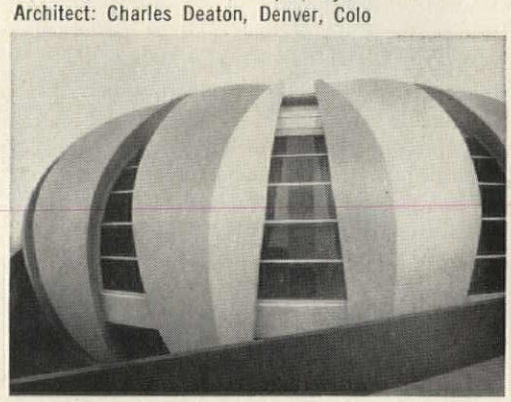
PROGRESSIVE ARCHITECTURE June 1965

Armstrong makes every kind of resilient floor. The best are the ones that suit your design.

Wyoming National Bank, Casper, Wyo.
Architect: Charles Deaton, Denver, Colo



HERE, THE BEST ARE MONTINA VINYL CORLON AND CUSTOM CORLON TILE.

A striking use of modern vinyl floors adds a dramatic touch to the interior of this exciting, new building. A perimeter of Montina Vinyl Corlon (a sheet floor) surrounds a core of Custom Corlon Tile–also vinyl–to create a design that echoes the circular ceiling and the sculptural concept of the building. The result achieved by this imaginative architect is an excellent example of what can be done with the diverse and versatile materials in the Armstrong flooring line.

Because Armstrong makes every kind of resilient floor, your Armstrong Architect-Builder-Contractor Representative can make an objective recommendation of the floors best suited to your design. For more information, call him, or write Armstrong, 306 Watson Street, Lancaster, Pennsylvania.

FLOORS BY Armstrong

THIS MONTH IN P/A

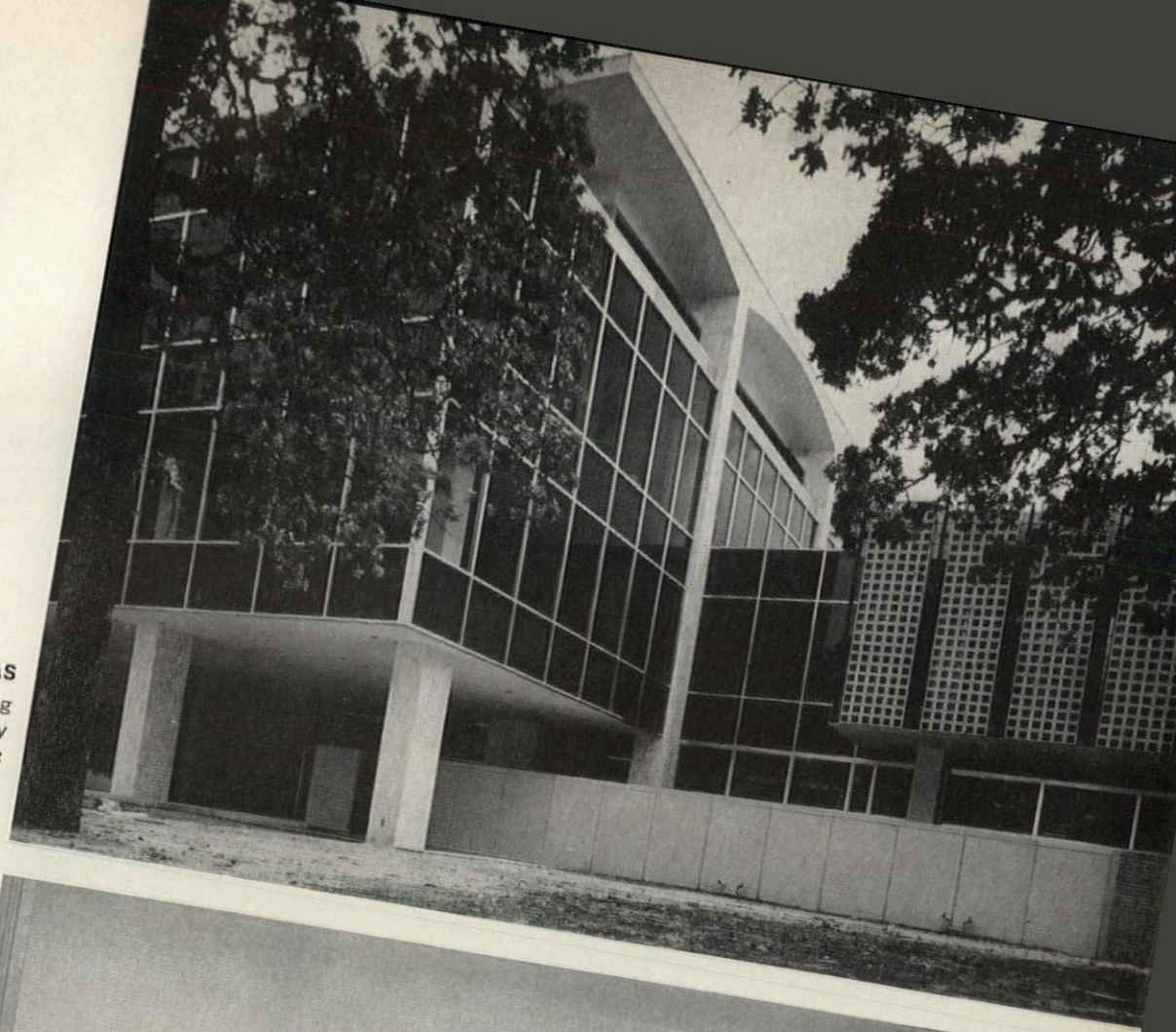
Progressive Architecture, June 1965

"PROGRESSIVE ARCHITECTURE" IS A MEMBER OF THE REINHOLD GROUP FOR BUILDING DESIGN, ENGINEERING AND CONTRACTING, WHICH INCLUDES THE PUBLICATIONS "AMERICAN ARTISAN" AND "HEATING, PIPING & AIR CONDITIONING."

PROGRESSIVE ARCHITECTURE, PUBLISHED MONTHLY BY REINHOLD PUBLISHING CORPORATION, 430 PARK AVENUE, NEW YORK, N.Y. 10022. RALPH W. REINHOLD, CHAIRMAN OF THE BOARD; PHILIP H. HUBBARD, PRESIDENT AND TREASURER; FRED P. PETERS, EXECUTIVE VICE-PRESIDENT; KATHLEEN STARKE, SECRETARY AND ASSISTANT TREASURER; C. M. BURNAM, JR., VICE-PRESIDENT. EXECUTIVE AND EDITORIAL OFFICES, 430 PARK AVENUE, NEW YORK, N.Y. 10022.

SUBSCRIPTIONS PAYABLE IN ADVANCE. PUBLISHER RESERVES RIGHT TO REFUSE UNQUALIFIED SUBSCRIPTIONS. SUBSCRIPTION PRICES TO THOSE WHO, BY TITLE, ARE ARCHITECTS, ENGINEERS, SPECIFICATIONS WRITERS, ESTIMATORS, DESIGNERS, OR DRAFTSMAN, AND TO GOVERNMENT DEPARTMENTS, TRADE ASSOCIATIONS, ABOVE TITLE GROUPS ON TEMPORARY MILITARY SERVICE, ARCHITECTURAL SCHOOLS, ARCHITECTURAL STUDENTS, ADVERTISERS AND THEIR EMPLOYEES: $5 FOR ONE YEAR; $8 FOR TWO YEARS; $10 FOR THREE YEARS. ALL OTHERS: $10 A YEAR. ABOVE PRICES ARE APPLICABLE IN U.S., U.S. POSSESSIONS, AND CANADA. ALL PRACTICING ARCHITECTS AND ENGINEERS OUTSIDE U.S., U.S. POSSESSIONS, AND CANADA: $10 FOR ONE YEAR; $16 FOR TWO YEARS; $20 FOR THREE YEARS. SINGLE COPY: $2, PAYABLE IN ADVANCE.

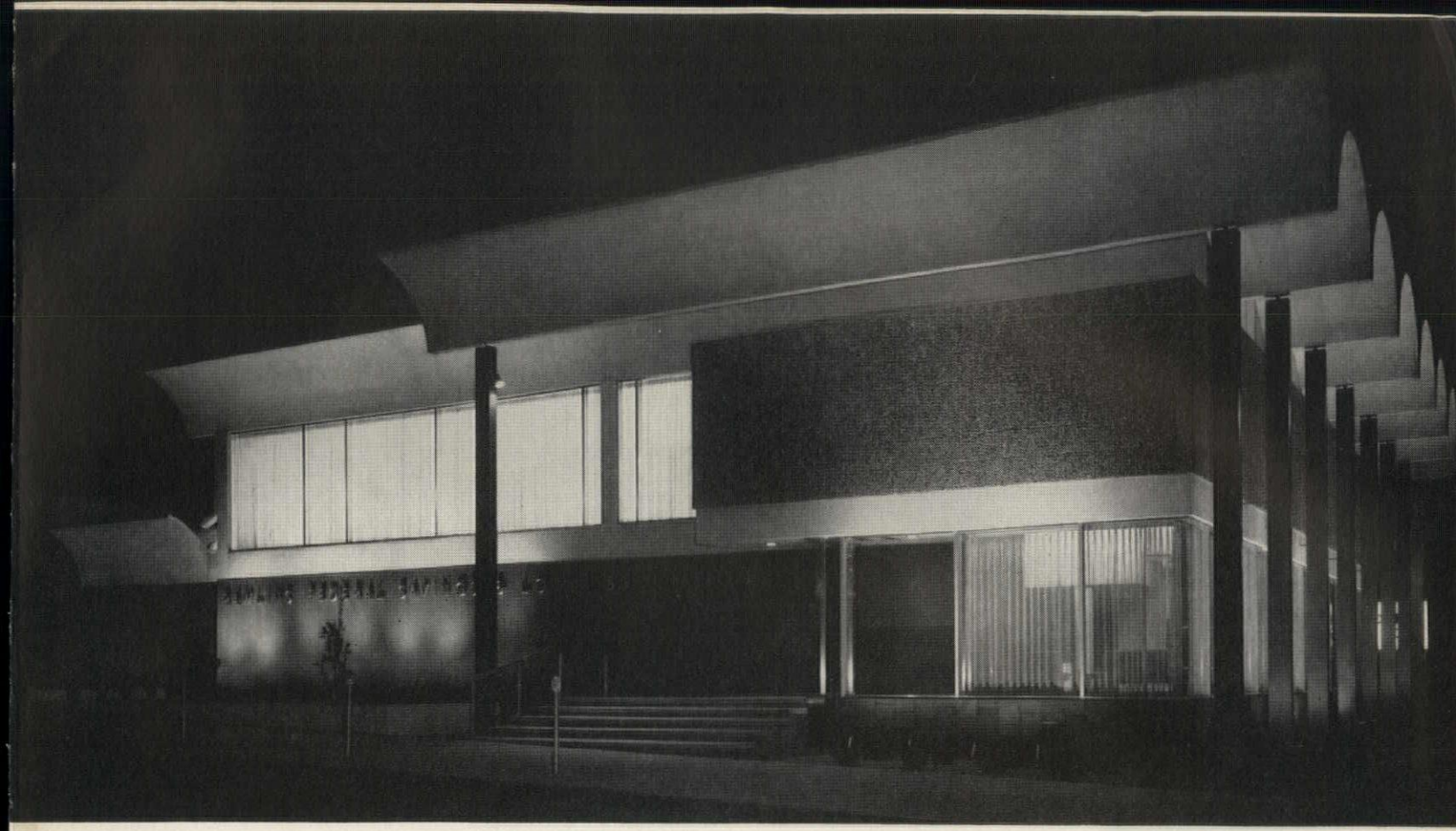
PRINTED BY PUBLISHERS PRINTING COMPANY, NEW YORK, N.Y. INDEXED IN ART INDEX, ARCHITECTURAL INDEX, SECOND-CLASS POSTAGE PAID AT NEW YORK, NEW YORK, VOLUME XLVI, NO. 6.



DALLAS, TEXAS
Oak Plaza Building
Architect: Thomas E. Stanley
General Contractor:
Thomas J. Hayman Co., Inc.
Dover Oildraulic Elevator installed
by Hunter Hayes Elevator Co.

SPRINGFIELD, MASS.
Springfield Institution for Savings
Architects: Alderman and MacNeish
Architectural and Interior Design:
Raymond Lowey / William Snaith
General Contractor: E. J. Pinney Co.
Dover Oildraulic Elevator installed
by Bay State Elevator Co.

CHICAGO, ILLINOIS
3525 W. Peterson Office Building
Architect: Schurecht, Inc.
over Oildraulic Elevator installed
by Gallaher & Speck



RAWLINS, WYOMING . . . Rawlins Federal Savings and Loan Association. Architect: Richard L. Crowther and Associates. General Contractor: L. M. Olson, Inc. Dover Oildraulic Elevator installed by Dover Elevator Co.

Seen any Dover Elevators lately? Look around you.

Wherever fine buildings are built, Dover Elevators are on the scene. Our Oildraulic® Elevators offer speeds of 200 feet per minute for buildings to seven stories. In the high-rise field, Dover Electric Elevators with Computamatic® Control provide fast, dependable response to changing traffic patterns. Cabs and accessories complement your best designs, and maintenance service is available to protect the owner's investment in his elevator equipment. Write for literature. Dover Corporation, Elevator Division, Dept. B-3, P. O. Box 2177, Memphis, Tenn. 38102.

DENVER, COLORADO . . . Embassy House. Architect: De Genette and McMichael. General Contractor: Irwin Horwitz. Dover Electric Elevators installed by Dover Elevator Co.

DOVER ELEVATORS DOVER®

On Readers' Service Card, circle No. 344

VIEWS

The Architecture of Israel

Dear Editor: Congratulations! I have long been looking for a comprehensive article on Israel's architecture—and you have done it. I am making your article (MARCH 1965 P/A) compulsory reading for all members of my staff.

CARL ALPERT
Executive Vice-Chairman
Board of Governors, Technion
Israel Institue of Technology, Israel

Dear Editor: I enjoyed very much your article. It is one of the best I have read about architecture in Israel. It is written seriously, professionally, and with an objective approach.

DAVID REZNIK
Jerusalem, Israel

Dear Editor: I have recently read your article on "The Architecture of Israel" and want to congratulate you on your comprehensive job of reporting—not only on Israel's architecture, but also on the environmental conditions that are shaping its architecture.

I have spent some time in Israel and have also worked for Heker, Neumann, & Sharon; I found your criticism of their city hall in Bat Yam particularly interesting. I, too, think that it is one of the most significant buildings in Israel, but I am only "disturbed" when judging it by its most incidental aspects (i.e., choice of materials).

What is significant about their building at Bat Yam is that it is concerned with three important functions of architecture: firstly, its use of the ancient wind tower idea is an attempt to solve an indigenous climatic problem. Secondly, it is concerned with the relationship of man to his "made" environment, as can be seen in the site plan of the city hall complex. And thirdly, the structure takes an integral part in shaping the spaces created.

DAVID R. SINGER
Ardmore, Pa.

Dear Editor: Your Israel article was great. It was some accomplishment for a short visit.

FORREST WILSON
Pratt Institute
Brooklyn, N. Y.

Word of Thanks

Dear Editor: On behalf of the Officers and Board, may I thank you for your wonderful article concerning Philip Johnson's Elsie de Wolfe Award (MARCH 1965 P/A). Your articulate words gave special meaning to this annual event of ours. We are most grateful.

FREDERICK W. DAVIS
President, New York Chapter
American Institute of Interior Designers
New York, N. Y.

Fascinating Conclusion

Dear Editor: I am utterly fascinated by the conclusion you draw in your Editorial (MARCH 1965 P/A) concerning the lateness of the Porcelain Enamel Institute in sensing the shift in market from "the flat reflective curtain wall to a much more muted and plastic design."

You concluded by pointing out that "too often, sales-trained, sales-oriented, sales-preoccupied management lose track of what it is they are selling."

May I suggest that the correct conclusion to be drawn is "too often, management not trained in sales, not sales-oriented, and not preoccupied with sales, loses track of what it is they are trying to sell!" An alert field sales force knows which way the wind is blowing very early in the game. An alert sales-minded management listens!

L. R. BLOETSCHER
Manager Marketing and Sales
Westinghouse Electric Corp.
Architectural Systems Division
Grand Rapids, Mich.

The Psychology of Design

Dear Editor: Your discussion of the "Psychological Dimension of Architectural Space" in the APRIL 1965 P/A was excellent but far too brief. This is an area of architecture that is least understood yet is potentially the most powerful. I quite believe that history backs up this conclusion.

This has been an article long overdue, but, now that you have set the ball rolling, can we hear more about such factors as color, form, size, light, texture, and how they can psychologically affect man's environment.

CHRISTOPHER RAPHAEL
Cambridge, Mass.

The New Government Architecture

Dear Editor: "Rejuvenated Architecture" (p. 188, MARCH 1965 P/A) may be in the making for our nation's capital, nurtured with the benevolence of the GSA. On a provincial level, I have found this not to be the case, for as a consultant to a local firm I was given an office building plan "overlay" by the GSA and asked essentially to apply my elevations to it. If, then, the GSA wants to design the small buildings, let them do all of the design and take responsibility for the outcome. The GSA should have confidence enough in our profession to let us design significant government buildings for the people, wherever called upon.

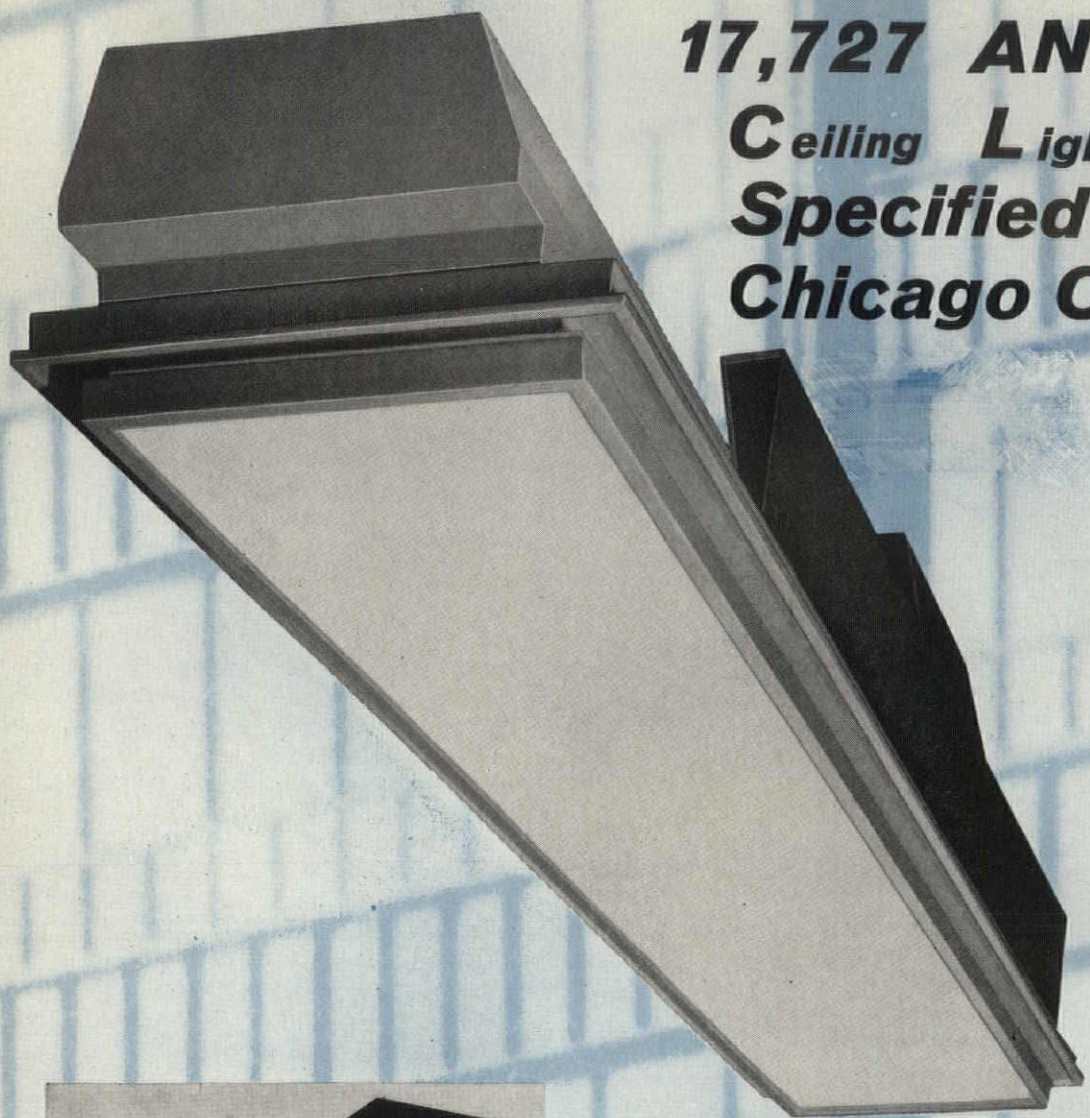
JOHN R. HIX
Assistant Professor of Architecture
School of Design, North Carolina State College
Raleigh, North Carolina

Dear Editor: It was a pleasure for an urban designer to see the new Federal buildings presented in a related group in the March P/A OBSERVER, rather than singly. But the rejuvenation of Federal architecture in Washington has an overall significance beyond the well-deserved tributes to the Public Buildings Service and Karel Yasko and their architectural compatriots. The design professions should take more careful note of what has happened here.

That whole group of projects illustrates a point of contemporary architectural dogma which—if lip-serviced less and thought about more—would explain why the individual designs received ". . . remarkable tribute(s) in view of the seemingly interminable delays and reviews that accompany most public projects in Washington." To wit: Each of these buildings was conceived, refined, and presented for review in terms of an established urban design for a larger area. Thus, the proposal could be more readily appreciated and acted on. Each of the final designs, only partially excepting FOB 7 and the HHFA Headquarters, is very close to the abstractly indicated form of a preceding urban design.

What you saw is as close as anyone would sensibly want—that is, because Yasko and the other architects have sought to imaginatively carry forward and develop the spirit of the urban designs. They did not ignore years of serious development at the planning level merely to do something "different." Nor

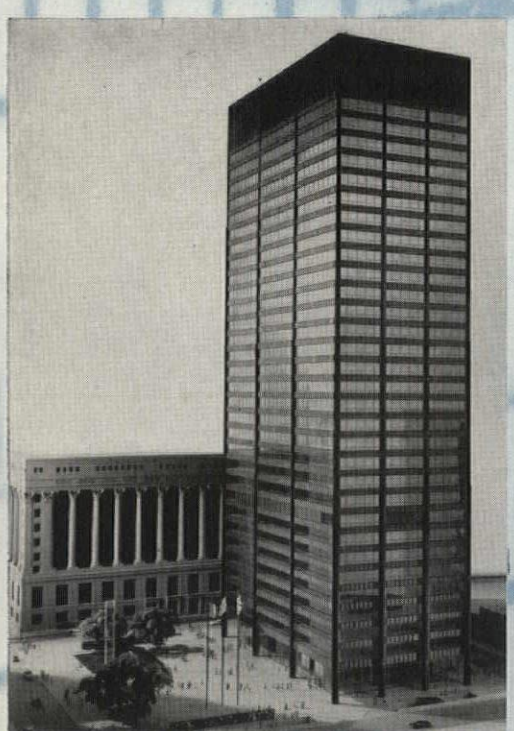
17,727 ANEMOSTAT®
Ceiling Light Diffusers Specified for new Chicago Civic Center



This beautiful 31-story Civic Center is designed and constructed to furnish functional, but pleasant prestige facilities. The combination of 17,727 ANEMOSTAT® Ceiling Light Diffusers with Westinghouse troffers is an integral part of the sophisticated ceiling beauty throughout the building.

Diffuser-troffer units provide air distribution and illumination in a single, efficient ceiling fixture. Supply and room air are rapidly mixed for comfortable even room temperature and draftless air distribution. A concealed damper control allows easy adjustment of air volume without opening or removing parts of the troffer.

ANEMOSTAT® Ceiling Light Diffusers assure stable illumination during cooling, heating and exhaust cycles; and, they eliminate lamp discoloration due to temperature variation. These advantages are made possible by separating the diffuser and troffer with an air insulating double wall. Specify ANEMOSTAT CLD for reliability and flexibility in ceiling light diffusers. For complete product and performance data, write for ANEMOSTAT Catalog 64L.



CHICAGO CIVIC CENTER
CHICAGO, ILLINOIS
Owners: **Public Building Commission of Chicago;** Architects: **C. F. Murphy Associates; Skidmore, Owings & Merrill; Loebl, Schlossman & Bennett;** General Contractor: **Gust K. Newberg Construction Co.;** Mechanical Contractor: **Holleran-Economy Assoc.**

See ANEMOSTAT Products at Booth 1011, 17th International Heating and Air Conditioning Exposition, McCormick Place, Chicago, Illinois.

®ANEMOSTAT PRODUCTS DIVISION
DYNAMICS CORPORATION OF AMERICA
P. O. Box 1083 **Scranton, Pennsylvania**

On Readers' Service Card, circle No. 460

Member of Air Diffusion Council

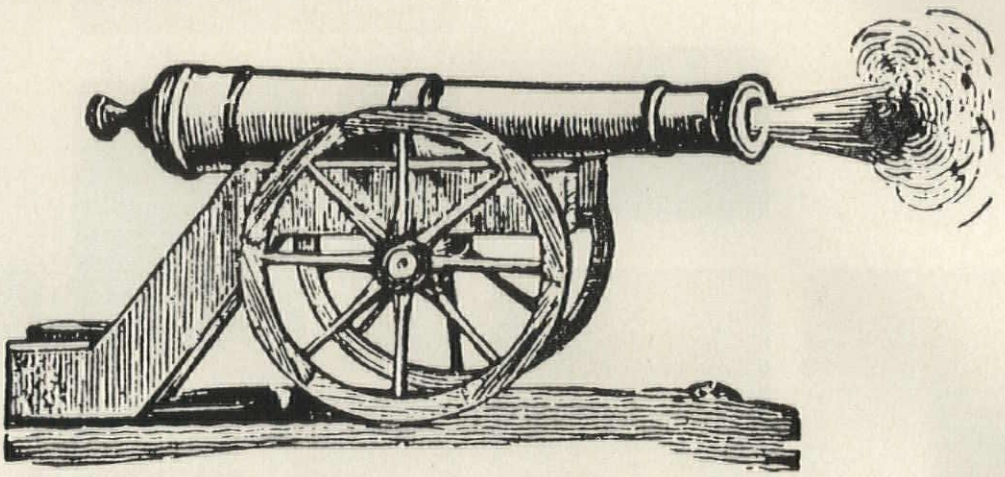
did they slavishly confine themselves to working out the insides and spreading some kind of façade on the children's blocks which we urban designers perforce must use to "avoid getting into architecture." When, for instance, design of the Air Museum was begun, it clearly had to fit the long-standing Mall plans. The earliest attitudes of the McMillan Commission and subsequent designers, especially F.L. Olmstead, Jr., were reviewed to refresh everyone's concept of what *general* symmetry of The Mall should be established with respect to the National Gallery and this obviously modern building, which would be last and first at the same time. Obata took these criteria and his program to breathe new life into the old compositions, such as matching the domed Gallery roofs with an equally strong roof of a different sort, achieving basic symmetries far above the cornice-for-cornice standard.

The FBI Building fits a newer plan in much the same way, for the final scheme is very different from what-might-have-been without the Advisory Council's Plan for Pennsylvania Avenue. Otherwise, even Yasko and his architects, let alone the rest of us, might *still* be haggling over the best way of putting a single building in that nondescript, unstable area now facing the Triangle.

So far, I've made a partial exception of HHFA and FOB 7. In both cases, though, the Southwest Urban Renewal Plan still sets the controlling framework for the project. HHFA was not originally intended as the occupant of its essentially "background" site; Pei's L'Enfant Plaza and the 10th Street Mall were the main features of the area. But Breuer immediately saw that the U.S. equivalent of a Ministry of Housing could not be background—whatever the opportunism of site purchase might be. So he made the building a foreground drama, a dynamic form suited to its freeway exposure and fitted to the other features of the urban design. The improvement was immediately appreciated, despite other problems of bringing the site, parking, etc., up to par.

FOB 7 was a different story. After the gateway prism of space developed by Von Moltke's Mall design was seriously violated by a nonarchitectural decision to span 10th Street, an unfortunately long time was needed before enough people realized the full extent of the decision: A basic ingredient of an urban design composition had been changed; the next step was re-evaluating the larger design, not fiddling with compromises.

Continued on page 12



REVOLUTION!

IN THE STEEL WINDOW INDUSTRY

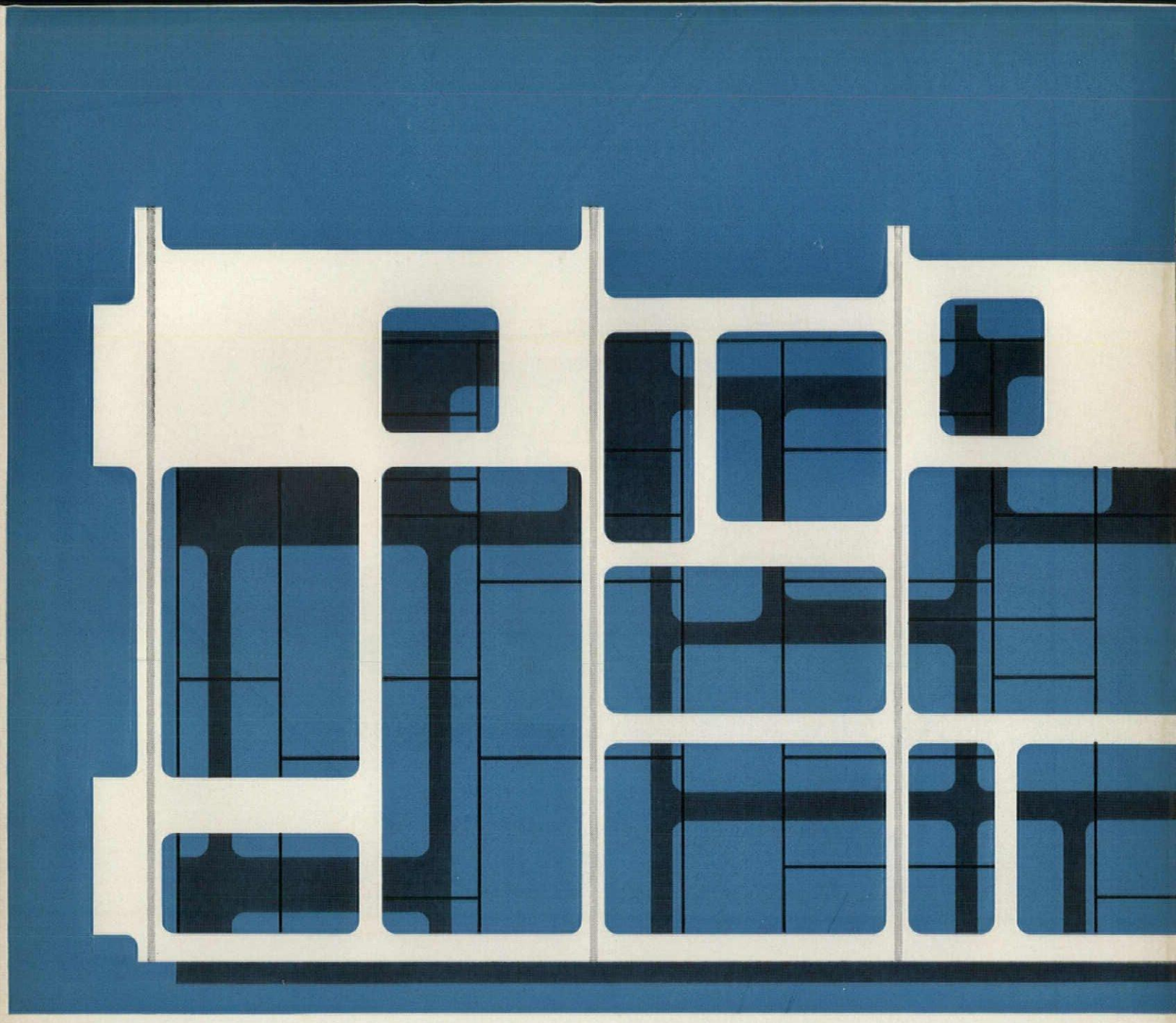
Who's the leader?

Why HOPE'S of course!

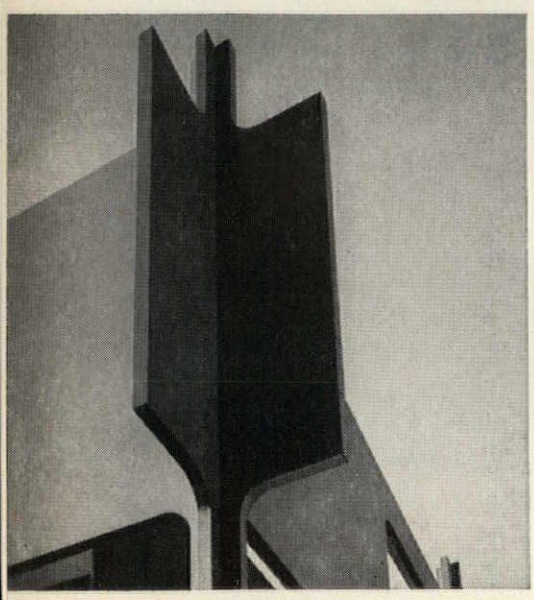
Not with powder or shot — but with a revolutionary new Steel Window design that reduces air infiltration by over 60% (confirmed by independent testing laboratory).

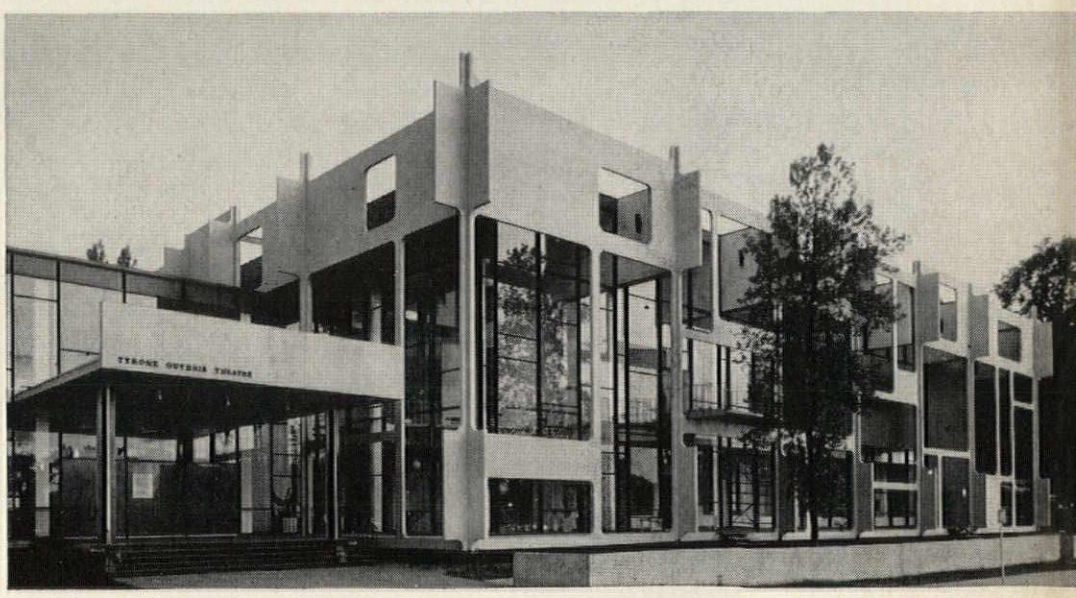
Get the facts from the nearest HOPE'S district office or HOPE'S representative listed in the yellow pages.

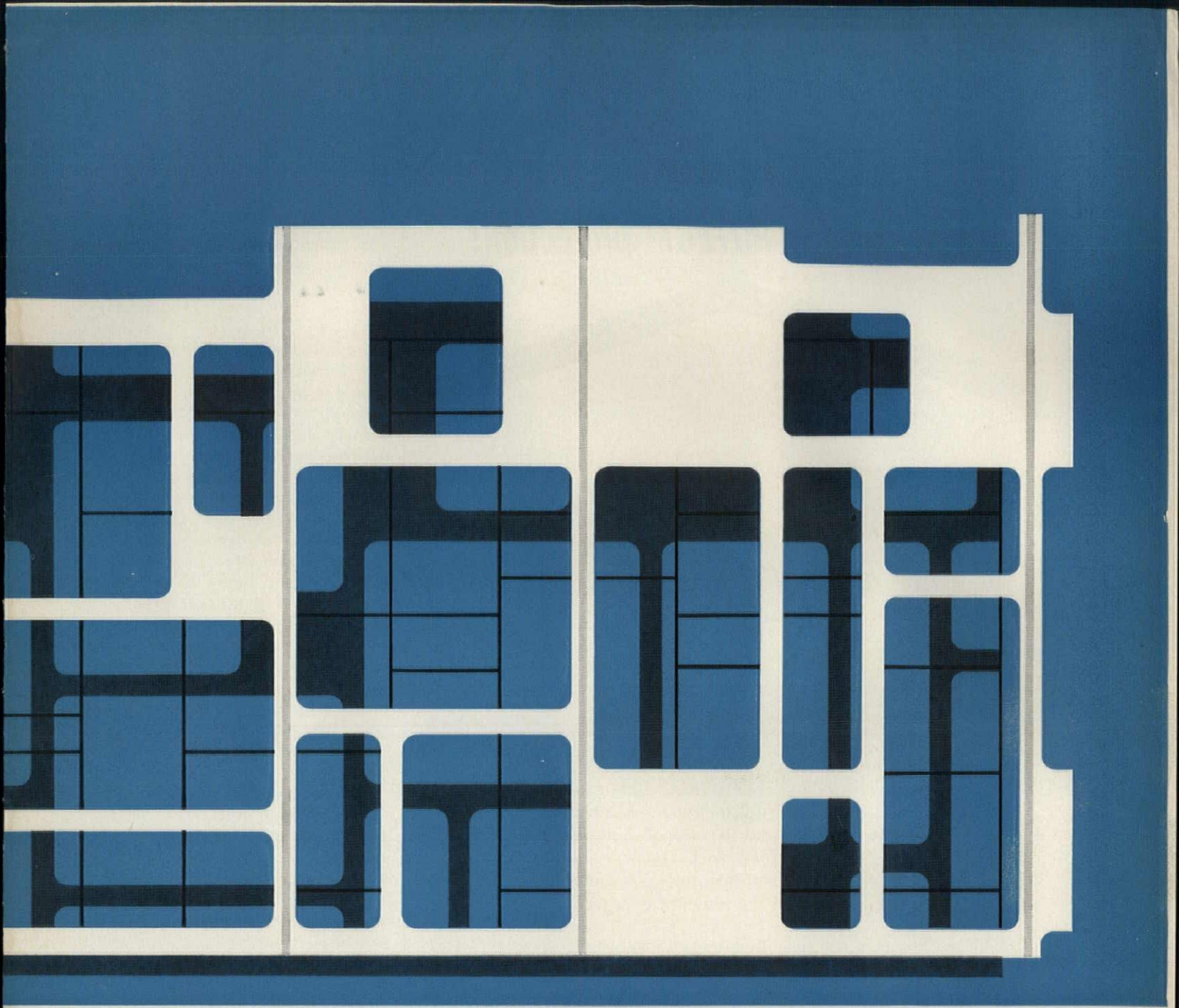
HOPE'S WINDOWS, INC., JAMESTOWN, N. Y.



the most exciting ideas take shape in plywood



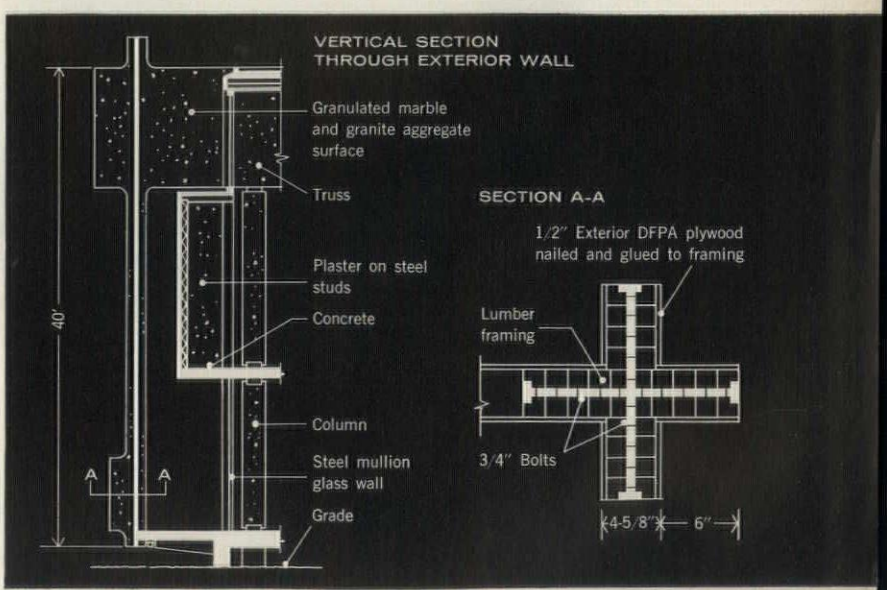




Tyrone Guthrie Theater, Minneapolis, Minn. / Architect: Ralph Rapson, A.I.A., Architects, Inc. / Structural Engineers: Meyer & Borgman / Contractor: Watson Construction Co.

This unusual screen forecasts the mystery and excitement to be found within the theater itself. And it is a good example of how plywood can help achieve unusual design effects without exaggerating costs. The screen is composed of thin sheets of Exterior DFPA plywood nailed and glued to a lumber frame. This construction – which works like a stressed skin panel – is light, strong and very low-cost. In fact, plywood cost less than steel, metal lath and plaster, or solid laminated wood. For more information on plywood structural systems, write us at Tacoma, Washington 98401 (USA only).

AMERICAN PLYWOOD ASSOCIATION



On Readers' Service Card, circle No. 330

Continued from page 8

Thanks to a bit of snapping by the new Commission of Fine Arts, the re-evaluation and a major change were made in time—but barely. The final design, which passed as quickly as FBI or the Air Museum, brought the whole south side of the long element into play with the Mall space. The bridging is now part of a larger spatial sequence in four directions, and the 10th Street Mall axis is richly carried through this sequence to the Smithsonian, its originally planned terminus, instead of ending abruptly on a compromise.

I have needed this rather detailed explanation to show that the heavy weather of Washington building review is not always an Act of God. The trouble is that sunshine and light are not automatic here in Washington either. Especially not if one wants to see the principles of a thoughtfully developed urban design carried forward to their fullest architectural expression—as exemplified in these recent projects of the Public Buildings Service. In process, the planners and urban designers, like the architects of GSA, have also needed a large share of patience in seeing their children turn out right.

It is not surprising that the architectural translation from urban design to building design is often painful. First off, urban design is too much fenced away from what will go on *inside* the buildings, except in the most common and stereotyped forms. If blandness is to remain an unacceptable consequence, even in Washington, where a certain consistency and unifying theme is desired in the townscape, it takes time to bridge the gap. Secondly, we must all admit there has been more lip-service than conscious effort in the architecture of urban design. If a magazine of your stature will devote seven pages (same issue) to a critique of the new MIT Earth Sciences Tower without once moving to off-campus relationships such as having another tower, the Prudential, immediately across the river, when or where will these urban problems be discussed?

I personnally assure you that just such discussion constitutes a very large part of some of those "interminable reviews." It is important to remember that the history as well as the result of these projects proves the main point of your article: that the mountain's labor pains should bring forth *more* than mice.

Yours for inspired genetics.

DONALD E. JACKSON, Architect
National Capital Planning Commission
Washington, D. C.

AT ST. MARY'S INFIRMARY IN GALVESTON, THIS CERAMIC COOLING TOWER

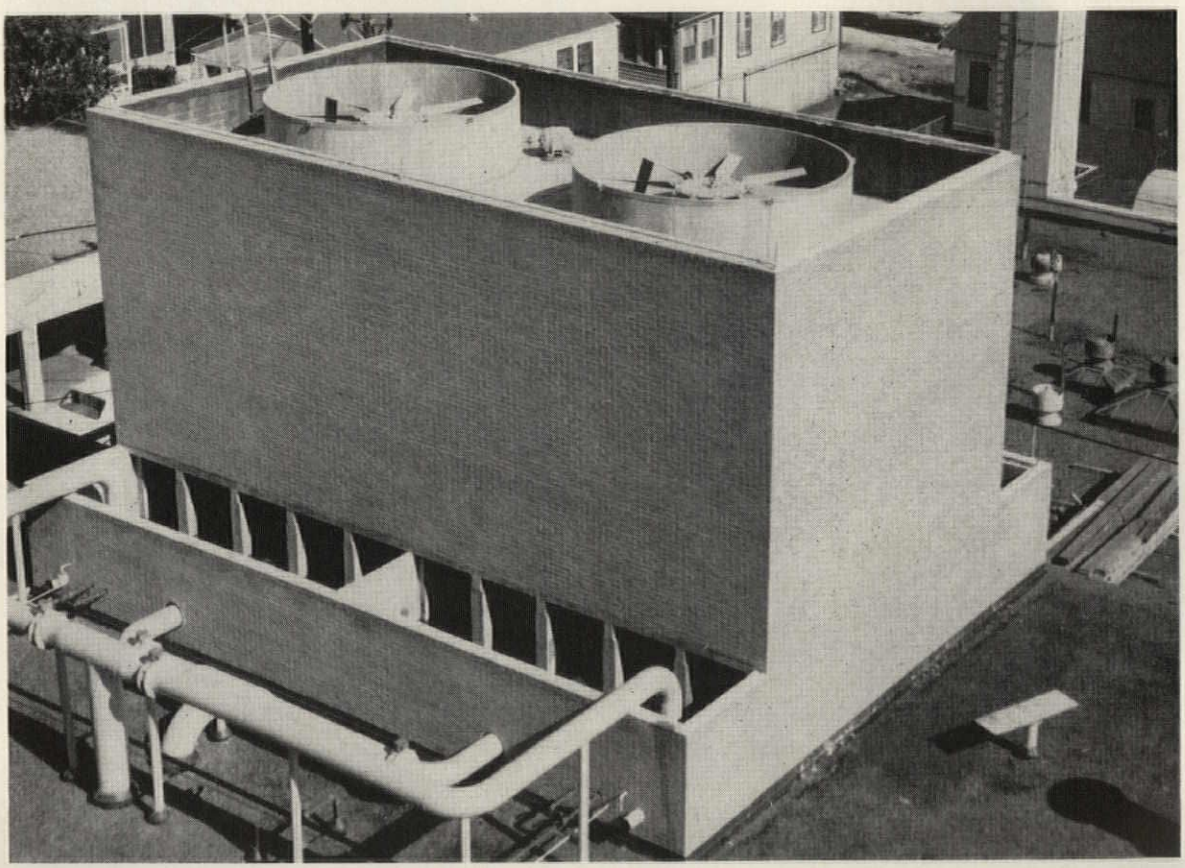
blends versatility with permanent, trouble-free performance

Ceramic Cooling Towers can be put virtually anywhere, to meet space limitations or carry out overall design requirements. They have been installed on roofs — as at recently-built St. Mary's Infirmary — in parking lots, in lawn areas, adjoining main buildings, and even forming part of a garden wall.

Serving hospitals, schools, colleges, commercial buildings, utility plants and factories, *Ceramic Cooling Towers* are being increasingly specified. They provide *permanency and long term economy* in a heat transfer system built to last as long as the building it serves, *with full thermal performance over the life of the tower.*

Ceramic Cooling Towers offer complete freedom of design. Exteriors can be any permanent material, with or without embellishment, to complement *any* architectural style. And, elimination of free water carry-over ends the inconvenience of water spray associated with conventional, impermanent cooling towers.

As further proof of quality, *Ceramic Cooling Towers* are certified by the Cooling Tower Institute — your assurance of performance at not less than rated capacity. You can depend on maximum value and full capacity only with a CTI certified performance tower.



Ceramic Cooling Tower recently installed at St. Mary's Infirmary (staffed by The Sisters of Charity of the Incarnate Word), Galveston, Texas. Two cells, 4,000 G.P.M.; specifications °F: 93.5 - 86 - 80 . ARCHITECTS: Golemon & Rolfe, Houston. CONSULTING MECHANICAL ENGINEERS: Bernard Johnson Engineers, Inc., Houston.

CERAMIC COOLING TOWER COMPANY
2821 West Seventh • Box 425 • Fort Worth, Texas
a division of ACME BRICK COMPANY
C T I Member

Ceramic Cooling Towers are represented by 40 sales agents across the United States, and are available all over the world. Send coupon below for CCT agent in your area, and complete technical literature.

Ceramic Cooling Tower Company
P. O. Box 425, Department 17
Fort Worth, Texas 76101
Please send material on Ceramic Cooling Towers to:

Name _____

Firm _____

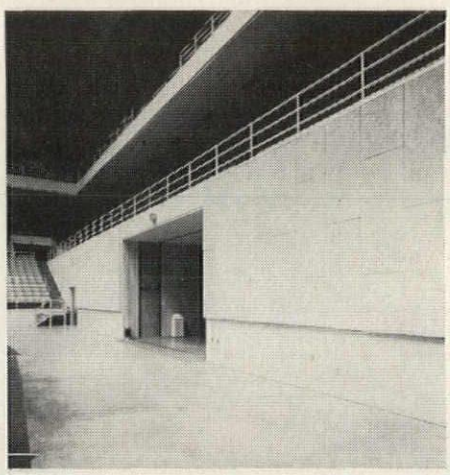
Address _____

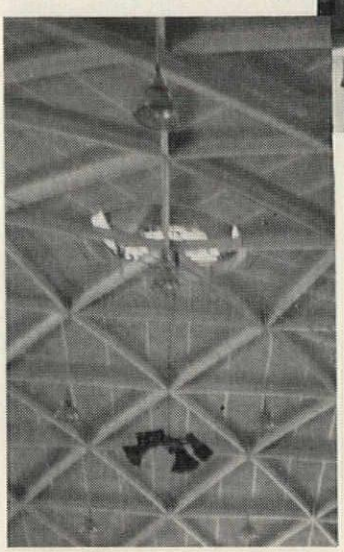
City/State/ZIP _____

On Readers' Service Card, circle No. 339

How many shapes should a roof deck have?

Shapes *are* important — and INSULROCK deck gives you a smart selection of contemporary shapes. For example, standard INSULROCK deck's attractive Insul-Glo-70* in off-white finish. Fashion Deck* special treatment in dimensional lineation. And Pavilion Tile* gives a new and exciting shape. All versions available with Insul-Tone* colors on exposed ceiling surface.





How many things should a roof deck be?

Versatile. Economical. Light-weight. Rugged. Durable. Acoustical. Insulated. Fire resistant. A finished ceiling!

All these things a roof deck should be...and all these things INSULROCK deck is!

INSULROCK Structo-Form* formboard stays in place to provide a handsome acoustical ceiling. Special dome shapes can be devised, and INSULROCK deck cuts easily to fit.

*A trademark of The Flintkote Company

INSULROCK® ROOF DECKS

For more information, contact

THE FLINTKOTE COMPANY Insulrock Products

30 Rockefeller Plaza, New York, N.Y. • General Sales Office: Box 157, Whippany, N. J.

FLINTKOTE®

America's Broadest Line Of Building Products

On Readers' Service Card, circle No. 446

On Readers' Service Card, circle No. 408 ➤

Mechanical Engineer–W. L. Cassel • Architect–Gentry & Voskamp • General Contractor–Swenson Construction Co. • Mechanical Contractor–U. S. Engineering Company

For patient comfort this new center chose Carrier Gas-powered cooling–with individual room control.

This is the $14 million Research Hospital and Medical Center in Kansas City. Certainly one of the finest hospital buildings in the world. One of the outstanding features: a Carrier Weathermaster® unit serving each room. With individual controls for year round air conditioning.

What's behind it all? Chilled water for cooling is supplied from two Carrier refrigeration machines powered by steam from Gas-fired boilers. A 250-ton turbine driven centrifugal exhausts steam to a 750-ton absorption machine. This combination system is simple to operate. And costs are low. Because Gas energy is dependable and economical.

Whatever your refrigeration needs—for new building, addition or modernization—remember this combination. Carrier and Gas Energy. Call your local Gas Company sales engineer for more information. Or write: Carrier Air Conditioning Company, Syracuse 1, New York.

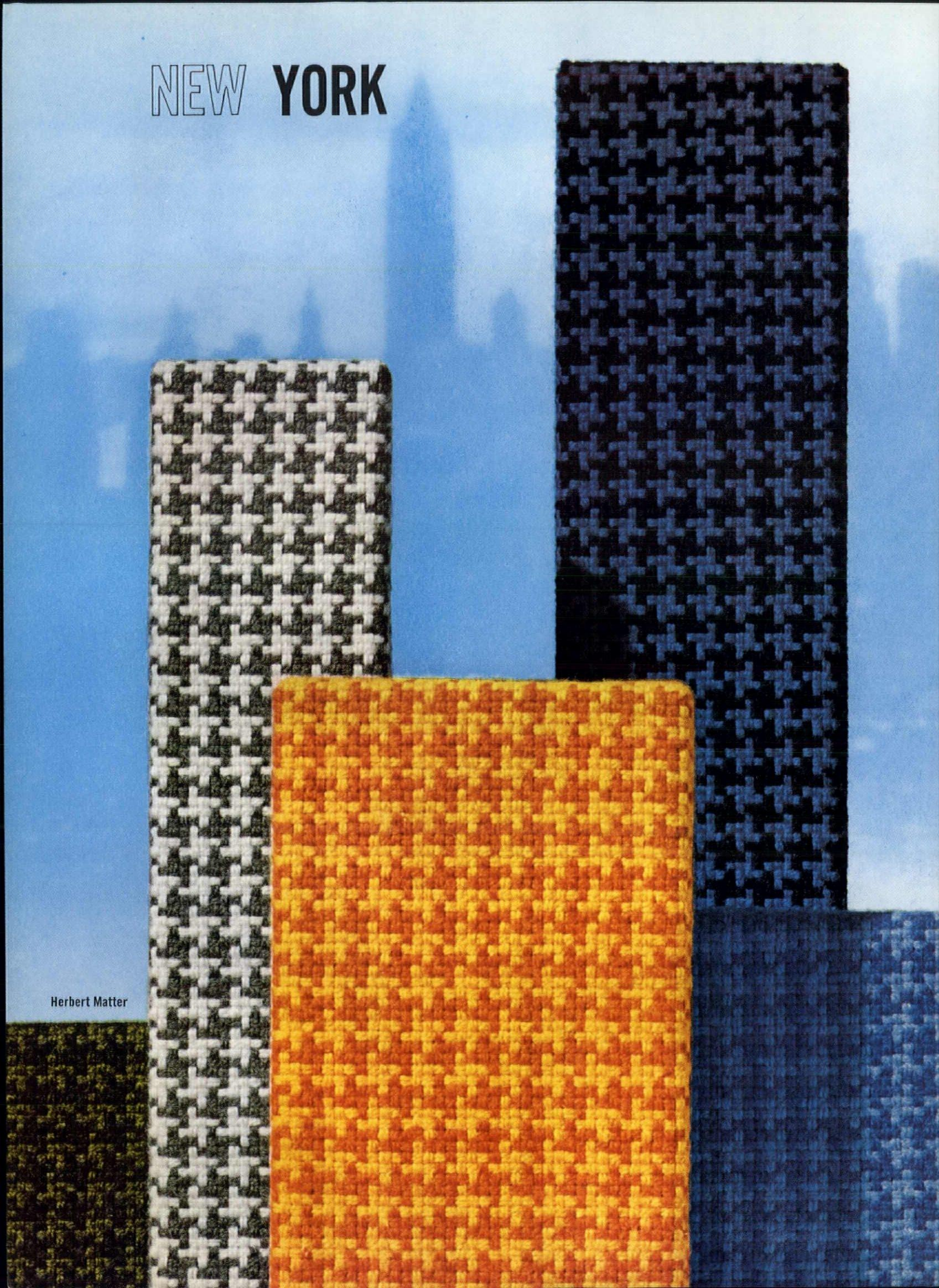
AMERICAN GAS ASSOCIATION, INC.

For heating and cooling... Gas is good business

SEE THE CARRIER GAS-POWERED ABSORPTION OPERATING EXHIBIT AT THE FESTIVAL OF GAS PAVILION–N.Y. WORLD'S FAIR 1964-1965

Readers' Service Card, circle No. 408

On Readers' Service Card, circle No. 327


NEW YORK
Herbert Matter

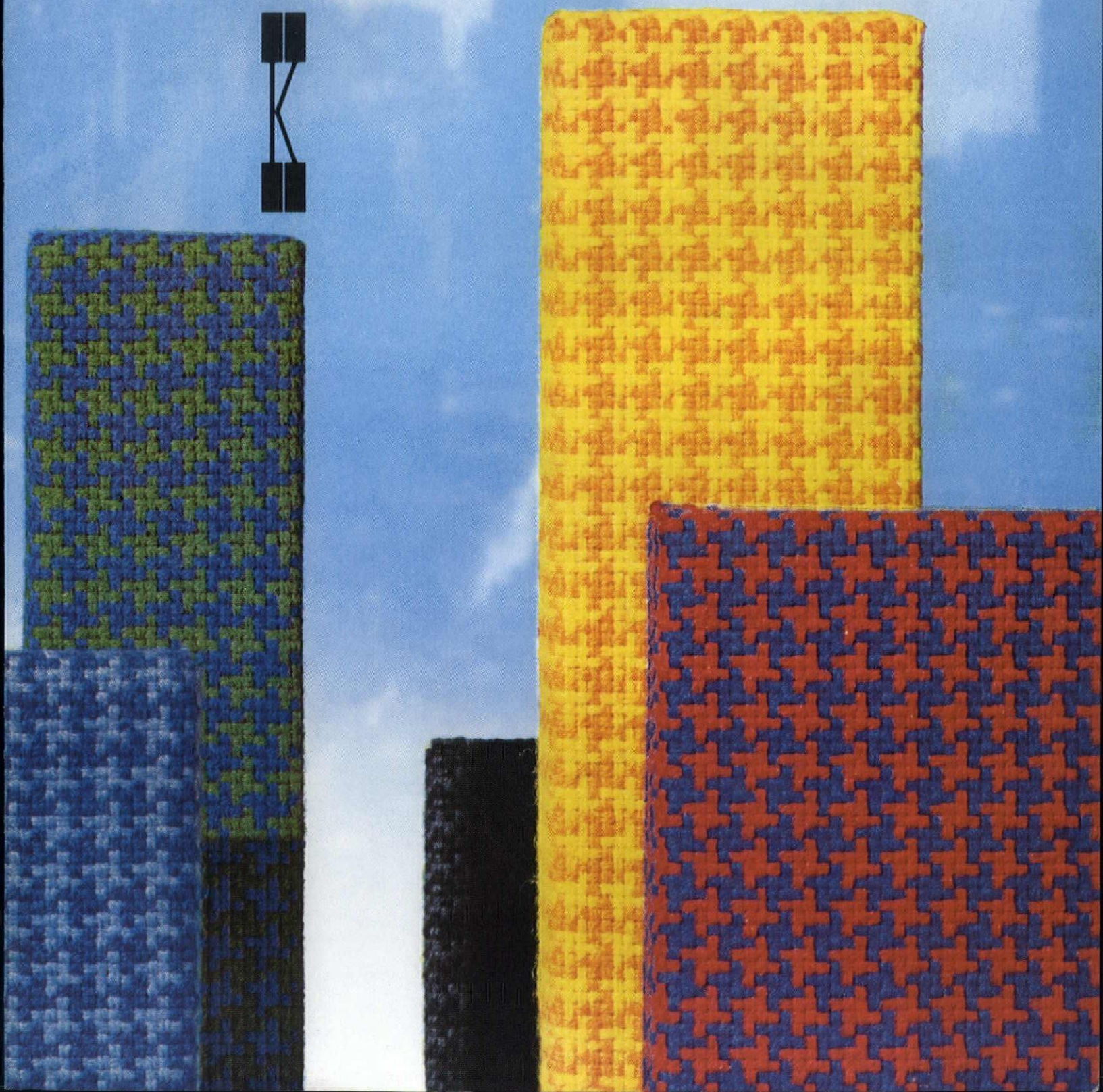
YORK

IS KNOLL'S NEW UPHOLSTERY WOOL FOR HOME AND OFFICE, COUCHES AND CHAIRS. A SUBTLE CHANGE IN CLASSIC HOUNDSTOOTH SIMPLIFIES THE WEAVE SO THAT THE PATTERN WORKS IN ANY DIRECTION. THE NEAREST KNOLL SHOWROOM HAS ALL 16 COLORS TO SHOW YOU.

KNOLL ASSOCIATES, INC. 320 PARK AVENUE NEW YORK N.Y. 10022

Showrooms in: Atlanta Boston Chicago Cleveland Dallas Detroit Los Angeles Miami Philadelphia St. Louis San Francisco Seattle Washington, D.C.

International: Argentina Australia Austria Belgium Brazil Canada Finland France Germany India Iran Italy Mexico Netherlands Norway Spain Sweden Switzerland Tunisia Uruguay Venezuela



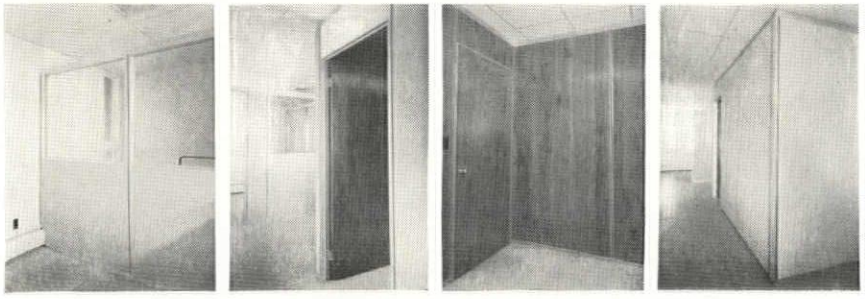
LOOK AT THE INSIDE STORY

INTRODUCING... NEW! WORKWALL SELECTRA MOVABLE PARTITIONS

a bold innovation in double wall space division

Selectra is the first partitioning system designed to fit a blueprint perfectly—without limitations, giving the architect full flexibility in interior space control ■ Flexibility in panel choice—Double wall construction with independent faces allows any choice of paneling in ¼" to ⅝" thickness ■ Flexibility in cost—Depending on panel selection, installed costs run as low as $1.50 per square foot ■ Flexibility in construction—Metal framing can be erected and wiring completed before panels are installed ■ Outstanding sound transmission test results.

Slim-line metal components assure trim architectural lines.

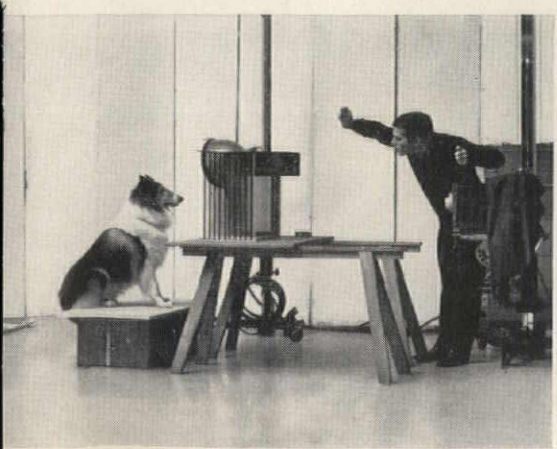


May we send you our new Workwall SELECTRA Brochure #665 describing the many additional features of this flexible new concept in space division? Write to

WORK WALL
MOVABLE PARTITIONS
DIVISION OF L. A. DARLING COMPANY
Dept. No. 25, Box 130, Bronson, Michigan

On Readers' Service Card, circle No. 447 ➤

You're looking at a collie named Caesar through 10 pieces of PPG Float Glass.



It's as though nothing is between the collie and the camera lens. This clarity is the reason why PPG Float—the new glass from Pittsburgh Plate Glass Company—is attracting the interest of automakers, mirror manufacturers and architects.

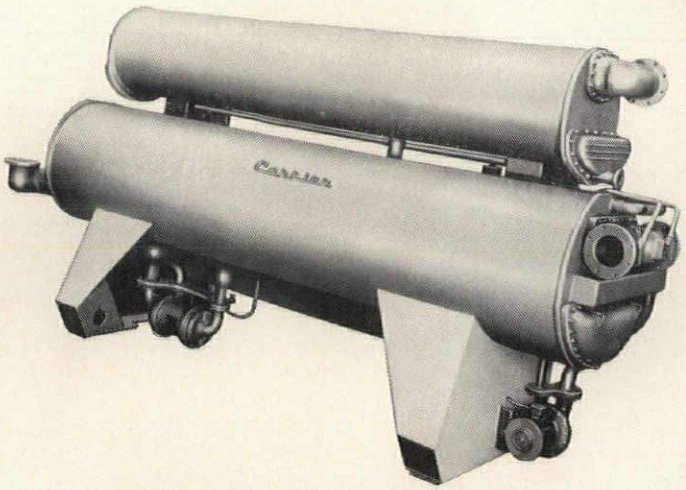
PPG Float is made by floating liquid glass upon a lake of molten metal. The result is a new approach to perfection in glass. Many 1965 cars are already using PPG Float Glass. You'll be seeing more of it wherever the last word in clarity is called for. Pittsburgh Plate Glass Company, One Gateway Center, Pittsburgh, Pennsylvania 15222.

Left: This is how the photograph at top was taken through 10 pieces of PPG Float Glass.

Pittsburgh Plate Glass Company, Pittsburgh, Pa.

PPG makes the glass that makes the difference

On Readers' Service Card, circle No. 399



How hermetic can you get in an absorption refrigeration machine?

Fully—yes, fully!

In fact, the new Carrier Hermetic Absorption units are the first fully hermetic large-capacity liquid chilling packages.

Take one critical component—our patented Hermetic Solution Pumps.

They're of horizontal shaft design.

This eliminates the need for a thrust bearing required on conventional vertical shaft pumps.

Now one motor powers two pumps on the solution circuit . . . reducing maintenance problems by one third . . . and increasing the overall efficiency of the pumping system.

These pumps typify the extra quality built into every component of our chillers—quality that results in superior performance for your clients.

Capacities: 52 through 1000 tons.

Up through 354 tons, the packages are completely assembled, wired and tested for leakage at the factory, then shipped as units to the job site.

The larger sizes, also completely factory-assembled, are shipped in two easy-to-connect sections. A brochure gives details. Ask your Carrier representative for it—or write Syracuse 1, N. Y. In Canada: Carrier Air Conditioning (Canada) Ltd., Bramalea, Ontario.

P. S. It's been 20 years since we introduced the first large-capacity absorption refrigeration machine. There are more of these Carrier units serving today than all other brands combined—something to consider when you do your next job.

Carrier Air Conditioning Company

More people put their confidence in Carrier air conditioning than in any other make

New Kawneer UNIT WALL 1200 System assures leak-free performance! Even with Operating Vents!

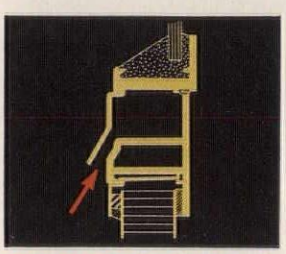
Outside, raging gale winds and rain! Inside, bone dry! Rigorous static test results assure that you can *now* specify an aluminum wall system *with operating vents* which provides weathering performance *better* than NAAMM standards. (See *Metal Curtain Wall Manual* by NAAMM, A.I.A. No. 17-A.)

Only Kawneer has the features that make this possible . . . 1) pressure equalization slot of Sealair Vents, proven by independent tests to be leak-proof even under hurricane conditions, and 2) split mullion construction of Kawneer UNIT WALL Systems takes thermal expansion stresses away from joint sealants; preventing possible damage and subsequent leakage.

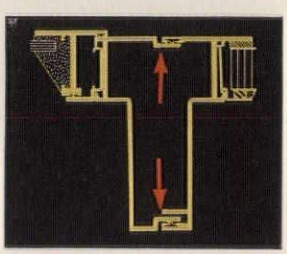
Such engineering leadership, plus Kawneer's experience on thousands of installations of both windows and wall systems, results in new UNIT WALL systems that out-perform any other, regardless of cost!

Permanodic* finishes, too! Kawneer's anodic hard color finishes can enhance your design while resisting abrasion, corrosion and ravages of time and weather.

If your next job is a one or two-story building, specify Kawneer Series 1200 or 3000. If it is a multi-story, specify Series 1250. For complete information on Kawneer architectural products and Permanodic finishes see Sweet's File 3a/KAW. Write for specification file, number WS-65.



Kawneer's Pressure Equalization Slot keeps water out. Pressure within the window sections is equal to pressure outside the building. No pressure difference—no siphoning action—no leakage.



Split Mullion, Unit Construction controls thermal expansion and contraction. No stress build up to damage joint seals and induce leakage. Factory fabricated units assure uniform quality control, speed erection.

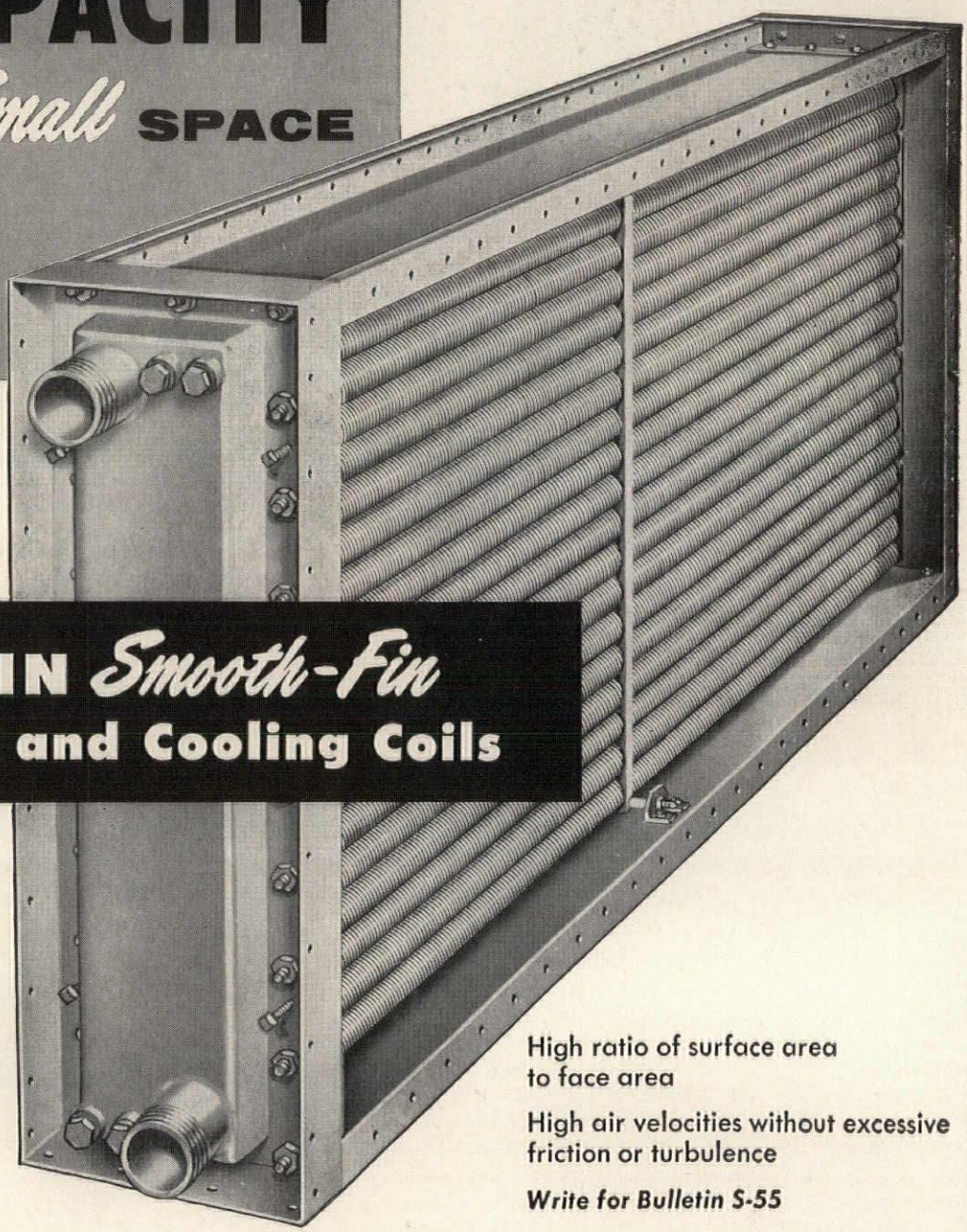
Kawneer

Kawneer Company, a Division of American Metal Climax, Inc.
Niles, Michigan • Richmond, California • Atlanta, Georgia • Kawneer Company Canada, Ltd., Toronto, Ontario • Kawneer de Mexico, S.A. de C. V., Mexico City, Mexico • Kawneer Company (U. K.) Ltd., London • Kawneer GmbH, Rheydt, Germany • Showa Kawneer, Tokyo, Japan

*Trademark of Kawneer Company

On Readers' Service Card, circle No. 448

BIG CAPACITY IN *Small* SPACE



AEROFIN *Smooth-Fin* Heating and Cooling Coils

High ratio of surface area to face area

High air velocities without excessive friction or turbulence

Write for Bulletin S-55

AEROFIN CORPORATION

101 Greenway Ave., Syracuse 3, N.Y.

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

ENGINEERING OFFICES IN PRINCIPAL CITIES

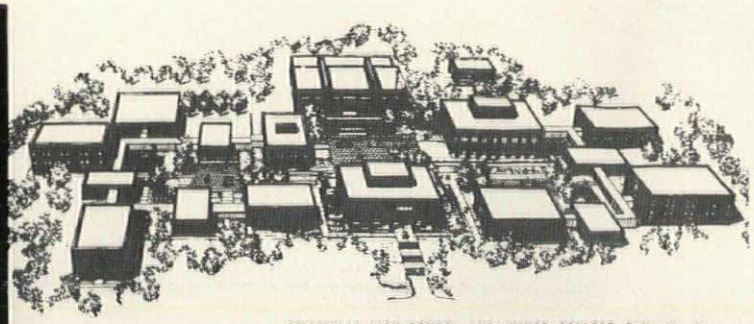
No other building material can match Georgia granite in the variety of colors and finishes available to the architect. From light airy grace to solid magnificence, a color and texture can be chosen to reflect the design and purpose of the structure. Samples are available upon request and our staff of engineers and draftsmen will be glad to give you the benefit of their skill and experience. Fast delivery of granite in any quantity, from the fabricating plant to the job site, is assured.

georgia granite

■ expression unlimited

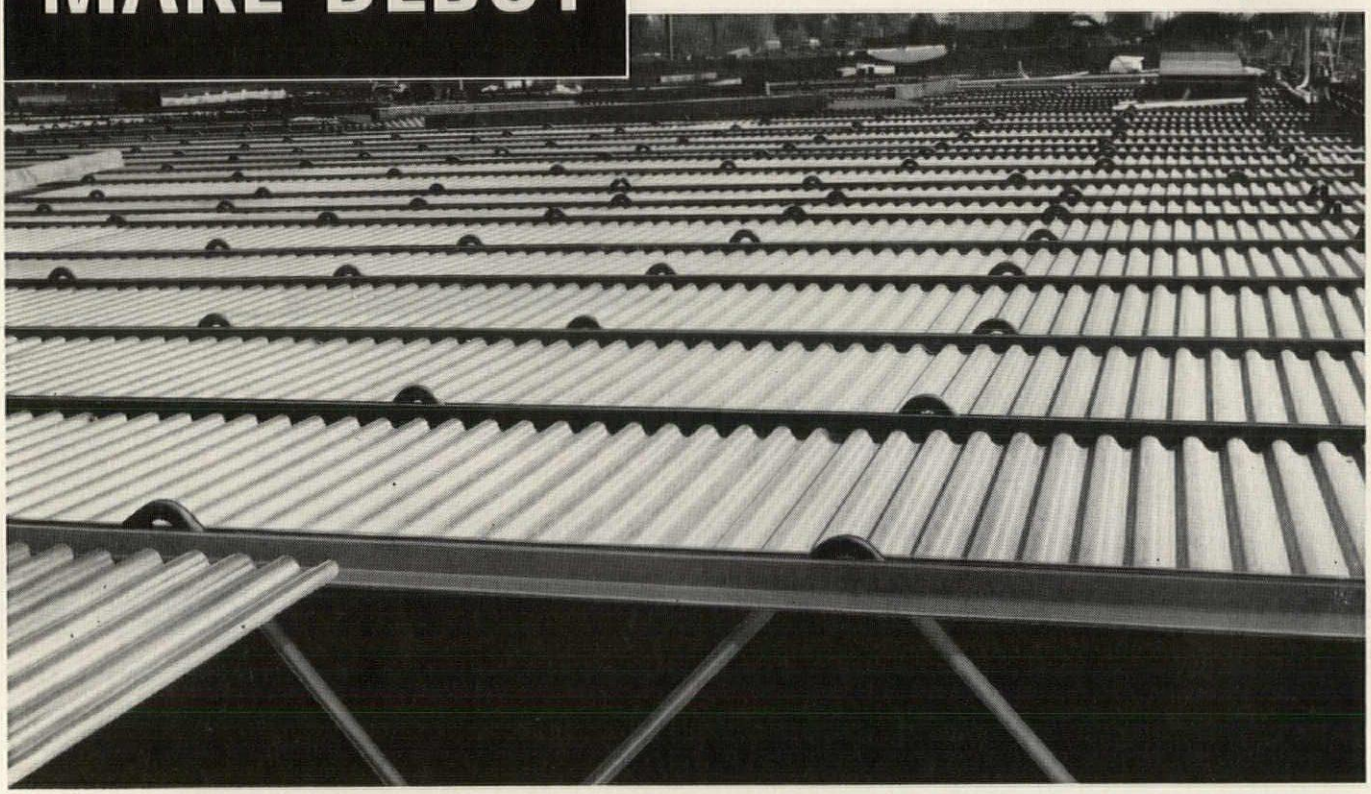
manufactured by the georgia granite company / elberton, georgia 30635

LACLEDE COMPOSITE JOISTS MAKE DEBUT



BELLEVILLE HIGH SCHOOL AND JUNIOR COLLEGE, Belleville, Ill.

Architect: Hellmuth, Obata & Kassabaum
Assoc. Architect: Weisenstein, Rogers & Hausmann
Structural Engineer: John P. Nix
General Contractor: S. M. Wilson Co.



New Product Used For First Time in Big Educational Complex

Here is the first major use of the new Composite Joists introduced recently by Laclede Steel Company. The new "C" type open web steel joists were specified for the sprawling complex of buildings comprising the new Belleville High School and Junior College, Belleville, Ill.

The uniquely designed joists and C-J Form blend the advantages of steel with those of concrete in floor slab construction. Longer spans with less deflection, saving in headroom, reduction in amount of steel needed, and saving in welding time and other labor are some of the benefits provided by these high strength joists.

For complete information, write today for technical brochure with all the facts about new Laclede Composite Joists.

LACLEDE STEEL COMPANY

St. Louis, Missouri 63101

Producers of Quality Steel for Industry and Construction

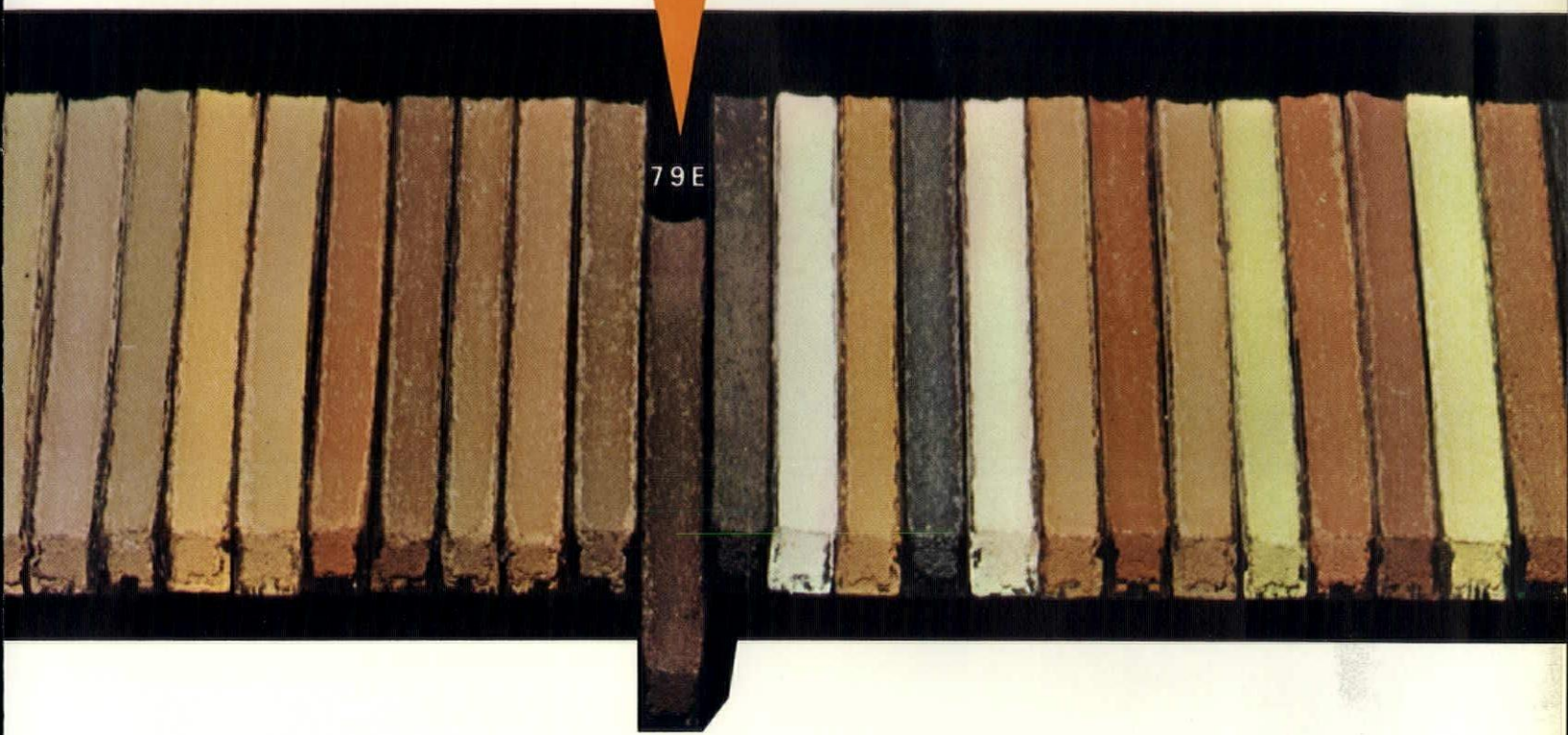
Steel

6516

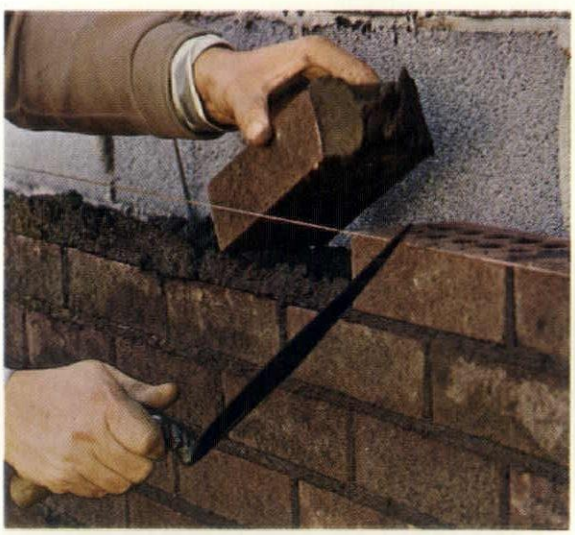
On Readers' Service Card, circle No. 371

On Readers' Service Card, circle No. 331 ➤

NEW MEDUSA
CUSTOM COLOR
MASONRY CEMENT **79E**



in the wall . . . color perfect!



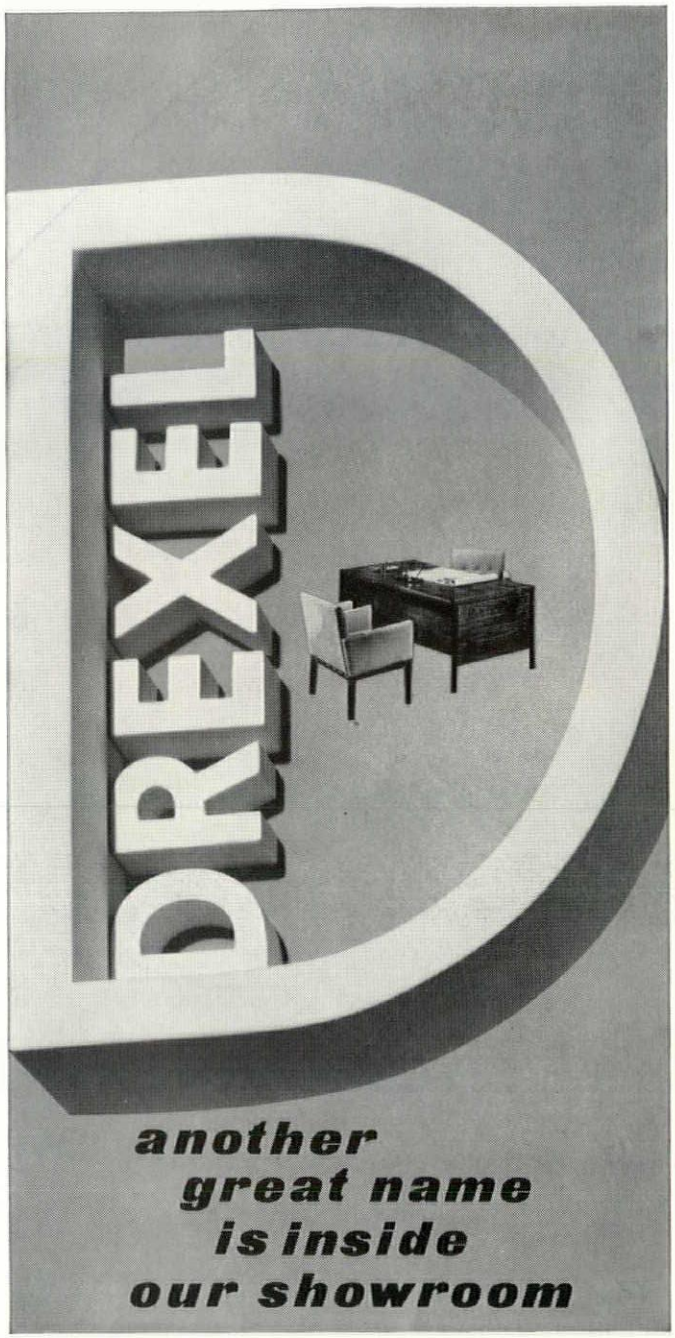
Medusa Custom Color 79E is a rich, chocolate-colored masonry cement . . . one of a number of colors you can specify . . . and **get** . . . with assurance. In this modern industrial job (120,000 brick), the chocolate mortar matches the brick precisely and heightens the striking contrast to precast panels of Medusa White. In other jobs, you may want a contrasting or harmonizing mortar to the brick. Whatever the color . . . Medusa will produce it with uniformity . . . bag after bag.

Medusa Custom Color is scientifically mixed at the mill . . . delivered to the job-site in 70 lb. bags ready for sand and water. Permanent on the wall. Fast to light pigments. When mortar color is vital . . . specify Medusa Custom Color Masonry Cement. Write direct for more data.

American Greetings Corporation, Cleveland, Ohio. Architect: Alexander A. Papesh, Cleveland, Ohio. Engineers: Osborn Engineering Co., Cleveland, Ohio. General Contractor: Gillmore-Olson Co., Cleveland, Ohio. Masonry Contractor: Jacob Haditsch, Cleveland, Ohio.

(This building also has precast panels of Medusa White and roof and and floors of Medusa ChemComp.)

MEDUSA PORTLAND CEMENT COMPANY
P.O. Box 5668 • Cleveland 1, Ohio



DESKS INC., N.Y.C. is proud to announce the addition of the Drexel collection of contract office furniture. Behind this magic name are tremendous manufacturing facilities, and furniture craftsmen that have made Drexel one of the most important furniture manufacturers in the country. Now, Interior Designers, Decorator, and Architects can specify a brand name line for the "big jobs" and remain in a moderate price range. See this important new line in our showroom at 71 Fifth Avenue (corner of 15th Street) and share in the advantages of specifying "Drexel".

Desks Inc.

A complete source for fine furniture in N.Y.C.

On Readers' Service Card, circle No. 472

Heavy Duty Shelving

Main Line now offers the most versatile line of shelving on the market, with the addition of **Heavy Duty** shelving to its popular standard shelving line.

Main Line COMPANY
DIVISION OF SOUTHERN EQUIPMENT CO.

For more information, see your Main Line dealer or write us.

MAIN LINE COMPANY • P. O. Box 14101 • St. Louis, Mo. 63177
(Div. of Southern Equip. Co.)

Please send the new MAIN LINE Heavy Duty Shelving Catalog

NAME_____ TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____ ZIP CODE_____

On Readers' Service Card, circle No. 452

STOP

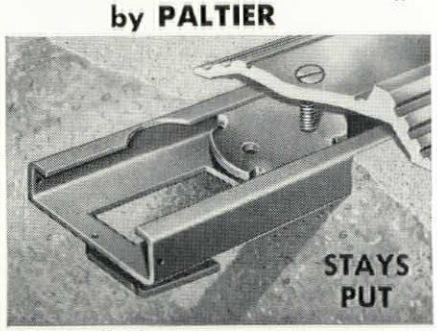
LOOSE THRESHOLDS!

GO

"THRESHOLDER"*

by PALTIER

GET THE JOB DONE QUICKER EASIER WITH LASTING HOLDING POWER



*Patent applied for

. . . NO MORE ANCHORING PROBLEMS

WHAT IS **"THRESHOLDER"?** — a perfected anchoring device for metal thresholds. The **"THRESHOLDER"** permits thresholds to be installed quickly with only a screwdriver. Thresholds may be adjusted in all 4 directions, easily removed, replaced and retightened.

Write for details today.

THE PALTIER CORPORATION

1717 Kentucky Street • Michigan City, Indiana

SALES AGENTS—WRITE FOR TERRITORIES TODAY!

On Readers' Service Card, circle No. 453

← On Readers' Service Card, circle No. 385

On Readers' Service Card, circle No. 388 →

Rx FOR BETTER DAYLIGHTING

Controlled daylighting is a principal ingredient in the jet age formula employed by Western Airlines in its modern maintenance base recently constructed at the Los Angeles International Airport.

Sidewall glazing in metal sash highlighted by the use of Mississippi SMOOTH ROUGH® in giant sliding glass doors contributes eye-soothing illumination within this immense structure where skilled craftsmen work in a favorable environment conducive to greater efficiency and comfort.

Translucent SMOOTH ROUGH is but one of many rolled glass patterns created by Mississippi to help control raw daylight. "Visioneered" to meet virtually any daylighting requirement they are available wired and unwired through leading distributors of quality glass.

Architects and Engineers: Quinton Engineers, Ltd., Los Angeles, Calif.
General Contractor: S. Patti Construction Co., Inglewood, Calif. and Kansas City, Mo.
Glass: Ful-Trim Division of Texas Aluminum Co.
Glazing: Imperial Glass Company, Los Angeles, Calif.

MISSISSIPPI GLASS COMPANY

88 Angelica Street • St. Louis, Missouri 63147

NEW YORK • CHICAGO • FULLERTON, CALIF.

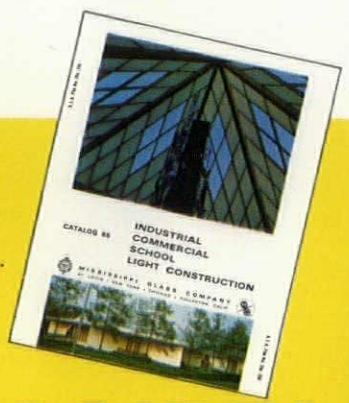
LARGEST DOMESTIC MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS

Architects: Grassold & Johnson, Milwaukee, Wisc.
General Contractor: Bauer Construction Co., Milwaukee
Glass: Lurie-Patek Glass Co., Milwaukee
Skylight Erection and Glazing: Super Sky Products, Inc., Thiensville, Wisc.

Glass BRINGS THE BEAUTY OF NATURE INDOORS

Skylights of ¼" Mississippi SMOOTH ROUGH MISCO (wire) glass crowns the Milwaukee County Zoo Aviary with softly transmitted natural light . . . create a feeling of spaciousness and help to simulate the native habitat of feathered songsters.

In keeping with modern architectural trends, the high levels of diffused illumination through patterned glass are coupled with the beauty and utility of MISCO, diamond-shaped welded wire netting for proven fire and breakage protection. See your nearby distributor of Mississippi glass.



NEW CATALOG
Contains pattern descriptions, light distribution charts, transmission data. Send for your free copy today.
See our catalog in Sweet's (S)

MISSISSIPPI
GLASS COMPANY

88 Angelica Street • St. Louis, Mo. 63147

DISTRIBUTORS IN PRINCIPAL CITIES OF THE UNITED STATES AND CANADA

H-#2-65

NEWS REPORT

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

Moore Takes Yale Post

Sketch: Ronlero Corbelletti

NEW HAVEN, CONN. Charles W. Moore will succeed Paul Rudolph as Chairman of the Department of Architecture at Yale University. Moore, 39, moves to Yale on July 1 from the University of California in Berkeley, where he has been Chairman of the Department of Architecture since 1961. Rudolph is opening his own architectural office in New York City.

Despite his relative youth, Moore has already had a distinuished career both as architect and teacher. Following graduation from the University of Michigan in 1947, Moore went to work in San Francisco, first for Mario Corbett, later for Joseph Allen Stein, and then Clark & Beuttler. In 1949, he won the George W. Booth Traveling Fellowship from his undergraduate alma mater and toured through Europe and the Near East, taking photographs for use in teaching architectural design and history. Getting his pedagogical feet wet as an assistant professor at the University of Utah in 1950–52, Moore began to formulate his philosophy of architectural education. "I had become convinced of the value of architectural history as a core discipline in the teaching of architecture," he says. After two years service as a Lieutenant in the U.S. Army Corps of Engineers in this country and Korea, he matriculated at Princeton, receiving his M.F.A. in architectural design and history in 1956 and his Ph.D. in architecture in 1957. He stayed at Princeton from 1957–59 as assistant professor, then returned to San Francisco as a senior associate of Clark & Buettler and associate professor at the University of California. In 1962, Moore won a P/A Award Citation for the design of his own house (pp. 146–149, JANUARY 1962 P/A). When he moves to New Haven in July, Moore will set up an office of his firm there. His associate, William Turnbull, will probably remain in charge of the office in Berkeley. The other two associates have left the firm: Richard R. Whitaker is in Washington, D.C., as the Education Director for the AIA, and Donlyn Lyndon was named recently Chairman of the architectural department at the University of Oregon.

Holmes Made Managing Editor

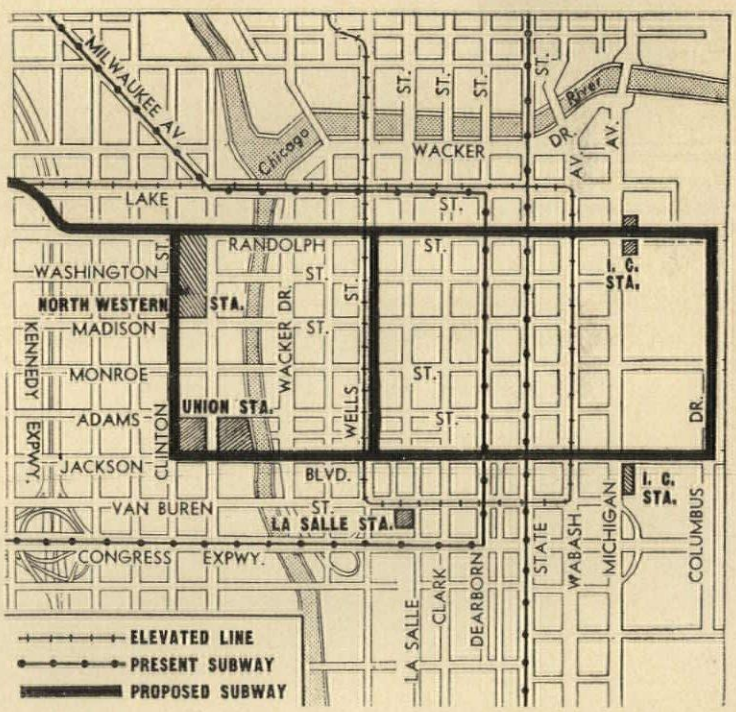
Burton H. Holmes, AIA, who joined P/A in 1949 as Technical Editor and was made Senior Editor, Materials and Methods, in January, 1965, has been named Managing Editor of PROGRESSIVE ARCHITECTURE. Holmes received his

B.A. from Oberlin College and his Bachelor of Architecture from Yale University, and was a major in the U.S. Army Field Artillery in World War II. He worked in the architectural firm of Hulsken & Strong, Lima, Ohio, then in design development of porcelain enamel structures with Davidson Enmel Products. Moving to New York, he was affiliated with Lockwood-Greene, Engineers, Inc., serving in both the architectural and structural design divisions.

Holmes has for some years been considered the most significant voice on technological matters in the architectural press. The P/A "theme" issues prepared under his direction have become invaluable references for the profession. They include "The Design of Building Products," "Air Conditioning and Architecture," "Wood in Architecture," "The Aesthetics and Technology of Preassembly," "Tectonic Steels," "Contemporary Masonry," and a number of others.

As Holmes moves into the Managing Editor's position, he will continue his interest in technology, as well as all other aspects of architectural design and practice. His experience on, and contributions to, the magazine for the past 16 years are expected to make his new role an even more importantly contributory one.

Subway Will Replace Loop



CHICAGO, ILL. Ever since 1897, when the elevated railway that encircles Chicago's downtown business area was completed, the area has been known as "The Loop." It is as famous, in its way, as the Great White Way, or the Great Wall of China, and has been likened to an Italian Renaissance fortress and a French bastioned town.

Now news comes from Chicago that, within 10 years, the Loop—the actual elevated structure—will be no more. It will be replaced by a subway system, following roughly the same route. In late April, the Chicago City Council passed a motion to seek Federal funds to finance the new transit program. Chicago has already requested $1,250,000 in interest-free Federal loans to pay for year-long preliminary engineering and economic feasibility studies.

According to William R. Marston, Chicago's deputy planning commissioner in charge of transportation, the subway, which will be part of a larger transit system, would cost between $100,000,000 and $150,000,000. Of this total, $40,000,000 would be

Remember Styrofoam.

(It's the roofing insulation we made
to last and last and last. And it does.)

Once Styrofoam® RM brand roof insulation is installed, it's in for good. Same as Styrofoam FR for masonry walls and Styrofoam SB for slabs and foundations. Wherever you specify Styrofoam, you're using an insulation that won't absorb water from inside or outside. One that doesn't need a vapor barrier. And is extremely light in weight. No matter what its age, Styrofoam doesn't rot, or collect mold, or deteriorate. There's even more to remember about Styrofoam in Sweet's Architectural File 10a/Do and 8a/Dow. Or we'll send the information to you. Just write. The Dow Chemical Company, Plastics Sales Department 1310EB6, Midland, Michigan.
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. 345

OK. Now forget it.

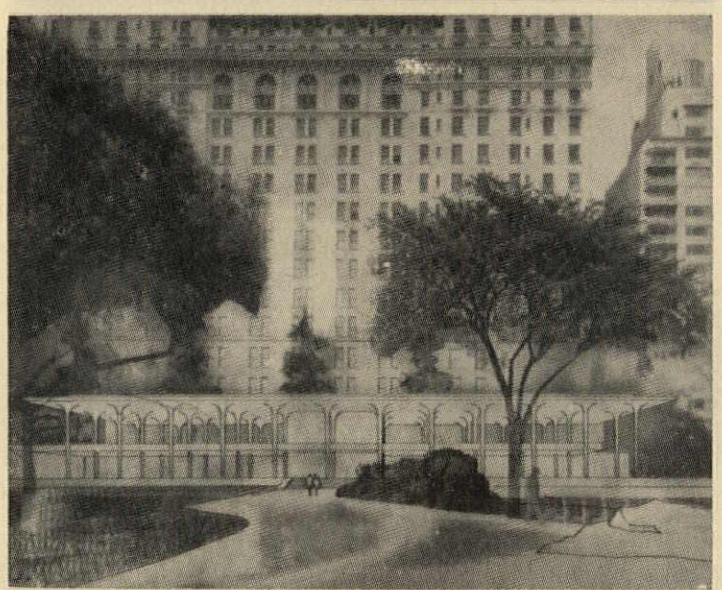
(It gets along by itself just great.)

DOW

raised by special assessment on downtown property owners over a 40-year period—a period allowed by Illinois State law for subway construction. Hopefully, the Federal Government would add $80,000,000 to this total under the two-for-one financing formula provided in the urban mass transportation act of 1964.

The disappearance of the El will alter the physical appearance of downtown Chicago, as much as the destruction of the Third Avenue El altered New York City's East Side. It will also change the feeling of the Loop. What the new feeling will be is up to Chicago.

A Hartford Saloon For Central Park?



NEW YORK, N. Y. Central Park is, as it was meant to be, an oasis in a concrete desert. "Where building begins, the park ends," explained Frederick Law Olmsted, who, with Calvert Vaux, planned the park and saw it created between 1856–1876. Because of their genius and vision, Central Park is today, a century later, an area of trees and grass, sunlight shimmering on quiet lagoons, actresses and mail clerks playing baseball, small boys wandering with gas-filled balloons, lovers sitting in the shade, nannies wheeling baby carriages, and children sailing boats on ponds. For millions of pavement-enclosed New Yorkers, the park is an emotional respite, a place where they can see real trees growing in real earth, a place where they can escape from the exhaust fumes of busses, and the honking of taxicab horns. But there are always those who would change all that. Today, Huntington Hartford, A & P heir, is one, and Robert Moses, former parks commissioner, is another.

In 1959, Hartford wrote Commissioner Moses proposing an esplanade, a "Champs Élysées," running from Columbus Circle at the southwest corner of the park to the Reservoir in the upper part, lined with outdoor cafés. Moses pointed out that such a grand-scale onslaught of cafés was not likely to make money, and he suggested situating a single pavilion at the southwest corner of the park, opposite the Plaza Hotel. There, in a busy corner of the park, traffic could be brisk, patrons could arrive and depart by car, and a concession-operated restaurant might turn a profit. Hartford said he would be glad to donate such a café. And Moses, accepting, suggested it be named the Hartford Pavilion. But there was no joy at Fifth Avenue and Central Park South, the corner picked for the honor. Four neighbors — 795 Fifth Avenue Corporation; Fifth Avenue and 59th Corporation; Andrew Y. Rogers; and Tiffany and Company — brought suit against the city in 1960, shortly after the proposed gift was announced. For five years, the case dragged through the New York courts, until this spring the New York State Supreme Court handed down a decision, without an official opinion, ruling against the café's opponents. Suit was brought under a New York State statute stating that no building may be put up in a park unless it has a park use. This spring's decision came at the end of the case's third retrial, granted on procedural grounds. The court found that the proposed Hartford Pavilion was indeed a park use building, even though two-thirds of the building's space will be on the upper level, entered from the street. Four entrances are from the street; one on the lower level from the park.

Hartford's desire to have a sidewalk café in Manhattan, (referred to by then-commissioner Moses in a staff memo as the "advice of a friendly but questionable character") came from seeing such cafés in London and Paris. But New York offers a different set of circumstances. The sidewalks of New York are narrow, offering little protection to anyone seated in a café from the roar of traffic or the exhausts of buses and trucks. Besides, land prices in mid-Manhattan are prohibitively expensive — often as high as $3,500,000 an acre, and while a café built on park land would circumvent the latter problem, it would not solve the former.

Hartford believes that his pavilion would bring more persons into the park. That seems hardly likely, or desirable, at that already heavily trafficked corner. And he thinks of it as giving persons a place to sit quietly and contemplate the park. But why not sit *in* the park, on benches or on the grass, and have the contemplating done there? The area is always filled with persons doing just that in good weather. And a building there only reduces the amount of available land.

As the city grows and land prices soar, speculators and "benefactors" always look eagerly at park land. It is vacant; it is often centrally located. Why not build on it? Because you gradually strangle what life a city has. Because a city must have park space as surely as it must have housing, business, and transportation. Remove the parks and you kill the desirability of living in the city. In Manhattan, which lost 200,000 residents between 1950 and 1960, the desire is waning already.

Olmsted and Vaux saw the problem clearly over 100 years ago, before the skyscraper or the motor car. They put it this way: "As the city grows larger, projects for the public benefit multiply, land becomes more valuable, and the park more and more really central, applications for the use of ground upon it for various more or less plausible purposes, are likely to become increasingly frequent and increasingly urgent, and there will thus be a strong tendency to its conversion into a great, perpetual metropolitan Fair Ground, in the plan and administration of which no general purpose need be recognized, other than to offer for the recreation of those who may visit it, a desultory collection of miscellaneous entertainments, tangled together by a series of crooked roads and walks, and richly decorated with flowers and trees, fountains and statuary.

"The only solid ground of resistance to dangers of this class will be found to rest in the conviction that the park throughout is a single work of

art, and as such, subject to the primary law of every work of art, namely, that it shall be framed upon a single, noble motive, to which the design of all its parts, in some more or less subtle way, shall be confluent and helpful."

Building a café and pavilion at 59th Street and Fifth Avenue in Central Park would be no more "confluent and helpful" to the park or to Manhattan than would the building of a Rockefeller Center be to Paris.

Unfortunately, plans for the Hartford Pavilion are moving ahead. Although the estimated cost of the building has soared from an original estimate of $750,000, to $1,712,000, with architect Edward Stone receiving a 15 per cent commission of $256,000, Hartford says he is ready to put up the money. Hartford's financial position, though, is reportedly unstable. He recently sold *Show*, his money-losing magazine of the arts; he is trying to sell Paradise Island, a resort venture in the Bahamas, and his Gallery of Modern Art at the southwest corner of Central Park is seeking contributors. It looks indeed as if the pavilion project is the stepchild of the misguided munificence of a cultural Casanova. The proposal is in its way as silly as earlier suggestions for the park, defeated by the citizens, who evidently must protect themselves against their own city government. One early proposal suggested the park be turned into a burial ground for the distinguished men of this country. Another called for the launching of a ship in the reservoir to train the merchant marine; and a third suggested turning the whole park into a topographical map of the United States.

If the Hartford saloon can be built in Central Park legally, what will come next? And who will protect the park? Certainly not Hartford, nor the city government, nor the courts. It is still not too late to reconsider.

Missed Chance in Boston

BOSTON, MASS. The high hopes that were raised when Back Bay Center by Belluschi, Bogner, Koch, Stubbins, and TAC was announced in 1953—it won the First Design Award in the first annual P/A Design Awards Program in January 1954—have long since dissipated. Part of the promise disappeared in the failure of that scheme to be built. It was wiped out entirely by the subsequent erection of Los-Angeles-Style commercial buildings by Charles Luckman, the Prudential Tower, the recently-opened Sheraton-Boston Hotel, and their related facilities. The same theme was adopted by the local firm of Hoyle, Doran & Berry when they designed the War Memorial Auditorium for Prudential Center, recently dedicated. One is tempted to speculate that the Luckman firm had a hand in this design, too, so closely does it parallel the feeling of monumental blandness engendered by Luckman's Madison Square Garden and office building designated for Manhattan's Pennsylvania Station site. In both cities, the opportunity for a truly memorable public facility has been lost, and a routine, "functional," large-capacity center substituted. Architects might ponder the lessons taught by such examples in reading this issue of P/A on "major spaces"—what they are, how they are attained, and how not.

Mies Apartment Opens in Baltimore

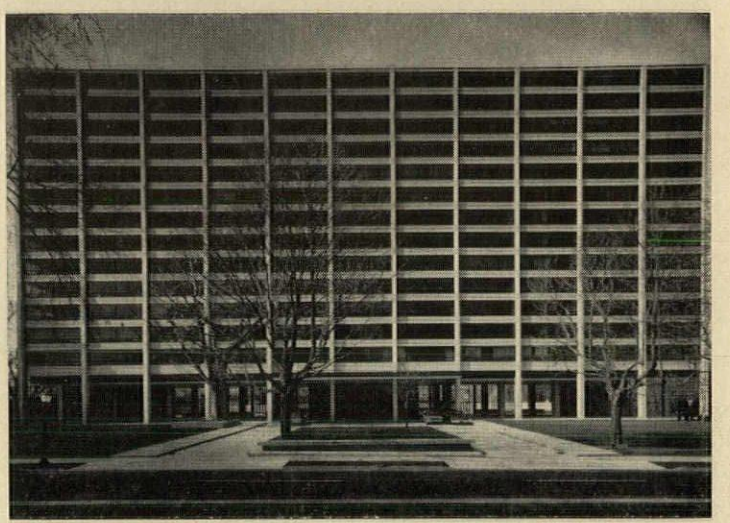


Photo: Norman McGrath

BALTIMORE, MD. Highfield House, at 4000 N. Charles Street in Baltimore, brings to that city a Mies van der Rohe design executed in concrete. Like most Mies buildings, Highfield House is distinguished by the orderly progression of its façade. Its tinted glass windows do not go from floor to ceiling in each room, but they do stretch from supporting column to supporting column, giving the building a feeling of horizontality, which makes its 13-story height less noticeable in an area of smaller buildings and individual homes. Beneath each window is a buff-colored brick sill, which gives the façade a punctuated rhythm. This effect is reiterated by gradations in the exterior concrete columns, stepped back every few floors, as Mies did with the columns in his Chicago Promontory apartment house in 1949. At the rear of the building is a sunken garden with a swimming-pool fountain, opening off a recreation room.

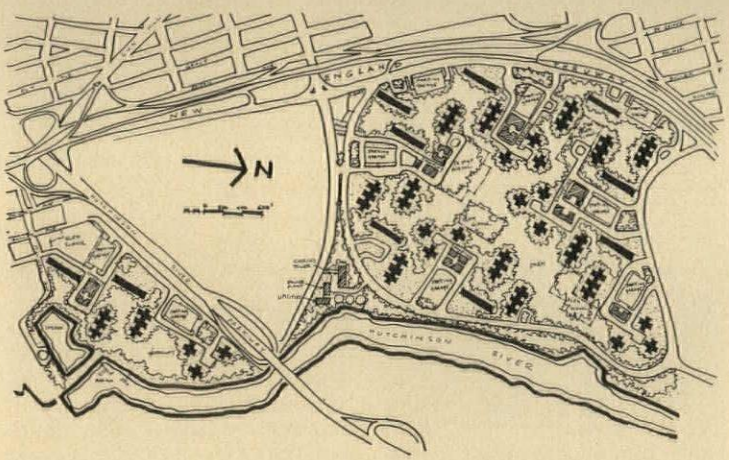
Photo: Marc Neuhof

A "City" Is Not a Home

THE BRONX, N.Y. Fourteen times the size of Clover, South Carolina, seven times the size of Fair Plain, Michigan, and three times the size of Bountiful, Utah, Co-Op City will soon raise its head in the Bronx. The "city," which will house about 60,000 people in 15,500 units (about the size, all told, of White Plains, New York) will be built on a 300-acre site—the grave of Zeckendorf's bankrupt Freedomland.

The site was purchased for $15,000,000 from the National Development Corporation by the United Housing Foundation, who will sponsor the project. (The Foundation, begun in 1951 and headed since 1959 by Abraham E. Kazan, has sponsored seven other such cooperative developments

around the city. Up till now, Rochdale Village, housing 5,860 families on the old Jamaica Race Track land, was the organization's largest venture.) Co-Op City—the world's largest apartment development, the 110th largest city in the U.S.—will absorb, in its five years of construction, $285,000,000 in construction costs ($263,000,000 to be financed by the state under its Mitchell-Lama middle income housing development), an on-site labor force of 2,000 men, and $115,000,000 in payrolls. Architect for the project, Herman J. Jessor, (chief) UHF architect, hopes for an early June approval by the Board of Estimate. The plan passed the City Planning Commission last month, virtually unaltered but not unopposed. The Metropolitan Committee on Planning, the Municipal Art Society, and the New York Chapter AIA all fought the proposal for its environmental and design failings—monotony, size, and lack of urban space.



In June, hydraulic filling operations—3,500,000 cu yds worth—will be pumped from Orchard Beach. Pile drilling of 2,000,000 linear ft will start in the fall, and in three years all will be ready for the first tenants—probably some of the 4,000 who have already put up the $450 deposit and who will pay thereafter anywhere from $18 to $26 a room.

Tenants will have the choice of 39 apartment buildings standing like so many celery stalks in a garden. The apartments will be of three types: a 24-story slab, a 27-story slab with projecting elements, and a 34-story cruciform tower (see plan). Materials will be reinforced concrete with brick facing. One suspects that they will be dull and repetitious in the manner of vast apartment developments. It will be difficult for the trees, in whatever number, to soften the effect.

Nine garages for 10,550 cars will be built around the periphery of the project. One desirable feature is that 80 per cent of the parking space will be underground—out of sight and mind. Near the garages will be located two-story shopping centers with "community rooms" upstairs.

Ninety acres of the total 300 will be ceded to the city for schools (three elementary, two intermediate, and one senior high school), police, fire, library, and gas operations. No designs have been submitted for these proposals. They show as dashes on the plan.

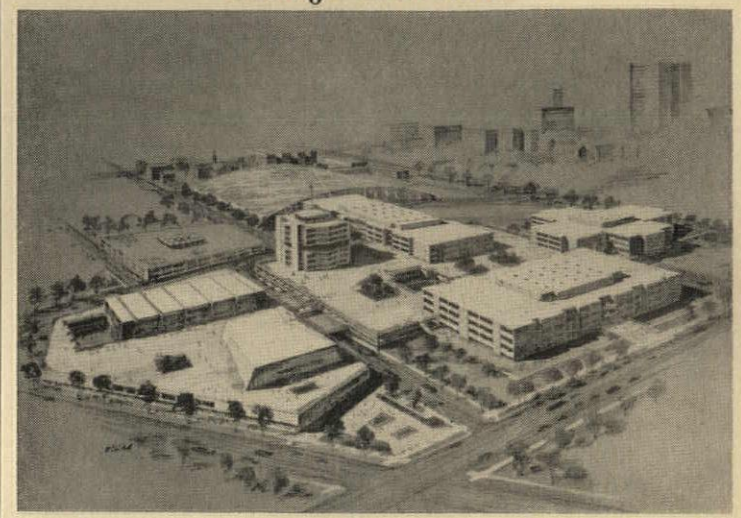
Of the 210 acres remaining on the Co-Op City site, 85 per cent will be landscaped by the team of Zion and Breen.

When asked by P/A about the singular lack of low-rise housing in this city of 60,000, Jessor said, "People just don't want to walk up stairs; that's why we aren't going into garden apartments or town houses." Jessor also maintains that the two-story shopping center will relieve the repetitiousness of the high-rise units. Jessor boasts that there will be no "Keep-Off-the-Grass signs. And this is true. The space for landscaped areas of grass is there.

The blessings of Co-Op City are obvious. Rent is low. Open space is in abundance. Man and car are separated as much as possible. And the city gains an additional $5,000,000 in annual revenues.

Still, the hope remains that, in the end, Co-Op City, (and its sponsors and architect) will show the imagination and variety—the life—that is so lacking in the current appearance of its design.

Centralized Schools for Kindergarten Through 14th Grade



EAST ORANGE, N.J. This New Jersey community of approximately 80,000 persons, located within a 3.9 sq mile area, is thinking of building a school plaza that would accommodate all the city's school children. Abandoning the neighborhood school and locating all school buildings (from kindergarten through junior college) in one large complex is a solution many cities have considered. It seemed an especially appealing idea to East Orange, which was faced with the possible need for a new junior high and the definite need for renovations and additions for 10 other school buildings.

To help the people of East Orange decide on such a radical approach and to aid the city's Board of School Estimates in approving it, architect Emil A. Schmidlin presented the school board with this rendering of what the school plaza might look like. The complex would be built over a 15-year period; if started soon, a middle school for about 3000 fifth- to eighth-graders could be ready in about three years. Added after that would be a "resource tower" for a curriculum center, a junior college, and central offices. Next would come a high school for 3600 students. Step four would provide a primary school for 3850 children in the first through the fourth grades. The last stages would add a gymnasium, a stadium, an arts center, and a parking area.

Other communities, notably New York City, have been considering such centralized schools to aid integration.

Architecture Exhibit at MOMA

NEW YORK, N. Y. In 1932, the Museum of Modern Art's newly established Department of Architecture, headed by Philip Johnson, introduced the concept of a large, architectural retrospective with the show, "Modern Architecture, International Exhibition." Every 10 years or so since then, the museum's expanded Department of Architecture and Design has presented a sizable review of "modern" architecture. The latest one, entitled "Modern Architecture USA," opened there on May 18. Selected and installed by department head Arthur Drexler, it includes some 71 buildings, built since 1900, by approximately 38 architects.

According to Drexler, "Some of the buildings shown are unique masterpieces; others are primarily of historical significance. Some buildings are shown because they launched an idea; others because they carried an idea to its conclusion. All of them remind us that architectural excellence has many forms."

Drexler's introduction to the exhibit goes on to say: "The exhibit begins with an early

work by Frank Lloyd Wright (Unity Temple, 1906, shown), illustrating some characteristics of his architecture much admired in Germany and Holland. What follows is the emergence in the 'twenties of a new architecture for an industrialized world. Its principles were meant to be internationally valid, but its European aspects were emphasized at the end of the 'thirties when refugees, converging on the United States, made major changes in the teaching of architecture as well as its practice.

"The post-war building boom provided ample opportunity for contending schools of thought, but through the late 'forties and most of the 'fifties the American imagination was dominated by the inspired method of Ludwig Mies van der Rohe. The great French architect Le Corbusier has been an acknowledged influence everywhere since the 'twenties, and in recent years his use of complex sculptural form has coincided with a world-wide restlessness—a suspension of dogma that has led to new freedom as well as disorder.

"Throughout this American story Frank Lloyd Wright appears in numerous guises. His work may be called a sustained explosion. Aspects of his architecture once rejected as naive —mass and solidity, for example—again seem relevant and curiously 'modern.'

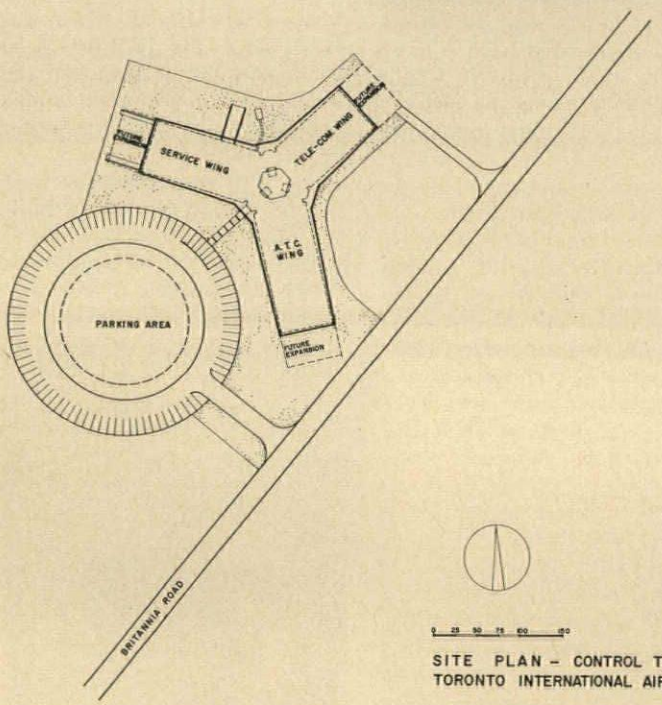
"Younger generations of architects are now building with brilliance and virtuosity. Indeed, modern architecture in the United States abounds with distinguished buildings and more than a few masterpieces. But however splendid this achievement may be, it does not begin to cope with the great problems of urban planning—not 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. But we can look forward to finding solutions to these problems that will rival and perhaps surpass our recent achievements."

"Modern Architecture USA" has been designed to travel here and abroad: all buildings are shown in large color transparencies, each mounted in its own prefabricated light box. These boxes are set into prefabricated, free-standing panels of varying heights, supported by square aluminum tubing.

The exhibit, which is under the joint sponsorship of the Museum and The Graham Foundation for Advanced Studies in the Fine Arts, will remain in New York through September 6.

Sculptural Control Tower

MALTON, ONT., CANADA The control tower of the new Toronto International Airport has a more striking form and texture than the terminal buildings it services (p. 46, DECEMBER 1962 P/A). The control cab is supported on three legs of reinforced, patterned concrete containing — respectively —elevator, stairs, and ductwork. The tower rises from a Y-shaped, one-story building housing telecommunications, air traffic control, and service area in as many wings. Exterior materials used in the base, which blend with the concrete of the tower, are gray brick for the walls and precast concrete panels for the fascia. John B. Parkin Associates of Toronto, architect of the terminal, performed the same services here.

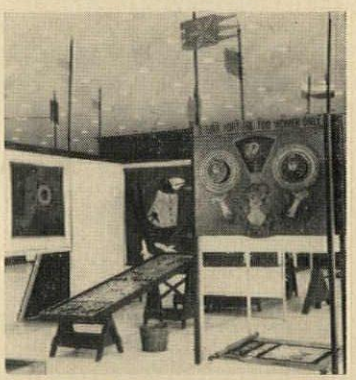


SITE PLAN – CONTROL TOWER
TORONTO INTERNATIONAL AIRPORT

FDR Memorial Put on Ice

WASHINGTON, D.C. When Francis Biddle resigned last month as chairman of the Franklin D. Roosevelt Memorial Commission, it looked as if plans for the controversial memorial were indeed, as Biddle said, "put on ice." Biddle's resignation capped a long struggle against opposition from the Roosevelt family, notably from commission member James Roosevelt, who felt that his father would not have liked the proposed memorial. Most recent disappointment to those who hoped the competition-winning design could be put up (see pp. 47–50, FEBRUARY 1961 P/A; p. 59, AUGUST 1964 P/A) was an indication that funds for the $4,500,000 structure would be virtually impossible to raise. Biddle had waited to start fund raising until a group headed by Adlai Stevenson raised money for a memorial to Eleanor Roosevelt. When Stevenson's group, even with the blessing of the Roosevelt family, had difficulty, Biddle believed that efforts for the FDR memorial would be fighting insurmountable odds. The commission still has the site, in Potomac Park between the Jefferson and Lincoln memorials, and at least one commission member, New York Senator Jacob Javits, who vigorously backs the FDR plan, hopes that the site can still be used, perhaps with a less ambitious scheme. Suggestions for saving the site propose landscaping, fountains, maybe a statue of the late President, and in the meantime signs proclaiming that the site will be used. Biddle plans to write the Smithsonian Institution in hopes of having the winning design kept by the Government for possible future use. On architectural grounds alone, it would be a shame to see such a stately proposal come to naught.

Come Alive



NEW YORK, N.Y. For about one month, from March 11 to April 7, Park Avenue executives, women with shopping bags, children old and young,

could throw a dart, roll a marble, pin a tail, or spin a wheel (shown) at a new exhibit—all in the spirit of fun and games. The exhibit, in coordination with the American Merchandising Council, is now traveling to major department stores throughout the nation. The "come alive" games, most of which are no more than dyed, crayoned, and shellacked carvings on wood, are colorful, simple, and, above all, inviting.

Behind the banners, marbles, plaques, and wheels at the Pepsi Cola Building was the moving spirit of del Sol Productions, of which Norman Laliberte is director of creative de-

sign. The organization, a small one with 10 employees, is based 43 minutes outside of New York, in Ossining, under a liquor store. The studio was started in 1962 as Sol Productions at St. Mary's College (Notre Dame, Indiana), where Laliberte and del Sol executive vice-president James Cronin were teaching at the time.

The next year saw a move to New York and the beginning of del Sol's exhibit design capacities. At the suggestion of architect and designer Charles Eames, Laliberte was made design consultant for the Vatican Pavilion at the New York World's Fair. There, some 88 of his needleworked banners, ranging in size from 12″ x 12″ to 5′ x 12′ and decorated with "found" objects (daguerreotypes, bells, medals, tassels), portrayed various Biblical subjects.

The final stage of development came in the summer of 1964, when, under the instigation of George Beylerian, owner of a New York crafts and accessories shop, del Sol turned to the commercial production of toys, games, banners, silk-screened items, and wooden plaques. The rugs are not to be tread on lightly—they retail at F. A. O. Schwartz for $595; plaques used as decorative accents run from $5 to $12 and Pin-a-Tail on the unicorn is an inexpensive $2.50. Many of the del Sol designs also made the rounds in the Manhattan galleries: in September of 1964, the Osborne Gallery featured Laliberte's banners; the toys found their way into the Museum of Contemporary Crafts' show "Amusements Is."

At present, del Sol is retained by Official Films as a consultant on creative ideas, and by the Boston Arts Festival as creative consultant. Soon a Durst Organization Building in New York will sport Laliberte banners.

Laliberte's art is a natural outgrowth of his background. A Roman Catholic and former teacher at the Rhode Island School of Design, Laliberte obtained his bachelors degree and masters degree in art education (his thesis was on the iconography of the Cross) at the Institute of Design in Chicago (before it was incorporated into the Illinois Institute of Technology). His art, whether in banner, plaque, or game form, abounds with symbol and is both timely and timeless. A Reinhold book on his banners and plaques is in the works.

Merit Scholars Choose Architecture

EVANSTON, ILL. In late April the National Merit Scholarship Corporation announced results of the tenth annual Merit Scholarship competition. Open to high-school seniors throughout the nation, the competition awarded college scholarships to more than 1900 students. Of these, eight announced their intention to study architecture. And of the eight, two will study at Rice University. The eight and the colleges they will attend are: William N. Scott, Fort Smith, Ark.: Georgia Institute of Technology; Elliott Kaikee, Palo Alto, Calif.: undecided; Patrick R. Hayes, Washington, D. C.: Rice University; Larre H. Nelson, Jamestown, N.Y.: Rennselaer Polytechnic Institute; Robert M. Martin, Duncan, Okla.: Oklahoma State University; Chris A. Carter, Oklahoma City, Okla.: Rice University; Woodrow W. Hammond, Fort Bliss, Tex.: University of Texas; Evelyn M. Stevens, Charlottesville, Va.: Massachusetts Institute of Technology.

Trade Mart for L.A. Clusters Product Showrooms

LOS ANGELES, CALIF. Out-of-town professional buyers visiting Los Angeles were long faced with time-consuming freeway dashes in pursuit of product showrooms. Now their problem is at least partially alleviated by the opening of the 462,000-sq-ft California Mart, where many manufacturers have taken display space; and it will be further lessened by the completion of the recently started second building that is rising on the site to the left. A third stage—construction of a hotel and convention center—will follow shortly.

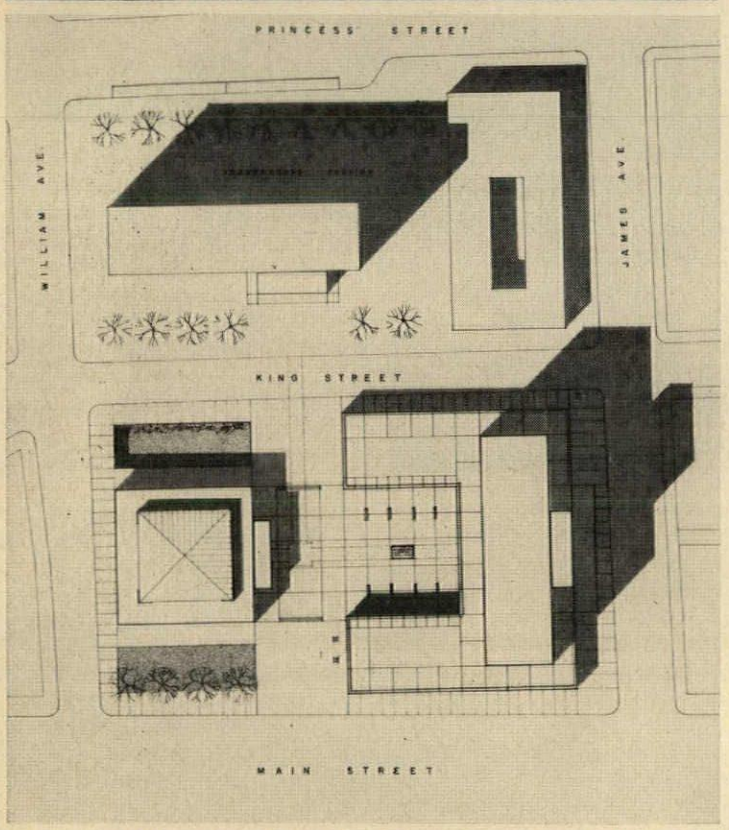
The second building, identical to the first, will be linked to it by a glass-enclosed escalator tower.

Victor Gruen Associates are architects for the structures, which, when completed, will be grouped around an open landscaped pedestrian mall. The site encompasses a full city block, bounded by Mann, Los Angeles, and 9th Streets and by Olympic Boulevard.

The completed building, and the circular bank building in front of it, are of steel construction, with columns about 27′ o.c. and 12′ between floors. Most of the exterior surfaces of these steel supports are faced with precast concrete panels, which form a prowlike projection the height of each support, making the building look taller than its 13 stories. Dark-gray glass spandrels separate window areas. Beneath the complex is a three-level parking garage with a 600-car capacity.

New Design on New Site Is Winner in Winnipeg

WINNIPEG, CANADA. Green Blakstein Russell Associates of Winnipeg won an architectural competition in 1960 for the design of a new Winnipeg City Hall (p. 74, FEBRUARY 1960 P/A). The competition design was for a site on Broadway and Osbourne Streets, and when the site was changed to Main Street, where the old City Hall then stood, the design had to be changed, too. GBR did the redesign, but the recently completed building, which cost $5,900,000, in no



way resembles the original winning design. In redesigning, the architects were restricted by the lack of an official renewal plan for that site. At present, the provincial government and the City of Winnipeg are preparing to build a concert hall and museum directly across the street. It was thus necessary to open up the site to allow an approach from Main Street to a future public building to the west of the City Hall.

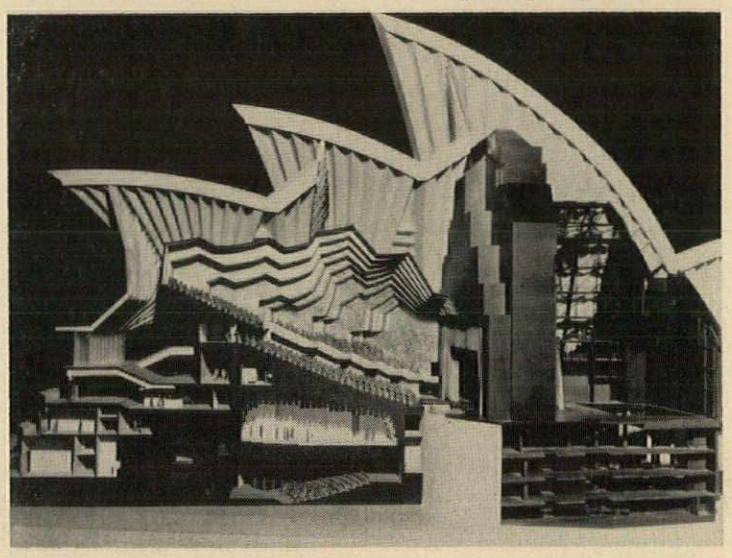
The solution was an inward-looking group of buildings whose character the architects could control, to provide, on however small a scale, a civic square. They separated the two functions of civic government: legislative (on the left) and administrative (on the right) into independent buildings, linked only by a podium, and, below grade level, by a gallery that accommodates city archives. This separation established a cross axis on the site, formerly Market Street, that now awaits the future public building to complete the project's grouping.

One other consideration was purely visual. Because of a quirk in the city's gridiron arrangement, the site appears to close off Main Street from the intersection of Winnipeg's two main streets, Portage and Main. This condition is further emphasized by the framing effect of two older high-rise office structures, one on each side of the street. The strong horizontal emphasis of the group of new buildings effectively closes and completes this composition, and the pedestrian approach is fittingly terminated by the courtyard.

Both buildings are faced with Manitoba Tyndall stone and Quebec granite; bronze is used for framing elements, screens, and hardware. The bold roof line of the legislative building is echoed by the spandrels of the administration structure. And the strength of the legislature's supporting columns is mirrored by the subdued columns on the administration building.

All things considered, it seems as if Green Blakstein Russell Associates produced a better design on the new site than they would have on the original site with their competition-winning proposal.

First Sectional Model of Sydney Opera



SYDNEY, AUSTRALIA When completed sometime in 1968, the Sydney Opera House is expected to look like the model shown here, enlarged 96 times. Built at a scale of 1″ to 8′, the model gives a meticulously detailed idea of how the building will look, complete with 2200 cast-metal figures depicting audience and sightseers. From the exterior, the building will be distinguished by 10 roof sections that soar beyond the building like lateen sails above an Arab dhow.

The building's interior is just as intricately striking. The main auditorium seats 2800 persons, rises steeply from the stage, and has a raised gallery on either side. A movable stage will drop out of sight, making way for the placement of the next act's scenery. Backstage are 11 platforms that move up and down electrically.

A piece of scenery, constructed in the ground-level workshop, will typically be raised on one of the platforms and then lowered to the stage.

Expected cost of the structure is $39,100,000. It will be constructed on Bennelong Point in Sydney Harbour.

Joern Utzon is architect for the opera house. Ove Arup & Partners, London and Sydney, are consulting engineers.

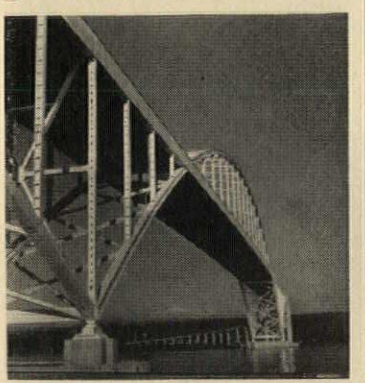
Canadian Structural Steel Design Awards Announced

TORONTO, CANADA A jury of 8 Canadian architects and engineers pored over 74 entries in Canada's first structural steel design awards program and awarded 4 citations of excellence. Initiated by the Department of Industry and the National Design Council in cooperation with the Canadian Institute of Steel Construction, the program called for submissions in four categories: buildings costing under $2 million,

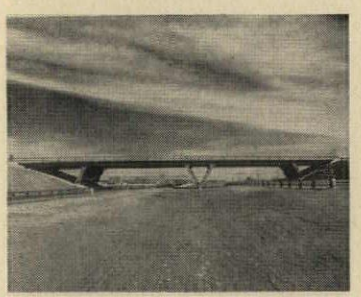
and those over $2 million; bridges costing under $500,000 and over $500,000. All buildings and bridges entered had to be in use at the time of the judging. After preliminary selection of 27 structures, the submitting architects and engineers were given a month to prepare finished plans, photos, and written copy mounted on 30″ x 40″ illustration boards.

1

2



3



4

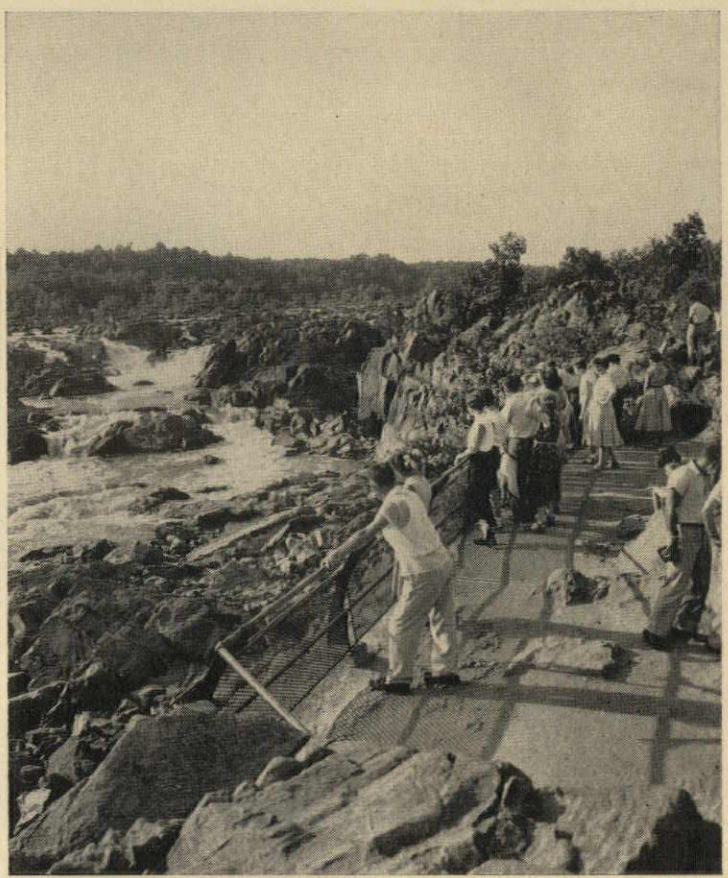
Winning entry in the large building category (over $2 million) was the 34 story C-I-L House, Montreal **(1)**. It stands on 28 steel columns, has black porcelain-enameled spandrel panels and gray-tinted plate glass. It was designed by Montreal architects Henry Greenspoon, Philip Freedlander, and John Kryton of Greenspoon, Freedlander & Dunne. Structural engineers were Jack Barbacki and Pierre d'Allemagne of d'Allemagne, Barbacki Associates, Montreal.

Toronto's Lothina Mews **(2)**, winner in the under-$2 million building category, has exposed exterior steel columns and curved roof supports, which unify the shops inside and provide a distinctive façade as well. Architects were Peter Webb, Boris Zerafa and René Menkes of Webb, Zerafa & Menkes, Toronto. Structural Engineers were J. W. Bradstock and H. L. Levelt of Reicher, Bradstock & Associates, Toronto.

Award for the best large bridge went to the Port Mann Bridge **(3)**, designed by Gerrit Hardenberg, Norman Hilton, Knud Manniche, and Gulian Willeumier of C.B.A. Engineering Limited, Vancouver. And the small bridge award went to the highway bridge at Red Deer, Alberta **(4)**, designed by Emil Sanden, T. J. Trimble, and Robert Foster of the Alberta Department of Highways.

Judges for the competition were: James A. Murray (chairman), who is chairman, Royal Architectural Institute of Canada, and professor, School of Architecture, University of Toronto; Ignace Brouillet, president, Ecôle Polytechnique de Montréal; Guy Desbarats, Dean, School of Architecture, University of Montreal, and partner in the firm of Affleck, Desbarats, Dimakopoulos, Lebensold; George H. Foures, member, National Building Code and National Research Council, and acting chief, Structures Division, Development Engineering Branch, Department of Public Works, Ottawa; D'Arcy G. Helmer, president, Ontario Association of Architects, and partner in the firm of Balharrie, Helmer & Associates; Thomas A. Monti, partner in the firm of Monti, Lefebvre, Lavoie, Nadon; Gilles E. Sarault, Chief Engineer, Canadian Corporation for the 1967 World Exhibition; and Robert F. Shaw, Deputy Commissioner-General of the Canadian Corporation for the 1967 World Exposition.

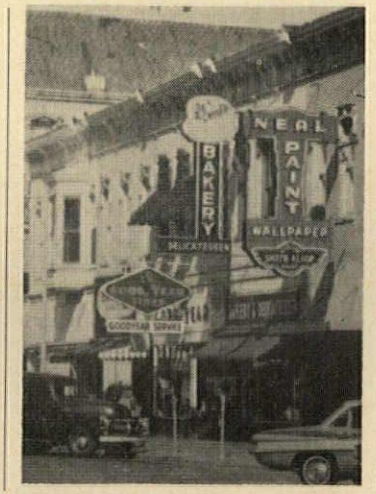
No Man Is an Island: Memorials Can Be



WASHINGTON, D.C. Visitors to this month's AIA convention may have a chance to visit Olmsted Island at Great Falls on the Potomac, 12 miles upstream from Washington. Known as Falls Island, until its rededication this spring, the wild natural beauty of the area was preserved by the National Capital Park and Planning Commission, of which Frederick Law Olmsted, Jr., was a member from 1926–32 and for whom the area is now named. Olmsted, Jr., (1870–1957) the son of America's first professional landscape architect, is credited with having "contributed more to the planned growth, orderly development, and beauty of the Federal City than any other individual since Pierre L'Enfant." Olmsted's association with Washington was a long one. In 1902, he was a member of the McMillan Committee, which revived and extended L'Enfant's original plan of 1791 for the city. From 1910 to 1918, he was a member of the first Washington Commission of Fine Arts. And in 1916, he framed the language of the Congressional Act establishing the National Park Service "to conserve the scenery and national and historic objects in such manner and by such means as will leave them unimpared for the enjoyment of future generations." Olmsted also designed the grounds for the Washington National Cathedral.

Outside the capital, Olmsted prepared city plans for many communities, including Rochester, Pittsburgh, and New Haven. His landscape architecture enhanced such housing projects as Roland Park in Baltimore, Forest Hills Gardens, L.I., and Palos Verdes Estates, Calif. He also planned the grounds of the U.S. Military Academy at West Point, St. Paul's School at Concord, N.H., and the Brooklyn Botanic Gardens.

How to Do What You Can With What You Have



COLUMBUS, INDIANA This county seat of 25,000 souls is well on the way to becoming the New Haven of the Midwest, having erected buildings, since World War II, by Eliel and Eero Saarinen, I. M. Pei, and Harry Weese—and now, a "test" block of municipal renovation styled by Alexander Girard. This project was not a matter of "rip it all down and put up something new and bigger [therefore better]," but a carefully thought-out scheme to preserve and enhance the typical blockfront of the city (generally dating from the 19th

Century and the early 1900's). Girard's approach was cosmetic, to be sure—painting, sympathetic sign design, awnings and canopies, bird control—but the effect is admirable, and other merchants in Columbus have responded by bringing their buildings up to snuff in a like manner. Columbus is now planning a similar blockfront renovation in another part of town, and other towns, small and large, might well take heed.

Vanishing New York

NEW YORK, N.Y. Victims of the computer age, New York's stately old hotels are disappearing to be replaced by motels and other glossy, automated, glass-and-plastic hostelries that process a guest much the way a Detroit assembly line processes flivvers. But the quiet architectural grandeur of the few remaining older luxury hotels is still a solace to visiting architects and others who want grace instead of glitter. Playing on this unsettling change in the New York hotel scene, one of the statelier, surviving inns. The Plaza, whose neighbor the Savoy Plaza will soon vanish to make way for the gigantic GM office building, has been running full-page ads in newspapers and magazines fantasizing about "The day New York almost vanished." In part their tale reads like this:

"It didn't happen all at once. They did it very gradually. 'We can't alarm the people!' they said. So they removed a little house here. And a great hotel there. And then a few limestone banks and all the cast-iron store fronts they could find. And very quietly one night they stole a railroad station and buried it in New Jersey.

"A few people grumbled. Some found temporary shelter at The Dakota when Park Avenue disappeared. Others moved to Westchester. And some completely disillusioned out-of-towners went to Philadelphia instead. But most people were complacent. Until the day they discovered that their city had been entirely replaced with glass.

"Then they complained. But it was too late. So the faces of the city grew grimmer than they had ever been before. Clocks stopped. And the glass began to crack.

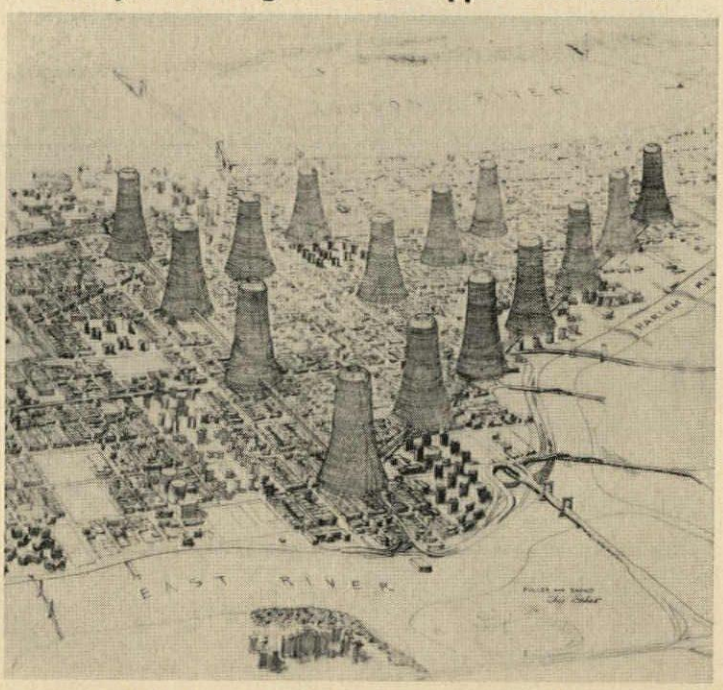
"Soon after this, on one ghastly glittering morning, an observant executive walking to work paused on Fifth Avenue at Fifty-Ninth Street to clean his heavy dark goggles. Squinting, he looked around. And gasped!

"There was The Plaza where he had always remembered it. 'It can't be!' he said and rubbed his eyes. He looked again. 'It *is* there!' he said. And ran to work.

"He called his wife. 'We'll go there tonight, before it's too late. Don't tell anyone!' he hissed. So she only told her very best friend. Soon everyone knew.

"Crowds gathered. They wandered in the lobbies. They caressed the marble, admired the gilded cherubs. And the caryatids in the Palm Court where palms still swayed. They feasted in the baronial splendor of the Edwardian Room . . . etc., etc."

Bucky's Housing Plan for Upper Manhattan

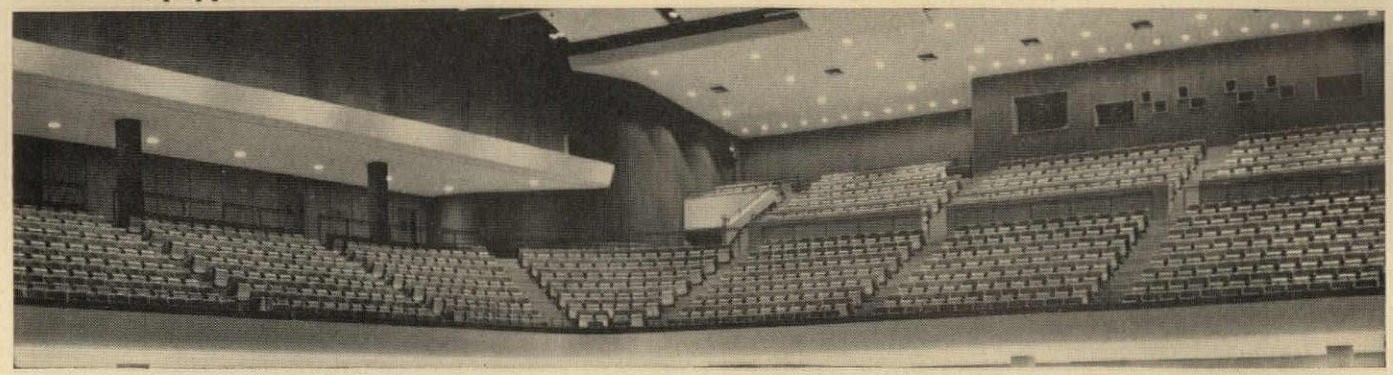


NEW YORK, N. Y. Under the title "Instant Slum Clearance," the April issue of *Esquire* magazine described a Buckminster Fuller plan for Harlem as "a proposal to rescue a quarter million lives by completely transforming their environment." Actually, the transformation would be far from instant. The first year, for instance, would be consumed in tooling up for the mass production of structural parts of the massive structures Fuller would superimpose on Harlem. Construction would take two years after that, and would provide living space for 110,000 families (almost four times as much as New York City's Housing Authority has provided in the last five years).

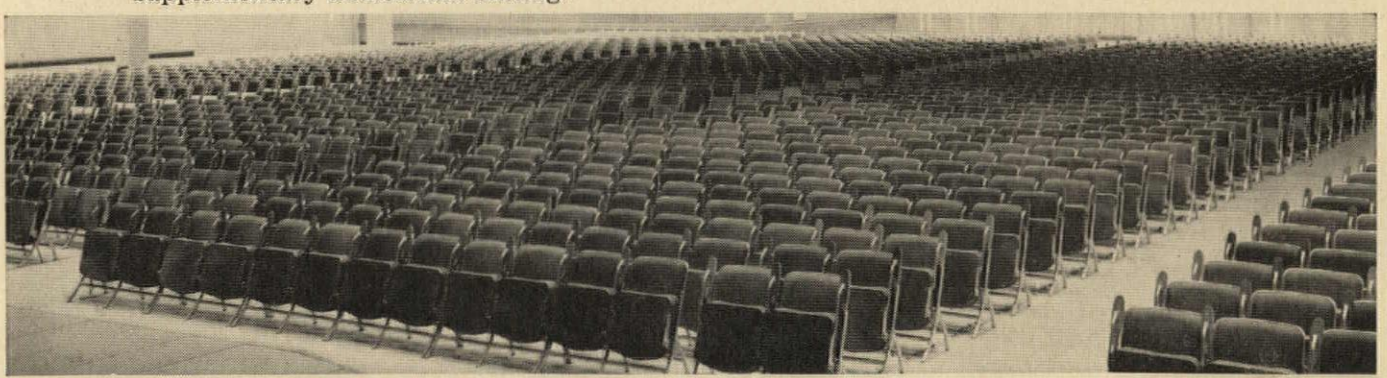
Looking more than a little like giant blast furnaces, the structures would rise 100 stories above the ground, supported by a central pillar from which circular decks would be suspended from steel supporting cables. "Open space between decks avoids a sense of

Comfort-Engineered Seating
by HEYWOOD-WAKEFIELD

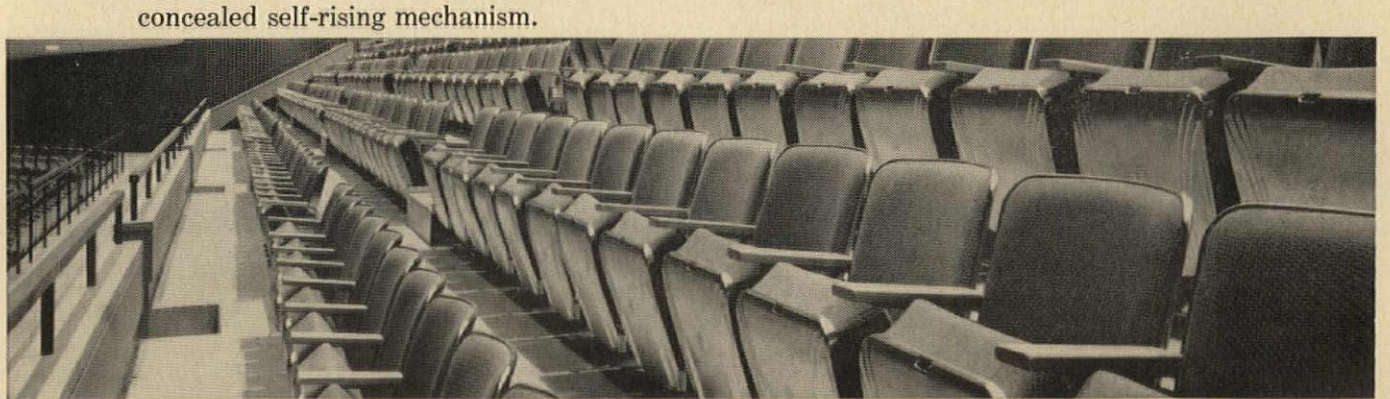
Boston's War Memorial Auditorium is handsome in design, extremely functional and well equipped. This balcony view shows most of the 1,836 Heywood (TC-477) fixed chairs.



Main floor view showing 4000 Heywood-Wakefield deluxe portable chairs (TC-290 FA) for supplementary auditorium seating.



Close-up view of TC-477 balcony installation showing well-padded foam cushion seats with concealed self-rising mechanism.



This installation of fixed and portable seating in Boston's War Memorial Auditorium, a part of the new Prudential Center, is typical of Heywood-Wakefield's ability to supply superior seating to meet the varied requirements of all types of auditoriums or arenas. No matter what the seating problem, or whether it involves floor or riser installation, there is a Heywood-Wakefield design to meet your requirements. Write for complete folio—or see Sweet's Catalog, Section 36d/He.

HEYWOOD-WAKEFIELD
EST. 1826
Menominee, Michigan

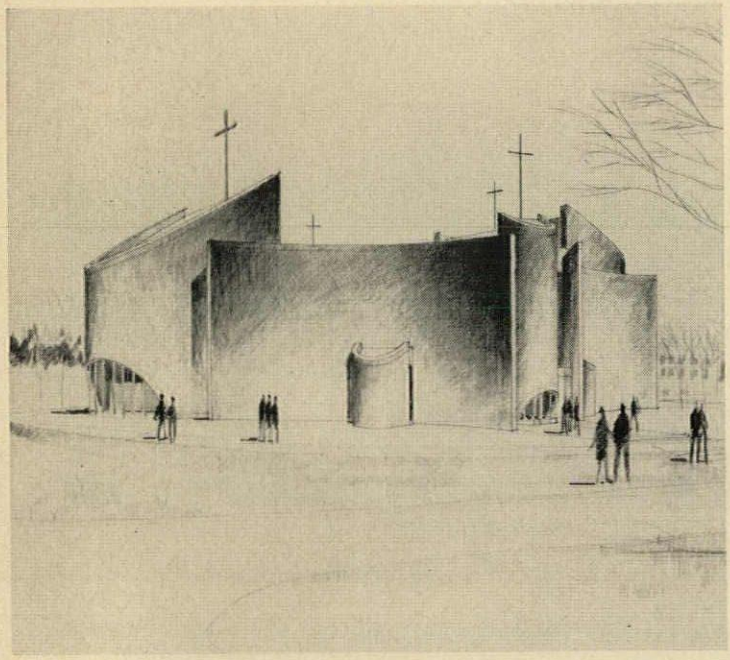
On Readers' Service Card, circle No. 362

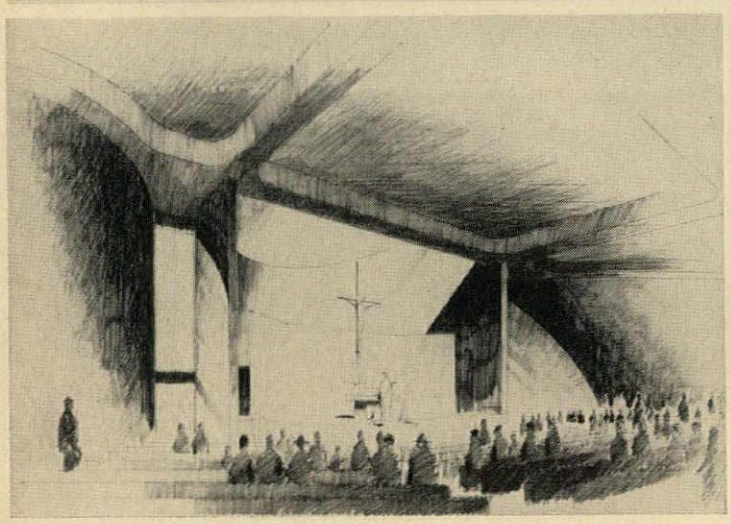
impenetrable mass. From the masthead, lenses capture the light and heat of the sun." (Remember when Jon Hall used to amaze the natives by lighting straw with a magnifying glass?)

Roadway ramps would circle the central pillar, and tenants could drive to their apartment doors and park there. Fuller estimates that each family would have an average of 1200 sq ft of living space (roughly 500 sq ft more than the present Harlem average), not including parking areas and exterior balconies. By starting each tower's living space 10 stories above the ground, room would be left beneath for highway cloverleaf interchanges or even for existing housing.

Perhaps this plan, developed by Fuller (with Fuller and Sadao, Inc., as associates) would ease the squalid, crowded living conditions in Harlem, bringing different housing to that area. But would it work structurally or socially? Someone should find out.

Church Plan Stresses Participation



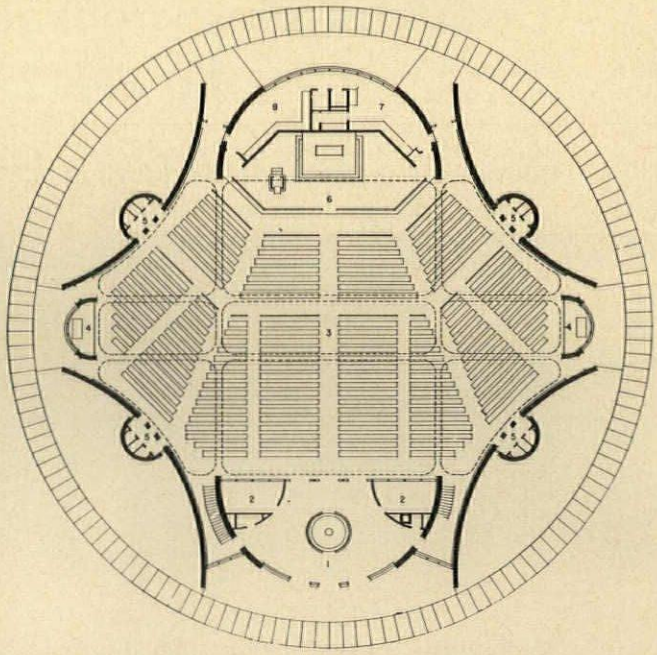


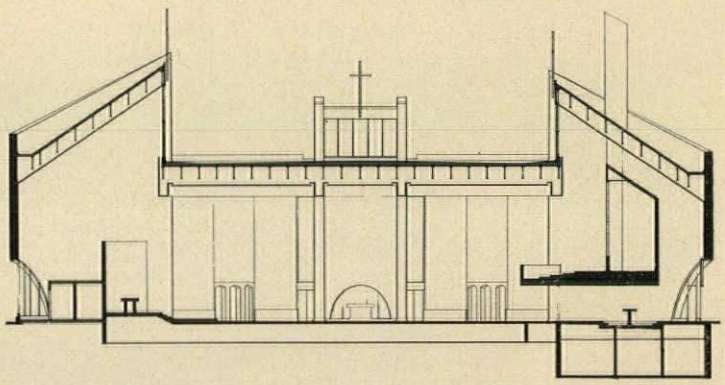
PARMA, OHIO What the Holy Family Catholic Church in Parma wanted was a building that would seat 1350 persons and express, in its design, the revitalization of the liturgy (see pp. 133–137, MARCH 1965 P/A). Since this revitalization requires that the congregation participate—visually as well as verbally—in the liturgy of the Mass, the congregation must be as close to the altar as possible. In Conrad & Fleischman's design, the altar is the focal point, with the ceiling sloping down toward it and the congregation spreading out directly in front of it.

The church's curved walls will be cast-in-place concrete with a white limestone aggregate. All exposed concrete will be bush-hammered.

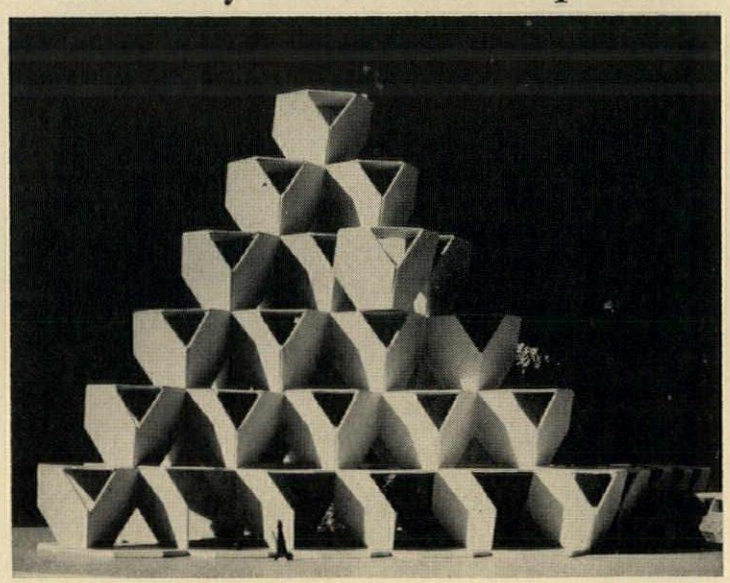
The façade is distinguished by the alternation of concave and convex surfaces and by the variations in the height and roof-slant of its facets.

The church opens this year.

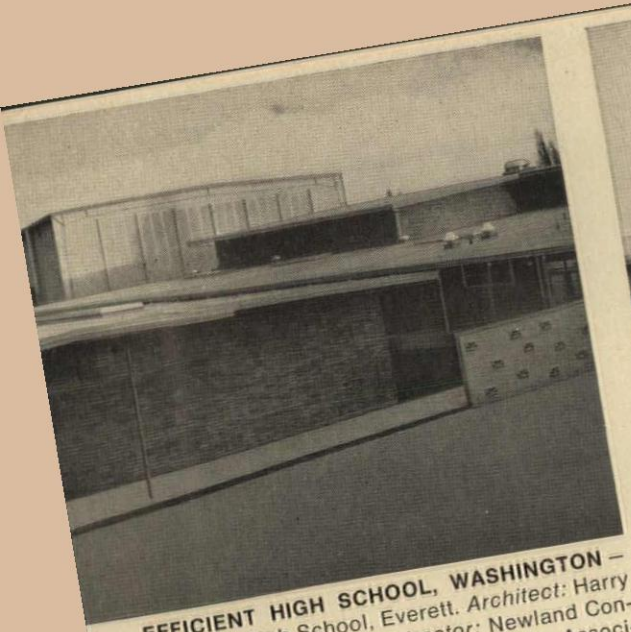




Israeli Pyramid Plan Proposed



TEL-AVIV, ISRAEL If built according to plan, the structural technique used in the Tel-Aviv Air Terminal may be the first idea Israel has consciously taken from Egypt since the Exodus. The idea comes with modifications; for although the structural shape is a pyramid, the components forming it are truncated hollow tetrahedrons instead of solid cubes, and the interior of the structure will be open instead of solid. Each



EFFICIENT HIGH SCHOOL, WASHINGTON—Cascade High School, Everett. *Architect:* Harry E. Botesch. *General Contractor:* Newland Construction Co. *Ready Mixed Concrete:* Associated Sand & Gravel Co. *Masonry Contractor:* G. E. Blackstone. *Masonry Cement Supplier:* H. O. Seiffert Co.

LUXURIOUS MOTEL, TEXAS—Ramada Inn, Amarillo. *General Contractor:* Dewey A. Hicks. *Masonry Contractor:* H. C. Bennett. *Masonry Cement:* Crowe-Gulde Cement Co. *Ready Mixed Concrete:* Amarillo Concrete Co.

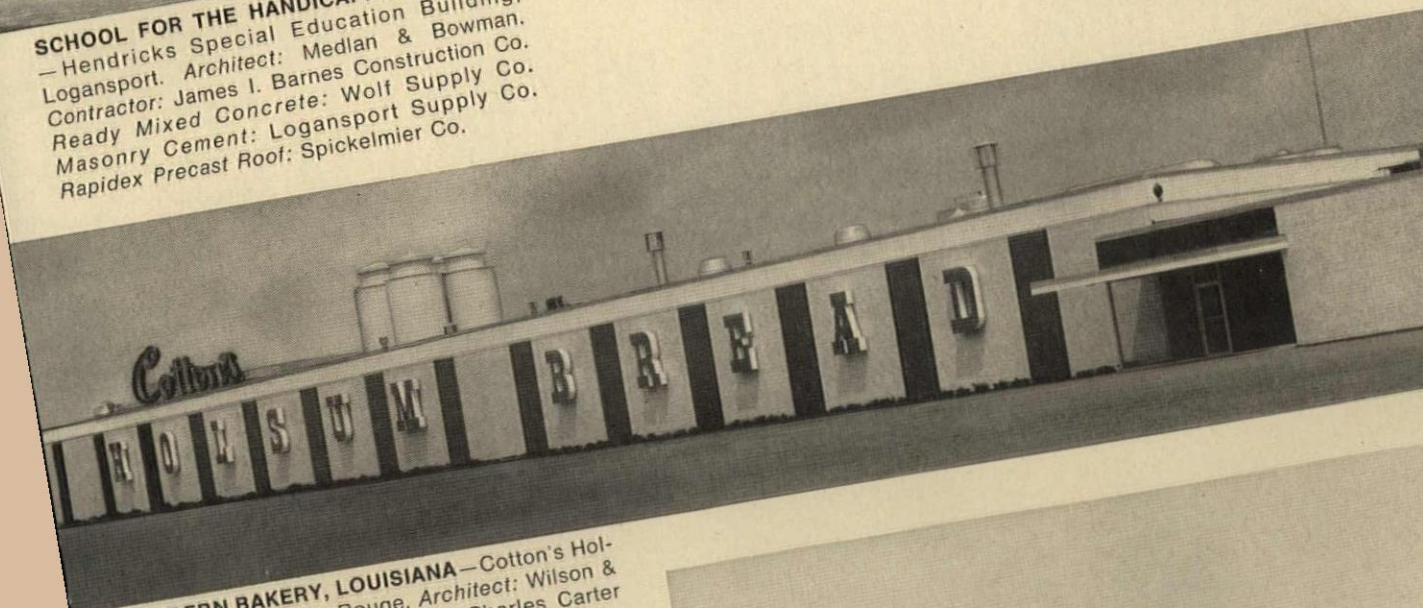
Masonry means permanence

And the key to its permanence is good mortar. Lone Star Masonry Cement is scientifically formulated to provide a good, plastic, clinging mortar—with only sand and water added at the job. It enables masons to do better work, faster, and assures a neat, uniformly strong bond. Pictured here are a few of the fine buildings built in all climates using uniform and dependable Lone Star Masonry Cement—a product to remember and specify.

LONE STAR CEMENT CORPORATION, NEW YORK 17, NEW YOR

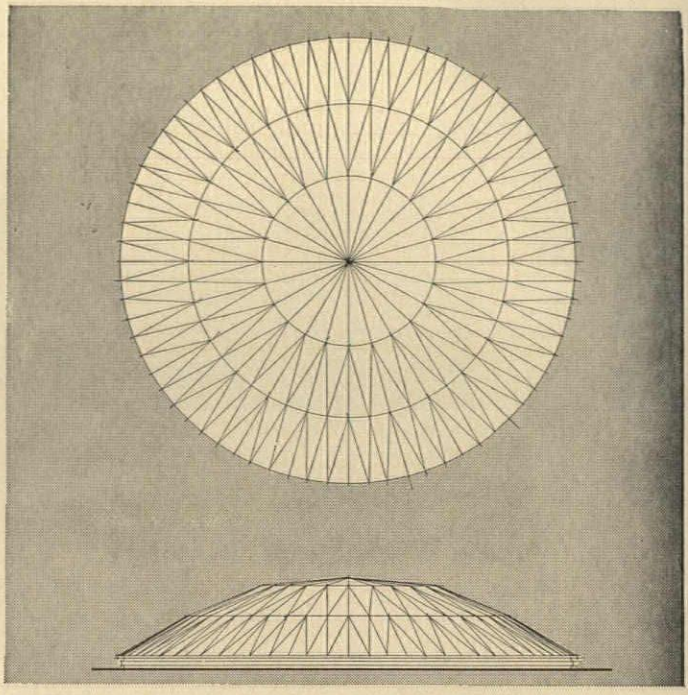
LONE STAR MASONRY CEMENT

SCHOOL FOR THE HANDICAPPED, INDIANA—Hendricks Special Education Building, Logansport. *Architect:* Medlan & Bowman. *Contractor:* James I. Barnes Construction Co. *Ready Mixed Concrete:* Wolf Supply Co. *Masonry Cement:* Logansport Supply Co. *Rapidex Precast Roof:* Spickelmier Co.



MODERN BAKERY, LOUISIANA—Cotton's Holsum Bakery, Baton Rouge. *Architect:* Wilson & Coleman. *General Contractor:* Charles Carter & Co., Inc. *Masonry Contractor:* L. J. Langlois. *Masonry Cement:* Baton Rouge Supply Co., Inc. *Ready Mixed Concrete:* Altex Ready Mixed Concrete Corp.

FIRE-SAFE NURSING HOME, NEW YORK—Bethel Methodist Home for the Aged, Ossining. *Architect:* Ferrenz & Taylor. *General Contractor:* J. R. Stevenson Corp. *Concrete Contractor:* Forbes Fireproofing Corp. *Masonry Contractor:* Palmieri Contracting Corporation. *Ready Mixed Concrete:* Cooney Brothers, Inc.



Design roof covers or skylights

24' x 60' (16' high from base to top) Barrel Vault variation for Creighton's Garden Restaurant Winter Park, Florida. Toombs, Amisano and Wells, Architects and Engineers, Atlanta, Ga.

75' diameter lamella Skylight for State University of New York, Albany, N.Y. Architect, Edward Durrell Stone, New York, N.Y.

or any other transparent overhead structures with the... IBG

TOTAL RESPONSIBILITY is assured by IBG for all areas of its involvement. IBG men will work with you in whatever way possible to bring to fruition your ideas and designs. There are offices or representatives in major cities across the country and in Canada. Work is accepted for domestic and foreign projects.

PRODUCT TYPES OF IBG, SPECIFICALLY:

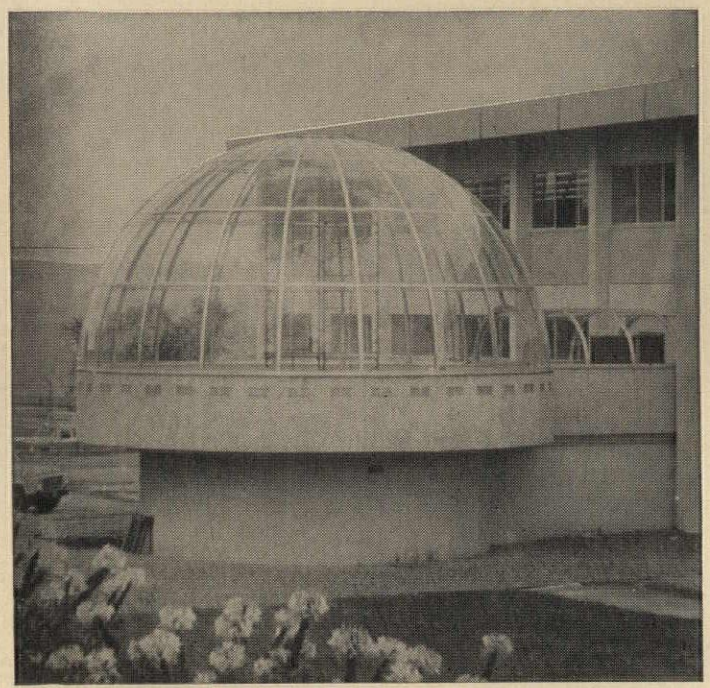
Geodesic Domes, *supported and self-supporting*
Skylights, *all large shapes and sizes*
Greenhouses, *6 standard styles plus custom designs*
Swimming Pool Enclosures, *standard or custom for residential or commercial*
Architectural Facing Panels, *sculptured (formed) Plexiglas*

SERVICES RENDERED BY IBG, SPECIFICALLY:

Design and Engineering—your basic ideas and concepts will be analyzed and developed by IBG. Preliminary plans will be submitted for your approval.

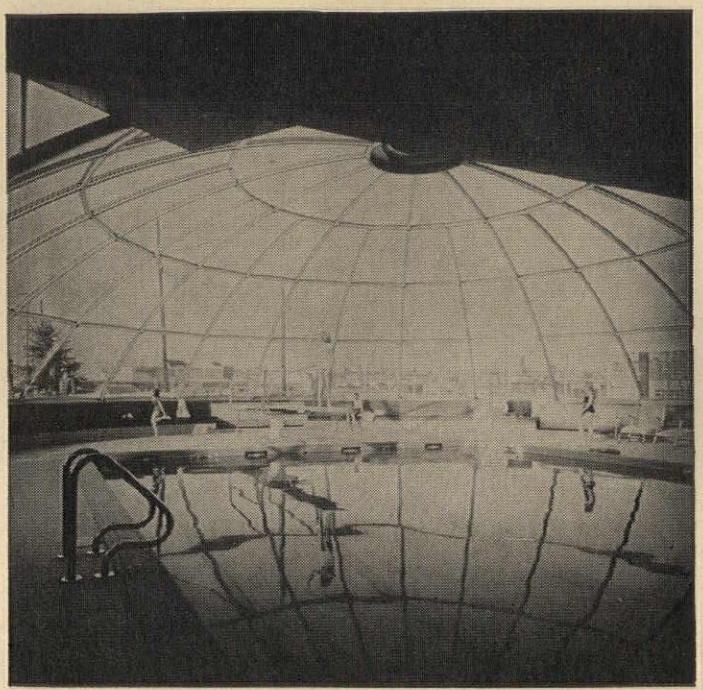
Crafting Skill—IBG manufactures and installs its own structures under the close supervision only this type of arrangement can allow. These sophisticated structures require the hand of true artisans. Most IBG men are lifetime employees having a degree of craftsmanship skill unequalled in this field. Their work consistently demonstrates this fact.

Responsible follow-through—because we install that which we design and manufacture, you will find IBG men responsible to the last detail.



or conservatories

34' diameter Conservatory dome, Ithaca College, Ithaca, N. Y. Architect, Tallman and Tallman, Ithaca, New York.



or enclosures

56' diameter dome Pool Enclosure at Park Place Motor Inn, Traverse City, Michigan. Architect, Paul Hazleton, Traverse City, Michigan.

DomeSystem

This name identifies the versatile, designer-oriented system which can be used to produce such structures as those pictured above as well as a multitude of other transparent enclosures and coverings.

It also identifies the single source for design and engineering services, manufacture and installation of such applications, namely, Ickes-Braun Glasshouses, Inc. of Chicago. The IBG people have been specialists in this field for over fifty years.

You may request the number of descriptive IBG DomeSystem brochures and Sweet's Catalog reprints needed for your designers and library. Save time, use the coupon.

ICKES-BRAUN GLASSHOUSES

Main office and factory
1733 N. Western Ave., Chicago, Ill. 60647

FOR IMMEDIATE ATTENTION
CALL COLLECT 312-486-0011

See our catalog in Sweets under 2L/Ic (S)

IBG
ICKES-BRAUN GLASSHOUSES
Advanced Design
Master Craftsmanship
Total Service

IBG / *1733 N. Western Ave., Chicago, Ill. 60647*

Yes, we are interested in the IBG DomeSystem's possibilities. Our request for descriptive brochures is as follows:

PLEASE SEND IBG DOMESYSTEM BROCHURES

PLEASE SEND IBG/SWEETS CATALOG REPRINTS

DATE PHONE

NAME

FIRM

ADDRESS

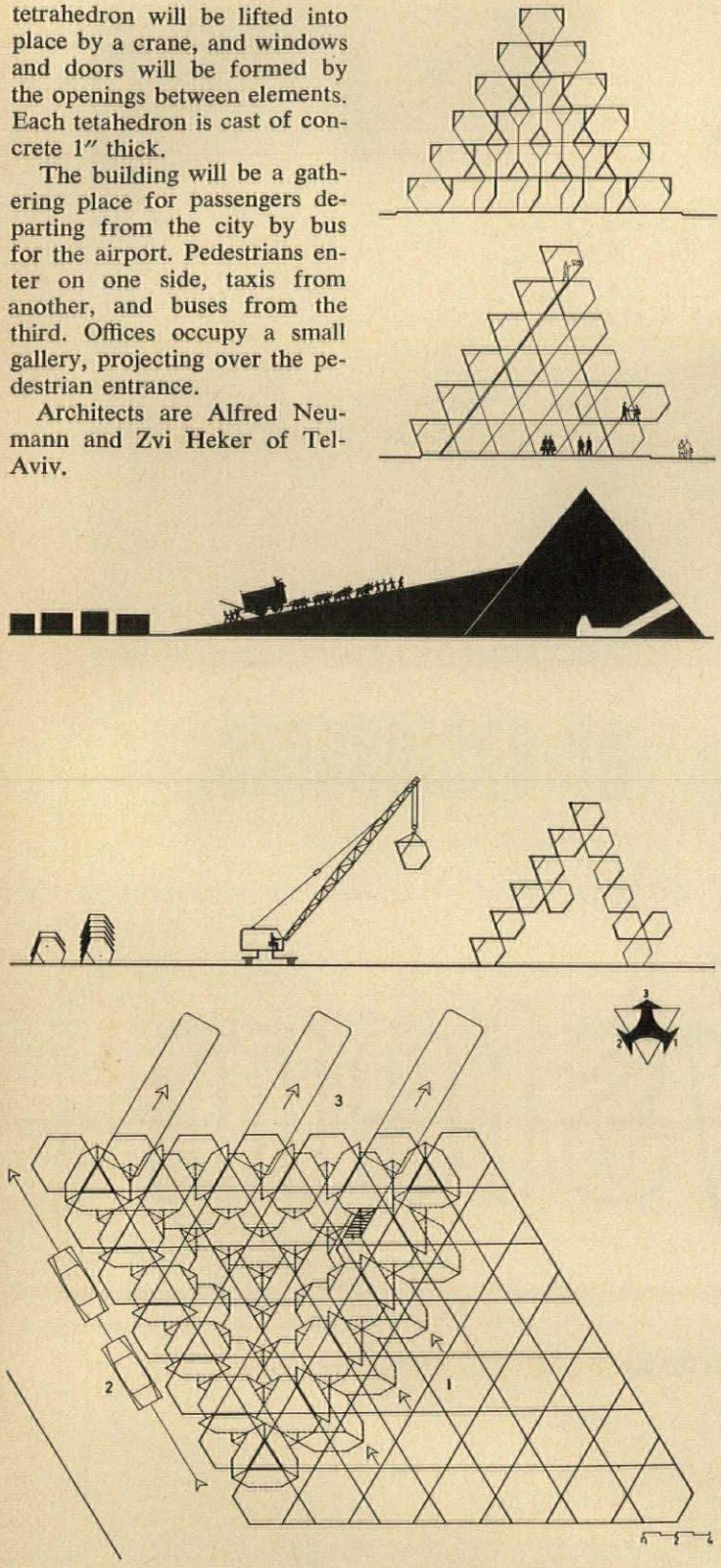
CITY, STATE, ZIP

On Readers' Service Card, circle No. 428

tetrahedron will be lifted into place by a crane, and windows and doors will be formed by the openings between elements. Each tetahedron is cast of concrete 1″ thick.

The building will be a gathering place for passengers departing from the city by bus for the airport. Pedestrians enter on one side, taxis from another, and buses from the third. Offices occupy a small gallery, projecting over the pedestrian entrance.

Architects are Alfred Neumann and Zvi Heker of Tel-Aviv.



AISC Holds Its Largest Engineering Conference

At the American Institute of Steel Construction's 17th Annual National Engineering Conference, held in Memphis last April 22 and 23, some 700 conferees heard numerous papers delivered by national authorities on various aspects of structural design and fabrication.

Of special interest to architects were two papers describing how large amounts of steel could be saved by novel design. Horatio Allison, Consulting Engineer of Rockville, Maryland, explained the achievement of unusual economy in multistory apartment framing by designing for full continuity in both directions, using regular-bay spacing and making use of high-strength steels. William J. Mouton, Consulting Engineer of New Orleans, demonstrated tnat a 50 per cent savings in steel could be effected in high-rise office buildings through a system of box-framed latticed trusses.

Although the present AISC design specification does not include design rules for composite design using lightweight aggregates, the conclusion of several papers presented was that it is quite possible to use aggregates of this type with composite design.

Research reports in plastic design in multistory buildings revealed the feasibility of designing both braced and unbraced frames by the plastic method.

Auto-town Trade Mart

DETROIT, MICH. Ground was broken last month for Detroit's Trade Center, long considered

a needed addition to the Detroit business scene. The developers plan to spend $10 million on the project, providing displayers with 450,000 sq ft of display space. As designed by Detroit architects Smith, Hinchman & Grylls Associates, Inc., there will be two buildings joined by a general tower that houses elevators, power equipment, and other mechanical and service facilities. The undistinguished exterior has exposed concrete columns. Interior includes a restaurant, cocktail lounge, the usual supporting shops, a large auditorium, and conference and hospitality rooms.

Author Seeks Material

Architect E. Abraben is now preparing a book on franchise motels. Architects, students, designers, and motel owners wishing to submit their motels for consideration may mail the material to E. Abraben, Architect, P.O. Box 1196, Boca Raton, Fla.

ERRATA

• Joseph J. Roberto, referred to as the former University Architect for New York University in the APRIL 1965 P/A (p. 221), is still quite active in that position. "News of my demise is greatly exaggerated," he writes P/A, and we thankfully restore him to the living.

• P/A's April announcement (p. 63) that Glen Paulsen will become head of the Department of Architecture at the Cranbrook Academy of Art did not mean to imply that he is giving up his private architectural practice. Paulsen and his firm, Glen Paulsen & Associates, will continue to operate at the same old stand in Bloomfield Hills, Mich.

The Buildings That Bloom in the Spring

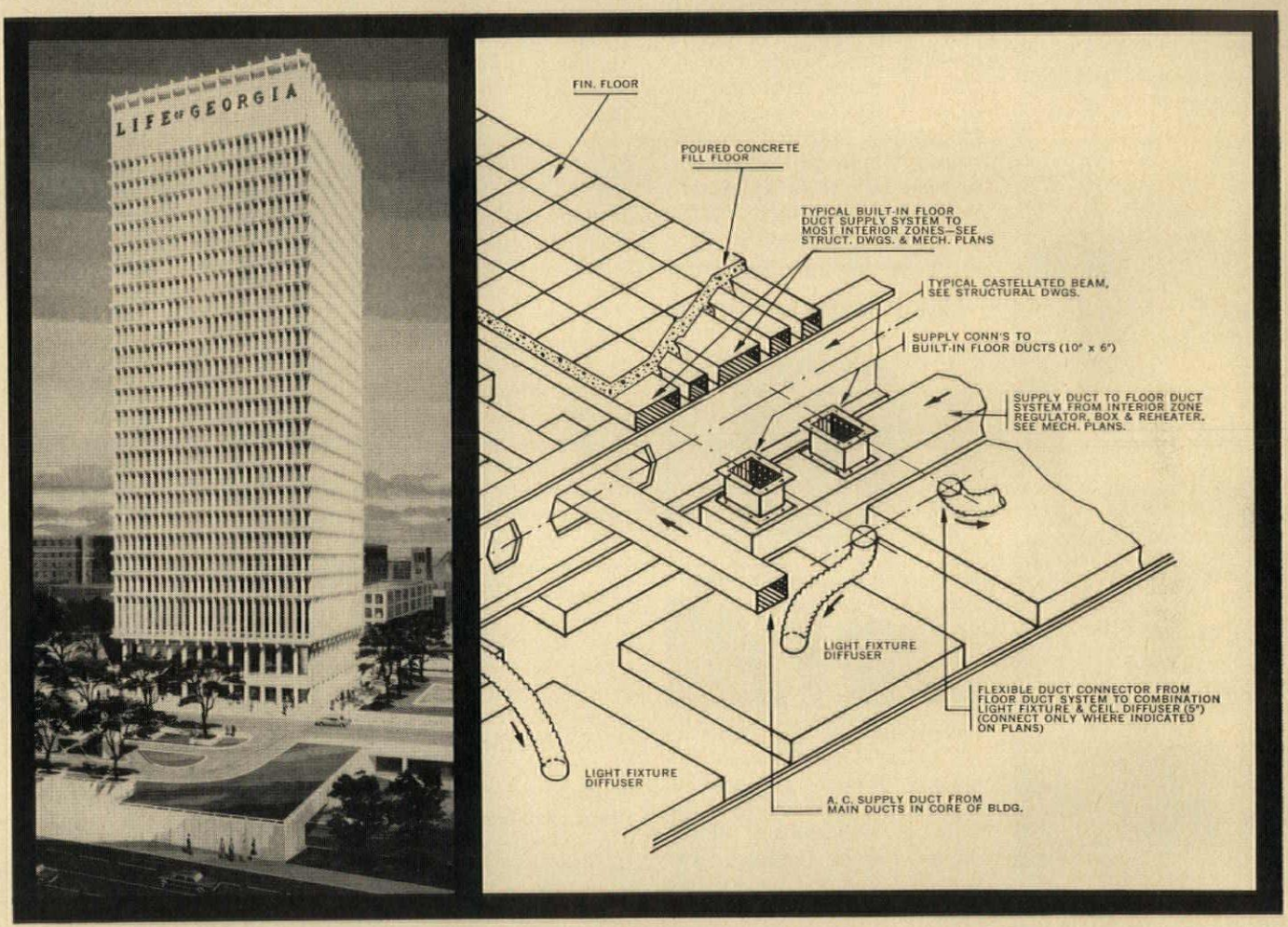
CHICAGO, ILL. Nineteen Chicago buildings were laureled this spring by the Chicago Association of Commerce and Industry and the Chicago chapter, AIA.

The two honor awards went to Edward D. Dart for the Chicago Theological Seminary Faculty Housing **(1,** interior) and to I. W. Colburn & Associates, Inc., for the St. Anastasis Church **(2).**

Citations for excellence went to the Volkswagen Building by Hausner & Macsai **(3);** to United Parcel Service Distribution Center and the Henrich residence by Edward D. Dart **(4);** to the Madison Elementary School by Cone & Dornbusch; the Jens Jensen Elementary School by Harry Weese & Associates; the Decorel Corporation by Don Erickson; to the garden townhouse by Y.C. Wong, R. Ogden Hannaford & Associates; to the Hawthorne Court Townhouses by Ralph Anderson Associates;

1

MAHON
IS IDEAS
IN BUILDING PRODUCTS



SEE HOW MAHONAIRE® FLOOR SYSTEMS
lower high rise costs

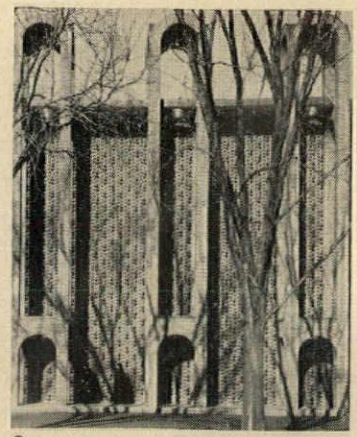
Today, in the construction field, many people are doing a "take off" on Mark Twain. "Everyone," they say, "talks about the high costs of construction, but no one does anything about it."

Well, it isn't true . . . and, down in Atlanta, Life Insurance Company of Georgia has a brand-new 28-floor building to prove it.

For example, by using Mahonaire Floor Systems, the architects reduced floor-to-floor height and realized substantial savings in materials. Use of the Mahonaire floors also eliminated beam penetration of air cells. They also provided ready-built, super-wide raceways for air distribution as well as for the carrying of power, telephone, signal and sprinkler systems. Results were increased efficiency and savings in time and costs.

Mahon is ideas in building equipment. When you have a tough construction problem "buck" it to Mahon for an idea that may save you space, time and money. Write . . . The R. C. Mahon Company, 6565 East Eight Mile Road, Detroit, Michigan 48234.

On Readers' Service Card, circle No. 380

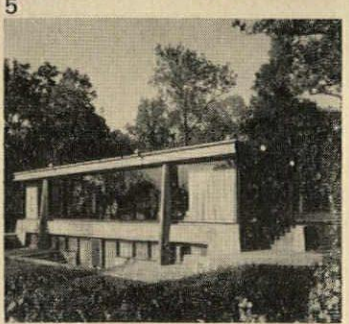


2

3

4

5

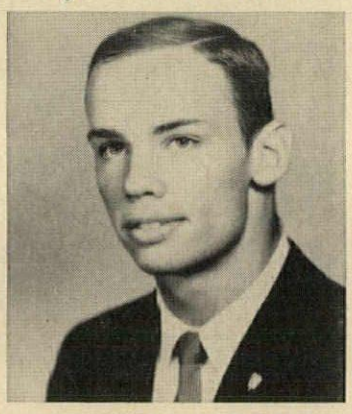


6

the Medical Merchandise Mart by Fridstein & Fitch; the Home Federal Savings & Loan Association by Skidmore, Owings & Merrill; the United States Courthouse and Federal Office Building by Ludwig Mies van der Rohe, A. Epstein & Sons, C. F. Murphy Associates, and Schmidt, Garden & Erikson; the U. S. Gypsum Building by The Perkins & Will Partnership; the Temple for North Shore Congregation Israel by Minoru Yamasaki & Associates **(5)**; the house on a bluff by Brenner-Danforth-Rockwell **(6).**

Citations of Merit were also presented to deserving projects in the area of rehabilitation and remodeling. Paul Gerhardt, Jr., was honored for his Chicago Police Headquarters; Stade, Dolan & Anderson for St. John's Lutheran Church; Brenner-Danforth-Rockwell in association with C. F. Murphy Associates for the Graham Foundation Building.

Lloyd Warren Winner



NEW YORK, N.Y. The 1965 winner of the Lloyd Warren Fellowship from the National Institute for Architectural Education is University of Illinois senior Patrick Leamy, who won the competition for the design of "A World Center for Philosophies and Ideas." He will spend several months at l'Ecole des Beaux Arts in Paris, then take a study tour of Europe.

New Fellows

WASHINGTON, D.C. The AIA has 654 Fellows. Thirty-seven of these are newly appointed, and their fellowships will be formally conferred in Washington at the banquet and ball on June 18, which closes the 97th annual convention of the AIA and the XI Pan American Congress of Architects. Newly honored are:

For design and contributions in education: Lawrence B. Anderson, Boston, Mass.; Joseph Esherick, San Francisco, Calif.; Ralph Rapson, Minneapolis, Minn.; José Luis Sert, Cambridge, Mass.

For design: Giorgio Cavaglieri, New York, N.Y.; William Francis Cody, Palm Springs, Calif.; Harwell Hamilton Harris, Raleigh, N. C.; Philip C. Johnson, New York, N.Y.; Robert Andrews Little, Cleveland, Ohio; and Arch Reese Winter, Mobile, Ala.

For education: Robert Henry Dietz, Seattle, Ore.; Joseph T. Fraser, Jr., Philadelphia, Pa.; William John Wagner, Jr., Des Moines, Iowa; and Philip Armour Wilber, Stillwater, Okla.

For public service: William F. R. Ballard, New York, N.Y.; James Joseph Chiarelli, Seattle, Ore.; Alfred Preis, Honolulu, Hawaii; Louie Lorraine Scribner, Charlottesville, Va.; and Karel Yasko, Bethesda, Md.

For public service and service to the profession of architecture: Mario C. Celli, McKeesport, Pa.; Frank L. Hope, Sr., San Diego, Calif.; Amedeo Leone, Detroit, Mich.; and Adrian Wilson, Los Angeles, Calif.

For service to the profession: Richard S. Banwell, San Francisco, Calif.; Robert Elkington, St. Louis, Mo.; William Ernest Freeman, Jr., Greenville, S.C.; Terrell Ray Harper, Dallas, Tex.; Lee B. Kline, Los Angeles, Calif.; William H. Scheick, Washington, D.C.; George Patton Simonds, Oakland, Calif.; Frank Robert Slezak, Kansas City, Mo.; Gustavus Scott Smitherman, Shreveport, La.; Ross Lloyd Snedaker, Salt Lake City, Utah; Oswald Hagen Thorson, Waterloo, Iowa; Frederic Richard von Grossmann, Milwaukee, Wis.; Fred Carter Williams, Raleigh, N.C.; and David Norton Yerkes, Washington, D.C.

Personalities

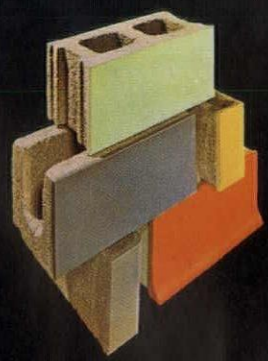
Hervey Parke Clark and **John F. Beuttler** of the San Francisco firm of Clark & Beuttler were awarded the Henry Hering Memorial Medal by the National Sculpture Society in recognition of their use of sculpture in San Francisco's West Coast World War II Memorial . . . Elected president of the New York Building Congress was **Robert W. Cutler,** partner in the firm of Skidmore, Owings & Merrill . . . **Dan C. Cowling,** partner in the Cowling & Roark firm of Little Rock, has been elected to a three-year term as the director of the Gulf States Region of the AIA. . . **Richard J. Neutra** recently received his fourth honorary degree—this one from Rome University, Italy. The other three come from the University of Graz, Austria; the University of Berlin, West Germany; and Adelphi University, New York . . . **Mary E. Dunn** was re-elected national president of the American Institute of Interior Designers for her third consecutive term. **Everett Brown** will also take his third term as national chairman of the board . . . **Frederick J. Woodbridge** will serve his second term as president of The Fine Arts Federation of New York . . . **William F. R. Ballard,** New York City's Planning Commissioner has accepted the resignation of **Jack C. Smith,** Chief of the Office of Master Planning, who is leaving to become a special consultant in the field of urban planning . . . The National Academy of Design has elected architects **Lawrence B. Anderson** (Boston), **Waldron Faulkner** (Washington), **Louis I. Kahn** (Philadephia), **Eldredge Snyder** (New York) and **Harry M. Weese** (Chicago) to Associate Membership in the organization. . . **Henry Kleinkauf,** of Omaha, Nebraska, and executive chairman of the board of Natkin & Co., was elected president of the Mechanical Contractors Association of America.

Competitions

The design of a super-highway service station is the subject of this year's architectural student competition sponsored by the Committee of Stainless Steel Producers, American Iron and Steel Institute. Further information may be obtained from the National Institute for Architectural Education, 115 East 40 St., New York, N.Y. 10016.

Awards

DALE MORLEY TAYLOR, a fourth-year architecture student, was one of two students at The University of Texas chosen to receive the Roy Crane Award in the Arts. Mr.



Spectra-Glaze®

GLAZED CONCRETE MASONRY UNITS

In stairwells, 8″ thick semi-solid units are loadbearing, provide the necessary 4-hour fire rating, eliminate the back-up wall and expose a finished block surface on the reverse side. Available in many sizes and shapes from 2″ to 12″ thickness.

Reg. U. S. Pat. Off., U.K., Canada, Other Foreign Countries by THE BURNS & RUSSELL CO

Ⓢ See SWEET'S CATALOG 4g/Bu

Ask about NEW 8x8  4x8 

and brick-size  scored units.

The Burns & Russell Company
P.O. Box 6063
Baltimore, Maryland 21231
301 · 837-0720

For more information & name of licensed manufacturer nearest you, turn to Reader Service card, circle No. 311

Crane, newspaper cartoonist and father of the Buz Sawyer adventure strip, established the award this year to encourage independent achievement in the arts. Taylor was honored for his design of a segmented hyperbolic stress-skin dome.

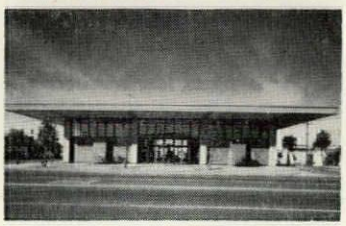
CALENDAR

June 16–18 are the dates for the convention of the **Concrete Reinforcing Steel Institute (CRSI),** which will be held at the Greenbrier, White Sulphur Springs, W. Va. . . . For more information on the **National Conference on Higher Education Facilities,** to be held July 22–24 at the University of Omaha, Nebraska, write Conference Center, University of Omaha, Omaha, Nebr.

Schools

Beginning in September, a traveling program of School Construction Seminars and product exhibits will be sponsored by 48 local chapters of The Producers' Council, Inc., an organization of manufacturers of quality building materials . . . A symposium on New Towns is featured in the latest issue of the *Washington University Law Quarterly* (available by application to Publications, School of Law, Washington University, St. Louis, Mo., and payment of $2). The symposium, centering on the British and French experiences, included a panel of: Wyndham Thomas, director of the Town and Country Planning Association of London; Shadrach Woods, partner in the Paris firm of Candilis, Josic & Woods; J. R. Atkinson, County Planning Officer of County Durham, England; Dr. Daniel R. Mandelker, professor of law at Washington University; and Marshall Kaplan, assistant director of the Community Development Project, the University of California, Berkeley . . . If school environment is your problem, you may find solace in the summer courses offered at the School of Fine Arts, Palace of Fontainbleau, France, from July 1–September 1. The course offered in architecture is run by Pierre Devinoy, Gérard Benoit, and Marion Tournon-Branly. The course is intended for advanced students. A special program is available for teachers and practicing architects. Also available is a course headed by René Péchère in Landscape and Garden Design. Application blanks are available from Fontainbleau Association Inc., 122 East 58th St., New York, N.Y.

Washington Winners



The Southwest Washington Chapter, AIA, has recently announced the winners of its honor and merit awards. Honor awards went to the firm of Liddle & Jones of Tacoma for their Branch Bank for the National Bank of Washington in Auburn, Wash. The second and only other honor award went to the firm of Harris & Reed of Tacoma for their design of a private residence on Ketron Island. Merit awards went to: William Hocking for the South Tacoma Motor Used Car Office and for his design of the Ceccantis Restaurant in Tacoma, and to Liddle & Jones for the Stewart Elementary School in Tacoma.

Obituaries

PAUL JONES GRUBB, official architect for Baltimore county, died at his home at the age of 54. As county architect, he was in charge of construction and remodeling of all county buildings except schools.

HERBERT J. WEST died at the age of 95, 26 years after he retired as president of the West Construction Company in Baltimore, Md. The firm was begun in the early 1900's and has since built over 1,500 structures.

WILLIAM P. DUDLEY, Exeter. New Hampshire, architect and antiquarian, died at his home at the age of 73.

CARL K. LOVEN, architect of Glen Rock, New Jersey, died suddenly at the age of 58 while vacationing in Bermuda. Mr. Loven had recently redesigned the Princess Hotel there.

WASHINGTON/FINANCIAL NEWS

BY E. E. HALMOS, JR.

The annual "Let's jump on J. George Stewart" exercise on Capitol Hill started just a little earlier than usual this year, with the annual introduction of a bill (S.1658) by perennial sponsor Senator Paul Douglas.

As usual, the bill would require that the "Architect of the Capitol" be, in fact, an architect; and that he be appointed by Congress, not by the President.

Also as usual, the bill was accompanied by Douglas' oratory concerning the incongruity of an "architect" who is not an architect at all (though Mr Stewart is a graduate civil engineer), and of the President naming an official whose principal duties include keeping Congress' house in order.

And true to form, nobody seemed to pay much attention to the matter—certainly not the septuagenarian Mr. Stewart, who holds his appointment for life (he was named by President Eisenhower in 1954). Stewart incidentally, succeeded another nonarchitect, David Lynn, in the post.

The move, however, this year comes at a time when there is a mounting drumfire of criticism of architecture in the capital in general—focused in part on the great pile of stone and steel known as the Rayburn House Office Building, a huge, expensive, unhappy example of the builder's art. Blame for the building is hard to place; for Congressional committees took a major hand in the building's design during the years it was under construction.

Adding to the general criticism was, for one thing, a growing argument about what some Congressmen feel is an overemphasis on concrete for exterior finish of many Government buildings; considerable uproar over monuments to past Presidents (the two Roosevelts, for instance); for another, debate about a "grand plan" for Pennsylvania Avenue that includes demolition of several of the city's most valuable privately held real-estate parcels (including the huge National Press Building, the Willard Hotel and others).

The plan for a memorial to Franklin D. Roosevelt, incidentally, was complicated by a couple of matters: placement of a small, desk-sized marble slab in front of the Archives building, despite Congressional orders authorizing the series of steles in Potomac Park approved by a special commission, confused a lot of people. Very particularly, it confused would-be donors to a $4.5-million fund to pay for the big FDR monument; most seemed to believe that the small slab at Archives ended the matter.

AIA Plays the Numbers

As in many matters in Washington, you can't tell the bills without a number, hence a series of statements by the AIA, in support of legislation, tended to be a little confusing.

First, AIA expressed unqualified support for the "Department of Housing and Urban Development Act" (HR 6654 and S. 1599), which would establish a "Department of Housing and Urban Development" on a cabinet level, to coordinate the vast and scattered Federal activity in this field.

Within a few days, AIA also announced its support for a bill to establish a "National Foundation of the Arts and Humanities" (HR 6050 and S. 1483), because AIA believes that "encouragement and support of the arts are appropriate concerns of Government."

And a few days later, AIA announced it was also supporting the bill on "Housing and Urban Development" for 1965 (HR 5840 and S. 1354)—the so-called "omnibus housing act"—but with some reservations. The reservations concerned lack of "appropriate emphasis" on the need for good design.

Problem with the announcements was that all the bills have titles that sound similar, though objectives are not at all the same. Without the numbers, it was hard to tell them apart by name.

All the bills, by the way, were in a stage of "mark up" (redrawing with corrections)

HAUGHTON

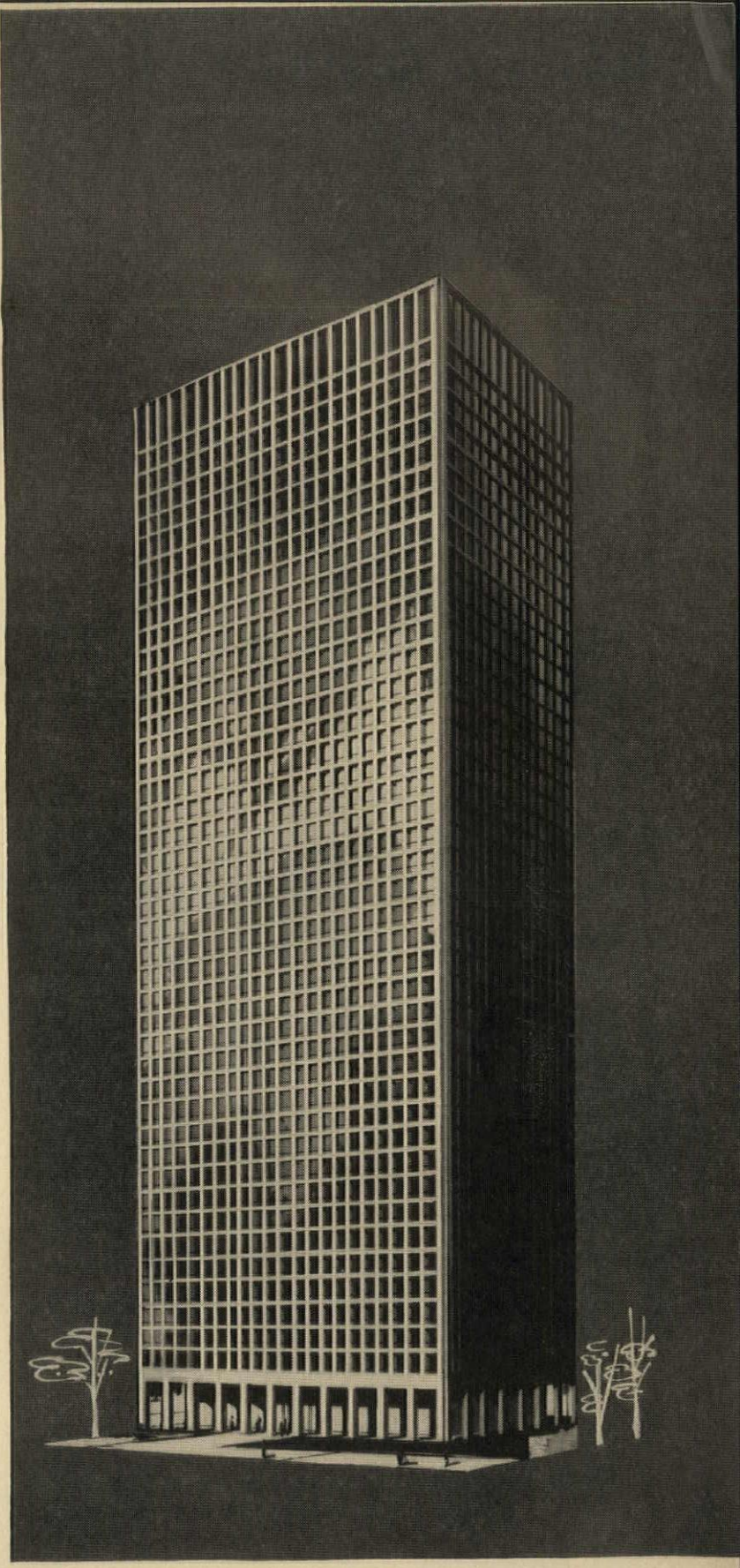
total elevator automation will assure distinctive service for The DE WITT APARTMENTS in Chicago

Haughton total elevator automation at the luxurious DeWitt Apartments means that elevator availability will be precisely matched to traffic demand 'round the clock.

It means that residents and guests will enjoy service so superlatively quiet and restful that every moment is a joy and a relaxation. Haughton Elevonics* achieves power flow so smooth, so finely controlled that the cars seem to float on a cushion of air as they move swiftly in response to passenger needs.

That Haughton *total elevator automation* should be specified for The DeWitt Apartments is supremely logical. From the very beginning, nearly a century ago, Haughton elevators have been built to uncompromising standards of excellence. Thus they command the highest honors for quality, performance, ease of maintenance.

Include Haughton *Total Elevator Automation* in your plans for building or modernization. Ask your Haughton Sales Office (listed in the Yellow Pages) for all the facts, or write to us.



HAUGHTON
ELEVATORS / ESCALATORS

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

The DeWitt Apartments now under construction at the corner of Chestnut Street and DeWitt Place, Chicago.

Developer:
Metropolitan Structures, Inc.
168 N. Michigan Avenue, Chicago
Architect:
Skidmore, Owings and Merrill
30 W. Monroe Street, Chicago
Contractor:
Metropolitan Construction Co.
168 N. Michigan Avenue, Chicago

Haughton Elevator Company / Division of Toledo Scale Corporation / Toledo, Ohio 43609

On Readers' Service Card, circle No. 360

by committees and subcommittees in early May, and didn't seem likely to move out for floor debate before mid-June.

Win a Few, Lose a Few

Professionals made a little headway in their tussles with Federal bureaucracy, though not gaining all of what they wanted.

In one case, the long fight to gain exemption from registration as "foreign agents" when architects or engineers work for foreign clients didn't succeed. But the floor debate in the Senate did produce a flat statement (by Foreign Affairs Committee Chairman Fulbright) that: "Professional services by attorneys, architects, engineers will not require registration" unless their efforts for a foreign client constitute political activity; and a definition (in amendments finally passed) of "political activity" that effectively takes architects out of the picture.

On another front, professionals took on the General Accounting Office, which had criticized "excessive" use of consultants on Federal-aid highway jobs. Answer was a bill (HR 7113) to "provide for the utilization" of qualified engineers (and architects) in private practice "in connection with public works and other projects undertaken by the Federal Government."

Of major importance to the construction industry (and those who must worry over costs) were hearings that started May 10 on a series of bills (HR 6363 and others) that would permit "common situs" picketing of a construction site —now barred by interpretations of the Taft-Hartley Act.

This has been a major objective of construction labor for some years—the right to close down an entire site, even if the dispute is with only one of many contractors. Similar moves have failed in Congress over a number of years, but this time there seems to be growing support.

Increase in Airports

There's still plenty of future for designers of airports, according to latest compilations of the Federal Aviation Agency. But the outlook isn't quite as optimistic as it may look from a quick glance at the figures.

FAA said that, as of the end of 1964, there were 9,490 air-

Reception Room, The Fafnir Bearing Company: Automatic Sliding Entrance by Stanley.

Stanley automatic sliding entrance... a new concept that assures a cordial and impressive reception

Stanley Automatic Sliding Entrances combine the beauty and prestige of modern clean-line appearance with the utility of efficient two-way traffic flow through a single entrance-way. They are an unmistakable sign of design excellence.

Model 1000 — AUTO-SLIDE automatic sliding entrance. Complete with doors that swing open for emergency use. Entrance meets all exit code requirements. Completely safe. Saves space. Write for Folder No. M73.

Model 5000 — SLIMLINE automatic sliding entrance. Lighter, more compact. Especially suitable for small shops and lower traffic applications. Priced within virtually any client's budget. Write for Folder No. M74. And a complete line of famous MAGIC-DOOR® operators (pneumatic, hydraulic, electric), controls and accessories for doors that swing, slide or fold. Write for Folder No. M67-COM, or look us up in Sweet's. STANLEY DOOR OPERATING EQUIPMENT Division of The Stanley Works, New Britain, Connecticut.

THE STANLEY® WORKS

CONSULT YOUR NEAREST MAGIC-DOOR DISTRIBUTOR LISTED AT LEFT

On Readers' Service Card, circle No. 413

ports in its files—and they've been increasing at an annual rate of 623. But the increase reflects not only new airport construction; it also shows a more extensive reporting service by FAA, which now is strictly enforcing requirements that airport operators notify the agency before establishing a new field.

GSA Conference

General Services Administration is expecting top-drawer attendance at a top-drawer conference for Federal architects early this month. The meeting will be a "Symposium on Environmental Design and Productivity" — a five-day session moderated by Dean Harlan E. McClure of Clemson University's School of Architecture.

Speakers will include Herbert Swinburne of Philadelphia; Vincent Kling, Philadelphia; Marcel Breuer, New York; William Gordon Lyles, Columbia, S.C.; and Karel Yasko, of the U.S. Public Buildings Service.

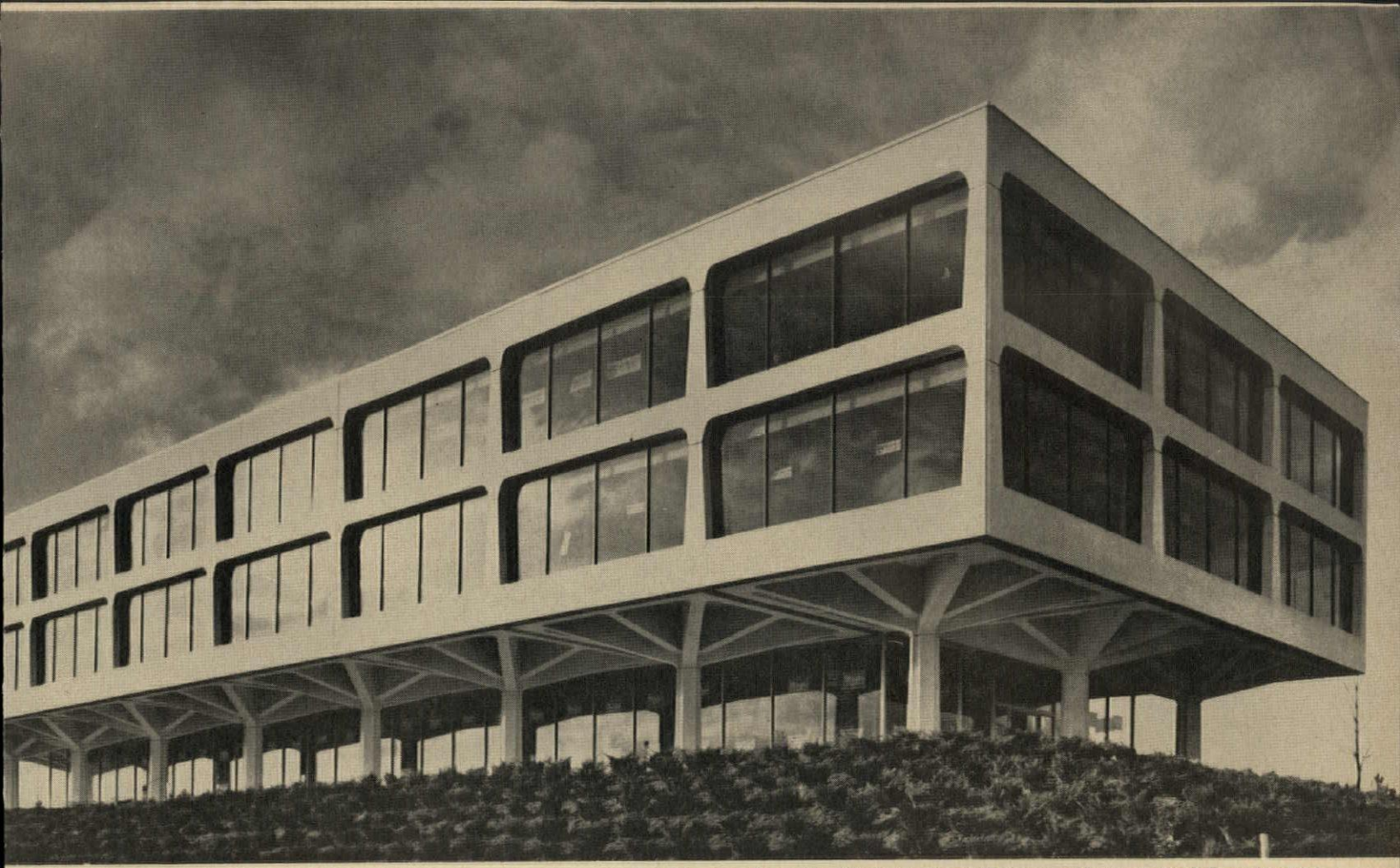
Idea is to study relationship between individual buildings and the total environment; understanding of interdependence of function and the organization of space; and analysis of fundamentals of visual and scientific design.

Financial

The construction industry seemed to be rocking along about as expected early in the year, showing modest but steady gains over 1964. But housing continued, as it has for more than a year, to be a worrisome area.

Total construction put in place in March, according to the Census Bureau, was $4.7 billion—up about 2 per cent over 1964. But housing was recorded at an adjusted annual rate of 1.549 million units—7 per cent below a year ago. Big boost came—as has been true all year—from private industrial and commercial work, and increases in public projects.

There was still the worry over rising costs, too. One indicator—the Sewage Treatment Plant and Construction index of the U.S. Public Health Service — climbed another small notch in April, to reach 111.07 —up .04 from the previous month. Note: Since it was first compiled a little more than a year ago, this index has never shown a downturn.



Bata International Centre / Don Mills, Ontario, Canada / Architects and Engineers: John B. Parkin Associates

Mo-Sai® goes international with "T"-shaped insulated column and beam covers for Canadian Centre.

Architects for the Bata International Centre at Don Mills, Ontario (near Toronto) chose Mo-Sai with a glistening white quartz exposed aggregrate texture for their new international headquarters, which serves Bata Enterprises in 79 countries.

Moulded into inverted double "T"-shaped units, the Mo-Sai panels cover structural steel columns and beams creating the striking windowall silhouettes. The Mo-Sai units are bolted and welded to the steel structure. Insulation is provided by a foam glass back-up.

Mo-Sai has been custom-manufactured under factory-controlled conditions to individual job requirements for distinguished buildings of enduring beauty for more than twenty five years.

MO-SAI INSTITUTE, INC., 110 Social Hall Ave. / Salt Lake City, Utah 84111

BADGER CONCRETE CO.
P. O. Box 1068, Oshkosh, Wisconsin

BEER PRECAST CONCRETE, LTD.
110 Manville Road,
Toronto, Ontario, Canada

BUEHNER & CO., INC.
P. O. Box 936, Mesa, Arizona

CAMBRIDGE CEMENT STONE CO.
P. O. Box 41, Allston 34, Mass.

ECONOMY CAST STONE CO.
P. O. Box 3-P, Richmond 7, Virginia

FORMIGLI SALES CO.
6 Penn Center Plaza,
Philadelphia 3, Pa.

GEORGE RACKLE & SONS CO.
Newburg Station, Cleveland 5, Ohio

GOODSTONE MFG. CO., INC.
470 Hollenbeck Street, Rochester 21, N.Y.

GRASSI AMERICAN CORP.
111 South Maple Avenue,
South San Francisco, California

HAMILTON CONCRETE PRODUCTS CO.
1401 East 39th Street,
Chattanooga, Tennessee

HARTER CONCRETE PRODUCTS, INC.
1628 West Main Street,
Oklahoma City 6, Oklahoma

JACKSON STONE COMPANY, INC.
330 West Mayes Street,
Jackson, Mississippi

OLYMPIAN STONE CO., INC.
1415 N.W. Ballard Way, Seattle 7, Wash.
Swan Island, Portland, Oregon

PLASTICRETE CORPORATION
1883 Dixwell Avenue,
Hamden 14, Connecticut

SOUTHERN CAST STONE, INC.
P. O. Box 1669, Knoxville 1, Tenn.

SUPERCRETE, LTD.
P. O. Box 80, St. Boniface, Manitoba, Canada

TEXAS INDUSTRIES, INC.
P. O. Box 400, Arlington, Texas

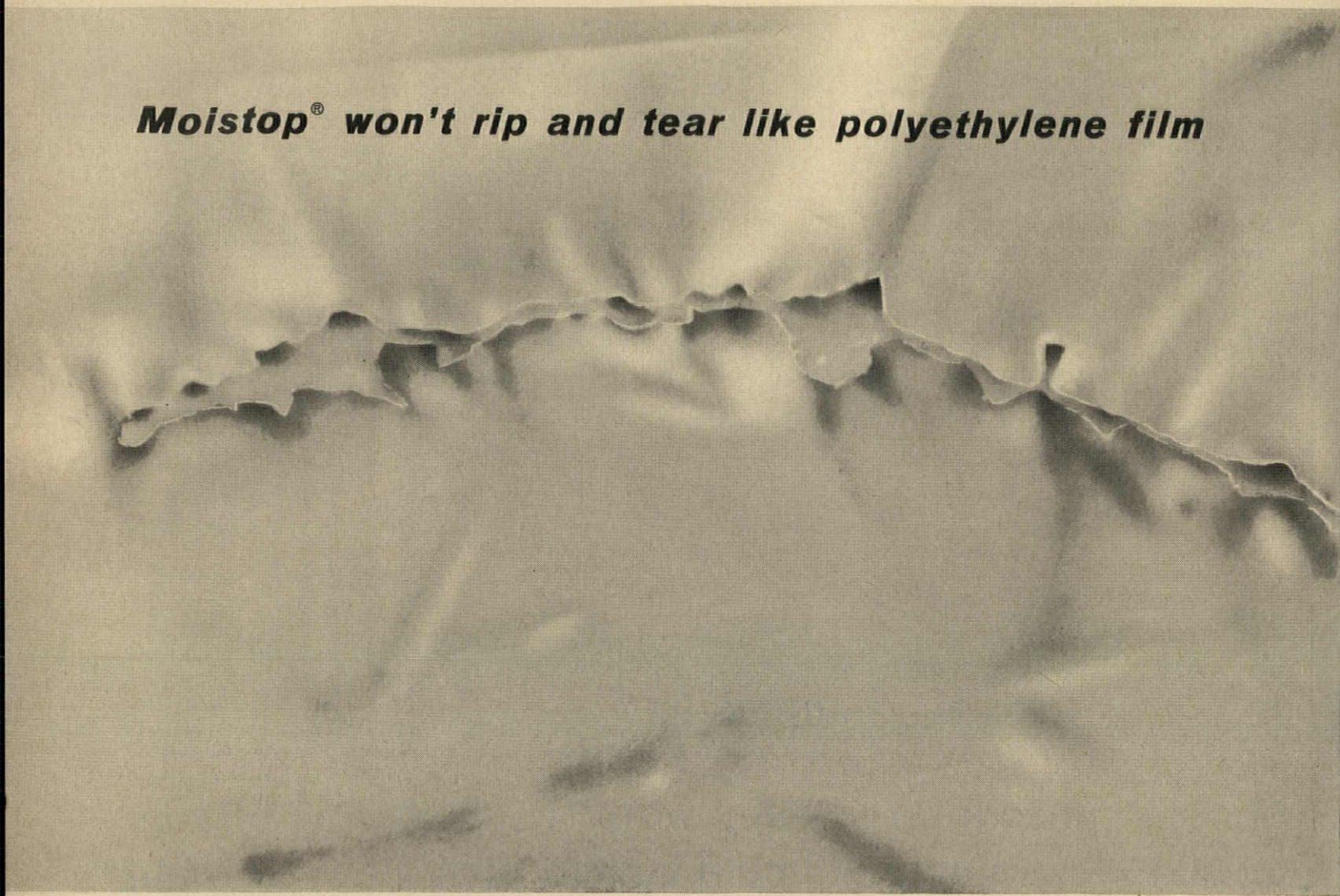
THE RACKLE COMPANY OF TEXAS
P. O. Box 15008, Houston 20, Texas

WAILES PRECAST CONCRETE CORP.
2901 Los Feliz Blvd.
Los Angeles, California

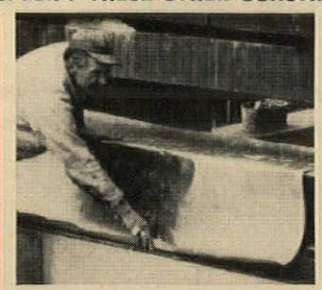
WILSON CONCRETE CO.
P. O. Box 56, Red Oak, Iowa
P. O. Box 208, South Omaha, Nebraska

Mo-Sai®
PRECAST, PRESTRESSED CONCRETE
WITH EXPOSED AGGREGATE

On Readers' Service Card, circle No. 391



SPECIFY THESE OTHER CONSTRUCTION PAPERS AND VAPOR BARRIERS FOR MAXIMUM PROTECTION IN CRITICAL BUILDING AREAS

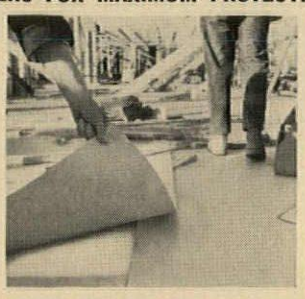


Copper Armored Sisalkraft®

For concealed flashing with pure copper at 1/5th the cost of heavy copper:
COPPER ARMORED SISALKRAFT. A combination of electro-deposit copper and reinforced Sisalkraft that provides lifelong protection against moisture penetration at vulnerable points in the structure.

Pyro-Kure

Permanent, noncombustible vapor barriers for pipe jacketing, air conditioning duct insulation and industrial insulation facing: PYRO-KURE®. A line of flame-resistant, reinforced laminations with a U/L flame spread rating of "25 or less." Complies with National Building Code standard for noncombustibility.



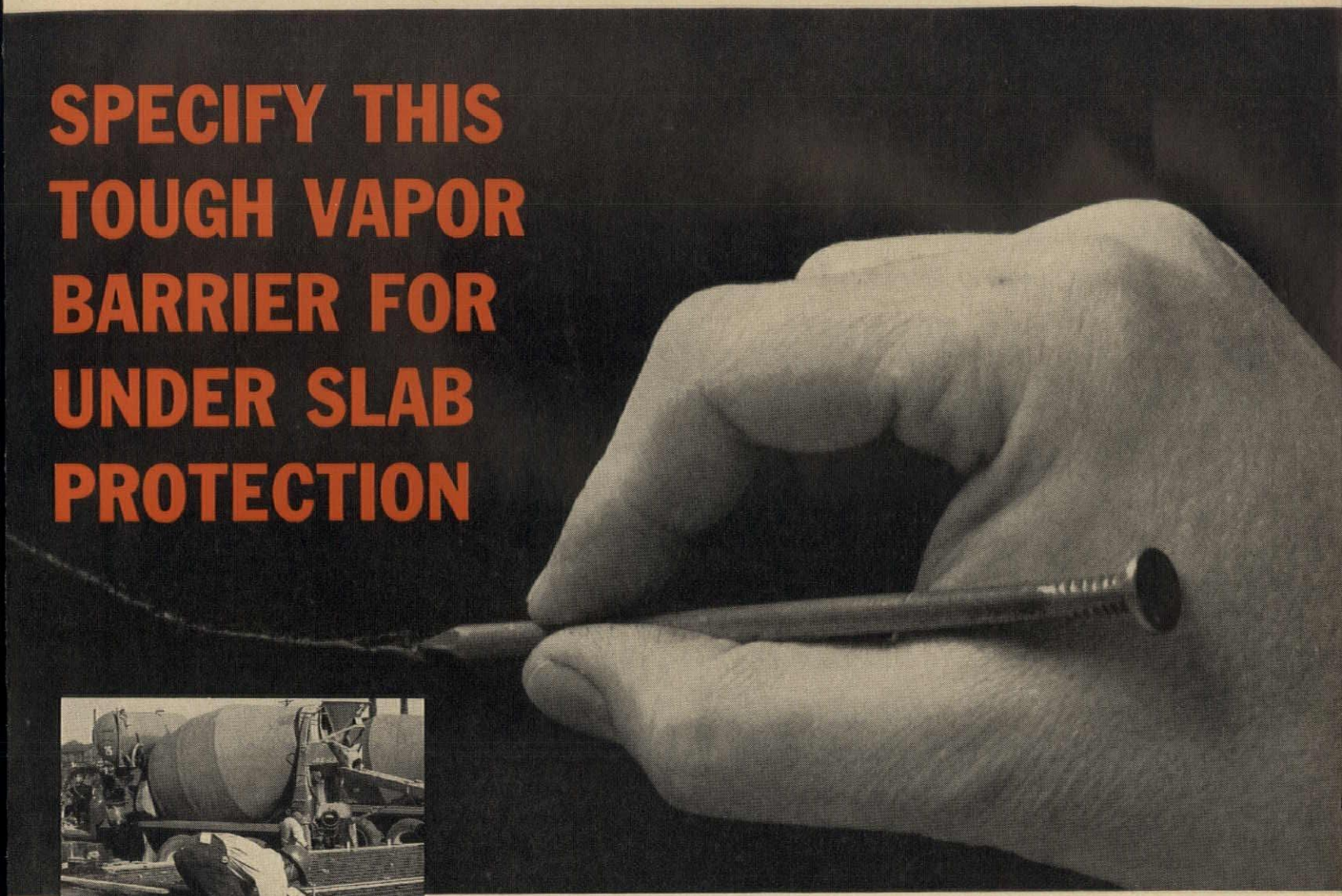
Curing Papers

For maximum protection and curing of concrete:
SISALKRAFT® CURING PAPERS. Reinforced, waterproof papers prevent damage and soiling of newly placed concrete slabs. Retards hydration, provides a maximum cure for harder, denser concrete floors.

Pyro-Kure® 600

Flame resistant, abrasion resistant vapor barrier for Class roofs:
PYRO KURE 600. More than twice the moisture resistance of vinyl film. Will not burn when hit with hot asphalt. Approved by Factory Mutual for use with asphalt and Fiberglas® insulation on metal decks.

SPECIFY THIS TOUGH VAPOR BARRIER FOR UNDER SLAB PROTECTION



Place a sample of polyethylene film and a sample of Moistop side by side. Take a nail and scrape it across both . . . as hard as you want. **You'll find that polyethylene ruptures but Moistop remains undamaged.** Moistop was made this tough because Architects found that too many moisture barriers failed on the job, with moisture and water penetration resulting. Moistop combines the inert properties of polyethylene film with the strength and body of tough, reinforced, waterproof paper. This multi-ply construction makes Moistop a stronger, better moisture-vapor barrier than any other available product, assuring your client of a permanent barrier to keep floors dry.

Specification: The vapor barrier shall be unrolled directly on top of the base fill, parallel with the direction of pour. Joints may be unsealed if lapped a minimum of six inches. Any damage to the vapor barrier shall be repaired before placing concrete. The vapor barrier shall be **Moistop,** as manufactured by the Sisalkraft Division, St. Regis Paper Company. Check Sweet's File 8h/Si.

Send for physical property data and sample of Moistop. Write: "Moistop Data": Sisalkraft, 56 Starkey Avenue, Attleboro, Massachusetts.

ST REGIS

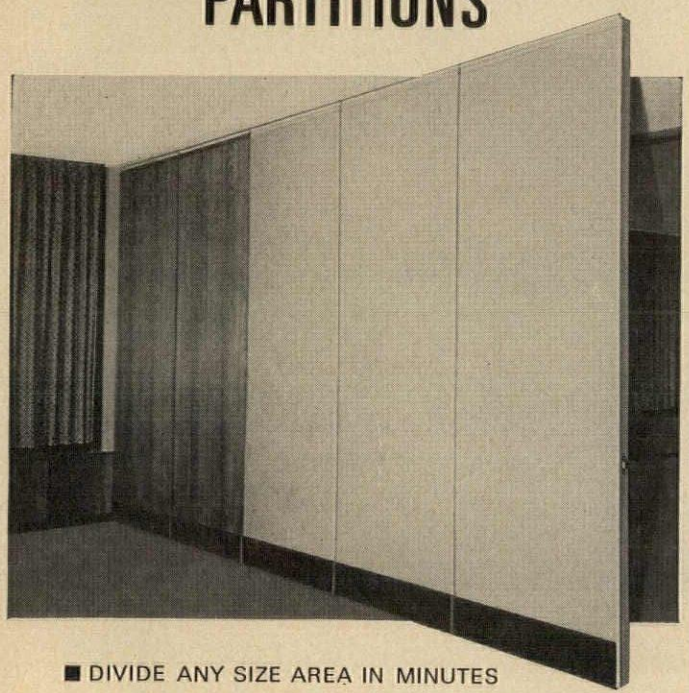
SISALKRAFT DIVISION

On Readers' Service Card, circle No. 445

To MULTIPLY Space DIVIDE

with

Brunswick FUNCTIONAL FOLDING PARTITIONS



- DIVIDE ANY SIZE AREA IN MINUTES
- THE RIGHT DECIBEL RATING FOR THE FUNCTION
- FULL CHOICE OF COLORS AND FINISHES
- MANUAL OR ELECTRICAL OPERATION

Planning a new project? . . . a remodeling job? . . . Get full utilization out of every square foot of that costly space. Minimize fixed walls that limit area function and increase both construction and operating costs. Plan the job around versatile Brunswick Folding Partitions. Seven types to choose from, including the new 700 Series Acoustic Dividers with sound retarding qualities as good as *or superior to* a permanent wall. Send for details today.

Brunswick CORPORATION

2605 East Kilgore Road, Kalamazoo, Michigan 49003

We'd like to know more about Brunswick Folding Partitions.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____ ZIP CODE_____

PA 65

On Readers' Service Card, circle No. 335

Paul Damaz is to be congratulated on his earnest study.
—Max Abramovits

Damaz has recorded accurately and lavishly.—Interiors

. . . . The book establishes an introduction to how the important problems of a successful fusion of architecture with murals and sculpture can be solved.—Walter Gropius

It is a very important book which gives a thorough view of what has been done in Latin America.—Carlos Raul Villanueva
Architect—Venezuela

Just Published!

ART IN LATIN AMERICAN ARCHITECTURE

by PAUL F. DAMAZ Preface by Oscar Niemeyer

A comprehensive, critical analysis of architectural art in Latin America, this new book is the **one** all-inclusive source on this subject. The author brings a penetrating insight to the special qualities of the Latin American temperament—a dynamic fusion of European-Indian culture, contemporary political and social forces, and sensuous response to color and form—which is responsible for the uninhibited collaboration between artist and architect. This handsome, visually exciting book considers this collaboration both in the text, and in the perceptive introduction by Oscar Niemeyer, and illustrates the extraordinarily imaginative results this union has produced.

Part I: A bird's-eye view of the culture and heritage of art and architecture in Latin America. Part II: The finest examples of Latin American murals, sculpture, stained glass and mosaics, mainly through illustrations and captions. 400 illustrations, 24 in color. 8½ x 10½. 224 pages. $15.

ART IN EUROPEAN ARCHITECTURE

by PAUL F. DAMAZ
Preface by Le Corbusier

This beautiful book describes the integration of the arts in modern architectural design with superb examples showing the use of color, mural painting, sculpture, stained glass, and mosaics in office buildings, factories, churches, gardens and steamships. The works of 130 architects and 150 artists are shown in this companion volume to ART IN LATIN AMERICAN ARCHITECTURE. 450 illustrations, 15 in color, 8⅜ x 10⅜. 242 pages. $10.95.

REINHOLD BOOK DIVISION,
430 Park Avenue, New York, N. Y. 10022

30-DAY EXAMINATION OFFER

REINHOLD BOOK DIVISION,
430 Park Avenue, New York, N. Y. 10022

Please send me the book(s) checked below for 30 days' examination (in the USA only). If I am not completely satisfied, I may return them and owe nothing. If I keep them, I will send the correct amount, plus small shipping charge.

☐ Art in Latin American Architecture $15.00
☐ Art in European Architecture $10.95

NAME_____
(Please print)

ADRESS_____

CITY_____ ZONE_____ STATE_____

Save! Send total payment with order. We pay regular shipping costs. Same return privilege guaranteed. Add sales tax on N.Y.C., Calif., Ohio and Pa. orders. Check or M.O. only. No cash!

Air/Temperature

Cooling Tower Has Design Flexibility

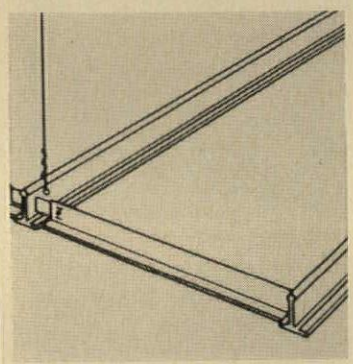
"Ceramic Cooling Tower" provides a permanent, trouble-free heat transfer system for air-conditioning or industrial water-cooling equipment. Tower, both fireproof and waterproof, uses chemically inert "Perma-Grid" vitrified clay tile fill, which does not deteriorate. Exterior walls may be made of face brick or any permanent material. All

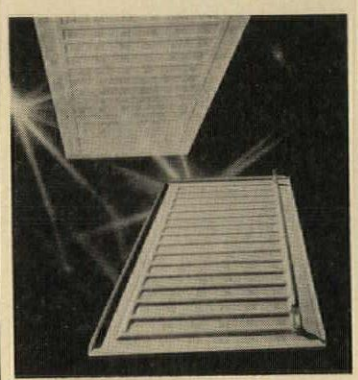
other structural features are handled by the architect. Adjacent buildings may be designed and integrated with the cooling tower. It is not necessary to have any element of the tower extend over the roofline. Tower includes reinforced glass-fiber eliminators that allow installation anywhere by stopping water carry-over, permitting parking areas to be utilized as tower sites. Three sizes are available in 19 models each. All sizes and models are in two series, for both absorption and motor-driven air-conditioning systems. Ceramic Cooling Tower Co., Div. of Acme Brick Co., P.O. Box 425, Fort Worth, Tex.

On Readers' Service Card, Circle 100

High Efficiency Radiant Ceiling

According to the manufacturer, "Hi-Performance" radiant ceiling panel delivers up to 250 per cent higher efficiencies than a ceiling composed of metal panels attached or bonded to separate water pipes or grids. Panel has noise-reduction coefficient up to .55 and a sound attenuating ceiling rating of STC 40. It combines a radiant ceiling with integral water channels. Panel consists of two layers of steel brazed together, with internal voids in the form of a water-carrying grid. Grid is raised on the top surface of the panel, leaving the bottom surface flat, except for the embossed design. Panel eliminates conductive heat barriers between the system's water and exposed ceiling surfaces. Only a single thickness





of steel (.0478″) acts as both water grid and ceiling surface. Panels are 2′x4′ and fit standard lay-in ceiling support grids. They are easily combined with lighting panels and integrate well with modular partition systems. Inland Steel Products Co., P.O. Box 393, Milwaukee, Wis.

On Readers' Service Card, Circle 101

Construction

Metal-Lath/Gas Concrete Domes

Hasty Chef Systems, a subsidiary of Chefless Restaurants, Inc., has chosen twin, thin-shell, metal-lath/concrete domes as the efficient and distinctive shelters for its franchised operation. Known as "Re-informed" thin-shell construction, the twin domes are created by the space frame, reinforcing-bar, rib metal lath, and spray-on concrete technique that was developed and tested at Tavernier Keys, Florida, in 1963 (NEWS REPORT, AUGUST, 1963 P/A). Technique was developed by Ar-

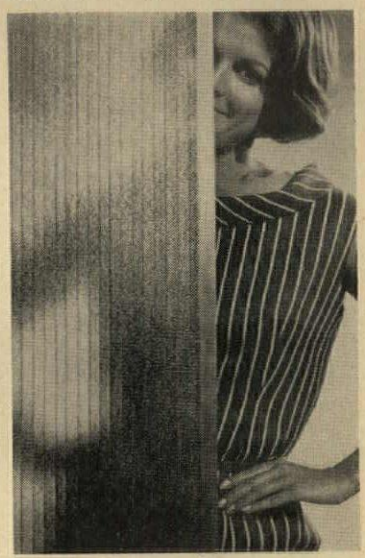
chitect Richard A. Rose of New York, and by Consulting Engineer Bertram S. Warshaw of Coral Gables. Sidney L. Kotkin of Miami was the architect for the construction of the initial Hasty Chef restaurant, with Rose as associate architect. Warshaw handled the engineering portion of the construction.

Structure is composed of two domes, with its floor slab only a few inches above grade, and the tops of the 6 pedestals about 2′ above the floor slab. After the 8 shop-formed curving space frames were attached to the 6 pedestals, 1″-sq steel-tube arches were affixed to them in each direction, to provide the support grid for the ⅜″ rib metal lath. Six complete circles of reinforcing bars were placed around each dome, closely spaced above the arched openings, to resist the horizontal dome thrust. Lightweight concrete, using an additive ("Vinfoam," manufactured by Vin-Lox Corp., Miami, Fla.) to create gas bubbles in the finished product, was sprayed onto the metal lath armature to produce a finished shell with a thickness of 3¼″. According to Warshaw, the cost of the shells, foundations, and floor slabs was approximately less than $3.00 per sq ft. Metal Lath Assn., Engineers Bldg., Cleveland, Ohio.

On Readers' Service Card, Circle 102

Steel Wire Glass

For the first time, high-strength steel wire, spaced ½″ o.c., has been imbedded into glass for use as interior partitions. "Pinstripe" glass in "Finetex" pattern (finely engraved on one side and smooth on the other) meets FHA im-

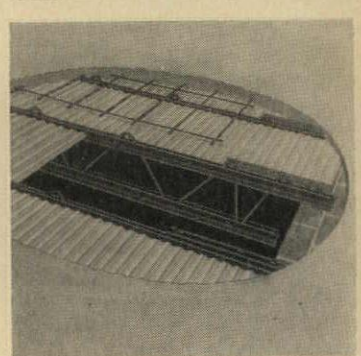


pact test requirement for safety glass. Pinstripe is 48″ wide, 84″ or 96″ long, and 7/32″ thick; larger lengths and widths are also available. Wire strands within the glass create various chiaroscuro effects as the light source moves across the Finetex pattern. American Saint Gobain Corp., Box 929, Kingsport, Tenn.

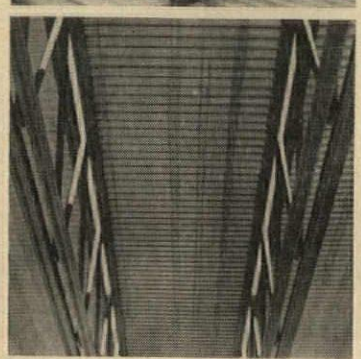
On Readers' Service Card, Circle 103

Composite Joist System

Recent line of composite "C" joists are used with concrete slab construction to produce composite floors. Joists handle loads applicable for standard open web steel joists of the same size designation. Joists have the top chord inverted to provide a flanged support or shelf for a deck form. Exten-



sions of the web system projecting above the top chords provide positive shear connections with the poured concrete slab uniformly along the joist length. Joist design features a beaded angle for an improved welded anchorage of the web panel joists. It also serves to minimize the amount of concrete leakage through the joists and to provide for the formation of a key of concrete throughout the length of the top chord. Test results comparing composite joists with standard joist and slab construction show that

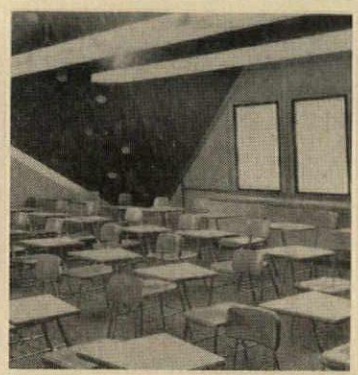


composite joist system has 20 per cent less deflection, produces savings in cost of steel because top chords need only be designed for the basic support of construction loads, and reduces amount of bridging or lateral support. Laclede Steel Co., Arcade Bldg., St. Louis, Mo.

On Readers' Service Card, Circle 104

Relocatable Classrooms

Low-cost, relocatable classroom unit has recently been designed by Neoplastics Structures of Ossea, Minn., to meet the needs of expanding educational space. Structure weighs 18,000 lbs or 12¾ psf and provides two 700-sq-ft classrooms per building. Each classroom, which will provide space for 70 students, can be erected in less than two weeks for as little as $12,000 to $15,000 per classroom. Roof and wall panels consist of Monsanto's "Lustra-Span" rigid vinyl spandrels, making the roof 500 lbs lighter than it would be with other materials. Roof can withstand a minimum load of 40 psf; it is a laminate of a coated plywood exterior, 6" of insulating foam, and white opaque .068 interior vinyl panels. Walls are also made of laminated panels and are available in variety of colors. Classroom unit can be air conditioned. Structure also has an individual fire alarm system. Monsanto Co., 800 N. Lindbergh Blvd., St. Louis, Mo.



On Readers' Service Card, Circle 105

Doors/Windows

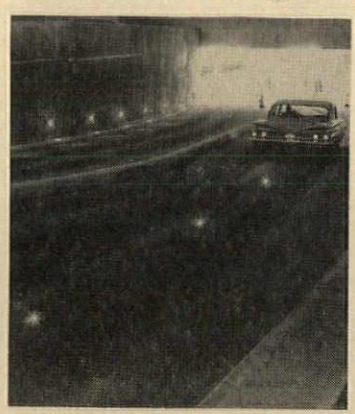
Plastic Glazing for High-Rise

"Lexan" polycarbonate sheet for use as glazing in windows of multiple dwellings has received approval by New York City Board of Standards and Appeals. According to the manufacturer, impact strength of Lexan is 50 to 100 times that of glass and 35 times that of acrylic. Lightweight sheet transmits up to 89 per cent of the available light and is self-extinguishing. It can be supplied in translucent colors or it can be transparent. Glazing material is especially useful in schools or in areas where there is a high degree of vandalism. General Electric, Chemical Materials Dept., Pittsfield, Mass.

On Readers' Service Card, Circle 106

Electrical Equipment

Sunken Street Lights



"Magdisc" pancake lights are used in off-street installations. System employs 8" cylinder-shaped units, set in 2⅛" in the pavement with only a ⅜" rise of the conical-shaped top protruding above the ground level at a 7° slope angle. Manufacturer states that units do not interfere with moving vehicles or snow-removal equipment. System has a light intensity of over 600 ft-c "on sunny days as well as at night." Light beam can be uni- or bidimensional and color coded by filters. Continued operation of the other lamps is unaffected by failure of any bulb. Strong Electric Corp., 524 City Park Ave., Toledo, Ohio.

On Readers' Service Card, Circle 107

Finishes/Protectors

Colored/Acoustical Ceiling or Wall Finish

Low cost, sound-absorbing and noncombustible acoustical finish can be applied in one operation to ceilings and walls. Called "Faserit Acoustical," it is made by a patent process of combining various chemicals, cellulose fibers, expanded volcanic stone, bonding agent, and water. It has neither particle fall-out or flaking. Material can be applied directly to monolithic concrete or poured on concrete with no special preparations. Finish can be applied to acoustical plaster, ceiling tile, sheetrock or portland-cement base coat, plywood, galvanized duct, aluminum, etc. It may be colored and textured before application to match any décor. Application of diamond dust or metallic fleck can be added. Specified Ceilings & Walls, Inc., 77 Montauk Ave., Brooklyn, N.Y.

On Readers' Service Card, Circle 108

Tilelike Coating System

"Pitt-Glaze" liquid coating system combines the nonyellowing property of polyester with the stain resistance of epoxy to provide for all interior surfaces exposed to hard wear, an

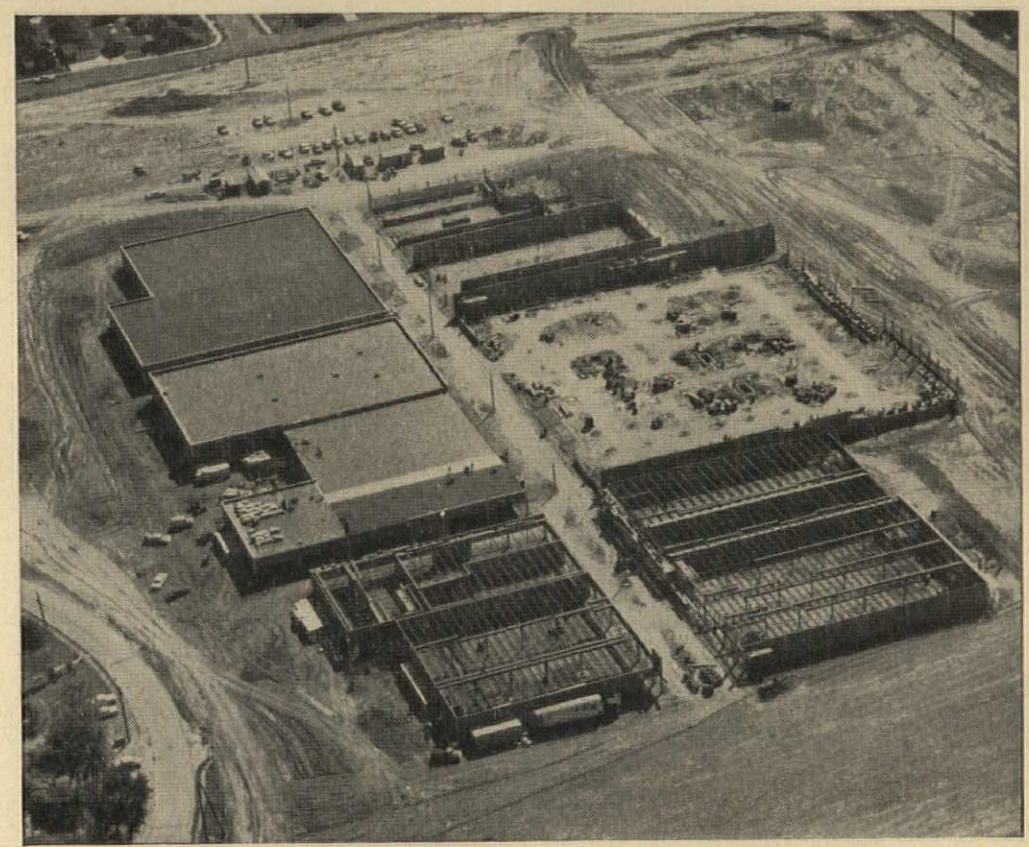
"impregnable" tilelike finish. It is said to resist industrial fumes and chemicals, dirt, grime, and scuff marks. Coating may be applied to wood, plaster, concrete, cinder block, etc. Pitt-Glaze is said to last five times as long as conventional finishes and to wash more easily than a high-gloss enamel, even on a semiflat finish. Coating may be applied by roller, spray, or brush. Pittsburgh Plate Glass Co., 632 Fort Duquesne Blvd., Pittsburgh, Pa.

On Readers' Service Card, Circle 109

Surfacing Veil

"Pellomac" is a nonwoven surface coating for use in exterior and interior building construction. Coating prevents hairlines, wind, and other related cracks in newly plastered walls. When applied to existing wall previously painted, cracked, or with poor substrates, Pellomac prevents cracks from showing through after application of the paint. It prevents humidity and moisture penetration and

Even the shopping centers themselves come packaged* these days for controlled economy



ARCHITECT: COX & FORSYTHE A.I.A., CANTON, OHIO
CONTRACTOR: GIBBONS-GRABLE COMPANY A.G.C., CANTON, OHIO

All framing—long and short-span steel, joists, composite system, V-LOK, columns—decking and ribbed steel centering—compatible in every way, sold, serviced and shipped from a single source—it's saving builders dollars, time, and headaches everyday.

The latest to take advantage of the benefits of the single source is the Gibbons-Grable Company, general contractors who are putting the finishing touches on the $10,000,000 Mellett Mall (pictured above) a shopping center complex in Canton, Ohio.

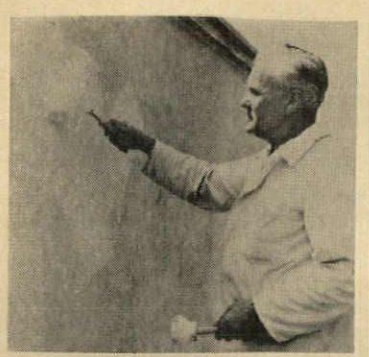
More than 965 tons of steel were used in the shopping center—all of it perfectly mated at Macomber with coordinated delivery that permitted most efficient construction. "It cut days off our field labor costs," stated Herbert G. Barth. "One source of responsibility makes sense when you're dealing with a quality house like Macomber."

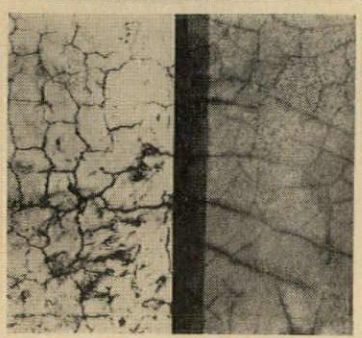
All Steel Framing Components and Steel Roof Deck.

MEMBER AISC

MACOMBER INCORPORATED
CANTON, OHIO 44701
SUBSIDIARY OF SHARON STEEL CORPORATION

On Readers' Service Card, circle No. 468





adverse effects caused by expansion and contraction of paint surfaces. It has high resistance to solvents, industrial fumes, and rot. Coating can be used with all latex or alkyd paints. Pellon Corp., 1120 Avenue of the Americas, New York, N.Y.

On Readers' Service Card, Circle 110

Furnishings

Do Your Drawers Remember? These Do

Drawers molded of a copolymer (a mixture of polypropylene and polystyrene) reportedly causes them to return to their original shape, even after being twisted or bent in storage for a long time. This new addition to the line of "Mod-U-Line Molded Plastic Drawers" is more flexible than its predecessors and virtually unbreakable; an antistatic additive assures greater cleanliness. Available in eight sizes, and shrinkproof, warpproof, and nonsplintering, the drawers are suitable for hotels, schools, pleasure boats, restaurants, and stores. Amos Molded Plastics, Edinburg, Indiana.

On Readers' Service Card, Circle 111

"Swan" Sofa

Adapted from his famous chair, the "Swan" sofa by Arne Jacobsen has molded sides and back, is upholstered with foam rubber, and covered in fabric or leather. Base is aluminum. Dimensions are 30″ x 57″ x 29″. Fritz Hansen Inc., 305 East 63 St., New York 21, N.Y.

On Readers' Service Card, Circle 112

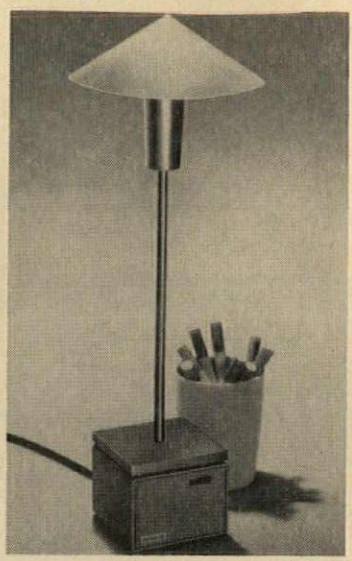
Guidelines For Interior Consultants

Architects should know that three pamphlets are available to guide interior designers not accustomed to working with architects on a fee basis. Included is "The Path to Professional Interiors," a procedural pamphlet that notes some pitfalls peculiar to interior design specifications. A second item, "Standards of Professional Practice for the interior Design Consultant," is based on corresponding AIA Document J330. The third one, "Check List for Interior Furnishing Specifications," lists both general and specific conditions for writing specifications covering moveable furnishings. The pamphlets are offered by Products for Professionals, a group that is trying to resolve some of the working problems of interior furnishing. Trefzger's, Inc., 3014 Woodburn Ave., Cincinnati, Ohio 45206.

On Readers' Service Card, Circle 113

Lilliputian Lamp

Latest Tensor high-intensity lamp, known as "The Bouguer" (model no. 5000), provides a gentle, more diffused illumination than the concentrated spotlight of former



models. A 12-w frosted bulb under a conical, translucent-plastic shade is reflected at approximately 30 and 50 ft-c, depending on position of hi-low control. Lamp is only 13″ high. Tensor Corp., 1873 Eastern Parkway, Brooklyn, N.Y.

On Readers' Service Card, Circle 114

Innovation in Carpet Weaving

Innovation in manufacturing processes is rare in carpet making. Now, however, E. T. Barwick has developed machinery that applies nylon

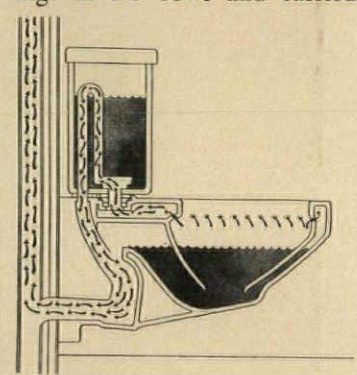
fibers electrostatically to jute backing — 17,500 individually applied per sq. in. The result is not a conventional flocked fabric nor a tufted or woven fabric; it is a velvet-type carpet, called "Veltron," of singularly lustrous texture (hence the 'Vel'; 'tron' is for the electronic process). The ⅛″-thick durable pile remains perfectly vertical and resists abrasion due to its unusual density. Color pattern is achieved by Colorset—Barwick's silk-screen process which was introduced last year. A great range of solids is also available. Carpet comes in widths up to 15′, with or without rubber backing. E. T. Barwick Mills, Inc., Chamblee, Ga.

On Readers' Service Card, Circle 115

Sanitation/Plumbing

Ventilated W/C

Built-in toilet ventilator, called "Vent-Away," eliminates w/c bowl odors. Device, operating in the toilet tank, is noncorrosive and has no moving parts. It employs the venturi principle: water falls in a tube inside the tank, thereby creating air suction behind it; odors are drawn through the rim punchings in the bowl and carried

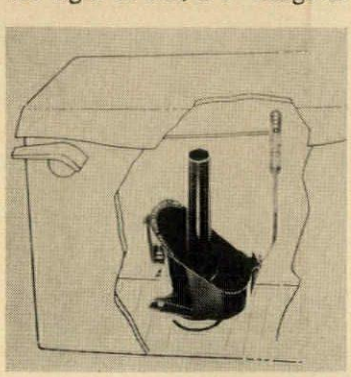


with this water to the normal discharge outlet. Lifting the regular trip lever on the tank activates the ventilator. Ventilating action stops when the lever is depressed for flushing. Flushing of the closet bowl can take place without using Vent-Away by normal operation of the trip lever. American Radiator & Standard Sanitary Corp., 40 W. 40 St., New York, N.Y.

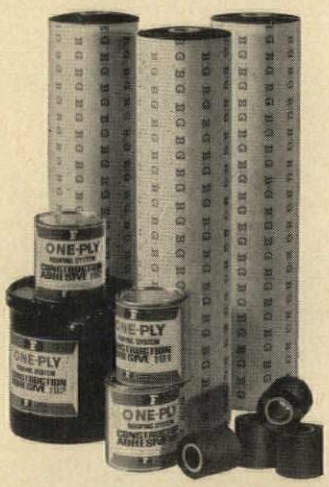
On Readers' Service Card, Circle 116

No Handle Jiggling

"Adjust-A-Flush" is a recently developed tilt valve for w/c. By turning adjustment lever to the right or left, a 3″ range of



This will roof nine squares



. . . so will this

It's BFG ONE-PLY, a complete self-flashing roofing system from B.F.Goodrich. ONE-PLY is made of Hypalon* synthetic rubber backed with neoprene-bound asbestos. Black or white. It's rugged, durable, quickly and easily applied. For roofs of nearly any shape. Lightweight? Nine squares of 4-ply, gravel-surfaced conventional roofing, in place, weighs nearly three tons. Just 365 pounds of ONE-PLY will cover the same area. And ONE-PLY offers big savings in on-site handling and installation costs. Performance? So good it's guaranteed watertight . . . free from leakage . . . for five full years under normal conditions. Want complete information? Just write Building Products Department PA-19, The B.F.Goodrich Company, Akron, Ohio 44318.

BFG ONE-PLY ROOFING SYSTEM

B.F.Goodrich

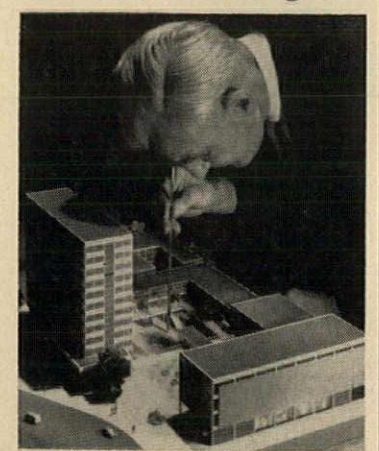
*Du Pont's Registered Trademark

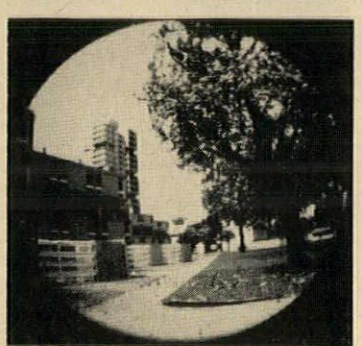
On Readers' Service Card, circle No. 358

water will remain in the tank at the end of the flushing cycle. When flushing the bowl in a normal manner with the water supply shut off, a level of 0″ to 3″ of water in even increments is left in the tank. There are five snap positions and openings for water control in this lever arrangement. Buoyant chamber replaces a counterweight cap and makes it much easier to direct water into the overflow tube. According to the manufacturer, valve completely eliminates handle jiggling to stop running water. Universal-Rundle Corp., New Castle, Pa.
On Readers' Service Card, Circle 117

Special Equipment

Model Viewing

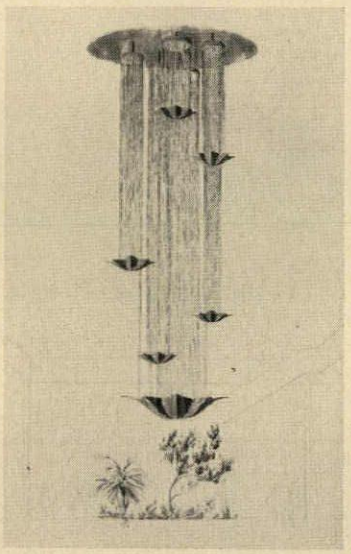




"Modelscope," a hand-held optical instrument, allows architects or clients to examine scale models in perspective, as they would look if actually constructed. The Modelscope can be moved among a cluster of models or even inside a particular model to give the viewer an illusion of seeing these models from ground level. Wide-angle lens with short focal length is fitted to the end of a slender repeater-system telescope 12″ in length and 3/16″ in diameter. Modelscope has a depth of field from about zero to infinity. It can be adapted to photography and television cameras. Viewer is supplied with a detachable eyepiece in a wood case. Modelscopes range in price from $250 up. HCI Sales Corp., 141 East 33 St., New York, N. Y.
On Readers' Service Card, Circle 118

Water-Like Falls

"WonderFall" is an animated method of creating the motion of rain, waterfalls, and waterfountains. Droplets of a special liquid flow down taut nylon strands. Droplet sizes and flow can be varied. Liquid is nontoxic, nonevaporative, noncorrosive, and noncombustible.



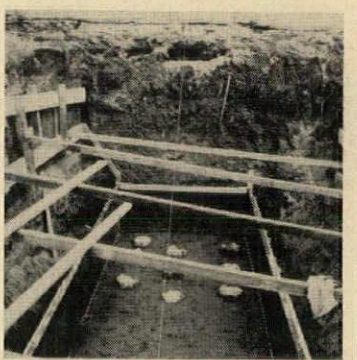
Furthermore, it does not conduct electricity. Clear liquid can be colored with vegetable or fluorescent dyes. Liquid collects in the lower tank of the system. Gas or electric lighting can be easily incorporated into the system. Display can be stopped by switching off the pump. Nylon strands can be angled up to 30° from the vertical. Density of the droplet flow can be varied by adjusting the spacing of the strands and the number of rows of strands. WaterFall system can be used for shopping centers, stores, banks, offices, restaurants, theaters, etc. It can also be used inside churches, museums, art galleries, etc. Navan Products Inc., Subsidiary of North American Aviation, 1320 East Imperial Highway, El Segundo, Calif.
On Readers' Service Card, Circle 119

Model Making

Lightweight plastic material made of epoxy derivative cellular material, called "Mock-Up," can be easily carved into any desired shape or form. Plastic is impervious to solvents, does not melt or burn, and is nontoxic. Once the material is shaped, it can be hardened into a durable solid by coating it with "Mock-Up Hard Coat," which is a low-viscosity epoxy resin with good penetrating qualities. Coating is easily applied with a brush or a two-component spray gun; it does not change the tolerances of contoured surfaces. Mock-Up is available in any size or shape up to 8½′ x 8½′ x 9′. General Laboratories, Div. of American Poly-Plastics, 635 Massachusetts Ave., Arlington, Mass.
On Readers' Service Card, Circle 120

Stabilizing Soil

"Siroc" grout, a one-shot modified silicate-base solution, is used in soil stabilization or moisture-control problems. It strengthens soil under foundations, stops water seepage into basements and stabilizes

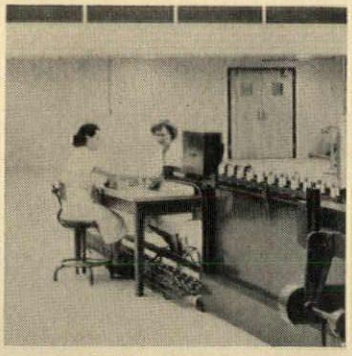


soil during construction. Siroc works in any groutable soil and provides strengths ranging from 30 to 1000 psi. Actual strength depends on the make-up of the soil and concentration of the Siroc solution. Given the required time, Siroc grout penetrates range of medium gravel through all grades of sand and into coarse silt. Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland, Ohio.
On Readers' Service Card, Circle 121

Surfacing

Thin Epoxy Floor

Thin, hard topping of epoxy resins, bonded to underlay of "Marbleloid" cement, produces durable flooring system that can be poured over wood or



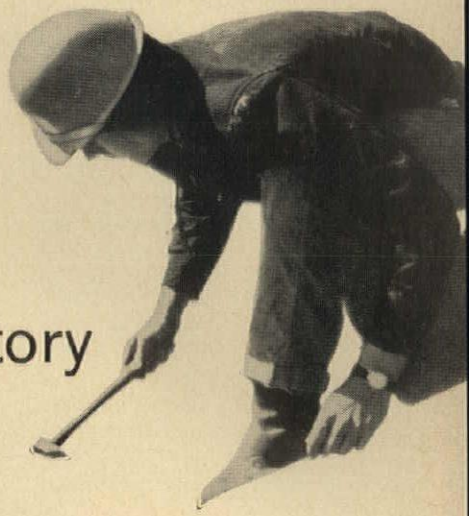
concrete substructure. Consecutive layers of metal lath, a ½″-deep cushion of Marbleloid cement and ¼″-topping of epoxy are built-up over wood subflooring; lath can be omitted when decking concrete. Seamless, colored epoxy composition (Trowelled-on) as well as the terrazzo surfacing are available. Epoxy floor is said never to spall, fragment, or pry loose from its substructure. It has impact strength of 23.3 psf and compressive strength of 7450 psi. Marbleloid Corp., 2040 88 St., North Bergen, N.J.
On Readers' Service Card, Circle 122

Tile Supports Computers

"Linotile" is a resilient tile used with pedestal floors that support heavy equipment such as computers. Floor is mounted on pedestals so that large electronic cables can be installed beneath them. Cables can then be reached by lifting sections of the floor. Special manufacturing process gives tile greater density. Linotile supports up to 200 psi without permanent indentation. Material resists stains, grease, burns, and cleaning agents. It costs less than plastic flooring and provides greater resiliency.

Linotile is available in 12″ x 12″ size in white, beige, green, brown, and gray. Armstrong Cork Co., Lancaster, Pa.
On Readers' Service Card, Circle 123

ARCHITECTS: SHORE & MOFFAT AND PARTNERS, TORONTO, CANADA LEAD ROOFING: HEATHER & LITTLE, TORONTO, CANADA



laboratory test puts lead on top

The new Cominco Product Research Centre in Sheridan Park near Toronto, Canada, has put lead quite literally on top. On top of the laboratory roof, to be exact. Only time will tell if this particular lead roof will pass all the tests of long use. However, many lead roofs have served for over 500 years, so no one is very worried.

Cominco's reasons for choosing lead roofing may well relate to your needs, too: 1) Lead will outlast the building it shelters. 2) With modern thinner, lighter, stronger lead-alloy sheets, lead installation costs are competitive with other metals. There's no "spring-back". Lead conforms easily to the workman's will and the roof's irregularities. 3) The beautiful natural grey patina of lead only improves with age. 4) There's never any staining of adjacent stone, concrete, or light-colored painted surfaces. 5) Lead has high sound-proofing performance. 6) If building becomes outmoded, lead has high salvage value.

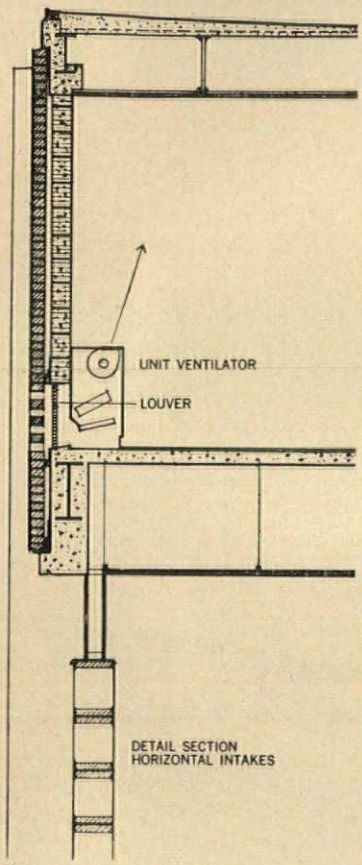
Want a roof you can install and forget? Then look into long-lived lead. Send for free illustrated Roofing Handbook with complete specifications and installation procedures for lead roofing. Write: Lead Industries Association, Inc., Dept. N-6, 292 Madison Avenue, New York, N. Y. 10017. 2414

LEAD INDUSTRIES ASSOCIATION, INC.

Look Ahead with Lead

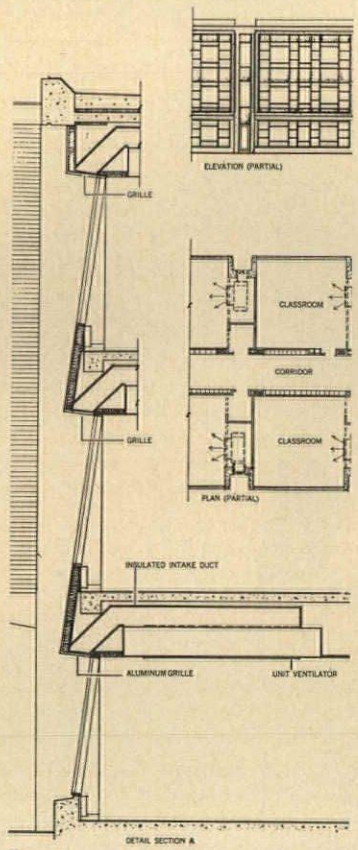
Ventilator/School Designs

"Architects Are Ingenious People" is the title of a booklet that discusses the integration of unit ventilator air louver systems with the design of schools. Introduction describes development, characteristics, and advantages of unit ventilator systems. Unit ventilators pre-

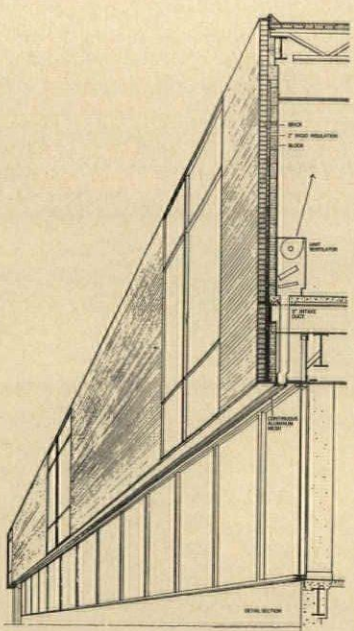


1

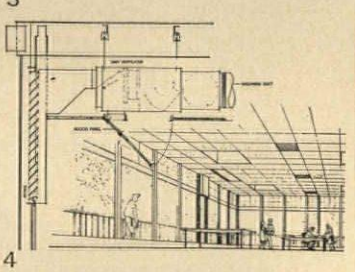
vent overheating by introducing cool air (in winter, cool air from outside the building), without causing the stratification or drafts usually associated with under-window ventilation and poor air distribution. Plans, sections, and photos illustrate 30 installations integrated with school planning. Four sections are shown: Sherwood, Mills & Smith's Turn of River Junior High School in Stamford, Conn., **(1)** shows how brick grillework conceals outdoor air intakes. Knappe and Johnson's Plainedge Junior High School in Long Island, N. Y., **(2)** shows how ceiling-type units located in a continuous soffit allows low-silled window and continuous subsill radiation. The Giffels & Rossetti, Incorporated, Classroom Building for St. John Fisher's College in Rochester, N. Y., **(3)** shows



2



3



4

how ventilators are integrated with soffit of the cantilevered second story. Reid, Rockwell, Banwell & Tarics' Crestmoor High School in San Mateo, Calif., **(4)** shows how concealed, ceiling-mounted units deliver air to ceiling diffusers in modular, loft-plan school. American Air Filter Co., Herman Nelson School Products Dept., 215 Central Ave., Louisville, Ky.

On Readers' Service Card, Circle 200

Acoustics

Acoustical Materials Study

Acoustical Materials Association has just published its 1965 manual (90 pages) entitled "Performance Data of Architectural Acoustical Materials." Recently, the AMA won a 1964 Certificate of Merit for the previous issue of the manual from a competition sponsored by the AIA and the PC. Manual is divided into two types of tables: "Summary Tables" classify acoustical materials according to appearance and composition; "Producers' Tables" contain all the listed acoustical materials of each of the 13 member companies and detailed data concerning them. Performance data includes: thickness of materials; types of mounting used in the sound absorption tests; light reflectance values based on the average of five tests on three different samples; flame-resistance, flame-spread, and fire-resistance; surface appearance; sound absorption coefficients; noise reduction coefficients (NRC) and NRC spec range; size of units on which sound absorption tests were made; nominal weight of the product as designated by the manufacturer; and ceiling attenuation factors. Study is available at $1 per copy. Acoustical Materials Assn., 335 East 45 St., New York N.Y.

Sound-Control Ceilings

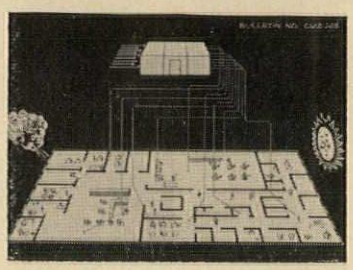
"Sound-Control Ceilings," a 52-page booklet, describes decorative acoustical panels and tiles made of glass fiber, mineral wool, asbestos, perlite, perforated metal, and wood fiber. Photos show decorative effects of panels and tiles in actual ceiling installations. Charts give characteristics of each type of panel and tile. Specs given for installation of sound-control ceilings include isometric sketches and section details. Johns-Manville, 22 East 40 St., New York, N.Y.

On Readers' Service Card, Circle 201

Air/Temperature

23 for 1

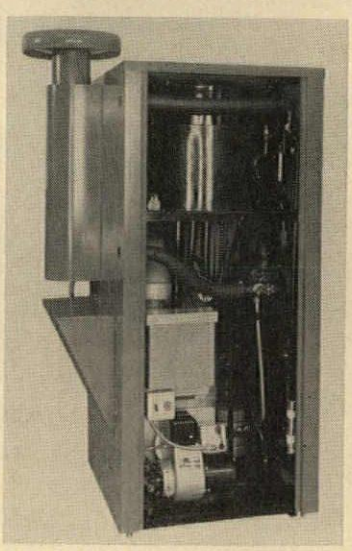
Gas or oil fired "Commercial-Aire" central-station multizone unit can handle up to 23 zones with simultaneous heating and cooling through separate ducts



with local zone thermostats. By using dual ducts with heating and cooling controlled at local diffuser outlets, temperatures may be controlled in any number of zones consistent with the capacity of the unit selected. Units have heating up to 2.5 million Btu, refrigeration up to 95 tons, and air delivery up to 38,000 cfm. Four-page brochure includes specs and charts. Mammoth Industries, Inc., 13120-B County Road 6, Minneapolis Minn.

On Readers' Service Card, Circle 202

Year-Round Chiller-Heater



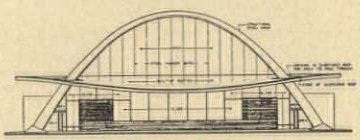
"Arkla-Matic" is claimed to be the first oil-operated absorption chiller-heater for year-round residential central air conditioning. Liquid traps and changing pressure levels within

a vacuum-tight system produce circulating water as low as 40 F or as high as 70 F. Water is delivered to chilled-hot water coils in conjunction with air handling equipment for year-round conditioning. Three-and-a-half- ton unit has heat input of 120,000 Btuh that provides a rated heating capacity of 96,000 Btuh. Cooling input of 82,000 Btuh produces a chilled water capacity of 43,000 Btuh. Number of hand-welded joints required in chiller-heaters fired from other energy sources had previously been 216, but by coiling these tubes the number was reduced to 18. Low weight per ton ratio was achieved by combining within one shell the three tanks housing the absorber, condenser, and evaporator. Unit stands 69″ high and is about 2½′ x 2½′. Brochure diagrams the unit. Oil Air Conditioning Co., Div. of Arkla Industries, Inc., P.O. Box 475, Evansville, Ind.

On Readers' Service Card, Circle 203

Construction

Lobby Hung from Steel Arches

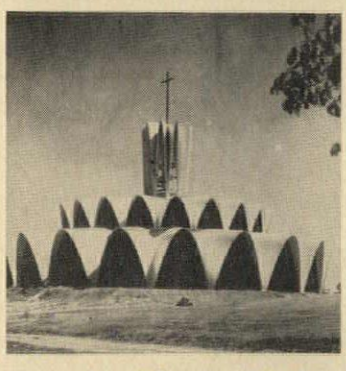


Problem of designing the 9000-sq-ft bank lobby of the Founders National Bank in Oklahoma City without interior columns was solved by using two exposed steel arches to support a suspended steel-framed roof. Arches are fabricated on all sides with ASTM A36 steel plate, 3/16″ thick. These members are reinforced by steel angles acting as diaphragms and hanger mounts. Roof structure consists of curved bar joists that all have the same radius and crowns at a constant elevation. Roof is suspended from the arches by A36 gal ¾″-diameter steel bars. Steel plate, 6″ x ½″, was used for mullions. Vertical glazing units act as steel tension members counteracting wind lift. These members prohibit roof movement due to temperature expansion of the supporting arches. Brochure gives details, elevations, sections, and photos. Architect is Robert Alan Bowlby of Oklahoma City. American Iron and Steel Institute, 633 Third Ave., New York, N.Y.

On Readers' Service Card, Circle 204

Film Depicts Concrete in America

"Twelve Decades of Concrete In American Architecture" (from 1844 to the present) is the subject of a 16-mm sound-color film series in four separate parts. Part I is entitled "The Long Years of Experiment (1844 to 1920)"; Part II, "The Search for a New Architecture (1920 to 1950)"; Part III, "The Material That



Can do Almost Anything (1950 to 1964)"; and Part IV, "The Architect's Material," which shows the work of 21 well-known American architects. Film, lasting a total of 73½ minutes, is available on a free-loan basis from any PCA district office in the U.S. and Canada. Portland Cement Assn., 33 W. Grand Ave., Chicago, Ill.

On Readers' Service Card, Circle 205

Doors/Windows

All Kinds of Doors

1965 catalog illustrates line of metal doors. Covered are flush steel, stainless-steel, porcelain-on-steel, and aluminum and textured steel doors; stile/panel and stile/rail doors; UL label doors and frames; profiles of door frames and how they are adapted and connected to various wall construction; and details of the metal frames designed to be installed in drywall construction after the wall is up. Steelcraft Mfg. Co., 9017 Blue Ash Rd., Cincinnati, Ohio.

On Readers' Service Card, Circle 206

Revolving Doors

Selected details of revolving door entrances are contained in 16-page booklet. Doors are made of aluminum, bronze, or stainless steel. They are equiped with a panic-proof collapsing mechanism that permits the wings to fold together when excessive pressure is exerted against any two opposing wings. Photos illustrate various models available. Crane Fulview Glass Door Co., 1201 Crane Drive, Deerfield, Ill.

On Readers' Service Card, Circle 207

Finishes/Protectors

Aluminum Finishes

Reynolds Metals Company has published a study of the application of various types of their finishes to aluminum. Each type is fully explained and includes color photos of an actual installation as well as samples. Also provided are a "Guide to Aluminum Alloys For Architecture"; hard-coat color-chart comparing Reynolds, Alcoa, Kaiser, and Kawneer aluminum; specs; and Aluminum Association Designation System for Aluminum Finishes that covers mechanical finishes, chemical finishes, anodic coatings, resinous coatings, vitreous coatings (porcelain and ceramic types), electroplated and other metal coatings, and laminated coatings. Booklet, 37 pages, illustrated. Reynolds Metals Co., 530 E. Main St., Richmond, Va.

On Readers' Service Card, Circle 208

Acrylic Emulsion Paint Problems

Comprehensive review of acrylic emulsion paint technology has been obtained from an extensive research and exposure program conducted by Rohm & Haas for more than 11 years. Report discusses the problems common to finishing many surfaces including both painted and unpainted substrates of wood, masonry, cement-asbestos, and galvanized metal. Methods for preparing and treating these surfaces are described, and suggested starting formulations for different performance requirements are recommended. Major part of this report describes paint formulation based on "Rhoplex AC-34," a 100 per cent acrylic emulsion polymer specifically designed for use on exterior wood surfaces. According to manufacturer, paints using Rhodex AC-34 have shown improved resistance to grain cracking and flaking, good adhesion to old or glossy oil-based finishes, good blister resistance, and high pigment binding capacity. Rohm & Haas Co., Resins Dept., Philadelphia, Pa.

On Readers' Service Card, Circle 209

Odorless Paints

"Valentine Master Decorator," line of "odorless" and fire-retardant interior and exterior paints, enamels, and varnishes, is presented in loose-leaf notebook. Each sheet pertains to a particular finish and contains specs, chemical analysis, and test results of that finish. Types of finishes are latex in white and eight pastel colors, a satin finish enamel in white and eight colors matching the latex colors, enamel undercoat, quick-dry vinyl sealer, two alkyd flats, and a quick-dry nonyellowing white enamel. Also included are an exterior primer, two white house paints, and a short line of varnish finishes. Valspar Corp., 200 Sayre St., Rockford, Ill.

On Readers' Service Card, Circle 210

Welding Concrete

"Uniweld" is a concrete structural welding agent consisting of epoxy and synthetic resin alloys. It can join fresh, wet concrete to existing cured concrete. This feature allows contractor to schedule phased, progressive casting or pouring, and greater use of precast designs. Uniweld is unaffected by aging, alkalies, and most acids or chemicals. Once cured, it does not soften, saponify, or emulsify. Photos illustrate application procedure and chart gives performance data and product uses. Permagile Corp. of America, Commercial St., Plainview, N.Y.

On Readers' Service Card, Circle 211

Furnishings

Template Aid for Dormitory Designers

To help architects plan dormitory interiors, Simmons has developed "Work-Saver" transparent plastic stencils of its entire dormitory line. All items-wardrobes, chests, desks, and beds—built-in and free-standing—are drawn to ½" scale; materials and spec data are included. New to the line: several new sizes, a large wardrobe with bi-fold doors that may be ordered in custom sizes, and a double chest of drawers with continuous top. Simmons Co., Merchandise Mart Plaza, Chicago, Ill.

On Readers' Service Card, Circle 212

Steel Furniture

John Vesey has released his first furniture catalog, which illustrates both traditional and elegantly modern tables, desks, chairs, and stools, all framed in steel. Much of the seating combines polished stainless-steel with tufted leather; the tables have glass tops and stainless-steel bases, some with brass accents. One new design, a well-proportioned chair by George Ray, contrasts lush suede upholstery with base and arms of flat steel bars. Rubber web supports down-filled cushions; suede comes in seven rich colors and is "Scotchguarded." John Vesey Inc., 969 Third Ave., New York, N.Y.

On Readers' Service Card, Circle 213

Lunning Supplements

Two supplements from the Lunning Collection have been made available for placement in Catalog 63. First illustrates four-seater sofa, table, lounge chair, couch, tea cart, dining table and chairs, side board, and double sofa-bed. Second

HOW LONG IS THE LIFE OF YOUR BUILDING?

* Norton aluminum door closer shells ARE GUARANTEED IN WRITING THAT LONG!

ANOTHER INDUSTRY FIRST! Norton door closers are guaranteed in writing for a full five years. Norton closer aluminum shells are guaranteed in writing for the life of the building.

YOUR WRITTEN ASSURANCE

Now, you have in writing, assurance that the Norton door closers you specify and install will give you the long trouble free service you have come to expect. Here's a guarantee architects can pass along to clients to assure them of quality products that give dependable service. Here is a formal policy building owners and managers can keep, knowing Norton door closers will perform.

SPECIFIC PRINTED POLICY

It has always been the policy of the Norton Door Closer Division to assure the satisfactory performance of Norton products; even beyond the terms of our former guarantee. Now, we have put this policy in printed form so that hardware distributors, architects, and owners will have a written statement of our guarantee policy.

WHY A LIFETIME GUARANTEE ON ALUMINUM SHELLS Naturally, Norton closers could be manufactured from any metal. However, we have chosen aluminum because we believe it to be the best metal for door closers. It offers the obvious benefits of better looks, better styling, lighter weight and longer life. We want everyone to know, specifically, that we not only believe aluminum door closer shells to be best, but also guarantee it. We simply state they will last as long as the buildings in which they are installed.

A GUARANTEE WITH BACKING

You will receive this guarantee on all types of Norton door closers. This warranty is backed by the integrity earned by the Norton 80-year old reputation for quality and dependable products.

1102

Guarantee

All Norton Door Control Products are guaranteed against defects in material and manufacture for a period of five years from date of shipment when properly installed in accordance with installation instructions furnished by us and provided recommended sizes are used. In addition, the aluminum shells of all Norton Door Control Products are guaranteed for the lifetime of the building in which they are originally installed. Any defects in workmanship or material appearing during the above-specified periods of time will be corrected. Any material found to be defective must be returned prepaid to Bensenville, Illinois, by the owner or occupant of the building in which the Norton product was originally installed. Material should not be returned without written authorization from Norton Door Closer Division, Bensenville, Illinois. No guarantees other than those specifically provided herein are expressed or implied. This guarantee applies to All Norton Door Control Products shipped after January 1, 1965.

WANT MORE INFORMATION?

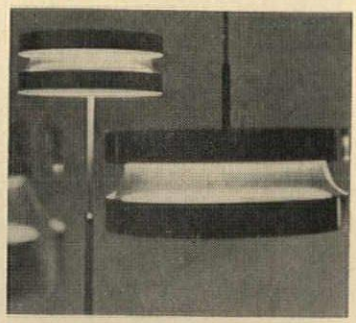
Your contract hardware man, or your Norton Representative has complete details on the new Norton Guarantee, he'll be glad to review it for you. Or if you prefer, write us.

NORTON® DOOR CONTROLS

372 Meyer Road • Bensenville, Illinois 60106

On Readers' Service Card, circle No. 449

supplement shows lighting: several ceiling and wall fixtures, including ceiling fixtures



designed by Lisa Johanssen-Pape in metal, amber finish (size is 17" diameter). Lunning Collection, 667 Fifth Avenue, New York, N.Y.
On Readers' Service Card, Circle 214

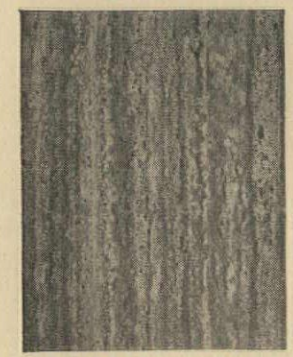
Tables Galore

Catalog includes folding, dining, conference, occasional, and library tables. Tops are round, square, oval, and boat shapes, with conference sizes

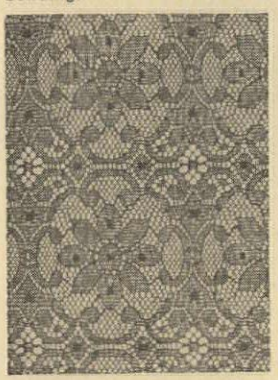
up to 40' in length. Bases and tops are priced independently. Study carrel to right in photo is a table unit with one of three carrel adaptations on top. Table to left in photo has comparable base that folds. Hugh Acton Co., 588 Brookside, Birmingham, Mich.
On Readers' Service Card, Circle 215

Pole Storage System

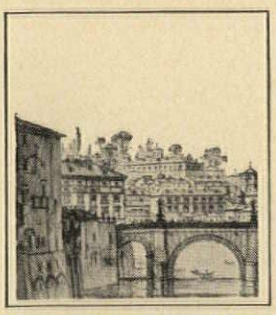
Storage system, called "Accent," is designed to be sold in prepriced, prearranged, two-pole bays, which can be purchased individually or in



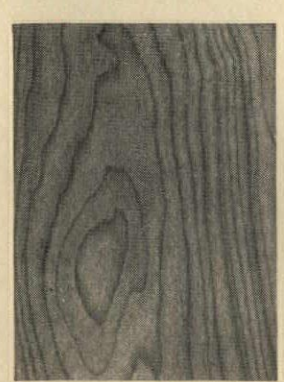
MARBLE PATTERNS
including Travertine for luxurious walls in any decor, any building.



DECORATOR PATTERNS
including four Chantilly designs plus Fleece, Lace and Nugget designs.



MARLITE MURALS
including Ponta Roma, River Landing and Williamsburg for custom-decorated walls.



TRENDWOOD FINISHES
including Colonial Maple and Provincial Walnut for distinctive interiors.

6526

New Marlite Decorator Paneling

Beautiful decorating ideas come easy with Marlite!

Now more than ever, Marlite plastic-finished paneling offers infinite decorating possibilities to help your customers plan distinctive and luxurious interiors. With Marlite's 1965 line of smart Decorator Paneling, no other material gives you such a wide selection of colors, patterns and designs.

Unique decorator patterns, rich marbles, authentic Trendwood® reproductions, bold new designer colors, and striking new Marlite Murals make this soilproof paneling at home in any decor.

And wash-and-wear Marlite resists heat, moisture, stains and dents. It's easily installed over old or new walls, never needs painting or further protection. Marlite stays like new for years with an occasional damp cloth wiping.

Get details on Marlite Decorator Paneling from your building materials dealer, consult Sweet's File, or write Marlite Division of Masonite Corporation, Dept. **614**, Dover, Ohio.

Marlite®
plastic-finished paneling

ANOTHER QUALITY PRODUCT OF MASONITE® RESEARCH

On Readers' Service Card, circle No. 382

combinations. This feature simplifies the purchasing of modular storage systems. Poles are the popular Omni aluminum extrusions. Shelves and cabinets are oil walnut. Cabinet backs are hardboard with interior surface finished in soft white; other interior surfaces match exteriors. Aluminum Extrusions, Inc., Omni Div., 815 West Shepherd St., Charlotte, Mich.

On Readers' Service Card, Circle 216

Sanitation/Plumbing

Integrated Plumbing System

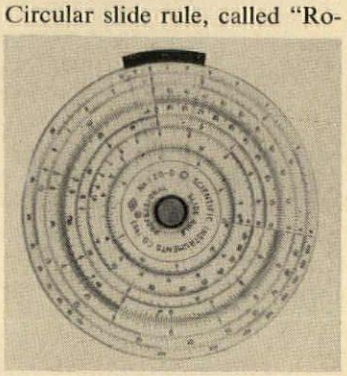
Complete line of plumbing fixtures enables architects to specifiy one compatible system of products throughout a hospital, nursing home, institution, etc. Integrated line of products simplifies specifications of parts. Guide specs describe selection of laboratory service fittings and fixtures and quality control. Another guide illustrates in chart form how to select spouts and actions for hospital lavatories and sinks. Other booklets (7) cover various types of fixtures, which include prerince equipment and accessories; pot and kettle fillers, spray stanchions, and combinations; heavy duty plumbing specialties, such as sink faucets, service faucets, and pantry faucets; heavy duty lavatory fittings and sink faucets with adjustable inlets; foot and knee controls and service fittings; and workboard faucets and glass fillers (bar and fountain fittings); laboratory service fixtures for gas, air, water, electrical, etc. T & S Brass and Bronze Works, Inc., 128 Magnolia Avenue, Westbury, N.Y.

On Readers' Service Card, Circle 217

Special Equipment

Round Slide Rule

Circular slide rule, called "Rotorule," permits one-hand operation and continuous readings. Slide rule has Pythagorean and Ei scales and is available in 3″, 4″, and 5″ diameters with scale lengths up to 15.7″. Manufacturer states that Rotorule costs less than 50 per cent of comparable slide rules. Scientific Instruments Co., 2126 6 St., P. O. Box 224, Berkeley, Calif.



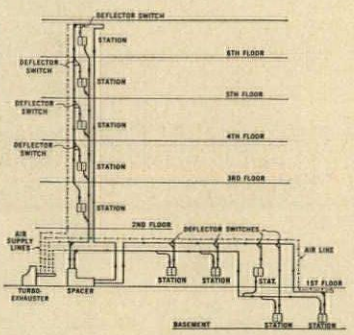
On Readers' Service Card, Circle 218

1965 Car Sizes

Parking dimensions for 1965 cars have been tabulated in chart form. Dimensions were obtained from measurement of representative standard vehicles under full design load conditions that include water, oil, gasoline, 300-lb passenger load in front seat, 450-lb passenger load in the rear seat, with tires inflated to recommended pressure. Crawford Door Co., 4270 High St., Ecorse, Mich.

On Readers' Service Card, Circle 219

Tube Communications



Pneumatic tube systems can result in more efficient communications. Difference between automatic and nonautomatic tube systems as well as three basic types of systems are explained. "Single loop automatic tube system is generally used to connect up to 10 stations. Carrier is placed in "send" chamber at any station. Address is selected on station-mounted selector. "Multi-loop automatic deflector" tube system has two or more loops of tubing. Each loop has two tubes, one for sending and one for receiving. It is usually used when more than 10 stations are required, or where peak load traffic is high. "Multi-loop automatic diverter" tube system is used for hospital communications because it is quieter than preceeding systems. Photos and descriptions of spacers, switchers, diverters, exhausters, stations, control

a specification from Hillyard . . .

FOR SEALING AND CURING NEW CONCRETE AND TERRAZZO

PRODUCT NAME: *HILLYARD CEM-SEAL®*

DESCRIPTION:

CEM-SEAL is a modified chlorinated rubber in a volatile aromatic solvent. It forms a clear membrane surface barrier that holds the moisture in the mix for a prolonged curing period to complete hydration. Produces water-tight, dense, hard concrete. At the same time, it protects against the penetration of moisture, stains or other soil as other trades complete construction. CEM-SEAL can be used on vertical installations.

SPECIFICATION AND HOW TO APPLY:

One man, who need not have special training, can apply CEM-SEAL with a sheepskin applicator or ordinary sprayer. CEM-SEAL can be applied as soon as the slab can bear weight, and dries traffic-ready in four hours.

COVERAGE:

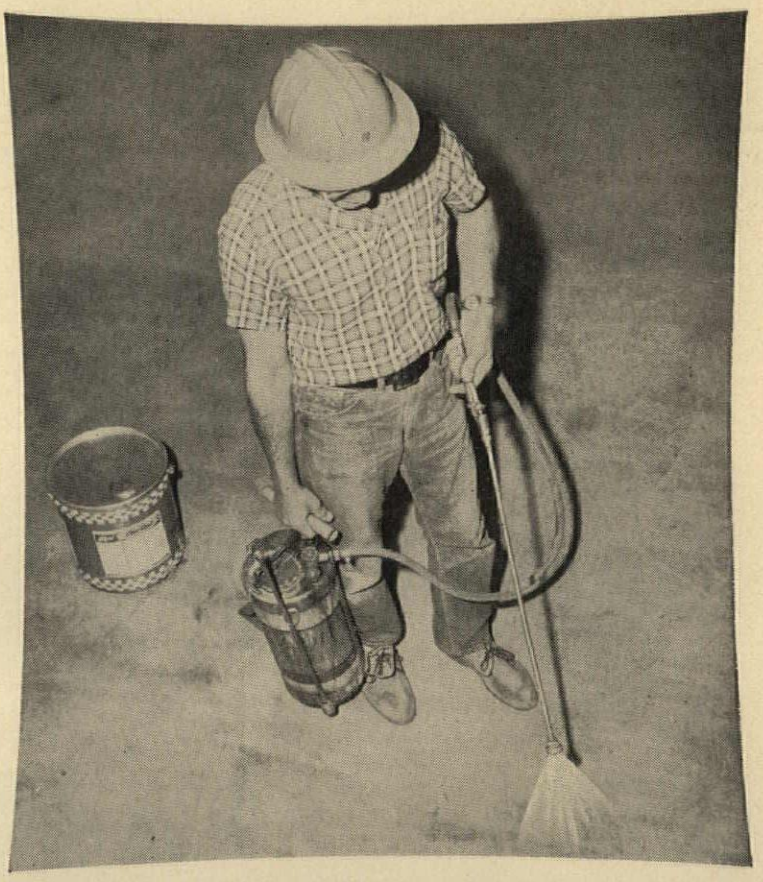
500 to 700 square feet per gallon. Only one coat needed.

ADVANTAGES:

Resilient floor tile, paint or surface finish may be applied when slab is thoroughly dry (free from moisture) and providing that preparatory steps are carefully followed.

SAVINGS:

Man hours and material costs are greatly reduced when compared to curing methods using—wet spraying, covering with building paper, wet sand, straw, burlap or plastic membrane.



EXCEPTIONS:

Do not use Cem-Seal on concrete slab that is to receive Bonded or Monolithic Terrazzo.

TECHNICAL DATA:

NVM – 20%. Complies with ASTM C156-55T, water retention efficiency of liquid membrane-forming compounds for curing concrete. Also conforms to ASTM C309-58 Type I as required by the National Terrazzo and Mosaic Association. Pittsburgh Testing Laboratory: Water Retention at 3 days—Average of 3 controlled tests—98.38%.

GUARANTEE:

When applied in accordance with manufacturer's directions, it is guaranteed to meet all claims made for it in the proper curing of concrete and terrazzo floors.

MAINTENANCE:

This is not a wearing surface but will leave concrete smooth and easy to maintain and free from "dusting" and efflorescence.

REFERENCES:

Hillyard A.I.A. File No. 25G
A.I.A. Building Products Register
Sweets Architectural File.

A trained professional Hillyard Architectural Consultant will demonstrate CEM-SEAL for you, at no obligation. He serves "On Your Staff—Not Your Payroll." Write, wire or call collect.

Since 1907

HILLYARD FLOOR TREATMENTS

St. Joseph, Missouri, U.S.A.
Totowa, New Jersey • San Jose, California

The Most Widely Recommended and Approved Treatments For Every Surface

On Readers' Service Card, circle No. 363

panels and carriers are included. Standard Conveyor Co., North St., St. Paul, Minn.
On Readers' Service Card, Circle 220

Urban Development Films

Catalog, 140 pages, lists over 400 films on urban development and growth. Among subjects covered are administration, air pollution, architecture, bridges and tunnels, city planning, construction, housing, new towns, renewal, and financing. Catalog costs $4.50 a copy. ACTION, Inc., 2 West 46 St., New York, N.Y.

Surfacing

Larsen Fabric Samples

Color brochure is designed to show 19 colorful patterned designs available from Jack Lenor Larsen. Groundcloths range from heavy velvets to handwoven silks, all of which are suitable for upholstery, wall coverings, and drapery. Also available at $15 per copy is "Larsen Weave Library," which is color-keyed four volume upholstery index containing 200 swatches of the most frequently used Larsen weaves. Swatches are easily removed from slotted pages for layout, specification, and replacement. Each book is chromatically arranged to show textures in 22 color ranges. Jack Lenor Larsen, Inc., 677 Fifth Avenue, New York, N.Y.
On Readers' Service Card, Circle 221

Vinyl Wallcoverings

Swatch catalog (three-ringed and 12" x 12") offers "Duran" vinyl wallcovering line of 18 patterns and 4 weight qualities. Swatches of each pattern are mounted in all colors. Backside of each page gives specs for the weight of the pattern and application instructions. "Duran" offers wallcoverings in more than 140 colors including a wide range of textures (such as marble, woodgrains, florals, silk and linen finishes, and multicolor overlay printing). The Masland Duraleather Co., 3236-90 Amber, Philadelphia, Pa.
On Readers' Service Card, Circle 222

Vinyl Fabrics

Samples of "Vileau" vinyl fabrics, the first of this new collection, are included in a folder. One has grained leather appearance; second has glazed antique effect; and others simulate printed and woven fabrics. Colors such as gold, chestnut, tangerine, ivory, and avocado are available. Union Carbide Corp., Fibers and Fabrics Div., 270 Park Ave., New York, N.Y.
On Readers' Service Card, Circle 223

Tweed Carpet

"Tintawn" carpeting has a tweedlike appearance. It is made from sisal fiber (produced in East Africa and woven in Ireland) with a looped pile and plastic backing. Tintawn has good tensile strength and resistance to abrasion. Some 22 patterns are shown in color brochure. Tintawn Inc., 281 Fifth Avenue, New York, N.Y.
On Readers' Service Card, Circle 224

PROGRESSIVE ARCHITECTURE
NEWS REPORT
REINHOLD PUBLISHING CORPORATION

430 Park Avenue, New York, N.Y. 10022
Editor.....Jan C. Rowan
Senior Editor.....James T. Burns, Jr.
Associate Editor.....E. K. Carpenter

Publisher.....P. H. Hubbard, Jr.
Publishing Consultant....D. B. Wilkin
Advtg. Sales Mgr.....W. R. Evans, Jr.
Production Mgr.....Joseph M. Scanlon

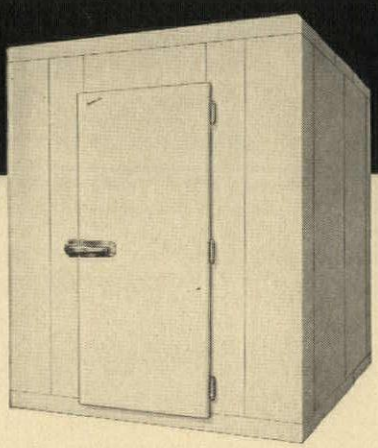
ANY SIZE

TO FIT ANY SPACE

NORRIS WALK-IN COOLERS, FREEZERS, COMBINATIONS

LIGHT WEIGHT

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



Any size . . . to fit any space . . . describes Norris walk-in coolers, freezers, and cooler-freezer combinations, for Norris walk-ins give you complete installation flexibility. Available with or without floors, Norris walk-ins are pre-fabricated in two- and three-foot wall sections, four-foot door sections (7½' high), and can be set up in one-foot increments in any size—in almost any space —in new or existing buildings. A light hammer is the only tool necessary.

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

WRITE FOR DESCRIPTIVE LITERATURE!

Norris

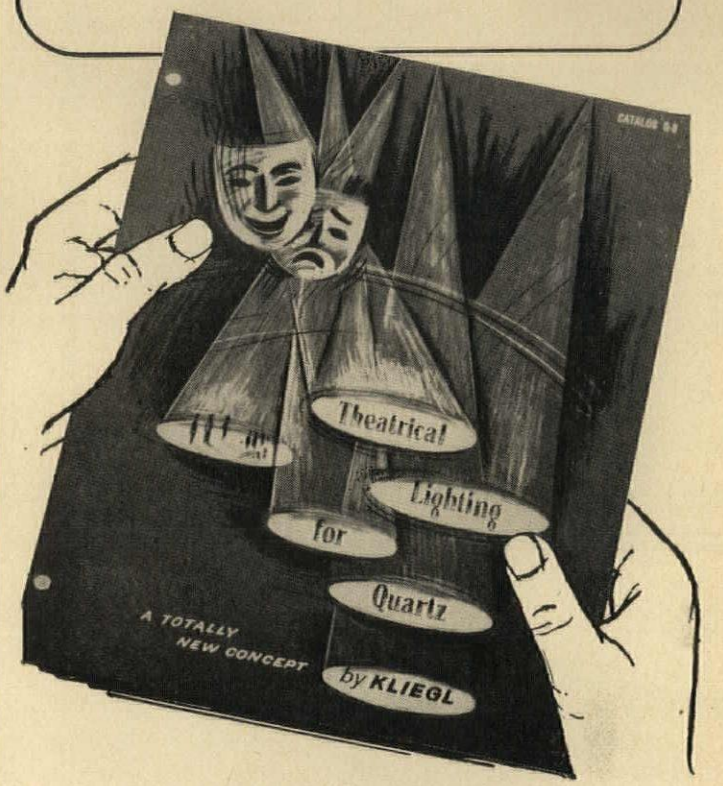
NORRIS DISPENSERS, INC.
2720 LYNDALE AVENUE SOUTH
MINNEAPOLIS 8, MINNESOTA

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

On Readers' Service Card, circle No. 432

Just off the press!

"THEATRICAL LIGHTING FOR QUARTZ"



Filled with revolutionary new lighting devices, specially developed by Kliegl Bros. to utilize the new line of quartz-iodine lamps, this new catalog lists, describes and offers not only unit specifications but suggested application and operating advantages, as well.

Another Kliegl First—no one in the industry has such a broad and thoroughly field-tested line of quartz lamp devices as Kliegl. With three full years of intensive engineering and development, plus hundreds of "proved out" installations for your ready reference, these new devices, all included in this new Catalog Q-8, offer the serious technician and lighting specialist a real "break through" in dramatic, economical lighting.

For the name of your nearest Kliegl Representative and a copy of Catalog Q-8, write today.

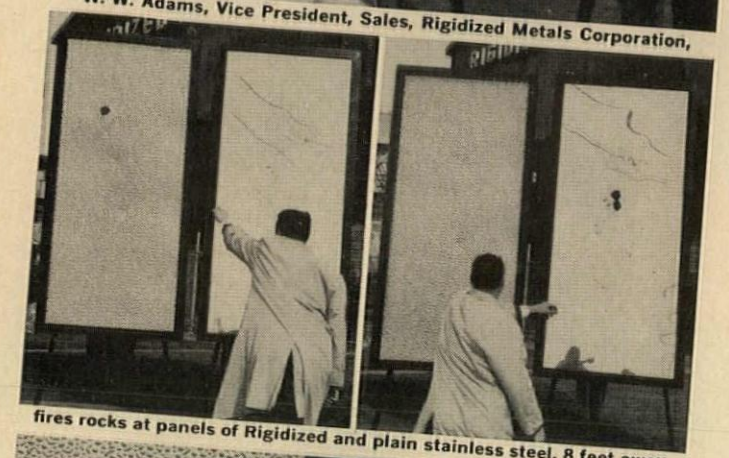
lighting

KLIEGL BROS.

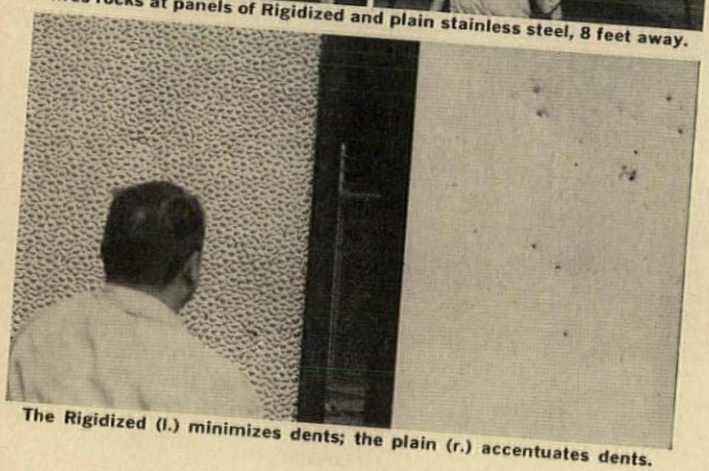
Originators and Manufacturers of Klieglights
32-32 48th AVE., LONG ISLAND CITY 1, N.Y.
Phone: Area Code 212, ST 6-7474

On Readers' Service Card, circle No. 370

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.

Dramatic proof...

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.

Rigid-tex offers you the largest choice of patterns and finishes for the widest range of aesthetically-pleasing design effects. **For Design-Engineering Facts and New Pattern Catalog, Write, Wire, Call:**

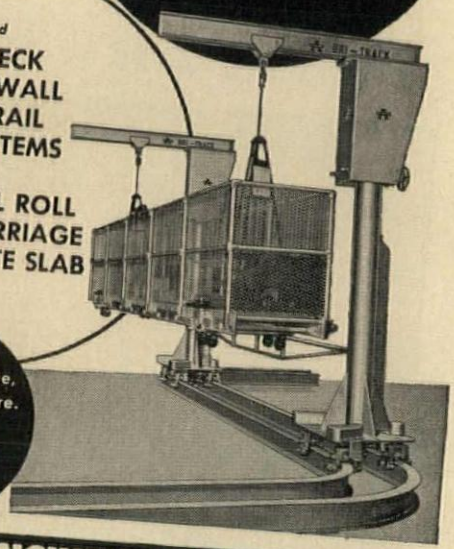
RIGIDIZED METALS CORPORATION
688 Ohio Street • Buffalo, New York 14203
Telephone 716-856-9060

On Readers' Service Card, circle No. 427

ALBINA ®

"UNI-TRACK"© and **"CLIMBER"®** **POWERED WINDOW WASHING SYSTEMS**

• *Illustrated*
ROOF DECK
PARAPET WALL
GUARD RAIL
TRACK SYSTEMS
and
FOUR WHEEL ROLL
AROUND CARRIAGE
FOR CONCRETE SLAB



Write for 12-page, illustrated brochure. AIA-35-J7 *Specifications included*

ALBINA ENGINE & MACHINE WKS.
2100 N. Albina Avenue • Portland, Oregon 97227

On Readers' Service Card, circle No. 321

Custom Fountains & Water Displays

Send for a FREE Guide to Better Fountain Designs, detailing important facts about selection of Fountain Equipment. Details on Pumps, Spray Rings, Fountain lights and installation procedures on use of Fountain Kits. Many catalog pages showing Self-Contained Fountains.

ROMAN FOUNTAINS

14847 Bessemer Street
Van Nuys, California 91401

On Readers' Service Card, circle No. 479

people specs.

These seemingly abstract lines are no abstractions at all. They are motations—codifyings of movement. They represent a new system that will enable architectural designers to plan for the movement of people and vehicles through space. This project is published in detail for the first time in the July PROGRESSIVE ARCHITECTURE.

In addition to motation, the July P/A will present a folio of New England houses; picture stories of offices that "design" congeniality into the physical environment; presentations on single-duct air conditioning and specialty wall coating materials.

There's no better time to start your P/A subscription than now—with the provocative July issue. Send your $5 check immediately. You'll receive July plus eleven more issues, including the January Design Awards issue. Address: Circulation Department, PROGRESSIVE ARCHITECTURE, Reinhold Publishing Corporation, 430 Park Avenue, New York, N. Y. 10022.

Why are Bradley Washfountains the people's choice?

Because . . . lavatories are fine at home, but in employee and public washrooms, people want wash fixtures that are truly sanitary, quick and easy to use, and require no fussing. Only one wash fixture fits that bill — a foot-operated Bradley Washfountain.

Management also insists on Bradleys. Washfountains save 25% or more on floor and wall space. And they serve up to 8 people with one set of plumbing connections, cutting installation costs as much as 80%. They also save water and reduce maintenance time.

What's more, Washfountains give you a wider choice of colors and compositions than any other type of wash fixture. So, for plants, commercial buildings, schools, institutions — *all* modern buildings — specify Bradley Washfountains!

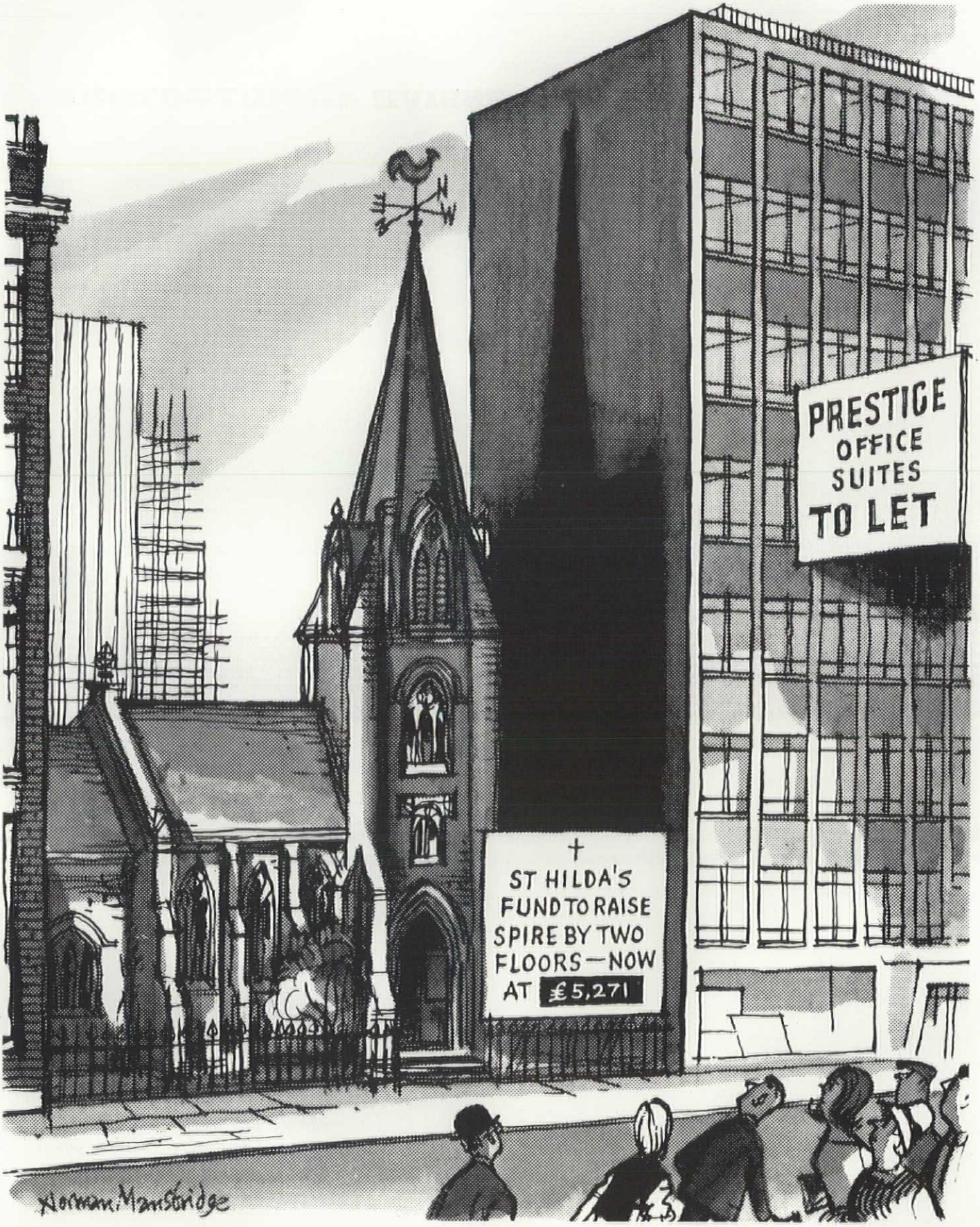
For complete details, see your Bradley representative. And write for latest literature. Bradley Washfountain Co., 9141 Fountain Drive, Menomonee Falls, Wisconsin 53055.

Bradley

On Readers' Service Card, circle No. 334

"We cannot, however, lay down fixed proportions of space as architecturally right. Space value in architecture is affected first and foremost, no doubt, by actual dimensions; but it is affected by a hundred considerations besides..."

GEOFFREY SCOTT


PRESTIGE
OFFICE
SUITES
TO LET
†
ST HILDA'S
FUND TO RAISE
SPIRE BY TWO
FLOORS — NOW
AT £5,271
Norman Mansbridge

EDITORIAL

Architectural space, which is contained or defined space, will be with us as long as man builds buildings. So it might be worth to ponder awhile about the possibility that the average person's feelings about architectural space—his psychological reactions to it—are changing.

In previous civilizations, except when in the presence of some natural phenomena such as high mountains or tall forests, man's greatest spatial experience was when he entered a large building. The importance of cathedrals and similar great structures is therefore obvious—they were not only symbols of material and technological achievement, but also places that stirred the spirit by the powerful impact of their spaces.

But is the impact the same today? Does contemporary man react emotionally to a large architectural space the same way he did in the past?

Today, we have many spatial experiences that did not exist before. Air travel, for instance. After a jet flight among the clouds, can one be really stirred by the architectural space within the terminal building? Or, assuming that there is a church on top of a skyscraper, how will a worshipper react to it after a thrilling ride up into the sky in a glazed, exterior elevator? Is looking down 500 feet from an upper floor of a high-rise tower a greater spatial experience than looking up 100 feet at a domed ceiling? And in the not too distant future, when man will be floating through the vast spaces of the celestial void, how will he react to earth's puny architectural spaces, however great they might be in the traditional sense?

The subject of space—of the changing space conceptions—has, of course, been discussed many times by many writers. Moholy-Nagy in his *Vision in Motion* said that "every great period in human civilization organically creates its particular space conception" and the whole book revolves around this subject. Giedion, in *Space, Time and Architecture*, also dealt at length with "space-time," which he called "the new space conception," and urged that "contemporary spatial approach has to get away from the single point of reference."

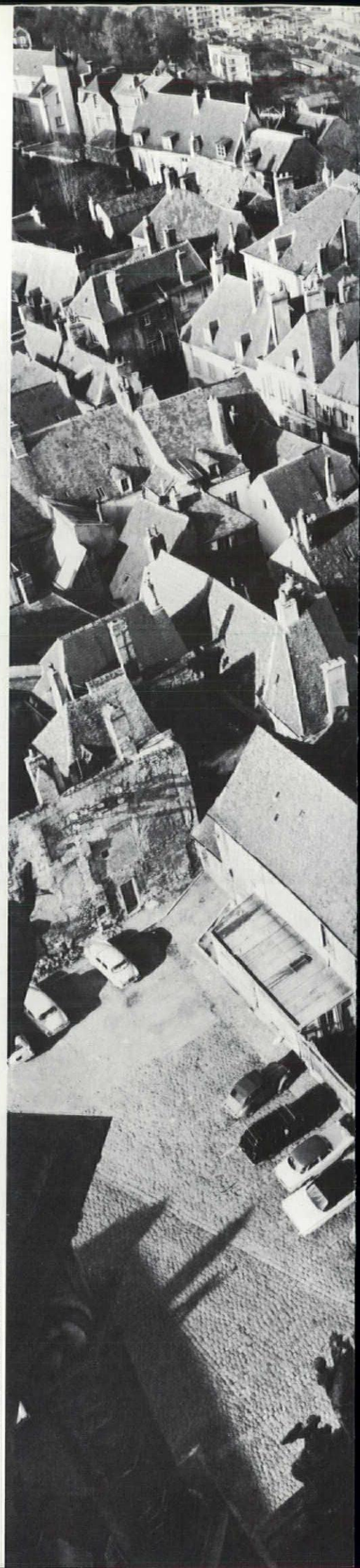
Yet many architects have been swinging back in recent years to a renewed interest in the well-defined, clearly contained, and therefore more traditional space.

It is worth noting that the destruction of Pennsylvania Station in New York did not evoke a public outcry of any significance. Those who were trying to prevent the demolition could be divided into two groups: well-schooled architects and sentimental preservationists. The former, because of their training, did appreciate the importance of the station's magnificent spaces; but the latter were upset only because another piece of familiar New York was to be taken away from them. The public at large—newspaper reporters, city officials, those who used the station, almost everybody else it seems—had no idea what the preservation struggle was all about. Most could comprehend only the value of the station's Doric colonnades; the importance of the great spaces as such meant nothing to them.

Is it then really true that the stationary architectural space, however grand, is psychologically becoming less and less significant to the new breed of fast-moving, space-age men? Or—like earth, water, fire, and air—is it elemental and eternal, and is a reawakening of public sensibilities to it therefore in order? ■

James C Rowan

THE MAJOR SPACE



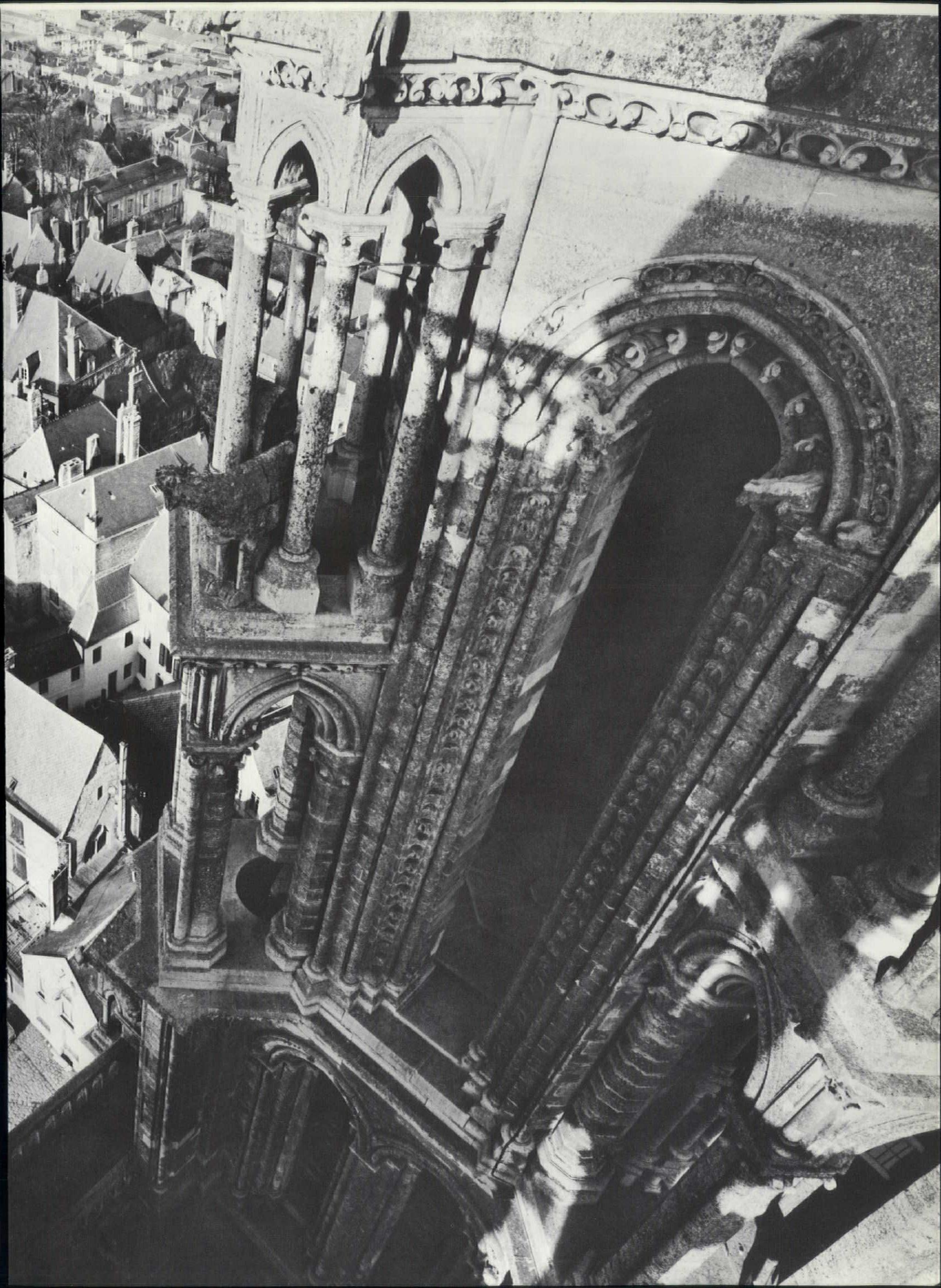
LAON CATHEDRAL, LAON, FRANCE

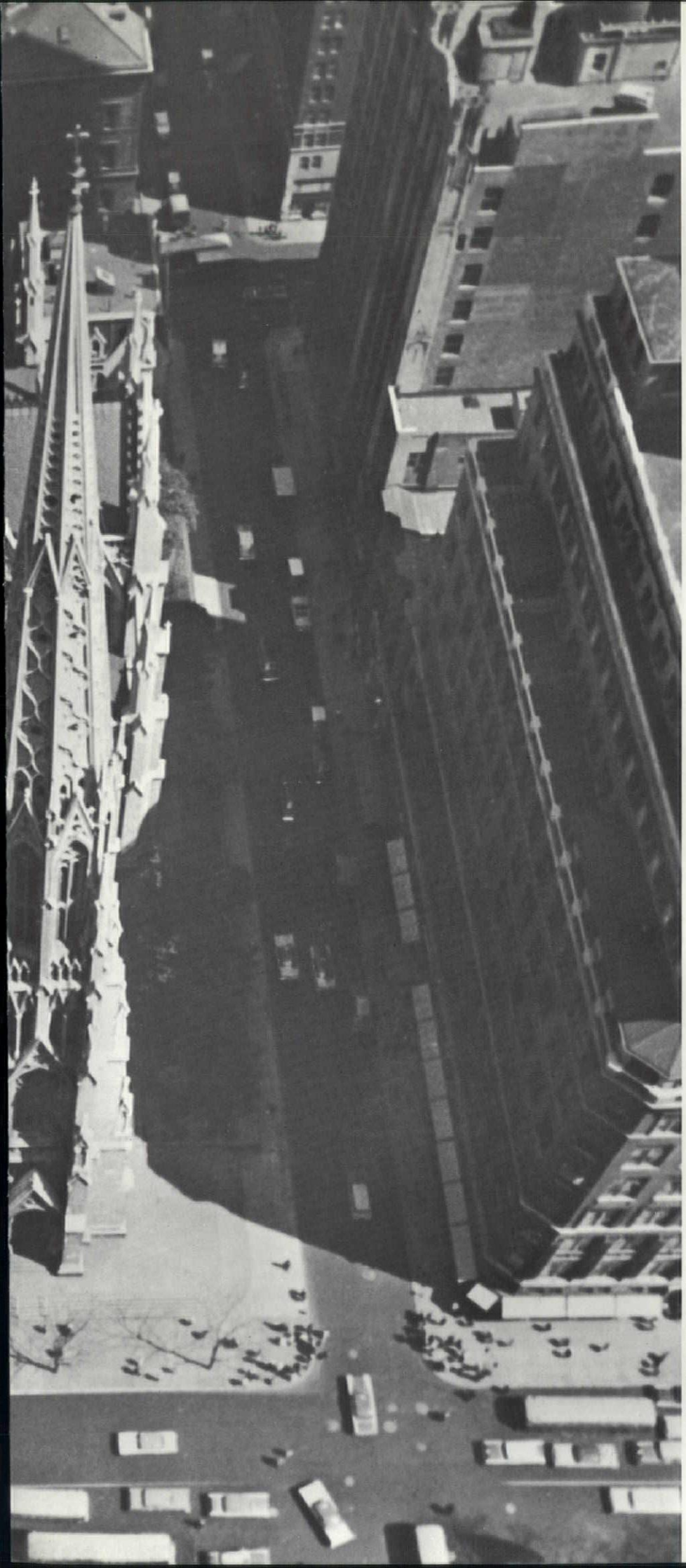
From the time man knew how to build, he tried to erect structures that enclosed large spaces. The need for big volumes of interior space is partly functional (to accommodate great quantities of people in a single room) and partly emotional (to achieve a sense of awe and grandeur). The history of architecture, which is the best record of succeeding stages in man's cultural and intellectual evolution, is to a large extent the history of evolution of single-space buildings.

The exact purposes for which such structures have been created have changed and evolved throughout history; there are some building types today that are almost identical to their counterparts of many years ago, there are some that have survived in altered form, and some that are new.

The position of these buildings in the community has changed, too: where formerly a cathedral was the most prominent building in town, socially and visually, today it is often dwarfed by the towering cellular blocks of offices and apartments.

The purpose of this special issue of P/A is to take a look at the single-space buildings being built today—to examine their meaning to individuals, to consider their position in the cityscape, and to explore the technical and





ST. PATRICK'S CATHEDRAL, NEW YORK CITY

aesthetic problems they pose for architects.

In the discussion that follows, we are using the term The Major Space. This will be our label for a building whose dominant part is a single room. Major spaces can also be outdoor spaces, such as plazas. We refer to such unroofed spaces, but only when they are relevant to the discussion of roofed-over spaces. In other words, in this issue we are limiting ourselves to a discussion of major-space buildings.

In preparing the issue, we talked with many architects, studied existing architectural literature, combed the archives, and, of course, pondered the subject ourselves.

There is, obviously, no doubt that architects are preoccupied with space. As Le Corbusier said:

"Space is the foot that walks, the eye that sees, the head that turns."

And James Fitch, discussing Michelangelo recently, wrote:

"Whatever the scale and purpose of his building, he treats it as a vessel, a container for human life and activity."

There is also no doubt that the concept of space enters into every definition of what architecture is all about. As Bruno Zevi has said, for instance:

"Architecture is a great hollowed sculpture which man enters and apprehends by moving about within it."

It is only when one begins to discuss large spaces of today that the controversy begins. Sir John Summerson dwelt at length on the subject of monumentality (a quality inevitable in a major-space building) in an essay entitled "The Mischievous Analogy":

"I have heard it hopefully said that the cathedral of the 20th Century is the school

or the hospital or the power-station, as if such things could bear any conceivable relation to buildings in which the utilization of space was the very last consideration in the world—buildings which were built as abstract monuments to objectify and render conspicuous certain collective ideas which could be communicated in no other way. It is surely certain that we shall not build cathedrals or anything remotely analogous. (This statement is, I am aware, quite untrue. We *shall* build cathedrals and they *will* be strictly analogous to medieval cathedrals—hence their utter unimportance either as architecture or as expressions of religious life.) A power-station may be as vividly striking in mass and silhouette as Durham Cathedral, but it would be childish to attempt to elaborate or 'heighten' it to the degree required by a religious building—or to pretend that it signifies anything more profound than the provision of that necessary power which in the past was provided by a large quantity of firewood and many thousands of horses. The power-station is not the 20th-Century cathedral. It is the 20th-Century power-station—*nothing more and nothing less than that.* . . . Today, to endeavour to be monumental is to be untrue to our own times. Except for churches and certain other very exceptional things, the kind of buildings we need have no aptitude to the monumental. Houses, blocks of flats, schools, libraries, hospitals, offices, administrative buildings—none of these in their modern form are susceptible of that grand increase of scale which is the essence of monumentality. Even theatres and great halls seem entirely to have lost that character of being places of formal assembly which would warrant their being conceived on monumental lines. The fact is that the whole idea of formal assembly in public has withered; and with it has gone the need for an architecture reflecting that collective sentiment which goes with the love of formal assembly. Today, wherever we go and whatever we do, we go and act as individuals. If we go to the theatre, we demand a comfortable seat, an uninterrupted view of the stage, and room to manoeuvre at the bar in the interval—and nothing else except a certain sense of amenity. We do not demand to be canopied under a golden dome, with floral pendants, and nymphs riding in a painted heaven. At the town hall, where, if we go at all, we usually go to complain about something, we demand courteous attention and expeditious service; we do not really care to be reminded by the grand staircase of the majesty and greatness of Mr. Mayor. Of course, some of us may think that these things are nice. Perhaps they are. But they are no longer of the slightest importance. And to pretend they are or can be important is to enforce an analogy which has no natural force of its own.

"Now, this loss of the natural impulse to monumentality should not be a matter for regret. It is a perfectly natural reflection of the change which is taking place in the whole character of Western culture. All those things which suggested and supported monumentality are in dissolution. The corporate or social importance of religion was one of them. The sense of the dominance of a class—of the exclusive possession of certain privileges by certain groups of people—was another. The prestige and competitive ambition of commercial corporations was another. Monumentality in architecture is a form of affirmation; and affirmations are usually made by the few to impress the many. Today, the few are becoming increasingly merged in the many and there are no groups within the community (possibly excepting the churches) who are anxious to express their corporate identities by gestures as costly and conspicuous as the erection of monumental buildings."

And Philip Johnson, when interviewed by us, expressed a similar sentiment, although with a different slant:

"Why can't churches be the monumental buildings of our day? Because to get anywhere in the scale of this city you need to take three blocks and make it into a room. The person who suggested this possibility to me said that of course it would have to be an indoor park. It never crossed his mind to say: why don't we build a church. They want a park. Well, this could be a civic relief. A church next to that wouldn't count. Let's say that St. John the Divine is a big church—and it is, it's enormous—but it doesn't have a touch on what we're talking about. . . . If you felt religion was as important, you would have to build a church that size. We are in the new age of the masses, of the great growth in population. The very smallest interior that you could think of as a civic venture would be three to five blocks.

"If we want a building that would express the highest aspirations of our society—any building, I don't care if it is worshipping the state or Mammon—that could so dominate our culture that we want an expression of it, it's got to have a great expression. And I think the problem is how. In the age of skyscrapers, how? If you take 800 x 800 as a volume dedicated to X—I am not able to say what our culture is interested in—what would you do? If it is only a 100-ft high, you wouldn't see it from anywhere. When you think of the Parthenon, or go up and see Chartres, you see it from miles away. You don't see anything specific, but you see the idea. Even now, when everything has swallowed everything.

"In my speeches, I say all the time that the Parthenon cost $20 billion; it cost a lot more than that. It took the Athenians some 30 years to build a little building. But little was big for those days. They spent their substance, they killed everybody they could find, they stole all their money, and they put every damn thing they had into it, and every citizen worked on that thing. By normal comparison, what would that mean today? $20 billion? Of course not. It would be at least $40 billion. It will cost $40 billion to go to the moon. Why the hell wouldn't it cost $40 billion to make a great symbol of America that would last as long as the Parthenon has lasted. There is no intention of spending such money. But what would we build if we had to?

"What is the architectural expression that would bring to us the emotions that the Parthenon must have brought to the Greeks? There is nothing scalefully large enough to encompass the least of our dreams. There are no ideas strong enough and it is an idea that we need that would pull us up. Chartres Cathedral wasn't created by an architect, it was created by the passion of a little village to make a great building. The village multiplied by five while they built it and disappeared after it was finished. If you could gather together enough will to build a building for $40 billion it would be an enterprise that would challenge people, like going to the moon.

"But even the moon isn't enough of an idea for us. We're going to foul up on that. I don't think our culture wants to go to the moon badly enough to spend the $40 billion. But there certainly isn't any idea of spending an equal amount on a structure. We're spending on going from one place to another but we're not spending a cent for what we get when we get there. I am talking about the lack of vision, the lack of any interest in what must be served.

"Chartres could not have been built if it weren't for the bishops who wanted it to be good. The problem of architecture in this world is the lack of values of the people who commission it. They want to look poor when they should be driving around in specially built Rolls Royces with three extra axles. There is no interest to build a building which is in a real

way worthy of our culture."

I.M. Pei also doubted that our major assembly spaces are as important as those of the past:

"We are not really as big as we think, compared to olden days. Today, we are much less. The group is smaller now. In the olden days, the whole town turned out for the festival. The town had only 100,000 people and for a festival the streets were filled with 100,000 people. We don't have this kind of mass activity anymore. The figures closest to this kind of thing are 70,000 people out of several million attending a World Series game. What is that?"

In that there is a spiritual need for major spaces, Philip Johnson was emphatic:

"I do think you are changed in your abilities by what is around you. When you're swimming for a record, you need good architecture. The only analogy that works is that people respond to great spaces with their guts. I think that people will respond in the sense that the swimmer doesn't know why he swims better, the singer doesn't know why he sings better, and the people may not know when they go to my State Theater at Lincoln Center, why they enjoy it more—because they have enjoyed the intermissions more. I am not sure that the public can specify at all. Breuer once said a wonderful thing. People don't see architecture, he said. What they see is landscaping and detailing. And that is perfectly true. I lectured in the State Theater this afternoon. I talked space. But what they asked me was, 'What are those curtains made of? And those awful statues.' That's what they think of on the verbal level. But what did they say before they started thinking in words? They were appreciating space when they didn't have any idea they were appreciating space. I think people have an instinct for space. It's something they like, like good food, sex, or anything else, but the *last* thing they can do is to talk about it. It is best to watch their eyes. Of course, they think it's religion when they walk into Chartres. But it is space that moves them."

When discussing the subject of all the needs for major spaces, Kevin Roche gave us a good summary of the prevalent feeling:

"Is there a functional reason for a great space? The large spaces were built because people needed places of assembly. Our reasons for building them will also be valid if they truly come out of the need for solving the mass assembly problem of getting people together in sensible ways so that they can do whatever brings people together in a city.

"Yet Grand Central Station in New York, which is a large space, actually had little reason for being in terms of assembly. Its major role was one of image-making—the creating of the façade of the image of the railroads. But you could conceivably "need it" because, as we are fond of saying about Dulles Airport, it is a major gateway.

"If you put that to one side, you can ask, are there other needs for it? Is there some psychological need? And then you get into the scale of crowd. When you multiply one person by a thousand, you get a thousand people. Can you put them all under an 8-ft high ceiling? You can't. If you took the whole city and covered over the streets, where would you cover them over? At a practical height of 8 ft? Or 12 ft, which clears everything? If you did, of course it would be terrible. I think everybody would want to get out into the open again. You really have the psychological need. Besides, major spaces are big opportunities for expression; one makes them automatically, not because of understanding of needs, but because the opportunity is there.

The discussion of the way major spaces should be treated architecturally also took many directions. Typical is this remark by Paul Rudolph:

"Ninety-five per cent of the building needs of today are probably just as well housed in cages of the rectilinear type. But whether places of worship, auditoriums, gathering places of all kinds are varied within a cage-type building, or whether they become separated structures undoubtedly has to do with their use in the cityscape itself."

And the one by John Johansen:

"We always have positive and negative space—the positive space with the form negative around it. When you set out to design a major space, you make sure that everything about that structure—function and all—subordinates itself to that space, that positive, most compelling idea of the whole structure."

And also a comment by Roche:

"The scale of the single human is expressed in the 4-ft or 5-ft module of the typical office building. But many of these are unhuman, because they have no larger module, no group or crowd module, that would express formless heaps of individuals. The crowd is very much a reality, and it just doesn't fit into rectangular spaces—the flow of people should determine the shape of space."

Also pertinent to this discussion is a paragraph from a 1924 book called* Bad Manners in Architecture *by Trystan Edwards. He wrote:

"A few people standing up here or there in a theatre audience might get a better view of the stage, but if they all stood up they would be no better off than before. The rule of urbanity is synonymous with good manners, or proper behavior, in town planning."

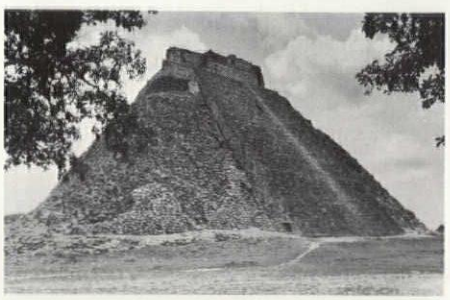
Good manners is, of course, one of the problems when designing major spaces. But what manners are good? To quote Kevin Roche again:

"It is easy to make a small building large, or a large building small. The subtle problem is to make it right."

And so the discussion continues. These few samples from the interviews we conducted and the literature we studied are merely an indication of the complexity of the problem and the diversity of ideas.

On the following pages is an attempt to coalesce some of the aspects of major-space buildings. The subject, however, is too vast for a complete treatment. All that we could hope to do was to touch on it, to create an awareness that it does exist, and to point out some of its ramifications. If we manage with this special issue of P/A to start architects thinking of major-space buildings—of their function, design, and position in the urban hierarchy—as being unique and therefore requiring a special study, then our purpose will have been achieved.—JCR

HISTORY AND NEEDS



Some thoughts on the history of major spaces, on man's reasons for building them and his psychological response to them.

This is an age of bigness—the bigness of expanding populations and sprawling metropolitan centers; of mass media and the "multiversity"; of huge expenditures for weapons of almost incomprehensible destructiveness; of vast, unexplored distances beyond our planet.

Buildings, too, are larger—larger spans and heights are possible; larger volumes are attainable. But do the biggest buildings necessarily reflect the highest values of our culture? And are the biggest buildings necessarily the best architecture?

Big Buildings Do Not Necessarily Constitute Major Spaces

Some of the most dazzling, large buildings of the 1960's are, of course, simply aggregations of cells. They would have been small buildings, except for their continuation in space beyond the limits that were previously considered the sensible or the possible. Yamasaki's proposed World Trade Center in New York, for instance (which, if built, will be the tallest building in the world, and will encompass the greatest square footage), is simply a succession of floors superimposed on each other, each eventually to be subdivided into cubicles no different from those in smaller buildings.

Arrangement in Space Versus Creation of Space

As buildings get larger, it is worth considering whether architecture must not be more than an exploitation of technique (however brilliant) for the provision of shelter (however necessary). The stuff of architecture, after all, is *space*, and despite attempts at the World Trade Center to enlarge the entry and to fashion a plaza (which, one writer immediately rhapsodized, "could be a modern Piazza San Marco"), this monumental ode to the elevator will probably be a good example of what Susanne Langer calls the *arrangement in space*, as distinguished from the *creation of space*.

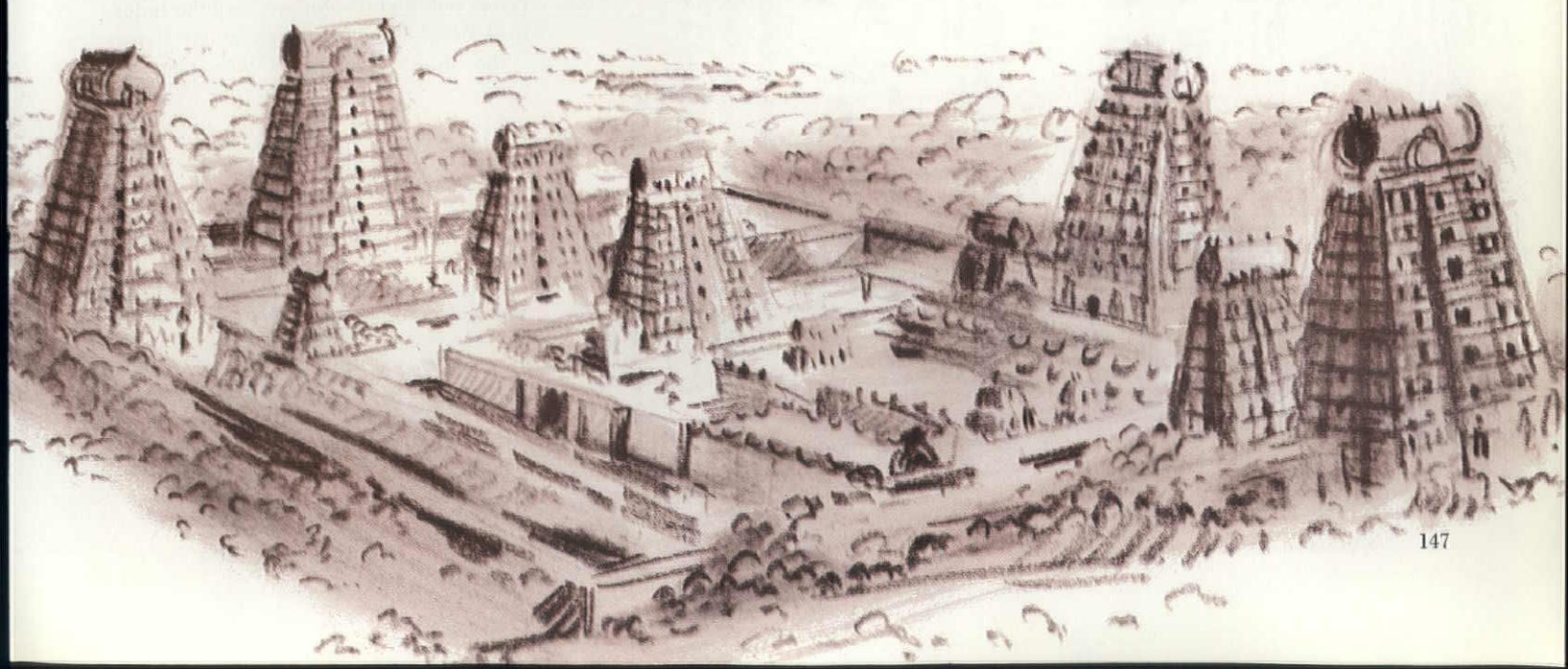
What happens to architecture — the creation of space — when many of the needs for shelter can be served by cages? Paul Rudolph gives a quick guess that this is true today for 95 per cent of all building. There are few occasions for the *major space*, the grand single-room building. (Perhaps there were never many occasions, but in past ages they accounted for a larger proportion than now of a master-builder's work, the lesser structures simply getting built somehow by others.)

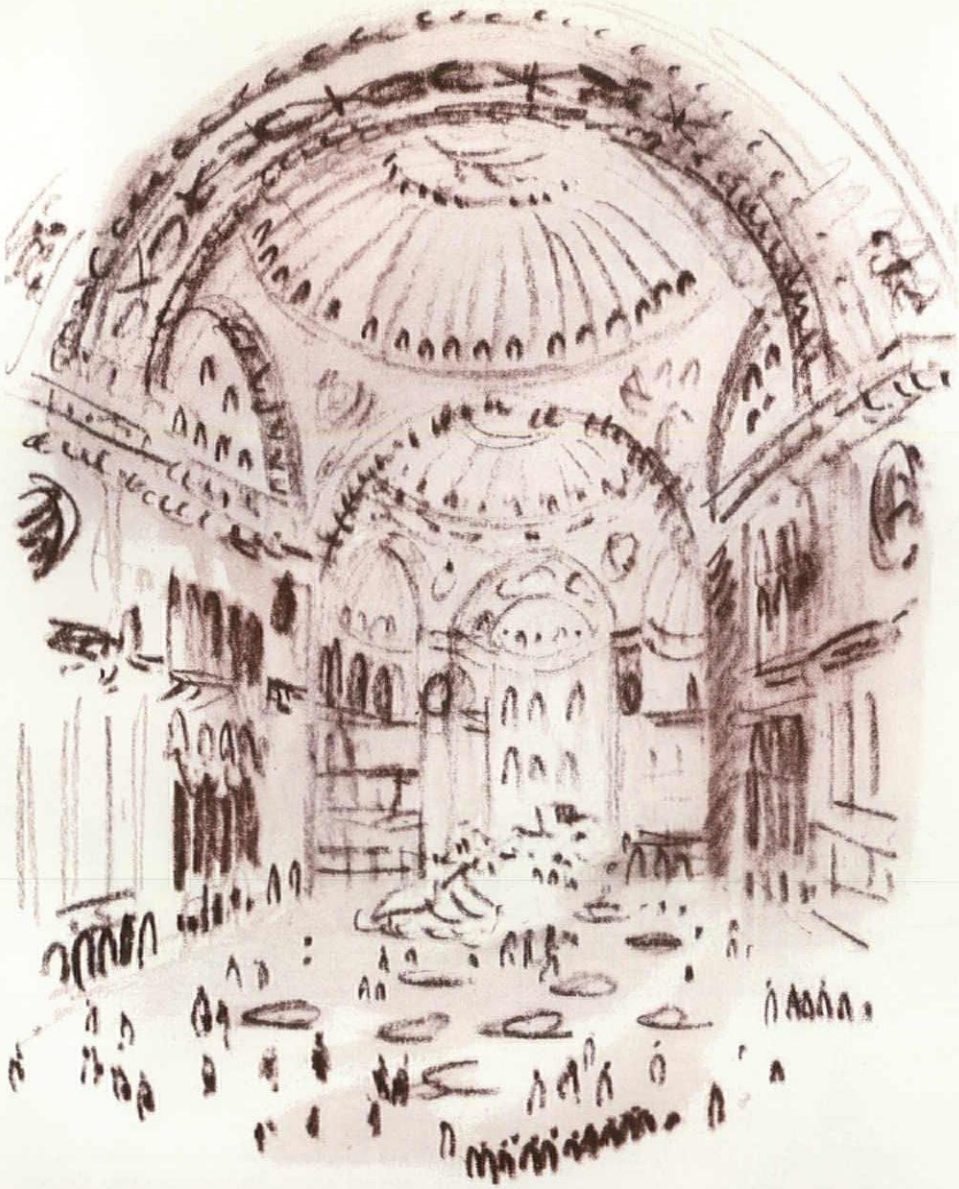
Before looking at some of the major spaces being designed today, it seems pertinent to consider one major space that is being destroyed: the ill-fated Penn Station. To have reproduced the ancient Baths of Caracalla as a modern railroad terminal, providing commuters from Long Island with a glimpse of the grandeur of Imperial Rome, will remain an anomaly long after the columns have been laid to rest. But there is nothing inappropriate about the scale of these latter-day baths. Only in such a major space could the traveler enter the city, or embark on a trip, with a feeling of drama that was exciting to the spirit, thrilling to the senses. The life-enhancing qualities of that experience will be gone when the height of the arrival/departure space is only slightly more than that of the average man. The underlying thought, it would seem, is that space—grand, non-utilitarian space—either was not appreciated or was not necessary, and definitely did not pay. It was more than "architectural heritage" that was at stake when the battle to save Penn Station was being fought; it was the whole meaning of *architecture as space*, no matter of what period.

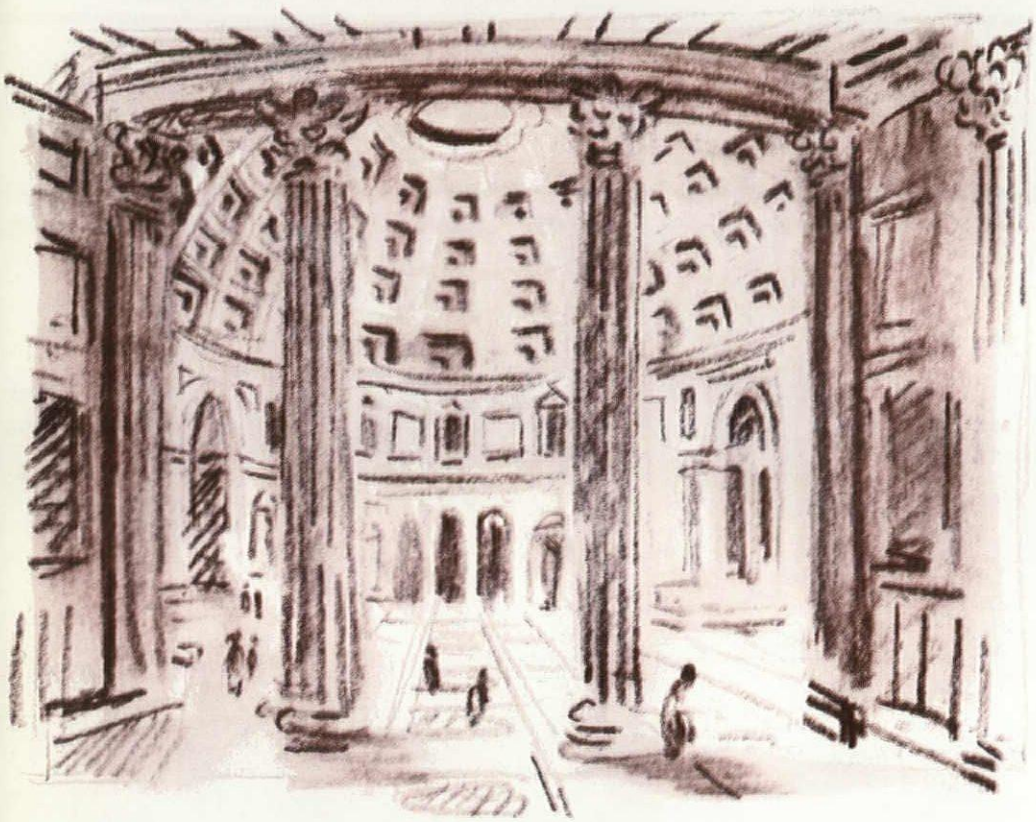
Major Space in History

We have covered a lot of ground since the days of ancient Rome, Penn Station notwithstanding. But it was Rome that witnessed the first realization of the idea of grand, enclosed space. The Greek temple had been mainly sculptural, with little internal space, and little emphasis on the sense of enclosed space. One walked only within the peristyle; the innermost place was reserved for the deity. And earlier, the vast monuments of the pyramids of Egypt also had little internal space, being conceived architecturally as volumes *in* space. In Rome, however, as the structure of its society was different—more man-centered, more pragmatic, more hedonistic—so was the structure of its architecture: concrete vaulting now made possible the spanning of immense distances. And there was a new emphasis on enclosed space, as seen in several new building types: the basilica, attesting to the importance of business and law; the bath, serving as social club for a hedonist citizenry; the amphitheatre, arena for life-and-death spectacles. But it was the Pantheon, a Roman temple, that

The Greek temple was mainly sculptural, with little internal space. The pyramids of Egypt also had little internal space, being conceived architecturally as volumes in *space. Shown here (facing page) are the Aztec temple and Pyramid of the Magician, Uxmal, Yucatan, and (above) the Parthenon, in perspective; plan of the Temple of Theseus, Athens; two of the many temples of Pagan, Burma, in perspective and section; and a village of Indian temples at Tiruvanamali.*







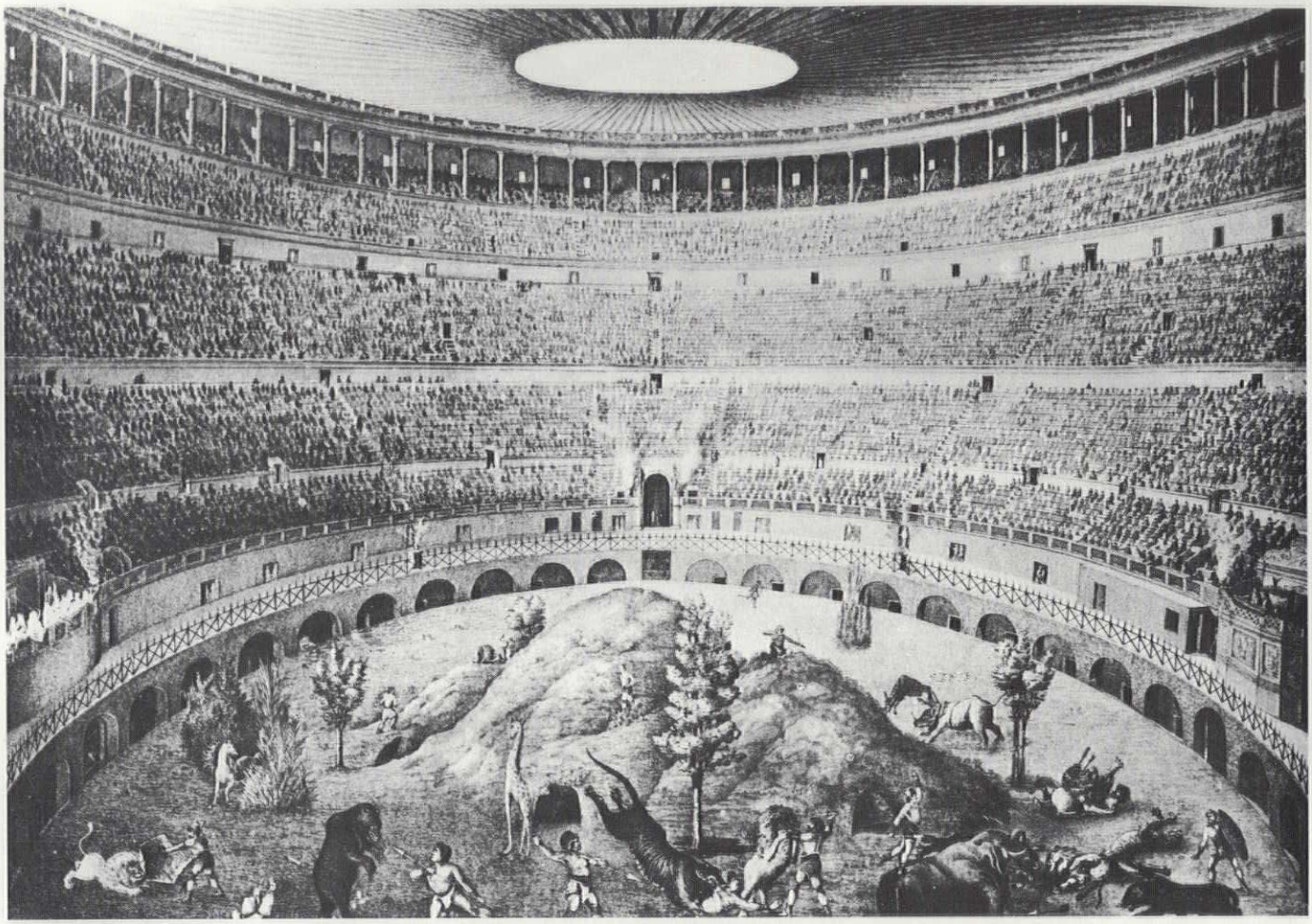
marked what Sigfried Giedion calls the "complete breakthrough" of the second space conception, the creation of interior space as the primary aim of architecture. Hadrian's Villa at Tivoli was also significant in the development of major spaces, its barrel vaults and domes marking the beginning of complex interpenetrating spaces. (At this point, we should repeat that, for the purposes of this issue, our consideration of major space excludes exterior spaces such as the Roman forum and confines itself to interior spaces—either fully enclosed ones, such as the Pantheon, or those with a strong sense of enclosure from an implied roof, such as the Roman Colosseum.)

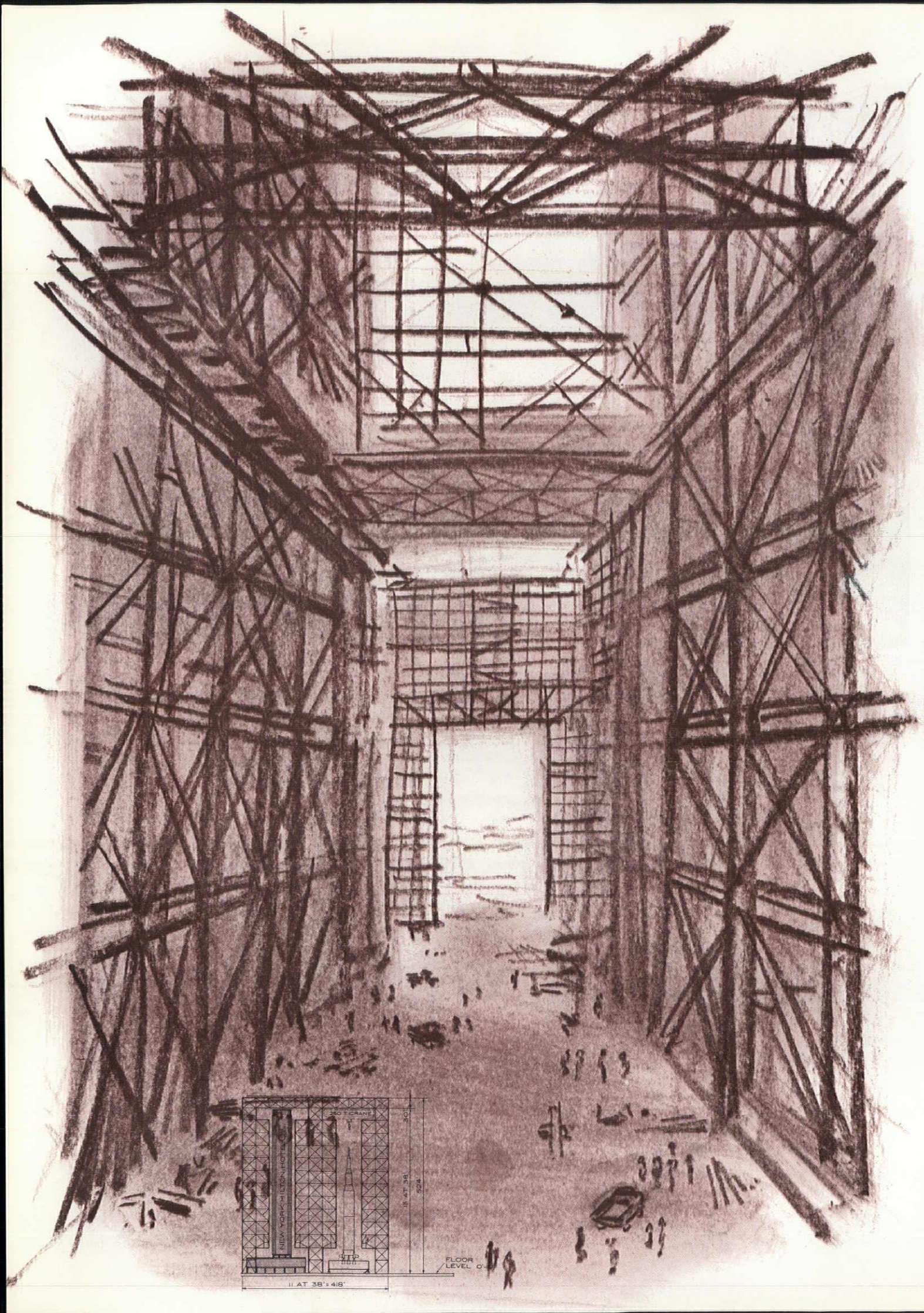
"Space in the process of expansion" is Bruno Zevi's description of Hagia Sophia, differentiating it from what was simply the expanded space of Roman architecture. Lighting has always been an important element in the creation of major space, and the band of light encircling the upper dome of the mosque at Hagia Sophia sets off the great dome as if it were the very heavens. Light, of course, played a major role in the Gothic cathedral, intensifying the emotional impact of the space. Structural potentialities in particular were intimately connected with the kinds of major spaces that were built in any age. The realized space could never be more than the technical means made possible. (Giedion has expressed the close relation between space and structure by noting that "each form of vaulting has almost become the symbol of its age.")

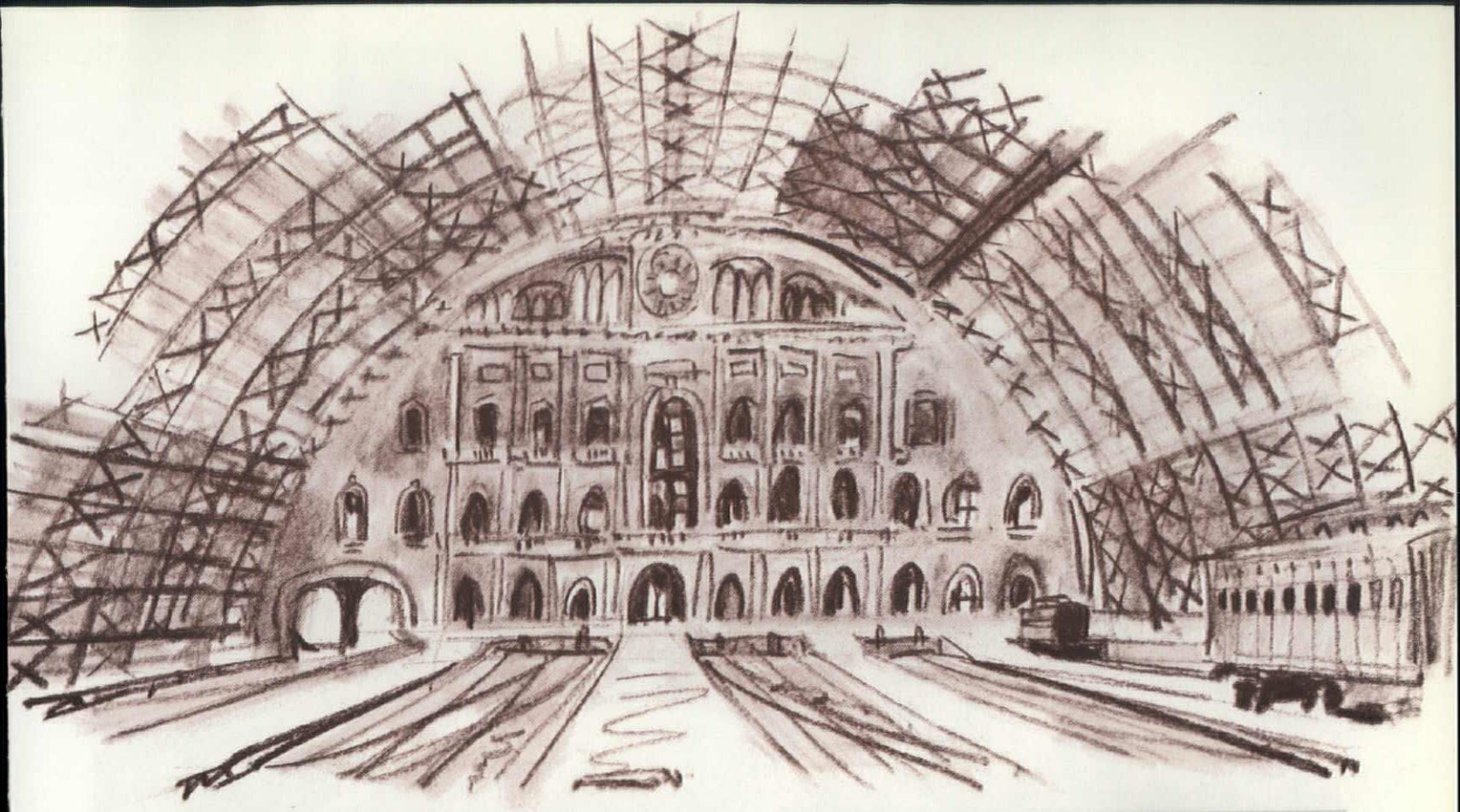
Major Space Today

The course of Western political history, with its periodic changes in the social structure, itself gave rise to other types of major-space buildings: the grand houses of palace and chateau, and the house of the municipality, the town hall. Then, with the Enlightenment, the egalitarian political revolutions, and the Industrial Revolution, came new major spaces —the large chambers to house popular

It was the Pantheon that marked what Sigfried Giedion calls the second space conception, the creation of interior space as the primary aim of architecture. Bruno Zevi refers to Roman architecture as "expanded space," contrasting it with Hagia Sophia's "space in the process of expansion." Shown here are Hagia Sophia and the Pantheon, and (facing page) the Colosseum and the Baths of Caracalla.



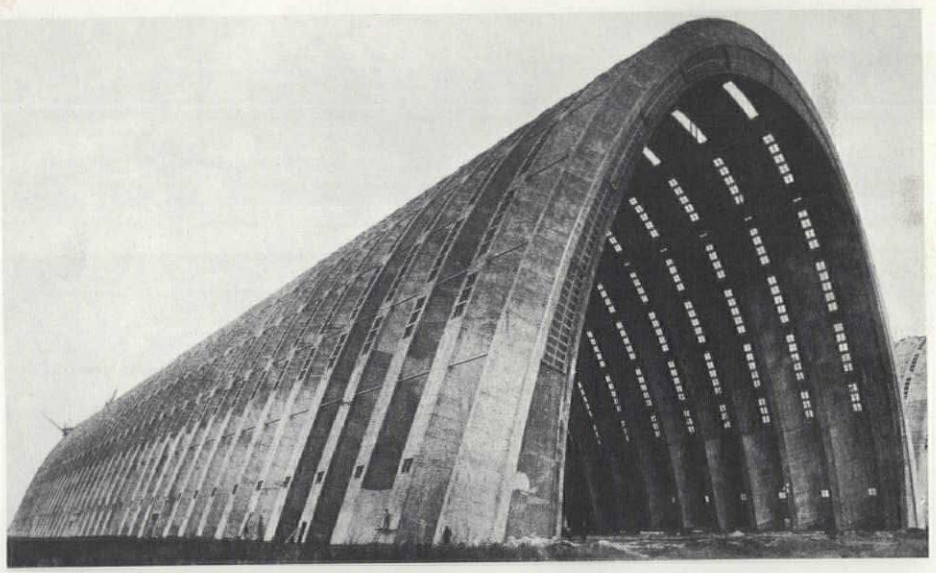

250 T. CRANE
NEW YORK HILTON HOTEL
STEP
FLOOR LEVEL 0'
11 AT 38'= 418'



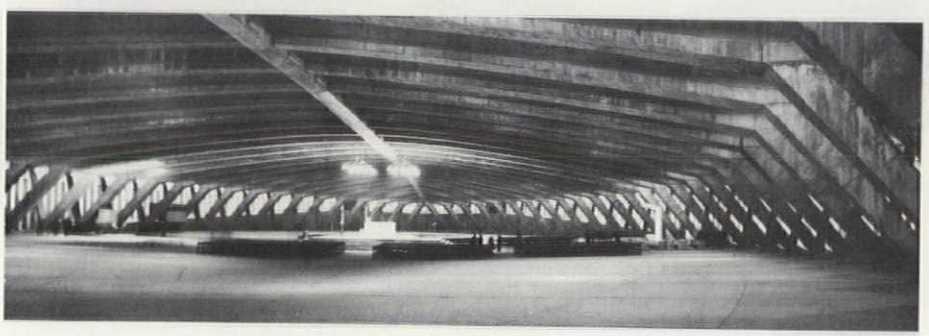
governments, the train sheds, the factories, museums, libraries, exhibition pavilions. And, in present times, there are the utilitarian spaces of the airplane hangar, the nuclear reactor, the power plant, the rocket assembly shelter.

This last is a considerable change. The reasons for major space in the past were congregation—the ceremonial or functional gathering-together of people—as spectators, participants, worshippers, workers, travelers. But today, there are vast spaces built solely for machines, or for things. "Nobility of use" is certainly not a criterion for the creation of this kind of major space. Also, since these more recent major spaces often have their size and shape quite precisely specified by their functions, the creation of space *as space* is often of less than primary importance. With an airplane hangar, for instance, no one asks: "But what is the space *for?*" Clearly, if there were less space, the building would be inadequate to its purpose. But the pragmatist is not convinced of the purpose of gratuitous space—of space as space. He will ask why we want it; he will doubt whether we need it; he will deny that he himself responds to it.

A theory is prevalent today, that, as a society, we *do not* need major spaces. Sir John Summerson, writing in 1941, believed that, "To endeavour to be monumental is to be untrue to our own times." He maintained that, with very few exceptions, the kind of buildings we need "have no aptitude to the monumental." In fact, said Summerson, "the whole idea of for-



Certain major-space buildings today are simply new expressions of early building types: temples, arenas, marketplaces. Others, however, are new—train sheds, factories, libraries, exhibition pavilions. Also new are airplane hangars and power plants—major spaces built for machines or things rather than for people. Shown here (facing page) are the Vertical Assembly Building at Kennedy Space Center in Florida, and (top to bottom) Grand Central Depot, New York, (1869-71), hangar at Orly airport, Paris (1916-24), and Arcade, Cleveland (1888-90).



Unusual major spaces built in recent years include Philip Johnson's New York State Pavilion at the World's Fair, which is an interior volume that is really out of doors (right), and Kevin Roche's projected Ford Foundation building, which has as its major space an outdoor court that is really indoors (see page 164). These cross-types, however, are in the mainstream of architecture, which has, since the early 19th Century, been more and more ambivalent about the distinction between interior and exterior.

Another type is the underground major space. The St. Pius Basilica (above) by Pierre Vago and Eugène Freysinnet was built to accommodate 22,000 pilgrims in inclement weather. Its elliptical plan measures 660 ft by 266 ft. So as not to disturb the open space in front of the principal shrine, the basilica was built underground. Also underground is the "Valley of the Fallen" (section, facing page), the enormous national memorial to those who died in the Spanish Civil War. General Franco has had the 853-ft long shrine carved out of a mountain.

mal assembly in public has withered." We move as individuals, wherever we go, whatever we do. Monumentality, he claimed, is simply no longer "suggested and supported" by the groups dominant in Western culture. He very matter-of-factly stated that this is not a cause for regret; it is simply fact. (It was Sir Banister Fletcher's contention that such massive buildings as the pyramids of Egypt would have been impossible without despotic government. And a contemporary commentator, Philip Johnson, feels that people today have no interest in a Great Building; he remarked that he himself "would like to live in a town where everybody got together to build even a pyramid.")

Psychology of Major Space

The forces responsible for initiating a major space have unquestionably changed. Today, they are more likely to be an institution, a corporation, a governmental body, than an Emperor Hadrian, an Abbot Suger, a Medici merchant. But if the causes and purposes of major spaces have changed through the ages, the emotional effect of a major space, of whatever age, remains compelling. What *does* space mean to the individual? Geoffrey Scott, in *The Architecture of Humanism*, first published in 1914, was one of the earliest of the modern architectural writers to discuss the effect of space and its power to "control the spirit." But he also said that we tend to overlook space "as nothing"—as merely the negation of the solid. (Banister Fletcher, in his monumental comparison of the world's architectural monuments, *did* overlook space as space. He exhaustively discussed buildings in terms of their plans, walls, openings, roofs, columns, moldings, ornament. Space as the measurable or immeasurable result of all these elements, and as an aim of architecture, was simply not in his schema.)

Perhaps because one's reaction to space is not on a fully conscious level, because the reaction is quite largely instinctive, the subject eludes precise verbalization. Le Corbusier has said, with poetry, "Space is the foot that walks, the eye that sees, the head that turns." Geoffrey Scott, too, has suggested that the experiencing of space is largely a question of instinctive movement; space, to him, was "liberty of movement," and he postulated that "a dependence upon physical firmness and security is not less fundamental to our nature than that instinctive need for expansion which gives value to architectural space." Philip Johnson has said that people have an instinct for space but cannot talk about it: "At Chartres, they think it's religion." And when László Moholy-Nagy spoke about space, he did so in such a way as to emphasize its unknowability. The effect of space on the individual is undeniable, though. Viollet-le-Duc, writing in the 1880's, was sensitive to the different emotional and physical reactions of a man who was first in a low, broad crypt and then in a soaring nave.

Architectural Space and Human Behavior

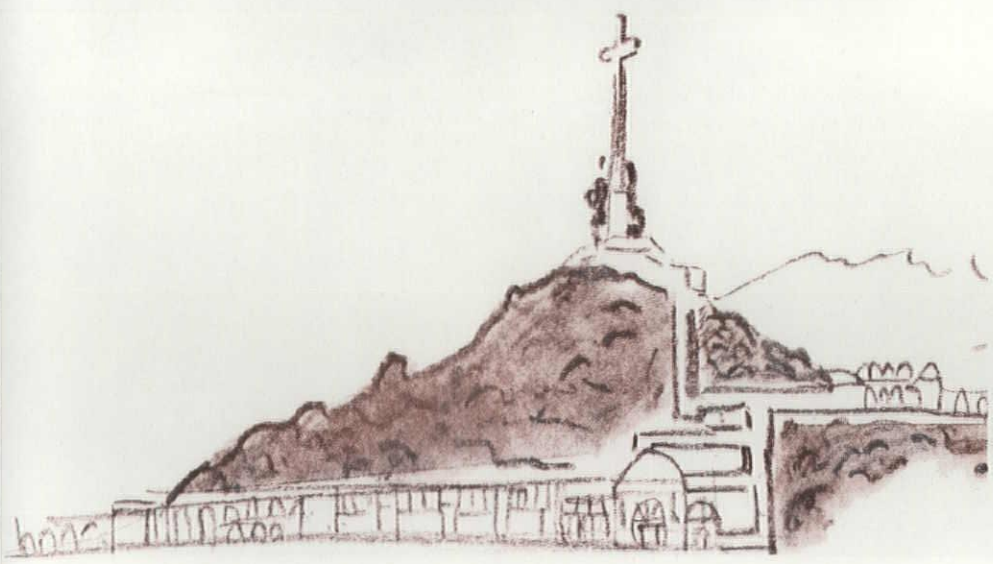
Today, the individual's reactions to space are being explored from another viewpoint. Psychiatrist Humphrey Osmond distinguishes between two kinds of space according to their effect on behavior—sociopetal space is that which brings people together; sociofugal space that which keeps them apart. Both are necessary. According to his definition, sociofugal buildings are those that "do not encourage interpersonal relationships; when group relationships occur, they are of the shoulder-to-shoulder type found in a crowd." This psychiatrist suggests that railway stations are "perhaps the apogee of sociofugality." (See the APRIL 1965 P/A for the application of some of Dr. Osmond's ideas.)

Dr. Edward T. Hall, an anthropologist, is also studying the ways in which space acts on people. Using Osmond's distinctions, Hall suggests that "many public and semipublic places are sociofugal—auditoriums, railroad stations, airports, lecture halls, classrooms." Some of these, of course, are the "major spaces" we have been accustomed to thinking of as bringing people together; but, from the behavioral scientist's point of view, it is possible to see that people can gather in great numbers without really coming together, without having meaningful interactions.

Addressing a recent AIA convention, Hall pointed out that men perceive space in different ways, and that their responses to space are not controlled and intellectual, not even characteristically or exclusively human. He urges that it is now necessary and possible "to conduct valid research in our use of space."

Ironically, perhaps the most careful investigation of individual response to space has been carried out in connection with space travel, where the emphasis is on the *smallest* space possible. There is no room for spatial extravagance on a journey into space. And the other area in which scientific investigation has been conducted is on animals, as in studies that link stress to overcrowding, but again these point mainly to minimal space requirements. At the AIA convention in St. Louis last year, Dr. Osmond suggested that the most carefully designed buildings today are zoos: if not properly provided for, an animal will die; a human, however, learns to adjust. Unquestionably, it is possible for a man to exit from Penn Station via several hundred feet of tunnel, but something will have died in him.

Confinement in a very small place has been a form of torture since ancient times. But what about enclosure in a vast space? Is there a point at which space becomes too immense, and the soul-expanding qualities become soul-diminishing? We can build larger structures today than ever before; but as single spaces become larger, increasing attention will have to be paid to the details that will mediate between man and his shelter. Major spaces will be built for various purposes, at the instigation of various forces in our society; the architect's job remains that of making space meaningful to man, and the great spaces comprehensible.—EP



ONE OF TWO FAMOUS RECLINING BUDDHAS IN PAGAN, BURMA (11TH CENTURY).

INTERIOR VOLUME

Problems of creating an interior volume that reads as a major space are discussed in this section.

Granted that man feels a continuing need to build major spaces, we then turn to the question, "How does an architect achieve a major space?" The answer has two parts: first, an aesthetic how, and second, a technical how. The latter will be discussed in other sections of this issue. Here, we turn to a consideration of the aesthetic means of expressing the fact that a space is major.

The answer given most immediately today is the word "scale." However, as Philip Johnson briskly reveals, "We don't know what that is, do we? Let's face it." And I. M. Pei concurs, saying simply, "The mystery of scale is something about which I am not qualified to speak."

Human Scale

Scale has always been a pivotal idea in architectural theory, but any reading of 19th-Century academic systematizers will reveal a paucity of direct definitions illuminating this mirage of a concept. Yet we hear the phrase "human scale" vaguely bantered about all the time. What are the definitions? Viollet-le-Duc observed that a particular balustrade "recalls human size"; other writers refer to the 12-ft dimension of columns as relating to the size of the "demi-god," man being the measure of all things architectural. Bruno Zevi explains this in his *Architecture as Space* by saying, "The Greeks had achieved their human scale through a static proportion between the columns and the height of man."

In Functionalist theory, those elements that must be dimensioned for the use of the human being—the height of window sills, balustrades, door widths and heights—acquire a physical size called "human scale."

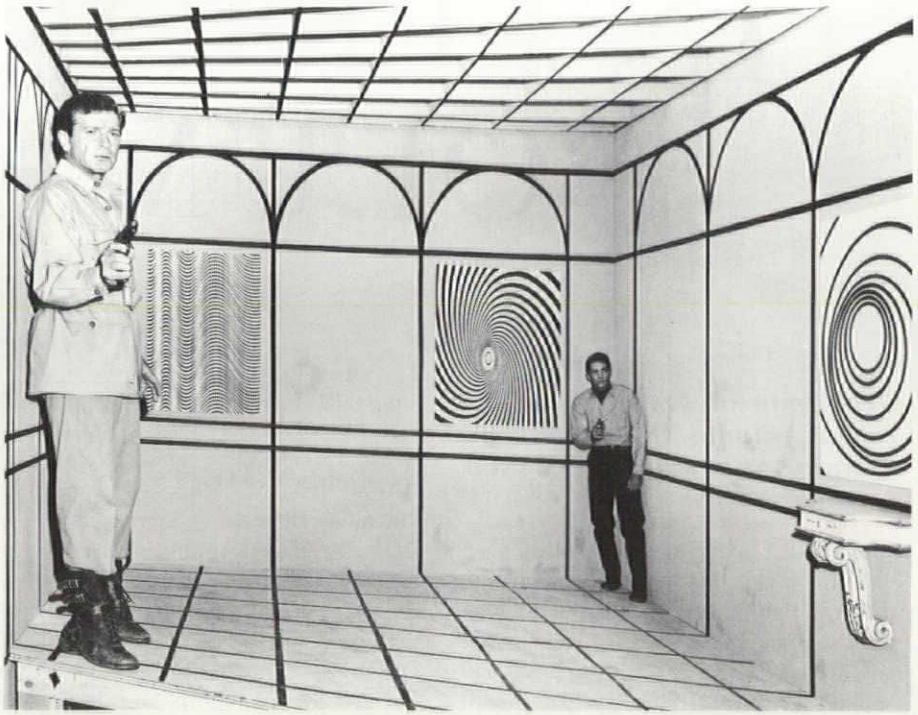
We must remember that the word scale itself, in one of its meanings, refers to *physical size*. Architects, as we all know, often talk about the "big scale" of a building—by which they clearly mean "size."

Scalelessness

Yet today there is an increasing concern among architects about interiors of enormous size that do not read as major spaces. Hangars and single-span factories that we know to be huge, for example, often appear to be *scaleless*. We frequently see photographs of large buildings that look a single story high. Long spans do not always impress us as being exceptionally long. In other words, we often cannot tell how big a space actually is.

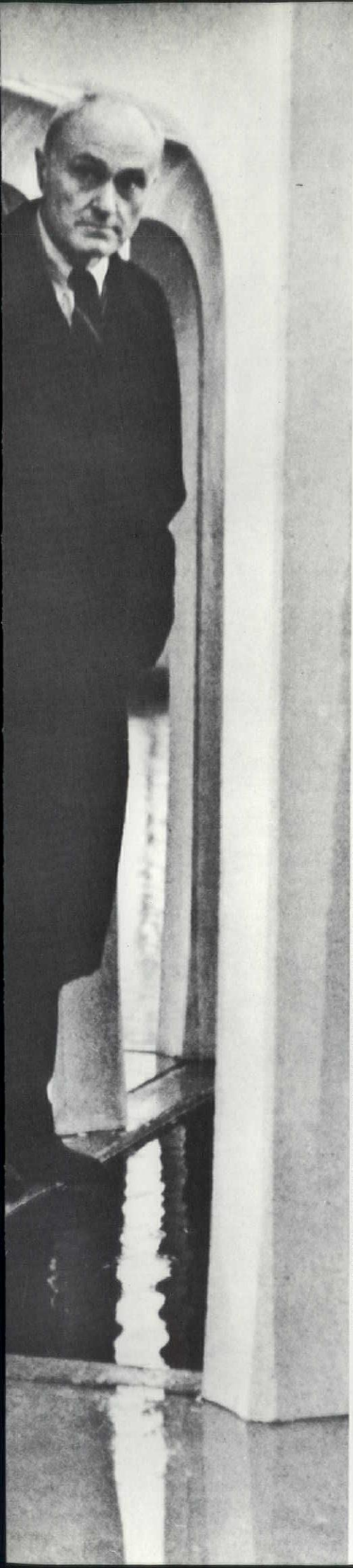
"One of the great disappointments in my life," says Philip Johnson, in citing a case in point, "was going to the River Rouge Ford Plant. I had always wanted to see those great modern automobile plants, which I understood had such wonderful spans and terrific spaces. Henry took me through one day—but it was no space. . . . And in Chicago, where Mies reigns supreme, they made Mies's 20-ft spans 28, then 40, and now the latest that Mies's students use are all 80. But they tell me that all an 80-ft span does is to make a 20-ft span look blown up, and there's no scale at all. After all," Johnson continues, "what does 1000′ x 100′ of something look like? The Crystal Palace, what did it look like? Was it very boring? We don't know. The only man who had the courage to say it stank was Ruskin. He said, 'This endless multiplicity, this endless rhythm of glass. There is no architecture to it. It leads the eye on, and all of a sudden it stops.' As often in a dome, it has no architecture. But why hasn't a dome architecture? To me, it's undistinguishable, a pseudo-ceiling; it's a cyclorama. A cyclorama has no definition of space."

Other critics also question whether there is any sense of scale in the repetition of a single unit without variation, as in Buckminster Fuller's domes, which are thought to produce a scaleless assembly. "In other words," Johnson says, "some



SETTING FOR "VOYAGE TO THE BOTTOM OF THE SEA," ABC-TV.

CLAES OLDENBURG'S "LIGHT SWITCH", COLLECTION MR. AND MRS. HAROLD LADAS.



PHILIP JOHNSON SHOWN IN HIS GAZEBO. VIEW OF ENTIRE BUILDING AT BOTTOM OF PAGE.

spans are expressive, and some aren't. Size is only one of the elements in all of this thing."

I. M. Pei concurs, "It is the treatment of the space, not its size, that makes it important. I have seen a catacomb in Italy by Albini that has a very low ceiling and is a very small space, but it is tremendously monumental. And there's one church in Rome by Borromini, a tiny little church, that is a very powerful space."

Thus the "treatment" that Pei mentions must be the use of "scale." And where does that leave us in defining this "treatment"?

Bruno Zevi most nearly strikes the heart of the matter in his definition: "Scale means dimension with respect to man's visual apprehension, dimension with respect to man's physical size."

Definition of Scale

Our definition of scale, then, is that it is the aesthetic impression conveyed about physical dimension. It is the product of the Gestalt ratio between a physical object and the mental impression conveyed to an observer about the size of that object. Thus, two relative forces are involved in the aesthetic concept, scale: first, the physical aspect of size; and second, and more important, the philosophical and psychological aspect of man's image of his own stature. For scale is primarily an *affective* aesthetic concept: the ontological aspect of the object—its physical nature or size—is less important than the affect on the observer—his apprehension of the object and his reaction to it.

In architecture, this ratio is created between individual functional elements, which are dimensioned for human use, and the over-all impression (which these elements help to create) about the size of the space in the mind of the observer. Thus those windows and balustrades that are said to give "human scale" are often *the means* of creating the desired impression about the size of a building. The Pan Am building, for instance, despite all its mass, looks like a stack of tiny elements, whereas the Seagram building, which is much smaller in over-all size, has a monumentality that is majestic. Such are the different effects of scale.

Scale As Keynote of an Age

Throughout the history of architecture, scale has revealed man's philosophical relationship to the objects or buildings of his highest aspirations. In the Middle Ages, for example, the Gothic cathedrals soared forcefully toward heaven; today, they demonstrate to us medieval man's aspirations to the God on High. In the Renaissance, on the other hand, when churches of even greater dimensions were built, such as St. Peter's, the buildings read as much smaller than their actual physical dimension. The aspirations of society had changed. Now everything was manipulated to increase man's own stature, and scale expressed this philosophical outlook. Therefore, scale gives us significant knowledge about an age.

Manipulation of Scale

One of the best examples of conscious and highly sophisticated manipulations of scale was in Baroque times. And today, also, we have examples that show a breaking away from these old effects, examples that reveal their architects' sufficient understanding of the concepts to manipulate scale in a playful manner. There have been trick effects with scale that illustrate how man can be made to look smaller or larger at will (*facing page, top*). The most obvious architectural example today is Philip Johnson's Gazebo at his Glass House (*left and below*). Claes Oldenburg's pop-art light switches create the opposite effect (*facing page, bottom*).

The methods that have been used in the past to create these varying effects of scale, and therefore to express a major space, will be the aim of our investigation on the following pages. Perhaps we can ultimately arrive at some understanding of present-day problems of scale.

"Those things that create scale, that make scale real," remarks Philip Johnson, "are the divisions of space into meaningful units, units that make the space exciting." How this Gestalt ratio—scale—is made real, and what meaningful units create major spaces, can be revealed by examining the following methods individually:

Methods of Achieving Scale

First of the means used to express a major space is the Vitruvian concept of "Order." Or, as I.M. Pei says, "Usually when you break up the space, the busier the space is, the less monumental it gets. I think simplicity is somehow related to monumentality." Classical concepts such as balance and symmetry, which are closely related to the concept of order, function in the same ways to convey the impression of scale.

Proportion

Second is that other Vitruvian concept—Proportion. As Zevi explains in *Architecture as Space*, "The most common definition is this: the relation of the parts to each other and to the whole of the building." (Yet Auguste Perret had said, "Proportion is man himself," indicating that he considered it ambiguously as an equivalent of "human scale.") "Proportion is closely tied to the scale of a building," Zevi continues, since the elements based on human size must be taken into account when relating to each other the physical elements that compose the space.

Focus

Focus is another of the methods of achieving scale. The emphasis in the Gothic church on having all lines point to the altar, is a clear example of this device (right). More complex were the Renaissance uses of perspective.

Much like scale itself, "perspective is not merely an optical illusion," as art critic John Berger wrote recently in *Realités;* "it is a visual method of putting man in his place—that is, at the center of events. It is not at all important that the railway lines meet: what is important —and what they did not teach us at school—is that by seeming to meet in the way they do, they reveal the point from which we are looking. All perspective is centered on us, on man—whether as artist or as viewer." Like the circular plan of the Renaissance church, perspective was employed architecturally to put *man* at the center of the universe, not nature or God.

Focus on a single object or point for the purposes of achieving scale need not be confined to exaggerated tricks of Op architecture, like those of Scamozzi's permanent background for the Teatro Olimpico in Vicenza or Bernini's Scala Regia at the Vatican, to name two of the most famous examples; it can also be achieved with other elements of interior composition, such as, most prominently, color.

Contrast

Contrast can also play a part in expressing scale. Contrasts in spatial sequence—a small, narrow entry, for instance—can prepare one in such a way as to emphasize the finally revealed large volume. Philip Johnson's reducing the ceiling height as one progresses up the stair to the Promenade of the New York State Theater is a recent artful example of such contrast. John Johansen also achieved this kind of contrast in Clowes Hall Auditorium, which he describes as follows: "There are

THE PERSPECTIVE OF LAON CATHEDRAL, SEEN FROM THE TRIFORIUM.

static spaces and fluid spaces. The major spaces are probably the static spaces, where you come to rest for some particular purpose. The process of getting there is by fluid spaces in which there should be no rest at all."

There are also contrasts of light and shadow that can emphasize the scale of a space. Etienne-Louis Boullée thought of himself as working with "the architecture of shades and shadows," and in his drawings indicated the enormous effect on a shady space that shafts of light from skylights could have "to make it appear grand," as he said (*drawing, facing page, bottom right*). Paul Rudolph has also worked for such effects in his Tuskeegee Chapel, as he describes below.

Physical Elements of Scale

Since all of the above methods have been known to architects in the past, they should be available to us today to apply to each of the physical elements that compose space. Yet scaleless space seems to be on the increase.

Decoration

Architectural critics have questioned whether this is not the result of our living in an age whose architecture is without handicrafts, and therefore without applied decoration—moldings, carvings, sculpture or paintings, friezes, and frescoes—that would give scale to spaces, as was the case in the past (*photos, these pages*).

Commenting on the effect of decoration, Viollet-le-Duc observed, "The interior of the Church of St. Sophia appears still more vast than it really is, while the interior of St. Peter's at Rome appears comparatively small on account of the colossal sculptures and moldings which constitute its decorations," (*this page*). Such are the possible methods of manipulating scale with decoration.

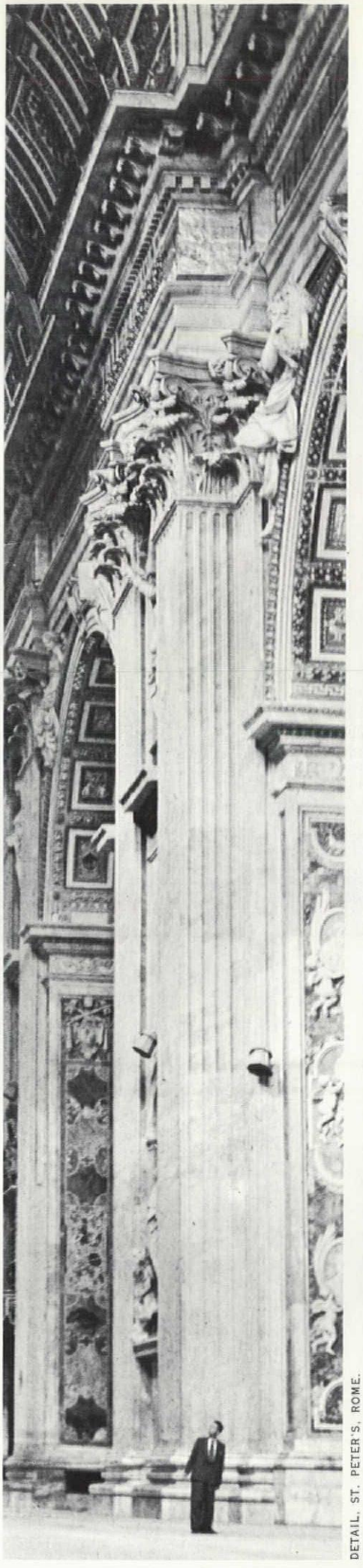
Texture

Walter Netsch feels that texture is today's equivalent of ornamental detail and that it can given scale to interior space. Paul Rudolph, who has done his fair share of evolving architectural textures in concrete, feels that, to replace the decorations of the painter and sculptor, "[In today's interiors], the architect must become the sculptor and painter himself. The painters and sculptors aren't interested in how to achieve a sense of interior scale today," he explains. "They are more concerned with other things, and would regard it as an insult if they were told, 'I want a painting or a piece of sculpture that helps give this room scale.' . . . In the meantime, there are very few people who know how to use these things. It's an impasse, obviously."

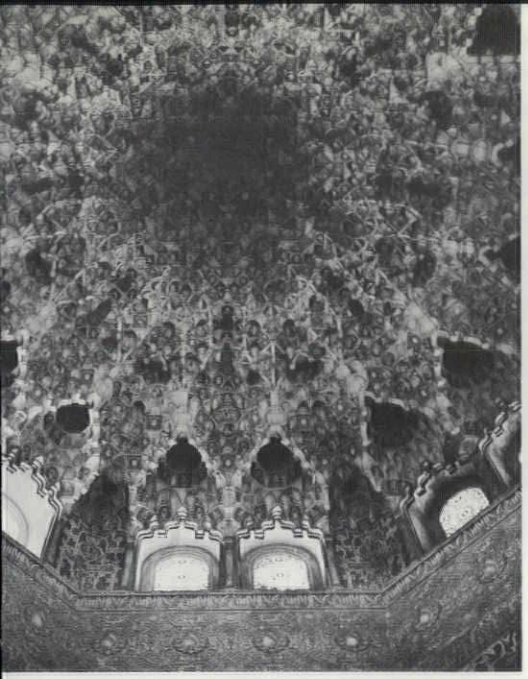
Rudolph continues, "At long last we're building the Tuskeegee Chapel which I designed about five years ago [*drawing, facing page, bottom left*]. Maybe we aren't doing anything about scale there, I don't know. The Tuskeegee Chapel is a nonrectilinear building that is based almost completely on acoustics. As you know, rectangles don't work well acoustically, so our walls are nonparallel. And the ceiling is undulating for acoustical reasons; it becomes what amounts to a great bent fan in plan, and in section it undulates. (I think I want to paint it crimson and purple and vermilion and orange—but I'm not sure; I have to see it first.) In any event, this great ceiling, which is really free of the walls, plus the seats, which become another kind of carpet, if you will (you won't really see the floor) —well, that's it. Now, the organ pipes and the pulpit and the dimension of the balcony—series of balconies—they will also break down the scale. And the concrete of the walls, or what we call texture #1 or aggregate—which of course is something your hand is related to, though it varies—that also breaks down the scale. One of the reasons I'm fascinated with concrete is that, by the method of forming, one can break down what amounts to a continuous surface so that it is something more comprehensible; it can be broken down to scale. To a degree, also, the walls are given scale by light and shadow. The major light source comes between the ceiling and the walls so that the walls are bathed with light. The mullions of the skylights and of the structural members, which penetrate where the ceiling is and where the walls are, will cast shadows. You have to humanize the thing and it's not so easy to say how or when you do it."

Structure

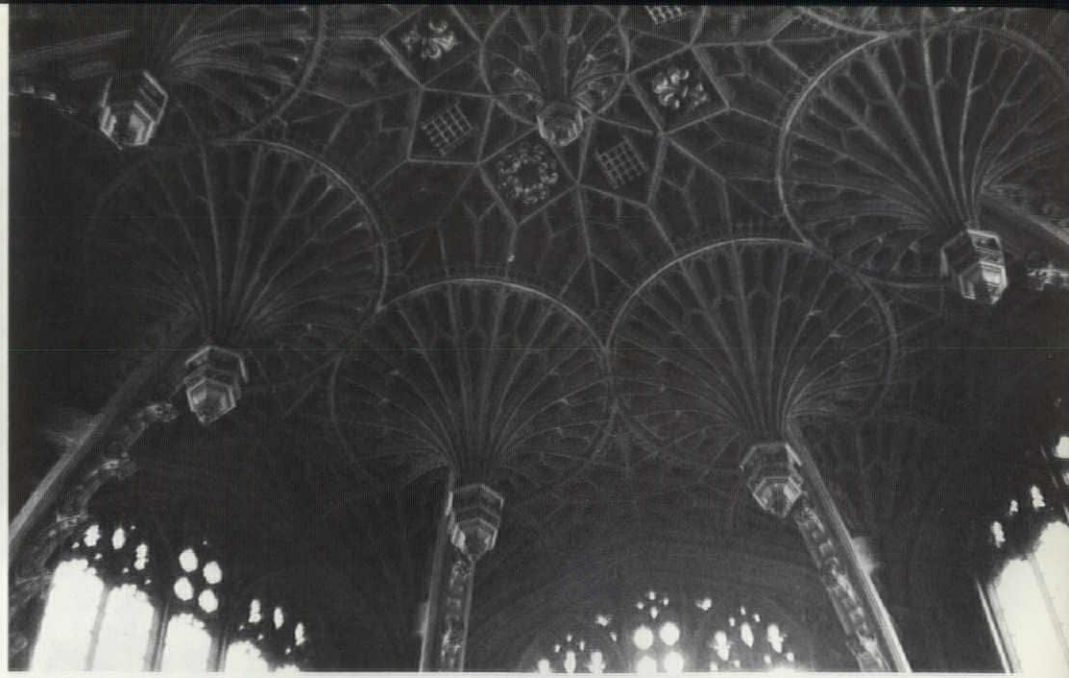
The last of the physical elements of space to be considered with regard to its effect on scale is the structure itself. To contrast with the repetition of identical structural members throughout the assembly, as in a Buckminster Fuller dome, many critics point to Pier Luigi Nervi, who, in expressing physical stresses, reduces the size of structural members as they ascend, or tapers them as they stretch horizontally (*overpage and p. 163, left*), and, in so doing, more clearly creates a scale for his building. Functionalist critics point out that Nervi's structural expressionism is not always physically required for support, and that, like the entasis of the Greek column, it is a refinement in dimensioning, created for optical effect.



DETAIL, ST. PETER'S, ROME.

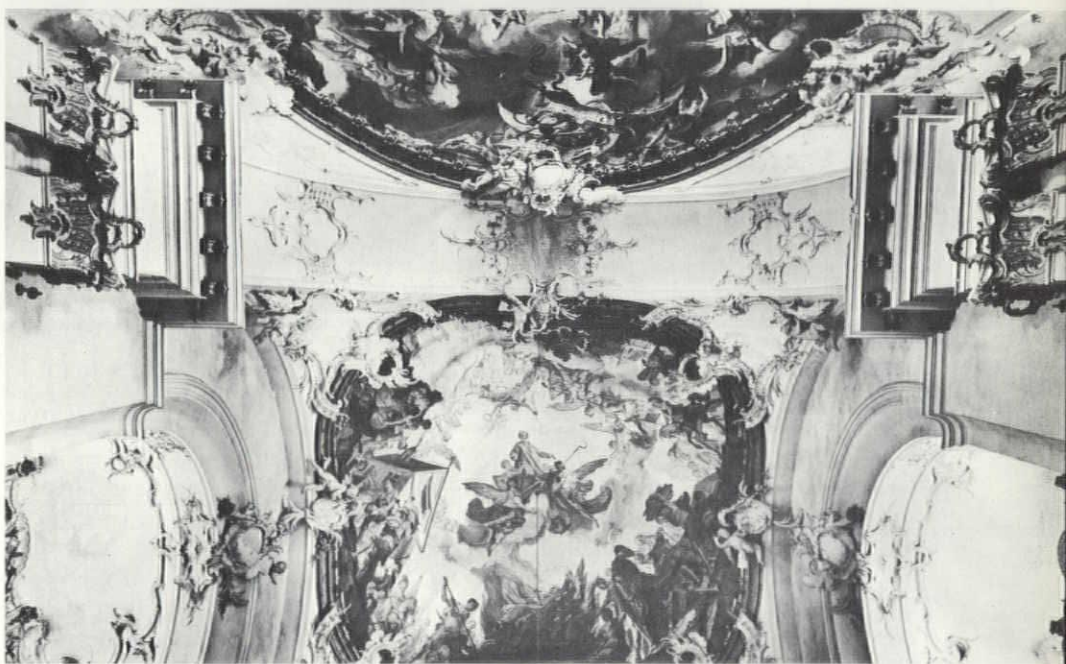


DOME DECORATION, ALHAMBRA.

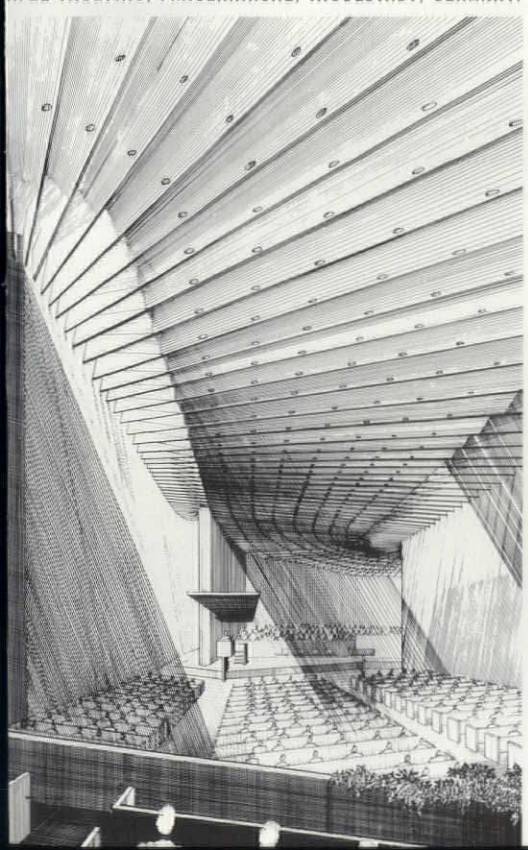


CEILING, HENRY VII CHAPEL, WESTMINSTER ABBEY.

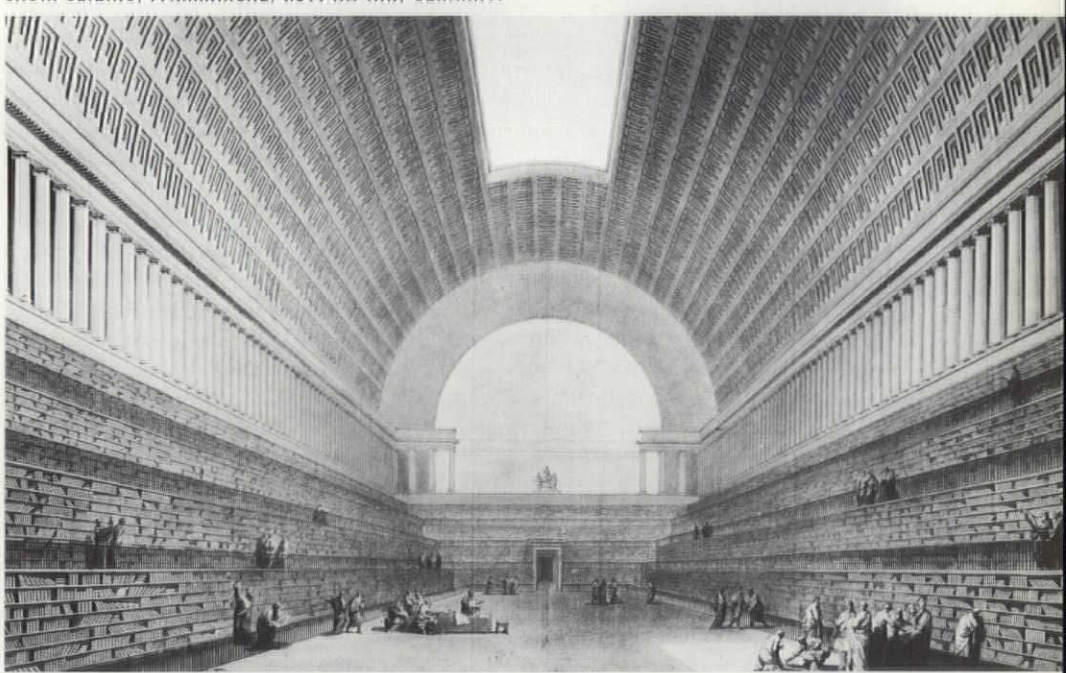
APEL VAULTING, FRAUENKIRCHE, INGOLSTADT, GERMANY.



CHOIR CEILING, PFARRKIRCHE, ROTT-AM-INN, GERMANY.



TUSKEGEE CHAPEL BY PAUL RUDOLPH.



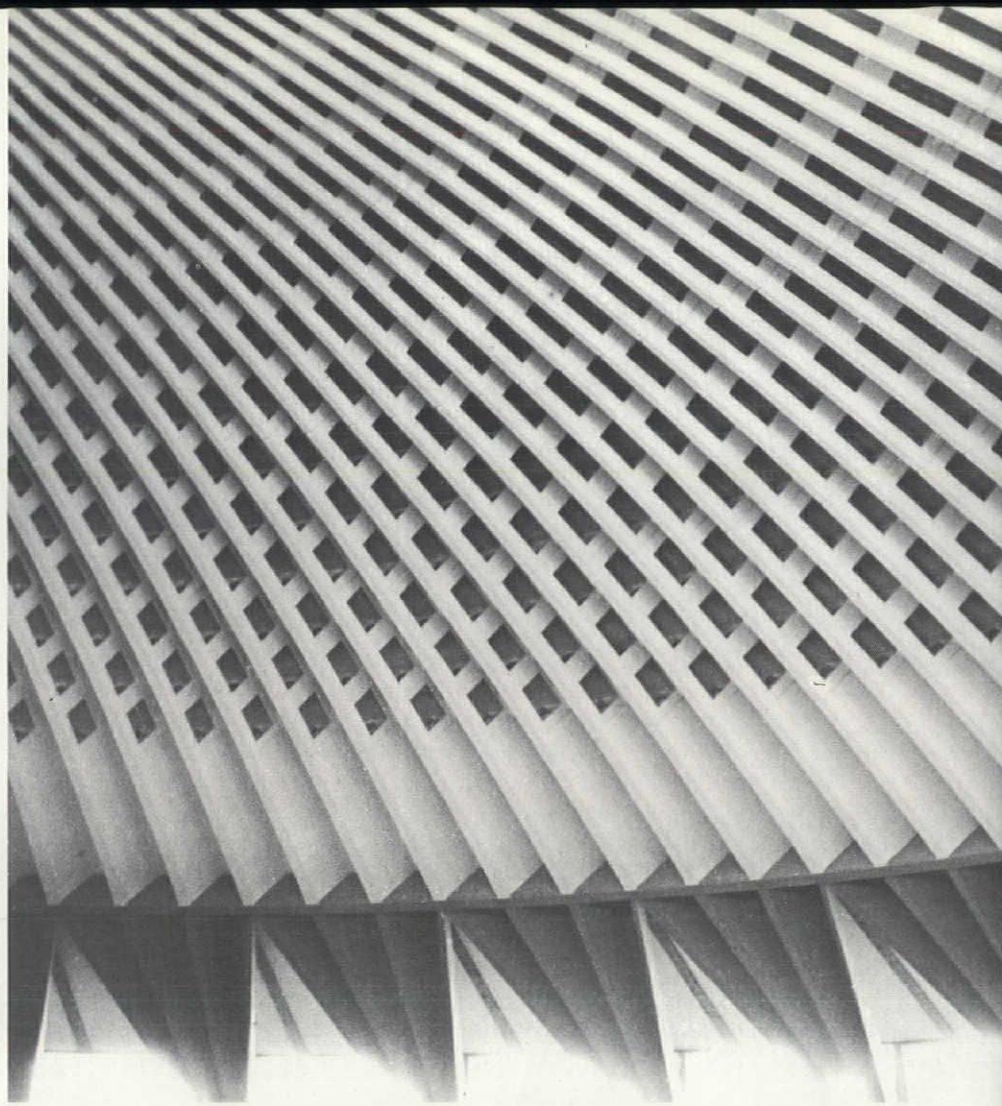
ETIENNE-LOUIS BOULLEE: PROJECT FOR THE BIBLIOTHEQUE NATIONALE.

Columns Also Give Scale

One of the most frequently and successfully used devices to give scale is the contrasting of open space with structural elements—in particular, the column (*facing page*). Auguste Perret was especially interested in the aesthetic effects of the column.

As Peter Collins noted in his book, *Concrete*, Perret "proliferated [columns] with all the enthusiasm of the architects of the past. It was not only the inherent structural dignity of the column itself which captured his imagination but the powerful emotional effect created by receding ranks of columns, and the optical function fulfilled by such rhythmic sequences in creating an awareness of scale beyond the effective bounds of stereoscopic sight. However much the Renaissance principles of perspective might be outmoded as a means of pictorial representation, the abiding reality of its laws as a means of apprehending spatial relationships seemed to him incontestable, and instead of diminishing or camouflaging his structural supports, he sought every means at his disposal to isolate them in space, and make their rhythm provide the dominant unifying element of his designs. This did not mean that he limited himself on principle to spans only possible in older types of construction, or multiplied columns unnecessarily where they were not structurally required; but it did mean that instead of feeling morally bound always to use the maximum spans obtainable by civil engineering, he considered himself free to use intermediate supports whenever desirable, and saw no objection to dividing a large hall with interior colonnades, provided that these were not in any way detrimental to its use."

Philip Johnson also is strongly articulate on the effect of the column in achieving scale: "The problem with any interior space is, how do you make it work on people as exciting space? We were discussing whether we could span 800' x 800' —of course we could. And I said, 'But what if I don't want to span it.' The more I think about it, to cut that span down makes the space more meaningful and large, in a screwy way. I like big spans—the spans in our airplane factories, and so on—but some are expressive and some aren't. My favorite room in this respect is the Scully Steel Plant in Newark (*facing page, bottom, right*): and that has 125-ft bays in both directions, and it's 6 or 7 bays by 6 or 7 bays with a sawtooth roof that brings those great rays of light down. But what is important is those columns—and the fact that there is nothing else there. It seems to me that the human mind measures things by recognizable divisions.



PALAZZETTO DELLO SPORT, ROME, BY PIER LUIGI NERVI AND ANNIBALE VITELLOZZI.

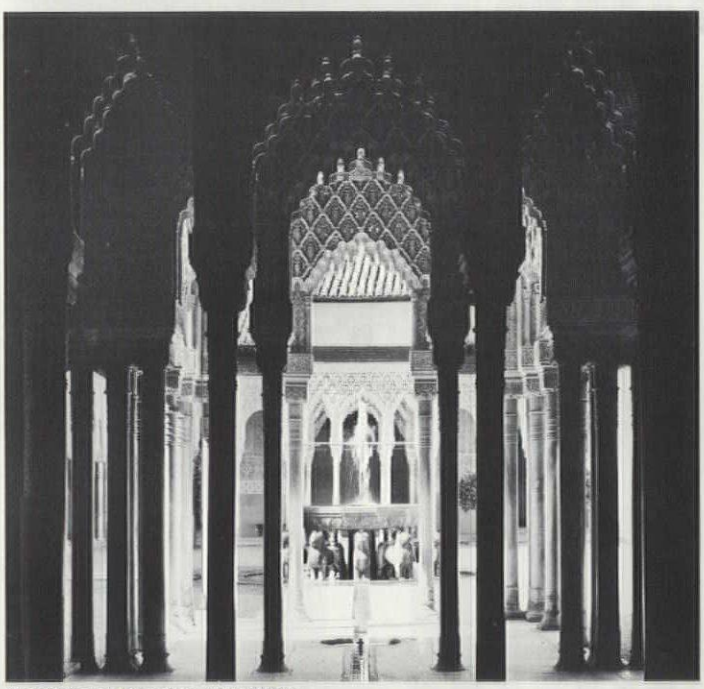
"Great rooms can only be great if they are articulated. This is one of my problems in the auditorium of the State Theater: I tried to make these bulging pseudo-box things a measurable stop to the eye as it goes around; unlike the Philharmonic, which just has these ribbons, none scaleful. Now, the promenade in the theater is nothing without people under the tiers to give it articulation. I am asked why the tiers go all around the room on the front side too. Well, I did it because I have seen it in prisons—and I liked it. Also, because in the multistory building, one assumes 12 ft for the height of a floor and since these tiers are 10-ft high, the room looks higher than its 40 ft. That's a manipulation of scale. But that space, without those balconies, would have had a blankness that would never have let you know how high it is. The Guggenheim has no articulation as you go around; I think that's obnoxious. Yet that room still has a greatness—it gives you something, and it gives you something all the way up. (Architecture is a great deal of luck—unless a man's a genius.)

"Yes, the reduction and breaking up of scale is important. My preference is for great columns, because I think trees give scale to buildings—I mean artificial trees. The great interior space by Frank Lloyd Wright at the Johnson's Wax Building has columns which weren't necessary, but the columns make the space, don't they? Or that great hall in Turin by Nervi, and a third, I'm sure, although I haven't been there, is the anteroom to the Senate chamber at Chandigarh—all with their useless, wonderful, extra columns. Now, Nervi could have spanned the whole thing, but it took separate explosions to make the space meaningful. Size isn't important; it's what you do with the size. Again, the articulation of space by the column. Space is the modularization of things. Those things which create scale, which make scale real, lie in dividing up space into meaningful units, units that make it exciting."

The use of the column to define and express space can obviously be questioned in many cases on the grounds of structural necessity, as in fact Johnson has done, and Perret before him. In the same way, Nervi's structural expressionism has been queried: the refinement in dimensioning structural members is created for optical effect, not out of structural necessity.

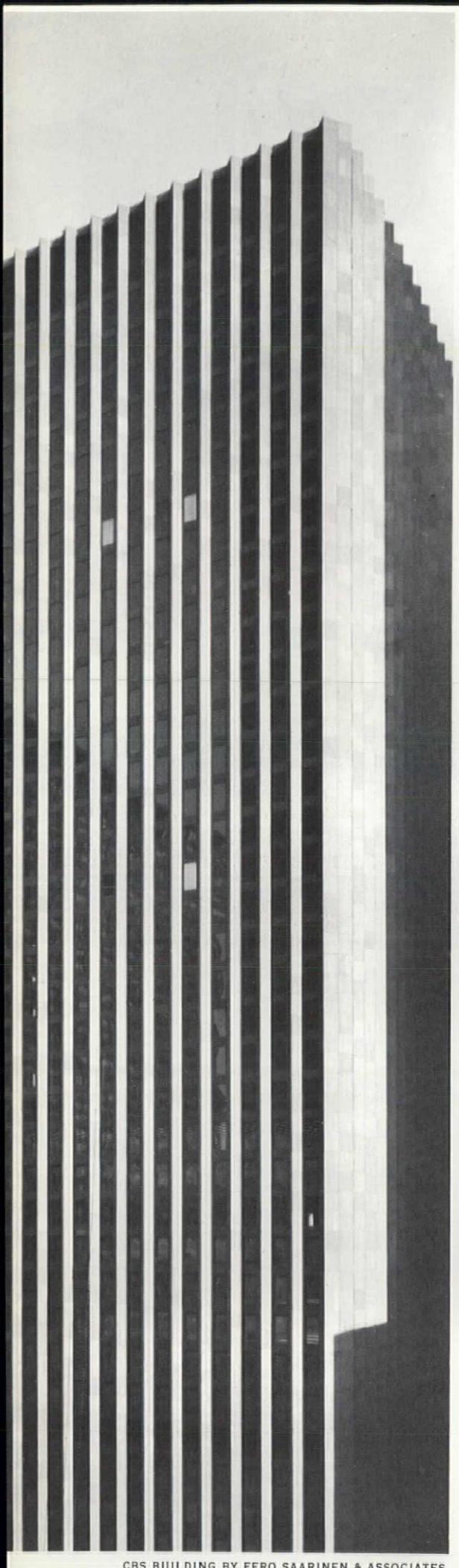
PALAZZO DEL LAVORO, TURIN, BY PIER LUIGI NERVI.

MOSQUE, CORDOBA.

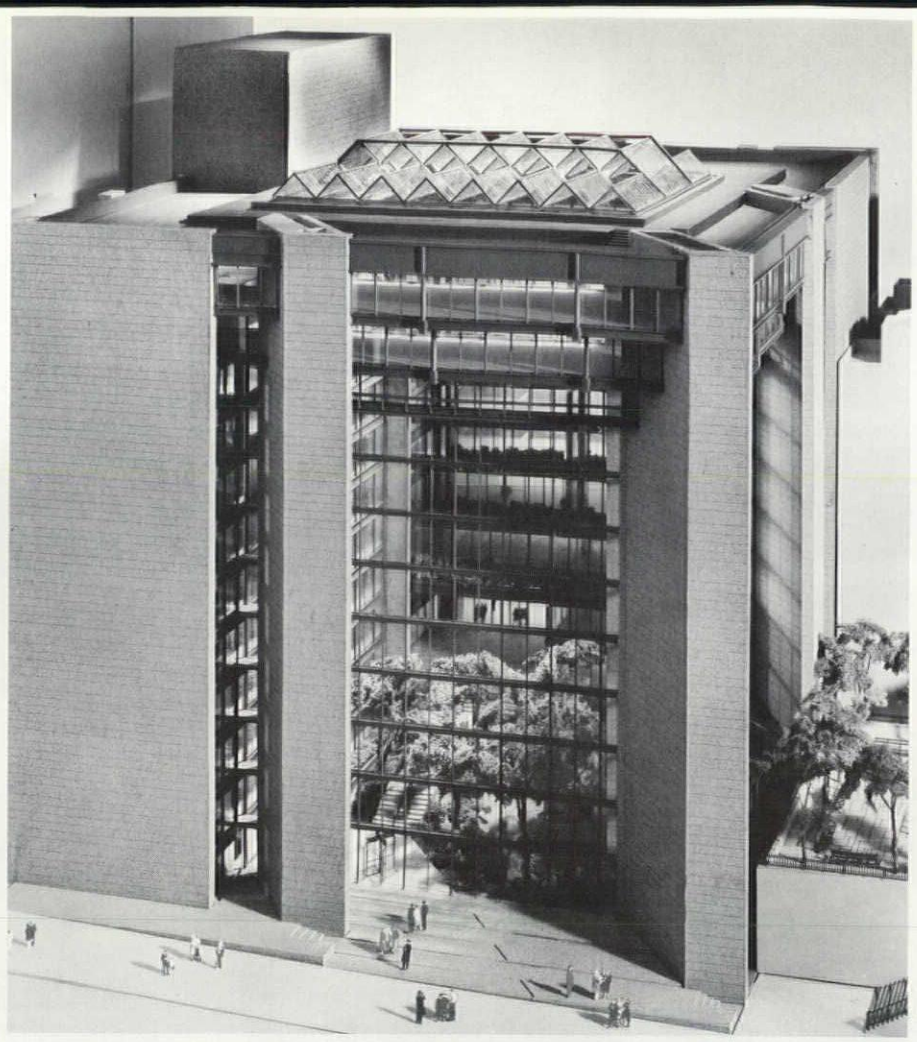


COURT OF THE LIONS, ALHAMBRA.

SCULLY STEEL PLANT, NEWARK, NEW JERSEY.

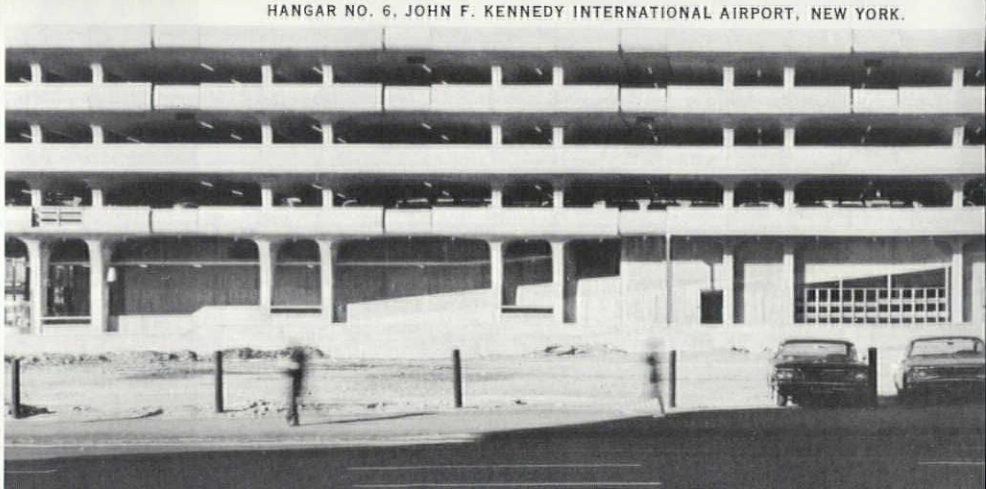


CBS BUILDING BY EERO SAARINEN & ASSOCIATES.



FORD FOUNDATION MODEL, BY EERO SAARINEN & ASSOCIATES.

HANGAR NO. 6, JOHN F. KENNEDY INTERNATIONAL AIRPORT, NEW YORK.



Today's Scale

In line with this thinking, Kevin Roche points out some of the differences between today's approach to scale and the approaches of the past:

"To learn about scale we have to go back to more mature architects than we have at the moment. In classical architecture, they understood what scale was; they understood that a building began, had a middle, ended. It had spaces beyond; it had a volume. It had a composed entity, in which all of the parts were related to each other. And they filled specific roles; they composed a total whole. Now, in our fabricated architecture, the module has become the measure, as it was in classical architecture, but the module in classical architecture was used to relate larger things to each other. In our architecture, the scale (i.e., size) of the single human is expressed in the 4-ft to 5-ft module of the typical urban office building, where it is simply the measure for laying out partitions, windows, and fabricating pieces. Many of these buildings are inhuman, because they do not have a larger module—no group or crowd module. The total volume is simply made up of a very fine grid of modules, expressing only formless heaps of individuals. You have that which is the human scale, and then you have nothing else until you end the building. Actually, it is characteristic of these buildings that they don't end; you could add or subtract a floor without making any appreciable difference in the scale.

"In this architecture, the main problem is being forgotten. The problem is, of course, getting from the thumb of man to the next larger thing—to the city block, to the whole city, to the region. There are successions of scale, and we haven't gotten beyond the first module."

"In the Ford Foundation Building," Roche goes on, "we try to express two modules. One is just the individual in his office: he comes from the sidewalk into a small lobby into a small elevator into another small lobby and into his office—five or six spaces—all of them just the same kind of volume. It is hard for him to have any sense of awareness of people who are involved in the same sort of endeavor that he is, to understand the size of the family. What do you belong to? This can be expressed from the outside, where you build an individual tower, and it has a name, and that's what you belong to; that's the physical reality of the corporation you belong to. But the need to see the man across the way, to know the other people in the family—that's why we have the living room (the living room is the place where the family as a larger unity actually exists). Shouldn't an office building also have a living room. Shouldn't it have a larger space which ties together all these smaller spaces? And so the Ford solution: where you have the little cubicles and the larger space, which really fulfills the function of being the center, of the heart or core, and allows people to see people across the way—and of course provides a year-round garden. We felt that, in terms of psychological need and in terms of function, we were taking the next step up from the module—from the cell, to the larger space, to the living room.

"In our Air Force Museum," Roche continues, "there is also a progression of scale: from the individual, to the aircraft (which increase in size as one progresses historically through the exhibition), to the over-all building. And the building itself as a whole also expands, as one passes through it, to illustrate this progression of scale through the history of aviation." Perhaps this is a new, fluid, "kinetic scale," related to a similar movement now current in other arts.

"It is easy to make a small building seem large," Roche says, "or a large one seem small. The subtle problem is to make it right." And Talbot Hamlin writes in his *Architecture Through the Ages* that, "To have scale is to make buildings appear their true size."

But what is "right" or "true" in terms of scale? As we have seen, throughout history the use of scale has varied in expressing the ratio between physical size and the impression the observer receives about the size of the building.

TEMPLE STREET PARKING GARAGE, NEW HAVEN, CONNECTICUT, BY PAUL RUDOLPH.

A New Scale for Today?

Paul Rudolph suggests a new view of scale, one that is pertinent to our day: "I think we fall into the trap of judging today's architecture by classical rules. I don't believe that the Renaissance notion that a building must have a beginning, a middle, and an end is always applicable. If you're dealing with a Renaissance-proportioned building, well then, OK, that's one way of looking at it. But if you're dealing with a parking garage that is 3 miles long, that notion doesn't have any meaning at all, and if you're dealing with a 60-story high office building, it doesn't have any meaning. These are structures which have no beginning and no end.

"There are other rules, which are of the 20th Century, and we just don't understand these rules very well yet. What was efficient in theory is not efficient in terms of our production today. For instance, I personally don't think that diminishing the scale of structural members can be counted on for very much today. The nuances of change in structural dimensions have their limitations because of efficiency; in other words, it is economically more efficient to make a wide-flange column the same dimensions for all of its 40-ft height than it is to diminish it. Now, that doesn't bother me, because it is merely one of the facts of life. It is the efficient thing and the efficient thing never bothers me. (That probably sounds strange coming from me, but, believe it or not, I think there's something sublime about that.)

"I think that is a new rule dictated not by architects but by economics. And again, one has to work with it, not against it."

The New Scale of Today, then, may well be a kind of scalelessness that architects resist, or deplore. On the other hand, perhaps it is so new that, however contemporary scale should be expressed, we have not yet come to understand it sufficiently to do so.

I. M. Pei says, "The more I observe these things, the more I learn how little we know. In the next 5 to 10 years, we'll really see some development of it."

Yet today, man's view of his own size in relation to the size of his most aspirational buildings is clearly not one that shows the individual at the center of the universe, nor one that makes him insignificant before an omnipresent God.

What does today's scale say about our age? Will future historians reveal that the 20th Century, through its approach to scale, merely expressed the depressing inconsequentiality of the individual vis-à-vis the collective activity of society—merely the "scalelessness" of man himself within the vast megalopolitanian complexes and the even vaster outer space?—CRS

EXTERIOR VOLUME

The space-molding envelopes, discussed in the previous section from the interior point of view, are here analyzed in terms of their external impact.

A structural envelope, in other words, has two properties: it captures space, and, at the same time, displaces space, forcing its impact on urban space. John Johansen calls this dual function of the envelope, the form positive and the form negative. James Fitch speaks of Michelangelo's buildings as vessels or containers of human life and activity in two forms: the open or urbanistic, and the closed or architectural. Bruno Zevi clarifies the dual nature of architecture in stating that every architectural conception has an equivalent urbanistic one. And Susanne Langer, writing in more general terms in her book *Feeling and Form*, likens the envelope of a building to a living creature's skin or carapace, which serves as protection against the world and at the same time as the point of contact and interaction with the world.

It is in this respect—the interaction with the world, the relation of the single piece of architecture to the larger environment—that the outer form of the major space assumes such importance.

Set within the landscape or the cityscape, these major spaces have invariably served as important visual punctuations. Master builders throughout history have been fascinated by their placement, their size, their shape, their structure, the choice of material and color, and have found innumerable and ingenious ways of utilizing these major spaces in the urban context. There are, for example, the all-powerful, single volumes **(1)**, which dominate their settings in an unqualified way. There are the groups of major spaces **(2)**, unified and neutralized to define urban outdoor spaces. There are the monuments **(3)**—"the outdoor sculptures," as Philip Johnson calls them—standing free and independent of each other. There are the major spaces—sometimes lifted off the ground—expressed plastically **(4)** within larger, though neutral, complexes. There are the jewels **(5)**, set within anonymous, sometimes overwhelming, surroundings.

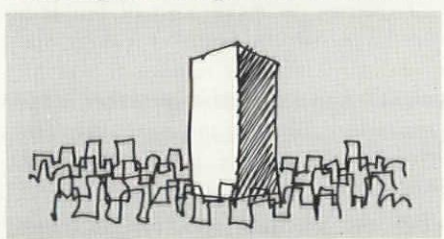
All of these depend essentially on visual contrast: the vertical against the horizontal, the large against the small, the finely detailed against the coarse, the rich against the modest, the busy against the quiet, the plastic against the modular.

Interestingly enough, all of these design approaches have their modern counterparts as shown in the following pages, though it is apparent that this contrasting of foreground architecture and background architecture is no longer easily accomplished by today's architects, nor is the contrast as clear-cut as it has been in former times.

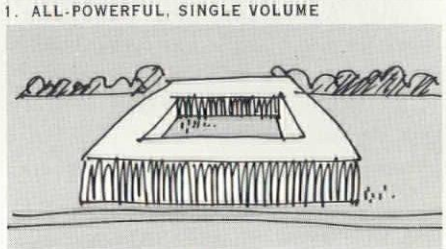
New technological possibilities, new demands, and economic pressures automatically encourage the construction of larger buildings—most of them of a cellular nature. "It is simply a matter of getting things in larger and larger envelopes," says Kevin Roche; "it will happen, because it will be the only thing one can do as architect—the economics suggest much larger buildings." It is obvious that this trend will make it more and more difficult for the major-space structure to compete with the huge cellular structures. And, looking still further into the future, there are today plans for super-structures which could span across the most imposing of the historic buildings, thus suggesting still another type of major space—the all-enveloping super-shell **(6)**.

Such super-shells would unquestionably be more in scale with the huge and inhuman scale of railroads and highways which at present tend to dwarf major buildings. "The future of architecture," says Paul Rudolph, "is going to be very much concerned with how we relate the automobile to buildings." I. M. Pei, too, believes that "automobiles do a great deal of damage to space-making. We will have to rethink the problem," he says.

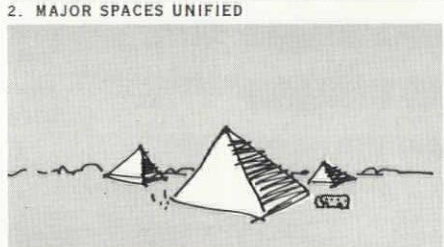
How, then, are today's architects approaching the design of major space? And what impact will these commanding structures have on the present and future environment? Some of the difficulties as well as successes of these architects are brought to light in their own words and the designs that follow.—IMR



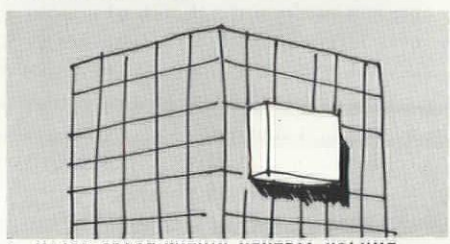
1. ALL-POWERFUL, SINGLE VOLUME



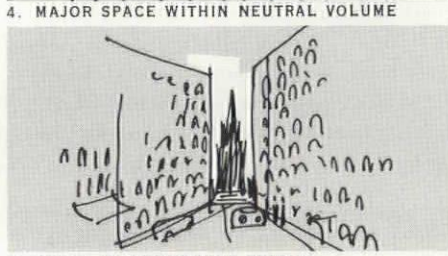
2. MAJOR SPACES UNIFIED



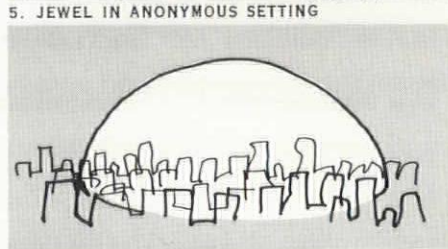
3. OUTDOOR SCULPTURE COURTS



4. MAJOR SPACE WITHIN NEUTRAL VOLUME

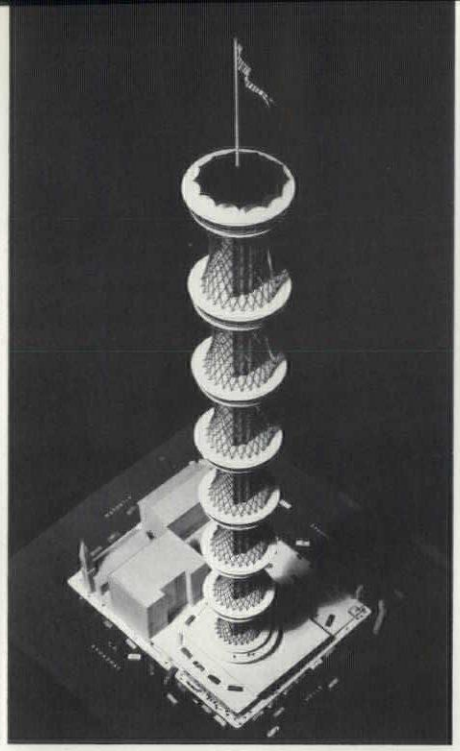


5. JEWEL IN ANONYMOUS SETTING



6. ALL-ENVELOPING SUPER-SHELL

SANCTUARY OF THE VIRGEN DE LA CABEZA, ANDUJAR, JAEN, SPAIN

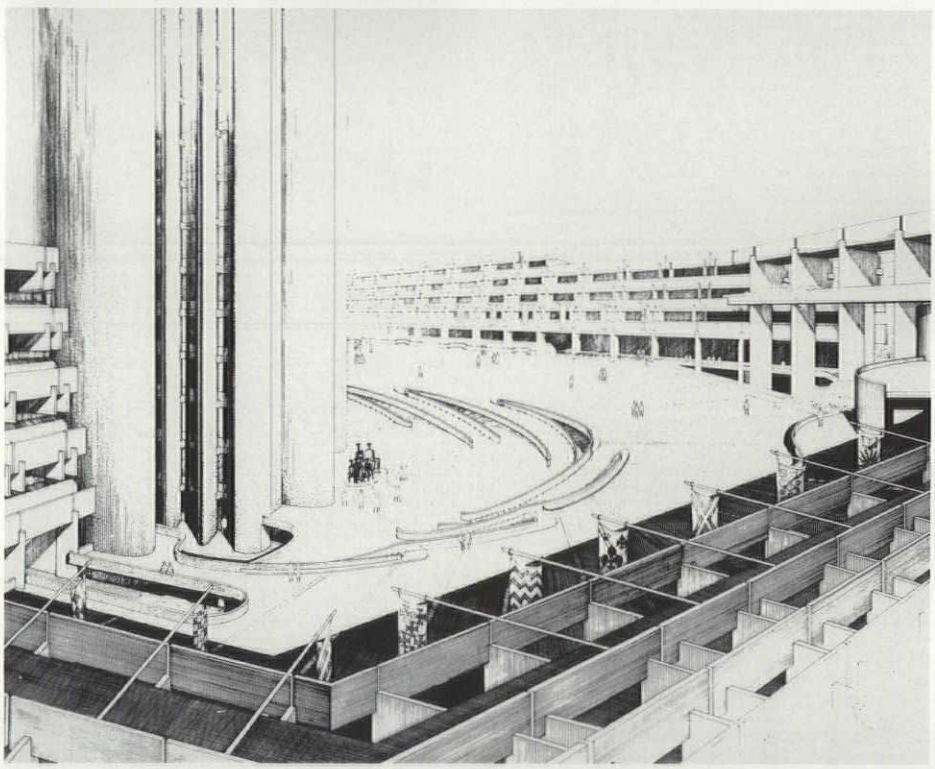


1

All-Powerful, Single Volume

Above the jagged skyline of Milwaukee, this new 999-ft observation tower **(1)** is to establish itself as the new visual focal point of the city. Comparison of the new tower with the nearby existing church points to the vastly changing scale of urban environments and to the complexities of expressing visually the multiple functions of future buildings. According to Robert E. Rasche, architect of the tower, its various segments are to house (*from top to bottom*): A revolving restaurant, cocktail lounge, observation galleries, exhibit areas, aquarium, deer park, historic museum, pump room, offices, hotel rooms, and parking spaces. Dr. Lev Zetlin is the engineer for the circular hyperbolic paraboloid structure.

The vertical and dominant element—the tower in Paul Rudolph's new Health Center for Boston **(2)**—is made up of many small office cubicles, as is the horizontal block which circles the tower. Is it justifiable, some architects ask, to force a quantity of small office cubicles into a tower for the sake of an urban focal point? "It can obviously be criticized," says Paul Rudolph, "because you have offices in the tower, as you do in the lower portion. I justify that in terms of urban design by saying that this is a public building and therefore should read from a distance. But because of the large site, it would have been wrong to have only a tower. You also have to define the streets. First, you have to make peace from a distance; second, you have to make peace with what's on the other side of the street; third, with how you approach the thing. There is a small auditorium within the volume of the building, but it would have been too small an element to pull out." Continuing this train of thought, he observes, "One of the most disastrous things that's happened in urban design is the so-called "binuclear" scheme, which has been used willynilly direct from the Harvard school of architecture."



2

On rare occasions, it is possible today for the architect to design a major space in the traditional way—as in this case, playing the verticality of the church against the horizontality of the houses. "We had at our disposal a clear, dominating site in the new part of Neustadt," say architects Hans Kammerer and Walter Belz, who designed this new church **(3)** in the center of a new housing estate in Southern Germany. "With our church we hoped to gain a center of gravity in the new town, not unlike the church in the old part of town." In attempting to express the dominant volume, the architects remark, "We did not want to experiment with new forms, but wanted to find again the old forms with the means of our times."

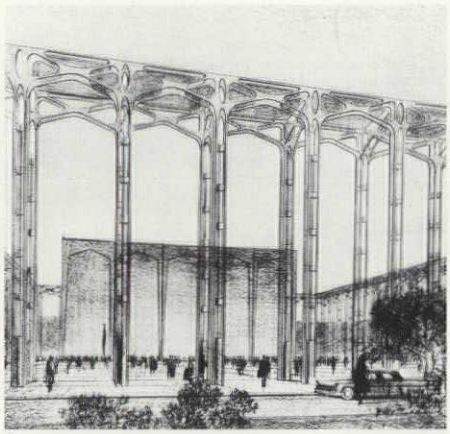
3

ALL-POWERFUL, SINGLE VOLUME: THE "MERVEILLE" OF MONT ST. MICHEL, FRANCE

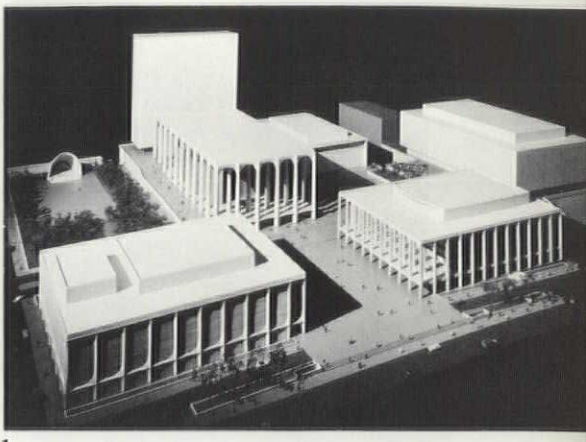
MAJOR SPACES UNIFIED: PROCURAZIE NUOVE, PROCURAZIE VECCHIE SEEN FROM ST. MARK'S CATHEDRAL, VENICE

Major Spaces Unified

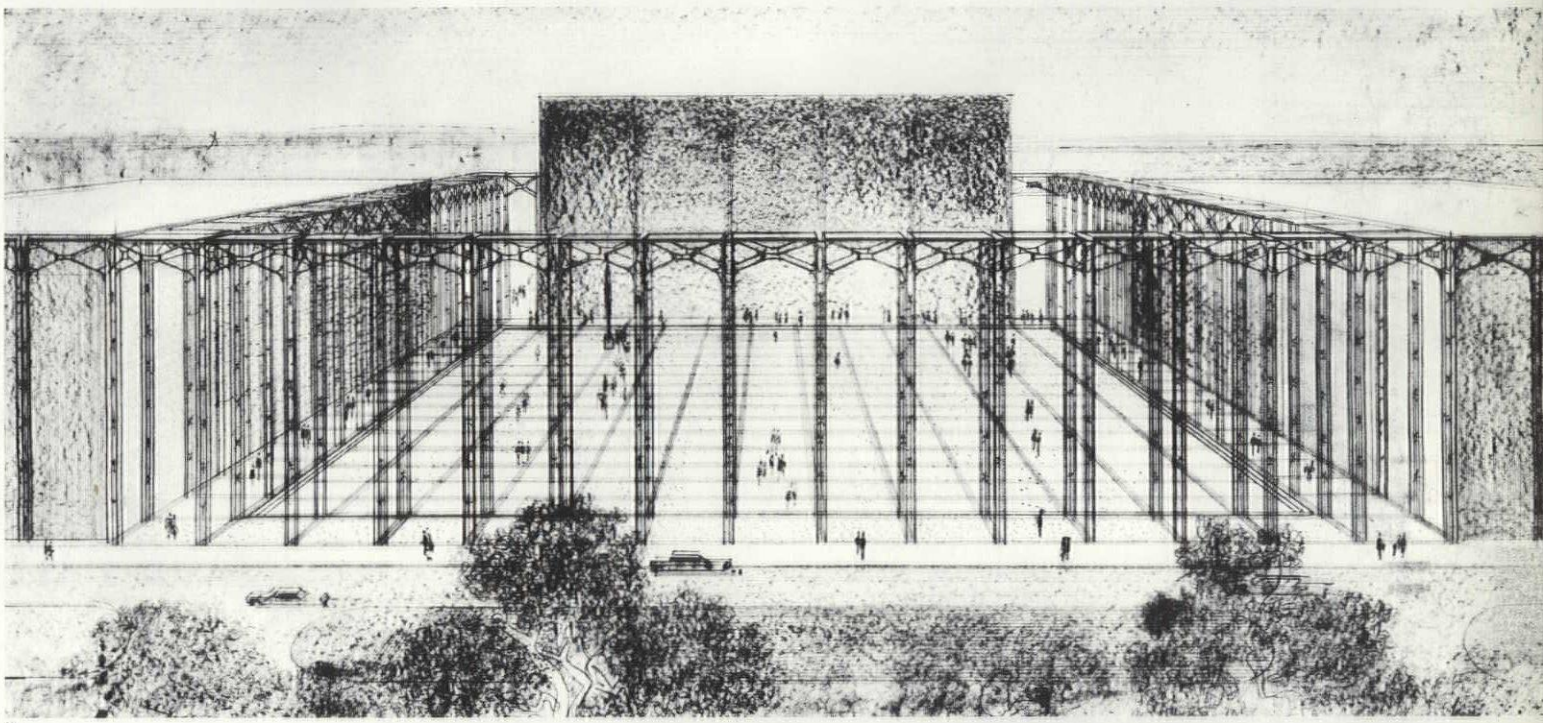
It is fashionable today to build centers of all kinds—cultural centers, civic centers, commercial centers. These collections of major buildings have, to some, taken on the symbolic content of the major landmark in the cityscape. Some of these have been architecturally successful; most however, reveal the difficulties of the design-by-committee approach. Lincoln Center, now nearing completion in New York, is a case in point. Shall the major elements be neutralized to form a unified whole?



2

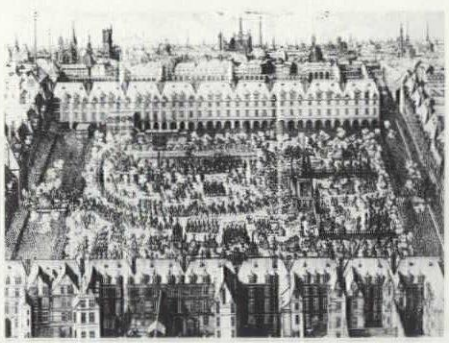


1

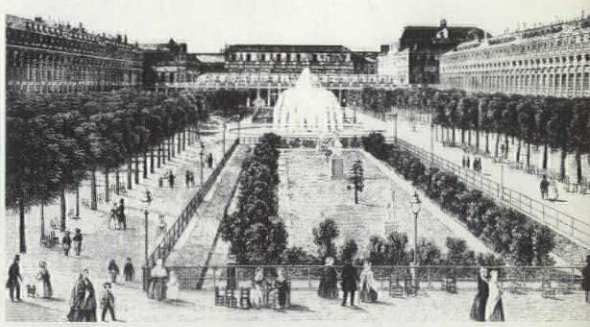


3

Shall one of the major spaces dominate? Or shall each major space be treated individually? Most often, it is the last of the three approaches that is followed for mere convenience's sake. "Each of us had an idea of a great outdoor space," said Philip Johnson, who was assigned the task of designing the New York State Theater, "but, since there were six architects, of course there were six buildings **(1)**. I wanted to make what is now an exterior plaza into an interior space **(2)**, although without a roof. My original idea was a colonnade around the whole thing, 70 ft high, with anonymous buildings backed up against it. I was going to create the space outdoors and let the buildings be anonymous **(3)** . . . like the Place des Voges **(4)**, like the Palais Royal **(5)**. In the space that I was going to make out of that plaza, the Metropolitan would have dominated, as St. Mark's cathedral **(6)** dominates the square in Venice, as St. Peter's **(7)** dominates its plaza."



4



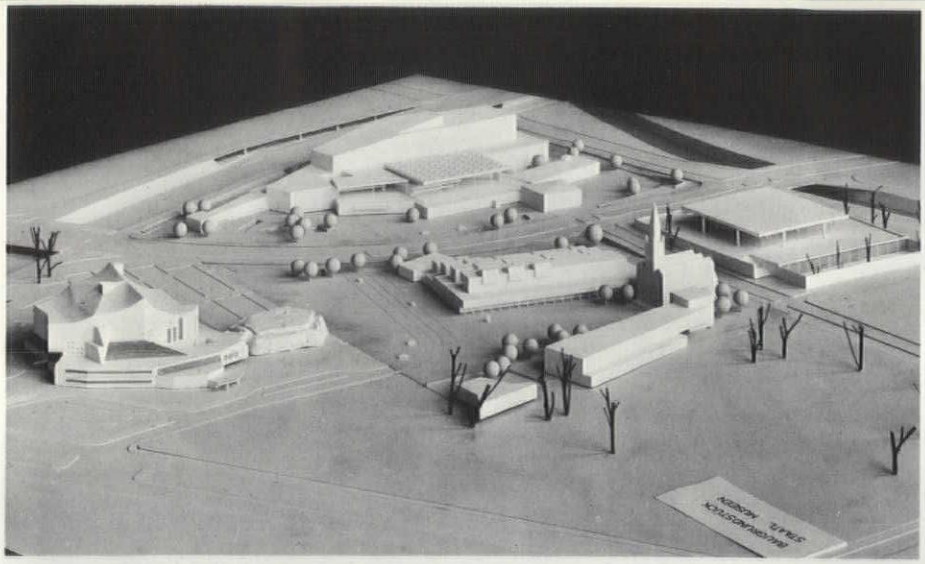
5

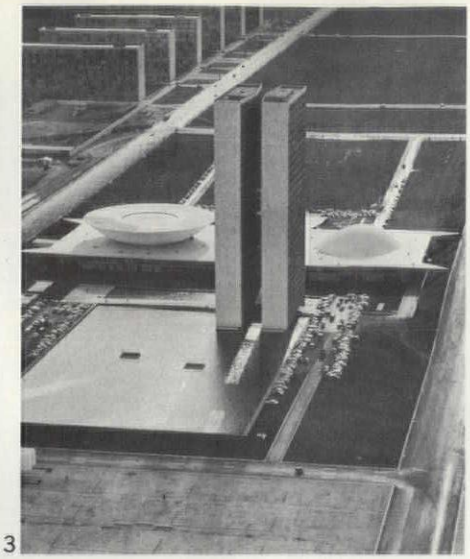
6

7

OUTDOOR SCULPTURE COURT: TEMPLES OF ANCIENT CITY OF PAGAN, BURMA

MAJOR SPACE WITHIN NEUTRAL VOLUME: TEMPLE CARVED INTO LUNG-MEN CLIFF, HONAN, CHINA





3

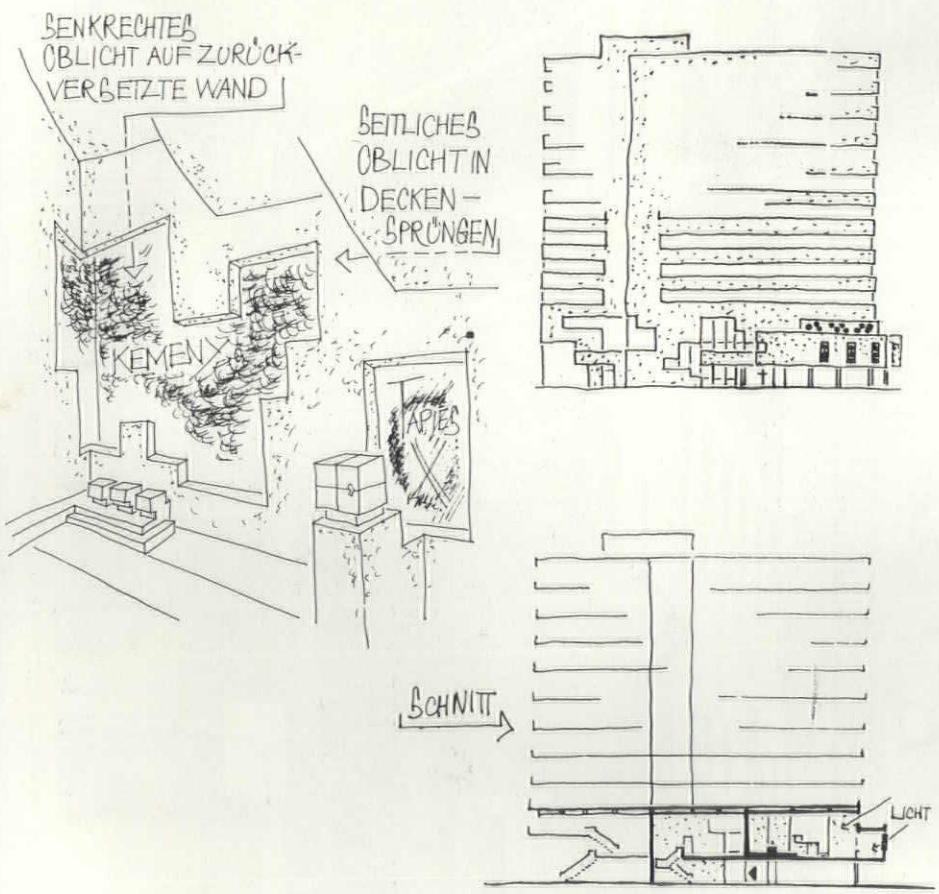
Outdoor Sculpture Courts

Though they may be related to each other on a site plan, major buildings when completed often take on the appearance of exercises in a sculpture garden.

This is the case with Berlin's new cultural center **(1)**. Scharoun's completed "Philharmonie" one of the strongest of the contemporary major-space buildings, appears curiously unrelated to the projected State Library (*center of model photo*), also by Scharoun. Mies van der Rohe's Gallery of the 20th Century (*right, in model photo*), the third major building in the complex, stands, in turn, as a monument by itself.

The demands of advertising and transportation were responsible at Kennedy International Airport in New York **(2)** for another kind of sculpture garden. Individual major spaces, each serving as a billboard for its airline owner, are necessarily widely dispersed to leave enough room for the parking of cars and planes.

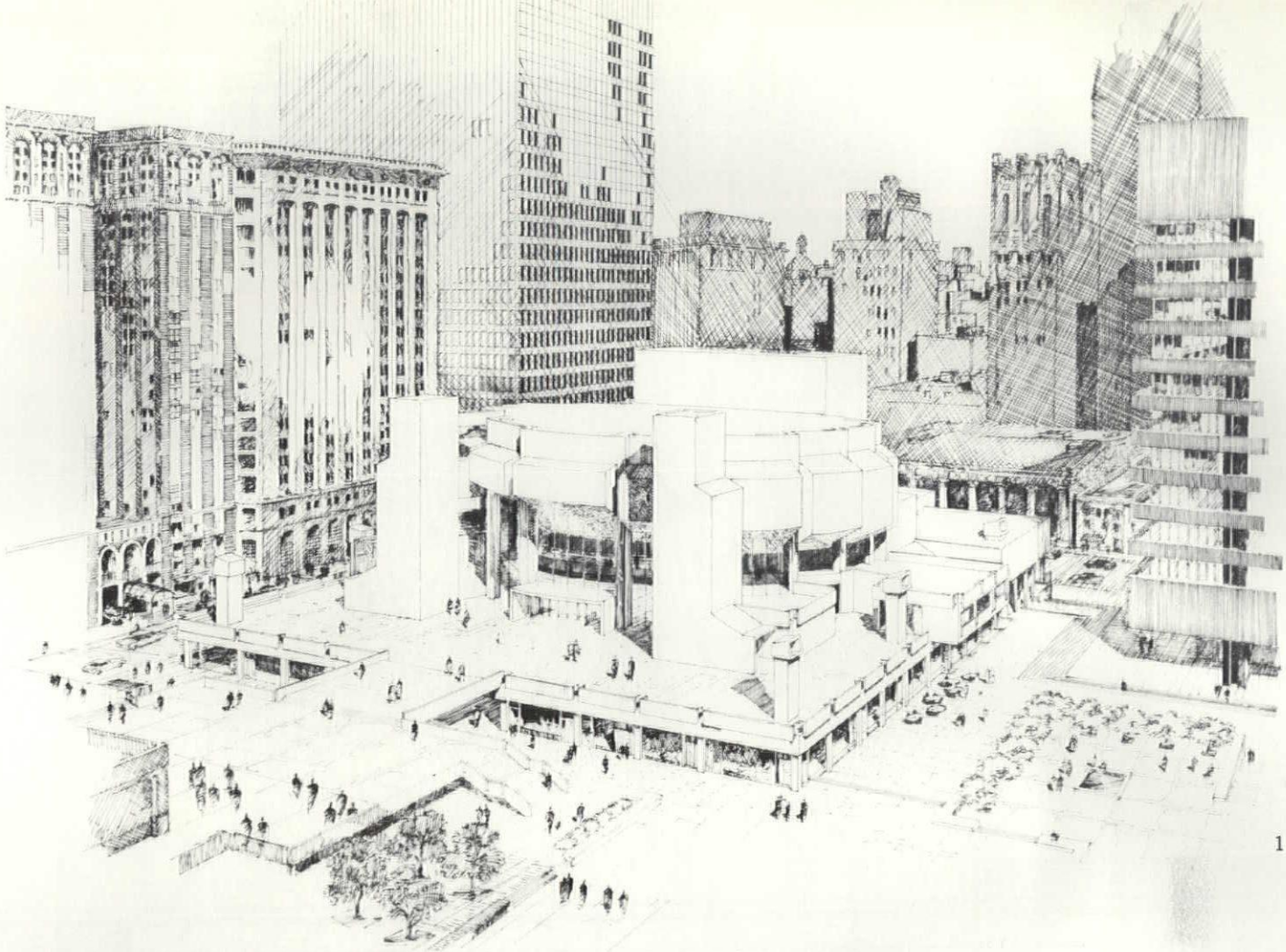
The epitome of the outdoor sculpture court, Philip Johnson believes, is Brasilia **(3)**. "That derives from Le Corbusier's idea of the building," he says; "his feeling is sculpture—he does not care about cities."



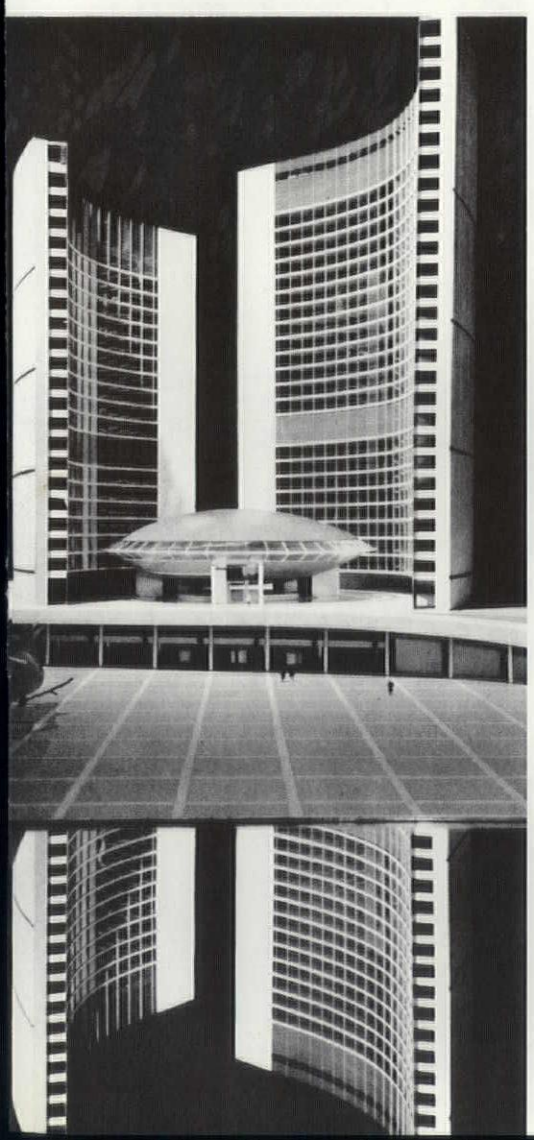
Major Space Within Neutral Volume

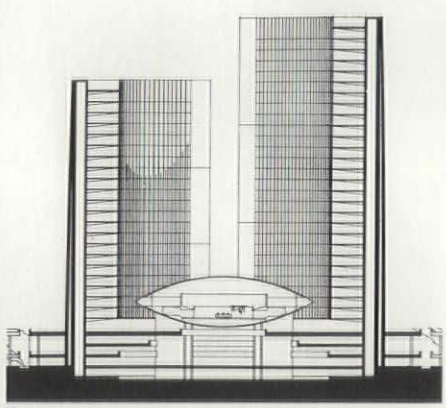
The Swiss architect Walter Foerderer, among others, proposes the incorporation of major spaces into the framework of cellular or neutral structures. A chapel, for instance, could be incorporated into an apartment tower **(4)**. The major space—the chapel—would be expressed plastically, in contrast to the geometric, regular grid of the apartment tower. Foerderer's main design effort would be concentrated on the molding of the interior space and its artistic enrichment. Urbanistically, this approach has the advantage of letting the trend toward larger buildings take its natural course, while the major space can still be freely expressed.

JEWEL IN ANONYMOUS SETTING: TRINITY CHURCH AMONG WALL STREET OFFICE BUILDINGS, NEW YORK



1





2

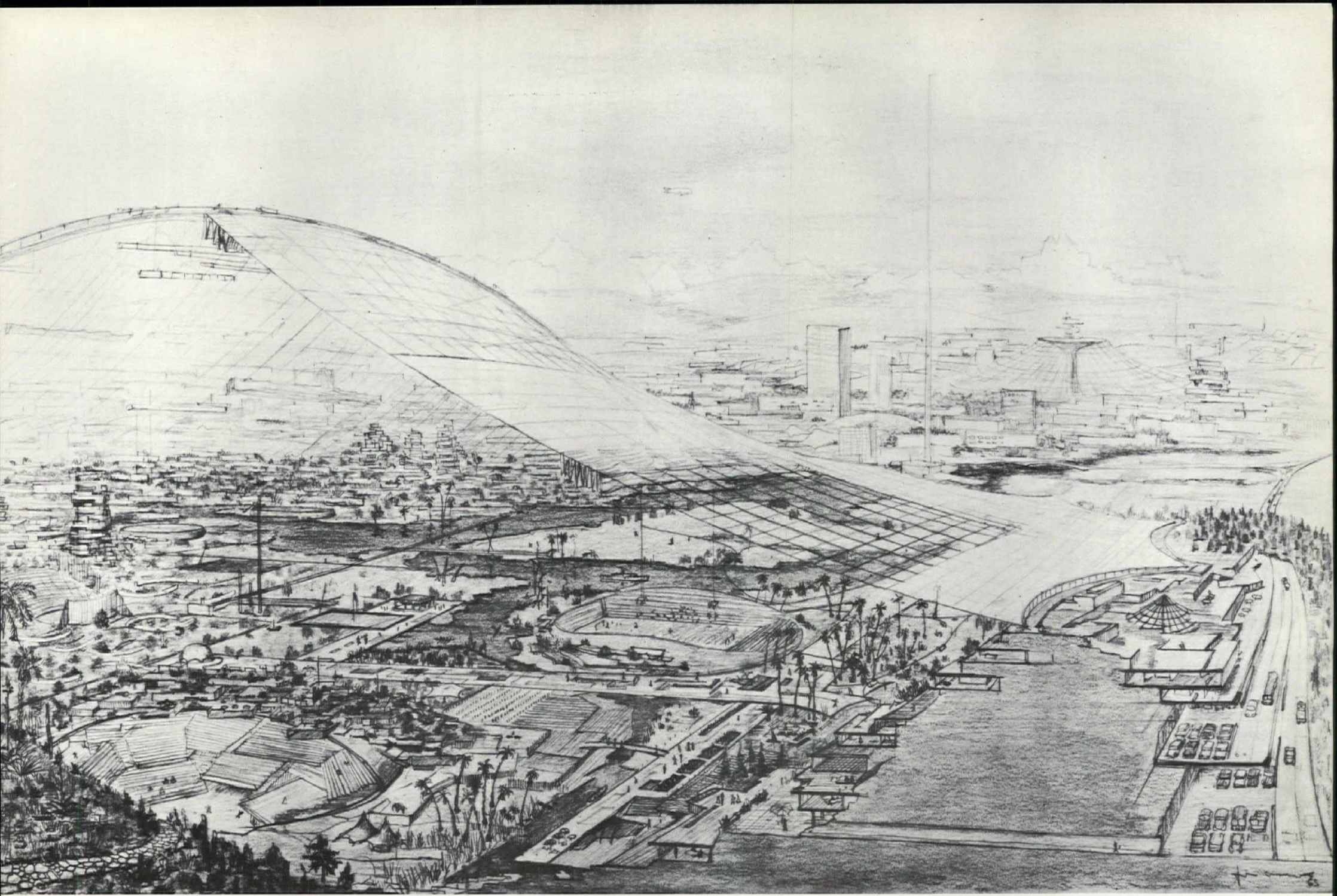
Jewel in Anonymous Setting

"In cities, we have no longer the opportunity of disclosing buildings in any grandeur," observes Lawrence Halprin. "The most important buildings—those that have great symbolic value—are often the smallest."

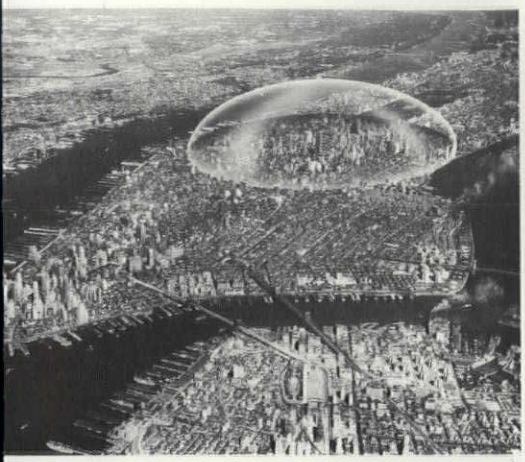
The theater by John Johansen for Baltimore **(1)** is a typical example of an important civic building being dominated by higher though less significant structures. Johansen's design approach has been to shape a plastically strong form that would contrast with the modular office structures.

Viljo Rewell encountered this problem in the design of the Toronto City Hall **(2)**. But instead of submerging the Council Chamber into the necessarily bulky office blocks, he has laid bare this major space and treated it as a jewel. In their curving and embracing form, the two office structures appear to give added emphasis to this small but important civic building.

There are obviously still other ways for a building to assert itself, but, as Paul Rudolph points out, "How to make a small but significant building dominate remains one of the great 20th-Century problems for architects today."



ALL-ENVELOPING SUPER-SHELL: SQUARE-MILE RETRACTABLE ROOF OVER RECREATION CENTER OF LARGE NORTHERN CITY.



1

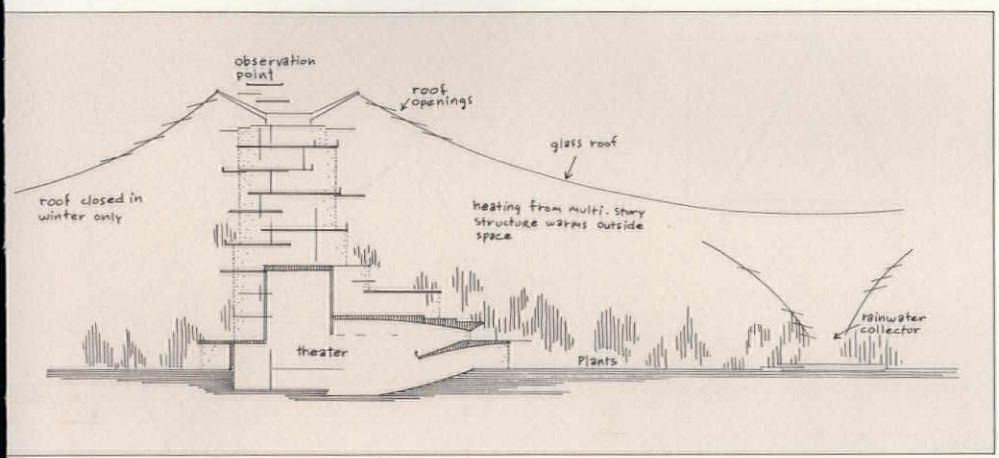
All-Enveloping Super Shell

"The furnace and the forge shall be at your service," predicted John Ruskin at a gathering of Members of the Architectural Association of London in 1857. "You shall draw out your bars of iron till you have encompassed us all—you shall put, if you will, all London under one blazing dome of many colors that shall light the clouds round it with its flashing."

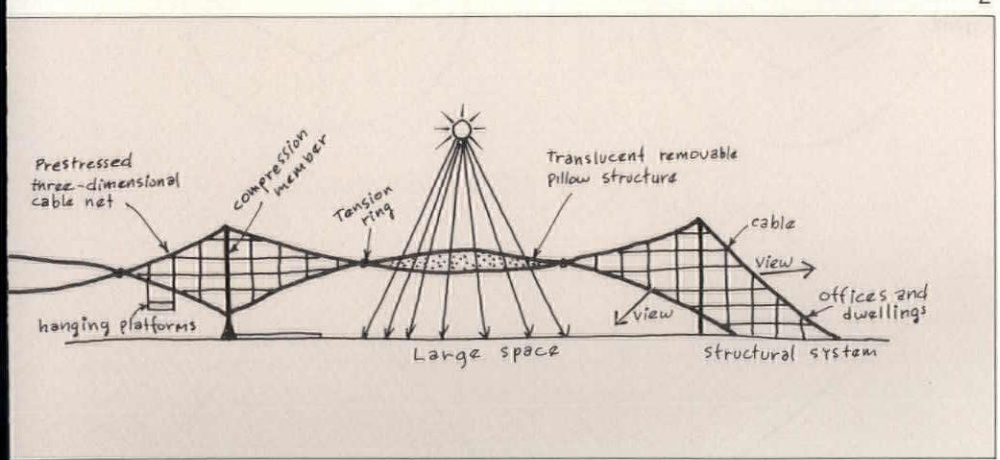
"It is entirely possible today to construct such roofs economically," says one of today's serious investigators of superstructures, Dr. Frei Otto. He and his group of young German architects feel, however, that it may be unrealistic and even dangerous at the present to cover densely populated cities with great closed roofs as Buckminster Fuller has proposed for New York **(1)**. Instead, they are concentrating their design efforts on structures for intemperate climatic zones. These could be smaller roof structures, such as the retractable glass roof suspended from a multistory building **(2)**, or the "translucent, removable pillow structure" supported by three-dimensional cable-net structures containing offices and dwellings **(3)**. A climate-controlling enclosure of this nature is indeed reported to be under way in Siberia, where parts of the diamond mining city of Aichal are to be covered.

But, as Dr. Otto suggests, "the structural problems of the superstructure are minimal compared to the sum of other matters of a city's structure that must be considered." He would restrict the use of superstructures "to new or easily adaptable smaller tracts in the metropolitan area." The convertible indoor-outdoor spaces, devoted to parks, theaters, and recreation areas, he believes, could become the "dwelling rooms" of the city—that is, the new major spaces.

Whether it is possible to give architectural and spatial definition to such vast, continuous structures, or whether they will become a dehumanized non-space, can only be imagined at this point **(4)**. Their possible impact on the cityscape and the landscape is revealed by Dr. Otto's drawing of a square-mile roof (*facing page*), over part of a northern city, which is to close automatically as temperatures reach below 14 F. "These structures," he says, "provide the opportunity to create very stimulating and concentrated cities developed in three dimensions. It is only a question of time," he predicts, "before city planning thinking will include such structural systems in a useful way . . . these superstructures may be the new centers of urban life."—IMR



2

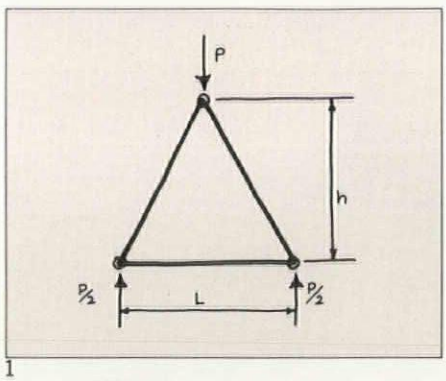


3

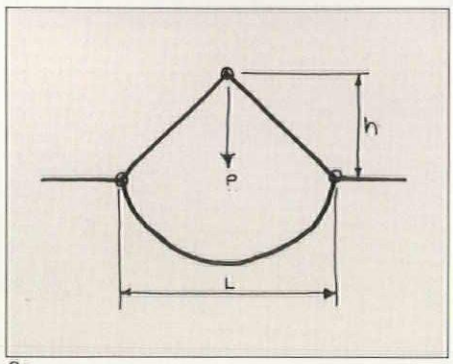
4

STRUCTURE

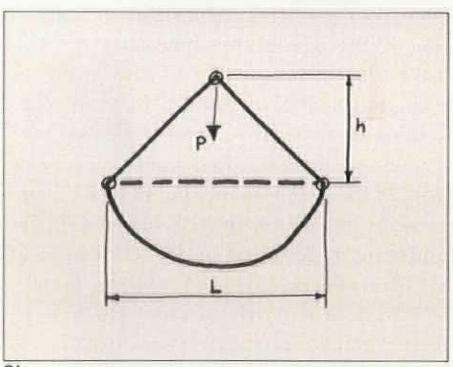
After a brief examination of the structural principles upon which all building forms are based, the author proceeds to demonstrate how these have been put to work by designers to evolve some of the great spaces of our recent history, including the Paris Exhibition Palace and the Houston Stadium.



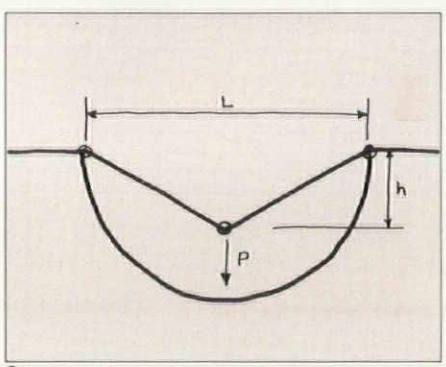
1



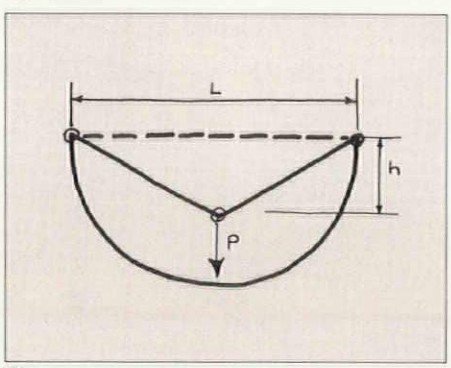
2a



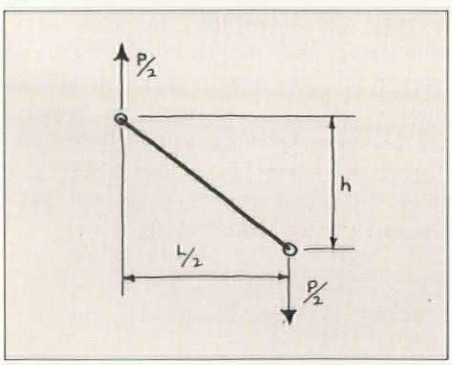
2b



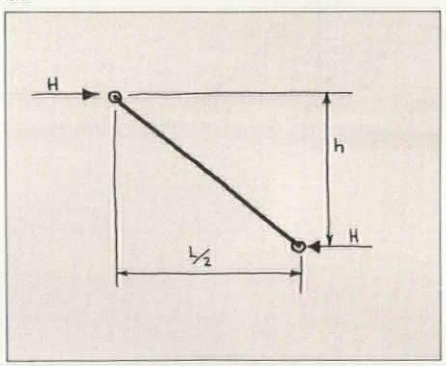
3a



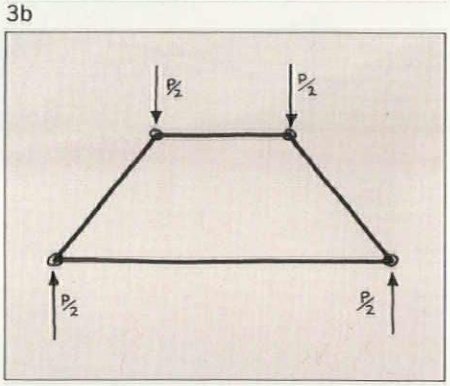
3b



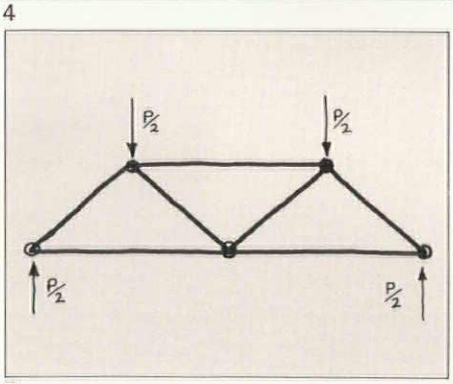
4



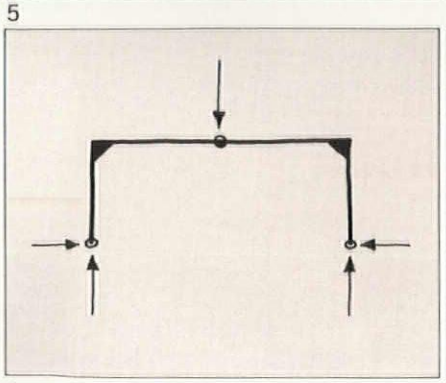
5

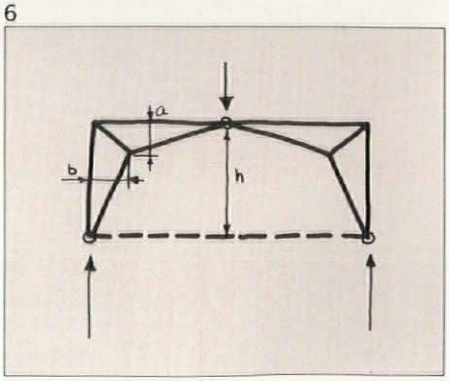


6



7


8



9

BY WILLIAM J. LE MESSURIER
The author heads his own firm of William J. Le Messurier & Associates, Boston.

The design of space is the business of architecture. Yet space by itself cannot be directly comprehended. Only by its boundaries can we perceive a particular space. But even boundaries must be perceived. Imagine being somehow suspended in a vast, translucent, evenly lighted sphere. If we are prevented from moving, making a sound, or seeing with both eyes at the same time, perception of space would be impossible. It is through sound reflection, relative motion, variability of light, and perturbations of boundary form that space is experienced.

Space is defined by its boundaries in two opposing ways. Within our imaginary translucent sphere, we find enclosed space. Being clearly defined by its enclosure, the space has a static solidity. But an observer outside would see an altogether different space, limitless in all directions except as it impinges on the sphere. This is exclosed space. It is dynamic, fragile, and strongly defined only in the region of the form that it surrounds. Exclosed space is less easily perceived, yet it is an essential ingredient of design. Major spaces are always a mixture of both enclosed and exclosed subspaces. Defining the interplay between space enclosed as a whole, and the excluded space surrounding the means of enclosure, is the function of architecture.

Perhaps because it so strongly defines both kinds of space, Eiffel's Tower induces a special experience. We must for a moment forget the strong image of the Tower as an object with its two-dimensional decorations to see its spatial grandeur. From miles outside Paris, it dominates the excluded space around it, but as it is approached and as one passes between its four great piers, the sense of powerfully enclosed space is dominant. Ascending and descending the Tower, an infinite gradation of spatial nuances is felt, which if it does not lead to vertigo, will deepen our understanding of space in all its dimensions. Although we will speak only of enclosed spaces hereafter, this structure sets a standard that emphasizes both aspects of spatial quality.

Basic Principles

All structural forms are based on a few principles that are inherent in the geometry of statics and may be found as common elements in every structure. A brief examination of these principles will provide us with tools for the comparative evaluation of structures.

The simplest structural form is a straight bar that transmits a constant force between two points. In an imaginary world of straight bars—truly homogenous materials—and ideal forces, a bar's cross section would be arbitrary. In the real world, no perfect member, ideally loaded, occurs. The effect of gravity, deviation from perfect straightness and homogeneity, and transient secondary forces, all prevent the realization of the ideal form. However, when the transmitted force is tension, these effects are often trivial and with many materials the structure in tension adjusts itself under load to approach optimum performance. Under a compressive force, the opposite is true. To the extent that the structure deviates from a straight line or is subject to extraneous forces, the compressive load will amplify the structural distortion. The important point for our discussion is that the ideal prismatic bar carrying a load between two points is a one-dimensional form, incapable of enclosing space.

Closed Loop

Structures that are architecturally useful redirect or modulate forces. They always involve action and counteraction within the structural form. Restricting ourselves momentarily to two dimensions, all structural forms may be diagramed as a closed loop, or series of closed loops. The simplest example is the pin-jointed triangle **(1)**. The closed loop, easily apparent, is made of elemental bars. The magnitude of the forces within the structure and the amounts of material are functions only of material strength and the proportion h/L. At this point, it is important to see that the simple arch and cable structures **(2a** and **3a)**, are also closed-loop structures, essentially the same as shown before **(1)**. The closing link in the loop is provided by the earth, replacing the link that is shown as a dotted line **(2b** and **3b)**. It is characteristic of all these forms that their ideal proportions are never arbitrary. Provided that material properties, cross-sectional proportions of the prismatic links, and all forces are fully defined, an optimum value of h/L will exist. Looking at one of the elements **(4)**, we see that the function of the structure is to redirect the force P/2 parallel to itself, but translated a distance of L/2. This redirection may be stated formally as the product $P/2 \times L/2 = PL/4$, which is a bending moment. To produce this redirection, the structure develops compensating forces that counterbalance the external moment **(5)**. These compensating forces H, separated by the distance h, also produce a bending moment, Hh. The condition for equilibrium is that the external moment PL/4 equals the internal moment Hh. The design variables are the material and cross-section of the bar and the dimension h. The important variable from the visual and functional point of view is h, the internal moment arm of the loop. If we neglect the structure's own weight as small in relation to P **(3a)**, it may be shown that the optimum h is L/2. For each loop, there will always be a proportion that may be optimized. This is the proportion between the external moment arm of the loads and the internal moment arm of the structure.

Chain of Loops

We have stated that all planar structures may be diagramed as closed loops. A four-link loop which is, however, unstable is illustrated **(6)**. If we make a triple-loop **(7)**, we form a chain of loops. Thus, the common Howe Truss may appear as a chain of loops again with an optimum value of h/L. The ordinary beam is the extreme case of a chain of loops having in effect an infinite number, giving it ability to be loaded at any point. Diagrammatically, however, the simple beam may best be thought of as a single loop consisting of continuously connected tension and compression regions. Beams also have optimum depth to span ratios. This optimum will depend on the load intensity in relation to material strength and the proportions of the cross-section.

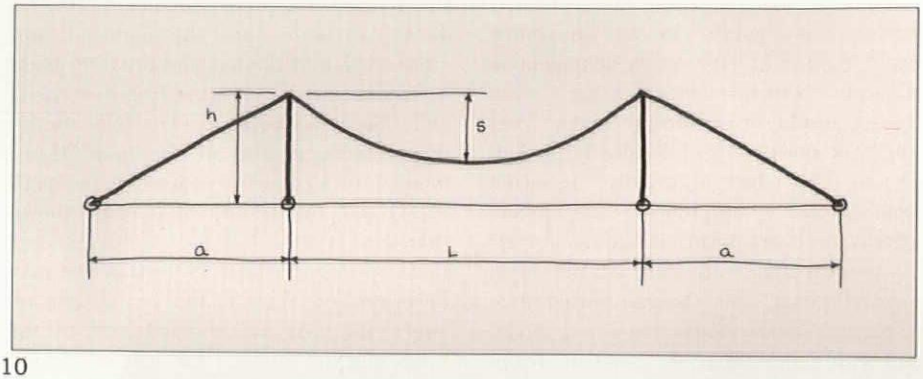
Finally, useful structures are made of chain loops, which themselves form higher order loops. Thus, the three-hinged structure **(8)** may be diagramed as **(9)**. Here, the dimensions a, b, and h are each the moment arm of a loop. As a final example, a common suspension bridge made of two loops, defined by a/h and s/L, is shown **(10)**. Here, h and L/4 are external moment arms, and a and s are internal moment arms.

All of these two-dimensional structures have their equivalent forms in three dimensions. The triangle **(1)** is matched by the tetrahedron **(11)**. The beam in two dimensions corresponds to the slab. Each form is a closed loop in three dimensions. Each form will redirect forces in two directions and have two ratios of internal moment arm to span.

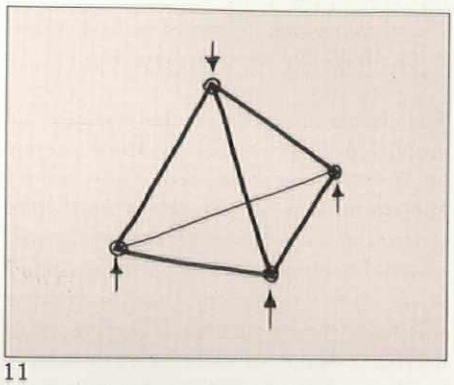
In looking at structural forms, the clearest understanding of their action will follow from seeing the loop of action and counteraction, which is defined by the internal and external moment arms.

Optimization of Structural Form

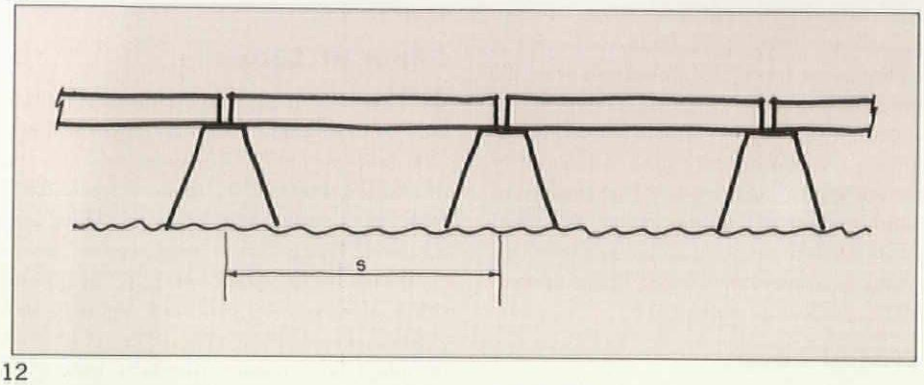
We have spoken of the optimization of a structural form. It must be understood that



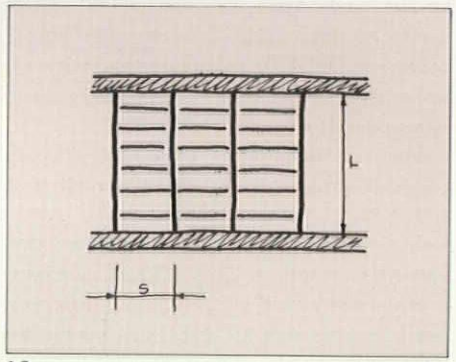
10



11



12



13

this is a purist's abstraction. In planning structures for real buildings, the limitations of manufacturing technique, the cost and character of secondary structures, and the functional utility of space itself, all modify the importance of the efficiency of the primary structure. But when we consider the enclosure of large spaces, the cost of structure is relatively high, so that perfection of structural form is a proper objective. The larger the space, the more demanding is the need for structural efficiency. It is no accident that the largest spaces have been enclosed with some form of dome or arch. These forms are simple loops with large internal moment arms. We are likely to continue using them for many centuries, although the inflated tension dome may replace the gravity-compression dome of today.

The purest structures built by civil engineers are bridges, and the largest are suspension bridges. The suspension bridge of several-thousand-ft span uses tension cables not primarily for efficiency of tension over compression, but because construction by "spinning" a cable is the only practical means of getting the bridge in place. Given the suspension bridge as a form, the designer's variables are back-span length and cable sag. The proportions that have been worked out over the past 100 years are familiar to all of us. Yet we take them for granted without realizing that a process of optimization has produced them. Except possibly for domes, no commonly understood proportions have yet emerged as far as large-span building systems are concerned.

Distribution of Materials

We have seen that the three-dimensional forms that enclose space may be diagramed as closed surfaces and that optimum proportions for these surfaces exist within defined criteria. Independent of these proportions, however, are the principles that govern distribution of material within a form. Here, the principle of concentration operates. This may best be understood from a few examples. A bridge over a lake is shown **(12)**. The designer must decide the spacing of the piers. It is obvious that pier cost will be lowest with the fewest piers or the greatest spacing. But while piers get cheaper, the deck spans become more expensive. At some spacing, s, the combination of pier and deck costs will be a minimum. The principle of concentration applies to the piers, which become more efficient as their number decreases and their individual load increases. The optimum concentration depends on the efficiency of the deck.

A similar situation exists in distributing material in flat surfaces. Assume two parallel walls with girders spanning between them a distance of L at a spacing of s **(13)**. Since the weight of bending members (provided that their cross-sections are geometrically similar) increases only as the two-thirds root of the external bending moment, the girder material will decline with increasing spacing. In other words, the more the load is concentrated on the girders, the more efficient they become. In conflict with the increasing girder efficiency is the greater effort required by the secondary beams to span between the girders. As s increases, they will clearly require more material. It follows that an optimum spacing will exist that minimizes the total material used. For any given materials and framing system, there will always be optimum proportions.

An exception to the principle of concentration occurs with tension members. Since a tension member will not buckle as long as it remains in tension, the allowable axial-stress level is independent of slenderness. In fact, in most materials, the highest strengths are achieved in the smallest fibers. In certain structural forms where reversal of stress can be prevented, a diffuse, closely spaced web of tension cables will naturally result from the need to minimize infilling material.

Conclusions from Principles

What conclusions may be drawn from these principles that apply to the structural enclosure of large spaces? Of greatest importance is the need for a structural loop whose dimensions are in proportion to the space being spanned. Not only is this important for structural efficiency, but equally so for comprehending the space. When the structural loop is concealed, the space can become scaleless. Compare the experience of driving over a suspension bridge to traversing a bridge whose deck is supported by an

arch below. In the first case, the sweep of cables down from the towers makes the scale of the span apparent, while the second is seen only as a one-dimensional deck.

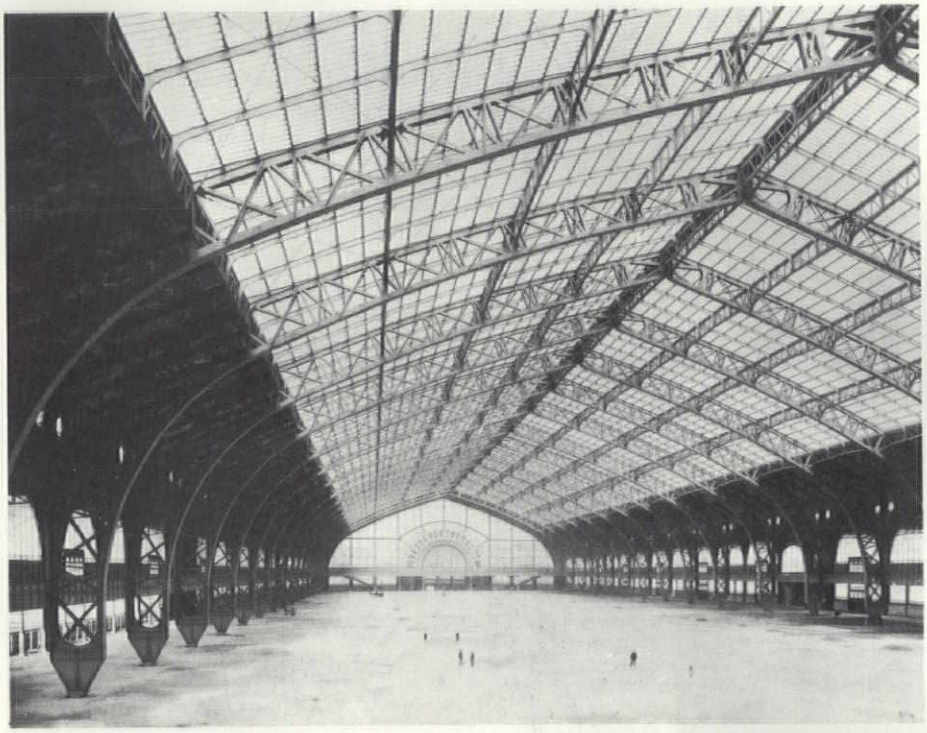
Within the form set by the over-all loop of structure, we may expect to see the principle of concentration at work. This will lead to a hierarchy of structural elements, each being balanced with its subordinate members to achieve an efficient whole. When this balance is achieved, further visual clues to scale will automatically follow. Boundaries will be modulated and articulated, leading to the most direct comprehension of space.

Application of Principles

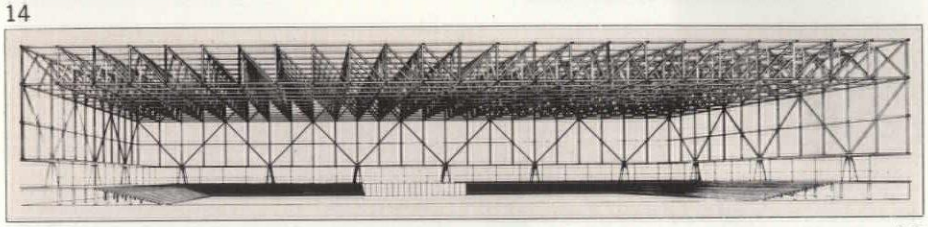
How are these principles put to work by the designer? The process is most often an evolutionary one. The number of steps forward made by an individual design are usually modest. It is the collective experience from which perfected forms gradually evolve. Structural efficiency is learned; the optimization of a single design is rarely attempted. In any case, the pursuit of material efficiency is bound to go on as we build ever greater spaces. It is a cliché of United States designers to say that high labor costs prevent the use of efficient structures. But this is only relatively true. When structural forms are conceived that are truly efficient, they invariably come to market because our industrial genius learns how to produce them efficiently. Let us review the progress we have made so far.

Three-Hinged Framing

For 2000 years, man's great spans were built with masonry vaults or domes. Although substantial spans were achieved, our contemporary scale depends on the 19th-Century's development of metal structure. Within a few decades, the character of long-span construction was permanently changed. The culminating example, both technically and aesthetically was the Galerie des Machines built for the Paris exposition of 1889 **(14)**. Spanning 374 ft, its great three-hinged frames boldly dramatized the total form, which included the ground plane as a tension tie within the structural loop. As designed by the engineers Contamin, Pierron & Charton together with C.L.F. Dutert, Architect, its full impact is achieved by the scale and organization of individual elements. The frames, whose internal moment is 11 ft, are spaced 65 ft apart. This generous spacing, which concentrates the load on the three-hinged frames, was achieved by an efficient infill consisting of trusses 39 ft o.c. supporting

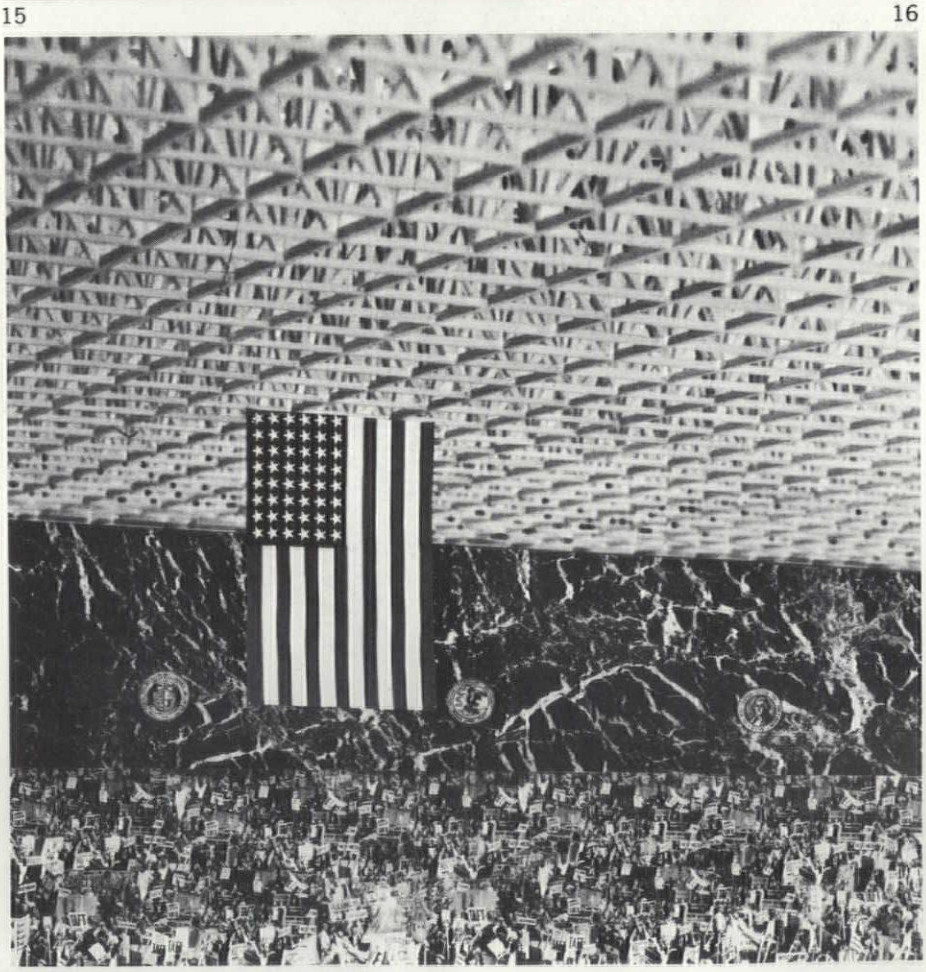


14

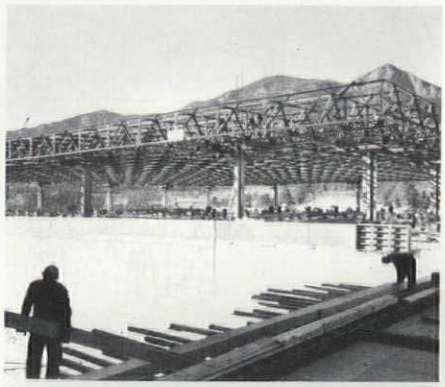


15

16

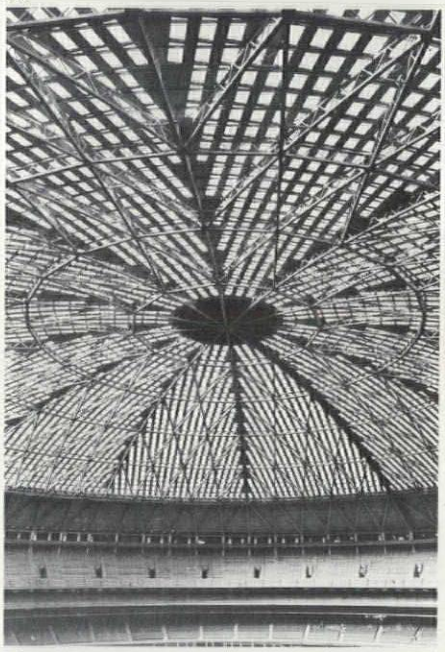


continuous beams 16 ft o.c. that finally support purlins at about 6 ft. The final enclosure was glass spanning 20 in. between muntins. This hierarchy of elements remains a classic statement of the principle of concentration. The 20th-Century eye, which is accustomed to sleeker structures, may fail to see the extraordinary lightness of the Galerie des Machines. Nevertheless, this lightness was not lost on contemporaries who complained that the supports were "too empty." The Galerie des Machines was conceived as a one-way structure, but, within this limitation, it was a very nearly perfect solution. Although we have improved materials and connecting techniques, the structural form remains a timeless model.



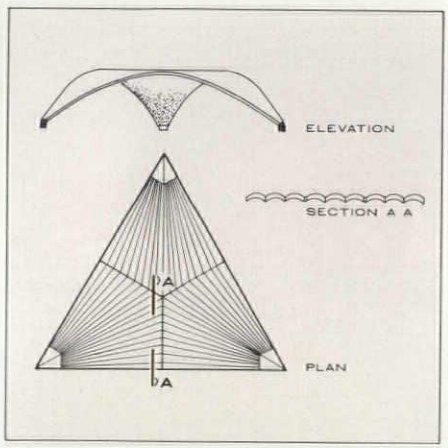
17

18

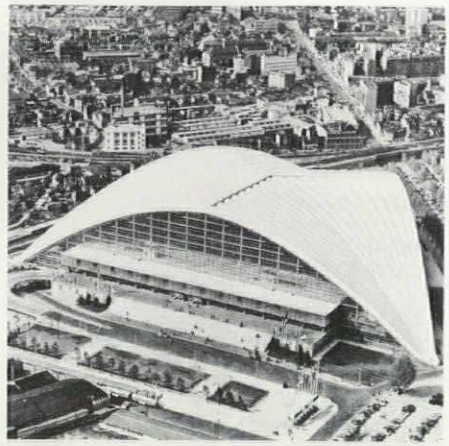


19

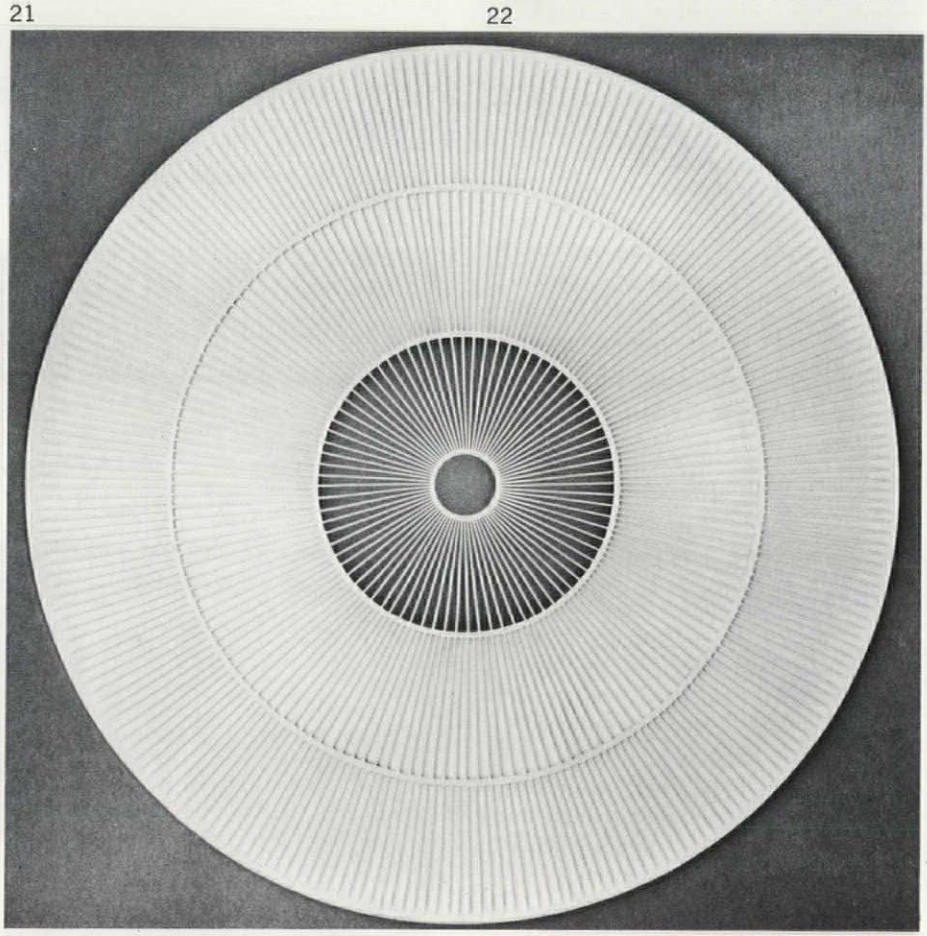
20



21

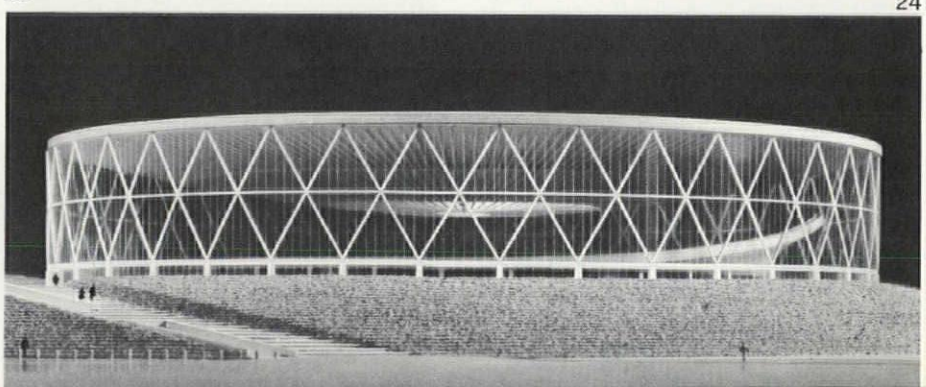


22



23

24



Space Trusses

The 20th Century has contributed several new forms for building larger spaces. One which has been talked about more often than built is the space-truss. In the attempt to achieve economy through two-way action combined with manufacturing duplication, many designers have proposed versions of the three-dimensional truss. The 700-ft-sq design for a Convention Hall in Chicago proposed by Mies Van der Rohe in 1953 is a prototype **(15, 16)**. The space truss was to be built of members defined by a module equal to a cube with sides one-twenty-fourth of the span.

This scheme is in direct contradiction to the principles of efficient structural organization previously described. The entire loop of structure is compressed into the limited depth of the truss, while the material is dispersed into hundreds of members each carrying loads of equal order of magnitude. Except for the bold diagonals in the walls, no hierarchy of scale exists. One expects that had the building been erected, comprehension of its size would have been difficult.

An actual example of the space truss was constructed for the roof of the Air Force Academy dining hall by Skidmore, Owings & Merrill at Colorado Springs **(17, 18)**. Its size is about 40 per cent of Mies's scheme with a clear span of 266 ft and structural depth varying from 11 to 13 ft.

The inefficiency of this structure is shown by published reports that 1150 tons of steel were required for its construction. At 24 psf, this substantially exceeds the amount required for many similar spans. The impersonal, unfocussed space that is the result was, undoubtedly, sought by the designers. However, as a structural form, this building design offers negative lessons.

Domes

The dome has shown its abiding vitality as a useful form in recent years. Used to surround space three-dimensionally as well as span a large distance, the dome naturally has a generous ratio of depth to span. Distinctions between domes arise in the way material is distributed in the structural surface. That smooth, thin domes of concrete are possible should not mislead us into the false conclusion that such constructions represent optimum distributions of material. All domes must be designed for unbalanced loads and must have resistance to buckling. These requirements become serious in large spans and give an advantage to ribbed or otherwise articulated surfaces. The true brilliance of Nervi is that, recognizing this, he has developed efficient construction techniques to build the articulated surfaces demanded by the logic of material economy.

When a dome as vast as the Harris County Stadium at Houston is attempted, stringent control of material distribution is vital for economy **(19, 20)**. The organization of the design, created by Architects Lloyd & Morgan and Wilson, Morris, Crain & Anderson, with a lamella arrangement of steel ribs including circumferential rings for true dome action, is a simple, direct solution. The geometrical problem has been solved by dividing the roof in 12 segments. This division is overemphasized by the arrangement of skylights, which give too much visual importance to the boundaries between sections. The resulting effect of 12 giant ribs is at variance with the equal importance of other members. Although this may affect a ballplayer's ability to catch flies, it may actually help in giving scale to the 642 ft span.

The current leader in the honors race for long spans is an architecturally unfortunate monster in Paris. The Exhibition Palace of the National Center of Industry and Technology, conceived by Architects Camelot, de Mailly, and Zehrfuss, may be classified as a dome, although it is triangular in plan **(21, 22)**. Each side appears as a great tied arch spanning a clear 676 ft with a rise of 152 ft. But being plugged with low buildings of several prosaic stories, these great spans lose their impact.

The contribution this extraordinary building makes is in the design of its double-layered corrugated shell. By building two cast-in-place thin shells separated by precast webs from 6 to 9 ft deep, the total amount of concrete used was equal to a solid slab about 7 in. thick. Using a great rise for the whole form, together with a large moment arm locally in the hollow shell, this span was built with the same rate of concrete required for 20′ x 20′ flat slabs. The corrugated surface of the Exhibition Palace roof reveals the structural organization and helps the eye to measure the scale. It is a pity that the magnificent space has been spoiled by unrelated appendages, however important.

A third domelike structure now in construction promises to set new standards of both structural logic and visual force. Although dwarfed by the Houston Stadium and the Paris Exhibition Palace, the 420 ft span of Oakland's (California) new Arena is still a major design **(23, 24)**. Here the dome is inverted, being formed by 96 radial tension cables. To resist wind uplift and flutter, a system of deep precast-concrete radial ribs braced by concentric rings of precast diaphragms is provided. This ingenious system is an improvement over other hung roofs, which have relied on the dead weight of a complete inverted concrete dome for stability. The ribs, which appear inside, will outline a web whose inverted form will emphasize the large span. In addition to its beautifully conceived roof, the Oakland Arena solves the problem of vertical enclosure with great power. The vertical support of the compression ring is accomplished by diagonal columns that also provide lateral and torsional support to the building as a whole. By visually and functionally separating these elements from the enclosing glass, the vertical structure clearly shows that it surrounds an open interior. This design, by Skidmore, Owings & Merrill together with Ammann & Whitney as structural engineers, should produce a building that will elegantly but directly sum up the principles of efficient structure.

Future

The definitive design for a great 20th-Century space is still ahead. The enormous spans at Paris and Houston have carried the compression structure to a fine point of perfection and even greater compression domes will certainly be built. But the logic of structure points to a different way.

We have previously referred to the principle of concentration. Pursued to its ultimate meaning, this implies that compression forces must be gathered in a few paths and that tension members, which can be diffused into many repetitive elements without loss of efficiency, will be the primary means of enclosure. The result will almost certainly be formed of saddle-shaped surfaces for their ability to resist load reversal, and the loop of structure, the action and counteraction of pull and resistance will be clearly evident. The prototypes have already been built, but so far, each has been flawed by extraneous forms. Nowicki's Raleigh Arena comes closest, but its solution is visually weakened by the heavy columns supporting the compression arches. Saarinen's Ingalls Rink at Yale is muddled by romanticism and the awkward structural terminations of its longitudinal cables. Yet a solution will surely come. The evolution of structural form takes place slowly. But as the buildings already built are better known and understood, structures that resolve tension forces clearly and directly will enclose the great spaces of the future.

ENVIRONMENTAL CONTROL

Problems inherent to the air conditioning of all large, enclosed spaces are similar. How two of the great enclosures of the 20th Century were air conditioned is here analyzed. One of these is a brand new structure, while the other required solutions applicable to modernization.

BY JOHN E. PLANTINGA
The author is a partner of the firm of Meyer, Strong & Jones, Mechanical and Electrical Engineers, New York City.

From the viewpoint of the mechanical engineer, just what is a major space? If you take, say, as a very minimum, 30,000,000 cu ft of space, then that volume, taken in the abstract, constitutes a major space. If that same volume, however, were enclosed in a 60-story office building, it could be called large but not major. By the same token, a single-story factory or warehouse encompassing that volume would equally be considered large but not major. After all, all such structures—the high-rise office building, the factory, the warehouse—can enclose large volumes of space and offer many difficult problems to the engineer, yet they are, in essence, only the sum total of a series of smaller spaces. If, however, more than 100,000,000 cu ft of space were encompassed within a single, gigantic room—that is, if that space were to constitute a single, uninterrupted whole, not subject to the subdivisions and physical partitionings true of an office building or factory—then we have a major space.

One definition of major space, then, is that it must constitute a single, uninterrupted whole; such a space would be large enough, for example, to permit football or baseball to be played, or to accommodate a political convention.

The engineer's first reaction when he is asked to design the air conditioning for a space of this magnitude is that, if not impossible, it is at least impractical. Once the initial shock has worn off, the problem is seen in its proper perspective: it is not insoluble, after all.

Year-Round Operation

The costs of erecting and operating large assembly buildings such as stadia are so high today that it is essential they be operable on a year-round basis, no matter what the weather. The best way to entice people to attend events is to provide them with a comfortable, protected environment. Television in the home is, after all, a formidable competitor.

The philosophy in air-conditioning the sort of space we are considering must be to provide climate control rather than the usual individual room control typical of an office building. When it is possible to seat 60,000 to 70,000 persons within a single space, individual control is out of the question. However, each of these individuals must have clean, fresh air at all times. Herein lie the critical points of the problem. How much air for each person? How to condition it for the maximum comfort? And finally, how does one deliver the air where it is needed?

Inherent Problems

Before we describe the recently installed air-conditioning systems for two major spaces, let us review some of the inherent problems. In a sports arena, convention hall, or exhibition space, tobacco smoke constitutes a serious problem. Not uncommonly, it accumulates to such an extent in a poorly ventilated space that visibility is seriously impaired. This can be potentially dangerous for performers, is certainly uncomfortable for nonsmokers, and is an inconvenience for smokers. Several years ago, when Philadelphia Engineer Charles Leopold was commissioned to design the air-conditioning system for Madison Square Garden in New York City, he set up photoelectric cells diagonally across the arena from calibrated lights. These devices permitted measurement of smoke density for several different types of events, as well as changes in density during the events themselves. Events catering to predominately male audiences were found to have higher densities, with the curve during the performance rising rather more parabolically than linearly. Because he was working with an existing structure, Leopold was required to make some compromises, although anyone who has been in the Garden will admit that the results are good.

Another problem, not necessarily as important as smoke, is that of body odor. Generally, any event or function held in a great space is an exciting one, under which circumstances people tend to perspire more. Generally speaking, however, the elimination of the smoke problem will tend to eliminate the odor problem. Furthermore, during circus performances, which are commonly staged in this type of space, people expect to smell the animals. During other performances, the excitement is so intense that people will tend to overlook human odor — even though they may complain of smog due to heavy smoke concentration.

How Much Air Conditioning?

A third major problem involves the amount of air conditioning required. Obviously, to attempt to cool and dehumidify the high, unoccupied portions of a major space—those above the highest tier of seats—would be wasteful and virtually impossible. The problem, we soon realize, can be reduced to five major air-conditioning loads: population; lighting; heat transmission through the walls and the roof; solar radiation admitted through plastic skylights; and, finally, the degree of cooling of the fresh air required to properly ventilate the space. When the loads are thus simplified and properly localized according to the occupied areas of the structure, a complex problem is greatly simplified. This simplification offers no solution to the problem, but merely a guide to a compromise. Since funds available for construction and for operation are usually not unlimited, there can be no ideal solution to the problem of satisfying the total expected load. When the theoretical calculations are complete, the engineer must view them critically and make every cutback that appears reasonably prudent.

Distribution

The fourth important problem facing the designer of air-conditioned major spaces involves methods of getting the conditioned air to the spectators. During a baseball game, the spectators are arranged around a 350-ft circle; during a football game, they are stretched along the sidelines. In a boxing match, the arena may be less than 50-ft sq. This represents a 50 per cent variation in population and nearly a 100 per cent variation in the location of the required air distribution. In popular terms, a second baseman or a boxing fan might welcome a fresh breeze of cool air, whereas a politician sitting on the honorary dais during a convention might prefer warm air. Although the long throws required for the air distribution system constitute a serious problem, the variations required in conditioning the arena present an even more serious problem.

Houston Solution

The new Harris County Stadium in Houston, Texas, was designed by Architects Lloyd & Morgan and Wilson, Morris, Crain & Anderson. The air conditioning was engineered by I.A. Naman & Associates. More than 100,000,000 cu ft of space is encompassed in this gigantic space, which is 642 ft in diameter and 213 ft high **(1)**.

The engineers for the Harris County Stadium determined that the heat and moisture load for the building required an air circulation of 2,500,000 cfm. Normal air conditioning criteria calls for a minimum of 30 cfm of fresh air for each person. Even when this is discounted to one-half, or 15 cfm, the fresh-air requirement during a boxing match would be 990,000 cfm of outside air. The design engineers of the stadium have provided only 250,000 cfm, which represents a saving of about 4000 tons of refrigeration that would have been added to the presently installed 6000 tons. There is thus a significant saving in first cost, as well as in operating expense. The latter is particularly important, since the Houston climate is such that daily use of the equipment is advisable. Naturally, the savings indicated by a reduction in the size of the refrigeration plant cannot be entirely recovered when a compromise is made. In this case, the penalty resulted from the use of electrostatic filters in series with activated carbon air purifiers. The electrostatic filters remove about 90 per cent of the solid particles in the air, and the activated carbon absorbs about the same percentage of the odorous vapors present in the return air. The net effect of 10 per cent outside air and 90 per cent purified air is nearly equal to total fresh air, without the penalty of the additional refrigeration load. In normal office building air-conditioning practice, activated carbon is extremely expensive, primarily because the total fresh air required per person is relatively small. In other words, we are comparing a 66,000-person board room with a 20-person board room, the rest of the office space being rather thinly populated, with only half of the people smoking.

The architects provided a large hole in the center of the dome. Since hot, smoke-laden air tends to rise, an exhaust system was unnecessary. As fresh air is brought in, the same quantity of vitiated air is forced through the hole. This is certainly an economy.

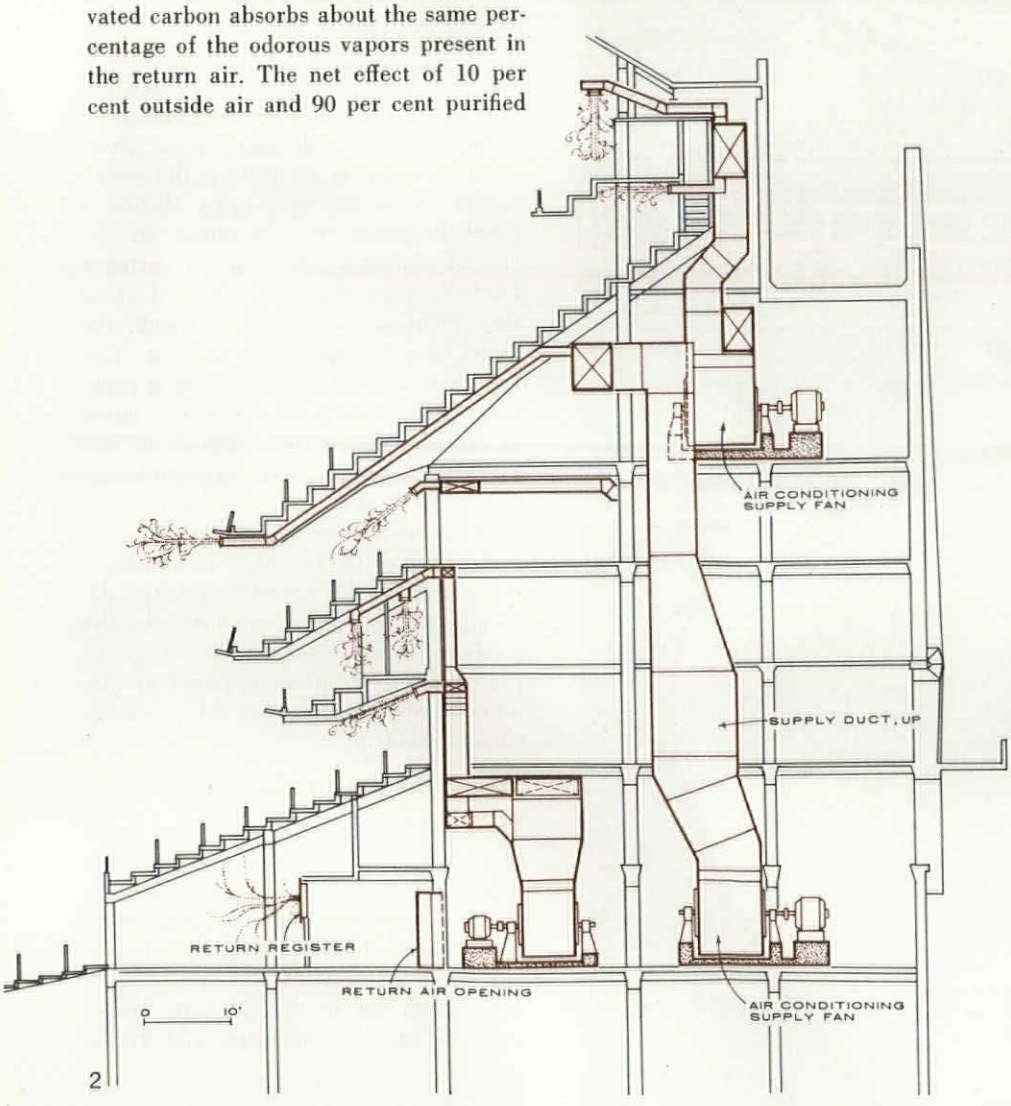
The last, and probably the most formidable, problem the engineers encountered was that of air distribution. Since several articles on this problem, as encountered in the Houston stadium, have already been published, it will be touched on only briefly. As previously stated, the problem is to get the air evenly distributed without chilling the performers, missing the spectators, and without losing any expensive cool air out the roof vent. The Barber Coleman Company worked closely with all of the designers, and the result is an air-distribution system that will project air for as much as 350 ft in a controlled stream **(2)**. Our original requirement that each individual patron be supplied with the proper amount of air at the proper conditions has been fulfilled.

All types of unusual instruments will keep tabs on indoor and outdoor conditions. One—a pyroheliometer—measures the brilliance of the sun's rays to help program stadium lighting and air-conditioning. And up on top of the dome—200 ft above the playing field—a special weather station measures wind direction and velocity, outdoor temperature and dewpoint: the temperature at which condensation occurs. Inside the stadium, special portable radio thermostats broadcast coded signals giving temperature and dewpoint readings from any seat in the house to sensitive radio receivers scattered throughout the stadium. Information from all these instruments is fed to an electronic "brain"—a control center.

Early in the season, ballplayers had difficulty catching fly balls. Painting the acrylic daylight panels solved this. "Black light" also helps players and fans.

"Black light" helps players and fans keep their eyes on the ball. An unusual Honeywell-engineered ultraviolet sensor runs a continual check on the transparency of the air. If it gets murky—from dust or tobacco smoke—the system signals stadium engineers to open a battery of cupola exhaust dampers. Because air cleaners continuously scrub the air clean electronically, then pass it through special charcoal filters to sieve out any odors, air inside the stadium normally is fresher and cleaner than the air outside.

The system has an ultraviolet lamp (located underneath the seats near the third-base dugout) focused on an ultraviolet sensor near the first-base dugout 700 ft across the stadium. These continuously indicate the transparency of the air between them on a meter located on the control center. Any time the transparency of the air drops to the point where a player would have difficulty seeing a baseball in play 550 ft away, a warning light flashes on. The system automatically compensates for sunshine and artificial light to give a true reading for both day and night games. Even TV-viewers are able to see the difference, because the cameras do not have to look through a haze of cigarette smoke and dust. People watching Houston games on TV will therefore get an unclouded picture.



2

Atlantic City System

When Engineers Meyer, Strong & Jones were commissioned to air condition the existing Atlantic City Convention Hall, which is 480 ft long by 300 ft wide, with approximately 175 ft from the floor to the center of the roof arch **(3, 4)**, many of the same problems that faced the engineers for the Harris County Stadium had to be solved. However, the advantages of a new architecture that could be tailored to alleviate some of the fundamental problems were denied. The structure and all of its various parts were virtually fixed and many compromises had to be made. For one thing, there was no hole in the barrel-type roof; hence the existing exhaust systems had to be retained. In fact, virtually none of the existing ventilating systems could be appreciably altered.

When the maximum possible refrigeration load was totaled, a requirement of over 4000 tons was determined. However, by taking the known demand factors into account, the maximum anticipated demand fell to 3300 tons, which became the installed capacity.

A further consideration that affected the design of the refrigeration plant was the mode of operations of the building. It is quite normal to allow two weeks for erection and demolition of an exhibition scheduled to last one week. With an operation frequency of one out of three weeks, and that for only the warm weather months, operating costs assume much less importance than that for the Harris County Stadium. Naturally, the cost reductions were in refinements that could be paid for out of operating savings. In other words, MS&J studies showed that economy of construction carried more weight than they would in a 365-days-a-year type of operation.

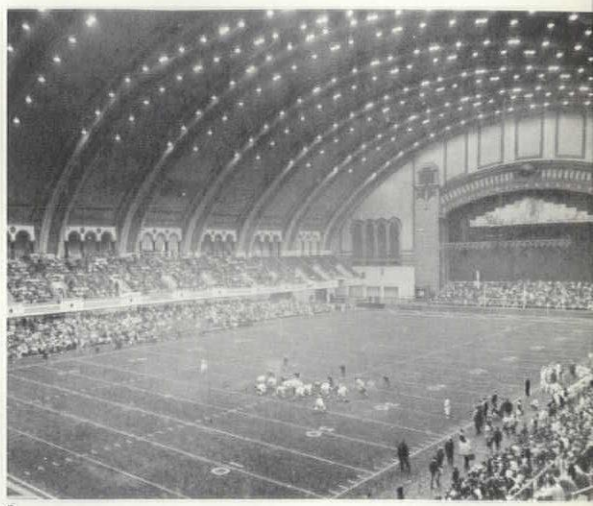
Although the Convention Hall is most certainly a major space, the prime problem faced, after the economic and load problems were solved, was fitting the required new equipment into the existing, available space. When the entire project was complete, only 1400 sq ft of rentable area had been pre-empted, and this was used for new electrical switchgear.

Ideal Solution

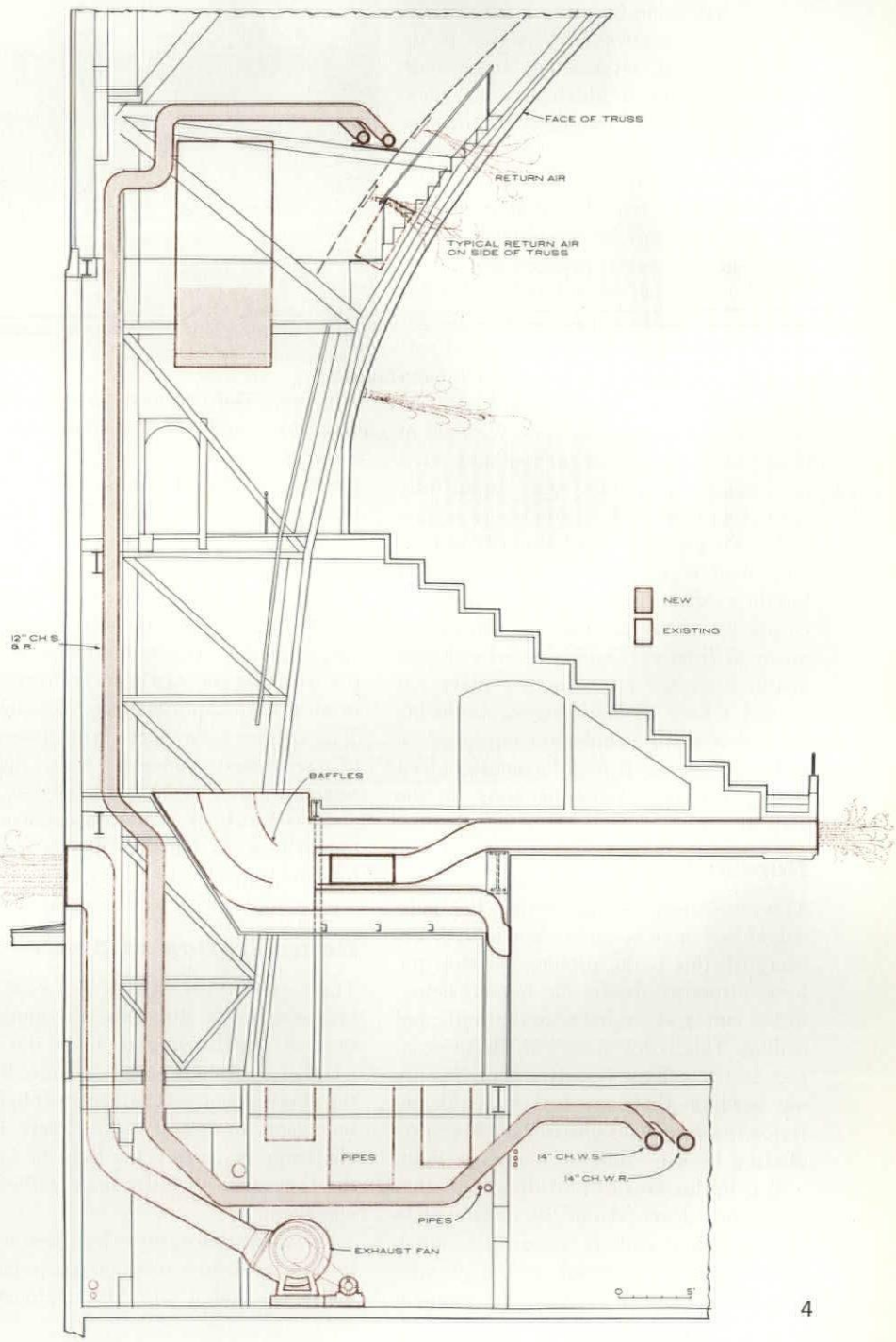
The basic principles behind the air conditioning of any voluminous space are the same. This is as true for the smallest theater as for the largest stadium, although in spaces such as concert halls, acoustical control becomes of paramount importance. This latter consideration also affected the Harris County dome design and the ratio of plastic to solid.

The ideal air-conditioning system for a major space would be one that provides fresh conditioned air for every occupant in such a manner that he would not be aware of it: He would neither see, hear, nor feel the air conditioning. This ideal is reached through capable and imaginative architecture and engineering.

None of these remarks should be taken to mean that the design of air conditioning for major spaces is simple. There is no reason, however, why any competent engineer should not be able to air condition an entire enclosed city, as long as he brings to the task the conviction that nothing is impossible, a diligent attention to detail, experience and skill.



3

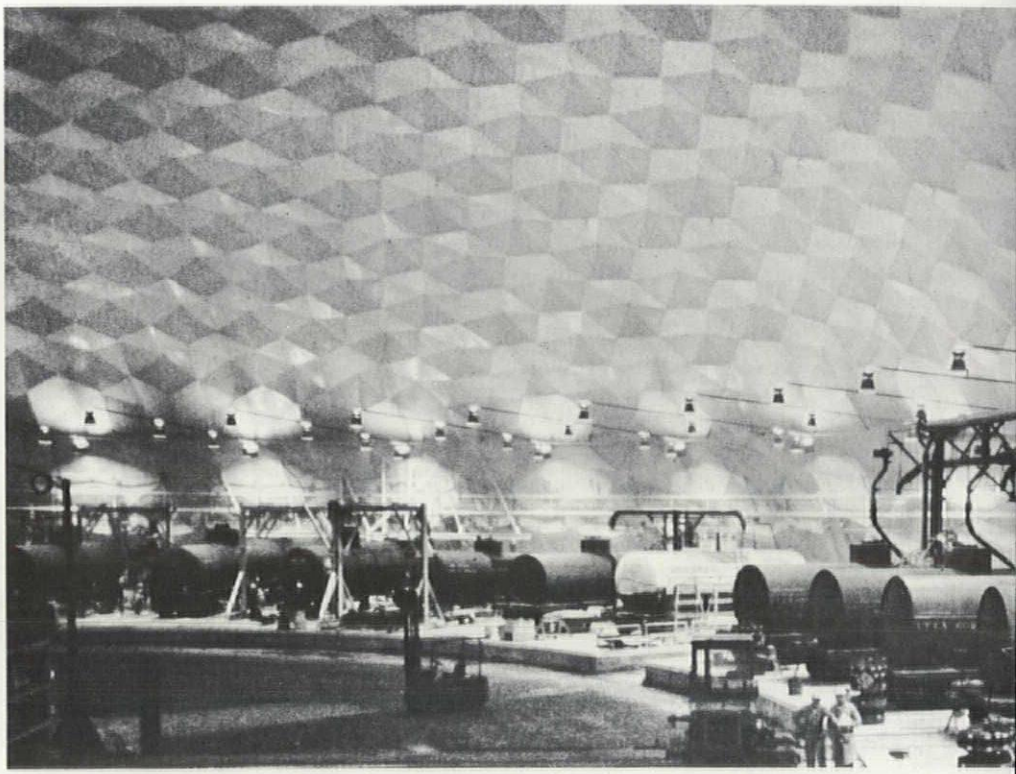


4

LIGHTING

A discussion of the philosophies and techniques of lighting major spaces, including lighting design problems encountered in two tremendous domes in the Midwest.

BY ABE FEDER
The author heads the firm of Lighting by Feder, Lighting Consultants, New York City.



As our civilization has grown, gregariousness *and* economics have drawn it together into vast, increasingly large manmade enclosures in which to work, play, and live. These are not empty monuments or pyramids for the dead; these are enclosures for human activity. The present rate of development foretells of an enclosure that may some day be deposited in space, with some of us or our progeny in it.

Architecture serves and anticipates this growth in creating increasingly larger spaces; lighting design is an integral part of it. As structures tower beyond human scale, architecture tends toward abstraction and light design follows. We look at these results daily without realizing what is happening. Walls are beautifully lighted, instead of the floors where people walk. People are quite literally forced into shadow for the glorification of a building. Magnificent patterns of light are traced into ceilings that are completely divorced from the human activity underneath. A visitor from another planet, if he had a keen aesthetic sense, would believe that earth people are equipped to walk on ceilings. It is unfortunate indeed that a building cannot be hung on the wall of a museum.

Human Scale

Everyone speaks of protecting the individual and human scale—but how to accomplish this is the problem. Within the large structure dwells the human being, in the empty space between the walls and ceiling. This is his space, which he occupies bodily and/or visually. There is only one medium that can deal with this interior space without obstructing it or precluding its use—this, of course, is light.

It is in this area of providing scale that the light scheme should be dedicated to the individual and his needs. Too much lighting design is based on the premise that the brighter a room is, the easier it is to see. The emphasis must be on the human eye and how it functions best and most comfortably. Seeing is a complex process. It should not be treated as an insoluble problem, but as a challenge. Sight and light are wedded. The eye, guided by the brain, seeks out certain objects and areas because of their significance. It is on them that light for visual acuity should be focussed, with the resulting contrast that comforts. Color is of prime importance to pleasantness. This applies even where critical seeing is of paramount concern. Also, light is something that enables us to be seen. This obvious fact is of utmost importance, particularly to the female. "Wrong" light or light improperly placed can be absolutely disastrous to one's physiognomy.

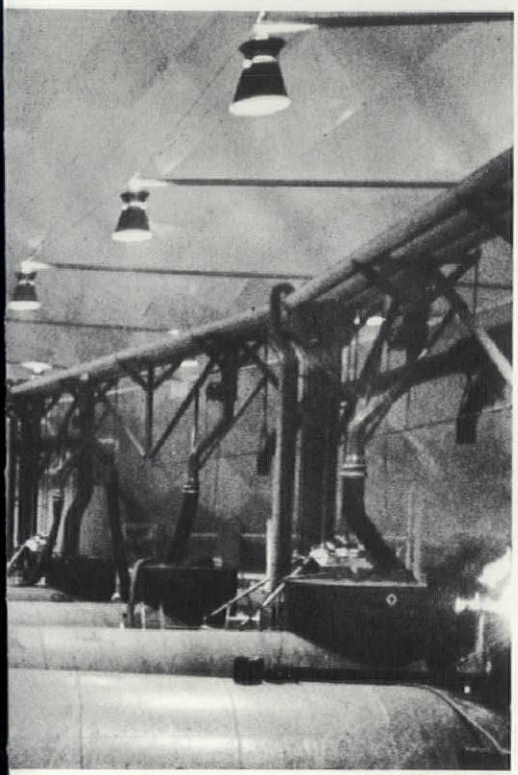
Humanization of Space

These generalized objectives of good lighting lead in one direction: the humanization of interior space. It is the same whether a space is small or large. But, as the single room gets larger, the challenge increases in several ways. There is the challenge of getting the light to each of the thousands of individuals gathered in one room.

In recent times, there has been a drive toward enclosing areas for purposes normally associated with the outdoors. We have always had large churches, public halls, ballrooms, and the like. But the enclosed area—and this is equally true of our towering apartment houses, hotels, and office buildings—has been subdivided and treated essentially as interior spaces. Floors and ceilings need support, which alone precludes the subdivision of enclosed areas, if only by columns. There is constant development of the means for creating greater distances between supports, resulting in larger, unbroken interior spaces. But to date, nothing conceived on the basis of the cube matches the dome for emptiness. For with the extension of the dome, we find a vast space unbroken by columns and walls, space conceived essentially as so much outdoors covered over to protect against the weather.

Geodesic Dome

Buckminster Fuller's geodesic dome in Baton Rouge was designed for the Union Tank Car Company (*above*). The daring use of the laws of physics overshadowed the more important meaning of the design: the deliberate use of an enclosed space as the outdoors. Normally, anything as large as a railroad car is left outside, where it belongs, or is covered provisionally without the complete control necessary for efficient working conditions. That dome, 385 ft in diameter and with no



obstructions, makes it possible to roll the cars indoors, providing both ideal weather and lighting regardless of outdoor conditions. Inside, the cars are moved from repair shop to paint shop to inspection crews or wherever, and then out again, where they can be put to use once more. As though to emphasize how exterior this interior space actually is, a complete office building sits in the center of the dome.

Once the exterior was brought under cover, the enclosure of such other exterior spaces as shopping malls and amphitheaters followed quickly. Economics alone would have dictated this, if the architectural imagination were not, after all, unlimited. It is not inconceivable that we shall see, perhaps in our lifetime, whole communities enclosed against the elements so that unusable areas of the world might be made usable.

Exterior or Interior Space?

In coping with these vast, unbroken enclosures, the lighting designer must decide whether he is dealing with an exterior or interior space. His decision depends on the individual's reaction. Picture a man somewhere between 5 and 6 ft tall walking into a dome where the walls, farther away than the next street, curve into a "ceiling" 20 times his own height. His first reaction would probably be to escape. We build interiors not just for safety, but to reduce the world to sizes with which we can cope. No normal person can cope with a room which he cannot encompass and familiarize himself with at a glance. Unless the individual were to increase in size about 10 times, he would never be able to handle these vast areas comfortably or feel secure in them. Even columns would help, making the individual feel at least slightly secured against danger. But there are no columns in domes.

This reaction is the key to one aspect of the lighting design: an unbroken, enclosed area of vast dimensions should be treated as an exterior. For an individual will accept the infinity of sky without a murmur, but when he is indoors, he wants to be surrounded by a space whose limits are defined and perceptible. The humanization of a space in which an individual is going to be active remains the prime goal in lighting any space, but in lighting something as vast as the interior of a dome, part of that humanization means providing an exterior look as well.

Limitation to Good Lighting

It is the dome which most points up the mechanical limitations to achieving the objectives of good lighting design. First, there is the stubborn fact of wiring. Every lamp must be attached to a wire, which in turn is attached to another wire, and so on until finally it reaches the source of electricity. We may live in an age when radio and television waves can be sent from one antenna to the next without a wire between them, but not light rays, although all radiation is essentially the same. Lighting requires that lamps be located and, with them, wires that serve as a means of transmission. There is also a definite limit to the number of bulbs that can be used.

More basic, however, is the fact that there is a bulb. There is no limit to what can be done with light, yet a bulb imposes so many limitations that it drastically limits the possible choices available. Each bulb type imposes its own set of rules about what can and cannot be done: a particular bulb can produce only so much light, project it only so far, last only so long, and create only one color temperature. The bulbs that produce the most light are short-lived; those that last the longest either do not throw their light far enough or have poor color values. And no bulb can change its color values the way daylight does in the course of a day. This is the nature of bulbs, and although we have made do quite well till now, when we are faced with the extension of enclosed areas, we are also faced with the fact that the existing lighting tools are outmoded.

There is, quite literally, no place inside a dome to locate wires or hang bulbs. There is no ceiling and therefore no beams from which to hang heavy lighting fixtures safely, nor the plaster or tile to mask them. There are neither walls nor columns where wiring can be located nor fixtures that can be hung. The one overriding reality for a lighting designer is that there is no place to hide.

Design concepts involving a baseball or football stadium, which add a roof to protect the gate in bad weather, essentially produce a stadium that, incidentally, has a cover. The same old batteries of lamps are mounted on tall standards (or attached at the upper levels). This is fine for a stadium, but such thinking hardly begins to exploit the full potential of a dome. It will not solve the problems of domes used as factories, or domes used as combinations of sports arena, concert hall, theater, and public hall, as was the problem with the University of Illinois Assembly Dome (*overpage*). Putting up poles means replacing columns, which defeats the precise reason for a dome. There can be no obstructions to function or view, making the problems of wiring and mounting locations almost insurmountable.

Solution at a Price

Available bulb types are designed primarily for smaller enclosed areas, and not for an enclosed area that is 120 ft high at the apex, 400 ft in diameter, and well over 1200 ft in circumference. Those designed for general service that last the longest are the fluorescent and mercury types; yet the former cannot push its light out too far from the lamp, and the latter has such poor color values as to be practically unusable inside a hollow cavern that must be made cheerful. Solutions within present limitations are possible, but at a price.

At the Baton Rouge dome, wire was brought around the entire circumference and strung out in radial lines across the top of the dome, providing electricity wherever it was needed for light. Fine ribs of extruded aluminum were outrigged from the sides of the dome, not too high above a man's head, and to these were attached the lights for the various "shops" around the perimeter. The then-new power-groove lamps were specified for the outriggers. Producing more light on a three-to-one basis than the standard fluorescent tube, they cut the number of lamps and wiring needed by two-thirds. Housed in special reflectors to increase

efficiency and provide directivity, they were located at a height that permitted intense illumination over an entire shop from the floor up. This put the light where the people were. The design also broke up the dome visually into a series of smaller, man-size places without the use of walls or columns, helping to establish the necessary comfortable atmosphere. As for color—and the solution with artificial light is always a compromise, at best—the warmest power-groove lamp available was the cool warm white deluxe type, which was specified. (All 1500 m.a. fluorescent lamp types are now available in warm white.)

Lighting the Skin

This design solved the shop lighting only, and not the over-all problem of turning an enormous, hollow cavern into a place where people could feel at ease. Large lamps, used to fan out light around the skin of the dome and bounce it back to fill the interior with a sense of brightness, were mounted on the tower of the centrally located office building. No existing lamp of comparatively long life and sufficient projection was available, so a new lamp—the R-80, 1000-w mercury vapor lamp—was developed to do the job. It has a self-contained reflector to give the mercury vapor source the directivity it does not have. A special reflector housing was designed to increase the directivity and projection power of the lamp. With these developments, only 80 lamps were required. To correct the severe color limitation of mercury-vapor light, the housing reflector and the skin of the dome itself were finished in a warm tint. The effect created an over-all feeling of daylight, that necessary exterior look previously mentioned. Solutions to the lighting problems were solved by demanding and getting from the lamp industry larger and more efficient lamps, and developing new reflector curves to bolster the characteristics of the new lamps. But the solutions were still within the limitations of bulbs themselves. As long as there are bulbs, however new, all lighting solutions are, again, compromises.

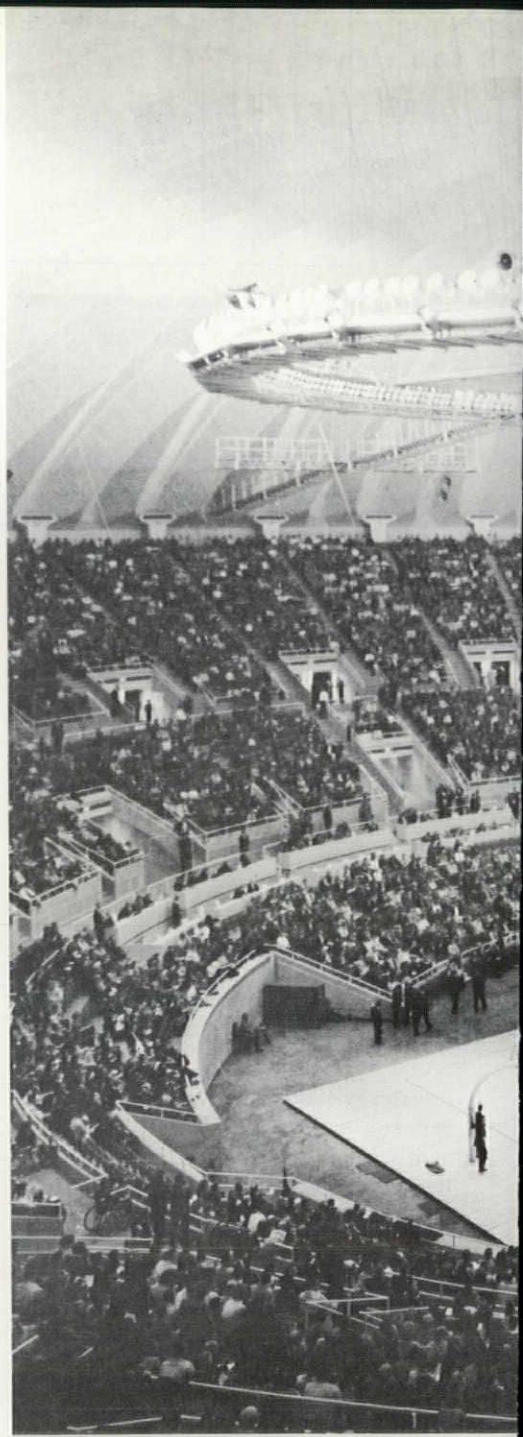
The closest to the ideal (warm daylight) that we have in artificial light is incandescent. It is warm, not diffuse, and therefore can be placed in definite patterns in precise locations, and it can be made to reach considerable distances. Unlike fluorescent light, it does not hover like a cloud around the light source, or dissipate itself by bouncing around in all directions. To insure good lighting control and color, there is nothing like the familiar incandescent light source. The trouble is that it does not live too long, being rated from 750 to 2000 hrs, but in reality lasting only from 600 to 1600 hrs, depending on the type. In a factory where it is to be used 24 hrs a day, the cost of relamping a huge incandescent installation every 30 to 80 days is prohibitive, and the incandescent bulbs have to be sacrificed for fluorescent and mercury vapor, which will burn 24 hrs a day for considerably more than half a year. This, again, is what makes the light bulb so limiting.

Illinois Dome

For the Assembly Hall Dome at the University of Illinois, the solution was entirely different. A grid, shaped like a Swiss cross, was hung 80 ft above grade (40 ft below the apex), and all lighting equipment was located there. Electric service was brought up one side of the dome to this one point. Again, the R-80 mercury vapor lamp was used to provide the daylight feeling. But because the dome was to be used for spectator sports, every possible type of theatrical and musical event, and for exhibits, conventions, student activities, etc., only incandescent sources were used for direct lighting. It was essential to use bulbs that could be controlled with precision by focusing their light beams exactly where events were happening, and it was essential to use bulbs that could throw light to 80 ft below. For these reasons, the largest and most efficient PAR lamp—the 500-w, 2000 hrs, PAR-64 lamp—was chosen. Because the dome covers a multipurpose hall, all lighting (except the mercury vapor lamps for the general, indirect lighting) was placed on dimmer control. This meant that it was not necessary to mount one complete installation for one event, and another for a second event. Dimming control made it possible not only to select certain lights for basketball games and some of the same lights plus others for an exhibit, but also to provide the varied intensities required for different events. Dimming control was the key to cutting down the number of lamps required and prolonging their life as well.

Goals

Unquestionably, the goals for good lighting design, summed up in the single goal of humanizing large enclosed areas, remain the same. It is the solution that varies. A tome could be written on ingenious solutions of maintenance problems within a dome alone, without once discussing the lighting design. The whole problem is reduced to the simple fact that lighting interiors as large as domes, with present light sources, requires far too much ingenuity. Given today's lighting tools, it would be almost impossible to light a dome, say, 600 ft high and 1800 ft wide, quite apart from it being economically prohibitive. Our antiquated way of producing artificial light may well put a limit on the size of enclosed areas.



The lamp industry has been moving rapidly to improve its mechanics. The romance with the fluorescent lamp is finally over: At last it is apparent that it does not solve all problems, and the discarded incandescent bulb is making a fast comeback in large installations. This is where the most comprehensive improvements are being made today. The use of the PAR-type lamp, the most controllable of all available lamps, is spreading. The newest bulb type for general use is the 1000-w, PAR-112 quartzline incandescent lamp. It was specifically developed for

the newly opened sports arena of the Tulsa Assembly Center and the rehabilitated San Francisco Civic Center Auditorium. Both are large, multipurpose halls. Although neither has the masking and mounting problems or sheer size of a dome interior, in both instances light had to be thrown considerable distances to reach its target, the area of action, with full intensity and accuracy. The new PAR-112 lamps, projecting light at far greater distances than the smaller PAR-64 lamp and with greater intensity, replaced the older lamp on a one-to-three basis. The PAR-112 lamp alone is a big step forward in the handling of large areas.

The whole development within the quartzline incandescent field has only begun to move forward. These lamps are considerably smaller than standard incandescent bulbs, and much more intense. They can only help with the problems of lighting enclosed areas.

A serious problem with lamps today is their short life. Large enclosures and frequent relamping can break the back of any maintenance budget. The fluorescent light source, with its actual burning time of about 6000 hrs, is not useful for large areas except for decorative and other special purposes. It is a mistake to cover a dome ceiling or walls with fluorescent tubes and think the interior is being lighted. Fluorescent light gets nowhere to speak of, and from heights of 50 to 100 ft or more, it will certainly not reach the audience. The mercury vapor light source, with its actual burning time of 4800 hrs, is again not useful in such applications, except for special purposes. The sickly color of mercury vapor light precludes its use, and it is less controllable and has less directivity than incandescent light. The lamp industry has come up with the new metal arc lamp that somewhat corrects the color of mercury vapor—but not enough.

But all this is as nothing when we think of the great expanses that can now be brought under one roof. One degree better control, a touch more red in a lamp, a few more thousand hours of life—these are tiny steps, while architecture rushes along in giant strides. The lighting industry has to think bigger and come out from behind the bulb.

It is time to put our effort into discovering how to capture and store light rays directly. There must be a way of dealing with light directly, without having to fight the inflexibilities of lamps. A way must be found of omitting wires. By the time the cost of wiring has been totalled, little money is left for the fixtures themselves. One does not mind having a wire or two to activate a system, but why must a wire go everywhere a lamp does? Perhaps the solar battery comes first, then a solar lamp, and finally a panel control, not unlike a switchboard that activates and controls the light rays sent by a central antenna. This is fantasy, but if ever we needed the fantastic, we need it right now in the lighting industry.

Enclosed areas will undoubtedly get larger, since the need is there. A rapidly growing population alone demands it. More people need to be fitted into sports arenas, shopping malls, recreation facilities, and so on. Strangely enough, exploration of outer space also demands it. We can now foresee the day of scientific outposts set out in space, completely enclosed but large enough for extensive equipment, a complete team of experts, and perhaps even their families. Nor is it untenable to foresee the enclosure of communities in deserts or frigid areas as land gets scarcer. How will this affect lighting? All we need is new tools.

Although lighting design must necessarily serve architecture, its first goal must be to protect human scale by making these enormous enclosed areas more livable. It means putting light where people are; it means visually dividing an area into more man-size proportions; and it means creating a warm atmosphere. There is no limitation to what light can do: the limitation lies only in the present mechanics of lighting. We need direct control of light if we are going to put it exactly where we want it in these new enclosed areas, and in the exact amounts and color values necessary. As long as there are people, the basic goals of lighting design will remain the same. It is the tools and techniques that must change.

THE NEW TOWN & MAJOR SPACES

Preliminary plans for the town center of Reston illustrate problems of relating major-space buildings to the cityscape.

Has anyone since our grandfathers ever seen Carnegie Hall in New York City? Isn't it simply a doorway on 57th Street? This startling realization highlights one of the difficulties of assuring suitable locations for important major-space buildings in existing city planning schemes. In a very dense gridiron, for instance, a major-space structure will very likely be swallowed up in the mass of the block; in a less developed area, it may sit back in the middle of the square surrounded by a space that serves to set it off—but so may the Safeway or the gas station sit gloriously enthroned, surrounded by spacious parking lots. In one case, the unrelieved gridiron leads to the overpowering order of the two-dimensional façade; in the other, it is nothing but a checkerboard ground plan for three-dimensional chaos. A popular alternative plan for major-space structures (exemplified in many recent civic centers) proposes free-standing buildings formally arranged in space, like sculptures in a garden. The problem with such a solution is whether it creates a useful urban space or not, whether the buildings have the continuity and cohesion that constitute a cityscape, and whether the structures are not, in fact, isolated in a vacuum.

Given the background of these two major experiments in gridiron and "civic center" planning, it is intriguing to see what an architect will do with a city plan in the mid-1960's. How will he produce a strong relationship between major-space structures and the rest of the city?

Recently, Whittlesey & Conklin, architects for the new town of Reston, Virginia, developed a series of designs for the town center that juggle precisely this design problem. The town center, designed by William Conklin with James S. Rossant and William H. Roehl, Associate Partners, will be the focal point for the seven villages of Reston, which will be constructed in the surrounding countryside. (See plan facing page and pp. 98ff., AUGUST 1962 P/A, for a report on the first village.) The town center had to be designed to be built in stages—to grow as the new villages are added and to eventually serve a total population of 75,000, only 3,000 of whom would live in the center proper. Basic to the schemes, shown on the following pages, is the recognition that two elements are essential to a cityscape: one, the unifying façade of anonymous buildings; and two, the occasional, salient, monumental structure—with both working together to form an integrated whole. According to Conklin, the architecture of a town is largely background tapestry: "It simply defines outdoor space and provides a setting for people. Occasionally, it is true, a major building will emerge as a personality and exert its influence, like the church in the Middle Ages. But generally, architecture is just a backdrop. It should be. A town has to make a strong, coherent statement; you must know when you enter it, and once inside, there should follow an intense sequence of spaces—spaces where people of different occupations meet and mix. This is why I cannot think of Chandigarh as a city. First of all, various functions are segregated, and then those official buildings are isolated in so much space. They are appropriate for some religious center: they inspire awe. Sure, I admire them as pieces of sculpture, as monuments, but then what?"

The idea of including monumental structures, such as major-space buildings, as distinctive but integral parts of the fabric of the city grows out of current rethinking on what actually constitutes a socially dynamic city. Both Robert Simon, the developer of Reston, and the architects exemplify the trend toward designing cities for people—not gods, kings, or automobiles. Behind the Reston plans is a knowledge of the pedestrian-oriented towns in England such as Stevenage, the recreation towns such as Tapiola in Finland, and the strong civic statement of the new towns such as Cumbernauld in Scotland.

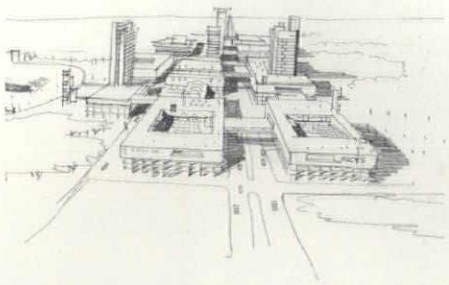
A more important influence on both developer and architect has been Jane Jacobs with her perceptive analysis of the social characteristics of a city: how closely they are dependent upon the economic and architectural structure of the town. Her book, and Reston itself, are a reaffirmation of the city as the coalescence of civic and social involvement and real privacy. They oppose the chaotic sprawl of the suburban town with its destructive isolation of social functions: the civic and business area isolated in the center, the shopping center surrounded by its sea of parking lots on the outskirts, and the rows and rows of houses that claim the illusive privacy of postage-stamp lawns only to destroy the real privacy of uninhabited land.

The center of Reston attempts to reunite the town again, to reinstate the city as a desirable and exciting place to live in and to distinguish it from more rural areas. The final plan proposes a series of squares that grow, medieval-style, one out of the other. The automobile is demoted to underground facilities. Key major-space buildings such as the churches and a conference center occupy important and socially symbolic places in the structure of the city—they jut out into squares (claiming a certain amount of religious attention) or straddle an entryway (defining the boundary of the town). The cinema is slightly de-emphasized, and sits back, above a row of shops, in the central square. All the major-space buildings are bounded by a façade of shops, and offices, town houses, or shops with apartments above. They are intermixed with the everyday circulation of the city.

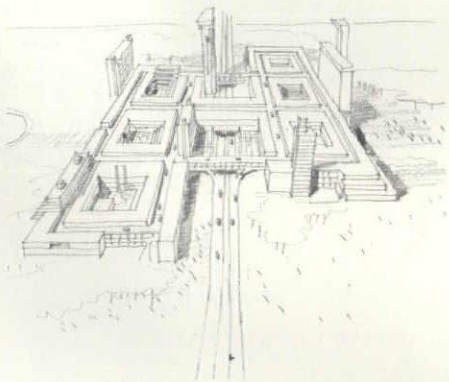
If finished according to plan, Reston will be a new experiment in city living and a new answer to suburbia. "Who knows," ventured Conklin with a grin, "how a city plan may affect a way of life, a civilization. Just think what might happen to investors if they saw mothers pushing baby carriages down a Wall Street. Business might become less abstract, investments more involved in human issues . . . who knows?"

Meanwhile, for the architect, the series

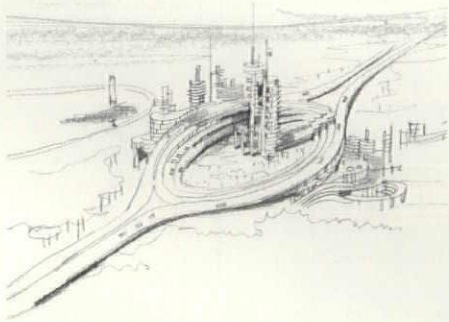
SCHEME 1



SCHEME 2



SCHEME 3



of sketches that lead up to the final scheme are an intriguing demonstration of a planner's mind gradually detaching itself from the compulsive geometric pattern of the gridiron, from the free-standing sculptures concept, and also from a rigid segregation of functions within the townscape; and gradually working toward a more meaningful relationship between major-space structures and the background buildings that define the daily life of the town.—MD

Scheme 1

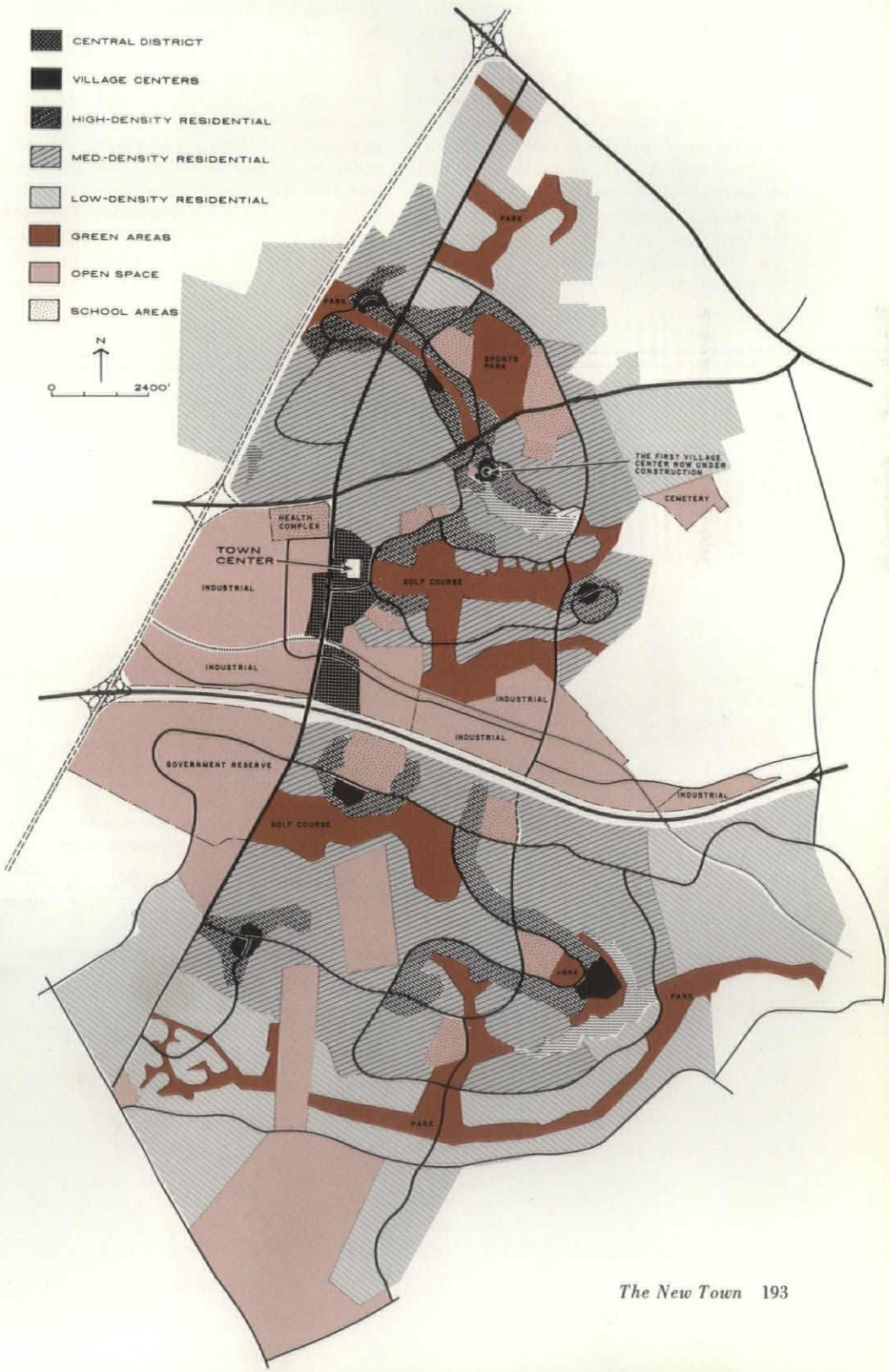
City blocks raised high on parking platforms —a variation on the gridiron scheme—appear in the first thumbnail sketch for Reston. On each block, all buildings are arranged around the edge of the top deck to construct a façade around an interior plaza for pedestrians. There is little opportunity for a major-space structure to become prominent: the dominant masses of the city are the mammoth blocks themselves. The main highway also cleanly bisects the town; and the isolation of the blocks—except for pedestrian bridges—might complicate interblock traffic.

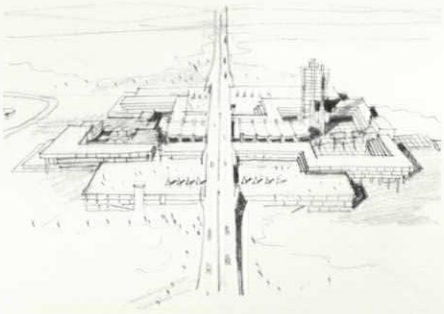
Scheme 2

In this Op-art, inside-out gridiron pattern, buildings are out in the street and spaces where solids used to be. Ground-level courts are surrounded by three stories of shops, interblock roadways, and parking. The principal buildings stand independently in the plazas. Just how well they could adjust to this rigid façade is debatable.

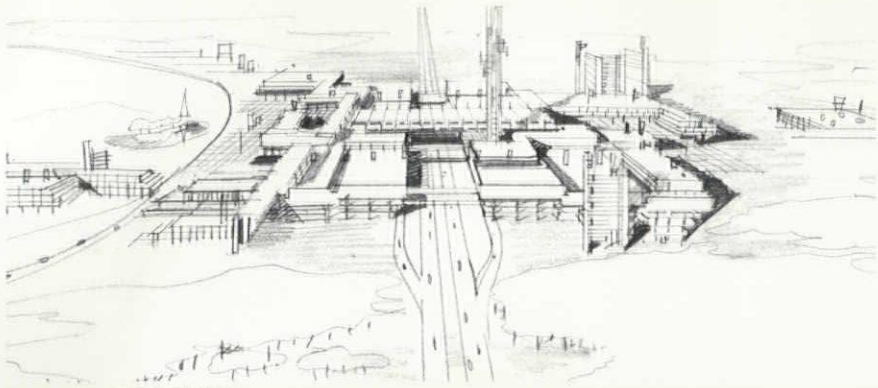
Scheme 3

A grandiose "civic center" scheme proposes a sweeping circular façade around a vast pedestrian plaza containing a cluster of free-standing buildings. The main highway runs along the top of the circle, and three terraces of roadways with built-in shops wind their way down to the center. There is no strong relationship between the enormous frame and the independent buildings that stand in the center and also attach themselves like barnacles to the exterior circumference. The architects felt walking distances might be a little excessive in the arena, and the plan disturbingly resembles an upside-down Tower of Babel that might end up glorifying the automobile rather than the pedestrian.





SCHEME 4



SCHEME 5 (FIRST SKETCH)

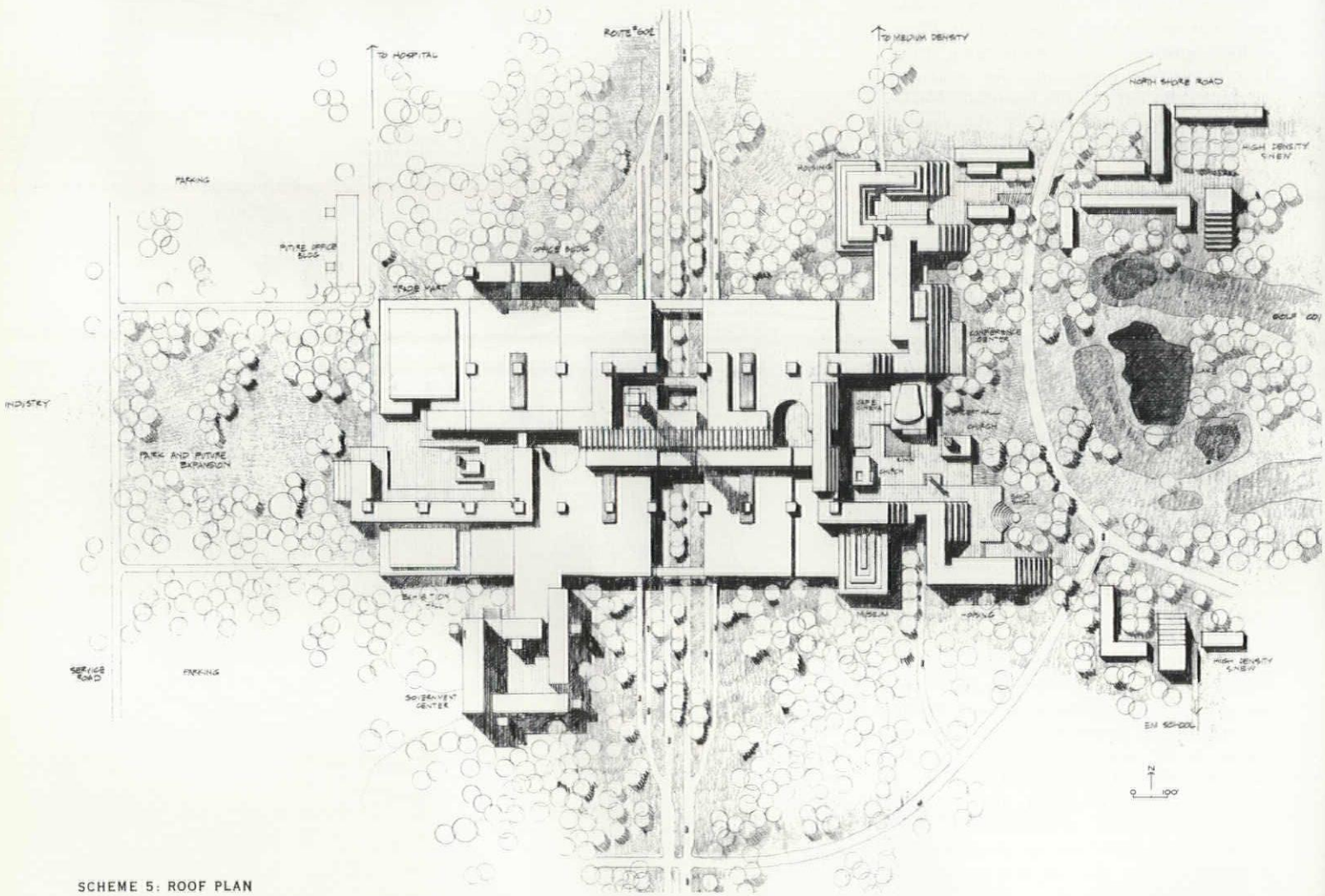
Scheme 4

The "dumbbell" plan of most shopping centers forms the basis of this design. The twin plazas on either side of the highway, connected by a shopping mall, closely resemble the two large department stores, which sit like magnets at either end of the conventional shopping arcade in order to pull the customer back and forth through the merchandise. This east-west pedestrian walkway is emphasized by stringing the majority of buildings along the north and south sides of the city, with two enormous parking garages buttressing the mall in the center.

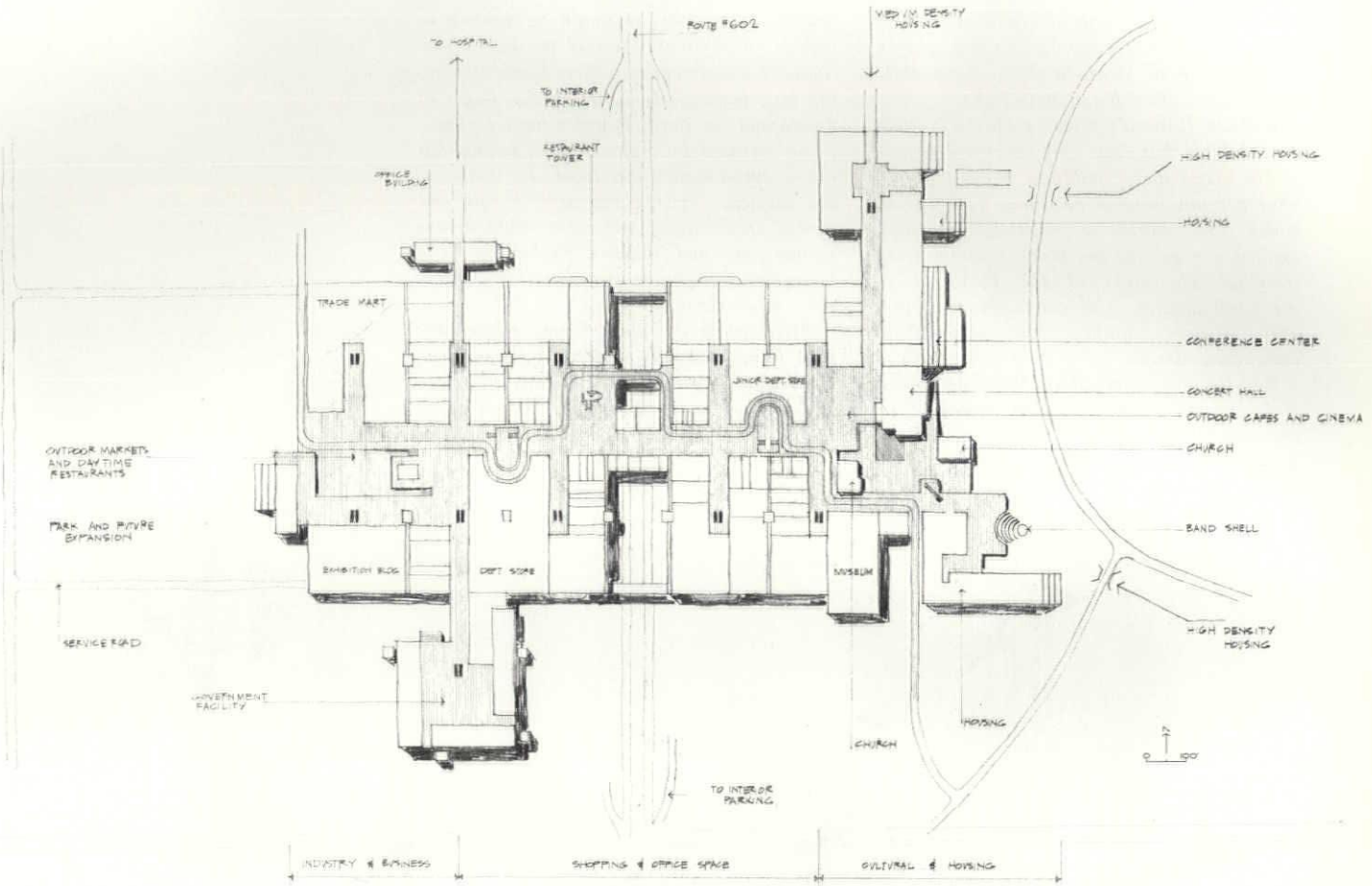
Scheme 5

An elaborate, master-minded city plan, similar to Scheme 4, developed into the first detailed proposal. It is an authoritarian scheme. The two plazas are now on top of a gigantic three-story parking structure that underlies the entire city. The platform is divided into rectangular sections — theoretically to be added to one another as the town grows — with each unit containing a service elevator and escalator connecting the parking levels to the surface (see, "Lower Level"). Above (see, "Pedestrian Level"), the functions of the city have been dogmatically segregated. The western plaza, which opens out onto the industrial zone, features industrial and commercial buildings: an exhibition hall and trade mart. The eastern plaza, which connects with a high-density housing sinew, appropriately specializes in cultural and housing structures: a museum, a conference center, churches, and a concert hall. In the middle is an ice-skating rink.

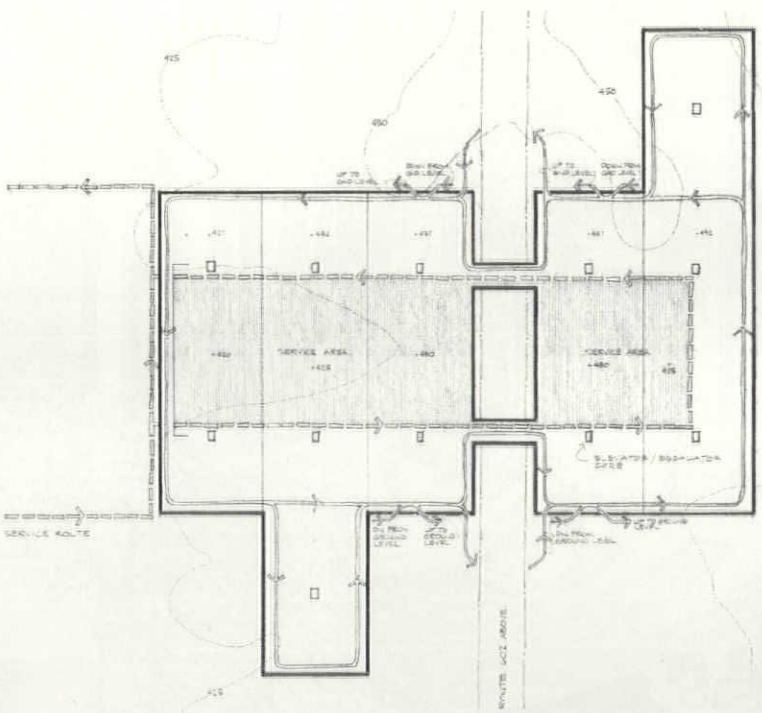
Although this type of logic simplifies the allocation of building sites, it is questionable —as it is questionable in conventional shopping centers—whether such a "magnet"



SCHEME 5: ROOF PLAN



SCHEME 5: PEDESTRIAN LEVEL



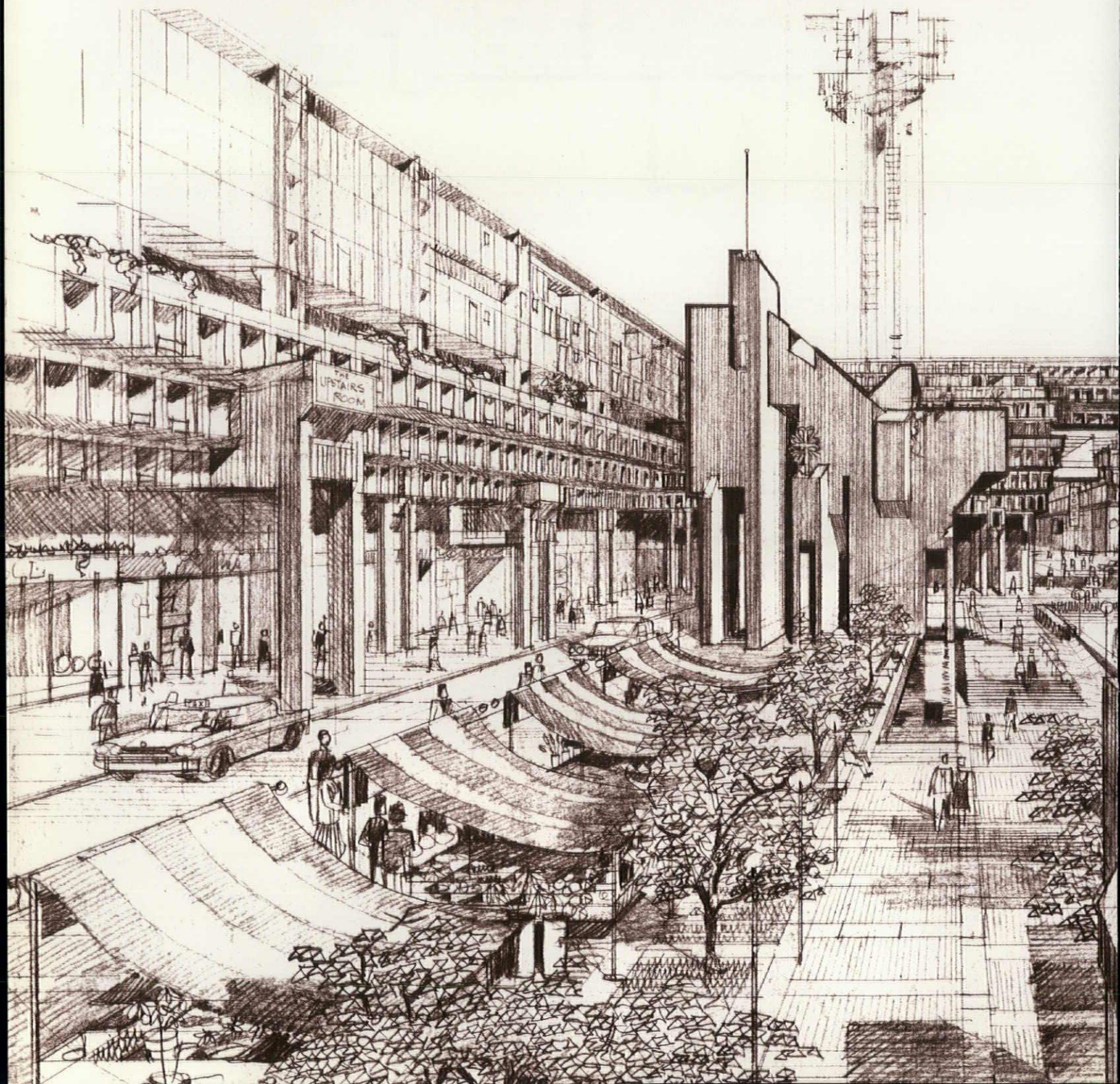
SCHEME 5: LOWER LEVEL

scheme can pull together the isolated sections of the plan. The commercial center might be as dead as Wall Street in the evening while the cultural plaza blazes with light.

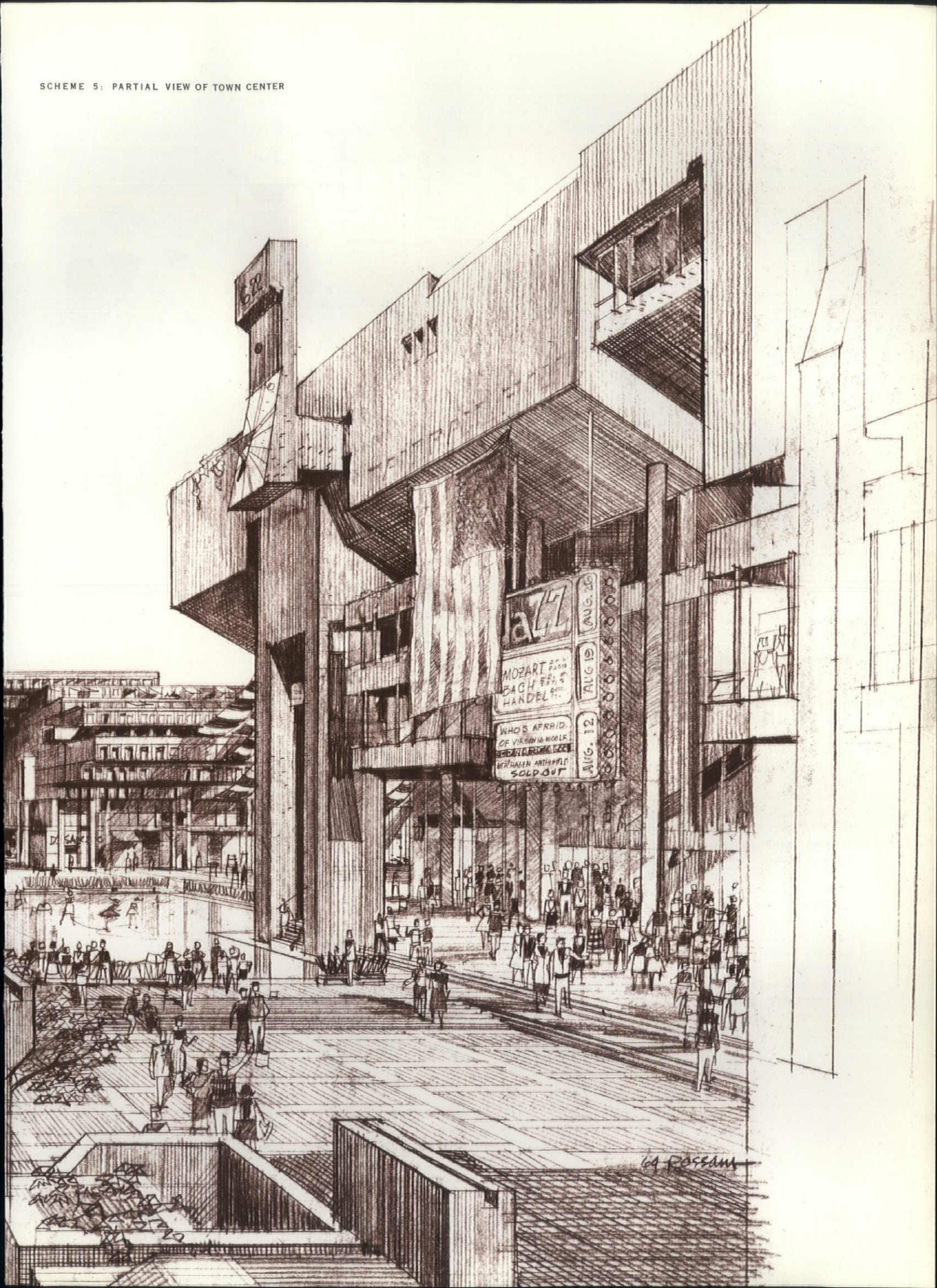
William Rossant's drawing (below) shows a modulated but close-knit courtyard façade where major-space buildings occupy prominent but not isolated positions. The way in which the church is situated, snuggling against one side of the plaza, resembles the irregular placement of the cathedral in medieval squares. The entire complex presents a strong, unified civic statement—a compelling design.

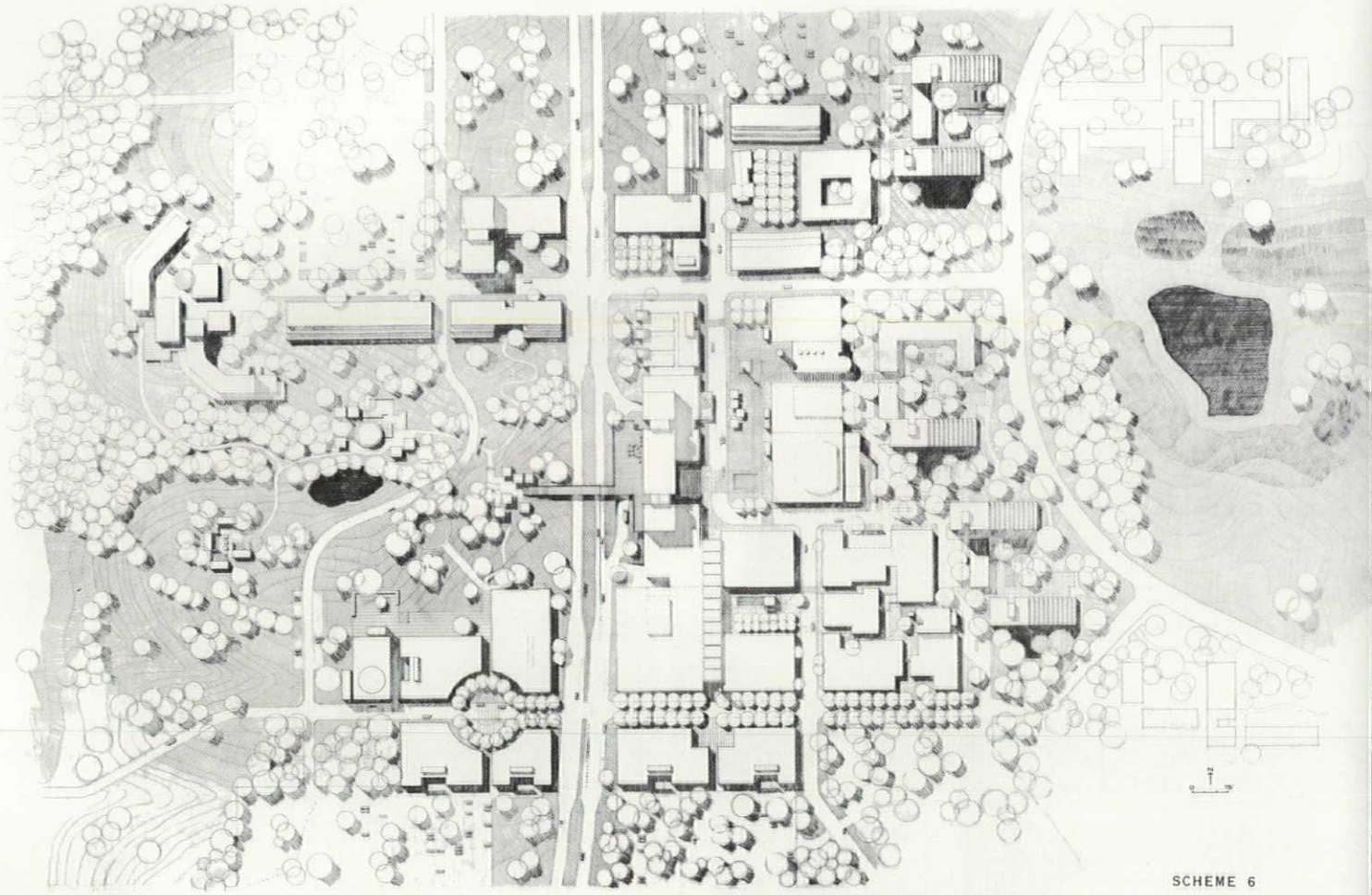
Perhaps too compelling. The developer, Robert Simon, was somewhat staggered by its monolithic quality: it was too grand and formal for a town center servicing 75,000 people. Financially, it would be difficult to induce commercial interests to sink a preliminary investment into three levels of parking lots, particularly in the initial stages of developing the town. It was a master plan—to be executed by a government, a king, but not a 20th-Century developer. Furthermore, the suspicion existed that such a bold and formal architectural statement might arouse strong likes and dislikes. Perhaps a little more chaos might be more neutrally attractive—to everyone.

After seeing the plan, Simon reduced the area from 1,000,000 to 425,000 square feet, and suggested a more modest proposal, a more conventional, small-town center where buildings are constructed individually—at ground level.



SCHEME 5: PARTIAL VIEW OF TOWN CENTER

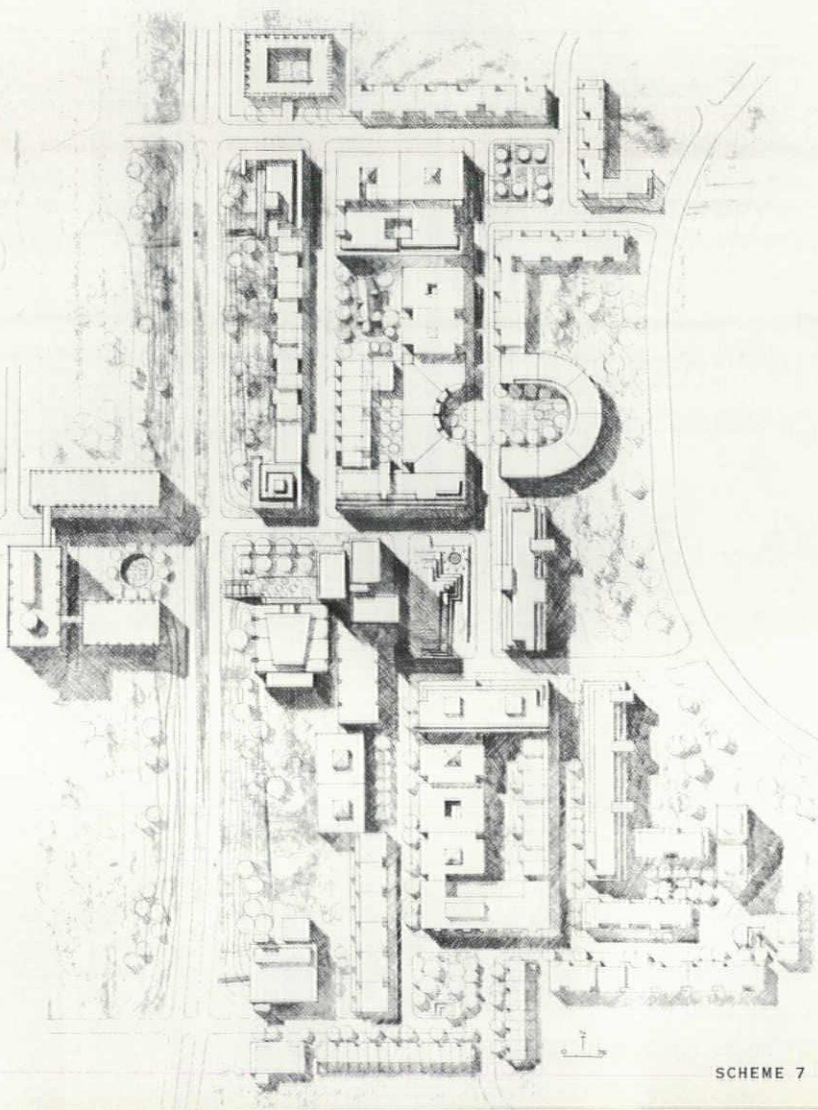




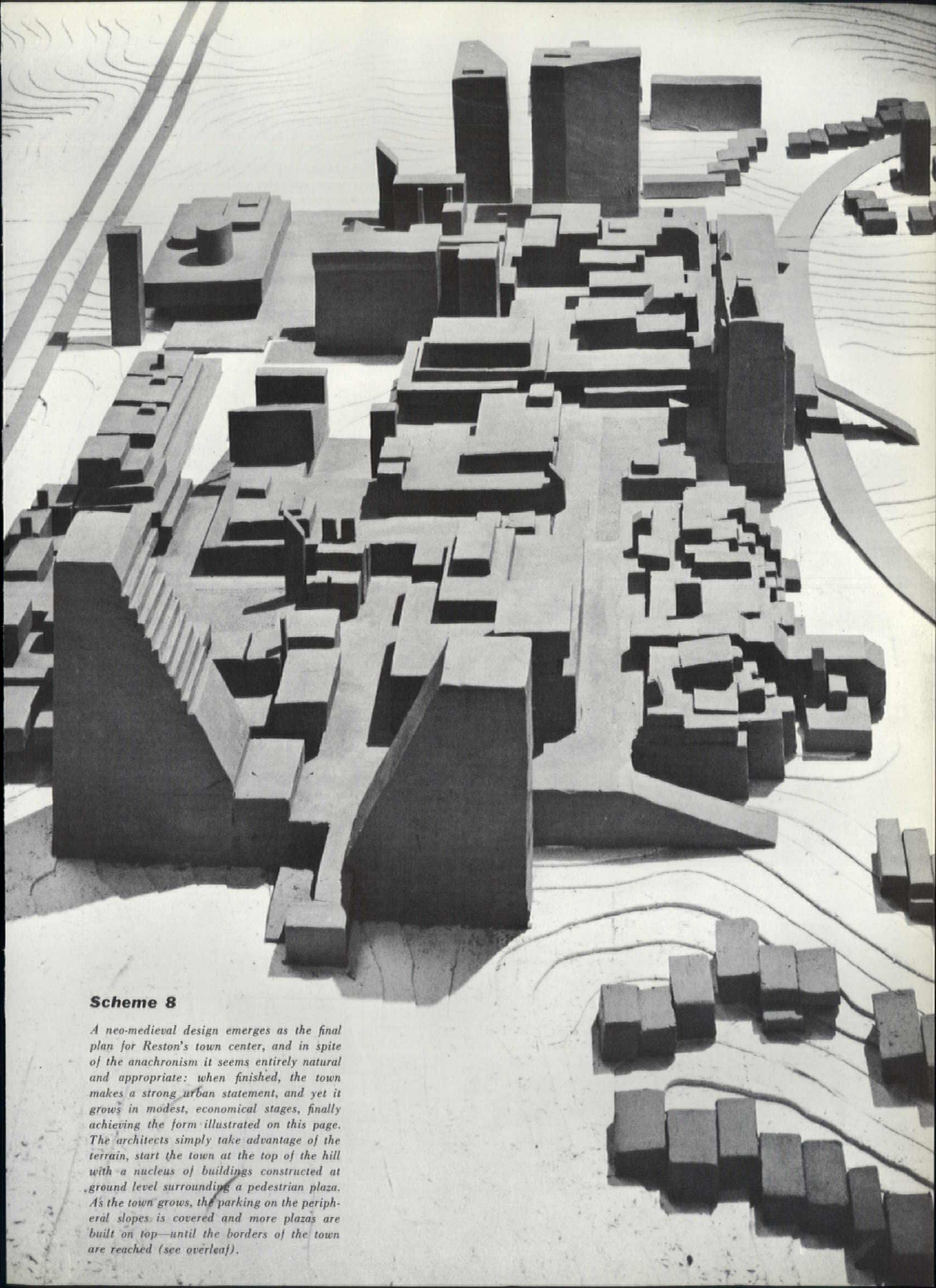
SCHEME 6

Schemes 6 and 7

The two resulting conventional plans swing back to commonplace planning, with blocks surrounded by streets, cars, and people. Most of the parking is on ground level, except for a few lots under major buildings such as the auditorium. A principal plaza is retained in the first plan, to form a civic center. The second plan was influenced by a trip Simon took to London, where he was so taken with the Bloomsbury district that he promptly sent his architects copies of the plan. Finally, however, neither scheme pleased the architect or developer. The towns were too diffuse to make a strong civic statement, occupied too much space, and perhaps lacked individuality. These two plans, however, may have served to release the architects from their tendency toward overplanning, and the developer from a desire for too much conventional chaos. Certainly they led to an appealing compromise solution.

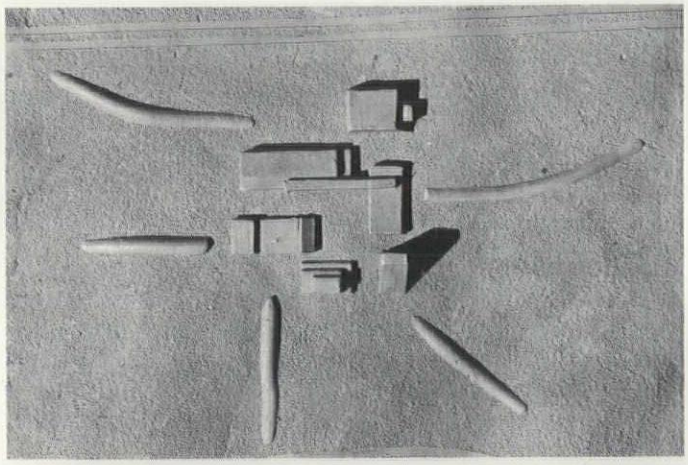


SCHEME 7

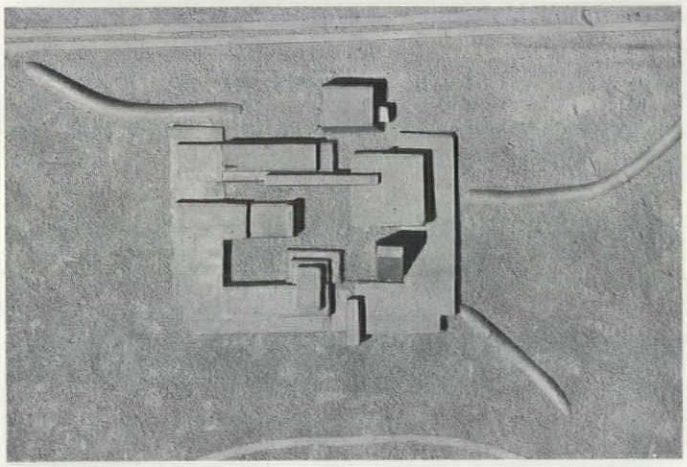


Scheme 8

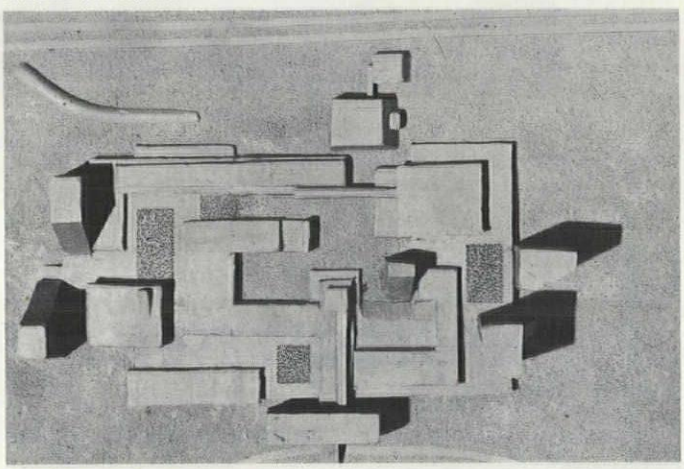
A neo-medieval design emerges as the final plan for Reston's town center, and in spite of the anachronism it seems entirely natural and appropriate: when finished, the town makes a strong urban statement, and yet it grows in modest, economical stages, finally achieving the form illustrated on this page. The architects simply take advantage of the terrain, start the town at the top of the hill with a nucleus of buildings constructed at ground level surrounding a pedestrian plaza. As the town grows, the parking on the peripheral slopes is covered and more plazas are built on top—until the borders of the town are reached (see overleaf).



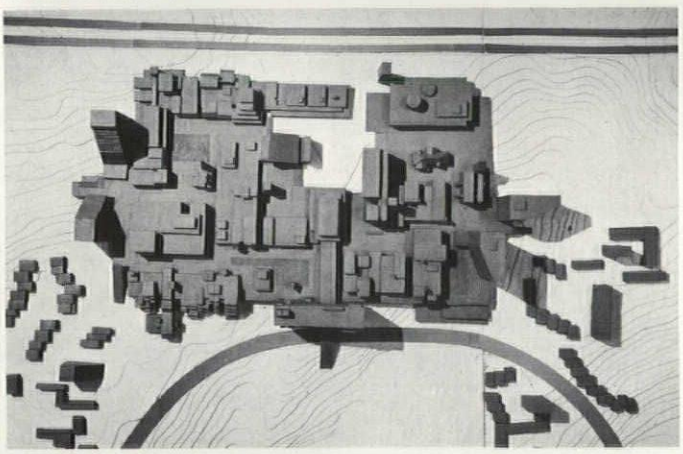
SCHEME 8: STAGE 1



SCHEME 8: STAGE 2



SCHEME 8: STAGE 3



SCHEME 8: ELABORATION OF STAGE 3

Four clay models illustrate the concept of expansion:

The first stage begins with 75,000 sq ft of shopping space and parking on grade for 1500 cars.

The second stage has 240,000 sq ft of shopping space with 1000 cars under cover and 2000 on grade.

At stage three there are 400,000–450,000 sq ft of shopping space with 3,000 cars under cover and 2,000 on grade.

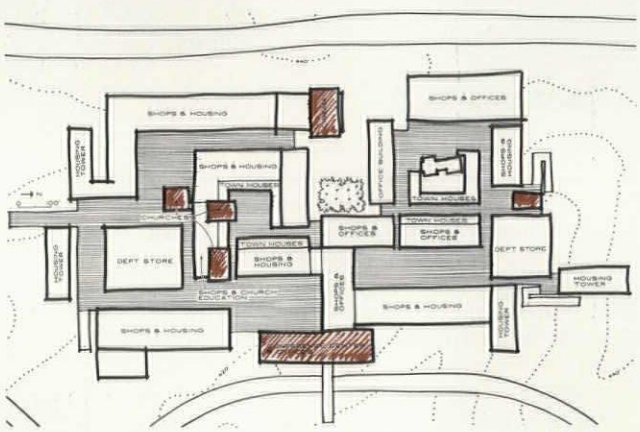
Model at bottom, left, shows a more detailed elaboration of the town center architecture as it might eventually evolve.

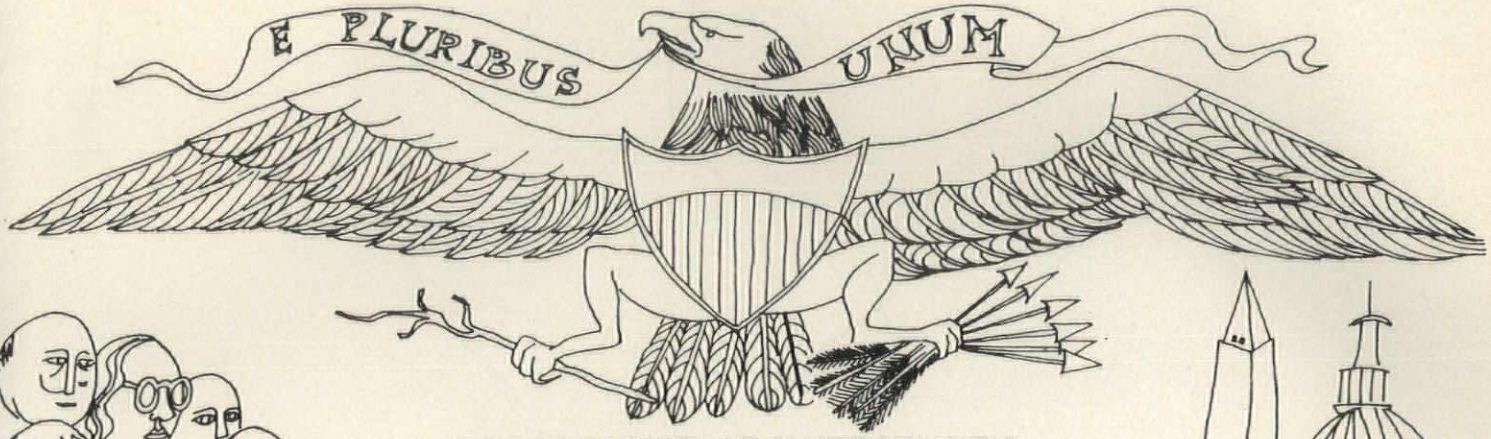
The architects are now working on a more detailed study of the final scheme. Below is a diagrammatic plan showing distribution of various types of buildings; major-space structures are shown in color.

From the formal point of view, the medieval square concept requires the tight façade proposed in scheme 5, with close-fitting town houses, shops with offices or apartments above. The major-space buildings are freed for more imaginative treatment. The diagrammatic sketch shows three churches pushing out into separate squares with varying degrees of evangelical zeal. They are all, however, cleverly anchored to a common educational center as if God had one mind and three faces, which is probably the case in the 20th Century. But the church is reinstated as an important community function.

Besides making a "social" statement, major buildings can also be used to define the formal structure of the town. Romantically, whimsically, high-rise apartments can turn into looming pylons flanking the eastern and western gates to the city, and an enormous conference center may rise like a triumphal arch at the southern edge.

If, in criticism, some should say that we no longer live in the 12th Century, the reply might be made that, whereas towers, battlements, and portcullis were once designed to keep the enemy outside from getting in, they may just as well serve to keep the enemy within from getting out—to keep Reston from sprawling out in an endless, formless, ever-multiplying aggregate of equal-density blocks that peter out over the landscape.



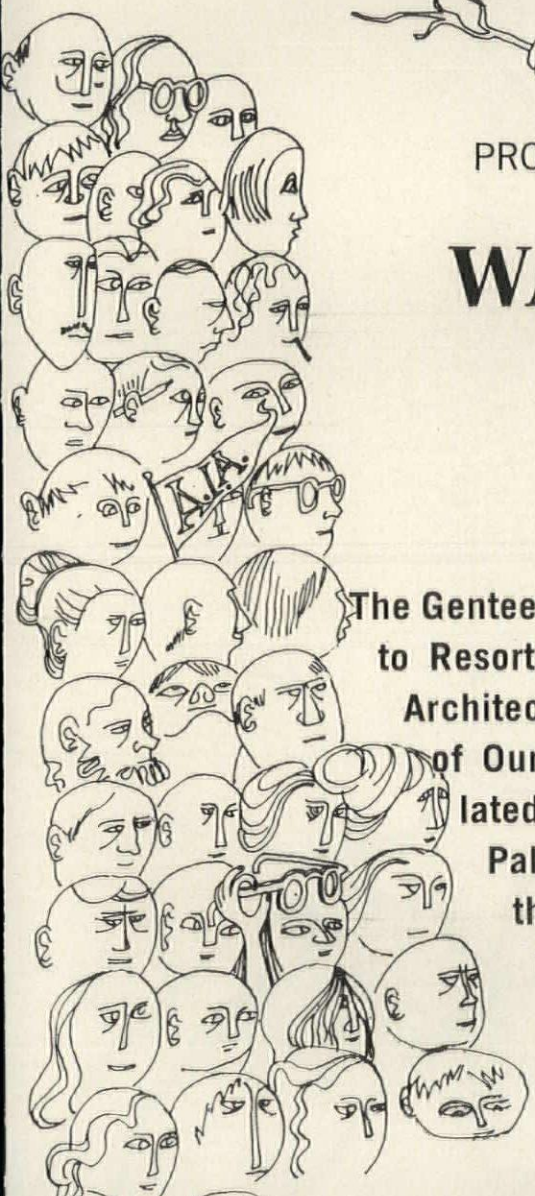


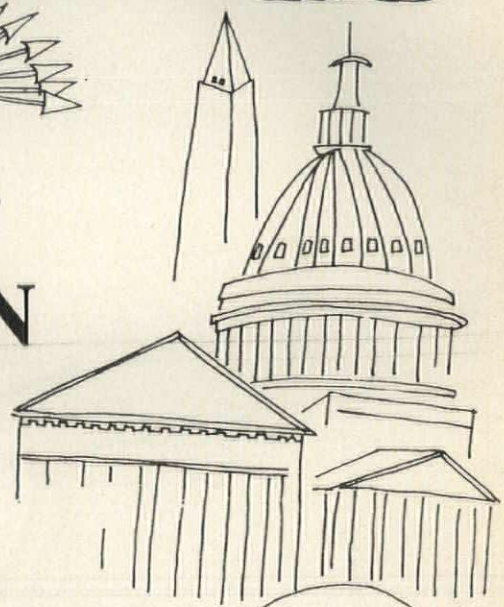
PROGRESSIVE ARCHITECTURE'S

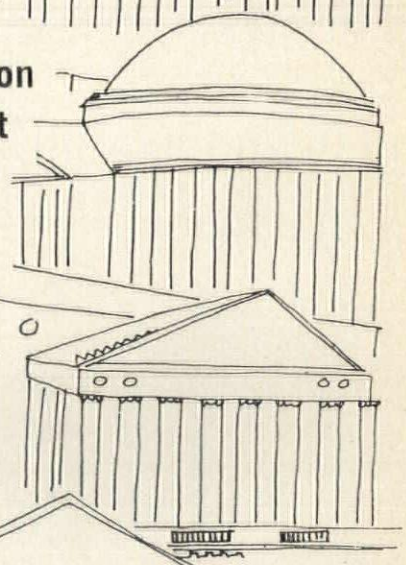
WASHINGTON VADE MECUM

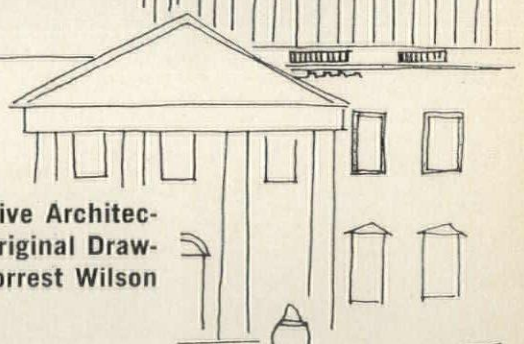
or

The Genteel Architect's Indispensable Companion to Resorts of Pleasure and Sites of Distinct Architectural Peculiarity in the Capital City of Our Nation, Containing Data Calculated to Educate the Eye, Titillate the Palate, Slake the Thirst, Gratify the Intellect, and Contribute to the Enjoyment of Multitudinous Other Stimuli Too Legion to List in This Space

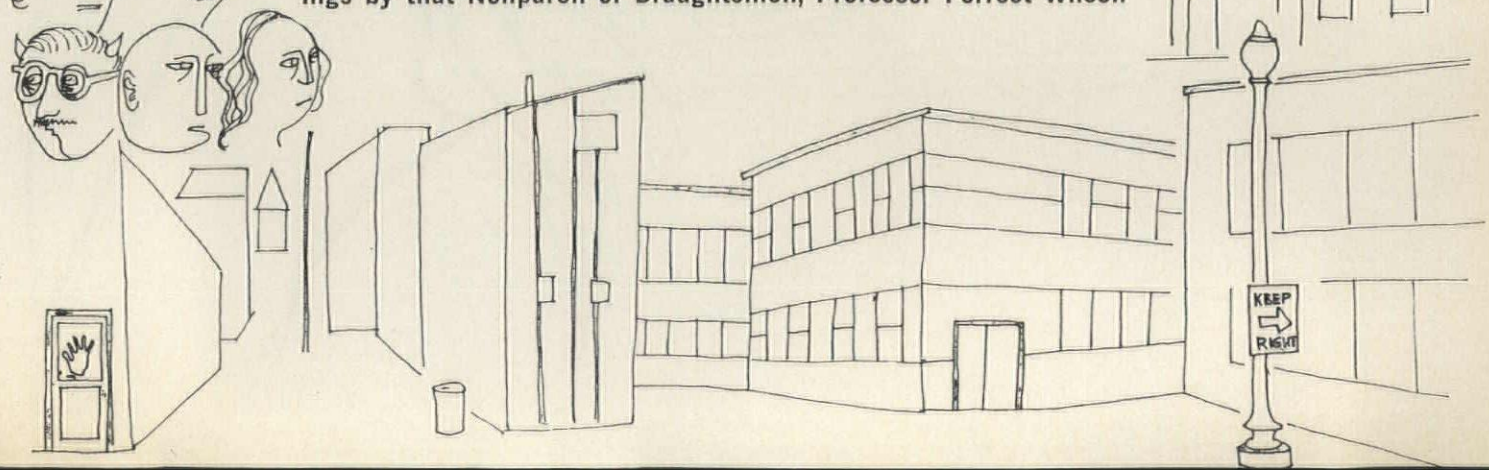


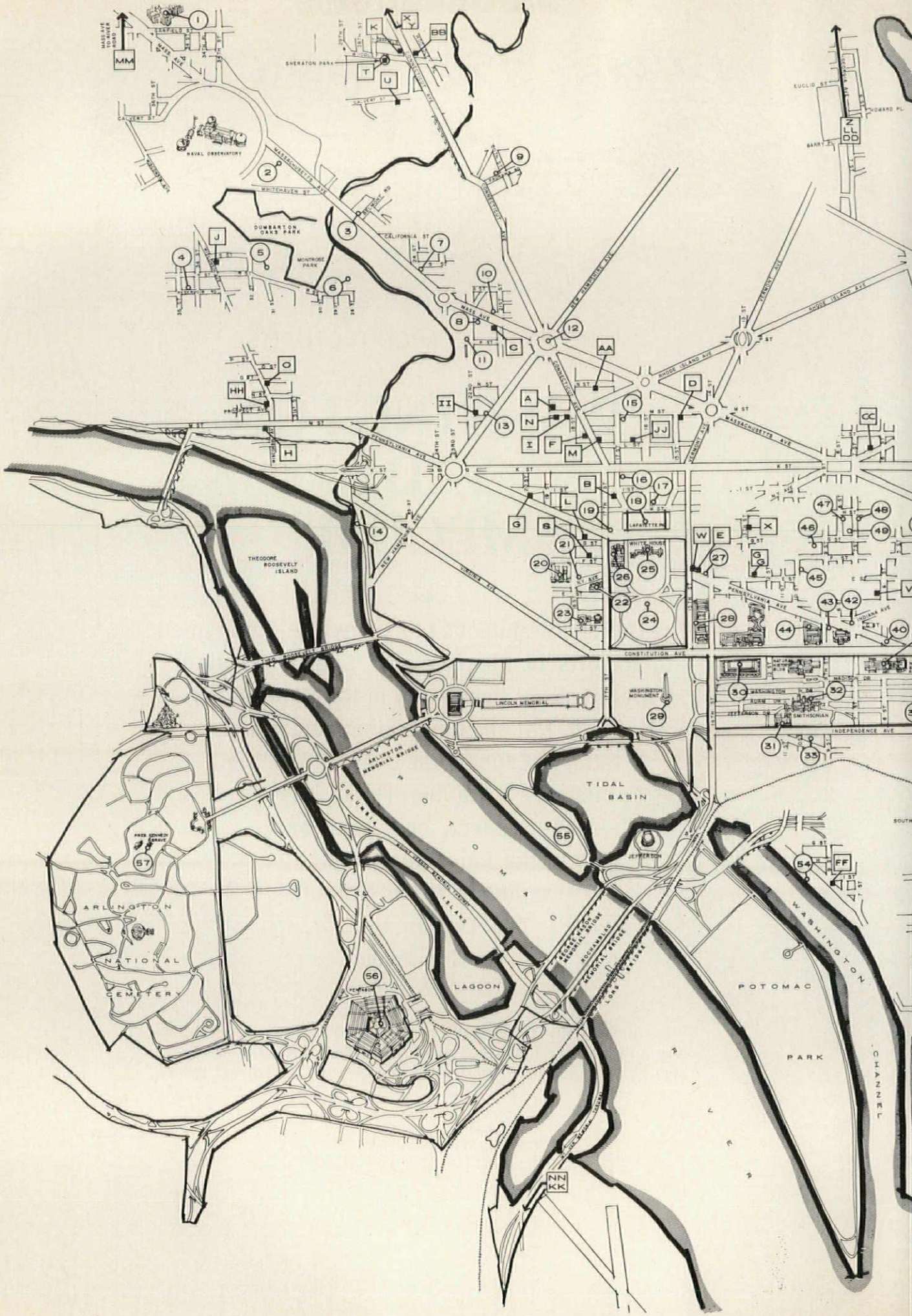






Presented by the World-Traveled Editors of Progressive Architecture and Lavishly Illustrated at Great Expense with Original Drawings by that Nonpareil of Draughtsmen, Professor Forrest Wilson

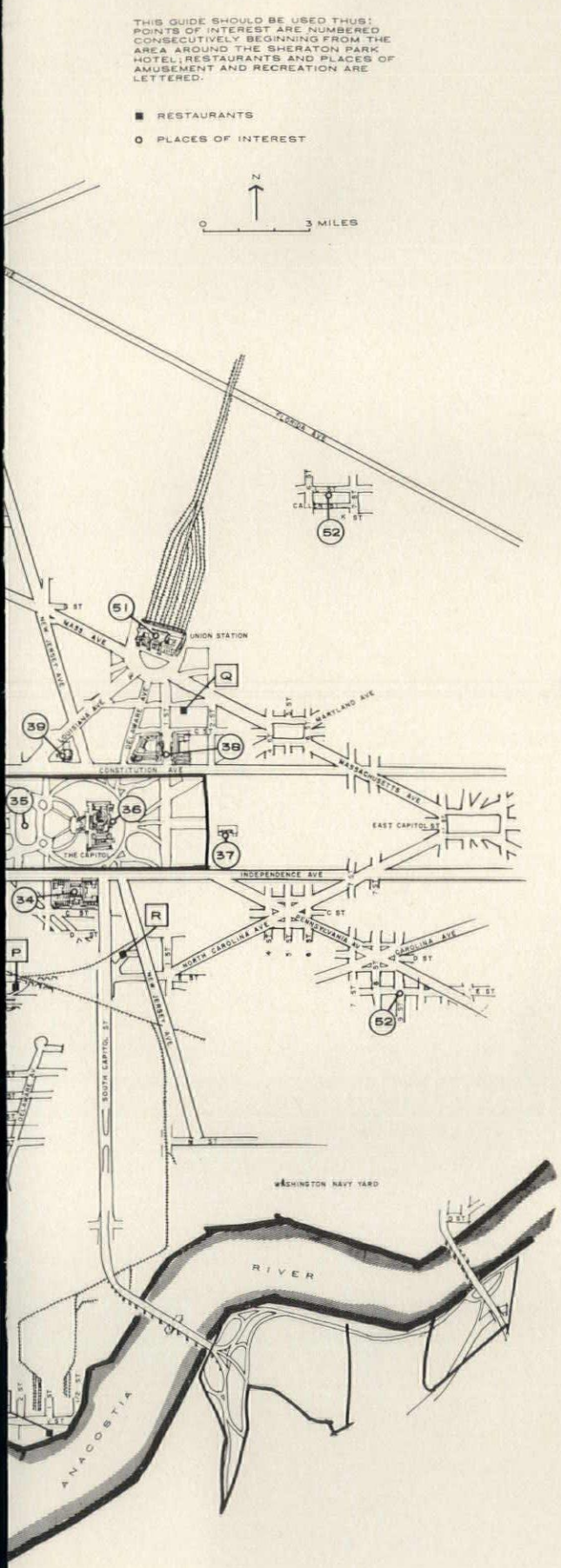


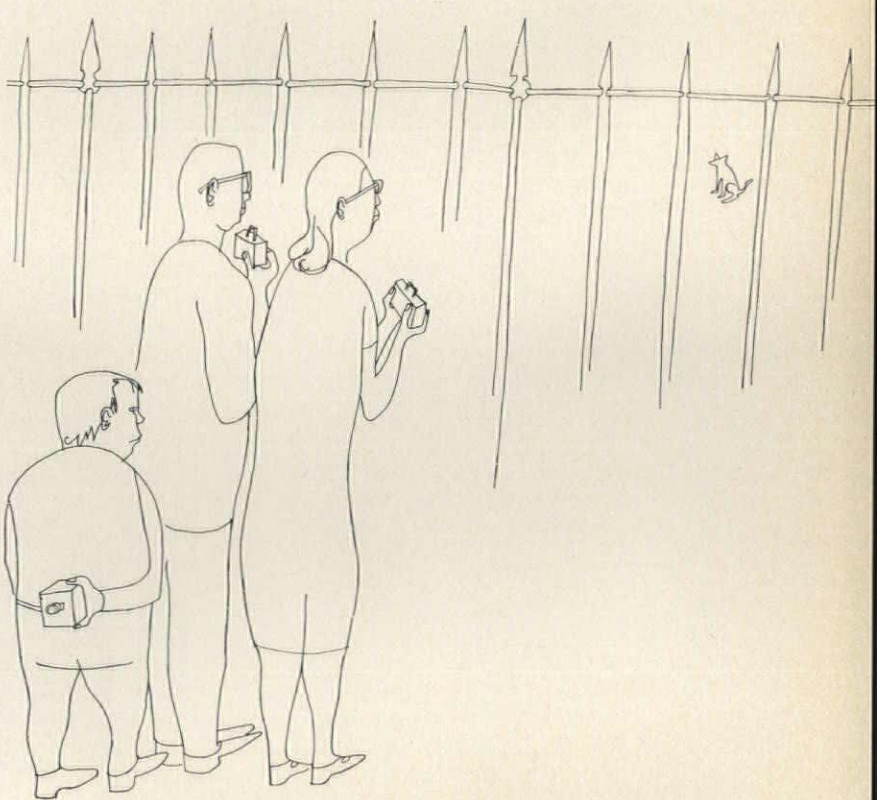

MASS AVE TO RIVER ROAD
MM
NAVAL OBSERVATORY
SHERATON PARK
DUMBARTON OAKS PARK
MONTROSE PARK
CALIFORNIA ST
WHITEHAVEN ST
MASSACHUSETTS AVE
NEW HAMPSHIRE AVE
CONNECTICUT AVE
VERMONT AVE
RHODE ISLAND AVE
M ST
K ST
PENNSYLVANIA AVE
NEW JERSEY AVE
VIRGINIA AVE
CONSTITUTION AVE
INDEPENDENCE AVE
THEODORE ROOSEVELT ISLAND
THEODORE ROOSEVELT BRIDGE
ARLINGTON MEMORIAL BRIDGE
LINCOLN MEMORIAL
WASHINGTON MONUMENT
WHITE HOUSE
LAFAYETTE
JEFFERSON
SMITHSONIAN
WASHINGTON RUINS
TIDAL BASIN
POTOMAC
COLUMBIA
ISLAND
LAGOON
GEORGE MASON MEMORIAL BRIDGE
ROCHAMBEAU MEMORIAL BRIDGE
LONG BRIDGE
ARLINGTON NATIONAL CEMETERY
PARK
CHANNEL
EUCLID ST
BARRY PL
HOWARD PL
NN
KK

"Washington is a city of Southern efficiency and Northern charm," President John F. Kennedy once said. Architects sweltering through a mid-June convention are likely to agree with him. Still, this sprawling city exerts a strange hold on most visitors and residents. The malady known as "Potomac fever," which strikes the young congressman from the Midwest and leads him (hopefully) to spend the rest of his days here, is only the most severe form of Washingtonitis. A peculiar sense of participation inhabits even the casual tourist, and causes him to know that he is where the **action** is. A visit to the White House leads him to visualize the President upstairs in conference. The Congress and the Supreme Court can be seen forming and enforcing the laws that affect everyone. He can pass in the hotel lobby or sit in a restaurant next to Vice-President Humphrey, Eunice Kennedy Shriver, Senator Dirksen, or Perle Mesta.

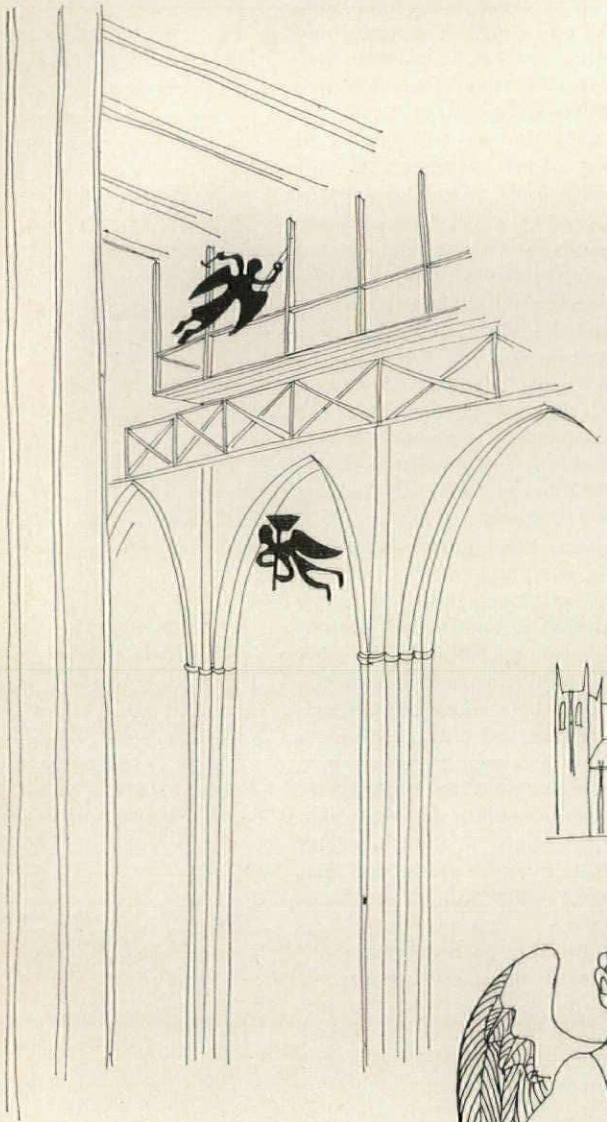
Official tourist Washington is known to practically everyone who visits the city. For those who need them, there are the usual guides to sights and restaurants available in plentitude. The P/A Washington Vade Mecum will provide the architect-visitor with a more offbeat collection of things to see and do while in the capital. In the following pages are to be found esoterica ranging from palmists to a horseshoe vendor, and such aesthetic items as where to find Lucretia Mott in the Capitol and where you can see the wildest collection of cornices in the city.

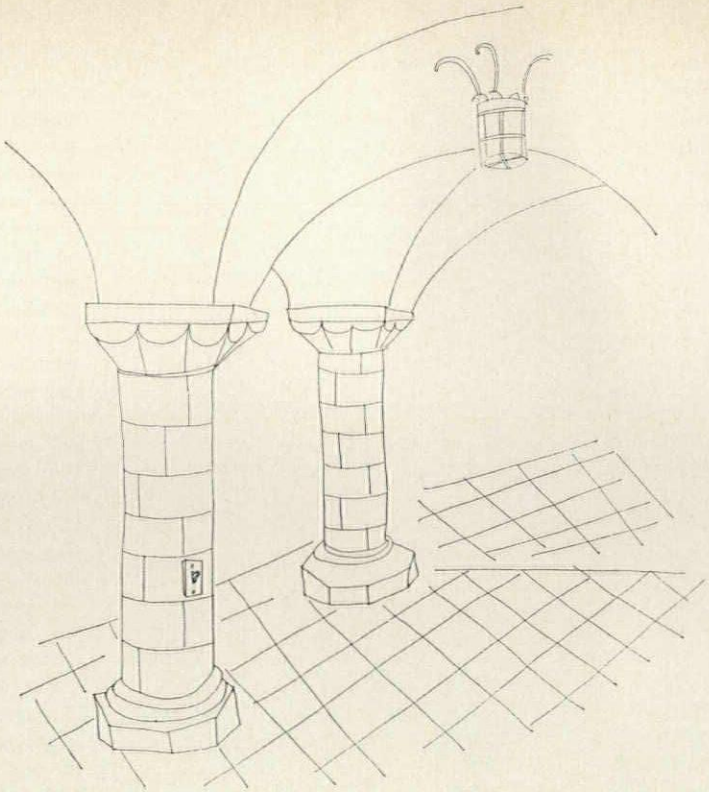
Together with artist Forrest Wilson, we put in strenuous days and nights in Washington running to ground the unusual and interesting to help architectural conventioneers and those who visit Washington in the future.

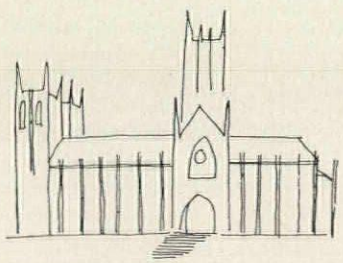


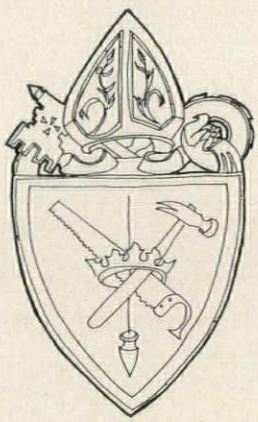


SIGHTS AND SITES



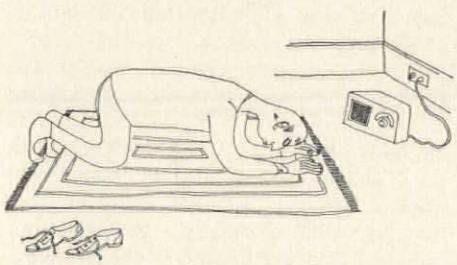






1 CATHEDRAL OF ST. PETER AND ST. PAUL (Washington Cathedral: facing page), Wisconsin and Massachusetts Aves. NW. A Penelope's winding sheet of a building, it has been under construction so long (almost 60 years) that its completion will probably herald the Second Coming. Architect Philip Hubert Frohman has been in charge since 1917; his latest completed element, opened last month, is the rare book library. Kneeling cushions in the chapel to the right of the nave are embroidered with names, sayings, and symbols of such noted people as Louis H. Sullivan, Frederick Law Olmsted, Edna St. Vincent Millay, and Millard Fillmore. There is also a rather touching tribute to Norman Prince, founder of the Lafayette Escadrille in World War I.

2 BRITISH EMBASSY, 3100 Massachusetts Ave. NW. New main legation building is bland office-building contemporary. Consular section next door looks like an oversized tribute to our Williamsburg (which used to be **their** Williamsburg, come to think of it).



3 ISLAMIC CENTER, 2551 Massachusetts Ave. NW. Loudspeakers have replaced the muezzin atop this mosque built under the sponsorship of 15 Moslem countries. It was dedicated by the noted mystic, Dwight D. Eisenhower. Note narrow, vertical pulpit and Technicolor decorations. "Painting and writing by Abdelaal Hassan and assistants M. Mahdi and T. Ahmed, Egypt," reads the credit line.

4 GERMAN EMBASSY, 4645 Reservoir Road. NW. The most notable recent building in Washington by a foreign power (or by our own, for that matter). Designed by Egon Eiermann, it is decidedly worth a visit.

5 DUMBARTON OAKS MUSEUM ADDITION, 1703 32nd St. NW. Philip Johnson's jewel box for the exhibition of pre-Columbian art nestles handsomely in the garden next to Dumbarton Oaks. Opens at 2 p.m.

6 OAK HILL CEMETERY, near Rock Creek Park, NW. A Byronic setting where old sea captains and much of Washington's upper crust await the Last Trump. Across the river is resting place for poorer folk, more run down, with a real Southern Gothic feeling (right).

7 WOODROW WILSON HOUSE, 2340 S St. NW. Property of the National Trust for Historic Preservation, this Georgian-style house is the only museum in a former President's house in Washington.

8 HEADQUARTERS OF THE MUSEUM OF THE SOCIETY OF THE CINCINNATI, 2118 Massachusetts Ave. NW. Repository of an impressive collection of Lafayette memorabilia, it is appropriately a good copy of French chateau architecture. Across the avenue is the Cosmos Club, which Robert Kennedy quit because of its alleged discriminatory membership policies.

9 THE LINDENS, 2401 Kalorama Road NW. Built in Danvers, Mass., in 1754 by Robert Hopper, a Marblehead merchant. Dismantled, put on flat cars, and reassembled in Washington in 1937. Privately owned.

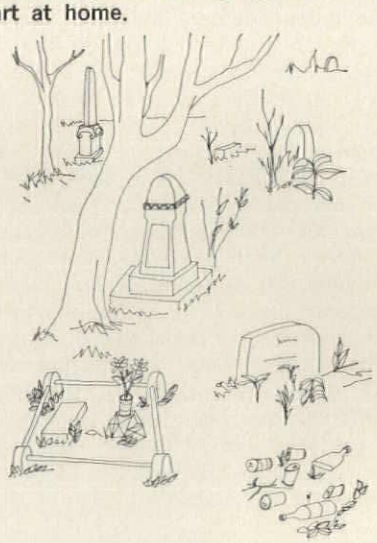
10 PHILLIPS COLLECTION, 1612 21st St. NW. Washington's leading collection of contemporary art, in a setting out of Truman Capote.

11 TARAS SHEVCHENKO, 22 and P Sts. NW. A fine old Beethovian gentleman, the "Bard of the Ukraine" has been sculpted in mid-dithyramb.

12 DUPONT CIRCLE on Connecticut Avenue. Washington's Washington Square, where the Op, the Pop, and the Beat gather on warm evenings for conversation, cards, and song.

13 HEURICH MANSION, 1307 New Hampshire Ave. NW. An 1892 castle on the Rhine built by a brewer, it is now owned by the Columbia Historical Society.

14 FISHING HOLES, along Rock Creek and Potomac Parkway NW. The pole-and-line set congregates here with as much patience as the one along the Seine, and frequently with more success. The condition of the Potomac, it should be noted, convinces one that the water-pollution prevention program should start at home.



15 NATIONAL GEOGRAPHIC SOCIETY, 17th St. near M, NW. Edward D. Stone's new headquarters building houses travel and adventure exhibits well worth taking Junior to see. Here you can also see where those old magazines you read in your dentist's office come from.

16 HOUSING AND HOME FINANCE AGENCY, 1626 K St. NW. What need be said that architects do not know to their joy or sorrow? A repository of commissions, design prizes, the possible first Secretary of Urban Affairs, and enough red tape to reach from here to Yoknapatawpha County and back.

17 ST. JOHN'S EPISCOPAL CHURCH, H and 16th Sts. NW. As your commercial guidebook will tell you, all Presidents since Madison have attended services here. You will not discover, unless you visit, that the glass was evidently selected by the one with the worst taste.

18 LAFAYETTE SQUARE, H St., across from the White House. John Carl Warnecke's designs for this area, prepared under the aegis of President and Mrs. Kennedy, are under way. While here, you can see the equestrian statue of Andrew Jackson that has been immortalized on the label of New Orleans's Jax Beer, or join a convenient picket line and march for higher fees, more art on buildings, or the return of nickel Jax Beer.

19 OLD COURT OF CLAIMS BUILDING, H St. NW, next to Blair-Lee mansions. Built for the Corcoran Gallery in 1859, it is a fine old example of overrusticated barococo by James Renwick, Jr. Deserted now, it probably will not be around much longer.

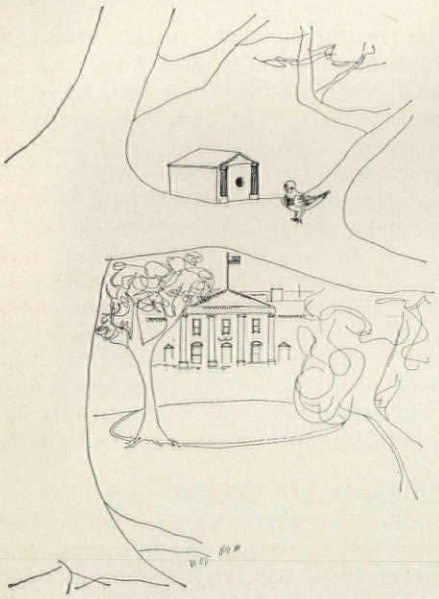
20 GENERAL SERVICES ADMINISTRATION, E St. between 18th and 19th Sts. NW. Drop in to the GSA cafeteria for a casual cup of coffee and maybe you will run into Karel Yasko and a commission.

21 OCTAGON ANNEX, 1735 New York Ave. NW. The AIA headquarters building. This will probably be your last chance to see this 1940 addition to the Octagon by Eggers & Higgins before Mitchell & Giurgola's winning design replaces it. If you just have a few minutes, though, see the Octagon instead.

22 CORCORAN GALLERY, 17th St. and New York Ave. NW. If you cannot see all the major Washington galleries, see them in this order: National, Phillips, Freer, Dumbarton Oaks, Corcoran.

23 CONSTITUTION HALL, 18th and D Sts. NW. Headquarters of the DAR. Check to see if there are any concerts scheduled here. It's unlikely to be Marion Anderson; she has retired.

24 ZERO MILESTONE marker in the Ellipse opposite the rear of the White House. Distances of national highways passing through Washington begin or end here. Tribute to the cowed esteem in which the automobile and the highway engineer are held.



25 THE TRUMAN BALCONY, The White House. A little-admired addition. But then, HST performed a notable service in having the mansion renovated just as it was about to cave in. The President can look at the Zero Milestone from here whenever he is of a mind.

26 EXECUTIVE OFFICE BUILDING, 17th and Pennsylvania Ave. NW. Formerly the State, War, and Navy Building, designed by A. B. Mullett, 1871-88. Thought of as a dreadful monstrosity for many years, this recently cleaned product of America's "Gilded Age" has begun to attract respect from architects.

27 THE WILLARD HOTEL, Pennsylvania Ave. and 14th St. NW. Called (mainly by the management) the "hotel of Presidents." Chief Executives who stayed here include Lincoln, Taylor, Fillmore, Buchanan, Taft, Wilson, Coolidge, and Harding. The Willard, along with the nearby Occidental Restaurant and Washington Hotel, will come down in the new Pennsylvania Avenue plan.

28 DEPARTMENT OF COMMERCE, 14th St. between E St. and Constitution Ave. NW. A big machine in the lobby, counting American births and deaths, shows that we are doing our level best to continue the population explosion.

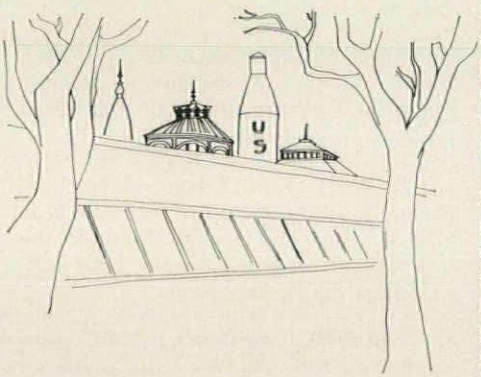
29 WASHINGTON MONUMENT, The Mall. Look at some of the runners-up in the design competition for the monument and thank your lucky stars that this one was built—and without the originally proposed stuffy colonnade around the bottom.

30 MUSEUM OF HISTORY AND TECHNOLOGY, The Mall at 14th St. NW. Part of the Smithsonian complex. A very uneasy compromise by Steinman, Cain & white (neé McKim, Meade & White) between "Federalese" and the 1960's. Hopefully, the last of its breed.

Horatio Greenough's seminude statue of Washington as Caesar is to be found here and proves that the author of **Form and Function** was a much better author than sculptor.

31 FREER GALLERY, The Mall. Also part of the Smithsonian, it has the best collection of Oriental art in the country.

32 SMITHSONIAN INSTITUTION, The Mall. James Renwick, Jr.'s, tribute to Sir Walter Scott, with even more **kitsch** than Donnizetti got into "Lucia di Lammermoor." The Charles Addams atmosphere is heightened by the rockets and missiles standing around in the courtyard.



33 TEMPOS, on Independence Ave. between the Smithsonian and the White House. Two World Wars gave birth to "temporary" structures designed to house wartime offices. These, from WWI, are some of the last of a slowly dying race (after all, Pennsylvania Station was just a little older, and they are tearing it down).

34 RAYBURN HOUSE OFFICE BUILDING, Independence Ave. and 1st St. SW. By nonarchitect J. George Stewart, Architect of the Capitol, out of Harbeson, Hough, Livingston & Larson. Not to be missed by the connoisseur of the unbelievable. "Majesty of Law" and "Spirit of Justice" have been dug up from the old WPA days and placed on either side of the entrance. At the sides are some kind of hybrid cornucopia-cum-gargoyles obviously placed there as a pigeon pleaser. If every effort had been expended to make this a satire on outdated Federalese architecture (and who is to say it wasn't), the effect could not have been more devastating. As the late Joe McCarthy once said, "It's the most unheard of thing I've ever heard of."

35 GRANT MEMORIAL, before the Capitol. A couple of fine, swirling groups of Feds at either side of the General's equestrian statue, by Henry M. Shrady.

36 THE CAPITOL. There is an exhibition of the architectural history of the Capitol in the "crypt" below the main rotunda, principally drawings and studies of the dome by Thomas U. Walter, fourth Architect of the Capitol.

Also in the crypt is a pre-Pop sculpture of the Suffrage Movement worthy of Marisol or George Segal. Elizabeth Cady Stanton, Susan B. Anthony, and Lucretia Mott, looking like the first act of "Macbeth," rise from a sea of marzipan. Sculptor: Adelaide Johnson.

Our friend J. George Stewart's East Front can be observed by those with a taste for nonarchitecture. Stewart is now exclaiming, Chicken Little fashion, that the dome may fall if the **West** Front is not extended. A visit will be safe.

37 FOLGER SHAKESPEARE LIBRARY, 201 E. Capitol St. Check to see if there are readings or performances here and pay it a visit after touring the Library of Congress next door. There is a letter written by Elizabeth I that shows she was right up there as a phrase-turner herself.

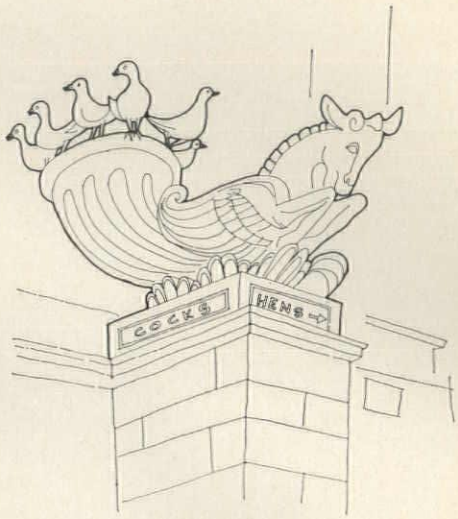
38 NEW SENATE OFFICE BUILDING, Constitution Ave. and 1st St. NW. Guess who? J. George Stewart, practicing up for his chef d'oeuvre, the Rayburn Building. The old Senate Office Building, incidentally, is fondly known as "the old SOB." Whether this one is to be called "the new SOB" or "the young SOB" or "son of the old SOB" is not yet known.

39 ROBERT A. TAFT MEMORIAL, Constitution and Louisiana Aves. NW. This ding-dong tower by New Haven's Douglas Orr (it adds a carillon to the Capitol Hill babel) is the only free-standing monument to a legislator on the Hill. Taft's shaft, it was feared, might lead to a parade of similar memorials for various favorite sons. Fortunately, this fear has thus far proved groundless.

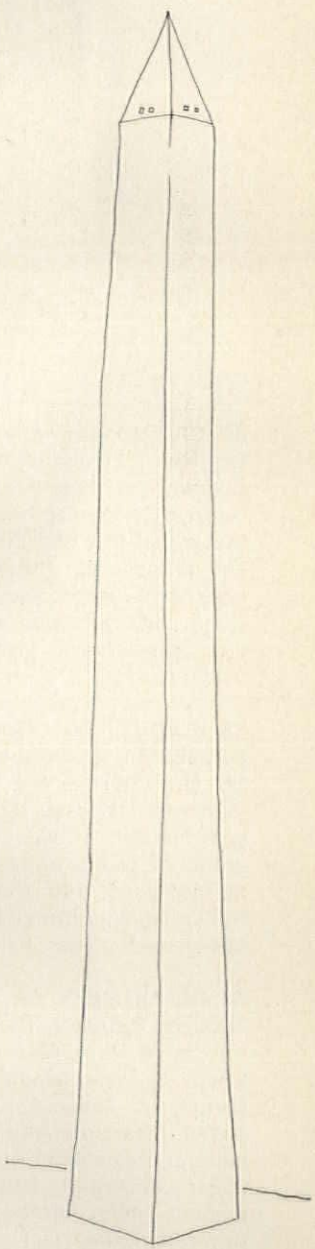
40 PENNSYLVANIA AVENUE. Walk from the Capitol to the White House along this historic route and try to visualize what it will be like when the grand plan developed under the Kennedy Administration goes into effect. Architect Nathaniel Owings has been given the "go" signal by President Johnson on the implemention of the plan.

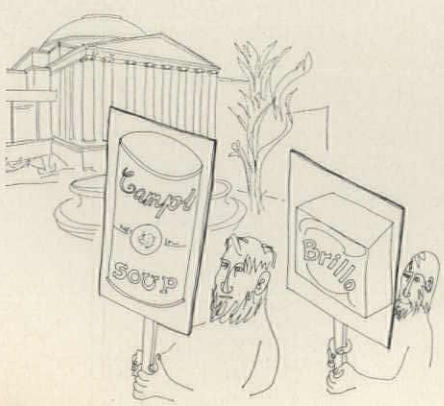
41 NATIONAL GALLERY OF ART, Pennsylvania Avenue, The Mall. This great collection was swelled last month with the addition of the famous Chester Dale Collection, which is to French Impressionism what the Freer is to Oriental art. Don't miss.

34

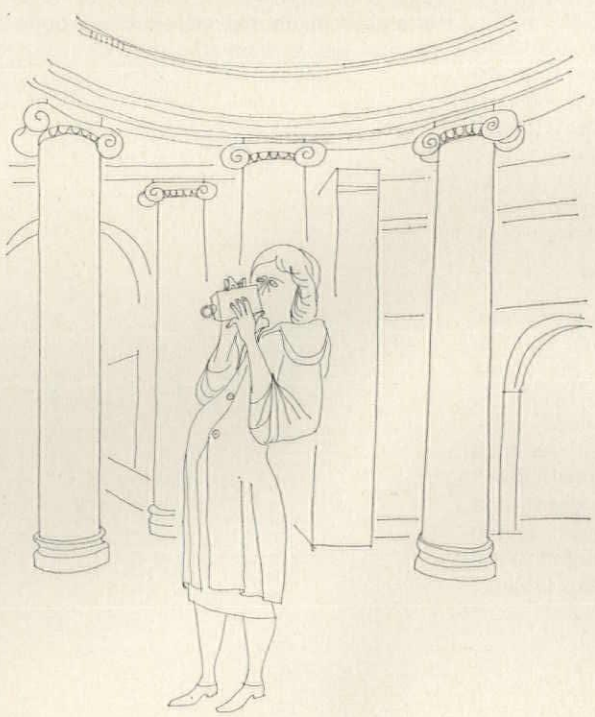


34



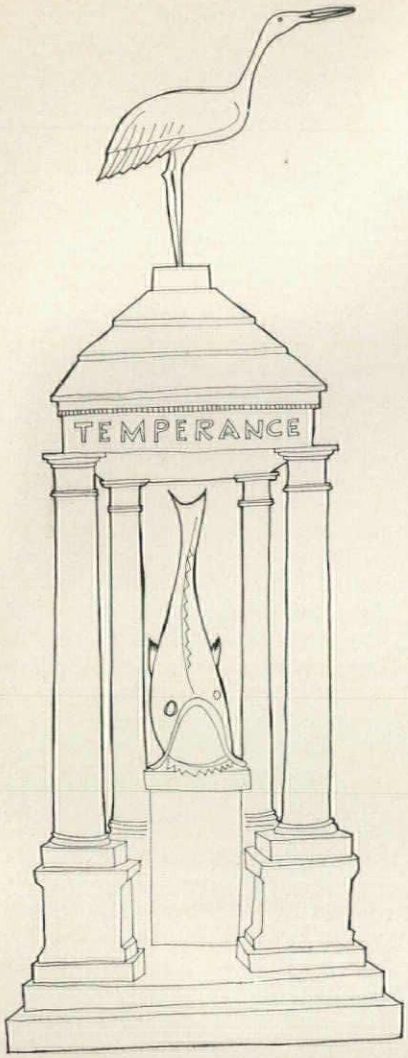


41



36

29

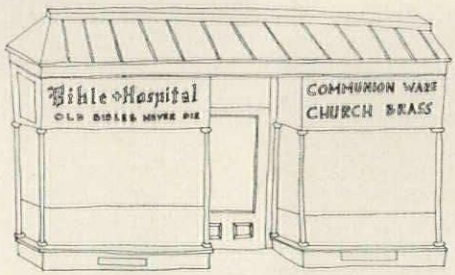


42 GAZEBO, Pennsylvania Ave. and 7th St. NW. "Presented by Dr. Henry D. Cogswell of San Francisco, Cal." Dr. Cogswell evidently had no fondness for the grape, this odd little structure being emblazoned with the virtues of Temperance, Faith, Hope, and Charity. A dolphin within and a crane and papyrus reed atop presumably symbolize these attributes.

43 PLAQUE TO FRANKLIN DELANO ROOSEVELT, Pennsylvania Ave. and 9th St. NW. This is the site and type of memorial proposed by President Roosevelt himself. It was contributed by a group of private citizens and is not to be confused with the Pedersen-Tilney-Hoberman-Wasserman-Beer design proposed for Potomac Park.

44 DEPARTMENT OF JUSTICE, Federal Triangle, Pennsylvania Ave. NW. The FBI will move from here across the street when its new headquarters by C. F. Murphy & Associates has been completed. Meantime, you can still see such cultural phenomena as the straw hat Dillinger was wearing when shot down, and gunnery demonstrations where agents prove that they can outdo Elliott Ness any day. Very elevating for the kiddies.

45 FORD'S THEATER, 10th St. between E and F Sts. NW. Having housed a motley "Lincoln Museum" for many years, the theater is undergoing renovations to restore it as closely as possible to its condition on the tragic night of April 14, 1865. Washington architect William M. Haussmann is in charge of the renovation for the National Park Service. Hugh Hardy of New York is consulting on the possibility of restoring the theater for actual, live performances.



46 BIBLE HOSPITAL, 908 G St. NW. Should you give the Gideon in your room too heavy a workout, you can take it to the Bible Hospital, which advertises, "Old Bibles Never Die."

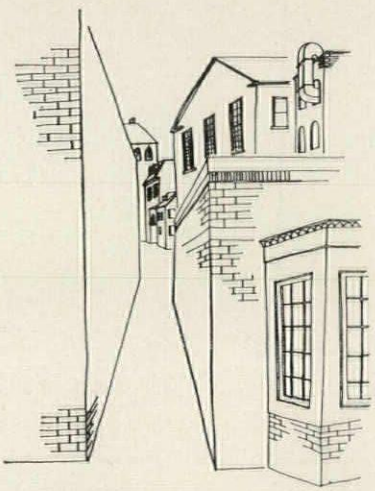
47 CALVARY BAPTIST CHURCH, H and 8th Sts. NW. Interesting old brickwork. The Northern Baptist Convention was formed here in 1907 with Charles Evans Hughes as its first president. Chief Justice Hughes was the grandfather of Charles Evans Hughes, III, New York architect.

48 HORSESHOES. Should you have arrived in town the same way President Washington did, you may need the services of W. S. Jenks & Son, H and 7th Sts. NW, who boast "Washington's Leading Purveyor of Fine Horseshoes."

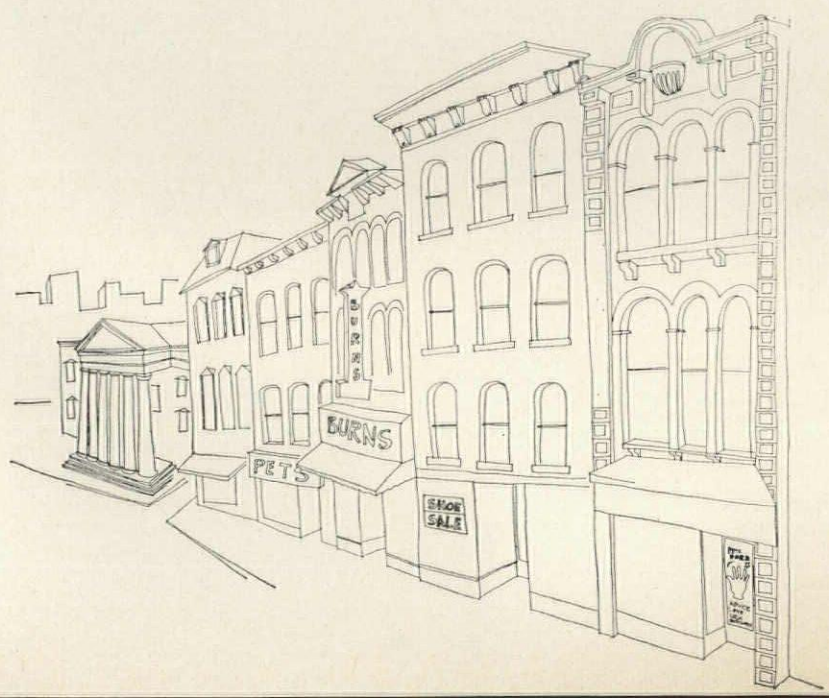
49 CORNICES. Looking south on 7th St. past the Jenks emporium, you will see as wild a collection of cornices as you have seen in many a day. Delightfully, they terminate in an old classic court building now being renovated (below).

50 OLD PENSION BUILDING, between F and G and 4th and 5th Sts. NW. A building of imposing solidity with a first-floor cornice made of a band of repetitive fired clay figures dealing with troop activities in the Civil War.

51 UNION STATION, confluence of Massachusetts, Louisiana, and Delaware Aves. NE. Architects who want to take a bath in a railroad terminal can no longer use Charles Follen McKim's replica of the Caracalla tepidarium at New York's Pennsylvania Station. Perhaps they will be satisfied with Daniel H. Burnham's version (1908) of the central hall of the Baths of Diocletian in Rome, reproduced as the main hall of Washington's Union Station.



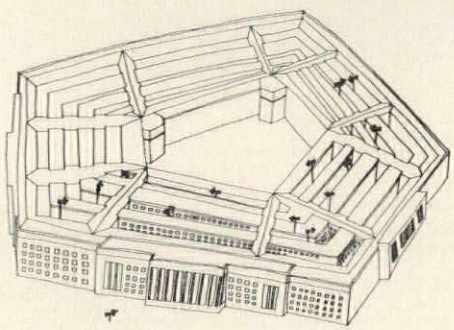
52 SOUTHEAST AND NORTHEAST AREAS. The Southeast is gradually emerging from somewhat run-down conditions in many blocks, mainly through the renovation of existing buildings. A number of interesting older structures can be spotted. The Northeast is in poorer condition. Neither exhibit the squalor of the Southwest area in the 40's, when the famous photographs of slums within sight of the Capitol were taken.



53 SOUTHWEST URBAN RENEWAL AREA. Quality ranges from Early Urban Renewal (Satterlee & Smith), through middle period, or Webb & Knapp, Pei, down to atypically jazzy Charles Goodman. Harry Weese's Arena Stage is in this section, at 6th and M. Sts.

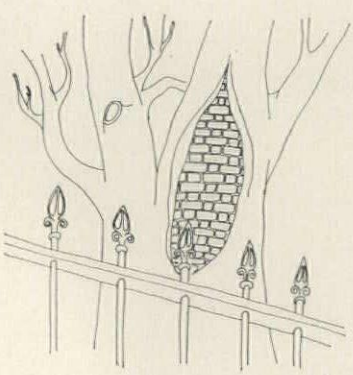
54 FISH PIERS AND MARINA, on Washington Channel. Worth a visit on your way to inspect the Southwest redevelopment area.

55 POTOMAC PARK between the Lincoln and Jefferson Memorials. As the site of the beleaguered Franklin D. Roosevelt Memorial, it might be called Francis Biddle's Lament. The Judge finally resigned as head of the memorial commission last month, leaving serious doubts as to the fate of the prize-winning Pedersen-Tilney-Hoberman-Wasserman-Beer design.



56 THE PENTAGON. (Do you need an address?) The greatest maze since the Palace of Minos at Knossos. It is rumored that the Andrews Sisters disappeared into this pile just after World War II and have not been heard of since. The strange cries that you hear from the War Room are just Dr. Strangelove and Werner von Braun talking over the good old days.

57 L'ENFANT MEMORIAL, Arlington Cemetery. Besides the one to Richard Morris Hunt in New York's Central Park and Olmsted Island in the Potomac, this is the only memorial to an architect or planner we know of (except for Jefferson, of course). Designed by Welles Bosworth.



OUTSIDE THE CITY

RESTON. A short detour on Highway 202 going to or from Dulles International Airport. Some housing by Charles Goodman and Chloethiel Smith is up now; the notable designs by Whittlesley & Conklin are in the works. America's prime example of a post-Greenbelt new town.

DULLES INTERNATIONAL AIRPORT. The world's handsomest air terminal is reportedly losing money hand over fist because people insist on coming in or leaving by the more prosaic but more convenient Washington National Airport. If you did the same, you might go to Dulles for dinner one evening (there is a good restaurant) and give yourself an architectural thrill.

If you visit Mount Vernon by river or highway, take time to go to nearby **WOODLAWN PLANTATION,** where you will see not only the plantation house, designed by William Thornton, first Architect of the Capitol, and presented as a wedding present by George Washington to his nephew and Nelly Custis, Martha Washington's granddaughter, but also the **POPE-LEIGHEY HOUSE,** a 1940 Frank Lloyd Wright Usonian house recently moved here by the National Trust for Historic Preservation, which oversees both properties. On June 16, Interior Secretary Stewart Udall will open the Wright house to AIA-XI Pan American Congress delegates and visitors in a tour that will also include Mount Vernon and Woodlawn.

MISCELLANEOUS

subjects not coverable in itemized guide

GIRL-WATCHING: On any square of grass, and there is plenty of it, around lunchtime. Weekends and after work, in Potomac Park, along the river, and in Rock Creek Park. It's enough to make a man proud and a little humble.

PALMISTS: A matter that might bemuse those who think about the conduct of the Government is the frequent occurrence of palmists in Washington. These clairvoyants are to be found in most parts of the city, and evidently enjoy steady employment. Should you care to have the future course of your practice revealed, you might try Mme. Fonda, 731 11th St. NW; Mme. Lane, 907 G St. NW; Mme. Anita, 716 7th St. NW; Mme. Roma, 623 7th St. NW; or Mme. Dana, 1732 Pennsylvania Ave. NW. Mme. Dana, incidentally, has her consulting salon in a splendid stepped-gable Dutch building.

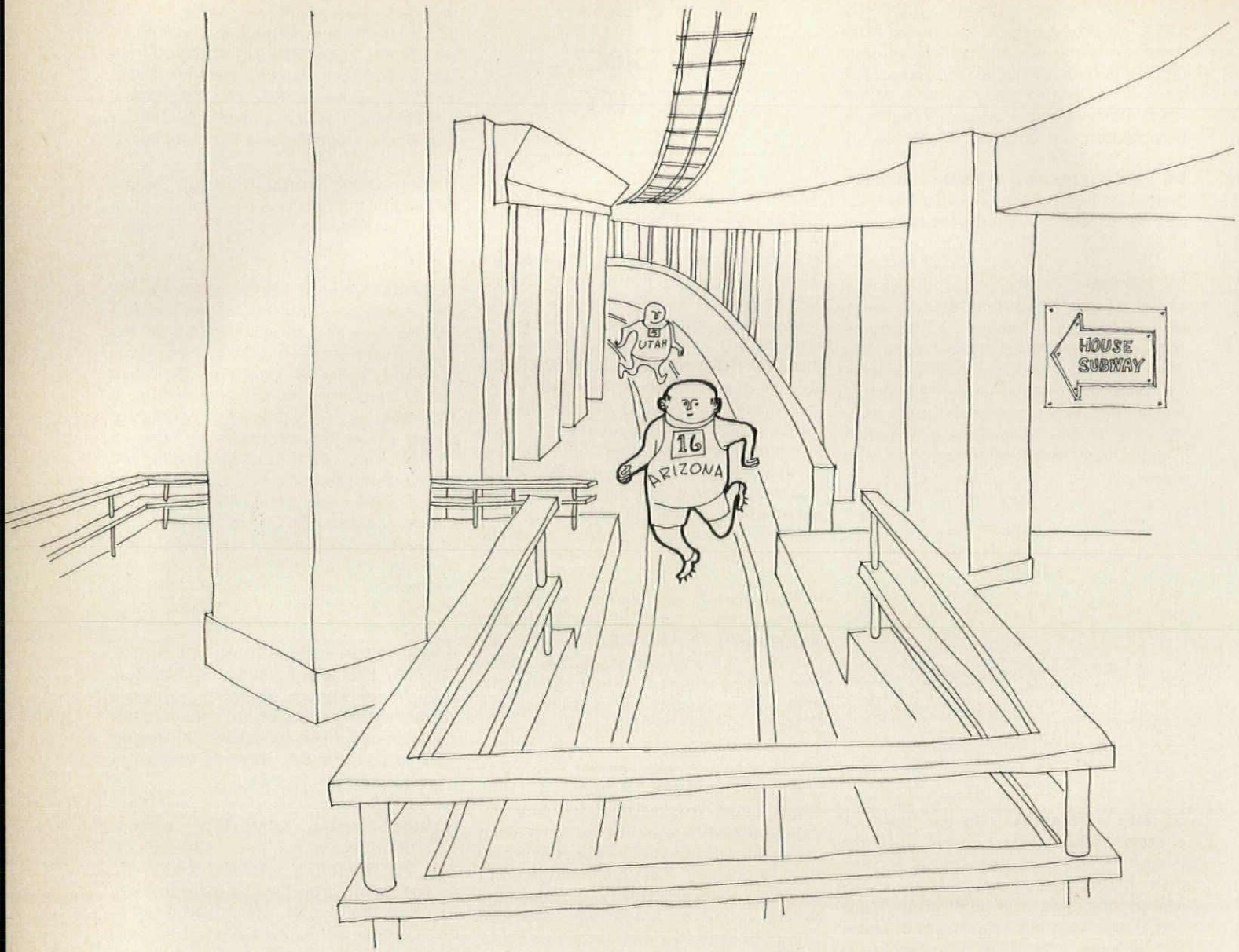
UNDERCOVER WORK: Ride the Senate subway or the new one beneath the Rayburn Building. This is good for politician-spotting.

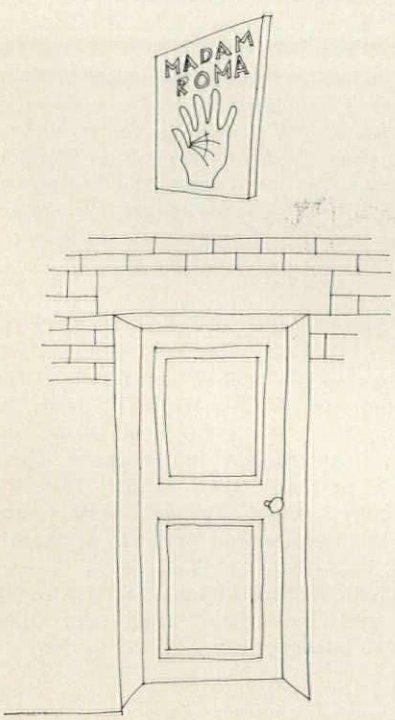
ASSOCIATIONS: If life with AIA or the Pan American Congress is not enough for you, you can always visit one of the other associations in which the capital abounds. A brief selection: American Foot Health Foundation, National Duck Pin Bowling Congress, Association of Oldest Living Inhabitants of the District of Columbia, Institute of Shortening and Edible Oils, Benevolent and Protective Order of Reindeer, American Hot-Dip Galvanizers Association, and National Investigation Commission on Aerial Phenomena. For the lobbyist with time on his hands, there is even an American Society of Association Executives.

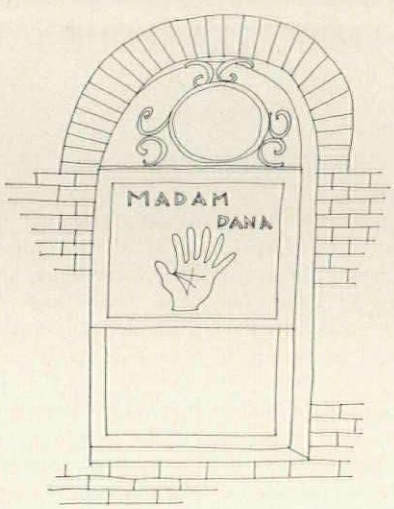
WASHINGTON COMMERCIAL BUILDINGS. The new business buildings of Washington almost without exception exhibit a stultifying blandness of the square-holes-poked-in-curtain-walls school. A deplorable exhibit for our nation's capital to have to show to visitors.

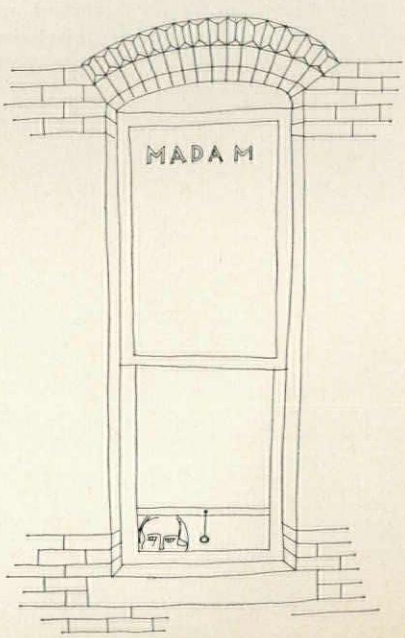
CONGRESSIONAL CEMETERY, eastern end of Pennsylvania Ave., 17th and E Sts. SE. Thornton, Hadfield, and Mills, architects important in the early development of the capital, are buried here. A group of 85 cenotaphs designed by Benjamin H. Latrobe and erected between 1838 and 1877 to legislators who died in office give the place its name. Upon the motion of Senator Hoar of Massachusetts, who said on the floor of the Senate in 1877 that the prospect of being interred beneath one of these atrocities added a new terror to death, an act was passed discontinuing their erection. Besides, the improvement of rail service had made it possible to get the remains back to the constituency before too much harm had been done.

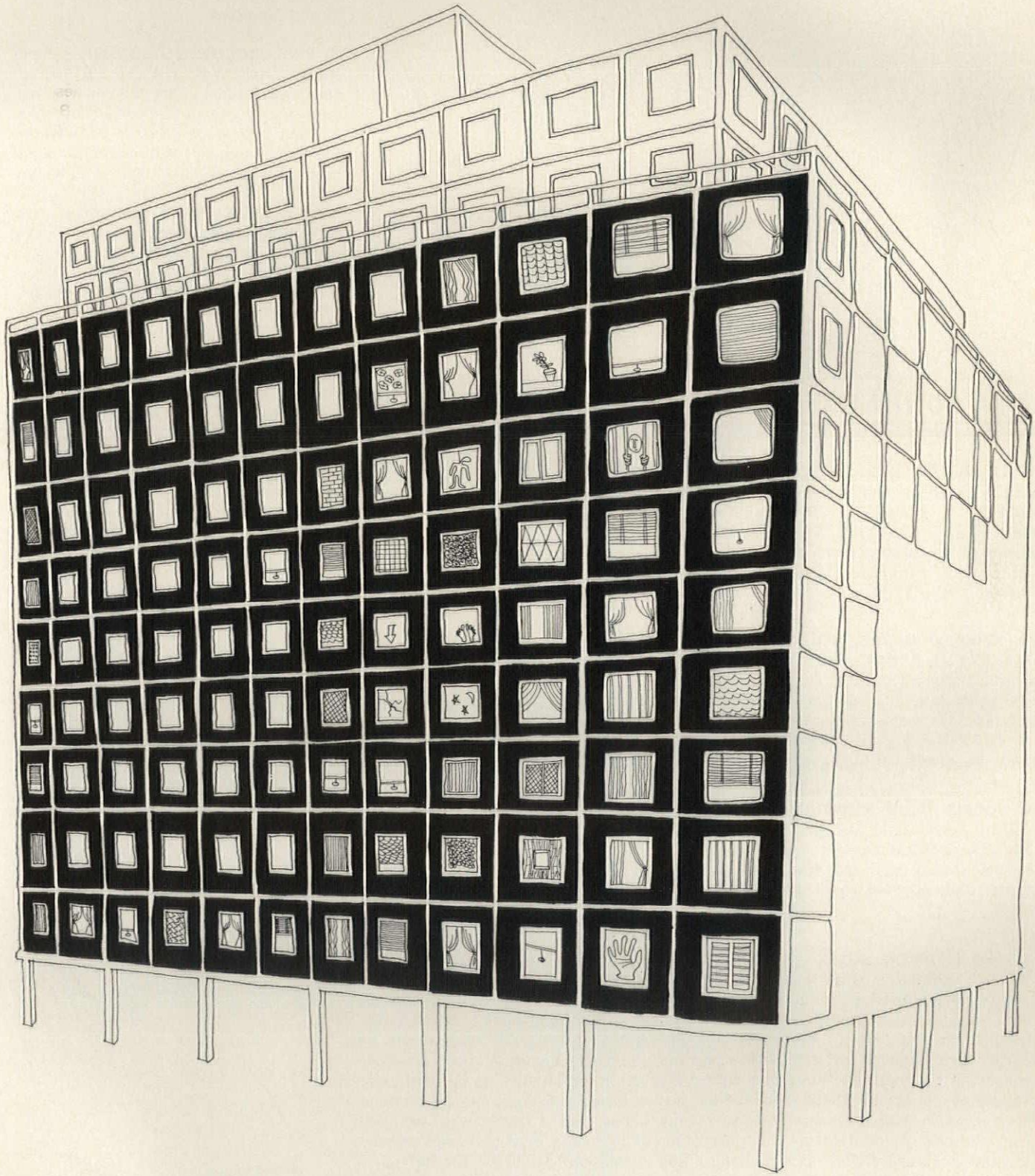
PLACES WE DID NOT GET TO INVESTIGATE, BUT MAYBE YOU WILL: Crazy Amusements, 7835 Eastern Ave., Silver Spring, Md.; Noah's Ark, 8914 Grant St., Bethesda, Md.; Mrs. Keiko Hiratsuka Moore, instruction in Japanese woodblock printing, 3116 M St., NW; the candidly named Thieves' Market and Pirate's Den, antique shops in Alexandria and Rockville; the Washington Christadelphian Eclesia Chapel, 1601 23rd St. SE: and, most tantalizing, Clara Lane, Social Introductions, 711 E St. NW.


UTAH
16
ARIZONA
HOUSE
SUBWAY


MADAM
ROMA

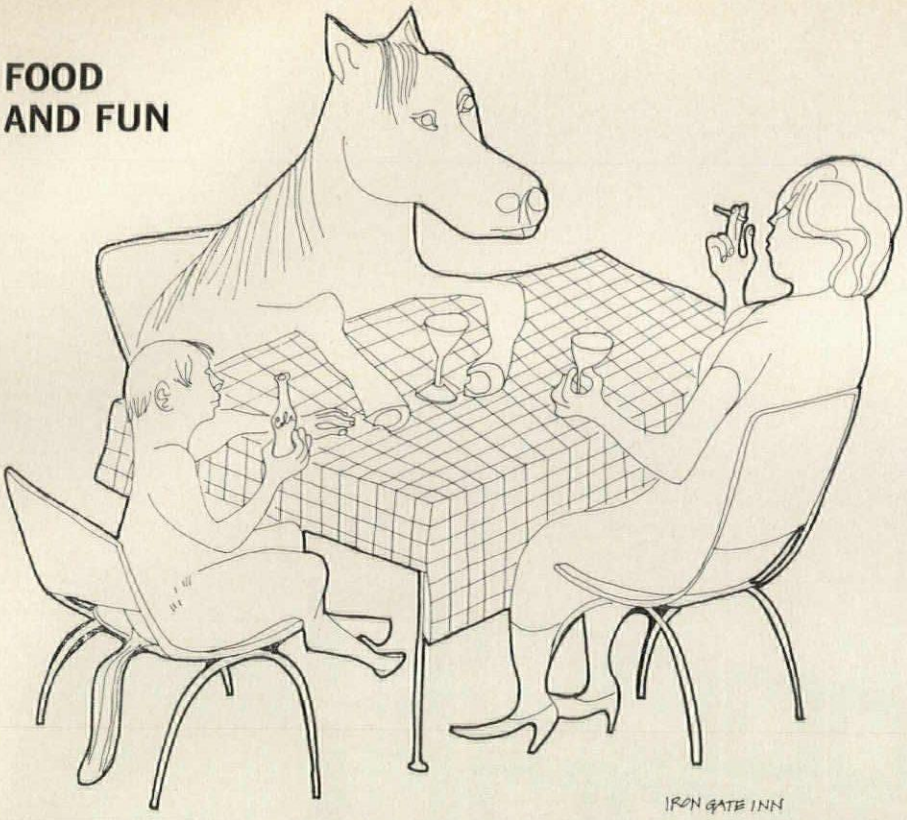

MADAM
DANA


MADAM



Wilson "composite" of Washington commercial buildings

FOOD AND FUN



CONTINENTAL

A. LE BISTRO, 1827 M St. NW. 338-4622. Excellent and expensive French cooking in intime low-ceiling setting. Back room is a discothéque cocktail lounge. Eat at conventional hours or waiters get cranky in good old Gaullist fashion. Daily 11:30 a.m.–12 M.

B. CHEZ FRANÇOIS, 818 Connecticut Ave. NW. ME 8-1849. A little bit of Paris on the Washington sidewalk. Good quality, particularly for outdoor lunch. Waitresses have sense of humor. Daily 12 N–2:30 p.m.; 6 p.m.–9:45 p.m. Closed Saturday lunch and Sundays.

C. JOCKEY CLUB RESTAURANT in the Fairfax Hotel, 2100 Massachusetts Ave. NW. CO 5-0222. One of Washington's best and most expensive French Restaurants. Daily 12 N–11 p.m. Closed Sundays.

D. THE MADISON HOTEL, 15th and M St. NW. 483-6400. Good food, elegant setting, and expensive ("You need dollar bills hanging out of your pockets to exit through the tip line"). Impressive imported hors d'oeuvre cart with delicacies concocted by imported Norwegian chef. Telephone outlets for those who like to keep in touch with their answering service, and only round tables—"no push-together squares." Dolley Madison hangs prominently; the "other Madison" is in the corner. Daily 12 N–12 M.

E. OCCIDENTAL RESTAURANT, 1411 Pennsylvania Ave. NW. DI 7-6467. This may be one of your last chances to dine in this fine old Washington restaurant—before the Federal bulldozer comes lumbering around the corner, leveling an historic site to create still another mall in bemalled Washington. Chef Mueller prepares excellent beef Burgundy, soft shell crabs, etc.; "authentic" Hungarian gypsies fiddle in the background. Walls are lined with portraits of notables, who are listed in the catalogue under headings such as "businessmen, statesmen, generals." "Authors" is added to the book in pencil, and the only architect to be found was Lorimer Rich, designer of Unknown Soldiers' Tomb, sandwiched between Robert Frost and Chief Justice Warren. Daily 11:30 a.m.–1 a.m.

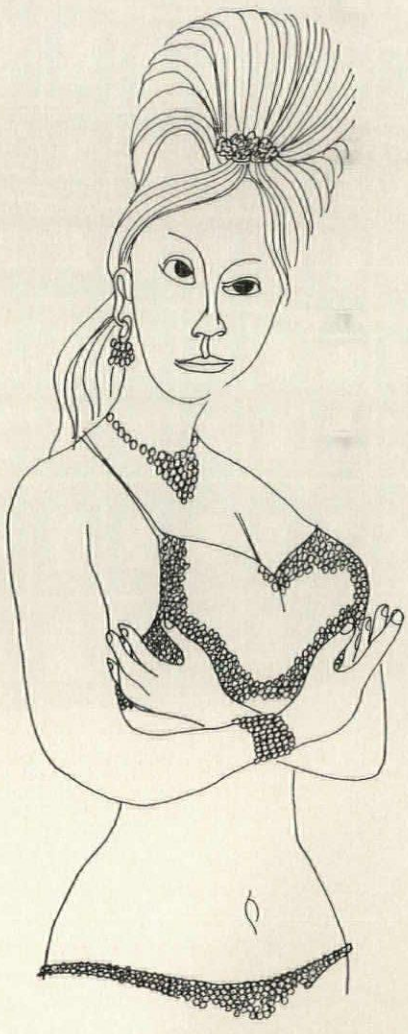
F. PAUL YOUNG'S RESTAURANT, 1120 Connecticut Ave. NW. FE 7-7000. Some tout it as the best food in Washington, although a little paler (or subtler) than Rive Gauche and more expensive. Kennedy breakfasted here after inaugural revelries, and it is frequented by many listed in "Who's Who." Impression-making State Department atmosphere with 3-ft-tall pepper shakers, an elegant brass lamp that used to hang over a pool room in Switzerland, and numerous other bits of foreign loot—some hidden out of reach of pinchy fingers. A family-run affair with Ma in the kitchen, an uncle out collecting wines in Europe, two sons among the tables, and a cousin who was converted to Indian mysticism and painted the powder-puff ladies on the bathroom doors. Daily 11:45 a.m.–3 p.m.; 5:45 p.m.–11 p.m. Closed Sundays.

G. LE PIGALLE RESTAURANT CABARET, 1921 Pennsylvania Ave, NW. 338-9226. This expensive little nightspot (also serving lunch) has excellent food—lobster en chemise, for one—along with a musical trio from the streets of Marseilles who come in their original Marlon Brando tee-shirts. Postage-stamp dancing. Sedate crowd to go along with fuller pocketbooks. Daily 11:30 a.m.–3 p.m.; 6 p.m.–12 M. Dancing from 8:30 p.m. on. Closed Sundays.

H. RIVE GAUCHE RESTAURANT. Wisconsin Ave. and M St. NW. FE 3-6440. Superb food—some of the best in Washington—and a vivacious blonde chatelaine, the best in Washington since Perle Mesta, and more shapely. Reservations obligatory. Daily 12 N–12 M. Closed Sundays.

I. LA SALLE DU BOIS, 1800 M St. NW. FE 8-6030. Good French cuisine. Fairly expensive. Daily 12 N–11 p.m.

J. TINO'S CONTINENTALE, 1721 Wisconsin Ave. NW. NO 7-1000. Leisurely dining. Call for reservations, since the management does not believe in the rapid turnover mania of most restaurants. Flambés are a specialty. Pianist 8 p.m.–12 M. Restaurant: Daily 12 N–12 M.



MISCELLANEOUS

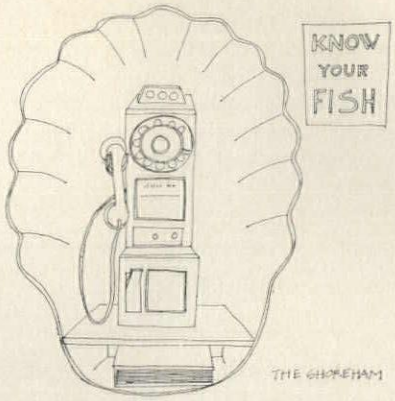
K. ARBAUGH'S, 2606 Connecticut Ave, NW. AD 4-8980. First-rate barbecued spareribs and coleslaw. Slightly kookie bright-yellow-and-blue Radio City Music Hall exterior with flower boxes leads to sober, cool, comfortably beer-scented interior decorated with pictures of missiles (because the clients are in the business) and horses (because the owner likes them), and a pen and letter from the White House celebrating the owner's contribution to the advancement of alcohol in the District of Columbia. Whatever it was, wasn't enough. Daily 5 p.m.–12 M; Sundays 3 p.m.–12:30 a.m.

L. CLEAVE'S CAFETERIA, 1715 G St. NW. For your last day, when you have spent all your money at the night spots on 14th St., NW, you can get "¼ baked chicken with cranberry sauce" for 39¢ here. If you have more than 39¢, of course, go back to Rive Gauche.

M. HARVEY'S, 1107 Connecticut Ave. NW. NA 8-1448. Another of Washington's well-known, expensive restaurants specializing in seafood, steaks, and chops. Daily 11:30 a.m.–11:30 p.m.

N. KNIFE & FORK, 1824 M St. NW. 333-8838. Alexandre Comninidis, executive chef, won first prize for fish decoration, crusty pie, and complete buffet at Epicure's culinary show in Washington. Good businessman's lunch spot in J. P. Morgan-type setting. Daily 12 N–11 p.m. Sundays 4 p.m.–10 p.m.

O. LEHI GRILL, 1335 Wisconsin Ave. NW (Georgetown). Good old saloon atmosphere across from phoniness of Georgetown Inn. Spiced shrimp and beer are okay, but stay away from the pizza.



P. MARKET INN, 200 E St. SW. DI 7-4455. Seafood, steaks, and chops are served in cozy, crowded, gemütlich, smokey atmosphere, through which Jimmy and Tex at piano and bass dimly emerge along with a rare collection of pictures of antique cars, missiles, and nudes. Choose your room according to your hobby. Daily 8 a.m.–2 a.m. Sundays 11 a.m.–12 M.

Q. THE MONOCLE ON CAPITOL HILL, 107 D St. NE. LI 6-4488. Small, Boswellian restaurant noted for illustrious political visitors. If you have a hankering to see Hubert Humphrey, he frequently dines here. Should you miss him, there is a tall, spindly object near the door that looks like a post from a bed H.H. once slept in. It's not, but—next best—is a 3-ft-pepper mill Humphrey and the owner brought back from Puerto Rico. Bass fiddle and vocalizing pianist from 8 p.m.–12 M. Daily 11:30 a.m.–2 a.m. Closed Sundays.

R. THE ROTUNDA, 30 Ivy Street SE. 546-2255. Down by the railroad tracks, there is a plush but dignified little villa where Senators can revel in a Roman atmosphere. Barmaids wear brief tunics —"the Washington policy for BM's," according to one waiter explaining the customs of the nation's capital. Dancing: Daily 9:30 p.m.–1:30 a.m. Saturdays 8:30 p.m.–11:45 p.m. Restaurant: Daily 11 a.m. Closed Sundays—Pax day.

S. SAM'S ARGENTINE BAKERY AND DELICATESSEN, 1735 F St. NW. A hole in the wall around the block from the Octagon features Sam's fresh-baked bread: Pan Frances, Pan Ruso, Pan Felipe, Pan Integral. Also strudel, tortas, knishes, sandwiches, etc., to be eaten in the park, or stand-up style with a bowl of borscht.

T. THE SHERATON PARK, 2660 Connecticut Ave. NW. CO 5-2000. The Cheshire Cheese room has good—and the only good—cooking in the hotel. Charcoal broils, the specialty, are served in cozy, pub-type setting, more intime than most grandiose hotel hash houses. Daily 11:30 a.m.–2:30 p.m.; 5:30 p.m.–12 M.

U. THE SHOREHAM. 2500 Calvert NW. AD 4-0700. The terrace has outdoor dining and dancing and a floor show. Dining 7 p.m.–11 p.m. Dancing 8 p.m. Shows Mon-Thurs. 10:30 p.m.; Fri. and Sat. 9:30 p.m. and 12 M.

V. THOMAS' GRILL, 308 6th St. NW. A sign above the bar in this neighborhood bistro proclaims "Mom's special extra large glass of beer—25¢."

W. THE WASHINGTON HOTEL, 15th and Pennsylvania Ave. NW. ME 8-5900. Excellent view from terrace on top of building, but the food does not match it. Better eating can be found across the way at the grill in the **EBBITT HOTEL,** 1000 H St. NW.

CHINESE

X. THE PEKING RESTAURANT, 5522 Connecticut Ave. NW. (WO 6-8079), and 711 13th St. NW. (ME 8-2122). Good 00 Soup and Moosh Pork. Typical Chino-American restaurant (uptown branch) with booths and formica tables combined with yellowed scrolls and glass chandeliers. Note maidens playing in the grasses above entrance while Cupid lurks behind a classic bust. Daily 11:30 a.m.–12 M.

Y. YENCHING PALACE, 3524 Connecticut Ave. NW. 362-8200. War broke out between rivals when this restaurant opened downstream from the Peking, called itself the Peking Palace, and stole the real Peking's secret ingredient—00 Soup. The outcome of the strife was a change in name of the restaurant to Yenching (the name of Peking, ca. 900 AD—real one-upmanship) and of the brew to Palace Soup. Good Moosh Pork; also Nos. 103, 102, 120, and 20, 64, and 37 on the menu. Daily 11:30 a.m.–12 M Fri.–Sat. to 1 a.m.

THE MYSTERIOUS EAST

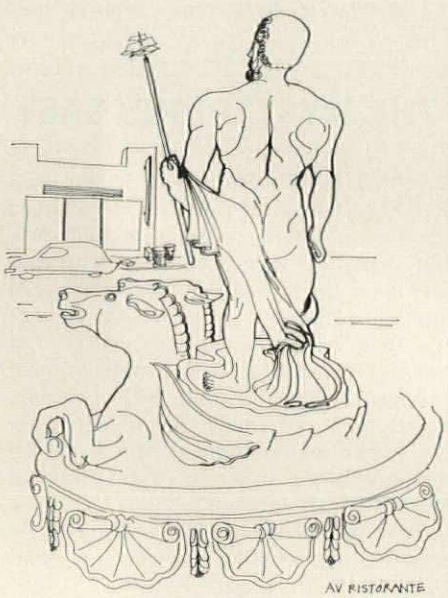
Z. IRON GATE INN, 1734 N St. NW. RE 7-1370. General Nelson A. Miles once gave a very fine horse to Buffalo Bill, but now his Spanish-style pink stucco stable is a restaurant specializing in Malfoof, Kifta, and grape leaves. Though the food is a little less tasty than The Sands, the setting is one of the most pleasant in Washington, with a small, quiet court and shady tree hidden from the fumes and trample of the street by the gray stone mansion of the General Federation of Women's Clubs. In case of rain, move into the stalls. Daily 11:30 a.m.–2:30 p.m.; 5:30 p.m.–10 p.m. Sundays 12 N–10 p.m.

AA. SAKURA PALACE, 7926 Georgia Ave., Silver Springs (Md.). 587-7070. Inconvenient location, but first-rate Japanese restaurant. Sunday and Wednesday nights for sushi (raw fish and rice). Too much Madam Butterfly nonsense in décor, but waitresses in kimonos are pleasant. Daily 11 a.m.–11 p.m. Closed Monday.

BB. THE SANDS, 2605 Connecticut Ave, NW. AD 2-7755. Best Near-Eastern restaurant in Washington. Call in advance for raw Kibeh—raw ground lamb with crushed wheat and onions. All seasoning and pastry prepared by the owner, Mrs. Lucas. Her baklava is so excellent, she gets orders from Turkey. One flight up, nondescript décor with Near-Eastern memorabilia. Bar is downstairs at **BACK DOOR**—a dim hole with piano player from 9 p.m. on. Restaurant: Daily 5 p.m.–2 a.m.; Bar 7 p.m.–2 a.m.

ITALIAN

CC. AV RISTORANTE ITALIANO, 607 New York Ave. NW. RE 7-0550. From among the dreary auto body shops, wheel aligners, and tire sales along New York Avenue leaps Neptune on a half-shell driving three white horses out of a pink marble fountain surrounded by a glorious cheese-colored parking lot. AV's is a splendid example of that Italo-American exuberance (that strange alchemy that also grows pink flamingos on suburban lawns). Food not as good as Phil's, but you can hear "Rigoletto" from the juke box. Daily 11:30 a.m.–3 a.m. Sundays 1 p.m.–1 a.m.



DD. PHIL'S ITALIAN RESTAURANT, 7303 Georgia Ave. NW. RA 3-9753. Inconvenient location, near the District-Silver Spring line. Excellent Italian food with the best cannelloni our consultant Robert Glynn has ever eaten. Daily 8 a.m.–2 a.m.

SEAFOOD

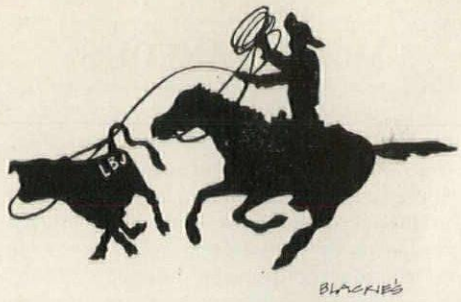
EE. HALL'S RESTAURANT & GARDEN, 1st and V Sts. SW. 543-5800. A little bit of ante-bellum nostalgia uprooted from its authentic location by the Land Redevelopment Agency and patched together again on the borders of the Anacostia River. Miss Hall in her purple feathered hat, a ferocious painting of the expulsion of Adam and Eve (not inappropriate here), and an old bar with brass rail are among the momentos salvaged from more glorious days. Crab cakes and river view are not bad. Pleasant outdoor dining. Piano bar driven by a blonde with little sparkle but Daisy Mae proportions. Daily 11 a.m.–2 a.m.

FF. HOGATE'S SEAFOOD RESTAURANT, 9th and Maine Ave. SW. RE 7-3013. Very touristy, but a chance to eat on the riverfront. Daily 11:30 a.m.–9 p.m.; Sundays 12:45 p.m.–9 p.m.

GG. O'DONNELL'S SEA GRILL, 1221 E St. NW. RE 7-2101. Pretty good seafood served beneath the mast overlooking a seacoast. Shack at end of pier doles out the "liquid bait," but if things begin to rock don't blame the boat—it is but a painted presentiment anchored in downtown Washington. Daily 11 a.m.–12:45 a.m. Sundays 12 N–12 M.

STEAKHOUSES

HH. BILLY MARTIN'S CARRIAGE HOUSE, 1238 Wisconsin Ave. NW. FE 3-5400. Decent beef, American food, large ye olde half-timbered restaurant with multiple-choice rooms, one of which—the Snuggery—used to feature Jackie Kennedy as well as the piano player. Daily 11 a.m.–1 a.m.; Sat. and Sun. 11 a.m.–12 M.



II. BLACKIE'S HOUSE OF BEEF, 22nd at M St. NW. FE 3-1100. Beef, of course, abounds in this New-Orleans-style restaurant crammed with overstuffed red velvet furniture and antiquities, including a sarsaparilla soda fountain and Emperor Maximillian's dining table and chairs. A labyrinth of rooms is coordinated by a push-button console at entrance, with emergency buttons to sound the alarm when beef runs out. Daily 9 a.m.–10:30 p.m. Closed Sundays.

JJ. GOLDEN OX, 1615 L St. NW. 349-0010. Beef restaurant owned and operated by the Kansas City Stock Yard Co. Daily 11:30 a.m. till closing. Closed Mondays.

GRACIOUS SUBURBIA

not worth special trip, but places to eat on out-of-town excursions

KK. COLLINGWOOD-ON-THE-POTOMAC, SO 8-7944. Five miles south of Alexandria on Mount Vernon Memorial Highway. The flavor of ante-bellum South. Daily 12 N–4 p.m.; 6 p.m.–9 p.m.

LL. OLNEY INN, Capitol Beltway Exit 21 or 10 miles north of District Line on Route 97 (Georgia Ave. extended). 929-1717. Country-home atmosphere. Daily 12 N–9 p.m. Closed Mondays.

MM. NORMANDY FARM, Capitol Beltway Exit 16, Potomac, Md. OL 2-9421. Country restaurant complete with pond and ducks, and colorful roosters who think they are peacocks. Comfortable décor—sawed-off barrel tables, round, hoody fireplace, and colonial green. Hitching posts for those who prefer to arrive by horse. Daily 12 N–12 M. Bar open Sundays.

NN. SEAPORT INN. 6 King St. Alexandria. 549-2341. In old port section of Alexandria, near Dockside Sales—a bric-a-brac shop of all nations. Daily 11:30 a.m.–10 p.m.

NIGHTSPOTS

THE AREA AROUND 14TH ST. NW. between I and L Streets is good for nighttime slumming with **SPEAKEASY** (ragtime piano, kitchen-sink 90's decor, leggy, leggy waitresses), **CASINO ROYAL** (discothéque), **GOLD RUSH** (ecdysiasts), **PORT SAID** and **SUEZ** (danses du ventre for the U.S. Navel Observatory).

MISCELLANEOUS spots are: **THE JUNKANOO,** direct from the Caribbean to 1629 Connecticut Ave. NW., featuring native Bahamian and American cooking, exotic drinks and exotic dancing; the **CASBAH** at 1211 U St. is a nightclub specializing in limbo contests; **HOWARD's,** 7th and T Streets, NW., has rock'n'roll stage shows featuring usual hyperthyroid audience reactions. Usually a midnight presentation on Saturdays (nondrinking night).

THE STRIP in Georgetown around Wisconsin & M Streets is the Greenwich Village of Washington: a Montmartre of beards, drifting hair, and smock-pregnant dresses. The **PITSTOP** is a motorcycle-hotrod rev-up place that can be joined for the sum of $15. At night, the arty shops close up for more violent activity. There are discothéques: the **WHISKEY A GO-GO** (with dancing by minor secretaries of unfamiliar embassies) and **THE MONKEY BUSINESS** (more of same). The **CORRAL LOUNGE** is a murky hole vibrating with the Frug, Monkey, and Fish, and features a greasy-haired beatle-like team called "Creatures, Inc."—a nonsequitur of cultures that saved the venerable pound in England. **THE CRAZY HORSE** down the street shows four experimental films at the four corners of the room at the same time—a feat that even Plato could not predict with his shadow box at the bottom of his cave. One piece on surfing is superbly dizzying. Jazz and folk music are featured at the **SHADOWS** and the **CELLAR DOOR,** where Saint Marie once played the Jew's Harp. **KIKI'S** up M Street has "Scopitone"—the latest electronic invasion of man's drinking precincts, and beloved by him. If you can get to the buttons before the ecstatic proprietor, push the French ones: they have some superb bits of cinematography—including some superb bikinis.

GEORGETOWN FLOOD: Warning. Try not to be on the streets of Georgetown at midnight Saturday. That is when the bars close, and the most amenable barmaid turns adamantine in her refusal to moisten parched palates. The drought leads to a sudden exodus of pumpkins—thousands of embassy secretaries, bureau underlings, Jaguars, and postadolescents hit the road in a mad rush to get home to the next glass. A truly memorable sight. (Incidentally, for most visitors, liquor purchased by the bottle in Washington is cheaper than at home.)

MUSIC

Not much in music: at press time, Lisner, Constitution Hall, and the Library of Congress report nothing—unless someone has a passion for graduation excercises (Constitution Hall). Just about the only classic thing going is a coloratura singing with her husband pianist at the **NATIONAL GALLERY**—Constitution Avenue at 6th St. NW. Call RE 7-4215 for more information. Sunday afternoons and Monday evenings there are concerts at the **PHILLIPS COLLECTION,** 1612 21st St. NW. DU 7-2151.

THE CARTER BARRON AMPHITHEATER, 16th and Colorado Ave. NW. TU 2-2620, opens June 14 with Henry Mancini and his orchestra, the New Christy Minstrels, and Charlie Byrd (guitarist) out of doors. If you hear some thumping around the Lincoln Memorial, that is a service band gratuitously filling the air with Sousa, at **WATERGATE.** A pleasant way to attend the concert is by canoe. Seats are available—for free.

Every Friday night a **MARINE RETREAT** is held at the Barracks on 8th and I Sts. SE.—a production of sound and light to delight children. Architects can gaze at the Commandant's House attributed to Latrobe, 1805, and barracks by Hornblower & Marshall, 1902.

FOR INFORMATION on what's going on in theater and music, call Hayes Concert Bureau, 1108 G St. NW. NA 8-7151.

THEATERS

Washington's pre- and post-Broadway theater, **THE NATIONAL,** 1321 E St. NW. NA 8-3393, presents "Oliver" in June. Fringe benefits of The National are a nearby paperback bookstore that stays open as a sideshow before performances, and an outdoor café on the corner—Bassin's—where you can sip a snort to the passing crowds and air pollution.

THE ARENA STAGE, 6th and M Sts. SW. 638-6700, a theater-in-the-round by architect Harry Weese, presents two plays at convention time: "The Lonesome Train" and "Hard Traveling," which are two semimusical Americana pieces by Millard Lampell. Do not buy box seats if you are hard-of-hearing.

Off-off Broadway — the **WASHINGTON THEATER CLUB,** 1632 O St. NW. (483-9607) and the **THEATER LOBBY,** 17 St. Mathews Court (EX 3-5818) often have excellent productions. At press time, they were not quite sure what plays would be produced in June.

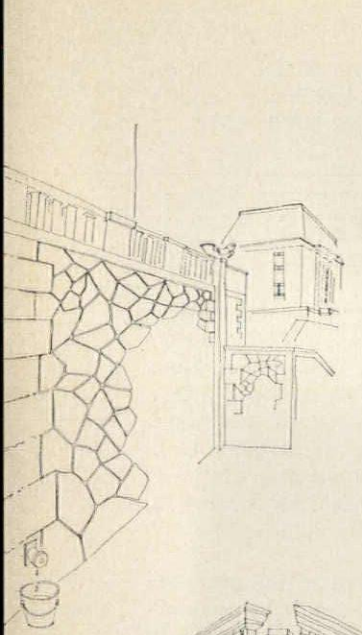
THE OLNEY THEATER, Rte. 108, Olney, Md., is a barnlike summer stock theater—a pleasant 45-minute ride out into the country. Jean Kerr's "Poor Richard" is playing, and stars in the lead role John Colicos of Stratford, Ontario. For tickets, call 347-5774 in Washington, D.C.

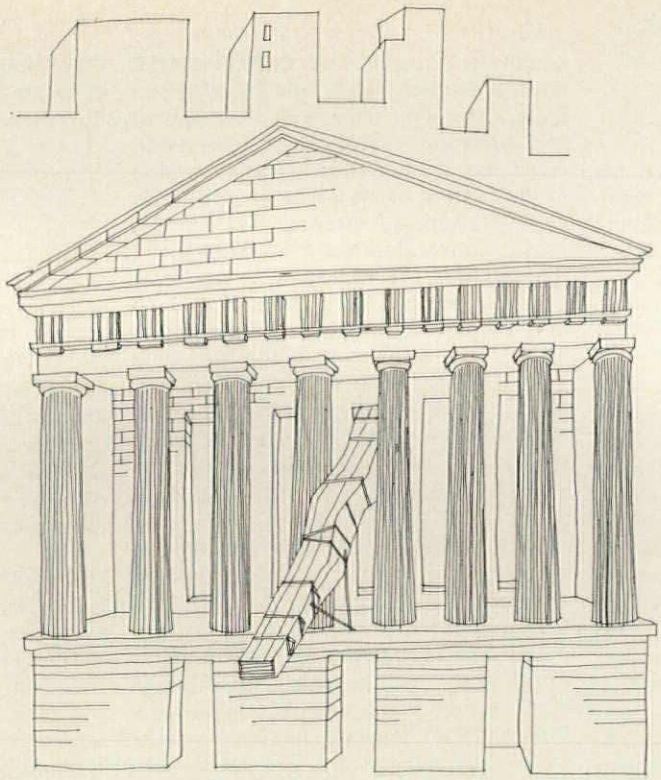
NAUTICAL PURSUITS

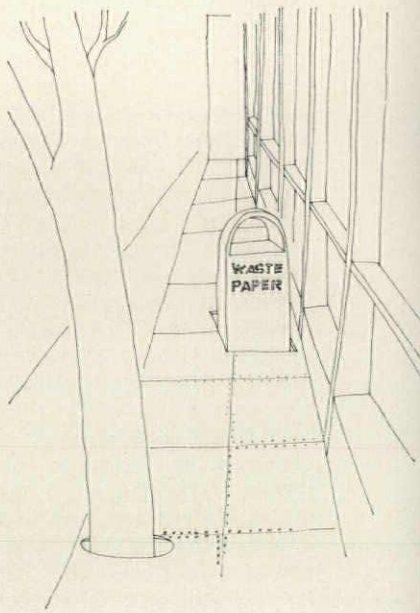
CHESAPEAKE AND OHIO CANAL BARGE TRIP. A perfect way to get away from the ennui of convention business meetings. Better yet, follow the example of Supreme Court Justice Douglas and hike it. Don't tell anyone else about it, though, or it will be just like the Monday luncheon meeting of the Apalachicola (Florida) Rotary. Call FE 7-8080 for reservations.

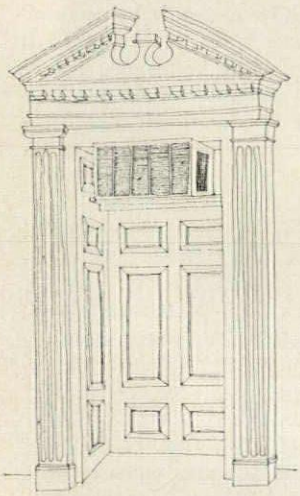
BOAT RIDE TO MOUNT VERNON. Pier 4, Maine Ave. & N St. SW. Good way to combine sun-tanning and sightseeing—or moonlighting and dancing. Call EX 3-8300 on day and night cruises.

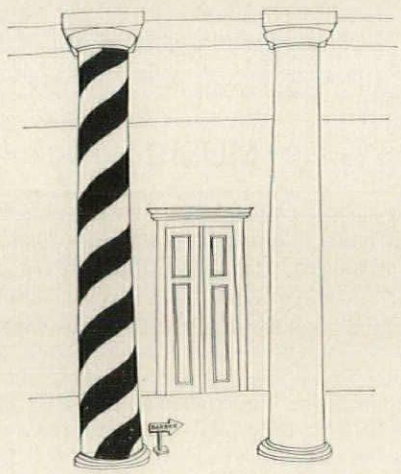
SWAN BOATS across from the Jefferson Memorial can be rented for a quarter. Probably the most pleasant of the three: here you are your own skipper, your own engine (foot-operated), and can get away from the rest of the tourists.

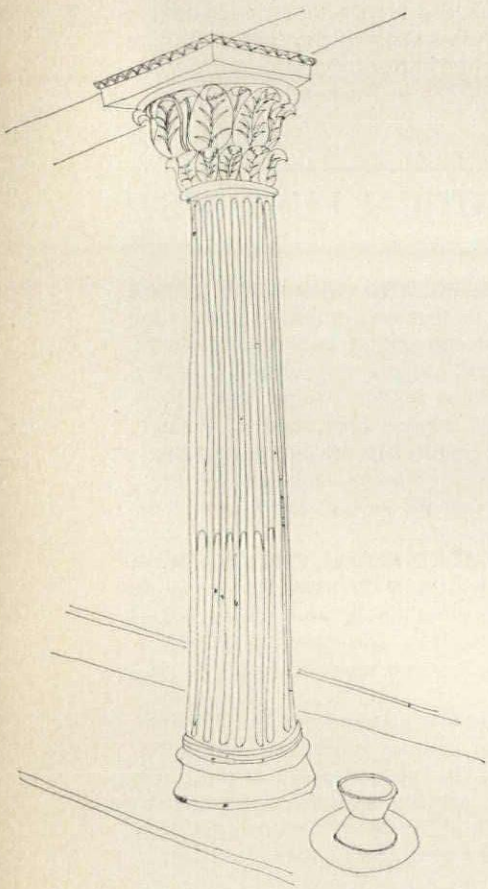


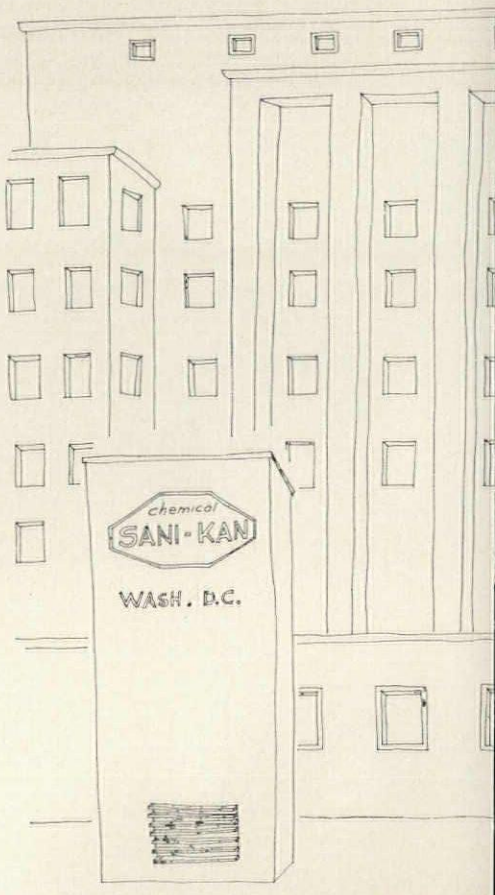








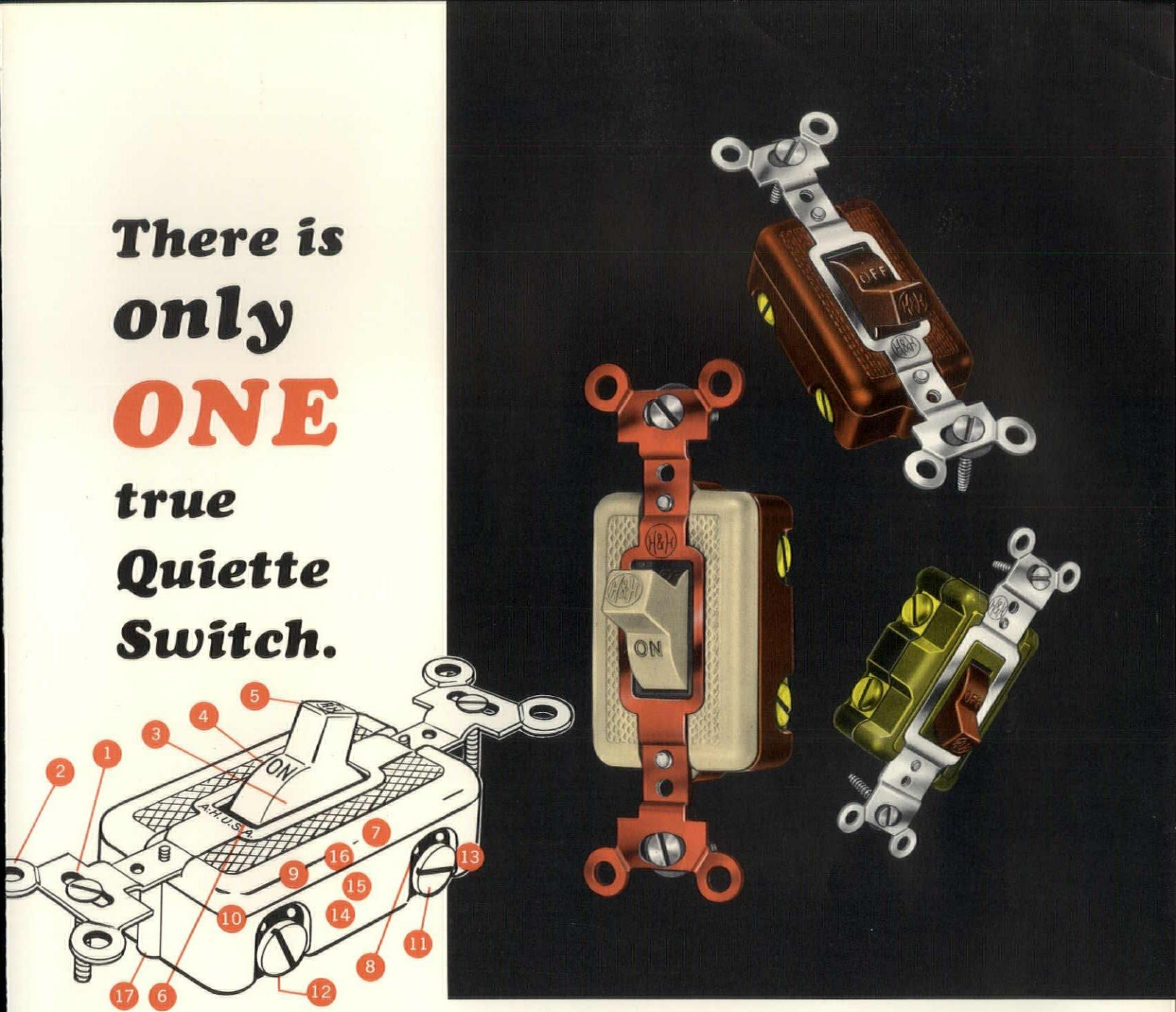




Northern charm and Southern efficiency or vice versa, Washington is a compelling metropolis. Of great assistance to us in preparing the P/A Washington Vade Mecum have been lawyer Robert Glynn of the World Bank; Deborah Ann Holmes of the Highway Research Board, National Academy of Sciences-National Research Council; Richard Dober of Dober, Walquist & Harris, Inc.; Jessie MacKenzie of the office of Senator Thomas Kuchel; Mrs. M. H. Morton, Jr., Managing Editor, Department of Information, National Trust for Historic Preservation; E. E. Halmos, Jr., P/A's Washington columnist; and John Y. Cunningham of "Materials in Design Engineering." We extend thanks to them all.

JTB, JR./MD

There is only ONE true Quiette Switch.



And 17 reasons why it's the one for YOU.

Arrow-Hart designed the first quiet mechanical switch 13 years ago. Seventeen points of extra quality are built into Arrow Quiette Switches to make them extra fine.

The switch above shows where these 17 points are. They include: (1) Thick .053" mounting strap (2) Washer-type ears on mounting strap (3) Bakelite lever fills switch plate opening (4) Filled "on-off" indications (5) H&H identification of Specification Grade on lever (6) Gasket around lever to shut out dust (7) Movable contact of .026" thick bronze (8) Movable contact terminal plate of .040" thickness; brass on 15 amp and bronze on 20 amp (9) Movable contact button 3/16" in diameter, of silver-alloy (10) Stationary contact of .040" thickness; brass on 15 amp and bronze on 20 amp (11) 11/32" long terminal screws with 3/8" head diameters (12) Back and side wired (13) Back wire hole sized for #10 wire (14) Steel fulcrum for activating spring (15) Copper caps on spring assembly for smooth operation (16) Lubricated spring assembly (17) Waxed-in assembly screws for extra safety.

Don't gamble with quality when you can be sure . . . with Arrow-Hart Quiette Switches: the original quiet mechanical switch and still the finest.

For additional information about Arrow-Hart Quiette Switches, see your Arrow-Hart Distributor today — or write direct to The Arrow-Hart and Hegeman Electric Company, 103 Hawthorn Street, Hartford 6, Connecticut.

MOTOR CONTROLS
WIRING DEVICES
ENCLOSED SWITCHES
SPECIALTY SWITCHES

AH

QUALITY SINCE 1890

ARROW·HART

The Arrow-Hart & Hegeman Electric Company, Hartford, Connecticut 06106

Our 75th Anniversary Year

Tropical Architecture

BY WILLIAM J. McGUINNESS

Traditional and contemporary considerations for achieving comfort control in tropical and semitropical areas are reviewed by a practicing mechanical engineer.

It has been the privilege of some architectural schools in the United States to contribute to the education of those who will practice architecture in the tropics or in semitropical areas. For several years, Pratt Institute has offered a Master's degree in Tropical Architecture. Under the direction of Profeessor Marvin Sevely, it has enlarged its scope to bring emphasis to many subjects that are especially important in warm climates. The present class in Climatology includes students who come from the countries mentioned below; the approximate general latitude of each is indicated.

COUNTRY	APPROXIMATE LATITUDE
Thailand	15° North
Viet Nam	12° North
Peru	10° South
Nigeria	7° North
Turkey	40° North

In many of these areas, protection against the effects of heat and humidity is of vital concern. Only a few of them require heat during the cooler season. Turkey, whose latitude (40° North) is the same as that of New York, is the obvious exception.

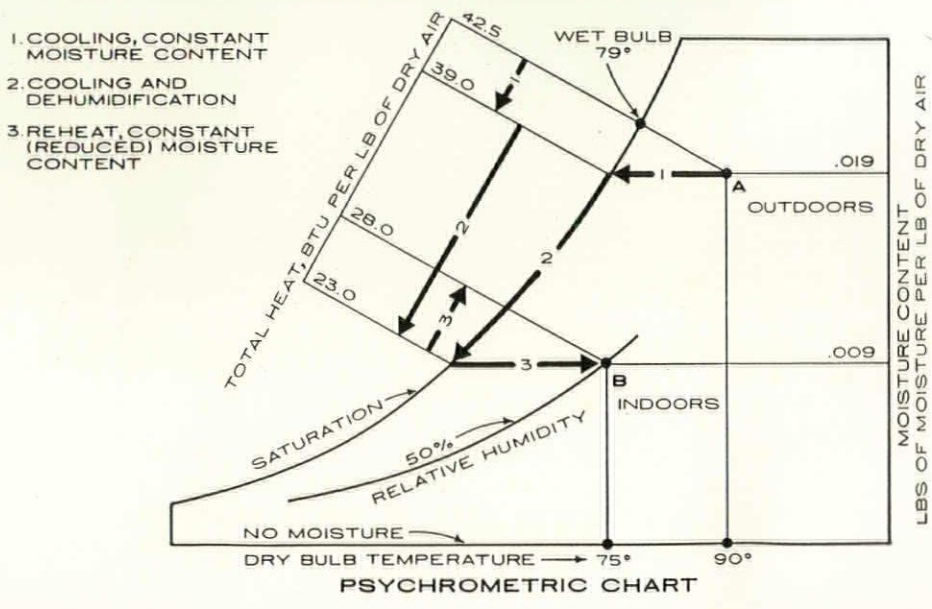
Following long tradition, the minimization of "sensible heat gain"—namely, the increase in air temperature—is relatively simple. Buildings must be left open and arranged to make use of natural air currents. Heavy masonry, with its 12-hr time delay due to great thermal capacity, postpones its reradiation of heat to the interior until the cool dark hours when warmth is welcome. Keeping glass away from the orbit of the sun, which causes its rays to fall on the east wall, roof, and west wall of a building, reduces the solar gain to one-tenth of its fierce intensity. Double roofs, water sprays, or water pools standing on the roof, lower roof transmission to a value more in keeping with that of the less troublesome walls.

It is well known, of course, that lowering the moisture content of the air is a much more powerful tool in achieving hot-weather comfort than controlling air temperatures. When the decision is made to dehumidify, everything changes. The space must be sealed. Heat gain contributed by human bodies, cooking, lights, bathing, and washing can no longer blow away. It must be "pumped out" by refrigeration. Fresh air, so much needed to minimize odor, especially in hot climates, may be admitted, but only if it can be conditioned to conform to the standards of the interior climate. Humidity now becomes the major problem.

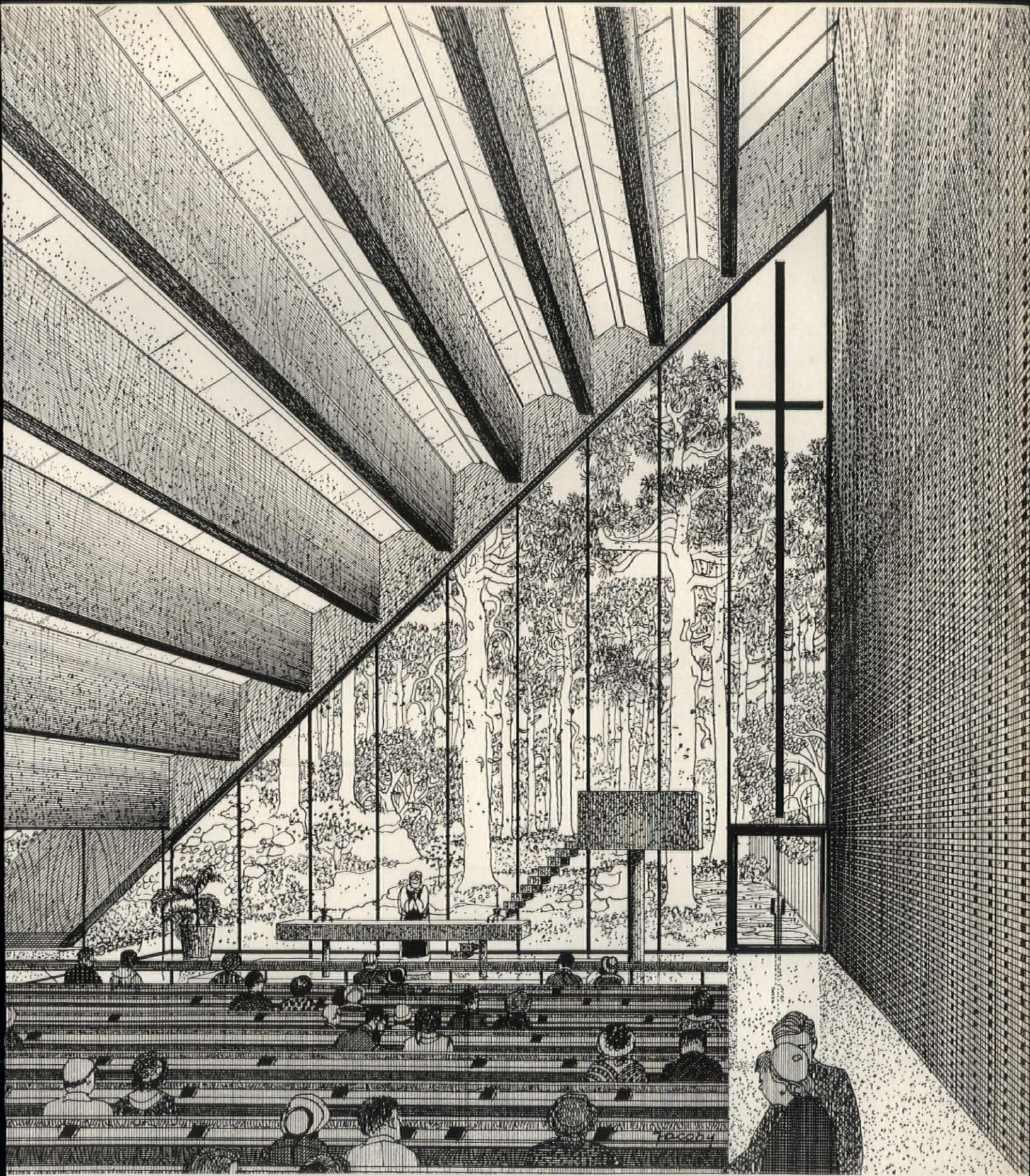
Fred Dubin, of Fred Dubin Associates, Consulting Engineers, who taught the course in Climatology to the Pratt graduate class in Tropical Architecture in 1964, has some persuasive opinions about the methods of dealing with this problem. He observes that, unlike desert areas where dry bulb temperatures often go above 100 F, humid tropical areas, especially those near large bodies of water, seldom exceed 90 F. The wet bulb temperature, however, is often as high as 79 F, indicating a high humidity that usually persists over long periods. His extensive experience in the design of conditioning installations in these areas has convinced him that the reheat method is the most effective in maintaining a low humidity.

Reference to the diagram shows that the amount of cooling (cycle 1) to be provided in changing the temperature from 90 F to 75 F is relatively small, but results in moisture-saturated air. Further cooling (cycle 2) is needed to reduce the absolute moisture content to about one-half of its former value. The air-moisture mixture is then too cool for use (about 56 F) and must be reheated. In the tropics, heating systems are generally nonexistent. It is suggested, however, that if hot water or steam is to be used for reheat, the prime source of power for cooling must also be hot water or steam used for cooling in an absorption machine.

In addition to the fact that the power (see total heat scale) for dehumidification (cycles 2 and 3) is about six times that for sensible cooling (cycle 1), an additional item of importance is that ventilation by outdoor air be strictly limited if possible. The Guide and Data Book of the American Society of Heating, Refrigerating, and Air Conditioning Engineers suggests rates of fresh air use between limits of 4 and 38 cu ft per min per person, depending on conditions. The generous but sometimes unnecessary use of the high limit can increase this part of the cooling cost tenfold.



PSYCHROMETRIC CHART



There is virtually no limit to the design effects possible with Armstrong Luminaire Ceiling Systems. In this church, the interspersing of Luminaire modules with rafters and beams creates the illusion of lightness and open sky, further enhancing the distinctive slant-roof design.

For free technical data on Armstrong Luminaire Ceiling Systems, a construction drawing of this particular design, and details on the many other design variations possible with Luminaire, write: Armstrong, 4206 Watson Street, Lancaster, Pennsylvania.

Ceiling Systems by

Armstrong

On Readers' Service Card, circle No. 300

Alternate Systems of Writing Specifications

BY HAROLD J. ROSEN

Comments on the merits of alternate systems of writing specifications are presented by the Chief Specifications Writer of Skidmore, Owings & Merrill, New York.

Specifications can be written on the basis of methods or results. When the method system is employed, the specifier describes in detail the materials, workmanship, installation, and erection procedures to be used by the contractor in the conduct of his work operations in order to achieve the results expected. When the specifier elects to specify results, he places upon the contractor the responsibility for securing the desired results by whatever methods the contractor chooses to use.

The methods approach to writing specifications can best be described as a "descriptive specification." The results system is best described as a "performance specification." An analogous example of these approaches can best be made by comparing them with building code standards. The "specifications code" sets forth specific materials and methods that are permitted under the law in the construction of a building. Under the "performance code," materials and methods are left to the architect and engineer to employ, provided that the performance criteria for fire protection, structural adequacy, and sanitation are met.

As a matter of fact, both the descriptive specification and the performance specification may be used together in the same specification, each in its proper place, in order to achieve the prime objective.

Before the advent of material standards such as ASTM Specifications or Federal Specifications, materials were minutely described in the specifications so that the contractor was completely cognizant of what the specifier wanted. In many instances, these descriptive specifications for materials have been supplanted by the aforementioned standards. For example, in lieu of describing portland cement in detail, as to quality, fineness module, and other characteristics, the specifier now simply states that "Portland Cement shall conform to the requirements of ASTM Specification C-150, Type ——." This method of specifying has resulted in a type of specification that can best be described as a "reference specification." By making reference to a standard, the standard becomes a part of the specification to the same degree as descriptive or performance specification language is used.

The term "reference specifications" can likewise be applied to workmanship standards. Various trade associations such as the Tile Council of America, The Gypsum Association, the Painting and Decorating Contractors of America, and others such as the American Standards Association, have prepared standard workmanship specifications—for ceramic tile; for furring, lathing, and plastering; for painting, etc.—that can be incorporated by reference in project specifications. By so doing, detailed, descriptive workmanship clauses for these sections of the specifications need no longer be copied copiously, but are made a part of the project specifications by the reference method.

The Construction Specifications Institute has a study underway entitled "Reference Workmanship Standards," which is an attempt to prepare workmanship clauses for various sections that can be incorporated in project specifications by reference.

A descriptive specification can be defined as one that describes in detail the materials to be used, and the workmanship required to fabricate, erect, and install the materials. As an example, a descriptive specification for a masonry wall would describe the materials to be used; the brick and mortar ingredients; the composition of the mortar; tests of individual components; weather conditions during erection; workmanship involved in laying up the brick; type of brick bond; jointing; and, finally, cleaning procedures. This allows all those concerned with specifications an opportunity to check each of the items specified. The supplier furnishes the brick and mortar as specified; the laboratory tests the components in accordance with specified test requirements; the inspector checks the workmanship requirements so carefully specified. If the specifications have been accurately prepared, the masonry wall is erected, accordingly, and the result the architect envisioned has been achieved through his minute description.

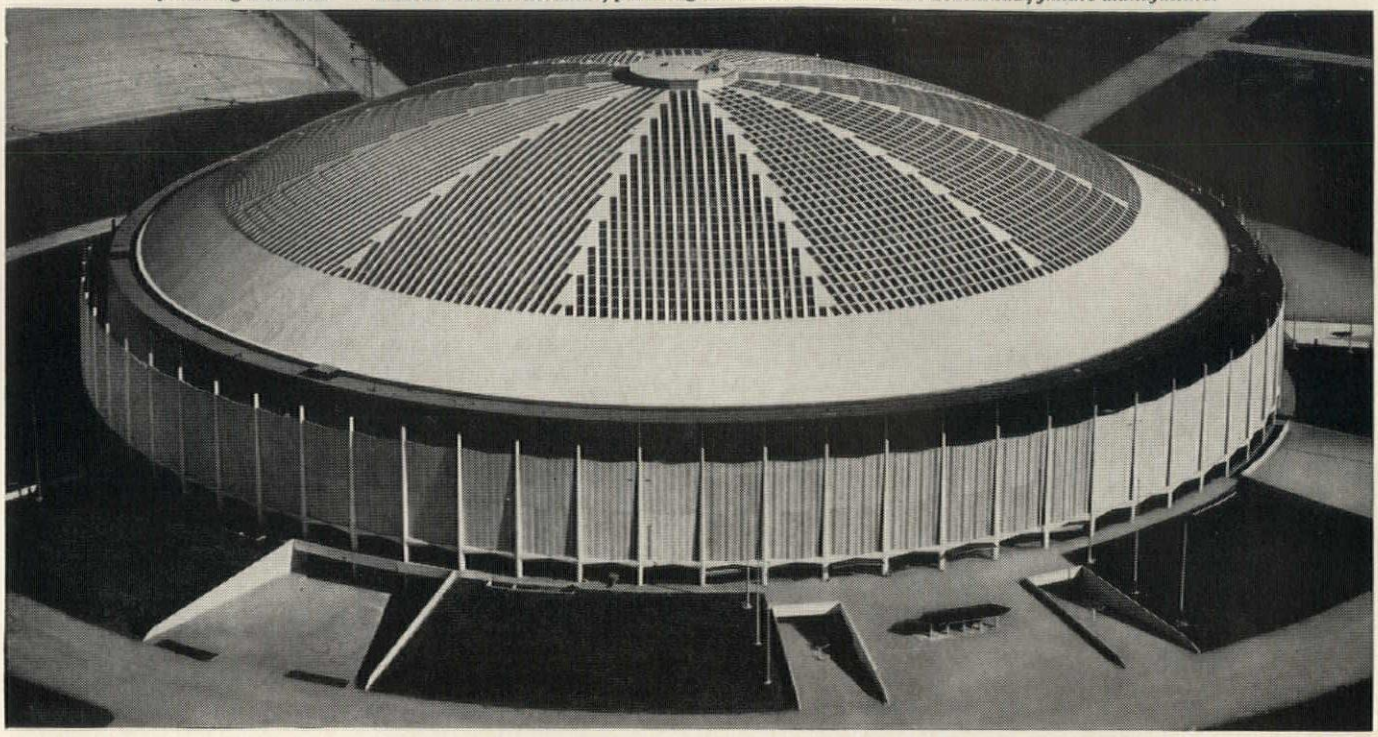
Performance specifications can be defined as specifying end results by formulating the criteria for its accomplishment. As an example, in a performance specification for a paint material, the end result is obtained by specifying or formulating the following criteria:

1. The painted surface shall withstand 10 washings with a mild detergent.
2. The painted surface shall show no sign of alligatoring or crazing.
3. The painted surface shall be resistane to abrasion when using the Taber Abrasive Method.
4. The painted surface shall have an eggshell finish.

Another example of a performance specification is one for a complete installation of a heating system. The specification spells out these performance requirements:

1. The heating plant shall be capable of providing an interior temperature of 70 F when the outside temperature is 0 F.
2. The heating system shall utilize No. 6 oil and shall be a hot-water system.
3. The heating elements shall be fin-type, baseboard radiation.
4. Controls such as thermostats, aquastats, and other safety devices shall be provided to regulate heat and prevent explosion.

LLOYD & MORGAN/WILSON, MORRIS, CRAIN & ANDERSON, *architects* • PRAEGER, KAVANAUGH & WATERBURY, *architectural consultants* • I. A. NAMAN & ASSOCIATES/DALE S. COOPER, *mechanical engineers* • H. A. LOTT/JOHNSON, DRAKE & PIPER, INC., *general contractors* • SAM P. WALLACE COMPANY, *plumbing contractor* • AMSTAN SUPPLY DIVISION, *plumbing wholesaler* • AMERICAN STANDARD, *fixture manufacturer*



THE ASTRODOME seats 45,000 for baseball, 52,000 for football, and 65,000 for conventions. Six tiers of gaily-colored seats are designed so that spectators enter the Stadium at mid-level and proceed up or down on wide, low gradient ramps or escalators to their seats. 10,428 seats in two stands at field level rotate 35 degrees under power on tracks from baseball position to parallel position for football. Roof is 202 ft. above the playing field.

The ASTRODOME

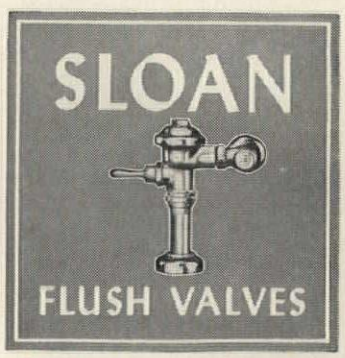
—called the Eighth Wonder of the World!

Any description of the Astrodome must, of necessity, begin and end in superlatives. For this colossal $31 million amphitheatre, rising like a rare jewel from the broad Texas plain seven miles south of Houston, boasts a long list of credits beginning with "first," "biggest," and "world's largest" which defy the imagination. Here are but a few:

- **Largest indoor arena in the world**
- **Largest clear-span building ever constructed**
- **World's largest air-conditioned stadium**
- **First major league baseball stadium with a roof on it**
- **World's largest electrical scoreboard (cost: $2 million)**
- **First all-purpose, weather-free combined sports stadium and convention center**

We are indeed proud that Sloan, the first name in flush valves, should be selected for the Astrodome. World famous in their own right for dependable service, long life, water economy and lowest maintenance cost, they are *the* Flush Valve of Quality.

As in the record-breaking Astrodome, your building, too, can benefit from the record-breaking performance of Sloan Flush Valves—and to be sure, just specify and insist on Sloan—you'll be glad you did.



SLOAN VALVE COMPANY • 4300 WEST LAKE STREET • CHICAGO, ILLINOIS 60624

Fees for Work Designed But Not Built

BY BERNARD TOMSON AND NORMAN COPLAN

P/A's legal team discusses the problem of assuring full and appropriate compensation to an architect for work designed but not executed. They suggest incorporating in the architect/owner contract a specific clause assuring such compensation and providing a formula for calculation of fee.

One of the more persistent and recurrent problems with which architects must deal involves their right to compensation when an owner, under an architectural contract that provides the architect's fee must be based upon the project construction cost, decides not to build. Disputes on this subject may arise when a project or some part thereof is abandoned because of lack of funds, because the cost is in excess of the budget allowance, because of the death of the architect or default of the owner, or because alternates have been designed that are not utilized by the owner. In each of these circumstances, the legal consequences affecting the architect's compensation may differ, depending on the provisions of the architectural contract. In some situations, the architect may be deprived of any fee whatsoever in connection with portions of his work not executed, and in other circumstances he may be limited to a recovery based upon the "reasonable value of his services" as distinguished from contract price (see IT'S THE LAW, AUGUST and SEPTEMBER 1962 P/A). To assure full compensation for work designed but not executed, the contract must contain a clause dealing with this problem.

Disputes relating to the architect's fee when based upon the cost of construction are most often engendered in situations where the architect has either designed alternates that are not selected and constructed, or, if selected and constructed, reduce the total cost of the project. An example of such a dispute is a decision recently issued by the Commissioner of Education of the State of New York relating to a dispute between members of a Board of Education in connection with fees paid to an architect (Matter of Levy, Commissioner's Decision No. 7464). This case involved the interpretation of a contract between a board of education and the architect retained by the board in connection with the design of a school building. The architect's contract provided that the architect's fee would be "6 per cent of the cost of the work." The cost of the work was defined as meaning "the cost to the owner, but which cost shall not include any architect's fees or special consultant's fee or reimbursements or the cost of a Clerk-of-the-Works." The architect designed the project, together with several alternates, and bids were obtained. Several of the alternates were not selected, but the architect was paid not on the basis of the cost of the project actually constructed, but on the bids for the entire project, including the alternates not executed. A member of the board of education challenged the propriety of the majority of the board making such payment, and the issue was presented to the Commissioner of Education of the State of New York for decision.

The Commissioner concluded that, in the absence of contractual language that justified the payment based upon the bid price as distinguished from the actual cost of the work constructed, there was no legal justification for paying the architect for the alternates designed by him that were not selected and constructed. The Commissioner stated:

"There would have been nothing to have prevented the Board of Education from agreeing to pay the architect on the basis of base bids. However, once the contract is entered into and both parties become bound thereby, the terms of payment cannot be varied without consideration therefor. In other words, the Board of Education may not gratuitously compensate the architect over and beyond the agreement. On its face, this contract calls for payment to the architect on the basis of cost. What happened was apparently that after the plans had been submitted, the Board rejected several of the alternates so that the cost fell below the base bids. It is alleged that if payment is made on the basis of cost and not on the basis of base bids, the architect should receive some $16,000 less. The cases, upon which the attorneys have advised the Board that it has the legal authority to pay upon the basis of bids, involve factual situations where a separable portion of a contract or an entire contract has been abandoned. Under these situations the courts have held that the architect is entitled to compensation on the basis of quantum meruit for drawing the plans and specifications. In this case, however, the alternates which were used by the respondent were a part of the plans and specifications drawn by the architect. The work not performed was not a separable part of the total project.

"I hence conclude that, premised upon the contract between the architect and the Board of Education, the architect is only entitled to receive his fee premised upon the cost of the work to the owner. Therefore, upon the facts before me, the Board is without legal authority to pay upon any other basis than the cost of the work."

As this case illustrates, an architectural contract that merely provides for a fee based upon the cost of construction is inadequate. The Standard Form of Agreement between Owner and Architect on a basis of construction cost issued by the American Institute of Architects (AIA Document B-131, 1963) seeks to deal with this problem under Article 6. This article states that project construction cost "means the total cost of all work designed or specified by the architect" and further provides that such cost shall be based upon either the lowest acceptable contractor's proposal or upon estimates of cost, with precedence in the order listed. Even this language, however, is not entirely clear and does not encompass all possibilities. The simple approach is to provide expressly that the architect is to be compensated for work designed but not constructed, and to incorporate a specific formula for fee calculation.

How do you top architecture like this?

With Johns-Manville Last-O-Roof

This is the new Beckman Auditorium at the California Institute of Technology. It was designed by Edward Durell Stone, built by M. J. Brock & Sons, Los Angeles, and the roofing job was handled by the Lytle Corporation of Pasadena.

This was a tough job, and Last-O-Roof was chosen because it makes tough roofing jobs easy. Last-O-Roof is a single-membrane, plastic elastomer product that can be installed in one step. It's a complete roofing system of totally compatible components... roofing membranes, cements, flashings and finishes. (The gold circles on the roof are a decorative paint.) Applied cold, Last-O-Roof can be used on low or steep slopes as well as involved configurations.

For complete information about J-M Last-O-Roof write Johns-Manville, Box 111, 22 East 40th Street, New York, New York 10016. Cable Johnmanvil.

Johns-Manville JM

On Readers' Service Card, circle No. 457

Unadorned Recapitulation

BY ROBERT B. RILEY

CONTEMPORARY ARCHITECTURE: ITS ROOTS AND TRENDS, *by L. Hilberseimer. Published by Paul Theobald and Company, 5 Wabash Ave., Chicago, Ill. (1964, 221 pp., illus., $12.75). Reviewer has served as Editor of* Potomac Valley Architect *and is currently a practising architect and architectural writer in Albuquerque, New Mexico.*

No matter what the title implies, this book is a history of modern architecture, from the Crystal Palace through the work of the 30's. Current trends are briefly discussed, but only insofar as they can be exemplified in the postwar work of Wright, Mies, and LeCorbusier. Histories of the modern movement are being published at a great rate today, but this one will be used long after the others have been forgotten, even though it contributes no new historical or philosophical insights. Not a source book, it has few reference notes, no bibliography, and no index. It is an introductory text requiring no previous knowledge of architectural history, and would serve equally well as a book for an interested layman or an introduction to an architectural student's history course.

Ludwig Hilberseimer was a participant in the great architectural ferment of the early decades of this century. His book is the work of a practicing architect, planner, and writer, not of a critic, historian, or professional popularizer. Moreover, it is written from a distance in time that makes it unnecessary, in his view at least, to propagandize. He writes with a sense of architecture as a living, continuing adventure; the result is an unusual blending of inside knowledge and fervor with a modesty and tolerance rare in architectural writing.

This is a simple, thoughtful book, both in style and format. The approach the author has chosen is primarily narrative, not interpretive. He omits the philosophical gymnastics familiar in Giedion, Banham, and Pevsner and restricts his attention to major trends, covering these thoroughly with a nice balance between discussion of actual buildings and the ideologies that produced them. There are omissions and simplifications, but, given the purpose of the book, none are serious. He is not reluctant to state his own views, but they are plainly presented as just that, and not disguised as great historical truths or aesthetic laws.

Hilberseimer's style is plain to the extreme, sometimes sinking to the simplicity of a high school text, but always free from gobbledygook and pomposity. What it lacks in elegance it makes up for in clarity. Accustomed as we are to fat, heavy, note-laden texts or ostentatious, overdesigned coffee-table books, this one, at first look, seems plain and slightly stodgy. But its careful, unassuming format, one soon realizes, is largely responsible for its excellence. Illustrations and text are balanced and carefully related. Every building discussed is illustrated, and almost every building illustrated is evaluated in the text. Best and most unusual of all, the illustrations are always exactly where they should be, within a page or two of the relevant text. The layout is orderly and uncluttered; the type is large, handsome, and generously spaced. One is struck by the parallel between its design and the characteristics of Hilberseimer's and Mies's architecture —sparse, airy, logical, and restrained.

Reading the book, one realizes anew what an ideological debt we still owe to the years from the First World War through the early 30's. Few new serious ideas have arisen either in planning or architecture since then, at least until recently. Our actual buildings have in the meantime been only fulfilling or catching up to principles laid down then, not expanding upon them. The social and aesthetic convictions of those earlier years make our current fascination with composition seem frivolous. Just now, similar deep concerns seem to be stirring once again. I hope that, in a few years, a chronicler as capable as Hilberseimer will be writing about our ideas and our architecture. Until that time, if a non-architect friend asks you what contemporary design is all about, give him this book.

A Discovery to Contemplate

BY HERB GREENE

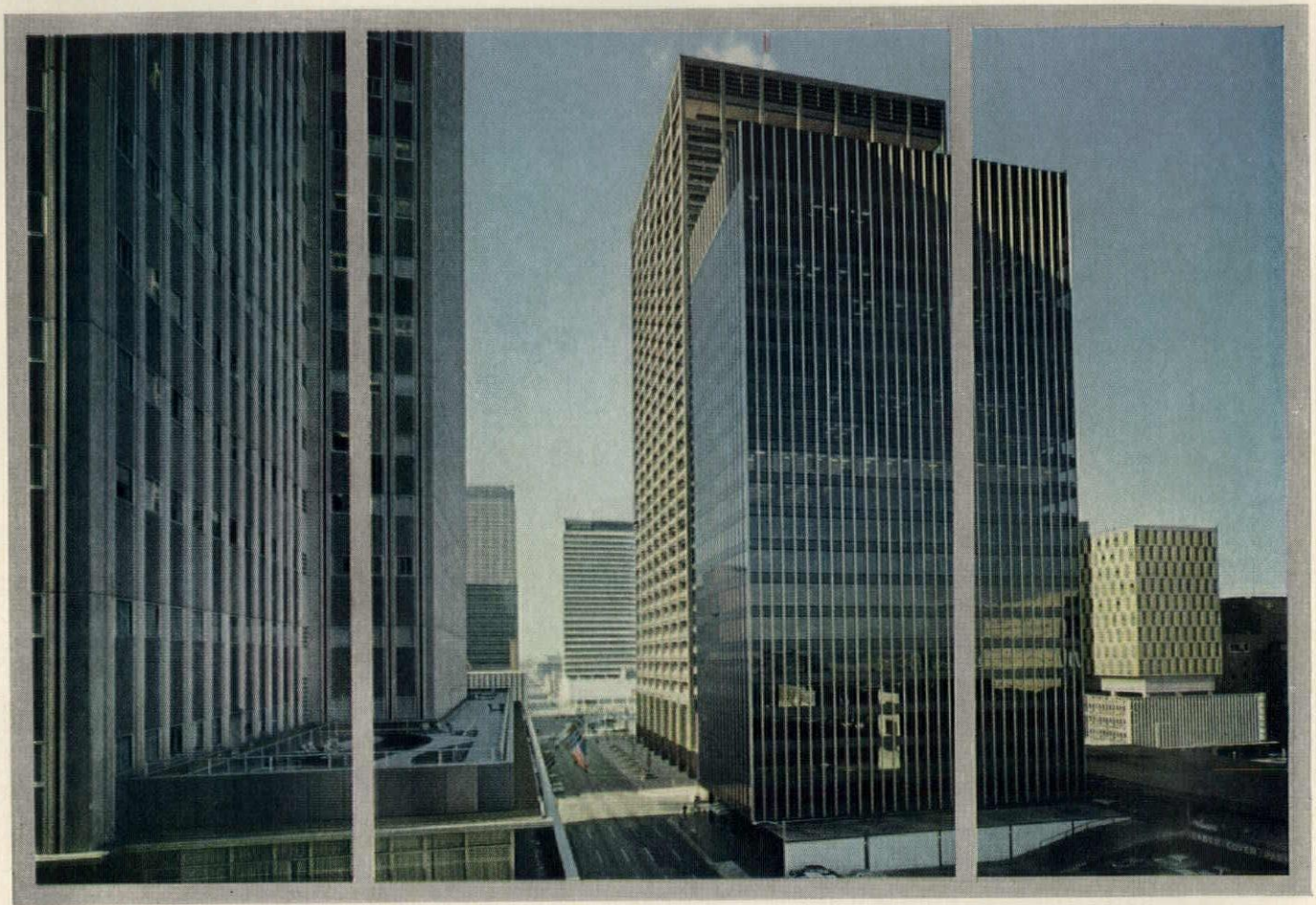
THE NEW CHURCHES OF EUROPE, *by G. E. Kidder Smith. Holt, Rinehart & Winston, Inc., 383 Madison Ave., New York, N. Y., (1964, 291 pp., illus., $17.50). The reviewer is Associate Professor at the School of Architecture, University of Kentucky. A house he designed in Oklahoma City appeared in last month's P/A.*

This book registers immediately as a contribution to architecture. The photographs are clear, essential, yet almost casual. They manage to endow their subjects with a reality uncommon for black-and-white pictures. So many fine passages of structure, materials, and architectural spaces are illustrated that the following conclusions are inevitable: the author has made his selection with care; he knows what he is looking at; and there is more quality in the new church architecture of Europe than we have hitherto realized. As a result, most of us will suffer the ominous doubt that an analogous discovery should be made of contemporary American churches.

Kidder Smith is primarily concerned with space for worship. His commentary is terse—a reportage of the central idea including only those features that are outstanding by their success or failure. The collection is arranged by nations, in alphabetical order, which proves at once unobstrusive and surprisingly valid in conveying national character. An 18-page coverage of Ronchamp and La Tourette provides a stout bulwark. My main regret is that some of the pictures are too small to be legible.

Continued on page 227

You're looking at Houston through a new glass from PPG that shuts out 70% of the sun's heat and has a "U" value of .35



Photograph taken through a sample of SOLARBAN TWINDOW simulating typical building location. Camera: 4 x 5 Linhof, 1/10 second at f/22 with Ektachrome daylight.

COMPARATIVE PERFORMANCE DATA		U Value	Maximum Heat Gain (BTU/hr./sq. ft.)	Visible Light Transmittance %
PLATE GLASS				
Regular Plate Glass	¼"	1.1	200	88
Solargray®	¼"	1.1	150	42
Solarbronze®	¼"	1.1	150	51
Solex®	¼"	1.1	150	73
LHR Clear	¼"	1.1	140	47
LHR Solargray	¼"	1.1	110	24
LHR Solarbronze	¼"	1.1	110	27
LHR Solex	¼"	1.1	110	35
SHEET GLASS				
Clear Sheet Glass	3/32"	1.1	205	90
Graylite™ 31	⅛"	1.1	170	31
Graylite 61	3/16"	1.1	195	61
Graylite 56	3/32"	1.1	190	56
Graylite 14	3/32"	1.1	150	14
Graylite 52	¼"	1.1	185	52
HIGH PERFORMANCE (Insulating, Heat and Glare Reducing)				
Clear Twindow®		.60	170	78
Solarban Twindow		.35	65	20
LHR Solargray Twindow		.60	90	22
LHR Solarbronze Twindow		.60	90	25
LHR Solex Twindow		.60	90	32
Solargray Twindow		.60	115	36
Solarbronze Twindow		.60	115	45
Solex Twindow		.60	115	65

INDUSTRY'S MOST COMPLETE LINE OF ENVIRONMENTAL GLASSES.

It's called PPG SOLARBAN™ TWINDOW®—the latest and most effective Glass Conditioning product. It transmits only one third as much heat as regular ¼" plate glass, cutting heat loss or heat gain 66%. And it transmits only about 20% of the sun's visible rays, greatly reducing glare.

What gives PPG SOLARBAN TWINDOW these remarkable properties? Actually, it's two panes of glass enclosing a dry air space. On the air space side of the indoor pane, an exclusive coating reflects 46% of the sun's total energy.

SOLARBAN TWINDOW is the ideal environmental glass in any climate or location. It provides the ultimate in indoor comfort. And the savings in heating and air conditioning costs may more than make up the difference in price.

PPG makes environmental glasses to control the sun's heat and glare on any orientation, of any building, in any environment. For details on these modern glass products, contact your nearest PPG Architectural Representative, consult Sweet's Catalog or write: Pittsburgh Plate Glass Company, One Gateway Center, Pittsburgh, Pennsylvania 15222.

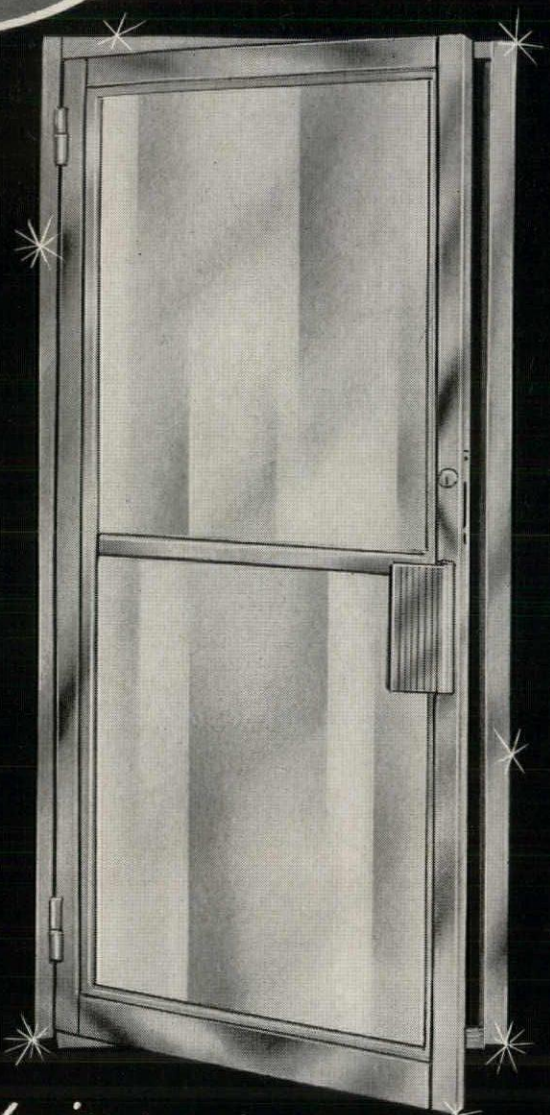
Pittsburgh Plate Glass Company, Pittsburgh, Pa.

PPG makes the glass that makes the difference

another product for Glass Conditioning from PPG

*Glass Conditioning is a service mark of the Pittsburgh Plate Glass Company

Natcor



Significant in ›DESIGN ›FLEXIBILITY ›PERMANENCE

DESIGN — A complete line of five door types and four basic framing systems, styled to the custom look for greater visibility and attractive appearance. All fastening devices concealed — exposed surfaces polished satin-smooth and alumilited (204-A1-R1).

FLEXIBILITY — Natcor doors and frames are readily adaptable to every entrance requirement — full vision, solid panel, single or double, inswing-outswing, single or double acting, transoms, side lights and interchangeable door hardware are all standard features.

PERMANENCE — Natcor doors, stock and custom, feature Aircomatic deep-weld and reinforced joints for maximum endurance and security. Glazing beads are positive-locked and bottom rails are reinforced. Frames, also, are of reinforced construction pre-fabricated from fully extruded aluminum.

Member NAAMM

See our catalog in Sweets or write:

THE NATCOR COMPANY

since 1920

P.O. Box 9321, Nashville, Tenn.

Continued from page 224

Important questions are implicit in certain churches. Is Gothic height valid for contemporary structures? The Church of Notre Dame by Guilliame Gillet is a dramatic statement of technology in reinforced concrete and is undoubtedly interesting in its own right, yet there is a difficulty with misplaced time. The relation to time past and present is poignantly tangled by the Norwegian Village Church by the late Magnus Poulsson. The structure and form of this church are an homage to its stave church forbears and to the Norwegian landscape, but the interior space and neo-folk paintings that crowd it seem sentimentally atavistic. The commentary only touches on these questions. But because Kidder Smith has brought together so much interesting and serious work, so many good buildings and several great ones, his book should provoke contemplations never suspected from its unprepossessing cover.

American Culture Hero

BY NATHAN SILVER

BULFINCH'S BOSTON 1787–1817, *by Harold Kirker and James Kirker. Oxford University Press, 417 Fifth Ave., New York, N. Y. (1964. 305pp., illus., $7.50). Reviewer is an Assistant Professor at the School of Architecture, Columbia University.*

There was a moment in the history of American cities when an architect had the highest political power, and it was just at the time that another architect was President. Charles Bulfinch was, like Jefferson, an amateur architect of sensibility, but, unlike Jefferson, he was innocent of the social responsibilities and opportunities presented by the Revolution. His ambitions for Boston were hopelessly limited by a colonial mentality. This precisely suited his conservative clients; they were Essex merchants who thought the war had been fought for commercial, not individual, freedom. They knew that Bulfinch would be good for business-as-usual. Through their support, and despite his personal unpopularity, Charles Bulfinch became chairman of the Boston Selectmen. He built some feeble Burlington and Adam buildings in town, and even tried to slip in a little Bath city planning. Boston was, after all, the fourth largest English-speaking city, and English culture was not a bad thing for trade.

Unluckily for an interesting subject, this inept and unfeeling book entirely

Continued on page 232

Select Russwin "Ten Strike" Locksets for security

. . . and get beauty as your bonus!

The Russwin "Ten Strike"* Lockset is a designer's lock.

It combines maximum security with exceptional versatility — and enhances your design as well.

The "Ten Strike" features a one-size mortise and strike cut-out for all locking functions. Extra-heavy lock parts. Convenient locking buttons. A drop-forged deadbolt that makes it virtually tamperproof. Ball bearings in the cylinders for long service life. A minimum number of parts. And versatility: you can specify it for all desired functions.

To help you use the "Ten Strike" creatively, Russwin makes it available in an exciting choice of designs, materials, and finishes. Your nearby Russwin supplier has samples and full information. Call him or write direct to Russwin, Division of Emhart Corporation, New Britain, Connecticut.

*Trademark

Rondé Royale Rosewood Modera II

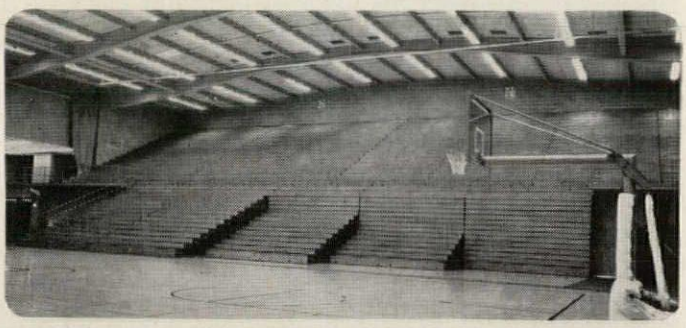
RUSSWIN

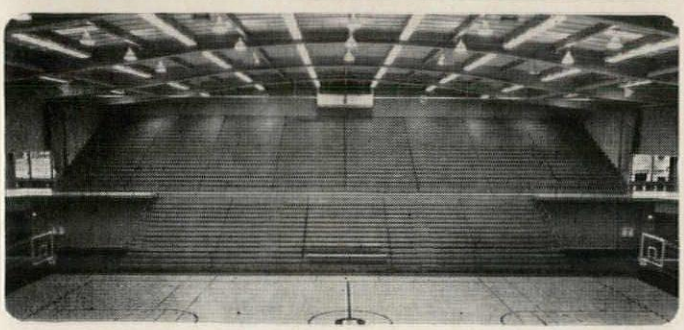
RUSSWIN
DIVISION OF EMHART CORPORATION
NEW BRITAIN, CONNECTICUT 06050

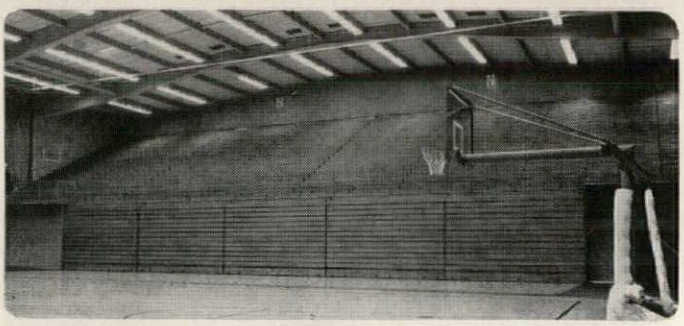
In Canada — Russwin Lock Division, Belleville, Ontario

On Readers' Service Card, circle No. 406

Ball State Teachers College P. E. Building — Muncie, Ind. / Seating Capacity — 7000 / Architects: Walter Scholer & Associates — Lafayette, Ind.







SAFWAY TELESCOPING GYMSEATS provide comfortable spectator seating and safety. Designed for maximum floor space utility — Safway's rugged steel understructure with extensive bracing insures complete safety reliability under all operating conditions. Safway gymseats are available in a variety of heights, widths, and seat spacings, for any building — large or small. Our engineers will provide you with detailed recommendations at no obligation.

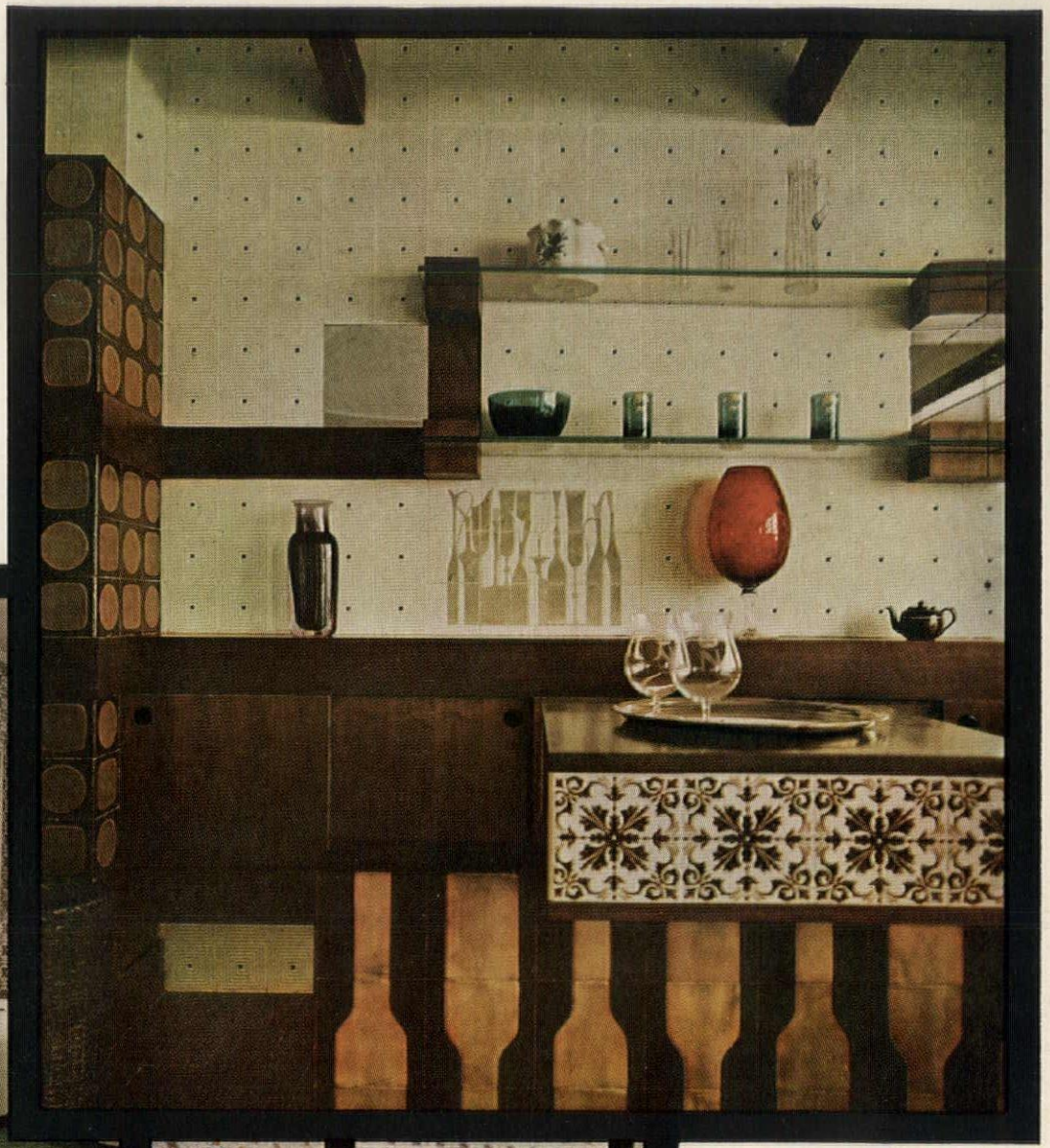
SAFWAY

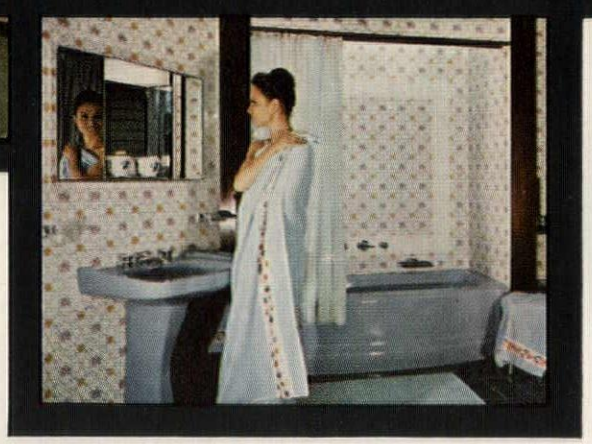
Write today for your copy of Safway's descriptive illustrated gymseat literature and the address of your local authorized Safway dealer.

SAFWAY STEEL PRODUCTS, INC.
P.O. BOX 1991
MILWAUKEE, WIS. 53201

On Readers' Service Card, circle No. 407

Installed... Ceramic Tile by Ginori of Italy Costs No More!





By now you know there's nothing quite like Ginori Tile. The extensive variety of unique printed and embossed patterns, the refreshing Italian colorings, provide unlimited inspiration for dramatic decor. But did you know that the TOTAL cost of a Ginori installation, figuring both tile and labor charges, can compare most favorably with an ordinary installation? Let us prove it to you . . . as we have proved it in numerous installations throughout America, in home and apartment developments, in hotels and commercial buildings!

Richard Ginori
ITALY
Since 1735

ZANIN, INC.
Exclusive Distributors
1929 Park Ave., Weehawken, N.J.
Also at Architects Bldg., 101 Park Ave., N.Y.
In New Jersey, phone UNion 5-6600
In New York, BRyant 9-6630

On Readers' Service Card, circle No. 357

Continued from page 227

evades discussions of the above kind. Nothing about Bulfinch's social ideals, cultural philosophy, or the responsibilities of his power is touched on. It is hard to get by in our post-Hauser, post-Giedion day with architectural histories that are narrative rather than analytical. If, forswearing a modern social history, the authors meant only to assess Bulfinch's buildings in the traditional Fiske Kimball-Talbot Hamlin manner, one might excuse their other insensitivities. But there is neither examination of details nor analysis of style here; the authors are not even offering an old-fashioned history of architecture.

Standards of scholarship in this book fall under suspicion when many disputed buildings are claimed for the architect without documentary support. The writing is often so clumsy that the sense is lost, and poor editing has allowed whole paragraphs of identical information to appear several times. Imprecision dogs the authors and misleads us. For example, Bulfinch's Tontine Crescent is called an ellipse—but it was an arc. The Royal Crescent at Bath by John Wood II was a real elliptical segment. The difference is that the ends of Wood's crescent plunge forward and stop, whereas an arc crescent is indefinitely long and has no sinewy ending. Distinctions like this should be important to those who write about architecture.

Bulfinch was an earnest man and true, at least, to his own principles. Boston now reveres him. It is far easier to like him today than it probably was in his own time. He ought to have a better cultural biography. A city, especially an architect's city, even deserves a poet's account, such as David McCord's *About Boston*. What a good prose subject for Robert Lowell! Charles Bulfinch, imperviously Tory in his revolutionary city, was our own successful Kinsman, Major Molineux.

Rigid Framework

BY LEONARD K. EATON

ARCHITECTURE, URBANISM, AND SOCIO-POLITICAL DEVELOPMENTS IN OUR WESTERN CIVILIZATION *by Carl B. Troedsson. Published by Akademiforlaget-Gumperts, Chalmers Institute of Technology, Göteborg, Sweden. Distributed by Scandinavian University Books, P.O. Box 65642, Los Angeles, Calif. (1964, 325 pp. $14.50). Reviewer is a Professor of Architecture at the University of Michigan.*

This volume is an accompaniment and expansion of the same author's earlier *Growth of the Western City during the Middle Ages*. Published in the United States by a consortium of Scandinavian presses, it is available through Scandinavian University Books. Mr. Troedsson is a former research professor in Sweden and at present a practicing architect and planner in southern California.

Briefly stated, the book's thesis is that all of Western history since antiquity is divided into "concentrative" and "decentralizing" cycles, and that the growth of cities is closely coordinated with these periods. Thus the author sees the Carolingian rulers as the first great concentrators of the Middle Ages, and the powerful feudal lords who followed them as decentralizers. Like all historians who orient their material around a rigid ideological framework, Troedsson runs into a good many difficulties, particularly in the latter part of his book. Most American historians, who are usually brought up in a pragmatic and empirical tradition, will object to his schematization, as they did to that of Toynbee.

Moreover, many of Troedsson's interpretations are at variance with those now currently accepted. For example, he sees Gothic architecture as primarily a product of the medieval commune. Recent scholarship has generally viewed it as flowering under the patronage of the French monarchy. Perhaps because his theory has a hard time explaining it, Troedsson gives almost no space to the achievement of the late Gothic style in Central Europe. He likewise has very little to say about the rise of modern architecture.

Notwithstanding these deficiencies, the book has something to be said for it. The thesis is provocative, and it is good to have material on the development of Copenhagen and Stockholm available in English. Unhappily there are no illustrations. These, it is assumed, will be found in the earlier volume.

Colorful Documentary

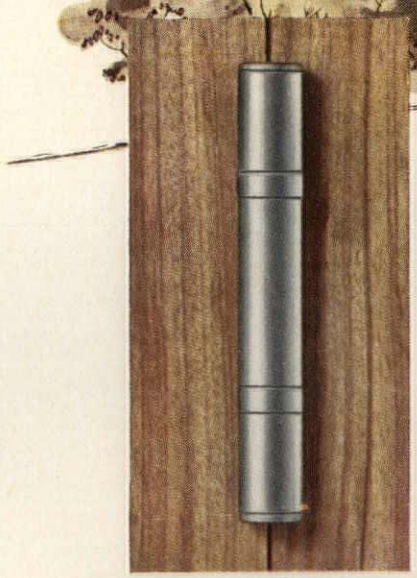
BY C. RAY SMITH

COLOR FOR INTERIORS: Historical and Modern *by Faber Birren. Published by Whitney Library of Design, 18 E. 50 St., New York 22, N.Y. (1963, 210 pp., illus., index, $15). Reviewer is an Associate Editor of P/A.*

Twenty years of experience as a color consultant and a great deal of thought are behind this book. The text contains a section devoted to the colors used in

Continued on page 236

BB93



BB600

COMMERCE TOWER, Kansas City, Missouri
OWNER: Commerce Trust Company
ARCHITECT:
John T. Murphy
Kansas City, Missouri
CONTRACTOR:
Henry C. Beck Builders, Inc.
Dallas, Texas
HARDWARE SUPPLIER:
Bunting Hardware Company

Lofty in Concept Dynamically Functional

In design and in dramatic impact, the 400-foot Commerce Tower artfully blends efficiency and convenience with beauty and good taste. Excellence permeates every detail, including hinges. To reflect elegance throughout Missouri's largest and most exciting office building, Stanley BB93 and BB600 hinges have been used exclusively. Logical choices because they combine rugged dependability and a high degree of refinement.

Hinges make an important contribution to architectural design. And you can be sure of the finest when you specify from Stanley's broad lines of hinges. To make your specifying tasks easier, write on your letterhead for the Stanley Architectural Hinge Fact File, which provides complete information on the right hinges for *all* your projects.

VISIT STANLEY
BOOTH 83 C.S.I. CONVENTION
El Cortez Hotel, San Diego, California
May 24-26

THE STANLEY WORKS®

STANLEY HARDWARE
DIVISION OF THE STANLEY WORKS
NEW BRITAIN, CONNECTICUT
IN CANADA: HAMILTON, ONTARIO

DON'T CHUTE! UNTIL YOU SEE VAN-PACKER™

Then fire away! Here's one of several practical applications for the versatile Van-Packer stack. As a refuse chute in apartments, commercial and institutional buildings, the Van-Packer factory-built stack serves quietly, efficiently, safely . . . economically.

This is a *refractory* chute, built in pre-cast sections for quick, easy installation. Won't corrode, of course. And should fire start, accidentally or on purpose, it's a *stack* unsurpassed for safety.

There is nothing quite like the Van-Packer stack for boilers, furnaces, incinerators — chutes! Diameters available from 10" to 36", nine in all. Want to know more? Write for Bulletin IS-56a, complete engineering and application data.

THE FLINTKOTE COMPANY

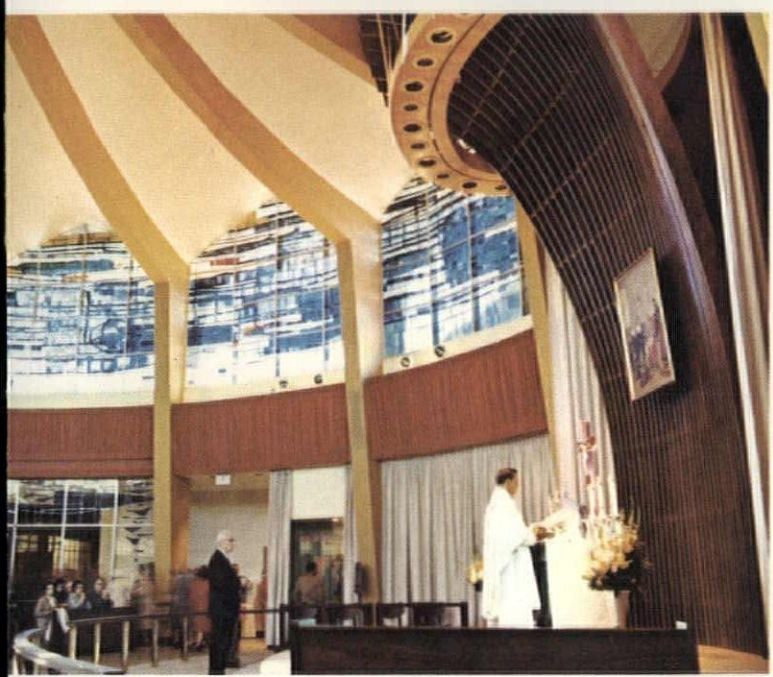
Van-Packer Products

General Sales Office: 480 Central Ave., East Rutherford, New Jersey
Executive Offices: 30 Rockefeller Plaza, New York, New York 10020

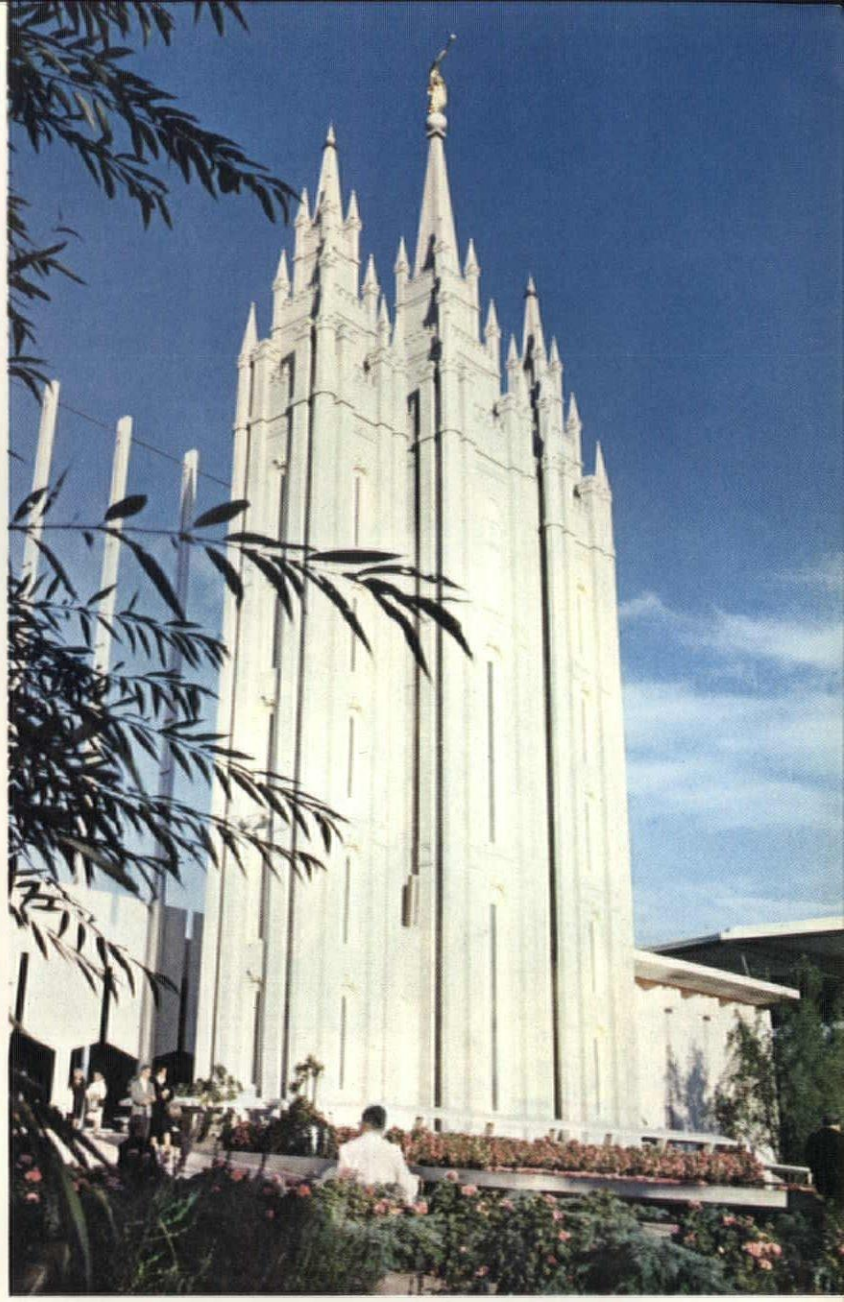
FLINTKOTE®

On Readers' Service Card, circle No. 455

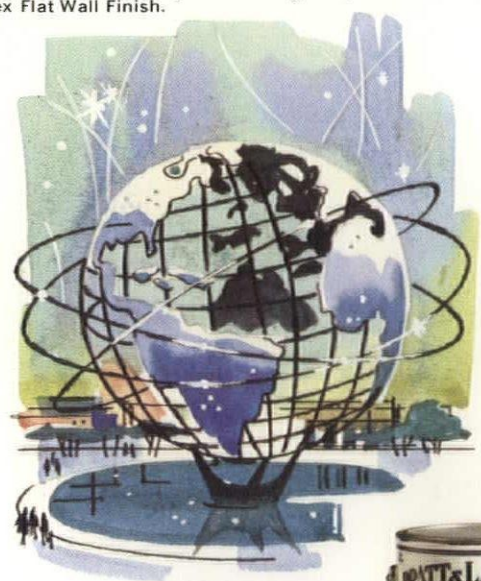
On Readers' Service Card, circle No. 401 ➤



VATICAN PAVILION. Kiff, Voss & Franklin, Architects, — The Office of York & Sawyer; Raymond P. Hughes, A.I.A.; Luders & Associates — Associated Architects. P&L products used: Vapex Wall Primer, Lyt-all Double Duty Primer, Lyt-all Flowing Flat, Vitralite Enamel Eggshell, Vapex Flat Wall Finish.



PAVILION—THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS. Fordyce & Hamby Associates, Architects; Harold W. Burton, Supervising Architect. P&L products used: Vapex Wall Primer, Lyt-all Double Duty Primer, Lyt-all Flowing Flat, Vitralite Enamel Eggshell, Vapex Flat Wall Finish, Low Luster House Paint.



Unisphere® presented by USS United States Steel

CRAFTSMANSHIP IN THE PACKAGE

PRATT & LAMBERT Finishes Enjoy World-Wide Favor At The World's Fair

The Vatican Pavilion and the Mormon Church at the New York World's Fair are beautified and protected exclusively with Pratt & Lambert finishes. In addition, Pratt & Lambert is used in the exhibits of thirty-two states, foreign countries and world-famous companies.

Exhibitors strive to present the best appearance possible to Fair visitors, so they depend naturally on quality products like Pratt & Lambert paint and varnish.

Pratt & Lambert Architectural Service is available to architects without obligation. For information, contact your P&L representative, or write the Pratt & Lambert Architectural Service nearest you.

3301 38th Avenue, LONG ISLAND CITY, N. Y. 11101
75 Tonawanda Street, BUFFALO, N. Y. 14207
4900 South Kilbourn Avenue, CHICAGO, ILL. 60632
1405 North Batavia Street, ORANGE, CAL. 92669
254 Courtwright Street, FORT ERIE, ONTARIO

PRATT & LAMBERT-INC.

NEW YORK • BUFFALO • CHICAGO • ORANGE, CAL. • FORT ERIE, ONTARIO

Continued from page 232

the major decorative periods of history and a section on modern colors for use in hospitals, schools, industrial buildings, offices, stores, and food service facilities. Both sections, which are well illustrated with black-and-white photographs of typical interiors, are offered as a guide to using color in ancient and modern interiors.

Most valuable to architects will be the section on modern uses. Here, the author professes to greater freedom with color than the engineering approach would recommend, but he reveals that this section, unlike the historical one, is directed at the common man, at the great mass of shoppers, workers, eaters, and patients. "While aesthetics and creative originality may be appropriate —and demanded—in a home, an exclusive shop, or restaurant, they may be out of place in environments where people are expected to do more than sit about and indulge their senses," he tells us. The author also intriguingly points out that there are functional uses of color. In his explanation, he reveals a loyal attachtment to various hues of pastel green as the panacea for perfect rest, concentration, education, and cold storage.

The most interesting and perhaps most valuable part of the book are charts of color chips (238 paint samples on 16 charts)—one group for historical periods and one for modern interior types. The results of the author's personal research and experience, the charts can be of enormous value to designers who have no other resources in this area. Also valuable is the inclusion of chips of the code of caution colors, which the author was consultant for and which are now becoming fashionable in both architecture and clothing.

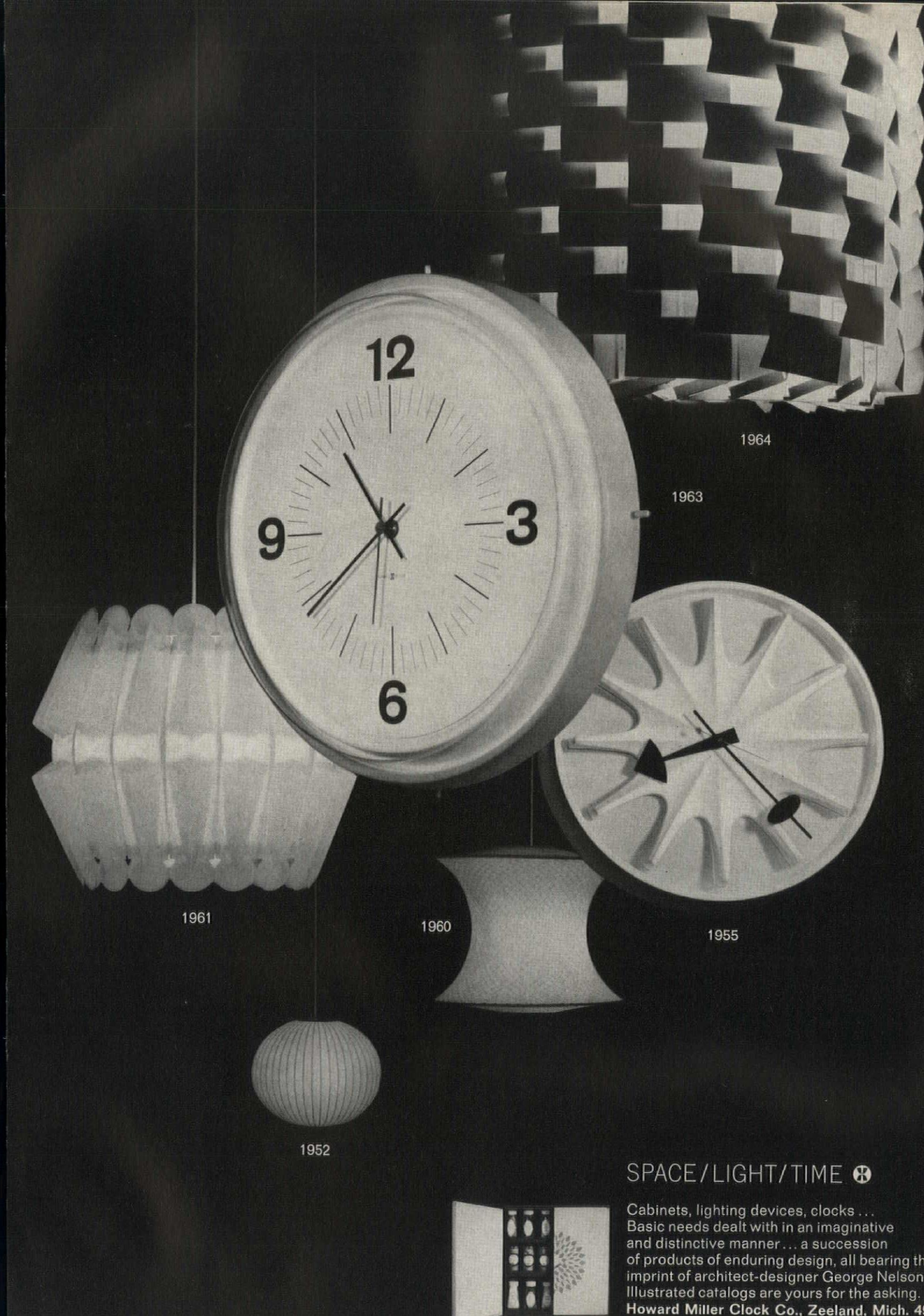
A Wealth of Information

BY WILLIAM J. McGUINNESS

REINFORCED CONCRETE *by E. Sigalov and S. Strongin. Translated from Russian by S. Klein. Published by Gordon & Breach, 150 Fifth Ave., New York 11, N.Y. (1963, 393 pp., illus., $12.50). Reviewer is a Contributing Editor of P/A. On this review, he had the assistance of his son, James T. McGuinness, who is a candidate for a master's degree in Civil Engineering.*

Although similar in general content to many American texts, this book reflects the current practices in structural analysis, design, and construction of reinforced-concrete buildings in the Soviet Union. It provides the reader with a wealth of information—both theoretical and practical. It advocates the wide use of precast and prestressed concrete, standardized modules and mass production, which involves the sacrifice of some architectural freedom but undoubtedly results in more economical buildings. So distinct is this feature that much of the content relates to individual discontinuous members and the methods of assembling them into buildings. Only in later chapters is there a discussion of *in situ* (cast-in-place) concrete monoliths. In these sections, however, the subject of continuity is well handled.

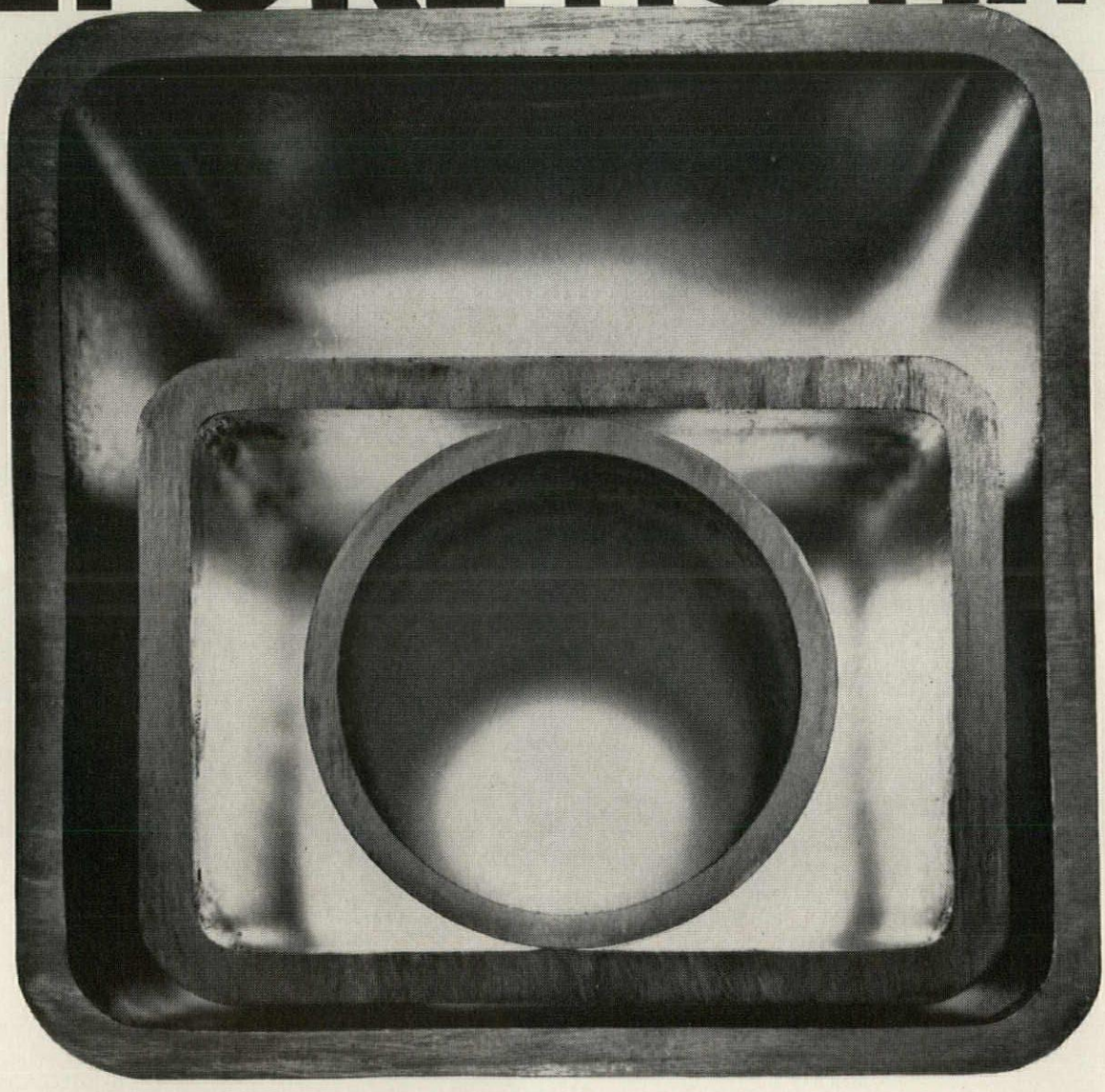
There are good sections on the properties of concrete materials, design principles, compression members, tension members, bending, slabs, creep, and the redistribution of bending moments. The sections on shells folded plates, vaults, arches, and foundations fall short, mainly because they are too brief. Although there is a chapter on reservoirs, hoppers, and bins, the work is confined largely to buildings. Bridges, heavy



SPACE/LIGHT/TIME ⊛

Cabinets, lighting devices, clocks ...
Basic needs dealt with in an imaginative
and distinctive manner ... a succession
of products of enduring design, all bearing th
imprint of architect-designer George Nelson
Illustrated catalogs are yours for the asking.
Howard Miller Clock Co., Zeeland, Mich. 4

THREE YEARS BEFORE ITS TIME



Since early 1962 you've been specifying Republic's ELECTRUNITE® Structural Steel Tubing that met or exceeded the ASTM Specification A-500 of 1964.

Nearly three years ago Republic first put into practical applications a new structural steel tubing with a yield strength 36 percent greater than ever before produced. The specifications for the new higher strength tubing were published by Republic in 1962. These specifications were the first ever issued specifically for structural steel tubing by or for the industry. From the time ELECTRUNITE's advantages were discovered by customers, this tubing has been increasingly hard at work in a wide variety of building applications.

WITH ELECTRUNITE STRUCTURAL TUBING:

- A building will average 30 to 40 percent lighter in weight than a similar structure employing conventional steel members.
- You'll spend less to get more than enough strength in columns, posts, lintels, spandrels, and other structurals.
- Lighter framework allows lighter footings and foundations.
- Walls are one-third thinner for increased usable floor space.
- Off site fabrication is another cost saver.
- Welding and mechanical joining can be done with a choice of techniques.
- Flat side of square or rectangular ELECTRUNITE simplifies fitting of masonry, glass, curtain wall sections.
- Smooth, defect-free finish contributes to building appearance in exposed areas, interior or exterior. Can be easily painted.
- Strength-to-weight ratios are unsurpassed by any structural steel tubing on the market.

Mail coupon for full information, found in Republic's booklet, "*ELECTRUNITE Steel Tubing for Structural Use.*"

ASTM A-500 SPECIFICATION FOR CARBON STEEL STRUCTURAL TUBING

ROUND STRUCTURAL TUBING

	Grade A	Grade B
Tensile strength, min, psi	45,000	58,000
Yield point, min, psi	33,000	42,000
Elongation in 2 in, min, percent .	25[a]	23[b]

SHAPED STRUCTURAL TUBING

Tensile strength, min, psi	45,000	58,000
Yield point, min, psi	39,000	46,000
Elongation in 2 in, min, percent .	25[a]	23[b]

(a) Applies to specified wall thicknesses 0.120 in. and over. For wall thicknesses under 0.120 in., the minimum elongation shall be calculated by the formula: percent elongation in 2 in. $= 56t + 17.5$.

(b) Applies to specified wall thicknesses 0.180 in. and over. For wall thicknesses under 0.180 in., the minimum elongation shall be calculated by the formula: percent elongation in 2 in. $= 61t + 12$.

Strong, Modern, Dependable

REPUBLIC STEEL
STEEL AND TUBES DIVISION
CLEVELAND, OHIO 44108

REPUBLIC STEEL CORPORATION
STEEL AND TUBES DIVISION • DEPT. 1503 • 289 EAST 131ST STREET • CLEVELAND, OHIO 44108

Please send me a copy of Republic's booklet "ELECTRUNITE Steel Tubing for Structural Use."

Name_____ Title_____ Company_____

Address_____ City_____ State_____ Zip_____

On Readers' Service Card, circle No. 402

Continued from page 238

on items that the everyday designer is sure to find helpful, including lines of reasoning worth pursuing when arguing the costs and benefits of site development.

Those concerned with preparing public presentations and client education will want this volume in their library as a special source book.

Villanueva In Toto

By GEORGE KUBLER

CARLOS RAUL VILLANUEVA AND THE ARCHITECTURE OF VENEZUELA *by Sibyl Moholy-Nagy. Published by Frederick A. Praeger, 111 Fourth Ave., New York 3, N.Y. (1964, 178 pp., illus. $12.50). Reviewer is a member of the History of Art Department at Yale University.*

Mrs. Moholy-Nagy here declares that the architect of the University of Caracas is ranked "in the small select group of international masters." She does not reveal the names of the other "masters," nor does she say who else agrees with her. Her comments suggest that she bestowed this accolade based on a combination of sociological, urbanistic, and aesthetic criteria.

The sociological conditions of Venezuela are characteristic of Latin America. Since the 16th-Century, town planners have had nearly absolute authority, unlike their colleagues elsewhere in Europe and America. Villanueva has not abused this traditional authority accorded to the municipal *alarife*. All his works show that he is guided by a belief in the possibility of realizing an ideal community.

Villanueva's urbanistic aims are governed by an insistence upon the primacy of architecture. He is a regionalist in his awareness of local environmental conditions and in his respect for traditional habits. He is reluctant to accept mere machinery or unnecessary mechanical adaptations like air-conditioning, when serviceable local traditions, such as "breathing walls" and under-eave ventilation, achieve the same purpose. Mrs. Moholy-Nagy notes throughout his work a commendable ability to separate the private and the civic domains, finding that in this he perpetuates a Roman achievement that also is part of the Latin American tradition.

It is as a designer, however, that she finds him most meritorious. He has been an untiring exponent of continuing creativity, in seeking to renovate and adjust long-term plans to changing conditions, instead of insisting like others upon the

Only extruded ceramic quarry tile offers so many features . . . tough enough to withstand impact, abrasion and wear in a power station . . . inherent, permanent beauty that requires no waxing . . . weatherproof qualities for exterior uses . . . and a range of colors, sizes and shapes to provide virtually unlimited floor designs. Next floor, specify Summitville Quarry Tile if you want unequalled durability or design versatility or everlasting beauty . . . or all three. Summitville Tiles, Inc., Summitville, Ohio 43962.

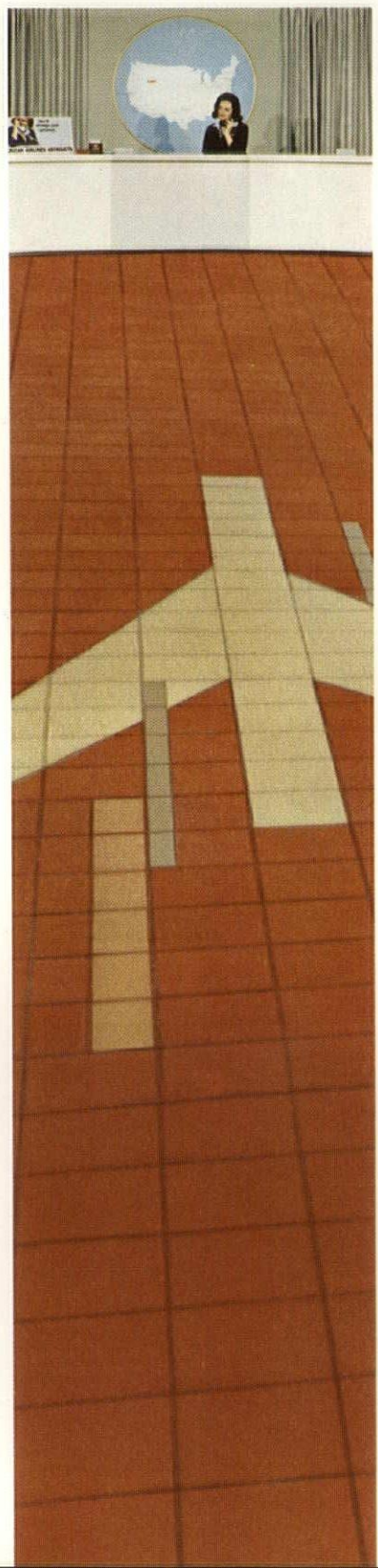
QUARRY TILE BY

Summitville®

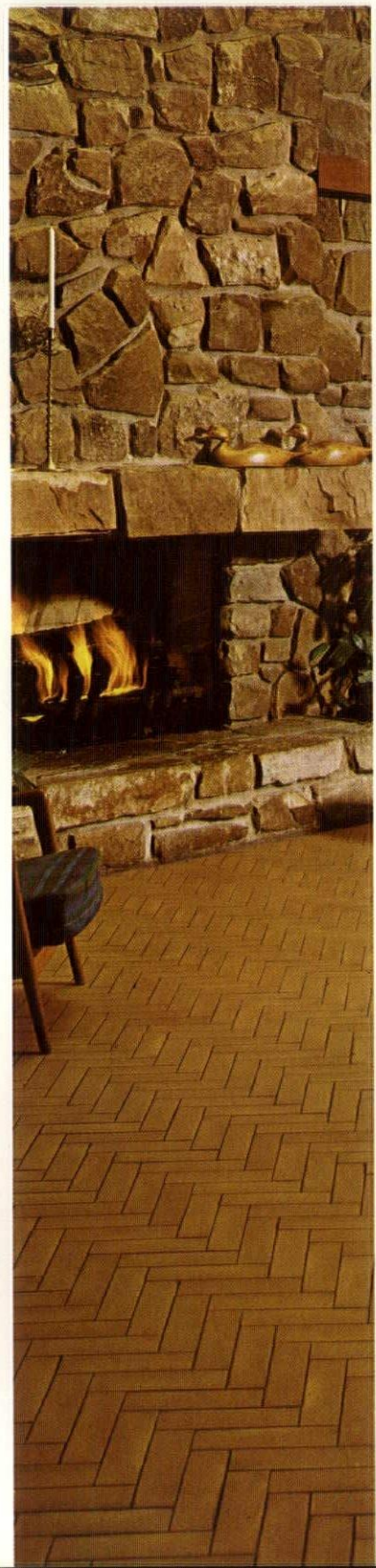
ONLY QUARRY TILE IS . . .

TOUGH

VERSATILE



BEAUTIFUL



INSIDE/OUT

execution of unchangeably final projects. Repeated instances of this fluidity appear in his adaptation to the other arts —the art of Léger, Arp, Calder, Vasarely and others—that can be found in his buildings. The covered walks connecting the parts of the University are the elements he uses to shelter the community from sun and rain as well as to interrelate architecture, sculpture, and painting. All parts of his work obey this criterion of relatedness. No piece escapes the over-all intention, which is itself subject to systematic changes made necessary by emerging needs.

The book is attractively presented, with 11 color plates and wide margins, although the proofreading is uneven and the English text is less idiomatic than the accompanying Spanish translation. A more extended discussion of Villanueva's technical collaborators and assistants would have been welcome. One also misses some discussion of his debts to others in the "small select group of international masters." His Beaux-Arts training in Paris and a doubtful early debt to Perret are mentioned only in passing. Mrs. Moholy-Nagy's assessment comes close to the cult of an isolated personality, separated from the sustaining matrix of associates, assistants, teachers, contemporaries, and followers.

A useful epilogue contains extracts from Villanueva's lectures and articles, as well as a table of dates and works.

The title is misleading because it suggests that works other than those by Villanueva are discussed. Actually, only some passing comparisons to colonial buildings are illustrated.

Pictorial Survey

BY C. RAY SMITH

NEW FURNITURE 7. *Edited by Gerd Hatje. Text by Karl Kaspar. Published by Frederick A. Praeger, Inc., 64 University Place, New York 3, N.Y. (1964, 162 pp., illus. $12.50). Reviewer is an Associate Editor of* P/A.

Like its six predecessors in the series, *New Furniture 7* is a pictorial presentation of the most recently produced furniture of all nations. Following a short introduction on the status of furniture design ("the period of stagnation is over"), there are some 441 illustrations and accompanying captions (in English, French, Spanish, and German) containing technical data, such as designer, date designed, country of origin, description of construction and salient features, and manufacturer. Furniture is grouped in

Continued on page 252

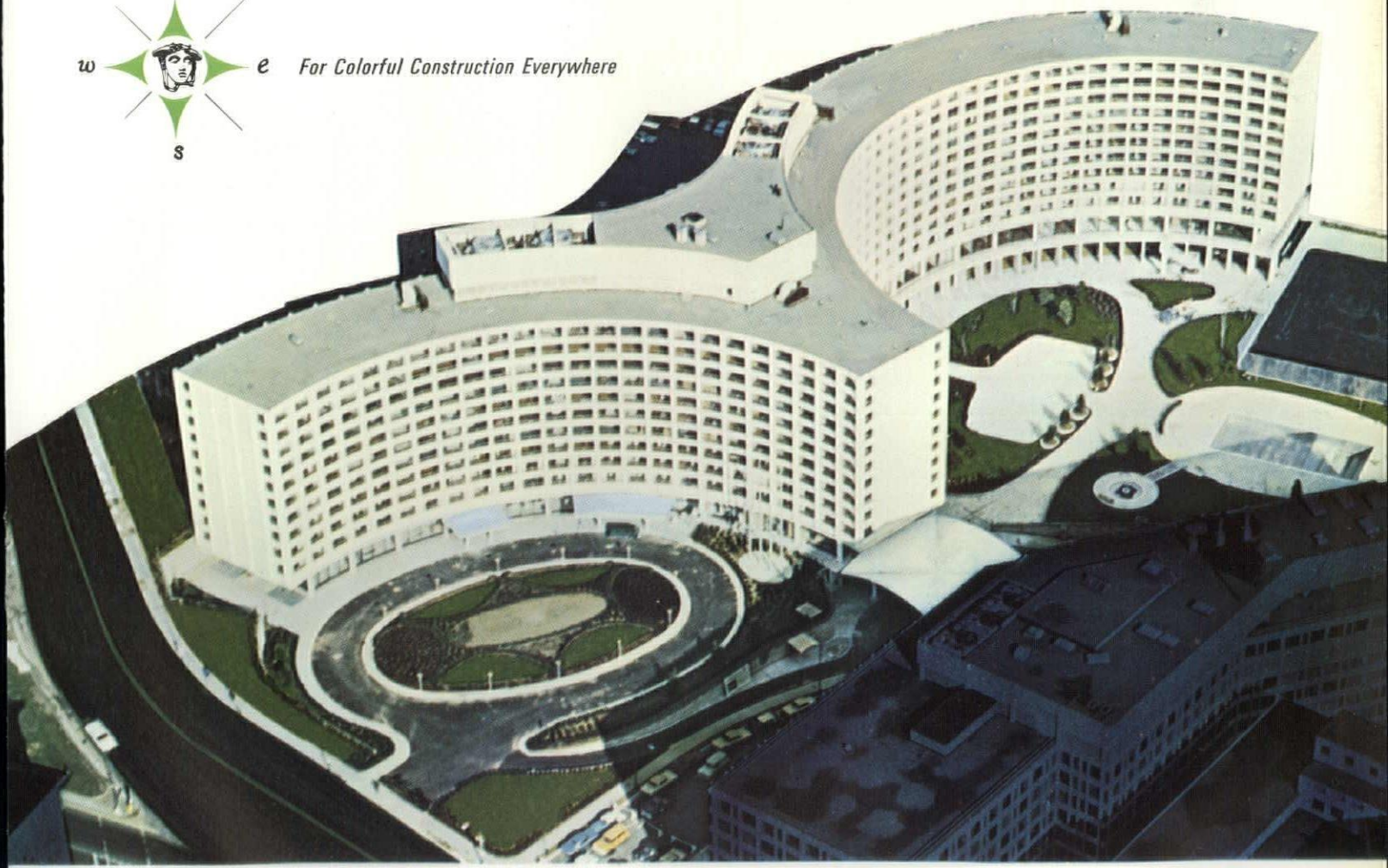
In Washington D.C.... An architect's mark of distinction with 2,000 precast units of

MEDUSA WHITE

The swept-back beauty of Washington's newest hotel landmark features over 2,000 precast, white aggregate, sculptured panels of Medusa . . . the original White Portland Cement. ☐ True-white Medusa White in precast units contributes distinctive beauty whether used in its natural true whiteness or with color pigments. And Medusa White meets all A.S.T.M. and Federal specifications for strength. Write direct for more data or contact your nearest precast concrete products manufacturer.

n
w e
s

For Colorful Construction Everywhere



Washington-Hilton Hotel, Washington, D.C. Architect: William Tabler, New York, N. Y., Gen. Contractor: Uris Bros., New York, N. Y. Precast Units by: Tecfab, Inc., Beltsville, Md.

MEDUSA PORTLAND CEMENT COMPANY

P. O. Box 5668 · Cleveland, Ohio 44101

On Readers' Service Card, circle No. 403 ➤

PLEXIGLAS...10 years without yellowing

These lighting panels of PLEXIGLAS® acrylic plastic were installed 10 years ago in the foyer of the technical building of a leading automobile producer. The photograph shows how they look today—completely free from yellowing. This resistance to discoloration makes PLEXIGLAS superior to all other plastics for lighting.

Throughout the life of a lighting fixture, PLEXIGLAS provides lighting as pleasant and efficient as the day when it was installed. PLEXIGLAS is also breakage resistant, light in weight and easy to handle—an outstanding material for your lighting requirements.

For lighting that stands out and stands up, write for literature and the names of lighting equipment manufacturers who use diffusers and lenses of PLEXIGLAS.

ROHM & HAAS
PHILADELPHIA, PA. 19105

®Trademark Reg. U.S. Pat. Off., Canada and principal Western Hemisphere countries. Sold as OROGLAS® *in other countries.*

Continued from page 248

sections (chairs, seating arrangements, sofas, beds; tables; office furniture; cabinets and shelves; nursery and school furniture). Three indexes (by manufacturer, designer, and photographer) facilitate using the book as a reference.

Another index in future editions (distributors or sales agents in other countries) could make the books more immediately valuable as shopping guides in the office.

One aspect implicit in the Editor's selection and juxtaposition of designs also makes the book valuable to the history of furniture design. Whereas Volume 6 contained furniture up to 1961, the most recent volume includes pieces dated from 1963 back to 1955. It becomes apparent that items are tacitly shown in groups of evident design similarity. The date of each design, therefore, takes on a somewhat damaging and curiously fascinating significance.

Mystical Meadows

BY PAUL T. FENNER

LANDSCAPE ARTIST IN AMERICA: THE LIFE AND WORK OF JENS JENSEN. *Leonard K. Eaton. The University of Chicago Press, Chicago, Ill., 1964. 240 pp., illus., $10. Reviewer is a Landscape Architect with the firm of Moriece & Gary, Inc., in Cambridge, Mass., who studied under Professor Eaton at the University of Michigan.*

The growing concern today with the future of America's natural heritage has led to a controversy among those involved in the planning and design professions as to the possible ways in which pleasant places in which to live may be created and conserved. Much of this controversy arises from the problem of how a region should best be expressed in physical design form and still be preserved for future economic use.

Jens Jensen practiced landscape architecture in the Chicago region from 1886 to the early 1940's, during which time he left a wonderful legacy of conservation in the Chicago Park System and in private estates. All his work strongly expressed and preserved the native American landscape; all of it was intended for use and enjoyment.

Jensen was a contemporary of, and for a time worked with, Frank Lloyd Wright. He embodied the Prairie Spirit in landscape architecture much as Wright did in architecture. Jensen, like both Wright and Sullivan, worked mainly in Chicago and in the Midwest, and, although many

Continued on page 256

Elm with Walnut Inlay

For your most selective clients!

You can now select from 11 elegant Inlaid Panelings!

Here's the decorative flair of Inlaid Paneling! Now available in a wide range of beautiful hardwoods! At a new low price! Turn the page and see G-P's exciting new panelings for 1965!

GP

See reverse side of this page for color illustration

Four new Georgia-Pacific decorator panelings for 1965!

G-P Inlaid Paneling

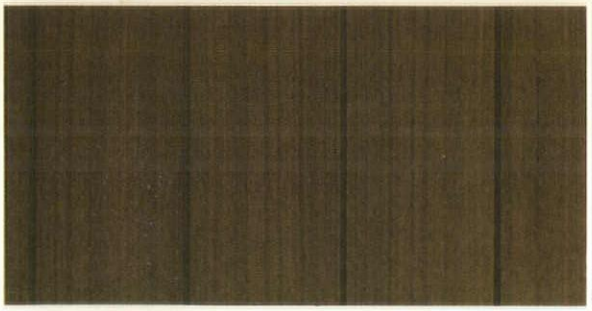
The custom look of hand-craftsmanship . . . at a new low price! Only $24.95 to $31.95 (retail) for 4′ x 8′ V-grooved panels. The beauty of the hardwood face veneers and inlays is protected with G-P's Acryglas® catalyzed resin finish. This posh paneling is ideal for both home and institutional installations. Eleven combinations: Pecan with Walnut inlay (as featured on the reverse side of this page), Walnut with Pecan inlay, Elm with Walnut inlay, Distressed Heirloom Cherry with Walnut inlay (antique appearance), Select White Birch with Red Birch inlay, Select Red Birch with White Birch inlay, Inlaid Figured Red Gum, Fawn Amazon Maple inlay, Golden Amazon Maple inlay, Nutmeg Amazon Maple inlay, and Autumn Amazon Maple inlay.

G-P Gold Crest Paneling

Use it the way it comes! Or stylize the panels by filling the half-inch channels with colored tapes and metallic strips. Only $26.95 to $29.95 (retail) for 4′ x 8′ panels. The panels have one-half inch channels spaced between the random planks. You can fill these channels with colored tapes or metallic strips. Metal strips slotted for shelf brackets are also readily available. The extremely rugged Acryglas® finish resists scuffs and stains—and polishes like new with a damp cloth. Veneer patterns available are American Walnut, Distressed Heirloom Cherry (antiqued), Golden Elm, and Pecan.

G-P Chateau Paneling

For walls higher than 8 ft.! The groove patterns run perfectly from floor to ceiling! Only $13.44 to $21.44 (retail) for 4′ x 8′ panels. The vertical grooves on every panel are extra wide—and perfectly matched. Result: You can stack them one on top of another and have a flawless groove from floor to ceiling. G-P's lustrous "Family Proof" multi-coat finish protects the woods against wear. The panels are as easy to maintain as fine furniture. Veneers feature nature's warm and beautiful growth characteristics. Available in Natural or Antique Birch, Select or Knotty Cherry, Select or Knotty Elm, Select or Knotty Oak, Select or Knotty Pecan, Select or Knotty Walnut, and Cypress.



G-P Style IV Paneling

Last year this effect called for hand-made craftsmanship! G-P's new Style IV Paneling is available in elegant American Black Walnut. Only $29.95 (retail) for a 4′ x 8′ panel. The panel creates the effect of four-inch planks separated by "V" grooves. This effect used to call for hand-craftsmanship—as each four-inch plank had to be installed individually. But Georgia-Pacific has devised a new production technique that captures this traditional beauty in an easy-to-install regular hardwood panel. And the Acryglas® finish will keep this paneling beautiful through years of hard use.

Send me full information on G-P Panelings

NAME

ADDRESS

CITY STATE ZIP CODE

Mail to GEORGIA-PACIFIC CORPORATION, Paneling Dept., Equitable Building, Portland, Oregon 97204

All new G-P panelings are 3-ply ¼" hardwood plywood, conforming to requirements of CS 35-56. Sealed to minimize moisture absorption. You can see Georgia Pacific's complete line of panelings at your building material dealer or nearby G-P distribution center.

GP

GEORGIA-PACIFIC

THE GROWTH COMPANY

DOW CORNING

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

A great many caulks, putties and sealants will make water-tight joints . . . for a time. Virtually all of them, however, lose their elasticity, harden, crack and deteriorate when exposed to direct sunlight, ozone, ultraviolet and extremes of heat and cold. The result: leaks!

One sealant that never "gives in" to weathering is Dow Corning® 780 building sealant. A true *silicone rubber*, this elastomer exhibits an almost rock-like indifference to the elements and remains virtually unchanged by the passage of time.

For a free evaluation/demonstration sample and full information, address Dow Corning Corporation, Dept. 8718, Chemical Products Division, Midland, Michigan 48641.

For nearest distributor, see Sweets $\frac{3c}{Do}$

Continued from page 252

of his works survive as testament to his genius, he never achieved wide fame. Little has been written about him.

Professor Eaton, through exhaustive research and travel, has written a book that treats Jensen thoroughly and nobly. It brings to life the spirit of his work—the simple, direct use of plants, terrain, and water with which he mastered outdoor space and created elegant landscapes.

Jensen was an activist; the campfire, not books, was his teacher. Underlying his work was a certain mysticism, a deep feeling for nature, and an ability to express the particularities of the region in which he worked. Jensen's rapport with plants and outdoor space developed from his childhood in Denmark and from many years of daily contact with the outdoors. The effects he produced were dependent on each individual site. They were simple and powerful.

Wright used flowing space and horizontal lines to symbolize the Midwestern prairie. Jensen symbolized the prairie by using trees to form great open spaces. He took his time before bringing the viewer to the main statement of the site, and one cannot help but be overwhelmed by the impact of Jensen's meadows.

The book is divided into four sections. First, generous space is given Jensen's Danish background. Following this, Professor Eaton deals with his early years in the United States that were spent in public park work. Jensen's private practice is discussed in the third section. Throughout, the author has chosen excellent photographs.

The fourth section concerns Jensen's later life, when he established The Clearing, a kind of school somewhat similar to Taliesin, where he conveyed some of his ideas to selected students. The Clearing had for Jensen more than a literal meaning—it fulfilled the hopes of a lifetime. Here he could write, speak, and enjoy life away from the city, which to him was becoming increasingly unpleasant.

This book contains much wisdom and insight. The ideas expressed are timeless. To read Jensen, and to walk through his beautiful meadows and along his quiet streams, is to hear the landscape speak as only he intended.

Unusual Pictures, Unnerving Subheadings

BY RICHARD W. SNIBBE

THE ELEMENTS OF THE ART OF ARCHITECTURE. *William Muschenheim. The Viking Press, Inc., 625 Madison Avenue, New York, N. Y. 10022, 1964. 200 pp., illus., $6.50. Reviewer is an architect practising in New York. He participated in the design of the U.S. Embassy in New Delhi as an associate in the office of Edward Stone.*

A book that is composed mostly of pictures will appeal to architects because most of them do not read anyway. The author, with the help of a grant, the AIA, and two research assistants, has gathered many interesting and some unusual pictures of buildings, places, and details. He has put these together on facing pages (regardless of when they were built) to illustrate architectural elements such as form, surface, and space. The short text contains subheadings, one of which reads: "Pure Cubical Form Geometrically subdivided with a deliberate emphasis on perfection of proportion and details." Under headings like this appear explanations that are sometimes historical and other times technical or just some elaboration on the theme.

At times, this seeming jumble and extraneous juxtaposition of anything anywhere is just that. At other times, there

Continued on page 262

Modern Door Control by

LCN

SMOOTHEE® Door Closers

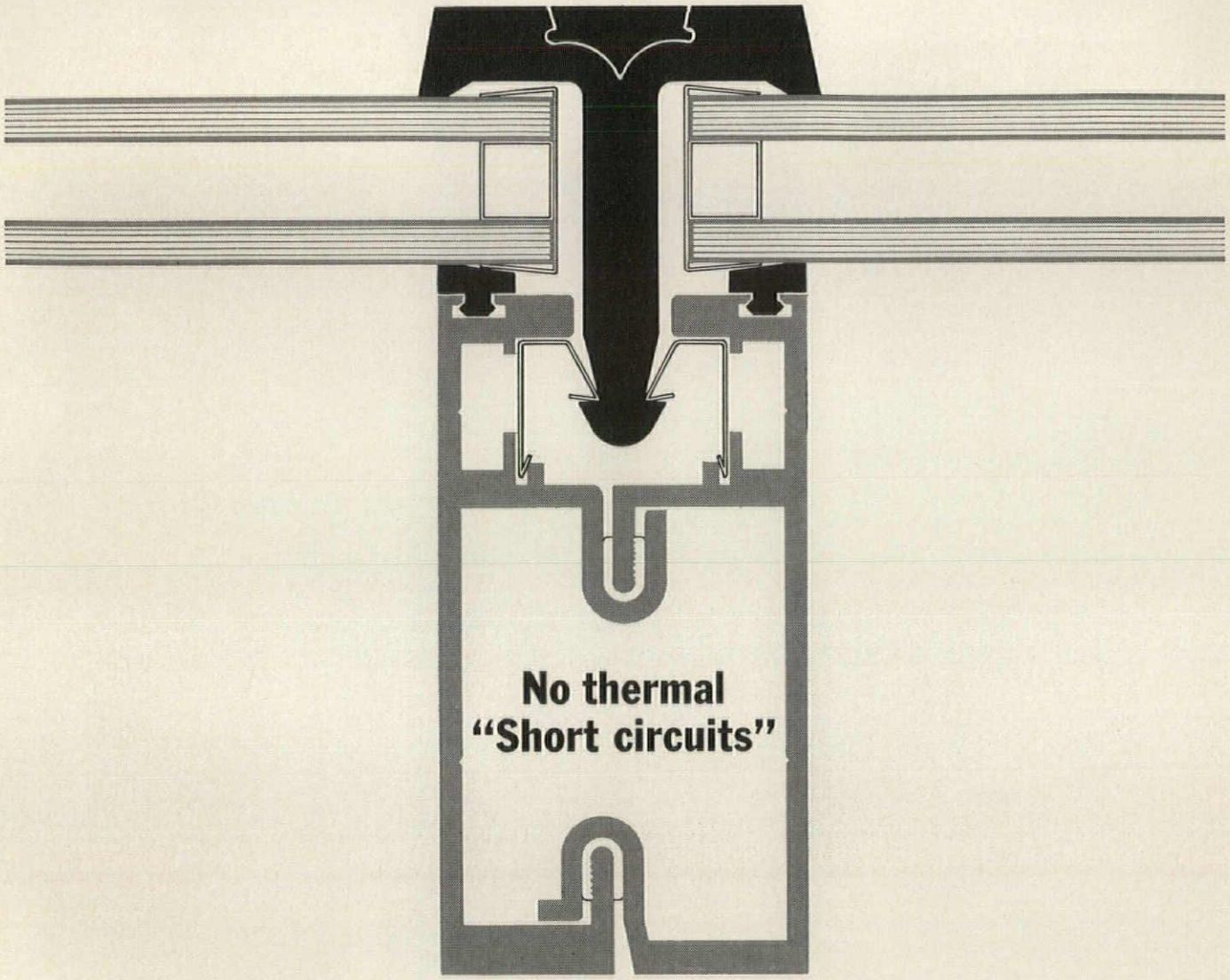
University Center Building
Northern Illinois University
De Kalb, Illinois

Gilbert A. Johnson, Kile, Seehausen
& Associates, Architects

LCN CLOSERS, PRINCETON, ILLINOIS

Application Details on Opposite Page

No metal on the outside



New Pittco T-Wall™ framing system prevents condensation, cuts heat loss

Pittsburgh Plate Glass Company has developed an entirely new thermal wall framing system called T-wall. The system has a proven U value of 0.6.* There is no through metal connection from outside to inside. Heating and air-conditioning costs are reduced. No condensation occurs with room temperatures up to 70° with relative humidity to 35% —even with an outdoor temperature of minus 20°. Walls aren't chilly to the touch. Sound transmission is considerably less.

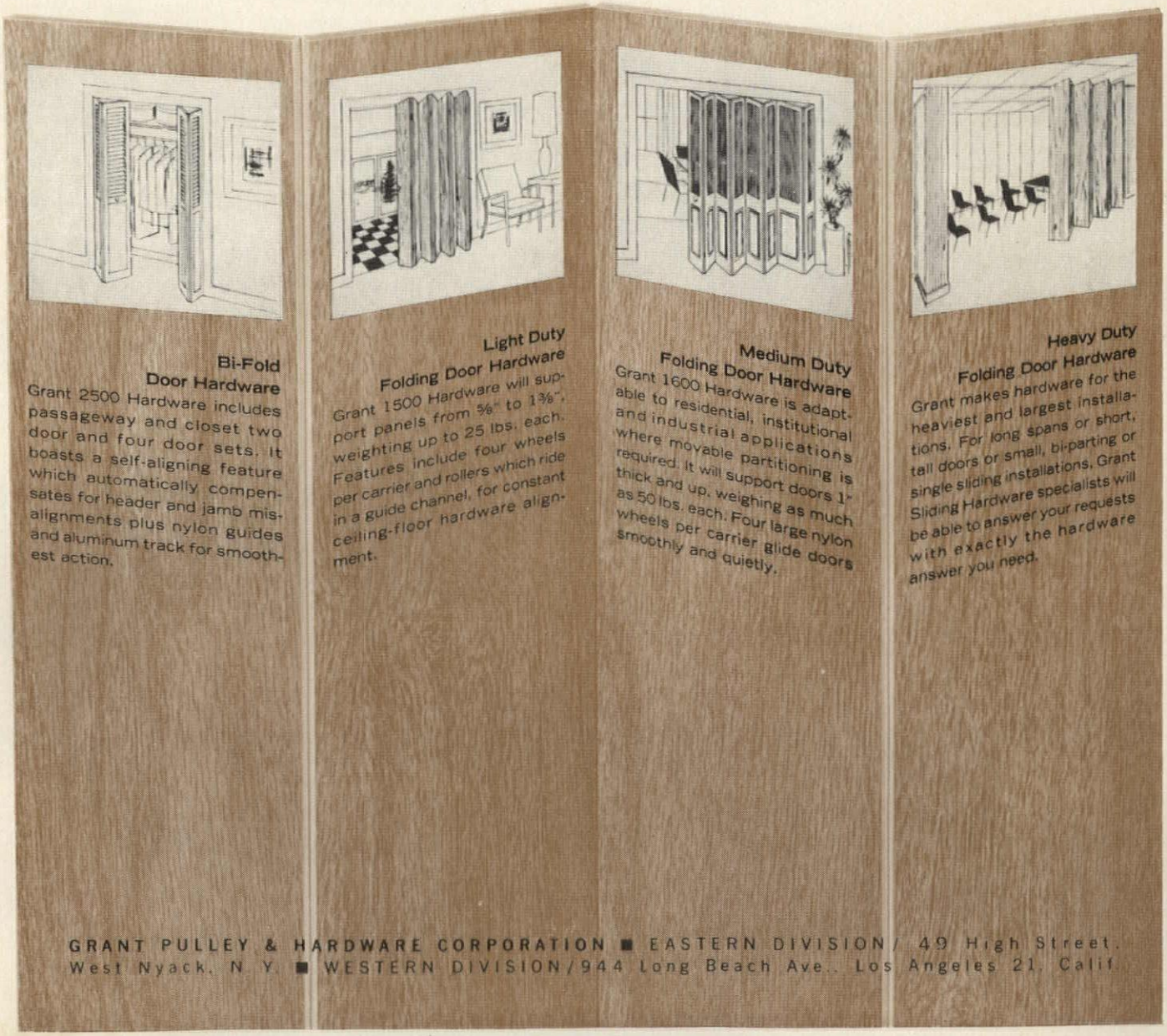
PPG T-Wall is versatile. It can be glazed in varying thickness combinations, from ¼" to 1". For mullion designs, contact your Pittco Architectural Metals distributor, or write **Pittsburgh Plate Glass Company, Pittco Architectural Metals, One Gateway Center, Pittsburgh, Pennsylvania 15222.**

PPG®

*Performance test data, published March 1, 1965— Pennsylvania State University.

4 ways to fold a room in half

(or quarters, or eighths)



Bi-Fold Door Hardware

Grant 2500 Hardware includes passageway and closet two door and four door sets. It boasts a self-aligning feature which automatically compensates for header and jamb misalignments plus nylon guides and aluminum track for smoothest action.

Light Duty Folding Door Hardware

Grant 1500 Hardware will support panels from ⅝" to 1⅜", weighting up to 25 lbs. each. Features include four wheels per carrier and rollers which ride in a guide channel, for constant ceiling-floor hardware alignment.

Medium Duty Folding Door Hardware

Grant 1600 Hardware is adaptable to residential, institutional and industrial applications where movable partitioning is required. It will support doors 1" thick and up, weighing as much as 50 lbs. each. Four large nylon wheels per carrier glide doors smoothly and quietly.

Heavy Duty Folding Door Hardware

Grant makes hardware for the heaviest and largest installations. For long spans or short, tall doors or small, bi-parting or single sliding installations, Grant Sliding Hardware specialists will be able to answer your requests with exactly the hardware answer you need.

GRANT PULLEY & HARDWARE CORPORATION ■ EASTERN DIVISION / 49 High Street, West Nyack, N. Y. ■ WESTERN DIVISION / 944 Long Beach Ave., Los Angeles 21, Calif.

At the spectacular Washington Hilton, Gas cooling provides unmatched comfort for global guests

This spring The Washington Hilton joined the select group of great cosmopolitan hotels. The new Hilton combines the relaxation features of the finest resort hotel with facilities for the most important social and state occasions.

And what keeps the distinguished guests comfortable through the sharp changes of Washington's seasons? A 1660 ton modern Gas air conditioning system. Each of the Washington Hilton's 1240 rooms has individual controls. A simple adjustment brings "climate as you like it"—silently, dependably.

Owner Hilton-Uris, Inc. chose modern Gas Energy for its great fuel economy. Moreover, Gas equipment first costs are low.

From the heat-treating of metals to the cooling of high-rise buildings, whenever *you're* thinking of energy applications, think of Gas first. Let us work with you. Call your local Gas Company Sales Engineer.

AMERICAN GAS ASSOCIATION, INC.

Do it tomorrow's way...with Gas

261

On Readers' Service Card, circle No. 469

Continued from page 256

is a brilliant set of choices that more than justifies the miscellaneous character of the whole. I happen to like this approach, even if it is forced at times, because it creates a feeling for the complexity of the subject and shows the author's respect for the reader's ability to think. It even encourages him to do so. This is not a book for the amateur or for the freshman student of architecture, but the notion would get through even to them that understanding architectural design takes more than 20–20 vision.

I particularly liked the statement, on page 20, about "exploded building masses expressing each element separately as opposed to the classical approach to design," as an indication of the origins of some of our current work. Let me recommend, too, the short statements on "Major Periods of Western Architecture" at the end. These—and indeed the entire book—contain fewer "weasel" words like "functional," "honest," etc., than any book on architecture written by an architect I have ever read.

A Dust Collector

BY HAROLD J. ROSEN

A.I.A. BUILDING PRODUCTS REGISTER, Third Edition. *Theodore W. Dominick and Robert J. Cowling, Editors. The American Institute of Architects, 1735 New York Ave., N.W., Washington, D.C. 20006. 1964. 456 pp., $20. Reviewer is Chief Specifications Writer for Skidmore, Owings & Merrill and a Contributing Editor of* P/A.

This reviewer has received the earlier editions of the Building Products Register and finds very little improvement in the Third Edition. The two earlier volumes have rarely been used by this reviewer, and this edition, too, seems destined to be a mint copy in his office.

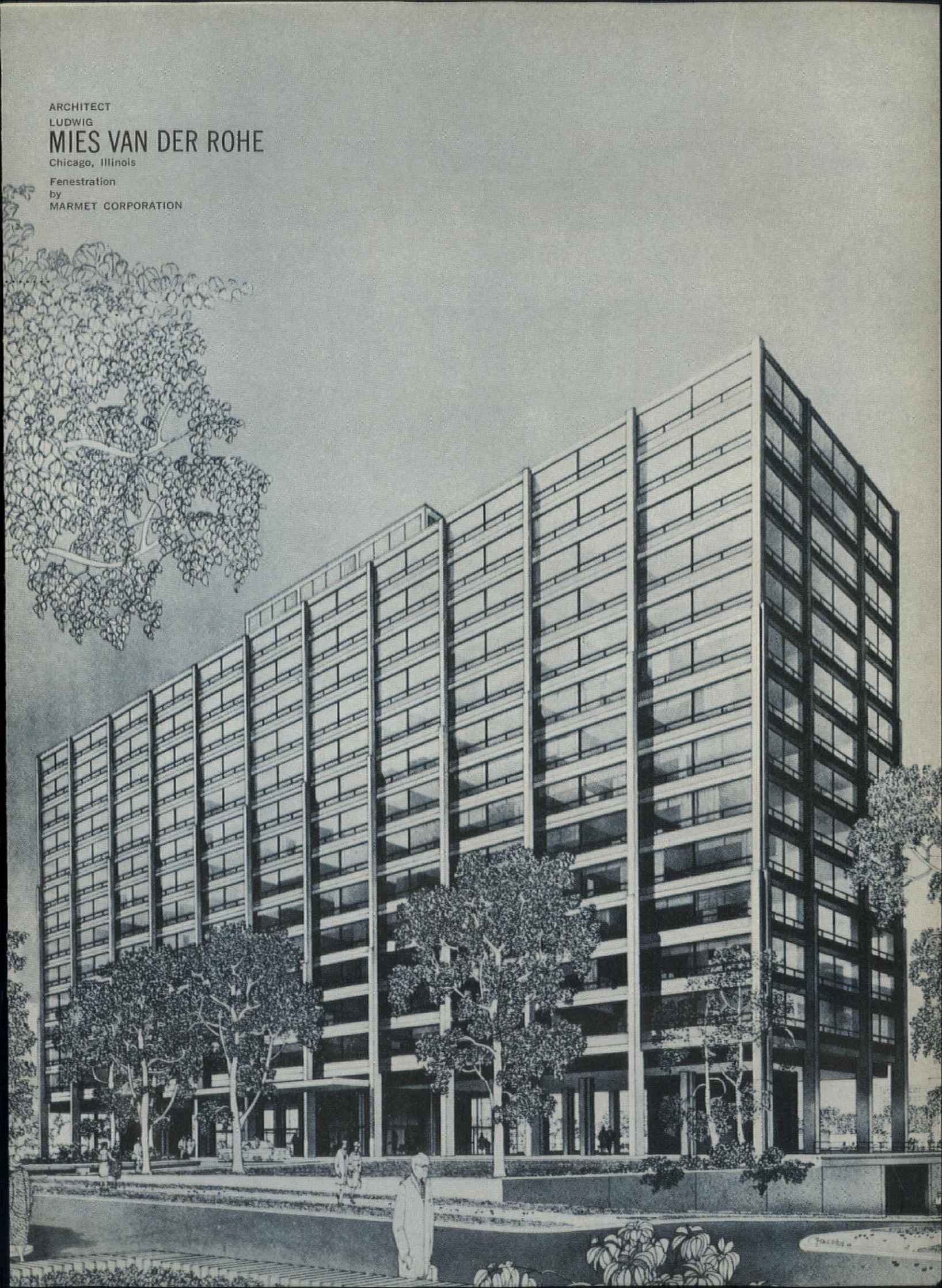
This negative attitude is based on the unreliable information contained in reported physical characteristics and the lack of standardization of test procedures in comparing like products.

For example, in checking the ceramic tile illustration on "How To Use The Building Products Register," several manufacturers indicate that their glazed tile meets Fed. Spec. SS-T-308b for chemical-, impact-, and abrasion-resistance. These requirements are not listed in the Federal Specification for glazed tile. Similar inaccuracies abound throughout the Register.

In comparing physical characteristics of roof insulation (on page 203), compressive strengths are required as the

ARCHITECT
LUDWIG
MIES VAN DER ROHE
Chicago, Illinois

Fenestration
by
MARMET CORPORATION



minimum psi at 10 per cent deformation. Thermal conductivity is reported at 75 F and 50 F. How can the architect or specifications writer compare products with dissimilar test references? The Register is replete with this incongruent method of comparing products.

The only outstanding feature of the Register is the bibliography at the end of each category, which abstracts specification standards such as A.S.T.M., Fed. Specs., Commercial Standards, and association standards.

OTHER BOOKS TO BE NOTED

The American Landscape, A Critical View. Ian Nairn. Random House, Inc., 457 Madison Ave., N. Y. 22, N. Y., 1965. 152 pp., illus., $5.95

To be reviewed.

Ancient Greek Houses. Bertha Carr Rider. Argonaut, Inc., 737 N. Michigan Ave., Chicago, Ill., 1964. 272 pp., index, $8.50

To be reviewed.

The Architecture of the European Synagogue. Rachel Wischnitzer. The Jewish Publication Society of America, 222 N. 15 St., Philadelphia 2, Pa., 1964. 312 pp., illus., $6.00

To be reviewed.

Arquitectura Espanola Contemporanea. Carlos Flores. Aguilar, S.A. de Editiones, Juan Bravo, 38, Apartado de Correos, Madrid 6, España, 1961. 623 pp., illus., no price given.

Spanish architecture, whether in Spain, South America, Mexico, or the Caribbean, is traced from the days of Juan de Villanueva and Antonio Gaudi up to 1960. Photographs are plentiful, well placed, but poorly reproduced. The text moves like a brook—fast but without depth. Still, this marks a beginning in a much-needed area.

Byzantine Aesthetics. Gervase Mathew. The Viking Press, 625 Madison Ave., New York, N.Y., 1965. 203 pp., illus., $6.50.

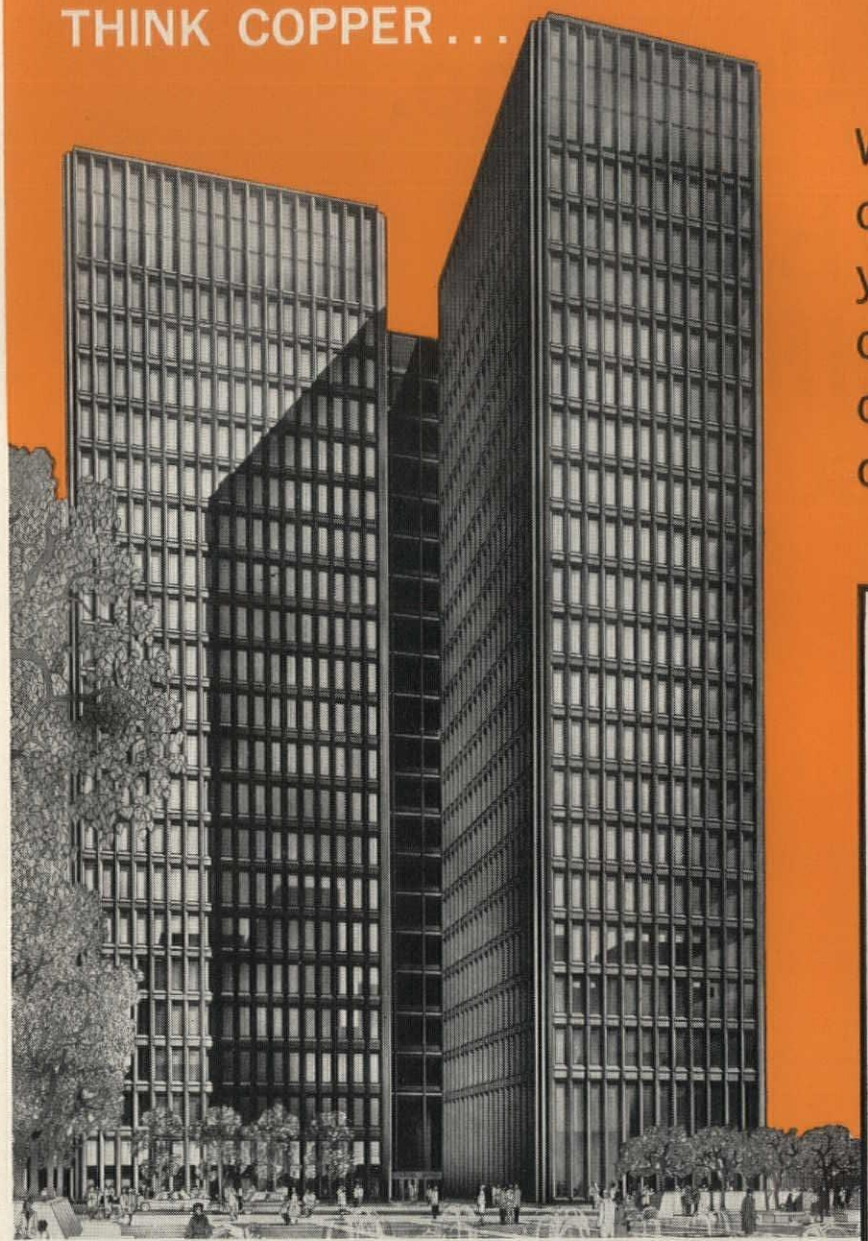
Mosaics, gems, architecture, geometry, and experiments with perspective illuminate this study of the Byzantine culture and its art from the 3rd to the 15th Century A.D. The author discusses the ideas of light, space, color, and portraiture that produced the highly symbolic Byzantine art. A provocative aspect of the book is the author's belief that theories of beauty are closely related to the civilization that produces them; thus he describes the hierarchical Byzantine civil service, its system of art patronage, and explains the anonymity of its artists. Mathew has been University Lecturer in Byzantine Studies at Oxford since 1947.

Comparative Performance of Year-Around Air Conditioning in a Split-Level Residence. E.J. Brown, J.H. Healy, and B.W. Hryekewicz. Engineering Publications Office, 112 Civil Engineering Hall, U. of Ill., Urbana, Ill., 1965. $1.00

This report summarizes a two-year investigation of comfort-conditioning a split-level residence with ducted air systems. Results of

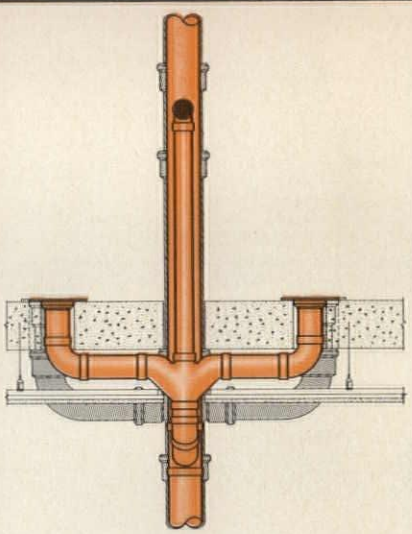
Continued on page 268

THINK COPPER . . .



First Federal Building, Detroit, Mich.; (owner, First Federal Savings of Detroit); Smith, Hinchman and Grylls Associates, Inc., architects; Russell F. Stem, associate and chief mechanical engineer; Spitzley Corporation, mechanical contractors; Lorenz Supply Co., Anaconda Distributor.

With copper plumbing you save on high-rise construction costs!



COPPER DWV SAVES BETWEEN-FLOOR SPACE: A comparison of the actual space required for copper vs. cast iron drainage piping illustrates that as much as 5½″ of building height can be saved per floor with copper. In a 20-story building, for example, this could mean thousands of dollars saved—equivalent to the cost of structural materials and labor for about one story.

Described as Detroit's most distinguished building, the new twin tower First Federal Building is truly copper-protected—actually more than 4 miles of copper tube were used; Type L for hot and cold water lines in sizes ½″ to 3″ and Type DWV for sanitary drainage in sizes up to 6″. By specifying copper tube, the architects and mechanical engineers saved piping space, and cut installation time and costs throughout the 23-story structure.

Chief Engineer Russell F. Stem reported that, "due to limited vertical pipe space between building column and exterior wall, copper was specified. Ease of installation and less supported weight were also key factors in our decision."

You, too, will find all-copper plumbing best all around. As J. H. Spitzley, president of Spitzley Corp., says: "DWV Copper offers many advantages —space-saving, light weight, and ease of fabrication and installation."

Copper saves money everywhere. You're the No. 1 man to achieve these savings. So plan on copper plumbing from the start. Anaconda plumbing products include Copper Water Tube, Copper DWV Drainage Tube, Copper Tube Fittings and Valves, Red Brass and Copper Pipe. 64 0844

ANACONDA®
AMERICAN BRASS COMPANY

Write for our booklet, "It Pays to Specify Copper". Anaconda American Brass Company, Waterbury, Connecticut 06720. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

Think thin with Barrett Urethane.

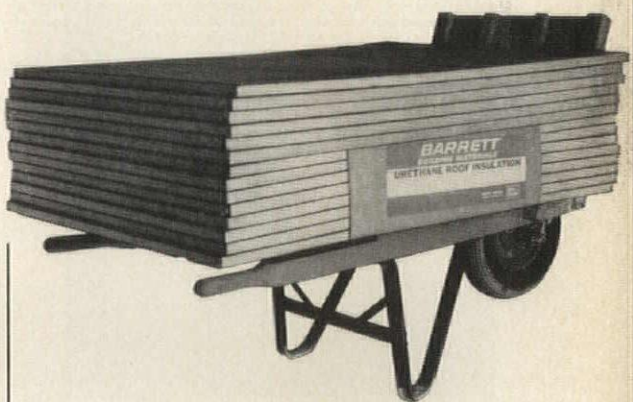
Twice as thin because it's twice as efficient as any other roof insulation.

Compare Barrett Urethane to any other roof insulation. You'll find others have to be at least twice as thick to equal Barrett Urethane in insulation efficiency. Trim, thin Urethane has a C factor of 0.15. That makes it ideal insulation for buildings with modern heating and air conditioning systems.

Here's the thickness needed in various materials to obtain this same low C factor:

Urethane	**1.0"**
Glass fiber	**1.8"**
Polystyrene	**2.0"**
Fiberboard	**2.4"**
Cellular glass	**2.7"**

Easy-to-handle Barrett Urethane saves on application costs, too. Compare what a roofer would handle on a 500-square job: only 43,500 lbs. of Urethane against 210,000 lbs. of fiberboard insulation. At an average handling cost of $5 per ton, this is a saving of over $400 or nearly $1 per square. Barrett Urethane comes in large, thin, lightweight panels. You get a tough walk-on, work-



on surface that won't bend, buckle or melt when mopped on with hot pitch or asphalt. There's only one way to get all the advantages of Barrett Urethane. Specify it by name. Merely to call for "1 inch of insulation" is inadequate with today's wide variations in insulating efficiency. For a detailed booklet, write to Barrett Division, Allied Chemical Corporation, Dept. PA-6, 40 Rector Street, New York, N.Y. 10006.

BARRETT®
BUILDING MATERIALS

Allied Chemical

On Readers' Service Card, circle No. 333

Continued from page 264

the study indicate that conventional conditioning equipment provides acceptable year-around comfort, provided that design and operating criteria, specified by the authors, are employed.

CPM in Construction Management: Scheduling by the Critical Path Method. James J. O'Brien. McGraw-Hill Book Co., 330 W. 42 St., New York, N.Y., 1965. 249 pp., illus., $10.75.

A practical and instructive book written by a professional engineer for contractors, this volume is intended both for the uninitiated and the practiced. The author discusses the construction industry in general, traditional scheduling methods, and the development and comparison of CPM and PERT. O'Brien is the director of the recently organized Society of CPM Consultants.

The Desert Kingdoms of Peru. Victor Wolfgang von Hagen. New York Graphic Society Publishers, Ltd., Greenwich, Conn., 1965. 190 pp., illus., $10.00

Buried in the alluvial plains of the far-flung desert coast of Peru are preserved the artifacts of a highly civilized people—the Mochica and Chimu tribes. The oldest civilization yet discovered in South America, it flourished from the Third Century to as late as 1300 A.D. A vast quantity of pottery figures, excavated intact, reveal to us, 650 years after they disappeared, what the people looked like, how they dressed, and their life styles. Monumental relics have been preserved also—great cities, temples, pyramids, roads—offering proof of their engineering ingenuity and of their sophisticated development of art and architectural forms. The author is well-known for his books on the Maya, Aztec, and Inca civilizations: Highway of the Sun *and* The Ancient Sun Kingdoms of the Americas.

Design and Operation of Clean Rooms. Philip R. Austin and Stewart W. Timmerman. Business News Publishing Co., 450 West Fort St., Detroit 26, Mich., 1965. 440 pp., illus., $25.00

A comprehensive study that covers all phases of contamination control, this book covers the economics of clean rooms, their design, construction, maintenance, and operation. Large and small rooms are discussed, as well as both laminar and conventional flow. The authors are responsible for the basic design of clean rooms as they are used in Air Force space-flight reliability testing, and in industrial and commercial rooms.

Education of Vision. Gyorgy Kepes, Ed. Vision + Value Series, George Braziller Inc., 215 Park Ave., S., New York, N.Y., 1965. 233 pp., illus., $12.50

To be reviewed.

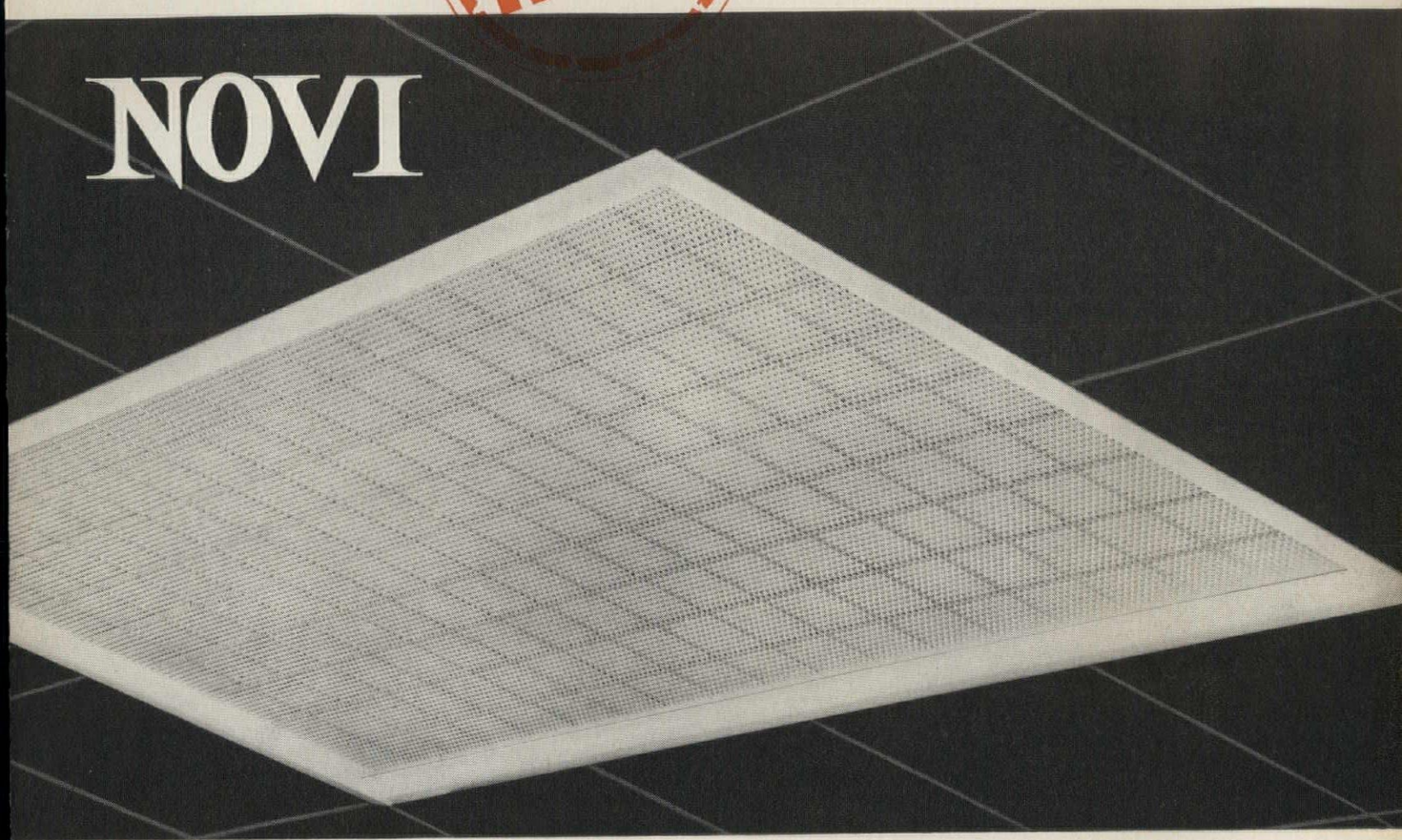
Foundation Construction. A. Brinton Carson. McGraw-Hill Book Co., 330 W. 42 St., New York, N.Y., 1965. 407 pp., illus., $16.00.

A survey of underground and underwater construction engineering written from the perspective of the contractor, this book encompasses the theoretical and the practical, the simple and the technical. It includes all the recent advances in allied fields, such as subsurface grouting, dredging operations, and work under compressed air. The chapter on open caisson construction in permafrost is the first detailed account available on the use of

Continued on page 272

NEW!

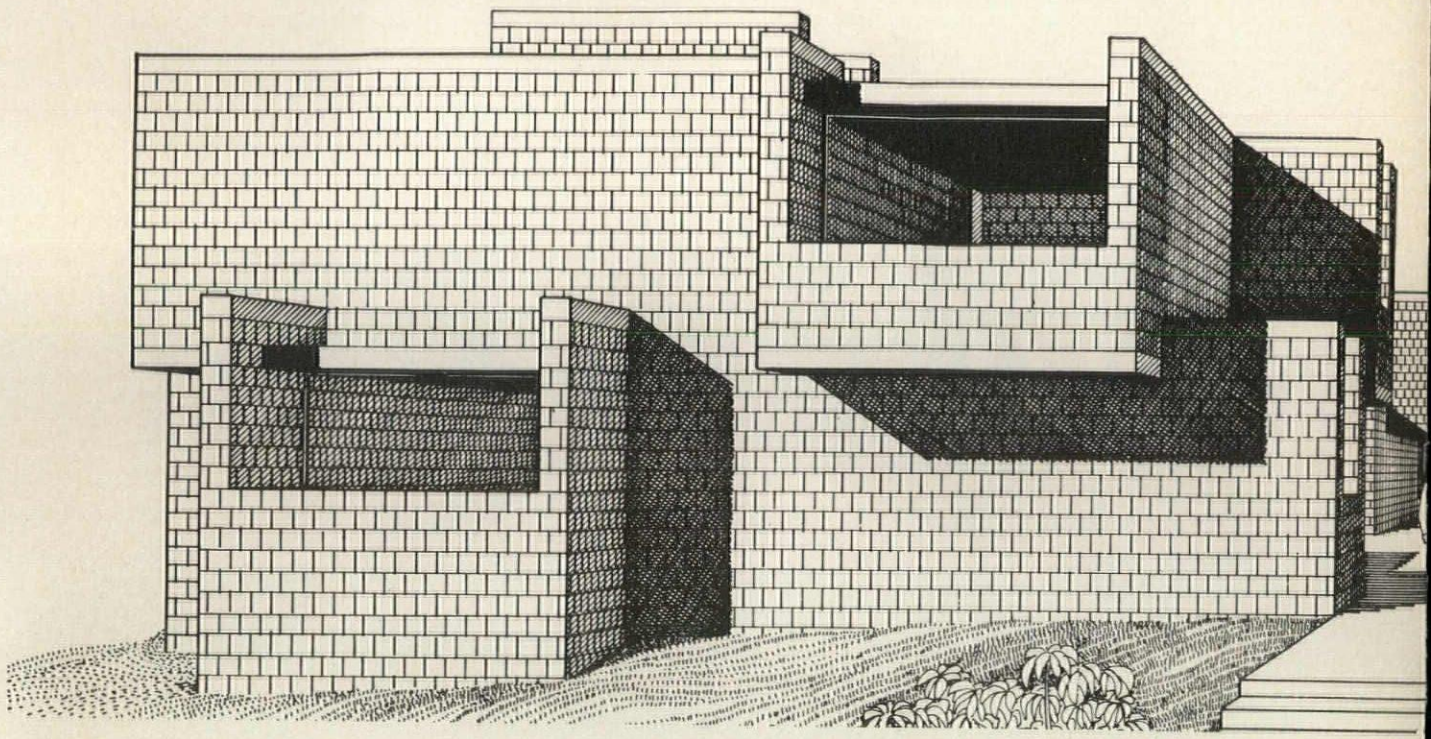
NOVI



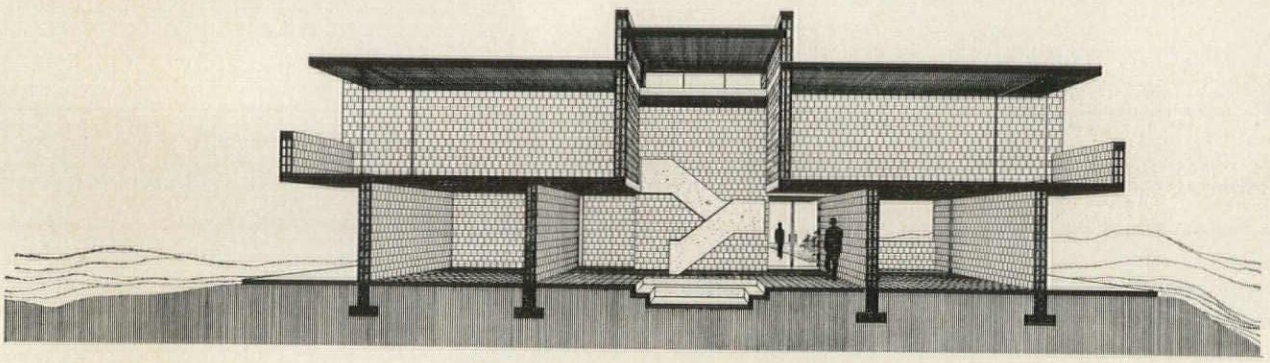
If you're looking for lighting with a special flair . . . and the ceiling system calls for recessed fixtures . . . specify NOVI. Here is sleek, space-age styling with high efficiency and low brightness, especially designed for the modern office, school or store. NOVI is available with either **frameless** plastic or concealed-frame lens for a larger luminus area...a unique **extruded aluminum, regressed splay** creates a smooth transition from enclosure to ceiling plane. NOVI is a real "money-miser" when it comes to installation and service, with an enclosure that hinges from either side, no tools required. Baked white enamel trim or anodized aluminum if you desire—completes a look of distinction that complements any interior. Send for Folder OD 1527. It will give you complete details and photometric data on NOVI, newest addition to the distinguished Day-Brite line.

DAY-BRITE®

DAY-BRITE LIGHTING
A DIVISION OF EMERSON ELECTRIC
5411 BULWER AVE. • ST. LOUIS, MO. 63147
On Readers' Service Card, circle No. 348



Architect Marvin Hatami designs a college dormitory



At –10°, indoor wall surface temperature is increased from 50° to 62° by insulating the block walls with Zonolite Masonry Fill Insulation.

The project consists of the first section of a dormitory complex, located on a hilly meadow site, accommodating fifty-two single rooms.

It was designed by Marvin Hatami and engineered by Cator, Ruma & Associates, both of Denver, Colorado.

The rooms are composed around a two story central lounge and every three rooms share common bathroom facilities. Developed modularly, the second floor is superimposed over the ground floor in a way to express each individual room in an interwoven and interlocking manner.

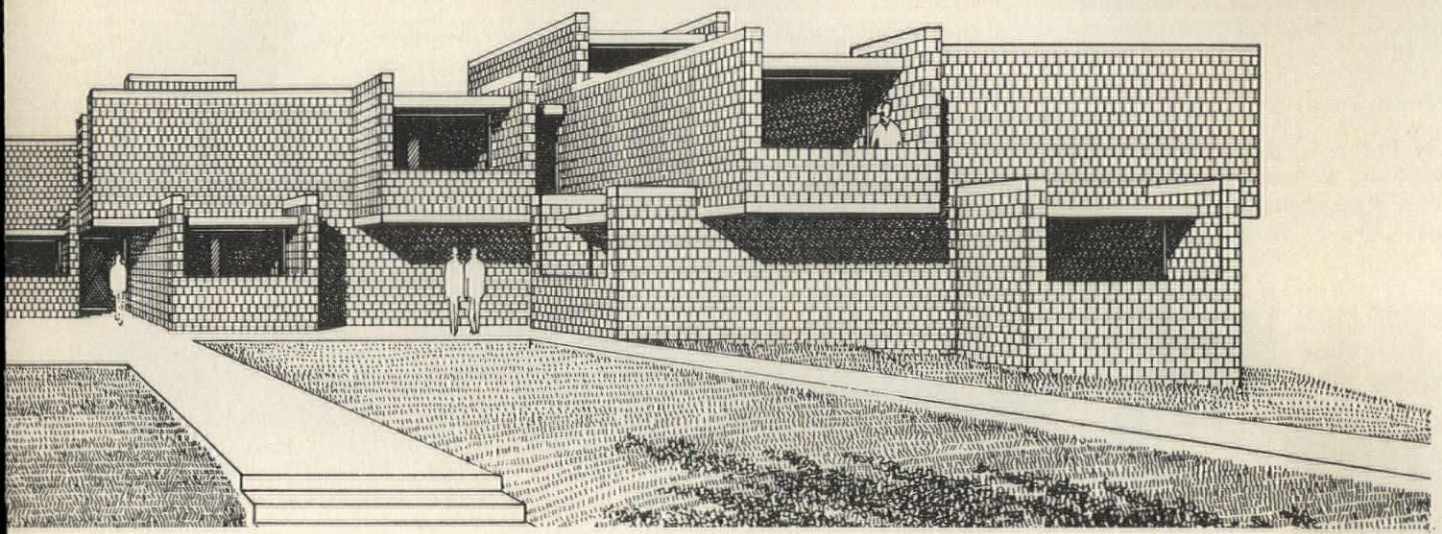
The structure is composed of 12″ x 8″ x 8″ reinforced lightweight concrete block bearing walls, insulated against thermal and sound transmission with Zonolite Masonry Fill Insulation.

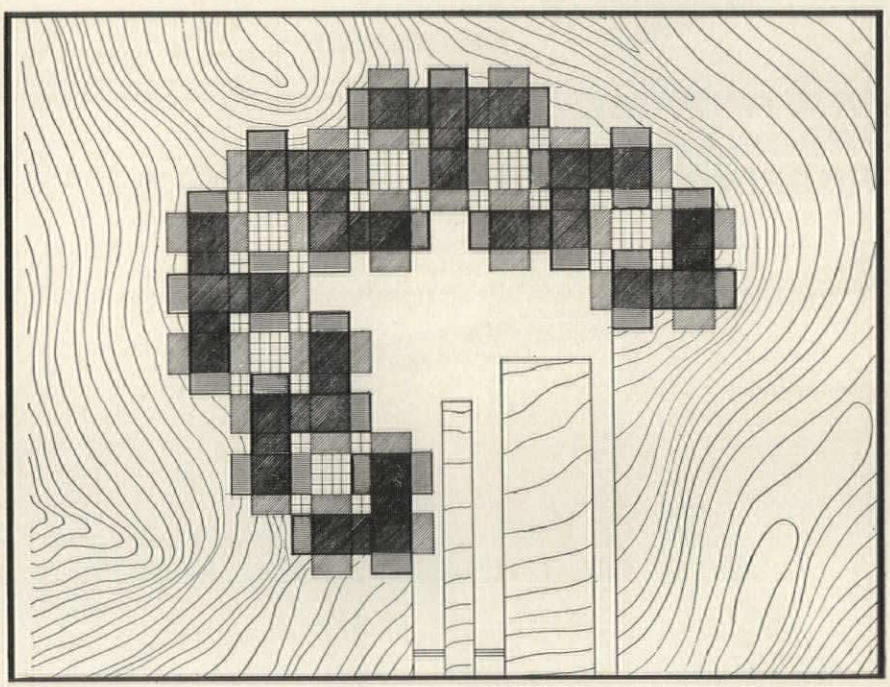
It cuts thermal transmission through the walls by 50% (see chart), raises the interior wall surface temperature from a miserable 50° to a comfortable 62°, thus reducing heat transfer and convection currents in the rooms.

This cut the operating costs 9.2%, or about $90 a year.

The savings more than pay for the cost of the thermal insulation over the 20 year mortgage period.

Zonolite® prototype building #10: a college dormitory





BLOCK PLAN SHOWING THE SUPERIMPOSITION OF SECOND FLOOR ON GROUND FLOOR

For complete information about Zonolite Masonry Fill Insulation, write for our Bulletins MF-79 and MF-80, Dept. 000-00, 135 South LaSalle Street, Chicago, Illinois 60603.

ZONOLITE
GRACE ZONOLITE DIVISION W. R. GRACE & CO.
135 SO. LA SALLE ST., CHICAGO, ILL.

DESIGN CONDITIONS			Winter Heat Loss in BTU/HR. Assuming 70° F Indoor —10° F Outdoor	
	Without Masonry Fill	**With Masonry Fill**	Without Masonry Fill	**With Masonry Fill**
Walls	12" x 8" x 8" Lightweight Concrete Block	12" x 8" x 8" Lightweight Concrete Block (Cells Filled)	142,000	**71,000**
Roof	Roofing, 8" Concrete 2" Insulation		98,000	**98,000**
Floor	4" Concrete on Grade		26,000	**26,000**
Glass	1" Insulated Glass		242,000	**242,000**
Ventilation	3600 CFM		260,000	**260,000**
Totals			768,000	**697,000**
% Savings with Masonry Fill			$\frac{768,000-697,000}{768,000} \times 100 = 9.2\%$	

1. Increased wall attenuation characteristics reduces sound transmission considerably.

2. Raised indoor wall surface temperature from 50° F to 62° F provides added comfort.

3. 14,100 sq. ft. of walls (includes 8200 sq. ft. of interior walls) @ 18¢ sq. ft. = $2,538 installed.

4. Additionally the operating costs are reduced by over $90 per year based on 5673 degree days $.053 per therm gas boiler.

On Readers' Service Card, circle No. 426

Continued from page 268

this method.

New York Proclaimed. V.S. Pritchett and Evelyn Hofer. Harcourt, Brace & World, Inc., 757 Third Ave., New York, N.Y., 1965. 245 pp., illus., $15.00

To be reviewed.

Nueva Vision de Gaudi. E. Casanelles. La Poligrafa, S.A., Balmes, 54- Barcelona, Spain, 1965. 260 pp., illus., $15.00

To be reviewed.

Old Russian Murals and Mosaics. Victor Lazarev. Phaidon Press, New York Graphic Society Publishers, Ltd., Greenwich, Conn., 1965. 300 pp., illus., $21.00

This is the first book in English on early Russian mosaics and frescoes, 11th to 16th centuries. The great Russian icons have been frequently studied, but the wall-painting contained in this volume is much less known. Most of the pictures are entirely new to the West; they were taken for this book specially by the Soviet Institute for the Restoration of Works of Art. The author is the President of the Russian Academy of Art.

A Preface to Urban Economics. Wilbur R. Thompson. The Johns Hopkins Press, Baltimore, Md. 21218, 1965. 275 pp., $7.00

The title of this book indicates a new field for both economists and city planners. Occasioned by the growing concentration of the world's population in cities, urban economics treats many of the well-known problems of large cities: work relief and welfare, taxes and public services under political fragmentation, urban sprawl, and traffic congestion. The author, an economist at Wayne State University addresses himself to these social problems with the tools of economic analysis.

Structure in Art and in Science. Gyorgy Kepes, Ed. Vision + Value Series. George Braziller Inc., 215 Park Ave. S., New York, N.Y., 1965. 189 pp., illus., $12.50

To be reviewed.

Therapy by Design. Lawrence R. Good, Saul M. Siegel, and Alfred Paul Bay. Charles C. Thomas, 301-327 E. Lawrence Ave., Springfield, Ill., 1965. 193 pp., illus., $10.00

To be reviewed.

Toronto, No Mean City. Eric Arthur. University of Toronto Press, Front Campus, Toronto 5, Canada, 1964. 280 pp., illus., $15.00

A history of Toronto, from its origins as a palisaded village, through the days when it was Governor Sincoe's capital, York, and through its days of serving as a battlefield in the War of 1812. The story ends, oddly enough, at the turn of the century. Photographs record Toronto's handsome buildings that survived demolition as well as some that did not.

NOTICES

Branch Offices, Showrooms

DEALER TO THE TRADE, a division of HELIKON FURNITURE COMPANY, INC., will act as an office furniture dealer and showroom at 315 E. 62 St., New York, N.Y.

DESIGN RESEARCH, designers of furniture, fabrics, accessories, and women's clothing. Showroom at Clock Tower, Ghirardelli Sq., San Francisco, Calif.

New Addresses

LEO KORNBLATH ASSOCIATES, Architectural and Interior Design Firm, has moved its Washington (D.C.), office to the Telephone and Telegraph Building, 1707 "L" St., N.W.

New Firms

BAY GROUP, Architects and Planners, 2321 Pine St., San Francisco, Calif.

COX, GRIBBIN AND CATANI, Architects, Engineers, Planners, 187 Union St., Hackensack, N.J.

DESIGN MANAGEMENT CONSULTANTS, 285 Winter St., Weston, Mass.

RICHARD A. DIMON, Architect, 9719 Holmhurst Rd., Bethesda, Md.

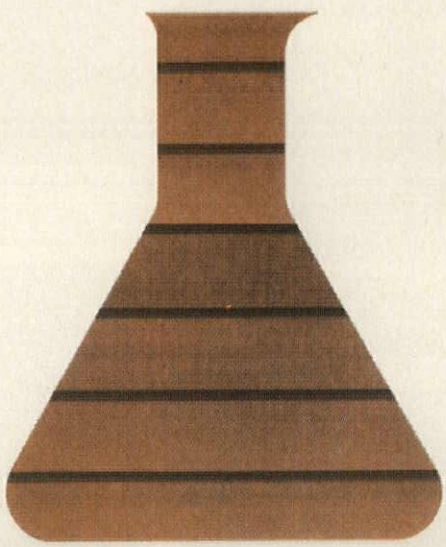
WRIGHT B. HOUGHLAND & ASSOC., Architects, 438 Duke of Gloucester St., Williamsburg, Va.

LOEBL, SCHLOSSMAN, BENNETT & DART, INC., Architects, 333 N. Michigan Ave., Chicago, Ill.

BIRGER LUNDBERG, Architect, Clarke Bldg., Tahoe Valley, Calif.

Continued on page 278

The preservative in Western Red Cedar would have cost $10,000,000 to develop.



[Thank goodness nature gives it to you free]

The handsome color tones and natural beauty of Western Red Cedar are the result of a unique preservative oil locked deep in the cells of the wood.

This oil, which defies scientists' efforts to duplicate in the laboratory, is death on fungi and other decay-producing organisms. And it makes cedar one of the most durable woods known to man.

This is why Western Red Cedar doesn't need paints and stains for protection although it takes them very well. They're for color only.

WRCLA

Whether this beautiful aristocrat of the Western forests is left to weather naturally or finished other ways, it is appropriate to any kind of architecture.

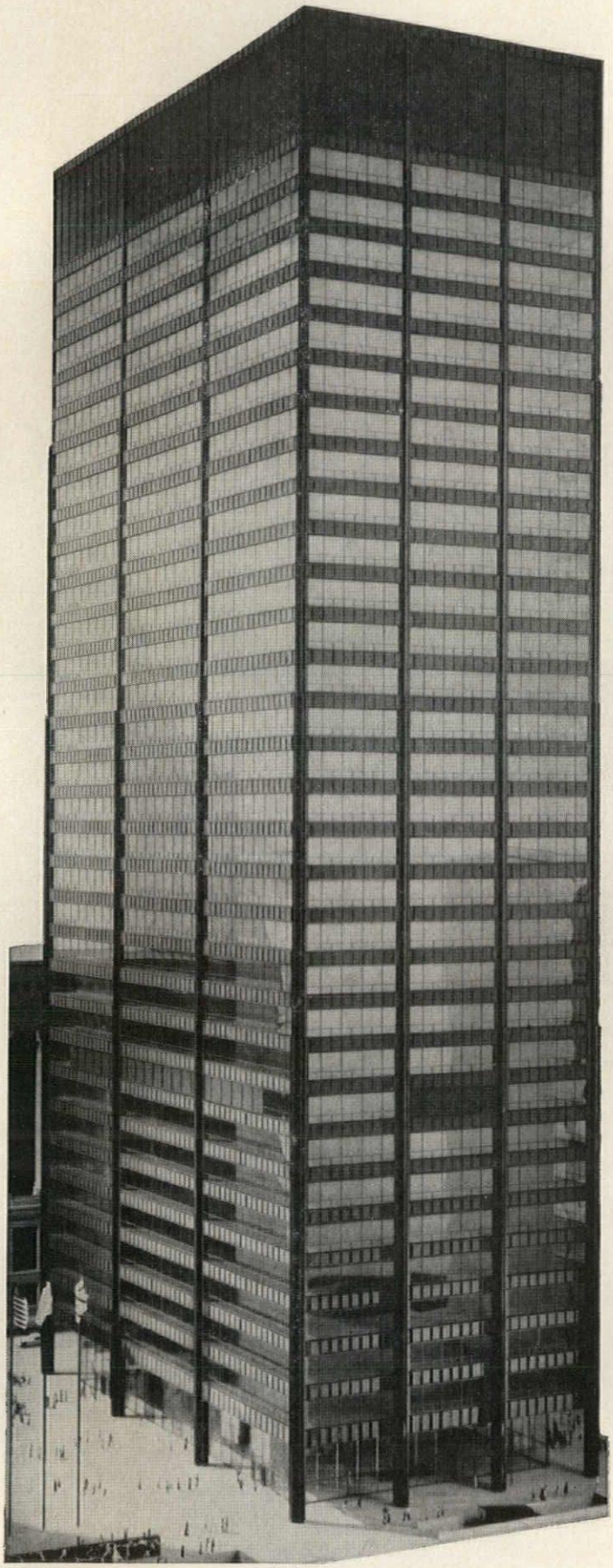
Highly popular 3/4 x 10-inch bevel siding with smooth or saw-textured surfaces adds character to both homes and commercial buildings.

Western Red Cedar is also available in a broad range of other grades and sizes including boards, dimension, decking and other items. For more information, write us: Western Red Cedar Lumber Assoc., Yeon Bldg., Portland, Oregon.

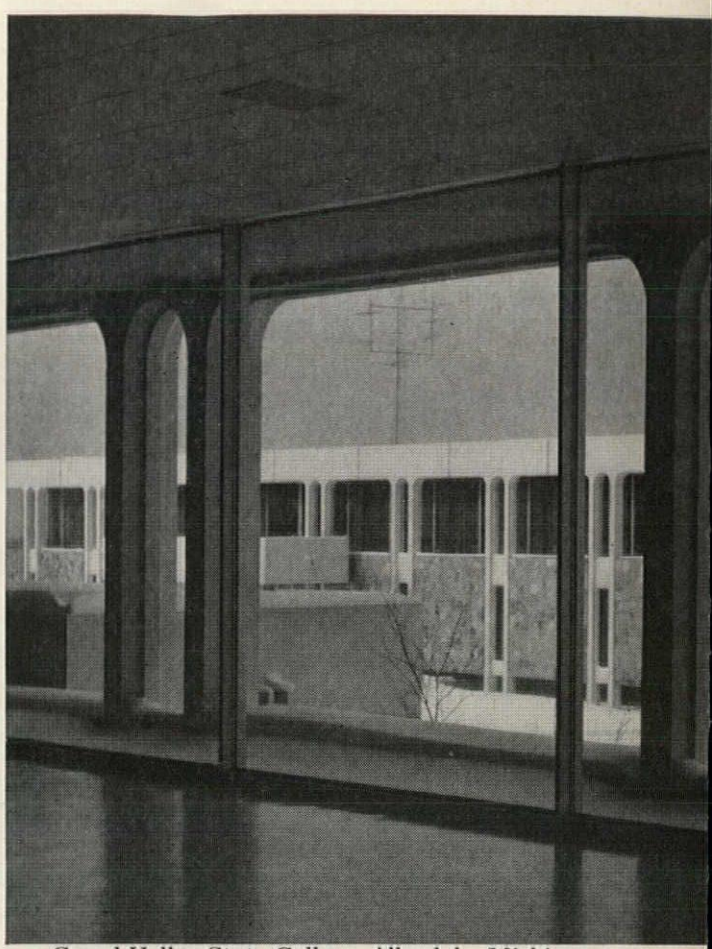
WESTERN RED CEDAR LUMBER

Yeon Building • Portland, Oregon 97204

On Readers' Service Card, circle No. 440

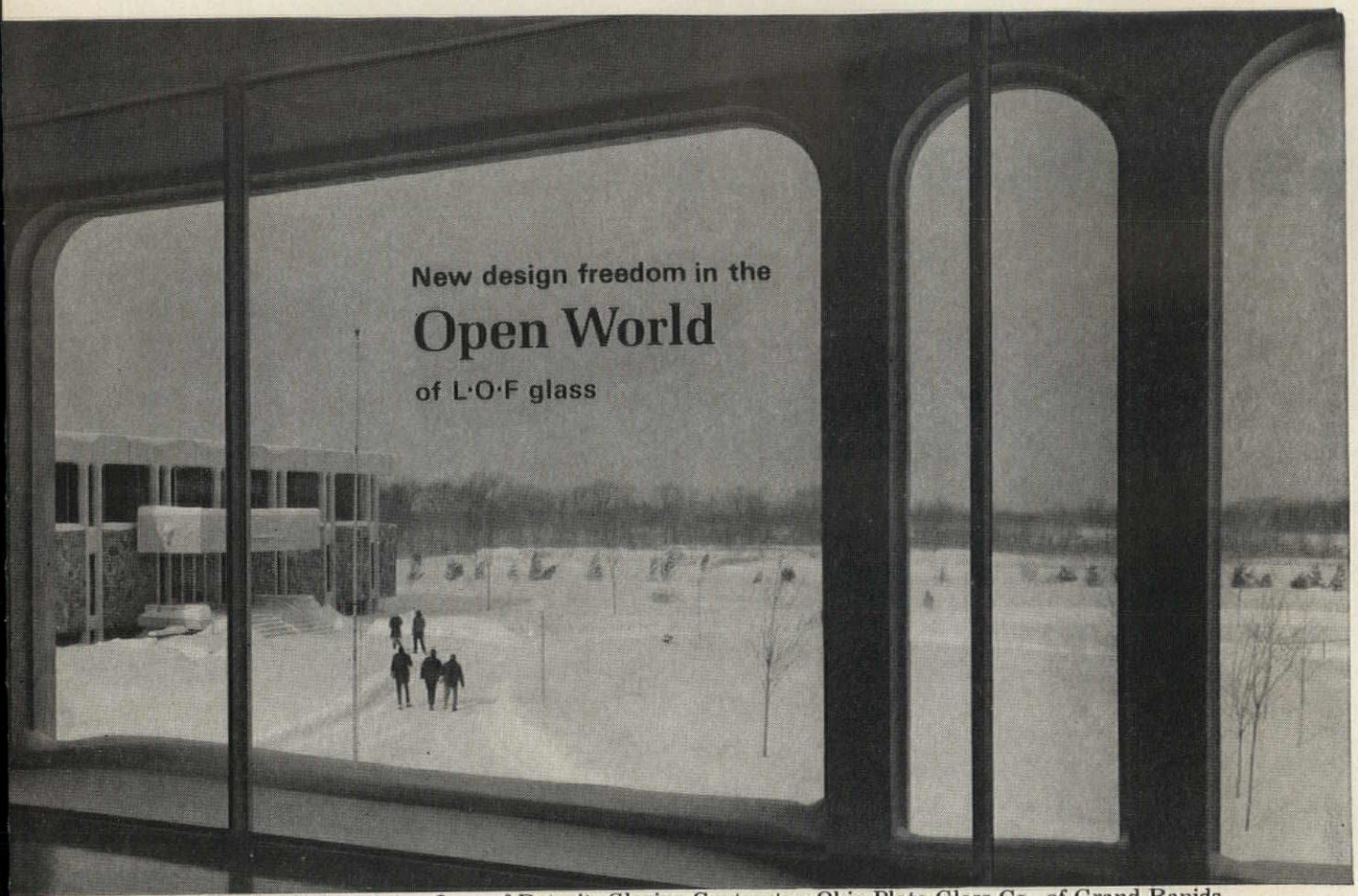


Chicago Civic Center. Architects: C. F. Murphy Associates; Skidmore, Owings & Merrill; Loebl, Schlossman & Bennett. Glaziers: Curtain Wall—Hooker Glass & Paint Mfg. Co. Other—Hamilton Glass Co., both of Chicago.

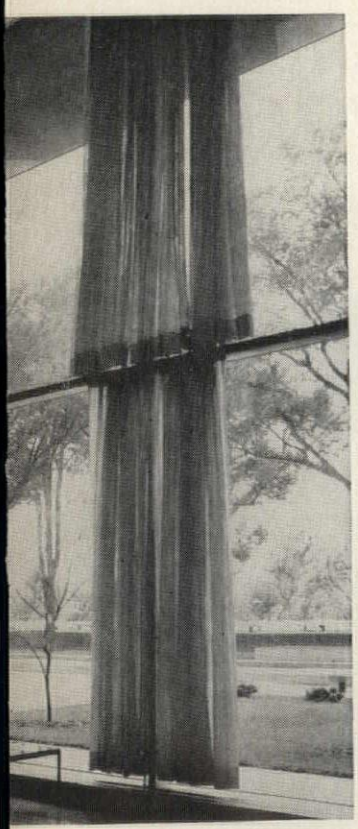


Grand Valley State College, Allendale, Michigan.

Louisiana State Library, Baton Rouge, La.
Architects: W. R. Burke and J. J. Desmond of New Orleans.



rchitects: Meathe, Kessler & Associates, Inc., of Detroit. Glazing Contractor: Ohio Plate Glass Co. of Grand Rapids.



Three building designs... three kinds of L·O·F plate glass to reduce solar heat, soften glare

In the college building above, *Parallel-O-Grey*® plate glass blends in smoothly with the face of the building; and from the inside, sun and snow glare is reduced.

In the Chicago Civic Center Building, the city's tallest structure, heavy-duty *Parallel-O-Bronze*® adds a rich over-all color and cuts transmittance of sun heat. It's ⅜" thick in the lower floors and ½" thick in the areas above where wind loads are greater.

In the library on the left, blue-green Heat Absorbing plate glass softens the light entering the building, yet transmits ample daylight.

These three kinds of tinted glass are made in a variety of thicknesses to give you various degrees of solar-heat control and depth of tone. In ¼" thickness, they are used as the outer pane of *Thermopane*® insulating glass units.

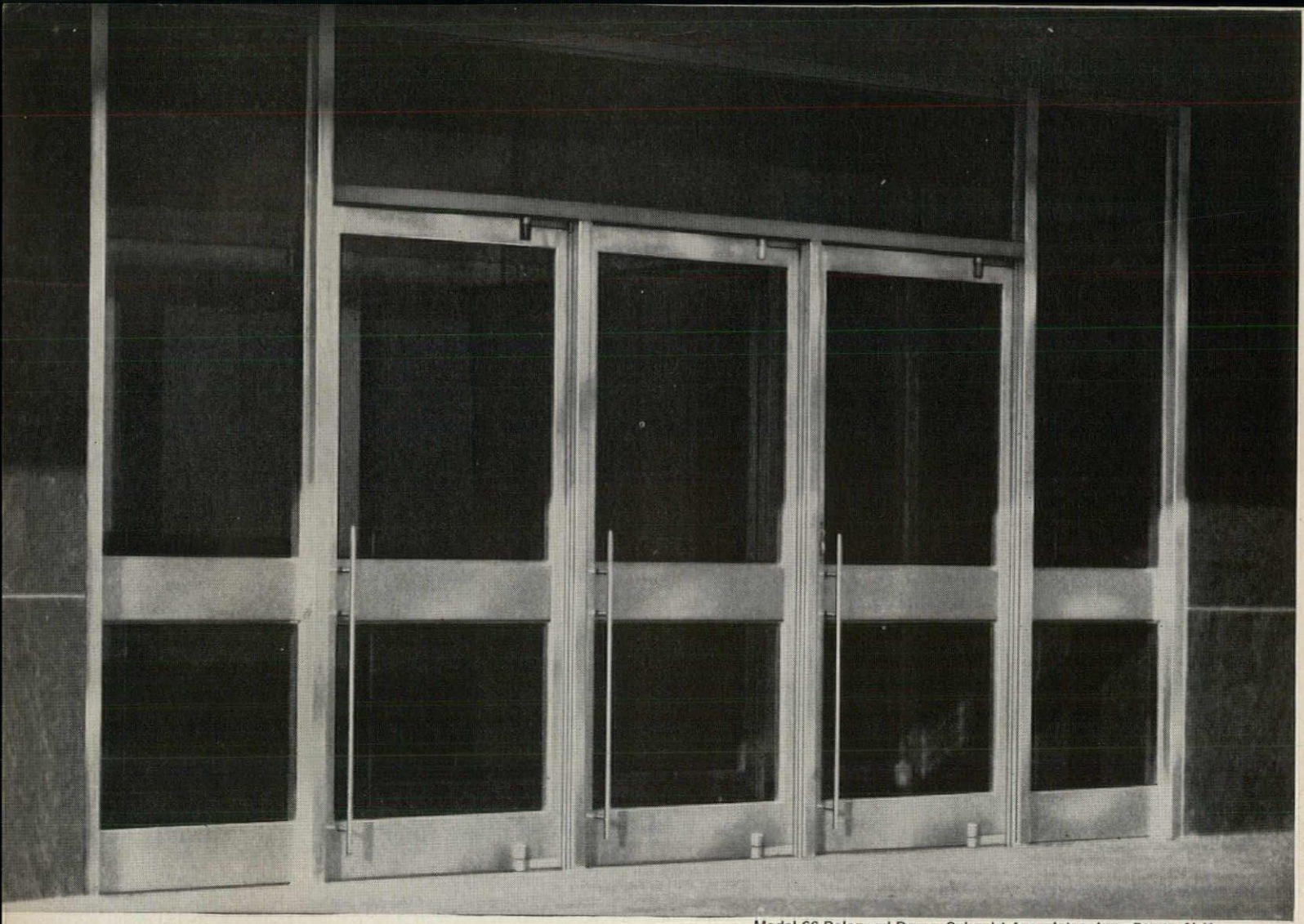
L·O·F offers you over 50 choices of plate glass types and thicknesses—each made to fill a specific need. For technical information, refer to Sweet's Catalog File 26A. Or call your L·O·F distributor or dealer (listed under "Glass" in the yellow pages of the phone book). Libbey·Owens·Ford Glass Company, Toledo, Ohio 43624.

MADE IN U.S.A.

LOF GLASS

Libbey·Owens·Ford . . . TOLEDO, OHIO

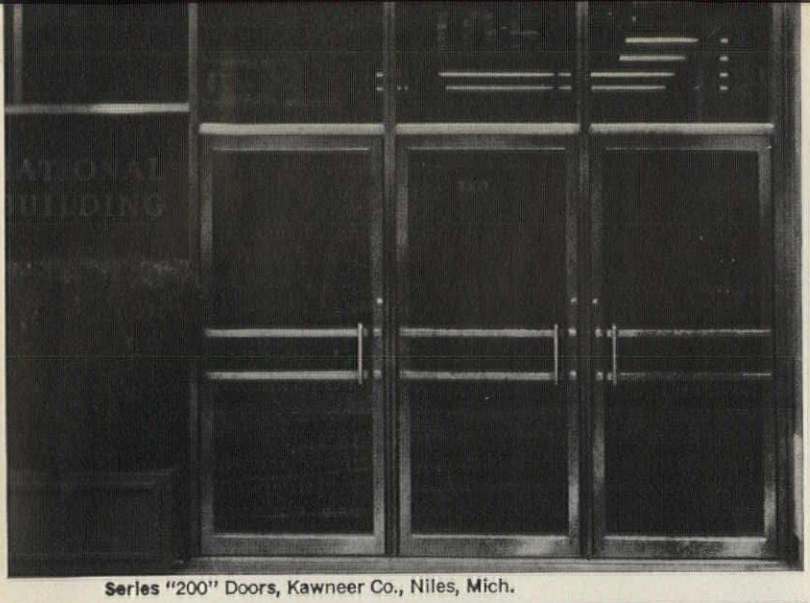
On Readers' Service Card, circle No. 375



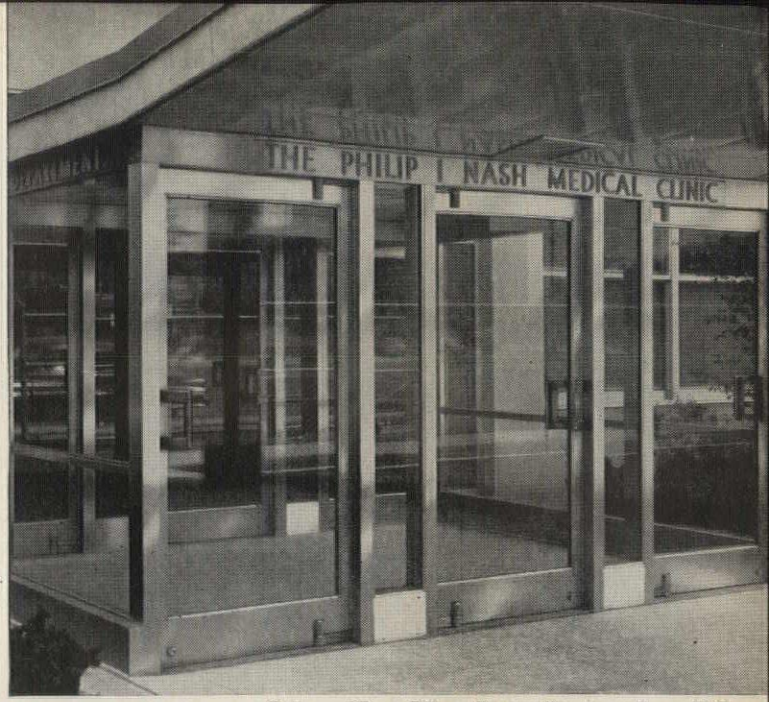
Model 66 Balanced Doors, Schacht Associates, Inc., Bronx, N.Y.

Now choose the design you want in nickel stainless steel.

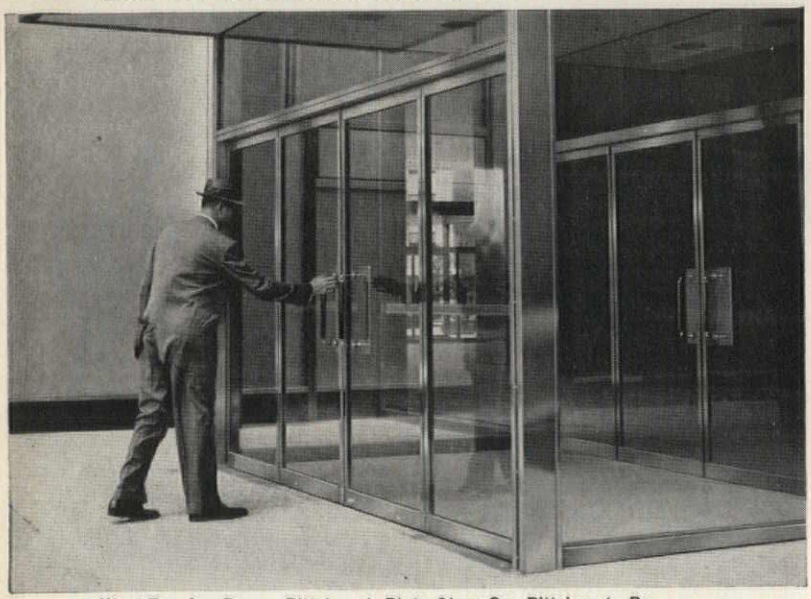
Swing Door, The Alumiline Corp., Pawtucket, R.I.



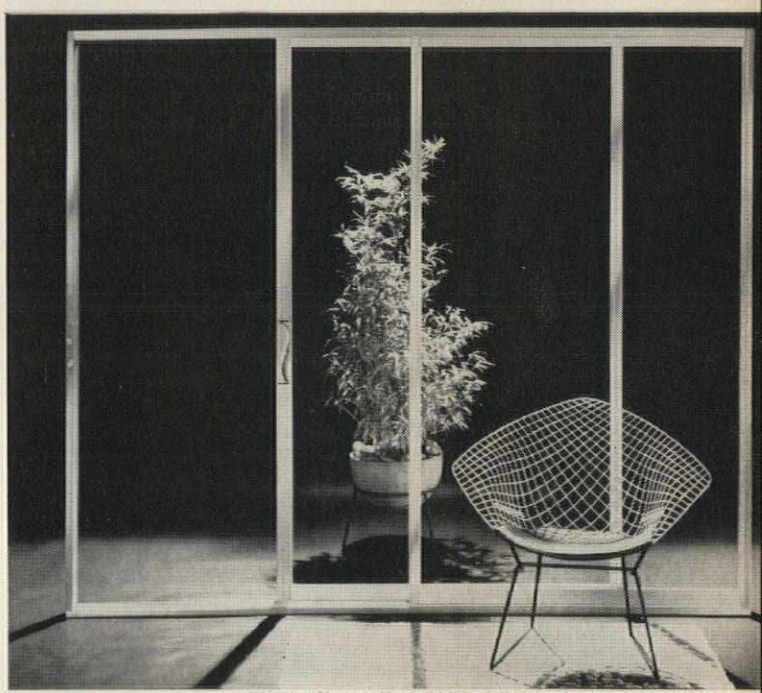
Series "200" Doors, Kawneer Co., Niles, Mich.



Balanced Door, Ellison Bronze Co., Jamestown, N. Y.



West Tension Doors, Pittsburgh Plate Glass Co., Pittsburgh, Pa.



Sliding Doors, Carmel Steel Products, Downey, Calif.

The door is wide open.

Almost everybody's making them. And, for appearance, durability, low maintenance and competitive cost, more and more architects are specifying standard revolving, sliding and swinging doors of stainless steel. It's among the strongest of metals, permitting use of narrow stiles and lighter, more economical gauges. The subtle sheen of stainless blends with other materials—complements and highlights its surroundings. And because nickel stainless steel is highly corrosion resistant, it won't pit, tarnish, dull, whiten or deteriorate under normal conditions. It's virtually care-free—washes easily with detergent and water. Low maintenance costs alone often make up any difference in price between stainless and other materials. Best of all, the doors shown here, and others, are readily available. For your next design, consider the advantages of stainless steel for doors—as well as curtain walls, windows, hardware, fascia and railings. And write for Inco's informative series of "Suggested Guide Specifications For Stainless Steel Doors." Their format follows AIA Specification Worksheets.

INCO

The International Nickel Company, Inc.
67 Wall Street, New York, N. Y. 10005
Nickel . . . its contribution is Quality

On Readers' Service Card, circle No. 464

Continued from page 272

GEORGE THIELE, INC., 509 Madison Ave., New York, N.Y.

TURNER JONES CO., INC., Textiles, 555 Madison Ave., New York, N.Y.

WED ENTERPRISES, INC., Walt Disney's architectural services and engineering firm, 800 Sonora Ave., Glendale, Calif.

New Partners, Associates

BUNTS & KELSEY, Architects, Colorado Springs, Colo., have named RALPH E. FOWLER and DUANE R. WALDO as associates.

RANDOLPH FRANTZ & ASSOCIATES, Architects, Roanoke, Va., have made JOHN W. CHAPPELEAR, JR., a partner.

HORNBACH, STEENWYK AND THRALL, INC., Architects, Grand Rapids, Mich., have just named WILLIAM THRALL a partner.

HOWARD, BURT & HILL, Architects, Butler, Pa., have named JOHN E. KOSAR an associate.

ALBERT KAHN ASSOCIATES, Architects-Engineers, Detroit, Mich., have named JOSEPH F. EBENHOEH an associate.

LEO KORNBLATH ASSOCIATES, Architects and Interior Designers, New York, Washington, D.C., and San Juan, P.R., have named KARL KAUFMAN a partner

Appointments, Elections

CHASTAIN & TINDEL, INC., Consulting Engineers, Atlanta, Ga., have elected KARL T. DECKER, JR., vice-president and THOMAS B. HARRELL, JR., associate.

DESIGNS FOR BUSINESS, INC., has elected ELI KAPLAN, vice-president.

THE ENGINEERS COLLABORATIVE, Chicago, Ill., have named EDWARD S. HOFFMAN and CHARLES JAMES MCDONALD partners, RAFAEL C. CODERO and CHARLES G. NOVAK as associate partners, ARTHUR G. JONES, DAVID V. REMELY and ESEN TOKAY as participating associates, and THOMAS F. NAUGHTON and JOHN J. WHITE as Project Engineers.

JOHN HANS GRAHAM & ASSOCIATES, Architects-Planners, Arlington, Va., announce that HERBERT KAPLAN has been made head of the specifications and cost control dept.

CHARLES LUCKMAN ASSOCIATES, New York, N.Y. has appointed JOSEPH M. STARON and ROBERT WILSON project architects.

ROSE, BEATON, CORSBIE, DEARDEN & CROWE, Architects-Engineers, New York, N.Y., have appointed as new associates: CHARLES L. KOESTER, LOUIS H. LI, ROBERT J. VANECEK, GEORGE HARRISON and LEE HILTON.

WHEN YOU CHANGE YOUR ADDRESS

Please report both new and old addresses directly to P/A five weeks before you move.

PROGRESSIVE ARCHITECTURE
Circulation Department
430 Park Ave., New York, N. Y. 10022

PHOTO CREDITS

The Major Space

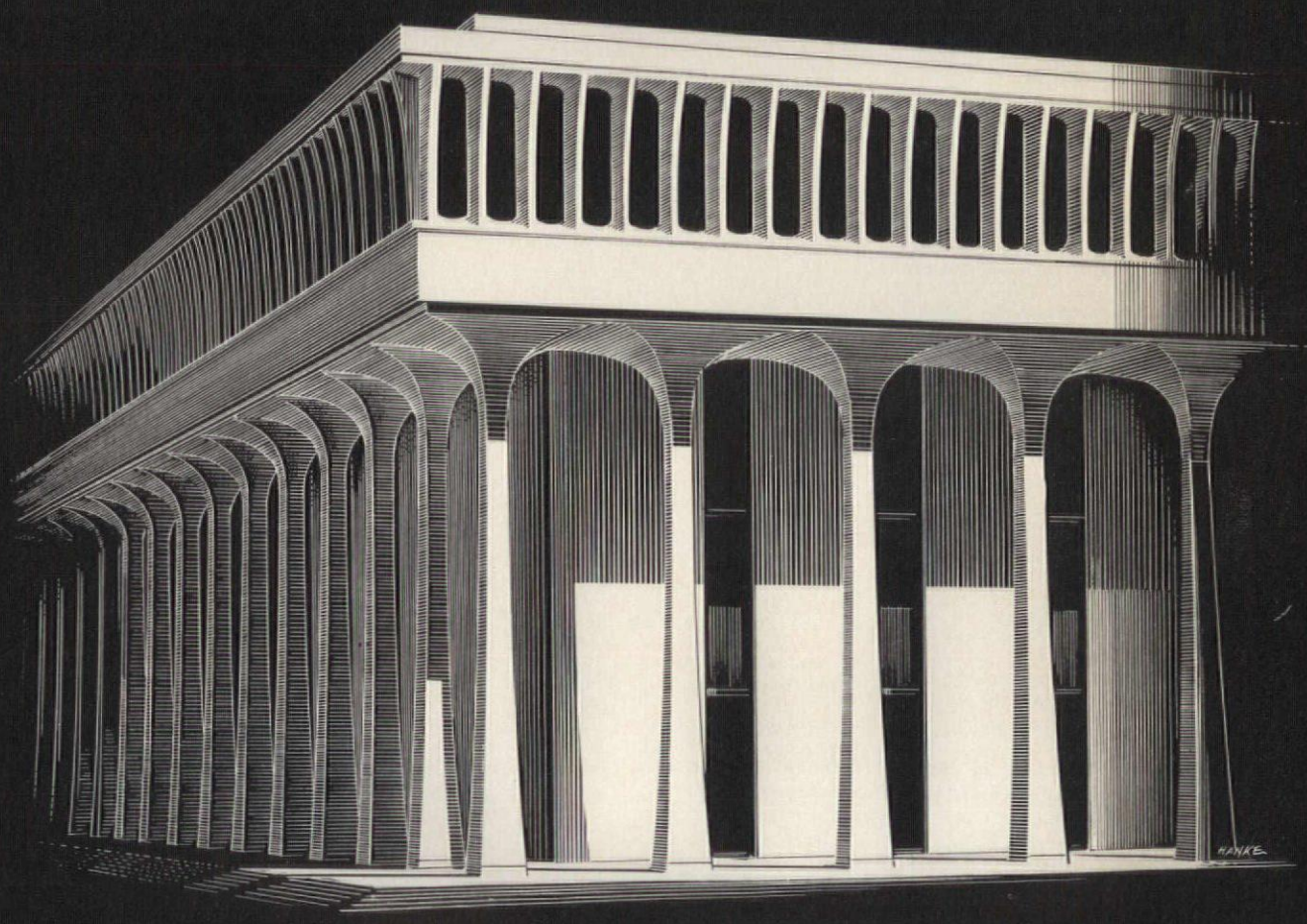
PAGES 140-141:
M. Gilles Ehrmann
PAGES: 142-143:
Wide World
PAGE 146:
Edward L. Friedman
PAGE 149:
top: Dr. Franz Stoedtner
PAGE 151:
middle: Dr. Franz Stoedtner
bottom: Courtesy, Cleveland Arcade
PAGE 152:
top: Photo Reportage Yan
bottom: Ezra Stoller Associates
PAGE 154:
Courtesy, The Asia Society
PAGE 156:
top: Courtesy, ABC-TV
bottom: Robert R. McElroy
PAGE 157:
across-gutter photo: Saul Leiter for *Show* magazine
bottom: Ezra Stoller Associates

Continued on page 280

On Readers' Service Card, circle No. 450 ➤

SCHOKBETON®

IS PROUD TO HAVE BEEN SELECTED BY THE ARCHITECTS, MINORU YAMASAKI AND ASSOCIATES, TO PROVIDE THE PRECAST CONCRETE FOR THIS MAGNIFICENT BUILDING



Woodrow Wilson School of Public and International Affairs, Princeton University

SCHOKBETON BY EASTERN SCHOKCRETE CORP. **CONTRACTOR: WM. F. CROW CO.**

FOR
THE BEST
IN PRECAST
CONCRETE,
CONTACT
THE SCHOKBETON
LICENSEE
NEAREST YOU...

EASTERN SCHOKCRETE CORP.
441 Lexington Ave., New York 17, N.Y.
65 Mountain St. West, Worcester, Mass.
5011 Kerby Hill Rd., Oxon Hill, Md.

SCHOKBETON-PITTSBURGH
A Division of The Levinson Steel Co.
37 South 20th St., Pittsburgh, Pa. 15203

CREST/SCHOKBETON CONCRETE, INC.
P.O. Box 328, Lemont, Illinois 60439

PRECAST/SCHOKBETON, INC.
P.O. Box 2088, Kalamazoo, Michigan 49003

MABIE-BELL SCHOKBETON CORP.
P.O. Box 1558, Greensboro, N.C.
Peachtree City, Georgia
P.O. Box 47546, Miami, Florida

INLAND SCHOKBETON
A Division of Nebraska Prestressed Concrete Co.
P.O. Box 4208, Lincoln, Nebraska 68529
2582 Long Lake Road, St. Paul, Minnesota 55113
9915 East 63rd Street, Kansas City, Missouri 64133

ROCKWIN SCHOKBETON
Division of Rockwin Prestressed Concrete Corp.
Subsidiary of United Concrete Pipe Corp.
P.O. Box 2536, Santa Fe Springs, Calif.

TEXAS SCHOKBETON, INC.
P.O. Box 52549
Sam Houston Station
Houston, Texas 77052

BUEHNER-SCHOKBETON COMPANY
301 West 60th Place
Denver, Colorado 80216
640 Wilmington Ave.
Salt Lake City, Utah 84106

CANADA
SCHOKBETON QUEBEC INC.
P.O. Box 240, St. Eustache, P.Q., Canada

SCHOKBETON PRODUCTS CORP. 1270 AVE. OF AMERICAS, N.Y.C., 20, N.Y.—A SUBSIDIARY OF THE KAWNEER DIV. OF AMERICAN METAL CLIMAX INC.

Continued from page 278

PAGES 158-159:
M. Gilles Ehrmann

PAGE 160:
Monkmeyer

PAGE 161:
top left: Richard O. Abbott, Architect
top right: Jan C. Rowan
middle left: Collection, Dr. Franz Stoedtner
middle right: Collection, Dr. Franz Stoedtner
bottom right: Courtesy, French Cultural Services

PAGE 162:
Jan C. Rowan

PAGE 163:
left: Jan C. Rowan
right top: Courtesy, Spanish Tourist Office
right middle: Richard O. Abbott
right bottom: Courtesy, U.S. Steel Corporation

PAGE 164:
left: Courtesy, CBS
right top: Ezra Stoller Associates
right middle: Tierney & Killingsworth; Courtesy, National Airlines
right bottom: George Cserna

PAGE 167:
Courtesy, Servicio Oficial del Ministerio de Informacion y Turismo

PAGE 168:
Courtesy, French Embassy Press and Information Division

PAGE 169:
(3) Brecht-Einzig

PAGE 170:
G. E. Kidder-Smith

PAGE 171:
(1) Ezra Stoller
(4) Collection, Dr. Franz Stoedtner
(5) Collection, The Bettman Archive
(6) Collection, The Bettman Archive
(7) Collection, The Bettman Archive

PAGE 172:
top: Courtesy, The Asia Society
bottom: From *Chinese Monumental Art;* Courtesy, The Viking Press

PAGE 173:
(1) Reinhard Friedrich
(2) Courtesy, The Port of New York Authority
(3) Manchete

PAGE 174:
Wayne Andrews

PAGE 175:
(2) Neil Newton for *L'Architecture D'Aujourd 'Hui*

PAGE 177:
(1) Leco Photo Service, Inc.

PAGE 181:
(15) Hedrich-Blessing

PAGE 182:
(17, 18) Stewarts
(19, 20) Al Locke
(23, 24) Dwain Faubion

PAGE 185:
(1) Al Locke
(3) Fred Hess & Son

PAGE 188:
(1) Courtesy, Union Tank Car Company

PAGES 199-200:
Louis Checkman

LINE DRAWING CREDITS

The Major Space

PAGES 148-153:
Drawings by Donn Moulton

PAGE 161:
bottom left: Rendering: Courtesy Paul Rudolph

PAGE 169:
(2) Rendering: David Bité

PAGE 171:
(2, 3) Renderings: Helmut Jacoby

PAGE 173:
(4) Sketches: W. Foerderer, from *Kirchen von heute fur morgen,* Echter Verlag, Wurzburg

PAGE 175:
(1) Rendering: Robert Furno

PAGE 176:
Rendering: Dr. Frei Otto

PAGE 182:
(21) Adapted from *ACI Journal,* Feb. 1961

PAGES 196-197:
Rendering: James S. Rossant

MONARCH'S QUALITY IS CERTIFIED!

Monarch Tile is a member of the Tile Council of America . . . and this triangular seal of TCA membership *is* the mark of *controlled* quality. Look for the TCA seal on every carton of Monarch Tile . . . it *certifies* that Monarch Tile equals or *exceeds* the Department of Commerce's Simplified Practice Recommendation R61-61 and Federal specification SS-T-308b. Specify Monarch Tile for *your* next project. Order it with *complete* confidence. There's none better!

Monarch®

TILE MANUFACTURING, INC.

FACTORY AND GENERAL OFFICE, SAN ANGELO, TEXAS

On Readers' Service Card, circle No. 390

P/A JOBS AND MEN

SITUATIONS OPEN

ARCHITECT—With 5 years experience, capable of being job captain, with design ability, for growing Architect-Engineer firm in Maine. Salary open. Usual fringe benefits. Send resume, including education, experience, and personal qualifications to Box #947, PROGRESSIVE ARCHITECTURE.

ARCHITECT & ARCHITECTURAL DRAFTSMAN—Immediate opening available with good future in medium-size office. Excellent working conditions in new building located in Tidewater, Virginia, near water and beach resort areas. Practice largely educational & commercial. Experience required in design and detailing with limited delineation ability or substantial experience in production of working drawings. Excellent salary for qualified personnel. Submit resume of education, experience and salary requirements to Box #948, PROGRESSIVE ARCHITECTURE.

ARCHITECTS—Expanding midwest A-E firm has permanent positions for talented designers, draftsmen, project architects, and project managers. To qualified architects (degree required), we offer challenging assignments on a wide range of projects including educational, industrial, and religious facilities. Address replies in confidence to Box #949, PROGRESSIVE ARCHITECTURE. An equal opportunity employer.

ARCHITECTS—Recent graduates or men with experience needed by international firm of architects and engineers which offers challenging opportunity designing diversified domestic and overseas projects. Professional growth enhanced by equitable salary potential. Office located in small midwestern city. Send resume, including salary requirements and availability to Box #950, PROGRESSIVE ARCHITECTURE.

ARCHITECTURAL SPECIFICATION WRITER—Exceptional growth opportunity available to experienced man who will become permanent member of staff performing domestic & overseas architecture and engineering specifications writing. Work involves preparation of specifications for construction of a wide variety of projects. Send resume, including salary requirements and availability to Box #951, PROGRESSIVE ARCHITECTURE.

ARCHITECTURAL SPEC WRITER—Exceptional opportunity with long established firm in Kansas City. Diversified work but principally schools, hospitals, and office buildings. Ideal working conditions and attractive salary for man who can qualify. State age, training, experience, availability and salary requirements. Box #952, PROGRESSIVE ARCHITECTURE.

DESIGNER OPENINGS—All levels. Work to include design of urban space: site planning, design of large public improvements as malls, parking lots, play areas, and parks; building rehabilitation planning and design; graphics; sign and color design; design review of developers site and building proposals. Degree in architecture, landscape architecture or graphic arts desirable. Also openings for design draftsmen. Authority engaged in planning and carrying out a varied design program of redevelopment projects throughout the County. Eight projects are in execution and seven are in planning. They include residential, commercial, industrial and public construction: Contact Mr. Sherwood Pine, Director, Redevelopment Authority of Alleghany County, 429 Forbes Ave., Pittsburgh, Pa. 15219. Phone 281-4900 ext. 847 & 857.

LANDSCAPE ARCHITECTS — Two permanent positions open in the landscape & site planning section of an award winning national design firm located in the firm's main office in San Francisco. Project Manager & Job Captain—Individual should be highly skilled in all technical aspects of landscape architecture and be able to guide and check working drawings prepared by staff members and consulting engineers. A minimum of 10 years professional experience is required. Designer & Job Captain—individual should have experience in design and site planning on major projects, and have a minimum of 3 years experience. Box #953, PROGRESSIVE ARCHITECTURE.

MAKING A CHANGE—Make the right move this time. We have a successful, established, expanding practice home based in the heart of the Finger Lakes Region. Our practice is based on full service and a quality product. If you feel that your talents and abilities are not being fully utilized, and that you would like to experience professional growth in a progressive firm, why not have a chat with our personnel officer. He is a very nice guy and he's looking for architectural draftsmen. He's probably looking for you. His name is Charles Brennen of Barrows, Parks, Morin, Hall & Brennan, 133 East Avenue, Rochester, New York. Why not drop him a line—now.

OPPORTUNITIES—Available for young architectural draftsmen who wish to progress under most desirable circumstances. Need not be college graduates. Prefer practical working drawing draftsmen under 40 years of age. The program here is one of steady growth. Primarily, public buildings; industrial plants; banks; schools; and college buildings. Work is varied and interesting. There are 15 licensed architects leading the work. If you wish to move in where merit and ability really matter and where you become important contact us at once. Location will be either Baltimore, Maryland, or York, Pennsylvania. Address all inquiries to Mr. Arthur Kaulfuss, AIA, 611 West Market Street, York, Pa. or Mr. Joseph Crumbling, R. A., 2204 Maryland Ave., Baltimore, Md.

STRUCTURAL SYSTEMS DEVELOPMENT ENGINEER—A unique opportunity to join a small, highly effective team in the development of interior wall systems utilizing gypsum products and other materials. Major diversified Western builder materials manufacturer. San Francisco Bay area location. While relevant experience is required, proven resourcefulness and imagination are more important than the amount of this experience. For prompt, confidential consideration, please write giving details of background and present earnings to J. A. Connolly, Fiberboard Paper Products Corp., 475 Brannan Street, San Francisco 94119. An equal opportunity employer.

WANTED—Competent architectural graduate and draftsman for position of Job Captain and designer. Salary equal to experience and ability. Good future in growing firm in university community. Contact Architects Hansen Lind Meyer, 14 South Linn Street, Iowa City, Iowa. Telephone 338-9116.

Advertising Rates

Standard charge for each unit is Ten Dollars, with a maximum of 50 words (effective January 1965). In counting words, your complete address (any address) counts as five words, a box number as three words. Two units may be purchased for twenty dollars, with a maximum of 100 words. Check or money order should accompany advertisement and be mailed to Jobs & Men, c/o Progressive Architecture, 430 Park Avenue, New York 22, N. Y. Insertions will be accepted not later than the 1st of the month preceding month of publication. Box number replies should be addressed as noted above with the box number placed in lower left hand corner of envelope.

SITUATIONS WANTED

ARCHITECT—Bachelor of Architecture, University of Illinois; Illinois registration. Six years experience in residential, high rise apartments, commercial, and institutional including governmental projects. Desire association with progressive firm or position of City Architect in growing community. Prefer midwest area, but will consider any location. Age 28, married. Box #955, PROGRESSIVE ARCHITECTURE.

ARCHITECT—European degree, USA citizen. Excellent professional background, security clearance. Thirty years of broad experience in every branch of profession, acquired partly as principal and associate. Fluent English, French, German, Portuguese, good Spanish. Several European and USA registrations including Florida. Brazil registration readily obtainable. Desires partnership or interesting, responsible and rewarding position with large, preferably Florida-based architectural engineering or development firm with good prospects for future or immediate work in Europe and/or Latin America. For most active planning and design collaboration and promotional, such as hotels, highrise apartments, hospitals, institutional and educational facilities etc. Replies: Box #956, PROGRESSIVE ARCHITECTURE.

ARCHITECTURAL DRAFTSMAN—Desires career position with architectural building materials manufacturer as sales representative. Salary plus commission. Fly own new Cessna 172. Interested in Tri-State area. 34 years of age, married. Korean veteran—12 years varied architectural & construction experience. Box #957, PROGRESSIVE ARCHITECTURE.

STRUCTURAL ENGINEER—With long experience leading engineering and construction firms, industrial plants, power plants, schools, churches, bridges, waterfront structures, wharves, docks, dams, roads, etc. Good estimator and spec writer. Good client contact experience. Position with architect, consulting engineer or industrial firm desired. Box #958, PROGRESSIVE ARCHITECTURE.

MISCELLANEOUS

ARCHITECTURAL & DESIGN AGENCY—Architects, design or production experience $6M to $25M. Muriel Feder maintains close contact with the entire Architectural & Design field. The "professional Consultant" for confidential, nationwide & international coverage. Specializing in personnel ranging through all phases of the architectural office for the past 15 years. 667 Madison Ave., at 61st St., New York City. TE 8-3722.

CAREER BUILDERS—We are extremely fortunate to have Ruth Hirsch in charge of our architectural department, which is now stronger than ever. Listed with us are a tremendous number of excellent architectural design and drafting positions with prestige NYC architectural and corporate firms. 515 Madison Ave. (at 53rd Street) New York 22, N.Y. PLaza 2-7640.

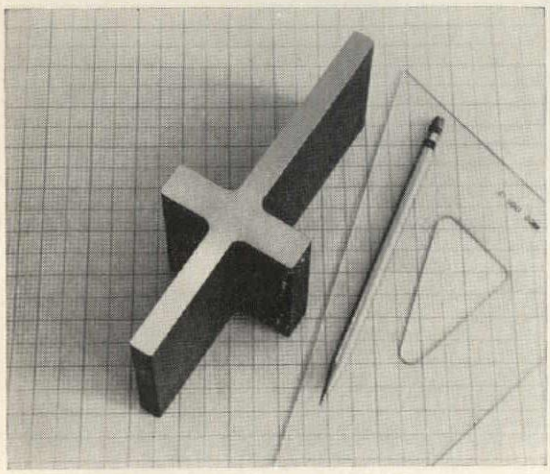
CONTACT PERSONAL AGENCY-LILLIAN FOX—A highly personalized and discriminating service for top-flight architects. Architectural and interior designers, production and draftsmen, in all phases of architecture. Confidential interviews by appointment. 18 East 41st St., New York, N. Y. MUrray Hill 5-1674.

HELEN HUTCHINS PERSONNEL AGENCY—Specialist: Architecture, Industrial Design-Interior Design and Home Furnishings. Interviews by appointment. 767 Lexington Avenue, New York 21, N. Y. TE 8-3070.

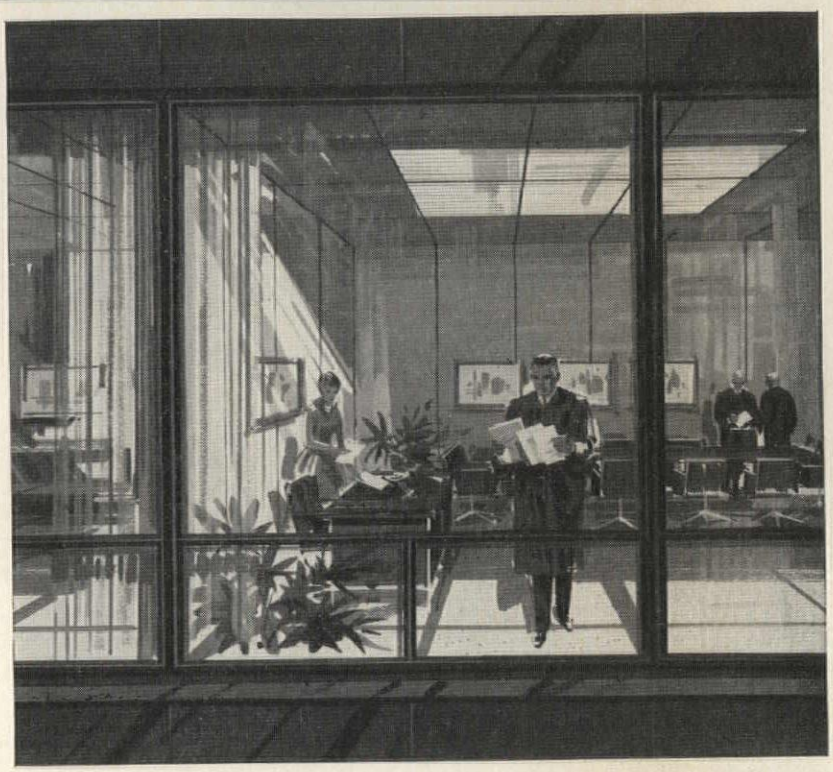
Steel for Strength

STRUCTURAL DESIGN **NEWS**

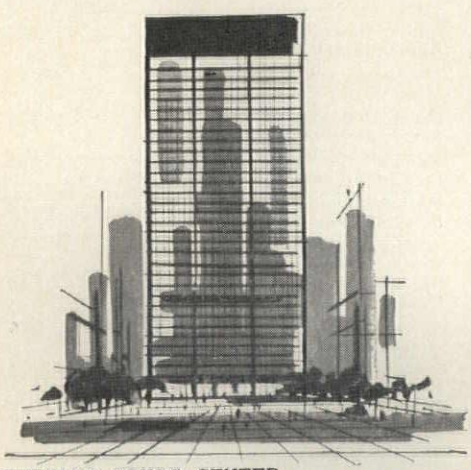
FROM BETHLEHEM STEEL NO. 10



3 x 8-in. cruciform-shaped sash section weighs 20 lb per ft. Bethlehem supplied 1,400 tons of this special bar section, in lengths up to 35 ft, to Ceco Steel Products Corp., Chicago, which fabricated the window frames.



SPECIAL WINDOW-SASH SECTION FOR CHICAGO CIVIC CENTER



CHICAGO CIVIC CENTER.
Owner: Public Building Commission of Chicago
Architects: C. F. Murphy Associates; Skidmore, Owings & Merrill; Loebl, Schlossman & Bennett

This section was rolled by Bethlehem to extremely close tolerances, and furnished in Mayari R Weathering Steel to be consistent with the building's skin material.

Unpainted Mayari R steel eliminates paint maintenance. It develops a closely grained and tightly adherent oxide finish which acts as a barrier to moisture and oxygen, and prevents further corrosion. The oxide finish ripens into an attractive russet-purple color within months.

Bethlehem has rolled hundreds of special shapes, each one tailored to a customer's individual requirement, just as this window-sash section was tailored to the architect's design. Is there a section we can develop for you?

Like to have our full-color folder describing the architectural uses of low-alloy, high-strength Mayari R Weathering Steel? Just phone our nearest sales office. Or write to us at Bethlehem, Pa.

BETHLEHEM STEEL

BETHLEHEM STEEL CORPORATION, BETHLEHEM, PA.

DIRECTORY OF PRODUCT ADVERTISERS

ADVERTISING SALES OFFICES

Progressive Architecture

Reinhold Publishing Corporation

William R. Evans, Jr., Advertising Sales Manager

New York Office
430 Park Avenue, New York, N. Y. 10022
MUrray Hill 8-8600 Area Code 212

Robert L. Bassinette District Manager
Harrington A. Rose District Manager
Donald W. Thompson District Manager

Pittsburgh Office
601 Grant St., Pittsburgh, Pa. 15219
ATlantic 1-9421 Area Code 412

Albert E. McCllmans District Manager

Chicago Office
111 W. Washington St., Chicago, Ill. 60602
RAndolph 6-8497 Area Code 312

Wolcott H. Johnson District Manager
Jerry B. Little District Manager
Carl J. Nolte, Jr. District Manager

Detroit Office
Telephone: Enterprise 6704
Carl J. Nolte, Jr. District Manager

Cleveland Office
1717 E. 9th St., Cleveland, Ohio 44114
PRospect 1-4011-12-13 Area Code 216

John F. Kelly District Manager

San Francisco Office
Jobson, Jordan, Harrison & Schulz, Inc.
57 Post St., San Francisco Calif. 94104
EXbrook 2-6794 Area Code 415

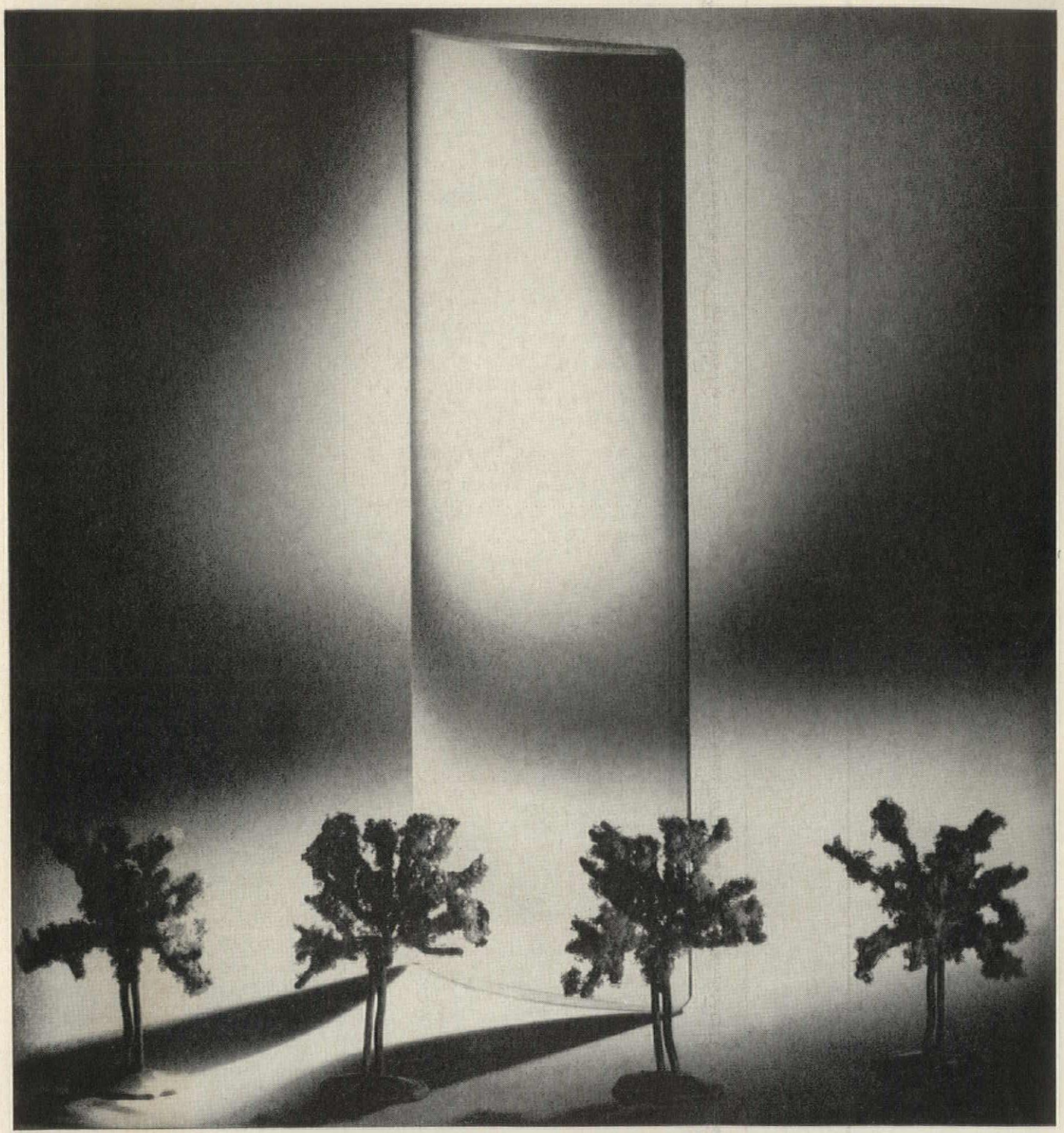
Cyril B. Jobson, Charles S. Harrison

Los Angeles Office
Jobson, Jordan, Harrison & Schulz, Inc.
1901 W. 8th St., Los Angeles Calif. 90057
HUbbard 3-8530 Area Code 213

Peter Schulz, David Clark

Atlanta Office
Robert L. Watkins Associates
505-805 Peachtree Bldg., Atlanta, Ga. 30308
TRinity 4-6427 Area Code 404

Robert L. Watkins, Harmon L. Proctor



IS YOUR BUILDING A "BURNING GLASS"?

A dazzling expanse of glass can be a giant lens for summer's blazing sun . . . magnifying solar heat input even on October days . . . burdened by an additional refrigeration cost. A hot house at Southern exposures . . . uncomfortably cool at other ones. BUT—not if you've provided indoor solar control in your building with FLEXALUM aluminum venetian blinds.

See how FLEXALUM blinds provide solar control! Unshaded single plate glass transmits 195 total Btu/Sq. Ft.,* while single plate glass with inside aluminum blinds transmits only 110 total Btu/Sq. Ft.* That's a reduction of 43.5%!

FLEXALUM Twi-Nighter Commercial Blinds and FLEXALUM Continental Blinds could make sense, could save dollars for you. For example: in a typical West exposure, New York City . . . reduction in original air conditioning expense with aluminum venetian blinds adds up to $118.80 per *every* 18 Sq. Ft. window plus $12.81 annually in operation savings and financing investment. (That's 7 times the cost of the blinds).

On 100 windows in 10 years there's a saving of $131,610.

Want proof? Send for your copy of the pioneer study: "Cost Analysis of Solar Controls" by Alfred J. Jaros, Jr. of Jaros, Baum and Bolles, Consulting Engineers, New York. This article, from the July 1963 issue of *Buildings Magazine,* explains the most efficient way to handle the large glass in today's modern buildings.

*August 1st (40° N. Lat.), Solar Azimuth 240°, 1600 hrs. "Solar Time."

Flexalum® DIVISION, ALCAN ALUMINUM CORPORATION
111 West 50th Street, New York, N. Y.

ALCAN

Puzzled

Dear Editor: We are puzzled by your reference to Carnegie Tech in the article "Urban Univerisity," on page 225 of the APRIL 1965 P/A.

I am wondering if you are perhaps thinking of the University of Pittsburgh, whose main building, of course, is a famous skyscraper? The only other "high-rise" building to which you might be referring is our Morewood Gardens residence for women. This building, which is adjacent to the campus, is a converted apartment building and is not at all unattractive. With student accommodations so hard to come by these days, we are only too happy for this apartment building to be given to us for use as a student residence.

DANTON BEAL
Director, Department of Public Relations
Carnegie Institute of Technology
Pittsburgh, Pa.

[*Mr. Beal is quite correct. The writer was thinking of the University of Pittsburgh's tower and its newer high-rise dormitories. Closeness of the two schools lead, in part, to the confusion. We hope that the loyal sensibilities of Carnegie Tech and University of Pittsburgh alumni are not irreparably exacerbated.* —JTB, JR.]

Disciplined Research

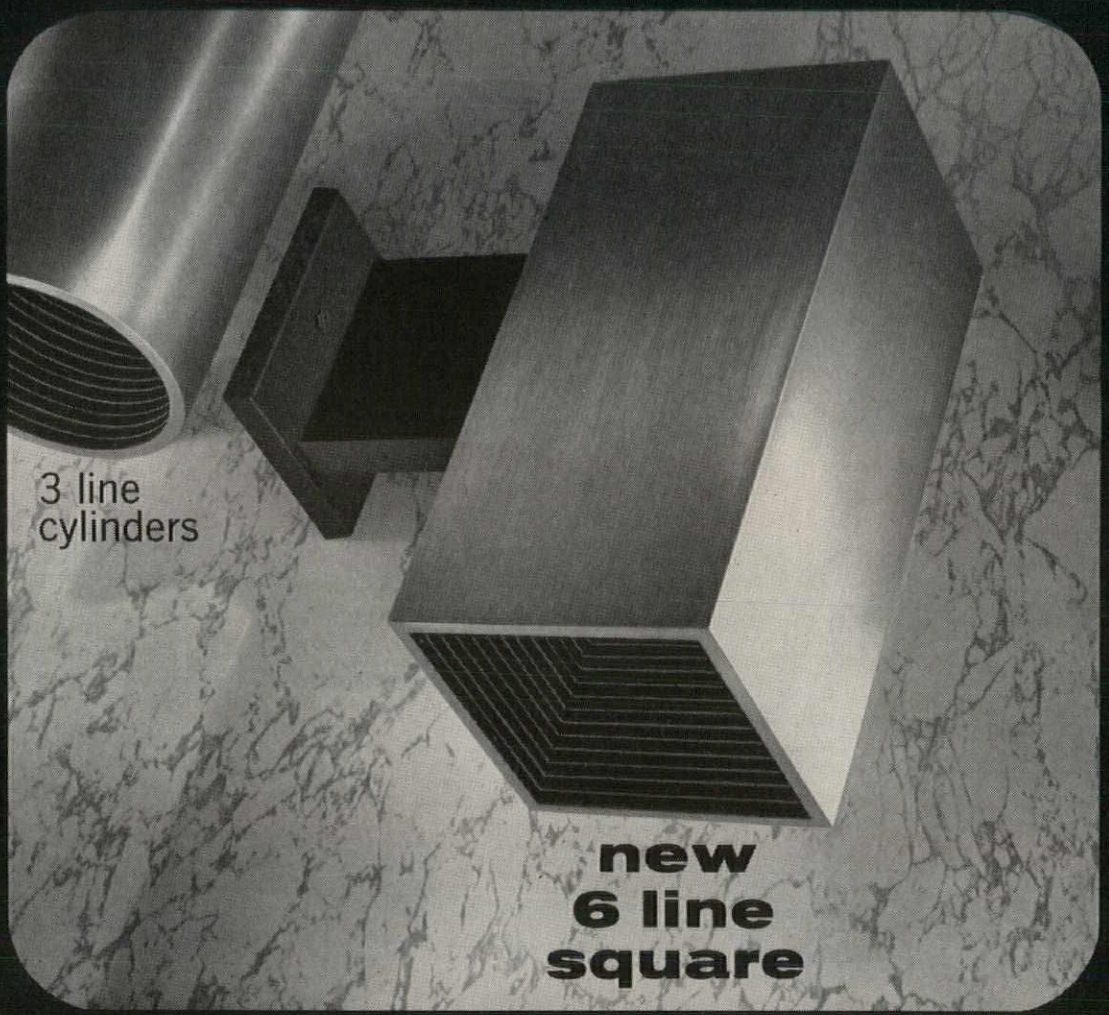
Dear Editor: It seems to me that the Rosenfields, in reviewing the research project reported in *Planning for Hospitals: A Systems approach Using Computer Aided Techniques* (p. 228, MARCH 1965 P/A) have made a mistake not uncommon to architects. Because of our training, we architects tend to assume that we can solve any problem—no matter how large—by a single brilliant effort. We tend to design buildings that way. One at a time, with an architect to lead the effort, even though others may be needed to fill in the details like a structural system that won't fail, or a mechanical sytem that can weave its way around the structure, or a communications system bolstered by electronics where it fails to work otherwise. But research when it is done well and within the discipline of mature science and technology is seldom like that. It consists of carefully worked-out, discrete advances in knowledge, the sum of which moves man closer to solving the riddles of the universe, or providing a cure for cancer, or sending a man to the moon.

The Rosenfields, in suggesting that we need ". . . the ability to think, to find new insights into the vital problem of how, through physical planning, we can help to make sick people well and how we can develop principles for such planning" believe that they thus pose a challenge so dramatic in its scope that the effort of Souder and Clark pales by contrast. Their assumption is that in stating a challenge of this magnitude that half the job of solving it has been done. They seem to forget Edison's comment that his work was 10 per cent inspiration and 90 per cent perspiration.

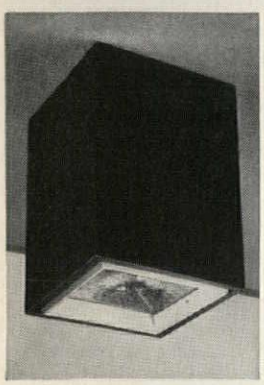
Architects abound in imagination and in inspiration, but they will continue to delude themselves if they believe that their contribution to improving the fabric of the lives of those who will live in the latter one-third of this century can be confined to the sort of inspirational inputs architects made in the first two-thirds. We need to undertake not a few large, brilliant research projects, but thousands of small but important ones that will build a base for an occasional stroke of genius. The W-59 project was an important contribution to this base—let's have a lot more like it!

JOHN P. EBERHARD
Deputy Director, Institute for Applied Technology
U.S. Department of Commerce
Washington, D.C.

Have you ever seen a square cylinder...?



mcPhilben makes them!



Take a closer look, it's actually a parallelepiped with all the quality design, construction and performance features of mcPhilben's famous 3 line cylinder downlights for outdoor, indoor and wet locations ■ McPhilben continues to lead the lighting industry with original new styling... plus the unquestioned permanence of anodized cast aluminum unitized construction, precision made. Look up to new 6 line square units: ■ fully weatherproof, corrosion resistant ■ virtually indestructible with integral cast baffles ■ triple ground satin or black anodized finish for lasting beauty ■ select from 148 models—wall, ceiling, pendant, mullion mount in 4 different types of engineered light control ■ When it comes to the selection of lighting—there is no "equal" for mcPhilben originality, construction and performance. You can take our word or write for complete specification data and convince yourself ■ mcPhilben / 1329 Willoughby Ave., Bklyn, N.Y. 11237/CANADA: 2275 Midland Ave., Scarborough, Ont.

mcPhilben®

On Readers' Service Card, circle No. 389