November 1965

PROGRESSIVE ARCHITECTURE

Installation: Trans World Airlines Executive Offices, 605 Third Avenue, New York City

Designers: Leonard, Colangelo and Peters, New York City

Building Architects: Emory Roth & Sons, New York City

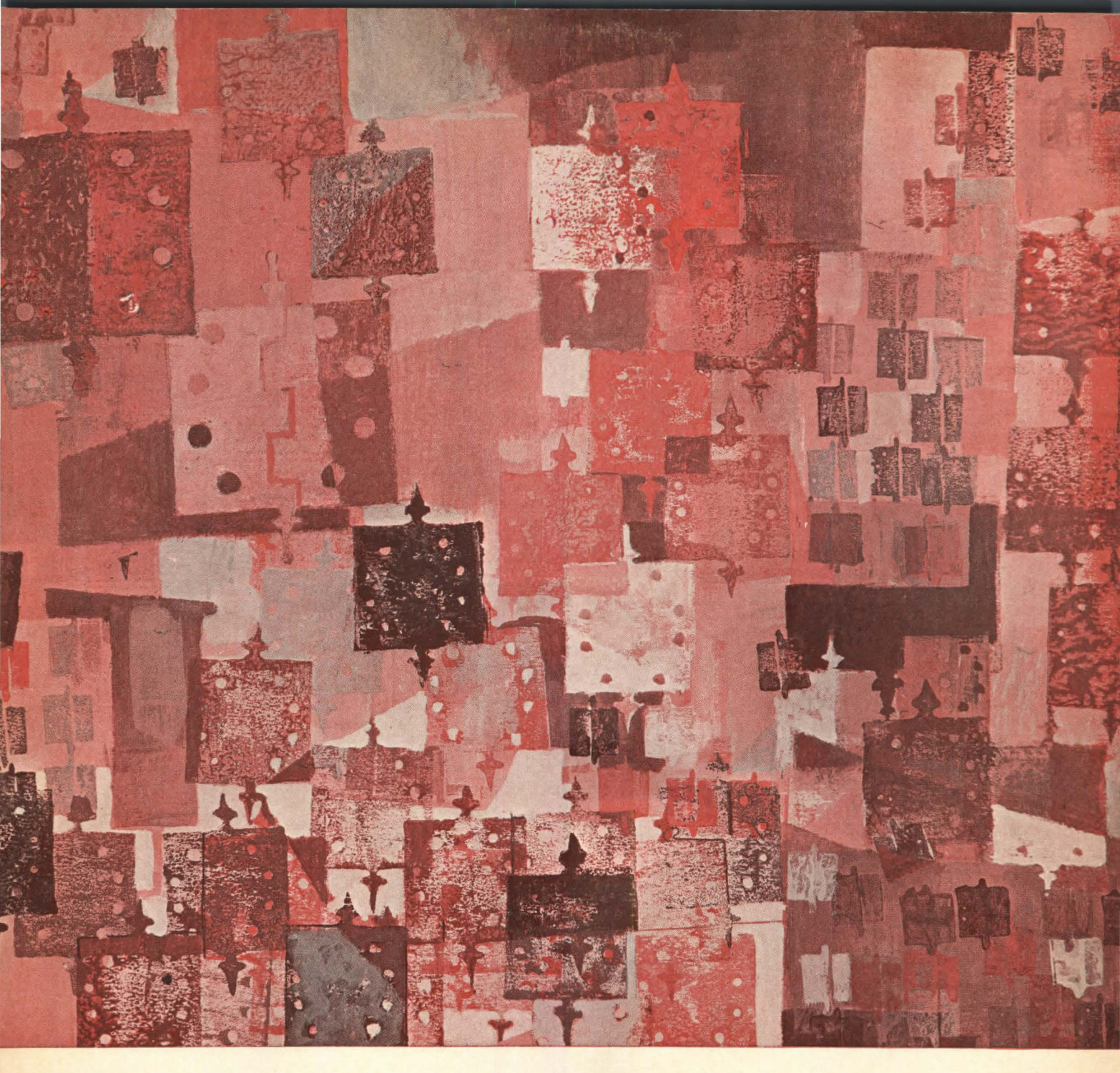
Floor shown: VP-624 Smoky Onyx

Creative styling: an inherent quality of Azrock floors.

The growing trend toward resilient floors of vinyl asbestos tile is the result of better styling, better performance, better value. And in all these qualities, Azrock vinyl asbestos tile excels. Case in point: the floors of Azrock Pebbled-Onyx now serving Trans World Airlines in their executive offices in New York City. Pebbled-Onyx has a subtle texturing which helps conceal heel and scuff marks. Made of fine chips of actual marble encased in translucent vinyl, Pebbled-Onyx is notable for custom-floor elegance at down-to-earth costs. Now available in 12″ x 12″ modular size.

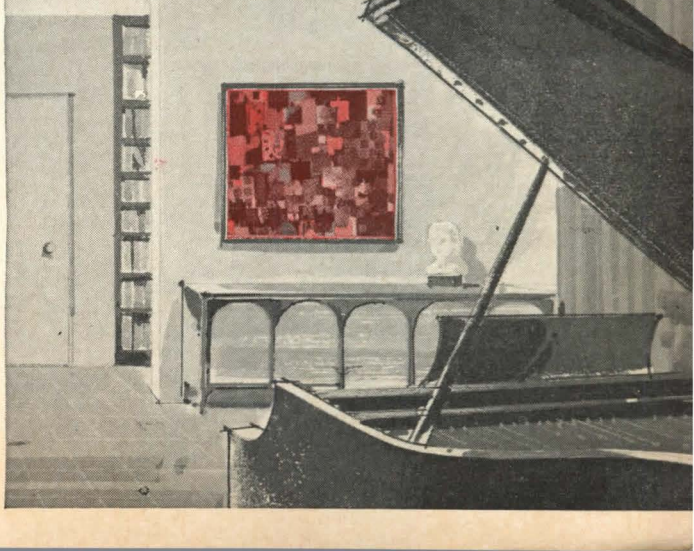
an original floor styling by **AZROCK®**

Consult Sweet's Catalog or write for samples. Azrock Floor Products, 500A Frost Building, San Antonio, Texas 78205.



Hager creates for the Ornatologist

Where luxury is projected by traditional design, ornamentation must be rigidly disciplined. Architects who avoid ostentation yet make full use of the design freedom allowed deserve special identification. We call them *ornatologists* and entrust the use of the obviously artistic Modelé Hinge to their discerning judgment. This new hinge from Hager in a choice of rich finishes carries impeccable taste right to the doorway of traditional interiors. HAGER HINGE CO., ST. LOUIS 4, MO.



On Readers' Service Card, circle No. 362

Hager

Everything Hinges on Hager

THIS MONTH IN P/A

Progressive Architecture® *November 1965*

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 INDEXED IN ART INDEX, ARCHITECTURAL INDEX, SECOND-CLASS POSTAGE PAID AT NEW YORK. VOLUME XLVI, NO. 11,


LEAD-COATED
COPPER
used to blend
with slate roof
in unusual
church design

NORTH CHRISTIAN CHURCH
(DISCIPLES OF CHRIST) Columbus, Indiana
Minister: DR. JAMES L. STONER
Architect: EERO SAARINEN AND ASSOCIATES, Hamden, Conn.
General Contractor: REPP & MUNDT CONSTRUCTION SERVICE, Columbus, Ind.
Sheet Metal Contractor: THE GENERAL ROOFING & SIDING COMPANY, Frankfort, Ind.
Revere Distributor: HUBBELL METALS INC., Indianapolis, Ind.

ENTIRE 192′ SPIRE, ARCH COVERS, TRIM AND FASCIA OF REVERE LEADTEX* 15

Its 192′ spire topped by a cross of gold, the North Christian Church (Disciples of Christ), Columbus, Indiana, is designed in the form of a hexagon representing the star of David. The slate roof is divided by fingers of lead-coated copper, which also covers the spire, arches and fascia. Some 23,000 lbs. of Revere Leadtex 15 was used.

Leadtex is often used by architects, as in this case, where a toned-down or muted effect is desired. It is one of the reasons why you can do so much more . . . have unprecedented freedom in creating the unusual, as well as the traditional, when you "Design with Copper in Mind."

*Reg. U.S. Pat. Off.

SEND TODAY for free copy of "Copper and Common Sense," Revere's 140-page manual illustrating the design principles and techniques of sheet copper construction. Also, free companion piece, "The Revere System of Copper Flashing," for the complete weatherproofing of masonry buildings. Write Dept. "N-4" at address below.

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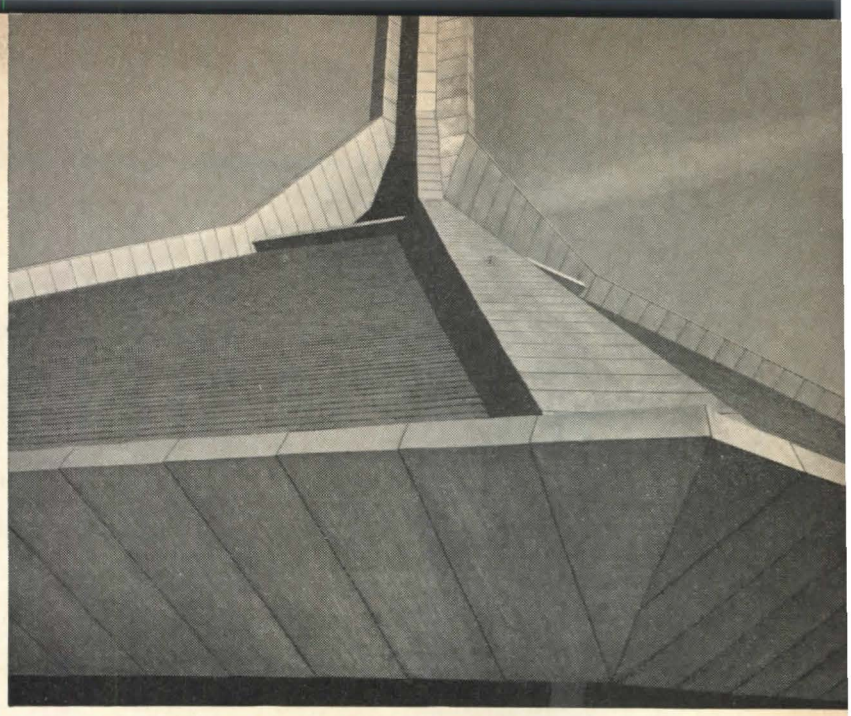
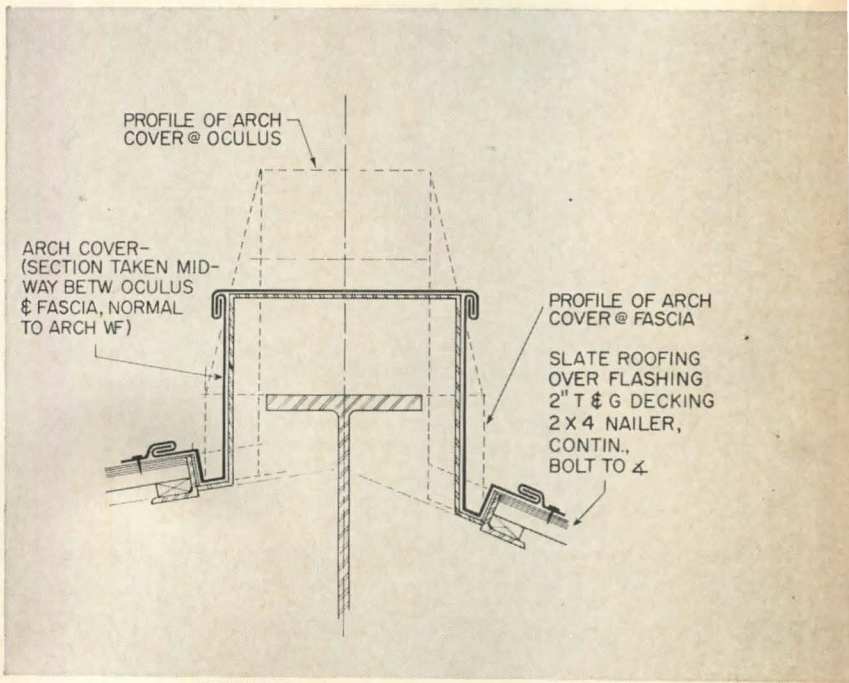
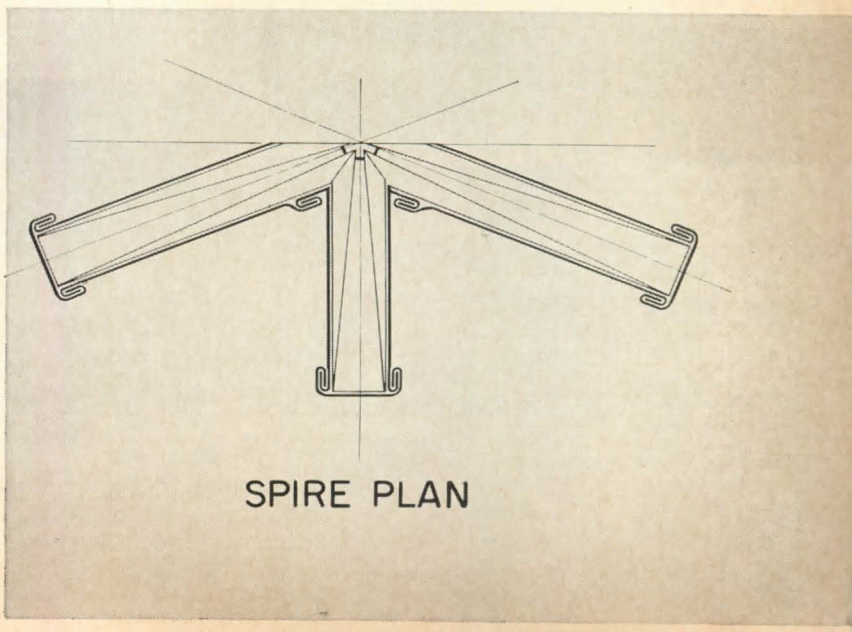


CLOSE-UP showing unusual fascia design.



DETAILS showing how Leadtex was applied to arches and spire.



SPIRE PLAN

If it weren't for the cold, you wouldn't need Dow Corning 780 building sealant.

Most sealants stiffen with cold and lose elasticity. The colder it gets, the harder they become. When this happens, expansion and contraction often cause the sealant to crack or pull away—and that's the beginning of a costly and embarrassing leak.

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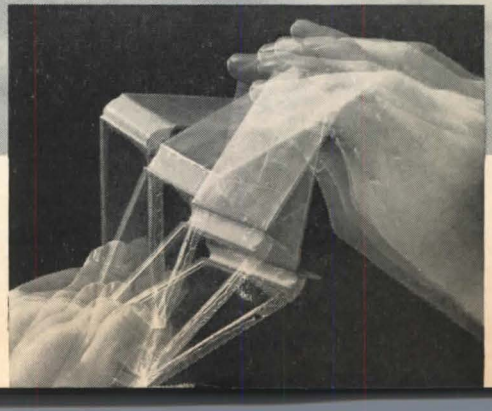
FREE SAMPLE:
We'll send you a two-ounce sample tube of this remarkable sealant for your own cold weather evaluation.

flexibility at 20° below



Write Dow Corning Corporation, Dept. 8723,
Chemical Products Division, Midland, Michigan, 48641.
For nearest distributor, see Sweet's Architectural File.

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VIEWS

P/A: More Than A Magazine

Dear Editor: I have read and subscribed to P/A for several years. Recently, I have noticed a change in this very good magazine. This change is lifting P/A above the title of "magazine." The articles and format are breathtaking and timely.

I would like to express my admiration and gratitude to you and your staff for changing a magazine into an exciting experience.

I know that you, your staff, and many architects and individuals are now trying to change "buildings" into architecture.

DOUGLAS T. WHITNEYBELL
Phoenix, Ariz.

Fine Statement

Dear Editor: Your Editorial in the SEPTEMBER 1965 P/A was one of the finest statements that I have seen in print on the need for fresh ideas in shaping a meaningful environment. It is perhaps one of the few statements I have seen in an architectural magazine that recognizes that "without meaning there cannot be beauty."

ISADORE CANDEUB
Newark, N.J.

Springing From Rich Insight

Dear Editor: Your Editorial in the AUGUST 1965 P/A seemed to me to be altogether constructive and forthright and very much to the point. In addition, it struck me as a very unusual piece of communications—springing from rich insight and carrying with it an overriding, transcendental quality like that associated with news and news events of special significance. Having characterized it thus in my own mind, I was moved to make a specific response to this extremely timely and meaningful statement.

Along with the general thrust of P/A, some other publications and some other efforts that are being made, the very existence of your statement should help to create the "new tradition" about which you have written. By making such a statement, I cannot help but feel that you have performed a genuine service—not only to one area of professional endeavor but also to the whole complex of creative elements within our society, and hence to that society itself. It is difficult for me to imagine a more commendable effort.

Although I have not been able to attend the Aspen conferences, I feel a strong empathy with the point of view that underlies them and follow them as best I can through secondary sources. The design concept embodied in these meetings seems to me to be generating a basis for effective continuity within all creative endeavor and also to carry within it the greatest potential for excellence in that endeavor.

As a communications person deeply involved in all aspects of the design world, I believe your statement will be of significant value in the advancement of "the spirit of Aspen." Thus, it seems to me that the contribution you have made is at least twofold. I certainly hope the Editorial will receive the wide circulation and thoughtful consideration it deserves.

ROBERT E. SMITH
Director of Public Information
Richardson, Severns, Scheeler
& Associates, Inc.
Champaign, Ill.

Misleading Book Title

Dear Editor: I wish to say a word in favor of the Mario Praz book, *An Illustrated History of Furnishings*, reviewed in the SEPTEMBER 1965 P/A.

Mario Praz was not intending to write a history. Your reviewer was deceived by a pompous title given to the English translation with the presumable idea of enhancing sales. Nikolaus Pevsner reviews this book in the July issue of *Architectural Review*, and starts off by clearing up the matter of this misleading title. In the Italian original, the book is called *Filosofia dell' arredamento*, loosely translated as Philosophy of Furnishing. This is closer to Praz's intentions, although I think that the title of Poe's article, "Philosophy of Furniture," probably determined his particular choice of wording, since he is not writing a closely reasoned book on aesthetics either. What Praz wanted to do, I should say, is write a rambling exposition of furnishing of a certain sort, regarded in a certain way, and illustrated chiefly by a kind of genre painting that he happens to like. In other words, it is a purely personal book, whose scholarship is incidental (and not always accurate), and that is meant to be enjoyed in the same way, approximately, as one of the cultural rambles of Sacheverill Sitwell. Personally, I found it a very enjoyable book.

WALTER C. KIDNEY
Brooklyn, N.Y.

CORRECTION: Woody Klein, author of *Let in the Sun*, reviewed by P/A Associate Editor Forrest Wilson in the SEPTEMBER 1965 P/A, was incorrectly described as no longer a practicing newspaperman. Woody Klein is, in fact, a staff writer for the *New York World Telegram and Sun*.

NOTICES

Branch Offices, Showrooms

ARCHITECTURAL POTTERY, Los Angeles-based firm, has new showroom at the Merchandise Mart, Chicago, Ill.

SHELBY WILLIAMS INDUSTRIES, INC., manufacturers of contract furniture, have a new showroom at 600 Madison Ave., New York, N.Y.

New Addresses

ATCHISON, KLOVERSTROM, SAUL & ATCHISON, Architects, 3970 E. Exposition Ave., Denver, Col.

VIGGO BONNESEN, Consulting Engineer, 1530 Summer St., Stamford, Conn.

GARDNER & HOWE, Consulting-Structural Engineers, 165 Madison Ave., Memphis, Tenn.

L.S. HIGGINS & ASSOCIATES, 1044 116th Ave., N.E., Bellevue, Wash.

LINDE-HUBBARD ASSOCIATES, 115 College St., Burlington, Vt.

CARL KOCH & ASSOCIATES, INC. Architects, 25-36 Lewis Wharf, Boston, Mass.

LAWRENCE E. MATESON, Architect, 413 "B" St., Idaho Falls, Ihaho.

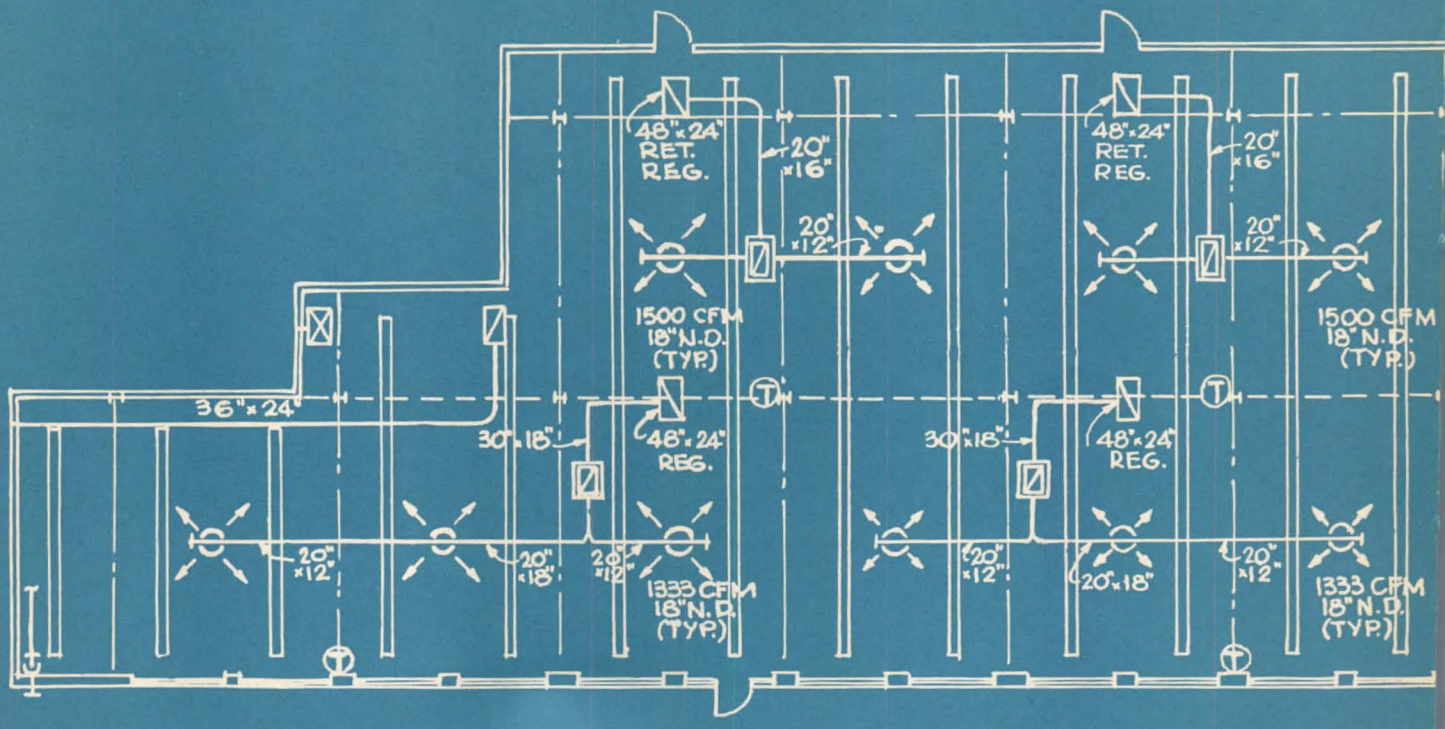
GORDON A. PHILLIPS, Architect, 1312 Third St., San Rafael, Calif.

ROBERTS & SCHAEFER CO. INC., Engineers, 445 Park Ave., New York, N.Y.

ROCHLIN & BARAN, Architects-Engineers, 10883 Kinross

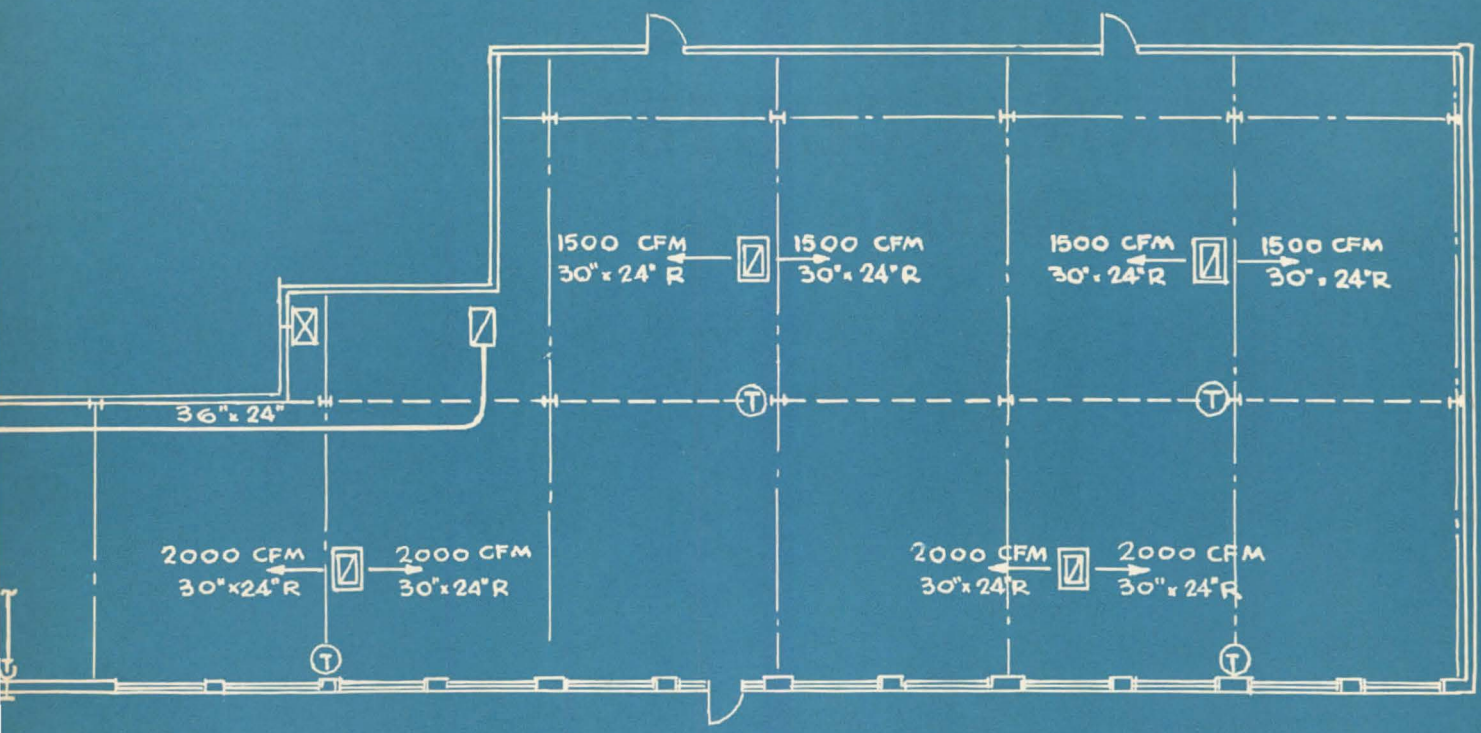
Continued on page 280


Modern Door Control by
LCN
Closers concealed in head frame
King County Court House
Seattle, Washington
Paul W. Delaney & Associates
Architects—Engineers
LCN CLOSERS, PRINCETON, ILLINOIS
Construction Details on
Opposite Page



Conventional air distribution system

Celo-Flow system costs less,



Celo-Flow® air distribution system

performs better, looks better

The drawings above show an actual job in the southeastern United States, figured two ways.

The architect recommended the Celo-Flow system because he concluded that it was best for the job. It eliminated ceiling clutter and the almost inevitable soiling that sooner or later accompanies diffusers. And the Celo-Flow system gave his client more quiet, even air distribution than ducts and diffusers could.

Of course the real clincher came when he showed his client comparative cost estimates. The 6,040 sq. ft. job done conventionally would have cost $6,190 installed—including ducts, duct insulation, diffusers and ceiling. The installed Celo-Flow system cost $4,635 including perimeter insulation, baffling and ceiling. That's a saving of $1,555—more than 25%!

The Celo-Flow system is performing beautifully—just as it is in hundreds of other installations. The architect is happy and so is his client.

For complete information about Celo-Flow air distribution systems, call your Acousti-Celotex consultant-distributor (see the Yellow Pages) or write The Celotex Corporation, 120 N. Florida Ave., Tampa, Fla. 33602.

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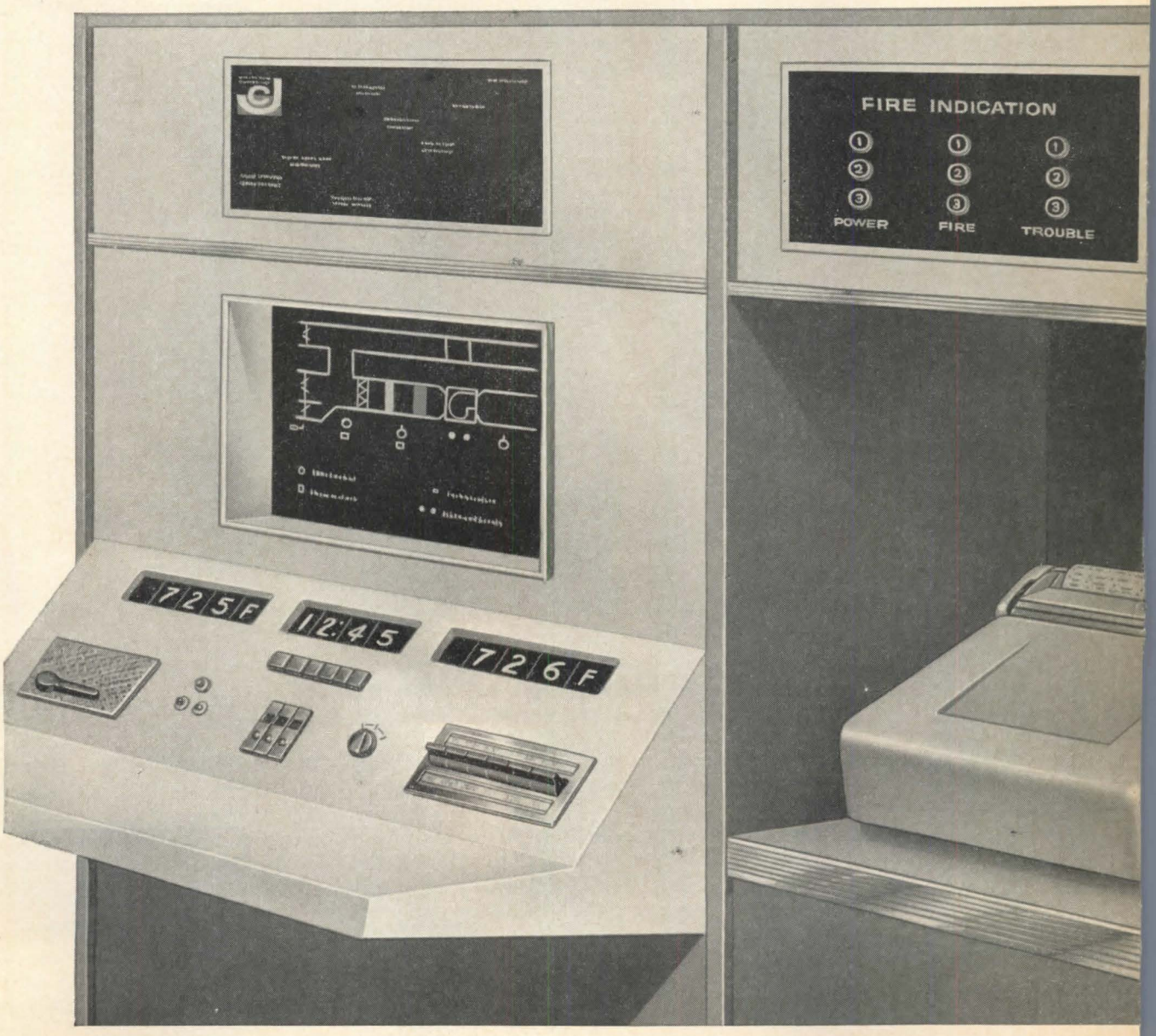
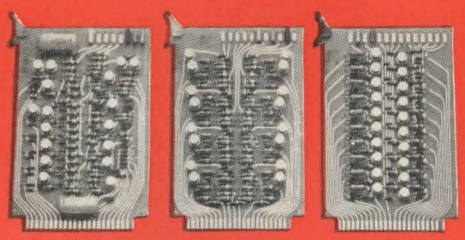
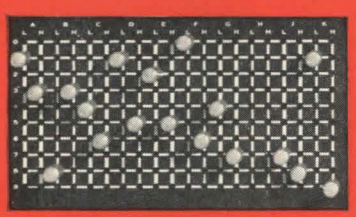




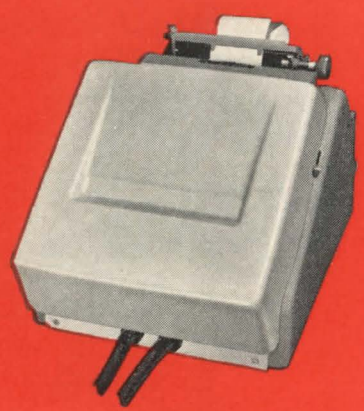
Printed Circuit Cards

Processor Control Panel

Alarm and Status Annunciator Panel



High-low Alarm Limit Selector



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Johnson electronic control centers equipped with our T-6000 solid state digital system perform any or all control center functions: monitoring, alarm, indication, remote reset/control, recording, communication. The T-6000 monitors all vital points essential to the total building operation, but directs attention to the off-normal conditions only. This is "Management by Exception," the Johnson concept that provides matchless operating efficiency and savings.

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The processor, heart of Johnson's Solid State Digital System, accepts all types of signals: electric and pneumatic, analog and binary. Printed circuit cards in the processor contain all circuitry required to coordinate change-of-state, programed, and command cycles for the system. Replacing or adding a circuit is as simple and foolproof as sliding a card in a slot!

SCANS AN UNLIMITED NUMBER OF POINTS

The T-6000, with the industry's fastest and most efficient scanner, monitors control points at the rate of 25 analog control points or 80 binary control points per second! There is no limit to the number of points that can be supervised. And units can be expanded or added as needed to enlarge the system.

WARNS OF OFF-NORMAL CONDITIONS

The T-6000 includes a memory cell which "memorizes" the conditions of scanned points and issues a warning in the form of a visual display and/or print-out and, if desired, an audible alarm. A unique annunciator panel, with individual indicators for 100 points, provides positive display of key control points. Alarm conditions are indicated in red, status conditions in green. Any number of annunciators may be used.

FURNISHES PRINTED RECORDS

The T-6000 can be equipped with a 3" tape or 15" carriage printer. In the programing sequence, systems may be locked out, allowed to operate normally, or selected for command or programed logs. When a change of state occurs, the logger records the off-normal conditions in red, normals in black.

PROVIDES MAXIMUM FLEXIBILITY

Mode switches give the engineer a choice of 10 different cycles of operation. Individual systems can be programed independently of the others whenever necessary. Any point or group of points may be selected for continuous monitoring. If desired, two or more systems may be monitored at the same time. For the ultimate in total building automation, the T-6000 can be integrated with a computer. Many other operational features are available.

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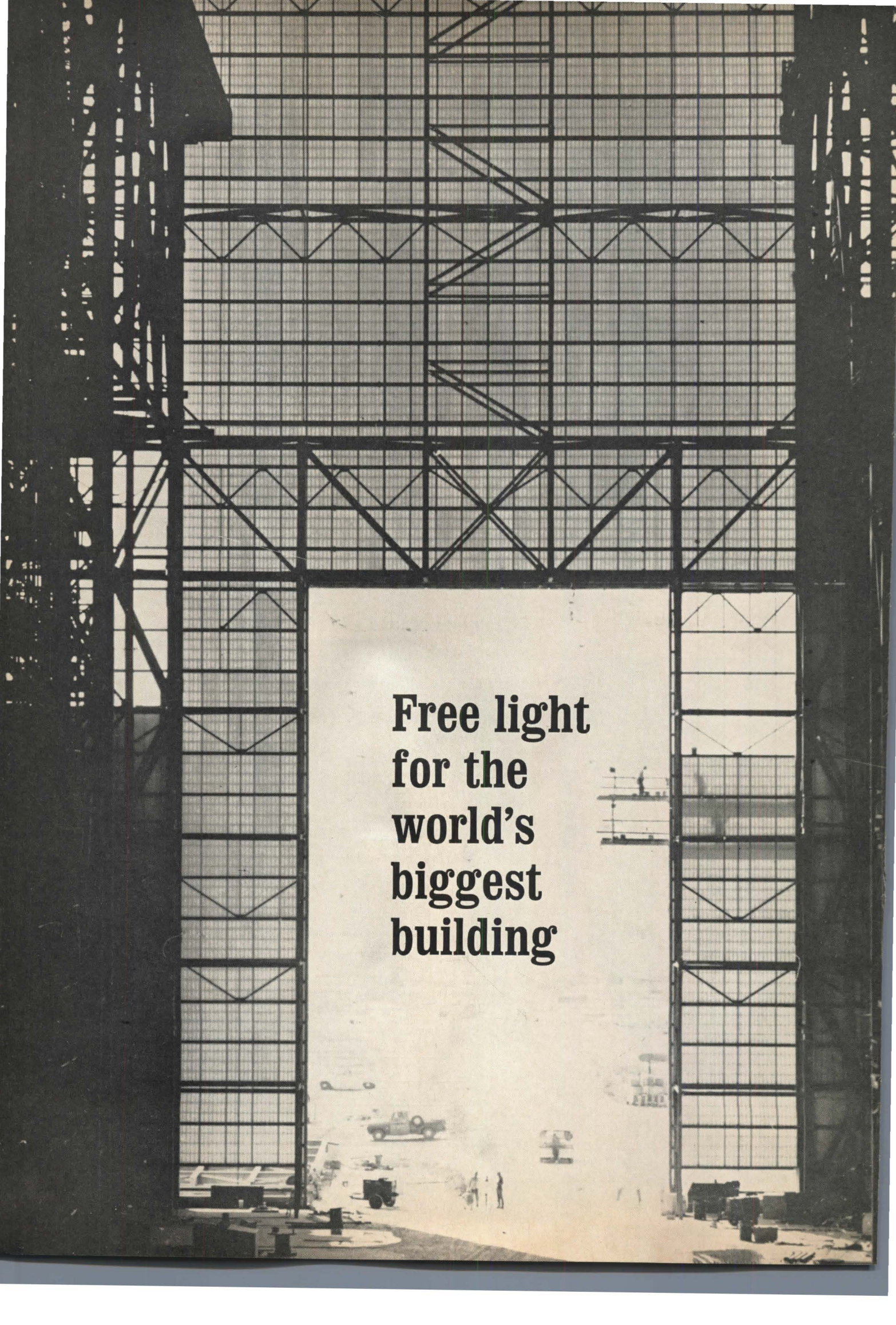
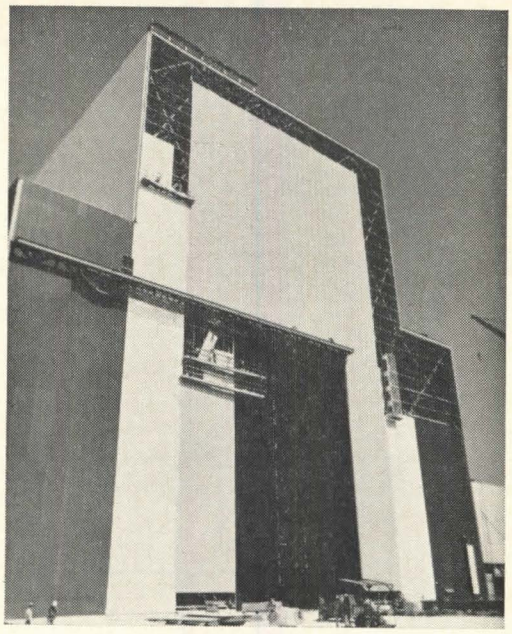
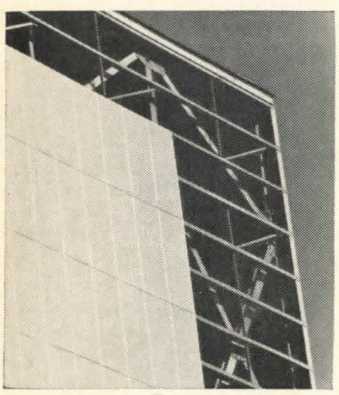

Free light
for the
world's
biggest
building

Hetron-based panels protect Saturn V rockets from the elements at the Vehicle Assembly Building on Merritt Island. Architects: Urbahn-Roberts-Seelye-Moran. Filon Corporation produced the reinforced Hetron sheets. Panel Structures Inc. is the fabricator.



Hetron®-based hurricane-proof panels let daylight into 129,482,000 cu. ft.

A hurricane tearing along at 125 miles an hour won't shatter these Hetron-based translucent panels. Neither will shock waves set up by rocket launchings at nearby Cape Kennedy.



That's why the architects chose them to let light into the vast interior of the Vehicle Assembly Building.

The big 4 x 12-foot panels are reinforced Hetron polyester resin laminated to aluminum grids. Their fabricator says they "are the strongest ever built." Coated with Tedlar,* they are expected to resist the brilliant Florida sunshine up to six times as long as standard panels.

No glare. You can specify Hetron-based panels for high, medium or low light transmission. Whether you let in a flood or a trickle, it is light without glare and only the softest of shadows.

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We don't supply these strong, weather-resistant panels—just the Hetron that makes them safer. We'll be glad to send you a list of fabricators. Please write Durez® Plastics Division, Hooker Chemical Corporation, 7711 Walck Road, North Tonawanda, N. Y. 14121.

*Du Pont registered trademark for its PVF film.

HOOKER CHEMICALS® PLASTICS

DUREZ PLASTICS DIVISION

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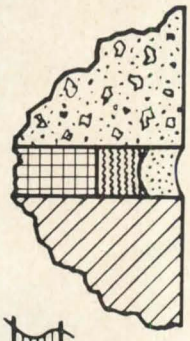
5 OUTSTANDING DAP® SEALANTS... AND WHERE PROFESSIONALS USE THEM

1 DAP BUTYL-FLEX® BUTYL RUBBER CAULK

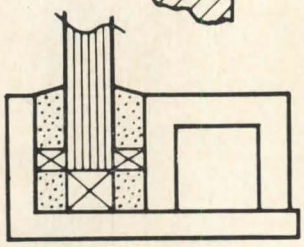
APPLICATIONS: Curtain wall construction and general caulking applications calling for a superior seal.



CHARACTERISTICS: Outlasts, outperforms conventional caulks 5-to-1. Butyl rubber base assures permanent flexibility. Butyl-Flex gives airtight, watertight seals between similar and dissimilar materials. Sticks tight to aluminum, concrete, glass, steel, marble and other construction materials. Won't sag or slump over wide temperature range. Non-bleeding, non-toxic, non-corrosive. Available in cartridges and bulk containers.

2 DAP FLEXISEAL® POLYSULPHIDE POLYMER COMPOUND

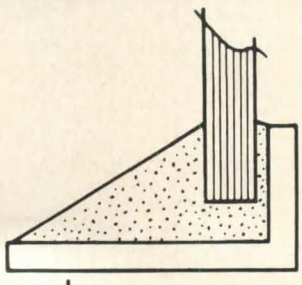
APPLICATIONS: Wherever critical conditions of expansion and contraction exist: expansion joints, curtain walls, swimming pools, porcelainized metal panels, tilt-up panels, skylights, channel or stop-glazed sash and similar installations.



CHARACTERISTICS: A 2-part liquid polysulphide polymer compound for trouble-free service in the toughest caulking, glazing and sealing jobs. Balanced Modulus means adhesion always exceeds cohesion . . . assures airtight, watertight seals under severest conditions of expansion, contraction, temperature and exposure. Smooth, buttery consistency makes mixing and application easy throughout a wide temperature range. Compounded in one, premium-grade quality only. Meets and exceeds Federal Specification TT-S-227b.

3 DAP '1012'® GLAZING COMPOUND

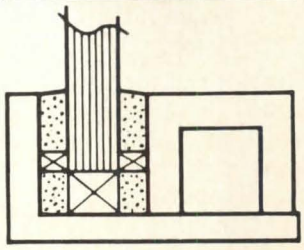
APPLICATIONS: Interior and exterior face glazing of metal sash.



CHARACTERISTICS: Aluminum gray color matches color of aluminum sash. Easily applied. Excellent handling and knifing. Sets quickly without cracking, sagging. Stays flexible. Adheres to all metals. Takes paint. Meets and exceeds Interim Federal Specification TT-G-00410c for a non-hardening glazing compound resistant to damaging effects of heat, cold, vibration and moisture. Available in cans and bulk containers.

4 DAP '1231' FLEXIGLAZE® GLAZING

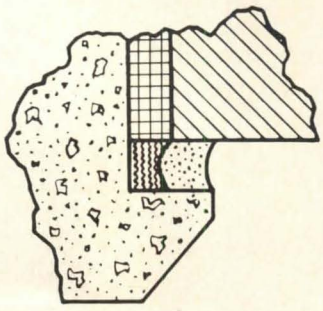
APPLICATIONS: Channel, bead or stop glazing. Bedding glass in primed wood or metal sash. Setting insulated glass window units or panels.



CHARACTERISTICS: Specially formulated from 100% solids—the finest synthetics and inerts—to eliminate shrinkage, cracking, discoloration. An outstanding mastic compound with excellent adhesion, cohesion, and flexibility. Adheres to primed wood, metal, glass, porcelain—most any kind of construction material. Forms a tough permanent seal that won't harden, bleed or stain.

5 DAP ARCHITECTURAL GRADE CAULK

APPLICATION: General caulking.



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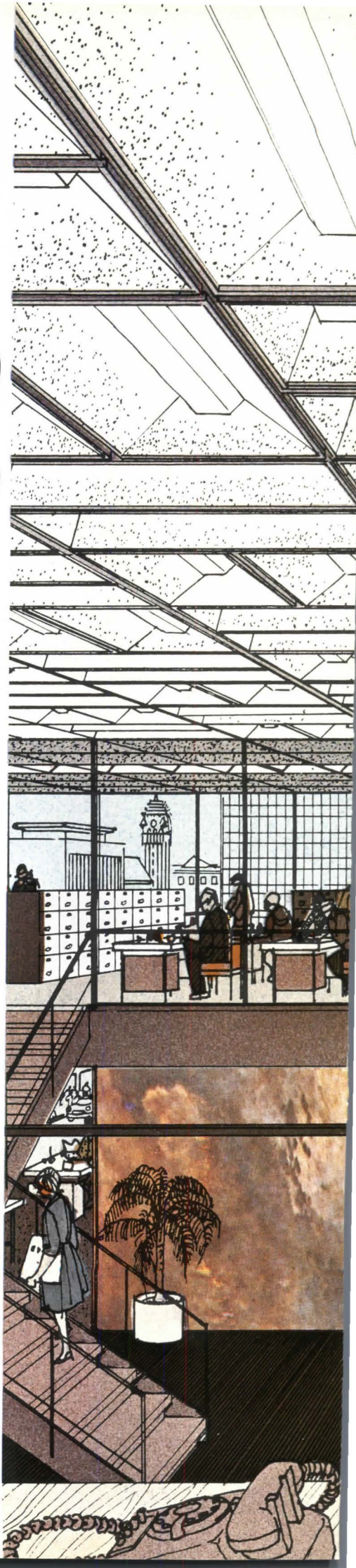

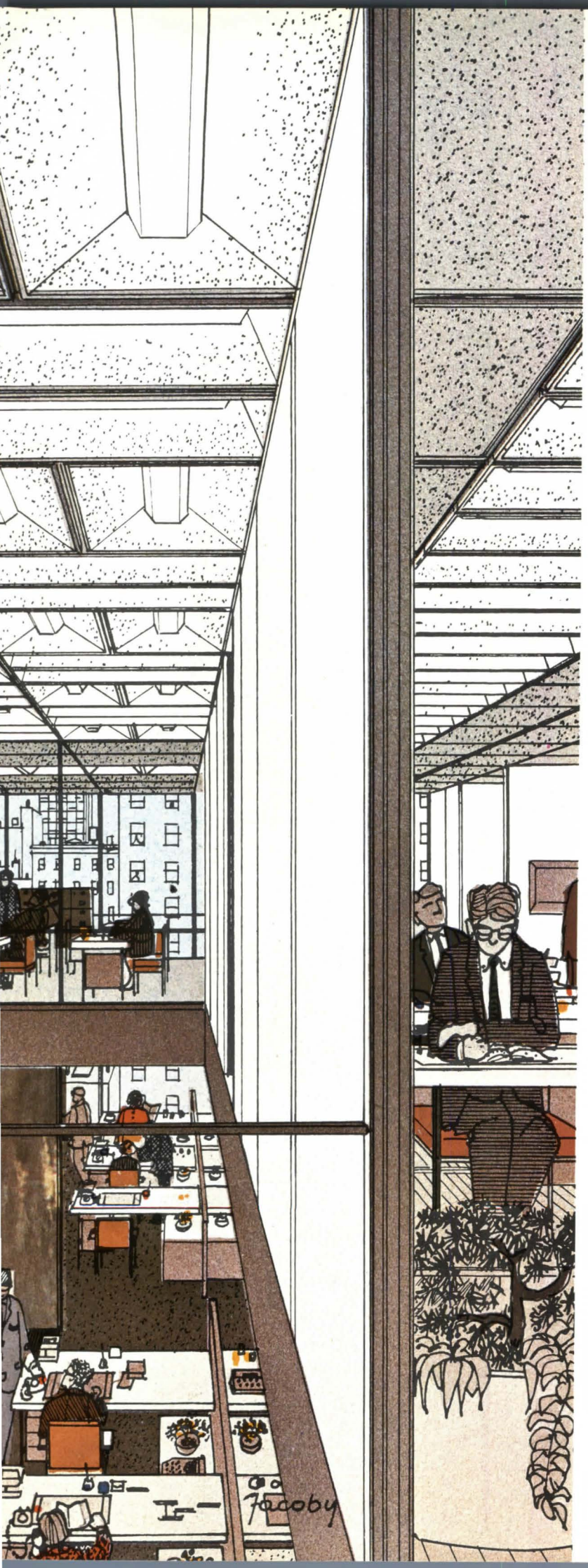

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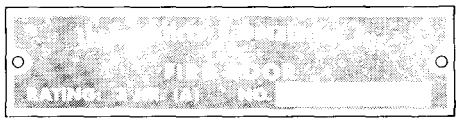
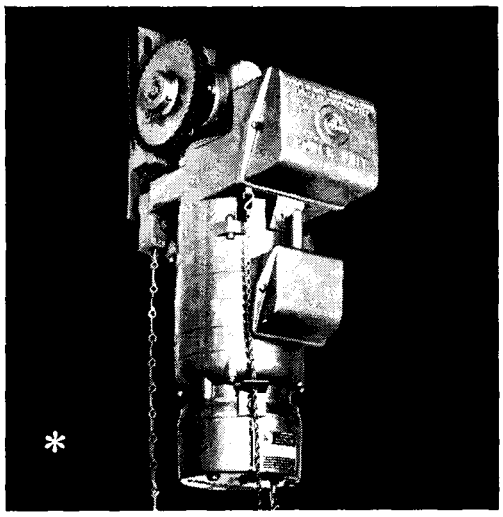
* 



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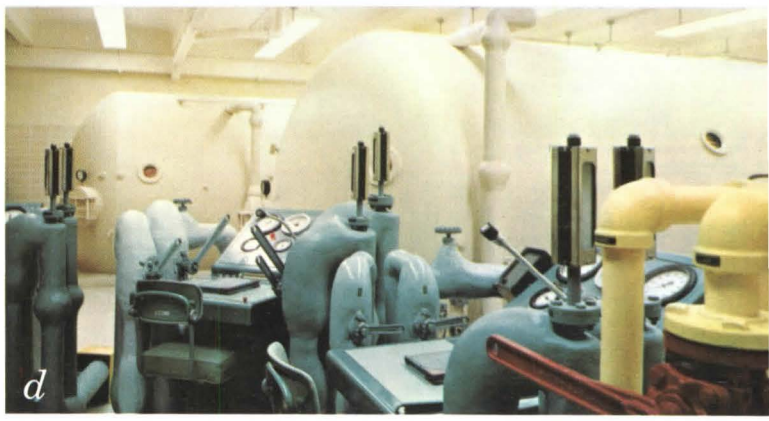

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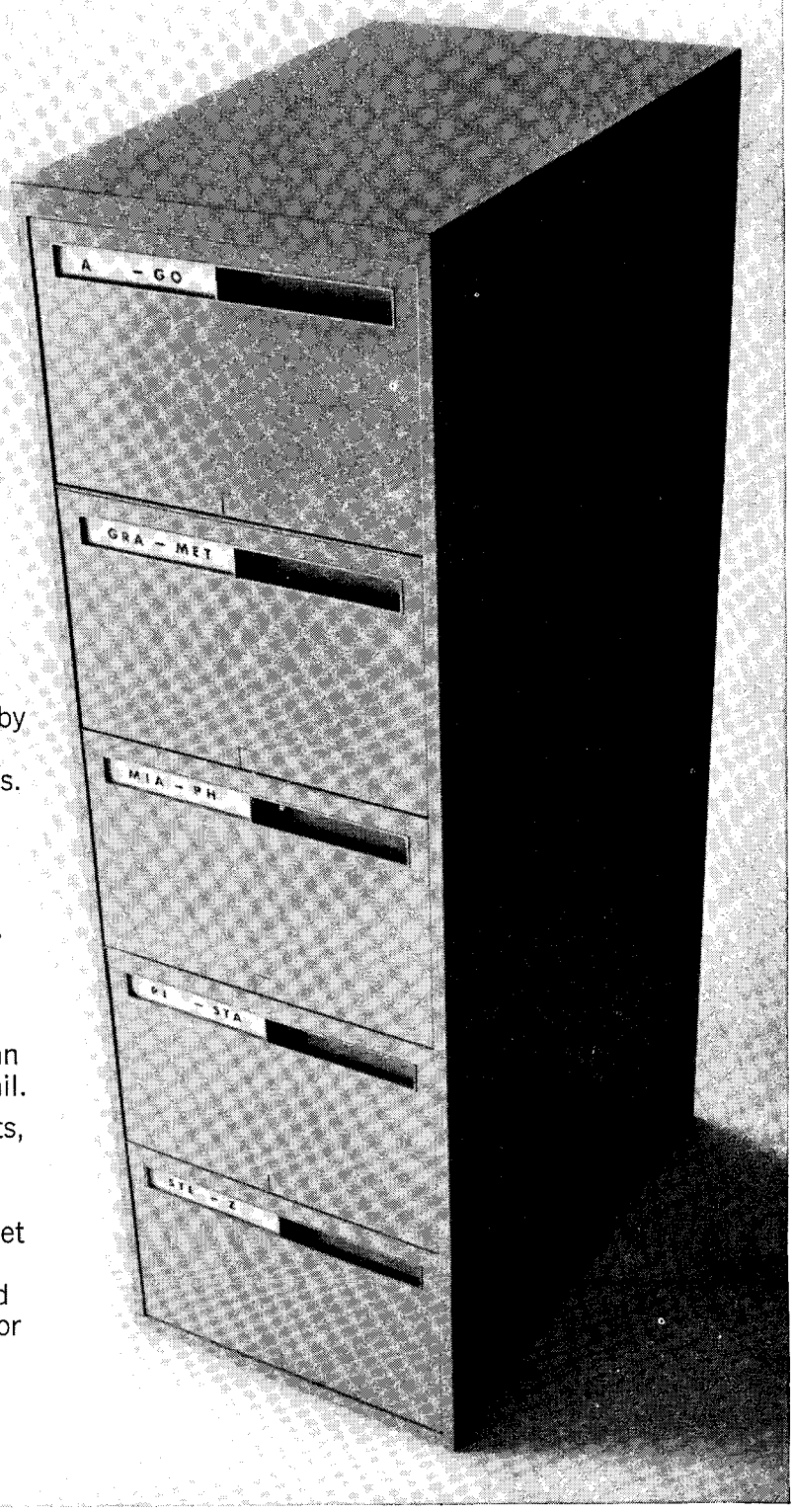

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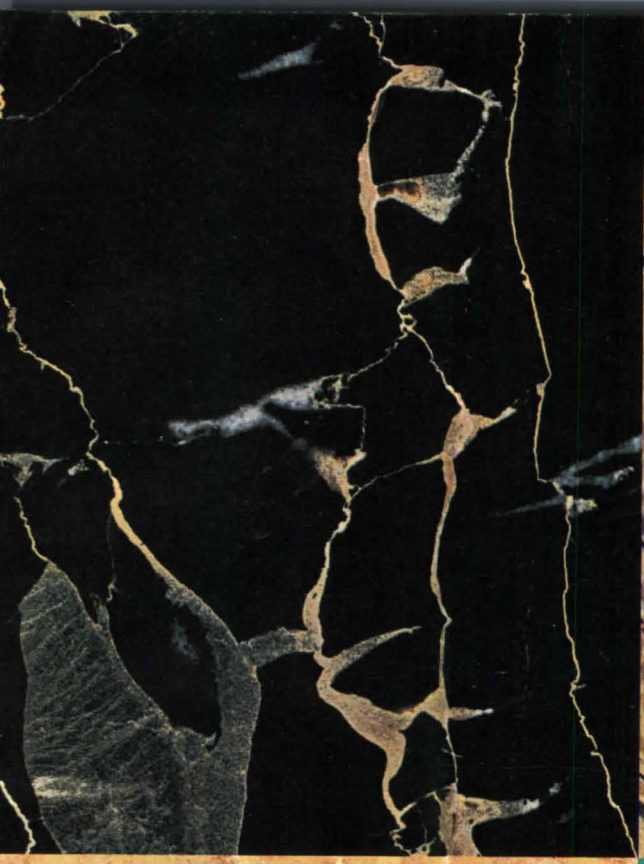

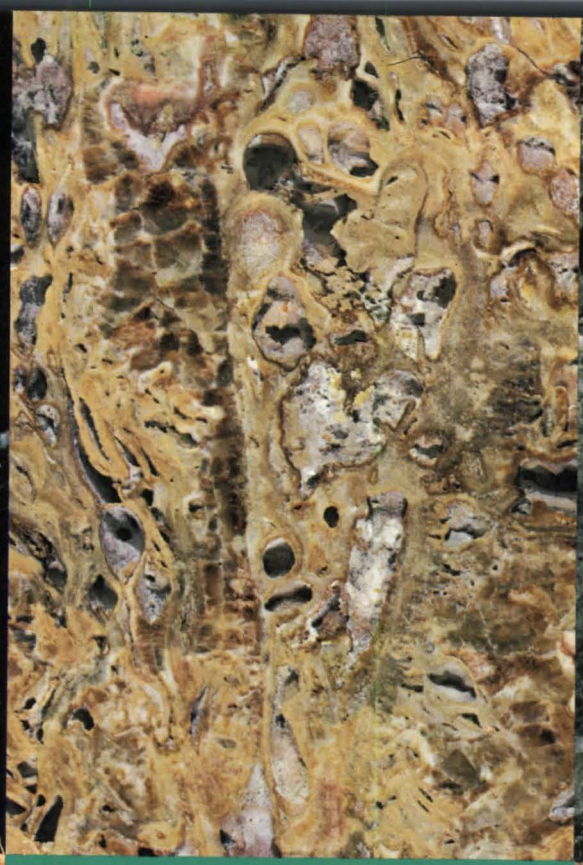

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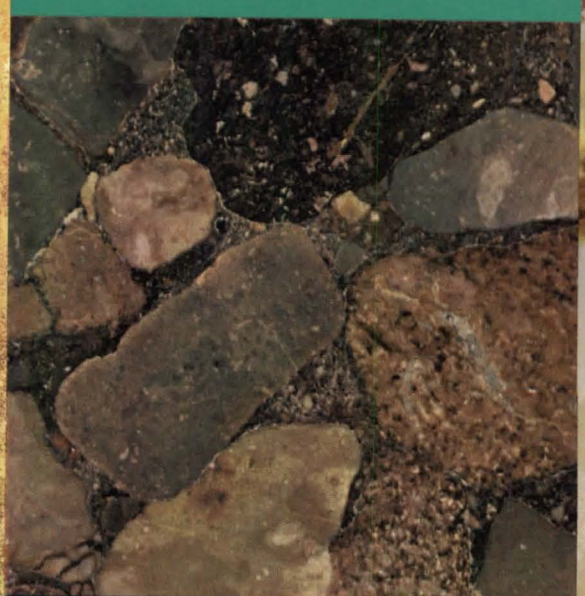

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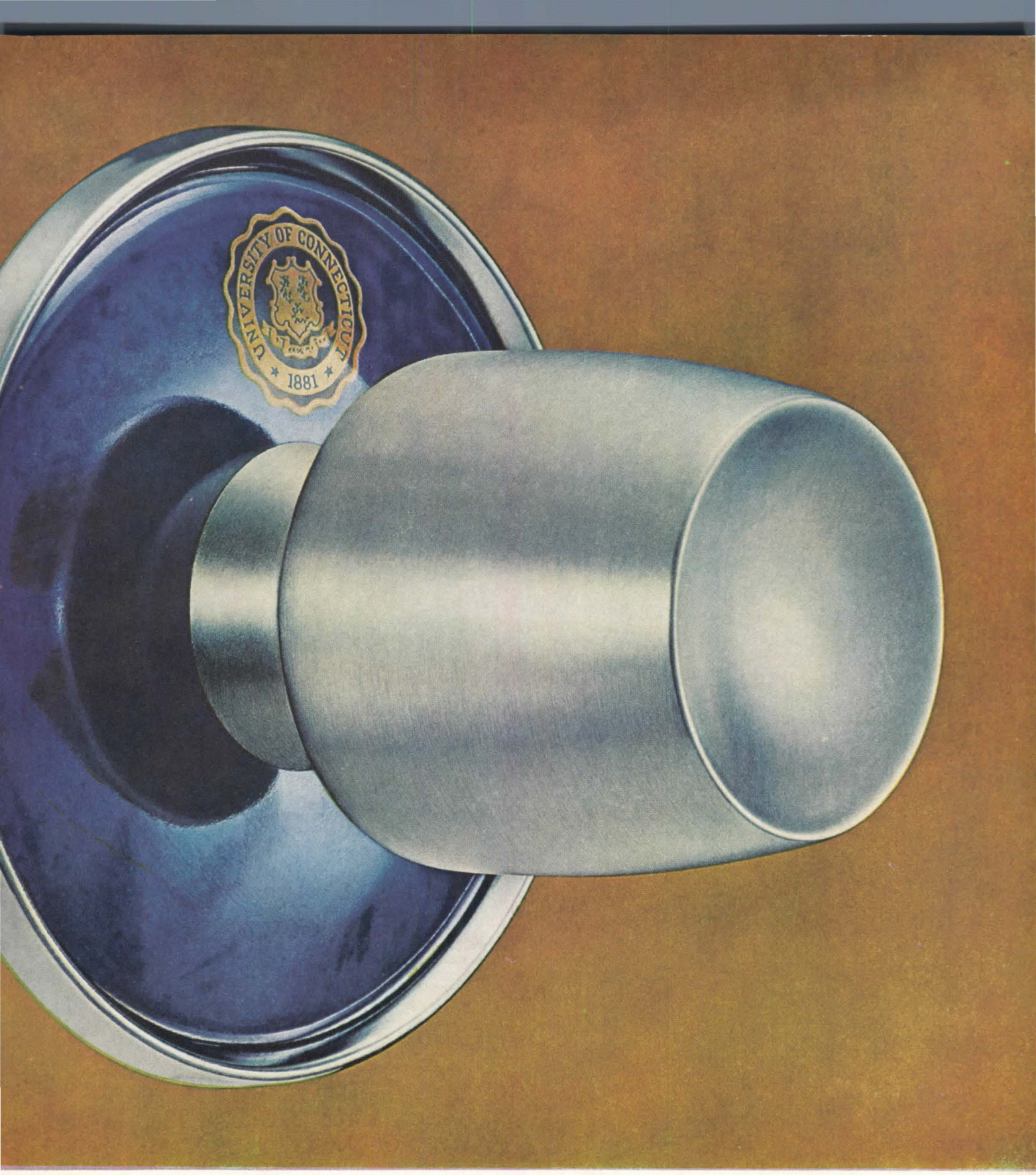

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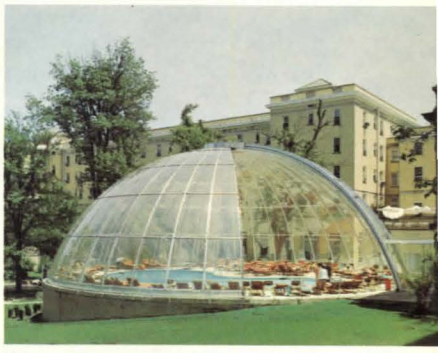

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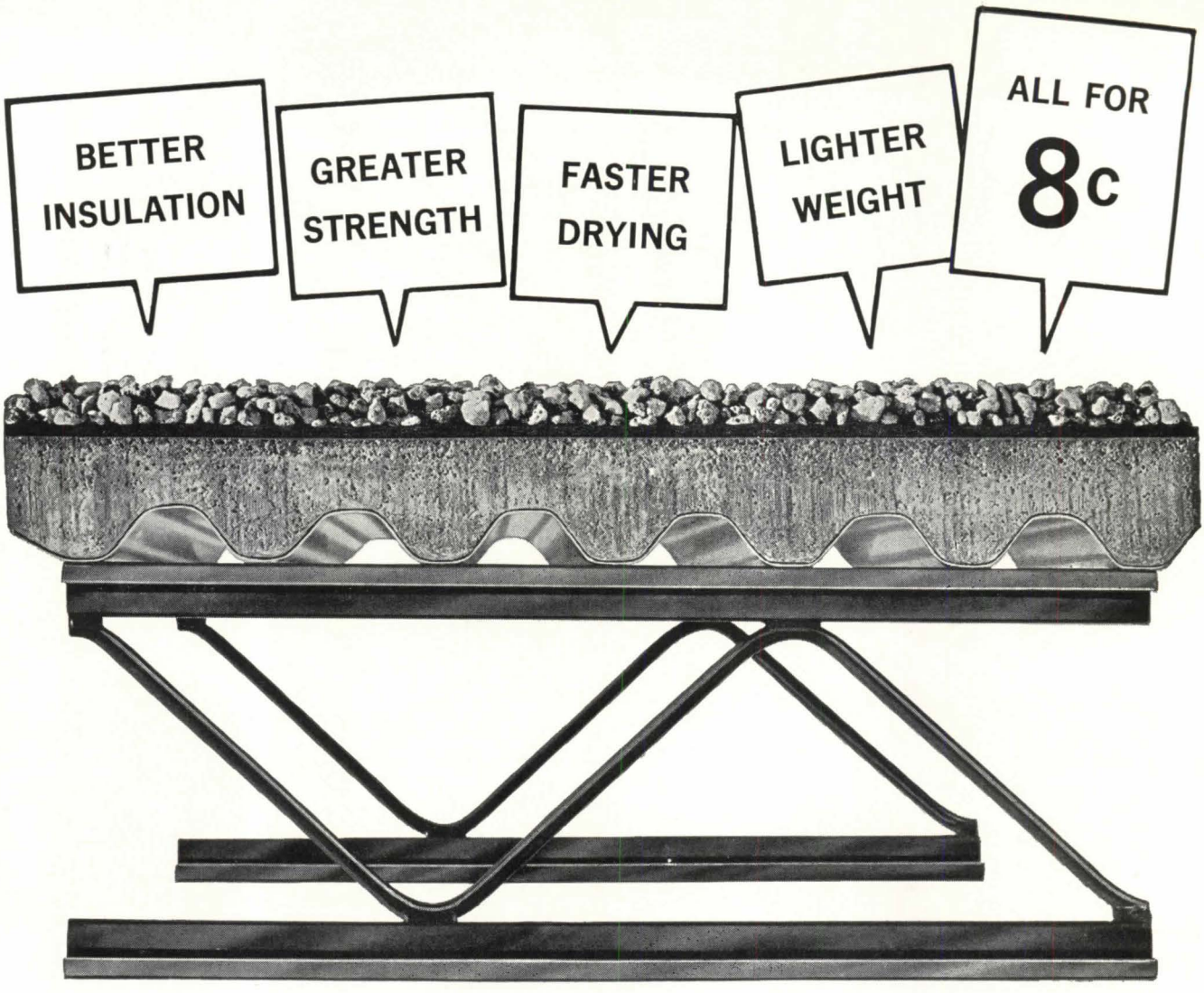

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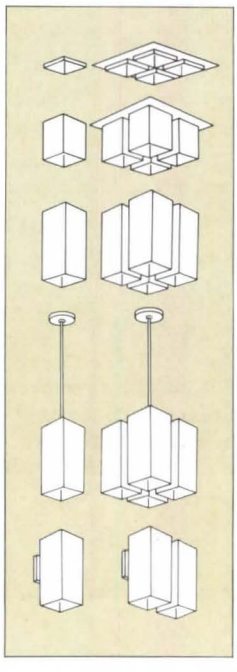

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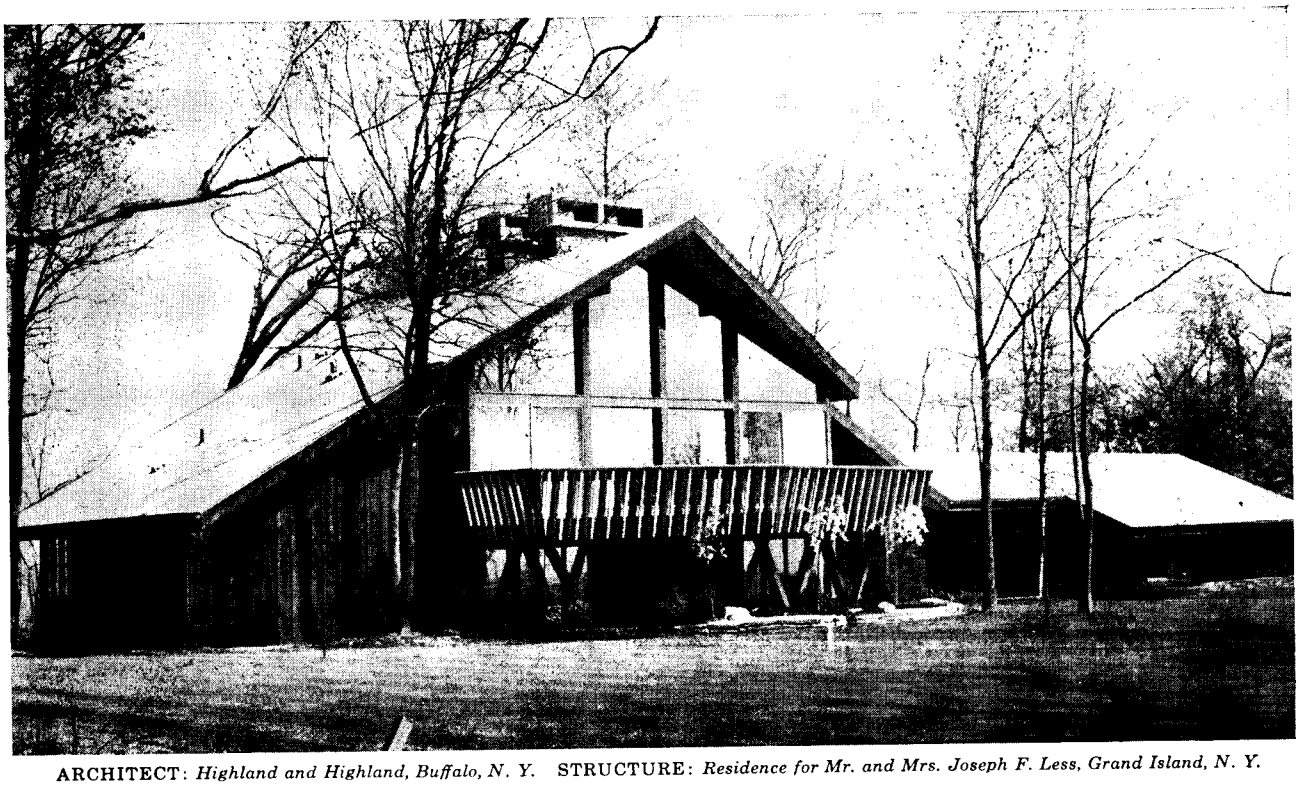

ARCHITECT: *Highland and Highland, Buffalo, N. Y.* STRUCTURE: *Residence for Mr. and Mrs. Joseph F. Less, Grand Island, N. Y.*

Here are the Architect's specifications

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in which the esthetic
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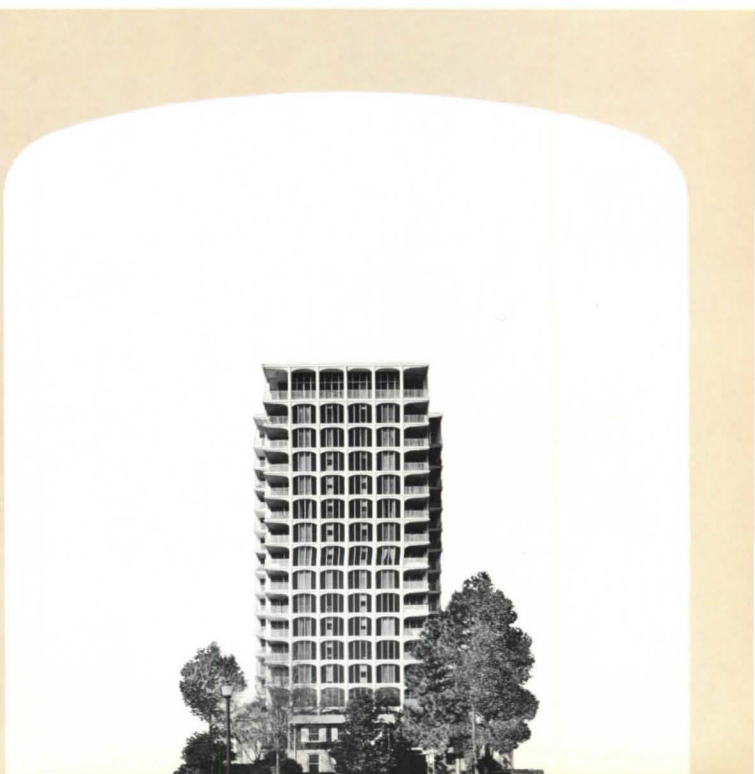

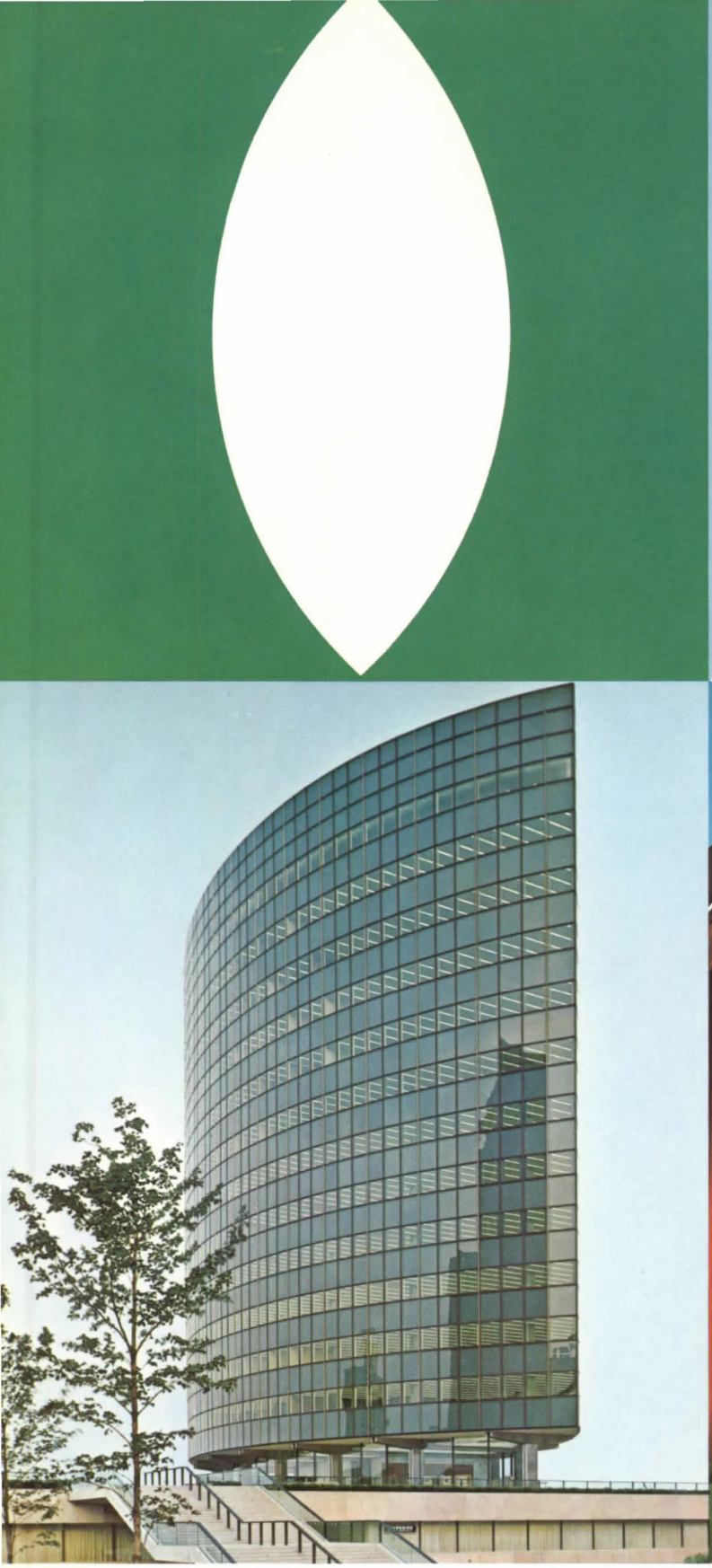

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Architect: A. Epstein and Sons, Inc.,
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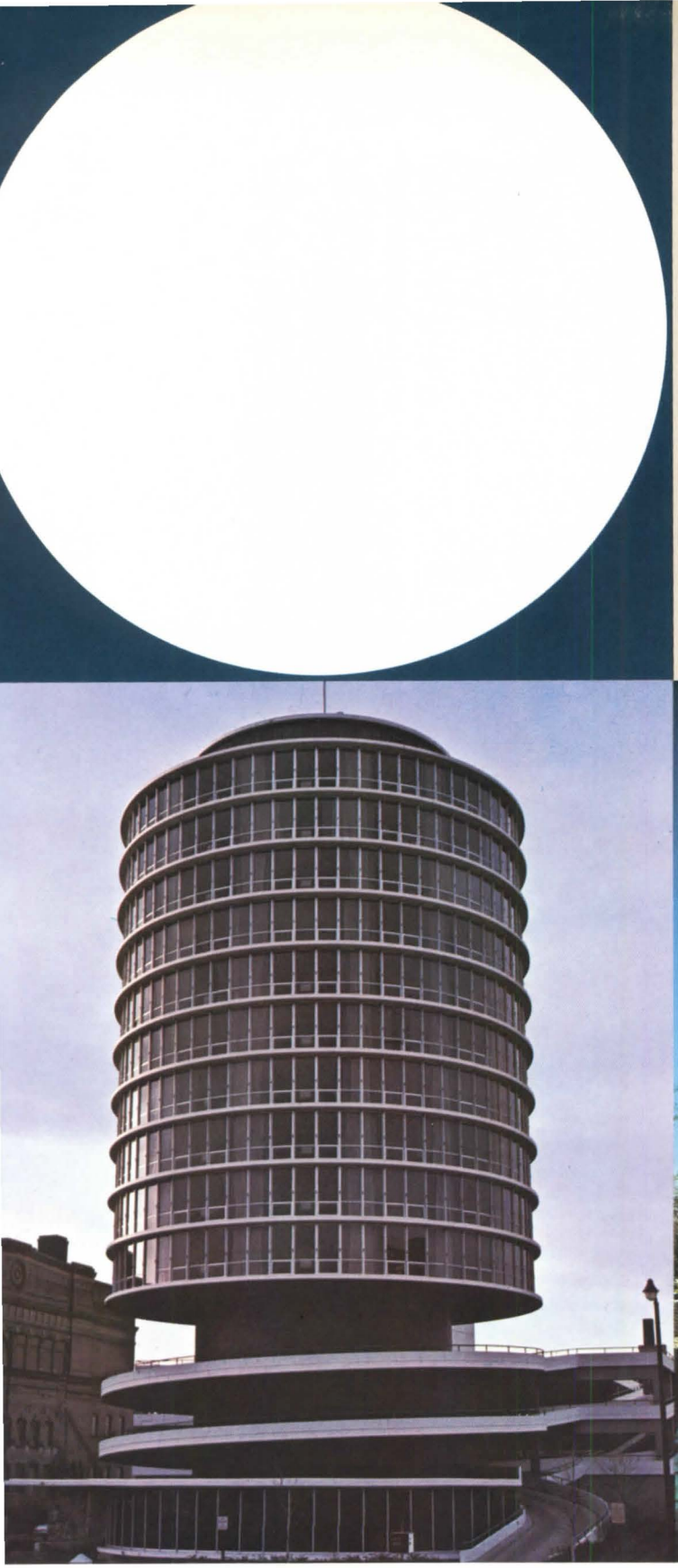
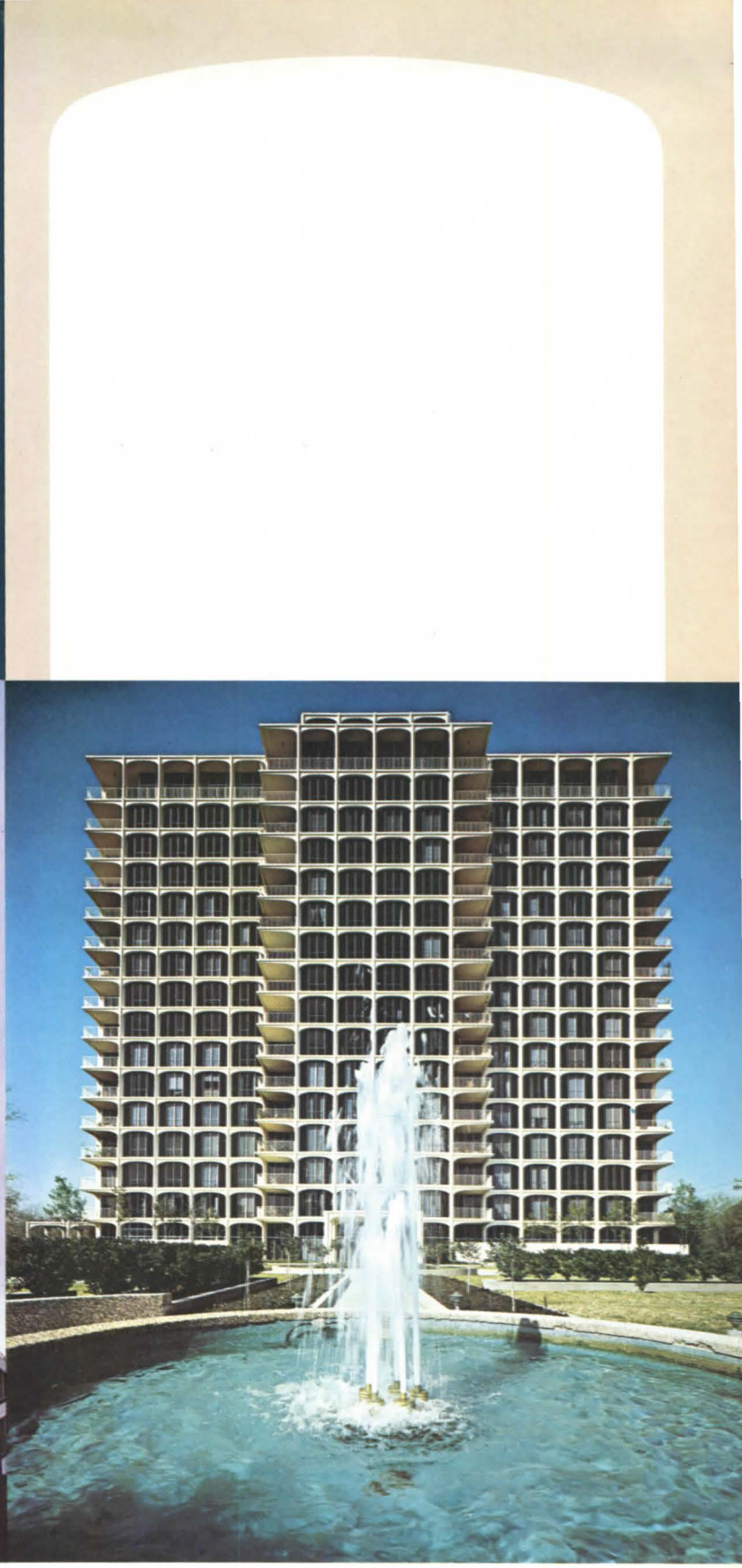




Glass heightens the drama of almost any design, yet does it unobtrusively. A case in point is the Christopher Inn motor hotel in Columbus, Ohio. PPG GRAYLITE™ glass dramatically enhances this simple reinforced concrete structure.

In the guest rooms, floor-to-ceiling glass gives the illusion of greater space. Outside, the soft gray hue of GRAYLITE blends smoothly with the exposed concrete while blocking a good percentage of the sun's glare. The effect is striking.

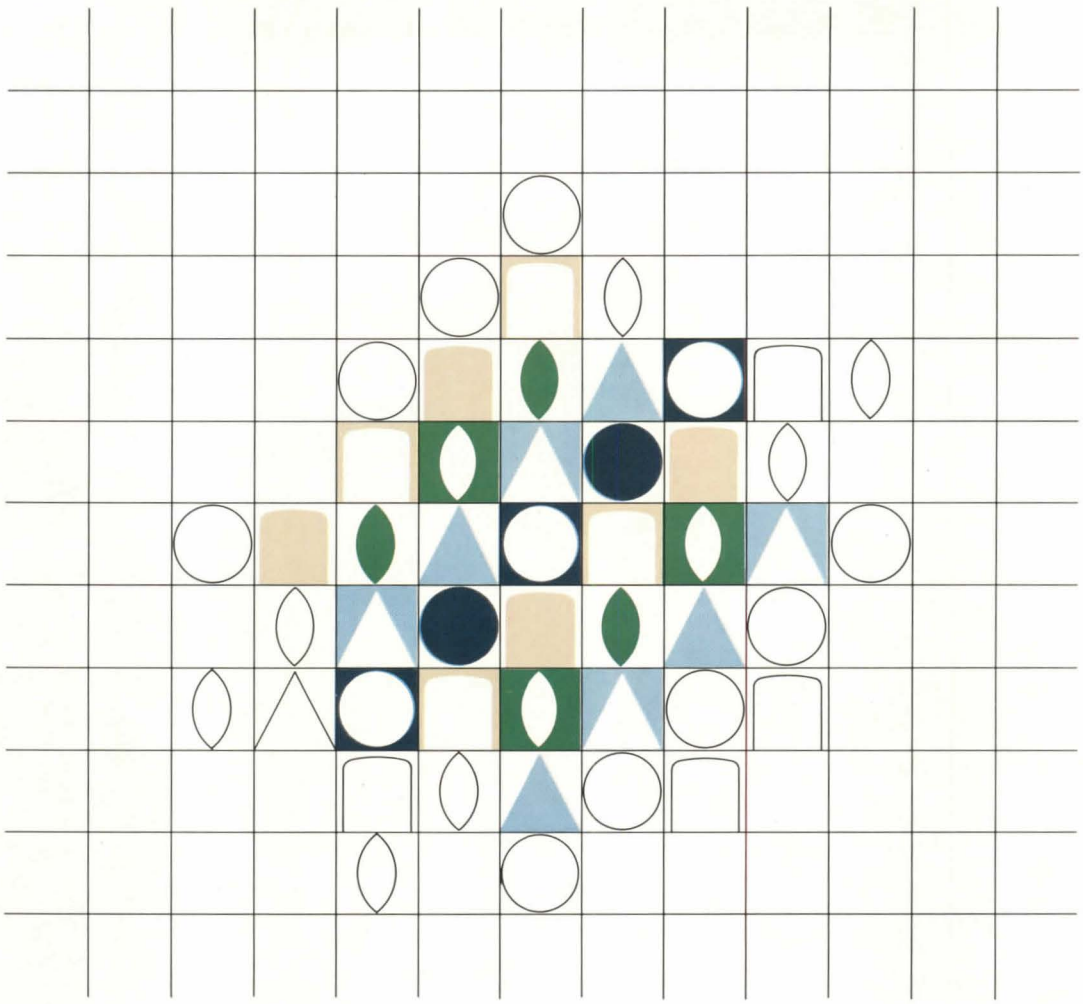
Architect: Karlsberger and Associates, Columbus

Inwood Manor, a 16-story apartment building in Houston, Texas, demonstrates an imaginative contrast—or visual contradiction—in the use of building materials. The lacelike, delicate white arches are solid concrete, while the dark "substantial" material behind them is glass.

The vision glass, PPG SOLARGRAY® plate, is flanked by "matching" black panels of PPG SPANDRELITE® glass. In addition to its important esthetic contribution to the building, SOLARGRAY handles the practical job of blocking part of the sun's heat.

Architects and Planning Consultants: Neuhaus & Taylor, Houston

PITTSBURGH PLATE GLASS COMPANY



These four examples demonstrate how glass brings its brilliance and its contrasts, its color and its transparency, its infinite variety to architectural design. It offers advantages both esthetic and practical, ethereal and permanent. For further information, contact your nearest PPG branch office or distributor, consult Sweet's Catalog file, or write to *Pittsburgh Plate Glass Company, One Gateway Center, Pittsburgh, Pa. 15222.*

PPG makes the glass that makes the difference.

NEWS REPORT

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

Pei to Add to Saarinen Work

DES MOINES, IOWA. Designed by Eliel Saarinen, the Des Moines Art Center Building was completed in 1948. Now, two recent gifts make possible needed expansion of the existing structure. One gift, from the Gardner Cowles Foundation, will provide for construction of an enclosed sculpture court. The second, from Des Moines residents, Mr. and Mrs. Ellis I. Levitt, provides funds for a new auditorium.

I. M. Pei has been selected to design these additions. In speaking for the building committee, chairman David Kruidenier commented: "Des Moines is fortunate to have Mr. Pei's interest in this expansion project, which will bring another example of nationally significant architecture to the city." Both the Art Center and Des Moines will be better off if, instead of a structure significant in itself, the design is aesthetically in keeping with the existing structure and with the spirit of this fine Midwestern city.

Aid-To-The-Arts?

WASHINGTON, D.C. With Dr. Walter Gropius and Buckminster Fuller among the 400 persons looking on, President Johnson last month signed into law the Federal aid-to-the-arts bill. "What this bill really does," explained the President, "is to . . . make fresher the winds of art in this great land of ours. America has not always been kind to its artists and scholars. Somehow the scientists always seem to get the penthouse while the arts and humanities get the basement."

By way of atonement, the bill provides funds for "the arts" in the amount of $21,000,000 a year for the next three years. Just how these "basement winds" will freshen architecture is not spelled out, but one hopes that, at least, they will contribute to improving the lackluster character of current Federal architecture. Perhaps funds could be made available for competitions for the design of significant Federal structures. Or perhaps funds could go to metropolitan areas, to help them in drawing up master plans for urban renewal. Or funds could be used to set up the non-profit Urban Design Center proposed by Morris Ketchum, Jr. What is needed, now that token funds are available, are some fresh thoughts on how best to use them.

AIA Calls For National Urban Design Center

LOUISVILLE, KY. Speaking to building materials manufacturers at the forty-fourth annual meeting of the Producers Council, Inc., AIA president Morris Ketchum, Jr., called for the formation of a national Urban Design Center, presently under consideration by the AIA. Such a Center would translate "the best creative ideas of architects, landscape architects, muralists, sculptors, and other artisans . . . into fabricated designs for use in furnishing the outdoor spaces of our cities. The Urban Design Center would work on street furniture: benches, trash receptacles, light standards, and fixtures. It would go extensively into attempts to bring order out of the present chaos of store signs and the graphics of street and highway directional signs. It would study and make recommendations on the uses of water and landscaping in open spaces, in short, all the small things that provide the amenities in urban areas." Ketchum sees the Center as being financed by donations from private individuals and corporations. In theory, it sounds as if it might help delay urban decay. How well it would work in practice is something else. We hope, in any case, that it will be given the chance to prove its worth.

Highway Beautification Bill Is On The Road

WASHINGTON, D.C. As we go to press, the much-touted highway beautification bill rests on the President's desk. It will, of course, be signed into law, even though severe changes have been made over the President's original proposals. President Johnson, for instance, wanted billboards controlled within 1,000′ of the 226,000 miles of the nation's interstate and primary roads. This distance has been cut to 660′. He had also asked that $100,000,000 a year, one third of the Federal funds authorized, be used for construction of roads leading to or through scenic areas. This provision was eliminated from the final bill.

States must agree to control billboards and to remove or screen junkyards along their Federal roads by January 1, 1968, or forfeit 10 per cent of their Federal highway grants.

Each state will receive funds equal to 3 per cent of its highway construction aid to finance this beautification.

No doubt, the influence of the President's wife helped the bill's passage. "I just couldn't say no to Lady Bird," drawled Texas' Representative Roberts.

Measure of Ugliness

WASHINGTON, D.C. Just how "ugly" is America? Although the answer is highly elusive, it is measurable, for ugliness, unlike beauty, does not lie in the eye of the beholder. Few persons, for example, take aesthetic pleasure in the twisted, rusting, chaotically piled-up heaps of discarded automobiles that always seem to adjoin major highways. Throughout the U.S., according to a survey undertaken by the Department of Commerce, some 17,500 monumental eyesores, such as junkyards and scrap metal heaps, line the roads. The survey covered 265,000 miles of interstate highways and other Federal-aid primary routes. This means there is an eyesore every 15 miles. Texas, the leading offender, has 1602 of them; Georgia, in second place, has 957; Pennsylvania is next with 899; and Rhode Island has 22. When is someone going to do a survey of roadside drive-ins? How long will it be before our highways are lined with eyesores in unbroken stretches, with eye-pleasing vistas limited to one every 15 miles—until, as Henry Morgan once said, "you'll have to go to Venezuela to see a tree"?

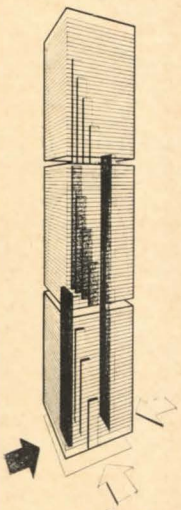
World Trade Center Stirs

NEW YORK, N.Y. Like most other Goliaths, New York City's World Trade Center is slow moving. But it *is* moving. On September 9, the Port of New York Authority authorized financing (an estimated $525,000,000 in all), selling the first $10,000,000 of the Authority's securities for the Center. Authorized at the same time was the sale of an additional $75,000,000 worth for the Center and other Authority purposes. According to Austin J. Tobin, the Authority's executive director, demolition of the structures now occupying the western portion of the 16-acre site (on the west side of Manhattan's financial district) will be under way by the end of the year. Also by the end of the year, the foundation contract should be out for bids.

The World Trade Center's twin 110-story towers, designed by Minoru Yamasaki & Associates in association with Emery Roth & Sons, and the four- to six-story buildings they plan around the center's plaza, will contain 10,000,000 sq ft of rentable space. Of this space, 4,500,000 sq ft will be set aside for Federal agencies involved in commerce moving through the port of New York. Some 4,000,000 sq ft will be used by trading corporations and companies that support

this trade. The rest of the space is for N. Y. state engineers.

According to Tobin, the towers will have over 10 per cent more floor space available than would a conventional building of the same height. Tobin explains it this way: "More space will be available on every floor as a result of the "sky lobby" system. In this system, the building is divided into thirds, with interchange floors, or "sky lobbies," at the forty-fourth and seventy-eighth floors. Each of the "sky lobbies" is reached by extra-big, extra-fast elevators. Conventional elevators serve intermediate floors. By re-use of the same core space for three tiers of elevators in each of the three zones, rentable space (which would only amount to 77 per cent in a conventional 110-story building) is increased in the Trade Center to 87½ per cent of the gross."



THE WORLD TRADE CENTER

SCHEMATIC DRAWING OF REVOLUTIONARY SKYLOBBY ELEVATOR SYSTEM TO BE USED IN THE TOWER BUILDINGS SHOWS THREE SEPARATE ZONES, ONE ABOVE THE OTHER.

EXPRESS ELEVATORS (LEFT) WILL CARRY PASSENGERS TO THE SKYLOBBY AT THE 41 st FLOOR WHERE PASSENGERS WILL TRANSFER TO LOCAL ELEVATORS FOR TRANSPORTATION BETWEEN THE 42 nd AND 74 th FLOORS

EXPRESS ELEVATORS (RIGHT) WILL CARRY PASSENGERS TO SKYLOBBY AT 74 th FLOOR WHERE PASSENGERS WILL TRANSFER TO LOCAL ELEVATORS FOR FLOORS ABOVE

THE EXPRESS CARS, THE LARGEST AND FASTEST EVER BUILT, WILL BE ABLE TO CARRY 55 PEOPLE, OR 10,000 POUNDS, AT A SPEED OF 1,700 FEET A MINUTE

THE SKYLOBBY SYSTEM, WHICH REQUIRES A FEWER NUMBER OF ELEVATOR SHAFTS, WILL MAKE AVAILABLE MORE USABLE AREAS IN THE BUILDINGS THAN IN THE CONVENTIONALLY EQUIPPED SKYSCRAPERS. IT ALSO WILL DECREASE TRAVEL TIME BETWEEN FLOORS WITHIN THE ZONES

The New Macy's Store Gets Good Marks in Traffic Flow...

QUEENS, N.Y. If anyone can do it, R.H. Macy & Company is the one. And it *has* done it. The new Macy's in Queens (the fifty-first store in the Macy family) is open, offering its customers the goods and an easy way to get them (see p. 75, APRIL 1964 P/A). The store, 426′ in diameter, has peripheral parking for 1250 cars on each of its six levels. To insure efficiency, a computer directs customers to vacant parking spaces; the concrete grilles of the façade facilitate ventilation of the parking areas. Entrance and exit is by way of the two interlocking helices on the side of the structure (see photo).

The department store—an SOM design of white quartz aggregate—professes to serve the community in a civic as well as a commercial way. In its second-floor Community Room, educational courses will be open to the public in everything from baton-twirling to tabletop decorating. At night, the store will function as a civic monument, with light shining through the slits of the façade—a Queens Coliseum of sorts, sitting amidst the ruins.

Yet the building itself is an effective one, simple and consistent, with only two brassy Macy signs to mar the façade.

...But Fails Geometry

QUEENS, N.Y. When Macy's was planning their circular store for the borough of Queens, one of the people they talked with was Mrs. Mary Sondek. Mrs. Sondek owns a plot of land that Macy's needed; part of the store would cut across it. Mrs. Sondek still owns the land and the house on it. And Macy's, Queens, has a notch in the side of its circular structure where the store cuts around—instead of across—Mrs. Sondek's yard. Mrs. Sondek has a dog: "I've got a dog, and he has to have a place to run," she says. An he does have a place, even though Macy's offered her a reported $200,000 for her land, and ended up spending $50,000 putting in the notch.

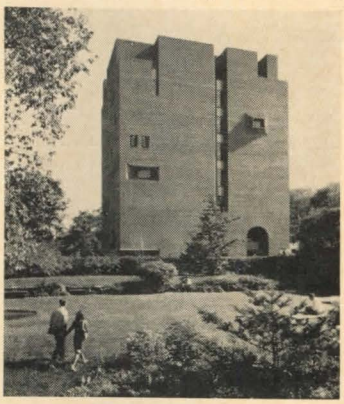
Macy's has had trouble acquiring land before. When they built on Manhattan's Herald Square at the turn of the century, they had to build around a wedged-shaped plot on the corner of Broadway and 34th Street. The five-story building there still stands today—with a four-story "Macy's" sign across its façade. One hopes the same fate will not befall the indomitable Mrs. Sondek.

Friendly Harvard Hall

CAMBRIDGE, MASS. The exterior of the Roy E. Larsen Hall at Harvard University looks like a genial robot. Its solid brick façade is massed rigidly. Were it not for the playful, humorous, almost whimsical, fenestration and arched entrances, the building's outstanding characteristics would be strength and dignity. As it is, these characteristics are offset so well that Larsen Hall emerges with both strength and humor. It is a building one would like to get to know well.

Deep vertical window slits penetrate both front and back of the building, exposing floor spandrels, and marking the otherwise hidden floor levels the way markings on thermometers mark degrees.

The building houses faculty offices, conference rooms, and study space for students at Harvard's Graduate School of Education. Each floor is organized around an informal meeting area, intended as a place to stimulate exchanges of ideas. Short hallways, with the resulting close proximity of offices,



are meant to contribute to the same sense of intimacy.

Architects Caudill, Rowlett, Scott, while showing their appreciation of the work of Breuer and Le Corbusier, have created a distinctive building.

Hommage á Corbu

Ceremonial tributes to Le Corbusier have started in this country with testimonials at Columbia University and Harvard University. The Columbia meeting, held on October 18 and sponsored by the school of architecture, featured a eulogy by José Luis Sert and a performance by Edgar Varese of his "Poème Electronique," written for Corbu's Brussels Fair pavilion. Dean Sert also spoke at the Harvard gathering, together with Dr. Walter Gropius. A special exhibition of the late architect's work had been mounted in Carpenter Center for the Visual Arts, his sole building in the U. S.

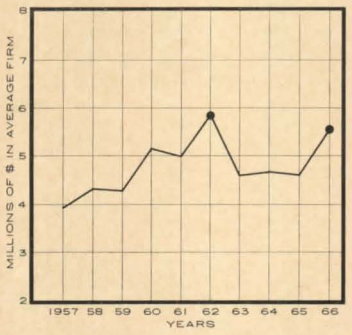
SIGNIFICANT RISE IN ARCHITECTURAL BUSINESS SEEN FOR 1966

Architects across the U.S. report a substantial 16.5% increase in business for 1966. The average dollar volume per office is $5,518,584, according to 1284 respondents in PROGRESSIVE ARCHITECTURE'S annual business survey, the only one of its kind in the architecturally designed building field. With seven of the ten major geographical areas of the country reporting gains, total work on the boards in these 1284 offices for next year is $7,100,000,000. Riding at the second highest level in the past 10 years, the average dollar volume per office should be welcome news not only to architects, but also to consultants and suppliers.

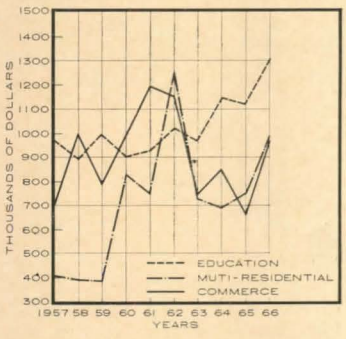
Education continues to be the leading breadwinner for architects, as it has for the past three years, with the average office reporting 23.8% of their work in this category. This represents a slight percentage drop over last year, although the average dollar volume is up slightly, to $1,312,433 *(Table 3)*. Continuing in second place is Residential (Multiple) (18%), with Commercial building not far behind (17.5%). Residential (Private) work continues to slump, with an even smaller percentage (1.7%) reported than last year. A slight percentage rise in both Industry (9%) and Defense (3.1%) may reflect the war effort in Viet Nam and the push into outer space but reflects just as surely the continued expansion of a healthy economy.

Seven of the ten geographical regions reporting will enjoy an increase in business in 1966. These are: Northwest, North Central, Great Lakes, Northeast, Southeast, Gulf States, and Texas. In the Great Lakes states, this year's most active area (replacing the Central States in top spot), business in the average office has more than doubled. In every region, either Education or Commerce is the leading building category, except in California-Hawaii, and the Southeast, where Residential (Multiple) leads. In the latter two areas, the substantial Residential (Multiple) work may mean that these areas are just now feeling the apartment boom that swept most of the rest of the country three years ago *(see graph)*. The split of work between public (36.8%) and private (63.2%) clients is almost exactly the same as a year ago. But slightly more work is in the preliminary design stage than last year at this time, meaning that the high dollar volume of business will continue throughout 1966. A reported 47.3% is already in the working drawing stage, so the first half of the year will show healthy activity.

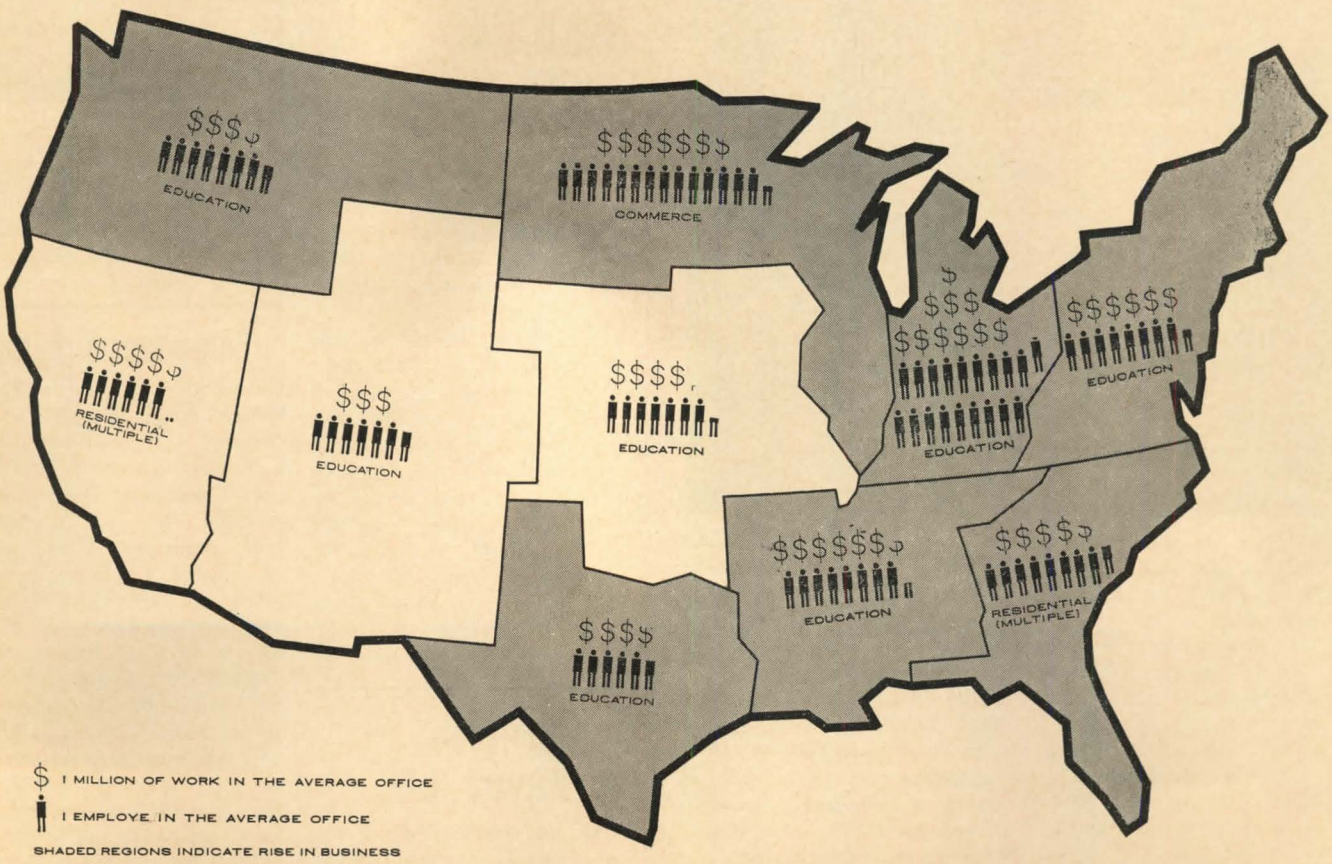
After a three-year decline, specialization in one building



Ten-year breakdown of dollar volume of business in average firm. Survey shows that 1966 will be second busiest year for architects since 1957.



The three most active building categories are plotted for last 10 years, showing average dollar volume in each category in average firm. Education has had fairly steady growth. Others have been more erratic.



type seems to be increasing, with a total of 10.24% of firms reporting specializing in some sort of work *(Table 5)*. For the most part, these specialized firms are small, recently formed ones with commissions so far in only one building category. Defense, in which no firm specialized last year, is back on the list; urban design, on the other hand, has disappeared. The make-up of the majority of U.S. architectural firms is indicated in Table 4, which shows *categories* of projects on the boards in percentage form, as opposed to those types responsible for largest average dollar volume *(Table 3)*.

Tabulation of offices according to number of employees is almost exactly the same as in 1965 *(Table 6)*, with a slight decrease in those employing more than 40 persons. Following the pattern set 10 years ago, when this forecast was first reported in its present form, the typical architectural office (77.5%) will have up to nine employees. Categorized on the basis of dollar volume of work in progress, the great majority of U.S. firms (88.0%) will be in the up-to-$10,000,000 category.

Asked about the reasons for the steady rise in architectural business in the last 15 years *(see graph, facing page)*, most respondents attributed the increase to uninterrupted years of peace. The population explosion and inflation, as well as easy financing and a steady increase in cultural appreciation and taste, were also thought significant factors.

The bold increase in architectural business in 1966 is, of course, partly the result of these same factors. Also cited is increasing urbanization. But, paradoxically, some respondents feel that business in 1966 will be brisk because of war in Viet Nam. Evidently, the architectural business, like show business, now flourishes in both peace and war.

Business next year will be affected, most respondents feel, by rising construction costs and labor demands, counteracted somewhat by a greater efficiency in construction. The trend toward prefabrication and automation will continue. And, of course, as in the past, new materials and techniques are expected to create opportunities for new design concepts.

TABLE 1

Number of firms reporting and regional distribution

Region	No. of Firms	% of Firms
Northwest	73	5.4%
North Central	135	10.5
Great Lakes	122	9.5
Northeast	337	26.3
Southeast	149	11.6
Gulf States	73	5.7
Central States	62	4.9
Texas	75	5.9
Western Mountain	80	6.3
California-Nevada	178	13.9
Total	1284	100.0

Although regional distribution of returns remains about the same as in the past, the number of firms reporting from California, Nevada, and Hawaii more than doubled. Only one return was received from the Virgin Islands. No replies were received from Montana, Nevada, Nebraska, or New Hampshire.

TABLE 2

Average dollar volume by region

Region	Average $ Volume
Northwest	$3,520,832
North Central	6,697,880
Great Lakes	9,745,280
Northeast	5,837,054
Southeast	4,644,671
Gulf States	6,547,638
Central States	4,223,565
Texas	3,790,773
Western Mountain	3,086,200
California-Nevada	4,525,381
National Average	$5,518,584

Dollar volume lead moves from Central States to Great Lake States. National average is almost $1,000,000 greater than in any of past three years.

TABLE 3

Dollar volume averages and % distribution of work by types of buildings in all regions

Type	% of All Firm's Work	$ Volume in Average Office
Education	23.8	$1,312,433
Residential Multiple:	18.0	994,921
(Low Rise)	(10.8)	(596,395)
(High Rise)	(7.2)	(398,526)
Commerce:	17.5	964,128
(High Rise)	(9.1)	(502,826)
(Low Rise)	(8.4)	(461,302)
Health	10.8	594,541
Industry	9.0	495,383
Public Use	6.7	372,873
Religion	3.1	173,901
Defense	3.1	169,376
Urban Design	2.3	126,922
Other	2.1	113,919
Recreation	1.9	107,276
Residential Private	1.7	92,911
Total (average office, all regions)	100.0	$7,085,862,236

Education, Residential (Multiple), Commerce, Industry, Defense, Urban Design, and Recreation show gains for 1966. Commercial work shows the greatest gain; Public Use the largest decline.

TABLE 4

Activity of architectural firms in types of buildings

Types of Buildings	% of Firms Reporting Current Work
Commerce	57.2
Education	48.4
Residential:	
(Multiple)	43.1
(Private)	42.2
Religion	27.6
Health	26.6
Public Use	23.5
Industrial	22.7
Other	9.3
Defense	6.9
Urban Design	5.4

Most U.S. firms have work in more than one building category, so percentages add up to more than 100.

TABLE 5

Specialization of architectural firms

Types of Buildings	% of Firms Doing Only This Type
Education	2.3
Commercial	2.1
Residential:	
(Multiple)	1.8
(Private)	1.6
Religious	.9
Industrial	.6
Health	.4
Public Use	.2
Other	.2
Recreation	.07
Defense	.07
Total	10.24

Total specialization has increased slightly since last year. Defense work is back in the list after a year's rest, but this year none of the firms reporting specialize in Urban Design.

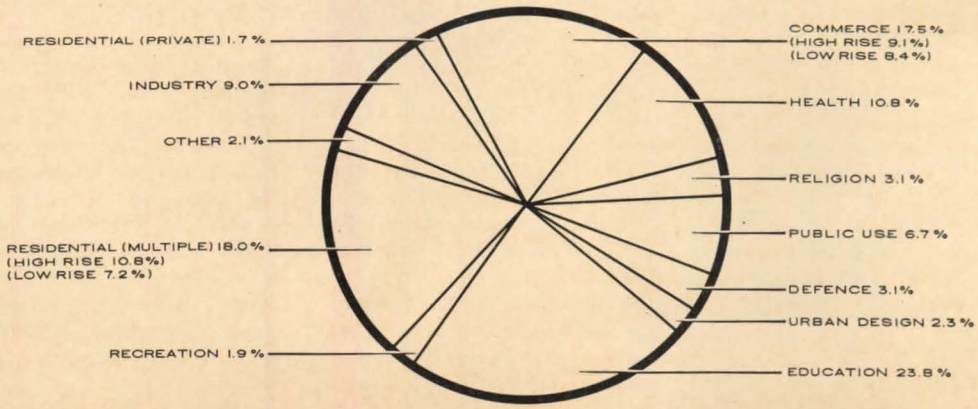
TABLE 6

Sizes of architectural firms

Size of Firm by Number	% of National Total
Up to 4 employees	46.1
5–9 employees	31.4
10–19 employees	14.0
20–39 employees	5.7
40–100 employees	2.1
Over 100 employees	.7
(Total Reponse: 1284)	100.0

Size of Firm by $ Volume of Work on Boards	% of National Total
Under $1 million	29.6
$1–10 million	58.4
$10–50 million	10.4
$50 million or over	1.6
	100.0

Percentage of firms with over 40 employees is down slightly, while percentage with over $10,000,000 is up.



GSA APPOINTS ARCHITECTUAL PANEL

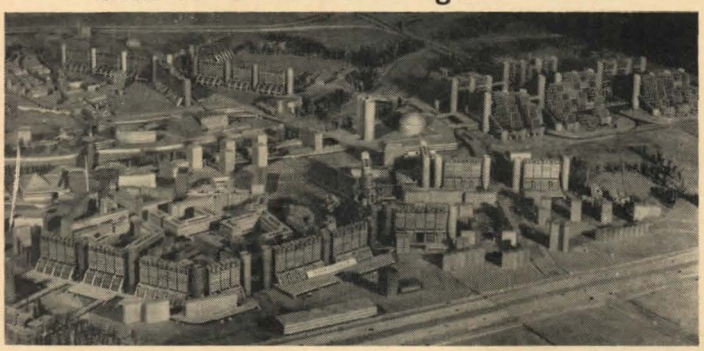
WASHINGTON, D.C. In an obvious reply to criticisms of some recent Federal buildings —and of the appointment of a lawyer (Lawson B. Knott, Jr.) as head of the agency — the General Services Administration has named a 17-member panel of architects to review building designs.

Selections were made to give geographic representation, and also, according to Karel Yasko, assistant GSA commissioner for design and construction, to provide a panel equally balanced with "design-oriented and construction-oriented architects." The panel, which will serve for one-year term without pay, will: (1) review all designs for GSA-built buildings; (2) review GSA design standards and recommend changes; (3) advise Knott on selection of architects, for "nationally significant" projects; (4) propose criteria for selecting architects, and for contract terms.

Chairman of the panel will be William A. Schmidt, now Acting Commissioner of Public Buildings Service. Panel members include: Max Abramovitz, David L. Eggers, and Grant Fordyce, of New York; Max Brooks, Austin, Texas; J. G. Durrant, Dubuque, Iowa; Max Flatow, Albuquerque, N.M.; A. S. Goleman, Houston; Robert F. Hastings, Detroit; James Hunter, Boulder, Colo.; G. E. Kassabaum, St. Louis; Vincent G. Kling, Philadelphia; Charles Luckman and Henry L. Wright, Los Angeles; William G. Lyles, Columbia, S. C.; A. G. Odell, Jr., Charlotte, N. C.; Cyrus Silling, Charleston, W. Va ; Warren W. Taylor, Nashville, Tenn.

Note that no panelist is located in Washington itself. Local architects, said GSA, are taken care of through their membership on the Fine Arts Commission, which oversees design of buildings in the capital.

UN Competition Produces Planning Ideas for Devastated Yugoslav Town



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SKOPJE, YUGOSLAVIA Two years after a one-and-one-half square-mile area of Skopje was destroyed by an earthquake, Kenzo Tange and The Town Planning Institute of Zagreb were announced as co-winners of the United Nations-sponsored competion for design of a new Central City. On July 26, 1963, when the quake hit the then-third-largest city in Yugoslavia, 85 per cent of Skopje's buildings were destroyed; damage inflicted totaled $1,300,000,000. Of the total population of 230,000, 1200 were killed, 2400 injured, 700 crippled and 170,000 left homeless.

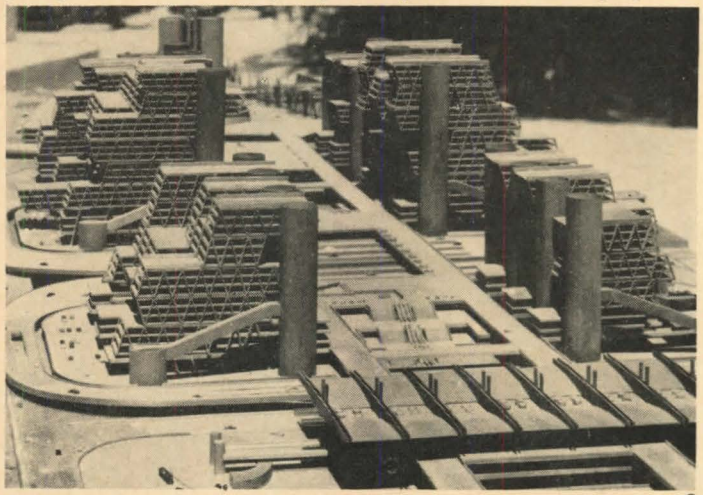
The Competition

The competition for a City Center design was promoted under rules for international competitions drawn up by U.N.E.S.C.O. Eight firms were invited to compete: four from Yugoslavia (Town Planning Institute of the Town of Ljubljana; Macedonia Project of Skopje; Town Planning Institute of the Town of Belgrade; and Town Planning Institute of the Town of Zagreb); Kenzo Tange (Japan); Luigi Piccinate (Italy); Maurice Rotival (U.S.); and Van der Broeke & Rakema (Netherlands). Each firm was to receive $20,000 for its 4½-months' efforts; an additional $20,000 would be awarded the winner.

Called for from the competing firms were: one model; an over-all plan (same scale as model); and five separate maps of the Center City, showing traffic circulation, green areas, layout, zoning, and one composite map showing the over-all organization. Also required were a written report on the design conception and solution.

Each firm was told that the design should be simple, provide for an estimated population of 350,000 by 1981, and contain the technical answer to many social problems: "The City Center will extend over to the left bank of the River Vardar, into the oldest and most historic part of the city. There are still preserved, partly in good condition and partly in ruins, some beautiful and valuable architectural monuments. They will have to be incorporated into the spatial arrangements of the new city and they will have to be brought to life. The center should include economic, cultural, social, and political activities. There are a variety of ethnic groups living in different parts of the city. . . . They should be encouraged to participate in the creation of that particular character of their homes, neighborhoods, and that of the entire city." In March 1964, a representative of each competing firm was flown to Skopje at Special Fund expense for a three-day conference where final questions were asked and answered.

Despite the remarkably thorough destruction caused by the earthquake, creative planning for renewal was hampered by the existing buildings, waterworks, sewage system, electricity supply, road system, and bridges, plus the need to incorporate into this potpourri the perimetral, prefabricated houses (built quickly right after the quake) and the added services and places of employment these houses will create.



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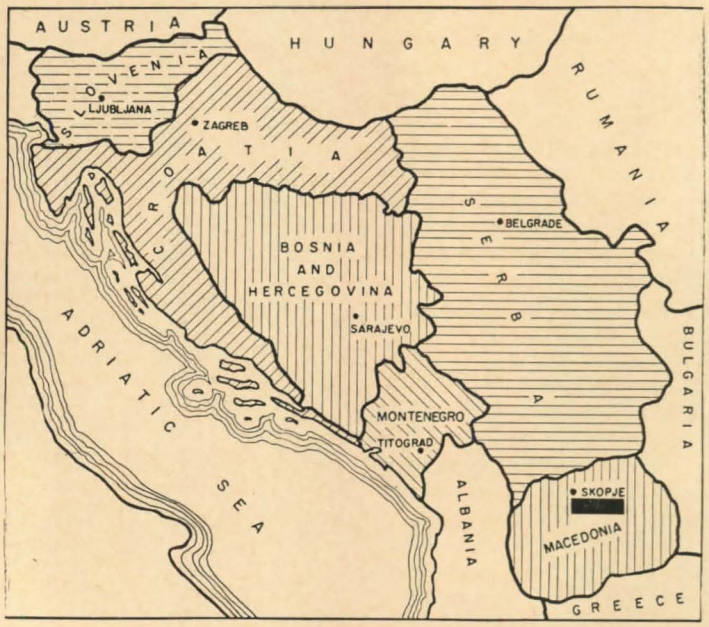

Jury Report

A 10-man jury met on July 12, 1965, and spent 9 days deliberating the submissions. The jury included: Ernest Weissmann; Adolf Ciborowski, Jean Canaux (France) representing the U.N.; Arthur Ling (U.K.) represent-

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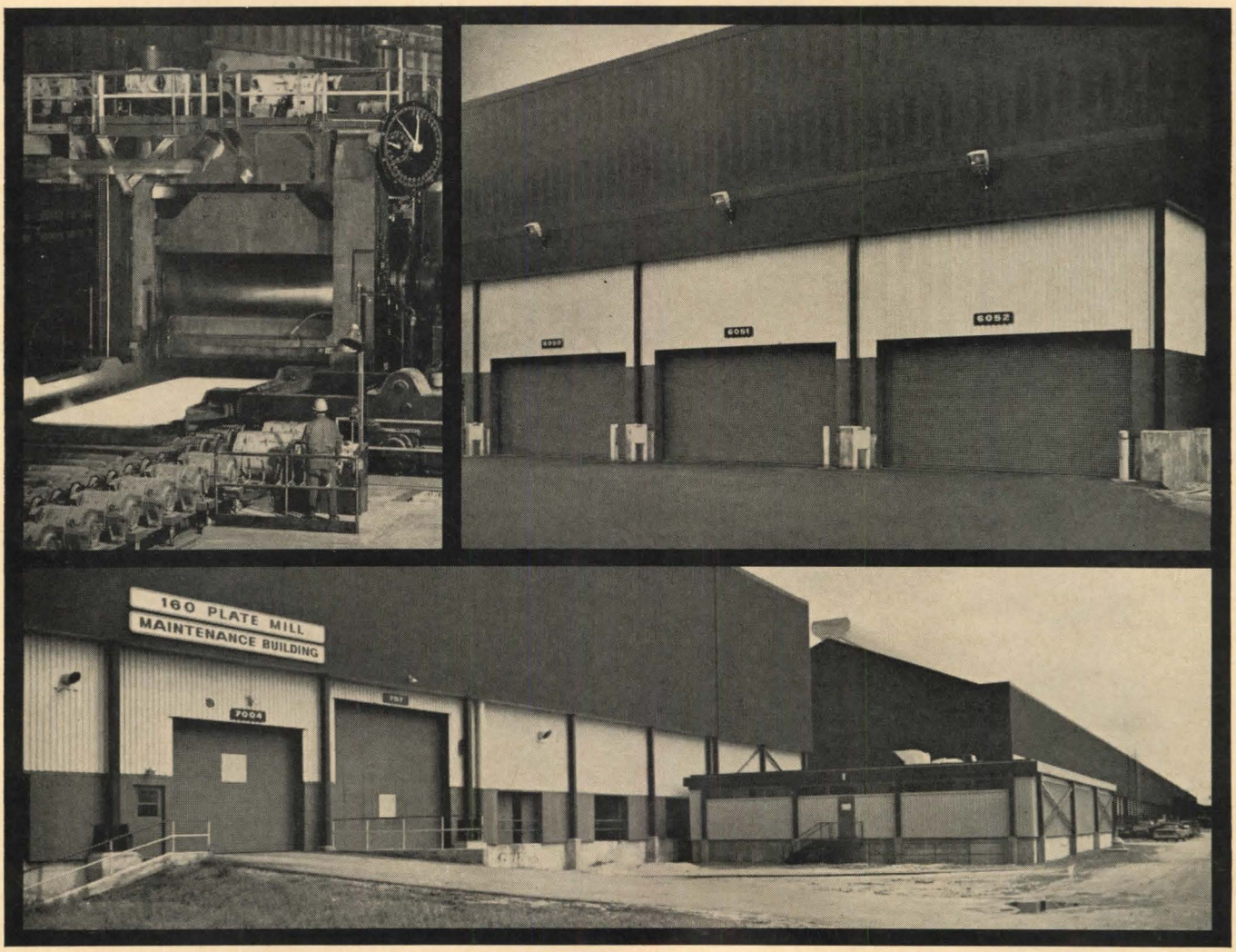

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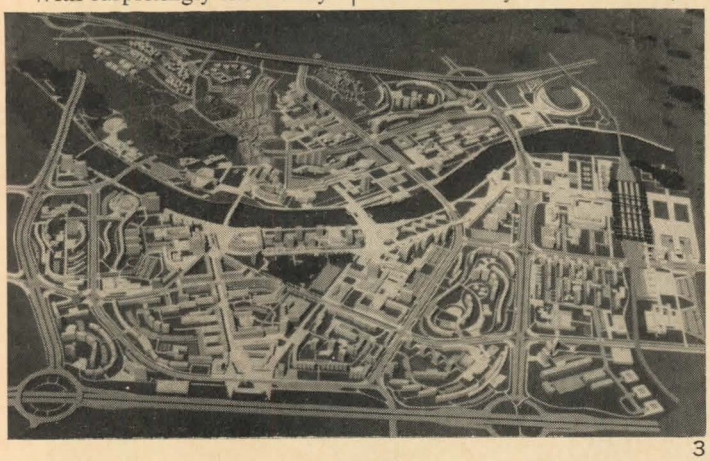
ing the International Union of Architects; Martin Myerson (U.S.), dean of the School of Architecture at the University of California, Berkeley; Tiberic Kirijas, Ljube Pota, and Sasha Sedlar, all representing Skopje local authorities; Vojislav Midic of Yugoslav Town Planning Associates; and Uros Martinovic of Yugoslav Architects Association. Also present were six consultant-specialists on historic monuments, transportation, traffic flow, economics, and structural and seismological problems.

With surprisingly little ballyhoo, the Tange project **(1, 2)** was awarded 60 per cent of the $20,000 prize; the group from Zagreb **(3)**, 30 per cent. A jury report, which examined in minute detail the pros and cons of each entry, showed that no one proposal adequately solved complex planning problems. "In the jury's considered opinion," it stated, "the eight entries submitted by the participants provide a wealth of imaginative town planning and architectural ideas. Together, they offer a fruitful source of study for the optimum solution for the design of the new Skopje City Center. . . . No one entry should be the single basis for implementing the reconstruction of the Center of the City."

The Tange project was praised for the architectural interpretation of the larger structures and design of the urban ensembles; for the siting of new cultural facilities and monuments; for the multilevel pedestrian movement plan that allows important areas and buildings within the city center to be linked together. The scheme was critized for its traffic plan; for the underground railway facilities solution; for the location of the University; and for some unnecessarily large, out-of-scale structures.

The Zagreb project was praised particularly for the "opportunity it provides for realization in stages and thus for flexibility." In addition, it incorporated sensible treatment of the river area, respect was paid to historical and natural features; the vehicular traffic and circulation scheme was simple and efficient; and there was possibility for a variety of residential spatial arrangements. It was considered weak in "architectural invention," and in unsatisfactory arrangement and scale of some buildings.

In conclusion, the jury released several sweeping planning recommendations—among them that the Vardar River should be a unifying element in the composition. Kale Hill, the highest natural feature in the area, should dominate and its natural beauty be left unspoiled. The Turska Carsija (old quarter) should be restored; housing should mix high-rise and low-rise, according to population preferences; many sports and recreation facilities should be scattered throughout the city; Marshall Tito Street, an arm of what was the most beautiful square **(4)**, should be given a special and consistent character. Highways ringing the center should be landscaped.



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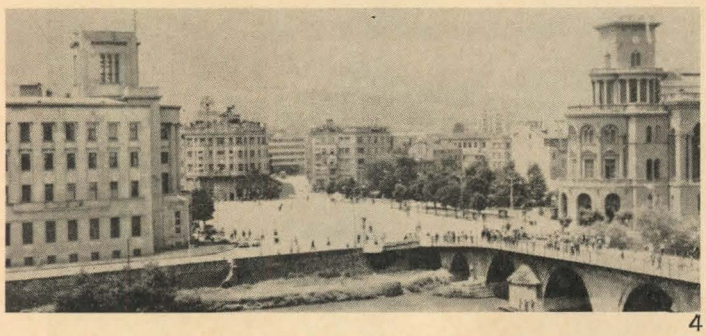

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What Now?

Unrivaled talent and effort have been focused on Skopje's problems through this U.N.-sponsored competition. The question remains: How long must Skopje sit in ruins until the proposals are coordinated and converted into approved plans, and those plans realized in mortar and concrete?

CIB Meets in Denmark

The following report was written for P/A by George J. Santry, president of the Schokbeton Products Corporation, who was one of 900 persons attending the Congress for Industrialized Building in Copenhagen, August 22–28.

A report on this Congress should be prefaced by stating that future meetings will be severely tried to equal the outstanding manner in which all phases of this program were organized and conducted.

I wish I could continue to report in glowing terms of the effectiveness of the many seminars or group discussions, which were for the most part very ably chaired. As yet, I have been unable to pinpoint to my own satisfaction the missing ingredient. Certainly, the following agenda and the predistributed papers seemed to provide a basis for challenging debate and discussion, but somehow the spark to ignite such an atmosphere failed to appear. With rare exception, speakers seemed merely to be confirming knowledge already acquired or proven by the audience, instead of exploring the exciting territories of materials, design, and technology.

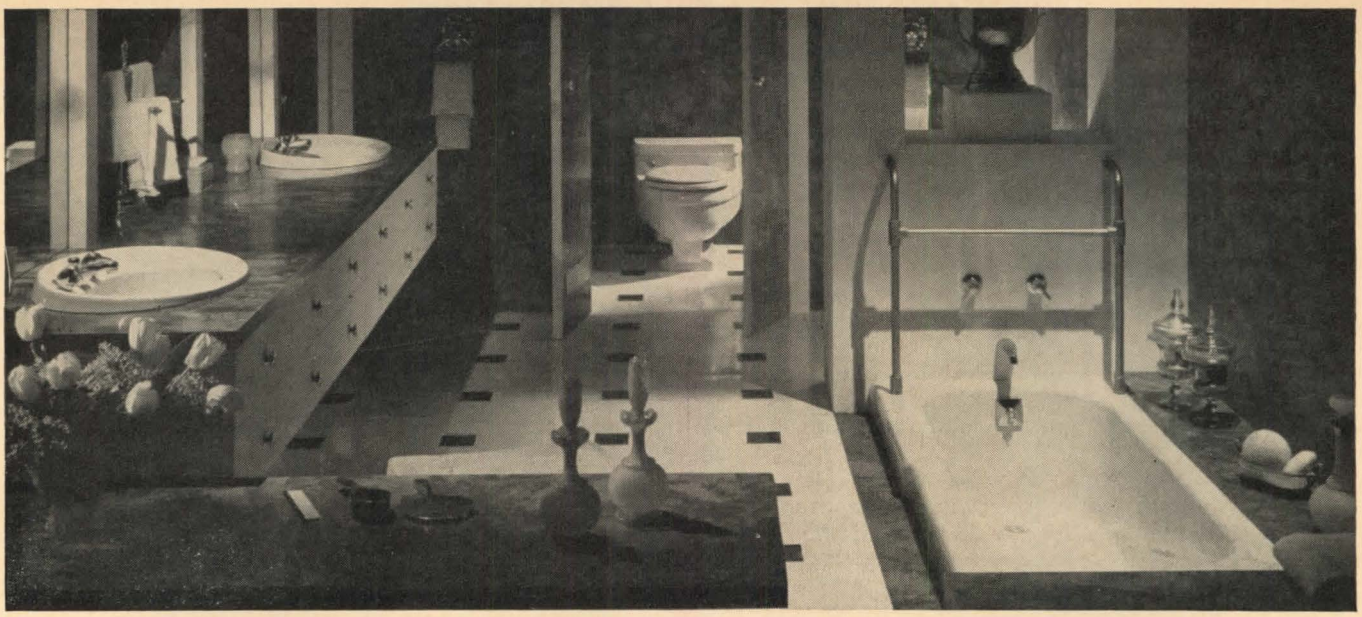
The papers submitted, published, and distributed prior to the group meeting are certainly worthwhile, and, as a folio, represent a very interesting cross-section of thought, opinion, and current status of the field of industrialized building today. I hesitate to say these are a "must" for those interested in this field, but they are definitely an asset in one's reference library.

It is apparent that most countries in Europe (including those in the Soviet orbit) are convinced that the answer to the shortage of so-called "social housing" lies in the industrialized production of components.

Using arbitrary percentages to express the differences between the United States and Europe, I came to the conclusion that the problems in industrialization of "social housing" in Europe are perhaps 75 per cent technical and 25 per cent sociological. By contrast (although I am not inviting challenge), based upon the United States' industrial competence, I am convinced that our problems facing a true solution to industrialized "social housing" are 25 per cent technical, 40 per cent *sociological*, and 35 per cent *jurisdictional*. While the United States can gain a great deal from Europe's experiences, there is nothing of a technical nature that cannot be overcome in short order, providing the way is cleared to accomplish this objective.

It must also be recognized that in the area of public housing, Europe's problem is by no means comparable to our own. Their buildings, which are architecturally attractive and meet their necessary functional and social standards, would fall short of our requirements and result in future slums. When most European countries, particularly the Scandinavian ones, speak of public or "social housing," they are referring to occupancy by persons in the *lower income bracket*. From the standpoint of their *social* level, however, they are at least equal to our middle-income strata. This results in the impeccable maintenance of property and surroundings and the nonexistence of deliberate destruction.

While in the United States the difference between the construction standards of low-cost and luxury housing are nominal (primarily space, location, and finishing), the public housing we visited in Denmark is definitely inferior in construction to middle- and upper-income developments. For example, with the exception of the precast structural components, most materials are definitely flimsy. The curtain wall, composed of an exterior of flat asbestos concrete board backed with fiberglas mats and wall



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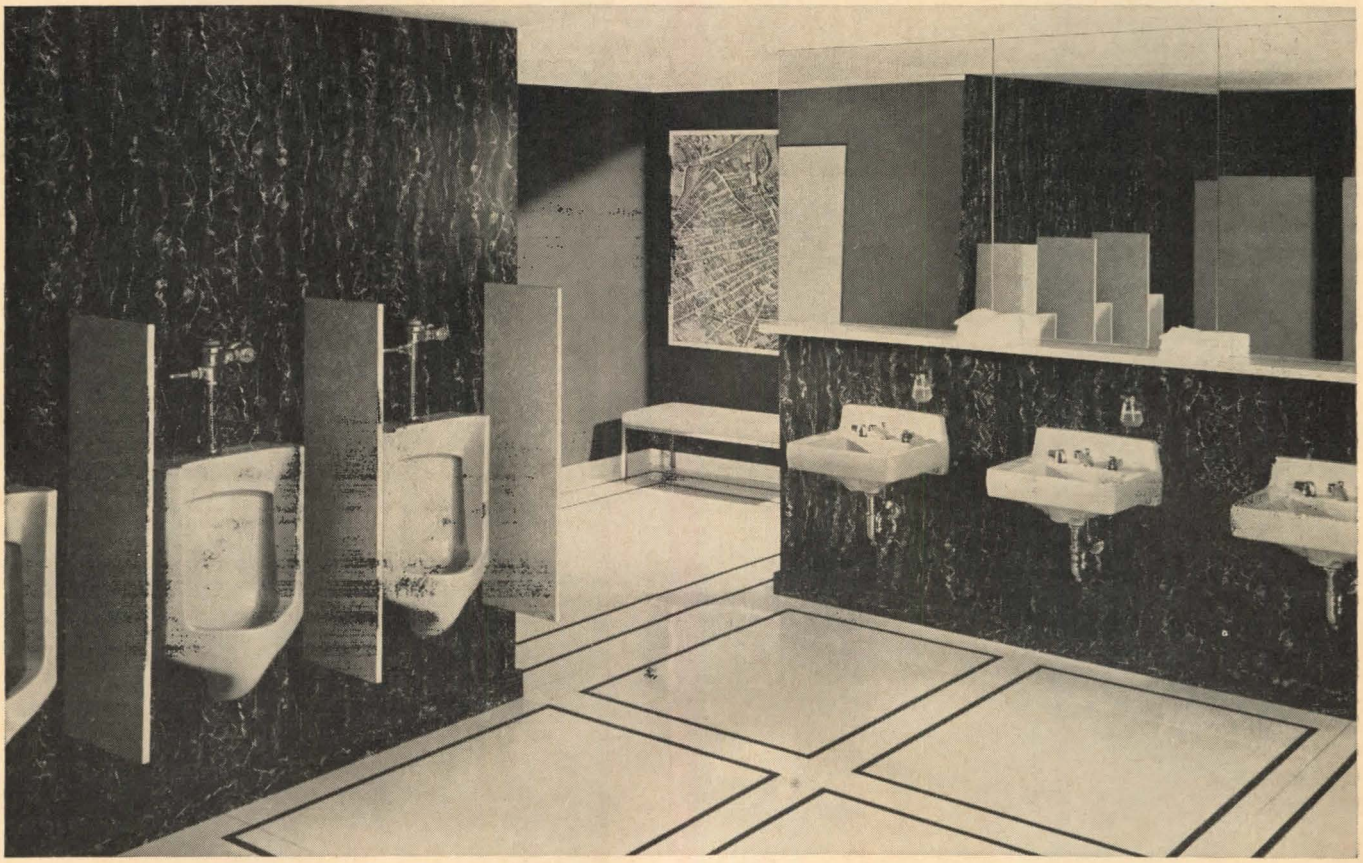

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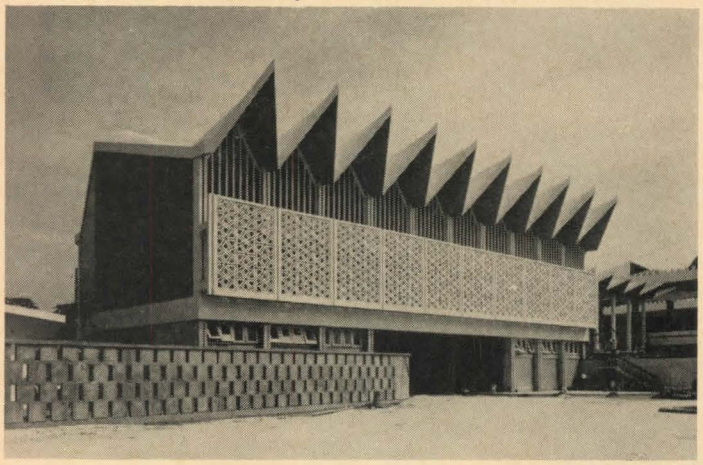
board, is almost incongruous compared to the structure. Window units are crudely framed in wood with interestingly-designed but cumbersome hardware which would not withstand abuse. Because of the government's desire to have all major industries participate wherever possible, this often results in a compromise in material selection: e.g., prefabricated birch floors floating on risers laid on precast concrete are springy and noisy. It was the opinion of most of the Congress participants that an insulated asbestos or vinyl tile would be far more practicable.

While the over-all impression of the public housing is attractive, I believe most credit must go to the government's generous allocation of land for a given project and the architect's organization of such outdoor areas as parks, playgrounds, parking space, walks, etc. There is a definite feeling of spaciousness and light, the absence of which would make the project very ordinary.

The overriding question remains to be answered in the U.S.: Is our country ready to face realistically the task of overcoming our urgent need for low-cost housing in a manner and with the speed compatible with our day without creating greater problems for future generations?

SOUPED-UP MOSQUE FOR SOUTHEAST ASIA



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KUALA LUMPUR, MALAYSIA The devout—10,000 of them—gathered for the opening of Malaysia's Masjid Negara, or National Mosque, in Kuala Lumpur. Although only 58 per cent of Malaysia's population is Moslem, it is the official state religion, and Malaysia would like to become an important Islamic center. As recently as January 1964, the World Muslim Congress decided to make Kuala Lumpur its Southeast Asian headquarters. The National Mosque, which was conceived a month before Malaysian independence in 1957, will accommodate 8000 persons. It was also conceived as a monument to independence.

Architecturally, what emerged looks a little like a corporate pavilion at a World's Fair. It has showmanship. Its relationship to a traditional mosque is comparable to that of the Vatican Pavilion at the New York World's Fair in relation to St. Peters. There is no moving walkway to carry a visitor past a blue-lighted statue; but the

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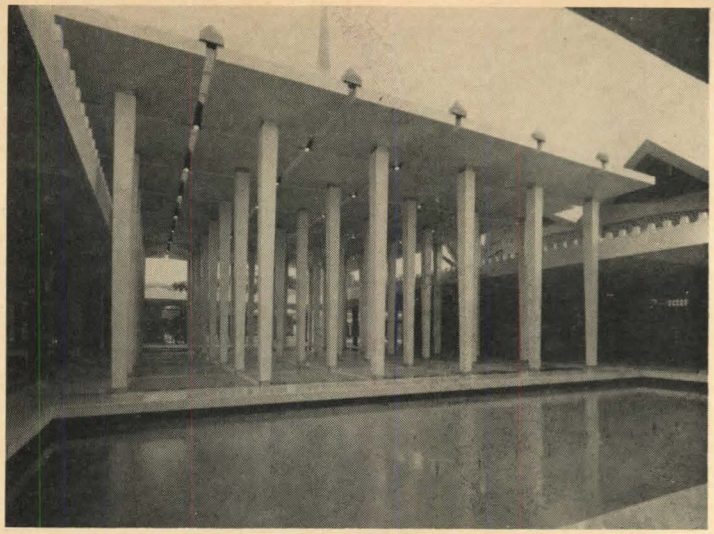
crier who five times daily announces the hour of prayer travels to his perch atop the 245′ minaret by elevator, his voice carried to the multitudes via a public-address system.



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Part of the architectural result reveals a conscious attempt on the part of Malaysian officials to seek out a national architectural style. However, architect Enche Baharuddin bin Abu Kassim, a government staff architect who studied in Great Britain, also tried to give a passing nod to traditional mosque architecture. For this commission, he traveled throughout the East, studying mosques in India, Pakistan, Iran, Turkey, Spain, Arabia, and the United Arab Republic. His design reflects this study, much as the work of Stone, Yamasaki, and Corbu reflect Eastern influences. Baharuddin bin Abu Kassim, however, has not done his work as well. Perhaps it has yet to mature.

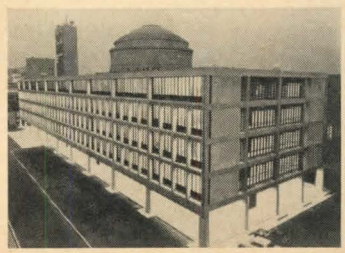
Spreading over five acres of the 13-acre site, the building comprises a grand hall **(1, 2)** (surrounded on three sides by a covered veranda), the minaret and its reflecting pool **(3)**, a decorative courtyard with two pools, a *Dewan* or meeting hall **(4)**, a library, a royal antechamber for the Malaysian King, Yang de Pertuan Agong, and offices for Moslem officials.

The hall is covered with a pleated shell roof of concrete, finished with glass mosaic, and supported by 16 columns each 3′ in diameter. Shaped purposely like an unfurled umbrella, the roof (200′ in diameter and 84′ high, from floor to apex) is symbolic of the royal umbrella, open to shelter the king. The minaret symbolizes the umbrella furled.

Some touches of the traditional mosque remain. The 73 small domes that dot the top of the veranda are based on Saracen design, and the grillework that stretches around the building has a traditional pattern. In the meeting hall, the complex roof system of connoid and pleated shell concrete, finished in white glazed mosaic, is distinctly Oriental. Yet despite these ties to the past, much that is not traditional intrudes. Much of the decorative grillework is aluminum, for instance, and the rosette with a Koranic inscription at the roof of the grand hall, an exact replica of those found under the great dome of the Blue Mosque in Istanbul, is here fashioned from aluminum. The minaret is lit by strip lighting at night.

Perhaps this gigantic project, which cost more than $3,000,000, one third raised by private donation, can become a stepping stone in Malaysia's quest for a distinctive national architectural style.

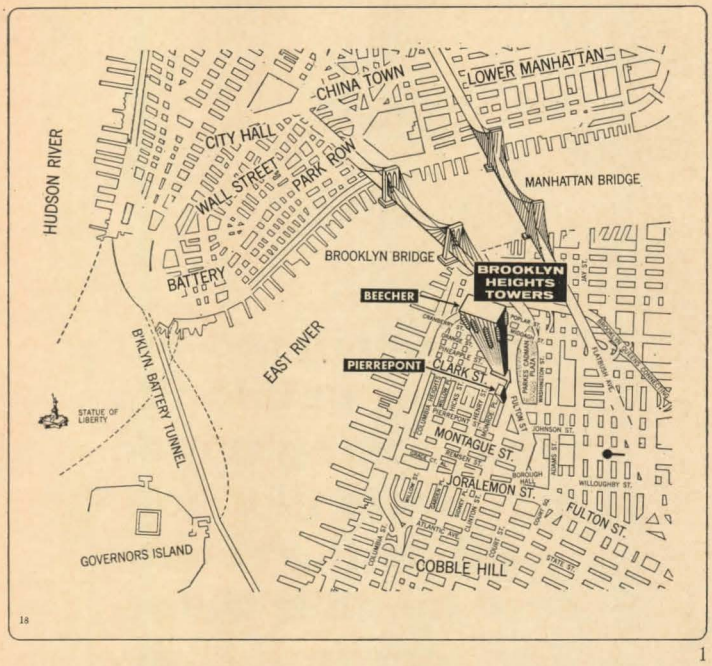
MIT'S CMSE



CAMBRIDGE, MASS. MIT recently dedicated its newest addition—a $6,000,000 interdepartmental Center for Materials Science and Engineering, the largest building to be erected on the Cambridge campus in some 50 years. Designed by Walter A. Netsch

of Skidmore, Owings & Merrill, the five-story concrete-and-glass building fills what was formerly the *main* MIT parking area, and now makes a new north façade for the university's main building and its familiar dome. The center is the first in the new North Campus master plan, devised by SOM. Planned for the area are a Center for Advanced Engineering Study and a Center for Space Research.

SCALING THE HEIGHTS



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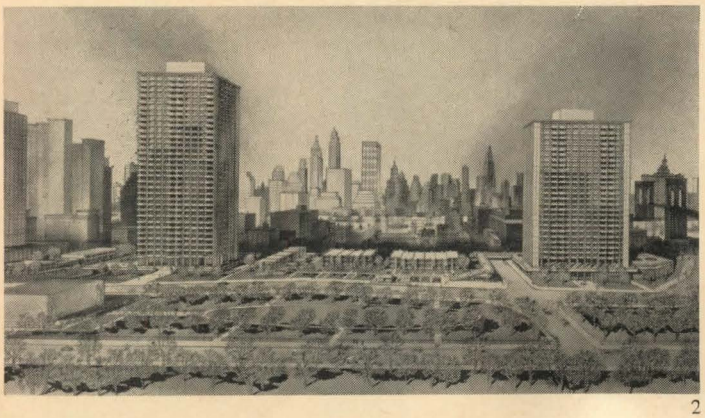

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NEW YORK, N. Y. It is curious that while our cities have grown so high, vertical space has been used so unimaginatively: Babylon, with its Hanging Gardens, was built on a more ingenious idea of heights than our towering, obelisk-like apartment buildings with near-useless balconies and ground-level plazas.

It is true that 20th-Century *visionaries* have lamented that the city is never considered one single structure, with many different levels of indoor and outdoor spaces closely related to each other. Although the concept always appears fantastic and foreign, it is probably closer to our traditional habits of living than the high-rise building where all indoor living is up in the air and all outdoor stretching is down on the ground. But for all practical purposes, the cliché of the high-rise-and-wide-open-spaces still persists, even though it has destroyed the fabric of many old communities and provided much unusable space. The alternative proposal and the more current cliché—the row house—is only a little better: It continues the façade of the street, provides a direct relationship between a vertical and horizontal space; but only on one level. It may be an innovation for suburbia, but for urban living it provides no solution to higher densities.

Perhaps nowhere are the current trends in urban planning more apparent that in two housing projects currently underway in the old community of Brooklyn Heights, in New York. One project, an enlightened synthesis of town house and apartment building, is designed by the architectural firms of M. Milton Glass and Whittlesey & Conklin; the other, by Morris Lapidus Associates calls for two-story row houses sandwiched in between two towering high-rise apartment buildings. One architect is thinking of the city block in terms of a unified structure; the other is still thinking in terms of single buildings. In one, there is an attempt to establish a human scale at two levels; in the other, there is an exaggerated juxtaposition of high and low.

The Flavor of the Old

What this means, in terms of the scale of the community and the effect on the older section of the Heights, is worth noting. Brooklyn Heights is an oasis of small-scale residential living that is one subway stop away from Manhattan's towering Wall Street. It is situated on a high bluff overlooking the East River. The streets are lined with trees and the houses are low—three to five stories—with more than 1000 of them dating from the pre-Civil War period. It is a popular residential area for couples with young children, and one of its major attractions is a promenade along the river that overlooks one of the most spectacular views of lower Manhattan.

Brooklyn Heights, in plan **(1)**, is a long, narrow area oriented toward the river. The area, designated for urban renewal under the Title I program, is a narrow strip of five blocks—formerly occupied by parking lots, garages, and delapidated houses (unfortunately, Walt Whitman's was among those destroyed). This strip was the backyard of the community and acted as a rather seedy buffer between the better residential area and a main highway.

One Bad Apple

The Lapidus project **(2)** is an unfortunate design for this particular site: The two high-rise apartment buildings—33 stories and 26 stories—are completely out of keeping with the architectural character of the community and ludicrously out of scale with both the older houses and the new ones sandwiched in between. The objective—"to save as much open space as possible"—has been achieved; but was it the right objective in the first place? The design breaks up the character of the street façade, and fails to provide a strong, consistent barrier toward the highway. Furthermore, the towers are monuments in a vacuous space. The structures at ground level are enclosed parking lots and the precious earth, so carefully preserved, is likely to end up like all the others—wasted, because it bears no direct relationship to people who live, not on it, but above it. The project, which includes 620 dwelling units, garage space for 620 cars, and a shopping center of 14,000 sq ft, will cost an estimated $18,000,000. One section, Cadman Plaza North, will be ready for occupancy in October of 1966; the Whitman Close Houses will be completed six months later.

Photo: Louis Checkman

3

A Distinctive Blend

The Milton Glass, and Whittlesey & Conklin project **(3)**—The Brooklyn Heights Towers—occupies a much smaller area (115,650 sq ft as opposed to 342,173 sq ft. It is far more compactly designed and successful in its use of vertical

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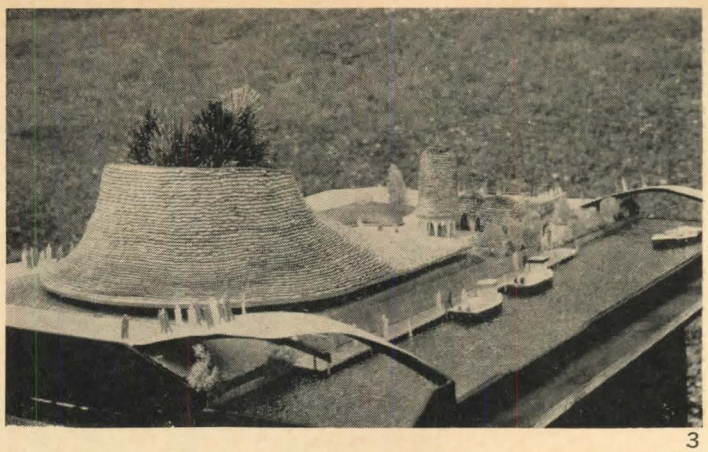
and horizontal space; and, although more radical in concept, it blends in far better with the older community. A row of town houses on the ground level continues the façade of the street (parking facilities are inside), and the "rooftops" become a landscaped terrace—a "ground level"—for another row of town houses and apartments above. It is an emerging Tower of Babel, where at least two levels have direct access to the out-of-doors. For the rest of the cliff dwellers located in the apartments above, there are some imaginative uses of outdoor spaces. Instead of the usual slabs of balconies, projecting, with balustrades, from the façade, the Towers have spaces more akin to porches with a protective roof and side posts, which give a feeling of partial enclosure, privacy, and security, even on the twenty-eighth floor. There are also different types of balconies: some are spacious to sit upon; others are conceived as widows'-walks, as small projections to go out upon, get a view of the river, a whiff of air and return inside (which seems a candid evaluation of the usefulness of many balconies). The project can accommodate 400 families and has a choice of 47 different layouts—a surprising variety in planning. And included in the package are a 500-seat theater, swimming facilities, an indoor garage for 300 cars, and 20,000 sq ft of commercial space in a shopping mall between the high-rise buildings. Estimated cost of the project is $17,000,000. It will be completed in 1967.

What Might Have Been

Although the combination of the high-rise towers on top of the row houses is still slightly awkward, it is because the two are still thought of as separate elements. They have not quite adjusted to one another to become a coherent structure. But the germ of a larger idea is there, and, by connecting the terraces, the architects are beginning to create another level for the community as a whole—not only to one block. It would be interesting to speculate on what the architects might have done had they been given the entire area to design. Had the strip been conceived as a unit, the design could have had greater scope. The entire area might have been covered with a gradually terraced structure that would have faced the river, formed a barrier to the highway, and been more appropriate in character to the rest of the Heights. Also, a more direct relationship between outdoor and indoor spaces could have been established on every level. But that is the stuff that dreams are made of, and the solid reality of the Glass, Whittlesey & Conklin project gives encouragement that, someday, it just may happen on a broader scale.—MD



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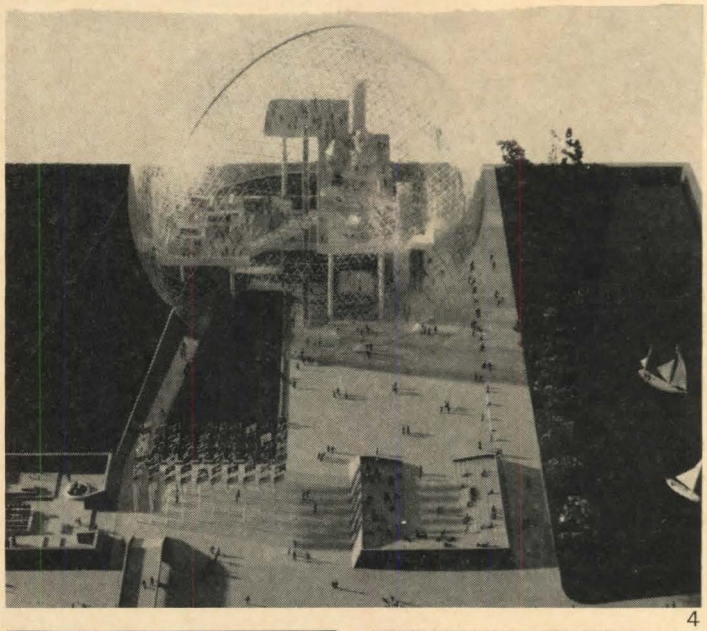

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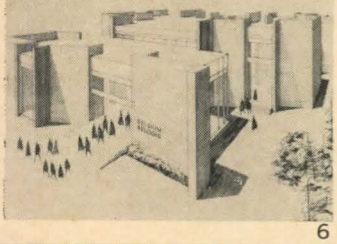
Photo: Panda Associates 5



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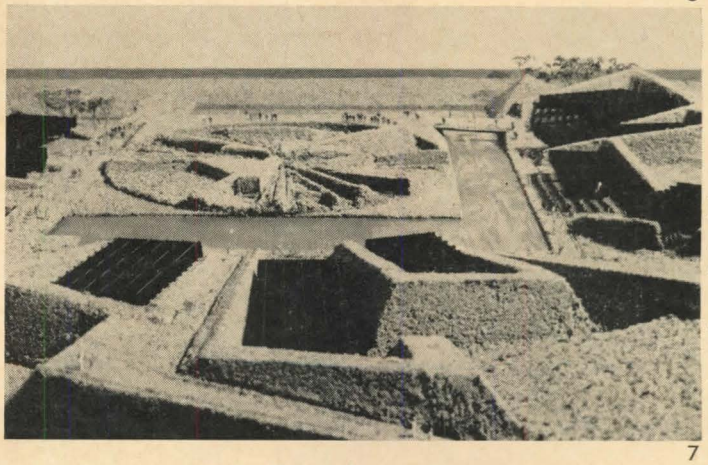

Photo: Arnott Rogers Batten Ltd.

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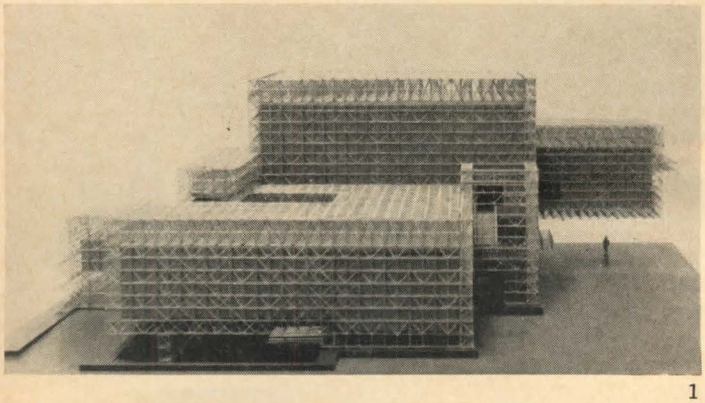
Expectations of Expo '67



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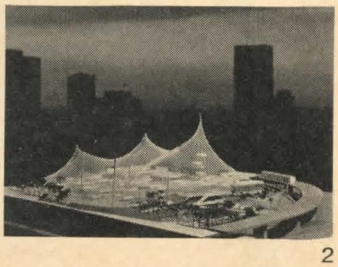

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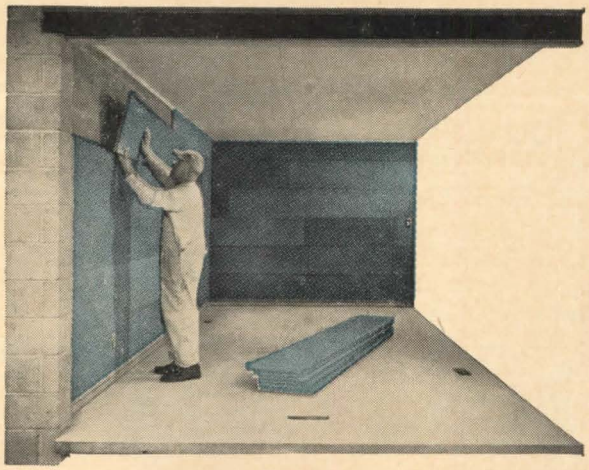
MONTREAL, CANADA. With the New York World's Fair freshly laid in its grave, some 59 nations, 27 Canadian industries, 10 Canadian provinces, and a few more interested parties are preparing for Expo '67. The exposition, marking the hundredth year of Canadian confederation, shares the build-up and expectation that the Flushing Meadows show had, but this one is pitched on a lower key. The fair's run will be one year (April 28 through October 27 of 1967), not two; its anticipated draw, 10,000,000, not 70,000,000; its theme, "Man and His World," not "Peace through Understanding."

Some of the pavilions that will grace the complex of largely man-made islands off Mon-



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So why not specify it for roofs and walls. It's every bit as good.)

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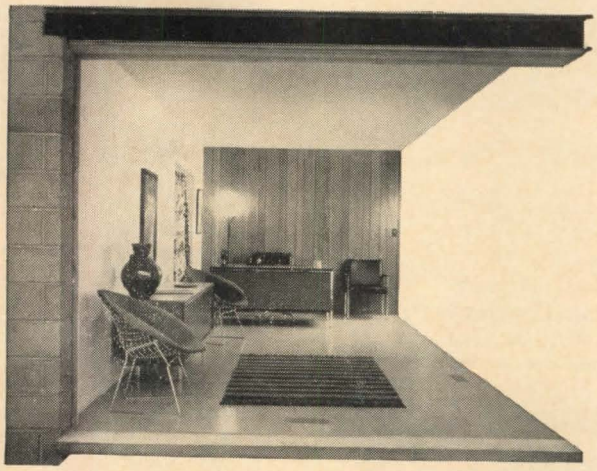
Styrofoam is Dow's registered trademark for expanded polystyrene produced by an exclusive manufacturing process. Accept no substitutes . . . look for this trademark on all Styrofoam brand insulation board.

On Readers' Service Card, circle No. 352



O.K. Now forget it.

(Until your next roofing or wall insulation job.)

DOW

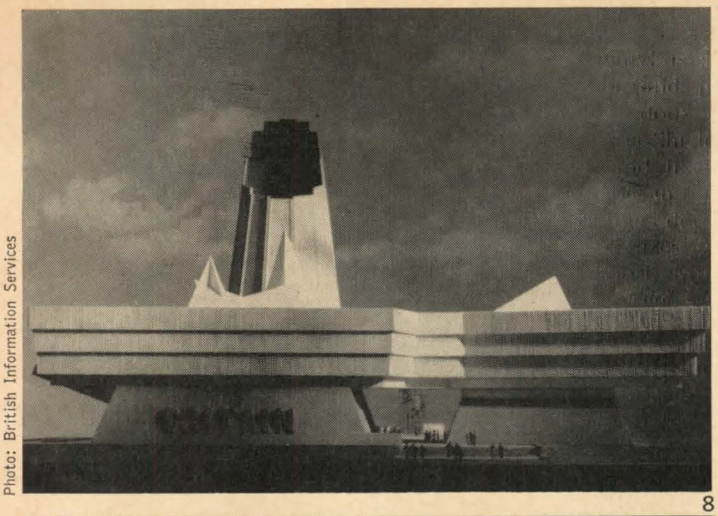


Photo: British Information Services

8

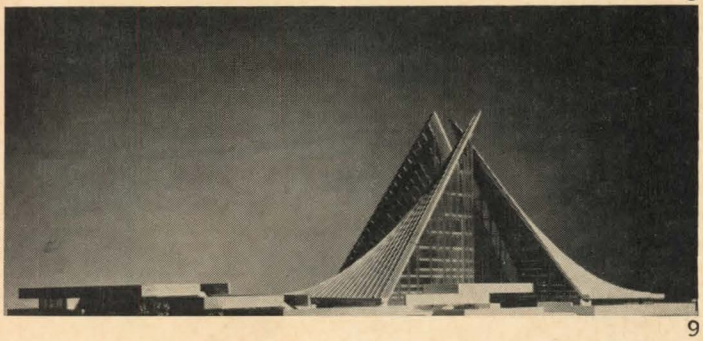


Photo: A. Cartoni

9

treal Harbor in the St. Lawrence River are shown below:

(1) Netherlands Pavilion: W. Eijkelenboom and A. Middelhoek, with George F. Eber, Canadian associate.

(2) German Pavilion: Prof. Rolf Gutbrod and Prof. Frei Otto, with O. Tarnowski and George F. Eber, Canadian associates.

(3) Pavilion of the Four Western Provinces: Beatson Stevens Associates.

(4) United States Pavilion: with Buckminster Fuller designing the sphere and Cambridge Seven Associates, Inc., in charge of landscaping, exhibits, traffic, and platforms.

(5) Ontario Pavilion: Fairfield & Dubois.

(6) Belgian Pavilion: René Stapels, with George F. Eber, Canadian associate.

(7) Agricultural Pavilion: Longpré, Marchand, Goudreau, Dobush, Stewart, Bourke. Structure here is an unusual and appropriate combination of earth fill and planting.

(8) British Pavilion: Sir Basil Spence, with Bland, Lemoyne, Edwards, Shine, Canadian associates. Peculiar to this pavilion is its almost graphically mapped out theme of strength, maturity, and aspiration. The 150′ tower, incomplete in form, is meant to stress England's unending contributions to world progress.

(9) Italian Pavilion: Piro & Co., consulting engineers. Italy here stresses her handicraft and art. Floors are of carved Carrara marble. A hand-painted glazed frame encircles one-third of the structure's sails. These three "sails" represent a first in construction techniques—the first application of ⅛″ steel membrane conoids.

And bit by bit, another fair emerges. As it does, we will report it.

OBITUARIES

FRANCIS J. MCCARTHY, San Francisco architect, died there early in August at the age of 55.

OTHMAR AMMANN, builder of bridges, died at his home in Rye, New York, at the age of 86. His achievements span the United States. The San Francisco Golden Gate Bridge, the Delaware Memorial, the Walt Whitman, the George Washington, the Triborough, the Bronx-Whitestone, the Bayonne, the Throgs Neck, the Verrazano-Narrows Bridges and the Lincoln Tunnel are all testaments to his greatness.

RICHARD HAVILAND SMYTHE, restorer of Stony Brook, Long Island, and designer of the Thom McAn shoestore storefront, died here at the age of 76.

LORD BOSSOM, British architect and pioneer of American skyscrapers, died in London at the age of 83.

JEAN B. FLETCHER, partner in The Architects Collaborative, died in Cambridge, Massachusetts, at the age of 50. With her husband, Norman C. Fletcher, she won the Pittsburgh Plate Glass Competition in 1945 and the Smith College dormitory competition in 1946.

WASHINGTON/FINANCIAL NEWS

BY E. E. HALMOS, JR.

Census Bureau will begin work early in 1966 on its first attempt in more than 26 years to take a census of the construction industry.

The census will be part of the five-yearly census of business, and will be taken for the year 1967. Last attempt—admittedly a long way from a resounding success — was in 1939.

Census specialists are now preparing a sample questionnaire, to be sent out as a test to a cross-section of the industry early in 1966. After it has been refined, a final question-sheet will be sent out in 1967 to some 200,000 contractors.

The results, Census experts hope, will provide the first accurate profile of the industry as a whole: how many people it employs, what types of work it does, how much and what it buys. A further result may be the updating of many of the statistical series now maintained.

"Beauty" Bills

An "beauty" aspect of the debate—an outgrowth of recent Congressional action that gave overhead power lines (needed by the Atomic Energy Commission) precedence over efforts by a California community to implement its own beautification program—resulted in two new bills (S. 2507 and 2508) by Oregon's Senator Maurine Neuberger. The aim of both bills, which will cost $150,000,000 over a 10-year period, is to find out how many overhead transmission lines there are in the U.S., where they are located, and what can be done about putting them underground so that they will not mar the natural beauty of our landscape.

Also strongly affecting the "beauty" program was passage of new amendments to stream-pollution control laws (S. 4), increasing funds available for control work and tightening standards for discharge of pollutants into streams; action came, too, on bills to impose controls on release of pollutants into the air.

Funds for Airports

Federal Aviation Agency has announced allocation of $84,-500,000 in matching funds for construction and improvement of 445 civil airports during the current fiscal year. The funds will cover construction of 74 new airports and improvement of 371 existing fields. Major portion of the money will go to obtaining land for clear approach zones, and for construction and reconstruction of runways and other facilities.

Financial

As the year entered its final quarter, continuing evidence of strong public support for public works construction was of key importance to the construction industry. The Investment Bankers Association reported that, in July, for example, taxpayers had approved nearly 92 per cent (by value) of all public work bonds presented to them, for a total of $129,100,000 in new funds authorized. And more than $2,200,000,000 worth of additional bond issues—including nearly $500,000,000 for new elementary and secondary schools—will be presented to voters over the next 12 months.

Private housing, however, continues to show a steady slip downward. In August, according to the Census Bureau, rate of new private housing starts was at an adjusted annual rate of 1,402,000, down 7 per cent from a year ago.

As of September, money rates seemed to be easing a little, according to the Housing and Home Finance Agency. For the first time in many months, average secondary market price for FHA-insured mortgages dropped very slightly (to $98.2 per $100 of outstanding loans).

L-M STYLED MERCURY and STYLESHIELD units in parking lot of Lake Shore Tower Apartments; Cudahy, Wisc.

Architect: TANNENBAUM, KOEHNEN & DEMETER, Milwaukee, Wisc.
Developer: TOWNE REALTY INC., Milwaukee, Wisc.
Contractor: LEMBERG ELECTRIC, Milwaukee, Wisc.

FOR A SYMPHONY OF STYLING AND COLOR

LINE MATERIAL MEDIUM ILLUMINATION OUTDOOR LIGHTING

250-400 WATTS MERCURY and METALLIC ADDITIVE • 620 WATTS INCANDESCENT
10,000-30,000 LUMENS • 1.2-2.0 MAINTAINED FOOTCANDLES

STYLING AND BEAUTY

Give your next lighting job a touch of elegance by choosing from Line Material's line of outdoor lighting. All L-M fixtures are styled by the noted industrial designer, Jean Reinecke, specifically to provide lighting fixtures that are compatible with today's architecture. And you have the choice of 9 colors to add just the right touch to accent or contrast with your landscape and exterior design.

EFFICIENCY, ECONOMY

You realize optimum light efficiency with all Line Material luminaires. Each has been engineered to provide maximum light utilization. *There's no glare or wasted light.* You also realize optimum economy with Line Material fixtures. All are fabricated of aluminum to assure long corrosion-free life. You also obtain the economy of low cost installation and maintenance with standard bases for easy mounting and accessible interiors for easy wiring, cleaning and relamping.

COMPLETE LIGHTING SYSTEMS

You avoid all the problems of coordinating your lighting job if you specify from L-M's complete outdoor lighting line. In addition to luminaires, you can order ballasts, poles, brackets, lamps, and all wiring and power supplies. Service and technical assistance through your Authorized L-M Distributor. And an L-M Lighting Engineer and an L-M Field Engineer are also available to assist you.

LINE MATERIAL'S COMPLETE OUTDOOR LIGHTING LINE ALSO INCLUDES HIGH, MEDIUM-SOFT AND SOFT ILLUMINATION

TURN PAGE

SELECT COLOR AND STYLING FOR YOUR JOB FROM L-M'S MEDIUM ILLUMINATION LINE...

FOR PARKING AREAS • SHOPPING CENTERS • MALLS • OUTDOOR AREAS
STREETS • HIGHWAYS • ROADWAY ENTRANCES • AND DRIVEWAYS.

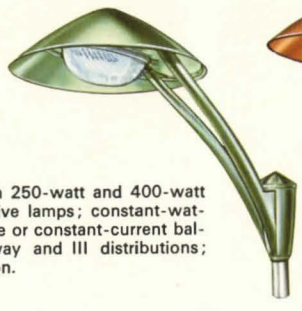
250-400 watts mercury and metallic additive • 620 watts incandescent
10,000-30,000 lumens • 1.2-2.0 maintained footcandles

STYLED MERCURY

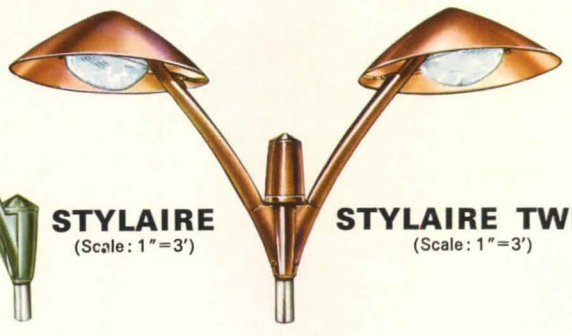
Graceful, elegant styling in distinctive designs. Available in 9 dynamic colors. Provides economy, with 1) shorter poles, 2) standard pole top mounting eliminating support arms, and 3) internal ballast eliminating external ballasting plus related wiring and mounting expense.

STYLEVUE
(Scale: 1″=2′)

SPECIFICATION
Units available for use with 250-watt and 400-watt mercury and metallic additive lamps; constant-wattage, reactor, high-reactance or constant-current ballasts; IES Types II, II-4 way and III distributions; photocontrol accommodation.



STYLAIRE
(Scale: 1″=3′)

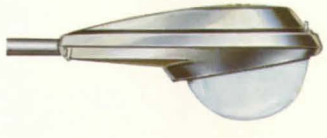


STYLAIRE TWIN
(Scale: 1″=3′)

STYLESHIELD
(Scale: 1″=2′)

Same modern, distinctive, and sweeping design as Styled Mercury. Ideal for new installations, alone or in combination with Styled Mercury units. Furnished with a choice of 9 decorative colors. Can be mounted on 2-inch supports or davit poles with a 2-inch tenon.

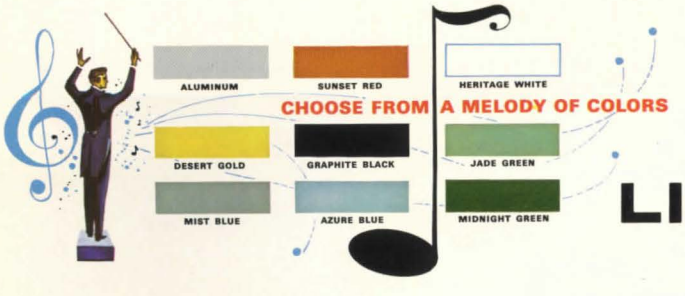
SPECIFICATION
All units available for use with 400-watt mercury and metallic additive lamps; IES Types II, II-4 way, III, and IV distributions; photocontrol accommodation.



UNISTYLE
(Scale: 1″=2′)

Clean, modern lines and efficient lighting. Designed for 1¼-inch or 2-inch supports. Available in aluminum finish. Provides installation economy with 1) one-piece lower housing that removes readily for ease of installation, 2) internal ballast, and 3) independent leveling assembly.

SPECIFICATION
Available for use with 250- or 400-watt mercury and metallic additive lamps; internally mounted constant-wattage, high-reactance, reactor or constant-current ballasts; IES Types II, II-4 way, and III distributions; built-in photocontrol receptacle.



FOR COMPLETE INFORMATION on Line Material's line of outdoor lighting contact your L-M Distributor or write Line Material Industries, Milwaukee, Wisc. 53201.

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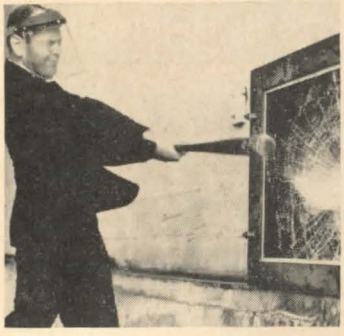
LINE MATERIAL®
McGRAW-EDISON
INDUSTRIES
McGRAW-EDISON COMPANY

Acoustics

Acoustical Material for Wet Locations

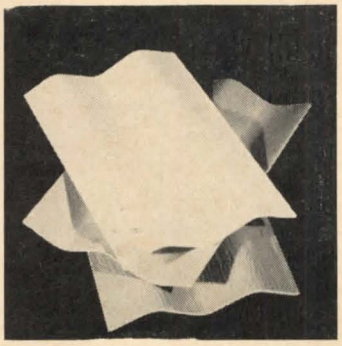
"Ceramaguard" acoustical material is, according to the manufacturer, unaffected by moisture, even when submerged in water. It is a ceramic-type material with a totally inert composition that does not expand, contract, or weaken under prolonged exposure to high humidity. Product also has good spanning strength and is claimed to be almost sagproof when installed in an exposed grid suspension system. Ceramaguard is available in 2′x2′ and 2′x4′ units to accommodate standard grid suspension systems. Panels have a fissured surface and an acrylic paint finish that gives this material good grease resistance, washability, and whiteness. Armstrong Cork Co., Lancaster, Pa. 17604.
On Readers' Service Card, Circle 100

Construction



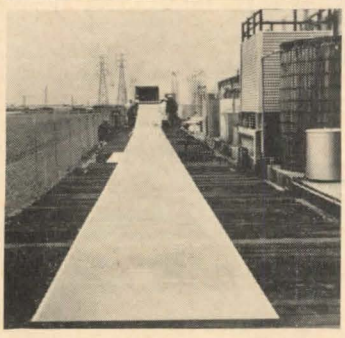
Burglars, Beware!

"Secur-lite," a $\frac{9}{32}$″-thick, two-ply laminated glass, frustrates efforts of smash-and-grab burglars. It is ideal for store windows, because it resists breaking, even after several blows with a heavy weapon. Although the glass cracks, it does not fall out of place or shatter. Available in clear, opaque, or tinted varieties, and in sizes up to 84″x130″. Secur-lite needs no special framing, and is installed like ordinary plate glass. Amerada Glass Corp., 2201 Greenleaf Ave., Elk Grove Village, Ill.
On Readers' Service Card, Circle 101



Chemically-Resistant Plastic Panel

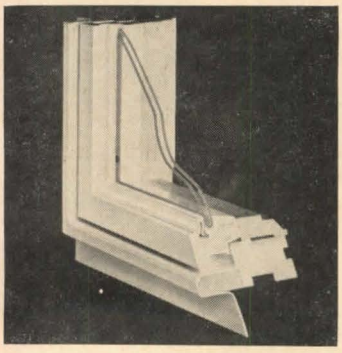
Corrugated plastic panels are for roofing and siding in buildings subject to severe corrosive atmosphere. Panels are suitable for chemical, paper and fertilizer industries. Material has low flame-spread ratings of 30 and 35. Manufacturer claims that "Econo-Dur" Panel is not affected by environmental stress cracking. Neither field cutting nor drilling reduces chemical resistant values. Econo-Dur is produced in standard corrugated profiles in lengths up to 42′. This opaque material is available in gray, green, and white with standard finish of pebble-grain on one side or smooth finish on both sides. Steelite Buildings Inc., 239 Fourth Ave., Pittsburgh 22, Pa.
On Readers' Service Card, Circle 102



Plastic Panels Made In Any Length

Cast acrylic plastic, called "Swedcast 500," can now be produced in a continuous sheet. It is available in flat, clear, or colored cast sheet in any width up to 8′ and in thicknesses from 0.060″ to 0.250″. It is also available in corrugated sheet or sheet with prismatic, matte, or other surface patterns as part of the continuous casting process. Leaves, coins, and other small objects can be embedded in the acrylic plastic during production. Cast acrylic sheet is a tough, "water white" thermoplastic material. It weighs about half as much as glass or aluminum. Swedcast 500 has good dimensional stability and resists shrinkage, deterioration, weathering, and ultraviolet degradation. Acrylic provides about 20 per cent better thermal insulation than glass, says the manufacturer. This material replaced glass at a school in New York City and saved $500,000 a year in breakage costs. Panels of acrylic are used in the Houston Astrodome roof. Other suggested applications include partitions, spandrels, diffuser panels, illuminated window glazing, skylights of curved or flat configuration, luminous walls, unbreakable doors, patio enclosures, and roofs. Swedlow, Inc., 12605 Beach Blvd., Garden Grove, Calif. 92641.
On Readers' Service Card, Circle 103

Doors/Windows

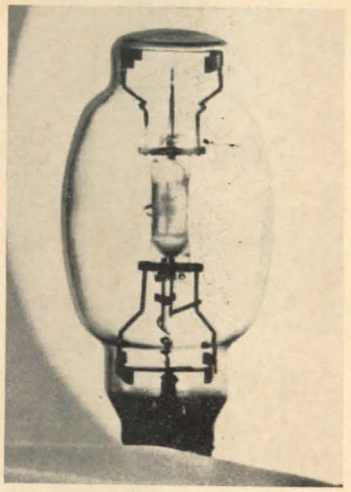


Wood Window Frames Encased in Rigid Vinyl

"Perma-Shield" is a new line of wood window and gliding door frames protected with "Geon," a rigid vinyl manufactured by B. F. Goodrich Co. For windows, preformed rigid vinyl is bonded to the exterior surfaces of the wood frames.

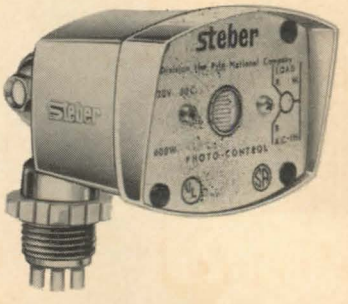
The rigid vinyl eliminates joints at the corners of the frames; interior trim is left uncoated to preserve the natural wood finish of the frames. For gliding doors, vinyl is applied to both exterior and interior surfaces of the door panels and frames. Perma-Shield casement, awning, and fixed windows are available in 21 basic unit sizes; gliding doors are available in five sizes. Andersen Corp., Bayport, Minn.
On Readers' Service Card, Circle 104

Electrical Equipment



True Red Light

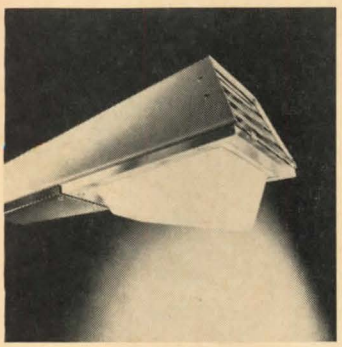
Recently developed 175-w "Metalarc" lamp is used in small-area commercial applications. Lamp has rated output of 10,500 lm and allows compact fixture design. Metalarc features intense light and good color rendition. Objects containing certain colors, such as red, retain their true color value when exposed to this lamp. Sylvania Electric Products, Inc., 730 Third Ave., New York, N. Y. 10017.
On Readers' Service Card, Circle 105



Floodlight Switch-Off

"Series S-590" photoelectric switches provide automatic, dusk-to-dawn, on-off operation of various size floodlights. If circuit fails, a built-in "fail-safe" device continues floodlight operation. Switch can operate in temperatures ranging

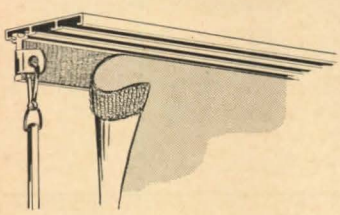
from —30 F to +140 F. S-590, which operates at 120-v, is available in capacities of 600-, 1000-, 1500-, and 2000-w. It can be mounted on cluster boxes or troughs, singly or in combination with high capacity floodlights. Housing for switches is die-cast aluminum with heavy-duty chrome-plated finish. Steber Div., The Pyle-National Co., 1334 North Kostner Ave., Chicago 51, Ill.
On Readers' Service Card, Circle 106



Outdoor Lighting

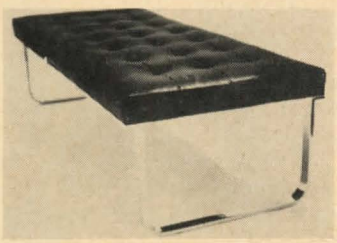
Recent line of exterior mercury lights is available in 1000-, 400-, and 250-w sizes. "Concept 6" luminaires are housed in aluminum trapezoidal-shaped diffusers that fit onto walls or light standards. Revere Electric Mfg. Co., 7420 Lehigh Ave., Chicago, Ill.
On Readers' Service Card, Circle 107

Furnishings



Innovational Window Treatment

A most imaginative and potentially elegant window-covering technique has now been made generally available with the introduction of Kirsch's "Paneltrac" drapery hardware system. Developed originally to implement the SOM-designed window treatment, the system supports flat panels which look something like narrow shoji screens. Paneltrac permits the panels of fabric to slide, when drawn by a baton, and to stack behind each other at the sides of the window. An additional feature of the system is the use of Velcro on the sliding clips; fiddling with hooks and other fasteners is thus eliminated. The flat-panel system is said to require 50% less fabric than the ubiquitous traverse drapery. Kirsch Company, Sturgis, Mich.
On Readers' Service Card, Circle 108

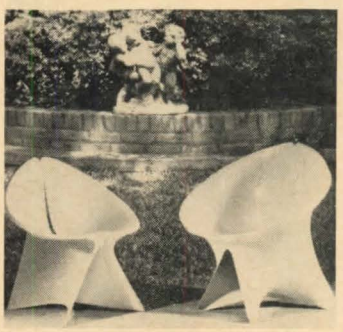


New Furniture Firm

Nicos Zographos, designer formerly with SOM and Albano, has opened his own furniture manufacturing company and show room with some of his familiar, elegant, metal-and-leather pieces, and he has added to the line. Among the additions are a button-tufted leather, overstuffed armchair on polished aluminum runner base and a bench (60″ x 25″ x 16″ high), which has a base of bent, mirror-polished stainless-steel bars with welded joints and a platform of individual welted panels of calfskin. Zographos Designs Ltd., 510 Madison Ave., N.Y., N.Y.
On Readers' Service Card, Circle 109

All-Resistant Tabletops

Wood tabletop is resistant to flame and stain as a result of aluminum foil laminated beneath the veneer. The foil reportedly absorbs heat, preventing the wood from burning. In addition, veneer (walnut or teak) has been treated with an epoxy-type finish that is said to be impervious to acid and alcohol. Even though this technique is not new in cabinetmaking (bars have been finished in this way for a number of years), the tables are the first "residential-quality" furniture to use the process. Tables come in four heights (14″, 16″, 20″, and 24″) and four shapes: round, rectangular, long, and square. Springer-Penguin Inc., 11 Brookdale Place, Mt. Vernon, N.Y.
On Readers' Service Card, Circle 110



Free Forms for Outdoors

A sinuous group of indoor and outdoor seating of molded glass fiber introduces a long-hoped-for direction of design originality on the part of the Burke Division. Two-section construction unifies seat and base—a noteworthy accomplishment. Designed by Stylianos Gianaokos and Andrew Moorison, the Athena *(left)* and Adonta *(right)* are available only in white (though they can be painted) with optional upholstered pads. The Burke Division, Brunswick Corp., Dallas, Tex.
On Readers' Service Card, Circle 111

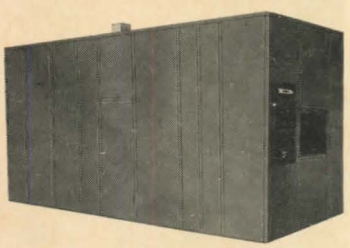
See These Vinyls

Union Carbide's entry in the vinyl race is gaining by lengths. At least six new numbers of "Vileau" will be of use to architects. Among them, "Sand" is a suedelike wall-covering in 29 plain colors; "Castilian" (*illustrated*) is a newly developed, high-gloss, deep crush vinyl for upholstery, which is available in leather-grain colors and 22 solid colors. Union Carbide Corporation, Fibers and Fabrics Division, 270 Park Ave., New York, 10017, N.Y.
On Readers' Service Card, Circle 112

Laminates by Noyes

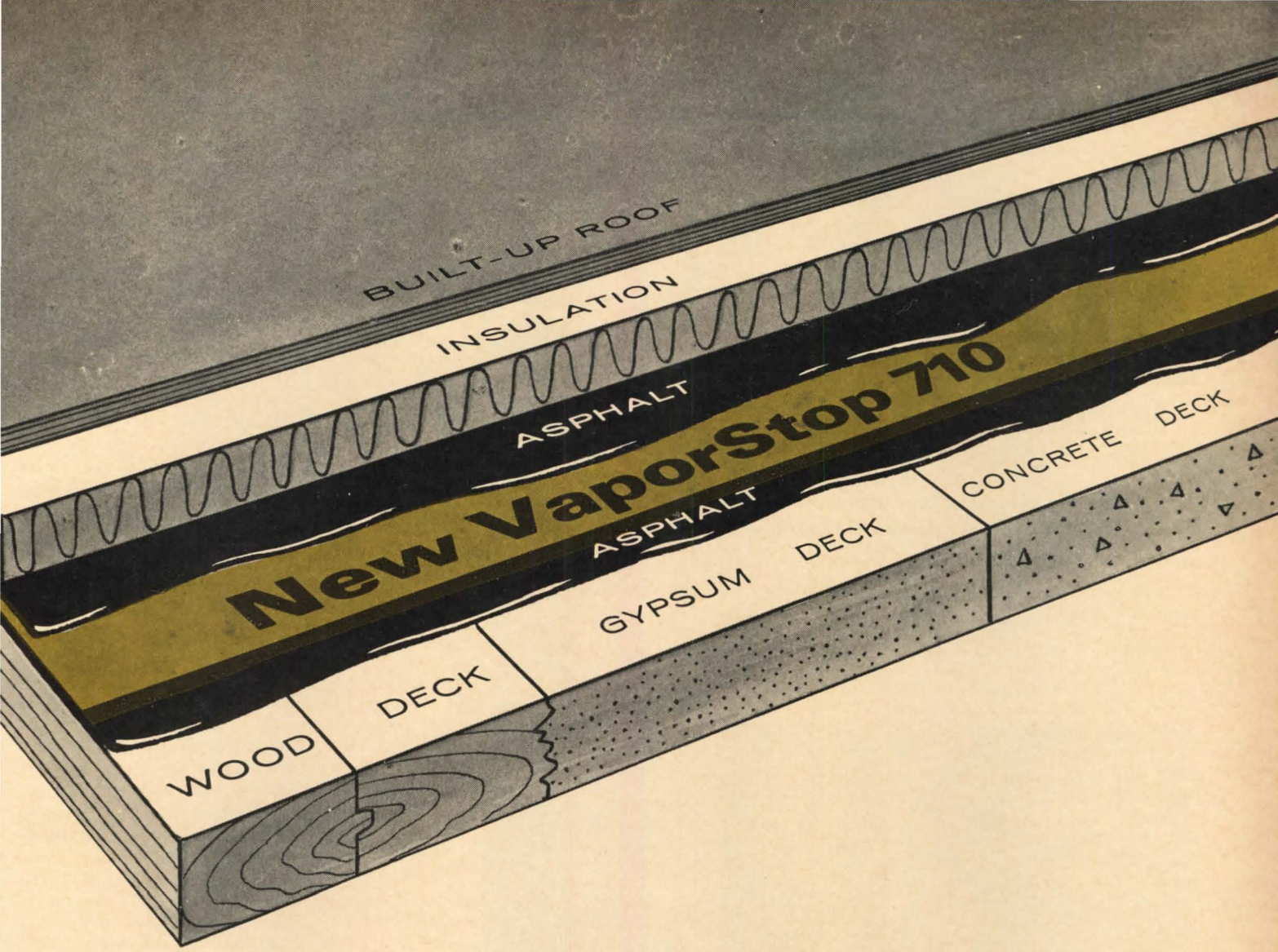
Eliot Noyes has assembled 36 new colors for Micarta plastic laminates that range from bright to muted (including taupes and olive tones). They reflect the best of the industrial design tradition and lack the harshness of many laminate lines. These Micarta colors can be coordinated with other furnishings by referring to the Ostwald international color coding system, which Noyes has used. Sample chips are packaged in bound volume or box and are available (without charge) from Westinghouse Electric Corp., Micarta Division, Hampton, S.C.
On Readers' Service Card, Circle 113

Sanitation/Plumbing



Hospital Dispose-All

"Des-Inerator" hospital waste disposal system consumes 8000 lb of refuse per day. It is capable of handling all disposables including plastics, hypodermic needles, syringes, fabrics, dishes, pathological wastes, etc. System is push-button operated by a control panel located on the incinerator. Incinerator re-



Revolution in Vapor Barriers for Built-up Roofs

VaporStop 710 Sisalkraft's new prebuilt, manufactured vapor barrier. It eliminates the quality risks of fabrication on the job; positively protects insulation with **one-ply application.** Applied cost is 20% less than conventional 15 lb. felts.

VaporStop 710 lays down as a one ply, pre-manufactured vapor barrier. It consists of two sheets of stretchable kraft laminated by a special plastic vapor barrier adhesive, with tough fiber edge reinforcing. It gives the owner the most efficient vapor barrier possible for these 6 reasons:

- Continuous low (0.28) perm rating is assured
- Expands as roof expands
- No absorbing or holding of moisture
- Less chance of moisture entrapment
- Weight is 80% less per square in place, with 5 fewer roll changes and end laps
- Greatest possible assurance of 100% coverage

Send for *Vaporstop 710* Bulletin and sample.
Sisalkraft, 56 Starkey Ave., Attleboro, Massachusetts.

ST REGIS
SISALKRAFT DIVISION

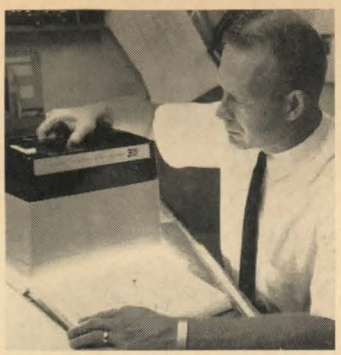
On Readers' Service Card, circle No. 439

duces volume of waste material up to 99.6 per cent, manufacturer says. Water wash section cools exhaust air temperature to less than 300 F, therefore eliminating need for special refractory smokestacks. Incinerator can be located indoors or out. Despatch Oven Co., 619 E. Eighth St., Minneapolis, Minn. 55414.
On Readers' Service Card, Circle 114

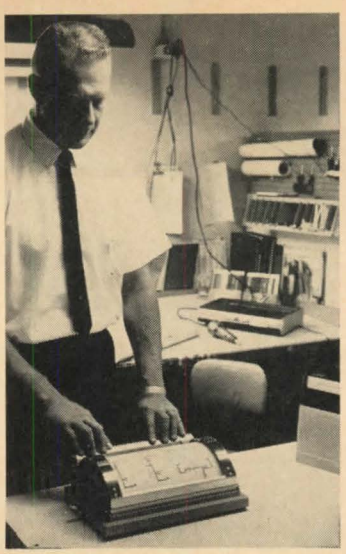
Special Equipment

Detail Reproducer

Recently developed reproducing system enables draftsmen



to make translucent photographs of details that can be superimposed on drawings. Manufacturer says that drafting time on architectural projects could be reduced by 35 per cent. This dry process of



making transparencies comprises two units: light exposure assembly that transfers the required image onto a film and a heat developer assembly that develops the transparent film. Among the applications for this technique are transferring portions of previous jobs to new working drawings, reproducing subcontractor shop drawings in files, copying directly from manufacturers' catalogs, and copying specifications from government agency building code specifications. 3M Co., 2501 Hudson Rd., St. Paul, Minn.
On Readers' Service Card, Circle 115

Potable Water Plant

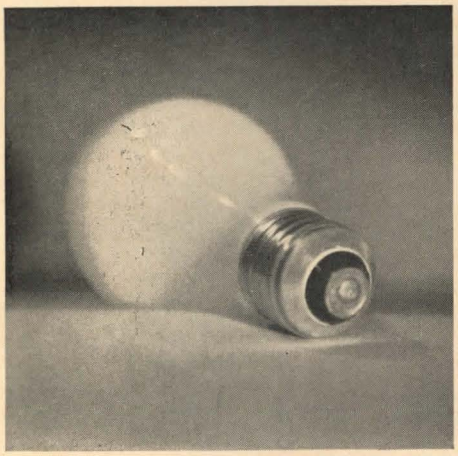
"Centra Filter" is an automatic water treatment plant with no moving parts, pumps, motor driven agitators, or mixers. Plant is powered by natural gravity and controls the inflow rate of raw water, adds chemicals, settles out most color and turbidity, filters out any remaining impurities, backwashes itself, and delivers potable drinking water. Unit is available in six sizes, from 4′-diameter tank producing 7500 gal per day to a 17′-diameter tank with a daily output of 165,000 gal. Suitable for small communities, isolated factories, and camps. Permutit Co., Box 41, Paramus, N. J.
On Readers' Service Card, Circle 116

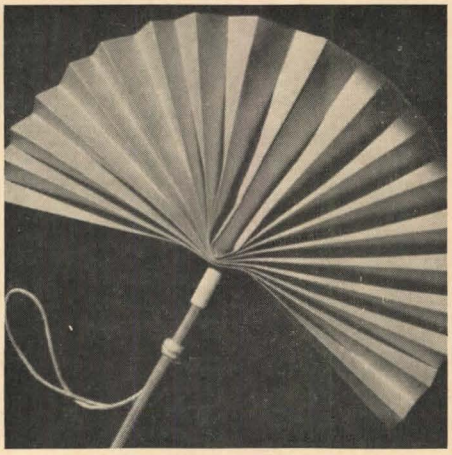
Surfacing

Crystal-Like Flooring

"Variegated Duresque," a seamless resilient flooring, is available in seven pastel colors. Manufacturer says flooring is impervious to corrosion by chemicals and to marring. It is composed of a translucent glaze to which are added large chips. Torginol of America Inc., 6115 Maywood Ave., Huntington Park, Calif.
On Readers' Service Card, Circle 117

Sweating over a bunch of unrelated ceiling components that have to be tied together and sugar coated to sneak by?





Cool it with Quartette, the total integrated ceiling that looks great and works great.

Organizing competing components into an attractive, environmental ceiling that really works is practically impossible. Achieving the "impossible" called for a new concept. Quartette is it: A total ceiling with complete control of environment functions in each module.

Take Quartette's light: Marvelous. Shielded, glare-free, subtle, controllable from 75 to 400-plus footcandles. Will an area's changing needs require more light in 1970? With Quartette, planning now will provide for it by a simple change of lamps and ballasts.

Take Quartette's air exchange: Complete. Each module incorporates its draftless, noiseless 180° air diffuser, located below lamp level. Generated lighting heat is not blown into room space. Reduces air conditioning workload and costs.

Take Quartette's acoustics: Excellent. The layin top of each module contributes to ceiling's 80% sound absorption quality, regardless of lighting level. Attenuation 39.3 db.; assured through-ceiling privacy without plenum barriers. Eliminates sound-leaking louvers and wall openings. Plan a private office in a general area — Quartette makes it possible.

Take Quartette's partitioning flexibility: Unequalled. Fast, easy repartitioning with one tool: a screwdriver. No damage to ceiling. No interruption of environment functions. Sound-seal gasketing, clean detailing. Unlimited space-arrangement freedom.

Take Quartette's module: Complete. Every function for its area. All permanent metal, with unique hollow corner-post which imparts immense rigidity to ceiling and partitions; serves as carrier for phone lines, switchlegs, etc. Modules custom-sized from your specs, to fit any bay.

Take *total* Quartette: Best, unequivocably. Beautiful, interesting texture. Total in harmoniously integrating environment functions. Extra years of keep-pace performance, with remarkable operating and maintenance economies.

Why sweat? Specify care-free Quartette. Write or phone

LUMINOUS CEILINGS INC., 3701 N. Ravenswood Ave., Chicago, Illinois 60613 312-935-8900

Quartette — the total integrated ceiling with controlled environment second only to nature's

On Readers' Service Card, circle No. 429

Acoustics

Reducing Industrial Machinery Noise

Report discusses basic principles in determining machinery noise levels and solutions to noise-control problems. It shows how hearing damage, neighborhood complaints, and decreased employee efficiency can be avoided by using noise control enclosures or shields. Brochure lists noise levels generated by typical machinery, acceptable noise criteria, speech interference levels, and data on partial and complete enclosures for machinery. Recommendations for reducing noise by balancing rotating machinery and by using acoustical shields, baffles, and enclosures. 4 pages. Bulletin #6.606.20. Industrial Acoustics Co. Inc., 380 Southern Blvd., Bronx, N.Y. 10454.
On Readers' Service Card, Circle 200

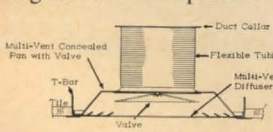
Air/Temperature

Regulating Temperature

Guide presents application information on temperature control of both storage and instantaneous heating/cooling systems. Detailed diagrams show more than 20 temperature control systems from single, single-loop systems to cascaded pressure-temperature systems that use various types of control. Eight charts list more than 3900 specific application areas in 14 standard industrial classifications. Guide includes complete lines of self-contained and air-operated temperature controls, and how and where to apply each type for stable control. 16 pages. Leslie Co., 265 Delafield Ave., Lyndhurst, N.J. 07071.
On Readers' Service Card, Circle 201

Air Diffusers

Booklet describes five different types of "Multi-Vent" modular, high-capacity air diffusers used for various acoustical ceiling systems. Diffusers have an angular-throw aperture along



the outer edges of the exposed surface of the diffuser panel. Balance of the exposed panel surface is available, plain or perforated, in matching colors to complement any type of ceiling materials. Multi-Vent can conform to any arrangement of lighting fixtures, sprinkler systems, or movable partitions. Performance chart lists diffusers at capacities from 40 to 220 cfm. Pyle-National Co., 1334 North Kostner Ave., Chicago 51, Ill.
On Readers' Service Card, Circle 202

Construction

Fire-Retardant-Treated Plywood Roofs

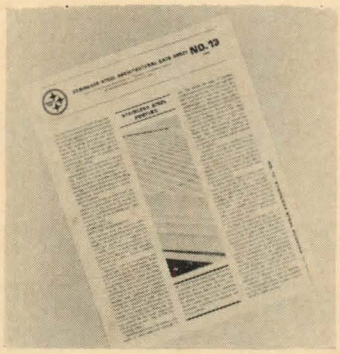
"Fire-Retardant-Treated Plywood Roofs" explains how plywood can be used for economy and still receive low insurance rates. Manufacturer states that treated plywood roofs now receive insurance rates comparable to rates for unprotected, ordinary steel roofs. Brochure explains various support systems that can be used with fire-retardant plywood: fire-treated wood joists, long-span steel joists and trusses, and a plywood stressed-skin system. Map shows rates allowed in all states. American Plywood Assn., Tacoma, Wash. 98401.
On Readers' Service Card, Circle 203

Mortar Aggregates

Brochure studies two types of fine aggregates for making mortar: crushed stone, gravel, or air-cooled blast-furnace slag; and natural sand made of rounder, smoother, particles than manufactured fine aggregates. These sands produce mortars with different workability properties. The brochure discusses graduation, deleterious substances, alkali-aggregate reactivity, bulking, proper handling, and stockpiling of the materials. 4 pages. Portland Cement Assn., 33 West Grand Ave., Chicago, Ill. 60610.
On Readers' Service Card, Circle 204

Heat-Absorbing Glass

Leaflet describes blue-green heat-absorbing glass, its characteristics, and design considerations. According to the manufacturer, "Aklo" glass is 25 per cent more resistant to thermal shock than regular patterned or wired glass. Leaflet gives specifications, shadow problems encountered in the use of heat-absorbing glass, and maximum recommended sizes for regular glazing, and glazing using cork or asbestos impregnated tape. American Saint Gobain Corp., P.O. Box 929, Kingsport, Tenn.
On Readers' Service Card, Circle 205



Stainless-Steel Roofs

Stainless Steel Architectural Data Sheet No. 13 briefly illustrates details of stainless-steel roofing. Five types of roofing methods are shown: welded standing seam, batten seam, flat seam, diamond tile, and corrugated roof. 6 pages. American Iron and Steel Institute Committee of Stainless Steel Producers, 150 East 42 St., New York, N.Y. 10017.
On Readers' Service Card, Circle 206

Doors/Windows

Framing Doors After Wall Construction

Metal door frame system can be installed after all wall work, including painting or papering, has been completed. Bulletin outlines economy of post-construction door frame installation, particularly in apartments, hospitals, schools, and office buildings. System is adaptable to any wall width or building material. Brief specifications and standard details. Overly Mfg. Co., Door & Frame Div., 574 W. Otterman St., Greensberg, Pa. 15602.
On Readers' Service Card, Circle 207

Electrical Equipment

How to See Better

"Lighting Fundamentals for Architects" covers the process of seeing, the importance of balancing "task" and "surround" lighting, lighting terms, how to improve visibility, light sources, light distribution curves, comfort in lighting, and control of light. Booklet illustrates text with photos, charts, and photometric curves. 16 pages. Holophane Co. Inc., 1120 Avenue of the Americas, New York, N.Y. 10036.
On Readers' Service Card, Circle 208

Polarized Light

Light polarizing ceiling panels are said to nearly eliminate surface-reflected and direct glare in interior lighting by controlling the plane of light vibrations. By using polarized lighting panels, nearly two-and-a-half times as much illumination through the panel face can be produced without discomfort, according to manufacturer. "Polarized" translucent ceiling panels, made of light-stable vinyl, are available with special back panels that absorb ultraviolet light. Available in 2′x2′ or 2′x4′ panels for luminous ceilings or large bay areas. "Polarized" light fixture lenses are available in sizes ranging from 1′x4′ to 2′x4′ in three types. Pamphlet gives test data on visual effectiveness and comfort of the product. 12 pages. Polarized Panel Corp., 9301 Wilshire Blvd., Beverly Hills, Calif.
On Readers' Service Card, Circle 209

Finishes/Protectors

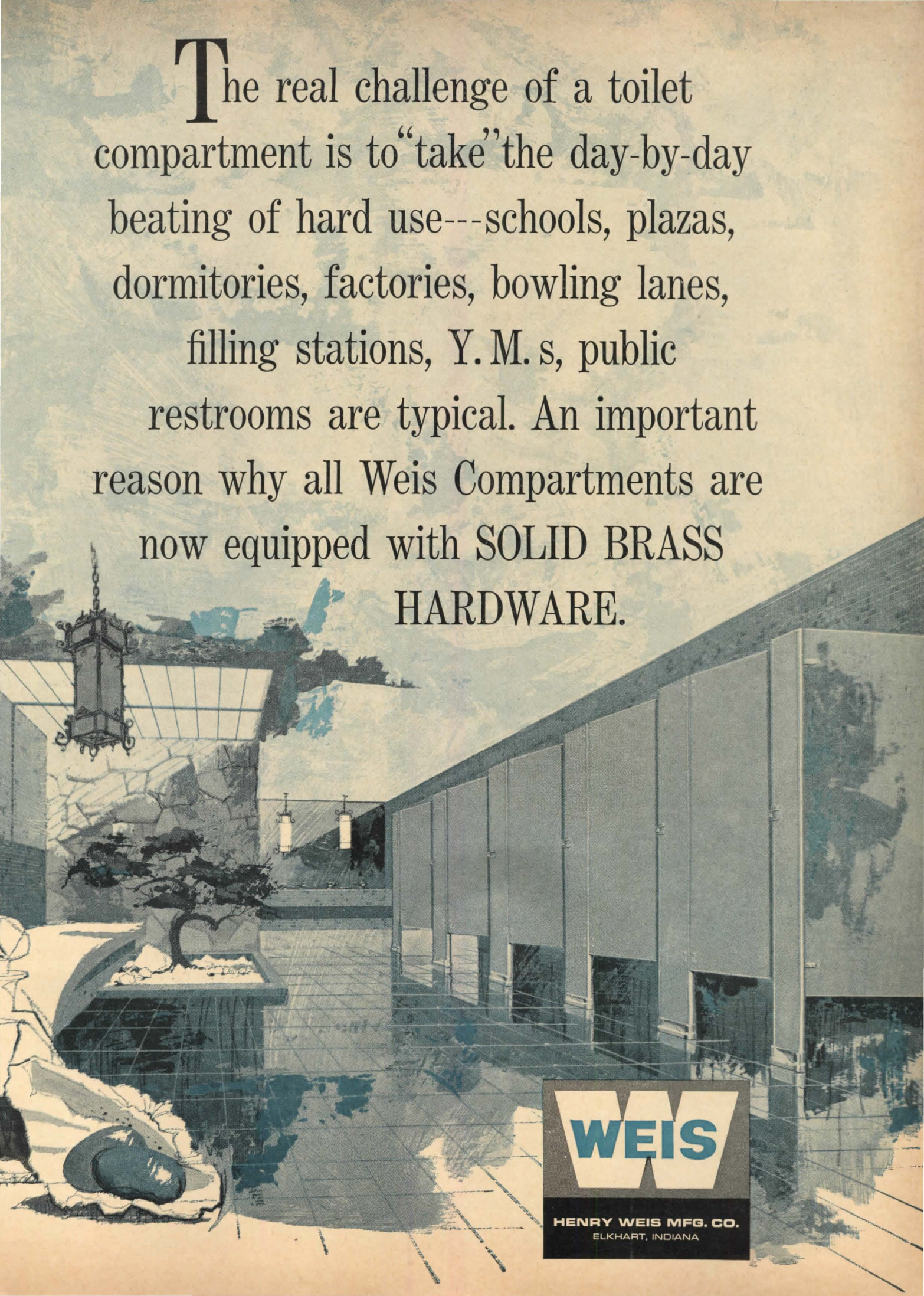
Polysulfide Sealant

Brochure describes "Rodofix," a two-component polysulfide sealant for calking, glazing, and sealing concrete, metal, masonry, wood, or glass. Details include physical properties, test data, colors, applications, and advantages over other types of sealants. Brochure gives recommendations for installation of back-up materials and joint design. Electrovert Inc., Construction Materials Div., 240 Madison Ave., New York, N.Y. 10016 .
On Readers' Service Card, Circle 210

Velvet Paint

"104 Series Velvet Coating" is applied like normal paint and provides a virtually perfect light-diffusing surface, says the manufacturer. Coating uniformly scatters light regardless

The real challenge of a toilet compartment is to "take" the day-by-day beating of hard use---schools, plazas, dormitories, factories, bowling lanes, filling stations, Y. M. s, public restrooms are typical. An important reason why all Weis Compartments are now equipped with SOLID BRASS HARDWARE.



WEIS

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ELKHART, INDIANA

of incidence angle and provides a velvet-like appearance without the glare of ordinary flat and textured finishes. Dirt and light abrasion marks are removed from the smooth surface without changing its original appearance. One gal. covers 400 to 450 sq. ft. when screen-processed on a smooth surface. Spraying covers about 175 to 200 sq. ft. per gal. and brushing and hand roller coating about 250 to 350 sq. ft. Brochure includes samples of 21 stock colors and 9 factory colors. 6 pages. 3M Co., 2501 Hudson Rd., St. Paul, Minn.
On Readers' Service Card, Circle 211

Tough Exterior Coating

Booklet illustrates applications of "Aroflint 505" oxirane-polyester polymer finishing system, an exterior coating with a high initial-gloss and superior-gloss retention. Manufacturer says product compares well with epoxy, urethane, alkyd, and spar varnish systems. Booklet gives detailed formulations of basic coatings, together with application procedures. Photographs compare Aroflint with other formulations after prolonged exposures. Manufacturer also claims that 505 has good crack-resistance on difficult to paint wood substrates, such as fir-plywood and Southern pine. 20 pages. Archer Daniels Midland Co., 733 Marquette Ave., Minneapolis, Minn. 55440.
On Readers' Service Card, Circle 212

Bushhammering Concrete

Brochure lists procedures for obtaining a varicolored textured surface on cast-in-place concrete by bushhammering. Covered are durability, suitable concretes, techniques, suggested specifications, and before and after photos. 4 pages. Portland Cement Assn., 33 West Grand Ave., Ill. 60610.
On Readers' Service Card, Circle 213

Insulation

Too Darn Hot, But Not Anymore

Catalog describes "Unibestos," an amosite-fibered asbestos material for high-temperature insulation applications, ranging from 100 F. to 1500 F. Tables of recommended thicknesses for power and utility industries, industrial use, process industries, and personnel protection are given. Also included are engineering drawings for joints and fittings, a chart of expansion control, and typical specifications. 12 pages. Pittsburgh Corning Corp., One Gateway Center, Pittsburgh, Pa. 15222.
On Readers' Service Card, Circle 214

Blanket Insulation

Brochure gives properties and recommended applications of "G-B Ultralite," a glass-fiber insulating blanket. Sketches show methods of insulating walls and roofs. Table lists physical properties of the blanket. Also included is a booklet explaining the fundamentals of heat transfer. 12 pages. Gustin-Bacon Mfg. Co., P.O. Box 13126, Kansas City, Mo.
On Readers' Service Card, Circle 215

Special Equipment

Store Fixtures

"Spacemaster" catalog contains merchandising tips, suggestions for better display techniques, visual merchandising trends, applications, schematics, and specifications. Booklet is cross-indexed into 18 basic product categories. 290 pages. Reflector Hardware Corp., Dept. FP-10, 1400 N. 25 Ave., Melrose Park, Ill.
On Readers' Service Card, Circle 216

Chemically-Resistant Asbestos-Cement Panels

Brochure describes "Colorlith" and "Colorceran" asbestos-cement sheets designed to resist chemical and physical abuse associated with laboratories. Manufacturer recommends the material for tabletops, around sinks, fume hoods, shelving, and other laboratory areas. Colorlith is highly resistant to acids, alkalies, and solvents. Colorceran is similar to Colorlith, except that it has added to it a ceramic-like surface to improve resistance to staining. Booklet lists resistance properties of both materials to a number of chemicals. It also tabulates physical properties of both products, and recom-

a specification from Hillyard . . .

FOR A GYMNASIUM FINISH that will withstand multiple use

PRODUCT NAME: *TROPHY® SEAL & TROPHY® FINISH*

DESCRIPTION: A seal and a finish especially formulated for wood gymnasium floors to give a light, durable, slip resistant playing surface that will resist rubber burning and marking.

SPECIFICATION AND HOW TO APPLY: An epoxy seal and finish. Apply with lambswool applicator. Seal coat fills porous wood surface. Game markings, using Hillyard Gym line paint, are painted in before finish coats are applied. Two finish coats are required. See Sweets Arch. File for detailed specification.

COVERAGE (Average): Trophy Seal—350 sq. ft. per gallon. Trophy Finish—500 sq. ft. per gallon.

TECHNICAL DATA: N. V. M.: Trophy Seal – 28%, Trophy Finish, 40%. Color: Gardner (typical) 4-5 (extremely light). Drying time: 7 hours to overnight (depending on humidity). Produces a glare free surface with proper light refraction. Exceeds all standards for abrasion resistance. Non-darkening—eliminates need for removing or sanding off finish for 10-15 years.

GUARANTEE: Controlled uniformity. When applied according to directions and under supervision of a Hillyard representative, all claims for the product are guaranteed.

MAINTENANCE: Regular treatment with Hillyard Super Hil-Tone dressing for conditioning and dust control.

APPROVALS: Maple Flooring Mfrs. Assn., Institutional Research Council. Listed by Underwriters' Laboratories as "slip resistant" In use: 12 years on all major basketball tournament floors.

REFERENCES: Sweets Architectural File, section $\frac{13n}{Hi}$
A.I.A. File No. 25G
A.I.A. Building Products Register

TINLEY PARK HIGH SCHOOL, TINLEY PARK, ILLINOIS
ARCHITECT – NICOL AND NICOL, CHICAGO, ILLINOIS

Write, wire or call collect for complete information and specifications on Hillyard TROPHY SEAL & TROPHY FINISH. You may also want your nearby Hillyard architectural consultant to demonstrate TROPHY SEAL & TROPHY FINISH in your office or on the job site.

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Since 1907

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On Readers' Service Card, circle No. 366

mends procedures for installing, jointing and maintaining Colorlith and Colorceran. 12 pages. Johns-Manville, 22 East 40 St., New York, N.Y.
On Readers' Service Card, Circle 217

Swimming Pool Specs

Two brochures outline minimum standards for public, semipublic, and residential pools. Topics covered include chemical treatment of water, safety devices, heaters, life-saving equipment, and plans. Tables for determining minimum filter and pipe sizes are given. National Swimming Pool Institute 2000 K St., N.W., Washington, D.C. 20006.
On Readers' Service Card, Circle 218

Surfacing

Plastic Laminate

Technical brochure describing "Panelyte" high-pressure, plastic laminate surfacing was prepared by Justin Henshell, AIA, former President of the New York Chapter of the Construction Specifications Institute. Panelyte is composed of layers of kraft paper impregnated with specially formulated resins. It is not affected by most solvents, soaps, cleaners, food, and household chemicals. Types of plastic laminate surfacing include general purpose, vertical-surface, post-forming, fire-retardant, edge banding, backer sheets, and cigarette-proof. Brochure illustrates installation details and gives specifications. Color range has increased from 17 to 35. Samples available upon request. 22 pages. Reliance Panelyte Inc., 2403 South Burdick St., Kalamazoo 34, Mich.
On Readers' Service Card, Circle 219

Tile Patterns

Ceramic tile handbook shows various design applications. Color photos illustrate 50 ceramic mosaic patterns, including 10 new patterns, 8 blends, and 32 stock patterns. Also described is "Conduct-O-Tile," a permanently conductive ceramic tile that provides controlled electrical conductivity in hospital areas that are subject to static-sparked explosions. Diagrams illustrate dimensions of shaped trim tiles and special tiles for thin-setting

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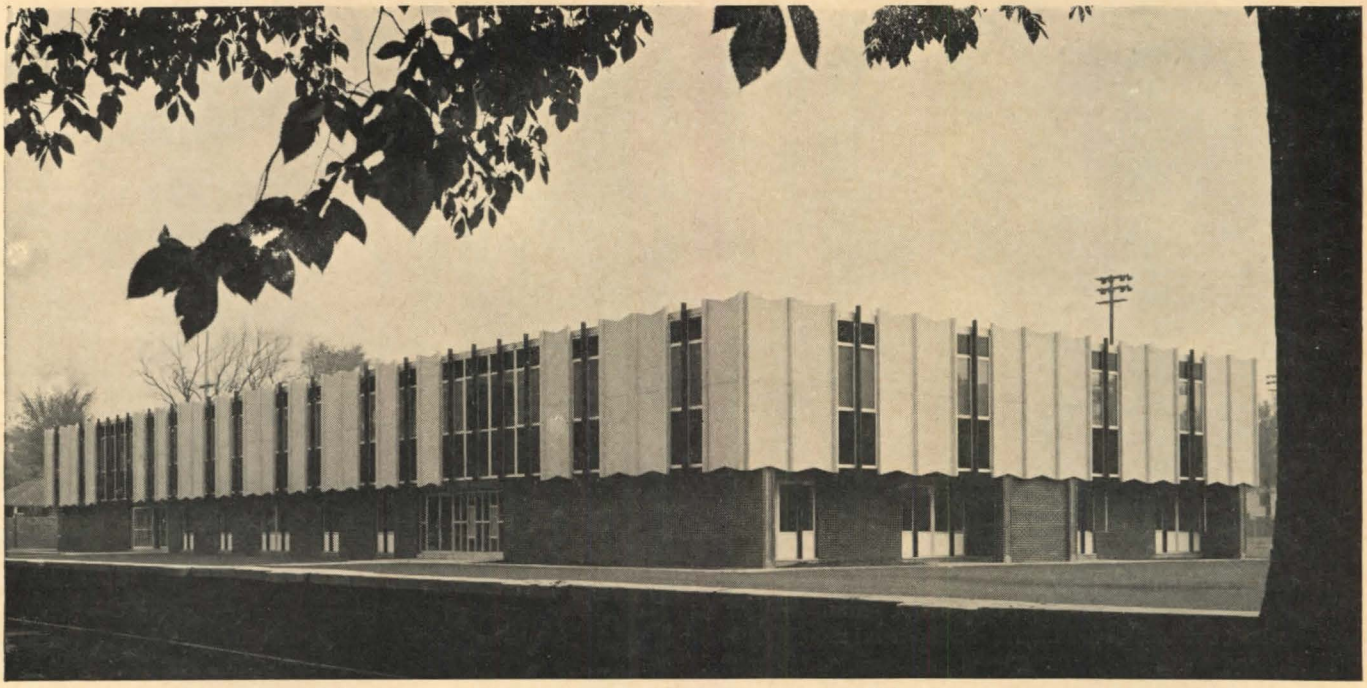

Longfellow School, Saginaw, Mich. Architect: Spence & Smith, Saginaw Builder: Gregory Construction Co., Bay City, Mich.

Another V-LOK® job that gave the architect freedom, the contractor time, and the builder savings

The better architects, contractors and builders understand the advantages of V-LOK the more they specify its use.

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If you are not aware of the definite benefits of V-LOK why not write for design manual and the name of the nearest Macomber representative. We think you'll find it the best thing you did today. *Macomber Incorporated, Canton, Ohio 44701*

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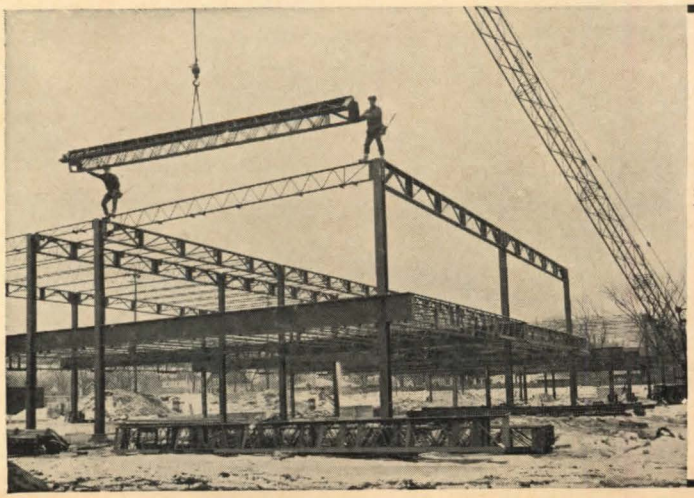

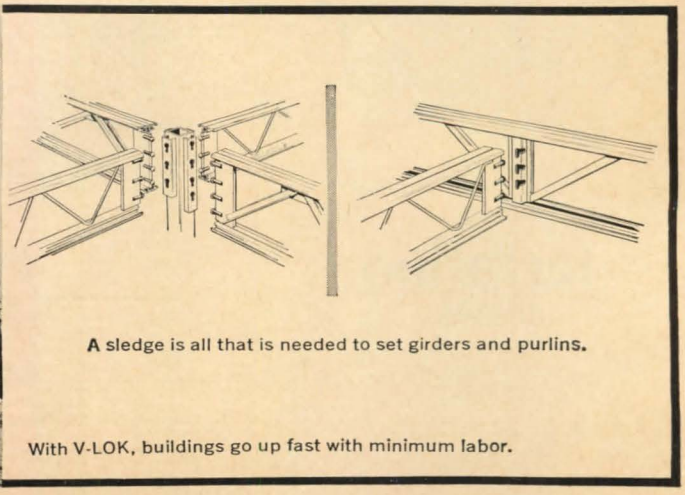

A sledge is all that is needed to set girders and purlins.

With V-LOK, buildings go up fast with minimum labor.

On Readers' Service Card, circle No. 381

bed installation. 20 pages. American Olean Tile Co., Dept. AO-119, Lansdale, Pa.
On Readers' Service Card, Circle 220

Tile Designs

Brochure illustrates "Designer Series" of six wall and seven floor tile patterns. They are available in a variety of sizes, colors, and surfaces. These tiles are resistant to acids, oils, chemicals, odors, and scuff-marks. 14 pages. Stylon Corp., 136 Newbury St., Boston, Mass.
On Readers' Service Card, Circle 221

Floor/Wall Cork

Cork wall and floor materials are described in 8-page catalog that includes specs and color photos. Covered are vinyl tile; special and standard cork tile for floors; 21 patterns of tackboard in washable, sanded, and vinyl-faced surfaces; cork for gymnasium floors; cork carpet, brick, wall tile, insulation, underlay, carpet padding; and composition expansion joint materials and adhesives. Dodge Cork Co., Inc., Lancaster, Pa.
On Readers' Service Card, Circle 222

Resilient Flooring vs. Carpeting

A documented report compares the costs of resilient flooring and carpeting. Study was based on the installation cost and maintenance of 112,-796,000 sq. ft. of resilient flooring and 572,000 sq. ft. of floors covered with commercial carpeting. The study compares figures obtained from recent installations with information reported several years ago by a study sponsored by the American Carpet Institute. 30 pages. Armstrong Cork Co., Lancaster, Pa.
On Readers' Service Card, Circle 223

PROGRESSIVE ARCHITECTURE
NEWS REPORT

REINHOLD PUBLISHING CORPORATION
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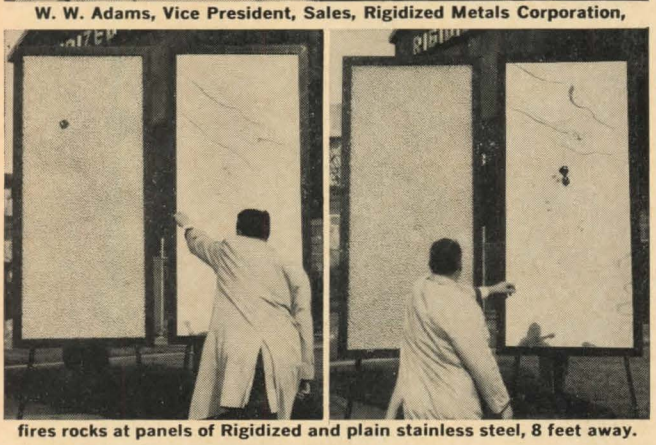
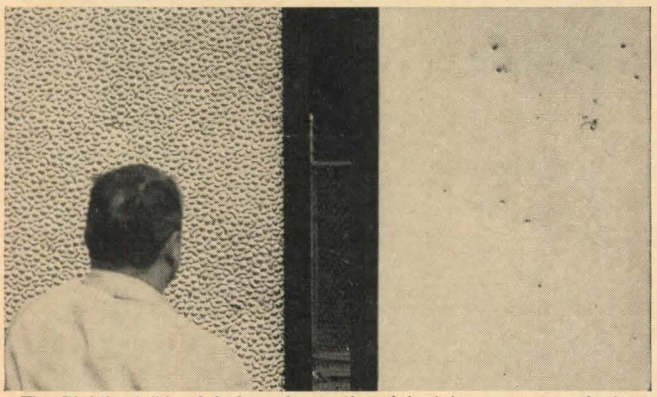
W. W. Adams, Vice President, Sales, Rigidized Metals Corporation,



fires rocks at panels of Rigidized and plain stainless steel, 8 feet away.



The Rigidized (l.) minimizes dents; the plain (r.) accentuates dents.

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RIGIDIZED METALS DON'T SHOW DENTS!

See for yourself! Let Rigidized send you actual colored and polished samples you can scratch, mar, and dent. Rigidized Stainless reduces actual deforming by as much as 50% over plain stainless. Scratches, fingerprints, and scuffs are completely concealed in the design-strengthened texture. These features mean big dividends in maintenance and replacement savings; initial costs are low, too.

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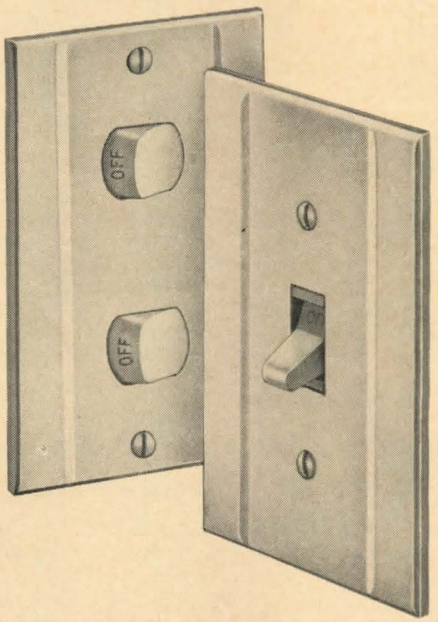

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The classic beauty of these new P&S wall plates—with intentionally understated design—complements any decor.

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These new UNILINE plates have the solid feel of excellence. Molded of high-quality phenolic material in Brown (61000 series) or Ivory (62000 series), they are available with a wide variety of openings.

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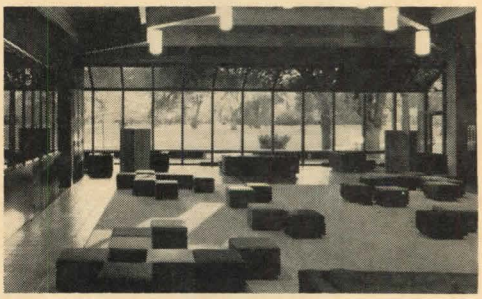
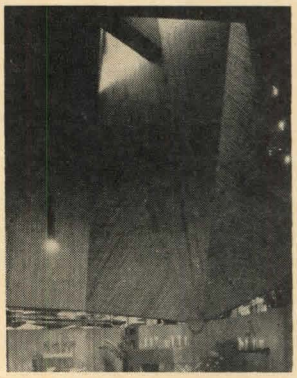
NEXT MONTH IN P/A





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■ *Sample: Marcel Breuer opens his vivid imagination and innovates for a client's showroom project.*

■ *Sample: "Finesse the words, show me the buildings," is the complaint of critic Robert Mutrux. In a provocative article, he laments the excess verbiage and the minimal tangible products of today's architects. Agree or not, you'll find the story stimulating.*

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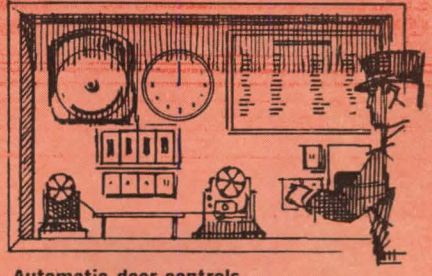

Automatic door controls to fit the precise need

Industrial, commercial, residential . . . there's a dependable AUTO®-MATE Automatic Operator to control any installation of The "OVERHEAD DOOR." Specific types include: remote control consoles, pull cords, pushbuttons, pull switches, treadles, time delays, interlocks, safety switches, time clocks, photo electric units, radio controls.

See Sweet's File 16-J for full details.

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There's a growing trend— to rough sawn Southern Pine

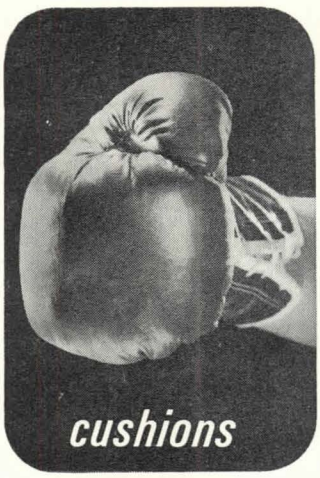
Sculptured, Natural, Modern

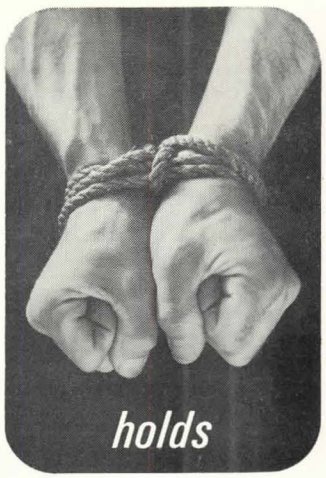
Many of today's new homes have exteriors of rough sawn Southern Pine siding. It is easy to understand why.

The sculptured look of this solid lumber creates a modern impression which warmly expresses Nature's beauty. While its charm is extravagant, the initial and long term costs are remarkably low.

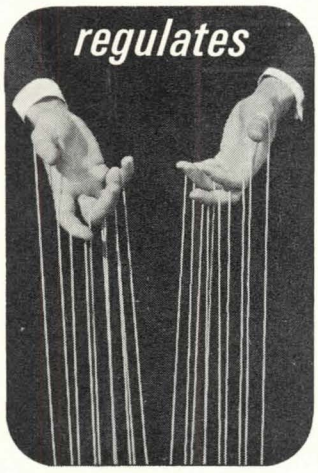
A variety of factors assures minimum maintenance. First, the enduring qualities of Southern Pine lumber—high strength and resistance to wear. Secondly, the exceptional durability of modern stain-type finishes, combining water repellants and preservatives—economical and easy to apply. The texture of the surface further improves the retention of these finishes.

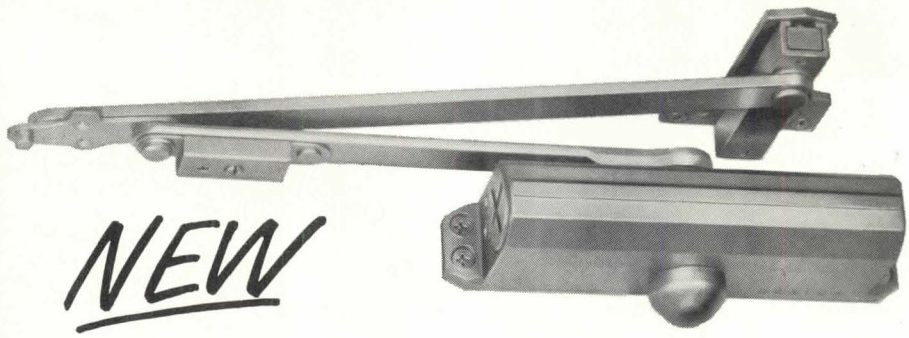
Specify Southern Pine from the member mills of the Southern Pine Association.
P. O. Box 52468, New Orleans, La. 70150.





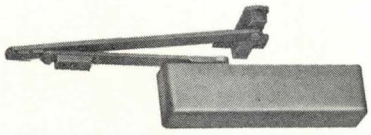
ALL FIVE DOOR CONTROL FUNCTIONS IN A SINGLE UNIT



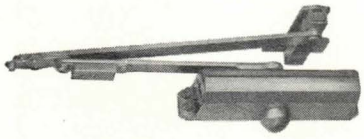


NEW

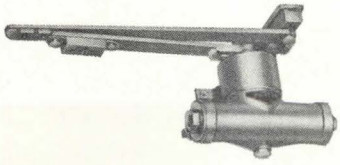
Norton Series 6100 Uni-Trol Door Control



Series 6110



Series 6120



Series 6130

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**CUSHIONS the opening of the door; STOPS the door;
HOLDS the door open; CLOSES the door;
REGULATES the door closing and latch speed.**

ATTRACTIVE DOOR APPEARANCE

You eliminate the necessity of two products at the door. Norton Uni-Trol, unitized door control, is an attractive single unit. There's only one installation at the door for a more esthetic, uncluttered appearance.

SIMPLIFIED SPECIFICATION

You only have to specify one product. You have only one catalog number and only one template to be concerned with. You completely eliminate the possibility of the mix-up of installing the wrong holder with the wrong door closer.

COMPLETE CONTROL

The coordinated control obtainable only with the Norton Uni-Trol assures perfect control under all conditions. Since the combined door holder and door closer are functioning as a unit, there's less strain on each, far less strain on the door and frame.

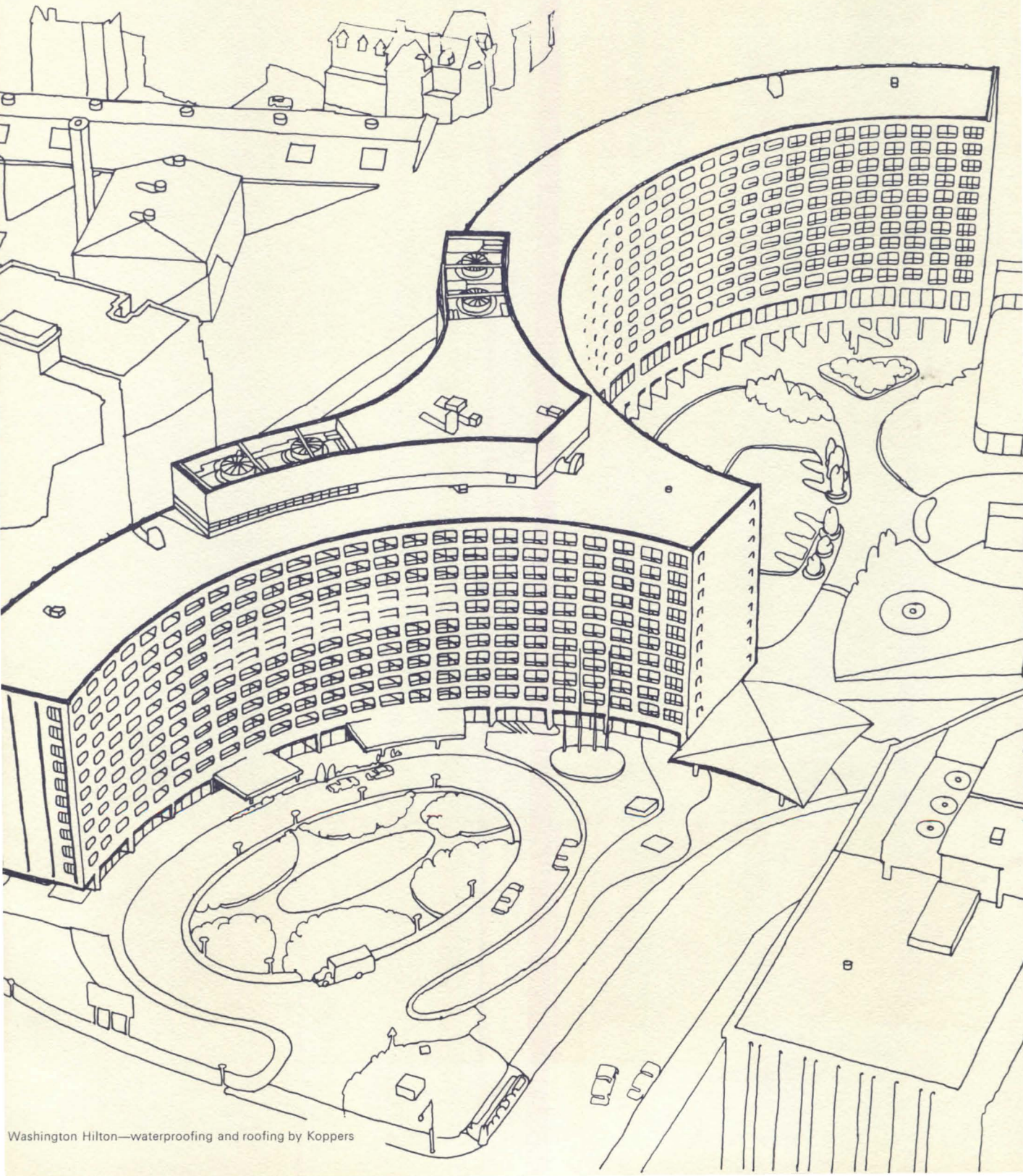
For complete details, write for Manual "U", or contact your Norton representative.

NORTON® DOOR CONTROLS
372 Meyer Road, Bensenville, Illinois 60106

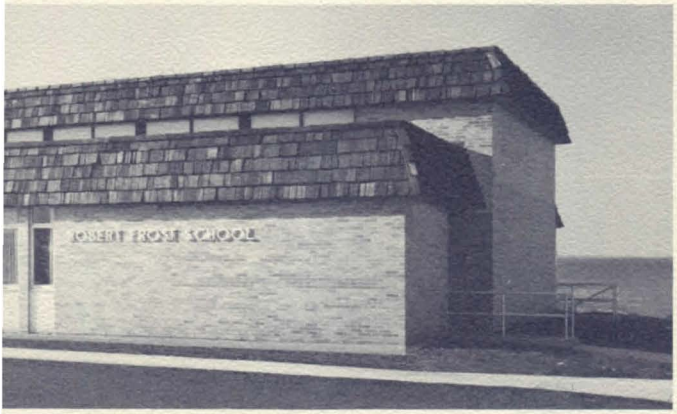
1106

DESIGN IDEAS'65

On the following pages you'll see 5 specific examples of how Koppers building products have helped architects and engineers obtain greater latitude of design and save money for clients. These Koppers products are either permanent in themselves, or they give permanence to other materials.



Washington Hilton—waterproofing and roofing by Koppers



Architect and Engineers: A. M. Kinney, Associates, Inc., Chicago, Ill.

4

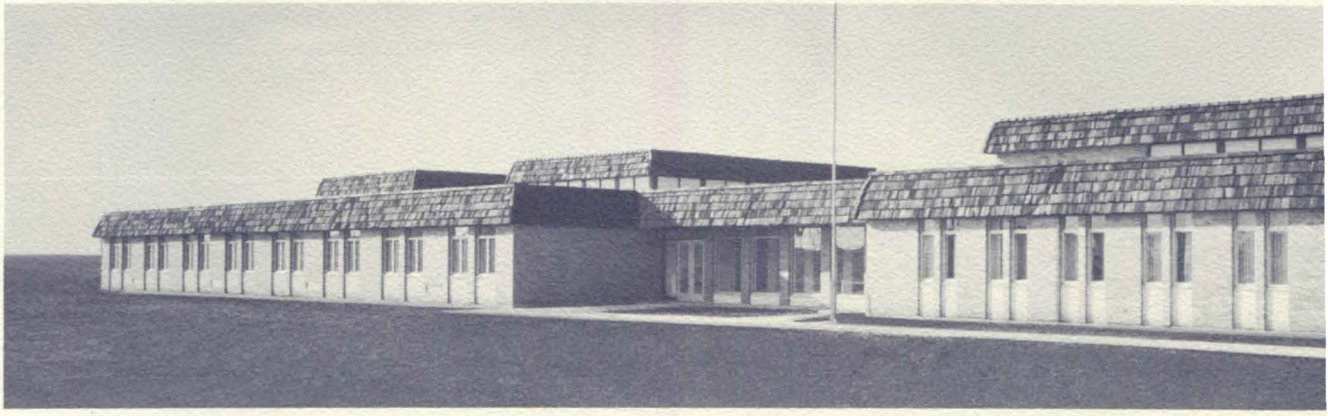
The Greenbrier protects its pools with Ramuc enamel

When The Greenbrier was refurbished in the late 1940's, interior designer Dorothy Draper wanted the grounds of the famed hotel to complement the interior. She and the landscape architect, Richard Webel of Webel & Innocenti, worked together to create harmonious flower arrangements and other plantings. The flowers around the fountain below, for instance, are changed three times a year, to reflect the changing seasons, and Mrs. Draper even specified what color each flower should be, so the outside setting would create the same mood as the inside.

The fountains, which are outside the Presidential Suite, are concrete on the bottom; the walls are Williamsburg-type hand-fired brick. They are protected from erosion by RAMUC® Enamel, made by Inertol Company of Koppers. The Greenbrier's concrete outdoor swimming pool is also protected by RAMUC Enamel. This chlorinated, natural rubber base paint is easy to apply, and keeps pools from showing signs of age, roughening, cracking or spalling. A wide variety of colors is available for cement, plaster, fiber glass, or steel pools. For more information, check the coupon.

2

They designed this school with laminated wood beams—and built it for only $14.22 per sq. ft.



In the Robert Frost Elementary School, Mt. Prospect, Ill., the architect wanted a structural system that would combine "functional strength and impressive beauty at moderate cost." This was achieved with laminated wood roof beams fabricated by UNIT STRUCTURES, a department of Koppers. Total in-place construction cost was only $14.22 per sq. ft.

The school has 10 classrooms, and there are plans for a future addition. The Mansard-type roof of wood cedar shakes provides a contrasting texture to the facade. The flat roof is supported by 40-ft. UNIT® laminated beams, left exposed inside to give a feeling of warmth in the classrooms.

The architects solved a space problem by designing two corridors to double as activity areas. There is room for a work counter, tables, chairs and desks, to take advantage of space that would be seldom used in classrooms. In these areas, UNIT laminated stub columns rest on the masonry walls and support the roof deck to give more window room for natural lighting, as shown in detail photo at right.

UNIT laminated beams, arches and decking offer unusual design advantages to the architect: they combine the warmth and beauty of wood with great strength, fire resistance, and economy. For more information, check the coupon.

3

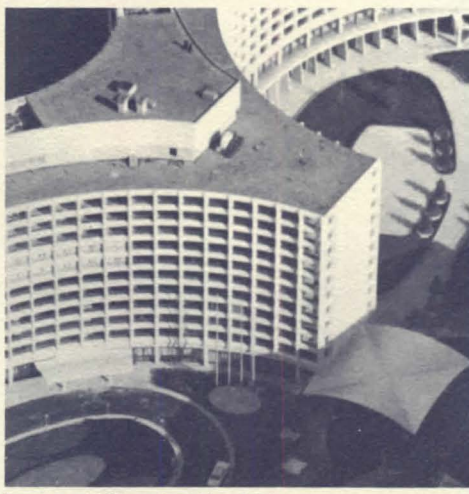
How to build a warehouse for peanuts

Nut processors must be able to store their products at cool, controlled temperatures. Precise temperature control is *especially critical* in hot, humid places like Durant, Oklahoma, where the temperature ranges from a high of 102°F down to a low of 12°, with an average humidity of 60%.

Durant Peanut Company has solved the problem of storing peanuts and pecans—and inexpensively—with this new warehouse built with insulated building panels from Koppers. The inside of the warehouse is kept at a steady 34°F, inside humidity at 65%.

These Koppers building panels have a core of DYLITE® expanded polystyrene, a rigid foam plastic insulation with a k factor of 0.24 at 40°F mean temperature. The 6″-thick panels used here are faced with aluminum inside and out. They are load-bearing and lightweight, so foundation and roof framing requirements were greatly reduced. Koppers building panels go up quickly because they fasten tightly together with a unique cam-locking device, and are available in a wide range of facings, sizes and thicknesses. For more information on Koppers building panels, check the coupon.

One-third of the new Washington Hilton Hotel is underground—and a coal tar membrane makes it waterproof



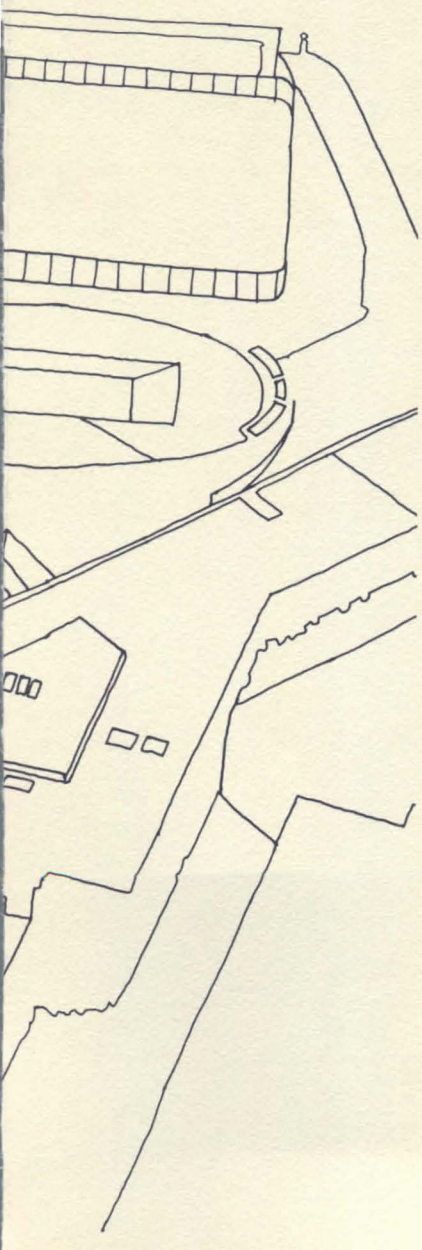
Architect: William B. Tabler, FAIA, New York, N.Y.

Because no building in Washington, D. C., can be over 90 feet high, William B. Tabler, the architect of the new Washington Hilton Hotel, had to design a structure that would have much usable space underground. The hotel is 10 stories high and has five more levels below grade, including garages, ballroom, dining rooms, lobbies, exhibit space and service space.

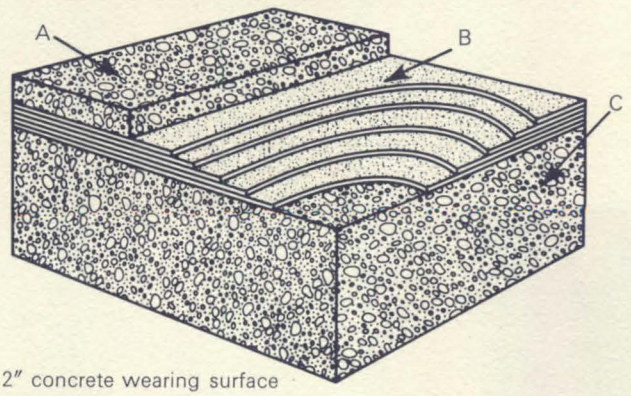
Waterproofing: A 5-ply Koppers coal tar pitch and felt membrane system waterproofs the roof of the underground garages and the area *under* the main ballroom floor. Perfect moisture control was particularly important under the ballroom, where waterproofing protects the wood floor from moisture damage. In all, a 200,000-sq.-ft. Koppers coal tar membrane system waterproofs the underground area.

Roofing: In addition, a Koppers coal tar pitch built-up roof tops the hotel. The 49,000-sq.-ft. roof consists of a 2-ply vapor barrier set in pitch, insulated with fiber glass, and covered with a 4-ply membrane of pitch and tarred felt.

Unlike other waterproofing or roofing materials, Koppers coal tar pitch has a molecular structure that permanently resists oxidation and the penetration of water and water vapor, so it retains its waterproofness. For more information on Koppers complete line of waterproofing, dampproofing and roofing materials, check the coupon.



Detail of membrane waterproofing



A. 2″ concrete wearing surface
B. 5-ply hot pitch and felt membrane
C. 10″ reinforced concrete slab

KOPPERS

TURN PAGE

5

It will be 20 years or more before these docks will need maintenance

his brand-new, $3 million Four Seasons Marina near incinnati, Ohio, was just a rusting auto barge a few nonths ago. Then the owners built a 50,000-sq.-ft. ountry club-like facility that provides mooring space or over 440 boats, plus a wide variety of shops and ervices for boaters. The docks are protected from main- enance, insects and decay for 20 years or more, because ney are built of Cellon®-treated lumber, produced by oppers. The use of Cellon wood also cut construction osts 40%, compared to conventional metal construction.

Two 200-ft.-long Cellon-treated docks and walkways oat above the water, supported by logs of expandable polystyrene. Cellon-treated Douglas fir was specified by the marina's developers, because they wanted a natural, attractive material that would effectively resist moisture, weathering, and termites. Cellon wood's *cleanliness* was another important reason it was chosen. Since the preservative is carried deep into the wood by liquid petroleum gas, it is non-leaching. Cellon-treated wood is also non-toxic and non-corrosive. In all, 400,000 board feet were used to build the 4,075 ft. of docks and walkways.

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Problems . . . and low-cost solutions

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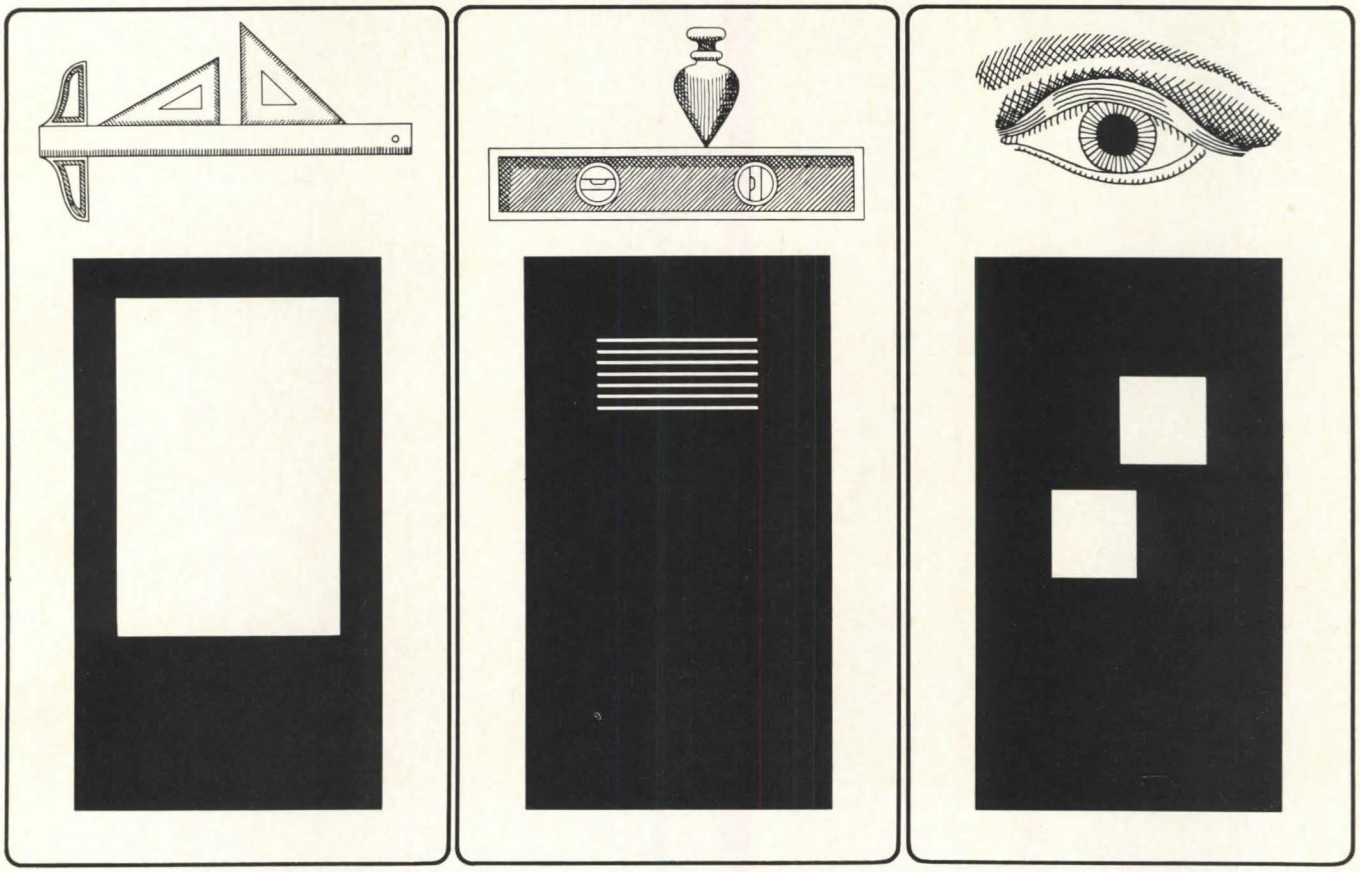
Solve custom door requirements from Republic's standard, stock line



You can find exactly the doors you need — whatever the performance requirements — whatever the glass or louver treatment — in the complete line of Republic Standard Stock Doors. What's more they're available from a network of warehouses — on overnight shipment in most cases.

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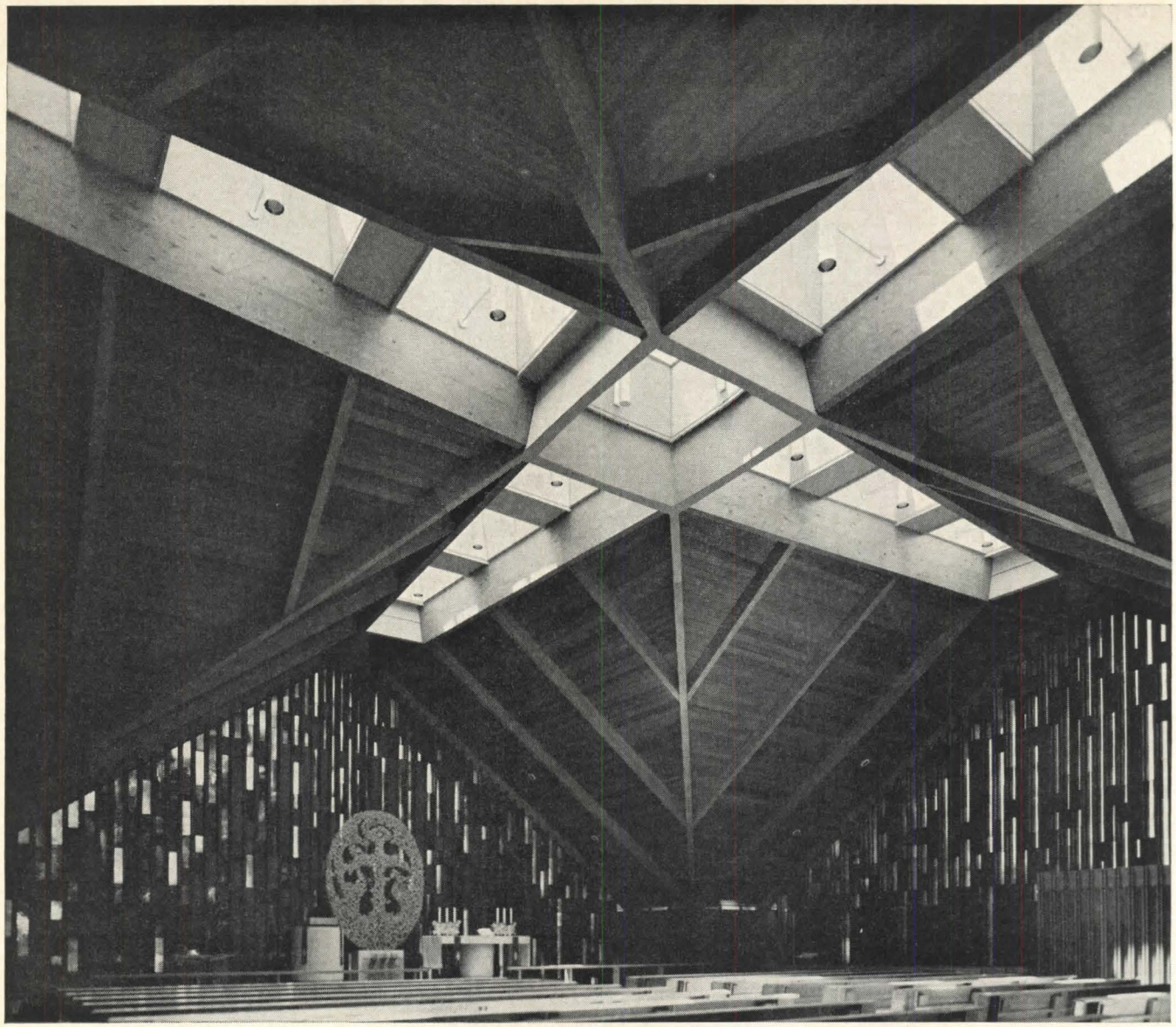

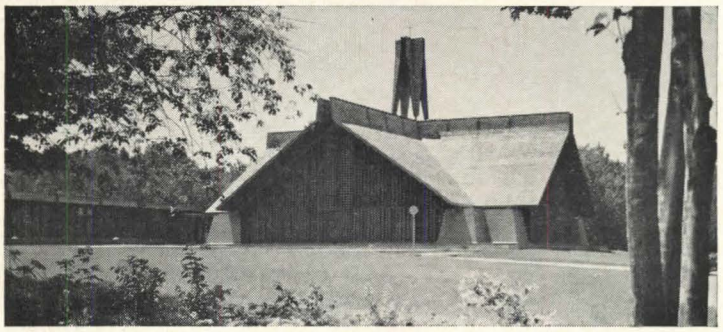

SKYLIGHTING IS AN ARCHITECTURAL FORM

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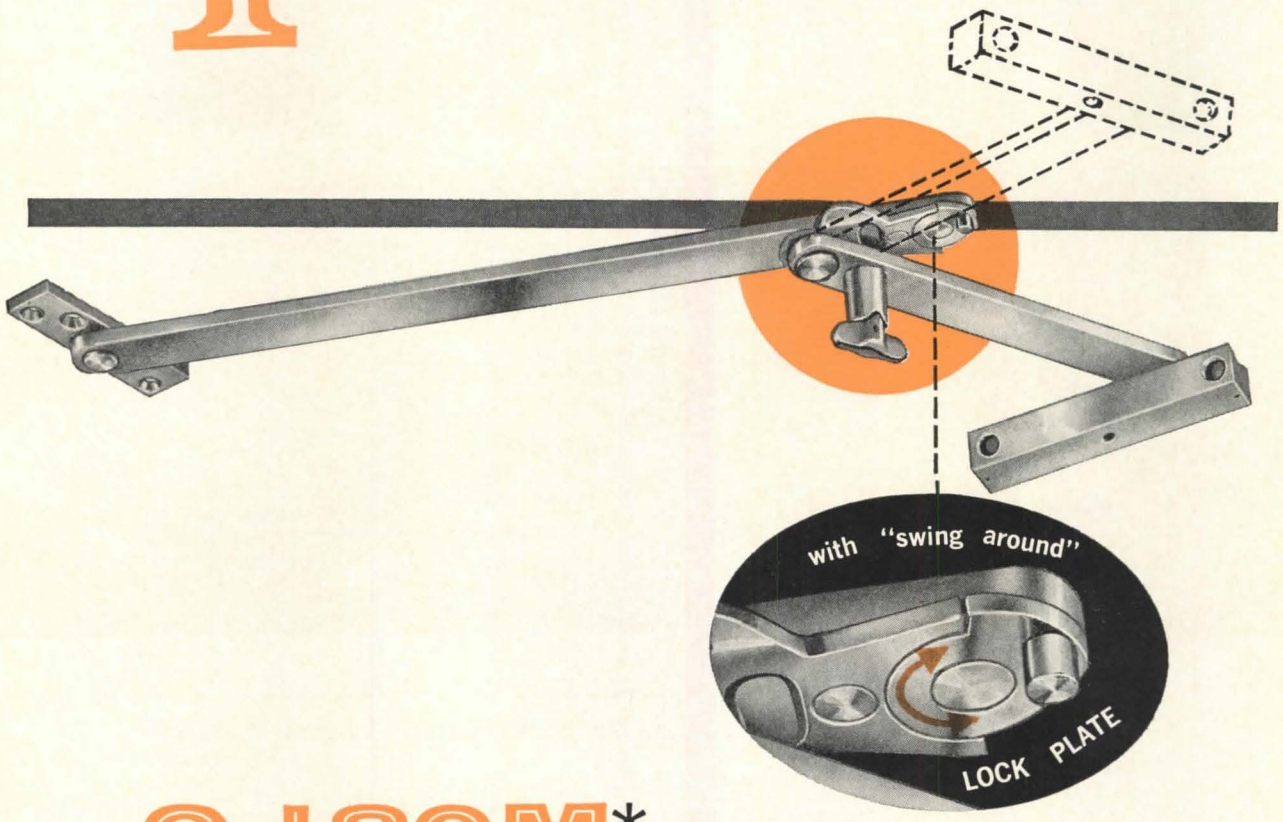

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for entrance, vestibule and heavy traffic interior doors

* **M** as in Modernized

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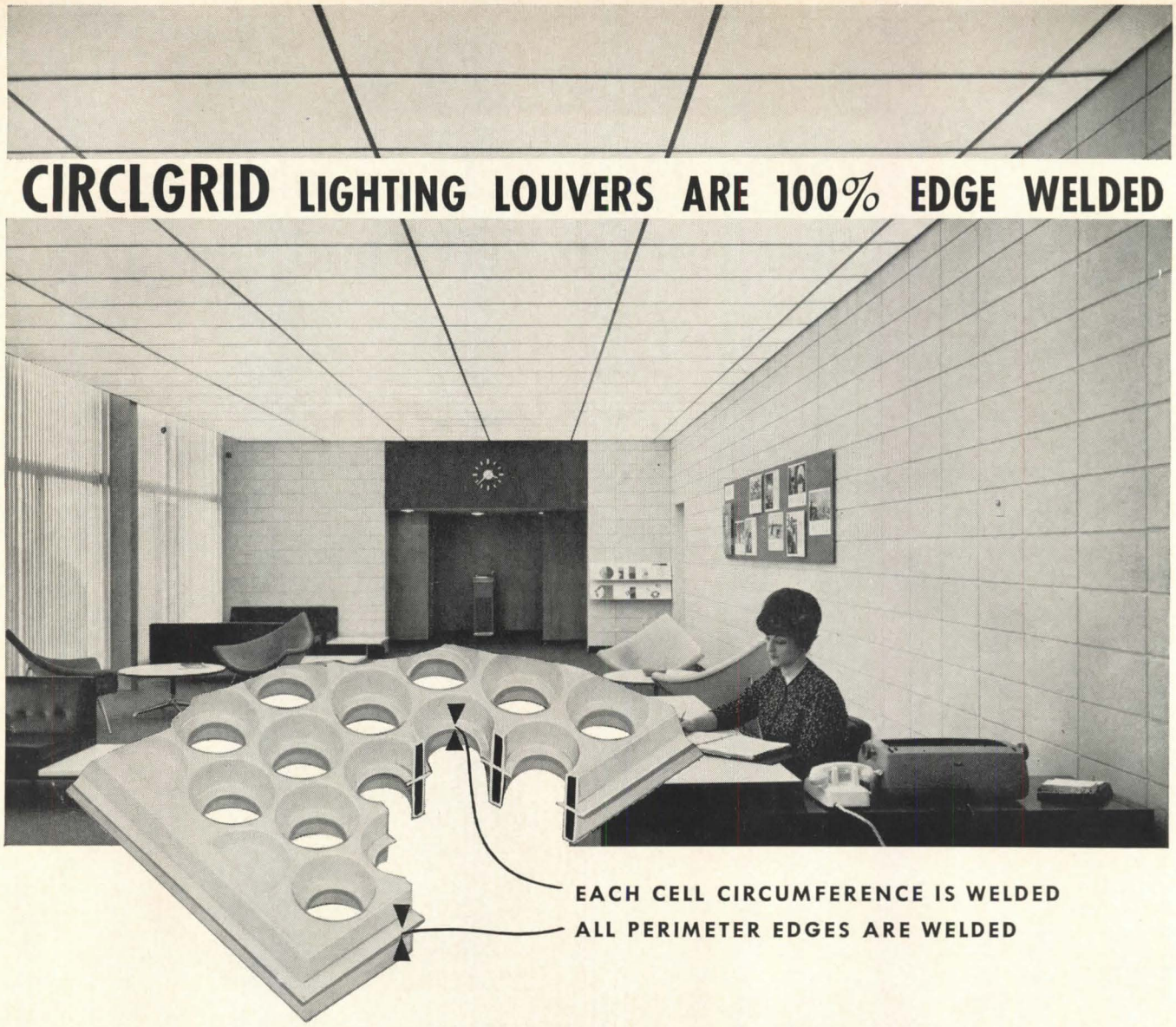

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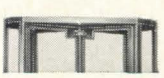

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what a record!

(Factory Magazine Top Ten Plants)

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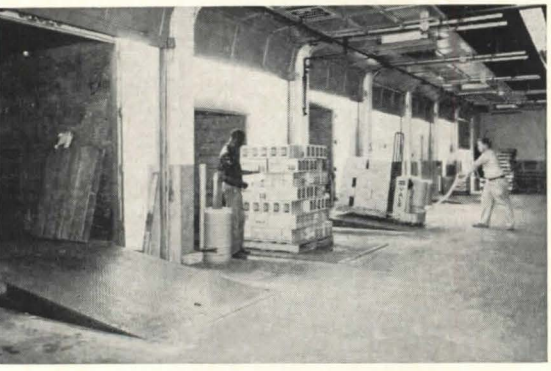

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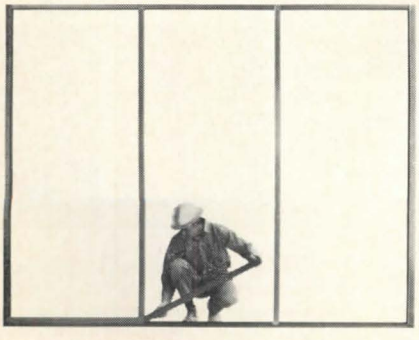
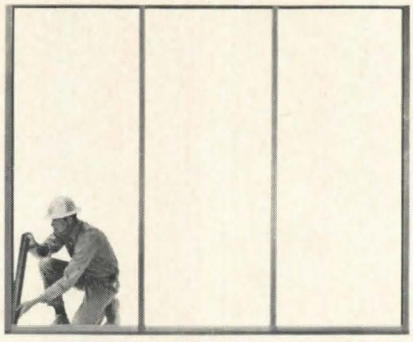
Why should an architect notice that S-45's new non-stretch glazing vinyl simply won't pull out of position... ever!

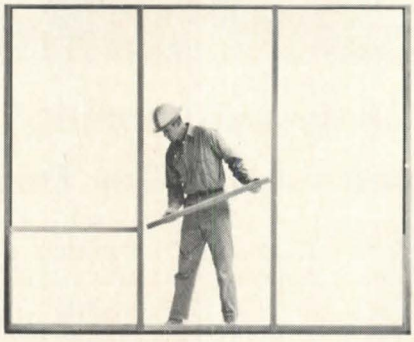
He's too busy making sure that the slim 1¾" sightlines are maintained throughout. (They are.)



And finding out if S-45 is available in genuine Duranodic® colors. (It is.)

It's no skin off an architect's nose that an installer can cut and stack S-45 "sticks" on the job.



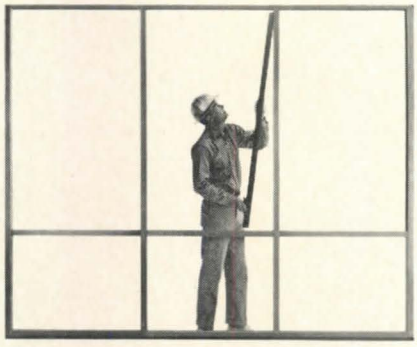


He's more interested in knowing the system is designed to make open joints impossible.

And that he can flush glaze glass and panels from ⅛" to 1½" thick... in any combination.

And that S-45 can be glazed from inside or outside... or half and half.

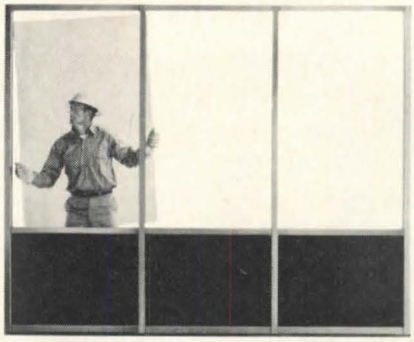
And that it works equally well as storefront or window wall.



Of course, an architect worries about windload capacity... and weatherproof design...

But then he knows Arcadia wouldn't offer a product that didn't measure up.

Everyone knows what an architect thinks of most loose-stick systems... that's why he's apt to get excited about the new



ARCADIA S-45

... the first loose-stick window wall with everything an architect wants!

Send for complete new details and installation data.

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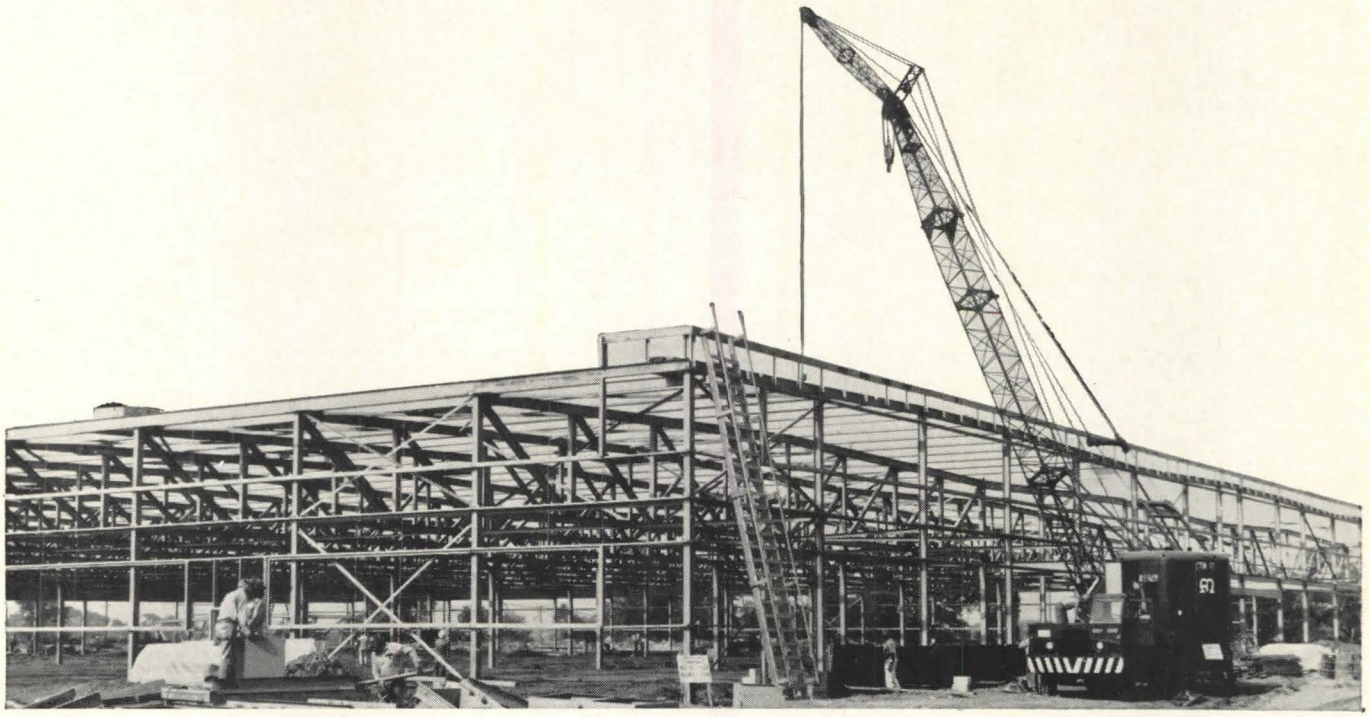


some fabricators no longer deliver mill scale to the construction site

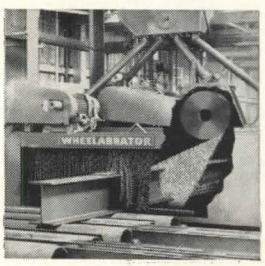
There's only one period during the life of a steel structural member that it can be freed of mill scale and rust. Just before the fabricator puts the prime coat of paint on it.

What usually happens? Nothing.

Or next to nothing, unless you specify blast cleaned steel—steel blasted to bare, white metal. Unless so specified, most steel goes to the site with scale and rust intact under the prime coat. This means the first coat will fail prematurely. Subsequent repaintings will be both costly and short lived, because the opportunity to remove scale was missed.

If you hesitate to specify blast cleaned steel because you associate blast cleaning with expensive sand blasting, you should know there's a better way to blast clean steel at very low cost — Wheelabrator *airless* centrifugal blast descaling. This fast, mechanical, low-cost descaling imparts an abrasive etch ideal for tight, long-lasting paint bond. And because the steel is scale-free, you can use one of the new epoxy, vinyl or other extra-protective coatings for extra-long finish life.

Who no longer delivers mill scale to the construction site? More than 70 fabricators equipped with Wheelabrator descaling equipment! What they *do* deliver is longer paint life and lower maintenance costs for exposed steel structurals. Have your fabricator write for Bulletin 190-D.



Wheelabrator airless centrifugal blasting hurls steel abrasive against the steel to remove all rust and mill scale, mechanically, inexpensively.

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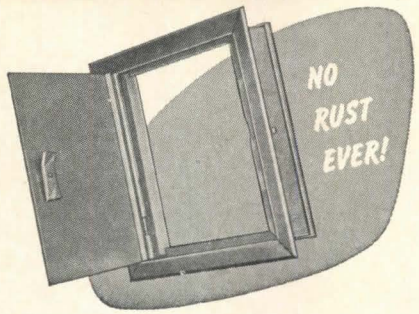
newman aluminum ACCESS DOORS



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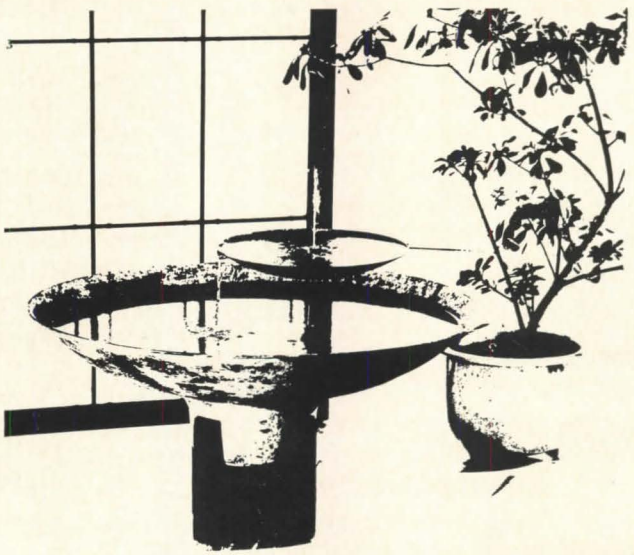

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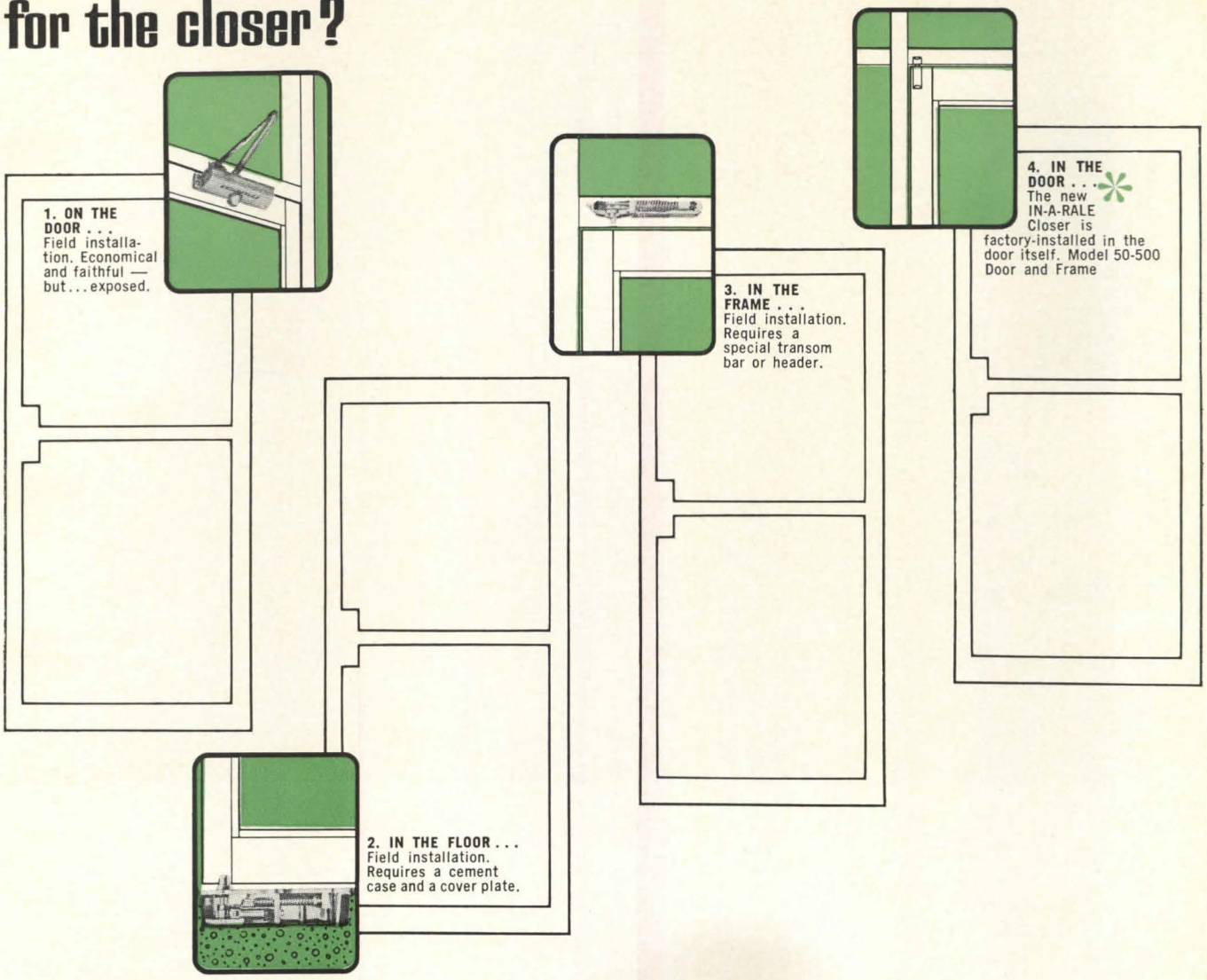

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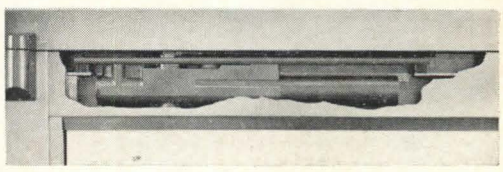

Amarlite
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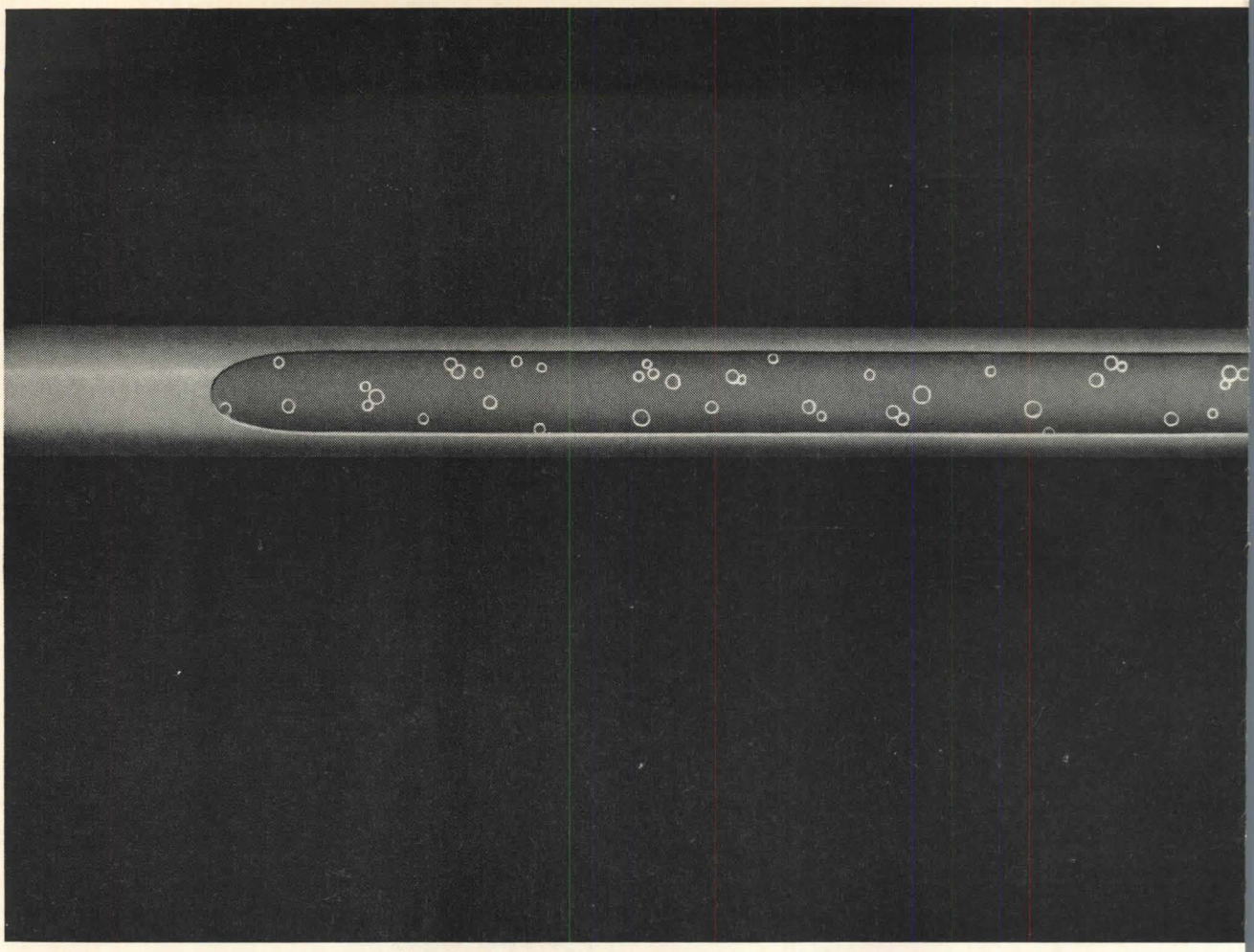
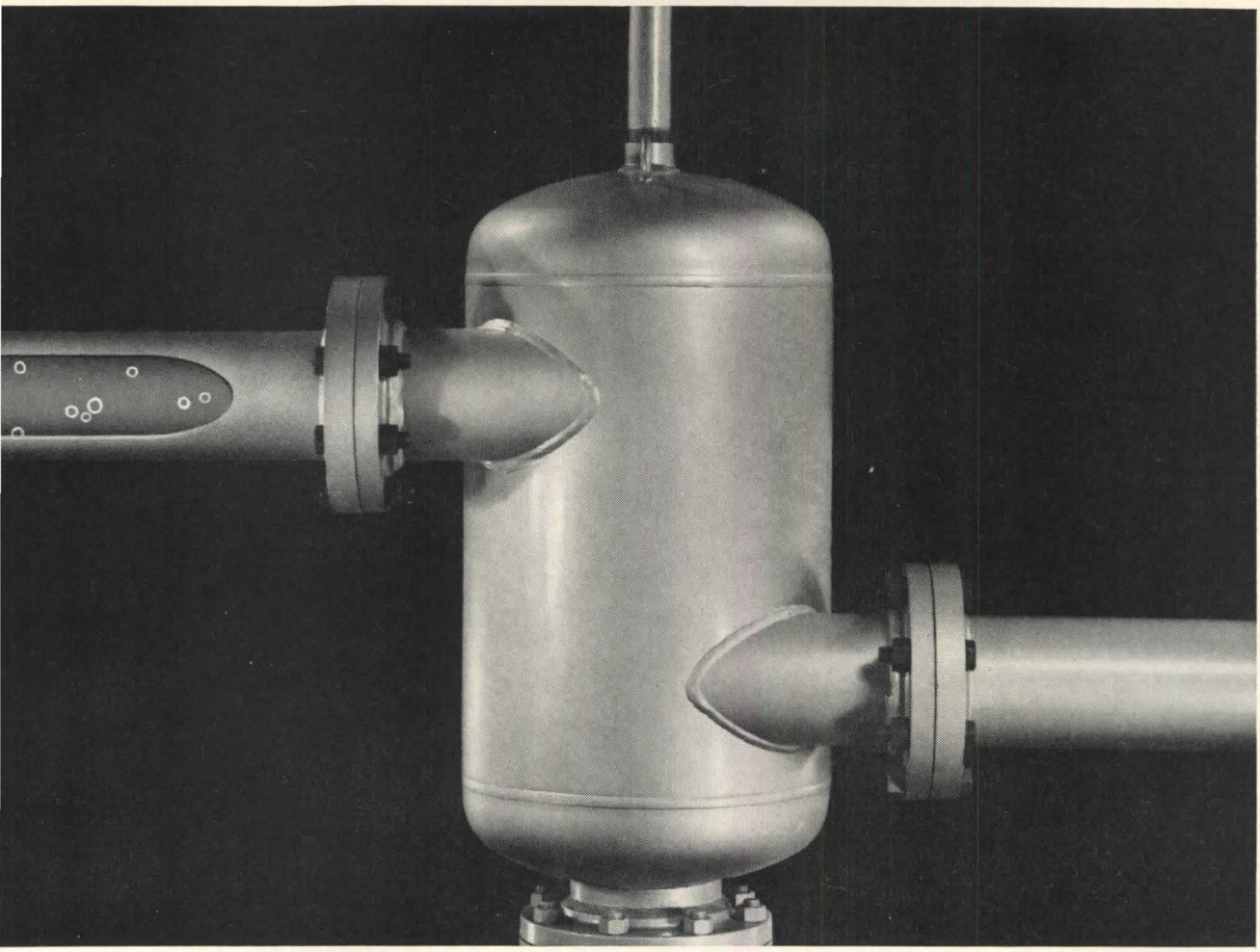


To take the rap out of radiation . . .



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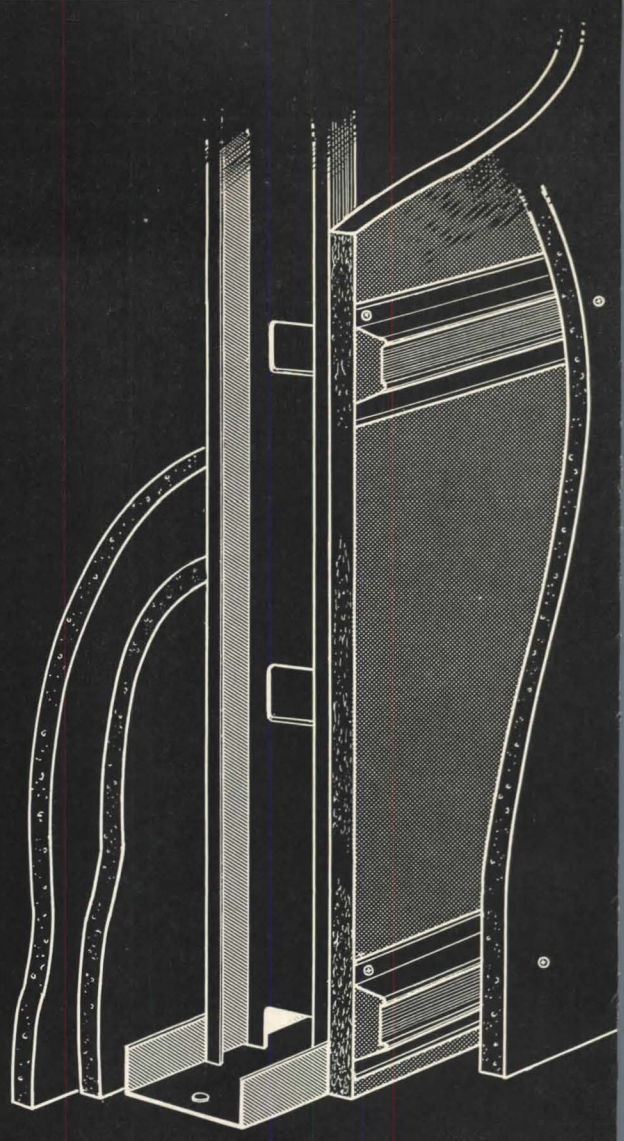

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New ⅝" Gold Bond Deciban 1, a fire-retardant, wood fiber sound-deadening board, is fastened to one side of 3⅝" steel screw studs. This serves as a base for drywall furring channels spaced 24" o.c. A single layer of ⅝" gypsum wallboard is screwed to the channels; a double layer forms the wall on the other side of the studs.

9-frequency average: 50 decibels
11-frequency average: 51 decibels
Sound-transmission class: 54

We think new to deliver... dramatic ear-to-wall privacy with new sound-deadening materials and systems

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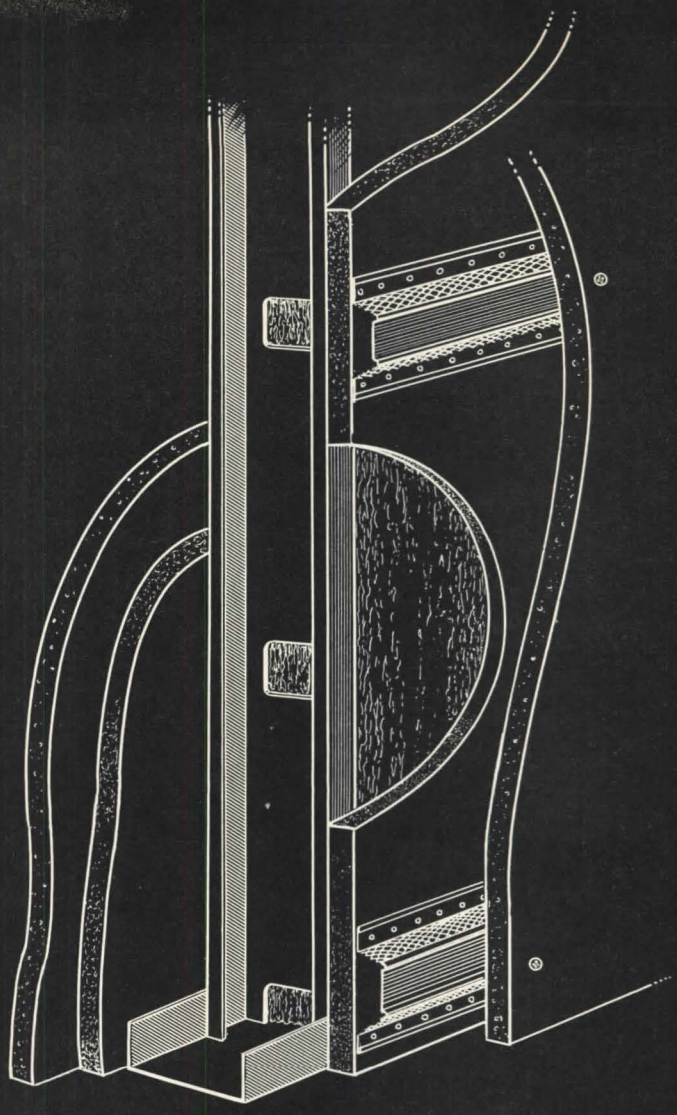
Three separate "walls" of 1" interlocking gypsum coreboard, anchored and spaced by 1" U-floor and ceiling runners. One air space is packed with 1½" Fiberglas blankets; ½" gypsum wallboard is laminated to the outer surfaces.

9-frequency average: 54 decibels
11-frequency average: 55 decibels
Sound-transmission class: 58



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This system combines resiliency with mass. One side of the wall has two layers of ⅝" gypsum wallboard attached to 2½" screw studs spaced 24" o.c. The second side has a base layer of ⅝" gypsum wallboard, resilient furring channels, then a screw-applied finish layer of ⅝" gypsum wallboard. 1½" Fiberglas blankets fill the space between studs.

9-frequency average: 50 decibels
11-frequency average: 53 decibels
Sound-transmission class: 51

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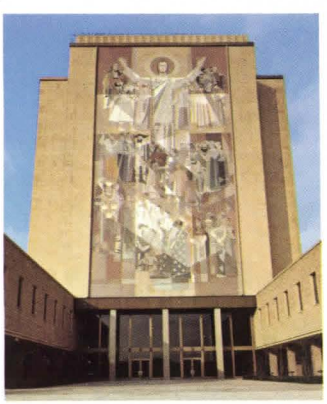
University of Notre Dame Memorial Library; Architect: Ellerbe, St. Paul, Minn.; Aluminum fabricator: Adams & Westlake Company; KALCOLOR® licensee: The H. A. Leed Company

GENERATIONS AT NOTRE DAME WILL KNOW THESE PORTALS—THEY'RE KALCOLOR® ALUMINUM



Amber KALCOLOR aluminum will welcome students at the University of Notre Dame Memorial Library far into the future. Doors, window frames, fascia of this dramatic mosaic tower combine dependable color uniformity with maximum resistance to weather. Even the student tables within the library are black KALCOLOR aluminum. KALCOLOR is sunfast, highly corrosion resistant, twice as resistant to abrasion as ordinary anodizing and may be applied to almost any aluminum building product. Most important, only KALCOLOR can be specified in ten color values—in the wide range represented in the circles below. See Sweet's File 6a/Ka for technical information on KALCOLOR aluminum. To locate KALCOLOR products of our fabricator customers, call Kaiser Aluminum in your city . . . or write Kaiser Aluminum, Dept. 845k, Kaiser Center, Oakland, California 94604.

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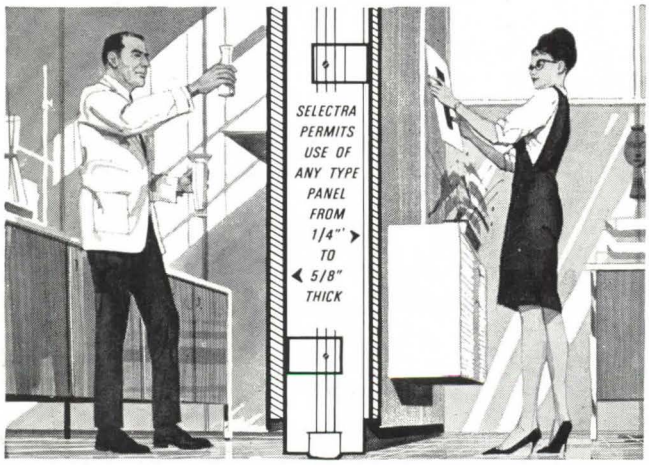

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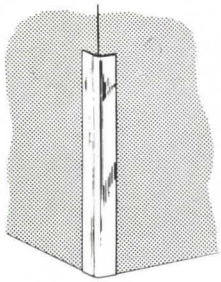

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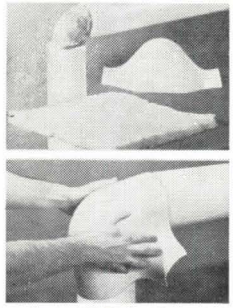
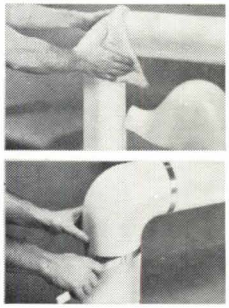
INSULATION EFFICIENCY PLUS A NEAT LOOKING, PROFESSIONAL FINISHED FITTING

This new method of insulating pipe fittings will not only make all fittings look better but will also increase insulation efficiency.

Materials used are: molded fiber glass insulation and one-piece ZESTON (patent pending) Fitting Cover. Other insulating materials can be used.

Fiber glass insulating material is placed over bare pipe and tucked in.





One-piece ZESTON Pipe Fitting Cover is placed over pipe and insulating material and "snapped" into place.

Cover may be banded, stapled or taped in place. . . . ever seen a more attractive finished fitting!

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- Glossy off-white finish can be cleaned with soap and water or painted any color • Costs less than present methods
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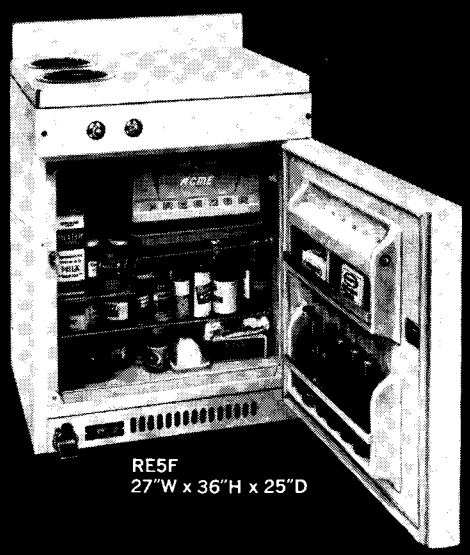
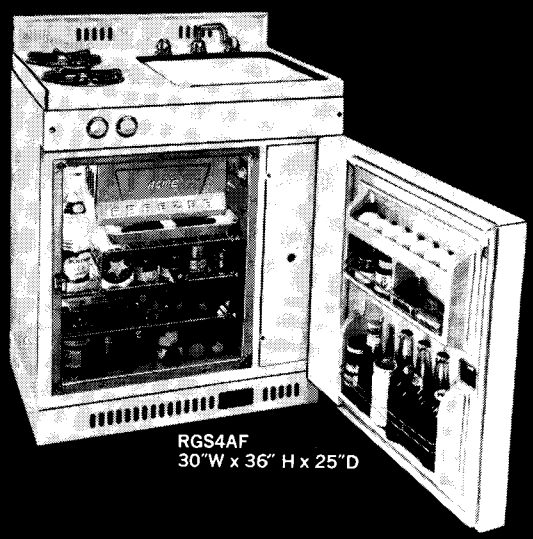
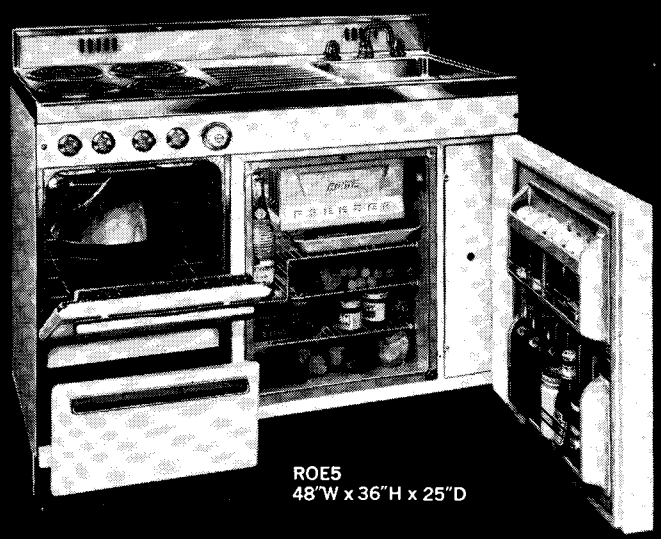


RE5F
27"W x 36"H x 25"D



RGS4AF
30"W x 36" H x 25"D



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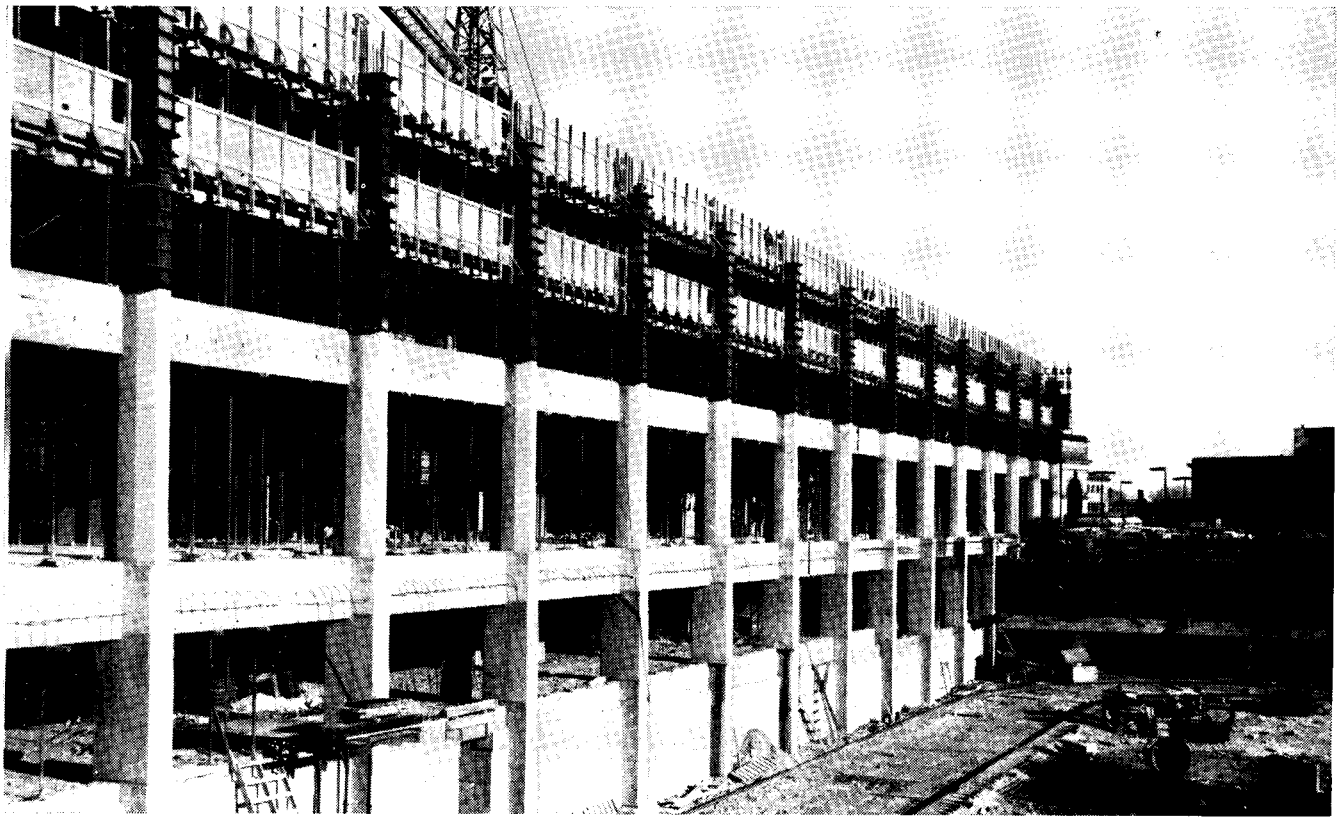


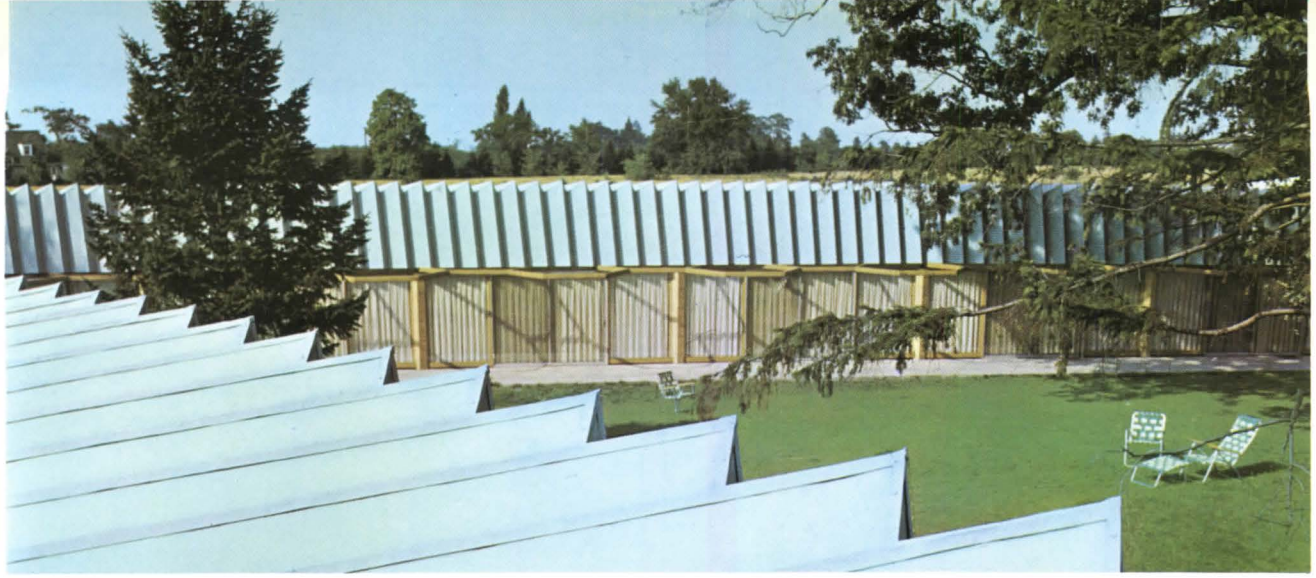
Exposed columns rise as an integral part of the cast-in-place structural frame. Precast exposed aggregate units form the spandrels at second and top floors and are used in some interior hall areas.

• Exposed vertical columns of the concrete structural frame provide an attractive architectural effect to this dwelling complex in the widely known Gateway Center, Minneapolis. Spandrels of precast exposed aggregate concrete at two levels of the structure further enhance the beauty.

Lehigh Cement was used in the ready mix for cast-in-place concrete of the complex and Lehigh Early Strength Cement in the precast units. Lehigh Portland Cement Company, Allentown, Pa.

Owner: Knutson Companies, Inc., Minneapolis, Minn. and Countrywide Realty, Inc., New York, N. Y.
Architect: John A. Pruyn, New York, N. Y.
Consulting Structural Engineer: Wayman C. Wing, New York, N. Y.
Contractor: Standard Construction Co., Minneapolis, Minn.
Precast Panels: American Artstone, New Ulm, Minn.
Ready Mix Concrete: Ready Mixed Concrete Co., Minneapolis, Minn.

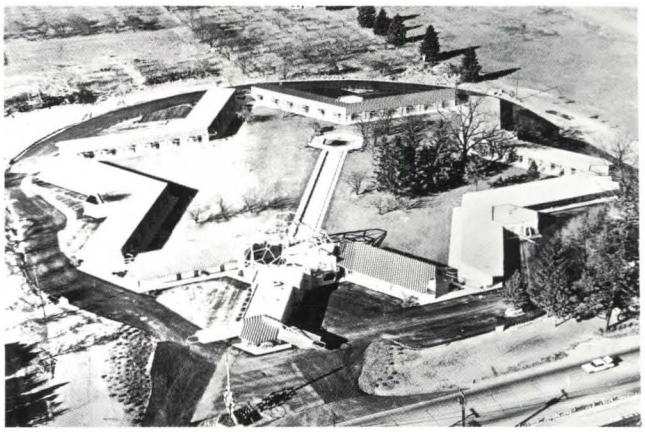
LEHIGH CEMENTS



COLOR, TERNE METAL, and the ARCHITECTURE of ENJOYMENT

From Chartres to Taliesin, color has been a fourth dimension in western architecture, an element of delight which lends human scale to the purely functional. And with today's increasing emphasis on sheer enjoyment as a positive element in design, color again becomes of major consequence to the architect, a trend which is reflected in the almost parallel revival of visually significant roofs.

For such roofs are superbly adapted to an imaginative utilization of the entire chromatic spectrum. And wherever they are employed, Follansbee Terne has the unique advantage among architectural metals of providing an unlimited range of color at relatively modest cost.



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St. Joseph, Michigan
Architects:
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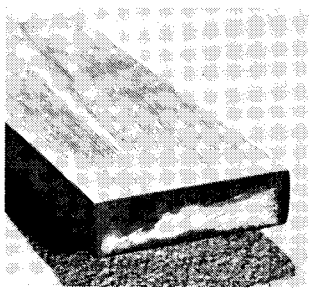
Teak paneling in Zeffran & Zeffran Law Offices, Los Angeles, with WATCO Oil Finish. Architect: Claude Beelman. Photo: Julius Shulman. Partitions and Paneling: Vaughan Walls, Inc., Los Angeles.

Danish Oil Finishes bring out the natural beauty and depth of grain inherent in all fine woods – walnut, teak, rosewood, cherry, oak, birch, mahogany and the exotic hardwoods. In fact, the American Walnut Manufacturers' Association, and many others, recommend Watco. And, the soft, natural patina provided by Watco protects the wood – indefinitely.

Inside, not on the surface



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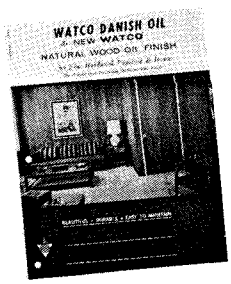

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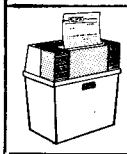

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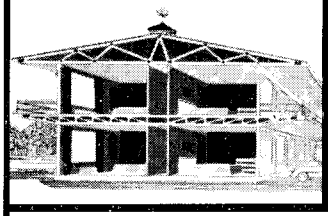

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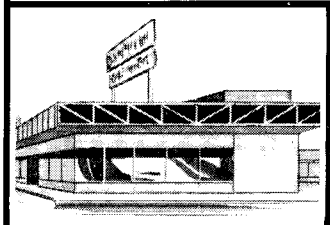

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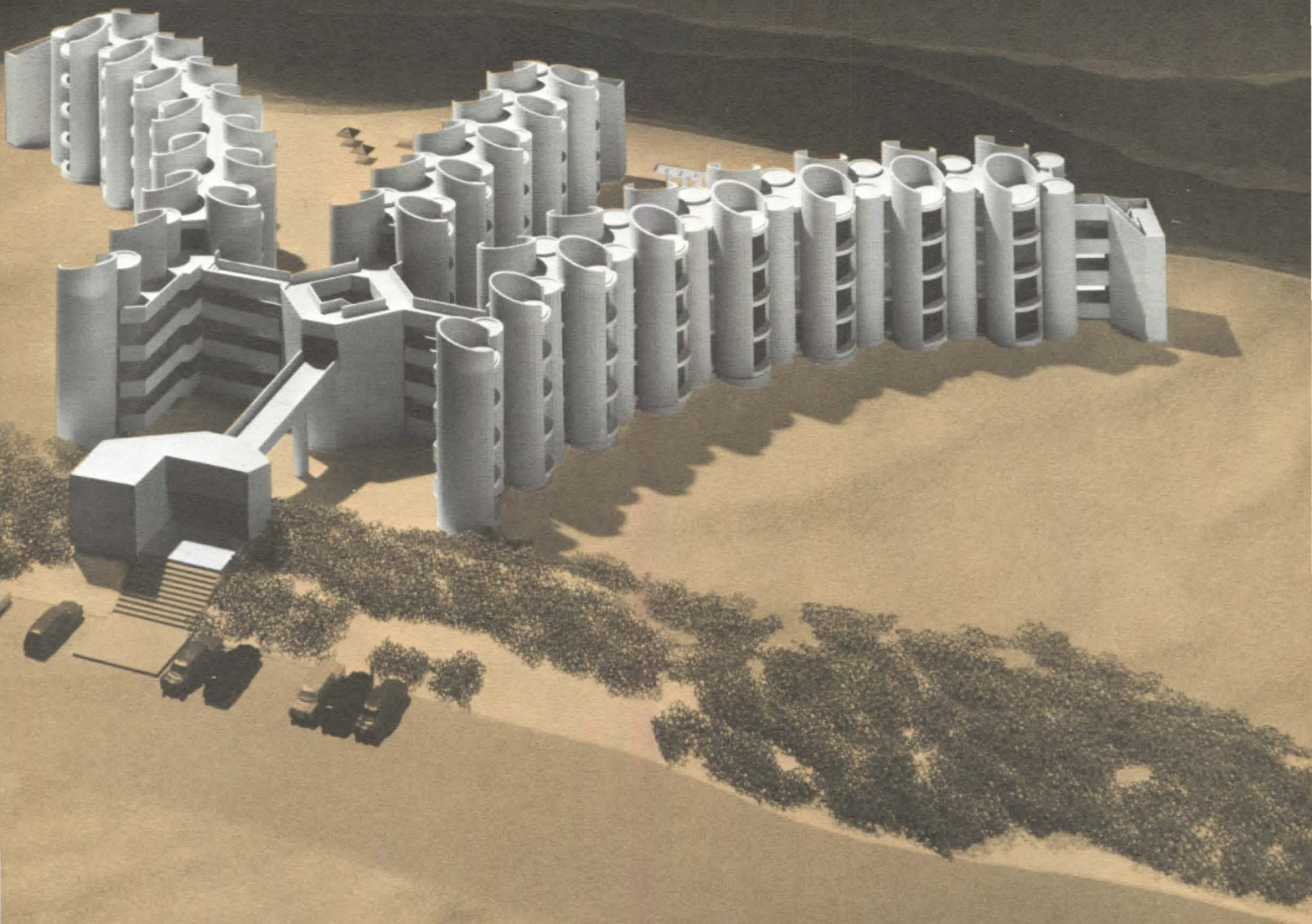
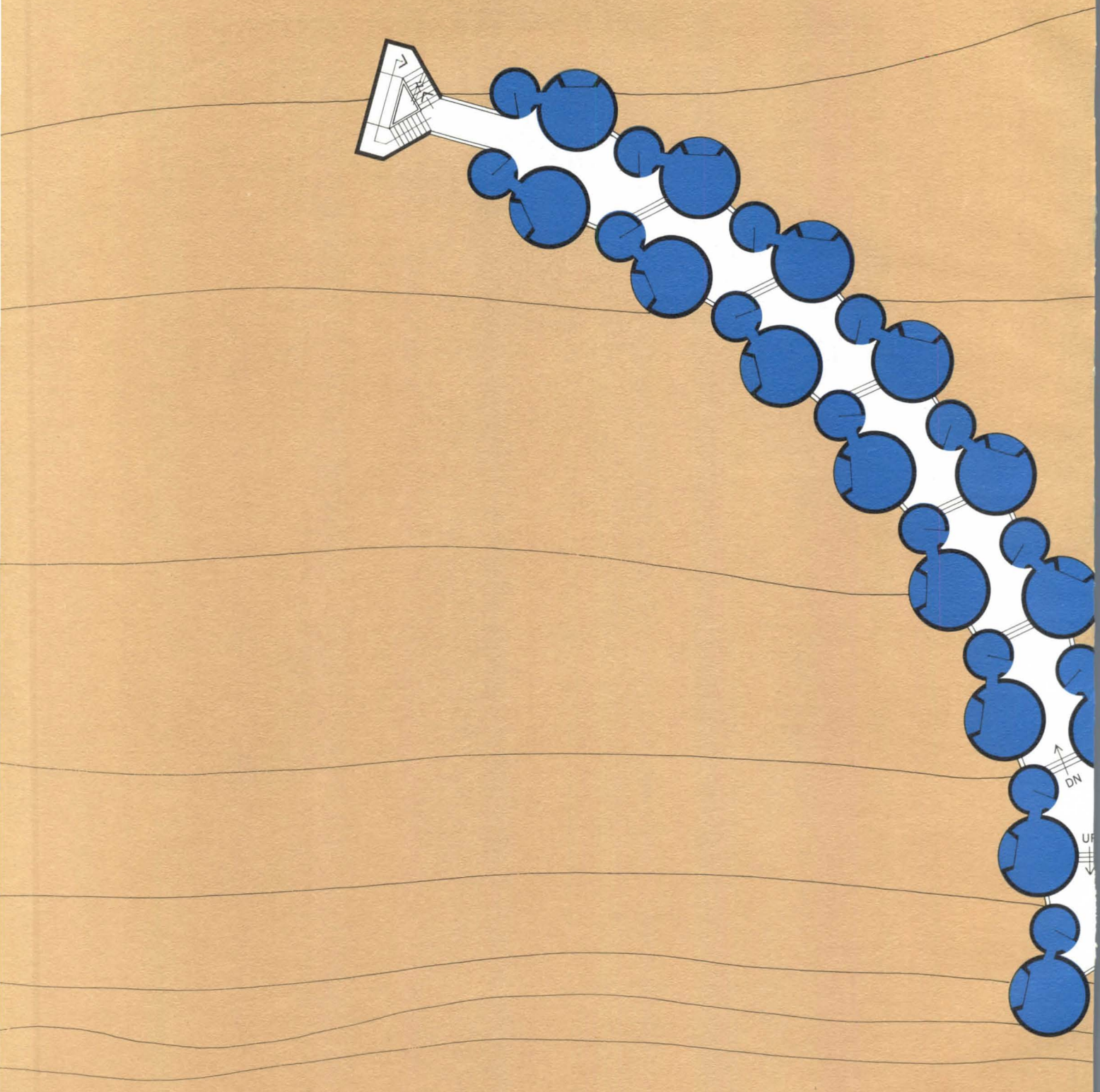
ULRICH FRANZEN DEMONSTRATES THE VERSATILITY OF WOOD IN A UNIQUE MOTEL IN THE DUNES



One of a series of design innovations commissioned by Weyerhaeuser Company.

Weyerhaeuser Company has commissioned a number of leading architectural firms to explore new uses of wood products in commercial buildings. This original design is the third in the series. It is by Ulrich Franzen, AIA, New York City.

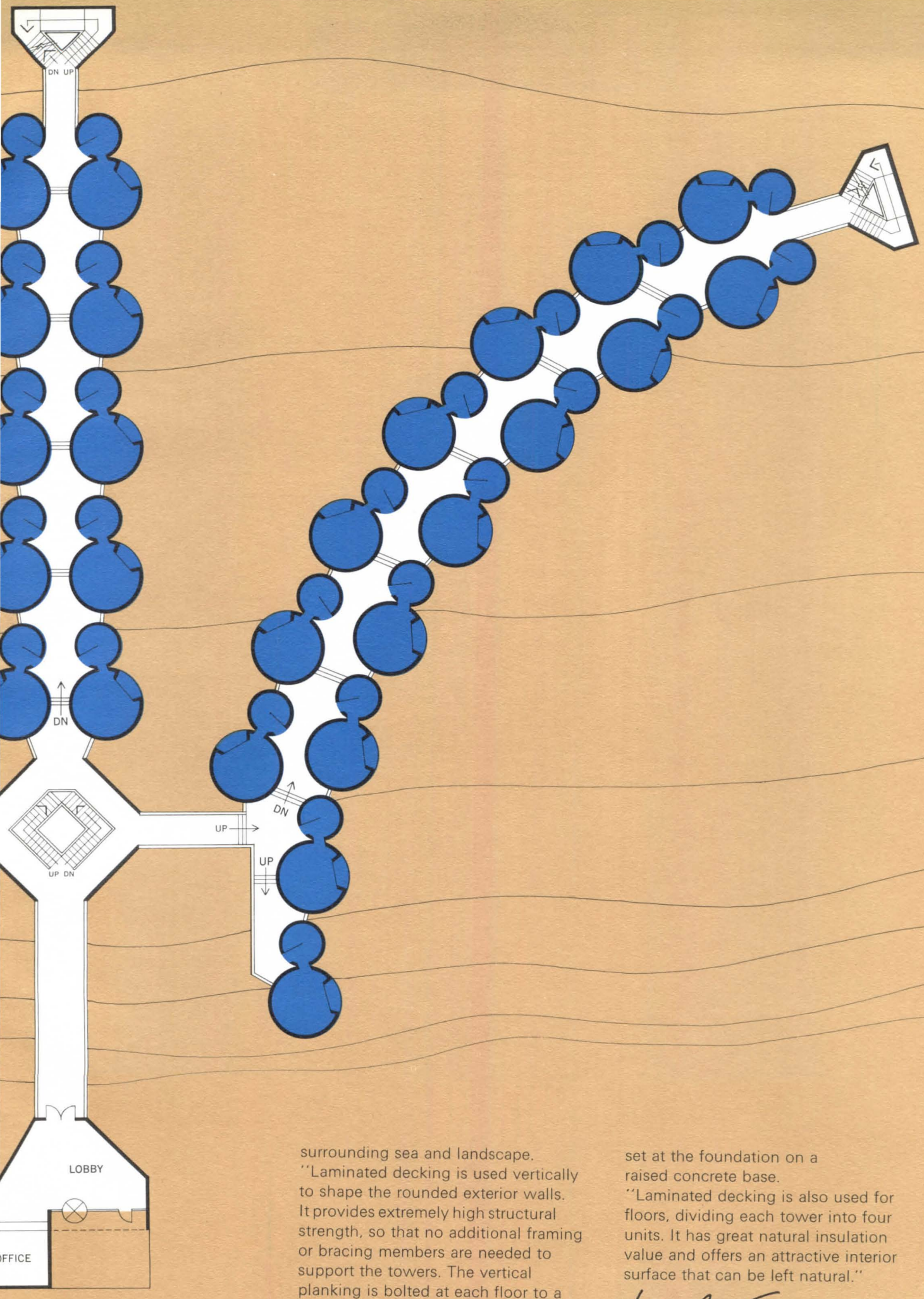


"Building over a rise in the dunes takes full advantage of the natural beauty of the seashore."

"This motel-by-the sea provides a full view of the beach and ocean from every one of its 160 units.

"The plan assumes a rise in the dunes. With such a foundation layout, tenants would never walk more than two floors up or down to reach their apartment. And building over a dune rise also takes full advantage of the natural beauty of the seashore

"The three-winged complex is composed of a series of forty circ towers, each housing four units. Units have two large, comfortable rooms—a bedroom measuring 16 in diameter, and a circular bathroo 10-ft. 6". Each unit has a wide terrace which offers a view of the



surrounding sea and landscape.
"Laminated decking is used vertically to shape the rounded exterior walls. It provides extremely high structural strength, so that no additional framing or bracing members are needed to support the towers. The vertical planking is bolted at each floor to a laminated wood reinforcing ring and set at the foundation on a raised concrete base.
"Laminated decking is also used for floors, dividing each tower into four units. It has great natural insulation value and offers an attractive interior surface that can be left natural."

Ulrich Franzen

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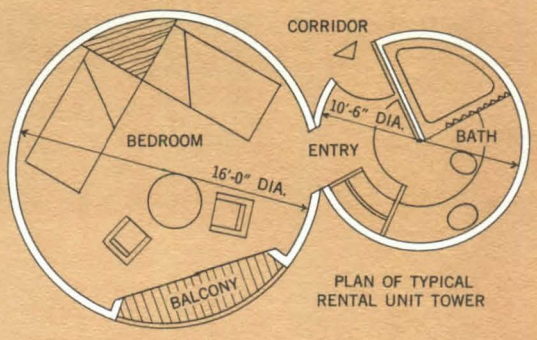


PLAN OF TYPICAL
RENTAL UNIT TOWER

"Laminated wood products in bold new forms are making designs like this possible."

The design demonstrates the great versatility of laminated decking and shows how it might be used in a wide variety of other designs at relatively modest cost.

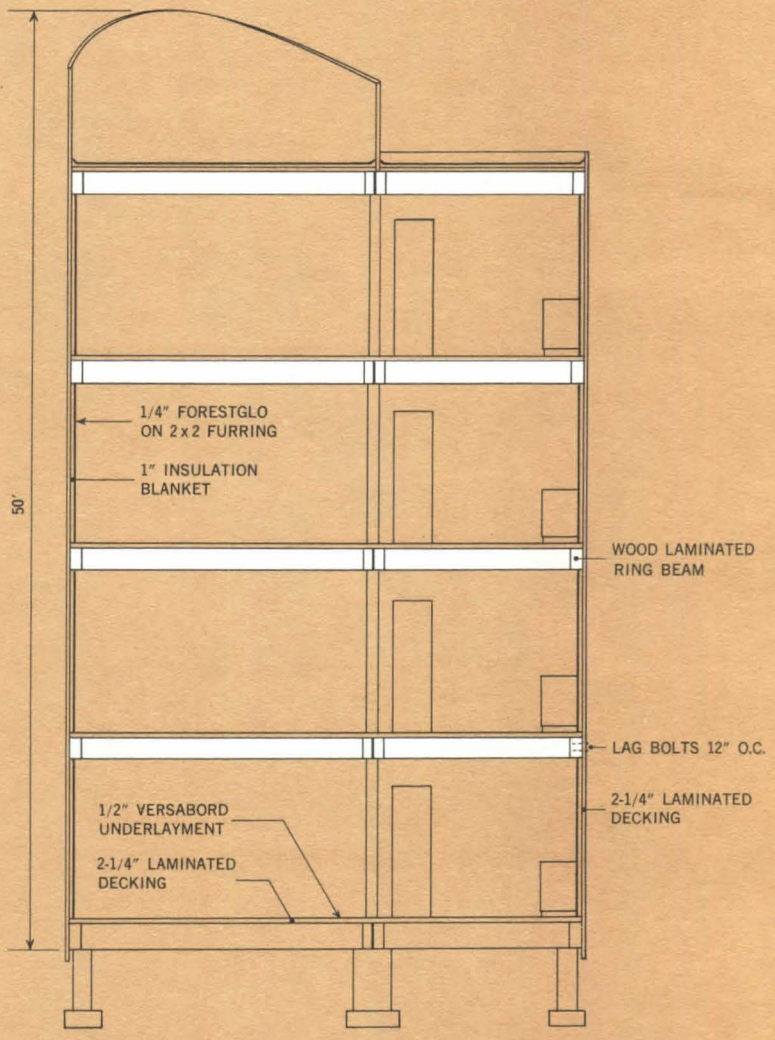
The laminated decking, circular laminated wood beams, and other wood materials detailed for this Motor Inn are part of Weyerhaeuser's extensive line of architectural wood products.

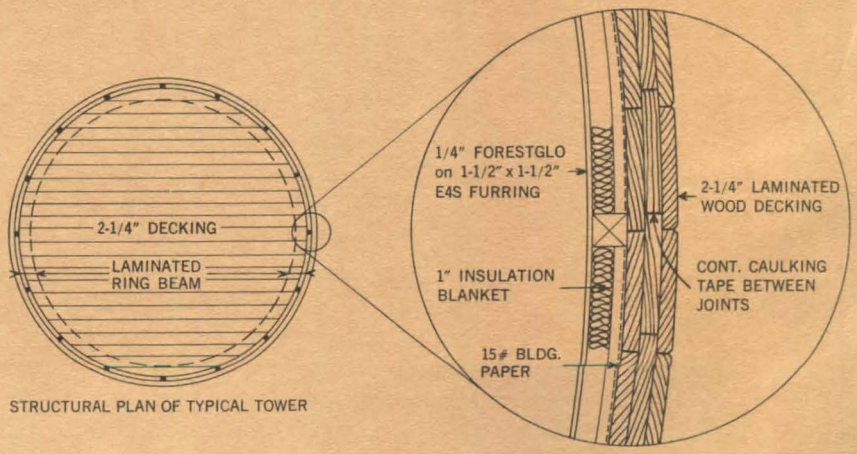
The laminated products are manufactured from kiln-dried lumber and special adhesives to conform to specifications of the American Institute of Timber Construction.

In addition to a complete line of wood products, Weyerhaeuser offers a new Architectural Services program which includes highly trained field representatives, comprehensive literature, and a services staff to provide technical and specification data.

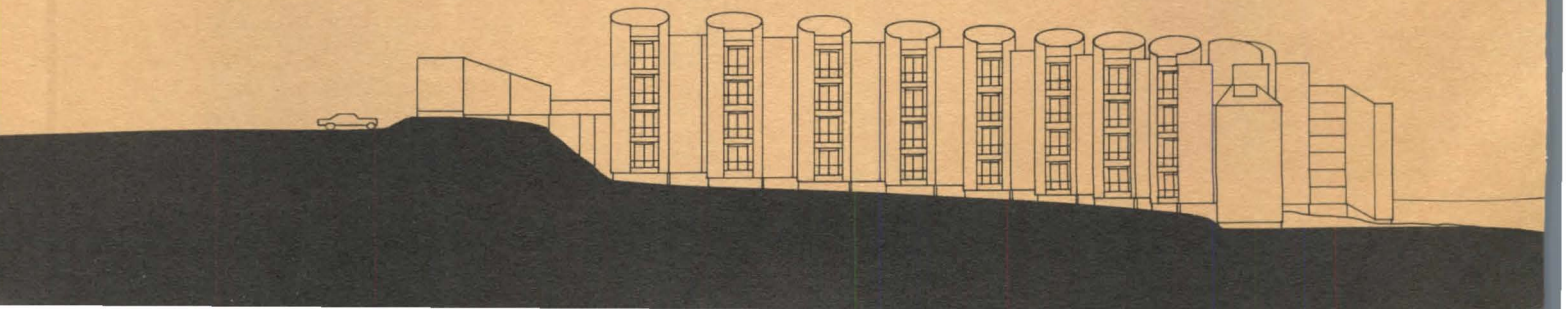
Your Weyerhaeuser architectural representative is your source for all this information. Call him or write us at Box B-113, Tacoma, Washington 98401.

Weyerhaeuser

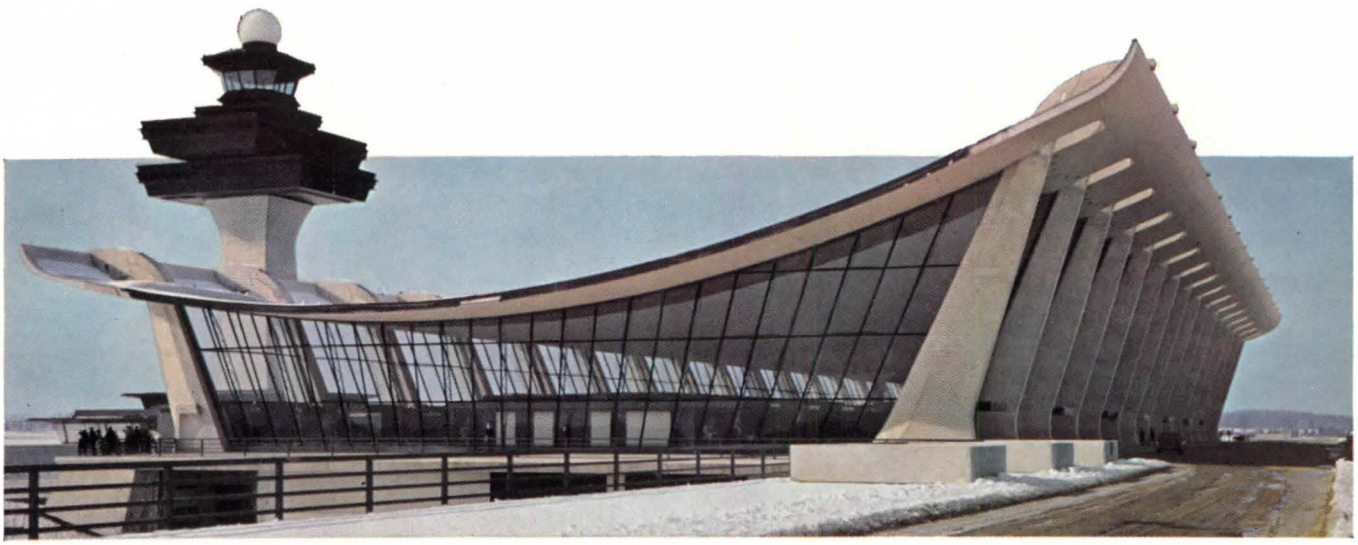




STRUCTURAL PLAN OF TYPICAL TOWER



Suppose you had to achieve dramatic beauty, lick the problem of weathering, and keep the client happy with low maintenance costs...



Eero Saarinen did it in the John Foster Dulles International Airport. Take the exterior. Here, leaded porcelain enamel fused to 22,000 linear ft. of extruded aluminum window framing members assures years of corrosion-free service. Inside the terminal building, and on the control tower and service buildings, lovely color effects were created with 114,000 sq. ft. of leaded porcelain enamel on aluminum panels and formed sheets. The result? Color steadfastness, aesthetic beauty, permanence and low maintenance costs. You can use building materials surfaced with this attractive finish in many ways—indoors and out! They can be sawed, drilled, punched, without fear of progressive spalling or rust, and their color and beauty will last the lifetime of the building. We will be happy to send you a copy of the Porcelain Enamel Institute's specifications. Write to Lead Industries Association, Inc., Dept. N-11, 292 Madison Avenue, New York, N.Y. 10017.

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Beefing up a floor tile to give it extra strength is easy. However, making one that has delicate beauty *at the same time* is a beast of a different color. But that's what makes new Johns-Manville Ionian Terraflex stand out from the horde. It offers *both*.

Ionian's massive swirl design, high gloss and subtle blending of colors give it a glowing elegance that blends with any decor. Yet there's no sacrifice in durability. That's because the pattern goes all the way through and is uniformly distributed throughout the thickness of the tile. Even years and years of the heaviest commercial traffic won't mar its looks.

So there you have it. Beauty *and* the beast. All in one 9" x 9" x 1/8" (or 3/32") tile. And it's available in eight different shades. Incidentally, no two tiles have the same pattern thus assuring the over-all random shading characteristic of real marble. For details see your J-M Representative.

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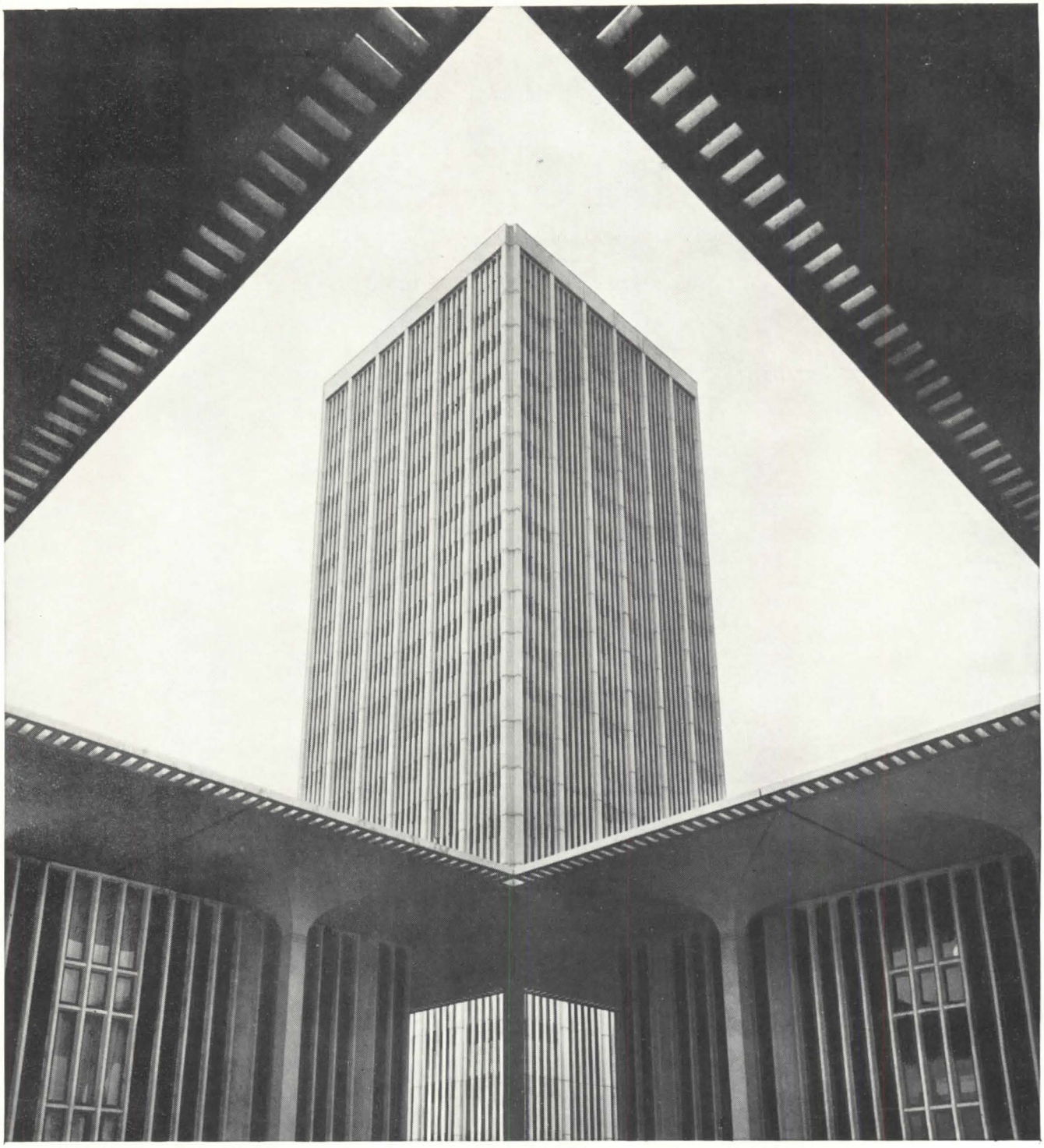

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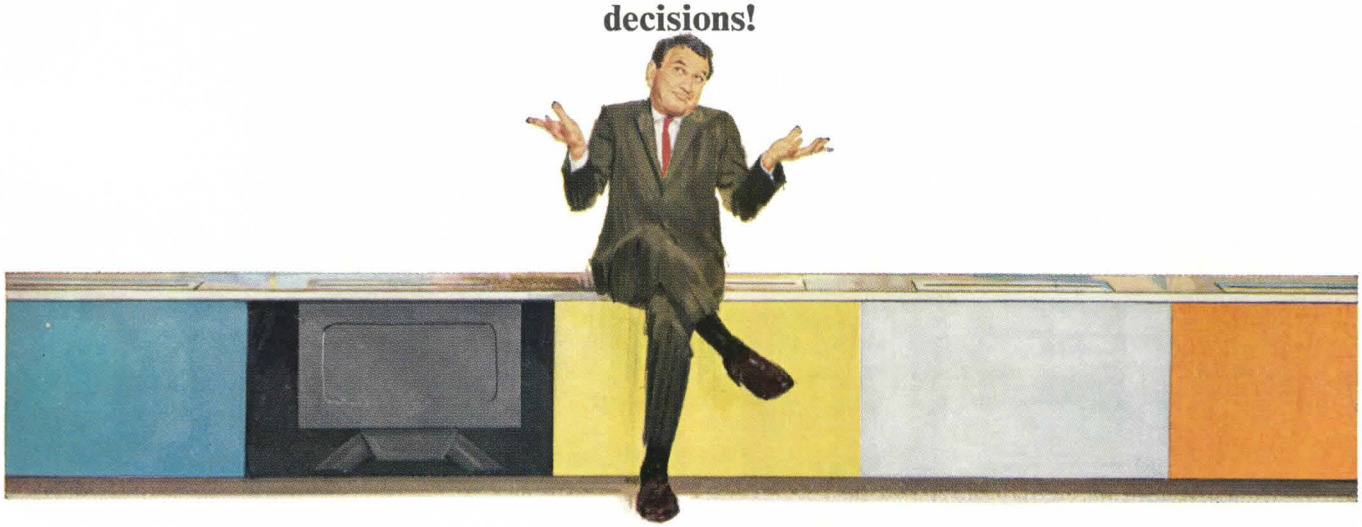
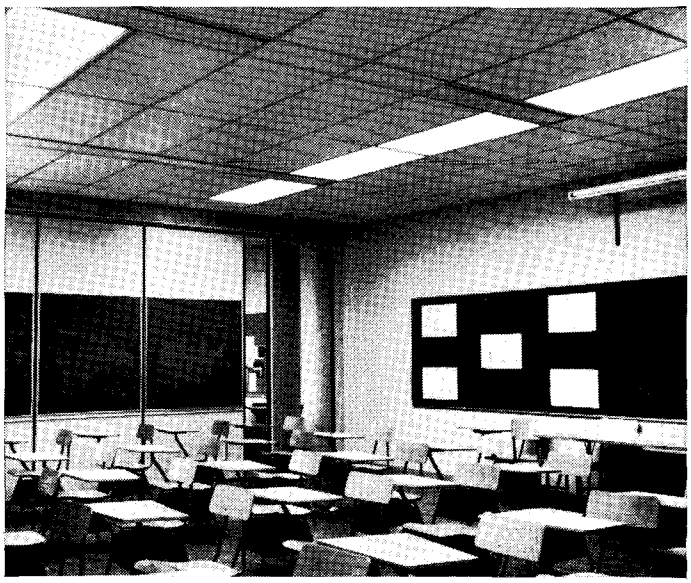
decisions, decisions!



P.S. The only thing you don't have to consider is knobs, keys, bolts, screws, or slots. Dual-Panels snap into place magnetically.



Classroom of Randolph Junior High School, Montgomery County, Maryland.
Architect: Burket, Tilghman, Nelson Associates.
Consulting Engineer: H. Walton Redmile Associates.

Will you step into this classroom for a moment, please?

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We've covered both systems in detail in a brochure that illustrates many attractive ceiling arrangements achieved by architects using Moduline units.

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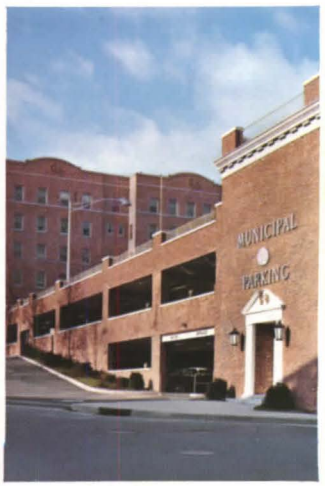
A REPORT ON PARKING STRUCTURES

Steel-framed parking structures, usually with decks and ramps of compositely designed concrete, offer the best solution to parking problems. Here are five examples where designers chose steel framing to provide permanent, functional, and attractive structures for their clients.

FROM BETHLEHEM STEEL

Showcase for steel construction. This split-level, 5-story design in San Francisco presents a striking architectural effect with its use of exposed structural steel columns, beams, angles, and plates as open exterior walls. Solar screen blocks and plantings provide attractive corner wall decor at the ground floor entrances. From the central core of this earthquake-resistant structure, steel beams span the 62-ft wide, 2-deep parking area on one side and the 45-ft wide, single-row parking area on the other. Capacity is 294 cars.

Framed in steel for a light, floating appearance. This four-level parking structure for a Sears Roebuck store in Washington, D.C. can accommodate 1,000 cars. Located in a residential neighborhood, its long, low silhouette blends nicely with its environs. The lightweight colored panels, which hide the cars from passersby, give the building a "finished" look seldom found in parking structures.



Traditional for Mount Vernon, N.Y. The cast-stone trim, wrought iron railings, and brick facade of this parking structure conform to the colonial character of surrounding municipal buildings. The two enclosed levels and exposed upper deck provide a 320-car capacity. Bethlehem V45 steel was used for the framework. This high-strength grade was a major factor in achieving an extremely low per-stall cost.

BETHLEHEM STEEL

Skillful execution of exposed structural steel framing is the key element in the design of the M.I.T. Parking Facility—No. 1, East. Basic structure is a rectangle, 228 ft x 121 ft, within which 425 standard-size cars can be parked on each side of 60-ft-wide inclined ramps. Main parking areas are column-free to make maximum use of space. Mesh enclosure panels between the exterior columns serve as snow fencing and enhance the structure's appearance.

CONSIDER STEEL...*for beauty and economy*

Things have changed. New steels—and new ways of using steel—make possible outstanding designs and the ultimate in economy.

For useful literature and technical assistance, get in touch with any steel fabricator, or call the Bethlehem sales office nearest you.

New deck over existing parking field. It's the Municipal Parking Field in Flushing, N.Y.C. Capacity: 1,130 cars. All structural components are at 8 ft, 6 in. centers; columns are spaced at 62 ft on centers. Main outrigger supports for plastic shelter canopies are 12-in. WF with web horizontal to harmonize with the stepped railings. The New York City Department of Traffic is so pleased with its appearance—and its low cost—that they are planning another structure of similar design.

Bethlehem Steel Corporation, Bethlehem, Pa.

BETHLEHEM STEEL

BETHLEHEM STEEL

CREDITS:

(Page 1)

Operator: Metropolitan Parking Corp.

Architect: A. F. Roller

Structural Engineer: H. J. Brunnier Associates

General Contractor: Louis C. Dunn, Inc.

Steelwork: Bethlehem Steel

(Page 2)

Owner: Sears, Roebuck and Co.

Architect-Engineer: The Ballinger Company

General Contractor: Irons and Reynolds, Inc.

Steelwork: Southern Iron Works, Inc.

Owner: City of Mount Vernon

Consulting Engineers: Zamory and Senor

General Contractor: J. B. Primiano & Son, Inc.

Steelwork: United Iron, Inc.

(Page 3)

Owner: Massachusetts Institute of Technology

Designer: Parking Development Company; Architect: Carleton N. Goff

Structural Engineer: Maurice A. Reidy

General Contractor: John F. Griffin Company

Steelwork: Tower Iron Works

(Page 4)

Owner: New York City Department of Traffic; Design and Construction supervised by the New York City Department of Public Works

Architects-Engineers: Rouse, Dubin and Ventura

General Contractor: Euclid Contracting Corporation

Steelwork: Bethlehem Fabricators, Inc.

Steel

"Beauty cannot be set aside for vacations or special occasions. It cannot be the occasional privilege of those who come long distances to visit nature. It cannot be reserved for 'nice neighborhoods' only. I am quite sure that ugliness, the gray, dreary, unchanging world of crowded, deprived neighborhoods has contributed to riots, to mental ill health, to crime."

MRS. LYNDON B. JOHNSON

(No Model.)

J. V. LAFFERTY.

BUILDING.

No. 268,503. Patented Dec. 5, 1882.

Fig. 1.

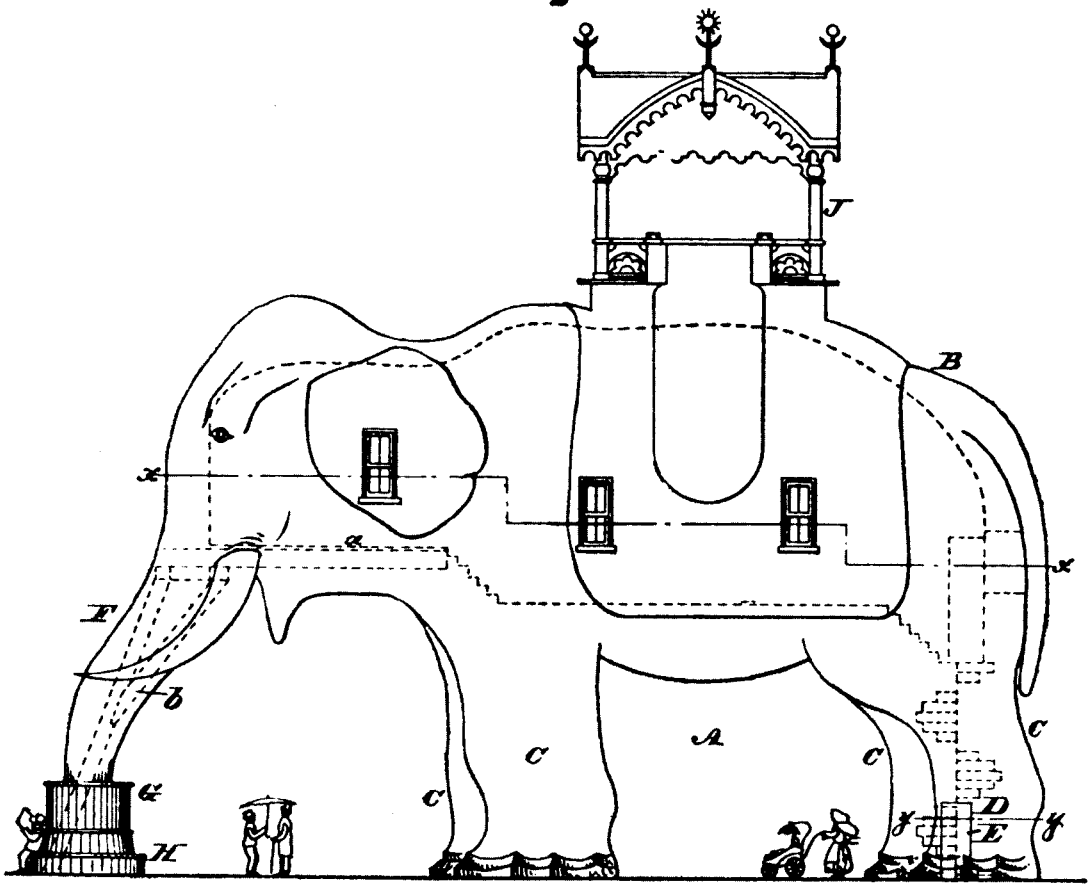


Fig. 2.

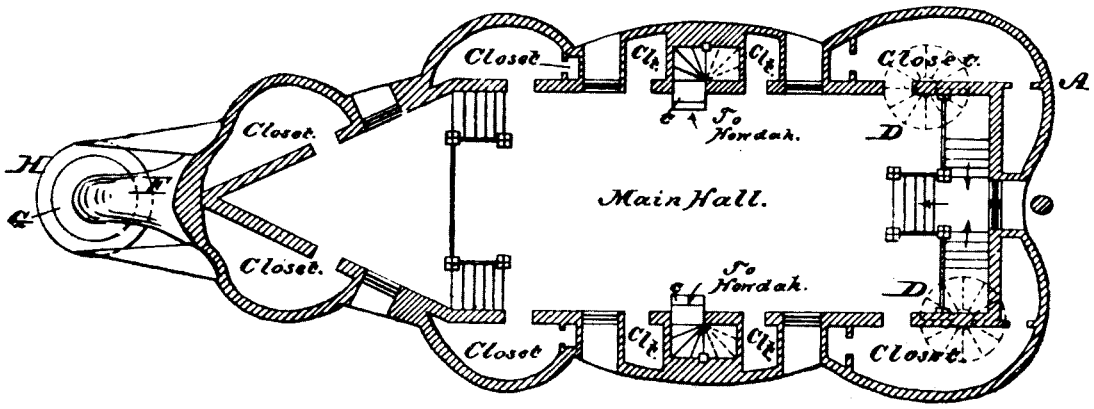
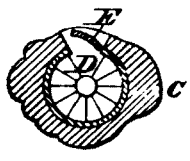


Fig. 3.



WITNESSES:

A. P. Grant,
W. F. Fischer

INVENTOR:
James V. Lafferty,
BY John A. Wiedersheim.
ATTORNEY.

Sight is only one of our senses, so when talking about total environment we must not forget all the other elements that are part of it. Take, for instance, the air we breathe.

Much has been written lately about the problem of air pollution, but most of the emphasis has been on the health hazard (carbon monoxide and other poisons), on the inconvenience (soot and dirt), and on visual aesthetics (can't-see-the-blue-sky argument). And yet, there is something that could be called olfactory aesthetics. This aspect of air pollution was pointed out by Abel Wilman in an article, "The Metabolism of Cities," published in the *Scientific American:*

"Why should air pollution be considered objectionable? Many people enjoy the smell of the pollutants released by a steak sizzling on a charcoal grill or by dry leaves burning in the fall. The cigarette smoker obviously enjoys the smoke he draws into his lungs. In other words, a pollutant per se need not necessarily be regarded as a nuisance. If by accident or design the exhaust gases emitted by a diesel bus had a fragrant aroma (or worse yet, led to physiological addiction), not many people would complain about traffic fumes. The criteria of what constitutes an objectionable air pollutant must therefore be subjectively defined, unless, of course, one can demonstrate that a particular pollutant is a hazard to health."

Assuming that we could control smells, it might be interesting to try to figure out what kinds would be most appropriate for our different architectural styles. How do you achieve a whiff of brutalism, or an aroma of sensualism? What fragrance would best befit the building on your boards right now? A question worth pondering about.

Still, health seems to be the foremost worry when people think of air pollution. So, if you really want to get nervous, here is an item from *The New York Times,* based on an interview with a Dr. Clair C. Patterson of the California Institute of Technology:

"Worldwide contamination of the environment by lead from motor gasoline was reported yesterday to have reached alarming proportions. The level of the poisonous metal in the blood of the average American was said to have risen to almost half that which produces obvious symptoms of poisoning. These include disruption of the central nervous system, such as convulsions. Fear has been expressed, however, that lower doses might produce more subtle effects, such as impairment of thought processes. The pollution of the environment, it was said, could have historic consequences."

This report was quickly attacked by the Lead Industries Association (Look Ahead with Lead). In a sort of Don't-Tarnish-My-Image-Boys release to the press, the Association fought back. Using data from studies of the U.S. Public Health Service and other sources, it tried to substantiate the claim that "lead levels in the human body today are in ranges considered safe by competent medical authorities."

Now, I don't know who is right, Dr. Patterson or the Lead Industries Association. But in case Dr. Patterson *is* right, the next time you see strange thoughts on *this page you* will know what happened: the lead level in my blood has gone up again. ■

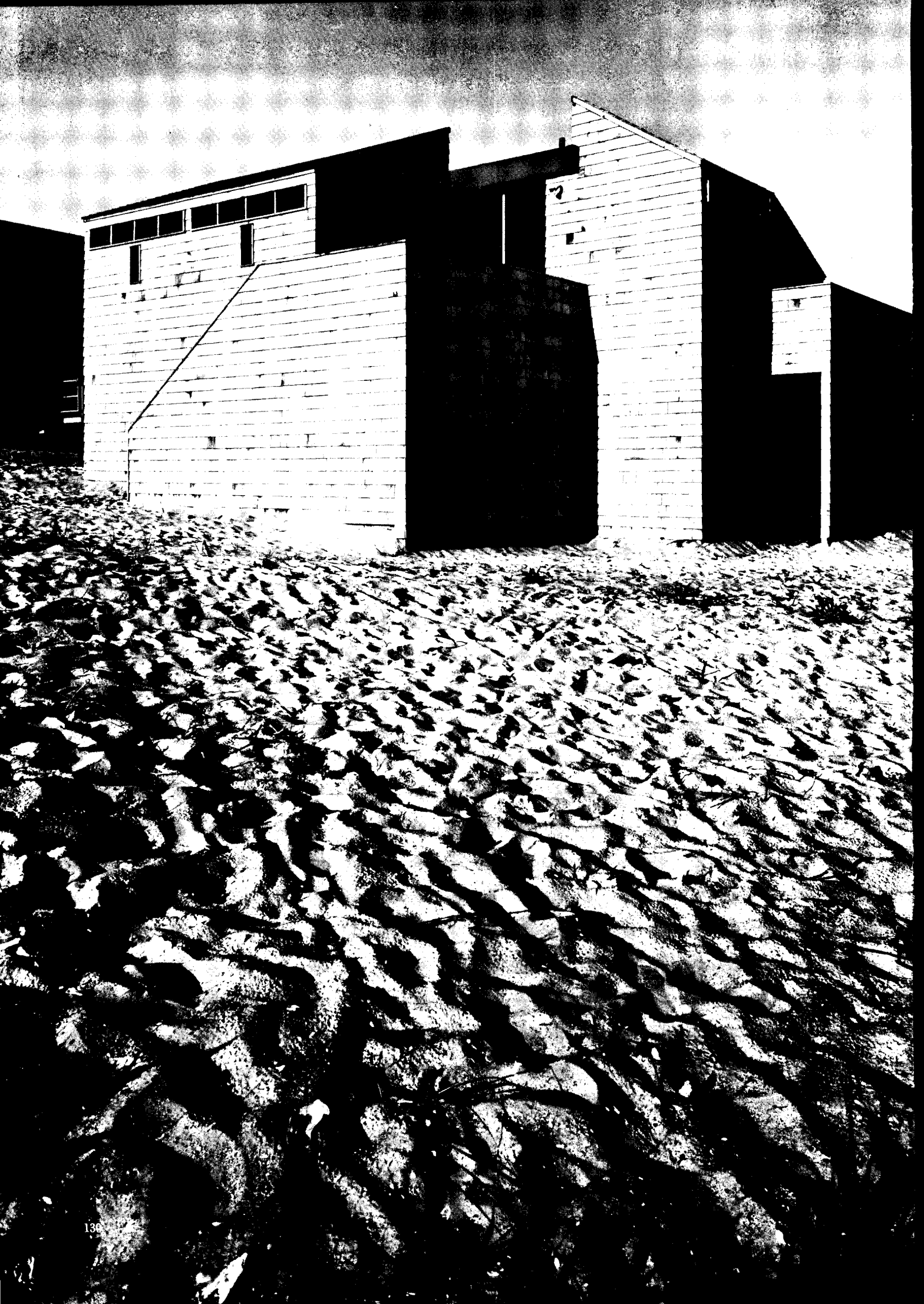
The vacation house has always been the place where fancy flows a little freer, where daily preoccupations—the minutiae of housekeeping and sweeping—are shelved for a while in deference to the simple urge to get out of doors, to soak up the sun, sail down a ski slope, or climb a mountain. Clients for vacation houses are inclined to let their hair down a bit, to dream, to go along, and accept something more adventurous in form than might be permissible back on the block in suburbia. So, for the architect, the vacation house can be a delightful exercise in freer form. His one major restriction is usually the budget—since, in most cases, the second house is a secondary investment of secondary proportions. But, for the young architect, even this is an advantage: It is an opportunity—an uncostly one—to design and build a first house. Since the vacation house market is expanding, many young architects are

A PLACE IN THE SUN: VACATION HOUSES

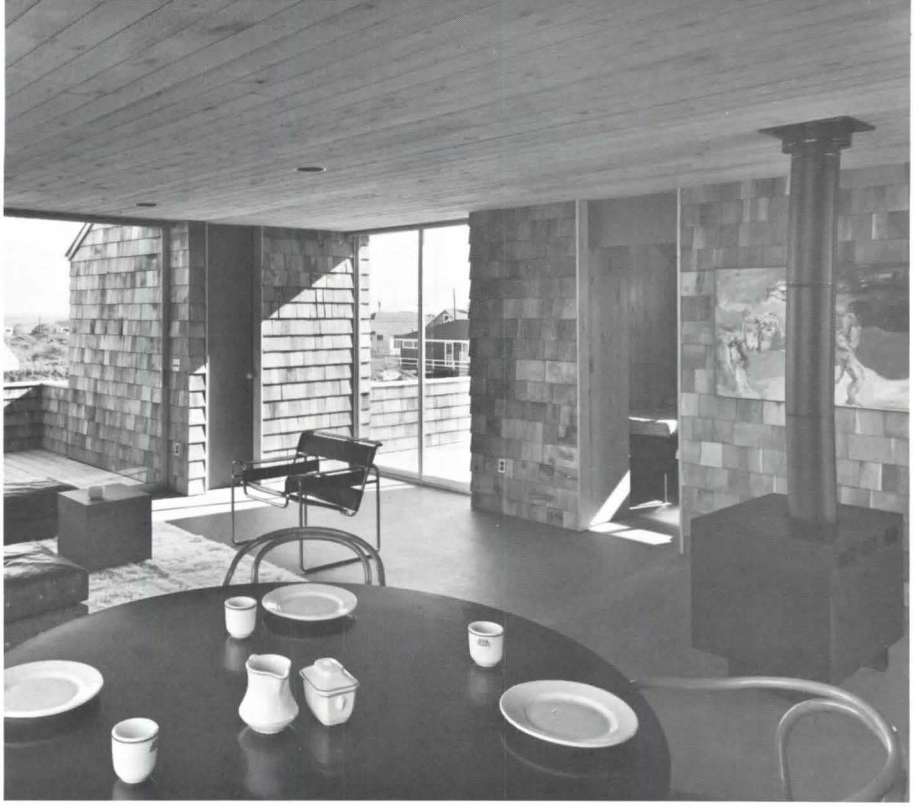
investing their own funds (or the bank's) in a reasonably solid speculation.

The temptation for the architect is to indulge in a sort of busman's holiday: Since the practical requirements of the house are less stringent, he is freer to pursue some vision of intriguing form. But there are curiously subtle, psychological demands upon a vacation house that perhaps cannot be expressed in concrete, practical terms but are equally important in producing an appropriately relaxed state of mind for the vacationer. For many people, a vacation house is a place to unfurl both the brain and the body, to stretch after living and working in cramped city quarters. It may require a big space, a tall space, a free space. Often the vacation house is a meeting ground for family reunions and must have a generous community space as well as some guarantee of privacy from the exuberant horde—some place to just sit and think, or not think at all. A vacation house is also a subtle balance between shelter and exposure, between indoors and out: Perhaps warmth and enclosure are needed after a day on the ski slopes, or cool darkness after a day on the glaring beach.

Finally, since most vacations are devoted to the pursuit of nature, architecture becomes almost a contradiction in terms. As more and more people gather on the shores and mountain slopes to build their houses, the less and less remains of what they came for—unspoilt nature. For the most part, the houses on the following pages are custom designed, but they reflect this concern to have them blend in with the local landscape and the local architecture, and to keep them subordinated to the natural surroundings. But the question still remains: How long can the second house proliferate, before nature disappears and a second—albeit imaginative—suburbia appears.—MD



Design Secures a Beachhead



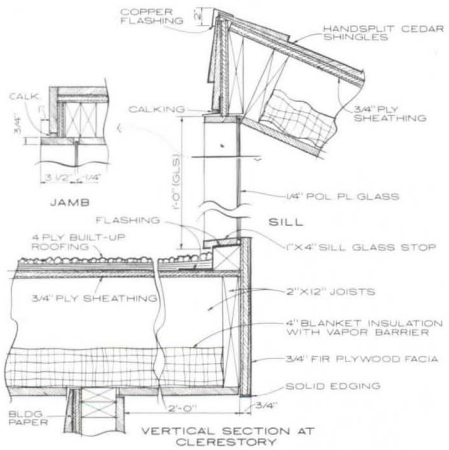
BEACH HOUSE, *Fire Island, New York.* ***Designers:*** *Charles Gwathmey, Richard Henderson.*

The problem was to design a beach house, make it private in the midst of congestion, and give it dignity in the midst of architectural chaos.

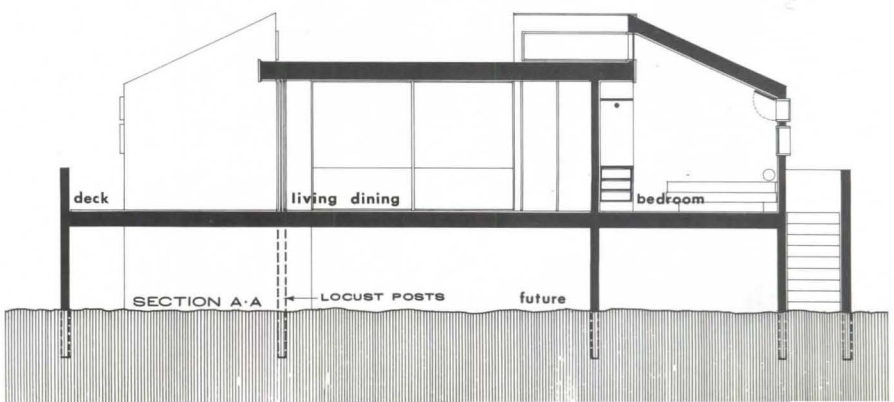
The young architects, Gwathmey and Henderson, were given a budget of $15,000 (which they met), a lot 75′ x 100′ (like all the others down the line), a distant view (if you craned your neck) of the ocean and the bay, and a closer view (had they designed an average house) of cracker boxes.

"The result," says Charles Gwathmey, "is a land fortress. From the ground, it is high, forbidding, private, flanked by walls and shingled towers with slanting roofs protecting a hidden interior space."

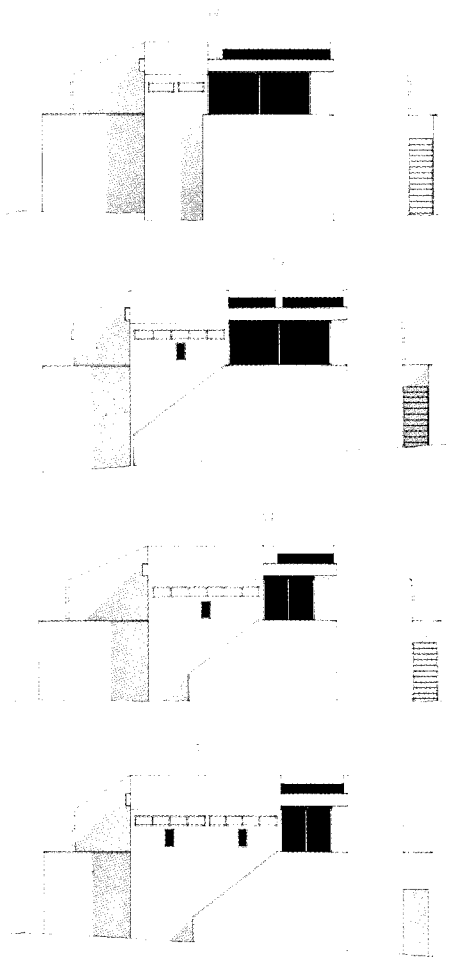
"On the inside, the major living area is a horizontal space, sheltered, but surprisingly open. It is extended outward onto decks on all four sides and inside-outside spaces are fused by continuously shingled walls. The position of the decks creates a diagonal movement of space . . . The entire area is elevated to get a view of the water, and insure some privacy from neighbors. Being high, it also catches the best of ventilators—the wind."



"In plan, the bedrooms, bath, and kitchen are small, closed pillars flanking the central space. Three of the decks have staircases, which wrap around the house like protecting arms. The plan resembles a swastika. The space below can be converted into a guest room or playrooms in the future—with light and air coming through the floors of the decks."

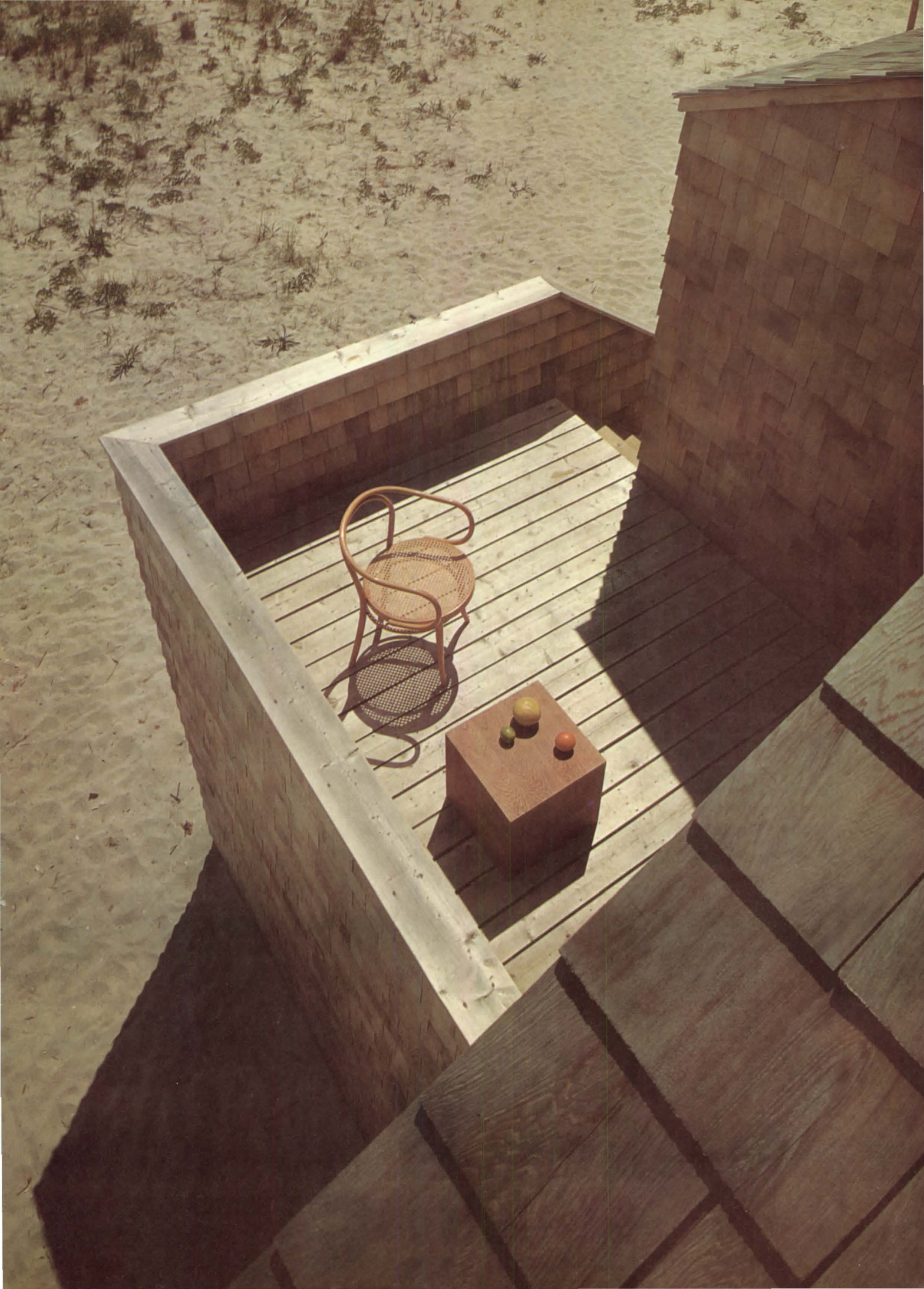


"A house in the middle of the sand has as many approaches as there are sides to it. The four decks surrounding the living room are walled-in, sheltered spots offering a choice of sun or shade."



Sun, shade, privacy, protection, and exposure are all served well by the basic plan of the house. It remains to be seen how well the lower floor area will work out when converted to living spaces: It may be excessively dark for a beach house, relying as it will on the open slats of the floor deck for light and ventilation.

What is striking about the house is that, by and large, the present needs are so well served by the plan; the formal order never becomes a fetish. Each deck, each interior space is slightly varied and presents a slightly different dimension and area to the eye. On the exterior, each façade is varied slightly, subtly, but the volume as a whole is sober and dignified in comparison to both its humdrum and flamboyantly exaggerated neighbors.



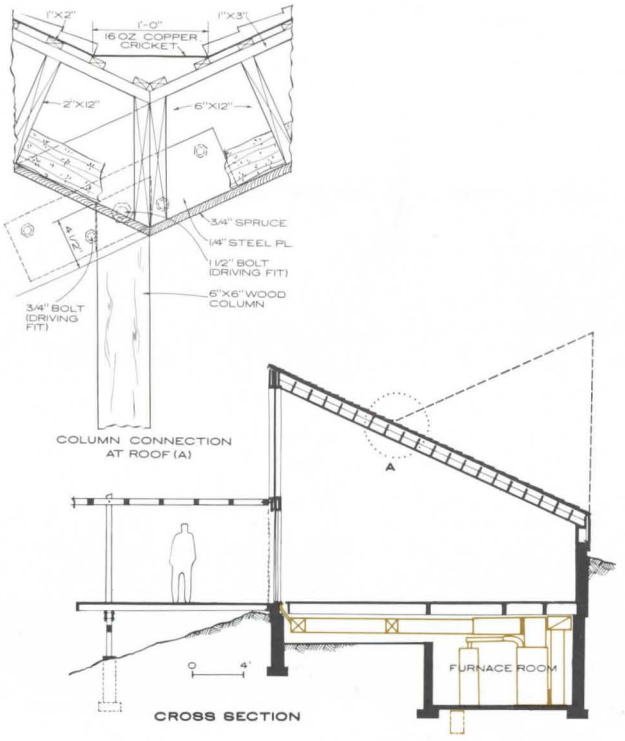
Volumetric Vacation

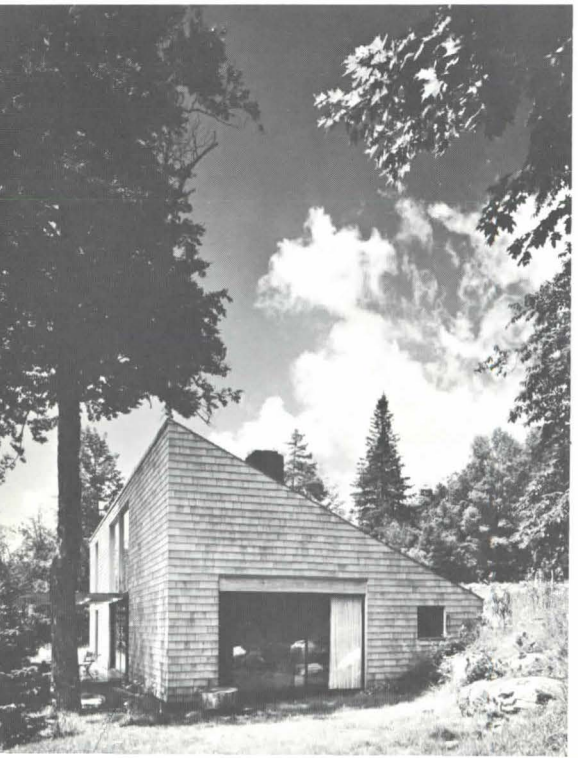
LAKESIDE HOUSE, *Adirondacks, New York.* ***Architect:*** *Edward Larrabee Barnes.*

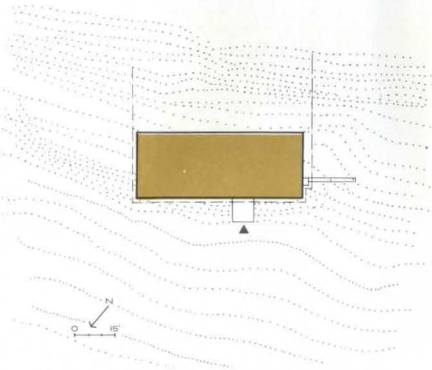
"It's a very simple house," said Edward Barnes of an expensive (approximately $50,000) house.

"It's a perfect volume. You could turn this house on its side and it still would be perfect. The walls are only opened occasionally so that the space is contained and does not spill out."

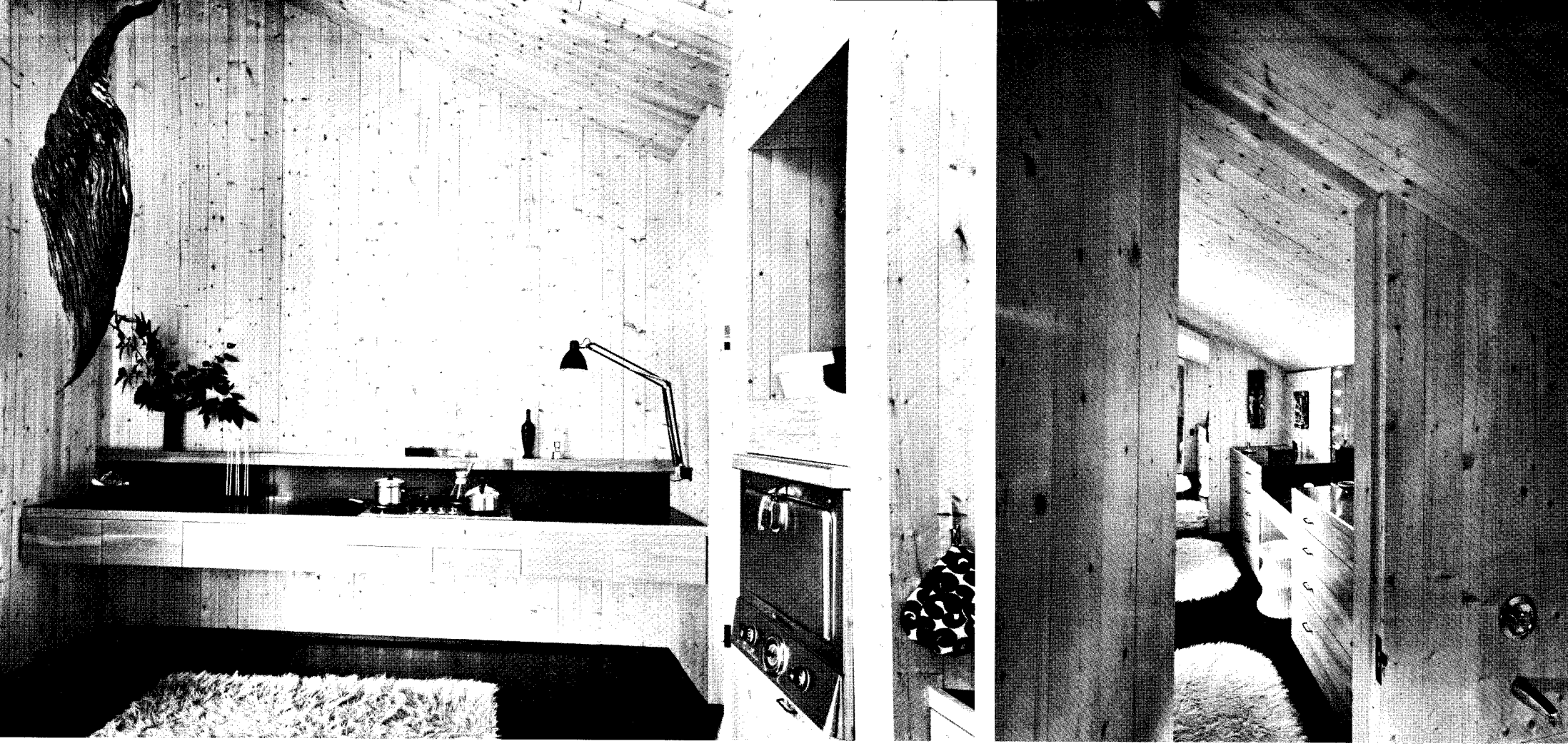
"When one thinks of volumetric architecture, there is really no difference between the roof and the walls; they are all just planes enclosing three-dimensional space. In this house, the entrance is down through the roof plane into a wedge-shaped volume. The surface materials of the house emphasize the sense of a continuous skin: The exterior is completely shingled, and the interior is entirely sheathed in spruce."







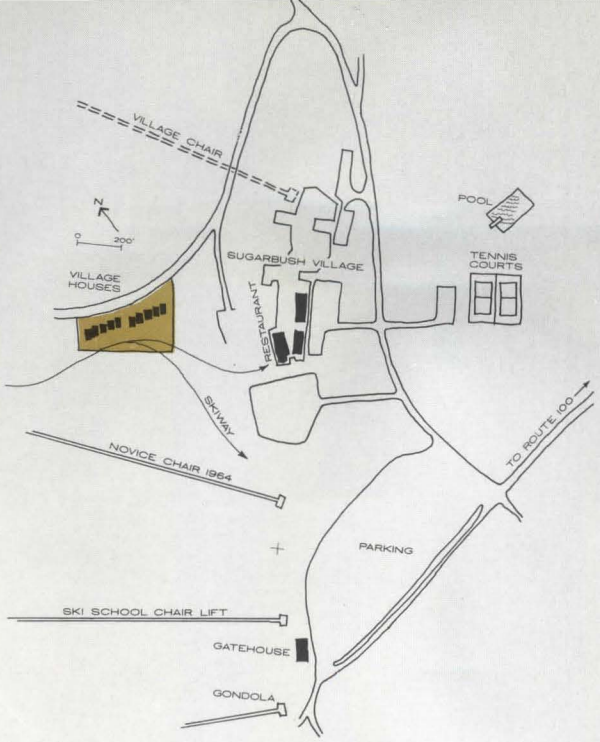
With this "simple volume," Barnes achieves an admirable kind of nonarchitecture. Seen from a distance, the building blends into the landscape (with the exception of the entrance) and becomes an integral part of the setting. The slanting roof continues the plane of the field, and the high side of the house emphasizes the



hill sloping down to the water. So dependent is the volume on the site, that, were the house transplanted to another location, it might appear awkward and ill-proportioned—scarcely a piece of "architecture" in its own right. However, as a vacation house, it is fittingly subordinate to its natural surroundings of fields, hillside, and lake.

A striking aspect of Barnes' description of the house is his overwhelming preoccupation with the building as a theoretical geometric exercise. It is true that the clients' specific design requests were fairly minimal (they wanted a certain view of the lake), but the architect seems never to have taken into consideration the spatial effects of the theoretical volume on the occupants. For instance, it may be true that, *in abstractum*, "there is no difference between walls and ceiling" and a perfect volume could be turned on end, upside down, and sideways. Nevertheless, the spatial effect will be quite different, depending on which side is up. A ceiling never *is* quite the same thing as a wall: the latter is a static, upright element; the former, particularly if it is slanted, acts, spatially, as an active overhead weight.

For Barnes, the slanted roof is an attempt to get away from the "volumeless quality of city architecture," where the front of a house is a fence, a façade; the walls are divisions; and the horizontal roof is simply a lid. But he seems not to have considered the question whether such a tautly tailored box—one whose continuous skin of spruce and shingle stretches over the surface to emphasize the feeling of a closely defined, constricted space, and whose ceiling slopes in such a way as to make this space feel oppressive—is a suitable type of space for vacation living. It may be an interesting formal exercise, but is it conducive to a way of life that is more varied, fluid, and relaxed than that of the city?



To assure privacy, the roadside approach has few windows. Buildings are low enough so that they do not block the view of mountains as seen from road or from the private houses above.

Sharp V's in roofs accent separation of units, but change quickly into a flat roof, which, according to the architect, is cheaper to build and eliminates valleys collecting snow and ice.

Slopeside Planning for Impatient Skiers

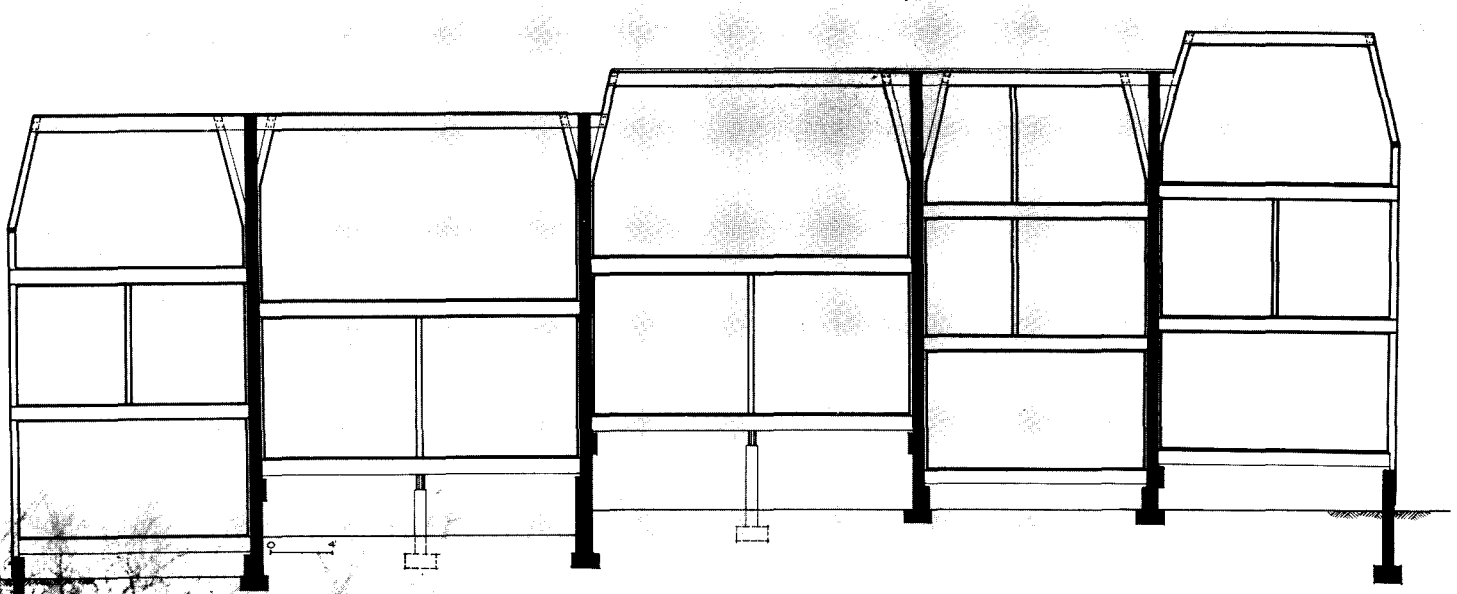
SUGARBUSH VILLAGE HOUSES, *Warren, Vermont.* ***Architect:*** *Robert Burley.*

Anyone who has trudged a mile from his car to the lift at the bottom of the ski slope will be intrigued with the idea of a row house right on the side of the trails. The Sugarbush Village Houses, 1000 ski-trail-feet above the lift terminal, are an experiment in "instant ski": drive the car up to the back door, change into ski clothes, and sail off the front porch down to the lift below.

For the ski enthusiast who pursues the sport with 9-to-5 intensity, a town house in the country offers many of the same advantages it does in the city: There are no suburban lawns to mow, and it is conveniently situated at the hub of all activity.

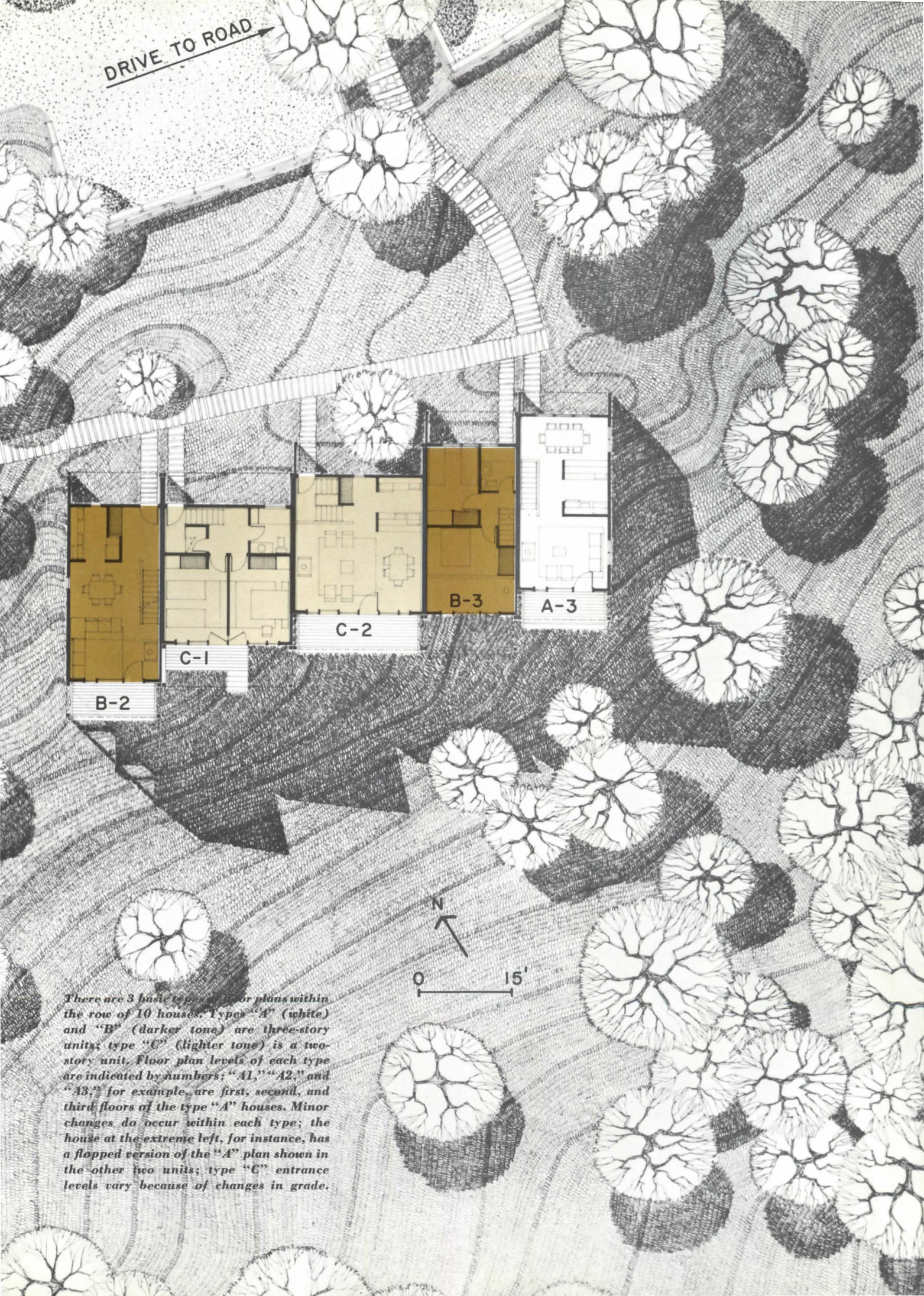
For the developer, a cluster plan in vacationland is less secure. Several projects, built as cooperatives, have conspicuously failed. One such apartment building, a quarter mile below the Sugarbush Houses, has leased only 1 out of 14 apartments since they were put on the market in September 1964. Vacationers still prefer to buy their house and negotiate their finances independently. The builder of the Sugarbush house development, Bradford Swett (who buys, renovates, and resells brownstones in New York City) felt that the row house plan would have far more chance of success if the units could be sold individually. The obvious solution was a condominium, where each individual owns his house, the land it sits on, and has a share in the property that surrounds it. However, the Sugarbush Valley Corporation, from which Swett leased the land, insisted on a long-term lease with an option to buy in two years: a potential homeowner would still get involved with the financial affairs of another party. However, the biggest stumbling block was that there is no law in Vermont that provides for condominiums.

As a solution to the problem, Swett first sought to interest local banks in a development of row houses for sale on leased land. No Vermont bank would touch it. Finally, he got an Albany bank to back the venture and went ahead with the project. Meanwhile, his lawyers worked out a deed whereby the occupants would

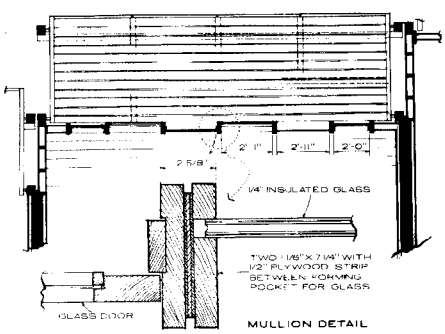


Poured concrete foundations, 8" concrete block party walls, wood joists and rafters. 26-ga. galvanized steel roofing with V-crimp. Interior walls of gypsumboard and battens painted white; exterior walls of plywood and battens creasoted and weathered to dark brown. Soffits painted white, columns and structural members black.


PARK
A-2
C-2
C-1
A-1
B-1
SKI TRAIL



There are 3 basic types of floor plans within the row of 10 houses. Types "A" (white) and "B" (darker tone) are three-story units; type "C" (lighter tone) is a two-story unit. Floor plan levels of each type are indicated by numbers; "A1," "A2," and "A3," for example, are first, second, and third floors of the type "A" houses. Minor changes do occur within each type; the house at the extreme left, for instance, has a flopped version of the "A" plan shown in the other two units; type "C" entrance levels vary because of changes in grade.



MULLION DETAIL

own not only the house and the land it sits on, but also a parcel of land in front, thereby avoiding the label of "condominium." In actuality, the cluster development would operate with all the advantages of the condominium system. Everyone has the right of way to the adjacent property, and the land would be maintained by a tenants association, which also handles garbage disposal and snow removal. Finally, in March 1965, Sugarbush agreed to change the terms of the lease, so that the land could be bought anytime. By this time, however, Swett estimates that at least $3600 had been spent on legal fees alone—far above what was anticipated.

When it came to the design phase, Swett chose Robert Burley, whose office is located in Waitsfield, Vermont, as architect.

Since the idea of individual ownership was the heart—and by this time the blood—of the project, the builder stressed that the design emphasize the individual units within the row. Each house should retain a look of autonomy, a semblance of a roof-of-one's-own, and avoid the appearance of apartment housing and anonymity. By breaking up the ten houses into two groups, varying the floor plans, changing the balcony levels and staggering the houses on the hillside, Burley achieved what was demanded. Moreover, by using throughout the scheme the same elements — balconies, windows, and roofs — the groups stands as a coherent row, not as a motley assembly of different buildings. The "individual" roofs, with deep projecting white soffits, are the chief elements that distinguish one unit from the other. So far, all but three of the houses have been sold and the builder is initiating a similar project in Mad River, Vermont.

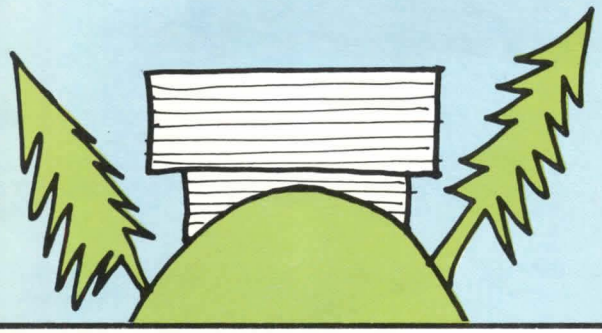
Since a tight cluster development is a sensible type of planning for vacation areas, it is unfortunate that Vermont law does not encourage it with a law providing for condominiums. The cluster plan has the advantage of concentrating housing in one area, preserving the majority of land for recreation (or as unspoiled, virgin land), and avoiding the extravagant wastes of suburban-type planning.

Front sides of units are opened up with glass and balconies to take advantage of the view toward the valley. The fronts are oriented toward the sun and protected from the wind for lunchtime use. Living room of unit A is on upper floor under the roof, living room of B is on middle floor.

A

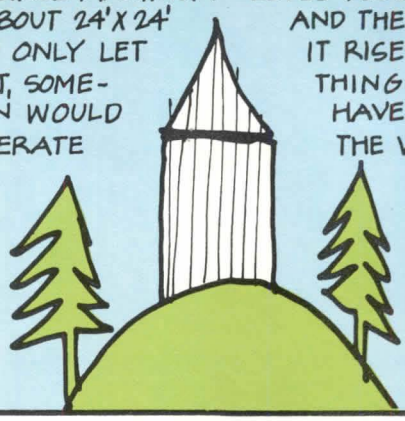
C

"SITE IS A SMALL HILL. A HORIZONTAL BOX WOULD HAVE LOOKED ABSURD WITH OVERHANGING SIDES."



1.

"SOMETHING VERTICAL WOULD DO BETTER. HOWEVER, SINCE MAXIMUM LEVEL FLOOR SPACE WAS ABOUT 24'X24' AND THE BUDGET WOULD ONLY LET IT RISE ABOUT 22 FEET, SOMETHING IN THE DESIGN WOULD HAVE TO EXAGGERATE THE VERTICAL."



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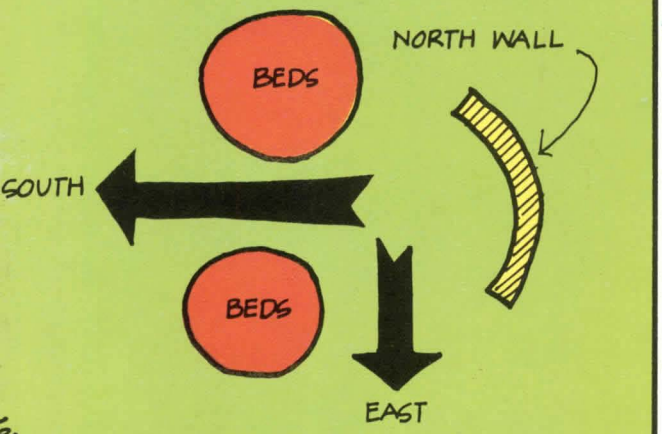
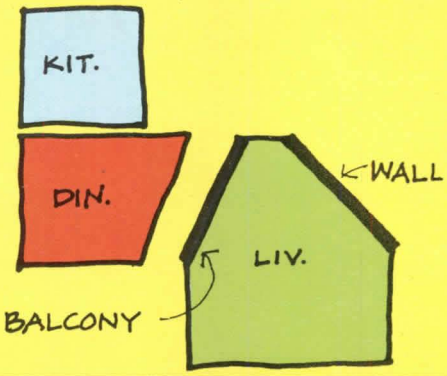


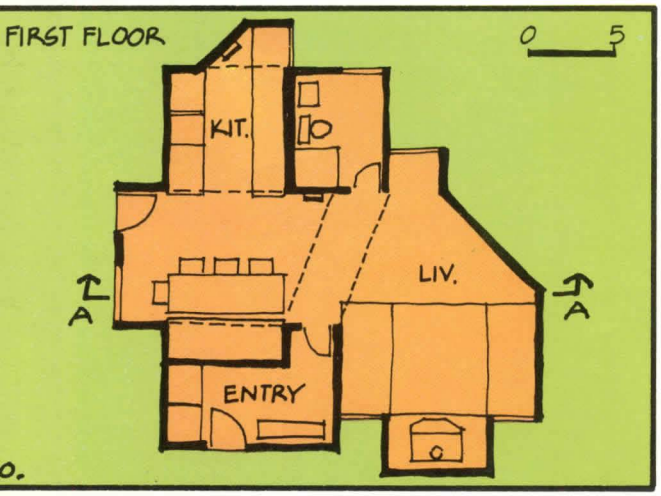
6.

KITCHEN, DINING ROOM, AND LIVING AREAS ARE DEFINED. BALCONY ANGLED TO BALANCE NORTH WALL.



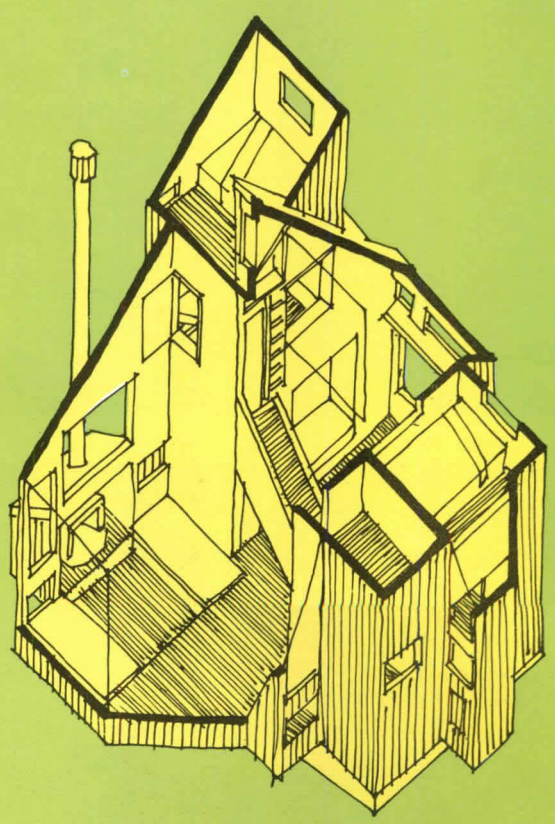
7.

FIRST FLOOR



10.

ISOMETRIC



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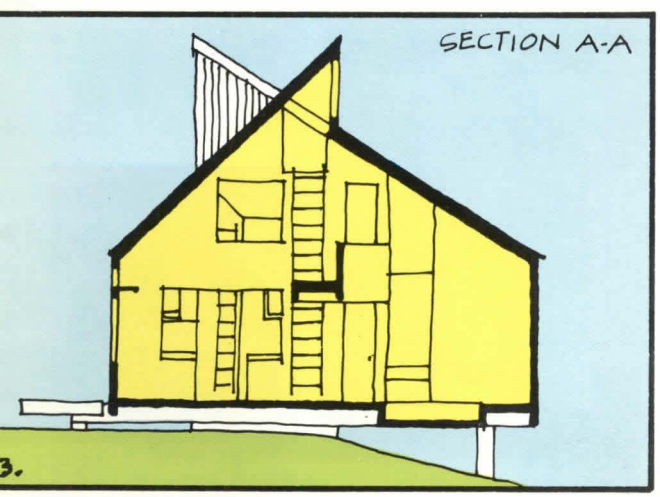
SECTION A-A

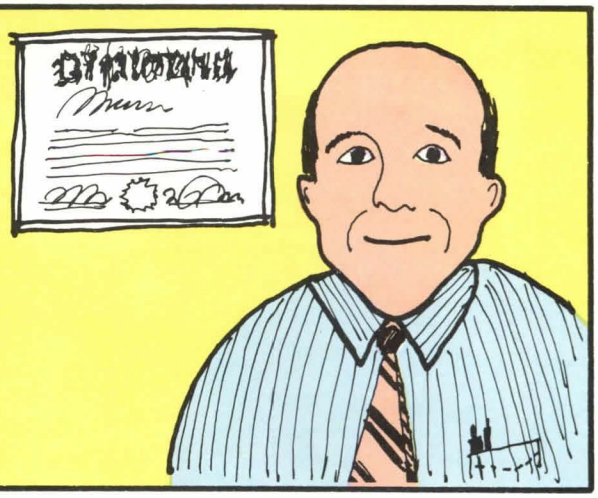


13.

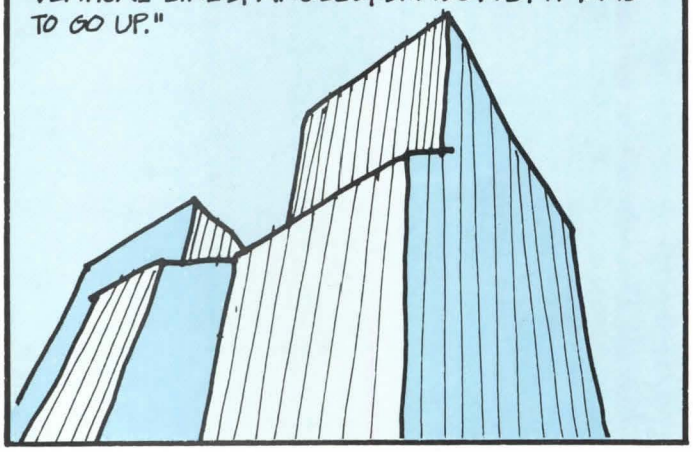
GRAPHICS: GARY FUJIWARA

SKI HOUSE, *Mad River Glen, Vermont.* **Designer:** *Peter J. Hoppner.*

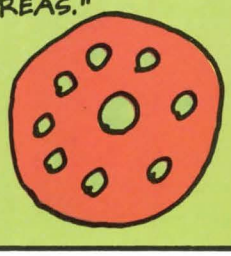
PETER HOPPNER, A RECENT YALE GRADUATE NOW WORKING FOR PAUL RUDOLPH, FELT THE NEED TO BUILD A HOUSE OF HIS OWN DESIGN. IT WOULD BE AN EXERCISE, A BEGINNING, A THREE-DIMENSIONAL PORTFOLIO PIECE. AS A SPECULATIVE VENTURE, HE PURCHASED A SITE IN MAD RIVER, VERMONT, AND WITH $18,000, SET OUT TO BUILD A SKI HOUSE - SOMETHING BIG ENOUGH TO SLEEP ELEVEN, YET WITH MORE PRIVACY THAN THE USUAL DORMITORY PILE-UP. SINCE THIS WAS HIS FIRST HOUSE, HE WANTED IT TO BE SOMETHING INTERESTING IN DESIGN - OR ELSE, "WHY DO IT AT ALL?" SOMETHING WITH COLOR, PILED-UP SHAPES, AND PAINTINGS (IT'S HARD, AFTER ALL, TO AVOID ALL SHADES OF RUDOLPH). BUT "WITH A FLEXIBLE, FLOWING, DIAGONAL SENSE OF SPACE."



"VERTICAL LINES, ANGLES, SHADOWS. IT WAS TO GO UP."



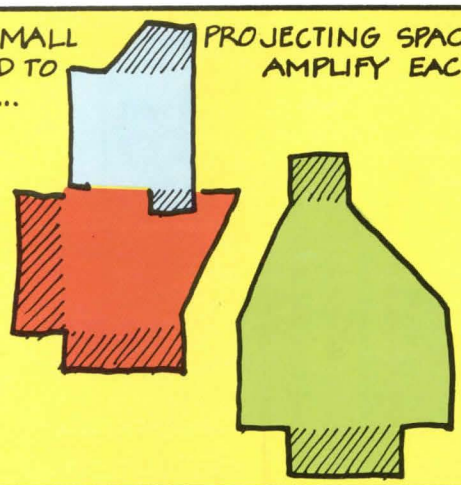
"THE DESIGN, HOWEVER, GREW FROM AN IDEA OF INTERIOR SPACE - TO CREATE A CENTRAL OPEN SPACE SURROUNDED BY SUBSIDIARY AREAS."



4.

"BUT THE SITE HAD TWO EXCELLENT VIEWS AND THESE BEGAN TO GIVE DIRECTION TO THE SPACES - THE DINING ROOM FACING SOUTH, THE LIVING ROOM EAST. A VIEW OF HOUSES TO THE NORTH DICTATED A CLOSED, ROUNDED, SHELTERING WALL. BEDROOMS STACKED UP IN TOWERS ON VIEW SIDES OF HOUSE."

THE SMALL PROJECTING SPACES ARE ADDED TO AMPLIFY EACH AREA...



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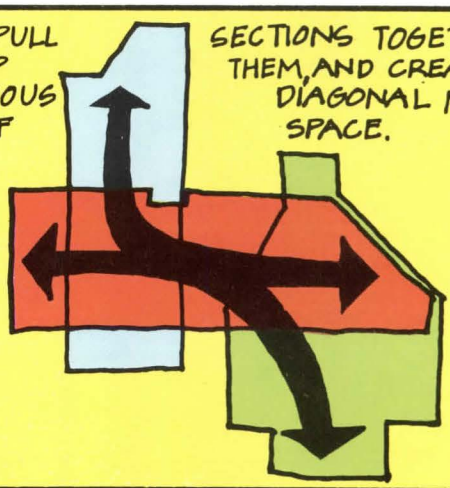
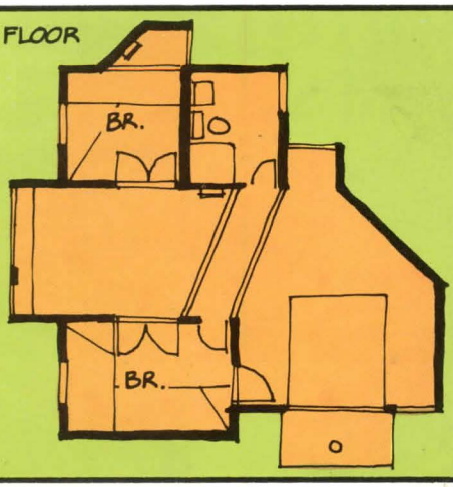
...AND PULL SECTIONS TOGETHER, OVERLAP THEM, AND CREATE A CONTINUOUS DIAGONAL MOVEMENT OF SPACE.



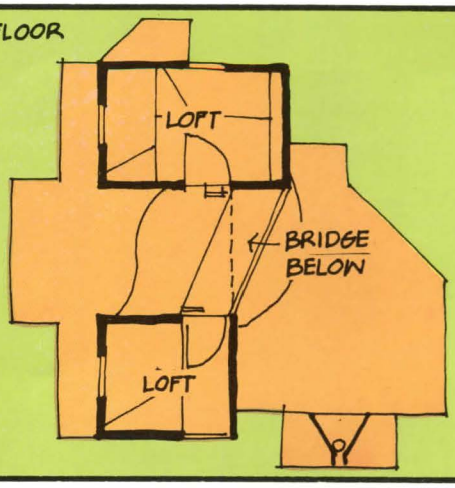
9.

SECOND FLOOR



11.

THIRD FLOOR



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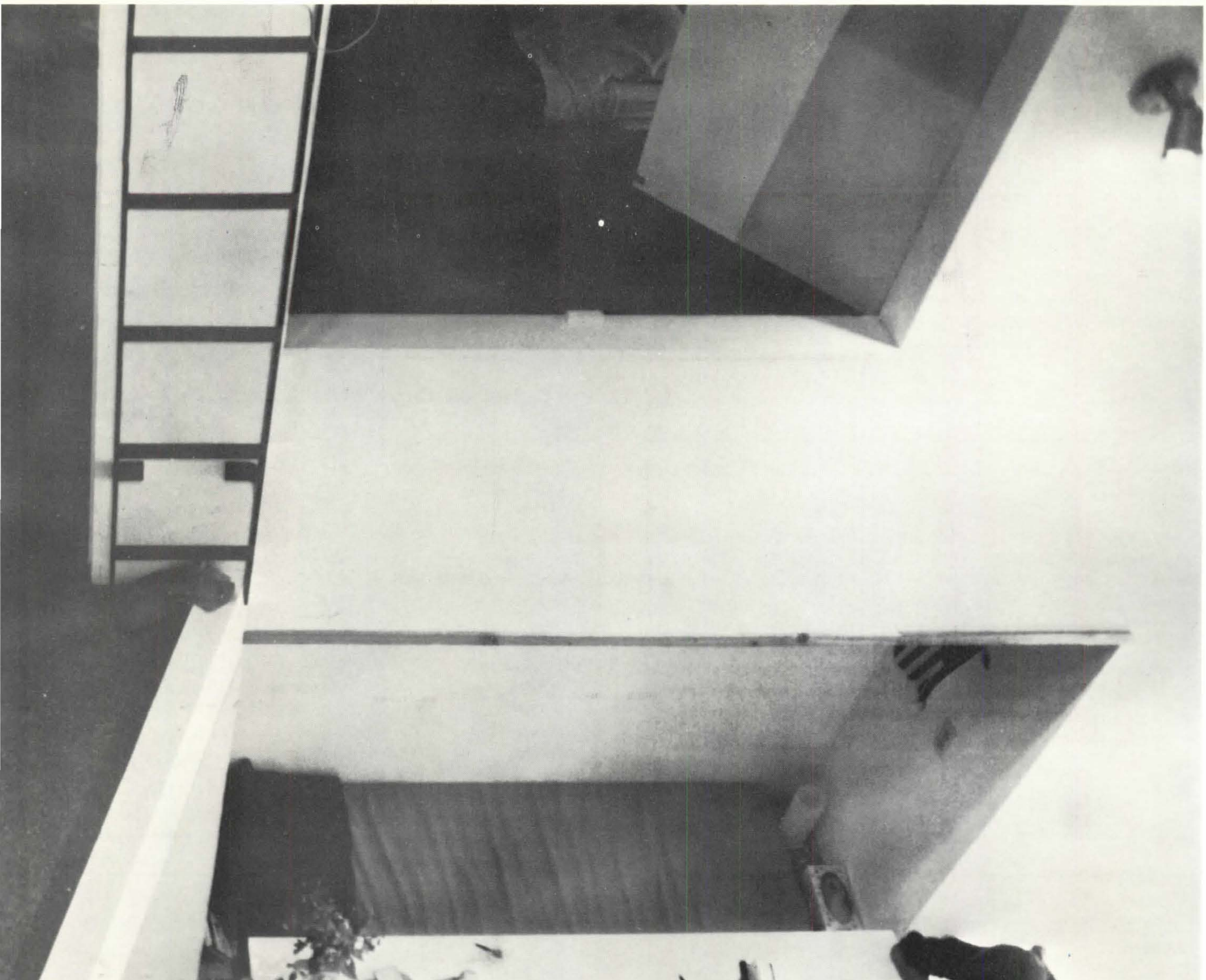
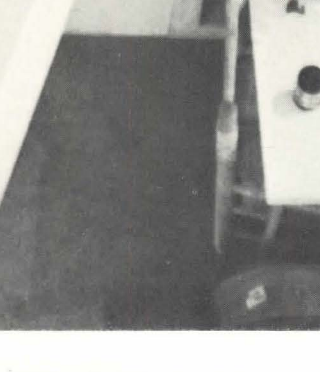




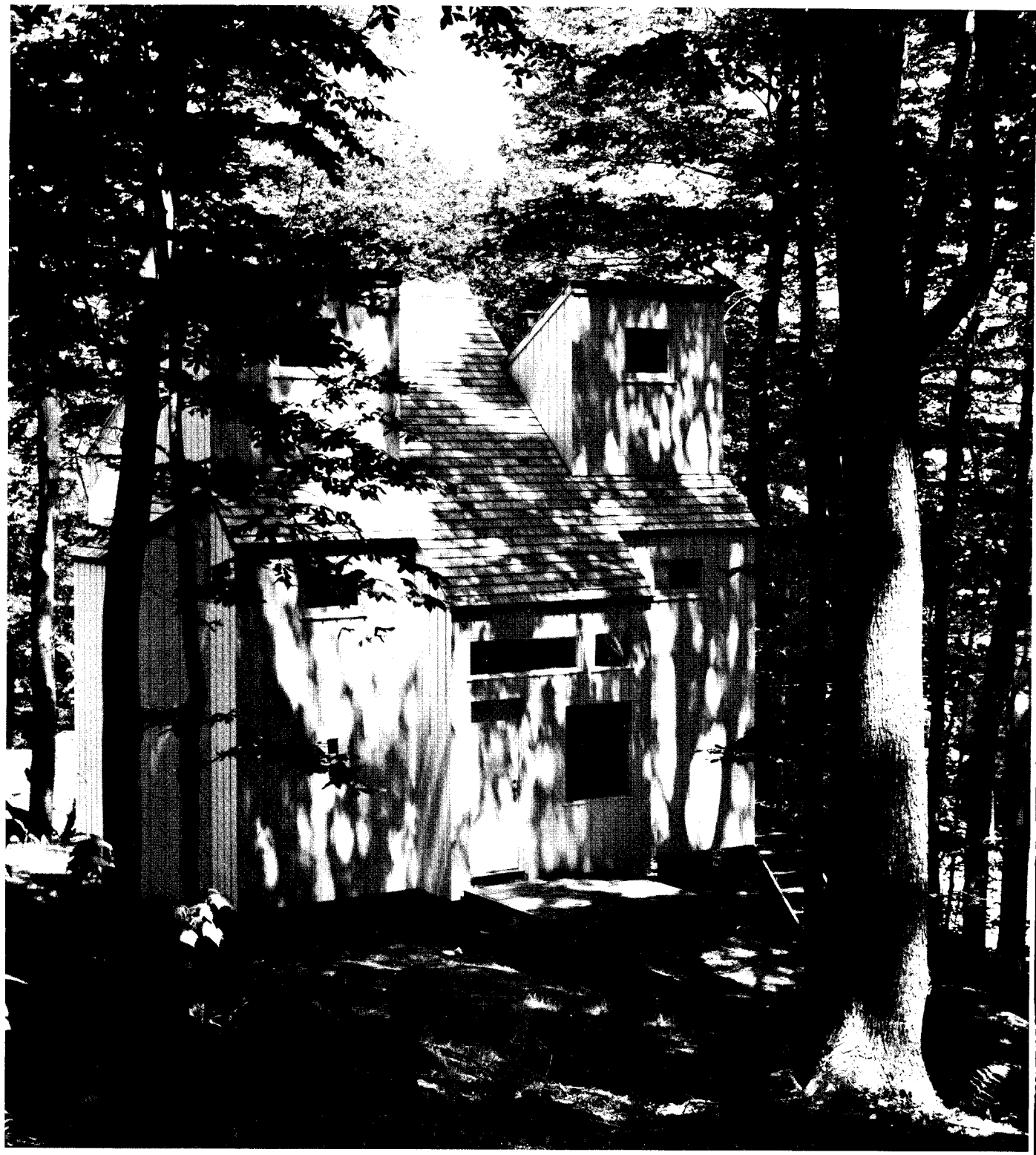
D

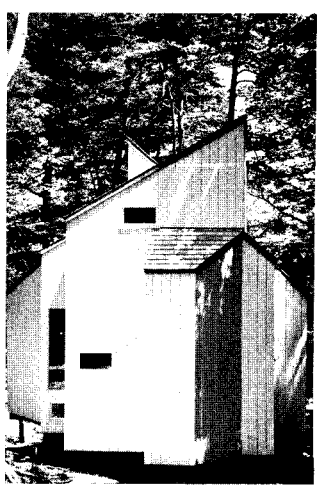
E

F

G

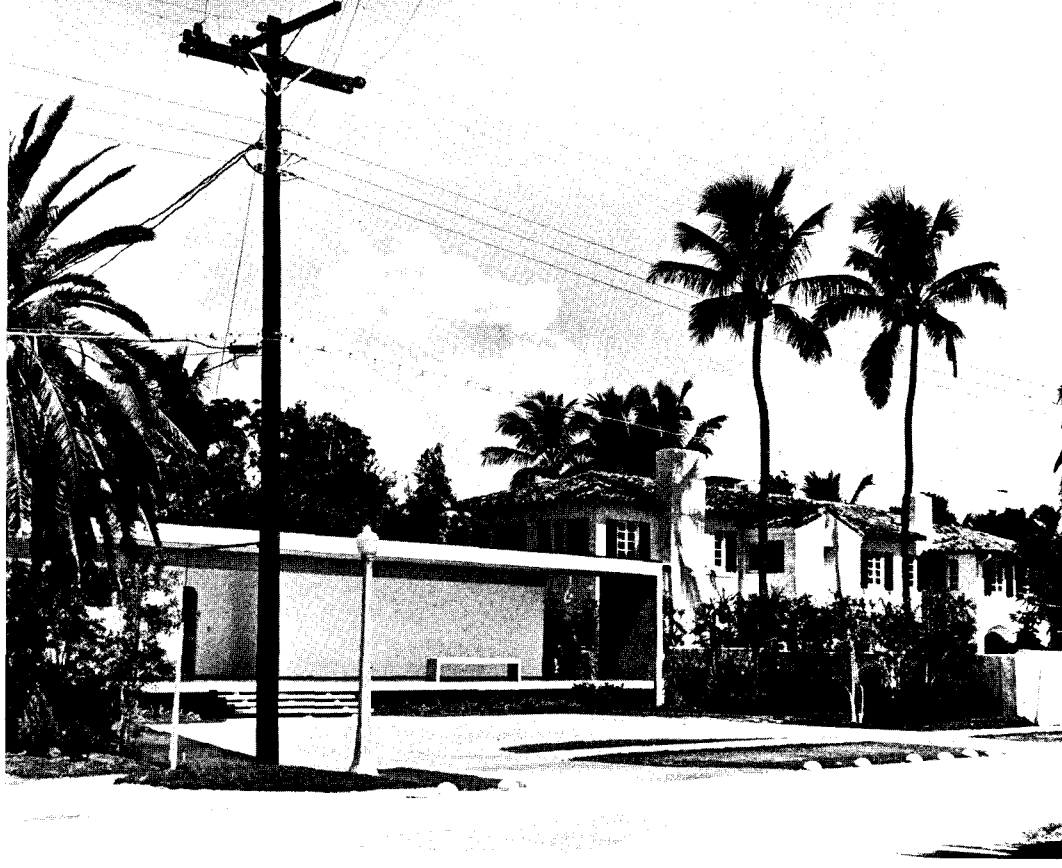
Color, space, and sculpture mix in the final design. Two Yale students, Jennifer Losch-Bartlett and David Dunlap, painted bedroom shutters ***(F)****, borrowing motifs and colors existing in the house: snakey vertical lines and limp rung* ***(D)*** *are pop-op versions of adjacent ladders; yellows and oranges follow colors used by the architect behind shutters and in the niche behind living-room stove. Wall construction (by Dunlap) behind guitarist* ***(G)*** *features a freedom-bound garden hose, rising out of a wooden mushroom, climbing up the wall, then perversely curling itself back up again into a tight little box. Additional color is given the interior with a tapestry designed by Helen Swallow* ***(B)****, and bright cloth shutters over windows* ***(C)****. Spaces move freely—up, down, and around. One side of balcony is eliminated, so walkway* ***(A)*** *opens onto dining room. In order to interlock dining and kitchen spaces, Hoppner uses Rudolphian corners* ***(E)****: one end of kitchen cabinets is cut back to absorb space from dining room; the other cabinet is twisted around to face the larger room and project out into it. Windows, according to Hoppner, are "anti-Rudolphian." Instead of inserting a pane of glass between two solid walls and letting space spill outside—à-la-Rudolph—end walls retain solidity, are "pierced" by windows, and keep the space moving around inside.*





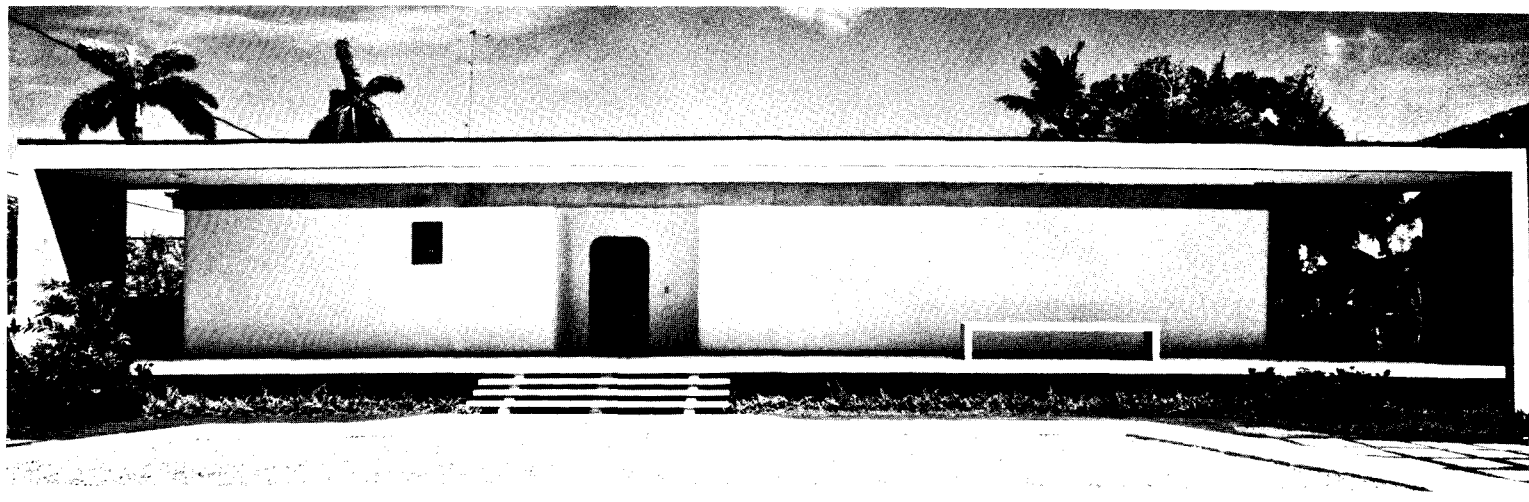
The house was painted white to emphasize the design. Had it been dark, the shadows would have been less pronounced and the verticals less apparent. The lines of the siding reinforce the height, and the pitched roof makes it seem less square. White also makes the house partially disappear in winter. "When you ski around in country like this," says Hoppner, "you get involved in nature, in the landscape, and you don't want big, dark, hulking structures looming out at you."

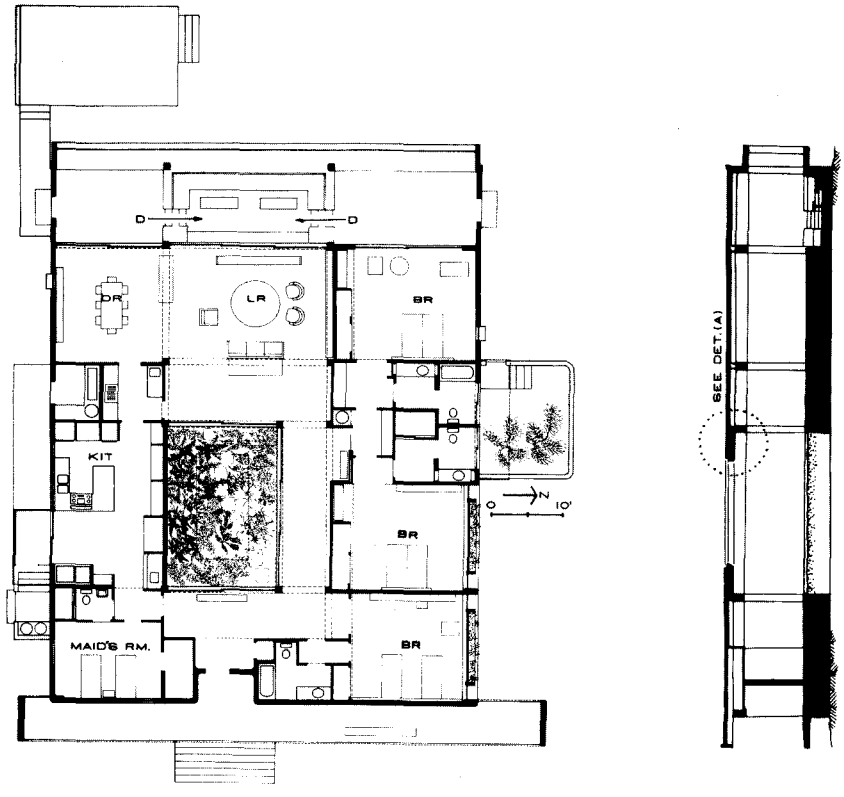
Modesty in Miami



VILLA, *Miami Beach, Florida.* ***Architect:*** *Jorge Arango.*

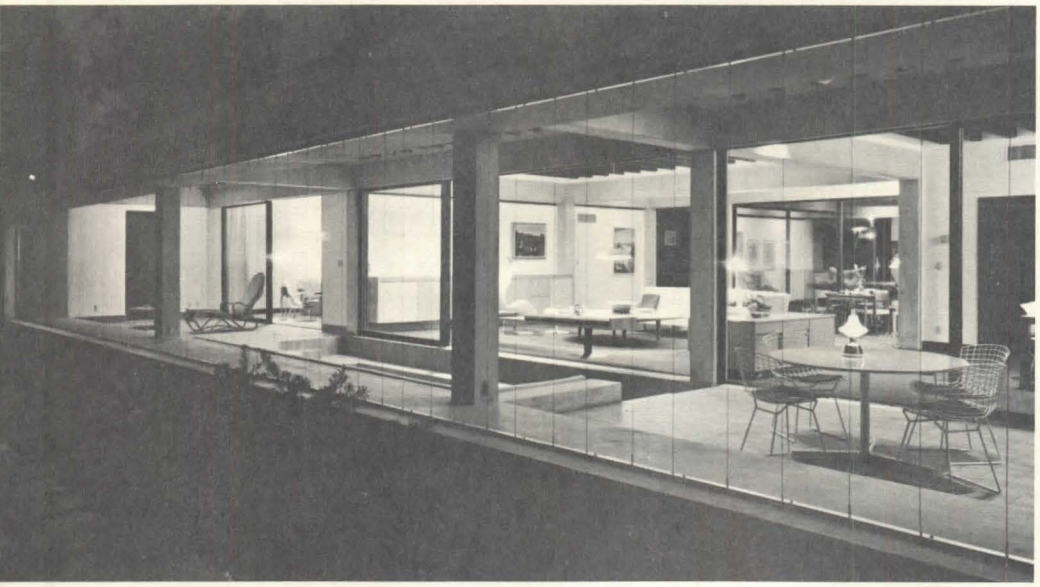
The house is located on a street of mansions built in the 20's or 30's with pretentious porticos, mansards, and heavily protected by walls or grilles for privacy and to insure safety from burglars. In this design, the wall is assimilated into the house itself and is pierced only by a small window and door. The design is modest and unassuming. But since modesty is so rare along this stretch of Miami Beach, it is doubtful whether modesty itself can succeed in being unobtrusive.

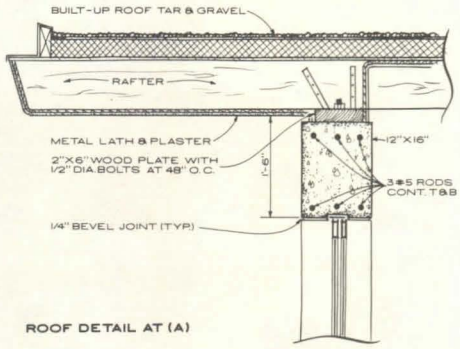




PLAN: *The lot is 90' x 170'—long and narrow. The design problem was to provide quick circulation from the front to the back of house, without resorting to long, narrow corridors. The solution is a variation on the patio plan, with a small garden at the center opening up the interior.*

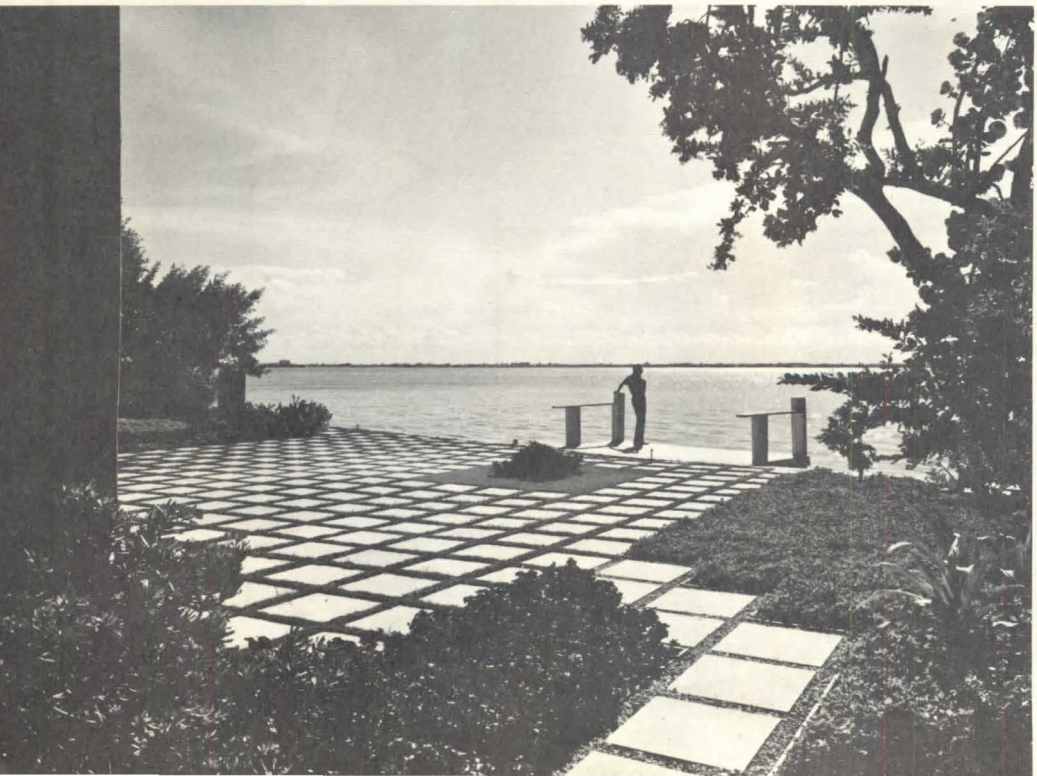
The rear of house is entirely open toward the bay, with a deep overhang to shade the interior from the sun. A single stretch of screen, 70' x 7', is reinforced with vertical stainless-steel cables strung on alternate sides of the fabric.



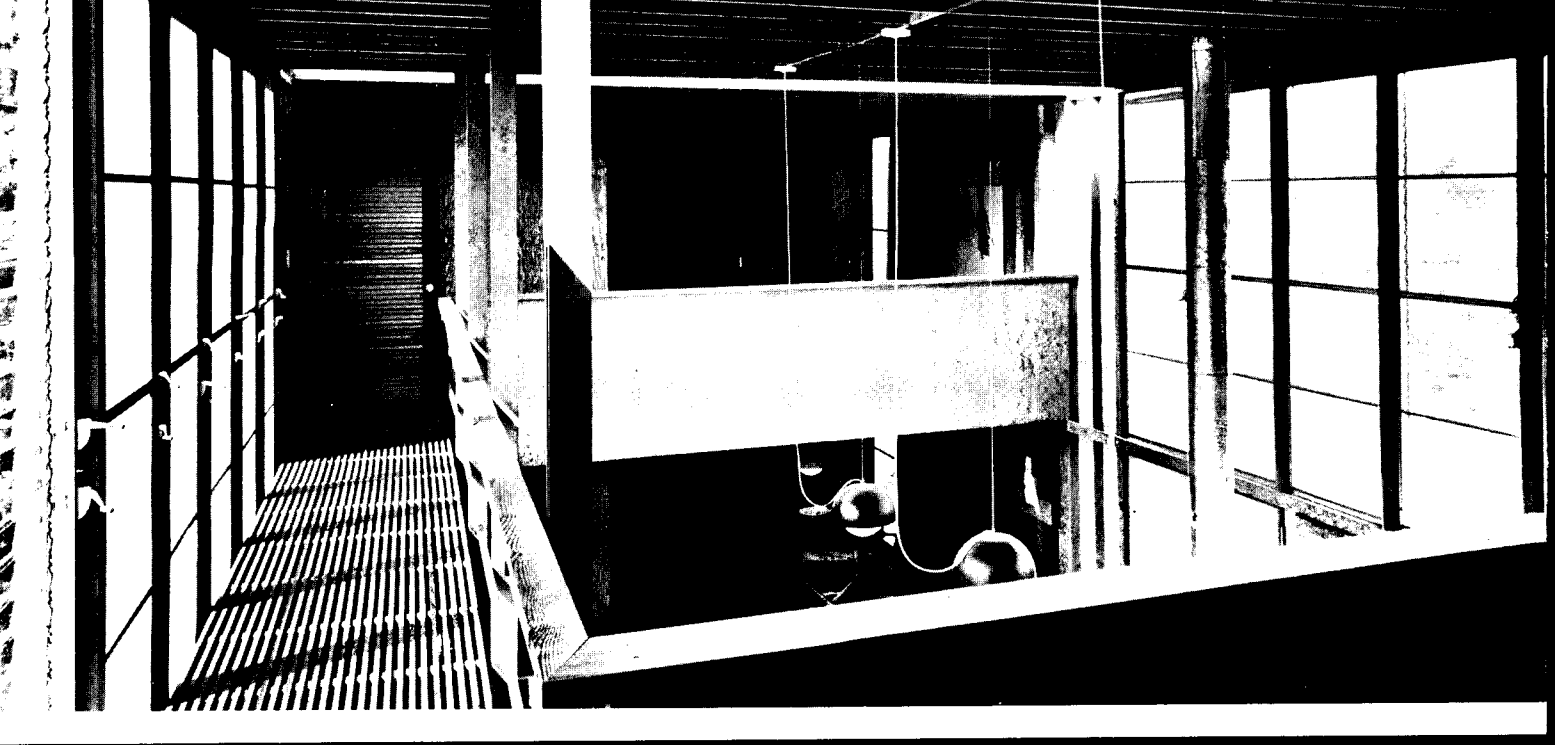


ROOF DETAIL AT (A)

The clients, a couple without children, wanted an interior that would be spacious yet not vacuous. The main living room and dining room area breaks up naturally into a series of bays, which divides what is essentially one space into more manageable and intimate areas.



Since grass does not grow well near the ocean spray, the rear garden was paved. The architect specified light pink coral, but cement slabs were substituted.

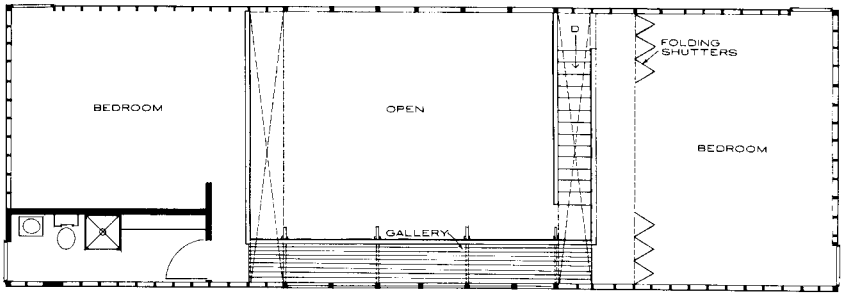


Three Vineyard Boxes: 1. Spacious Box to Stretch in

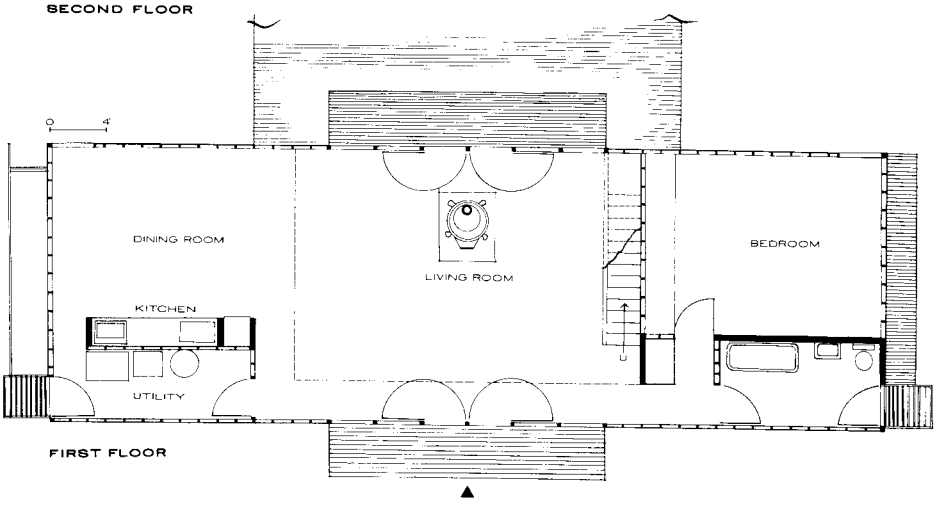
SUMMER HOUSE, *Menemsha, Martha's Vineyard, Massachusetts.* ***Architects:*** *Davis, Brody & Wisniewski.*

When Samuel Brody designed a summer house for his family, the principal requirement was that it have a large, open interior space: a space where three children—and parents as well—could explode after a winter of living in cramped city quarters. The restrictions were the usual ones: first, it had to be relatively inexpensive ($14,000, including built-in furnishings and site work); and second, the construction techniques had to suit the unspecialized carpenter-laborer craft of the island. One happy consequence of the limitations was a gain in freedom—by building the interior of plain wood (it was double-milled to give it some surface quality), there is no fussing over a fancy finish or delicate refinements: "If you feel like driving a nail in the wall to hang a picture, kite or fish, there is nothing, nothing at all, to inhibit you."

"The interior volume," explains Brody, "is a generous two-story space, glazed with jalousie windows and defined by transverse skylights (large plexiglass sheets, screwed directly over butyl tape sealer). The morning and afternoon sun floods the room, jalousie windows catch available winds, and a pot-bellied stove with a long flue (salvaged from the Third Avenue El) heats the center space as well as the upstairs during cool days of fall and spring."

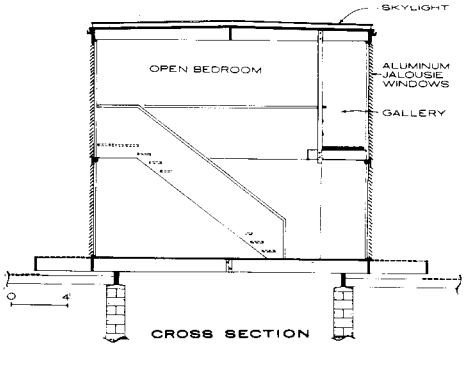


SECOND FLOOR



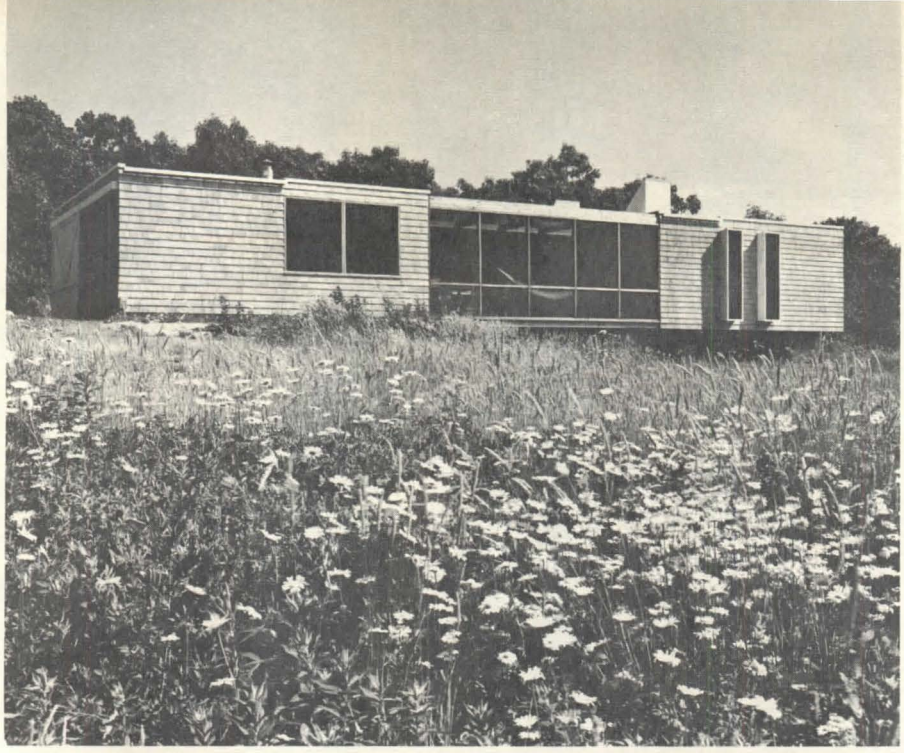
FIRST FLOOR

"Side volumes—bedrooms upstairs, and dining room below—flow into the central space. One second-story bedroom can be closed off with shutters for privacy; a guest room on the first floor is completely isolated and private. The gallery connects rooms on second story, gives scale to the entrance side of the house, and a high view of distant water."



CROSS SECTION

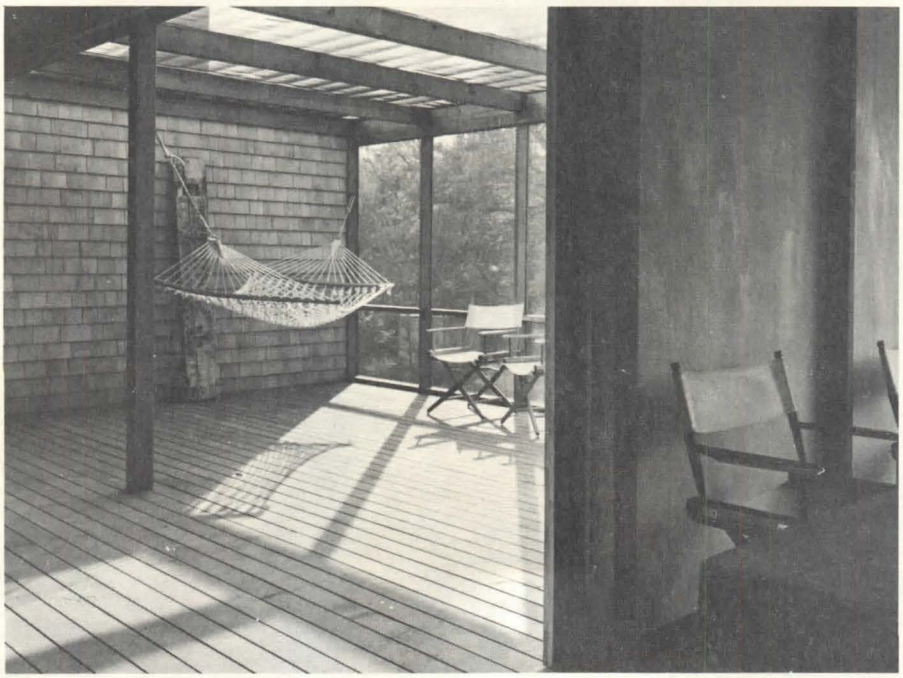
SECTION: *House is a standard two-story balloon frame construction using sheathing with plywood. Frame is exposed on the interior; shingles are used on the exterior.*

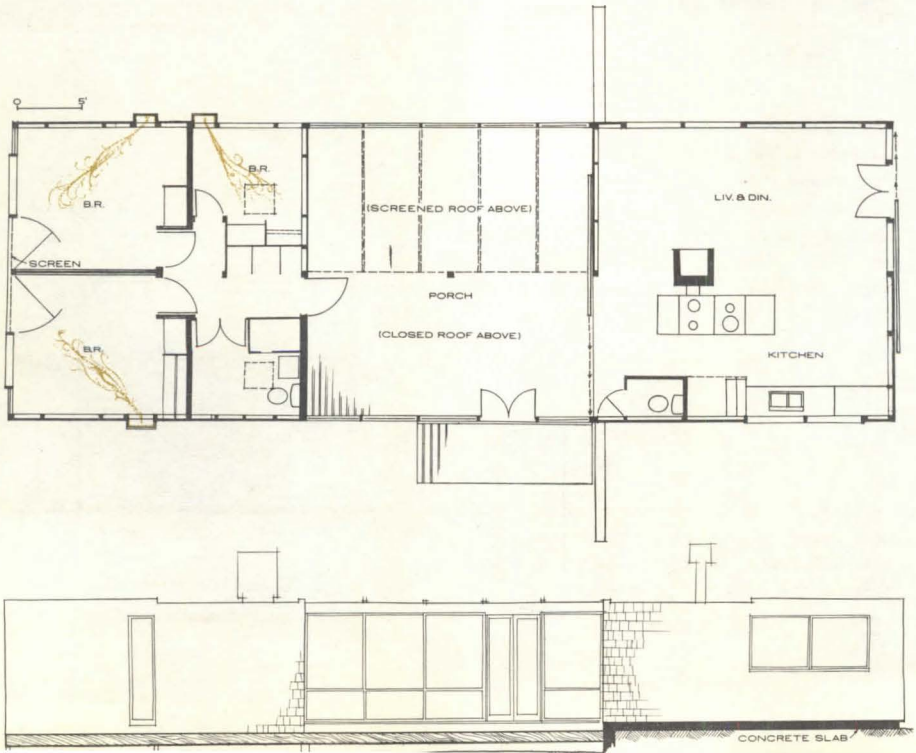


2. Kitchen Gets the Best of the Box

SUMMER-WINTER HOUSE, *Menemsha, Martha's Vineyard, Massachusetts.* ***Architect:*** *Richard G. Stein.*

A short way down the road from Samuel Brody's house in Menemsha (see preceding page) is a second vacation box designed and occupied by another New York architect, Richard Stein. Unlike the Brody house, which sits in a tight little clearing surrounded by scrub, vines, and poison ivy, the Stein house commands a view of a generous open meadow—a field that turns into a sea of daisies in the springtime. The one-story frame structure cost roughly $10,000, excluding utilities and well. However, some careful interior detailing in the kitchen-living-dining-room area makes this part of the house a carefully-tailored and comfortable year-round habitat.





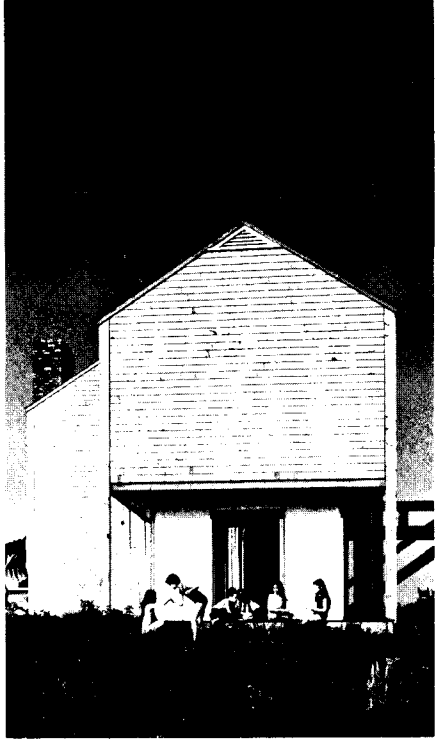
PLAN: *House is divided into three units: bedrooms, screened porch, and living-dining area. A transverse corridor—with a view from one end of the house to the other—through all three sections, ties it together laterally. Long, narrow, screened boxes, which project from the side of the house, are shuttered on the interior and provide cross-ventilation for each bedroom. One-half of porch roof is screened; the other half is roofed with plywood.*

SECTION: *Summer rooms and porch are over an unenclosed crawl space; living-dining-kitchen area has concrete slab on grade floor and is more protected for winter use. Studs are 4' o.c. and depend on plywood sheathing to carry part of the weight of the roof. Roof surface is divided into sections (note irregular roof line), which slope toward portions of wall containing no screened windows or doors so that water is drained off in front of solid wall areas.*

Living room has quarry tile floor. Canvas cloth (painted white) is stapled onto plywood walls for a semi-elegant, semi-casual finish. Fireplace, designed by the architect's wife, a sculptress, is of cast concrete.

Vertical pull-out drawers on casters make maximum use of storage space.

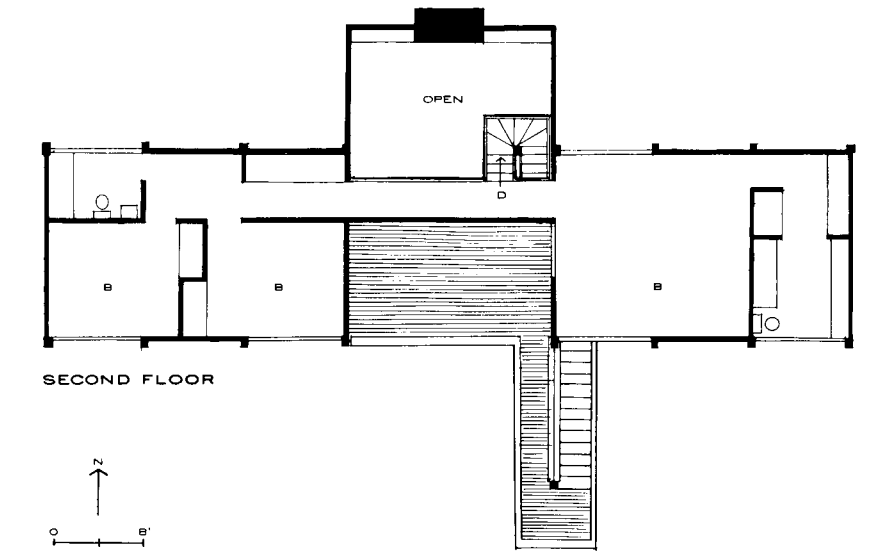
Shelves above kitchen sink hang from joists.

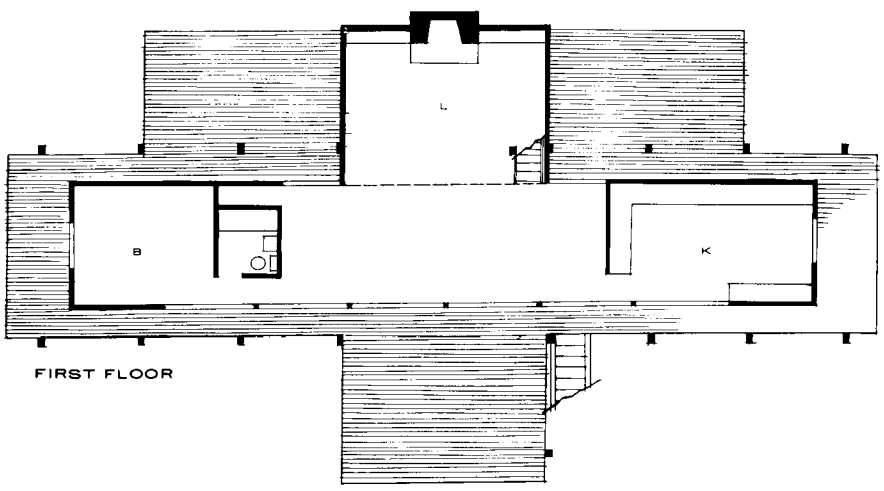


3. A Box for the Natives?

OCEANSIDE HOUSE, *Chilmark, Martha's Vineyard, Massachusets.* ***Architect:*** *Chester Bowles, Jr.*

The third Vineyard house ($26,000), designed by Chester Bowles, Jr., for a family of four (plus the inevitable guest), stands in a flat, open grassland overlooking the bay. The house was designed "tall" in order to get a view of the ocean, recall the tall proportions of the local fishing shacks, and provide large interior spaces. However, between the initial design idea and the execution, several conflicts arose and changes were made.



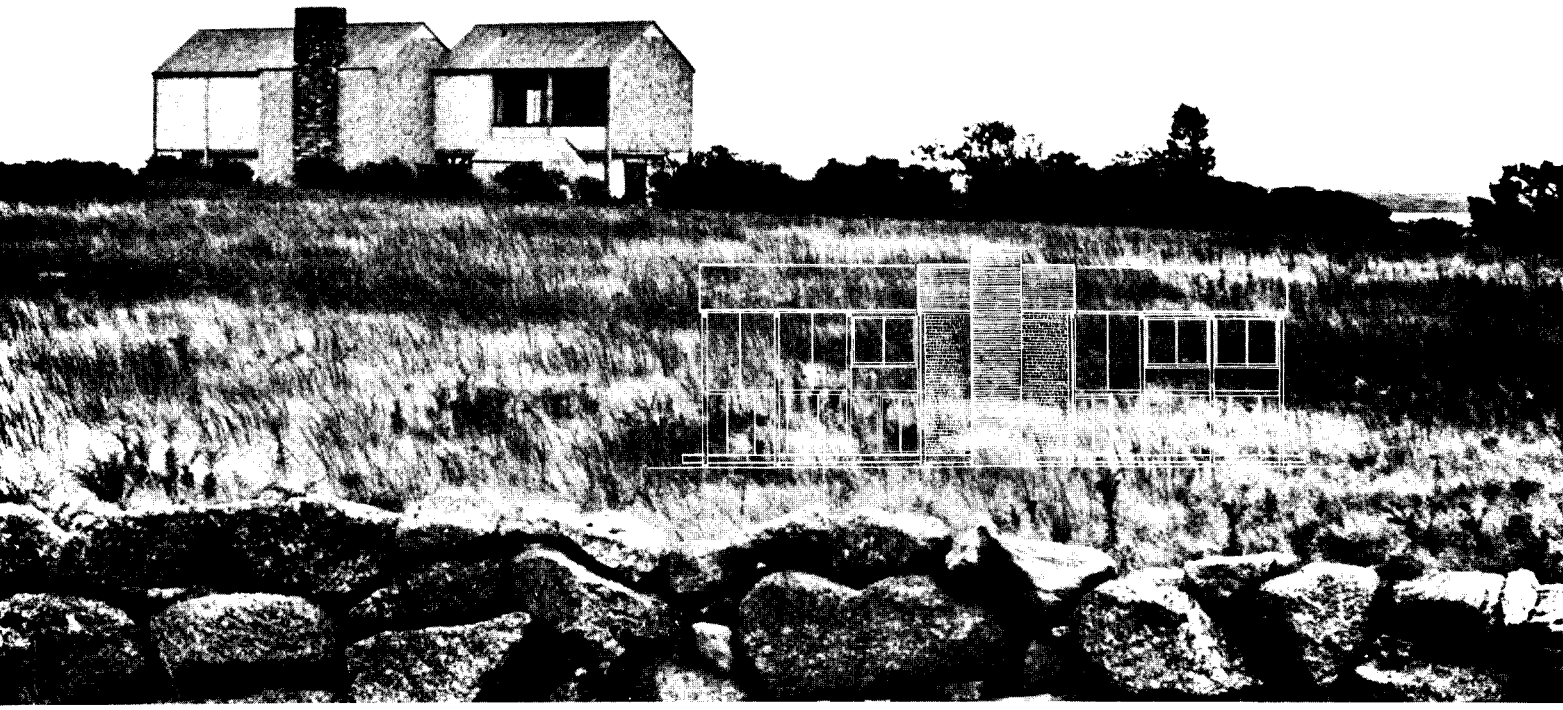


PROGRAM: *Since there is a good deal of rainy weather on the island, when everyone is cooped up in the house, the clients wanted large rooms, and the various sections—children and adult divisions—made separate and private. The living room was to be a two-story space—set back from the front windows and the traffic corridor—to create a sense of seclusion and protection from the weather on bad days, and avoid the bustle of passing children. An exterior deck (cover photo) was to be a fair-weather lookout—similar to the bridge of a ship. Decks on three sides of the house were to provide a choice of outdoor spaces for sitting and dining—in or out of the wind.*

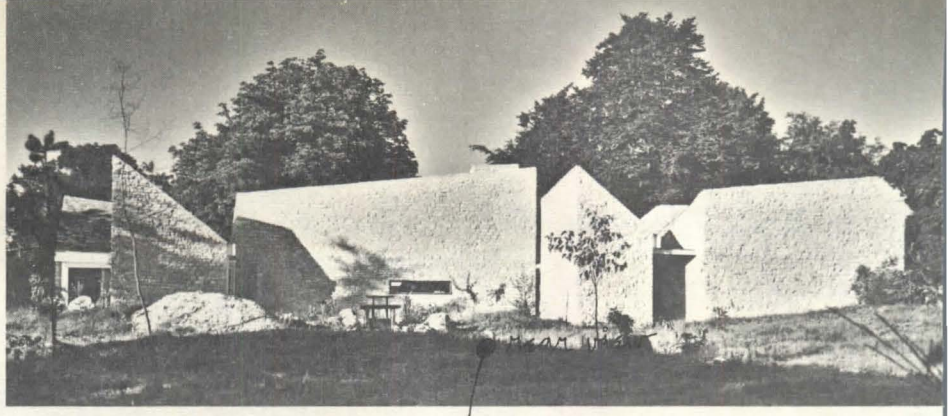
EXTERIOR CHANGES: *Although the architect intended to reflect the shingled siding and tall narrow proportions of the local fishing shacks, this characteristic shape appears on the ends of the house that are not commonly seen. The main view of the structure is from the road, which parallels the long rear elevation. From this angle, the building is an enormous, long bulk that obscures the view of the bay—much to the annoyance of the local gentry. The vertical volume was stressed in the original design by shingling the center of the building only. Side wings were white-painted plywood panels. However, the natives maintained the panels were not of the local idiom, so they were shingled. In a checkmate of contradictions, native verticality was sacrificed for native shingling.*

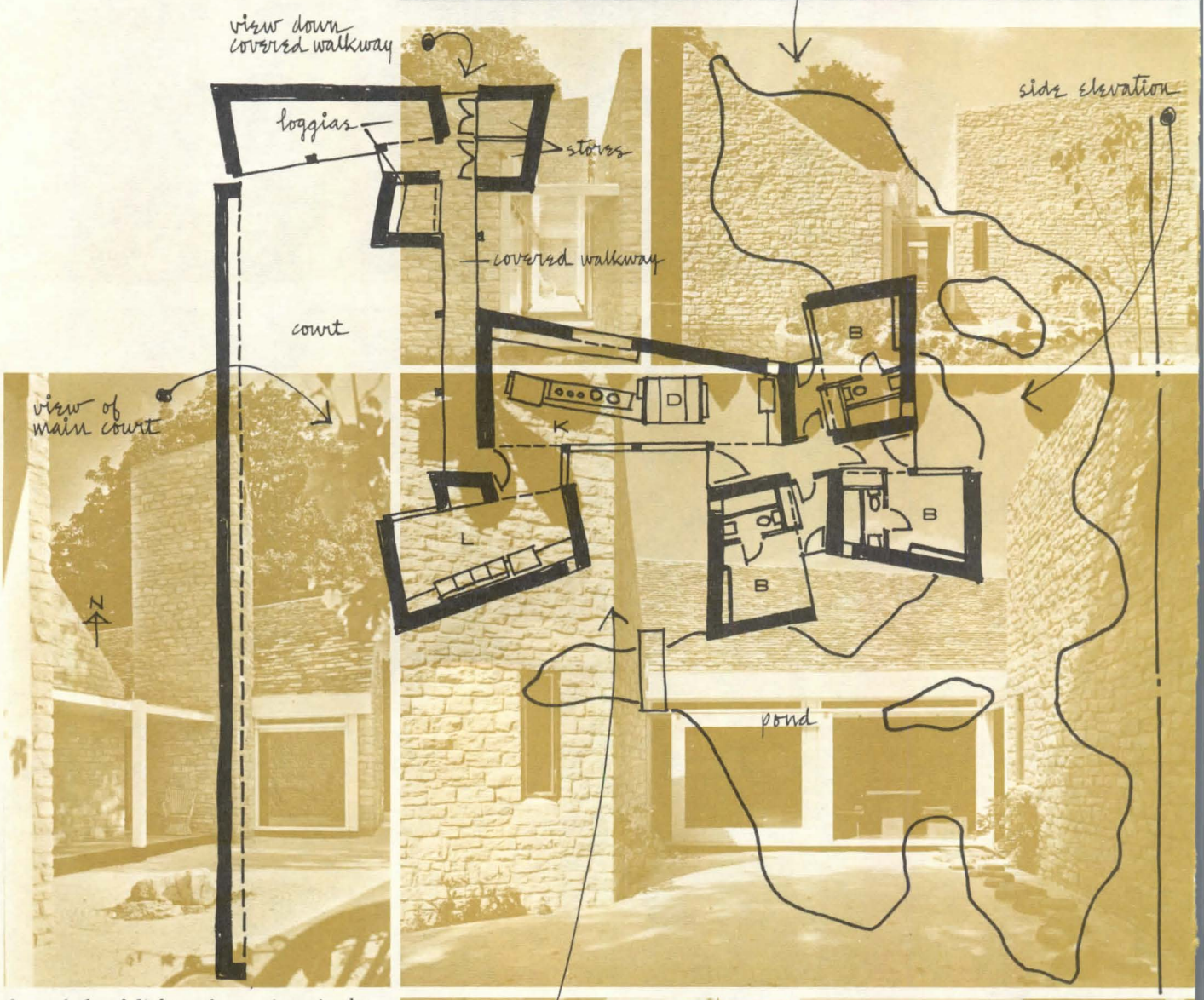
INTERIOR CHANGES: *The living-room space underwent a subtle metamorphosis that often occurs in a design between the drawing stage and actual construction. In the architect's rendering, the living room is a generous two-story space; and although it is set back from the windows by a one-story corridor, it nevertheless appears (through exaggerated perspectives) as a room in its own right. In actuality, the proportions are such that the effect is that of a tall, shallow niche—a dependent, subsidiary space on the side of a wide, low passageway.*

Part of the crowded aspect of the living room is due to the bulky stairway—one the client arbitrarily took from another house designed by the same architect. The original stair was more modest, and the only gain from the switch is a slatted railing along the gallery (not visible in photo). A final contradiction is that the railing appears to broaden the space of the living room at the upper level, while the stairs themselves eat up part of the space below.

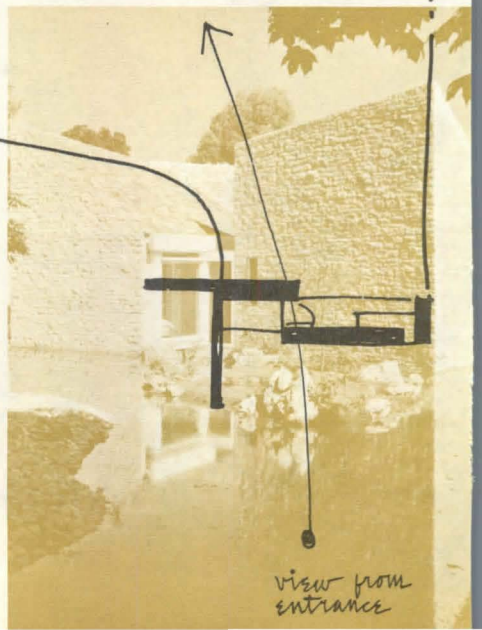


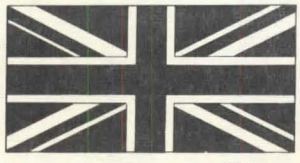
British Coziness vs. New England Austerity



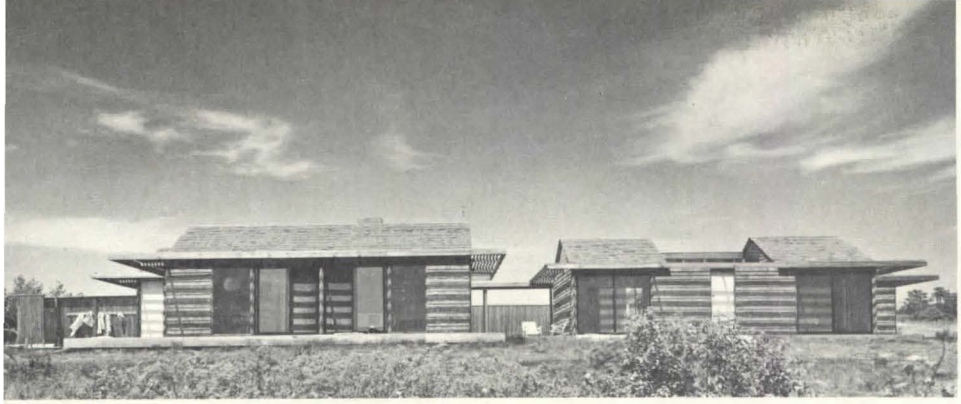


One of the delights of vacations is the gathering of the clan, but one of the difficulties is keeping just the right balance between privacy and togetherness—keeping everyone happily assembled throughout the summer. One solution is a multi-unit plan in which separate, individually-roofed units—created for sleeping, dining, and living—are connected or separated by galleries or covered walkways. Two houses—one in England; the other in New England—use this type of plan, but since both reflect local architectural styles, the results are surprisingly different.

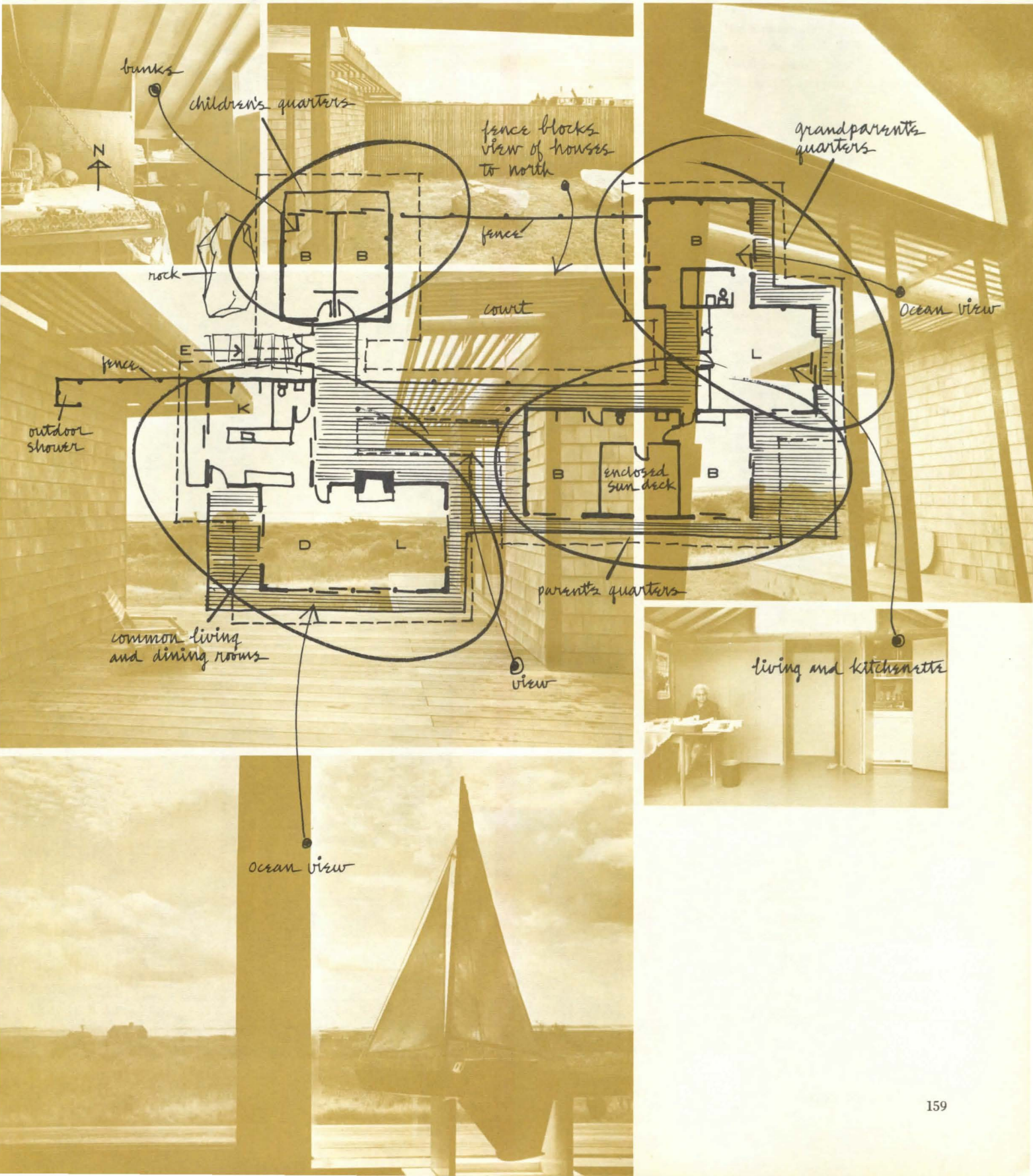




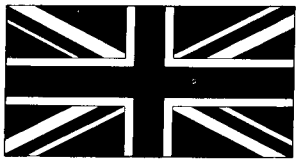
MULTI-UNIT HOUSE, *Shipton Under Wychwood, Oxfordshire, England.* **Architects:** *Stout & Litchfield.*

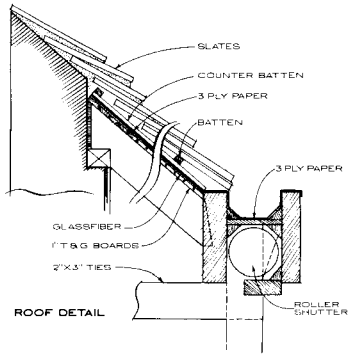


MULTI-UNIT HOUSE, *Chilmark, Martha's Vineyard, Massachusetts.* ***Architect:*** *Chester Bowles, Jr.*

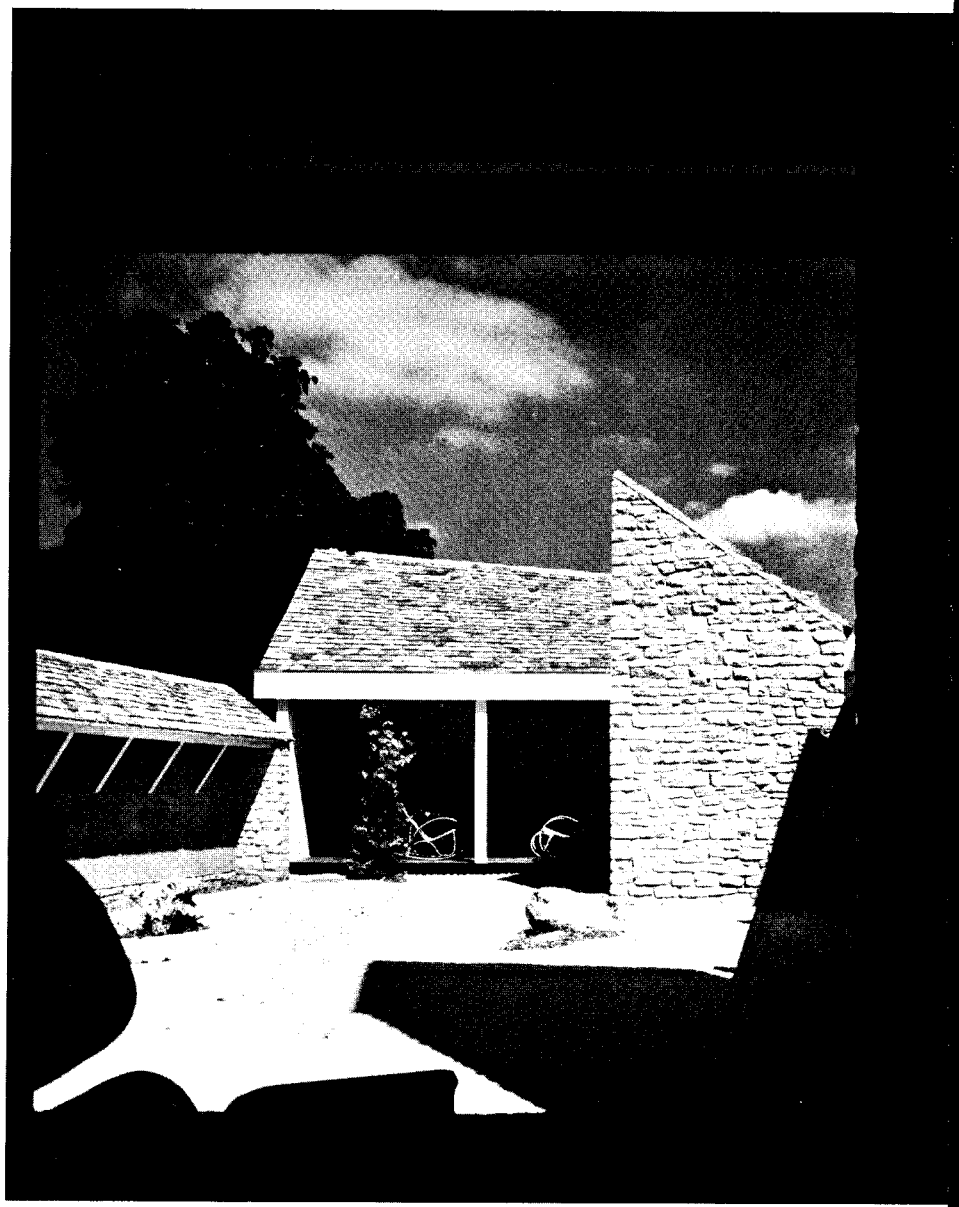


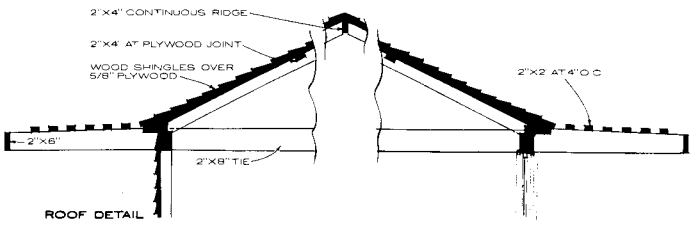
The English house reflects a type of Cotswold farm building with single pitched roofs and rough stone walls. The effect is a picturesque, rather casual grouping of slanting roofs and random volumes, based on an irregular plan. The house grows quite comfortably out of the landscape. It seems part of the land, and the land has that peculiar English quality of seeming part civilized and human. The New England house, on the other hand, adopts the double peaked roofs and all-over shingled look of Vineyard houses. The plan is rigid and the pattern is appropriately reminiscent of a puritan grandfather rather than a rollicking country squire. This house, with its brittle geometry, sits on wild, untamed landscape. It is a peculiar, and uneasy, juxtaposition.





ROOF DETAIL





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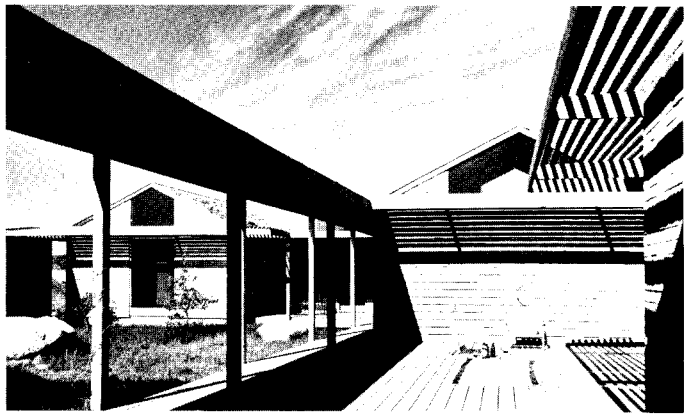
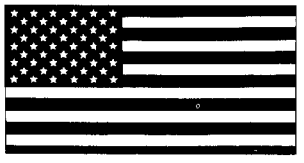
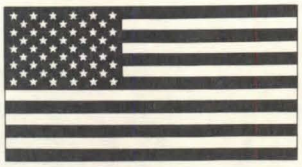
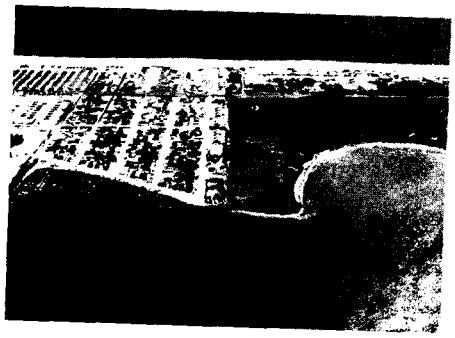




Both houses show (by accident or design) a taste for the pseudo-Japanese: for bits of rock protruding in the view. But while the English court contains genteel-sized stones tamed with gravel, the American rocks loom large and grass grows rampant. One stone is super-politely self-effacingly understated; the other lumbers in, like an uninvited Tyrannosaurus Rex *peeking around the porch. The fact is, however, that the dinosaur was invited. Before it was built, the whole house was shifted on the site, so that the rock could be included—and lined up with the rest of the geometrical plan (see plan, previous page).*



Both American (above) and English houses (below) have similar living-room spaces with exposed beams and rafters, and built-in furniture. The construction of the former—a simple wood frame—is much less expensive and designed for summer use; the latter, more of an all-year-round vacation house, has radiant floor heating.



Are Sanctuaries for Birds Only..?

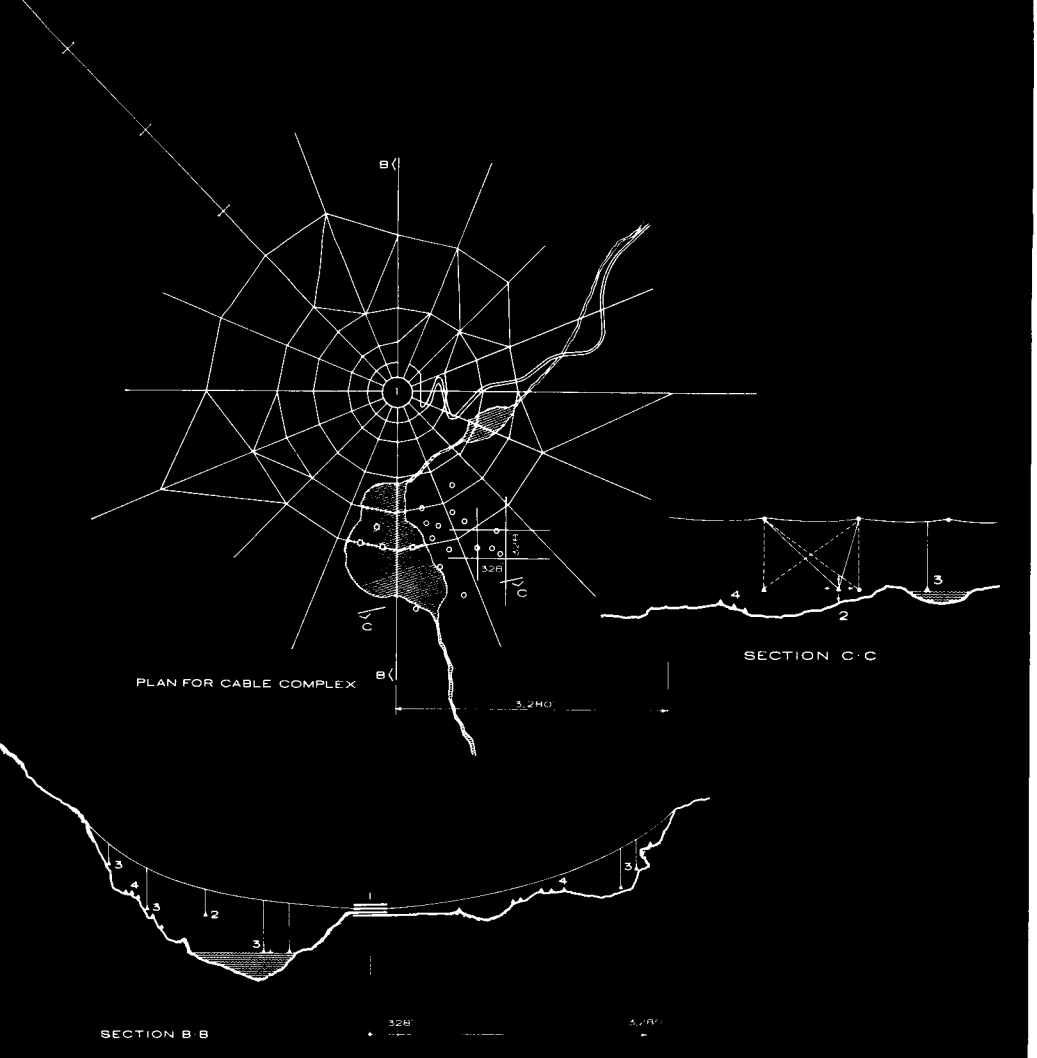
Have you ever been thrown out of a park just because you happen to be human? It comes as a shock, especially when you realize that birds may have the only decent spots left on the seashore. For instance, most of Island Beach, New Jersey (*photos this page*), with the exception of the State Park (*undeveloped area in photos*), has been steam-rollered. Dunes, brush, and trees have been leveled to a convenient flatness; the terrain is covered with suburban gravel, and row upon row of houses march across the drilling grounds. In man's eagerness to get to the beach, to lay himself out in the sand, he has destroyed all but the narrowest margin of sand.

One section, however—the State Park—has been preserved from marauding hands. Here, in sharp contrast to the adjacent development, nature is her old irregular self again; heaps of sand shift about in slow-moving dunes, trees and grasses grow and bend with the wind. Even if you cannot see the sea, it is undeniably near, and all the rich and varied aspects of the shore have been preserved. But this area is a sanctuary—a sanctuary from human beings. It requires a written permit to walk upon it, and if you pause beside the road too long, a park official will tell you to "move on—and leave it to the birds."

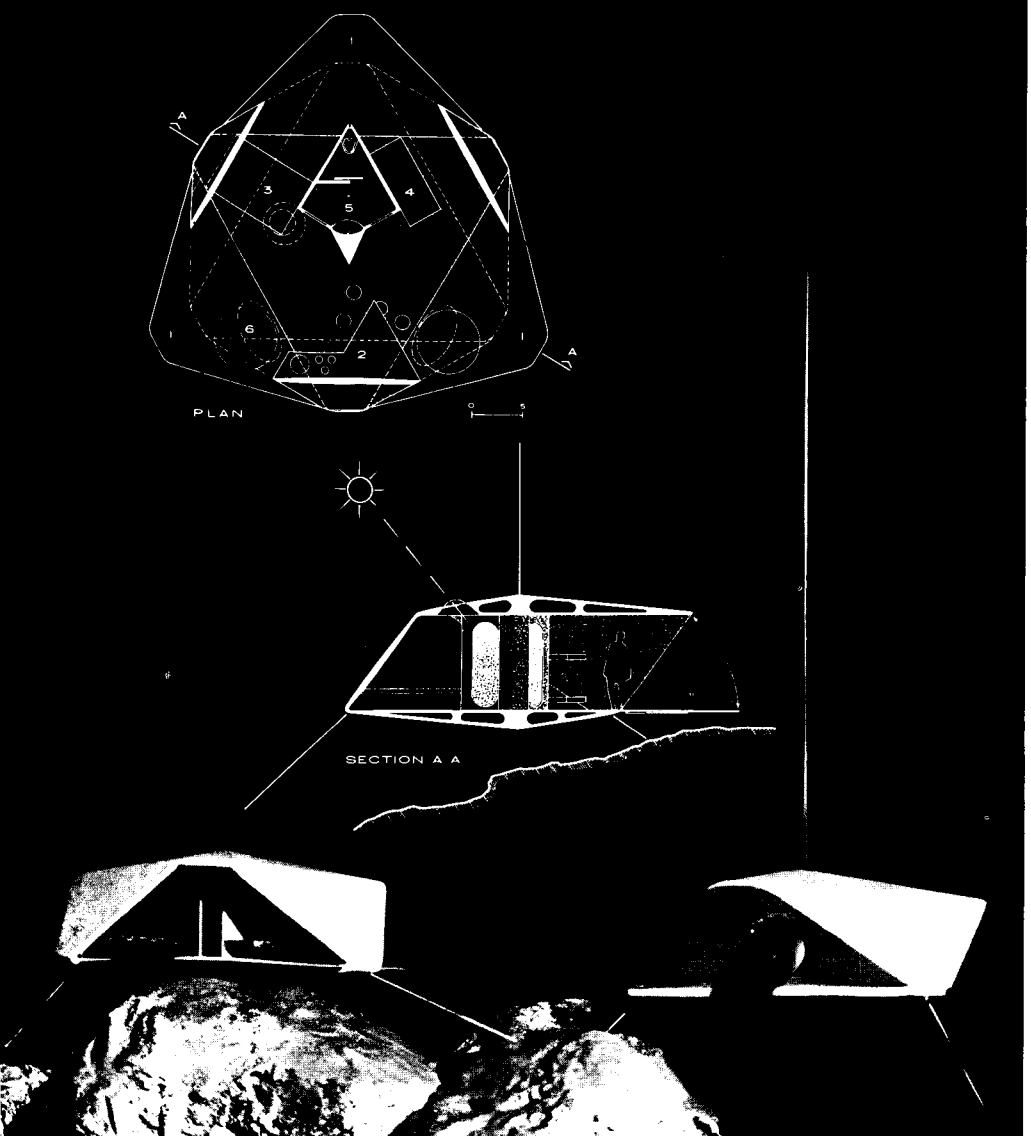
It is an ironic state of affairs—the kind of situation that often drives dreamers to nonarchitecture. Is it not possible to design a shelter that can be set down temporarily, and then removed without permanently marring the landscape? On the following two pages appear two such nonarchitectural schemes.

...For Cable-Cars?

Guy Rottier, a Frenchman from Nîmes, offers a couple of fanciful alternatives to the proliferation of the permanent vacation house and the consequent destruction of nature. The first is a cable-car city composed of mobile plastic cabins expedited from a terminal along a network of suspended cables resembling a spider's web. Once the cabin reaches a desirable location—cliff, clearing, or lake—it is attached by three cables, suspended from the top, or anchored in the water. The concentric cables of the web are used for tie-up lines; the radial cables are reserved for transportation to and from the center. There would also be mobile food and clothing centers—maybe even movies. Rottier estimates the cables could extend over a maximum area of 750 acres, and service 900 units. Doubtless someone could design a less bug-eyed habitat, but there is an advantage to a city that expands or contracts according to demand and that finally, at the end of the season, leaves the area as it was before—without people, buildings, or other ground clutter.



PLAN AND SECTION OF CABLE COMPLEX:
(1) Central storage station (2) Cabins en route to destination along radial cables (3) Cabins suspended in place from concentric lines (4) Self-supported cabins detached from cables.

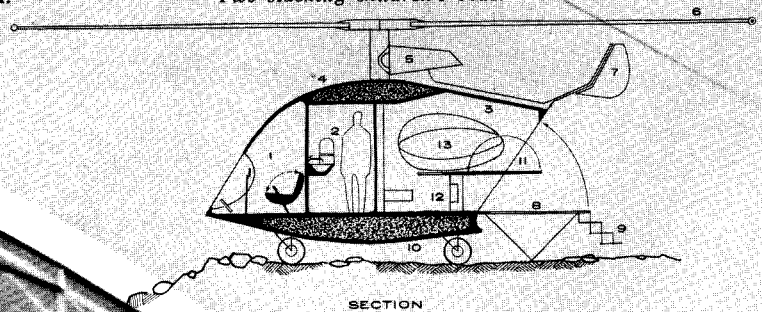


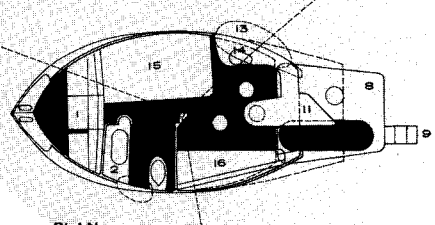
PLAN AND SECTION OF CABLE-CARS:
(1) Sides of cabin unfold into open platforms (2) Kitchen/dining space (3) Master bed (4) Children's bed (5) Toilet in triangular closet (6) Portholes.

. . For Helicopters?

In association with Charles Barberis, Guy Rottier also designed a helicopter for traveling vacationers. The plastic shell sleeps two adults and two children, travels at 34–68 mph, and requires only 9 sq yd or so to land on. It is probably the next best thing to being a bird.

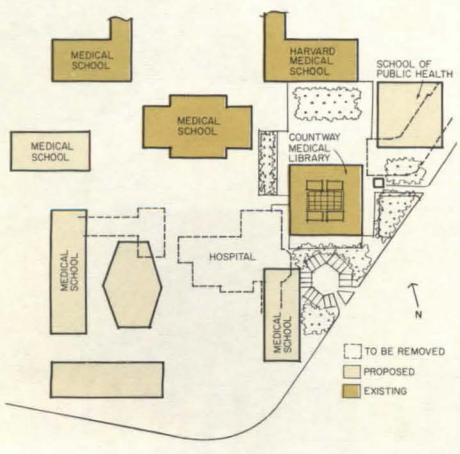
(1) Pilot's cabin (2) Bathroom (3) Main cabin (4) Mechanical equipment; water storage (5) Turbine engine (6) Rotor blades (7) Rotor tail (8) Translucent door and window hatch folds into terrace (9) Folding steps (10) Fuel; baggage (11) Folding table (12) Table base; cupboard (13) Window (14) Kitchen sink (15) Parent's bed (16) Two stacking children's beds.





THE COUNTWAY LIBRARY: Fresh Approach to Old Problems

THE FRANCIS A. COUNTWAY LIBRARY OF MEDICINE, *Boston, Massachusetts.* ***Architects:*** *Hugh Stubbins & Associates, Inc.; Hugh A. Stubbins, Architect; Peter Woytuk, Collaborator in Design; Gordon F. Anderson, Project Manager; Sebastian LaBella, Job Captain; John Lee Wacker, Site Planner; S.T. Lo, Color Coordination and Furnishings.* ***Site:*** *Irregular, restricted piece of land bounded by main thoroughfare, by several structures to be removed, and by two imposing marble structures of neo-classic style containing primary facilities of the Harvard Medical School.* ***Program:*** *Facilities to accommodate the combined collections, staffs, and services of the Harvard Medical Library and the Boston Medical Library. New buildings to serve students in the Harvard Schools of Medicine, Public Health and Dental Medicine, the faculty and research investigators of these schools, members of the professional staffs of the adjacent teaching hospitals, and members and Fellows of the Boston Medical Library, a group which includes the members of the Massachusetts Medical Society. The 750,000-volume library was to be an active instrument of education, access to the collection was to be direct and efficient, the setting pleasing, and the atmosphere peaceful.* ***Structural System:*** *Reinforced concrete frame; beam and flat slabs spanning from outer ring of double columns to four towers of inner core. All floor slabs were designed to support a uniform live load of 150 lbs/sq ft.* ***Mechanical System:*** *Library is totally air-conditioned and humidity-controlled by a central double-duct air system utilizing central steam. A high-velocity system of distribution is used throughout. The main supply and return riser ducts are integrated into the four vertical core towers, each distributing to horizontal zones. Major mechanical components and high-pressure equipment are housed in an underground equipment room located below the paved plaza and adjacent to existing utility lines. Special intake grilles receive fresh air near the rim of the forecourt planting area. Top floor is conditioned from an auxiliary system because of the dissimilarity of operating hours. This system also provides a special humidity control system for the critical rare book and special collections area. Duct systems were designed for low decibel ratings, lined with sound-absorbing material, and equipped with down-rated attenuators. Perimeter zone air-distribution system was designed for maximum flexibility and individual control. Large areas, such as underground bookstacks, are subdivided into separate zones for future flexibility. Where reader facilities are located, the exterior zones are conditioned through individual thermostat controls with perimeter outlets concealed above the open-cell luminous ceiling. Over the interior bookstack zones, conditioned air is introduced through a vent-spline ceiling system. Lighting is generally fluorescent, with low-brightness diffusers; incandescent limited to special effects and accents; stack lighting by continuous, parallel rows of single-lamp fixtures 4 ft on centers, running perpendicular to bookstacks; in upper-floor book stack areas, these fixtures run in concentric rows, to reinforce plan-form of building. Central court lighted by mercury lamps concealed high in overhead skylight; lamps are easily replaced through hinged glass panels of skylights. In periodicals area, luminuous panels, set between transverse beams, double as air ducts and supply acoustical absorption. Underfloor raceways provide outlets for telephone and electricity in all office areas.* ***Major Materials:*** *Reinforced concrete for framing; Indiana buff limestone for wall surfacing inside and outside; oak for most built-in furniture; anodized aluminum for window frames; carpeting and vinyl asbestos for floors.* ***Cost:*** *$6,284,000 (including fees, utilities, furnishings, landscaping) for 162,000 sq ft gross area.* ***Consultants:*** *Le Messurier Associates, Inc., Structural Engineers; Greenleaf Associates, Inc., Mechanical Engineers; Thompson Engineering Co., Electrical Engineers; Bolt, Beranek & Newman, Inc., Acoustics; George A. Fuller Co., General Contractor.* ***Photography:*** *Louis Reens.*



Hugh Stubbins' thoughtfully planned Library of Medicine at Harvard complements the surrounding neo-classic buildings, yet asserts itself stylistically.

Six years of design effort have gone into this library, and the completed building is without doubt one of the most thoughtfully planned and meticulously executed libraries anywhere. The design problem encountered here was by no means a simple one. As center of the medical community, the new library was to be expressed as a dominant element in a composition that already contained a number of impressive and massive elements in the form of the existing neo-classic structures of the Harvard Medical School. "Any new buildings added to the complex," remarked the architects at one of the early design conferences, "must stand up to them or be overpowered." At the same time, the architects were intent on unifying the new and the old and in utilizing all of the parts in the molding of new exterior spaces. Through use of related materials, control of building height, alignment of cornices, and careful proportioning, the architects have indeed managed to establish rapport with the existing buildings, but, for the moment, the new dominates with a certain stylistic overbearance.

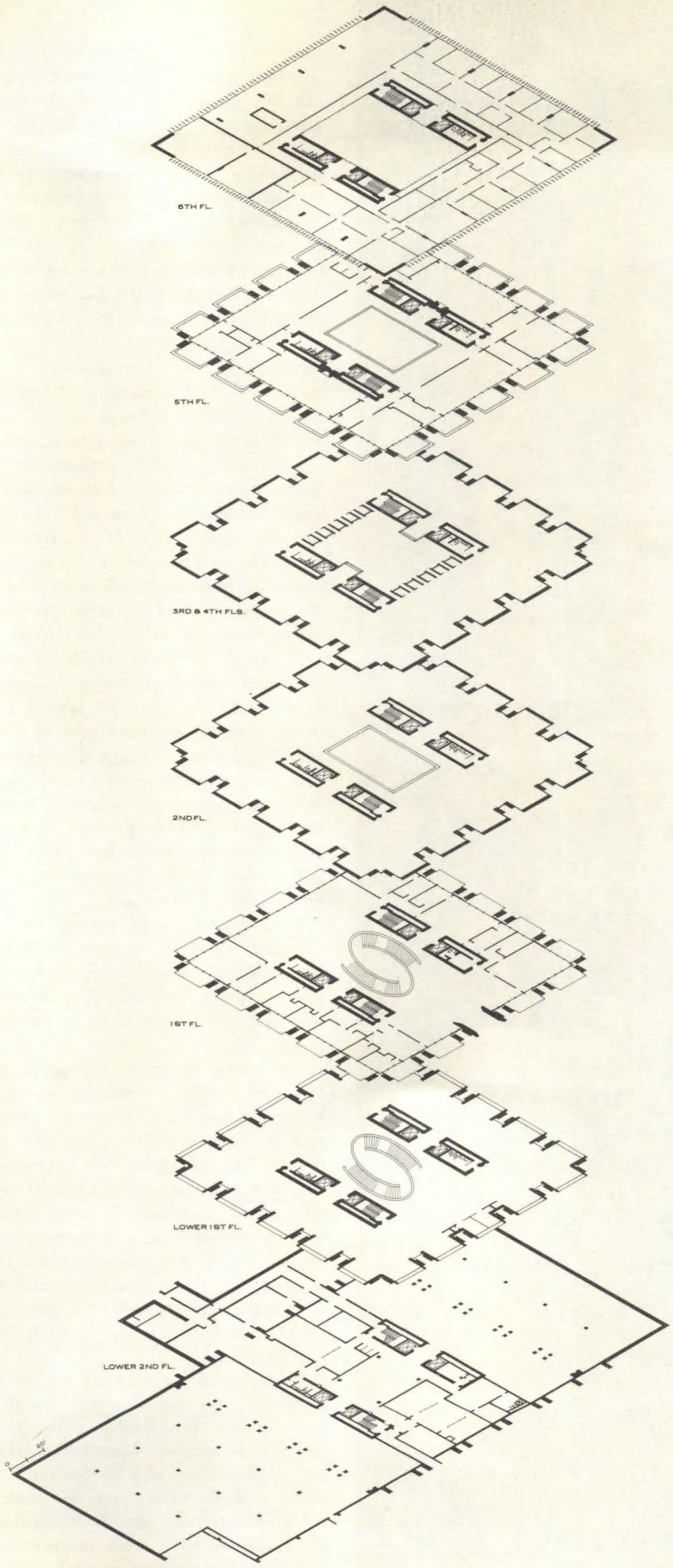
On the interior, on the other hand, all of the design effort has been directed toward creating a simple, sensible, and inviting work space. From the very start, the building committee insisted on an "active educational instrument" rather than the usual "storehouse of books." The

committee's independence was also displayed when, after a nationwide search for the ideal architect, Stubbins was given the job, because, aside from his many recognized talents, he had never designed a library and consequently was felt not to have any preconceived notions. This must have contributed to the blessed absence of the large reading room and the usually complicated calling system. Almost all of the books and periodicals, except for the rarest and most irreplaceable, are directly accessible on open shelves, and, most importantly, library users do their reading in small, intimate places within close range of the stacks. For the most part, these private reading spaces were gained by pushing the perimeter walls outward to form recesses between the double columns. In this position, they gain the benefit of natural light and views and are out of the stream of traffic. Within the small reading areas, the visitor is given the widest choice of arrangement: some of the carrels are equipped with comfortable seating; others are partitioned at eye-level; others have sliding doors to allow typing, dictation, conversation; some are, in effect, small offices to be assigned to research professors who will use the compartment for longer periods of time, some contain tables and chalkboard walls for use of conferences, and still others are entirely private, for individuals who prefer to view the activities in the court below.

Psychologically, the central court is extremely effective, not only in brightening the inner portions of the building, but also in tempting the curiosity of the reader toward further exploration on the other floors.

The same warm-hued limestone that was used on the exterior has also been brought indoors and plays an important role in preserving the architectural continuity. This is particularly apparent in the center court, where light from the roof openings brings out the rich texture, sharply defined form, and warm color of the material. Where concrete members are exposed, as in the precast concrete carrels of the center court, they have been closely matched in color to the Indiana buff limestone.

The other major material is dark oak millwork, used consistently throughout the building for display units, index tables, work counters, consultation tables, sliding sunscreens, and built-in furniture. Most of these pieces were designed by the architects, who have been unusually successful in using these furnishings to underline the clear-cut spatial order of the building.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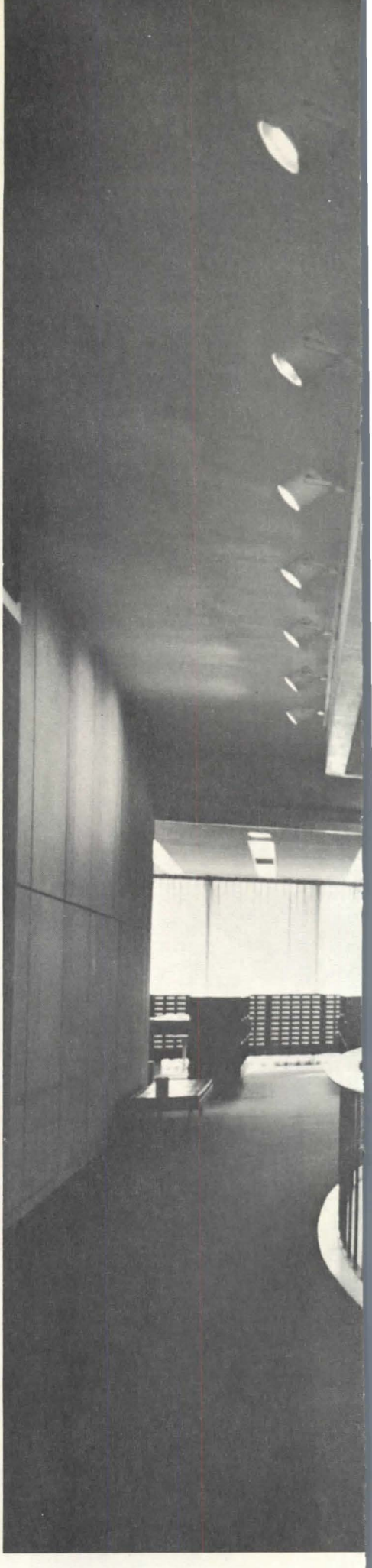
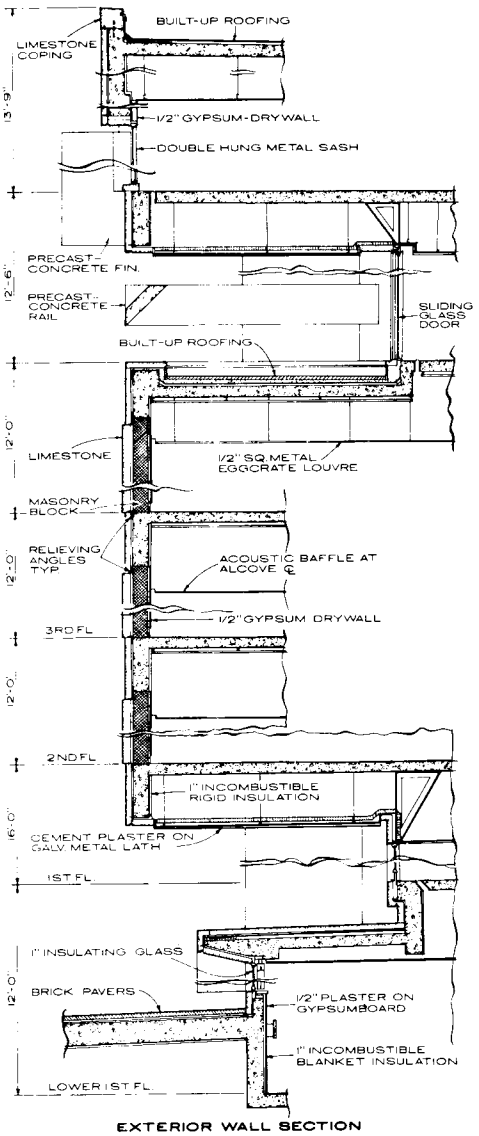
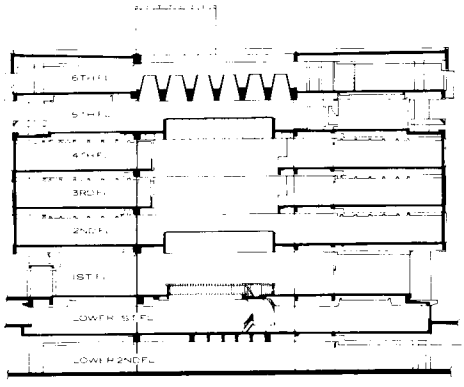
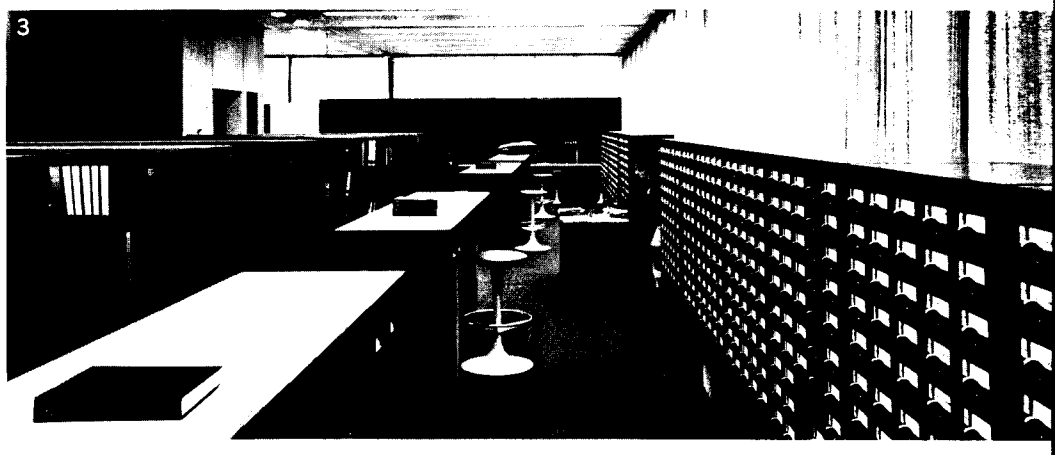


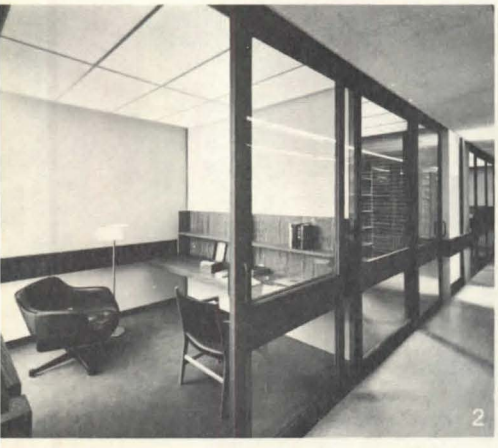


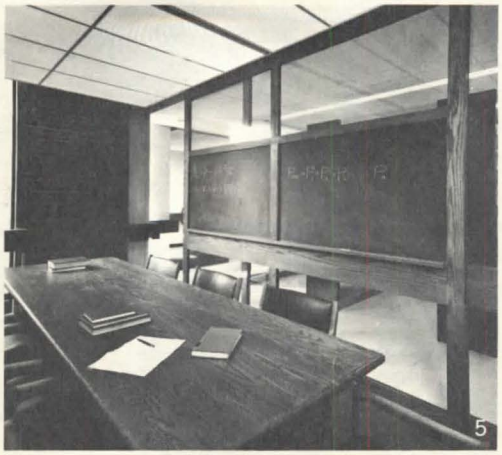
EXTERIOR WALL SECTION

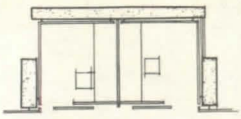


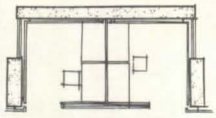


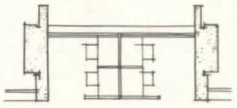
Carrels of the third and fourth floors projecting over the open court ***(1)****. Cornice soffit and balconies at top of perimeter carrels* ***(2)****. Card catalog files on first floor* ***(3)****. Information desk on first floor* ***(4)****.*






ENCLOSED INDIVIDUAL STUDIES


OPEN INDIVIDUAL ALCOVES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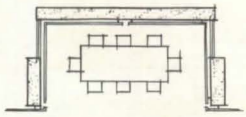
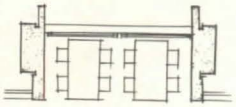

OPEN TABLE SEATING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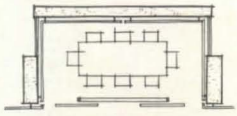
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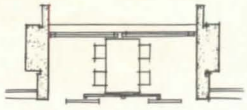
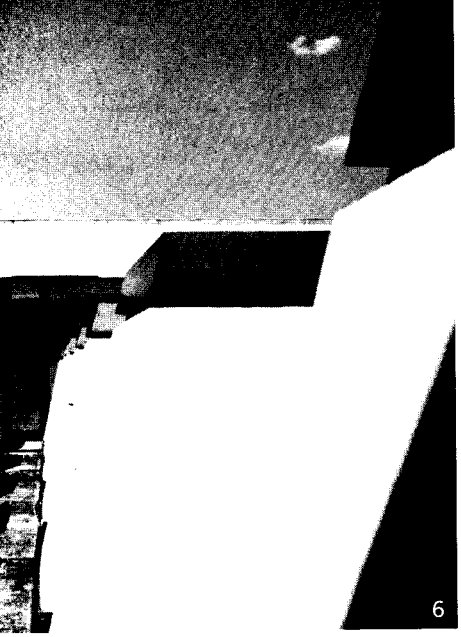

ENCLOSED TABLE SEATING

Some typical fifth-floor spaces: Semiprivate study alcove ***(1)****. Private corner study alcove with locking door* ***(2)****. Lounge alcove* ***(3)****. Conference room alcoves* ***(4, 5)****. Roof skylights* ***(6)****. Physicians' reading room* ***(7)****. Combined reading, social, and lecture room* ***(8)****. Study room* ***(9)****. Portrait gallery surrounding open court* ***(10)****. 108-seat auditorium* ***(11)****. Open court at second floor and stair from first floor down to lower level periodical room* ***(12)****.*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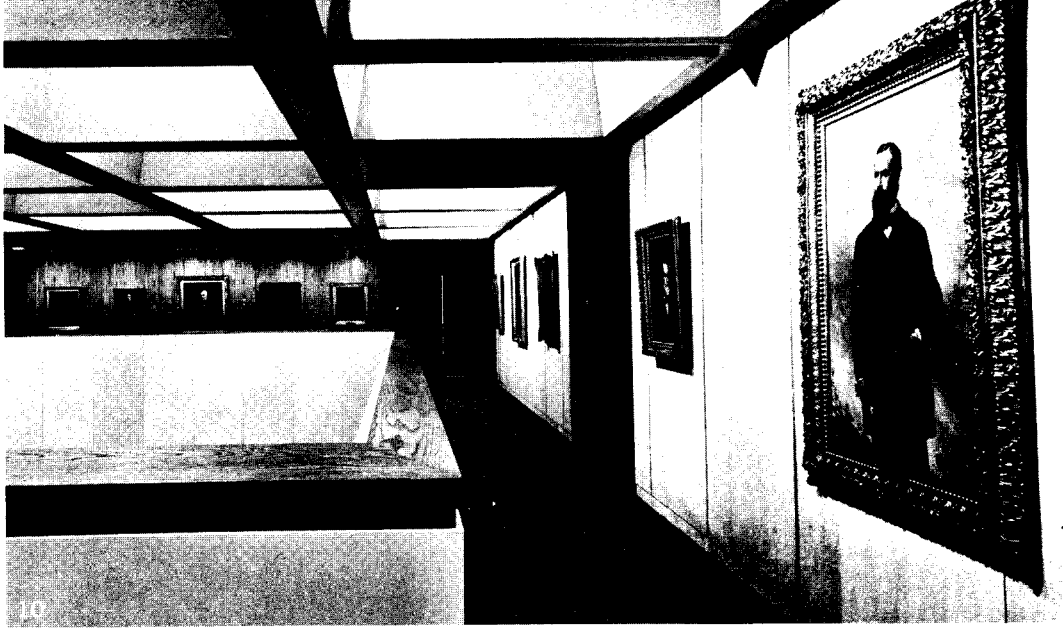
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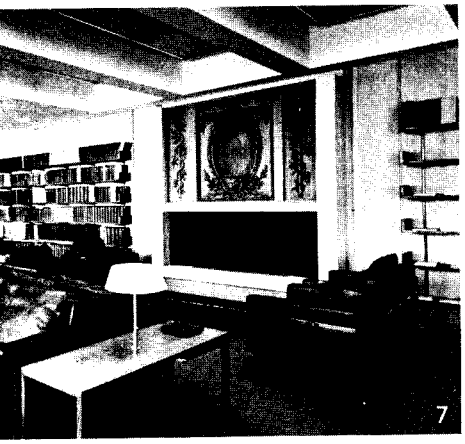
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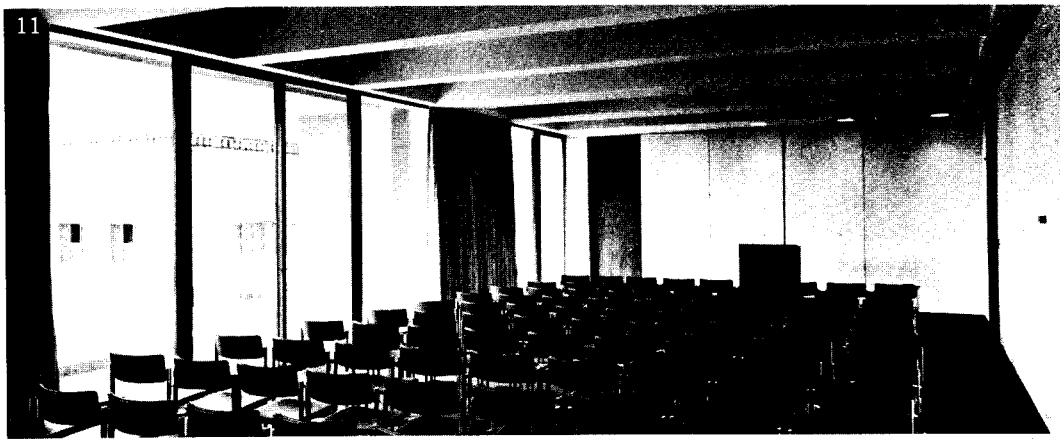
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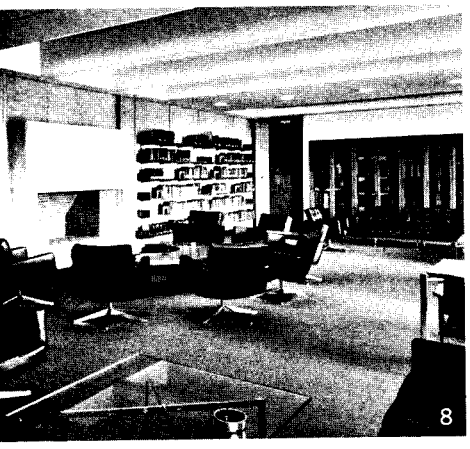
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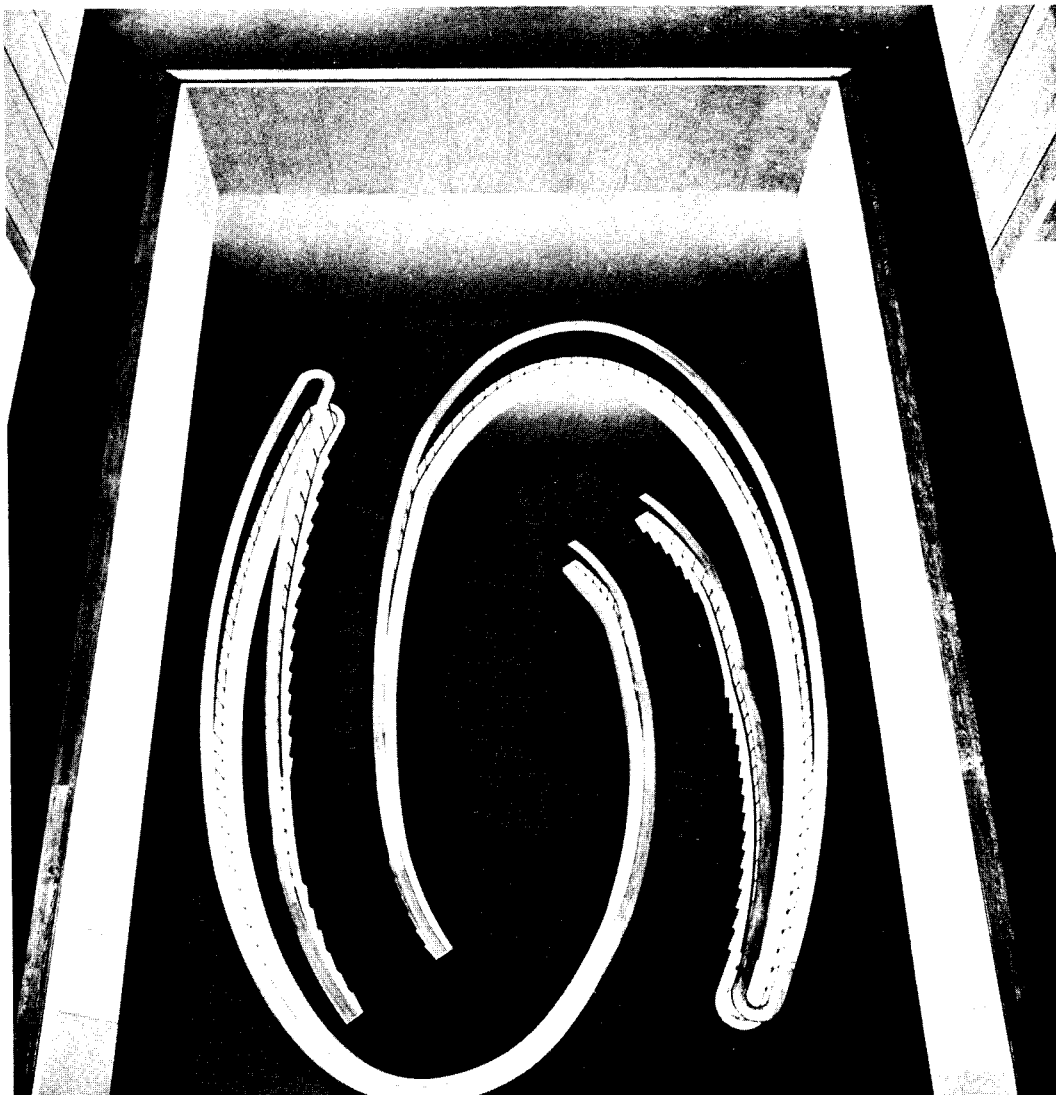

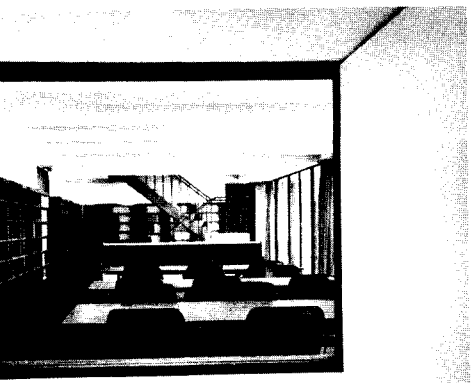

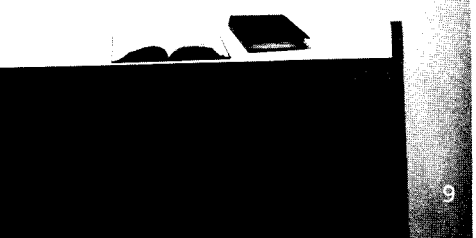
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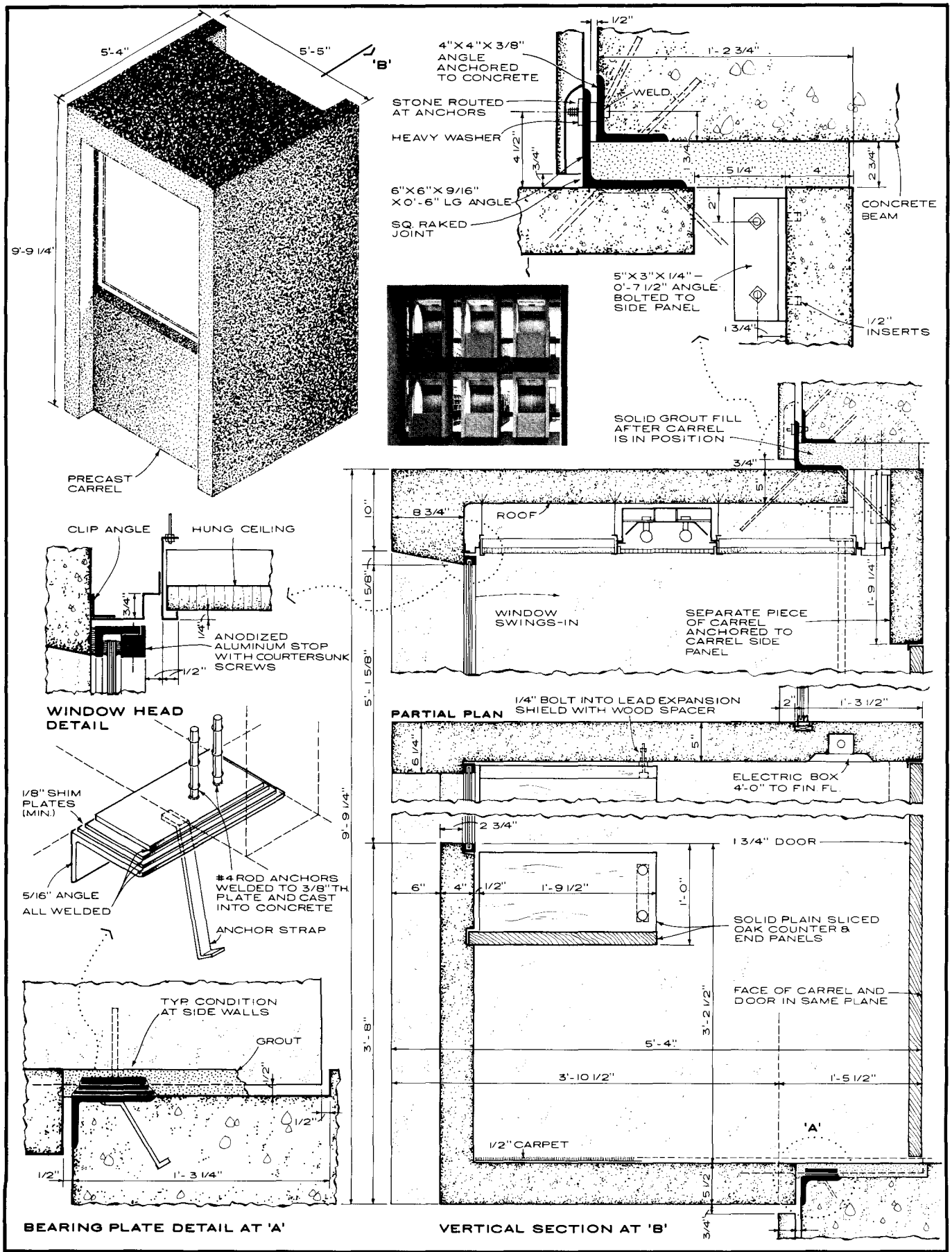
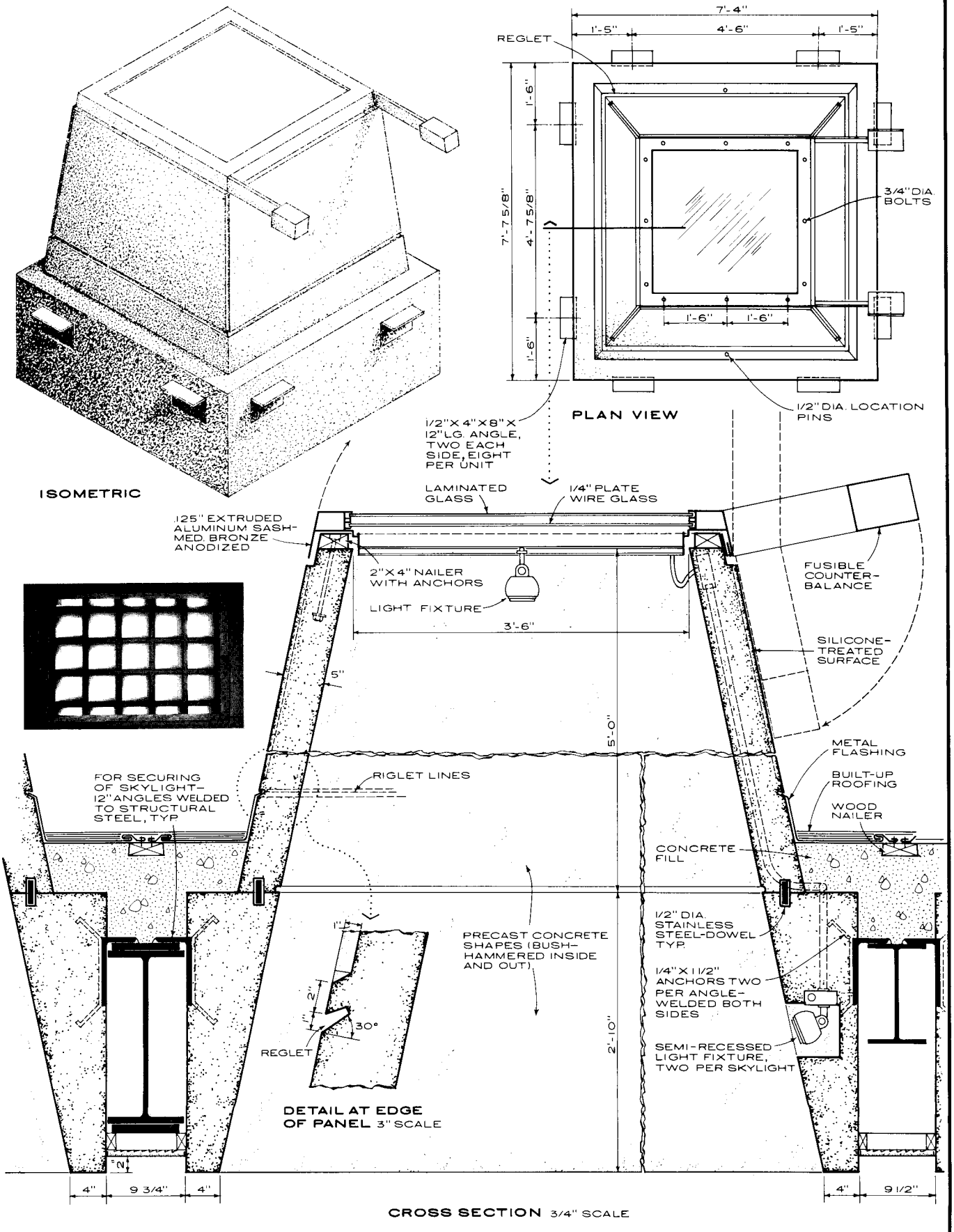


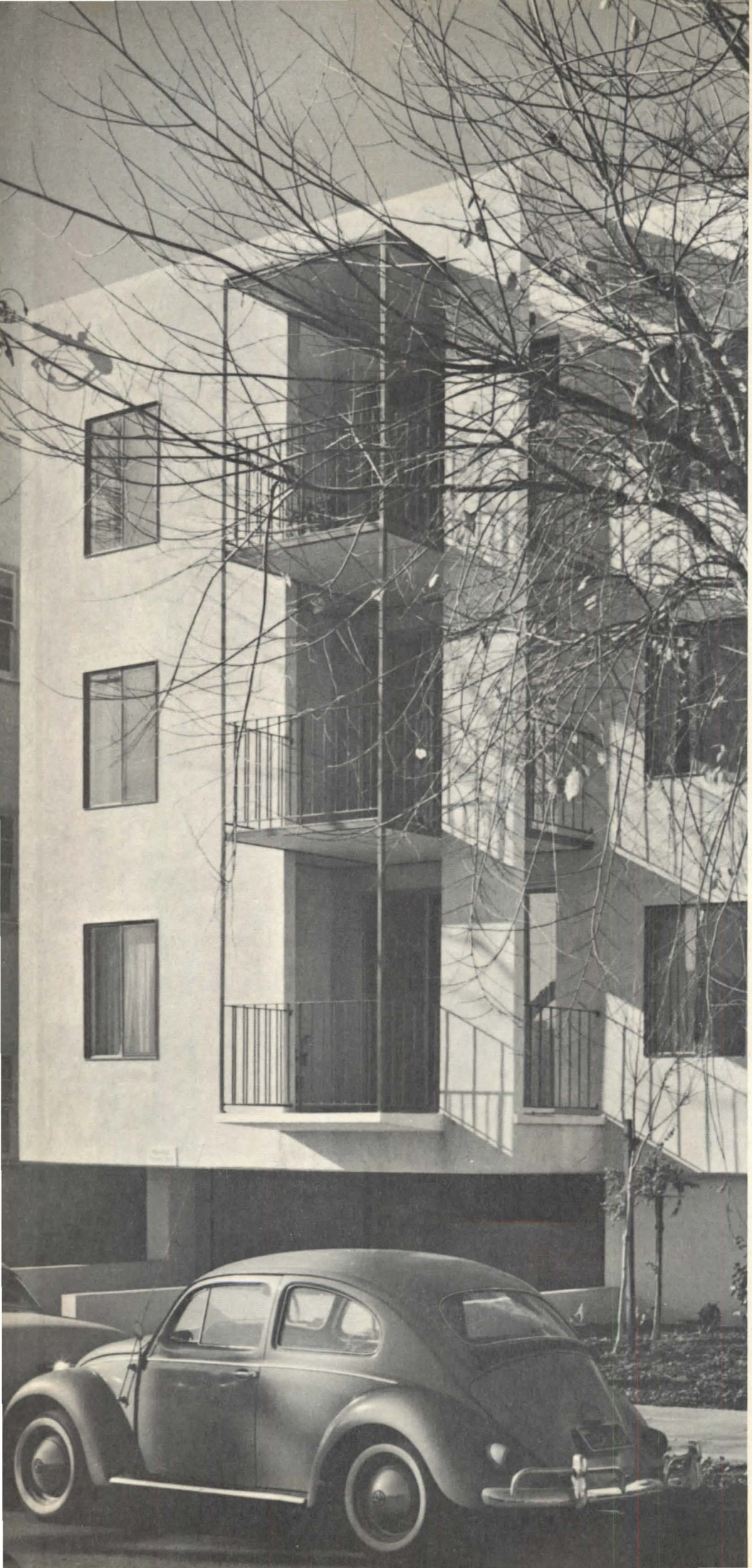
FRANCIS A. COUNTWAY LIBRARY OF MEDICINE: Boston, Mass.
HUGH A. STUBBINS, Architect

SELECTED DETAIL
CARREL



FRANCIS A. COUNTWAY LIBRARY OF MEDICINE: Boston, Mass.
HUGH A. STUBBINS, Architect

SELECTED DETAIL
SKYLIGHT



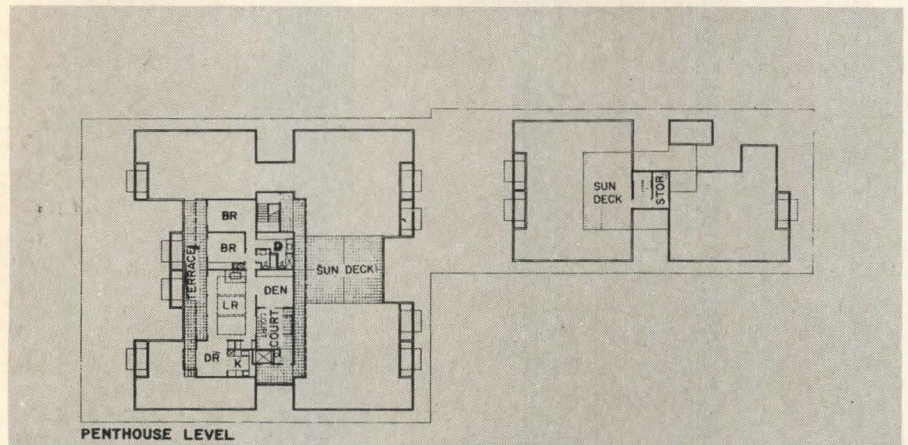
MAXIMUM USE OF MINIMUM SITE

TERRACE EAST, TERRACE WEST, *Berkeley, California.* ***Architect:*** *Roger Lee Associates; Ward Higgins, Partner-in-Charge.* ***Site:*** *Three lots combined into one L-shaped parcel; 12-ft sloping grade from east to west; two western lots commercially zoned; eastern lot residentially zoned.* ***Program:*** *Provide a maximum number of medium-rental apartments, predominantly two-bedroom, two-bathroom units, with private outdoor spaces and common swimming and sunning areas — a program requiring a maximum use of a minimal site.* ***Structural System:*** *Poured reinforced concrete for garage and first floor; garage walls and parking screening walls of concrete block—wood frame construction above first floor. Exterior finish is stucco painted white; sliding steel sash windows; iron balcony stanchions and railings painted black; hydraulic elevators. Interior construction: wood stud plasterboard partitions; apartment dividing partitions of double staggered stud construction with 5/8-in. gypsumboard over 1/2-in. fiberboard. Stock wood interior trim, 1 3/8-in. hollow core interior doors.* ***Mechanical System:*** *Individual apartment gas-fired hot-air units.* ***Cost:*** *$497,500, including landscaping, swimming pool, carpet, and drapes. Total building area 43,520 sq ft. Cost per square foot, $11.00. Cost per rental sq ft, $15.66.*

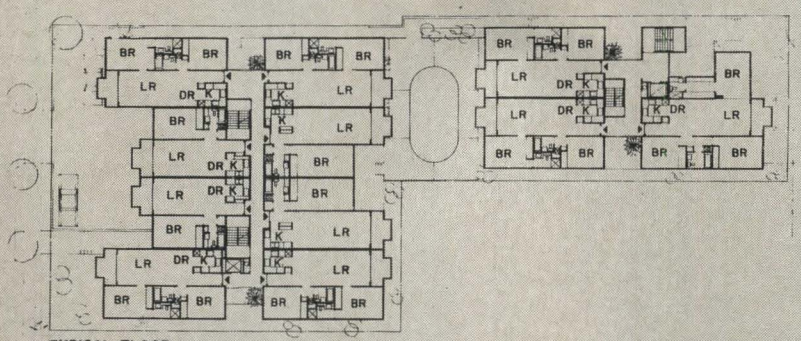
An apartment complex that on its east borders a residential street and on its west a commercial thoroughfare was brought together in harmonious union by Robert Lee Associates in Terrace East, Terrace West.

1

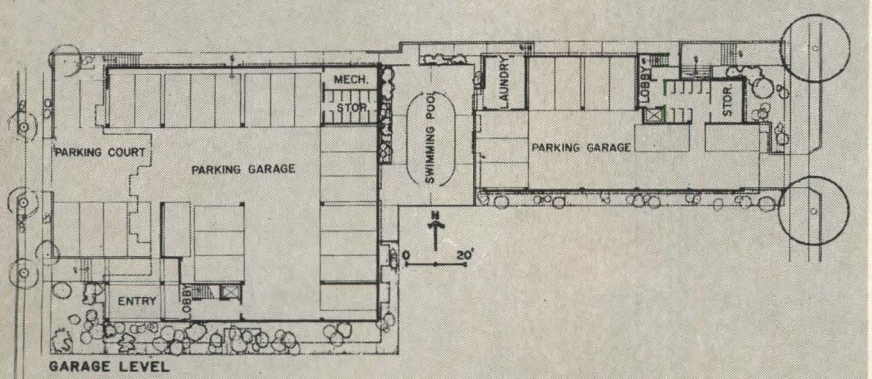
(1) Western elevation faces a commercial street. (2) Interior corridors terminating in balconies and penthouses. (3) Corridor balcony looking toward Berkeley hills. (4) Looking down on corridor balcony.



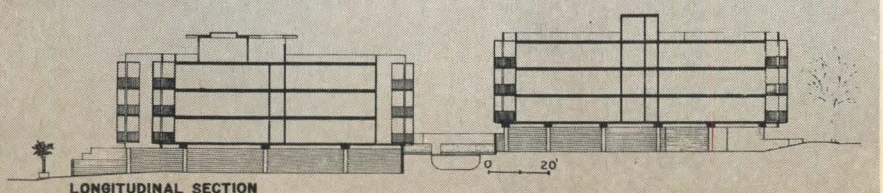
PENTHOUSE LEVEL



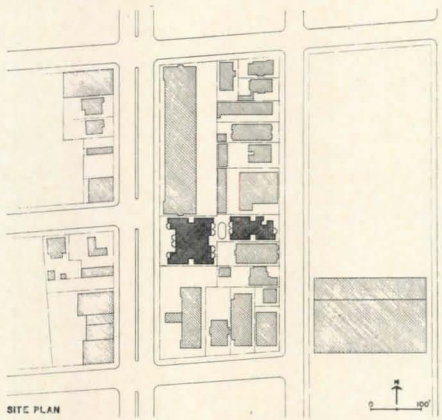
TYPICAL FLOOR



GARAGE LEVEL



LONGITUDINAL SECTION



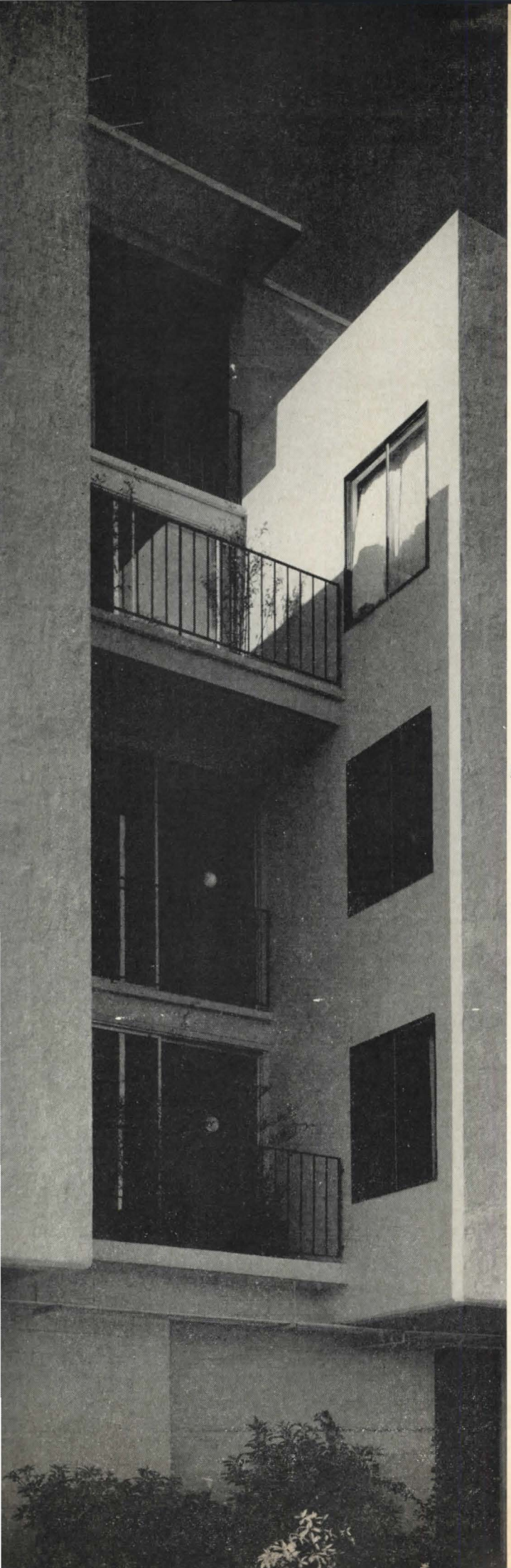
The two buildings create a little of the Mediterranean across the bay from San Francisco, the "Naples" of California. While the Terraces do not have the problems of Neapolitan density, the architects were faced with severe space limitations. However, they successfully designed a number of well-integrated units on a limited site without creating any feeling of confinement.

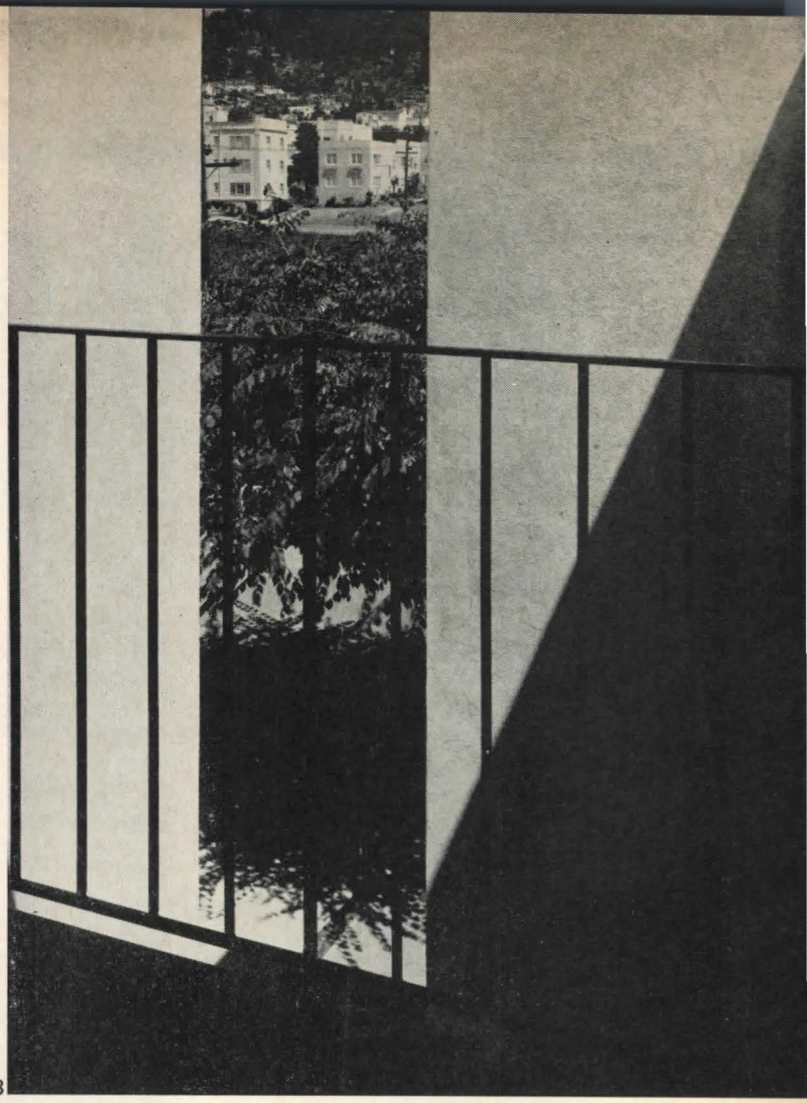
The Terraces were built on three city lots. Two contiguous lots front a commercial throughfare on the west of the site, backed by a third lot to the east that faces a quiet residential street. The three combined form an L-shaped parcel. The western lots are surrounded by large commercial buildings, while the eastern is situated among smaller residential structures.

In making the western building twice the size of the eastern, a harmonious scale was achieved with both commercial and residential buildings. Variation of balcony pattern adds interest yet does not break design continuity.

The 12-ft difference in elevation afforded the opportunity of creating a variety of different levels, adding considerable interest to circulation.

Facing the Terraces to the west is a street termination. The west-to-east





2 3

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passage of the Terraces seems to provide a much needed avenue from this street and commercial area to the botanical gardens (see site plan). Although the route does have obstructions, it is not without temptation: It may well be frequented by small boys carrying bathing suits who do not complete the trip.

Vistas to the east and west are exciting. Those to the north and south, however, are of little interest, so the architects chose to leave these walls without fenestration. Open light wells at their center provide a terminus for north/south interior public corridors that end in open balconies. They also provided window openings for the east/west oriented bedrooms, which have been staggered to provide increased privacy.

Full advantage has been taken of the temperate bay area climate. Besides opening the interior cores, all apartments have balconies, which are recessed into the building and are accessible from sliding glass living-room doors. Each balcony frontage affords its own varied visual interest. Those to the east provide views of the botanical gardens and the Berkeley hills beyond; the western balconies share the excitement of the commercial street.

The balconies, in deeply perforating the exterior walls and combining with the screening walls, provide shade and give the sculptural impression of a building within a building.

The Terraces are located a few blocks from the University of California campus and have some student occupancy. The two-bedroom, two-bathroom units, which predominate, are ideal for students sharing quarters. For those who can afford greater luxury, a penthouse is available atop the western building; for those who who can afford less, there are one-room units. There are also a number of bedroom/living room/single-bathroom apartments.

Parking has been provided underneath both buildings, with screening walls at the western building to mask it from the street.

Terrace East and Terrace West, although in complete harmony with each other, conform to the surrounding buildings in materials and scale only—a matter of architectural necessity. The encompassing residential buildings of the California, crenelated, peaked, stuccoed, half Aztec school are in total disregard of their environment. The Terraces, by contrast, have reintroduced the intelligence of earlier Spanish California buildings, which also knew well how to avail themselves of advantages in site and climate.

An apartment balcony view, looking toward the botanical gardens.

THIN SLAB KEEPS CONCRETE OUT OF SWAMP

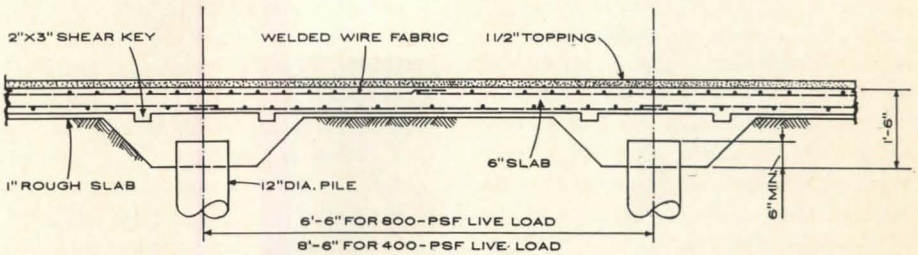
Since swampy soil could not support 6-in.-thick slab, contractor cast 1-in.-thick slab to support permanent slab until concrete cured enough to support itself.

Waterlogged soil at a Philadelphia site was so unstable that a contractor could not cast a floor slab designed to span between pile caps because the soil would not support the weight of the green concrete. The contractor first had to cast a 1-in.-thick rough concrete slab, which the soil could support, and then cast a 6-in.-deep reinforced slab on top of it.

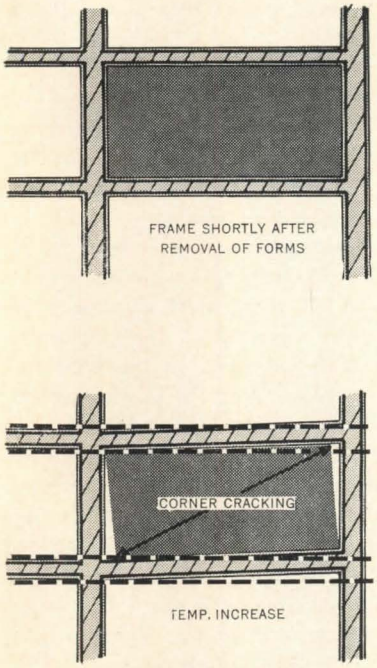
The floor slab, with a 1½-in. topping, is designed to carry 400-psf and 800-psf live loads at the 500,000-sq-ft Acme Market Distribution Center, South Philadelphia. Knowing that the soil could not carry a fully loaded slab on grade, the designers called for a flat-plate floor slab spanning between pile caps. This design has the added advantage of reducing the number of pile supports required for a slab spanning between grade beams. In, fact, the engineers estimate that flat-plate design saved 650 piles costing $40,000.

Piles are spaced on 8½-ft centers under one-third of the building that will carry 400-psf live loads. The other two-thirds, carrying an 800-psf loading, stands on piles spaced 6½-ft apart. Pile driving started in summer, and by fall the subcontractor had completed driving 11,000 tip-bearing piles to an average depth of 33 ft. Conical caps atop the piles taper from 50-in. diameter at the top to 28-in. diameter at the bottom of the 11-in.-deep cap. The contractor cast these caps monolithically with the 1-in. rough concrete slab that formed a working platform for constructing the warehouse floor slab. After workmen cast the thin slab over the pile caps, they pressed four short lengths of 2 x 4 lumber into the wet concrete to make a box-shaped shear key around the cap. This key helps transfer horizontal shear stresses from the structural slab into the supporting caps.

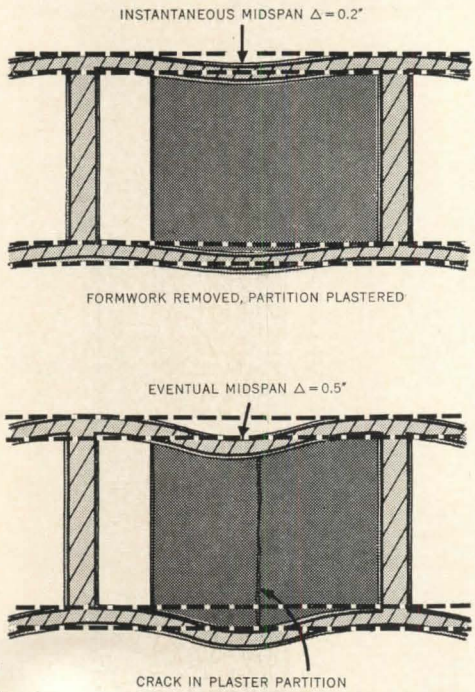
The designers, Alexander Ewing & Associates, Architects-Engineers of Philadelphia, offered bidders the choice of reinforcing the slab with steel bars or with welded wire fabric. The successful concrete contractor bid welded wire fabric at $170,000 for 828 tons of fabric and 17 tons of accessories, in place. This bid came in $10,000 lower than for bars, probably because the higher yield strength reduces the tonnage required. Also, the fabric can be handled more easily, which cuts down on site labor costs. Accessory costs were also reduced from $25 per ton of fabric to $10.50 per ton by taking advantage of the preliminary 1-in.-thick concrete slab. Instead of setting the reinforcing on chairs to give adequate cover between the underside of the steel and a crushed stone base, the contractor used 1-in.-thick concrete blocks to raise the reinforcement. Similarly, for the top steel, the contractor used short lengths of chairs instead of continuous bolsters.



WHY PARTITIONS CRACK IN HIGH-RISE BUILDINGS



TYPE A CRACKING
FIGURE 1



TYPE B CRACKING
FIGURE 2

Several phenomena contribute to cracking of plaster partitions in high-rise buildings, but main cause is movement of the structural frame.

By H. Omson, Technical Manager of the Gypsum Association in Chicago, Illinois.

Extensive cracking of partitions occurs in many high-rise structures throughout the United States. A research study of this phenomenon, made by Wiss, Janney, Elstner & Associates, Consulting Engineers of Des Plaines, Illinois, shows the primary cause of two predominant types of partition cracking to be directly related to structural movement. This movement results from racking of the structural frame, differential expansion of columns, or deflection of the flat-plate floor slabs. Floor slab deflection has become more pronounced with the advent of floor systems that use wedged-in-place partition systems such as those found in flat-plate type buildings.

Two basic types of cracking patterns have been identified. Type A is found primarily in the upper floors of high-rise buildings where exterior columns are exposed. This type of partition cracking is a racking stress caused by a differential temperature movement of structural elements that surround and support the partition. Type B cracking, generally found near the center of a partition, appears to be the result of flexural tension in which the wall panel tries to conform to the deflected floor. All available evidence reveals that nonloadbearing partitions specified in high-rise construction—with flat-plate floor slabs, exposed exterior columns, or both—may be subjected to tremendous loads.

Historically, investigators of partition and ceiling cracking have concluded that the partition cracking was caused by one or more of the following:

- Shrinkage restraint in the material, or movement in the base or frame that supports the surface materials
- Differential foundation settlement
- Quality of materials
- Seismic forces
- Movement of structural framework

However, it is now believed that the last cause—movement of the structural framework—is the chief culprit in cracking panels at midspan (type B) and at the corners (type A). Studies of models and actual structures support this theory.

Evaluation of recent problems in high-rise buildings reveals that restrained shrinkage is not usually a primary cause of partition cracking. Type A cracking is usually confined to the upper floors, with the intensity of the cracking pattern increasing floor by floor. Since temperature and humidity conditions are usually uniform throughout the building, shrinkage problems are not restricted to the upper floors. Moreover, the cracking patterns are typical of a racking distortion. The partition is racked and distorted as the surrounding frame moves from a rectangular shape to that of a parallelogram.

Type B cracking is usually found throughout the structure. However, type B is characterized by vertical cracks that start at the base with a wide gap, gradually decrease in magnitude, and then disappear as they move vertically toward the ceiling. Shrinkage cracks would normally be uniform; and they can also be repaired. Type B cracks do not stabilize, because they continue to recur even though repaired three or four times in a 12-month period.

Differential foundation settlement can be eliminated as a source of either type A or type B. Cracking from this source would neither be confined to the upper floors, as in type A, nor dispersed throughout the structure, as in type B, because it would be concentrated in the area where structural elements have settled. Seismic forces can also be eliminated as a source of the problem. Neither type A or type B is similar to those produced by these forces.

There are two reasons why quality of materials is not often assumed as the culprit. First, the problem of cracking is too closely associated with a particular building type, regardless of partition type. And, second, the problem is geographically much too widespread. This leaves structural movement as the primary cause. Structural movement may be caused by wind, temperature variation, force of gravity, volume change in the framework elements, or cold flow of materials. Wind should not be dismissed as a factor, but it is not likely to be the primary cause of type A, nor is it likely to have anything to do with type B.

Type A cracking is almost exclusively associated with buildings that have exterior columns, shear walls, and spandrel

beams either partly or completely exposed to outside temperatures. The inside beams are not subjected to great temperature changes; the exterior columns, however, are exposed to a wide range of temperatures that cause an appreciable movement in the members.

According to E. E. Ellwood, Director, Architect Service, United States Gypsum Company, the free movement in a 30-story building with 300-ft-high steel or concrete columns exposed to a 100 F temperature change can be calculated as follows:

$\Delta = 0.000006 \times L_x \ (T\text{-}T_o)$

$\Delta = 0.000006 \times (300 \times 12) \times 100 = 2.16$ in.

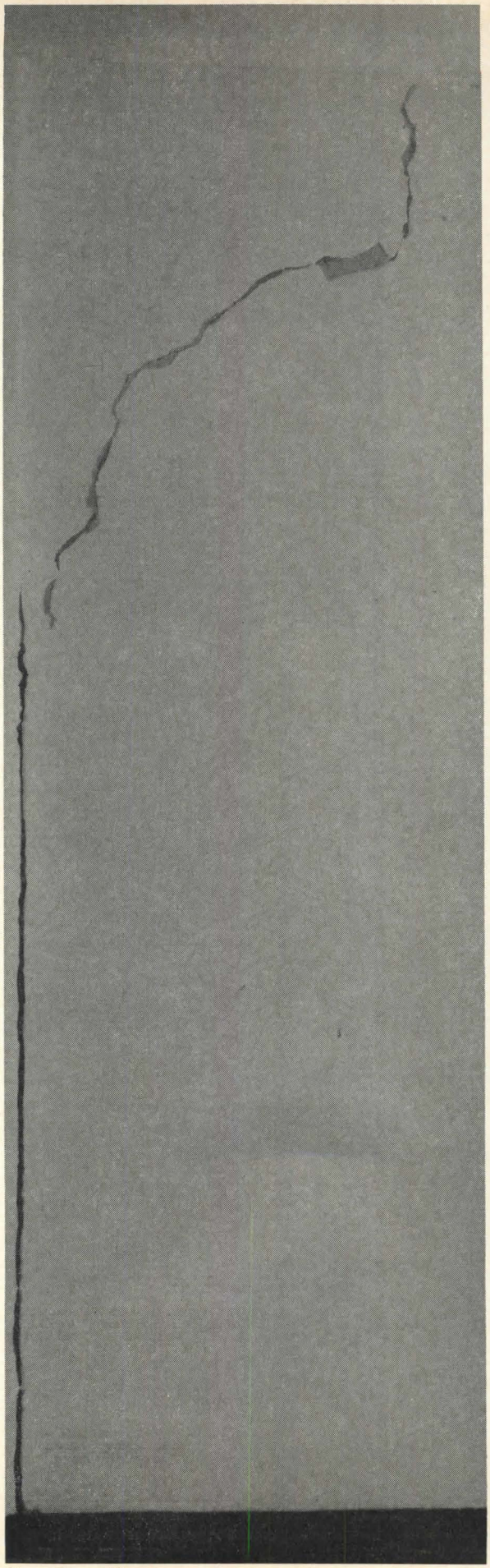
Where Δ = free expansion; L = column length in in.; $(T\text{-}T_o)$ = change in temperature, degrees F.

Ellwood points out, however, that the total movement will probably be no more than 30 per cent of this amount because of the stiffness of the frame and degree of the column exposure. As the outside column, which is exposed to temperature variations, moves up and down with respect to the inside column, cracks and gaps can be expected in two corners of partitions that connect the columns. Evidence of perimeter crushing will show up in the two opposite corners. In other words, the partition connected to the column is forced to become a shear wall for which it is not designed. Partitions parallel to the outside walls are usually unaffected.

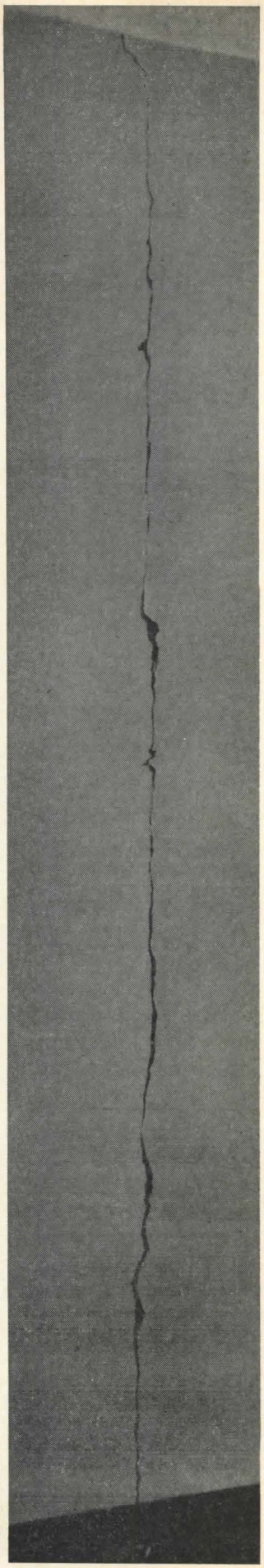
Type B cracking is usually caused by floor deflection that increases for some time, due to creep or cold flow of the slab. It may amount to two-and-a-half times the initial dead-load deflection.

During the design stages, architects should anticipate the structural movement in the frame and deflection in the floor system. All available data reveals that exposed concrete columns and shear walls can be safely used in structures from 6 to 10 stories high without creating excessive stresses on most nonloadbearing partitions. Beyond these limitations, a control joint must be provided at the periphery of the partition. These control joints must compensate for the movement as well as maintaining the required fire protection and sound isolation.

It is economically unsound to develop nonloadbearing partitions that would resist the stresses imposed by movement of the structural frame. Architects and engineers should be aware of this problem, and compensate for it in design. Moreover, manufacturers must continue their research into adequate control joints in order to develop partition walls that can accommodate building movements without sacrificing current economies.



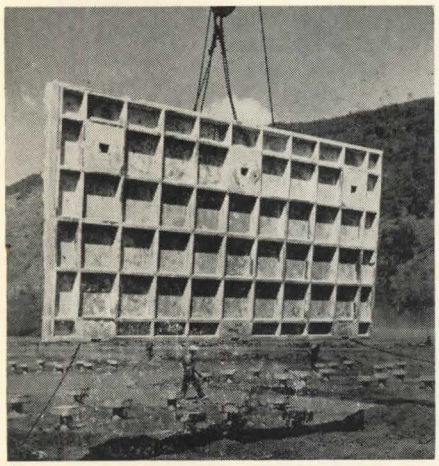
Type A cracking



Type B cracking

Photos: Cortlandt V. D. Hubbard

LOW-COST HOUSES CAST IN PLASTIC FORMS



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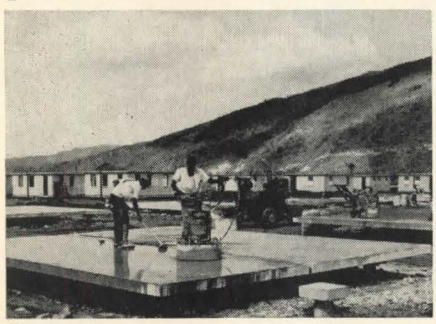

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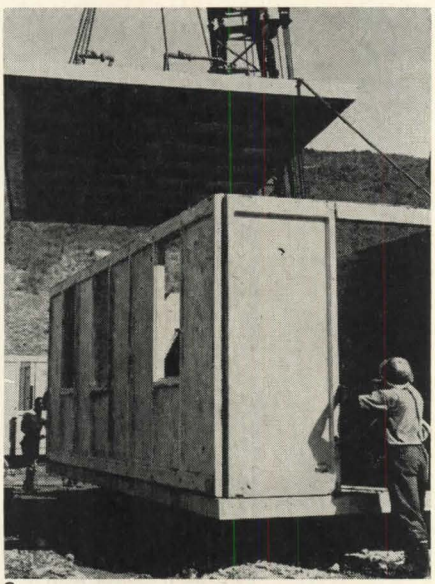
(1) Precast, waffle-slab floor panels sit atop piles driven 6 ft. into ground. (2) Grinders finish terrazzo surface of floor slabs. (3) Crane lowers roof panel onto wall units. Contractor then connected panels to each other by welding steel plates embedded in the precast concrete. (4) Small, 500-sq-ft, low-cost houses are designed to withstand tropical hurricanes and earthquakes.



3

Welding precast concrete panels together produced low-cost houses strong enough to resist tropical hurricanes. Plastic forms yield smooth concrete finish.

To keep the price of a low-cost house down to only $4200 requires a lot of ingenuity, even in the West Indies, where land and labor are cheaper than in the United States. But a firm of architects in Kingston, Jamaica, achieved this low-cost price with a concrete house assembled from 16 precast panels welded together to resist hurricanes and earthquakes. The concrete house, which is suitable for most tropical climates, cost $2000, and the serviced 37′x65′ lot cost $2200.

The architect-engineer, Wilson Chong & Associates, rejected conventional prefabricated systems because the cost exceeded the government housing agency's budget for 1900 houses. So, to keep within the budget, the firm developed a design for waffle-slab panels that reduced the quantity of concrete without diminishing the strength of the components. Thus walls can be 2-in. thick, and floors and roofs 1½-in. thick with ribs, spaced 28 in. and 32 in. apart, adding another 4 in. to the panel thickness.

Two features of this design overcame drawbacks common to precast concrete house construction: field connections between components, and a uniform, high-quality concrete finish. Chong simplified field connections by calling for steel plates to be embedded in the edges of the concrete panels. Iron-workers field welded the plates in abutting panels to join walls to slabs, walls to walls, and walls to roofs. The firm achieved high-quality concrete surfaces by specifying glass-fiber-reinforced-plastic forms for all panels. After stripping these plastic forms, the concrete panels required no touching up, and the surface was so smooth that it increased the spreading capacity of paint.

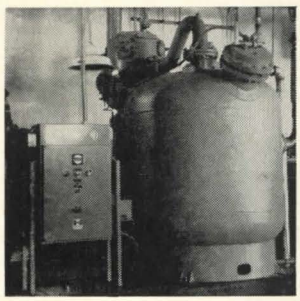
The contractor's work cycle called for the concrete panels to be removed 24 hours after casting in the plastic molds. With vacuum lifting cups attached to a crane load line, workmen moved the panels from the horizontal casting beds to vertical storing racks without subjecting the panels to stresses that could crack the concrete.

While panels were cast and stored on one part of the site, another crew sank piles 6 ft below grade and cast caps atop them for supporting the houses. Steel plates, set flush with the top of the cap, were welded to the reinforcing cages to serve as anchor plates for field welding to similar plates embedded in the bottom of the floor panels. The tops of these floor panels were covered with stones in the casting bed, and after they had been secured to the pile caps, the contractor ground the top surface of the slabs to produce a terrazzo finish.

Next, workmen installed interior wall panels, welded their abutting edges together, and welded the walls' base plates to the inserts embedded in the floor slabs. Exterior walls were erected in the same manner. With the walls in place, workmen erected the two halves of the roof and grouted and calked the joint between the panels. All joints between panels were filled with a 1:3 grout. No waterproofing membrane was applied to the top surface of the roof.

The general contractor for Duhaney Park Housing Estate is The West Indies Home Contractors Company Ltd. George Kreier, Jr., Inc., of Philadelphia designed the plastic forms.

ROOFTOP FURNACES LOWER FACTORY HEATING COSTS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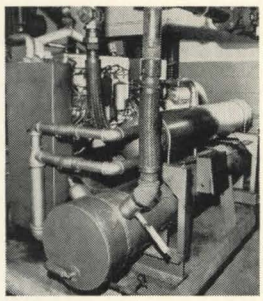
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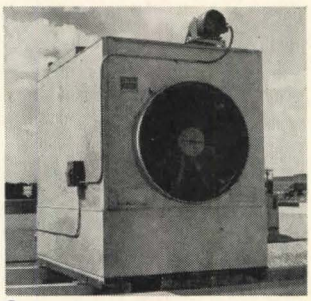
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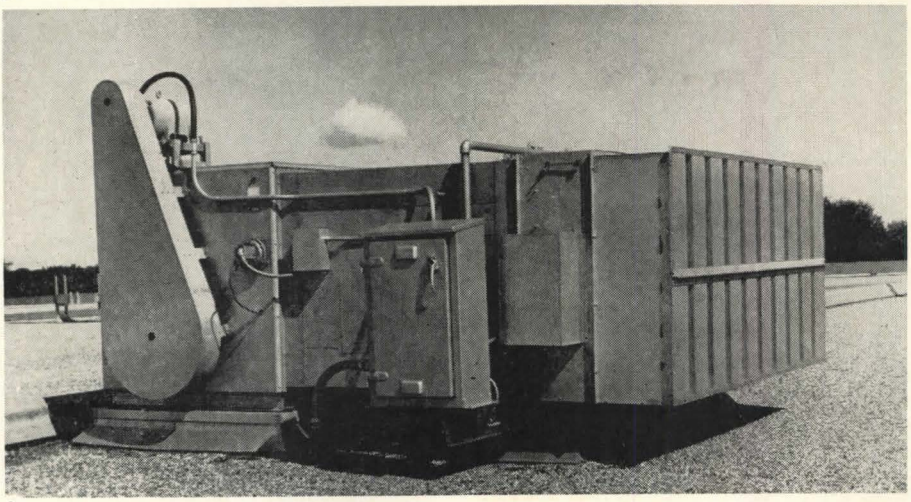
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Rooftop furnaces that eliminate ducts maintain heat but cut down fuel costs for a Minneapolis factory.

The country's first ductless direct-fire heating system is giving double the expected performance at half the expected cost for Northwest Automatic Products Corporation in Minneapolis.

Despite a typically severe Minnesota winter last year—daytime temperatures below zero for weeks on end—gas consumption for heating was less than half what Minnesota Gas Company engineers had predicted, despite the following heating problems:

• The building was heated throughout winter while still under construction. This condition precluded bonus heat from lights, machines, heat-treating ovens, or people. In a building of this type, such "free" heat can account for as much as 25 per cent of the entire heating requirements.

• Although office areas are heated by a separate perimeter fancoil system, these units were not installed until March. During the coldest months, the ductless furnaces (plus some construction-type heaters) heated both factory and office areas.

• Glazing was not finished until mid-February. Until then, window openings were covered with plastic sheets while casements were installed and surrounds painted. Not surprisingly, warm air continually leaked to the outside through gaps in the billowing plastic.

Yet despite the fact that temperatures plummeted to —36 F, building interiors were always comfortably warm—and heating costs were less than half that predicted. Actual gas consumption was 8,000,000 cu ft, compared to the gas company estimate of 18,000,000.

Northwest Automatic Products is a huge job shop with more than 100 automatic screw machines, plus dozens of milling and drilling machines, lathes, grinders, deburrers, punch presses, and heat-treating furnaces scattered throughout the 100,000-sq-ft factory. It was designed by architects S. M. Smiley & Associates and Donald Hustad, both of Minneapolis.

Equipment Advantages

Mechanical equipment for heating and cooling the office areas is in a utility room at one end of the factory. Three direct-fire furnaces for heating the factory are located on the factory roof. Each direct-fire furnace is, essentially, a giant blowtorch blazing away in a fast-moving airstream, generated by a fan pulling 30,000 cfm of outside air through a filter, over the burners, and into the building (4). This air supply is constant: burners are modulated automatically to vary the heat supplied to the factory. In moderate weather, the burners are shut off and the fan supplies ventilating air. In any case, the fan output is always 30,000 cfm; dampers must be locked wide open before the fan can start. The air is pumped directly into the factory without any ducts or fans—in fact, without any distribution system at all, because none is needed.

Since the heating system keeps the building interior under pressure, there are no chilly spots anywhere in the factory. Windows are open all winter long, letting the pressurized air move outside. Should an area get chilly, opening a nearby window will flood the area with warm air. The air movement carries any odors or gases (as from, say, heat-treating ovens) outside; therefore, the interior is unusually fresh, even in the dead of winter.

Since the interior is under pressure, there are no wintry drafts or cold-air blasts when doors in the shipping and receiving departments are opened. Even during a blizzard, a man can stand outside the open shipping doors and be comfortable because of the warm air flowing around him.

The system helps keep the factory clean. A conventional heating system with exhaust fans resembles a giant vacuum cleaner. Outside air, dirt, and dust are sucked inside through windows and doors, leaving soot and stains; but the pressurized system forces interior air outside, preventing any cold-air leaks. Similarly, the interior air moving out through the open windows wipes the walls with warm air for additional comfort. While a conventional system heats the interior air, exterior walls are often cold. And cold walls actually "absorb" heat from warmer objects, such as people working nearby. For example, with an exterior wall at 50 F and the air temperature at 72 F, a person working nearby feels chilly because his body heat is radiating

to that wall. But if the conditions are reversed—air at 50 F and walls at 72 F—he will be comfortable because the walls are not soaking up his heat.

Another benefit of the ductless heating system is far less stratification. While there is some temperature difference between the floor and the 18-ft-high ceiling, it is far less than the temperature differential using a conventional heating system, because the moving air swirls and mixes so thoroughly. Also, first costs are substantially lower since neither distribution ducts nor piping (except for gas lines to the roof-mounted furnaces) are required. The packaged furnace simply fits over a hole in the roof. The fan pulls air through a grille and filter, across the burners, then pumps it down into the building.

Since this was the first installation of its kind, gas company engineers recommended two furnace units. To be on the safe side, however, the company installed three. Yet in the first winter, just one unit was sufficient to handle both the factory and the office building when outside temperatures dropped to —18 F. With the factory in full operation and the office heated by its separate system, one furnace unit should be able to keep the plant comfortably warm through the most severe winter weather.

An even bigger surprise was operating costs. With no experience to draw on, gas company engineers estimated heating costs at $10,000 for the 1,800,000-cu-ft factory. For the first winter—with the building unfinished, no windows installed, and no heating system for the office—heating cost was only $4,000.

Thermostatic Control

The key to this unusual ductless heating system is a Honeywell thermostat in the factory linked to furnace thermostats and controls. When interior temperatures drop below the thermostat setting, the thermostat turns on one of the direct-fire furnaces. If the outside temperature is between 30 F and 60 F, a thermostat in the air intake switches on one burner of the two-stage furnace; if temperature is below 30 F, both burners pull in.

The temperatures of air moving down into the factory are sensed by two duct thermostats that control the modulating burners. As long as the factory thermostat is calling for heat, the duct thermostats turn the burners (or burner, depending on outside temperature) up to supply 150 F air. As soon as the factory thermostat is satisfied, the duct thermostats throttle the burners back to supply 90 F heat. The system can cut the burners down to 10 per cent. When a single burner is used, this means down to 5 per cent of total furnace capacity. In any event, outside-air dampers are always fully open, so that a constant volume of air moves into the factory. The only temperature variation is supplied by varying the gas supply to the burners.

Flame-Safeguard System

Since an excess of air is pulled across the flame, combustion is complete. And since the flame does not strike any metal surfaces, there is virtually no contamination from carbon-monoxide or impurities. In fact, gas company engineers claim there is less danger of carbon monoxide poisoning inside the factory than there is standing on a busy city street corner. Similarly, the tremendous volume of air moving across the burners eliminates any danger of explosion. Even if all the safety controls were somehow by-passed and the gas turned on without a flame, the gas would be thoroughly mixed with 600 parts of air—about 2 per cent of the gas/air ratio necessary for combustion. However, a Honeywell flame-safeguard system continuously keeps an eye on the flame, shutting off the gas the instant the flame goes out. It also shuts off the supply if the gas does not ignite within a few seconds after start-up. And if the gas is off and duct temperatures drop too low, a thermostat automatically shuts off the fan.

The flame-safeguard system uses the flame itself as part of the control circuit. The flame ionizes combustion gases, freeing electrons that carry a current. Although the current capacity is minimal, it is easily amplified electronically. The flame-safeguard system uses this flame to change alternating current into direct current, in effect using the flame as a blazing rectifier. If the flame goes out, the circuit is broken and the gas valve closes instantly.

Gas-Powered System

Except for lights, and electric motors driving production machinery, the factory is almost entirely powered by gas. One natural-gas engine drives the chiller for the office air-conditioning system; another, the compressor for factory air; a gas-fired boiler supplies hot water for the perimeter fan-coil units in the office; three gas-fired water heaters—two 75-gal units and one with 40 gal capacity—supply domestic hot-water needs, and 9 of the 12 heat-treating furnaces are gas-fired.

The air-conditioning unit is a "Ready-Power" system with a 6-cylinder 75-hp International engine driving a 50-ton Trane unit (2). A similar International engine powers an Ingersoll-Rand compressor supplying 125 psi air to the factory (1).

Coolant from both engines goes to a roof-mounted cooling tower (3); water from the air-conditioning condenser and the air-compressor cooling coil also circulates through the tower.

Since the natural gas is on an interruptive basis, the company has an 18,000-gal propane tank nearby. Furnaces and engines are manually switched to propane during peak demand periods.

Cost Savings

The client chose gas engines over electric motors to drive the air-conditioner and air compressor despite a $2000 difference in initial cost because an engineering study (by the gas company) indicated this would be more than offset during the first year's operation. (In addition, fixed demand charges meant the company in effect is getting air conditioning and compressed air for nothing all summer long.)

A breakdown of the power costs shows that the gas engine for the air conditioner has an annual operating cost of $200 a year; an electric motor would cost $900 to run. These are, however, energy costs alone: to the gas engine should be added an estimated $200 for projected maintenance (oil, plugs, points, filters, regular overhauls). The electric motor is assumed to require no maintenance.

Since the air compressor is on almost continuous duty, operating costs are substantially higher. For the gas engine, the costs would be $725, plus an additional $400 for maintenance; for the electric motor, the operating costs would be $2650, with maintenance costs again assumed to be zero.

Natural gas is figured at 50.1¢ for 1000 cu ft, electricity at 1.9¢ a kw. The air conditioner was assumed to run the equivalent of 800 hrs under full-load conditions each season. The air compressor was slated for 16 hrs a day, 5 days a week, at 60 per cent of full-load. An engine would use 10 cu ft of gas for every horsepower hour, a motor 0.9 kw for every horsepower hour. Based on these figures, the gas engines would pay back more than $2000 annually in reduced operating costs compared to the electric motors, even after setting aside $600 a year for maintenance on the engines. Add this to the $6000 saved during the first year of heating with the direct-fire system—a saving that is bound to increase, since equipment, lights, and people will help offset the heating load—and the company obtains economies by employing gas heating and cooling.

A THRUST FORWARD FOR THE THEATER

VIVIAN BEAUMONT THEATER & LIBRARY MUSEUM, *Lincoln Center for the Performing Arts, New York, N. Y.* ***Architects:*** *Eero Saarinen & Associates and Skidmore, Owings & Merrill, Associated Architects. Jo Mielziner and Eero Saarinen Associates, collaborating designers for the Beaumont Theater.* ***Consultants:*** *Ammann & Whitney, Structural; Syska & Hennessy, Mechanical; Olaf Sööt, Consulting Engineers, consultant to Syska & Hennessy for Movable Structures; Turner Construction Company, General Contractor.*

Last month's opening night at the Vivian Beaumont Theater, the third of five buildings to be constructed at Lincoln Center for the Performing Arts, marked the arrival in its permanent home of one of New York's long cherished and most nurtured dreams—its own repertory company, already performing for two seasons and matured by some sensitive growing pains. The opening also marked the completion of one of the most innovational theater facilities in this country.

The Beaumont Theater is the collaborative design of Eero Saarinen, whose fundamental approach to problems is again evident in this theater, and one of the country's most experienced scenic designers and theater technicians, Jo Mielziner.

The over-all building, furthermore, is the result of a collaboration between Eero Saarinen Associates

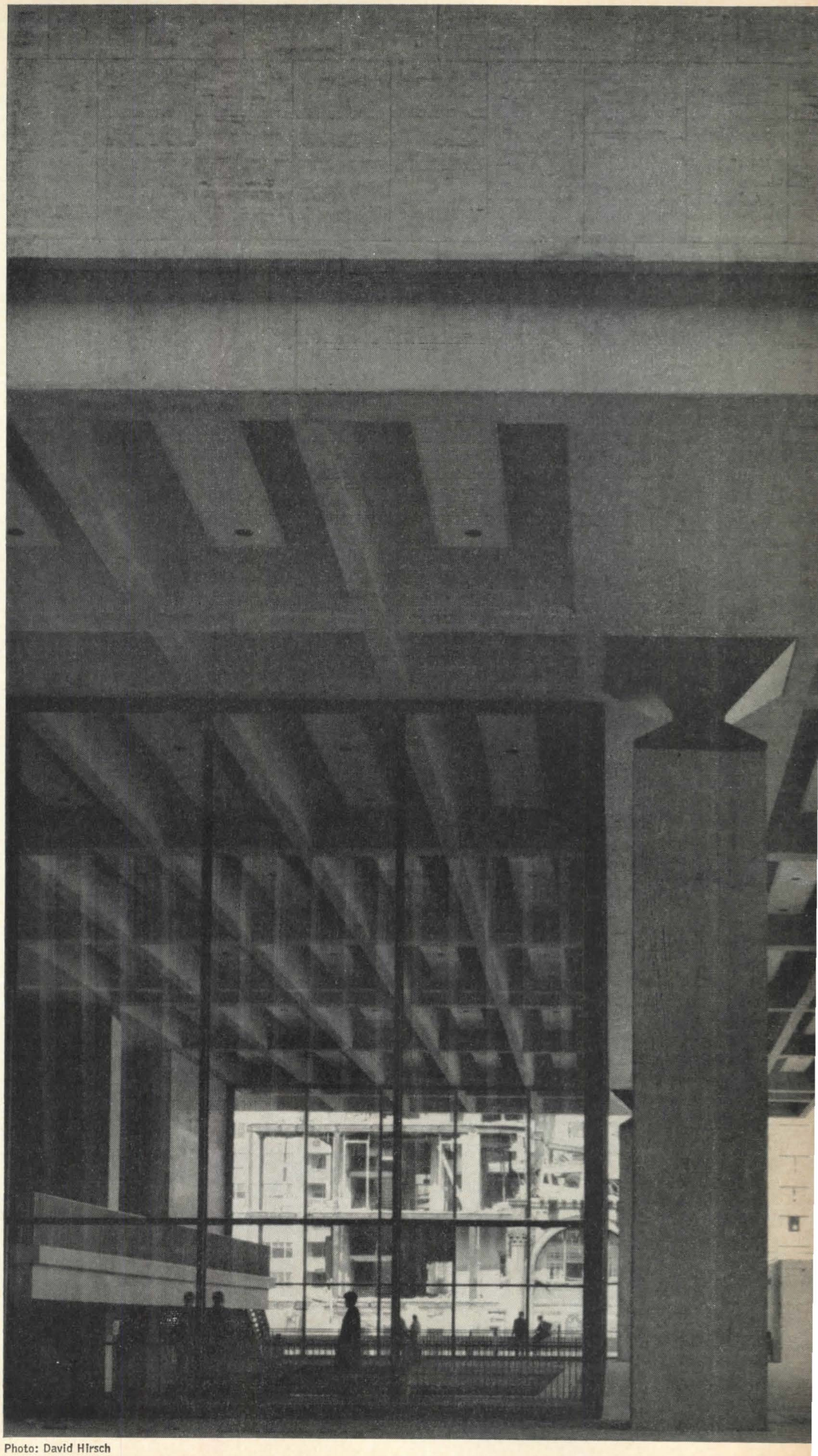

Photo: David Hirsch

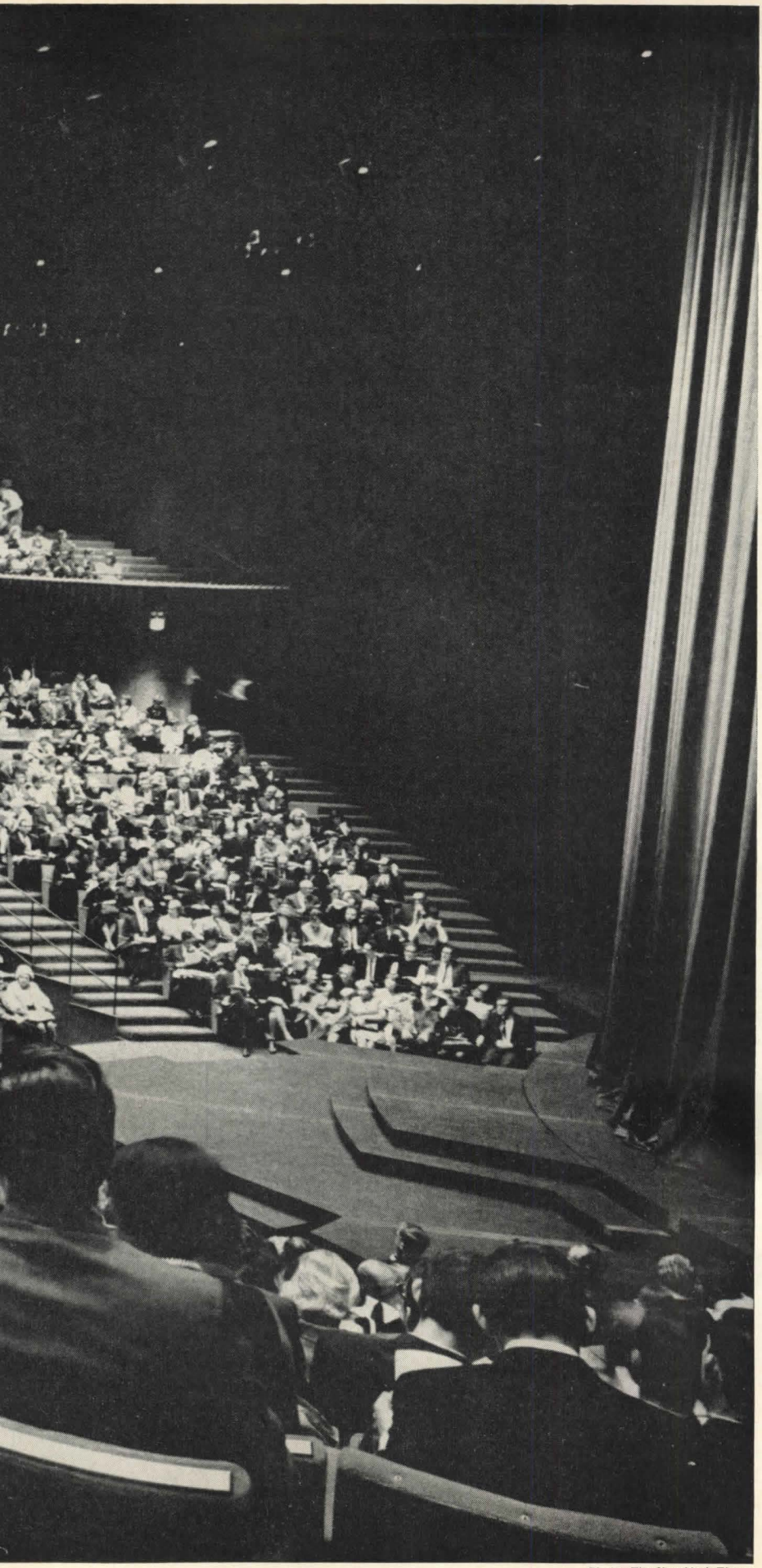

Photo: The New York Times

and Skidmore, Owings & Merrill, New York, as Associated Architects; for the structure also houses the Lincoln Center Performing Arts Library and Museum, which was designed by SOM. The building is a remarkable example of successful and seemingly selfless collaboration.

Construction of the building was first assured by a $3,000,000 gift to the theater by the late Mrs. Vivian Beaumont Allen. The City of New York subsequently allocated $7,500,000 to provide a new home for its theater collection and music library. Total cost of the building was $17,700,000.

Appropriately, the repertory theater, which is envisioned as a living repository of the drama, and its housemate, the Library-Museum, are located at the northwest corner of the site—between the Juilliard School of Music, and the new home (nearing completion) of what is sometimes called "The Metropolitan Museum of Opera."

Of all the buildings at Lincoln Center, this newest is the most sober, simple, and serene. The tight site required something calm—a somber gem set among flashier stones—and that is what has been provided. A bold yet solemn contemporary temple, the building has a faceless, overhanging attic that is carried on massive, square columns. Of exposed aggregate finish like the plaza paving (not of the Center's ubiquitous travertine), the columns form a rather spare peristyle around the glass-and-travertine enclosing walls of the plaza level.

Huge steel pins with aluminum covers (seen elsewhere in the work of Gordon Bunshaft) connect the columns to the exposed concrete coffered soffit of the attic, which is framed with 20-ft-high Vierendeel trusses that span 152 ft between the columns and are cantilevered beyond them.

Through the glass of the lobby, the curved walls of the ambulatories, like beckoning fingers, reiterate the invitation of the stage curtain beyond. Bridged across those walls is the horizontal line of the balcony level lobby, which relates to the strong exterior promenades of the

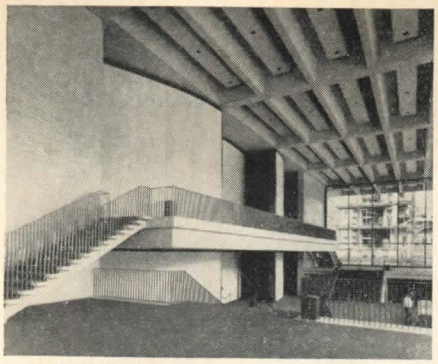

Photo: David Hirsch

other Lincoln Center buildings.

The complex arrangement of interior space is not apparent from the exterior. The Library-Museum is housed in the large, elevated, two-story-high, rectagular-plan doughnut that appears as the deep travertine fascia of the pavilion exterior; its spaces pass through the 20-ft-high Vierendeels that frame the doughnut. The Library also extends down to ground level behind the stagehouse to gain a formal entry on the west side of the Center's site. In addition, a two-story Library-Museum block nestles against the opera house on the south. The Beaumont Theater fills the remainder of the site at ground and plaza level, and its stagehouse extends up through the center of the Library-Museum doughnut *(see isometric)*.

The structure also houses a second theater facility, The Forum, which is a 299-seat replica of the open-stage

Photo: Maris-Ezra Stoller Associates

arrangement of the larger auditorium immediately above it. The Forum will be used as a rehearsal room for the Lincoln Center repertory group and as an experimental playhouse for visiting companies.

The Beaumont is a 1140-seat, mechanized multiform theater that is changeable from proscenium to open-apron stage. The designers describe the latter as having "extreme thrust" into the audience, which wraps around it on three sides. Performers on this "thrust stage" have a sense of heightened intimacy with their audiences. Changing the stage forms is accomplished by means of a lift that is integrated with a below-stage turntable: one half of the split turntable device carries down-front seating for the proscenium arrangement; the other half carries the peninsular acting area, together with three rows of encircling seats.

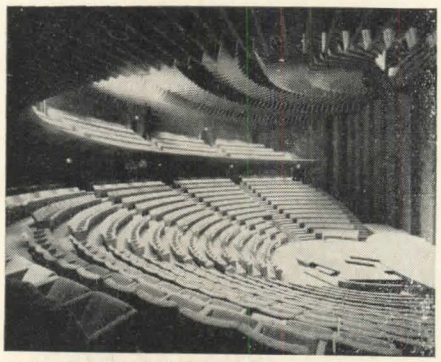

Photo: Maris-Ezra Stoller Associates

What is innovational about this stage is both the ingenious lift-turntable solution, and, above all, the possible use of the open stage in combination with a full proscenium stage behind it. This is the first time, in professional theater in this country, that this new combination has been achieved.

The staging problems of using such a deep proscenium stage behind the intimate peninsular acting area may be precarious. However, the available options for both pageantry and intimacy in a single production should prove this combination to be a major contribution to the development of theater forms.

The stage is enormous, occupying 10,000 sq ft, compared to the largest Broadway stage, which is 2914 sq ft. Besides the jackscrew-operated stage lift that carries the open acting area (28 ft deep by 25 ft wide), the stage has a mechanized orchestra pit in two sections, which provides additional stage variations, and an on-stage turntable (46 ft in diameter), which is trapped and has an independently rotating annulus (5 ft wide) surrounding it. The proscenium opening can be closed by seven flying panels, which permit it to be closed in completely for pure open-stage productions or to be opened to a 58-ft width. The turntable and annulus are designed to project beyond the proscenium wall of flying close-in panels so that quick set changes can be made for the open-stage arrangement. Because of this design, the asbestos curtain is, unconventionally, forward of the proscenium arch; it is flown on a double-curve steel frame following the line of the semicircular 14-ft-deep apron.

The 1140 seats in the auditorium are apportioned between the 779-seat orchestra and a shallow, 5-row loge containing 361 seats. Only two rows of the loge overhang the orchestra level. When the open stage is used, 57 seats are displaced. Vomitories, which can be used for either of the stage forms, displace an additional 24 seats. No seat is more than 64 ft from the stage, a standard that is considered optimal for drama theaters.

The seating plan devised to accommodate both stage forms is basi-

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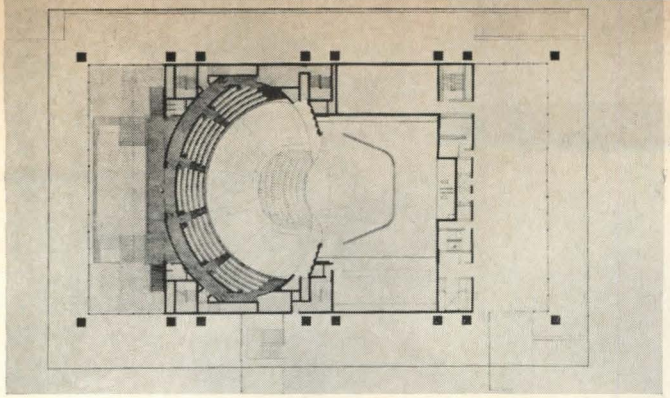
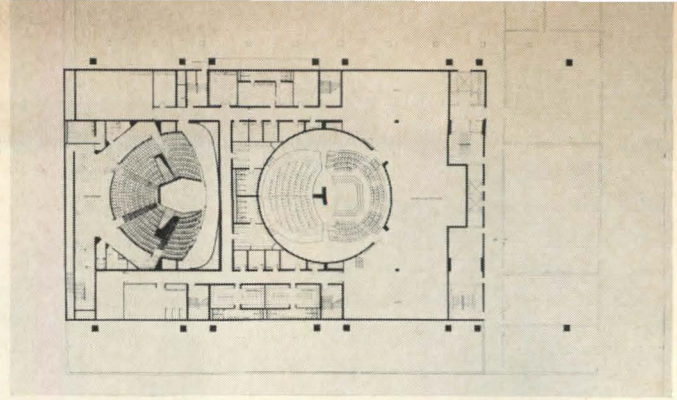
To effect the Beaumont's change from open-apron stage to its proscenium form requires: (see cut-away section of stage mechanism, facing page) first, removing the open apron from the audience area; and second, opening the proscenium arch.

The procedure for changing the floor arrangement is as follows: the orchestra lifts and "thrust" stage are lowered (on the jackscrews); the "thrust"-stage platform is unlocked from its steel-deck lift and connected to the semicircular down-front proscenium seating, stored under the main stage; then the two connected semicircles of this turntable are rotated (by means of traction-drive motors beneath the proscenium-seating platform); the two semicircles are again disconnected; and, finally, the proscenium seating arrangement and orchestra lifts are run up into position.

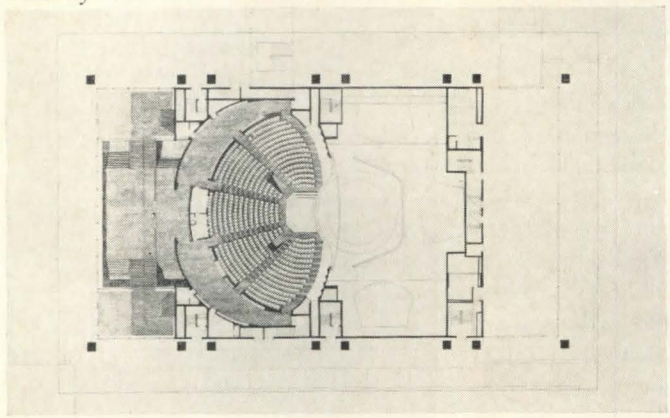
The proscenium arch is opened to the desired width by raising the necessary number of seven aluminum close-in panels by means of a basic, cable-hoisted counterweight system. The two outside panels are manually operated; the five others are motorized and are activated from a control panel with presets for accurate positioning. Open-stage productions, therefore, can make use of preset panel positions to provide changes of stage entrances; fanfares may be used to muffle the mechanism during performances.



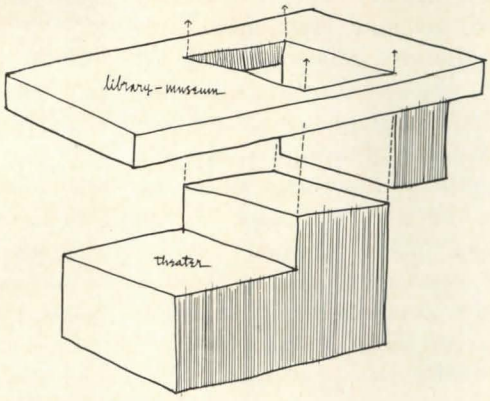
Balcony Level



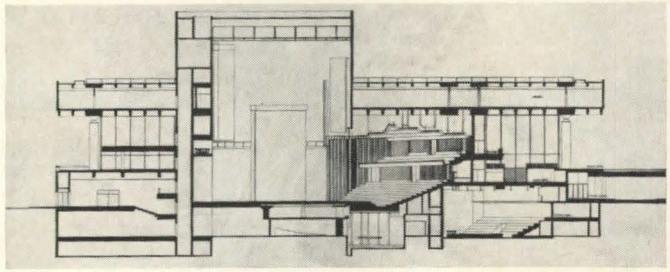
Understage and Forum Level



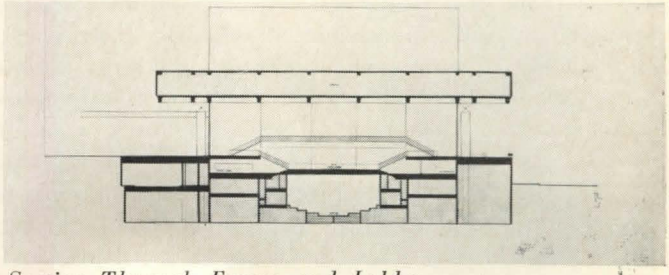
Plaza Level



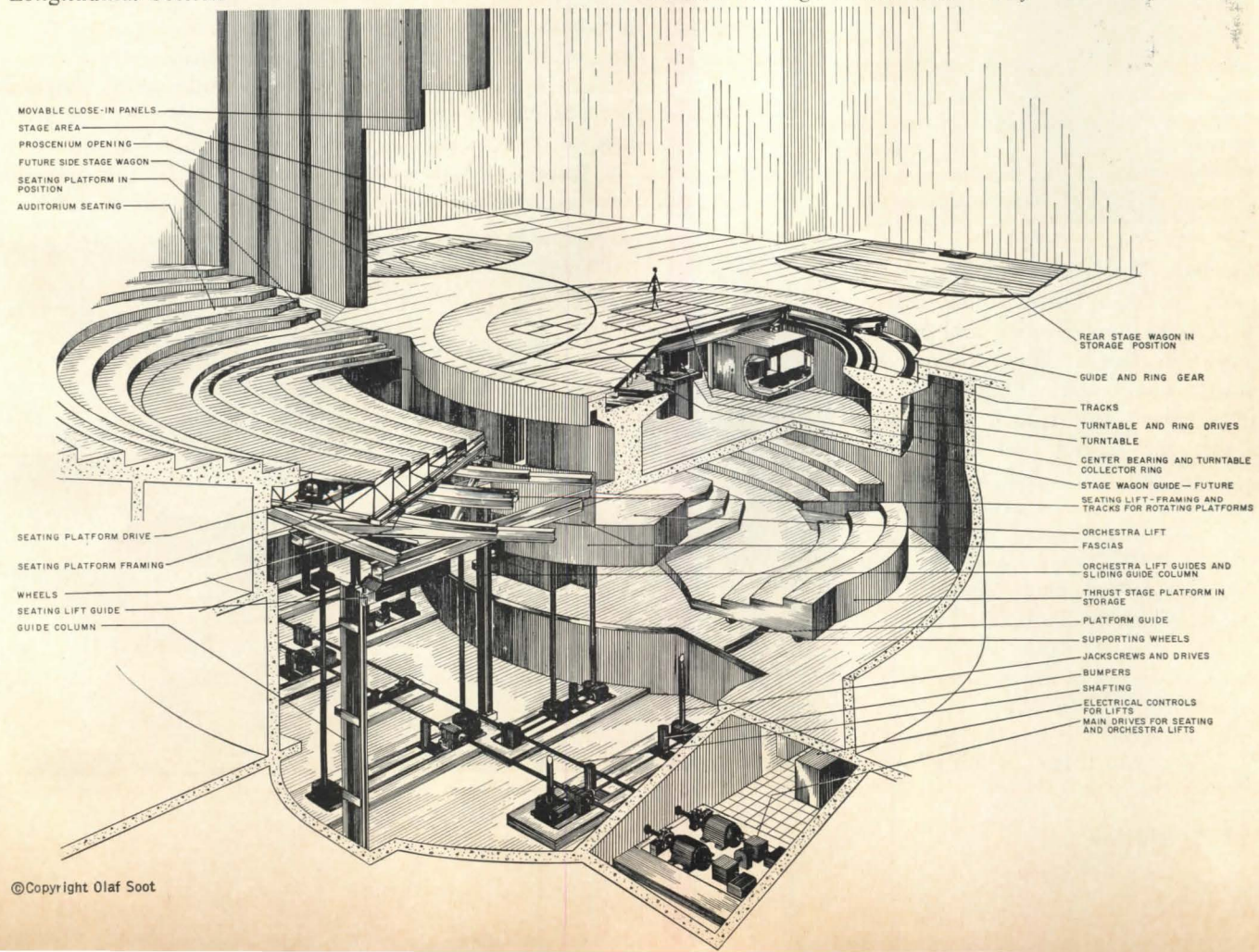
Isometric



Longitudinal Section



Section Through Forum and Lobby



cally semicircular, but in order to preclude poor sightlines from the extreme side seats during proscenium productions, the ends of the semicircle have been cut back, giving an ovate plan. This is the gray area of this design, which is yet to be tested: Since open-stage theater requires that the audience surround the stage on three sides and that it be "tight into the stage," the cutting back of the side seats may leave stage-audience intimacy weak at crucial places. Furthermore, the wide-fan seating plan may not permit sufficient sightline clearance into the deep proscenium stage to accommodate the traditional box set. On the other hand, no stage yet designed seems to have made such a successful compromise in negotiating the two diverse stage forms.

Physically, the auditorium is designed so that, no matter which of the available stage forms is used, the arrangement looks permanent. Psychologically, it is designed to create an effect of anonymity when the lights go down, focussing all attention on the stage and on the performers. Walls and ceilings are of rich, cordovan-brown wood battens, which are nonreflective and emphasize directional lines toward the stage; metal close-in panels at the proscenium are ribbed in smaller scale; the carpet and seating are vibrant red. Aisle lights, a bane of open-stage theaters, are recessed in the sides of end seats, so that spectators on the opposite side of the auditorium will not be distracted by the customarily illuminated risers.

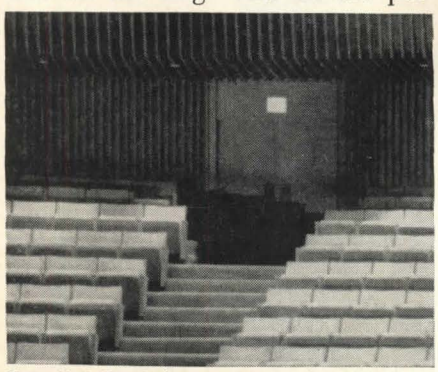


Photo: Maris-Ezra Stoller Associates

The stage-lighting system is the most extensive in the country. Every square foot of the stage is permanently covered by pre-angled equipment — "saturation lighting" — so that installation work will ordinarily be limited to color changes and choices of existing equipment. Front-of-house lights are concealed by the open ceiling of fins, above which four semicircular steel catwalks serve as light bridges. (Some 565 spotlights are controlled by a rear-of-house panel with 180 presets.)

Photo: Maris-Ezra Stoller Associates

Backstage facilities are exemplary. The truck dock permits deliveries from the street directly onto the stage. Costume and scenery storage are extensive; however, scenery-building shops and a paint frame, which were eliminated for budgetary reasons, would be desirable for a resident repertory company. There are 20 double dressing rooms with private bathrooms, two chorus dressing rooms, and two other chorus dressing rooms for the Forum theater. Stage and backstage facilities occupy 75 per cent of the theater area.

Lobbies and other audience areas occupy 25 per cent of the space. The main lobby is travertine and bronze with red carpeting and white silk wall panels. An elevator is provided for handicapped persons. One thoughtful innovation is the inclusion of individual coin-operated coat lockers in the ambulatories off the auditoriums. However, the relatively unsolved dilemma of the entire Center—the automobile versus pedestrian-arrival problem — is apparent in the split-level lobby of the theater, most of which is below—and therefore lacks a full view of—the delightful, tree-bordered plaza (the most successful in the Center) with its reflecting pool and "Reclining Figure" by Henry Moore.

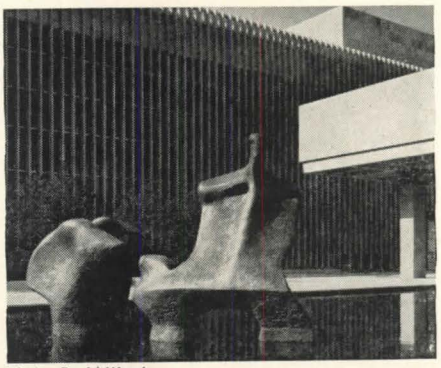


Photo: David Hirsch

The Beaumont Theater and the building enclosing it are the finest designs at Lincoln Center. It is to be hoped that whatever shortcomings may become apparent will be allowed a probationary period in which to settle down, without hue and cry from unknowing or disgruntled critics, and that whatever improvements are deemed desirable will be carried out by the original architects and designers.—CRS

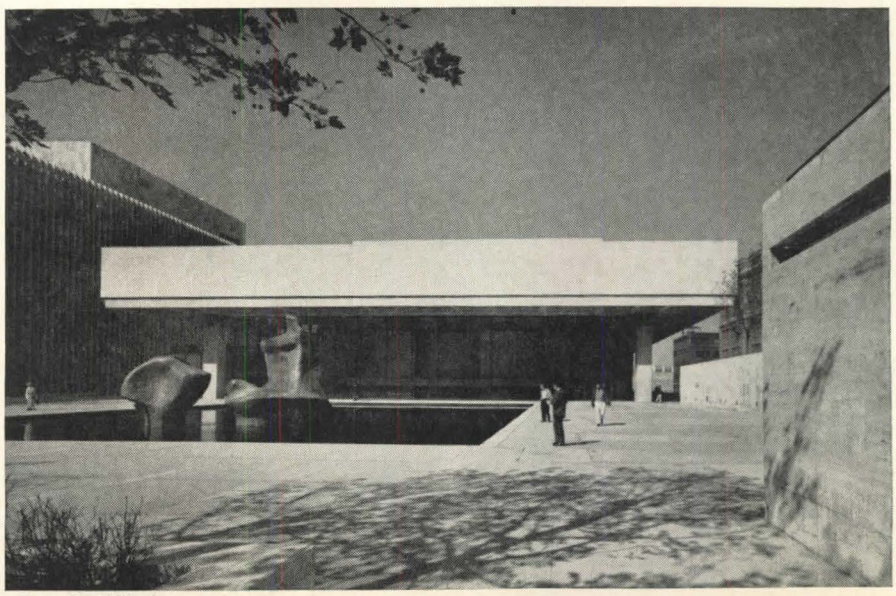
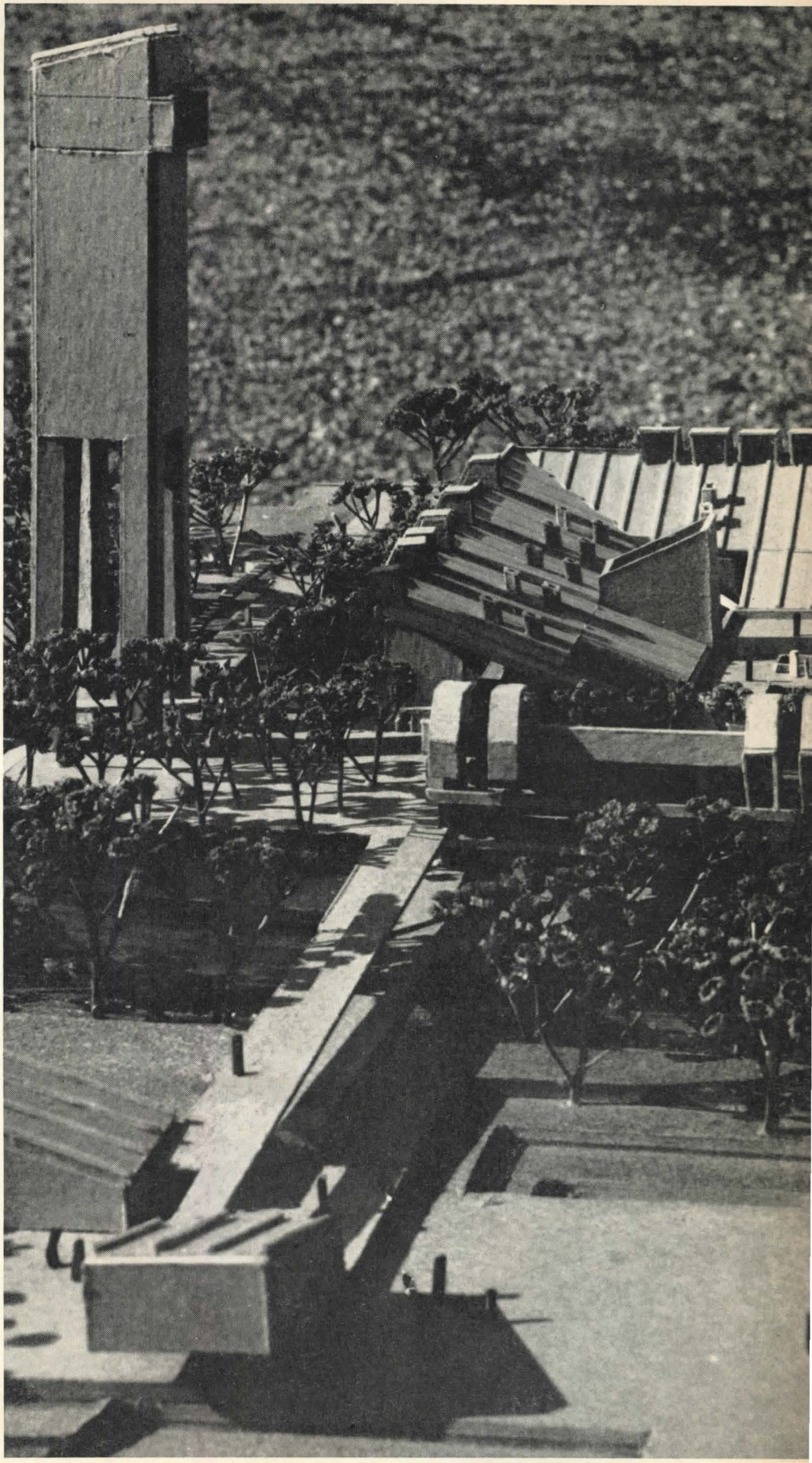


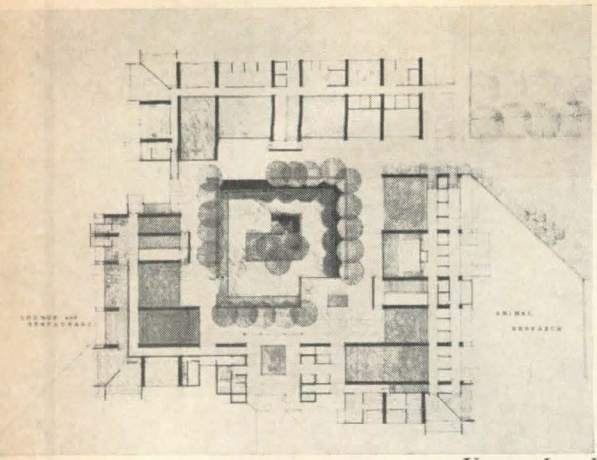
Photo: David Hirsch

NEW ZOO IS GOOD NEWS

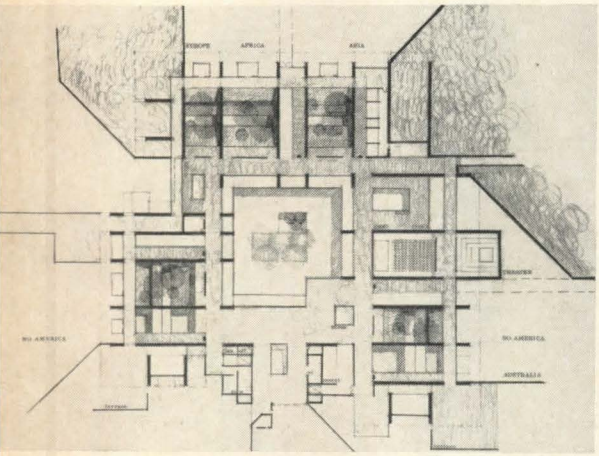


Most of the notable work in animal exhibition and housing in zoos—or zoological gardens or parks, as they are more properly known—has taken place in established zoos: London, the Bronx, San Diego, and Rock Creek Park being cases in point. The majority of our zoos feature animals housed behind neoclassic and Victorian façades, in cute little Disney-esque buildings, or staring pitifully from behind iron bars and institutional fences.

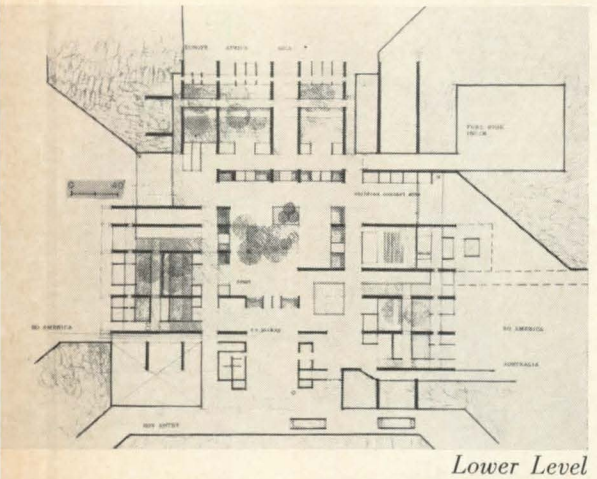
On a 168-acre site in Ramsey County, Minnesota, architects Voigt & Fourré of St. Paul have been given a chance to design a full-fledged, totally new zoological park, using all the modern techniques of animal handling and exhibition, and to put them into good contemporary architecture. (R. Michael Schneider is design associate.)



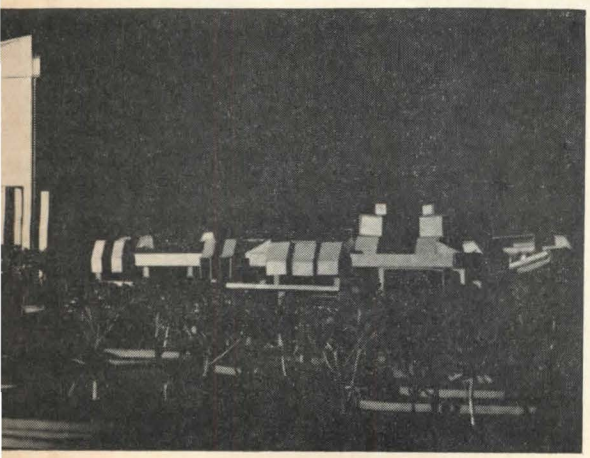
Upper Level



Entrance Level



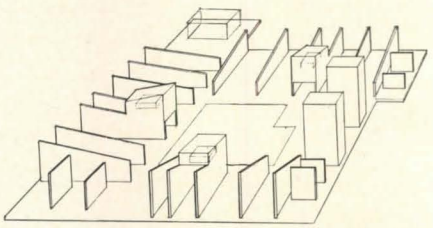
Lower Level



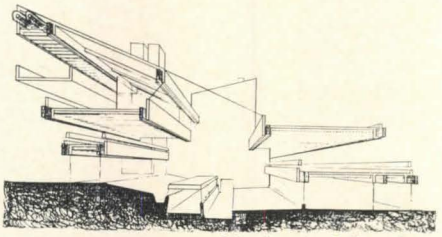
While the Battle Creek Zoological Garden is not exactly comparable to the usual in-city exhibition-type zoo — it lays uncommon emphasis on species conservation and education of the public—its central or "target" area could serve as prototype for a progressive new municipal zoo. This complex surrounds a 112-ft-sq exhibit court with animal display units at the lower levels and public areas, such as restaurant, lounges, and meeting rooms, on the upper levels. Stepping back as they rise, the buildings form an inverted pyramid of open space above the central court and a children's animal contact area. The main exhibits will be grouped around this area geographically, by continents (see plans). This arrangement will be extended into the larger outdoor areas, with particular emphasis on North America. A tower will contain a free-flight bird cage, elevator to observation deck, water storage, and smoke stacks.

Construction will be brick bearing walls with reinforced concrete double beams carrying services (bearing cavity walls will carry vertical services). Brick and exposed concrete will surface most exhibit and public areas; ceramic tile will be used in the animal hospital, research rooms, toilets, and service areas.

The program of the zoological garden has three elements: conservation and exhibition of animals, concentrating on species of North American fauna in danger of extinction, but exhibiting also birds and animals from all over the world; educational, including botanical and zoological gardens with related classrooms, research and auxiliary facilities; and recreational, with picnic spots, playgrounds, and concession areas. The zoological and botanical sections of the park will take 43 of the 168 acres, with the balance devoted to recreation, parking, buffer zones, feeding grounds, expansion, and conservation of the existing woods, ponds, valleys, and other natural features. The central area structures shown on these pages can be "winterized" to protect animals and public in the severe Minnesota winters. Covered public walkways acting as extensions of the "target" area are envisioned for balmier weather. Within the main structure, which the architects describe as having a "stadium" shape, viewing will be enjoyed by a variety of means: from ramps, tunnels, platforms, over moats, and by means of special techniques such as periscopes, one-way glass, telescopes, and special lighting for nocturnal exhibits. The mechanical systems are carefully studied to provide humans with requisite fresh air of appropriate temperature, while at the same time giving each animal



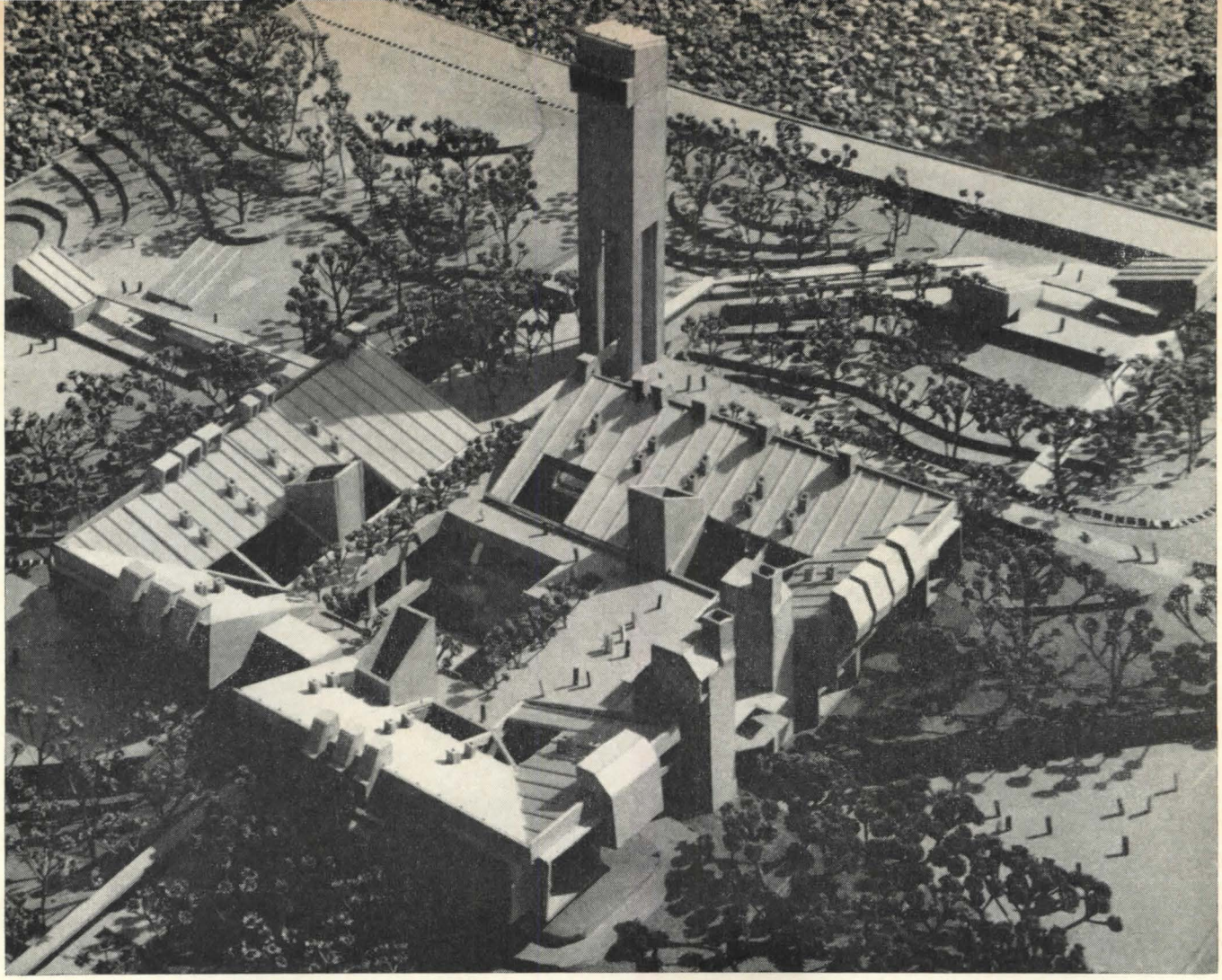
Partitioning

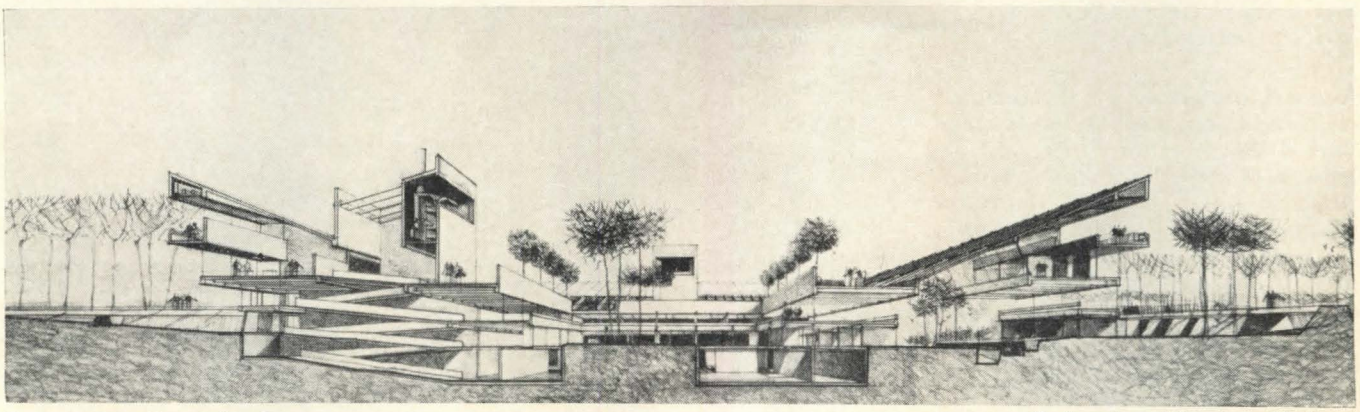


Mechanical Services

the scents, sounds, and ambiance to which it is accustomed. In addition to the limited pedestrian walkways through the "good weather" exhibition areas, there is proposed a rail system connecting various widespread points of the park.

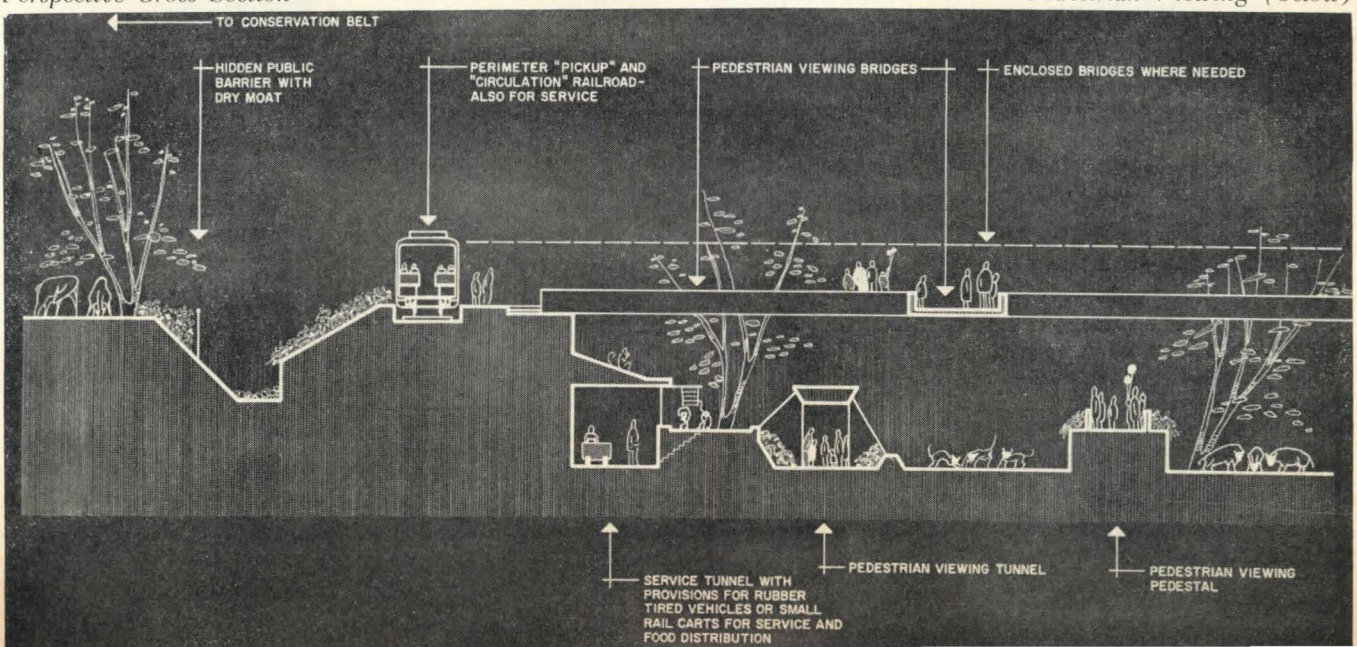
To accomplish this design, Voigt & Fourré had to study ecology, ethology, human and animal psychology, soils research, plant materials study, and landscape planning. They say that the "total concept has been guided by the principles of the 'International Biological Programme,' the 'International Union for the Conservation of Nature and Natural Resources,' and 'The World Wild Life Foundation.'" A heavy research schedule indeed; it is a pleasure to see such handsome design emerge from it, instead of a mere antiseptic reflection of the "function." The architects write that "The modern zoological garden must link the modern world with the receding domain of nature." It is possible to predict that the Battle Creek Zoological Garden will accomplish this aim sympathetically, in an architecturally distinguished framework.—JTB





Perspective Cross Section

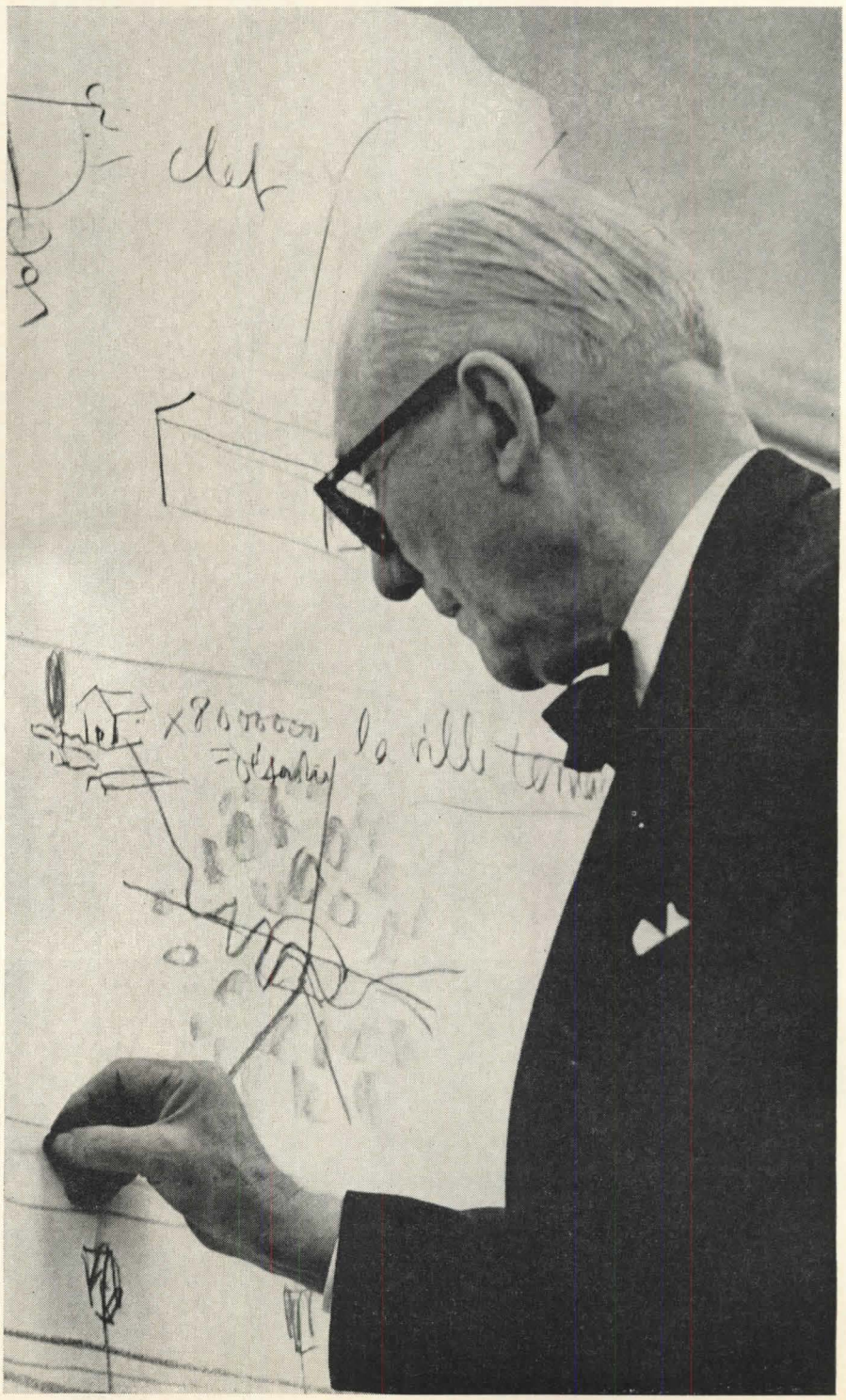
Pedestrian Viewing (below)



In last month's issue, P/A presented the remarks of a dozen architects, critics, and historians on the subject of Le Corbusier's place in the architectural firmament. We here continue these appraisals by authors and architects who range in time from a contemporaneous chronicler of the rise of modern architecture to younger men who grew up during the time when that architecture was becoming accepted and who may be regarded as the first generation with the responsibility not of fighting the battle but of consolidating the victory.

Le Corbusier

A PRELIMINARY ASSESSMENT (Continued)



KENZO TANGE
Tokyo, Japan

Once, 25 years ago, I thought that Le Corbusier could be compared with Michelangelo because Le Corbusier is the pioneer of modern architecture and at the same time the creator of high modern architecture. At present, however, the contemporary architecture is transforming into a second phase, from static to dynamic, from functional to organizational, from architectonic to urbanistic. He has been the leader not only for the first phase, but also the second. Finally, he achieved the greatest role in the history of human habitation.

SIEGFRIED GIEDION
Zurich, Switzerland

You ask me how Le Corbusier's position is projected to the future? Since 1926, on many different occasions, I expressed my opinion about it. I confess that, today, at the moment of his tragic passing, leaving behind him an unfinished work, I am far more in the mood to accuse our time and those who were incapable of recognizing or making use of the force of his genius.

At the present state of architecture, there are two ways open to us—an easy one, which follows, more or less, the 19th-Century methods; and a difficult one, which tries to express what is going on in the depth of this period. The easy and the difficult way:

The easy way is to pick out historical details at random. Small-breasted "gothic" or "moorish" lacework for colleges and exhibition halls. Many gifted architects, especially in the U.S.A., are under the spell of this unfortunate fashion. The reason for all this is that contemporary architecture, under the misnomer "International Style," has been regarded as

something that has worn thin; so for the sake of change, architects embark on a romantic orgy.

Of course, the public is delighted by this change. Old instincts of the 19th Century, still slumbering in the masses, are reawakened. This public admiration is as dangerous as it will be ephemeral. I called this trend "playboy architecture"—an architecture treated as playboys treat life, jumping from one sensation to another and quickly bored with everything.

The hard way *tries to explore the unknown before us. This is the difficult way. Only step by step can the future be conquered. It develops the new tradition that grew up in this century. Le Corbusier followed this path in all of his work. The latest of his works are, in this respect, the most masterly. Circumstances forced him to become a lonely man. But around the world are others who are also working at the new tradition, such as Kenzo Tange in Japan, Jorn Utzon or Timo Penttilä in Finland.*

Le Corbusier's destiny represents a severe accusation against those who decided about the great building tasks and were incapable of recognizing and estimating the vital forces of our period. This was not only the case in U.S.A.; Le Corbusier had the same experience in France, and, to an even greater extent, his own country, Switzerland.

The reasons for this cannot simply be explained by his rough Swiss character. He was his own worst enemy in dealing with public relations. The real reason was that Le Corbusier — who created, until the time of his last work, most of the vocabulary of contemporary architecture—could not be appreciated by politicians, executives, or presidents of corporations, because their aesthetic sensitivity and emotional make-up were insufficient.

Le Corbusier's greatest mistake concerning the U.S.A. was to have accepted an invitation from the Museum of Modern Art, in 1936, for a lecture tour. It proved to be at least five years too early. In 1936, F. L. Wright still lived as an outlaw in his own country, which was under the grip of the Beaux Arts. The result was that the journalists made fun of Corbusier, and the outcome was the bitter volume, When the Cathedrals Were White. *Also, it was not a brilliant financial success. To return to France he had, as he told me, to borrow the money for the fare from Fernand Léger. Times have changed. When, some years ago, Corbusier received an honorary degree from Columbia University, hundreds of students stood in front of the lecture hall. Two policemen had to protect him, and, when he left the hall, he asked angrily, "Am I a prisoner?"*

In spite of recognition of his fame, the attitude of official circles remained unchanged. In 1947, when he and other architects from foreign countries were invited to prepare a scheme for the United Nations buildings and secretariat, they proposed finally "A 21," Le Corbusier's scheme. His plan contained the most ingenious assembly hall, where ceiling and floor formed an inseparable oneness. Le Corbusier had no more chance to have any kind of influence. What fate befell his genial hall can easily be judged today by everybody.

It is thanks to a Harvard student that Le Corbusier's one building in the U.S. was erected—the Carpenter Center for the Visual Arts at Harvard University. A year after his master's degree, this student—I remember him vaguely —brought to Dean José Luis Sert a check for $1,500,000 for the erection of an art center. The Dean brought the check to the president, insisting that Le Corbusier should be the architect. When the president asked if this would not involve a risk, Sert replied: "If you engage Michelangelo, it would also be a risk." It was fortunately no risk.

PAUL RUDOLPH
New York, New York

Le Corbusier was the only 20th-Century revolutionary who grew beyond his own revolution to expand the art of architecture to such dimensions that there is a clear direction for the foreseeable future.

PETER COLLINS
McGill University
School of Architecture

The only earlier architect with whom Le Corbusier can fittingly be compared is Michelangelo, in that his creative vision of architecture was essentially that of a painter or sculptor. But whereas Michelangelo designed buildings at a time when architecture (being of masonry) really was a kind of sculpture, and when painting was primarily an integral part of interior spaces, Le Corbusier imposed exciting individualistic forms on a world which (as his own early books propounded) needed, above all, buildings conceived in terms of structural standardization, rational planning, and urban co-ordination. I believe, therefore, that fate's removal of this awe-inspiring giant will substantially lessen the compulsion experienced by ambitious architects to emulate the intensely arbitrary forms of Le Corbusier's later designs, and will encourage a return to the exquisite rationalism exemplified in such masterpieces of his early period as the Swiss Pavilion in the Paris Cité Universitaire.

JAMES MARSTON FITCH
Columbia University
School of Architecture

I saw Corbu last in February 1963. The occasion was the opening, in Florence, of the great retrospective show of his work. The celebrations began, with typical Florentine bravura, in the "Hall of Fifteen Hundred" of the Palazzo Vecchio. Here, amid banners, trumpets, and pages clad in Renaissance costumes, the Swiss was made a citizen of Florence. He—that lifelong apostle of the new—responded to the antique pomp and panoply with surprising grace and good humor. He was being prepared for entry into the ranks of the immortals, so many of whom had had a hand in the art and architecture of that room, that building, that city. His beatification had begun; and one had the feeling that, in his own wry fashion, he was reconciled to it.

Then we moved over to the Strozzi Palace, where the show had been lovingly installed by some of the younger Florentine architects. Corbu opened the exhibition with a few dry, almost sardonic remarks, but he was clearly moved by the great affection which surrounded him. So were we all. It was an historic occasion and it proved to be an extraordinary show. All the materials had been selected by Corbu himself and it was astonishing to find that it was overwhelmingly a show of his art: *His architectural work—all those great buildings and projects that had reformed the visual grammar of the world—were summarized, almost casually, in a small anteroom. All the rest of the immense show was devoted to his art: room after room of sketches in pencil,*

crayon, watercolor; paintings and murals in oil, gesso, fresco; stained glass and tapestry; sculptures in polychromed wood. The material was hung in strict chronology and, walking through that record of almost half a century of activity, I understood as never before what he meant when he gave to his autobiography the title Creation Is a Patient Search.

Corbu always said that he was a painter in the morning and an architect in the afternoon. But not until I saw that show did I comprehend how literally the morning's work supplemented that of the afternoon. His painting studio was exactly what he called it: his laboratory of form. The Florence exposition proved that every plastic and pictorial concept, every symbolic form and device, had been worked upon, explored from every angle for years, decades, before it was ever admitted into his architecture. Here was the answer to those of us who have marveled at the inexhaustible wealth of his artistic invention, at the durability of his formal language of expression, which seems at once so ever-fresh and yet so timeless. Here indeed was the record of patient creation, the prehistory of that noble procession of forms, which—on the rooftop at Marseilles, at Ronchamp and at Chandigarh—have burst upon us without any warning, as full-blown and complete as a dream.

Another lesson of that Florence show—and one of which Corbu could not have been unaware, since it was his own selection—was that the rational and the poetic, the socially committed and the passionately subjective, had always co-existed in his work. Only the balance between them had shifted as his life unwound. In his young manhood, he had been dazzled by the social promise of industrial technology and the aesthetic potentialities of the modern city. All his great talents, artistic and polemic, were mobilized in a campaign to rebuild the world along the lines of reason and order, in the best French Utopian tradition. In these years, great architectural and urbanistic projects occupied his attention; and he sought to design them with the cool and immaculate precision he so admired in the airplane and ocean liner.

But he was not given the chance to rebuild Paris or Algiers. Frustrated in his attempt to solve social problems, he was driven back more and more into the personal and private; and, parallel with that enforced retreat, the subjective and poetic comes more and more to the forefront of his work. The private landscape of his imagination bloomed suddenly in Marseilles, as a masonry garden of new Corbusian form, half idyll, half nightmare. At Ronchamp, it became a wonderful building which, if not irrational, was at least the nonrational thing that dreams are made of. The designs date from the 50's; but if we look at his paintings, we see how long they were in gestation, awaiting merely the chance to flower.

For younger men who might aspire to the succession, Corbu has left a legacy of Calvinist simplicity and rigor: self-discipline and work. For him, there was no other route to a viable architecture. Though he might rush into print for a cause he believed in or dash out dozens of sketches to illustrate some new concept that gripped him, he was very conservative about committing them to actual construction. He recognized that architecture was a far more durable medium than the printed essay and he acted with comparable responsibility. His polemics, that is to say, were verbal, not plastic —an example our most successful architects might do well to heed.

CLIVE ENTWHISTLE
New York, New York

It is perhaps a testimony to Le Corbusier's rocklike consistency that, in trying to express what I deem most precious in the vast legacy he left us, I find myself setting down essentially the same ideas that I expressed in my introduction to The Home of Man, *a work of his that I translated in 1948:*

"Le Corbusier has observed men and the world around him with an attentive and impersonal eye. He spoke to me recently of his delight and wonder when he first realized how the infinite variations of climate, vegetation, life on earth and even forms of building have developed inevitably from a system of limpid simplicity. The sun in space—remote —shining in parallel rays upon the earth turning in space. The increase in radiation falling on unit surface from the poles to the equator of the rotating sphere: climate.

"The gentle annual tilting of the axis: spring, summer, autumn, winter. Men turning on the great sphere, into its own shadow—into the light of distant stars—back toward the brilliance of our parent star: day and night—'metronome of human activities.'

"Here, toward phenomena of a cosmic order which are yet open to our observation, and toward other more complex aspects of creation exteriorised in nature, Le Corbusier opened the sharp eye of his mind. He observed too the nature and behaviour and needs of men. From these two streams of material his mind synthesized poetry; poetry that has enflamed a generation of architects. We need not seek in overcomplicated terms to express the reasons for Le Corbusier's extraordinary influence. He has been to the plastic artists of our generation a stethoscope reasserting that the world is alive, even if humanity had nearly died, and making audible some of the fundamental rhythms of that life of which man is a product.

"Having understood certain simple truths very clearly, he wishes others to understand them with equal clarity from their own observations, so that they will work, not in imitation of his conclusions, but on their own initiative, toward a common goal.

"And in this attitude lies the key to the understanding of Le Corbusier's unique position in modern architecture. He has taught always the correct way of formulating problems, rather than emphasizing, by style and finishes, his particular answers to them. If he has been widely plagiarized, it has not been his responsibility nor his wish. His value has been in his exemplification of method: the abandonment of all preconceived forms that had become a language entirely without force or meaning both for the user and the viewer: the thinking out and clear formulation of the problem: the study, as much intuitive and emotional as intellectual, of the expressed nature of the world of which man is a product in so far as it was positively legible to his eyes: the answer to the formulated problem in terms that harmonized with his appreciation of the laws and processes of nature: the incessant rejection and re-formation of prototypes, and the recultivation of the fields of his experience."

On a more personal plane, I have often heard it said of Le Corbusier that he was a "difficult" man, suspicious and bitter. If he sometimes manifested these attitudes, we should remember the almost total solitude of his long

early battle with the fossilised official institutions and attitudes of France in the 20's and early 30's. A struggle in which his only resource was his utter dedication to the search for a new truth, and in which his adversaries were armed with an overwhelming arsenal of weapons and defenses: vested interest, the immense prestige then enjoyed by the academies, a fiercely reactionary press, and the self-satisfaction of bourgeois officialdom, sporting the inevitable Legion d'Honneur boutonniere, which nevertheless did not deter its wearers from employing the most dishonorable ruses, as when Monsieur de Lemarasquier of the Ecole des Beaux Arts had Le Corbusier's winning project for the League of Nations building in Geneva disqualified simply because the plans were reproduced in printer's ink, instead of Indian ink as was required by the conditions.

The young men of our day cannot, I think, imagine the agonies of frustration and tantalizing disappointment that were piled without pity on his life. Therefore they cannot realize what they owe, what we all owe, to the real sufferings of that man.

The United Nations building was to afford a similar disappointment. On his return from New York, where his basic design had just been accepted, he stayed in my house in London, and from there wrote a letter to the Secretary-General, proposing an international team for the execution of the buildings, which included Niemeyer from Brazil, Amancio Williams from Argentina, and myself from Britain. During his absence from New York, Harrison managed to obtain the commission for his firm alone, and erected the banal monument that so sadly betrayed the spirit of Le Corbusier's intentions.

Yet his bitterness remained restricted to those who had worked against him; it did not stain his whole nature. I remember once arriving two hours late in his penthouse in the rue Nungessor et Coli. He certainly had every right to show displeasure at this apparent sign of disrespect from a man almost half his age. Yet as I entered his studio, he smilingly handed me a small painting he had just done—it was inscribed "En attendant Entwhistle—amicalement Le Corbusier." His emotions, like his thought, were never conventional. A delightful and original companion, who taught without teaching. He was gifted with that piercing and memorable humor of one who has "eyes that see." Of an oaken masculinity, like all truly creative men, and (it was said) of a taurean virility, he was capable of the most delicate gestures of kindness inspired by understanding.

Over and beyond my immense debt to him as a master in my profession, I remember him as a man whom I loved.

KUNIO MAYEKAWA
Tokyo, Japan

With a feeling of deep sorrow and regret I now say to you, Le Corbusier, "Adieu!" Perhaps it is the rule of nature that a junior lament over the passing of a senior. Never have I thought, however, that this would come so soon and so suddenly. It reminds me once again of the vicissitude and frailty of human beings. I feel I can hear you murmuring to yourself, "Oh, zut alors!"

I recall one day in July this year, when Nicolas Colli from Moscow and I paid a visit to your atelier at 35 rue de Sèvres. It was exceptionally cool, although it was not late in the afternoon of the Parisian summertide. Aged trees in the court of an ancient convent were shadowing the windows of your small cabinet, built according to your famous "Modulor" which was so dear to you all through your life. Silence reigned, and it was hard to believe that we were right in the heart of Paris. Clad in a navy-blue coat and wearing a small tie as usual, you said to us teasingly in good humor, "What are you doing in Paris, you two?"

It was just at this same spot that I met you for the first time in my life, nearly 40 years ago. I was 23 and you 40 years old. I visited your atelier the next day of my arrival in Paris after a 17-day trip by the Trans-Siberian Railways. I had left Tokyo on the very day of my graduation from the university. I was so much fascinated by your thought on architecture, especially that expressed in one chapter "Confession" in your book, L'art décoratif d'aujourd'hui, *that it caused me to make an instant decision to come to Paris to work in rue de Sèvres.*

On the day of your first encounter, you and Pierre Jeanneret took me to Garche to show me the "Villa Monzi," just completed. I would never forget the profound emotion that stirred me when I looked up at this villa from the back garden. Do you remember the beautiful lilac flowers swaying in the spring breeze?

"You will arrive, after difficult sailing, in a calm harbor at the age of 30.

"An avant-garde architect cannot maintain his place once he becomes an architect en vogue."

I always remember these words, which you told me from time to time, although I cannot agree with you in some of them, since my own later experiences have taught me differently. You yourself wrote, in Ville Radieuse, *about the terrible disillusionment you experienced after making strenuous efforts with an unbounded confidence in a glorious future of the "era machinist": "The twentieth century has built so much for the sake of money, but nothing for the sake of human beings!"*

I regret very much that I have missed the chance of discussing with you the destiny of humanity, thrown overboard off the "Ghost Ship" of machinism, which one time appeared as a savior on the distant horizon.

When our conversation fell upon Colli's son, whom you seemed to have known well, you uttered after a short silence, "I have no child." Your voice sounded to me like a small pebble thrown in the middle of an isolated marsh. You continued, I remember, "When I married, I told my wife, 'No baby!' because I expected that the whole of my life would be a hard one." Also, I recall that you told me repeatedly, "Architecture is but affliction (penible)*!" Indeed hard was your life. Nevertheless, with confidence I can say that it was never afflicting, at least for you. On the contrary, you, who had never ceased to think and to create all through your life, must have found the greatest contentment and happiness of human life.*

Let me bid you "adieu" once again, and pray for the most peaceful sleep!

IEOH MING PEI
New York, New York

While Frank Lloyd Wright is generally credited with freeing the Plan, Le Corbusier liberated the Volume. The greatest impact of his influence is yet to be felt when we grasp more fully the meaning of plasticity in architecture.

The Log of the Klamath

Ship of the San Francisco Bay Ferry Fleet, length: 234 ft; beam: 60 ft; capacity: 78 automobiles and 1000 persons; speed: 13 knots.

December 27, 1924
A ferry built by the San Francisco Union Plant of the Bethlehem Shipbuilding Corporation is sold to the Southern Pacific Company for $500,000. The Southern Pacific Company names the ferry the *Klamath*, after Klamath County, Oregon.

January 26, 1925
The *Klamath*, placed on the Southern Pacific-Golden Gate Sausalito line, begins to ferry a maximum of 78 cars in a 33-minute trip between San Francisco and Sausalito. Her 1400-hp, triple-expansion vertical steam engine drives a solid cast-iron propeller, 10 ft in diameter.

July 1938
The Golden Gate Bridge, finished the previous year, goes into service and the Sausalito-San Francisco ferry line goes out of business. The trip, formerly 33 minutes across the bay, now takes 35 minutes by bus.

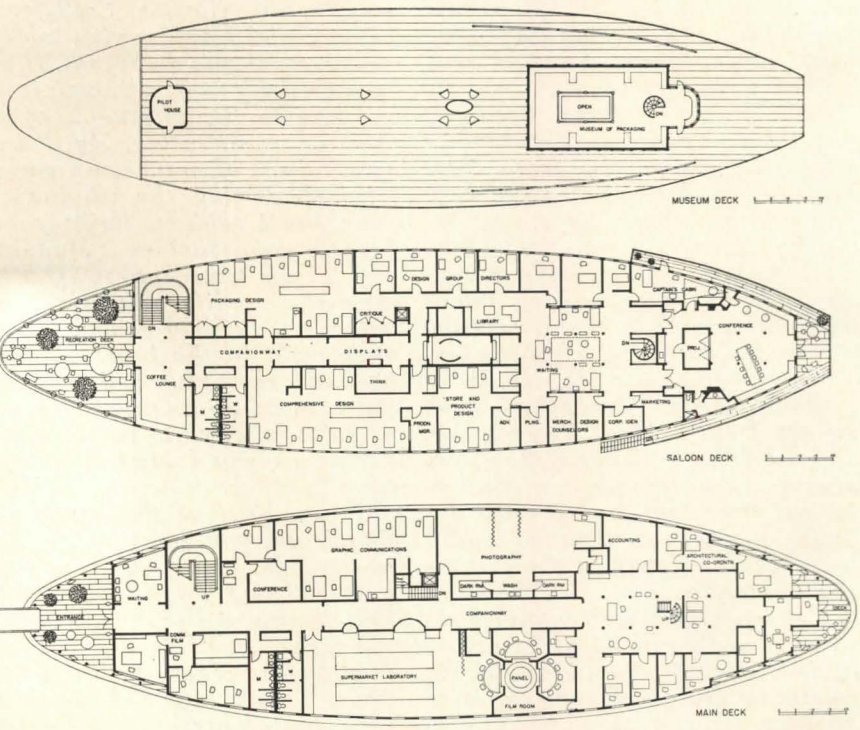
November 1, 1938
The *Klamath* is sold to the Richmond-San Rafael Ferry Company, together with her sister ships, the *El Paso* and the *New Orleans*, for a sum of $150,000. The ferry begins a new run between Point Molate, Richmond, and San Quentin.

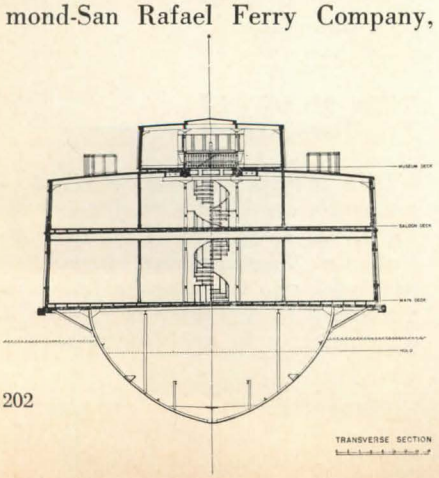
July 2, 1944
Just after two bells, a U.S. Navy submarine (name and mission now lost in the files of wartime security) crossed the *Klamath's* bow and was rammed. Damage slight.

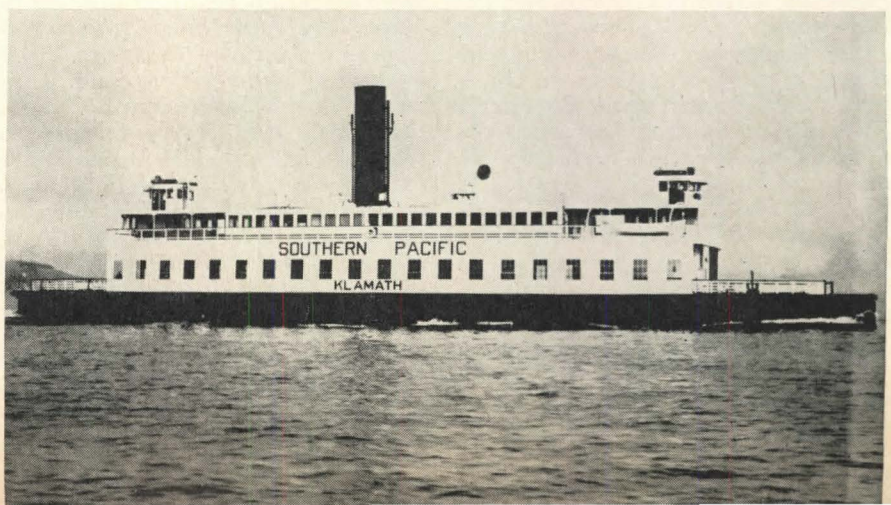
September 1, 1956
The *Klamath* is retired. All flags are struck. Cause: a new San Rafael-Richmond bridge. Plans to turn the old ferry into a restaurant fail.

January 1, 1964
The *Klamath* is sold to Walter Landor & Associates, Industrial Designers, for $12,000. Plans are made to turn the ferry into offices for Landor's group, making it the only office building in the world to ram a submarine.

January to June 1964
These are the months of change for the *Klamath*, and for Alexis Tellis of Walter Landor & Associates, in charge of reconstruction, and Morton Rader, of Chan/Rader & Associates, architectural consultant. Her bottom is sand-blasted and sealed with a protective coating. Electronic equipment is installed to deter corrosion. Decks are leveled, windows glazed, a deck house added for the Museum of Packaging Antiquities. Partitions are put up; ceilings are lowered, but the original wood-exposed beam construction is kept. Natural woods, redwood and Douglas fir, are used for paneling in some of the offices. Lighting is of ferryboat vintage wherever possible. The original passenger stairway amidships is taken out and a grand stair-








KLAMATH

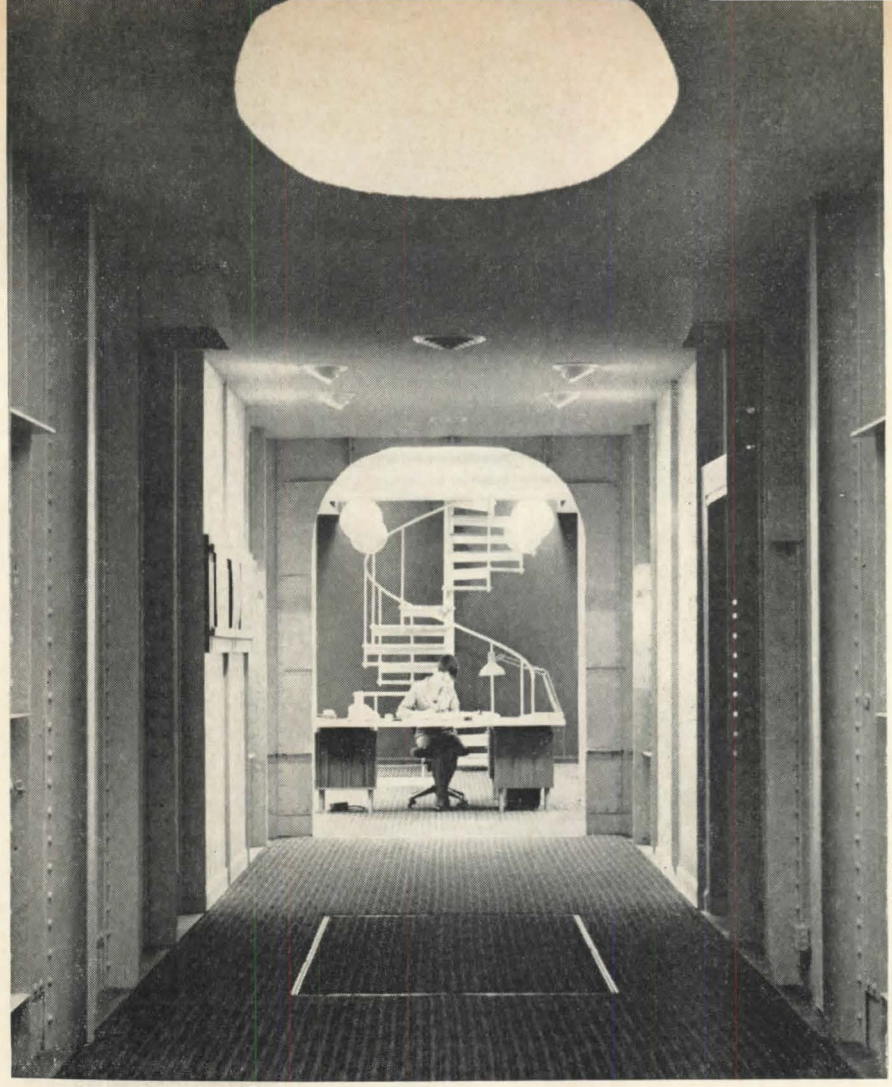
case of natural wood leading from the main to the saloon deck is installed in the stern. In the bow, the two decks are connected by a circular iron ladder. To "feed" the ferry, a flexible cable between the *Klamath* and shore is installed to carry telephone, electricity, gas, water, and sewerage.

June 9, 1964

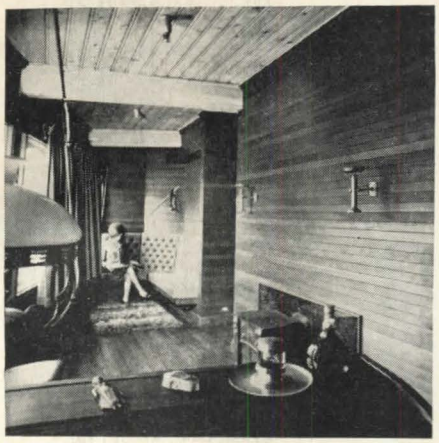
Dry-dock reconstruction is completed at a cost of $90,000 (or less than $10 a sq ft), and the *Klamath* once again takes to sea to reach Pier 5. Even though this is considered a permanent berth, the *Klamath* can weigh anchor at any time and hook to new utilities at another location. Stripped of her boilers and propellers, the *Klamath* looks as seaworthy as she ever did. And she is. Despite the 5- to 6-ft changes in tide, workers on the *Klamath* report no problem with sea motion; even in the 100 mph winds that recently blew across the Bay, the *Klamath* suffered no damages.

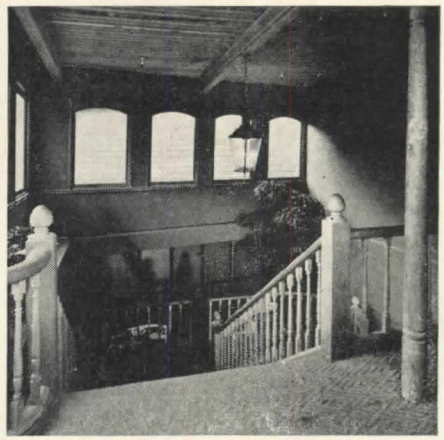
Her interior spaces are the intimate ones of a ship. Tellis and Rader have kept as much as possible to the original structure. The result is a happy one. The *Klamath* is an image-builder; on it, the Landor office "doth suffer a sea-change . . ." As Landor himself puts it, "There is something stirring about the idea that we can slip our mooring and glide away beyond the horizon." But, aside from these romantic considerations, the office functions both spatially and economically. Commercial space comparable to the 22,000 sq ft of offices on board would cost $500,000 on land. Landor's total expense was $102,000. In sum, the ferry-*cum*-office-building is a welcome addition to the San Francisco waterfront redevelopment, which already sports Acquatic Park, The Cannery, and Ghirardelli Square (see NEWS REPORT, p. 58, AUGUST 1965 P/A).—JCE

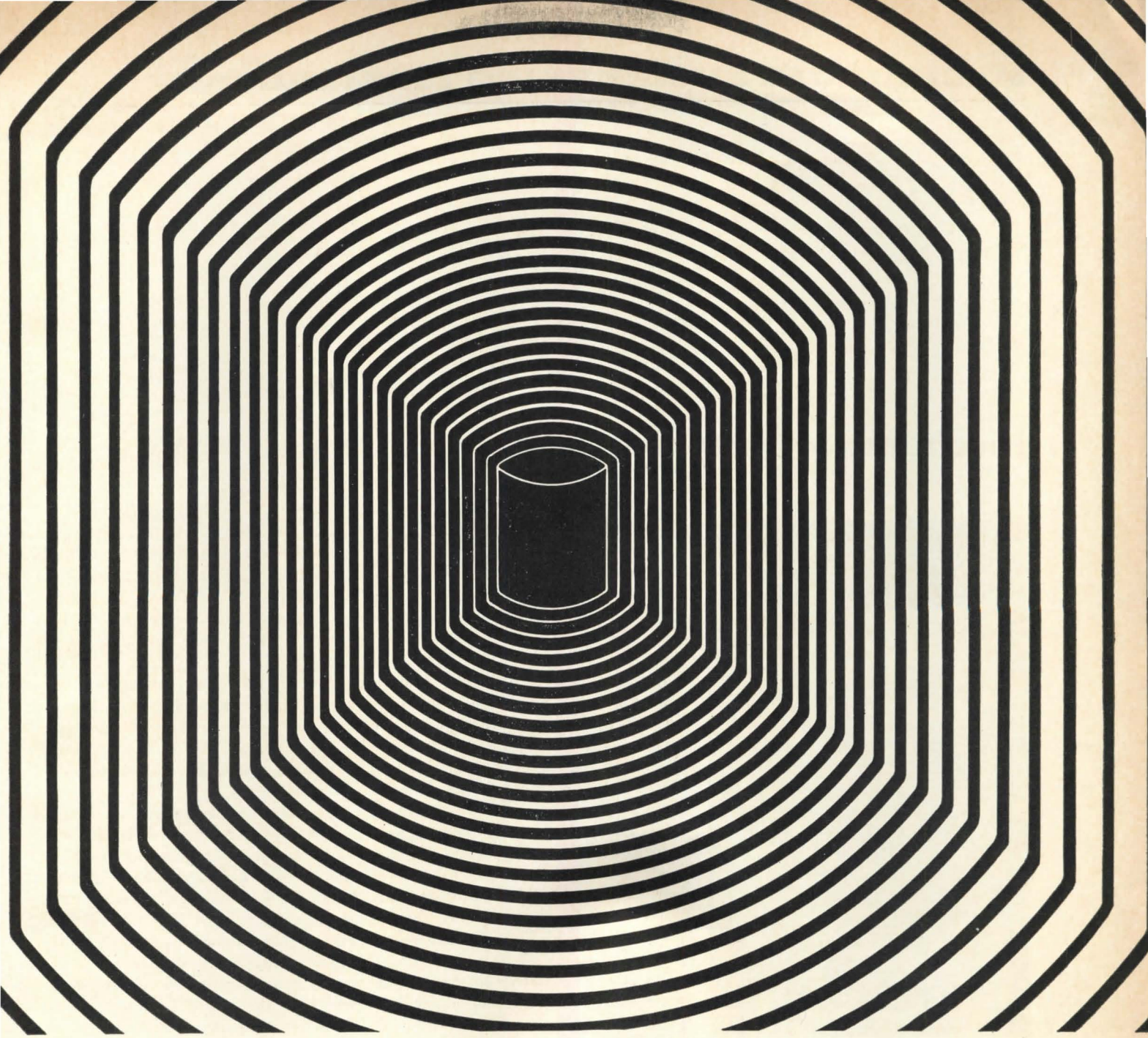
In Charge of Reconstruction: *Alexis Tellis, Walter Landor & Associates.* ***Consulting Architects:*** *Morton Rader, Chan/Rader & Associates:* ***Interior Furnishings:*** *Walter Landor & Associates.*



Photos (except as noted): Stone & Steccati







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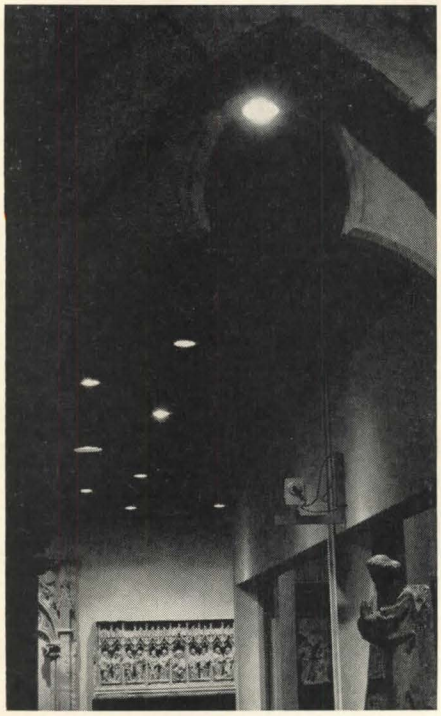


BY WILLIAM J. McGUINNESS

Los Angeles protects its new art museum with an array of electronic detection devices linked to a central console. William McGuinness is a consulting mechanical engineer.

The well-publicized gymnastic feat of stealing priceless gems from a New York museum would have been foiled if the building had been protected with the same electronic security equipment that guards the recently opened Los Angeles Art Museum.

The interior of this art museum is kept under constant surveillance by television cameras, sound detectors, and electronic door sentries. All this equipment, plus heat and smoke sensors for fire protection, is connected to a central control panel.

One man at a master console can control the museum's four-story gallery, a two-story exhibition hall, and an auditorium. The console can also control security equipment installed in any future additions to the museum.

Visual surveillance is conducted with closed-circuit television systems. Twenty-four cameras, located strategically throughout the buildings, are used in conjunction with electronic sound detectors. Both are installed in or near the ceiling. These detectors flash signals to the console when sounds reach a predetermined threshold. Because there are always noises from airplanes, trucks, or air conditioners, even at night, the sound detectors are equipped with pulse discriminators that help to eliminate false alarms. These devices react only if they hear a certain number of sounds within a preset period. Thus the alarm will not be accidentally triggered by a backfiring truck, for example, or a sonic boom.

Another electronic aid guards 27 fire exits that must be capable of being opened from the interior of the building at all times. These door sentries relay an alarm to the console if the doors are opened.

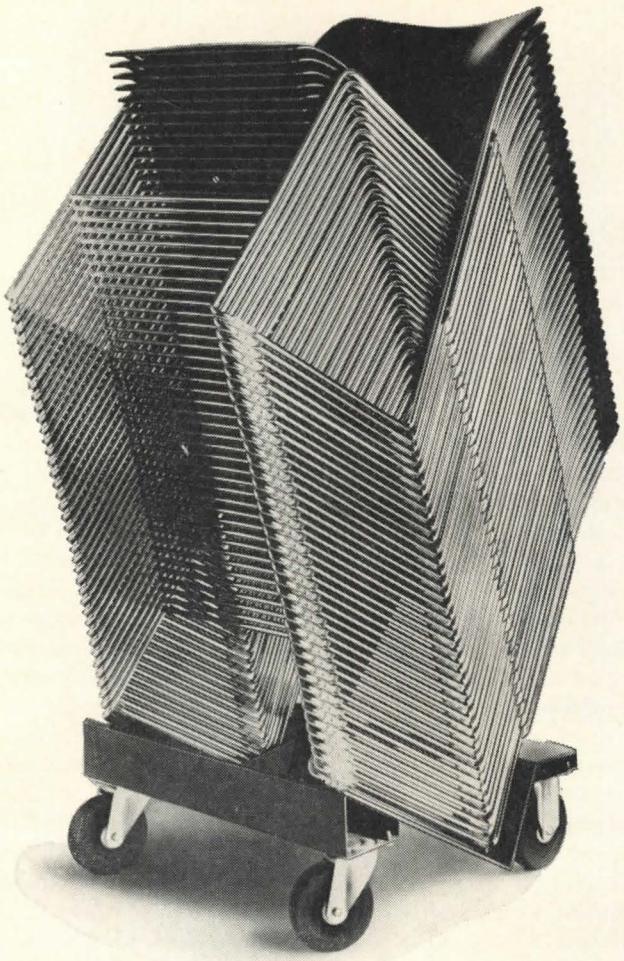
All the protection systems are protected against tampering. If an intruder cuts or crosses wires, or even rips a detector unit off the wall, the network will not go dead but will instead call for help.

Guards are still required to back up the electronic security system. When the alarm sounds, men have to investigate the trouble and apprehend intruders. However, the number of guards can be significantly reduced, and manual, intermittent surveillance stepped up to a constant, remotely-controlled watch.

The man operating the electronic system from the console can look at and listen to any part of the buildings. He can post an electronic sentry at a door, talk through an intercom with colleagues in the protected areas, or operate garage doors to see who enters.

At the console, colored lights indicate the areas under surveillance: red lights for the main gallery, blue for the two-story building, and green for the auditorium. Fire warning is relayed to the console by sensitive heat detectors and smoke-sensing systems. They are mounted high enough for the smoke detectors' light beams to shine across the tops of partitions that divide galleries but do not extend to the ceiling.

The Los Angeles Art Museum security system was designed by George Carey of William L. Pereira & Associates, Architects, Los Angeles. Honeywell Inc. designed the control console.



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Sum of the Parts May Not Equal the Whole

BY HAROLD ROSEN

Building science lags because research is fragmentary. A comprehensive, impartial agency is needed, according to the Chief Specifications Writer for Skidmore, Owings & Merrill, New York City.

There is a growing belief among architects today that problems arising from the faulty use and selection of building materials could be avoided if an impartial testing agency existed that investigated the physical and chemical properties of these materials before manufacturers marketed them. These are, of course, ASTM and Federal specifications covering materials, but the time lag is too great between development of a new product and publication of these specifications. Before the ASTM specifications appear, an architect who needs technical data on a new product must rely on information made available by the manufacturer. Often, this information is looked upon with distrust by many prospective users of the material.

Even in cases where the manufacturer's data is beyond reproach, the test methods and procedures he has adopted to develop criteria for his products do not necessarily provide architects with all the answers they need about the material. In addition, data published on related materials is sometimes evaluated on the basis of differing standards, and the results expressed in units that are not comparable. With such uncoordinated data, an architect cannot determine the equivalent properties of materials.

There is thus considerable merit in suggesting a materials evaluation service *that* would impartially establish standards for materials, test materials against these standards, and report the results. However, such a service should also try to bridge the knowledge gap between the behavior of a unit, such as a brick, and the multiple use of the unit, such as a wall. (When the physical and chemical properties of a material are established, either by a manufacturer or by a committee on standards, these properties are usually concerned only with the unit behavior of the material.)

When the unit material is used as a multiple of itself—e.g., the brick, or a strip of wood flooring in a gymnasium floor, or a ply of bituminous roofing in a built-up roof—we find that the multiple of the unit exhibits characteristics that are not necessarily reflected in the standards that have been established for the basic material.

A brick unit is described in most standards as having characteristics related to compressive strength, moisture absorption, and modulus of rupture. But a masonry wall must be designed to prevent water infiltration, and to control cracking by the introduction of control joints and expansion or contraction joints. However, the factors related to considerations in the design of a masonry wall cannot be extrapolated or interpreted from data contained in the standard for the masonry unit. The same reasoning can be applied to design considerations for a gymnasium floor built up from a multiple use of a single wood strip, and a bituminous built-up roof developed from the single ply of roofing felt.

Even more important is the action and interaction of materials when combined in a composite design, such as a curtain wall. Information as to the properties of individual components may be available from the manufacturer or from reference standards, but the question of how such materials interact and affect each other is frequently not answered until after they have been used in combined form; field inspections may then disclose a breakdown or defect resulting from an incompatible marriage of materials.

For example, although concrete and glass have been available for years, only recently have they been used in close proximity to one another in concrete window frames with neoprene gaskets securing the glass. This new composite design may result in etching or staining of the glass by free alkali released from the concrete by rainwater (see p. 198, SEPTEMBER 1965 P/A).

It is curious that, in this age of science, so very little basic research has been conducted in the field of architecture. There has been product development by manufacturers motivated by the opportunity to exploit new and profitable markets. But the experience gained from product development is fragmentary, and even a materials evaluation service would not solve the behavioral problems of several materials used in a composite design.

In commercial and industrial fields, mock-ups or prototypes of new designs are made and tested before mass production is contemplated. This is particularly true of airplanes and automobiles. Aircraft are thoroughly tested in wind tunnels and by test flights before they are made available for commercial use.

A building, however, is designed and put in use without benefit of a shakedown cruise to determine whether all of its parts will function properly. When older materials and previous designs are integrated on the basis of known factors and use experience, few difficulties will be encountered. The introduction of new materials, however, and even older materials that use new construction techniques and new designs or configurations, can create trouble because we cannot anticipate all the problems that may arise.

Public subsidies have supported basic research programs in agriculture, medicine and industry, which have contributed to a better understanding and solution of the problems involved. The science of building technology, however, has lagged, because no systematic investigation of every type of situation arising in the design of contemporary structures has ever been undertaken.

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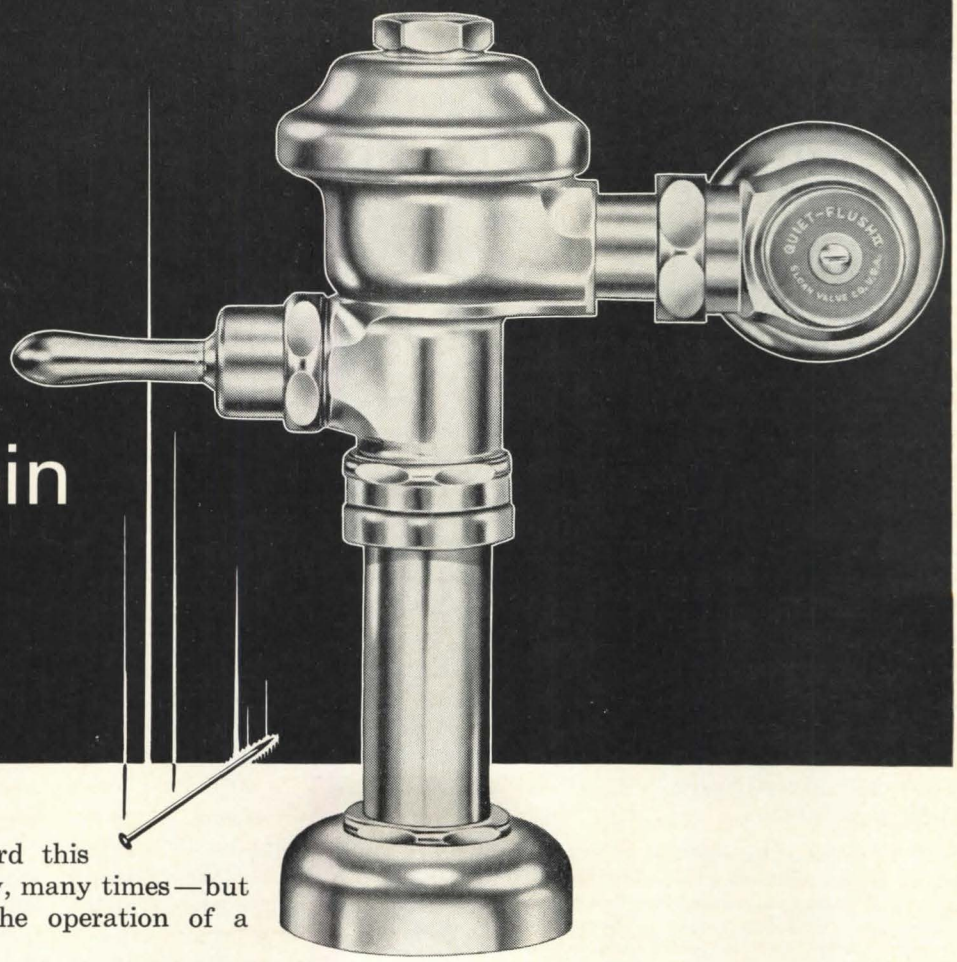

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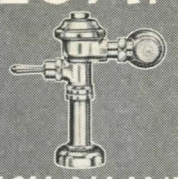

FLUSH VALVES

Indemnification Agreements

BY BERNARD TOMSON AND NORMAN COPLAN

P/A's legal team discusses implications of a recently passed New York statute that prohibits agreements between owners and contractors that indemnify an architect for liability for damages when these are the result of defective plans or specifications.

A statute has been enacted in New York, effective as of September 1, 1965, that makes void and unenforceable agreements by owners and contractors that provide indemnification to architects and engineers for liability caused by or arising out of defects in maps, plans, designs, and specifications. The statute provides as follows:

"Every covenant agreement or understanding in, or in connection with any contract or agreement made and entered into by owners, contractors, subcontractors or suppliers whereby an architect, engineer, surveyor or their agents, servants or employees are indemnified for damages arising from liability for bodily injury to persons or damage to property caused by or arising out of defects in maps, plans, designs or specifications, prepared, acquired or used by such architect, engineer, surveyor or their agents, servants or employees shall be deemed void as against public policy and wholly unenforceable."

This law was proposed and strongly supported by contractors' associations that had objected to a "hold harmless" clause included in the contract of a state agency (see IT'S THE LAW, AUGUST 1965 P/A). This clause provided that the contractor was to indemnify the owner and architect for damages charged to them regardless of the contractor's negligence. The contractors' associations contended that it was unfair to require a contractor to indemnify an architect for liability arising from defects in the architect's plans and specifications, independent of the contractor's negligence, and further on the ground that insurance could not be obtained to cover such a commitment.

The restriction upon the enforceability of certain indemnification agreements provided by this statute is limited in nature. It has no application to agreements pursuant to which a contractor undertakes to indemnify an owner. Even in the absence of such an agreement, an owner may nevertheless be entitled to indemnification for liability for damages with which he is charged, but that was occasioned by the contractor's negligence or other improper performance. Such right to indemnification will depend upon the legal tests or criteria applied by the state having jurisdiction.

If a third party is injured while on the owner's property, as a result of a hazardous condition created by a contractor, the owner will generally be deemed liable to such third party under a rule of law that charges the owner with furnishing a safe place for a person who is lawfully on his premises. However, under such circumstances, it is also the general rule that the contractor is to indemnify the owner for the liability for damages with which he is charged. Some courts describe the owner's liability in such a situation as secondary, and the contractor's as primary, and accordingly require the primary tort feasor to indemnify the party who is only secondarily liable. Other courts require indemnification on the theory that there is an implied obligation in the construction contract that the contractor will indemnify the owner for any wrongful act on the contractor's part in the performance of the contract. Still other courts require indemnification where they find that the contractor was guilty of active or affirmative negligence, whereas the owner was cast in liability only because of passive negligence. No indemnification, however, will be required where both contractor and owner have been concurrently and actively negligent.

Courts differ as to what constitutes primary or secondary liability or passive or active negligence. Consequently, if an owner is to be assured of indemnification, the construction contract should contain an appropriate indemnification or "hold harmless" agreement. If, for example, an owner is aware of a dangerous condition on the site caused by the contractor and takes no action, some courts may deem this active negligence. If, however, the construction contract had provided that the contractor was to be responsible for any damage due to his act or neglect, the same court would probably require indemnification.

Nothing in the statute adopted in New York would appear to prohibit agreements between contractors and owners that provide for indemnification of an architect for any liability cast upon the architect due to alleged negligent supervision. The statute refers only to liability based upon defective plans or specifications. It is quite common for persons who have been injured by the acts or negligence of contractors to include the architect as a party defendant in the lawsuit against the contractor, on the theory that appropriate supervision by the architect would have prevented the contractor's negligent act. An indemnification agreement in these circumstances would, of course, be highly desirable from the architect's point of view. Unfortunately, the role and responsibility of the architect during the construction phase of the project is clear neither to the public nor to the courts, and consequently a misunderstanding of this function can and has resulted in claims, suits, and in some instances substantial money judgments. The significance and importance of an indemnification agreement that requires the contractor to assume full liability for damages he primarily occasioned is readily apparent.

A challenge to the constitutionality of the New York statute, on the ground that it is an improper invasion of the right to contract between private individuals, has not as yet been made. It is debatable whether the exercise of the state's police power to prohibit such agreements is justified by the public or social interest in the subject matter sought to be regulated.

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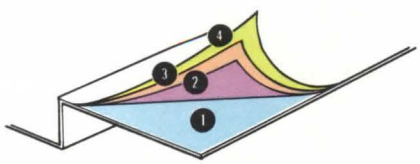

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EP-54

Landscape Architect Burle Marx: An Artist of Indisputable Significance

BY LEONARD K. EATON

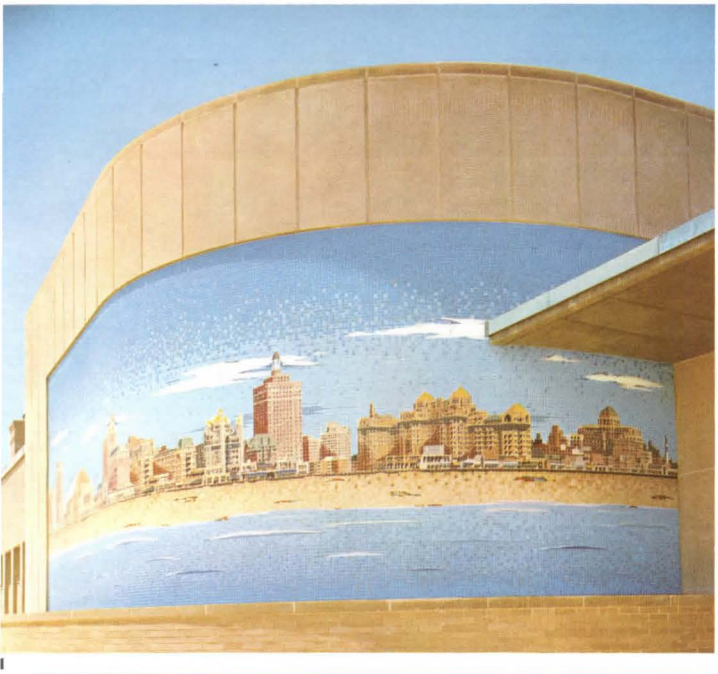
THE TROPICAL GARDENS OF BURLE MARX. *P. M. Bardi. Reinhold Publishing Corp., 430 Park Avenue, New York, N. Y., 1964. 154 pp., illus., $15. The reviewer is Professor of Architecture at the University of Michigan.*

In recent years, the art of landscape architecture in the United States has enjoyed what amounts to a renaissance. Stimulated by the enormous campaigns of urban reconstruction now being carried on across the country, architects and town planners have demonstrated renewed interest in the contribution the landscape designer can make to the rebuilding of our cities. (The current enthusiasm for greenery has even infected a few perceptive politicians; Detroit's Mayor Cavanaugh has recently issued a "Let There Be Flowers" order for lower Woodward Avenue and the Civic Center.) The appearance of a large, well-illustrated book on Brazilian landscape architect Roberto Burle Marx is therefore a welcome event.

While Burle Marx has held a large reputation in North America and Western Europe, material on him has hitherto been buried in a number of rather inaccessible publications, many of them in Portugese. This volume sets his achievement before us in comprehensive terms. It was evidently intended for an international audience, since there is a trilingual text (in English, Italian, and German). The author, P.M. Bardi, is director of the Sao Paulo Museum and a long-time friend of the artist. His interpretation is thoroughly sympathetic, and the photographer, M. Gautherot, also deserves credit for a brilliant performance. The illustrations, many of them in color, are of a uniformly high quality. Finally, the book designer, whoever he was, should receive an award. *The Tropical Gardens of Burle Marx* is a truly handsome job of bookmaking.

American readers will have several surprises in store for them. The first will undoubtedly be the fantastic variety of plants used by Burle Marx. From the first years of his practice, he seems to have been interested in botany and plant ecology, and has made several expeditions into the interior of the country in search of new varieties. Since Brazil contains within its borders something like one-quarter of the world's 50,000 known plants, it is difficult to imagine the almost limitless possibilities the country presents to a landscape architect. Most of Marx's plant materials will be totally unfamiliar to Americans without tropical experience. The heliconiae (relatives of the banana) are a good example. Marx has devoted much attention to them and has had one named after him. With such plants, and others like them, color combinations far beyond the ken of most of us are entirely possible. Their structural possibilities are likewise almost unlimited. Brazil's numerous succulent plants are especially striking. Sometimes their shapes seem weird, if not

Continued on page 216



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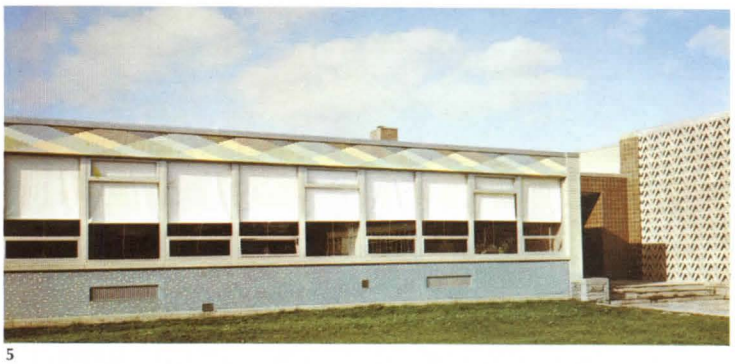
CERAMIC TILE
American Olean

4



5

Architectural Showcase...exteriors in tile

1. Airport, upper left, Atlantic City, N.J., has 40-foot long mural depicting Atlantic City skyline. Architect: Donald L. Rosenstein. Tile Contr.: O'Keefe Tile Company. Plate 487.

2. Motor Inn, lower left, Casa Grande, Arizona. Murray quarry tile, 6" x 6" x ½", in Sahara provides a rich and rugged floor for the exterior. Architect: Nicholas Sakeller & Assoc. Tile Contr.: Wright Tile Co. Plate 523.

3. Passenger Terminal, upper right, Birmingham, Ala. Colorful mural in 1" x 1" ceramic mosaics provides theme for L & N Terminal. Architect: Lawrence S. Whitten. Tile Contr.: Floor Engineers, Inc. Plate 445.

4. Supermarket, Northampton, Mass. Contrasting light and dark blue panels in 1⅜" Tile Gems® add interest to this exterior. Architect: Sumner Schein. Tile Contr.: Mayfair Tile & Rubber Co. Plate 533.

5. High School, lower right, Waterloo, N.Y. Exterior features decorative panels of 1" x 1" ceramic mosaics above and below windows. Architect: John C. Ehrlich. Tile Contr.: Stearns & Bergstrom, Inc. Plate 482.

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Continued from page 212

actually sinister. Those shown on the book's dustjacket resemble the horrible hamburger-eating plants in the famous collection of Morticia Addams of TV fame. Undoubtedly, they contribute to the occasionally surrealistic character of Marx's gardens.

At the same time that Burle Marx has developed the scientific side of landscape architecture, he has also concentrated on its purely artistic aspects. These, of course, relate directly to his very considerable accomplishments as a painter. More than one critic has pointed out that his earliest works—private gardens of a modest scale—are three-dimensional realizations of abstract paintings. Among them, the marvelous garden for Señora Odette Monteiro at Petropolis in Rio de Janeiro State (1948) would be this reviewer's favorite. Beautifully illustrated with plans and several colored photographs, it certainly arouses that sense of wonder and euphoria that is central to Marx's concept of his art—an idea very like the notion of the picturesque that dominated the work of the landscapists of 18th-Century England. *It is*, however, different from the work of Brown and Repton, in that *buildings* have little or nothing to do with it. Accordingly, they are omitted from the photographs.

Within the last decade, Marx has been occupied with a series of large urbanistic projects that have provided him with an opportunity to transform the scale of his work. The key monument here is undoubtedly the Parque del Este at Caracas, Venezuela. When this park is finished, it will have an area of almost 20 acres and will include a Natural Science Museum, a planetarium, playing fields, an open-air theater, various areas for resting and popular entertainment and restaurants, as well as artificial lakes suitable for boating, a zoological garden, and many other attractions. Without going into the matter too deeply, it can be stated that this project, now under construction, proves conclusively Marx's ability to work on the larger scale required of the urban designer. It also demonstrates his mastery of a climate and a flora quite different from that of his native country. It is therefore all the more tragic that personal and political considerations have hitherto combined to deny him the chance to work in Brasilia. As Grady Clay has written, its vast and all too often dismal spaces cry out for his attention. We must all hope that the present regime in Brazil will remedy this neglect. One of the few defects of the book, incidentally, is that it does not make clear the extent of Marx's influence outside his own country. He is a figure of major artistic significance throughout the Latin American world.

For the North American reader, then, this book raises many fascinating questions. While Marx's plant materials are exotic, certain aspects of his art will be immediately recognizable to any one familiar with the history of modern painting. He is obviously very much at home in the world of contemporary art, having done the scenery and costumes for a Sao Paulo performance of Stravinsky's *Petrouchka*, as well as a good deal of jewelry that would do credit to anyone working in that field. His use of ceramic tile seems to grow out of the traditional Latin-American virtuosity in that material. The twisting, undulating lines of his garden borders have an obvious affinity with the forms of the Portuguese baroque. In the light of these qualities, it is a little hard to understand Neutra's

Continued on page 220

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		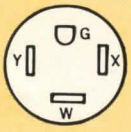					
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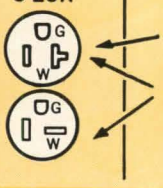							
5-20P*							

*This is NEMA's numbering of this straight-blade grounding configuration.

**Locking configurations have not yet been numbered by NEMA but will be.

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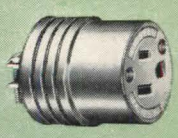

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Hubbell Types Available Now

The NEMA configurations obtainable *now* from Harvey Hubbell are the numbered straight-blade configurations in the chart on the left. For completeness, this chart also shows Hubbell "Twist-Lock" grounding configurations.

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A Word of Caution

The fact that all brands of equipment-grounding connectors will ultimately be made in the NEMA configurations does *not* mean that all brands will become identical in quality. Engineering, materials, and workmanship will still make the vital difference.

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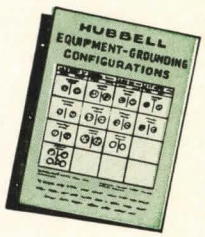

7552, 7553
Midget "Twist-Lock" armored cap and connector body.

7375
Duplex outlet accepts one straight-blade and one "Twist-Lock" cap.

5214
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Continued from page 216

remark that Burle Marx's art is absolutely original and has no roots in the past. It would be more appropriate to say that precisely because he has identified himself so completely with the soil of his native land, he has been able to reinterpret its traditions so vigorously in contemporary terms. At the same time, in his handling of space, color, and texture, we sense in him something truly revolutionary. It is no exaggeration to say that he has done for landscape architecture what Wright, Mies, and Le Corbusier have done for the art of building. His achievement goes far beyond that of any other modern landspace designer. This book demonstrates that he may very well be one of the most significant artistic personalities in the world today.

Missing the Boat

BY JEFFREY ELLIS ARONIN

DESIGN WITH CLIMATE. *By Victor Olgyay. Princeton University Press, Princeton, N. J., 1963. 190 pp., illus., $15. Reviewer is an architect practicing in New York.*

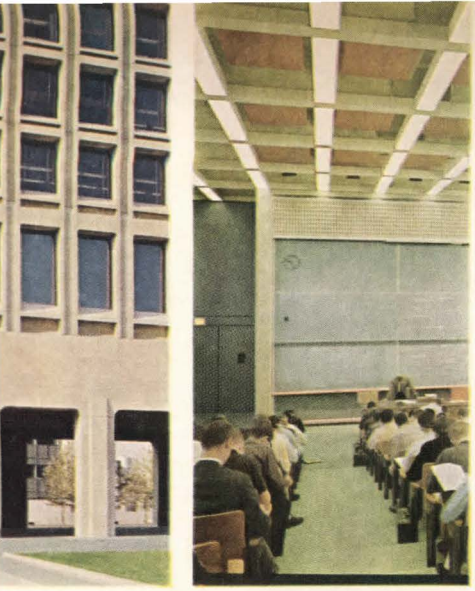
This book was, for me, most difficult to review. Having written a volume on the same subject *(Climate and Architecture)* 10 years earlier, I weighed every word and studied every illustration with keen reference to my own work. And I must conclude: little, if anything, has been contributed to the knowledge of the subject in a decade.

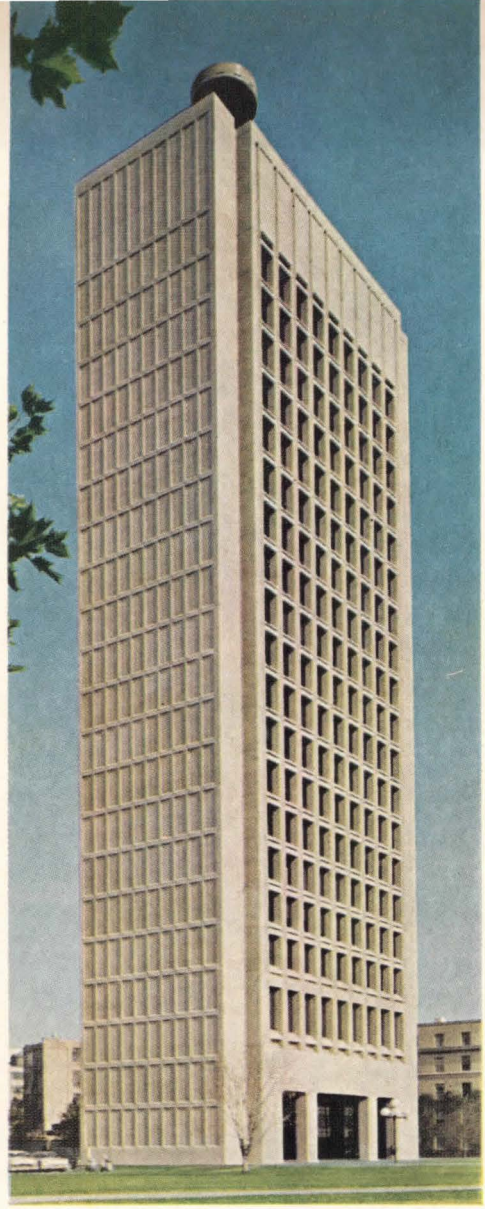
I write this 12 months after the book reached my desk. I had hoped to get a perspective, with time, that would give me a rosier point of view. Now, even though time has reinforced my first thoughts, I am paradoxically restrained from damning the work, for, if I do so, I would cast a reflection on my own book on the subject, which over and over again seems to have inspired Olgyay regarding format, illustrations, bibliography, and text. Comparing it with such distinguished works as *Design of Insulated Buildings* and *Design in the Tropics*, I am further reminded that *Design With Climate* lacks some essential ingredient that prevents it from being called either a trail-blazer or a fountain of knowledge. Olgyay gives just so much—but not enough to embrace all aspects of the subject.

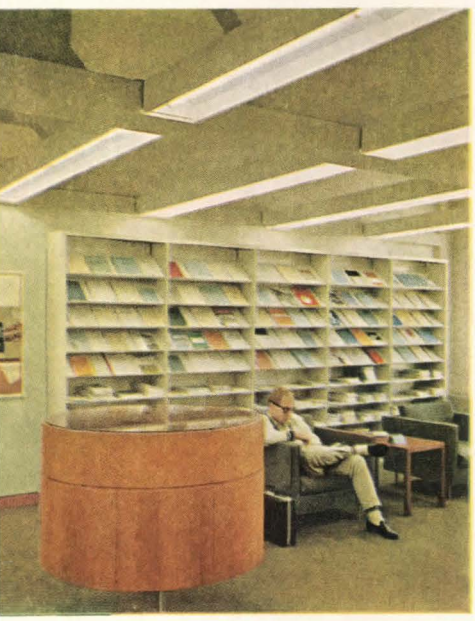
In judging anything, one must test by analysis as well as by comparison. Analysis of this book, without reference to other sources, indicates an intelligent goal supported by poor technique. There are too many graphs and charts of specialized situations that have no pertinence to most architects' work. The architect must be given the tools and the method of thinking to make his own decisions. As students — and Olgyay writes from the academic environment of Princeton—we used to pay careful attention to the exact size of overhangs, for example, for a given day. But that situation occurs only twice yearly. As architects, we design in some respects for mean or average conditions, and in others for extreme conditions. All those tackled in Olgyay's book are generally useless.

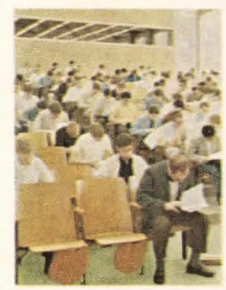
On the "plus" side, one can commend the author for his remarks on bioclimatology, his concept of the comfort zone, and for several charts regarding desirable site locations. In addition, one should acknowledge the fine collaboration on some chapters of the author's twin brother, Aladar Olgyay, who unfortunately died six months after the book was published. They were a dedicated team with much fine work to their credit. I hope that Victor continues that tradition in his future works. Unfortunately, I think he missed the boat this time.

Continued on page 225









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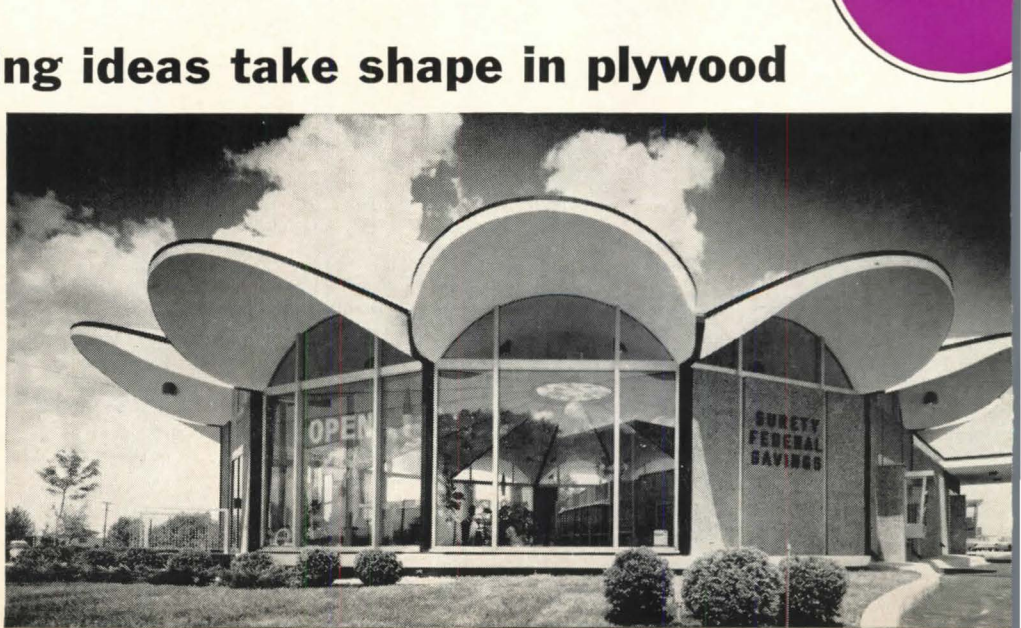

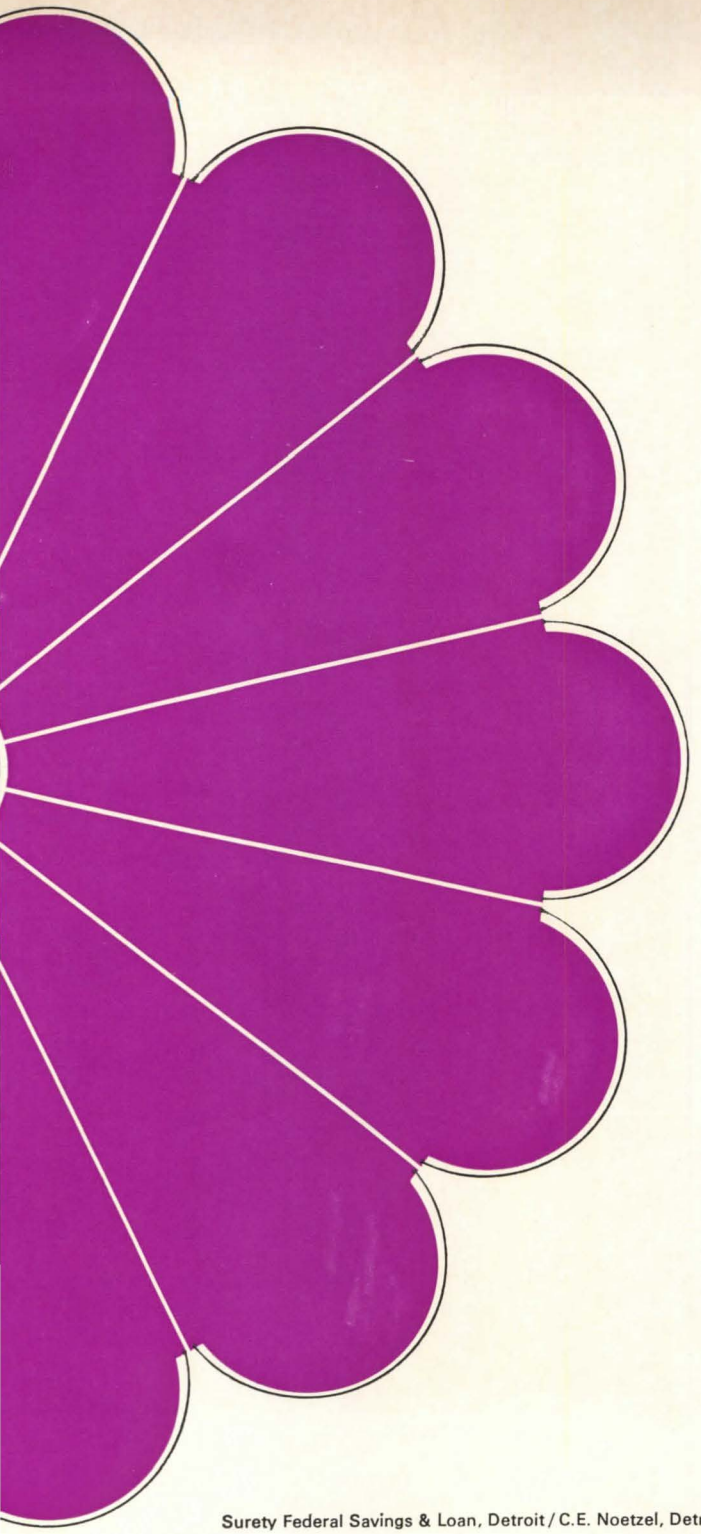

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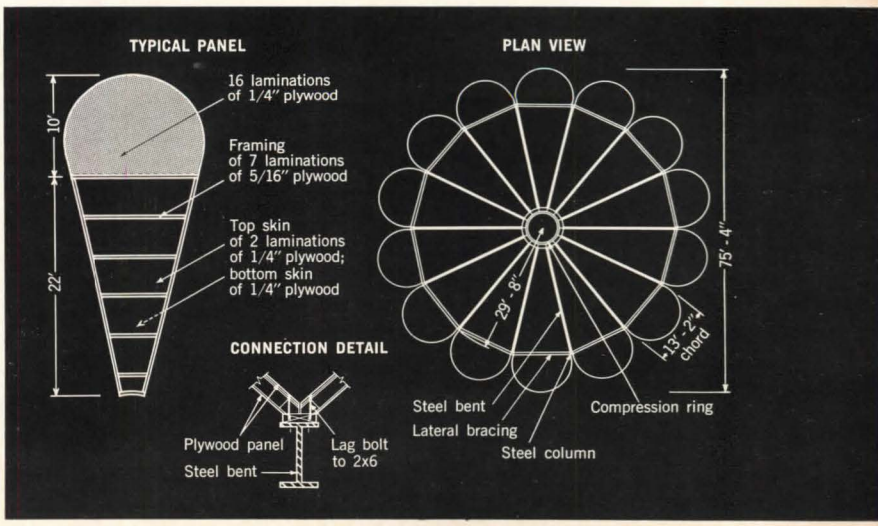
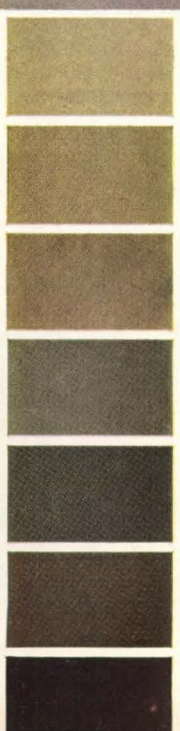


"...from gold



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Continued from page 220

The Shell Structure Conference

BY PAUL ROGERS

WORLD CONFERENCE ON SHELL STRUCTURES, *October 1962. W. J. Medwadowski, Chairman, Editorial Committee. National Academy of Sciences, National Research Council, 2101 Constitution Ave., Wash. 25, D.C., 1964. 690 pp., illus. $20. Reviewer is a Chicago-based engineer.*

Seventy-five papers that were presented at the World Conference on Shell Structures held in San Francisco in October, 1962, are presented in this book. The conference was sponsored jointly by the University of California, Berkeley, the International Association for Shell Structures, and the Building Research Advisory Board of the National Academy of Sciences. More than 800 architects, engineers, researchers, manufacturers, and builders from 27 countries attended the sessions.

Shells were defined as exhibiting the following characteristics: *geometry* (three-dimensional structures having small thicknesses compared to other dimensions); *manner of carrying loads* (primarily by means of in-plane spatial action); *utility* (load-carrying structural elements also utilized as space-enclosures).

Shell structures are not new. Itersen built his first hyperbolic cooling towers a half century ago, and in the 20's Dischinger designed a barrel shell roof for the Budapest Market-Pavilion. In this country, Roberts and Schaeffer built several shell structures in the 30's. The real impetus for shell construction, however, commenced after World War II.

Several of the papers presented are summarized below:

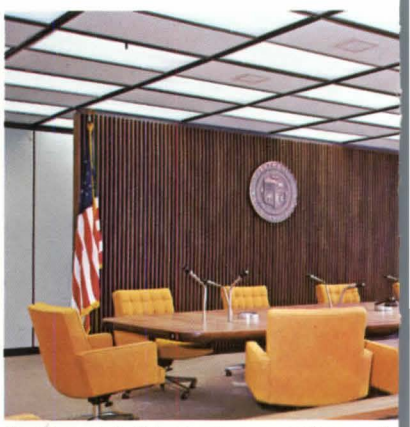
Frei Otto discussed both theoretical and aesthetic problems of shells. He emphasized that the expression "membrane" is a misnomer, except for carrying surfaces in tension. The transition from compression-resisting elements, through bending and tension, is graphically illustrated, examples from nature are shown, and possible future solutions are projected.

Felix Candela is a name practically synonymous with shells. Yet Candela's speech, not prepared as an official paper, was full of warnings against the unlimited and unnatural use of shells and the excessive use of theories, when many shells may be designed with simple equations of second order. Candela's

Continued on page 230

A. Westinghouse Mainliners give you any desired brightness or dispersion pattern for large areas and offer a wide choice of lenses and louvers. Shown here in the Government Employees Insurance Company Headquarters, Washington, D.C.

B. Soft light and quiet air, both from a single source. Westinghouse Airliner, installed here in Allegheny Airlines Headquarters, Pittsburgh, Pa., incorporates Anemostat air diffuser.



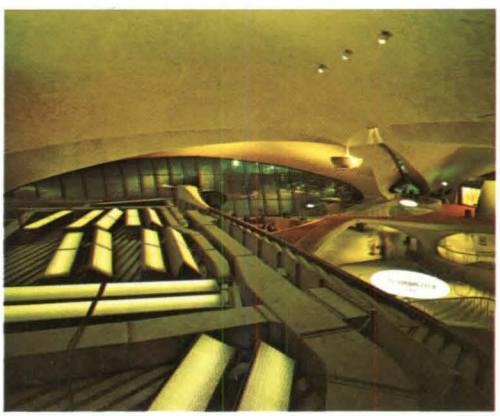
C. Complete Westinghouse ceiling syste in Los Angeles Water and Power Buildin Los Angeles, Calif., controls air, acoustic light. The system features infrared shield reduce heat, improve lamp efficiency.

F. Low-cost bullet fixture by Bryant provides weatherproof light source for store fronts, restaurants, gardens, driveways. Features adjustable swivel, snap-on shield, and photo-cell control.

G. Illuminate malls and parking areas such as Stouffer's Restaurant, Mt. Lebanon, Pa., with Westinghouse Viscount Luminaires; used with 100-, 175-, 250-watt mercury lamps.

H. Westinghouse Promenade Luminair are available in eight patterns. Weathe proof light source illuminates Lubboc Texas, Airport walks and driveways.

L. Translucent dome of Missouri Botanical Gardens, St. Louis, glows in color at night. Westinghouse floodlights inside dome produce the unusual effect.



M. Special effects lighting by Westinghouse accents the exciting motif of the Trans World Flight Center, New York. Specially designed floodlights reflect upward, illuminate the soaring ceiling of this unique structure. Downlights add dramatic touch of light to special areas.

N. Just a touch of finger or elbow ar Westinghouse Bryant Fashion Plate switc turns lights on or off in the Hilton Hote Pittsburgh, Pa. Choose fabric or wallpap insert.

estinghouse total construction capability lets you create, cus, polarize, color, diffuse, bend, reflect, dim, brighten or tinguish every kind of light for offices, showrooms, sales floors, nference rooms, auditoriums, reception rooms, hallways, bbies, entranceways and exteriors.

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D. Dramatic interior effects, Pan Am Building, New York, with Westinghouse downlights. Available in stationary and moveable fixtures.

E. Proper lighting, efficient relamping saves money in the IBM Building, Pittsburgh, Pa. A Westinghouse lamp contract assures ready availability of the right lamp for every need.

00-foot beams of light illuminate the des of Pan Am Building, New York. tinghouse developed these tungsten os with 2500-hour life to meet lighting gner's rigid specifications.

J. Free Westinghouse Lighting Cost Reduction Service analyzes needs, suggests improvements, often saves thousands of dollars per year.

K. Evenly diffused interior light from Westinghouse luminous ceiling illuminates the bank's quarters at Chemical Bank New York Trust, New York. Stripliners installed above ceiling provide light source.

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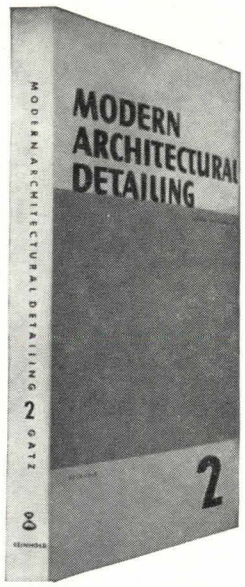

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Edited by **Konrad Gatz**
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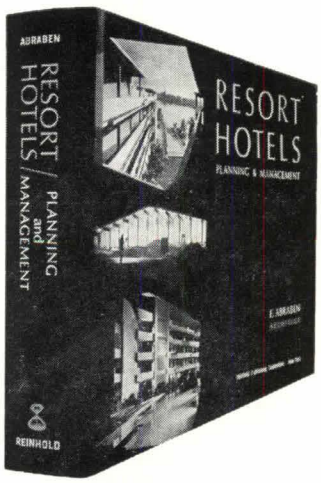

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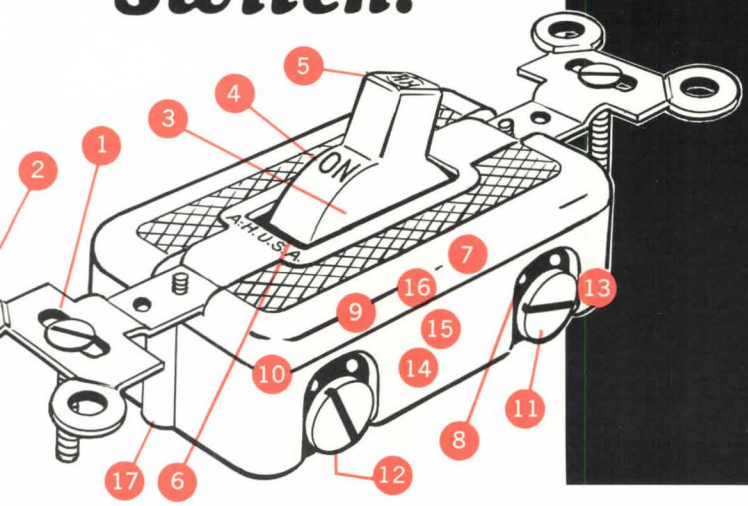

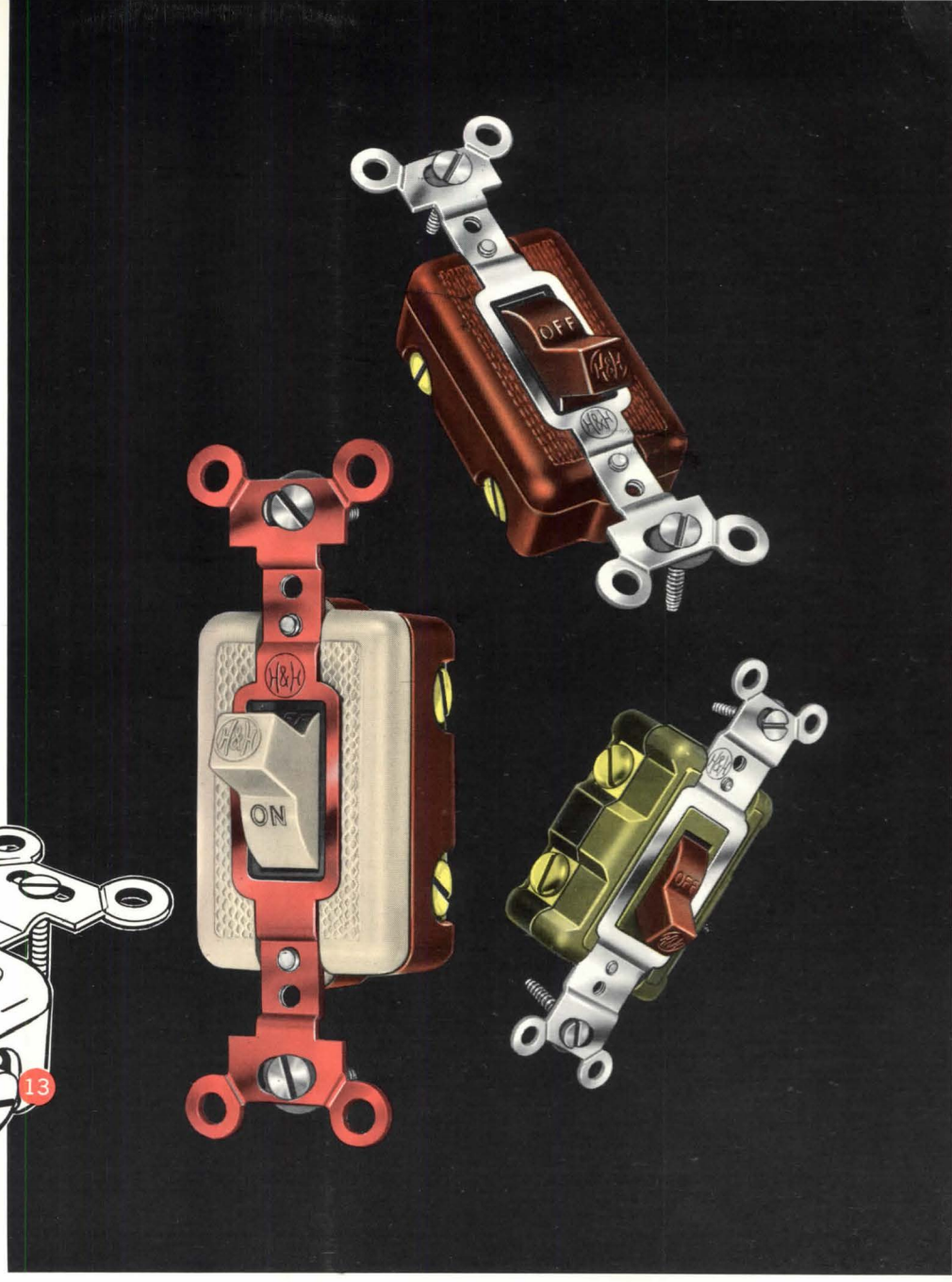

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Continued from page 225

closing remark, which is not really applicable in this country, was that the designer of shells should also build them and take full construction responsibility.

William W. Caudill gave a delightful dissertation on the obsolescence of the traditional classroom, which has become a sort of sacred cow. As the educational procedure is undergoing fundamental changes, it is very likely that huge shell-covered structures will be used where a large number of students, under the guidance of several simultaneous educators, will study in open spaces.

N. N. Culin advocated the use of double shells to counteract the damaging effects of weather. Present methods of direct application of vapor, barrier, insulation, and coating, do not seem to be adequate.

F. del Pozo, J. A. Torroja, and R. L. Palanco presented a unique cantilevered, folded-plate stadium roof structure. Stability is achieved by V-shaped tie-backs, and longitudinal stiffness is obtained by an above-roof, triangular-shaped, wall system. Rocker bearings are provided to reduce resistance to flexure.

H. Ruhle analyzed the precasting and erecting aspects of shell. His thorough statistics included many shapes and references from countries from both sides of the Iron Curtain. His conclusions indicate that a success with cast-in-place systems is no guarantee that the same can be economically repeated using precasting.

N. Esquillan, the designer of the famed triangular shaped exhibition hall of Paris, described two major shells. One, in Turin, is hexagonal in plan, with an inscribed circle of 450 ft. The vault was cast in segments and the prestressing wires were unbonded. Each segment was designed as a funicular arch for dead load. Under live load, however, the whole shell acts in unison. The Sports Palace in Oran consists of 10 arch bays of approximately 180-ft span and shallow cylindrical shells in between.

T. Y. Lin and F. Kulka explained the use of the load-balancing method employed in the design of several long span shell constructions. Load balancing is analogous to an internal suspension cable system whereby the vertical, upward components of the cable force are equal and opposite to the gravity forces due to dead load. Under ideal conditions, this results in transforming a flexural member into an axial-loaded column. While there will always be moments and deflections under live loads, this method seems

Continued on page 236

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St. Sebastian's Catholic Church, North Hills, Pittsburgh, photographed for Aluminum Company of America by Leonard Schugar.

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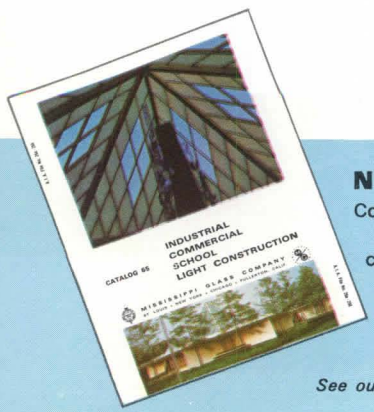

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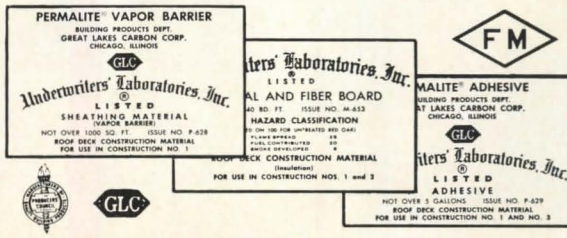

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Continued from page 230

advantageous for folded plates, barrel shells, etc.

Anton Tedesko discussed the St. Louis Air Terminal shells. This structure is one of the finest examples of shell construction in the Midwest. The original stage consisted of three vaults, each with diagonal and intersecting stiffening ribs. The construction proceeded by re-using the intricate false work, which was moved on rails.

The proceedings of the World Conference on Shell Construction include an enormous source of analytical, practical, and structural information.

There are the extremes of the high mathematics of researchers and the simplified methods of the practitioners. No doubt, much of the presented theories are beyond the capabilities of practicing structural engineers who must work for safe and economical solutions within limited allocated time. Yet, the researcher's basic studies pave the way toward better understanding of shell structures.

Anonymous Italian Architecture

BY PAUL J. MITARACHI

La Valle Dei Trulli. *Photographs by Mimmo Castellano. Texts by Leonardo Sinisgalli, Giuseppe Cocchiara, and Enzo Minchelli. English Introduction by Lovett F. Edwards. Leonardo da Vinci Edition. Distributed by Museum Books, Inc., 48 E. 43 St., New York, N.Y., 1964, 91 pp., illus. $4. Reviewer, a Connecticut architect, has traveled extensively throughout the Mediterranean and has spent many years in Greece.*

It is only in Puglia, the province of southern Italy known to American travelers for its harbor of Brindisi, that we encounter conical stone houses called *trulli*, from the Greek *troullos*, or dome. The greatest concentration of these houses is in Alberobello, where a good-sized area of the town, covered by some of the oldest existing *trulli*, has been preserved as a national monument. It is still, however, alive with the day-to-day activity of its inhabitants. Outside the town, the countryside of vineyards and olive trees is peppered with farmhouses, each of which is one or more stone beehives of black, flat, stone roofs atop white-washed walls. Some are topped with finials that resemble pawns in a gigantic chess set, some with large, white, symbolic signs painted on the roofs.

All this is part of that popular and anonymous architecture of Italy, which was first taken seriously by architects

Continued on page 240

Architects: Warren Cummings Heylman, William H. Trogdon—Associated Architects, Spokane
Structural Engineers: Esvelt & Saxton, Spokane
Structural Steel Fabricator: Union Iron Works, Spokane

Sheffield Steel Joists stud the walls of a circular-building-within-a-circular-building at Spokane International Airport. Joists form a made-to-order plenum to contain mechanical and air conditioning ducts.

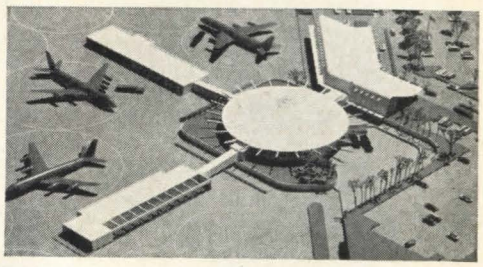

Photo of architectural model of the completed Spokane International Airport.

Steel joists used as studs save money in new Spokane International Airport Terminal

In an unusual application, Sheffield Open Web Steel Joists proved to be an economical substitute for conventional wall studs. This was in a circular restaurant in the main terminal building of the new Spokane International Airport, Washington. The open webs of the 10-inch-deep joists provided ready-made space for heating and air conditioning ducts within the walls. Standard, production-run joists, with lower chord extended to equal the length of the top chord, were used. Thus in a single unit, each joist provided studs for the interior and exterior of the circular restaurant wall.

The two-level cylindrical restaurant is 33-feet in diameter, 21½-feet high, with a false ceiling above the upper level. Both chords of the 96 H-Series Joists are welded to angle rings at the ceiling and lower floor slab.

Sheffield Open Web Steel Joists—both in H- and J-Series—also offer design economies in more conventional structural frame designs. For more information on these joists, see our data in Sweet's Architectural File. Or, write for a copy of our latest catalog. All Sheffield Joists are produced to meet current specifications of the Steel Joist Institute. Armco Steel Corporation, Department W-1715, 7000 Roberts Street, Kansas City, Missouri 64125.

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Continued from page 236

when they saw it exhibited at the 1936 Milan Triennale. The catalogue of the exhibition (by Giuseppe Pagano and Guarniero Daniel) was slim, moderately well printed, and full of implications—because it demonstrated that we, with our Bauhaus-oriented schooling, could have our puritanical cake and eat it too. Here was architecture not only *for* the people but *by* the people themselves, but which had a form and life we did not accept as befitting the modern world.

Today, our conscience is at ease. We can reach for the lessons of architecture in the past or the obscure present and do not need any excuse to do so. This small and unpretentious volume is just right for that. There is little information available on the *trulli*, and I suspect that all of it is here. Some speculations on their origins by the planner Enzo Minchilli, some thoughts on the symbolism of the *trulli* roof paintings by the ethnologist Giuseppe Cocchiara, and the good photographs of Mimmo Castellano are backed up by plans and sections.

Most important are the plans of a small neighborhood of Alberobello, with the plan of each house in the maze drawn clearly and the relationship of the forms shown with the help of a roof plan. This illustrates the latest shift in our interest: We are no longer fascinated with the shape of units; we don't have to go that far to find form. It is the joining of the similar pieces, the open-ended combination of cells, one with the other, to make up larger social units, which has caught our imagination, especially when it results in form and space deserving to be called architecture. When our minds run in this direction, *La Valle Dei Trulli* is a fine book.

To many, the *trulli* will remain a curiosity to catch on the way to Brindisi. To those who compare the photographs with the plans of the houses and with the drawings of the town neighborhood, the *trulli* will reveal something about the richness possible in a system of repeated forms.

Snaps and Caps

BY JAMES T. BURNS, JR.

MODERN ARCHITECTURE U.S.A. *Introduction by Arthur Drexler. Museum of Modern Art, 11 West 53 St., New York, N.Y., 1965. 36 pp., illus., $.95. Reviewer is Senior Editor of P/A.*

This is an illustrated catalog of last spring's exhibit presented at the Museum of Modern Art in New York City under

Continued on page 244

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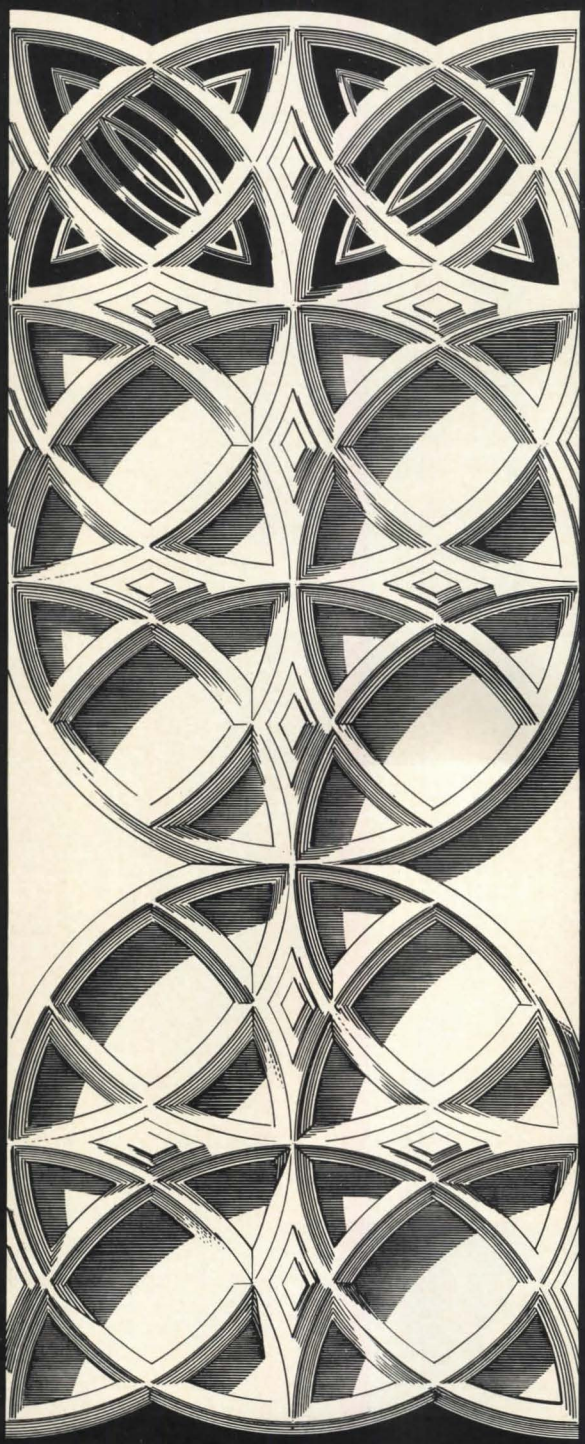

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Contractor: Robert E. McKee
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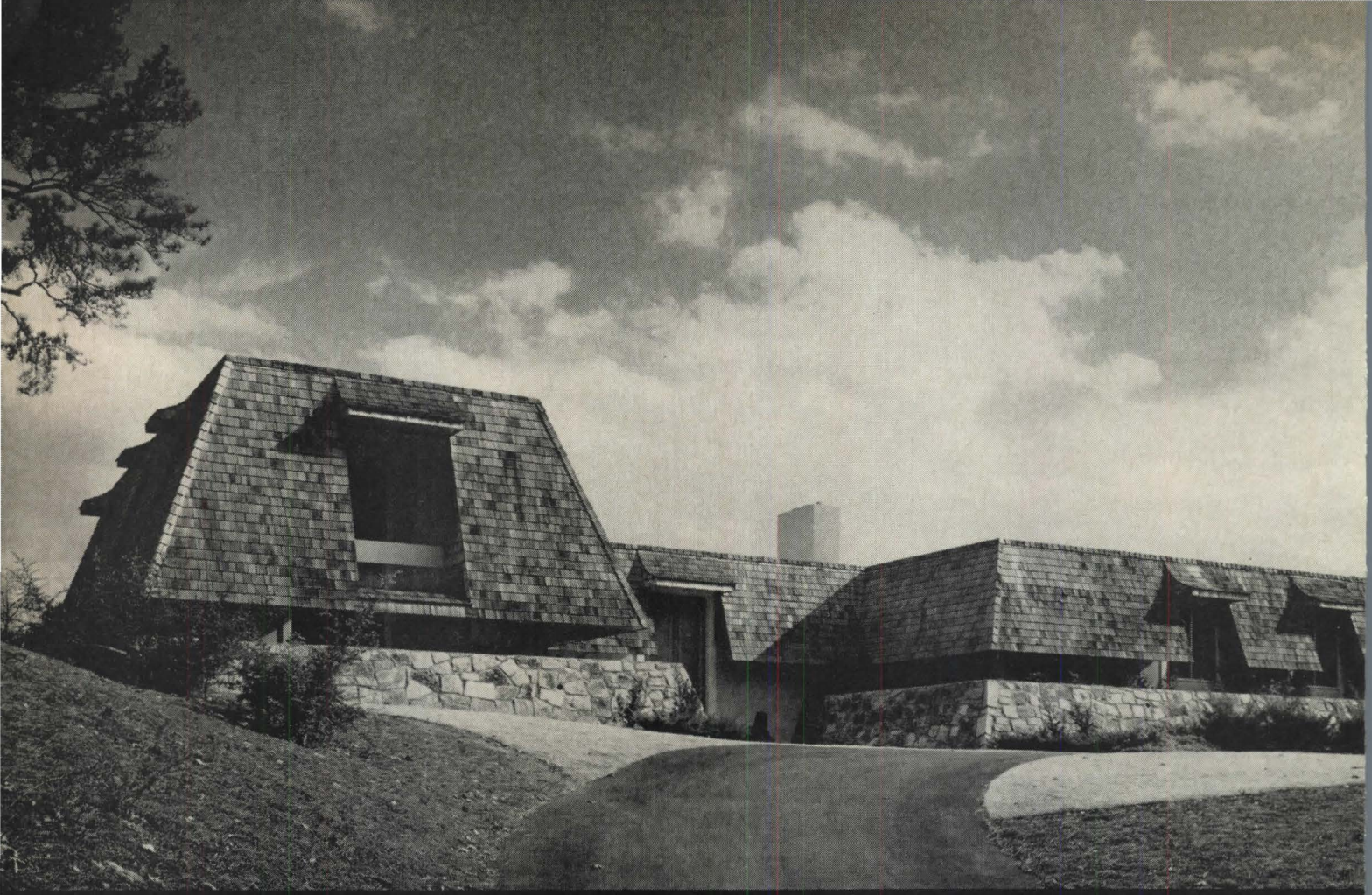

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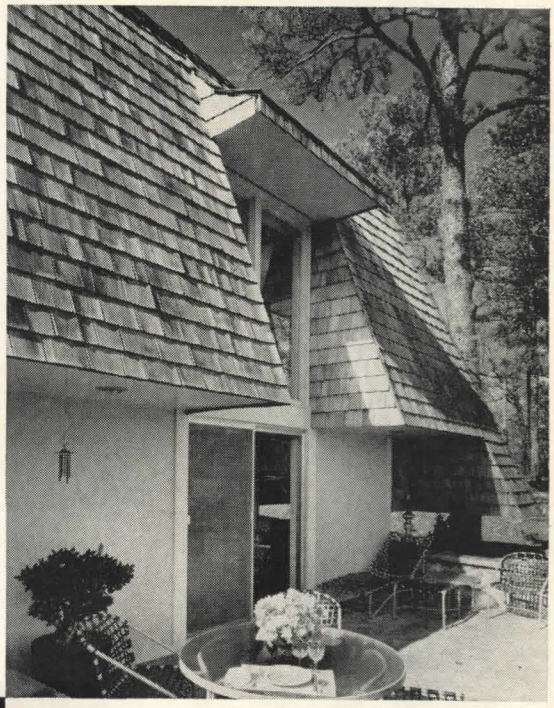

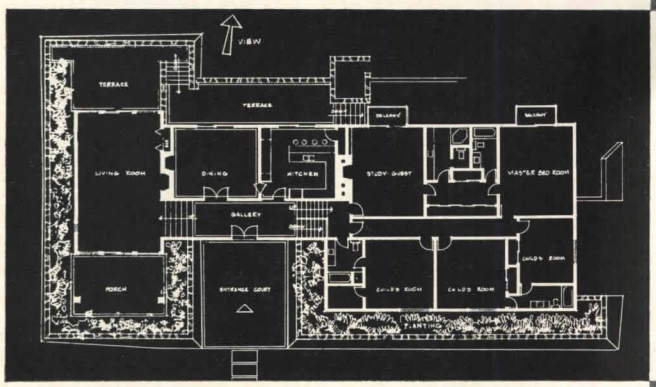

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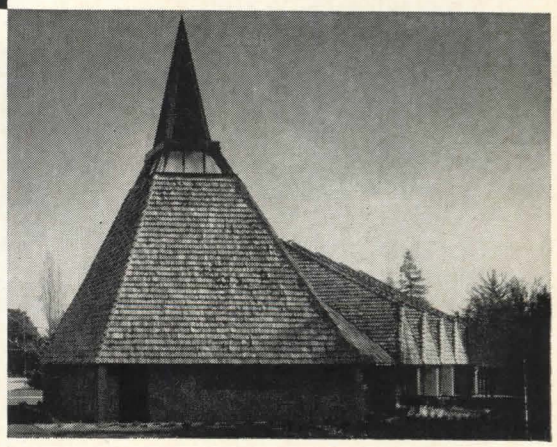

The Messiah Lutheran Church is in Santa Cruz, California. *Architects Robert A. Benninghof and Associates* selected Certi-Split No. 1 Handsplit-Resawn Shakes 24" x ¾"-to-1¼", 10" to the weather.

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Continued from page 240

the joint sponsorship of the museum and the Graham Foundation for Advanced Studies in the Arts. The survey covers about 60 years—from Wright's Unity Church of 1906 to Lundy's 1965 neo-Mayan IBM building in New Jersey. There is a photograph, not always a good one, of each building and sometimes a pertinent plan. Captions give extremely brief descriptions of the significance of each building.

A short introduction by Arthur Drexler, director of the museum's Architecture and Design Department, cautions that although the individual achievements of U.S. architecture in this period have frequently been most impressive, we are still faced with immense problems in urban planning, "not because architects have been unwilling [to deal with them], but because the social and economic procedures that would make their ideas a reality do not yet exist. . . . There are other problems as well: we do not yet have an effective means of preserving important buildings, and we have not yet educated all our public officials to a just appreciation of what building as an art can do to enhance our lives." The exhibition is now on tour.

Instant History

BY RICHARD W. SNIBBE

THE WORLD OF ARCHITECTURE. *Lionel Brett. Thomas Nelson and Sons Ltd, London, 1964. 119 pp. illus., $3.00. Reviewer is a New York architect.*

This small pocketbook attempts to tell the history of world architecture. It is full of good pictures on good stock, and has a large, readable text. In fact, it succeeds in touching upon the milestones of architectural history—from mud hut to Corbu.

There is a questionable chart of modern architecture's family tree, which places Wright among the group that includes Gropius and Mies (which led to diagramatic architecture), instead of among those leading up to plastic architecture, such as Corbu and Nervi.

The author seems to think that great changes in architecture occurred suddenly after the Greeks, and for no apparent reason—except that a genius came along and designed something new. In a short work, such a thesis may facilitate jumping from period to period, but, taken as a statement about architectural evolution, it seems frivolous.

I admired the last chapter on "The Mind of the Architect"; it deals with an

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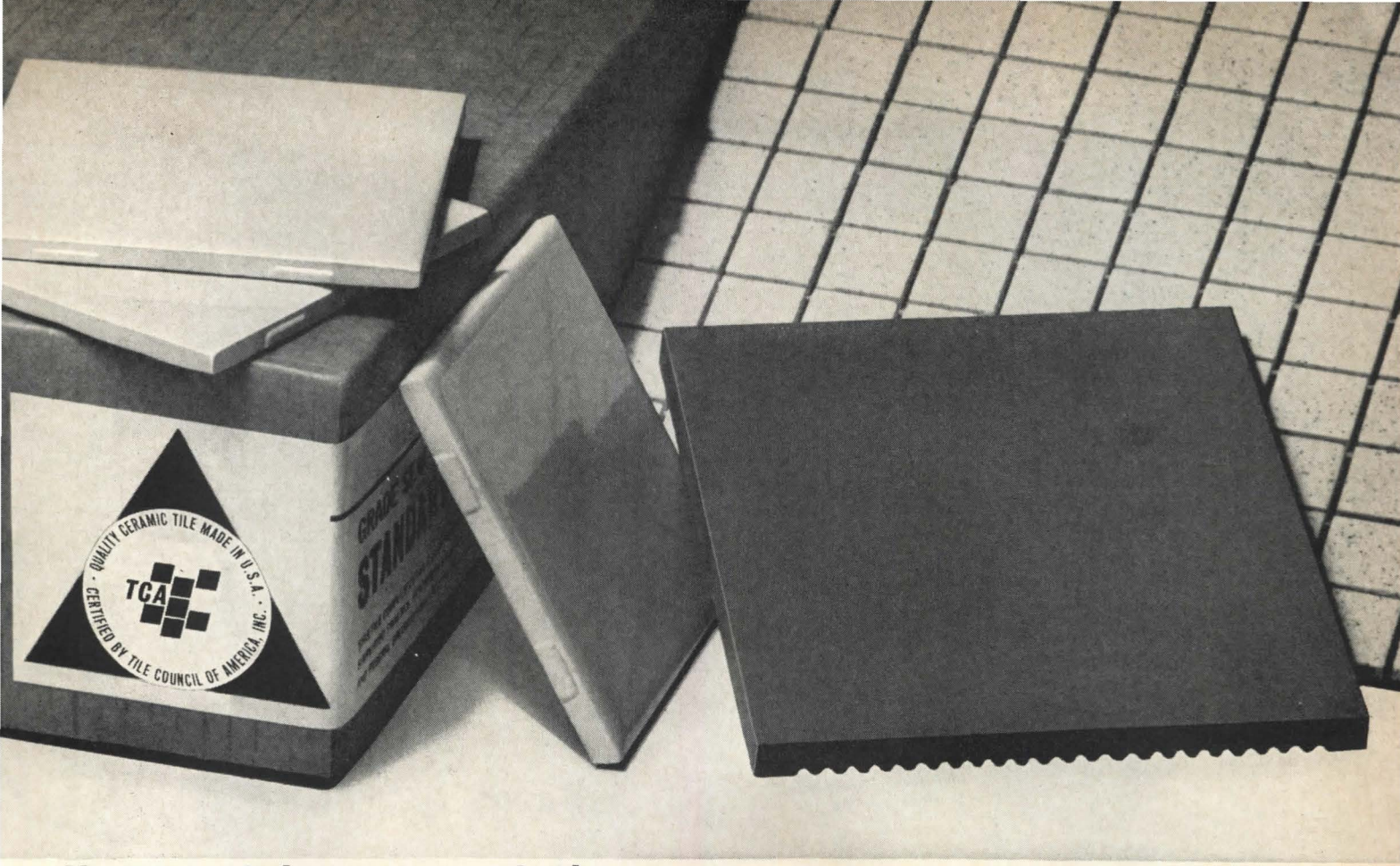

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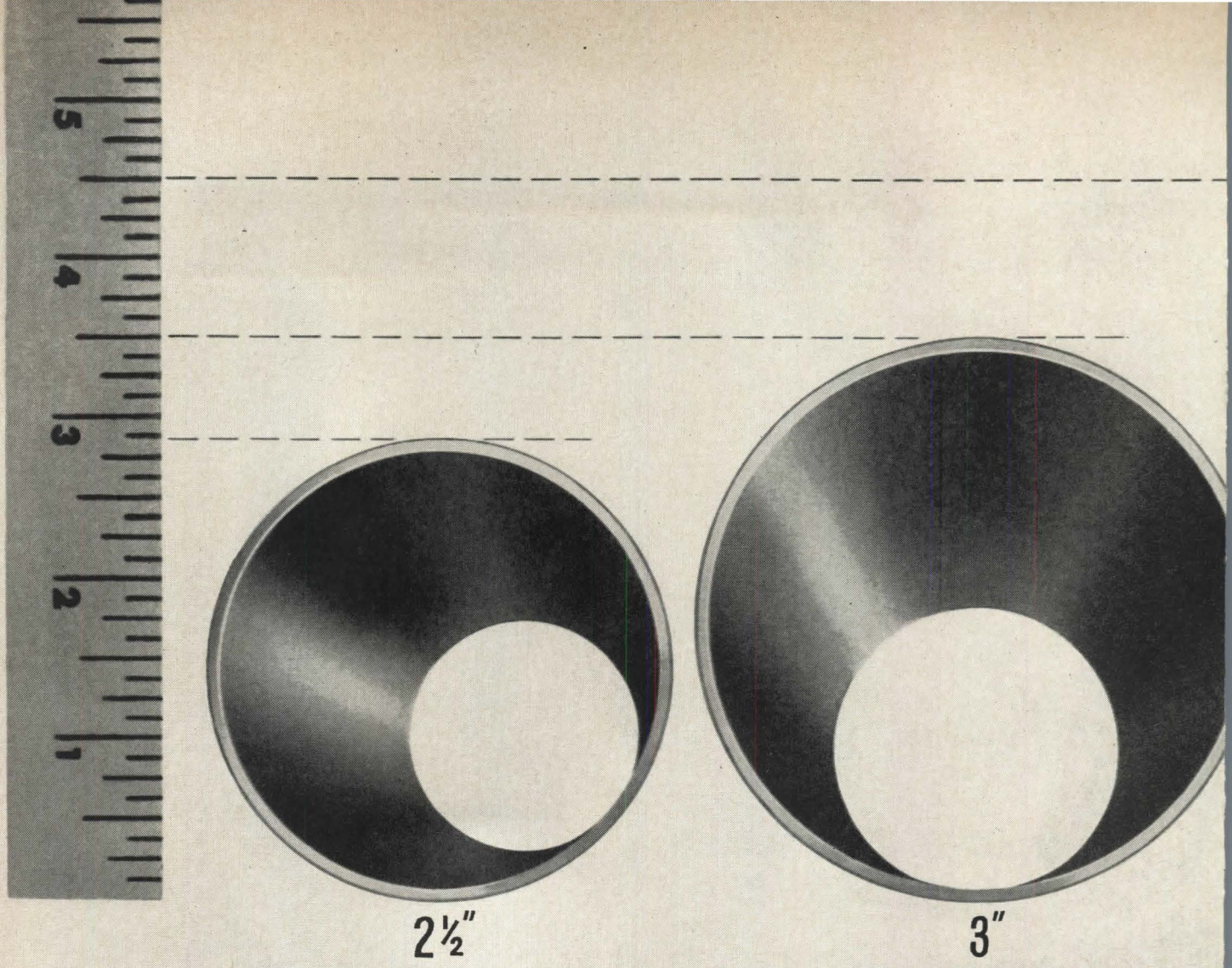

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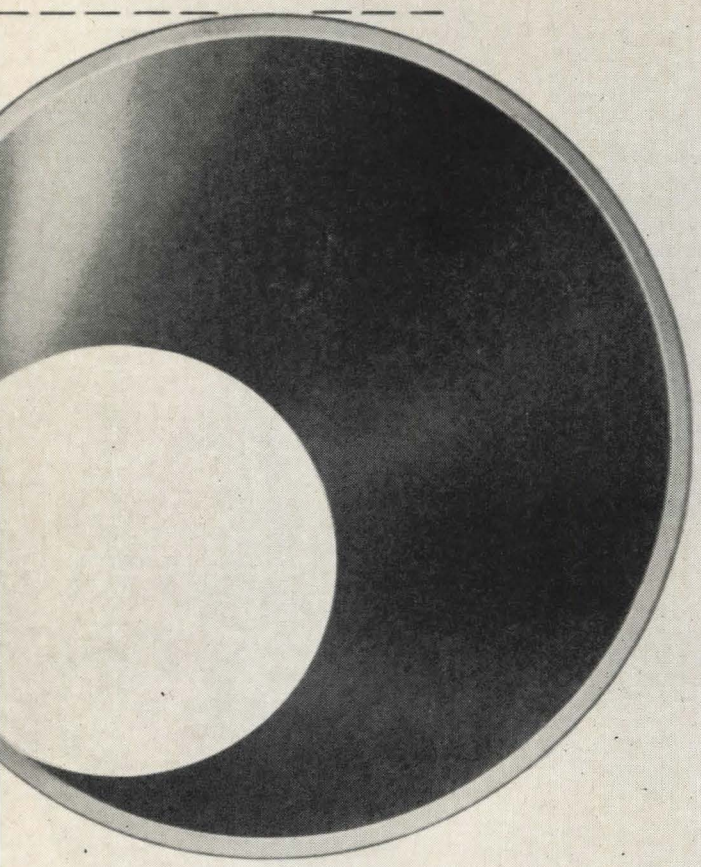

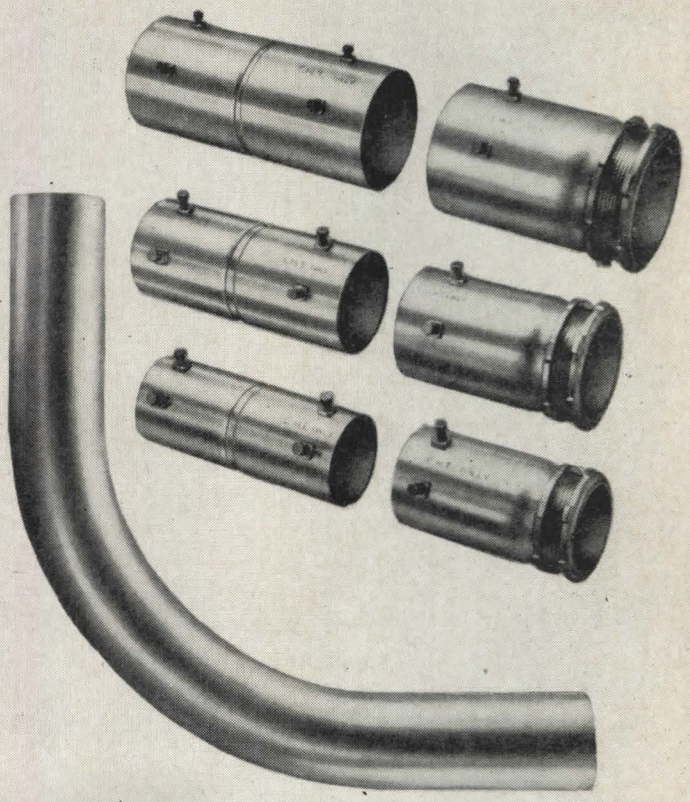

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Continued from page 244

inscrutable theme in a realistic way. There is also a good short bibliography at the end, for further study. This is a valuable book, written for kids inquiring about architecture as a career. It is written in simple language with a smattering of British wit, and a broad, but slightly British, understanding of the field.

Architectural Environment and Human Behavior

BY ROBERT L. GEDDES

THERAPY BY DESIGN: THE IMPLICATIONS OF ARCHITECTURE FOR HUMAN BEHAVIOR. *By Lawrence R. Good, Saul M. Siegel, Alfred Paul Bay. Charles C. Thomas Publisher, 301-327 East Lawrence Ave., Springfield, Ill., 1965. 193 pp., illus., $10.00. Reviewer is a partner in the firm of Geddes, Brecher, Qualls, Cunningham, and dean of the School of Architecture at Princeton.*

This book is both a transcript of a conference held at Topeka, Kansas, in March 1963, and a report on a research project at Topeka State Hospital that studied the effect of the architectural environment on psychotic patients. The broader implications of the book are concerned with the relationship between man's architectural surroundings and his social habits and behavior.

The report on the research project is presented in a workmanlike manner, but the transcript of the six-day conference of architects and psychologists is almost unreadable. Since, on the sixth day of the conference, the participants were concerned about "communication between architecture and psychology," the editors of this book could have addressed themselves to the problem. The book does not contain a series of prepared papers, or a summary of relevant and correlated information, but it does contain page after page of off-the-cuff comment. (For example, Mr. ——, "You will see that the proposal is not just an arbitrary thing imposed upon the patient. Dr. —— says we have some coffee in the other room, and I wonder if we could spend about 10 minutes for coffee and come back.")

Nevertheless, the book does contain some very important comments by the social scientists (especially William Ittelson and Gardner Murphy) and Richard Neutra, who is particularly brilliant in his discussion of general design principles, and in his intuitive response to the questions posed by the scientists. But the importance of the book lies more in

Continued on page 256

URETHANE FOAM PROJECT REPORT

Builder News

Part of a series of product-use bulletins published by Mobay to keep architects, engineers, builders and contractors informed on new developments in urethane foam materials for the commercial and residential construction industries.

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ARCHITECTURAL FIRM SOLVES TRICKY HEIGHT/SPACE EQUATION BY RUNNING HOT AND COLD WATER RISER PIPE IN EXTERIOR MULLIONS

A new departure in commercial building design permitted the installation of over 13,000 linear feet of water pipe in the exterior mullions of the new 35-story Equitable Building in Chicago as part of the heating and cooling system.

Only a pourable, highly efficient insulating medium like rigid urethane foam could have made this innovation practical in a region where external surface temperatures swing from far below zero to over 140°F during the year, according to Skidmore, Owings & Merrill, who designed and engineered the project.

The unique structural feature was the answer to an architectural problem of obtaining the optimum number of office floors and useable floor area within a maximum height restriction placed on the building.

Poured-in-place rigid urethane foam, the only commercial insulating material that would meet the exacting requirements, insulates the hot and cold water pipes located in 32 of the 48 vertical mullions seen between the larger supporting columns of the new 35-story Equitable Building.

In buildings of this type, a common procedure is to run the water pipes in a conventional riser system in a central core shaft, with horizontal feeder pipes radiating from the core lines to air-conditioning induction units on each floor's perimeter. But this would have meant deeper beam space than necessary, to accommodate the pipelines, and could have reduced the total number of floors in the building.

To overcome this problem, it was decided to run the riser piping in the 7¼-inch aluminum mullions which function as guide tracks for window-washing equipment.

But housing the water lines in the mullions created a sizeable insulation application problem. The large number of intermediate supports and the tight dimensions of the mullion cavities made it virtually impossible to wrap conventional insulation material around the pipe after it was installed. Yet the piping could not be insulated until after being connected and tested under 1½ times normal operating pressure for 24 hours.

Insulation was needed to prevent condensation during summer months when water at 52°F is pumped through the system at up to 440 gallons per minute. In addition, the insulation prevents heat pickup during chilled water use and heat loss when water at 156°F is pumped through in the winter when outside temperatures can dip as low as −20°F.

These problems were solved by encasing the risers in poured-in-place urethane foam which fills the mullion cavity with a rigid, flame-resistant blanket. Installation was performed by a two-man crew who insulated 32 piping risers per floor at the rate of 2½ to 3 floors per week. In-place pouring was accomplished with the help of a metal form snapped into the mullion cavity and held in place by a lever-type handle.

Urethane chemicals are foamed around vertical pipes in fast, efficient operation by two-man crew using foaming gun, plastic sheeting and special snap-in metal form.

Each 12-ft. rise of pipe was insulated in five steps. The first consisted of filling the cavity between the floors where the piping is hidden behind the spandrel beams.

The second, third and fourth steps utilized the steel form plus a plastic sheet which formed a liner between the form and the foam. The urethane chemicals were poured in above the steel form and expanded to the top while the other crew member applied pressure to the form which molded the foam to the desired contour.

In the fifth step, the 12-ft. length of pipeline was topped to seal off the cavity behind the spandrel beam. This phase was accomplished with a small steel plate hand-held in place as the foam expanded upward behind the spandrel. Upon completion, the plastic sheet was peeled off, and the foam insulation was ready to be covered with interior closure panels.

Each floor in the Equitable Building is supplied with chilled or hot water by the insulated risers and with tempered air through about 70 induction units connected to an air-supply system housed in the exterior building columns. Air-conditioning is supplied by three machines with a total cooling capacity of 3400 tons, enough to produce 6.8 million lbs. of ice a day.

The Equitable Building contains about one million gross sq. ft. of floor space and has an occupancy potential of 5000.

Summary:

Rigid urethane foam is a cellular plastic material composed of countless tiny bubbles or closed cells which contain an inert gas that makes it a very poor conductor of heat or cold, consequently making it a very effective barrier against the transmission of heat or cold through a section of the material.

With a k factor of 0.11 at 70°F, rigid urethane foam is twice as efficient as the next-best insulating material, can maintain predetermined insulation values at half the thickness required of other materials. Also important to the building industry, urethane foam contributes little weight to walls or structural members when foamed or sprayed in place, adds rigidity and structural strength which can permit the use of lighter, more economical building materials.

Urethane foam slab stock is also available and can be employed when a method other than the foam- or spray-in-place technique is desired.

For further information on this project, please contact any of the following sources:
Architect—Skidmore, Owings & Merrill, Chicago, Ill.
Owner—Equitable Life, New York, N. Y.
Foam Supplier—Phelan's Resins & Plastics, St. Louis, Mo.
Applicator—Vierling Steel Works, Chicago, Ill.

Foaming sequence is about half completed in this wall. If pipe repairs are ever required, urethane can be cut away easily, quickly reinstalled with foam-in-place kit. Smooth foam surface makes fitting of interior wall panels easier.

For additional information on the use of urethane foam in other insulation and construction jobs, write on your letterhead to:

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Continued from page 248

the questions raised than in the answers already available. Some questions have to do with methods of research—how to evaluate man's response to his environment. Dr. Murphy commented on the measurement of complex behavior changes resulting from planned variables in the environment, and several scientists commented on problems and techniques of observation in research on the architectural environment.

The research project at Topeka State Hospital was concerned with the architectural modification of a psychiatric ward, based on the premise that "the architectural environment is a part of the patient's milieu, and it is believed that a scientific manipulation of this environment can be used to produce patient changes." The two psychological and social dimensions that were approached in the study are: (1) ego integration, or the establishment of identity in the patient; and (2) social interaction. The authors believe that "the architectural milieu can be helpful in the development of both of these dimensions."

Both the research project and the conference are to be commended for their approach to architecture and knowledge. It is unfortunate that the material has not been presented in a more useful and systematic way.

A Good Beginning

BY RICHARD W. SNIBBE

AMERICAN ARCHITECTURE. *Thomas H. Creighton. The America Today Series. Robert B. Luce, Inc., Washington, D.C. 1964. Distributed by David McKay Co., Inc., 750 Third Ave., New York, N.Y. 85 pp., illus., $1.95. The reviewer is a New York architect.*

This short book, 85 pages, is the first of the "America Today Series" that will deal with social security, business and government, newspapers, crafts, and labor unions. It is surprising to me that architecture is number one in the series on the more popular subjects; it may mean something important—unless it was an accident.

The work is easy reading. It is illustrated by Paul Spreiregen with ink sketches. Some of them are good and others only fair. I personally feel photographs would have been better, particularly of finished buildings and not schemes or ideas. Perhaps cost was a factor here.

Starting with "Colonial Building," we go straight through to Yamasaki. I had the feeling at the end that it was a listing of people and their work, with very little attempt to tell why or what for, except that we are polyglot and eclectic. This could be due to space limitation.

There is also a central tone to the book, bordering on the patriotic, that America is, after all, a remarkable place for architecture. I feel this is only partially true. It is not easy to do a primer on architecture in America, and very few writers have even attempted it. I am glad to see someone begin and hope it will inspire others to try.

The First Industrial Artist

BY C. RAY SMITH

LOUIS C. TIFFANY, REBEL IN GLASS. *By Robert Koch. Published by Crown Publishers, Inc., 419 Park Ave. South, New York 16, N. Y. 1964. 246 pp., illus., biblio., index, $7.50. The reviewer is an Associate Editor of P/A.*

Louis Comfort Tiffany (1848–1933), son of the founder of the Fifth Avenue jewelry firm, devoted his life to what he called a "quest for beauty," and became

Continued on page 260

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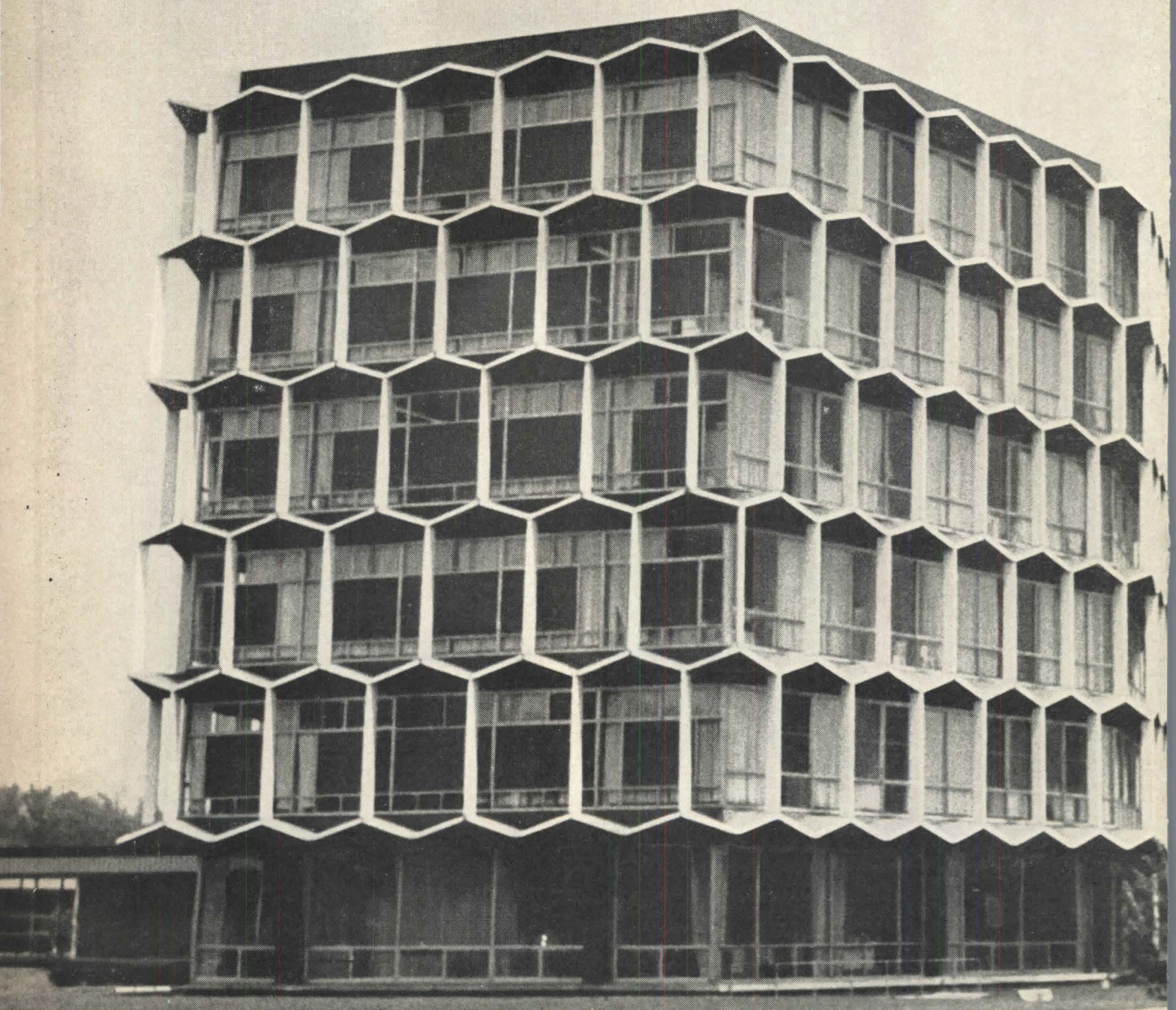

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Continued from page 256

one of the finest craftsmen this country has produced. Those ubiquitous leaded lampshades, which are again so popular, are seldom his productions but rather coarse imitations that belie the refinement of Tiffany's inspirations. He was certainly the most influential designer of his era, since he was dedicated to being the country's "first industrial artist." In this regard, he emulated William Morris by attempting to produce "beautiful" objects for the ordinary home.

Tiffany began as a painter and then took up decorating for the wealthy, redoing rooms for the White House during Chester Arthur's Presidency. At all times, he was a shrewd businessman and promoter. Ultimately, he became a highly technical innovator in the texture and color of glass; this was his most significant contribution.

Tiffany's "Favrile" glass, first used in "stained glass' windows, was developed to replace the painted glass of the previous centuries with glass in which the texture and color was integrally molded. Later, Favrile was used as "art glass," within the stylistic idiom of Art Nouveau. Fantastically wrought in sensuous and delicate forms, this technically complex and fragile material had depths of perspective in its thin sheets, changeable alexandrite effects, and rich, or diaphanous, textures and colors such as no other glass ever executed.

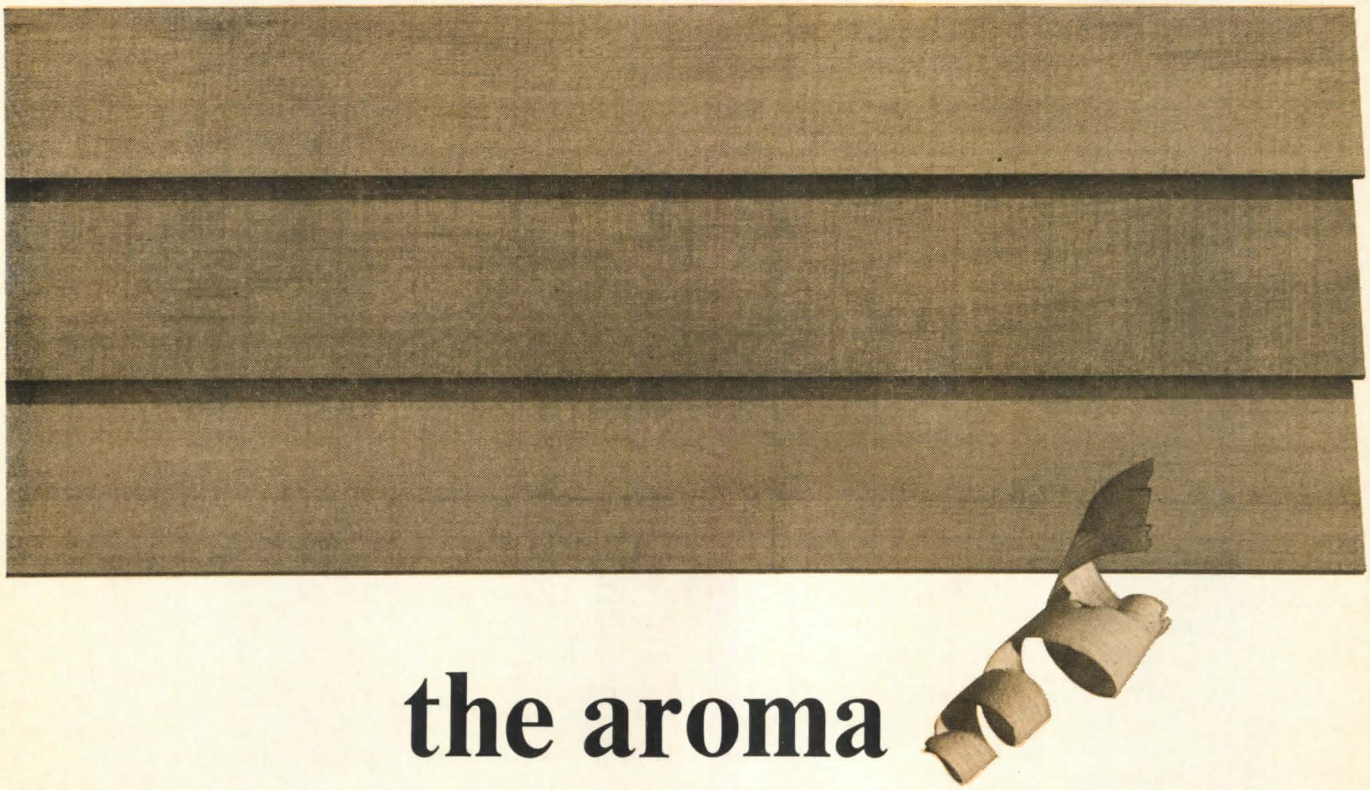
The publication of a book on this master craftsman at a time when his popularity is again universal is therefore important. Never before has such a broad spectrum of information on Tiffany been available in a single volume. The color photographs alone—many, although not all, sumptuously reproduced—are almost worth the comparatively low price of the book. The black-and-white plates—over 300 in rather fuzzy offset—reproduce, as no other single collection yet has, the works and background of Tiffany and his time: his paintings, family, friends, and associates; facsimiles of letters, bills, and accounts of various companies he organized; views of rooms that his decorating departments designed; and many close-ups of works in glass—windows, lamps, and "art glass."

For the uninitiated, the book provides a broad introduction; however, since the first interest was shown in the 90's toward Tiffany's avant-garde "art glass," his work has appealed to an intimate group of cognoscenti.

And here lies the fundamental flaw of this book: only layman's information is

Continued on page 268

If the imitators could, they'd even copy



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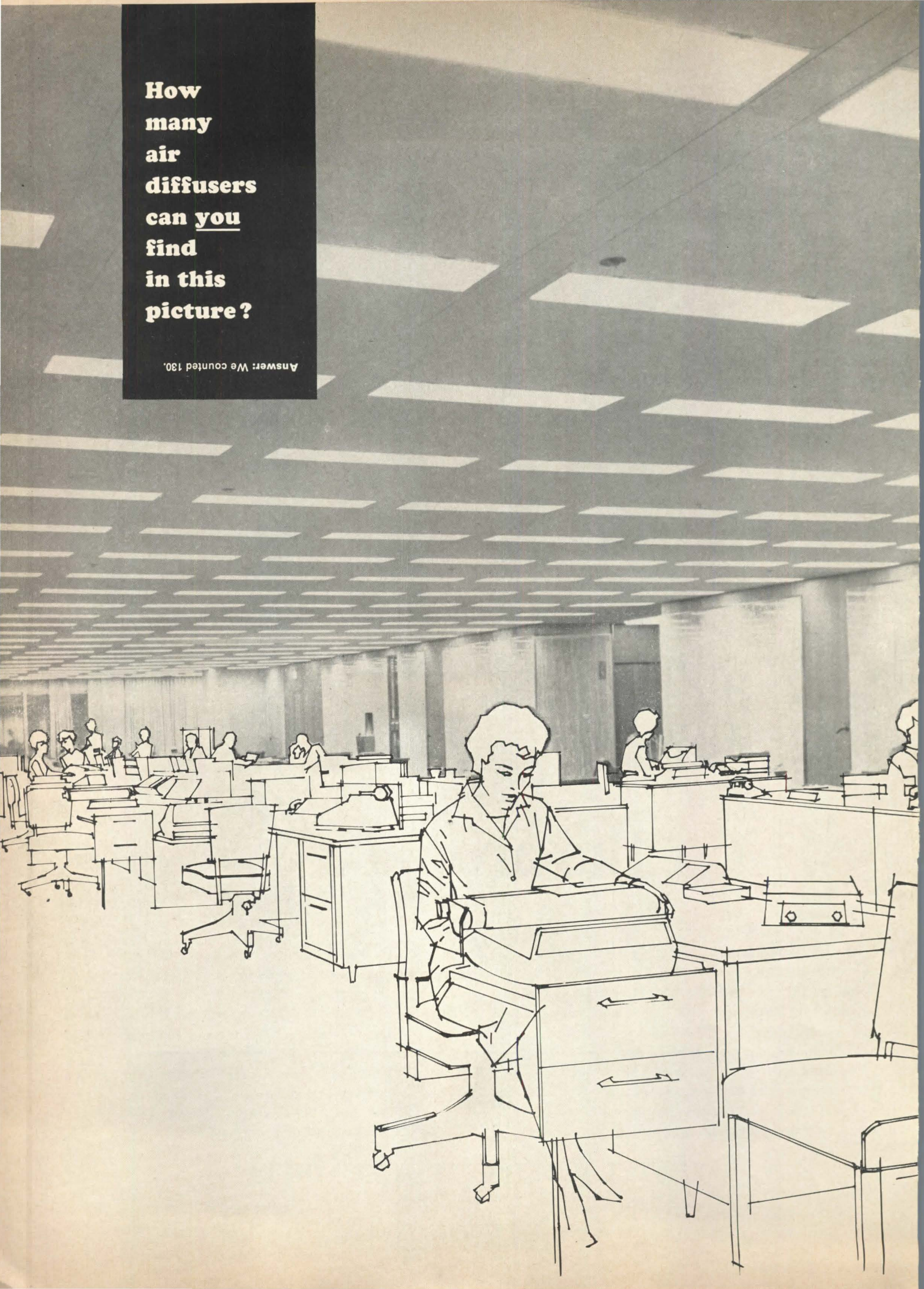
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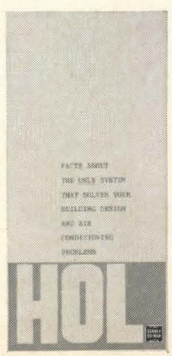

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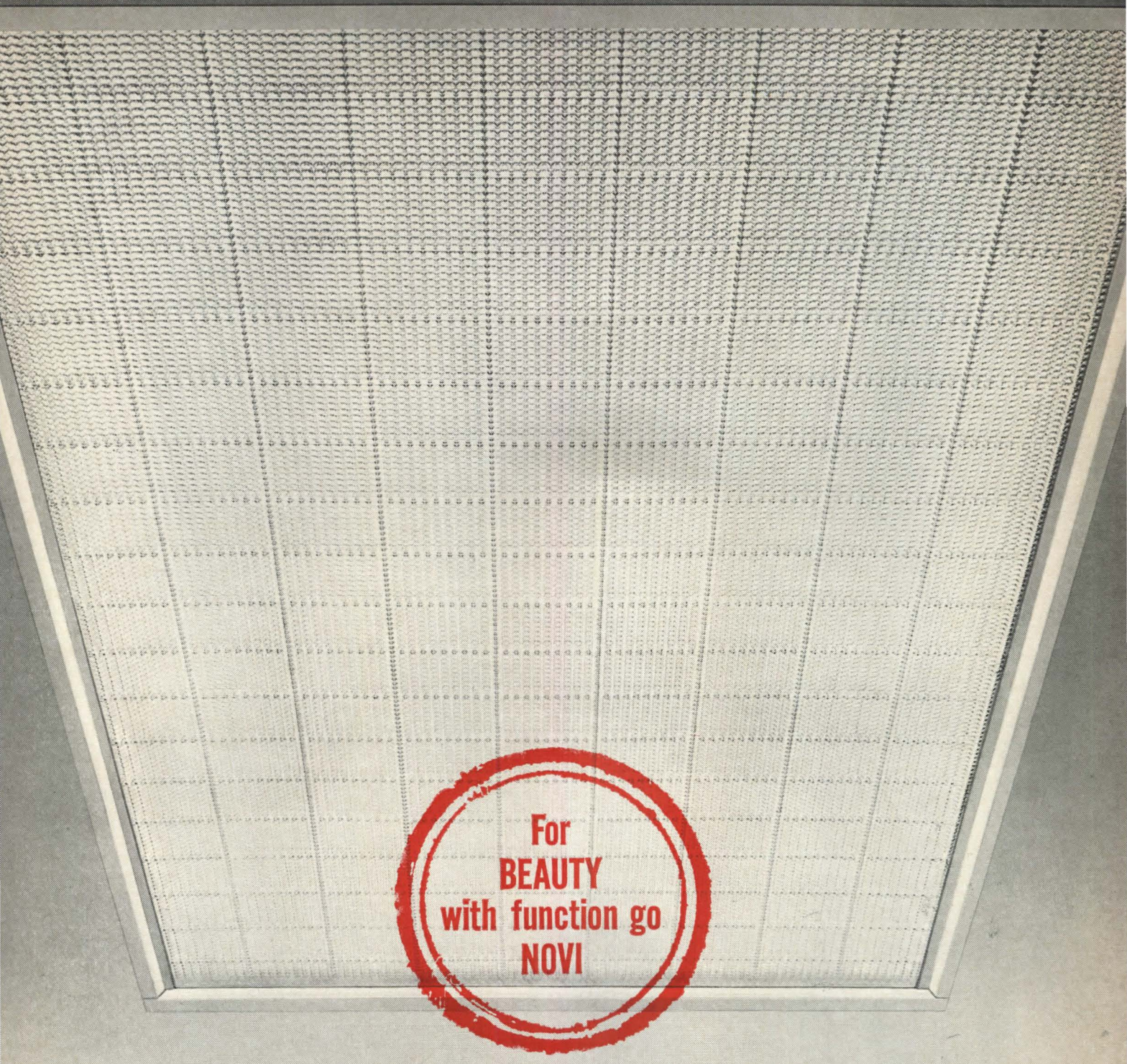

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The uniform annual costs for the glass were based on an anticipated useful life of 40 years for the building. For the air-conditioning equipment, a 20-year life was used. Both costs are for borrowed money at 5½% interest.

The initial cost of the *Thermopane* and the air-conditioning equipment it would require is slightly higher than for single bronze plate and the air-conditioning it would call for. But the total annual cost of owning and operating the building glazed with *Thermopane* will be substantially less.

	THERMOPANE *Parallel-O-Bronze* in the 13 Office Floors	¼″ *Parallel-O-Bronze* in the Office Floors
Initial glass cost	$208,031	$117,290
Initial cost of air-conditioning equipment	62,500 (125-Tons)	98,000 (196-Tons)
Added initial cost of heating requirement if building is single glazed	0	22,800
Initial cost of glass, air-conditioning and heating equipment	$270,531	$238,090

UNIFORM ANNUAL COSTS

(a) With ¼″ *Parallel-O-Bronze* in transparent glass areas in office floors	$43,905
(b) With *Thermopane (Parallel-O-Bronze)* in transparent glass areas in office floors	39,480
(c) SAVINGS PER YEAR with *Thermopane* in transparent glass areas in office floors	$ 4,425

There are also incalculable benefits received in the building glazed with *Thermopane* such as (a) greater humidity control, (b) sharp reduction of roomside condensation, (c) sharp reduction in down drafts in winter months.

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Continued from page 260

provided in a field of scholarship and connoisseur interest.

For instance, what Tiffany experts have long believed to be most needed in the field was a really extensive book of color plates showing the best of the "art glass," which has generally been in private collections and therefore inaccessible to the public. Another need in Tiffany research, it is felt, is a detailed discussion of two mysteries: first, the actual formulae and techniques of the glass production that Tiffany's Studios used (most of which information is lost); and second, an examination of the method of numbering and therefore of dating the glass (which is the most intriguing of the Tiffany mysteries, since no one seems to have been able to decipher the confusion of letters, symbols, and numbers with which he marked his glass by hand). Neither of these promises is fulfilled in this book.

Author Robert Koch, an art historian at Southern Connecticut State College, was unable to produce a really extensive color-photo book that would present Tiffany's glass in all its glory and detail. Furthermore, he devotes only three paragraphs of a 100-page text to his personal theory of the numbering system, and this has already been found fallible.

Architects may have strong objections to the author's calling Tiffany's Oyster Bay house, Laurelton Hall, "the first modern house." The text is written in a frighteningly unacademic style. There are surprising gaps and curious jugglings in the dates, and some painful errors. For instance, a letter from Tiffany to his chief enamelist is reproduced and captioned "Thanking Julia Munson Sherman in 1928 for her 'lovely carmels.'" Could the author really take Tiffany's "enamels" for "caramels"?

Unfortunately, the author does not manage to produce an image that will convince those who have never seen any of the best works that there is a difference between Tiffany's productions and his many Tiffanesque imitators, who have once again risen to the industrialized market place which he endeavored to improve.

How the Past Determines the Present

BY JEFFREY ELLIS ARONIN

THE ENGLISH TRADITION IN ARCHITECTURE: FROM ROMAN BRITAIN TO COVENTRY CATHEDRAL.

John Gloag. Barnes & Noble, Inc., 105 Fifth Avenue, New York 3, N. Y., 1963. 258 pp., illus., $8.50. The reviewer is an

Continued on page 274

This new vinyl wallcovering is surfaced with TEDLAR®. It is as stainless as ceramic tile. Please try to stain it. Try crayon, mustard, ballpoint pen, iodine, shoe polish, coffee, tar, lipstick—even blood. Then wipe it away without a trace. Use powerful cleaning agents if you like—caustic soda, paint-remover, even MEK. None can harm this new wallcovering. Stain it, if you can.

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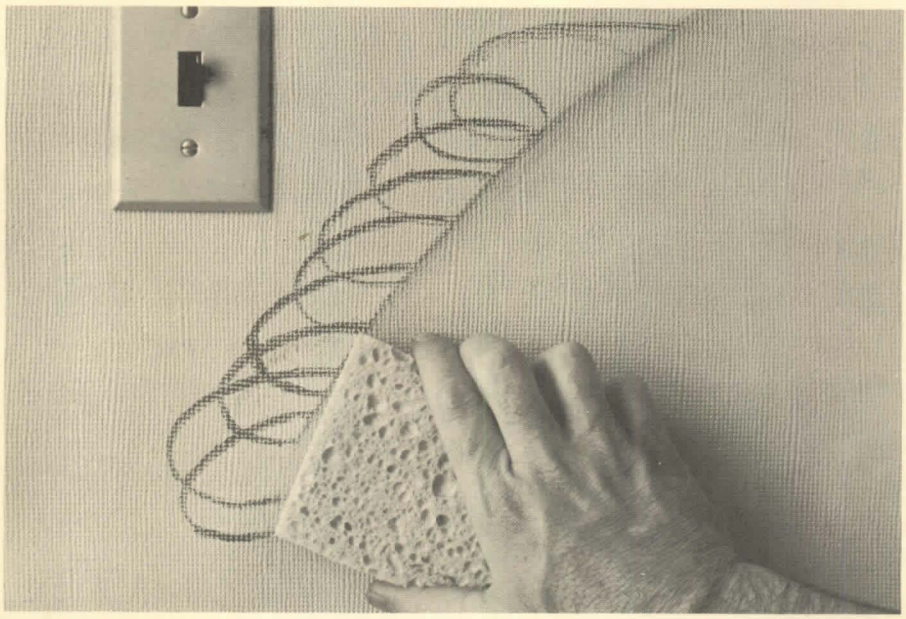

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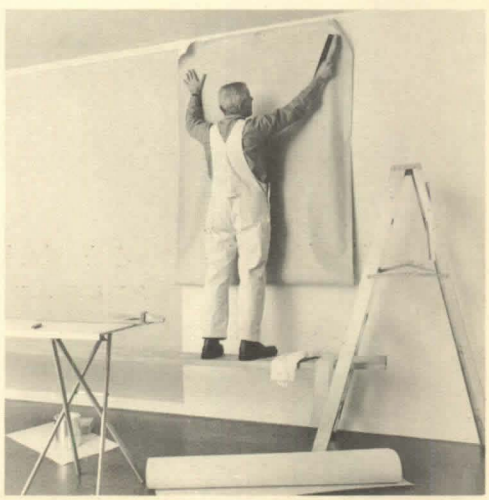

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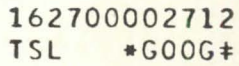

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Continued from page 268

architect practicing in New York.

This book is not the best compendium of English architecture insofar as the listings are concerned; there are many others, including Fletcher, that are the bibles of our architectural heritage. Nor does it live up to its title—Coventry Cathedral is mentioned only once in the text and is used as the frontispiece illustration. But the book ranks among the best because the author illustrates how the past has determined present architectural forms in England.

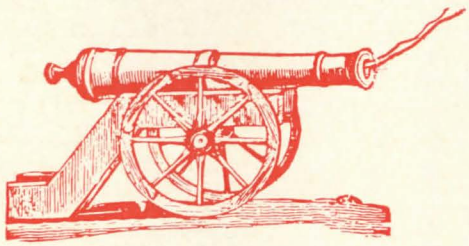
In America, English homes have a reputation for poor plumbing and heating. Yet the Roman era is described as "a preview of the comfort that was to characterize English homes for a thousand years later": the plumbing "would almost have satisfied modern American standards; hot air warmed the floors and walls, passing through ducts below the floors, and ascending, through hollow box-tiles built in with the masonry eaves." The windows were even glazed and the houses differed little from those of the 15th and 16th Centuries. The Roman orders, characteristic throughout Britain, gave the towns a "superficial external likeness to the wealthier cities that sparkled in Mediterranean sunlight."

After the decay of Roman Britain and until the Norman invasion of England in 1066, the architecture was poor, and so is the written history of England (save for tales of heroes and holy men). Any large-scale building at that time was inspired by fear: ramparts were built against the barbarians; materials were salvaged from Roman buildings to repair others; Anglo-Saxon houses were "barbaric hovels and there were holes in the buildings for passage, for smoke exhaust or for daylight." During this period, the "Teapot Hall" houses were built—a forerunner of our present day A-frame house, where the roof rests directly on the ground. Composed of a living room with a bedroom above, the local jingle describing the building, was "Teapot Hall, all roof, no wall."

The Norman invasion and conquest of England spawned the Norman period, which lasted until the 12th Century and perpetrated windowless buildings, like the Tower of London, on the warring English countryside.

The conquest of voids over solid walls developed in the Gothic period: shafts of sunlight, passing through stained glass, sprayed color on the interior of churches, ennobling them. Great architecture, says Gloag, cannot be made without substan-

REVOLUTIONARY



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tial emotion. And although Gothic structure constantly suggested flight and lofty ideals, it was good from all angles—even today from an airplane, or when floodlighted at night.

In the Gothic era, architect and builder were one and the same. The client was a knowledgeable person, and the architect and craftsmen "had the advantage of serving people who knew what they wanted." "Apart from a fraternal regard for the welfare of their members, they had little or nothing in common with the latter-day trade unions. They demanded ability and integrity from their members." Such a paradise should exist today!

The Golden Age of English Architecture—highlighted by Sir Christopher Wren, among others—showed that the classic Roman orders were inexhaustibly flexible. But this Renaissance was not unanimously accepted. Woty, in 1780, wrote of St. Paul's:

> "For tho' superb, not solemn is the place
> the mind but wanders o'er the distant space
> Where 'stead of thinking on the God, most men
> forget his presence to remember Wren."

And Blenheim Palace, said to be Sir John Vanbrugh's greatest work, was thus received by Alexander Pope:

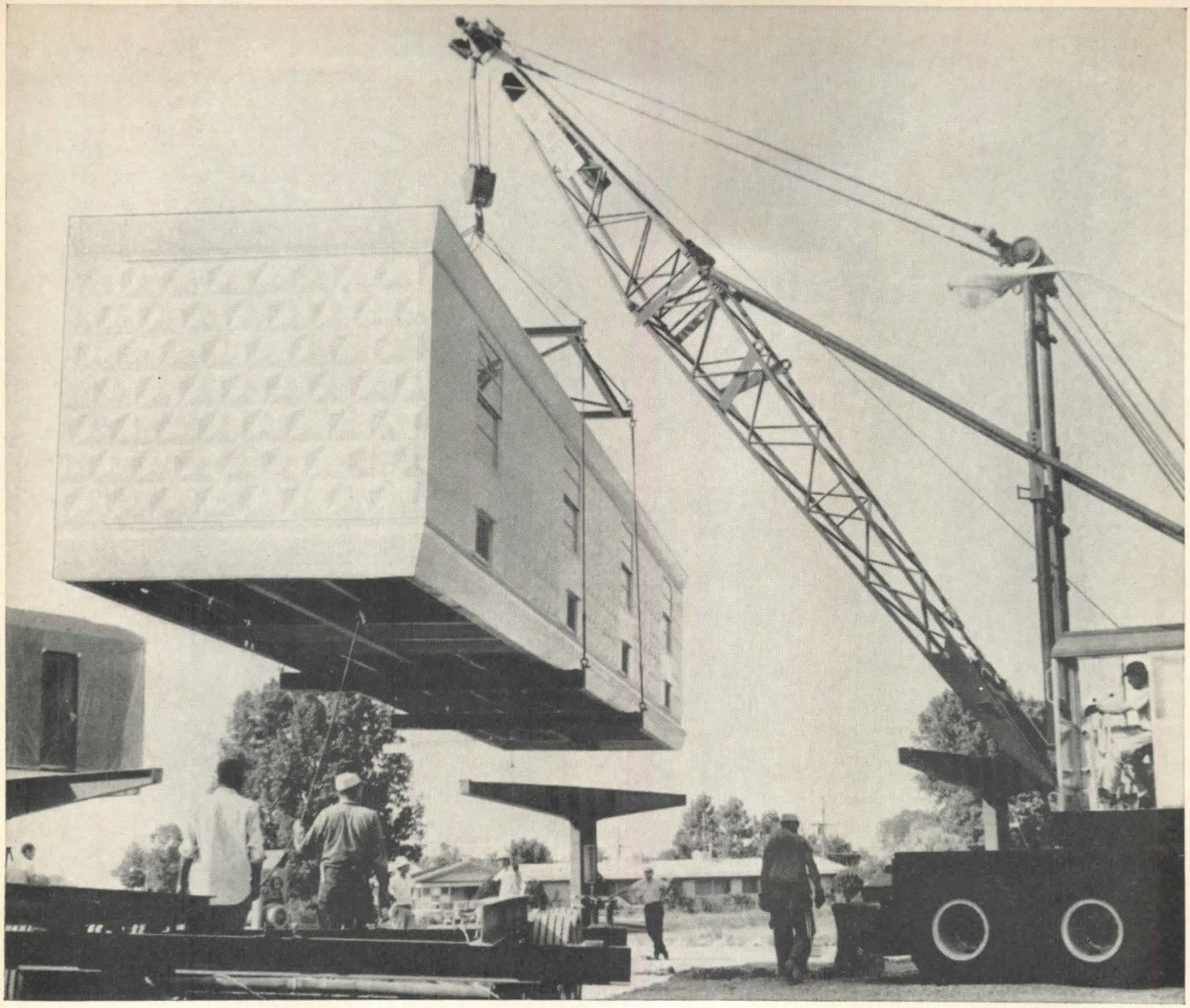
> "Thanks sir, cried I, 'tis very fine,
> But where d'ye sleep, or where d'ye dine?
> I find, by all you have been telling,
> That 'tis a house, but not a dwelling."

Abel Evans followed with this sad epitaph:

> "Under this stone, Reader, survey
> Dead Sir John Vanbrugh's house of clay.
> Lie heavy on him, Earth! for he
> Laid many heavy loads on thee!"

The influence of economics on building design is shown by the severe effects of the window tax, which diminished the number of windows but not the glazed area. Nevertheless, men of breeding and wealth enjoyed good design. Nash gave London the finest shopping street in the world, Regent Street, and stucco houses in Brighton and Hove. But being ahead of his time, he too was criticized: "He finds us all brick and leaves us all plaster."

Over the centuries, a native English style developed. A fire, for instance, was a prerequisite in all homes. It was only when frilly styles were brought from France and Italy that confusion resulted. They did not fit the English scheme of things and the English architects could not adjust. This episode illustrates how important it is to design for one's own



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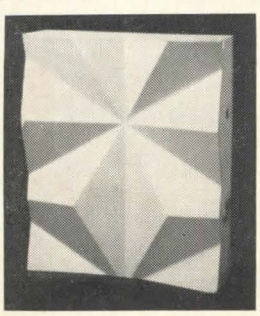
Hetrofoam-based polyurethane insulation foamed between skins of reinforced Hetron polyester resin and plywood panels forms the exterior walls of this module.

The four-room component is a unit of a 32-room Holiday Inn Jr. motel.

Hetrofoam-based foam is almost unlimited in its scope of fabrication. It fills the space around the electrical conduit and roughed-in plumbing in the walls. It shapes itself to the stylized triangular pyramids of the Hetron skin.

Hetron and Hetrofoam lend themselves to large fabrications such as these 8x10 and 8x14 ft. module panels.



SECTION OF SANDWICH PANEL.

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environment and in one's own tradition.

Other influences from abroad crept in, and the popularity of Chinese motifs gave rise to a form of taste known as *Sharawadgi* or *Sharawaggi*. There were revivals, motivated by Ruskin among others, that did great damage to the basic common-sense English approach to architecture. By the opening of the 20th Century, architecture in England had lost its human relationship, its functional expression, gaiety, and rich variations of national character.

The book is handsomely illustrated by line drawings and halftones and is written in an easy-to-read, flowing style that should find favor with those who like to delve into the past in a relaxful way.

OTHER BOOKS TO BE NOTED

America East, Its Architecture and Decoration. By Everett B. Wilson. A. S. Barnes & Company, 8 East 36 St., New York, N. Y., 1965. 322 pp., illus., $10.

A picture-book with minimal captions and the most typical of pictures of houses built before 1860 arranged by state—covering the states from Maine to Florida. Nothing new; there must be a better way to treat a fascinating trip. The author might have enjoyed doing this book but we defy you to enjoy looking at it.

The Citizen's Guide to Zoning. By Herbert H. Smith. Chandler-Davis Publishing Co., P.O. Box 36, West Trenton, N.J., 1965. 182 pp., $2.50.

Dedicated "to that vanishing breed—the genuinely concerned and interested citizen," this little book is lucidly written, and devotes itself mainly to the problems and techniques citizens can use to change zoning laws.

Fair Housing Laws. Housing and Home Finance Agency. Available from Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. 369 pp., $1.50.

Summaries and texts of state and municipal housing laws.

The Library Environment, Aspects of Interior Planning. Edited by Frazer G. Poole. American Library Assoc., 50 E. Huron St., Chicago, Ill., 1965 69 pp., illus., $2.

A report on the proceedings of the June 1964 Institute on Library Equipment held in St. Louis. Five aspects of library equipment and furnishing are covered: informal furnishings, lighting, audio facilities, transporting books and people, and flooring. Librarians, designers, and experts from commercial firms contributed.

Portrait of Westminster. A. F. Kersting and L. C. Spaull. Leisure Time Books, P. O. Box 634, New Rochelle, N. Y., 1965. 50 pp., illus., $11.

Spaull's short, informative introduction leads us into the ins and outs of the city of Westminster. Westminster Abbey, Henry VII's Chapel, Westminster School, The Houses of Parliament, and Westminster Cathedral are explored with a loving camera.

This is a story of a city, not just of sticks and stones, but rather of the present and the past—the stuff of cities. Paper is of excellent quality, as are the graphics and type. The section on the Abbey's funeral monuments is especially good.

Profiles of Significant Schools: Middle Schools. A report for Educational Facilities Laboratories, 477 Madison Ave., New York, N.Y., 1965. 64 pp., illus., free.

Review of recent schools designed for age group from 10 to 14. The junior high school concept has largely failed: the schools shown are attempts to find new ways of coping with the problem, architecturally as well as pedagogically.

Profiles of Significant Schools: Schools Without Walls. A report of Educational Facilities Laboratories, 477 Madison Avenue, New York, N.Y., 1965. 56 pp., illus., free.

An evaluation of schools without interior partitions that have been built in answer to educational demands for maximum flexibility.

Planning and Developing Waterfront Property. Technical Bulletin No. 49, 1964. 24 pp., illus., $3 to nonmembers.

Baltimore's Charles Center: A Case Study in Urban Renwal. Technical Bulletin No. 51, 1964. 79 pp., illus., $5 to nonmembers. Urban Land Institute, 1200 18th St., N.W., Wash., D.C.

Two excellent studies.

The Structurist, No. 5. Edited by Eli Bornstein, University of Saskatchewan, Saskatoon, Canada. Distributed by Wittenborn and Co., 1018 Madison Ave., New York, N.Y., 1965. 49 pp., illus., $2.75.

Published annually, this magazine proclaims the beliefs and illustrates works of the school of art whose name it bears. There are also photographs of nature—trees, flowers, boulders, eggs—since "structurism" is based on patterns of growth and form found in nature. The artworks are all reliefs and consist of strips or blocks of wood on a ground. The most interesting are those of Joan Saugrain—particularly her "Cube and Cell Study" designed for use as a dividing wall.

Threads of History. By Bellinger, Rutledge, Standen & Mailey. Published by The American Federation of Arts. Distributed by Whitney Library of Design, 18 E. 50 St., New York, N.Y., 1965. 53 pp., illus., $5.50.

The Decorative Arts Exhibition Program organized the exhibit of which this thin volume is the catalog. The exhibit was organized to "help bridge the gap between Art and Industry . . . to increase the appreciation of good design in the familiar objects of everyday life." It also seeks to explain the unique properties of fibers in "generic terms and not in promotional trade terms.' The pictures are excellent throughout; the text is scholarly but interesting, especially the "history of threads" section, which explains how each kind of thread is made.

Walls: Enrichment and Ornamentation. David B. Van Dommelen. Funk & Wagnalls Company, Inc., 360 Lexington Ave., New York 17, N.Y. 1965. 113 pp., illus. $7.50.

David Van Dommelen leaps over the wall. He covers the wall in detail, in toto, alone, in an environment, in history, in the present. One regrets that illustrations are not more clearly and forcefully presented. Text is not adequate to cover the subject.

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ARCHITECT—The State of Alaska, Department of Public Works has one immediate opening for Architect with Division of Buildings. Applications can be submitted to the Personnel Officer, P.O. Box 1361, Juneau. Qualifications call for college graduate with major in architecture plus five years experience as an architect. Appropriate experience may be substituted on year for year basis. Registration as a professional architect desirable. Starting salary $1090 per month.

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EXPERIENCED ARCHITECTS—Requires at least 10 years diversified experience in commercial, industrial, and institutional architectural projects together with grown potential. Offers opportunity for permanent situation with increasing responsibility in management of architectural projects and expansion of clientele. International firm with liberal fringe benefit programs. Salary commensurate with qualifications. Small midwestern community provides excellent educational and recreational facilities. Stanley Associates, Inc., Stanley Building, Muscatine, Iowa. An Equal Opportunity Employer.

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ARCHITECT—Bachelor of Architecture, registered in Illinois. Six years experience in residential, educational, religious and commercial projects with nationally respected Chicago Architects. All phases of practice. Desire position with design conscious firm. Prefer Chicago area, but will consider any location. Age 30, married. Box #120, PROGRESSIVE ARCHITECTURE.

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ARCHITECT—NCARB, New York & Florida registration. Bach. of Architecture, twelve years diversified experience in all phases of the profession, including landscape architecture and interior design. Interested in challenging position with progressive firm in Manhattan, or San Francisco Bay area. Resume and photo on request. Age 34, married. Box #121, PROGRESSIVE ARCHITECTURE.

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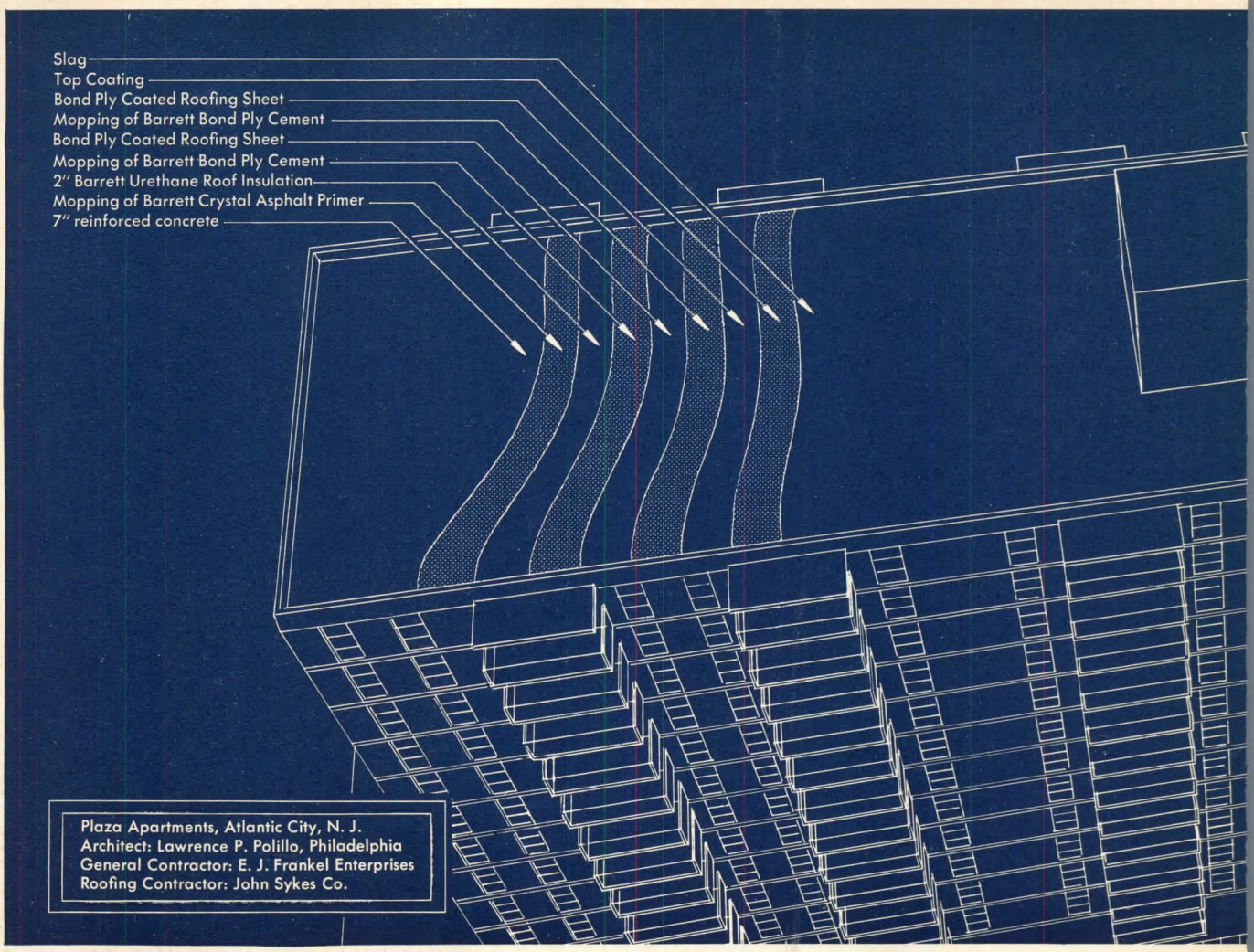

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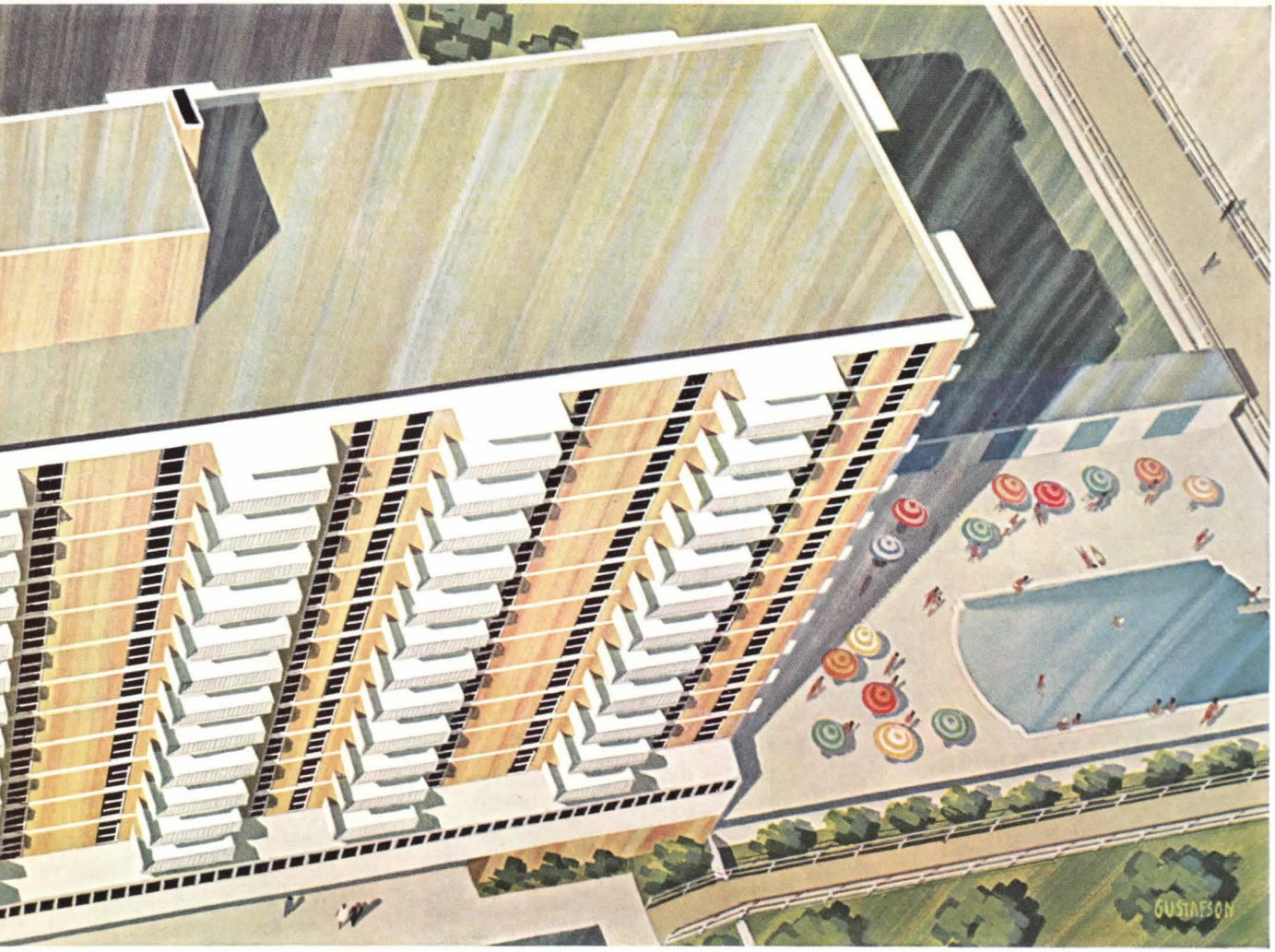

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