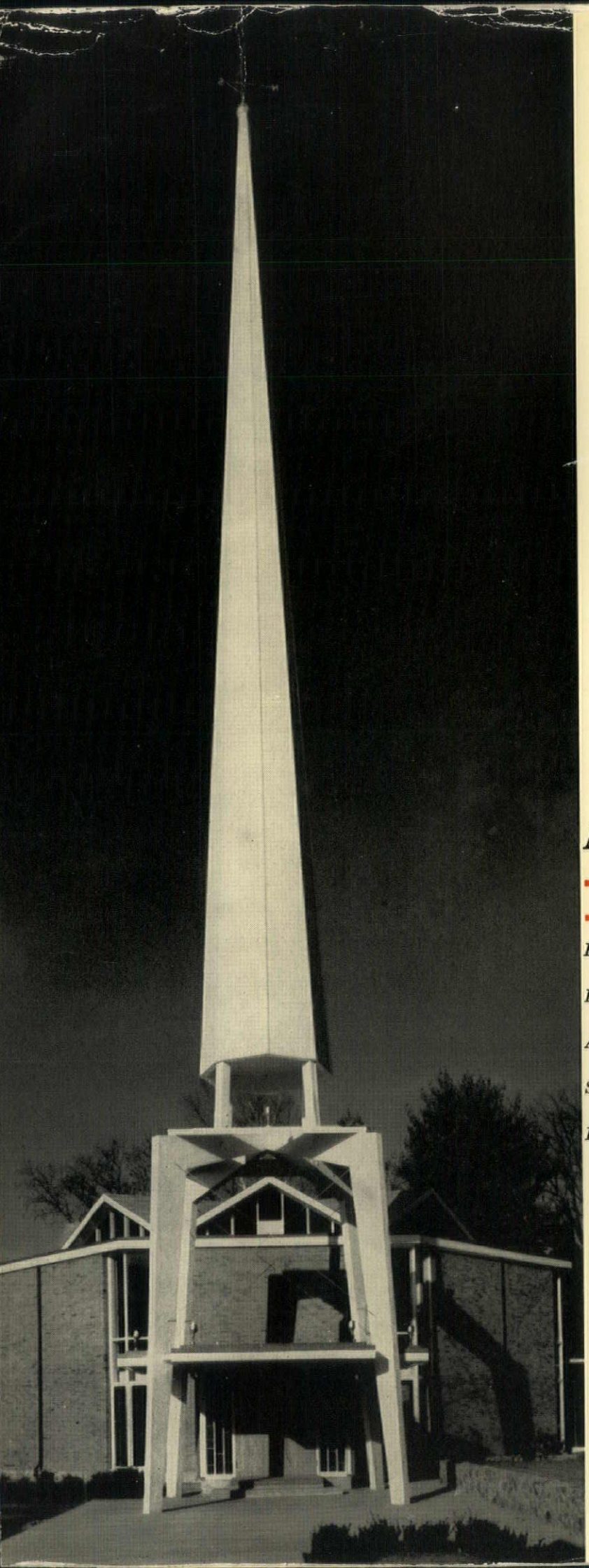

ARCHITECTURAL RECORD

12 *December 1960*

Building Types Study: Churches

Paul Rudolph's Office Building for Blue Cross

A Commercial Center for Kaiser Industries

Semi-Annual Index

Full Contents on Page 5

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— See next page →

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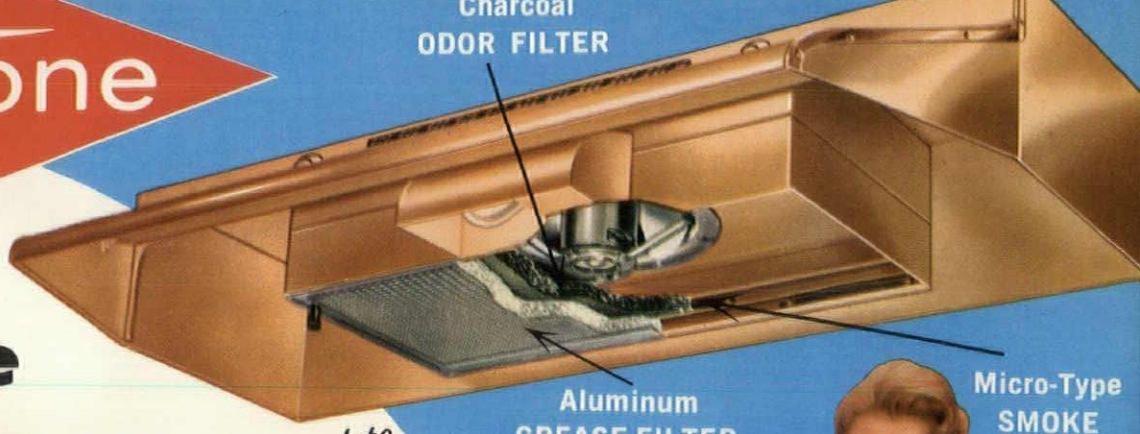

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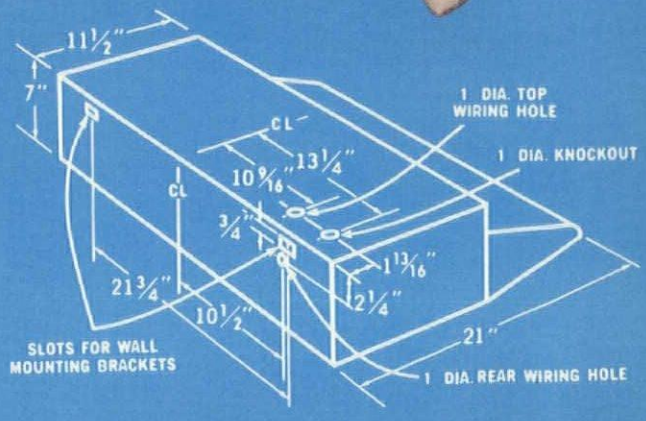

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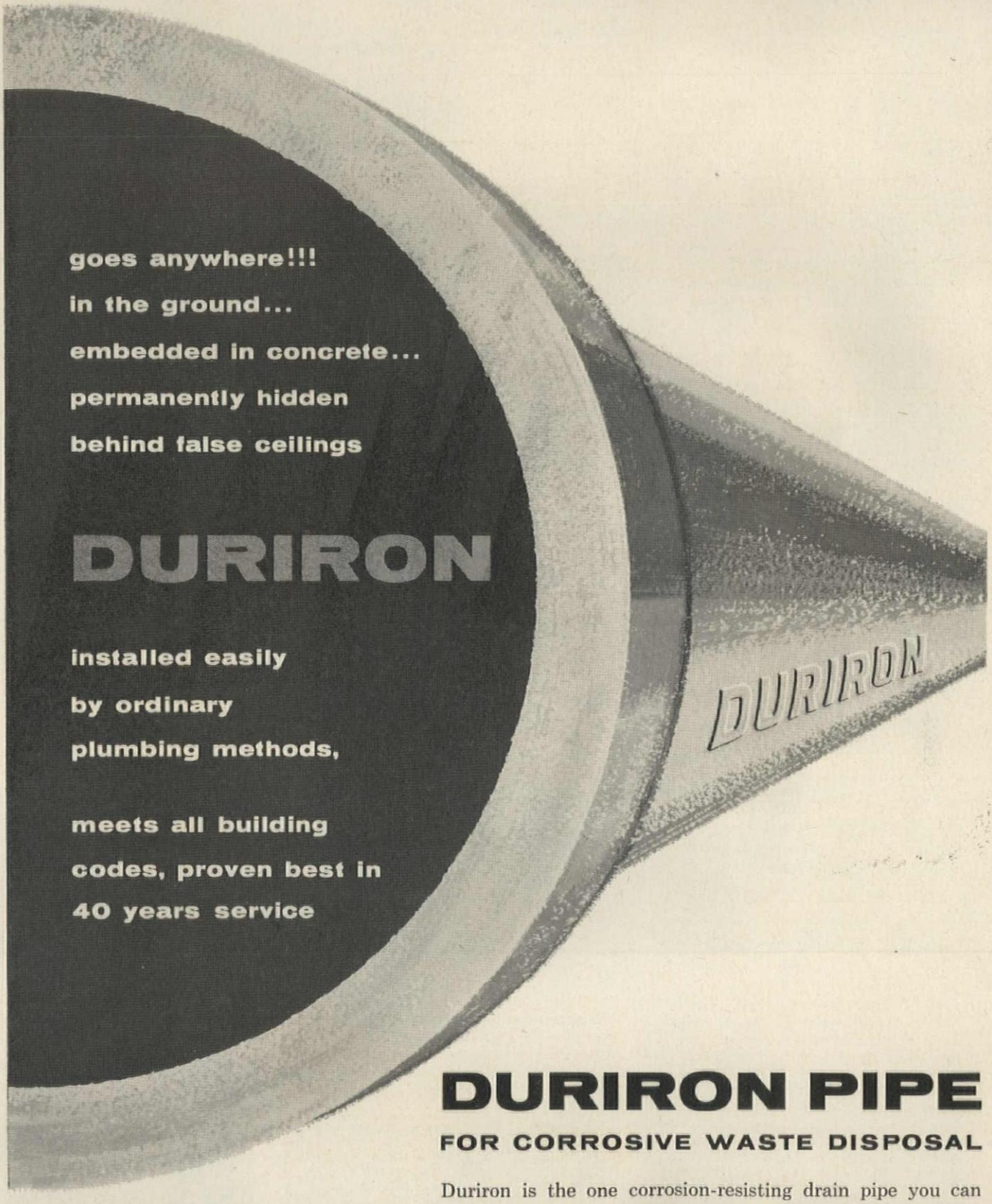

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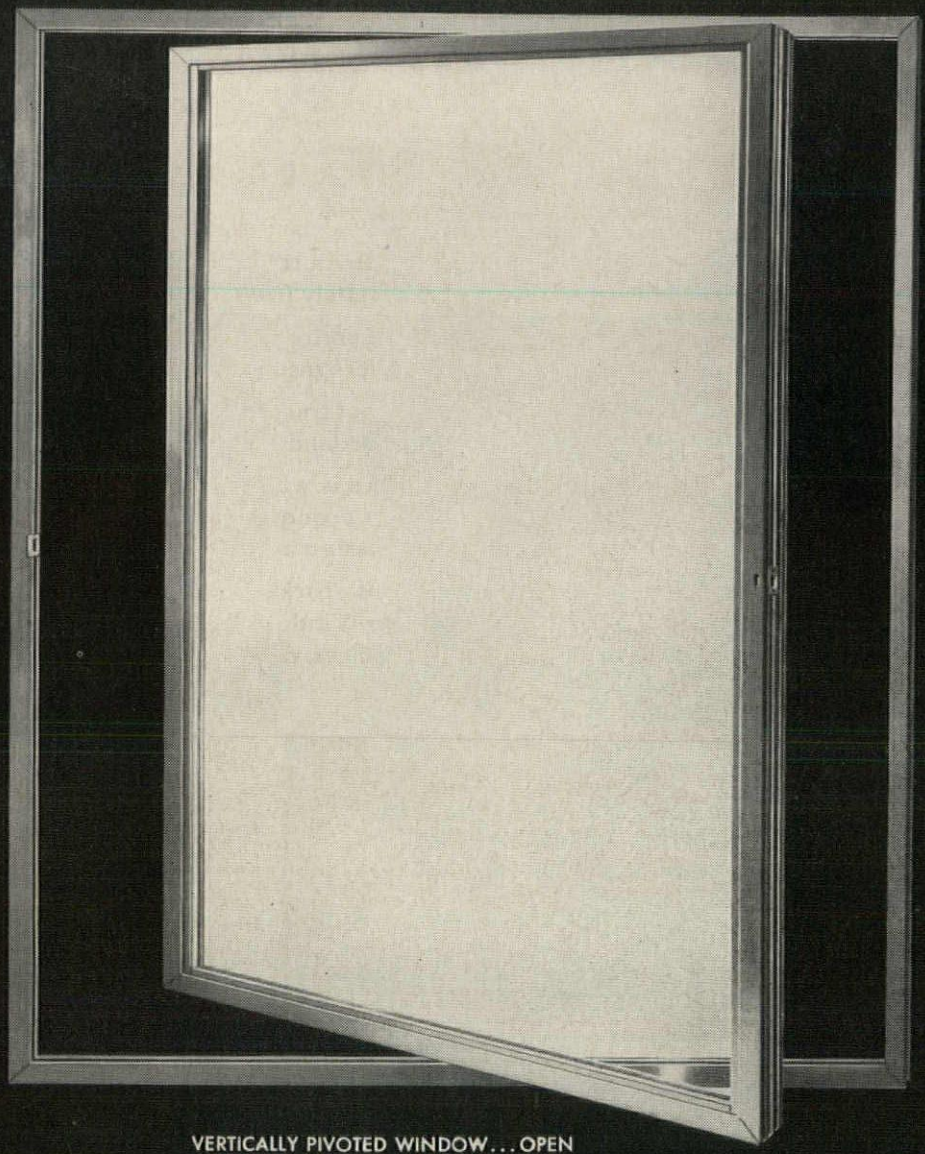

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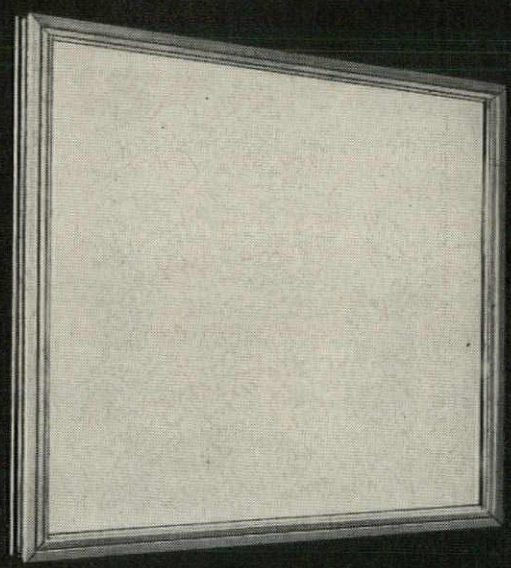

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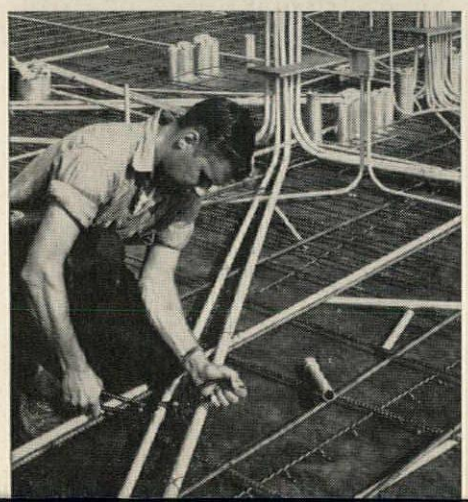

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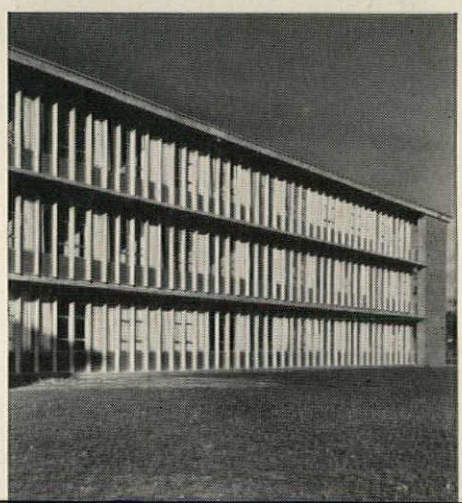

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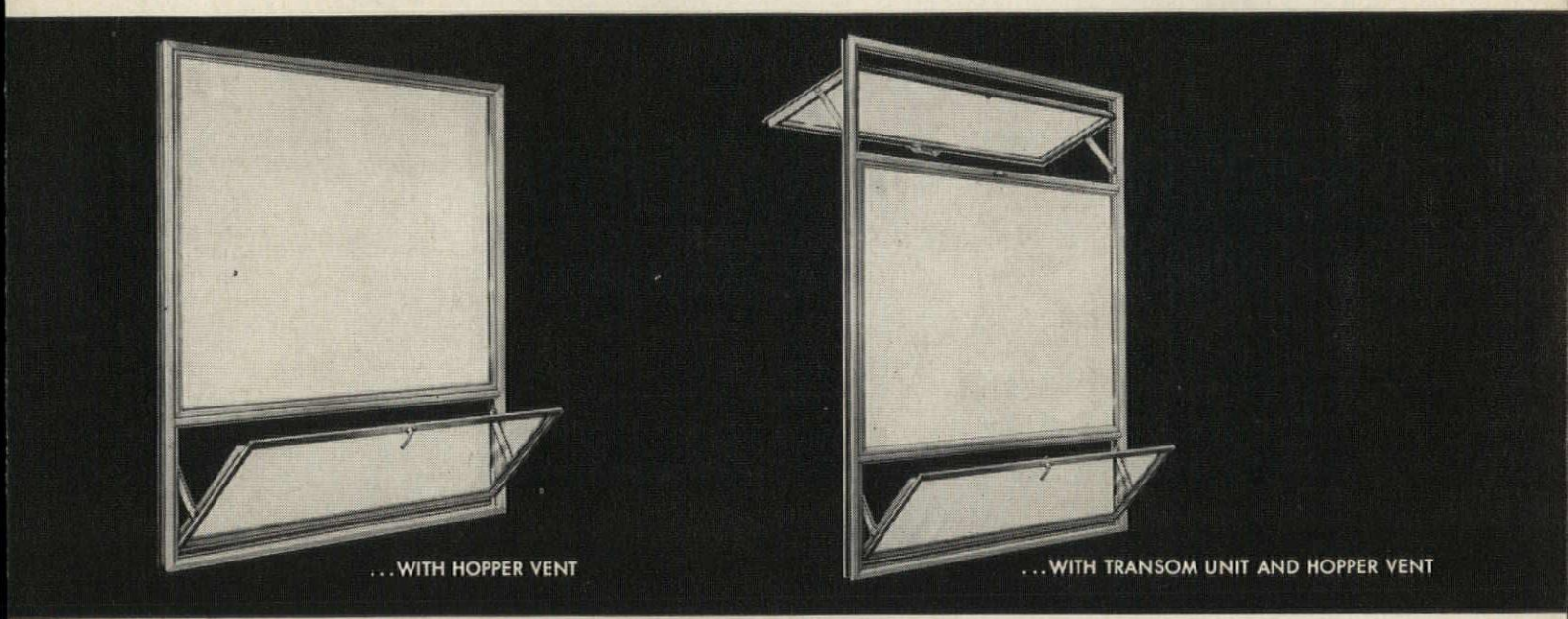

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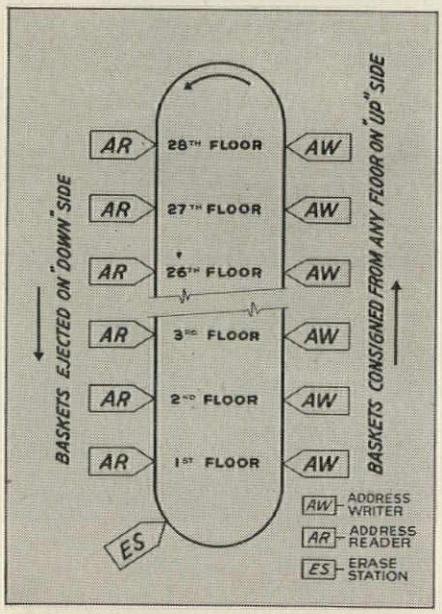
High speed mail distribution streamlines the paper flow in new Kaiser Center



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ARCHITECTURAL RECORD

December 1960

Cover:

The Second Congregational Society in Concord (Unitarian), Concord, N.H. Hugh Stubbins and Assocs., Inc., Architects; Photographer, Maris © Stoller Assoc's.

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Coming in the Record

ARCHITECTURE FOR THE BENEDICTINES

Marcel Breuer's design for the Benedictine Sisters' priory of the Annunciation in Bismarck, N. D., is being built in two stages, of which the first has just been completed. Breuer is giving it an architecture of strength and serenity, with a quality of unselfconscious monumentality. Architects' architecture.

BUILDING TYPES STUDY: JUNIOR HIGH SCHOOLS

Latest assay in a much-controverted educational area is James B. Conant's report on junior high schools, destined—like his earlier report on secondary schools—for much discussion among architects and educators. Next month's study on junior high schools will present an analysis of the Conant report, together with comments pro and con by several architects. Junior high schools to be shown include examples both related and unrelated to the Conant principles.

LIGHTING: PROGRAMMING AND DESIGN

The RECORD's four part series on lighting as a design element, which has met wide interest not only among architects and engineers but among designers and manufacturers of lighting equipment as well, concludes next month with an article on programming and design of lighting installations.

OTHER F. W. DODGE SERVICES: Dodge Reports—Dodge Construction Statistics—Sweet's Catalog Services—Dodge Books—Dodge Mailing Service—The Modern Hospital—The Nation's Schools—College and University Business—Hospital Purchasing File—Chicago Construction News—Daily Pacific Builder (San Francisco)—The Daily Journal (Denver)—Real Estate Record & Builders Guide—Dow Building Cost Calculator.

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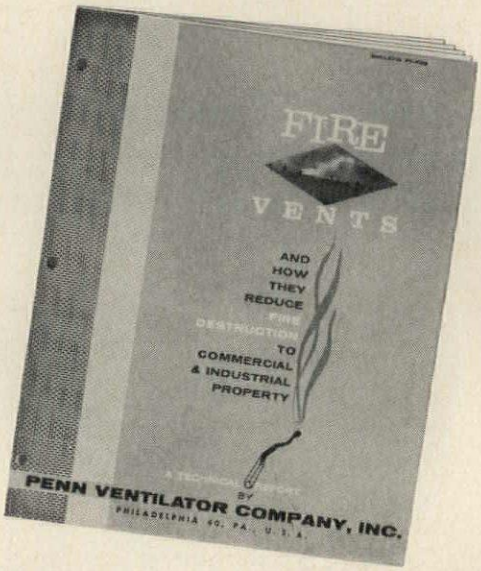

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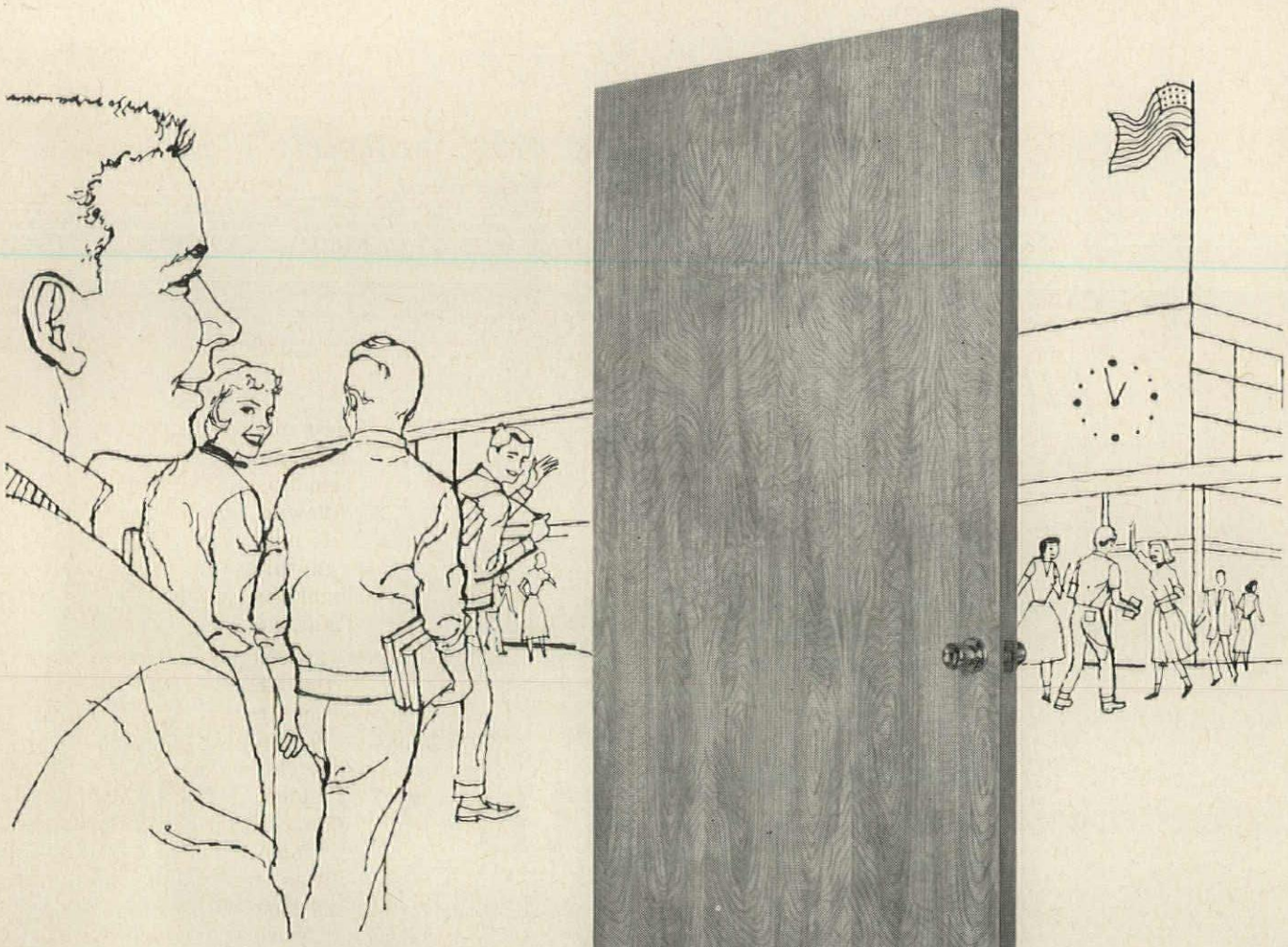

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Can He Draw?

Ability to draw has always been the special badge of the architect. It was his first interest, his pride, his means of communication. Perhaps it was also his way of working in creating and developing a design. Ever since Giotto drew the perfect circle in one quick sweep of his arm, skill in drawing has been the *sine qua non*, the mark of the architect's architect.

In a single day in our office recently this citadel of the architect was shaken by three separate missiles. Nothing seems safe from the jet-propelled progression of change.

First came a conversation with Constantinos Doxiadis, the Greek architect whose meteoric march to fame has left a string of offices literally girding the earth. In explaining an essentially practical, total approach to the problems of city planning ("ekistics") he was reminding us that in the original Greek the word *architektom* really meant "master mason." The architect was the one who rose from the ranks of the masons. Doxiadis said that he had worked as a mason before studying architecture. It was remarked that this seemed different from the usual bent of the architectural student—building as against drawing. He said, "I still don't draw."

He went on to say that the drawing must come after the solution; the problems of living today must be worked out, and the concepts of cities and buildings developed. Then it is time to start drawing.

A supporting view, in a different context, came from—of all people—Eero Saarinen. Eero, perhaps our most famous current exponent of the art of drawing (he is literally ambidextrous at it), has made the point that in the designing of the plastic forms of some of today's buildings, drawing lets you down. You simply can't design them, he points out, by the process of drawing. You can't visualize them on paper; you can't study them. So, as in the TWA terminal for Idlewild, you must work with models. He uses cardboard, modeling clay, or anything suitable for three-dimensional forms. Then, when you get it right, you try to draw it.

Even as we were remarking on this sign of the times, we got a manuscript from another corner of the world of design. The new dean of the school of architecture of the University of London, our old friend Richard Llewelyn Davies, was delineating (not drawing) some of the new responsibilities of the architectural school in preparing students for tomorrow's world of practice. (Yes, we'll publish the whole paper soon.) The mention of drawing came in connection with preparation of the student for his communication chores. Davies said:

"First, we must cease to regard drawing as the sole means of communication which architects can use. We must include exercises in which the results are presented in writing and speech. We must educate architects to use all available methods of communication, and to understand something of the theory of this subject. Undue emphasis on drawing has tended to make architecture a closed shop, and to perpetuate the feeling amongst architects that they are a private group who cannot discuss the mysteries of their work with outsiders."

Well, well, you gentlemen don't need any support from me for your theses. As an editor, however, I must remark that I have always found English architects quite articulate in writing and speech, and that I could wish for more of the same on this side of the water.

—EMERSON GOBLE

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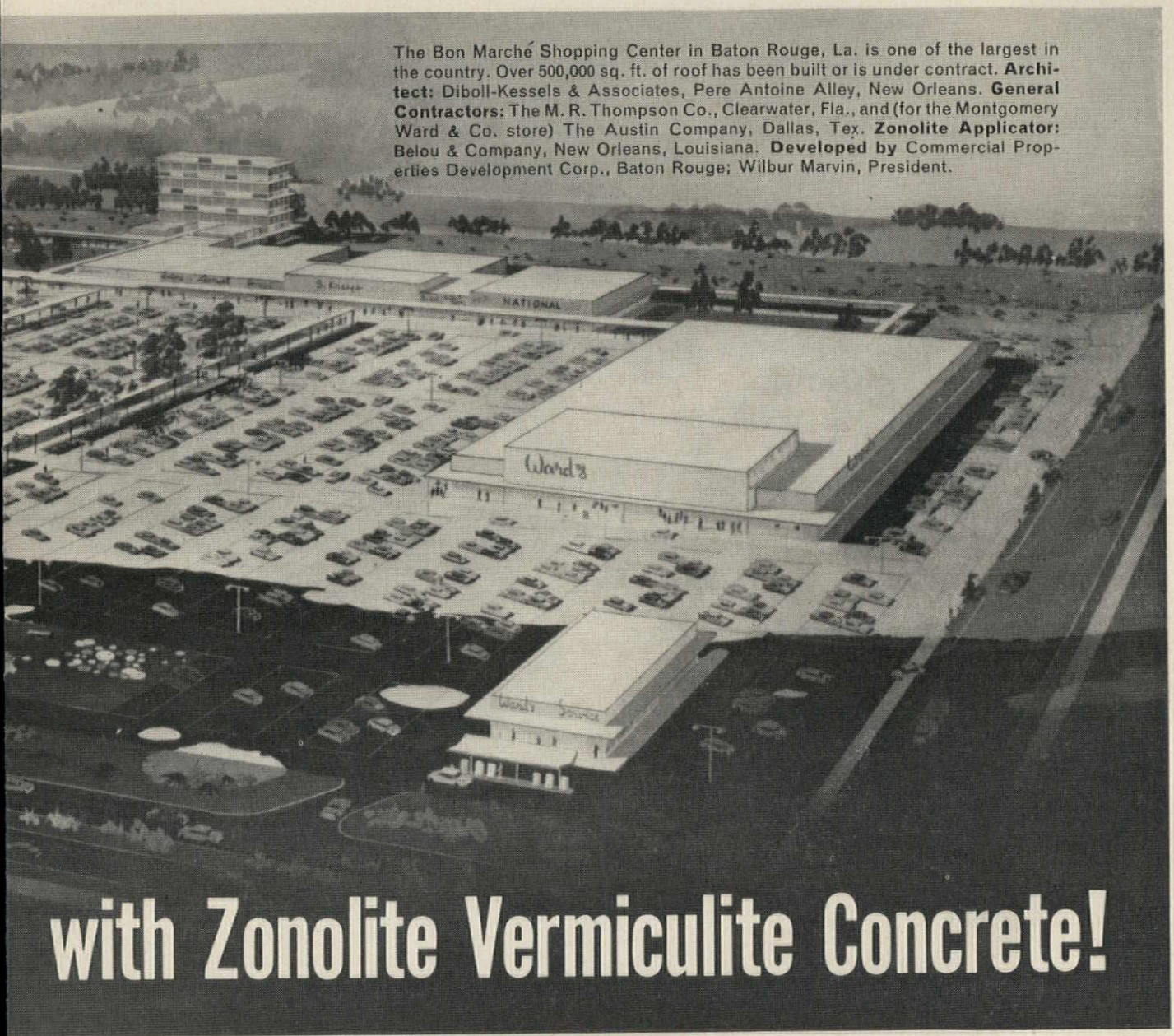

The Bon Marché Shopping Center in Baton Rouge, La. is one of the largest in the country. Over 500,000 sq. ft. of roof has been built or is under contract. **Architect:** Diboll-Kessels & Associates, Pere Antoine Alley, New Orleans. **General Contractors:** The M. R. Thompson Co., Clearwater, Fla., and (for the Montgomery Ward & Co. store) The Austin Company, Dallas, Tex. **Zonolite Applicator:** Belou & Company, New Orleans, Louisiana. **Developed by** Commercial Properties Development Corp., Baton Rouge; Wilbur Marvin, President.

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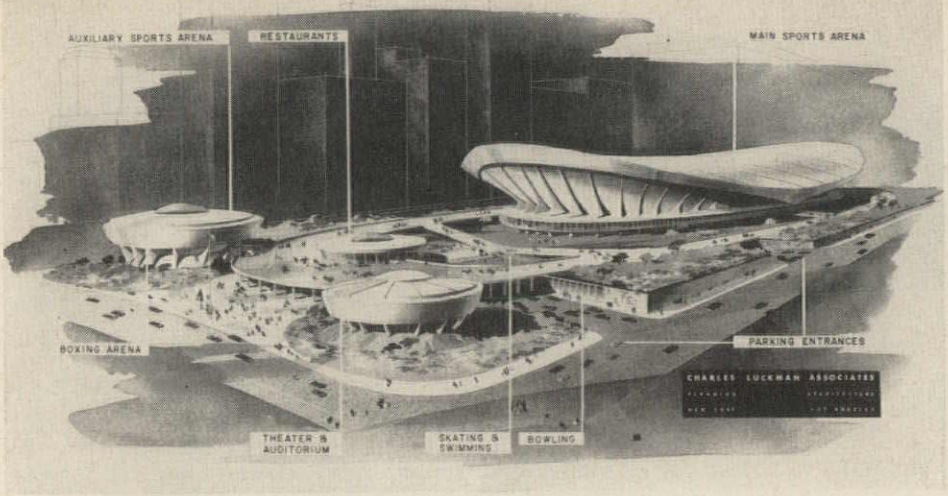
PIRELLI BUILDING COMPLETED IN MILAN

One of Europe's major postwar architectural landmarks has been completed in Milan—the 34-story Centro Pirelli (Dec. 1956, pages 155-165) designed by architect Gio Ponti, engineer Antonio Fornaroli, architect Alberto Rosselli and engineers Valtolina and Dell'Orto, with the collaboration on structural design of Pier Luigi Nervi and Arturo Danusso.

Constructed of reinforced concrete with a glass façade, the Pirelli Building has a structure formed by four triangular semi-points and four large pillar-walls. The reinforced concrete structure of the elevator shafts and staircases also contributes to overall structural strength.

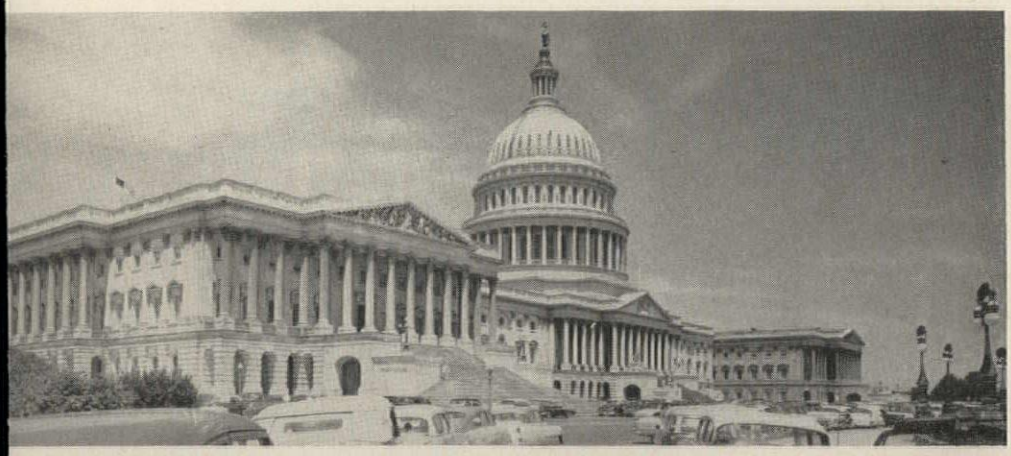
Surrounding the office tower is a broad raised square which, with its crossing streets, provides parking space for 800 cars. Below the square is an auditorium seating 600, a business machine center, and a technical plant. An interior circular road running parallel to the tower descends below ground level where service entrances give direct access to trucks.

Visitors enter from Piazza Duca d'Aosta by way of the broad square, 11 ft 9 in. above ground level. Employees' entrance is at the other side of the building at ground level.



Charles Luckman Associates are designers of a $38 million sports and entertainment center to be built, at a central Manhattan location not so far disclosed, by Graham-Paige Corporation, owners of Madison Square Garden. Described as "a counterpart to the Lincoln Center for the Performing Arts," the multi-level center will include a major arena seating 25,000 to be "internally convertible into the largest and most modern convention hall in existence"; a two-level building containing two smaller arenas; another for sports, theater and auditorium activity; and a two-level restaurant. Included in the rectangular street level enclosures are a bowling emporium and indoor swimming pool. In the central mall are an outdoor skating rink and swimming pool. Two-level parking for 3000 cars is planned under three sides of the center mall

New York's first new luxury hotel since the Waldorf Astoria in 1931 will be built, at an estimated cost of $75 million, by Uris Buildings Corporation, Rockefeller Center Inc. and Hilton Hotels Corporation on a 92,000-sq-ft site on the west side of the Avenue of the Americas between 53rd and 54th streets. Construction will begin next spring and formal opening is scheduled for January 1963. The design by architect William Tabler, with Harrison and Abramovitz as consulting architects, provides 2200 rooms, all "outside," in a 45-story structure which puts a tower 392 by 60 ft above a four-story base. Façade will be metal and glass combined with masonry



History's most controversial moving job has been completed: the East Front of the U.S. Capitol has been moved forward that long-argued 32 ft 6 in. Here it is: before (top) and after (below)

Toronto City Hall Nears Construction Stage

Construction will get underway for the new Toronto City Hall in April or May of 1961. Viljo Rewell, John B. Parkin and John C. Parkin are associated architects on the project. Working drawings are well in progress in the John B. Parkin Associates office, more than two thirds of the preparation of some 500 sheets of architectural and engineering drawings having been completed. The hope is to have all drawings completed, ready for tendering, in late January, with bids and negotiations completed, ready for construction to start in mid-spring. The cost is estimated at $24.4 million, construction time at two and one half to three years.

The design is fundamentally the same as the original by Viljo Rewell which won the 1958 $25,000 international architectural competition (Nov. 1958, p. 10). It is possible, however, that during the current review some adjustments may have to be made to maintain estimates.

John B. Parkin Associates is proceeding separately from Mr. Rewell in the preparation of schematics and working drawings for an addition of 1000 car-capacity to the present underground garage under the new Civic Square, thus giving a total capacity of about 3000 cars.

Toronto landscape architects Marani and Morris are preparing working drawings and design for the development of the Civic Square.

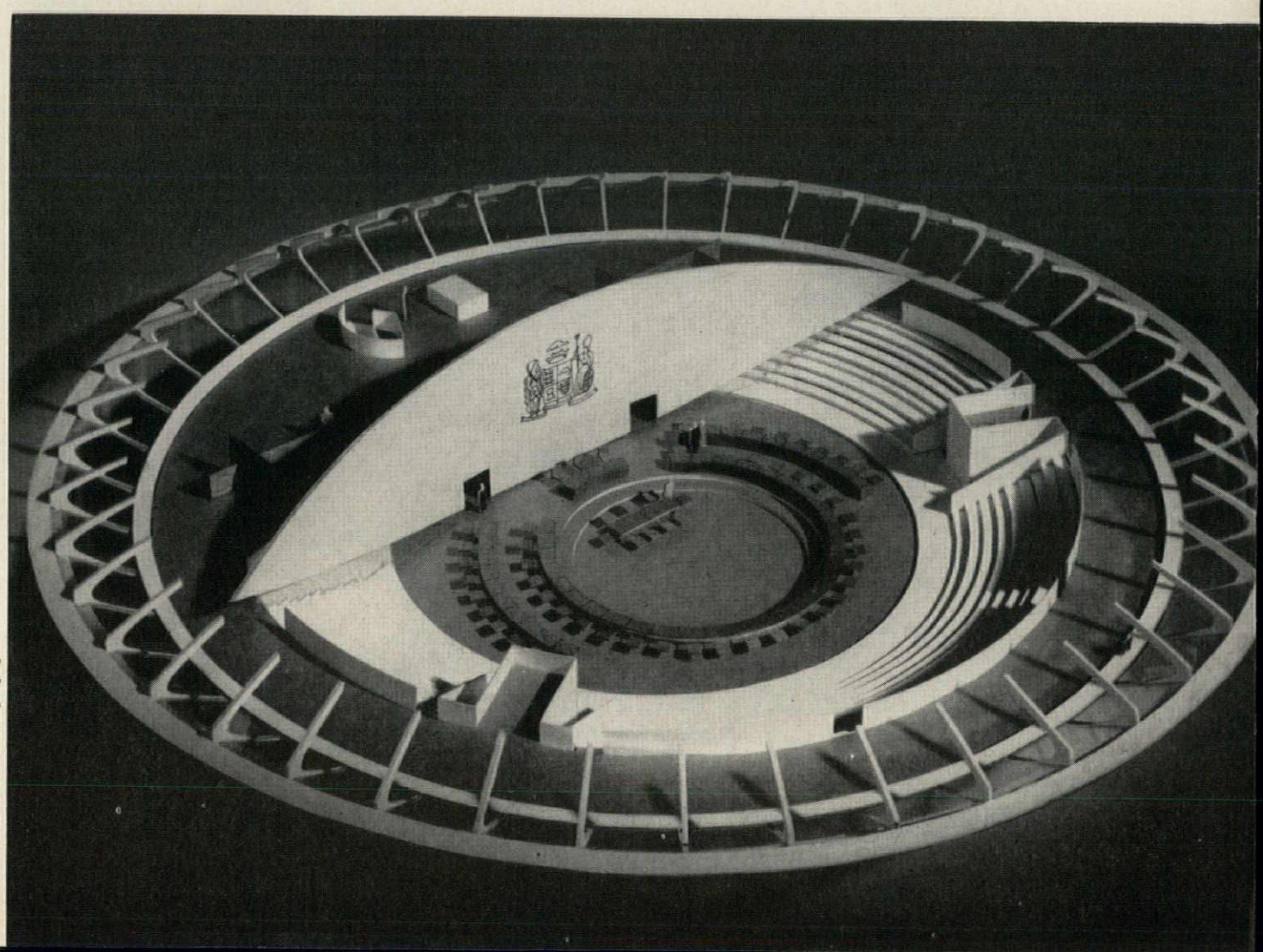
Mr. Rewell's design devotes the southern part of the site to the square, the northern to a building group of three main elements: a broad, low horizontal building above which rises a pair of tall curved towers and, nestled between them immediately above the horizontal building, a structure whose upper surface is a low, broad dome.

Opening directly from the Square, the low building contains those activities in which the public is likely to be interested. The curved towers, containing office space, focus inward on the dome which holds the government center, the Council Chamber.

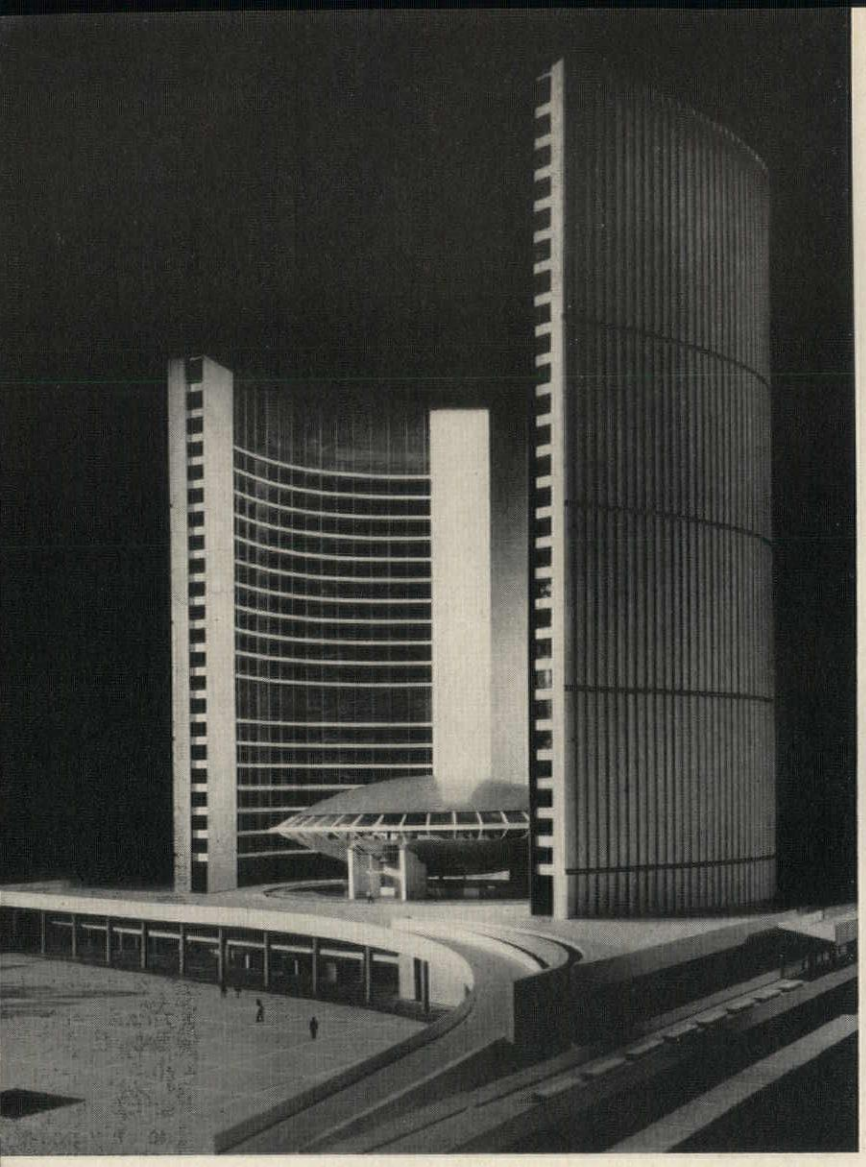
Structurally, the towers' huge buttressed reinforced concrete walls support floors which are, in effect, trays cantilevered in one direction. The open ends of the trays are covered by a glazed curtain wall.

The 1958 competition, at the time the largest architectural competition ever held, drew 525 submissions. A basic consideration of the international jury was that the building would "proudly express its function as the center of civic government."

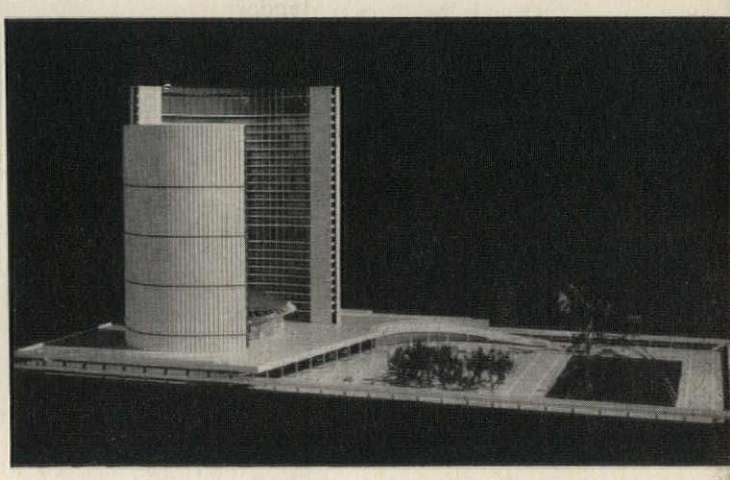
Council Chamber's Interior, roof removed, shows Council and public seating and Members Lounge separated by curved screen

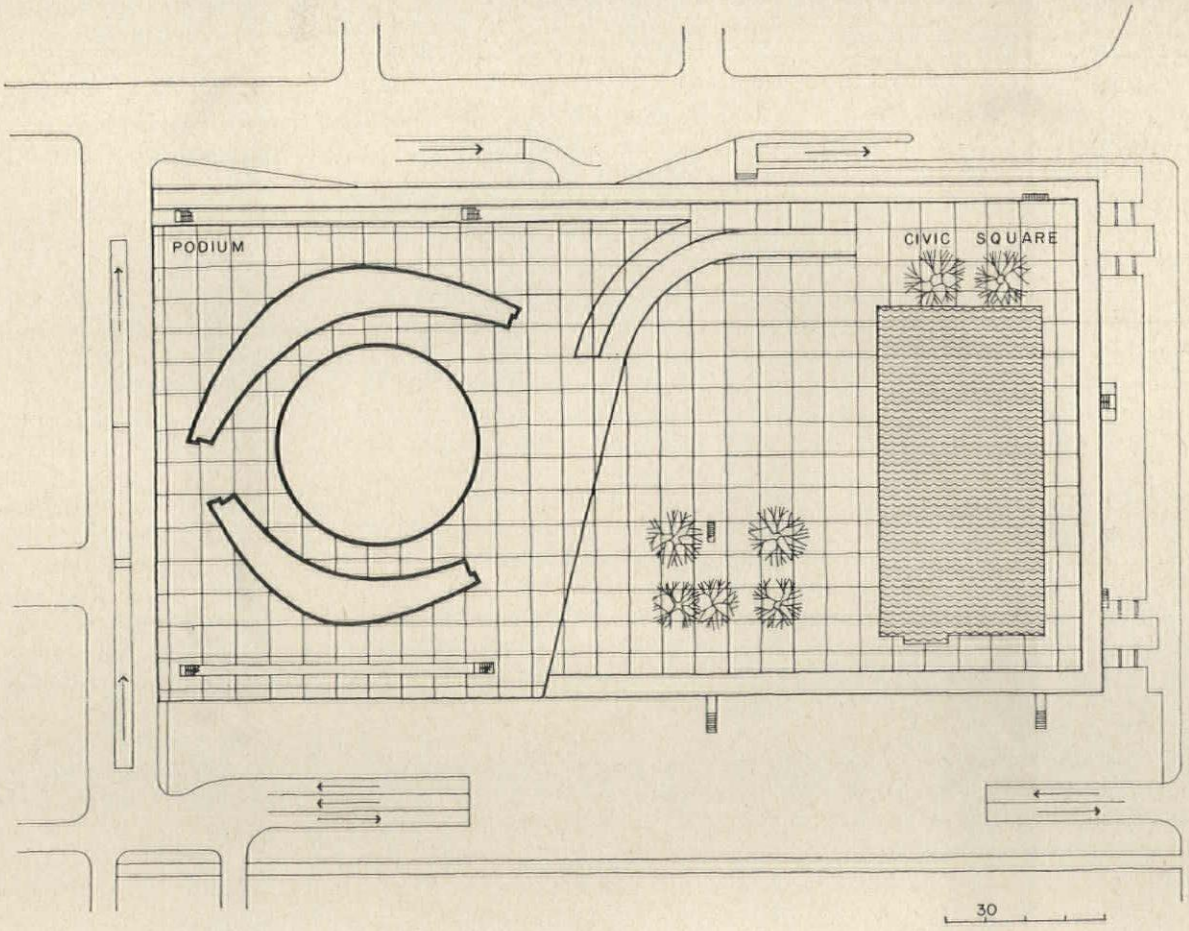


Max Fleet—Photography



Looking from the Square northward, the two curved towers containing all general office space surround the Council Chamber. The roof of the four-level base (which covers nearly half the site) constitutes an upper plaza, the inner part contained within the towers, the outer part overlooking the Square. The Square itself occupies almost an acre of area. The four main elements—the Square, the base or podium, the two towers and the Council Chamber—are connected to each other by external ramp, moving stairs, a large number of elevators in ten different places, as well as by emergency stairs. At present plans are being made to increase the size of the underground garage under the Civic Square, to give a total car-capacity of about 3000 cars





Speaking of Architecture

ARCHITECTURAL STUDENT JONATHAN BARNETT INTERVIEWS ARCHITECT PHILIP JOHNSON

Discoursing freely in his inimitable and outrageous fashion, Mr. Johnson consigns the International Style to the academies; comes out for the one-man office and against architectural schools; advises making function follow form—etc., etc.

In the days when Modern Architecture was fighting to become established, there seems to have been a belief that any building that was Modern must necessarily be good.
In the old days, yes. I used to believe that too. At first it was the International Style versus the academies. Now the International Style belongs to the academies.

You do think that the International Style was a true style in the historical sense of the word?
Yes.

What happened to it?
Apparently we're still living in the nineteenth century, and I thought we weren't. Of course, a style is always something to strain against; but in the twenties and thirties the sense of community was tremendous. I think it was the success of the International Style that caused its death—the anti-academics turned against it.

What, if anything, would you say can serve as a basis for architectural criticism today?
When there is no style, criticism cannot be put into words. One can only find a building that everyone acknowledges is a good building. Take Lou Kahn's medical laboratory at Penn. Ask any architect and he will tell you it is a good building.

Would this be because of the high degree of integration of the functions and services into the architectural concept?
I don't think so. I think that building is exactly the opposite of what Lou Kahn says it is. I think it is a magnificent piece of sculpture.

In considering the architect as a sculptor . . . To what extent, to restate the old English controversy, do you think architecture is a profession and to what extent is it an art?
I'm not aware of this controversy, but I would say that architecture is unquestionably an art. Of course in this country the question hardly arises because architecture is not a profession either, I only wish it were. It is organized as a business.

What do you think is the best size for an architectural office?
One man.

As the function of the building becomes more and more complicated, how best should this one man coordinate the services of the various specialists he must use?
I don't think architecture has much to do with function. You can certainly quote me on that, I've said it often enough in the past. Architecture is a form of sculpture.

Then you don't think any practicing architect actually designs his buildings so that the form follows the function?
I do not. One can't any more work from the program out than fly. One devises the form and then one forces the functions about until they fit it. Let me modify that a little; one is aware of the sort of functions involved when one is designing the form.

In any event one obviously requires a certain amount of practice. Where do you think the education of an architect is best accomplished, in a school or in an office?
In an office. That is, in a good office, if you can get into one.

Would you say there were any advantages to learning architecture in a school?
None whatever.

In that case why go to school at all?
Because the laws are set up so you have to do it. I myself don't think there should be any requirements for architecture. For engineering, yes of course, but not for architecture.

Well, do you have any words of consolation for all the people enrolled in the schools?
School won't stop you from becoming an architect. If you have ideas, there are pencils and paper there. When I was in school I used to do two sets of designs: the one that I really liked and the one that I knew they wanted me to do. Of course, I was pretty old when I went to school. I would say that you just have to stand it, like measles. It's not very pleasant, but it probably won't kill you.

What is the modern architect's relationship to city planning and social questions in general?
I don't think the artist has a social responsibility. Society has a responsibility to itself. Today the only people that want art are museums and churches. In the nineteenth century there was a *noblesse oblige* on the part of the railroad to build monuments. Even in this century Grand Central Station was by far the best building in New York until Kodak ruined it. Our airports today are not monuments, they are carnivals.

As for planning, when I see those projects on Urbanism in the architectural magazines, I just roll over. I don't even look at them any more. I cannot close my door and design the city of tomorrow. It is a consistent attitude towards building that is important, not a plan.

Copley Square was the best planned Square in the country when McKim Mead and White placed their library opposite Richardson's church. It began to be spoiled when they tore down the old museum to make room for the hotel, and now, of course, with the Hancock building—

And they've torn down the old S.S. Pierce building as well.
Have they? I didn't know that.

It's a parking lot now.
In the old days this wouldn't have

continued on page 238

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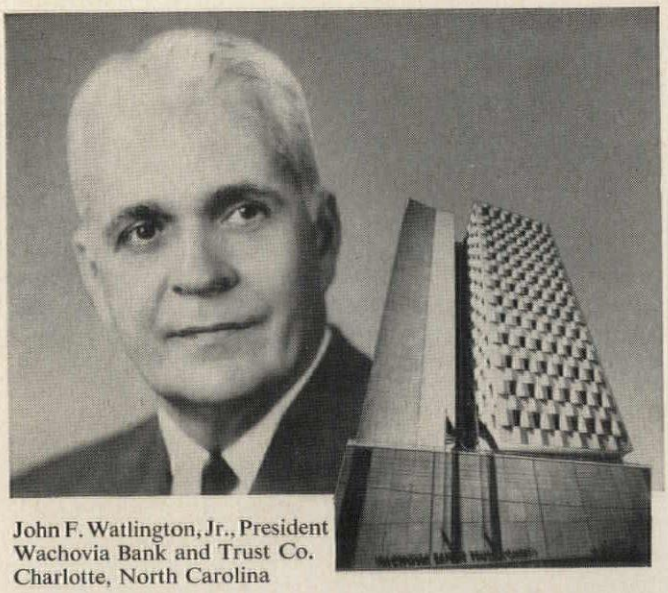

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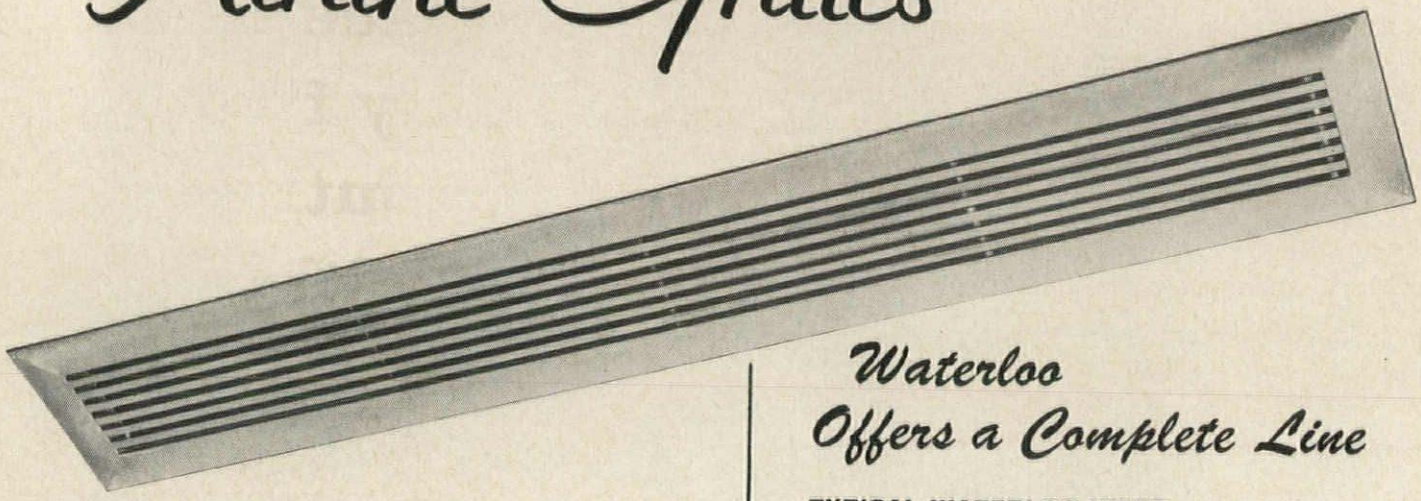
WATERLOO

Airline Grilles



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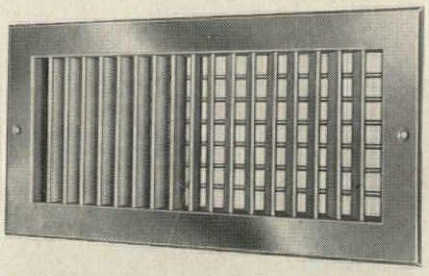

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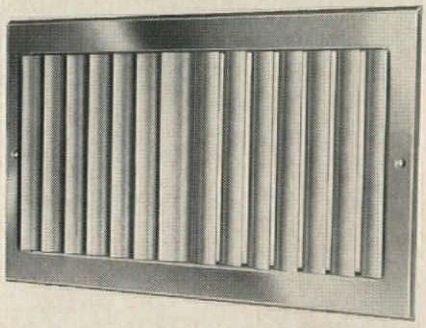

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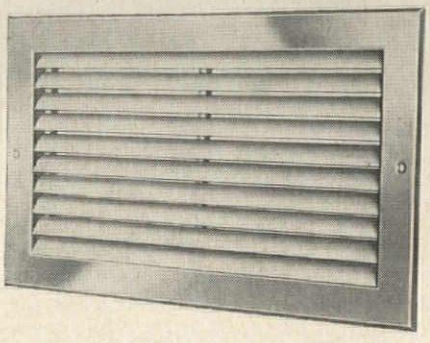

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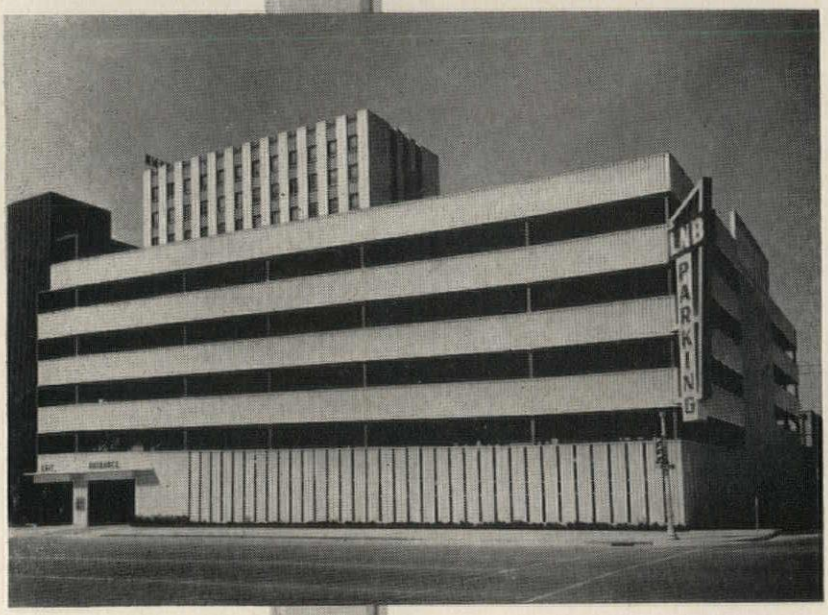

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Here's what this meant to the owner in additional income — income which could *never* have been realized if the parking deck had not been ready three months earlier.

Extra rental income for the owner:

1 month earlier completion — $4490

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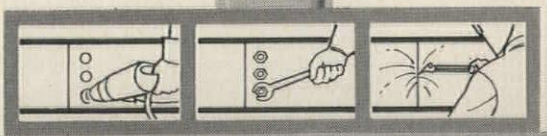

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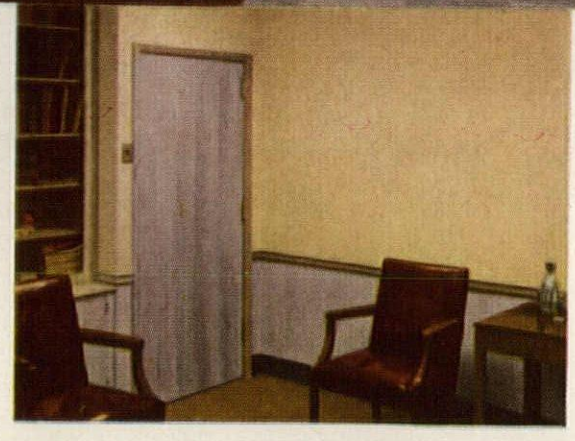

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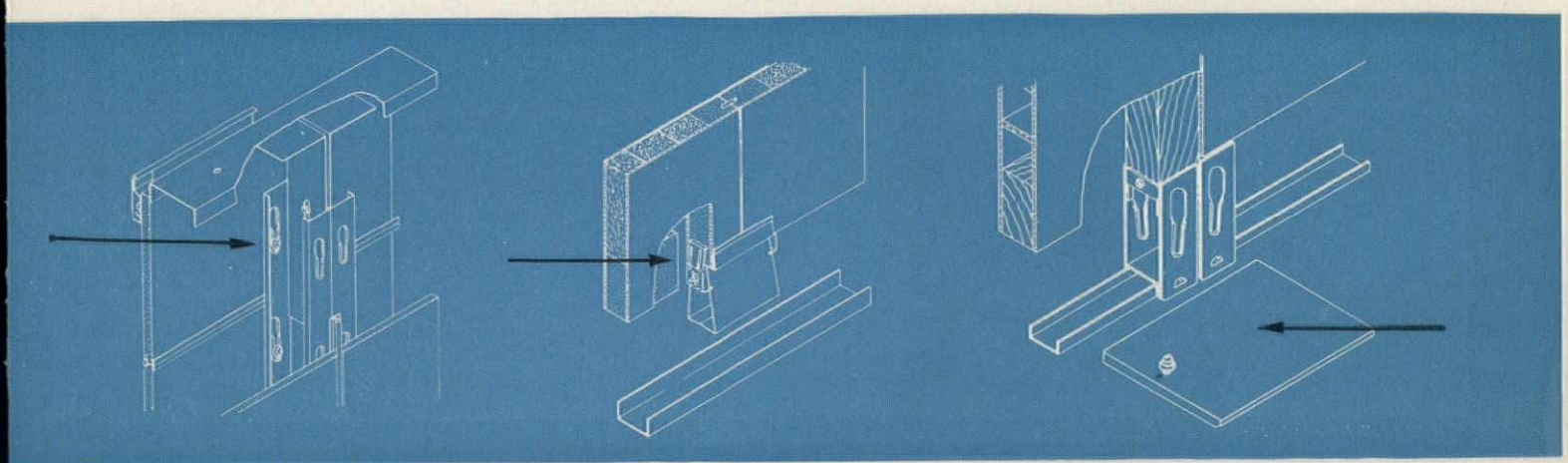

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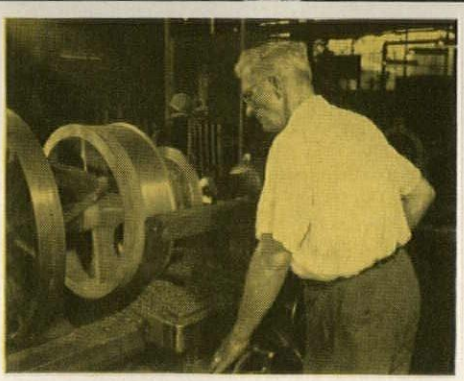

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A Washington Report by Ernest Mickel

Kennedy Administration Expected to Favor Cabinet Post for Urban Affairs; "Bold and Imaginative" Design for Elderly Sought Under FHA Section 231 Standards; U.S. Study Promises New "Casebook" on College Building in 1961

The outlook for the establishment of a Federal Department of Urban Affairs changed considerably last month with the election of John F. Kennedy as President.

Such a Federal department to coordinate the many government programs in the housing and urban renewal fields long has been advocated by the American Institute of Architects, the National Association of Home builders, and other organizations whose members are concerned with the design and construction of housing. The National Association of Real Estate Boards and some other groups have consistently opposed the formation of such a cabinet-level department.

A Democratic Administration was expected to make the proposal for such a department early. Construction interests were watching the development closely for its significance in the nation's urban renewal programs.

The A.I.A. long has supported the creation of a cabinet post to tie together the far-flung housing operations of the Federal government and to give a greater guidance to Uncle Sam's part in the planning of municipal redevelopment.

Here is the way A.I.A.'s President Philip Will Jr. stated the Institute's position in a statement prepared for the Senate and House Banking and Currency subcommittees on housing earlier this year:

"The A.I.A. has supported and continues to support the early establishment of a Department of Urban Affairs or its equivalent. In the meantime, it recommends legislation for the study of the best means of carrying out a program which will place before the Congress of the people of the United States the problems of urban places at the same level that the problems of other aspects of the physical development of the country are presently located. Due to the accelerating urbanization of the nation, it feels that a cabinet position is ultimately demanded.

"At this time it recognizes that so complex a problem will need further study and urges on the Congress that it pass legislation providing funds for the detailed study and recommendations required to achieve a workable scheme for this purpose."

Mr. Will told the subcommittees that the Institute consistently had been concerned with the plight of the American cities, the disintegration of the central portions of American cities, the spread of urban blight and sprawl, and the lack of sound and consistent metropolitan regional planning development.

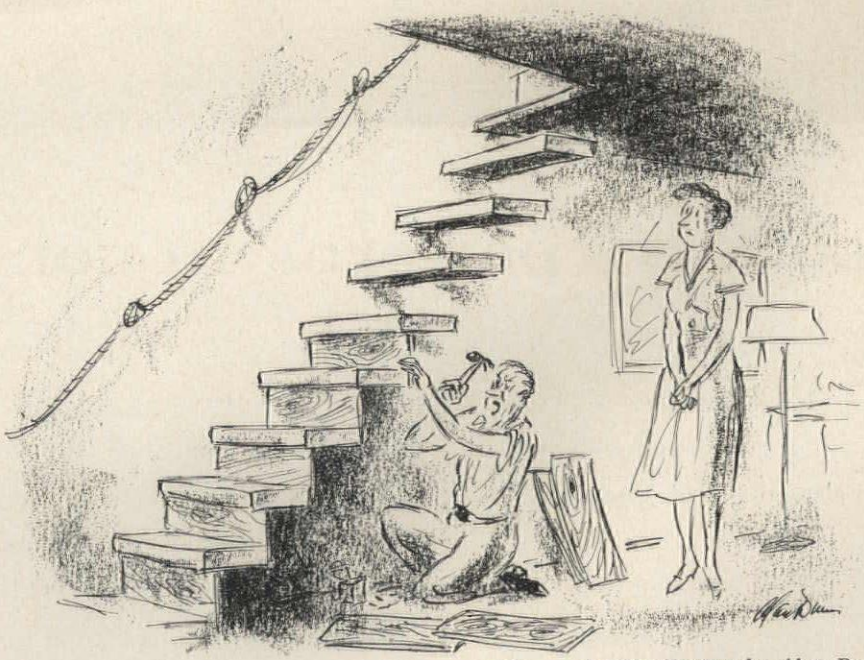
In this framework, the Institute has pushed for new legislation to provide for a major all-out attack on the problem, including the preservation of open space, the adequate planning and replanning of highways and street systems, and general plans for the locality to be redeveloped. Mr. Will's statement called for provision of funds where necessary to advance the planning of open spaces that are in danger of subdivision laceration and what he called land pollution.

A new Federal Department of Urban Affairs would have these problems—and many more allied to the Federal role in city planning—under its jurisdiction.

It was too early to tell just what form the organization of such a cabinet-level function might take, or what details for it might be proposed to Congress by the Administration. It was assumed by most observers, however, that the present Housing and Home Finance Agency, with its many facets of operation in the urban renewal and other housing fields, would form the nucleus of such an effort.

There have been many proposals in the past that if and when such a Department came into being, it should certainly include highway planning in its manifold responsibilities. In fact, transportation in general has been suggested by many as a natural field of jurisdiction for such a cabinet post.

continued on page 258



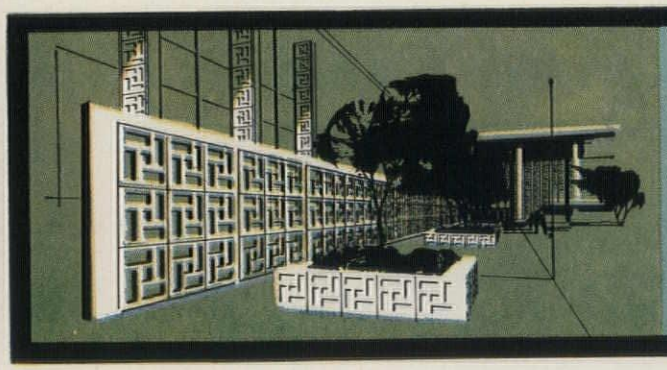
—*Drawn for the* RECORD *by Alan Dunn*

"You and your 'sense of insecurity'!"

Decorative patterns in concrete give unity

Hospital, clinic, school, research laboratory—the many activities of the new Stanford Medical Center require 7 separate buildings. To bring this complex into one harmonious whole, ingenious use has been made of modern concrete. Precast grilles provide a strong light-and-shadow pattern over large areas. They also set a design theme which is repeated in bold relief on other concrete surfaces throughout the Center. The elegant beauty achieved gives dramatic evidence of concrete's esthetic versatility and its structural advantages. Today, more than one architect is acquiring a reputation through the creative uses of modern concrete.

and beauty to new medical center!



Buff-toned concrete of Medical Center harmonizes with older Stanford University buildings. The grille motif is repeated in columns, spandrels, mullions and plant boxes. Grilles shield east and west façades, corridors and patients' private gardens.

Stanford University Medical Center, Palo Alto, California. Architect: Edward Durell Stone, New York, N.Y. Structural Engineers: Pregnoff & Matheu, San Francisco, California

Construction Cost Indexes

Presented by Clyde Shute, Director of Statistical Policy, Construction News Div., F. W. Dodge Corp., from data compiled by E. H. Boeckh & Assoc., Inc.

Labor and Materials: U.S. average 1926-1929=100

NEW YORK

PERIOD	RESIDENTIAL Brick	RESIDENTIAL Frame	APTS., HOTELS, OFFICE BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Steel
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
1948	250.1	251.6	239.4	242.2	235.6
1949	243.7	240.8	242.8	246.6	240.0
1950	256.2	254.5	249.5	251.5	248.0
1951	273.2	271.3	263.7	274.9	271.8
1952	278.2	274.8	271.9	265.2	262.2
1953	281.3	277.2	281.0	286.0	282.0
1954	285.0	278.2	293.0	300.6	295.4
1955	293.1	286.0	300.0	308.3	302.4
1956	310.8	302.2	320.1	328.6	324.5
1957	318.5	308.3	333.1	345.2	339.8
1958	328.0	315.1	348.6	365.4	357.3
1959	342.7	329.0	367.7	386.8	374.1
July 1960	353.8	338.9	380.0	399.4	381.3
August 1960	353.6	338.7	379.7	399.2	381.1
Sept. 1960	354.3	339.4	380.6	399.2	381.1
	% increase over 1939				
Sept. 1960	186.9	177.3	191.2	199.2	192.9

ATLANTA

RESIDENTIAL Brick	RESIDENTIAL Frame	APTS., HOTELS, OFFICE BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Steel
82.1	80.9	84.5	86.1	83.6
72.3	67.9	84.0	87.1	85.1
86.3	83.1	95.1	97.4	94.7
199.2	202.5	178.8	178.8	178.8
189.3	189.9	180.6	180.8	177.5
194.3	196.2	185.4	183.7	185.0
212.8	214.6	204.2	202.8	205.0
218.8	221.0	212.8	210.1	214.3
223.0	224.6	221.3	221.8	223.0
219.6	219.1	233.5	225.2	225.4
225.3	225.1	229.0	231.5	231.8
237.2	235.7	241.7	244.4	246.4
241.2	239.0	248.7	252.1	254.7
243.9	239.8	255.7	261.9	262.0
252.2	247.7	266.1	272.7	273.1
261.1	254.8	275.9	284.9	278.5
260.2	253.7	275.5	284.6	278.1
261.4	254.9	277.2	285.6	279.5
% increase over 1939				
202.9	206.7	191.5	193.2	195.1

ST. LOUIS

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
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
1952	259.1	253.2	249.7	255.0	249.6
1953	263.4	256.4	259.0	267.0	259.2
1954	266.6	260.2	263.7	273.3	266.2
1955	273.3	266.5	272.2	281.3	276.5
1956	288.7	280.3	287.9	299.2	293.3
1957	292.0	283.4	295.2	307.1	302.9
1958	297.0	278.9	304.9	318.4	313.8
1959	305.4	296.4	315.0	329.8	323.9
July 1960	312.0	301.6	322.5	337.4	327.1
August 1960	311.1	300.5	322.1	337.1	326.7
Sept. 1960	311.1	300.5	322.1	337.1	326.7
	% increase over 1939				
Sept. 1960	182.3	180.8	171.3	181.4	174.5

SAN FRANCISCO

90.8	86.8	100.6	104.9	100.4
89.5	84.5	96.4	103.7	99.7
105.6	99.3	117.4	121.9	116.5
218.9	216.6	208.3	214.7	211.1
213.0	207.1	214.0	219.8	216.1
227.0	223.1	222.4	224.5	222.6
245.2	240.4	239.6	243.1	243.1
250.2	245.0	245.6	248.7	249.6
255.2	257.2	256.6	261.0	259.7
257.4	249.2	264.1	272.5	267.2
268.0	259.0	275.0	284.4	279.6
279.0	270.0	288.9	298.6	295.8
286.3	274.4	302.9	315.2	310.7
289.8	274.9	311.5	326.7	320.8
299.2	284.4	322.7	338.1	330.1
307.5	291.4	337.2	353.6	344.5
307.1	290.1	338.4	356.1	345.0
305.0	287.4	338.0	355.9	344.5
% increase over 1939				
188.8	189.4	187.9	192.0	195.7

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.

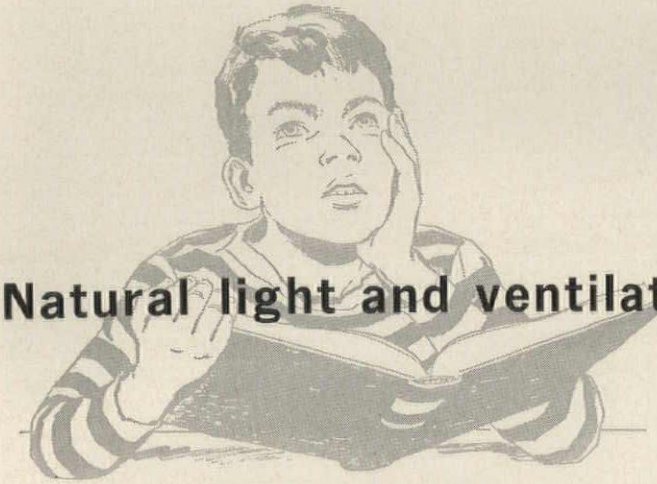
$$\frac{110-95}{95} = 0.158$$

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.



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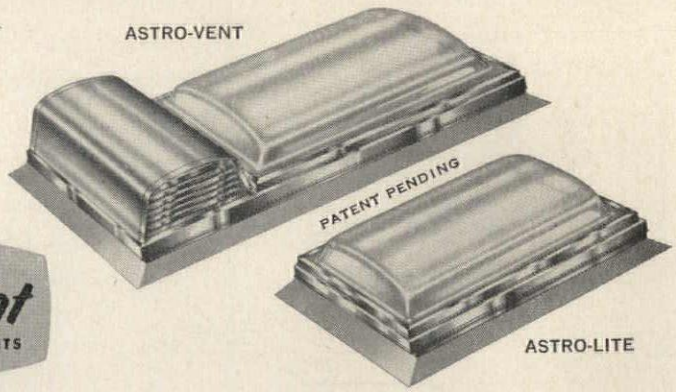

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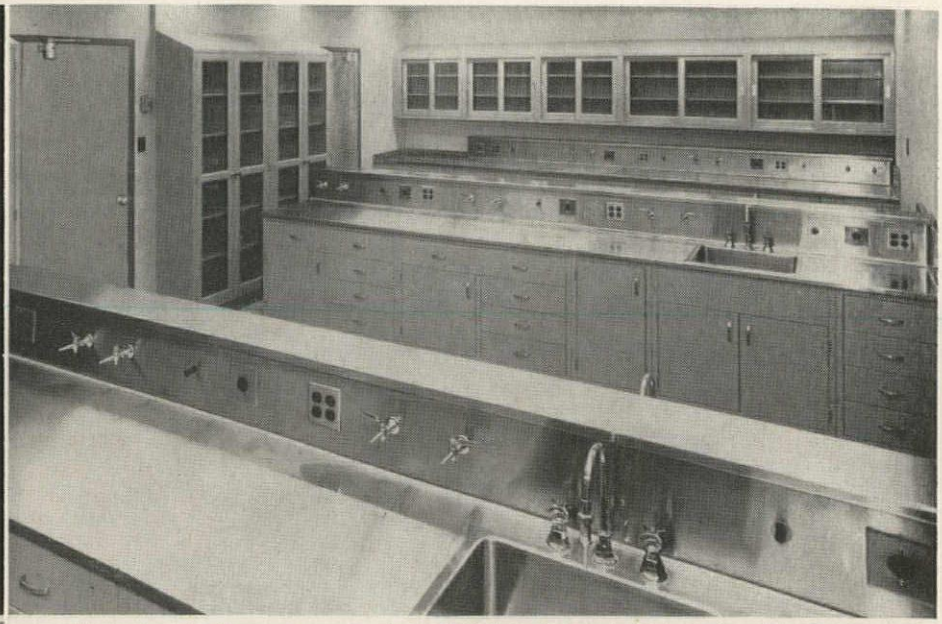

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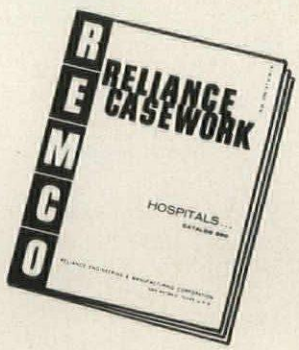

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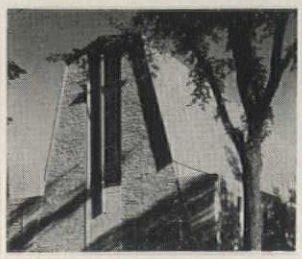
First Methodist Church, Rochester, Minn. Rilco laminated wood arches span 51'; center height 52'; 15' o. c. Architects: Bergstedt, Hirsch, Wahlberg & Wold, Inc., St. Paul, Minn.



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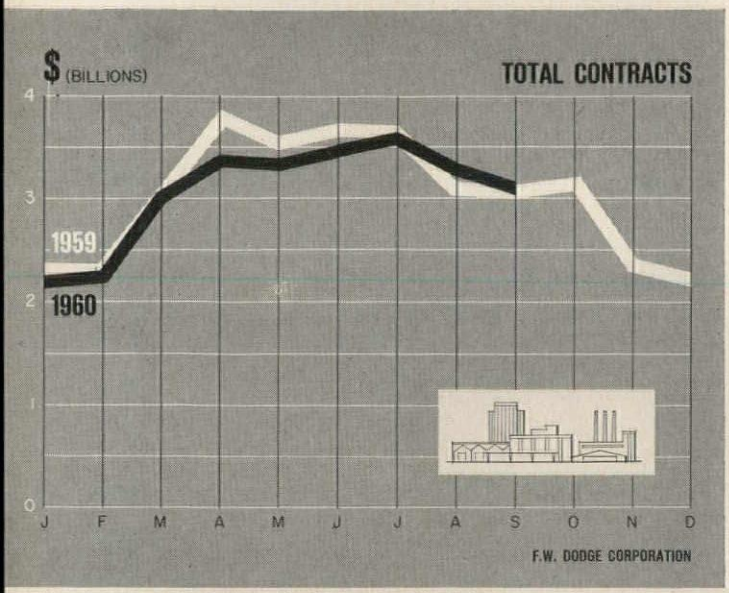
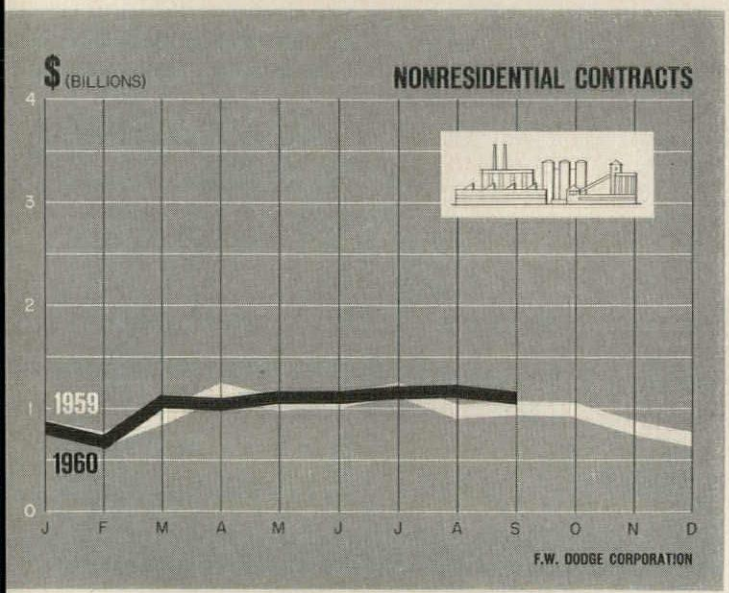
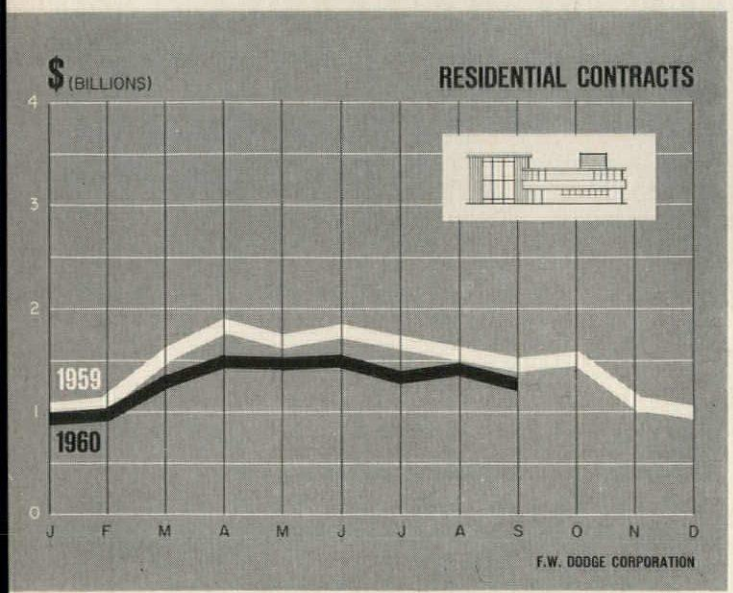


Total contracts include residential, nonresidential, heavy engineering contracts





RELIGIOUS BUILDINGS SHOW HIGH ACTIVITY, BRIGHT PROSPECT

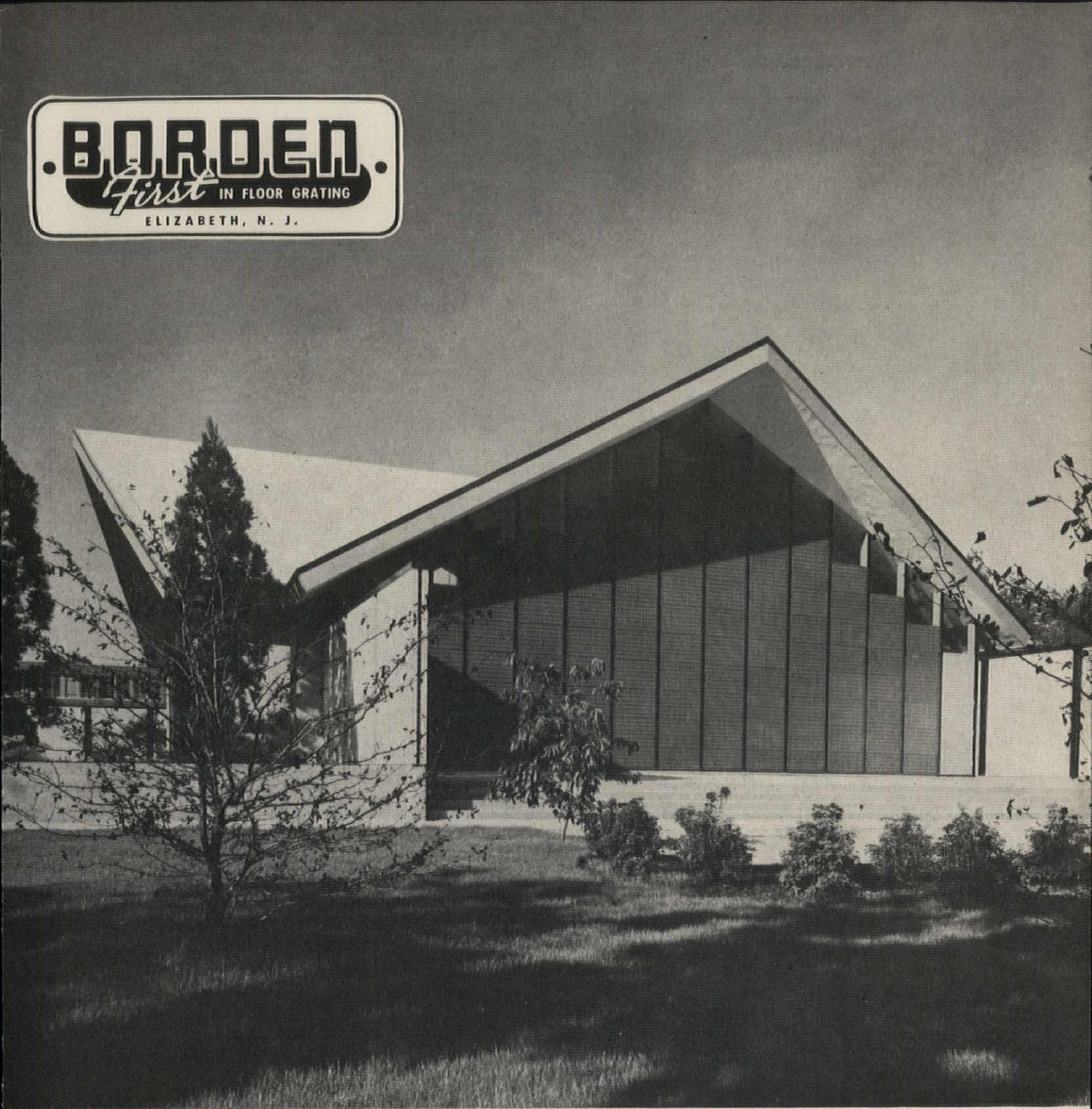
RELIGIOUS building construction so far in 1960 has continued very close to the record levels of 1959. For the first nine months of this year, contracts for religious buildings, reported by Dodge, were valued at nearly $625 million dollars, down only one per cent from the corresponding period a year ago. In fact religious building contracts in the two most recent months for which figures are available—August and September—actually edged above the comparable 1959 months. It seems reasonable to assume that for the year 1960 as a whole, religious building contracts will again closely approach the $800 million mark. The total figure, of course, includes not only churches, as such, but also other parish buildings, monasteries, convents, seminaries and the like.

AS WE have pointed out in the past, basic demand factors for religious buildings have been rising steadily. Population growth in itself is a primary factor. What's more important is that available evidence shows church membership growing even faster than total population. Church incomes have been increasing; past periods of under-building have left backlogs to be met; and the mobility of our population continues at very high rates. All these pressures indicate record or near-record levels of religious building construction for some time to come. Our own Dodge outlook statement, which appeared in the RECORD last month, points to a two per cent gain in the level of church building contracts in 1961.

IN PAST summaries of the religious building market, we have often tried to add a touch of humor by contrasting church construction with contracts for new jails and penitentiaries. At the moment, there is nothing funny about it. Although religious building contracts are close to their all-time high, construction of jails and penitentiaries is proceeding in real record fashion! Contracts for the latter in the first nine months of 1960 were running 170 per cent above a year ago!

TURNING from churches to construction as a whole, we find that as 1960 draws to an end, this year's figures on construction contracts have edged still closer to last year's record totals. Over $27.5 billion worth of contracts were awarded in the January through September period, just four per cent below year-earlier levels. In contrast, total contracts were down seven per cent at the mid-year mark. And, as we said last month, a moderate rise in total construction seems in store in 1961.

GEORGE CLINE SMITH
Vice President and Chief Economist
F. W. Dodge Corporation



Davis, Brody, and Wisniewski, Architects

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Borden pressure-locked type grating, of gold-anodized aluminum, backed by porcelain enamel panels and bolted to mullions, forms the facade of this dramatic new structure.

Installation of the grating, which was made with special spacing and in panel sizes to meet the architect's specifications, was simple and quick. The panels were supplied with lugs welded to the grating in such a way as to easily slip into pre-drilled holes in the mullions.

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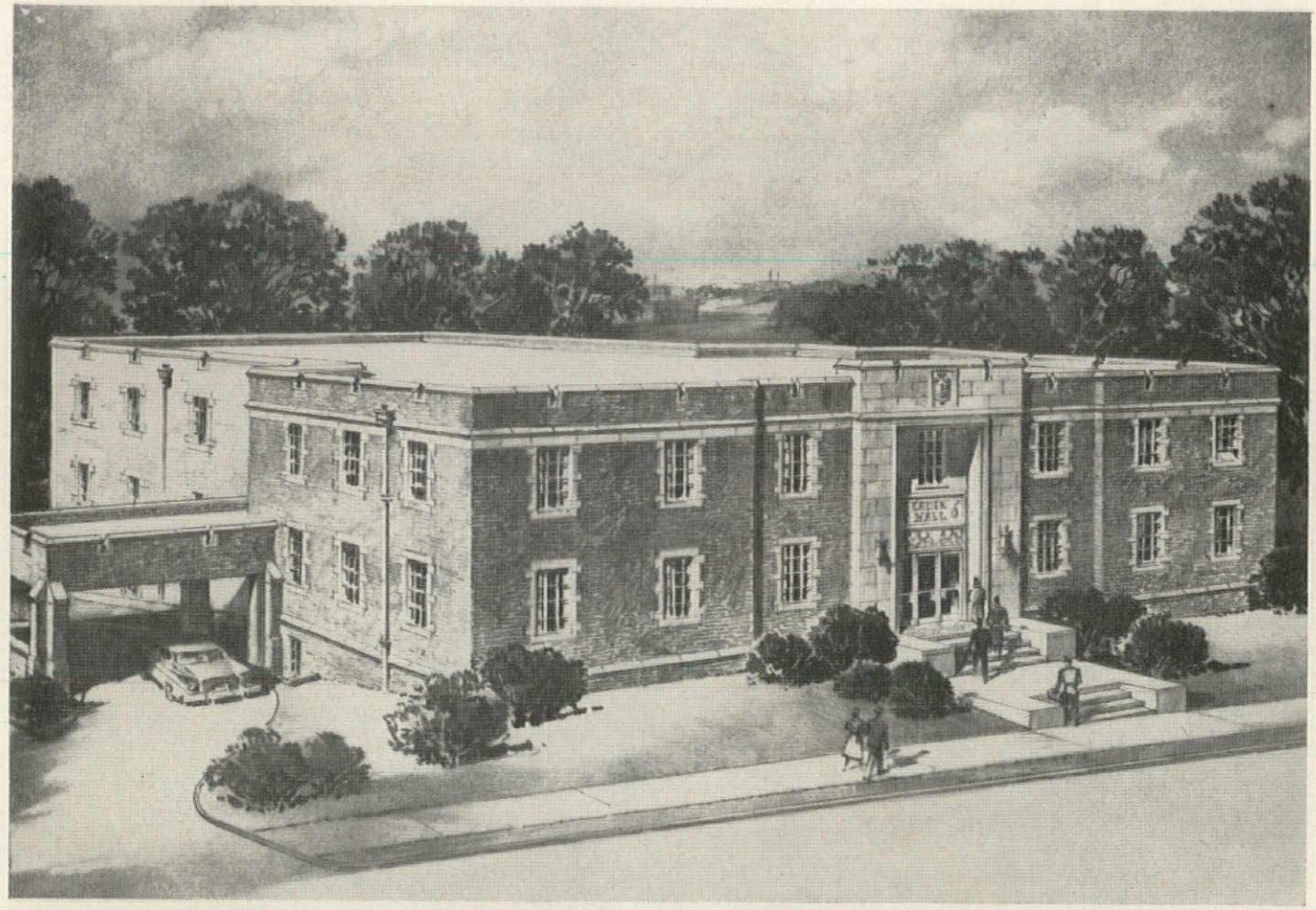

MARLO *Quietly* LEADS THE CLASS IN ENGINEERS' AIR CONDITIONING TEST

Selected over nine other makes to comfort condition new music conservatory

There was no guesswork in the selection of air conditioning for the new Cadek Hall, conservatory of music at the University of Chattanooga, designed by architects Shepherd and Smith.

The consulting engineers, Campbell & Jones, conducted comparison tests on 10 leading makes of equipment. Judgment was on the basis of noise level, overall construction, and individual features such as access panels, grilles, etc.

Results of the tests pointed conclusively to Marlo Seazonaire remote room units as the best choice. Low noise level in particular was an outstanding characteristic of the Marlo equipment, which operated as quietly at high speeds as other units at low speeds.

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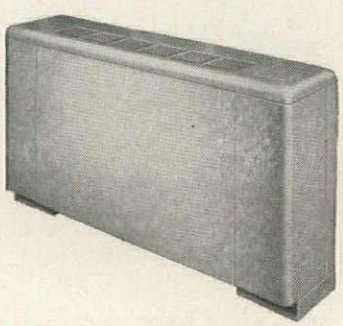

Marlo Seazonaire Unit, Model FWC-C, selected for Cadek Hall, University of Chattanooga.

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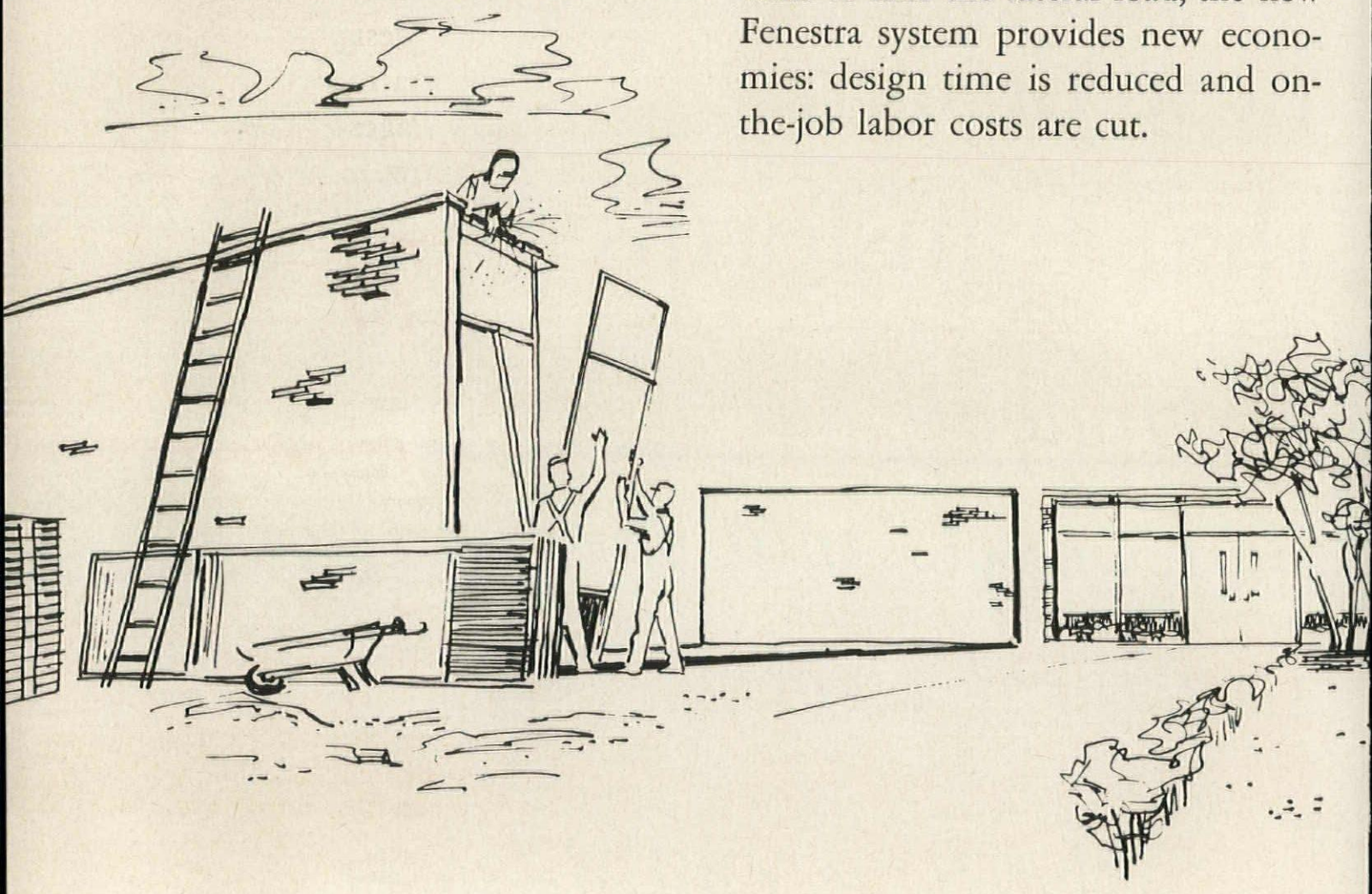

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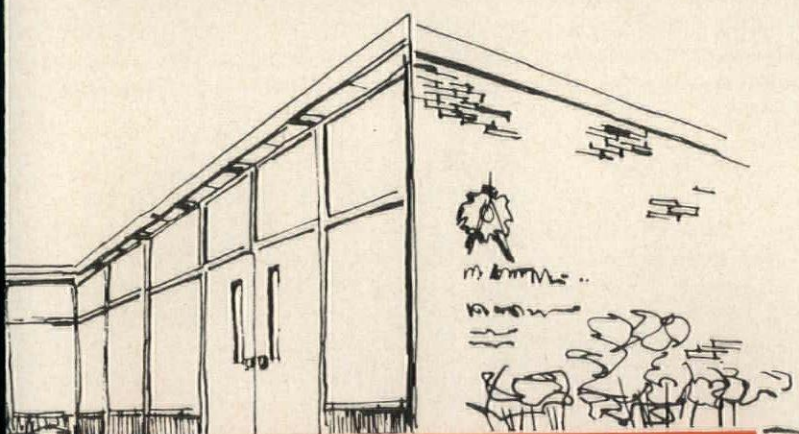

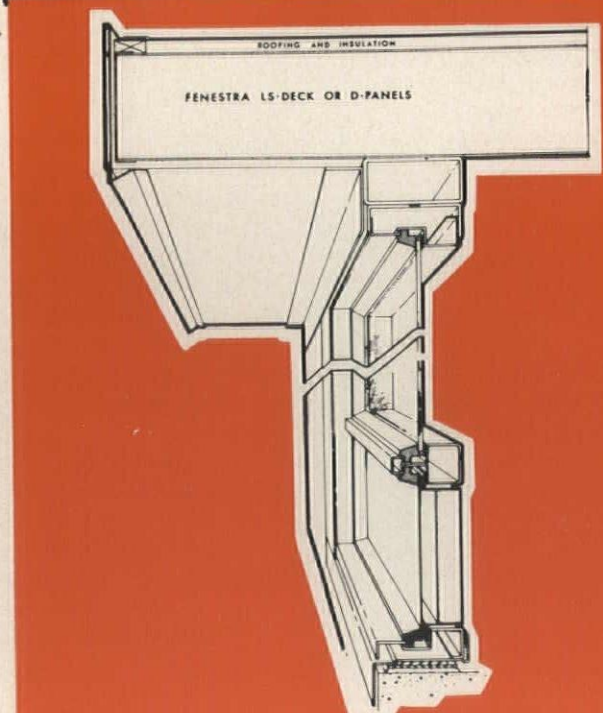

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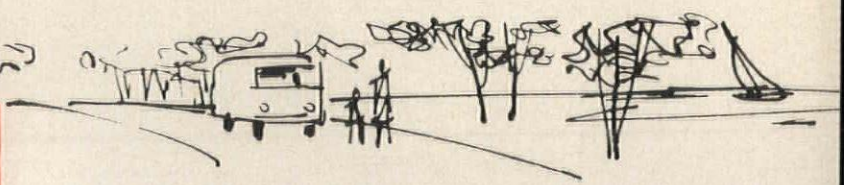

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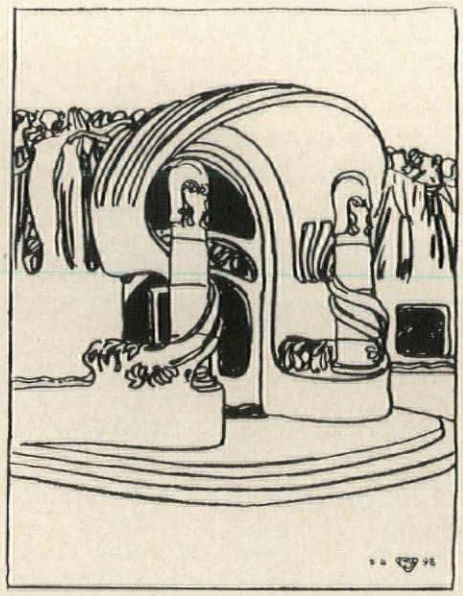


Left, project by Josef Hoffman, 1898
Right, title page by Otto Eckman, 1900
—from *Art Nouveau*

Art Nouveau—Relevant Still?

ART NOUVEAU. *Art and Design at the Turn of the Century. Edited by Peter Selz and Mildred Constantine. The Museum of Modern Art, 11 W. 53rd St., New York 19. 192 pp., illus. $6.50.*

Architects who note the increasing interest on the part of critics, art historians, museum directors, antique dealers and art loving public in the short-lived European Art Nouveau movement which appeared in full strength between 1895 and 1905 and in a diluted form for some ten years after that, may ask themselves if this concern means that Art Nouveau has relevance to the architectural design of the immediate present. Henry-Russell Hitchcock discusses the contemporary significance of the movement in his chapter on Art Nouveau architecture, a part of this excellent collection, which also includes authoritative articles on the graphic design, painting and sculpture, prints, drawings and decorative arts of Art Nouveau's brief flowering.

According to Hitchcock: ". . . we are on the whole less puritanical and singleminded about architecture today than we were in the twenties and less naively Freudian than in the thirties. The historians are perhaps still ahead of the public in their acceptance of Art Nouveau but current developments in architecture are lending a new relevance to a re-evaluation of Art Nouveau.

"The relationship of these trends to Art Nouveau lies more in a mere rejection of the international style of the thirties than in any consistency of ideals or real similarity of forms. One may note in many recent buildings the return of curves in section, in plan, and even in elevation, and the preference for types of expressive structure more organic in appearance, if not in fact, than the reticulated cage. In this looser and more eclectic climate of taste that has come with the mid-century it should be possible to appreciate more fully the virtues of Art Nouveau architecture. . . .

"It is a commonplace of modern theory, curiously inapplicable to the greater part of the advanced production of the last 35 years, that architecture is primarily an art of space. This can justify high esthetic evaluation of the larger Art Nouveau interiors . . . and not as mere 'interior decoration' but as architecture in the fullest sense. The spatial qualities . . . are not tentative or premonitory of later modern architecture but wholly mature and assured in their own right, more satisfying to the observer than most comparable later interiors."

Those who wish to learn more about the entire movement will discover in this well designed and brilliantly illustrated book the remarkable coherence which existed among all the arts at this time. A study of the illustrations reveals the ever present flowing evocative line which unified and related each art to every other. Editors Peter Selz and Mildred Constantine, by bringing together the most distinguished examples of Art Nouveau in each design field, have made an important contribution to our understanding of this brief and curious episode in recent art history.

—Mildred F. Schmertz

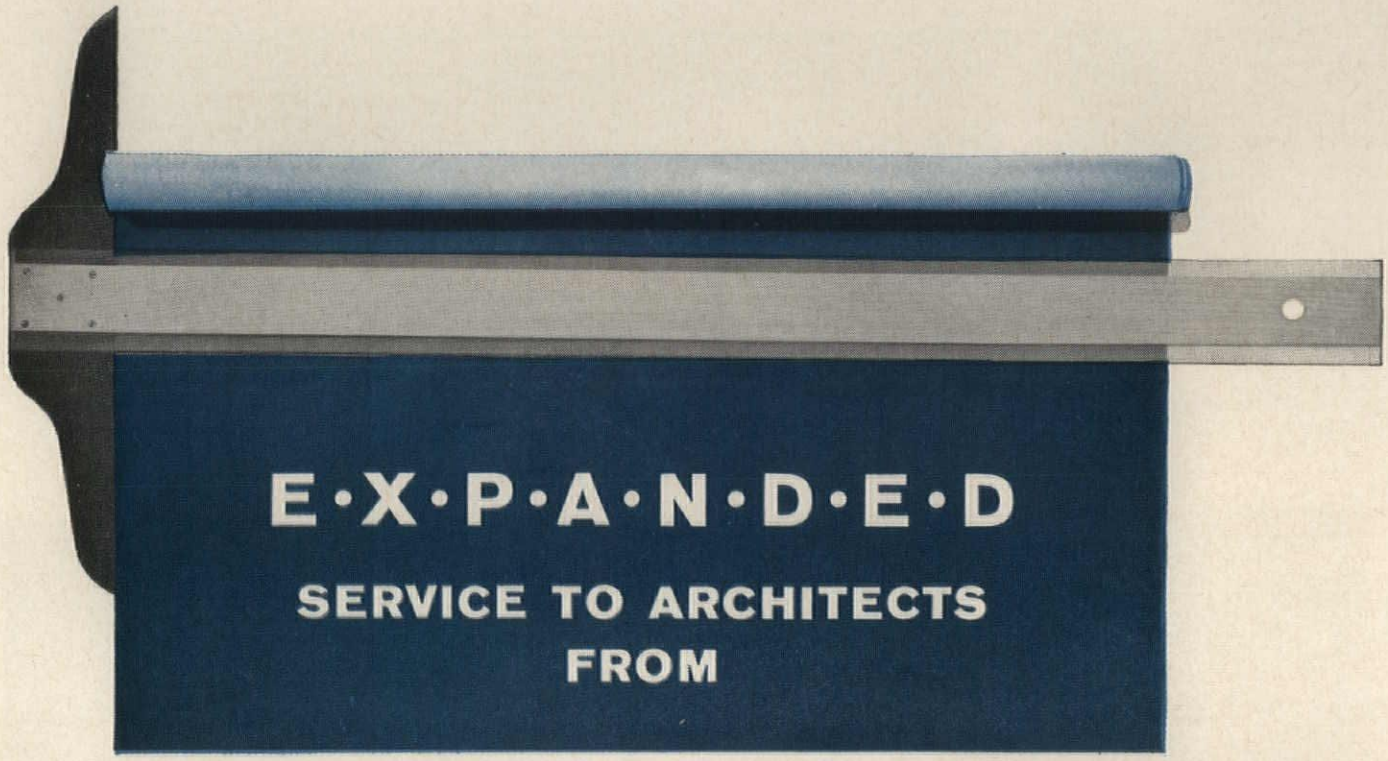
Architectural Masters, Cont'd

WALTER GROPIUS. *By James Marston Fitch. 128 pp., illus.* ERIC MENDELSOHN. *By Wolf Von Eckardt. 128 pp., illus.* OSCAR NIEMEYER. *By Stamo Papadaki. 127 pp., illus.* RICHARD NEUTRA. *By Esther McCoy. 128 pp., illus.* LOUIS SULLIVAN. *By Albert Bush-Brown. 128 pp., illus. George Braziller, Inc., 215 Park Ave. S., New York 3. $4.95 each.*

These books complete the publishers' "Masters of World Architecture" series (similar studies on Wright, Mies, Nervi, Gaudi, Aalto and Le Corbusier were reviewed in AR, April 1960, p. 70). Like the earlier books, these too are notable as good texts well illustrated—and at a price considerably more modest than is usual for well-illustrated architectural books.

Apart from each book's place in the series, perhaps the most important, viewed alone, is Mr. Bush-Brown's study of Sullivan. It is not properly a biography, but rather an

continued on page 60



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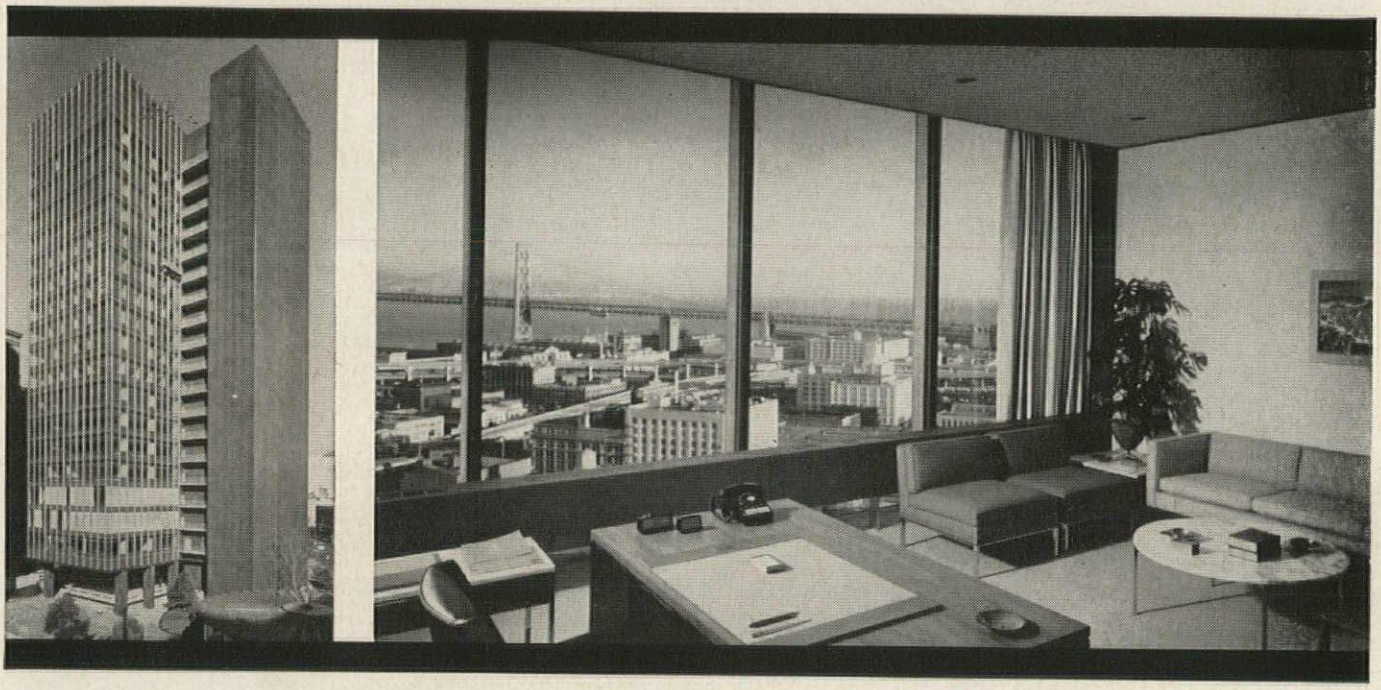

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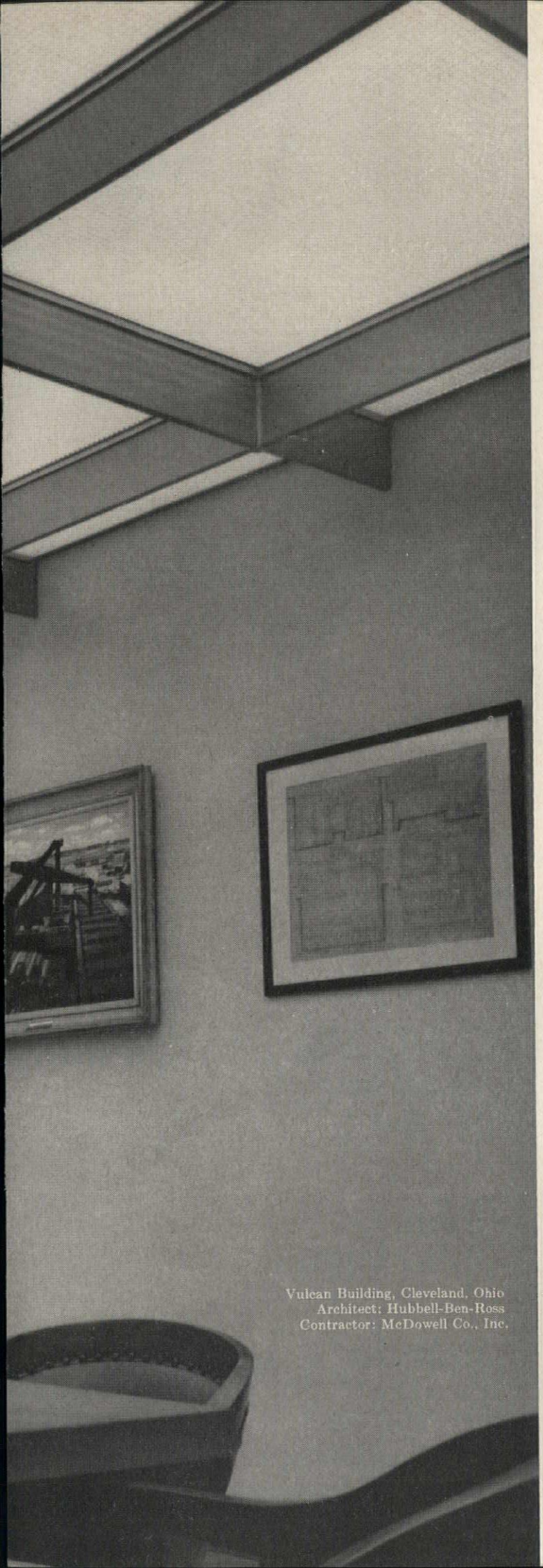


Vulcan Building, Cleveland, Ohio
Architect: Hubbell-Ben-Ross
Contractor: McDowell Co., Inc.

ABOVE ALL:

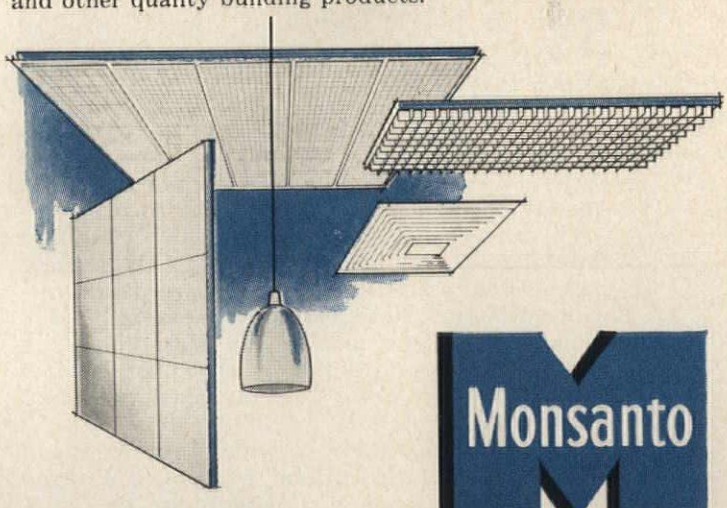
the luminous beauty of Styrene lighting

Styrene luminous ceilings, luminaires, louvers, refractors, diffusers and modules are adding unique beauty and comfort to hundreds of new buildings of all types.

Molded of Lustrex® perma tone, a specially developed Monsanto styrene, these installations deliver low surface brightness and high illuminating values. Perma tone fixtures are dimensionally stable, yet light in weight for easy handling, installation, and maintenance.

Exceeding IES-NEMA joint specifications for ultra violet light stabilized styrene, perma tone fixtures can be the whitest of whites—or one of a wide range of molded-in permanent colors. Lustrex perma tone, impact grade, has also been developed—for extra toughness and flexibility in snap-fitting to metal parts, and high resistance to abnormal abuse.

Send coupon below for free technical report on both regular and impact Lustrex perma tone, including accelerated aging test results, and other valuable data on styrene in lighting fixtures. We will send you names of leading manufacturers of lighting fixtures molded of perma tone. Monsanto also supplies the plastics used by leading manufacturers to produce vinyl flooring, melamine laminated plastics surfacing materials, molded drawers, exterior latex paints, and other quality building products.



Monsanto®

MONSANTO DESIGNER IN **PLASTICS**

MONSANTO CHEMICAL COMPANY, Plastics Division
Room 791, Springfield 2, Mass.

Please send me free technical data on styrene in lighting. Also list of manufacturers of lighting fixtures molded of Lustrex perma tone Styrene.

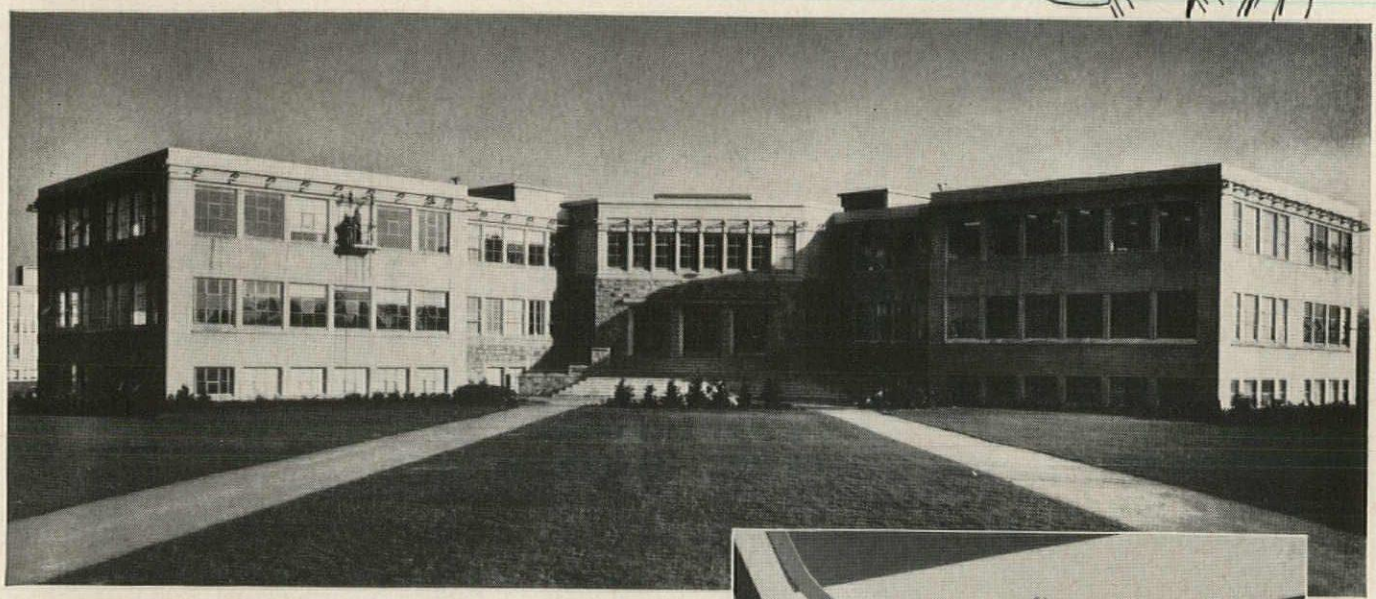
Name_____ Title_____

Company_____

Address_____

City_____ State_____

TRAMRAIL *Speeds*
Window Washing at University



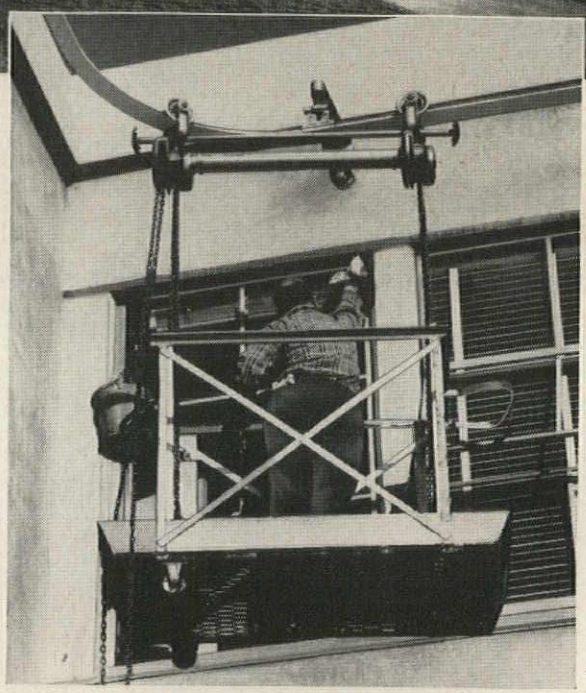
The Cleveland Tramrail window-washing system on this building is hand operated. When not in use the cage is detached and rolled inside. The track does not detract from the building appearance, in fact, it usually is not observed unless special attention is called to it.

THE track of a Cleveland Tramrail window washing system practically encircles the beautiful Biological Sciences and Pharmacy Building of the University of British Columbia, Vancouver, B. C. A hoist carrier supporting a special cage operates on the track. A man in the cage can travel laterally or vertically and thus quickly position himself at any window.

Obviously the equipment greatly simplifies the window washing job. It is not necessary to handle heavy ladders or work from dangerous window ledges. Nor do window washers have to track through busy offices and rooms to reach windows. The entire job of washing external window areas is done from the outside without disturbance to anyone.

Moving from window to window by means of the overhead track system eliminates a large amount of climbing, walking and carrying. Therefore, a man can wash far more windows per day with less effort. And of importance, he is much safer in a Tramrail cage which is provided with a sturdy guard rail.

Cleveland Tramrail window washing systems offer real advantages and are practically a "must" for air-conditioned buildings, because opening windows during washing is apt to unbalance a cooling system and cause widespread discomfort. For further details write for Booklet No. 2022-A.



The cage will accommodate two washers. Buckets supports are provided at convenient heights on both sides. A washer can lower or raise himself with a chain hoist. Other Cleveland Tramrail window washing equipment is available with electric drives for both hoist and carrier travel.

CLEVELAND TRAMRAIL

Overhead Materials Handling Equipment

CLEVELAND TRAMRAIL DIVISION • THE CLEVELAND CRANE & ENGINEERING CO. • 2528 E. 290 ST. • WICKLIFFE, OHIO

Kansas City Public Library and School Board Administration Building, Kansas City, Mo.
Architects: Edward W. Tanner & Associates, A.I.A.

Vina-Lux® 800 Series

SERVES KANSAS CITY PUBLIC LIBRARY

The new standard of flooring performance in many heavy traffic areas is Vina-Lux 800 Series . . . the superior vinyl asbestos tile with distinctive styling that won't walk off or wear away because the color chips are evenly distributed at every level through the tile. Yet Vina-Lux 800 Series costs no more than ordinary vinyl asbestos tile.

In the Kansas City Public Library, Vina-Lux 800 Series provides quiet, slip-safe resilience underfoot. Its clean colors and unique styling complement architectural design and room decor. Available in 12 coordinated colors; 9″ x 9″ size; 1/8″, 3/32″ or 1/16″ gauges. Consult Sweet's Catalog or write for samples and complete specifications.

AZROCK FLOOR PRODUCTS DIVISION
Specialists in the manufacture of vinyl asbestos tile and asphalt tile flooring
UVALDE ROCK ASPHALT CO. • 517A FROST BANK BLDG. • SAN ANTONIO, TEX.

Required Reading

continued from page 52

Architectural . . .

attempt to define Sullivan as a theorist, and to refute those historians "who understood Sullivan partially and treated him as one who anticipated German mechanistic architecture but, unfortunately, still suffered from 19th century devotions to picturesque towers and ornaments." Mr. Bush-Brown's argument that Sullivan sought an entire new style to express new structural techniques is convincingly reasoned, and it seems likely that this will be a basic Sullivan reading.

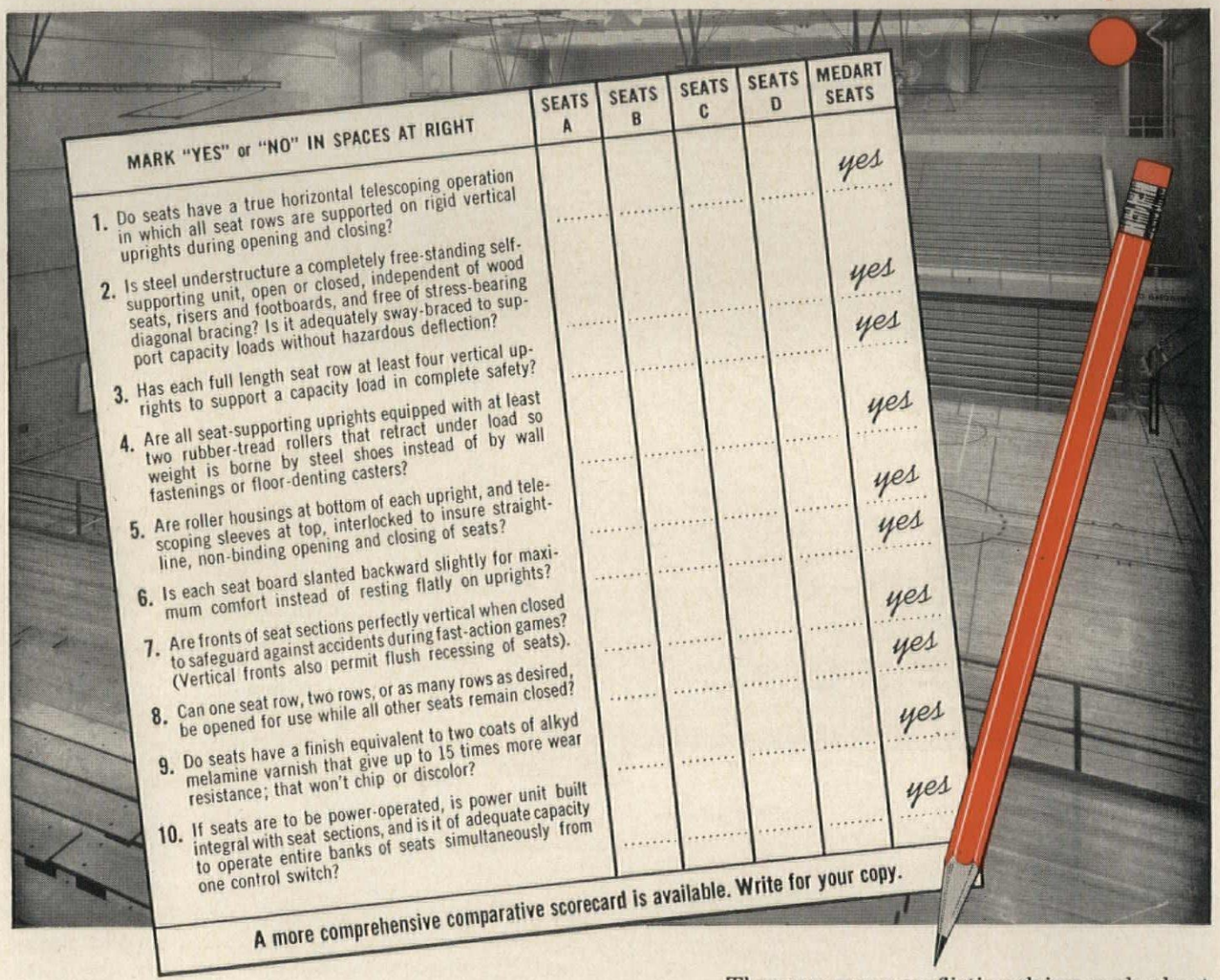
The most disappointing book in the series by far is Mr. Fitch's treatment of Gropius. While it would be next to impossible to write a study of Dr. Gropius without mentioning the Bauhaus's difficulties with the Nazis, the author has permitted himself a tractarianism (architectural and political) not wholly fair to Gropius or to the principles of the Bauhaus, and an occasional shrillness of tone (*e.g.*, "fascist madmen") not at all flattering to the reader. Gropius' stature and accomplishments deserve measured critical judgment.

In the case of the book on Niemeyer, it is no criticism of Mr. Papadaki, already the author of two books on the subject, to wish that we might have had another, perhaps non-C.I.A.M., interpretation. Nonetheless, this does postdate the earlier books by at least four years, and includes Niemeyer's work at Brasilia.

Since Neutra is, among architects, a very busy writer, and since his autobiography is now in preparation, Mrs. McCoy's relatively straightforward chronicle of his training and practice was probably the most useful approach which could have been made. A charming bonus is provided by the inclusion of a few of Neutra's "travel sketches."

Mr. Von Eckardt's study of Mendelsohn is neither as long or as thorough as Arnold Whittick's of a few years back, but it seems in some ways a more realistic, though equally sympathetic, appraisal. While not denying Mendelsohn's strong individualism, he places him in a more believable relationship to his times. The particularly good illustrations include a number of Mendelsohn's "imaginary sketches."

What's the score on Gym Seats for that new school ?



MARK "YES" or "NO" IN SPACES AT RIGHT	SEATS A	SEATS B	SEATS C	SEATS D	MEDART SEATS
1. Do seats have a true horizontal telescoping operation in which all seat rows are supported on rigid vertical uprights during opening and closing?					yes
2. Is steel understructure a completely free-standing self-supporting unit, open or closed, independent of wood seats, risers and footboards, and free of stress-bearing diagonal bracing? Is it adequately sway-braced to support capacity loads without hazardous deflection?					yes
3. Has each full length seat row at least four vertical uprights to support a capacity load in complete safety?					yes
4. Are all seat-supporting uprights equipped with at least two rubber-tread rollers that retract under load so weight is borne by steel shoes instead of by wall fastenings or floor-denting casters?					yes
5. Are roller housings at bottom of each upright, and telescoping sleeves at top, interlocked to insure straight-line, non-binding opening and closing of seats?					yes
6. Is each seat board slanted backward slightly for maximum comfort instead of resting flatly on uprights?					yes
7. Are fronts of seat sections perfectly vertical when closed to safeguard against accidents during fast-action games? (Vertical fronts also permit flush recessing of seats).					yes
8. Can one seat row, two rows, or as many rows as desired, be opened for use while all other seats remain closed?					yes
9. Do seats have a finish equivalent to two coats of alkyd melamine varnish that give up to 15 times more wear resistance; that won't chip or discolor?					yes
10. If seats are to be power-operated, is power unit built integral with seat sections, and is it of adequate capacity to operate entire banks of seats simultaneously from one control switch?					yes

A more comprehensive comparative scorecard is available. Write for your copy.

There are many conflicting claims made about different makes of retractable, folding or telescoping gym seats. This "scorecard" will help you get the facts straight.

Additional factors that should be considered are the engineering experience of the manufacturer—approval among architects, schools and colleges—cost and frequency of maintenance as well as availability of service—durability (maximum service life).

YOU make the comparison before deciding, as thousands of other school officials and architects have done. *Ask for complete catalog.*

Long Beach City College Gymnasium
Long Beach, California

MEDART
TELESCOPIC GYM SEATS

SPECIFY the best, then INSIST on it!

SEE OUR CATALOG IN SWEET'S

FRED MEDART PRODUCTS INCORPORATED • 3540 DEKALB STREET • SAINT LOUIS 18, MISSOURI

Here's a Sparkling Addition to Sylvania's Popular Troffer Series . . .

Newly installed Sylvania two-foot-wide Troffers with Plastic Lens shielding provide 120 footcandles of quality illumination in the home office of the National Union Fire Insurance Co., Pittsburgh, Pa.

Architect: William B. Simboli & Associates
Consulting Electrical Engineer: Carl J. Long
Electrical Contractor: J. W. Hosick

Here's What Sylvania's Troffer Line Offers You

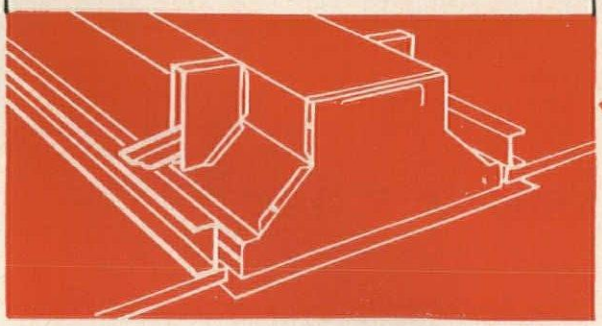
- Only 5½" deep for ideal ballast operation and convenient relamping.
- Broad choice of widths and lengths.
- 2, 3, 4 and 6 lamp units to meet any lighting requirement.
- Concealed hinges and latches.
- Wide selection of shielding media.
- 3 housing types to fit ALL modern ceilings.
- Simple installation in any ceiling.
- Easy access for maintenance.
- 5 types of Accent Units for pattern lighting.

Sylvania's Troffer Series enjoys tremendous popularity for two basic reasons: (1) outstanding product design together with practical, time-saving features; and (2) an extremely wide range of models to fit all modern ceilings and to suit every individual taste.

Now . . . a NEW addition to the famous Sylvania Troffer family . . . the *Air-Handling Troffer* combining the functions of lighting, heating and cooling into one compact system.

Here is a unit that blends the lighting features and advantages of Sylvania Troffers with the air handling experience of The Pyle-National Company.

With Sylvania's Air-Handling Troffer you obtain the correct, controlled atmosphere so essential for top effi-

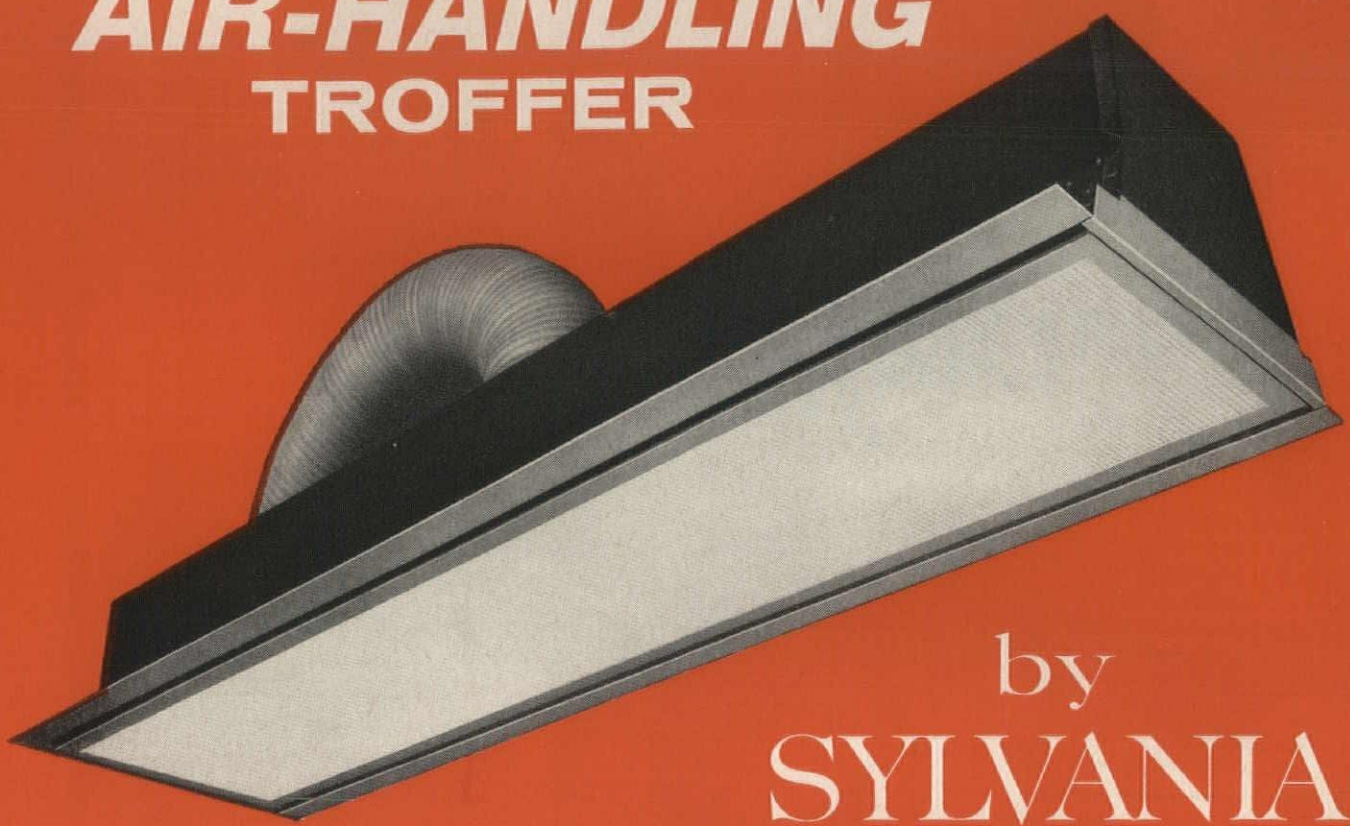


Unique Snap-Up Hanger

The simplest, most effective method of installing troffers in acoustical ceilings and in plaster ceilings with metal framing.

Fixture snaps into place and is supported by toggle arms of Snap-Up Hanger. Positioning and leveling of troffer takes only a few minutes.

The All-New AIR-HANDLING TROFFER



by SYLVANIA

ciency working performance. The coordination of mechanical facilities results in excellent overall economy. And uncluttered ceilings, free of separate diffusers, meet the goal of alert designers today.

All of the key features of Sylvania's Troffer Series are incorporated in this new fixture. The air-mixing chamber plus the valve and other air handling accessories combine for a minimum plenum chamber depth for most effective space utilization. The wide selection of fixture sizes, shieldings and number of lamps permits any lighting requirement to be met efficiently and economically.

The low-velocity air-diffusion system provides efficient, uniform air distribution for year-round comfort. Noises, drafts and soiled ceiling areas are minimized. Because the low-velocity system does not depend on walls or partition locations, room space assignments can normally be changed without affecting the efficiency or operation of the air flow.

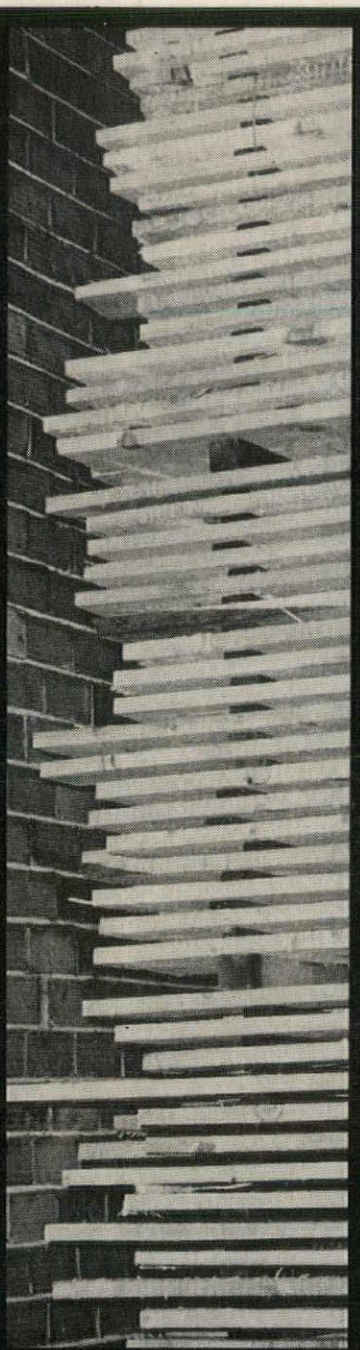
This combination of quality lighting and efficient air-handling fits well with many building or remodeling plans. Perhaps you can use these convenient, money-saving advantages on your next project. Write today for complete information.

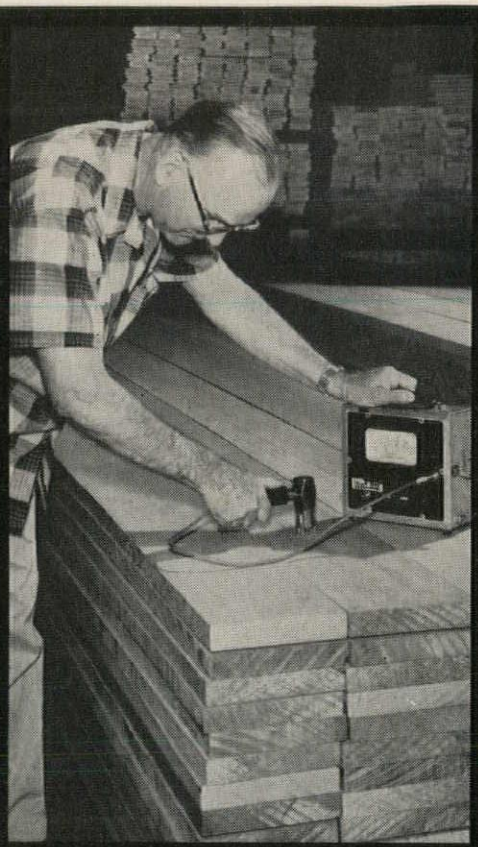
SYLVANIA LIGHTING PRODUCTS
A Division of SYLVANIA ELECTRIC PRODUCTS INC.
One 48th Street, Wheeling, West Virginia

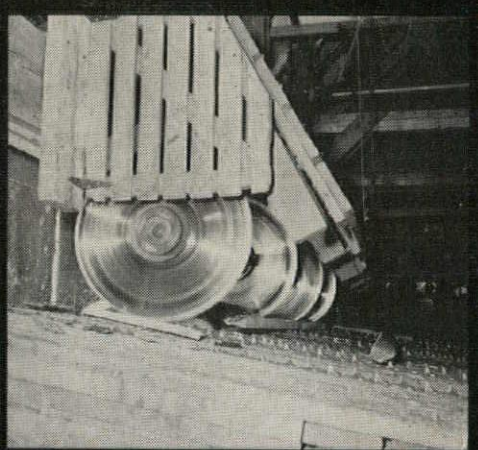
SYLVANIA

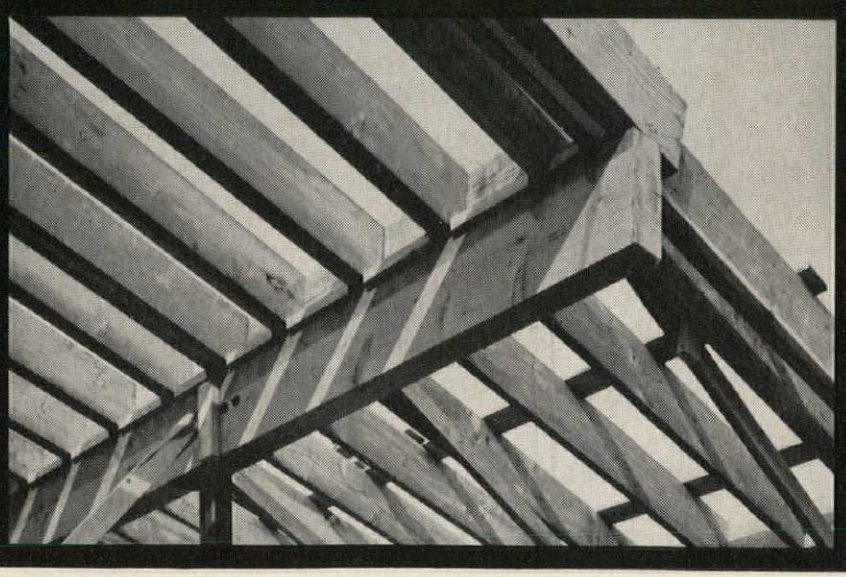
Subsidiary of **GENERAL TELEPHONE & ELECTRONICS**

GENERAL SYSTEM









Quality Control... the single standard of Western Pine Region lumber

This inspector is using an electronic meter to double-check the moisture content level of seasoned Western Pine Region lumber . . . before shipment. This is one of the many quality control steps at Western Pine Association mills aimed at customer satisfaction.

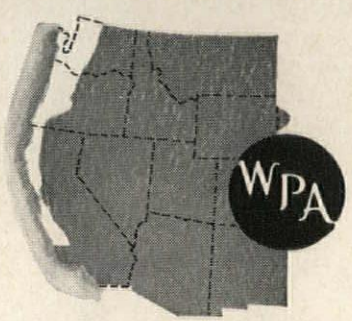
QUALITY—reliable, dependable, constant—is the goal of Western Pine Region lumber manufacturers.

Framing and sheathing lumber is available at controlled moisture contents which meet and exceed the most rigid requirements of the building industry.

Precise milling after expert seasoning is the hallmark of Western Pine Region products—not only rugged construction lumber but also interior and exterior finish, trim and cabinet stock.

Our research laboratory constantly guides the industry in modern seasoning methods. A field staff of specialists covers the entire 12-state region, checking and advising to help mills do a top job of uniform lumber drying.

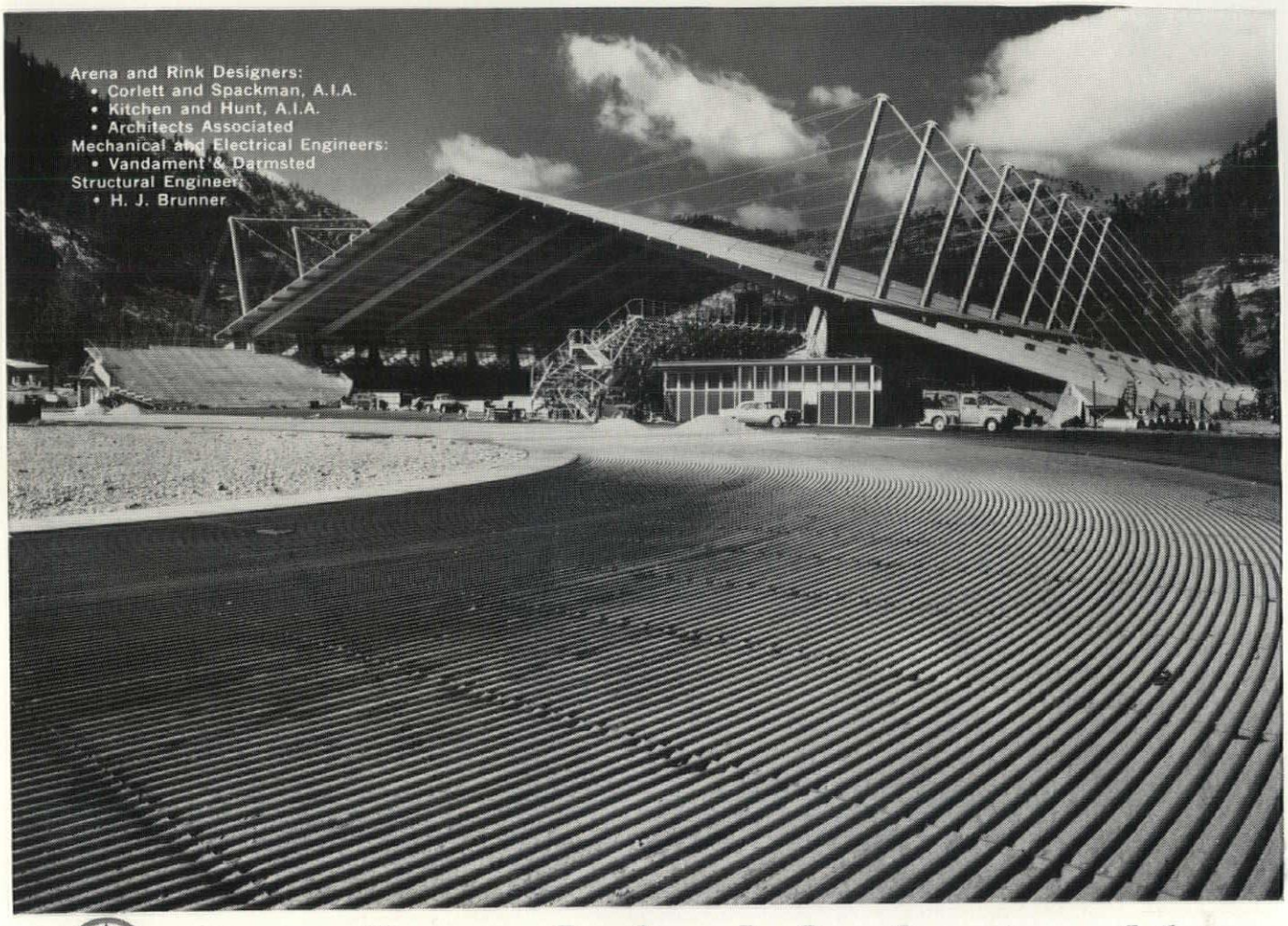
The Western Pine Association mark (WPA) stands for reliability. When you specify Western Pine Region lumber, you are ordering lumber of quality manufacture and dependable grade.



Western Pine Association

Yeon Bldg., Portland, Oregon

PONDEROSA PINE / IDAHO WHITE PINE / SUGAR PINE
DOUGLAS FIR / LARCH / WHITE FIR
ENGELMANN SPRUCE / LODGEPOLE PINE
INCENSE CEDAR / RED CEDAR / WESTERN HEMLOCK



Versatile **steel pipe** helped put and keep the Winter Olympics in championship form

Over 100 miles of steel pipe kept Squaw Valley's ice rinks just "wet" enough. 48 different check points throughout the system protect against danger spots and make-to-order "hard" ice for hockey, "wet" ice for racing.

Interested in steel pipe ice making systems? Write for booklet: "Steel Pipe in Ice Skating — The story behind the new approach to an old sport."

COMMITTEE OF STEEL PIPE PRODUCERS
150 East Forty-Second Street, New York 17, New York

Steel pipe was busy behind the scenes as America took a rink-side seat at the 1960 Winter Olympic ice show. Inches beneath the flashing skates, over 100 miles of *steel pipe* were making and keeping the world's largest expanse of man-made ice in top form.

While *steel pipe* was freezing 120,000 square feet of ice on the ground, it was busy melting snow on the roof.

Award winning Blyth Arena designed to give 8500 spectators an unobstructed view of the ice show is covered by 300 feet of roof suspended from steel cables. *Steel pipe* coils provide heated air for snow melting on the arena's roof to defend against the crushing load of Squaw Valley's 450 inches of annual snow fall.

The reasons that make *steel pipe* first choice for ice making and snow melting systems at Squaw Valley are good ones.

1. *Steel pipe* handles heat and cold without serious contraction and expansion problems.
2. *Steel pipe* does not present major installation problems. It is formable; has unsurpassed load bearing ability.
3. *Steel pipe* is economical.
4. *Steel pipe* in quantity is available quickly everywhere.

STEEL PIPE IS FIRST CHOICE

- Low cost with durability
- Strength unexcelled for safety
- Formable—bends readily
- Weldable—easily, strongly
- Threads smoothly, cleanly
- Sound joints, welded or coupled
- Grades, finishes for all purposes
- Available everywhere from stock

Insist on MADE IN USA Steel Pipe

C-8

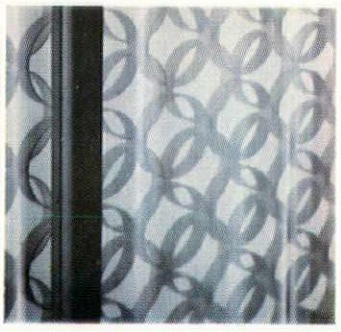
Color comfort in light for Barber-Greene's new Ontario plant...through

GLASS BY AMERICAN-SAINT GOBAIN

Some creative solutions to problems of radiant energy control for the versatile A-SG line

John B. Parkin Associates specified one of eight varieties of *AKLO* heat absorbing glass – for the Barber-Greene plant, above. Lighting is generous, yet restful and free of glare. It's available wired or unwired . . . in ⅛ and ¼-inch thicknesses . . . with polished or patterned surfaces.

Reynolds Metals Company Building in Detroit, by Minoru Yamasaki, is notable for its finely-modulated daylighting–admitted through A-SG *LUSTRAGRAY*® covered by an aluminum sunscreen, and through faceted skylights of A-SG *HUEWHITE*®.



Vincent G. Kling's distinguished Operations Building for the Government Employees Insurance Company is glazed throughout with TOPAZ PLATE by A-SG. One of eight integrally-colored plate glasses . . . provides light balance, glare control, increased privacy.

When a heavy industry enters a small-town environment without clashes of character, an architectural triumph has been scored. This is the case with the new plant built by Barber-Greene Ltd. in Don Mills, Canada. Here complete processing plants and massive road-building equipment are manufactured. Yet the structure's quiet poise makes it a most welcome neighbor. The design, by John B. Parkin Associates, is notable for its 70-foot clear-span bays, and an abundance of controlled daylighting. To achieve the optimum in climate control, restful illumination and architectural color, the architects specified Blue Ridge Aklo* for both vertical glazing and skylights. This is another fine glass by American-Saint Gobain.

Glazing Contractor—Consolidated Glass Industries Ltd.

*Reg. T.M.—Lic. by Corning Glass Works

The installations and samples pictured here suggest the variety of ways in which American-Saint Gobain glasses can contribute to your plans. Every important type of flat glass—in the widest range of characteristics, sizes and designs—is available to you from this one source.

For detailed information, see the following Sweet's files: *Architectural:* 7a/Am . . . 16d/Am . . . 3e/Am. *Industrial Construction:* 6a/Am . . . 3b/Am. *Light Construction:* 2e/Am. *Plant Engineering:* 5b/Am.

For other information, call the A-SG office nearest you...or write:

AMERICAN-SAINT GOBAIN CORPORATION,
DEPT. AR-60, 625 MADISON AVENUE,
NEW YORK 22, N. Y.

CREATIVE IDEAS IN GLASS

A few of the hundreds of handsome and functional glasses sheet, rolled, and plate – from the advanced facilities of

AMERICAN-SAINT GOBAIN CORPORATION

District Offices: Atlanta • Boston • Chicago • Dallas • Detroit • Kansas City • Los Angeles • New York

The Record Reports

$5000 Top Award in Reynolds New Student Competition

The American Institute of Architects has announced the creation of a Reynolds Aluminum Prize for Architectural Students, with a top award of $5000 to be divided equally between the winning student and the school. The prize will be administered by the A.I.A. under a program sponsored by Reynolds Metal Company.

Under the program a $200 prize will be awarded to the student in each participating college of architecture who submits the best original design for any type of building component in aluminum. Each school will handle its own judging in any way it chooses. Participants must be third year, fourth year, or graduate students. The winning design from each school will be judged by a jury of three distinguished architects chosen by the A.I.A.

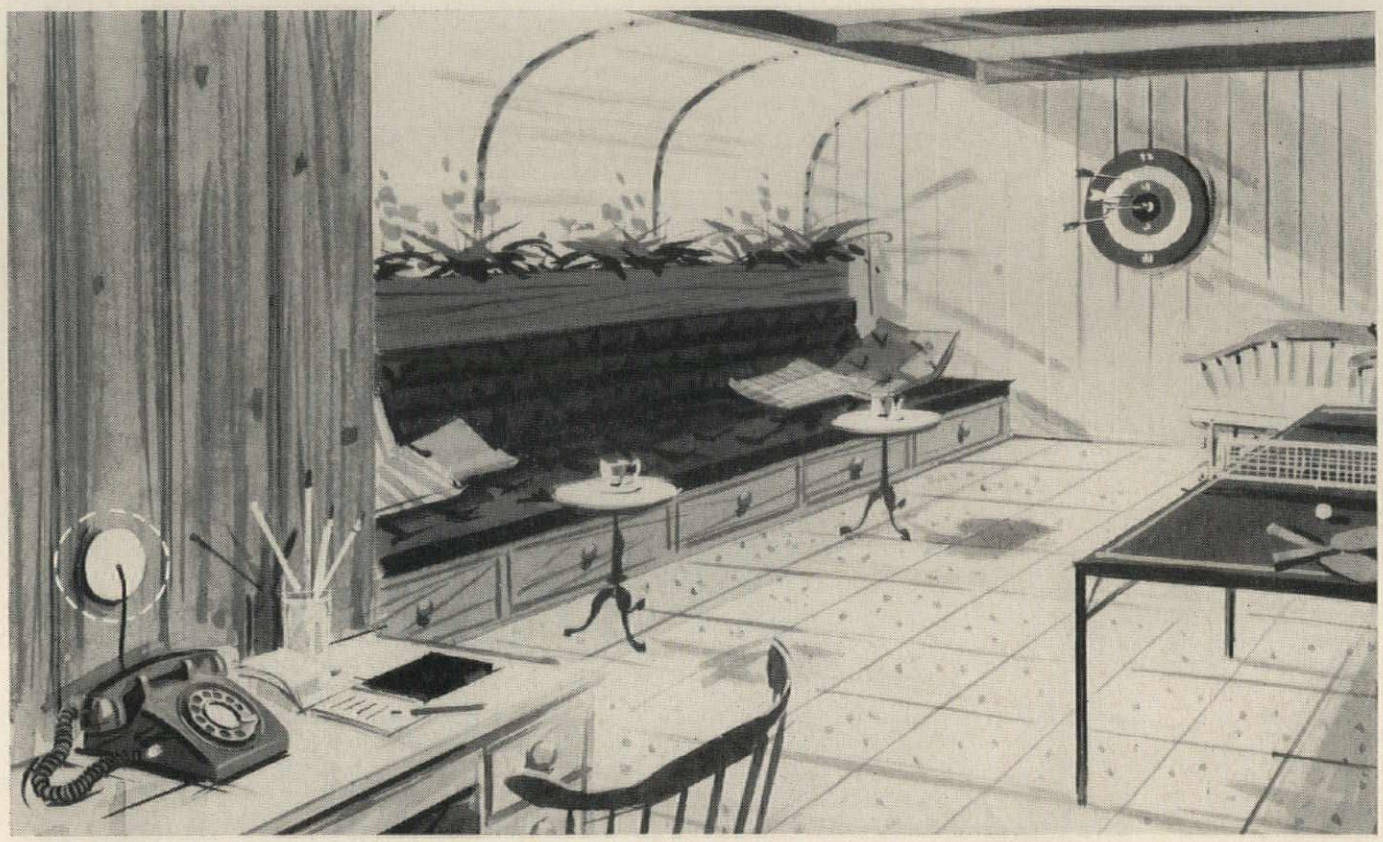
For the initial year's program, each school must complete its judging by Feb. 1, 1961, with winning designs to be submitted to the A.I.A. by Feb. 13, 1961, for the national competition. The national prize will be awarded at the A.I.A. Student Convention in April, 1961 in Philadelphia.

To date, 31 schools of architecture have given formal notice of participation in the prize program.

David P. Reynolds, executive vice president of Reynolds Metals Company, said the student prize was established to encourage creativity and inventiveness in architectural design, and to foster the interest of the nation's future architects in the design potential of aluminum as a versatile building material. "We anticipate that many practical designs suitable for general application in the building industry will result from the program," he said.

This is the second competition for distinguished architectural achievement to be sponsored by Reynolds Metals Company and administered by the A.I.A. The R. S. Reynolds Memorial Award, a $25,000 international award for distinguished design by architects and architectural firms, is now in its fifth year.

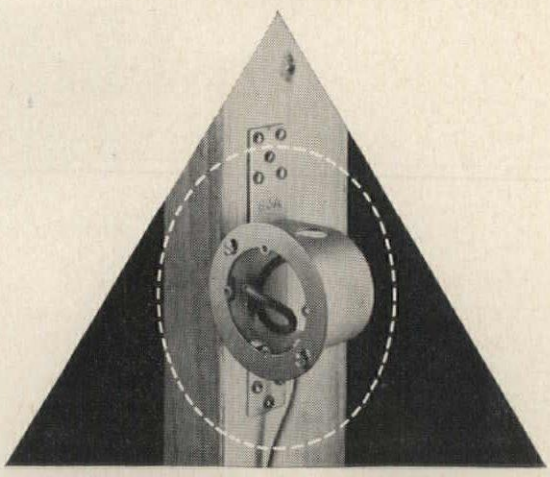
more news on page 234



▲ For details of home installations, see Sweet's Light Construction File, 11c/Be.

TELEPHONE CONVENIENCE

is a recognized need in today's homes. By telephone planning the homes you design, you provide outlets for full service flexibility, keep wiring concealed, preserve interior beauty.



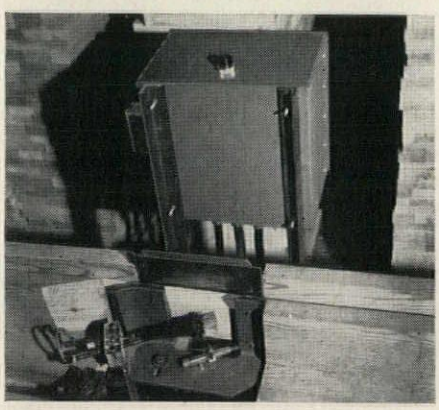
Bell Telephone System

Weyerhaeuser 4-Square Lumber and Plywood make quality count in two important ways

- **Hidden Values that make homes more saleable**
- **Time, material, and labor savings in construction**

When you build with Weyerhaeuser 4-Square Lumber and Plywood, you gain a nationally accepted brand name to show your buyers—and a highly effective "hidden values" sales story. The greater inner core of strength and structural stability that results from kiln-dried framing creates all of these important features:

- Solid, yet resilient floors that will stay smooth and level
- Neat, tight joints on door and window trim, baseboards and mouldings
- Reduced danger of plaster cracking in walls or ceilings
- Tight, draft-free floors, doors, and windows for minimum heating (and air conditioning) cost
- Lower maintenance cost, year after year
- Greater durability—these same features will benefit subsequent owners, thus improve the home's re-sale value.



"Moisture meter" check is an extra quality control.

The extra quality of Weyerhaeuser 4-Square Lumber and Plywood results from three important factors: (1) selective cutting of prime trees in a variety of species from Weyerhaeuser's tree farms and timberlands, (2) extra manufacturing care and skill in modern, well-equipped mills, and (3) continuous research and product testing. Research is aimed at developing new lumber products and improved processing methods which will help you cut labor costs, speed construction, and reduce waste.

Many examples of the way Weyerhaeuser quality works for you can be cited. Scientifically controlled kiln-drying, in addition to other benefits, makes lumber lighter, easier to truck and handle. Eased edges and precisely squared full load-bearing ends improve Weyerhaeuser 4-Square Lumber still further.

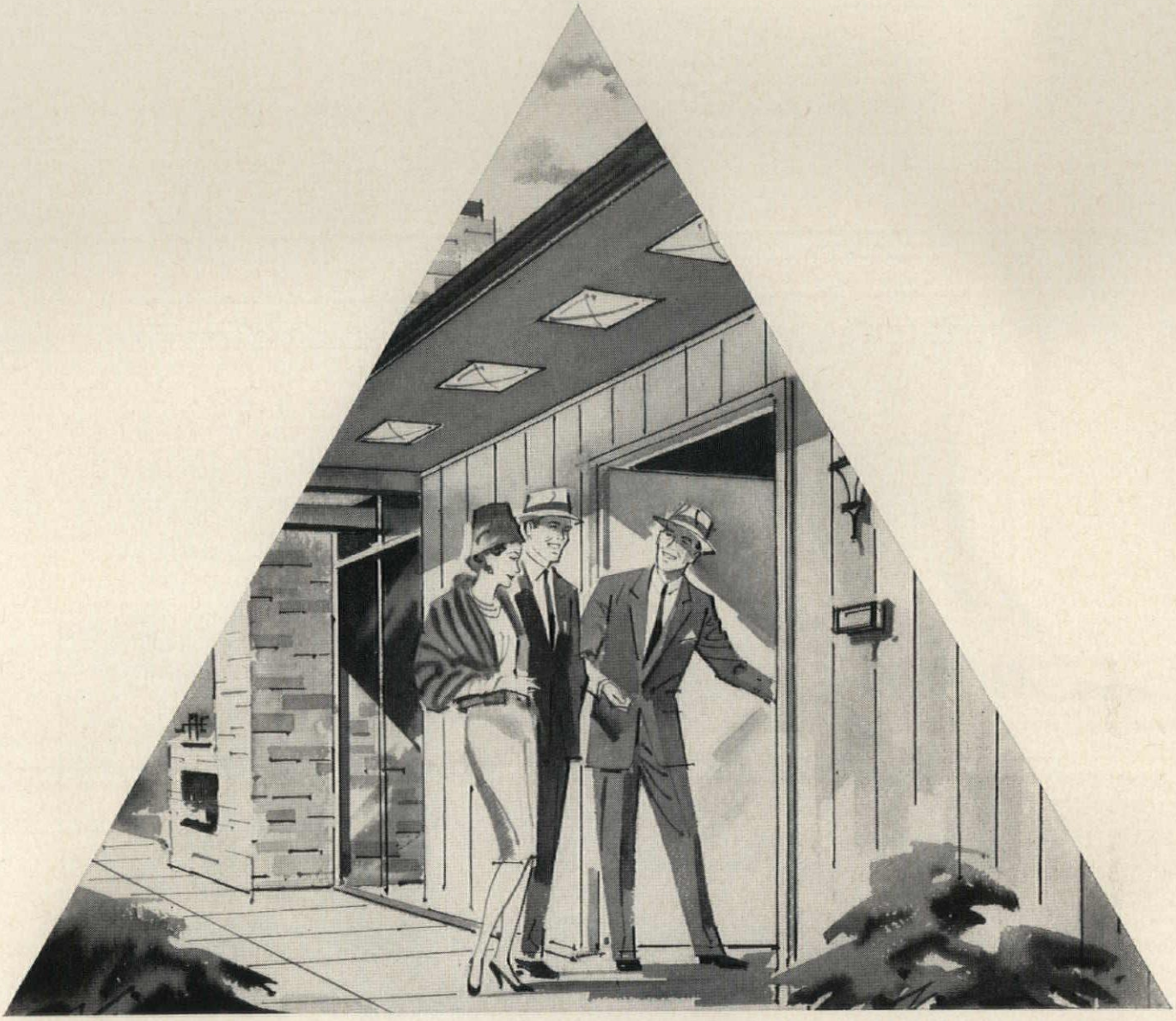
Weyerhaeuser Water Repellent Treatment—frequently specified for siding and trim—provides effective moisture resistance before and after installation, thus allowing greater freedom in scheduling work. It also provides an improved paint base.

Made-to-measure NU-LOC saves time and labor.

Weyerhaeuser 4-Square Nu-Loc is lumber that is made-to-measure in extra wide widths and long lengths. Ordered to exact size, it eliminates waste and costly, time-consuming on-site cutting and fitting.

Weyerhaeuser plywood for roof and sidewall sheathing, helps get framing under cover fast to provide protected storage for other materials, and permit you to keep your crews working regardless of weather.

Whether you've had problems in selling, cost control, or both, you'll find the *quality* of Weyerhaeuser 4-Square Lumber and Plywood can help you overcome them. For further information write: Weyerhaeuser Company, Dept. B-61, Tacoma Building, Tacoma 1, Washington.

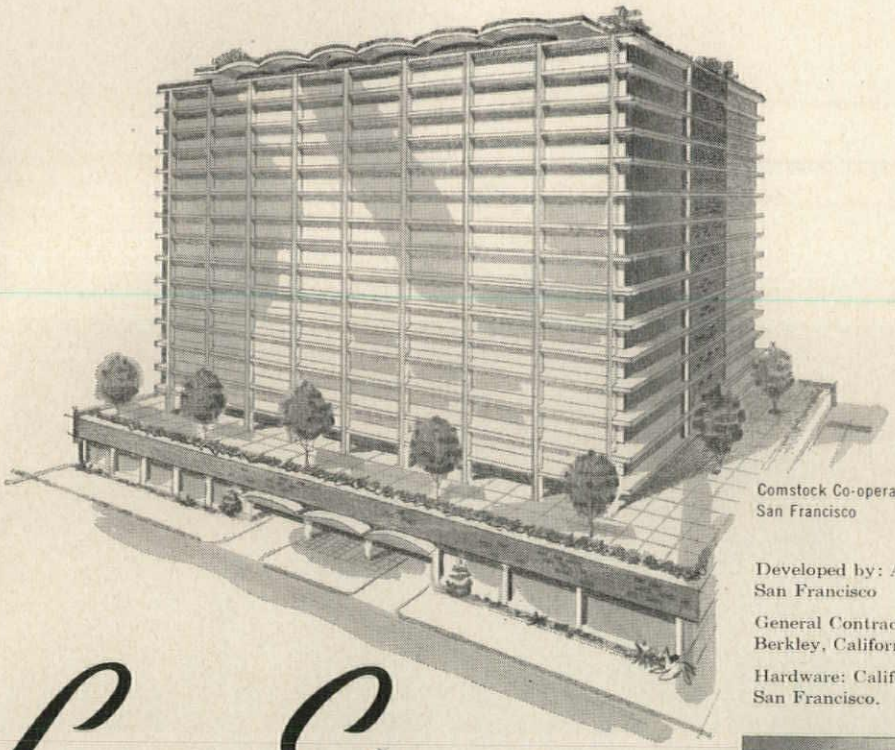


Quality: your key to better building– with savings!

Today, quality features are more important than ever—and they become really effective when they're backed up by the Weyerhaeuser 4-Square trademark—America's best-known name in lumber! When you talk quality, you can put meaning behind it that your clients and prospects understand if you're talking the quality of Weyerhaeuser 4-Square Lumber and Plywood Products. Many of these sales points are explained on the facing page . . . probably you can add many more from your own building and selling experience.

And remember: Weyerhaeuser 4-Square quality works for you in building as well as in selling. The right product, manufactured to precision standards, can often save time and labor costs—even material costs. Savings made this way help stretch building budgets and result in a better finished job. Write today for literature and additional helpful information.

Weyerhaeuser Company
Lumber and Plywood Division



Comstock Co-operative Apartment
San Francisco

Developed by: ALBERT-LOVETT CO., San Francisco

General Contractor: The Pacific Co., Berkley, California.

Hardware: California Builders Hdwe Co., San Francisco.

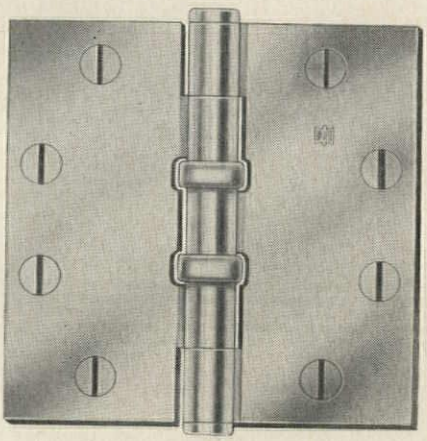
HAGER *Luma-Sheen* FINISH
T. M. REG.

SELECTED FOR NOB HILL $8,000,000 APARTMENT

- **largest, most lavish co-operative apartment west of Chicago**
- **occupying an entire square block on plush San Francisco Nob Hill**
- **LUMA-SHEEN will add the finishing touch of refinement to the Comstock's elegant decor.**

Initiated with the largest loan in San Francisco building history . . . 16 levels . . . 193 apartments, almost all of them balconied with panoramic vistas to the Golden Gate, San Francisco Bay and wooded hills beyond . . . a garden-lobby with porte-cochere . . . a tree-shaded garden sundeck high above city streets . . . all possible mechanical and personal conveniences . . . five penthouses surrounded by five tree-shaded terraces. This is luxury where EVERYTHING HINGES ON HAGER!

Hager LUMA-SHEEN hinges are specified. The original *permanized* aluminum-colored finish, that matches perfectly the modern aluminum door hardware and trim.



Luma-Sheen **finish Available...on Brass or Steel Butts—Specify LS**

Comstock recognition of the beauty and permanence of LUMA-SHEEN finish, caps the climax of 6 years of nation-wide acceptance.

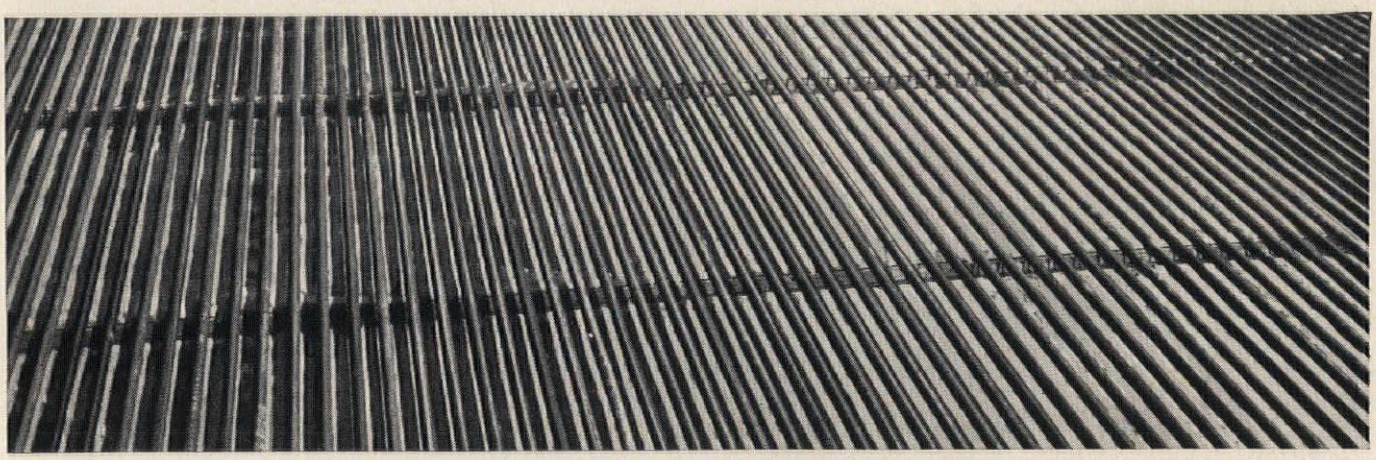
Its electrolytic finish has the true aluminum color . . . *permanized*. It's been proved in practically every conceivable situation.

When you want it to stand up to the test of time—specify Hager LUMA-SHEEN (symbol LS) on that next job!

Hager
EVERYTHING HINGES ON *Hager!* ®

C. HAGER & SONS HINGE MANUFACTURING COMPANY, ST. LOUIS 4, MO.
IN CANADA • HAGER HINGE CANADA LIMITED, KITCHENER, ONTARIO.

New rink in Tonawanda



built with Ammonoduct Steel Pipe

It's the new 85 by 185 ft Brighton Park Arena, Town of Tonawanda, N. Y., built by *Mollenberg-Betz Machine Company, Inc.* Park and Recreation Consultants: *Tryon & Schwartz & Associates.* Consulting Engineer: *William E. Harries.* The 58 tons of Bethlehem 1¼-in. standard black plain end Ammonoduct steel refrigeration pipe was supplied through *Commercial Pipe and Supply Company.*

Steel *for Strength . . . Economy . . . Versatility*

Piping a new ice rink with steel is an easy way to please everyone. Owners find it economical—steel pipe costs considerably less than any other ferrous piping material. Contractors save on installation costs—in double-random lengths, Ammonoduct steel pipe eliminates many field welds; and it can be fabricated *cold* without fracture. Well-designed rinks piped in steel give long, trouble-free service—a boon to rink management.

Make your next rink a pleasure all around—underline it with Ammonoduct steel pipe. Your pipe distributor can give you the complete story. Or call the Bethlehem sales office nearest you.

BETHLEHEM STEEL COMPANY BETHLEHEM PA
Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

G. R. BAILEY, Chairman, Building Planning Service of the National Association of Building Owners & Managers, and President of G. R. Bailey & Company, Chicago.

LOTS OF GLASS! "The very maximum of properly dimensioned windows counts for more in the renting of office space than any other item of efficient design"

. . . is the position of prominent building management executive

"Windowed corner offices frequently command a 15% to 20% premium.

"We know that tenants like windows. Punched windows lack the sales appeal of continuous glass. Windows of continuous horizontal expanse – the kind that stretch from column to column and wall to wall – count for even more today in renting office space, despite the advantages of fine lighting and air conditioning. And the higher rental obtainable more than offsets an increase in cost of air conditioning.

"We approve of glass for spandrels between windows, too – the 'new' appearance of new buildings can be maintained almost indefinitely because glass spandrels, when washed, are as clean and bright as at the time of installation.

"Buildings today are put up to last much longer than their predecessors, so the physical components must be better. Glass is one of the finest and most practical of modern materials.

"I personally like glass corridor doors. They lend an appearance of activity, a sense of being occupied. They give 'life' to long corridors which could otherwise be dull and depressing. And it is far easier and less expensive to handle tenants' lettering when it's on glass panels."

LIBBEY • OWENS • FORD

TOLEDO 1, OHIO

3 KINDS OF PLATE GLASS FOR BUILDINGS

To assure clearer vision from the inside and a richer appearance on the outside, use twin-ground, clear *Parallel-O-Plate*® Glass in windows. For control of sun heat and glare, use *Parallel-O-Grey*® or Heat Absorbing Plate. *Parallel-O-Grey* is neutral grey in color. Heat Absorbing Plate is pale bluish-green. Both effectively reduce transmission of sun heat to keep interiors cooler, but *Parallel-O-Grey* is more effective in reducing glare.

THERMOPANE® INSULATING GLASS

For maximum comfort and for heating and air-conditioning economy, use *Thermopane* insulating glass in windows. Heat loss is cut in half, compared with single glazing. Drafts near windows are reduced. Outside noises are muffled. *Parallel-O-Grey* or Heat Absorbing Plate can be used in the outer pane of *Thermopane* for even greater building operating economies.

VITROLUX® SPANDREL GLASS

Rich color, fused to the back of this clear, heat-strengthened plate glass, adds youthful beauty and cheerful character to any structure. It is resistant to weathering, crazing and checking. Sixteen standard colors, plus black and white. Also in nonstandard colors subject to manufacturing limitations.

TUF-FLEX® DOORS

Made of ½" thick or ¾" thick tempered plate glass, they are 3 to 5 times tougher than regular plate glass of the same thickness. Sixteen types in finished sizes up to 48" in width and 108" in height. *Tuf-flex* Doors are furnished complete with cast bronze or anodized aluminum fittings which are designed to take standard pivot hinges and builders' hardware.

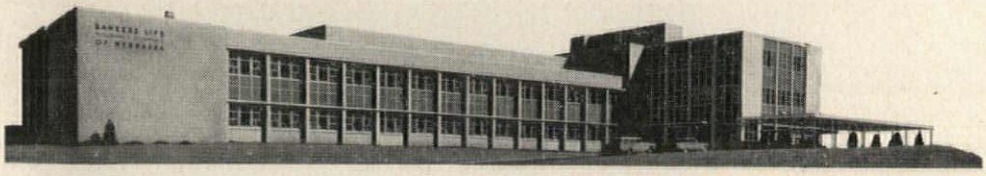
For information on these L·O·F products, refer to Sweet's Architectural File 26-A, or call your L·O·F Distributor or Dealer (listed under "Glass" in the Yellow Pages). Or write to L·O·F, 41120 Libbey·Owens·Ford Building, Toledo 1, O.

TYPICAL L·O·F INSTALLATIONS

TIME & LIFE BUILDING, New York. Approximately 150,000 sq. ft. of *Parallel-O-Plate*. Architects: Harrison & Abramovitz & Harris.

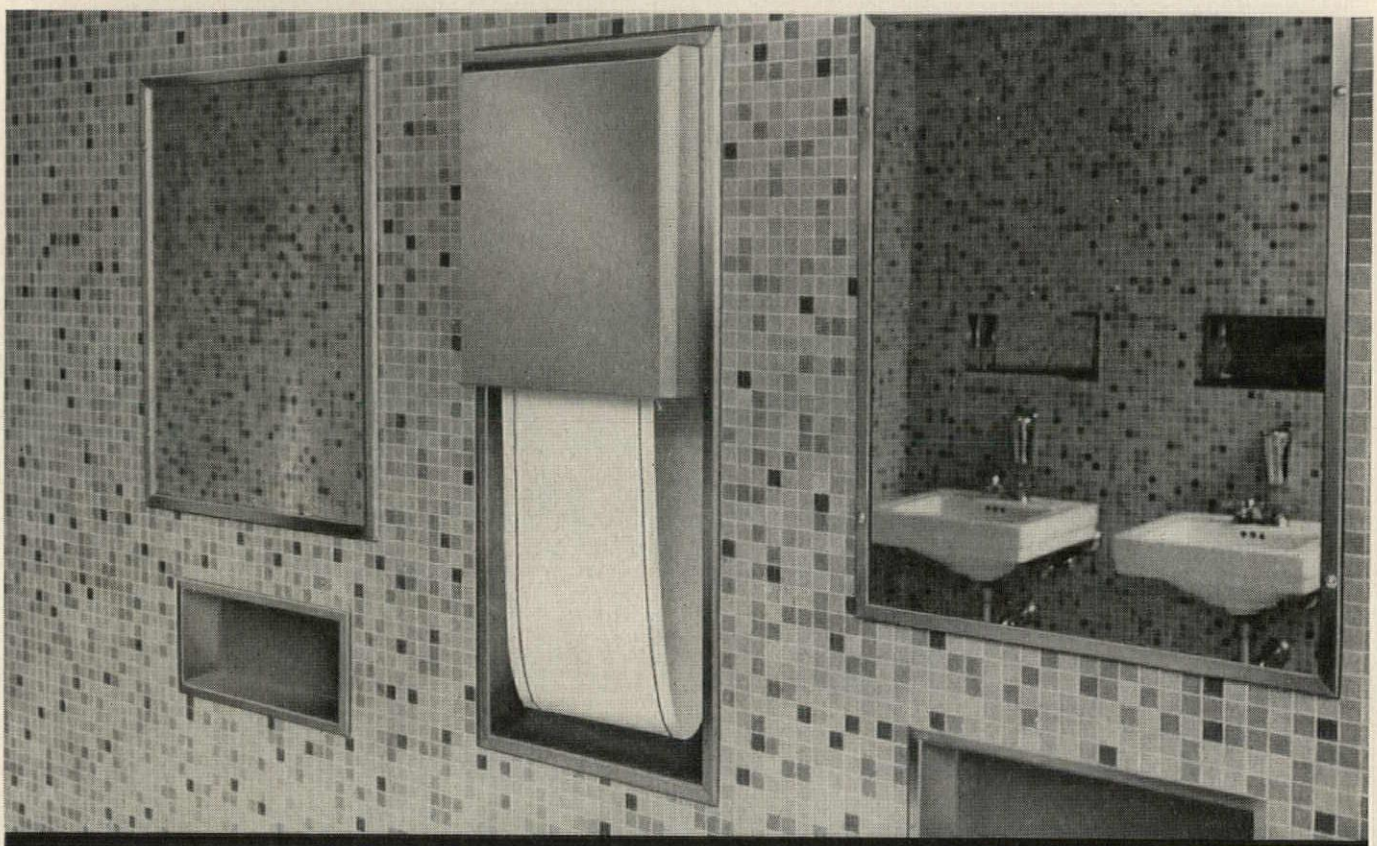
NORTON BUILDING, Seattle, Wash. *Parallel-O-Grey* and *Vitrolux*. Architects: Bindon & Wright, Seattle and Skidmore, Owings & Merrill.

L O F GLASS

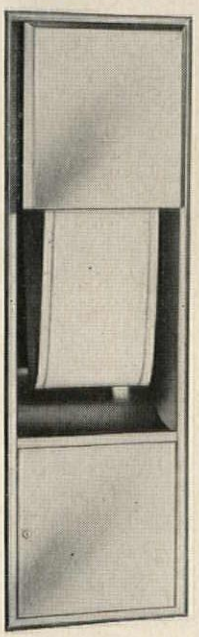


Bankers Life Insurance Company of Nebraska, Lincoln. Architects: Unthank & Unthank. Consulting Architects: Shreve Lamb & Harmon. Serviced by Sanitary Towel & Laundry, Lincoln.

Thoughtfully planned throughout...



...including Cloth Towel Cabinets in the washrooms!



Good design is apparent in this handsome building. And it extends to the small but important details, too . . . like the attractive, functional towel cabinets, for example.

When YOU specify continuous cotton towel cabinets for washrooms, you automatically provide your clients with a number of plus values: Lowered janitorial costs . . . fewer plumbing repairs . . . less litter . . . less fire hazard. So plan for continuous towel cabinets. Your local Linen Supplier will install the units and keep them supplied with fresh, real cotton toweling. Yes, specify continuous towel cabinets for the job on your board right now . . . your clients will appreciate it.

For complete information, write to Linen Supply Association on your letterhead. You'll receive this free, fully illustrated Planning-for-Cloth Kit which includes specifications for recessed and other continuous cloth towel cabinets.

This beautiful recessed unit is but one of the many designs available. It is solidly constructed of 22 gauge, satin-finished stainless steel and carries 50 yards of cloth toweling.

Linen Supply Association of America
and National Cotton Council • 22 West Monroe Street, Chicago 3

YORK Lithium Bromide Absorption System Cools with Steam or Hot Water

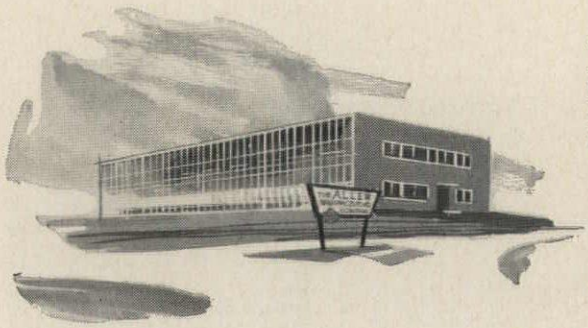
—Uses less pump HP per ton of refrigeration

CAN UTILIZE EXCESS BOILER CAPACITY—Unique system uses existing steam or hot water for economical cooling. Can cut operating costs up to 25% over ordinary motor-driven compressor systems. Refrigerant is plain water, absorbent is lithium bromide.

MORE EFFICIENT FLUID DISTRIBUTION—Advanced method of liquid flow cuts pump horsepower and reduces power costs. It also assures quieter operation, rapid start-up, close control. Fluids are nontoxic, non-explosive, never need replacement.

LOWER INSTALLATION COST—No expensive starters or heavy electrical conduit. Noiseless, vibration-free operation permits installation anywhere from basement to roof without costly foundations. Roof-top location saves piping and pipe shafts.

VIRTUALLY MAINTENANCE-FREE—Except for 3 small pumps and motors, the unit has no moving parts. Operates automatically, easily handles load changes. Steam valve provides simple, direct capacity control. 100 to 740 tons refrigeration.



Another YORK Trail Blazer Concept Proved in Action at *Allen Mfg. Co., Bloomfield, Conn.*—Excess boiler capacity in summer is used to deliver very economical cooling. A 230-ton York Absorption System air conditions the office and cafeteria, and a 170-ton unit chills process water.

YORK

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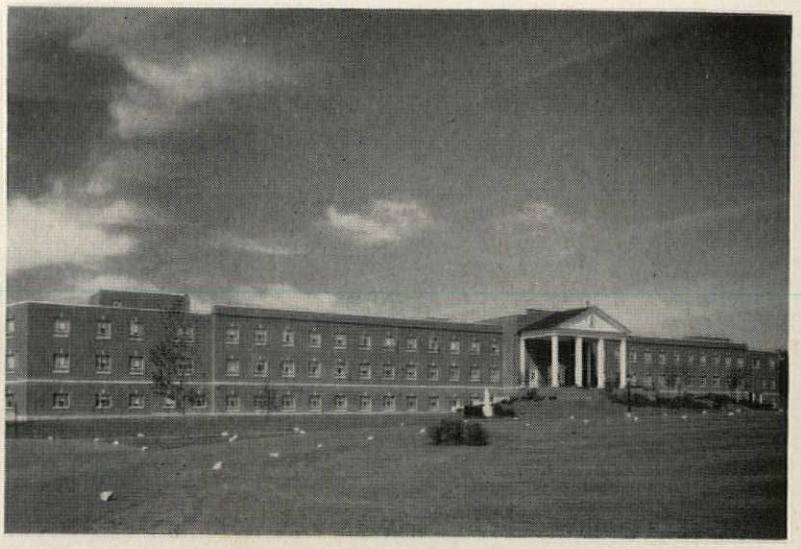
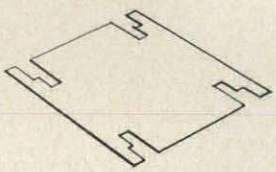
BORG-WARNER RESEARCH & ENGINEERING MAKE IT BETTER

Air Conditioning, Heating, Refrigeration and Ice-Making Equipment • Products for Home, Commercial and Industrial Applications



Architect: Polak & Sullivan, New Haven, Connecticut.



7¢ clip protects $200,000 plaster job at new Mercy Knoll Convent

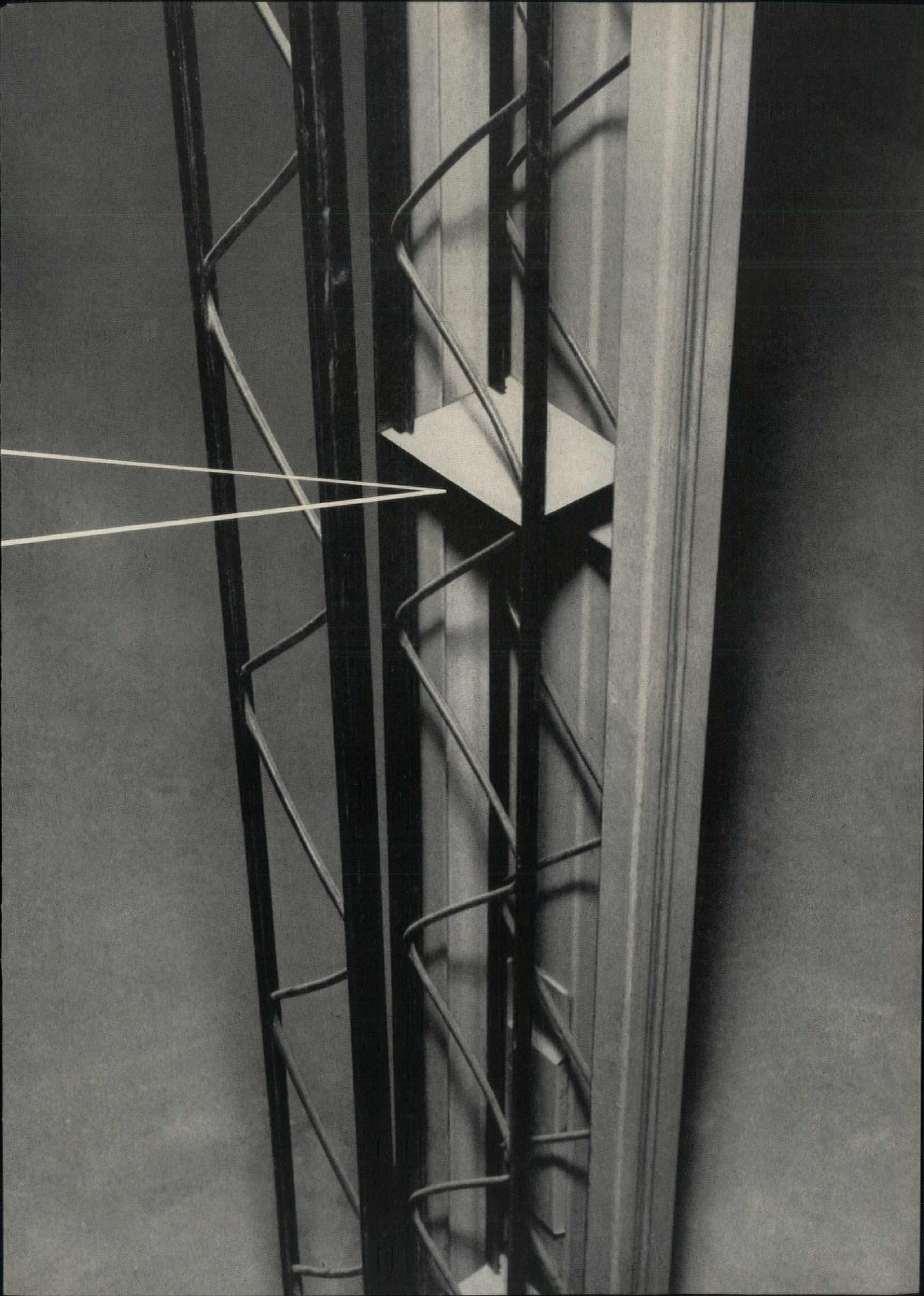
There are over 425 doors in the new Mercy Knoll Convent in New Haven, Connecticut. That's why the alert architect specified the Gold Bond Holostud System with its exclusive Column Clips. These ingenious clips fasten two studs together, forming a rigid four-cornered column adjacent to the door buck. It absorbs door-slamming vibrations and helps reduce plaster cracking around doors. The clips cost only a few cents a door, and can make the difference between a high quality plastering job and a poor one.

There are lots of other interesting features to the versatile Holostud® System. Ask your Gold Bond® Representative about them, or write Dept. AR-1260 for samples and technical information.

NATIONAL GYPSUM COMPANY, BUFFALO 13, NEW YORK

a step ahead of tomorrow

Gold Bond
BUILDING PRODUCTS



THE REAL TRUTH about SAVING CLIENT MONEY!

"It costs the taxpayer almost as much each year to run school buildings as it does to acquire them . . . upkeep costs have been largely taken for granted . . . A ten percent reduction in these costs is almost as important to the taxpayer as a ten percent reduction in the cost of the building."

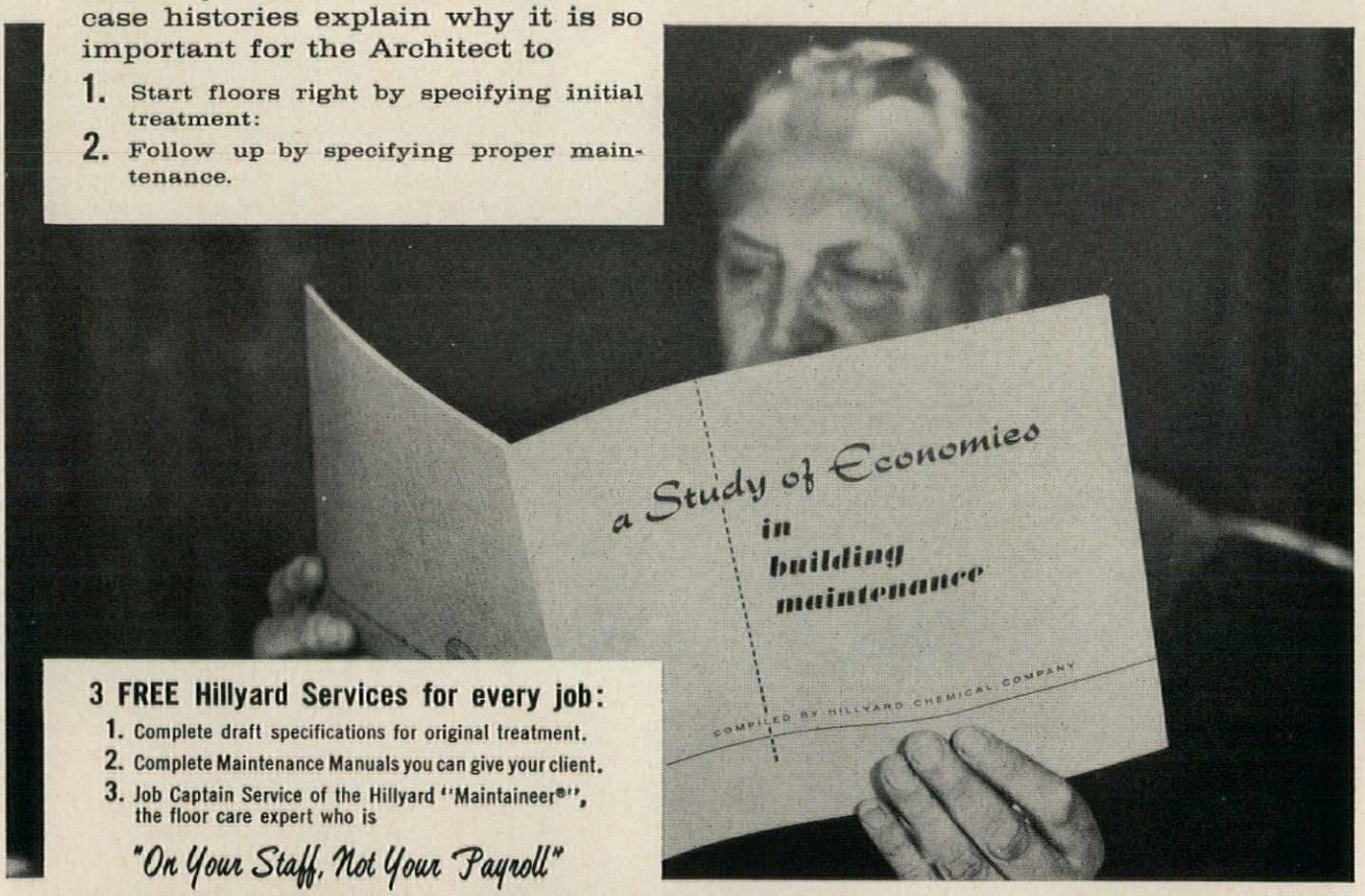
From a study made for the New York Dept. of Education by the faculty of the School of Architecture, Rensselaer Polytechnic Institute.

Read Hillyard's new Study of actual case histories for the answers to economy of floor maintenance. These case histories explain why it is so important for the Architect to

1. Start floors right by specifying initial treatment:
2. Follow up by specifying proper maintenance.

Contrary to opinion of all too many building owners, there is no economy in "cheap" floor maintenance products. Pennies saved here mean dollars lost in higher labor expense for floor re-treatment and maintenance – and, perhaps, permanent damage to expensive flooring.

If, without your guidance, the client guesses and guesses wrong, he will be the loser. So will your building. Write today for your Free copy of "A Study of Economies".



3 FREE Hillyard Services for every job:

1. Complete draft specifications for original treatment.
2. Complete Maintenance Manuals you can give your client.
3. Job Captain Service of the Hillyard "Maintaineer®", the floor care expert who is

"On Your Staff, Not Your Payroll"

THE BEST PROTECTION FOR YOUR FLOORS IS THE BIGGEST SAVING FOR YOUR CLIENT

PRODUCERS COUNCIL

IN SWEET'S ARCHITECTURAL FILE

H I L L Y A R D

Passaic N. J. ST. JOSEPH, MO. San Jose, Calif.

Dept. A-2

You'll Both be Ahead with

HILLYARD

Branches and Warehouse Stocks in Principal Cities

WHY does an architect recommend three Drive-in Windows for a bank that will be surrounded by 1500 parking places? Here, in the words of L. H. Skeen, President, Inter City National Bank, Bradenton, Florida, is one of the answers.

"Parking a car is simple. But, *you can't park kids.* Our Mosler Drive-in Windows get a lot of use by all our customers but particularly by ladies who have young children to worry about...children who can't be parked yet are hard to manage on foot. Of course, there are also the obvious advantages of drive-in banking: the sheer convenience of doing business from your car; staying dry on rainy days; and in downtown areas, drive-in banking is the only answer to the parking problem."

Why most architects choose Mosler

Whenever an architect recommends Mosler equipment, he's sure of these three things: One, Mosler equipment will be the last word in modern design and appearance. Two, the equipment will be completely efficient, and practically maintenance-free. Three, Mosler's highly trained technical people will be at his service. These people are available for consultation on specifications and other problems connected with the design of protective and service equipment for banks. Mosler's "The Key to Auto Banking" booklet has been prepared for your convenience. Just write to address below.

The Mosler Safe Company

World's Largest Builder of Safes and Vaults

320 Fifth Avenue, New York 1, N. Y.

New "standards"

Also available in electronic dual-element type

Typical subbase neatly accommodates control switches

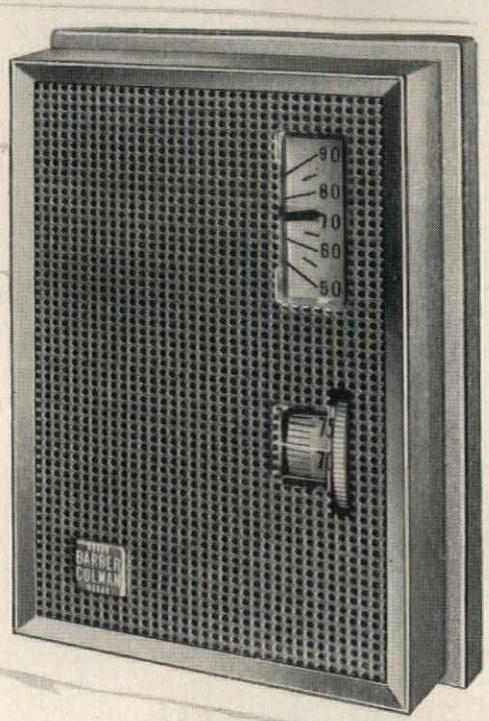
Accessory kit modifies thermostat to prevent tampering

Literature

See our exhibit
Booth No. 506-508
International Heating &
Air Conditioning Exposition
Chicago, Feb. 13-16.

in room thermostats

Broad new line of room thermostats includes standard catalogued variations to meet every requirement



Now a broad new line of versatile room thermostats is offered by Barber-Colman to meet every requirement. You can select the exact thermostat you need from a very wide range of basic styles—all are *standard* items—all are *completely catalogued* for your convenience.

24-120-240 volts. There are light-duty models for on/off control of relays, solenoid valves, and other pilot-duty applications—medium-duty models for control of heaters, motors, and other heavier load applications. Both types conveniently operate on low or line voltages (24, 120, 240) as required. Room microtherm models provide proportional control of Barber-Colman motor-operated valves, damper motor operators, and sequence controllers.

Night depression—heat anticipation. All thermostats in this versatile new line are available with resistance heaters for night depression or heat anticipation. Perforated faceplates permit unrestricted air circulation for maximum temperature sensitivity. A clear plastic cover protects the wide-scale temperature dial. Graduations are easy to read—there is a mark for each degree. A precision bimetal thermometer clearly indicates a room temperature from 50° to 90°. The sturdy bakelite base has large screw-type terminals. Standard finish is champagne gold, but a polished chrome cover frame with a bronze perforated metal insert is also available.

Add-on construction. Easily added matching subbases that neatly accommodate a wide variety of manual switches contribute to the versatility of the new line. The switches are SPDT types with or without center "off" position for such functions as: switching from heating to cooling control, day-to-night control, or automatic to full "on."

Cover kits. A lock cover screw kit will modify these thermostats to prevent tampering. Guards are available for protection from external damage in auditoriums, gymnasiums, and factories, as well as special fittings for use with exposed conduit.

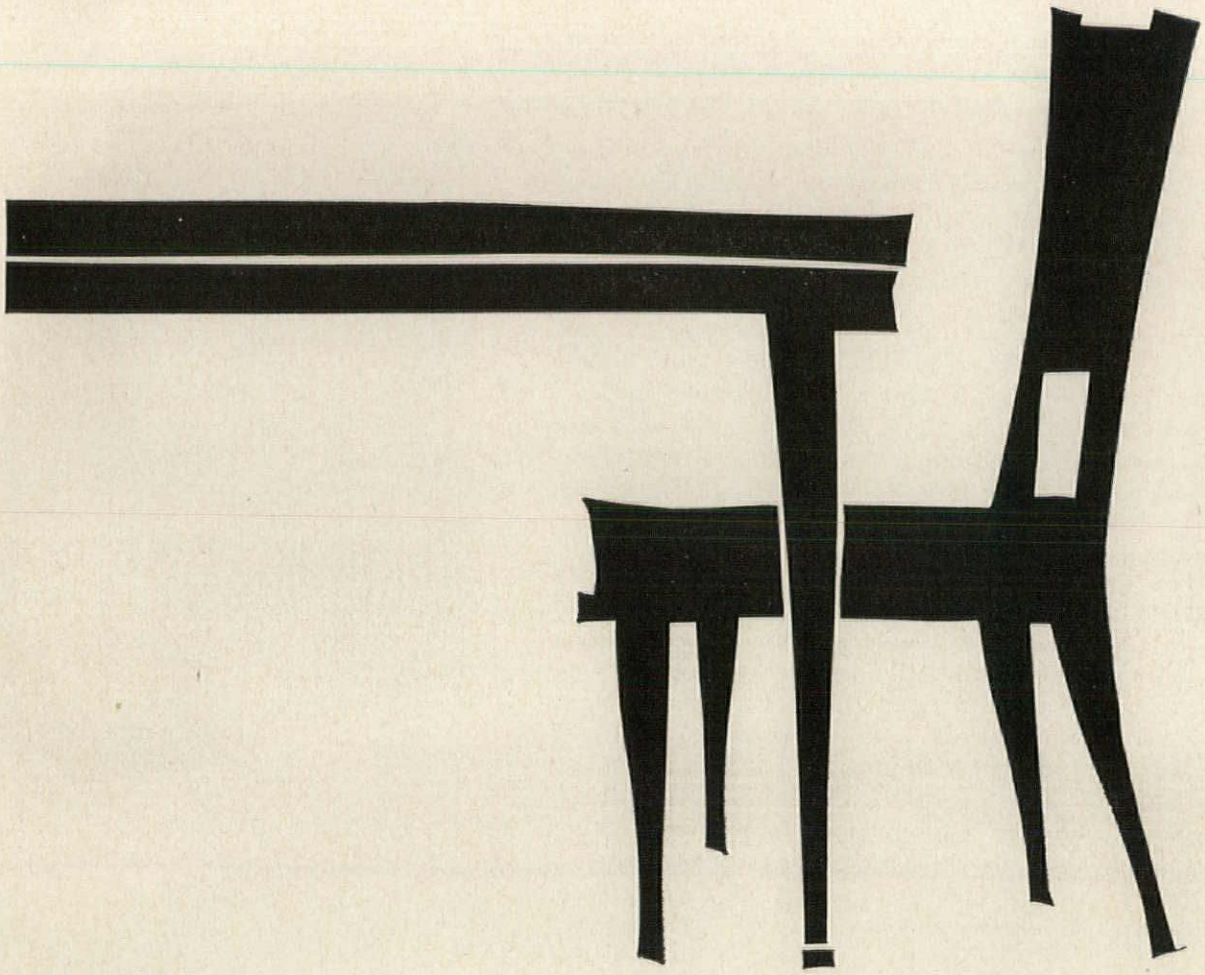
Next time you specify room thermostats, select the exact models you need from the broad new Barber-Colman line. Be assured of quality, installation ease, and sensitive, reliable operation.

Ask for Bulletin F-10201. Call your local Barber-Colman Automatic Controls office or write:

BARBER-COLMAN COMPANY
Dept. L, 1304 Rock Street, Rockford, Illinois

BARBER COLMAN

KEEP PACE WITH ELECTRICITY



DESIGNING A BANK? SAVE A CHAIR AT THE PLANNING TABLE FOR A LeFEBURE MAN

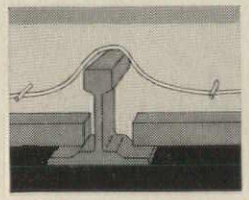
Expansion planning requires a team of talents. The banker's for goals, functional details and supervision. Yours for structural, decorative and contracting details. And LeFebure's for the most profitable equipment and systems. You're time and money ahead when you take advantage of LeFebure's Architects Service Division. For details of this free service, write: LeFebure Corporation, Cedar Rapids, Iowa.

LeFebure®

Bank systems and equipment

LeFebure is a subsidiary of Craig Systems, Incorporated

Another gypsum roof deck, poured in '27 and still in good shape today!



That's the kind of long and trouble-free service you can expect from a Gold Bond Poured Gypsum Roof Deck. The natural advantages of gypsum have long been recognized by leading architectural and engineering societies, which set up high standards of design for its use in roof decks. Poured gypsum decks have fireproofing qualities that give endurance ratings up to two hours; application is easy and fast (an experienced crew can pour up to 20,000 feet a day); the finished deck is light and strong.

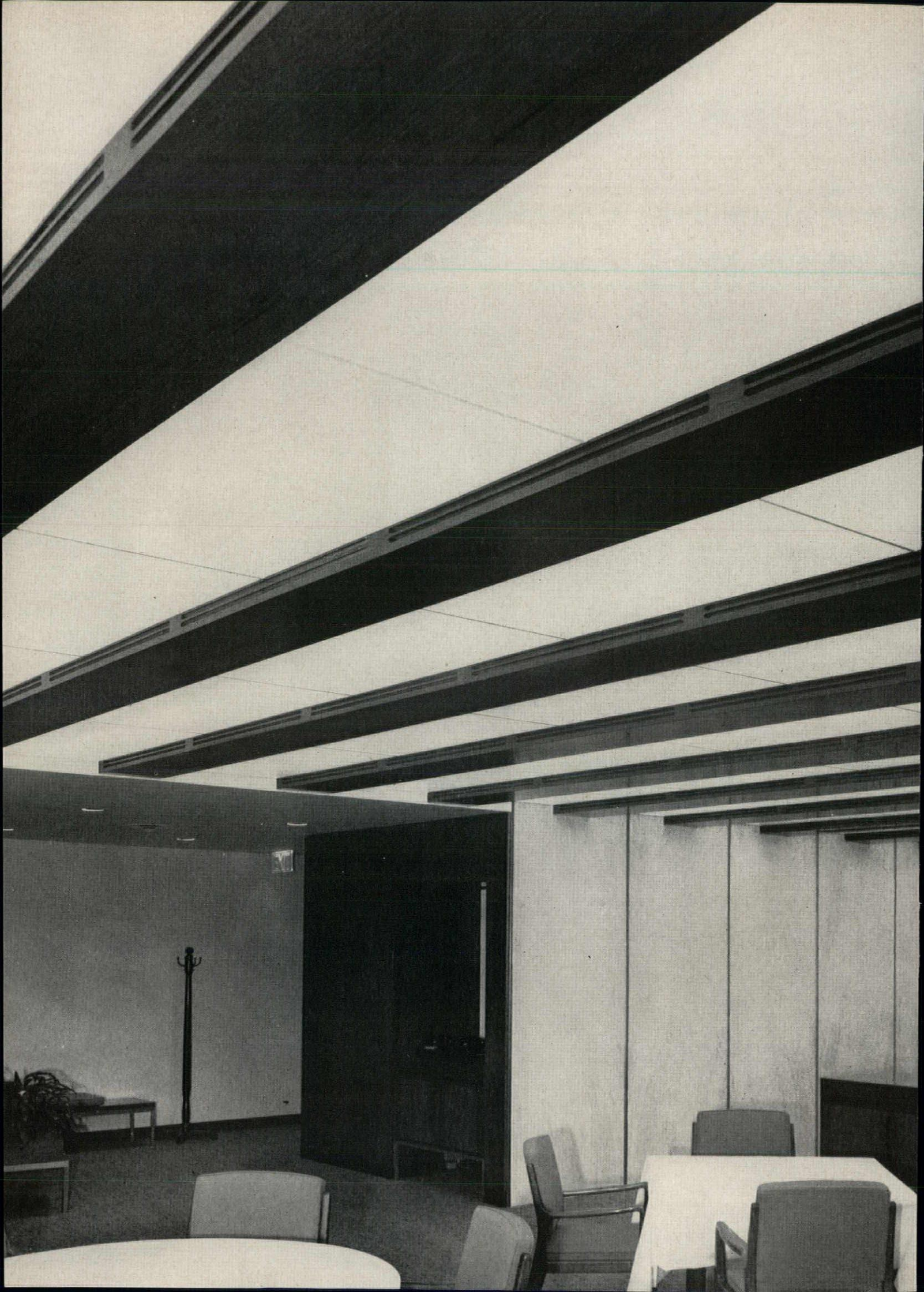
You'll like these advantages of a gypsum deck, too. Ask your Gold Bond® Representative for full information, or write Dept. AR-1260 for free samples and literature.

NATIONAL GYPSUM COMPANY, BUFFALO 13, N. Y.

Gold Bond
BUILDING PRODUCTS

a step ahead of tomorrow

Gypsum deck poured in 1927 still gives the Cincinnati Music Hall faithful service today.



Panels cast from Du Pont MONOCITE* provide soft, natural lighting in new Prudential Plaza Building

The Plaza Building of Prudential Life Insurance Company of America, 736 Broad Street, Newark, New Jersey. Architects: Voorhees Walker Smith Smith & Haines, New York. Interior Architectural Designers for area shown: Maria Bergson Associates, New York, N. Y. Installation: Beach Electric Co., Inc. and Lightning Electric Service Company, East Orange, New Jersey.

Lighting shield panels made by CAST OPTICS CORPORATION Hackensack, N. J.

In the executive dining room and in the president's office of the Prudential Plaza Building, light-fixture panels cast from Du Pont MONOCITE assure good, evenly balanced lighting.

Softer illumination, together with freedom from maintenance problems, are given as major reasons for the recommendation of cast acrylic sheets by the interior architectural design firm of Maria Bergson Associates, which designed these areas. In the dining room, the ceiling design involves thirty-inch-wide plastic sheets cast from Du Pont MONOCITE, with wooden beams twenty-four and one-half feet long running between the panels.

The panels, cast by the Cast Optics Corporation, are designed to last the life of the lighting fixtures. They will keep their translucent beauty with only occasional cleaning with soap and lukewarm water.

It will pay you to find out how Du Pont's customers are using Du Pont MONOCITE to produce lighting-fixture shields that assure beautiful, glare-free illumination with a minimum of maintenance. For more information, write: E. I. du Pont de Nemours & Co. (Inc.), Department B-12, Room 2507M, Nemours Building, Wilmington 98, Delaware.

Trademark for Du Pont's methacrylate monomer

POLYCHEMICALS DEPARTMENT

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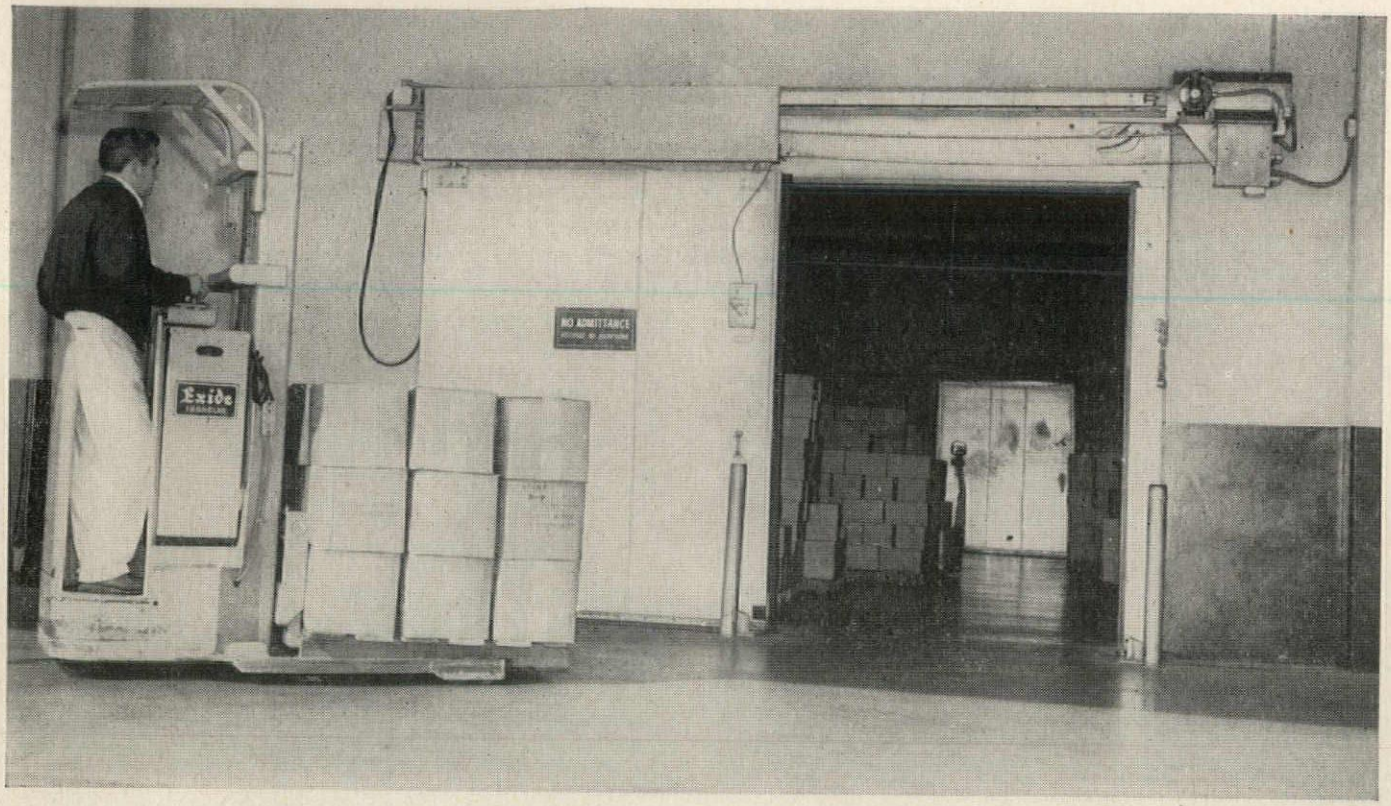
BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*



TIME AND LABOR SAVER. Electroglide remote pull switch allows operator to open door without leaving truck.

Jamison *Electroglide*® Power Doors

stand up under continuous, high volume traffic

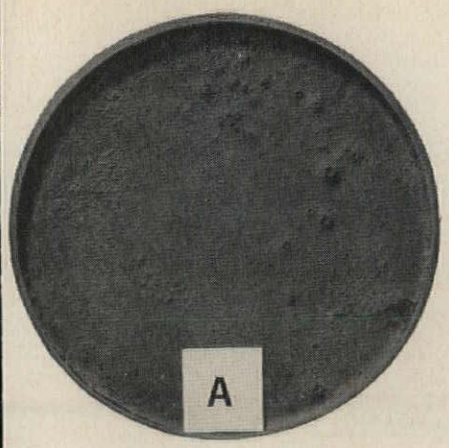
RAPID OPENING AND CLOSING. Fast operation speeds traffic, saves refrigeration. Single leaf and bi-parting doors available to meet varying wall conditions.

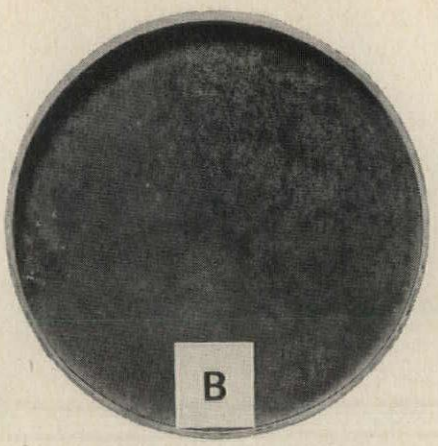
• For ten hours every day, foot and truck traffic speeds through three Jamison Electroglide power-operated cold storage doors at the Wilsey, Bennett Co., Los Angeles, Calif. High volume, heavy traffic operations such as this demonstrate conclusively that Electroglide doors keep traffic moving profitably—and stand up under the most rugged duty.

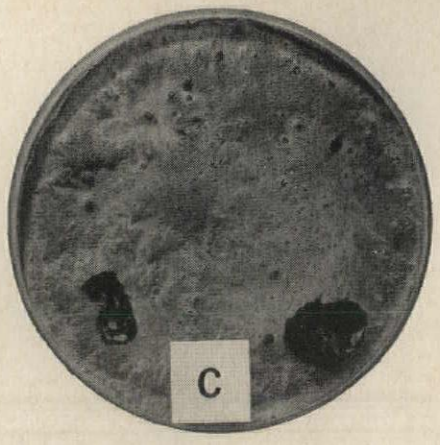
Electroglide reduces operating costs through special features that assure rapid, easy opening, smoother operation, maximum safety, positive sealing and simple, low cost installation.

For complete performance and specification data write for Electroglide Bulletin to Jamison Cold Storage Door Co., Hagerstown, Md.

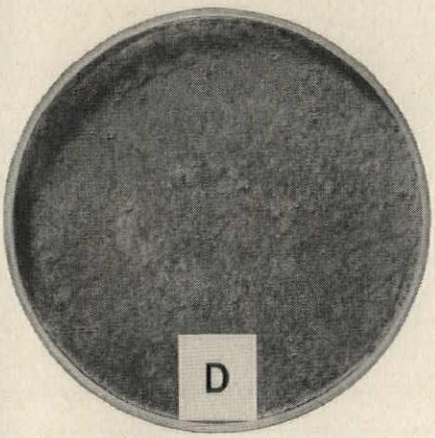
JAMISON
COLD STORAGE DOORS

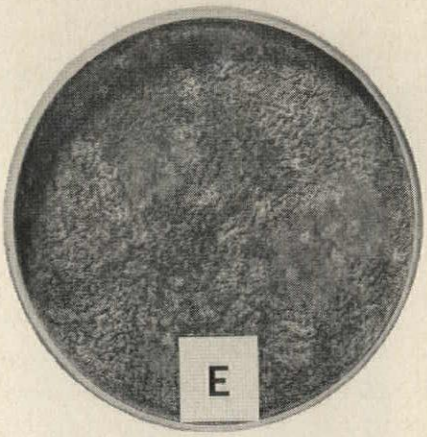


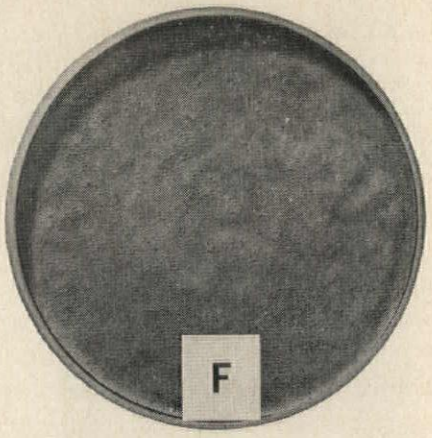




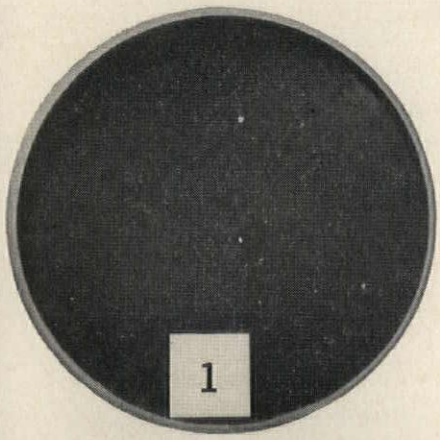
These are not photos of the moon, but unretouched pictures of 9/16"-deep Petrie dish samples of various types of bituminous roofing materials. Prepared in an identical manner, these 5½" diameter dishes were all subjected to 687 days of

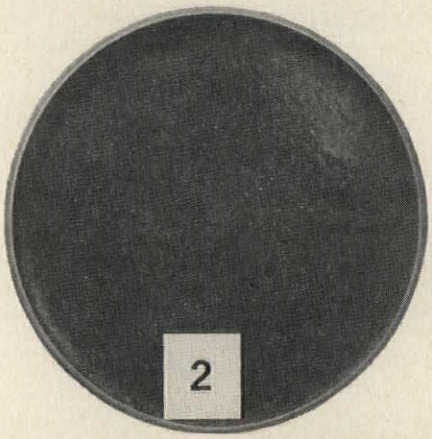


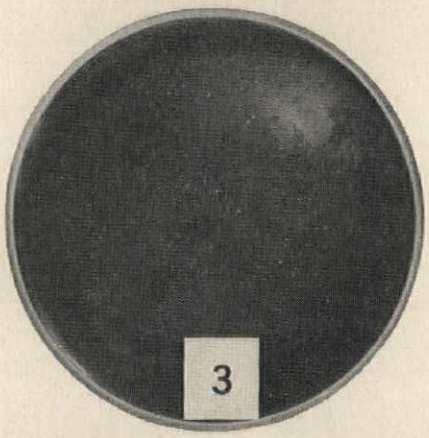


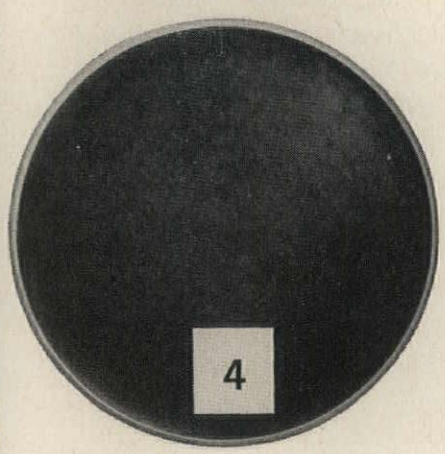


continuous water immersion at 65° F. Periodically, they were removed from this bath and weighed: the six samples (A-F) shown above had soaked up, on the average, 11 times









the weight of water that the four samples (1-4) of Koppers Coal Tar Pitch had. Water exposure is an inevitable condition for flat, built-up roofs and it's easy to see that the numbered coal-tar pitch samples withstand this exposure better than the lettered non-tar specimens. This superior waterproofness is one important reason for the unequalled service life of coal-tar pitch roofs. May we tell you more?

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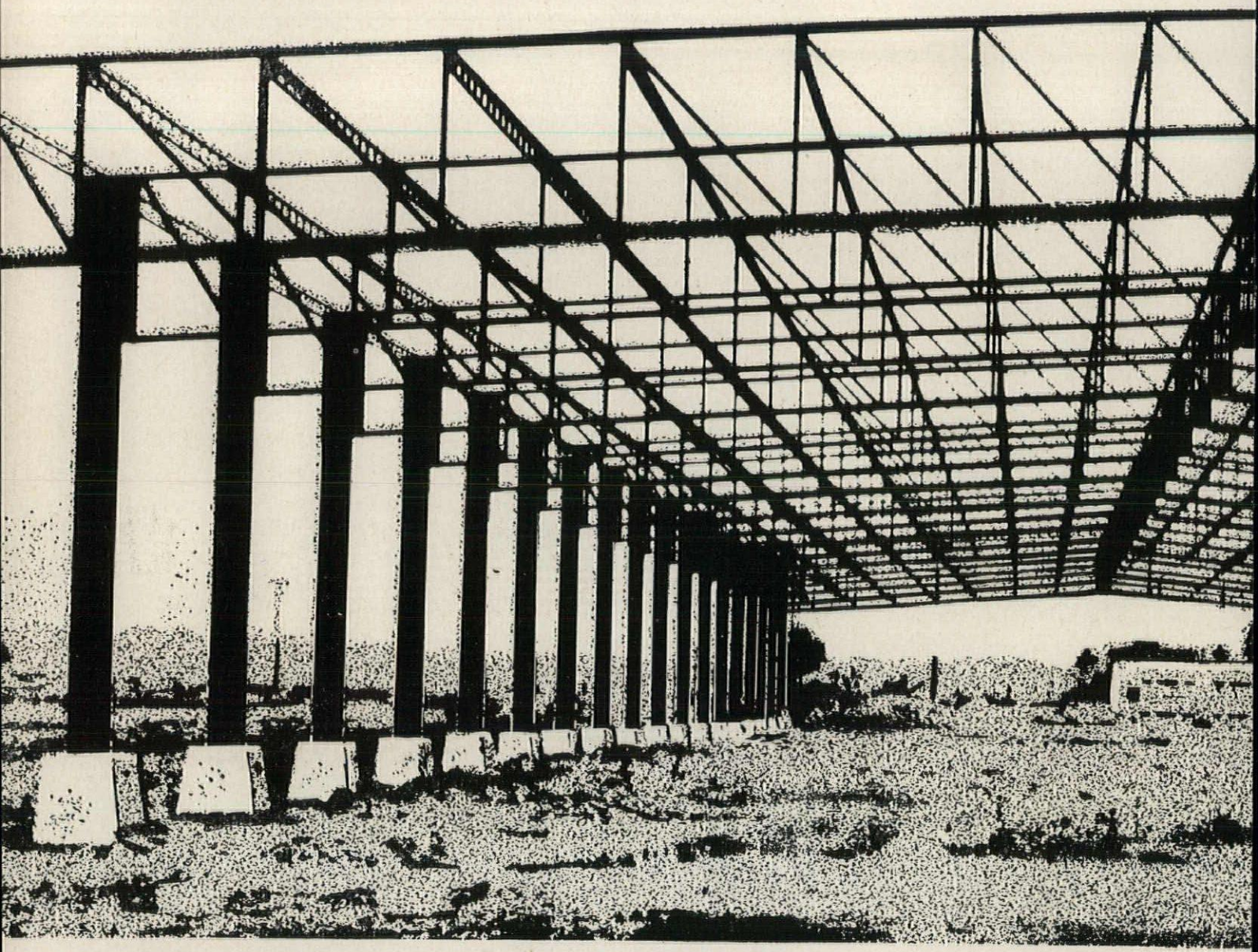
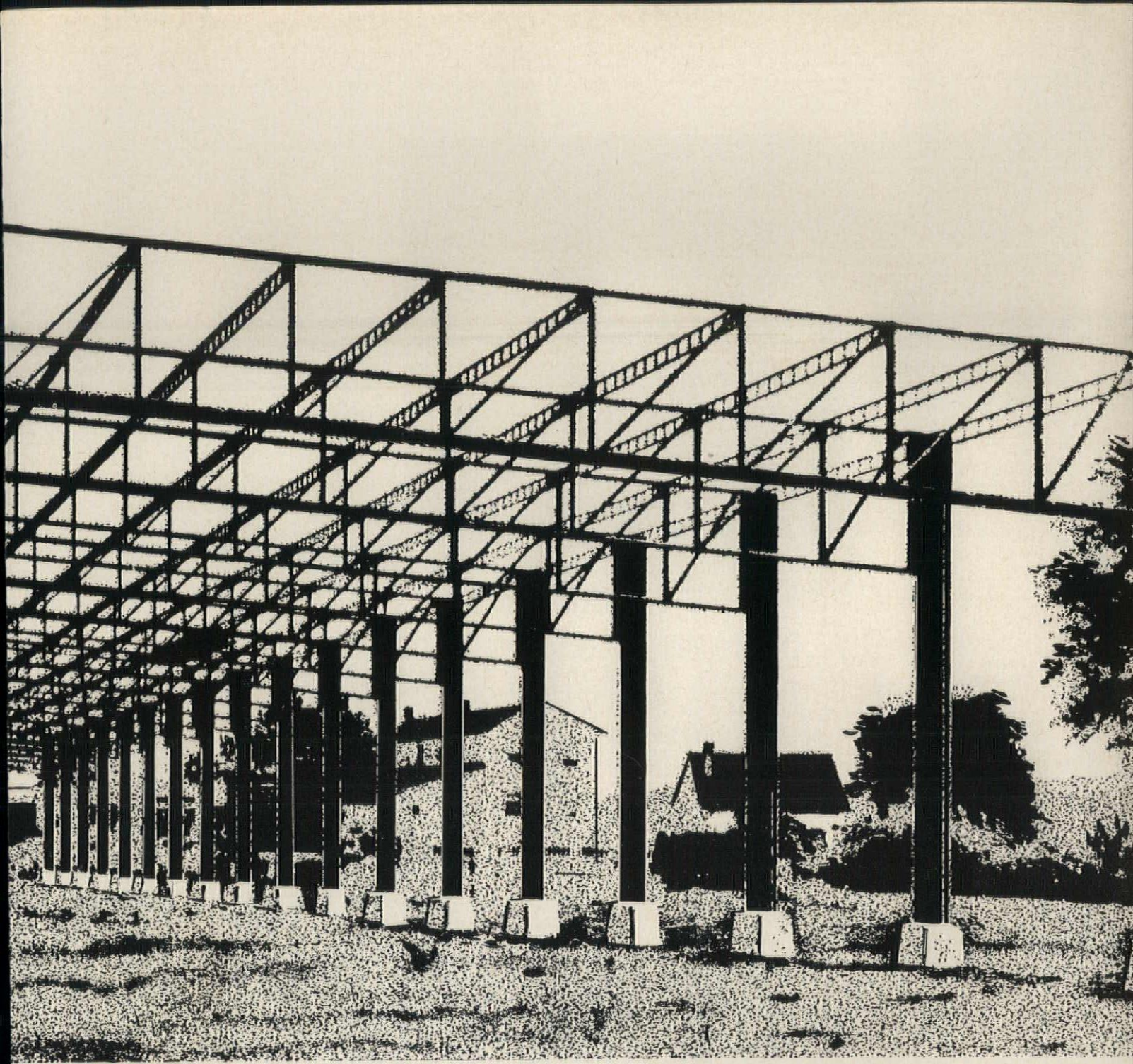


Steel pipe building frames make a strong structure lighter

Swiss Fabricating, Inc., of Pittsburgh, Pa., saves money for customers by using USS National Butt-Welded Steel Pipe for low-cost, quickly-erected building frames. This particular building will house an automobile sales agency consisting of a show room, parts and service departments and a body shop. The building is 350′ long with 80′ clear span steel pipe trusses.

Steel pipe is strong, yet it's light enough to cut the weight of a structural frame by approximately one-third. In a test performed on a 60′ clear span building designed to support 65 pounds per square foot roof load, a load of more than 182 pounds per square foot was safely handled through uniform loading. Deflection at



the peak was $2\frac{3}{16}$".

Because steel pipe is light-weight, shipping costs are low. It also cuts maintenance costs, because there's less surface area. Less to clean. Less to paint.

USS National Butt-Welded Steel Pipe is ideal for many structural applications in buildings such as: trusses, columns, posts, scaffolds, towers, frames. It is available in sizes ½" thru 4" from your local National Tube Distributor.

For additional information, write National Tube Division, United States Steel, 525 William Penn Place, Pittsburgh 30, Pa. Ask for Bulletin #2, entitled "Pipe for Mechanical and Structural Applications."

USS and National are registered trademarks

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SACRED HEART RESIDENCE FOR THE AGED
PHOENIX, ARIZONA

Architect: Lescher and Mahoney, Architects and Engineers Ltd.
General Contractor: Wm. Peper Construction Co.
Lathing and Plastering Contractor: Allen R. Smith Plastering Co.
Distributor Penmetal Structural Framing: C & R Distributing Co.
Dealer Penmetal Lath Products: Arizona White Eagle Stucco Co.

Another architect selects Penmetal products for quality... permanence... economy

Faced with the problem of achieving construction excellence at reasonable cost, the designers of Sacred Heart Residence for the Aged turned to Penmetal products. Partitions throughout were erected using Penmetal nailable studs and plaster over Meshtex lath. This combination provided the privacy so essential in a building accommodating 150 people, while assuring fire integrity and freedom from maintenance. Penmetal's unique expansion joint was used to panel ceilings for protection against plaster cracking as well as a work stop for plasterers.

Builders everywhere are finding it profitable to use Penmetal as a single source for a variety of building products and plastering accessories. If you are interested, send for catalog SS-38 *"Penmetal Structural Framing"* and catalog 633-L *"Metal Lath and Plastering Accessories."*

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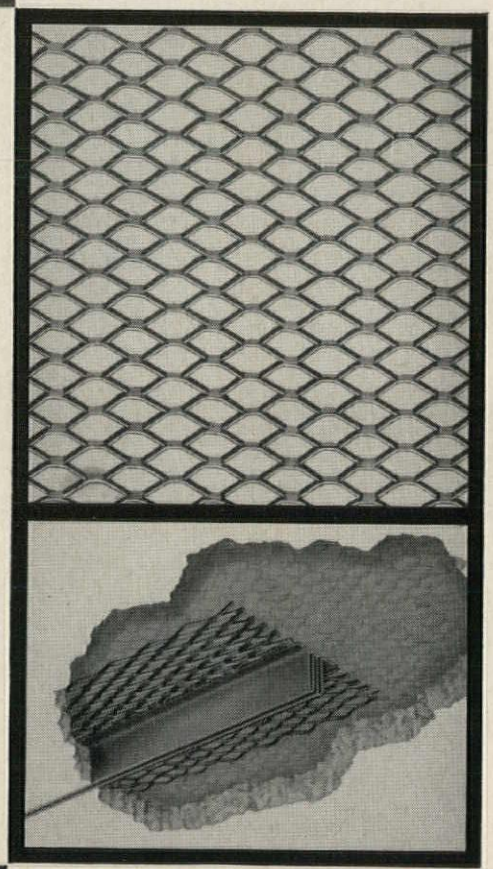
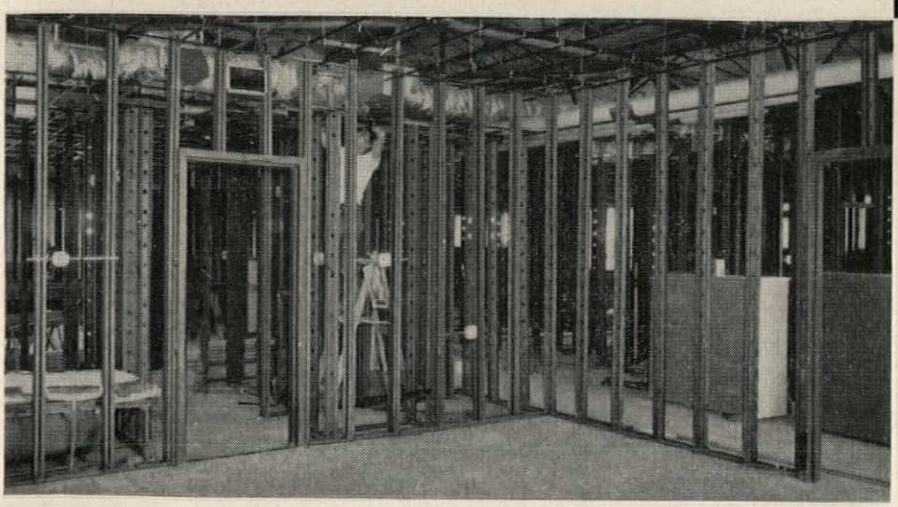




Above: Penmetal Meshtex lath and plasterer's expansion joint—two of the many Penmetal products used in the building. **Left:** Penmetal nailable studs were used for all interior partitions, and Penmetal channels for the suspended ceilings.

METAL MARK Penmetal 1869 OF QUALITY

a name to remember

PM-267

ARCHITECTURAL RECORD DECEMBER 1960

INSIDE OUT OFFICE BUILDING

In the Massachusetts Blue Cross–Blue Shield Headquarters Office Building in Boston, architects Paul Rudolph and Anderson, Beckwith and Haible put the mechanical ducts outside the structure.

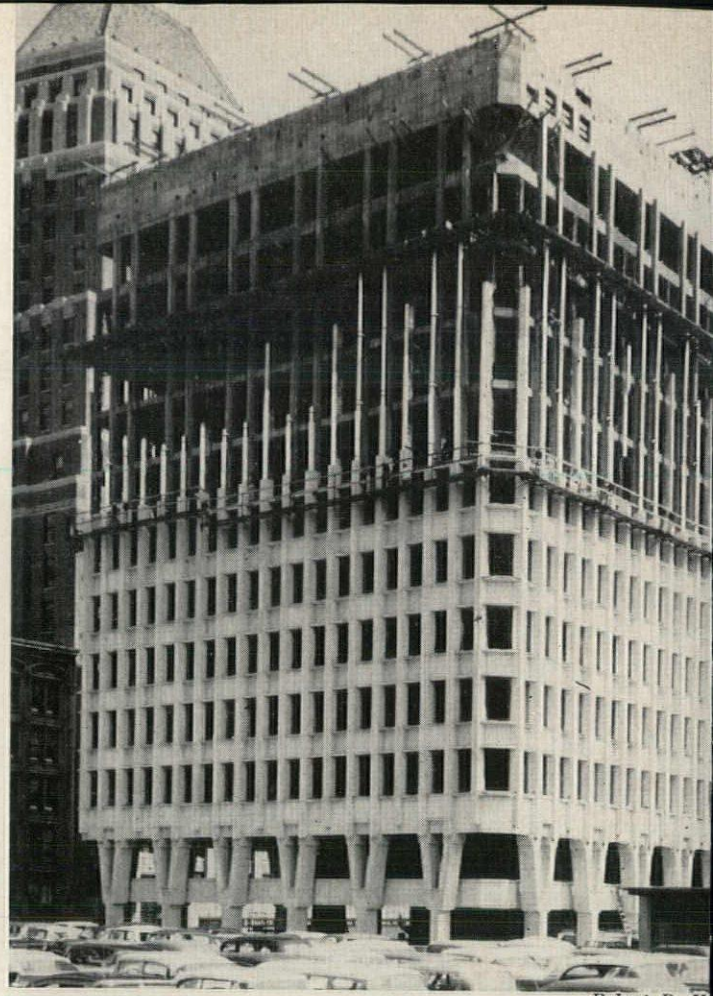
ASSOCIATED ARCHITECTS: *Paul Rudolph; Anderson, Beckwith and Haible*

STRUCTURAL ENGINEERS: *Goldberg, LeMessurier and Associates*

MECHANICAL AND ELECTRICAL ENGINEERS: *Stressenger, Adams, Maguire & Reidy*

INTERIOR DESIGN: *Contract Interiors, Inc.*

CONTRACTOR: *George A. Fuller Company*



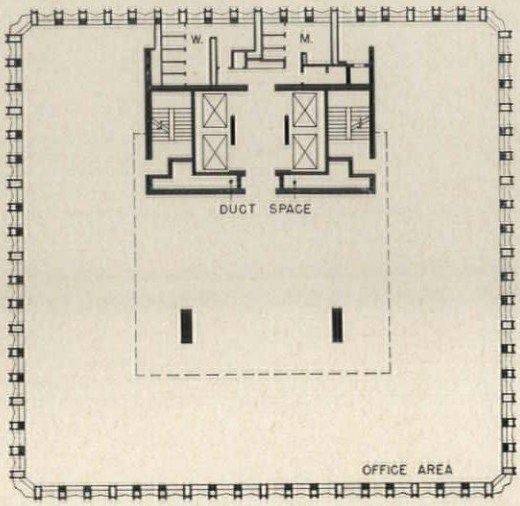
Robert D. H

Rudolph's statement of purpose in the design of Blue Cross: "that the mechanical systems become eloquent within themselves and give a reason for the plasticity of the façades." He put the hot and cold air intake ducts on the exterior faces of paired structural columns, with a return air duct in a single slender shaft between each two pairs. The return air shafts halt at the third floor. Between each hot and cold air duct he projects an air mixing chamber which occurs every ten feet along the spandrels, and plays a part in the rhythmic pattern of the façade.

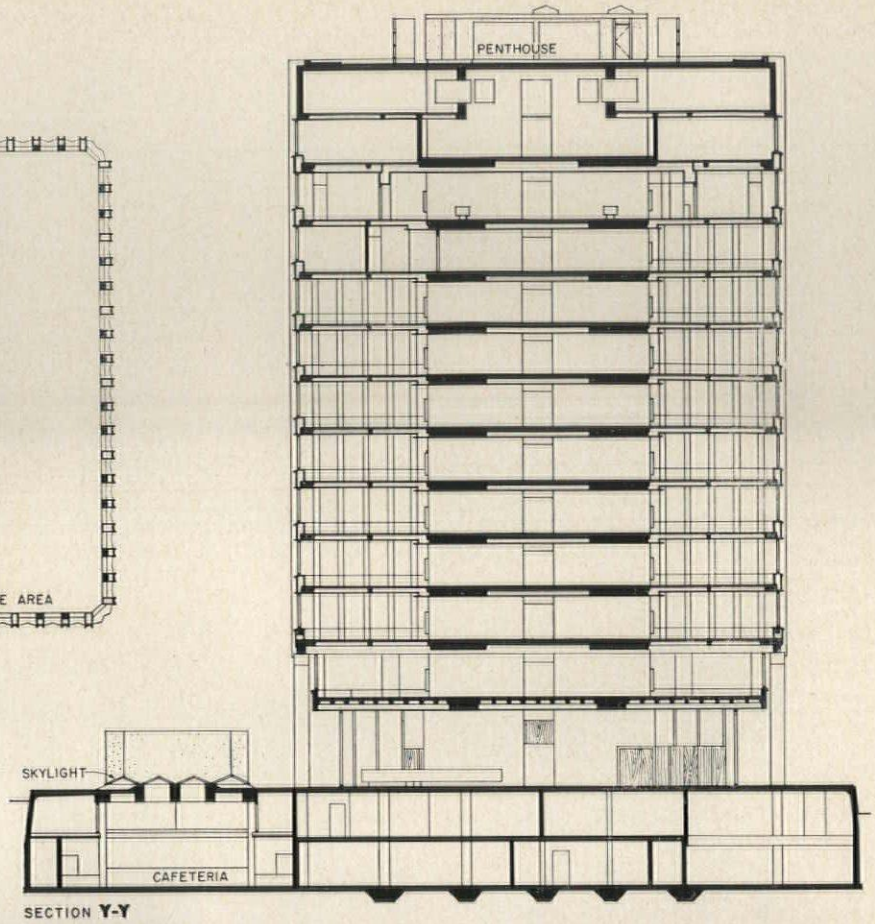
Paul Rudolph, like some other leading architects, looks for logical systems (structural, mechanical, organizational) to generate and justify form. As the design develops, the form generated by the logical idea begins to have a life of its own and may take precedence. In the end it is the form that counts, and for form's sake the system is not pushed to its logical extreme. This is what happened in the Blue Cross building. It's façades are indeed plastic, but since the mechanical ducts are concealed by intricately faceted quartz surfaced pre-cast concrete panels which alternately appear as part of the structural supports where they join the 'Y' columns at the base, or as thick window mullions where they don't, the façade is more eloquently plastic than expressive of its mechanical system. The building surface not only conceals the mechanical system, but in its uniformity, misrepresents it. The mechanical system as expressed on the façade from the third to the twelfth or top office floor, actually functions as expressed from the third to the tenth only. On the twelfth floor the mixing chambers function as return air chambers. The eleventh floor, which is heated by convectors at the sill and cooled by outlets elsewhere, doesn't require mixing chambers. On this floor they are pure sculpture.

Eloquent or mute, the exterior mechanical duct system brings definite important advantages to the structure. From the third to the tenth floor air ducts do not cross horizontal space except along the perimeter of the thick-

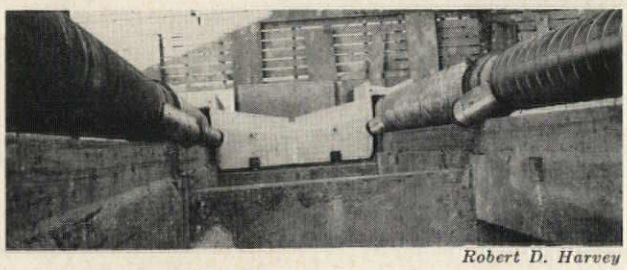
Joseph W. Molitor



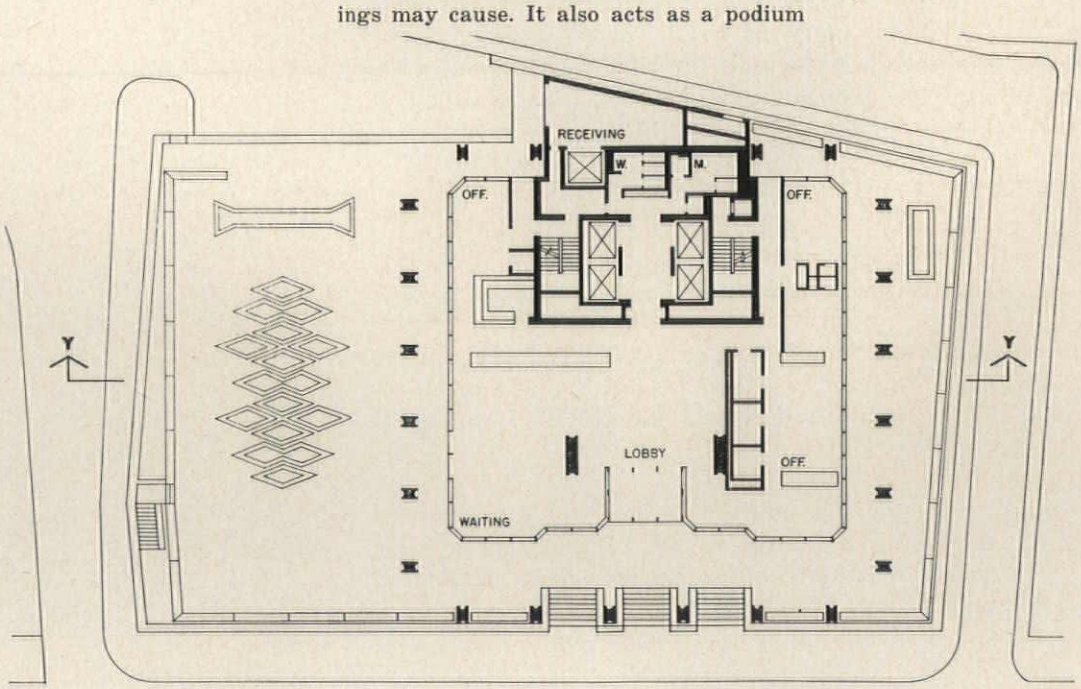
TYPICAL FLOOR



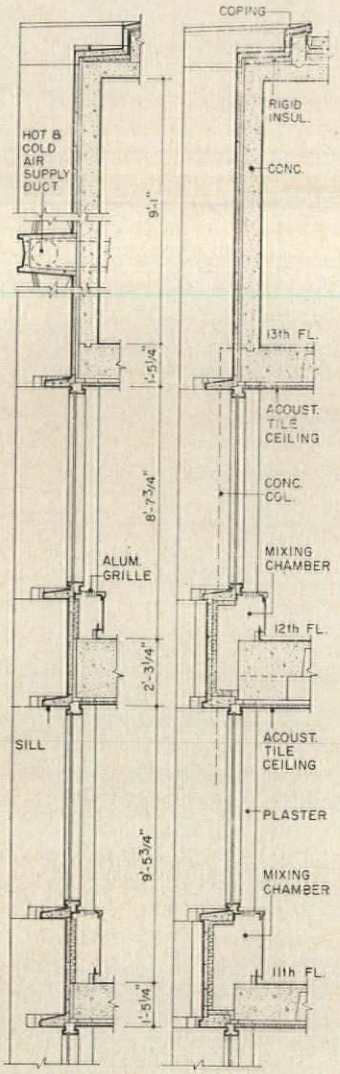
SECTION Y-Y


Robert D. Harvey

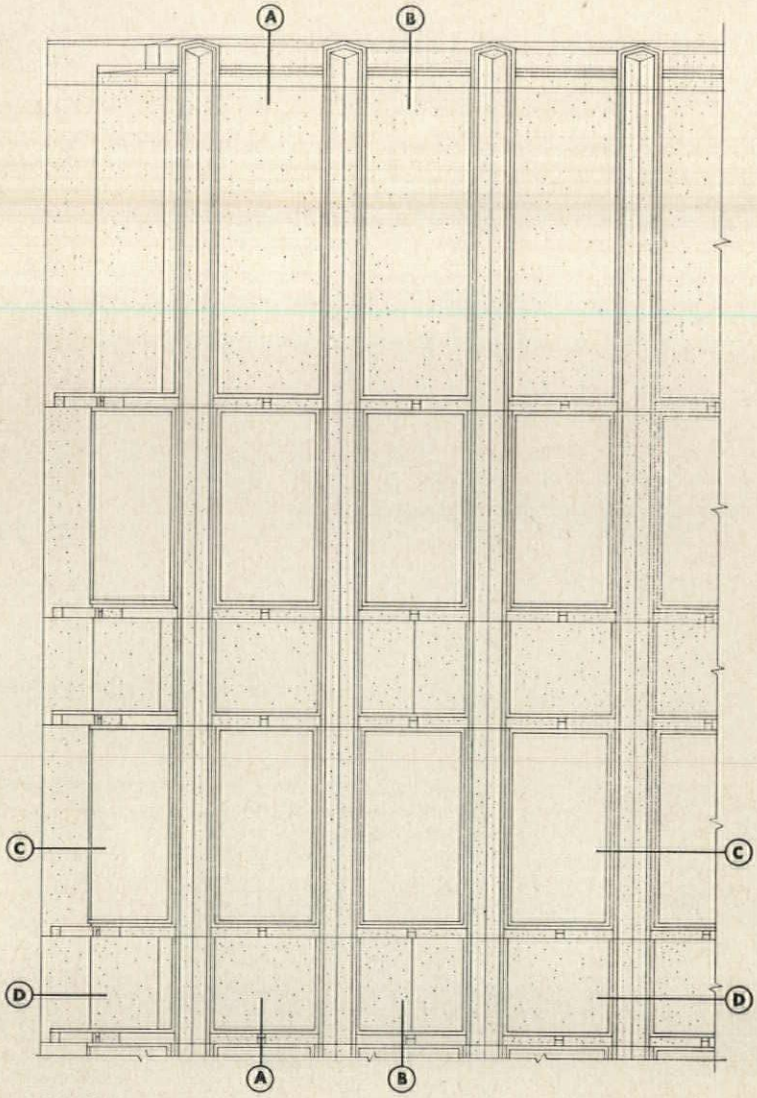
Left: Construction photo showing main hot and cold air ducts with smaller ducts which will feed into mixing chambers. Note pre-cast concrete enclosure. Window ledges and sills project to provide some shade and to reduce glare. Intricate faceting of pre-cast concrete is designed to help control the pattern of stains and enable the building to get dirty in a handsome way. *Below:* plot plan. Diamond shaped elements on terrace are actually tetrahedral skylights which illuminate the cafeteria below. Seats are provided along edge. Elongated form at top of terrace in plan and beyond skylights in section is a free standing kitchen exhaust wall equipped with a deodorizer which fires kitchen smells upward. It is approximately 12 ft high. Since the terrace is largely given over to lighting and mechanical service it can only be considered an amenity in the sense that it will help to reduce the enclosing effect which future high buildings may cause. It also acts as a podium



MAIN FLOOR & PLOT PLAN

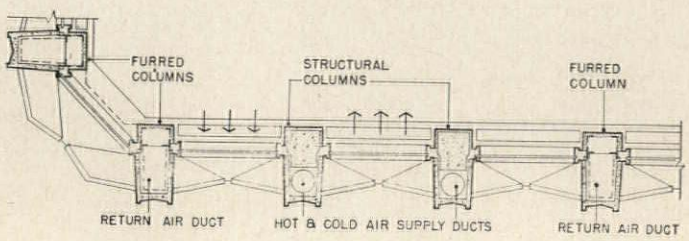


SECTION **A-A** SECTION **B-B**

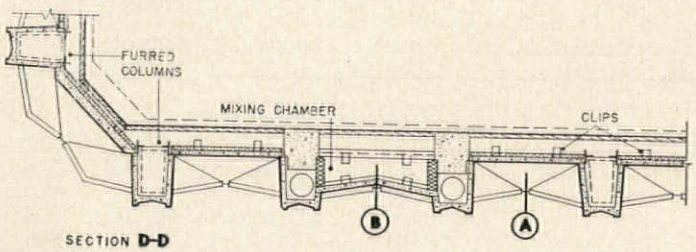


ELEVATION

Paired structural columns are as slender as possible to minimize bulk. Building is on a 5-ft module so that each kind of duct is repeated every 15 ft, a desirable spacing for this type of system. The thirteenth floor is devoted to mechanical space



SECTION **C-C**



SECTION **D-D**

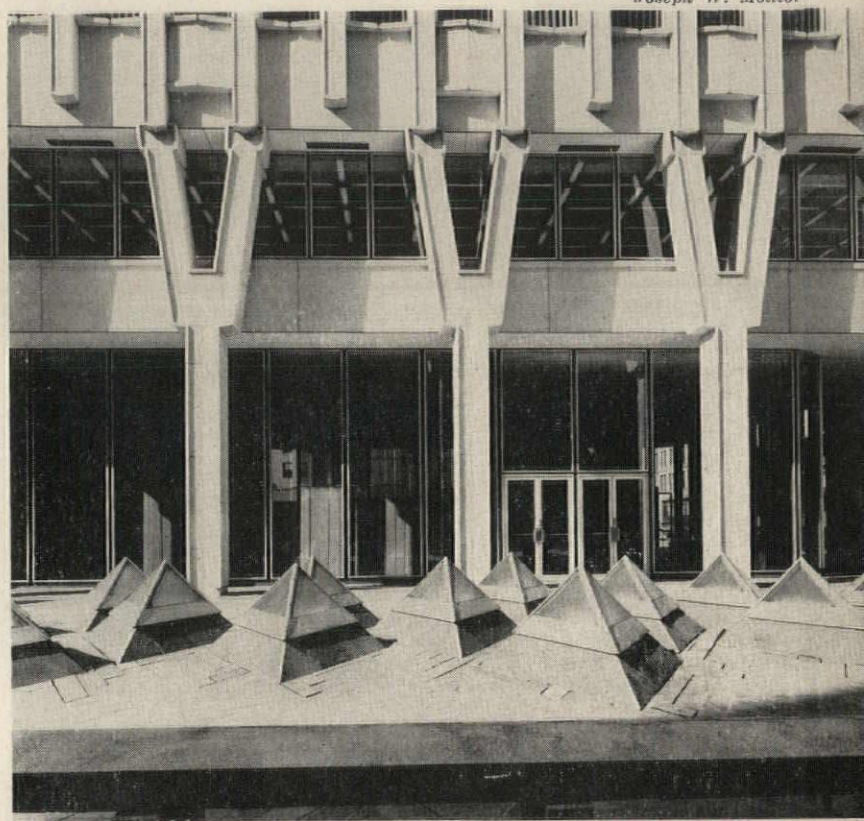
Since the two upper legs of the 'Y' do not flow smoothly into the vertical member, but are offset by the architect's choice for the sake of appearance, it was ncessary to add heavy steel horizontal reinforcement. The projecting member at right angles to the column reinforcement connects the column to the second floor

ened floor in the central bay shown by dotted line in typical floor plan. The need for ceiling ducts was thus minimized and total floor thickness apart from the central bay was kept to 17¼ in., as opposed to the 3½ ft or more generally required by long spans with ducts. Two floors were gained thereby, within the height limitation allowed for buildings without setbacks. Of course this system resulted in extremely close tolerances where ducts were required. Another advantage of the system is the creation of a continuous surface on the interior wall face. No columns or ducts project into the interior space, and areas may be subdivided on the 5-ft module.

A further examination of the structure shows more fully the extent to which it was influenced by the primary considerations of air supply and return. The established module is 5 ft and is based on the fact that each of the three ducts within the air conditioning system (return, cold air, hot air) had to repeat at 15-ft intervals. The return air ducts had to be the largest, so that it was logical that they should stand alone and that the smaller hot and cold air ducts should be backed by the structural columns. The shape and thickness of the pre-cast panels surrounding the ducts added 6 in. of width and 4 in. of depth to the duct size which gradually thickens to a maximum dimension of 12 in. as it rises. Surrounding the 12-in. maximum duct with a material as thick as the pre-cast concrete created great bulk and it was necessary to compensate for this by making the structural supports behind the ducts as slender as possible. This meant that the structural loads on the outside walls had to be kept light, so the center floor bays were made thicker to carry more load on the inside. See section and plan on page 113. The central core, walls and ceiling, and the two main columns became the major structural element.

Rudolph had originally wanted the exterior vertical ducts to return to the mechanical floors across an open space provided by a setback at that level, but requirements of space would not permit this dramatic expression of concept.

Joseph W. Molitor

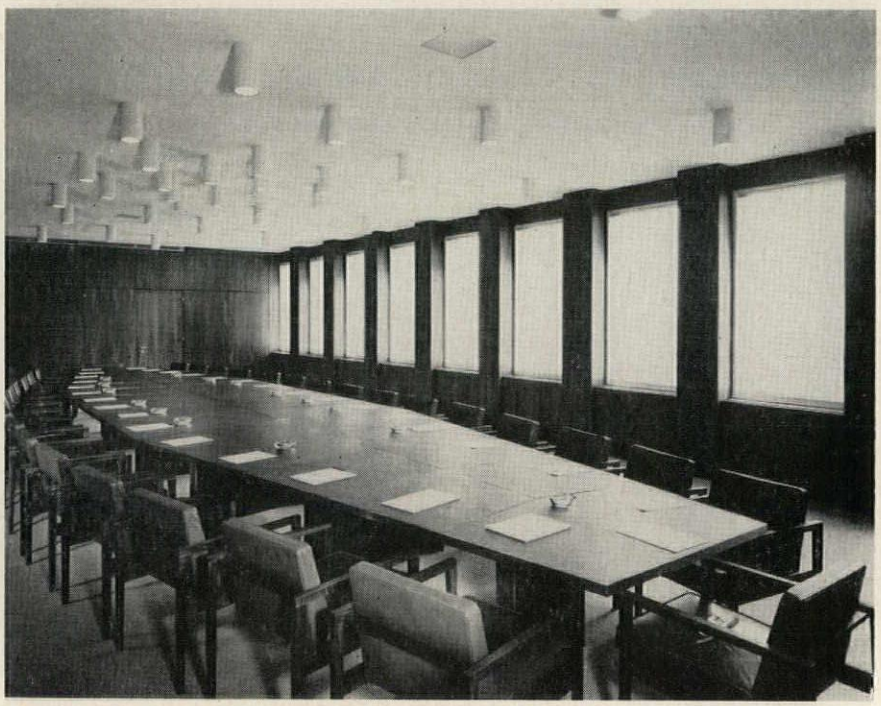


Cafeteria skylights on terrace

Cafeteria

Joseph W. Molitor

Lobby at left of entrance. Elevators are beyond main structural column at right



Interior effect of wall shown in conference room

KAISER CENTER

LOCATION: *300 Lakeside Drive, Oakland, Calif.*

OWNER: *Kaiser Center, Inc.*

ARCHITECTS AND ENGINEERS: *Welton Becket and Associates*

STRUCTURAL ENGINEER: *Murray Erick Associates*

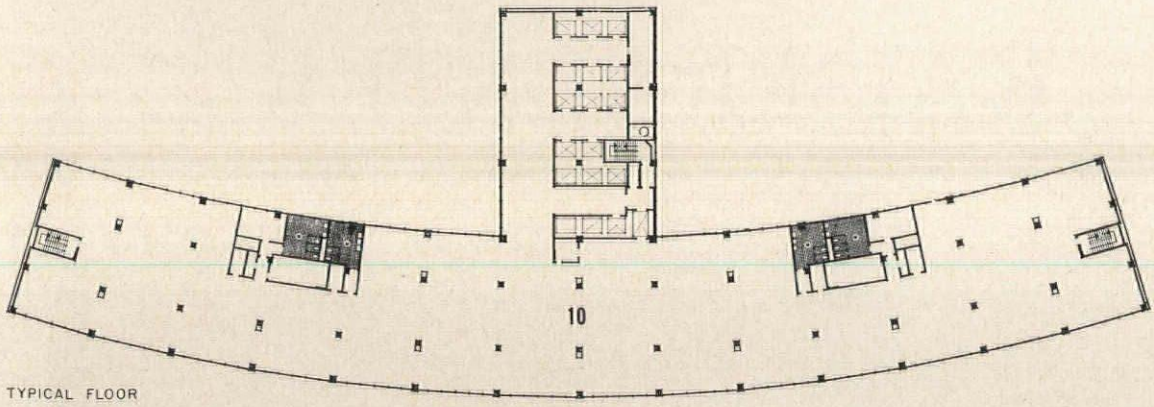
SOILS MECHANICS ENGINEERS: *Dames and Moore*

GENERAL CONTRACTORS (excavation and foundations): *MacDonald, Young & Nelson, Inc*

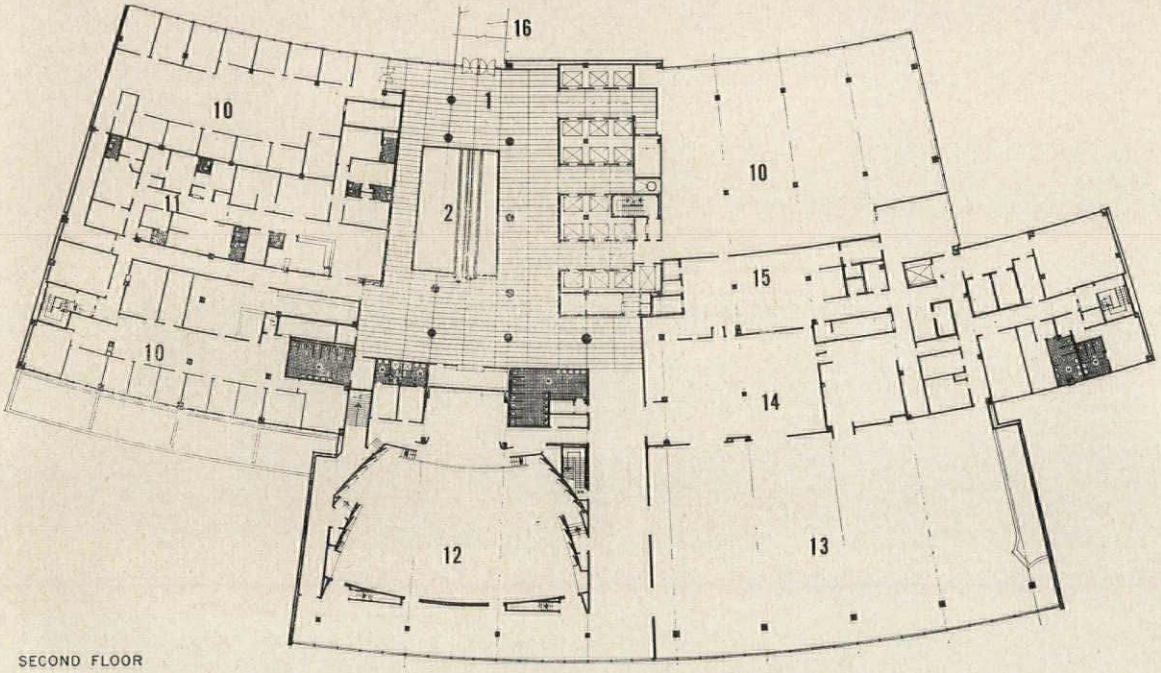
LANDSCAPE ARCHITECT: *Osmundson and Staley*

GENERAL CONTRACTOR: *Robert E. McKee General Contractor, Inc.*

All photos courtesy Kaiser Graphic Arts



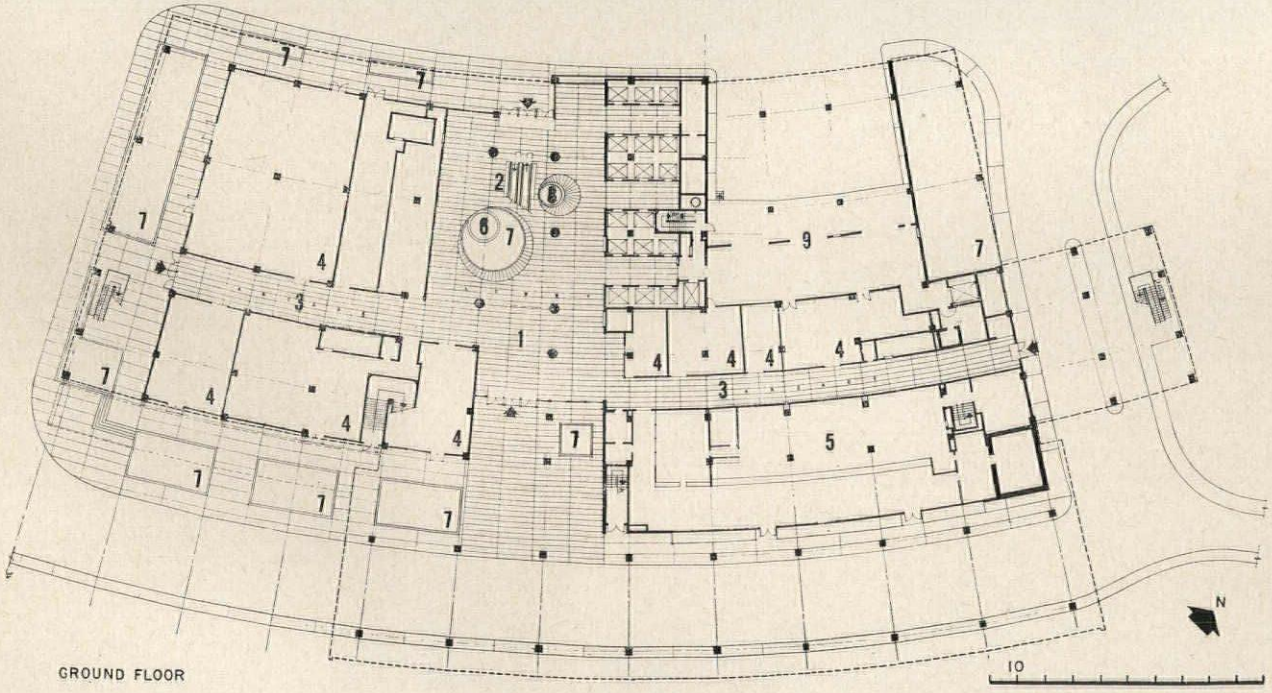
TYPICAL FLOOR



SECOND FLOOR

LEGEND

1. Lobby
2. Moving Stair
3. Arcade
4. Shops and Rental Offices
5. Bank
6. Pool
7. Planting
8. Reception Desk
9. Loading Dock and Storage
10. Office Space
11. Medical Space
12. Auditorium
13. Cafeteria
14. Serving
15. Kitchen
16. Bridge to Garage and Shops



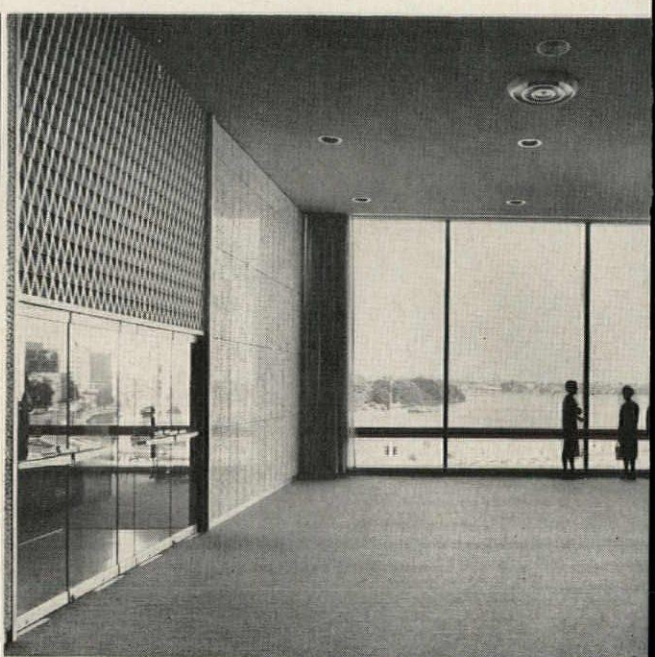
GROUND FLOOR

Kaiser Center

Kaiser Center is a complex of buildings dominated by a gleaming 28-story office tower whose height, size and curved faces make a dramatic silhouette on the downtown Oakland skyline. But drama was only one of the requirements for this world headquarters of the 61 affiliated companies that make up the Kaiser industrial organization. The buildings had also to be a practical demonstration of the use of the products and raw materials of these companies—a very tangible "corporate image" of the companies. As a result, over 80 per cent of the products and raw materials used came from Kaiser companies, and the architects found themselves engaged, with their client's engineers, in extensive research, making mock-ups of anodized and natural aluminum curtain walls, experimenting with precast panels of dolomite for exterior and interior walls, and detailing aluminum extrusions for wall panels and screens. The curtain wall finally chosen is a combination of natural-finish aluminum frame, gray glass and gold anodized aluminum panels. The building is steel framed; except on the lower levels, floors are of cellular steel decking with lightweight concrete fill. A radiant heating and cooling system is used to air condition the building.

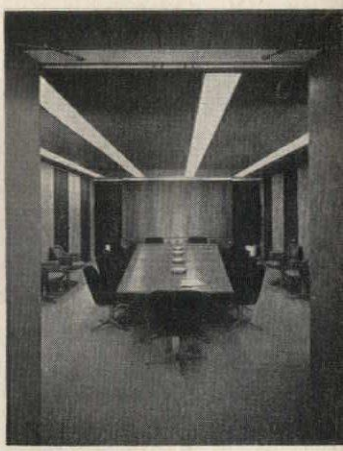
Center includes department store, service shops, offices and 1200-car parking garage. Lakeside site is particularly effective at night

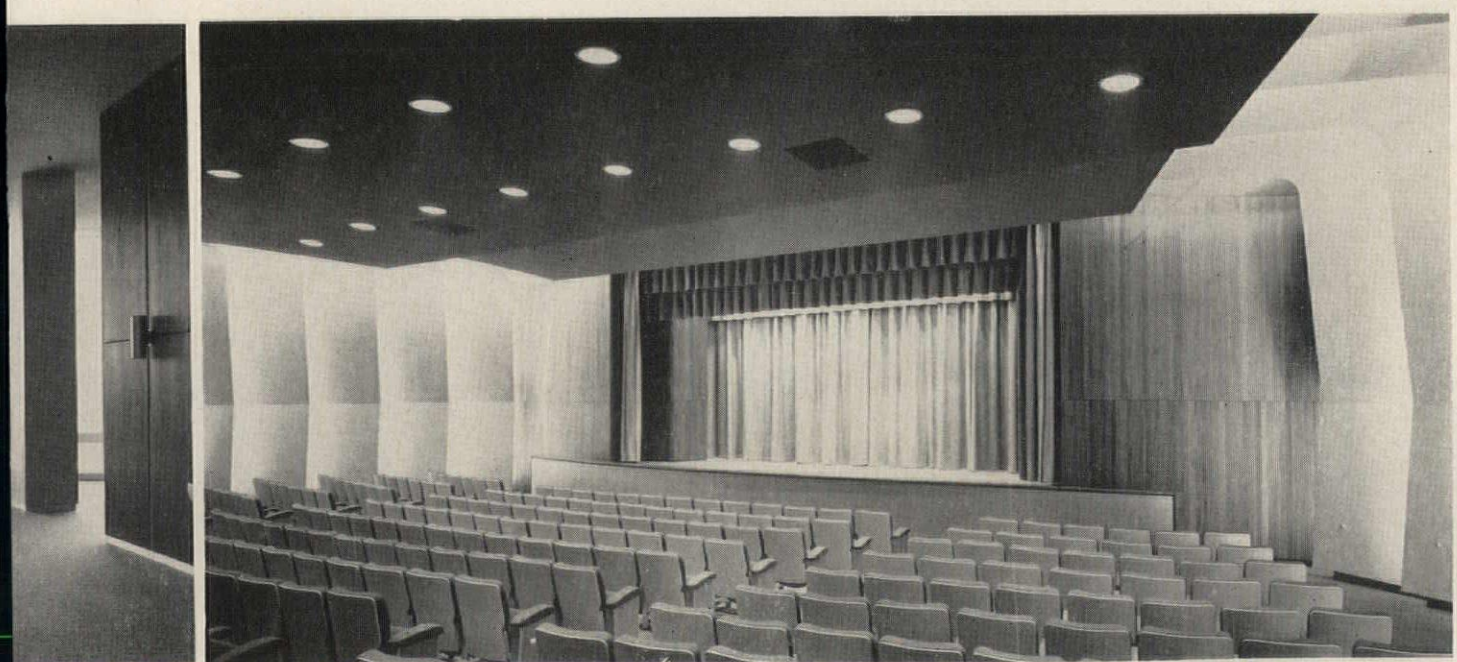
Morley Baer photos (except page 117, above, and top of page 121)



Kaiser Center

The lobby opens on one side to a view of Lake Merritt, and on the other to the parking garage. Colors are used with restraint—white walls, gray floor, soft gold luminous ceiling. Less subtlety, however, is shown in the use of materials: even the columns are faced with dolomite, and the otherwise simple ceiling surface is interrupted by a staccato pattern of aluminum fins. A long moving stair cuts through the lobby's great two-story space to connect it with another public area, the second floor, where service shops and offices, cafeteria and auditorium, are located. The wide corridor leading to the cafeteria ends in a view window overlooking Lake Merritt and turns the corner to become the foyer for the 400-seat auditorium. Wood, aluminum, polished dolomite and precast lightweight concrete vie with each other in color and texture. In the cafeteria, the ceiling is in two shades of gold—light and dark —and two planes; in the auditorium, the ceiling is bright red and the walls are white. Colors on each office floor conform to four basic coordinated color schemes, derived from the four colors specified by Kaiser for floors three through 26; the two top floors are for executives and have both individual layout and color schemes.





Kaiser Center

The curved faces of the building were a Kaiser stipulation whose esthetic challenge was tempered by the planning problems imposed by the curved form. Private offices were required along exterior walls with wide corridor space between for secretaries' desks and for occasional waiting areas. Wide reception areas opening off elevator lobbies on office floors were needed to take care of large numbers of callers. On some floors, individual departments are arranged in suites with their own waiting areas. Interfloor communication is speeded up by transmission of telegrams through a pneumatic tube system from the 11th floor communication center; an endless chain conveyor system with push-button control between the basement and the 27th floor delivers mail

DESIGN FOR MERCHANDISING

The Lloyd Center, Portland, Oregon

Delano Aerial Surveys

ARCHITECT: *John Graham.* ASSOCIATES *(in office of John Graham): Manson O. Bennett, Architect, Manager, Seattle Office; Nathan Wilkinson, Jr., Architect, Project Designer; Alfred H. Fast, Architect, Project Administrator; R. R. Kirkwood, P. E., Director, Mechanical and Electrical Engineering; H. W. Leuschen, P. E., Director, Structural Engineering*

ARTISTS: *Tom Hardy, sculpture; George Tsutakawa, sculpture; Jean Johanson, mosaic; Ray Jensen, sculpture.* CITY PLANNING AND TRAFFIC CONSULTANTS: *Harland Bartholomew and Associates.* ECONOMIC CONSULTANTS: *Larry Smith & Company.* CONTRACTORS: *Donald M. Drake Company; Max J. Kuney Company; Henry M. Mason Company*

All photos by Roger Sturtevant

The Lloyd Center

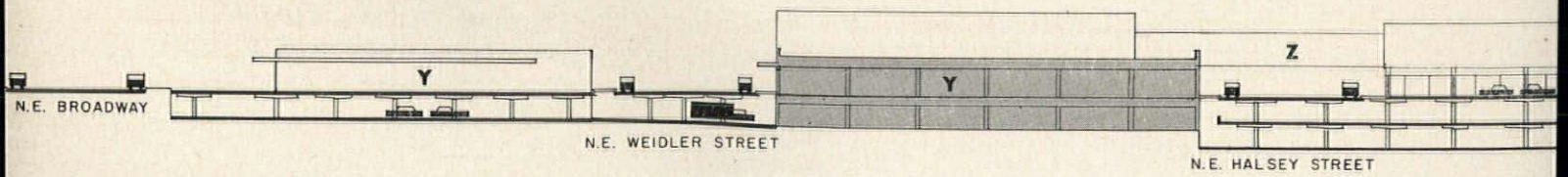
The design of the Lloyd Center incorporates and reaffirms several sound merchandising principles the architects have proven through their experience in the shopping center field, and the plan comes close to achieving its aim of providing a "100 per cent location" for every store. The merchandising program called for a total of 100 stores: one large department store, one junior department store, and at least two of every other kind of store. The plan is an open-ended T, with the large, four-story department store (C in plan at right) as anchor at the central intersection of stem and cross-bar to serve as the main attraction, or chief traffic "puller." Other stores with strong pulling power (junior department store M, variety stores N, supermarkets T, super drug store S, women's specialty store O, and major shoe store Q) are located at the three ends of the T plan, with parking beyond them minimized. Such an arrangement provides maximum pedestrian traffic for the other stores lining the malls that connect those stores listed above.

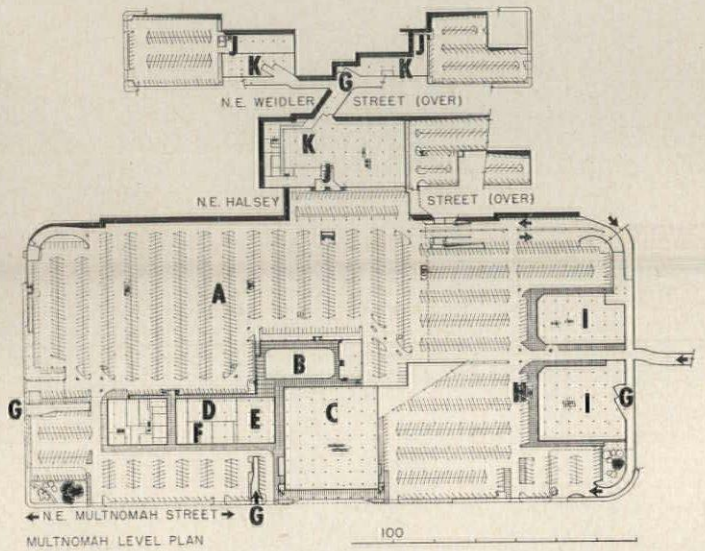
Although there had to be three levels (due to the high cost of urban land), the architects have confined nearly all shopping to the mall, or intermediate level, with only supporting merchandising on upper and lower floors; an idea based on recognized retailing practice. The lower level is devoted principally to parking and recreational facilities; the upper level to professional suites and offices. Some of the stores are serviced from above; some from below. Additional parking is variously located on the three levels and in small plots on the periphery of the plan.

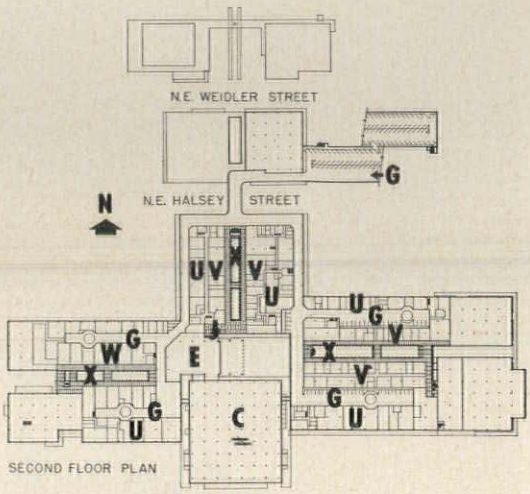
The T plan is open-ended in three directions to allow for future expansion, which can be accomplished readily by extending the malls as bridges over intervening streets. Note that every store has both a mall and a "carriage" entrance, so that customers who are so inclined may drive up and park "in front of" a given store and enter from there.

Malls have been held to 50 ft in width (the same as a downtown street) on the basis that a wider space would discourage shopping on both sides. All mall approaches to stores are sheltered by the second floor walkways to the offices overhead.

The Lloyd Center is the largest of its kind, and the first complete urban center. It was conceived as an all-inclusive, 70-acre complex located only six minutes from the old "downtown" Portland—a new commercial nucleus of 100 stores; parking for 8000 cars; a 300-room hotel; an office building; offices within the central group; a skating rink, auditorium, and other cultural and recreational facilities. Additional property owned by the Lloyd Corporation—extending from the center to the Willamette River (see aerial photo, page 123)—will be developed in the future for additional commercial structures, housing, parks, outdoor recreation, etc.

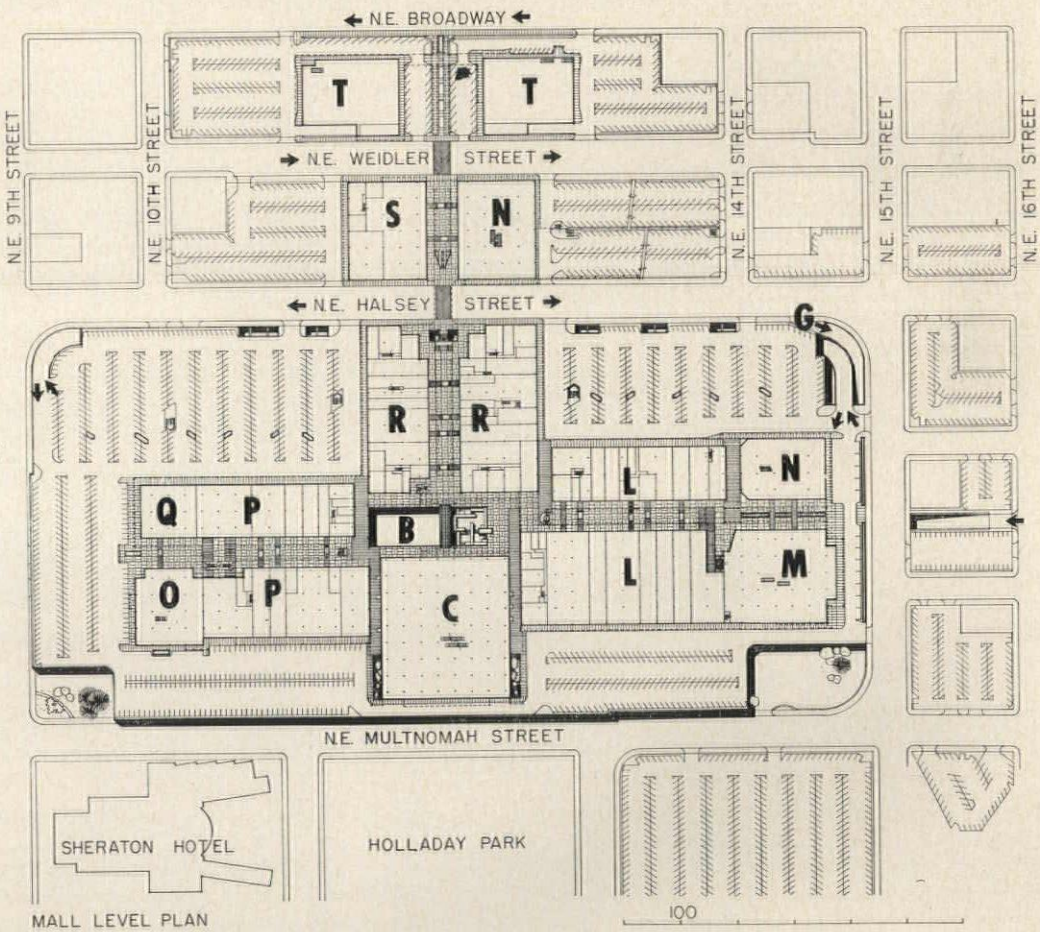


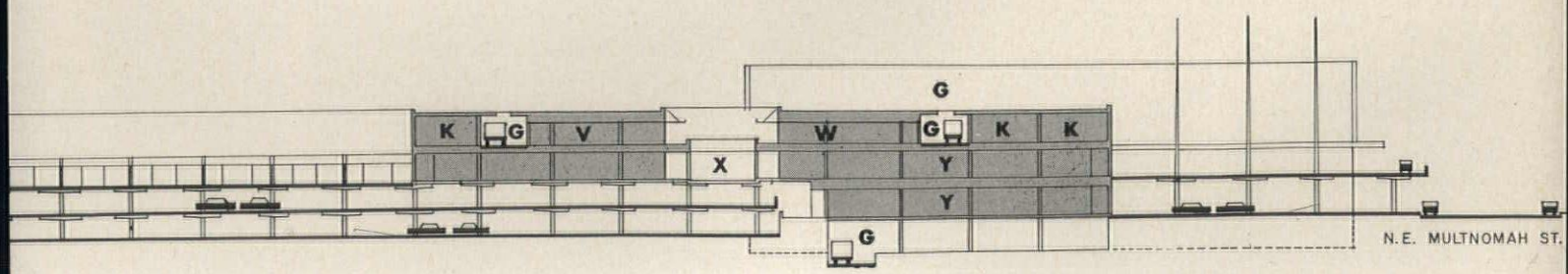




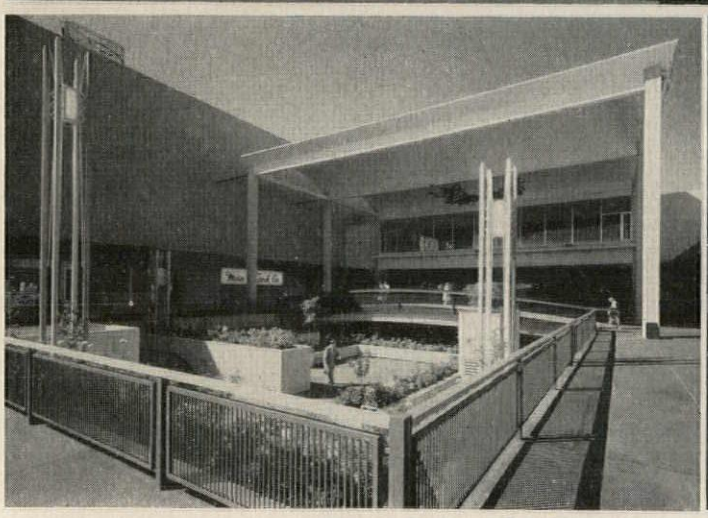
LEGEND FOR PLANS AND SECTION

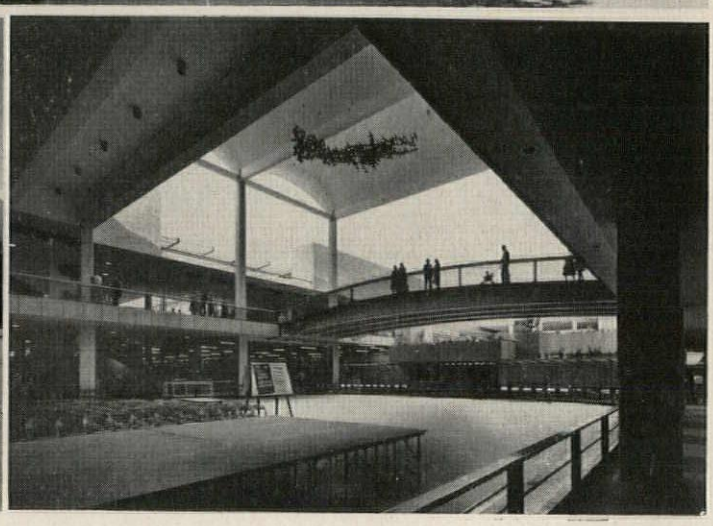
A. Intermediate parking (over)
B. Ice Rink
C. Department Store
D. Auditorium
E. Restaurant
F. Financial Center
G. Service Concourse
H. Elevators
I. Basement Sales
J. Moving Stairs
K. Stock Area
L. East Mall: Popular-Priced Stores
M. Junior Department Store
N. Variety Store
O. Women's Specialty Store
P. West Mall: Quality Stores
Q. Major Shoe Store
R. North Mall
S. Super Drug Store
T. Food Market
U. Storage
V. Offices
W. Secondary Shops
X. Mall
Y. Stores
Z. Bridge to Second Floor Truck Concourses






BROCKMAN





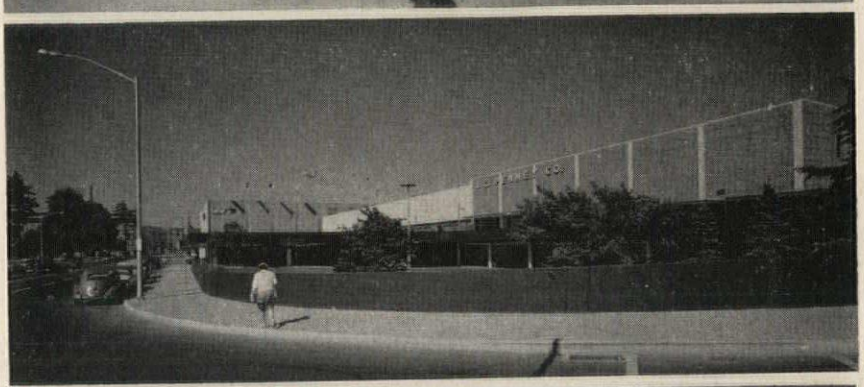

WOOLWORTH'S

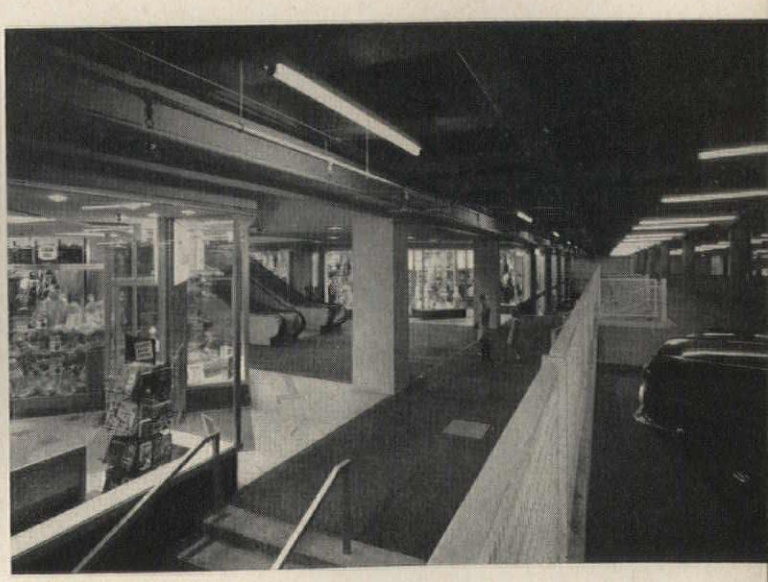
The Lloyd Center

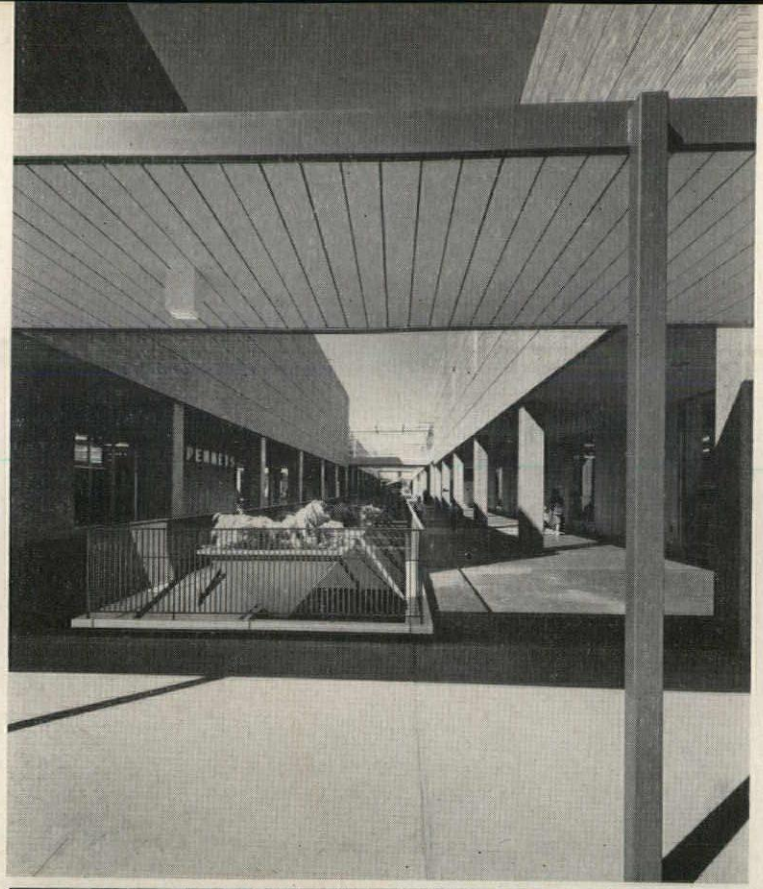
Graphic design and signs are controlled; landscaping for the malls—in fact for the entire center—will be rotated seasonally (as at Rockefeller Center); fountains, pools, and sculpture enliven open mall areas. The central skating rink—76 by 180—is shown here (two photos at center, left page) in alternate warm weather use as an auditorium. A thin-shell barrel vault roof extending from an upper level restaurant shelters the rink. Sculptor Tom Hardy's bronze "Birds in Flight" is suspended in front of the restaurant windows overlooking the rink.

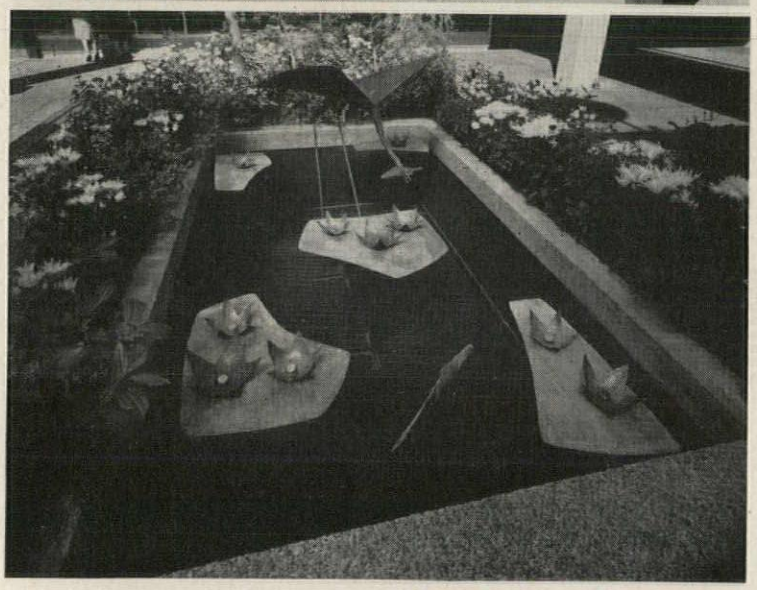
Parking at Lloyd Center is beside, around, and underneath the stores. A three-level structure is integrated with the store structures, providing covered parking on street and intermediate levels, and outdoor parking at mall level. At some points (as under mall crossings) both covered levels can be seen at once. Cars go from street to intermediate levels on an open ramp. Full size trees and shrubs enhance the small outdoor parking areas.

Unlike so many others, Lloyd Center is not a group of stores in a sea of parked cars. Street views of it are pleasant on all sides, and all are different—for valid reasons. By integrating some parking with the main structure and breaking up outdoor parking into smaller areas, by landscaping its perimeter areas attractively and eliminating garish signs, Lloyd's recognizes a community obligation too often overlooked



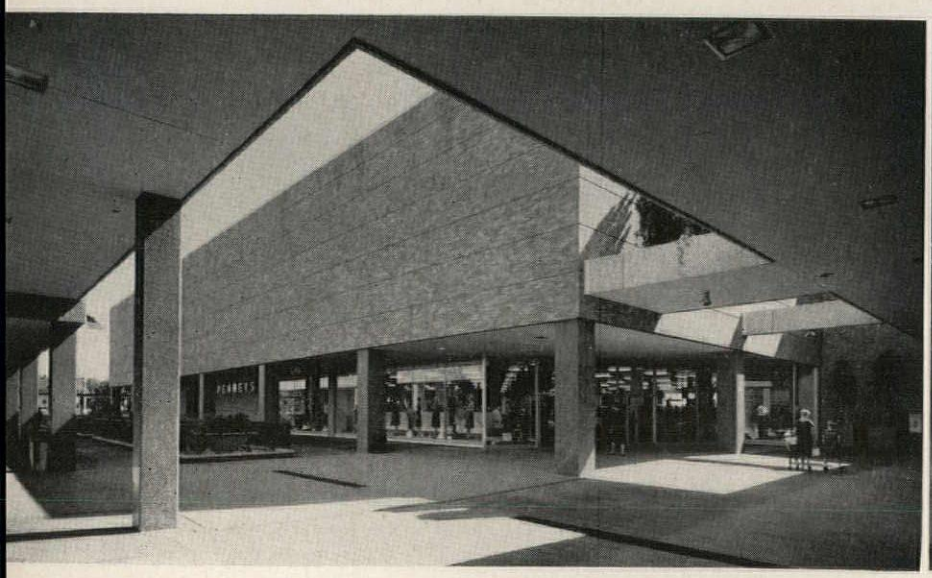




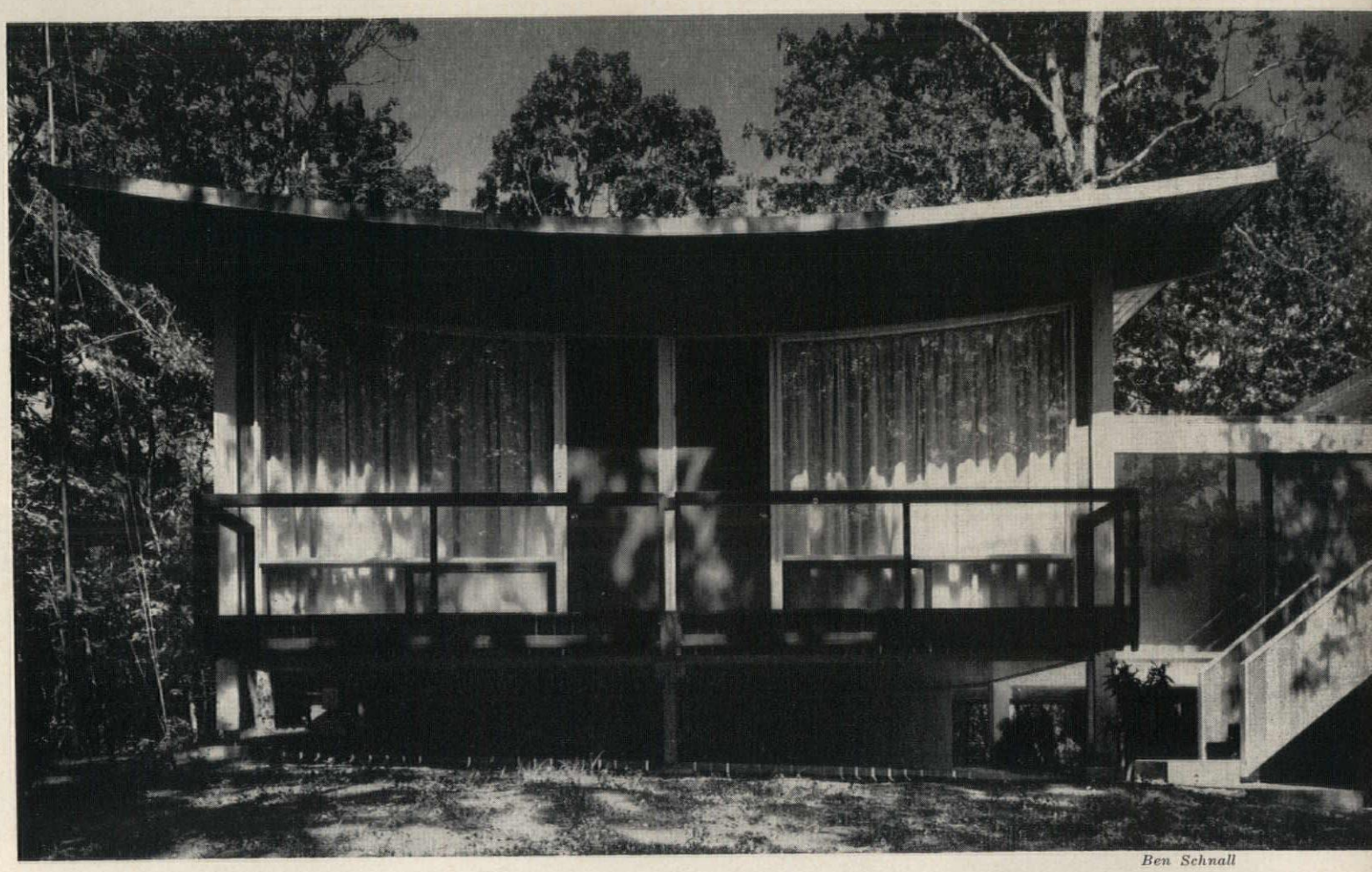


The Lloyd Center

Throughout the center planting, water, and sculpture contribute to the environment and are often used to minimize, where possible, the intrusion of essential service or utility elements. Along the East Mall a long opening in the center admits daylight to the entrance driveway (bottom right) for delivery trucks headed for lower level stores (upper level shops receive deliveries in a narrow alley on the second floor with a truck turntable). But strollers on the mall see only the planter boxes (top and bottom left), slightly raised above mall level, which make virtue of the necessary and add color to this dignified, almost austere area. Most unexpected use of sculpture is in the "dry pools" (center) at frequent intervals along the malls. Seattle sculptor Ray Jensen designed these lily pools, herons and fish to stand over the air vents for the parking garage below. Jean Johansen's pebble mosaic pool is a showpiece in the garden plaza



THREE SUBURBAN HOUSES



Ben Schnall

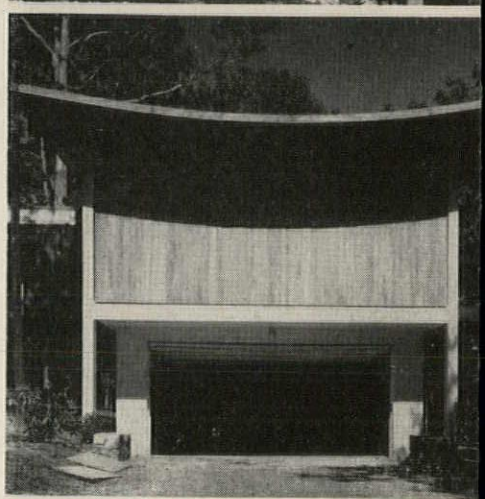
Residence for Dr. and Mrs. William Abruzzi

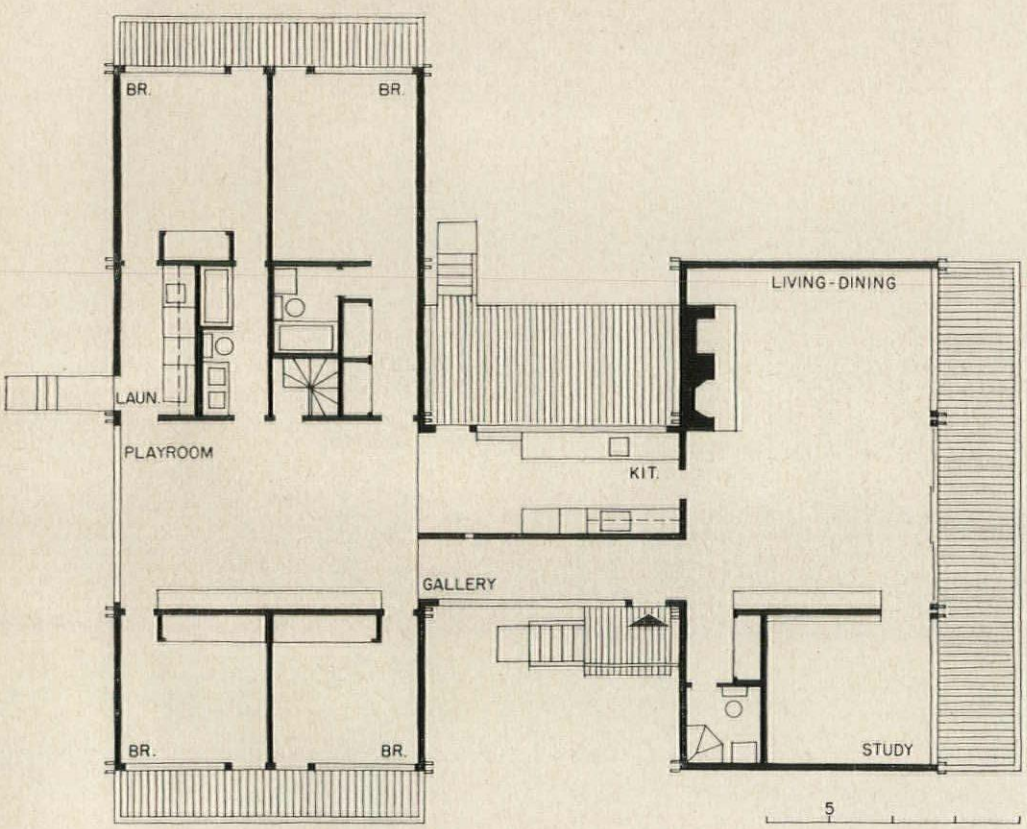
Wappingers Falls, New York

Jay Fleishman, Architect

Wiesenfeld, Hayward & Leon, Engineers

A. P. Frymier & Co, Contractor





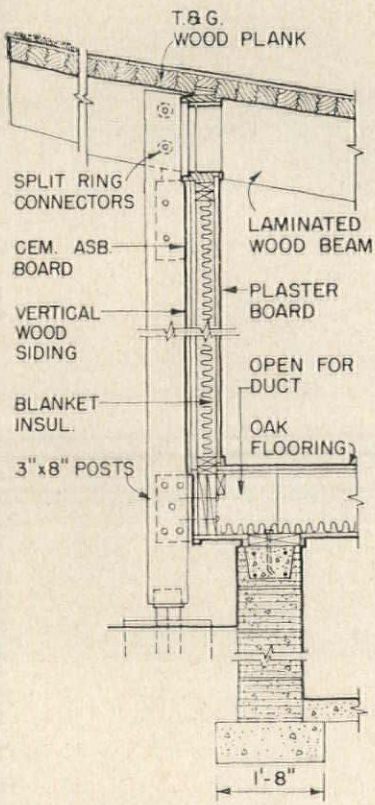
Curved Roof Gives Fillip to Post and Beam Structure

A distinctive profile is given this bi-nuclear hilltop house by a new twist to the post and beam formula. The beams are concave, laminated wood, and slightly tapered at the ends; the beams are spanned by 4-in. red cedar planking, which forms roof and ceiling and overhangs the house on all sides. The roof is supported by double 3-by-8 wood columns, which are fastened to either side of the beams and floor joists.

The site is a heavily wooded one, with a series of views over farmland to small mountains in the distance. The grade was virtually solid rock and posed excavation problems. The building was therefore elevated to take greater advantage of the view, and to allow the natural contours of the slope to run undisturbed beneath the structure. It also increases the visibility of the house from the valley below. Part of the area under the house is used for a small basement under the bedroom wing, and for a garage.

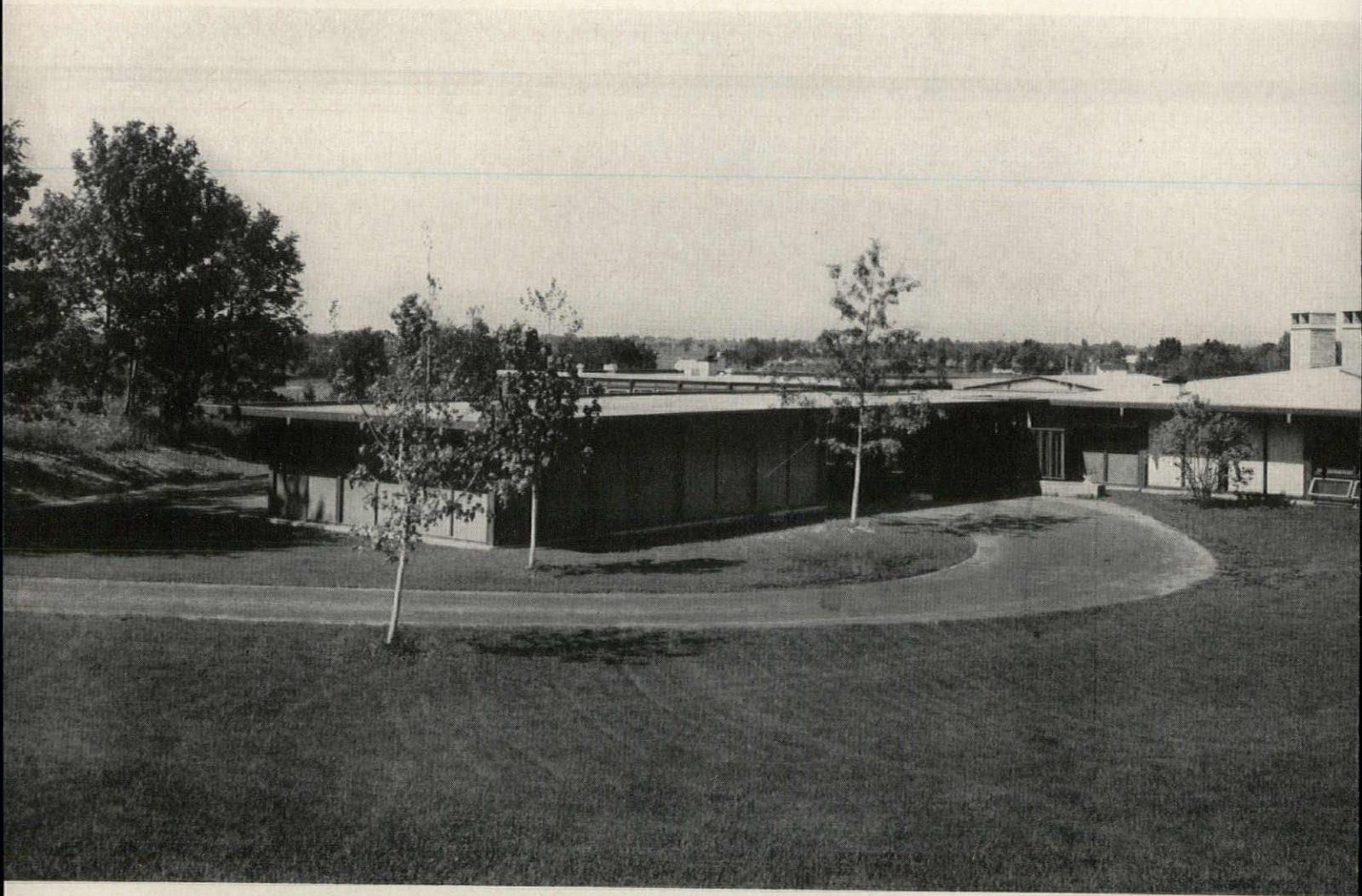
The client desired a house that would separate areas for children and adults, but permit visual control of both areas from the kitchen. Each room was required to have access to the outdoors. Other plan requirements included a study adjoining a living-dining room, and placement of the laundry in the bedroom wing. The house solves all these conditions quite well, and also manages a great air of spaciousness via the relationship of the rooms, glass walls, and the upward tilt of the roof.

Heating is by a hot air system, which was sized for the addition of air conditioning at a later date.



SECTION

Ben Schnall



A Spacious House Primed for Hospitality

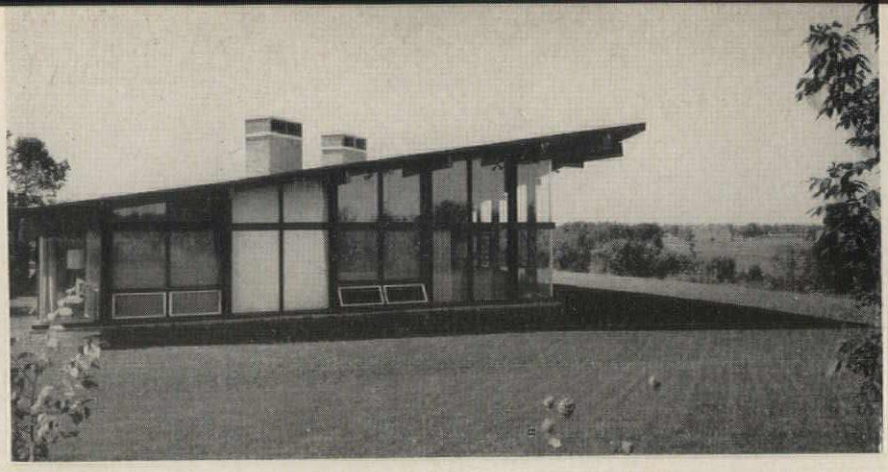
Residence for Mr. and Mrs. Jay VanOmmen, Holland, Michigan
Obryon & Knapp, Associate Architects; Medema & Van Kooten, Structural Engineers; James Dean, Heating Consultant; TerVeen Builders, Contractor; Russell H. Cole, Interior Designer

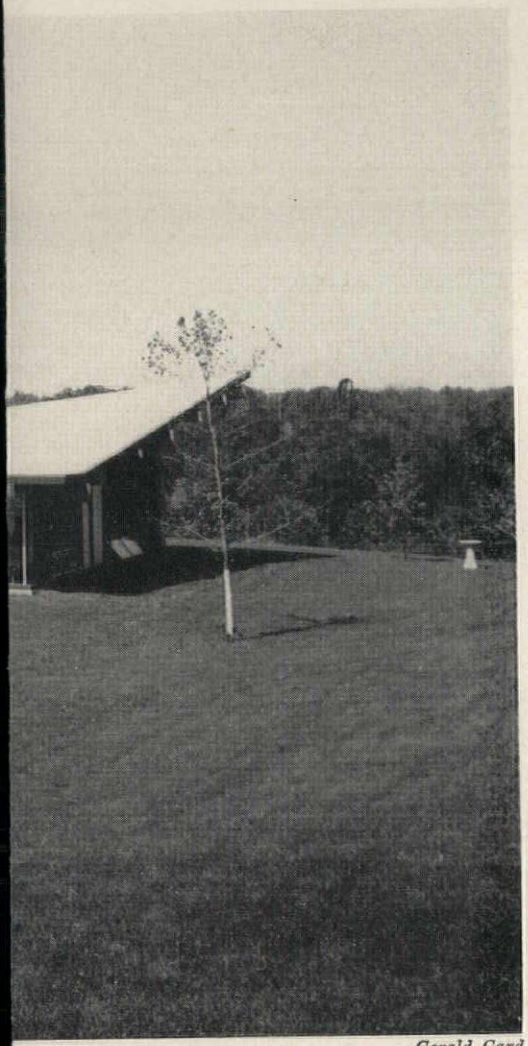
From its extremely pleasant covered entrance, to the arrangement of the "activities" areas and "quiet" bedroom wing, the design of this house focuses on offering a warm sense of "welcome" to family and guests. The sense of arrival at the front entrance is an especially effective one: the curved drive, *porte cochère*, little garden court, entrance loggia, porch and vista beyond all combine into a planned and pleasing sequence of events.

The "activities" area, composed of family-living, dining, game and kitchen rooms, is planned on the bias in such a manner that each room may be used individually, or all opened together with porch and loggia for a really big entertainment space. The living room ceiling is pitched upward to a 15-ft height at the corner to dramatize the view.

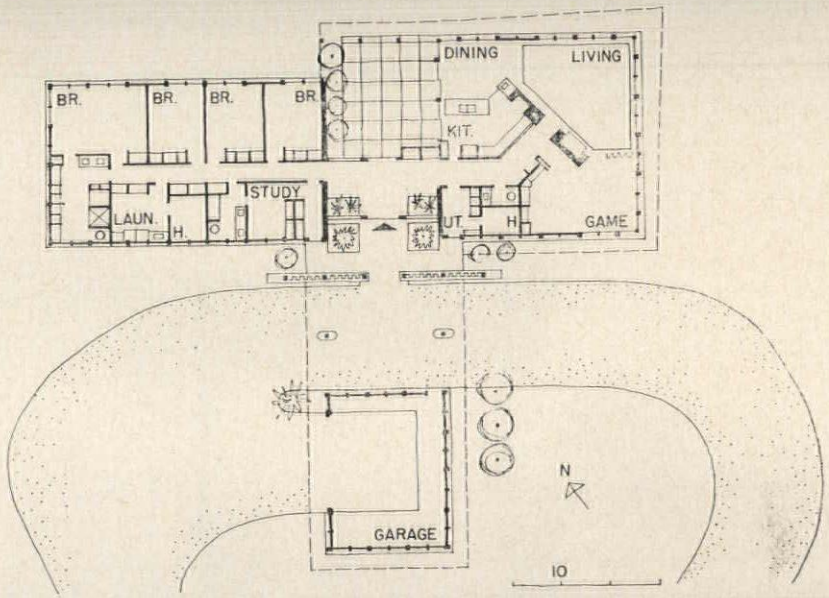
The "quiet" wing contains four bedrooms, tack room (den), baths, laundry and heater room. (A separate heater room is provided for the living wing.) All bedrooms face the view at the back, and utility rooms form a bank along the front of the house.

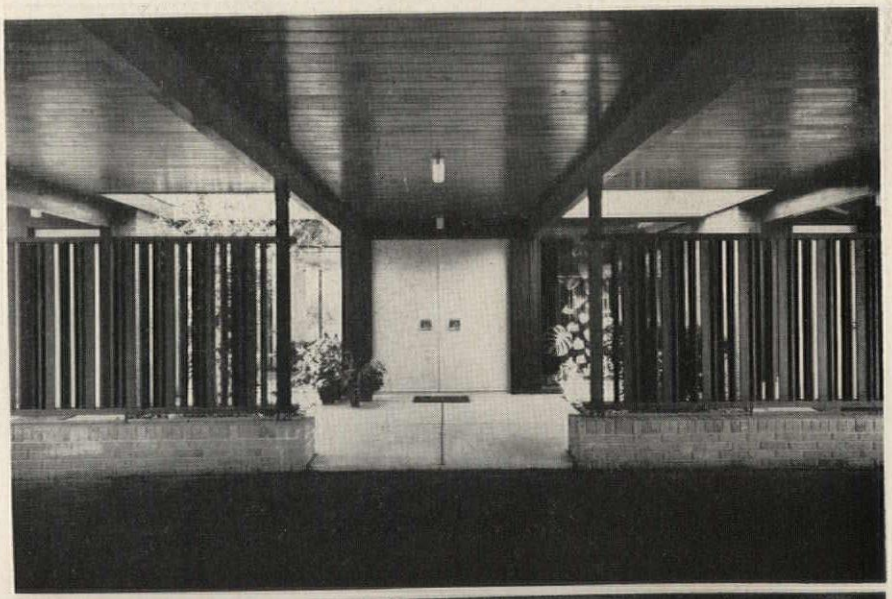
The house is framed with Douglas Fir, and exteriors are paneled with cement board. Interiors are finished with laminated dry-wall panels. Floors are quarry tile, carpet or vinyl asbestos. Ceilings are wood, except for plaster board in baths. Kitchen equipment is all electric.

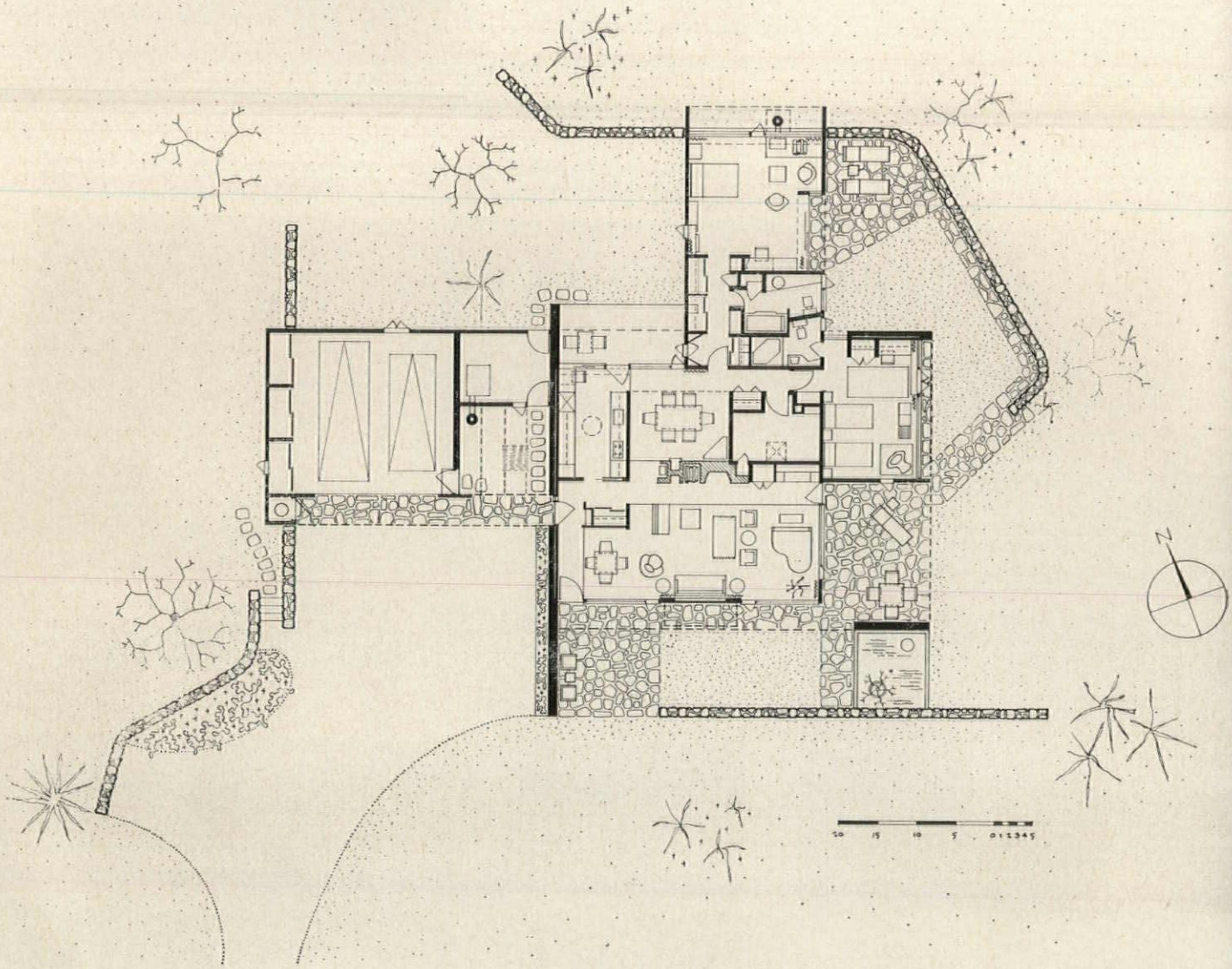




Gerald Gard







An Interplay of Color, Texture and Natural Materials

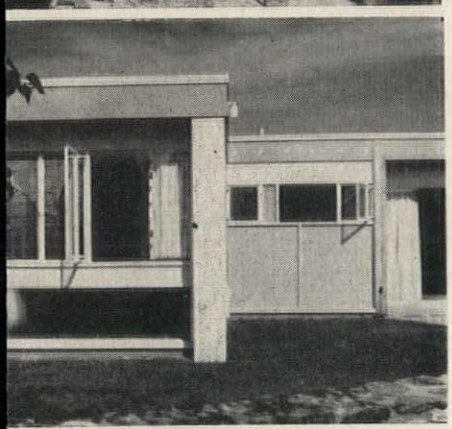
Residence for Mr. and Mrs. James J. Staples, Glastonbury, Connecticut
Peter Frazer, Jr., Designer; Jansen & Rogan, Mechanical Engineers;
Robert Glenn, Inc., Contractor

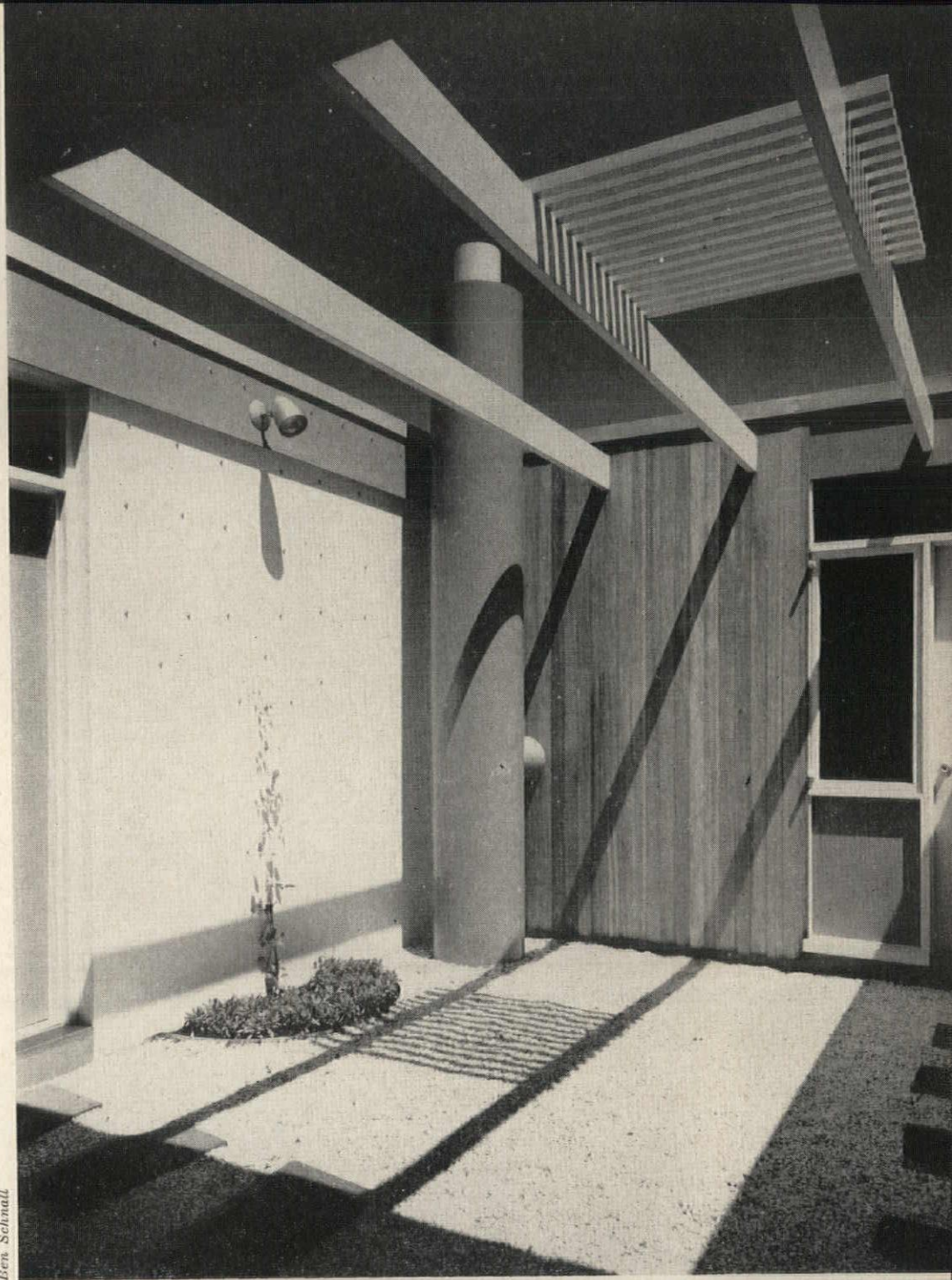
Nicety of detail and careful integration of house, interiors and landscaping highlight this home for a retired couple. The site is a 16-acre property, with pleasant views in all directions except toward the west. The owners wished the house to take maximum advantage of this, and to provide as much outside sitting and dining space as possible. They also wanted complete separation of the two bedrooms, and—as the wife is a musician—a piano placed to afford views for the person playing.

The plan, as developed, includes four terraces or porches, covering all orientations, and a couple of vistas for most of the major rooms. The west is blanked off by garage, utility room and entrance court.

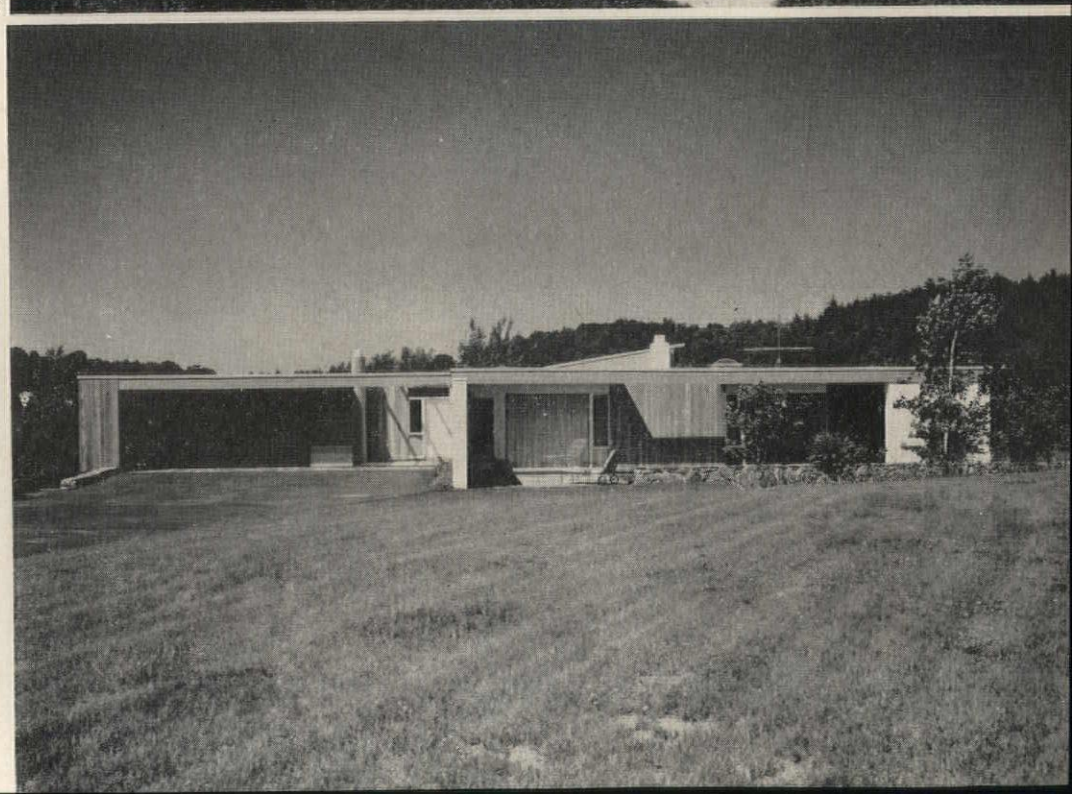
Construction is wood frame or concrete block on poured concrete foundations. Floors are reinforced concrete slab with hot water radiant heat (bedrooms have built-in air conditioners). Exterior walls make an interplay of white stucco, native stone, and natural finish vertical cedar siding. Asbestos cement board panels are painted in bright primary colors and set in white frames for accent. The rather novel chimneys for the freestanding fireplaces are stucco-coated terra cotta flue linings. The pool off the living room, and the north dining terrace are blue mosaic tile; other terraces are random pattern slate.

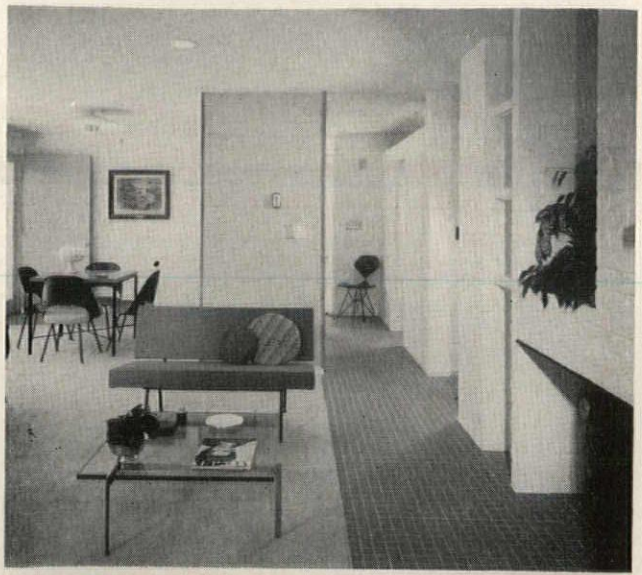
Interior finishes include ceilings of white painted plaster, acoustic tile or cedar boarding; walls are painted or papered plaster, painted or natural siding.

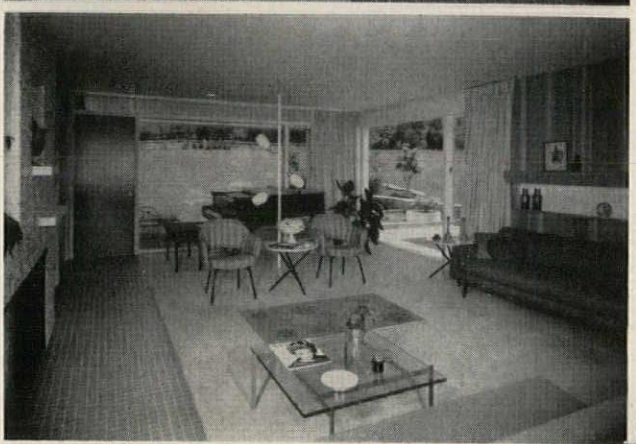




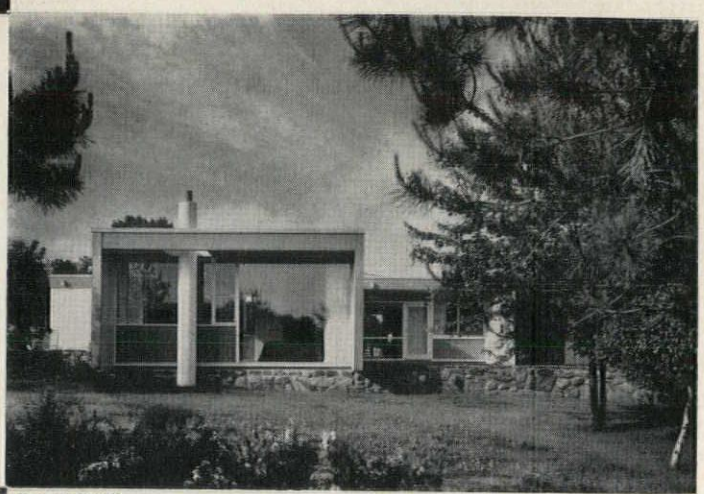
Ben Schnall



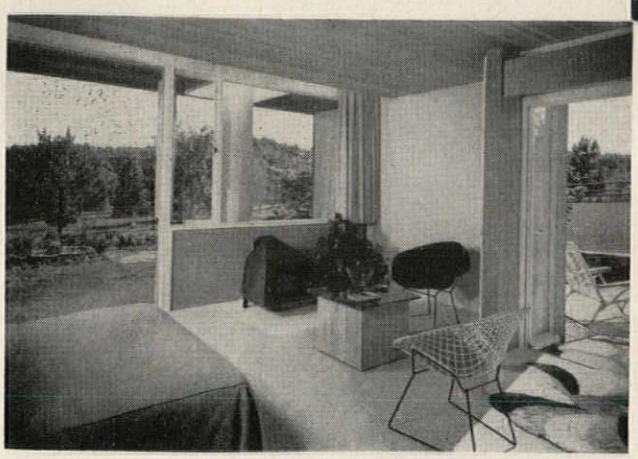




The interiors of the Staples house provide a big variety of built-ins throughout. Bedrooms have built-in drawers, shoe closets, single and double hanging spaces. The living room (above) has concealed television, phonograph, bar and storage for entertainment and recreation equipment. A phonograph speaker is provided in each room. An area for bulk storage is incorporated in one of the garage walls, and a storage room is located centrally near the bedrooms. All kitchen and laundry equipment is electric. The kitchen and storeroom have vented plastic dome skylights, and a clerestory roof adds daylight to the dining area and bedroom hall



Ben Schnall



BUILDING TYPES STUDY 289

®

RELIGIOUS BUILDINGS

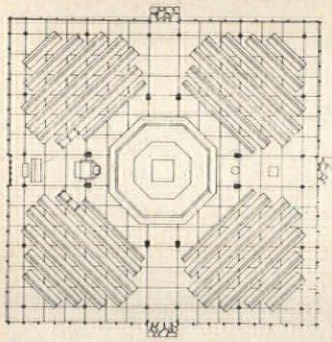
It is not enough that a church be decorative, nor that it be skillful, exciting or sincere. It must somehow communicate in architectural terms the religious faith for which it was built. Architect Edward A. Sövik in developing this theme, defines areas of religious belief and concern which should influence architectural decisions in behalf of faithful and correct communication. Five new churches and one synagogue follow this article. They represent some of the best recent low cost religious buildings. The question of the extent to which they fulfill Sövik's criteria merits study.

Church Design and the Communication of Religious Faith

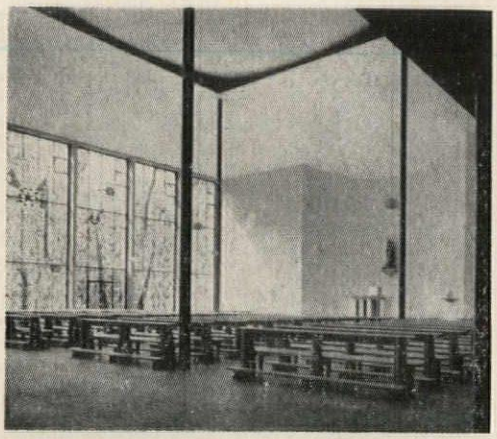
by Edward A. Sövik

If we assume, as most Christians nowadays assume, that the Holy Spirit can work through means other than the words of the Bible, that revelation is continuous, and that the message which the Scriptures tell can be ministered through other media, it is clear that churches must communicate the Word of Grace. The architect's problem as an artist is to design churches which do indeed communicate with faithfulness, and clarity, and vigor the view of man, the world, the church, and God, which the Christian community professes.

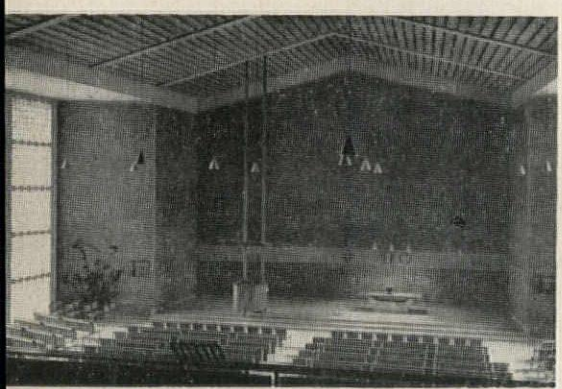
If this is true, there are two results: church architecture and art is provided with two criteria of excellence, namely, (1) the effectiveness of its communication and (2) the faithfulness of its content. First let me say something about the criterion of effective communication. It is no longer enough that a church or its art be decorative. The sensual delight which is provided by decorative qualities is important only if that which makes a church delightful also makes it more effectively communicative. But architecture has the freedom also to be ugly, if necessary; or awesome, or terrifying, or grand, or brutal, or instructive, providing that these qualities effectively communicate what is to be expressed. Nor is it sufficient that church architecture be skillful. The skill which makes communication effective is more than ever important; but the kind of virtuosity which distracts from effective communication is unacceptable. Nor is it sufficient that architecture be exciting or that it provide a unique and moving



The plan of the Chapel of St. James the Fisherman by Olav Hammarstrom encourages the participation of the laity in the liturgical functions of worship, thus lessening the separation between laity and clergy

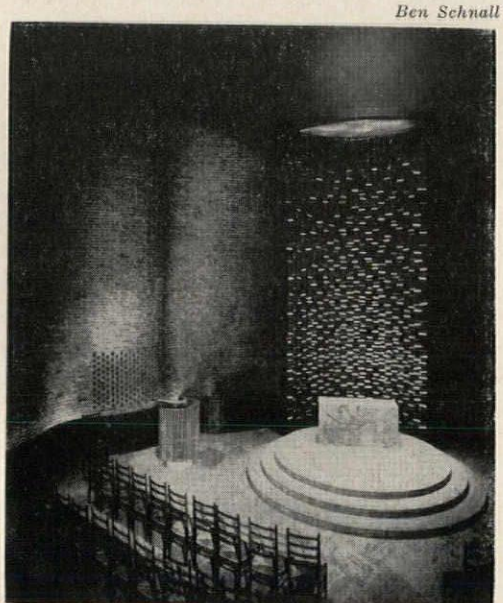


The sanctuary of St. Maria Königin in Cologne-Marienburg by Dominikus Böhm has a radiance which suggests that the Lord's supper was thought of "as a joyous thanksgiving, a celebration, a Eucharist."



"I think it is possible that the direction in which we ought to move is toward worship spaces which do not have a single dominant focus, but in which the focus moves as the liturgy moves." In the Bullinger Church in Zurich, by the brothers Pfister, neither altar nor pulpit has the dominant position

Ben Schnall



Saarinen's interdenominational chapel at M.I.T. necessarily avoids any architectural emphasis on differences among the faiths. Since the ecumenical movement is directed toward reconciling these very differences, M.I.T. chapel may become a prototype for future churches which will not stress them

experience.

I have had a lurking feeling, since spending some time at Ronchamp, that the undeniable force of this building is not directed clearly and consistently at a Christian objective, but too much toward an exciting personal vision, and that, therefore, despite its impact as space and form, it is not as valuable a prototype of church design as some have thought it.

The concept of art as simply new experience rather than expression of ideas is dangerous. It makes art irrelevant. The concern for interesting and exciting experiences is a delusion, with serious implications. The respected English philosopher C. E. M. Joad wrote a decade ago in his book *Decadence* that one of the characteristics of a decadent culture is that it concerns itself with the search for what is new, interesting, and exciting rather than with the search for truth: and history gives foundation to this assumption. This was the situation among the Greeks, for instance, when St. Paul preached to them on Mars Hill.

The second result of the view of architecture as communicative media is that a heavy burden is placed on the architect, not merely to communicate effectively, but to be faithful. To do one's best, and to be sincere, is no longer sufficient, since the concern of the church is not to give artists the opportunity for self-expression, but to communicate the Word of God. The artist, therefore, must become the servant of the Gospel first of all—just as the pastor is; and his burden is not simply to articulate a response to the Gospel but to articulate the Gospel itself.

Once having said this, I should confess that this is really too big an assignment for an architect, as an architect. There are any number of ideas which are a part of the Christian vision which cannot be expressed in the material and spaces with which an architect works.

But some of the ideas which concern us as Christians, can be expressed in architectural form, and to these we must be faithful. I should like to proceed by selecting a few of these ideas, most of them of particular concern in the twentieth century, and saying something about their implications in architecture.

One of the areas of current Christian thought is the relationship of the laity. In general, the emphasis has been on the recovery of the sense of the community as being one community, with a diminishing of the breach between the clergy and the non-clergy. Laity means simply "people." We are all the people of God, whether we are clergymen or not. Some of the Quakers have historically held most aggressively and literally to this concept—without even a functional office in their congregation. At the other extreme is the Roman Catholic Church with its sacrament of ordination, which establishes not only a functional difference but an essential difference be-

tween clergy and laity. The rest of us fall somewhere between.

Among most of us (and clearly even among the Roman Catholics) there is a sense that the breach between the laity and clergy has been unhealthily wide. This has liturgical implications. A. G. Hebert in his book *Liturgy and Society* suggests, for instance, that we ought to do as the early Christians did and try to involve as many people as possible in the liturgical functions of our worship; and this certainly is the direction in which the changes in liturgical practices are bringing us.

The obvious architectural expression of the idea that we are one community is that we should worship in one room, not in a pair of sharply distinguished spaces called "chancel" and "nave." And, of course, if we are to abandon one of them, it is the nave we must abandon. We will never know how much the typical church design, with a deep chancel and remote altar, has contributed toward the average church-goer's tendency to detach himself from responsibility, and regard the church as being a body of clergymen. Or how much it has fostered the notion that God's Presence is somehow focused on the altar or the pulpit instead of in the hearts of His people.

It is true, isn't it, that our churches often imply some sort of mysterious Presence which gives the chancel a sort of extra holiness? Yet, we know, if we consider carefully, that it is wrong to imply this, for we worship not at Mt. Moriah or at Jerusalem, but in spirit and truth; and the Kingdom of God is not here or there, but within us. The holiest things in a church are the children of God who worship there. And, if we wish to imply that the Presence of God is located in a church in a special way, it is so because the children of God are there. They are the holy vessels and the sacred instruments. And where they are, this is the sanctuary, because God is there.

Another of the issues which has been the concern of the church in our century is the definition of the nature of the Church. Historically, the architecture of churches has generally pictured the church as being one of two things; either a family gathered together, or a pilgrim army. The latter image appeared in the dark ages and developed to its strongest formulation in medieval times when pilgrimages were a common form of devotional activity, and the crusades the most dramatic activity of the church at large. At the time of the Reformation—even before it—the image was moribund, until it was revived by the medievalists of Victorian England. The other image, that of a family, was evident in the early Church and in post-Reformation times, and continuously in the Eastern Church.

If an architect wonders which of these is more valid (I think there is no doubt that both have validity), he is concerning himself with an important thing; for the building is the garment for the community, and it ought to be a fitting garment, a true reflection of the nature of the community. In architectural form, this issue is, for one thing, the issue between a long, narrow space which suggests a pilgrimage, or a more nearly circular or square shape, which suggests the family gathered. And if the family is the proper image we ought to abandon the long narrow church. It is perhaps also the issue of whether the pastor turns his back on the congregation like the leader of a procession, or faces them.

Another concern which may affect church design is manifested in the liturgical movements or studies in which so many churches have been involved in the last generation. These have branched out in many directions, but one of the most important issues has concerned the Lord's Supper, and one of the concepts which has been most generally emphasized is that the Lord's Supper should be thought of as the early Christians viewed it, not so much the impartation of forgiveness (this was the Pietists' view), but as a joyous thanksgiving, a celebration, a Eucharist.

To an architect, this ought to mean something in terms of light and space. I have been to evening communion services where the lights have been dimmed down in a room which already had a melancholy gloom. This scarcely represents a Eucharist. Milton's phrase "dim religious light" characterizes an approach to Christianity which, I think, gives much less importance to the Resurrection, the sense of thankfulness, the celebration, and even to the hard disciplines of Christianity, than ought to be given.

Perhaps, because the liturgical movement among Protestants has concerned itself in a large part with the study of the Lord's Supper, we are used to seeing statements which imply that the Eucharist is the "central," or "climatic," or "primary" element in the liturgy of the church, and the remainder of the service is frequently thought of as preparatory, subsidiary, as simply of relative importance.

Architecturally, this view is being reflected in church plans which give the Lord's Table a uniquely commanding position in the church building, sometimes central in the space, sometimes the focus of a special perspective. This is happening among denominations which have no such traditions as well as among the so-called liturgical churches.

I should like to suggest that, among Protestant Christians, this view should not be so quickly accepted. It probably has the same fault as the form which many reformed churchmen are abandoning, where the pulpit as the symbol of the Word dominated the church and completely overshadowed the Communion Table; and it is not necessarily a corollary of the concern for a more complete liturgy. I say this, with the support, I think, of at least one considerable theologian, Gustav Aulen, who says: "Another wrong and inadequate approach is the attempt to differentiate between the means of grace.

One of the great achievements of the Reformation was the re-discovery of the Word as a means of Grace. But the reformer who made this re-discovery never asked the question, which means of grace should be regarded as the greatest: The Word or the Sacraments. Essentially, there could be for him no depreciation of either baptism or the Lord's Supper; both are the Lord's actions with His church, and in His church. Later on, the question of preference was often raised within Protestant communions. There is no more wisdom in this question than in the question of the disciples as to who is the greatest in the Kingdom of God."

I think it is possible that the direction in which we ought to move is toward worship spaces which do not have single dominant focus, but in which the focus moves as the liturgy moves. It is these thoughts that incline me away from a central altar, in a concentric arrangement, and away from the shrine-like altar at the focus of the church, and away from the tremendous lecture hall pulpit. If the architect who must design the churches is worried about a room without a focus, he should consider the family living rooms where the focus changes from picture window, to piano, to fire place. The presence of people accomplishes the change.

Another twentieth century Christian concern is the ecumenical movement among the churches. Constantly we pray that God will mend the breaches among his people, and indeed He seems to be doing it. How long it will take and what difficulties we or our grandchildren may be forced into before the matter is completed, none of us knows, but this has architectural implications, too. How many Lutheran building committees have hired my firm because I am a Lutheran, I don't know, but I know that some have. And, I am fairly certain some have refused to hire us because I am a Lutheran, too. Those who have, however, have sometimes said they knew we could design them a church which would be distinctively Lutheran. I have sometimes told them that I think it would be better if we just did our best to build a church for Christian people with no conscious attempt to accentuate those things which distinguish us from other Christians. The laymen usually are quite happy with this, and I think most of the pastors are, too. Partly because our differences are generally not the sort of thing that demand architectural expression; partly because Christians and particularly Protestant Christians are really growing together; partly because the new architecture requires that we slough away many traditional patterns; and partly because we can earnestly try not to build in our idiosyncrasies, I think we can and should accomplish something in this direction.

I should like to think that a church building can be flexible enough, and restrained enough, so that whatever happens in liturgy and worship in the years to come can be accommodated; and that it need not be a barrier which separates one brother from another.

I think it is necessary also, to say something about the Christian ethic as it may be reflected in architecture. There is the temptation among people who become absorbed with the fascinating problems of systematic theology to forget temporarily that the greatest thing in the world is not faith or hope, but love. And among those of us who have inclinations to scoff at the pseudo-gothic or pseudo-colonial, it is easy to forget that these churches were also built out of love and that some of them actually have the qualities of architecture which are very kind to people, gentler and friendlier and more compassionate than many of the more honest and vigorous contemporary churches.

I do not mean to say that it is not possible to design a church that is kind and at the same time new, and disciplined, and consistent with the precepts of architectural integrity and dogmatic truth. Indeed, the devotion to truth is one aspect of love, and that love is not complete which evades discipline, or honesty, or truth, at any level.

But I do mean to say that whatever else our churches are, they ought also to be ministers of compassion and sympathy. They must not be proud, or detached, or inhuman; they must not be monuments which impose themselves on people.

It seems to me that the problem can only be met by the designer who remembers three things: The first is that truth, as the Gospel presents it, is full of paradoxes. The present is concerned with both the past and future. Joy exists only in the presence of suffering. The achievement of knowledge brings new mysteries. Sunlight and shade are companions. It is possible and necessary to combine the noble and dignified and disciplined and even austere, with the gentle, the sensitive, the kind and the compassionate.

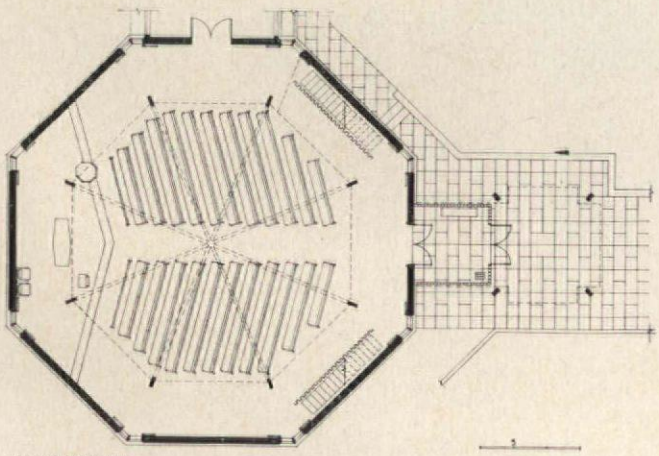
The second is that every decision in the process of the design of a church must be made not only with intelligence and understanding, but with love, for the unknown people, living and not yet born, who are to worship together in the church.

There are buildings which seem always to be asking for attention. There are others which seem simply to be providing fine companionship. A preacher who wants to carry the message of the Lord's love to people may have sometimes to spend the hours after midnight in a bar being company to a drunken parishioner. This suggests the third thing, namely, that the law of love can make an exception of every other law and can require of us unexpected things. So I am sure there is no more absolutely fixed formula for church designs than for loving behavior. Any good church is the solution to an immediate problem, and the formula for success is an attitude of mind on the part of the builders—a creative, sensitive, informed, thoughtful, and loving concern for the ministry of the Gospel.

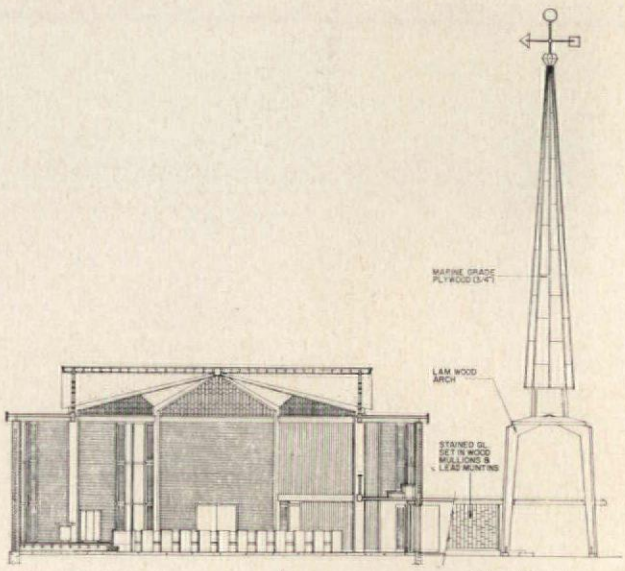
Maris © Ezra Stoller Assoc's.

A Unitarian Church for New England

Maris © Stoller Assoc's.

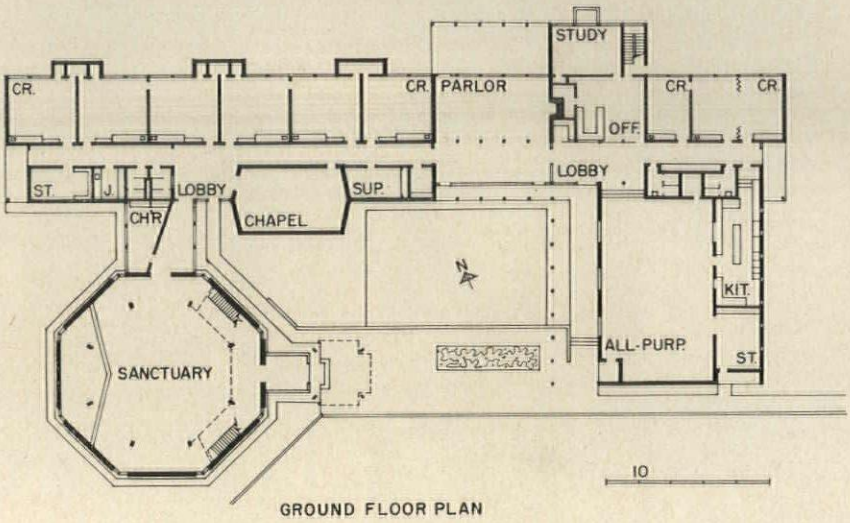


PLAN OF SANCTUARY



SECTION THRU SANCTUARY

TOWER ELEVATION



GROUND FLOOR PLAN

NAME: *The Second Congregational Society in Concord (Unitarian)*

LOCATION: *Concord, New Hampshire*

ARCHITECTS: *Hugh Stubbins and Associates, Inc.*

STRUCTURAL ENGINEERS: *Goldberg and LeMessurier*

MECHANICAL ENGINEERS: *Fred S. Dubin Associates*

ACOUSTICAL ENGINEERS: *Bolt, Beranek and Newman*

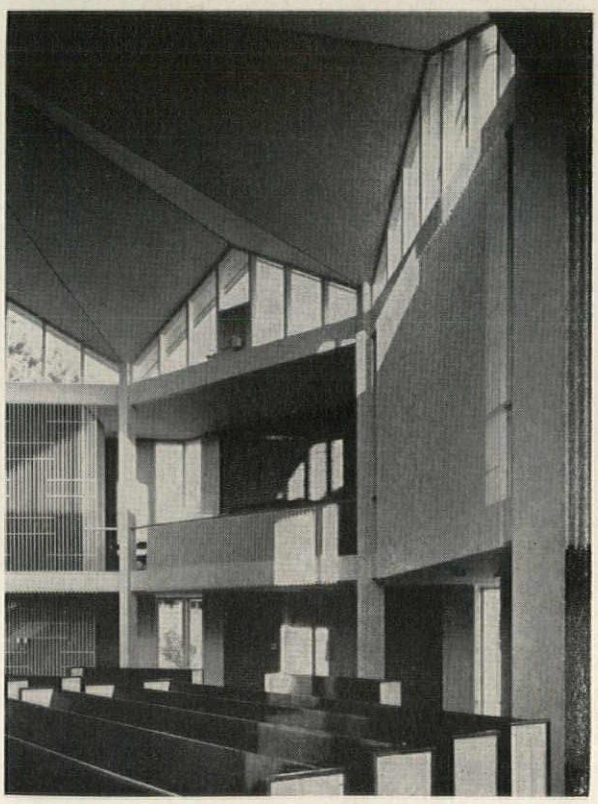
CONTRACTOR: *A. Taylor Corporation*

The congregation requested that the church be sympathetic to their form of Unitarian worship and that it be compatible with the New Hampshire landscape. The question of traditional symbols was discussed and the building worship committee made the following statement in its report to the architect. "Although we feel that most traditional symbols should not be used in a Unitarian church, we did not wish to have just a traditional church with the essence removed, but to have a positive creation which expressed our faith. We want to build a lasting building and avoid definite symbols. This is not meant to limit the architect in his use of materials or decoration. Perhaps other means than permanent symbols could be used to gain warmth and spiritual quality."

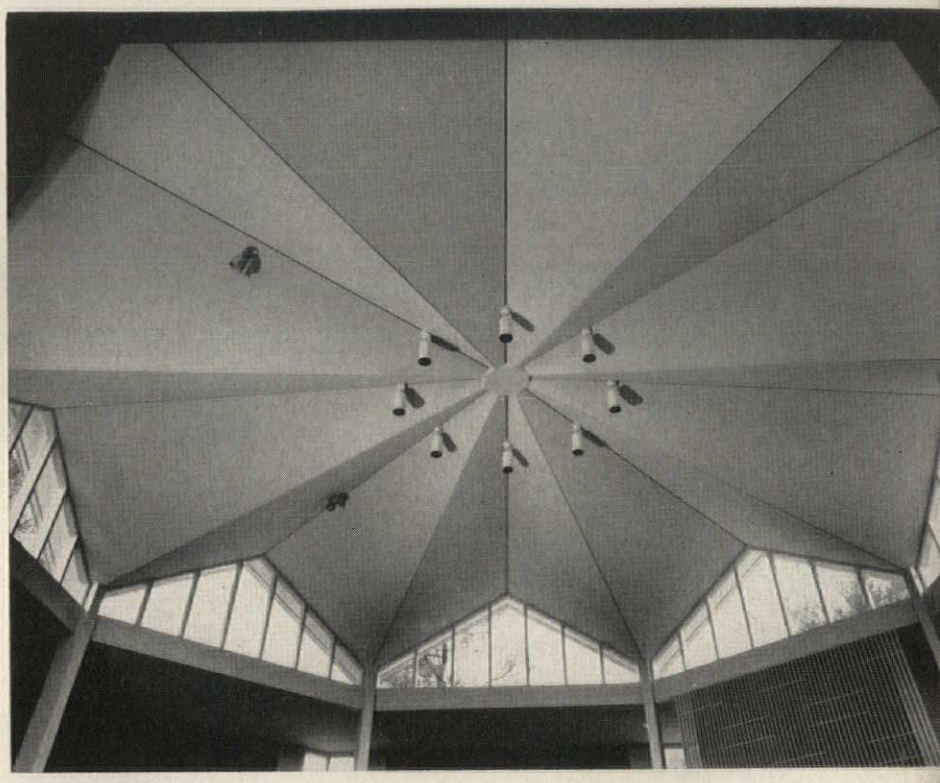
The architect's means are simple and clear. The sanctuary is octagonal, a shape which both architect and congregation find expressive of the concept of unity. His forms, the octagon and tall white belfry spire, have geometric strength. The spire establishes positively the church's relation to the New England landscape and spirit, and further study of the building reveals other ways in which the architect developed this theme in contemporary terms.

Maris © Ezra Stroller Assoc's.

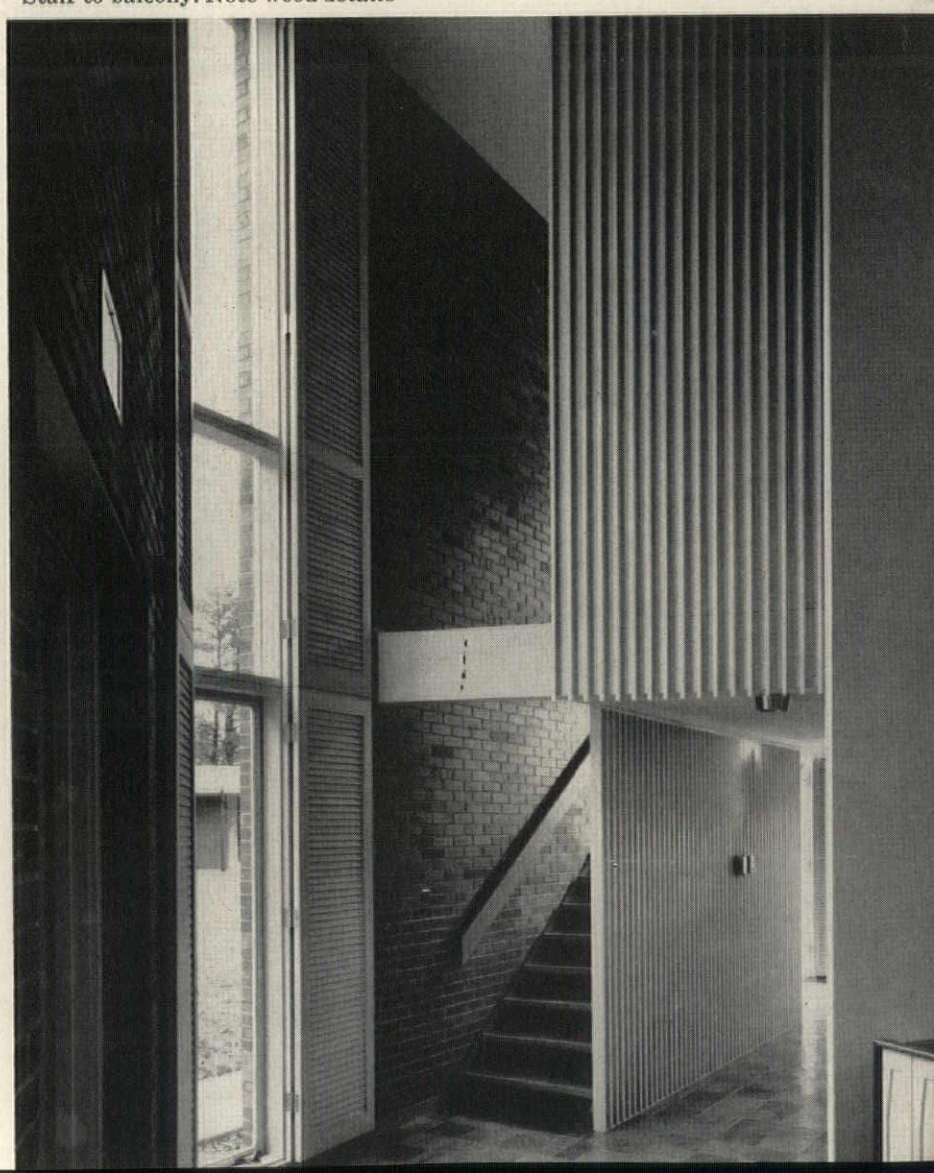
The sanctuary accommodates 200 and is not planned for seasonal crowds. Side aisles are wide enough to handle temporary chairs for crowds. Note room-high windows providing views of the landscape. The sanctuary is flooded with light which can be controlled by pairs of shutters at each window



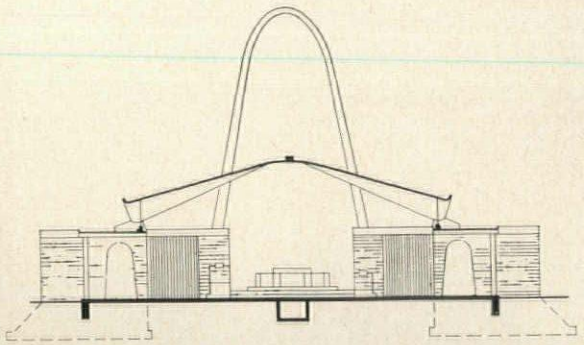
The electronic organ and choir area was placed in a balcony at the rear of the auditorium over the entrance. Access stairs and adjacent balcony areas are concealed by screens. This arrangement leaves the rest of the sanctuary completely open and spacious as shown in photograph above



Stair to balcony. Note wood details



Precast Concrete Shells Roof Lutheran Church

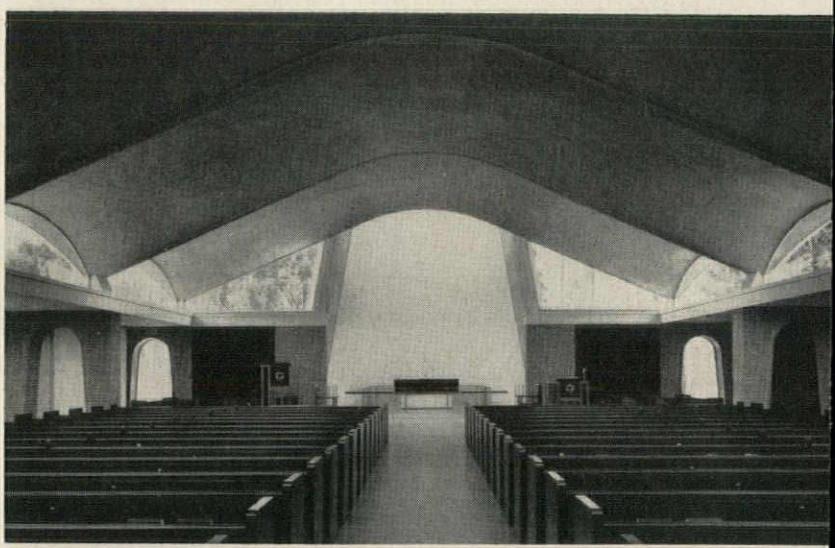


SECTION A-A

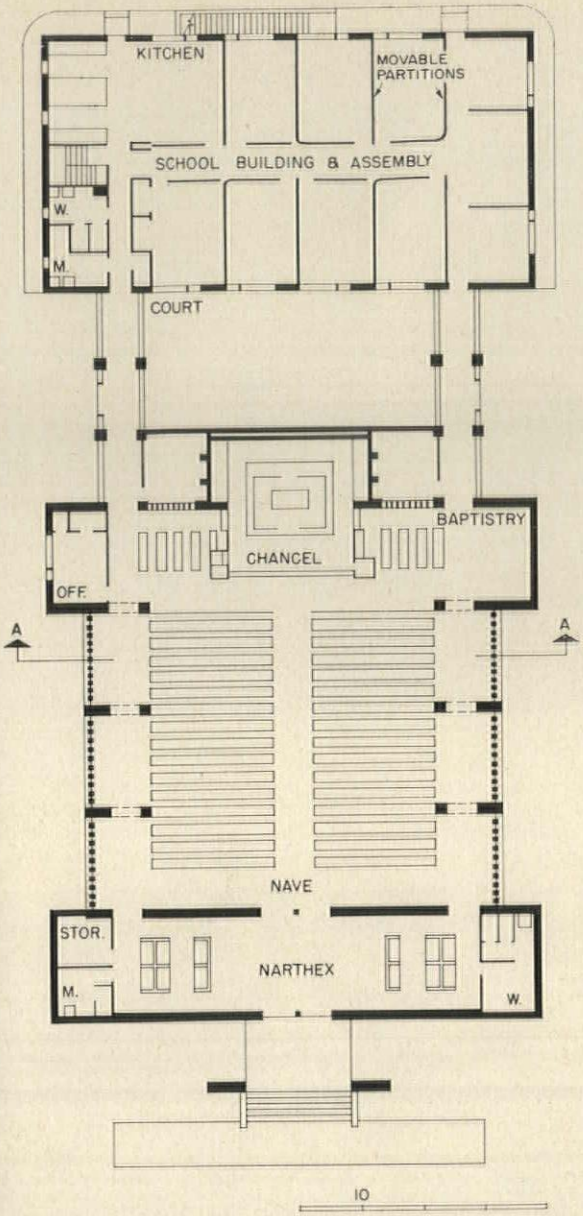
NAME: *St. Mark's Evangelical Lutheran Church*
LOCATION: *Norwich, Conn.*
ARCHITECT: *John M. Johansen*
STRUCTURAL ENGINEERS: *Ammann and Whitney*
MECHANICAL ENGINEERS: *Fred S. Dubin Associates*
GENERAL CONTRACTOR: *Schnip and Sons, Inc.*

The nave and altar of this Lutheran church and school are enclosed by concrete shells cast on earth bank molds. The parabolic form over the altar was poured in six sections joined in pairs along the ridge. There are eight conoidal shells over the nave and the forward part of the chancel joining along a central axis. These and the parabolic segments over the altar, as well as the shell over the entrance were cast by the same method. An earth bank mold contained by a rough concrete skin was used for each type of form. The rough concrete surface was covered with a plastic membrane and the steel reinforcement laid on top. Then the shell was poured. The plastic membrane facilitated removal of the shell from the form. After the shells were raised in position the plastic membrane was removed and the interior surfaces were sprayed with asbestos insulation.

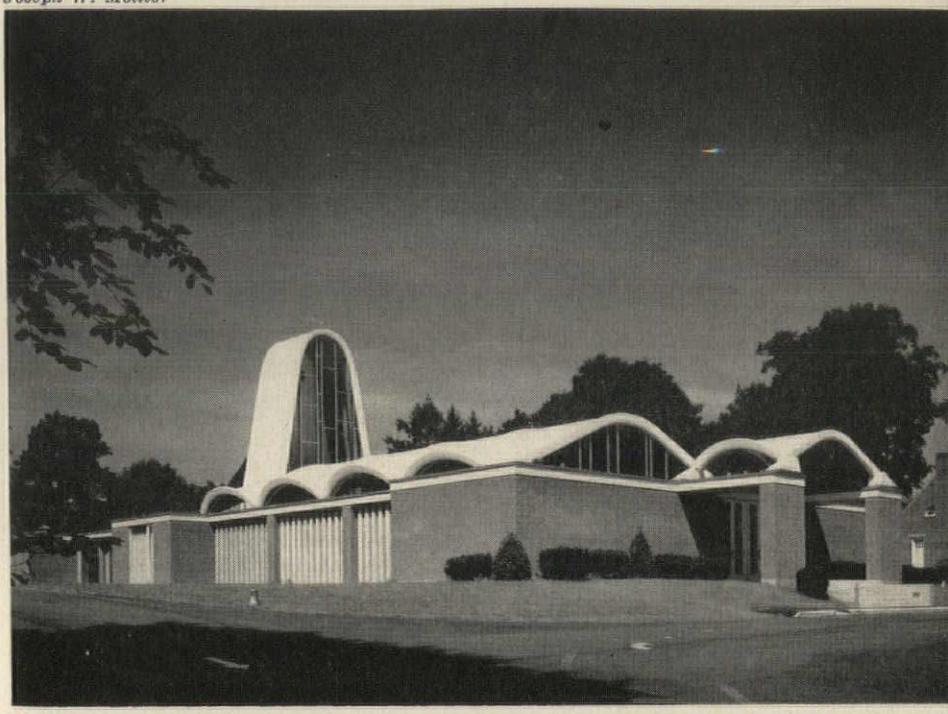
The conoidal shells over the nave are supported by concrete buttresses covered by brick veneer. Other walls are of brick veneered concrete block, and the school building at the rear of the chancel beyond the court is flat roofed.



Brick veneered concrete buttresses support precast shells



Joseph W. Molitor



Wall at rear of altar is stuccoed concrete block

Plastic membrane and reinforcement

Shells raised into position

Multiple-Use Plan Fulfills Program Within Tight Budget

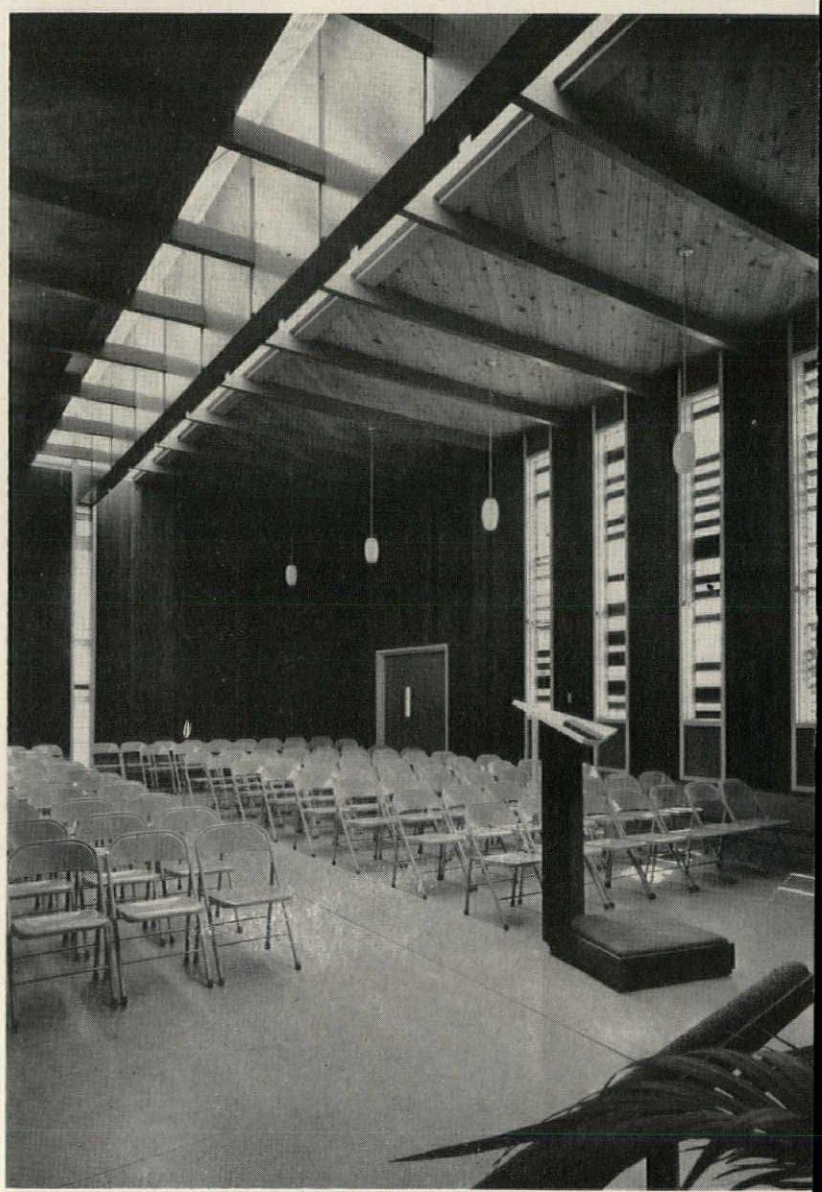
Roger Sturtevant

NAME: *Mount Carmel Lutheran Church*
LOCATION: *San Luis Obispo*
ARCHITECTS: *George J. Hasslein and Kenneth E. Schwartz*
CIVIL ENGINEER: *Hans Mager*

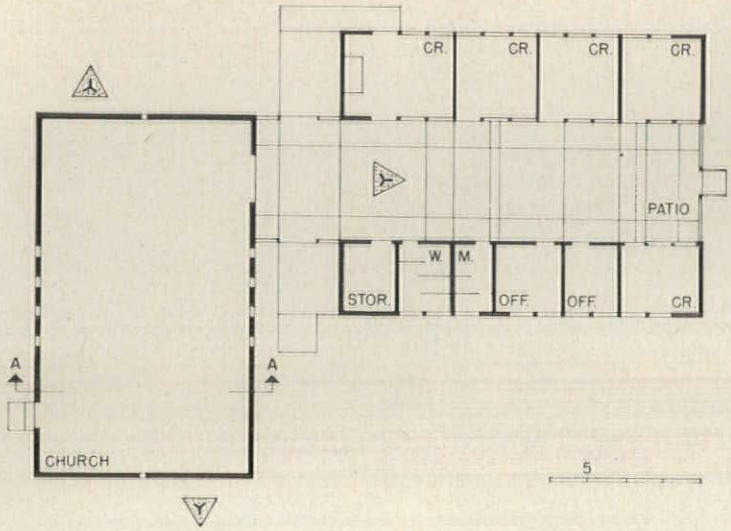
The congregation had $45,000 to spend and hoped to get sanctuary seating for 200, eleven classrooms, kitchen, dining and meeting hall, narthex, two offices and storage space. This sum was to include the architects fee, sewer assessments, curb and gutter, parking lot and site development. The architects first thought these requirements impossible within the budget, but by combining the worship area and meeting hall, and providing a radiant heated central patio which could serve as narthex, or dining room, or three additional classrooms or multi-purpose hall, they managed to meet most of the current demands of the congregation.

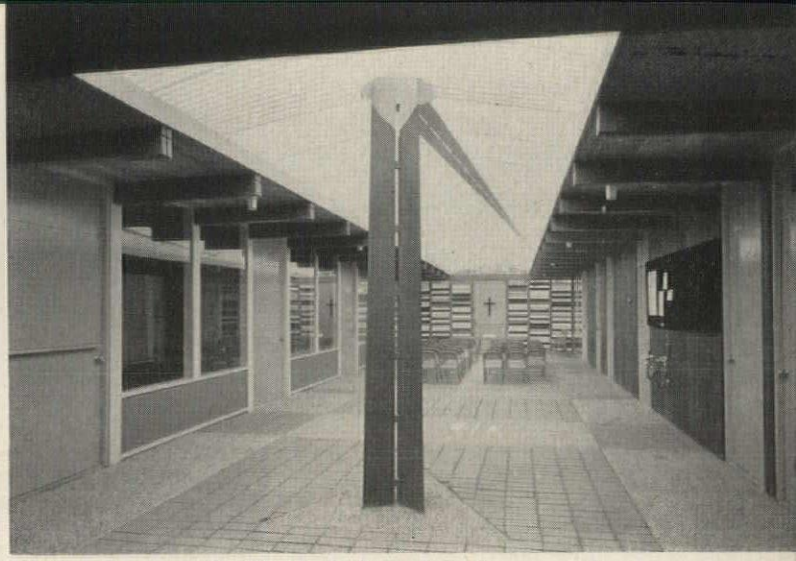
The form had to be kept simple to help keep costs down. The central truss in the nave simplified framing. It is covered with 4-ft by 4-ft plywood panels to conceal inexpensive workmanship. Exterior walls are surfaced with red cedar, which is used on the interior in combination with plaster. Jalousie windows are glazed with plastic and wood.

As the congregation grows the building will expand, a future church will be built and the present worship area will become an assembly hall. Although a transitory place of worship, in spaces designed for maximum flexibility, the building nonetheless effectively communicates its religious purpose.

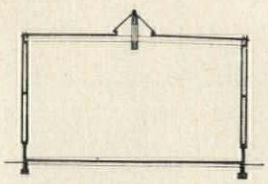


Seating area as seen from altar

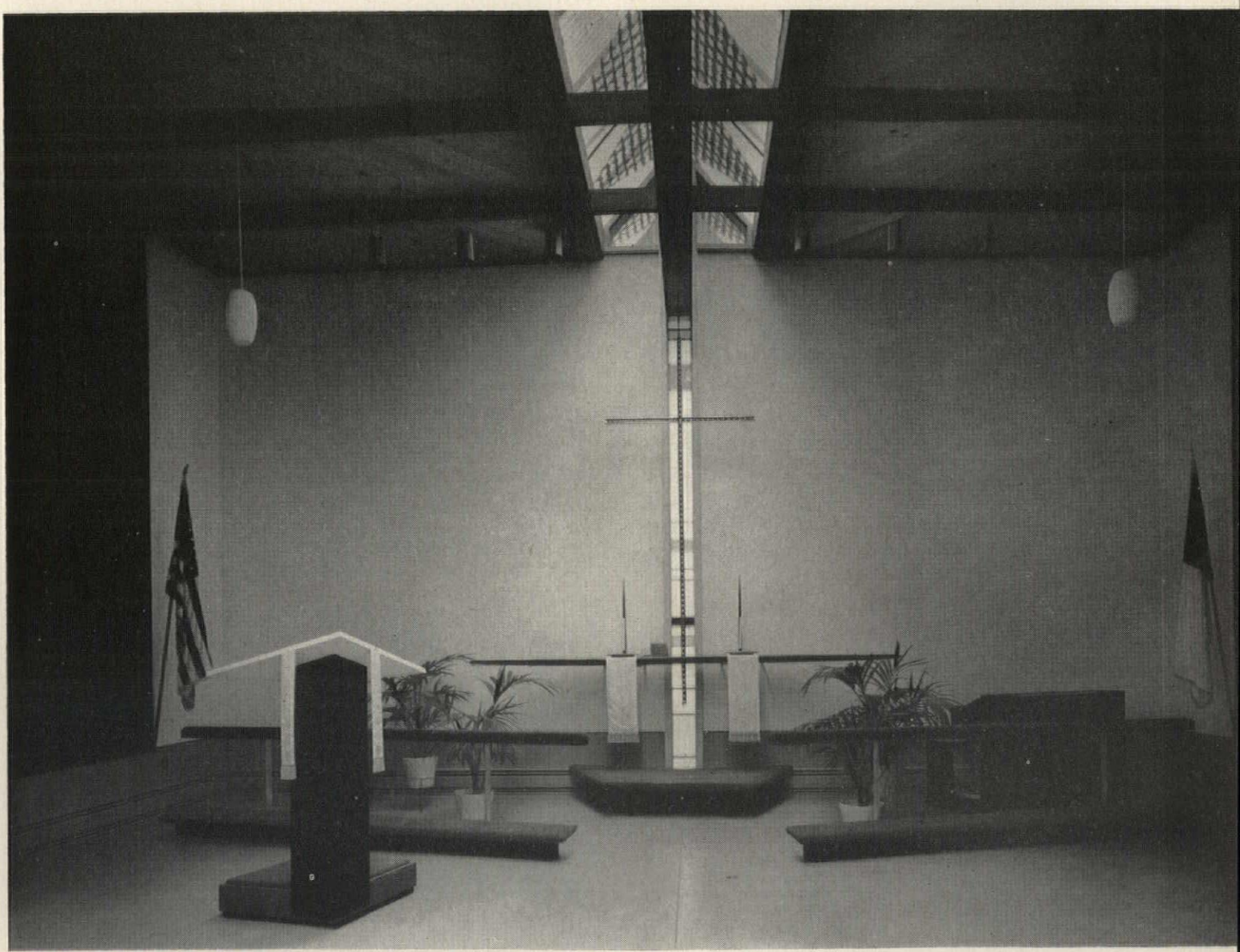




Multi-purpose patio. Vertical element in foreground is base of spire identical to the one shown in the top photograph on opposite page. Ceiling is plastic



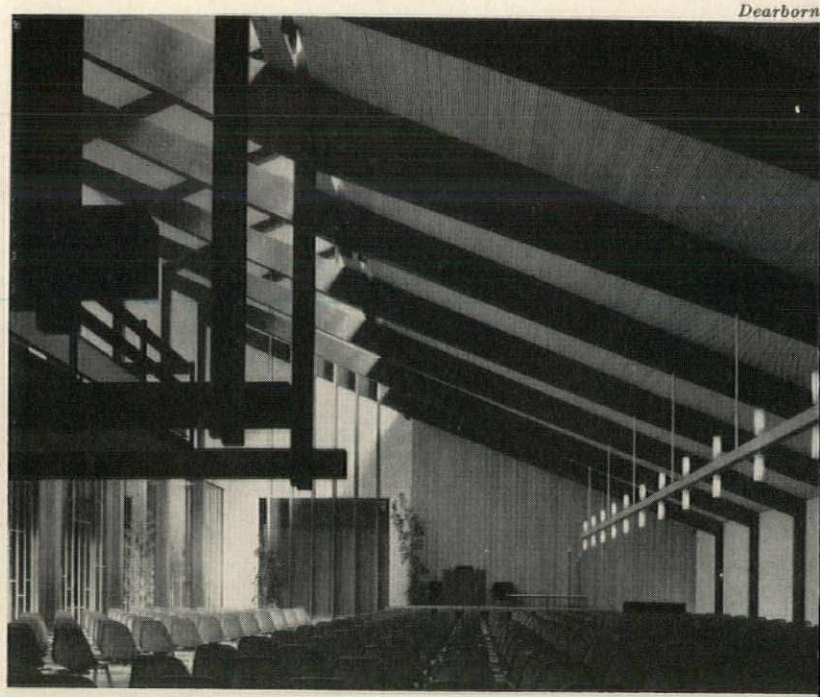
SECTION A-A



Sanctuary. Center truss is roofed with corrugated plastic which serves as light source

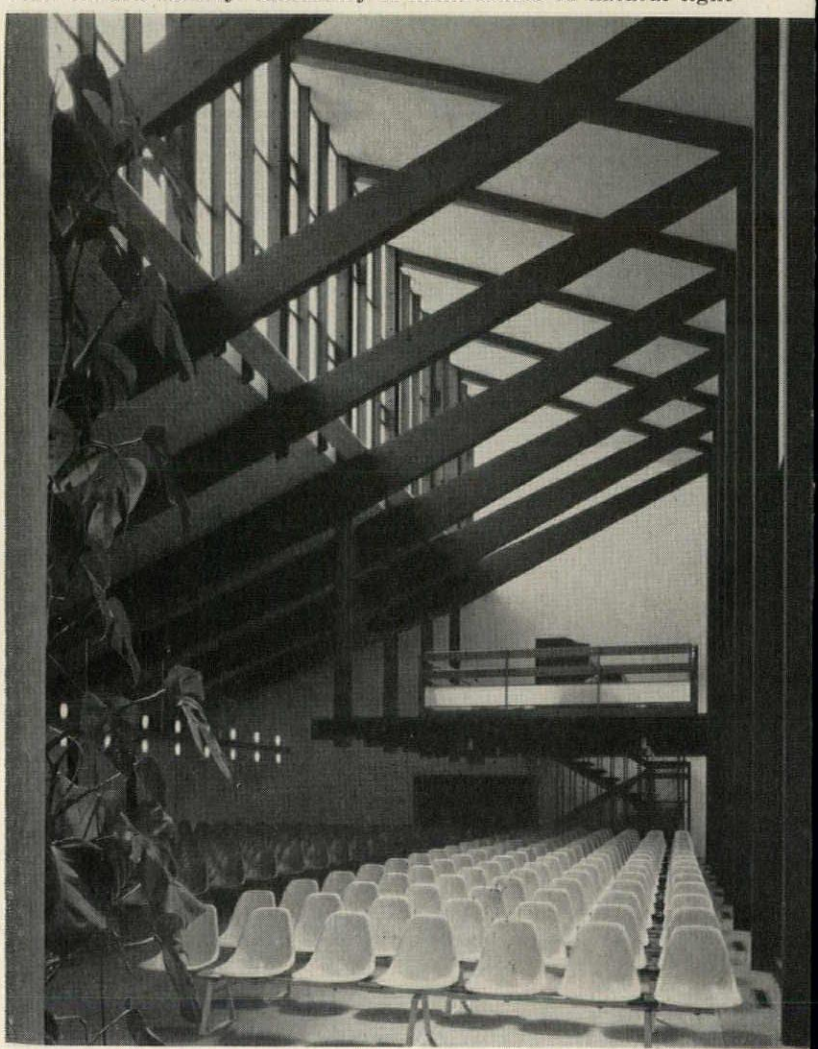
Dramatic Lighting for Unitarian Worship

Dearborn



View toward platform and lecturn. Screen conceals stair

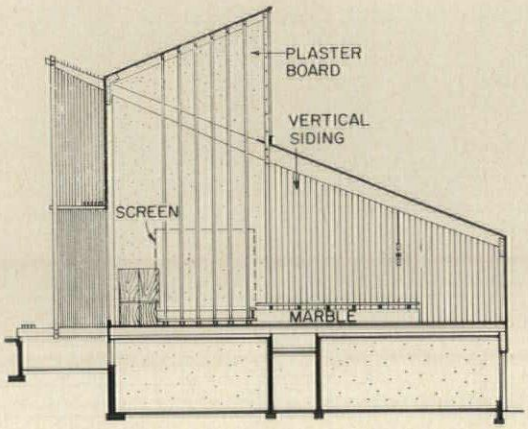
View toward balcony. Clerestory is main source of natural light



NAME: *University Unitarian Church*
LOCATION: *Seattle, Washington*
ARCHITECTS: *Paul Hayden Kirk and Associates*
STRUCTURAL ENGINEER: *John H. Stevenson*
MECHANICAL ENGINEERS: *Stern and Towne*
CONTRACTOR: *A. W. Robertson*

Natural light is handled in an unusual way in this precisely articulated wood frame and stucco church. The platform and lecturn, and the portion of the nave which directly faces them are in shade, while the remainder of the nave, (less than half) is brilliantly illuminated by a clerestory and focuses upon a screen which conceals the stair which provides access from the basement to the platform. This area is further illuminated at the side aisle which is roofed by a continuous skylight.

This reversal of what would seem to be the obvious procedure of dramatizing the focal area with light, suggests that the architects wished to deliberately mute the emphasis on platform and lecturn, perhaps to express architecturally its non-sacramental nature in the Unitarian Church.



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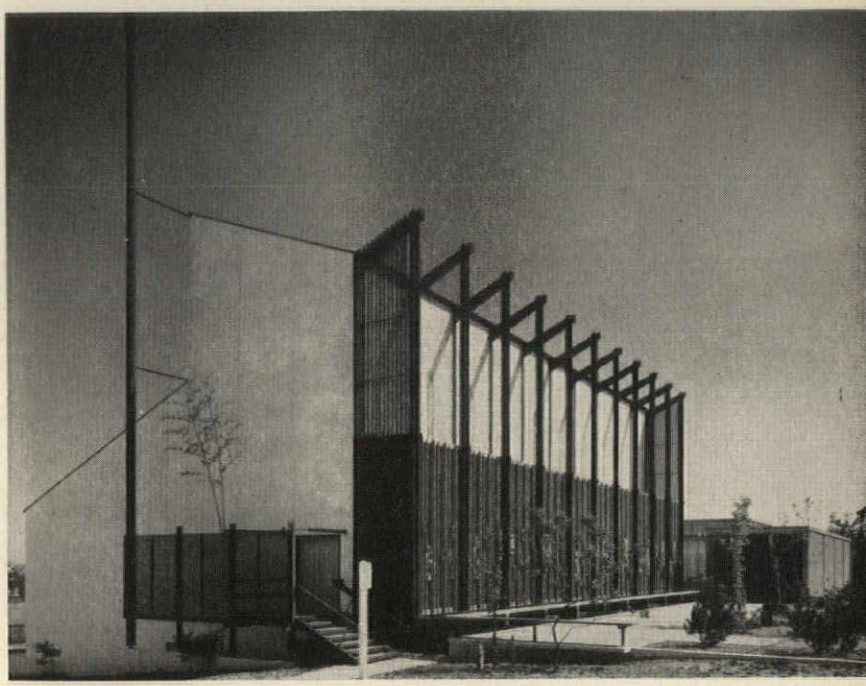
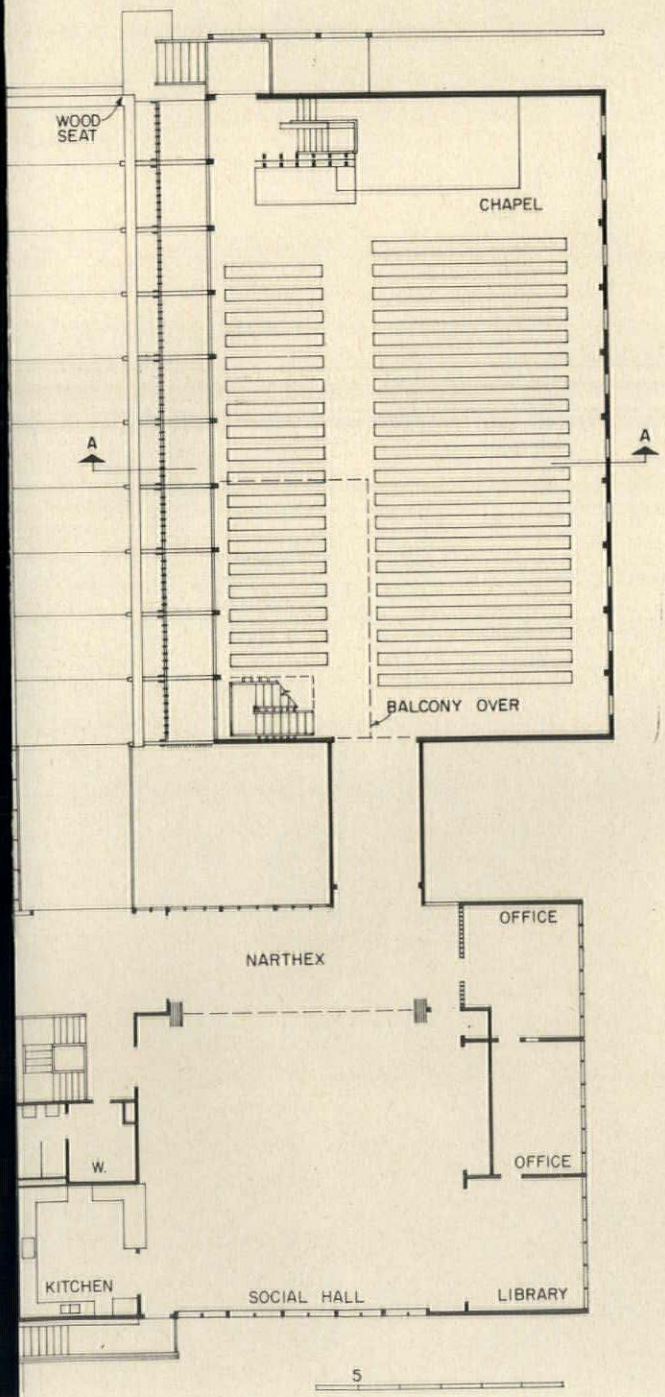
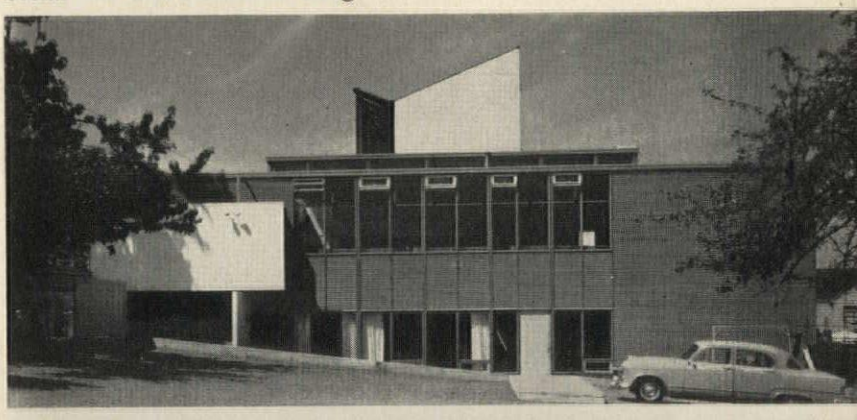
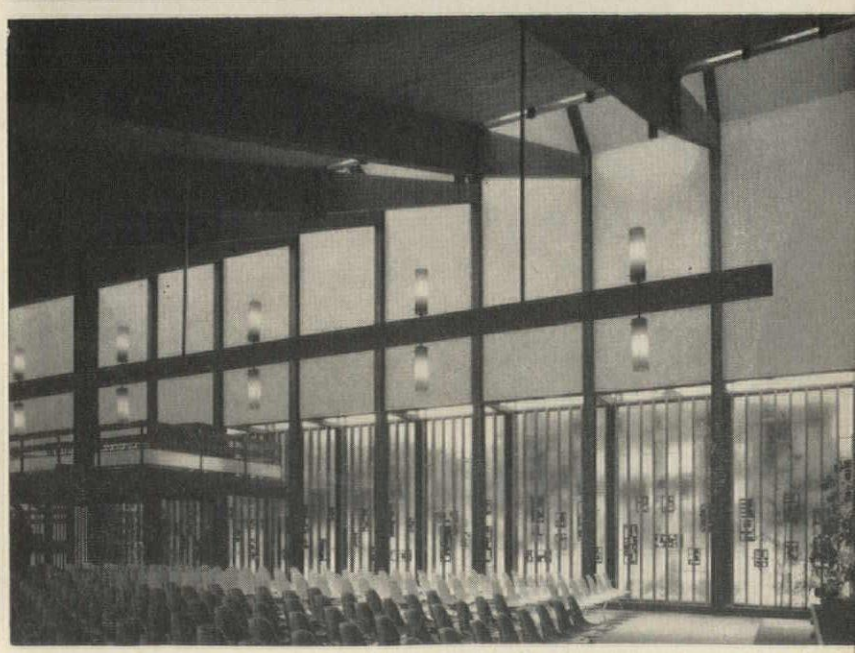


Projecting element between structural frames is top lighted side aisle

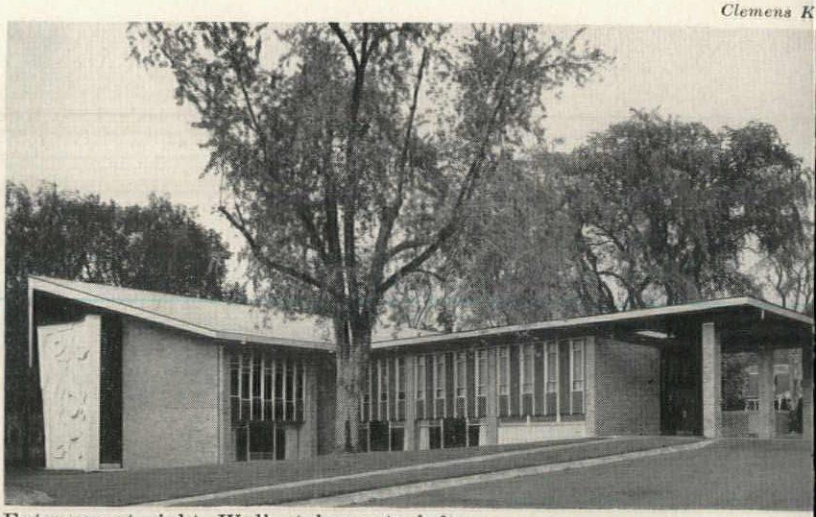


Social hall and classroom wing





Compact, Well Detailed Synagogue



Clemens K

Entrance at right. Wall at bema to left

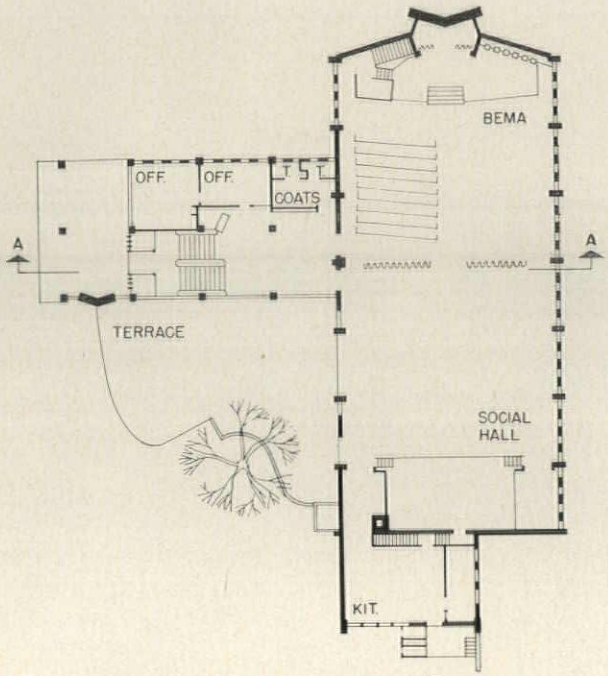
NAME: *Temple Adath Yeshurun*
LOCATION: *Manchester, New Hampshire*
ARCHITECT: *Percival Goodman*
ASSOCIATED ARCHITECTS: *Kohler and Isaak*
STRUCTURAL ENGINEER: *Harry Sadler*
MECHANICAL ENGINEERS: *Francis L. Gallagher Associates*
CONTRACTOR: *Harvey Construction Company*

The conception of sanctuary and social hall as a single interpenetrating unit is quite common in synagogue design, since it provides for the greatly expanded crowds which attend services on the high holidays. For this temple, a gently sloping site facilitated a two-story scheme which provides a sanctuary with permanent seating for 246 and a social hall with additional seating for 456. The social hall opens on a terrace. Rabbinical and administrative offices are at the entrance level, and eight well-lit classrooms, a youth lounge and a library are provided at the lower level.

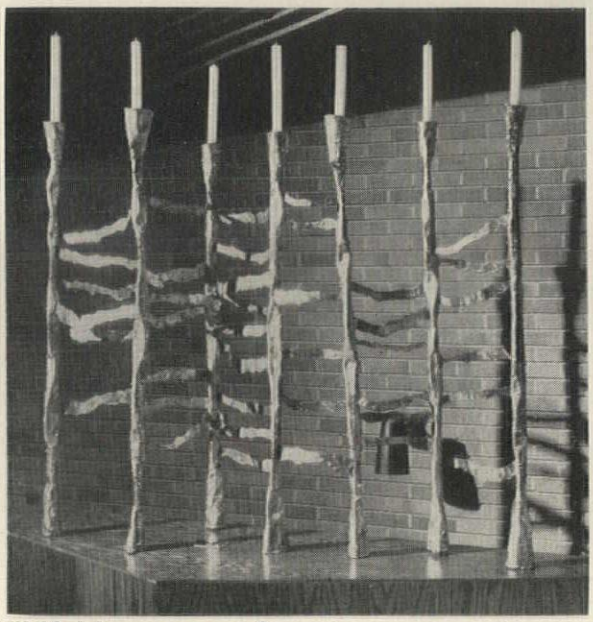
Percival Goodman makes use of the allied arts and crafts to the fullest practical extent in all his synagogue work. In this temple all design and sculpture was done by Harris and Roz Barron. They designed the exterior sculpture and cast it in place, and executed the welded bronze menorah and eternal light. The ark curtain and the scroll covers were handwoven after their designs.

The roof is constructed of laminated wood bents and steel. Total cost of the building which comprises an area of 19,000 sq ft was $254,000 exclusive of land, furnishings, landscaping and fees.

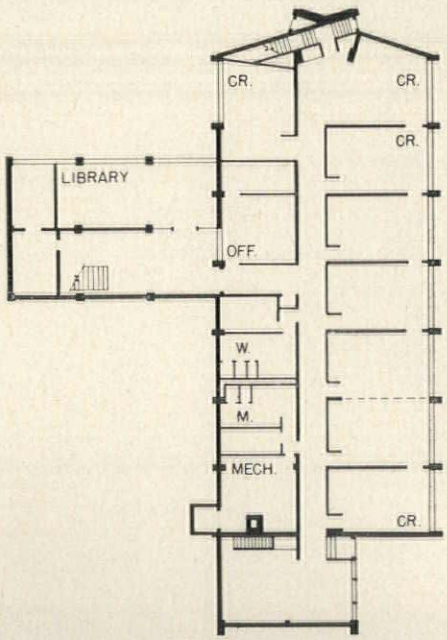
Decorative window illuminates bema. Classroom below



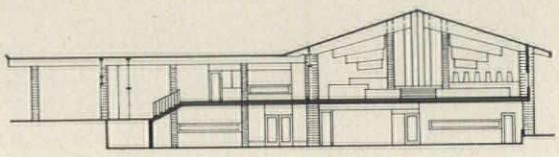
UPPER LEVEL



Welded bronze menorah

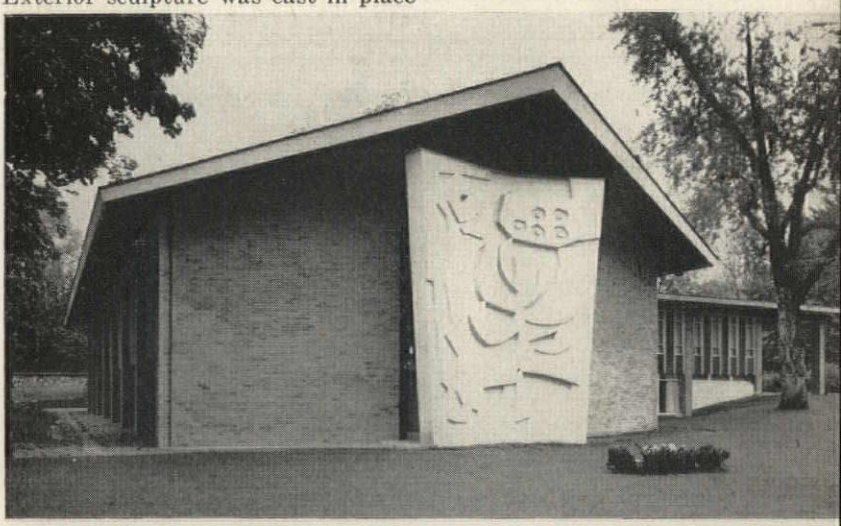


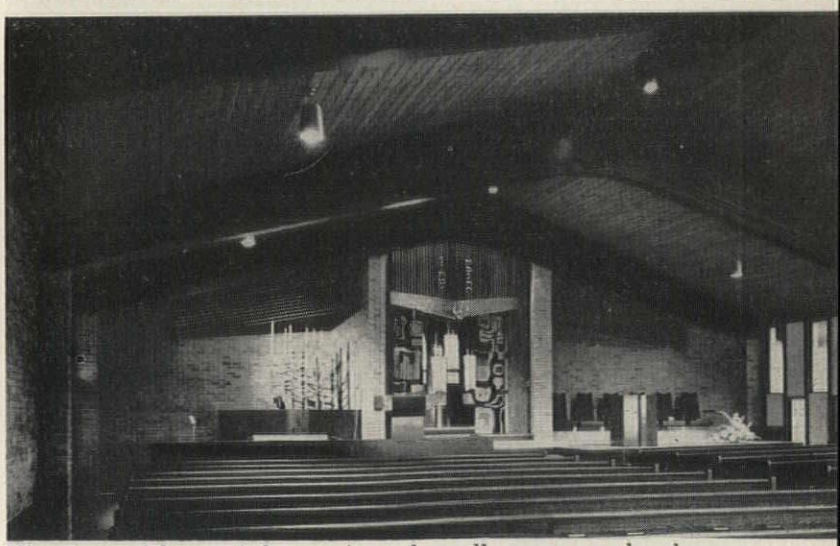
LOWER LEVEL



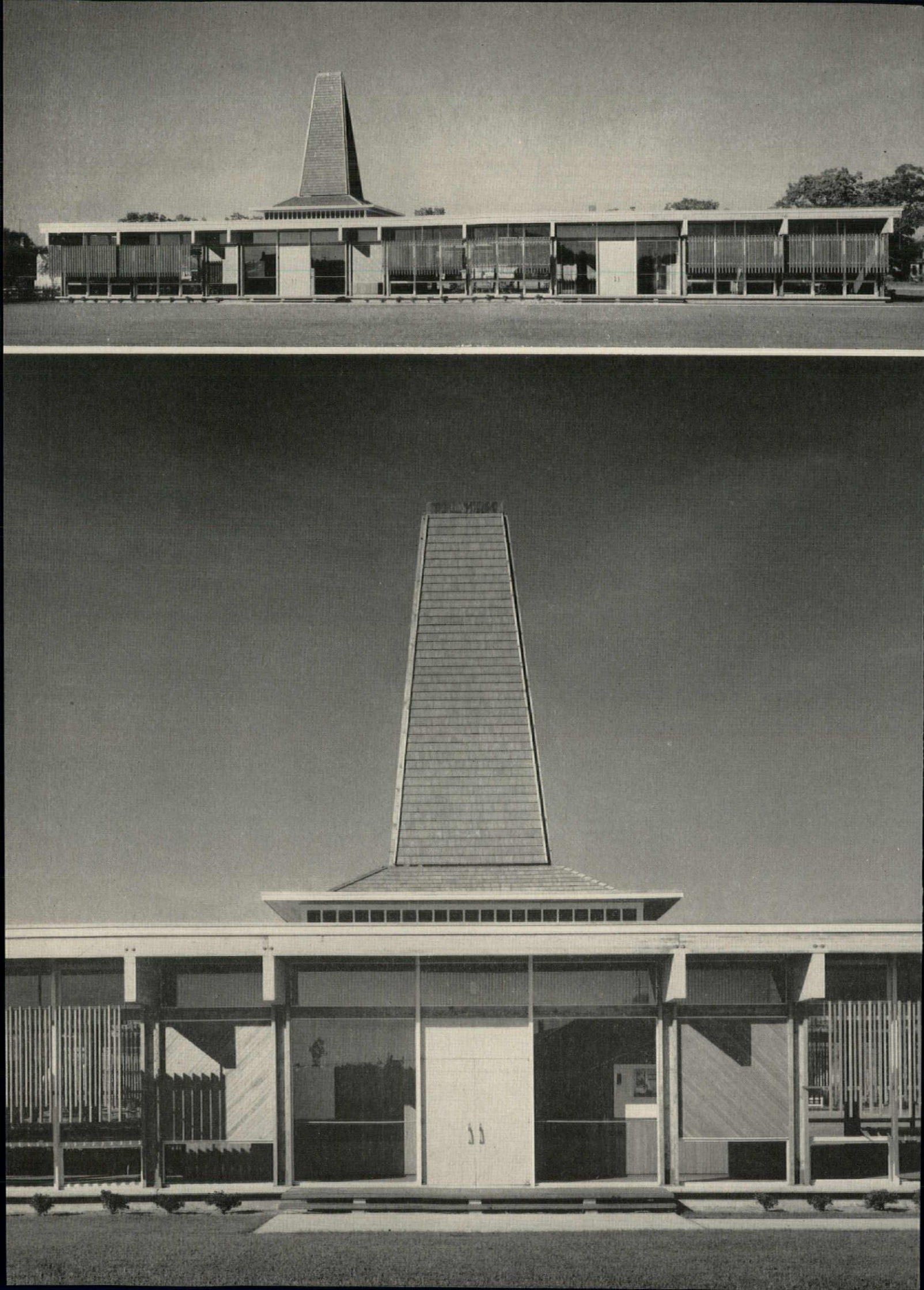
SECTION A-A

Exterior sculpture was cast in place

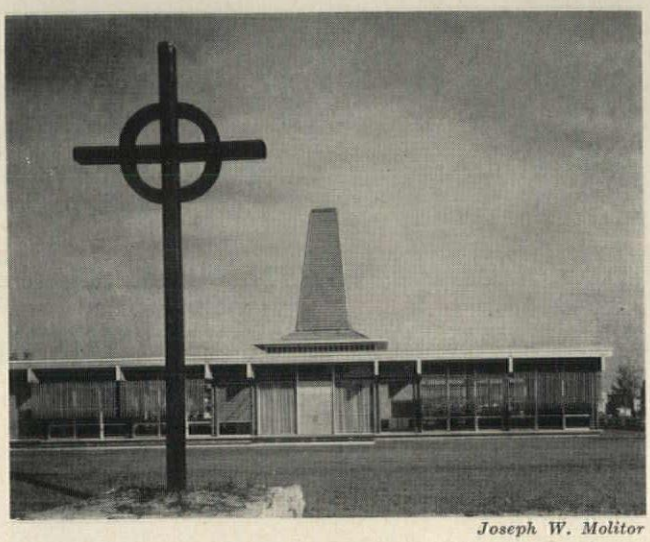




View toward bema. Ark curtain and scroll covers are handwoven

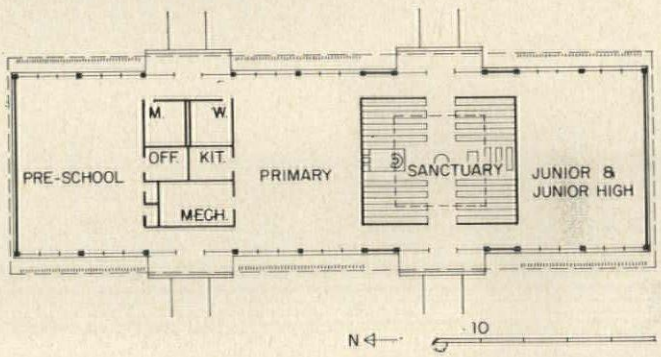


Flexible Plan for Education, Fellowship and Worship



Joseph W. Molitor

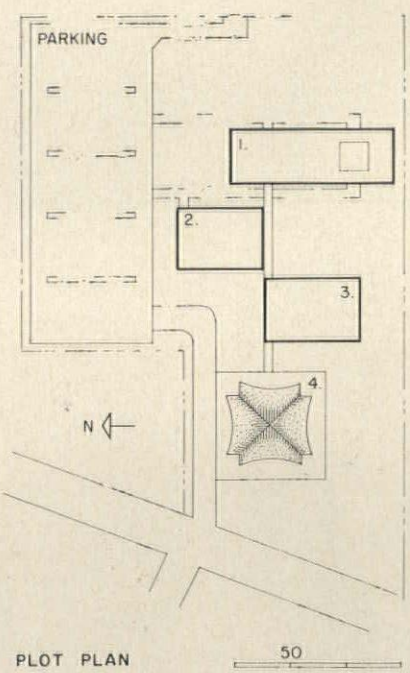
NAME: *Westminster United Presbyterian Church*
LOCATION: *West Islip, Long Island, N. Y.*
ARCHITECTS: *Davis, Brody and Wisniewski*
STRUCTURAL ENGINEERS: *Atlas and Rosenberg*
MECHANICAL ENGINEERS: *Wald and Zigas*



This building marks the first phase of the long term growth program of a Presbyterian Church in a new suburban community. Recently completed at a cost of $80,000, the first unit provides three teaching areas and a small sanctuary which can seat 160 persons. The primary classroom can be used as a fellowship hall.

After two intermediate building stages are completed (see plot plan) in which facilities for Christian education will be increased, the final sanctuary will be constructed, and the present sanctuary partitions will be removed. The primary classroom, sanctuary, and junior and junior high classrooms will become one large fellowship hall with a stage, dressing rooms and kitchen at the south end.

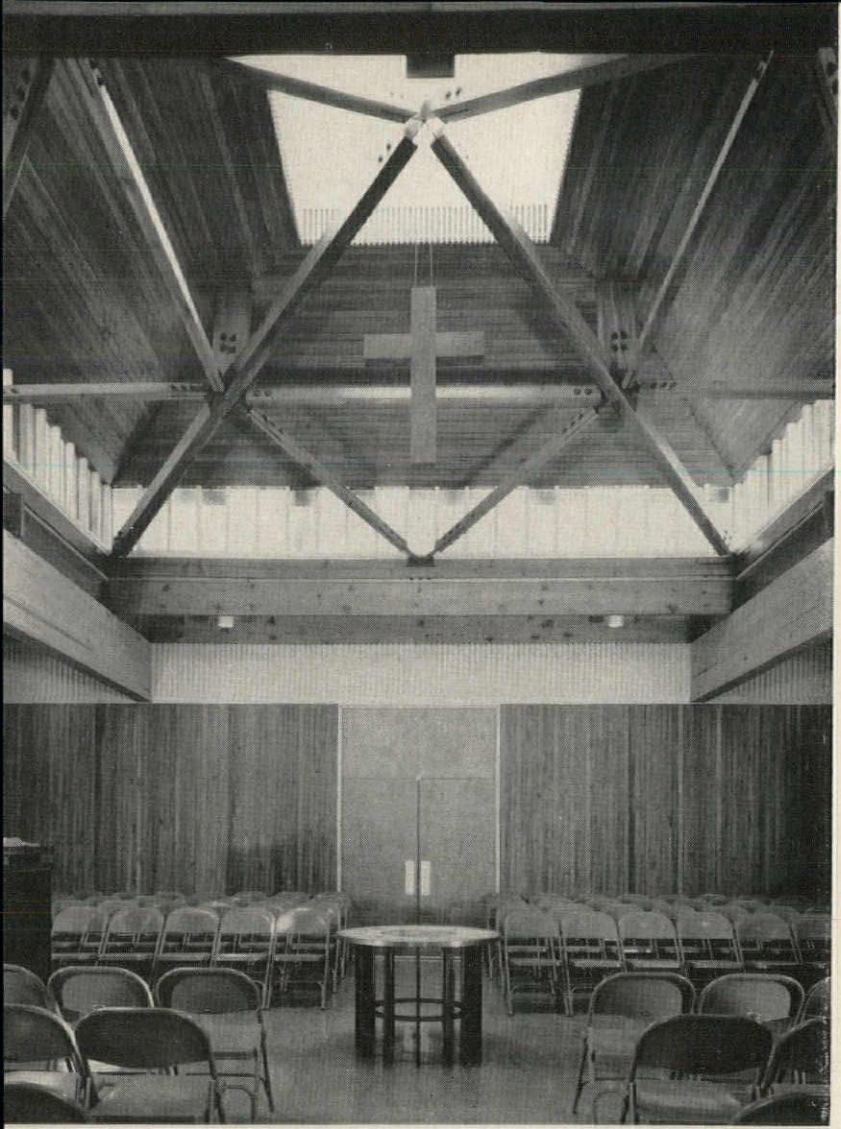
In the design of the sanctuary, a feeling of impermanence had to be avoided, and whatever was deemed a suitable permanent symbol for its presence had to be considered as part of the eventual expression of the fellowship hall. A major success on the part of the architects was the achievement of an appropriate sanctuary character on both the exterior and interior by means of the carefully designed clerestory and tower.



1. PRESENTLY COMPLETED
2. FUTURE CONSTRUCTION EDUCATIONAL FACILITIES
3. FUTURE CONSTRUCTION EDUCATIONAL FACILITIES & ADMINISTRATION
4. FUTURE CONSTRUCTION SANCTUARY

Religious Buildings:

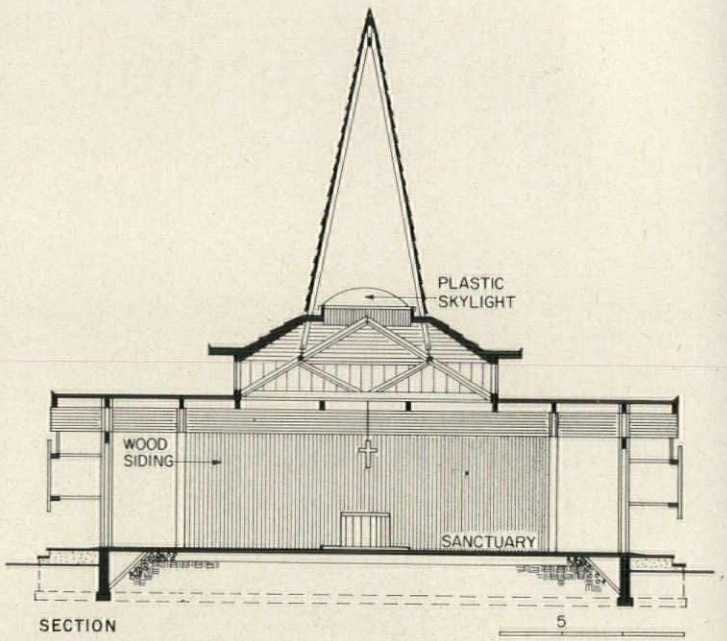
United Presbyterian Church of West Islip



Sanctuary interior

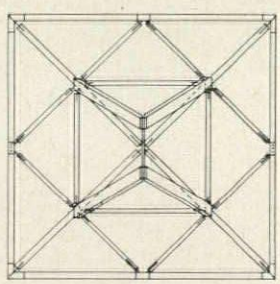
Structure is framed by laminated beams and heavy timber

Joseph W. Molitor



SECTION

5



PLAN OF STEEPLE

Architectural Engineering

Torroja Urges Automation in Construction

Dr. Eduardo Torroja, Spain's famed architect-engineer, told a recent meeting of the California Council of the A.I.A. that, in his opinion, stepped-up economic and industrial pressures requiring an increased use of prefabrication rank high among the many forces shaping present-day architecture. "It is necessary to pass on to the specialized workshop a large part of the total project and thereby reduce the cost by large-scale use of standardized units and mechanized labor." Further intensification of the trend toward increased automation through prefabrication is particularly important, he pointed out, since the problem of efficient site assembly is less easily solved. If field labor costs are not reduced, or offset by greater use of factory-produced components, the risk that the building industry will tend to be much more expensive than others will continue. This problem Torroja termed "perhaps the most serious one facing architecture."

Concrete Joinery: Neat, Efficient

The 6th annual convention of the Prestressed Concrete Institute held in New York gave convincing evidence that the problems—and possibilities—of prefabrication in building have not gone unnoticed at least by this segment of the industry. As if in anticipation of Torroja's prediction that efficient field assembly will be increasingly the key to economical building, many of the speakers addressed themselves to the techniques and economics of assembly and erection. Canadian consulting engineer Laurence Cazaly, for example, told the audience that "Neat Joints Are Good Business" and that joint and erection details should be given painstaking consideration by the top echelons of the design team. He dramatized this thesis with an only slightly tongue-in-cheek definition of a "neat" joint: "If a joint can be fabricated by a welder just going on vacation, placed in a mold by a carpenter with a linen tape, erected with the only piece of equipment within 50 miles on a rainy day by a man who has just quarreled with his wife; and if the engineer pronounces it safe, the architect says it is beautiful, and it did not cost you more than $5.00," he asserts, "rest assured that the design was a good one."

Concrete Joinery: A Design Theme

The real hymn to the joint, however, was sung by Louis I. Kahn, F.A.I.A., in discussing his approach to the design of the trend-setting Medical Research Building at the University of Pennsylvania (ARCHITECTURAL RECORD, September 1959; August 1960). "I began to realize," he said, "that the event of these large pieces coming together is the point from which wonderful decoration can occur . . . the beginning of ornament. It is not an applied thing, [but] stems from a strategic consideration of a building . . . from a challenge against the elements . . . from water tending to destroy the building, sun tending to make the building uncomfortable. Prestressed concrete should try to consider the joint-making not as a form of homogenizing one member with another but as a construction of itself."

Prestressing and Codes

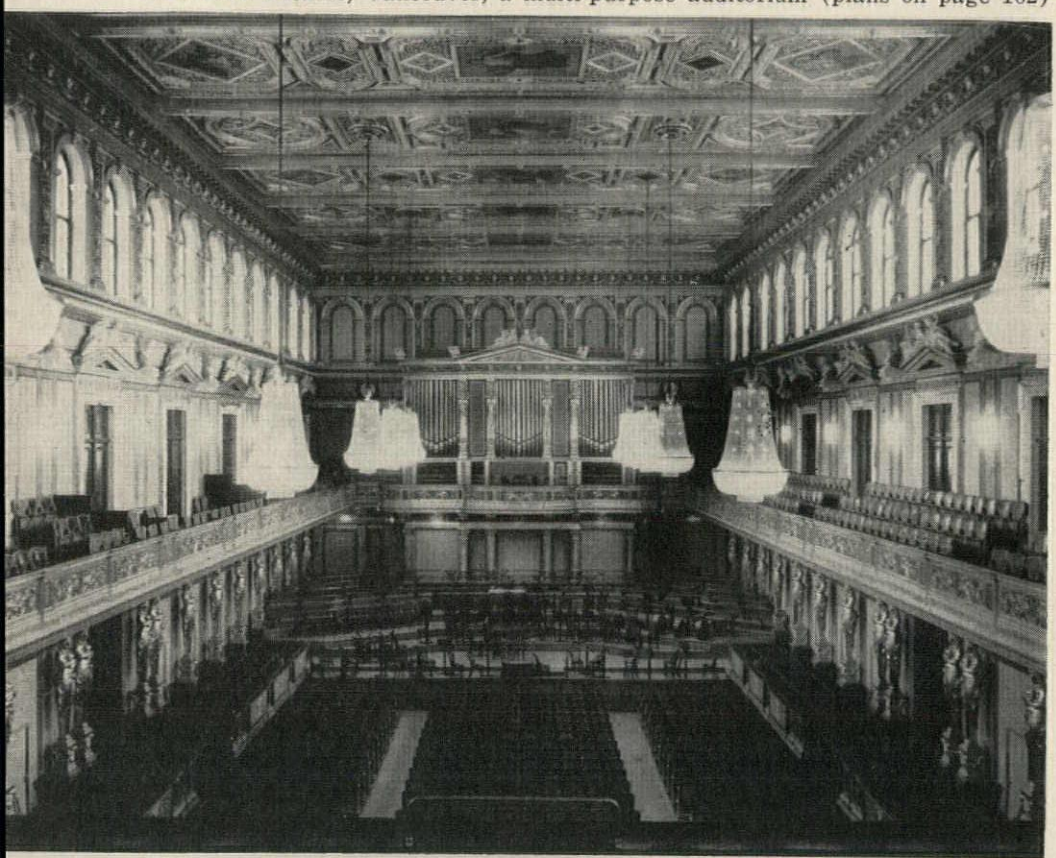
The International Conference of Building Officials has formally approved the inclusion of prestressed concrete in the Uniform Building Code, one of the four model codes in the U. S. The section of this code covering prestressed concrete was first approved by the Structural Engineers Association of California. Other news involving prestressing and building regulations comes from New York and Chicago. While the New York City Building Code does not cover prestressed concrete, a provision in a temporary code set up for the 1964 World's Fair will permit its use. The Chicago Building Department, which earlier in the year forbade the use of prestressed concrete in buildings, changed its regulations in late August to permit it for most types of construction; excluded are industrial plants where there is "more than the average risk of fire."

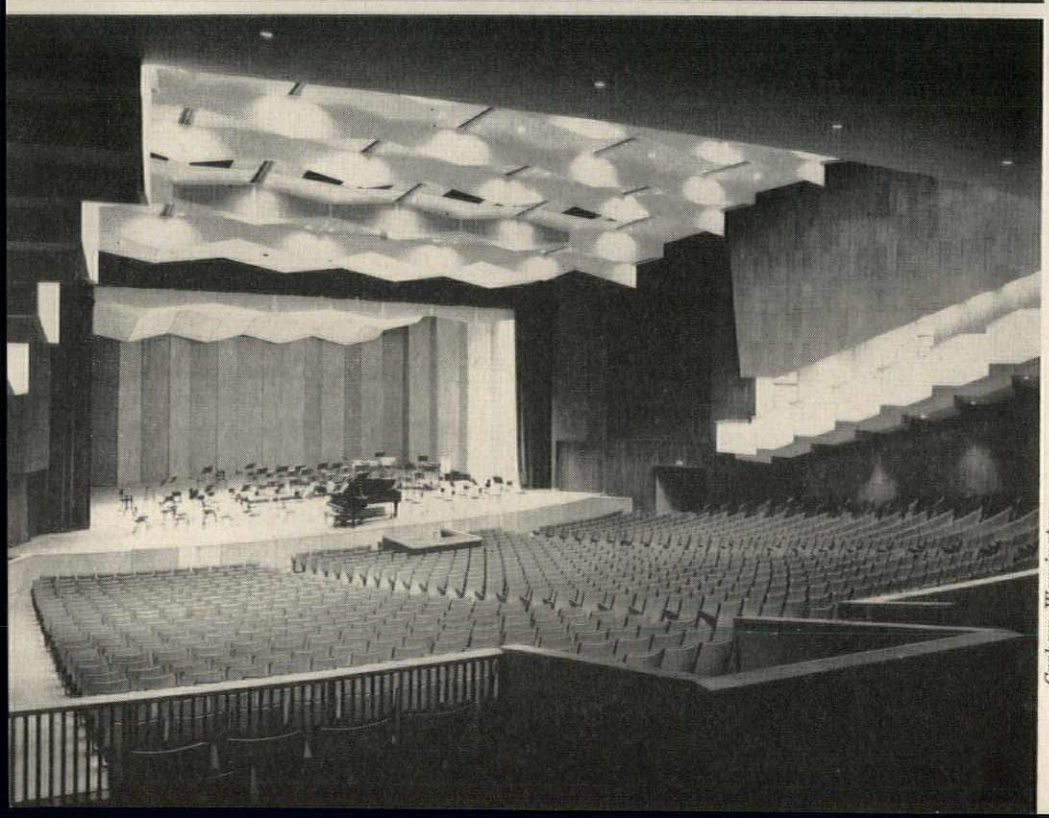
This Month's AE Section

AUDITORIUM ACOUSTICS FOR MUSIC PERFORMANCE

by Russell Johnson, Bolt Beranek and Newman, Inc.*
Consultants in Acoustics

In the classic tradition: Grosser Musikvereinsaal, Vienna. Today's trend: Queen Elizabeth Theatre, Vancouver, a multi-purpose auditorium (plans on page 162)





Graham Warrington

Rapidly growing interest in the performing arts has stimulated the building of concert halls, theaters, opera houses and, particularly, multi-purpose auditoriums throughout the country. Contrary to some opinion, the acoustic design for these various facilities is not in any sense a cut-and-try process with a bit of magic thrown in to make some arbitrary shape work.

Rather, the acoustical characteristics of a hall designed for the performance of music are fixed by the size and shape of the hall, the materials used in it, and the nature of the stage enclosure. And recent studies have determined not only which halls throughout the world are most preferred, but also the acoustical reasons why they have made an almost universally favorable impression.

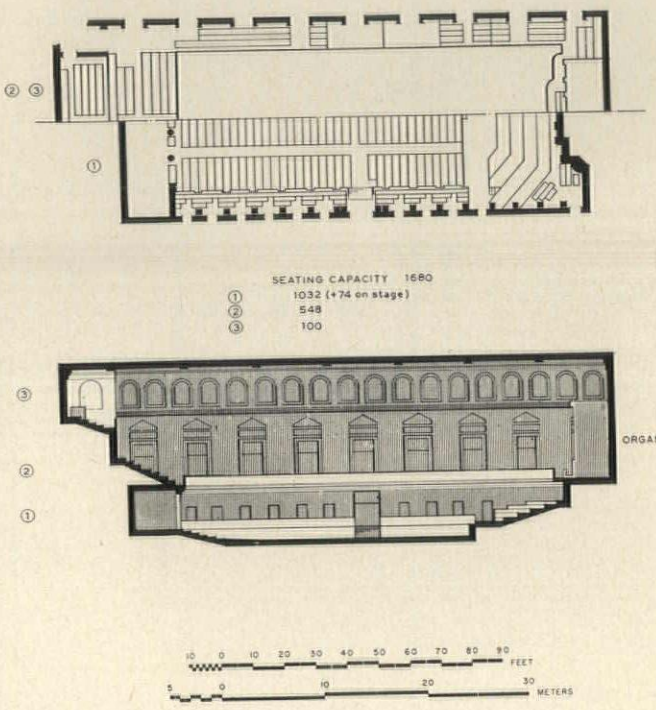
Ideally, each of the performing arts should have its own hall if the acoustics are to be "perfect." But unfortunately, economics often dictate a multi-purpose auditorium which must accommodate everything from symphony to musical comedy to lecture—and which must be considerably larger than the classic concert hall or opera house. When this is the case, the architect, acoustical consultant and owner must determine which activities are most important; design the acoustics primarily for these; and make whatever provisions are feasible to get the best possible acoustical environment for the remaining uses.

SIZE VS. ACOUSTIC QUALITY

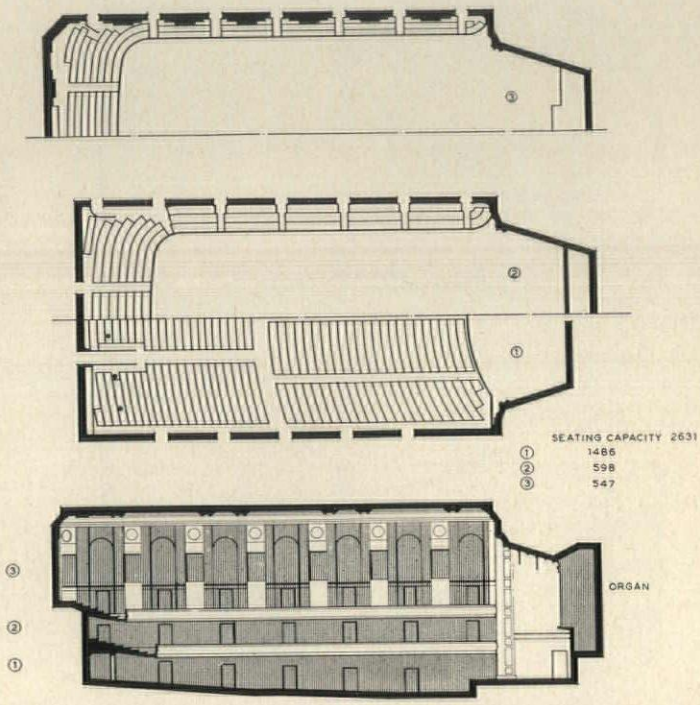
The most difficult concept to communicate to the public and to many architects is that it is not possible to take a space of any arbitrary size and make it into a good concert hall or opera house or multi-purpose hall. As a matter of fact, the size (cubic volume) of the hall is perhaps the single most important factor in determining its acoustical quality, first because the cubage affects the length of the reverberation time, and second, because the size of the hall must be properly related to the "size" of the source in order to conserve the energy produced.

Unfortunately, the size of a hall is equally crucial in terms of box office income. Economic pressures are so

* The text has been adapted from a two-part article which appeared in *Musical America*, February and March, 1960.
A book *Music Hall Acoustics* by Dr. L. L. Beranek is now in preparation.



GROSSER MUSIKVEREINSAAL, VIENNA



SYMPHONY HALL, BOSTON

Symphony conductors rate these classic-shaped concert halls as the two best. Note the rectangular plan and parallel walls

great in the planning and operation of new halls that building owners sometimes have a desire to throw in the sponge: build a hall large enough to pay off expenses readily, and solve the acoustical problem with the abracadabra of masonry bowls or broken glass beneath the auditorium floor or some other nostrum.

But the solution is not that easy. In general, the halls and opera houses with the best acoustics are smaller in terms of cubic volume, seating capacity and floor area allotted per seat than auditoriums being built today. The halls listed in Table I in bold face have received almost universal praise—and negligible criticism. The areas occupied by seats and aisles range from 8000 to 16,000 sq ft (bold face in table)—or 4.7 to 6.8 sq ft per seat—as compared with the 7.0 to 8.0 sq ft per seat allotted in many contemporary auditoriums.

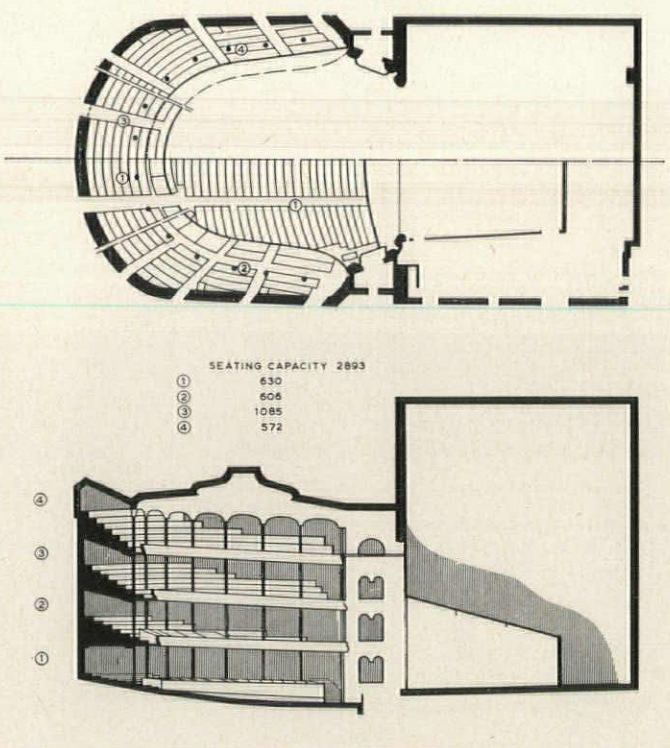
Translated into present-day standards of seat spacing, these halls would seat between 1500 and 2200 people. For example, Boston Symphony Hall seats 2631 people, but its smaller seats, smaller row-to-row spacing in the balconies and narrow aisles could not be built today. If it conformed with current public safety codes and comfort standards, it would hold about 2200 people.

As might be expected, the highest-rated concert halls have, in addition to their relatively low seating capacities, relatively small volumes—ranging from 352,000 to 662,000 cu ft. Similarly, conductors' ratings of halls used for opera production (Table II) relate directly to cubic volume, the highest-rated being in the neighborhood of 300,000 to 400,000 cu ft.

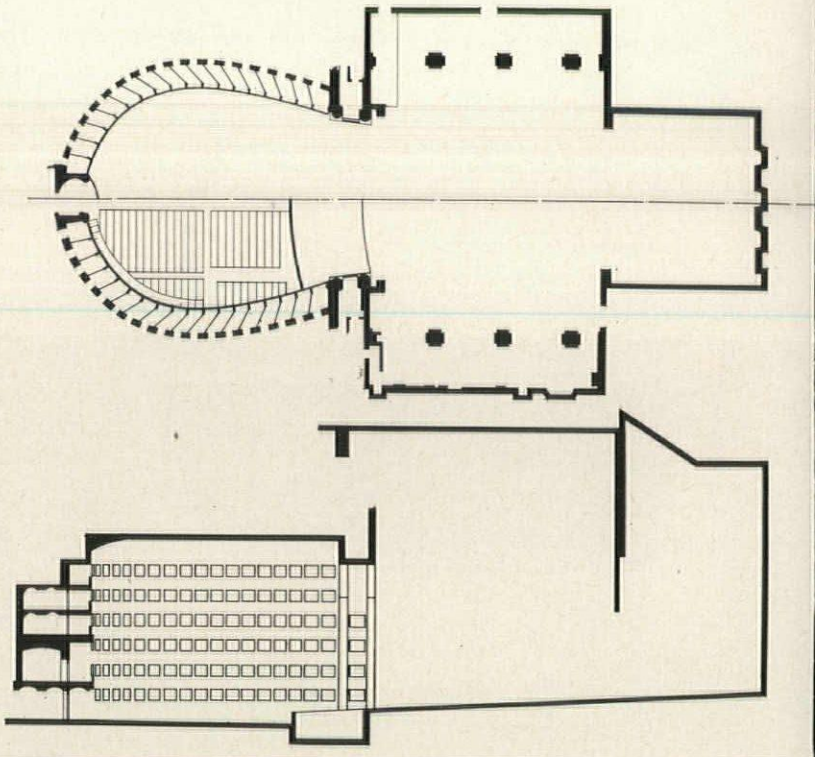
It is impressive to see how extremely small these halls are compared to some of the giants that are being built in the United States, but it is far from unexpected. Since all instruments or ensembles have some reasonable output, to obtain optimum acoustics for various types of music performances the cubage of the auditorium must be matched to the musical sources, or vice versa.

Assuming that no sound absorbing materials are installed, the musicians performing in a concert hall of 900,000 cu ft must produce 80 per cent more sound than in a hall of 500,000 cu ft to obtain the same musical effect. This is of particular interest since most of the acoustically outstanding halls have cubages in the neighborhood of 500,000 cu ft, whereas halls built today are frequently as large as 900,000 cu ft to 1,000,000 cu ft and even more. However, some of the concert hall-opera house-theaters built recently have rather low seating capacities, and many of them can be expected to have good acoustics if other acoustical precepts are not ignored. A few of these are: Municipal Theater, Munster, West Germany (opera house-concert hall-theater), 955; Concert Hall, Stockholm, 1110; Kanagawa Concert Hall, Yokohama, 1331; Opera House, Cologne, 1400; Municipal Theater, Malmo, 1695; Tivoli Concert Hall, Copenhagen, 1840.

The seating capacity and size of the hall usually receive some consideration during the early planning stages of new halls, although in many cases, box-office economics exert a controlling influence that never loses its grip on the design. The men who represent the box-office side of the story carry a big stick, so why is it that all halls are not designed on the basis of box-office income? The answer is simple—the building owner (or sponsor or principal tenant) wants good acoustics *plus* enough seats to pay, according to his calculation, initial costs and operating and production costs. These two factors must be balanced intelligently by the building owner. He must decide, with the help of the acoustics and economics counsel, how to divide the emphasis between income and acoustical excellence. Perhaps only with subsidy, as heavy as that which



ACADEMY OF MUSIC, PHILADELPHIA



TEATRO ALLA SCALA, MILAN

"Excellent" is the rating given by conductors for opera in these halls. Note stage shell for orchestra in the Academy

flourishes across the Atlantic, can a cultural organization build *and operate* an opera theatre or concert hall of 2000 seats with "near perfect" acoustics.

Concert managers often point out that it is questionable to build a concert hall that will not seat all the citizens who would like to hear a particular performance. In rebuttal, the building owner often responds that the hall must be designed with all the activities to take place therein in mind; that it should not be planned only around the attractions that tax the seating capacity.

In any case, every city is unique, and all building sponsors must make their decisions on the type of hall to be built, seating capacity, etc., on the circumstances that prevail in the particular city.

EFFECT OF REVERBERATION

Reverberation is the persistence or lingering of sound in a room, hall or chamber after the originating sound has ceased. This effect arises from the multiple reflection of the original sound wave as it strikes the various surfaces of the hall: the floor, ceiling, walls. Each time the sound wave hits a surface, a portion of it is absorbed, and thus the sound gradually dies out.

Assuming that a multi-purpose hall is to be built, one of the first questions the acoustic designer asks the building owner and architect is: what activities will take place, and what is the relative importance of each type of activity?

The activities that are ordinarily housed in a multi-purpose theatre can be divided into two categories: (1) a group requiring a relatively short reverberation time—lectures, musical comedies, any activity using sound amplification, opera, assemblies, motion picture exhibition; and (2) another group requiring a relatively long reverberation time—organ, orchestra, chamber music, voice, violin and piano recitals, string instrumental groups. Although there are many acoustical design considerations other than reverberation time, the reverberation time is still the most useful key to gauge how satisfactory or unsatisfactory the acoustics of a hall are for various types of speech activities and music performances.

Within reasonable limits, the intelligibility of speech improves as the reverberation time is decreased. On the other hand, the acoustic environment for music considered best by both performers and listeners requires more reverberation. Organ and choral music require more reverberation than other forms of music. A piano, or an orchestra performing contemporary music have the most suitable acoustical environment when reverberation time is on the short side of the range for musical performance.

Opera and other musical theatre productions are a combination of music and speech, and accordingly, the reverberation time that should be provided for this type of activity is between that for music and that for speech. With such basic conflicts, it is obvious that ideal acoustic environment cannot be provided for all of the activities that take place in a multi-purpose theatre.

In addition to the varying optimum reverberation for speech, music, lyric theatre, etc., there is convincing evidence from subjective tests that acoustical preference varies with the type of music, ranging from a preference for high definition for some composers such as Mozart to fullness and blending for, say, Brahms.

Table III indicates the range of reverberation time (at 500-1,000 cps) generally suitable for various activities that take place in multi-purpose halls. At first sight, the differences between some of the reverberation

times listed below may seem ridiculously small, but if it is remembered that these are decimal parts of a *second;* and if it is borne in mind that in speech and music we are dealing not with just one sound reverberating, but with successions of sounds, each reverberating, it will be clear why a difference of 0.5 of a second is so vital.

The best concert halls, with full occupancy at mid-frequencies (500-1000 cps), have relatively long reverberation times—between 1.8 and 2.1 seconds. Optimum reverberation for opera is lower. (These numbers are by modern measurement techniques. Frequently higher numbers have been associated with existing halls, but many of the numbers previously published have been proven erroneous.)

Once the *seating area* and the *cubage* of the hall are fixed, the *maximum reverberation time* is automatically determined. Assuming that no or very little sound absorbing materials are installed, the ratio of volume to audience seating area must be 45:1 for 1.8 seconds reverberation (concert); 36:1 for 1.4 seconds in the mid-frequency range (opera) and 32:1 for 1.3 seconds in the mid-frequency range.

The formerly universally used ratio of *volume per seat* has been proven invalid, and thus removes a stumbling block that has plagued acoustic designers for decades. Dr. Beranek's research has shown that audience absorption should be calculated on an *area* basis, rather than on the former *per person* basis. Application of this technique results in significantly lower calculated reverberation times, particularly in newer halls with larger seating spacing.

The new, more accurate methods for calculating the sound energy absorption by the audience and the performing group present are particularly important because practically all of the sound absorption present in a concert hall is provided by the audience. Seated audiences in halls with a larger seating spacing absorb more sound by a factor of as much as two than was previously thought. This new technique produces reverberation calculations considerably closer to the measured data on existing halls than calculations made on the per person basis (usually expressed in terms of volume per seat).

The profile of a hall intended to

TABLE I

Halls	Area (sq. ft.) of seats w/ aisles up to 3.5 ft.	Volume in cu. ft. (auditorium only)	R.T. occupied 500-1000 cps. in seconds**	Ratio of volume to area of audience, orchestra pit + proscenium opening	No. of seats	Area/ Audience seat* (sq. ft.)	Width measured between balcony facias (ft.)
Festspielhaus Bayreuth	8,500	364,000	1.6	34.8	1,800	4.7	84
Theatre de l'Opera Paris	12,120	352,000	ca 1.2	22.7	2,156	4.8	66
Staatsoper Vienna	12,850	376,600	1.25	24.0	1,658 (+500 standees)	6.8	64
Academy of Music Philadelphia	16,000	533,000	1.4	28.0	2,893	5.5	54
Teatro Colon Buenos Aires	19,000	726,300	ca 1.5	31.5	2,500 (+375 standees)	7.0	72
Eastman Theatre Rochester	20,030	1,045,000	1.65	44.5	3,347	6.0	130 (wall to wall)

Halls	Area (sq. ft.) of seats w/aisles up to 3.5 ft.	Volume in cu. ft (incl. concert enclosure)	R.T. occupied 500-1000 cps. in seconds	Ratio of volume to audience, stage + chorus areas	No. of seats	Area/ Audience seat* (sq. ft.)	Width in ft.
Stadt-Casino Basel	8,000	370,000	1.7	38.4	1,400	5.7	68
Gewandhaus Leipzig	9,750	375,000	1.55	35.0	1,560	6.2	62
Musikvereinsaal Vienna	10,600	530,000	2.05	44.0	1,680	6.4	64
St. Andrews Hall Glasgow	12,750	569,000	1.85	38.2	2,500	5.1	74
Symphony Hall Boston	15,000	662,000	1.8	40.0	2,631	5.7	74
Philharmonic Hall Liverpool	13,000	479,000	1.55	31.5	1,955	6.6	90
Kleinhans Hall Buffalo	21,000	644,000	1.32	27.7	2,839	7.4	140
Jubilee Auditorium Edmonton	21,000	759,000	1.45	30.4	2,697	7.8	120

* Including aisles and cross aisles up to 3.5 ft. Each standee is rated as one-half a seat.
** These reverberation times measured with house occupied, main curtain closed. Reverberation times are sometimes higher with curtain open, particularly if the scenery is not canvas.
Note: Bold face indicates preferred halls.

TABLE II

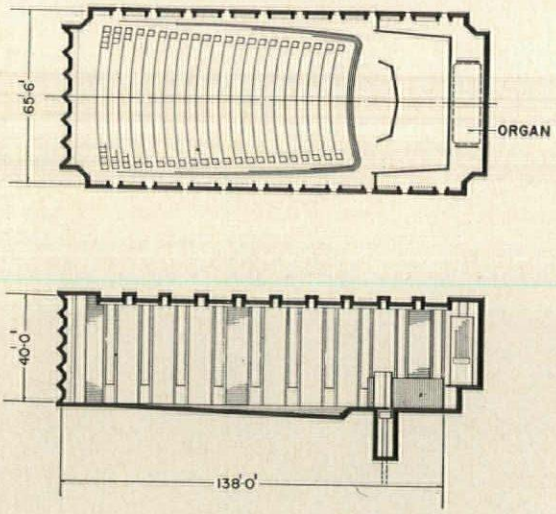
Name	Ratings by conductors	Cubage** (cu. ft.)	Area (sq. ft.) of Audience Seating	Width* (in ft.)
Theatre de l'Opera, Paris	excellent	352,000	12,120	66
Festspielhaus, Bayreuth	excellent	364,000	8,500	84
Staatsoper, Vienna	excellent	376,600	12,850	64
Teatro alla Scala, Milan	excellent	318,200 (well only)	7,700 (main floor + box openings)	72
Academy of Music, Philadelphia	excellent	533,000	16,000	54
Metropolitan Opera House, New York City	good	700,000 (approx.)	24,050	62-68
Auditorium*** over 3,500 seats	fair	902,000	26,240	140
Auditorium*** over 6,000 seats	poor	1,270,000	37,214	160

* Width is facia-to-facia of opposite rings or balconies, or, if there are no side balconies, side wall to side wall measured one-half way back on the main floor.
** House only—concert enclosures, if any, not included.
*** Multi-purpose hall used for opera productions.

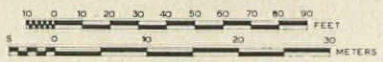
TABLE III

Activity	Optimum Reverberation Time
Motion picture exhibition	.6—1.2 seconds
Lectures, convocations, and any other activities using sound amplification	.6—1.2 seconds
Musical comedy or related form	1.0—1.4 seconds
Drama	1.0—1.4 seconds
Opera	1.2—1.6 seconds
Piano recital	1.2—1.6 seconds
Voice and violin recital, string quartet, chamber orchestra	1.4—1.8 seconds
Symphony orchestra (contemporary works)	1.3—1.6 seconds
Symphony orchestra (Brahms, Wagner)	1.8—2.0 seconds
Liturgical choral music, organ	1.8—3.0 seconds and up
Medieval liturgical works	4.0—8.0 seconds

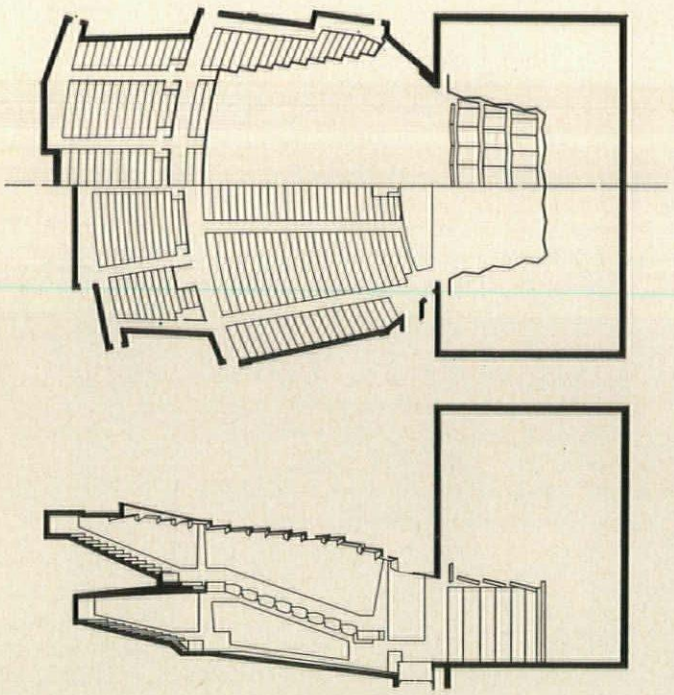
Table I gives related architectural-acoustical data on a number of famous concert halls and opera houses. Table II shows conductors' ratings for several opera houses. Size of concert hall has a direct bearing on the acoustical environment because it is one of the two factors determining reverberation time. Boston Symphony Hall, for example, with a volume of 662,000 cu ft, has a reverberation time of 1.8 which is in the ideal range for symphony



AUDITORIUM, OBERLIN CONSERVATORY OF MUSIC



Oberlin will have the classic rectangular shape preferred for concert halls. The other three are multi-purpose auditoriums. Queen Elizabeth Theater is shown on first page



QUEEN ELIZABETH THEATRE, VANCOUVER

rank among the world's top ten would be a hall of relatively small cubage, but at the same time, in accordance with the volume to seating area ratios stated above, the total area used for audience seating would have to be restricted in order to maintain sufficient reverberation.

Since the reverberation time in a hall is not related directly to the number of seats, but rather to the area that the seats (plus aisles) occupy, an audience floor area of 15,000 sq ft (including aisles) will absorb the same amount of sound whether there are 2600 or 2200 seated persons in it. It is for this reason that the older halls (like Boston) could seat 2600 people for a volume of not over 700,000 cubic feet and still achieve satisfactorily long reverberation time, while a modern hall meeting present-day safety and comfort standards can seat only about 2200 in this same volume.

This however does not mean that sponsors of concert halls are doomed to obtain a poor acoustical environment if they build auditoriums larger than 2200 seats. As acoustical consultants we are constantly being asked to design halls with volumes approaching a million cubic feet. We have found it necessary, therefore, to examine carefully means for producing acceptable musical quality in larger halls. One of the important factors in the judgment of musical quality of a hall is the presence of short-time-delay reflections of the right magnitude at the listener's position. Such reflections come automatically in a smaller, narrower hall. How can they be introduced into a larger hall?

Study reveals that the only way to introduce short-time-delay reflections into a larger concert hall is to construct a partially-open, partially-closed canopy over the orchestra and the front part of the audience. The closed portions send short-time-delay reflections into the audience. The open portions permit the sound to rise into the volume above the canopy and to develop the essential reverberation. With a closed canopy, the reverberation will not develop properly. With no canopy, the short-time-delay reflections will not be provided.

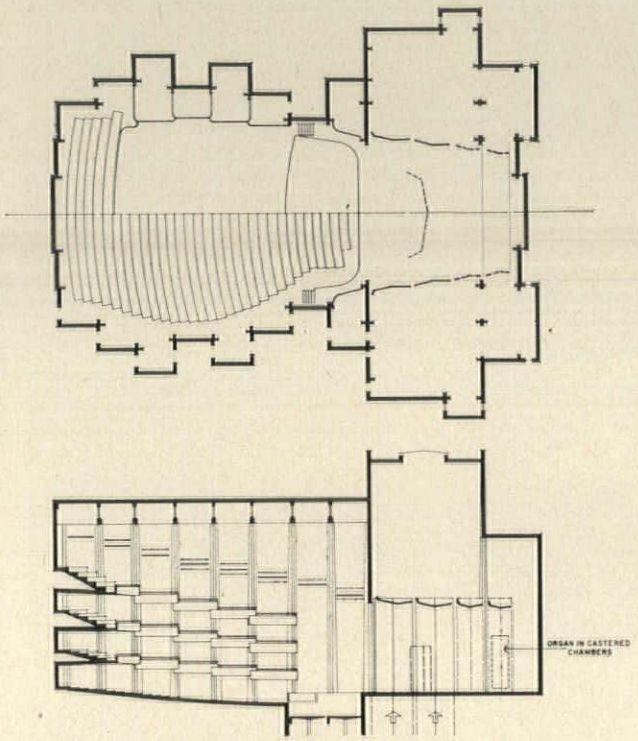
SHAPE AND PROPORTIONS

The basic shaping and proportions of a hall are also very important factors. The correlation between acoustical results and basic room shape is far greater in a hall for music performance than in any other type of listening space.

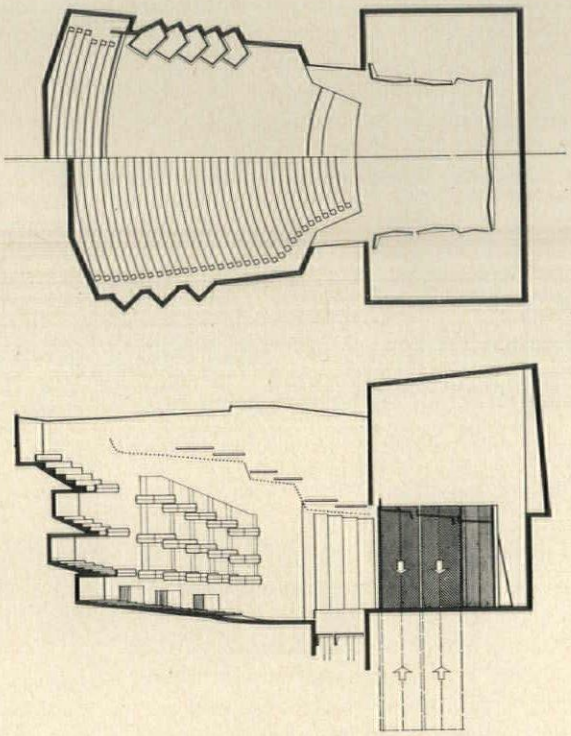
Speech auditoriums, theatres, coliseums, and other facilities for speech activities can be designed with a wide variety of shapes. The acoustical consultant can then recommend compensating measures, including the use of sound amplification and installation of sound absorbing materials, and by these "corrective" measures, obtain satisfactory speech intelligibility. However, this procedure, which involves use of sound absorbing material, is inadmissible in the design of a recital or concert hall; for in this case, every possible effort must be made to conserve the sound produced by the voice or the musical instrument.

A hall for the performance of music should be relatively long, narrow, and rectangular, since relatively close, parallel walls provide desirable "short-time-delay" acoustic reflections. For good music performance acoustics, it is necessary that first reflections from the walls and ceilings of the hall should reach the listener's ears between 20 to 40 milliseconds after arrival of the direct sound. This characteristic occurs almost automatically in the seating areas most distant from the stage, providing the smooth tone and blended, homogeneous ensemble sound that is typical of these seats, but, unless special acoustical provisions are made, it is usually lacking in most of the seating areas.

In order to provide the required reflected "signals" during the first 20



CLOWES MEMORIAL HALL, INDIANAPOLIS



LA GRANDE SALLE, PLACE DES ARTS, MONTREAL

to 40 milliseconds, it is essential to have wall and ceiling reflectors within about 25 ft or less of the sound source. This architectural provision can be met in a concert hall by establishing the width of the stage platform at about 50-65 ft and suspending sound reflecting panels overhead at a height of 22-28 ft above the stage floor. The reflecting surfaces should be almost parallel—wall parallel with wall; ceiling (and reflecting panels) parallel with the floor.

The short-time-delay acoustic reflections provided by a long, narrow, parallel hall and overhead reflecting panels also favor clarity, clean transient response, balance of various instruments of the orchestra as heard at all seats on stage and throughout the hall, and even distribution of sound energy throughout the hall. The use of overhead suspended sound-reflecting panels is particularly important for the violin section of the orchestra.

The width of the hall as measured from wall to wall should be 65 to 85 ft, if possible, for both concert and opera production—the narrower the better. A wide hall is likely to be unsatisfactory for speech also, as the long delayed acoustic reflections from widely spaced side walls arrive too late to integrate with the direct sound, producing muddiness, or a garbled effect. Sometimes the listener refers to areas suffering from this effect as "dead" spots.

In summary, existing halls with excellent acoustics are rectangular and relatively narrow (as narrow as 60 to 75 ft). In general, these halls are about twice as long (measured from the rear of the auditorium to the back of the stage) as they are wide, and are about as high as they are wide, the proportions being roughly 1:1:2 (width, height, length). Some are even longer than twice their width.

TONAL QUALITY

Another important aspect of music performance acoustics is the tonal characteristic of the hall—that is, the relative balance between the low, middle and upper registers—which is determined by the nature of the finishes of the walls, ceiling and floors. Some materials absorb sound efficiently in certain registers and reflect the sound in other registers, producing the varying amounts of reverberation at various frequencies that endow a hall with its tonal characteristics.

Sufficient and balanced reverberation at all frequencies provides the "warm and resonant" sound which pleases both listeners and performers. When a hall is judged as just a bit too mellow, it has insufficient high register reverberation. Sound which is *too* "dark" or "boomy" has insufficient reverberation in the middle and high registers. Sound which is "cold" or "sharp" has too much reverberation in the upper registers. This condition frequently results from the use of thin wood paneling which absorbs the low frequency sounds produced by the instruments of the orchestra. BBN's concert hall survey has shown that of two halls that are equal in other characteristics, the one with the richer bass has the greater acceptance. What is surprising to most musicians is the fact that the walls and ceiling of a hall that is rich in low frequency sound are generally constructed of plaster or of very thick wood. Halls that are thought by many conductors to be finished with wood are actually more than 75 per cent plaster.

THE "SENDING END"

A part of the hall which plays a very important role in the success of the acoustics is the "sending end": the surfaces in the vicinity of the stage

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Drawings in this article were prepared by Wilfred Malmund of Bolt, Beranek and Newman. Architects for the halls on this page are: *Oberlin Conservatory*—Minoru Yamasaki and Associates; *Queen Elizabeth Theater and Place de Arts*—Affleck, Desbarats, Dimakopoulos, Lebensold, Michaud and Sise; *Clowes Memorial Hall*—John Johansen and Evans Woolen III, Associated Architects

platform. These surfaces might be (a) permanent structure (floor, walls, ceilings), (b) permanent structure plus a suspended canopy or independent suspended panels or (c) demountable panels that assemble into a complete enclosure for a theatre stagehouse. All of these arrangements are simply variants of the "sending end", and the acoustical aims are the same.

In a concert hall (no stagehouse), a suspended canopy or a set of individual panels provide necessary close-in acoustic reflections and at the same time permit the cubage above to serve as a reverberant chamber. This provision not only improves the acoustical conditions in the auditorium, but also serves to help the various sections of the orchestra to hear both their own and other sections. This is a definite aid to the conductor and helps provide coordination. Halls which are very narrow (60 ft or less) and rectangular do not usually need suspended panels.

In a hall with a theatrical stagehouse, a complete demountable concert enclosure is essential for good music performance acoustics. The construction, rigging and operation of the large, heavy enclosure required in a multi-purpose hall used for symphony concerts is one of the major problems which confronts the operating staff.

Although the cost of construction and operation of a concert enclosure may seem unconscionably large when considered in relation to the available funds, the provision and use of this heavy device is essential.

A permanent stage platform enclosure in a concert hall is a heavy architectural structure, with side and rear walls constructed of 12-in. or thicker masonry construction, frequently faced with thick wood veneer. This heavy masonry enclosure is essential for the warmth and richness of tone of good concert halls, which is obtained by sufficient reverberation in the lower registers. However, it is obvious that a symphony orchestra cannot expect the building owner to provide a 12-in. thick masonry enclosure on the stage of a theater. Unfortunately, this is almost what would be required to obtain "concert hall" acoustics in a multi-purpose hall.

If it is essential for the building owner to obtain in one auditorium both an opera house and an outstanding concert hall, it might be valid to think of the cost of a truly adequate concert enclosure as the relatively small price to be paid in lieu of the cost of two separate buildings.

Enclosure walls of 2-in. thick wood, sufficiently braced by heavy steel sections, help maintain the desired warm resonant tone, and the box-like basic shaping of the shell provides a reverberant chamber that, by multiple reflections, mixes and blends the sound before it is projected into the auditorium. An enclosure design of this type does not do as good a job as the 12-in. thick permanent masonry "enclosure" of a concert hall, but does provide better acoustics in a large hall than the lightweight canvas or thin plastic and plywood "shells" currently in use in many multi-purpose halls.

The relatively high, sound-reflecting ceiling (in a completely enclosed demountable shell, about 32 ft) makes it possible for each musician more easily to hear the rest of the orchestra and this is, of course, beneficial for balance and also enables the musicians on stage more readily to judge what the audience is hearing. An enclosure also conserves the energy produced by the orchestra, preventing it from being dissipated in the backstage areas and the fly gallery.

The initial construction costs of an adequate shell are one problem, but operational costs are often a more difficult problem. For this reason, it is wise to incorporate as much mechanization and ease of operation as possible into the original design of the enclosure. There are probably two methods of operation which are feasible for a heavy enclosure. One is the provision of a complete "box" which travels up and down stage, either on tracks in the floor or on overhead rails. This procedure is similar to that used in some continental theatres to move a plaster cyclorama up and downstage. The cost of building the portion of the stagehouse in which the enclosure is stored during theatrical productions must be included as part of the cost of the enclosure. Another method of operation which has been used is telescoping the side walls and the rear wall of the enclosure into the stage floor.

A properly designed enclosure will produce similar benefits for a choral group, and will also provide good balance between a choral group and an orchestra. A similar, but smaller, enclosure is recommended for small performing groups and recitals.

The reader will probably be interested in seeing how the acoustical requirements discussed above can be incorporated into a complete building design—how the conflicts and practical considerations can be resolved. Two of the projects are multi-purpose auditoriums. The third, a 600-seat hall is primarily for music performance.

THREE CURRENT DESIGNS

Oberlin Conservatory of Music

This hall design is a simple rectangle, which is significantly better for music performance acoustics than the so-called "intimate" audience seating arrangements so popular. The hall is more than twice as long as it is wide. The ceiling is high and horizontal and the width is narrow, about 65 ft. The proportions are in the neighborhood of 1:1:2. This hall is being designed for a music conservatory and will be used for all types of music performance.

There are two enclosures provided in this hall. The permanent enclosure consists of 11-ft high walls spaced about 50 ft apart, providing sufficient space for a symphony orchestra. Elements for acoustical diffusion are located at the side walls of the stage, concealed behind this 11-ft high acoustically transparent screen. The other enclosure is a hydraulically-operated wall about 14 ft high, recessed into the stage floor, for recital performances, string quartets and small instrumental ensembles. This enclosure is constructed of 2-in. wood plank braced with a heavy steel frame.

The audience is the largest and therefore most important source of absorption present in a hall. Since this hall will be used for performance for low to high capacity audiences, for rehearsals, and for recording, the audience size will vary from no one present to a capacity house. Under these conditions, it is essential in a hall of this size to provide some mechanized means of adjusting the reverberation. This is particularly important since some of the performances will require rather short reverberation, while others will require rather lengthy reverberation.

To be able to make any significant change in the reverberation, modification of the acoustical properties of

The "sending" end of the auditorium plays an important role in the success of the acoustics. In the Stockholm Concert Hall (above) the suspended translucent panels provide necessary close-in acoustic reflections and help members of the orchestra hear each other better. The platform canopy in the headquarters for the Church of Jesus Christ of Latter Day Saints in Independence, Mo., aids the projection of music from the choir as well as speech. The stage enclosure for the Henry and Edsel Ford Auditorium in Detroit prevents sound from getting lost in the top of the stage house and projects it into the auditorium. It is heavy enough to reflect the low frequencies, which sometimes are absorbed when the enclosure is built of a lightweight material

a very high percentage of the wall surfaces of a hall is required. Use of a reverberation adjusting device is required on practically all of the side wall area from floor to ceiling plus the rear wall, if one is to provide a worthwhile degree of variability. This design incorporates about 6000 sq ft of adjustable curtain, which, under certain conditions of occupancy and setting of the adjustable drapery, will provide reverberation times ranging from 1.2 seconds to 2.3 seconds in the mid-frequency range.

Clowes Memorial Hall

This 2200 seat multi-purpose hall is now under construction at Butler University in Indianapolis, Indiana, and is expected to be available for some use by the community. The building owner predicts about 170 performances each year in which over 105 will be music performances without electronic amplification. With as much emphasis as this, it is essential to provide an architectural-acoustical design which gives the musician a "square deal." The acoustics for most of the speech activities in a hall of this size will depend on the installation of a carefully designed, highly directional amplification system.

In a hall with reverberation suitable for music, the acoustics for unamplified speech will depend in large measure on a narrow hall design. In the front of the original plan, side walls are 65 ft apart and, except for the two bays on each side for entrance and exit to the hall, the hall is not wider than 85 ft. The length of hall, including the symphony enclosure, measures about twice as long as it is wide. As the design proceeded, the proportions were modified to bring the rear rows closer to the stage for theatrical purposes. The average ceiling height of the concert enclosure is 33 feet. A smaller enclosure for recitals and small ensembles is included.

Each section of the auditorium walls is parallel to the center line of the hall to provide as much interreflection as possible. This aspect of the design will help provide a well-blended, homogeneous sound with high definition in the main floor seating area and in the balconies at the sides of the house. This is beneficial both for musical quality and speech intelligibility.

The volume of the original design, including the symphony enclosure, was about 685,000 cu ft in order to maintain a sufficiently long reverberation time. In order to provide this volume, it is essential that the

continued on page 182

STRUCTURAL FORMS—METAL DOMES: 4

by SEYMOUR HOWARD, *Architect, Associate Professor, Pratt Institute*

(Conclusion. Sheets 1, 2 and 3 appeared in November)

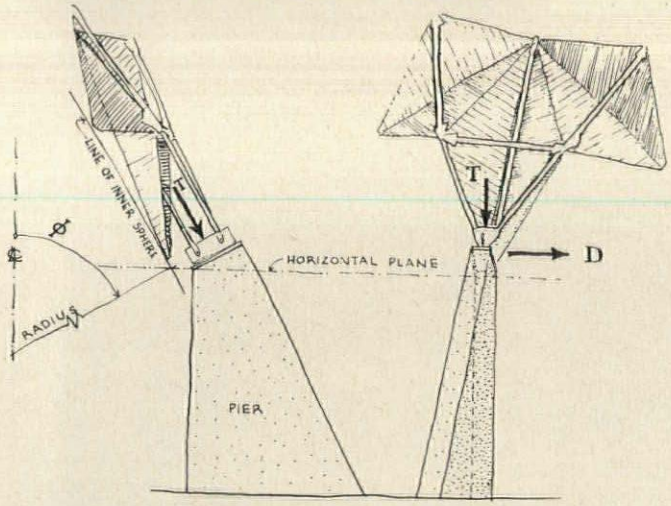


Figure 3. PIER FOR GEODESIC DOME (See Table)

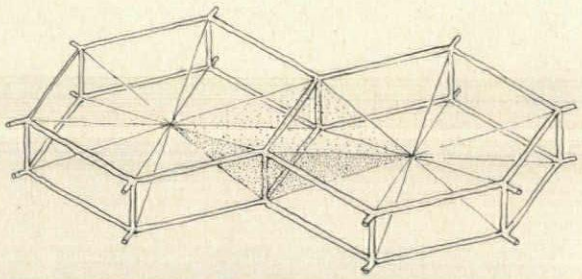


Figure 4. OCTAHEDRAN SPACE TRUSS

The Kaiser Aluminum and Chemical Sales Co., 919 North Michigan Ave., Chicago 11, Illinois, has designed aluminum domes based on Fuller's patents, and some of its own patents covering the system of stressed skin space truss using diamond shaped panels. Kaiser is currently marketing two basic series, each of three sizes of type A domes. (See table.)

The plan and elevation shown in Figure 2 are of Kaiser's type A-80-15.3 (approximately a quarter sphere.)In plan the surface is divided into five identical sectors, corresponding to the five upper spherical triangles of the spherical icosahedron; they are joined by a pentagonal lantern at the top. Each sector is supported by five symmetrically arranged piers: C in the center (highest) ; B_L and A_L to the left, looking up at the dome; B_R and A_R to the right.

The geometry of the division of the dome surface is described in detail on Sheets 28, 29 and 30 of "Useful Curves and Curved Surfaces," AR, April, 1958. A typical basic spherical triangle is shown between lines 8, 9 and 12 on both plan and elevation. The divisions are marked to correspond to those shown on Sheet 29; here the frequency (μ) is 10.

The panels and struts are drawn in detail in two other similar spherical triangles: between sectors two and three in plan and between sectors five and one in elevation.

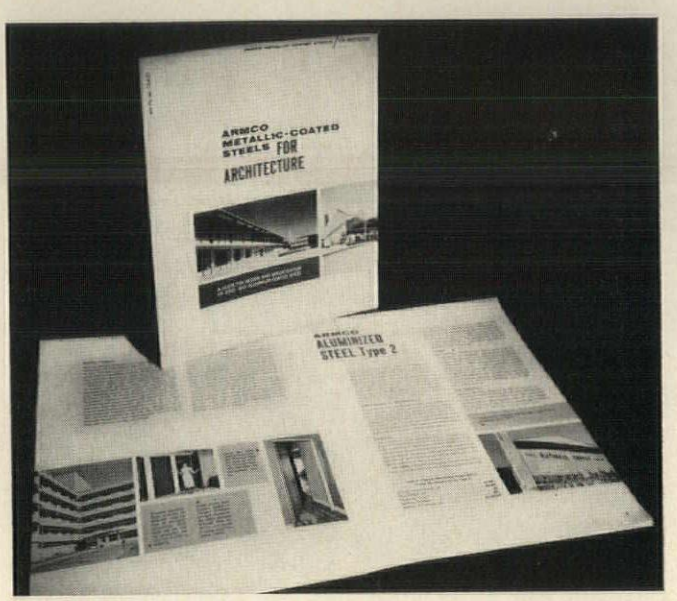
Each unit consists of a sunburst-crease formed, diamond shaped panel of aluminum sheet (maximum length 140 in.) with the central cambered valley approximately a chord of a great circle on the inner sphere (radius 80 ft). Six of these panels meet at a point on the inner sphere. The flanged edges of the panels go out to meet the struts, which form a hexagonal pattern with their vertices on the outer sphere (radius 81 ft). The creased valley and the four edges of the panel plus one strut comprise the six edges of the unit tetrahedron. (This is being patented by Kaiser Aluminum, Don L. Richter, inventor; other patents are pending.) Filler panels (as shown dotted in sectors five and one) can be hung from the lower edge to bring the dome down to a more uniform line.

In sector four, broken lines show the piers as they are required for the two small domes (A-80-11.5 and A-80-7.0), which can be built using the same panels but taking smaller portions of the same sphere.

DATA ON KAISER DOMES

Dome Code No.				Volume × 10^3 Cu. Ft.	Rise, Top of Lowest Pier to High Point of Inner Sphere	Frequency (μ)	Number of Piers Per Sector (5 Sectors Per Dome)	Pier Letter	Radius in Plan To Point on Inner Sphere Opposite Pier (See Figure 3)	Ø° (See Figure 3)	Pier Loads in Thousands of Pounds		
Type	Radius Inner Sphere (Add one foot for outer)	Plan Area × 10^3 Sq. Ft.	Surface Area × 10^3 Sq. Ft.								Max. Downward Thrust T with Snow Load	Max. Uplift —T with 100 m.p.h. Wind	Max Drag D (Snow or Wind)
A -	80 -	15.3	21.9	603	46'-10¾"	10	5	A	72'-10"	65.6°	15.4	— 5.7 (30 lb. snow)	5.8
								B	71'- 6⅛"	63.4°	21.7	— 8.3	8.6
								C	70'-11¼"	62.5°	23.2	— 9.1	7.5
A -	80 -	11.5	14.5	230.7	31'- 9½"	10	4	A	63'-10⅛"	53.0°	21.0	— 8.8 (30 lb. snow)	10.4
								B	61'- 6⅝"	50.3°	28.2	—12.9	11.6
A -	80 -	7.0	8.1	87	18'- 5⅝"	10	3	A	51'- 1½"	39.7°	24.6	—15.2 (20 lb. snow)	12.6
								B	48'- 6¾"	37.4°	33.3	—22.7	10.3
A -	112 -	30.0	42.7	1180	64'- 5½"	14	7	A	101'- 4½"	64.9°	22.6	— 7.2 (40 lb. snow)	10.7
								B	99'-10"	62.1°	31.4	— 9.4	13.4
								C	98'- 7⅝"	61.8°	35.3	—11.1	13.5
								D	98'- 2"	61.3°	36.0	—11.4	12.7
A -	112 -	24.7	32.2	733	46'- 5⅜"	14	6	A	92'-10½"	56.1°	32.3	—11.0 (40 lb. snow)	15.2
								B	90'- 4⅜"	53.8°	42.2	—14.3	15.4
								C	88'- 9⅝"	52.5°	44.5	—15.2	13.3
A -	112 -	18.7	22.6	403	35'-10 "	14	5	A	82'- 1⅛"	47.2°	42.5	—15.1 (40 lb. snow)	18.0
								B	78'- 2⅜"	44.3°	56.7	—20.2	15.4
								C	76'-10¼"	43.4°	56.9	—20.4	10.0

Note: All of these domes except A-80-7.0 can safely withstand winds of 125 m.p.h.; uplift and snag loads on piers will be increased by about 55% over those given here for 100 m.p.h. wind.



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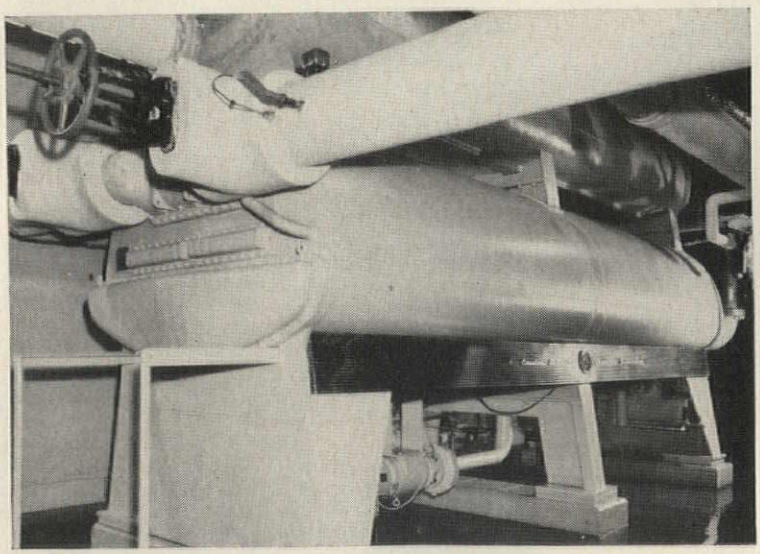

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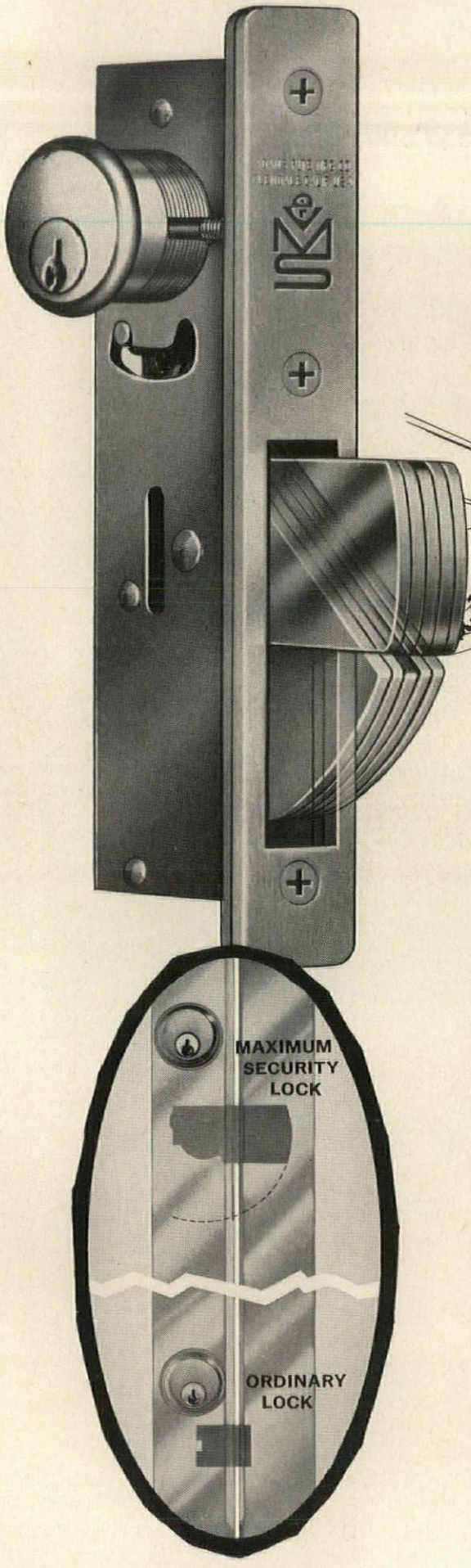

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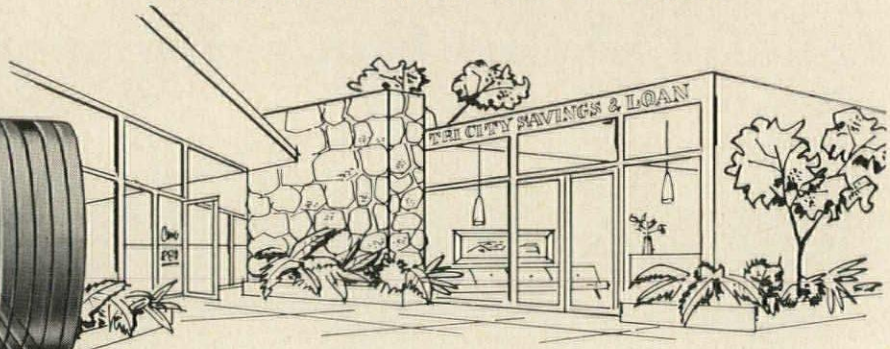

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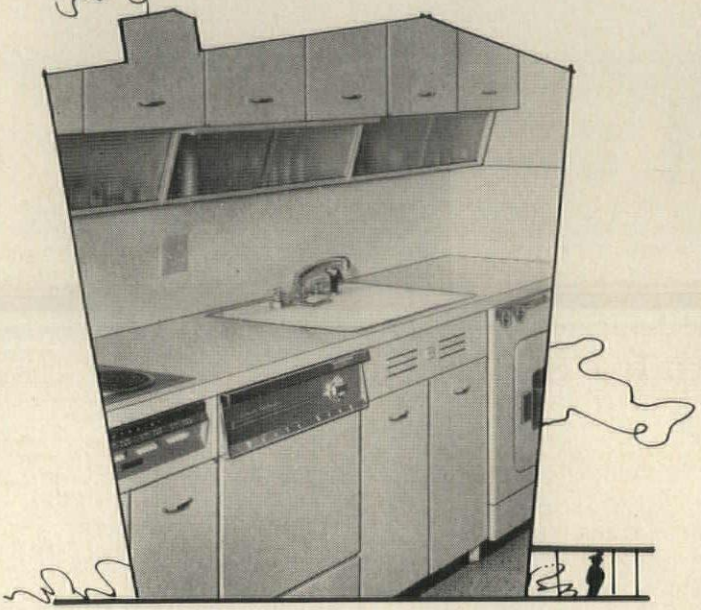

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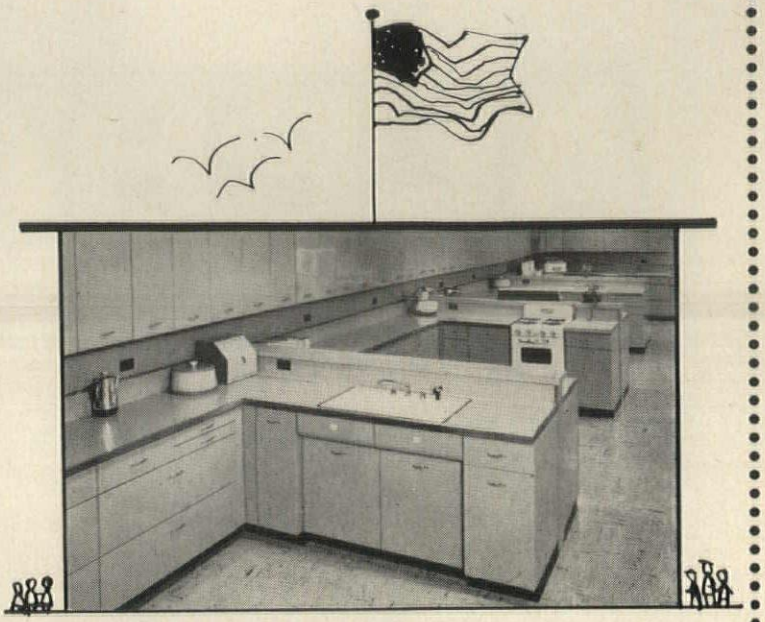

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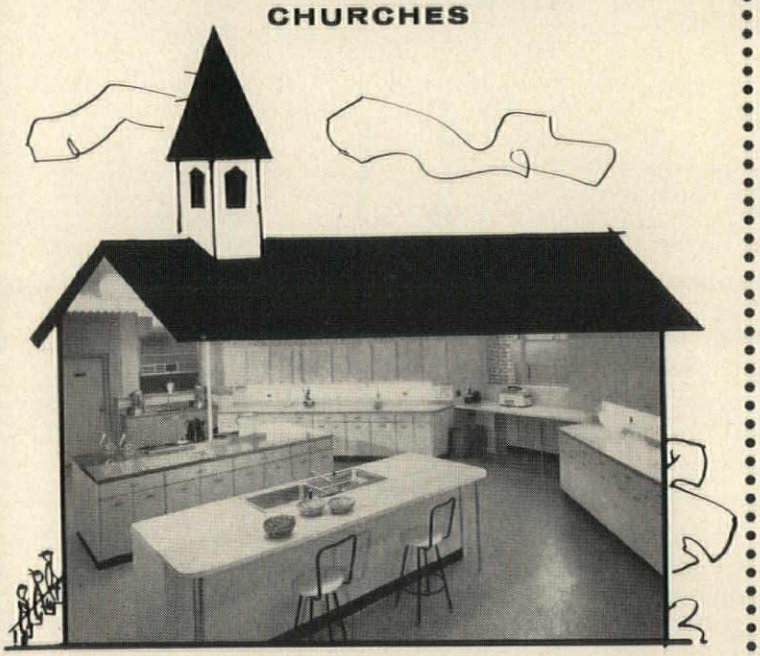

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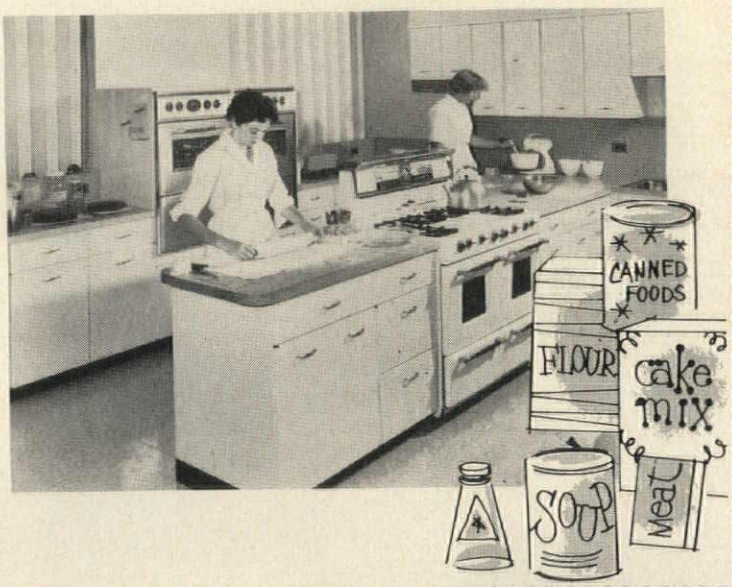

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Sampling

If the slump test is to determine acceptability of the concrete, the sample must be taken from the early part of the load. Let out at least a wheelbarrowful before taking the sample. The first concrete out of the mixer should never be used for testing.

If the test is to be representative of the entire load, take samples from three parts of the load, directly from the mixer discharge. The total sample should be at least 80 lbs. and should be remixed in wheelbarrow before making slump.

1. Place Slump Cone on Plank, Slab or Steel Plate

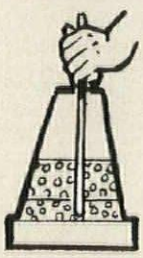
Moisten the inside of the cone and place it on a flat, level, firm surface which extends several inches beyond the base of the cone. When putting concrete in the cone stand on the foot lugs to hold it firmly in place.

Reprints of the information on this page are available for the asking.

2. Fill Cone in 3 Layers

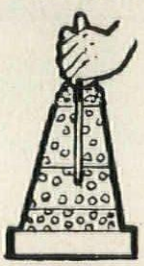
Fill the cone ⅓ full and rod layer exactly 25 times with a round, bullet-nosed iron or steel rod of ⅝" diameter. Rod uniformly over the entire concrete layer.

3. Use Bullet-Nose ⅝" Rod



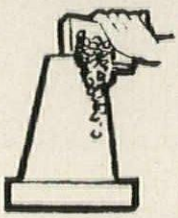
Fill the cone with the second layer until ⅔ full and rod this layer 25 times uniformly over the entire concrete surface, penetrating into but not through the first or bottom layer.

4. Rod Each Layer 25 Times Uniformly



Fill the cone until it slightly overflows and then rod this top layer 25 times uniformly, penetrating into but not through the second layer.

5. Strike Off Excess Concrete

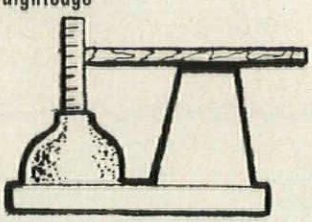


Strike off excess concrete from the top with a straightedge so that the cone is exactly full. Remove spilled concrete from around the bottom of the cone.

6. Remove Cone Carefully

Lift cone straight up, slowly and gently, immediately after filling, rodding and strike-off are completed. Never jar the concrete at this point.

7. Measure Slump From Bottom of Straightedge



Measure the slump as shown above. If the top of the slump is irregular, do not measure the high point or the low point. Try to get the average. Caution: Never reuse this concrete for cylinder strength tests.

Recommended Slumps for Various Types of Construction*

Type of Construction	Slump inches**	
	Maximum	Minimum
Reinforced foundation walls and footings, and thin plain walls	5	2
Plain footings, caissons, and substructure walls	4	1
Slabs, beams, and reinforced walls	6	3
Building columns	6	3
Pavements	3	2
Heavy mass construction	3	1

*Adapted from Table 4 of the 1940 Joint Committee "Report on Recommended Practice and Standard Specifications for Concrete and Reinforced Concrete."

**When high-frequency vibrators are used, the values given should be reduced about one-third.

PREVENTING CRACKS IN PLASTER CEILINGS

For the past seven years the Gypsum Association has been conducting research on the performance of lath and plaster ceiling systems in order to develop plaster constructions that will provide a high degree of crack resistance.

The most recent phase of the Association studies, dealing with small (up to twenty square yards) suspended ceilings, was recently completed "under job conditions" in three large hospital projects which were carefully selected for similarity of construction, room size and so forth, but separated geographically to provide for some evaluation of the effect of climate. Since completion of plastering, the ceilings have been examined periodically and are still under observation. Although it is quite possible that future observations may slightly alter the current evaluation, definite trends and patterns have been established.

For example, of the 21 "variables" studied, it was found that those with the greatest effect on resistance to cracking were *types of finish coats, basecoat aggregates, plaster to aggregate ratio, type of lath,* and the *presence or absence of restraint at the perimeter.*

On the basis of the data acquired in this study, plus other industry research and recorded field experience, the Association has prepared a set of recommendations intended to provide the designer with information that will permit him to predict ultimate performance of lathing and plastering systems with a much higher degree of accuracy.

These guideposts are not intended to be all inclusive. But since the basic design principles that influence performance are quite clear, a knowledge of their relative contributions, backed by adequate construction details, definitive specifications, and competent field inspection, should enable the designer to select materials and systems with more assurance that they will meet his intentions for the performance of plaster surfaces.

THE FINISH COAT OF PLASTER

As used in combination with various lath and plaster systems, the finish coats of plaster exhibit a wide range of performance. Hence, selection of the finish coat becomes very important.

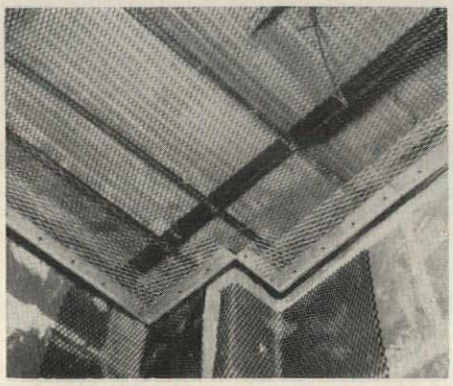
Sand Float Finishes (Keene's cement or gypsum gauging with lime putty and sand), as compared to smooth trowel finishes, provide a much higher factor of safety against cracking. They require less rigidity and strength in the lath and basecoat plaster, and are recommended for maximum crack resistance. (The descriptions of the basic sand float finishes are found in paragraphs 7.40, 7.50, and 7.60 of the American Standards Association Specification A42.1, 1955.)

Acoustical plasters and certain textured finishes are known to be highly resistant to cracking and are considered to be equal to sand float finishes in that respect.

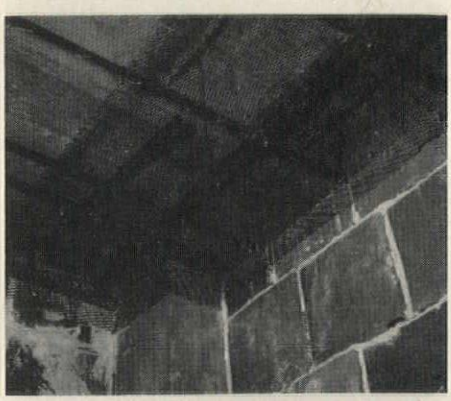
When vermiculite basecoat plaster is used over metal lath, or over gypsum lath by the two coat method, only sand float finishes or acoustical plasters are recommended.

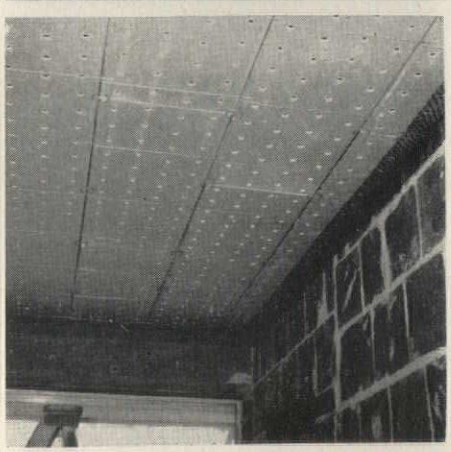
Smooth Trowel Finishes such as gypsum gauging-lime putty require a much higher degree of rigidity and strength in the lath and basecoat plaster for good visual performance. When the use of high strength basecoat plasters is impractical, consideration should be given to the elimination of restraint at the perimeter angles, or the selection of a more rigid lath such as gypsum lath, or both, to help to compensate for the lower strength of the basecoat.

The resistance of gypsum gauging-lime putty trowel finishes to cracking, particularly to check cracking, can be increased by the addition of fine aggregate. The use of not less than ½ cubic foot of fine silica sand or perlite to each 100 pounds of gauging plaster or Keene's cement, increases the factor of safety in trowel finishes, and is recommended when such finishes are applied over lightweight aggregate basecoats.



Unrestrained gypsum and metal lath ceilings with plaster casing at perimeter





Restrained gypsum and metal lath ceilings with metal cornerite at perimeter

THE PLASTER BASECOAT

Under comparable circumstances, crack resistance is closely related to the strength of basecoat plasters, the higher basecoat strengths generally providing a higher degree of crack resistance. The strongest basecoat plaster is wood fiber scratch with sanded brown, followed in order by basecoats with sand, perlite and vermiculite aggregate, proportioned as indicated below. If good performance is to be expected of intermediate or low strength plasters extreme care must be directed to selection of the finish coat and lath, and to the possible need for elimination of restraint at the perimeter angles. Experience and research prove the case for strong basecoat plasters where a high degree of surface integrity is to be realized. For these reasons the Gypsum Association recommends the following proportioning of aggregate to plaster, regardless of whether it is aggregated on the job site or in the factory:

a. Not more than 2 cu ft of lightweight aggregate to 100 pounds of gypsum, except over masonry where proportioning should not exceed 3 cu ft of lightweight aggregate per 100 pounds of gypsum. (This proportioning differs from, but yields a stronger plaster than, that permitted by Section 3.00 of American Standards Association Specification A42.1, 1955.)

b. Not more than 2 cu ft of sand (12 shovels) for scratch coat and not more than 3 cu ft (18 shovels) for brown coat to 100 pounds of gypsum; except over masonry where proportioning should not exceed 4 cu ft of sand per 100 pounds of gypsum; and except over gypsum lath for two coat application where proportioning should not exceed 2½ cu ft of sand (15 shovels) per 100 pounds of gypsum.

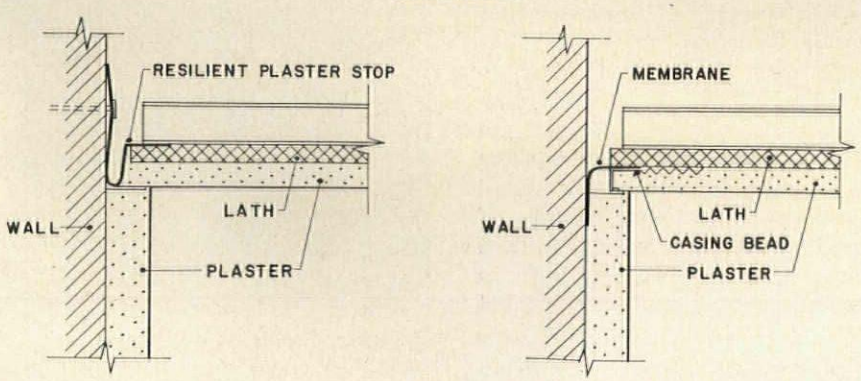
RELATIVE PERFORMANCE OF LATH AND PLASTER SYSTEMS WITH RESPECT TO CRACK RESISTANCE

	RESTRAINED CONSTRUCTION			UNRESTRAINED CEILING CONSTRUCTION		
PERFORMANCE	LATH BASE	PLASTER BASECOAT	FINISH COAT	LATH BASE	PLASTER BASECOAT	FINISH COAT
EXCELLENT	G or M	WF	F	G or M	WF	F
	G or M	S	F	G	S or P	F
				G or M	WF	T
				G	S	T
				M	S	F
GOOD	G or M	WF	T	G2	S or P	F
	G	P	F	G	V	F
	G	S	T	M	P	F
	G2	S	F	G2 or M	S	T
	G	V	F	G	P or V	T
	G2 or M	P	F	M	V	F
	G2 or M	S	T			
	G	P	T			
ACCEPTABLE	G2 or M	V	F	G2	V	F
	G	V	T	G2 or M	P	T
	G2 or M	P	T			
NOT RECOMMENDED	G2 or M	V	T	G2 or M	V	T

G—Gypsum Lath - 3 Coat Plastering
G2—Gypsum Lath - 2 Coat Plastering
M—Metal Lath - 3 Coat Plastering
WF—Neat Wood Fiber Scratch and Gypsum Sanded Brown
S—Sanded Plaster
P—Perlited Plaster
V—Vermiculited Plaster
F—Sand Float Finish
T—Smooth Trowel Finish

NOTE: All proportioning of basecoat and finish coat plaster as recommended herein.

CONSTRUCTION DETAILS FOR UNRESTRAINED CEILINGS, WALLS AND COLUMNS



THE PLASTER BASE

The rigidity of the base to which the plaster is applied is also an important factor in crack prevention. Under comparable circumstances gypsum lath usually provides a higher degree of resistance to cracking than does metal lath. Under certain conditions the selection of lath is not critical, but when the design calls for a plaster basecoat in the moderate to low range of strengths, a smooth trowel finish, or restrained perimeters, the selection of the lath often becomes a determining factor in resistance to cracking. The relationship of these variables of design, as they affect visual performance, are shown in the table at left.

PERIMETER CONSTRUCTION

Integration of walls and ceilings at the perimeter angles becomes very significant under some circumstances. Differential movement is always a factor, its extent being governed by the building's rigidity and the climatic changes. The performance of lath and plaster depends upon the extent of such movement and the ability of the wall and ceiling surfaces to move independently without transfer of undue stresses from one to the other; and on such other factors as the finish coat, the lathing base and the strength of the plaster. It is believed, however, that restraint in the vertical angles of lath and plaster systems is less significant than in the perimeter angles of ceilings, and that performance in partitions is dependent primarily upon the other factors.

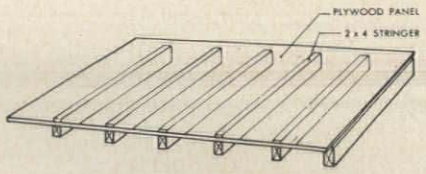
continued on page 230

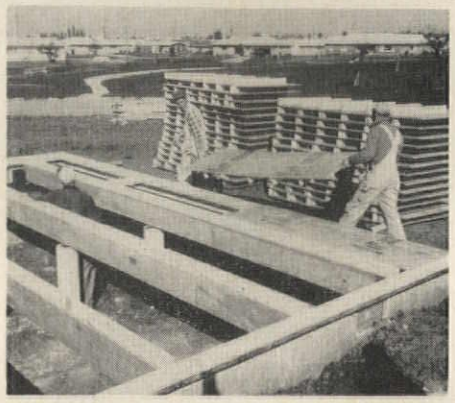
Low-Cost Approach to Floor Systems

A low-cost approach to floor systems for residential and light commercial construction offers a number of advantages. Basically, the *Insta-Floor* system is made up ½ in. thick, 4 by 8 ft fir plywood panels, with stringers pre-attached 16 in. o.c. across the panels. The panels are dropped in place and fastened to beams set 4 ft o.c., eliminating all cutting and fitting on the job and all nailing except to fasten the panels down from above. No cross-blocking is required. In Case I a 10-in. deep plywood box beam is used with top and bottom 2 by 4 flanges glue-nailed to ⅜-in. fir plywood webs. This beam, if used over a crawl space, requires supports 14 ft o.c. The beams are set into 8-in. deep pockets preformed in the foundation and rest on concrete footings at the center. Ledger strips of 1 by 2 stock are shop-applied so that the re-sized stringers on the panels will rest on them. The floor panels overhang the stringers 2 in. and are power-stapled to the top flange of the beams. Ledger strips are used on the outside courses of panels and rest in pre-formed ledges on the foundation. In Case II the ledger strips are eliminated and a 2 by 4 in. spline is added. The stringers rest directly on top of the beam and are connected with nails at the common spline.

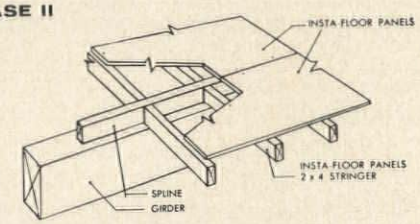
In both cases, the reduction in labor and the high speed of application are said to result in considerable cost savings.

Another important feature of *Insta-Floor* is its dimensional stability: requirements for the panels call for re-sized, kiln-dried lumber. (Where the floor is applied over a crawl space, it is advisable to wrap the beams in polyethelyne film unless a moisture barrier is used.) Also, if access to the crawl space is desirable, panels may be left unfastened until time to install underlayment. *Douglas Fir Plywood Assn., 1119 A St., Tacoma 2, Wash.*

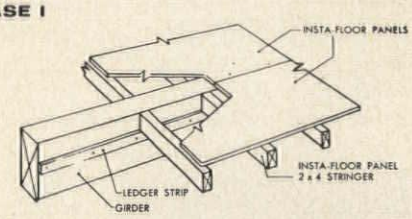




CASE II



CASE I



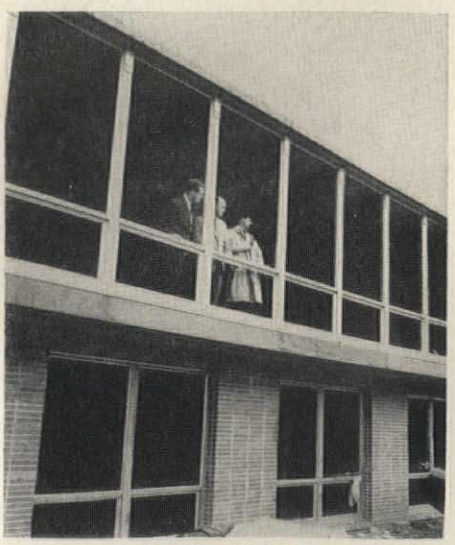
Aluminum Closure System for One-Story Buildings

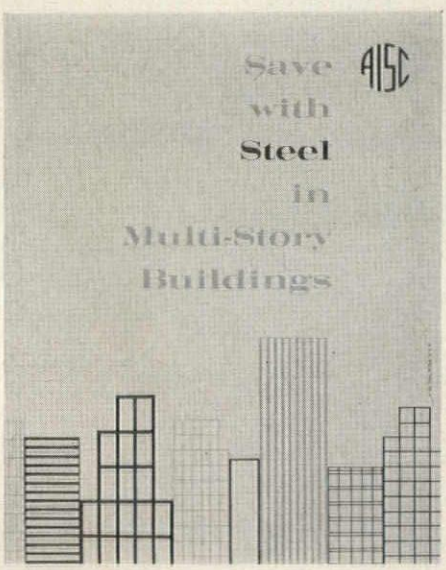
More extensive use of aluminum in the construction of schools, offices and other buildings may result from the development of a structural closure system for one-story buildings. The system combines the structural strength of steel with aluminum's light weight, low maintenance, colorability and ease of erection.

It consists essentially of load-bearing frames fabricated from aluminum extrusions. The individual frames are built to a precise 4-ft module. Assembled, and joined to standard roof beams, they form structural columns which will accept the total loads imposed on a one-story building of any kind—including live, dead, and wind loads. (The manufacturer expects ultimately to develop similar systems for use in buildings of any height.)

The principal advantage claimed for the system is the combination of the time and money savings offered by standardized components with a high degree of design flexibility. Glazing or decorative spandrel panels can be used in the frames, including masonry, precast concrete, plywood, chalk board, plaster, or ceramic tile. The aluminum mullions can also be changed or re-organized to suit design requirements. *Functional Structures, Inc., Chicago, Ill.*

more products on page 182





SAVE WITH STEEL IN MULTI-STORY BUILDINGS (A.I.A. 17-A) reviews fifteen typical steel-framed, multi-story buildings, describes the buildings themselves, and discusses the reasons for the selection of steel construction for each. Floor plans, framing plans and data sheets that give a comprehensive picture of their structural and architectural features are supplemented by cost figures and pertinent details. 48 pp. *American Institute of Steel Construction, 101 Park Ave., New York 17, N. Y.*

Drafting Pencils
A 24-page catalog presents a variety of items designed for engineers, architects and draftsmen to execute drawings. Among the 81 items are the *Mars-Lumograph Duralar* pencils for work on drafting films and *Mars-Lumochrom* for color coding on tracings. 4 pp. *J. S. Staedtler, Inc., Hackensack, N.J.*

School Building Ideas
Stretch Educational Dollars Further with School Buildings Planned with Plywood covers with precise descriptions seven schools constructed through low-budget, efficient ideas. 20 pp. *Douglas Fir Plywood Assoc., Tacoma 2, Wash.**

Premoulded Membrane Vapor Seal
Design Techniques for Controlling Moisture and Condensation in Building Structures fully explains in a direct and easy manner the cause and effect of destructive moisture and how *Premoulded Membrane* meets the need for an effective vapor seal. Booklet No. 16. *W. R. Meadows, Inc., 5 Kimball St., Elgin, Ill.**

ColorRold Stainless
(A.I.A. 15-H-1) Gives general information, characteristics, physical and mechanical properties and applications for color-coated stainless steel sheet and strip. 8 pp. *Washington Steel Corp., Washington, Pa.**

Terrabond Adhesive for Terrazzo
Details the advantages of *Terrabond* over conventional terrazzo topping with information covering cost analysis, weight, installation and other facts. *Thiokol Chemical Corp., Trenton 7, N.J.**

Grillewall
(A.I.A. 35-P-2) Discusses the special features of a non-modular, aluminum grillework which features low-cost maintenance, reduction of interior heat load and savings in window cost. Special emphasis is given to the "dovetail" joint which permits circular rings to be joined without mortar. *Integrated Ceilings & Grilleworks, Inc., 11766 W. Pico Blvd., Los Angeles 64, Calif.*

Progress Building Products
(A.I.A. 30-D-1) Covers a building products line which includes bathroom cabinets, range hoods, exhaust fans, home radio-intercoms and electronic ductless hoods. *Progress Mfg. Co., Philadelphia 34, Pa.*

Westinghouse's Space Saving Fans
A 14-page booklet describes *Centriline*, an airfoil centrifugal fan with in-line air flow, and includes sections on construction features, optional accessories and installation, plus notes on specifying and applying the fan. Also given are tabular performance and engineering data on the six different sizes available. Catalog No. 1125. *Westinghouse Electric Corp., Dept. 355, Hyde Park, Boston 36, Mass.**

Sonneborn's Sonolastic Sealant
A report on the results of an independent laboratory study of *Thiokol*-base sealants and *Sonolastic Sealant* is now available. The comparative tests were made to determine longevity of service, absorption of joint movement and thermal stability at sub-freezing temperatures. Included are graphs and charts of the test results as well as suggested specifications for a high quality, long lasting sealant. *Building Products Div., Sonneborn Chemical and Refining Corp., Dept 5, 404 Park Ave. South, New York 16, N.Y.**

Dry-Type Transformers
. . . Specifier's and Buyer's Guide Contains selection and application information on dry-type transformers. Included are prices, dimensions and specifications for single and three-phase general-purpose transformers, autotransformers and buck-boost transformers, as well as for distribution and voltage-stabilizing transformers. *General Electric Co., Schenectady 5, N.Y.**

Lighting Handbook
Revised edition covers the general field of modern lighting practices. Included is a full color page of the electromagnetic spectrum, information on distribution and light measurements, details on coefficients of utilization and maintenance factors, together with footcandle tables and many application illustrations. Major revisions have been made on floodlighting design, and roadway and sign lighting. 250 pp. $3.00. *Westinghouse Electric Corp., Lamp Div., Bloomfield, N.J.**

**Additional product information in Sweet's Architectural File*

more literature on page 226

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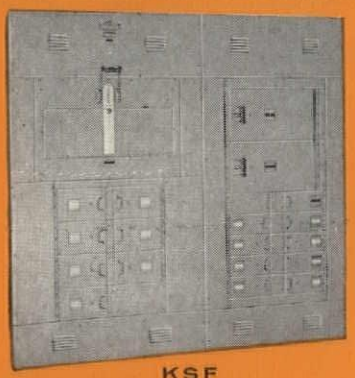

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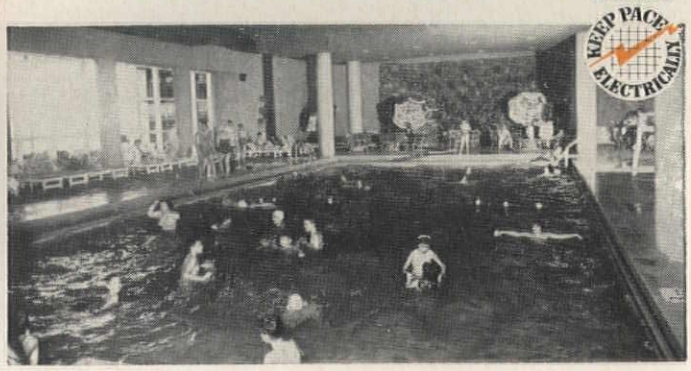

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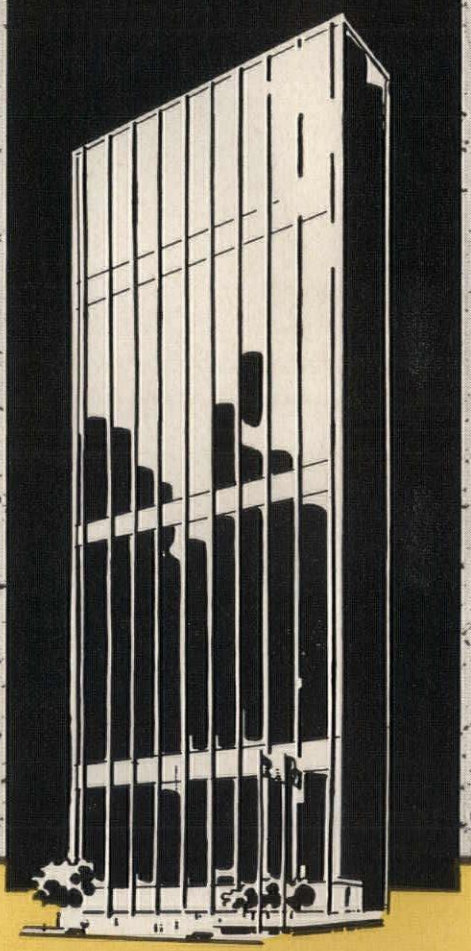

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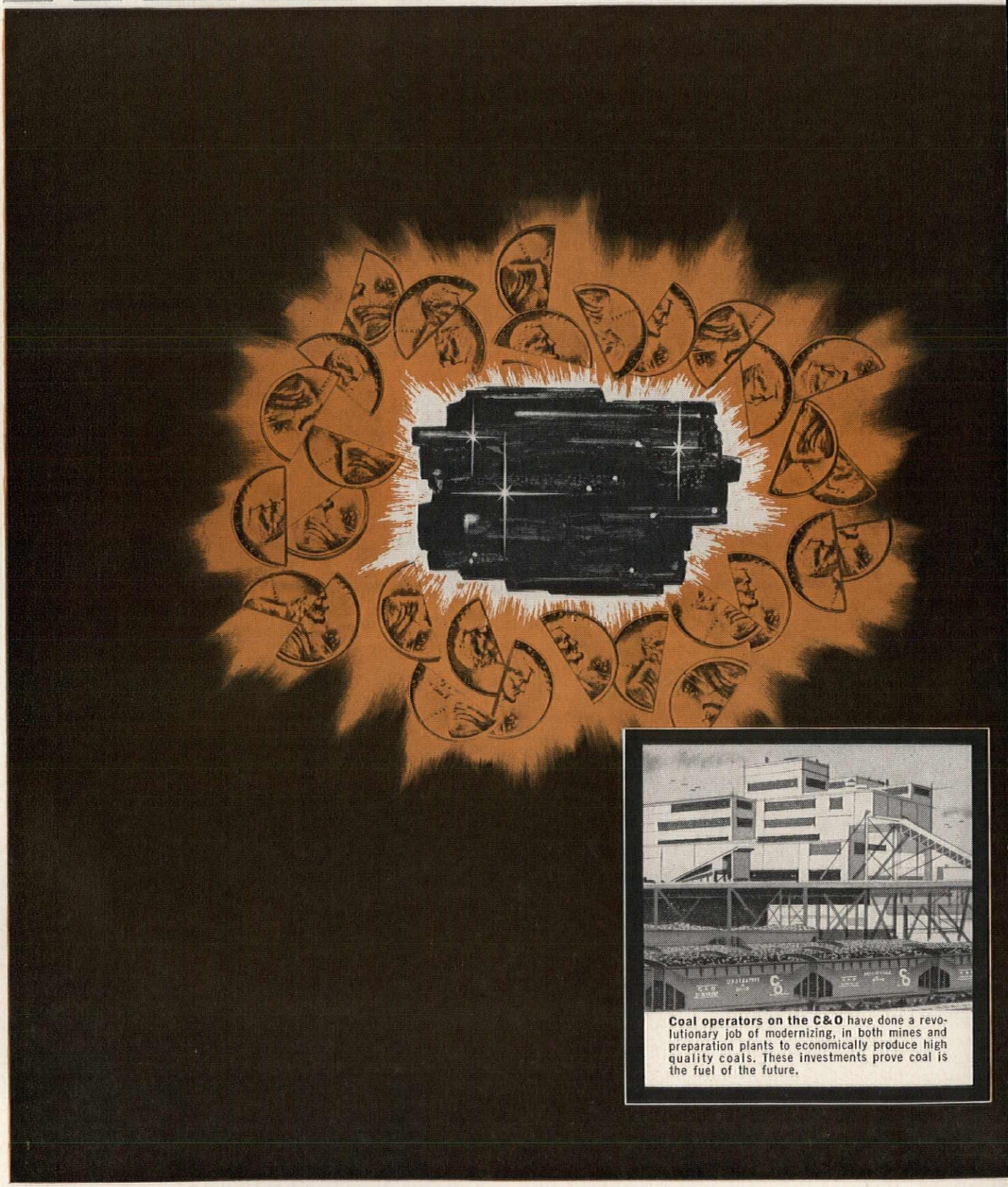

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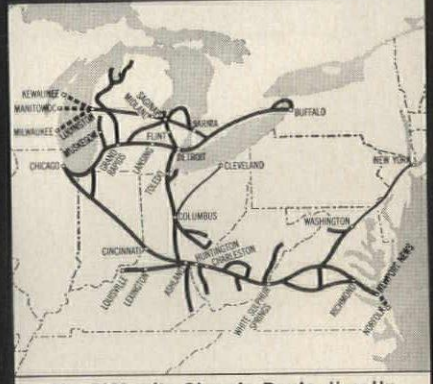


The 5100-mile Chessie Route directly serves over 300 mines in America's richest bituminous coal reservoir with the finest fleet of 68,000 coal cars. Specify C&O routing for dependable, efficient delivery.

CHESSIE SERVES THE COAL BIN OF THE WORLD

AUDITORIUM ACOUSTICS FOR MUSIC PERFORMANCE

continued from page 165

ceiling over the front rows of audience be extremely high. To make a smooth transition between the 35-ft high symphony enclosure ceiling and the 66-ft high auditorium ceiling, the design includes suspended sound-reflecting panels, which will provide the short-time-delay reflections required to eliminate the harsh tone and poor speech intelligibility that would otherwise be experienced in most of the seats on the main floor.

Two-thirds of the side wall area of the symphony enclosure is constructed of 2-in. thick wood plank mounted on a heavy reinforced steel frame. These heavy sections telescope into the floor. The remaining portions of the enclosure side walls are constructed of lighter materials and can be handled from the stage grid, or handled manually at the stage floor. The ceiling of the enclosure consists of three separate panels, each suspended from the stagehouse grid.

Place des Arts, Montreal

This 3100-seat hall is to be used for opera, touring musical comedy production, symphony, ballet, recitals, conventions, and motion picture exhibition.

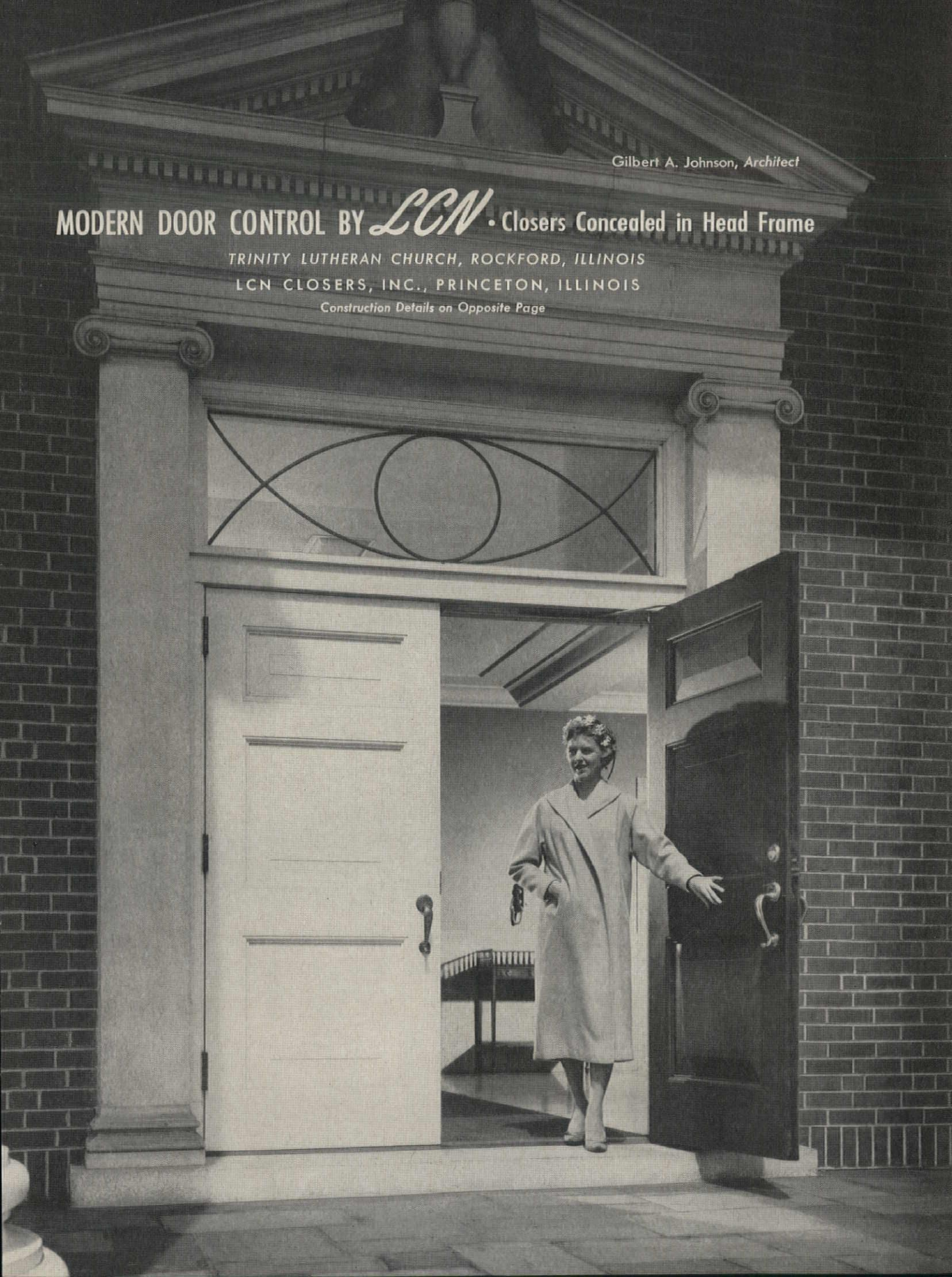
In order to obtain a seating capacity of 3100 seats with sufficient comfort for the audience, it was necessary for the designers to stack the balconies. The balcony overhangs thus produced will acoustically shade some of the seats at the rear of the main floor and the two lower balconies. This compromise is necessary in order to keep the audience reasonably close to opera and musical comedy productions, maintaining satisfactory visual acuity. In order to obtain the desired 3100 seat audience capacity, it was also necessary to provide three tiers of boxes at the sides of the auditorium.

As in the 2200 seat theatre, the aisles are uncarpeted, the seating is fully upholstered and the area beneath the seats is finished with carpet and underlay.

Here again, as in the 2200 seat theatre, the suspended ceiling panels required for short-time-delay reflections are incorporated in the design, and, at the same time, the space above the panels is used to support the reverberation. In the design illustrated, the panels were hidden behind a continuous, acoustically-transparent screen of wood battens which also concealed the loudspeakers. A more recent design incorporates exposed acoustic reflecting panels in a handsome design.

The stage width of 60 ft maximum was established for the proper acoustical support of the string sections of an 85-95 instrument symphony orchestra. The podium location is at the main curtain line position, and the pit railing is removable so that audience seats can be installed to within a few feet of the conductor to eliminate the psychological "gap" between conductor and audience.

In summary, the answer to the question of what makes a hall good for music performance is at hand. The remaining question is whether economics of esthetic trends or both will prevent building sponsors from capitalizing on these findings in future concert hall-opera house design.



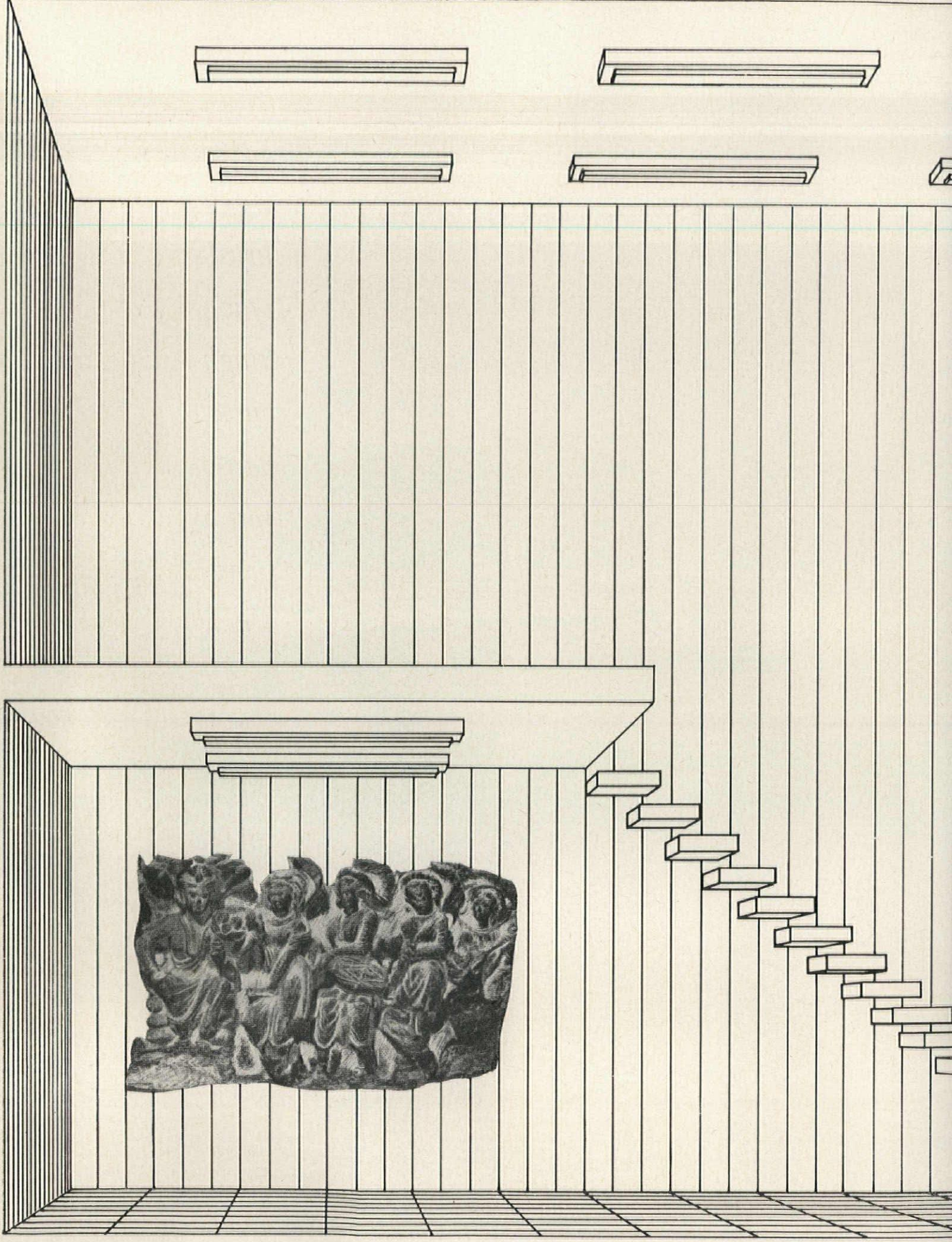
Gilbert A. Johnson, *Architect*

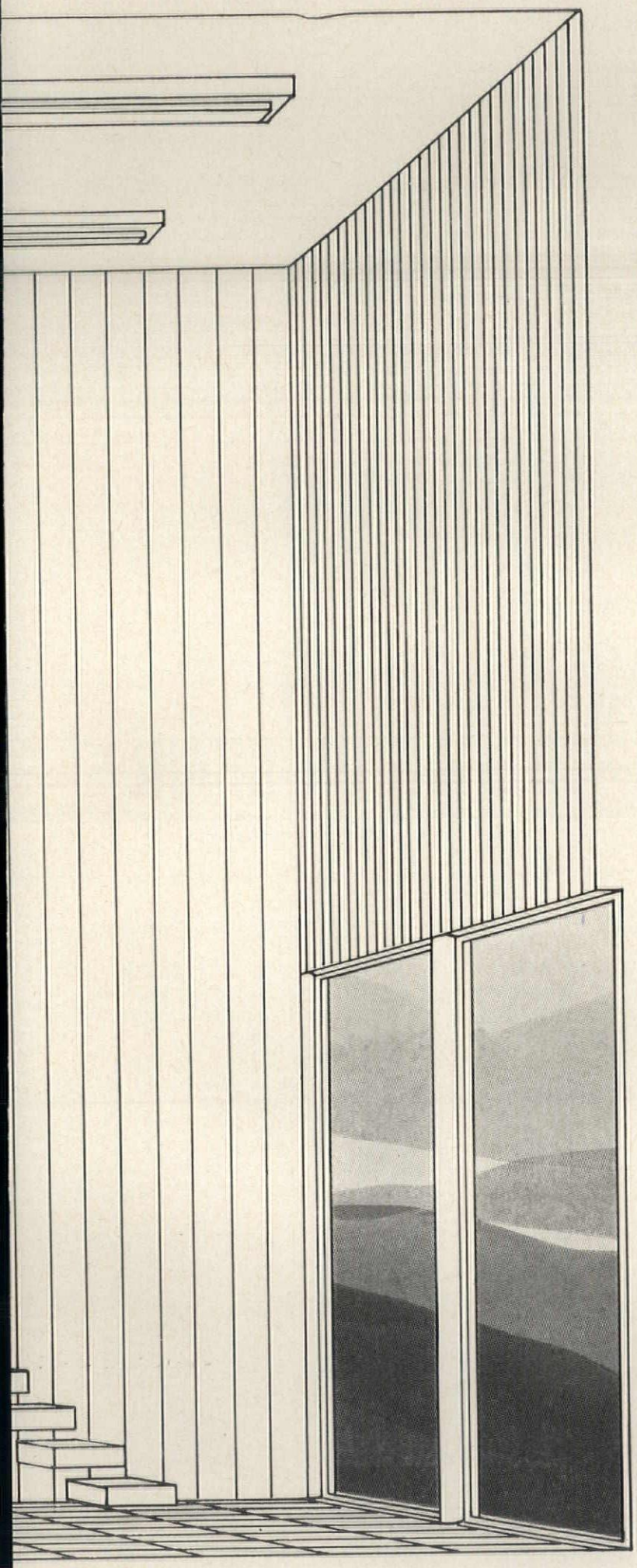
MODERN DOOR CONTROL BY *LCN* • Closers Concealed in Head Frame

TRINITY LUTHERAN CHURCH, ROCKFORD, ILLINOIS

LCN CLOSERS, INC., PRINCETON, ILLINOIS

Construction Details on Opposite Page



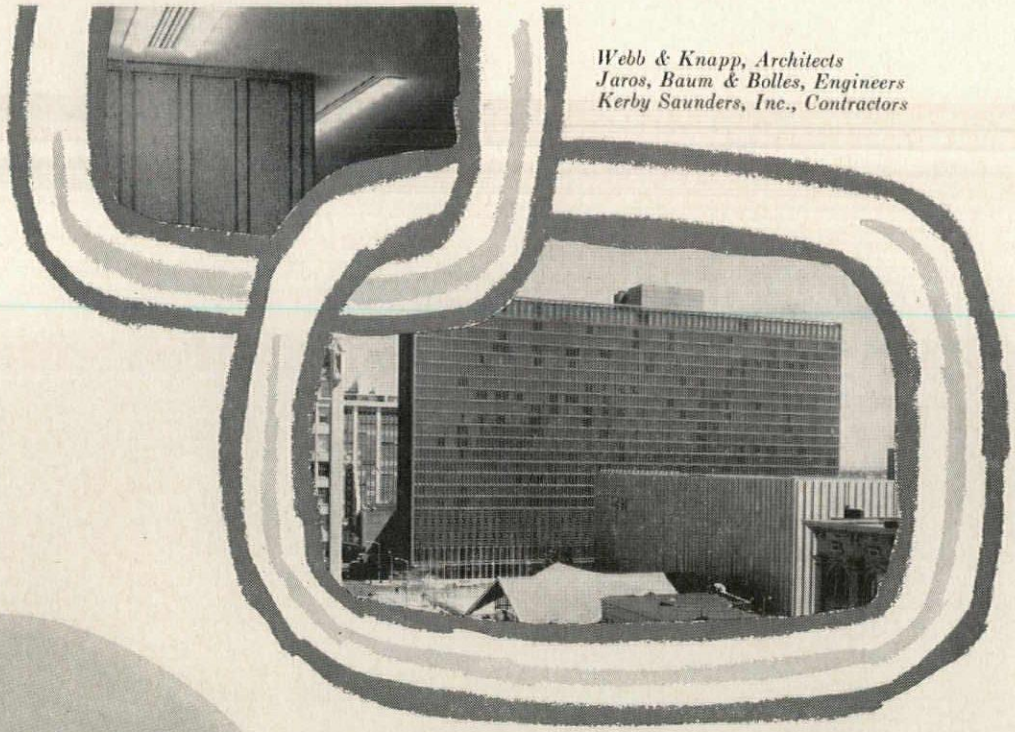


Textures change a surface
and the surface gains in interest.
The interest turns to excitement
with the play of light.
Westinghouse fixtures
are the source of that light.
They're part of the surface,
part of the texture,
part of the feeling
of quiet excitement.

For more information
on the Westinghouse SF,
write for AIA File No. 31-F-23-W2,
Westinghouse Electric Corporation,
Lighting Division,
Edgewater Park, Cleveland, Ohio.
You can be sure . . . if it's Westinghouse.
J-04480

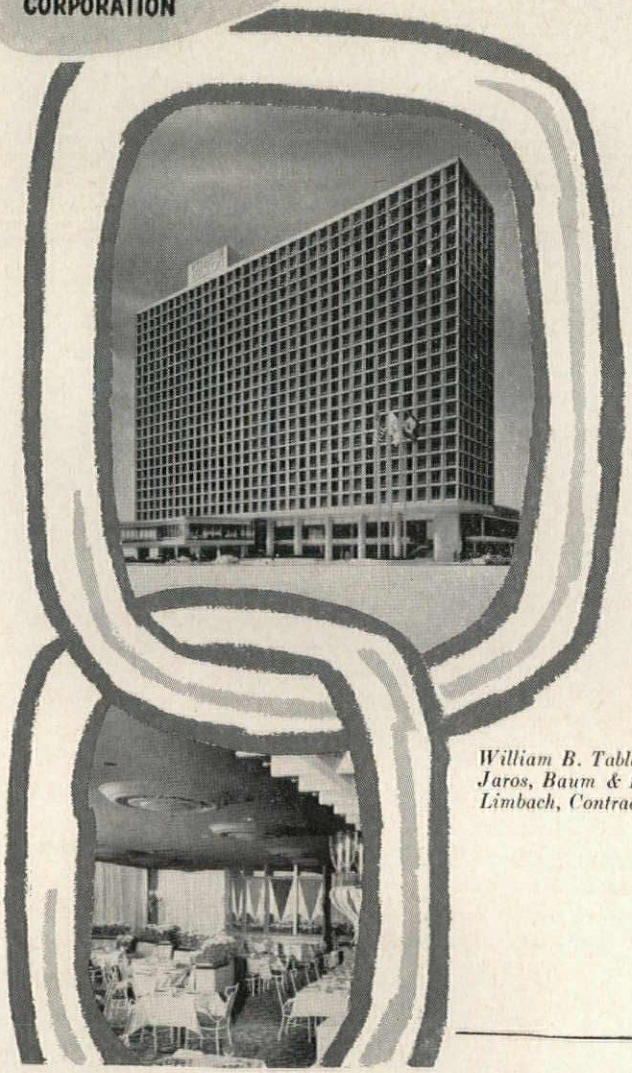
Westinghouse

The room: *a large mountainside living area.*
The fixture: *new Westinghouse SF luminaire.*



Webb & Knapp, Architects
Jaros, Baum & Bolles, Engineers
Kerby Saunders, Inc., Contractors

CONNOR ENGINEERING CORPORATION --- COMFORT LINK IN THE HILTON CHAIN



In these two handsome additions to Hilton hospitality, more than 5000 Connor air distribution units make a vital contribution to the comfort of travelers, conventioneers, and hotel employees. Virtually every product that Connor manufactures—from the famous Kno-Draft overhead square and round diffusers to the unique, pneumavalve-equipped Series 45 P valve attenuators—is installed in these glamorous new buildings.

In the 900-room Denver Hilton, 1100 feet of Connor's attractive, functional KLS linear diffuser were used to complement the essentially rectilinear pattern of the hotel's interior.

The Pittsburgh Hilton—800 rooms and 24 stories—features many Connor linears, squares, and rounds, all of which have the clean, simple lines that blend unobtrusively with the hotel's beautiful textured ceilings.

Leading architects, engineers, and contractors agree that Connor's complete line offers the ideal combination of function and design . . . a combination that suits a wide variety of structural demands.

Write for detailed information. Representatives in principal cities.

CONNOR... for Constant Comfort Conditions

William B. Tabler, Architect
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CONNOR ENGINEERING CORPORATION

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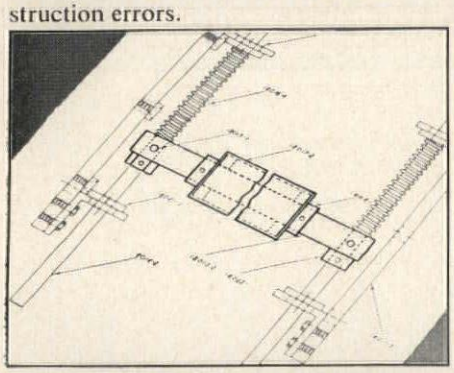
AIR DIFFUSERS

CONNOR ENGINEERING CORPORATION

DANBURY • CONNECTICUT

Ever Want Prints Emphasizing Parts of a Drawing?

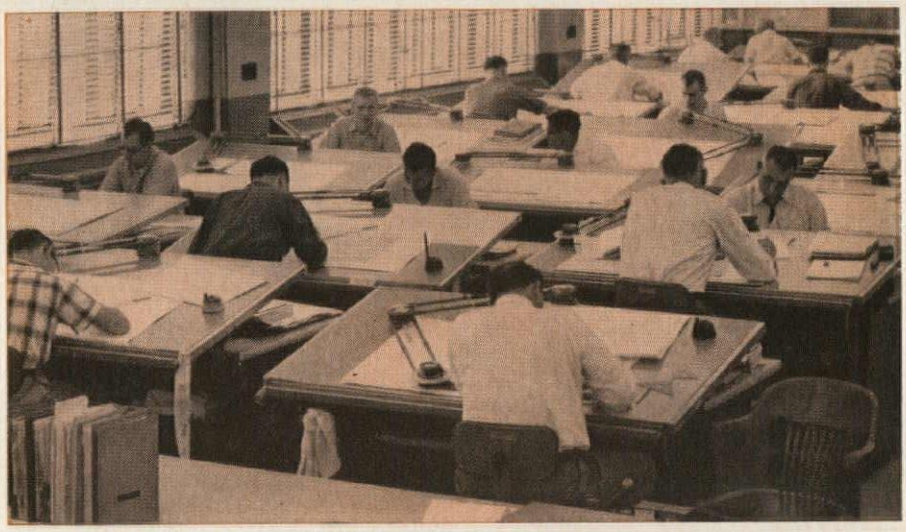
Engineers, architects and many other types of technical people often want prints that separate key parts of a drawing from the rest of it, and some weird and costly techniques have been used. This is understandable because the cost of *not* getting good separation or emphasis can also be shocking. Take the case of a large West Coast engineering organization constantly involved in plant construction. They used sepia prints of floor plans to lay out the electrical work. But the lack of contrast between the plumbing shown in the sepias and the electrical layouts added required hours of careful checking and frequent revisions, even caused some expensive construction errors.



Diazo print from special-blue image intermediate produces a sharp contrast between the parts to be emphasized and those to be subdued.

That's all ancient history now! Two of Dietzgen's numerous modern drafting-printmaking aids have turned this tough old chore into a picnic. They are new drafting media (one a polyester film and the other a vellum) diazo sensitized to produce a special blue image. The reproduction of your basic drawing on either of these media is bold and clear so drafting additions can be made without confusion or error. But when you make prints from the completed intermediate, the basic part in the special blue prints faintly (clearly visible but subdued) . . . while the added drafting, even in pencil, prints strong and bold. The results are perfect, easily and quickly obtained, delightfully inexpensive.

SOLVED: A COSTLY PROBLEM OF COMBINING DRAWINGS AND GRAPHS



Drafting time costing as much as $40 was used to draw a single grid . . . and draftsmen resented the tedious assignment.

A large manufacturer of automotive parts decided to plot their graphs directly on the drawings in order to end the nuisance of their being separated in handling, filing, plant interchange, etc. But this created many new problems. Tracing or drawing the grids in position proved costly, as much as $40 each in drafting time. They were rarely accurate and never uniform in character. The lines often smudged and usually reproduced poorly. The work created a morale problem because draftsmen resented the tedious assignment.

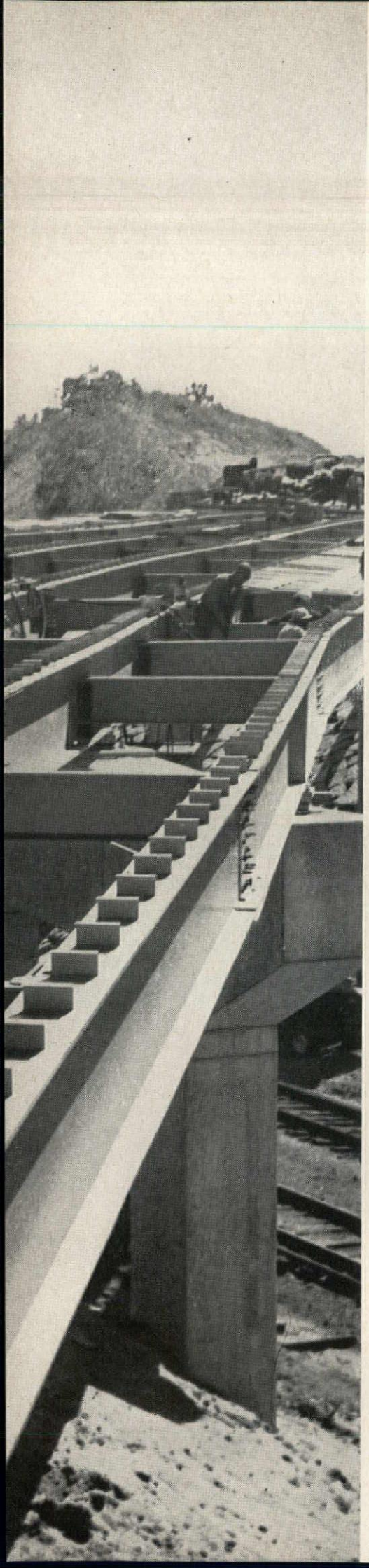
One of Dietzgen's modern drafting-printmaking aids furnished a perfect answer! It is a light-weight drafting film which is adhesive-backed and furnished printed with a stock grid. It is simply mounted in place and the grids are sharp, clean, clear and uniform, so much more accurate that fewer plotting points are needed to develop the graphs. Reproductions were so noticeably better as prints moved through other departments and associated plants that the change was investigated and quickly adopted. Much needed drafting time and capacity is saved and the reduction in costs amounts to many thousands of dollars a year.

Drafting-Printmaking Handbook reports new techniques for solving engineering and production problems

This new 36 page handbook describes a wide variety of engineering and production problems that have been solved with advance techniques in drafting and printmaking pioneered by Dietzgen. The concise, problem-solution approach suggests ways in which you may improve the efficiency within your engineering department or eliminate production bottlenecks. Write today on your company letterhead for the Mechanics of Modern Miracles. Ask for Publication SPD2- M42 Eugene Dietzgen Co., Chicago 14, Illinois.

DIETZGEN

EVERYTHING FOR DRAFTING SURVEYING & PRINTMAKING



Now! Greater economy for with new **A36**

Mechanical Properties

	A7	A373	A36
Yield Point, min. psi	33,000	32,000	36,000
Tensile Strength, psi: For shapes of all thicknesses	60,000 to 75,000	58,000 to 75,000	60,000 to 80,000
For plates and bars. Up to 1½ in., incl., in thickness	60,000 to 72,000		
For plates and bars over 1½ in., in thickness	60,000 to 75,000		
Elongation in 8 in., min., per cent	21	21	20
Elongation in 2 in., min., per cent	24	24	23

Chemical Requirements

	SHAPES		BARS		PLATES			
A7 C max.	...		...		...			
Mn	...		...		...			
Si	...		...		...			
			¾ in. & under	Over ¾ in. to 4 in.	¾ in. & under	Over ¾ in. to 1½ in.	Over 1½ in. to 4 in.	
A36 C max.	.28		.28	.28	.28	.28	.28	
Mn	...		...	.60/.90	...	.80/1.10	.85/1.20	
Si	...		...	...	...	...	.15/.30	
	Other than Group A	Group A heavy W.F.	1 in. & under	Over 1 in. to 4 in.	½ in. & under	Over ½ in. to 1 in.	Over 1 in. to 2 in.	Over 2 in. to 4 in.
A373 C max.	.28	.28	.28	.28	.26	.25	.26	.27
Mn	...	.50/.90	...	.50/.90	...	.50/.90	.50/.90	.50/.90
Si	...	...	...	...	...	...	.15/.30	.15/.30

BETHLEHEM STEEL

steel bridges and buildings
structural steel!

Steel

for strength
. . . economy
. . . versatility

- ***Adopted by the ASTM on June 16, 1960***
- ***Approved by the Bureau of Public Roads***
- ***Recognized by the A.I.S.C.***

ASTM Specification A36 covers carbon steel shapes, plates, and bars of structural quality not over 4 in. in thickness for use in the construction of bridges and buildings, and for general structural purposes.

10 PER CENT STRONGER THAN A7 AND A373

A36 has an increased yield point of 36,000 psi, and is approximately 10 per cent stronger than A7 and A373. The higher yield point of A36 allows increased design stresses using the same factors of safety.

WELDABILITY IS NO PROBLEM

A373 has been generally specified for welded construction of bridges and buildings. The chemical requirements at left indicate how closely A36 agrees with A373 in chemistry and, therefore, in weldability. Where weldability is required, the controlled chemistry will permit the use of A36.

INCREASE IN YIELD POINT SAVES WEIGHT

The substantial increase in yield point for A36 makes it a real bargain in strength-to-weight ratio at a very nominal cost. The weight saved by designing with A36 steel will result in even greater economy for steel construction.

A36 IS AVAILABLE IN ALL SIZES AND SHAPES

A36 can be furnished from the same schedules and in all sizes and shapes in which A7 and A373 are rolled.

FOR MORE INFORMATION on new A36 steel, write for Folder 773, and Booklet 569. Or get in touch with the Bethlehem sales office nearest you.

BETHLEHEM STEEL

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BETHLEHEM, PA.
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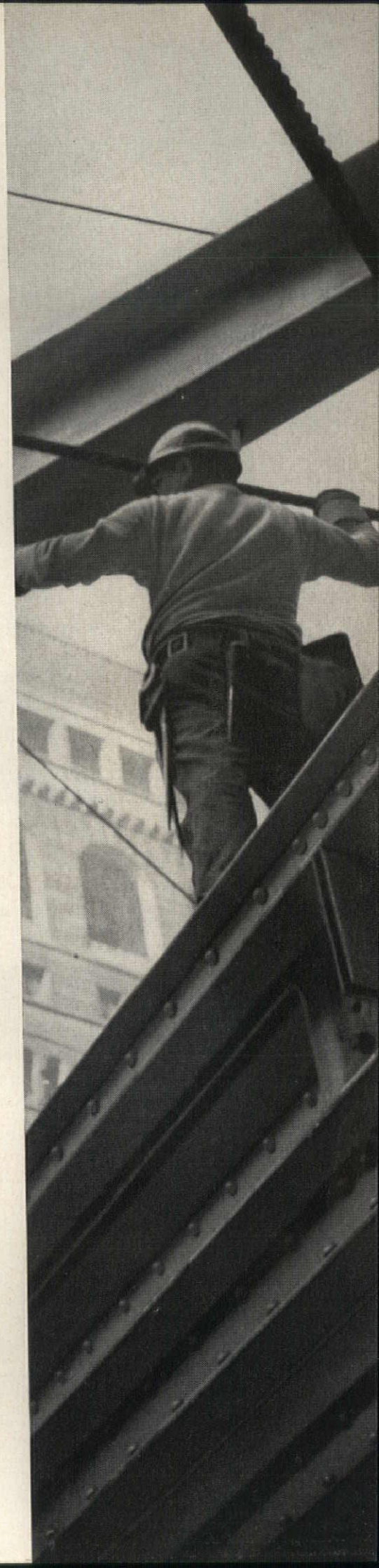
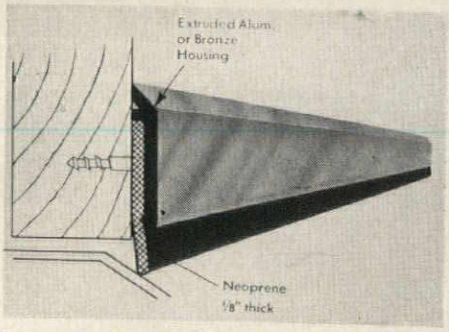


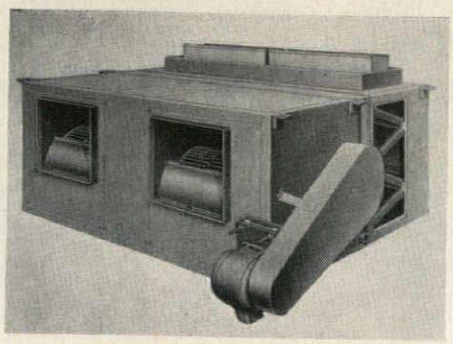
continued from page 175

Sealer for Masonry Surfaces
A sealer for all cinder, cement, *Haydite, Waylite* and pumice blocks fills and seals the pores and crevices of masonry surfaces without hiding the texture. At the same time it blocks water out, and prevents dampness and damage which often comes with moisture seepage. Quickly applied with brush or spray, the gray finish may be painted or stained if desired. *Samuel Cabot, Inc., South Terminal Trust Bldg., Boston 10, Mass.*

All-Purpose Clear Finish
Varmor, a recently introduced all-purpose clear finish, has been tested on furniture, boats, industrial floors and exterior home sidings in every climate condition. Its advantages include up to 100 per cent more wear resistance and from 50 to 100 per cent more resistance to the elements than conventional finishes, plus high resistance to detergents, acids, alkalis, etc. Easily applied with brush, roller or spray, it can be subjected to hard use after 12 hours, and can receive a second coat after 4½ hours. *Pratt & Lambert, Inc., Tonawanda St., Buffalo, N. Y.*



Weather Stripping for Door Sills
Zero No. 39, a two-piece weather stripping seal for door sills, provides protection from sun, rain, cold and dust. It utilizes a ⅛-in.-thick neoprene strip which is held in place by an extruded aluminum or bronze housing. The strip protrudes downward to meet the sill and is rigidly retained by a ridge along the housing bottom, as well as by screws through matched and pre-punched holes in both gasket and housing. *Zero Weather Stripping Co., Inc., 451 East 136th St., New York 54, N. Y.*

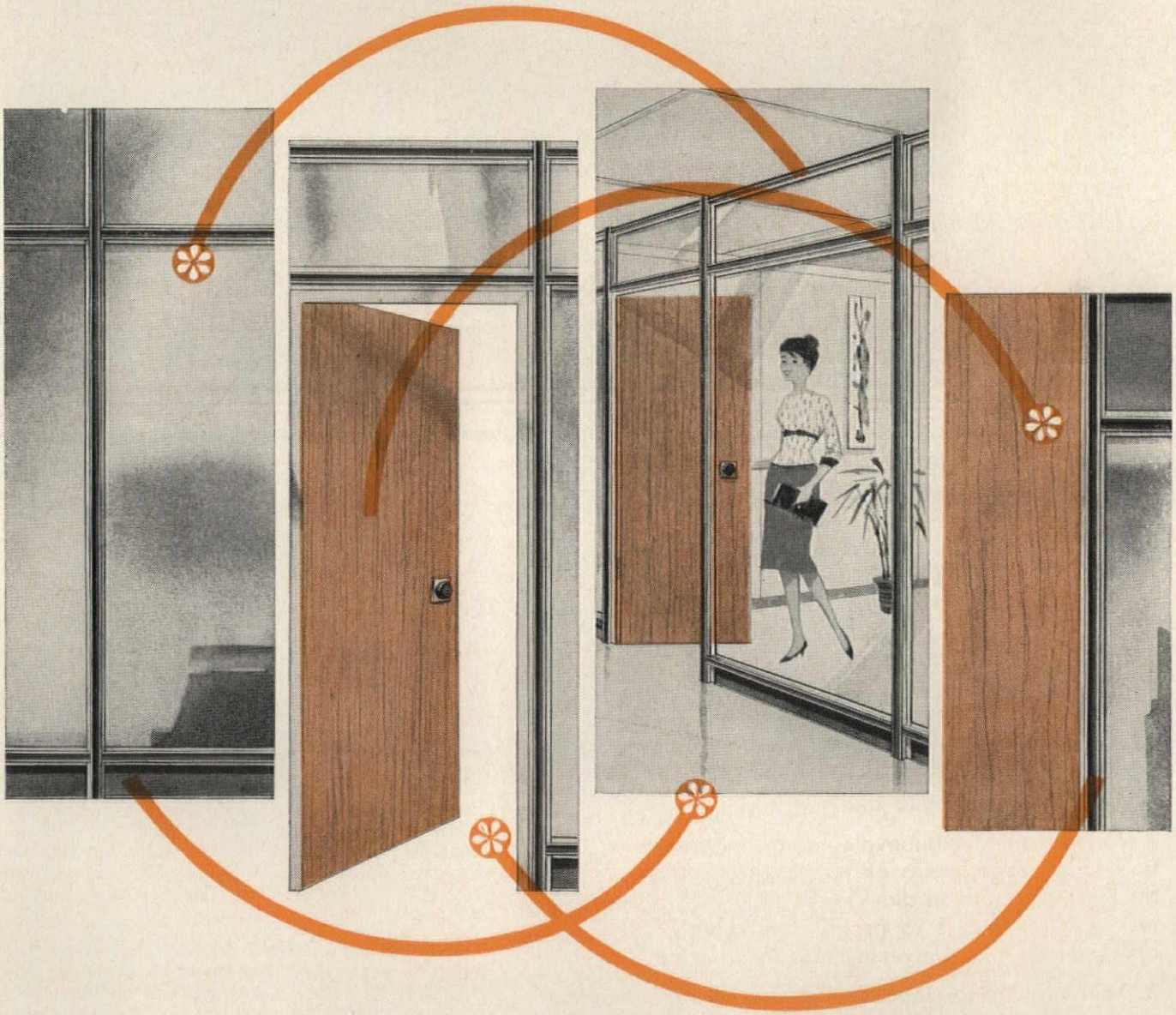


Air Handling Units
A line of central station heating, ventilating and air conditioning units is now available with ratings from 400 to 30,000 C.F.M. The units match fan and coil face area to the system by offering two fan sizes and three coil sizes for each model. In addition, there is a choice of internal or external face and bypass section, combination mixing box and filter section (or filter section only), drain pan under coil and blower section in all units, a selection of filter types, and vari-pitch V-belt drive. *Airtherm Mfg. Co., Heating and Air Conditioning Div., P. O. Box 7039, St. Louis 77, Mo.*

more products on page 198

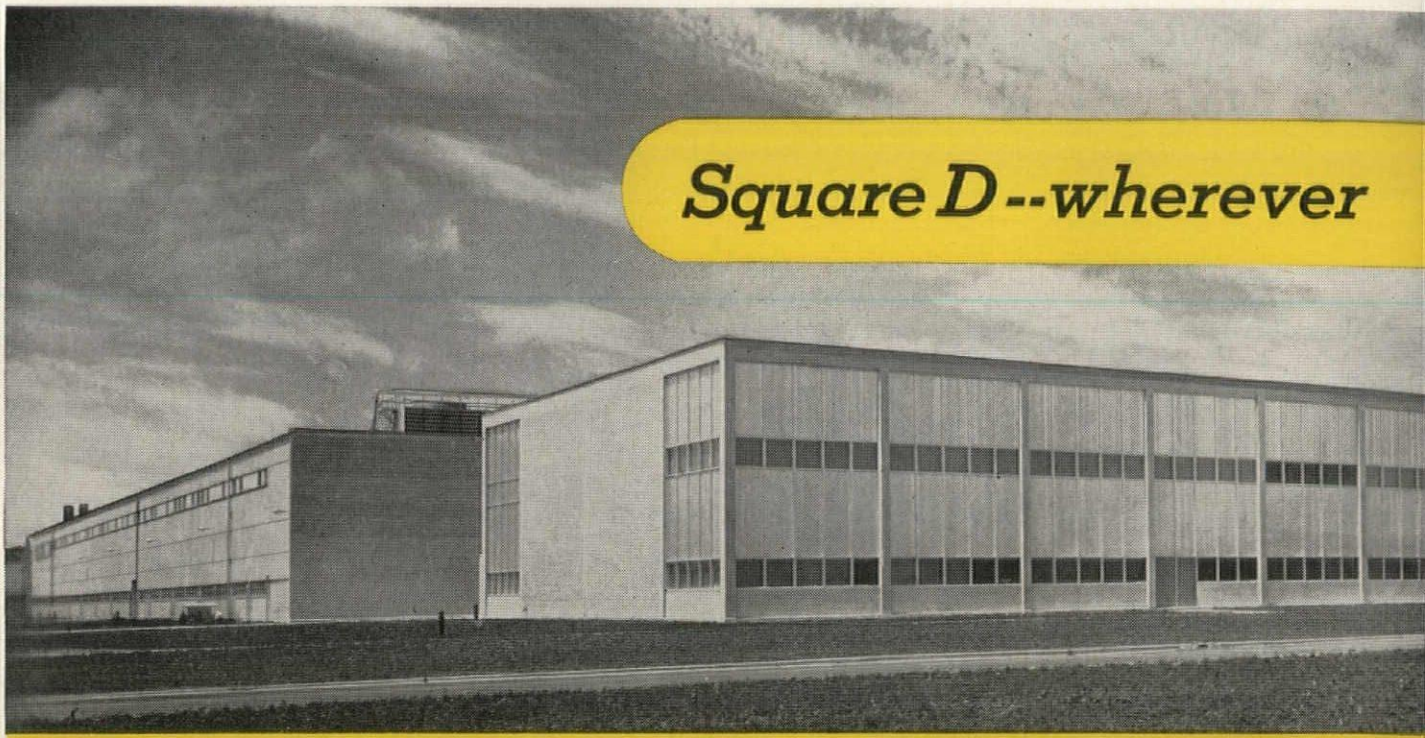
Modular Integrity ✻ by Mills

Change after change, a Mills Movable Wall System maintains its integrity because it has been custom-crafted to the building module. Only Mills design assures you that even after many changes, joints and trim will be tight; partitions, on module. Mills representatives are now showing further examples of Mills-conditioned office space; you may see them by writing to us, The Mills Company; since 1921, manufacturers of movable wall systems: 933 Wayside Road, Cleveland 10, Ohio.



Space-Conditioning:
a total concept by Mills.
Control • Comfort
Privacy • Efficiency
Beauty

MILLS



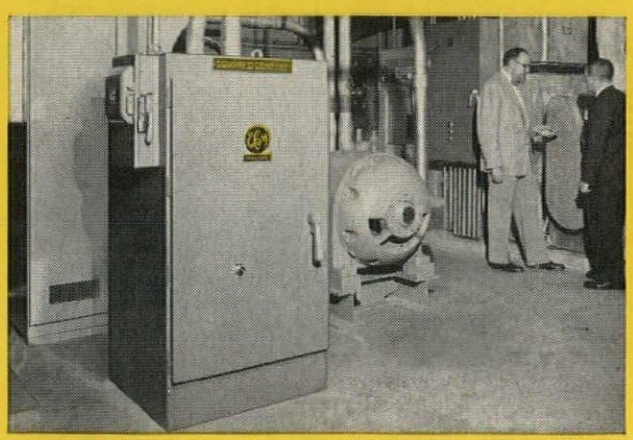
Square D--wherever

Largest of its kind ever built!..

LOCATED ON A 474-ACRE TRACT AT HINSDALE, ILLINOIS, the new International Harvester Farm Equipment Research and Engineering Center is the largest facility of its kind ever constructed. It houses under one roof nearly all of the people responsible for creating, designing and testing Harvester's farm and industrial tractors and farm implements.

As styled by Raymond Loewy Associates, the huge center is virtually self-sufficient. It provides complete dispensary, cafeteria and fire-fighting facilities. Water is supplied by on-the-site wells. The electrical capacity equals 60% of the maximum load of the entire village of Hinsdale, with a population of 12,000! Part of that load is consumed by an air-conditioning system which cools the equivalent of 700 average homes.

Square D electrical distribution and control equipment is used throughout the Center.



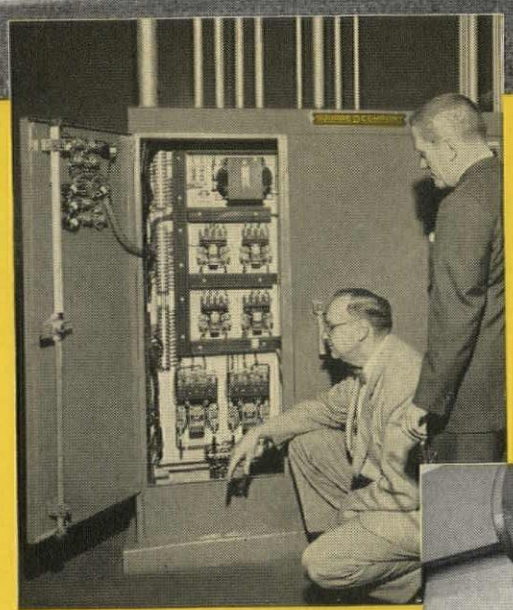
The EC&M Size 6 starter in the foreground controls a 250-hp MG set. In the right background is one of eighteen purge control panels which regulate the amount of air circulation and free the air of dangerous vapors before starting the electrical equipment in engine test cells.

FIELD ENGINEERING SERVICE is available to architects and consulting engineers through more than 100 Square D offices, backed by over 1000 authorized electrical distributors and 21 plants in the United States, Canada, Mexico and Great Britain.

Executive Offices • Executive Plaza, Park Ridge, Illinois

SQUARE D COMPANY

electricity is distributed and controlled



James Cousert, Plant Equipment Design Engineer, and Square D Field Engineer Bob Kunz inspect the panelboard which starts and operates, in sequence, the entire air-conditioning system.

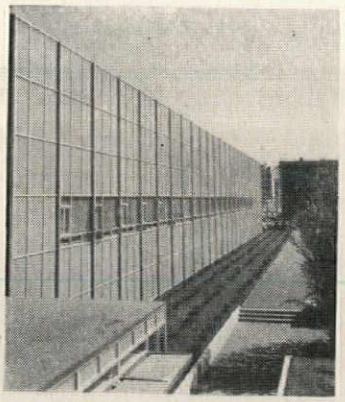
The Center is equipped with more than 25 circuit breaker distribution panelboards like this one for feeding 3-phase motors. This panel controls the press in the background.

Undergoing an axle test, this Farmall Tractor #460 is secured on a Square D controlled treadmill.

A *Complete* LINE OF ELECTRICAL DISTRIBUTION AND CONTROL EQUIPMENT

ADJUSTABLE SPEED DRIVES
BUSWAYS & WIREWAYS
CIRCUIT BREAKERS
CONTROL CENTERS
CRANE & HOIST CONTROL
DISTRIBUTION SWITCHBOARDS
ELECTRIC TRUCK CONTROL
HIGH VOLTAGE CONTROL
LAUNDRY CONTROL
LIFTING MAGNETS
LIGHTING AND POWER PANELBOARDS
LIGHTING CONTROL—LOW VOLTAGE
LIMIT AND FOOT SWITCHES
MACHINE TOOL CONTROL
MAGNETIC BRAKES
METER MOUNTINGS
MOTOR STARTERS
PRESS CONTROL
PRESSURE, FLOAT, & VACUUM SWITCHES
PUSHBUTTONS
RELAYS AND CONTACTORS
RESISTORS
SAFETY SWITCHES
SERVICE ENTRANCE EQUIPMENT
STAGE DIMMERBOARDS
STATIC CONTROL
STEEL MILL CONTROL
SWITCHGEAR & UNIT SUBSTATIONS
SYNCHRONOUS MOTOR CONTROL
TERMINAL BLOCKS
TEXTILE MACHINE CONTROL
TIMERS
VOLTAGE TESTERS
WELDER CONTROL

At MIT's New Athletic Center...



New wing houses gym, class and locker rooms and instructors' offices. Opaque glass curtain walls are weathersealed with neoprene gaskets.

Architect: Anderson, Beckwith & Haible, Boston, Mass.

General contractor: George A. Fuller Co., Boston, Mass.

Gasket supplier: Firestone Tire and Rubber Co., Fall River, Mass.

Glazing and panels: Pittsburgh Plate Glass Co., Boston, Mass.

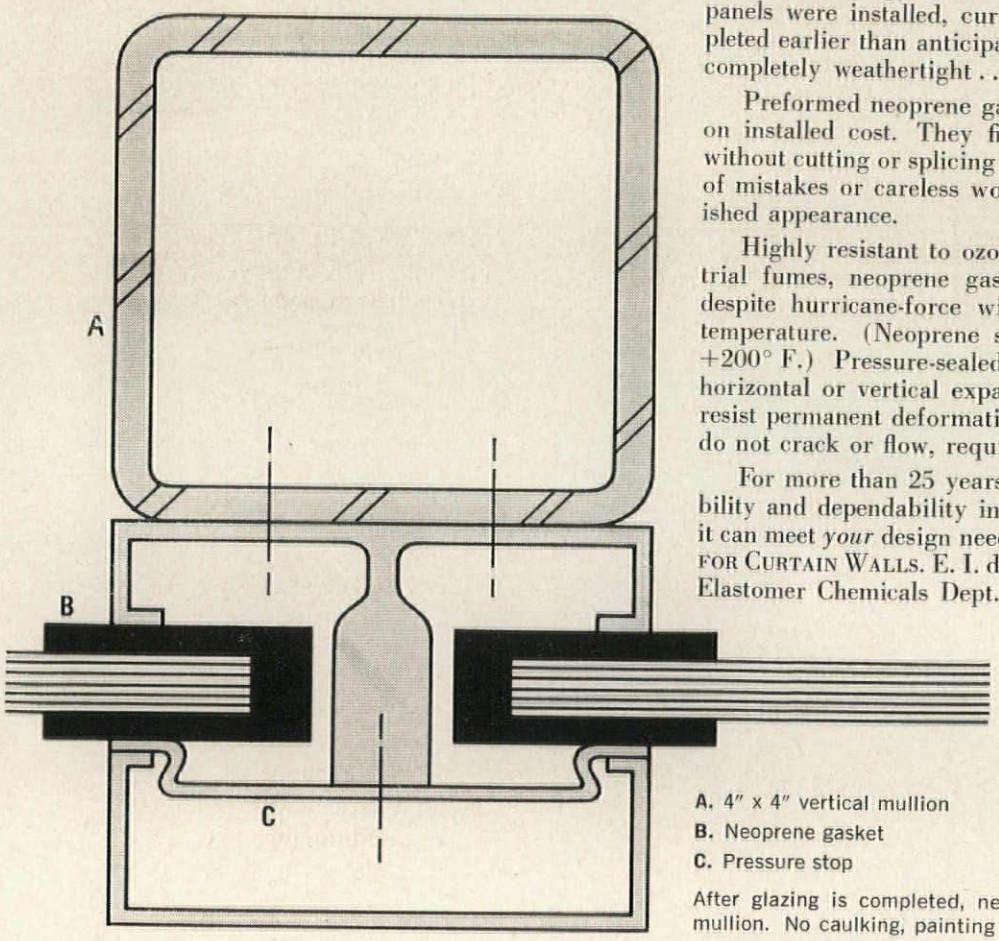
NEOPRENE GASKETS SIMPLIFY CONSTRUCTION, ASSURE A LASTINGLY WEATHERTIGHT SEAL

Architects Anderson, Beckwith & Haible specified preformed gaskets of Du Pont neoprene in designing this handsome addition to the new Athletic Center at Massachusetts Institute of Technology. Because of the ease with which gasketed panels were installed, curtain wall construction was completed earlier than anticipated. In addition, the building is completely weathertight . . . and is built to *stay* that way.

Preformed neoprene gaskets can save as much as *50%* on installed cost. They fit into place easily and quickly without cutting or splicing on the job, reduce the possibility of mistakes or careless workmanship and give a neat, finished appearance.

Highly resistant to ozone, weather, sunlight and industrial fumes, neoprene gaskets maintain an effective seal despite hurricane-force winds, driving rain, extremes of temperature. (Neoprene stays resilient from –40° F. to +200° F.) Pressure-sealed neoprene gaskets accommodate horizontal or vertical expansion of glass or metal panels, resist permanent deformation. Due to their elasticity, they do not crack or flow, require no periodic attention.

For more than 25 years, neoprene has proven its durability and dependability in outdoor service. To learn how it can meet *your* design needs, write for NEOPRENE GASKETS FOR CURTAIN WALLS. E. I. du Pont de Nemours & Co. (Inc.), Elastomer Chemicals Dept. AR-12, Wilmington 98, Del.



A. 4" x 4" vertical mullion

B. Neoprene gasket

C. Pressure stop

After glazing is completed, neoprene gasket is trimmed flush to mullion. No caulking, painting or other finishing is necessary.

DU PONT
REG. U. S. PAT. OFF.

NEOPRENE
SYNTHETIC RUBBER

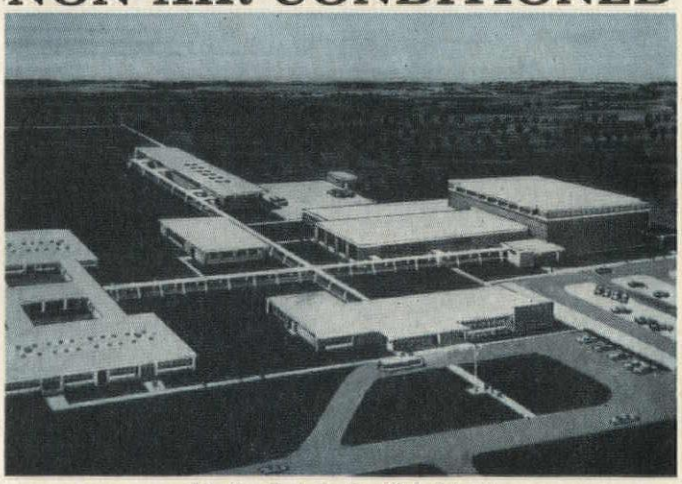
Better Things for Better Living . . . *through Chemistry*

WHICH SCHOOL COST LESS TO BUILD?

AIR CONDITIONED

Oak Grove Junior High School
Clearwater, Florida

NON-AIR CONDITIONED



Pinellas Park Junior High School
St. Petersburg, Florida

An exclusive Herman Nelson report on the economies of school air conditioning

These schools are being constructed under the supervision of one school board. Each will become a part of the Pinellas County, Florida public school system. Each was designed by a different architect. The schools are identical in terms of educational space and facilities. For accurate cost comparisons, it should be noted that the non-air conditioned school conforms to Florida state design requirements for natural light and ventilation in schools. The air conditioned school was permitted special design liberties by the state which, because of air conditioning, become both possible and advisable.

Herman Nelson presents a complete cost study of this unique project on the following pages

AIR CONDITIONED SCHOO
COSTS $15,918 LESS!

Now underway: The first realistic comparison of year-round air conditioning versus conventional heating systems for schools

Leading architects and school planners have contended for some time that the air conditioned school can be *constructed* and *operated* more economically than school plants with conventional heating systems. This pioneer project in Pinellas County, Florida has already confirmed the precedent that:

> An air conditioned school can be built for less—*$15,918 less in this case*—even in areas where costs for heating and ventilating are relatively low and those for air conditioning high!

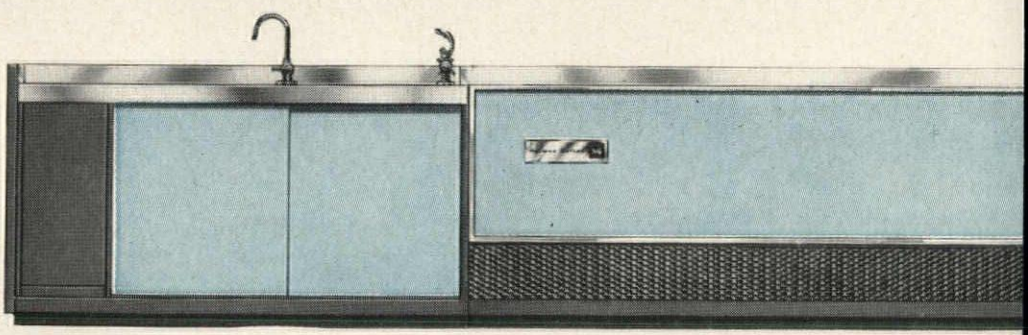
Many other factors are also being studied. A three year research program, underwritten by the U. S. Office of Education, will evaluate the advantages of air conditioning in terms of (1) operating expenses, (2) student attendance, (3) increased use of school facilities and (4) "learning environment."

Plot orientation is no problem for the air conditioned school since air conditioning eliminates the need for natural breeze ventilation. As a result, Pinellas County's Oak Grove school is more compact—requires less space than its non-air conditioned companion. These and many, many other construction details sharply reduced construction costs of the Oak Grove school.

Another key cost influence is the *type* of air conditioning system selected. Low-cost year-round thermal control is being achieved at Oak Grove school with efficient Herman Nelson HerNel-Cool unit ventilators. The HerNel-Cool system acts as a thermal "handy-man" in school rooms . . . fulfilling the special needs for sensitive heating, ventilating and natural cooling (with outdoor air) plus mechanical cooling in hot weather.

Write today for your free Herman Nelson Fact Kit on school air conditioning. A comprehensive report on the Pinellas County project will be enclosed.

Product Engineering magazine's "Master Design Award" awarded to Herman Nelson for new unit ventilator styling.



AIR CONDITIONED SCHOOL:

Oak Grove Junior High School

Clearwater, Florida

CONSTRUCTION FACTS

Will contain same basic facilities as those in Pinellas Park school. Features a very compact scheme made possible by air conditioning. Classrooms are rectangular . . . narrower dimension reduces corridor length. Mall connects various parts of the school and has plastic skylight. Window sills are high since there is no need for ventilation cooling. Concrete block with brick facing. Roof is gypsum decking supported by steel joists. Herman Nelson unit ventilators will heat, ventilate and air condition classrooms. Unit ventilators are located on the inside walls which are separated by mechanical core space containing piping, wiring and admitting ventilation air.

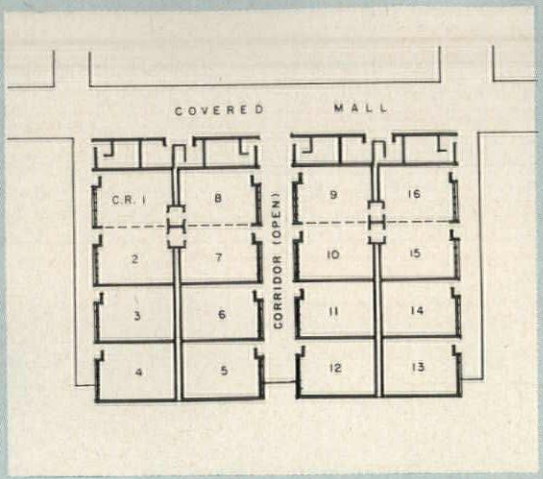
CONSTRUCTION COSTS

(Costs include a total of 24 classrooms, an additional eight classrooms will be added later.)

Mechanical (electrical, plumbing, heating, ventilating and air conditioning)	$235,640
All other construction	$439,232
Total cost	$674,872

Architect: Bruce and Parrish, A.I.A., St. Petersburg, Florida

Consulting Mechanical Engineer: Healy & Latimer, St. Petersburg, Florida



NON-AIR CONDITIONED SCHOOL:

Pinellas Park Junior High School

St. Petersburg, Florida

CONSTRUCTION FACTS

Pinellas Park school approaches campus-style design. A cluster plan for maximum breeze ventilation. Classrooms are nearly square with windows on two sides where possible. Buildings occupy one-half of 20-acre site. 32 classrooms, gymnasium, auditorium, cafeteria, shops, home economics rooms, library and administrative offices. One story buildings of concrete block with brick facing. Roof is pre-cast concrete. Classrooms have plastic-dome skylights. Heating is residential-type gas-fired furnaces, one unit serving two adjoining rooms. Exhaust fans serve rooms without windows on two sides, according to Florida State school building regulations.

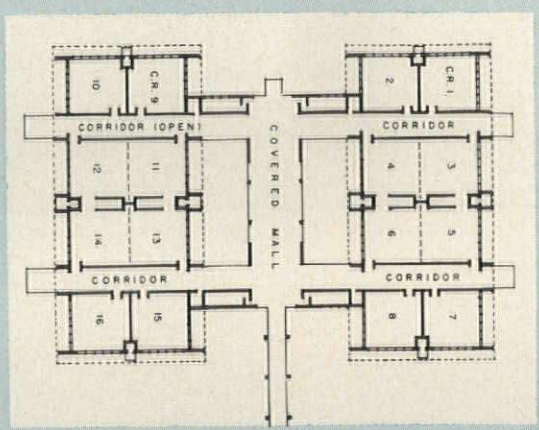
CONSTRUCTION COSTS

(Costs include a total of 24 classrooms. Eight more will be added in future construction.)

Mechanical (electrical, plumbing, heating and ventilating)	$180,498
All other construction	$510,292
Total cost	$690,790

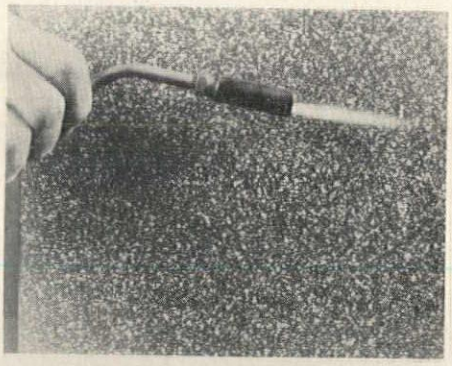
Architect: Charles L. Colwell, A.I.A., St. Petersburg, Florida

Consulting Mechanical Engineers: Healy & Latimer, St. Petersburg, Florida



Structural Carbon Steel
According to the manufacturers, A36, a new carbon steel, is superior to ASTM A7 and ASTM A373, both considered as standard in the heavy construction field. Its minimum yield point of 36,000 pounds per sq in. surpasses A7 at 33,000 psi and A373 at 32,000 psi. Matched with A7 steel on an equal weight basis, A36 will withstand about 10 per cent greater load in tension before it reaches its yield point and has about a 12 per cent yield point advantage over the weldable A373 grade. This new steel conforms to specification A36-60T for rolled structural steel recently approved by the American Society for Testing Materials. *United States Steel Corp., 525 William Penn Place, Pittsburgh 30, Pa.*

Interior Wall Coating
A spray-applied, low maintenance interior wall coating called *Glazetite* meets the requirements of interior



wall finishes in resistance to the hazards of fire and smoke inhalation. In addition, it is not affected by moisture, abrasion and impact. The thickness of the coating can be varied to provide additional filling as required and also permits application over all forms of masonry backings. *Glazetite* is available in various color combinations. *Desco International Assn., Box 74, Buffalo, N. Y.*

Plumbing Fixtures for Schools
A series of products specially designed for schools includes stainless steel column showers, wall hung showers, and a 36-in. semi-circular sage green washfountain (above). The showers provide savings in material, space and installation costs by accommodating as many as five students with only three plumbing connections—two supplies and one drain. The wall-mounted showers are completely self-contained and are available in either two- or three-student models. The washfountain features foot control and provides for three students simultaneously. It is treated with vinyl-base materials to improve its acid and alkali resistant qualities. All three achieve savings in space, maintenance costs, and water consumption and heating costs. *Bradley Washfountain Co., 2203 W. Michigan St., Milwaukee, Wis.*

more products on page 206

CONTRACTORS FOR
ROOFING • SHEET METAL
HEATING • VENTILATING
DUST COLLECTING SYSTEMS

Schriber SHEET METAL & ROOFERS Inc.

915 SOUTH PERRY ST. . . PHONE BAldwin 8-8158

DAYTON 2, OHIO

The Celotex Corporation
36 E. Fourth Street
Cincinnati, Ohio

Gentlemen:

Sending the enclosed order brings to mind the fact that we have been using Celotex roof insulation for the past thirty years.

Thinking about this makes us realize that you might be interested in knowing why we like Celotex so much.

There are two good reasons. One is that you people do the most for me. Celotex promotes jobs and works with engineers and architects to show them the advantages of specifying rigid above-deck insulation.

The second reason is just as important . . . dependable product performance. We have no call-backs due to Celotex material. It's failure proof.

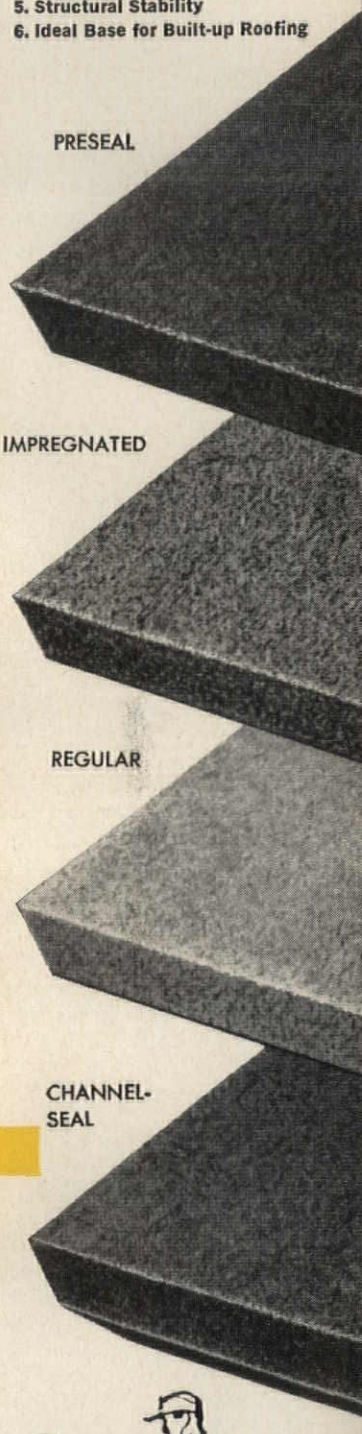
Yours truly,

Max Schriber

Max Schriber, President
SCHRIBER SHEET METAL
& ROOFERS, INC.
DAYTON, OHIO

RIGID ABOVE-DECK ROOF INSULATION BY CELOTEX ASSURES:

1. Fuel Savings
2. Power Savings
3. Heating Equipment Savings
4. Condensation Control
5. Structural Stability
6. Ideal Base for Built-up Roofing



"FAILURE-PROOF"

No call-backs! Many years of that kind of experience prompted this letter . . . job-tested assurance of dependability from one of the leading roofers in the Ohio Valley . . . proof again that rigid above-deck insulation by Celotex is "best for balanced roof performance"!

If it's "by CELOTEX" you get QUALITY . . . *plus!*

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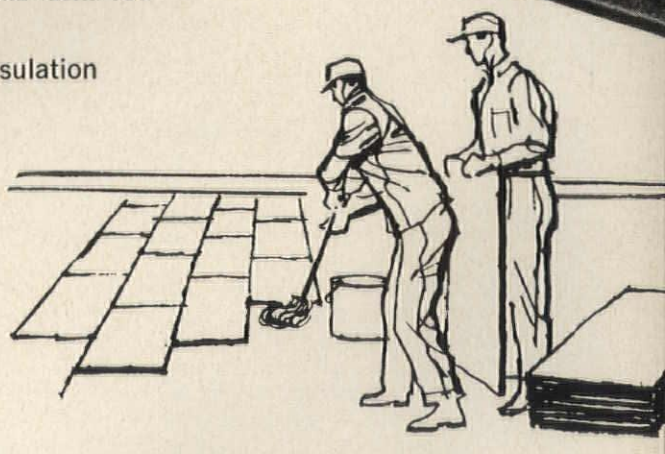
BUILDING PRODUCTS

THE CELOTEX CORPORATION
120 S. LA SALLE STREET, CHICAGO 3, ILLINOIS



See 1960 Sweet's Architectural File, Catalog 10a Ce. — Write for Specifications, Samples, Information Manual.

THE BERMUDIANA stands again as a majestic landmark dominating Hamilton Harbor in Bermuda. Steeltex by Pittsburgh Steel Co. went into the 280,000 square feet of concrete floors in the plush six-story hotel. E. G. M. Cape International, Ltd., was able to meet a tight construction schedule.

The Bermudiana Opened On Time—Steeltex Helped—Cut Costs, Too

Bermuda's beautiful Bermudiana Hotel again is dominating the majestic harbor at Hamilton.

Only the memory of the fire-ruined old Bermudiana remains. In its place is a six-story, 225-room, steel-frame structure with concrete floors reinforced by Pittsburgh Steel Company Steeltex.

Costing $5 million, the new Bermudiana represents the largest single, non-military, construction project in the island colony's past 31 years.

One of Canada's oldest and largest contractors—E. G. M. Cape International, Ltd.—built the new Bermudiana. It was a race with the calendar and a prolonged bout with the toughest kind of logistics on delivery of construction materials.

• **Contractor Won**—The Montreal-based contractor won and the Bermudiana welcomed its first guests just 14 months and 3 days after the contract was let for demolition of the charred ruins of the first Bermudiana.

Part of the credit for winning the race goes to Steeltex, the welded steel wire concrete reinforcement that carries its own waterproofed form on its back.

Steeltex was a natural for the Bermudiana job. Here's why:

• The island of Bermuda has no commercial lumber, so wood forming would have required costly, imported lumber. Steeltex combines form and reinforcing all in one.

• Steeltex saves labor. All skilled and experienced labor had to be brought in, mostly from Canada and mostly by air. In addition, the contractor had to set up a camp and service it.

• Steeltex' welded wire fabric is galvanized. On the Bermudiana job, this assures continuing protection of reinforcing against the corrosive elements of a tropical climate.

• But the big advantage was the speed of Steeltex installation. Cape Construction Superintendent Rhys Davies estimated wood forms would have required a crew of up to 60 men. The Steeltex installation required four men.

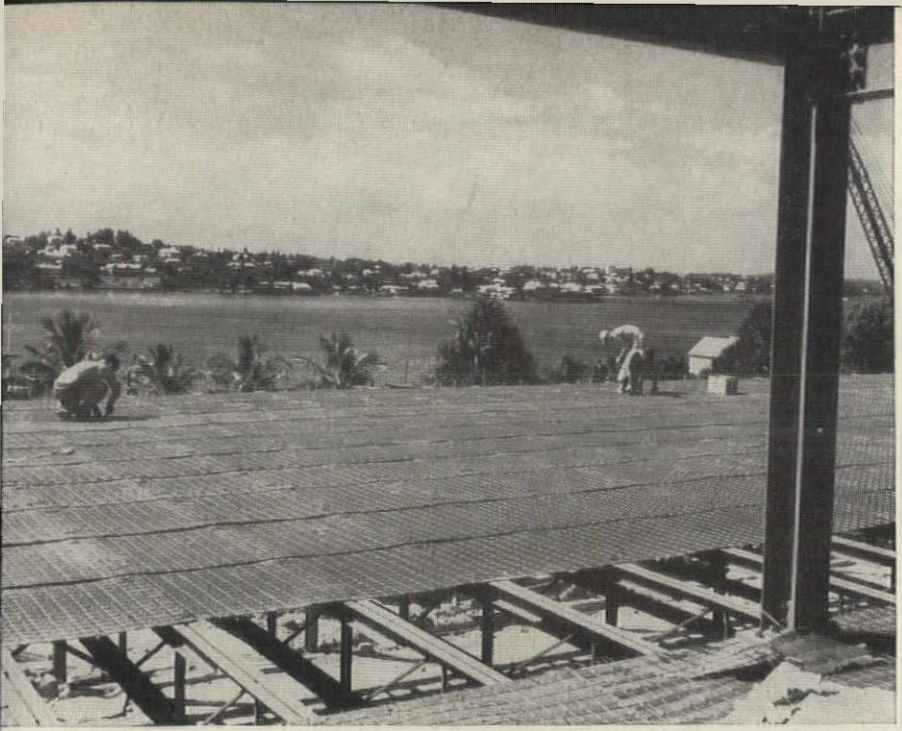
"Fifty percent of the cost at the site," Mr. Davies explained, "is labor. That's why we like a product such as Steeltex, which is preassembled and saves on-site labor costs."

• **Tourist Rush**—To get the full story of the new Bermudiana, you have to go back to a September afternoon, when a small fire broke out on the Bermudiana's fifth floor. It spread quickly and soon blazed out of control. Bermuda's greatest single disaster was in full progress.

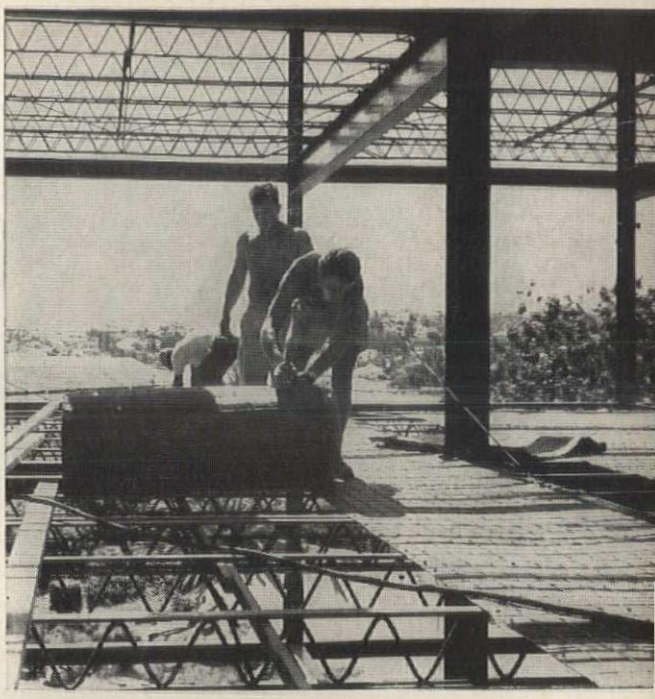
A major chunk of available hotel rooms was lost to the vital tourist industry.

Sir Harold Wernher, Bermudiana owner, announced his determination to re-build. Confronting him, however, was an immutable deadline imposed by rigid limits of Bermuda's tourist season. If the hotel couldn't be ready in time, it would be better to wait another year.

• **Big Obstacle: Time**—E. G. M. Cape was named as a single general contractor. Five days after getting the contract, Cape had its first crews on the scene.

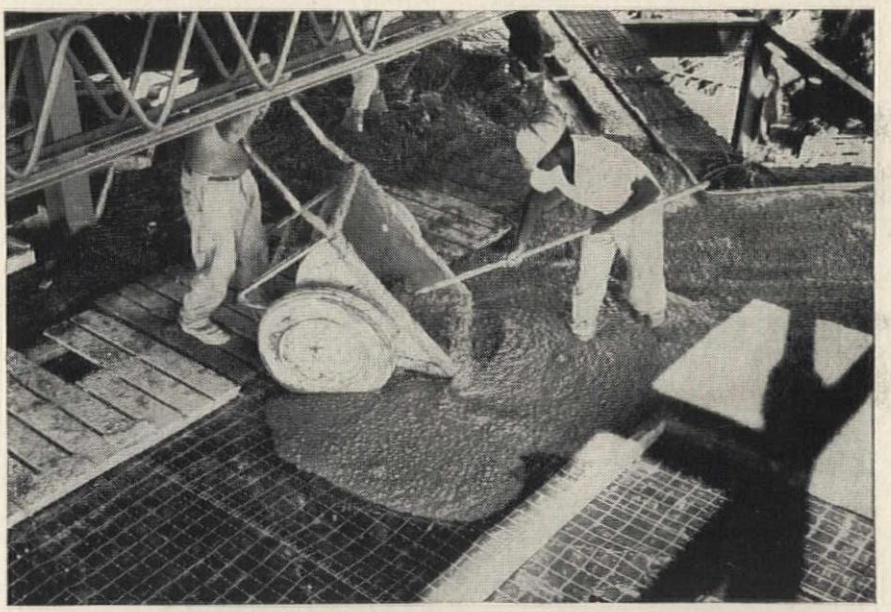


FOUR MEN laid Steeltex, which reinforced concrete in the Bermudiana's floors. Steeltex' galvanized fabric assures protection against corrosive elements of tropical climate. Above, crew is working on 60 by 200-foot floor for main dining room.



CONSTRUCTION WORKERS had to be flown into Bermuda, so saving labor was nearly as important as saving time. Here, a two-man crew unrolls the welded-wire Steeltex.

CONSTRUCTION SUPERINTENDENT Rhys Davies, above, said ease of installing Steeltex permitted concrete work to stay on schedule, one day behind structural steel erection crews.



STRONG, NEAT base of Steeltex gets its concrete. Waterproofed backing of Steeltex held moisture, permitting better curing of the slab. Labor costs of clean-up on floors below were eliminated.

All three factors influenced Cape's choice of a method to pour concrete floors. Pittsburgh Steel's Steeltex got the nod here for the 280,000 square feet of floors. Cape officials had been impressed with Steeltex on a number of building jobs in Canada, and liked Steeltex' economy and versatility.

Looking back, Construction Superintendent Davies said: "We could never have done this job within the time limits had it not been for Steeltex."

So if a tight construction schedule faces you, or if you want to cut labor costs, Steeltex will suit your needs.

Contact your nearest Pittsburgh Steel Products sales office for direct or distributor service.

▶ See Sweets Catalog Section 2-B

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Steel

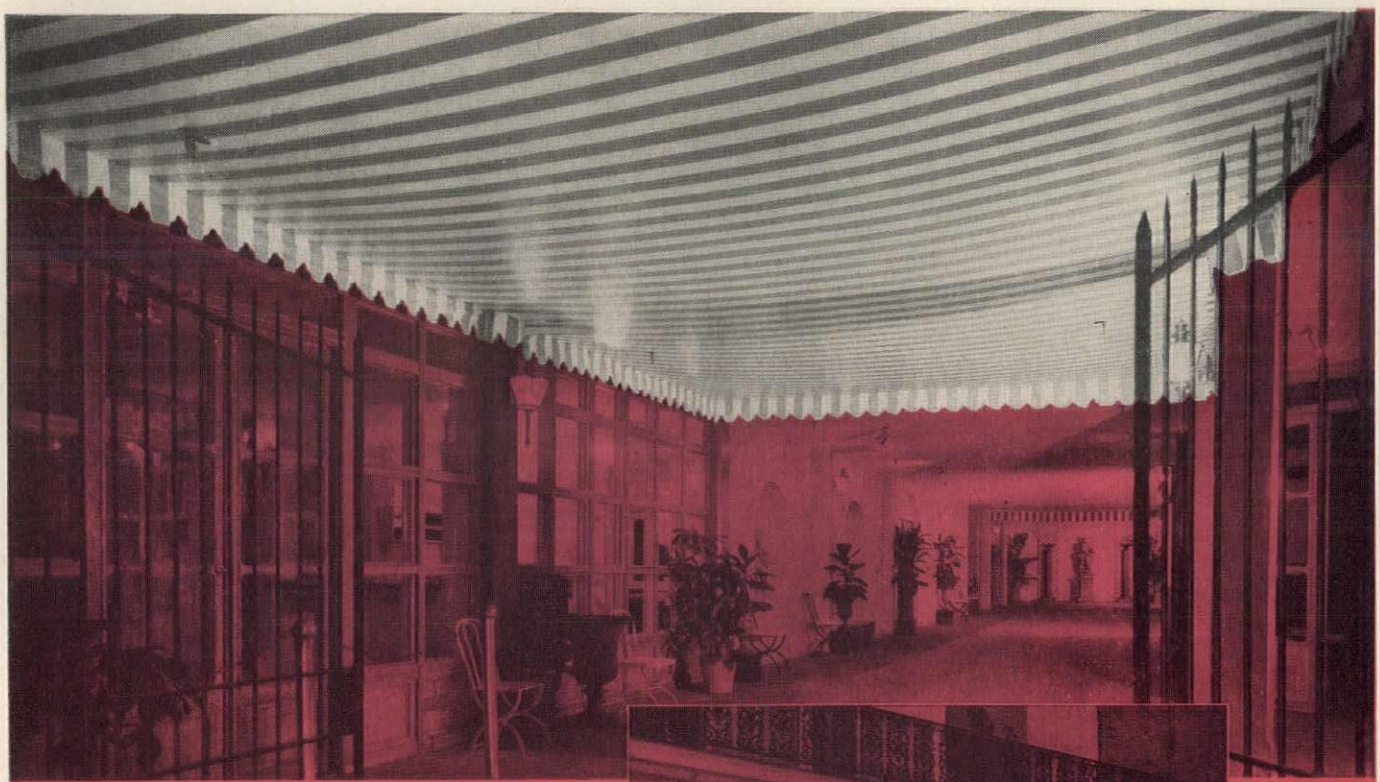
MEN'S DORMITORY, SYRACUSE UNIVERSITY, SYRACUSE, N. Y.

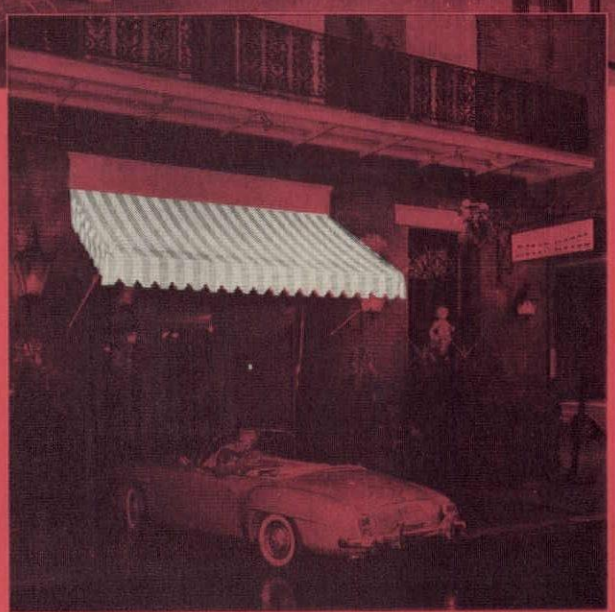
King & King, Architects

Winco Constructors, Inc., General Contractors

In this large college dormitory each room has its individual window wall unit. The exterior divisions that separate these units, both horizontally and vertically, are masonry. Hope's field construction staff is installing the window walls complete, consisting of Hope's aluminum fixed windows, mullion, sills, projected windows (Hope's aluminum Series 110) and porcelain enameled insulated steel panels in the unglazed portions.

Anyone considering the use of aluminum windows and window walls will find the discussion of their special problems in Hope's publication No. 165 to be valuable and interesting. For a complete engineering catalog of aluminum window walls write for Hope's Catalog No. 167.





FOR **SHOW** OR FOR **SHADE**

CANVAS AWNINGS

■ To match the fun-loving mood of New Orleans' French Quarter, Prince Conti Motor Hotel decorates and protects interiors with canvas in a gay, flamboyant stripe.

Canvas is a smart choice for a number of reasons. Long, dependable service is one. Thanks to amazing new advances in textile chemistry, this sturdy fabric now has a color fastness and weather resistance never before possible.

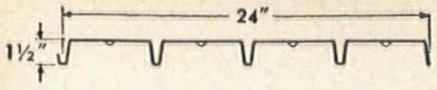
Versatility is another. Use canvas to protect entrances from sun and rain, to keep sun heat off window glass, to shade poolside areas, or simply to add color, texture, and a festive flair indoors or out.

Whatever your requirements, you'll find your nearby canvas products manufacturer well qualified to carry out design specifications and recommend from a wide assortment of colors and patterns, the type canvas best suited for the job.

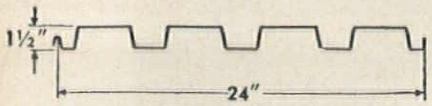
See our catalog 19e/Ca in Sweet's Architectural Catalog or write for a free copy. It contains original and practical ideas plus helpful information for specifying canvas.

CANVAS AWNING INSTITUTE, INC. and NATIONAL COTTON COUNCIL

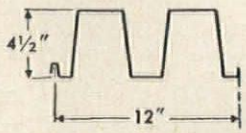
P. O. Box 9907 / Memphis 12, Tenn.



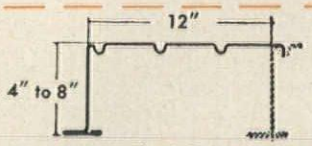
A-DECK — For purlin spacings not exceeding 8'4". Narrow ribs provide deck surface that supports the thinnest or softest types of insulation.



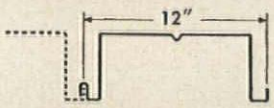
B-DECK — For spans to 10'0". Wide rib distributes metal for greater structural efficiency — gives higher section properties per pound of steel. Well suited for use as side wall panels.



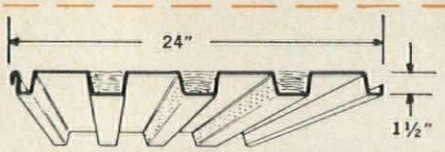
C-DECK—Carries normal roof loads over spans up to 24'0". Used extensively in canopies.



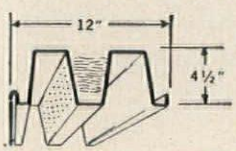
T-STEEL — New! Galvanized only. For clear spans to 32'0". Adaptable to acoustical and flush, luminous ceiling treatments. Provides superior diaphragm to resist seismic and wind loads.



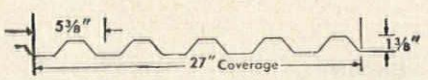
H-DECK — New! For simple spans to 20'0" — 3" and 4½" depths. Especially practical to cover walkways in shopping centers, schools, other installations.



B-ACOUSTIDECK — Two-in-one panel combines steel roof deck with acoustical ceiling having Noise-Reduction Coefficient of .70. Used for spans to 10'0".

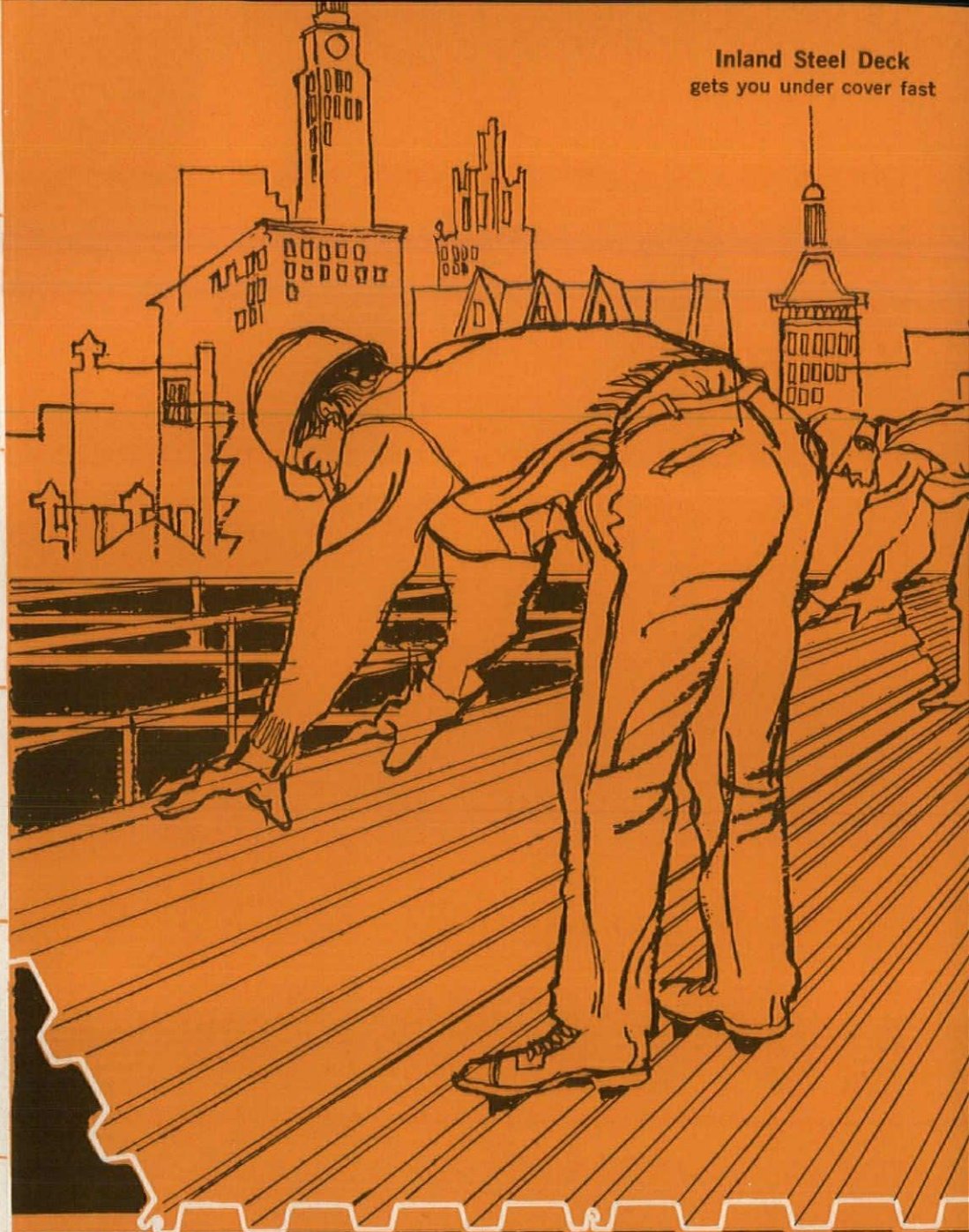


C-ACOUSTIDECK — Offers same Noise-Reduction Coefficient as B-Acoustideck. Can be used for spans to 24'0".



RIBFORM — High-tensile, galvanized steel form for concrete slabs over spans up to 8'0". Three types: Standard, Heavy-Duty, Super-Duty (shown).

Inland Steel Deck
gets you under cover fast



Steel deck or centering

Plant-expansion projects and new buildings of many types get under cover fast and economically, when you specify an Inland roof system.

Inland steel deck is easy to handle and weld in place — in any weather that a man can work. One panel provides over 56 sq. ft. of coverage. Large areas are quickly ready for roofing crews.

Types A, B, C, and H decks are Bonderized, then covered with a baked-enamel primer that resists on-the-job damage. One field coat of paint over the primer on these decks usually does the job of two coats on ordinary decks.

ATLANTA, BALTIMORE, BUFFALO, CHICAGO, CINCINNATI, CLEVELAND, DALLAS,

Inland Ribform
for poured construction

. . . you name it, INLAND has it!

In concrete-over-steel construction, Inland Ribform supports wet concrete with minimum deflection. Rigid sheets are quickly and inexpensively attached to supports — in place, they provide a safe work platform for crews.

Write for catalogs 240, 241, and 245 — or see Sweet's sections 2c/Inl, 11a/In, and 2a/In for full information on Inland steel roof deck and permanent centering. Inland Steel Products Company has a force of trained sales engineers capable of giving you the benefit of diversified experience on specific problems. Write or call your nearest Inland office to have one of these men contact you.

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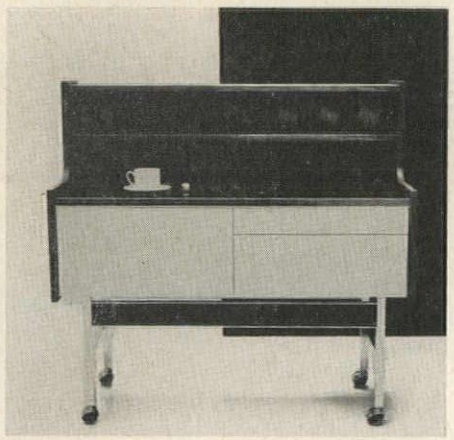
Product Reports

Structural Clay Products
Ceramic glazed bricks in deep, vivid colors are now available to greatly enlarge the color range for exterior and interior design work. Although characterized by brilliance of color, these bricks still retain the rugged quality of a hard burned clay brick. Available in ten colors. *Goodwin Companies, 614 Central National Bldg., Des Moines, Iowa*

Color Coatings for Metal
The *Hinac Process* is a chemical surface treating process which color-coats all types of metals in a single treatment. The coating is produced in several grades which are corrosion resistant and color fast, and have good weathering properties. *Hinac* can be applied by roller coating, dip or spray and the only pre-treatment is thorough cleaning and rinsing. *Hinac*-1 and -2 are clear coatings and *Color Hinac* is available in numerous shades. *Pennsalt Chemicals Corp., 3 Penn Center, Philadelphia 2, Pa.*



Office Furniture and Furnishings
Office Designs Inc. is developing a full line of furniture designed to fulfill office installation needs for longevity and low maintenance. The portable coffee bar shown above features a walnut shell, oak interior, plexiglass sliding doors, and white plastic drawers on aluminum legs with a walnut stretcher. Also available are desks with metal frames and wood bodies, leather and steel chairs, storage cabinets in wood and plastic, tables in metal and marble, conference tables, credenzas, and a uniquely-designed drafting table. *Office Designs Inc., 136 William St., New York 38, N. Y.*

more products on page 214

masonite contemporary studies featuring

MASONITE *Seadrift* PERSONALITY PANELING

Masonite® Seadrift® offers outstanding interior design versatility. It can be used in its prime-coated individuality of plain white... or decorated to suit the fancy of your most exacting client.

Seadrift imparts the charm of sea-weathered driftwood. Sturdy, with grooves 3½" o.c. and a textured surface, Seadrift lends richness to accent walls, makes an ideal complementary wall in living and dining areas, lends warmth in dens and family rooms, adds quiet charm to commercial locations. Naturally, like all Masonite hardboard, Seadrift will never split splinter or crack. Outstanding? Of course.

Use the coupon below to send for more information on new Seadrift and your free copy of the "Masonite Contemporary Studies" booklet.

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Please send me Seadrift information and a copy of the new, free booklet "Masonite Contemporary Studies."

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City.....*State*.....

Zone.....*County*.....

Concrete structural members in the McGregor Memorial Conference Building, Wayne University, Detroit, are beautified with plaster. A base coat of RED TOP* Cement Plaster on USG® Diamond Mesh Metal Lath is finished to a dense, durable surface with RED TOP* Gauging Plaster and Lime.
Architect: Minoru Yamasaki & Associates, Birmingham, Mich.
Plastering Contractor: M. A. Santoro, Inc., Detroit, Mich.

PLASTER CAPTURES THE CONTOURS OF CREATIVE THOUGHT

Varied in effect as the imagination that visualizes it, plaster transforms a creative idea into enduring reality

The interplay of plane and angle in the honeycomb design of the school building illustrated on the opposite page requires a construction material with complete flexibility of form. The answer—plaster!

Plaster's natural adaptability has been greatly increased by United States Gypsum research, a continuing effort that has also created new plaster and plastering systems that are lighter, stronger, more durable and more easily installed than ever before.

For any architect seeking new expressions in form and texture—lath and plaster, erected by skilled craftsmen, truly *capture the contours of creative thought.*

USG® UNITED STATES GYPSUM

UNITED STATES GYPSUM

the greatest name in building

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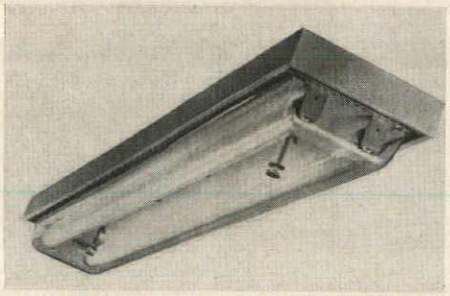
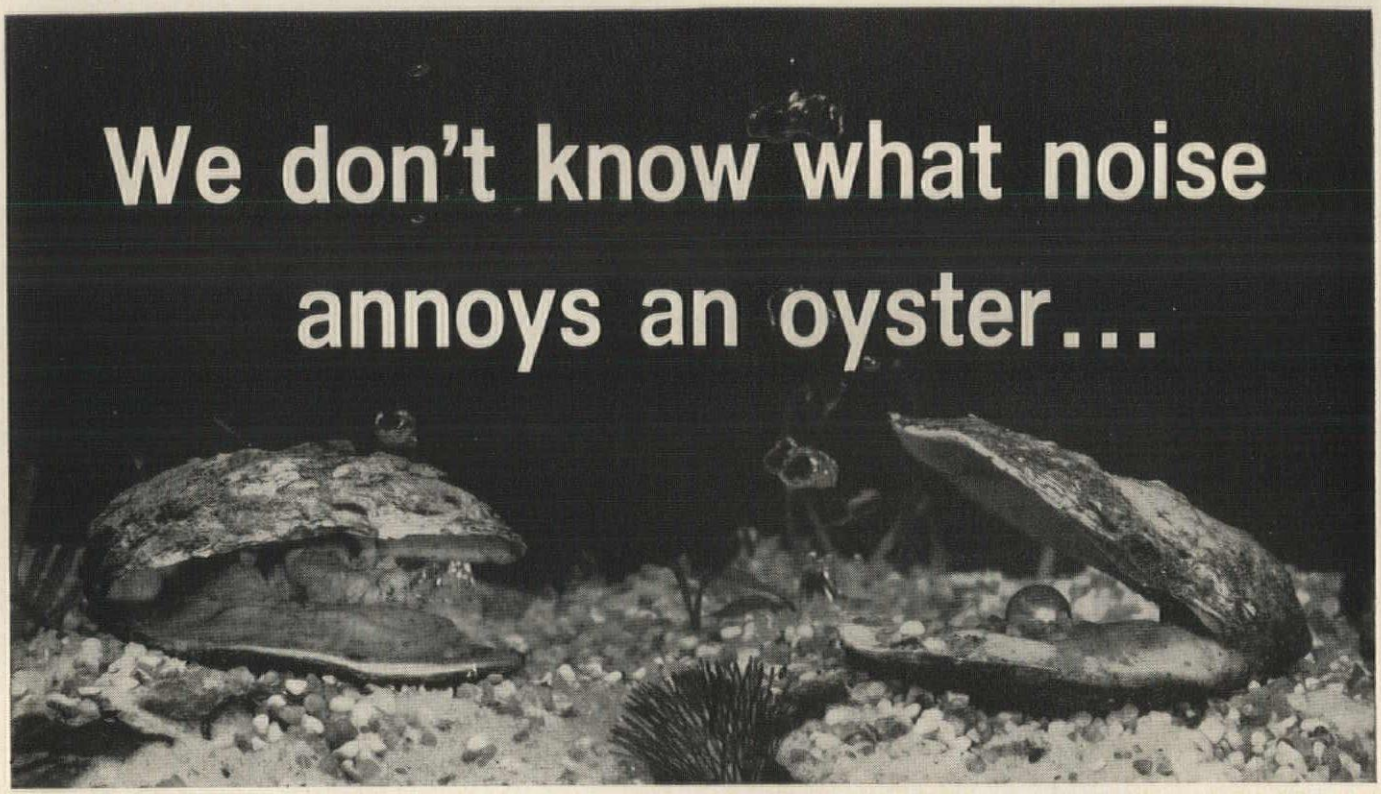
Product Reports



Moisture-Proof Lighting Fixture
Special features are designed into a fluorescent lighting fixture for better performance wherever it is important to protect from dust, dirt, and moisture. The completely smooth top permits mounting the fixture flush against the ceiling; a one-piece plastic enclosure allows quick visual inspection; and rounded corners make easy cleaning. *The Miller Co., Dept. PR-103, Meriden, Conn.*

Fire Detection Electronic Tube
Though smaller than a golf ball, a recently-developed electronic tube is not only capable of detecting fire by sensing its ultra-violet radiation but can also be used for the detection of absence of flames in boiler fire boxes, furnaces and other combustion chambers. In either application, the tube can send a signal to a visual or audio alarm at a central location, or in the case of fire detection, directly to a fire station. The *U-V Detector* is 1⅛ in. in diameter and 1¼ in. long, including mounting pins which fit an ordinary radio tube socket. It is an alternating current-operated gas discharge device with two symmetrical electrodes which are sensitive only to ultraviolet radiation. *Thomas A. Edison Industries, McGraw-Edison Co., 61 Alden St., West Orange, N. J.*

more products on page 219



. . . but we do know plenty about eliminating *industrial* noise. Koppers AIRCOUSTAT is the *pioneer product* for controlling duct-transmitted noise in air handling systems . . . and Koppers has the *longest, broadest experience* in the whole field of industrial sound control, from air conditioning to aircraft engines.

AIRCOUSTAT® is the quality standard in its field. Its pioneer engineering is matched by premium construction that features heavier gauge metal than competitive units. It is assembled with care to give the quality performance promised by its original design. And AIRCOUSTAT provides *guaranteed* attenuation certified in the laboratories of independent research organizations.

Write today for your copy of the Aircoustat Selection Manual, a quick guide to eliminating noise in all air-handling systems, to: KOPPERS COMPANY, INC., Sound Control Dept., 3012 Scott St., Baltimore 3, Md.

KOPPERS®

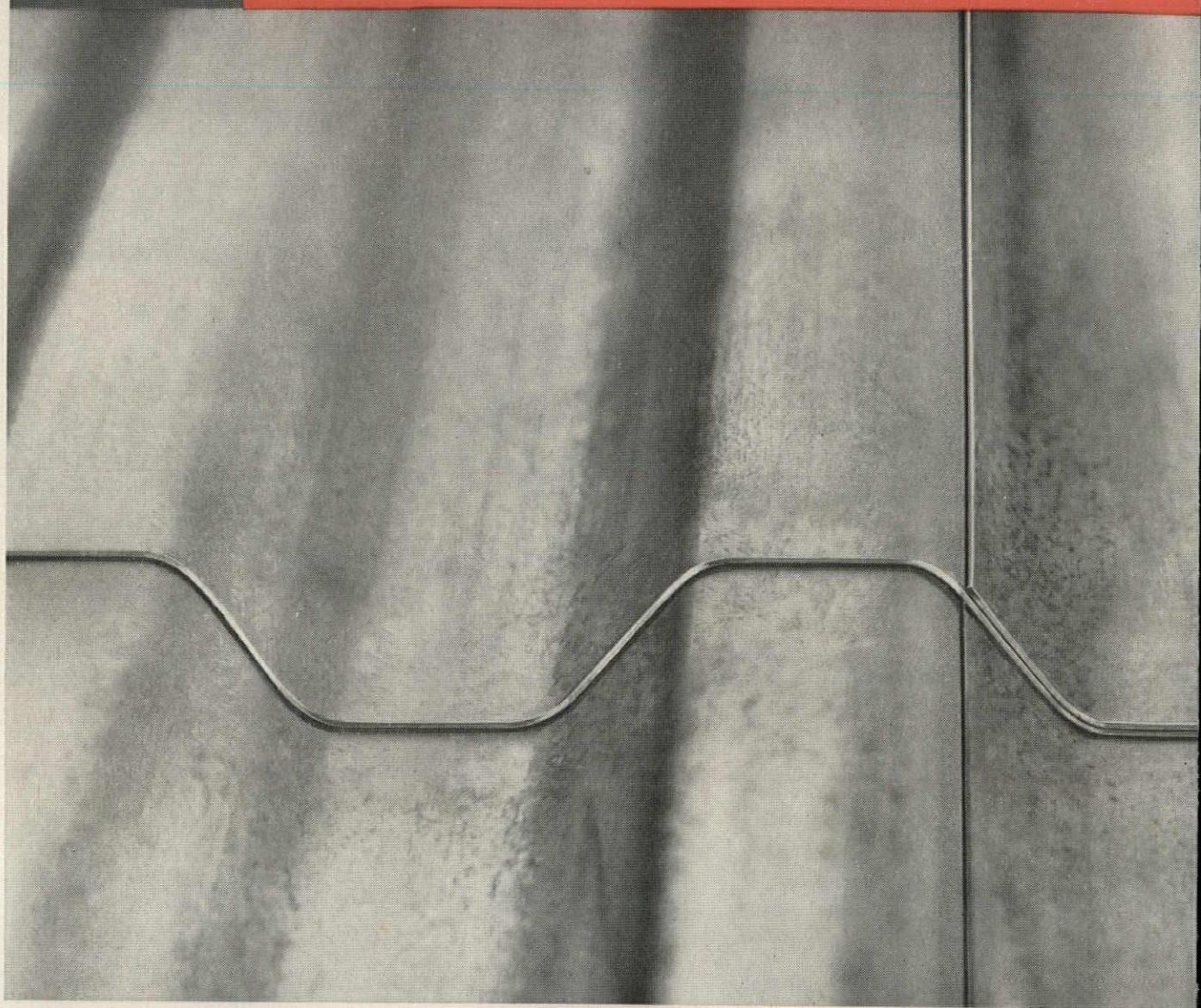
SOUND CONTROL

Engineered Products Sold with *Service*

Aircraft/Engine Test Enclosures | Portable Jet Run-Up Silencers | Audiometric Rooms | Soundmetal Panels

Wheeling
CORRUGATING COMPANY

TENSILFORM® BY WHEELING



NEW! MORE UNIFORM SHAPE SPEEDS FLOOR

Now! Here's a stronger, easier-to-use permanent steel base for concrete floors and roofs...and for *both* conventional and light-aggregate concrete. It's *all-new* Tensilform by Wheeling!

A full twenty-five per cent stronger, new Tensilform permits fewer, lighter floor and roof supports ...provides excellent lateral stability for all types of structures.

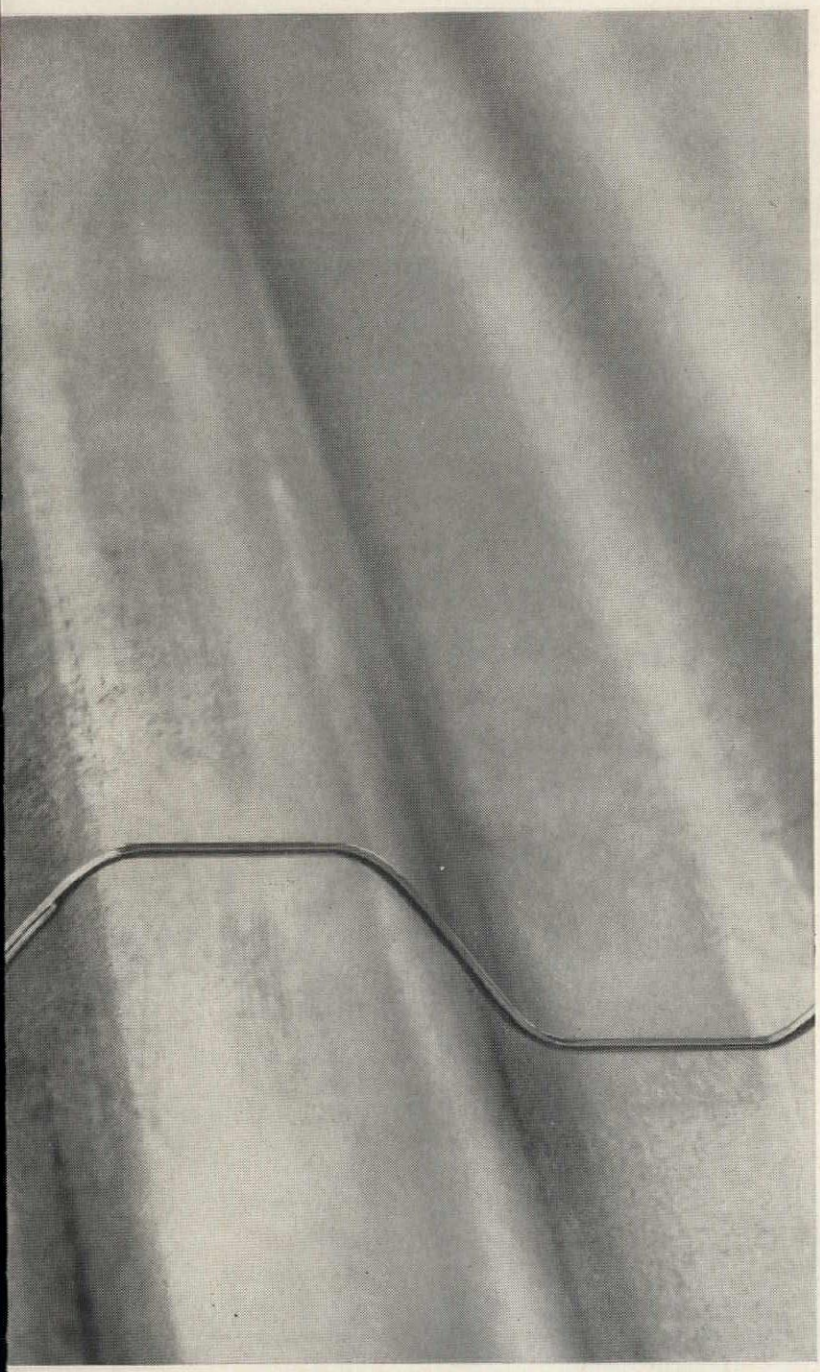
What's more, Tensilform is produced by Wheeling Corrugating Company, long experienced in the fabrication of corrugated steel sheets and other sheet steel products. So it always has close-fitting corrugations . . . always lays quickly.

You gain many other advantages as well by specifying strong, dependable Wheeling Tensilform as a permanent base for concrete floors and roofs! These include:

• Earlier occupancy because shoring is eliminated

WHEELING CORRUGATING COMPANY

Warehouses: *Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City, Louisville, Minneapolis, New Orleans, New York,*



AND ROOF CONSTRUCTION!

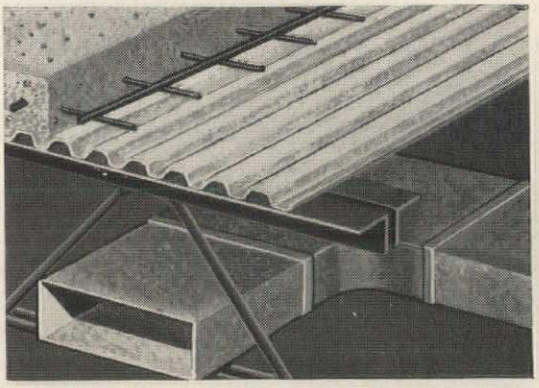
...and Tensilform can be installed in any weather.
- Excellent "U" factors with low initial cost.
- Lower fire as well as extended coverage rates.
- Cleaner construction because precision-formed Wheeling Tensilform cuts cement seepage.

Get the complete story on Tensilform for floor and roof slabs from your Sweet's File. Or write to Wheeling Corrugating Company, Wheeling, West Virginia.

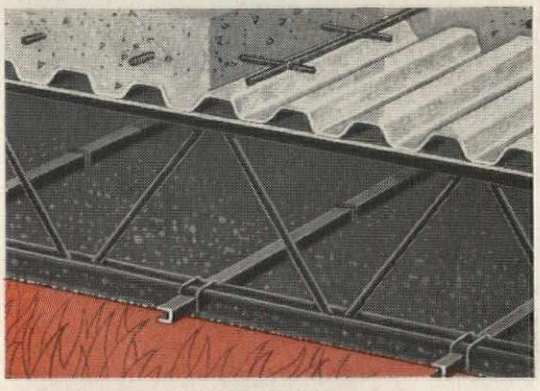
Steel

IT'S WHEELING STEEL!

Philadelphia, Richmond, St. Louis. Sales Offices: *Atlanta, Houston.*

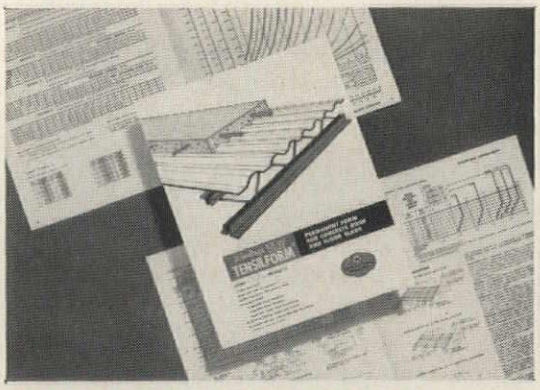


EXCELLENT "U" FACTORS AT LOW INITIAL COST! Save your client money by (1) lowering construction costs, and (2) minimizing heating and cooling costs throughout building's life.



SUPERIOR FIRE RESISTANCE! Cuts annual costs because this superior fire resistance is reflected in reduced fire and extended coverage rating.

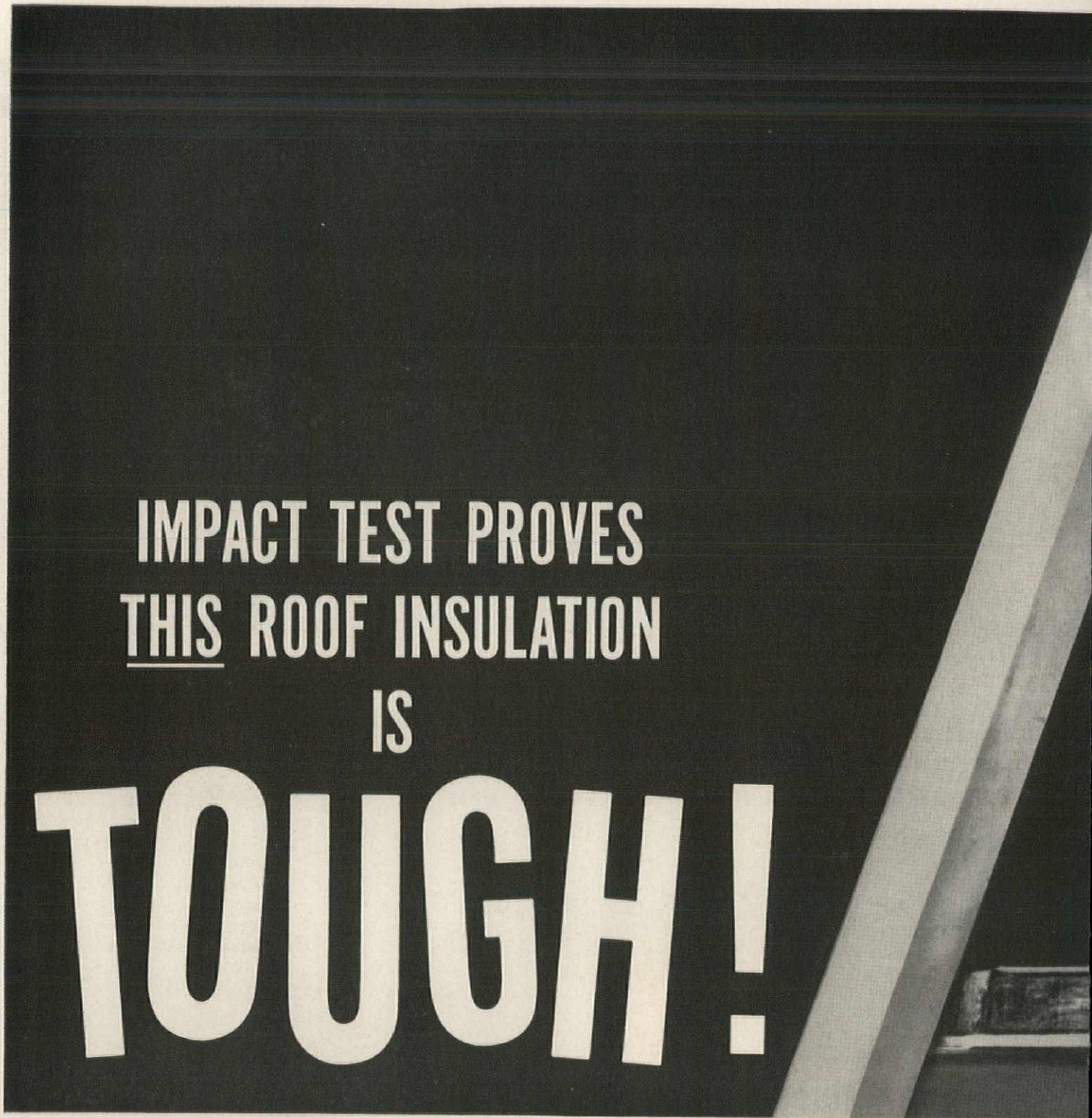
IMMEDIATE, SAFE WORKING DECK! As soon as it's laid, Tensilform speeds construction by providing a sturdy, safe working deck that's used by all crafts.



FULL INFORMATION IN YOUR SWEET'S FILE! Our catalog is in Sweet's. It has complete load tables, deflection charts; in fact, everything you'll need to specify Wheeling Tensilform. (Extra copies upon request!)

Ballroom-lounge of Montana State Lodge, student union building of Montana State University, Missoula, Montana. Architects: Brinkman and Lenon, Kalispell, Montana. Contractors: Hightower & Lubrecht, Missoula.

Space provided: dining room; kitchen; ballroom-lounge; offices; student organization offices and meeting rooms; rest rooms; outdoor dining patio; faculty rooms; student store. *Structural framing:* reinforced concrete for first floor; glulam timber beams and arches for second floor, spaced at 20′, with glulam purlins spaced at 6′-8″. *Exterior walls:* stone over concrete block for ground floor; wire brushed Tim-Deck applied vertically for upper floor. *Interior walls:* larch paneling in dining room, lounges and offices; structural glazed block in kitchen; painted pumice block in rest rooms. *Heating:* steam heat with direct radiation and unit heaters supplied by central heating plant. *Ventilation:* unit ventilators with unit exhausters for larger areas. *Lighting:* generally incandescent, with fluorescent fixtures in offices. *Floors:* oak for ballroom-lounge; quarry tile for kitchen, rest rooms and concourses; asphalt and rubber tile in offices and conference rooms. *Roof:* built-up roof over rigid insulation and heavy timber decking. *Area:* 78,000 square feet. *Cost:* $12 a square foot (in 1956).



ONE MORE WAY FIBERGLAS* ROOF INSULATION IS ENGINEERED FOR THE ROOF DECK:

This roof insulation meets every specification for a *rigid* insulation board. Composed of durable, inorganic glass fibers, it is faced with a tough, impact-resistant asphalt and paper mopping surface. This surface later becomes an integral part of the built-up waterproofing. The resulting insulation is rigid and *tough!*

Other major advantages include excellent thermal resistance, non-corrosive properties, ease of cutting and laying, no warping or buckling, and larger sizes. No other roof insulation offers this remarkable combination of properties plus the advantages of larger 3′ x 4′ and 4′ x 4′ sizes. The ideal insulation specification for roof decks of all types.

Recommended for above the deck: Perma Ply*

Unretouched "delayed flash" photograph shows how impact tester demonstrates toughness and impact resistance of Fiberglas Roof Insulation. Test simulates impact of mobile roofing equipment.

RIGID CONSTRUCTION THAT STAYS FLAT AND WILL NOT WARP OR BUCKLE

Roofing Felt, the Fiberglas Built-Up Roofing that provides a long-lasting roof. Monolithic (single-unit) construction forms a solid, weatherproof slab of asphalt reinforced with Perma Ply—no layers as in conventional roofs. Best specification for quality roofs top to bottom: Fiberglas Roof Insulation *and* Fiberglas Built-Up Roofing. For complete, descriptive literature write: Owens-Corning Fiberglas Corporation, Department 68-D, National Bank Building, Toledo 1, Ohio.

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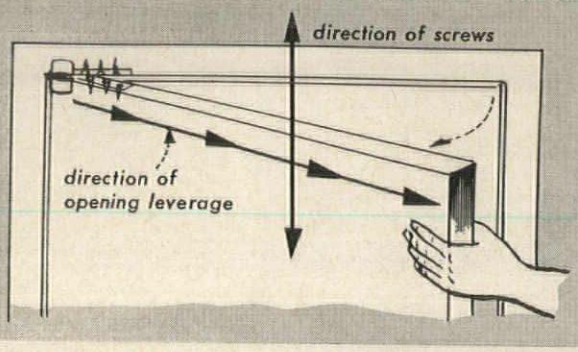
FIBERGLAS
T.M. REG. U.S. PAT. OFF.

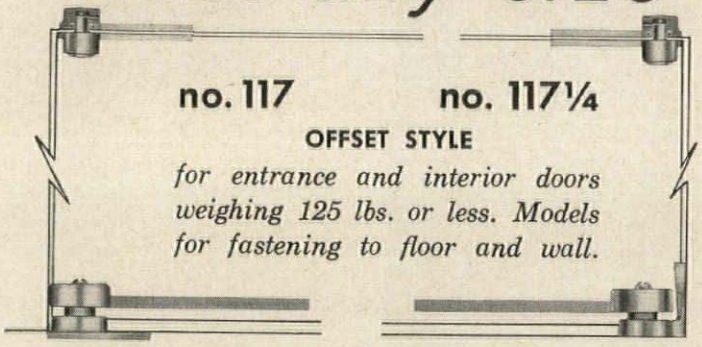
*T.M. (Reg. U.S. Pat. Off.) O-C.F. Corp.

PIVOTAL HUNG DOORS ARE MORE SECURELY ATTACHED



Direction of mounting screws is at right angles to the door leverage. Weight of door is carried by the bottom half of the pivot set.

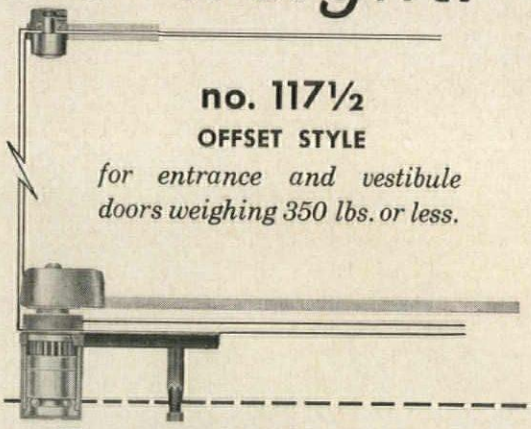
there's a RIXSON® pivot set for pivotal hanging of doors... most any size and weight.



no. 117 **no. 117¼**

OFFSET STYLE

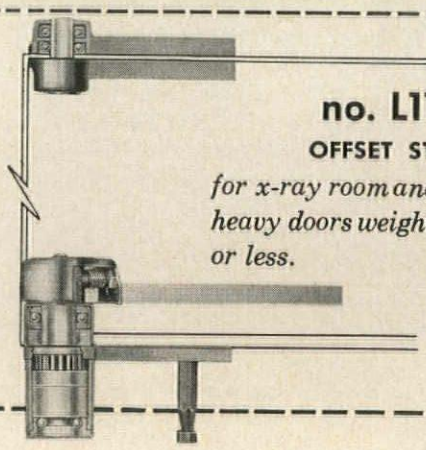
for entrance and interior doors weighing 125 lbs. or less. Models for fastening to floor and wall.



no. 117½

OFFSET STYLE

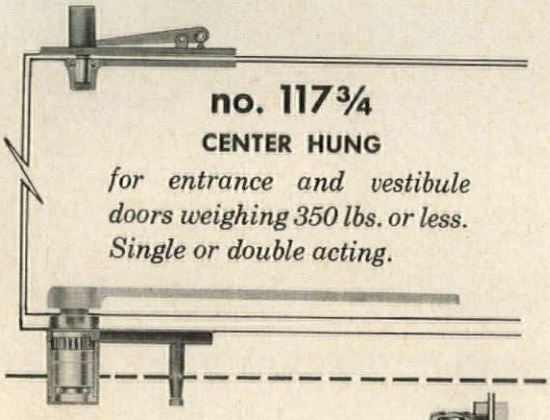
for entrance and vestibule doors weighing 350 lbs. or less.



no. L117

OFFSET STYLE

for x-ray room and other extra heavy doors weighing 1500 lbs. or less.



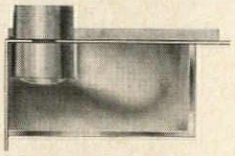
no. 117¾

CENTER HUNG

for entrance and vestibule doors weighing 350 lbs. or less. Single or double acting.

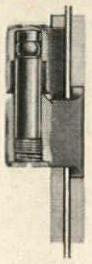
no. 280 top pivot

is recommended for the utmost in secure mounting and to relieve racking stress. Door portion is surface mounted with thru bolts.



no. M19 side jamb pivot

is recommended for keeping heavier doors in true alignment. Has vertical adjustment and self-lubricating bearings.



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THE OSCAR C. RIXSON COMPANY 9100 west belmont avenue • franklin park, illinois

CANADIAN PLANT: 43 racine rd. (Rexdale P.O.) toronto, canada

SHRINE OF THE IMMACULATE CONCEPTION,
Washington, D. C.

The largest
n Catholic Church
in the Western
Hemisphere

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Boston, Mass.

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Sheet Metal Works,
Philadelphia, Pa.

DOME:
wici shingle tile —
full glaze blues,
ellow, gray and red

LOWER ROOFS:
Ludowici Special
pered Mission tiles
pans and covers —
s, fireflashed buffs
and browns

Roofs by Ludowici

FIRST METHODIST CHURCH POMPANO BEACH, FLORIDA

ARCHITECT:
Robert E. Hansen,
Ft. Lauderdale, Fla.

ING CONTRACTOR:
Broward
Sheet Metal Works,
Ft. Lauderdale, Fla.

ROOF:
rlocking shingle —
light blue

LUDOWICI-CELADON COMPANY
75 East Wacker Drive - Chicago 1, Illinois

The Future is on our drawing boards and in our conference rooms !

Curtis-AllBrite announces a 10-year plan of product development . . . advanced lighting concepts . . . new ideas—new answers to illumination problems

Seldom in American industry does a company offer a blueprint for the future so all-encompassing as the program just announced by Curtis-AllBrite Lighting, Inc.

For the Curtis-AllBrite plan spans a generation and it has an application for the present. So that you may have something truly new, around which to design today, Curtis-AllBrite makes this promise. On January 31, 1961, the wraps will be taken off three inspired design fixtures. These new advances in lighting concepts are: *1. A more efficient way of lighting industrial plants. 2. A means of cutting installation costs of illumination combined with other utilities . . . ideal for office buildings, banks, showrooms, hospitals and schools. 3. New slim-line design fixtures to pique your imagination . . . ideal for today's architectural concepts.*

So, look to Curtis-AllBrite for new ideas—new
swers in lighting today, tomorrow, and ten years f
now. You know you can rely on Curtis-AllBrite wh
77 years of experience stand behind every fixture
where you can be confident you are associating y
name with a company that has over 50 import
"firsts" in the science of illumination. These incl
the development of the concept of concealed light
ending the era of the bare lamp on a drop cord and
pioneering of the Alzak process for finishing alumin
reflectors. And you can be sure, too, there will
important improvements in the days to come since
future in lighting is on our drawing boards and in
conference rooms. Curtis-AllBrite Lighting, Inc.,
6135 W. 65th Street, Chicago 38, Illinois—
San Francisco, California—Toronto,
Canada—Vancouver, B.C.

CURTIS-ALLBRITE
LIGHTING, INC.
Visioneers in Planned Lighting

■ The ultimate in *"Slimplicity"* . . . flowing contours that will be around for years to come. Ideal for the bold, imaginative application.

■ Brings a new dimension to industrial lighting—a forward concept in harmony with today's plant design.

Tomorrow is here . . .
under wraps . . . 3 truly exciting innovations in illumination available for you January 31, 1961!

■ The answer to utility yet brimming with beauty . . . a trend fixture with the future designed in.

Office Literature

continued from

Philippine Mahogany L
Gives complete specificati
formation on Ilco's mah
ber line for moldings, pa
siding, flooring, door jam
and shelving. *Insular Lum*
Corp., 1405 Locust St., Phila
Pa.

Home Insulation
How To Install Mineral Woo
lation in Homes gives detailed
trated instructions for ins
batts and blankets and blowing
Information on the new "R"
stalled resistance) standard exp
how mineral wool products will
form after installation. *Mineral W*
Assn., 1270 Sixth Ave., New Y
20, N.Y.

Wiring Installation Equipment
JIC and NEMA Type 12 Wireway
and Enclosures (A.I.A. 31-D-3
describes and illustrates the com
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enclosures designed to meet JIC and
NEMA Standards. A variety of li-
quid-tight units are included for ap-
plications where wiring must be pro-
tected against dust, dirt, oil, water
and coolants. Catalog No. 159-D. 16
pp. *Watkins-Rogers, Inc., 675 Pallis-*
ter, Detroit 2, Mich.

Vinyl Floor Tiling
Armstrong Custom Corlon Vinyl Tile
for Computer Pedestal Floor Sur-
facing covers the characteristics of
Custom Corlon tile, a surfacing ma-
terial with good resistance to inden-
tation under heavy equipment, di-
mensional stability and uniformity,
and dielectric strength and electrical
volume resistivity properties. *Arm-*
*strong Cork Co., Lancaster, Pa.**

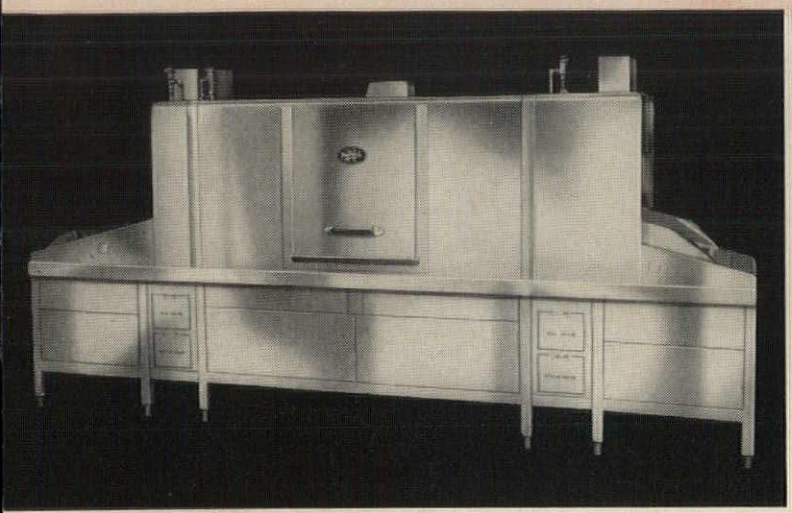
Aluminum Siding Application Manual
Contains instructions for products in the Alcoa siding line, including insulated and uninsulated horizontal 8-in. siding, and vertical siding. Also given is information on using acces-
sories, preparing tools for applica-
tion, estimating the job, ordering material, etc. 44 pp. $1. *Aluminum Company of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa.**

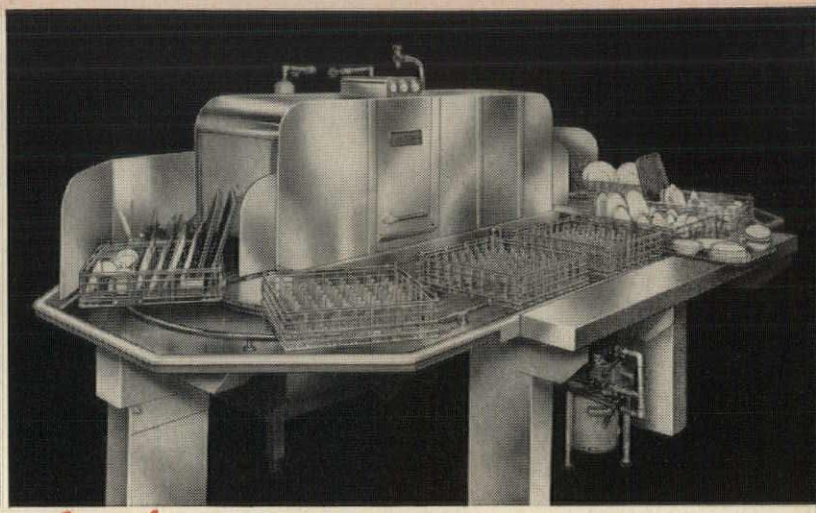
**Additional product information in Sweet's Architectural File*

NEWEST HOBART DEVELOPMENTS FOR FOOD SERVICE

NEW operating efficiency
NEW lower operating costs
NEW greater value—year in and out

Get full data—Hobart offices . . . in 200 cities . . . ready to serve you



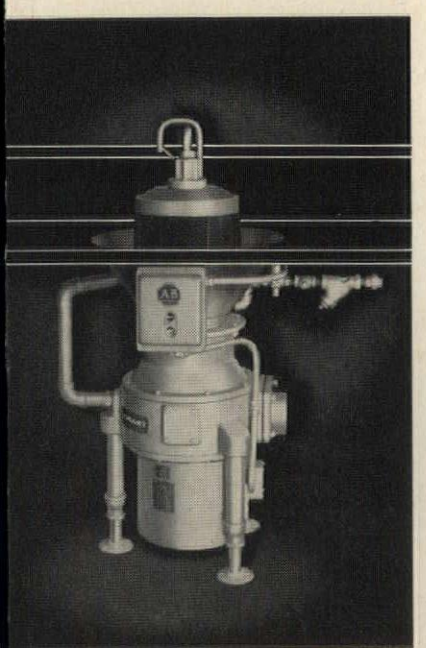


NEW COMPACT FLIGHT-TYPE DISHWASHER

For the first time—in just 13 feet—the speed and efficiency of a continuous racking-conveyor dishwasher! Small in size but with mighty 4-stage performance, Model FT-13 does all these automatically—*power* scraps with recirculated, detergent-charged water, *power* washes, *power* rinses and final rinses. Hobart design assures sparkling, sanitized dishes...with maximum dishwashing performance in minimum time and space. Stainless steel flight link conveyors are standard; new, exclusive "Delrin" acetal resin conveyors, an economy option.

NEW RACK-O-MATIC DISHWASHERS

Designed for increased dishwashing capacity to meet specific space limitations or operational requirements. The dishes, in multi-purpose racks, travel the Hobart "sanitizing circle"—a complete circuit that automatically conveys them through recirculating power water scrapper, jet-powered wash and rinse, and final fresh-water rinse actions. One operator can handle racks quickly and easily. Exclusive feature prevents water waste. Integrated power waste disposer. These new "Rack-O-Matic" models—RM-86 and RM-66—take as little as 12 x 6 ft. area.

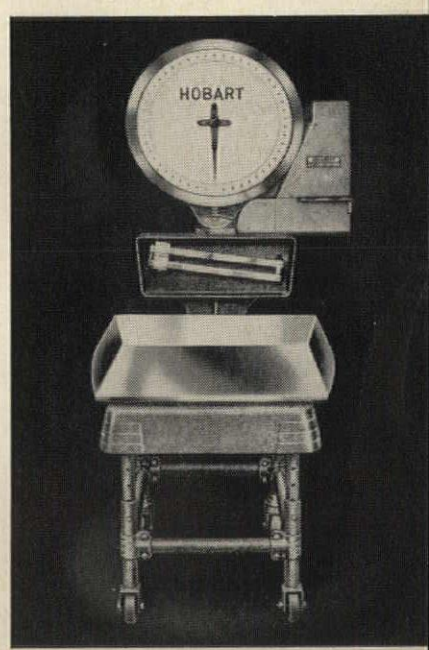


NEW 5 H. P. FOOD WASTE DISPOSER

This super-capacity unit, FW-500, completely eliminates all the nuisances of waste disposal—saves time, handling and space. No more distasteful lugging chores, messy floors, odors; no sanitation problems. Exclusive, Hobart 4-stage waste breakdown action insures smooth, continuous discharge. Exclusive continuous upper and lower water injection system—with extended after-flushing—prevents dry grinding and clogged drains. Every bit of food waste goes down the drain—fast, economically, positively—without wasting water.

NEW HEAVY-CAPACITY SCALES

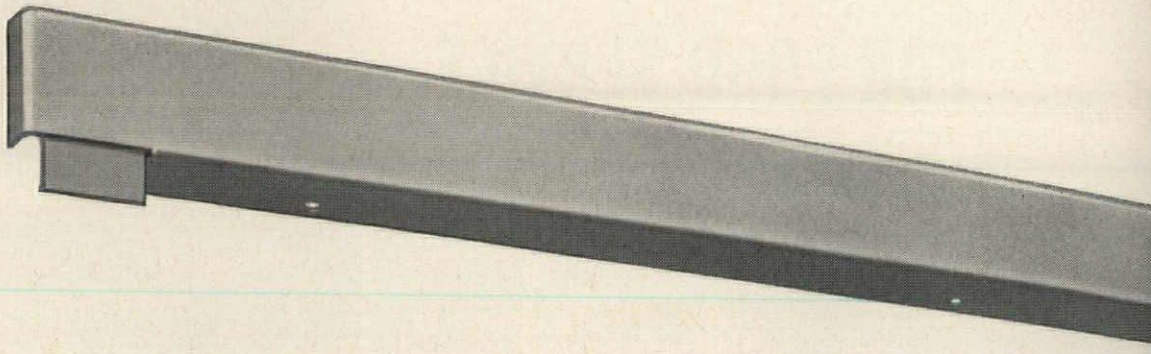
A whole new line...capacities from 50 to 6000 pounds...for every check-in weighing need. Bench, floor, built-in, overhead-track types—all in simplified design insuring highest dependability with minimum care. Choice of indicators: exclusive tape-driven dial (with optional "Record-O-Weight" printer recording each weighing on tape, ticket or form)...exclusive projected-image "Project-O-Weight"...easy-to-read beams with sliding poises...or combination of "Project-O-Weight" and beams. Shown: Bench-type Dial with pan, and printer that eliminates operational errors; gives audit control.



The Hobart Manufacturing Company, Dept. HAR, Troy, Ohio • Nationwide Factory-Trained Sales and Service . . . over 200 Offices

Hobart machines

A Complete Line by the World's Oldest and Largest Manufacturer of Food, Kitchen, Bakery and Dishwashing Machines.



PERMA-LAP® FRAMED MODINE CONVECTORS
EASIEST TO INSTALL, EASIEST ON THE WALL

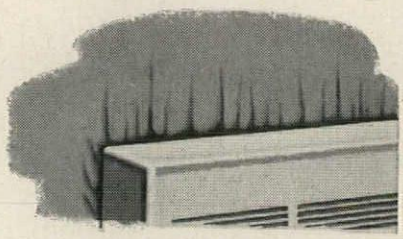
PERMA-LAP framing assures a neat, permanent, recessed installation . . . units can be serviced without disturbing wall seal

Modine's PERMA-LAP framing ends all the problems common to recessed convectors of conventional design. With PERMA-LAP, Modine convectors install fast and clean . . . whether walls are smooth or rough. PERMA-LAP neatly frames the unit in the recess . . . snugs up to finished walls or can be plastered in. No chance for air leakage and resulting wall streaking.

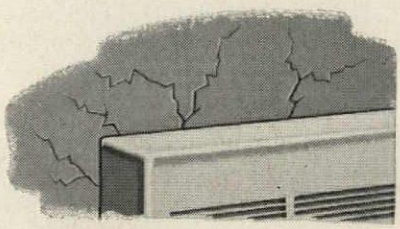
Once Modine convectors are installed, walls are never disturbed. Servicing? Nothing to it! Machine screws permit rapid removal and replacement of the lighter-weight, smaller front panel . . . eliminate need for access doors.

Cost more? Yes, slightly more than conventional recessed convectors. But they actually save more than the difference in lower installation and redecorating costs.

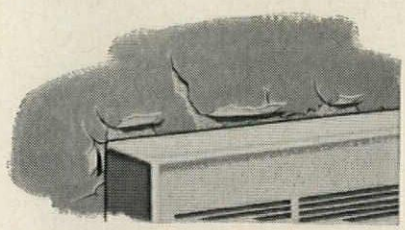
PERMA-LAP is available for flush recessing and in 2⅜", 4⅜" and 6⅜" projections to permit partial recessing of convectors in walls of varying thicknesses. Modine's line of recessed cabinet units is also available with PERMA-LAP framing. For complete details, mail the coupon below. Or contact your Modine representative . . . he's listed in the yellow pages.



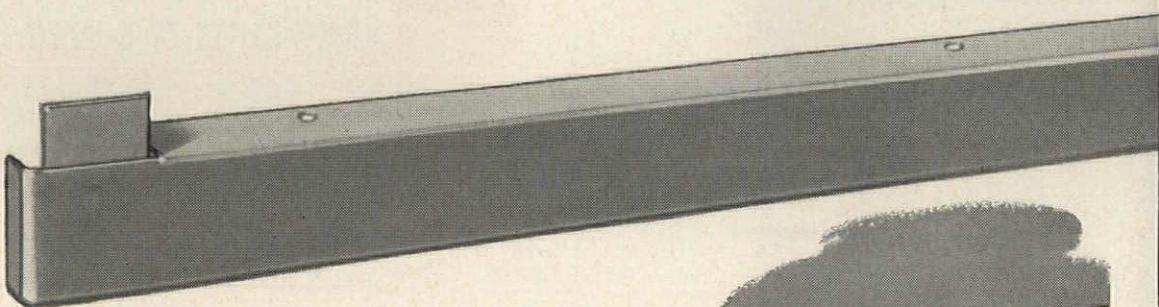
NO WALL STREAKING!

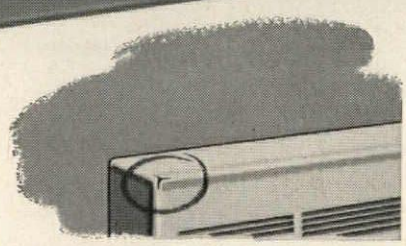


NO CRACKED PLASTER!



NO PEELED WALLPAPER!





NO "STARRED" CORNERS!

Modine®
MANUFACTURING COMPANY

MODINE MANUFACTURING COMPANY
1510 DeKoven Ave., Racine, Wisconsin
I would like complete PERMA-LAP details. Please send Convector Bulletin 259 and Cabinet Unit Catalog 557.

NAME.....

FIRM.....

ADDRESS.....

.....

R-1413

Building Components

Preventing Cracks in Plaster Ceilings

continued from page 174

Serious consideration should be given to the use of details that will help to eliminate restraint (continuity of lath and plaster) in perimeter ceiling angles where differential movement is anticipated, particularly where trowel finishes are indicated or the rigidity and strength of the lath and basecoat are in the moderate to lower range. (See details and photos on pages 173 and 174.)

In addition to perimeter considerations, large unbroken ceiling areas should be divided by relief joints. The maximum recommended distance between such joints is 60 ft with a maximum undivided area of 2400 sq ft.

SUMMARY

It must be recognized that the performance of lath and plaster systems, like that of many other building constructions, cannot be predicted with complete accuracy. However, it is believed that a more accurate prediction can now be made, and that a knowledgeable and intelligent selection of materials and systems will more nearly provide the required visual characteristics of the plaster surface.

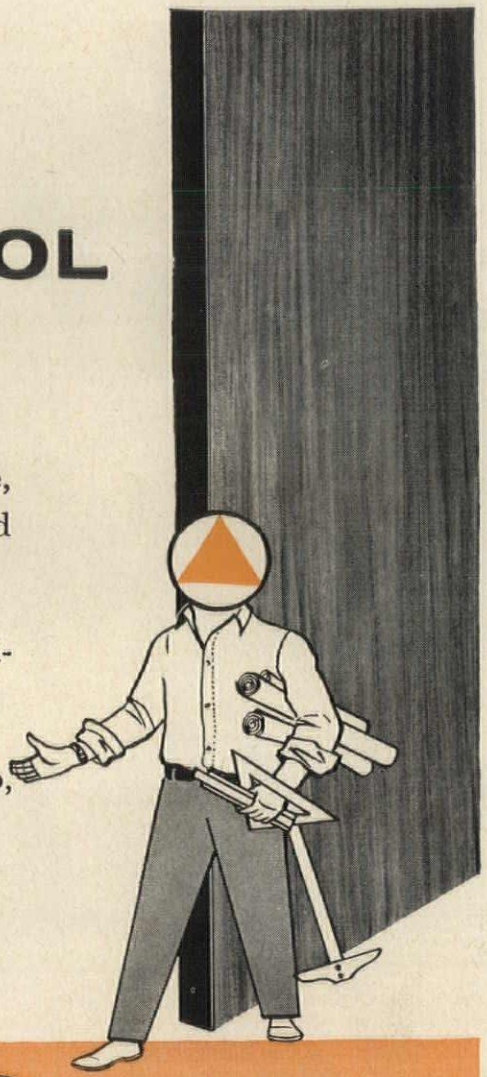
The table on page 174 shows the anticipated relative performance of numerous lath and plaster constructions. It has been compiled from the recently acquired research data, volumes of other research, and the gypsum industry's extensive laboratory and field experience. Except as noted herein it is based upon full compliance with the provisions of American Standards Association Specification A42.1-4, 1955.

Obviously, plaster performance is affected by several factors other than the basic variables considered in these recommendations, such as extreme weather conditions, lack of ventilation, thermal shock, unusual framing, and so forth. The standard precautions with respect to such factors should always be observed, but in compiling this table of Relative Performance, the absence of such unusual conditions was assumed.

Adapted from a recent report, *Performance of Lath and Plaster*, (A.I.A. 21-A-2), issued by the Gypsum Association, 201 North Wells St., Chicago 6, Ill.

from your

GJ DOOR CONTROL SPECIALIST



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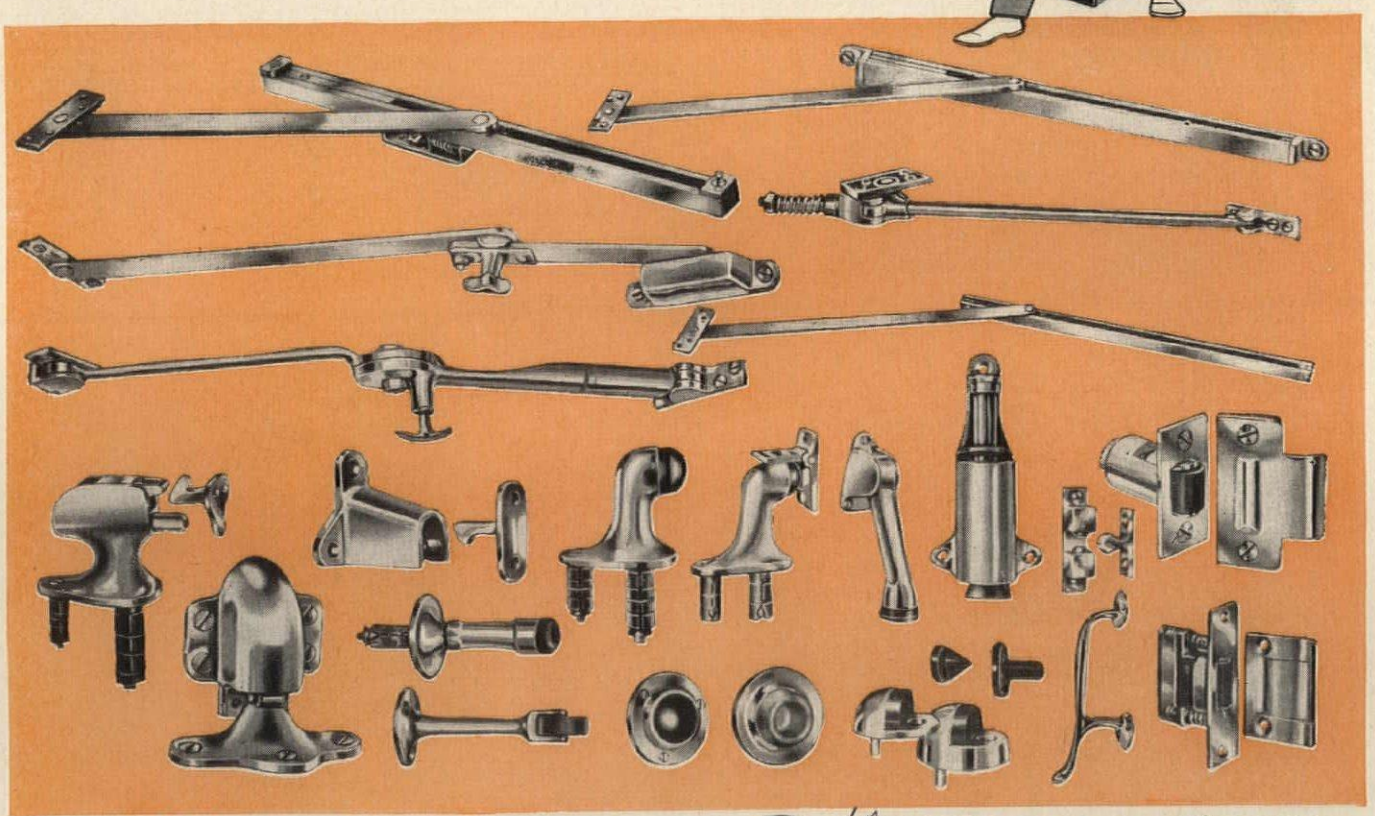

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In new churches, wood provides soul-stirring beauty, ideal acoustics, limitless design freedom—all at substantially lower cost. Good reason for the present prevalence of wood in church construction. Floyd Comstock, architect.

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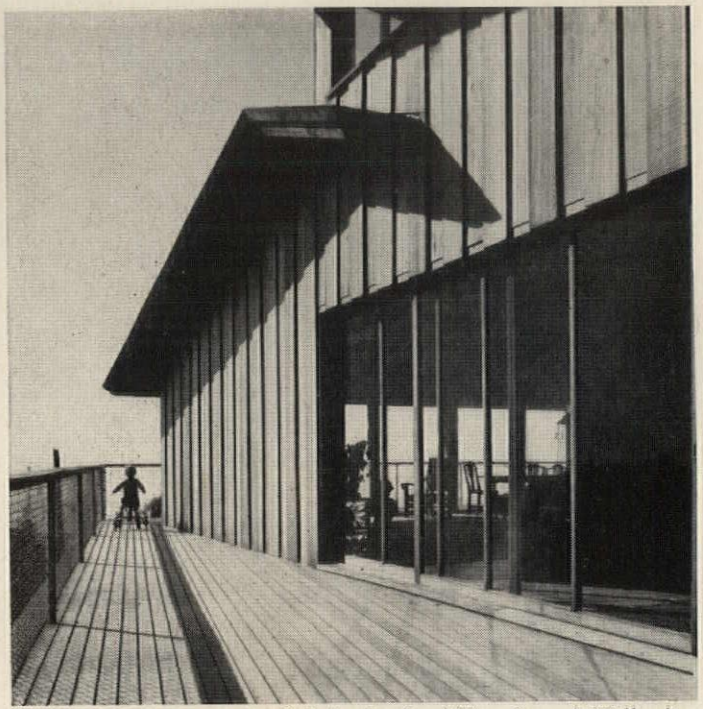

Long-term economy is implicit in the durability of wood. Mellowing with age and exposure, wood gives homes and other structures lasting character for fewer dollars. Ratcliff & Ratcliff, architects.

With most building materials, today's high costs of construction can severely restrict your freedom of design. But not when you choose *wood*, so economically applicable to many types of structures.

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Wood Information Center, 1319 18th St., N. W., Washington 6, D. C.

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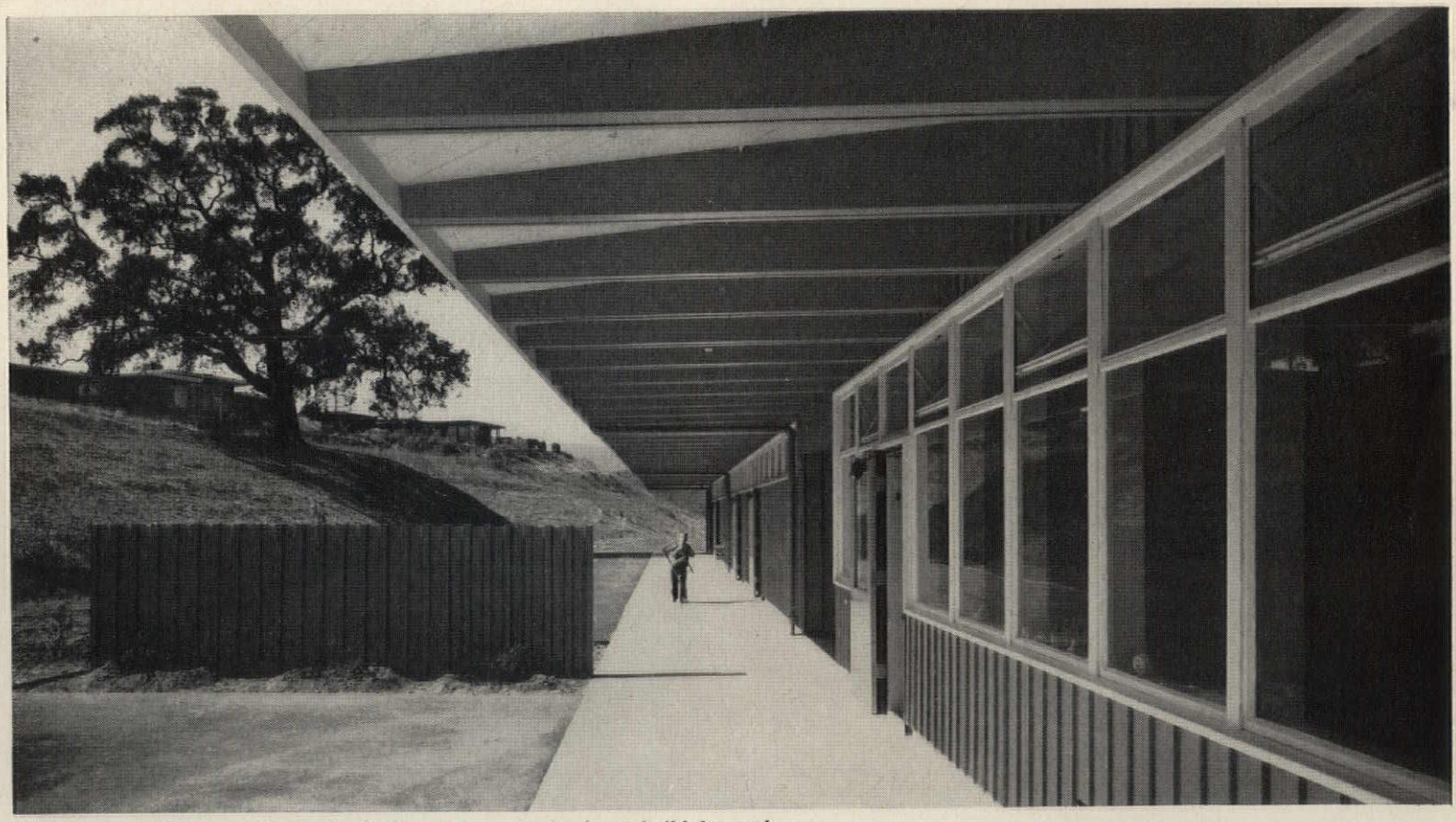
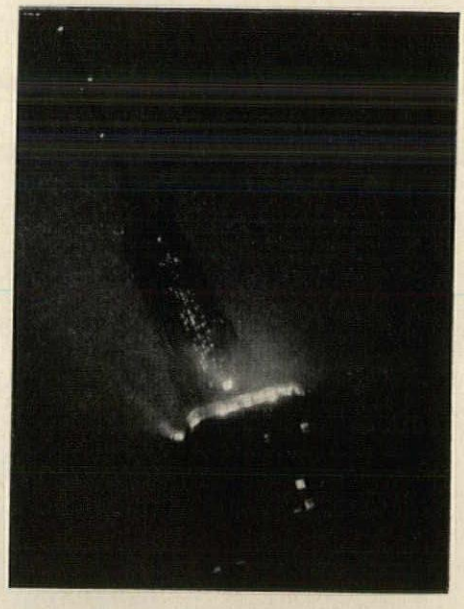


The more wood you use in a school, the more good school you build for each tax dollar. Many of America's most successful new school designs have been inspired and made possible by wood construction. Peter Kump, architect.

Empire State Building Gets New Addition

Since 1934, when the Empire State Building was completed, the building's architects Shreve Lamb & Harmon Associates have been continuously at work on general alterations, although only two of their projects have been visible from the exterior. One was the erection of the antenna tower, the other, a recently completed enclosure of a microwave transmission area on the east side of the 87th floor.

Extending across the full width of one side of the floor and continuing around the portion of the two ends included in the transmission area, the "full sweep" enclosure allows space for 12 antennas instead of the former four, which being located on an open platform were protected by igloo-shaped domes. Now the big discs are mounted within

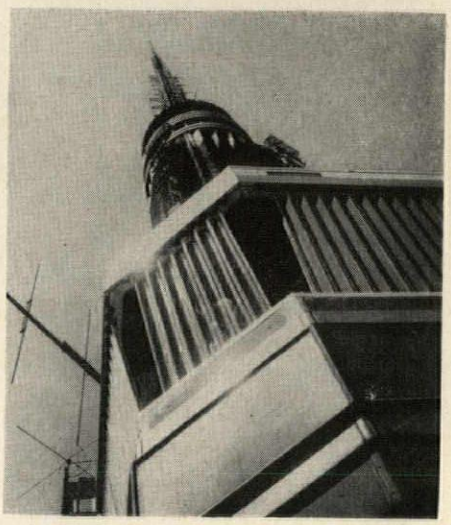


the actual building area, with no walls or supporting structural members except behind the antennas. The entire area is enclosed, weather-tight, with glazed plastic panels.

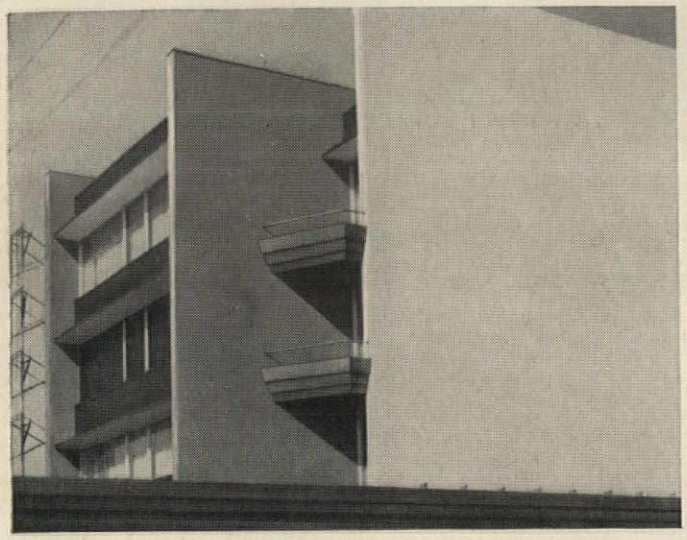
The window of plastic glazing (¼ in. thick) is 70 ft long, projecting out about 8 ft. It is formed into a special "flat-bottomed Vee" corrugation pattern. This stiffens the panels to enable them to withstand the high winds and eliminates objectionable micro-wave reflections that might occur from an unbroken flat surface.

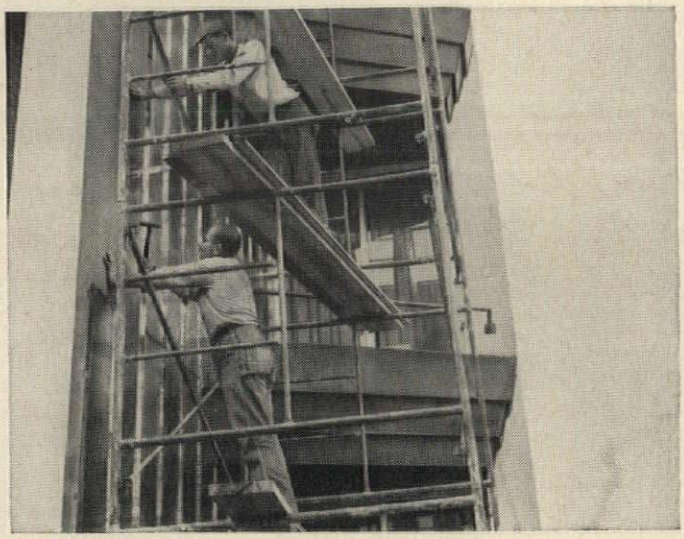
The New York Telephone Company operates several relay stations, most of them located atop telephone buildings in Manhattan. The Empire State Building relay station is the first to use the long, sweeping acrylic plastic enclosure.

General contractors for the installation of the plastic window were James King & Son.

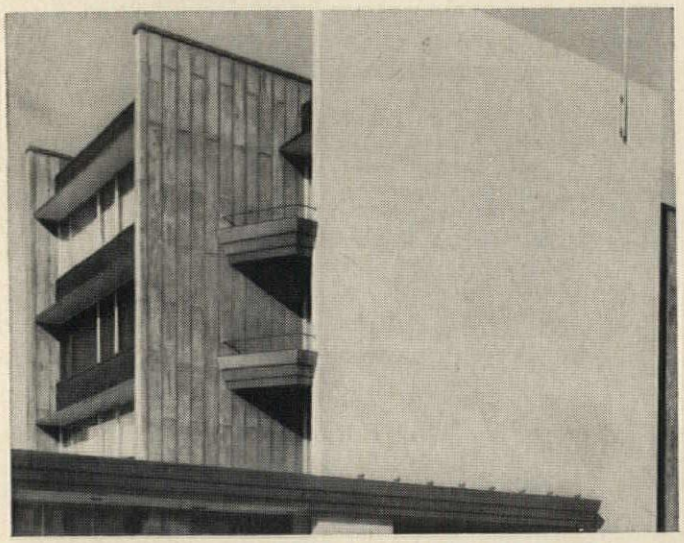


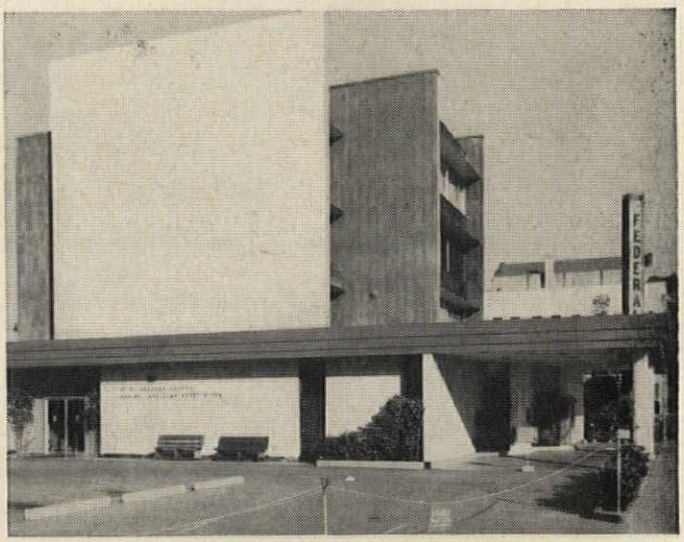
HOW REVERE COPPER





makes buildings alluring





as well as enduring

Copper is far from passé in modern building construction. In fact, it's being used more and more and in more different forms than ever before. The main reasons are: 1-You can do so many things with copper. 2-It is so easy to work and fabricate. 3-It has unusual flexibility in design. 4-Its endurance has been proved over the centuries.

In this instance the architect, WILLIAM B. HARVARD of St. Petersburg, Florida, having used copper on the balconies and front fascia, decided that copper would be the perfect sheath for the large wall surfaces, and by using vertical pans of copper a most unusual and decorative effect was obtained. The copper was then treated to produce a soft green weathered look to contrast with the white marble. Result: a striking, enduring edifice for the ST. PETERSBURG FEDERAL SAVINGS & LOAN ASSOCIATION, St. Petersburg, Florida.

The 5,000 lbs. of 16 oz. Revere Cold Rolled Copper used, were applied by DANIELS & JONES SHEET METAL WORKS, St. Petersburg. Copper was furnished by the Revere Distributor, HORNE WILSON, INC., Tampa.

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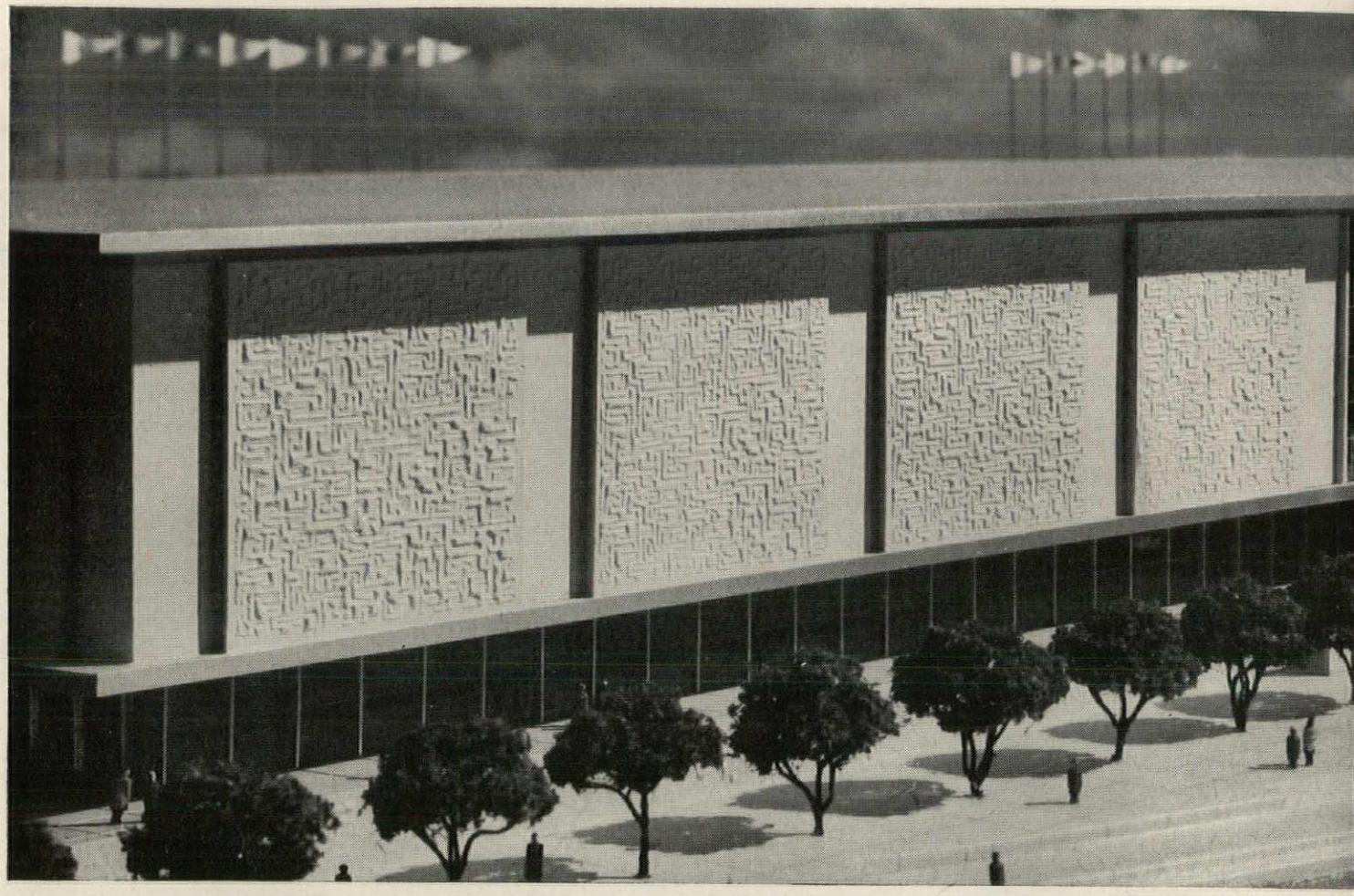


Steel Fabric reinforces sculptured precast concrete panels

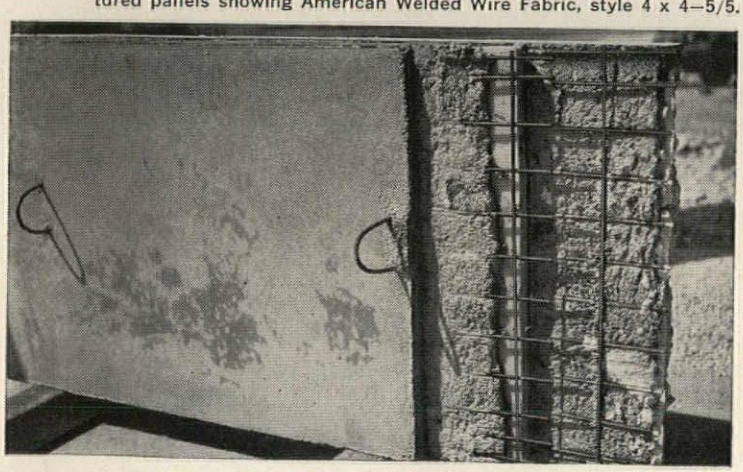
Chicago's new Convention and Exposition Center gives you a lot to marvel at. For one thing, you could put Wrigley Field, Comiskey Park and Yankee Stadium under its roof. For another, it is spectacularly beautiful from any angle.

But only architects, engineers and contractors will fully appreciate how some of the ingenious structural and architectural effects were achieved. So, look closely at the photographs and don't forget the unusual sculptured panels are of precast concrete reinforced with USS American Welded Wire Fabric.

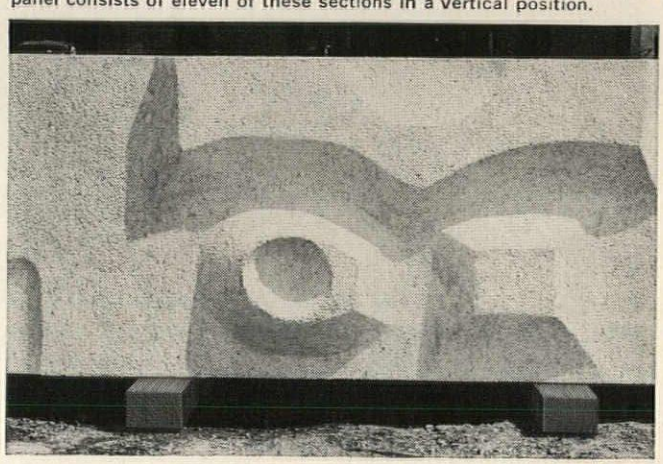
USS American Welded Wire Fabric was also used for concrete reinforcement of the pan-type floor construction. The floor is designed for 400 psi live loads with columns at 60-ft. centers. The joists are 14" deep with the top 4½" slab reinforced with welded wire fabric sheets. Welded wire fabric reinforcement was also used in the construction of the ground floor slabs, terrazzo floors and gypsum roof decks.

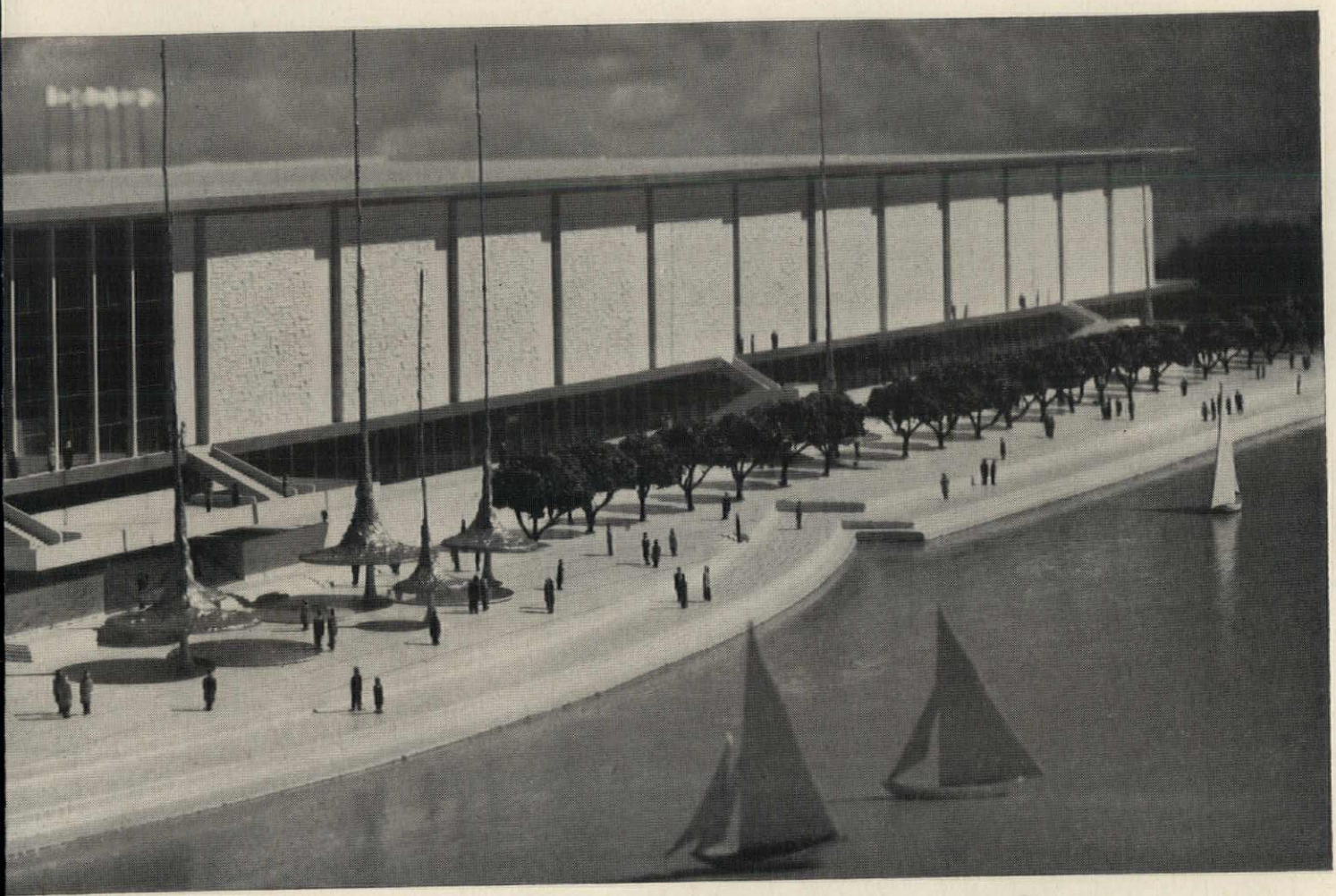
USS American Welded Wire Fabric is readily available in a variety of styles, sizes, lengths, widths and finishes—in wire gauges from 7/0 to 16 and with longitudi-

Rear view of a section of one of the precast reinforced concrete sculptured panels showing American Welded Wire Fabric, style 4 x 4—5/5.



This is front view of same section. Each 50 ft. high x 15 to 20 ft. wide panel consists of eleven of these sections in a vertical position.





in Chicago's McCormick Place Lakefront Exposition Center—

nal or transverse intervals of 2″ to 16″.

For more information on the advantages and applications of USS American Welded Wire Fabric, get in touch with our nearest Sales Office or write American Steel & Wire, Dept. 0477, 614 Superior Ave., N. W., Cleveland 13, Ohio. *USS and American are registered trademarks*

Credits: Chicago's McCormick Place Lakefront Exposition Center—23rd Street and the Lakefront. *Chief Architect:* Alfred Shaw, *Consultants:* Carl A. Metz, John Dolio, Edward D. Stone, John Root, Victor Hofer. *General Contractor:* Gust K. Newberg Construction Co. *Welded Wire Fabric Distributor:* Joseph T. Ryerson & Son, Inc. *Posttensioning Wire Tendons:* Joseph T. Ryerson & Son, Inc. *Precast Wall Panels:* American-Marietta Co., Concrete Products Division.

American Steel & Wire
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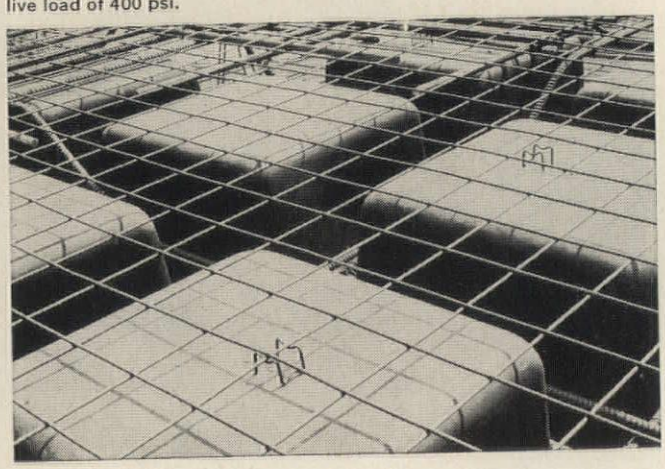
United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennesse Coal & Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, Distributors Abroad

The cast-in-place pan-type reinforced concrete floor is designed for a live load of 400 psi.



Large sheets of USS American Welded Wire Fabric, style 6 x 6—2/2 used to reinforce the 4½″ thick concrete slabs are handled by two men.

JOHNSON INTERVIEW

continued from page 16

happened. Even Nero would never have permitted it.

But Copley Square was once a success because of a consistent attitude towards building?
Yes, like St. Mark's Square in Venice.

Then you would say that the development of such a consistent attitude towards building was an important task that faces today's architect.
I would say so, yes. Perhaps the English have something when they use the Jaoul Houses for a vernacular. I never used to think so when Jim Stirling first preached them to me, but perhaps they do.

Is there anything meaningful for the modern architect in the study of architectural history?
I think so. I use history all the time.

This is not exactly the attitude of some of the leaders of the International Style.
The Bauhaus and Henry Ford were of the same age. Both thought history was bunk.

Of course, your use of the past is not the literal application of historical solutions that occurred in the old academies.
Russell Hitchcock has a good analogy. He says that the eclecticism of today is not so much like that of the nineteenth century as that of the eighteenth. For a grotto you used the Baroque conventions of Bernini, and if you wanted to build something tall you made it a pagoda.

Right now in this office we are doing an opera house which is all white and gold and red plush with curved forms throughout, at the same time that we are doing a $25-a-sq-ft Chemistry Laboratory for Yale. Perhaps this is a fantastic situation; but I feel that you can't ignore the fact that these operas have always been performed in buildings of a certain type. I wouldn't dream of designing an opera house that wasn't a horseshoe.

Do you think the submersion of the individual in a new style is possible today?
No.

And yet you do think that it is worth working towards a new architectural vernacular. Surely you can't achieve a vernacular through conscious effort?
If you can't conceive a vernacular consciously, you are certainly not going to be able to conceive it unconsciously.

Do you think that any of these new movements one hears about, the New Brutalism or the New Sensualism or what have you, might prove to be a new vernacular or style?
I don't know. I don't think one should categorize so close to the events. We didn't try to define the International Style until it had been going on for ten years.

But perhaps this categorization performs a useful function for the practicing architect.
I wonder. Look at all the great architects of the past. How many ever read a word of architectural criticism?

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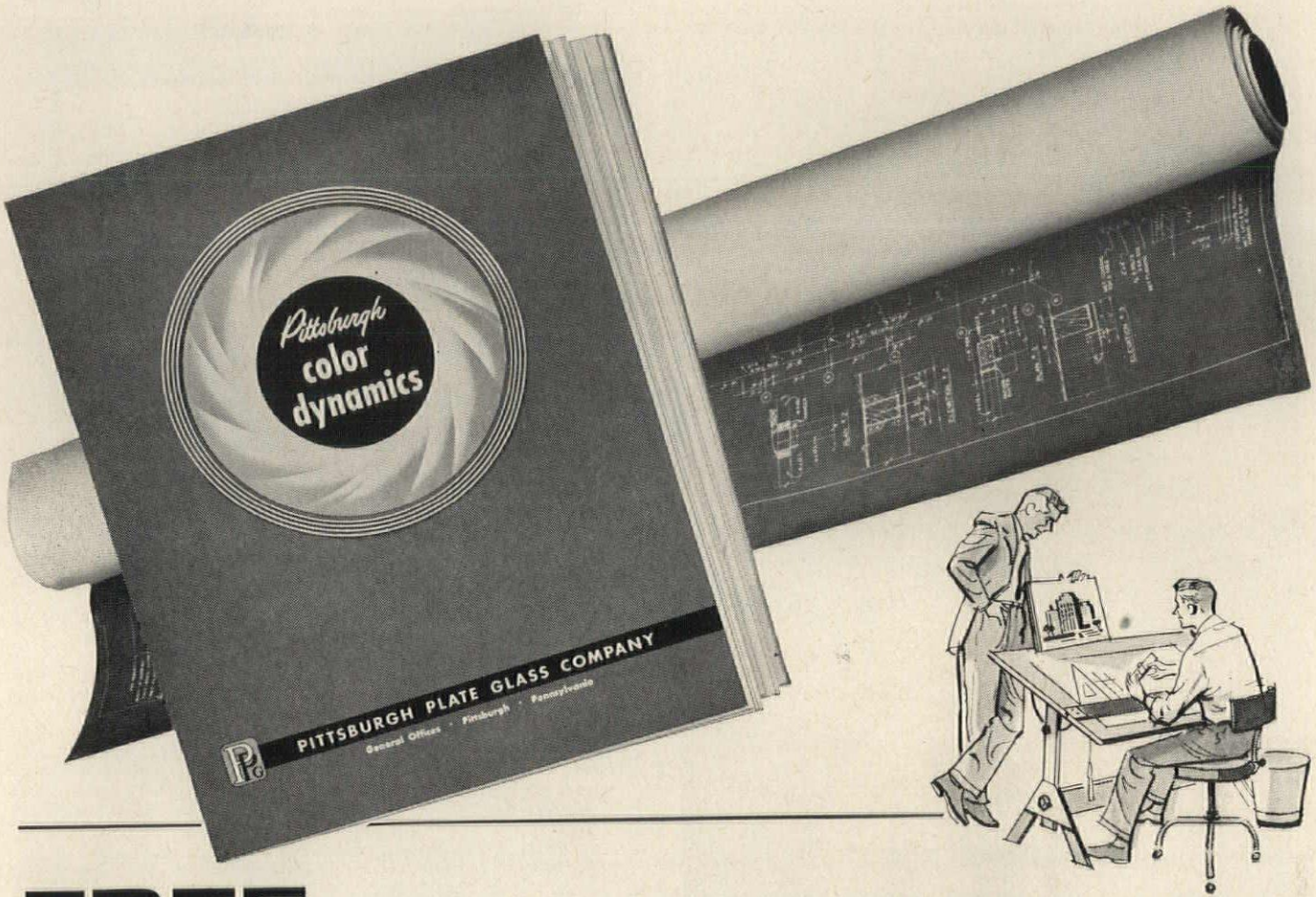

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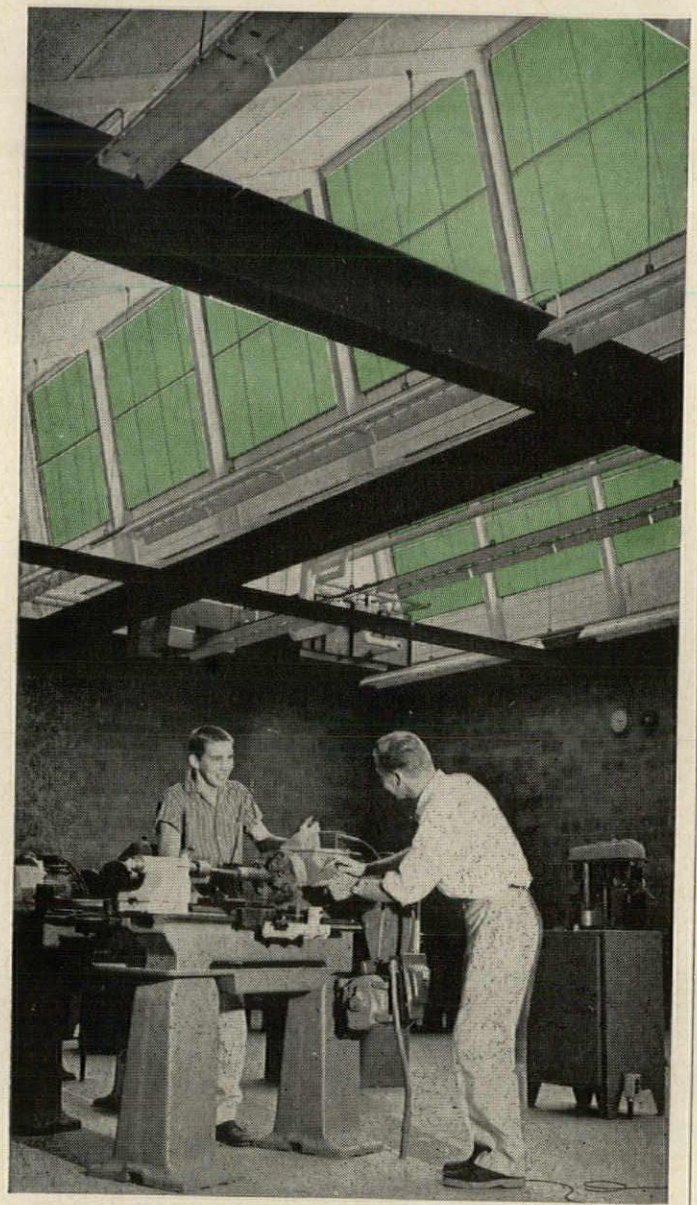

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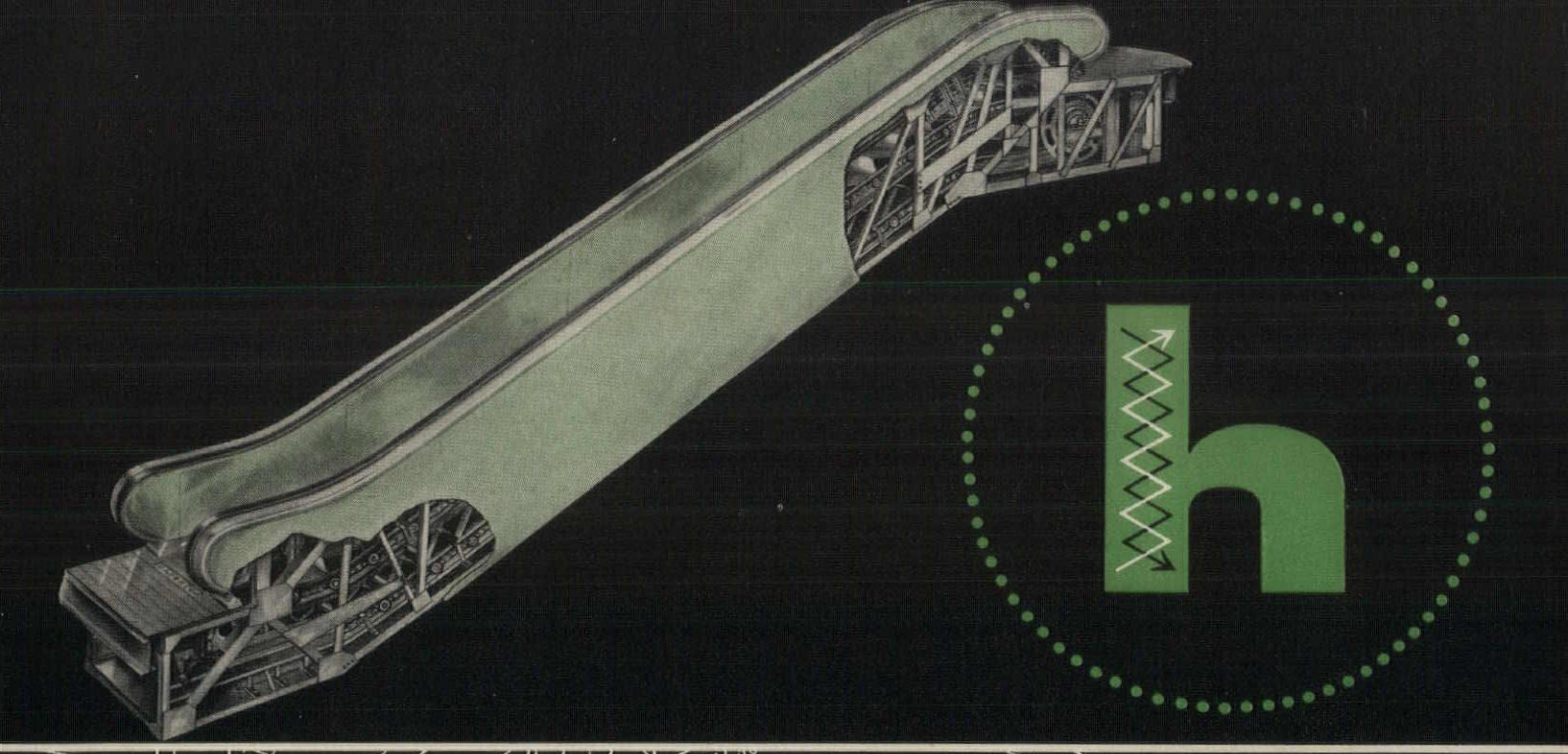

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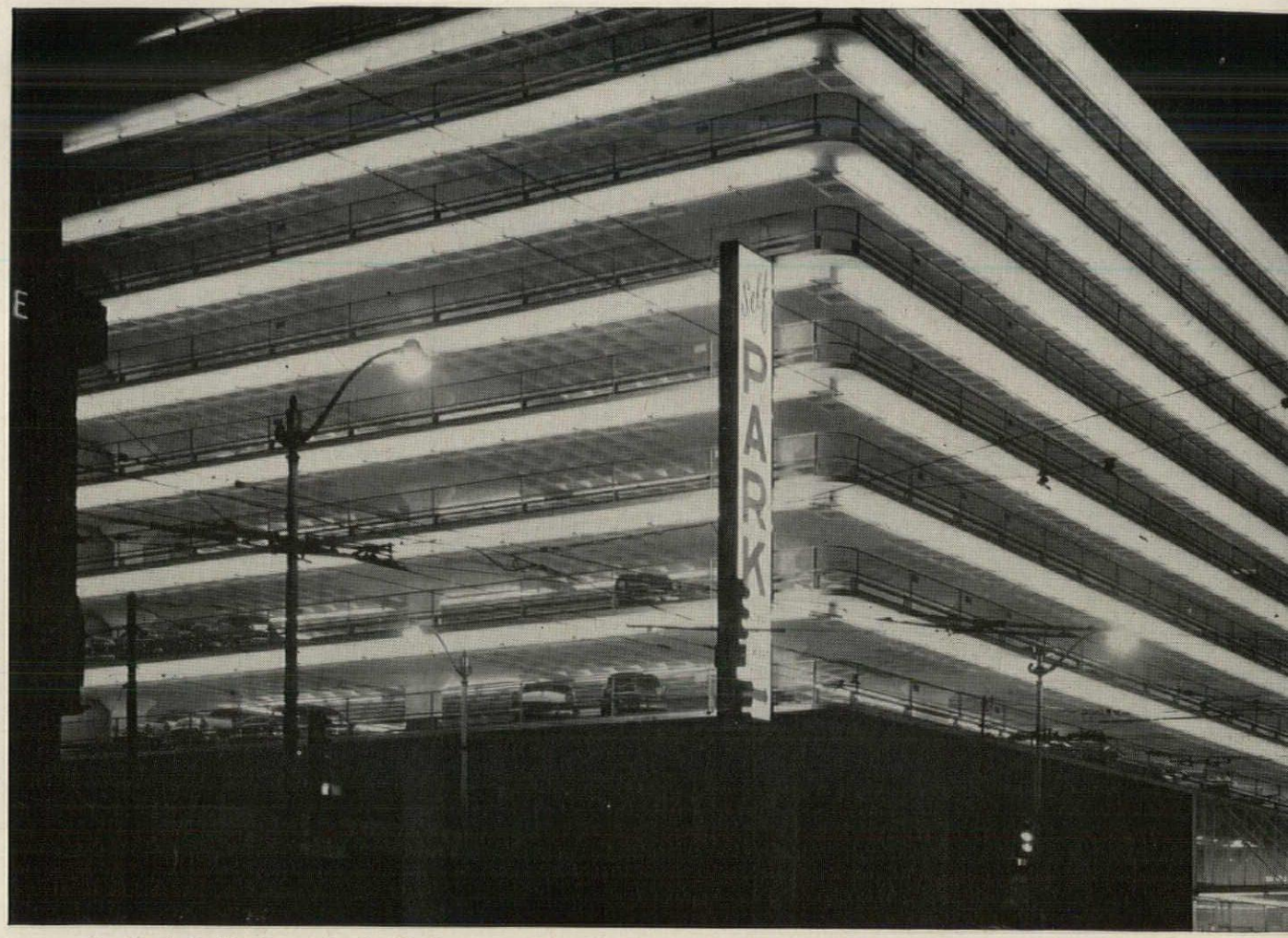
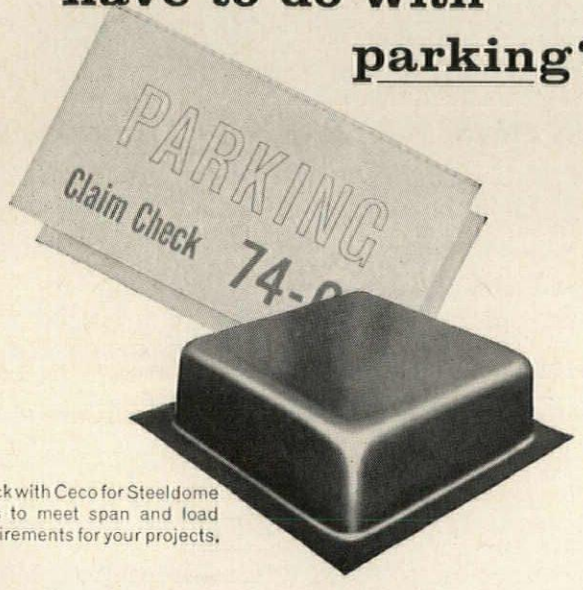


Bon Marche Parking Garage, Seattle, Washington. Architect: George A. Applegarth. Structural Engineer: Ellison, Sedgwick & Associates. Contractor: Utah Construction & Mining Company

What do steeldomes have to do with parking?



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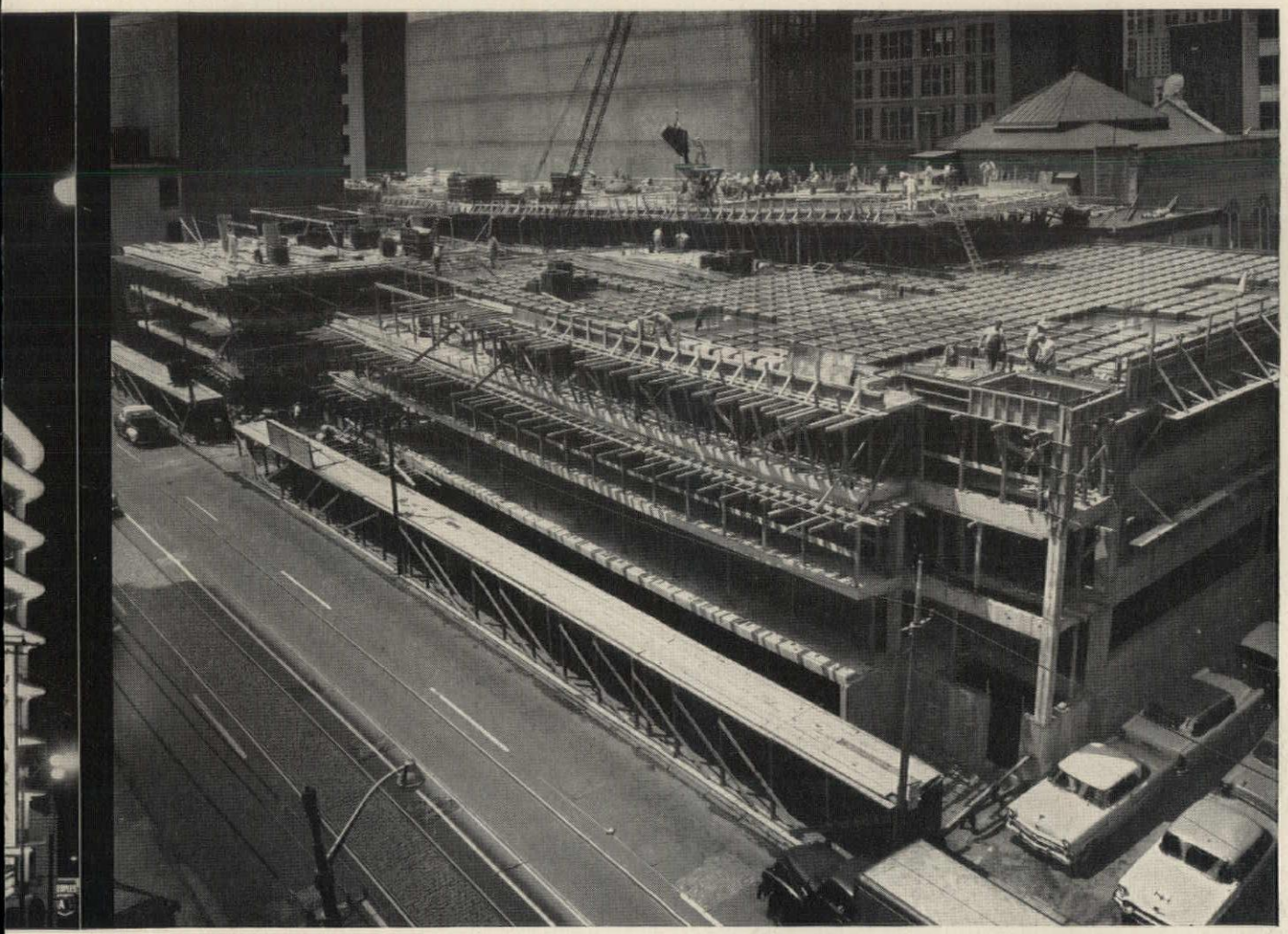
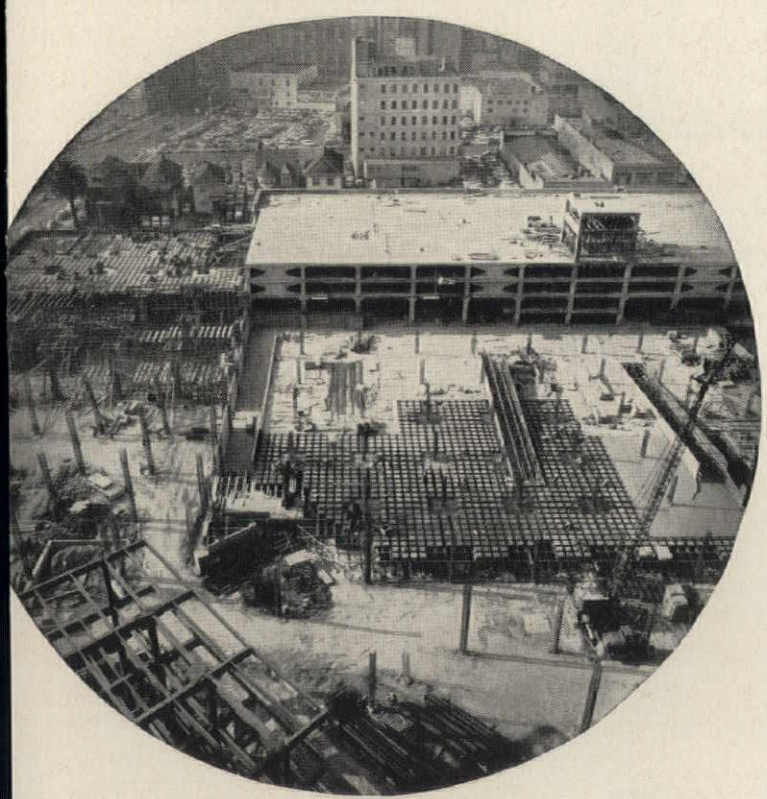
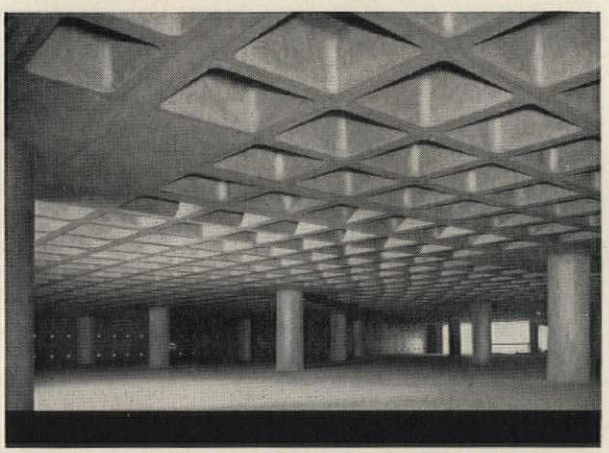


Site "Y" parking facility, Pittsburgh Parking Authority, Pittsburgh, Pa. Structural Engineer: Leland W. Cook. Contractor: Graziano Construction Co.



Kaiser Garage and Shops Building, Oakland, California. Architect: Welton Becket and Associates. Structural Engineer: Murray Erick Associates. Contractor: Robert E. McKee, Inc.



Interior of Kaiser Garage and Shops Building illustrates wide open spaces obtained economically through two-way joist design of Steeldome construction. There is no excessive clean-up expense because forms fit tight, leave no unsightly residue.

On the Calendar

December

12-14 First Industrial Building Congress and exposition—The Coliseum, New York

12-15 Atomic Industry Exhibition and Annual Conference and winter meeting, American Nuclear Society—Masonic Memorial Temple, Fairmont and Mark Hopkins Hotels, San Francisco

January

7-10 National Exposition and Convention, National Swimming Pool Institute—Dallas

9-12 White House Conference on Aging—Washington, D.C.

23-26 12th annual Plant Maintenance and Engineering Show; theme: "Maintenance Operation Meets the Needs of Increased Production"—International Amphitheater and Palmer House, Chicago

24-27 17th Annual Technical Conference, Society of Plastics Engineers—Shoreham Hotel, Washington, D.C.

29ff Convention and Exposition, National Association of Home Builders; through Feb. 2—Convention Hall, Chicago

30ff 12th Biennial Concrete Industries Exposition, sponsored by National Concrete Masonry Association; through Feb. 2—Cobo Hall, Detroit

February

9-11 Fifth Annual Home Improvement Show, sponsored by the Home Improvement Products Association—The Coliseum, New York

13-16 Semi-annual meeting, American Society of Heating, Refrigerating and Air-Conditioning Engineers—Chicago

20-23 57th Annual Convention, American Concrete Institute—Chase-Park Plaza Hotels, St. Louis, Mo.

Office Notes

Offices Opened

Katzman Associates, store designers, have opened a new branch office in Phoenix, Ariz. at 221 East Camelback Rd. Directing the new office is Meyer Katzman, A.I.A.

Nelson J. Palmer, A.I.A., has opened an office at 425 Central Ave., Dunkirk, N. Y.

William Parrish Plumb announces the opening of his office for the general practice of architecture and related design at 3021 N.E. 32 Ave., Fort Lauderdale, Fla.

The firm of Harland Bartholomew and Associates has opened an office in Memphis under the resident direction of William S. Pollard Jr., partner in the firm. The office will be located at 188 Jefferson Ave.

Ransdell Cox, Architect, has opened new offices at 127 East 60th St. in New York City.

I.S.D., Inc., the interior space design division of Perkins & Will, Architects, announces the move of its Eastern operations to 125 East 55th St., New York, from the parent office at 55 Church St., White Plains, N. Y.

Welton Becket and Associates an-

more news on page 254

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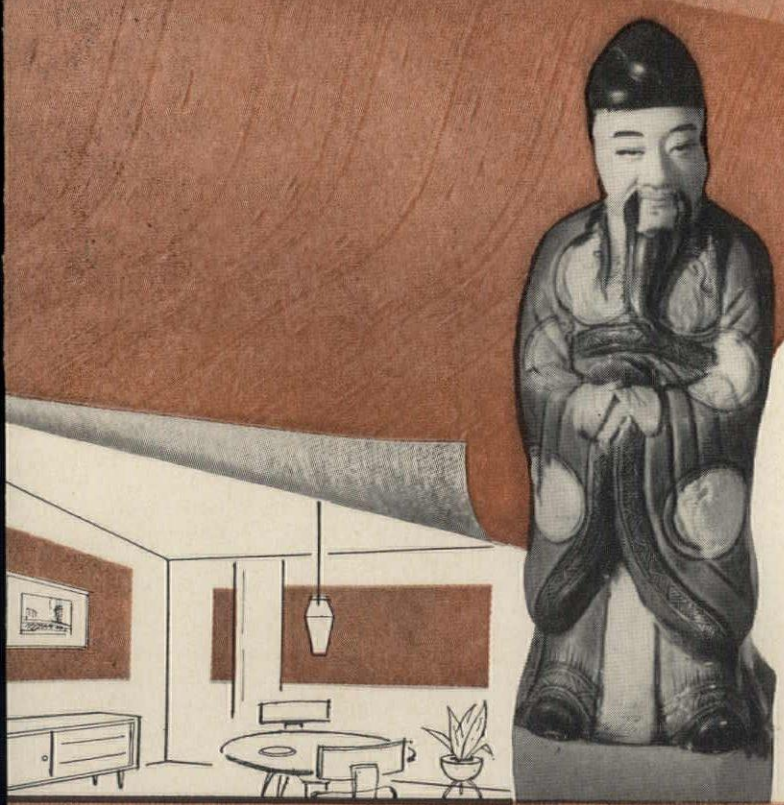

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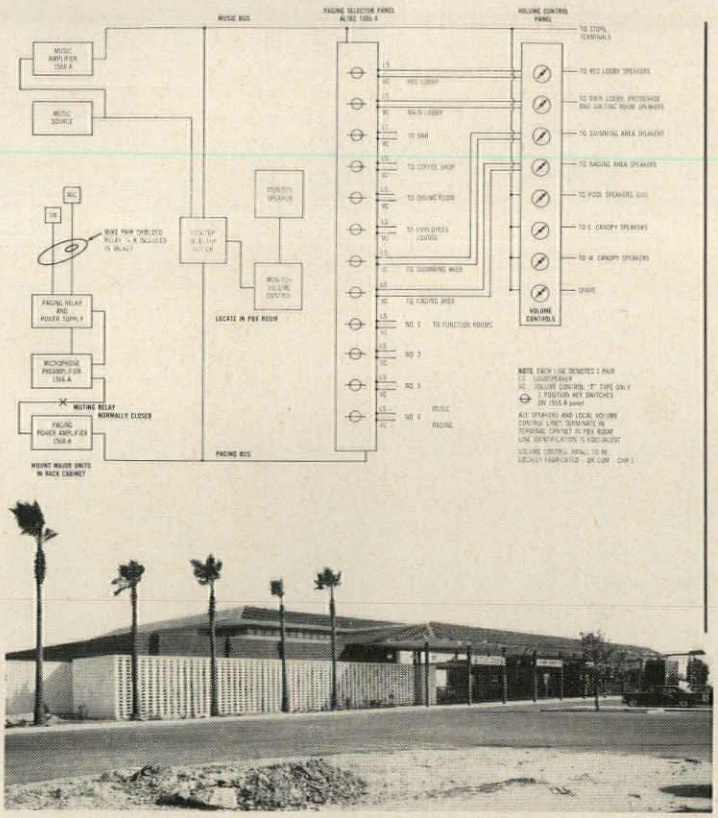

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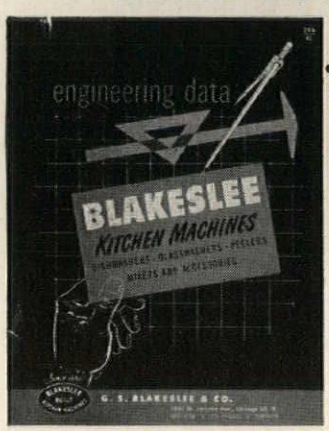

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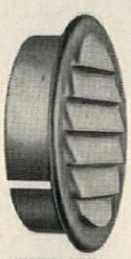

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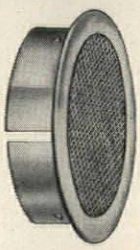

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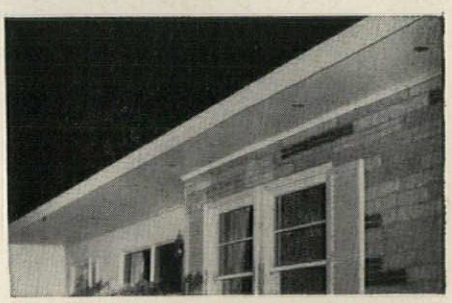

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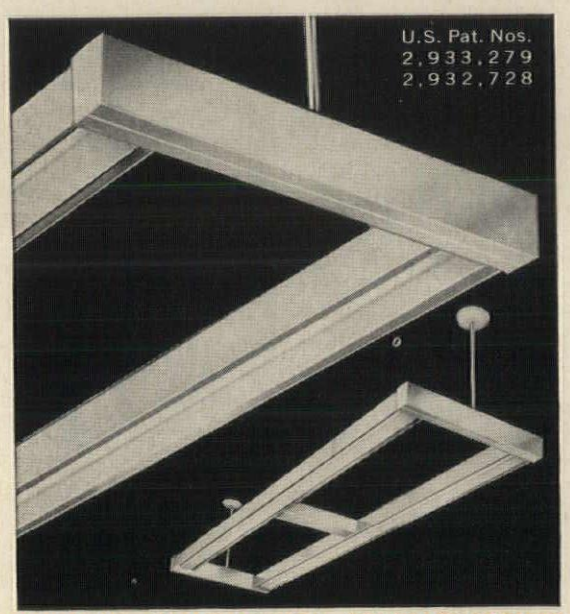

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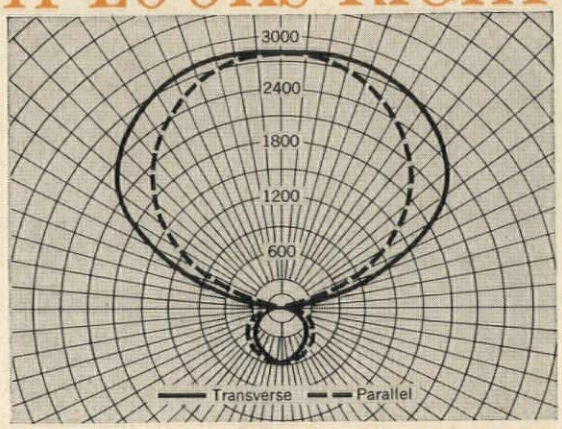

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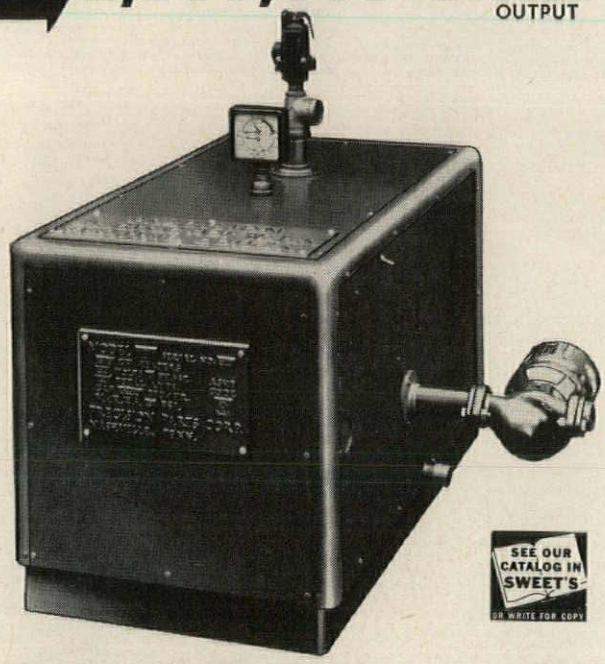

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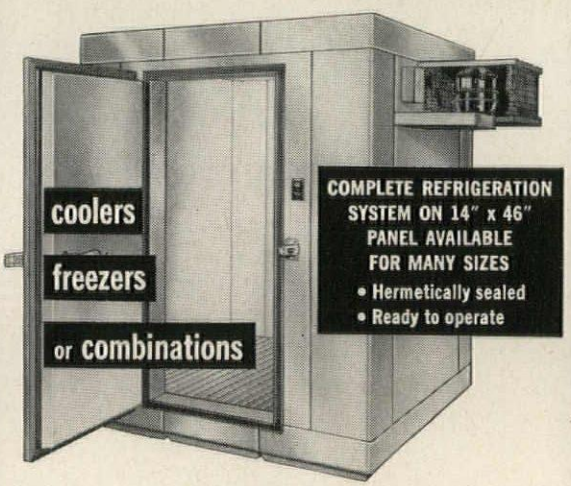

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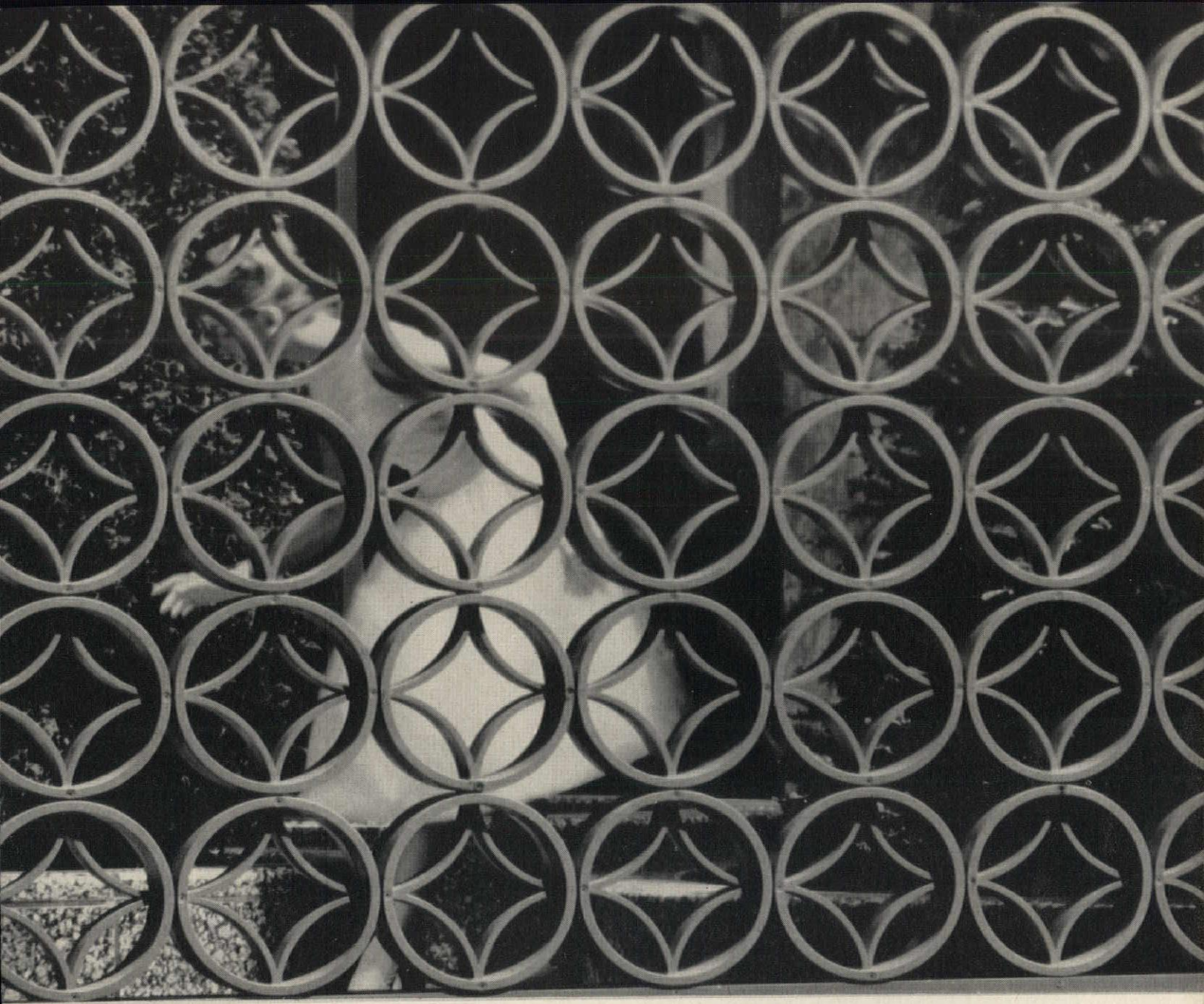

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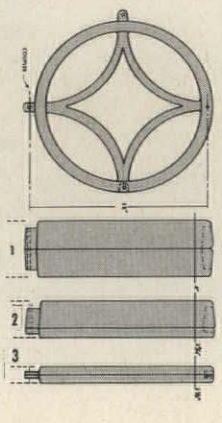

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AL-SHADE

nounce the opening of new offices at 10000 Santa Monica Blvd., Los Angeles, Cal.

New Firms, Firm Changes

H. E. Bovay, Jr., partner of H. E. Bovay, Jr., Consulting Engineers, announces that George C. Love has been transferred from Houston to the firm's Richland, Washington office, replacing Robert O. Grimes as Chief Engineer. R. O. Grimes now assumes his former position as Associate of the Bovay Houston organization, and has resumed his duties as Senior Project Engineer. He will also serve as Assistant Projects Manager to Charles A. Lawler, Partner.

Robert T. Dormer, former deputy regional director of Urban Renewal Administration, has been named Director of the Urban Renewal Division of Victor Gruen Associates. Mr. Dormer will play a major role in the Gruen firm's downtown planning and redevelopment projects.

Architects Ballard, Todd and Snibbe have announced that Robert W. Hegardt, A.I.A., and Gordon L. Schenck, R.A., have become associates in the firm. Both men have been staff members, Mr. Hegardt specializing primarily in hospital design and Mr. Schenck in structures for colleges and secondary schools.

Mr. Roy O. Allen, Jr., Edward C. Bassett and Bruce J. Graham have been elected general partners of the firm of Skidmore, Owings & Merrill, with offices in New York, Chicago, San Francisco and Portland, Ore.

Smith+Smith/Architects have announced a change of name and location, reflecting enlarged staff and facilities. The new firm name is Smith +Smith/Associates, Architects. The new address is 4268 North Woodward Ave., Royal Oak, Mich. Firm members are: Bruce H. Smith, Neal B. Smith, Roy I. Albert, Edward W. Gabert, and William Lyman.

New Addresses

Architects Harrell & Clark, A.I.A., U.S. Highway 321 By-Pass, Hickory, N. C.

Clarence B. Kearfott, Architects, Dominion National Bank, Lee Highway Branch at Valley Drive, Bristol, Virginia-Tennessee.

Norman M. Klein, Architect, A.I.A., 36 East 61st St., New York 21.

Macbird & Associates, Industrial Designers, 403 North Harbor Blvd., Santa Ana, Cal.

Migdal & Layne, Consulting Engineers, 10150 West Nine Mile Rd., Oak Park, Mich.

Morton-Carter & Associates, Architects, 217 24th Ave. No., Nashville, Tenn.

Peterson and Befu, A.S.L.A., Landscape Architects and Site Planners, 35 South Raymond Ave., Pasadena, Cal.

Rhone & Iredale Architects, 5615 Mackenzie St., Vancouver 13, B.C.

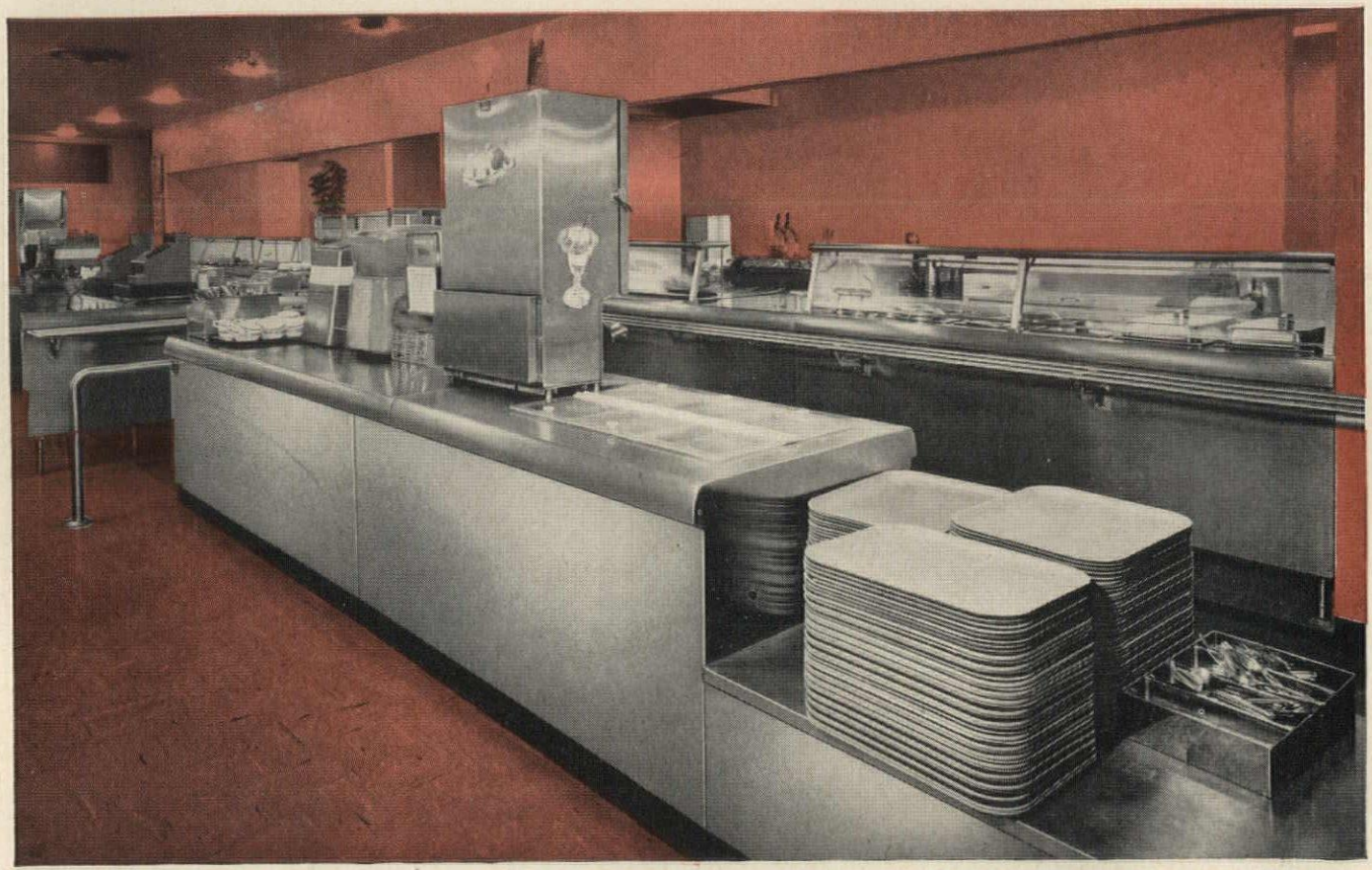
Philip D. Tomasello, A.I.A., Architect, 3030 Bridgeway, Rm. 231, Sausalito, Cal.

Robert G. Zetsche, Architect, 4 Albany St., New York 6.

Addendum

The Record regrets the error on page 20 in the November issue ascribing the design of the Turin Palace of Labor to Antonio Nervi. The building was designed, of course, by Pier Luigi Nervi *and* Antonio Nervi.

more news on page 258



The new cafeteria at King's College, Wilkes-Barre, Pennsylvania, features such unexpected cafeteria equipment as a Bastian-Blessing 5' sandwich unit, and a 30-gallon Fast-Serv soda fountain. Each line starts with a 7'6" food warmer. Lacy, Atherton and Davis, Wilkes-Barre, Pa., Architects.

Ingenious "twin" serving lines and Bastian-Blessing Custom-Modular equipment makes King's College cafeteria a model of efficiency...

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Fast food service, labor saving efficiency, attractive appearance, and minimum cost were key considerations in designing King's College new Science Building Cafeteria. Facilities for speeding 250 boarding students, 150 faculty members and many of the 700 day students through the serving lines three times daily centered around two "twin" 22 ft. food service lines converging on central cashier stands. Unique parallel counters for silver, trays, ice cream and beverages speed service by enabling students to simultaneously "serve themselves" while momentarily waiting to be served from the main food serving counters.

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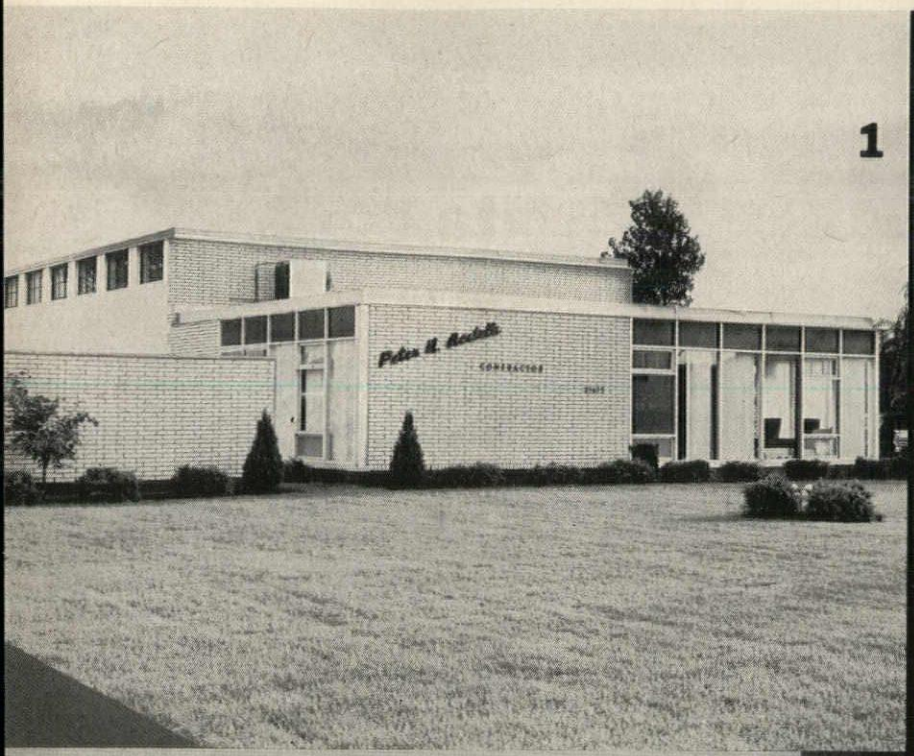
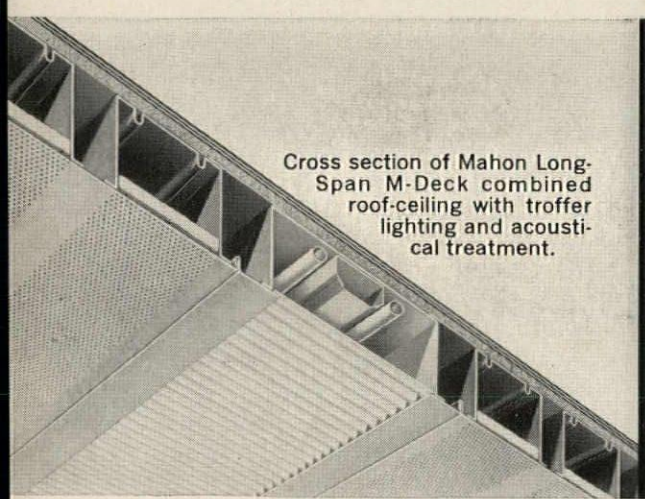


MAHON MULTI-USE LONG-SPAN M-DECKS...



Cross section of Mahon Long-Span M-Deck combined roof-ceiling with troffer lighting and acoustical treatment.

MAHON LONG-SPAN M-DECK SECTIONS

SECTION M1-OB
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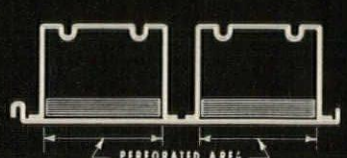

SECTION M2SR (Acoustical)
CEL-BEAM DEPTH 1½", 3", 4½", 6 or 7½"

A NEW SECTION M1-OB (Troffer)
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1 Mahon Long-Span M-Deck was meaningfully used in this "twin" facility at Livonia, Michigan. For the offices of contracting firm, Peter H. Acitelli, Inc., with its . . .

2 . . . attractive reception area, Mahon Long-Span M-Deck was used as structural members to span wall-to-wall, as a roof-deck system and also served as a . . .

3 . . . finished acoustical ceiling in offices—flat ceilings in shops of the R. V. Tool Co. as well. Architects: Wakely-Kushner Associates, St. Clair Shores, Michigan.

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MAHON

continued from page 37

One of the first members of Congress to speak out on this subject after the November elections was Senator Harrison A. Williams, Democrat of New Jersey.

In a series of speeches he called for the solution of sub-problems created in the wake of housing and urban renewal programs for cities. As well-to-do citizens move out of cities, neighborhoods deteriorate, welfare costs go up and the tax yield goes down when it's needed most, he said.

He asked: "Are we saving a few city blocks while the rest of the metropolis deteriorates? Do we need greater Federal concern about the welfare burden caused by migrations into largest cities?"

Senator Williams, for one, said he was convinced a Secretary of Urban Affairs was needed vitally. He described such a cabinet member as "a partisan" who would represent a certain clientele, and who would "do battle for cities and suburbs in much the same way that the Secretary of Labor or the Secretary of State do battle for the programs in which they have faith."

The New Jersey Democrat then added this on the matter: "The President, even a President sympathetic to the aims of a Federal Department of Urban Affairs, is subject to many pressures. If anyone is to be heard by the President, he must often make himself heard. Only a cabinet member of outstanding ability can keep a President as fully informed and alert to the urban situation as a President should be."

He suggested that such a department might evolve naturally from the present HHFA, but felt that in such instance it would administer only those programs now handled by the HHFA as well as a few closely associated activities.

Mass transportation planning, according to Senator Williams, would easily become one of those newer programs. Others, he stated such as the Federal highway grant program, could remain under present departments but agency directors would report to the new Department of Urban Affairs on matters affecting metropolitan areas.

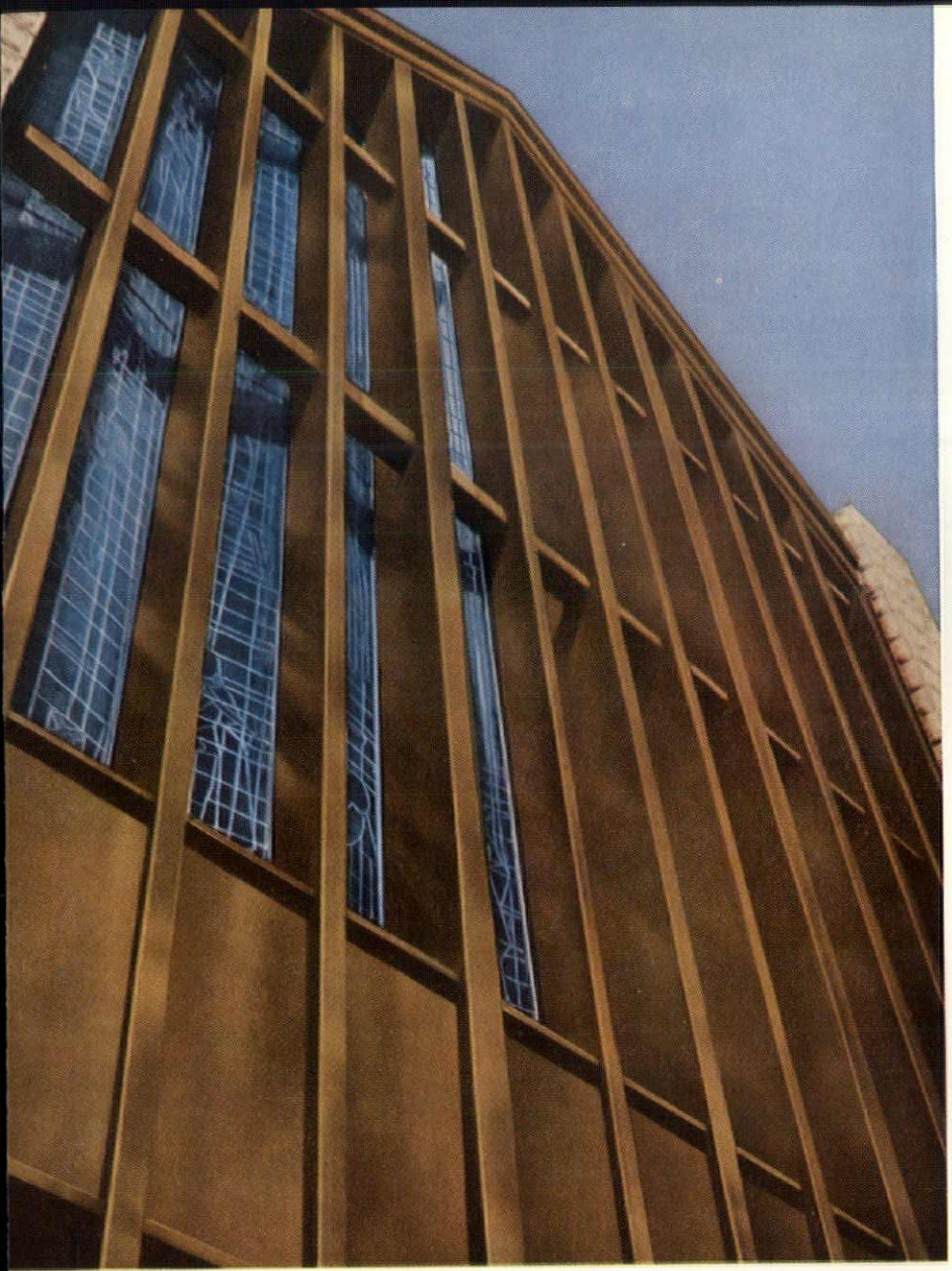
It was doubted that related programs such as public health, education, and similar functions would be removed from the Health, Education and Welfare Department to a new Urban Affairs unit. These are well-entrenched activities that traditionally have been integrated in HEW.

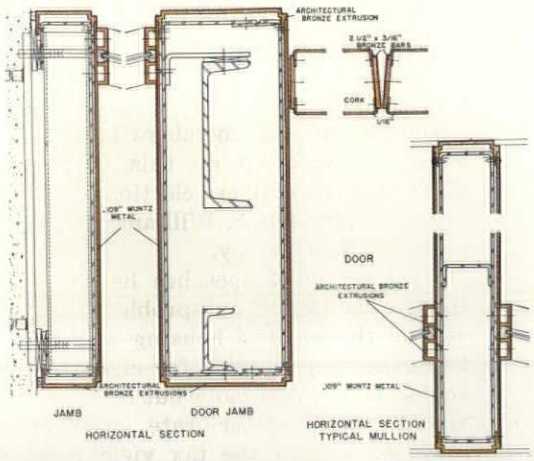
Senator Williams, for one, believes that until there is such a new Department at cabinet level, it cannot be hoped that any administration will understand the relationships of one Federal program to another and the magnitude of the urban challenge he claimed was facing all levels of government.

There appeared to be general agreement that some study of the matter was needed immediately. A new coordinating body in Congress was broached by Senator Williams who said it might take the form of a new subcommittee, select committee or joint committee.

The A.I.A., in the Will statement to the subcommittees in May of this year, recognized the complexity of the overall problem and said further study would be needed. It urged appropriation of funds (which were

continued on page 264





St. Andrew's Episcopal Cathedral, Honolulu. Here bronze in the soft statuary finish complements the grace and dignity of a contemporary Gothic design. A wise choice of standard materials made substantial economies possible. Drawing above shows how Architectural Bronze extrusions were used for pilaster faces and corners. Flat surfaces are of Muntz Metal sheet. Bronze facing on doors is bonded to a reinforced sheet steel core. Architect: Carleton Monroe Winslow, Beverly Hills, Calif. Fabricator: Cochran-Izant & Co., Los Angeles, Calif.

Bronze in weathered or natural finish blends warmth and dignity

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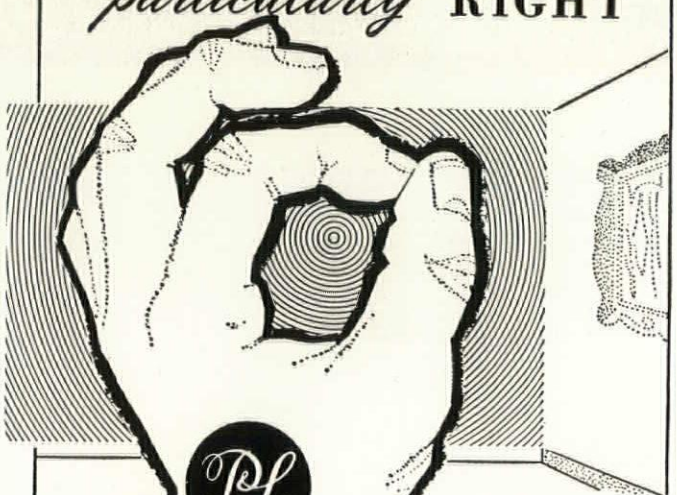

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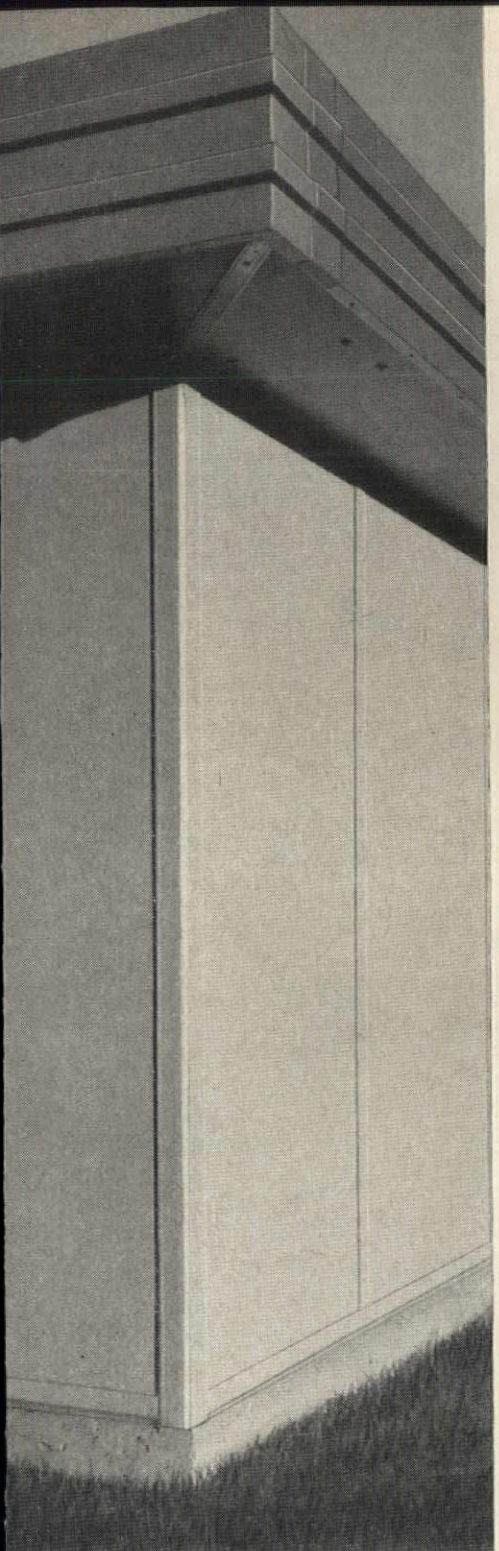

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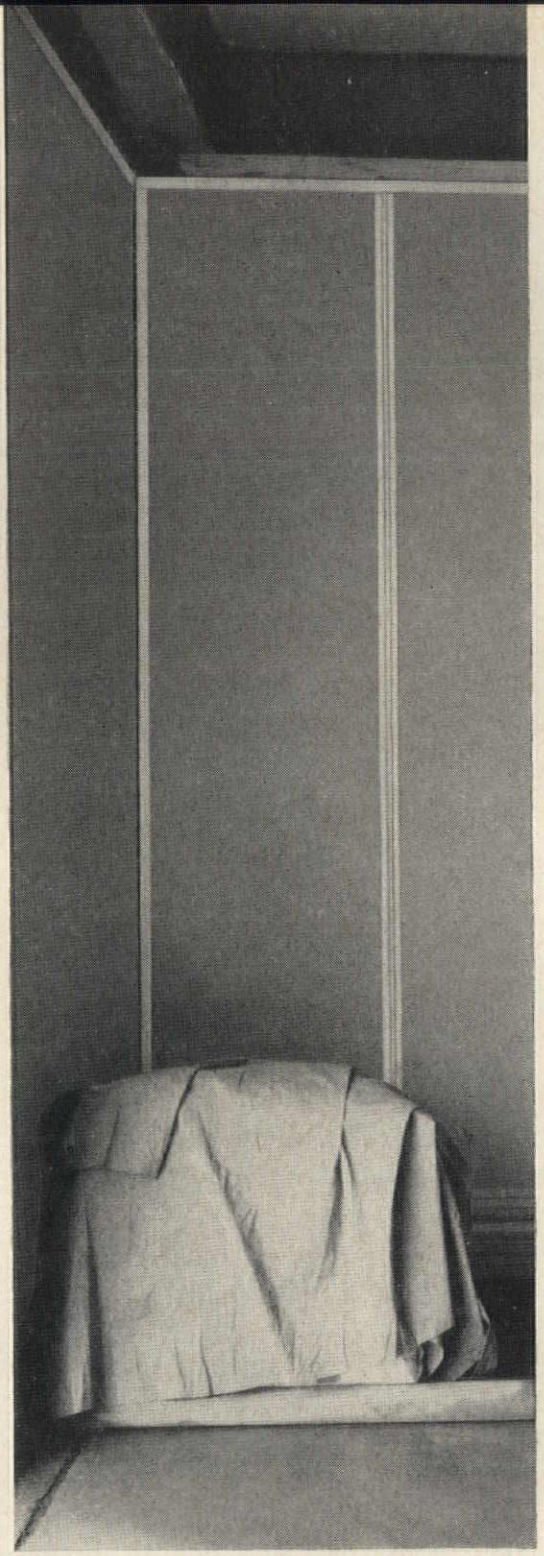

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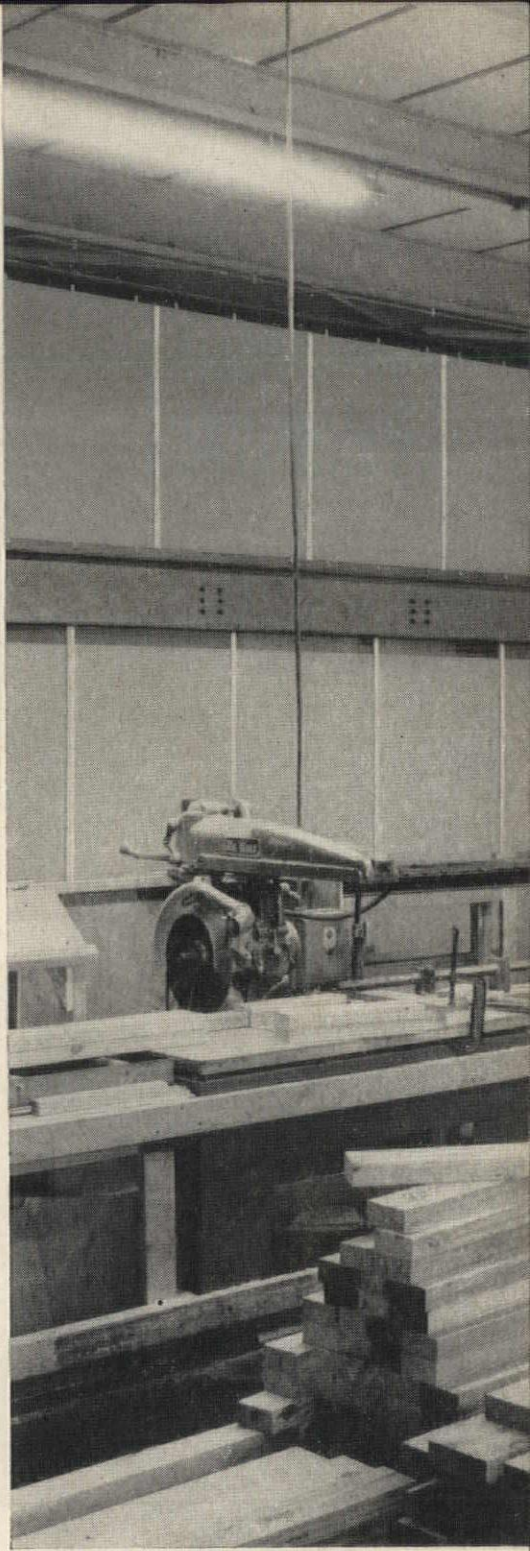

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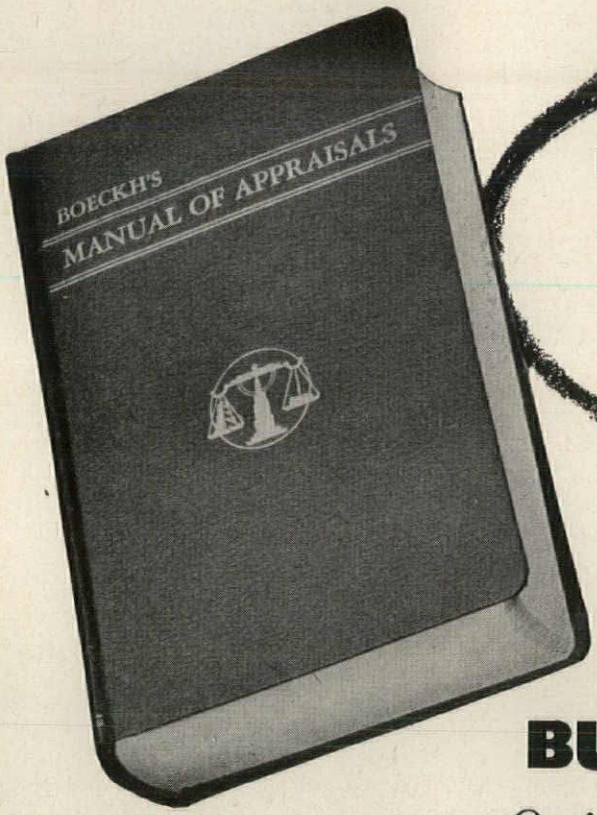

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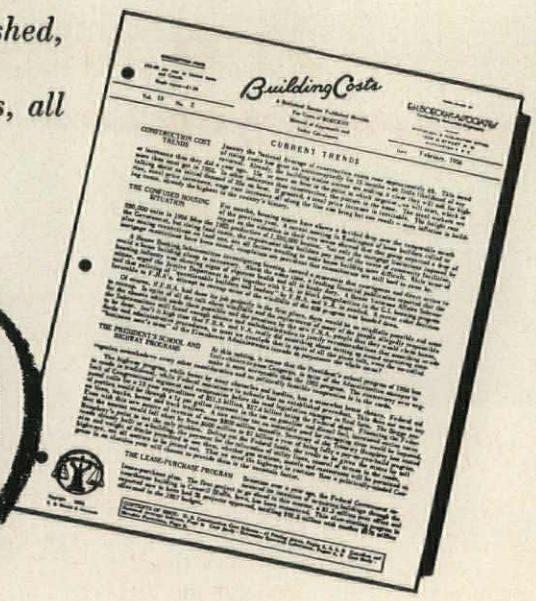

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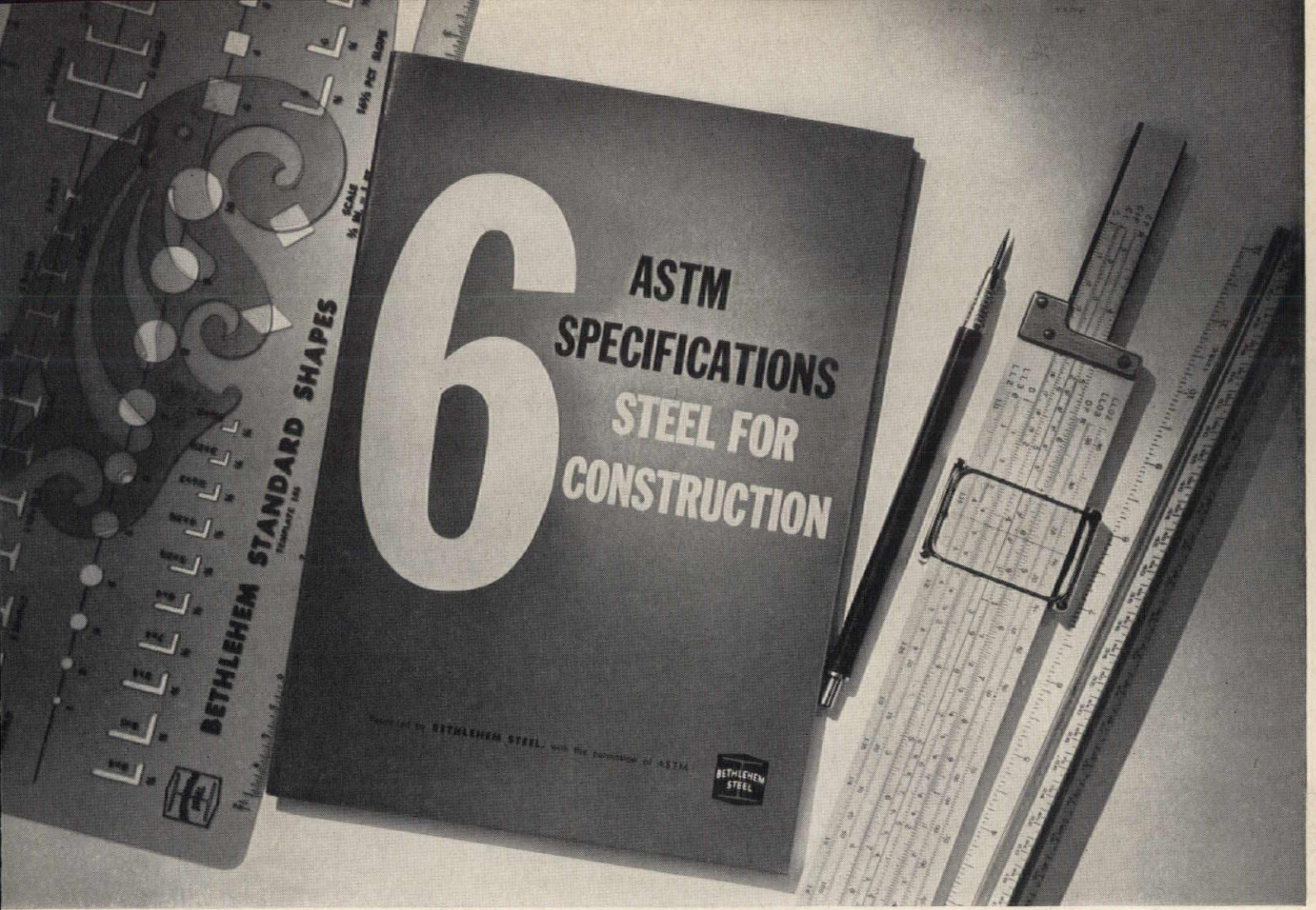

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continued from page 258

not voted) to provide for a detailed study and recommendations it said were required to achieve a workable scheme for the purpose.

As recently as mid-September the A.I.A. Board of Directors reaffirmed the Institute's stand by approving the statement—"We strongly support the proposal to establish a Department of Urban Affairs." The action was taken at the regular fall Board meeting held in Las Vegas.

FHA Sets Old Standards For New Elderly Program

Architects involving themselves in the new experimental Federal program on housing for the elderly have been informed that they will operate under the Section 231 minimum property standards employed by the Federal Housing Administration in its own elderly housing program. This despite the fact that architects in the Division of Housing for the Elderly, Office of the Administrator, Housing and Home Finance Agency, spent weeks drawing up MPS of their own, expecting that new guidelines would be issued for the experimental endeavor.

But on September 21, Dan G. Minto, director of the Division of Housing for the Elderly, told a home builders' mortgage clinic at Kansas City that the direct loan housing would be built under the Section 231 standards and that there would not be two sets of criteria.

A week before, Division personnel had been preparing to issue the new standards as developed by their architects which were to supplement those used by the FHA. It was understood that Administrator Norman P. Mason overruled the plan for a double set of MPS.

This does not mean, however, that architects will be bound too closely by the FHA rules. Director Minto was stressing at every opportunity that HHFA would welcome a "bold and imaginative approach in designs and materials" for this elderly housing to be constructed as rental shelter with direct loans from the agency —loans now bearing three and one half per cent. Congress appropriated $20 million to start the program on an experimental basis and learn how it is progressing before taking a look at requests for greater fund amounts.

Meanwhile, the architects at HHFA emphasized that the new program housing must be built as relatively low cost construction, carrying out the Congressional mandate. It strikes for the middle and middle-low income ranges, leaving the higher income properties to the FHA loan insurance program where the units can be either for rent or for sale.

A third housing agency effort in the elderly occupancy field is that of the Public Housing Administration, where Mrs. Mary Cleverley, recently with the FHA program and an adviser to the Administrator for a brief period, has been appointed assistant commissioner for housing for the elderly.

The HHFA Office of the Administrator experimental program was said to lie in between the higher-cost FHA housing and the public type. One spokesman said an almost austere type of construction would be called for under the Administra-

continued on page 272

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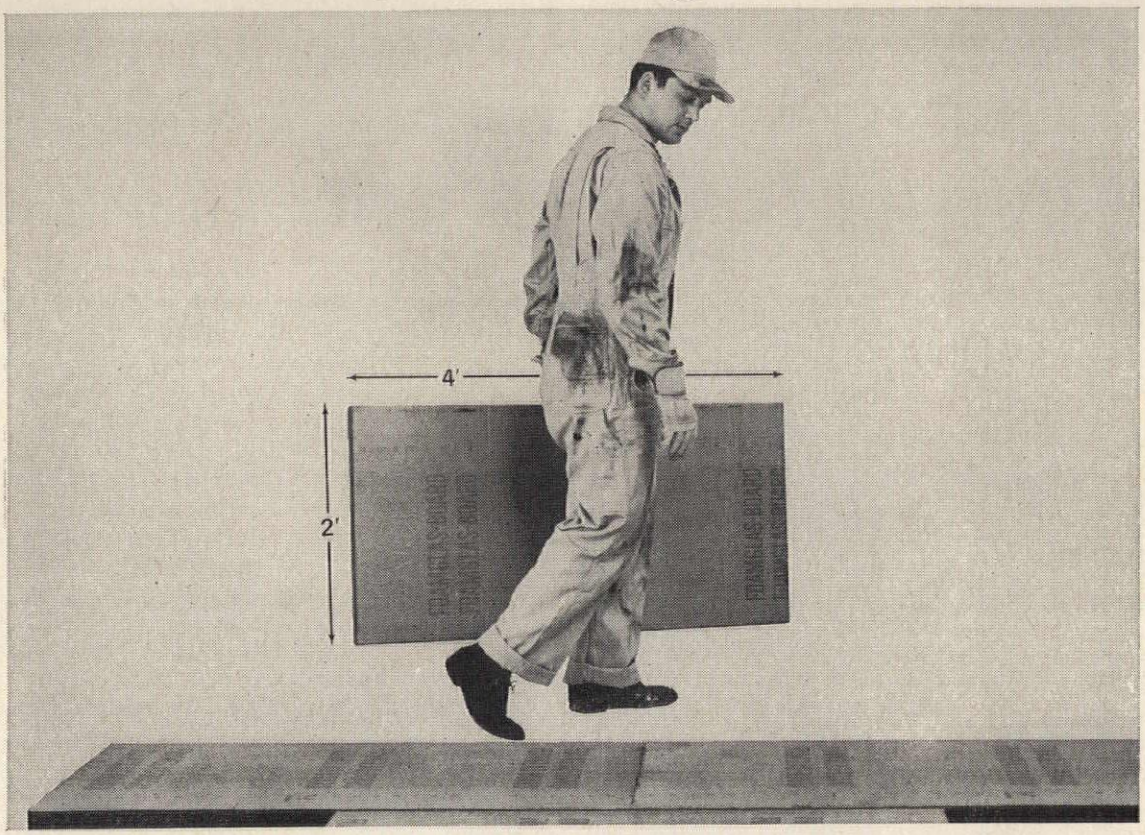

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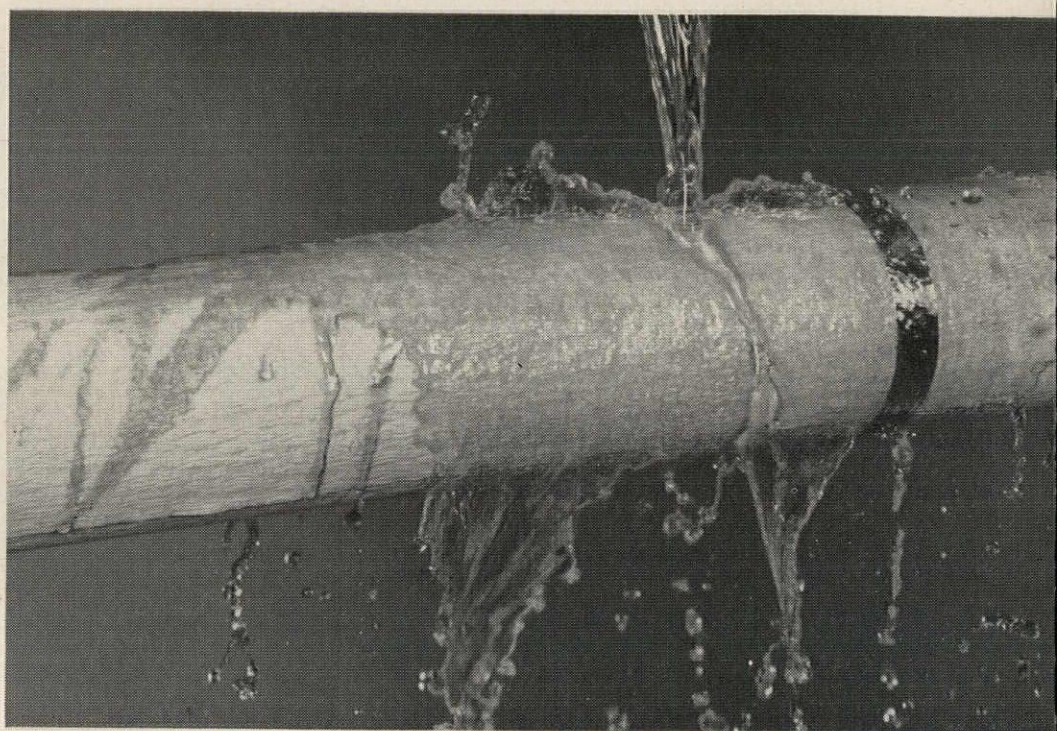

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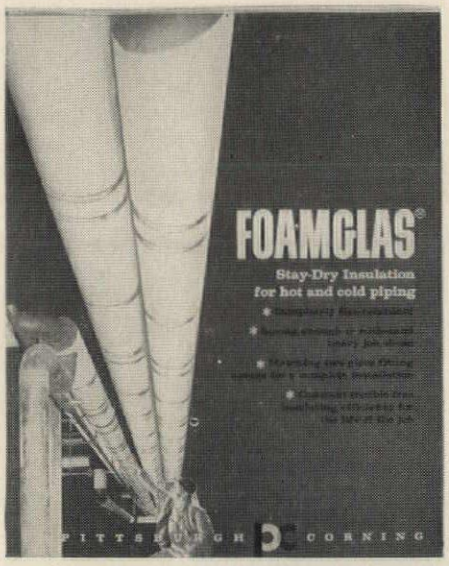

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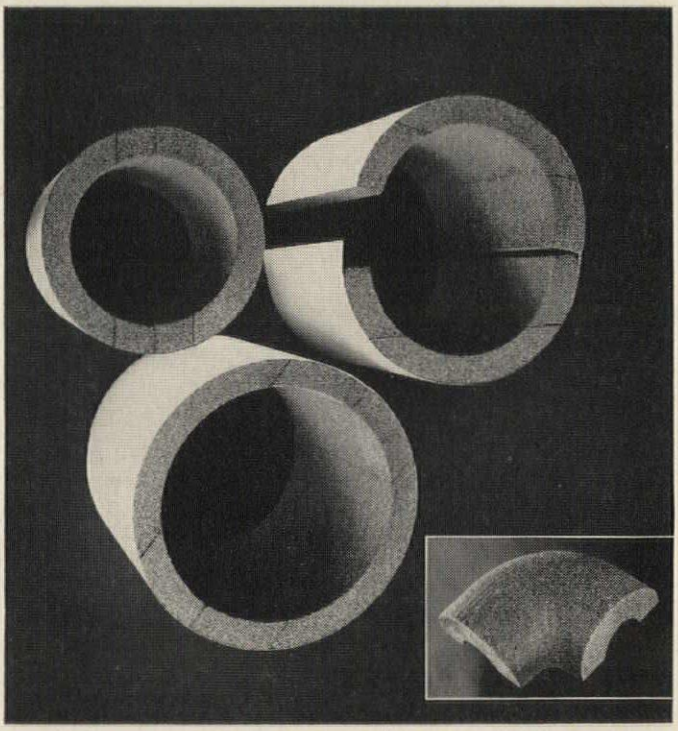

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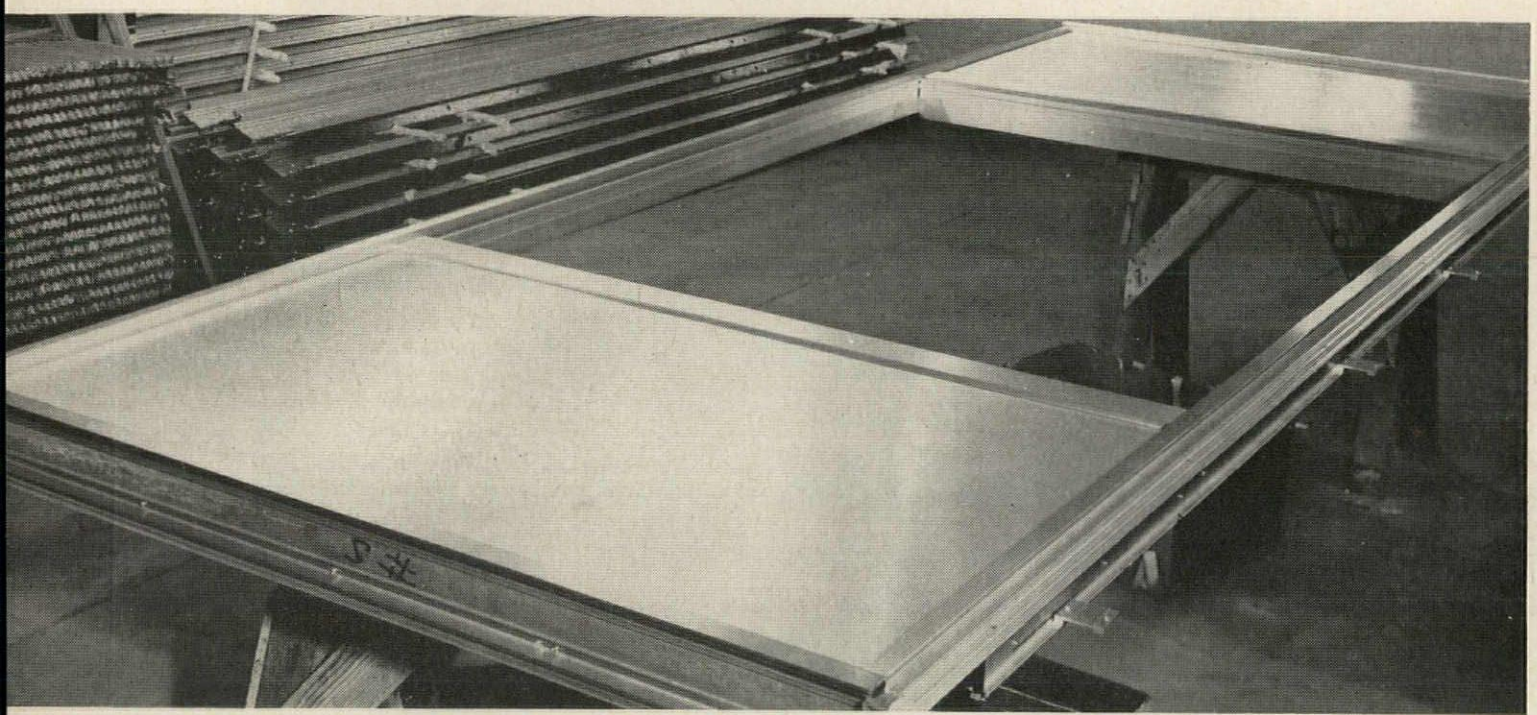

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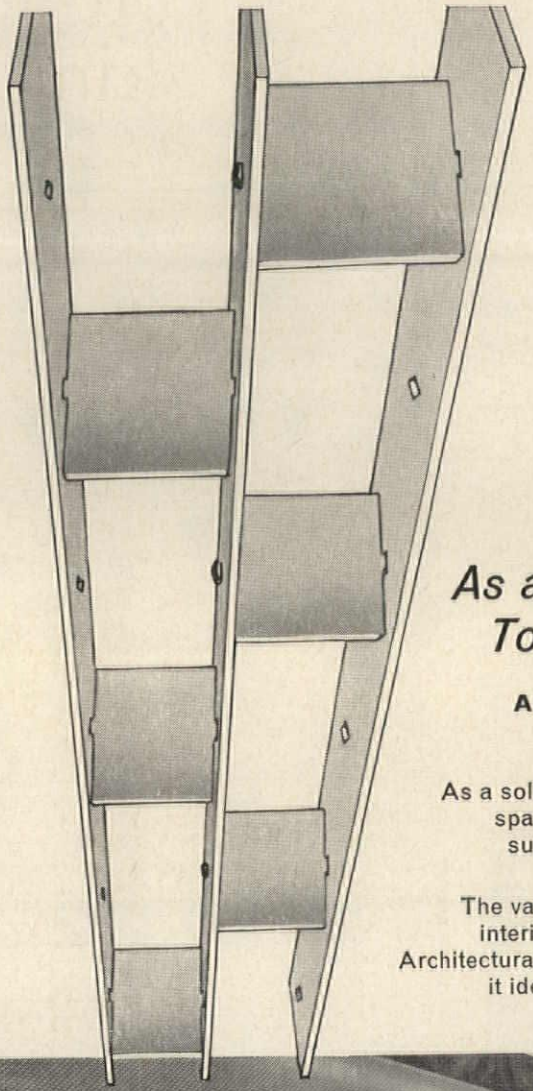

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Washington Report

continued from page 264

tor's schedule. But he added quickly that quality was not to be sacrificed.

Otherwise, the architect is not to be inhibited in any degree. Director Minto explained that deviation from the Section 231 MPS will be considered by Washington on the basis of individual merit. In accepting projects, Administrator Mason will evaluate progressive and imaginative site and building planning, he added.

The purpose of the direct loan program was described as the achievement of housing for the elderly at substantially lower rents than can be obtained under the regular FHA program.

"In order to achieve these ends, projects must be undertaken in an economical manner," Mr. Minto commented. "This will require the maximum use of new ideas in architectural designs, building materials, and construction methods."

The early plans called for each project submitted to follow a survey of intended occupancy to determine design characteristics. The applicant, or project sponsor, was expected to submit a design that conformed generally to the survey findings.

The law passed by Congress provides that the construction will be done in an economical manner and shall not be of elaborate or extravagant design or materials.

By mid-September, a short time after HHFA had announced it was substantially ready to start the program (though there had been no decision on the standards), there were four firm applications on hand for the experimental housing for the elderly. There had been 950 inquiries about the newest program, and the Minto office had sent out 158 application forms in answer to requests.

Mr. Mason's advisory committee on this type of housing met with him September 15 and suggested that the "humanitarian" approach to the construction of this shelter was more important than the "cost" aspect. Sociological considerations, with thorough community education on this point, should involve community services so important to the elderly, said a report from this closed meeting.

"We should not make these projects too bare-bones," one spokesman said.

continued on page 280

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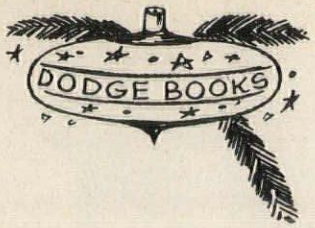

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types, characteristics, and functions

by Carl D. Shields

A practical engineering approach to boilers and their selection, application, and performance. Intended to help all those involved in the specification, design, installation, and operation of all types of boilers, this book contains 32 chapters organized within 6 major sections: Boiler Classification, Boiler Design, Steam Generating Equipment, Boiler Construction, Industry Regulation, and Industry Status.
This up-to-date reference covers the experience of the entire industry. It will have specific appeal to stationary engineers, operators, installers, maintenance personnel, and buyers, sellers, and owners of boilers. Over 500 drawings and photographs. (Nov. 1960)

566 pages, 7⅛ x 10, $15.00

INDUSTRIAL BUILDING DETAILS

by Duane F. Roycraft

The only master reference of architectural details for the industrial building designer. It presents over 1,500 detail drawings which have been proved in use by architects, draftsmen, and engineers. Each is sharp and clear, drawn precisely to scale, and is large enough to trace or project for direct use or adaptation.
Every part of the contemporary industrial building is shown —from roofs and parapets to catch basins and manholes. Text is kept to a minimum, appearing only to introduce each of the seventeen major sections. Will save many man hours of tedious searching through files and folders. (1959)

352 pages, 8¾ x 11⅝, $12.75

ELECTRICAL EFFICIENCY IN INDUSTRIAL PLANTS

by E. S. Lincoln

A practical engineering guide to lower power costs. Designed to eliminate power waste and its resultant drain on industrial productivity. The author shows in detail the practical methods of making surveys of power load, voltage, and electrical protection —complete with a discussion of the necessary instruments and their use.
An analysis of power costs is included as well as all the elements in the distribution system. Such troublesome matters as power factor, choice of voltage, and equipment maintenance are presented directly and simply. Supplemented by helpful illustrations and tables. (1959)

288 pages, 6 x 9, $9.50

PLANT ENGINEERING PRACTICE

by the editors of Plant Engineering

The mammoth new reference work of plant operation and maintenance. Presents 226 separate case studies, each of which is designed to save time, work and money for the plant engineer and his staff, and architects and engineers doing industrial building work.
Written by over 100 experts in their fields, it is virtually an encyclopedia of practical, hard-earned experience. Organized into 13 sections: Sites and Layouts, Construction, Housekeeping and Safety, Materials, Handling, Maintenance, Paints and Protective Coatings, Mechanical Power and Piping, Electric Power, Lighting, Utilities, Heating and Air Conditioning, Quality Control, Shop-work. 12-page master index. Over 800 illustrations. (1958)

704 pages, 8¾ x 11⅝, $18.50

GROUNDS MAINTENANCE HANDBOOK

(Second Edition)

by Herbert S. Conover

The only comprehensive reference work of grounds development and maintenance. Contains all the detailed information you need to plan, supervise and maintain grounds of every type and size.
It is a big book (503 pages), and fully illustrated (over 175 illustrations). It consolidates all the needed information on planning, turf maintenance, planting and care of trees ad shrubs, equipment selection, control of weeds, insects and diseases, materials specifications and erosion control. Throughout the book practical, economical methods and materials are stressed. (1958)

503 pages, 6 x 9, $10.75

BUILDINGS FOR INDUSTRY

by the editors of Architectural Record

An outstanding selection of new industrial buildings, together with a series of informative studies on trends and factors in present-day industrial building design. 74 projects from all over the United States, as well as a few from overseas, are completely analyzed. Explains choice of site, plan, lighting, colors, loading docks and rail spurs, employee facilities, and many more features. Over 700 illustrations. (1957)

315 pages, 8¾ x 11⅝, $9.75

DODGE BOOKS

TIME-SAVER STANDARDS
(Third Edition)

by the editors of Architectural Record

Architects, engineers, designers, builders, and other specialists in the building field consider this book the one indispensable reference to every question of building principle, practice, and procedure. As a daily working tool on construction projects of every size and description, *Time-Saver Standards* has saved endless hours of research time, immeasurable extra work, and many costly mistakes, as well as millions of dollars on construction costs. (1954)

888 pages, 8½ x 11, $13.75

COMMERCIAL BUILDINGS

by the editors of Architectural Record

Office buildings, banks, transportation buildings, TV studios, and theatres are shown here in photographs, plans and drawings. (1954)

406 pages, 8¾ x 11⅝, $10.50

RELIGIOUS BUILDINGS FOR TODAY

by the editors of Architectural Record

Presents 35 new religious buildings, each of which is the work of a gifted architect collaborating with a clergyman and building committee who were not afraid to break with the architectural past. Protestant, Catholic and Jewish buildings are shown, from all parts of the United States as well as Europe and Asia. Each is shown in brilliant photographs, and plans and drawings. There are several other sections. One is called "Worship and the Arts." It explores the relationship between eternity and the present, as it pertains to the design of churches. There follow six articles on worship and the arts in different traditions—Jewish, Catholic, Orthodox, Episcopal, Reformed, and Lutheran. Also contains cogent studies by leading architects, clergymen, and secular authorities. Over 300 illustrations. (1957)

184 pages, 8¾ x 11⅝, $7.95

ERIC MENDELSOHN **(Second Edition)**

by Arnold Whittick

A thoughtful, handsomely-illustrated study of the works and life of one of the outstanding architects of our time. (1956)

219 pages, 7¼ x 10⅛, $9.85

TIMBER DESIGN AND CONSTRUCTION HANDBOOK

prepared by Timber Engineering Company

The complete master handbook of timber design and construction written and edited by 34 engineers and timber specialists. Serves two purposes: it is a comprehensive timber design reference, and it is also a practical field handbook. Offers every bit of essential information needed to develop and construct the best wood structures.

The first portion covers the fundamental structural characteristics of wood. Lists types, grades, and ways of preservation. The next ten chapters analyze preliminary design considerations, design details, fabrication and erection. The final chapter presents 129 pages of design and engineering specifications and precise tabular data allowing easy conversion for particular grades and species. (1956)

622 pages, 6 x 9, $12.75

HOW TO BUILD MODERN FURNITURE
(Second Edition)

by Mario Dal Fabbro

Clear, easy-to-follow instructions for building your own professional quality furniture, plus step-by-step plans for 53 contemporary pieces, by a famous furniture designer.

The first section gives instruction in basic woodworking operations, selection of materials, joints, assembly, wood finishing, and upholstery. Standard measurements of all furniture pieces are listed. The second section presents 53 separate pieces: hi-fi cabinets, chests, tables, chairs, beds, and many others. Text is brief and clear—unique exploded diagrams do most of the teaching. Each project contains a list of materials and directions for assembly. Over 1200 diagrams and drawings. (1957)

224 pages, 7⅛ x 9¾, $4.95

HOW TO MAKE BUILT-IN FURNITURE

by Mario Dal Fabbro

Step-by-step instructions for constructing 102 contemporary built-ins. This practical book presents unique sequence plans and illustrations which virtually eliminate the errors and miscalculations which arise in these projects. All pieces can be built from standard grades of wood using common woodworking tools. Included are pieces for living room, kitchens, bedrooms, playrooms, attics and cellars. Hundreds of variations and adaptations can be made from these plans, and the book is also an excellent source of data for designing your own built-ins. (1955)

259 pages, 7⅛ x 9¾, $6.95

BUILDINGS FOR RESEARCH

by the editors of Architectural Record

This timely book analyzes in detail a wide variety of research facilities built by industry, government agencies, and universities during the past seven years—44 separate projects. The installations shown are in these fields: Nuclear research, Industrial engineering, Biological research, Electronics and electrical engineering, and Institutional laboratories.

Opens with a general discussion of the principles of laboratory design, with emphasis on the ingredients common to all laboratories. Every point is made clearer by the inclusion of numerous photographs, plans, diagrams—over 500 illustrations in all. (1958)

232 pages, 8¾ x 11⅝, $9.50

DESIGN OF PRESTRESSED CONCRETE BEAMS

by William H. Connolly

A rational and clear-cut method for the design of prestressed and posttensioned concrete members. Through the use of design tables, emphasis is put on the reduction of the tedious trial and error normally involved in design problems. These tables are presented with explicit instructions that make this book uniquely practical.

Selecting the cross-section is easily the most time-consuming and, for many, the most difficult aspect of prestressed concrete design. Connolly, a practicing engineer, approaches this problem in a logical, straight-forward manner in this new book.

Well organized, with lucid explanations, it treats the problem of design from the practical point of view—eliminating unnecessary frills. Contains approximately 90 illustrations of stress diagrams and cross-sections. (Nov. 1960)

256 pages, 6 x 9, $11.50

REINFORCED CONCRETE COLUMN TABLES, ULTIMATE STRENGTH DESIGN

by Hugh F. Fenlon

A time-saving sourcebook specially designed for the practicing structural engineer, architect and designer. Through the use of practical tables, the column designer can confidently select reinforced concrete columns for every set of conditions he is likely to encounter.

A relatively new approach to the design of concrete members, ultimate strength takes into account the fact that concrete has certain plastic characteristics which makes it stronger than it has appeared by conventional design methods. Introductory text explains the simple nature of this technique and 300 tables show over 8,500 column designs computed in accordance with the ACI building code. Tables cover round columns up to 36" in diameter and rectangular columns up to 24" x 24" in four material strengths. Pages are edge-indexed for quick reference. (1960)

316 pages, 8 x 11, $15.00

THE STRUCTURES OF EDUARDO TORROJA
an autobiography of engineering accomplishment

Eduardo Torroja, famous Spanish architect-engineer, has written a book which illustrates, describes, and explains the 30 most significant accomplishments of his career. These structures include bridges, dams, hangars, sports arenas, factories and churches. Many are of reinforced concrete—for Torroja's most unusual engineering feats are in prestressed and post-tensioned concrete—but wood, brick, and steel are used as well.

The book shows the author's reasoning in arriving at the design of each structure, and reveals his unusual building philosophy. Engineering details are given. There is a profusion of photographs, plans and drawings—over 275 in all. (1958)

208 pages, 7 x 9¾, $8.50

STRUCTURES

by Pier Luigi Nervi

Pier Luigi Nervi of Rome draws on over 30 years of experience as architect, engineer, and builder. Contains much valuable information on the properties of Ferro-cemento, which is a type of reinforced concrete developed by the author and used by him in the construction of some of the largest and most beautiful thin-shell concrete structures in the world.
Alternately practcial and philosophical, the book considers such varied subjects as architect-client relations, training of designers and builders, theory of structures, and building in reinforced concrete. Contains photographs of all of Nervi's major works, as well as numerous sketches and plans. (1956)

118 pages, 7¼ x 9⅞, $6.95

ADVENTURES IN ARCHITECTURE

by Whitney S. Stoddard

The exciting story of the rebuilding and expansion of 100-year old St. John's monastery in Minnesota. The client is the Benedictine order of monks. The architect is Marcel Breuer. How he was selected, the rapport established between him and the building committee, and the flexible master-plan they drew is all explained here. The text has a narrative quality, and the 100 photographs and drawings cover every phase of the project. (1958)

128 pages, 8½ x 11, $8.50

THE CHAPEL AT RONCHAMP

by LeCorbusier

LeCorbusier's own account and explanation of the chapel of Notre Dame du Haut, which is one of the truly revolutionary buildings of our time. He presents the buildings in its 3 facets: as a place of worship, as a work of art, and as a practical exercise in architecture and construction. Contains notes and sketches in LeCorbusier's own handwriting. (1957)

136 pages, 7¾ x 8⅛, $5.50

RECORD HOUSES OF 1960

by the editors of Architectural Record

The fifth annual volume of the year's outstanding contemporary houses. After considering hundreds of architect-designed houses, the editors of *Architectural Record* selected the 20 presented here. Representative of contemporary architecture's exceptional adaptability to the cultural, social, and day-to-day living needs of the American family, they cover every climatic region of the country—from New Hampshire to Hawaii. Their price range spotlights the dramatic capabilities of the architect to serve the living needs and aspirations of families with widely varying budgets.
Presentation of each house includes: overall floor plan, accurately scaled, complete photographic coverage of exterior and interior, brief text telling why the architect designed as he did, and the equipment and materials of his choice. Half of the residences are shown in full color, one outstanding residence is featured in a special, lengthier spread. (1960)

226 pages, 8¾ x 11⅝, $2.95

THE SECOND TREASURY OF CONTEMPORARY HOUSES

by the editors of Architectural Record

A magnificent collection of 44 contemporary houses superbly described by text, photographs, drawings, and plans. They are examples of the spirit of originality and individuality that is becoming ever more important in mid-twentieth century architecture, and they are distinctive in the success with which they meet the physical and esthetic requirements of their owners. Selected from the outstanding *Record Houses* annuals of 1956, 1957 and 1958. Ranging from the inexpensive to the luxurious, and representing the various climates of this country, these houses will furnish a genuine treasury of ideas to architects, contractors, and layman alike. 8 pages in full color. (1959)

232 pages, 8¾ x 11⅝, $7.75

A TREASURY OF CONTEMPORARY HOUSES

by the editors of Architectural Record

Here are 50 contemporary houses designed by some of the world's leading architects; the ultimate in quality contemporary design. Most of the houses are depicted in 10 or more photographs, plans and drawings. The story behind each house is presented simply in its essentials, with no involved technical language. (1954)

215 pages, 8¾ x 11⅝, $6.95

82 DISTINCTIVE HOUSES

selected from Architectural Record

82 of the finest houses published in *Architectural Record* in recent years. Each house is depicted in superb interior and exterior photographs which dramatize its design and convey its originality. These houses represent a wide range of localities, living habits, personal tastes, and sites. The last 100 pages contain special Time-Saver Standards data for houses. (1952)

437 pages, 8¾ x 11⅜, $8.50

THE ART OF HOME LANDSCAPING

by Garret Eckbo

Here is the book which helps the user recognize his landscaping needs, plan them on paper, substitute pencil work for shovel work, and eventually provide useful, beautiful outdoor space to the limits of his lot. Especially valuable to the new home buyer or builder, who cannot afford the services of a landscape architect, and cannot afford to make costly mistakes in his basic planning.
Covers in detail such topics as: Recognizing your needs, Plans, Scheduling work and money, Screenings, Walls, Drainage, Soil conditions, Solar orientation, Weather considerations, and many more. Profusely illustrated. (1956)

256 pages, 6⅝ x 9¾, $5.95

LANDSCAPE FOR LIVING

by Garret Eckbo

The professional-level study of the purposes, problems and practices of landscape design (1950)

288 pages, 8 x 10½, $10.00

LANDSCAPE ARCHITECTURE:

the shaping of man's natural environment

by John O. Simonds

An articulate plea for intelligent landscape planning by a landscape architect who has drawn upon his years of study and worldwide travel, his practice, and his capacity for direct, clear statement. It explains what sensitive and sensible landscape planning is, why and how it can enrich our lives, and what we have lost through neglecting it.
The author begins his discussion by surveying the fundamental considerations: man, nature, landscape character, natural and man-made forms, forces, and features. He proceeds in clear, painless, steps to build a framework encompassing the entire scope of landscape planning: Site Considerations, Organization of Spaces, Visual Aspects of Plan Arrangement, Circulation, Structures in the Landscape, and Planning the Region. Contains line drawings by the author, as well as a generous collection of photographs and sketches. (Dec. 1960)

288 pages, 8¾ x 11⅝, tent. $12.75

APARTMENTS AND DORMITORIES

by the editors of Architectural Record

In response to numerous requests for information on this building type, the editors of *Architectural Record* have selected 48 superior examples of apartment houses, college residence halls, and other multiple dwellings, designed by some of the world's leading architects. The buildings range in size from two-family houses to vast housing projects.
In addition to the buildings, there is a section containing useful technical information, and a series of studies on trends in apartment buildings and community development. Over 250 illustrations. (1958)

238 pages, 8¾ x 11⅝, $8.95

Washington Report

continued from page 272

There was said to be agreement in the advisory group that officials must take a serious look at the shortage of trained persons in the project management field, and that the pilot housing should be of mixed types—congregate and individual living. There even was a suggestion that perhaps elderly housing should revert to the old "boarding house" concept. And it was reported that there is a growing sense of the need for housekeeping care for elderly tenants.

Casebook on College Building Promised by U.S. Study

One forthcoming project in the Office of Education program is publication of a booklet on the future use of existing college buildings, their rehabilitation, modernization, alteration, or expansion.

This is being undertaken through a contract with Walter A. Taylor, formerly head of the Division of Education and Research, American Institute of Architects, and now associated with Ohio University. He will prepare the manuscript for the text which will be published next summer.

An early outline of the subject matter indicates the booklet will lay heavy emphasis on architectural and engineering aspects of existing campus structures in the evaluation of their future use. The outline draft carried these major headings: (1) Introduction; (2) Present and Future Educational Programs and Their Building and Site Requirements; (3) Appraisal of Existing Buildings and Sites; (4) Reconciliation of Program Requirements with Existing Facilities and Deciding Upon Next Steps; and (5) Appendices which would include a glossary of terms, general background considerations and information on property records, codes, architectural services and documents, etc.

The division is also working on a campus planning casebook which will detail the typical major construction problems facing any institution needing more space.

Most of the 17 chapters of this case book will be written by experts outside of government, those who have been through the experience of

continued on page 284

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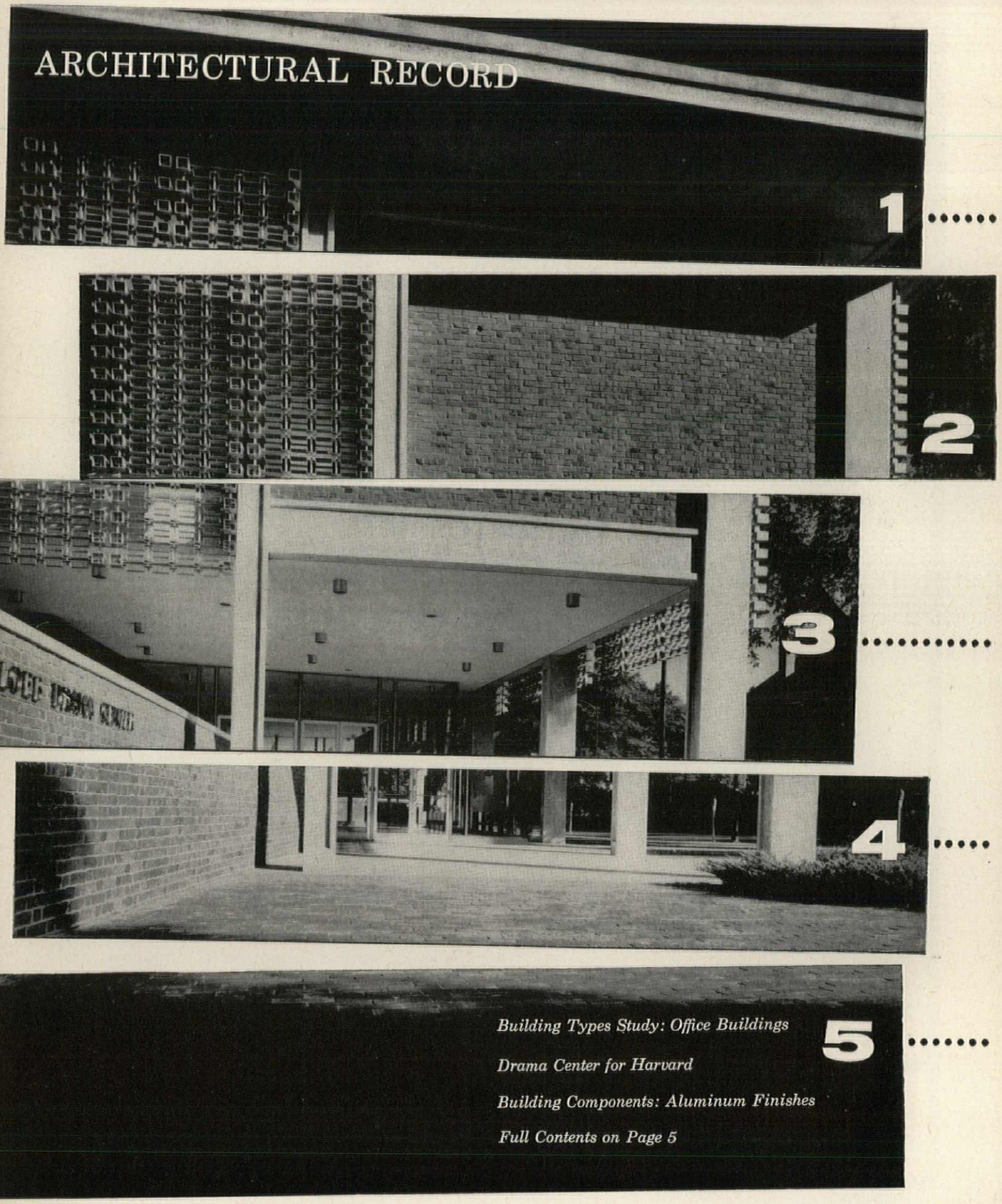

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Architectural Record publishes more editorial pages than any other magazine in its field—all of them edited *specifically* for architects and engineers! And only the Record is

- timed and balanced with the aid of Dodge Reports to be of maximum value to architects and engineers in terms of the work on their boards;
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Architects and engineers have voted *Architectural Record* their preferred architectural magazine in 146 out of 161 studies sponsored by building product manufacturers and their advertising agencies.

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Over 30,000 architects and engineers pay to read the Record (19,391 architects; 10,741 engineers). And the Record's renewal rate is the best in its field by far!

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Over 89% of all architect-planned building, nonresidential and residential, is in the hands of the Record's architect and engineer subscribers—a fact documented by Dodge Reports.

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For the 14th consecutive year more building product advertisers are providing architects and engineers with more pages of advertised product information in *Architectural Record* than in any other magazine. The Record's margin of leadership: over 60 per cent!

Architectural Record

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"stimulus to creative architectural and engineering design"

Washington Report

continued from page 280

expanding a university or college.

The book definitely will advise local school officials faced with building projects to consult private architects and engineers early. This publication, it is felt, will be most helpful to local school officials, citizen committees, architects, state and local governing bodies, and those established institutions that do not have planning specialists on their staffs.

The proposed case studies will be under the following chapter headings with the author institution shown wherever it has been selected (first five chapters are introductory): Chapter 6—Planning and building a new public four-year college (University of Southern Florida at Tampa); Chapter 7—Planning and building a new private four-year college (Methodist College, Fayetteville, North Carolina); Chapter 8—Planning and building a new public junior college (South Plains College at Levelland, Texas); Chapter 9—Planning and building a new private junior college; Chapter 10—Planning and building a new junior college with the express purpose, when feasible, to become a four-year college (Delta College, Saginaw, Mich.); Chapter 11—Planning and building for the consolidation of two or more institutions (Consolidated Presbyterian College, Laurinburg, North Carolina); Chapter 12—Moving an established private institution to a new site (Howard College, Birmingham, Alabama); Chapter 13—Moving an established public institution to a new site; Chapter 14—Expanding an existing institution through an urban renewal project; Chapter 15—Expanding an existing institution where space is limited; Chapter 16—Expanding an existing institution where space is available; Chapter 17—Establishing a college in part in facilities not planned for a higher education institution.

A part of the suggested framework for each of these studies is the selection of an architect. The outline asks three questions under this subhead of steps in planning:

1. What weight was given to previous experience with college construction?
2. What weight to local loyalty?
3. What other factors contributed?

ARCHITECTURAL RECORD

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ABBREVIATIONS: BTS—Building Types Study; AE—Architectural Engineering; TSS—Time-Saver Standards; BC—Building Components.

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J

K

L

M

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Index to Advertising

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