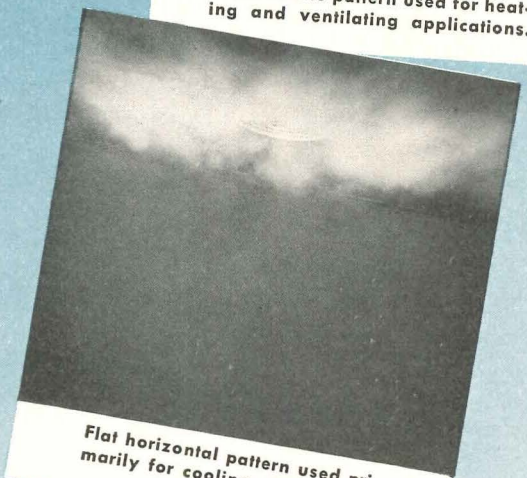
Just "Turna-kone" for the air pattern you want!



Downward pattern used for projection heating and spot cooling applications.



Intermediate pattern used for heating and ventilating applications.



Flat horizontal pattern used primarily for cooling applications.

Anemostat's Type C-1 air diffuser is *easy to adjust*—simply "Turna-kone" to vary the air pattern from horizontal to vertical discharge. No tools, no screws, no fussing, no fiddling. Changing pattern does not affect balance of system.

The Type C-1 Anemostat air diffuser is *easy to install* on exposed duct or flush to ceiling. The snap-in assembly cuts installation time two-thirds. It has clean, handsome, concentric lines that add to ceiling beauty, blend into your design motifs. It provides true *draftless air diffusion*, eliminates stale air pockets, equalizes temperature and humidity.

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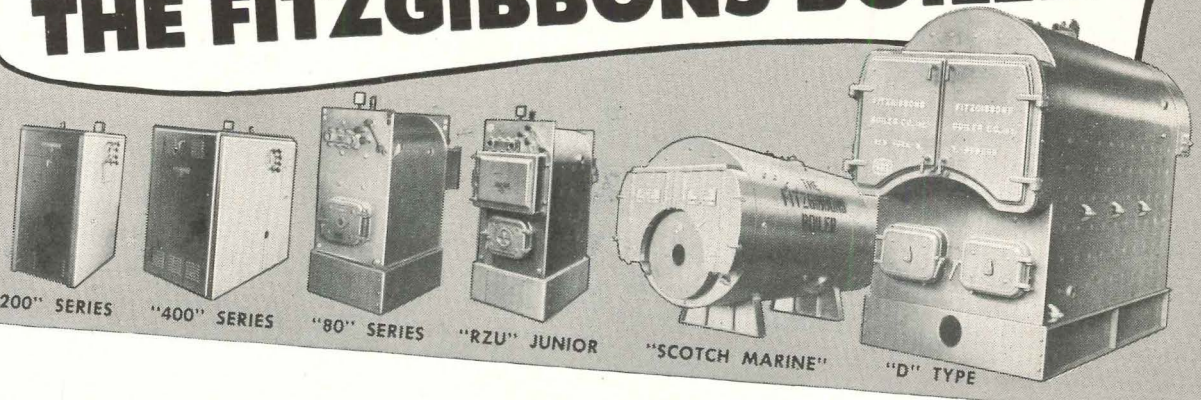
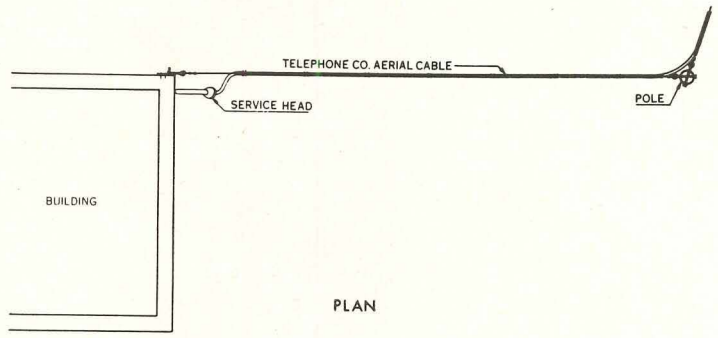


TELEPHONE SYSTEMS FOR HOSPITALS: 1

FIG. 1 AERIAL SERVICE ENTRANCE IF REQUIRED

Consult Telephone Co. in order that entrance may be located as near as possible to main cable system. Also that fuse protection requirements may be considered.



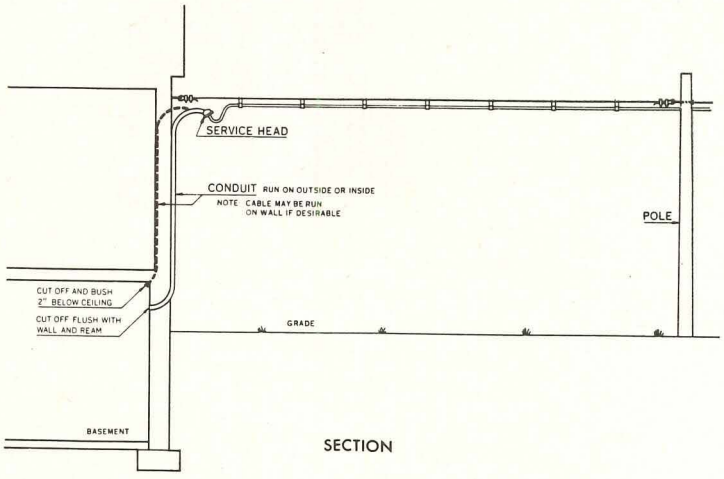
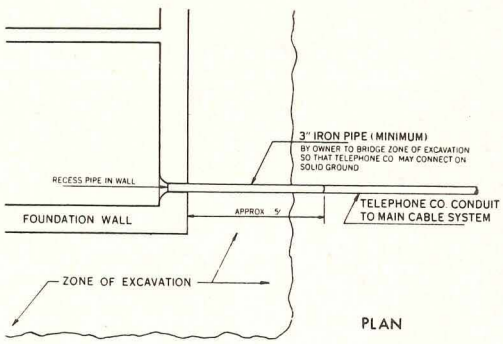
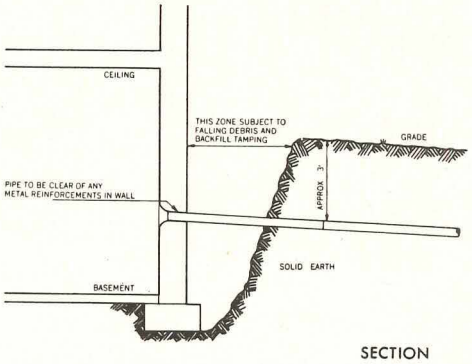


FIG. 2 UNDERGROUND SERVICE ENTRANCE





The following sheets have been adapted from* Telephones In The Hospital, *prepared by Noyce L. Griffin, Electrical Engineer, Public Health Service, Division of Hospital Facilities. The telephone company should be consulted for exact requirements.

General

Interconnecting telephones should be provided for all departments, operating and delivery suites, offices, and an elevator outlet at mid travel level. All telephones may be connected on a dial system which permits interior communication without calling hospital switchboard. Telephone jacks should be installed at all private and semi-private beds. Public pay stations should be provided for visitors and personnel. Rigid conduit or electrical metallic tubing should be installed for all wiring. Surface wiring should be avoided. Construction plans should show all facilities listed below as approved by local telephone co. Symbols should conform with "Graphical Electrical Symbols for Architectural Plans", Z32.9 as approved by the American Standards Association. Building owner provides conduits, wire terminal boxes, space for equipment; telephone co. furnishes and installs all wiring and equipment.

Facilities which carry cables from telephone co. to building, and wiring in building include:

1. *Service Entrance:* location determined by architect and telephone co. so entrance cable will be:

a. Well removed from: electric light, power circuits, apparatus; gas or water pipes, foreign metallic objects; boilers, steampipes, engine exhausts.

b. Free from possibility of mechanical injury, coalbins, ash pits, elevator shafts, coal or freight chutes. Avoid proximity to storage for flammable materials.

c. Accessible to most satisfactory route to main cable terminal cabinet or frame, or to foot of riser shaft or conduit.

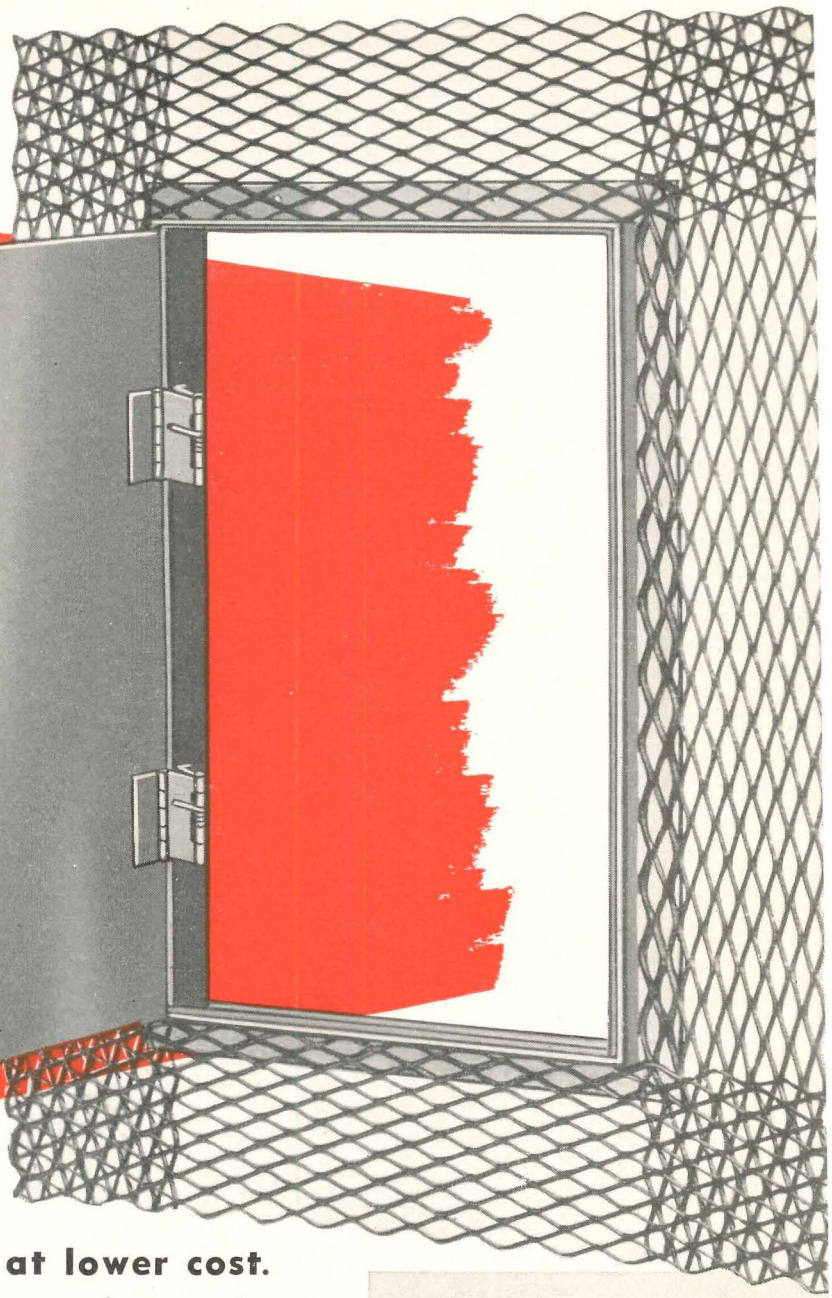
d. Attached to walls or ceilings, not to partitions which may be changed.

e. Unobjectionable in appearance.

In masonry construction, conduit stubs or pipe sleeves should be cast into wall, or a hole left for later installation. Provision should be made for quick installation of emergency service.

Where service is brought into building underground, conduits should drain away from building toward a manhole or pull box and extend at least 5 ft beyond foundation wall to firm earth. Telephone conduits should be separated from electric light and power conduits by not less than 3 in. of concrete, 4 in. of brick masonry, or 12 in. of well tamped earth. (See

Milcor Style K Access Door — Note exclusive hinge design which permits door to open 175° for easy work entry. Number of hinges and cam locks is determined by size of door.



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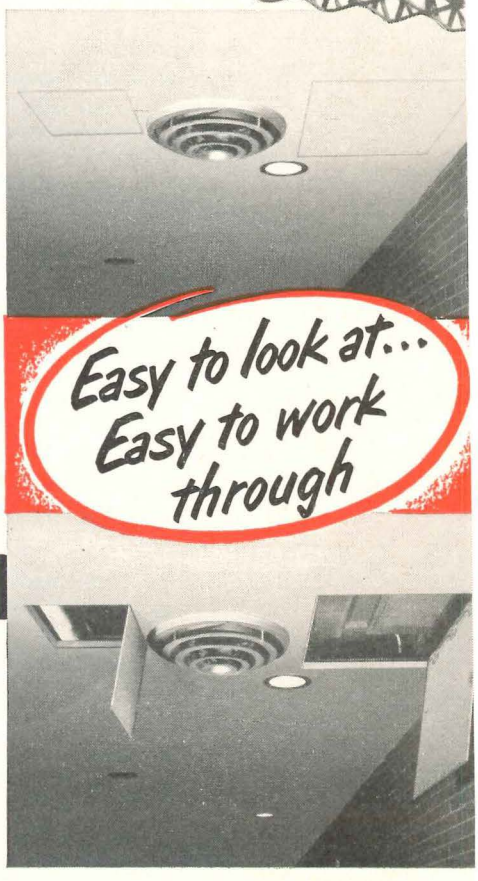
Quality design and construction make Milcor Access Doors the standard by which all others are judged. Specify them on *your* next job. Consult your Sweet's File, or write for complete information.



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M-101

TELEPHONE SYSTEMS FOR HOSPITALS: 2

FIG. 3 MAIN CABLE TERMINAL FOR SMALL INSTALLATION

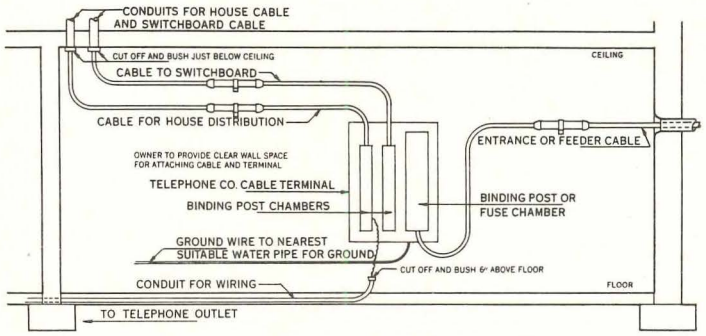
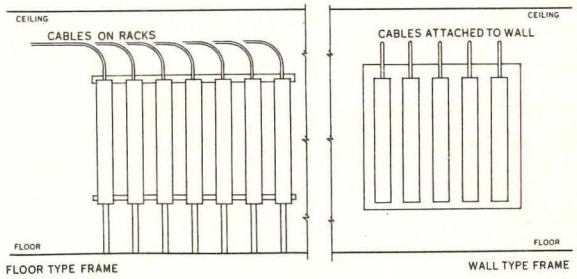


FIG. 4 FRAME FOR LARGER INSTALLATIONS



Figs. 1 and 2.)

2. *Main Cable Terminal Cabinet or Frame* provides means for: (a) terminating wires of cables from telephone co.; (b) terminating wires of building cables; (c) interconnection of wires so telephones may be connected and changes made.

Terminal frames are generally furnished and installed in a metal cabinet by telephone co. Preferable location for terminal cabinet is dry, clean, accessible, well ventilated, near to service entrance. (See Figs. 3 and 4.)

3. *Switchboards:* connection of telephone service to trunk lines is accomplished by a Private Branch Exchange (P.B.X.) switchboard. There are two types suitable for hospitals:

a. *Manual System:* All connections between stations or between any station and central office trunks are established manually by operator at switchboard. Use of this system is generally limited to small hospitals.

b. *Dial System:* Incoming calls, toll calls both in and out, information service, and transferring calls are handled by operator at switchboard. Outgoing calls and station-to-station calls inside hospital are handled by automatic switching equipment. In the average hospital, use of automatic switching equipment is generally more economical and efficient. More space is required for automatic switching equipment, which is quite heavy and requires a separate room for protection against dust, excessive moisture, etc. Telephone co. should be consulted as to space and floor loading requirement.

Floor space required for switchboards will vary slightly with different types. In estimating, allow about 2 ft 3 in. wide by 3 ft deep for each section of switchboard. (See Figs 8 and 9.)

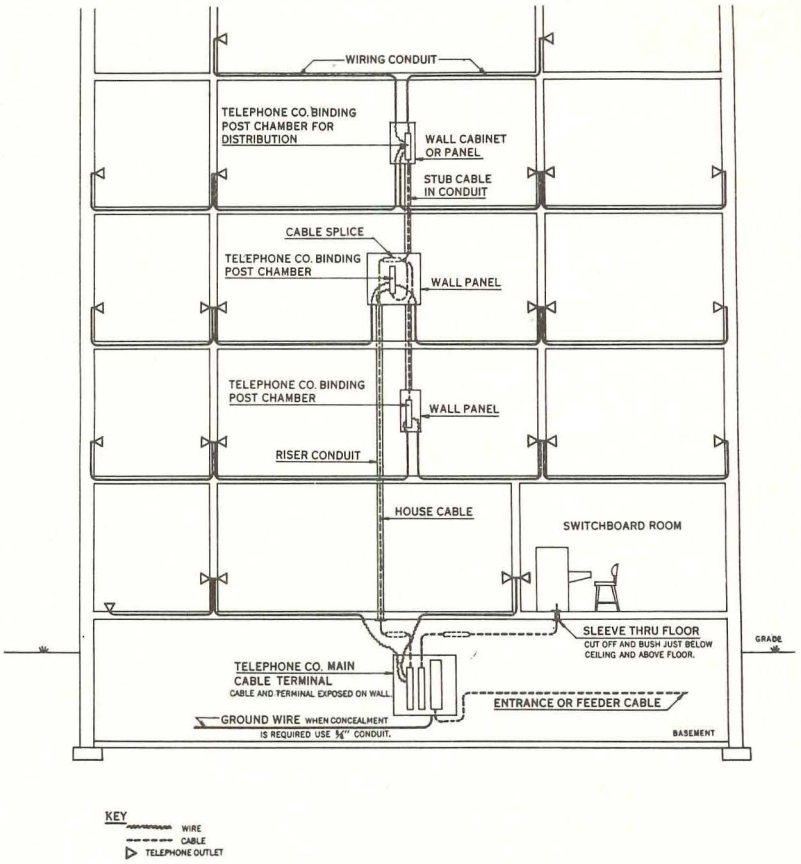
4. *Vertical Riser Conduits:* in buildings of moderate height and where building cables are small, riser cables are usually installed in conduits in lieu of riser shafts.

5. *Splicing Closets:* in multi-story buildings, wires must be taken from cables for connection of telephones for each floor. Wires are brought out in a splicing closet and connected to a terminal strip. Where riser shafts are used, splicing closets are normally provided on each floor. Where riser conduits are used, as in most hospitals, splicing closets may or may not be required on every floor. (See Figs. 5 and 6.)

6. *Distribution Terminal Cabinets:* branch cables from splicing closets are connected to terminal strips in

FIG. 5 VERTICAL TELEPHONE RISER CONDUIT AND WIRING DIAGRAM

Conduit sizes will be determined by number of wires or diameter of cables. Panel sizes will be determined by type of equipment to be installed.



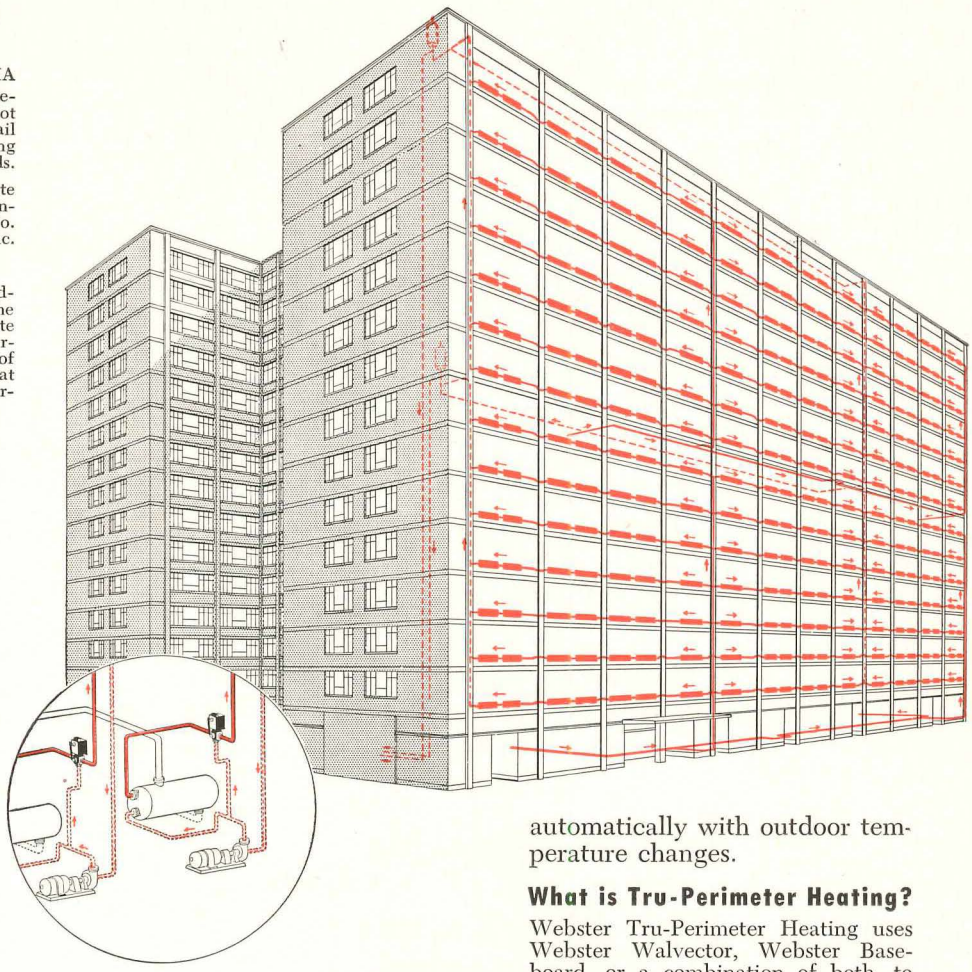
FLAMINGO APARTMENTS
1220 N. BROAD ST., PHILADELPHIA

Diagrammatic view showing piping arrangement for Webster Tru-Perimeter forced hot water heating. Inset shows basement detail with heat exchangers, pumps and mixing valves for Webster Continuous Flow Controls.

Architect: John H. Graham, A.I.A. Associate Architect: Sweet and Schwartz, A.I.A. General Contractor: Turner Construction Co. Heating Contractor: Benjamin Lessner Co., Inc.

MECHANICAL DESIGN NOTES

Only four risers across entire front of building. Two-zones—one serving floors 2 to 8, the other floors 9 to 15, each with separate Webster CF-2 Control and Outdoor Thermostat. Each zone vented to tank at top of zone — no individual room vents. Two heat exchangers and circulating pumps all interconnected.



Perimeter Heating

For 15-Story Flamingo Apartment Building

Webster Tru-Perimeter Heating with series-connected Webster Walvector and Webster-controlled continuous flow hot water heat provided the designers of this ultra-modern building with comfort heating and attractive interiors without sacrifice of many novel building construction features contributing to low cost. Consider these features:

(1) Economy construction. No hung ceiling, no furred columns to conceal piping.

(2) Supply and return risers concealed in partitions at convenient column locations; less than half the risers required in conventional piping.

(3) All connections concealed in continuous Walvector enclosures (see photo), customary runouts completely eliminated.

(4) Neat, attractive, out of the way, matches modern architectural style.

(5) Continuous draft-free, mild heat blanketing the almost all-glass exposure. Water temperature varied automatically with outdoor temperature changes.

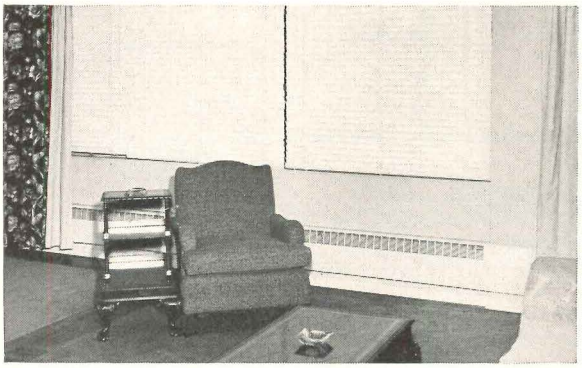
What is Tru-Perimeter Heating?

Webster Tru-Perimeter Heating uses Webster Walvector, Webster Baseboard, or a combination of both, to replace the heat at the perimeter where heat loss occurs. Heating elements are mounted close to the floor along outside walls, spreading the heat the entire length of the exposed walls.

Webster Tru-Perimeter Heating warms the air within a room, warms the floors and warms the inside surface of outside walls where a normal coolness occurs during winter months. Gently moving warm air is drawn to floor level and across the floor into the inlet opening of the radiation. Radiant heat rays strike the floor along the full length of the exposed wall. Floors are warm and comfortable even with slab floor construction.

Webster Tru-Perimeter results are obtainable with either forced hot water or Moderator controlled low pressure steam heating. For further information about Webster Tru-Perimeter Heating for a new building or modernization see your Webster representative or write us.

Address Dept. AR-6



Living room in typical apartment showing Webster Walvector.

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WALVECTOR
REG. U. S. PAT. OFF.
For Steam or Hot Water Heating

TELEPHONE SYSTEMS FOR HOSPITALS: 3

FIG. 6 TELEPHONE RISER AND WIRING DIAGRAM

Using splicing closets when available and desirable

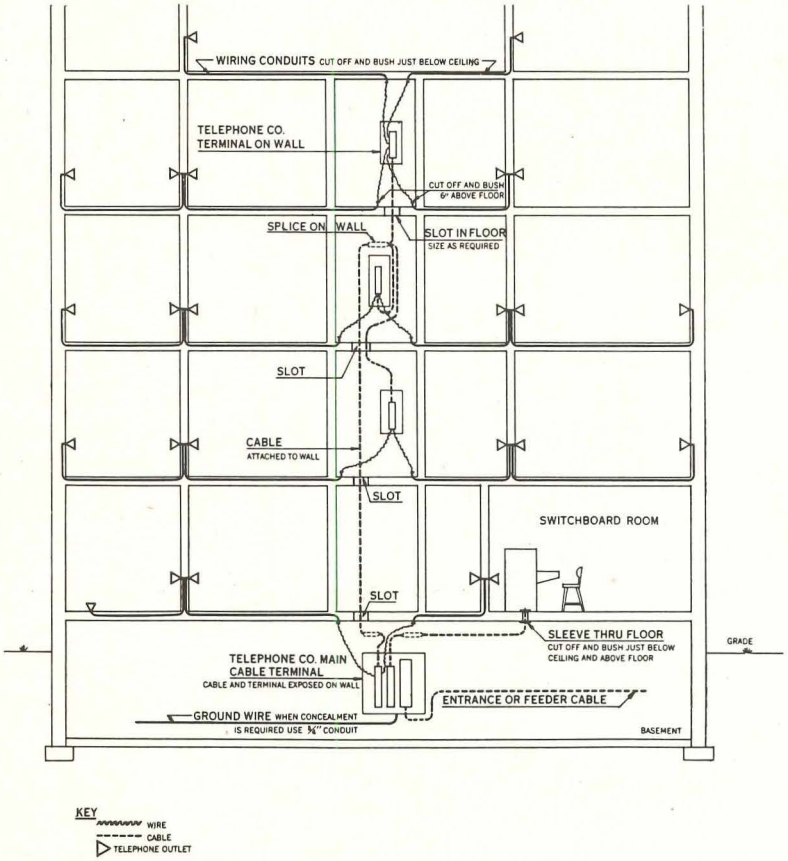
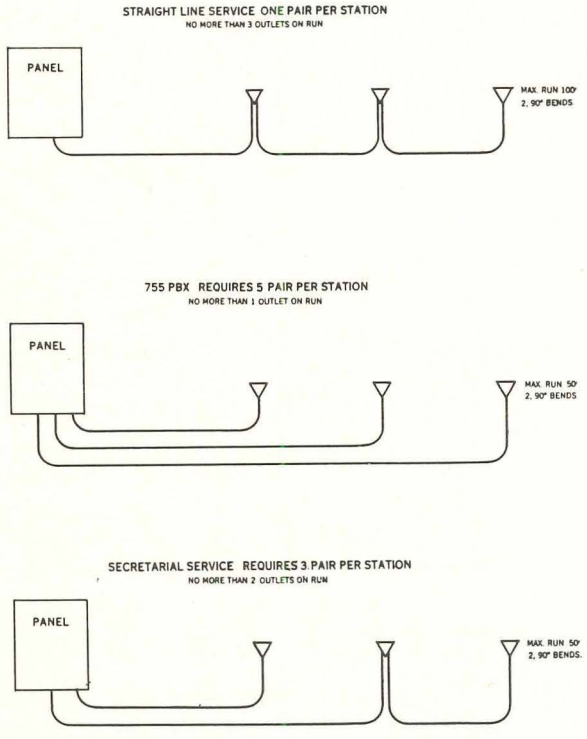


FIG. 7 CONDUIT FOR INSIDE TELEPHONE WIRES

Rigid conduit or electrical metallic tubing to be used



distribution cabinets, and from these, individual telephones are connected. Cabinets should be in accessible locations on each floor, near to center of areas they serve.

7. *Branch Conduits* for cable or wire runs should not be filled to more than 40 per cent capacity to allow for replacements or additional service. Where more than two 90 deg bends are necessary in a run, pull boxes should be installed so no section will have more than two bends. Runs between pull boxes should not exceed 100 ft for cable, 50 ft for wire. (See Fig. 7.)

FIG. 8 DIAGRAM OF SWITCHBOARD AND CONDUIT LOCATION

When board is serviced from switchboard room

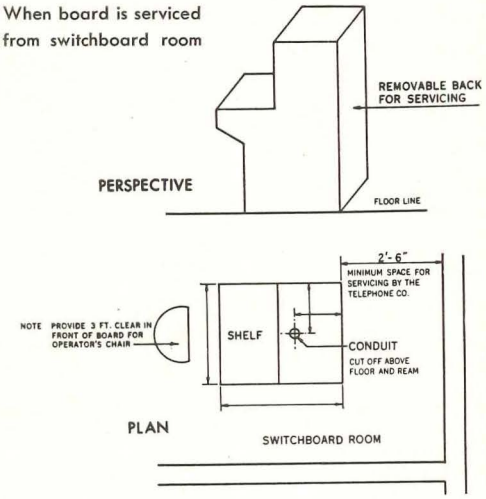
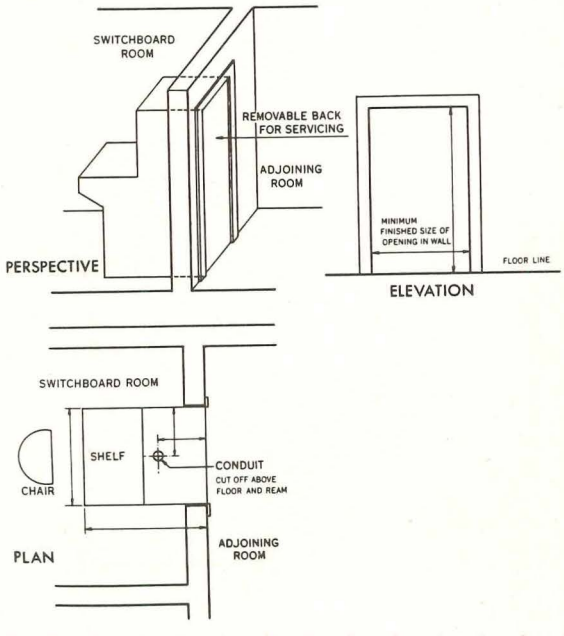


FIG. 9 DIAGRAM OF SWITCHBOARD AND CONDUIT LOCATION

When board is serviced from an adjoining room

Note: Correct dimensions may be obtained from the telephone co.



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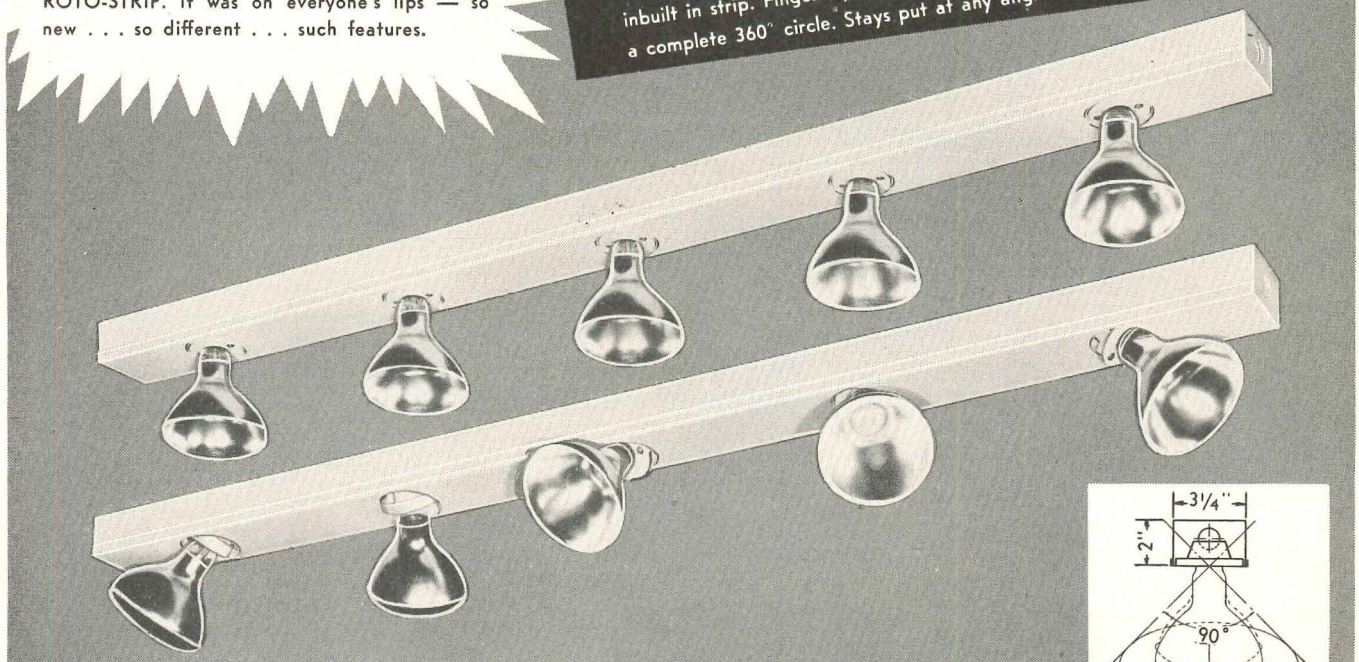
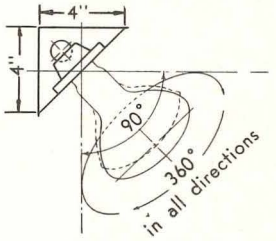
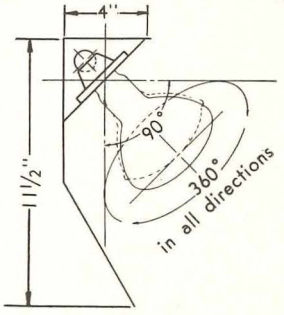


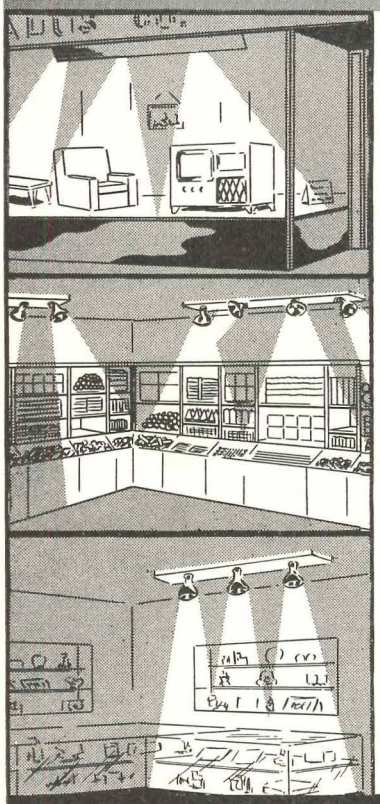
in all directions
Socket Wired On 12" Centers
No. 13



Socket Wired On 12" Centers
No. 13C For Corner Mounting



Socket Wired On 12" Centers
No. 13R with Reflector



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ARCHITECTURAL PORCELAIN ENAMEL: 1—Basic Design Data

This is the first of a series of Time-Saver Standard Sheets on porcelain enamel, prepared with the cooperation of the Porcelain Enamel Institute and its manufacturer members, and especially of D. C. MacDonald of Industrial News Service. Subsequent sheets will include additional design and fabrication limitation data, attachment methods, and notes on the design and attachment of sign letters.

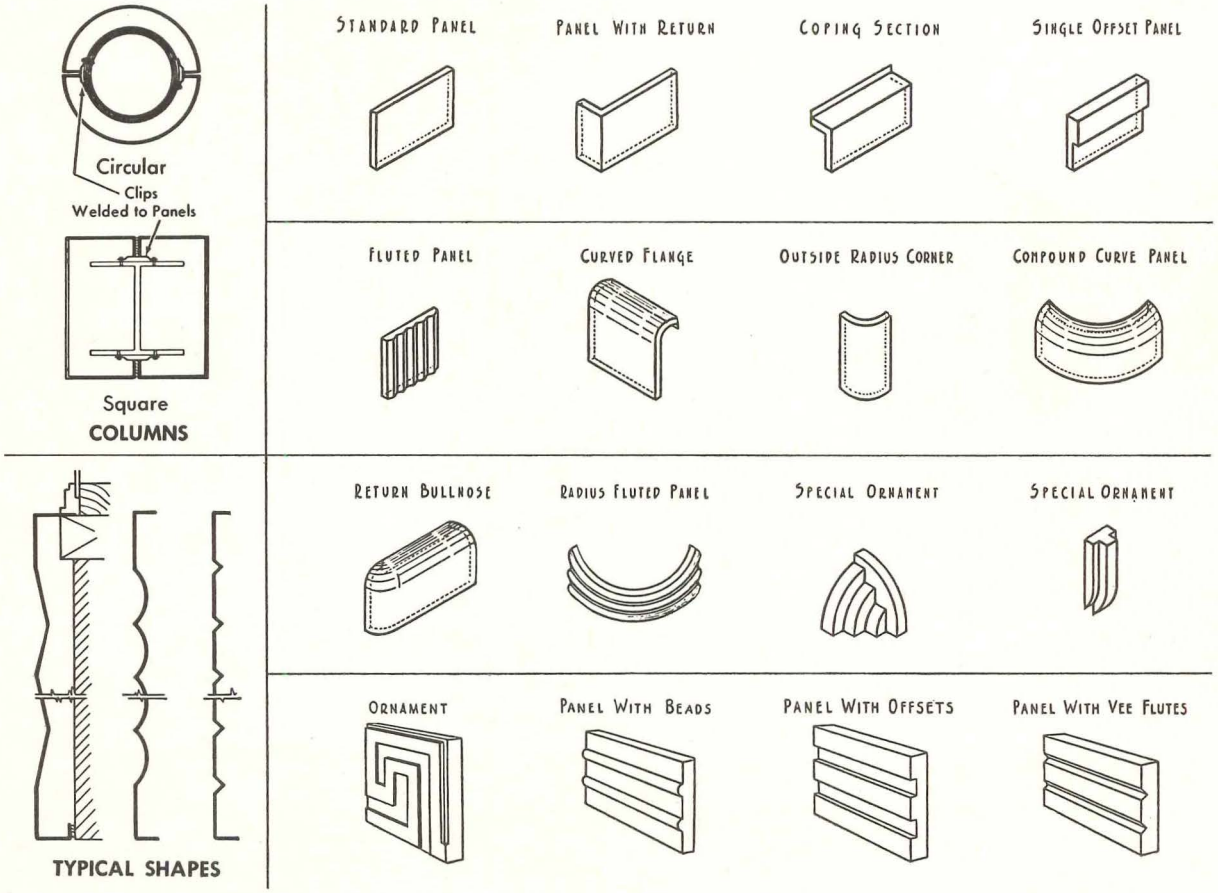
Architectural porcelain enamel is made of iron or sheet steel panels covered with a glass coating which is fused into the metal at temperatures up to 1800 F. The coating is fused to the base after forming. Almost any desired shape can be made by forming, stamping, deep drawing or welding; a number of typical shapes that can be obtained are illustrated below.

Porcelain enamel is an inorganic, mineral composition that is very durable, easy to clean, acid resistant, weatherproof and non-inflammable. Its uses include a wide variety of interior and exterior wall surfacings, trims and signs.

Proper designing and fabrication are extremely important in producing satisfactory finished panels. To develop in the panel the strength required to withstand the repeated fusing operations, attention must be given to many factors, such as proper gage of metal, size and shape of piece, correct method of forming, rigidity, holes for hanging, etc. Close cooperation between the designer and those responsible for the fabricating, enameling and assembly of the parts is necessary to avoid processing difficulties.

In general, a designer should keep in mind the following points:

1. Make all designing of products a cooperative job between designer and enameler.
2. Select sheet metal of the proper gage and working properties.
3. Keep shapes as simple as possible.
4. Keep sizes proportionate. Avoid long, narrow shapes.
5. Avoid unsymmetrical embosses and offsets.
6. Use flanges for strengthening where necessary. A 1-in. depth is standard size; less is usually not recommended.
7. Weld flanges at corners.
8. Avoid cutouts in flanges.
9. Avoid cutouts in body of parts wherever possible.
10. Provide holes for hanging during firing. Such holes should be spaced to give uniform weight distribution.
11. Keep double thickness of metal to a minimum.
12. Avoid large angle reinforcements welded to back of parts.



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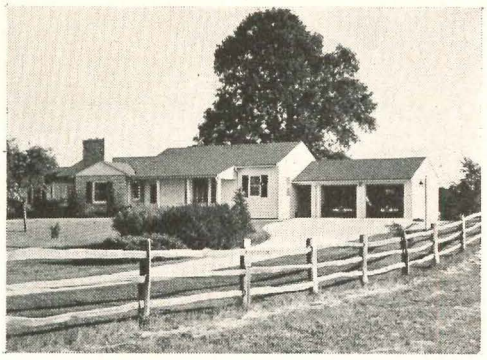

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(*Continued from page 206*)

4. WALL CONSTRUCTION

The walls should provide a sanitary, durable, safe and comfortable enclosure. Suitable vapor barriers and thermal insulation should be incorporated to eliminate excessive heat loss as well as within-the-wall condensation, especially where there is apt to be a wide differential between indoor and outdoor temperatures and humidities.

The structural framing should be independent of wall and window construction. There are many benefits: **(1)** overall construction time will be shortened. **(2)** all erection and heavy construction activity associated with the structural frame will be done at one time, thereby eliminating delays caused by waiting for allied work to be completed. **(3)** the roof may be erected at an early date, providing protection for all subsequent work. **(4)** if columns, beams and slabs are in place, the other trades will be able to move right in and finish their work without interruptions ordinarily caused by piecemeal structural framing.

Although the sketches indicate structural columns within walls, load bearing masonry piers may be economically superior in certain geographical areas.

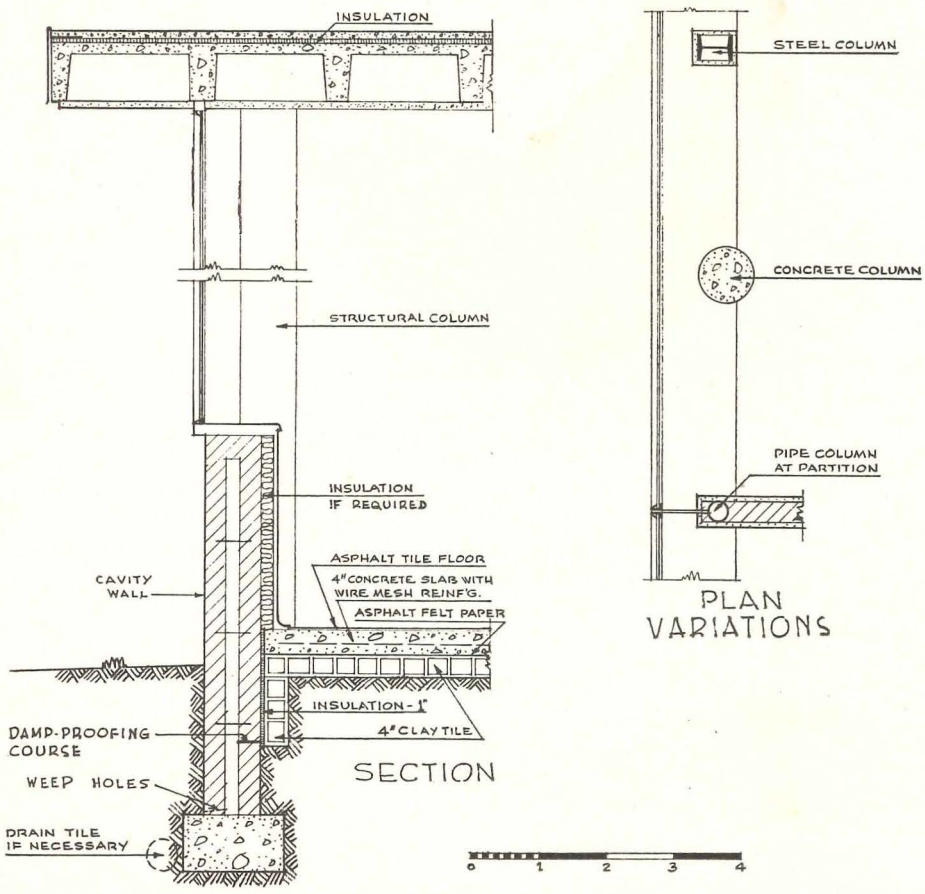
The cavity shown in the wall construction of Fig. 3 provides (1) a moisture barrier and (2) thermal insulation.[4] **Window details.** To obtain optimum daylight for the bed patient farthest away from the exterior wall, it is desirable to raise the window head and make it flush with the ceiling line. Natural ventilation of the rooms will be increased if the upper portions of such windows can be vented. The use of extensive window areas provides added cheerfulness in the patient areas and better working conditions in the service rooms. Continuous windows which do not tie directly into the structural framing can be detailed with standardized connections at columns and walls.

Setting the windows flush with or projecting slightly outside of the exterior face of the wall provides some features also worth considering. Elimination of the exterior sill removes a point of water leakage into the wall. Many fine buildings are seriously stained by dust and soot which collects on the window sills and is washed down the face of the buildings by rain. Finally, the apparent size of a room may be materially increased by locating the windows as outlined above.

A hollow type, non-load bearing, interior partition is desirable to permit the installation and concealment of pipes and ducts without exterior projections. They can permit future alterations and space rearrangement with a minimum amount of work and trouble. If possible, the interior partitions should be arranged to allow part or all of the columns to be within the wall construction in order to reduce or eliminate projecting corners, as shown in Fig. 4.

[4] *Cavity Wall Construction, Ben John Small,* Progressive Architecture, *August 1947.*

3. Typical exterior wall construction and column locations



5. ROOF CONSTRUCTION

The decision between a flat or pitched roof outline is governed by individual preference more than by functional requirements (See Fig. 1). Recent experience indicates many advantages in providing a roof structure which will span between exterior walls without intermediate support.

The elimination of parapet walls (See Fig. 3) does away with many roof flashing details which are not only expensive to install but also quite expensive to maintain. Simpler and lighter structural lintels over all exterior wall openings can be used when a heavy parapet wall is omitted. The roof overhang can easily be extended for protection from rain and sun.

A construction scheme which results in a flush ceiling surface is desirable for several reasons. The work in applying ceiling finish materials is reduced. Overhead piping and ductwork can be readily installed without the interference of beam and girder projections. Insulation and vapor control measures can be more positively installed in straight ceilings. Interior walls and partitions are more easily erected with a minimum number of offsets and projections.

Where the roof construction includes a substantial attic volume, it is best to apply the insulation at the ceiling line to reduce the heating load. Proper ventilation of attic spaces is necessary, but suitable baffles and fire stops should be installed as safety measures.

6. ACOUSTICS

Some of the new materials being used in today's structures tend to increase the problems involving sound control, and the general application of sound absorbing finish materials is not a panacea for noise.[5]

Three points should be considered:

(1) Source of noise
(2) Insulation of noise
(3) Absorption of noise

(*Continued on page 234*)

[5] *Noise Reduction in Dwellings — Albert London,* ARCHITECTURAL RECORD, *Aug. 1949. Architectural Acoustics, Richard Bolt and Robert Newman,* ARCHITECTURAL RECORD, *(April, June and September 1950).*