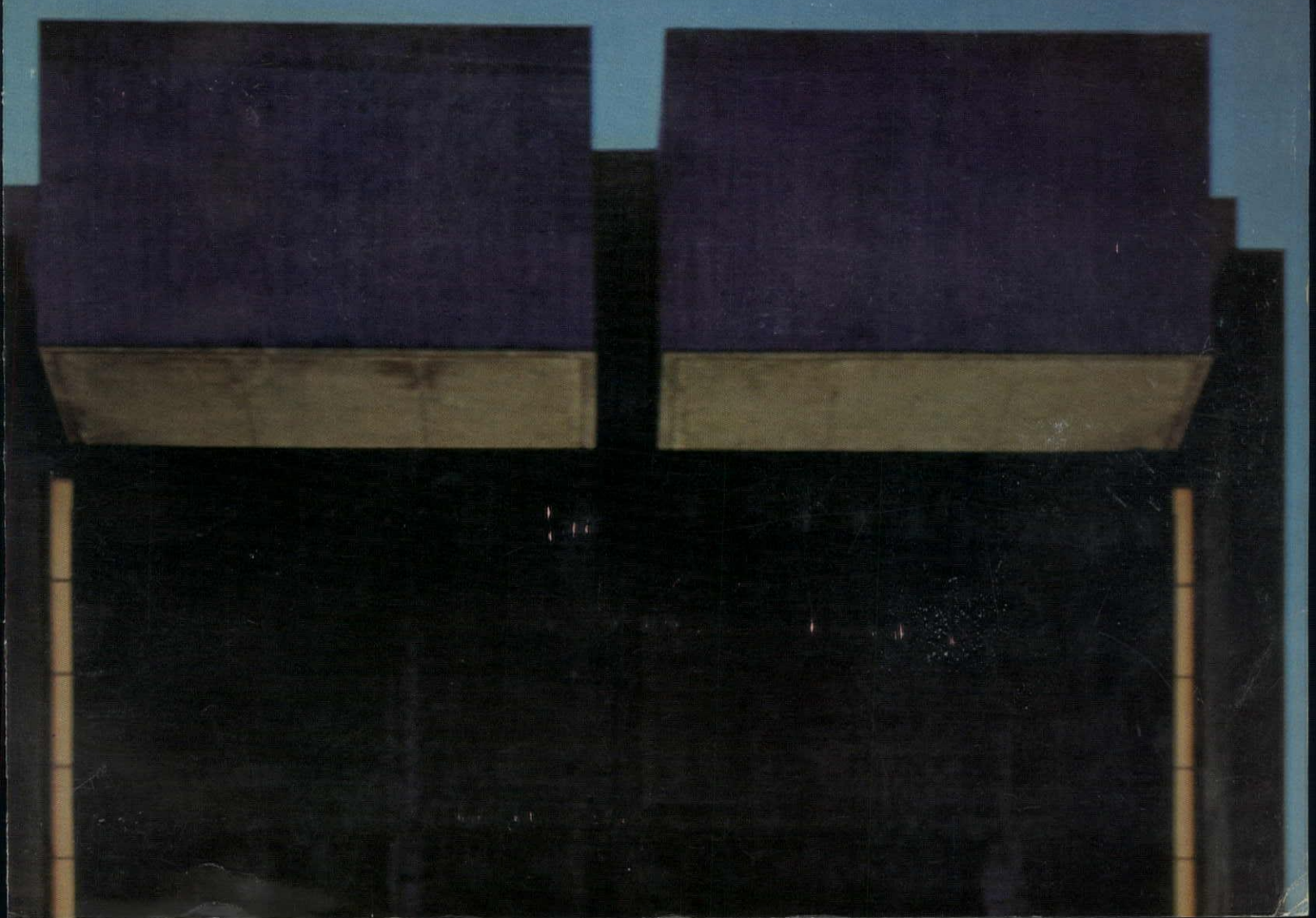
September 1964 **PROGRESSIVE ARCHITECTURE**



Installation: Britt's Department Store, Alhambra, Calif.

Architect: Carl Maston, Los Angeles

Floor shown: V-423 Autumn Haze

Creative styling: an inherent quality of Azrock floors.

Good floor design need not be sacrificed for superior performance under heavy traffic, as demonstrated by the Azrock vinyl asbestos floors* in service at Britt's Department Store, Alhambra, California. Scientifically planned for shopper convenience, Britt's has floors of Azrock Premiere Series — the high-performance resilient flooring with patterning through the thickness of the tile. For styling and durability, there's nothing quite like Premiere.

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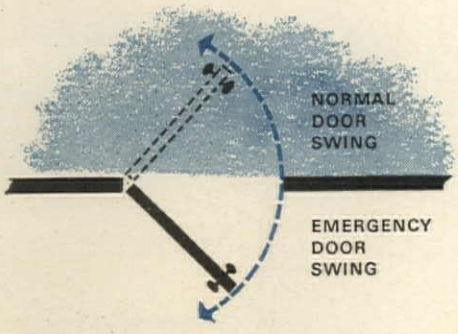
Release spring-action latch with finger-tip pressure to swing door in emergency direction. The stop resets automatically.



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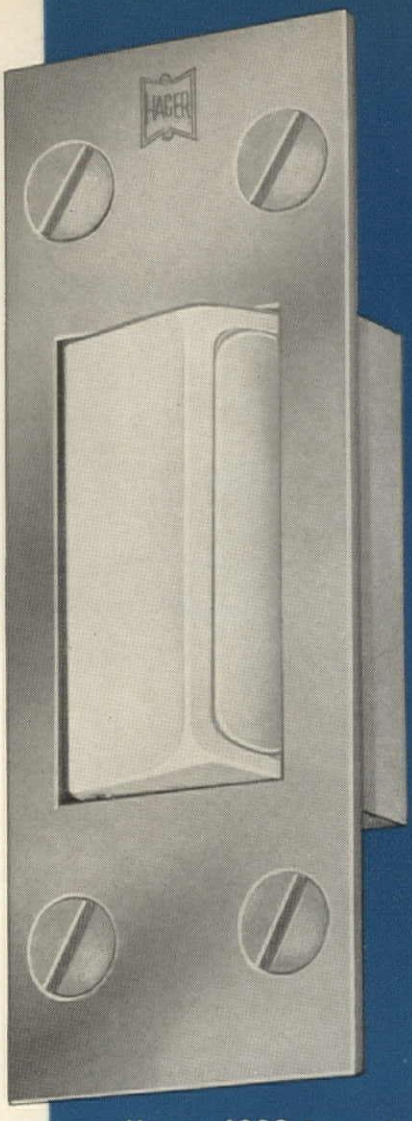
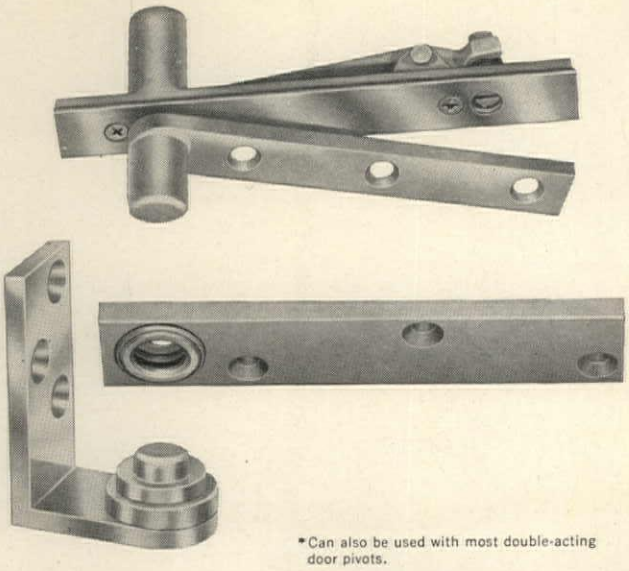
- **PATIENTS ROOMS**
- **NURSING HOMES**
- **CONVALESCING HOMES**
- **PRIVATE BATHROOMS**



Hager 400S Forged brass mounting plate with Satin Bronze or Chromium Plated finish. Packed 1 to box with machine screws.



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Top Pivot Assembly is cast iron equipped with a walking beam operated by a lever for easy installation. Bottom jamb bracket is cast brass. Bottom door plate is wrought steel with ball-bearing pivot sleeve. Regularly packed with wood screws for door and machine screws for jamb.

*Can also be used with most double-acting door pivots.

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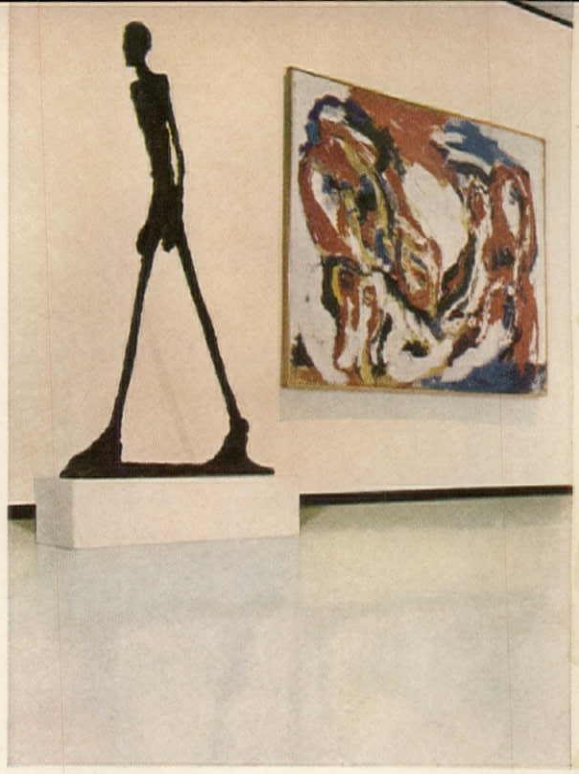
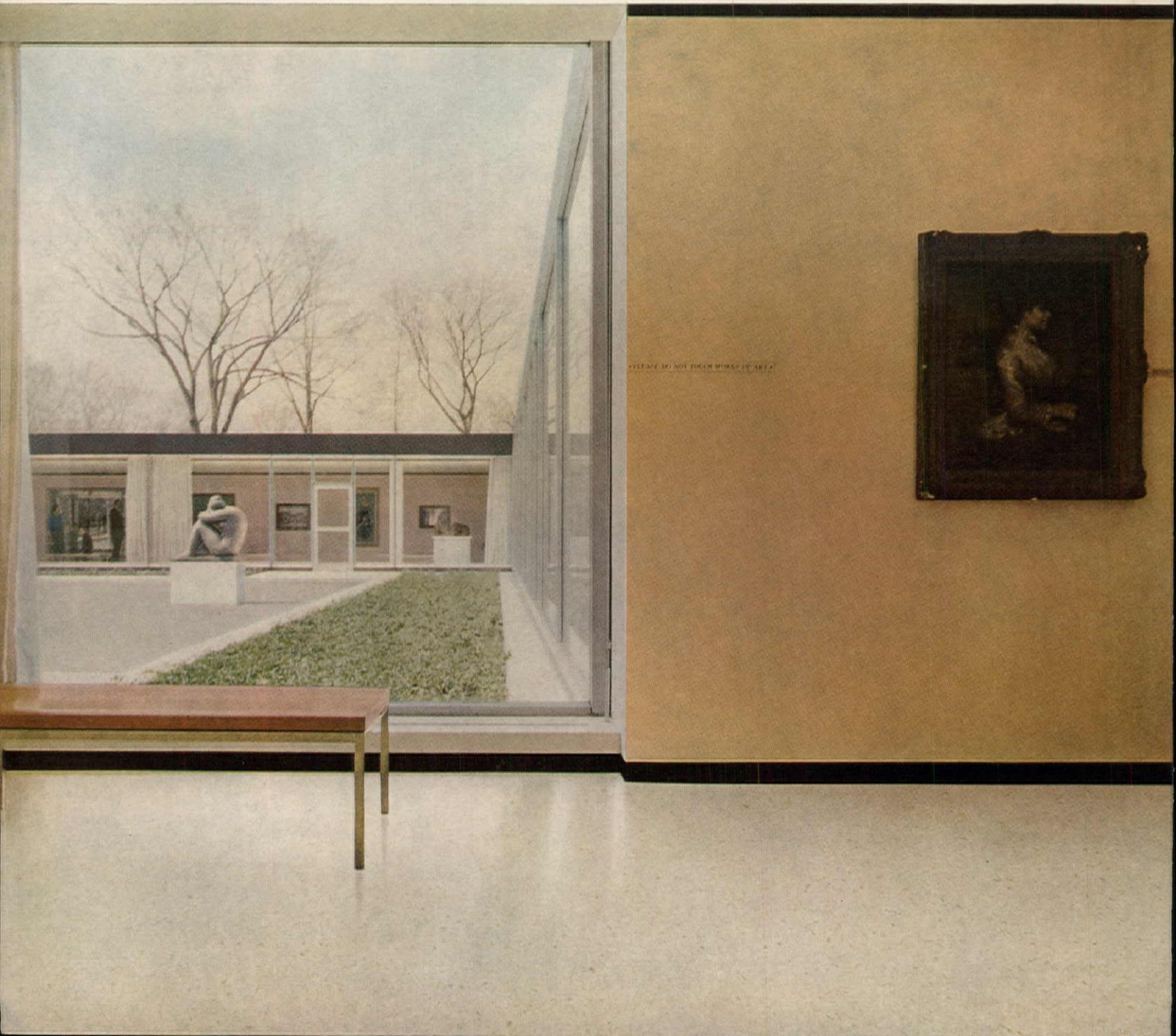
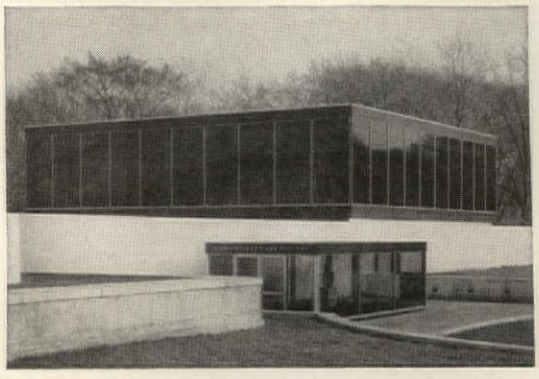




Armstrong makes every kind of resilient floor. The best is the one that suits your design.

Albright-Knox Art Gallery, Buffalo, N.Y.
Architects: Skidmore, Owings & Merrill.



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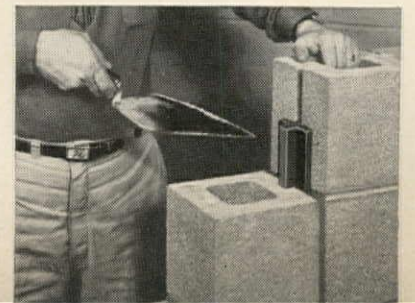

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THIS MONTH IN P/A

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VOLUME XLV, No. 9

Cover DETAIL OF FAÇADE, University Reformed Church (p. 186)
Photo: Balthazar

Frontispiece DESIGN FOR COPPER-PLATED DOORS, Worcester Public Library, by Leslie A. Segal (p. 166)

VIEWS

The Berkeley Campus "Ark"

Dear Editor: Your brief "Passing of the Ark" [JULY 1964 P/A] by Dean Emeritus Wurster and Photographer Baer is the most exciting article I have yet seen in an architectural publication. Both do wonderous credit from different angles to a building which has meant as much to students of my generation as it did and surely always will do to those of Wurster's.

That Wurster should see the "Ark" as both a freshman and its last and greatest Dean, that they both should fight on together against finally insurmountable physical odds and retire as one, is a sadly touching finale.

GARY T. MOORE
Berkeley, Calif.

Dear Editor: A few remarks regarding your article "The Passing of the Ark" are in order. Although Morley Baer has done a creditable job, he has not photographed architecture. If, as Dean Wurster mentioned, "The lovely court . . . has been the center of student life . . . ," where are the students? What meaning does the abandoned corridor or the tomb-like lecture hall have when compared with the noisy, milling presence of the people who used to fill these spaces? Architecture is intended for people and as such is to be used and enjoyed. As individual compositions, Mr. Baer's photos are very fine, but as the expression of a once bustling community of students, it leaves much to be desired.

MELFORD LEONARD CHUDACOFF
Berkeley, Calif.

[The following letter was written by the same individual who authored the comments on Rudolph's A&A building in the JULY 1964 P/A, *in juxtaposition to remarks by Robert H. Mutrux.—ED.]*

Rudolph's A & A— A Piece of Pop Art?

Dear Editor: If Paul Rudolph's School of Art and Architecture were an isolated example of brutal and functionless architecture, one could shrug it off and forget about it. But it is not. On the contrary, it is proliferated by Corbu's disciples throughout the land, and what's worse, it is being acclaimed by critics and awarded first honors by professional juries.

What is this architectural beatnik stuff all about? Is it the new norm, a vogue or a passing fad? Is it what it is, so as to be contemporaneous with pop art, twist dance and aleatory music? Is it what it is because it reflects the current world turmoil, or does it perchance expose obscure and fuzzy thinking?

Mr. Mutrux implies in the JULY 1964 P/A that Rudolph's A & A is a masterpiece and goes on to explain that ". . . no building stands or falls on the basis of its day-to-day function . . . the A & A may be placed, with no false modesty, side by side with the cathedrals. . . . The Gothic cathedral [is] . . . notoriously badly heated, acoustically unsound, [and] lacking in elementary facilities . . . but apart and beyond these mundane deficiencies it 'leads'. . . . The A & A building is the sole product of a completely individual and highly gifted mind, working independently of his client, and with equal freedom from details that might detract from his purpose."

And what, may I ask, was Mr. Rudolph's purpose, aside from designing a malfunctioning school of art? Was it not his purpose by any chance to erect a monument to himself, not unlike Corbu's Ronchamp or Wright's Guggenheim Museum?

Mr. Mutrux mistakenly compares Michelangelo's Piéta and Beethoven's Ninth Symphony with Corbu's Ronchamp and Rudolph's A & A. Architecture may be the mother of all the arts, but the arts are not alone the mother of architecture—there are other elements involved.

John Ruskin wrote: "We require from buildings, as from men, two kinds of goodness: first doing the practical duty well, then that they be graceful and pleasing in doing it."

Ralph Walker put it more bluntly: "Architecture . . . is not mere playing with building blocks by little boys, it takes a man to develop an architecture of human relations." And Minoru Yamasaki observed: "Most of the great architecture of the past was built for monumental purposes—to impress or to awe the masses. Our democratic ideals need buildings that give us . . . a sense of happiness, peace, and serenity."

To my straightforward and frill-less mind architecture must: (1) function; (2) have aesthetic quality; (3) be structurally sound; and (4) enhance the environment.

The extent to which a given piece of architecture attains these four norms is a measure of its success.

Obfuscation, gobbledygook, abracadabra, and other nonsense will not add up to an architectural masterpiece—Messrs. Rudolph and Mutrux notwithstanding.

JOSHUA D. LOWENFISH
New York, N.Y.

Parking Facilities and the CBD

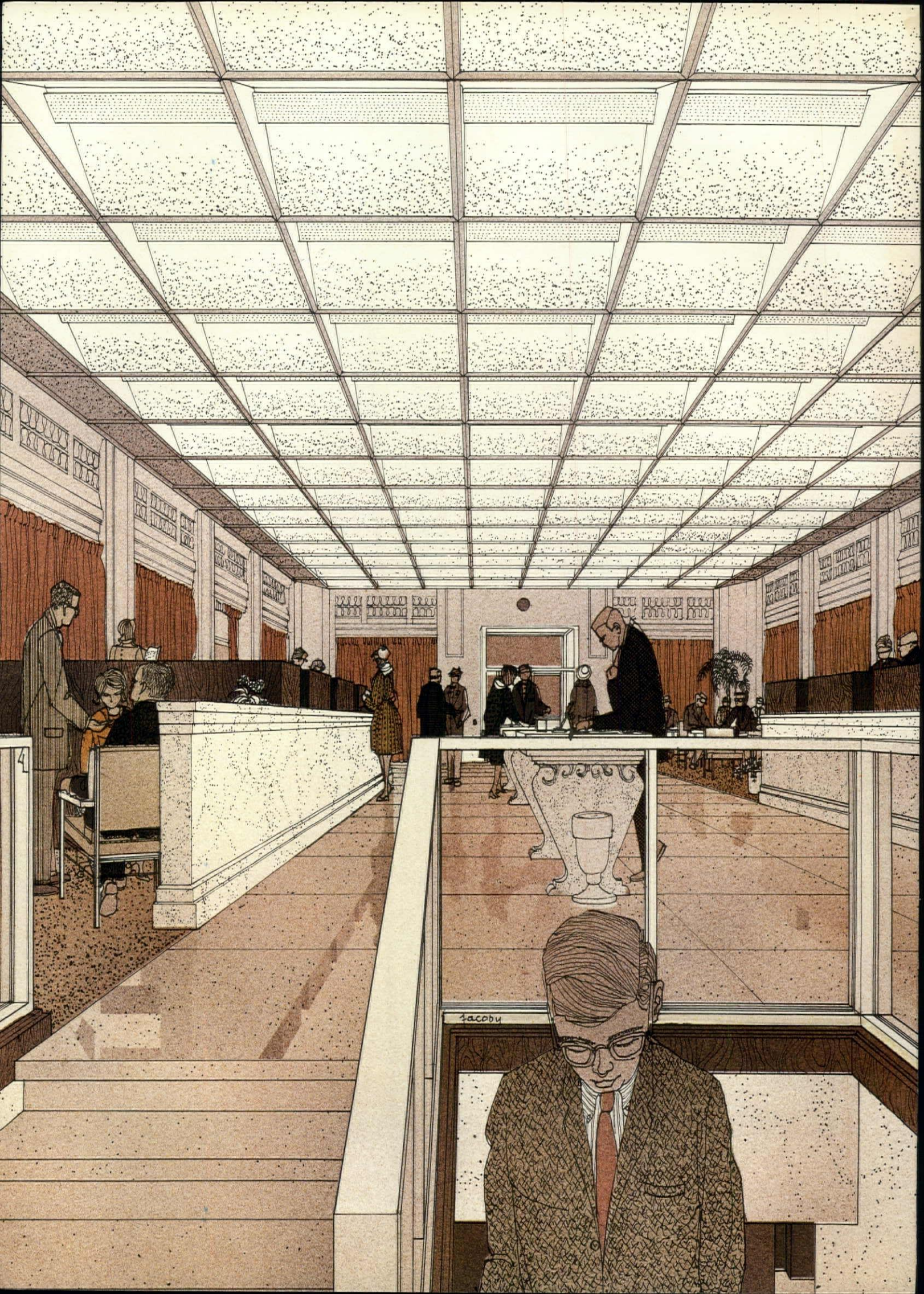
Dear Editor: Unashamedly this is a letter about the new garage in downtown Philadelphia [p. 74, MAY 1964 P/A]: I can agree that the façade of this parking structure is far from exciting. It is interesting, however, that the sponsors selected National Garages as the design consultant. Apparently they felt that a "specialist" in designing parking facilities (even though such a "specialist" was not an architect) could design a more practical facility than a member of our profession. While this is not an exciting building, it has an excellent plan and the operation is a success.

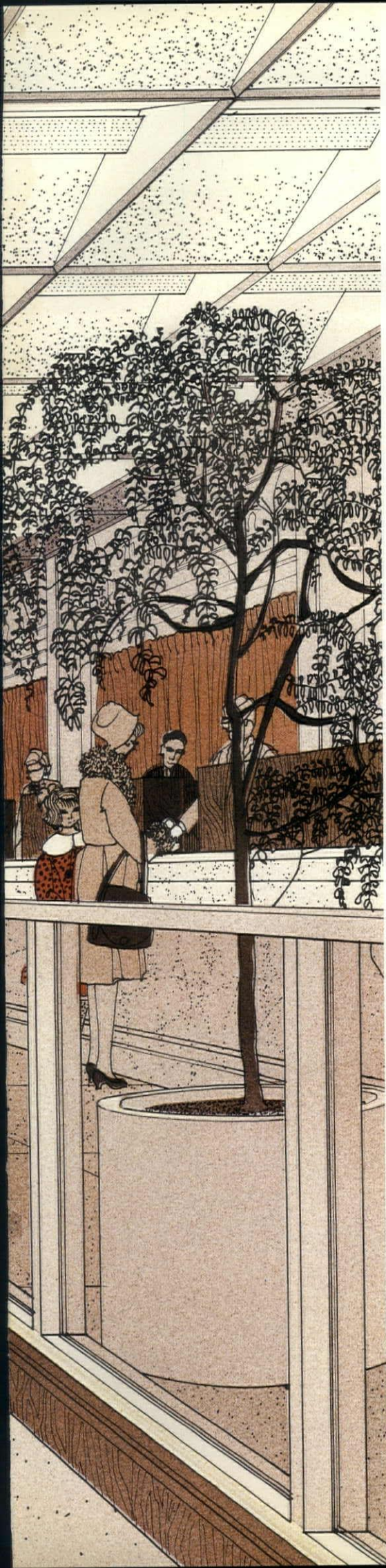
This, perhaps, is where the reporting side of architecture goes wrong. Your first reaction seems to favor the visual and ignore true function.

I was also intrigued by your statement: "The erection of such large parking facilities in center cities draws automotive traffic better left at the periphery of the CBD." While the suburbs are draining the downtown department stores of their daily volume, how can these institutions compete unless they encourage the suburbanite to return to the city? The cruel facts in Philadelphia show that despite excellent cooperation between the city and mass transit systems, the suburbanite does not come to the city in large numbers to shop. It is one thing for the planner to dream about mass transportation, but quite another to demand that one use mass transportation.

It is vital for every city to encourage the department stores to remain as the anchor of both retail and commercial activities. Philadelphia subsidizes certain travel between the periphery and downtown. Although this has helped, it is a mere drop in the bucket. Therefore, in Philadelphia, if the downtown department store wishes to remain downtown and compete with peripheral shopping activities, in my judgment, they are well advised to provide parking facilities.

ALEXANDER EWING
Philadelphia, Pa.


Jacoby



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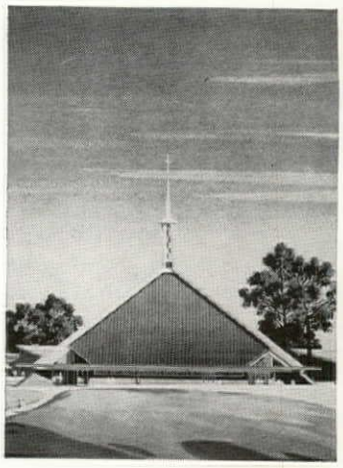

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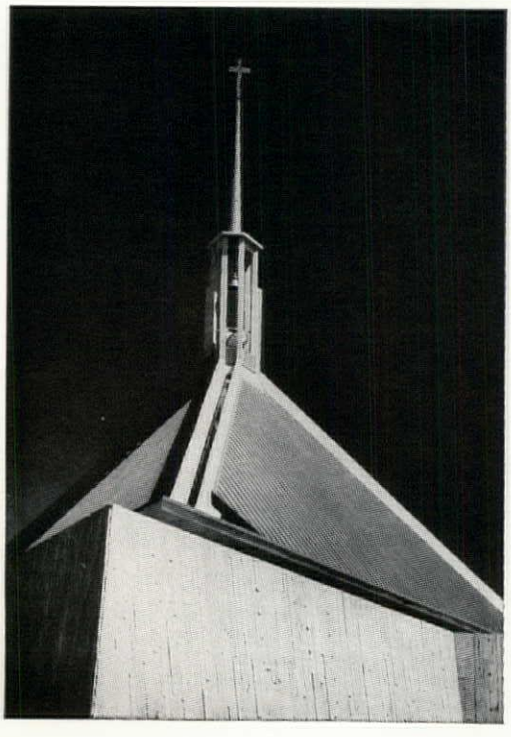

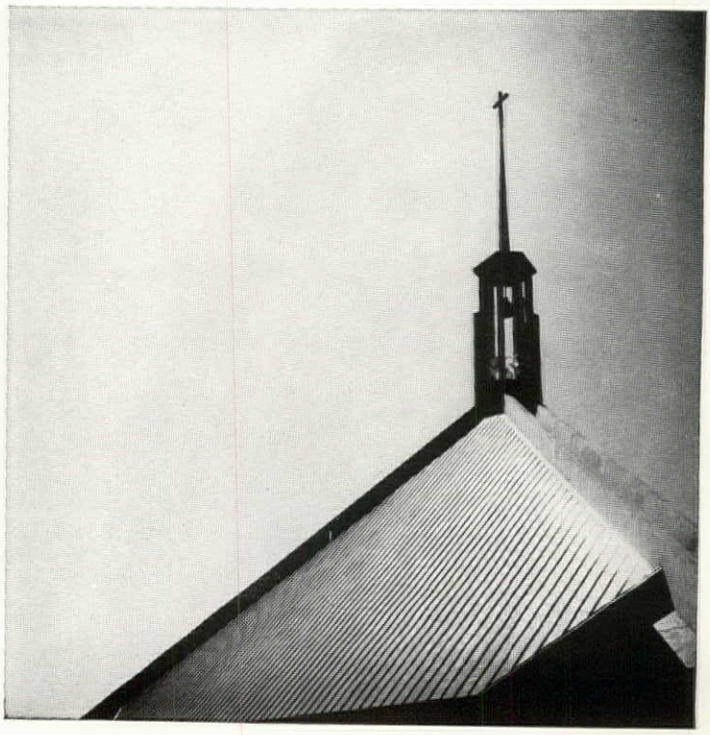

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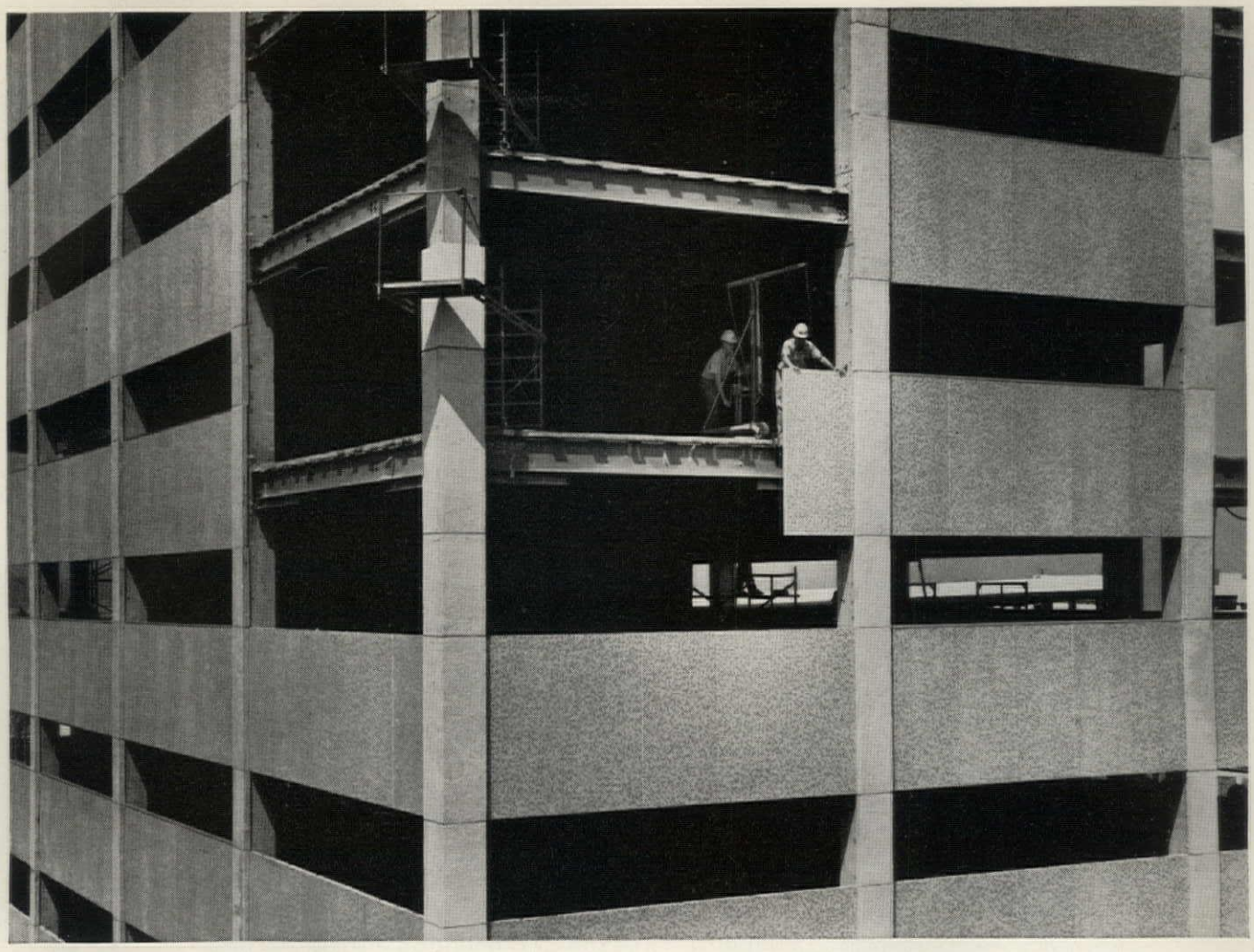

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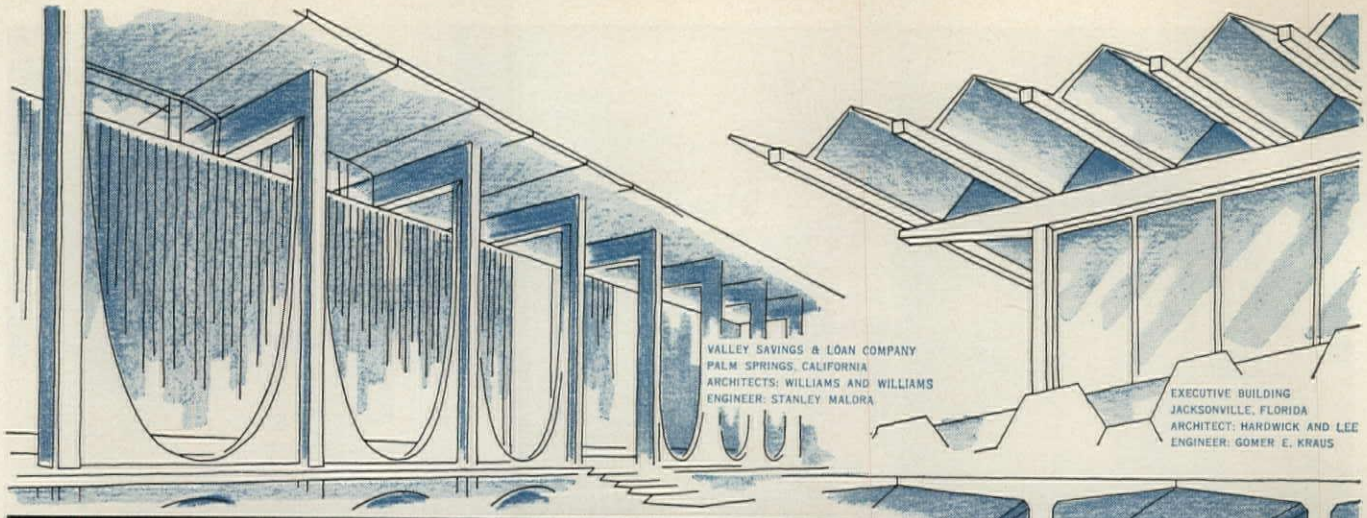

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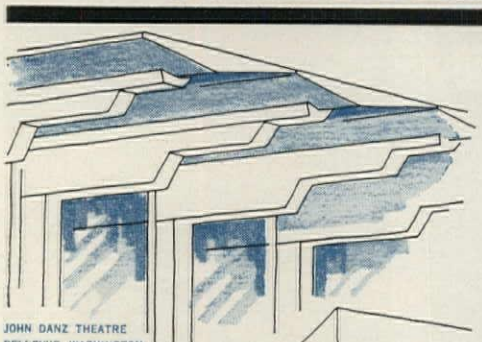

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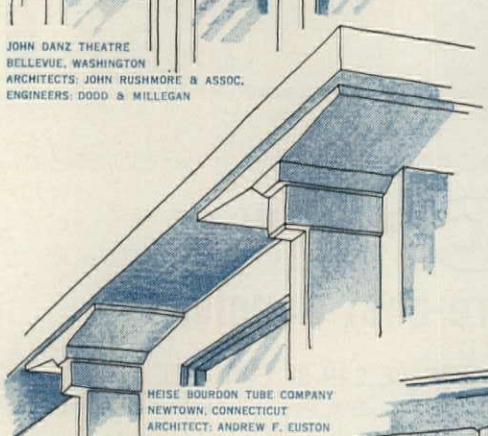

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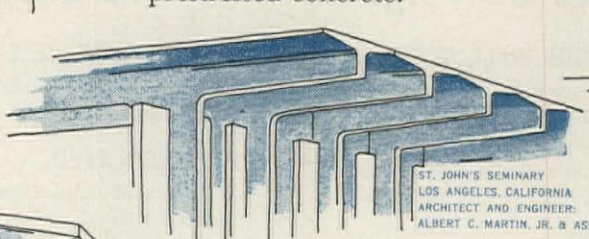

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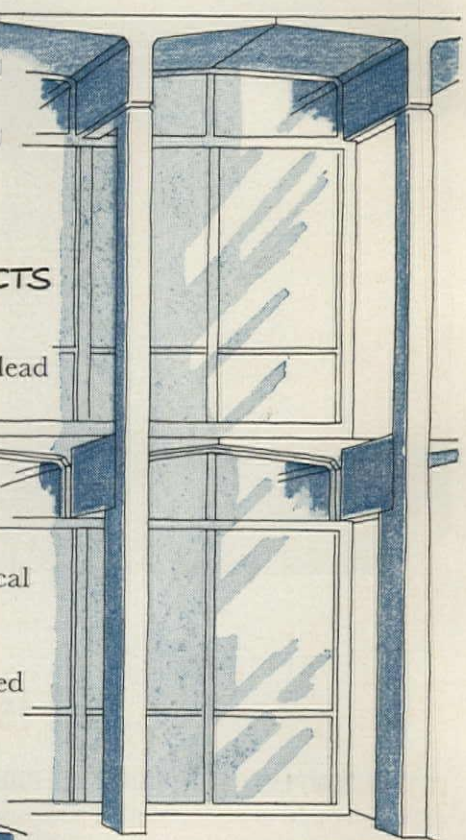

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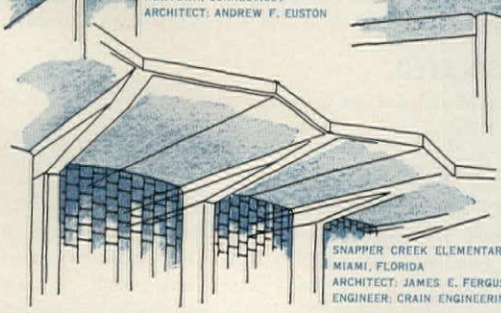

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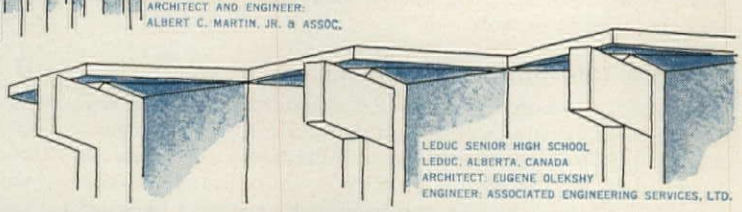

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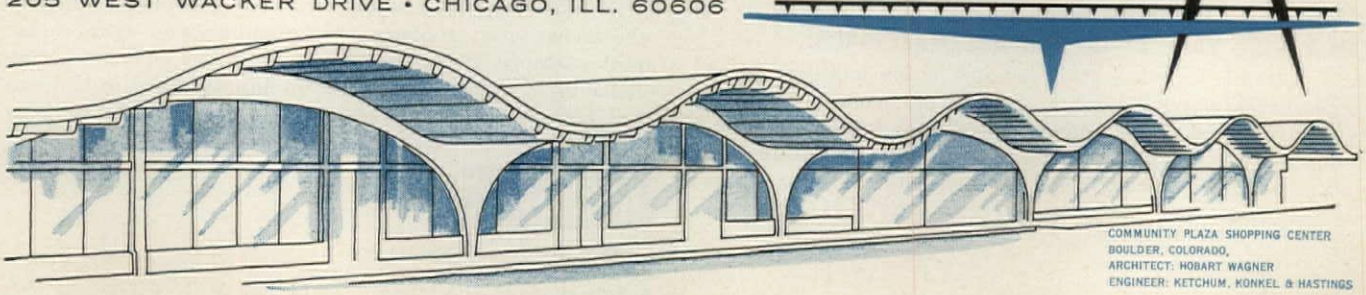

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WRITE FOR TECHNICAL BULLETIN MF-2

*Structural Clay Products Research Foundation.

For more information, turn to Reader Service card, circle No. 343

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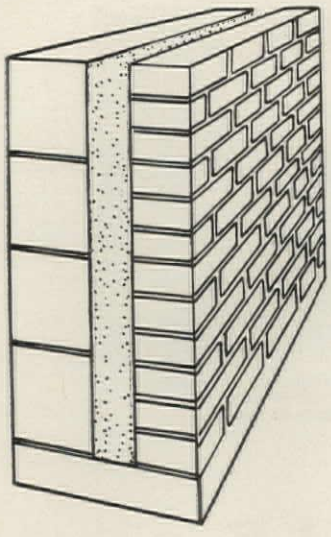

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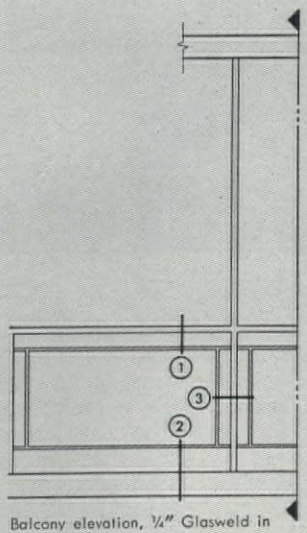
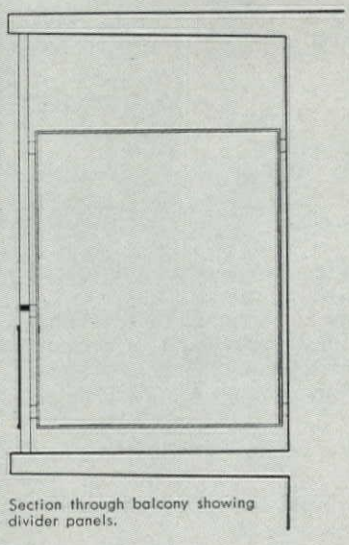
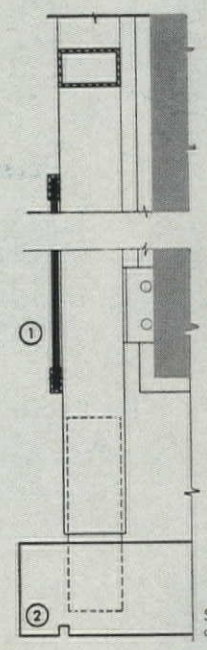
Permanent, maintenance-free color, strength, and imperviousness to weather make Weldwood® Glasweld® an excellent choice for balcony facing and divider panels.



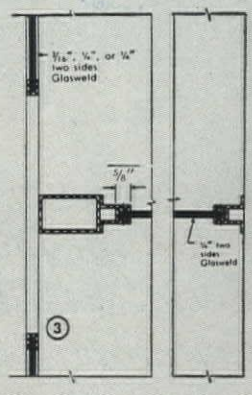
Balcony elevation, ¼" Glasweld in aluminum frame.



Section through balcony showing divider panels.



Section through rail showing divided connection.



Plan view of upright.

Balcony facings panels.
Balcony inserts employ 3/16" and ¼" Glasweld in metal sections on established centers to sustain impact. For large panel size facings use ¼", one-sided, or ¼" laminated-two-sides Glasweld.

Balcony dividers.
Glasweld ⅛" thick is installed back-to-back to form units of desired dimension. Consult your Weldwood Architectural Representative who can arrange for quotations by local fabricators. When economy is a factor, savings can be realized by utilizing stock size Glasweld sheets.

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GLASWELD®

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Glasweld is an autoclaved asbestos-reinforced exterior grade panel with a permanently colored mineral coating. Completely inert, it appears optically flat and is 100% incombustible (UL rating 0-0-0). Glasweld's wide range of non-fading colors can be used singly or in combinations; its great versatility makes it equally suitable for curtain walls, fascias, soffits, and fences, as well as for balcony facings. In addition to 48" x 96" and 48" x 120", Glasweld is now available on special order in sizes as large as 64⅝" x 126".

Come see us at the New York World's Fair—Better Living Building.

Left: Whitehall Apartments, Bethesda, Md. Architects: Cohen, Haft and Associates.

The radiant ceiling panels of the IRC System are finished in baked enamel for easy cleaning. There are no floor-mounted, wall-hung, or window-sill units to clean or to get in the way.

ENVIRONMENTAL CONTROL IN HOSPITALS

Designing to meet a medical facility's special conditions of temperature, humidity, air cleanliness and circulation

The environmental requirements of today's hospital increase the demand for total air conditioning. Thirty years ago, air conditioning a hospital was big news. In fact, air conditioning *anything* was new and exciting; the concept of a controlled indoor environment had just dawned.

Many basic ideas now common in air conditioning practice were born in that period. Force-fed by the pressure of great building programs, they matured and were refined into highly efficient systems. But they had their limitations.

The vast volume of air used to heat and cool a large building required extensive mechanical equipment and ductwork. Wet refrigerating coils had a bad habit of accumulating and propagating airborne contaminants. These deposits tended to develop into colonies of bacteria and other micro-organisms which passed into the air stream during the system's operation.

Great strides were made by filter designers to reduce this hazard. But one weakness of the filter remains: it has to be serviced regularly and faithfully by human beings — and is subject to consequences of their vagaries.

Need for a New Approach

The basic ideas of the 1930's were great in their day, but we are now in the mid-1960's. The need now is for an up-dated approach to hospital comfort control — one that takes into account the special conditions of the hospital.

Designing an air-conditioning system to satisfy these particular requirements differs from designing for other building types. Problems indigenous to hospitals are:

(1) The need for 100% exchange of air.
(2) Complete control of airborne contamination.
(3) Temperature, humidity, and air movement favorable to a patient's health and comfort.
(4) Cleanliness and ease of maintenance.
(5) Economy—both in first cost and in operation.

There is a new awareness of air conditioning as a contributing factor in sanitation, as well as comfort. Obviously, it is inconsistent to spend time and money to create aseptic conditions in surgery and other critical departments by sterilization methods and then permit contaminating influences to exist in the air conditioning system.

Growth of New Technics

Technological advances over the past decade have placed at the disposal of the hospital architect new equipment, methods and procedures that are capable of improving environmental conditions in medical facilities — at the same time, contributing to economy of installation and operation.

One of the newest developments is the Inland Radiant Comfort System. Here is a completely new concept in total air conditioning specifically designed for the needs of the hospital.

This system combines three widely accepted, proven components into one engineered design: (1) a radiant-acoustic ceiling, (2) a chemical air conditioner, and (3) a cellular steel floor. Because of the integrated design, each component assists in the functioning of the others.

100% Exchange of Air

The arguments for and against using only *outside* air as an air-conditioning source, instead of recirculating *inside* air, are academic. If it weren't for its record of excessive costs (*until now*), everyone would prefer to start with outside air, condition it, feed it into the patient's room, then exhaust it. Outdoor air, by action of the sun and massive dilution, usually is less contaminated than recirculated air, both given the same degree of filtration.

Recirculating inside hospital air is a touchy procedure completely dependent upon filter efficiencies which can be variable, due to maintenance problems. Equally or more hazardous is to attempt flushing air completely in some parts of the hospital and not in others, depending upon balanced pressures to prevent cross-contamination.

No one prefers these compromise measures. They were forced upon hospital designers by the high cost of conditioning the large volumes of air required by conventional, all-air systems. To add the cost of conditioning outside air was to prohibit it.

This is no longer so, with the Inland Radiant Comfort System for hospitals. By efficiently handling only a small amount of air, the IRC System introduces 100 per cent outside air throughout the hospital and does it at no extra cost.

This contrasts with conventional air conditioning systems which generally are based on the principle of using large quantities of air, most of it recirculated. Decontaminating air in large quantities not only is impractical, but the fan horsepower to move such air adds to the expense of operation.

With Inland's modern system, it is practical to exhaust all air without recirculation. The air can be decontaminated very effectively, because of the small amount used.

Radiant Panel Ceiling System

The inherent advantages of radiant-acoustic ceiling panels help to make this new Inland technology a sound approach to hospital air conditioning.

As its name implies, the radiant-acoustic ceiling heats and cools by the principle of radiant heat transfer and, at the same time, provides acoustical control to the room space.

Acoustical treatment is simple. Perforations in the aluminum panels, with glass-fiber insulation above, give this ceiling system an excellent acoustical rating — noise reduction coefficients as high as .90. Sounds disturbing to a restful atmosphere, e.g., the extra noise level during visiting hours, are dampened.

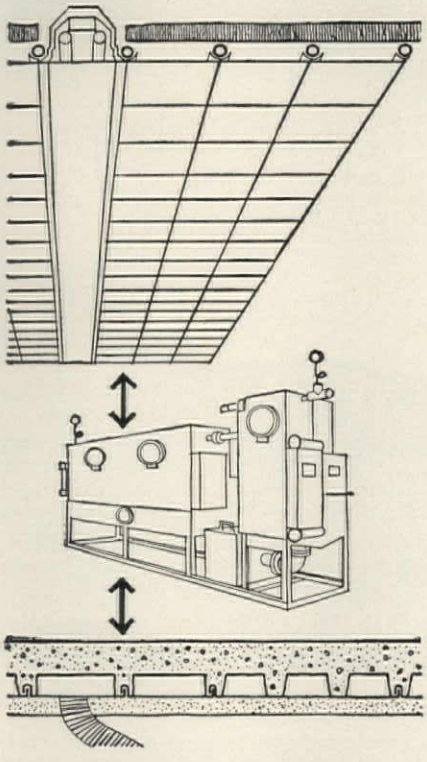
The radiant-acoustic ceiling acts as a single, wall-to-wall heat exchanger — heating when the thermostat calls for heat, and cooling when circumstances require. The ceiling heats in the same manner as the sun. Low-frequency waves of heat energy travel in straight lines from the ceiling to every part of the room, bathing all surfaces in warmth.

This steady, gentle comfort is patient-oriented. Physiologists have determined that more than one-half of our body heat is lost by radiation. Therefore, the most practical method of maintaining comfort is to control the rate of heat gain or loss by radiant means.

Here's where radiant heating is ideally suited to the needs of a hospital patient. It bathes his body in continual warmth, free of drafts. Even without a blanket, the rate of his body heat loss is kept at a uniform rate throughout the day and night. Because radiant heating is not dependent upon moving air to raise room temperature, there are no hot blasts from registers, no strong convection currents.

Radiant cooling obeys the same physical law of radiant energy transfer as radiant heating, but in reverse. Now, the ceiling is made cool and it absorbs heat from all surfaces in a room, including a patient's body. The human body loses heat most comfortably through radiation, without chilling drafts.

Only ventilation is required of the air system. Ventilating air is supplied at low velocity and held to desirable humidity levels.



The Inland Radiant Comfort System is made up of three basic components, carefully engineered to work together more efficiently than any one of them could work alone. The components are not new to architects and mechanical engineers. They are: (1) a radiant-acoustic ceiling, (2) a chemical air conditioner, (3) a cellular steel floor (optional in hospital construction).
All three of these components have long records of successful performance as individual products. It is the way in which they are used together — in integrated design — that accounts for the efficiency of the IRC System: The radiant ceiling handles virtually the entire heating and cooling loads in the hospital. The chemical air conditioner controls humidity and purifies the air. Reduced air volume makes it possible to use the cellular steel flooring for air distribution, eliminating tons of ductwork.

Chemical Air Conditioning

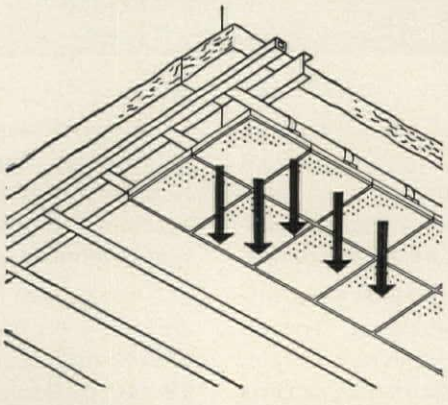
Chemical air conditioners have long been recognized as superior devices for controlling humidity and air purity in operating rooms, recovery rooms, and other critical hospital areas. In the integrated design of the Inland Radiant Comfort System, a Kathabar® Chemical Air Conditioner* treats the hospital's entire ventilation-air system.

Air is conditioned by a spray of lithium chloride. This traps up to 97 per cent of all airborne impurities.

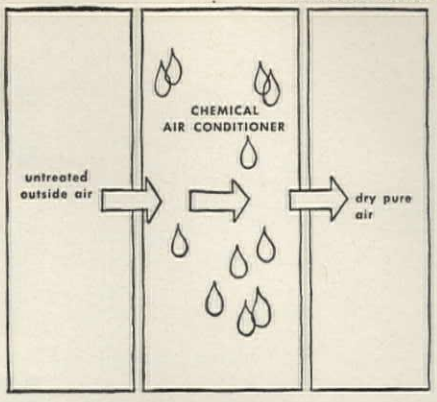
Conventional air conditioners use refrigeration coils to cool and dehumidify the air. For many years, these wet coils have been recognized as breeding places for colonies of bacteria and micro-organisms.

Trouble arises when matter from these colonies blows off into the hospital's air stream. Elaborate filter systems have been designed to remove this contamination from the air, but their complete effectiveness frequently has been questioned. Hospital administrators, bacteriologists, and others have been shocked at the contaminating effect of conventional air conditioning systems.

*Surface Combustion Division, Midland-Ross Corp.



The radiant-acoustic ceiling acts as a single, wall-to-wall heat exchanger. Heating and cooling are accomplished by means of aluminum panels attached to grids of water pipes hung in the manner of a conventional suspended ceiling. Hot or cold water is circulated through these pipes to heat or cool the panels. Heat loss and noise are reduced by an acousti-thermal blanket.



Chemical air conditioning removes the latent (humidity) load from incoming outside air. A non-vaporizing solution of lithium chloride with a great affinity for moisture is sprayed into the air stream. Condition of the air as it leaves the dehumidifier at a specified humidity level depends upon (1) solution concentration and temperature, and (2) temperature of cooling tower water.

Substantial Construction Savings Possible

Where hospital plans include a steel frame, significant savings in construction costs accrue from the IRC System's third basic component, a cellular steel floor.

Ventilating air is carried through cells in Inland Celluflor, eliminating tons of expensive ductwork. This not only saves money on materials and labor, it reduces the space required between floors. This can drop the total height of a multi-story building by as much as 5 per cent, without sacrificing a cubic inch of interior space. Obviously, there are consequent cost savings all down the line — including savings on the foundation, since building weight shrinks with the height.

There are other advantages to consider here, during the planning stage of a new hospital: The greater erection speed of steel-frame construction. The flexibility of electrification made possible only by a Celluflor steel floor.

Breakthrough in Hospital Comfort Control

Of great importance to the hospital architect, the Inland Radiant Comfort System delivers all of its advantages well within the budget for an ordinary hospital air conditioning system. Key to its economy is its concept of three basic components working together. By balancing the high performance of these components through careful engineering, the IRC System saves on both first cost and operating costs.

Further information is available in a new brochure, "Breakthrough in Hospital Comfort Control." Write for your copy today. Address Inland Steel Products Company, Engineered Products Division, 4069 West Burnham Street, Milwaukee, Wisconsin 53201.

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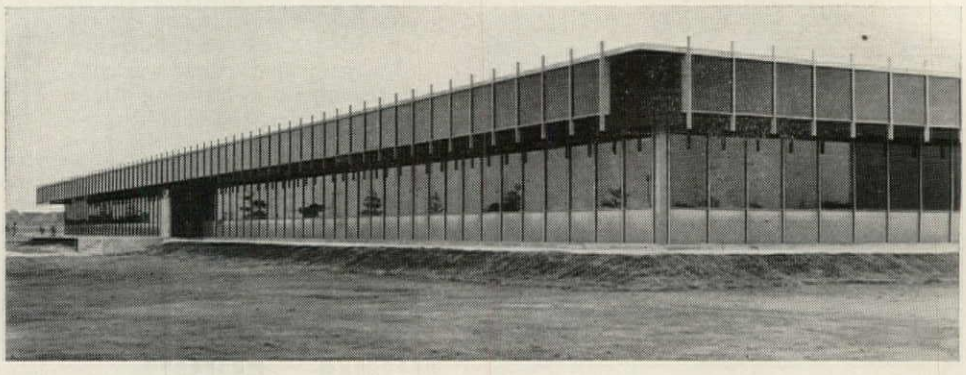

Sargent Company Building
New Haven, Connecticut
Arch.: Douglas Orr, New Haven
Wall system by Fenestra, Inc.

Different though they are, these three buildings have one important thing in common—seals of Du Pont Neoprene synthetic rubber. Good judgment in each case. Because Neoprene can't be topped for sure-sealing ability and long-range freedom from maintenance.

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Two additional advantages: Neoprene resists flame, an important consideration in any public building. And Neoprene can be compounded to remain flexible in cold weather, so that construction can continue during winter months.

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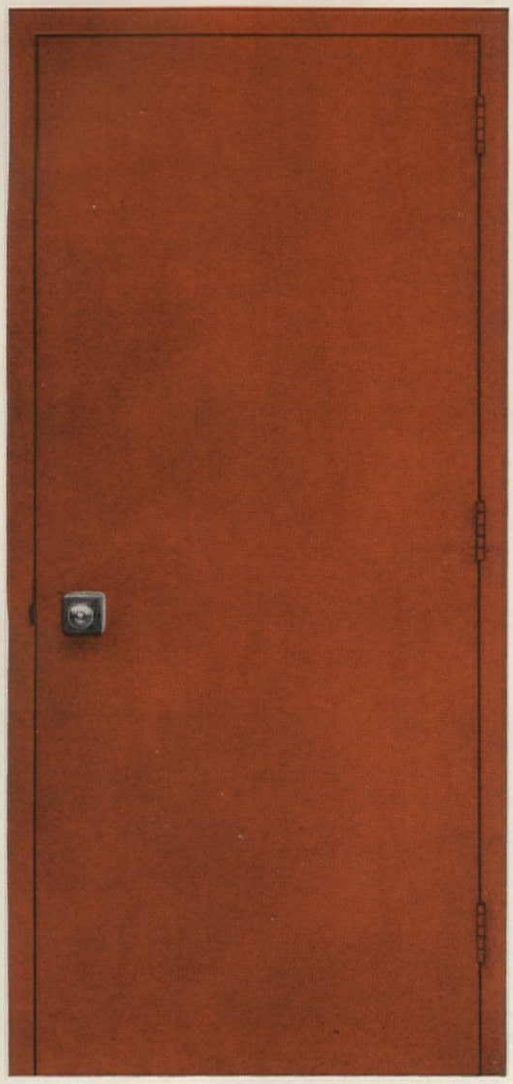

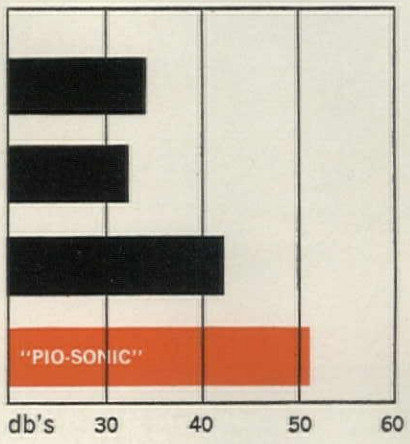

This is the new 51db "Pio-Sonic*" hollow metal soundproof unit. There is no other with a higher db rating.

Until now, it did not follow that specifying soundproof doors meant obtaining **operable** soundproof doors.

Most soundproof door ratings are for "sealed in panels" — a fact so well hidden in manufacturers' published test data that it is often overlooked by the specifier. A "sealed in panel" is nowhere near a door. It is but a "sealed in panel", an inoperative device used for test purposes only.

Pioneer need not disguise its Pio-Sonic door ratings. The 51 db's for its operating standard doors and 42 db's for its operating vision paneled doors are the highest ratings ever earned by normally installed, **fully operable** doors as tested by the renowned Riverbank Acoustical Laboratories in Geneva, Illinois. Tests were conducted in accordance with the latest ASTM standard E90-61T; the rating being determined by the sound transmission class.

"Pio-Sonic" doors are 1¾" thick, flush seamless, made with Pioneer's **exclusive continuously welded heliarc process resulting in no seams on face or edges.** They are hung with normal hardware in a standard frame featuring specially designed 4-sided gasketing.

The certified test sound transmission loss data on "Pio-Sonic" doors is available on request. Read this unbiased and factual study which finally gets to the truth about sound transmission.

Write department PA, Carlstadt, New Jersey, for your copy of this important report.

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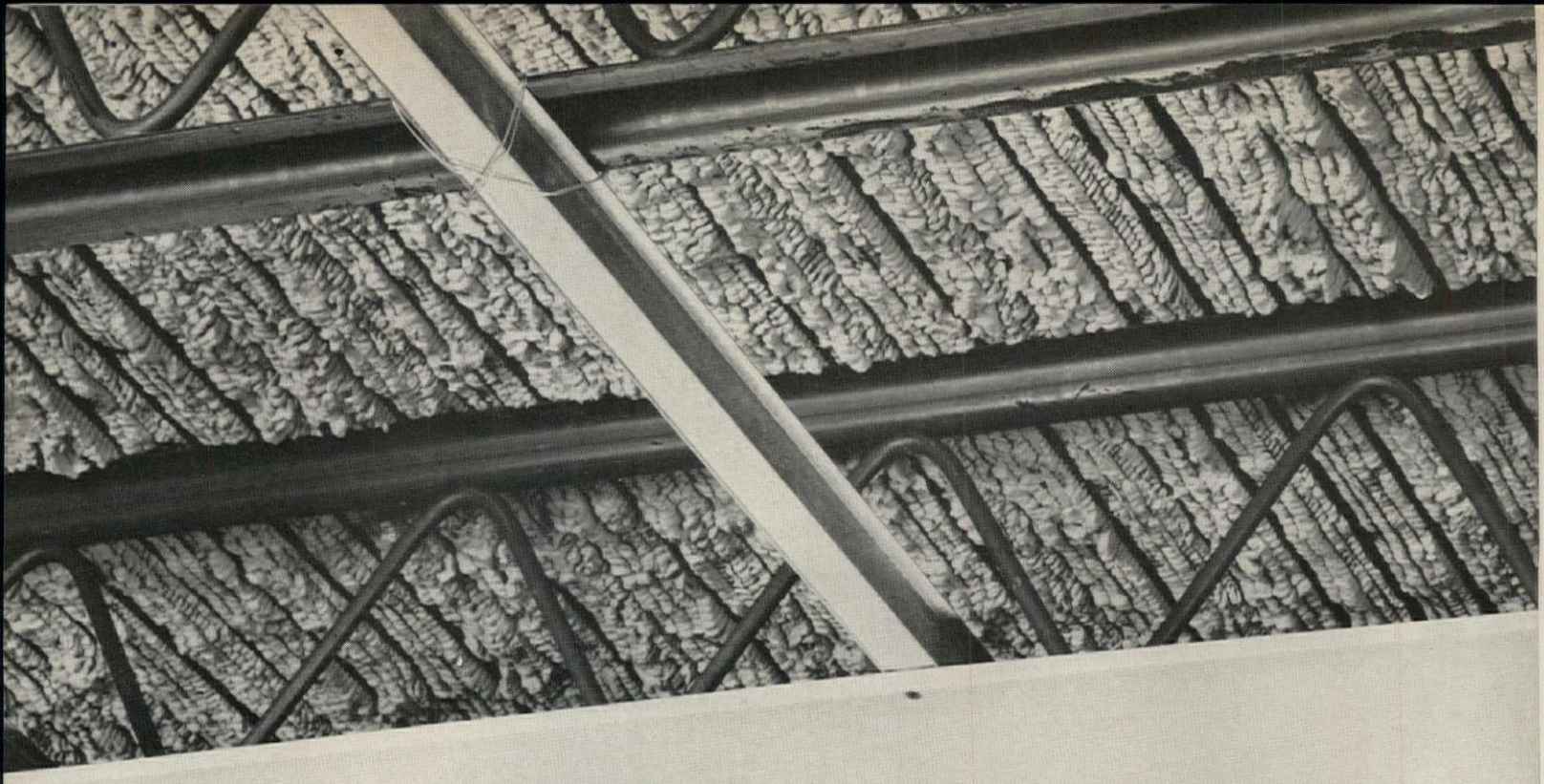

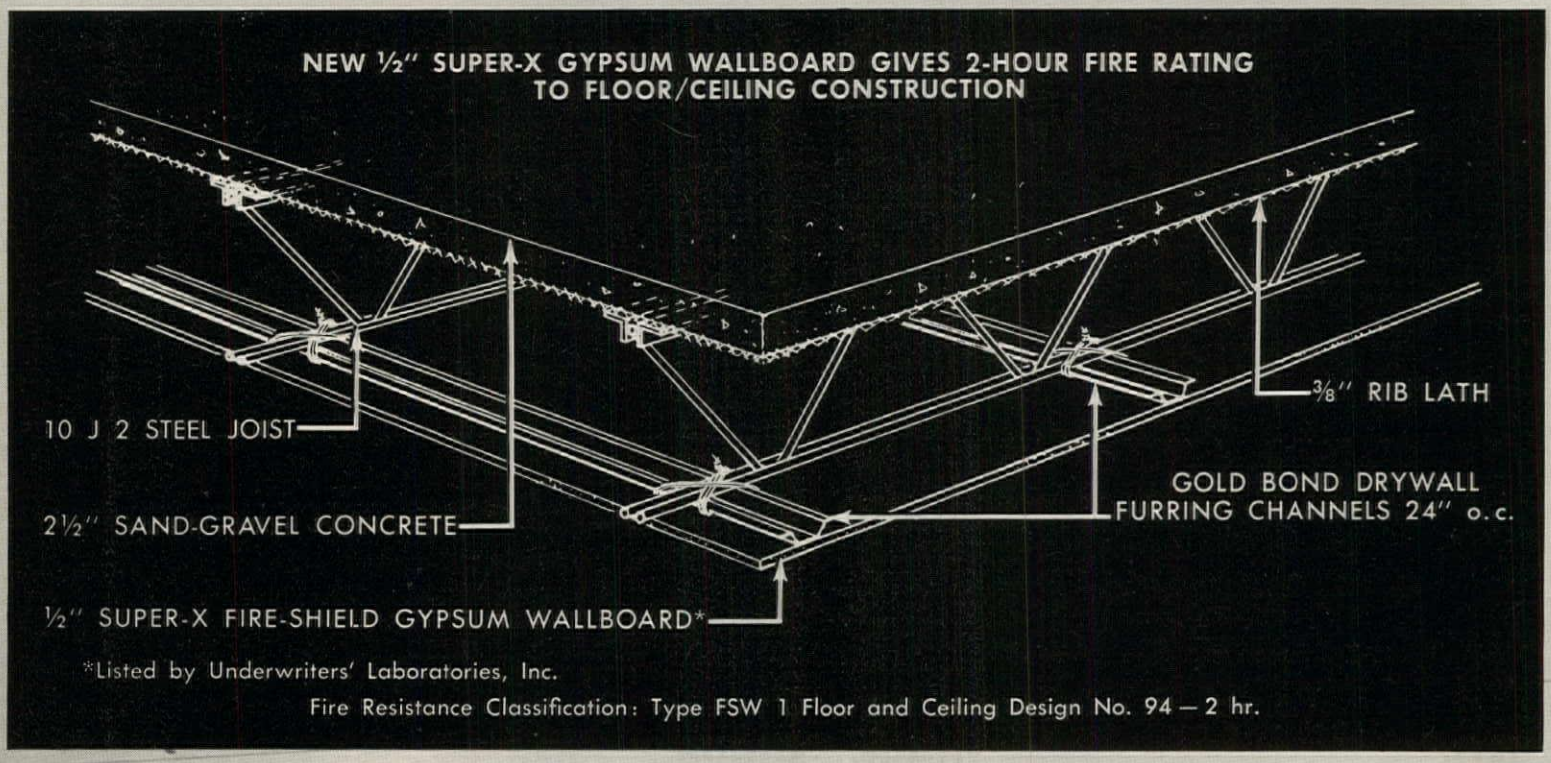

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NEWS REPORT

Architecture's Monthly News Digest of Buildings and Projects, Personalities, New Products

NEW P/A SECTION

On page 208 of this issue of PROGRESSIVE ARCHITECTURE, you will find *P/A Observer*, a new, 16-page, monthly section of the magazine. For a detailed description of the "Observer," and the new layout and approach of the NEWS REPORT which you see here, read Jan C. Rowan's Editorial on page 153.

Go-Ahead for Boston City Hall

After a pro-and-con controversy, the Boston City Council recently granted $5 million more in funds for its new City Hall by Kallman, McKinnell & Knowles. This includes the furnishing of the completed building. $3 million—which was the difference between the budget figure and the lowest bid—was voted for actual construction. Gerhard Kallman says that the substructure is virtually complete up to plaza level, and that the building will soon be coming out of the ground.

Photo: John M. Dixon

Second Fall of Atlanta

Just 100 years ago, General William Tecumseh Sherman gave Atlanta a lot of trouble by burning much of it to the ground, an event that should have conceivably made its citizens think twice before allowing things like that to happen again. But they have, though on a more modest scale.

For many years, one of the delights of downtown Atlanta has been the Peachtree Arcade, a multilevel, befountained, skylighted galleria extending between Peachtree and Broad streets. Designed in 1916 by Atlantan Ten Eyck Brown, the arcade was built within the exterior walls of the National Hotel, which previously occupied the site. Local outcry against the demolition from architects, the press, and TV was rapidly squelched by the simple expedient of destruction.

Now the arcade has been destroyed to make way for a Park-Avenue-type curtain-wall high-rise building for the First National Bank (also provided—a remodeled bank building next door). Architect Emery Roth & Sons of New York can plead a carpetbagger's naiveté over the loss of the old arcade, but local firm Finch, Alexander, Barnes, Rothschild & Paschal and their hometown client must seem to many Atlantans like the people who gave General Sherman the matches.

Perils of Frank Lloyd Wright: His Tokyo Imperial Hotel Threatened

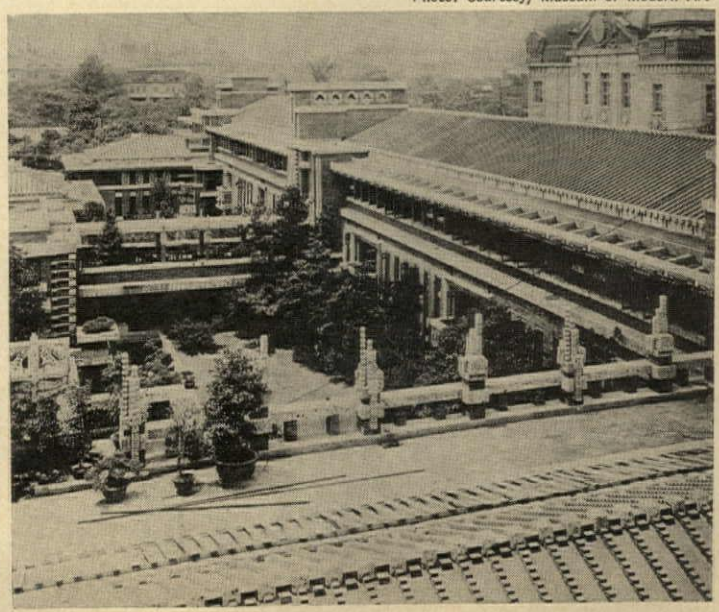
The works of Frank Lloyd Wright are in varying states of peril and security these days, as usual. As this is being written, there is a strong rumor about that his Imperial Hotel (*below*) in Tokyo is scheduled for demolition; there is news that one of his houses in Virginia has been saved; and word from Los Angeles has it that his famous "Hollyhock House" will be surrounded by a cultural development (*page 91*).

The rumored destruction of Wright's Tokyo Imperial Hotel (1916-22) follows by a few years the addition of a most unsympathetically-designed new wing. Architects will be interested in protesting to Ambassador Ryuji Takeuchi, Japanese Embassy, Washington, D.C.

In a comment to P/A on the fate of the hotel, Mrs. Frank Lloyd Wright wired: "I am shocked that we could not save the Imperial Hotel designed by Frank Lloyd Wright. It is sad to see profit take the predominate place over beauty. It is sad to see Japan disregard an historical monument, as the Imperial Hotel saved thousands of lives during the earthquake of 1923. Have suggested to Washington to buy the Imperial Hotel, preserve it, and use it for the United States diplomatic personnel, but obviously the suggestion took no root. It is a pity that this symbol of America's great genius, Frank Lloyd Wright's rare combination of engineering feat and beauty, is not to be allowed to survive for future generations."

Civic leaders in Los Angeles have unveiled a master plan by architects Paul Robinson Hunter and Herbert Kahn for Barnsdall Park, site of the Hollyhock House (client was Aline Barnsdall; house was his first—1917—in California). The plan calls for nine new structures on the 11-acre hillside site. They would include a junior arts center, a municipal art gallery, a 450-seat auditorium, art department administration building, museum of city history, and an underground parking garage. Design of the buildings "will be in harmony with the existing Frank Lloyd Wright building." Asked by P/A for a comment on the proposal, Los Angeles Architect Robert E. Alexander said: "The pro-

Photo: Courtesy, Museum of Modern Art



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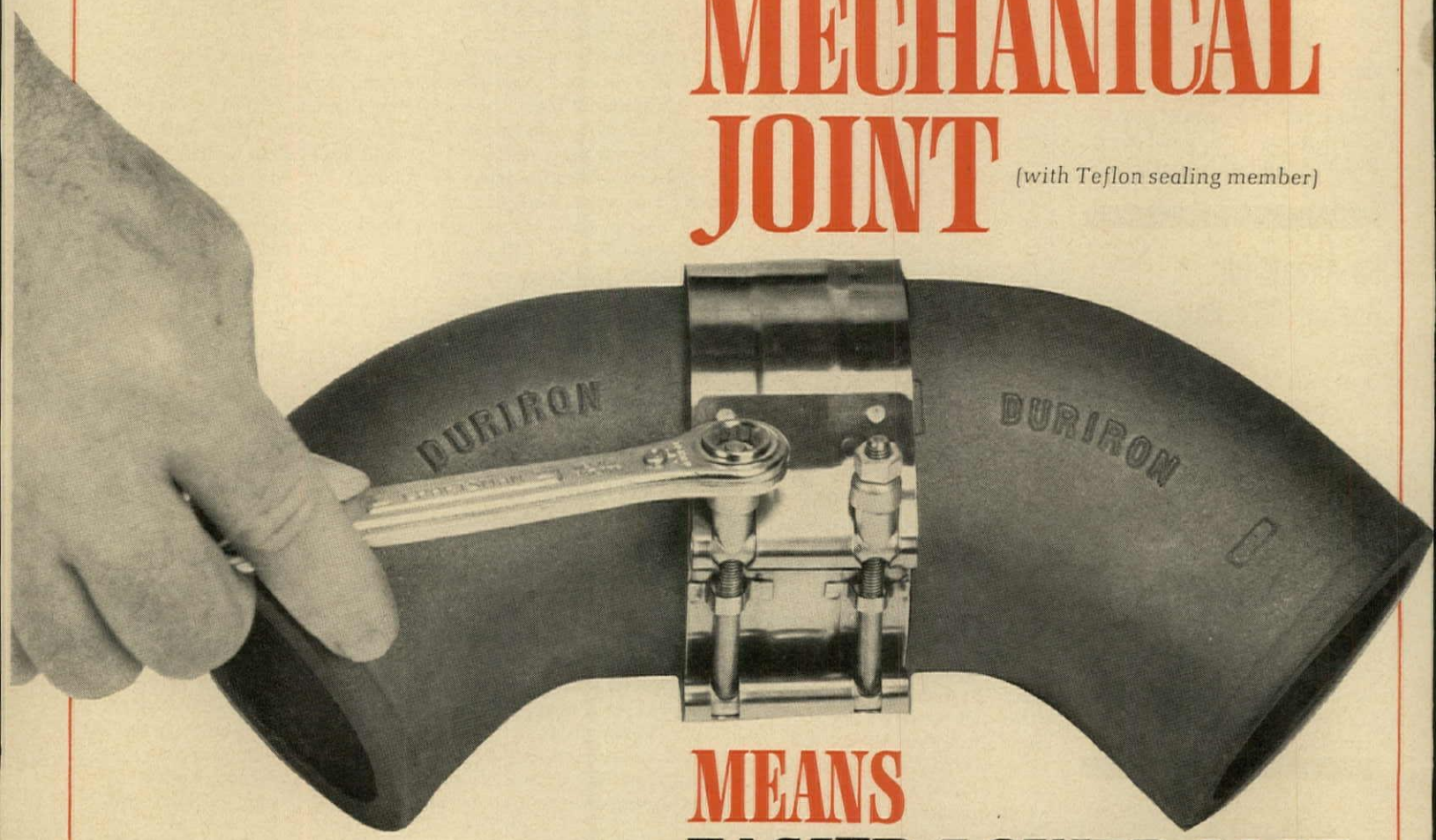

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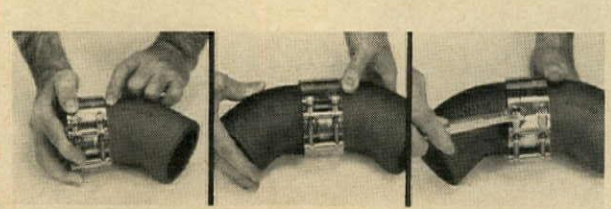

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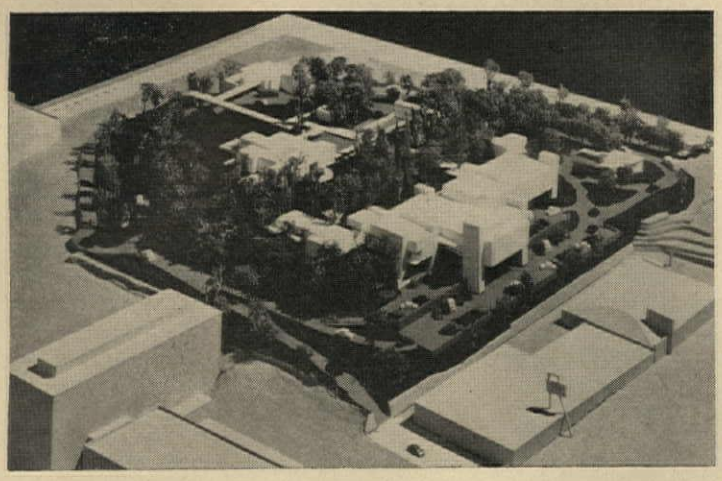


Photo: Ezra Stoller Associates

gram for municipal development is exciting, and I hope the City pushes the various elements proposed toward early completion somewhere. Stacking the proposed projects on Olive Hill [site of Barnsdall Park] will change a beautiful environment drastically. It seems to me we can afford a new site for all the proposed cultural additions to our community without ruining a cultural asset irrevocably."

The Pope-Leighey house, built in 1940 by Wright for Mrs.

Marjorie Leighey in Falls Church, Va., has been saved from destruction by an onrushing highway project by Mrs. Leighey's signing the house over to the Commonwealth of Virginia for $31,500 (to be contributed toward the removal of the house to Woodlawn Plantation, a site owned by the National Trust for Historic Preservation). Instrumental in the salvation of the house was Secretary of the Interior Stewart L. Udall.

PRESIDENT OPENS NEWHOUSE JOURNALISM BUILDING

Photo: Bandy

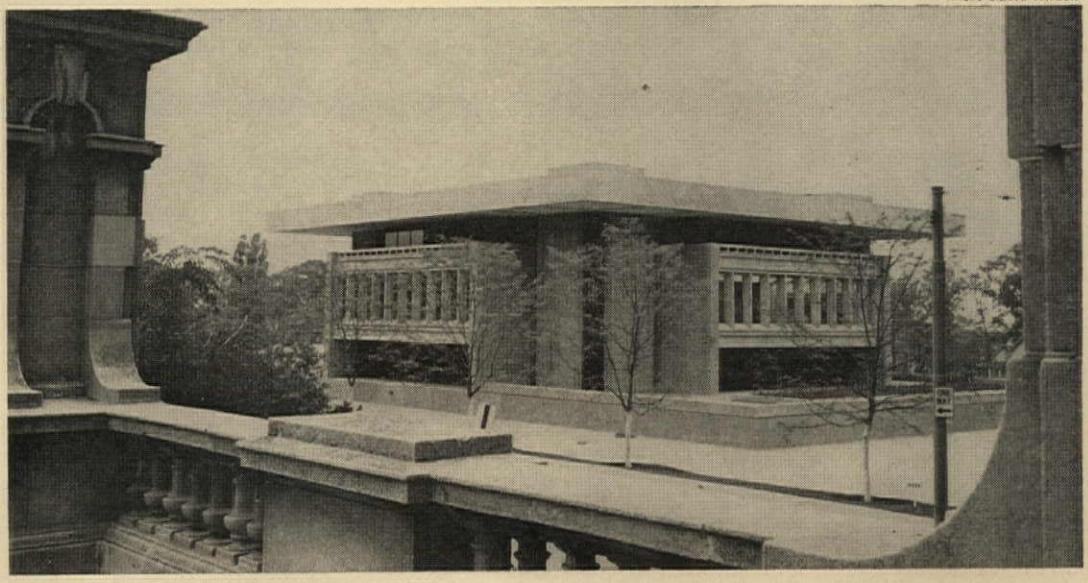
SYRACUSE, N.Y. The festivities that usually mark the dedication of a significant building were subdued here on August 5 when President Lyndon B. Johnson, as chief speaker at the opening of the first element of the Samuel I. Newhouse Communications Center at Syracuse University, chose the occasion to state strongly the United State's stand against North Vietnamese aggressive acts, and by implication, those of Communists anywhere in Southeast Asia. "The world remembers — the world must never forget — that aggression unchallenged is aggression unleashed," he said. An attentive audience of almost 20,000 interrupted the President frequently with applause.

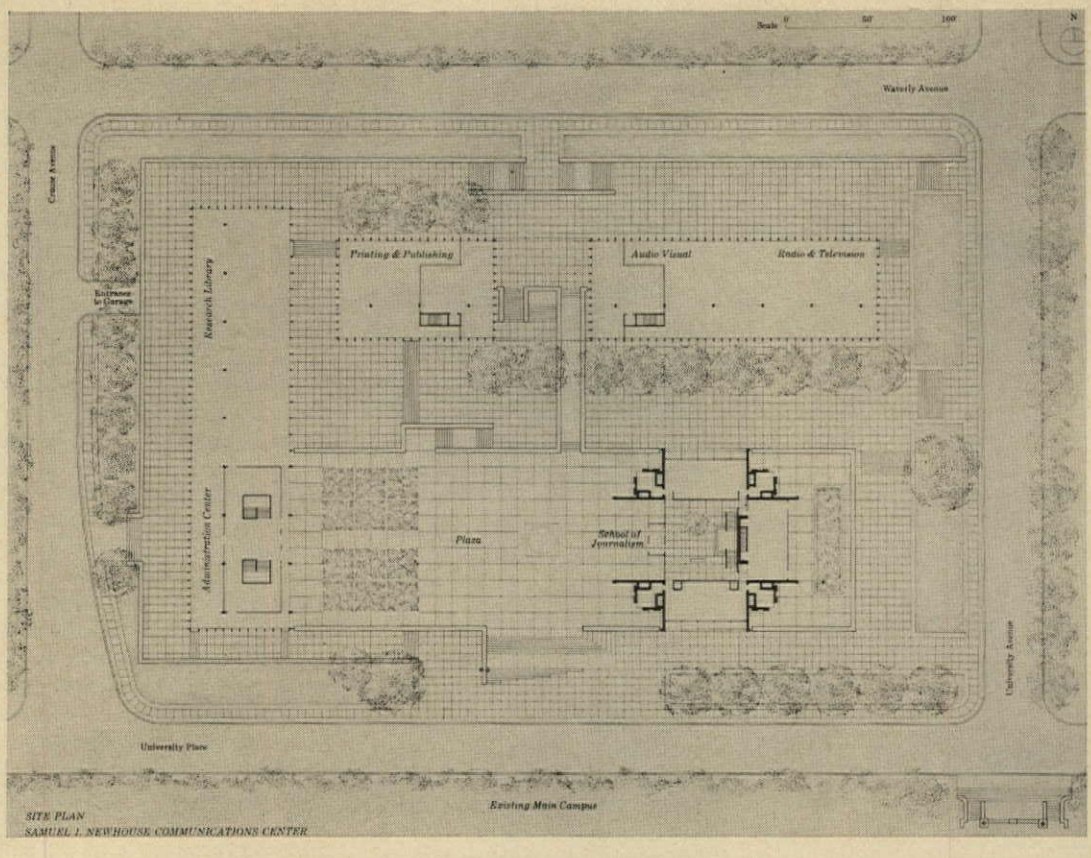
After receiving an honorary doctor of laws degree from University Chancellor William P. Tolley, the President and Mrs. Johnson cut the ribbons to open the School of Journalism, first element of the Center. With them were Samuel I. Newhouse and Chancellor Tolley *(left to right in photo)*, with President and Mrs. Johnson. The two buildings of the Center still to be built (see site plan) are: (1) a building containing radio and television facilities, an audio-visual center, Syracuse University Press, an educational television station, a sight and sound library, a self-instruction library with facilities for research and experimentation with programmed learning and advanced instructional techniques and equipment; and (2) a building for the Institute for Advanced Study in Communications, an information storage and retrieval library, provision for midcareer education in communications, headquarters of the Laubach Literacy Fund, and a public communications library.

The School of Journalism is a deceptively simple-appearing pavilion having its main entrance on the central plaza of the Center. The massive concrete roof is supported by four hollow concrete box-girder shapes that contain vertical transportation facilities and restrooms. Deeply inset beneath the overhang of the upper floors is the entrance to Dedication Hall, a 50′ x 50′, roof-high, central space leading to a flight of stairs that breaks to either side under a sculpture by Lipchitz (a bit too small for the space) and a quotation by donor Newhouse. The hall is lighted from above by a 25-faceted, 25′-square glass skylight. On three sides of the hall are located the Dean's suite, a public lounge, and the journalism school library. The four spaces off the second-floor balcony are occupied by seven

Photo: H. M. Zalmanoff

Photo: David Hirsch





SITE PLAN
SAMUEL I. NEWHOUSE COMMUNICATIONS CENTER

lecture and seminar rooms, an editing laboratory, and a news laboratory. Offices for the faculty and for a number of New York state press organizations are around the third floor balcony and enjoy the benefit of four exterior balconies under the cantilevered roof. Curiously, there is access to these balconies from the interior balcony and from small, separate corner offices, but not from the major office spaces themselves. In two floors below the terrace level, accounting for almost two-thirds of the 71,000 sq ft of floor area, are located the Goudy Memorial Typographical Library, a two-story photographic studio, and two audio-visual classrooms featuring the most up-to-date equipment.

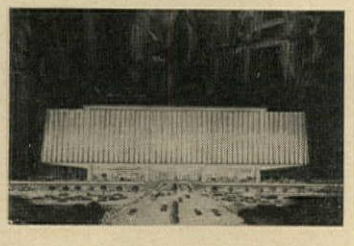
The roof supports are of a

Photo: H. M. Zalmanoff

pinkish-colored concrete aggregate also used on the plaza. This contrasts pleasingly with the lighter concrete of the roof fascia and the horizontal support elements between the corner columns. A particularly graceful note is struck by the visual opening of the column corners with glazing, lending a much lighter appearance to the building.

Donor of the school is Samuel I. Newhouse, owner of 19 newspapers, a number of magazines, and some television stations. Since Mr. Newhouse has been noted for his strictly businesslike approach to his communications media and non-concern with their editorial directions, perhaps his generous endowment of such an important center could be viewed as an act of atonement. The center, appropriately enough in this context, lies at the foot of Piety Hill.

Architect is I.M. Pei & Associates of New York, with King & King of Syracuse as Associated Architect.



Times Square Promotion

A mammoth convention hall covering three city blocks next to Times Square and spanning 42nd Street between Seventh and Eighth Avenues has been proposed to City Hall by the Broadway Association, Inc. This would create the country's largest convention facility nine blocks from where the new Madison Square Garden is scheduled to rise over the grave of Pennsylvania Station, plus extensive exhibition facilities on ground level, and "other uses on the top floor and roof levels." When telephoned by P/A for the name of the architect responsible for the design, the Broadway Association averred that it had not hired one of those yet. Herewith, consequently, the "artist's conception."

Architects Advise Business

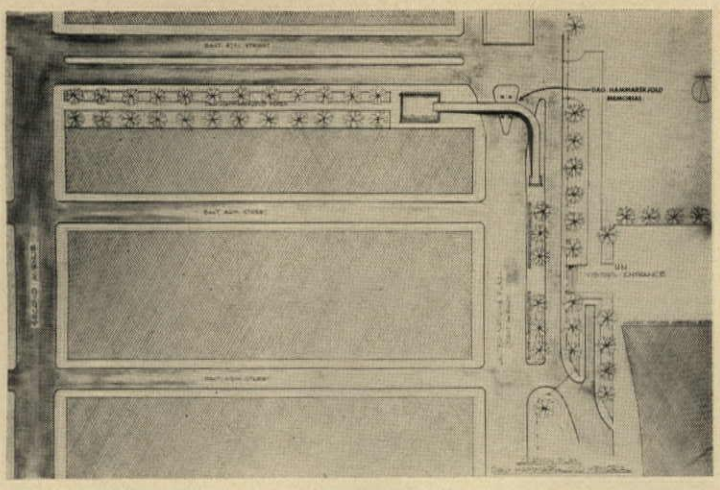
The New York Board of Trade has appointed an Architectural Advisory Council "to provide professional guidance and advice [to the Board] in matters concerning the environmental improvement of New York and the upgrading of public and private facilities for housing, health, recreation, education, and the cultural life of the City." Members are Max O. Urbahn, Chairman; Stanley Sharp; Bancel LaFarge; Lathrop Douglass; Peter Blake; and P. Whitney Webb, Secretary to the Council. Hopefully, the group will be able to persuasively present the cause of good design to a city and business community badly in need of it.

Photo: Arnold Eagle

Hartford on Art

Huntington Hartford, the A&P tycoon whose victual displays have inspired many of the "pop" artists whose work he deplores and despises, will expostulate his views on art and artists in a Doubleday book entitled *Art or Anarchy?* to be published in November.

Mr. Hartford (whose Ed Stone-designed museum specializes in what writer Ralph Caplan calls the "Oh, see the pretty cow" school of painting) had previously entitled his opus *Armageddon of Art,* leaving one in doubt before publication date whether he sees art in a "state of confusion and disorder" or "the place of a great battle to be fought out on 'the great day of God' between the powers of good and evil" (*Webster's New Collegiate Dictionary*). At any rate, one can fairly safely predict that he will regard everything done since Jean François Millet with a jaundiced eye.



Bridge Memorial to Hammarskjold

A memorial pedestrian bridge connecting the United Nations complex with a plaza on the other side of New York's First Avenue has been proposed to honor Dag Hammarskjold, the late Secretary General of the international body, who perished in a plane crash in Northern Rhodesia in 1961. Designed by Architect Daniel Chait, the structure would arch in an L-shape from the east to the west side of the avenue, supported by a tall sculptural form. The walls of the bridge would be incised with selections from Hammarskjold's writings and speeches. Honorary chairman for the fund-raising campaign for the bridge are present Secretary General U Thant, U.S. Ambassador to the U.N. Adlai E. Stevenson, and New York Mayor Robert F. Wagner.

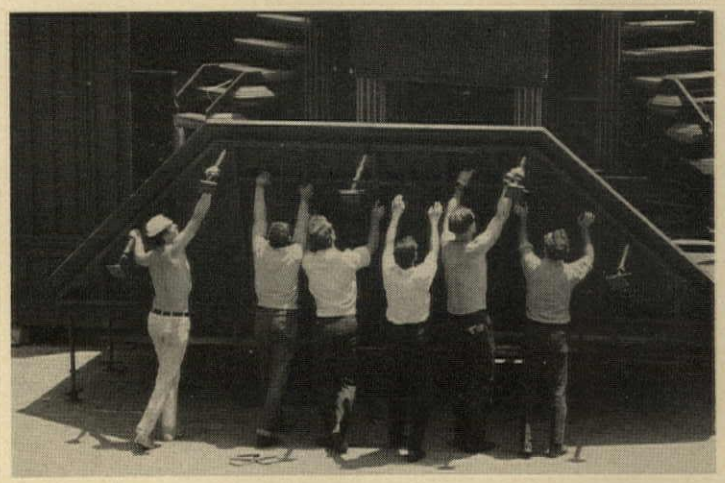
Latest in Portables—Shakespeare

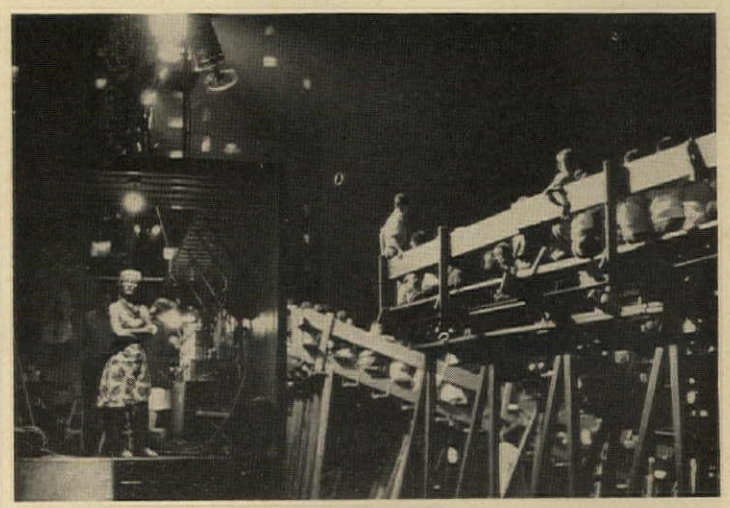
After centuries of confinement in stuffy New York theaters, Shakespearian production has hit the road (or streets, in this case). The idea is an old one—piling players on a wagon and traveling from town to town originated with medieval morality plays. But when it reappeared in New York City this summer with the New York Shakespeare Festival's decision to take "A Midsummer Night's Dream" into the streets, the supporting vehicle was a trailer truck, or rather, a caravan of trailer trucks. What could have been a futile "ram culture down their throats" campaign has been a resounding hit. The intimate theater that immeasurably contributed to this success was designed by Ming Cho Lee. Lee began with the stage design, based on the Stratford, Ontario, stage, and then figured out how to section it and fold it into the shape of a 40′ x 12′3″ trailer. This has been so skillfully executed that a crew of seven men can unfold the stage in an hour without slip-ups. The rear and end walls, trailer floor, and a balcony-stair ensemble remain stationary — everything else moves. The remaining wall and the roof are divided into three sections. The center wall-roof section, moved by hydraulic force, opens up and flips over so that what was once an interior trailer surface is now the main platform — a hardwood, sound-proofed stage. The side sections remain upright, with the unfolded roof extending their height. A vertical fold turns these walls inward at the stage, masking the wings. Small stairways flip into position and the stage is set. After a run at one location is finished, the sides are refolded and the stage is once more a trailer-truck.

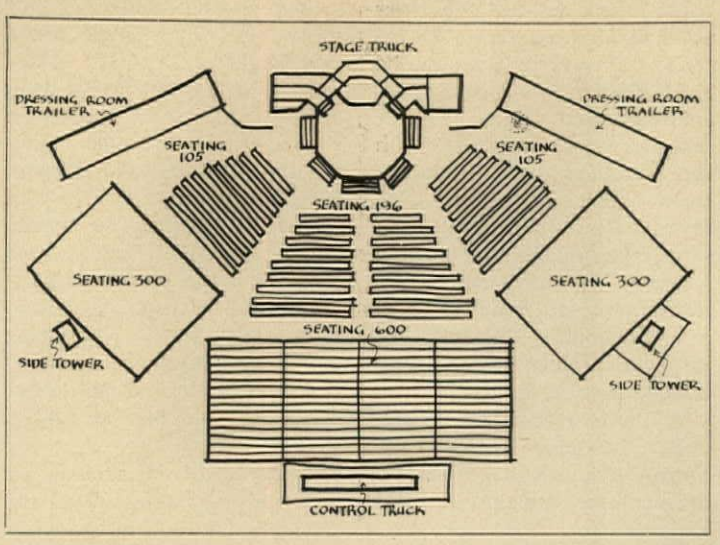
A fully-equipped control trailer, designed by Lee with Martin Aronson, is a variation of the same concept. A light bridge in the center of this trailer rises on a single piston to a height of 22′. (The bridge can rise to 24′ but Lee is wary of the stability of the single piston, which the trailer manufacturer insisted was sufficient; Lee braces the bridge with cables.) Lighting is permanently focused and welded onto the bridge to prevent jarring during transit. Two auxiliary light towers, stored in the control trailer, are rolled down a ramp and positioned on either side of the control station.

Also part of the caravan are two dressing-room trailers and

Photos: George E. Joseph







two generator trucks.

Seating, presently rented and set up by an outside concern, has proven costly, and in the future Lee hopes to design two trailers that open into bleachers. Seating, as planned, was for 1600, but actual attendance pushed far past this when two or more children squeezed into one seat, mothers held babes in arms and one or two more in the lap, and several hundred "groundlings" stood beside the bleachers. Throughout the 58 performances, staged in 38 locations, spirits ran high. If, for instance, there was a three-night performance in Harlem, second-nighters would arrive buzzing with stories of the night before. The cast felt that these audiences—made up of a public that seldom wanders beyond the sidewalk for entertainment — were among the most responsive they had encountered.

The stage was constructed by Pete Feller; trailer skin was constructed by Huber-Wagon Workshop; scenery for "Midsummer Night's Dream" was by William Rittman.

1

Rumanian Architecture: Conformity and an Occasional Breakthrough

The U.S. architect, striving, with minimal assistance from his Government, to advance the cause of good design, might care to note the efforts of one collectivist state, Rumania. The progress of this small Iron-Curtain country, which in the past few years has begun to show a move away from Soviet domination similar to that of Hungary and Poland, was evidenced in the recent exhibition of "Architecture in the Rumanian People's Republic" held in New York at Columbia University.

The pace of postwar construction has placed heavy demands on the talents of Rumanian architects. During these years of economic expansion, the country's construction needs have been analyzed and planned by the State Committee for Building, Architecture, and Planning. And even if the exhibition — organized by the State Committee and carrying the motto "The Rumanian People Devote All Their Forces to Peaceful Construction"—were a biased sample rather than an accurate cross-section, it nevertheless reveals a remarkable volume of construction over the past decade.

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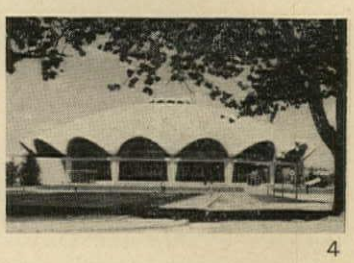

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Most outstanding are the achievements in town planning. Where prewar Rumanian cities housed one-fourth of the country's population, today's urban centers accommodate one-third of the people. Expansion has taken the form both of enlarging existing cities—notably Bucharest—and the creation of completely new cities such as Onesti, which has a population of over 20,000. The current housing rate of 7.3 dwelling units per 1000 people per year approximates that of the U.S.; two-thirds of these units are constructed by private owners. Subordinated to central design control are regional design institutes. Every town is to have a master plan, and, by the end of this year, 181 communities will have been physically defined and planned. In all cases, construction is undertaken in vast complexes: each community plan includes recreational, shopping, and cultural facilities (Palace of the Republic Square 1).

The use of prefabricated elements and buildings has produced a certain amount of standardized design. Alexandru Budisteanu, architect-advisor to the central State Committee, states: "The Rumanian architects try to build pleasant-looking construction, solving at the same time the problems determined by a maximal functionality and economic efficiency. According to this aim, they use industrialized structures and constructive systems which allow them to build in a short time numerous apart-

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ments at reasonable prices, thus making it possible to fulfill the great envisaged building program. In this way, in addition to the traditional structures of reinforced concrete and brick walls with prefabricated ceiling slabs, there are used on a large scale first of all large prefabricated panels and structures of concrete poured in slip forms. We must also point out that all the needed building materials and accomodation accessories are produced nearly wihout exception in Rumania."

This massive volume of construction has not been achieved without some detrimental effects. Buildings that occur frequently — industrial and housing projects, schools, cultural institutions, hotels — are based on standardized plans. Although it is possible to build individually designed structures, this is obviously impractical in terms of the most economical production. Thus, while the over-all impression of Rumanian architecture is one of freshness and progress, it is also often one of rectangularity, sterility, and anonymity (Bucharest Housing Project 2). "It is still premature," Budisteanu asserts, " to speak about a completely formed Rumanian style, applied to the new architecture of the country. Nevertheless, through their constructions, the Rumanian architects are striving to create new, modern, optimistic ensembles, adopting those forms which are in accordance with the employed structures and materials and which allow the rational use and function of the buildings and correspond to the character of each region and to the architectural traditions of Rumania."

A departure from standardized design does sometimes occur, mainly in the new resorts of the Black Sea (Maimia 5), in cultural structures (State Circus, Bucharest 4), and in facilities for an expanded educational system (Student Housing, Bucharest 3). And even when the new structures are dull, they are enhanced by the Rumanian landscape.

Designs for Money

Small financial institutions at opposite ends of the country illustrate quite disparate departures in design and use.

Photo: Eddie Hoff

At a Bay Shore, N.Y., shopping center, a branch of the First National Bank of Bay Shore resembles an extravagant, space-age version of the old Quonset hut. The unusual shape was achieved by attaching paper-backed wire lath to a steel frame, then spraying on a 2" layer of Gunite, topped by a covering of white Hypalon. Architect-Engineer was Frederic P. Wiedersum Associates.

On Wilshire Boulevard in Los Angeles, Honnold & Rex have designed a temporary building for the Huntington Park First Savings & Loan Association on a site that will eventually contain the company's high-rise office building. The simple, modular, pavilion-like building achieves a pleasant appearance within a small budget (under $75,000), and has the added advantage of being designed for transportation to a new site.

PCI AWARDS

Designs contributing most imaginatively to the use of prestressed concrete have been announced in the 1964 Prestressed Concrete Institute Awards Program. Judges were Architects Richard M. Bennett, Chairman, J. Roy Carroll, and Maurice Robillard (last year's winner), and Engineers G. Brooks Earnest and S. Kenneth Johnson.

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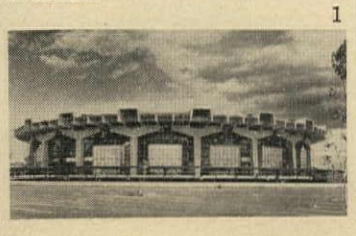

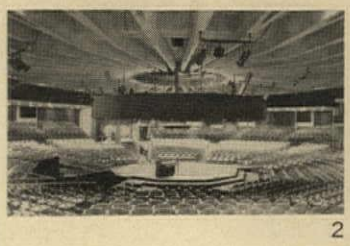

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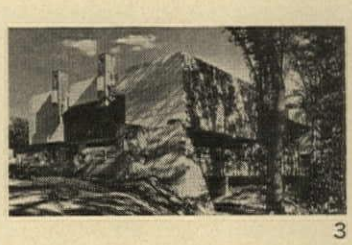
First-place winner was the circular convention center (1, 2) by Perry Neuschatz, in association with Gary Gall, for HiWay House Hotel in Phoenix. The center has a roof composed of V-shaped precast, prestressed concrete members, alternating double tee and "high hat" double tee forms. They are connected by a tension ring to make the roof a single element and eliminate the need for interior support. Structural Engineer was T. Y. Lin & Associates.



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Nine Merit Award winners included: (3) Japanese Canadian Cultural Center by Raymond Moriyama, G. Dowdell & Associates, Structural Engineers; (4) Fire Station No. 5, Seattle, by Durham, Anderson & Freed, John H. Stevenson, Structural Engineer; (5) New York State World's Fair

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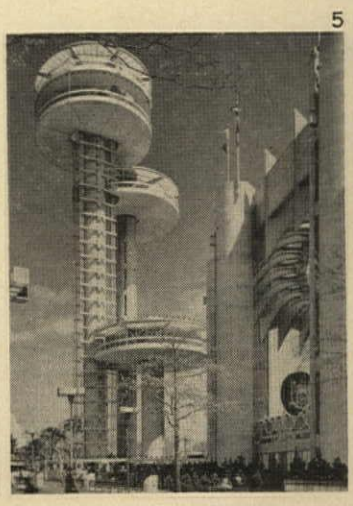

Pavilion observation towers by Philip Johnson Associates, Lev Zetlin & Associates, Structural Engineers; (6) classroom and office building, University of California Davis Campus, by Gardner A. Dailey, T. Y. Lin & Associates, Structural Engineers; (7) house, Laguna Niguel, Calif., by George Bissel, Scherrer-Baumann Associates, Consulting Engineers; (8)

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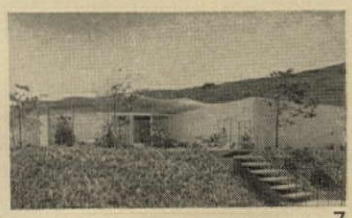

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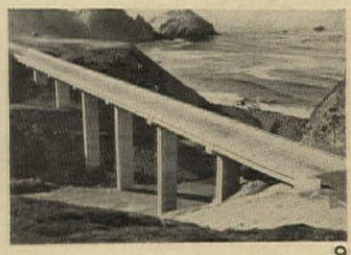
parking plaza, Janesville, Wis., by City Engineer Roger E. Krempel; (9) Willow Creek, Calif., bridge by State Highway Engineer J. C. Womack; (10) carrying beams over Arroyo



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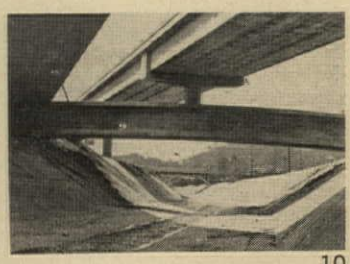

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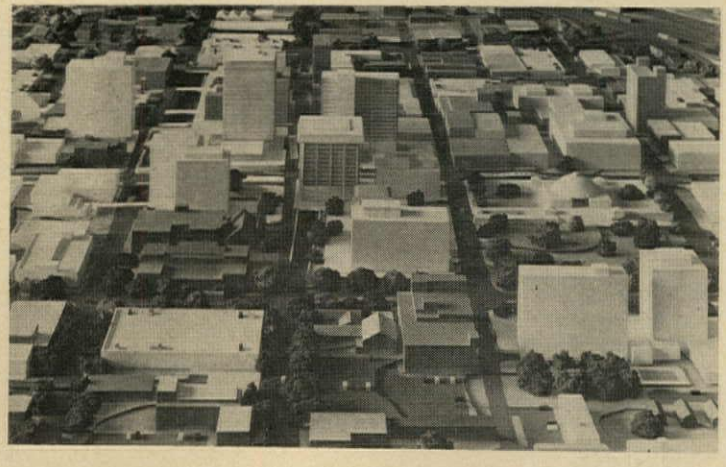
Seco, Calif., also by Womack. Not shown: tainter gate storage system, Wanapum Dam, Columbia River, Wash., by Harza Engineering Co.

Program of Action in Greensboro, N.C.

Located in the heart of the rapidly expanding Piedmont Industrial Crescent, the city of Greensboro, N.C., is in direct competition with nearby Winston-Salem and High Point. In 1958, the city's Chamber of Commerce set out to plan a CBD that would strengthen the city's image as center of the Crescent. The resulting plan, developed by Rogers, Taliaferro, Kotstritsky & Lamb of Baltimore and based on extensive economic studies by Hammer & Company, will maintain the present geographical center as a high-rise core. Surrounding this core will be a low-density "green frame." This green frame, serving to define and contain the central core, will be reserved for "peripheral uses," such as garden apartments, town houses, a convenience center, an auto dealers' district to the east, and a wholesale and manufacturing district to the southeast.

Within the core (*shown*) all efforts will be directed toward luring the pedestrian and discouraging the auto. Traffic not headed for downtown will be routed to bypasses and underpasses. The core will consist mainly of office, retail, and Government facilities. Jefferson Square, located between Market and Gaston Streets at Elm Street and identified by the existing Jefferson Standard Building, will be the focal point of downtown. The retail section will extend along Elm Street to terminate at Washington Plaza in a department store complex. Elm Street will be narrowed and pedestrian sidewalks widened to deter vehicular traffic. Future plans may include the closing off of Elm Street as a roofed, air-conditioned mall with two-level pedestrian walkways. A Government center near Jefferson Square will include a new City Hall, County office building, a Public Safety Building, Federal offices, and a plaza at its southern border. This Government plaza and two additional plazas will contain space for charity bazaars, art exhibitions, a sidewalk café, public gatherings, and a memorial fountain.

A Civic Design Commission has been suggested to approve design of buildings receiving public funds or built on public land. Structures falling into this category will be required to allocate a percentage of cost for inclusion of art works.



FHA Improvements

FHA, in its continuing program to upgrade design in Federally-built or assisted structures, has come out for the use of art in multifamily housing projects. Commissioner P. N. Brownstein said that to be eligible as part of the mortgage security, works of art (by living American artists) must be considered to be a part of the real estate and may consist of sculpture, mosaics, and/or murals. Up to 1 per cent of the FHA-estimated cost may be used for art, though more may be granted in special situations. FHA will not dictate on aesthetics, but "the agency will review all proposals and may reject any which does not conform to the general criteria established," whatever that means. Hopefully, FHA will not become an artistic censor of its own good program.

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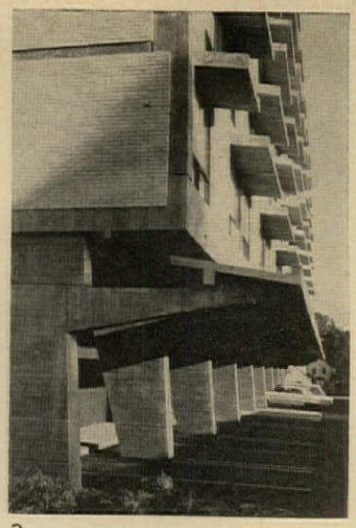

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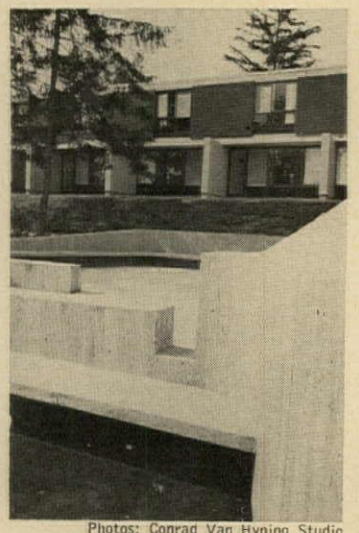

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Photos: Conrad Van Hyning Studio

"Far Above Cayuga's Waters . . ."

ITHACA, N.Y. The dedication of Marcel Breuer's newest project, 150 rental apartments in the college town of Ithaca, had all the earmarks of an institutional performance—blessings, singing, and a formal address. But while designed primarily for faculty and staff of Cornell University and Ithaca College, the Fairview Heights development was privately built. Or, rather, the institution that built it is a family named Schickel, present in force on August 1.

The father, Norbert Schickel, Sr., had assembled the 5-acre property for "the finest housing" ever constructed in a university community. A mechanical engineer (Ph.D., Cornell, 1933), he had already designed and built, in 1939, a noteworthy apartment house at the edge of one of Ithaca's magnificent gorges. In the 'forties, *Architectural Forum* cited that project, Fairview Manor, as "unusual in design, significant in construction." Its layout, a square doughnut around an interior court, gave corner windows to 36 of the 58 apartments (1). Its construction—concrete for floors and interior walls; brick and cinder block for exterior walls—created the "solid, substantial, permanent" structure that its designer-builder held to be essential for housing. This man was no stranger to architecture—he was the son of William Schickel, mentioned by *Forum* as a "prolific architect."

At Norbert, Sr.'s, death in 1960, the Fairview Heights property (catty-corner to Fairview Manor) was left to his nine sons and daughters. They began their task of creating "the finest housing" by selecting a top architect, one whose standards of excellence are well known.

An early decision by the architect was to separate single persons and couples from families with young children. But the 7-story block is in the middle of the row house units housing most or all of the children, hardly separated, and the parking that completely surrounds

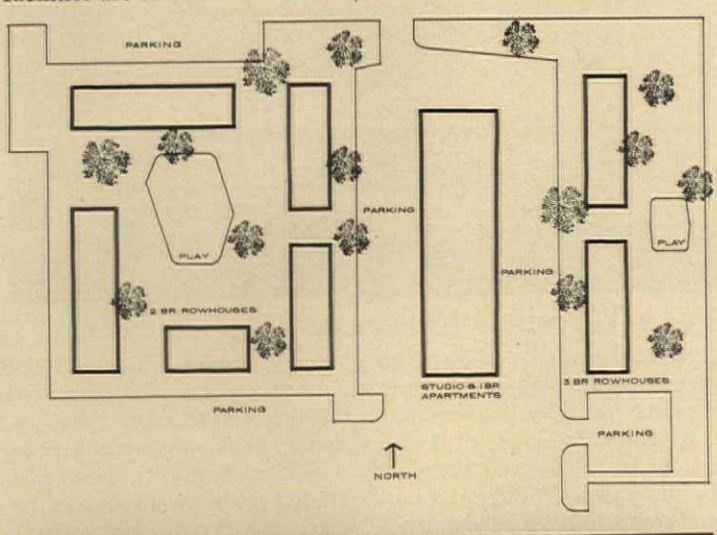
the building does not make a successful demarcation (2). This parking belt for adults seems to say that only the children can have a specialized landscape of their own. True, there will be a sun-terrace on the roof, a narrow duck-boarded strip, but the provision is half-hearted —railings are set far in from the edge, which avoids adding height to a building that is already scraping the sky. (Even from the roof "far above Cayuga's waters," the lake cannot be seen at this leafy time of year.) Also questionable in the general layout is the uncovered parking — Ithaca winters can only be called brutal.

But there is a consistently high quality to the project. The main play space is not just fun for children, pleasant for mothers, but a landscape feature of handsome appearance (3). The concrete construction is not just fireproof, but gives an added sound barrier that is vital to multifamily housing. For acoustical purposes in the row houses, load-bearing partitions are 12"-thick concrete-block walls, plastered (4); in the tall building, there are acoustical ceilings throughout, and carpets in the central corridor. Quality materials are everywhere: wood floors, aluminum sliding windows.

Individual apartments make the most of limited space. The development as a whole reflects an early market survey of the needs of the academic community and its ability to pay; one interesting result is that study facilities are included in two of the high-rise apartments — a 6′ x 6′ alcove in one, and a 9′ x 9′ full study in another. Rents, compared to the rest of Ithaca, are high ($138 for an efficiency, $259 for a 3BR). But since there is no similar project in all of Ithaca—with contemporary design, quality construction, and community facilities—no real comparison is possible.

The project is FHA-insured, and while they passed the buck back to the owner ("if you really want all this, *you* pick up the tab for the difference"), this doesn't alter the fact that they *did* help to realize the project. Farkas & Barron were Structural Engineers; Robert Zion–Harold Breen, Landscape Architects.

Altogether, however, one comes away from the project disappointed. It has only some of the Breuer strengths—the rationality and rectangularity, the sculpture of land forms and building forms. But if, visually, it is not as brilliant as other Breuer works, the combination of factors here would have—and has—crushed many a lesser architect. The client, after all, although sensitive to good design, was concerned with a sizeable investment; the FHA, although proud of its participation in Fairview Heights, usually can't see through its web of regulations enough to recognize and encourage excellence; and the community, although home of a major university (and school of architecture), offers little challenge in its aesthetic climate to the creation of an architecture of excellence.—E.P.



Delos Symposium

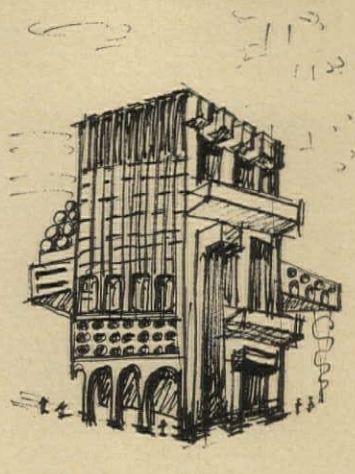
Last month, about 35 architects, educators, scientists, authors, economists, anthropologists, and devotees of various other disciplines sailed through the Greek islands on the craft "Philippos" as members of the second Delos Symposium under the auspices of the Athens Technological Institute. Main topics of discussion were a study of the need "to establish the proper framework for a new discipline of Human Settlements," presented by Greek Architect-Planner C. A. Doxiadis; the political factors influencing the solution of human settlements, introduced by British political scientist and author Barbara Ward and Philadelphia City Planning Commission Executive Director Edmund N. Bacon; and the educational needs to train the proper experts, presented by Lord Llewelyn-Davies,, Professor of Architecture, Edinburgh University. The second symposium ended on July 21 at the Athens Technological Institute, where members reported the results of their discussions.

Aesculapius in Arctic

Construction of a hospital 200 miles north of the Arctic at Barrow, Alaska, will be made on permafrost (subsurface layers of ice and vegetation). Solution, by Edwin Crittenden & Associates of Anchorage, is a sealed structure resting on 8′ pilings that have been frozen into the permafrost. A 4′ heated utility space under the floorings will house pipes and protect them from freezing. New hospital—serving an area of 58,000 sq miles with more than 2000 inhabitants—replaces an outdated structure which is gradually sinking into the permafrost. Facilities will include a 12-bed hospital with outpatient clinic, X-ray lab, and pharmacy, staff headquarters and a warehouse.

Film on Schools

"To Build a Schoolhouse" reports the dramatic changes taking place in school design, construction, and function. The 28-minute 16-mm color film, narrated by Chet Huntley, has been made available for free loan by the Educational Facilities Laboratories. It can be obtained through the regional libraries of Association Films, Inc., located in Ridgefield, N.J.; La Grange, Ill.; Hayward, Calif.; Dallas, Tex.; and Oakmont, Pa.

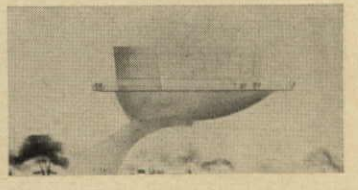


An Architect Reacts

New York Architect Meyer Katzman sent us this fanciful rendering with the following words: "The enclosed doodle is an expression of my confusion and indigestion resulting from an attempt to digest the laudatory editorials and wonderful photographs illustrating recent work by some of our distinguished architects.

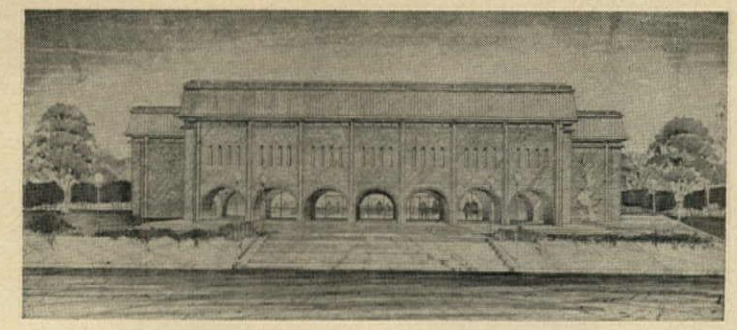
"I'm sure that my analyst would tell me that this is a manifestation of jealousy and sour grapes."

Just lay off that Welsh rarebit before bedtime, Meyer.



Clubhouse Capers

Clubhouse by Christopher Chamales is devised to spark the renovation of Aurora Downs race track west of Chicago. Escalators in the supporting arm will carry patrons 65-ft to a three-level circular clubhouse containing restaurants, terraces, and betting windows. Arm and cantilevered base will be prestressed concrete; grandstands with a capacity of 425 will be glassed in and heated.



Arts Center by Kling for Ohio

Fine Arts Center for Marietta College, Ohio, was designed by Vincent Kling to recall "the origins of the arts to be held within the center." Exterior window pattern varies at each of the three levels. Seven arches open the first level of a two-story lobby to a view of the campus and implement the flow of crowds to the first-floor theater and drama facilities. Classrooms and offices of the music department on the second floor open onto a balcony overlooking the lobby. Band and choir room is located in the rear wing. On the top floor, art studios will admit natural light through skylights and a continuous horizontal window band. Four studios are planned here, plus a centrally located reading-exhibition area and two lecture rooms. The three-story brick building with gray mansard roof will rise from a banked-earth podium intended to prevent damage from local flood threats.

Goths and Vandals Join Battle

Modern-day versions of the Goths and Vandals, who added quite a bit to the excitement of Teutonic life in earlier days, have clashed over the design of a proposed addition to the Houses of Parliament. The Goths, of course, prefer the addition to be "in the Gothic style" to blend with the present structure. The Vandals (who call themselves the anti-Goths) are campaigning for a design, in the words of one member, "uncompromisingly and recognizably of the 20th Century." According to *The New York Times*, Emrys Hughes, a Labor member, offered an alternate solution. "Abolish the House of Lords," he proposed, "and then there would be plenty of room. Or we could keep the House of Lords and let them meet in the waiting room at St. Pancras Station or in Madame Tussaud's."

African Art in Capital

A museum of African art has opened in the historic Frederick Douglass House at 316 A St., N.E., Washington, D.C. In order to demonstrate the relationship between African and contemporary European and American art, the museum will display them together.

Changeable Stadium

Almost anything from a baseball game to a circus can be accommodated in this prototype all-purpose, all-weather municipal stadium, according to architects Welton Becket & Associates. The basic structure is formed by 24 steel pylons set in a circle. Cables from the 280′ pylons form a hyperbolic paraboloid from which a 600′ diameter roof is suspended. Lower structure is reinforced concrete with cantilevered balconies. The column-free stadium is five levels: field, bleachers, first balcony, club and restaurant, and second balcony. According to the demands of particular events, seating arrangements can be shifted, providing a maximum seating of over 51,000. Parking areas are graded so that entrance can be made directly to each of the four lowest levels.

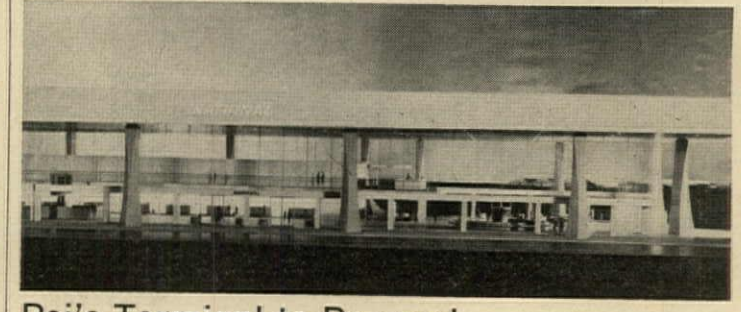
Two circles of incandescent lights suspended from roof will provide flexible lighting. Center portion of roof can be removed to enable sunlight entry for growing grass. Prototype can also be built as an open stadium in appropriate climates.

Steel-Roofed Coliseum

Architects Law, Law, Potter & Nystrom have devised a handsome coliseum of steel and concrete for Madison, Wisc. Roof of steel deck on steel beams will provide a clear span of 312′; height at the center is 94′. Just below the roof, a band of colored porcelain panels will encircle the building. Entrances will be marked by folded plate roofs. Main structure will be poured-in-place concrete with precast concrete seating risers. Permanent seating will be provided for 7464, with an additional 3500 temporary seats. A small mechanical equipment building will be constructed of the enamel panels used on the coliseum. Structural Engineers: Charles W. Yoder & Associates.

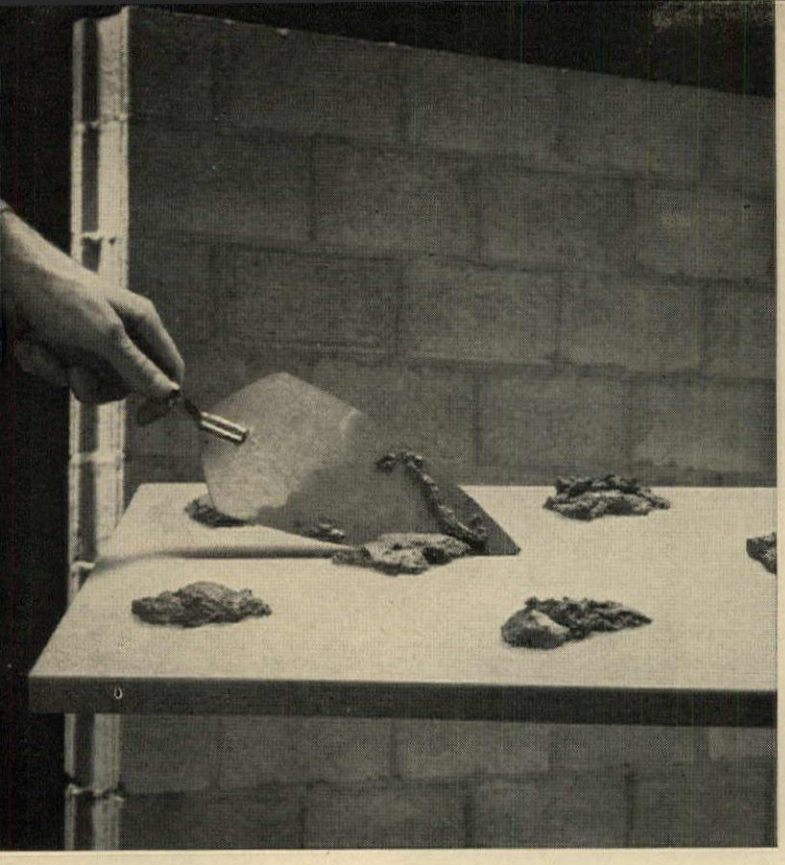
Tampa Tower

Dominating the skyline of Tampa, Fla., will be a concrete and aluminum banking tower. Design for extension of the Exchange National Bank by Harry A. MacEwen features projection of second through seventh levels over the sidewalks. Parking, located within these levels, will be concealed from exterior view by aluminum screens on three sides. Concrete masonry west wall will face the existing bank building. Utilizing the projection of parking levels will be an eighth-floor dining cafeteria and roof terrace. Exterior walls of rental tower—recessed to street floor's wall line—will have precast channel fins and inswing aluminum windows. First level will house banking facilities, lobby, and small rental space, with drive-in banking and main vault at a basement level.



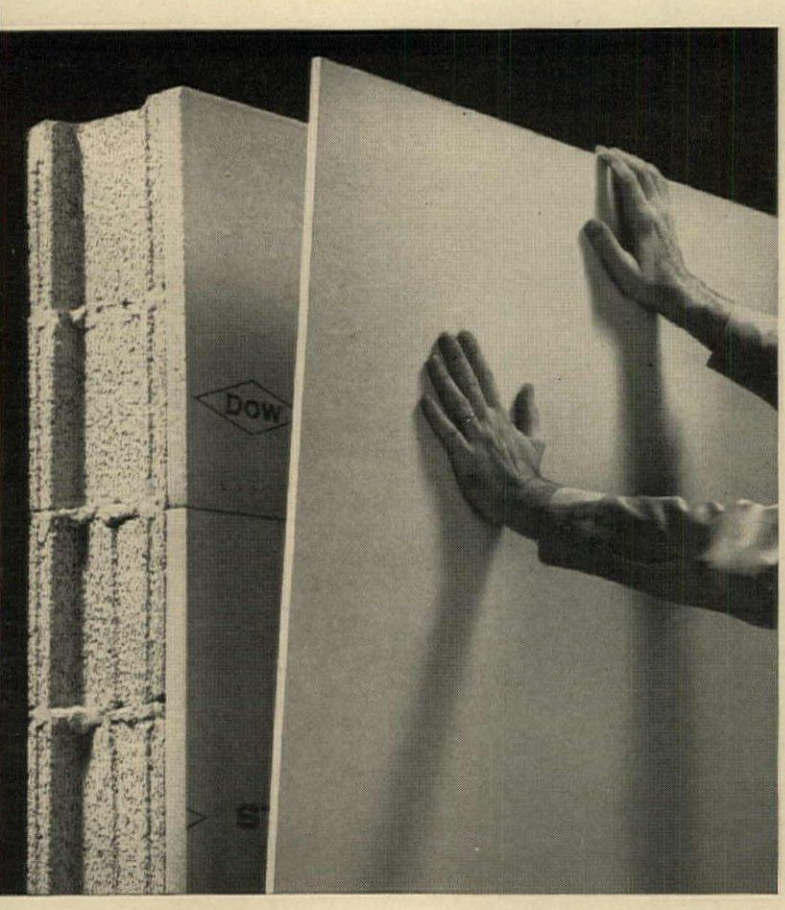
Pei's Terminal to Proceed

Final designs have been completed for the National Airlines terminal at John F. Kennedy International Airport by I. M. Pei & Associates and accepted by the airline. Winner of a limited competition in 1960 (see pp. 71-73, October 1960 P/A), the final design closely resembles the winning preliminaries. The steel-trussed roof will be supported by large sculptured columns behind which will occur a hung glass wall. The terminal will have a ring road permitting deplaning passengers to encounter baggage claim and ground transportation at the rear, while departing passengers will use the front entrance. The terminal will also be occupied by Air Canada and Trans-Caribbean Airways under sub-lease to National.

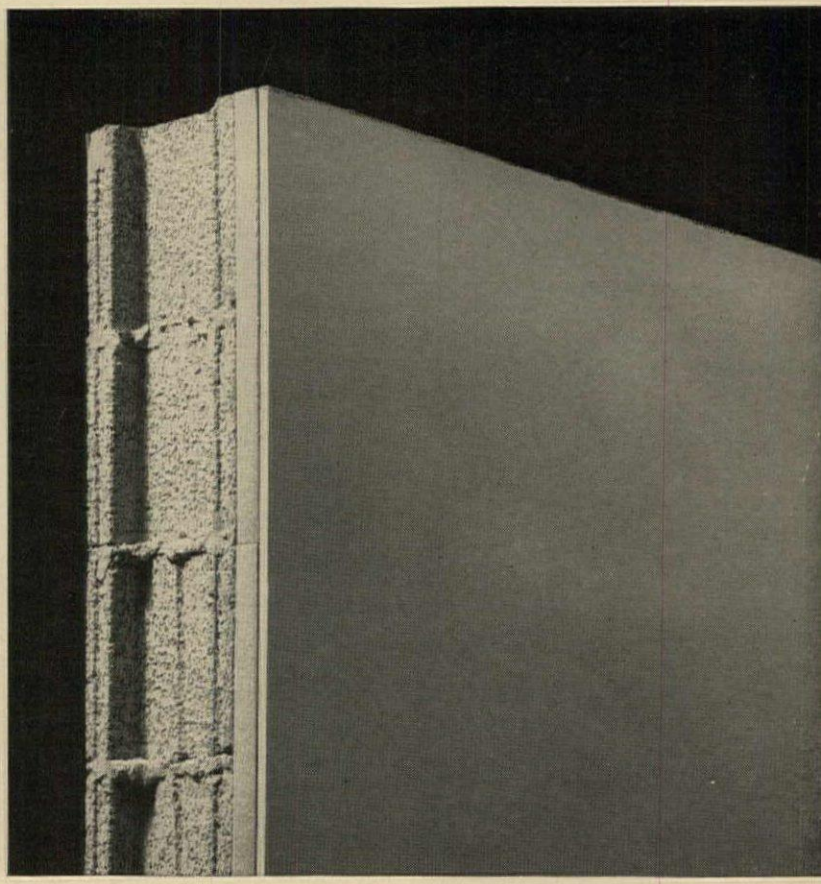


3. Spot-apply Styrotac® bonding adhesive.

4. Press Styrofoam FR into place. It installs fast, stays dry for year-round comfort.



7. Wallboard goes up. Finished wall (8-in. concrete block, 1-in. Styrofoam FR) has "U" factor of 0.16.



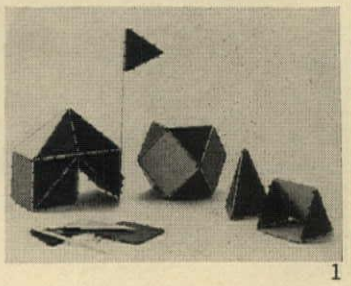
8. OK. Now forget it. Styrofoam FR won't absorb water, won't let moisture pass, won't need attention —ever! Any questions? See Sweet's Arch. File 10a/Do. The Dow Chemical Company, Midland, Mich.

DOW

Toy Design Problem

The Ideal Toy Company of New York recently contributed $3000 for a unique student problem in the School of Architecture, Pratt Institute, Brooklyn. Working with modular units in various materials that can be shaped and reshaped by children into different combinations, the neophyte architects designed a variety of toys that pleased a more discerning audience than the design jury for the problem—namely, a group of children assembled to give the winning toys the acid test of real play.

Photos: Courtesy Pratt Institute



1

From among 80 students who entered toy designs, fourth-year student Suzanne Wertz won first place with a hinge system joining rigid plastic planes to wood dowels

2

3

with integrally-molded clip hinges (1). Fellow fourth-year student William Wright received second prize with a design utilizing shapes cut from a standard panel of pressed wood (2). Another fourth-year man, Roomet Aring, captured third place with a toy that can be contained in a cube and taken apart like a Japanese puzzle (3).

Olindo Grossi, Dean of the Pratt School of Architecture, said, "Though this work is a little off-beat in architecture, it does include similar design principles of structure, function, and aesthetics, though in a lighter vein."

WASHINGTON/FINANCIAL NEWS

BY E. E. HALMOS, JR.

Two separate studies on the utilization of scientific and engineering manpower reached the same conclusion:

Older, more experienced men are having a tougher time finding jobs. Recent graduates, however, are in sufficient demand that recruiters still have a hard time filling their quotas.

Neither of the studies—one by the Engineering Manpower Commission of Engineers' Joint Council; the other by a White House manpower utilization committee headed by James R. Killian of M.I.T.—took up architects as a separate group. But the over-all conclusions seemed to be applicable to all professional regimens.

Both reports found the engineering/scientific "community" of about the same size (a total of about 1.7 million individuals); both found a surprising number of non-degree holders in some fields. (Among "engineers," EJC found that about 45 per cent of some 935,000 persons listed in the category did not hold any degrees.) EJC's report, however, did not offer any remedies.

The White House group singled out poor management of technically trained personnel as the principal culprit causing apparent shortages in the technical fields—particularly lack of incentive in terms of opportunity for study and advancement as well as in pay; lack of sufficient supporting organization to keep the technical men out of as much operating routine as possible; special management operations to bring engineers and others into top decision-making processes.

In Government work, incidentally, the Killian report made a major criticism familiar to many architects: the tendency of Government officials to "excessively monitor" internal operations of a private concern, thus inhibiting the decision-making of the firm's officers.

(The EJC report, "Demand for Engineers, Physical Scientists and Technicians," is available, for $4.50, from EJC at 345 E. 47th St., N.Y.; the Killian Report, "Toward Better Utilization of Scientific and Engineering Talent," can be obtained, for $3.00, from the National Academy of Sciences, Washington 25, D.C.)

Professional Measures

While Congress was pushing as hard as it could to get out of Washington before the end of August by shoving through appropriations bills and other needed legislation, it also put through a couple of bills of special interest to professionals.

One of these will establish a National Commission on Technology, Automation, and Economic Progress. Duties of the 14-member group will be to study the impact of economic and technological change on production and employment—including new job requirements and worker displacement—and make recommendations to Congress for "channeling new technologies into promising directions, including civilian industries."

The whole area of technological unemployment, for example, is a part of the general concern as to whether there will be enough—or perhaps too many—professionally trained people to man the nation's future needs.

50-50

Tucked away in a conference report on the $1.6 billion military construction bill that Congress approved was a flat prohibition against any 50-50 division of such work between the Army's Corps of Engineers and Navy's Bureau of Yards and Docks.

For some years, the annual bill has carried language requiring that military construction (mostly for the Air Force) be divided between the two construction agencies; but in fact, the Corps has been performing more than 70 per cent of the work. This year, the House inserted a provision that the work be divided equally.

The Senate—in the belief that BuDocks couldn't handle such a proportion with its present facilities and manpower (while the Corps would probably be faced with a reduction in manpower and facilities)—struck the provision from the bill.

Boom!

Federal Aviation Agency has concluded its six-month test of the "acceptability" of sonic booms created by supersonic aircraft—much to the relief of Oklahoma City, Okla.

During the tests, 1250 "booms" were produced, on an average of eight per day, seven days a week. Included in the test—in addition to effects on human beings—were effects on 11 representative houses and other structures, rented for the test period by FAA.

Object—to determine the effect of supersonic airliners expected to be in general use by the 1970's.

Still Foreign Agents

Professionals struck out almost completely in their efforts to get more out of U.S. foreign-aid programs. Amendments to two bills that would have pushed the Agency for International Development into urging U.S. architect-engineer firms on foreign governments and exempted such firms from registering as "foreign agents" (see last month's column) were both struck from final bills approved by Congress.

Coordinating with Locals

Federal agencies that buy, sell, or plan to use land in urban areas would be forced to consult with local governmental agencies before taking action, under terms of a bill put before the Senate just before the session ended.

Continued on page 112

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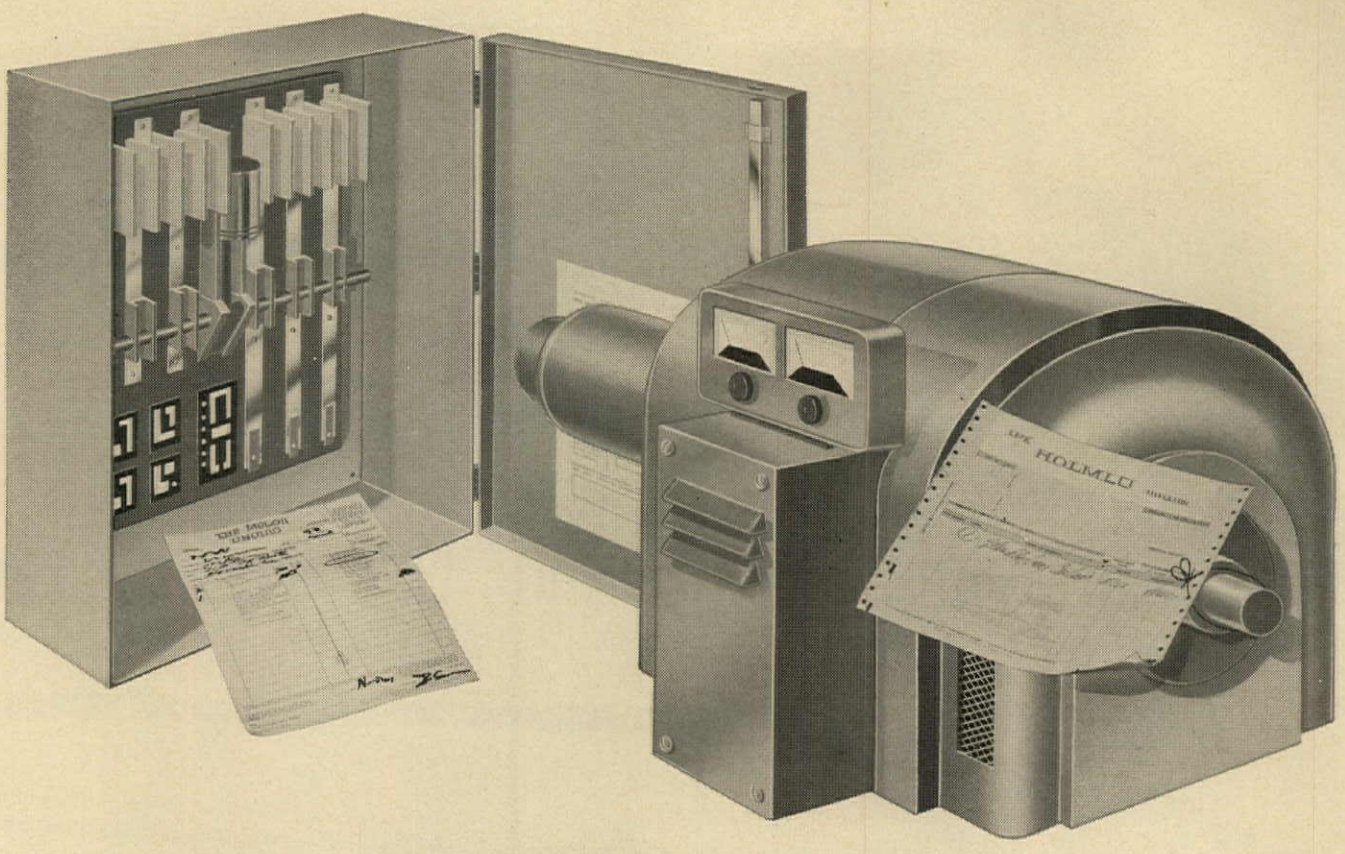

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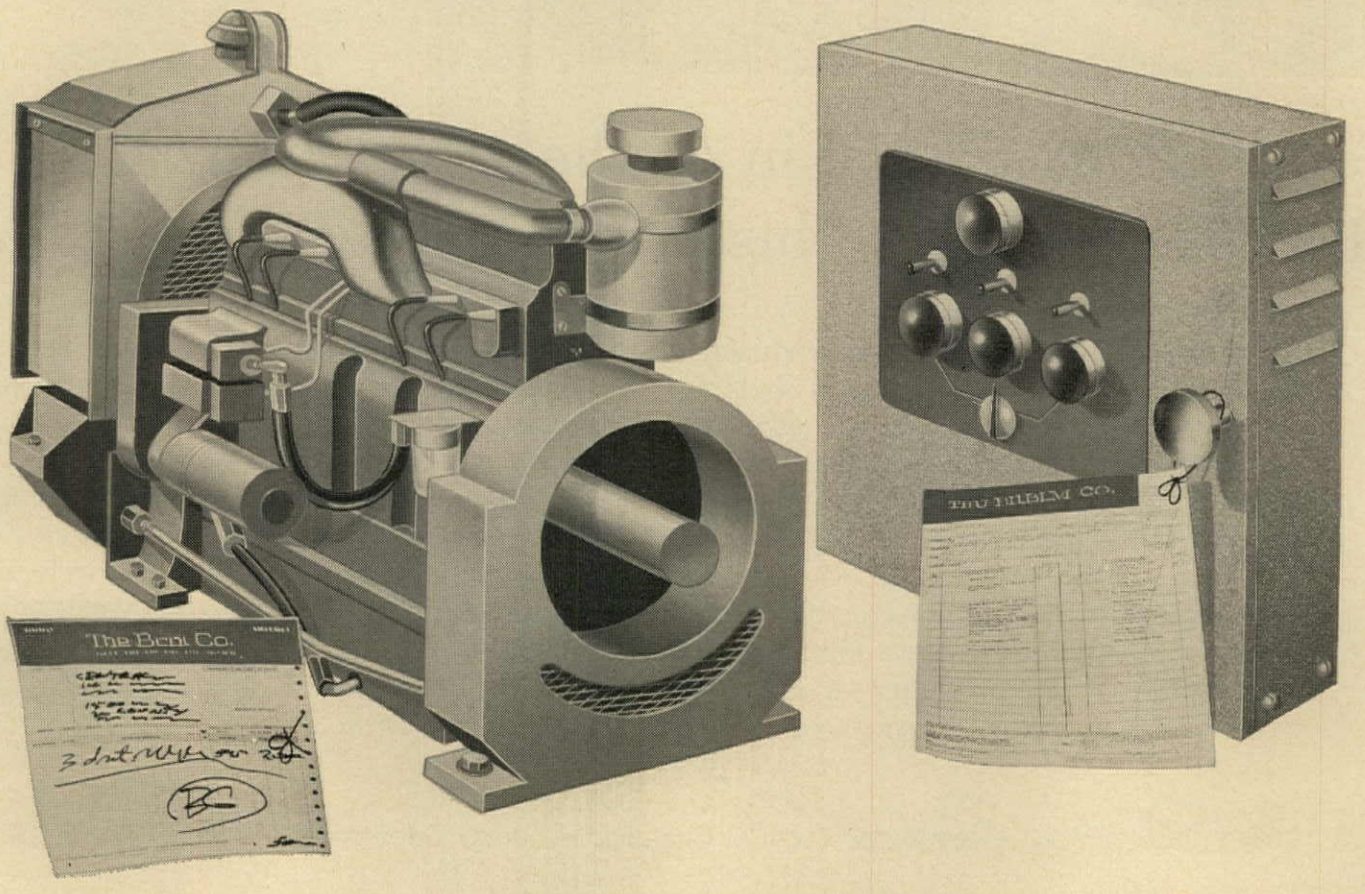
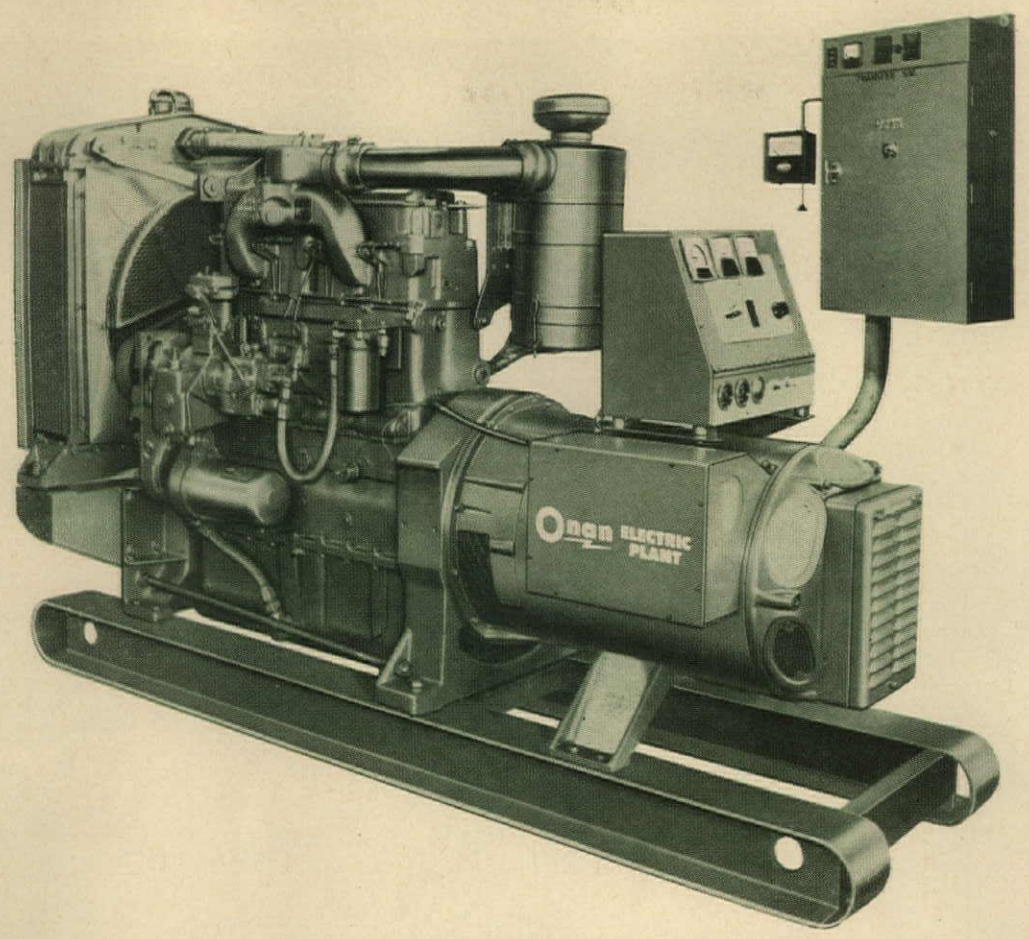
so you'll know who to bug for service...





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Then there's the problem of getting the components together on time when they're shipped from different factories. A much bigger problem is getting the generator set and controls functioning properly together. Regardless of the quality of individual components, they may not be compatible.

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Near Eastern Bronze Bull, VI Century B.C., New York Metropolitan Museum of Art, Rogers Fund, 1947.

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Lo-Tone FR acoustical ceilings cut new construction costs — eliminate the need for installing costly intermediate fire protection above the acoustical ceiling. They speed remodeling jobs which require fire protection. Application is *completely dry*. Off-hour work doesn't upset stores and offices; there's no moisture to slow other trades on the project.

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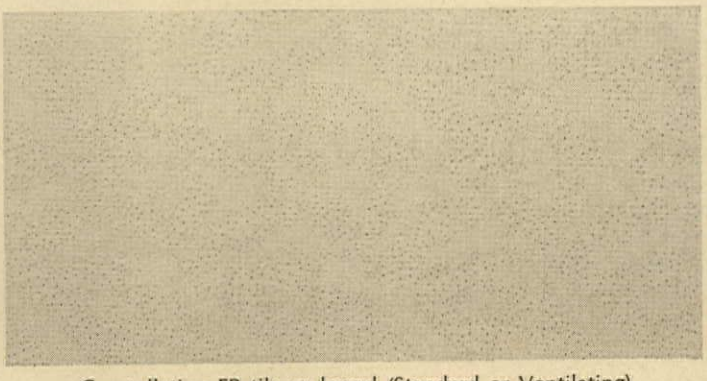
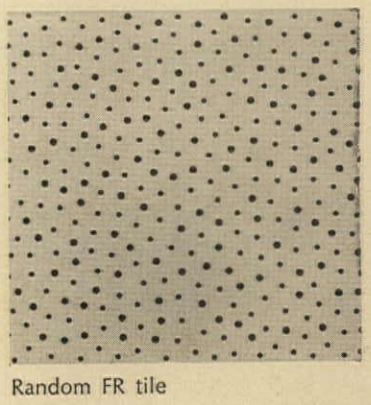


Constellation FR tile or board (Standard or Ventilating)



Random FR tile

For more information, turn to Reader Service card, circle No. 415

Continued from page 106

Idea of the measure (S.3037) is to prevent recurrence of a recent case where the General Services Administration tried to sell part of an installation by advertising that the land could be used for commercial or apartment development.

As a matter of fact, said Maine's Senator Muskie, the sale was planned without any coordination with city planning groups; the land cannot be served by city sewer or water, has no proper access to existing streets, and thus no purchaser could legally obtain building permits.

The bill (which had little chance for action this year) would force GSA and other agencies to consult with local governmental agencies, give 90-day notice of intent to use or sell land, and "take into account" local wishes.

Protecting Good Design

Washington's Fine Arts Commission, as a noncompulsive arbiter of the capital's architectural style, has generally served well—though not without criticism—to keep the city in tune with its traditions.

But local newspapers are beginning to wonder if the cost isn't prohibitive. They cited the recent case of plans for a $3 million school building. Last January, some local architects were signed to draw up plans for the school. In February, the architects submitted a proposed design to Fine Arts —which handed it right back. On April 15, the architects were back with revisions—and didn't get a hearing. On April 27, the city issued a stop-order to the architects. Finally, new plans were worked out and approved May 1.

The architects now turned in a bill for an extra $29,753 for services, and said they weren't sure they could now hold the cost within the allotted $3 million.

Said a Fine Arts Commission spokesman, defending the series of actions:

"We're constantly being blamed for increasing costs, but I don't think it is true. The Commission's view is that good design doesn't cost any more. You just shouldn't invest a lot of hours doing something that's inappropriate to begin with."

Financial

With continued evidence of a booming construction economy in July, the most encouraging sign for architects and owners was the indication that costs are levelling, or even coming down a little.

Value of new construction put in place in June was set by the Census Bureau at $6.1 billion—up 11 per cent over May and up 5 per cent over June of 1963.

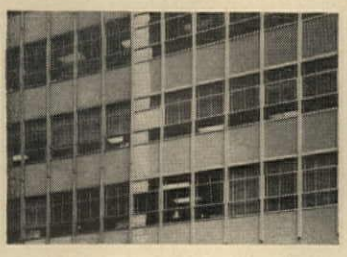
At the same time, the Bureau of Public Roads reported that its highway construction cost index for the second quarter of 1964 dropped to its lowest point in more than two years — to 99.3 (with 1957-1959 taken as 100). Biggest individual price changes affecting the index were substantial drops in prices of reinforcing and structural steel, and structural concrete.

The U.S. Public Health Service reported that its new sewage treatment plant construction cost index showed almost no change in July, over June.

The magnitude of the 1964 construction boom is indicated by the fact that Census placed total new construction spending in the first six months of the year at $30 billion, compared to $27.7 billion in 1963.

Powering the continued prosperity is the overwhelming support by voters of most municipal and local spending. In May, according to the Investment Bankers Association, voters approved 87.4 per cent ($772.4 million) of all construction bond issues presented to them.

Products



Metal Protectant

"Acrylocil" silicone metal protectant that prevents damage from atmospheric corrosion and tarnish was developed by Stuart-Dean Co. of Los Angeles-New York, utilizing silicone materials supplied by Union Carbide Corp. Protectant is less than 1/10,000″ thin and colorless. It forms pinhole-free film that is impermeable and inert to many chemicals in liquid, solid, or gaseous form. Acrylocil is effective on all common metals including copper, brass, aluminum, steel, and many others. It bonds to metal so tightly that possibility of underfilm corrosion is eliminated. Average savings are from 50 to 65 per cent over present polishing costs.

Where severe service conditions are encountered, an organic coating over silicone may be required to protect the silicone, which, in turn, protects the metal. Acrylocil is an excellent primer for many clear topcoats such as epoxies, acrylics, nitrocellulose, urethane, and nitrocellulose-acrylic systems. One gallon of protectant will cover up to 1000 sq ft of surface area. Application shown is Colgate Palmolive Building, Park Ave., New York. Union Carbide Corp., Silicone Div., 270 Park Ave., New York, N.Y.

On Free Data Card, Circle 100

Arch System

Recently developed "Donn Spann" U-shaped arch roof and ceiling system with legs pointing up consists of 22 gage steel 6″ wide x 2″ deep curved sections that are electro-zinced. System is perforated or nonperforated, depending on sound control needs. Donn Spann is shipped in straight lengths and curved to radius of arch at job site. Top of each leg on roof section slides and interlocks with leg of adjoining section by means of power driven machine (*top*). Each

section is automatically pulled up from the ground as preceding piece is driven across the arch. Operator and driver ride supporting beam. Driver pushes section over the arch interlocked into the preceding piece (*bottom*). Spans range up to 40′ with 30 psf live load. Radius of arch ranges up to half circle. Since there is no cutting in the field, waste material is eliminated. Available in white or colors with orders exceeding 25,000 sq ft.

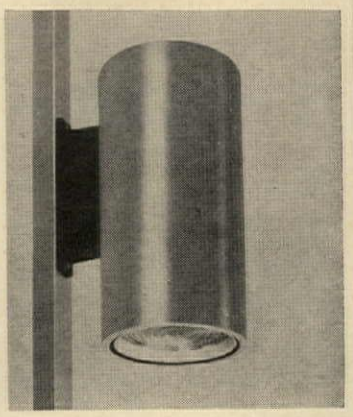
Two systems are employed for insulating and roofing Donn Spann: (1) Insulation, in rolls slit to 6″ widths, is placed on frame and automatically inserted between legs. A 2″ slab of gypsum is poured over insulation and then built-up roofing is applied. (2) Attachment of rigid insulation to legs of section by means of special clips. Built-up roof is then applied over rigid insulation board.

System is used for one-story structures requiring finished ceilings such as shopping centers, stores, schools, offices, labs and research facilities, and some industrial buildings. Cost of system including deck is 20 per cent less than comparable flat roof and suspended ceiling buildings. Variety of methods are used to integrate heating, air conditioning, and lighting into arch system. Donn Products Inc., Westlake, Ohio.

On Free Data Card, Circle 101

Cylinder Lights

Cylinder lighting fixtures are made of unitized aluminum. Precision castings of corrosion-resistant alloy (⅛″ thick with integral cast baffles for low brightness) have 10″ or 14″ depths. There are 54 models;



wall, ceiling, pendant, mullion swivel units with choice of five types of light control: open baffles, louver guard, prismatic lens, reflector intensifier, and up-down lights. mcPhilben Mfg. Co., Inc., 1329 Willoughby Ave., Brooklyn, N.Y.

On Free Data Card, Circle 102

Heat Control Window

Horizontally pivoted aluminum window (HPA50-TVB) provides solar heat control as well as a light, sound, and thermal barrier, all in one unit. Friction pivot controls degree of opening. Unit has concealed limit stops and insulated sash and frame. Window is double glazed. Sash can be easily opened for washing inside faces of glass. Lightproof, 1″ slat venetian blind rides between panes of glass and has easily operated controls of raising, lowering, or tilting. Hupp Corp., Flour City Architectural Metals Div., Minneapolis, Minn.

On Free Data Card, Circle 103

Patterned Metal

Four patterns have been designed for embossed metal (CroRoto Line). They are available on both perforated or nonperforated metals. Embossed metals are used on ornamental backgrounds, grilles, and panels. Multilevel designs are produced in widths up to 16″ and in continuous lengths. Variety of mechanical, chemical, and organic finishes is offered. CroRoto line now comprises over 82 stock patterns. Croname Inc., CroRoto Div., 6201 West Howard St., Chicago, Ill.

On Free Data Card, Circle 104

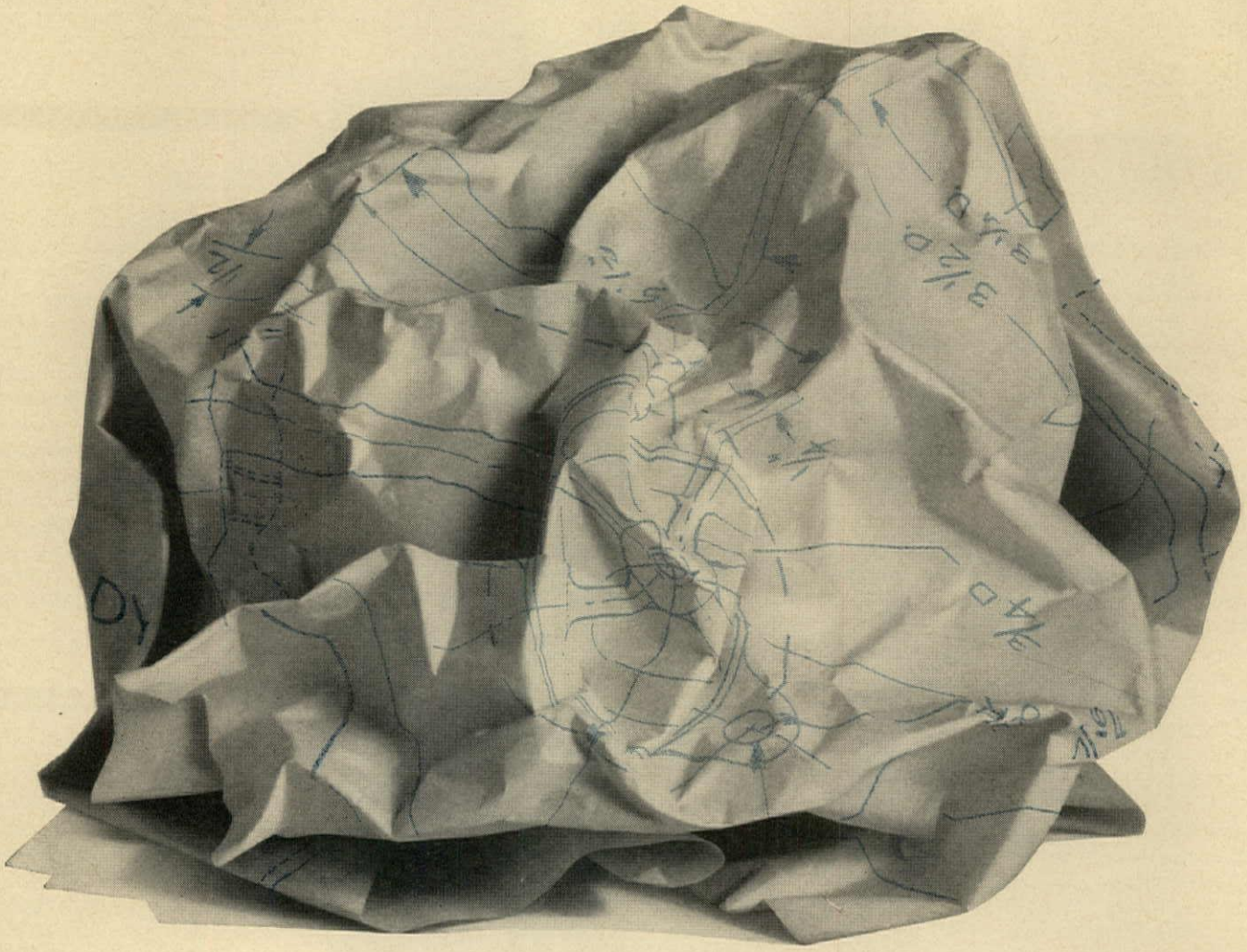
Decimal Chart

Decimal-equivalent chart simplifies conversion of architectural designations in inches to engineering designations in decimals of a foot. Chart is backed with pressure-sensitive adhesive for mounting on T-square or straight edge. Decimal equivalents to four places are given for decimals of a foot for each ⅛″ up to 12″. Bilco Co., New Haven 5, Conn.

On Free Data Card, Circle 105

Communications Wall

Communications wall is completly self-contained, multi-screen audio and visual system for lecture presentations, team teaching, large group instructions, or conference room briefs. It provides combination of 35 mm slides, film strips, 16 mm motion pictures, overhead projectors, bulletin board and chalk board. System serves as room dividing wall and will show films in either room by flicking a lever. Automatic controls for operating projectors can be installed for easier operation. Ample space is built into wall for equipment and ma-



There's nothing wrong with most drawings that Mars Leads couldn't fix.

J. S. STAEDTLER, INC., MONTVILLE, NEW JERSEY

I would like to receive

☐ complimentary samples of Mars pencils and leads
☐ the complete catalog of Mars products

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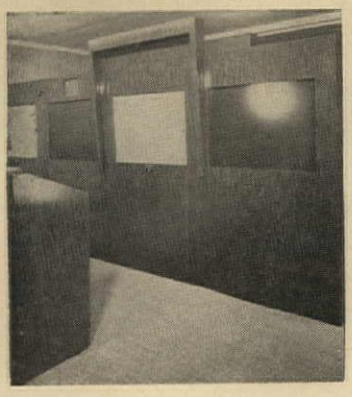
POSITION _____

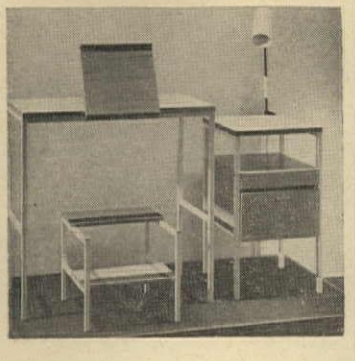
COMPANY _____

ADDRESS _____

For more information, turn to Reader Service card, circle No. 400



terials storage. Busch Film and Equipment Co., 214 So. Hamilton St., Saginaw, Mich.
On Free Data Card, Circle 106



Handsome Hospital Units

Illustrated are aluminum-framed bed table, night table, and bed step for hospital use. Bed table and night table have tops of white "melamine" plastic with solid oak edges and pull-out reading leaf. Night table has drop lid covering a storage unit, and a towel rack. Bed step has non-skid plastic tread on oak steps. Aluminum frame finishes: white, aluminum, bright chrome or black. Stendig, 487 Park Ave., New York, N.Y.
On Free Data Card, Circle 107

Lightweight Sandwich Panel

Architectural panel, called "V-Matte," combines light-gage steel with weatherproof matte porcelain finish. It can be laminated directly to rigid core materials with any backing in any desired thickness. Panels are available in Porcelain Enamel Institute colors. in standard widths of 3′, 3½′ and 4′, and in standard lengths of 8′, 10′, and 12′. Bettinger Corp., Milford, Mass.
On Free Data Card, Circle 108

Vinyl Flashing

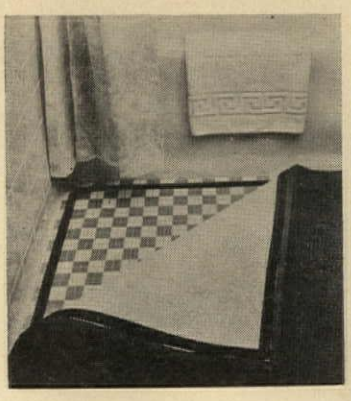
Flexible vinyl flashing provides low-cost protection for movement between building structure and roofing. Flashing is made from specially compounded PVC resins in nominal thickness of 1/16″. It is available in standard widths in either black or white. Vinyl does not support combustion and is not affected by corrosive industrial atmosphere, bacterial growth, and most chemicals. B. F. Goodrich Co., Akron, Ohio.
On Free Data Card, Circle 109

Glass Fiber Planters

Planters, made of molded sprayed glass fiber, are designed by Krevolin & Constantine, Inc. They are available in wide range of sizes, colors, and shapes. Colors include white, bronze, brown, travertine, and black. Shapes include polygons, cylinders, squares, and rectangles. Port Fiberglasspray Inc., 137 Haven Ave., Port Washington, N.Y.
On Free Data Card, Circle 110

Revolutionary Fastener

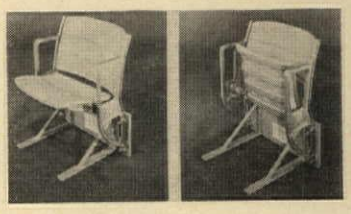
Velcro is a nylon tape that can be used in place of nails, hooks, and glue in the installation of wall coverings, drapery, pictures, carpets and rugs, and



that could have an important impact on the upholstery and slip cover business. It is made of two strips of 100% nylon whose smooth outer sides are glued, sewed, or stapled to facing surfaces, as illustrated. The inner sides, soft plush on one tape and firm, looped spines on the other, interlock, zipper-fashion, when pressed together. They can be pulled apart by hand. F. Schumacher & Co., 58 W. 40 St., New York, N.Y.
On Free Data Card, Circle 111

Weatherproof Plywood

Weatherproof plywood sheathing, "L-1R," resists adverse exterior effects such as water and mold. It is immune to delamination despite severe storage and installation conditions. Sheathing meets glue line requirements of strictest building codes. Edges are treated with "Convoy," a weather- and fungi-resistant treatment. U.S. Plywood Corp., 777 Third Ave., New York, N.Y.
On Free Data Card, Circle 112

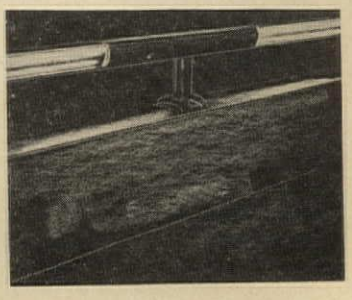


Plastic Stadium Chair

Plastic stadium chair is either self-lifting or manually operated. Backs and seats consist of double-walled high-density polyethylene, molded construction. Both parts are provided with properly spaced holes for ventilation and water drainage. Chairs are available in green, beige, red, bright orange, blue, brown, and terra cotta. They cannot rot or split, and resist ultraviolet rays. American Seating Co., 901 Broadway, Grand Rapids, Mich.
On Free Data Card, Circle 113

Refined, Caned Chair

Sleek cane dining chair with walnut frame is part of a collection of residential furniture designed by Jens Risom. Cane is continuous on both sides of chair back. Also available as arm chair; fabric seat optional. Jens Risom Design, Inc., 444 Madison Ave., New York, N.Y.
On Free Data Card, Circle 114



Roadway Lighting

"LUXaire - Rail" all - weather roadway lighting unit serves as high-density fluorescent luminaire and structural railing. Used with 4′ and 6′ HO lamps, luminaire mounts approximately 40″ above roadway and provides uniform, broad horizontal distribution of lighting. It eliminates need for lighting standards, railings, and time it takes to pull wires, install conduits, and ballast. All wiring is performed above grade in aluminum wireway that is maintenance free. In case of

Continued on page 120

Three Cleveland architectural firms have organized Cleveland Federal Building Architects to design the new Cleveland Federal Office Building. They are: Outcalt, Guenther, Rode, Toguchi & Bonebrake; Shafer, Flynn & Associates and Dalton-Dalton Associates. The contractors (joint venture) are Frank Briscoe Company, Newark, N.J., and Huber, Hunt and Nichols, Inc., Indianapolis, Ind.

HAUGHTON TOTALLY-AUTOMATED ELEVATORS TO SERVE THE NEW CLEVELAND FEDERAL OFFICE BUILDING

28-totally-automated Haughton high speed elevators are specified for the new 32-story Federal Office Building to be built on Lakeside Avenue in Cleveland, Ohio. They will provide service that is precisely matched to traffic demand around the clock. ■ Total elevator automation is made possible by a number of unique developments to come from our work in Elevonics*. One example: our remarkable new electronic computer-control system. This advancement in elevator technology constantly monitors elevator service demands on every floor . . . automatically controls each car to coddle tenants and visitors with the ultimate in swift, smooth service. ■ Even peak demand experienced during rush hours is handled with such incredible speed and efficiency that elevator service is virtually instantaneous. ■ Specify totally-automated Haughton Elevators in your plans for new construction or modernization. See our catalog in Sweet's, or write us for information. Haughton Elevator Company, Division of Toledo Scale Corporation, Toledo, Ohio 43609.

*Haughton's advanced program in systems research and engineering, with specific emphasis on the creative application of electronic devices and instrumentation for betterment of systems design and performance. Registered in U. S. Patent Office.

HAUGHTON ELEVATORS

For more information, turn to Reader Service card, circle No. 346

Continued from page 117

impact damage, rail and lamp units are easily replaced because of surface mounting with continuous ground. Pfaff & Kendall, 84 Foundry St., Newark, N.J.

On Free Data Card, Circle 115

Combination A/C Unit

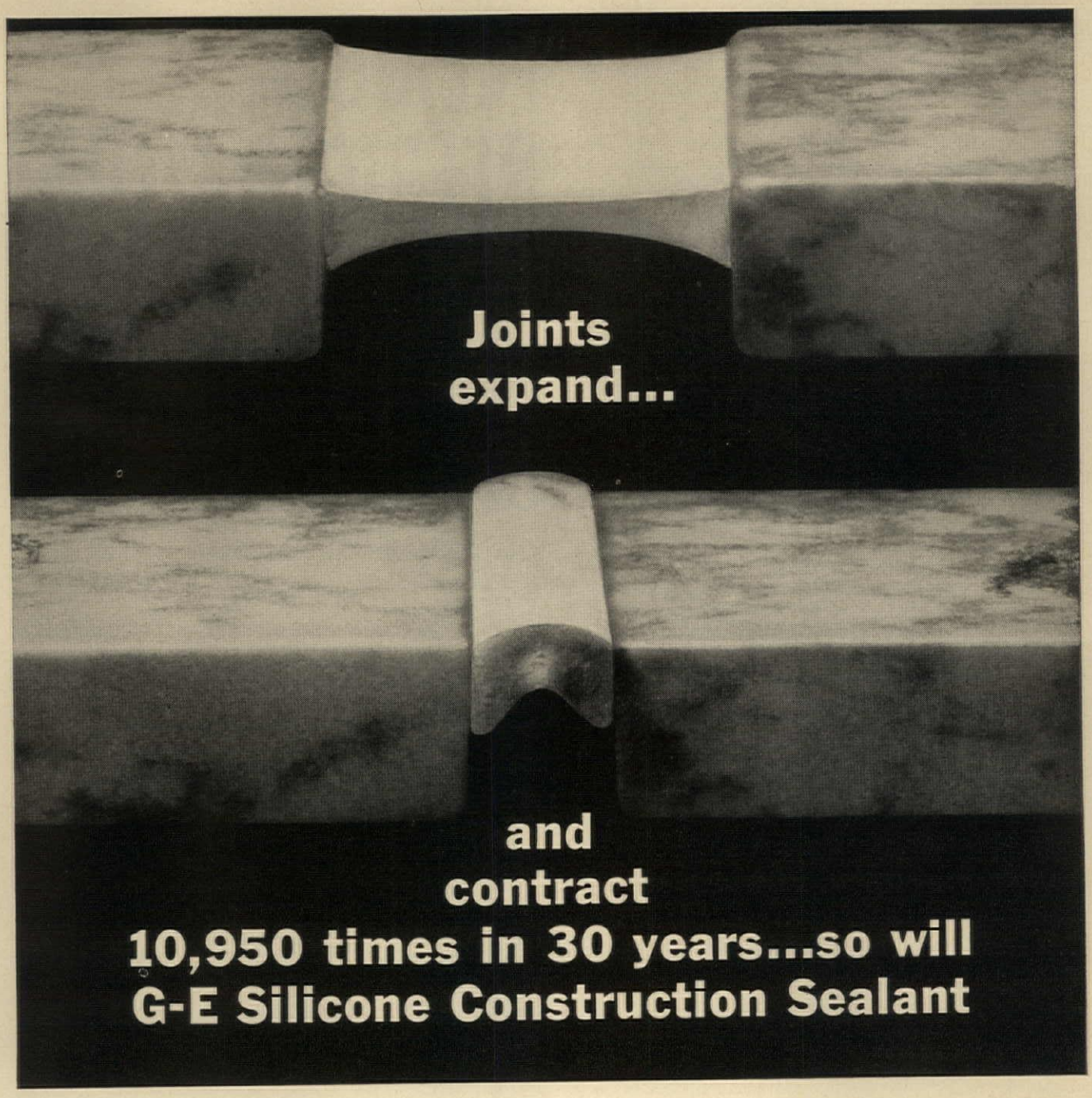
In-wall combination air conditioner and forced air heater (ACC-18-50) for apartments has been introduced. The 1½-ton unit cools from 600 to 800 sq ft while providing individually metered and thermostatically controlled climate for each apartment. It has cooling capacity of 18,000 Btu's and heating capacity of 50,000 Btu's. System, 14′ wide x 16″ deep x 7′-6″ high, can be installed between wall studs or in any small alcove. When centrally located, it eliminates duct work. It has accessory side and rear grilles for supply and discharge to other rooms. Lear-Siegler Inc., Holly Div., 4361 Firestone Blvd., South Gate, Cal.

On Free Data Card, Circle 116

Stacking Chair

Low-cost school seating of molded "Dytron" has been announced. Dytron — a plastic alloy—can be molded to body contours, has strength, resilience, and color fastness, and is able to withstand temperature extremes. Eight seat heights and seven colors are available. Dytron series includes stacking chair, tablet-arm, chair-desk and tablette (drop arm) chairs, as well as study top, cluster and book-box combinations. Brunswick Corp., School Equipment Div., 2605 East Kilgore Rd., Kalamazoo, Mich.

On Free Data Card, Circle 117



Construction joints go through the expansion-contraction cycle at least once a day, and far more often in modern curtain wall buildings. This is the major cause of sealant failure. In the past, even the best elastomeric sealants have been subject to early failure under severe compression-extension conditions. Because these sealants take a "set" during compression, they put a severe strain on the bond during extension. G-E silicone sealant, with almost 100% recovery after severe compression, withstands repeated cycling while maintaining an effective seal.

General Electric Silicone Construction Sealant will take this punishment for years because silicone rubber doesn't lose its elastomeric properties through exposure to sunlight or ozone, the deadly enemies of organic rubber sealants.

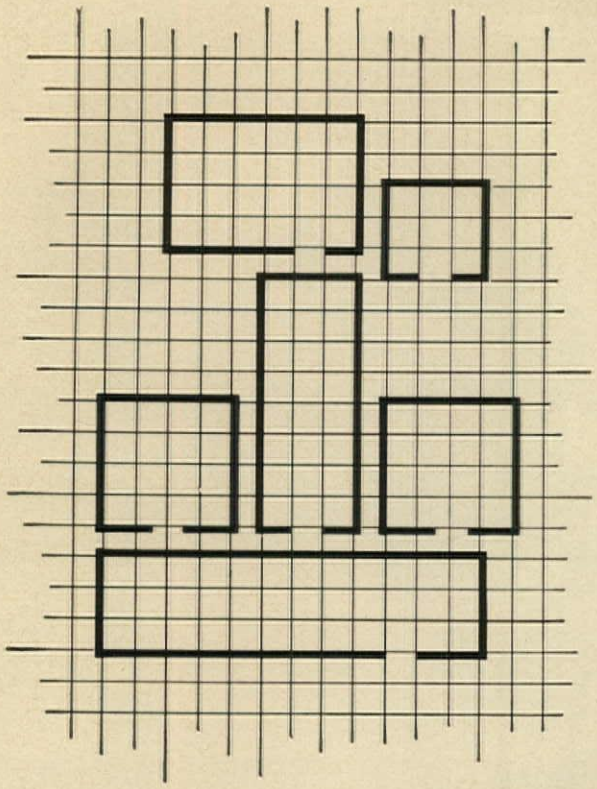
It is unaffected by ozone in any concentration over thousands of hours in accelerated aging tests. It withstands weathering, intense heat and sub-zero cold superbly. In fact, our tests support conservative estimates that it will last at least 30 years, much longer than *any* other type of sealant on the market.

G-E Silicone Sealant comes in a variety of non-fading, non-staining, non-bleeding colors including almost invisible translucent. It needs no pre-mixing or catalyst—bonds securely to all common building materials—can be applied easily, efficiently and quickly at any temperature.

For more information, check the listing of distributors. Or write, General Electric Company, Silicone Products Department, Section Q9118, Waterford, New York.

GENERAL ELECTRIC

For more information, turn to Reader Service card, circle No. 459

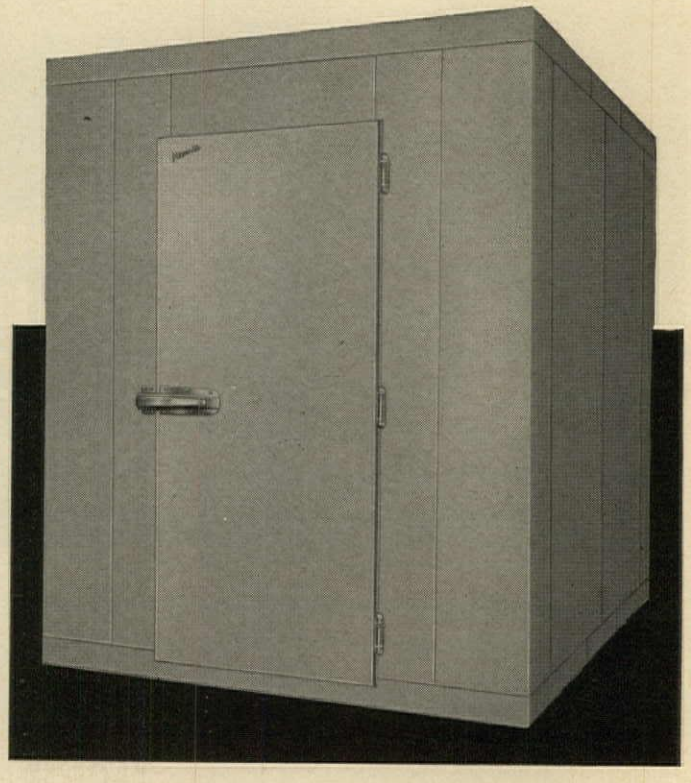


FLEXIBLE REFRIGERATION

pre-fabricated, all-metal

NORRIS WALK-IN COOLERS, FREEZERS, COMBINATIONS

quickly provide refrigerated space by the foot



Flexible refrigeration describes Norris walk-in coolers, freezers, or cooler-freezer combinations, for Norris walk-ins offer you complete installation versatility. They're pre-fabricated in two- and three-foot wall sections, four-foot door sections (7½′ high), and can be set up in one-foot increments in any size . . . in virtually any space . . . in new or existing buildings. Best of all, the only tool required is a light hammer.

The modular panels of Norris walk-ins are all-metal—no wood to absorb moisture—and extremely light weight. Standard exteriors are bonderized steel finished in grey baked enamel, interiors are 22-gauge galvanized metal, with custom exteriors or interiors optional at extra cost. Ideal for every institutional, commercial, or industrial refrigeration need, Norris walk-ins can be supplied with the proper self-contained or remote refrigeration equipment to meet any application.

Your Norris representative has full details, or write Norris for descriptive literature.

Light weight—as low as 4½ lbs. per sq. ft.—reduces freight costs!

Norris

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2720 LYNDALE AVENUE SOUTH
MINNEAPOLIS 8, MINNESOTA

NORRIS—THE *FIRST* NAME IN MILK SERVING AND STORAGE EQUIPMENT!

For more information, turn to Reader Service card, circle No. 426

Manufacturers' Data

AIR / TEMPERATURE

Heating/Cooling Unit

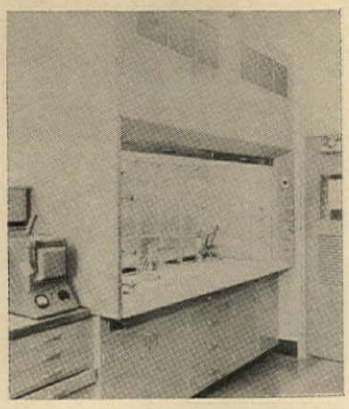
Recently developed heating-air conditioning unit, designed for apartment and other multiple unit buildings, is described in 4-page folder. Compact "APT" series combines gas-fired furnace and built-in evaporator coil with wall-mounted compressor-condenser unit for year-round heating and cooling. American Furnace Co., 1300 Hampton Ave., St. Louis, Mo.
On Free Data Card, Circle 200

Roof Ventilator Trends

Comprehensive manual presents complete information on roof ventilator trends in glass fiber and metal. Included are complete engineering and comparative selection data and information required to design gravity or mechanical ventilation systems. Also covered are gravity vs. powered vents, specific selection of attic vents, fan discharge and fresh-air intake hoods, skylight/gravity combination vents, equipment enclosures, and power roof fans. Williams-Bermuda Corp., Box 2053 Pasadena, Cal.
On Free Data Card, Circle 201

Fume Hoods

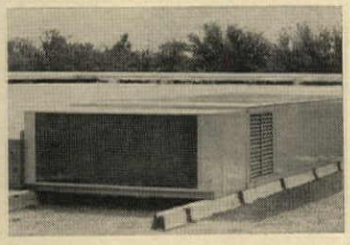
Catalog, 68 pages, describes laboratory fume hoods. Types of fume hoods include walk-in distillation, coved corner, table and canopy, and portable. Also



covered are fume hood superstructures, fume hood accessories, service fixtures, fume hood exhaust blowers, and blower support shelves. Mechanical service roughing-in drawings, duct location drawings for all fume hoods, photos, and charts are given. Kewaunee Mfg. Co., 5089 S. Center St., Adrian, Mich.
On Free Data Card, Circle 202

Direct Multizone Unit

Booklet, 31 pages, describes direct multizone system designed for "School Construction Systems Development" project in California, which is sponsored by Educational Facilities Laboratories. Booklet describes SCSD project and explains that direct multizone system is



single package providing multizone control using direct-fired heat exchangers and direct expansion coils for cooling. Equipment is designed for schools, offices, and other commercial applications where temperature control of multiple zones is required. It provides simultaneous heating or cooling in up to eight individual zones per system. Drawings and illustrations indicate potential applications with typical ductwork and show components of system and their various functions. Lennox Industries Inc., 200 So. 12 Ave., Marshalltown, Iowa.
On Free Data Card, Circle 203

School Ventilators

Catalog 1100, 104 pages, describes "60 Series" unit ventilators and accessory cabinets for use in schools. Included are spec data, dimensional information, details, photos, charts, and complete capacity and performance ratings. Schemenauer Mfg. Co., Holland, Ohio.
On Free Data Card, Circle 204

CONSTRUCTION

Suspended Wood Ceiling

"Timberline" wood grain and tie-grid suspended ceiling is described. "Snap-Lock" system, in 3′ x 3′ modules, simplifies installation. Long rails, 9′ or 12′, eliminate parts found in other ceiling systems. Ceiling needs only four hangers in average 12′ x 12′ room. System needs no more clearance than furring strips and ceiling tile. Simple twist of preslotted tab on rail securely locks sound conditioning panels in place. Wall angle slips into slot and tab locks in place. Basic parts and installation photos are given. K-Lux Products Div., K-S-H Plastics, Inc., 10212 Manchester, St. Louis, Mo.
On Free Data Card, Circle 205

Weatherproof Plywood Panels

"No-Check" plywood panels for exterior use are described in 4-page folder. Panels are treated to stop weather checking by relieving stresses that develop on face veneer. It consists of series of striations $\frac{1}{32}$″ wide and .080″ deep, running long way of panel and spaced on ¼″ centers. These striations are applied either to sanded or unsanded panels. Standard sizes are 48″x96″, 48″x108″, and 48″x120″ with special sizes of 48″x72″ and 48″x 84″. Panels are used as siding, garage door panels, soffits, gable ends, and dormer openings. Pope & Talbot, Inc., Kalama, Wash.
On Free Data Card, Circle 206

Higher-Strength Glass

Recommendations for specification of higher-strength glasses are discussed in 24-page report entitled "Technical Service Report No. 101." Charts (14) give recommendations to meet sonic boom, underwater, snow, and wind load requirements for all standard PPG glasses in wide range of building applications varying from underwater windows to glass floors and skylights. Load and application charts are included. Pittsburgh Plate Glass Co., 632 Fort Duquesne Blvd., Pittsburgh, Pa.,
On Free Data Card, Circle 207

Hardwood Panels

Hardwood panels for interior and exterior use are illustrated in 16-page booklet. Oak, cherry, pecan, teak, elm, and walnut are types of wood available. Details, color photos, and characteristics of many types of panels are given. Masonite Corp., Masonite Bldg., 29 N. Wacker Drive, Chicago, Ill.
On Free Data Card, Circle 208

Built-Up Roofing Specs

Built-up roofing specs, 1964 edition, has recently been published in 28-page booklet. Topics include flat decks, steep decks, re-roofing, insulation, flashings, and waterproofing and dampproofing. Detail

sketches and charts are given. Koppers Co. Inc., Tar Products Div., Koppers Bldg., Pittsburgh, Pa.
On Free Data Card, Circle 209

Roofing Specs

Manual, 20 pages, lists data and specs for built-up roofs. Described are methods of attachment with details on nailable and non-nailable decks; lapping and mopping instructions; steep deck application; bitumen chart; and roofing over existing roofs. Details are also given for raised edge and gravel stop with fascia, flashing for raised roof perimeter, regular gravel stop, pitch pocket, mushroom type moisture release vent, concrete curbs with ventilators, flashing for vent pipes, expansion joint-raised curb, and flashing for roof drain. Philip Carey Mfg. Co., 316 South Wayne Ave., Cincinnati, Ohio
On Free Data Card, Circle 210

Glass Fiber I-Beams

Glass fiber I-beams and other structural shapes, called "Extren," are described in 8-page booklet. "Extren 100" for general purposes and "Extren 200" for greater corrosion resistance are both made of polyester plastic reinforced with glass fibers and produced by continuous forming process. Shapes include I-beams, wide flange beams, angles, channels, round and square tubing, round and square bars, and flat and corrugated sheets. Mechanical, electrical, and thermal

properties are described and compared with typical properties of steel (ASTMA7) and aluminum (6060-T6). Chemical resistance chart and fabrication information are also provided. Joseph T. Ryerson & Son, Box 8000-A, Chicago, Ill.
On Free Data Card, Circle 211

Insulated Metal Walls

"Nu-Line Q Panel" insulated metal walls are described in 16 page catalog. Profile, isometric, and exploded drawings show how concealed joint, long span panels are assembled without need of calking. Load and span tables provide information on deep face, extended lip, and liner profiles. Another section consists of cross section drawings concerning assembly and component details. H. H. Robertson Co., Farmers Bank Bldg., Pittsburgh, Pa.
On Free Data Card, Circle 212

FINISHERS/PROTECTORS

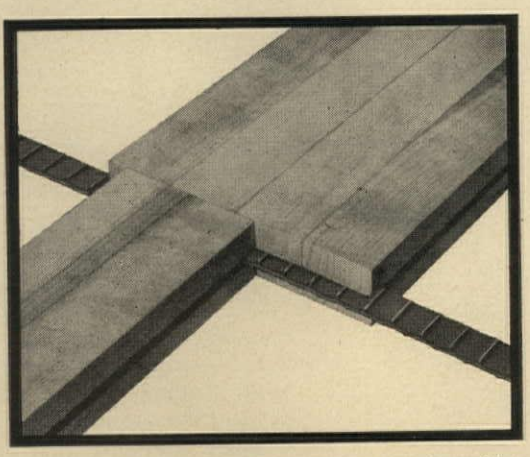
Protective Coating

"Colma" protective and decorative epoxy coating is presented in 4-page folder. Coating adheres to concrete, steel, and other structural materials. It cures to glossy, tile-like finish. Colma is abrasion-, chemical-, and radiation-resistant. It is available in red, green, gray, white, aqua, and clear. Sika Chemical Corp.,

ROBBINS

Ironbound *

CONTINUOUS STRIP MAPLE FLOOR



Ironbound Continuous Strip Floor consists of individual flooring strips interlocked with steel splines and embedded in mastic. Result: unexcelled uniformity in smoothness and resilience. An underlayment of ½" cork gives extra resilience. Treatment with Woodlife preservative optional.

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In recreational and industrial buildings and many other areas, Robbins IRONBOUND is the most satisfactory of all floors for these reasons: Precision-milled from edge-grain Northern Hard Maple for maximum durability. Laid in mastic over concrete for uniform resiliency. Installed by expert, franchised floor contractors with guarantee backed by Robbins to assure complete satisfaction. From coast to coast, Robbins IRONBOUND Floors are giving trouble-free service in gymnasiums, auditoriums, industrial and institutional buildings with exacting floor requirements. For detailed data and the name of the nearest authorized installer, write: Robbins Flooring Company, Dept. PA 9-64, White Lake, Wisconsin.

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SUBSIDIARY OF E. L. BRUCE CO., MEMPHIS, TENN.

For more information, turn to Reader Service card, circle No. 391

Box 899, Passaic, N.J.
On Free Data Card, Circle 213

Tape Sealants

Seven samples of different types of tape sealants are shown. These include "WELD-SEAL TAPE" for welding; "NU-CHROMSEAL TAPE" for cold sealing mechanically fastened butt seams or lap joints; "EXPANSEAL TAPE" for sealing joints or channels; VINYL-FOAM TAPE," a closed cell plastic used for vi-

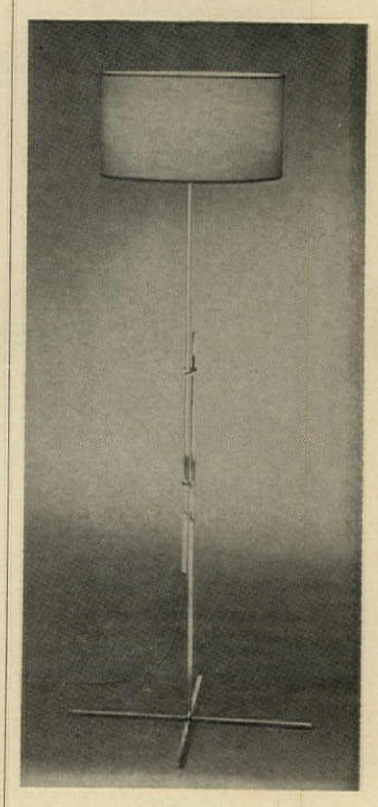
bration dampening, sealing, mounting, gasketing, etc.; "FABSEAL TAPE," a rust-inhibiting fabric for sealing; "ULTRASEAL," an asphaltic rag based felt; "VINYL FOAM CALKING TAPE" for compression sealing. Descriptive data for each tape is given. Sandon, Inc., Box 120, Granville, N. Y.
On Free Data Card, Circle 214

FURNITURE

Bookstacks

Examples of steel bookstacks, which are available in 127 standard colors, are presented in line drawings. Various types of book-, newspaper-, and

periodical-stacks are described. Accessories and types of shelving are also shown. Aetna Steel Products Corp., 730 Fifth Ave., New York, N.Y.
On Free Data Card, Circle 215



Comprehensive Stendig Catalogue

Charles Stendig, who has collected some of the world's most distinguished furniture designs, has assembled his first complete catalog. Each piece, featured separately, is shown from at least two angles. Furniture includes seating, tables, desks, lamps, cabinets, planters, and hospital units. The collection represents some of the best of Bentwood (Hoffman), Bauhaus (Mies, Breuer, Corbu), pre-Art Nouveau, and

This new shopping center designed with ALLSPANS® is off to a better start

As you can see, this shopping facility is not limited to any one architectural effect. ALLSPANS were used as floor and roof framing members and the results are attractive and practical. ALLSPANS, with cold rollformed chords and web systems, are engineered to function as you have a right to expect. ALLSPANS are versatile, permitting maximum design freedom.

ALLSPANS come in any length you need, from 8 feet to 152 feet. These are the *quality* joists in open-web framing. Production of ALLSPANS is carefully controlled through a stringent inspection program.

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MEMBER AISC

MACOMBER INCORPORATED

CANTON 1, OHIO

SUBSIDIARY OF SHARON STEEL CORPORATION

contemporary European and American concepts. Illustrated is floor lamp by Swiss designer Hans Eichenberger. White glass-fiber shade tops a stem of highly polished square steel tube which adjusts in height from 45″ to 62″ by means of a mechanism. Stendig Furniture Co. Inc., 487 Park Ave., New York, N.Y.

On Free Data Card, Circle 216

Progressive Scandinavian Firm

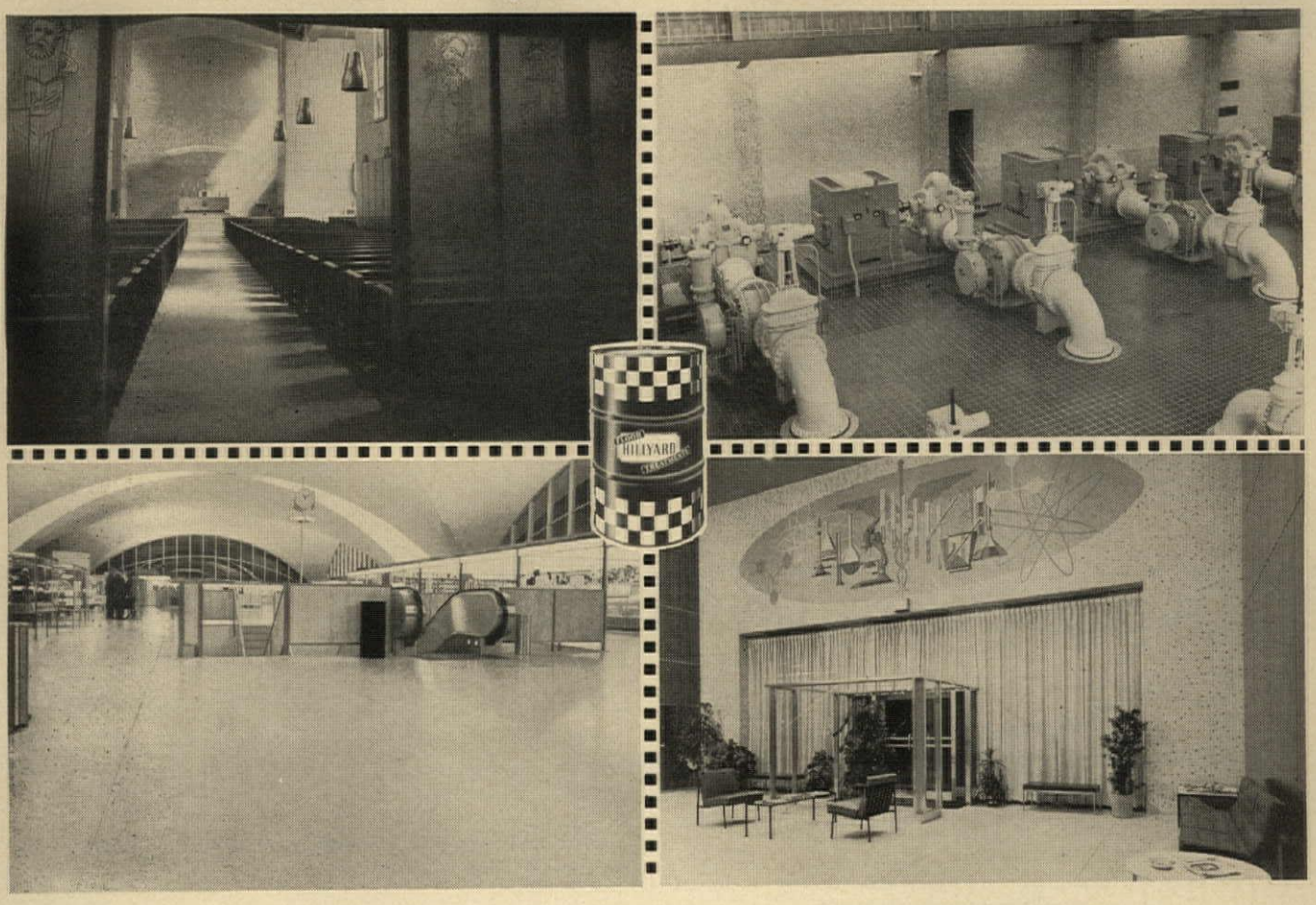
Fritz Hansen's progressive Scandinavian furniture, which includes chairs, desks, and tables, is illustrated in 68 page booklet. Among chairs by architect Arne Jacobsen, all of whose furniture is manufactured by the Danish firm, is a synthetic fiber shell covered with foam-rubber cushioning and upholstered in cloth, vinyl or leather (*illus.*). Dimensions: 16″ wide, 27″ high. Fritz Hansen, Inc., 305 E. 63 St., New York, N.Y.

On Free Data Card, Circle 217

Decorative Mica

Mica flakes suspended in colored translucent sheets are offered for lighting, furniture, and architectural uses. Dense mica products are made in 36″ x 36″ and 36″ x 72″ sheet sizes in both .015″ and .030″ thicknesses. They are suitable for flat applications and are also post-formable for uses requiring such shapes as cones and cylinders. Applications include lamp shades and bases, lantern panels, fixture cylinders, and related specialty lighting assemblies; screens, room dividers, window treatments and fur-

Specify Hillyard ... S AND A.I.A. Building Register Products



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The Most Widely Recommended and Approved for Every Surface

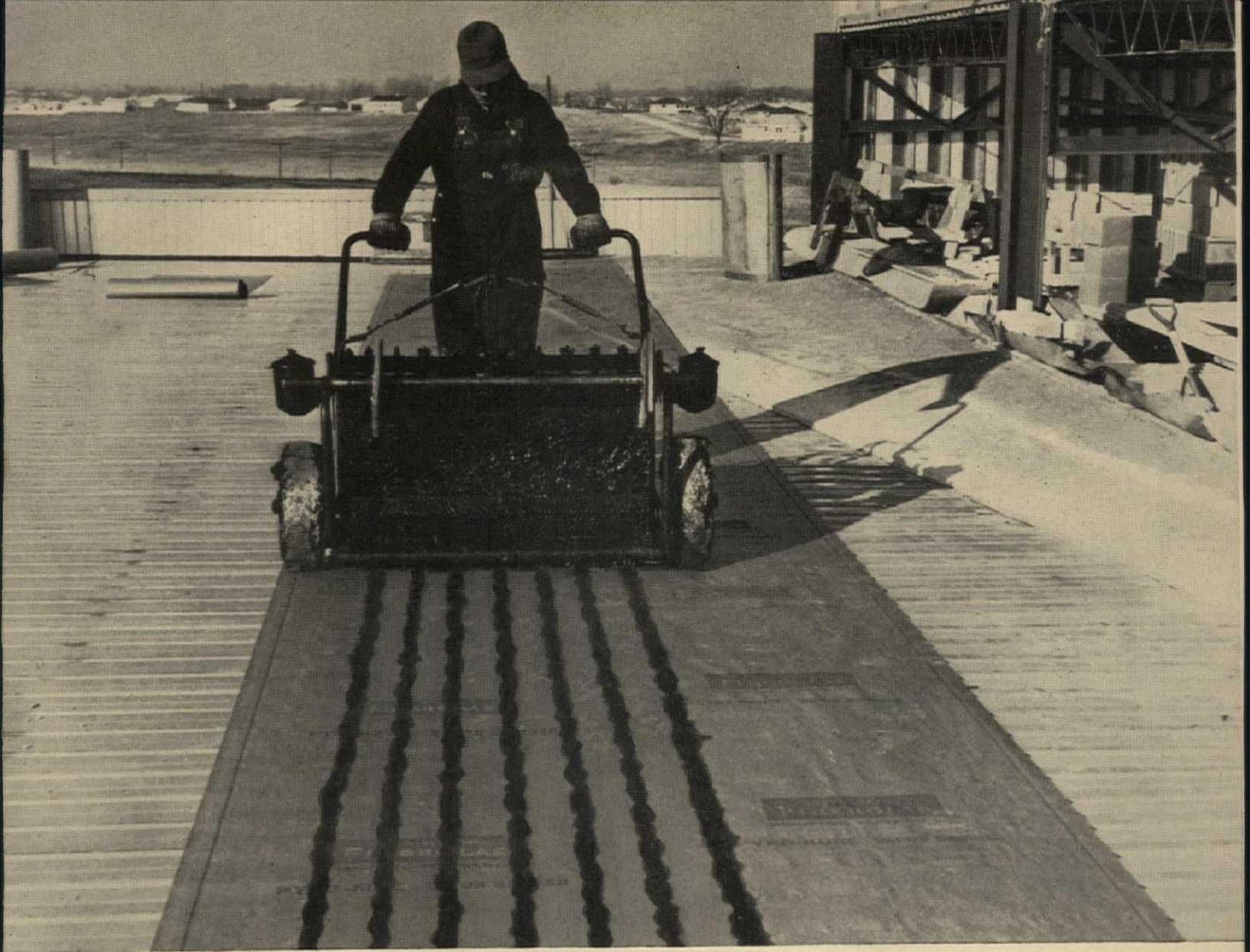
niture surfaces; and luminous ceilings, wall coverings, and miscellaneous decorative accessories. In addition to amber and pearl, colors include blue, gold, green, and pink. Macallen Co, Inc., Newmarket, N.H.
On Free Data Card, Circle 218

SPECIAL EQUIPMENT

PVC Chain Link Fence

"Colorbond" fence system is, according to manufacturer, first chain-link fence system completely clad with PVC. It is permanent in color and guaranteed against rust and corro-

sion. Fence fabric is made of high-strength steel with minimum tensile strength of 80,000 psi. "Bakelite" plasticized PVC coating is supplied by Union Carbide Corp. It has tensile strength of 3300 psi, elongation of 275 per cent, high abrasion resistance, and retains its properties over temperature range of −52 F to +248 F. Fence does not support combustion and is effective insulator for 12,000 v. Chain-link fabric is made in 12, 9, 6, and 3 gages, in 5″ to ⅜″ meshes, in 2′ to 12′ heights, and in 8 standard and 28 two-tone color combinations respectively. Colorbond post and rail pipe is clad with 100 per cent thermosetting hydrazide epoxy resin "Scotchkote 104" supplied by Minnesota Mining and Manufacturing Co. Epoxy resin is flame resistant and self-extinguishing, and has been tested to with-



For Class I Metal Roof Deck Construction

PYRO-KURE® 600 — TWICE THE VAPOR RESISTANCE, FAR BETTER ABRASION-PROOF THAN VINYL

New Pyro-Kure® 600 provides a better vapor barrier system. It has twice the vapor resistance of vinyl film, and, unlike vinyl, this tough lamination has high abrasive resistance which results in a vapor barrier that will retain its integrity. As a result the owner gets a better roof, protected against condensation damage.

Factory Mutual Approved for use with metal decks and Fiberglas® roof insulation, Pyro-Kure 600 is classified as "NON-COMBUSTIBLE" under the National Building Code. Its U/L Flame Spread rating of 25 will never increase due to age or moisture. No other comparably priced vapor barrier can meet these requirements!

Pyro-Kure 600 is applied to the metal deck with conventional felt-laying equipment using regular asphalt, 12 to 15 lbs. per 100 sq. ft., or it can be strip mopped. The use of asphalt rather than special cold adhesives results in substantial savings in material cost. Write for suggested specifications and additional information on this new vapor barrier system. American Sisalkraft, 56-R Starkey Avenue, Attleboro, Mass. Branch offices and plants at Cary, Illinois and Tracy, California.

AMERICAN SISALKRAFT
DIVISION

St.Regis PAPER COMPANY

Pyro-Kure 600 is available nationally through Owens-Corning Fiberglas Corporation and its distributors.

For more information, turn to Reader Service card, circle No. 320

stand more than 250 common corrosive chemicals. Colorbond Corp., 107 East 38 St., New York, N. Y.

On Free Data Card. Circle 219

Vinyl Handrails

Folder, 4 pages, presents vinyl handrails made of pure virgin vinyl without fillers. They are self-extinguishing and not subject to corroding agents. By employing hot-air blower, material is fed through attached canvas sleeve. As vinyl emerges at opposite end in flexible condition, it is easily mounted on supporting steel sections of specified size. Handrails are available in 14 colors. Actual size and shape standard and special profiles are shown. Rehau-Plastiks, Inc., 730 Fifth Ave., New York, N. Y.

On Free Data Card, Circle 220

SURFACING

Ceramic Colors

Brochure, 4 pages, shows both plain and mottled colors for "Ceramic Veneer" and "CV Durathin." Ceramic veneer is made in nominal thicknesses of 1¼″ and 2″ in units large or small. It comes in monochrome facings or polychrome panels for interiors and exteriors. Grille patterns are available in 12 designs and in 4″, 6″, and 8″ thicknesses. CV Durathin is lightweight, large size unit. Maximum net face size is 17¾″x23¾″. CV sandwich panel with "Foamglas" insulation is available in thicknesses from 1⅝″ to 1⅞″. Size of panel may exceed recommended 4′x8′ if required. Brochure shows 50 colors. Federal Seaboard Terra Cotta Corp., 10 East 40 St., New York, N. Y.

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PROGRESSIVE ARCHITECTURE
NEWS REPORT

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...newest of the P&S super devices

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The body and top are molded of high impact Melamine. All contacts are reinforced by plated spring steel clips . . . and each contact is individually recessed. May be side *or* back wired—with up to No. 10 wire. Assembly screws are threaded into the metal strap, not the plastic body.

The "6300" is for installations facing years of rough usage. It looks different because it is a truly different heavy duty outlet.

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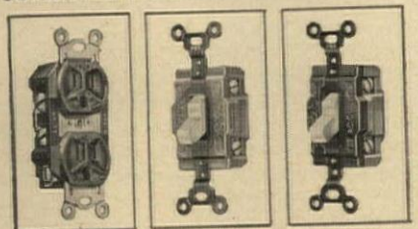

6200 3-Wire Grounding Outlet Companion to the "6300" with 15 amp. rated Capacity.

1001-I and 1021-I Switches Heavy duty, shallow body switches for installations requiring continuous, dependable service. 15 amp. switches are color coded blue; 20 amp., red.

FOR MORE INFORMATION WRITE DEPT. PA-964

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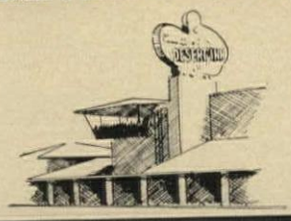
Lighting News AT THE
CRYSTAL ROOM
Theatre Restaurant
in **WILBUR CLARK'S DESERT INN, Las Vegas, Nevada**



Designed by internationally famed hotel designer, Jac Lessman, A.I.D., as one of the world's most fabulous theatre restaurants, the Crystal Room required an unusual lighting system that would neither detract from the lush decor nor distract from the stage presentations.

For his latest in theatre restaurants, the Crystal Room at the Desert Inn, Mr. Lessman called upon Kliegl for a "return engagement"—a second collaboration on lighting that previously had worked out so successfully for the Inn's former Painted Desert Room!

In the Crystal Room, Kliegl engineers and lighting consultant William Richardson produced, *with lighting alone*, an atmosphere of warmth and intimacy to minimize the vast 95′ x 65′ proportions of the room. Along with developing a special system of architecturally correct lighting, Kliegl furnished the entire stage lighting and control system, keeping them completely compatible with the opulent decor. The Kliegl system included arrangements of 148 low-brightness downlights, special cove strip lighting and a super-sensitive Kliegl SCR® dimmer control.

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lighting
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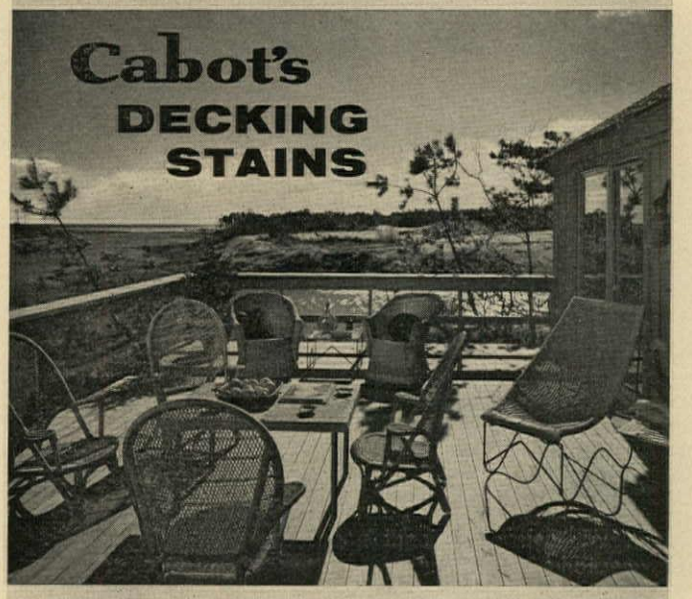
New . . . for Wood Decking



Home at New Seabury, Cape Cod, Mass.; architect: Royal Barry Wills & Associates, Boston, Mass.; developer: Emil Hanslin Associates, Melrose, Mass. Cabot's Stains used on Interior and Exterior.

A finish that stands up to heavy foot traffic and severe weathering.

The popularity of wood decking, in demand now as never before for porches, sun decks, patios, etc., requires a finish both durable and decorative. Samuel Cabot Inc. answers this pressing need with a new product, Cabot's Decking Stains. It is a product with a specific purpose . . . protecting, preserving, and beautifying wood surfaces under difficult conditions. Now, for the first time, it is possible to obtain a durable stain finish for wood decking.

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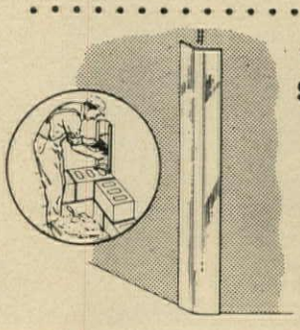

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Ideal locations for Vynatex 23 include "red carpet" and safety sections, walkways, play areas, tennis courts, parking lots, tree lawns, median strips, driveways, etc. In every application, it offers all advantages of color dynamics . . . attracts customers, welcomes visitors, enhances worker morale, creates sensations of warmth, excitement, cheerfulness, relaxation, etc. Also, it cuts lighting costs, reduces heat on outdoor work or play areas..

Information on Vynatex 23 may be obtained from Jennite J-16 distributors (in principal cities). See Maintenance Inc. catalog in Sweets. Or, write for Bulletin L-7952A.

MAINTENANCE INC., Wooster, Ohio

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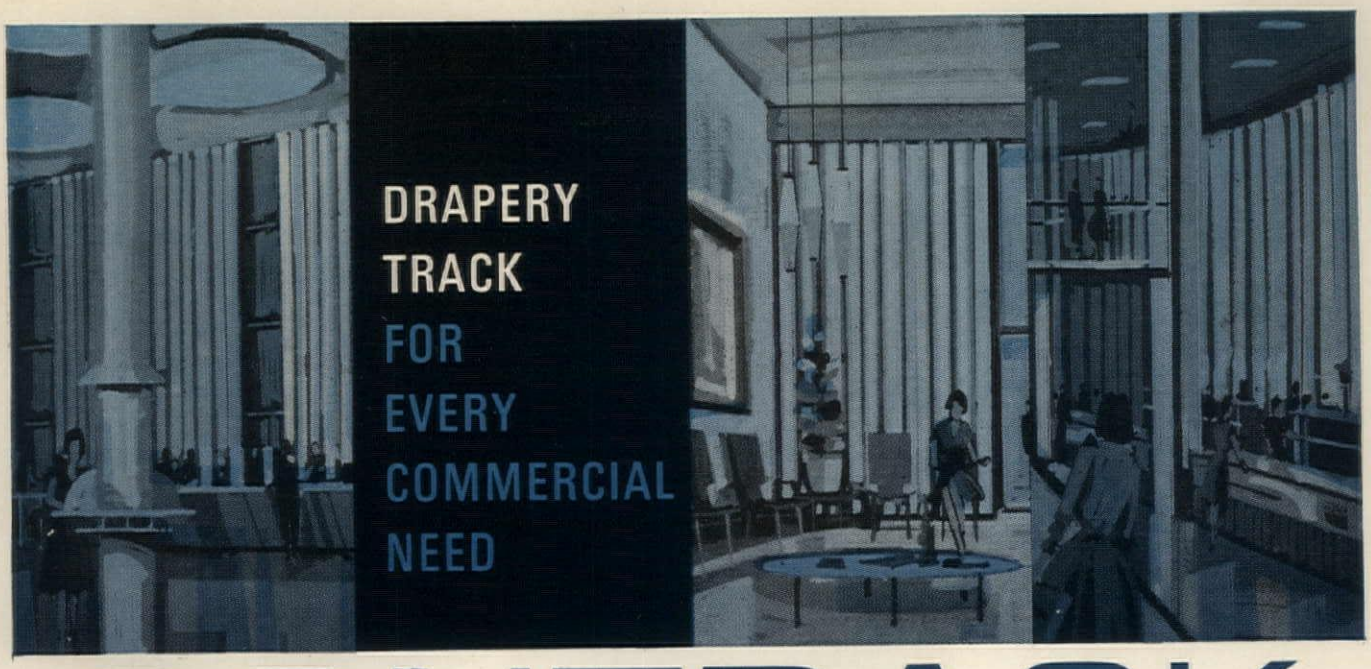

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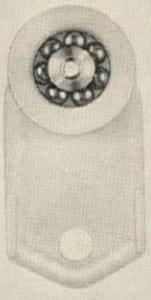

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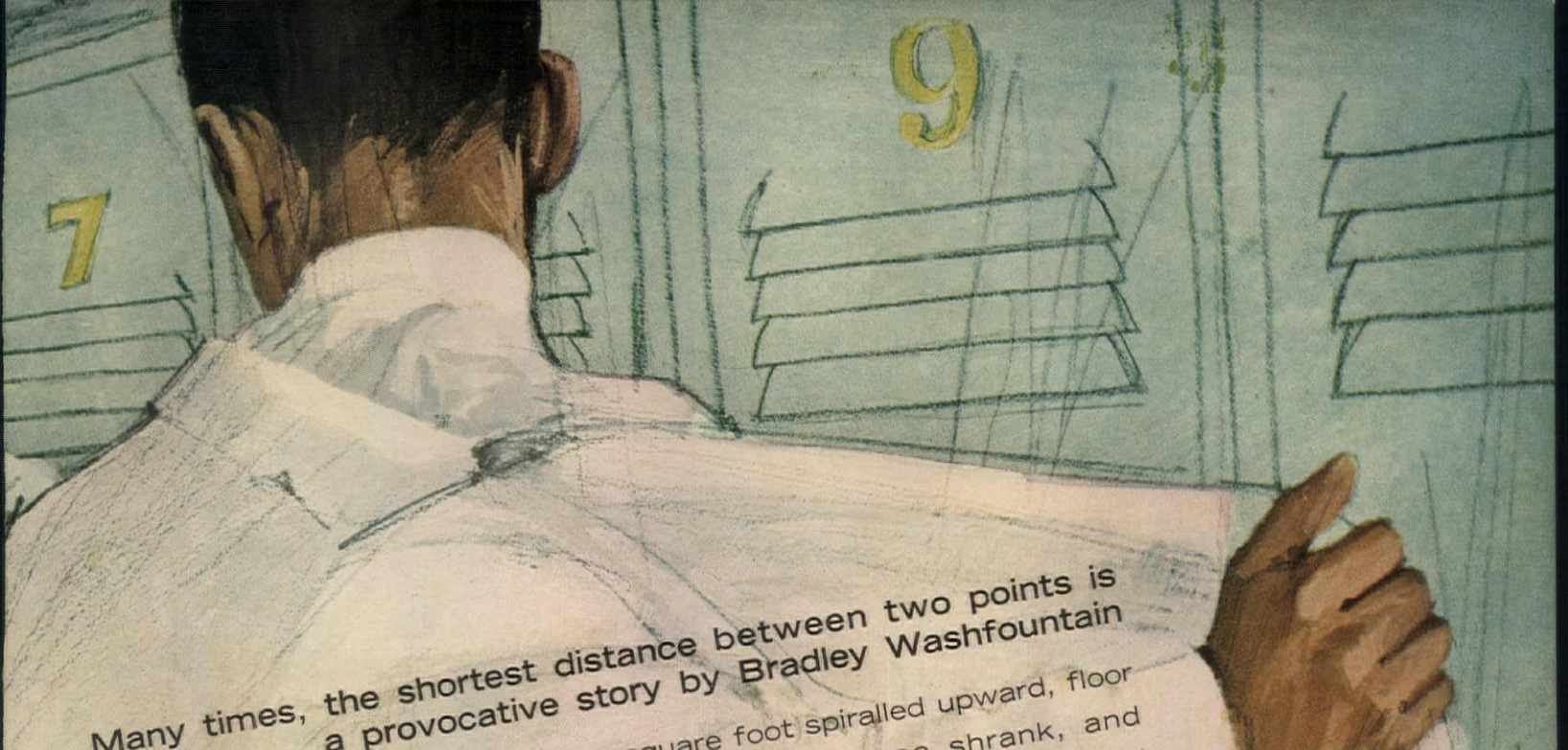
54" Circular Washfountain



Many times, the shortest distance between two points is a circle . . . a provocative story by Bradley Washfountain

Conquest of Inner Space

Building costs per square foot spiralled upward, floor space shrank, and washroom walls seemed to close in on you . . . as you fought your daily battle to conquer **inner** space. Then along came Bradley Washfountains, and the battle was won! Bradley Washfountains do more in less space than any other washfixtures. Eight-person circular models save as much as 25% on floor and wall space. Semi-circular 36" Washfountains extend only 22" off the wall, yet serve three people! □ But the savings only begin there. Washfountains serve up to eight people at one time with just one set of plumbing connections — speeding traffic flow, and cutting installation costs as much as 80%! They save water and maintenance expenses, too. And they are far more hygienic: with foot-operated Bradleys, hands touch only a clean spray of tempered water, never touch germ-laden taps or faucets. □ You'll like working with Bradleys because they provide so much design flexibility (there's a wide variety of shapes, colors, and compositions to stir your imagination). So, remember Bradley Washfountains for all modern buildings: schools, institutions, hospitals, offices, and the like. Spin the circle; Begin with Bradley!

See your Bradley representative for assistance on specific applications. And write for latest literature. Bradley Washfountain Co., 2375 West Michigan Street, Milwaukee, Wisconsin 53201.

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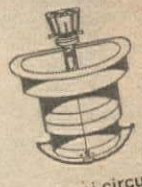
Bradley

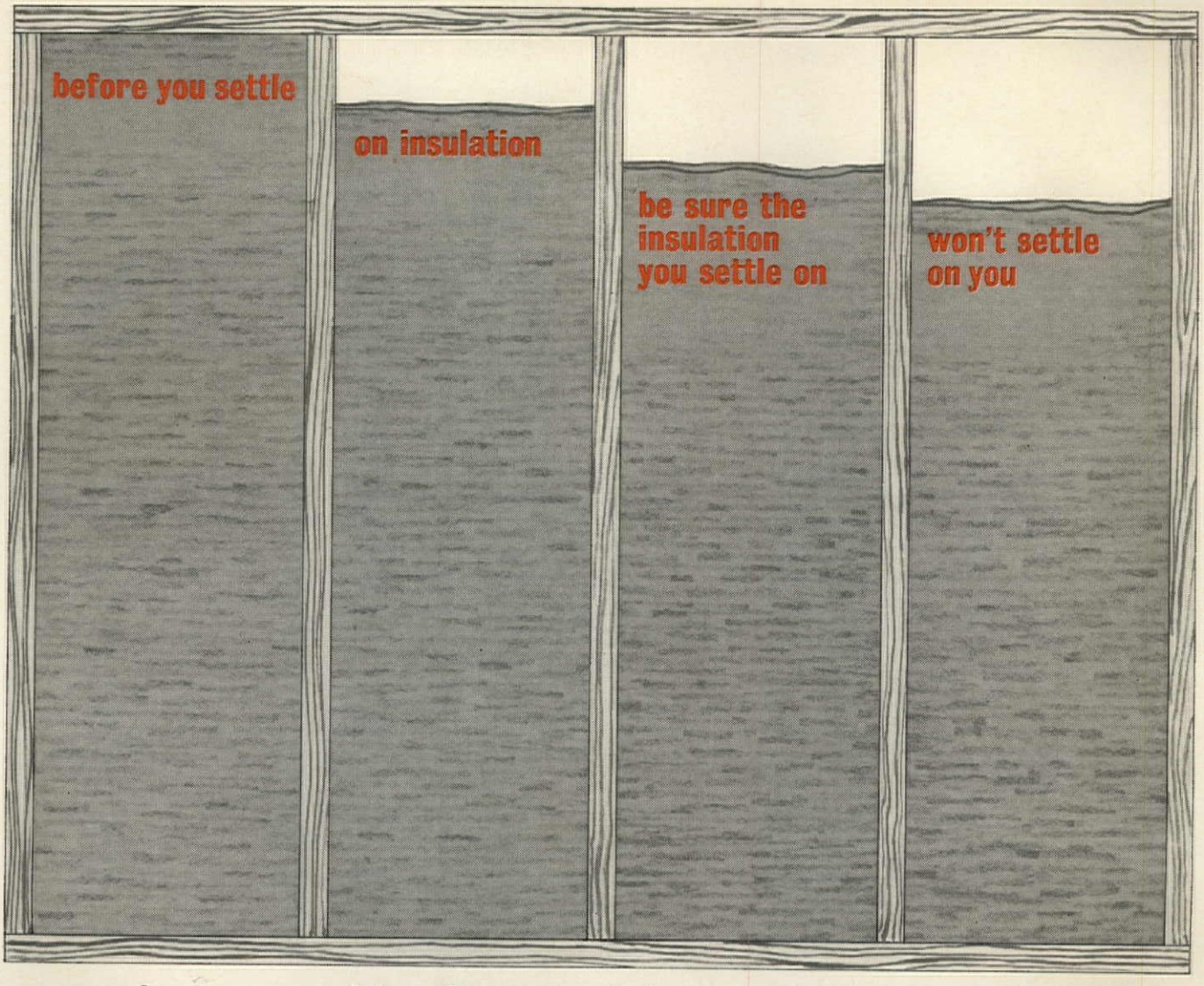
54" Semi-circular Washfountain

36" Circular Washfountain



36" Semi-circular Washfountain

Duo Washfountain



sprayed on, poured-in-place or slab rigid urethane foam won't:

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We almost forgot to mention ~~one~~ two other point~~s~~: Urethane foam is the most efficient (K factor .11 @ 70°F) insulant on the market. And it's self-extinguishing. ▪ For all the facts and sources of supply, write to Mobay Chemical Company, Code PA-9, Pittsburgh, Pennsylvania 15205

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Make terrazzo your heavy-traffic choice. It is one flooring that will never fray, fade or wear thin. It never needs waxing, buffing, painting, patching or refinishing. All it asks is an occasional wet mopping to hold its original beauty. Terrazzo not only is the most economical material for floors, but it also offers greatest aesthetic freedom in color and design for walls, wainscots and stairs. ■ When you plan around terrazzo, specify a matrix of ATLAS WHITE portland cement. Its uniform whiteness brings out the true value of colored aggregates and coloring pigments. ■ Complies with ASTM and Federal Specifications. Ask your local terrazzo contractor about the many effects available. For installation data and a brochure with color plates, write Universal Atlas, 100 Park Ave., New York, N.Y. 10017.

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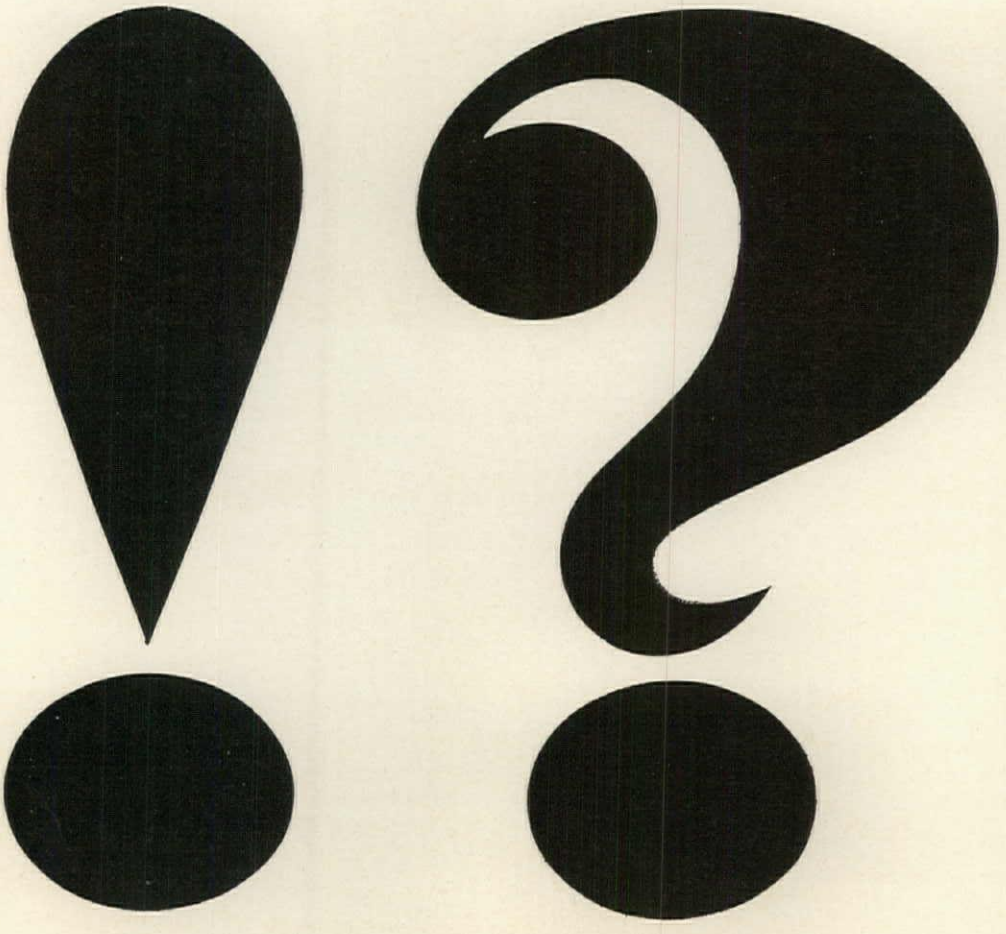

When a roof must be more than a roof, choose Ruberoid T/NA 200® roofing (with DuPont TEDLAR*)

St. Aloysius Gonzaga R.C. Church, Cincinnati, Ohio was designed, as the pastor puts it, "to be a beacon for the neighborhood."

Of vital importance to this goal was the *roofing*. It had to lend striking visibility, yet reverence, to the building as a whole. But the roofing had to be functional too. It had to be installed to a steep pitch. And the roof design demanded a maintenance-free material.

This was the problem facing L. P. Cotter & Associates, architects-engineers; Edward T. Honnert & Sons, general contractor; and Imbus Roofing Co., the roofing contractor.

You can see the answer—Ruberoid T/NA 200 roofing—a brilliant white, prefinished membrane that lasts for years and years.

Ruberoid T/NA 200 conforms to *any* roof shape, lets you design a roof to be much more than a roof. For complete details, write us at the address below.

RUBEROID®

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*DuPont's registered trademark.

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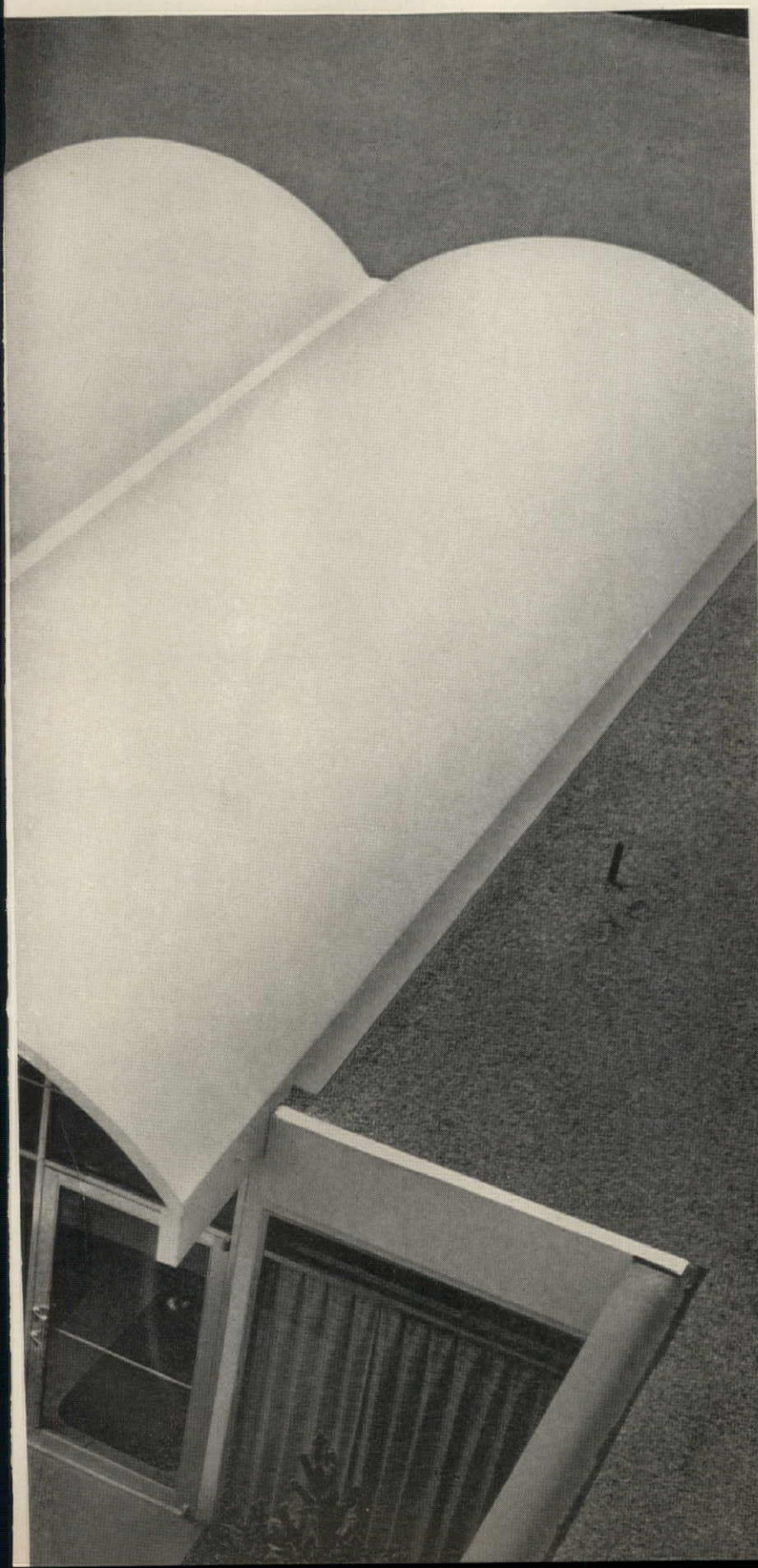
Roofing surfaced with Du Pont TEDLAR® keeps this clinic roof brilliantly white— without maintenance



A SINGLE PLY OF ROOFING GIVES LASTING WHITENESS to the dominant architectural feature of this medical clinic—its barrel-vault roof. The surface of Du Pont TEDLAR* PVF film will remain a brilliant white, even after years of exposure.

The roofing is Ruberoid T/NA 200†. T/NA 200 was easily installed with conventional roofing techniques. It will fit any roof, no matter what its shape or angle.

The lasting whiteness of the surface of TEDLAR gives high reflectivity (it has less than half the solar absorptance of crushed stone or marble), which lowers under-roof temperatures and air-conditioning loads.

The whiteness stays white because TEDLAR is a tough, inert, flexible film that's too smooth to trap dirt. The roofing stays tough and flexible from minus 50° to over 250° F. Maintenance is negligible.

More and more architects are specifying TEDLAR as the finish on roofing and siding for their new designs. Du Pont Film Dept., Box 903C, Wilmington, Delaware 19898.

Berg Medical Clinic, Thornton, Colorado
Architect; Frenchie Gratts, Denver, Colorado
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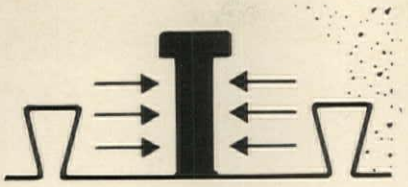


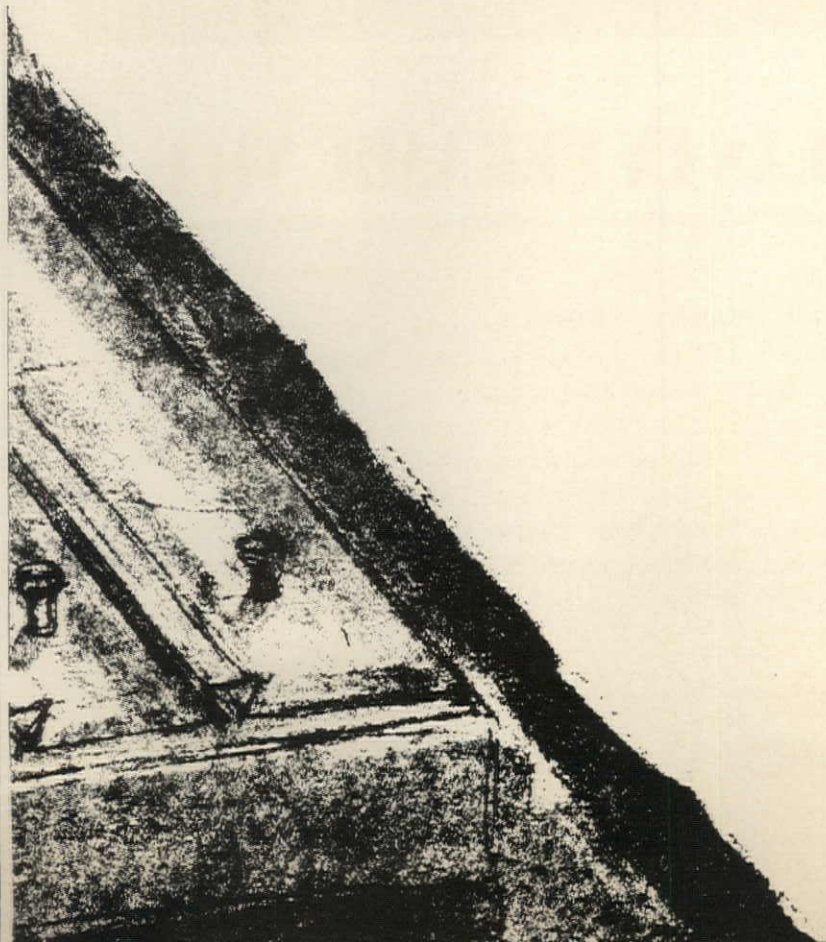
What's New in Composite Design

Standard A.I.S.C. design for Composite Beams may now incorporate Fenestra's Holorib Reinforcing Forms with no change in the design procedure or slab thickness. Independent laboratory tests confirm that Holorib slab may be considered solid concrete in the computation of Composite Beam section properties.

Advantages of the Holorib System—The "Key-bond" action of the triangular ribs replaces reinforcing steel and allows longer spans without shoring than any other system using an equal thickness of concrete. Stud shear connectors and temperature mesh are installed after other trades have finished. Holorib electrical cells are factory installed to occur where the design requires.

"Composite Floor Systems," a 20-page brochure giving test results and design data, is available upon request. Call your Fenestra Representative or write Fenestra, Inc., P. O. Box 1085, Buffalo, New York 14240. Fenestra engineering is at your service.

For more information, turn to Reader Service card, circle No. 460



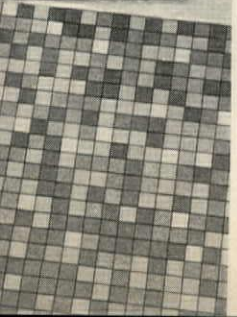
FENESTRA

WALLS, BAR FRONT AND ROOM DIVIDER IN CANDY STRIPE GLAZED WALL TILE NO. 280; FLOOR IN BLUE BLEND STYLON VB NO. 2906

UNIQUE, FRESH NEW IDEAS IN CERAMIC TILE

STYLON VB Revolutionary ceramic tile flooring made in flexible one-foot squares; 144 real ceramic tiles cushioned in pure vinyl. VB comes in decorator-designed color blends specially styled to harmonize with any tiles in the Stylon line. It installs quickly — with no grouting! Costs no more installed than other quality floorings—yet needs no maintenance, no waxing, and never has to be replaced.

CANDY STRIPES Exciting new ceramic wall tiles that have an unusual fluted surface — for beauty you can see and feel! These bright new 4¼" x 8½" tiles come in a whole rainbow of gorgeous colors that add distinctive flair to any building interior. See Stylon VB at the World's Fair "House of Good Taste." For full information write Stylon Corporation, 136 Newbury Street, Boston, Mass. HGT



Stylon CERAMIC TILE

STYLON CORPORATION • BOSTON, MASSACHUSETTS

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September 1964 **PROGRESSIVE ARCHITECTURE** ®

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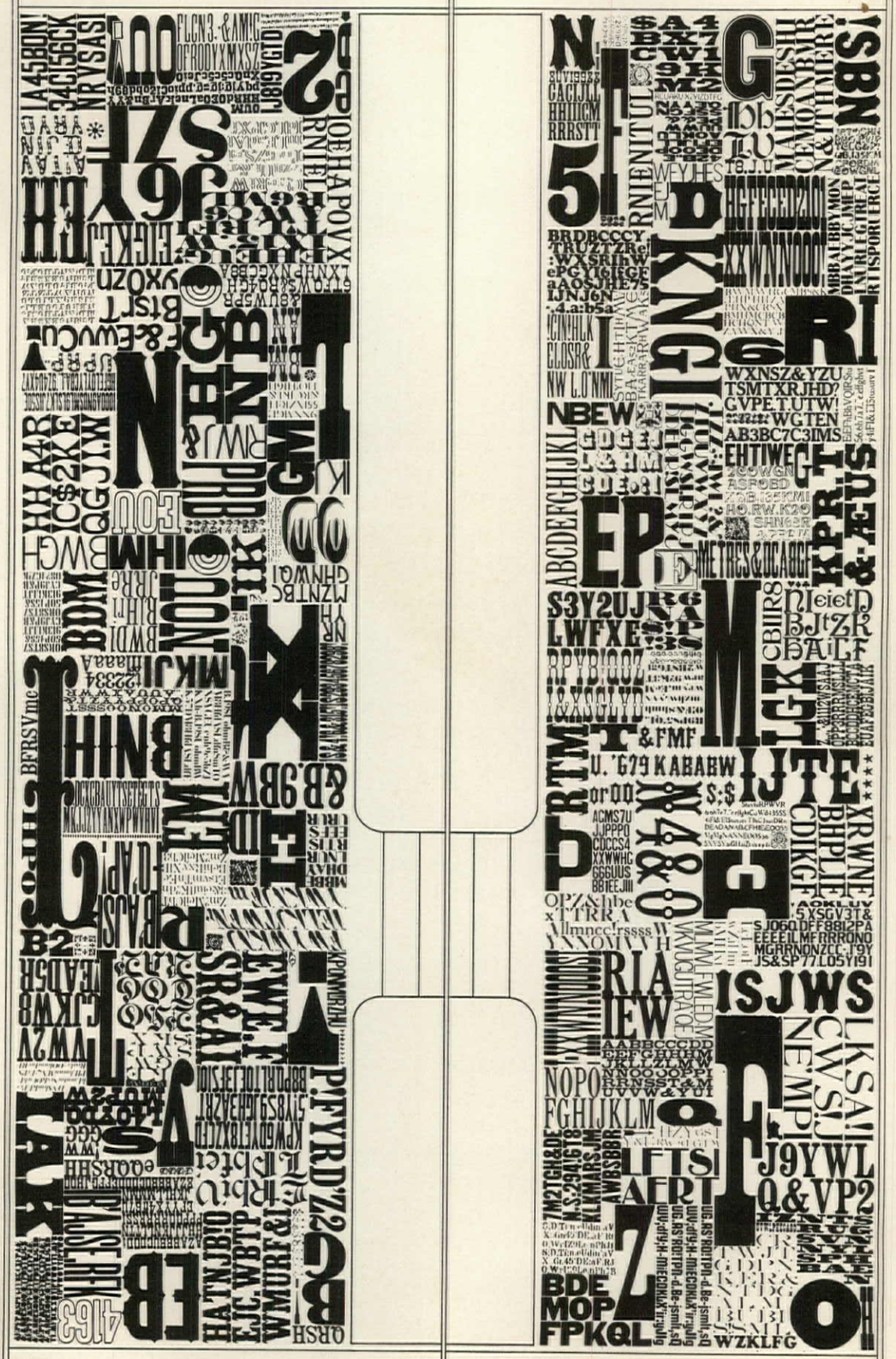


EDITORIAL

P/A Observer is the title of a new section we are introducing this month. You will find it beginning on page 208.

A magazine like P/A is really performing two separate functions. One is similar to a newspaper operation where all the "news"—in our case items like new products introduced to the market, new projects just announced, new buildings just completed, new developments in the profession or the construction industry, and many other pieces of information of interest to the practicing architect—is written up and presented as quickly as possible. Although the P/A staff frequently digs up "news" items on its own, often the source for this information is public announcements, usually in the form of "press releases." In recent years, even many architects have used this type of "open" release in announcing their latest creations.

The other function P/A performs falls more in the category of traditional magazine work. In this case, whether describing a building or discussing a wider subject, we attempt as thorough a presentation as possible by including as much information and analysis as possible. Preparation for this type of presentation is time-consuming, and involves much work on the part of our photographers, editors, art directors, draftsmen, and production staff. We therefore always prefer, and usually insist, that material so covered be given to us on a first-publication right basis, so that the quality of presentation, not speed, be the guiding criterion.

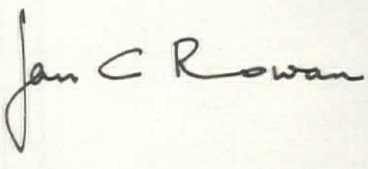
So far, our *News Report* was the only section where we could place anything that had to be done quickly, which we could not present in adequate depth. P/A, however, is a magazine that deals mostly with visual subjects. Often, even a glimpse must be large enough in order to be meaningful. In the *News Report*, we did try expanded reporting to some extent, but the format was not suitable for such treatment, and the need for a different approach became more and more obvious.

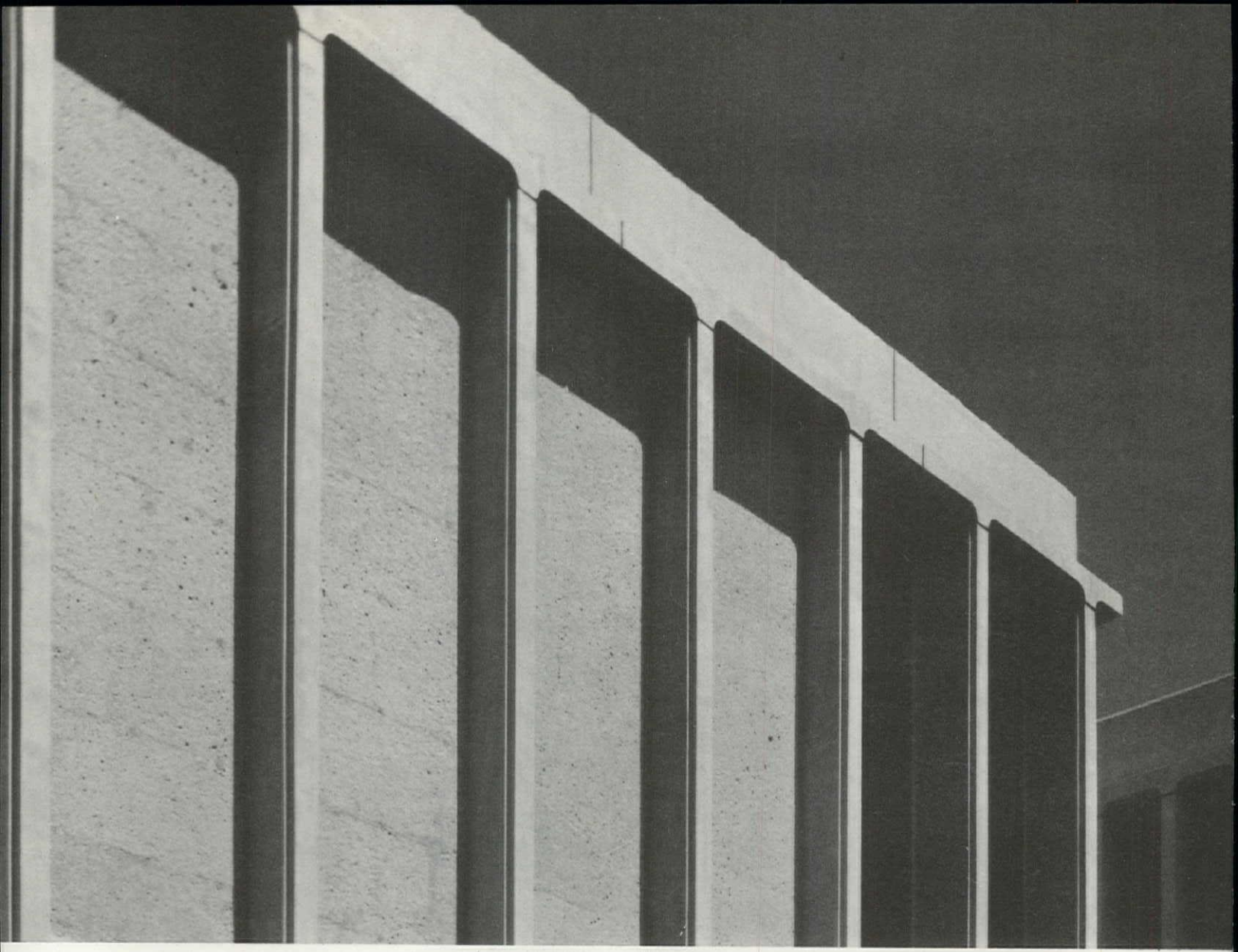
Therefore, you will also notice in this issue a difference in the *News Report*—a change in type-face and a four-column pattern, both quicker and easier to read, and a simpler, uniform layout. Its contents and its appearance now reflect the fact that it is strictly a news section.

In the *P/A Observer*, on the other hand, we shall have every month a different version of "news"—here the visual treatment is more expansive, the writing more opinionated, and the results, we hope, still more informative, interesting, and thought-provoking than those we achieved previously under a more restrictive format.

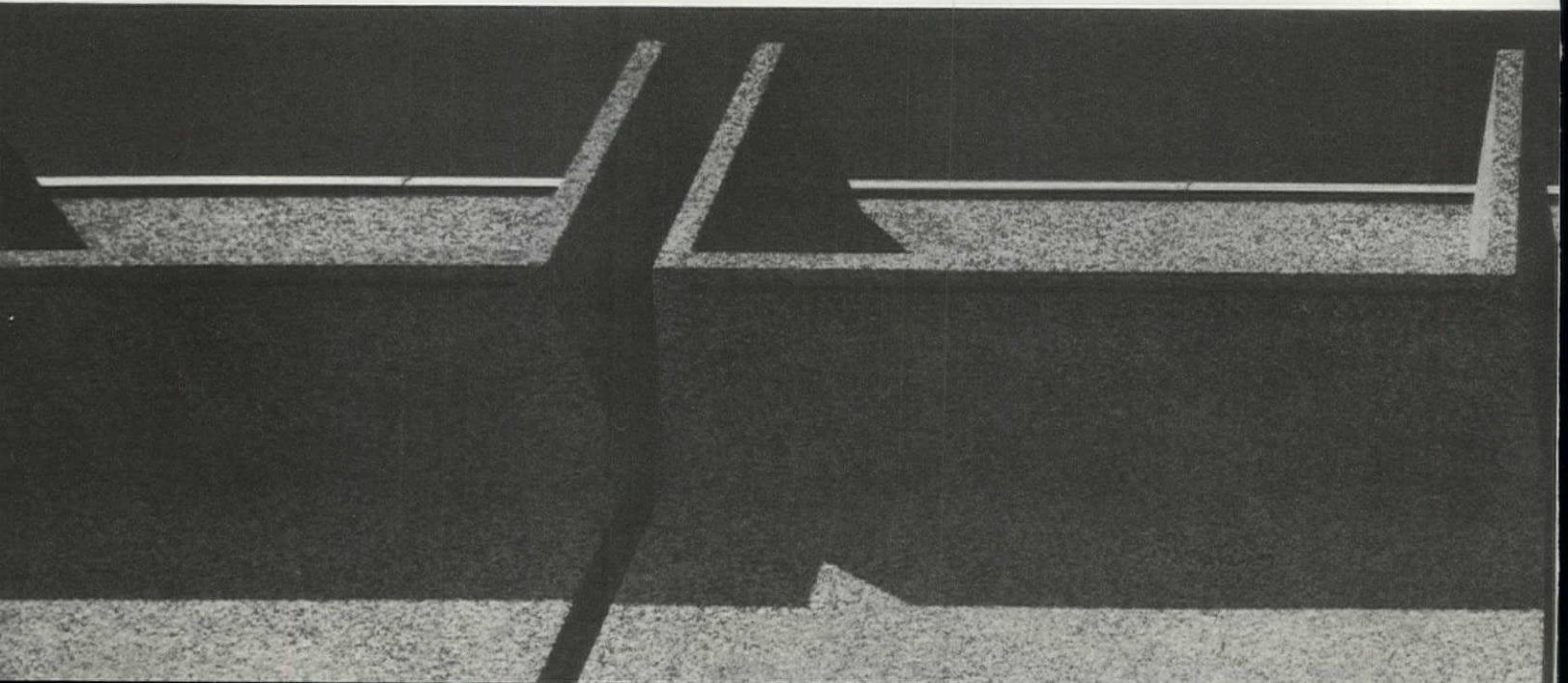
News Editor James T. Burns, Jr., well known to many readers of P/A, has overall responsibility for both the *News Report* and the *P/A Observer*. He will be helped by an Associate News Editor, who will shortly join the staff.

In the heart of the magazine—the "feature section"—there is no change. We are continuing with our coverage of buildings, design trends and philosophies, construction methods, and many other subjects, all treated in depth as much as possible and illustrated with meticulous graphics for which, as the *Architectural Review* once pointed out, P/A is well known. ■

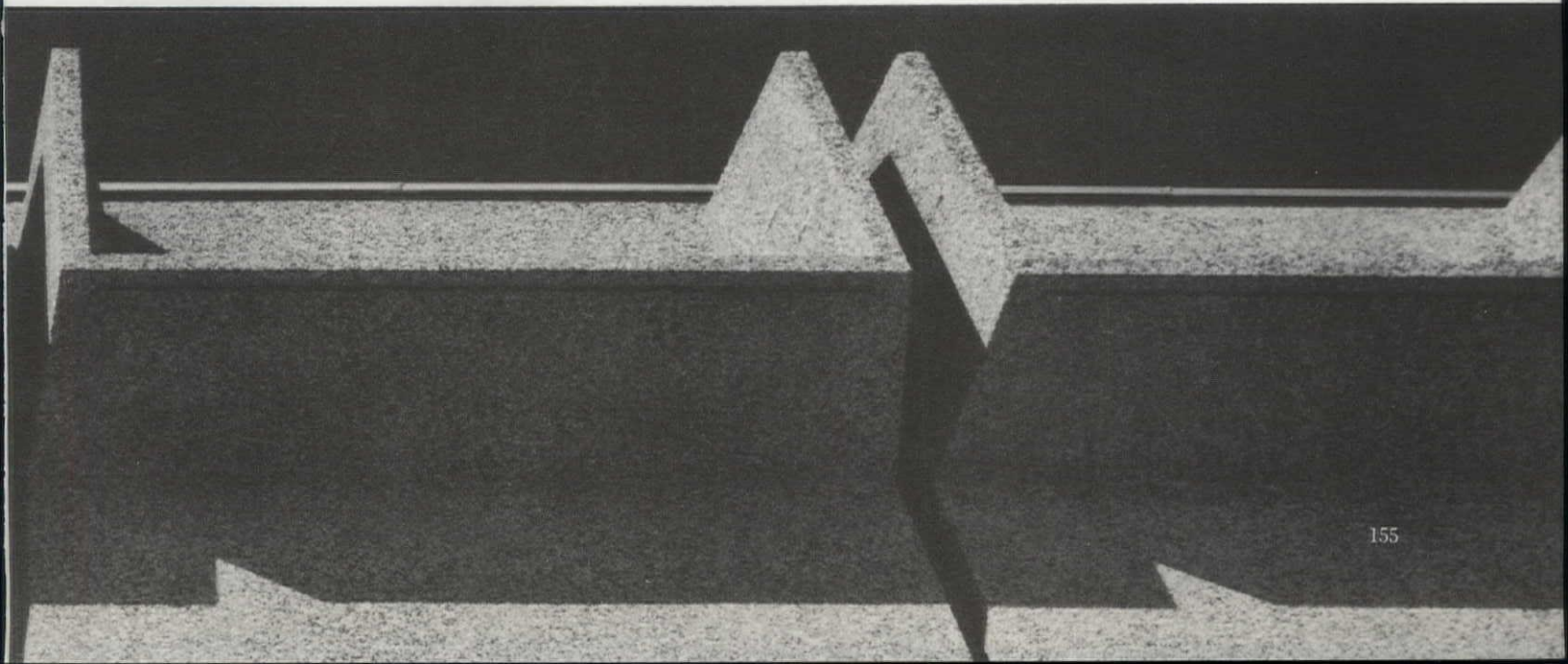




CONCRETE SOLUTIONS FOR THREE LIBRARIES



As a building material, concrete has seemingly inexhaustible potentials for structural variety and stylistic expressiveness. Three different techniques of concrete construction were employed in the libraries presented on the following pages: Worcester's new public library is entirely cast-in-place in prefabricated fiber glass forms; The Burndy Rare Book Library in Norwalk, Connecticut, uses precast concrete vaults as formwork for a cast-in-place roof slab; and a new public library for Philadelphia combines a cast-in-place frame with precast exterior walls.



PHOTOS: CORTLANDT V. D. HUBBARD

PRECAST PANELS ON A FRAME

NORTHEAST REGIONAL LIBRARY • PHILADELPHIA, PENNSYLVANIA • GEDDES, BRECHER, QUALLS, CUNNINGHAM, ARCHITECTS

As the first of a series of five similar facilities proposed for Philadelphia, the new Northeast Regional Library is thought of as a bridge between the main library downtown and the various branches throughout the Northeast Region. Whereas the branches house from 20,000 to 30,000 volumes, this regional headquarters houses approximately 200,000 volumes, a major reference collection, a children's section, and a special "leisure" collection that serves as a branch library for the immediate vicinity. The building also contains facilities for lectures and exhibitions, typing rooms, workrooms, and administrative offices for the branches throughout the region.

Located on a corner site in the midst of what has become the most active shopping area outside the Center City, the new library provides an oasis of quiet from the commotion of the surrounding department stores, supermarkets, parking lots, and flashing signs. At the heart of the building is a calm, skylighted, two-story reading room. The other library facilities are wrapped around this central space, like a buffer zone, to shelter it from the commotion outside.

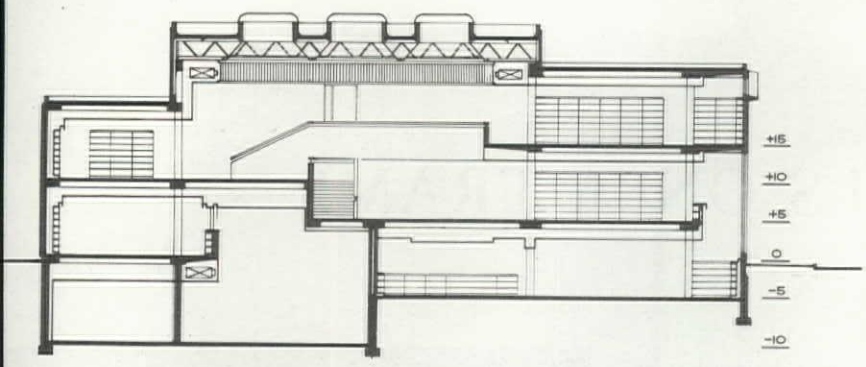
The location of the building also governed the arrangement of these facilities, since the limitations of the site made a multilevel structure necessary. The facilities that are wrapped around the central reading room and the lecture hall below it are offset at half levels "as a means of gaining a unity between the various departments," the architects explain, "even though they happen to be separated vertically."

The interplay of these offset levels is most apparent in the reading room, where several different mezzanines are revealed at one time. This motif is also interestingly reiterated on the north and east sides of the reading room where the floor stops short of the exterior wall and functions visually as another mezzanine interlocked with the children's section below.

The exterior has been designed to express this split-level scheme and to acknowledge the fact that the building sits on a corner. The architects offer in evidence of the corner condition the asymmetric entrance, the setting back of the building from Cottman Avenue on the front, and the consistent façade that turns the corner. They note that the split-level section is expressed on the exterior by the entrance side of the building, which is half a level lower than the west portion on the corner. The entrance lobby is intended also to serve as a transition to the commercial development that is expected to take place adjacent to that side of the building. For this reason, display windows, approximately the size of those in the shopfronts along Cottman Avenue, are used in the lobby. (Actually, since the library has become the busiest in the city, there is talk of extending the building in that direction.)

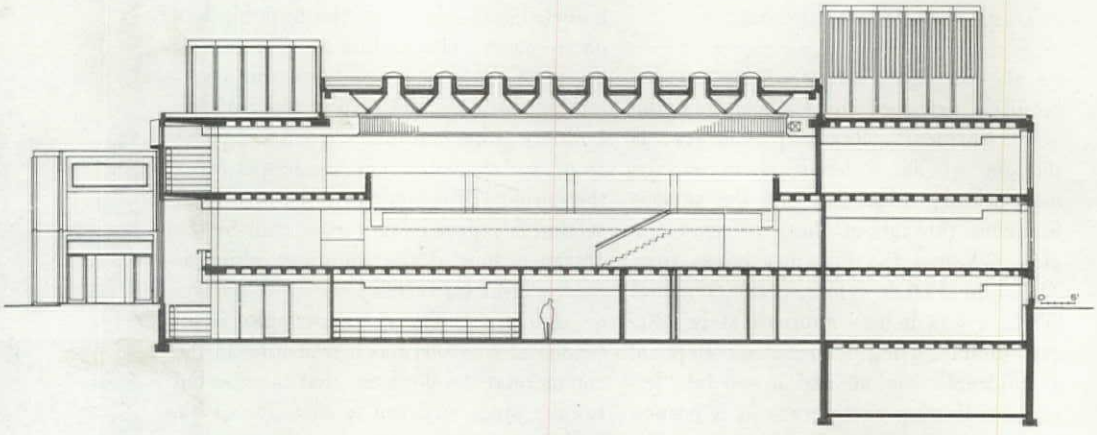
At the corner, two-story windows are used, which relate to the central two-story reading room. However, the reading room floor is at elevation +5 ft, whereas the windows are set at grade level; this vertical offsetting of the fenestration not only relates to the split-level section, but also reveals it visually from the exterior. In addition, because of this placement of windows (and the cut-back of the reading room floor), light is admitted to the children's section on the lower level.

The structural system is a cast-in-place concrete frame with a rib-slab system spanning from beam to beam. The exterior is clad entirely in precast-concrete panels and inverted "eyebrows," made with a mix designed to develop a minimum compressive strength of 5000 psi at 28 days. Gray cement with an aggregate of white quartz and "Riverdale" stone from New Jersey are used in the panels, which were finished with low-pressure sandblast equipment to expose the aggregate. A colorless silicone water repellent was applied to the panels after installation. David Bloom was the Structural Engineer, Garber & Cohen the Mechanical and Electrical Engineers, and Bolt, Beranek & Newman the Acoustical Consultants.

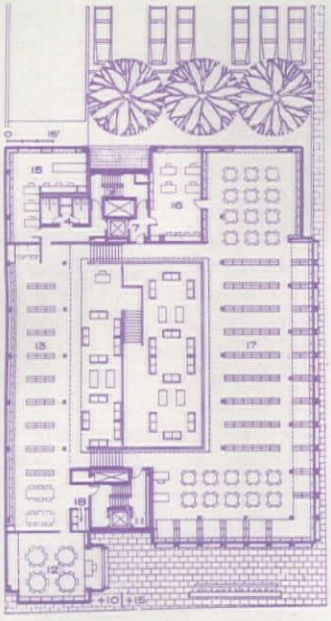


Transverse Section

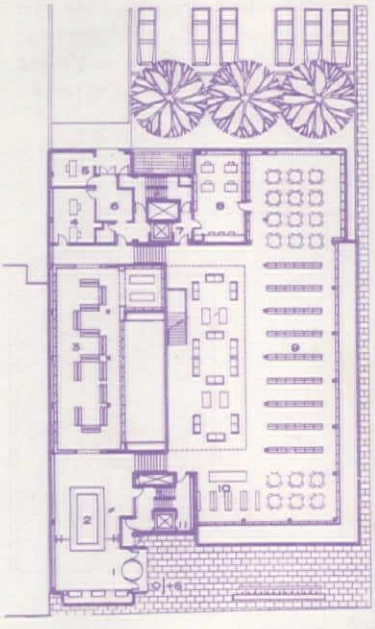
The central reading room of the Library (bottom) *is a brightly skylighted, two-story space that is sheltered from the hubbub outdoors by a series of mezzanines wrapped around it in a split-level scheme. Ceilings are of smooth plaster, acoustical control being provided by carpeting on all the floors. Air conditioning for the central space is supplied through a perimeter strip of walnut louvers just below the skylight. The color scheme of the interior is: white plaster in large expanses; walnut doors, handrails, and bookcases; black trim, and black-brown carpet. This conservative scheme is "purposely muted to allow the colors of book spines and jackets to dominate the atmosphere."*



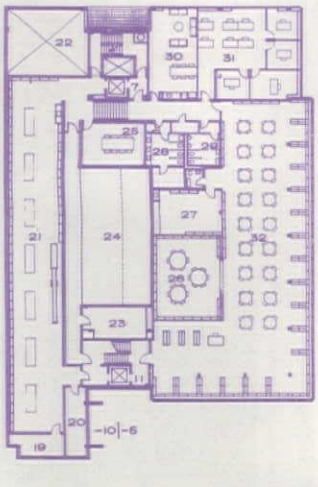
Longitudinal Section



+ 15 Social Sciences
+ 10 Special Services



+ 5 Humanities
0 Entrance

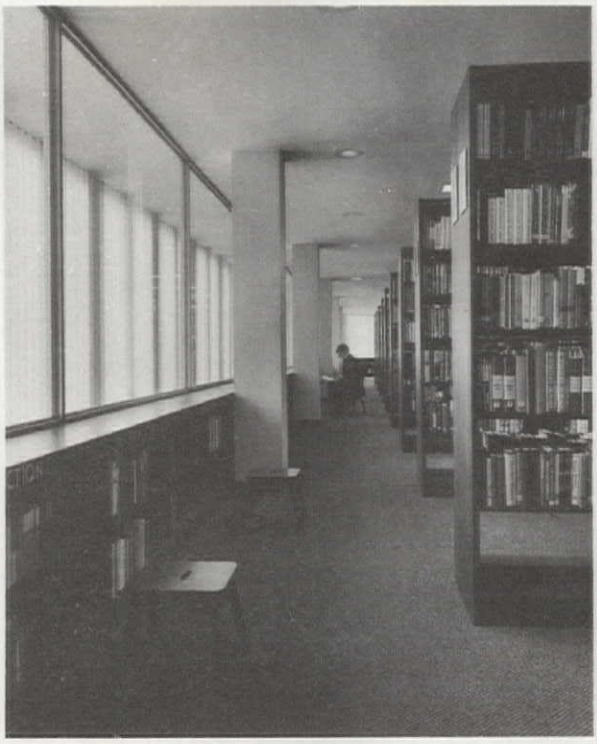


— 5 Children's Department
— 10 Basement

The circulation desk in the entrance lobby (above) *is designed as an island with the entrance on one side and the check-out exit on the other. Returned books go directly by a conveyor belt-chute from the charge desk to the main workroom below* (above, right); *there, they are checked for necessary repairs before being replaced in bookstacks.*

On the wall behind the circulation desk is a wood mural, 9' x 44', designed by James Van Dyk. The mural was commissioned under a City of Philadelphia program that requires at least 1 per cent of the budget for public buildings to be devoted to works of fine art.

The perimeter of the reading room floor (right, middle) *is set back from the exterior wall to reiterate the interplay of levels that occurs in the center of the building. From the perimeter of this reading room level, where the Humanities stacks are located, one can look down onto the level below, where the Children's section is located* (right, bottom). *Fire regulations required that the upper level be enclosed with glass.*

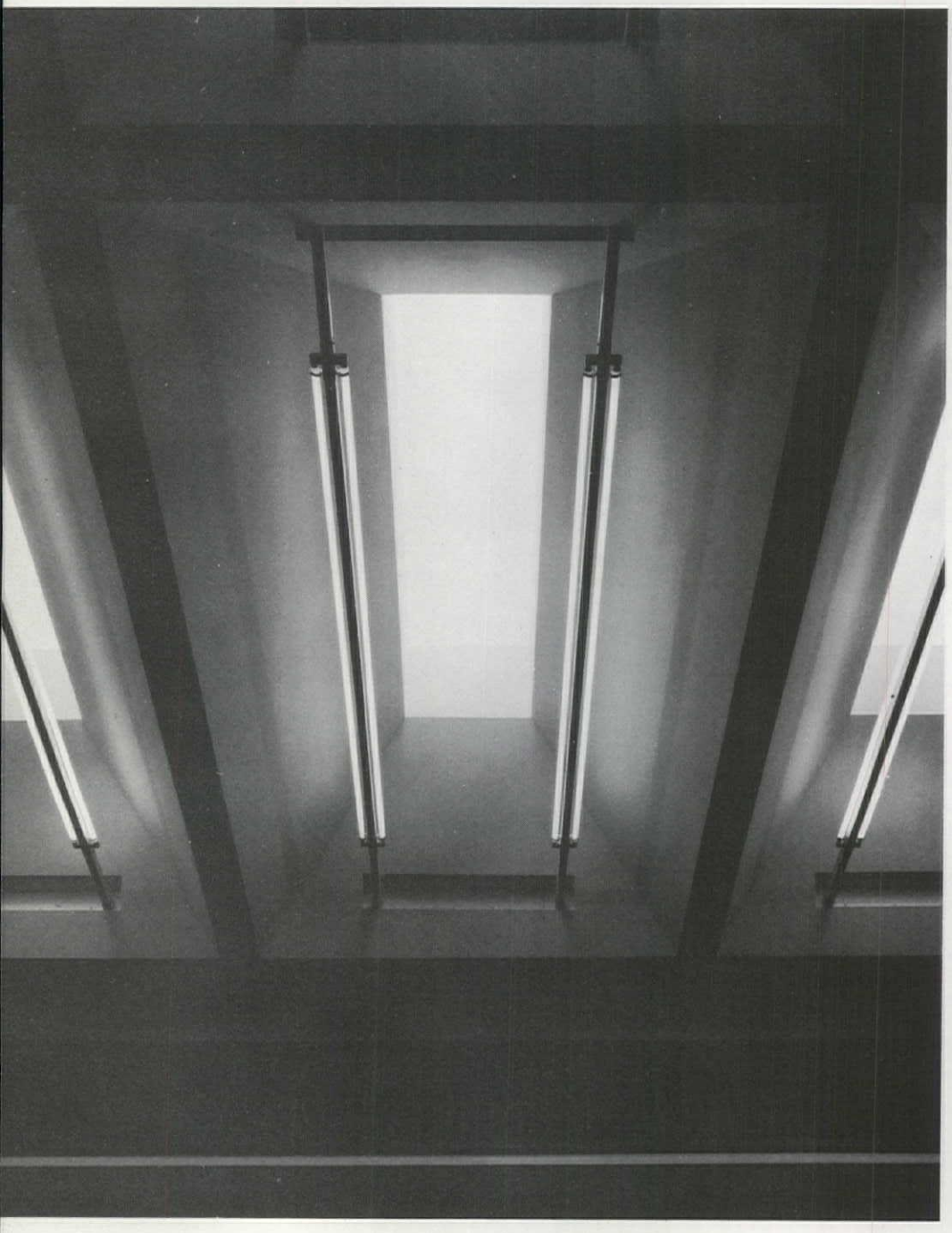


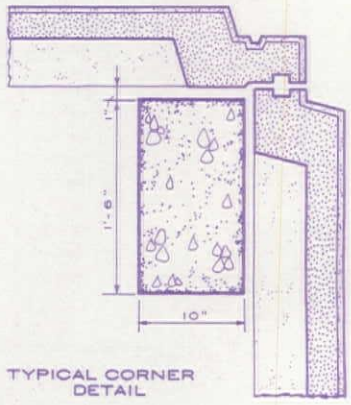
LEGEND

1 *Entrance*
2 *Circulation Desk*
3 *Leisure Reading*
4 *Office*
5 *Storage*
6 *Shipping and Receiving*
7 *Service Elevator*
8 *Workroom*
9 *Humanities Section*
10 *Card Catalogue*
11 *Public Elevator*
12 *Recording*
13 *Special Services*
14 *Rest Rooms*
15 *Workroom*
16 *Workroom*
17 *Social Sciences and Technology*
18 *Telephones*
19 *Telephone Equipment*
20 *Elevator Equipment*
21 *Workroom*
22 *Upper Level Mechanical*
23 *Projection Room*
24 *Multi-Purpose*
25 *Conference*
26 *Reading*
27 *Workroom*
28 *Women*
29 *Men*
30 *Employee Lounge*
31 *Regional Offices*
32 *Child Reading*

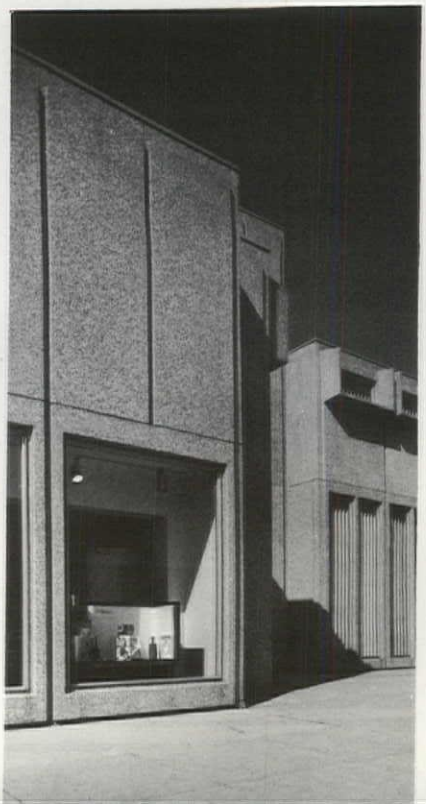
The skylight over the central reading room has artificial lighting incorporated into it in the form of bare fluorescent tubes suspended on channels (left).

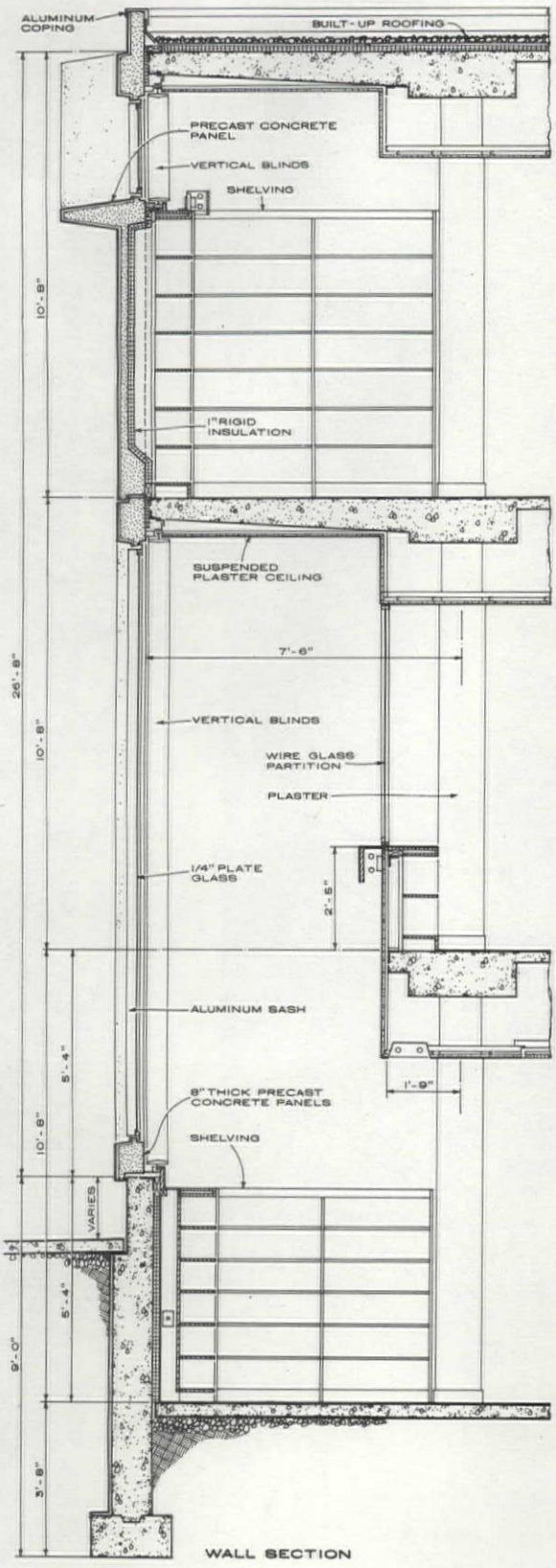
The windows, which are screened by vertical blinds, relate both to the scale of the neighboring shops and to the split-level interior. Single-pane storefront windows at the lobby (left of photo below) *and taller, double-pane windows on the corner of the building* (facing page) *are set in large precast panels. Typical corner detail of the panels is below. The windows on the uppermost level are treated as a clerestory with projecting precast panels underneath them, like eyebrows that have been inverted; these both reflect light inside and function aesthetically as a cornice for the exterior.*



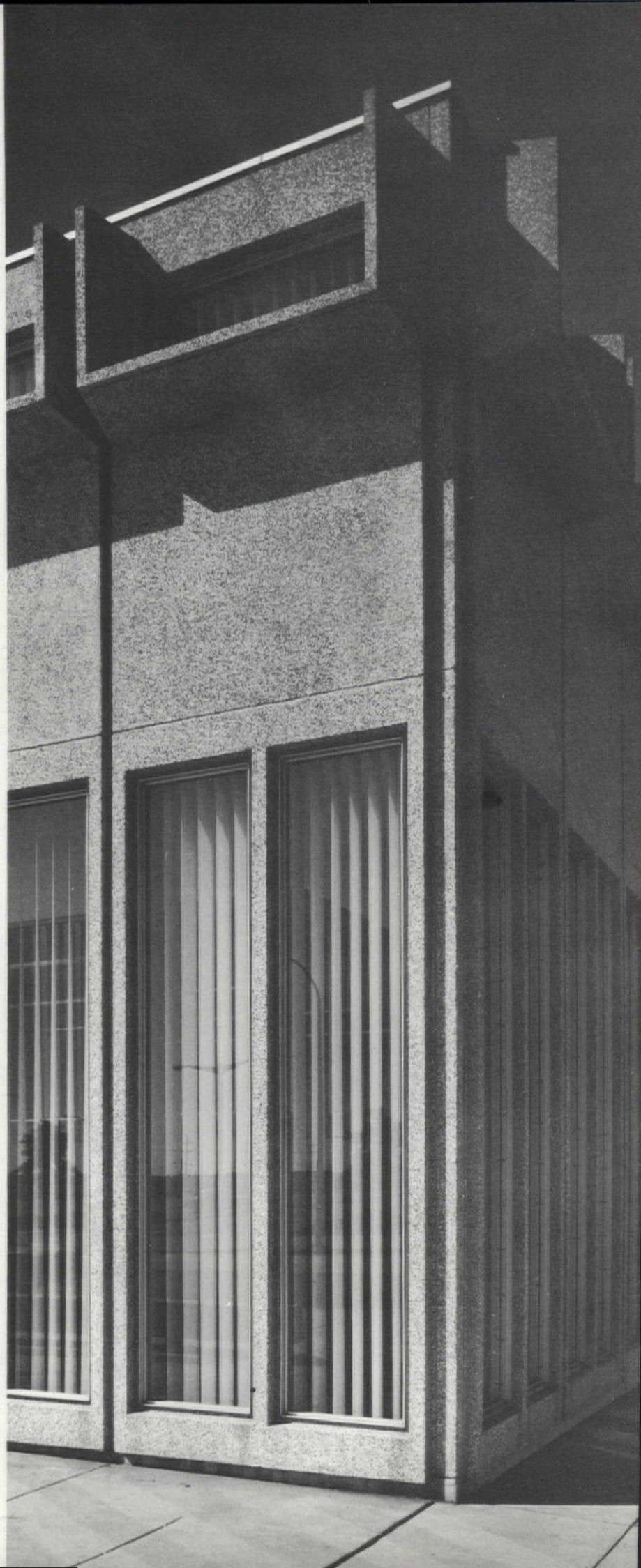


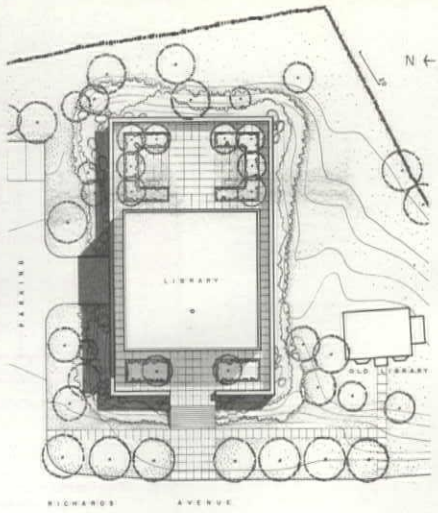
TYPICAL CORNER DETAIL





WALL SECTION





PRECAST VAULTS SUPPORT A POUR

BURNDY LIBRARY • NORWALK, CONNECTICUT • SHERWOOD, MILLS & SMITH, ARCHITECTS

This library houses a unique collection of rare books, manuscripts, and journals which record the development of the physical and biological sciences from the earliest times. The material was assembled by Bern Dibner, the founder of an electrical equipment manufacturing company, who now heads the library. It was his particular wish to make the collection available to the public, not in the form of a museum, but as a working library where Plinius' *Historia Naturalis*, for example, could be studied in its original version, and where Newton's own revivions of his treatise on chemistry and alchemy could be examined first hand by visitors.

The atmosphere of the library was to be dignified yet friendly, and the interior climatic conditions to be carefully controlled for human comfort and for the preservation of the valuable treasures.

In order to shield the building from nearby industrial structures, from busy roads and parking areas, the building has been raised on a rocky plateau, and, for additional privacy, surrounded by a 5-ft garden wall.

The building itself is a simple pavilion composed of nine square-bayed reinforced concrete vaults which define one large interior space. Brick panels fill in the vaults along the north and south. The east and west façades are of ⅜" heat-absorbing, solar-bronze glass, set back 9 ft from the building line. Entry to the building is from the west between a row of offices and beneath a mezzanine devoted to the display of early electrical apparatus. The central portion of the main reading room is left open so that it can be set up for lectures. Storage space for folding chairs, a projection screen, and tackboard are all incorporated into the cabinetwork under the mezzanine. Additional reading, storage, and work rooms are at the basement level, which also provides access to the parking area.

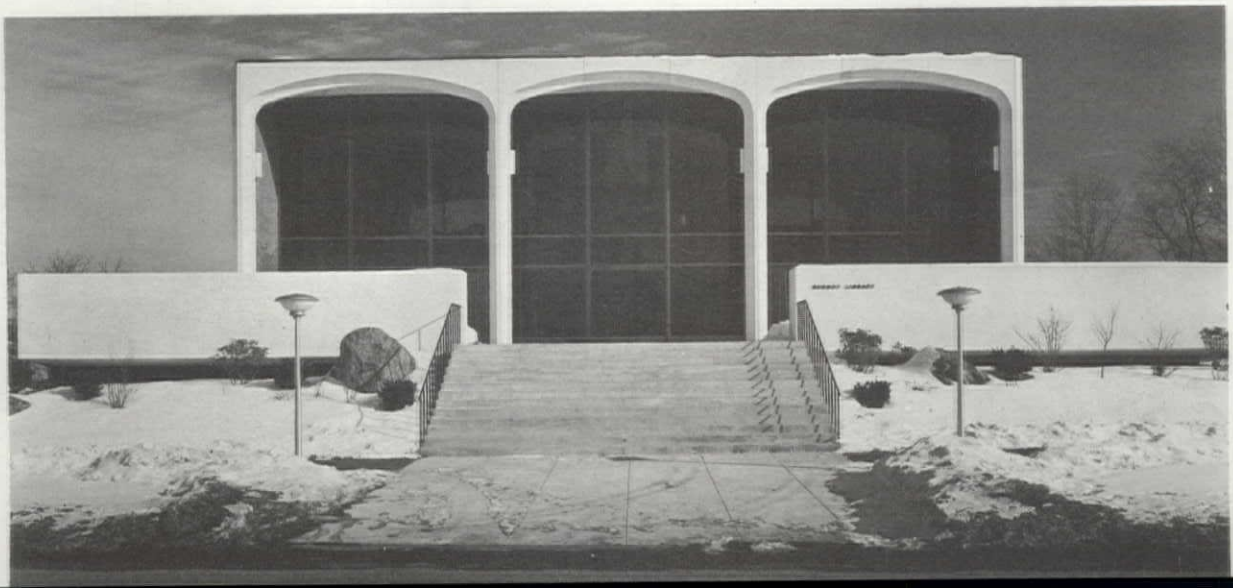
The library is heated and cooled by a gas-fired boiler and compressor and provided with special humidity controls. Continuous grilles are located at the base of the east and west glass walls and at the mezzanine facia.

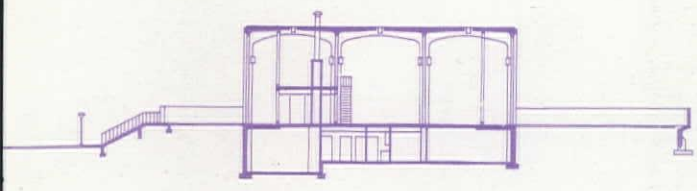
Lighting is largely indirect, using the overhead vaults as a source of reflected light and the curved shapes of the cruciform columns to carry the light down to the floor level.

Construction cost of the 12,000 sq ft library was $370,000.

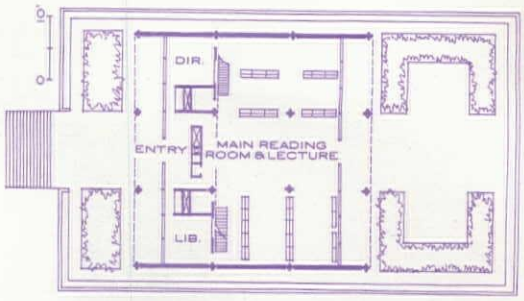
Of the architectural firm, Willis N. Mills was Partner-in-Charge-of-Design; Robert Rogus, Designer; Francis Wilson, Interior Designer. Outside consultants were William Lam, Lighting; George Cushine, Landscaping; Henry Pfisterer, Structural Engineering; John L. Altieri, Mechanical Engineering.

PHOTOS: EZRA STOLLER ASSOCIATES

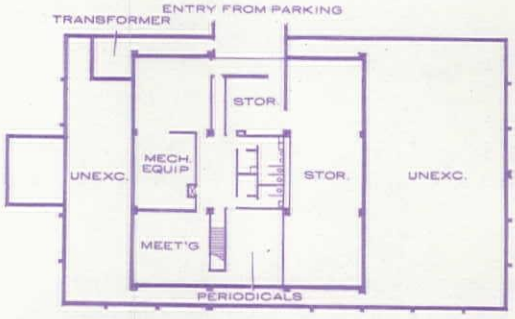




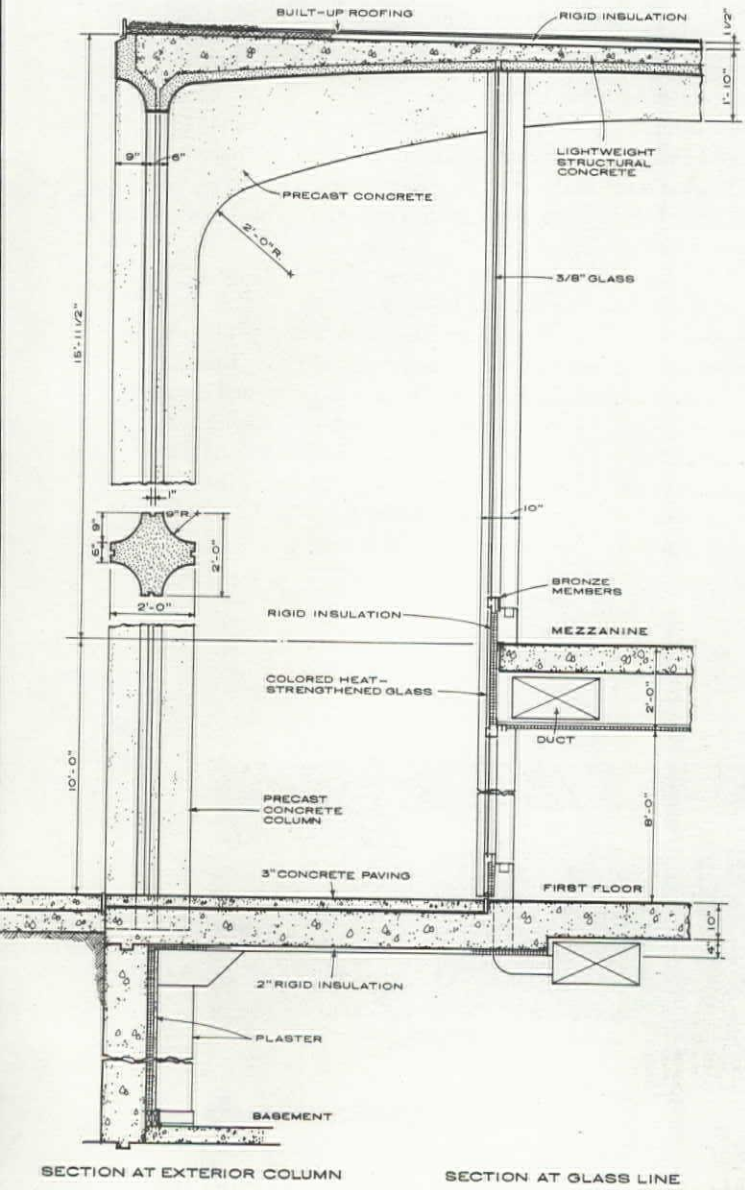
TYPICAL SECTION



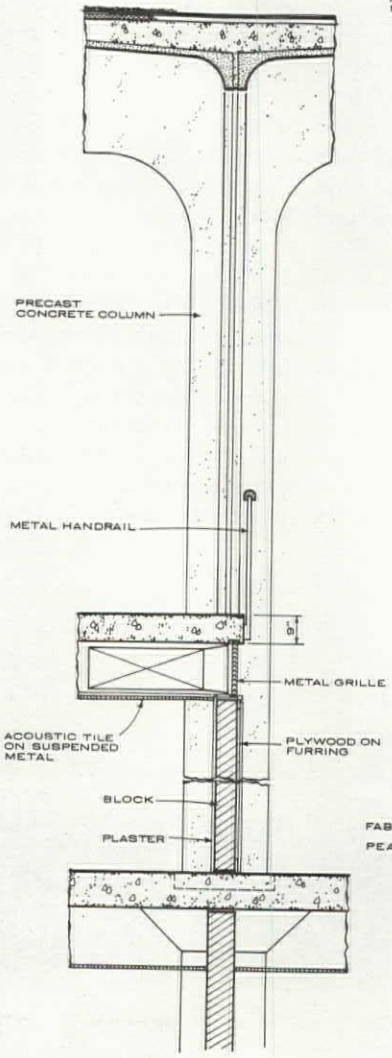
FIRST FLOOR



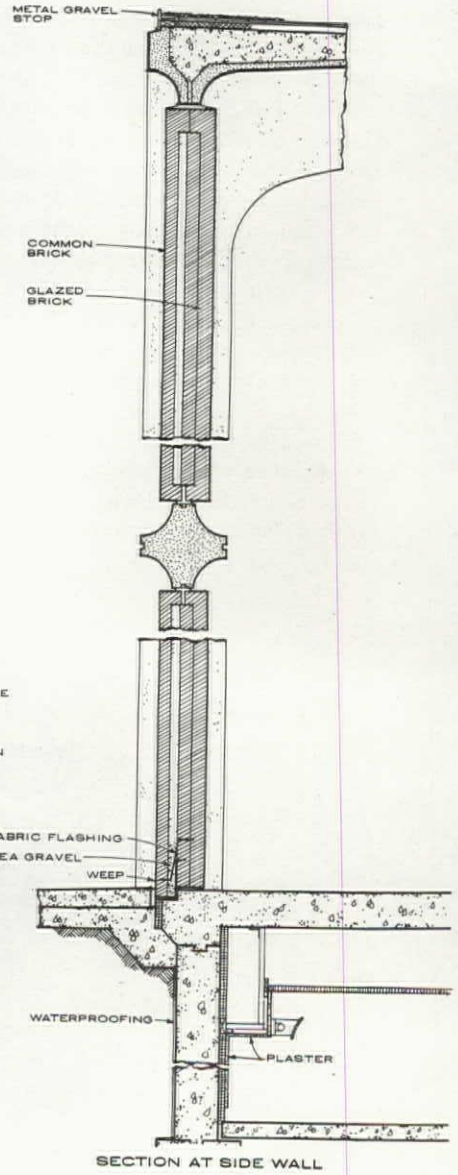
BASEMENT



SECTION AT EXTERIOR COLUMN



SECTION AT MEZZANINE RAIL



SECTION AT SIDE WALL

SECTION AT GLASS LINE

Of primary structural interest are the reinforced concrete vaults, which were erected in three steps: ceiling panels of about 3-in. thickness were precast at ground level; then placed at the desired height; and roof slab poured over the precast panels. Advantages were the repetitive use of formwork for standardized precast panels; minimum need for falsework to hold precast panels in position, while roof slab was poured; and use of the precast panels as formwork for the roof slab. Columns with integral vents and roof drains were also precast. To conceal minor imperfections and discolorations, all concrete surfaces received a final thin spray coat of white cement.

Materials and colors within the library are white concrete; brown brick with matching joints; oiled walnut for book stacks, furniture, handrails, storage walls; continuous carpeting in golden beige.


PUBLIC
OFF STREET
PARKING

Structural efficiency and appearance were of equal importance in the designing of the concrete exterior walls of the library. These walls are load-bearing and at the same time concisely shaped by means of prefabricated glass fiber forms to effect a façade of strong highlights and shadows. There is also textural interest in the smooth, stone-rubbed finish of these supporting members contrasted with the bush-hammered finish of the in-fill panels. Color is natural warm gray inside and outside. The floor is a waffle slab, supported by 18" x 18" or 20" x 20" concrete columns, spaced 25'-0" o.c. Specified concrete strength for the exterior load-bearing elements was 3750 psi at 28 days, elsewhere 3000 psi. All concrete was air-entrained to a maximum of 6 per cent, and a minimum of 3 per cent. Several test mixtures were made before an admixture was found to provide the proper combination of water reduction, workability, and air-entrainment for best possible finish and strength.

CAST-IN-PLACE IN TWO FINISHES

PUBLIC LIBRARY • WORCESTER, MASSACHUSETTS • CURTIS & DAVIS, ARCHITECTS

Worcester's central square, which is made up of all types of architectural monuments, including an Italian Renaissance palace that serves as its City Hall, now has at its far corner a bright new public library in the neo-classic idiom. Only its narrow north façade fronts on the common—a factor conditioned by the oblong shape of the site. However, as the building is now placed, it will serve as a logical connection between the common to the north and a future shopping center to the south, which is being developed, as was the library, under an urban renewal program. Arcaded walks serve to draw visitors from both directions.

To stay within the limited budget and yet achieve the strength, simplicity, and monumentality the architects considered appropriate for this public building, they chose reinforced concrete construction. This allowed them to shape the exterior columns and structural mullions into a stately façade and to introduce textural interest by contrasting the smoothly-finished structural elements with the roughly-finished in-fill panels.

North and south glass walls at the first floor are sheltered by arcades, which surround most of the building. The east and west sides have large windowless expanses to protect the interiors from the sun and glare, to shield out heavy traffic on one side, and drab views on the other.

While the architects have indeed succeeded in making a simple and forceful architectural statement—at least when the building is studied from vantage points to the north and south—the library's real significance lies in its interior.

Here the spaces are masterfully ordered to achieve not only a workable facility but at the same time "a place of delight," as its chief librarian has called it. As in their earlier, award-winning public library for New Orleans [p. 116, JANUARY 1957 P/A], the architects concerned themselves with "interpenetrating volumes that treat the library as a single space, rather than a series of rooms." They also re-used the open, flexible department-store system of planning that had proven successful in the earlier library, and gave the whole an invitingly colorful and elegant look. Essentially, the building is composed of five parts: a central block, flanked on either side by two generous light wells, which serve as links to two end wings. Except for the work spaces on the upper floor of the outer wings, all of the reading rooms and stack areas are open to each other. "Alternating low- and high-ceilinged areas," commented head librarian Thurston Taylor in the *Library Journal* "provide dramatic vistas and exciting kinaesthetic experiences for the visitor. We feel that this plan—'open' not only horizontally but vertically—will have important practical values as well. It will beckon and invite the visitor to all parts of the building . . . will make the plan evident to all . . . and will provide a sense of supervision."

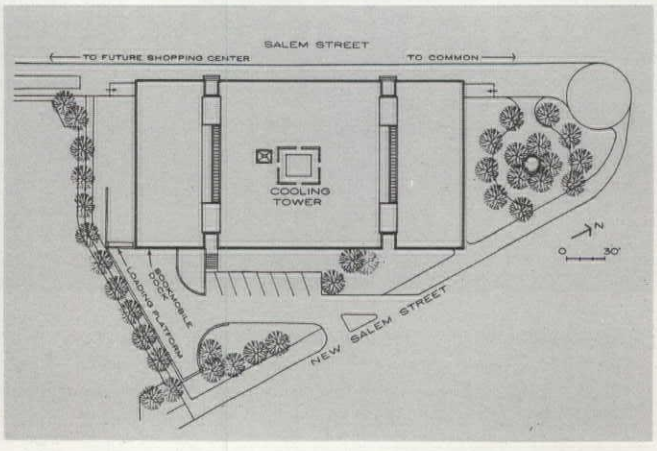
To permit the placement of standard bookcases anywhere within the building, the two-way waffle slabs were designed for a uniform live load of 150 lb/sq ft. The original intention—to leave the concrete ceiling exposed and to integrate light and mechanical systems—proved uneconomical. Instead, the ceilings were hung, and lighting fixtures—strip and round fluorescents and incandescent spots—recessed into the space above.

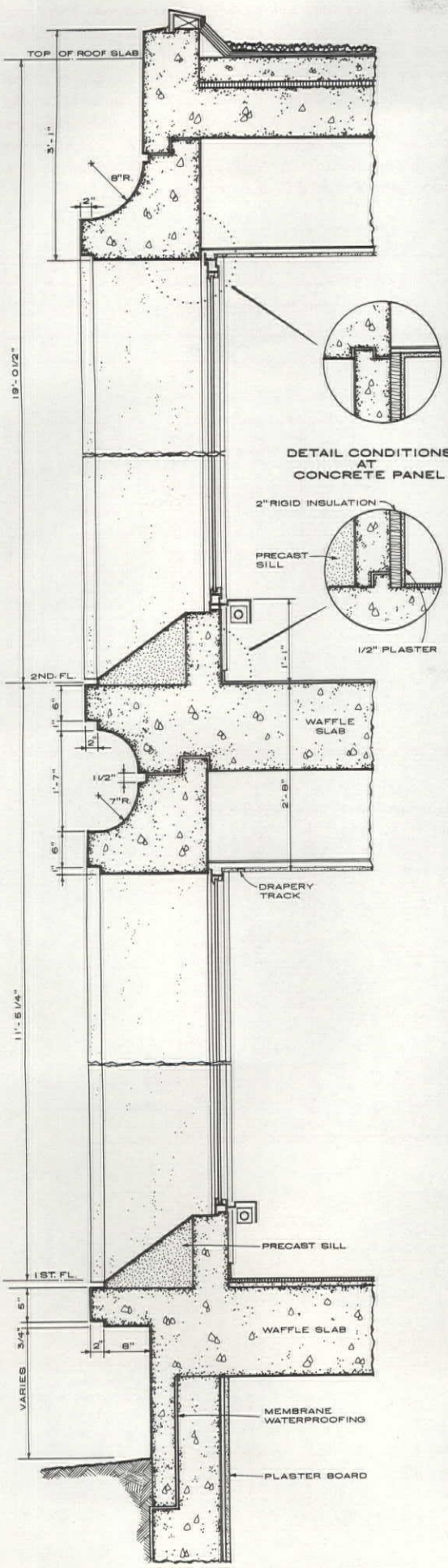
The mechanical system consists of an oil-fired hot water heating plant, a centrifugal electric chilled water cooling plant, and two multizone air-handling units. The main library spaces are fully air-conditioned. Return air fans circulate vitiated air through the basement to provide satisfactory comfort and humidity conditions to this below-ground level partially devoted to book storage and work areas. An auxiliary system of fin-tube radiation under large glass areas supplements the all-air heating system.

Construction cost for the 98,449-sq-ft building amounted to $1,984,687—averaging $20.15 per sq ft. Another $329,905 was spent to furnish and equip the 425,000-bank-capacity library.

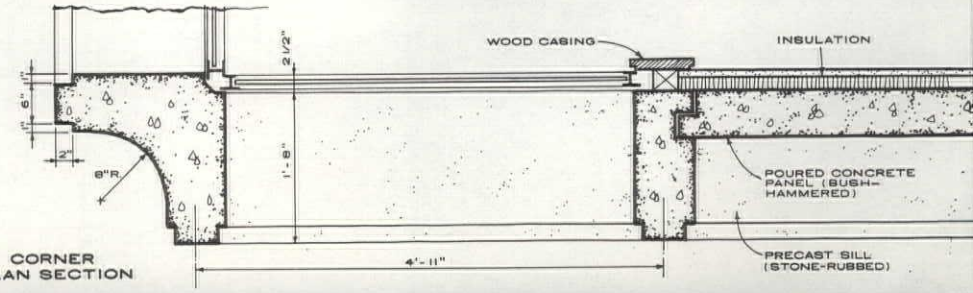
Job Captain for the project was Abraham J. Rothenberg. Wayman C. Wing collaborated as Structural Engineer, with James E. Flynn as Supervising Engineer; Consentini Associates were the Mechanical and Electrical Engineers.

PHOTOS: DAVID HIRSCH



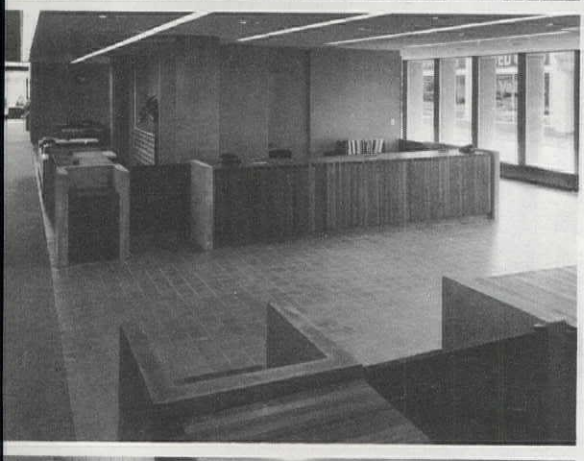


VERTICAL SECTION AT GLASS



CORNER PLAN SECTION

1



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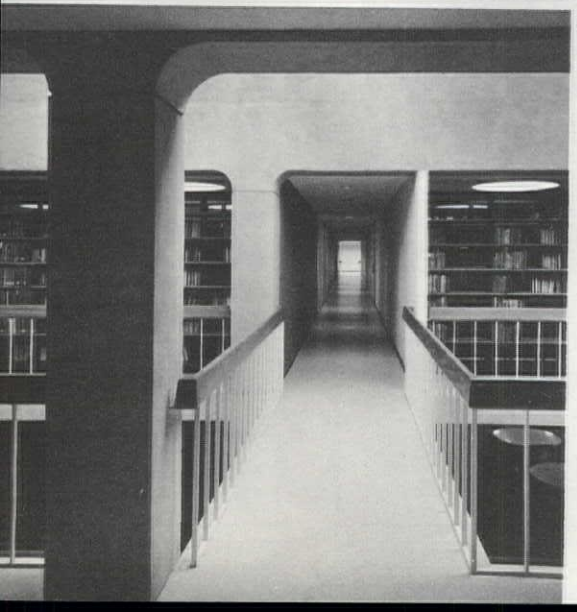
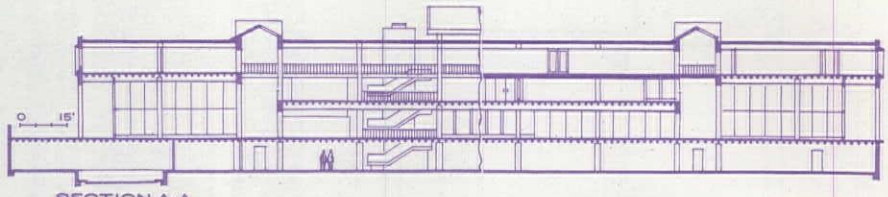


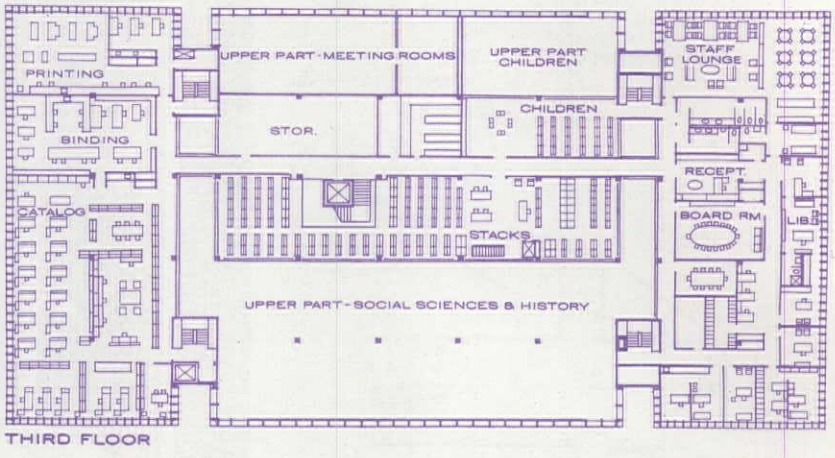
4

Within the discipline of the 25 ft square structural bay—interrupted only by the two light courts ***(1)****—the architects have created a series of ingeniously interlocking spaces* ***(5)****. The largest of these is the main reading room, which measures 50′ x 125′ and has a ceiling height of 16′-10″. Smoothly finished concrete columns define this space clearly, but permit the space to flow into the open stacks, into the light courts, and into the end wings beyond. The main floor directly below has a normal one-story ceiling height, but borrows space and light from the high-ceilinged end wings. Views from the open stairway* ***(3)*** *and from the third-floor bridge connection* ***(4)*** *make the spatial interplay particularly evident.*

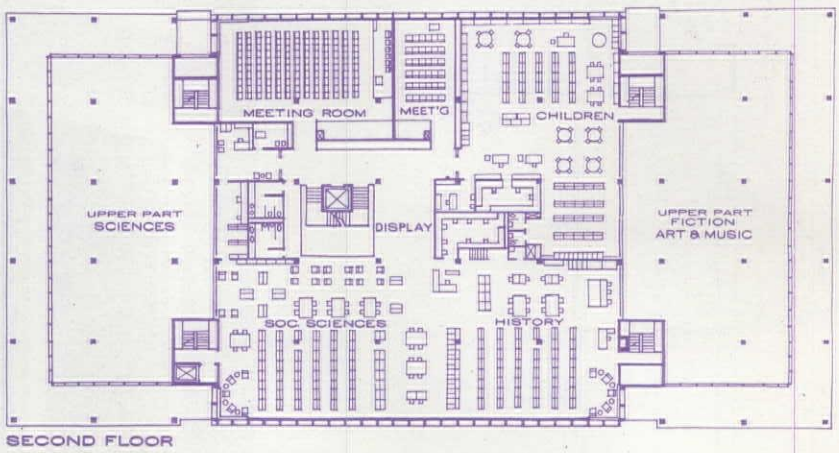
The neutral warm-gray tones of the concrete elements are echoed in the tan quarry tile at the entrance and in the deeper tans of the major carpeted areas. In contrast to these, the colors of furnishings, carpeting, and even shelving are vivid. Color clusters of crimson-magenta-red-orange or blue-green-purple-bronze are used to define specific areas, as are bright inserts in the carpets. All of the interior design, including major built-ins like the circulation desk ***(2)****, card catalogues, and work counters, were designed by the architects.*



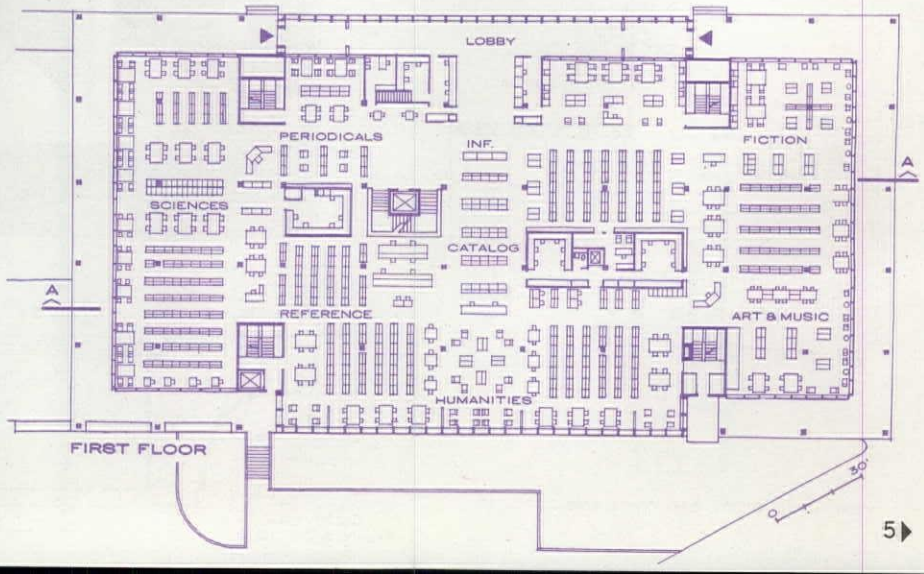
SECTION A-A



THIRD FLOOR



SECOND FLOOR



FIRST FLOOR

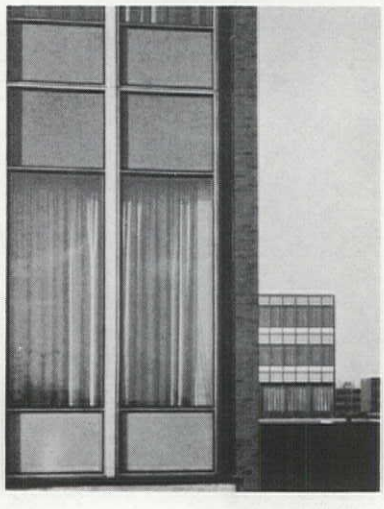
A SEARCH FOR ARCHITECTURAL PRINCIPLES—

Some Thoughts and Works of Gunnar Birkerts

The political turmoil of Europe in the 1930's and 1940's brought many people to America who have made significant contributions to our intellectual and artistic development. In the field of architecture, our course since the late 1930's has been largely shaped by men of strong convictions who fled from hostile governments—men such as Gropius, Breuer, Mies, Mendelsohn, and Sert. But there were many younger men among these immigrants whose capabilities are only now coming to light.

Gunnar Birkerts left his native Latvia in 1944, at the age of 19, and was borne westward with the sweep of the Soviet armies to Stuttgart, where he was able to pursue his long-standing ambition to study architecture. After four years there at the Technische Hochschule, where he received his Diplom Ingeneur-Architect, Birkerts continued his westward migration by coming to the United States in 1949.

So impressed had he been with the published work of the Saarinens that he went straight to Bloomfield Hills. He recalls with a smile how he arrived at Eero's house unannounced, having walked up from the nearest bus stop, only to find that there was no opening for him in the Saarinen office. Following Eero's advice, he went further west to Chicago, where he spent a year and a half in the office of Perkins & Will. In 1951, after the elder Saarinen's death, Gunnar was invited back to Bloomfield Hills to join Eero's firm, where he remained as a designer until 1955, working on such projects as the G.M. Technical Center (*right*) and the Milwaukee War Memorial Building.



A brief period of employment with a firm in Milwaukee was terminated in mid-1956, when Minoru Yamasaki asked him to return to Birmingham once more to join Yamasaki, Leinweber & Associates, where he later became Chief Designer. Among the buildings he worked on as Chief Designer for Yama were the Reynolds Metals Building (*below*), the Educational Building at Wayne State University, and the Dhahran Air Terminal.

While in Yama's office, Birkerts designed two houses on his own, both of which won P/A Design Award Citations (in 1957 and 1959), and neither of which were built. (In 1960, he won a third Citation for a swimming club, also unrealized.) With Douglas and Astra Haner (who were with him in Yama's office), he won third place in a competition for a Belgian Congo cultural center. His furniture design, begun while he was in the Saarinen office, gained him a prize in the First International Design Competition at Cantu, Italy.

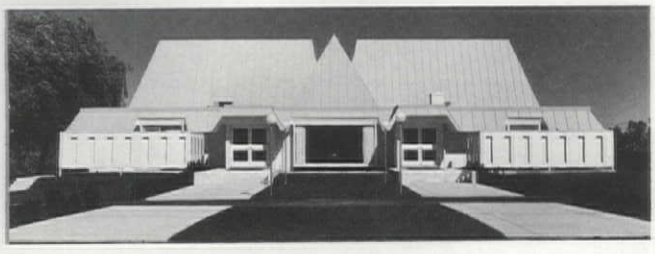
When Yama's firm was reorganized as Minoru Yamasaki & Associates in 1959, Birkerts became one of the principals. Before the end of the year, however, he had left the Yamasaki office, along with Frank Straub, another principal, and some of the junior members of the firm, to set up the office of Birkerts & Straub in Birmingham.

Birkerts' first works as an independent architect showed a definite reaction to the increasing delicacy of Yama's work at that time. Gunnar was finally able to fulfill a desire to build plain, solid walls, pierced by strongly articulated windows. He admits that his firm's first completed building, the summer

house at Northville, Michigan (*below and* AUGUST 1961 P/A), was a wood building with a "massive concrete aesthetic".

This discrepancy, however, did not spoil it for the AIA awards jury, which gave it a First Honor Award. The Haley Funeral Home (*below and* JUNE 1962 P/A) was an exercise in the design of windows (an interest of Birkerts') and steep roofs (a request of the client's).

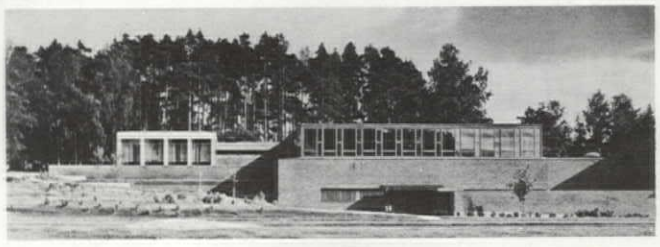
However strongly these first two jobs differ from the work of Yamasaki, they both retained his Palladian symmetry of plan. Although Birkerts' approach as a whole has changed little in his five years of independent practice, he has reconsidered the



matter of symmetry, designing a symmetrical building today "only when it is really called for."

Birkerts' urge toward larger scale and bolder forms was part of a world-wide disillusionment with the machine aesthetic; but it was based in part on his personal admiration for the work of Wright, the early industrial buildings of Albert Kahn around Detroit, and—in particular—the work of Eliel Saarinen at the Cranbrook institutions in Bloomfield Hills (*below*). Birkerts still makes a custom of strolling around the Cranbrook campuses every Sunday with his family—enjoying the fine landscaping and examining the profuse and varied details of buildings, courtyards, and passages.

A tour of Finland during a European trip in 1962 gave Birkerts a new source of inspiration. He attributes the unrivaled quality of modern Finnish architecture (*below*) partly to the fact that the Finns "can't afford showmanship." But the excellence of their work goes far beyond the effect of this economic limitation. "It is hard to explain," he says, "but their architecture speaks to me in a language that I understand. It says the same things I am trying to say, but much better—with greater eloquence and much more appropriately." He fears the day—apparently almost upon us—"when American archi-



tects discover Finland and plunder elements of its architecture for superficial application."

The partnership with Frank Straub was dissolved in 1963, with both architects establishing independent practices. Their design associates for the projects shown on the following pages were Harold F. Van Dine, Jr., and Jack Hilberry, both of whom came from Yamasaki's office. Van Dine remains as a Design Associate of Gunnar Birkerts & Associates. The firm's second-ranking designer is Keith A. Brown—a graduate of the University of Michigan, where Birkerts has been a design critic for five years. Birkert's office has recently moved to the sprawling Pontiac showroom building on Woodward Avenue, into space once occupied by Eero Saarinen & Associates.

Birkerts has no pretensions to a "philosophy of architecture," feeling that "nowadays too much is said by architects about their work and their philosophy." He questions the validity of formulas such as "wanting to be" ("There is often conflict between what the building wants to be and what you want it to be") and "serenity and delight" ("Exuberance sells well, but it is not lasting"). He prefers to exercise restraint in his work, but finds the maxim "less is more" as inadequate as these other oversimplifications.

His major criterion is that a building be "appropriate" to its specific program. To achieve this, he makes a point of starting each job without preconceptions. "I like to 'fertilize' myself with information and requirements—program, site, budget, etc. —then proceed into a period of gestation." He also expects each building to show a kinship with his other projects. "The greatest compliment for me is to be told, 'We recognized that it was your work right away'—but of course that only counts if the building is appropriate."

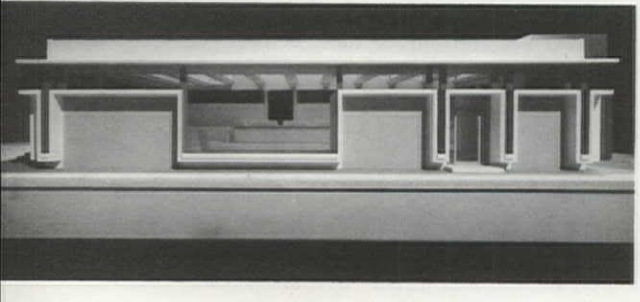
Birkerts is not a speculative thinker. He does things first—in the most direct way he knows—and examines them for principles later. If anyone analyzes his work to date, certain consistent methods of approach are revealed: subordination of structural to spatial needs, simplification of detail, stratification of the wall, and use of indirect daylight. While these principles recur—where appropriate—throughout his work, it is possible to choose examples in which they are most clearly demonstrated. On the following pages, these points will be taken up one by one, and each will be illustrated in one of his recent buildings. (*For photo credits this and facing page, see p. 290.*)

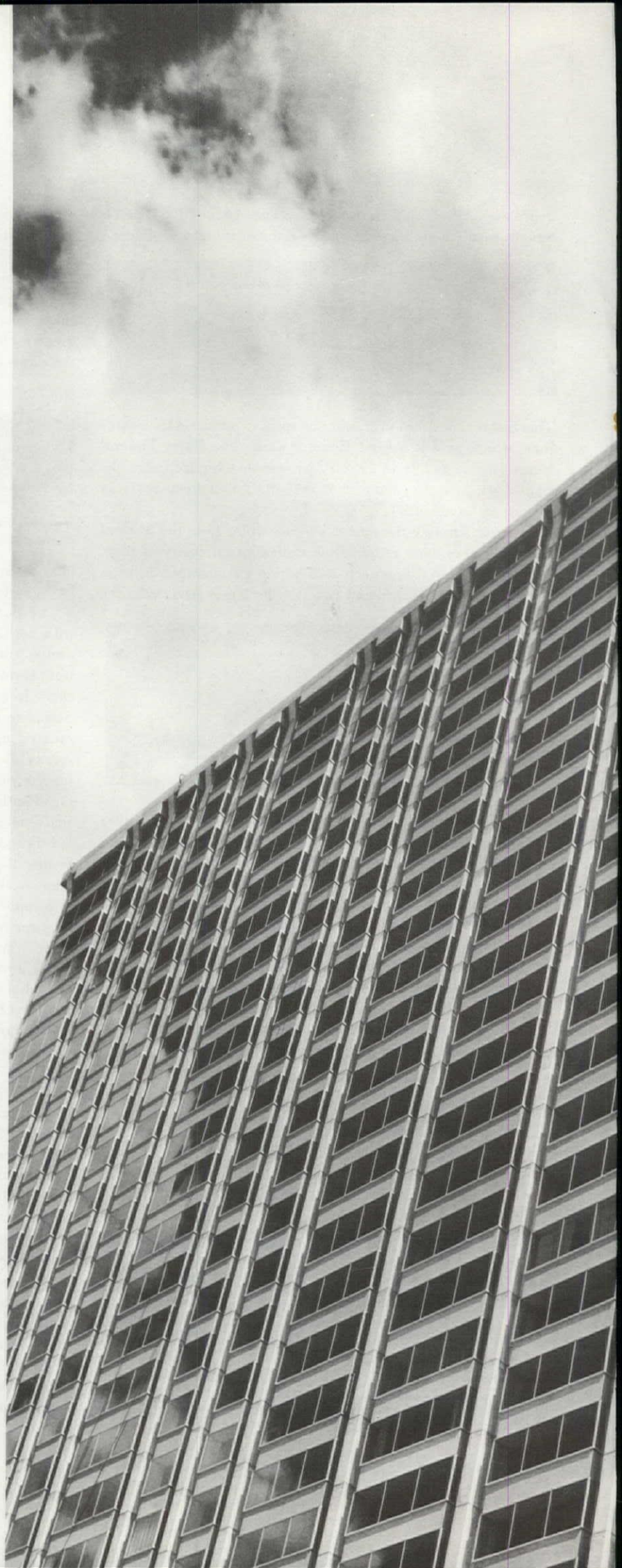
SPACE BEFORE STRUCTURE

Birkerts is convinced that space must be given first consideration, before the means of enclosure. For him, "Structure is almost in the same category as heating and plumbing; it is up to the architect how much to use it as a design element." But like mechanical systems, structural systems must have integrity within themselves. There must be "no mystery about how loads reach the ground." Materials and techniques must be applied consistently throughout a building.

In applying these principles to his buildings, Birkerts uses the enclosing surfaces—the floors, roofs, and walls themselves—as structural elements wherever appropriate (as in the church presented later in this issue). Where concentrated support is necessary, he lets spatial requirements, rather than predetermined spans, determine the size of bays. He may vary bay sizees without changing the sections of beams and columns to correspond, thus giving up economy of materials for consistency of detail.

Birkerts tested this principle in small scale in the Royal Oak Branch of the People's Federal Savings and Loan Association of Detroit (*photo below and* MARCH 1963 P/A). He has applied it on a larger scale, exploiting the inherent adaptability of cast-in-place concrete, in the new 1300 Lafayette Apartments, presented on the following pages.





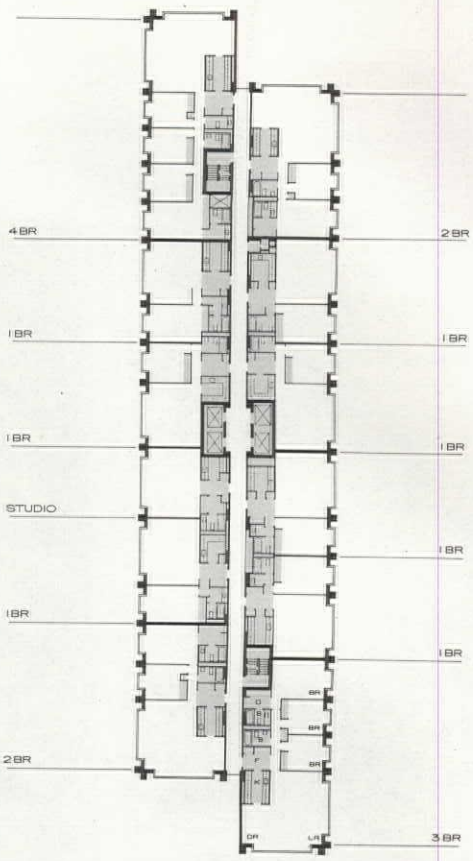
1300 LAFAYETTE EAST APARTMENTS, Detroit, Michigan *• **Architects:** Birkerts & Straub • **Site:** Area of 4 acres on a major thoroughfare leading out of downtown, about ½ mile from Civic Center, part of extensive Lafayette Redevelopment area • **Program:** 336 apartments, maximum room count as determined by City Planning Commission for this site. Parking for 1.1 cars per apartment, 25 per cent uncovered as required by FHA • **Structural System:** Concrete structural frame, except for steel framing of suspended mezzanine; concrete joist and fillerblock floors • **Major Materials:** Precast, exposed-aggregate spandrel panels; aluminum sash with gray glass; steel stud and drywall partitions, double strength and on resilient clips between apartments • **Mechanical System:** Individual heating and air-conditioning units in each apartment, feeding air-floor system with supply grilles at window walls; fresh-air supply from operable sash and from corridor, which is under positive pressure; mechanical exhaust through baths and kitchens • **Structural Engineers:** Paul Rogers & Associates • **Mechanical and Electrical Engineers:** E.G. Siegel Associates • **Landscape Architects:** • Eichstedt & Grissim • **Developers:** Morton Scholnick & Associates • **General Contractors:** 1300 Lafayette East Company • **Photographs:** Balthazar.*

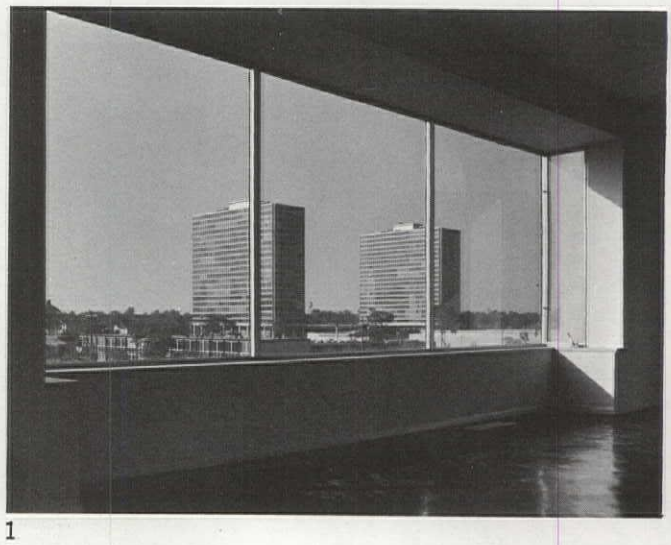
The basic measurements of the building—height, floor area, and size of individual units—were determined by nonaesthetic considerations: maximum allowable room-count, market research, economical use of elevators, and so on. The typical floor plan was then developed by tailoring the structural frame to a straightforward layout of units along a central corridor. This frame is by no means disorganized, however, but is composed of bays of a uniform 25-ft depth, the widths varying from 11 ft to 25 ft to fit the individual rooms.

All apartment windows are identical in detail and have been placed to leave equal segments of wall between column and window throughout the building. Thus the windows in larger rooms (1) are not only wider, but occupy a larger proportion of the exterior wall. Bedrooms (2) consequently have a greater feeling of enclosure than living rooms, and have wall space suitable for furniture arrangement.

Windows at the ends of the long central corridor give it a visual focus and provide striking views of the city and river for residents whose apartments face in other directions.

The projecting exterior columns (3) taper visibly between the base of the building and the parapet, but are deep enough at all floors to block the view from one projecting window into another. Seen from the exterior, the wall looks more solid near the bottom, where the columns are deeper. Its composition also appears to vary with the angle of view; seen from a sharp angle, the windows conceal the structural elements, giving the illusion of a single, scored plane of glass (9).





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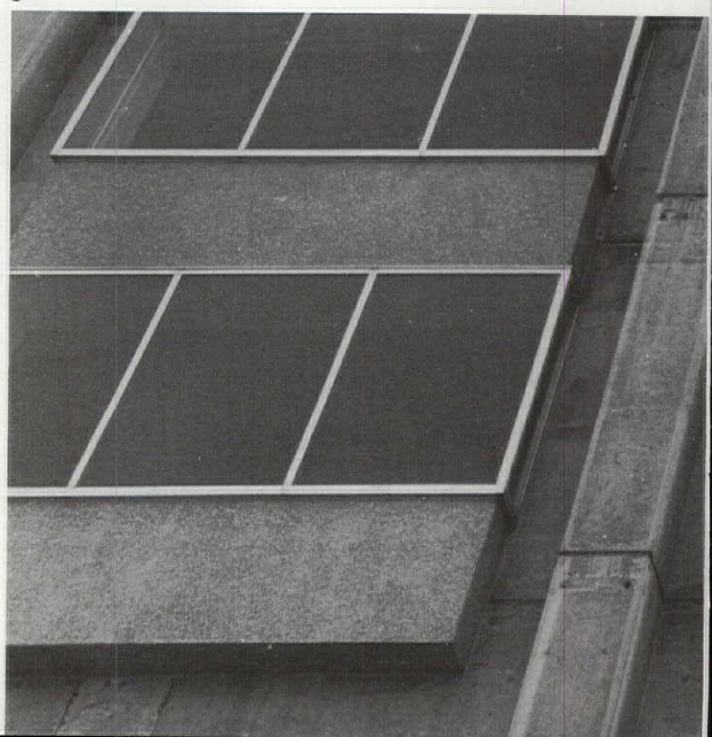
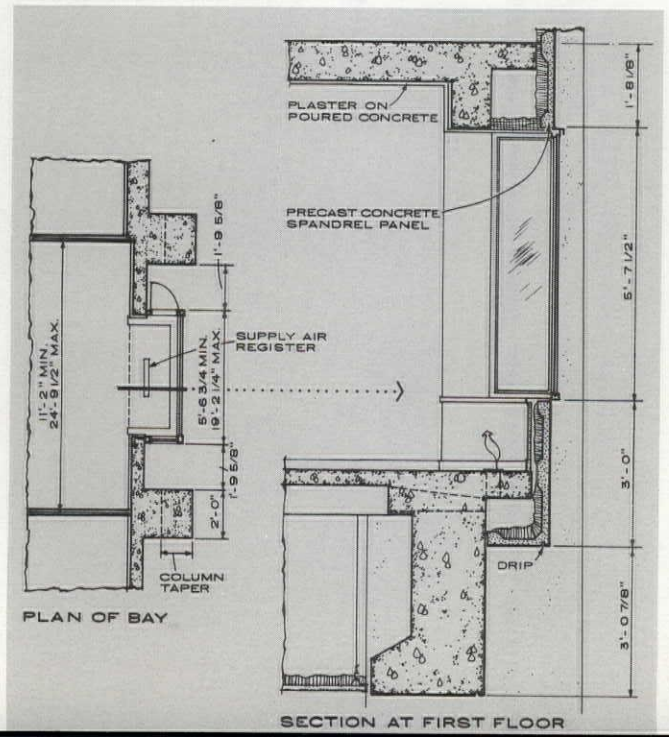
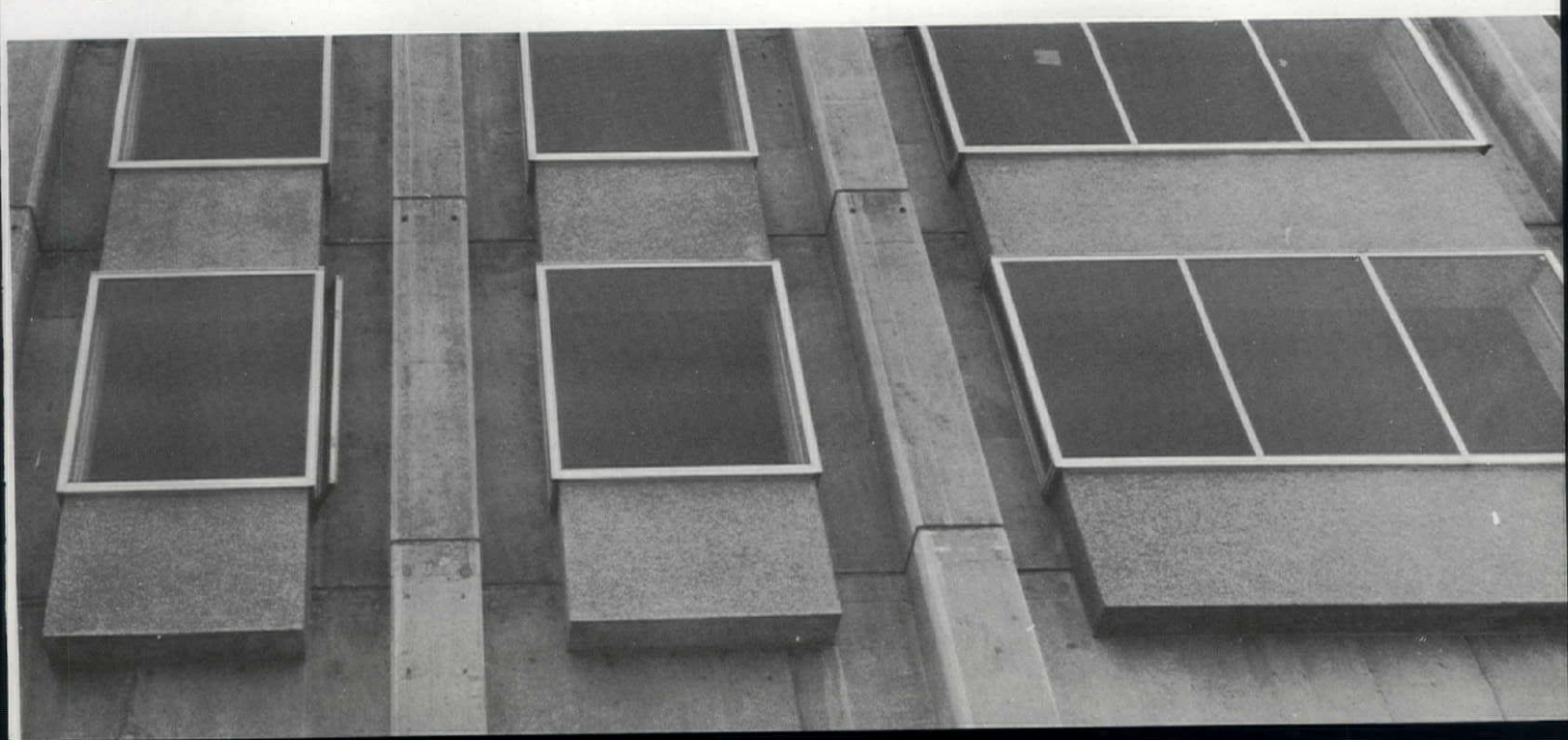


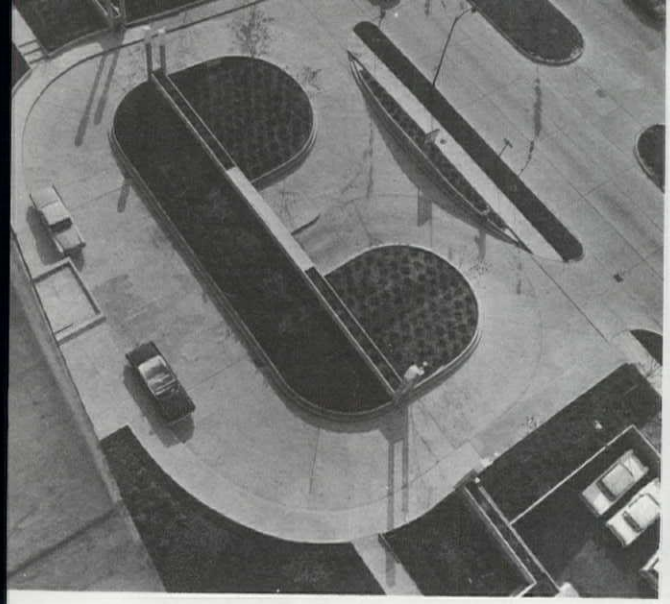


PLAN OF BAY

SECTION AT FIRST FLOOR

2





4 5

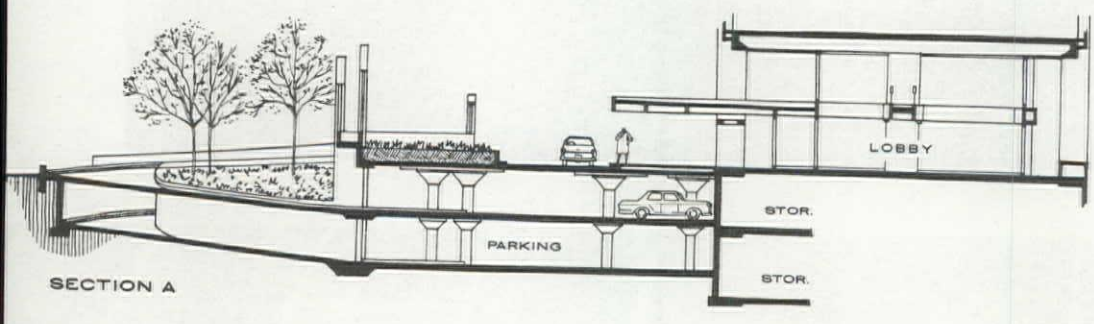
This building was originally part of a design for a 13-acre development (OCTOBER 1961 P/A) that included a group of town houses and another identical apartment block. Construction of the remainder of the development is undecided at present.

A unified system of parking facilities was designed for the entire development. The fragment that remains around this building is nevertheless an example of effective integration of site planning and building design.

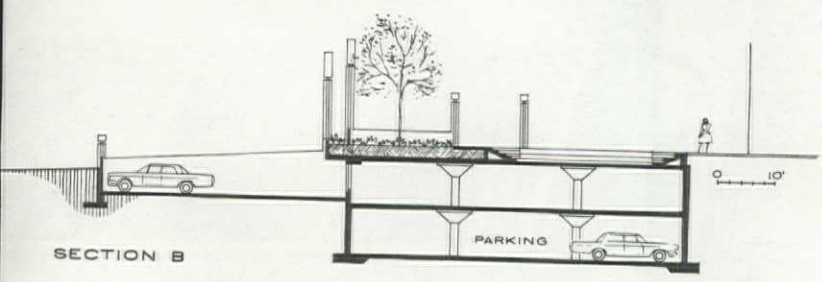
The two-level garage has been concealed beneath a landscaped terrace (8), and the surface parking required by the FHA has been depressed to form a moat around it (9). Overhanging planting boxes at the edges of the terrace restrict the view of the open parking areas, and shelter the pedestrian approaches to them. Entrance ramps for the garage (4, 5) are placed directly at the entrance to the building, offering the driver a convenient—and clearly indicated—choice of routes. Their symmetrical and self-contained forms emphasize the entrance process in the manner of a Baroque stair.

The glass-walled lower floors are recessed behind a tall colonnade. The canopied central entrance (6) leads to the main lobby (7); entrances flanking it lead directly to mezzanine stairs.

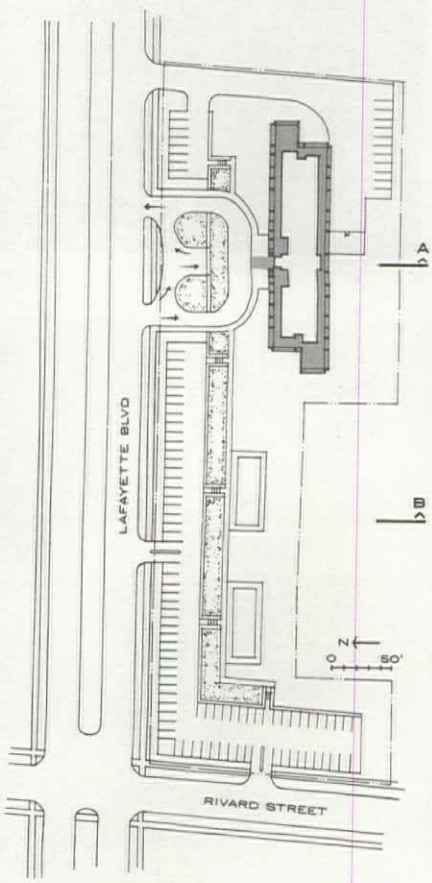
Architect-designed concrete lighting standards, used throughout the site (4, 5, 8, 9) are topped with cubic "globes" made of translucent acrylic sheet.

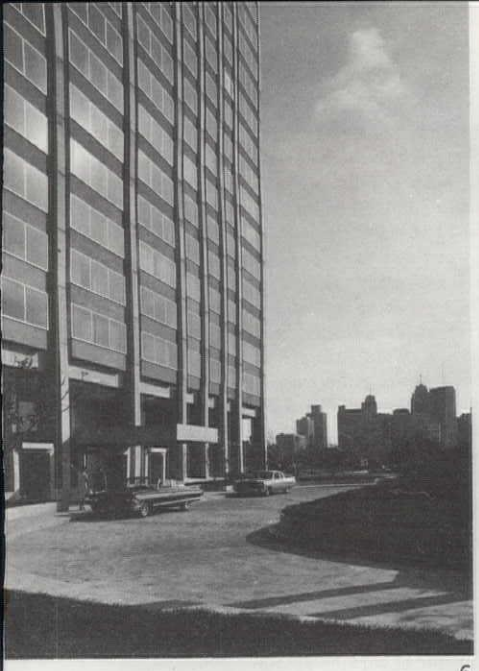


SECTION A



SECTION B





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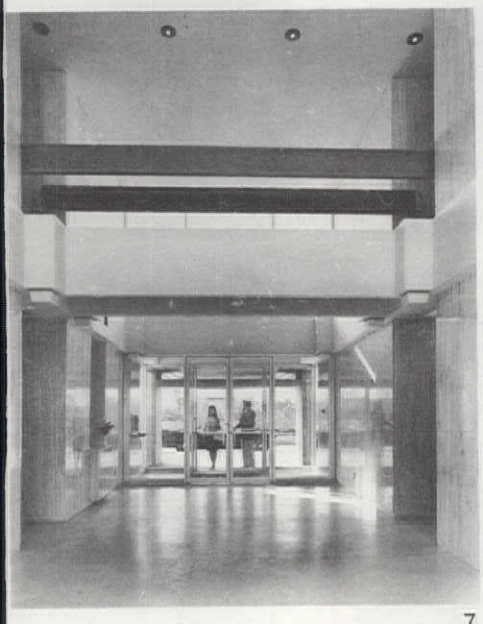

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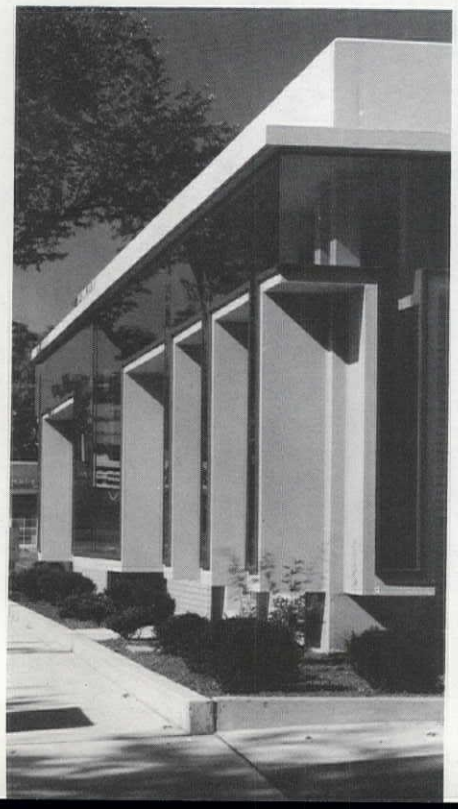
MINIMUM OF DETAILS

During his years of practice in other offices, Birkerts became concerned about the effort he saw devoted to details that were not related to over-all architectural concepts, but devised merely to meet unforeseen conditions. One of his objectives in his own practice has been to design so that only a limited number of details are required—all related and all appropriate to the major concept. To this end he manipulates other elements—structural framing, openings, etc.—in order to repeat the same detail conditions throughout a building.

This effort to regulate details is evident in all of Birkerts & Straub's recent work (as it was in the walls of the Royal Oak Branch of the People's Federal Savings & Loan, *below*). But in the soon to be completed Marathon Oil Building, presented on the following pages, Birkerts has obtained a remarkable consistency and simplicity of detail by limiting the number of materials and joint conditions.

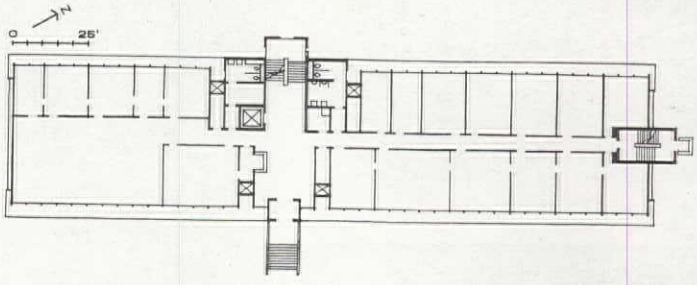


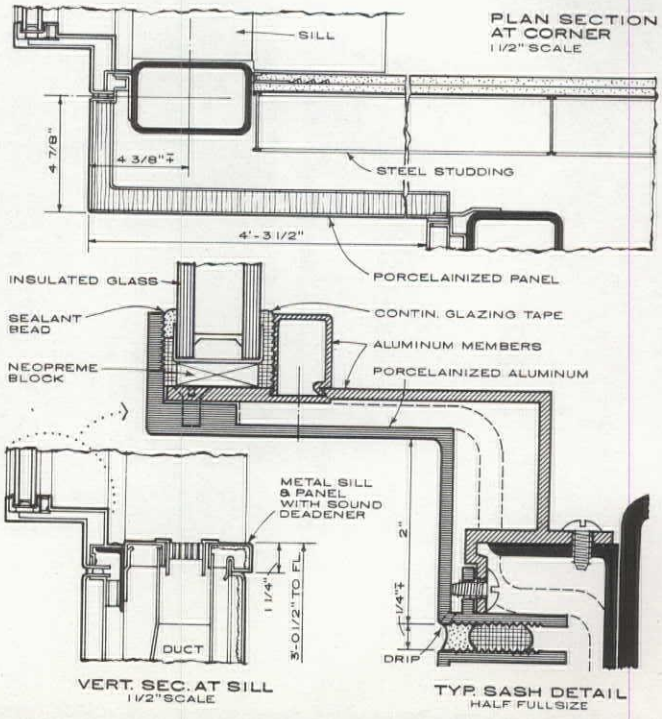
OFFICE BUILDING FOR MARATHON OIL COMPANY, Detroit, Michigan • ***Architects:*** *Birkerts & Straub* • ***Site:*** *Highway frontage on property of company refinery* • ***Program:*** *A "shirt-sleeve" plant office building, with about 20,000 sq ft of flexible office space* • ***Structural System:*** *Light steel frame, with tubular steel exterior columns at 5-ft intervals; open-web joists and concrete floors on steel decking* • ***Major Materials:*** *Continuous skin of charcoal gray matte-finished porcelain-enamel steel; windows of gray glass framed in same material* • ***Mechanical System:*** *Air-conditioning system includes special filters for industrial odors; supply ducts housed in horizontal projections on exterior walls* • ***Structural Engineers:*** *Clifford Holforthy & Associates* • ***Mechanical and Electrical Engineers:*** *E.G. Siegel Associates* • ***General Contractor:*** *George W. Auch Company* • ***Photographs:*** *Balthazar.*

The primary objective in the design of this building was to give it an exterior skin that could survive—and be kept clean—in a heavily contaminated atmosphere. Birkerts' solution was to cover the entire exterior—between foundation and roof—with charcoal-gray, matte-finished porcelain enamel panels **(1)**, similar in detail to those of a typical service station. The panels themselves turn the corners of the building, so that all joints are on flat surfaces and are essentially identical in detail. Projections on the panels hold panes of dark gray glass, framed so that no bare metal is exposed to the corrosive atmosphere.

Tubular steel sections at 5-ft intervals on the long walls support both the wall panels and the structural frame. Air-conditioning supply ducts branch out from risers near the center of the building and run along the façades, housed in horizontal projections that also serve as sunshades and platforms for the frequent window (and wall) washing that will be necessary.

The building accommodates three floors of flexible office space and is planned to permit expansion at the ends. The entrance is at the middle level—a half-story above ground—on the rear of the building **(2)**; a tall stair landing projecting on the highway side marks its location.





1

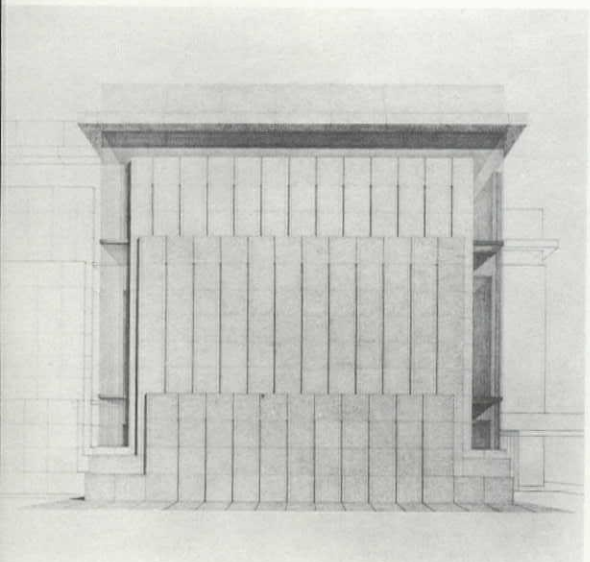
2

STRATIFIED WALLS

Birkerts conceives of the planes bounding architectural spaces as composed of layers serving different purposes or reflecting different conditions. Thus he always maintains a distinct separation between the plane of glass and the solid wall. The wall itself may be composed of several layers, the disposition of which may be based on structural or mechanical requirements, or may be frankly symbolic, as in his design for an addition to the Detroit Art Institute (*below and* p. 69, SEPTEMBER 1963 P/A), where setbacks indicate floor levels.

Arrangements of receding planes like those of the Art Institute Addition were characteristic motifs of the early 20th-Century *Sezessionist* group and appeared in the 1930's in this country in the works of Eliel Saarinen, Albert Kahn, Raymond Hood, and many others. Birkerts, however, does not limit himself to planes that recede in a simple, predictable pattern, but often establishes more complex compositions. He is interested in the effect of placing the glass plane forward of the solid wall, as in the People's Federal Savings & Loan building and the 1300 Lafayette East Apartments.

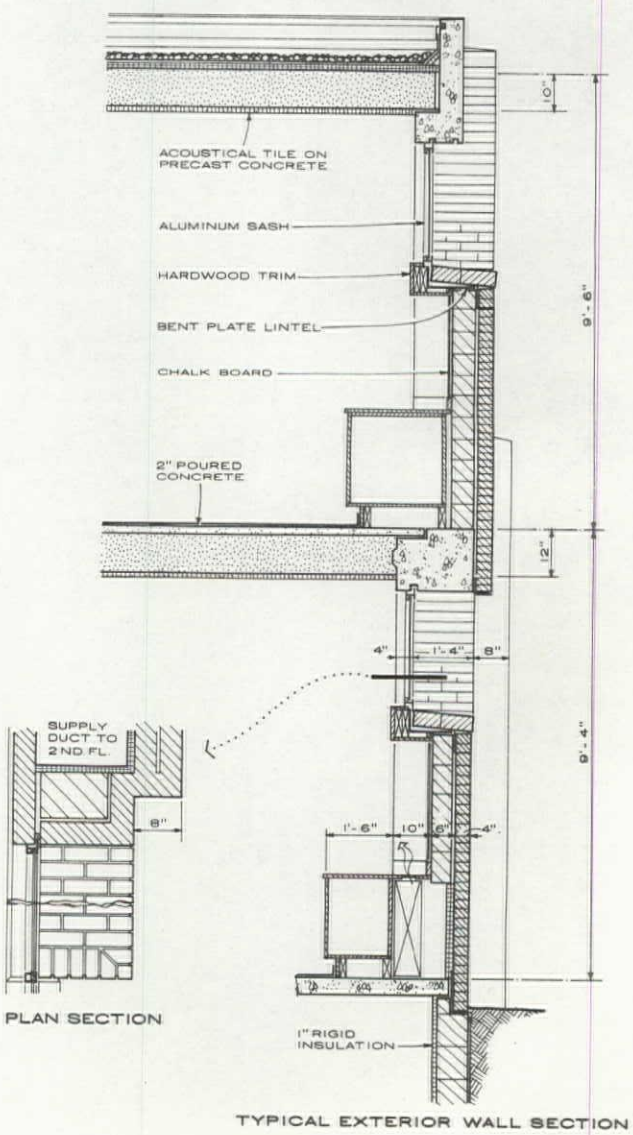
In the new Lillibridge School Addition (*right*), the exterior bearing walls are divided into a number of receding and projecting planes. The recessed glass is shaded by planes of wall and fascia. The varying thickness of the wall is related to structural requirements and allows for the housing of ducts.



LILLIBRIDGE ELEMENTARY SCHOOL ADDITION, Detroit, Michigan • ***Architects:*** *Birkerts & Straub* • ***Program:*** *Addition to existing K-6 elementary school, increasing capacity from 664 to 1400 pupils. Part of two-stage replacement of existing facilities. Building construction budget, $14.60 per sq ft* • ***Site:*** *Original school site of 3.9 acres. Remaining 1.2 acres of city block to be acquired in future to enlarge playfields* • ***Structural System:*** *Brick and concrete bearing walls; poured concrete and concrete plank floors and roof* • ***Major Materials:*** *Brick walls on exterior, painted block on interior; vinyl asbestos tile floors; mineral fiber tile ceilings; birch trim, cabinetwork, and furniture* • ***Mechanical System:*** *Central heating and ventilating system supplying filtered air at temperature of 55 F to induction units in rooms. Boilers sized to serve entire school in final stage of development* • ***Structural Engineers:*** *Clifford Holforthy & Associates* • ***Mechanical and Electrical Engineers:*** *E. G. Siegel Associates* • ***General Contractor:*** *Bundy Construction Company* • ***Photographs:*** *Balthazar.*

The walls of this schoolhouse addition were designed to fulfill many conditions: they had to provide wall-space and an occasional outward view for the classrooms; they had to relate well to the existing red brick building; they had to carry structural loads and accommodate ducts. The solution was a brick-faced bearing wall, with concrete block on the inside, because, says Birkerts, "exposed block was all we could afford."

Classroom windows have been limited to a supplementary light strip above wall cabinets and narrow view slots at the corners of the room. On the first floor, these view slots have been enlarged to serve as emergency exits. In the kindergartens, where cabinets are lower and a closer relation to the outside is desired, the light strip is considerably taller. Ducts supplying air from a central source to the upper-floor classrooms are housed in pier-like projections at the center of each bay.



PLAN SECTION

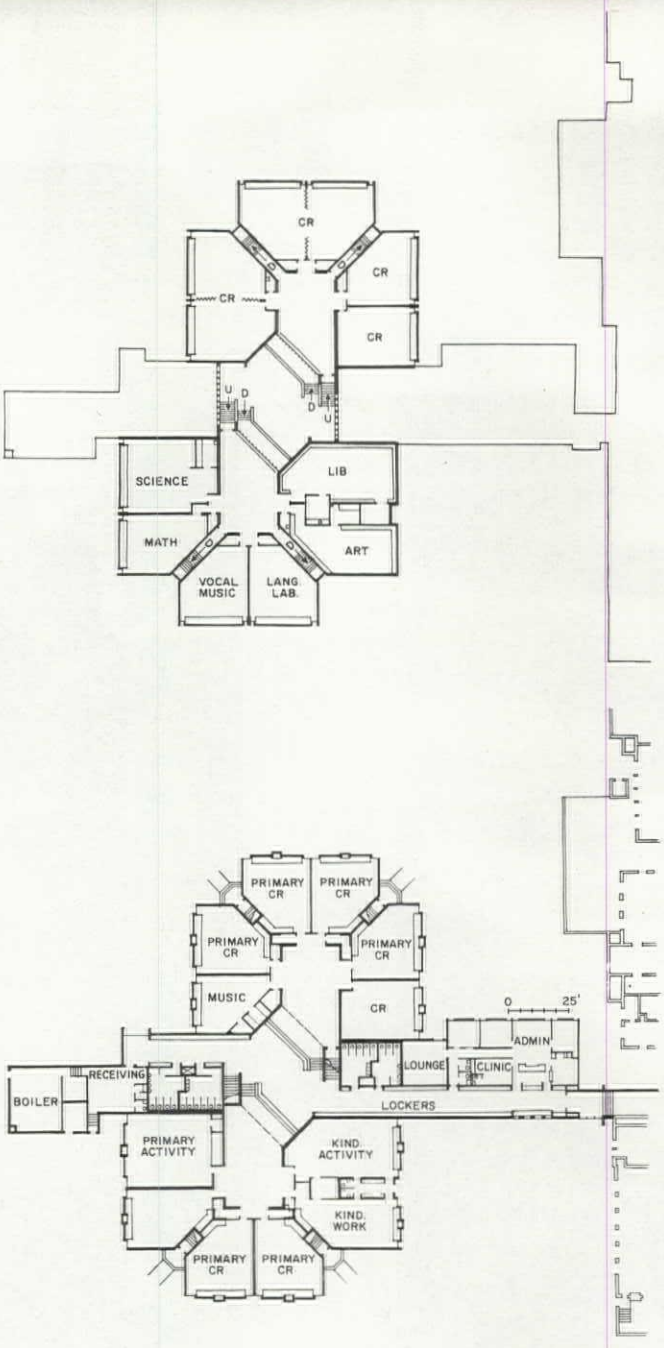
TYPICAL EXTERIOR WALL SECTION

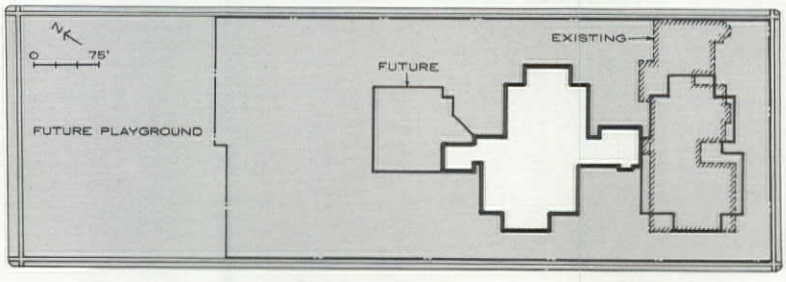
The role of this structure as the first stage in the replacement of an obsolescent school imposed stringent conditions on its design. No undue limits were imposed, however, on the architects' imagination in solving the problem. When Birkerts & Straub obtained the commission, the Detroit school building program was under the direction of Anthony Adinolfi, who received an AIA medal for his contributions to architecture at this year's convention and who is now director of the building program for the New York State University. "Great guy," says Birkerts, "a champion of good architecture—of this school and the whole program."

The relation of this addition to the existing school and the space limitations of the site dictated a two-story scheme **(1)**. The need for a new single-story administration area between the old and new classroom wings (and the convenience of making the connection at an existing stair landing) suggested the concentration of circulation at an intermediate level between the two classroom floors. A further study of circulation led to a scheme in which the area that would otherwise be devoted to corridors serving the classrooms has been reshaped into usable "intermission areas" at the center of each six-room cluster.

Four of these areas are connected by half-flights of stairs to a high central space lighted by clerestories **(2)**—a setting for displays, ceremonies, or informal social contact. Its usefulness has been reduced somewhat, however, by the State Fire Marshal's requirement of wired glass enclosures for the upper intermission areas and by the current lack of provisions for display or decoration.

Interior trim, cabinetwork, and furniture is of natural-finished birch, wherever appropriate. Birkerts feels that its color is cheerful and relieves the austerity of white walls. A stout birch railing of uniform design appears at a fixed distance above the floor throughout the interior. It serves as a child-height handrail on stairs and as a back-rest for benches **(4, 5, 6)**; it also keeps the children from rubbing up against the block walls and conceals the division between heavy-duty plastic wall finish below the rail and ordinary paint above. For cabinetwork, shelving, and other storage units, the architects have chosen standard components wherever possible, as required in the program. Most of these elements have been integrated with their settings by building them into walls or organizing them under counters **(3)**, and by maintaining the uniform wood color.





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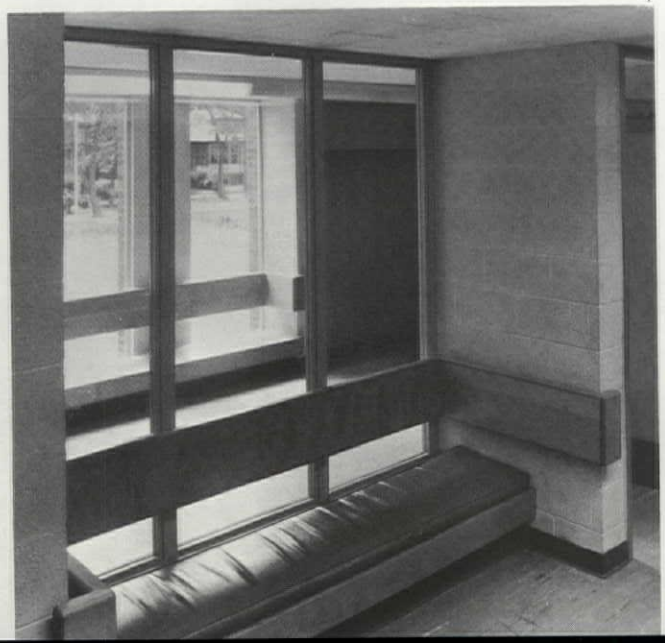

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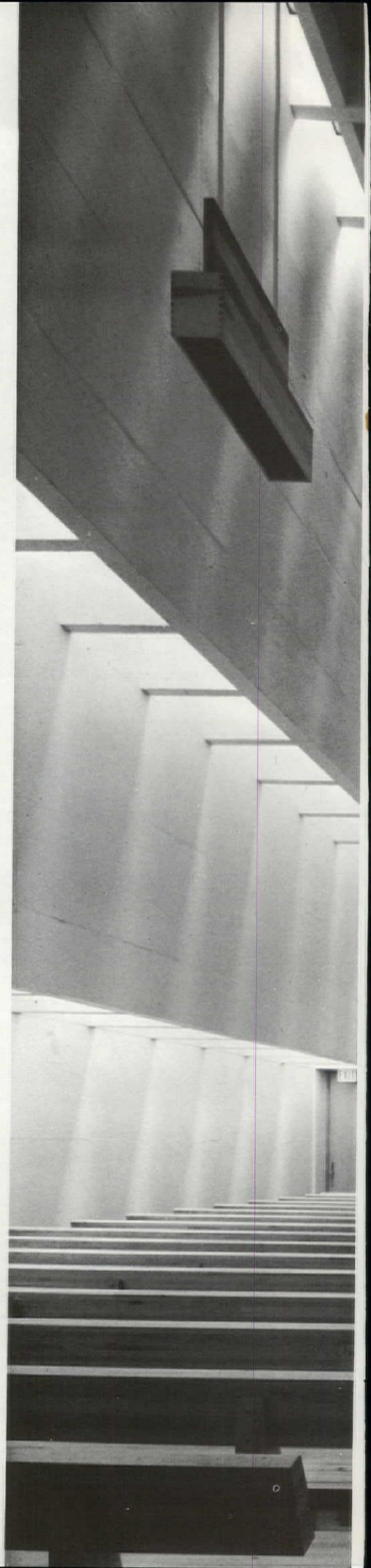
INDIRECT DAYLIGHT

Birkerts' interest in the means of introducing daylight to the interior has been apparent in all of his work. His objective has been to illuminate and define the planes bounding his spaces, dispersing the light to avoid dark corners.

In Birkerts & Straub's first completed work, the summer house at Northville (page 173), broad verandas eliminated direct sunlight. The interior was illuminated partially by subdued light at the perimeter, but principally by clerestory light bouncing off the white walls of the central utility core (*below*). An ingenious arrangement of narrow windows at the corners of the People's Federal Savings & Loan building (MARCH 1963 P/A) illuminates adjoining wall planes without sacrificing the visual solidity of the corner. In the Haley Funeral Home (page 173), where only narrow slit windows were required, they were placed in deep embrasures to disperse the light and soften contrast.

The University Reformed Church in Ann Arbor (*right*) gave Birkerts a particularly appropriate occasion to work with indirect daylight. Light admitted between the stepped-back planes of the nave wall is baffled and reflected by deep fins between the wall planes, so that it is dispersed across the broad white surfaces. All of the planes defining the space are silhouetted against daylight.



UNIVERSITY REFORMED CHURCH, Ann Arbor, Michigan *• **Architects:** Birkerts & Straub • **Site:** Long, narrow property running through block, with major streets at both ends. One end faces center of campus, the other adjoins residential area • **Program:** First stage (completed) includes church seating 500 and social hall below; second stage will include 16 classrooms, offices, and lounges • **Structural System:** All reinforced concrete, except for concrete block bearing walls in narthex. Precast beams of nave roof supported on poured concrete honeycomb system composed of very deep, narrow beams braced by short fins • **Major Materials:** Exposed concrete, painted white on interior. Pine board ceilings; and oak parquet floor in nave. Narthex floor and walls (inside and out), red brick • **Mechanical System:** Warm air heating. Ducts below nave floor supply grilles in base of side walls; ducts in rear wall supply balcony and under-balcony grilles • **Structural Engineers:** Robert Darvas & Associates • **Mechanical and Electrical Engineers:** E.G. Siegel Associates • **Landscape Architects:** Johnson, Johnson & Roy • **General Contractor:** Henry de Koning Construction Company • **Photographs:** Balthazar.*

The nave of the church is enclosed by a three-dimensional composition of planes that incorporates both structural support and sources of daylight. A series of poured concrete bents runs the length of the space, rising in steps from the bearing walls along either side up to the level of the roof. Poured concrete fins at 4-ft intervals act as stiffeners for the exceptionally deep, narrow sections of the bents. The engineers' analysis reveals that the entire honeycomb structure behaves in a complex way, with the fins and the precast roof beams forming a transverse arch, but the longitudinal bents carry substantially the entire load.

Natural light is admitted through deep, rectangular cells—of uniform size and detail—at each setback and through skylights at the edge of the roof. Multiple reflections from the wall planes and fins—both inside and outside the building—diffuse the light throughout the space. Vertical strip windows flanking the altar articulate the planes of the end wall.

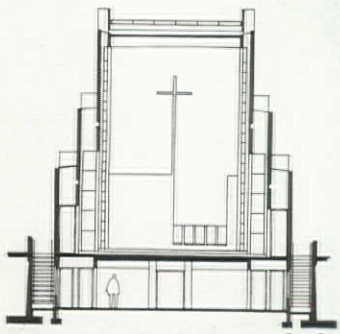
Artificial lighting is designed to emanate mainly from the same sources. Bare incandescent bulbs in each cell of the structural honeycomb illuminate both interior and exterior. The lack of lighting for the top tier of fins on the exterior—attributed to the difficulty of re-lamping at that height—leaves the building form inadequately defined at night **(1)**. Inside the nave, supplementary lighting is provided by suspended fixtures over the seating area and up-lighting on the chancel wall **(2)**.

In this interior, Birkerts has applied his rule for the use of symmetry to the letter. The over-all envelope of the nave is symmetrical, as "called for" by the requirements of seating and circulation. But in the chancel, where liturgical requirements demand some distinction between the two sides, the asymmetry has been boldly expressed. In the preliminary design (pp. 118-121, DECEMBER 1961 P/A), Birkerts had tried to maintain the symmetry throughout.

The concrete walls of the church interior have been left untreated except for painting them white. The only other architectural material visible is wood—pine in the ceiling and suspended light fixtures, oak flooring in the seating area, and maple in the chancel wall and in the pews and liturgical furniture, all designed by the architects. The warm color of the wood is intended to complement the concrete and its distribution to "tie the room together." The only strong color appears in the purple and magenta cushions of the chancel.

The predominantly hard surfaces and large volume of the nave make it somewhat too reverberant for good speech intelligibility, especially when the pews are not filled. It has proved excellent for instrumental groups, however, and is expected to be an excellent acoustical setting for the Beckarath organ to be installed above the choir loft. Speech conditions will be improved by installation of the organ and by carpeting the choir loft; the speakers of the amplification system may be adjusted to direct sound away from the upper space.

In the narthex **(5)**, daylight and artificial light are introduced through cells in the concrete roof structure **(6)** similar to those of the nave. The white concrete structural frame and pine board ceiling of the nave are retained, and red brick is introduced as a transition to future wings and courtyards.



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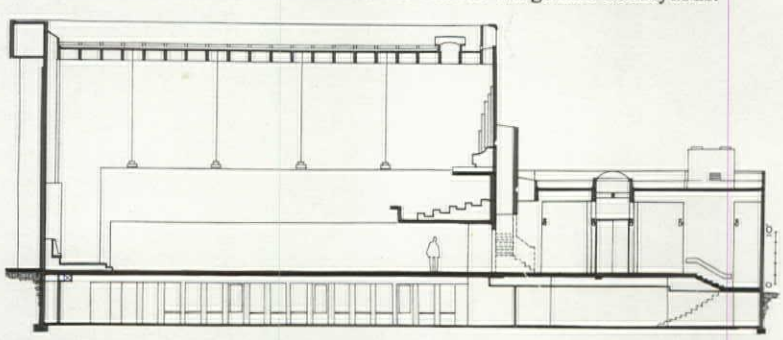

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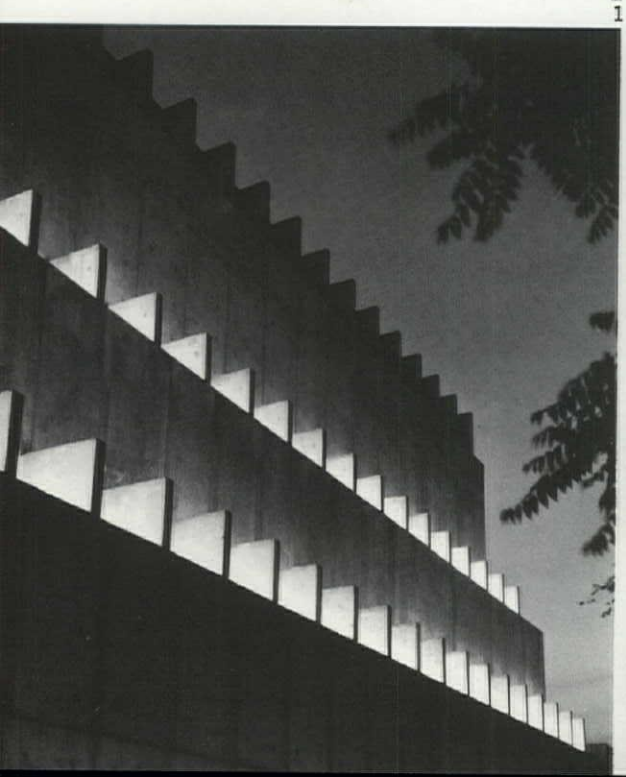

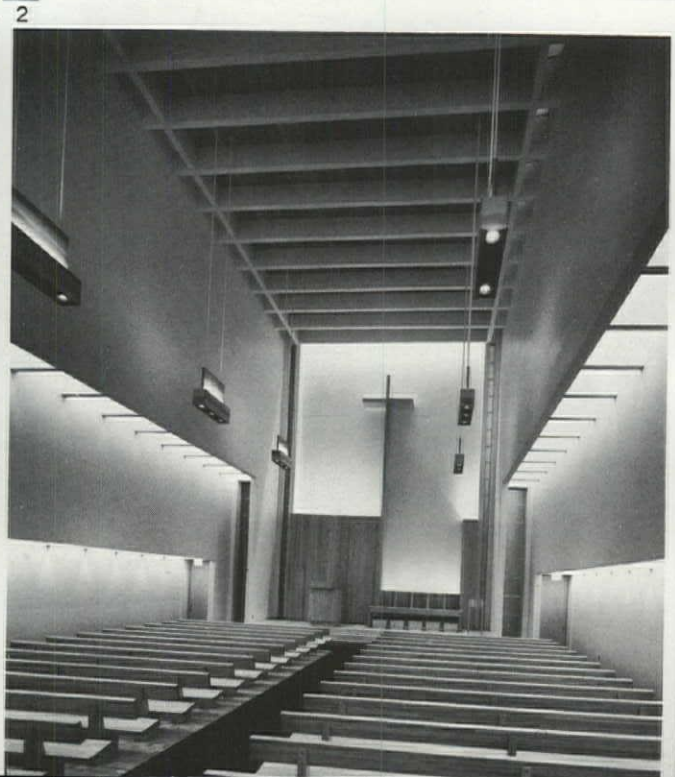

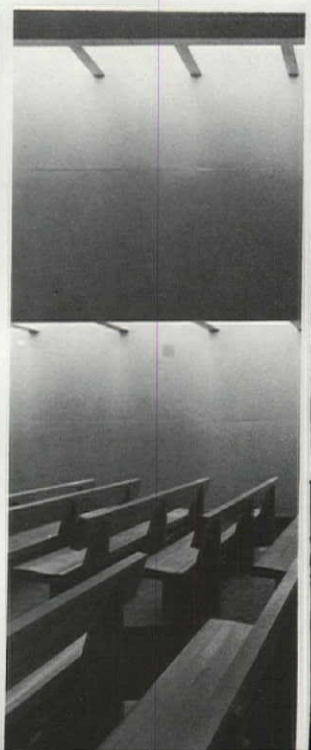

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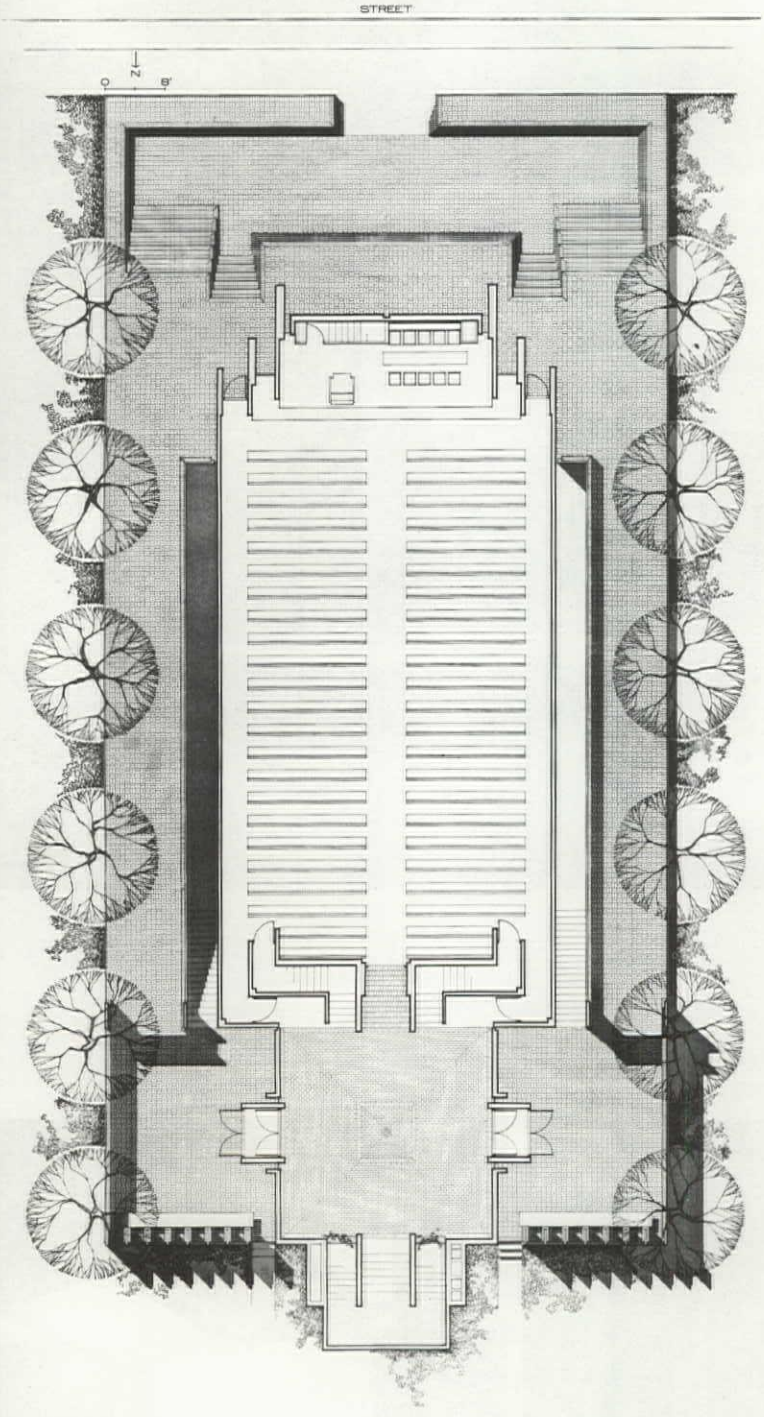

Since a large part of the capacity of the church plant was needed to serve university students, who contribute relatively little financially, it was economically necessary to build the complex in two stages. In the second stage, two classroom wings will be constructed to the rear of the church; the basement, now devoted partly to classrooms, will be opened up as one large banquet hall. The approach from the nearby residential neighborhood will lead through a long narrow court between the new wings to the existing narthex entrance (7).

The entire plan is symmetrical about the axis of a street that leads to the church from the university. The tall form of the nave has been placed at the campus end of the site (8), its large scale, cubic forms, and neutral color compatible with nearby university buildings; the smaller-scaled classroom wings will be on the lower, more secluded end of the site.

As in the 1300 Lafayette East Apartment project, the entire site has been designed as an integrated architectural composition. When the second stage of construction and final site development are completed, the concrete church building will rise from a platform of brick. Horizontal planes of brick will turn up to form steps, walls, and light pylons and will cover the concrete masonry walls of the narthex and classroom wing. Concrete will emerge in the frames of openings and in fascias, to emphasize the role of the brick as a mere veneer. At the present stage, brick appearing only in the narthex walls and the low walls around areaways at the sides of the nave is not extensive enough to make the design intent clear. A fragment of the eventual paving pattern appears in the floor of the narthex (5).

The concrete exterior was originally intended to have the texture of board formwork, but even that proved too expensive, and 4′ x 8′ plywood sheet, plastic coated, was used instead, except on the front wall and the narthex parapet. Cold-weather pouring resulted in uneven color, despite precautions. Choice of a corrective treatment or coating is still being considered.

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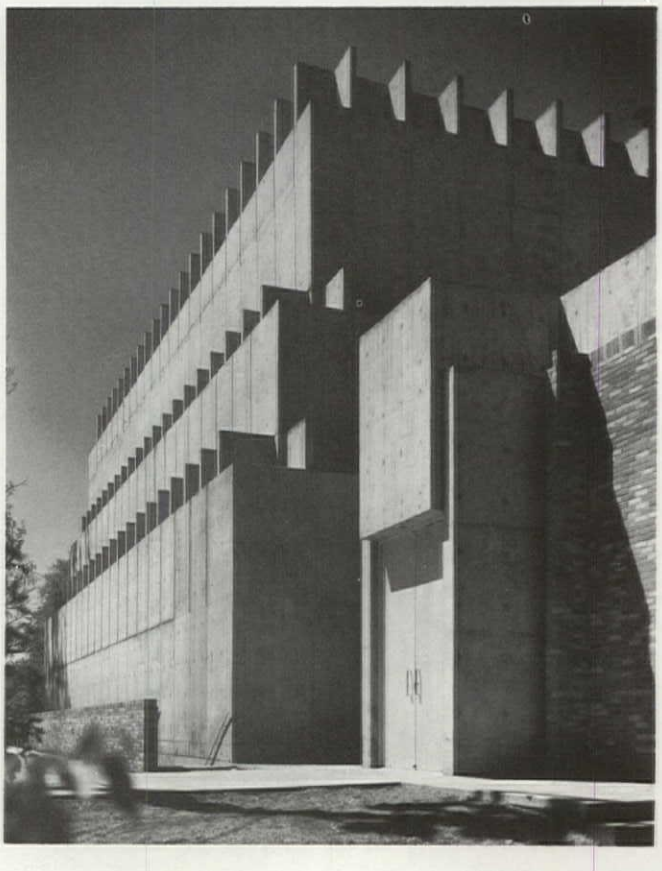
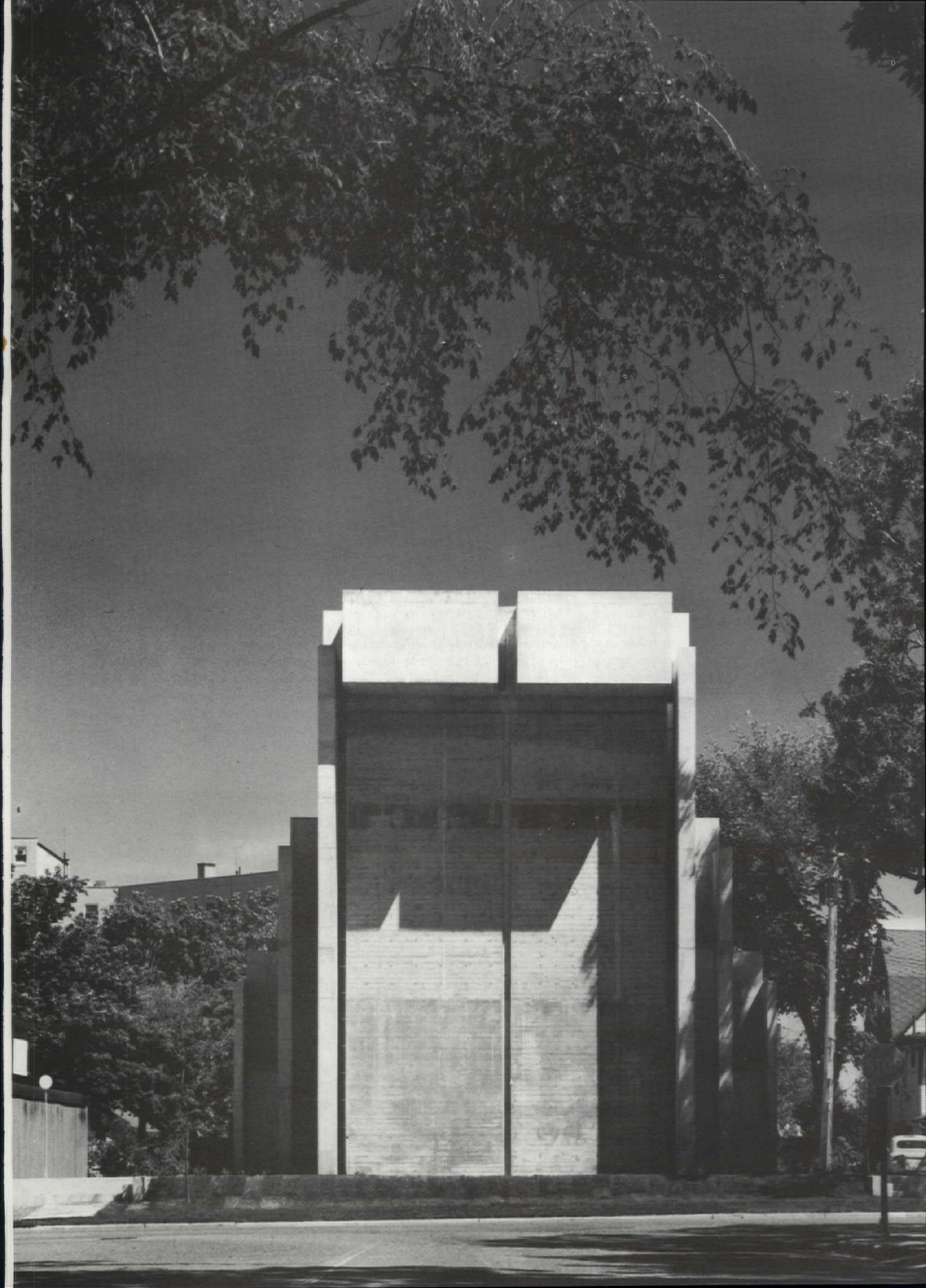




Composite Construction

BY DR. JOHN B. SCALZI

Economical designs utilizing steel and concrete composite construction are discussed and illustrated by a structural engineer of the Market Development Division, United States Steel Corporation.

Adoption of the relatively new specification for the "Design, Fabrication, and Erection of Structural Steel for Buildings" in the *Manual of Steel Construction* by the American Institute of Steel Construction has opened the doors to greater economies in building construction. The specification incorporates the results of research on steel behavior in bending of beams, column action, bolting, plate-girder design, and composite action of steel and concrete. All of the additions and revisions benefit the owner in providing him a safe, economical steel structure. The architect and the engineer are provided with the tools for optimum steel design, combined with a greater degree of freedom in designing procedures. The section on Composite Construction (AISC Section 1.11) will be illustrated.

AISC Definition

Composite construction shall consist of steel beams or girders supporting a reinforced concrete slab, so interconnected that the beam and slab act together to resist bending **(1)**. The interconnection of the concrete slab with the steel beam is accomplished by mechanical devices such as spirals, channels, or studs **(2)**. These connectors transfer the longitudinal shear between the slab and the beam in the same manner as the rivets or welds in plate girders **(3)**. When properly connected, the slab acts as the compression flange of the beam, and the steel continues to carry the tension and shearing forces. The width of the concrete flange is determined on the basis of the theoretical distribution of the compressive stresses and practical consideration of beam spacing.

Effective Width of Concrete Flange

The specification outlines the requirements for the effective width of the concrete slab to be the smallest of those determined as follows. Slab on both sides of beam **(4)**: (1) quarter span of beam; (2) projection "a" to be not more than half clear distance to adjacent beams; (3) projection "a" not more than eight times slab thickness.

Slab on only one side of beam **(5)**. Effective width of concrete flange projection beyond the beam shall be taken as not more than the least value of the following: (1) "a" is not to exceed more than 1/12 beam span; (2) "a" is not to exceed six times a slab thickness; (3) "a" is not to exceed half distance to adjacent beam. The total effective width of concrete is the sum of the width of concrete directly over the beam plus the projection "a" as determined above.

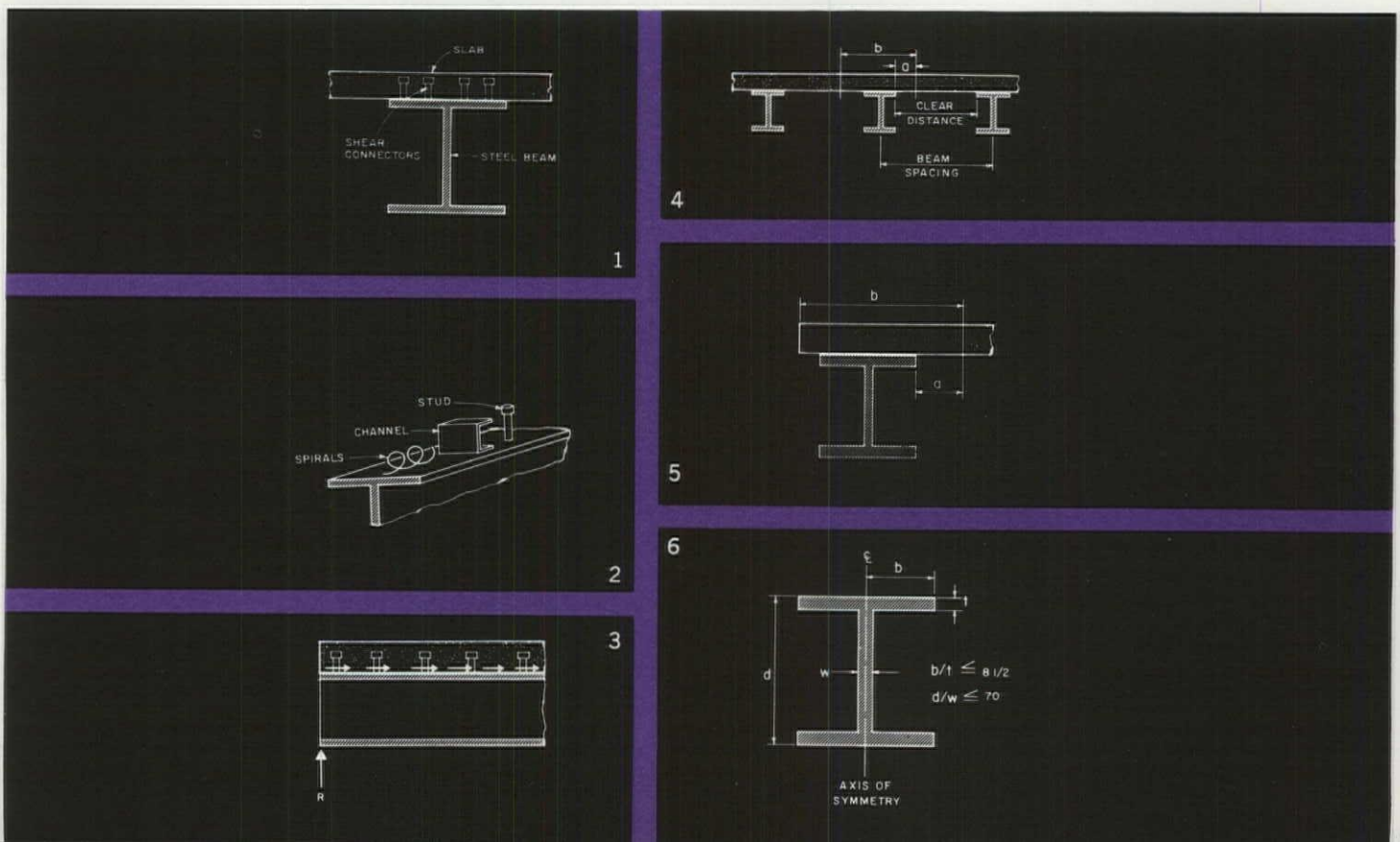
Allowable Bending Stress

The allowable bending stress in compression and tension in the steel flanges is based on the lateral support provided to the steel and the geometrical proportions of the beam. Tension and compression allowable stress is $F_b = 0.66F_y$ when: (1) beam section has an axis of symmetry; (2) beam is considered to be a compact section having a flange whose outstanding length is equal to 8½ times the thickness and the ratio of web depth to web thickness is 70 **(6)**; (3) lateral support at intervals no greater than 13 times the compression flange width. For composite action, the shear connector may be considered to provide the required lateral support **(7)**. In some instances, the concrete may be placed flush with the bottom side of the top flange.

If the above conditions are not present, then the tension allowable is $F_b = 0.60F_y$. The compression allowable should be investigated for lateral instability.

Moment of Inertia of Composite Section

The section properties for bending stresses and deflections are determined by the elastic theory, and therefore must be based on an equivalent section consisting of one material to replace the steel and concrete. It is more convenient to convert the concrete compression flange into an equivalent flange of steel. This is accomplished by reducing the effective width "b" of concrete by the ratio of the modulus of elasticity "n" of the two materials **(8)**. The ratio expressed mathetcially is: $n = \frac{\text{E of steel}}{\text{E of concrete}}$. The conventional



With New Steels

elastic theory procedures are used to determine the location of the neutral axis and the moment of inertia of the transformed section. In some instances, the neutral axis may fall within the slab thickness. The tension stresses produced on the concrete below this axis are neglected in designing the composite section.

Maximum Moment of Inertia of Transformed Section

The AISC states, "For construction without temporary shoring the value of the section modulus used for the determination of bending stresses (tension flange) shall not exceed the quantity, $S_{tr} = (1.35 + 0.35\ M_L/M_D)\ S_s$; where S_{tr} equals section modulus with respect to tension flange; M_L equals maximum moment of live load; M_D equals maximum moment of dead load; and S_s equals section modulus of steel beam, referred to its tension flange, and further that the steel beam alone which supports the loads before the concrete has hardened is not stressed to more than the applicable bending stress." The limitation on the transformed section modulus is a protection against the build-up of excessive stresses.

End Connection

It is important that the web and end connections of the steel beam shall be designed to carry the total dead and live loads. Because the composite action increases the bending capacity of the steel beam, the web shear and end connections must be investigated for the increased loads acting on the beam.

Connectors

The concrete slab is made an integral part of the steel beam by a connector in the form of a channel, a spiral, or a stud that is welded to the top flange of the steel section **(2)**. These connectors, which are completely embedded in the concrete, transfer the entire longitudinal shear at the junction of the steel beam and the concrete slab. The ultimate horizontal shear force to be transferred is the couple force of the maximum moment acting on the beam **(9)**. This force must be resisted by the shear connectors placed between the end of the beam (or point of contraflexure) and the position of the maximum moment. Due to the possibility of overloading the beam, the code requires that the number and size of shear connectors be determined on the basis of the minimum ultimate moment capacity of the beam. As a result, the total force to be resisted is the smaller of the internal couple forces.

If the concrete is the critical material, its maximum force is $V_h = \dfrac{0.85\ f'_c\ A_c}{2}$ where f'_c equals specified compressive strength of concrete and A_c equals actual area of effective concrete flange. And if the steel is the critical material, its maximum force is $V_h = \dfrac{A_s\ F_y}{2}$, where A_s equals total area of steel beam and F_y equals yield point stress of steel in beam. The smaller of the two forces is used in the calculations for the size and spacing of the connectors. These forces are based on the ultimate capacity of the concrete and steel, reduced by a safety factor of two. Tests on ultimate strength of composite beams have shown that the connectors may be equally spaced in the beam without reducing the total load-carrying capacity of the beam. This feature simplifies the calculation of the spacing. Placing of the connectors in the shop or field becomes more convenient.

Allowable Horizontal Shear Load on Connectors

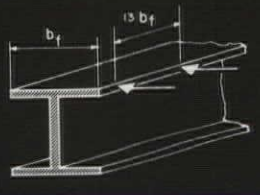
The allowable horizontal shear load "q" for each recommended type and size of connectors is tabulated (AISC Table 1.11.4) for three strengths of concrete. Values for one size of each type are listed (*Table I*).

Number of Connectors Required

The number of connectors on each side of the maximum moment may be determined by the relationship: no. of connectors = V_h/q, where "q" is the allowable shear load on one connector or one pitch of a spiral bar.

Spacing of Connectors

The spacing of the connectors or pitch of the spiral bar is established by dividing the length of beam between the sections of maximum and zero moments by the number of connectors required and rounding off the value to a convenient fab-



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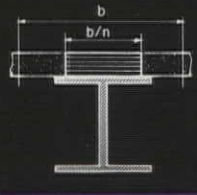

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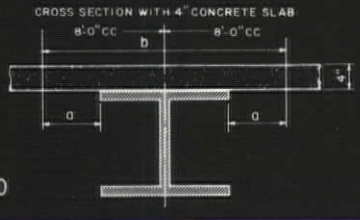

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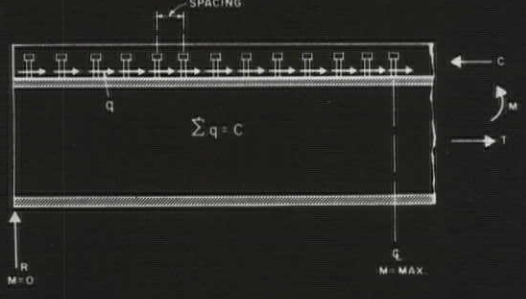

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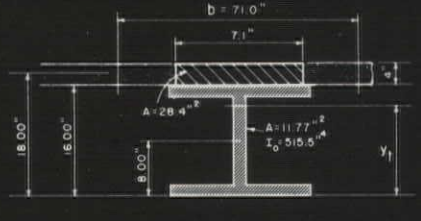

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ricating dimension: therefore,

$$\text{spacing} = \frac{\text{length available}}{\text{no. of connectors}}$$

Clearance

It is recommended that shear connectors be protected by at least 1" of concrete cover in all directions. Practical considerations of placement recommend that the minimum spacing of studs be no less than 2½" and that the maximum spacing be limited to 24" for all three types of connectors. For example, a 30' span will be designed to support a 4" concrete slab, 110 psf live load, and 20 psf for partitions. The steel is A36, the slab is 3000 psi concrete strength, n = 10, E = 29,000 ksi. The AISC design procedure is used. A noncomposite beam solution indicates that a 16 WF 50 or an 18 WF 45 would be required. On the basis of the noncomposite design, a 16 WF 40 beam section is assumed for the composite design. Design is based on construction without shoring **(10)**.

Effective width of concrete (AISC Section 1.11.1): $b \leq \frac{1}{4}$ beam span length $= \frac{1}{4} \times 30 \times 12 = 90$; $a \leq \frac{1}{2}$ clear beam spacing $= \frac{1}{2}(8 \times 12 - 7) = 44.5"$; and $a \leq 8$ times slab thickness $= 8 \times 4 = 32.0"$. Minimum effective width $b = 2 \times 32 + 7 = 71"$.

Properties of Transformed Section (AISC Section 1.11.2.2)

Concrete width must be transformed to an equivalent width of steel **(11)**. A modular ratio, n = 10, is used. Therefore, $b/n = 71/10 = 7.1"$.

Position of Center of Gravity, Composite Section

$$y_t = \frac{(11.77)(8.00) + (28.4)(18.00)}{11.77 + 28.4} = 15.07"$$

Moment of Inertia, Composite Section

$$I_{tr} = 515.5 + 11.77(7.07)^2 + 1/12(7.1)(4)^3 + (28.4)(2.93)^2 = 1385.5"^4$$

Section Modulus, Tension Flange:

$S_{tr} = 1385.5/15.07 = 91.9"^3$

Maximum Moments

Live load moment:
$M_L = 1/8(0.960)(30)^2 = 108.0'^k$.
Dead load + weight of beam = 0.440 klf. Dead load moment:
$M_D = 1/8(0.440)(30)^2 = 49.5'^k$.

Maximum Section Modulus of Transformed Section: (AISC Section 1.11.2.2)

$S_{tr} = (1.35 + 0.35\, M_L/M_D)\, S_s$
$S_{tr} = (1.35 + 0.35(108.0)/49.5)\, 64.4$
$S_{tr} = 136.1 > 91.9$ O.K.

Stress Calculations

Dead load on steel beam only: (AISC Section 1.11.2.2)

$f_{t,c} = (49.5)(12)/64.4$
$= 9200$ psi, tension and compression $< 24{,}000$ psi O.K.

AISC Design Procedure (AISC Section 1.11.2.2)

The AISC states that, "When shear connectors are used, the composite section shall be proportioned to support all of the loads without exceeding the allowable stresses prescribed."

Steel, tension flange,

$f_t = (157.5)(12{,}000)/91.9$
$= 20{,}600$ psi $< 24{,}000$ psi. O.K.

Steel, compression flange,

$f_c = (157.5)(12{,}000)(0.93)/1385.5$
$= 1270$ psi $< 24{,}000$ psi. O.K.

Concrete, compression,

$f_c = (157.5)(12{,}000)(4.93)/(1385.5)(10)$
$= 672$ psi < 1350 psi. O.K.

Live Load Deflection, Composite Design

$$\text{Deflection} = \frac{(5)(960)(30)^4(12)^3}{(384)(29 \times 10^6)(1385.5)} = 0.44"$$

Shear Connectors: (AISC Section 1.11.4)

The total horizontal shear to be resisted between the point of maximum positive movement and each end of the steel beam may be taken as the smaller value of the formulas (18) or (19).

Formula (18), concrete critical.

$$V_h = \frac{0.85 f'_c A_c}{2} = \frac{(0.85)(3000)(71 \times 4)}{2} = 362^k$$

Formula (19), steel critical.

$$V_h = \frac{A_s F_y}{2} = \frac{(11.77)(36{,}000)}{2} = 212^k$$

Number of Connectors Each Side of Maximum Moment

$N = V_h/q$, where "q" equals allowable shear load for one connector, or one pitch of a spiral bar obtained from Table 1.11.4 (AISC). A 3" maximum height of connector is recommended in order to provide 1" of cover in the 4" concrete slab.

Stud

Use ⅝" × 2½" $q = 8.0^k$ (stone concrete)
$N = 212/8 = 26.5$, use 27 (single row)
Spacing for single row = $(15 \times 12)/27 = 6.67"$
Use 6½" spacing.

Channels

Use 3" at 4.1# $q = 4.3w^k$
Assume w (length of channel in inches) = 3"
$q = (4.3)(3) = 12.9^k$
Spacing: $N = 212/12.9 = 16.4$ Use 17
Spacing $= 180/17 = 10.6$ Use 10½"

Spirals

½" diameter bar $q = 11.9^k$
N (contact points) $= 212/11.9 = 17.8$, use 18
Spacing $= 180/18 = 10"$
Recommended maximum spacing of approved shear connectors not to exceed 24".

Beam Connection to Column (AISC Section 1.11.3)

The connection of the beam to the column must be designed to carry the total dead and live load on the beam.
Maximum shear: $V = 21^k$
Web shear stress: $f_s = 21/(16)(0.307) = 4275$ psi, which is less than the 14,500 psi permitted for A36 steel. A check of the capacity of the standard beam connections should be made.

Economies

A comparison of composite and noncomposite designs is shown (*Table II*).

Table I. Allowable Horizontal Shear Load on Connectors

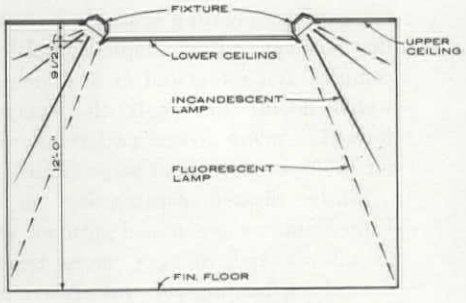
Connector	f'_c = 3000 psi	3500 psi	4000 psi
¾" diam. × 3" hooked or headed stud	11.5^k	12.5^k	13.3^k
3" channel, 4.1 lb	$4.3w^k$	$4.7w^k$	$5.0w^k$
½" diam. spiral bar	11.9^k	12.4^k	12.8^k

(w = length of channel in inches)

Table II. Comparison of Composite and Noncomposite Designs

Item	Composite	Noncomposite	
Steel Beam Size	16 WF 40	16 WF 50	18 WF 45
Steel Weight Reduction	20%, 11.1%	--	--
Beam Depth Reduction	-- 11.1%	--	--
Live Load Deflection	0.44"	0.92"	0.85"

PHOTO: SAM SPIRITO



TYPICAL GALLERY FIXTURE

Gallery Lighting

Lighting system for Edward Durell Stone's design of the recently opened Gallery of Modern Art in New York, developed over a period of six years, by Abe Feder, Lighting Consultant, is discussed.

There were several goals involved in the search to bring paintings alive under artificial light, permitting them to be seen in true perspective, dimension, and color. Problems of perspective and dimension had to be handled jointly. It was a matter of providing an even wash of light over the entire painting, within which certain features could be highlighted. This would mean that a painting could be seen whole, without shadow, and that accents could be brought forward to the eye, giving both dimension and perspective.

The even wash of light pointed to a linear source, a fluorescent lamp. The problem of brightness was also important, since color absorbs light: the darker the color, the more light is absorbed. It was important that even black be made vivid, rather than have it dissolve into a vague shadow. The powergroove fluorescent lamp (1500-ma) was new when the lighting was first being planed six years ago. Intensely bright, one row of powergroove lamps could match three rows of standard fluorescent lamps. The right reflector curve, essential for pouring the light only on the paintings from the correct angle of incidence, and for intensifying it still further, took two years to develop. A continuous troffer containing the reflector, a single row of lamps, and a hexcel shield was set in all four sides of a dropped ceiling. The troffer was built to follow the contour of the curved walls. Thus, an intense, even, and glareless light was achieved over all the paintings.

The problem of highlights meant an incandescent source, but no existing lamp was small enough to fit into the troffer and still provide the intensity required. The ideal was to keep the main ceiling plane clear so that only those standing between the fixtures and paintings would be made aware of where the light was coming from. Development of the 2½" x 5", 650-w, 120-v, 25-hr DWY quartzline lamp solved the problem. Operated two in series, it burns at approximately 275-w for 2000 hrs. The troffer was widened to receive these lamps, set below the fluorescent components. Placed in tiny Sungun reflectors on a track behind 2½" x 5" ports covered with hexcel, they can be adjusted both horizontally and vertically, each painting treated individually.

The problem of color was to find the kind of artificial light that could approximate the spectrum of the sun, since the true hue of all colors seems to the human eye to be revealed in daylight only. The fluorescent source, strong in purple, blue, and green, has little red, and the incandescent source, rich in yellow, orange, and red, has its strongest peak in yellow-orange. Selecting the warm white powergroove lamp added some pink to the fluorescent, and operating the quartzline lamps at half intensity changed the incandescent to red-orange, creating an artificial light that ranged the full spectrum of the sun.

Movable Structures for Stages

BY OLAF SÖÖT

Movable structures, ranging from simple turntables to complex arrangements of walls, floors, and roofs for use in stages and auditoriums, are described by a consulting engineer who has recently collaborated in the designs of some of today's outstanding theaters.

Modern theaters have come a long way from the days when stage machinery consisted solely of sandbag counterweights to lift backdrops, and when the director was confined to one single stage configuration for a variety of productions. Today, the economics of construction and operation expenses of a theater make it necessary to obtain maximum flexibility by utilizing all available space. This can be achieved by creating movable structures that may range from simple turntables to complex and integrated arrangements of walls, floors, and roofs that may be formed in many diverse patterns to allow for multipurpose use of stage facilities.

While theater construction in the United States was confined for many years to schools and colleges, more recently several outstanding cultural centers have come under construction and many more are being planned. These developments, together with the use of installations such as sliding roofs and revolving restaurants, have created an increased need for movable structures in architectural planning.

Fortunately, the means and experience of designing these facilities are to a great extent already available to us in the form of existing and newly developed industrial installations. While there seems to be little in common between a radioactive-materials handling system and a modern stage, both may utilize lifts, hoists, and turntables, which, while designed for different functional requirements, employ similar operating principles.

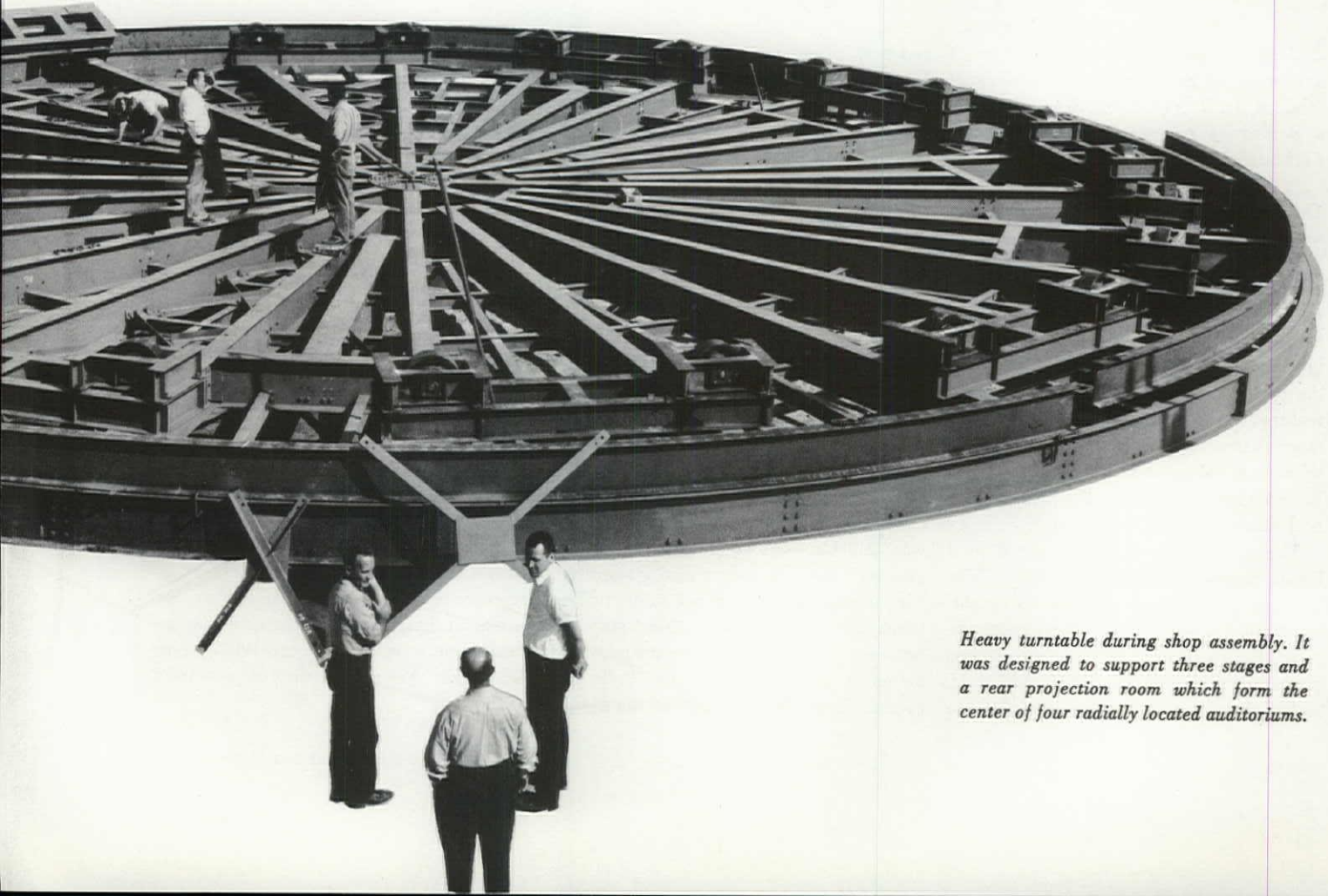
Also, parallels can be found in the electrical controls, which may range from simple starters to sophisticated systems, using electronic devices with timers, interlocks, speed regulators, and even computers.

Since similarities do exist, much can be adopted from industry. However, movable structures for stage and architectural design can present additional problems. Instead of materials, they handle people. Often they are larger than most industrial installations and their operation must be quiet and visually acceptable. Just as the acceleration characteristics for a movable structure may have to be selected with care, so it is equally important to introduce architectural features into the final design that cannot possibly be weakened by vibrations and deflections.

With an increasing demand for flexibility in modern buildings, the architect may often find it necessary to use movable structural components. Since the technical problems can be complex, and their solution requires specialized experience, a general knowledge of the mechanics involved can greatly assist the architect in over-all planning.

Stages

The movable structures in a theater are most commonly used on the stage. Their purpose is to provide the producer and director with effective tools for setting the mood and quality of a given production. Their mechanical design must be made accordingly. Basic stage floor installations consist of turntables, lifts, and several types of movable platforms. They may be used individually, or they can be operated in groups to fulfill the particular requirements established by the stage designer.



Heavy turntable during shop assembly. It was designed to support three stages and a rear projection room which form the center of four radially located auditoriums.

Turntables. A turntable is certainly the most common movable structure on the stage. It can be designed as a single revolve, or a group of turntables can be used to increase functional flexibility. Sometimes a turntable is built of several separately driven concentric rings, each of which is independently operable. In such a case, additional provisions can be made for joint operation of all rings as a single unit. The stage turntable supporting arrangements can be just as varied. It is not uncommon to design a turntable as part of a stage wagon, and thereby add a possibility of using it at more than one location.

Where stage lifts are used, the revolve can become a part of a lifting system and it can be built in several parts, each of which can be supported by a separate lift.

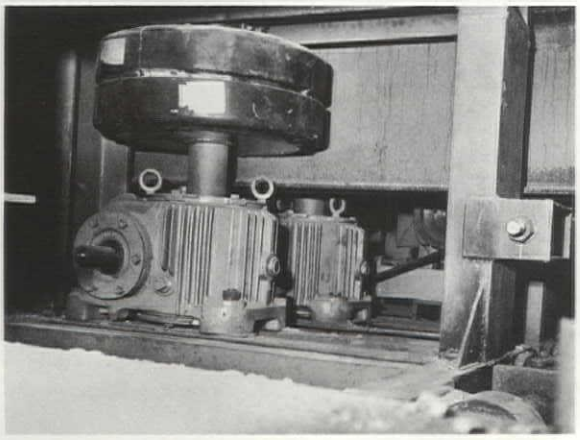
Many rotating stages used in Europe involve substantial structures that extend from stage floor down to basement level, and are large enough to house the stage lifts together with other movable equipment. An interesting example of a turntable is found in the Chrysler Exhibit at New York World's Fair, where the whole stage complex, which forms the center of four radially located auditoriums, rotates. This exhibit was designed by George Nelson & Co., Inc. Performers (puppets) act one quarter of the show continuously. Each quarter is rotated to the next auditorium so that the show is performed staggered, to several audiences, and there is no waiting.

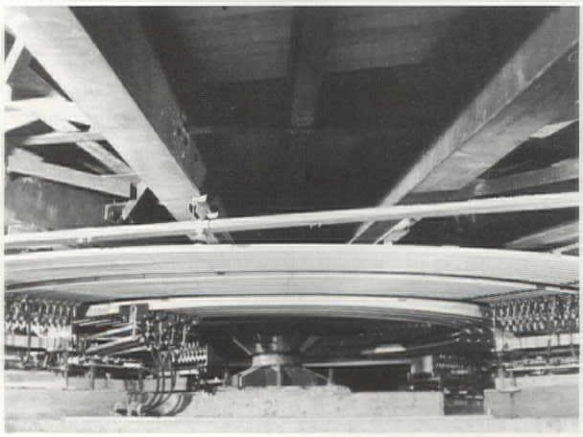
Most turntable structures, however, are relatively simple and consist of a floor framing that is directly supported by wheels. The use of steel wheels on regular steel rails is satisfactory where speeds are slow and where rolling noise is not a serious problem. Their high load-carrying capacity makes them especially desirable for large installations. However, if quiet operation is desired, both wheels and track must be carefully polished and properly isolated (by rubberized duck) from the turntable and from its supporting structure.

Where loads are moderate, wheels made of nonmetallic materials, such as reinforced phenolics, and more recently wheels with polyurethane elastomer treads, can effectively reduce the rolling noise. Since the load-carrying capacity of the wheels is partially a function of their width, flat tracks should be employed to provide maximum support. Here, too, tracks can be isolated from the supporting structure if further noise reduction is desired.

Most turntables are driven by positive type gearing or by traction. A positively driven gear drive can be efficiently used where synchronized operation of several turntables, or concentric turntable rings, is required. Here, exact gear ratios can be chosen and magnetic clutches between the motors are all that is necessary to achieve precise joint operation. Switching from independent to joint operational mode can be accomplished simply by energizing the clutches.

On the other hand, a well-designed traction drive is quieter than the geared type. It gives more protection to the machinery, since under excessive loads a slip would normally occur before a serious breakdown. This, however, can easily become a disadvantage, for the amount of tractional force available depends on the condition of drive surfaces, drive wheel pressures, and many other variables. Dirty drive surface or improper pressure can easily cause a slip. Although there are many types of excellent traction drives available, their selection should be made with care. A traction drive cannot be





Rotating stages are driven by two traction drive units with rubber wheels engaging a circular drive beam (left). *Wheel pressures are adjustable and the sliding base is designed to compensate for possible drive beam irregularities. Electrical controls incorporate timed "S" curve acceleration and deceleration and automatic stops. Underside of the turntable shows radial framing pattern* (right) *and the electrical collectors. (Photos from Chrysler Exhibit at Fair.)*

recommended where rotation of two or more turntables are to be precisely synchronized. Choice of turntable electrical controls and drive motors can be just as varied as the choice of drive mechanical components.

For many turntables, a single or a two-speed a-c motor is all that is necessary. To insure smooth starts, hydraulic linkage can be added to the system. However, this does not necessarily provide for smooth and precise stops. For variable speed operation and for more flexible controls, d-c systems are recommended. The use of timers and magnetic amplifiers in the d-c control circuitry enable one to design the acceleration and deceleration characteristics so that their effects would be unnoticeable on the turntable. Also, precise positioning can be easily accomplished.

Stage Wagons. Stage wagons are basically movable platforms that facilitate quick scene changes. They can be also used for staging effects where motion is required, and they are often employed to change the configuration of the stage itself. A basic stage wagon is normally a wheel-supported platform, complete with its own drive unit. The stage wagon may incorporate a turntable or even lifts. It can be positively guided, or the wheels can be set so that it will always travel along a predetermined path.

Sometimes the height of a stage wagon structure must be kept to a few inches, while its total area may be close to 1000 sq ft or even more. Needless to say, such a movable floor is flexible and therefore must be properly constructed, driven, and supported. Its framing is not deep enough to house a drive system. It may travel through other stage floor installations, such as lifts or turntables, that would eliminate the use of a simple cable drive under stage floor. Therefore, highly specialized drive machinery must often be developed. The designer should not be limited to the use of conventional type of equipment. With modern technology, many new tools and ideas are readily available to us. While this is especially true for the choice of electrical controls, it also applies to material handling systems. One should consider all available equipment and components, which might even include the possibility of supporting movable structures on a cushion of air.

Lifted Structures. Lifts used on the stage to form a stage or to change its configuration are very similar to industrial elevators. Their platforms are large, loads heavy, distance travelled relatively short, and high speeds not always essential. In addition to vertical lifting, various installations may incorporate tilting and even rotation. One must be cautious in the selection of dependable lift machinery and the design of proper lifted structures, to make sure they contain safeguards that will protect the audience, the actor, and the machinery involved.

The architect can choose from a variety of basic lifting systems. To transport heavy weights over medium distances, hydraulic systems are often employed. They are suitable for a great variety of stage installations and their operation is quiet, safe, and dependable. Minor disadvantages include the necessity of separate mechanical travel equalizers for hydraulic plungers. This holds true if more than one cylinder is used to move a platform. If synchronous operation of several adjacent lifts is desired, their platforms or equalizers must be mechanically interconnected.

When hydraulically lifted platforms are used as a part of the stage or auditorium floor, they should be positively connected to the surrounding structure. This is to prevent possible drift in case of leakage and simultaneous electrical power failure.

Where lighter weights travel longer distances, cable lifts can be called upon. This type of device, however, is seldom used for stage lifts in the United States. It requires additional safeguards against possible sudden failure. This extra cost makes it less attractive than the more reliable hydraulic lifts.

A low efficiency system that is noisier than both the hydraulic and cable drives is the jackscrew. Yet it has many definite advantages for a number of applications where travels are short and high speeds are not essential. First, its reverse efficiency is sufficiently low to make the system almost self-locking against loads applied to the lifted structure, and only a simple braking device is necessary to hold the system in place. Because of direct mechanical drive connections, travel and leveling are precise and it is easy to synchronize the travels of several lifts. Also, jackscrew lifts are relatively maintenance free.

It is not advisable to design the mechanical and lifting components separately and apart from the lifted structures. Often the structure itself can perform such mechanical functions as equalizing the loads on hydraulic cylinders, and a well co-ordinated design can utilize the structure to minimize the machinery.

Care must be exercised in specifying deflections for lifted structures. Often a lift platform, when in a certain position, may form a part of the surrounding fixed floor, and while framing spans in the movable structure may be longer than the corresponding spans in the surrounding building, with allowable deflections specified as functions of span lengths, excessive differential deflections may occur. Therefore, it is always a good practice to set the maximum limits for these deflections.

For any movable installation, the importance of proper structure and guide system cannot be overemphasized. They form the key to simplification of machinery and their efficient use can result in considerable savings.

Cable-Hoisted Installations. Common to almost all stages is their counterweight system that is used to raise and lower the stage sets, the lighting battens, and the curtains. Most counterweight systems are manually operated, but they can easily be motorized.

Another — almost standard — requirement in a theater is the fire-protective asbestos curtain. It is designed to close the proscenium opening in case of fire on the stage.

More unusual cable-hoisted stage facilities include acoustical canopies, movable back drops (cycloramas), and sliding walls that can be used to change the size and shape of the proscenium or stage area.

The motion of acoustical canopies is usually slow. They cover large areas and their weight can be substantial. Therefore, the main problem is to design a hoisting system that includes separate fail-safe features.

A simple protection can be provided by making the guided counterweights heavier than the hoisted structures. In case of drive failure, the canopy would simply move up until the counterweight motion is stopped by spring bumpers.

When counterweights cannot be used, the hoisting machinery itself must be designed so that a visible breakdown of any one major component would stop the system, but would not cause the canopy to fall.

Dependence on a single overdesigned hoisting unit cannot be recommended. As a building gets older, maintenance may slacken. Improper service can damage any machinery, no matter how much it is overdesigned.

A stage backdrop or cyclorama is usually made of fabric that is fastened to pipe battens and stretched taut when in use. It can be straight or curved and it is normally suspended from the stage counterweight system. To compensate for the stretch of the fabric, the cyclorama would

have to be tied to the floor or weighed down when in use. To move it quickly to different positions in the playing area would be extremely time consuming and difficult.

All this would not be acceptable for a theater that has to provide the utmost in stage flexibility. Therefore, instead of using the conventional system, a cyclorama can be designed as a huge, movable wall that contains its own drive and hoisting machinery. Since this type of cyclorama travels horizontally in the space located directly under other flown stage sets, its overhead traveling carriages and hoisting cables must be kept well outside the rigging area. The cyclorama framework itself must bridge the gap betwen its hoisting cables.

A multiunit movable wall concept can also be used to change the configuration of proscenium or playing area.

A common requirement for most hoisted structures is to keep their weight to a minimum. Their main purpose is to provide rigid support for architectural finishes. They seldom carry live load in addition to their own weight. Light tubular space-frame type construction can be utilized, and often aluminum can replace steel.

Controls. The operation of stage equipment must be quick, quiet, and visually acceptable. The manager must have effective control over all movable installations. Lack of proper controls could easily incapacitate the most sophisticated facility and change it into unmanageable nuisance. Also, requirements for operational safety must be thoroughly studied and satisfied. A stage floor may consist of a variety of movable structures and the operation of one may affect the others. All movable systems must be well protected. Otherwise, an accidental use of a wrong button could start a sequence of events that not only could interrupt a performance, but could also be damaging to the equipment and unsafe for the personnel.

The basic problems in stage equipment electrical controls involve automatic placement of structures to predetermined positions; smooth starts and stops; variable speed and synchronous operation; safety interlocking; remote position indication, and design of control consoles where positions and movements of all installations are clearly displayed.

While it would be beyond the scope of this article to describe technical details of electrical controls, it should be noted that it is in this area that much progress has recently been made.

Modern instrumentation, including analogue or even more accurate digital control devices, can add much to the positioning flexibility. The complete operation of stage or auditorium mechanical facilities could be programmed by a computer.

These do not, however, rule out the use of many already well-proven systems, and simplicity still remains the key for dependability. A limit switch to stop a lift is still as effective as it has always been, and interlocks between different movable components that permit their operation only when the conditions are safe, remain equally necessary.

Auditoriums

The use of movable structures in a theater is not limited to its stage alone. The auditorium itself can be designed for multipurpose use, or it can be mechanically created within the space normally used for other purposes.

An interesting example is the ABC Television Studio #2 in New York. It was designed for dual-purpose use by Sol Cornberg Associates, Inc. While this studio is basically a large stage without major floor obstructions, it can be mechanically converted into an auditorium.

The stepped-up auditorium floor is formed by a series of platforms, complete with seats and folding undercarriages.

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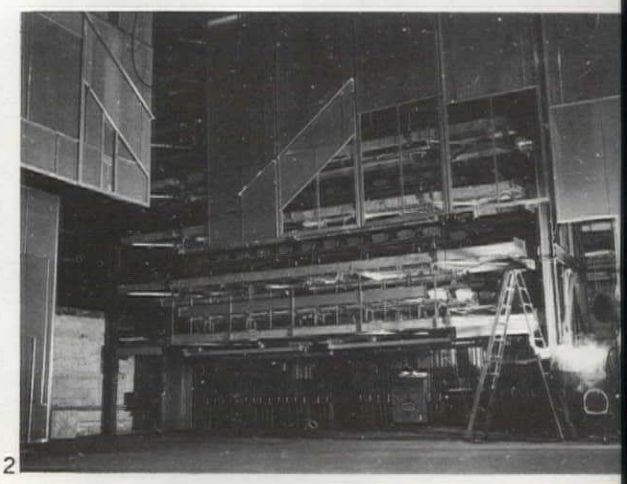

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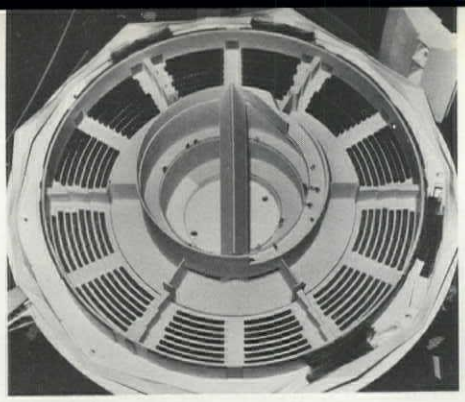
3

(1) *Complete assembly of television studio with all floor, ceiling, and wall units in place.* ***(2)*** *Six auditorium floor sections are stored inside vertical storage hoist; wall components are visible above.* ***(3)*** *Ceiling sections are stored between studio rigging. When lowered, they automatically open to form auditorium ceiling. (ABC TV Studio #2 in New York.)*



Scale model (above) *shows rotating ring formed by six separated auditoriums. Together they carry an audience of 1400 around stationary display areas. (G.E. Pavilion at the Fair.)*

Interior of one complete auditorium. Six similar units form the complete ring (above). *Floor framing for each auditorium utilizes horizontally curved main girders* (below). *This is to provide uniformity of floor beams and connections while forming a conical surface. Electrical*

collector rings are mounted on the supporting framing. Each auditorium is supported by three undercarriages (bottom). *Curved main girders are hinged on top of motorized undercarriage to provide necessary drive pressure. Drive differential and wheels are visible, but motor is not yet mounted.*

Normally in vertical storage, these platforms can be lowered by an automatic hoist system and easily moved to their proper locations.

The auditorium shell, consisting of movable ceiling and wall panels, can be quickly assembled or disassembled by the use of electrical push-button controls.

It should be noted that this particular installation was located within a space where conditions were already crowded, and where the design possibilities were therefore quite limited. If such conversions are planned during the building design stage, a structure can be built, completely space-controlled, so that both the stage and auditorium can be shaped to meet the physical and economical requirements of a given production.

While such a complete flexibility may still remain to be accomplished in the future, interesting approaches have already been made in theaters where mechanical means for a partial stage and auditorium conversion are provided.

The basic movable installations for these conversions remain essentially the same as previously described for stage equipment. They, too, consist of lifts, movable platforms, turntables, and hoisted structures. However, on most occasions, auditorium changes are made without the presence of an audience. Therefore, the requirements for high-speed and quiet operation are not quite as critical as for stage installations. Also, the control systems can be somewhat simplified.

On the other hand, while these movable structures are a part of the auditorium, they are subject to much stricter safety regulations than similar stage facilities, and fail-safe features must be incorporated into all structural, mechanical, and electrical systems.

Many other types of movable structures can presently be seen at the New York World's Fair. The majority of these differ from the flexible auditorium concept, because they carry people while in motion.

A good example would be the rotating auditorium complex in the General Electric pavilion, created by Welton Becket & Associates, Architects.

Here, a revolving auditorium, more than 160 ft in diameter, is used to carry an audience of 1400 people around stationary display areas. This auditorium is divided into six separate rooms. Joined together, they form a continuous but flexible structure that can adjust to all possible track irregularities.

Each room is independently supported by six wheels. Since two of these wheels are used for individual drive units, each floor framing is designed to always transfer a sufficient amount of load to these drive wheels to guarantee proper traction.

The machinery and controls are designed to minimize the effects of acceleration and contain extensive safety devices. While the operation of the auditorium ring is basically automatic and preprogrammed, it cannot be initiated before each car operator has pressed the "ready" button. Opening of a door would immediately stop the motion, which can also be accomplished by using the auxiliary controls located in each car.

Installations of this magnitude are usually carefully planned and detailed, and the architect, owner, and consultants all work together to develop a refined system.

However, the detailing and construction of many smaller facilities is often trusted entirely to a manufacturer. In this situation, the architect's duties may include incorporating these movable facilities into the permanent building. Therefore, a few words about an often forgotten subject—maintenance.

Since the safe operation of many movable structures depends on machinery, maintenance becomes an important factor. No matter how rugged the drive units may be, they have to be periodically checked and serviced.

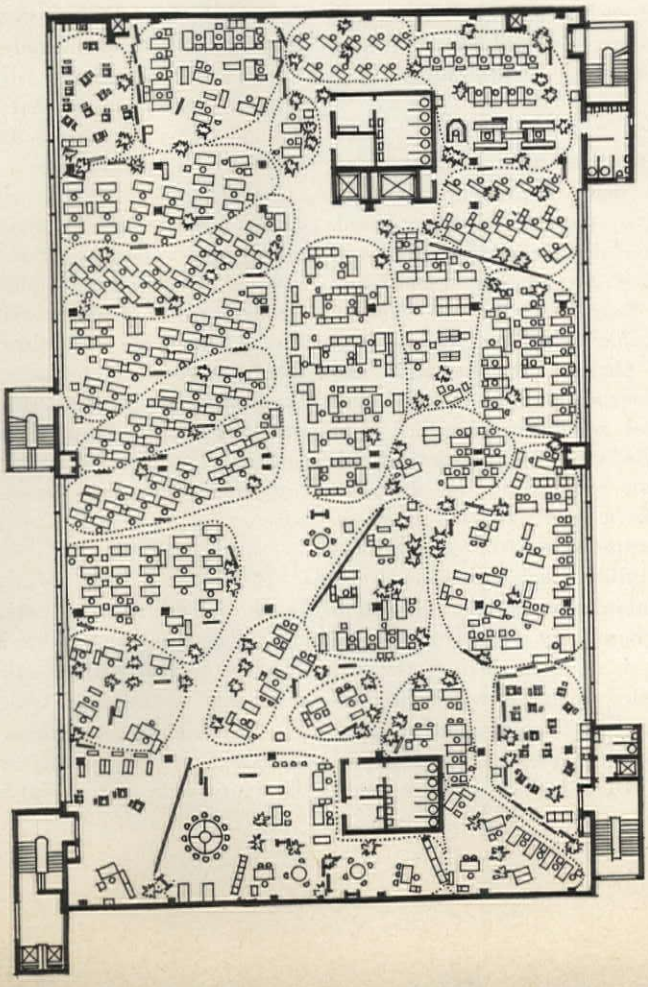
Much too often, the machinery is located in places where a mechanic must possess first-rate knowledge in acrobatics just to reach it with an oil can. Under these conditions, a man cannot be expected to do his work properly, and it is probable that an installation designed to increase the efficiency of a theater may in time become a hindrance and even a safety hazard.

There are occasions where it is difficult to provide for good access to service areas, yet more often poor conditions exist simply because of lack of adequate planning. Whenever movable structures are used as a permanent part of a building, their specific requirements should be considered in the early stages of the design. Only then is it possible to satisfy all the architectural and mechanical requirements.

It would be well to keep in mind one basic rule, applicable to all movable structures—namely, that only a properly integrated system of structural, mechanical, and electrical components can assure the architect of utmost dependability and economy. It would be a folly to develop the various elements separately.

The advent of movable structures has indeed opened up new horizons for creativity and design opportunity. The field is a vastly expanding one and only the imagination of an architect can determine its limits.

OFFICE LANDSCAPE

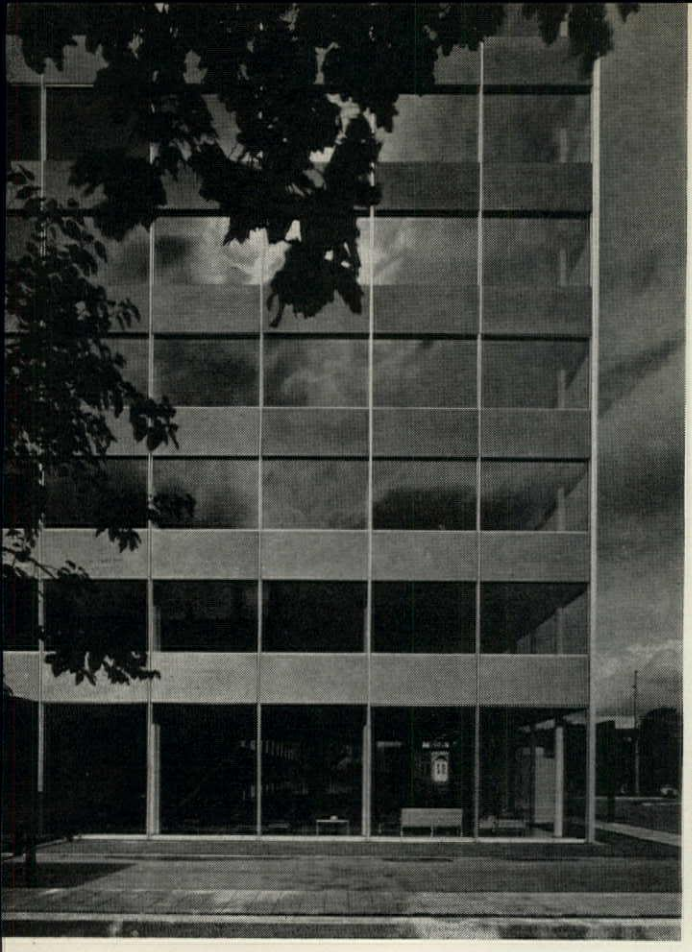


Within the past two years, several distinguished European architectural journals have reported on a new German system of office planning known as Bürolandschaft—*literally, office landscape.*

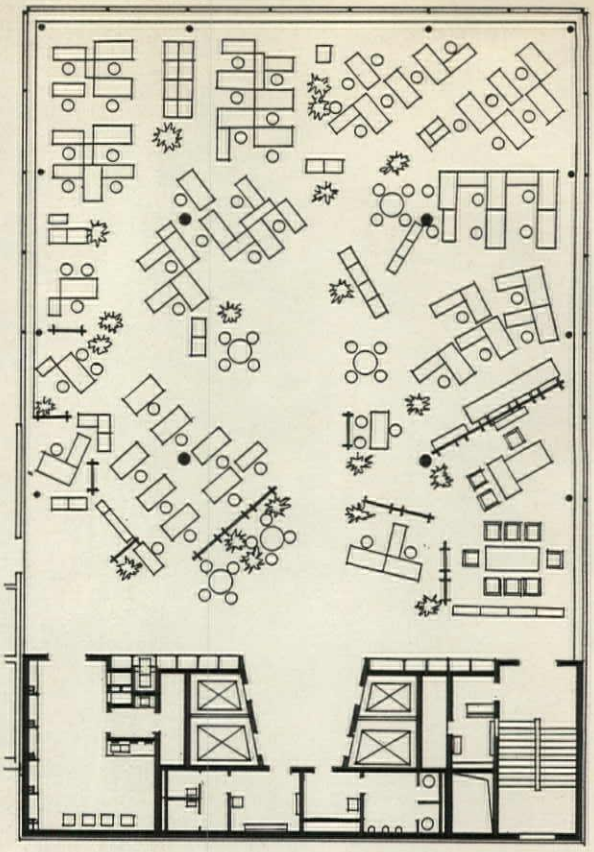
This system will be interesting to P/A readers, both because the free-form arrangements of furniture it produces are diametrically opposed to American office planning results and also because its invention and use by Eberhard and Wolfgang Schnelle, furniture manufacturers now specializing in office planning, somewhat parallels the development of the postwar American office, which was influenced so much by Florence Knoll and her collaboration with SOM.

Bürolandschaft *seems now to be firmly enough established to permit evaluation, having been adequately put to trial in four new buildings: the Deckel building in Munich by Professor Walter Henn; the Krupp building at Rheinhausen by Dr. Becker; the Boehringer building at Mannheim by Siegel; and the Ninoflex building at Nordhorn by N. Zobel. The system has also been used in the reorganized offices of Bertelsmann at Gütorsloh by Dr. Henn, (left) and in the British Petroleum office in Hamburg by the staff architect.*

A report on the method, its intentions, and its physical and psychological effects follows as part of this month's IDD.



PHOTOS: H. HEIDERSBERGER



"Bürolandschaft" is a German method of office planning based, as is American office planning, on studies of work-flow, communication, and circulation. In contrast to the typical American rectilinear layout, however, it produces irregular arrangements. To the American eye, the results of this planning may look only like primitive, outrageous, free-form chaos; the intent of the system is serious, however.

From all reports, Bürolandschaft aims primarily at improved communication and an environment that will evoke greater efficiency of work performance. It is also claimed that the system produces a more intensive and therefore more economical use of space.

The Method

Prerequisites of the system are an already functioning office organization, which can be studied, and, preferably, according to Dr. Walter Henn, a single-floor space not less than 69 ft deep. Once actual work-flow data have been assembled, the method of layout is seemingly simple. Squares of cardboard sized to the scale of each department and work team are juggled in a circular arrangement until the lines of traffic between departments, as reproduced from the assembled data, are as short and as direct as possible. Next, a similar procedure is exercised with respect to workers and equipment within each department or working group; the squares inevitably break down. What results from this juggling is a free-form arrangement that is allegedly expressive of the functional requirements of each worker and each department. Thus traffic-flow efficiency is used as the coordinate of efficient space utilization.

Physical Effects

Patently, the resulting irregular arrangements make rectilinear partitions impossible, so partitions are not used. Elimination of them is justified on several grounds. First, the absence of partitions makes the floor more flexible—that is, more accessible to rearrangement—both because of physical and economic factors and because of the lack of that psychological reluctance that has kept most so-called flexible partitions fixed. Secondly, the open plan gives more office workers a view of the windows. Thirdly, partitionless, free-form layouts are said to utilize space more intensively, because interdepartmental circulation space is shared by intradepartmental space—that is, a good deal of the circulation space required within departments is shared by the circulation space between adjacent departments. Furthermore, it is alleged that modular partitions inevitably enclose more than the work area actually required. (It has been found, however, that in most of the finished projects spaces are not being used as intensively as planned.) The fourth justification offered for the absence of standard partitions, which are considered to be metallic or glazed ones, is that they reflect sound and thus disturb workers' concentration. Lastly, the visual privacy provided by glazed partitions is thought to be no greater than that provided by no partitions.

Some degree of visual privacy is provided, however, by file cabinets, wardrobes, and planters; this equipment, however, is presumably placed to meet the demands of efficient traffic and is not always adequate to obstruct vision. Where more visual privacy is required, Bürolandschaft makes use of screens that are opaque and acoustically absorbent. Even board rooms have been separated from other spaces by screens only.

Acoustics

In Bürolandschaft, two main elements are utilized to keep noise levels down, in addition to acoustical ceilings and the occasional acoustically treated screens. The most significant of these elements is thought to be the use of carpeting over the entire floor; the second is the height

Plan, exterior view, and typical interior of the Friedrich Deckel building in Munich by Walter Henn, Architect.

of the ceilings, which is generally kept uncommonly low for such broad, open expanses—about 9 ft. The low ceiling height is adopted so as to shorten the sound paths, resulting in keeping the noise level down.

The use of carpeting in large general offices will not seem new to American architects, who have for several years welcomed its alleged maintenance advantages. What will seem new is the reasoning given for its use, which is similar to arguments proferred in favor of carpeting in schools: that carpeting is an effective sound-absorbing material (although it must be noted that the *Architectural Review* reports of those offices planned with the Bürolandschaft system that no machine noisier than a typewriter is used); and that the effect of carpeting is to induce people to move about and to speak more quietly—a psychological effect critical to the Bürolandschaft concept.

Psychological Effects

The open, partitionless space that follows from a free-form furniture layout determined solely by traffic flow is said to produce an environment that evokes a greater efficiency of work performance. Certainly, both the acoustical openness of the offices and the domestic finish of the floor covering, which is thought necessary to make the large, rather inhumane spaces comfortable, must contribute toward inducing office workers to maintain an atmosphere of quiet conducive to efficient work.

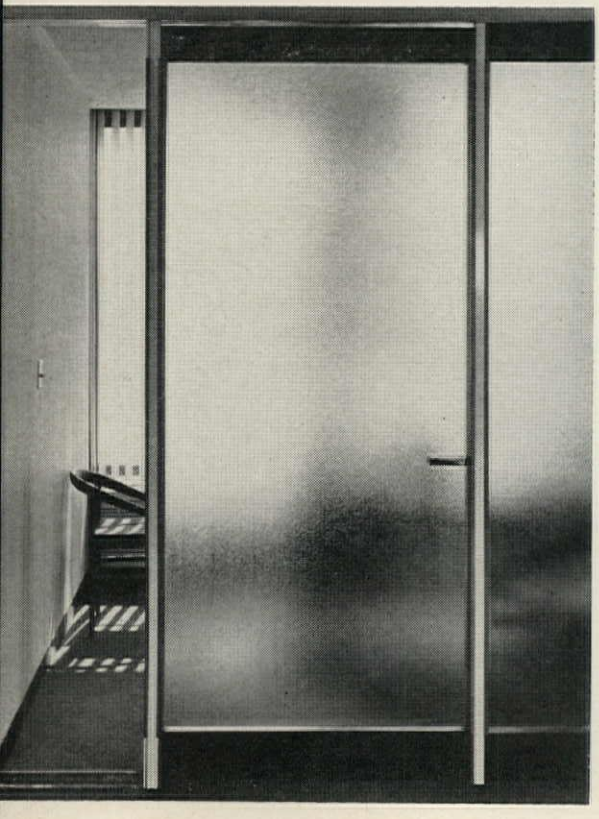
An adjunct to the domestic comfort provided by Bürolandschaft is the "Pausenraum," or employee lounge, which is centrally located and to which workers—pausing in their work at will—can come for relaxation and continually available coffee. The responsibility and discipline that this arrangement imposes on the individual worker is interesting, in view of the regimentation imposed from above in American offices by having an established coffee break or by having coffee delivered. The Bürolandschaft arrangement is perhaps also indicative of national temperament and the different degrees of personal regimentation prevalent in the two countries. It is assumed that Bürolandschaft will work best when office workers understand that they are working *together*, as part of a team for a common goal, rather than when they feel they are working *for* someone.

One significant psychological aspect of the German system is the thinking that the kind of privacy provided by desks facing in different directions is analogous to the acoustical "silence" provided by the low and constant noise level of an air-conditioning system: when the noise is constant, there is, so to speak, no noise. Similarly, when faces and movement are always visible, there is no distraction through singular action. Conversely, it is claimed that when one person turns around in a line of desks that all face in one direction, the order is visibly disturbed, and the distraction counts for more. The rule of Bürolandschaft would be, then, that when everything is distracting, nothing is distracting. The idea is analogous to feeling alone in a bustling crowd.

This visual aspect of Bürolandschaft is one area that will surely come in for criticism from American office designers. Although it has been admitted by Dr. Henn, among others, that interiors and furnishings must have a high caliber of design to make the system effective (and it has been reported that generally this has not been the case), American designers will surely feel that the psychological effects of such visual chaos, as opposed to those of an easily perceived, geometric order, can only be fatigue and consequently less efficiency. Nevertheless, Bürolandschaft should provide room for thought not only about national temperaments but also about the psychological ramifications of office design, which seem to be the most significant aspects of the Bürolandschaft system.

NEW DIMENSIONS FOR CONFERENCE ROOMS

PHOTOS: MARC NEUHOF



OFFICES, GENERAL INSTRUMENT CORPORATION • OFFICES, PEOPLE'S PLANNING CORPORATION • NEW YORK, N.Y. • FREIDIN-STUDLEY ASSOCIATES, INTERIOR DESIGNERS

One of two current approaches in office layout is to locate executives next to the windowed perimeter and to place the clerical staff more toward the center of the building; the other approach is, conversely, to give the clerical staff the benefit of the windows since executives are frequently away from their offices. In both approaches, use is generally made of transparent or translucent glass partitions to admit daylight into the central office spaces. Two layouts by office planners Freidin-Studley Associates, carry the use of interior glass walls further by bringing the conference rooms within this purview.

The conference room of the General Instrument Corporation (*above, left*), a firm that manufactures electrical products for industry, is located at the core of the plan, surrounded both by a secretarial corridor and perimeter offices. Transparent glass partitions are used as the inner wall of the westerly offices and as the facing wall of the conference room so that natural light is admitted deep into the space. These glass interior walls also serve to extend the offices and secretarial corridor, which could be given relatively small areas because of this added dimension.

The conference room at People's Planning Corporation (*facing page*), a firm of mutual fund and investment counselors, is treated as a single, unified space with the reception room, from which it is separated by only a frameless, transparent wall of tempered glass with vertical venetian blinds. This glass wall not only makes it possible to take advantage spatially of the conference room, which is never in constant use, but also takes visual advantage of this highly finished, prestige area.

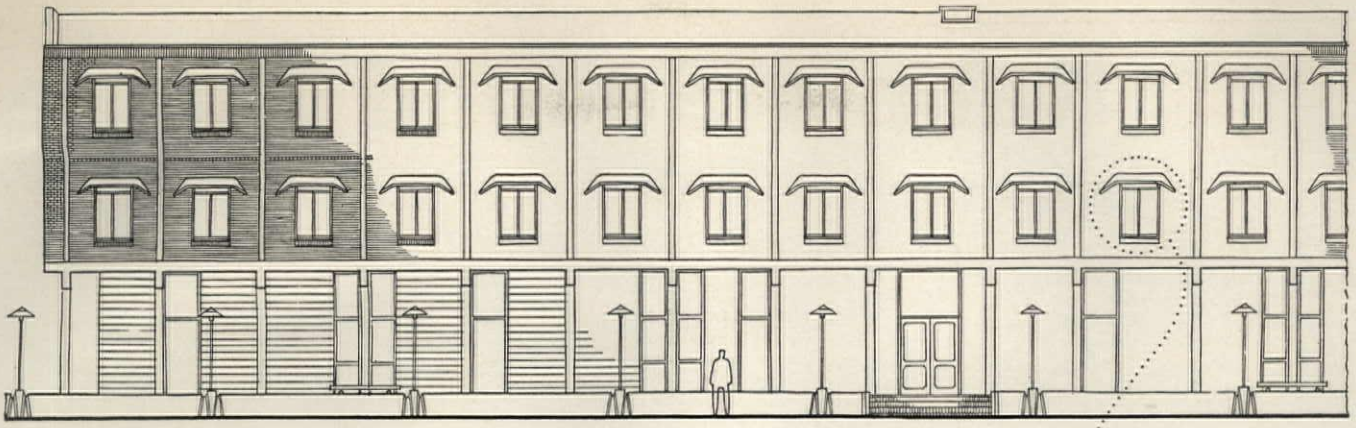
Other interesting aspects of the two jobs include the partitioning systems (*left, below*), which are detailed so that the doors are virtually indistinguishable from the fixed panels. This makes the partitions light and elegant looking. And in the general Instrument Corporation offices, to give the plan visual unity, rosewood paneled walls are used as the side walls of the reception room, where the dominant feature is a white marble wall, and are continued uninterrupted along the east and west corridors.

"When we start with an empty floor," says Architect Jack Freidin, "we put in partitions only if privacy is required for prestige or acoustics. Then we search for a means of visually organizing the space. At General Instrument, we used the rosewood walls. To a degree, we compromise the workflow and circulation to achieve this visual organization. That is the function of the architect and designer. Otherwise, the floor could be laid out by an engineer or computer. But the visual organization for psychological or physical needs is the special contribution of the designer-architect."

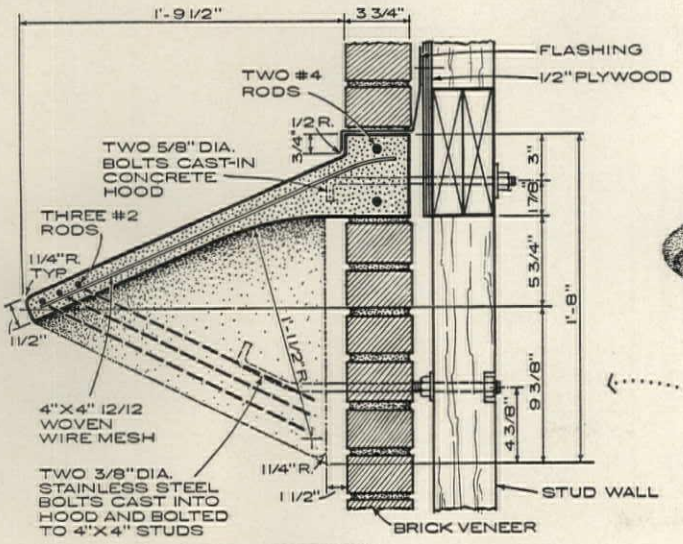
DATA: Descriptions and sources of the major materials and furnishings shown.

GENERAL INSTRUMENT CORP.:
Conference table: rosewood/J. G. Furniture Co. **Chairs:** Knoll Associates. **Desks:** Art Metal. **Side Chairs:** Frederick Lunning.

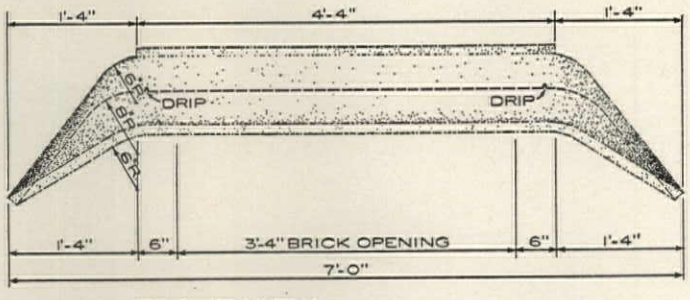
PEOPLE'S PLANNING CORP.:
Reception Desk: rosewood, white marble, chrome-plated steel legs/Freidin-Studley design/custom. **Sofa, armchairs:** black leather, steel/Frederick Lunning. **Coffee table:** travertine, chrome-plated steel/Laverne Inc. **Conference table:** rosewood/Lehigh Furniture Corp. **Chairs:** Knoll Associates. **Vertical blind:** Holland Shade Co.



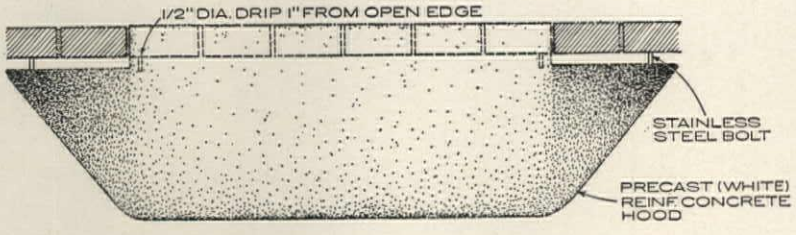
ELEVATION



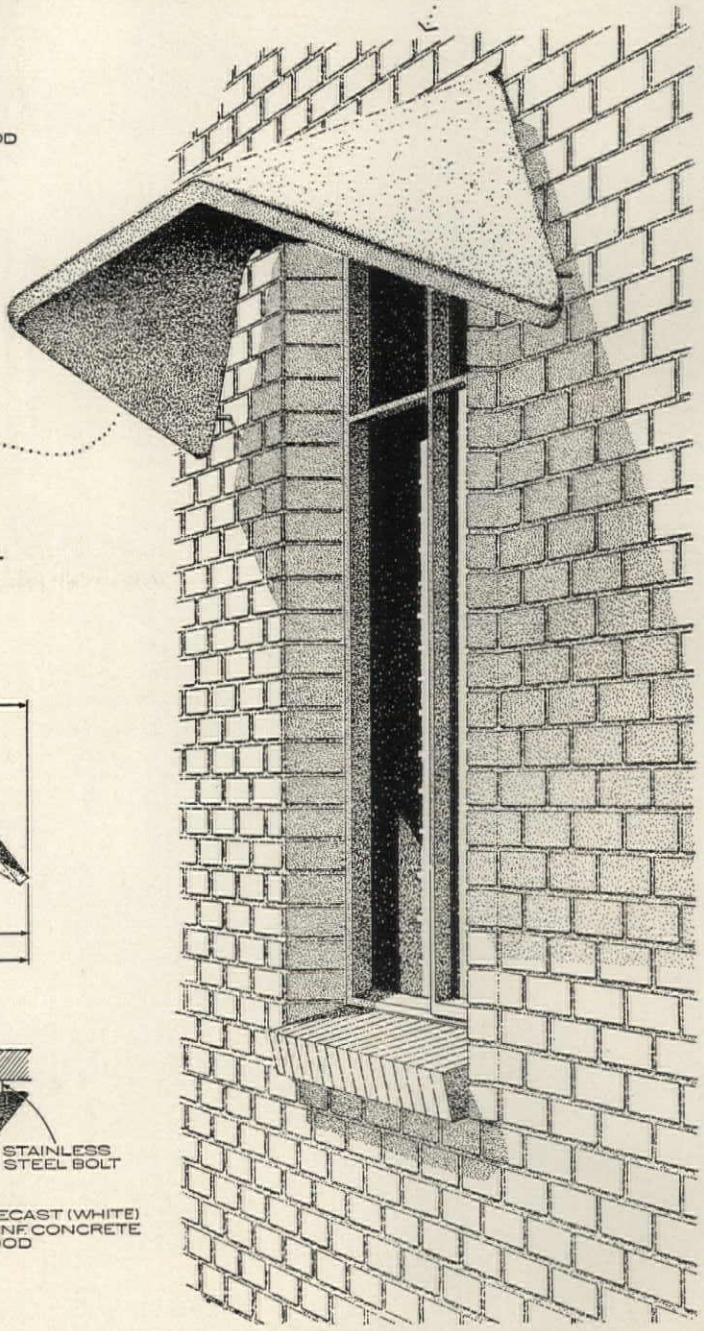
CROSS SECTION 1"=1'-0" SCALE



FRONT VIEW



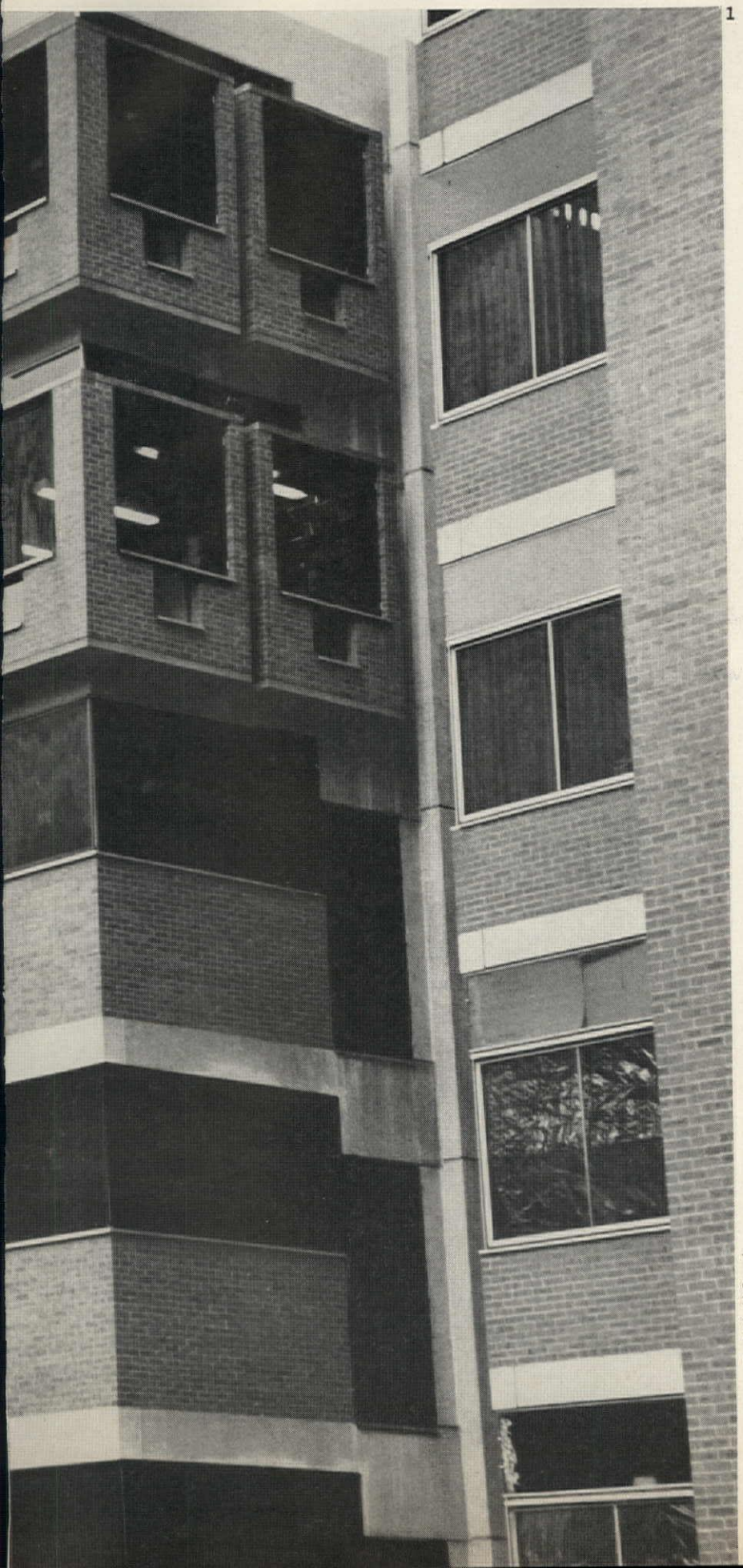
PLAN VIEW 1/2"=1'-0" SCALE



WESTERN WASHINGTON STATE COLLEGE: Bellingham, Wash. FRED BASSETTI, Architect	SELECTED DETAIL PRECAST SUNSHADE

Kahn's Second Phase

at Pennsylvania



1

Photos: Fred W. McDarrah

The excitement which followed the opening of Louis I. Kahn's Alfred Newton Richards Medical Research Building at the University of Pennsylvania in 1960 reflected at least two factors: the admitted farsightedness of Kahn's design, and the fact that here, at last, was a *real* building by one of the influential architect-teachers of our day. Encomiums were lavish, the majority of them well-deserved, for here *was* an important building by an important architect.

Now the second unit of Kahn's scientific complex—the new biology building—has been completed **(1, 12)**, and some might begin to have doubts about the composition as a whole (there is still a third unit to come). The first source of concern is that the two connected sections differ in a number of significant respects, tending to break the building right down the middle, to the detriment of both halves and the whole.

The most obvious reason for these differences was economy. The structural system of the first part, very complicated for such small spans **(3)**, has been visibly simplified **(2)**; so have the windows up to the two top floors **(1)**. These changes have produced a larger scale in the new section—larger undivided glass areas, larger expanses of brick wall between them, larger exposed structural elements **(12)**—resulting in an uneasy discrepancy between the two halves.

In some significant changes, however, it was obviously not economy but the mind of the designer at work. For instance, the two top floors have deliberately been made different from the typical lower ones (on the older building, the repetition of identical parts up to a sudden cut-off at the roof was a definite characteristic of the design). Why change here? Could this simply be Kahn's understandable impulse to display his latest idea for an interesting office form; doesn't it *say* office? (To be just, these *are* office cubicles and most of the lower floors contain laboratory spaces.) Then too, the building was originally to have two more floors (eliminated for eco-

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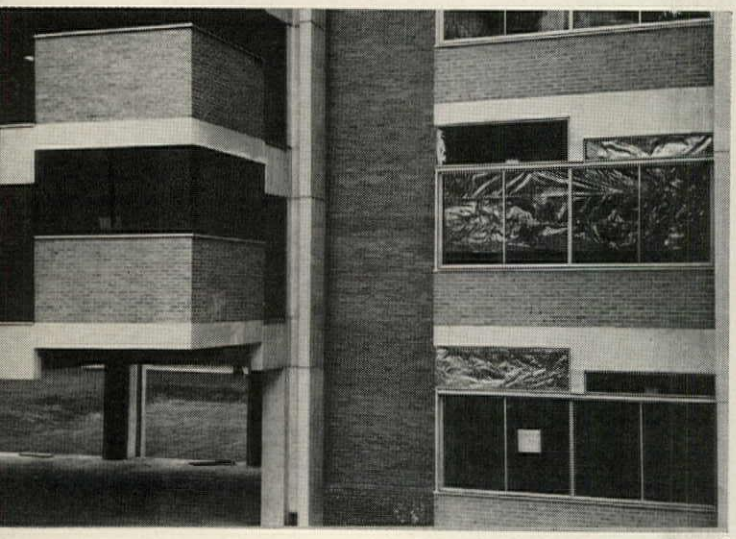

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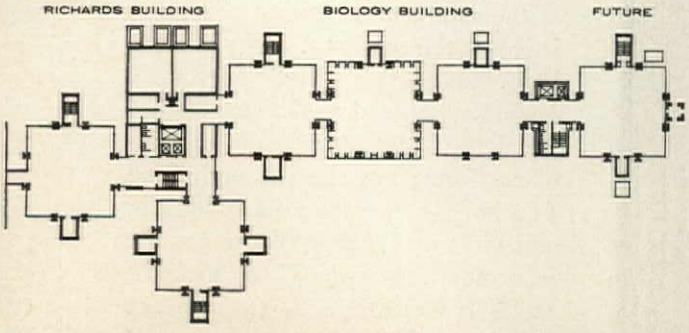
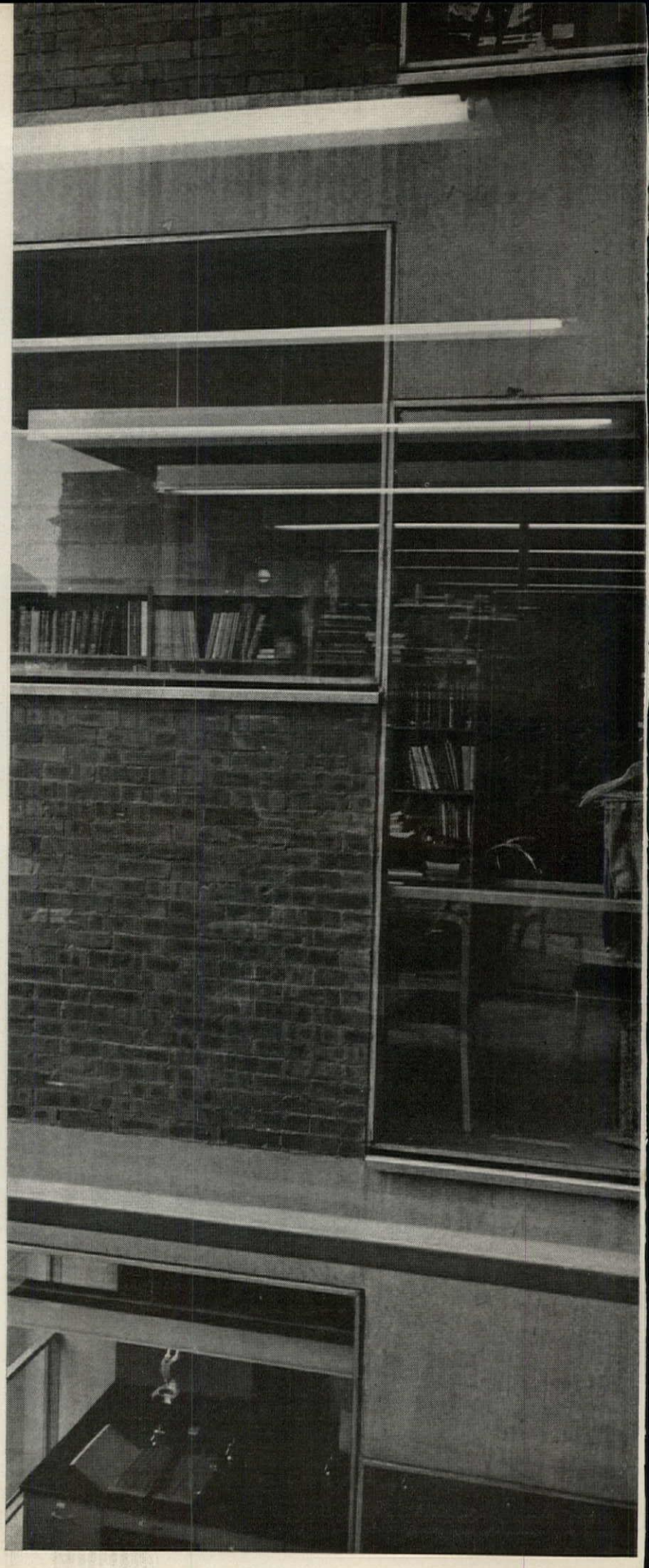
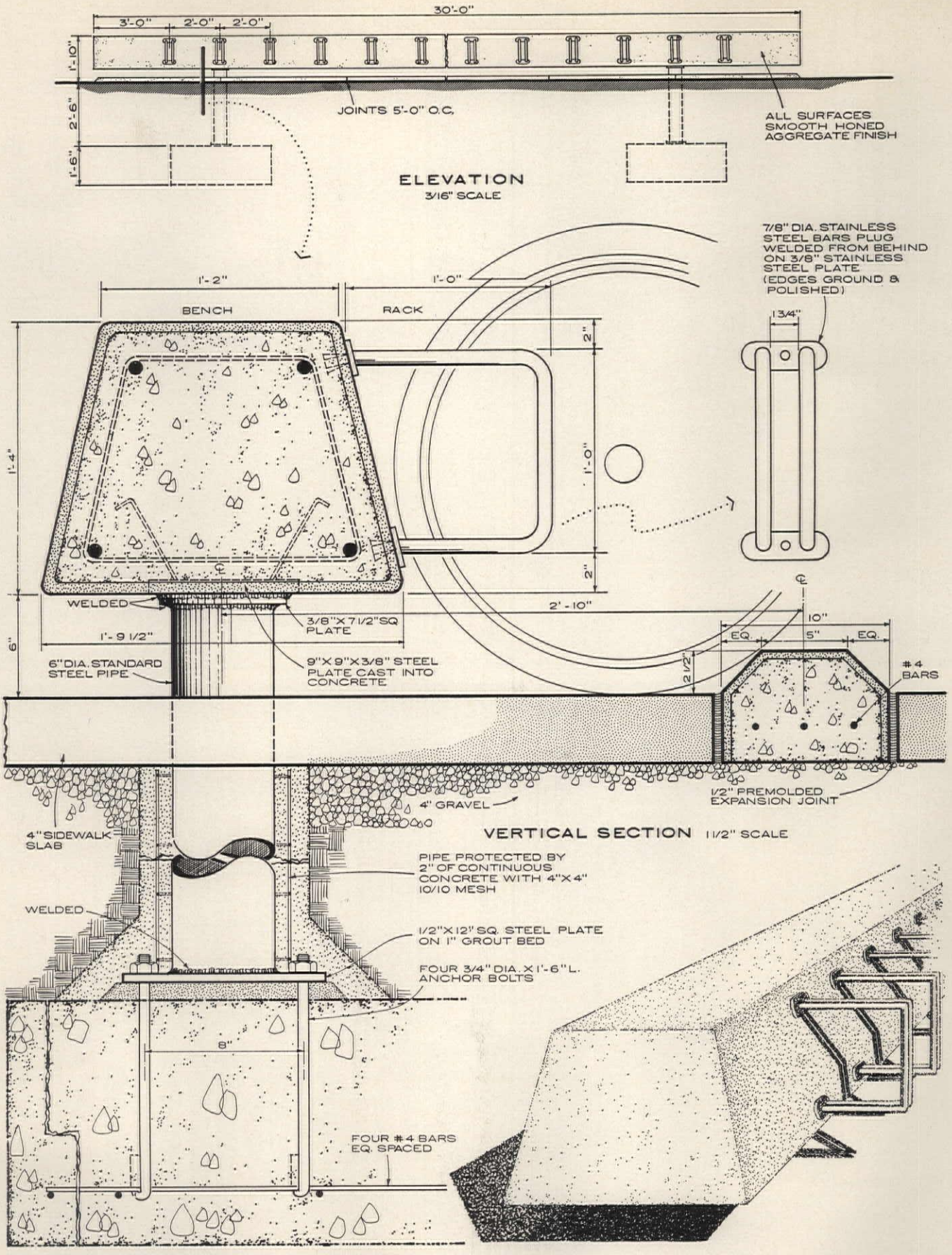


Sketch from Kahn's original plan for complex.

5





NORTHEAST REGIONAL LIBRARY: Philadelphia, Pa. GEDDES, BRECHER, QUALLS, CUNNINGHAM, Architects	SELECTED DETAIL BENCH AND BICYCLE RACK

nomic reasons) and the whole appearance may have been changed by two more stories of office-boxes.

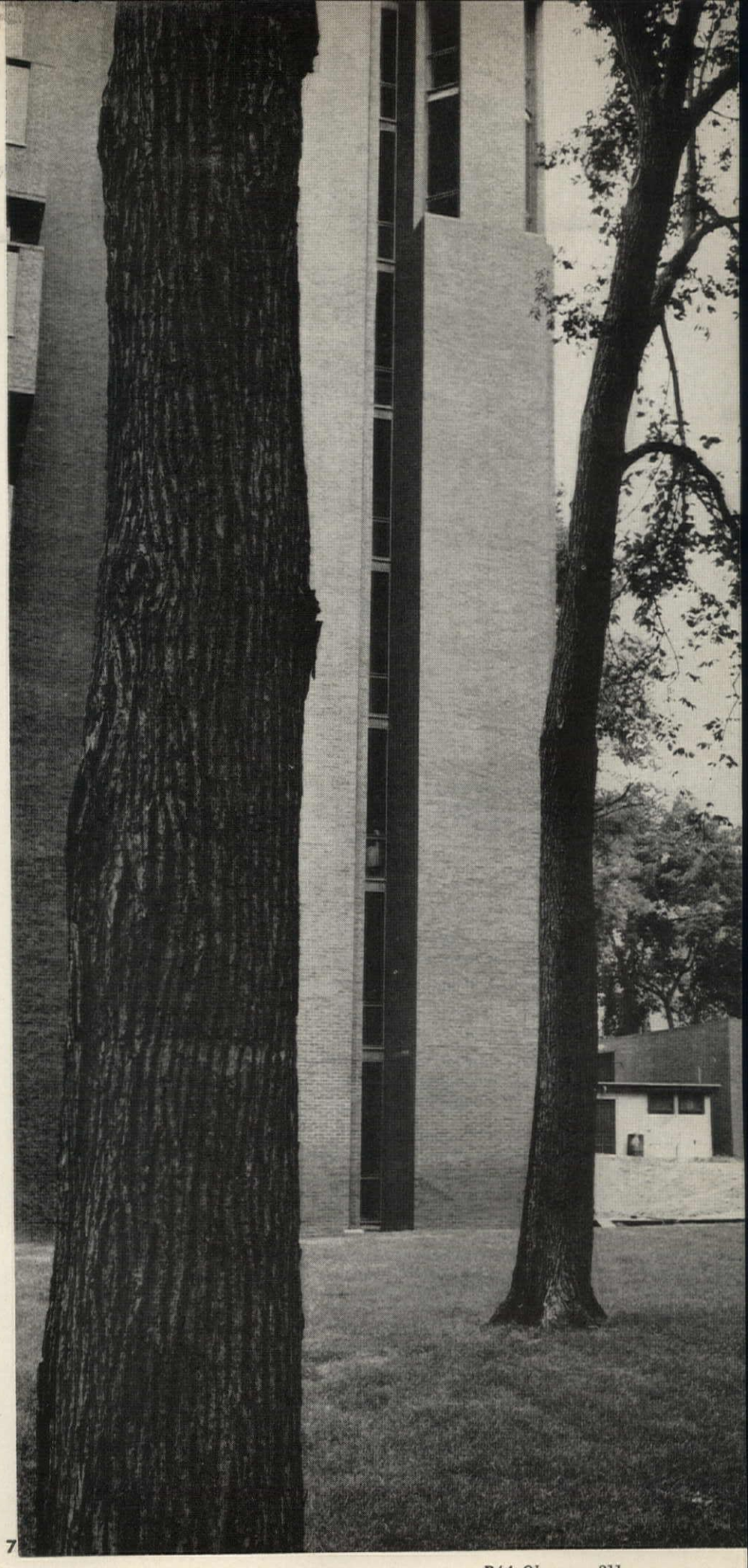
Inside, the offices are quite appealing (4), until one notices the waste glazed area beneath the desks (9), tween cubicles, the functionless small glazed area beneath the desks (9), the already encroaching scientific impedimenta being shoved into corners and onto the clerestory shelf.

The laboratory spaces on the lower floors seem more workable than the ones in the Richards building, where Kahn often let interesting tricks with structure interfere with the ultimate function of a laboratory space. Here the space is freer, and the insistence of the architecture less distracting. Reduction of wall elements to larger, simpler, opaque and translucent areas will undoubtedly be appreciated by researchers (5). An improvement on the sunny side of the building is the use of glass with integral sun-screening. The measures taken by tenants in the older structure to overcome glare problems often look ludicrous when seen from outside (6).

The stair-elevator tower at the end of the new biology building shows Kahn's sculptural powers at their best (7). The strip of glass which separates the corners of the tower is quite effective (8, 10, 11) and the cut-out, glazed floors at the top of the tower (where the faculty lounge will be), gives a sense of termination and individuality to the structure. However, the point must be made again that this tower and the towers of the Richards section, when one regards the composition as a whole, tend to fight each other. Where the Richards towers were definitely closed forms, the biology tower is decidedly open at the corners and top.

Whatever disappointment one may feel from this lack of cohesiveness, there is always the sense of a vigorous, inventive mind at work. One only wishes that that mind could resist utilizing the next appealing design idea or interesting technique, and subdue exhuberance and innovation for comity and design integration within a single complex. It is to be hoped that the third section will not carry this disparity further.

—JMD/JTB, Jr.



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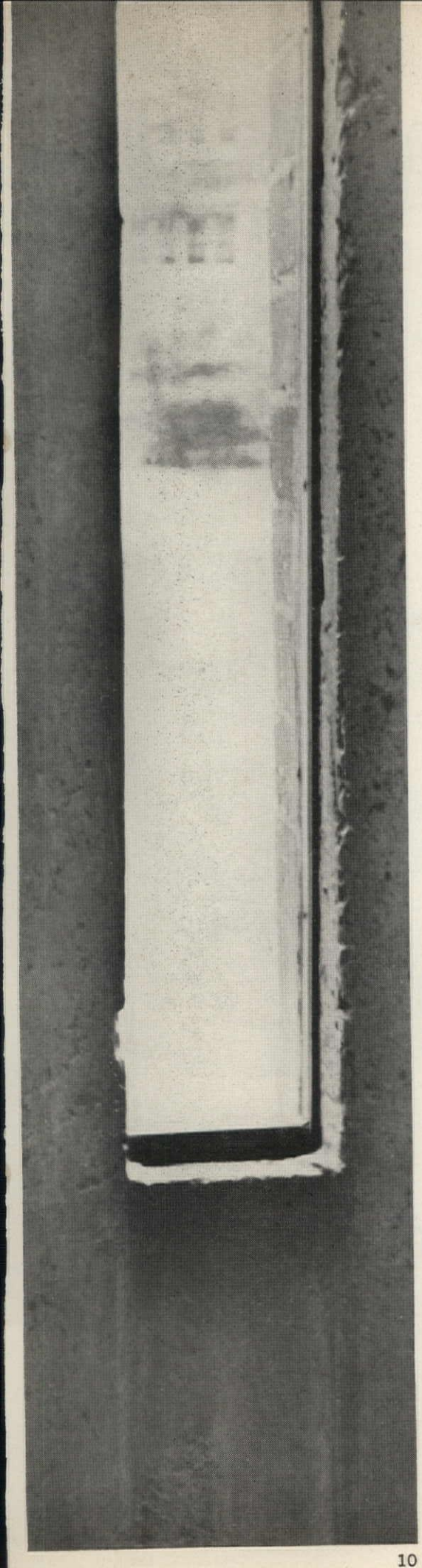
Details of biology building tower show glazed corner opening inside ***(8, 10)*** *and outside* ***(11)****. Tower corners of older building were closed. Knee-level glazed area in two top floors* ***(9)*** *seems quixotic. Photo also shows sun screening employed in new addition.*



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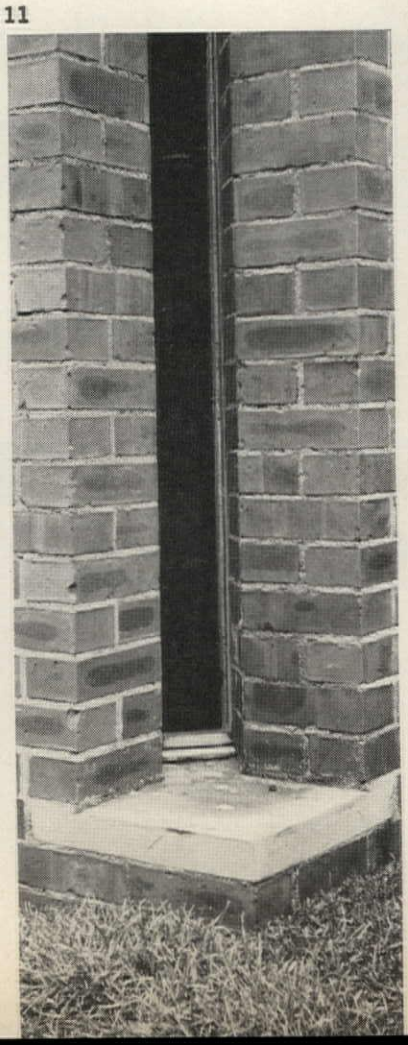

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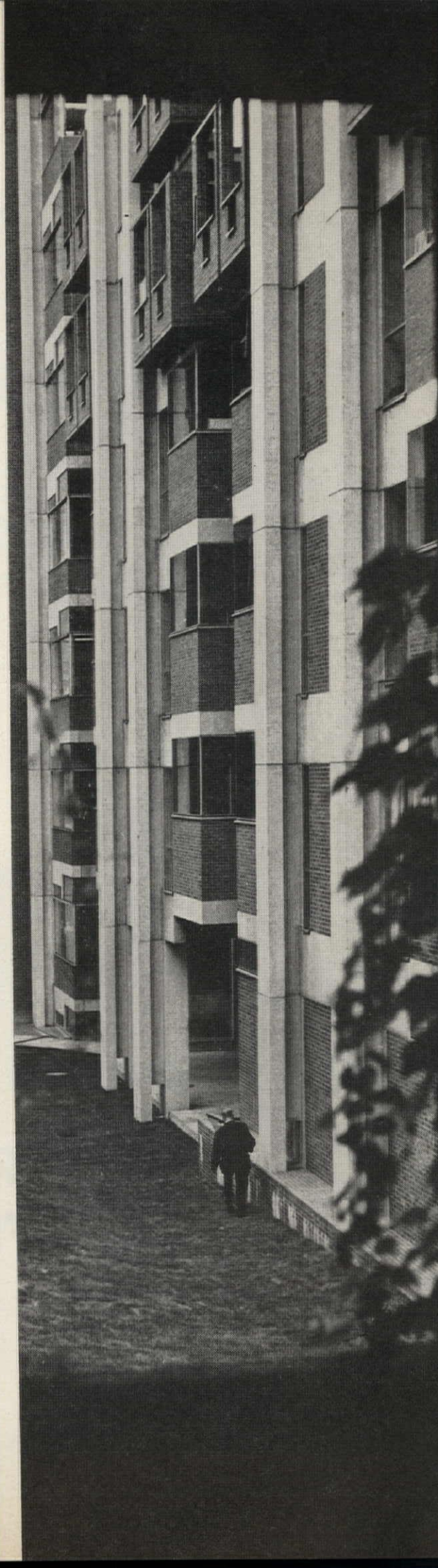
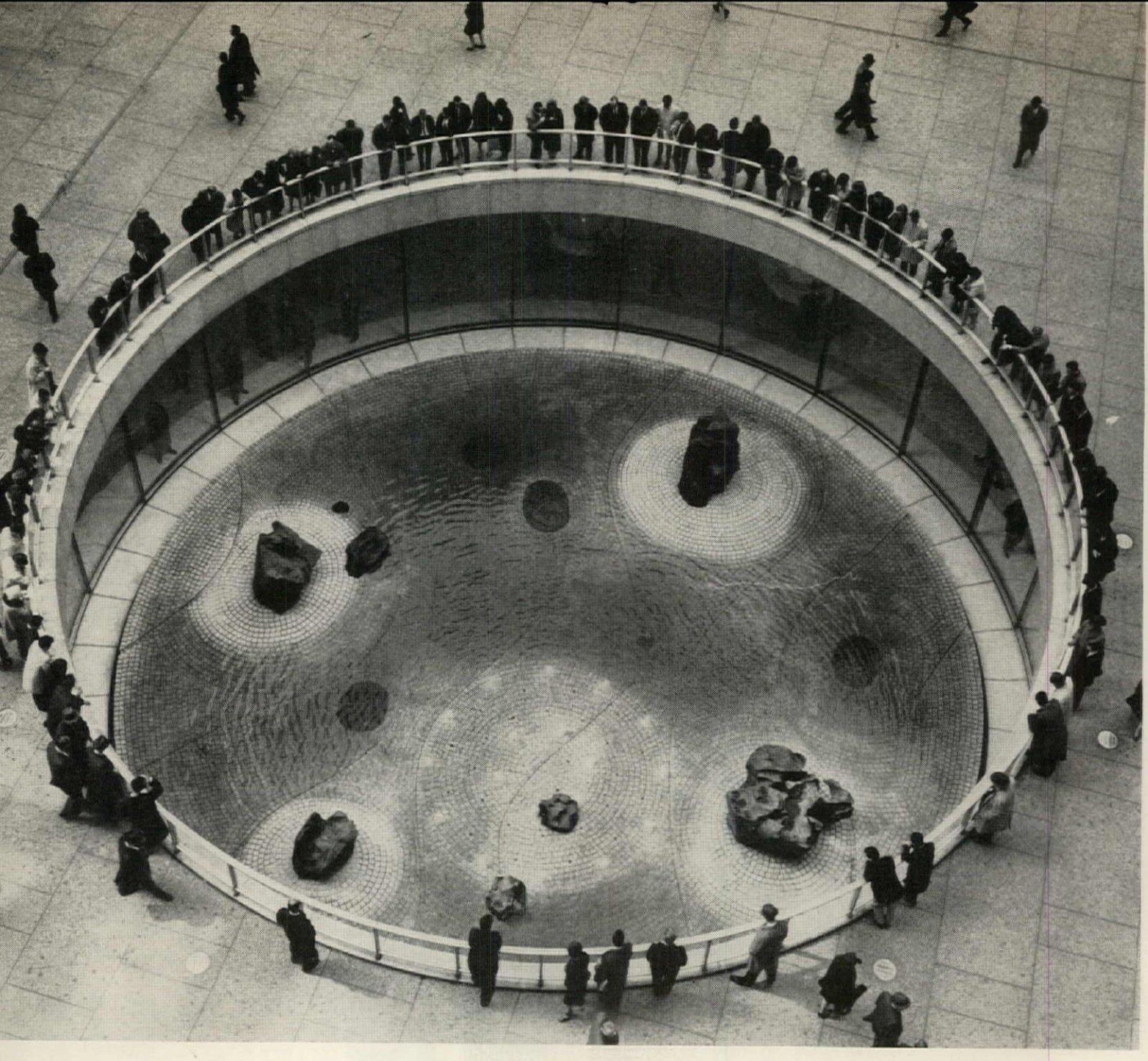




A LUNG FOR NEW YORK'S FINANCIAL DISTRICT

Photos courtesy Chase Manhattan Bank

Laborers in the Stygian caverns of New York's Wall Street area have been presented with a great open breathing space by the Chase Manhattan Bank. Part of the original design by Skidmore, Owings & Merrill for the bank's 60-story headquarters building which opened in 1961, the main south plaza had to wait for demolition of existing structures to be erected. Now, in its first summer, the entire plaza can be judged as a complete composition.

Chase Manhattan Plaza surrounds the company's building with 89,466 sq ft of open space (plaza of the Seagram Building is approximately 22,000 sq ft), mostly unobstructed reaches of dark green and gray Italian marble terrazzo. Formal tree plantings occur at the northwest and southeast portions of the site. The latter site, on the main south plaza, features 10 sycamore trees in two formal rows between which are four circular granite benches. To the northwest, on a secondary plaza, are nine hawthorn trees in circular granite wells. Other planting includes 90 andromeda bushes lined in cast stone boxes against the side of the New York Trust Company Building, which bounds the western end of the main plaza, and four honey locust trees located to the left of the stairway to the main southern plaza (*below*).

Isamu Noguchi's sculpture fountain is the star of Chase Manhattan Plaza. It furnishes a peculiarly Japanese grace note to the pellmell activities of the financial district. Set in a glass-walled well 16 ft below plaza level, the "water garden," as Noguchi calls it, consists of a 60-ft diameter pool, fountain, sinuously patterned paving of granite cubes, and seven basalt rocks selected from the bottom of the Uji River in Japan. Noguchi has placed these rocks atop rises in the topography of the composition, recalling the traditional Japanese garden creations of seas, islands, and mountains in miniature. The area can be observed from two levels: from the plaza, and from behind glass walls of Chase Manhattan's banking office below. It recalls another recent sculpture garden by Noguchi for SOM: the one at Yale's Beinecke Memorial Rare Book and Manuscript Library (see pp. 128–133, FEBRUARY 1964 P/A). Here, as there, the creation is only to be viewed, not touched. At Chase Manhattan, however, life and variety have been introduced by the fountain, which can produce effects ranging from a great spray to a serene bubbling movement. The water-covered portions of the fountain have now taken on the greenish cast of water fungi, emphasizing the whiteness of the "mountains" even more dramatically. Additional sparkle (not designed by the sculptor) is provided by the nickles, dimes, and pennies which people seem to have an obsession for throwing into the fountains.

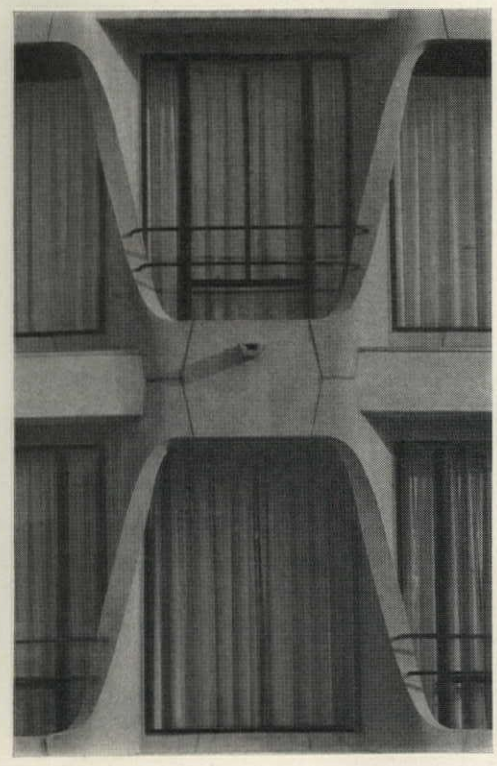
This is a plaza which needs people. Seen on a Sunday afternoon, when the financial district is virtually deserted, the effect is one of monumental barrenness. On a working day, however, the bustle of workers and financiers across its expanse, and the calm of more leisurely citizens relaxing on its benches, gives scale and humanity to the space.

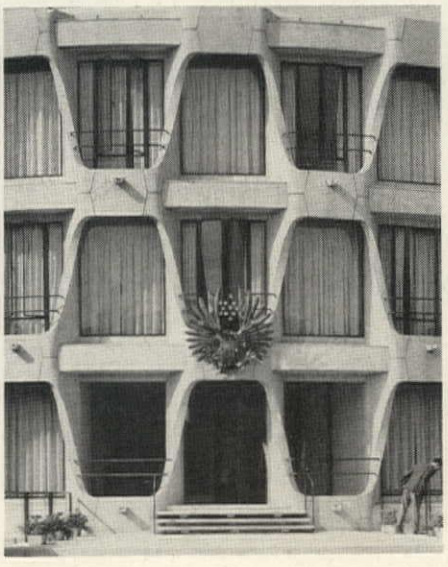
The Chase Manhattan site slopes down rather steeply to the northwest, which caused the architects to place the plaza and office building on a black stone podium. Walking at street level where this wall reaches 20 ft overhead, one gets quite an oppressed feeling. It would have been interesting to see these walls treated as welcoming ramps rather than as forbidding barriers. On the south side, the effect is quite different, the plaza being reached by a broad course of only 10 steps.

The opening up of such an amount of expensive land in a crowded business area can only be lauded. One could have wished that the plaza, once made possible, could have been conceived in a more informal, inviting manner. This is a minor quibble in a city such as New York, however, where the overwhelming tendency is to fill every inch of land with speculative construction rather than to set aside an occasional area where the harried citizen may rest, restore his soul, and contemplate the city.—JTB, JR

Photos: Norman McGrath

JOHANSEN'S HONEYCOMB EMBASSY OPENS





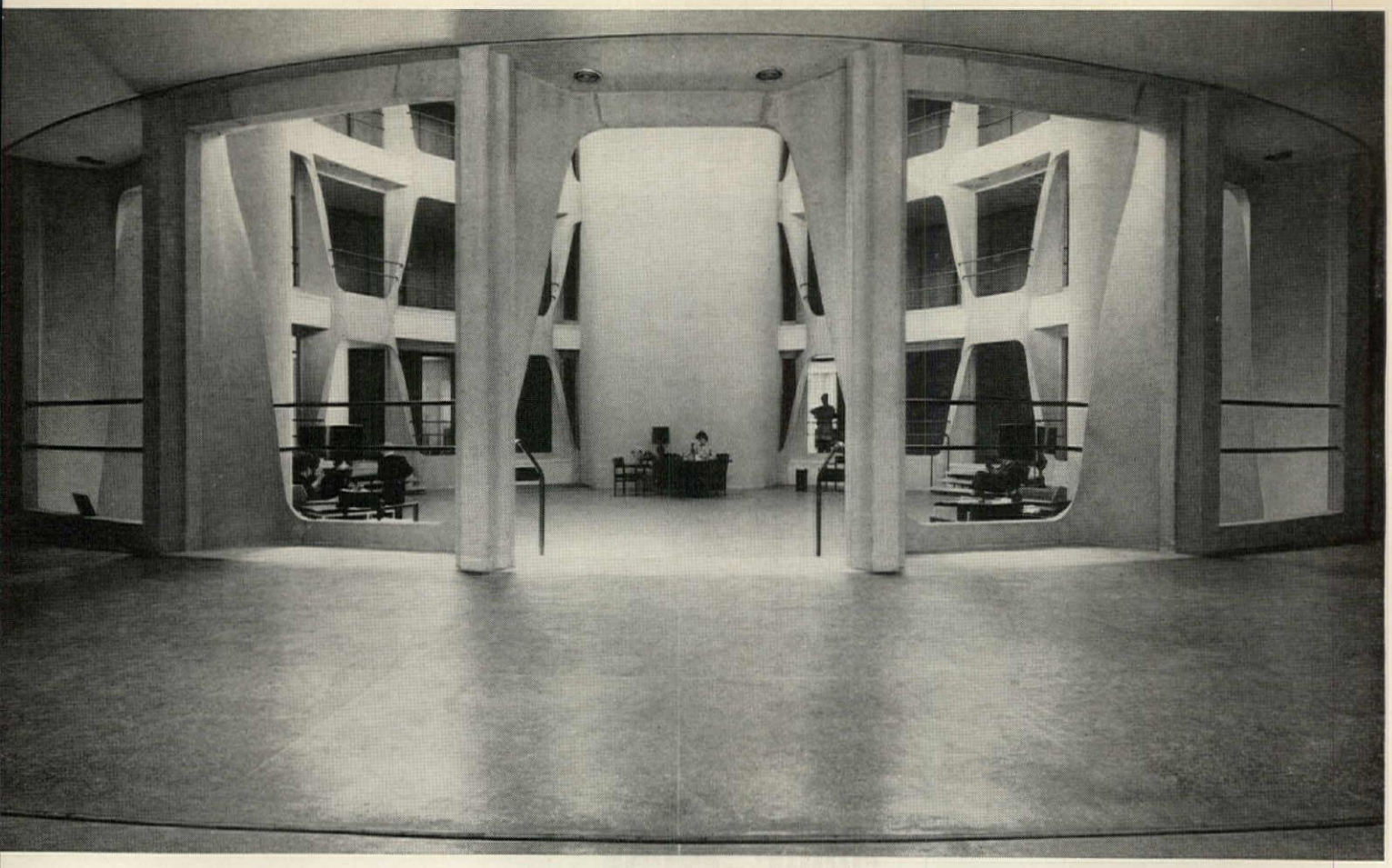
John Johansen's United States Embassy Office Building for the Republic of Ireland in Dublin has opened despite virulent attacks against its design in 1960 by Congressman Wayne L. Hays (D., Ohio), Chairman of the Government Operations Subcommittee of the House Appropriations Committee. As it now stands, the embassy is still another testament to the forward-looking building program of the State Department's Office of Foreign Buildings.

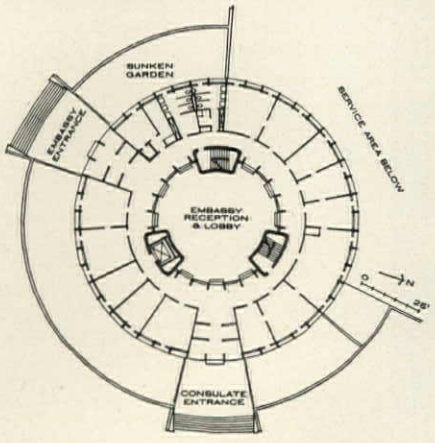
Due to the nature of the site—a triangular-shaped property—the building was able to make a much more sculptural "statement" than the London and Oslo embassies of Saarinen, which were designed to meld with their neighborhood fabrics—unsuccessfully, according to some Londoners; successfully, according to the Norwegians.

Johansen's embassy is a building that can be perceived as a totality from a distance. The strong, sculptured concrete elements that are its most salient design feature become more and more powerful as one approaches the building, until one actually enters it through one of the apertures—somewhat like Jonah being strained through the whale's teeth.

Although the circular shape deliberately recalls the ancient towers with which Ireland abounds, and its sculptural forms hark back to old Celtic carvings and illuminations, Dubliners so far are divided in their opinions of the controversial embassy, but with a surprising percentage being in favor of it.

Johansen seems to have had eagle trouble here just as Saarinen did in London. However, where many Britons found their eagle too dominant





and aggressive, the Dublin eagle is too small and "pretty" for the individualistic building it ornaments.

Passing under the eagle and over a planted moat, the visitor traverses an ambulatory into the building-height, circular reception and waiting area. This space, washed with light from a rooftop clerestory, gives the visitor a satisfying feeling of involvement with the building's activities: consular offices on the ground floor, offices for the Ambassador, his attaches and staff on the upper two floors. Officials and employees can be seen going about their business around the circular, arcaded corridors that ring the lobby at each level. These corridors occur behind the repeated pattern of the concrete forms used on the exterior. At three points within the courtyard rise the bushhammered concrete towers carrying vertical transportation facilities. According to one observer, the use of furniture in this public space has been awkward and could use some expert attention.

The exposed, precast concrete, discussed at length in P/A earlier this year ("Precast Annular Embassy," pp. 155–163, FEBRUARY 1964 P/A), has contributed not a little to the success of this building, having been accomplished in a truly craftsmanlike manner, with start-to-finish attention to details.

Johansen's embassy is one of those "either you like it or you hate it" buildings. Some may find the form forced and the molded structural elements capricious, but none can deny that it is a powerful structure, far surpassing in imagination and use of modern technology the Federal buildings we still see being built in the U.S., and particularly in Washington.—JTB, Jr

Photos, except as noted: Charles Forberg

FANCIFUL FABRIC FORMS FOR TRIENNALE

A striking American display at the Milan *Triennale* owes its existence and its sparkle to a small private group that would not take "no" for an answer—the "no" being our Government's official response last December to the *Triennale's* invitation to exhibit there this summer.

The group is the Committee for American Participation in the *Triennale*, Inc. Its president is Edgar Kaufmann, Jr., and its Director of Design is Jack Lenor Larsen, who convened the group last December. Both Kaufmann and Larsen were on the selection committee that weeded out 72 examples of imaginative design from almost 10,000 submissions. Other judges were Olga Gueft of *Interiors*, and Mildred Constantine of the Museum of Modern Art.

The important *Triennale* of Milan (the world's only noncommercial international exposition of design) has been around for more than 40 years, but this is the first year that America is exhibiting side-by-side with other countries in the *Triennale's Palazzo dell'Arte*. Theme of this 13th *Triennale* is "Leisure." The 12th also had a special theme—"Education"—but other years were open to anything that would fit into the all-inclusive title, *Esposizione Internazionale delle Arti Decorative e Industriali Moderne e dell'Architettura Moderna.*

In selecting appropriate items, says the Larsen committee, one of their aims was to unearth avant-garde designers "who are now difficult to find, partly because today's exploratory designer is working independently in his leisure time on his own personal statement rather than as part of a movement with a group rationale."

One of the best selections made by the committee was their architect, Charles Forberg. In the curved segment of the *Palazzo* assigned to the U.S., Forberg hoped to make "an immediately unique and intriguing impression of space and light—experimental, provocative, fresh—implying movement and exploration, reflecting the content of the exhibit objects." The continuous warped surface of his nylon canopy creates a series of curved spaces that "direct and contain" the attention. It is a sculpture in itself, yet also serves as a neutral background for items displayed against it.

Describing the structure, Forberg says that since the canopy is suspended from points only, the forms are entirely the result of three-dimensional tension stresses in the elastic material. "As an exhibition structure, it is an extremely economical medium in the relationship of spatial effect to the amount and weight of material." The fabric is a translucent, double-knit stretch nylon, its 2-ft strips seamed together in the loft of a Manhattan sailmaker. The complete canopy and all connectors for the 2500-sq ft space weighed only 135 lbs, and were packed in a roll 2 ft in diameter, 5 ft in length. There was extensive pretesting of the design, first in models at 1/25th scale, later at 1/10th, and finally at full scale with approximately 250 sq ft of typical forms.

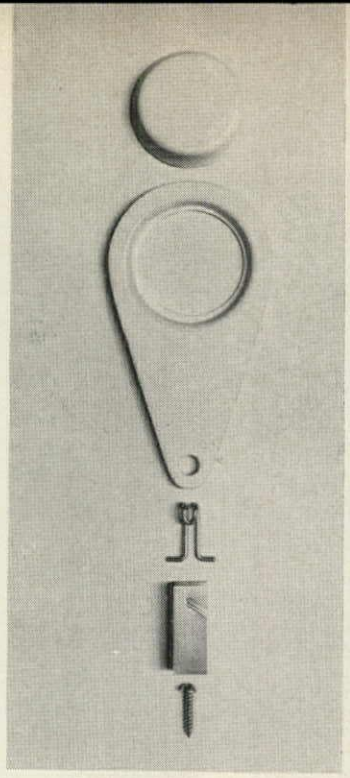
Fabric has not only created an

architecture of distinction, but fabrics were also the leaders among the displayed items, making up the largest group of designs selected. According to Larsen (who has three of his own fabrics in the show), fabrics showed more interesting new approaches—in materials and techniques—than any other medium. Of all the items chosen—furniture, fabrics, sports and play equipment, works of art—about half are one-of-a-kind pieces, the other half are designed for production (some already on the market). Of the designers whose work was chosen, most are independent, not with the large producers or large offices.

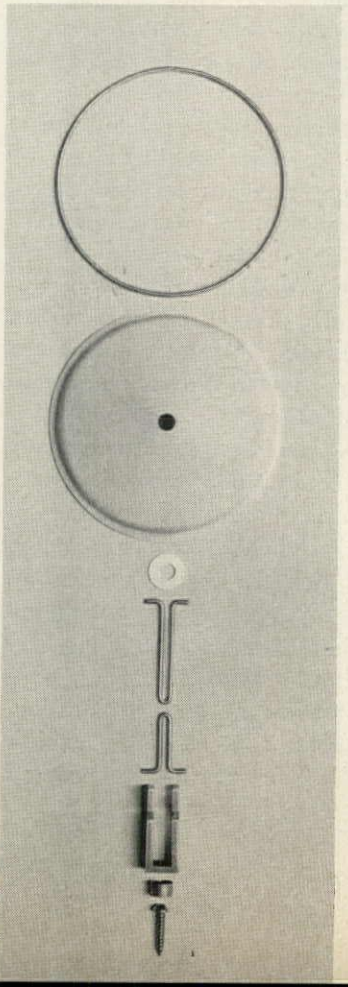
The reception given the American exhibition is described by Jack Larsen as "phenomenal," and unbiased observers agree (some are Americans, to be sure, but are otherwise unconnected with the show). One returning architect says it is the best of all the national exhibits. And enthusiasm comes from Milanese and other visitors, as well as professionals.

The U.S. exhibit is undeniably an outstanding performance, but it also stands out from the other nations because of its totally different treatment. The international section is a series of sophisticated and subjective art experiences—with mazes, mirrors, mirages, three-dimensional pop art. The largest part of the show is handled by the Italians themselves, and is dark, cavernous, noisy. Many exhibits have no "products" at all. By contrast, the U.S. exhibit is a show-stopper—"white, brilliant, clean, ordered, full of things to look at, delightful," says Larsen.

This group, which assembled the American exhibit and obtained funds from individuals and foundations to make it possible, has given U.S. designers a chance to join their colleagues from around the world "in a joint cultural enterprise where size and power count for less than creative vitality." P/A salutes the Committee and all responsible for this work. We hope they will receive full recognition when the *Triennale* announces its highly-prized awards later this month. —EP



The fabric is tensioned by connectors at the edges and at interior points. Connectors hold the fabric by interlocking friction parts, requiring no holes in the fabric and allowing adjustment of tension points; connector parts are of plastic sheet, with stainless-steel hooks, and aluminum channel clips. Walls of the exhibit are white glossy vinyl over 10-in. plywood planks. The baffled joint between vertical planks provides natural ventilation from exterior windows behind. Assistant Designer was Donald Davidson.



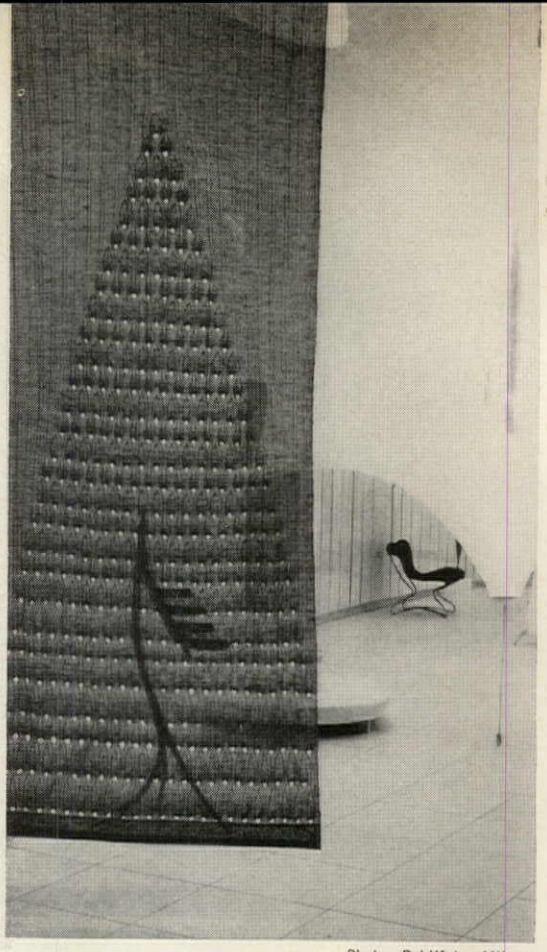


Photo: Publifoto, Milano

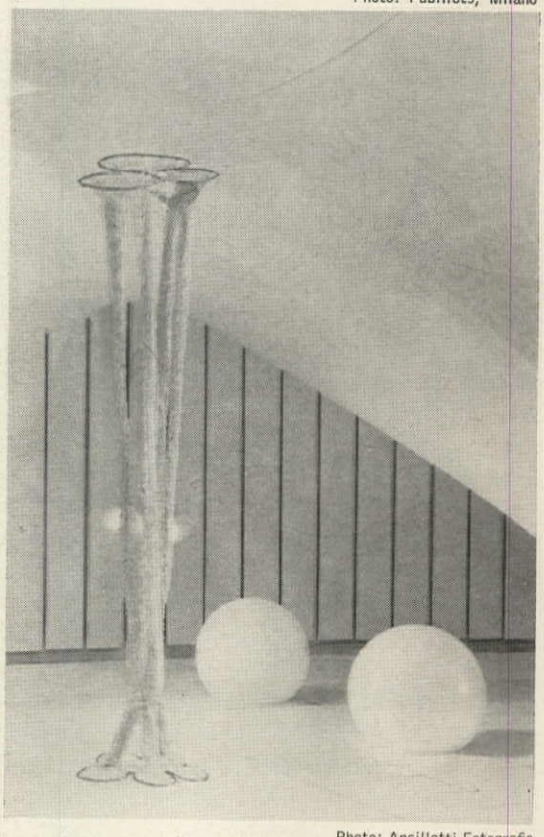
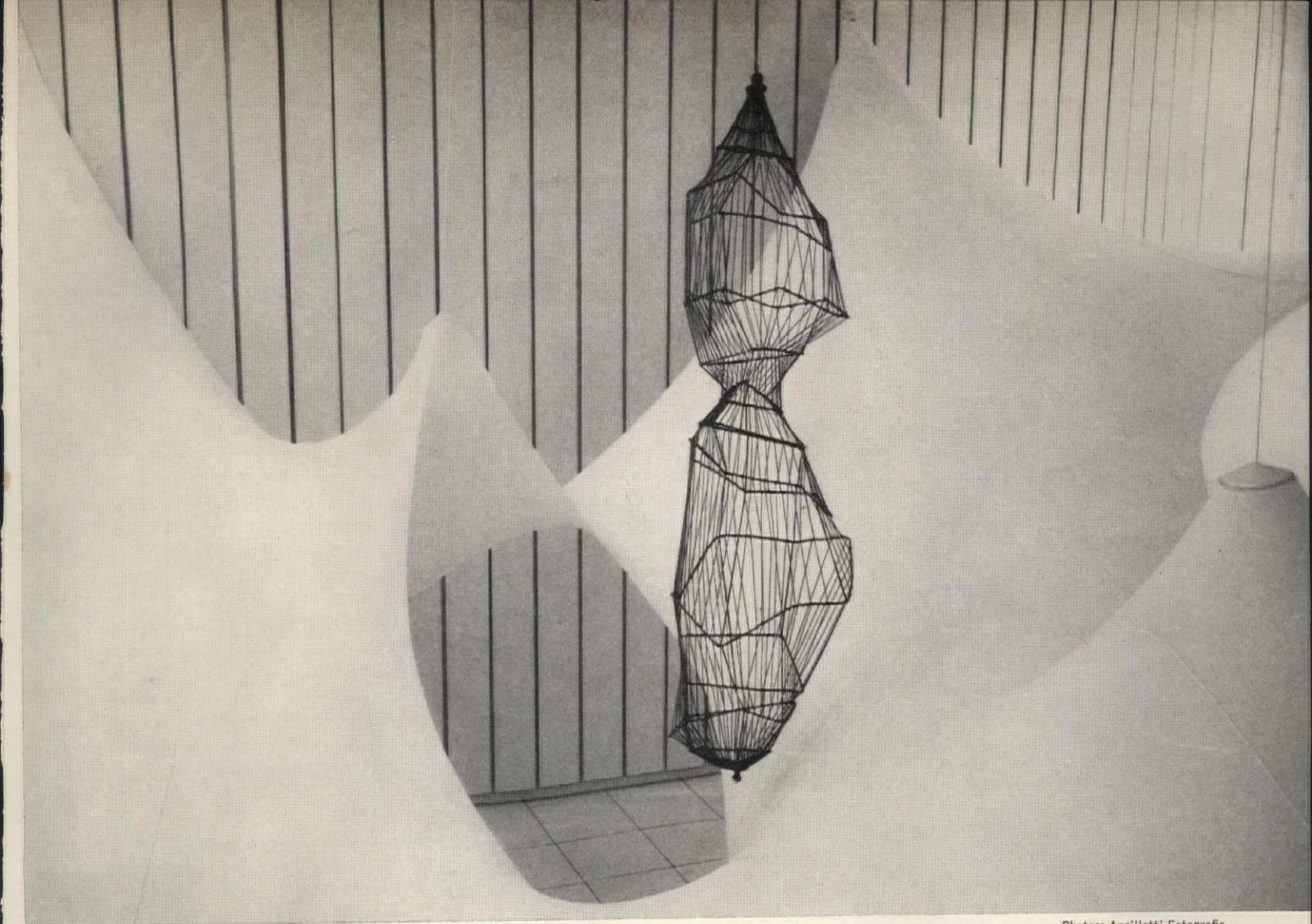
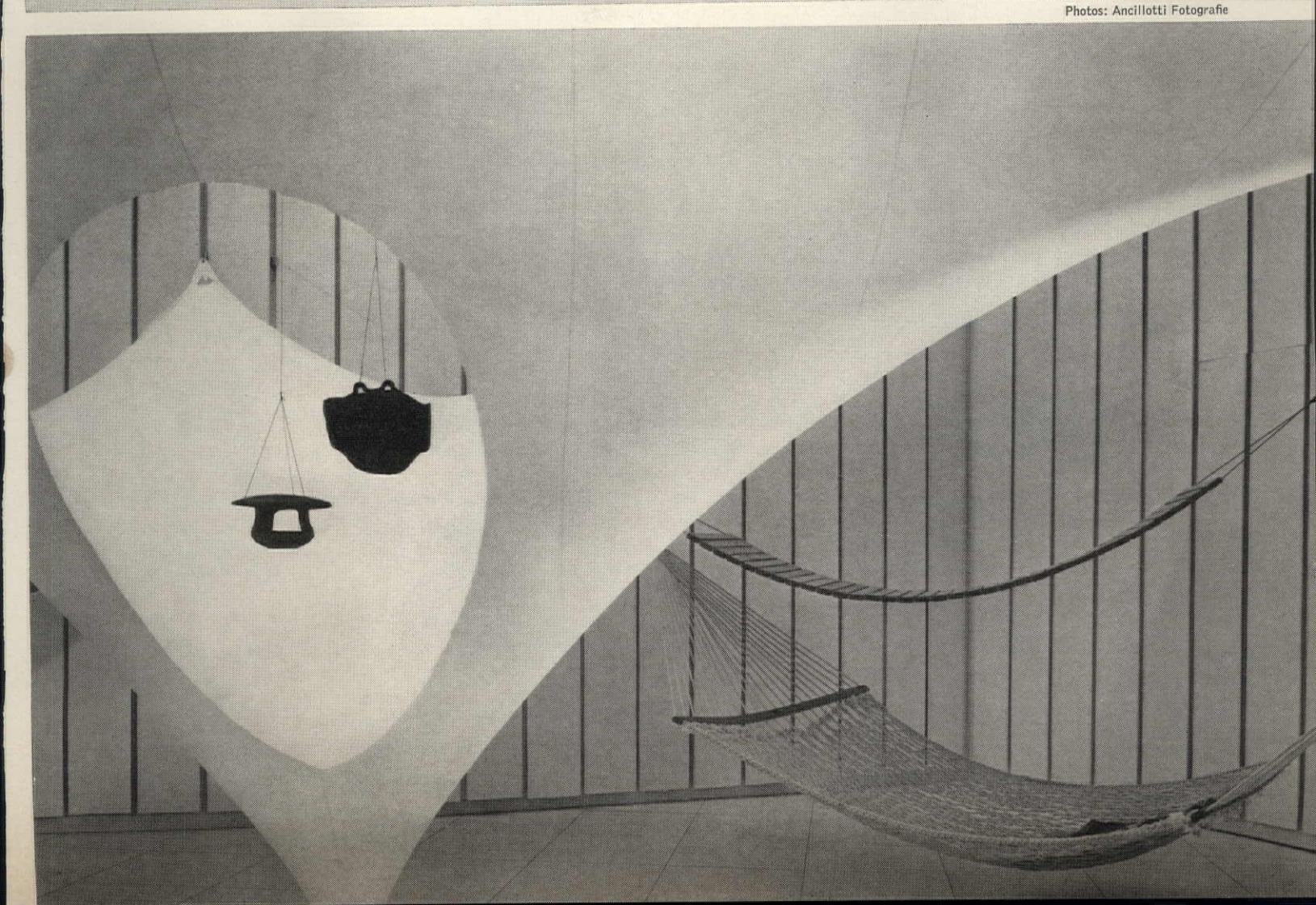


Photo: Ancillotti Fotografie

Selections of the entries were made on the basis of their exploratory approach to the design of objects for leisure. Among the items are a hand-knit chair cover by Mary Walker Phillips, which eliminates many of the cutting and sewing processes of standard upholstery; plastic seating spheres by Paul Mayen, which are adaptable to the rough forms of the outdoors (perhaps more so than to the human form); and many interesting fabrics—of unusual weave or fiber, for utilitarian or sculptural purpose.



Photos: Ancillotti Fotografie



Medical Facilities

BY WILLIAM J. McGUINNESS

Interrelationship of mechanical and electrical services in a modern medical center is discussed by a practicing mechanical engineer.

The Downstate Medical Center, which is part of the State University of New York adjacent to Kings County Hospital in Brooklyn, is a rapidly expanding campus on a site long established as a center for medical research, practice, and learning. The designers of this project are The Office of Max O. Urbahn; the engineers for the mechanical and electrical services are Seelye, Stevenson, Value and Knecht; and the structural engineers are Di Stasio and Van Buren.

A University Teaching Hospital Building and two dormitories (all nearing completion), and a proposed recreation building will supplement the existing 1958 Basic Sciences Building for teaching and research to augment a medical complex that relates to the activities of Kings County Hospital.

The interrelationship of the mechanical services of the buildings—especially the two medical buildings, the existing Basic Sciences Building, and the Teaching Hospital—affords an opportunity to review this well-planned expansion and to consider some of the systems and methods evolving in the design of modern medical facilities.

Function. The teaching Hospital Building will unify the activities of teaching and research, including examination, treatment, and care of patients. These will be selected as cases posing difficult problems and requiring the greatest skill in treatment.

The building is divided into two units: one is a long, narrow structure of eight stories and basement, mechanical subbasement, and mechanical penthouse. The second is an attached auxiliary unit which is square, has three stories, and includes a basement with mechanical subbasement and some equipment rooms on the third story.

A convenient division of function characterizes the two components. The low, square element nearer the street affords reception, administration, and examination on the first floor with surgery, obstetrical deliveries, and other "medical action" on the two uper stories.

The connected eight-story element, in its more seculded position, includes, on almost every floor, space for patient care, seminars, teaching, laboratories, faculty offices, and animal quarters.

Power and Equipment Centers. The 1958 power center in the Basic Sciences Building is now increased by two boilers adder to the original three. This center will supply five or more buildings. Steam pressure is 150 psig, reduced to 100 for power equipment, 40 for cooking and sterilizing, and 15 for heating. Boilers are equipped for both oil and gas. Additional network transformers make this building the location from which electrical distribution originates.

Atop the eight-story section of the Teaching Hospital Building, the louvered penthouse, which houses fans and cooling towers, is 20′ high. Other stories are about 12′ floor to floor. Finished height in each story is 8′-6″ in rooms and 8′ in corridors, allowing 3′-6″ above rooms and 4′-0″ above corridors for horizontal ducts and conduits and for the floor structure of the story above.

Climate. Full air conditioning including cooling is provided only in operating suites, delivery rooms, and in animal research centers. All sections of the building are separately ventilated and controlled by circulated and outdoor air.

Electric. Primary voltage of 29,000-v is transformed by six 1000-kva network transformers to 120/208-v for lighting and receptacles. Some power is stepped-up to 480-v for use in machinery. Much of the transmission is by bus duct. There are 17 motor control centers, all of which are tied-back to the Data Logging Control Center. An automatic-start, 1250-kw steam-turbine-driven emergency generator provides about one-fifth of the total demand, enough to power essential services. A 7½-kw battery-powered inverter-diverter set assures an uninterrupted flow of alternating current to devices essential for patient survival.

Water Service. Treatment is provided only for boilers and air conditioning. Piping for both hot and cold water is brass or Type B copper tubing. Hot-water tanks are cement-lined. There is no roof-storage tank for water, pressure being maintained by pumps and controls. Domestic water and water used for fire standpipes and sprinklers are received in separate mains.

Drainage. Acid drains are of Pyrex glass. The fluids are lime-neutralized before discharge to the sewer. Storm and sanitary drainage are separate within the building. Master grease traps monitor all kitchen wastes.

Communication. A sound system is available for music and paging. Major operating rooms have closed-circuit TV and in-patient rooms have a master television antenna system for sets. Transmission of documents, X-rays, and money is facilitated by a pneumatic tube system. Oval tubes are 4″ x 7″ in dimension with 2″ acoustical covering and spring-isolated suspension.

Special Services and Access. Oxygen, nitrous oxide, vacuum and compressed air are widely distributed by integral piping. Warmed and chilled water serve hypothermia units in operating rooms. Garbage and refuse are processed by the Somat system in which the solids are shredded, flooded, and compressed. Fluids are then expelled to the sewer and the greatly reduced bulk of solids trucked away. Incineration is thus eliminated. Access to above-ceiling piping, ducts, and conduits is possible at almost all locations through acoustical panels that lift out.

Control. A Digital Data Logging Control Center in the sub-basement provides, by its electric-pneumatic operation, a nerve center for the control of all vital services. It records the performance of the systems it controls.

General. The cost of the mechanical and electrical installation, not including X-ray and other medical equipment, represents almost exactly 50 per cent of the total cost of the work.

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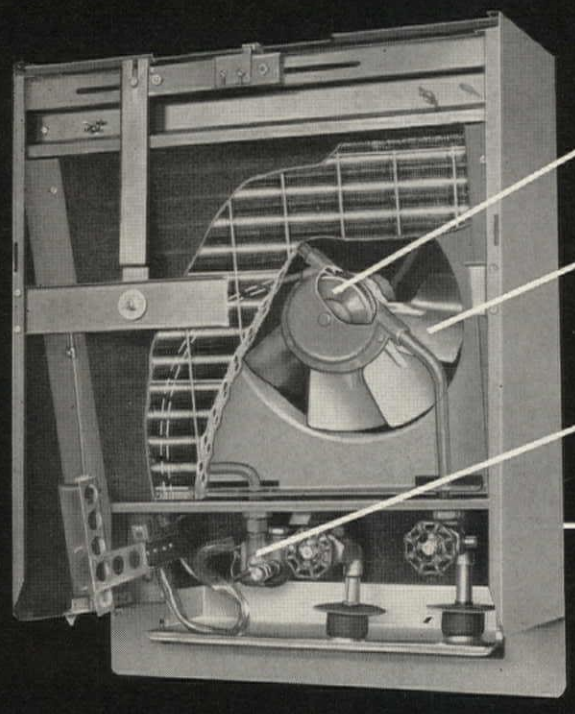

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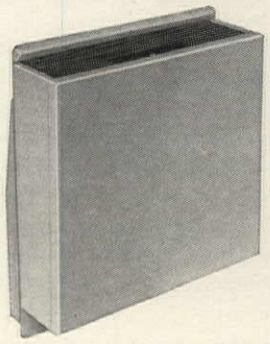

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Defining the Technical Section

BY HAROLD J. ROSEN

An analysis of the "trade" section of the specifications and an explanation of how it gained its present character is offered by the Chief Specifications Writer of Kelly & Gruzen, Architects-Engineers.

Some misunderstanding has arisen with respect to the use of the word "trade" as it relates to the technical sections of the specifications.

The drawings generally show all the work that is to be constructed. The only attempt made on the drawings at segregating the work of different "trades" is in the preparation of separate drawings for plumbing, heating, and electrical work. When a specification is written, the specifier attempts to segregate, under the various technical or "trade" sections of the specifications, a unit of work that a contractor may let to a subcontractor; or a unit of work that a material man may supply for another to install; or a unit of work that combines several subcontractors so that a single responsibility is established for this portion of the work; or a unit of work that is performed by a single union jurisdiction.

The misunderstanding arises both from the dictionary definition of the word "trade" and from the failure to recognize that the so-called "trade" section of the specifications can be as restrictive or as all-inclusive as previously described.

The dictionary defines trade as: "(1) The business one practices or the work in which one engages regularly; occupation; means of livelihood. (2) A pursuit requiring manual or mechanical training and dexterity; a craft. (3) Those engaged in a business or industry." The word trade can therefore mean a craft, such as carpentry, brick laying, or plumbing; or it can mean a business, such as a concrete subcontractor or a plumbing and heating subcontractor.

The Tower of Babel illustrates the first construction job that failed because of a lack of communication. The current hubbub concerning the use of the new CSI format for building specifications likewise stems from a misconception of the term "trade" when applied to the technical or "trade" section of the specifications.

In 1860, a "Handbook of Specifications" written by a T. L. Donaldson of London, England, provided for the arrangement of specifications on a craft basis. The specifications were divided into two main general divisions and with subdivisions as follows:

Carcase	*Finishing*
Excavator	Joiner
Bricklayer	Plasterer
Mason	Plumber
Slater	Painter
Founder and Smith	Glazier
Carpenter	Paperhanger
	Ironmonger
	Smith and Bellhanger
	Gasfitter

The limited availability of materials, (it being restricted to nature's materials such as wood, stone, slate; and the early manufactured items such as cement, glass, iron pipe, plaster, and paper) created the crafts that in turn were used to designate the sections of the specifications. As materials and methods of construction gained a degree of sophistication, the specifications sections began to change with the times and took on additional crafts within one section of the specifications. In lieu of the general contractor hiring specific crafts for each unit of work, he sublets portions of the work to subcontractors who hired the several crafts to perform certain parts of the work.

Specifications written for buildings toward the end of the 19th Century consisted generally of three main sections—Masonry, Carpentry, and Mechanical Work, with various allied or related subjects under each section. The Masonry section included excavation, brickwork, stonework, steel columns and lintels, tilework, and waterproofing. The Carpentry section included roofing, glazing, and painting as well as carpentry. The Mechanical or pipe trades consisted of plumbing, gas, and heating work.

Today, under the specifications section entitled Concrete Work, the concrete subcontractor employs carpenters for formwork, lathers or ironworkers for reinforcement, concrete laborers for placing concrete, and cement masons for finishing. Heating subcontractors utilize steam fitters, insulation workers, sheetmetal workers, welders, and painters. A specialty subcontractor such as a walk-in refrigerator constructor utilizes carpenters, plasterers, tile setters, and refrigeration mechanics.

For convenience in writing, for speed in estimating, for ease of reference, and for responsibility of an over-all operation such as curtain-walls or integrated ceilings, it is necessary to organize the specifications in a series of sections dealing successively with units of work.

The term "trade" sections is becoming a misnomer. A technical section may in some instances be that of a single craft such as the section on Painting or Tile Work; a section concerned only with finishing an item such as a section on Finish Hardware or Wood Doors; a combination of subcontractors as the section for Curtain Walls or Integrated Ceilings; a single subcontractor utilizing several crafts in a section such as Concrete or Heating; or a finished product described in the section, Movable Metal Partitions or Gymnasium Equipment.

The technical section can best be described as a unit of work rather than a "trade" jurisdiction. The specifier cannot settle trade practices. The National Joint Board for Settlement of Jurisdictional Disputes has been established for this purpose.

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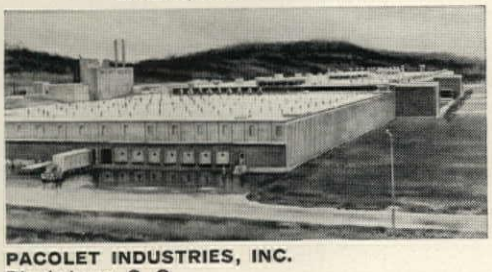

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Default in Performance

BY BERNARD TOMSON AND NORMAN COPLAN

P/A's legal team discusses the importance to owner and architect of obtaining legal guidance should a contractor default in performance.

The owner of a project under construction may be faced with many problems if his general contractor should default in performance. If, for example, he utilizes the moneys which have not as yet been expended under the original construction contract to complete the project through another contractor, he may become involved with claims against his property by subcontractors or materialmen of the original contractor who have not been paid. Such a situation was recently considered by a New York court in an action instituted by a subcontractor to foreclose a mechanic's lien against the property of the owner (*Abe Schild Stone Corp. v. Apostle*, 246 N.Y.S. 2d 446.)

The principal issue for determination by the Court in the Stone case was whether there was a fund available consisting of moneys due and unpaid under the original construction contract against which a subcontractor could perfect a lien. The facts as found by the Court were that the general contractor, after undertaking a contract that apparently was unprofitable, had abandoned the project without just cause. The owner then undertook to complete the improvement through another contractor. The total original contract price for the work was approximately $54,000. The owner had paid to the original contractor sums totaling approximately $17,000. In order to expedite the work, he had also paid directly to various subcontractors and materialmen the approximate sum of $13,000 prior to the abandonment and with the general contractor's authorization. At the time of abandonment, there was the sum of approximately $24,000 remaining payable under the original construction contract, and the owner expended a substantially larger sum than such balance to complete the work. It was the owner's contention, therefore, that an unpaid subcontractor had no lien rights against the property and that there was no fund available against which any claimed lien could be perfected.

On the other hand, it was the subcontractor's position that the moneys that had been paid directly to subcontractors and materialmen should not be considered as payments to the general contractor so as to preclude the foreclosure of a lien by unpaid subcontractors; that the moneys spent by the owner to complete the contract were excessive and unreasonable; and that a portion of the work uncompleted under the original contract had not been completed, nor paid for by the owner, as of the time of the filing of liens, and therefore, should not be deemed an expenditure by the owner, which would preclude the foreclosure of the lien.

The Court, in concluding that the action of the subcontractor to foreclose his lien must be dismissed, first stated the general rule of owner's liability in respect to unpaid subcontractors as follows:

"The basic rule as to an owner's liability for mechanics' liens is that, except in cases of fraud or collusion or evasion of the provisions of the Lien Law, an owner cannot be compelled to pay any greater sum for the completion of a building than by his contract he has agreed to pay.

"Thus, where the general contractor abandons or otherwise breaches his contract, and the owner assumes completion himself under the contract, the fund, if any, available to lienors consists of the contract price plus agreed extras, if any, less what the owner has already paid for the improvement, against which is credited the actual cost of completion by the owner, provided same is fair and reasonable."

In rejecting the contention of the subcontractor that a portion of the moneys expended by the owner had been direct payments to some materialmen and subcontractors to the prejudice of the lienor and in violation of the Lien Law of New York, the Court pointed out that the mere fact that payments had been advanced to some subcontractors is not enough to debar the owner from claiming credit therefor. The Court said:

"Advance payments made in good faith to expedite the work or because the contractor is in financial difficulties or for other legitimate reasons may be credited to the owner....

"The evidence discloses that all of the questioned payments were made prior to the filing of any notice of mechanics' lien and were given in good faith under the exigencies of the situation in payment of actual work done and materials furnished."

The Court also found that the owner was entitled to credit for moneys which the owner had not as yet expended to complete the project at the time the lien was filed, but which he would be required to expend. In this respect, the Court said:

"Although there is some confusing language in various decisions regarding the owner's right to recover for unfinished work. . . . there is no reason for distinguishing between the actual cost necessarily expended by the owner in completing the job and the reasonable cost of the uncompleted work, except in the nature of the proof and the kind of testimony to be required by the court."

The Court further ruled that, in determining whether a lien could be asserted, the reasonable cost to the owner of completion, as distinguished from the actual expenditure, was determinative. The Court found that the reasonable cost of completion exceeded the unpaid balance of the fee under the original contract, and thus dismissed the subcontractor's action.

The disintegration of normal contractual relationships attendant upon a contractor's default should dictate to both owner and architect the importance of legal guidance before any action is taken to salvage the situation.

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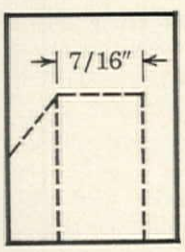

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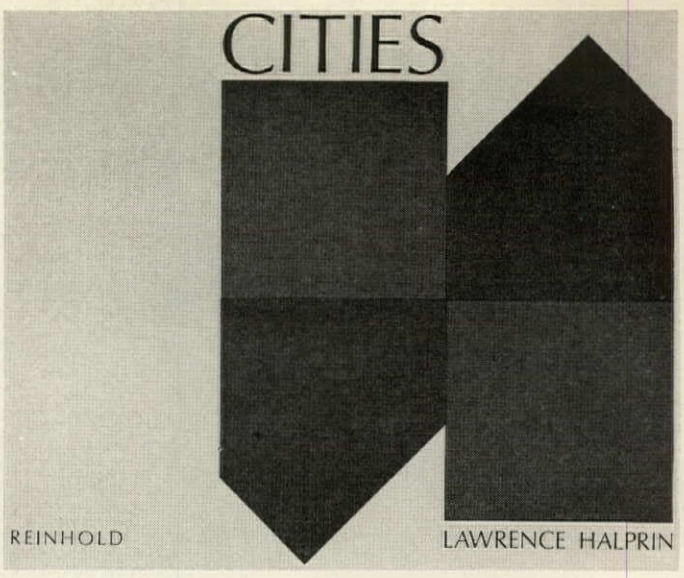

The search for Form . . . and Fun

BY WOLF VON ECKARDT

CITIES *by Lawrence Halprin. Published by Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y. (1963, 224 pp., illus. $15). Reviewer is a free-lance architectural critic who contributes to various national publications, and writes a regular column on urban design for* The Washington Post.

There are, of course, many reasons why our cities are in the throes of death by accelerating rot. A very important one is that they have, more often than not, ceased to be fun.

Fun is not merely what is good for you. It is enjoyable experience and enjoyable activity. It invites and provokes your creative participation and involvement such as the experience, one cold and foggy winter day in Venice, Lawrence Halprin tells us about in the prologue to his wonderful book.

The top of the Campanile on San Marco, Halprin writes, "barely showed sunlit above the low hanging sea mist. The tide was in, and the black and white stones of the intricately laid pavement were covered with a thin film of water. There was no sound—no automobile exhausts, no buses. Absolute quiet in the heart of a great city. In the distance you could faintly hear some young people singing.

"All of a sudden the air became dark with birds, the square filled with the beating of thousands of wings, the noise increased and increased until it was deafening, and the deserted square became absolutely filled with pigeons. The noise was incredible—even frightening. They had come to feed, and when they had finished, they left just as quickly, and the great square was empty and quiet again."

We probably need all the ponderous treatises about the urban problem with their endless statistics wrapped in sociologese. And the give-'em-hell-and-junkyard-picture sermons are undoubtedly uplifting the souls of the faithful. But neither will save the city. Nor will the Master-builders with their *Villes Radieuse* and Dynopoles who always start from scratch on some virginal plateau or at least a square mile of bulldozed desert.

But what we have needed even more is a book such as Halprin has written. He shows us what makes the existing city livable, how to attract the pigeons and make the young people sing on a cold and foggy winter day.

With sensitive curiosity and mostly his own perceptive camera, he has compiled examples from all over the world and many different times, including some which are not carefully or even particularly tastefully designed, to present some of the elements which give character and life to a city.

Halprin's approach to urban design starts with the city's indigenous character, its natural topography and views, its particularly unique features, its people and its cultural heritage. He is a landscape architect and, I suspect, abhors the bulldozer, preferring to approach the cityscape much as he would a garden that has grown wild with weeds and abuse—with pruning shears, a judiciously wielded spade, and tender loving care.

He sees the city as a continuum, relating both to our past and our future. Its purpose, he says, is to offer us freedom of choice. We must be able to take or leave those pigeons and make our getaway from their sudden, noisy charge to some nearby, quick and quiet brandy.

A good city is not only the aseptic good taste of a housing project or a downtown center. It is, says Halprin, the opportunity "to participate in elegant, carefully designed art and spontaneous, nondesigned elements juxtaposed into what might be called a folk idiom, a series of unplanned relationships—a mixture of what is considered beautiful and what is considered ugly."

To begin with, he presents truly urban spaces and it is significant that the opening picture of San Marco does not show the buildings, the relationship of the Campanile to the Duomo, say, but the people who crisscross the square and who loiter there and who mingle with the pigeons. He shows us other historic prototypes of squares and plazas and parks and parklets, some magnificent and some humble. And always he shows up the way they serve different kinds of human needs. "We need," Halprin says, "to capture in our own modern terms, the simple, logical, and ecologically sound interrelationships which these ancient spaces perform so well."

Next there are marvellous pictures of streets and how they can be full of mystery and adventure or broad and brassy overtures to some great event like the Etoile with its Arc de Triomphe. (The Champs-Elysées, by the way, was not "driven straight through the heart of Paris by Baron Haussmann," as Halprin asserts. It was laid out some 200 years before the Baron was born and assumed its present form some 30 years before he became Louis Napoleon's prefect.) Halprin regrets the absence of sidewalk cafés in America. He will be cheered to

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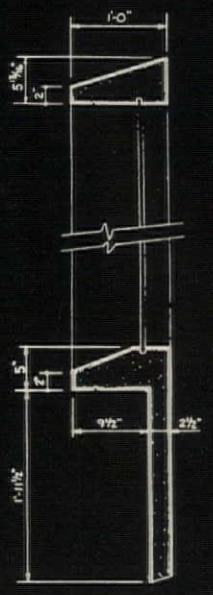

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was licensed in Washington against much opposition (the Daughters of the American Revolution protested that it would encourage prostitution). This summer there will be more than twenty outdoor cafés to prove that at least in the nation's capital, we are becoming more sophisticated.

I, in turn, regret that Halprin's sequence on waterfronts and urban motorways is so brief. Just as we seem at last to be discovering sidewalk cafés, we are also beginning to discover our waterfronts. Halprin's deals with the automobile, of course. "Ultimately," he says, "we will have to come to grips with the notion that cars cannot come into the city, or by sheer numbers they will destroy the that happens, until we find ways of making mass transit-riding an enjoyable adventure like the cable cars in San Francisco or the monorail at Seattle, we must tame the downtown freeways and make them urban. Halprin offers but one sketch illustrating how this might be done. We will need more imaginative proposals to persuade our stubborn city highway departments that "amenities in a city must have priority over the automobile at whatever cost to mobility."

These amenities, however, Halprin shows us in abundance. There are many examples of how to bring nature into the city with large and small gardens and parks and the ever-refreshing play of water in all its forms. There is all manner of street furniture. The pictures of lamp fixtures in Florence and Copenhagen show us how dismally drab most of our modern fixtures are. There is much inspiration in the pictures of benches, not only in their form but also the way they are placed. And there are numerous kiosks in all shapes and for all uses including the justly famous Paris pissoir. Halprin shows us clocks and doors and pavements and bollards and a number of different ways of treating the base of sidewalk trees.

As I look out on my street, one of the most charming in Washington, contemplating these pictures and Halprin's lucid text, I realize again how much we are missing with our indifference toward the urban environment. It is a crying shame that the capital of the nation cannot even keep its sidewalks in decent repair, let alone install imaginatively designed ones.

Will anyone listen? One should think that Halprin's quiet persuasion may have greater effect on our planners and officials than the laments and utopias. For he shows us elements of urban design which, for the most part, are available without cataclysmic renewal and huge expenditures. He shows us streets that beckon the stroller or shopper, plazas that guide the choreography of the city, benches we will want to sit on, pavements we will want to walk, fountains that invite our coins and the play of children and laughter of lovers. Make the city fun again and the rest will follow.

Form, says Halprin, is not the result of preconceived order. We do not, he admits, have any clear picture or concept of what the ideal city of our time ought to be. Nor does he offer any dramatic new visions. "The form evolves as

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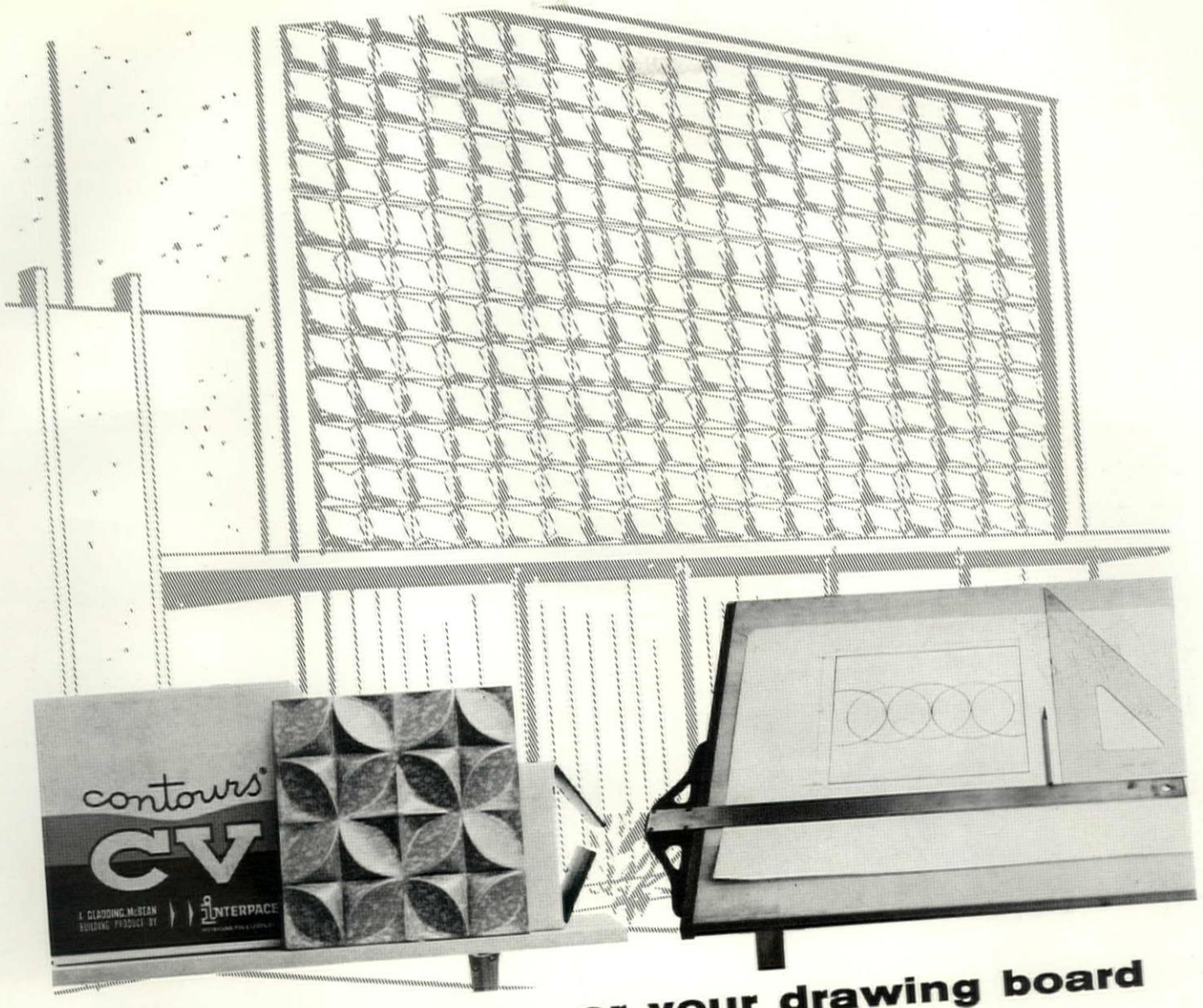

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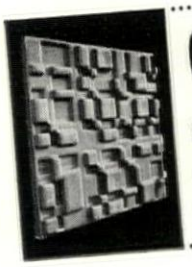

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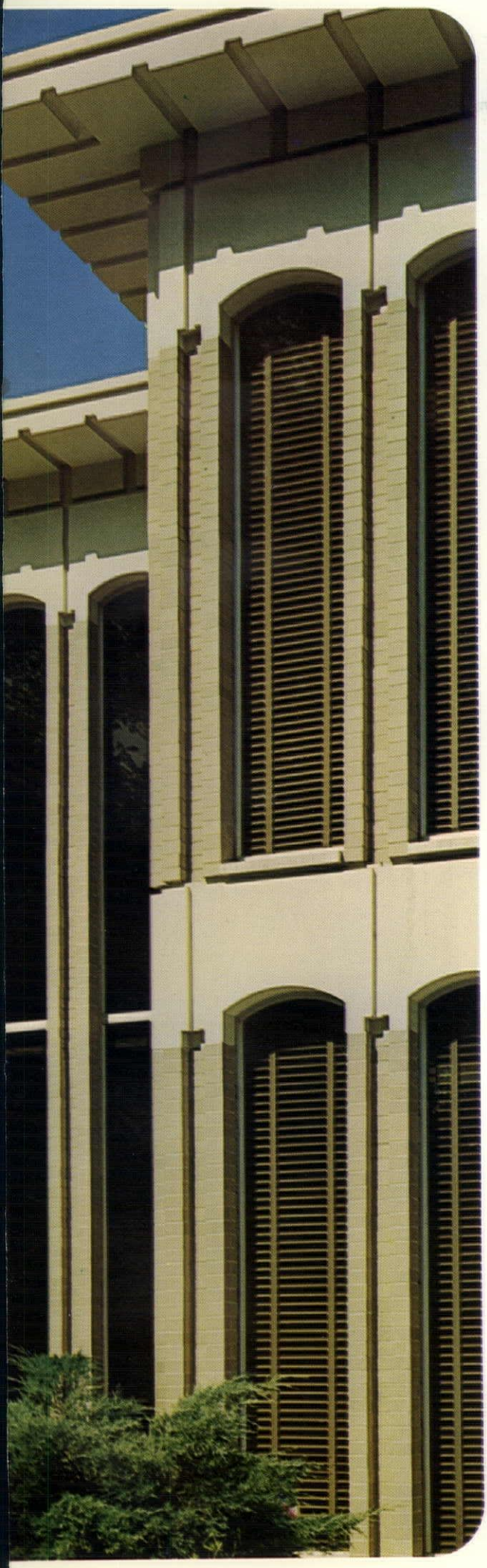

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Continued from page 244

to Cullen, both in point of view and in techniques used, then takes the subject several steps forward. Confining his activity to that area of Italy north of Rome where the concentration of examples of urban wisdom is probably the most dense in the world, he expands the Cullen vocabularly with perception, pleasure, and anger mixed with humor. He introduces townscaping as "the art of humanizing high densities after the engineers have made them hygienically possible," and later relates it to the role played by the eye, which should dictate to the reason and prime the imagination. There is no question of town versus surburbia or open country living. The fact that congestion offers the only hope for civilized life is not considered debatable. The law of gravitation rules, and, having accepted it, he prompts us to learn to do the job properly by first learning to see.

That a book about seeing should be loaded with photographs — about four hundred and fifty by Ivy de Wolfe — should surprise no one. But there are no photographs of pigeons swarming when the clock strikes twelve in the Piazza de San Marco. Instead, these are incisive, almost artless shots, taken as if by the writer's own eye and not for photography's sake. The inelegant has not been edited out: laundry hangs on the clotheslines and Lambrettas speed across the foreground.

In this partisan argument, the primary target is the "artless planner" and his "naïve thought sequence which identifies order with system and system with symmetry," the planner who remains steeped in the academic attitudes of the last century. It seems unfortunate that the author has chosen to call his own anti-grand-manner vision "picturesque." The word could easily mean quaint, accidental, unusual, or even just charming. Actually, he defines it as the art of building consciously, in terms of sequential experiences. The discussion of the elements used to create such experiences culminates in the study of Sabbioneta, a 16th-Century town which, according to the evidence he presents, was consciously planned and built with studied sequences of visual events such as blocked views, openings, closures, proper entrances into and exits from the streets and the squares.

Camillo Sitte, acknowledged as the first modern Critic of the City, wrote in terms of what might be called the "place." His observations on what makes successful spaces remain the fundamental stuff subsequently expanded by Gibberd in *Town Design* and to some extent by Kidder Smith in *Italy Builds*. Both acknowledge their debt to Sitte and to Giedeon, who in his *Space, Time and Architecture* started everybody moving into, out of, and through the town spaces. The camera became the obvious tool to record the critic's sequential impressions, and it is probably no coincidence that movie cameramen have been showing a similar interest in moving through the town spaces. These are some of the antecedents of both *Townscape* and its Italian sequel.

We are finally recognizing that towns cannot be just the three-dimensional expression of statistics or any other technique. Ivor de Wolfe's premise that they cannot exist as places for man's machines to live in seems fair to us. His point that good architecture often makes for bad townscape may be asking for a redefinition of what is good architecture, and possibly for an expansion of the old definitions to include townscape criteria. Lately this has been occurring; for people like Mr. de Wolfe, are, in their

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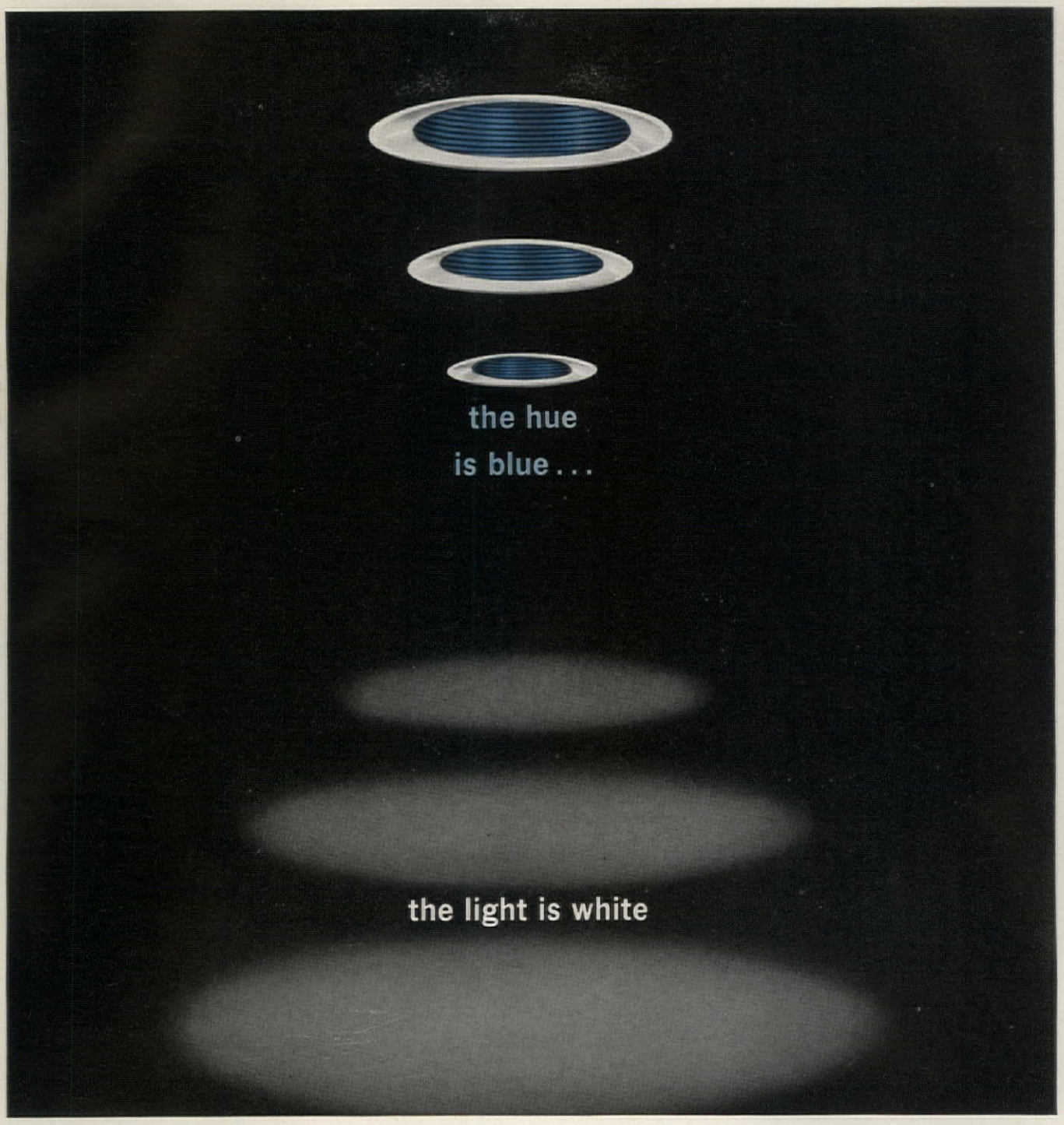

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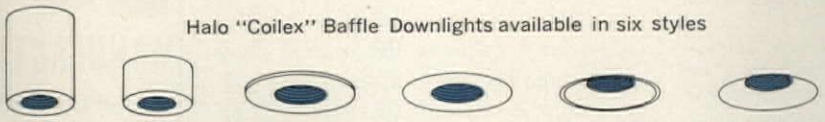

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works of this type ignore. Throughout, Boyd tries to relate his subject matter to the broader aspects of Chinese life, and it is this that lifts his book above the level of a catalogue. One drawback, though, is that it forces him to be exceedingly brief in his comments on architecture and town planning. The architectural discussions are so abbreviated as to be almost telegraphic in style. One wishes that he had devoted more space to his historical comments, which are the most readable parts of the book.

The author is aware of his problems. He expresses this when he writes, "A very small book on a very large topic, the architecture of a subcontinent, must have drastic limitations." In spite of this, his book forms an excellent introduction to the topic. It is to be hoped that readers will not regard it as anything more.

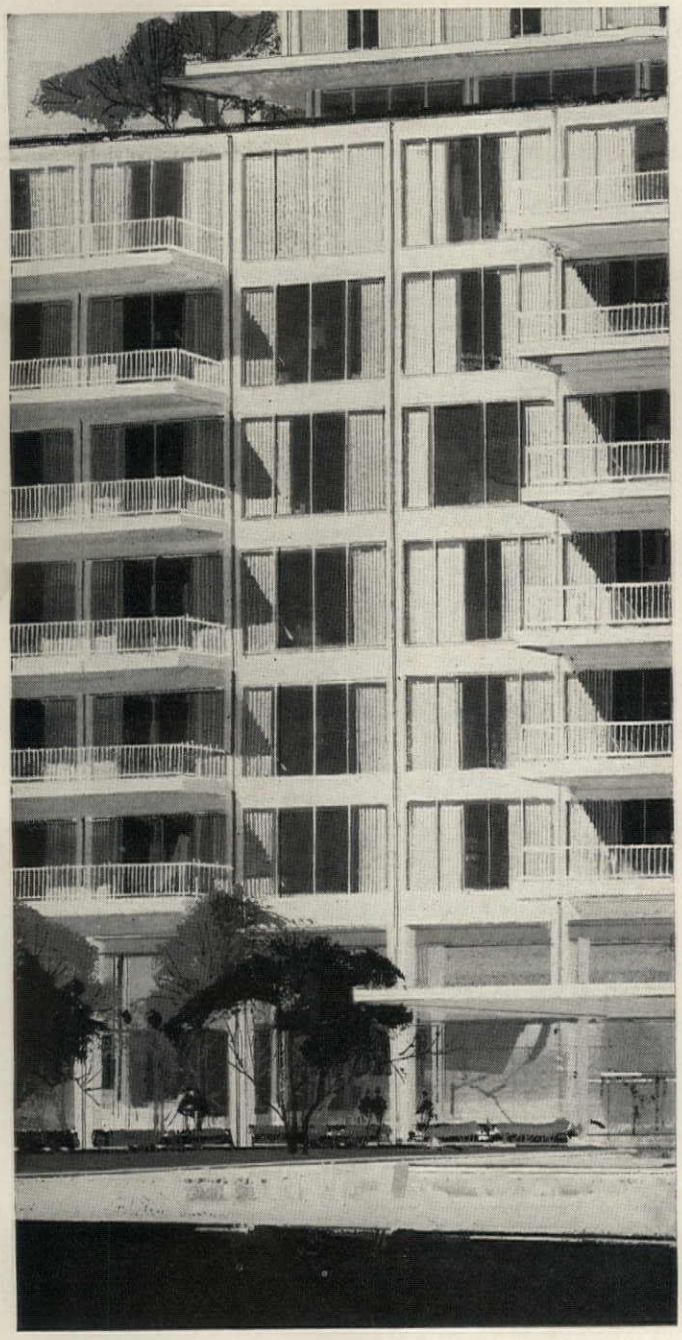
The book itself is handsomely printed, with a large number of excellent and sharp in-text drawings. Unfortunately, a separate photographic section of 158 photos fails to come up to the same standard. The photographs tend to be mediocre in composition and, at times, emerge as poor and fuzzy in reproduction. The problem of correlating the pictures with the text has been handled by placing the plate numbers in the margins. Although this helps, it stills entails flipping back and forth; one page of text sometimes has as many as 11 references to photographs. This reader wishes that a few color plates, indicating the role of color in Chinese architecture, had been included in this little book, which, nevertheless, is well worth its price.

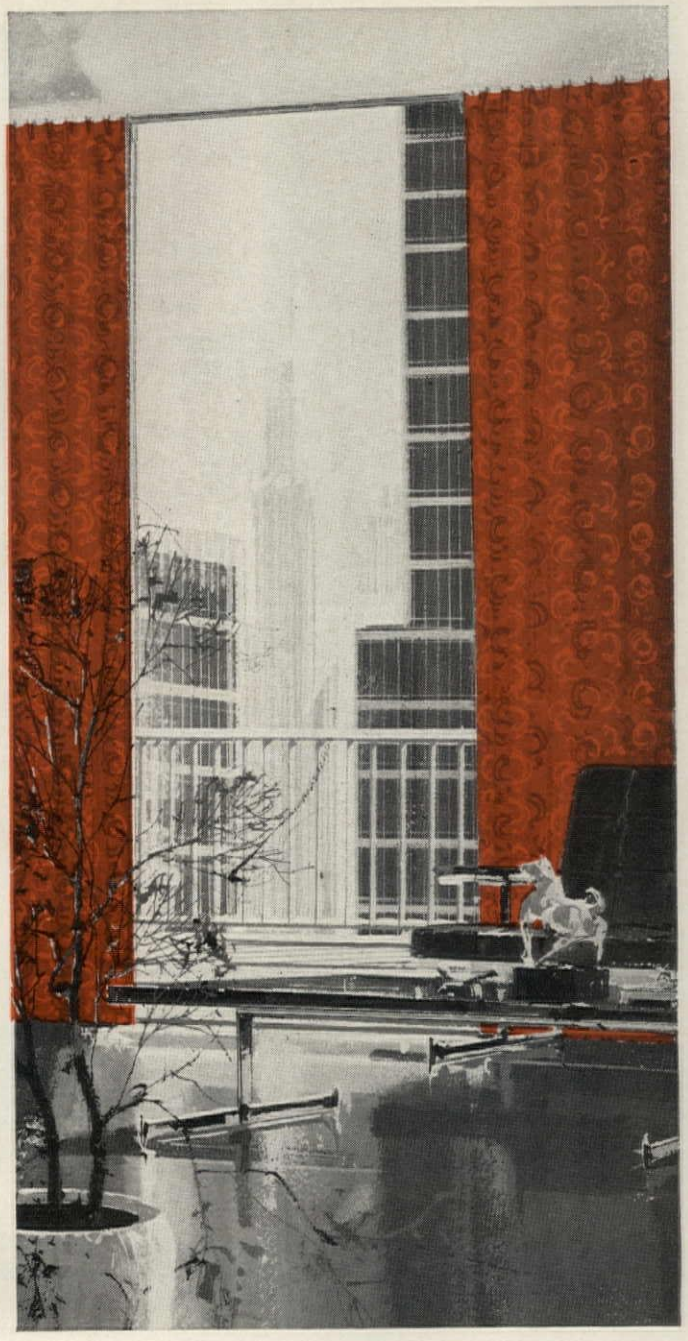
Unexpurgated and Unevaluated

BY WALTER K. VIVRETT

BUILDINGS FOR THE ELDERLY *by Noverre Musson and Helen Heusinkveld. Published by Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y. (1963, 216 pp., illus. $15). Reviewer is a Professor at the Institute of Technology and School of Architecture, University of Minnesota.*

What sort of housing is being proposed for old people? Fifty-five recent projects (residential and institutional) are presented in *Buildings for the Elderly*. This unexpurgated and unevaluated presentation should prove most useful as a where-to-look-for-it guide to the several kinds of housing. The projects shown are perhaps representative of the quality of architecture to be found in such housing: generally low. They are also reasonably representative of the "special" types of





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housing being built. (The book deals neither with standard housing, which most old people occupy, nor with such institutional facilities as nursing homes or hospitals. It does, however, include infirmaries and nursing wings of homes for the aged.)

Authors Musson and Heusinkveld state that their objective is "to stimulate new, gracious, and beautiful forms of architecture" that will interpret the emancipated living of senior citizens. Their intent is "to examine the kinds of residences for the mature years now available and popular, to take a look at the kinds of residences now being planned and built, and to evaluate current concepts."

The text, however, first considers: Who should build what? For whom? And how much will it cost? Then, in its major effort, it proceeds to tell how-to-do-it-yourself. The meat of the author's examination of housing and evaluation of concepts is presented in an almost incidental fashion. Except for the ideas contained in Chapters 10 and 11 ("Accommodations" and "Activities") and Chapters 14 and 15 ("Care" and "Supplementary Community Services"), what might have been a thesis is fragmented and hung loosely on the framework of how-to-do-it. With rare exception does the text make any reference to the 55 housing projects presented; never does it attempt to evaluate one.

The authors hide behind their desire to avoid "freezing" concepts. They pose as neutrals, for instance, in what they identify as the issue of segregation of the old versus integration with younger families. They thus gloss over the all-important concepts of the development of residential communities, of desirable levels of concentration of old people in housing, and of the way old people, both now and in the future, can participate in—and contribute to—social, civic, and cultural life.

As to space standards in housing, few would disagree with the authors' premise of not too big, and not too small. But how is this premise likely to be interpreted?

The bibliography is lacking in solid background material. Such a major work, for instance, as the *Handbook in Social Gerontology* (Clark Tibbitts, Editor; University of Chicago Press, 1958) would seem indispensable for reference in a variety of fields related to housing. Some works cited in the text are omitted from the bibliography. Pamphlets appear to be listed without regard to their availability or, in many cases, their pertinency.

Nonetheless, the bookshelf on housing for old people is small, and *Buildings for the Elderly* is a welcome addition. How-to-do-it books sometimes have greater effect than more academic varieties. A picture is sometimes worth ever so many words. May this first work of authors Musson and Heusinkveld lead to subsequent ones—works that will be evaluative and inspirational.

OTHER BOOKS TO BE NOTED

Carports and Garages. Sunset Books. Lane Book Co., Menlo Park, Calif., 1964. 80 pp., illus. $1.95 (paperbound)

Numerous suggestions and guidelines for incorporating carports and garages into existing or new homes. Ideas are included on style, construction, materials, techniques, remodeling, landscaping, and treatment of the driveway. All ideas are well illustrated with photos and diagrams.

A Housing Manifesto. John H. Haas. Workshop 221, Inc., 1522 Connecticut Ave., N.W., Washington 6, D.C. 95 pp. $2 (paperbound)

A severe criticism of current housing and national housing programs. The author makes several indictments and recommends changes in method on the part of private interests, URA, and FHA.

Light Cladding of Buildings. R. Michael Rostron. The Architectural Press, 9-13 Queen Anne's Gate, London S.W. 1, England, 1964. 224 pp., illus. 42s

A summary of available knowledge on light cladding, and detailed guidance on technical design. Main topics are: performance, materials and finishes, assembly, and maintenance. Author is a practicing architect who travelled extensively in Britain and the U.S. during the preparation of this book.

Planning for Man and Motor. Paul Ritter. Pergamon Press Ltd., England. Distributed by The Macmillan Co., 60 Fifth Ave., New York 11, N.Y., 1964. 384 pp., illus. $15

To be reviewed.

Realms of Gold. Leonard Cottrell. New York Graphic Society, Greenwich, Conn., 1963. 278 pp., illus. $5.95

The fascinating and unfinished search for the origins of a lost world. Cottrell suggests that the problem is "to find some rational relationship between the potsherds and the poems, between the megara and the myths." It was only recently proven (in 1952, with Michael Ventris' decipherment of the Linear B tablets) that the Myceneans were Greek-speaking. Even before this, though, A.J.B. Wace had argued that the glories of classical Greece did not arise miraculously in the 8th Century B.C. but were developing for a thousand years in an earlier Greek civilization, elements of which are still preserved in Homer. This was in opposition to Sir Arthur Evans, who had said that Mycenae was only an offshoot of the much older civilization of Crete, which he had discovered. Knossos was destroyed about 1400 B.C., perhaps by Mycenean conquest, but most probably by earthquake. Myceneans were not the cause but

Continued on page 288

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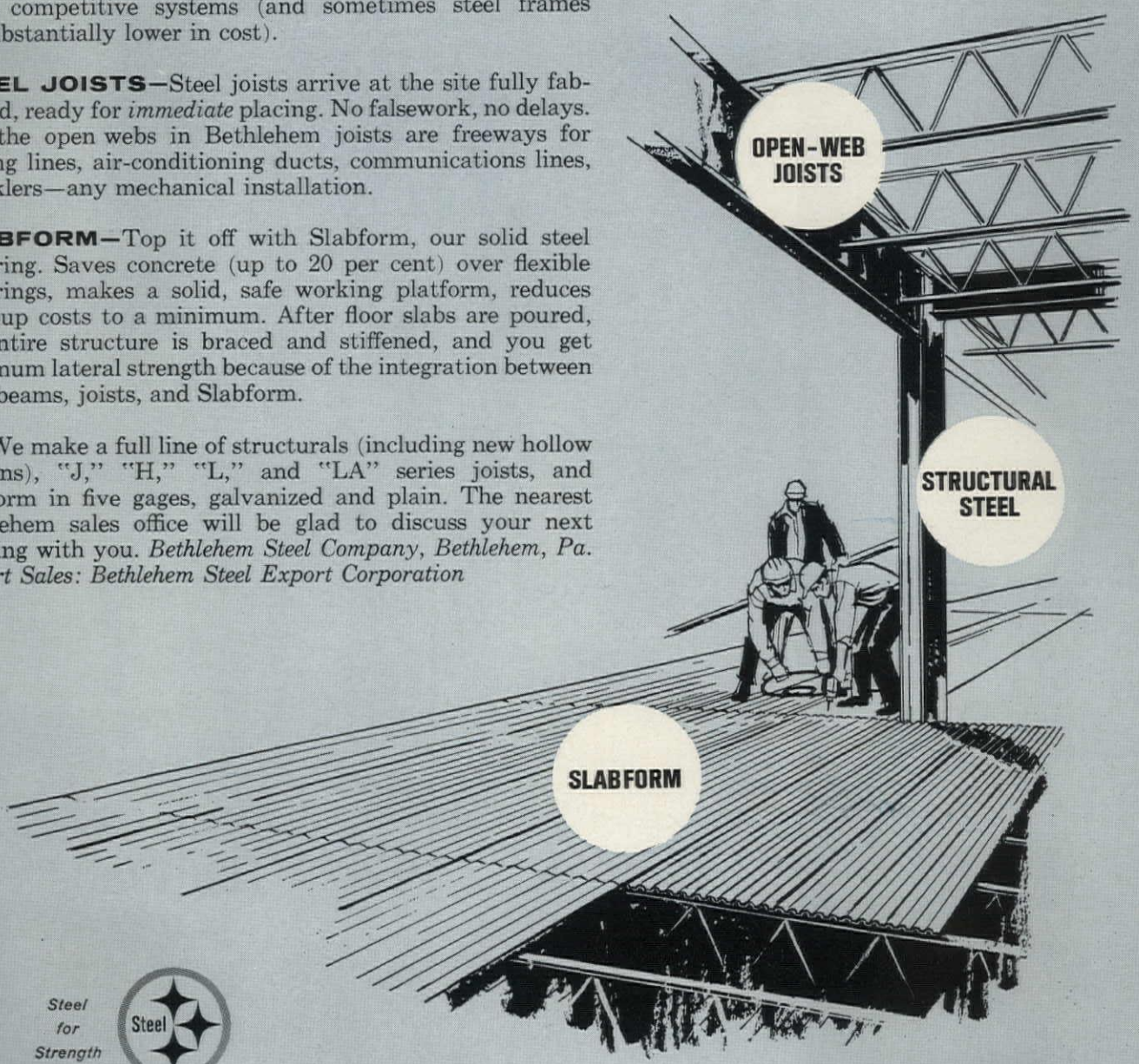

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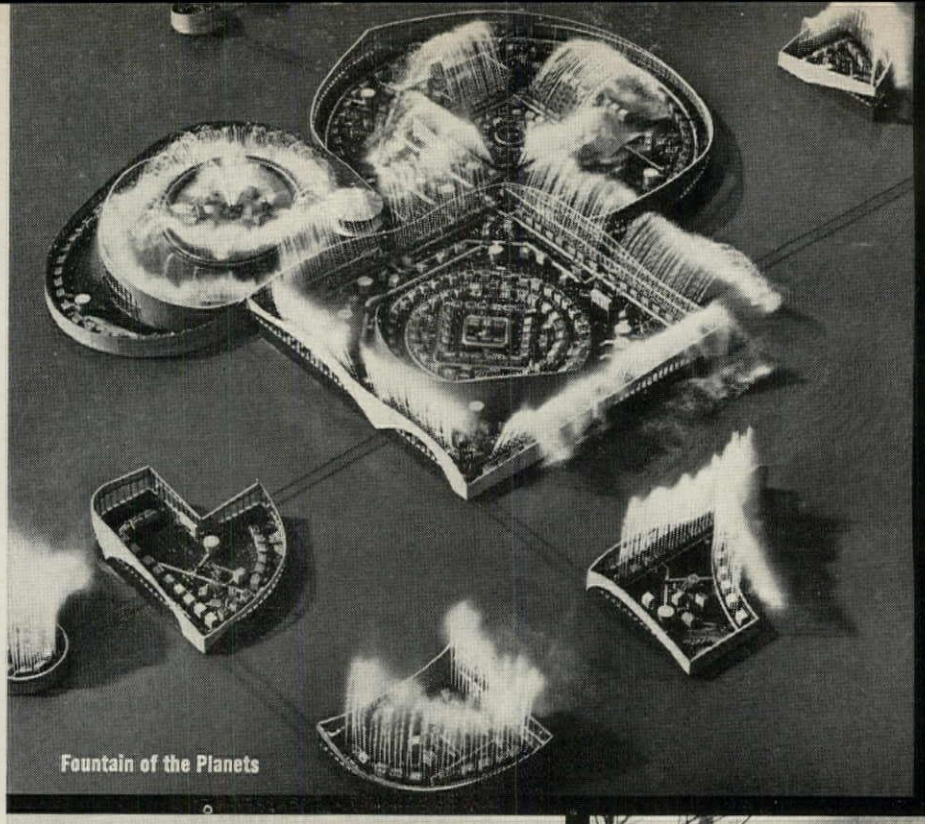
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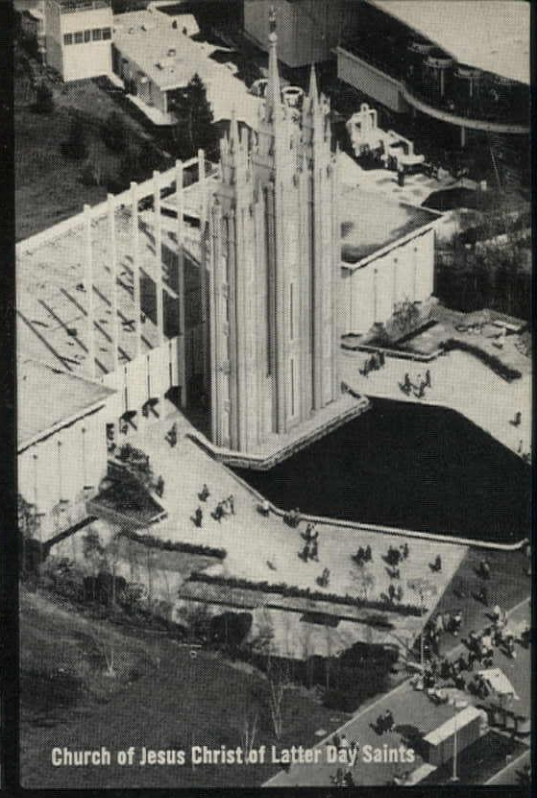
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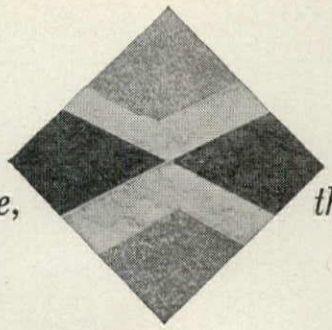
The beauty of marble,  *the durability of concrete . . .*

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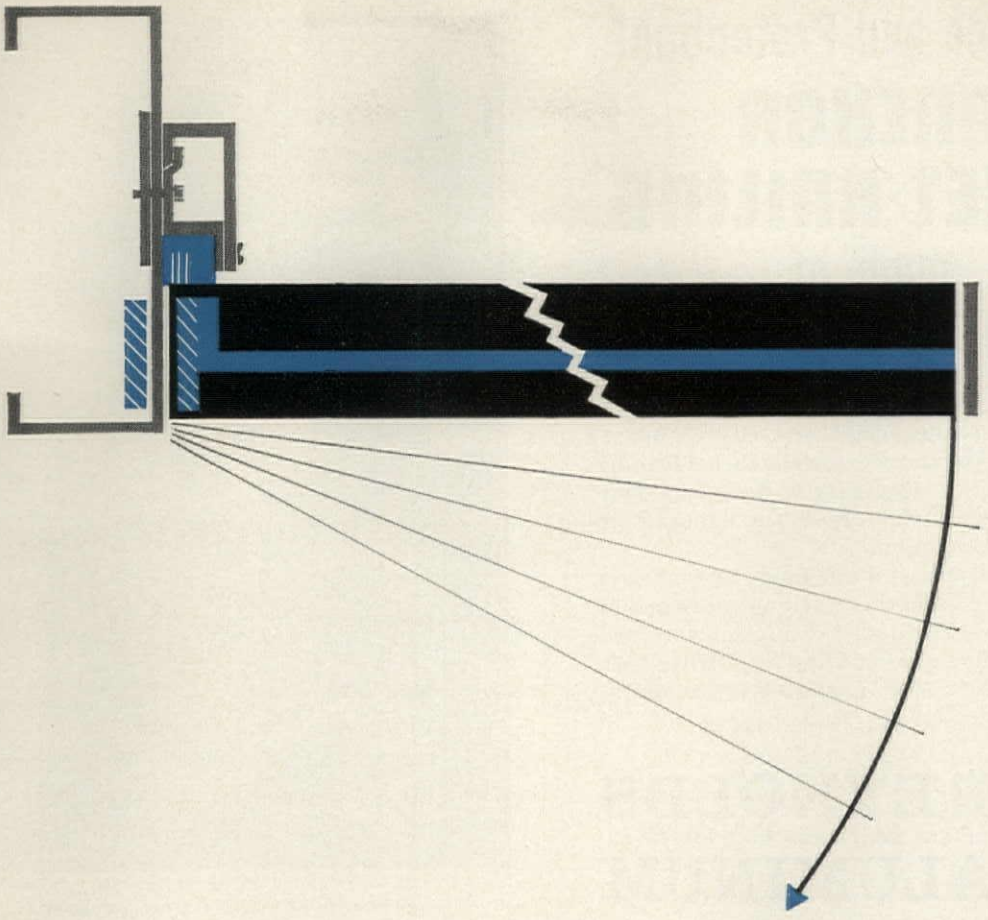
American College of Surgeons' Administration Building. Architects-Engineers: Skidmore, Owings & Merrill, Chicago, Illinois.
Terrazzo Contractor: Roman & Co., Chicago General Contractor: Turner Construction Company, Chicago



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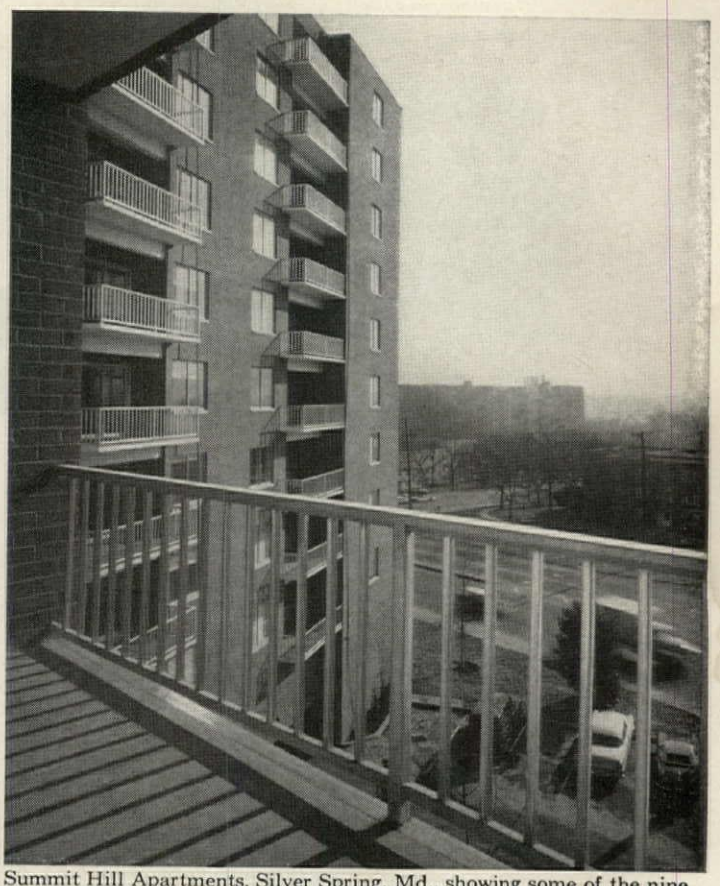

Summit Hill Apartments, Silver Spring, Md., showing some of the nine levels of balconies protected by Anchor railings of Reynolds Aluminum.

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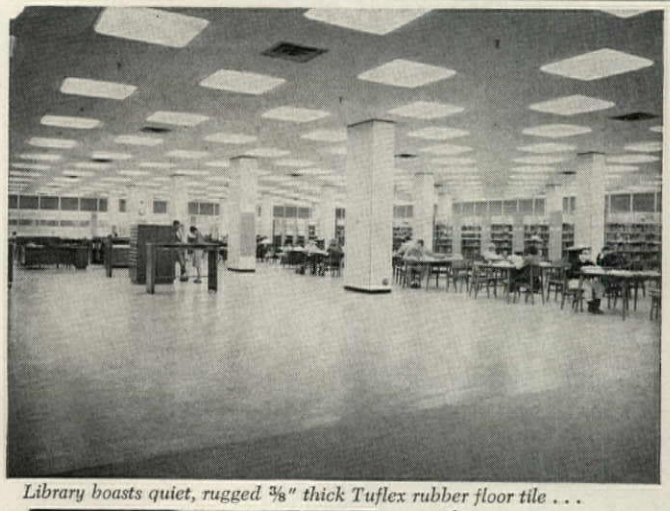

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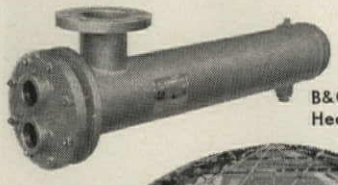

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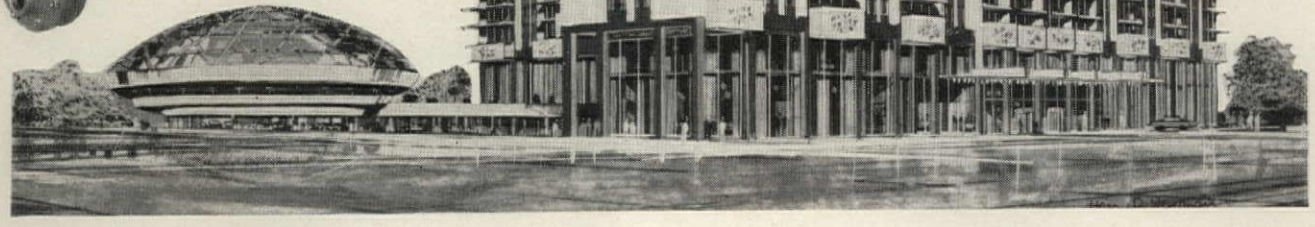

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Continued from page 280

the exploiters of that catastrophe, Cottrell suggests. By 1100 B.C., Mycenae too had disappeared. Cottrell has written many popular books on archeology; he is the official commentator on the subject for the BBC. This book is rich in vivid details of archeology and literature.

Relocatable School Facilities. Frank Carioti. Educational Facilities Laboratories, 477 Madison Ave., New York 22, N.Y., 1964. 64 pp., illus. No charge.

Results of a survey of over 10,000 non-permanent classrooms in 23 communities in the U.S. The majority of existing structures were found to be inadequate for modern instructional programs and lacking in the expected potential for flexibility. A number of new, promising designs are described, and the report suggests a system of a common core to which portable or demountable space can be added and subtracted according to demands.

Roof Design. Paschen von Flotow and Horst Leiermann. Karl Kramer Verlag, Rotebuhlstrasse 40, Stuttgart W. Germany, 1964. 212 pp., illus. 3gns.

Reference on use of zinc—a traditional roofing material in Western Europe—in modern building. Photographs and drawings illustrate roofing, wall cladding, flashing, and roof drainage. Captions are in English, German, and Italian.

Ruins in Jungles. Stella Snead. London House & Maxwell, 122 E. 55 St., New York 22, N.Y., 1964. 100 pp., illus. $12.95

To be reviewed.

The Saarinen Door. Cranbrook Academy of Art, Bloomfield Hills, Mich. 63 pp., illus. $3 plus 20¢ handling charge

Tribute to Eliel Saarinen contains an introductory biography, photographs of his architecture at Cranbrook, and a sampling of his related design interests. Saarinen's views on "contemporary architecture," as expressed in an address to the 1931 AIA Convention, and an extensive chronology of his life complete the album.

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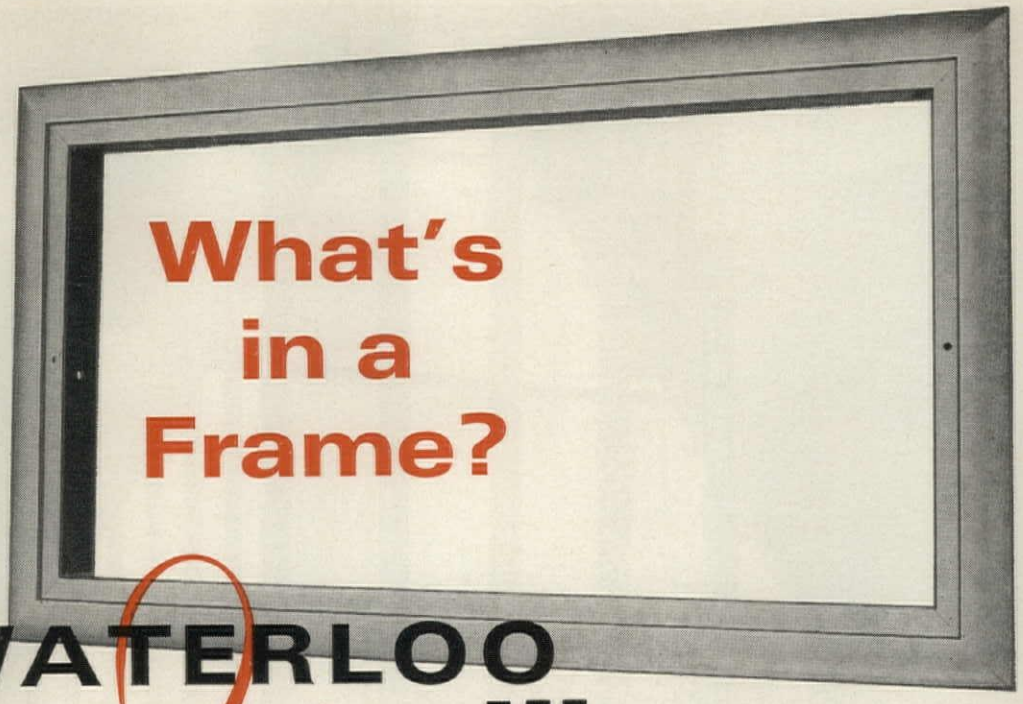
bottom right: Harvey Croze, Courtesy of Cranbrook Foundation



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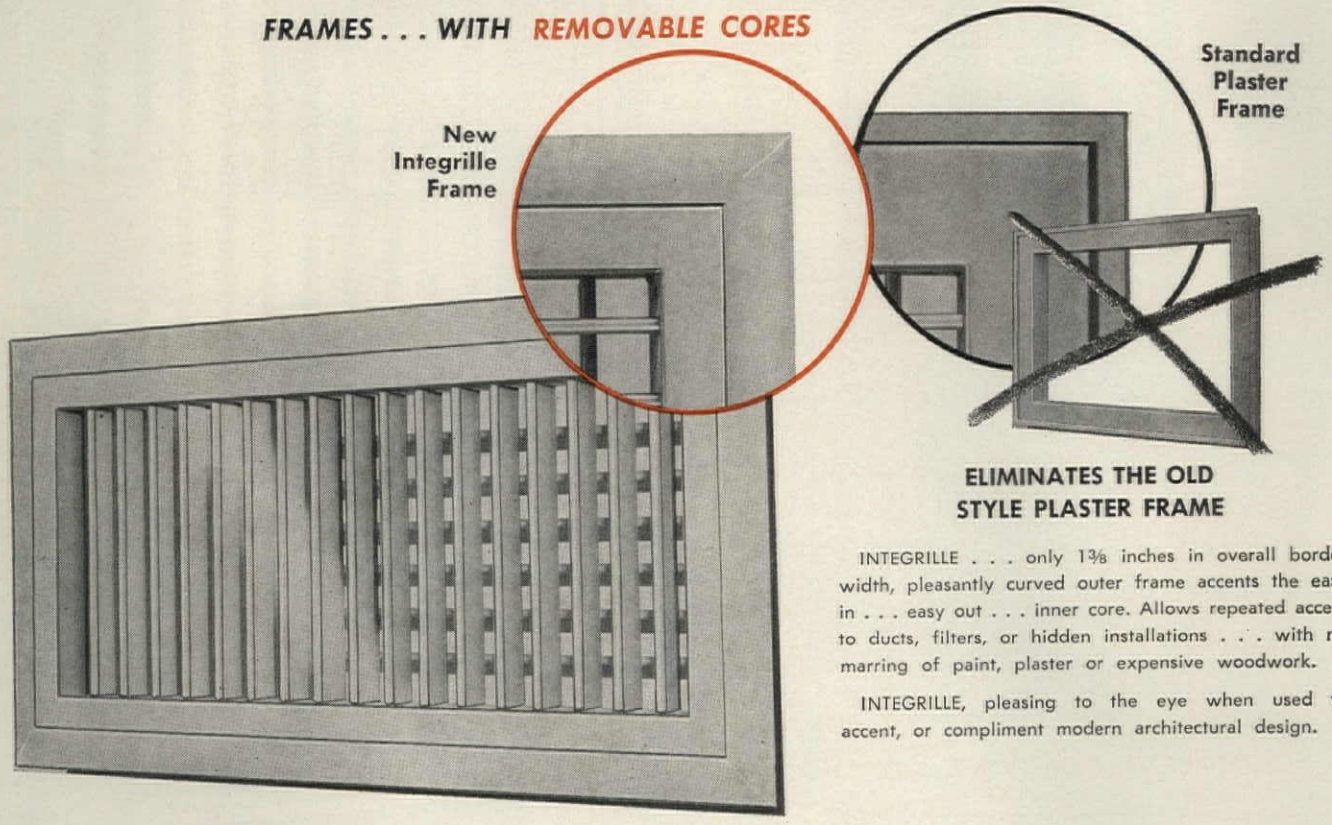

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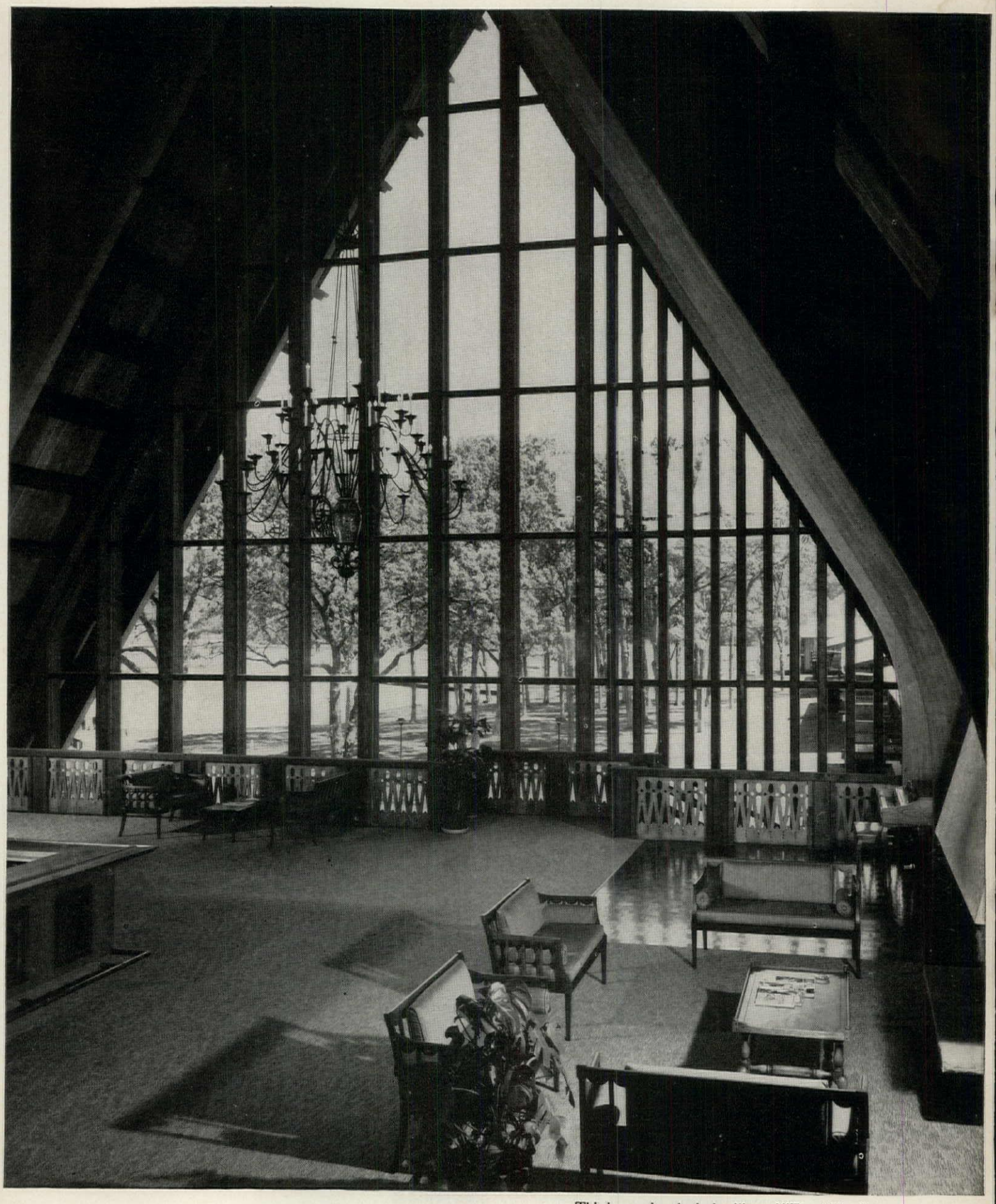

This beamed cathedral ceiling of "The Abbey" reaches new heights in architectural grace and beauty. The wide windows open the visitors' eyes on the Oak Grove.

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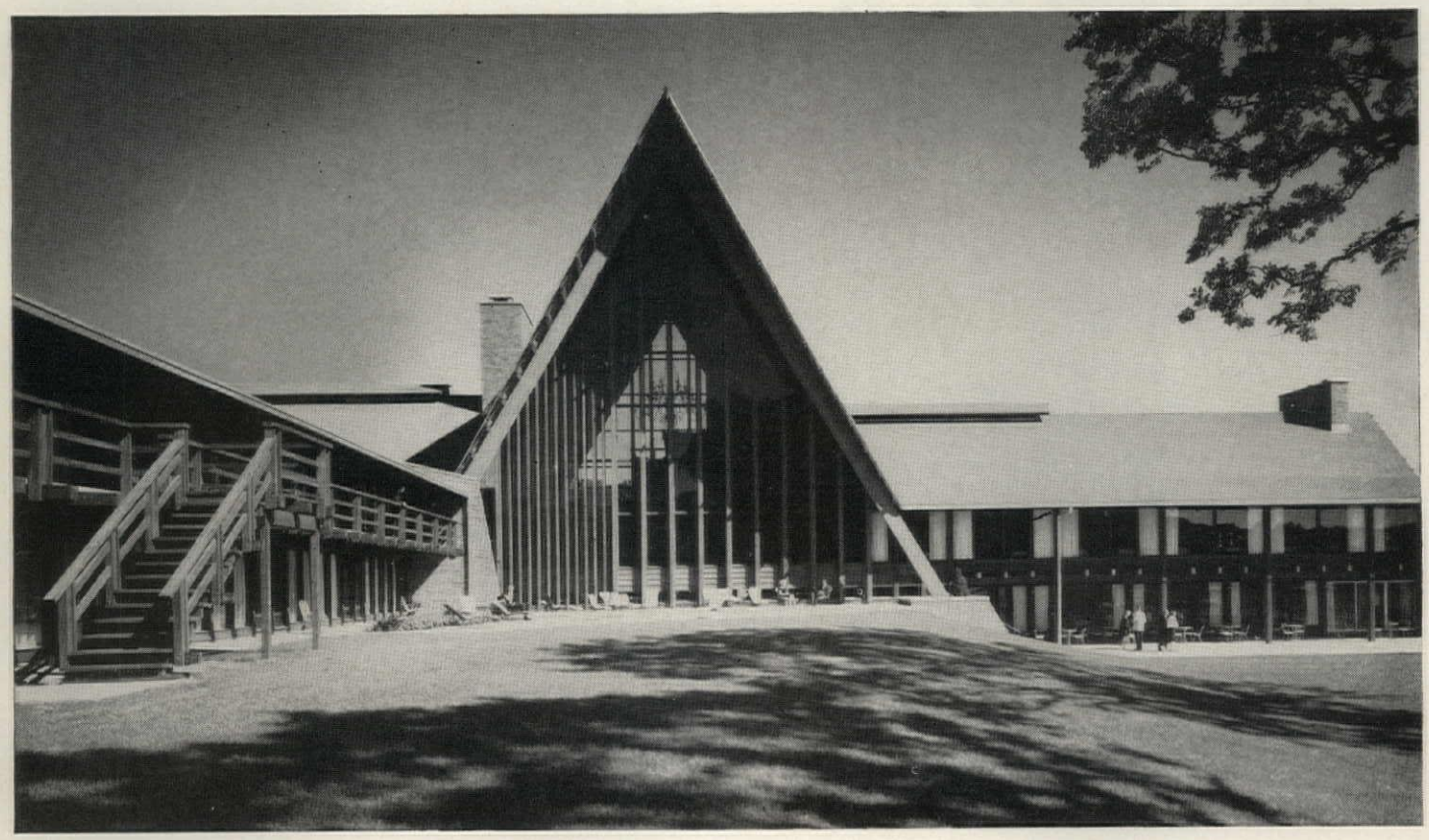

This "A" frame Tower of Wood, "Tour de Bois," makes a point of bringing a striking and distinctive appearance to "The Abbey." Notice how wood works wonderfully with glass.

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TECHNICAL EDITOR—For national architectural and engineering magazine. Background

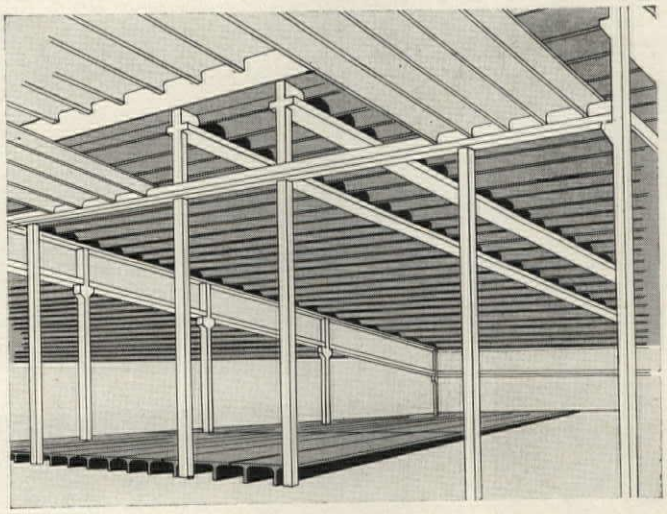
Continued on page 296

Owner: Norfolk Daily News, Norfolk, Nebraska
Architects, Engineers: Leo A. Daly Co., Omaha, Nebraska
Contractor: Beckenhauer Brothers, Norfolk, Nebraska
Prestressed Concrete Fabricator: Wilson Concrete Company, Omaha, Nebraska

New home of Norfolk, Nebraska newspaper has complete structural frame, roof and floors of prestressed concrete

Behind the facade of the new Norfolk Daily News building in Norfolk, Nebraska, is a complete prestressed concrete structural system: columns, beams, double tee floor system and roof, plus double tees for the balcony floor. Use of prestressed concrete permitted the contractor to work through the winter months, and, equally important, provided an efficient, economical interior finish. The smooth surface of the concrete members permitted liberal use of exposed painted areas in the building. Use of acoustical tile ceilings was limited to the editorial, advertising and business offices, plus the hallway.

The Norfolk Daily News building is another example of the way prestressed concrete is used to meet a variety of design and construction needs. Prestressing strand used throughout this project was Union TUFWIRE Strand. TUFWIRE Strand and other Union Wire Rope Products are made by **Armco Steel Corporation, Steel Division, Department S-1644, 7000 Roberts Street, Kansas City, Missouri 64125.**



All columns, beams, floor and roof double tees in the Norfolk Daily News building are prestressed concrete.

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Continued from page 294

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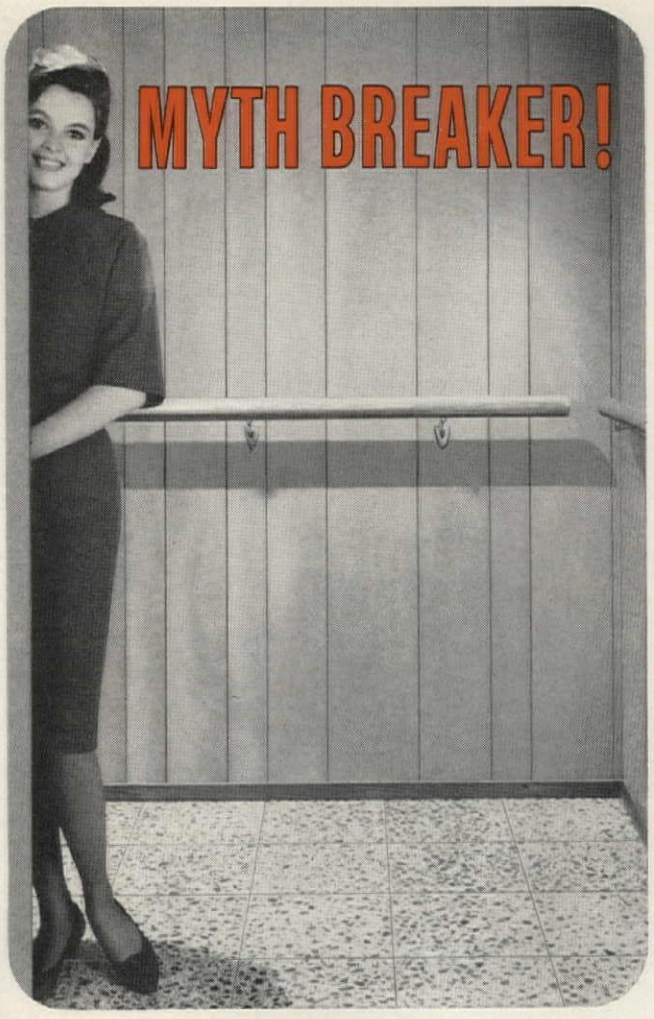

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