PROGRESSIVE ARCHITECTURE *July 1965*

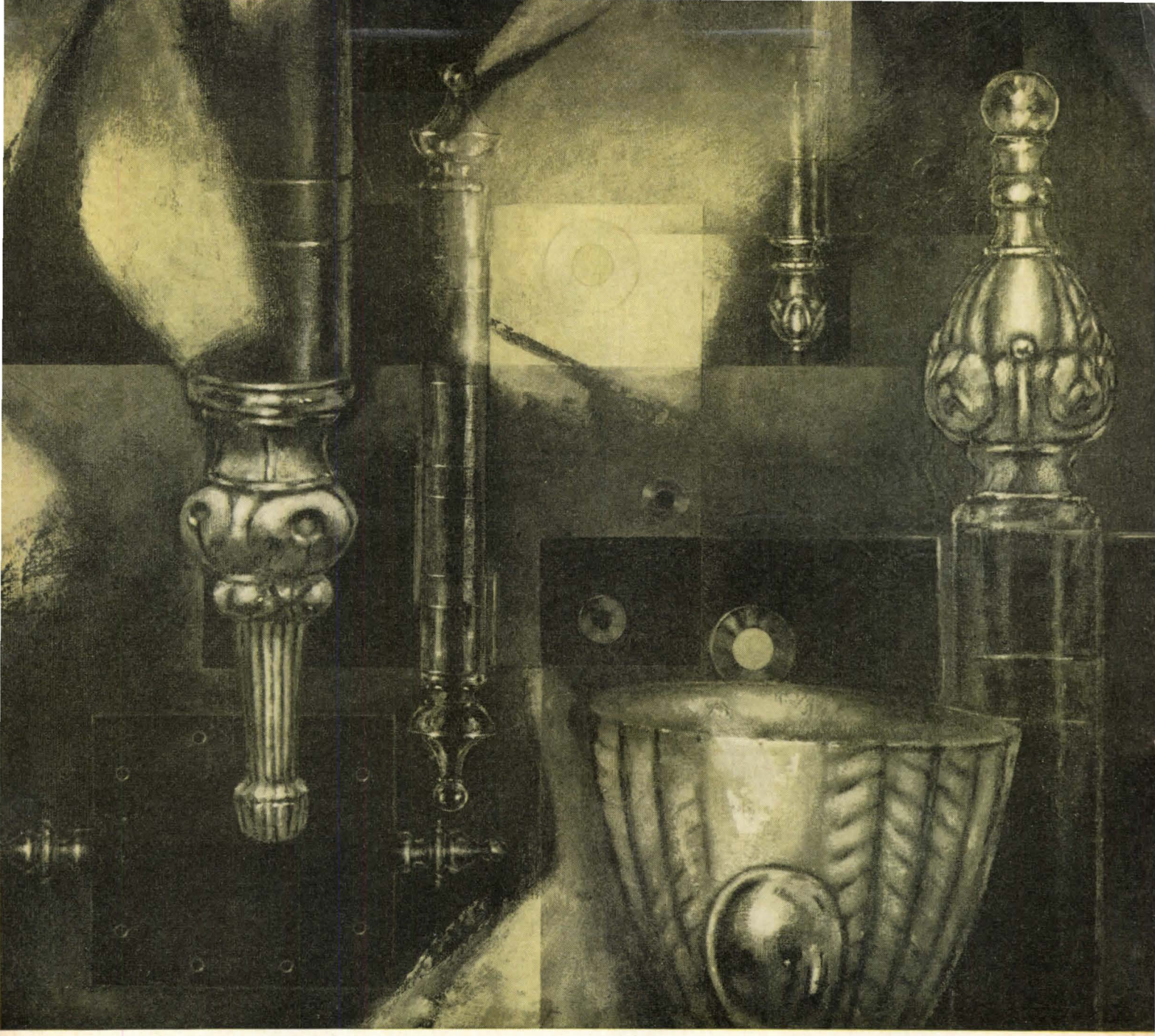
Installation:
275 Wyman St. Bldg.,
Waltham, Mass.
Architect:
Anderson, Beckwith
and Haible,
Boston.
Floor shown:
VP-394 with
red feature strip.

Creative styling: an inherent quality of Azrock floors. An outstanding characteristic of Azrock vinyl asbestos floors* is their ability to reflect any mood or decor . . . to emphasize or understate as desired.

A recent example is Waltham, Massachusetts' 275 Wyman Street Building. Floors of Azrock Pebbled Terrazzo coordinate effectively with other interior colors and finishes . . . add the unusual dimension of textured floor surfaces. Like all Azrock styles, Pebbled Terrazzo is a product of modern craftsmanship in durable vinyl asbestos tile.

an exclusive floor by **AZROCK**®

Consult Sweet's Catalog or write for samples. Azrock Floor Products Division, Uvalde Rock Asphalt Co., 500A Frost Bldg., San Antonio, Texas 78206.
Also known as Vina-Lux.



STYLED TO THE VERY HINGE TIPS

Beveled leaves, bearing segments that nest neatly, finish that brings solid brass to rich luster . . . you could stop there and have a quality hinge, complete and attractive, far beyond the ordinary. But Hager carries design right out to the tips. The tips in ten different designs, from the tall Cathedral to the short Crown cap, all suggest motif that can further emphasize interior decor. May we send you more details on this special decorator hinge group? HAGER HINGE COMPANY, St. Louis, Mo. 63104. Hager Hinge Canada Ltd., 61 Laurel Street East, Waterloo, Ontario.

Hager

Everything Hinges on Hager

On Readers' Service Card, circle No. 362

THIS MONTH IN P/A

Progressive Architecture, July 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."

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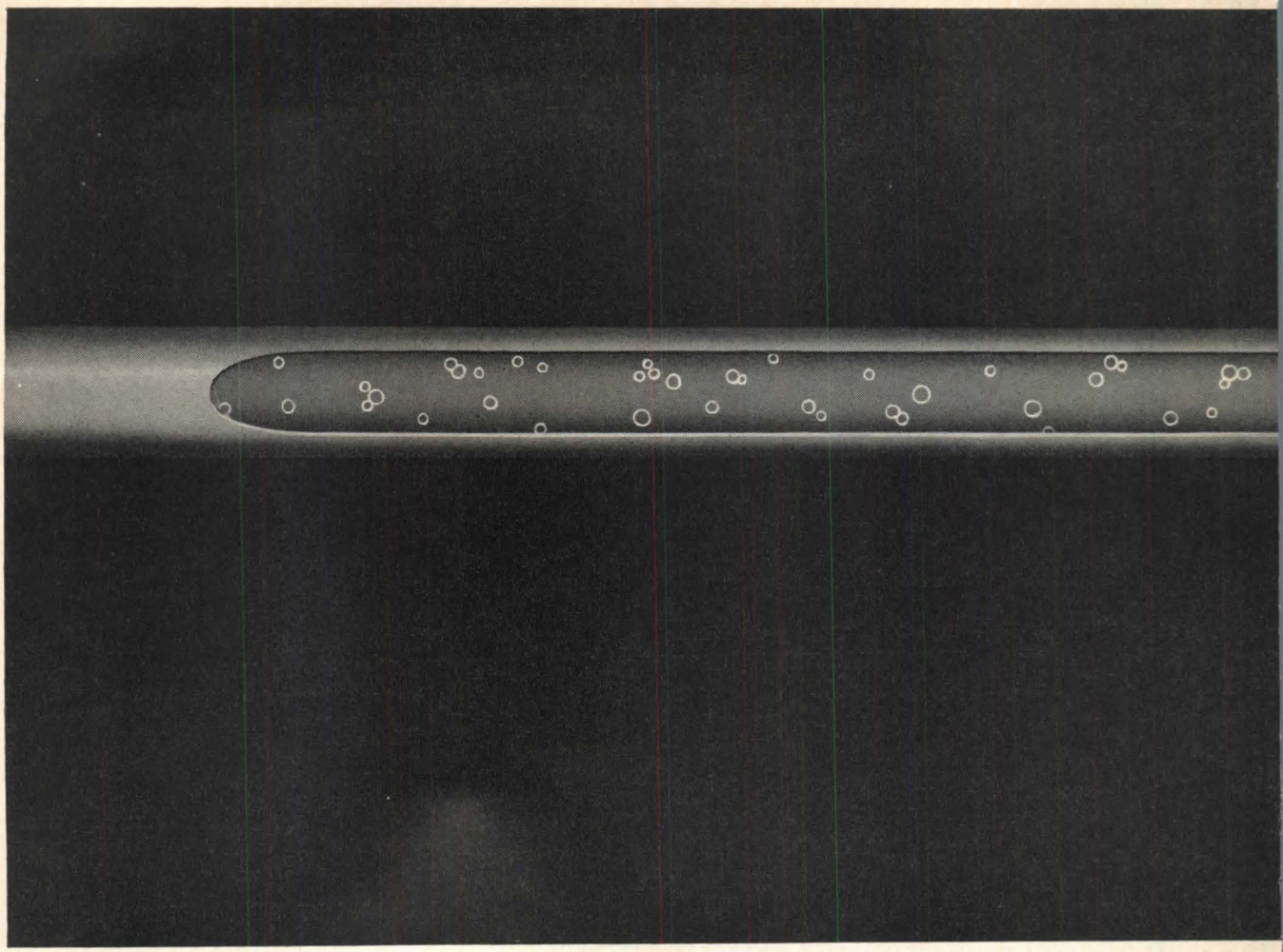
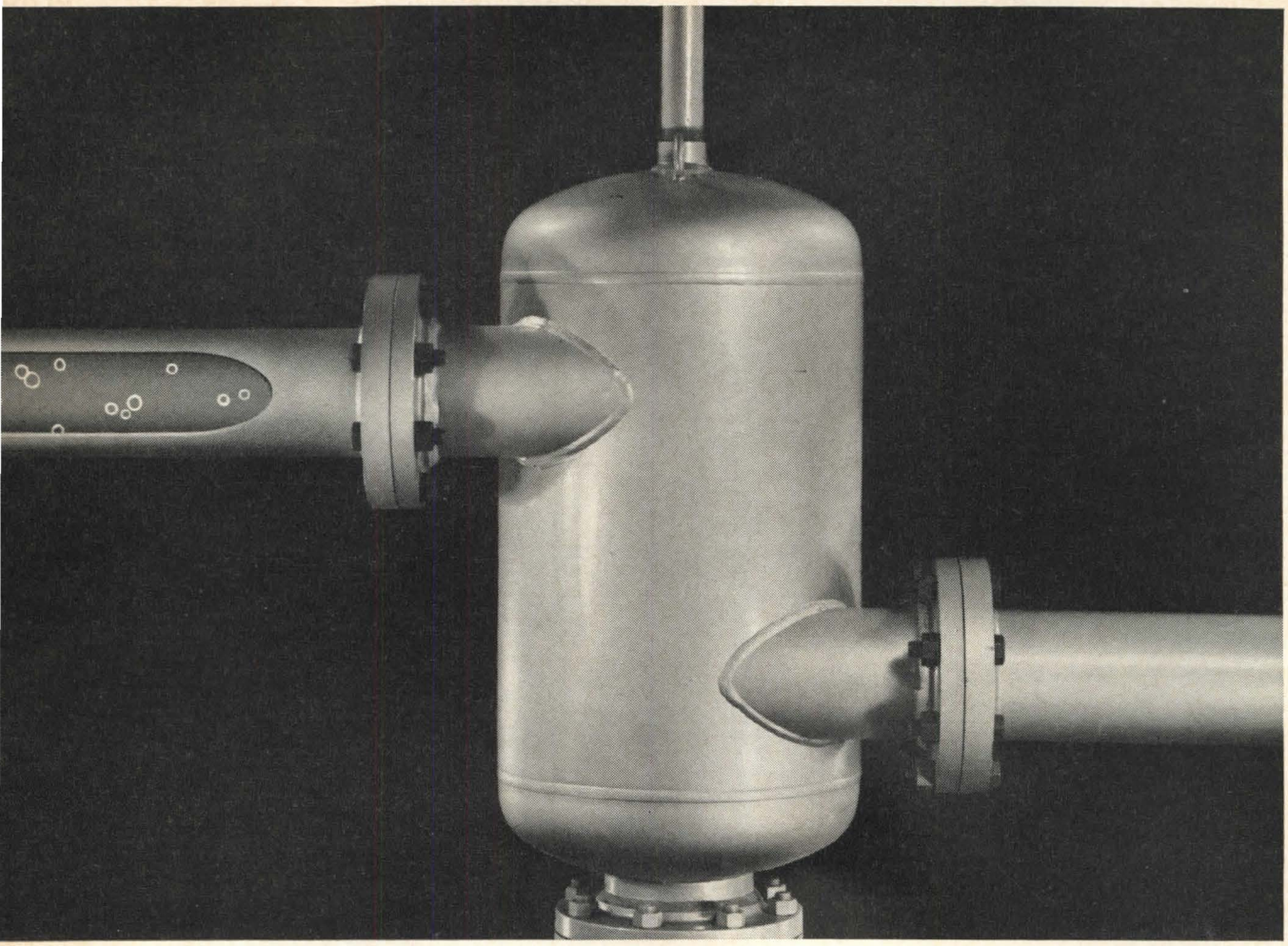


To take the rap out of radiation . . .



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VIEWS

Vote of Thanks

Dear Editor: You deserve a vote of thanks from everyone for your fine and forceful Editorial in the MAY 1965 P/A. This is my share of the thanks.

In your clear and reasoned analysis, you summed up the essence of the sorry contradiction. Many people are aware of it, but few seem to care.

It would be good if your Editorial could be reprinted in many places: places like the real estate sections of all newspapers, the Congressional Record—well, you know the list.

But, at this distance from the dream, I simply want to thank you again.

ETHEL DEAN
New York, N.Y.

The Best Issue By Far

Dear Editor: The APRIL 1965 P/A is by far the best issue of an architectural magazine that I have seen in several years. Presenting more than pretty pictures and building techniques, it indicated some of the underlying thought that is presently coming out of the profession. Obviously I am speaking about the article, "The Psychological Dimensions of Architectural Space." Here are presented concerns of the architect that have too long been ignored by both the profession and the magazines.

Also to be commended is the productively critical article on the San Mateo Junior College—a fine dialogue of ideas, both good and bad, that suggests that more self-criticism would be beneficial for the profession.

I look forward to more issues that repeat the quality of the April issue of P/A.

CHARLES M. EASTMAN
Berkeley, California

Author Answers Critic

[*The writer of the following letter is author of a book that was reviewed by James C. Rose in the* JANUARY 1965 P/A. *Previous limitations of space prevented publication of the letter till this time* —ED.]

Dear Editor: It is unfortunate and unreasonable for a book review to be based upon a pet thesis of the reviewer having but poor application to the substance of the book being reviewed. My *Japanese Influence in America* falls victim to this misleading injustice.

The book first is criticized for failing to mention that Antonin Raymond (whom James C. Rose, the reviewer, has

Continued on page 8

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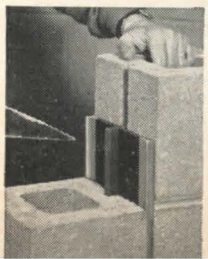

STRENGTH WITH FLEXIBILITY—this basic masonry wall requirement is met for sure (and economically!) when Dur-o-wal, above, is used with the ready-made, self-flexing Rapid Control Joint, left.

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Continued from page 6

chanced to meet) is the "father" of modern domestic Japanese architecture. The obvious rebuttal to this is that the book does not deal with Western influence upon Japan. Next, it becomes apparent that the reviewer has an obsession with the word "influence," and later it is brought out that he prefers to think of similarities as the result of spontaneous coincidence. As will be shown, this is entirely contrary to the facts that the book sets out to establish.

"Lancaster has a habit of treating his connectives rather loosely," declares the reviewer. "He can start with a few harmless generalizations, say, about the turmoil of World War I, and suddenly startle the reader with a conclusion like, 'Thus was developed the International Style.'" The intervening key sentence, overlooked by the reviewer, reads: "The emotional fervor that fed, and in turn fed on, the war was necessarily counterbalanced by a pure rationalism that in building took the form of solid geometry." Surely the action-reaction theory of history is not out of place here. Other characteristics of the International Style mentioned are the use of new materials and a fresh handling of space and planning. That the relation of these to the principle of organic architecture in America is "news" to the reviewer is forthright admission of his ignorance of Frank Lloyd Wright's definition of the word, which seems odd inasmuch as it is concise and readily available.

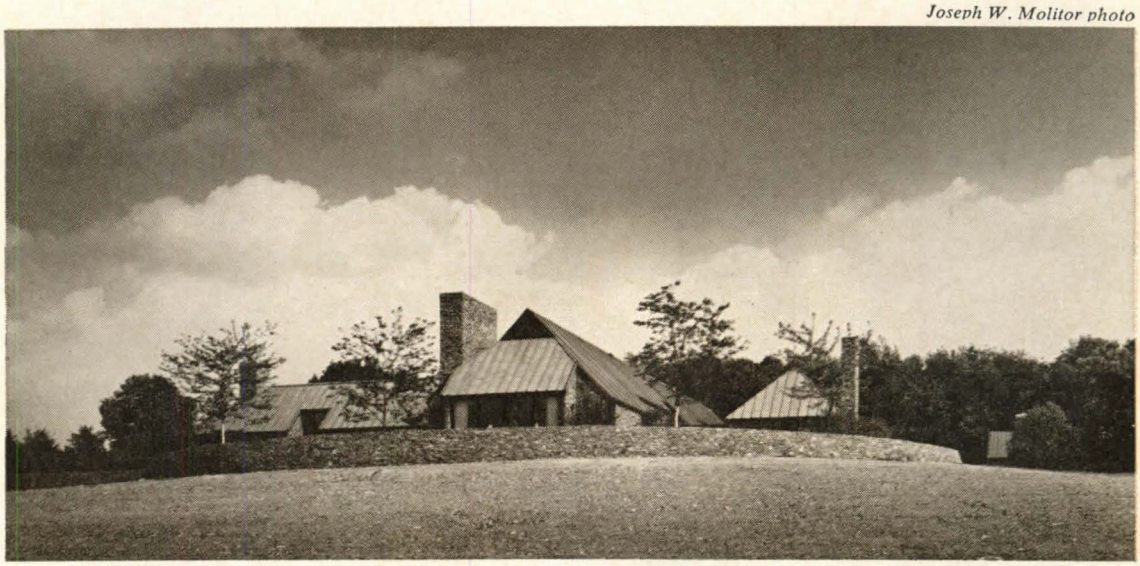
Except for the quotations concerning the International Style—which all appear on the first page of Chapter 15—the entire balance used by the reviewer to generalize on the contents of the book are extracted from the last two-and-a-half pages. This should strike the reader as significant. Two of them are even misquoted. One of these is a clause used in isolation, the correct reading of which is: "Zen is indeed an excellent dispenser of higher values," and to this the reviewer adds his own comment that it "ought to make a Zen student cringe." Possibly, depending upon the development of the student. Uninformed people may be expected to cringe when confronted by truths about which they know nothing. Had the reviewer chosen to interpret the response of a Zen scholar, such as the eminent Dr. D.T. Suzuki, he would have found complete acceptance. The hypothetical "student" is to be referred to Dr. Suzuki's book, *Zen Buddhism and Its Influence on Japanese Culture*, for his edification and stability.

Continued on page 10

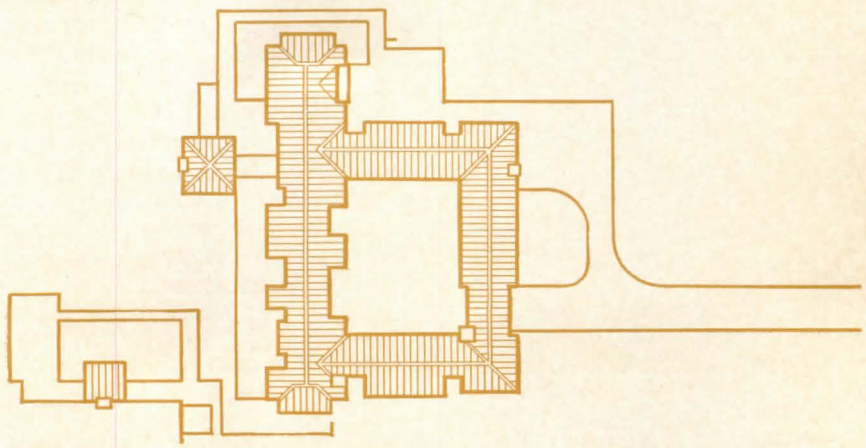
WHATEVER HAPPENED TO THAT "MACHINE FOR LIVING"?

However rhetorical the question, it at least reflects our personal gratification that the work of so many outstanding residential architects is increasingly oriented toward elegance, imagination and environmental harmony. And we are even more gratified—albeit not unselfishly—by the high percentage of these architects who have recently specified Follansbee Terne on major projects. For Terne, its functional integrity validated by two centuries of use, is unique among roofing materials in that it provides both form and color at relatively modest cost.

Joseph W. Molitor photo



"STORNOWAY", Ligonier, Penna.—featured in 1965 RECORD HOUSES.
Architect: Winston Elting, AIA, Chicago, Illinois
Roofing Contractor: Miller-Gyekis Inc., Pittsburgh, Pa.



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Continued from page 8

The reviewer seems especially adverse to pictures, apparently because they present evidence too convincing in support of the text. He prefers to dismiss the combination as "a word-and-picture merry-go-round called 'influences.'" The pronouncement is flippant, opinionated and anti-intellectual, besides being in poor taste and unworthy of a magazine of P/A's caliber. The reviewer sees fit to go off on a tangent concerning R.H. Blythe's book, *Zen in English Literature and Oriental Classics*, categorized as a "scholarly treatise," being pictureless, and propounding the coincidence thesis, nowhere suggesting that Zen parallels in Shakespeare are "because Marco Polo refused to stay home." Of course Marco Polo never went to Japan, and, being an adventurer, rather than an intellectual, he failed to bring back little, if anything, of any cultural significance from the Far East. There were, undoubtedly, other channels of spiritual and artistic flow from Eastern Asia into Western Europe during the Middle Ages, but the remoteness of the period has left little record of them.

It is quite otherwise with my subject. Dealing with a recent period, I present concrete evidence of Japanese influence upon specific American works, especially architecture, beginning with that of the first Japanese building erected in this country at the Philadelphia Centennial of 1876. Further proof is furnished through the writings of leading architects and contemporary critics, who speak out in no uncertain terms. If, indeed, as the reviewer surmises, preferring in the face of authentic documentation to maintain that "who got there 'first'—is of no importance," then we may as well close up our schools, universities, museums, and libraries, and just sit down and wait for the coincidence of the Russians to discover America.

One final word: The reviewer's last paragraph on my volume is so garbled that it is impossible to make any sense out of it. The quotations given—all from the last page—would be valid only in context and to people who have read the book through, and the reviewer's use of them is evidence that he has not. Among them is one in which it is claimed that I have said something about "Abstract Impressionism." I must vindicate myself by declaring that I never heard of the term, I have never used it in my life, and certainly it does not appear anywhere in *The Japanese Influence in America.*

CLAY LANCASTER
Brooklyn, N.Y.

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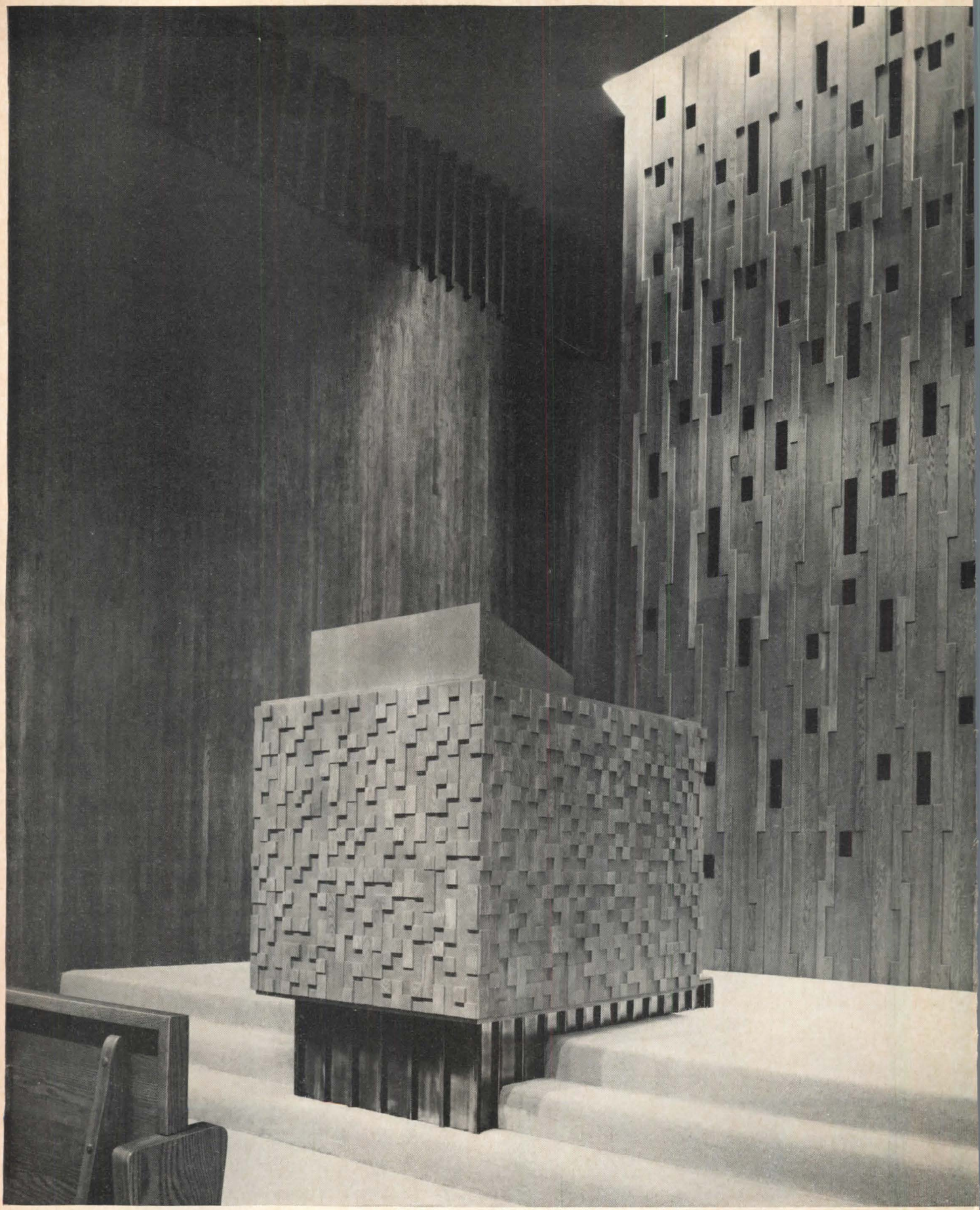

Houses of worship, often austere and uninteresting in decor, are made beautiful and warm with the proper use of wood. Note the blending of pews, panels, and podium. Architects & Engineers: Young, Richardson & Carlton.

For architectural textures, patterns, and tones

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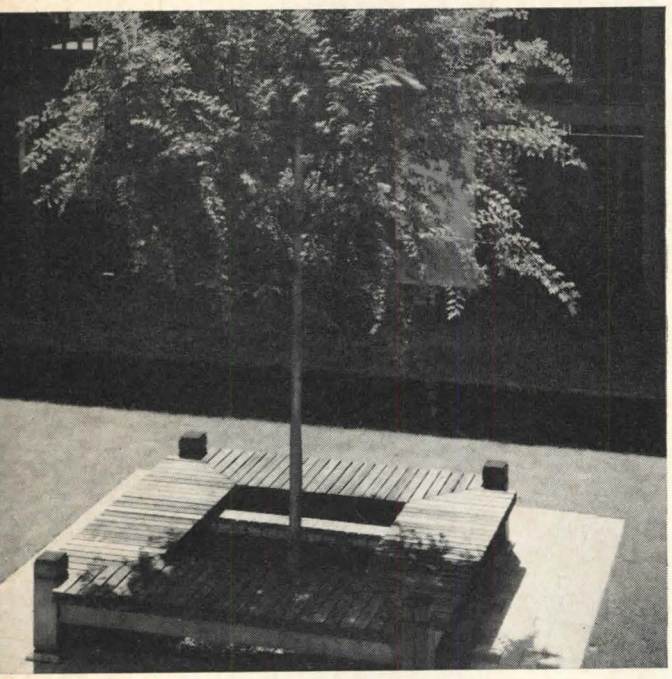

In private yards or public parks, the imaginative use of wood adds beauty all around. This tree, for example, becomes more inviting with its shaded wood bench. Architects: Skidmore, Owings & Merrill.

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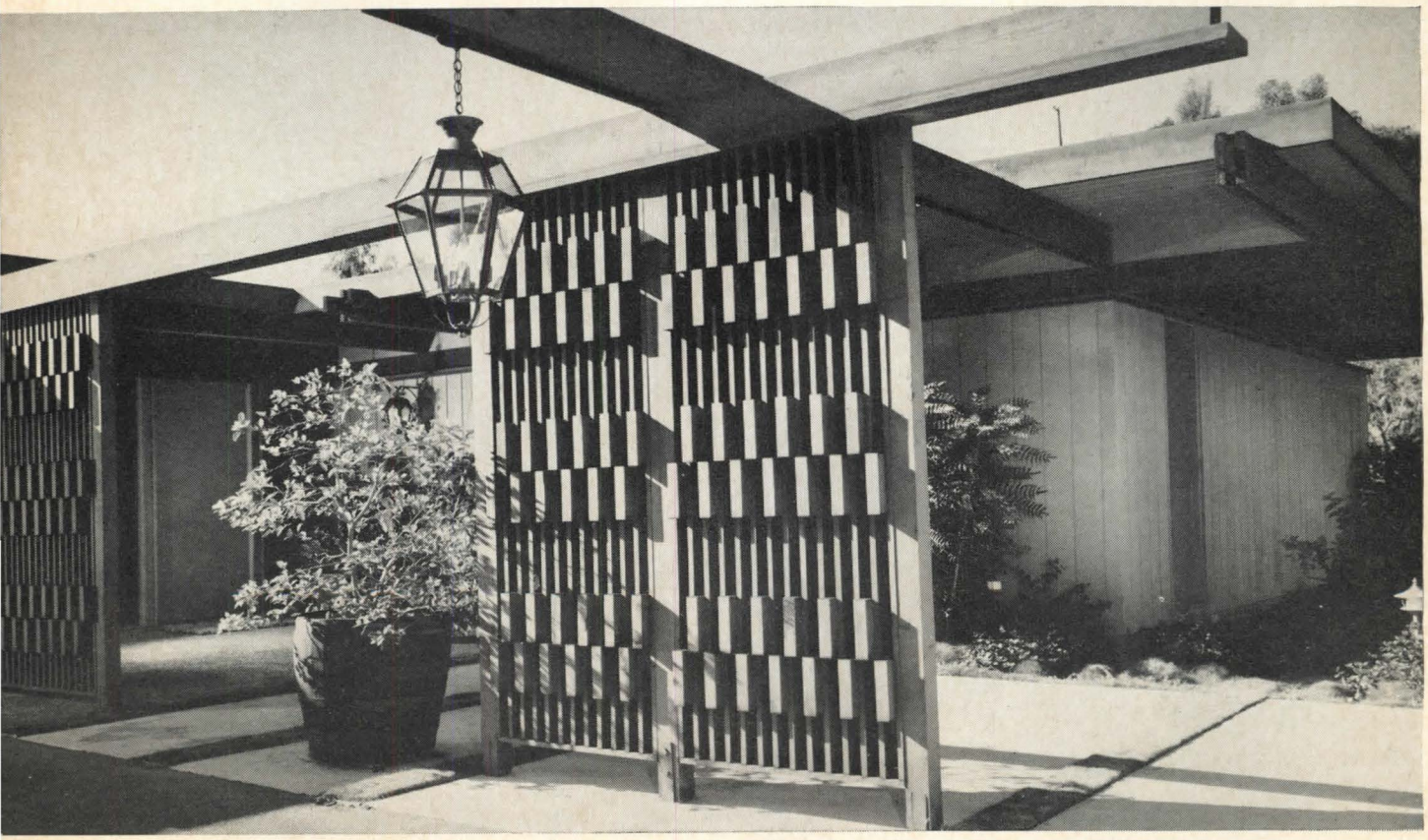

Patios and gardens assume a special distinctiveness when they are refined with attractive wood sculpture — both beautiful and functional. Architects: Wuesthoff & Klokke.

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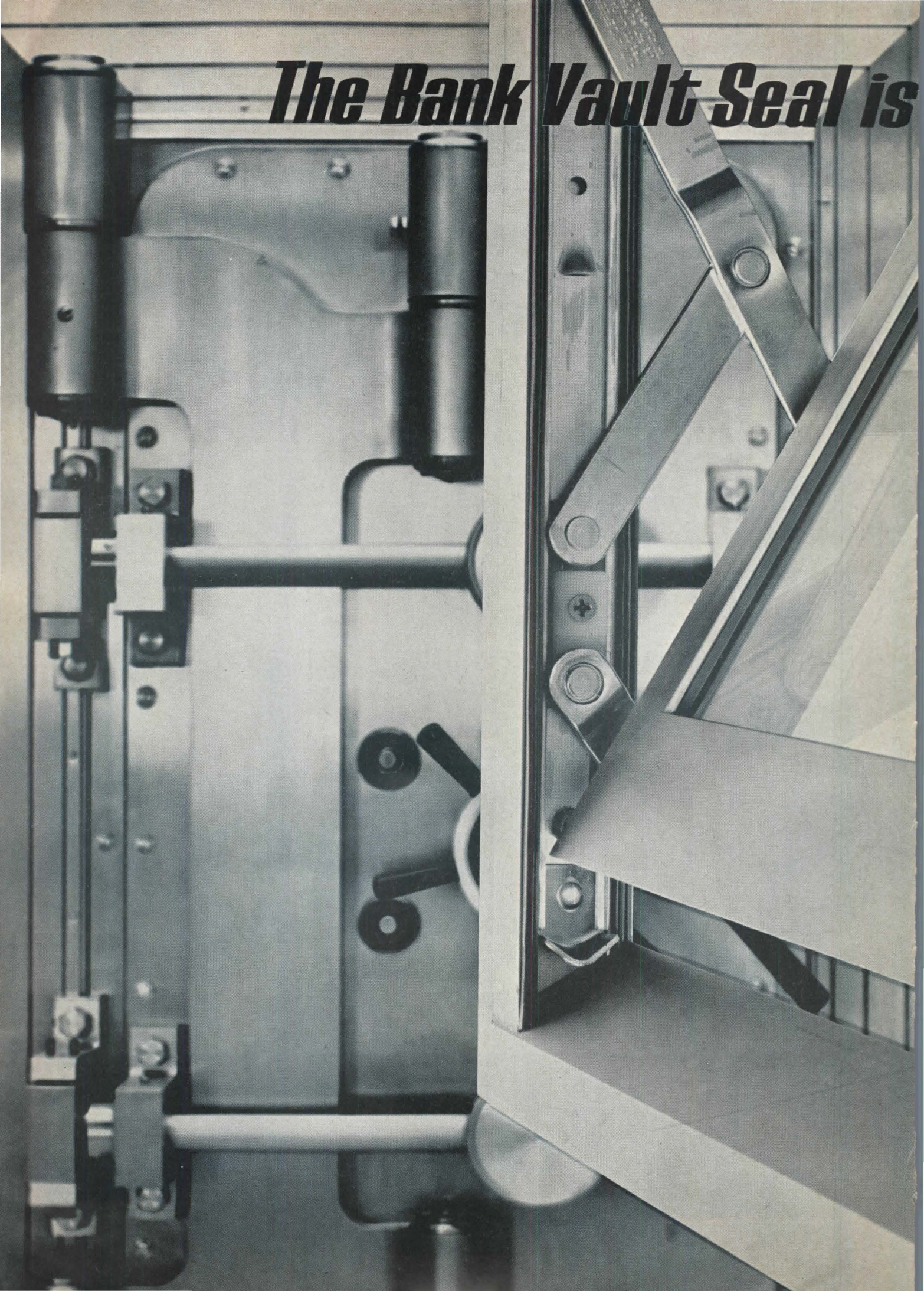
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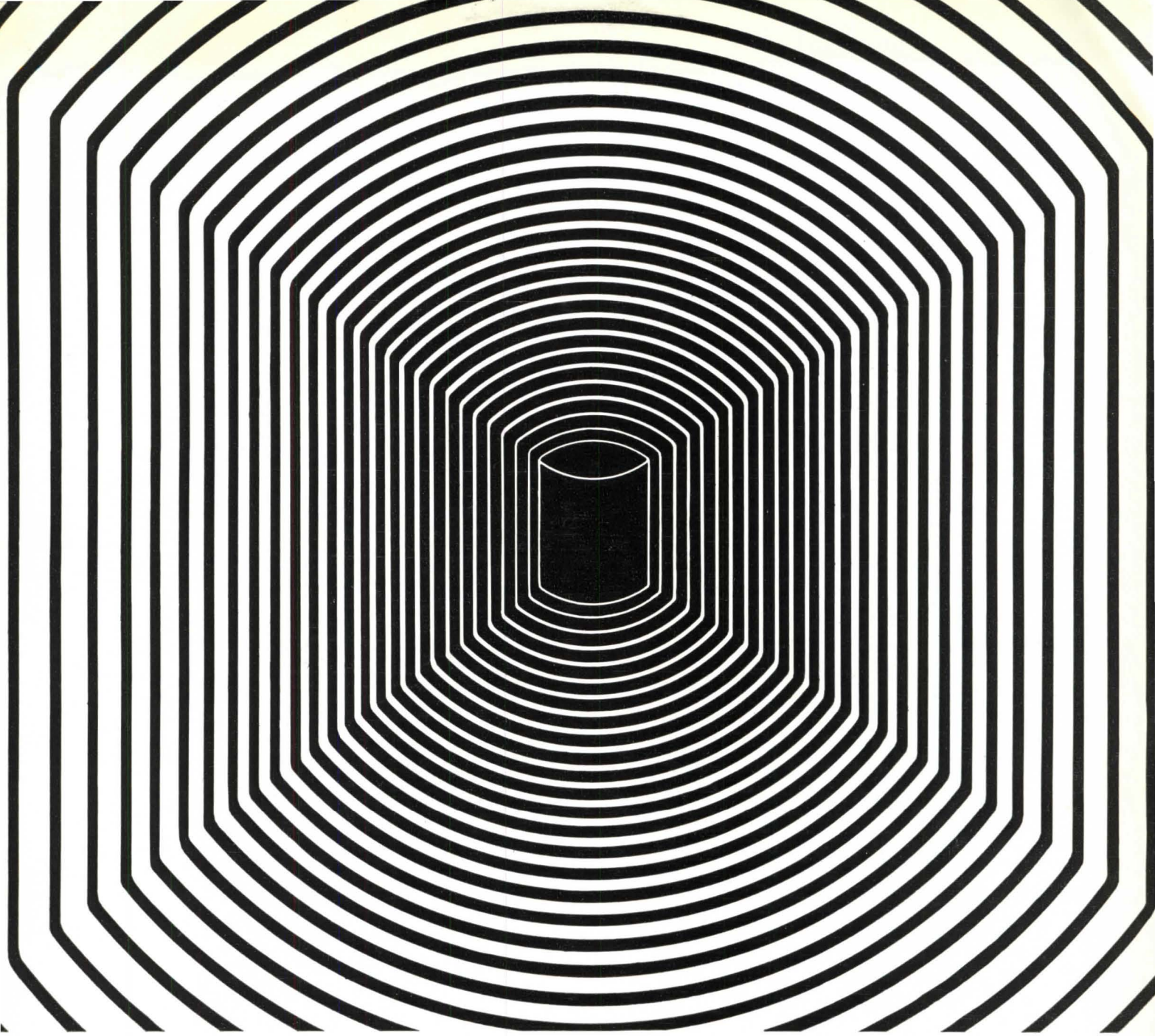

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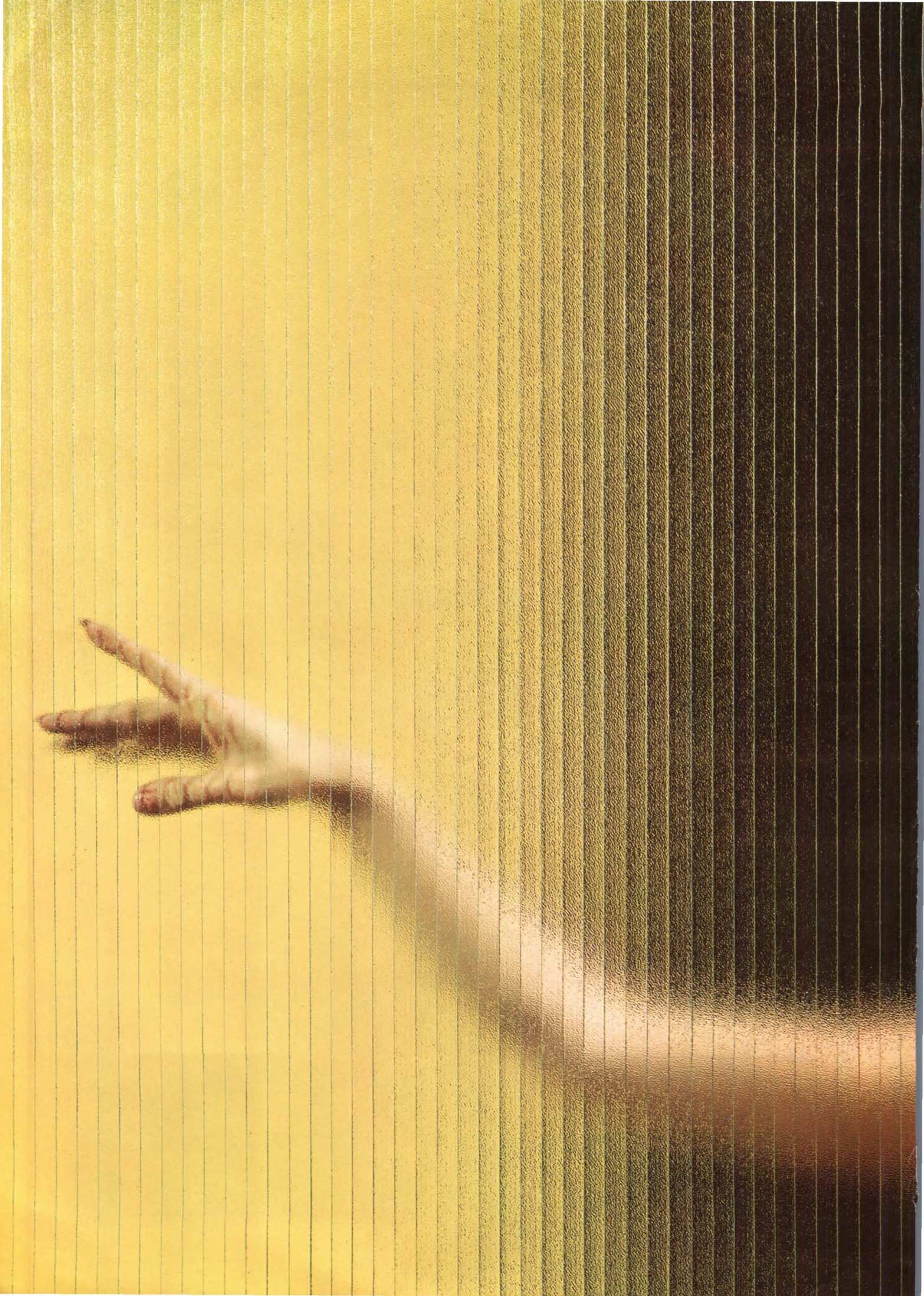

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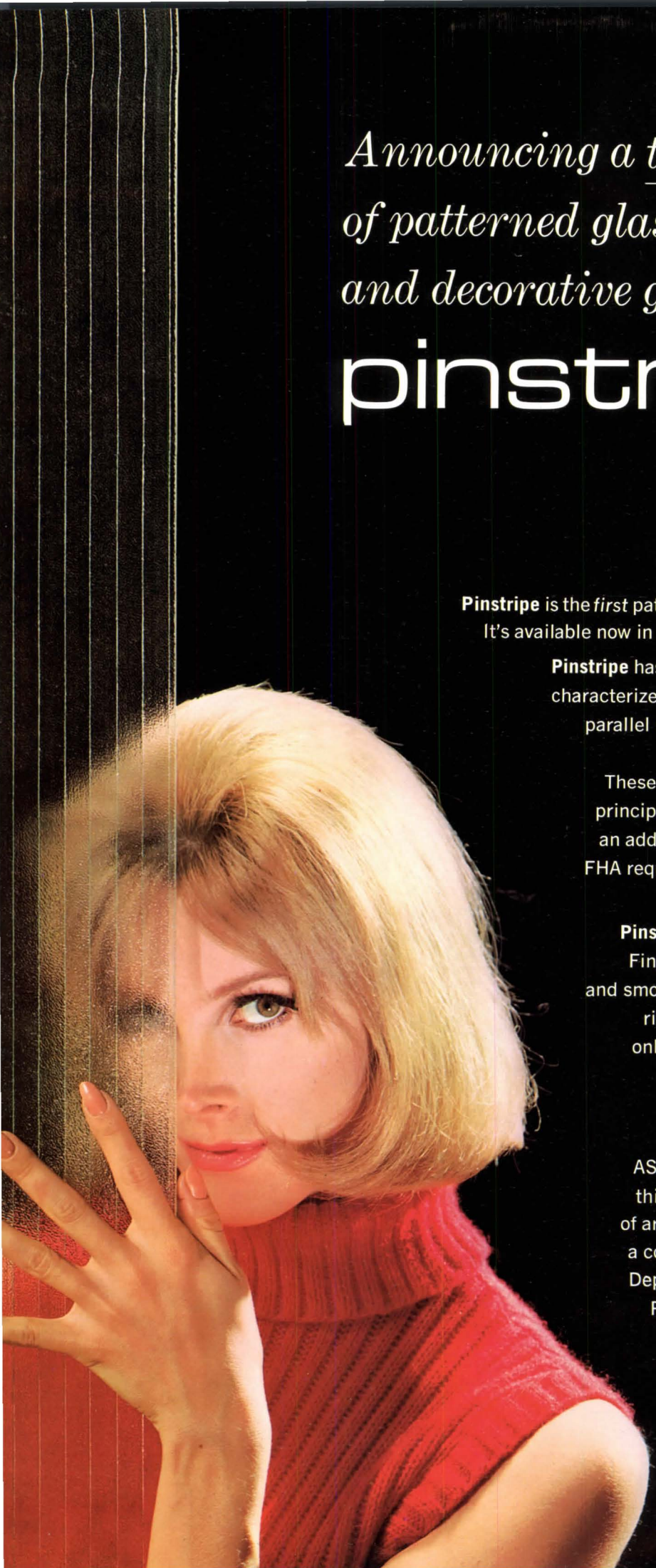

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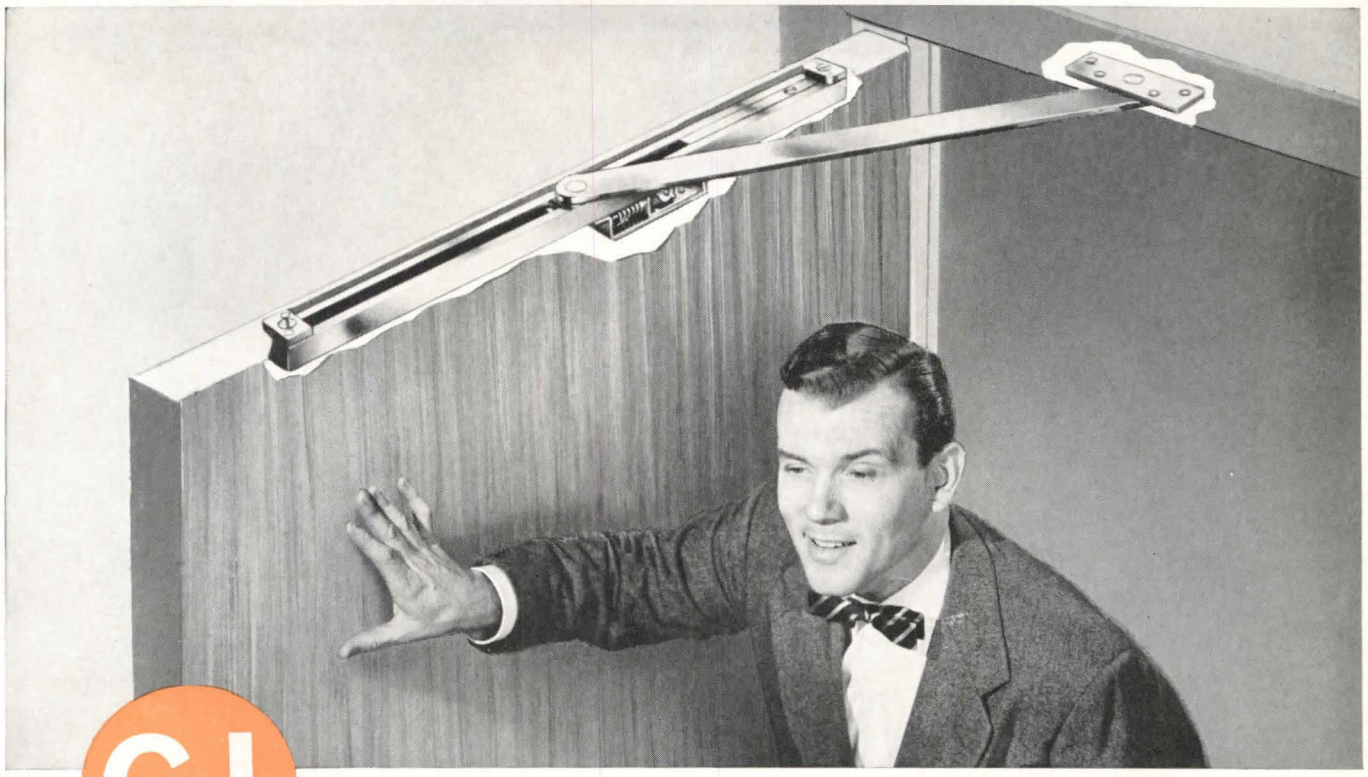

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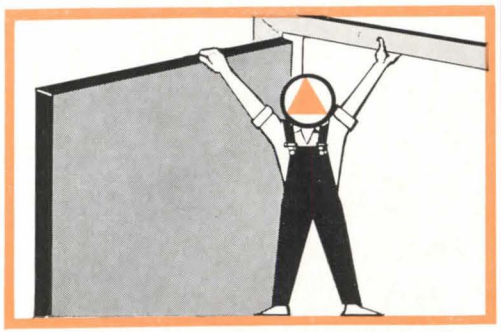
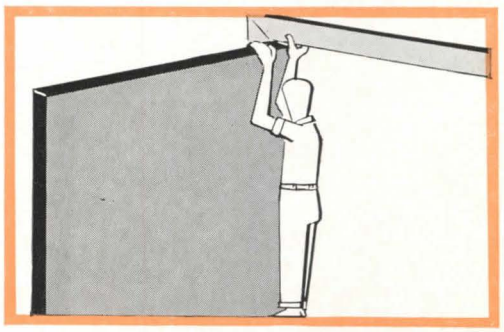


leverage control when separately installed



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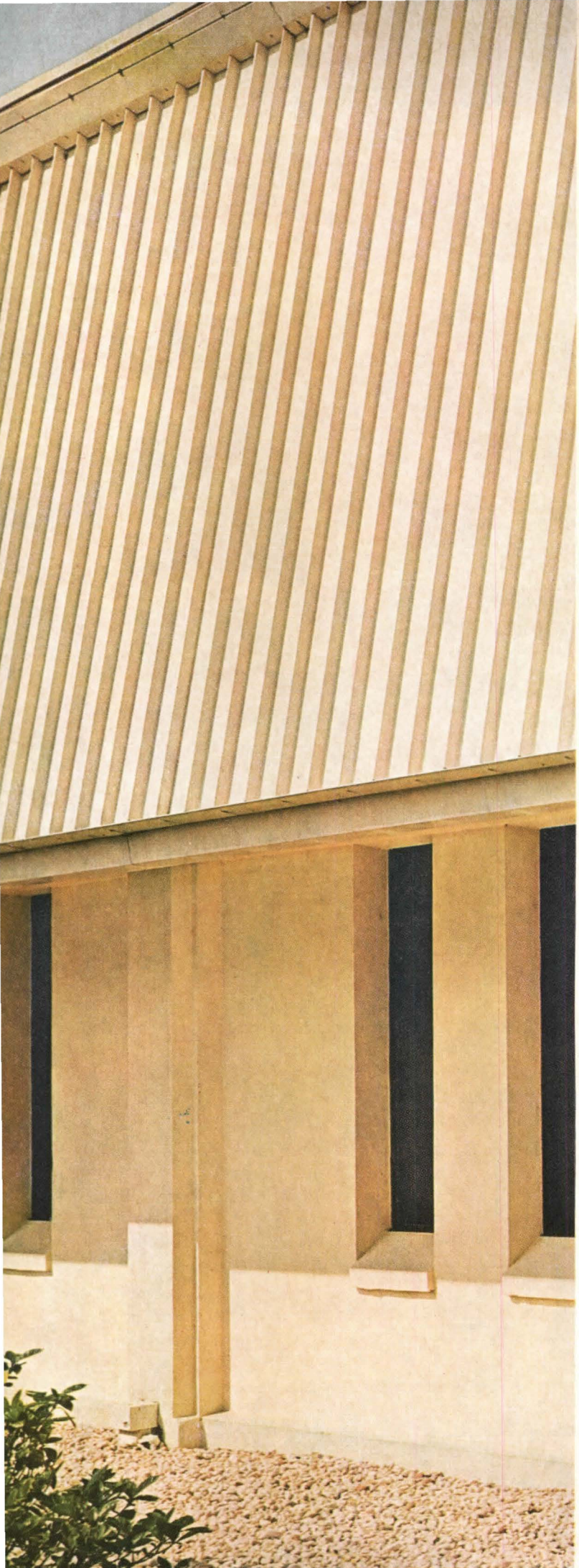
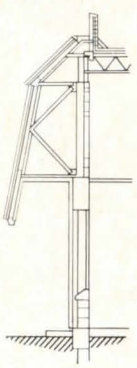


are used for the roof

General Electric needed a colorful, strong, good-looking roof. A roof that would stand out. Take high wind loads. A roof that wouldn't lose its color under a baking Florida sun, that would withstand salt air like a sea gull. Solution: Ribbed panels of Alcoa® Aluminum, fabricated and erected by Elwin G. Smith & Co., Inc.

General Electric's space complex near Daytona Beach isn't ordinary. The roofs of the buildings act as sun shades—protect like awnings. That's why they had to be strong. The unique roof line also gives the buildings a scale that is compatible with a residential environment. The off-white, baked-enamel finish contributes to this community-pleasing asset. This change for the better with Alcoa Aluminum offers you a new slant on roofing.



General Electric's Daytona Beach facility will include 16 buildings of this design. The bronze-tinted windows are encased in a sash of brown Duranodic* finish.

Engineers & Architects: Rader and Associates, Miami, Fla.

Consulting Architect: Vincent G. Kling, FAIA, Architect, Philadelphia, Pa.

Metal Fabricator & Erector: Elwin G. Smith & Co., Inc., Pittsburgh, Pa.

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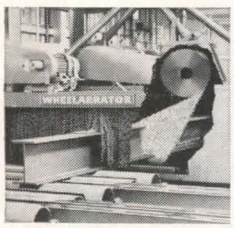
Now that there's an efficient, low-cost way to descale steel structurals before fabricating, there is no reason to hesitate about specifying blast-cleaned steel. Wheelabrator centrifugal airless blasting cleans steel *economically* to bare metal, etching the surface to assure tight, long-lasting paint adhesion. And when you specify blast-cleaned steel, you can also specify one of the new epoxy, vinyl or other extra-protective modern coatings—coatings that demand a completely-cleaned steel surface to work their longevity magic.

The first step to longer paint life and lower maintenance costs? Specify blast-cleaned steel. As 70 fabricators have already experienced, your favorite supplier can blast clean better and more economically with a Wheelabrator. Have him write for Bulletin 190-D.



Wheelabrator airless centrifugal blasting hurls steel abrasive against the steel to remove all rust and mill scale, automatically, inexpensively. Write for details.

VITAL VALUES FOR INDUSTRY

WHEELABRATOR
CENTRIFUGAL WHEEL BLASTING FOR CLEANING STRUCTURALS

Wheelabrator Div. • THE WHEELABRATOR CORP. • 758 S. Byrkit St., Mishawaka, Ind.
Wheelabrator Corp. of Canada, Ltd., Scarborough, Ontario

WORLD-WIDE OPERATIONS:
Switzerland (Geo. Fischer, Graber & Wening); Australia (McPherson's); France (Wheelabrator-Allevard); Brazil (Eisa); India (Indabrator); Japan (Sintobrator); England (Tilghman's); Mexico (Wheelabrator de Mexico)

Declare roof design independence

(with J-M Last-O-Roof)

Roofs like this would be complicated for traditional roofing materials. But Johns-Manville Last-O-Roof* makes tough roofing jobs easy! This single-membrane plastic elastomer roofing gives you *absolute freedom* to design your roofs to the needs of your buildings.

Dead-level decks, steep and vertical slopes, step-downs, curves and double curves . . . Last-O-Roof covers every contour. This complete system of compatible components—membranes, cements, flashings, finishes—weighs 3 times less than most smooth roofs, 10 times less than gravel. It adjusts better to structural stresses, provides monolithic protection. It's fire-resistant, heat-reflective, weather-proof in any climate. Finished in aluminum, white or pastel shades (like the rose metallic roof shown here), Last-O-Roof can add dramatic beauty to your structures.

It's easy to apply, too, any time of year. All Last-O-Roof materials arrive at the job ready to use without on-site preparation. They go on cold, either by hand or high-speed mechanical equipment. There's less chance of error, no chance of fires and burns from hot materials.

Design with the one roofing system that's equal to your imagination —J-M Last-O-Roof. For details, write to Johns-Manville, Box 111, New York, N. Y. 10016. Cable address: Johnmanvil.

*Trademark

Johns-Manville

On Readers' Service Card, circle No. 374

Spectacular!

Computer-programed fountain highlights world's fair attractions with automatic control by Johnson

To operate the Fountain of the Planets, Johnson installed a fully-automated, computer-programed control system. Millions of visitors have thrilled to the seemingly infinite variety of water and lighting patterns, in combination with music and special effects.

Other Johnson control systems assure air-conditioned comfort in many of the Fair's outstanding pavilions. G-E. The Bell System. Du Pont. Ford. Chrysler. And many more.

The World's Fair showcases Johnson's varied capabilities in systems control. Whenever automatic control is involved, you'll be money ahead with a Johnson system. You can rely on it! Johnson Service Company, Milwaukee, Wisconsin 53201. 110 Direct Branch Offices.

JOHNSON CONTROL

AUTOMATIC CONTROL SYSTEMS • BUILDING AUTOMATION • CONTRACT MAINTENANCE • INDUSTRIAL INSTRUMENTATION CONTRACTING

You're looking at Philadelphia through a new glass from PPG that shuts out 70% of the sun's heat and has a "U" value of .35

Photo taken through a sample of SOLARBAN TWINDOW simulating typical building location. Camera: 4x5 Calumet, 1/50 sec at *f*/11 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	7/32"	1.1	190	56
Graylite 14	7/32"	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.

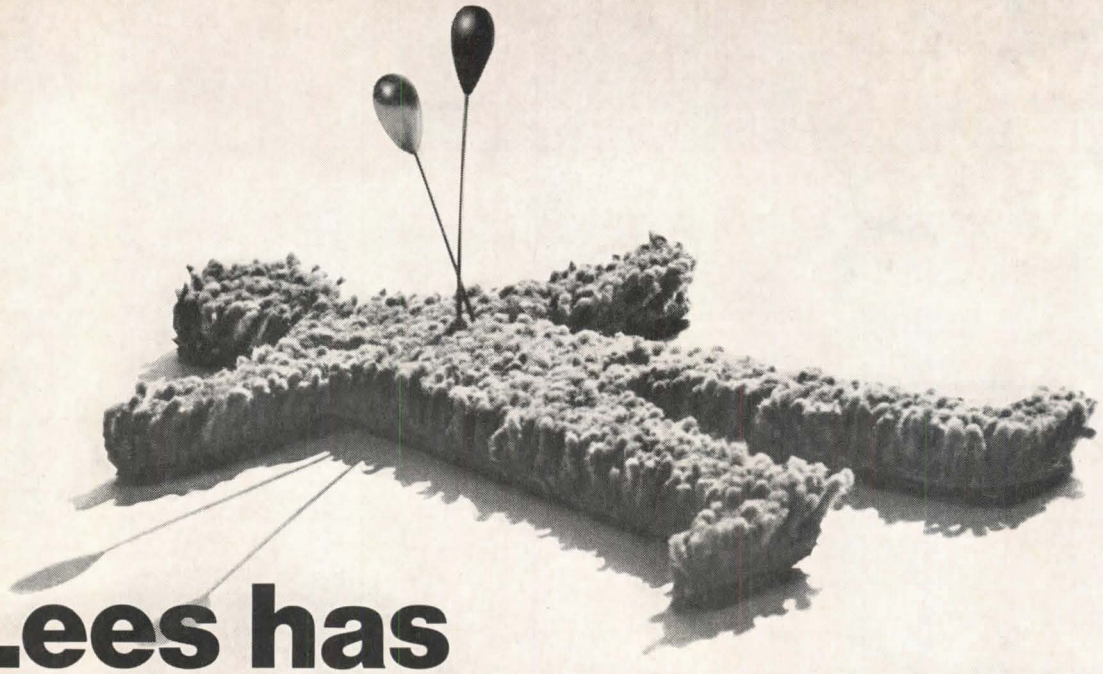
another product for Glass Conditioning from PPG

*Glass Conditioning is a service mark of the Pittsburgh Plate Glass Company

Pittsburgh Plate Glass Company, Pittsburgh, Pa.

PPG makes the glass that makes the difference

On Readers' Service Card, circle No. 437 ➤



Lees has just made the first nylon carpet without nylon's two old curses.

The !@*!! dirt and the !@*!! static.

Lees didn't use a new kind of witchcraft.

Just a new kind of nylon. Antron*

It's why our new Design III carpet doesn't pick up the cursed dirt as fast or show it as much as regular nylon.

So you don't get a carpet that looks like a dirty shame, after a day on the floor.

You don't get as much static to swear at either. Ever.

Design III gives you less than any nylon carpet before, because it's the first with a permanent anti-stat. Not just a chemical coating, but an actual part of the fiber. It won't wear out or walk off.

In fact, Design III won't act like any other nylon carpet ever has before. Except.

Except for the way it wears.

Lees wouldn't change that for anything.

If anything, we improved on it.

We gave Design III an extra tough double jute backing. And 63 inspections to make sure there were no skips and misweaves. No weak spots that could fall apart in a year. Nothing that could turn into a curse later on.

Not a !@*!! thing.

If you'd like to learn some new words to use about nylon, write Commercial Carpet Department, James Lees & Sons, Bridgeport, Pennsylvania.

*ANTRON® NYLON BY DUPONT

new economy and design freedom

in Curtain Walls...with

Reynolds Aluminum Multi-Framing System

This system combines the beauty and durability of aluminum, with new economy and design flexibility. Multi-purpose extrusions reduce the number needed. All are solid shapes, permitting easy inspection.

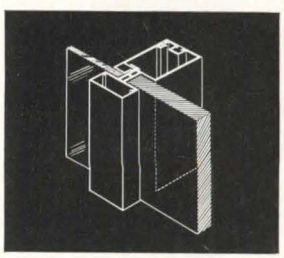
Components are stocked by distributor-fabricators who also install, at minimum field cost, according to the architect's design.

Mullion depth, in this system, can vary from four to eight inches. One continuous mullion can enclose a variety of glass, panels and window thickness.

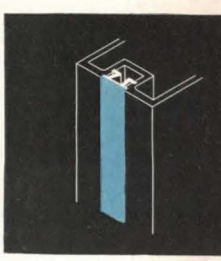
Details are available in a portfolio which also shows the system's application to Store Fronts, Re-Facing and Partitions. 57 sheets of drawings.

For your set—and for name of distributor—write to Dept. PA-7, Reynolds Metals Company, Richmond, Va. 23218.

On Readers' Service Card, circle No. 404



Single continuous mullion can enclose panels and windows of different thickness.



Snap-in Inserts can add shadows or color accents to the mullion face.

REYNOLDS
where new ideas take shape in
ALUMINUM

Watch "THE CELEBRITY GAME"—
Thursdays, CBS-TV

1217 Delaware Avenue Apartments, Buffalo, N.Y.
Architect-Engineer: Backus, Crane & Love.

Something new in apartments

This building may *look* fairly conventional, but it isn't.

The architects' problem was to provide 80 units, with parking underneath, on a lot only 132 feet wide, and with a height limit to boot.

Their solution called for only two rows of columns on 35-ft centers. And those unusually generous balconies are supported by extensions of the steelwork. It saved weight and costs and went up in only 17 days!

"Goalpost" design resulted in a maximum of shop-welded fabrication. Owner-Builder: BCH Construction Corporation.

BETHLEHEM STEEL

Steel

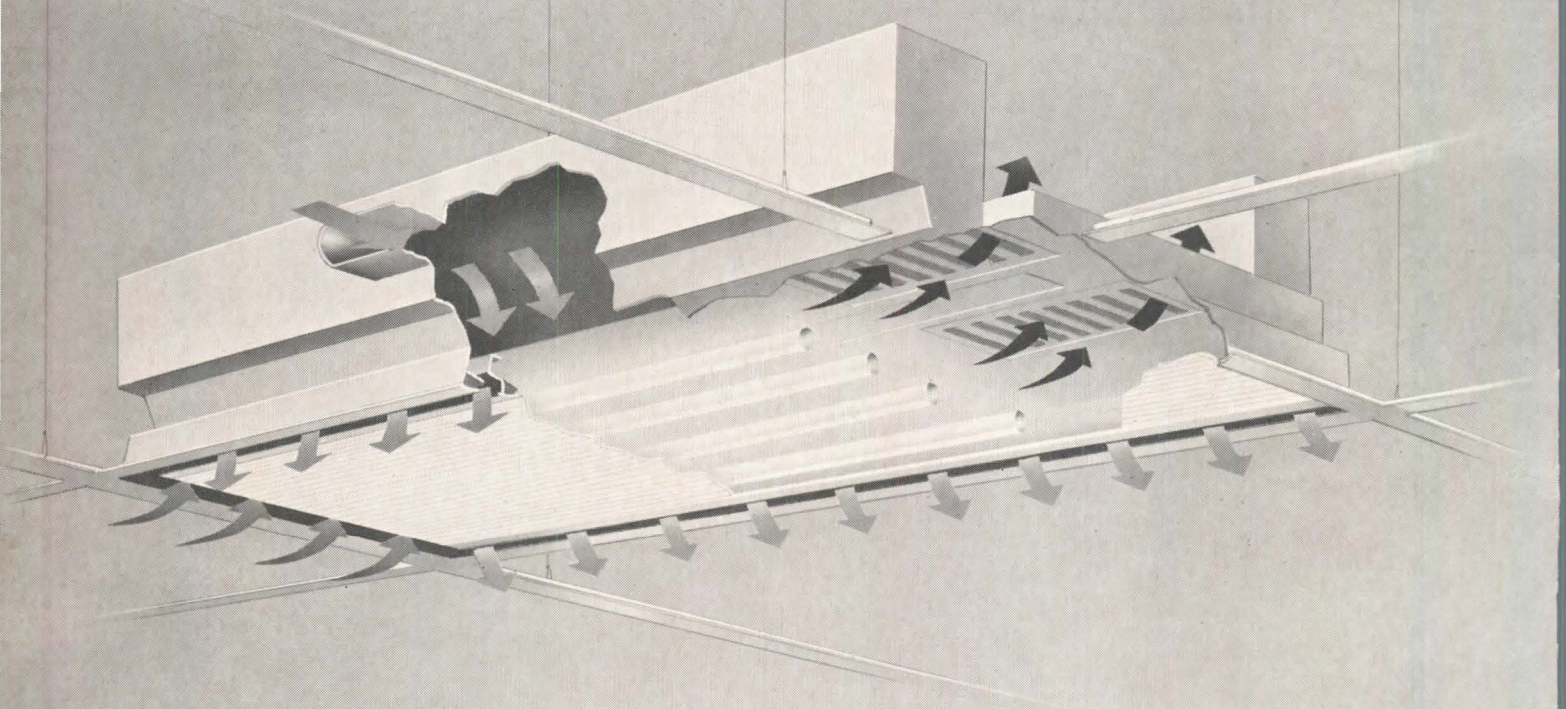
BETHLEHEM STEEL

Steel for Strength

Introducing

Clymatron® II

by Day-Brite / Barber-Colman



An important new addition for the

Clymatron II incorporates new features of maximum benefit to the architect, engineer, contractor, and owner. It's the first combination air/light diffuser with *factory-installed* internally insulated air fittings (for 1.9 times greater heat transfer efficiency than uninsulated fixtures). It also features new *internally adjustable* air pattern control • *built-in* dirt trap (for cleaner ceilings) • *continuous* air supply slot • an integral housing for electronic "Dynamic Sensing" temperature control • and regressed splay that accommodates both framed and frameless lens • two side or one side air delivery.

It is compatible with all popular types of ceilings. "Building-block" design simplifies installation. Electrical workers install and connect *only* the light fixtures; sheet metal workers assemble, install, and connect *only* the air handling equipment.

Three standard housing sizes are available—1 x 4, 2 x 4, and 2 x 2. Building projects which call for custom designs (such as increased air delivery or special esthetic considerations) receive special attention from Barber-Colman's and Day-Brite's engineering department.

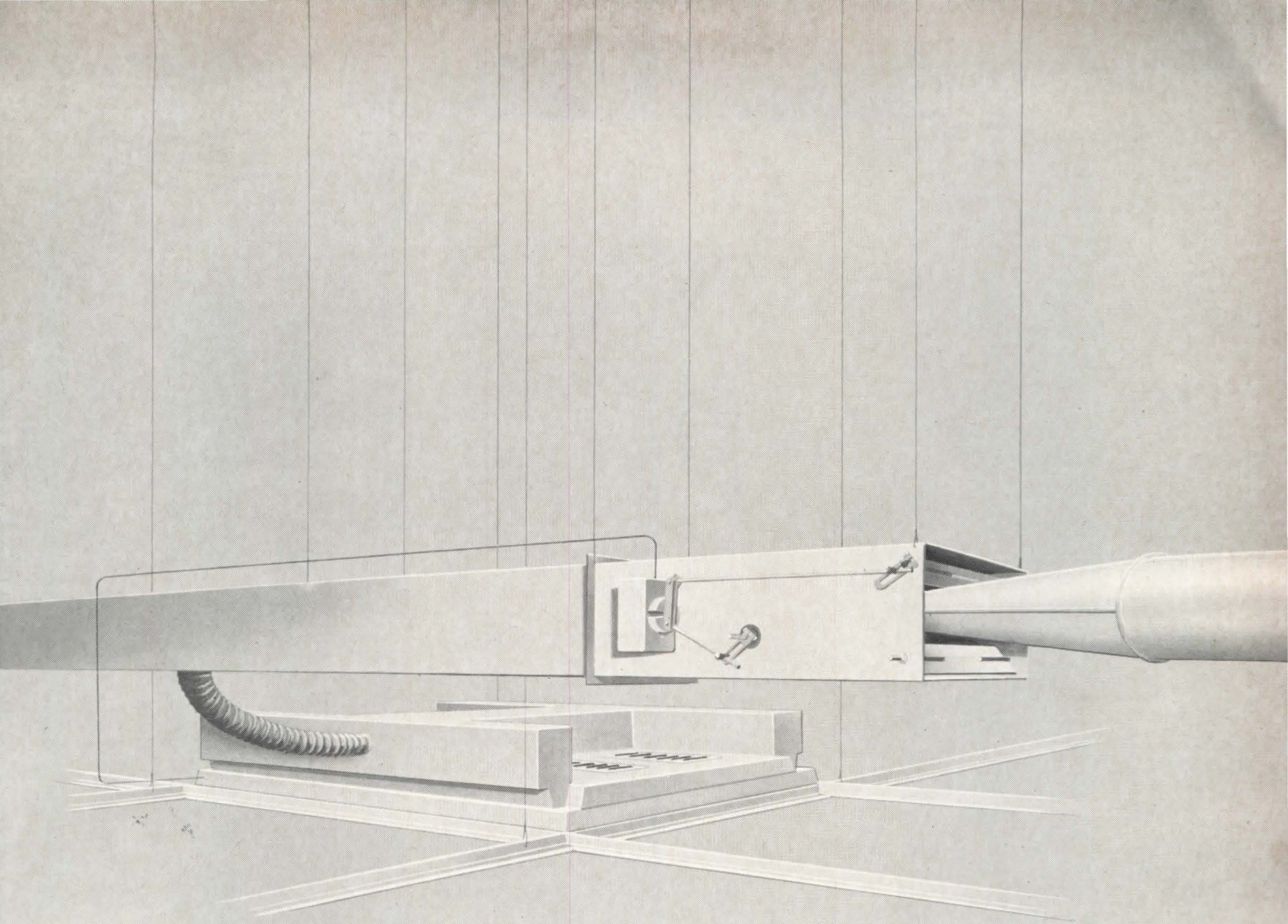
Clymatron II is a product of DAY-BRITE®

Air Handling Components by Barber-Colman Company

A Division of Emerson Electric Co., St. Louis, Mo.

MANUFACTURERS OF QUALITY BUILDING PRODUCTS — THE PRODUCERS' COUNCIL, INCORPORATED

BARBER COLMAN



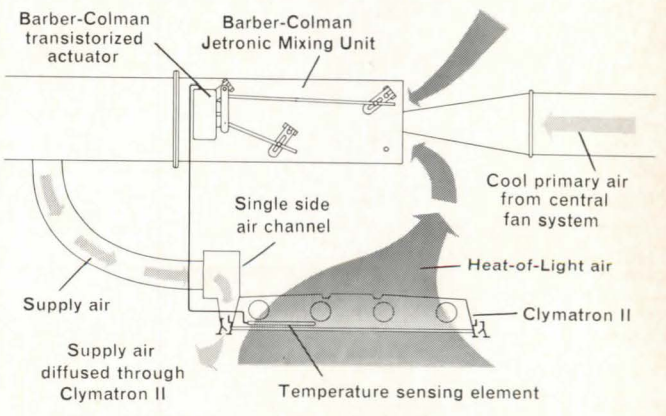
Barber-Colman Heat-of-Light® System

Energy can neither be created nor destroyed; it *can* be conserved and put to more efficient use. For example, when you buy light, you get light plus heat, whether you like it or not. Until recently, this light-generated heat represented wasted energy.

The Heat-of-Light energy conservation system changes this!

Barber-Colman engineers challenged traditional thinking. They asked, "Why should the building owner use an air conditioning system that throws away the energy (heat) he has already paid for in another form (light)?" The answers to this and other questions led to the modern Barber-Colman Heat-of-Light System.

One of the numerous ways that this energy conservation system works is shown at the right. How Heat-of-Light can best be applied to *your* next building project can be determined through one of our computerized Feasibility Studies. Simply contact your nearest Barber-Colman field office for details. No obligation.



Heat-of-Light conserves energy . . . and cuts your air conditioning costs

In the Heat-of-Light System, heat generated by lighting fixtures is drawn into the ceiling cavity (through the lamp compartment of the Clymatron II). Automatically controlled Barber-Colman Jetronic® mixing units mix some of this warm air with cool primary air from the central air conditioner. This tempered supply air is then distributed to the conditioned space.

Since there is more heat available than required for local comfort conditioning needs, the remaining Heat-of-Light is available for use at the building perimeter, if required, to offset heat losses.

BARBER-COLMAN COMPANY

Rockford, Illinois 61101

In Canada: BARBER-COLMAN OF CANADA, LTD.
Toronto, Ontario

On Readers' Service Card, circle No. 334

Homecoming 1985

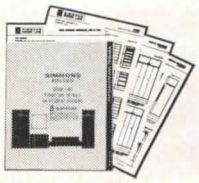
(And the Simmons Dorm Line furniture is still here)

Still here, because unlike old-fashioned millwork construction, Simmons Dorm Line built-ins start with a welded steel framework that won't sag, twist, crack or break, ever.

In fact, the corner joints in a Dorm Line wardrobe are welded so securely that they could actually support the dormitory roof. Compare this with a millwork frame, with corners that are only nailed and glued.

Over the years, Simmons Dorm Line furniture comes out way ahead with the lowest maintenance costs of any furniture available.

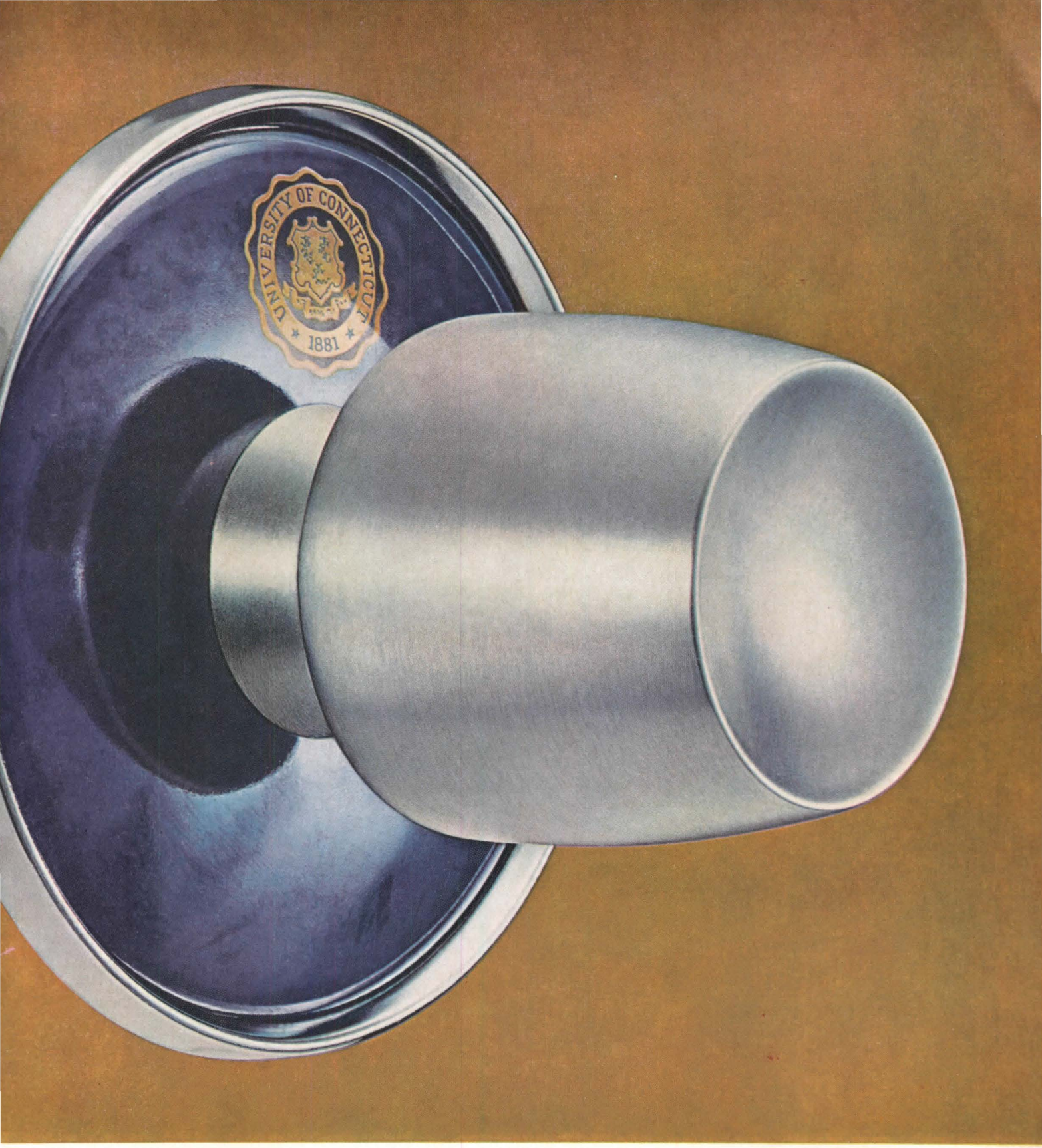
When you take into consideration that most built-ins are financed for a minimum of 18 years, you certainly should expect them to deliver full term service. Plan to specify Simmons Dorm Line built-ins for your next dormitory project.



Free! Attach this ad to your letterhead for our new Work Saver portfolio of acetate overlays. It will make your specification of built-in furniture easier and faster.

SIMMONS

CONTRACT DIVISION • MERCHANDISE MART • CHICAGO 54, ILLINOIS

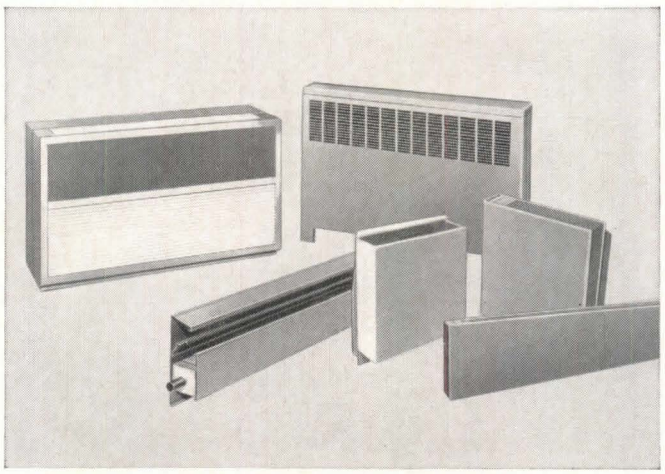


Seal of superb styling: personalized fired copper roses. SARGENT. Lustrous colors handcrafted for amazing detail in patterns, crests, trade marks. Permanent. A distinctive addition to a complete line of advanced architectural hardware: SARGENT®

SARGENT AND COMPANY • 100 SARGENT DRIVE, NEW HAVEN 9, CONNECTICUT • PETERBOROUGH, ONTARIO • MEMBER PRODUCERS COUNCIL

On Readers' Service Card, circle No. 407

We'll sell you any kind of space conditioner you want.



As long as it's right for your conditions.

We've got our reputation to think of.

So we won't try to push a space conditioner that's too large or too small, or doesn't do everything you want it to.

(We make so many types of units, we *can afford* to be completely honest. Not only heating and cooling units, but total air treatment systems. That's why we call ourselves Space Conditioning.)

Say you have large volumes to condition. A school, hospital, office building or dormitory. We'll probably suggest our Walvector® radiation. It's easy to install, provides true perimeter comfort. Available for water or steam, with top or front outlet, and in a choice of sizes and enclosures.

What about smaller areas? An apartment, for instance? We might recommend our Dualaire®. A small, slim individually controlled forced-air unit that mounts in the wall. Heats and cools hydronically. Needs no ductwork, no wiring.

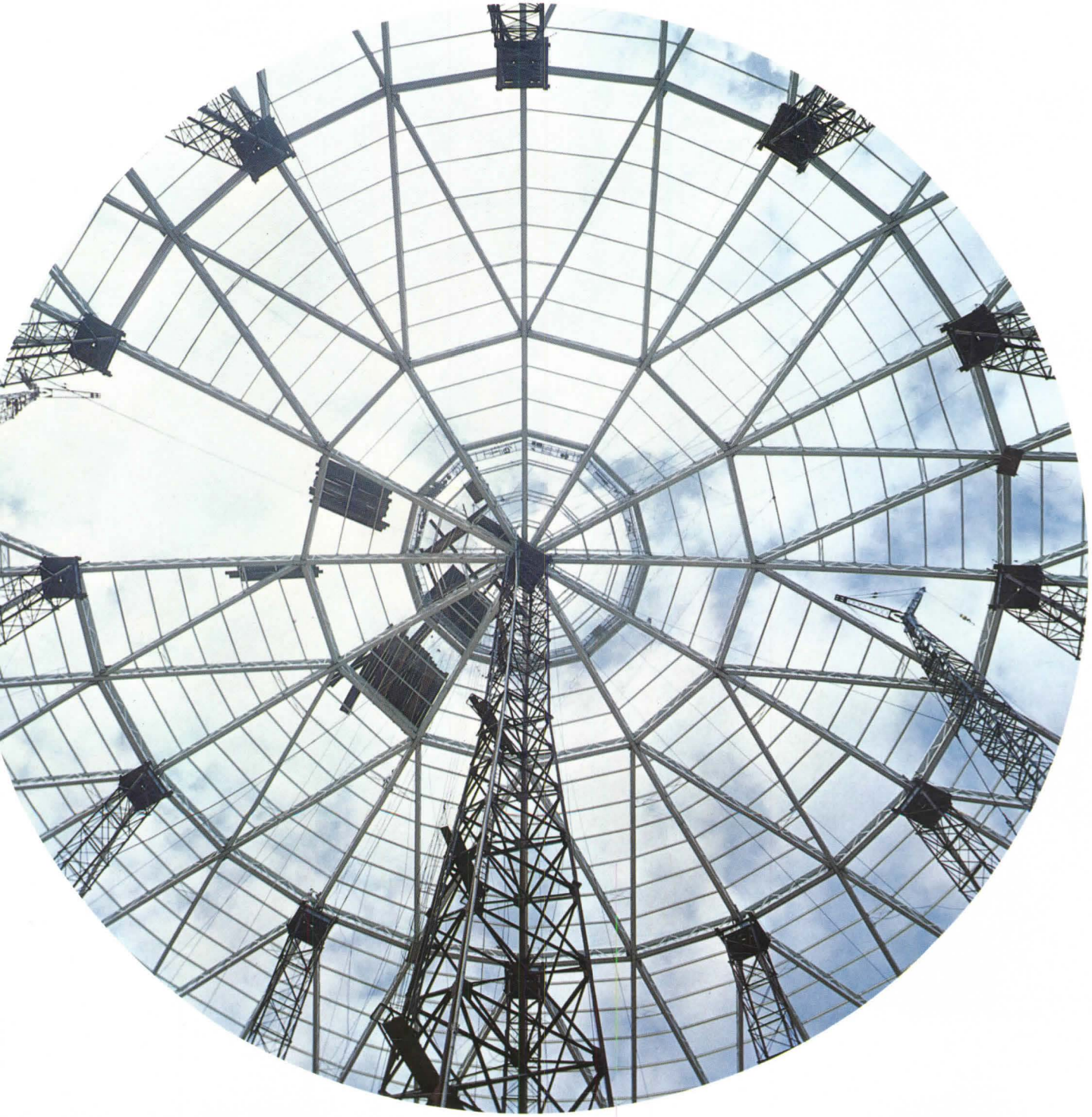
As for baseboard heating, we originated it. We can supply you with the lengths and quantity you need, perfectly matched to our complete line of oil and gas-fired domestic commercial heating equipment.

So no matter what the problem, call on us.

We'll do right by you.

ES Space Conditioning, Inc.
Formerly Iron Fireman-Webster, Inc.
Harrisonburg, Virginia 22801
A Subsidiary of Electronic Specialty Co.

Steel is tops



(TURN PAGE FOR THE WHOLE DOME STORY)

Houston dome steelwork completed 30 days early

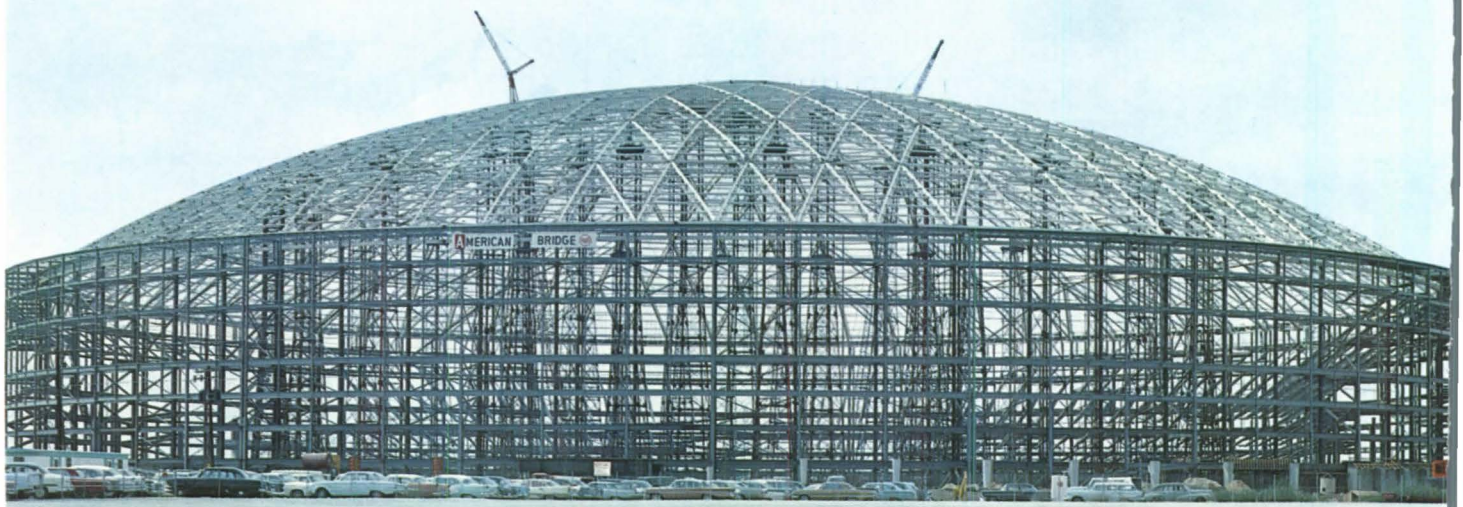
This spring the Houston Astros moved into the world's first indoor baseball park, a nine-acre steel-framed building topped by a 642-ft.-diameter dome that soars 202 ft. above the playing field. Because the Harris County Stadium is the first of its kind, architects-engineers Lloyd & Morgan and Wilson, Morris, Crain & Anderson faced a series of knotty problems, including a complex air-conditioning system, extraordinary acoustical difficulties, and tricky skylighting to admit sunlight for turf.

The first major decision was the type of structure to use for the dome. A number of systems were studied, including steel and aluminum geodesic suspension-type cantilever trusses, aluminum and timber space frames, and even an inflated flexible covering. The final selection—most economical of all—was a steel Lamella trussed structure designed by Roof Structures, Inc., of St. Louis.

Once under construction, the Lamella design proved even better than anticipated. The 2,890-ton dome—plus 6,110 additional tons of steelwork—was fabricated and erected in less than four months, 30 working days ahead of schedule.

Today, most large domes are built with steel because steel has the most favorable strength-weight-cost combination of any structural material. Steel can be erected in any season, and generally is less likely to be damaged in handling than other materials.

Lamella is a registered trademark of Roof Structures, Inc.



Steel design most economical for Houston's record-span dome. This Lamella design in steel was the least expensive of several systems considered and actual costs came in under the budget estimate. All members are standard structural steel sections.

Owner: Harris County; Architects: Lloyd & Morgan and Wilson Morris, Crain & Anderson; Consultants: Praeger-Kavanagh-Waterbury; General Contractors: Lott-Drake, Inc.; Dome Designers Roof Structures, Inc.

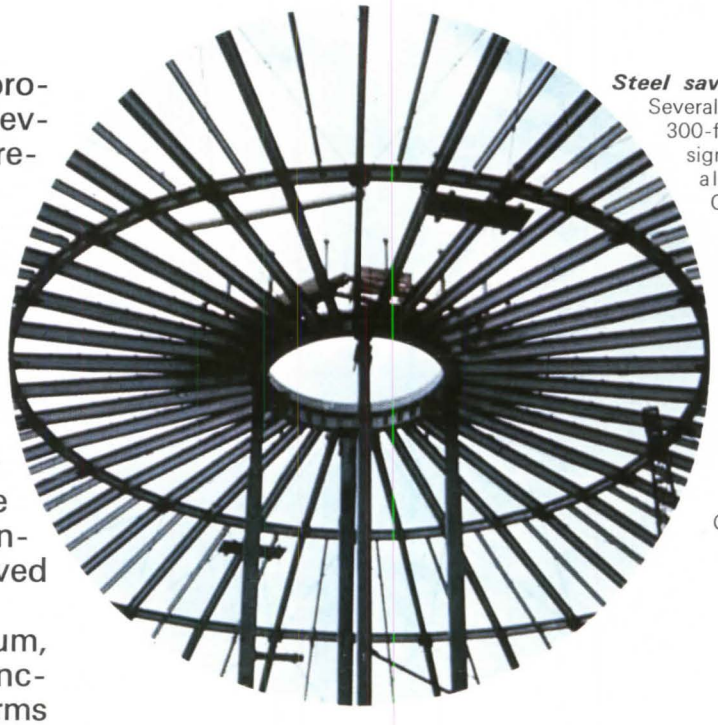
This mark tells you a product is made of steel.

The USS Family of Steels provides a range of strength levels to fit the designer's requirements.

Another striking example of steel's economy is Syracuse University's field house dome. With 700 tons of USS structural steel in the dome and canopy, it has a rise of 32 ft. and a diameter of 300 ft. In a competitive bid with a design using another material, steel saved $193,500.

At the Memphis Coliseum, an intricate and highly functional network of steel forms a gracious Lamella dome 105 feet high and 325 feet in diameter. Two other designs were originally considered—thin shell concrete and a conventional steel dome. Both were more expensive and would have taken longer to construct.

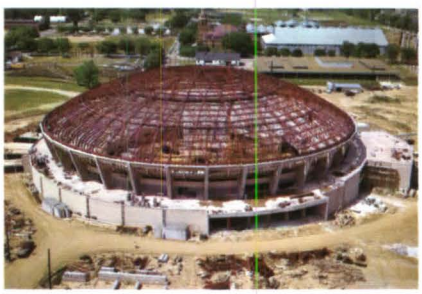
For information about the widest available range of structural steel shapes, or for design assistance, contact a USS Construction Representative at our nearest District Office or write United States Steel, Room 8216, 525 William Penn Place, Pittsburgh, Pa. 15230.



Steel saves $193,500 in Syracuse. Several bids were submitted for this 300-ft. low-profile dome. Steel design was $193,500 lower than the alternate concrete design. Owner: Syracuse University; Architect: King and King;

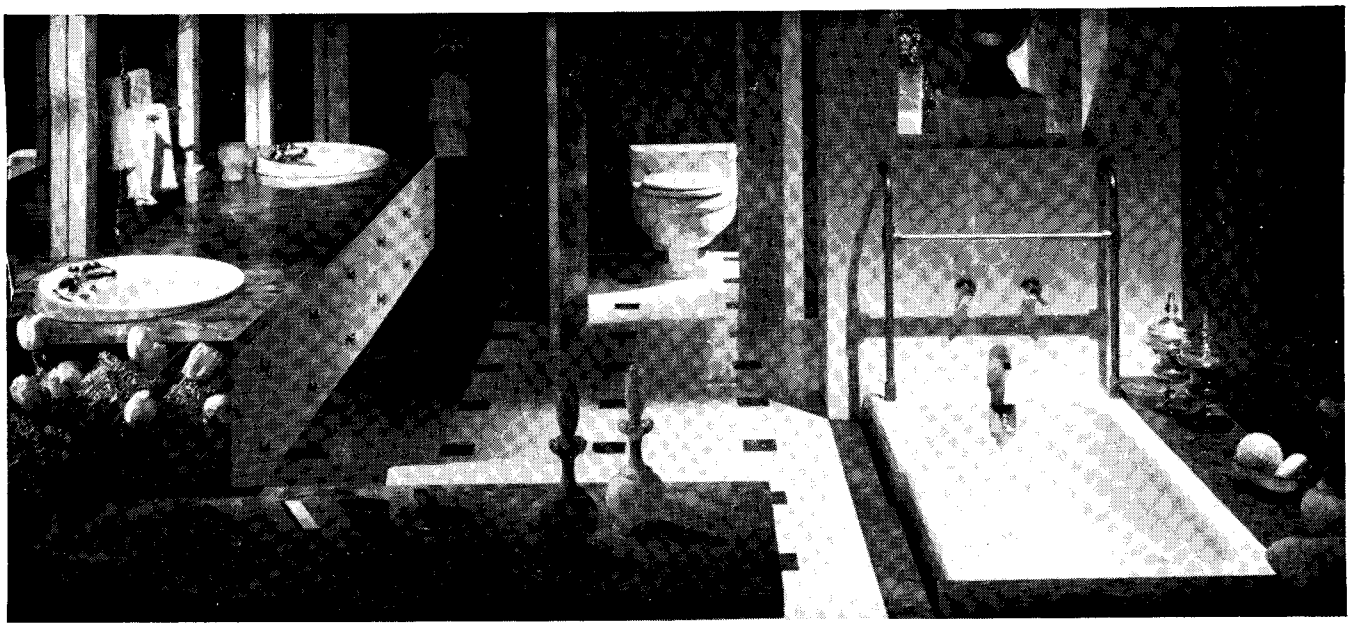
Engineer: Eckerlin and Klepper; General Contractor: R. A. Culotti Construction Co.

Steel lowest bid in Memphis. Lamella design in steel was selected over designs using other materials for two reasons: speed of construction, and low cost. Owner: City of Memphis, County of Shelby; Architects: Furbringer & Ehrman and Robert Lee Hall & Associates; General Contractor: Granite Construction Company; Structural Engineers: S. S. Kenworthy & Associates, Inc.; Dome Design: Roof Structures, Inc., and Steel and Roof Structures, Inc.; Fabrication and Erection: Pidgeon-Thomas Iron Co.

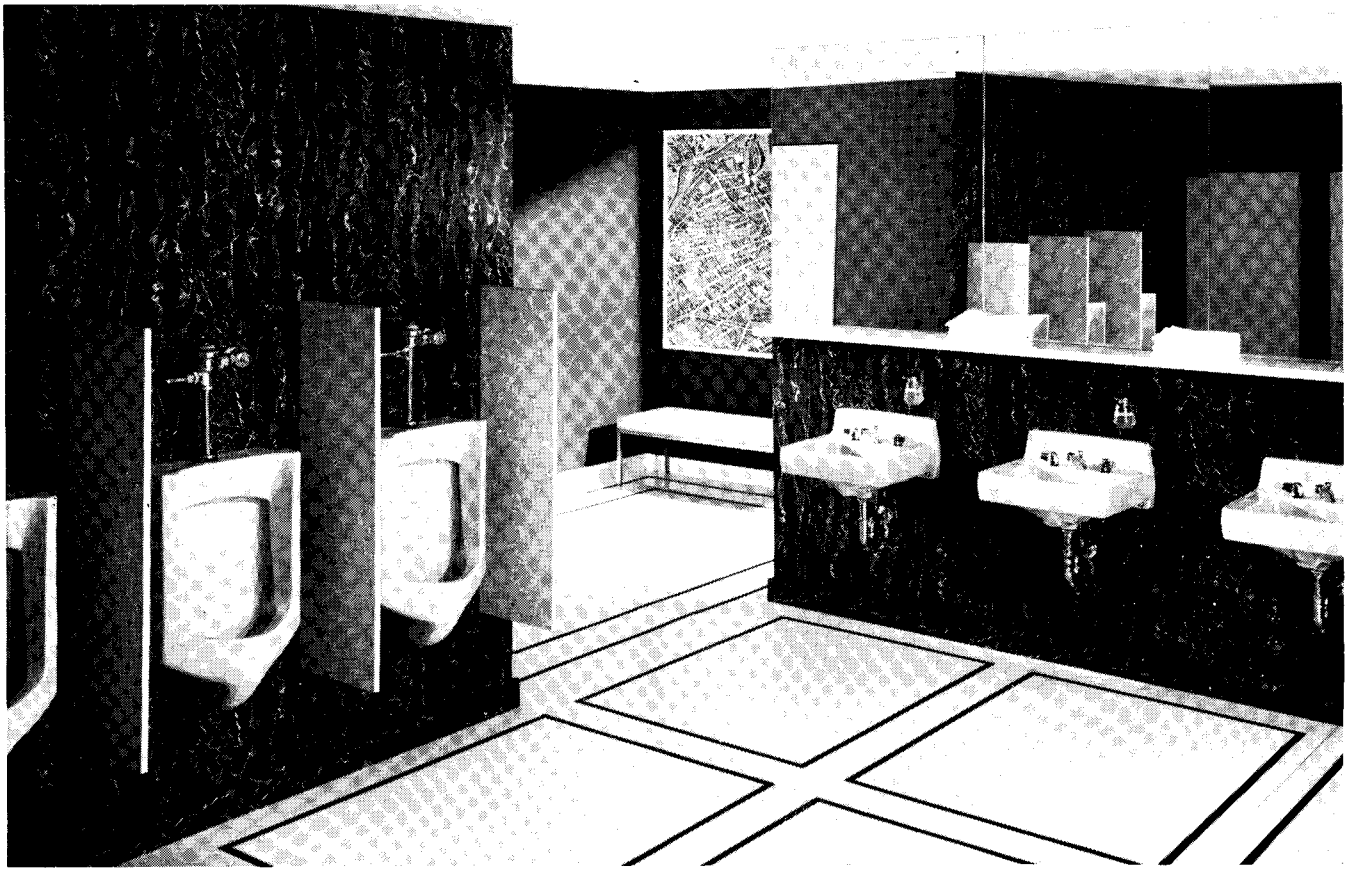


United States Steel: where the big idea is innovation

TRADEMARK



Fathers and sons from homes like this...



...appreciate offices and schools furnished like this

Eljer's new commercial fixtures are a refreshing departure from the ordinary "institutional" look. Their graceful lines and warm colors take their cue from Eljer's celebrated Master Crafted residential fixtures. Their advanced styling allows the architect greater latitude in washroom design—and they cost no more than conventional makes. Their upkeep is nominal . . . no hard-to-clean nooks and crannies. The acid-resistant surface provides easy maintenance and protection of your investment for years.

Get the entire story. Call your Eljer representative or write The Murray Corporation of America, Eljer Plumbingware Division, Dept. PA, P.O. Box 836, Pittsburgh, Pa. 15230.

MASTER CRAFTED

ELJER

SINCE 1904 FINE PLUMBING FIXTURES

On Readers' Service Card, circle No. 328 ➤

for exciting decor... you can let yourself go with ACRYLITE®

That's the beauty of it. The subtle glow of the ACRYLITE luminous wall in this salon creates a mood of quiet elegance — and a sense of spaciousness. Back-lighting the facia provides glare-free, evenly diffused illumination.

Textured ACRYLITE panels in gradually intensifying hues set off the semi-circular divider as a dramatic design motif.

With ACRYLITE, in fact, unusual design ideas are as limitless as your imagination.

ACRYLITE acrylic sheets come in over 70 exciting patterns and colors — velvety smooth or exotically textured... transparent, translucent or opaque. Lightweight, fade-proof, impact-resistant and lastingly beautiful, ACRYLITE is the unique new way to divide space and control light dramatically.

Look what you can do with ACRYLITE:

Twist it

ACRYLITE, when heated, can be permanently twisted or bent into unique and interesting forms.

Shape it

ACRYLITE works like wood; can be cut, sawed, drilled, routed, ground, sanded and polished with ordinary tools.

Form it

ACRYLITE is easily formed by conventional thermo-forming methods. Ideas become reality with this versatile material.

ACRYLITE®
ACRYLIC SHEET

If product or performance defective • Good Housekeeping • Guarantees replacement or refund to consumer

For more information see Sweet's Architectural File 7d/Am, or write: American Cyanamid Company, Building Products Division, Dept. JRY 595 North Ave., Wakefield, Mass. 01881

CYANAMID

DISTRIBUTORS COAST TO COAST

Cleveland architect A. A. Papesh specifies Inland Radiant Ceiling Panels with 3M Brand Velvet Coating

American Greeting Card Building combines superior heating, cooling, acoustics with near-perfect light diffusion

"Has excellent hiding qualities. Even the seams between panels flatten out in appearance," says architect Alexander A. Papesh about 3M Velvet Coating on Inland Radiant Ceiling Panels.

By finishing Inland Radiant Ceilings with 3M Velvet Coating, new beauty has been added to the system of controlling temperature nature's way: through transfer of radiant energy.

Uniform and glare-free, 3M Velvet Coating is an *optical* rather than a chemical formula. It has virtually perfect light diffusing properties — giving a soft, suede appearance with rich, uniform color over a wide range of viewing angles.

And while conventional flat finishes burnish when cleaned, 3M Velvet Coating stays glare-free—even after 250 scrubbings. Dirt and light abrasion marks remove easily with no change in appearance.

3M Velvet Coating and Inland Radiant Ceilings—a simple, economical system of temperature and acoustical control—plus glare-free, velvet-soft beauty to complement the interior decor.

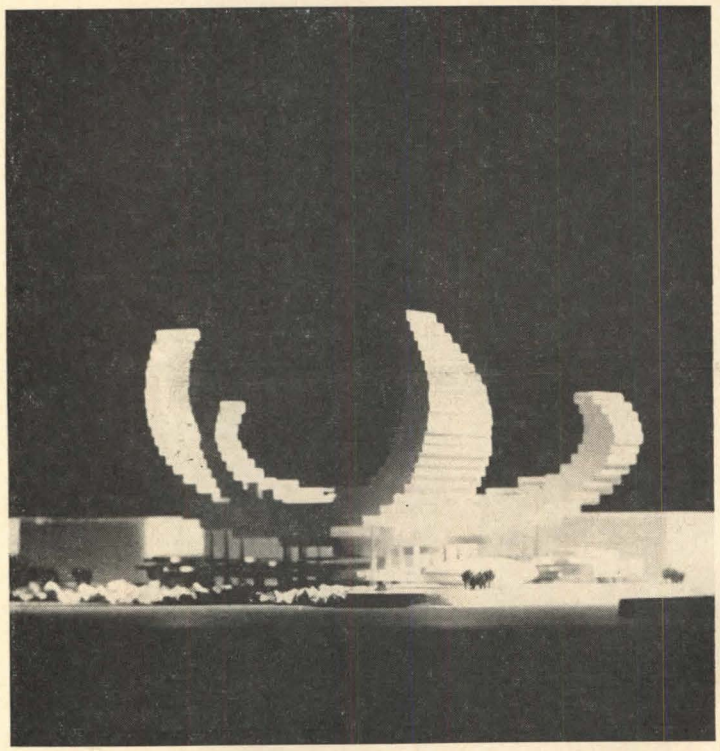
For detailed information on Inland Radiant Ceilings, write: Inland Steel Products Company, P.O. Box 393, Milwaukee 1, Wisconsin.

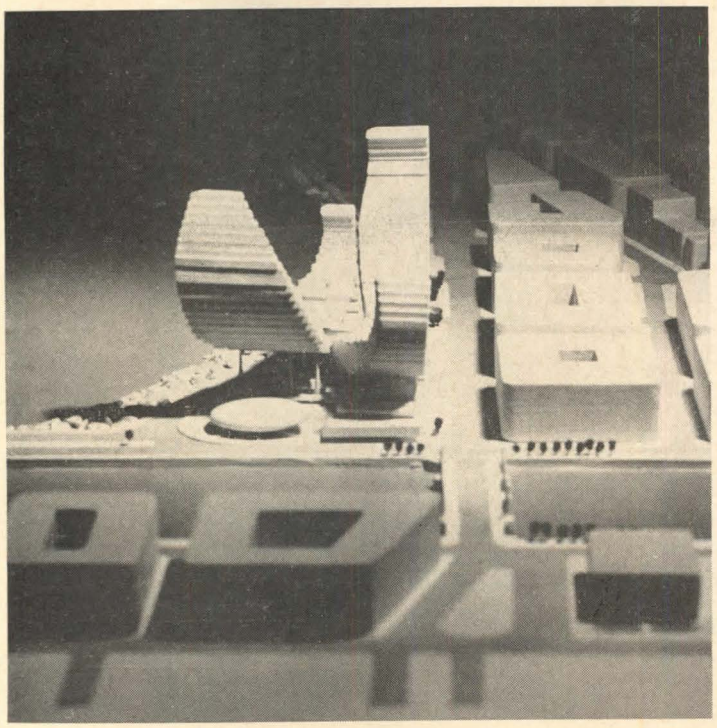
INLAND STEEL PRODUCTS COMPANY in cooperation with 3M COMPANY

NEWS REPORT

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

Up-Ended Horseshoes Win in Spain





SAN SEBASTIAN, SPAIN Three members of the University of Virginia's architecture faculty have won $20,000 in an international competition sponsored by the Gran Kursaal Maritime and Real Estate Company of San Sebastian. Their winning design is for a multiple occupancy building complex, which will replace an old existing structure, and which will include 105 luxury residences and apartments, a luxury hotel with space for 300 guests, 300,000 sq ft of shopping arcades, underground parking for 350 cars, an auditorium seating 1000 persons, a covered skating rink, an indoor swimming pool, an elevated public terrace and gardens, restaurants, etc. The three winners —Jan Lubicz-Nycz, lecturer in architecture, Dr. Carlo Pellicia, assistant professor of architecture, and Dr. William Zuk, professor of architecture, who served as structural consultant—conceived their project as a "container": a distinct structure related to the city of San Sebastian. The site is a triangular one at the mouth of the Urumea River, which runs through the center of town. (San Sebastian is located 12 miles south of the French border on the Cantabrian Sea; and during the summer months, it becomes not only a popular resort but also, when "El Jefe" is there, the capital of Spain, much as Johnson City becomes the U.S. capital at barbecue time). Designer Jan Lubicz-Nycz had this comment about the concept behind his winning entry: "In times when the process of urbanization is rapidly gaining momentum, architecture as a discipline of a single building for a specific purpose —school, church, house, factory, etc., placed on its isolated site defined by property lines and arbitrary street patterns— results in urban forms that are inefficient and uneconomical aggregations of small buildings, are wasteful in the use of land, means of communication, and services, not to mention the poverty of their spatial matrix. A possible direction for the future of architecture is that it will become a discipline concerned not with the single and competing buildings but will seek conceptual and formal solutions in terms of multioccupancy structures which, for lack of a better term, are here called containers."

According to the promotors, the structure will be built as designed, probably at a cost of about $6,000,000.

Jurors for the competition were architects Secundino Zuazo Ugalde, Heikki Siren, Ernesto N. Rogers, Pierre Vago, Julio Cano Lasso, Rafael La Hoz Arderius, and sculptor Eduardo Chillida Juantequi.

Four for Columbia

NEW YORK, N.Y. Columbia University annnounced a major reorganization of its architectural school recently and confirmed

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administrative faculty appointments. Kenneth A. Smith **(1)**, who has been acting Dean since the resignation in 1963 of Charles R. Colbert, will become Dean of the School. There will be an immediate increase in enrollment from 330 students to about 410, with an eventual goal of 500, once space is found for new quarters. The school itself will have three divisions: architecture, urban planning, and architectural technology. As tentatively announced in the MAY 1965 P/A, Romaldo Giurgola **(2)** will become chairman of the Division of Architecture. Charles Abrams **(3)** becomes chairman of the Division of Urban Planning. And Mario G. Salvadori **(4)**, professor of Civil Engineering and Architecture, has been appointed chairman of the Division of Architectural Technology, which will train engineers as consultants in structural, mechanical, electrical, and acoustical fields.

Dean Smith explains the rationale behind the new divisions by pointing out the dearth of urban planners and urban planning throughout the world.

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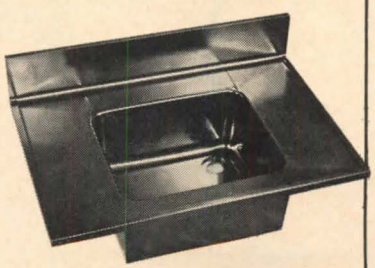

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He goes on to say: "At the same time, the technology of architecture is becoming a larger and more complex area of the field. Engineering schools are training fine minds for research and pure science. But there is a definite lack of graduate engineers trained in the technological, practical aspects of engineering needed by the building industry. The new Division of Architectural Technology will help fill that gap."

Smith (1), who becomes the fifth dean in the 94-year history of Columbia's School of Architecture, was born in 1905, educated at Massachusetts Institute of Technology, and, by 1935, was an associate in architecture at Columbia. He has been there ever since. In 1937, he became assistant professor, and resigned as vice-president of Wininger & Selby, Inc., a construction firm. He became associate professor in 1946, professor in 1953, assistant dean in 1957, and associate dean in 1962.

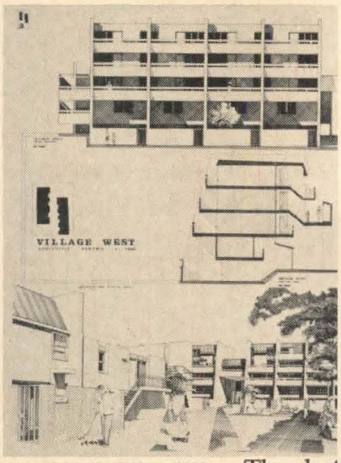
Giurgola comes to Columbia from the University of Pennsylvania, where he was Professor of Architecture. Born in Rome in 1920, Giurgola, who is now a U.S. citizen, graduated *summa cum laude* from the University of Rome and earned an M.S. degree in architecture from Columbia in 1951. Besides maintaining an active architectural practice (his firm Mitchell/Giurgola, Associates, of course, won the recent competition for the new AIA headquarters), Giurgola has taught at Cornell University, and was art director and architectural editor of *Interiors* magazine from 1952 to 1957. He is also currently a design consultant for Philadelphia's City Planning Commission.

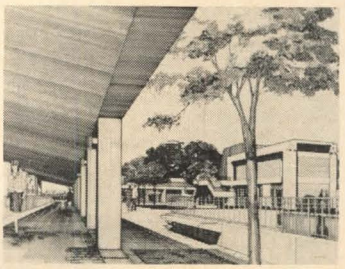
Charles Abrams, who was born in Poland in 1901, has a legal, administrative, and academic background. He helped write municipal housing laws in the 1930's, and was New York State Rent Administrator in 1955. From 1955 to 1959, he was chairman of the New York State Commission against Discrimination and a member of the Governor's Cabinet. He is the author of five books on housing and planning. He has in addition taught at the Massachusetts Institute of Technology and in the Graduate School at the New School for Social Research.

Mario Salvadori, who was born in 1907, has doctorates in both civil engineering and mathematics from the University of Rome. He has written numerous books and papers in his fields, and is a member of the Columbia University Seminar on the Influence of Technology on Society.

The separation of powers, administrative and pedagogical, looks good to P/A—at least on paper. Too often, good designers and teachers have been forced to spend most of their time on red tape. Now, Smith may be able to relieve Giurgola, Abrams, and Salvadori of these chores.

Refreshing Approach to Urban Renewal in Mint-Julep Land





LOUISVILLE, KY. The last major architectural competition in Louisville was held more than 30 years ago. This spring, the city's Urban Renewal and Community Development Agency held another. The results were announced recently, and the winning design, unlike many competition winning designs, has an excellent chance of being built in its original form. To help insure that unwarranted changes are not made, the agency has retained two of the architectural jurors—Ralph Rapson, Dean of the University of Minnesota's School of Architecture, and George W. Qualls, Associate Professor of Architecture at the University of Pennsylvania—to act as continuing consultants, representing the city in overseeing the project.

The nationwide competition, which drew submissions from 31 architect-developer teams, was for the design of a neighborhood residential-commercial complex (apartments, town houses, shopping centers) on 34.4 acres of land in the west downtown area.

The winning design was presented by Louisville architects McCulloch & Bickel, who are working with two New York finance-developer firms, Taylor Hurley Associates, Inc., and David Rosen Associates, Inc. The contractor will be Wittenberg Engineering and Construction Company of Louisville.

Called Village West, the community will bar automobile traffic, but will provide off-street parking space for all of the 712 dwelling units in the community. Around the periphery of the village will be a series of five-story terrace apartment buildings. These will overlook interior groupings of town houses, playgrounds, schools, churches, shopping center, etc., amid generous landscaping. All entrances to apartments in the five-story buildings are from the outside. First- and second- floor duplex units will be entered from grade. Single-level apartments on the third floor, and duplexes on the fourth and fifth floors, will have entrances off long promenade terraces, which are reached by exterior stairwells. Commenting on the favorable aspects of the design, the jury stated: "One of the strongest features of the design is the pedestrian system of movement and closed spaces along diagonal paths by courtyards alongside open spaces, which provide varying experiences on a trip through the entire site." The jury feels it is worth mentioning further that the results of the competition seem to amply justify the time and expense of carrying out this competition. It is doubtful whether the result could have been obtained without benefit of the competition, which will produce a community offering more in the way of living quality than this type of housing has produced anywhere else. Hopefully, the competition will have significant impact on the future developments of this type in other cities."

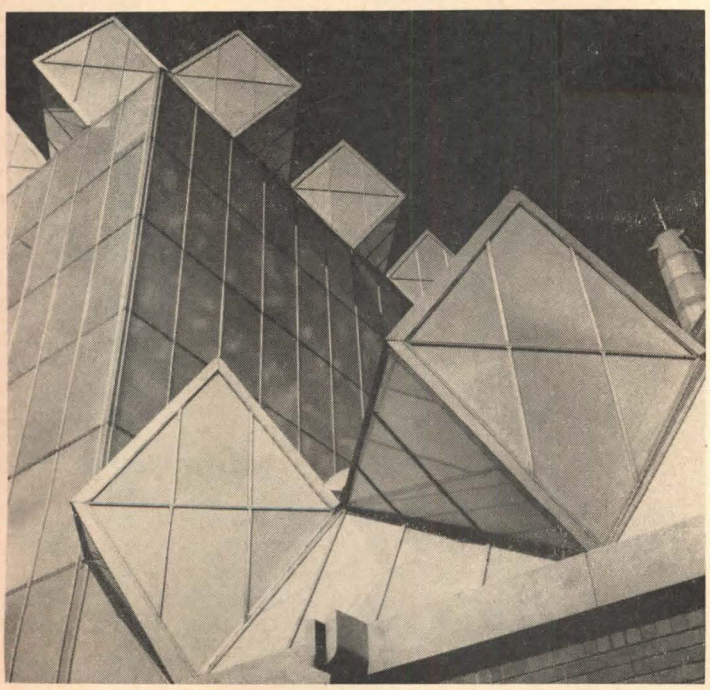
Cost of the land was fixed by appraisal before the competition at $262,000, or about $700 per unit. All developers had to agree to pay that price, and it is anticipated that financing will come under the FHA 221 (d) (3) program, which sets limits on both construction costs and family income of occupants. Rents in the housing units will range from about $70 a month to about $100 per month.

Jurors were (besides Rapson and Qualls): Lewis E. Kitchen, Kansas City real estate developer; Matthew L. Rockwell,

Executive Director, Northeastern Illinois Planning Commission, Chicago; Roger C. Wilkins, Vice-President, Travelers Insurance Company, Hartford, Conn.

Work on a $2,500,000 pilot project, which includes the shopping center and some apartments, is expected to be underway by the beginning of next year.

Reynolds Awards Goes to British Building



LONDON, ENGLAND The coveted $25,000 R. S. Reynolds Memorial Award, the most remunerative annual international award in the field of architecture, was presented to James Gowan and James Stirling for their Engineering Building at Leicester University.

Administered annually for the last nine years by the AIA, the Reynolds Award honors architectural achievements making "significant use of aluminum." The 1965 award, presented here last month by Morris Ketchum, then first vice-president of the AIA, is the first to go to British architects Their winning design—a low-budget, low-maintainence complex—uses standard aluminum patent glazing bars throughout to support glass and cladding panels.

Considerable controversy has been stirred up by this complex building, which dramatically overshadows an unextraordinary campus. The forms are simple—the architects have admitted a strong Wrightian influence—but they are arranged in a very distinctive way.

The angular, concrete frame structure is split by expansion joints into three blocks: one, a three-storied workshop, is attached to the second, a long one-storied workshop, 125-ft high. Both buildings are roofed by spectacular skylights of diamond-shaped glass—a folded plane, north light construction designed to carry heavy hydraulic pipe runs.

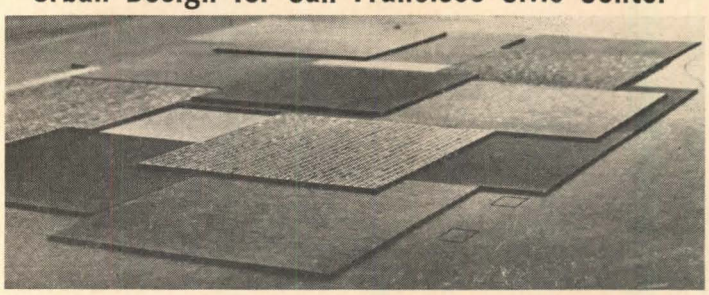
Two tower elements of unequal size and split by a circulation area—separate concrete towers for stairs and an elevator—fit close against the workshops to form the third block. The tall tower, sheathed in translucent glass, houses administrative offices. The smaller tower, which is divided into lecture halls, has a tile-clad exterior interrupted by wrap-around strips of jutting windows that complement the angular workshop skylights. The towers rise above windowless, cantilevered podiums shaped like the prow of a coal barge. Here and there, exhaust pipes of varying sizes poke up. What results is a startling interplay between vertical mass and the horizontal thrust. The solid parts of the building are faced in red brick and Dutch terracotta tile.

The building's interior looks efficient—and somewhat unfriendly: it has been economically finished in tile, brick, and metal; pipes are all left exposed; bare spots light the corridors. One wonders what this building is like during a typically dreary spell of English weather.

Nevertheless, the complex is meticulously worked out. In addressing his audience at the awards dinner, Ketchum said, "an American going abroad is likely to have too tolerant an attitude toward the industrialization of the country he is visiting. After all, he has been told that America's vaunted technology created the highest living standard in the world. And then an American architect comes to Great Britain and finds that you are ahead of us in the industrialization of buildings."

In addition to the $25,000 honorarium, Messrs. Gowan and Stirling received an original sculpture, in aluminum, by Elbert Weinberg.

Urban Design for San Francisco Civic Center



SAN FRANCISCO, CALIF. A breath of Parisian air blew into "Baghdad on the Bay" this spring with the announcement of the first prize winners in an international competition for the Beautification of the San Francisco Civic Center Plaza. Sharing the first prize of $3750 were two Bulgarians, now residents of Paris: Ivan Tzvetin, 36, and Angela I. Danadjieva, 34. With the award went a strong jury recommendation for the project's realization. The jury consisted of Thomas Church, chairman, landscape architect, San Francisco; Sibyl Moholy-Nagy, professor of architecture, Pratt Institute, New York; Andre Bloc, sculptor and editor of *L'Architecture D'Aujourdi'hui,* Paris; Moses Lasky, attorney and art

patron, San Francisco; and Luis Barragan, architect, Mexico City.

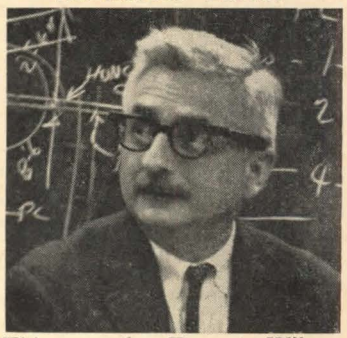
Selected from 317 entries, the first-prize winner represents a series of flat terraces, 100′ x 100′, that are stacked, juxtaposed, and arranged much like rugs in an attractive department store layout. One terrace will be a water-filled reflecting pool. Others will be covered with grass and may serve as places for the display of sculpture or for seating during public assemblies. Some, as they appear in the design, are concrete slabs covered with incised text telling the history of San Francisco.

Unanimously praising the winning entry, the jury said: "This design, instead of being just another municipal plaza, is so unique that is will be a matter of comment around the world and will prove to be a perpetual attraction to the visitors. Any other selection would have presented a compromise and would not have permitted an inspiration for future significant contributions in sculpture, paving, lighting, and other aspects of this Plaza. A new beginning in the design of a truly urban environment could emanate from this winning project."

Second prize of $3250 went to Iwona Sadowska, Andrzej Gorczynski, and Marek Lewandowski of Warsaw, Poland.

Third prize, $3000, went to Americans Sidney Katz and John Matt, with Michael Bobick, William Vitto, and Albert Lorenz as associates.

New P/A Associate Editor

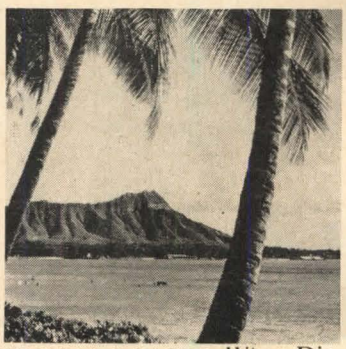


This month, Forrest Wilson joins PROGRESSIVE ARCHITECTURE as Associate Editor, Features, replacing Ilse Meissner Reese, who is returning to full-time practice.

Readers of P/A will remember Wilson's article on "Mayan Stone-Age Masonry" (NOVEMBER 1964 P/A), and his inimitable drawings for "The Busy Architect's Guide to the World's Fair" (OCTOBER 1964 P/A) and "Progressive Architecture's Washington Vade Mecum" in last month's issue.

Wilson's construction experience ranges all the way from ship's carpenter during World War II to construction field superintendent and designer for Maria Bergson Associates. He has most recently been assistant professor in charge of the construction program for the Department of Interior Design at Pratt Institute. Besides his knowledge of structure and design and his talent in presenting them visually and verbally, Wilson is an accomplished sculptor, having studied and worked in France, Mexico, and the United States. His varied talents and steady enthusiasm will make him a valuable member of P/A's editorial staff.

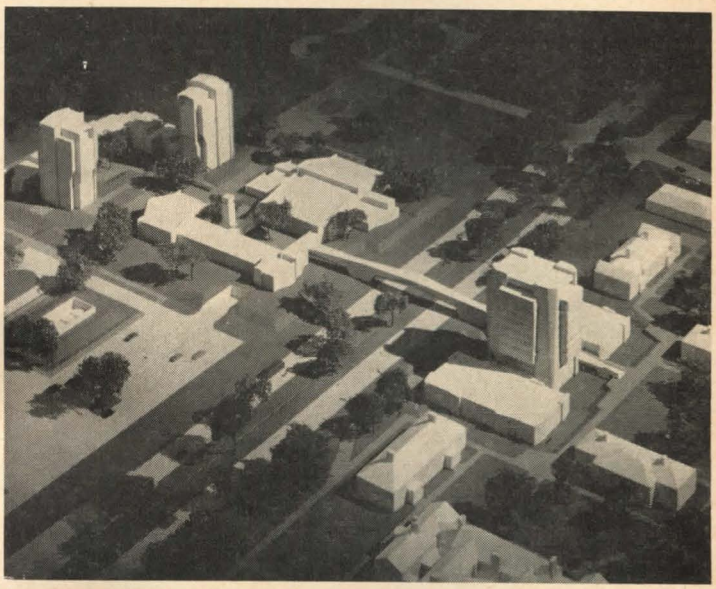
Diamond Head Imperiled Again

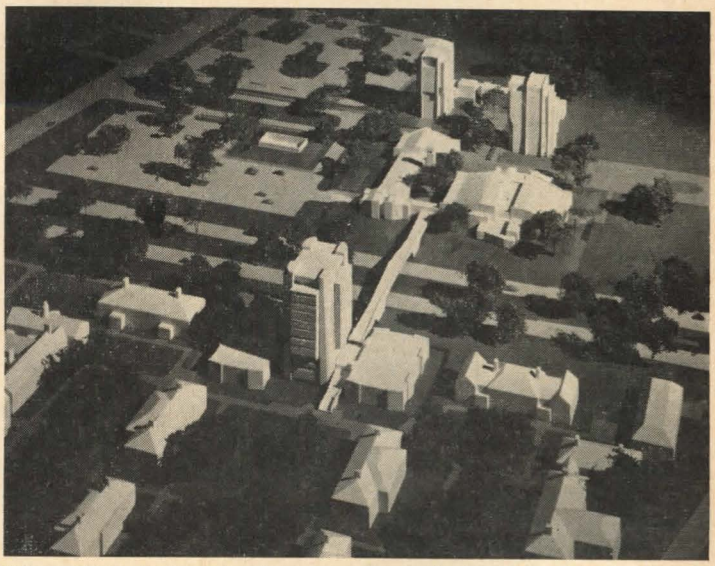


HONOLULU, HAWAII When Diamond Head was threatened by an onslaught of get-rich-quick apartment-house builders a few years ago, concerned islanders started the usual round of petition signing and button-holing of legislators (p. 79, OCTOBER 1962 P/A). Things quieted down for a while and even showed signs of improvement in 1963 when the City Council was prevented from making any zoning changes within the city until a general plan for the city and county was adopted. This May, however, the City Planning Commission, in a cloak-and-dagger meeting, voted to recommend the change on the zoning of the property on Diamond Head from single-family residential to apartment-hotel classifications. Immediately, groups such as the AIA and the Oahu Development Association leapt to the barricades with cries of "Foul!" and exclamations of worry over the future of one of the United States' most famous landmarks.

While the conduct of this affair on the municipal level is (however blatantly the city government has moved) a local matter, the future of Diamond Head is not. The vision of this imposing promontory being laid helpless before the ravishing of the real-estate speculator is disturbing, to say the least. It is all too easy to imagine Diamond Head ringed round with hotels and apartment buildings that would put Miami Beach to shame. And it takes only a little more thought to envision the same thing happening to the Grand Canyon or the Black Hills or Mount Kennedy. The Hawaii State Legislature has, since the action of the City Planning Commission, declared Diamond Head a state monument. Perhaps this will give fuel to the fires of those trying to prevent the defacing of this monument. If not, Secretary of the Interior Stewart Udall had better step in to save Hawaii from its own folly.

Design for an Urban Campus





HEMPSTEAD, LONG ISLAND, N.Y. The expansion problems of urban universities closely resemble the problems of compulsive eaters. If not handled by a professional, they are likely to end in runaway sprawl. Recently, Hofstra University in Hempstead received from the Federal Government a gift of 88 acres of land near its present campus that formerly belonged to the Mitchell Air Force Base. To help plan the expansion, the university engaged New York architects Warner, Burns, Toan & Lunde. Hofstra, which currently has an enrollment of 10,000 students, badly needs dormitory and library space to help attract students from outside the Long Island area. The school already has raised about $11,-

000,000—on top of a $1,-000,000 loan from the Ford Foundation to finance its expansion.

A major planning problem faced the architects. The newly acquired land lies across from the present campus but is separated from it by the Hempstead turnpike, which is soon to be doubled in width. WBT&L decided to build a new library at the foot of the existing campus next to the turnpike, where it would act as a focal terminus. Construction of the library was begun this spring. The original Hofstra campus, completed in 1935, was laid out like Jefferson's University of Virginia around 210-ft quadrangles. In seeking a shape for the library, WBT&L first thought of a round one. Their final solution, however, is a tall, narrow tower, 12 stories high, whose corner-supporting shafts are mitered and tapered forms, and which rises from a sunken two-story base. When completed, it will hold 400,000 volumes, about 60,000 on each floor, so that each floor will provide easy divisions for subject categories. Windows 4 ft off the floor ring the building between the columns, and every 5 ft or so a slice of window cuts to the floor. Carrels are placed between these window slices so that a student who is studying will have a solid wall between himself and the exterior. Light will enter from above; by moving his chair back, the student will be able to look out.

Running from the library to the other side of the turnpike will be a footbridge, 15 ft wide and 360 ft long, built in two sections, cantilevered from either side of the road and joined in the middle. Forming the opposite approach to the bridge will be a student-union dining hall. When the plan is eventually completed, the Mitchell Air Force acreage will have playing fields, parking areas, and dormitories. Students will sleep and eat on one side of the campus and attend classes on the other. Going and coming across the bridge will make them pass through both the student union and library, establishing a sense of academic community.

Two 13-story dormitory units are planned during the first construction stage. These will have mostly one-room living units, some with connecting doors so that suites can be formed. On the roof will be located laundry rooms (traditional student meeting places), lounges, and snack bars. Both dorms are to be set on raised podiums of land, to make them focal points when seen from the open land beyond them.

One drawback in an otherwise skillfully detailed plan may be the delivery provisions for the dining-room kitchen. Because of the way the building is situated, all loading and unloading is accomplished on the side of the building away from the kitchen, and provisions must be wheeled down the corridor that runs through the main approach to the bridge. If not carefully controlled, deliveries at peak traffic hours could be disturbing and disturbed.

AIA HONOR AWARDS

WASHINGTON, D.C. Announced at last month's AIA convention here were winners of the 1965 AIA Honor Awards. Four of the 11 winners, selected from 388 entries, received First Honor Awards, the rest received Awards of Merit.

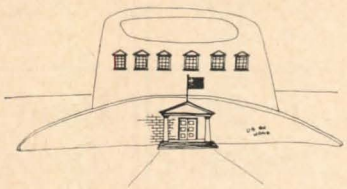
First Honor Award winners were: Sert, Jackson & Gourley of Boston for the Francis Greenwood Peabody Terrace at Harvard University; I. M. Pei & Associates, New York, and King & King Architects, Syracuse, for the S. I. Newhouse Communications Center at Syracuse University; Reid & Tarics, Architects & Engineers, San Francisco, for the Eleanor Donnelly Erdman Memorial Chapel, Robert Louis Stevenson School for Boys, Pebble Beach, Calif.; and Eero Saarinen & Associates, Hamden, Conn., for the Deere & Company Administrative Center, Moline, Ill.

Awards of Merit went to: Roger Lee Associates, San Francisco, for Terrace East and Terrace West Apartments in Berkeley; William D. Warner, Providence, R. I. for the Gordon School in East Providence; Robert Damora, Bedford Village, N.Y., for a prefabricated tract house for the New Seabury Community on Cape Cod; Crites & McConnell, Cedar Rapids, Iowa, for Ray D. Crites' residence in Cedar Rapids; Clark & Beutler, Architects, with Charles W. Moore and Alan E. Morgan as associates, for the Headquarters Building for the Savings & Loan Association, San Francisco; Kirk, Wallace, McKinley & Associates, Seattle, for the Japanese Presbyterian Church of Seattle; and R. Gommel Roesser, Austin, Tex., for The Oaks in Austin.

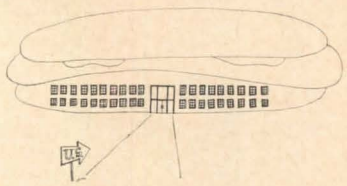
Jury members were: Willis N. Mills, Stamford, Conn., chairman; Philip Johnson, New York; Donald Lutes, Springfield Ore., Nathaniel Owings, San Francisco; and Peter Tarapata, Bloomfield Hills, Mich.

There's No Business Like Business Business

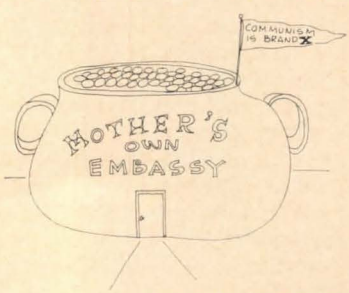
WASHINGTON, D.C. The prime architectural achievement of the Federal Government since World War II has been the distinguished series of embassies and consulates erected by



the State Department's Foreign Buildings Operation. This notable program, which has produced such famed buildings as



Saarinen's embassies in Oslo and London, Stone's New Delhi embassy, Johansen's Dublin embassy, and Weese's Accra embassy, is now imperiled with "improvement" by a group of businessmen asked by President Johnson for advice



Drawings by Forrest Wilson

on how to create an "American atmosphere" in our American embassies. This raises the specter of an approach summed up by mottos like, "This embassy looks good, like a good American embassy should," or, "Our embassy has 34 per cent fewer cavities than your embassy." or, "The U. S. embassy cleans like it's 10 feet tall." Visualization of what this all may lead to is seen here. Fair warning, Mr. President: Leave the design of our buildings in the hands of the professionals!

Eavesdroppings

"Today, much more so than in Wordsworth's time, the world is too much with us. Business and industry, which have done such a wonderful job of seeing to it that we have so many more things nowadays to live *with,* could well take some time out to be concerned with the possibility that we may yet find ourselves with too few things to live *for.*

"Urban renewal, which is concerned with the blight of our real estate, could well have some counterpart which is concerned with the blight of our "unreal estate"—which is what Nabokov calls that *intangible* property which is remembrance—the *net* that we are left with after we have seen and learned things. This is the realm of memory and imagination, and this is the province of the arts." *Arnold Gingrich, Publisher,* Esquire *magazine, at New York Board of Trade's "Business in the Arts" luncheon.*

"The source of man's power over life is through the effect he can have upon his environment." *Dr. Jonas Salk.*

"Every vigorous age has had its own vision of urban splendor. Why should we be deprived of it?" *Walter Gropius.*

"Once we have stemmed the flood of automobiles from the heart of the city . . . we can bring back the tens of thousands of residents who have fled; we can bring back the artistic, social, and cultural functions which have either died off completely or found a modest existence in refugee homes in suburbia; we can bring back works of the fine arts, fountains, sculptures, trees and flowers and architecture of excellence—because we have re-established the possibility to contemplate them without the fear of being killed by an automobile in the procedure." *Victor Gruen at Awards in Urban Studies dinner of the Pittsburgh Plate Glass Foundation.*

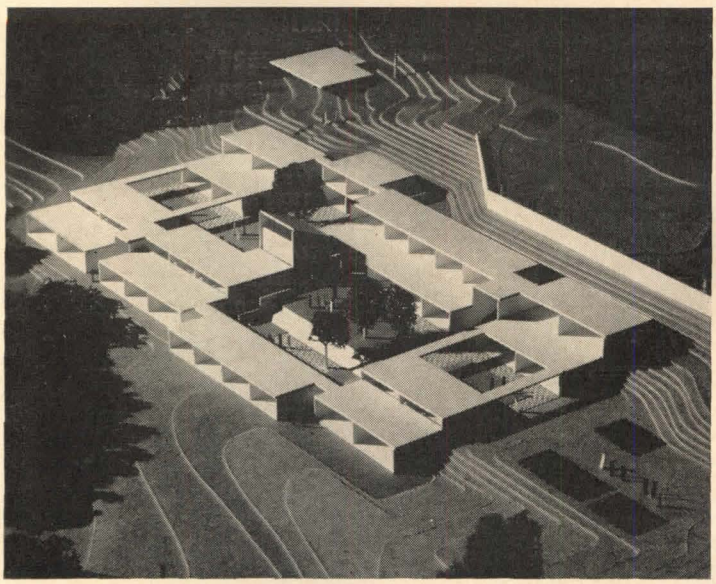
"My father told me as a boy that I could recognize a bad carpenter by his hair; each was

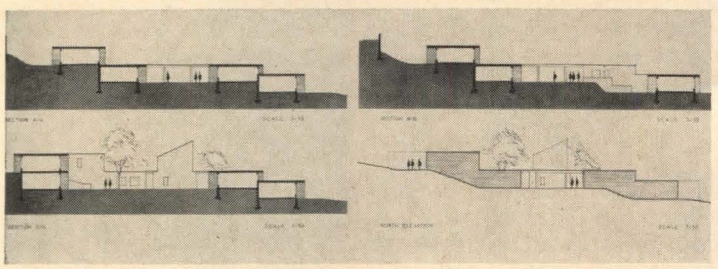
an inch thick! Because if something was off an inch, he would say it was off an hair! Since then, I have myself stopped minimizing smallish deficiencies or treating deviations 'en bagatelle.'" *Richard J. Neutra, lecture at Stanford University.*

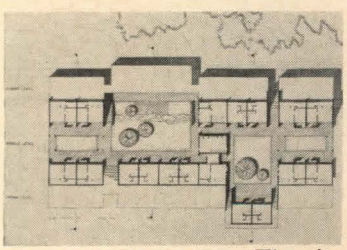
"Life is good in America, but the good life still eludes us. Our standard of living is admittedly high, but measured by those things that truly distinguish a civilization, our living standards are hardly high at all. We have, I fear, confused power with greatness. . . . An American renaissance [can come about through] . . . the building of handsome and balanced cities . . . the saving of our wildlife and wild land, the preservation of our historic landmarks, the cleansing of our air, the restoration of our countryside and the redesigning of our cities and suburbs."

Stewart L. Udall, Secretary of the Interior, in commencement address at Darmouth College.

Courtyard Complex for Connecticut Elderly







WILLIMANTIC, CONN. The site for proposed elderly housing in this New England city drops rather steeply from the access road to a wooded plot the apartments will overlook. Frequently, architects designing residences for the elderly tend to prefer flat sites—probably overcompensating for imagined disabilities on the part of future tenants. The Willimantic project by Olson & Miller, while not making an Olympic climbing course of the site, has respected the age of the inhabitants and also their desire for mild exercise with gentle rises from level to level.

The project will provide 40 apartments—20 one-bedroom and 20 efficiency—in a three-level plan. Other amenities will include a community center, a small laundry, and parking for 10 cars. There will be three basic apartment plans differing only in fenestration. Apartments will look out onto the system of courtyards and to the woods beyond. The courts are expected to provide a sense of community for the residents. Construction will be concrete foundations, walls of brick on the exterior and wood stud with gypsum boards on the interior (masonry party walls), and wood-framed, built-up roofs. Outdoor walks within the complex will be 12″x16″ concrete blocks to provide "texture and scale." The whole project will occupy only about two acres, but the view to the woods and the courts should provide a sense of openness.

Heads at Hampton, Cooper Union

In September, Bertram Berenson, who has been Research Associate Professor of Architecture at Louisiana State University, will become Chairman of the Department of Architecture at Hampton Institute. Joining Berenson will be three new staff members: Bernard Jensen, a San Francisco architect, who will teach full-time, and David Cooper and Armando Guerra, both of Hampton, who will teach part-time. Berenson writes P/A: "Although I have made no definite plans for the organization of the curriculum, I anticipate that the course sequence will be experimental and will include parallel studies in planning, design, the humanities, social sciences, and technical course work toward a five-year undergraduate professional degree in architecture."

John Hejduk will become chairman of the Department of Architecture at the Cooper Union School of Art and Architecture, effective September 1. Hejduk's appointment climaxes a two-year search for a chairman following the promotion of former department chairman Esmond Shaw to dean of the school. Hejduk's teaching experience includes work at the University of Texas, Cornell, and Yale, and most recently at Cooper Union, where he has been Associate Professor of Architecture for the past year.

Pennsylvania Avenue Plan Forges Ahead

WASHINGTON, D.C. Nathaniel A. Owings of Skidmore, Owings & Merrill, who was appointed chairman of the Temporary Commission on Pennsylvania Avenue by President Johnson, talked recently with P/A of his plans for making the planned grand design of the avenue become reality.

His first act was to call a meeting of the commission at the Octagon to iron out general procedures. Among the members are the Secretary of the Interior, Secretary of the Treasury, Secretary of Labor, Secretary of Commerce, Attorney General, Postmaster General, Administrator of General Services, Housing and Home Finance Administrator, Chairman of the Commission on Fine Arts, Chairman of the National Capital Planning Commission, Secretary of the Smithsonian Institution, President of the Board of Commissioners of the District of Columbia, Director of the National Gallery of Art, and the Architect of the Capitol.

Chairman Owings said he has asked the National Park Service to categorize Pennsylvania Avenue as a "National Historic Parkway," a move that presumably will help surmount whatever obstacles might lie ahead in the field of real estate economics or land acquisition. Actually, Owings foresees no major problems in these areas, feeling that the entire program can be accomplished with existing agencies under existing laws.

First physical evidence of the new avenue will probably be the new building for the FBI, across from the Federal Triangle. After the commission had helped the architect (Charles F. Murphy Associates), the FBI, and GSA in advancing a design that will be appropriate to the new look of the thoroughfare, a private developer who owns property nearby on what is the site of the Raleigh Hotel announced willingness to go along with a design of his own to enhance the avenue.

Possibly the first major space to take form along the avenue will be Archives Square, which will run from the Archives Building to the National Portrait Gallery. Private investors will be asked to take a hand in this area, particularly with a large hotel that will replace the rooms lost when the Willard and Washington hotels near the Treasury are demolished to create the new National Square. National Square itself is expected to be the next development on Pennsylvania Avenue. Present plans call for two private developers to cooperate on the creation of this area, with the remaining space to be

taken by Government buildings, perhaps including a new Department of Labor building. Federal Square will, of course, be a monumental ceremonial space leading past the Treasury to the White House. Owings has proposed to Secretary Udall a national competition for the design of the Square to be conducted under AIA rules, and to include architect-sculptor-landscape architect teams. Of particular significance, he feels, will be the great gates connecting the Square and the White House grounds. "I hope that through this we can get a newly revived interest in monumental sculpture," he said.

On the other side of Federal Triangle from Pennsylvania Avenue, Owings's firm, Skidmore, Owings & Merrill, is involved in the redevelopment of The Mall. He and several members of the firm, including Charles Bassett and John Woodbridge, recently were in France to absorb some "feeling" of the monumentality of Paris and the sensitivity of surrounding chateaux. Basic requirements so far are to get the automobile completely off The Mall and into underground garages, take out all street paving, add more trees and fountains, coordinate The Mall in one design all the way from the Capitol to the Potomac, and introduce a series of cascades down its course as L'Enfant originally desired.

Reverberations at Lincoln Center

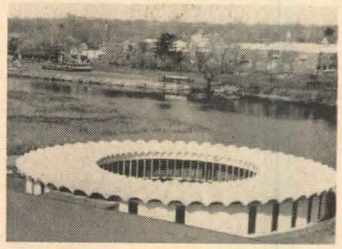
NEW YORK, N.Y. Philharmonic Hall at Lincoln Center, designed by Max Abramovitz, will undergo a thorough acoustical revision during the month of August. Long plagued by the disappearance of some high notes and an edginess in those that remained, Philharmonic Hall was given a partial acoustical uplift last summer when a wooden bandshell-type enclosure was built behind the orchestra. Now Hamburg acoustician, Dr. Heinrich Keilholz, will carry his work further by installing undulating acacia wood panels on the auditorium walls, tilted to catch the music and channel it toward the audience much as a cupped hand placed behind the ear channels sound into it. Keilholz also plans to remove some of the padding from the seats, replacing fabric on their backs with wood panels, and replacing carpeting on the floor with vinyl. Although the removal of the carpet will also remove some of the plushness and elegance traditionally associated with fine music, Keilholz believes that the changes will make sound in the hall enveloping, rather than directional, as it has been. As a result of the changes, reverberation time will be increased from 1.6 seconds to a more favorable 2.1 seconds.

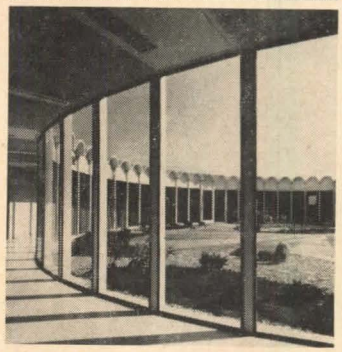
Moreover, the new acoustical treatment will make it possible for musicians on stage to hear each other better, as well as for the audience to hear the musicians better. But if stage and auditorium will be better integrated acoustically, they will also seem more harmonious visually. For the dark acacia wood placed on the sidewalls of the stage last summer will blend with that put in the auditorium this summer. Architect Abramovitz, who advised on the changes, believes that the wood-covered walls will provide more reflected light in the auditorium, giving the performer a feeling of being closer to the audience. The hall will no longer appear deeper than it really is. By removing the padding from the backs of seats and by adding more 21-in. seats, (in place of the 22-in. seats now in use), room will be created for 200 additional seats, increasing the hall's capacity from 2658 to 2858. Philharmonic officials believe this will allow 70,000 additional admissions a year. The extra income will pay for the acoustical work, and Lincoln Center officials will not have to dip into capital funds or solicit more contributions. Since Philharmonic Hall opened in 1962, $800,000 has been spent so far on correcting the acoustics.

Personalities

Dr. Norman Bienenfeld, president of the Aluminline Corporation of Pawtucket, R.I., has been elected to a second term as president of the National Association of Architectural Metal (NAAMM) . . . Winner of the 1965 Wood Structure Design Award given by the National Lumber Manufacturers' Association is the architectural firm of **Callister & Associates** of Tiburon, Calif. . . . **Jacob Robbins,** Bay Area architect, has been appointed to the Oakland (California) Planning Commission . . . **William A. Doebele,** Harvard professor of city and regional planning, has become Associate Dean for Development of the Harvard University Graduate School of Design . . . **Whitney North Seymour, Jr.,** will succeed **Giorgio Cavaglieri** as president of the Municipal Art Society of New York . . . Named as a trustee of the Committee for Economic Development was Chicagoan and SOMian **William E. Hartmann** . . . **Dr. Hermann Schenck,** president of the German Iron and Steel Institute and **Pierre van der Rest,** president of the Belgian Iron and Steel Institute, were made honorary members recently of the American Iron and Steel Institute. Strong are the ties that bind. . . . The New York Chapter, AIA, has elected **Max O. Urbahn,** New York architect, president. **Marcel Breuer** was given the Chapter's Medal of Honor "in recognition of distinguished creative design for construction and industry, of outstanding architectural design achievements . . . of significant contributions to the profession . . . of the ability to recognize the importance of and to use all the visual arts in the creation of a complete architectural environment." **Norval White** received the Harry B. Rutkins Memorial Award "for his creative leadership and devoted service to the Chapter, the profession and the community." **Charles Abrams,** housing expert, was also honored . . . Los Angeles architect, **Robert E. Alexander,** has been named by Governor Brown to the Advisory Council on Good Design . . . The American Institute of Steel Construction awarded research fellowships to **David L. Cute** of the Drexel Institute of Technology, **David M. Harris** of the University of Houston, and to **William C. Russell** of Oregon State University . . . New appointment to the Potomac River Task Force is **Donn Emmons,** partner in the San Francisco architectural firm of Wurster, Bernardi & Emmons. The Task Force also includes **Arthur Odell, Jr., Edmund R. Bacon, R. Max Brooks, Francis D. Lethbridge, Ian L. McHarg . . . Gilbert A. Stayner,** a third-year student at the University of Southern California School of Architecture, has been chosen winner of the Mentorship Award established by Los Angeles architects Daniel, Mann, Johnson & Mendenhall . . . **Lewis Mumford** was recently awarded the Emerson-Thoreau Medal of the American Academy of Arts and Sciences . . . **Edward L. Tagwerker** is now Associate Deputy Commissioner for Operations of the Federal Housing Administration . . . **C. Maxwell Stanley** will receive the National Society of Professional Engineers Award for outstanding service to the engineering profession . . . **David A. Crane,** planning administrator of the Boston Redevelopment Authority, will become, this fall, an associate professor of civic design in the University of Pennsylvania's Graduate School of Fine Arts. He will serve as chairman of the school's committee for civic design.

Doughnut on the Hackensack





HACKENSACK, N.J. Rising above the banks of the Hackensack River are the newly opened offices of a petroleum terminal that are distinguished by pleasing designs. In an industry where the height of architectural elegance is a square concrete-block building decorated by a stenciled sign that says something like "No Dumping" or "Danger: Inflammable," the offices of the Reinauer Brothers Terminal are striking indeed.

What the brothers and their father have done in Upper Saddle River, N.J. (with the de-

Reinhold Publishing Corporation's

ANNUAL P/A DESIGN AWARDS PROGRAM

for projects not yet built

PROGRESSIVE ARCHITECTURE announces the thirteenth annual Design Awards Program. Awards will be made to architects and their clients for projects now in the design stage to be built in 1966 in the United States.

PURPOSE of the Design Awards Program is to give recognition to good design in the period of design development, rather than after completion, in order to encourage the designers and owners of the projects so honored.

AWARDS and **CITATIONS** will be given by the Jury listed below to the best projects chosen from nine categories—COMMERCE, EDUCATION, DEFENSE, HEALTH, INDUSTRY, PUBLIC USE, RECREATION, RESIDENTIAL DESIGN, RELIGION—on the basis of site use, choice of structural system and materials and methods of construction, solution of the client's program, and over-all design excellence.

The Jury will assign projects to the various categories, and reserves the right to withhold an Award or Citation in any category.

FIRST DESIGN AWARD may be given to the one best building submitted.

FIRST DESIGN AWARD, AWARDS, AND CITATIONS may also be given in Planning and Urban Design. Under this phase of the program, the Jury will consider projects in Urban Redevelopment, Campus Planning, Industrial Park Planning, Recreational Area Planning, etc.

JURY will be composed of: EDWARD CHARLES BASSETT, Partner, Skidmore, Owings & Merrill, Architects, San Francisco, Calif.; WILLIAM J. CONKLIN, Partner, Whittlesey & Conklin, Architects and City Planners, New York City; KEVIN ROCHE, of Eero Saarinen Associates, Hamden, Conn.; VINCENT SCULLY, JR., Professor of the History of Art, Yale University; DR. AUGUST E. KOMENDANT, Consulting Engineer, Montclair, N.J.

JUDGMENT will take place in New York during September 1965. Winners of Awards and Citations will be notified (confidentially) immediately after the judgment.

ANNOUNCEMENT of the winning projects will be made at a presentation in the home town (if practicable) of the recipient of the First Design Award. Winning projects will be featured in January 1966 P/A. As in the past, P/A will arrange coverage of winning projects in news media, particularly those in the localities of all the Award and Citation winners.

SUBMISSIONS do not require filing of an application blank. For each project you submit, simply send:

1. On a 5" x 8" card, type the client's name, location, and proper name of project; name and address of the architect; and identify all items included in the submission.
2. Brief explanation of the program and your solution.
3. Description of materials and construction methods used, and the reasons for their use.
4. Site plans; basic building plans; pertinent sections and details.
5. Perspective or model photographs.
6. A statement that (a) the project is now in the design stage and that construction is anticipated in 1966, and (b) that submission of a project for judgment gives PROGRESSIVE ARCHITECTURE first rights in the architectural field to publish both the project and the finished building if it receives an Award or Citation.

It is preferred that you submit 8" x 10" prints, photostats, or photographs. **Original drawings, actual models, or mounted exhibit panels will not be accepted.** No material is to exceed 11" x 17" in size; if drawings cannot be reduced to this size, they must be folded to a size within this limit. Each project is to be submitted under separate cover.

DEADLINE FOR MAILING is August 31, 1965. Address entries to Awards Editor, PROGRESSIVE ARCHITECTURE, 430 Park Avenue, New York, N. Y. 10022.

P/A will guard and return all submitted material.

sign guidance of architect Donald Fischer) is to create a building that fits the site and suits the temperaments of the people who work in it. The site includes petroleum tanks, bullrushes, and wire-mesh fence along the river; the building itself is a doughnut-shaped concrete block projection off a regulation one-story warehouse. Built around a carefully landscaped atrium (pool, bushes, trees, flowers), the offices all face outward to capture views of the river and bullrushes, avoiding the petroleum tanks. The ceiling is composed of 60 precast, prestressed concrete vaults, each weighing 7800 lb, and each resting on the circular concrete block walls. Half-moon-shaped, tinted-glass windows fill the space between tops of the arches and the wall beneath, and at night light shining through these windows makes the roof seem as if it is floating.

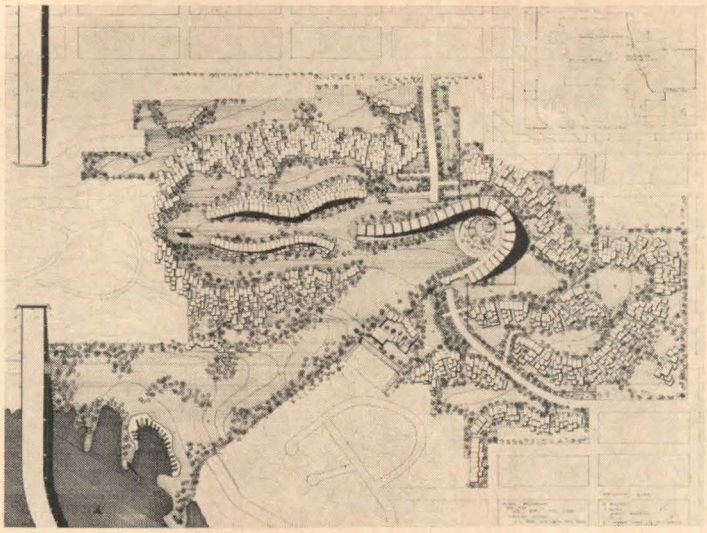
What do Reinauer Brothers have to gain from such pleasant architecture? Nothing really—except an appealing environment for themselves and their employees. As distributors for Phillips "66" petroleum products in northern New Jersey, their customers never visit their offices.

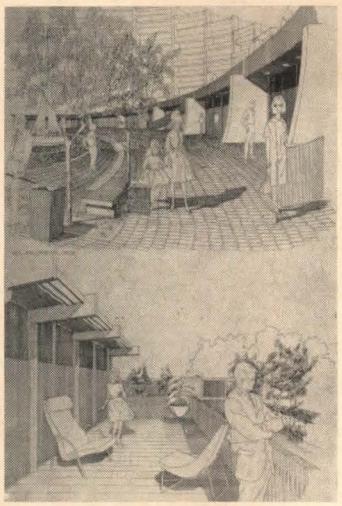
Back in 1948, vice-president Franklin Reinauer II met Frank Lloyd Wright on the site of the Guggenheim Museum in New York and talked with him for 10 minutes. "It was an unforgettable experience" says Reinauer, who keeps a drafting board outside his office. Reinauer's interest in architecture was the initial inspiration for the building. And it is to the credit of almost everyone connected with the project that both offices and warehouse were constructed at a cost of roughly $15 per sq ft.

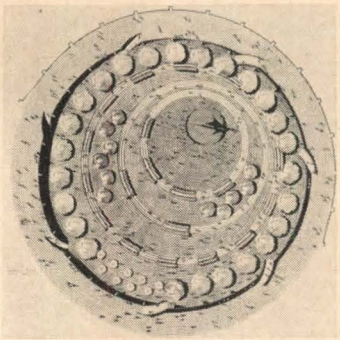
Yak Felt Yurts Passe

According to a report in *The New York Times,* Mongol herdsmen of Inner Mongolia have begun to live in plastic yurts, or tents, rather than the traditional felt-covered variety. The yurt-dwellers say that the new tents have all the "traditional" features of the felt kind (whatever they are), but are better insulated and more resistant to "worms and moisture." Thus the decline of another fine old building product.

PPG Competition Winners







SAN FRANCISCO, CALIF. Two fifth-year architectural students at the University of Illinois won $1200 this spring for an urban renewal design for the Hunter's Point Ridge location, overlooking San Francisco Bay. The national competition for architectural students, won by Terry Ernst and Charles Miller, was sponsored jointly by Pittsburgh Plate Glass Company and the National Institute for Architectural Education.

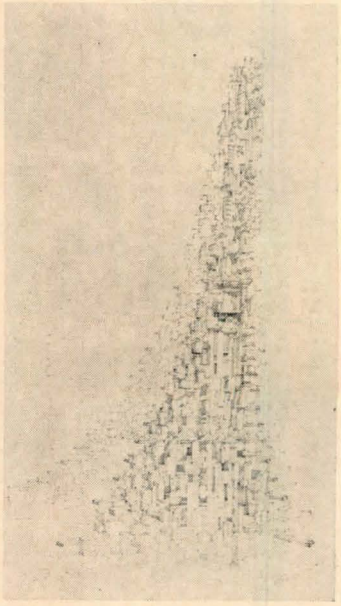
The winning design for a community of 20,000 has horseshoe-shaped apartments following the contour lines and slopes of the ridge site. Ernst and Miller said this about their design: "We maintained the identity of the individual inhabitants in a complex of mass-produced units through the use of human scale and also by utilizing the natural contours to bring about a seemingly arbitrary placement of living units. This resulted in an infinite variety of spaces within the complex itself, yet maintained an ordered circulation toward the central community space. The curvilinear form of the central space was used as the focal point of the housing, reflecting its form. It encompassed the central park and directed the community's view toward the Bay."

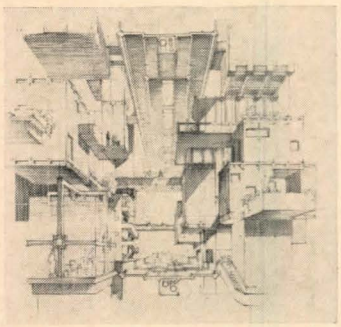
Second prize, $750, went to three New York City architectural students: Secundino Fernandez, Joseph Fleischer, and Dennis Singer. Third prize, $500, went to Sally Waxman and Richard Kajmowicz of the University of Illinois.

Schools

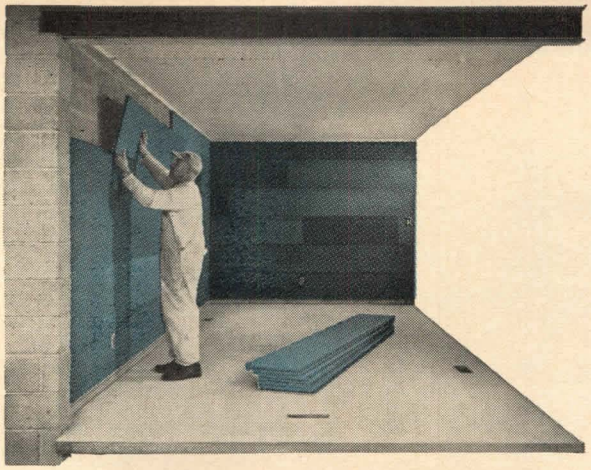
URDOA, Urban Redevelopment Division of the ACTION Council for Better Cities, in cooperation with NAHB and NAHRO, will present short summer-school sessions on urban renewal projects; the courses will be given in Chicago (July 27-28), and in Denver (August 16-17). Reservations and registration fee ($95, $75 for ACTION, NAHB, and NAHRO members) should be sent to ACTION, Inc., Urban Redevelopment Division, 1025 Connecticut Ave., N.W., Washington, D. C. 20036 . . . Southern Counties and Southern California Gas Companies have established a $1,000 annual scholarship fund for architectural study at the San Luis Obispo campus of California State Polytechnic College.

Cooper Union Studies Staten Island





NEW YORK, N.Y. The completion of the Verrazano-Narrows Bridge, linking Brooklyn and Staten Island, is expected to bring considerable development of the island, with attendant planning headaches. In last month's 106th annual exhibition of student work at Cooper Union, a solution was shown that proposed vertical cities housing 52,000 persons each, with all necessary community services, stores, communications, and service facilities. These 1600-ft towers, using members in tension as the basis of the structure, would be surrounded by parks and wooded areas. A sketch of a completed tower is shown here, together with a view out from the core showing residences, walkways, roads, and distribution of mechanical ducts. Design is by students Kenneth M. Baresich, Jeffrey Ollswang, Michael J. Pittas, Charles P. Reiss, and David C. Rib.



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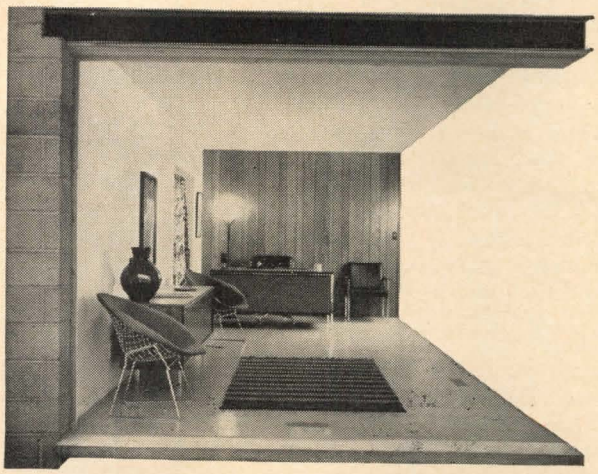

O.K. Now forget it.

(Until your next roofing or wall insulation job.)

DOW

Watterson Steps Down

WASHINGTON, D.C. Joseph Watterson, for more than eight years editor of the *AIA Journal,* is resigning his position June 17. He plans to travel, and to take on assignments in architectural writing, editing, consultation, and lecturing. For over 30 years, before he became Editor of the *Journal,* Watterson was a practicing architect, first in Cleveland, then in Mineola, Long Island, N.Y., where he had his own office. During the Depression, he taught at the College of the City of New York; and he is the author of the book *Architecture—5000 Years of Building.* His successor will be Robert E. Koehler.

Down in the Dumps

NEW YORK, N.Y. There is the story of the young history student, who, pressed for the date of Columbus's arrival in the New World, said 1492, then, unsure of himself, added, tentatively, "more or less." In 1641, more or less, this farm house, known locally as the Pieter Claesen Wyckoff House, was constructed in what was then New Amsterdam. Today, 324 years later, it is still standing there, but it is now in Canarsie, which is part of Brooklyn—which, of course, is part of New York City. The City has encroached on the old farm house in more than name. The house stands surrounded by a dump, by piles of rusting automobile bodies, discarded tires, and other artifacts of our culture. Instead of the rolling meadows that were there in 1655 when Pieter Claesen Wyckoff signed a contract to "superintend the Bouwery and Cattle of Director General Pieter Stuyvesant," there are today the clutter and dirt of a largely industrialized area. But the house still stands, patched, drafty, and aged, an example of what someone once called "early New York folk architecture."

Although the house has been occupied continually, ownership has changed hands many times. It is now the property of the Wyckoff House Foundation, set up by the Board of Regents of the University of the State of New York in 1959, which purchased it for $30,000 in 1961. The Foundation is now trying to raise $50,000 to $70,000 to restore it. Meanwhile, its occupants—a divinity student, his wife, and 2-year-old twin daughters—

fend off souvenir hunters and tourists, who "walk right in" and try to slake their curiosity about a piece of architectural history.

WASHINGTON/FINANCIAL NEWS

BY E. E. HALMOS, JR.

In all the pronouncements and news stories about that recent "White House Conference on Natural Beauty" in Washington, the most important point was never mentioned. But it ran through every session of the two-day meeting like a thread:

The whole approach to "beauty" is being sparked by —and is likely to be turned over to—the "planners": the sociologists, urban theorists, and others, rather than to the professionals who have the factual background and must actually do the job.

Architects, engineers, and the construction industry are very much on the defensive, very much under attack on several fronts.

Key speakers throughout the meeting talked of over-all concepts, landscaping, social and economic impacts— and, when they mentioned the construction group at all, spoke in such terms as "narrow concepts," "single-purpose operations," "lack of broader viewpoints." They virtually ignored the role of the construction industry as a professional planning group in its own right—and also completely ignored the strictures (such as available public funds, existing conditions, and the like) that limit the work of the industry and its professionals in the practical sense.

Many observers who sat through the two long days in the State Department's overdone palace on Virginia Avenue were disturbed by the tone of the sessions, which, at the very least, was condescending.

The two-day "conference" also proved to be a rather obvious stage setting for a Presidential message and a series of no less than four bills on the subject of beautification of highways.

What made it obvious was that conference leaders reported the results of their deliberations to the President at 5 o'clock one evening—and the next morning at 9 o'clock, press releases and the exact text of the four new bills were made available to White House correspondents.

The four bills contain some laudable objectives—screening of junkyards, construction of scenic roads after 1972—and at least two highly controversial points: diversion of about one-third of highway funds to beautification work, and a flat demand that states agree to eliminate billboard-type advertising, on pain of losing some Federal-aid money.

Highway lobbyists, one of Washington's most powerful pressure groups, have successfully fought off attempts to divert construction money to anything else so far, and they'll fight this proposal as well. The Johnson measure really hits them where they live—in the pocketbook—after some previous "voluntary" measures, whereby states could clean themselves up, proved unsuccessful.

The highway program was in for some stiff in-fighting anyway, as Congress got around to considering Presidential recommendations on cutting many excise taxes—but raising others, particularly those on heavy trucks, to pay for increased construction costs. Truckmen, who contend they already pay some 38 per cent of all highway "user" taxes now flowing to the Treasury, vowed a battle.

Engineers found something to be concerned about in highway sections of the recently passed "Appalachia" bill: a section that permits states to "give special preference" to the use of mineral resources of the region (principally coal derivatives) for "road use" in the area.

This, said the Asphalt Institute, constitutes a legal "invasion" of the engineering prerogative of selecting materials and designing roads.

Labor Rules

Employers should take note (if they have 75 or more employees) that one of the major provisions of last year's Civil Rights Act goes into effect July 2: the ban on discrimination in hiring. In subsequent years, on the same date, the number of employees required for a firm to be brought under this provision drops to 50, then 25.

The discrimination sections also affect labor unions (if they operate hiring halls, for example); but that wasn't labor's principal concern in Washington in early June.

Of much more immediate concern was the President's call for repeal of Section 14(b) of the Taft-Hartley Act, which permits some 19 states (including the President's own Texas) to enact so-called "right to work" laws under which workers need not join unions to protect their jobs.

Fact is that existence or nonexistence of such laws admittedly has had little effect on union membership, and lit-

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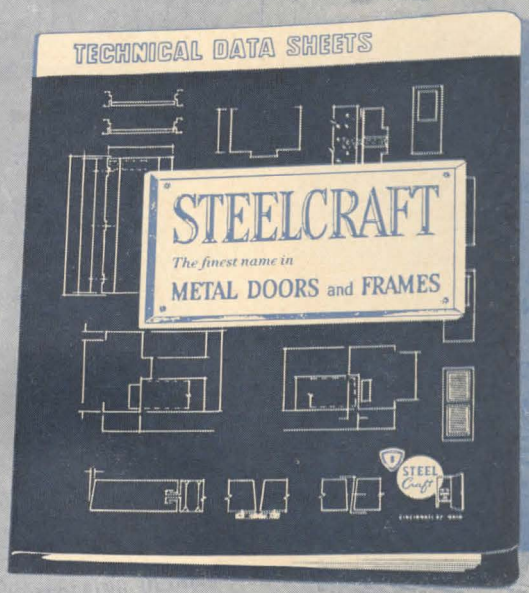

Yours for the asking.

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On Readers' Service Card, circle No. 415

tle in the construction industry. But for top labor leaders, the battle against such laws has now assumed the proportions of a crusade.

Of much greater interest to architects, owners, and the construction industry was the President's complete omission (from his labor message) of a matter also dear to the hearts of construction labor: so-called "situs picketing" (where a union can picket a whole construction job, even if the dispute is with only one of many contractors on the site).

Underground Movement

In Washington itself, among all the discussion of "beauty-vs.-freeways," it began to appear that the capital would soon become a city of highway tunnels.

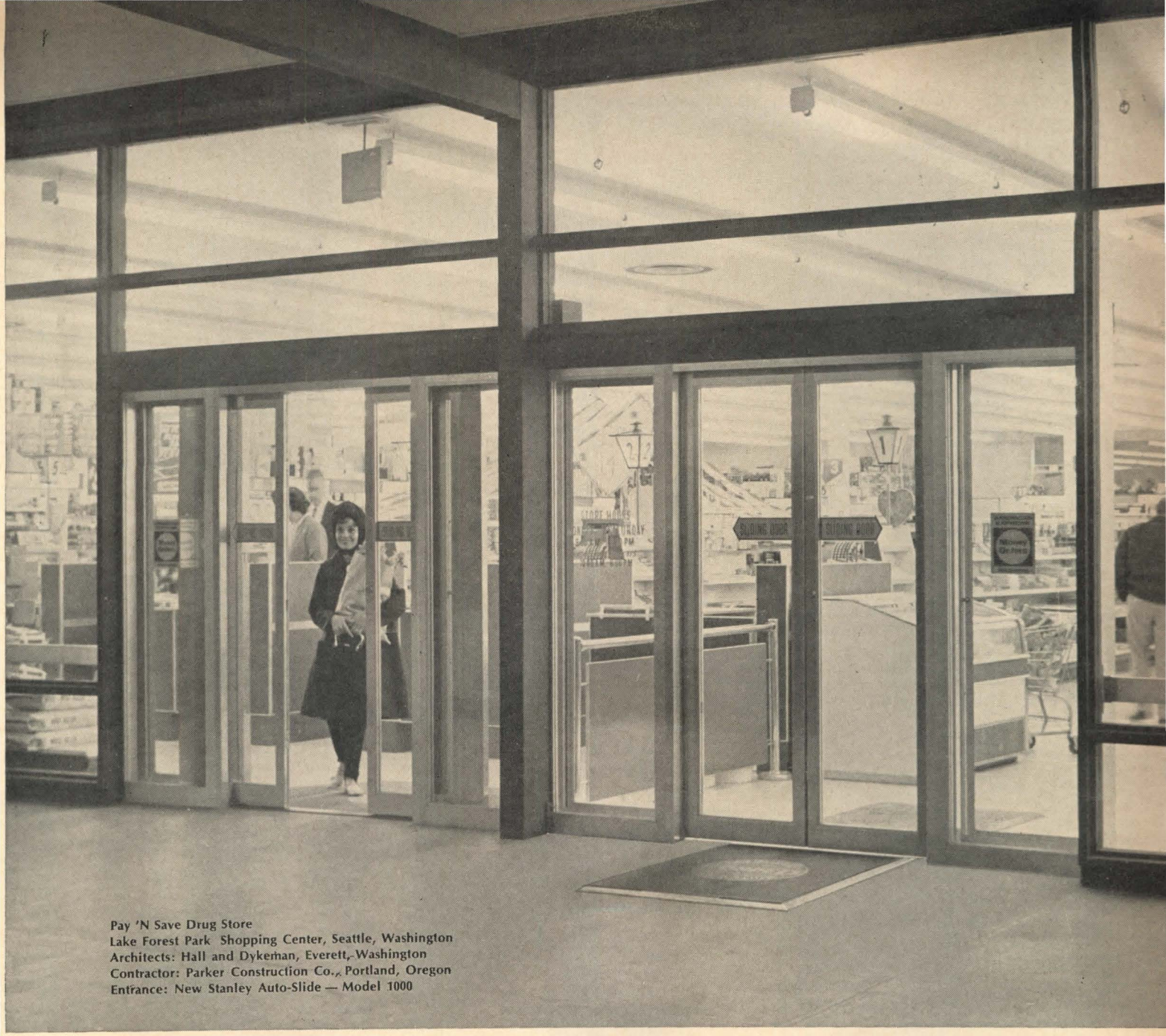
Biggest road tunnel planned would be a half-mile section of the long-proposed Center Leg Freeway, cutting under a dozen streets at the foot (west) of the Capitol; others planned would go under the Lincoln Memorial and the Tidal Basin; one would take 9th Street under the Mall.

Financial

The construction economy continued to move ahead at predicted speeds, showing (for April) a total value for new work put in place of $5.1 billion—up 1 per cent over that a year ago.

But there was an encouraging note in the figures: For the first time in months, the seasonally adjusted rate of private dwelling units started topped the figures for the same month a year ago. In April of this year, the rate was 1,548,000—up a modest 1 per cent over that a year ago. Just how encouraging this might really be, however, was in some doubt. The Federal Housing Administration suggested one reason: FHA has received more applications for new-home approvals in the past month or so, in anticipation of a rise in application fees that went into effect May 1.

On costs, there were some indications of a momentary steadying, after some recent jumps. The Bureau of Public Roads reported its highway costs index at 103.2—down 0.5 per cent (after jumps totaling 4.4 per cent in the last two quarters of 1964).



Pay 'N Save Drug Store
Lake Forest Park Shopping Center, Seattle, Washington
Architects: Hall and Dykeman, Everett, Washington
Contractor: Parker Construction Co., Portland, Oregon
Entrance: New Stanley Auto-Slide — Model 1000

Stanley automatic sliding entrances now bring benefits of automation to any doorway

New Stanley Automatic Sliding Entrances save floor space, offer modern, clean-line appearance and efficient two-way traffic through a single or double entranceway — or controlled one-way traffic.

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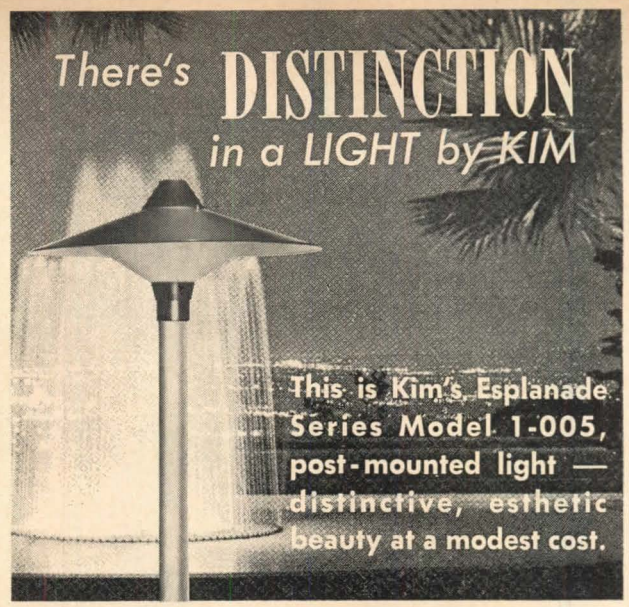

Kim's Esplanade Series are designed for shopping centers, malls, entryways, or wherever beautiful area lighting is desired. Poles are sturdy, seamless aluminum. Straight or tapered. See Sweets 32/B.

kim

KIM LIGHTING & MANUFACTURING COMPANY, INC.
1467 NO. LIDCOMBE EL MONTE, CAL. CU-3-7621
Manufacturers of display fountains, landscape, swimming pool and mall lighting.

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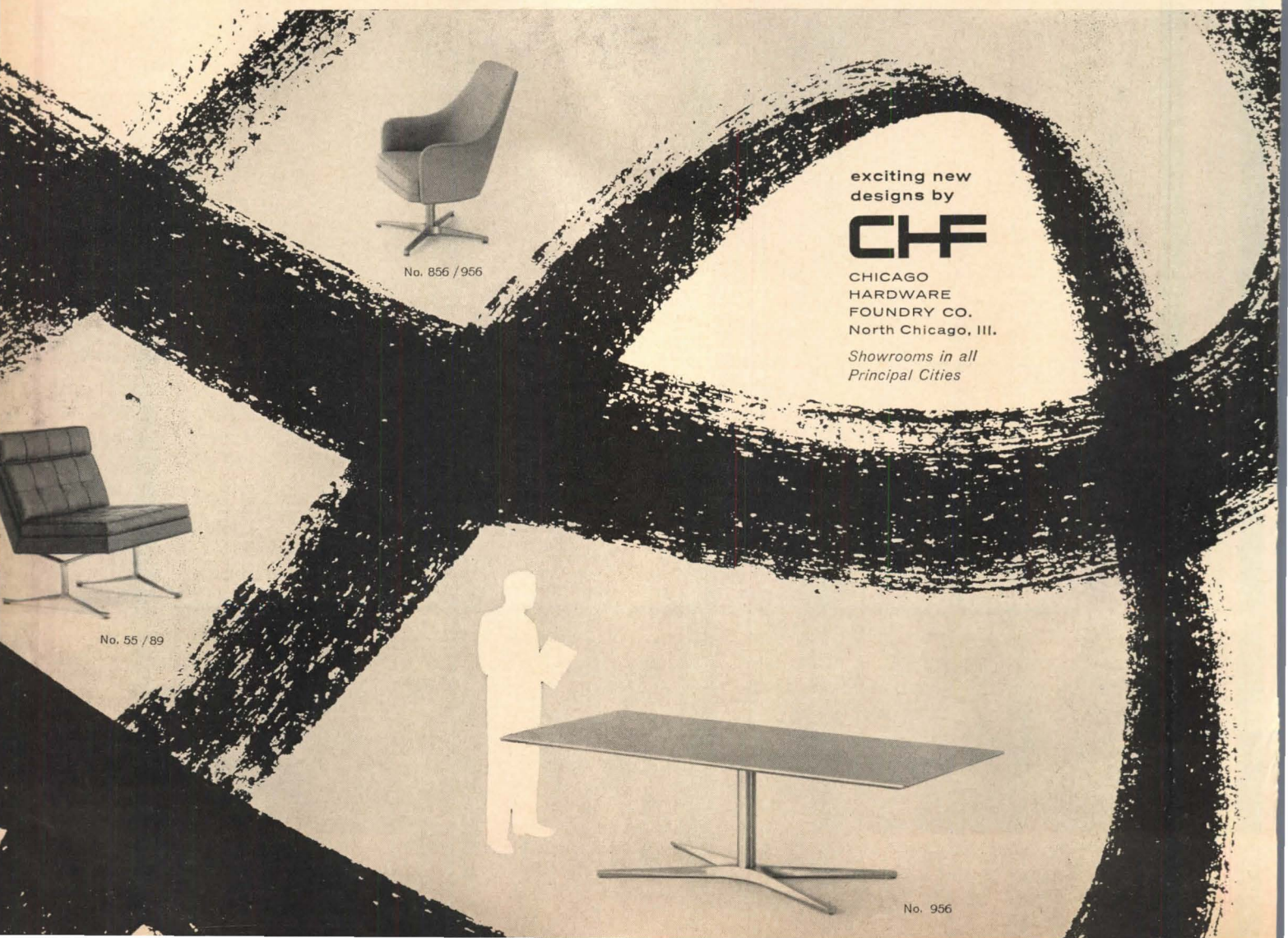
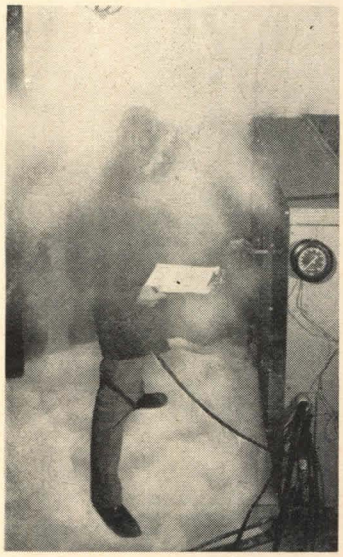
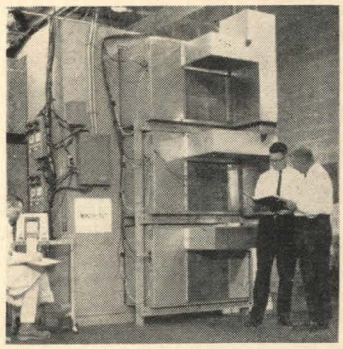


Air/Temperature

Heat Pump, 98 Per Cent Reliable





G.E. has announced that 87 important technical improvements have been made in its "Weathertron" electric heat pump. This electrically-powered unit is an air source heat pump that ranges in capacity from 2 to 10 tons. In 1962, G.E. decided to withdraw the Weathertron from the northern U.S. market because it was not performing with consistent reliability. By using computers to interpret information obtained from the field and from physical tests, they sought to develop a unit that could withstand the operating stresses in northern climates particularly. G.E. learned, for instance, that a heat pump operating in Chicago must withstand seven times the stress load of a unit operating in New Orleans. Furthermore, 75 per cent of the early unit failures resulted from compressor motor overheating. Among the most important tests was the "Monster Test," which simulates one year's stress in four weeks, using 24 units. Among the 87 improvements are a new insulation on the compressor motor windings that is said to be capable of withstanding all-known stresses; a thermostat installed in the motor winding that prevents overheating and burn-outs; an improved indoor comfort control system that prevents "temperature droop"; simplified control circuits; prevention of false defrost; and simplification of controls to prevent flooding, which occurs when unboiled liquid refrigerant is permitted to return to the compressor. Of some 13,500 Weathertron heat pumps tested in the field, reliability exceeds 98 per cent. General Electric, Appliance Park, Louisville, Ky.

On Readers' Service Card, Circle 100

Construction

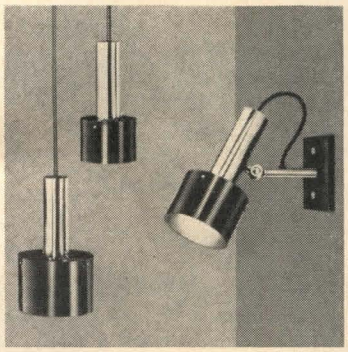
Gas Concrete for Thin-Shell Designs

Thin-shell designs can be created by employing steel for outline and framing, gas concrete for cladding, and membrane coatings for protection. Elimination of temporary forms with gas concrete system permits greater design flexibility. System is used for on-site applications or in precast modular units. Gas concrete is a stable lightweight concrete in which minute air cells replace a part of the aggregate. It is produced from portland cement, sand or fine aggregates, and "Vinfoam" additives, mixed to a formula protected by a pending patent. Gas concrete may be placed by pouring, pumping, or spraying, using standard equipment, "without breakdown of cellular structure." Surfaces may be left textured from the air gun, wood-float finished, or sponge finished. Or they may be ruled and hard-trowelled like Class A concrete. Density can be controlled from 30 to 120 lbs per cu ft. Predetermined compressive strength ranges from 250 to 5000 psi; compressive strength is related to the density and the design-mix. High flexural strength is twice that of regular concrete. Mix has a thermal insulation k— factor of less than 1.0 at 70 lbs per cu ft. It resists rain damage 30 to 60 min. after placing. Gas concrete can withstand a temperature of 2000 F for 30 min., according to test results. Because of Vinfoam additives in the mix, problems of cold joints or striation, despite application in layers, are eliminated. Vin-Lox Corp., 1352 N.W. 29 St., Miami, Fla.

On Readers' Service Card, Circle 101

Electrical Equipment

Danish/Italian Spot

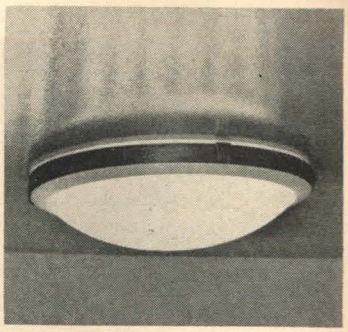


"Milano" spotlight is designed by Danish Architect Fredrik Fogh and Italian Architect Edorarado Berlgani. Spot uses Par-38 and R-30 reflector type lamps. Canopy and lamp shield are black anodized aluminum. Socket enclosures and tubing are satin chrome. Unit is available as a wall bracket or a pendant. Prescolite Mfg. Corp., 1251 Doolittle Drive, San Leandro, Calif.

On Readers' Service Card, Circle 102

Decorative Ceiling Bubbles

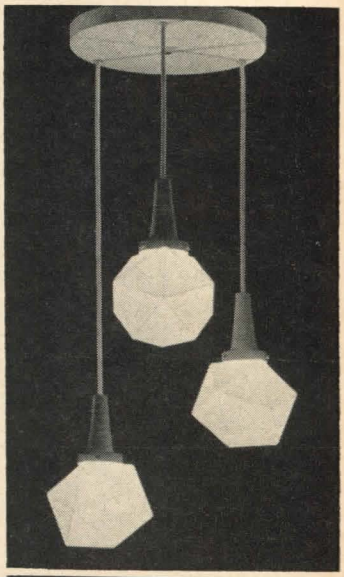
All plastic, flush-to-the-ceiling lighting fixtures have been developed for residential use. Called "Bubble Lights," they are 12″ in diameter, 6″ deep, and accommodate three 60-w bulbs. Plastic diffusers assure

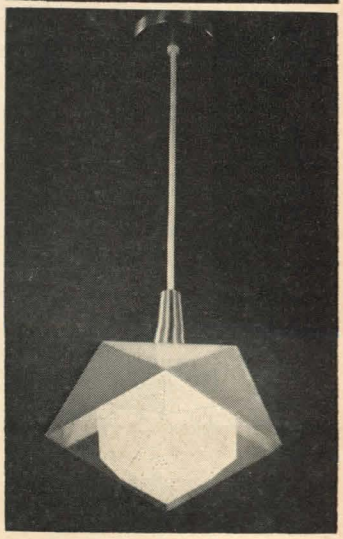


low-intensity, glare-free illumination; decorative collar (ring), of wood, plastic or sculptured glass, offers 12 design variations. Lumitex Company, 1250 17 St., San Francisco, Calif.

On Readers' Service Card, Circle 103

The Icosahedron





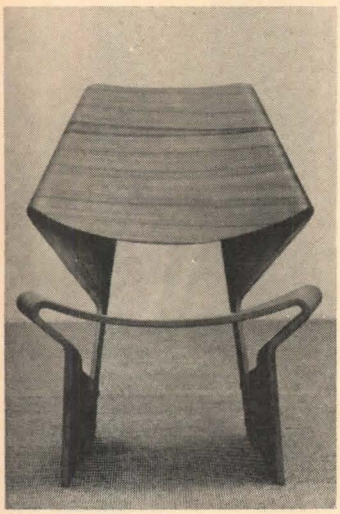
Hand-blown glass lighting fixtures are icosahedrons—20-sided solids made up of equilateral triangles. These fixtures, called "Polyhedrons," range in sizes from 8″ to 18″ in diam-

eter, are made with opal or satin glass, and may be used inside or outside. Metal fittings are satin chrome, satin brass, or special-order satin aluminum. Flush-ceiling mount, post lights, wall lights, wall bracket units, bath or utility wall mount, walnut bracket lamps, and chandeliers are available. "3-Lite Cluster" unit is made of satin blown glass with conical holders and 14″ canopy (upper photo). "Polyhedra Shade" is segmented 12″ acrylic plastic shade over 8″ diameter satin glass Polyhedra with adjustable 4′ drop cord (lower photo). Frederick Ramond, Inc., 3762 Beverly Blvd., Los Angeles, Calif.

On Readers' Service Card, Circle 104

Furnishings

Folded and Molded



Two pieces of laminated teakwood are shaped by Danish architect Grete Jalk into a sculptural tour de force. Chair is 25″ wide, 30″ high, and 30″ deep. Foam-rubber cushion is optional. Chair is included in a collection of architectural lighting systems, lamps, furniture, and rugs at Danlite, Inc., 301 East 61 St., New York, N.Y.

On Readers' Service Card, Circle 105

The Office Bar

Bar refrigerators, intended for use in executive offices and hotel suites, are surfaced in teak, walnut, or rosewood (including backs) to make them visually compatible with their surroundings. The refrigerated section is insulated with polyurethane foam, has four ice-trays, defrosts automatically, and has a one-piece plastic

liner. The other half of the cabinet is for bottle and glass storage. Cabinet legs are available either in wood to match the cabinet or in metal; built-in cylinder locks are included in "Model 1100" (shown). Dimensions: 27¾″ x 33¼″ x 18″". Springer-Penguin, Inc., Brookdale Place, Mt. Vernon, N. Y. 10550.

On Readers' Service Card, Circle 106

Insulation

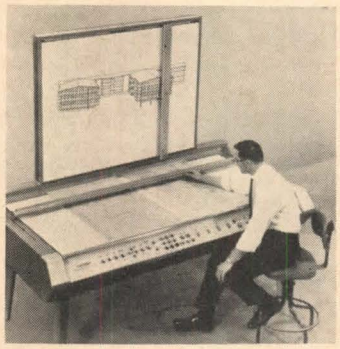
Automatic Insulation With .12 k-factor

Continuous automated application of polyurethane foam in thin uniform coatings is used for the first time as insulation and backer for aluminum siding. "Therm-O-Back" insulation is 90 per cent closed cellular product with a k-factor of .12, which compares with .23 for expanded polystyrene and .30 for fiberboard. Manufacturer states that "this lower k-factor produces a higher insulating value and is expected to reduce average home heating costs 30 per cent." Therm-O-Back is sprayed as a liquid but immediately expands to 30 times its volume and can be handled within 90 seconds. System provides ⅜″-thick insulation to a standard length, 8″-wide aluminum siding panel at the rate of 1 sq per min. Insulation has good solvent resistance, low moisture permeability, and minimizes possible condensation problems. It does not rot or mildew. System is available on a rental basis with purchase option. Siding is fed to a conveyor and moved, back-side up, through the spray unit. Callery Chemical Co., Callery, Pa.

On Readers' Service Card, Circle 107

Special Equipment

Perspectives By Computer



"Illustromat 1100" is a computer-directed drafting machine that draws perspective drawings. Machine produces perspectives from two-dimensional mechanical drawings in considerably less time than it takes to calculate and produce similar three-dimensional perspectives by hand. The 1100 consists of a tracing table, a control panel, a solid-state analog computer, and a vertical, motorized x-y plotter. Two tracing styluses, supported by a movable gantry, are above the horizontal table. Styluses are connected to the x-y plotter pen through the analog computer. Illustromat can plot perspectives from any angle. When front and side views of a building are given, accurate perspective views can quickly and easily be drawn, with subject assuming an angle of rotation and tilt. It is said that, in some cases, the 1100 can draw a perspective in one-sixtieth the time it takes to draw one by hand. Perspective, Inc., 4400 Seventh Ave., South, Seattle, Wash.

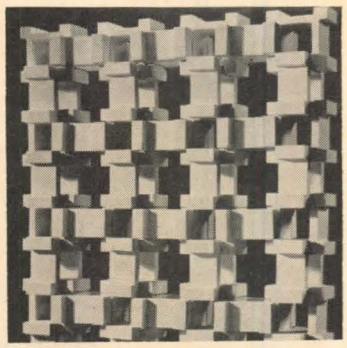
On Readers' Service Card, Circle 108

Glass-Fiber Plywood

"Bonate" is a glass-fiber-reinforced, plastic-coated plywood that has high impact, abrasion, and corrosion resistance. Panels cannot be bent or curved, but they can be fabricated into a variety of geometrical shapes. Coated plywood is available in standard 4′ x 8′ sheets, with 3/32″ thick coating of the glass fiber reinforced plastic laminated to a sheet of "exterior grade" plywood. Material is available in a glossy black color. Beetle Plastics, 198 Airport Rd., Fall River, Mass.

On Readers' Service Card, Circle 109

Light-Diffusing Walls

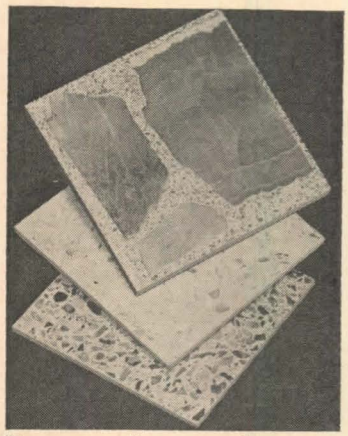


Interlocking concrete block (8″ x 8″ x 4″), designed by Erwin Hauer and called "Design #8," is the latest addition to the collection of three-dimensional screens, which can be used for interior and exterior walls. Chiaroscuro effects achieved by repetition of one form distinguish this rectilinear design. Arts for Architecture, Inc., 50 Rose Place, Garden City Park, New York. N.Y. 11041.

On Readers' Service Card, Circle 110

Surfacing

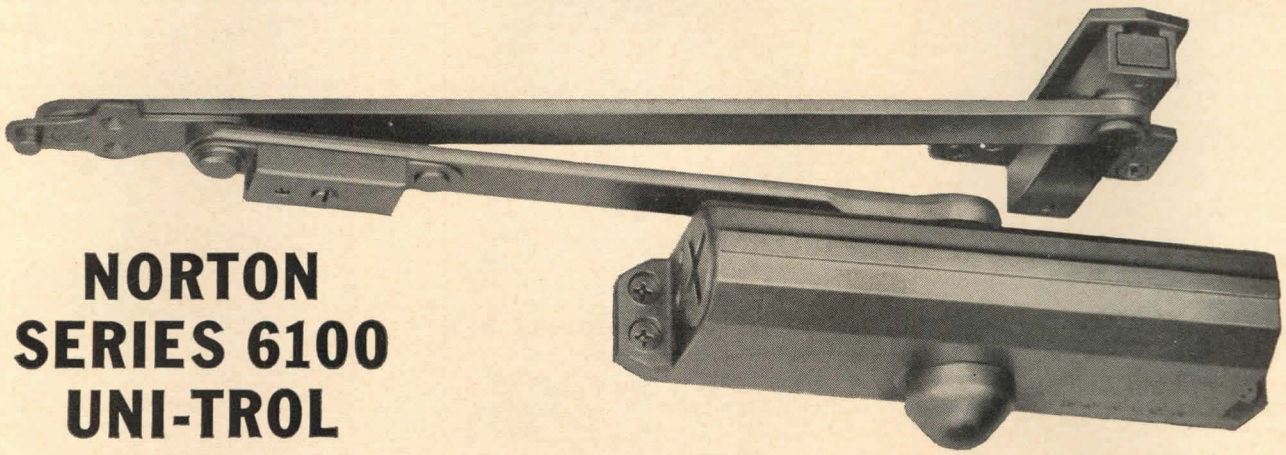
Terrazzo Tiles



Terrazzo tile uses thermoset "S-200" epoxy resin binder instead of conventional cement. Tile may be installed on or below grade, on vertical surfaces, over radiant heated floors, and as patio flooring. Tests by manufacturer indicate that this terrazzo tile is three to six times stronger than concrete. It is resistant to cracking, and to damage from diluted acids, alkalis, oils, greases, and detergents. Tile is available in 14 colors that supposedly never fade. Cost compares favorably to

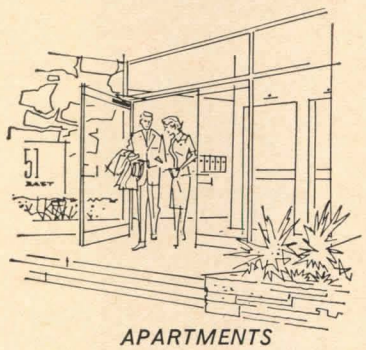
COMPLETE CONTROL

FOR EVEN YOUR "PROBLEM" DOORS

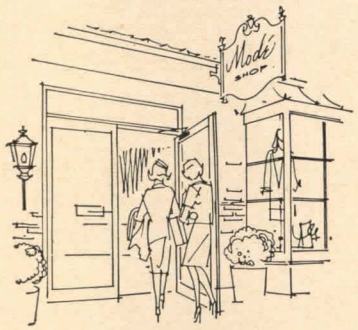


NORTON SERIES 6100 UNI-TROL

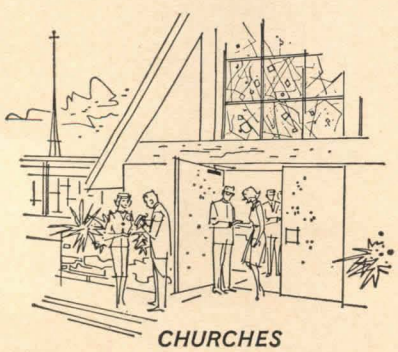
A COMBINATION DOOR CLOSER AND DOOR HOLDER



APARTMENTS



COMMERCIAL

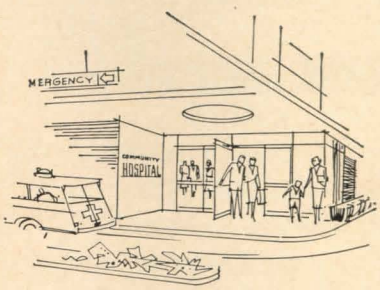


CHURCHES

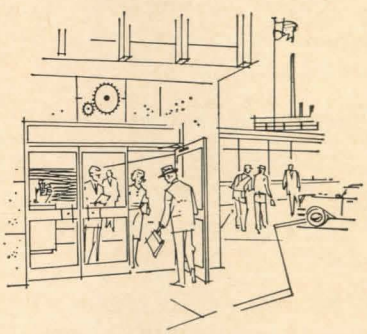
Regardless of the type of building there's always a number of doors that receive more abuse than others. The pounding volume of traffic through these doors can, in some cases, result in door closer failure.

To overcome the problems associated with these high traffic areas, the Norton Series 6100 has been developed. It basically combines a door closer and a door holder into a single product. It is a coordination of both functions to give complete door control. Acting as a door closer it keeps door closed when it should be closed. Acting as a door holder it easily engages the holding device when a large amount of traffic comes through. A spring acts as a cushion to absorb the jarring effect when the door is opened quickly.

The over-all effect is less abuse to door, frame, closer, and holder with improved control. Extreme testing conducted prior to the introduction of this product confirmed the benefits of unitized door control. If you're interested in seeing for yourself how well this new closer-holder operates, contact your builder hardware distributor and arrange for a test installation. Or, if you wish, send the coupon at the bottom of the ad and we'll have our representative arrange a test installation. Give it a fair test, but install it where it will get lots of use, or, if you wish, abuse. It'll take it. You'll find the investment well worthwhile.



HOSPITALS



INDUSTRIALS

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I'd like to make a test installation of your Series 6100 Uni-Trol. Please have your representative arrange one for me.

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On Readers' Service Card, circle No. 448

vinyl flooring. Fritz Chemical Co., P.O. Box 17087, Dallas, Tex.

On Readers' Service Card, Circle 111

Fabric-Backed Vinyl

McCordi's line of inexpensive fabric-backed vinyl wallcoverings has five new patterns for contract interiors: "Aragon," a travertine effect, (*shown*) is available in five-colorways (best are "Alabaster" and "Sand"); "Flat Cut Walnut" in natural wood tones, and "Shadow Stripe," an embossed stripe, are among the group. All patterns come in 54″ widths at 10¢ per sq ft. Standard gage is .016-.018. "Master Swatchbook" has complete details. McCordi Corp., Mamaroneck, N.Y.

On Readers' Service Card, Circle 112

Original Textures

Weaving and knitting simultaneously on one machine is a new process that yields new textures in a collection of three semi-sheer casements called "Firelon-R." All contain Dow Chemical's saran flat monofilament, "Rovana," which is blended with "Verel," spun rayon, and "Dacron." Reportedly flame-resistant, immune to chemicals and sunlight, and unbreakable, the fabrics are 60″ wide and available in five or six color combinations. The Georgia Company, Inc., 276 Fifth Ave., New York, N.Y.

On Readers' Service Card, Circle 113

"Using G-E Silicone Construction Sealant our cost was 16% less..."

Stanley A. Fredrick, President, Hall Aluminum Products, Inc., Fort Wayne, Indiana

"We ran a cost study of porcelain panel installation on two identical schools. Installing 198 panels with a two-part polysulfide cost $665. Installing 198 panels with G.E. Silicone cost $555.

	Polysulfide	Silicone
Material	$331.50	$450.00
Labor	333.50	105.00
	$665.00	$555.00

"These panels were installed before the windows were erected. If the panels were field installed the cost would have been about the same." (Today, Hall Aluminum uses G.E. Silicone for all panel installation—field or shop.)

According to Mr. Fredrick's cost study, labor savings more than offset material costs. That's because one-part G.E. Silicone Sealant needs no mixing, heating or chilling. It flows on and bonds securely to all common materials even at extreme temperatures.

Once it's on, you can forget about costly call backs. G.E. silicone rubber retains its flexibility for at least 30 years. It resists severe strain, sunlight, ozone, weather, hot and cold temperatures. So it won't ever sag, shrink, crack or crumble.

The Sealant comes in standard caulking cartridges and 5-gallon containers, in white, black, aluminum, neutral, translucent and 18 new colors.

•

For more information, contact a G.E. distributor listed on the opposite page. Or write: General Electric, Silicone Products Department, Section. Q 7149 Waterford, New York.

GENERAL ELECTRIC

On Readers' Service Card, circle No. 359

Acoustics

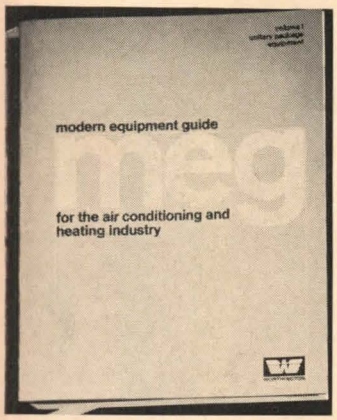
Aluminum Ceiling Tile

"Acousti-Clad," an incombustible, aluminum-faced, sound-control ceiling tile, is available in white, silver, copper, or gold finishes with either "Perlite" or "Spintone" core materials. Perlite is a rigid, multicellular board formed from expanded perlite plus mineral fibers and binders. Spintone is composed of mineral wool fibers bound together in rigid, monolithic construction. Sizes are 12″ x 12″ for both ⅞″-thick Acousti-Clad "P" and ⅝″-thick Acousti-Clad "S." Johns-Manville, 22 East 40 St., New York, N.Y.

On Readers' Service Card, Circle 200

Air/Temperature

A/C Selection Guide



"Modern Equipment Guide" (MEG) contains information necessary for selecting any type of air-conditioning control system. MEG is divided into two manuals. First one, 166 pages, describes package equipment up to 60 tons, which includes furnaces, roof-top units, air handlers, remote condensing units, etc. Second one, 319 pages, contains information on equipment ranging from 20 to 3,500 tons. Worthington Air Conditioning Co., Ampere Station, East Orange, N. J.

On Readers' Service Card, Circle 201

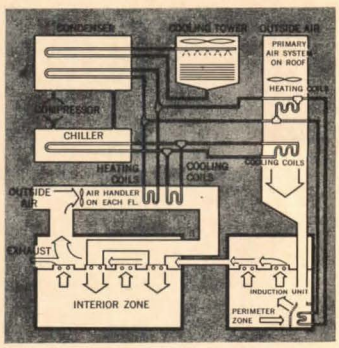
Computing A/C Loads

Heating/cooling loads and energy requirements may now be calculated by computer on a charge basis. Load program determines heat gains and losses for each zone or conditioned space within a building. Among the variables that contribute to the final computation of the total peak load are outside temperature, solar radiation, wind velocity, building materials, shading, ventilation, building orientation, window arrangement, hourly weather and solar conditions, number and distribution of people, hours of use, inside temperatures, nighttime temperature setback, and electric loads. Calculations account for variations in parameters for every hour of every month throughout the year. Computation calculations such as these are, according to Westinghouse, "an impossible undertaking using the classical method of slide-rule calculation." Brochure describes and illustrates the entire method of computation. Westinghouse Electric Corp., P.O. Box 2278, Pittsburgh, Pa.

On Readers' Service Card, Circle 202

Electric Heating/ Cooling Combination

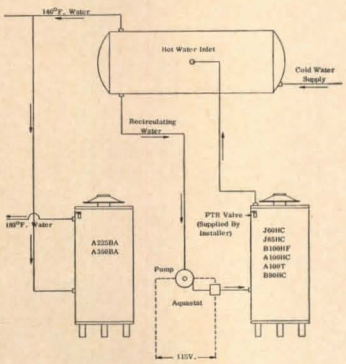
Heat generated by lighting systems can be re-used as the major source for heating systems. Depending on the type of system employed, heat may be recirculated when needed, transferred by heat exchanges, mixed with outside air, or exhausted to the outside. Subject of all-electric heating/cooling is discussed in considerable detail in the 24-page booklet entitled "Electric Space Conditioning."



Important advantages of this type of air conditioning include: lower air volumes and luminaire temperatures improve thermal comfort; smaller supply duct sizes and lower blower horsepower reduce headroom requirements and both initial and operating costs for air handling; more usable or rentable space with an all-electric design; increased light output from fluorescent lamps due to more favorable operating temperatures; elimination of chimney; and reduced air-conditioning tonnage if requirements for ventilation air are sufficiently great so that it can be exhausted through the lighting fixtures. Several types of systems are illustrated and described in detail. General Electric Co., Large Lamp Dept., Nela Park, Cleveland, Ohio.

On Readers' Service Card, Circle 203

Water-Heater Guide



Sizing and installing of commercial water-heaters are examined in 44-page technical manual. Included in discussion are consumption factors, temperature requirements, and occupancy percentages. Sizing tables and installation drawings of water heaters for installation in apartment buildings, motels, hotels, swimming pools, restaurants, schools, etc., are also given. General Water Heater Corp., 4851 So. Alameda St., Los Angeles, Calif.

On Readers' Service Card, Circle 204

Construction

Concealed Joint Aluminum Panel System

"CCP," or 12″-wide modular aluminum roofing and siding system, is thoroughly examined in 24-page booklet. CCP combines corrugated, ribbed, and V-beam roofing and siding with textured, stucco-embossed surfaces. Building types include shopping centers, manufacturing plants, schools, etc. Panels are available in 60 "Colorweld" finishes that do not chip, peel, or crack. Panel lengths range from 3′ to 39′ and are supplied cut to any specified length within this size range. Booklet includes details, photos, specs, load span data, and related information. Reynolds Metals Co., Building Products and Supply Div., Park Ridge, Ill.

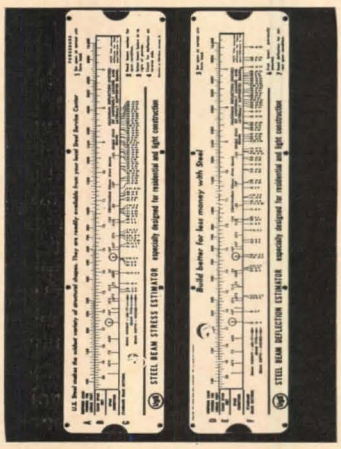
On Readers' Service Card, Circle 205

Double Tees

Double-tee prestressed-concrete floor and roof members, 7½′ by 20″ deep, are used for building spans 20′ to 60′. Minimum strength of concrete at transfer of prestress is 3,500 psi and 5,000 psi after 28 days curing. Property charts detail 7′6″ x 20″ roof member and 7′-6″ x 20″ floor member with 2″ topping. Allowable superimposed load (psf) chart, recommended specs, and photos are included. Dickerson Structural Concrete Corp., P.O. Box 160, Youngwood, Pa.

On Readers' Service Card, Circle 206

Slide-Rule Beam Calculator



Slide-rule calculator simplifies selection of steel beams employed in residential and light commercial structures. Span conditions range up to 23′ and uniform loads up to 10,000 per lin ft. Calculator aids in selecting proper size beams and in checking deflection of laterally supported beams under uniform loads. It can calculate steel beam requirements for three span conditions: simple, two equal continuous, and three equal continuous spans. U.S. Steel Corp., 525 William Penn Place, Pittsburgh, Pa.

On Readers' Service Card, Circle 207

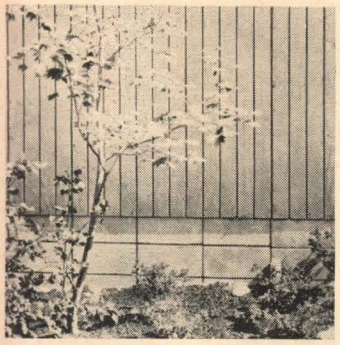
Precast Concrete Members

Precast concrete slabs, waffle units, channel slabs, concrete

joints, and tongue-and-groove planks are described in 12-page booklet. Featured is "DuLite" roof slab, which is available in thicknesses of 3″, 3½″, and 4″, and in spans up to 8′-4″. Slabs are unaffected by water and do not retain moisture. DuLite insulation concrete, 3″ thick, is equal to 2″ of rigid insulating board. Slabs do not weigh over 10 psf when thoroughly dry, compared to 40 psf of ordinary concrete. Its insulating value is about four times that of ordinary concrete. Grout in the joints has same low U-factor as slab itself. Details, roof insulation data, and load tables are included for all types of precast concrete members. Duwe Precast Concrete Products, Inc., Oshkosh, Wis.

On Readers' Service Card, Circle 208

Plywood Siding



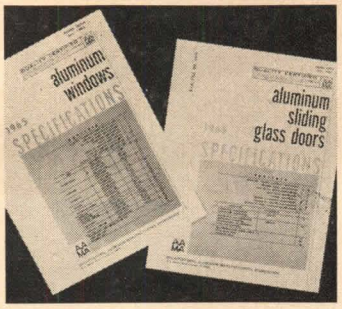
Use of plywood siding for residential design is illustrated in 24-page booklet. Among contents are plywood siding styles, installation procedures, strength and durability tests, and finishes. Also included are window and door details for applications to studs, information on the insulation value of wall sections with plywood sidings, and color and black-and-white photos. American Plywood Assn., 1119 A St., Tacoma, Wash.

On Readers' Service Card, Circle 209

Doors/Windows

Aluminum Window/ Sliding Door Specs

1965 AAMA specs cover aluminum windows and sliding glass doors. First booklet on aluminum windows, 50 pages, contains general specs for commercial, monumental, and residential construction. Detailed specs are then given for double-hung, casement, projected, awning, horizontal sliding, jalousie,



jal-awning, vertical sliding, top-hinged, and vertically pivoted windows. Wind-zone map, standard window size chart, and membership list are also included. Second booklet on aluminum sliding glass doors, 18 pages, contains specs for commercial and residential structures. Spec and design check list, wind-zone map, and standard size and nomenclature charts are included. Architectural Aluminum Mfg. Assn., 35 East Wacker Drive, Chicago, Ill.

On Readers' Service Card, Circle 210

Fire Door Facts

Information is available on hollow-metal fire doors and frames. Booklet includes chart that shows typical openings in variety of buildings and label classifications of the door that should go into that opening, type of hardware used, test results, and specs. Steelcraft Mfg. Co., 9017 Blue Ash Rd., Cincinnati, Ohio.

On Readers' Service Card, Circle 211

Finishes/Protectors

Wood Overlay

"Forbon" is a recently developed vulcanized fiber overlay for lumber, plywood, and particle board. A commercially available system permits continuous lamination of Forbon at speeds over 100′ per min. This resin-free cellulosic plastic prevents warping, cracking, or delamination. It can be used as subsurface for top-coating with film overlays or factory-applied solution coatings. Other advantages include high tensil strength and good burst strength to prevent knots or defects from rupturing the overlay. Forbon does not require heat for curing and is compatible with wide variety of finishing systems. Coating can be furnished in lengths, widths, thicknesses, and colors to meet architect's requirements. It can be printed or embossed as well. Uses include siding or façades, furniture or paneling, and stadium seats or benches. National Vulcanized Fiber Co., Wilmington, Del.

On Readers' Service Card, Circle 212

Aluminum Finishes

Aluminum Association has recently issued the second edition of the "Designation System for Aluminum Finishes," which attempts to eliminate the confusion resulting from the many proprietary designations introduced for finishes on aluminum. Covered are three types of finishes: mechanical finishes, chemical finishes, and coatings, which include anodic coatings, resinous and other organic coatings, electroplated and other metallic coatings, laminated coatings, and vitreous coatings. This system employs numbers to represent the mechanical and chemical finishes and each of the five types of coatings; two-digit numbers represent various finishes in each class. The Aluminum Assn., 420 Lexington Ave., New York, N.Y.

On Readers' Service Card, Circle 213

Furnishings

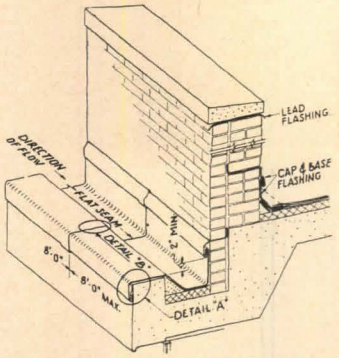
Flexible Carrels

Study carrel-modules may be used individually or in combination, thereby establishing a flexibility in space planning for schools, libraries, or institutions. Standard units, 50″ high by 36″ or 48″ wide, consist of tubular steel construction with baked epoxy enamel finish, individual lighting, work shelf, electrical and audio outlets with concealed wiring, nonglare laminated surfaces, and leveling feet for use on any carpeting or flooring surface. "Modukarels" may also include matching laminated storage compartment with sliding perforated doors, coat hook, one-box drawer and file or three-box drawers, post-leg extender for visual barriers, chalkboards, racket-type shelves, flush bracket shelves, and sloping magazine shelves. Monroe Industries Inc., 1050 South McComas, Wichita, Kan.

On Readers' Service Card, Circle 214

Insulation

Lead Roofing/ Flashing



Guide to lead roofing and flashing includes detailed drawings that illustrate layout in flat pattern, forming of sheets, and final installation of all standard joint systems normally used in sheet metal roofing but with special reference to lead sheet. Performance data, table of gages, and specs are included. Lead Industries Assn., Inc., 292 Madison Ave., New York, N.Y

On Readers' Service Card, Circle 215

Lath and Plaster Specs

"The 1965 Specifications for Metal Lathing and Furring" describes each type of metal lath and plaster assembly. Discussed are specs, design assumptions, partitions, vertical furring, wood studs, exteriors, ceilings, fireproofing, and reinforcement of other plaster bases. Metal Lath Assn., Engineers Bldg., Cleveland, Ohio.

On Readers' Service Card, Circle 216

Sanitation/Plumbing

Group Washing

Group washroom equipment is presented in 12-page booklet. Covered are circular, semicircular, and counter-type wash-fountains; column, multistall, wall, and modular showers; and drinking fountains. Details, photos, and colors available are

No. 101 Urethane Sealant– Strong and firm, impervious to heels; formulated for plazas and most horizontal concretes, excellent for setting windows or bonding to neoprene. Elongation 200%.

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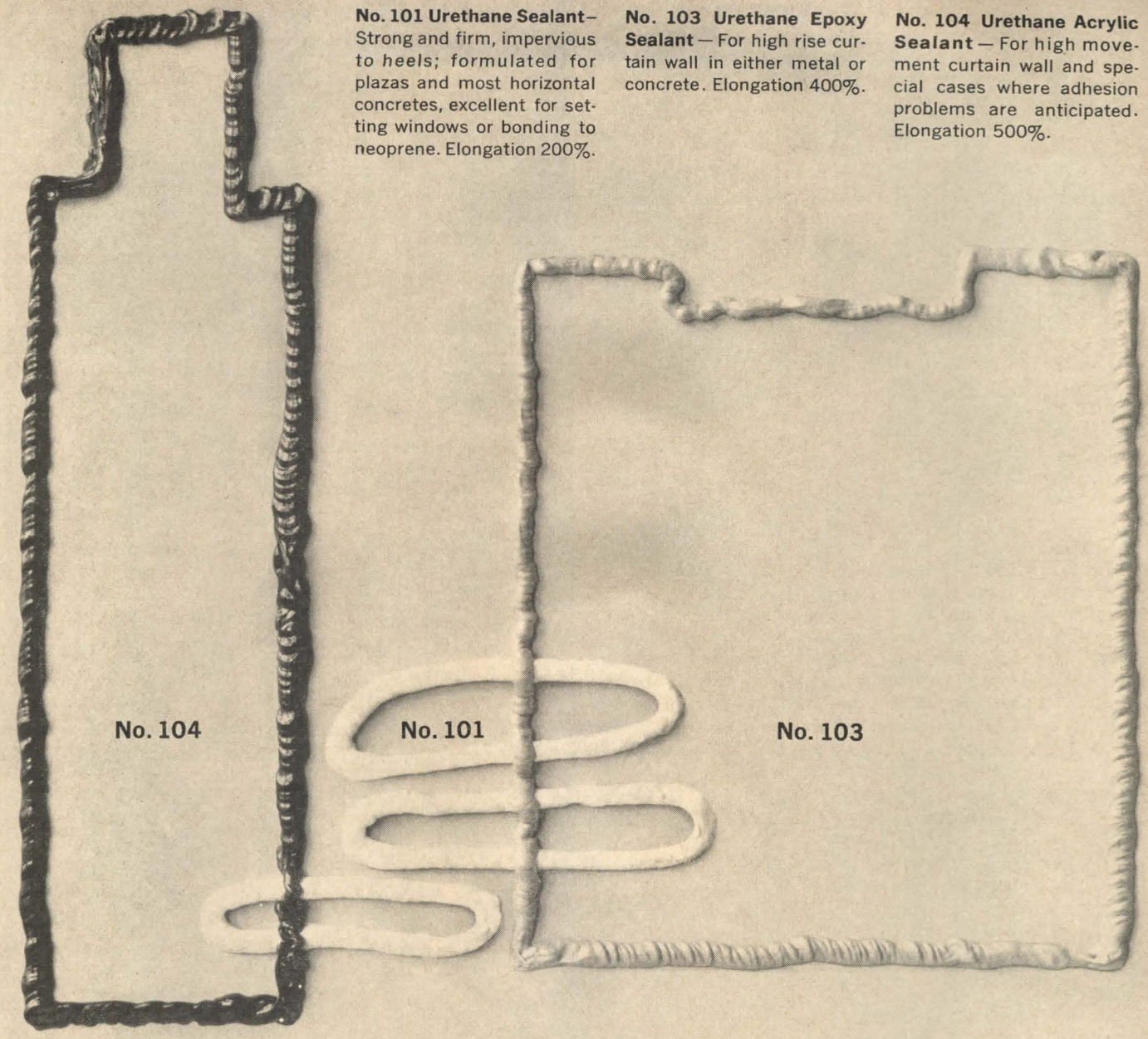

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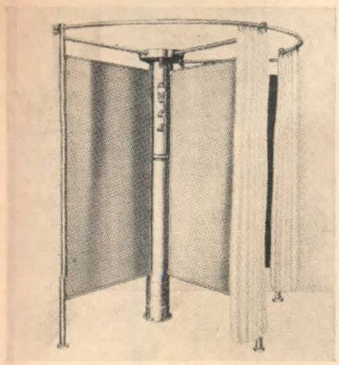


given. Bradley Washfountain Co., Menomonee Falls, Wis.

On Readers' Service Card, Circle 217

Special Equipment

Railing Designs

1965 Blumcraft catalog, 174 pages, covers their entire line of railing designs and equipment. Among subjects covered are accessories, panels, balusters, center posts, gates, handrails, lighting-fixture wall brackets, posts, and room dividers. Details, sketches of the various designs, and specs are included. Featured is "Techni-Phone" service by means of which architects can have their preliminary drawings reviewed within 48 hours by Blumcraft engineers. Blumcraft of Pittsburgh, 460 Melwood St., Pittsburgh, Pa.

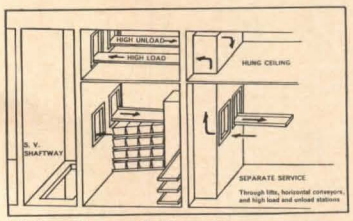
On Readers' Service Card, Circle 218

Integrated Hospital Lighting/Service Unit

"Pal-Lux" integrated and mechanical service center is used in patient rooms. Entire unit includes room lighting unit, patient reading light, examination light, night light, oxygen/vacuum system, nurse call system, remote TV control, telephone outlets, and I.V. support brackets. ("Luxo" lamp is manufactured by Luxo Lamp Corp. of Port Chester, N.Y.). Pal-Lux units are installed semirecessed in new construction or surface-mounted in modernization projects. It accommodates all major nurse call and oxygen/vacuum equipment. Special units are available for intensive care and recovery rooms. Photometric charts, selection charts, and specs are given. Pacific-Associated Lighting, Inc., 837 Folsom St., San Francisco, Calif.

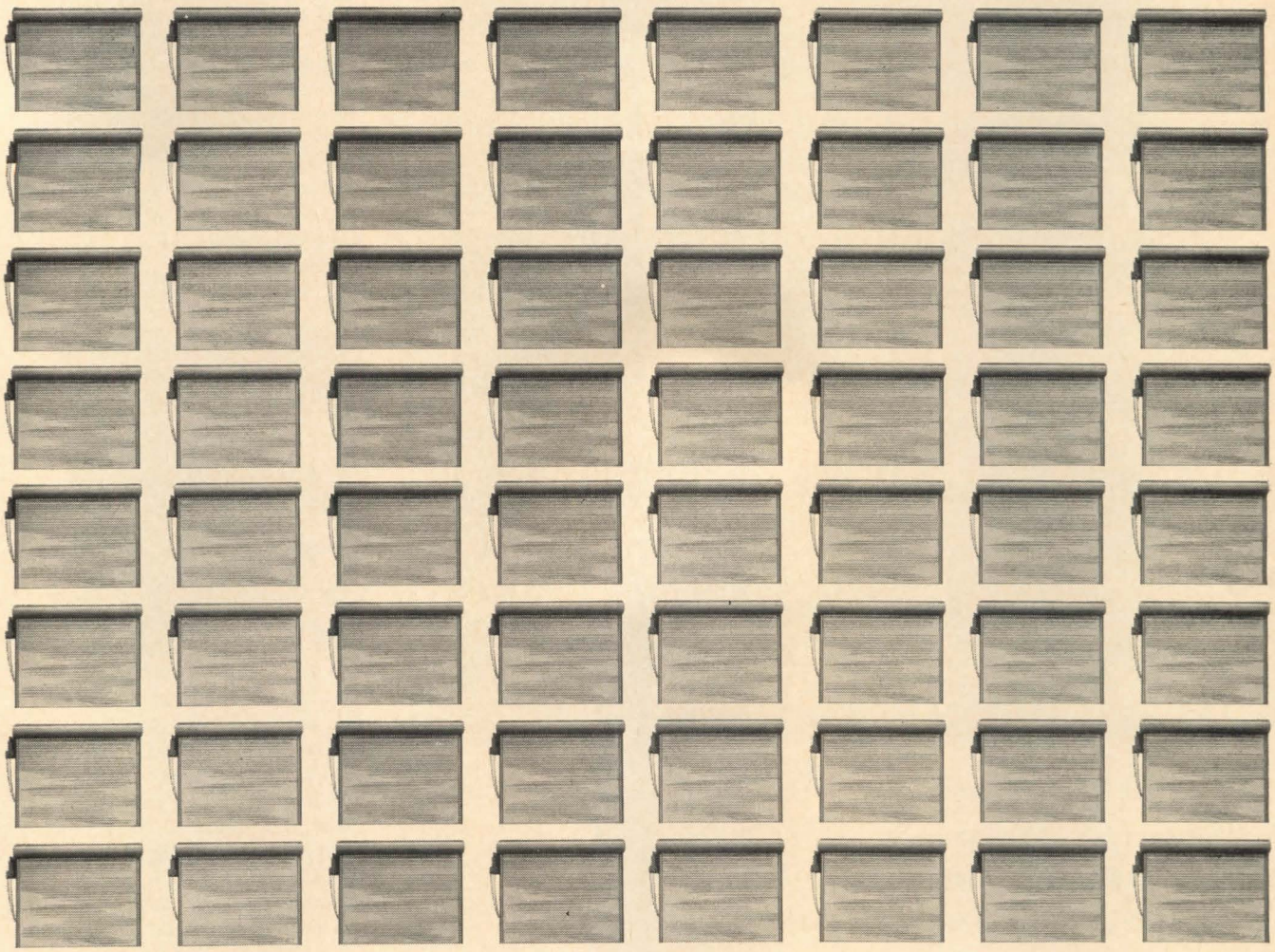
On Readers' Service Card, Circle 219

Postal Planning



U.S. Post Office Department has published an important booklet entitled "Planning for Postal Service in Office Buildings." They suggest that architects employ the "Vertical Improved Mail" system (VIM), which provides off-street loading and unloading; area mailroom for postal operations; and, for large buildings, vertical conveyor systems. In small office buildings, a planning factor of ½ sq ft of mailroom for each 1000 sq ft of leasable office space is generally adequate with a minimum size of 24 sq ft. In medium-sized office buildings, the planning factor for the mailroom size is 1.5 sq ft for each 1000 sq ft of leasable space. In large office buildings, the main mailroom should be about 3 sq ft per 1000 sq ft of leasable space. Vertical conveyor system can transport trays of mail to and from proper floor levels at 12 per min., thereby increasing the speed and amount of mail deliveries. Booklet is available at 20¢ per copy. Bureau of Operations, Post Office Dept., Washington, D.C.

MAHON
IS IDEAS
IN ROLLING STEEL DOORS



SEE HOW MAHON "COVERED THE WATERFRONT"

for the Port Authority of Duluth—64 doors in one installation

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The Port Authority should know, too.

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Today, write for Mahon catalog C-64. Write to . . . The R. C. Mahon Company, 6565 East Eight Mile Road, Detroit, Michigan 48234.

On Readers' Service Card, circle No. 384

Surfacing

Tile Specs

1965 spec manual for installation of ceramic tile is offered. Floor and wall costs are compared in chart form. Details include interior, exterior, and chemical resistant floors; interior and exterior walls; countertops; control joints; shower receptors; swimming pools; tile tubs; steam rooms; and refrigerator rooms. Each detail also includes recommended uses, limitations, preparation, specs, and materials to be used in application of the tile. Tile Council of America Inc., 800 Second Ave., New York, N.Y.

On Readers' Service Card, Circle 220

Walnut Gypsum

Two wood grain patterns have been added to standard line of "Durasan" vinyl-covered gypsum wallboard. "Modern Walnut" and "Heritage Walnut" combine with previously introduced "Presidential Walnut," all of which are lightly embossed to simulate the appearance and texture of wood. Durasan wood-grain panels can be sawed like lumber or cut to size by scoring the surface and snapping the core. Panel sizes are 4′ wide; 8′, 9′, and 10′ long; and ⅜″ and ½″ thick. Brochure contains samples of the three walnut textures. National Gypsum Co., Buffalo. N.Y.

On Readers' Service Card, Circle 221

PROGRESSIVE ARCHITECTURE
NEWS REPORT
REINHOLD PUBLISHING CORPORATION
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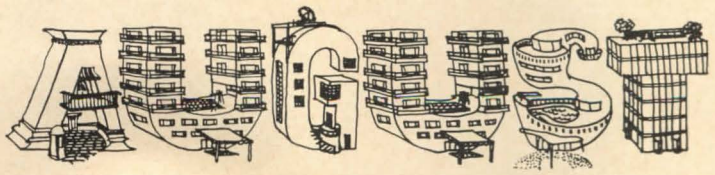
NEXT MONTH IN P/A



■ ***Flexibility is the key to successful school design today. That is because contemporary design must accommodate both current and possible future teaching concepts—from large-group teaching to small-group seminars, from simple blackboard presentations to elaborate audio-visual presentations. It's done with walls that move, with self-contained modules, with cluster construction that offers individual "family" and group environments. The exciting picture story appears in the August issue of PROGRESSIVE ARCHITECTURE.***

■ ***There's more. A follow-up to P/A's earlier discussion of design for psychotherapy; a presentation on interior design featuring the offices of Sperry & Hutchinson (S&H) in New York; a report on the materials and design of lightweight structures; advice on leasing architectural office equipment.***

■ ***Like its predecessors, the August P/A is a lively one, in tempo with you and your needs and interests. Send your $5 check immediately and you'll receive the August issue plus eleven more, including the exciting January Design Awards issue. Address Circulation Department, PROGRESSIVE ARCHITECTURE, Reinhold Publishing Corp., 430 Park Avenue, New York, New York 10022.***

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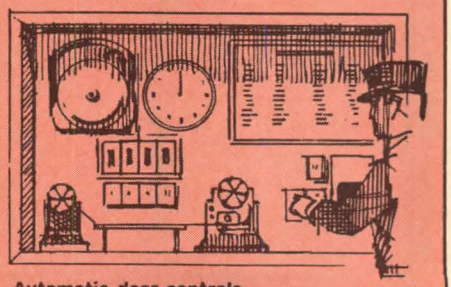

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The Cathedral of Notre Dame is the most famous religious edifice in Paris. It measures 139 x 52 yards. Built with very slender internal supports, it exemplifies the grandeur of a balance between vertical and horizontal lines. Central spire was added during 19th Century restoration.

Could the brothers Parret have improved their "symphony in stone" with Castell?

The greats of 12th Century Gothic had the leisure to surmount crude drawing tools. It is a matter of conjecture whether LOCKTITE TEL-A-GRADE holders and CASTELL leads would have added to the genius of Auguste, Gustave and Claude Parret when they designed Notre Dame Cathedral in 1163. Victor Hugo called it a "vast symphony in stone".

But the thought lingers that if nothing else were available today, a stick of CASTELL #9030 lead and a LOCKTITE TEL-A-GRADE 9800SG are all the tools you would need to give wings to your creative imagination—whether you are an architect or an engineer, a designer or a draftsman.

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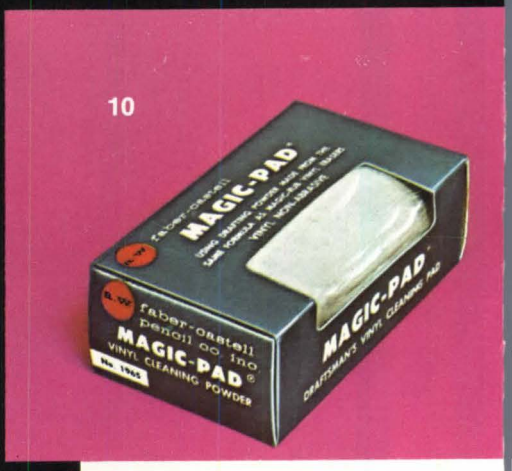
Specs for the most important working tools of your profession



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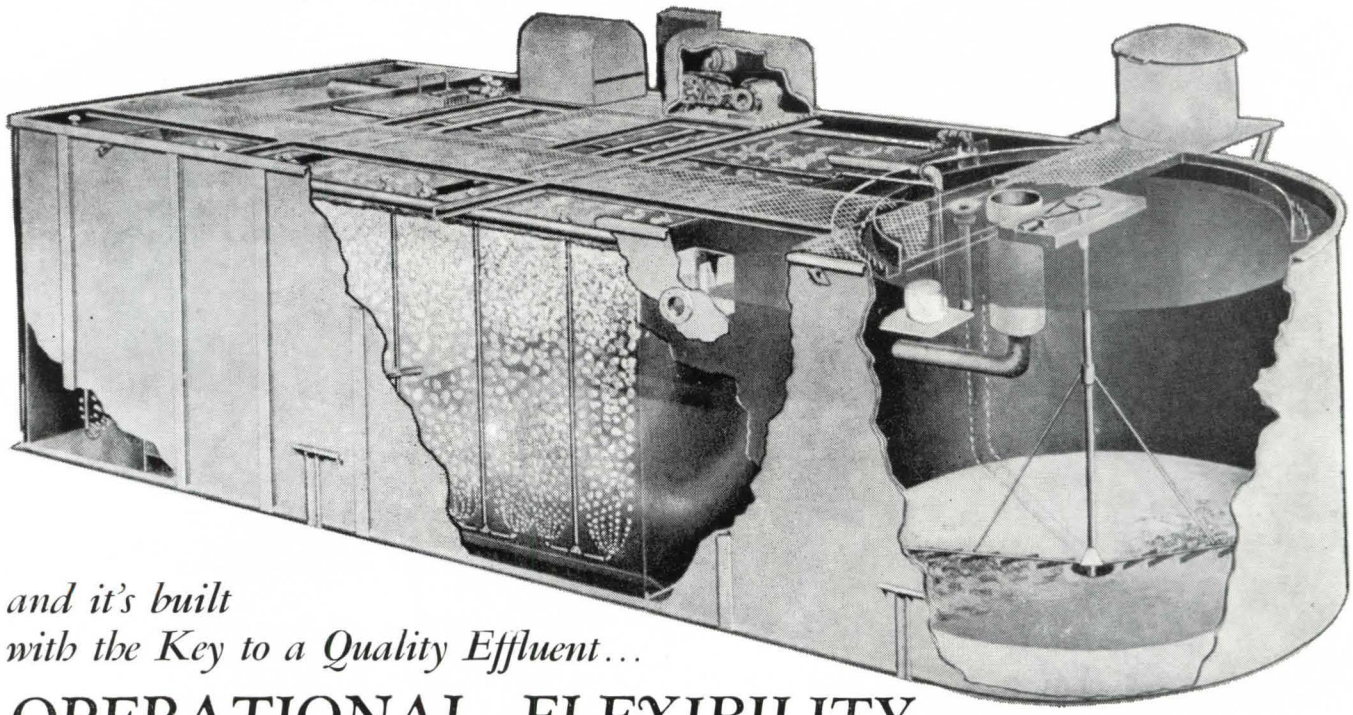

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P. O. Box 200 THOMASVILLE, GEORGIA

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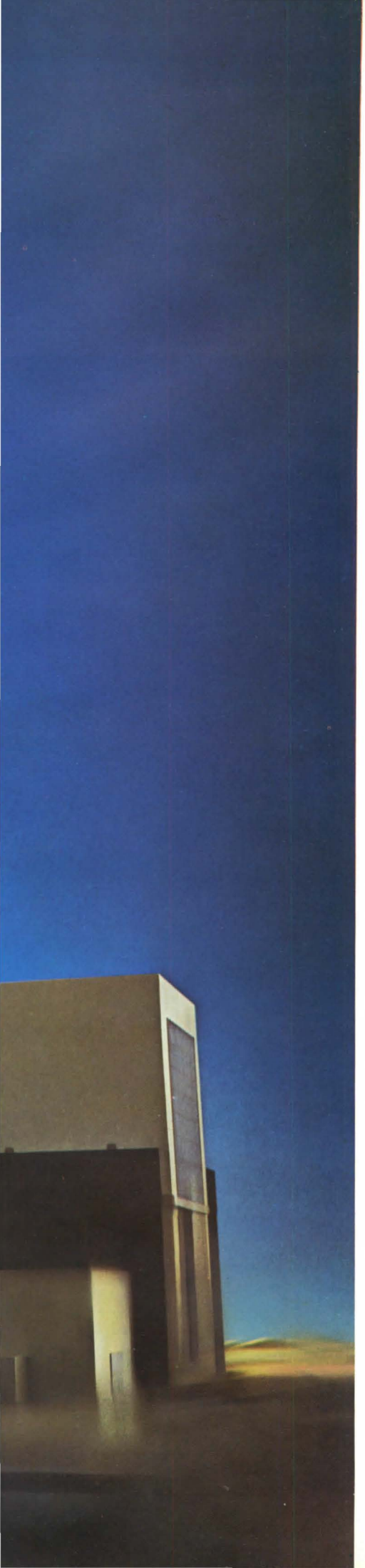
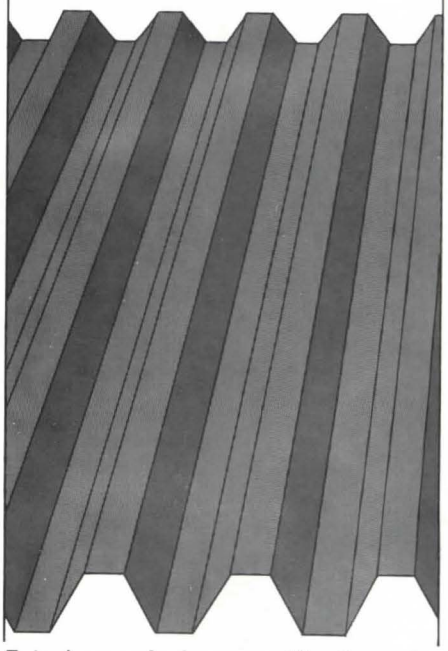
UNITED STATES



What metal was selected as a skin for the WORLD'S LARGEST BUILDING?

Name of Project: Launch Complex 39 Vehicle Assembly Building, NASA Launch Area, Merritt Island, Florida □ Architects/Engineers: Urbahn-Roberts-Seelye-Moran; New York City □ Construction and Design Supervision: Canaveral District, U. S. Army Corps of Engineers □ Contractor: Morrison-Knudsen, Perini, Hardeman; Joint Venture, South Gate, California □ Aluminum Panel Fabricator/Erector: Climate Conditioning Company, Stanton, California.
Panels consist of an exterior skin of prepainted aluminum V-beam sheets, backed with 1½ in. of insulating material.



Exterior surfacing specifications for this 524-ft-high structure at the National Aeronautics and Space Administration's John F. Kennedy Space Center were extremely strict: The coastal climate called for a metal skin with high corrosion resistance; strength was also needed to withstand severe wind load and deflection requirements; design-appearance was also a major consideration.

Solution? Of several options specified, the contractor chose specially-designed Alcoa® Aluminum V-beam sheets to "skin" giant wall panels (19 ft, 4 in. long, 42 in. wide and only 68 lb per square). Alcoa's design met the specifications and job requirements, including texture and color.

If you would like to know more about aluminum roofing and siding, call your nearest Alcoa sales office. Or write Aluminum Company of America, 1676-G Alcoa Building, Pittsburgh, Pa. 15219.

ALCOA BRINGS YOU AMERICA'S FINEST NEWS SHOW ... **THE HUNTLEY-BRINKLEY REPORT**, ON NBC-TV

ALCOA

Carrier Centrifugal No. 6499 helps cool nine city blocks!

No. 1 is in the Smithsonian—that may give you some idea of our experience in manufacturing centrifugals.

No. 6499? That's one of four Carrier steam-turbine-driven machines chilling water to air condition sixteen buildings in and around Hartford's famous Constitution Plaza.

The installation is the largest of its kind. No. 6499, with a capacity of 4500 tons, is the largest centrifugal ever built.

And its operator, The Hartford Gas Company, is the first to distribute and sell chilled water for air conditioning.

The project has been in operation since early June, 1962.

How is it doing? So well that Hartford Gas is installing another Carrier 4500-tonner to meet the demand.

The success of this project indicates that utility-operated plants supplying chilled water are practical for other cities—particularly those planning urban renewal.

We offer a booklet on the Hartford operation examining the advantages of central refrigeration plant and outlining cost and design factors in matching it to cooling usage.

Whether your interest in such a plant is for urban renewal, government center, campus, industrial park, airport, apartment or hospital complex, we believe you will find it worthwhile.

For a copy, call your Carrier representative or write us at Syracuse 1, N.Y. In Canada: Carrier Air Conditioning (Canada) Ltd., Bramalea, Ontario.

Carrier Air Conditioning Company

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

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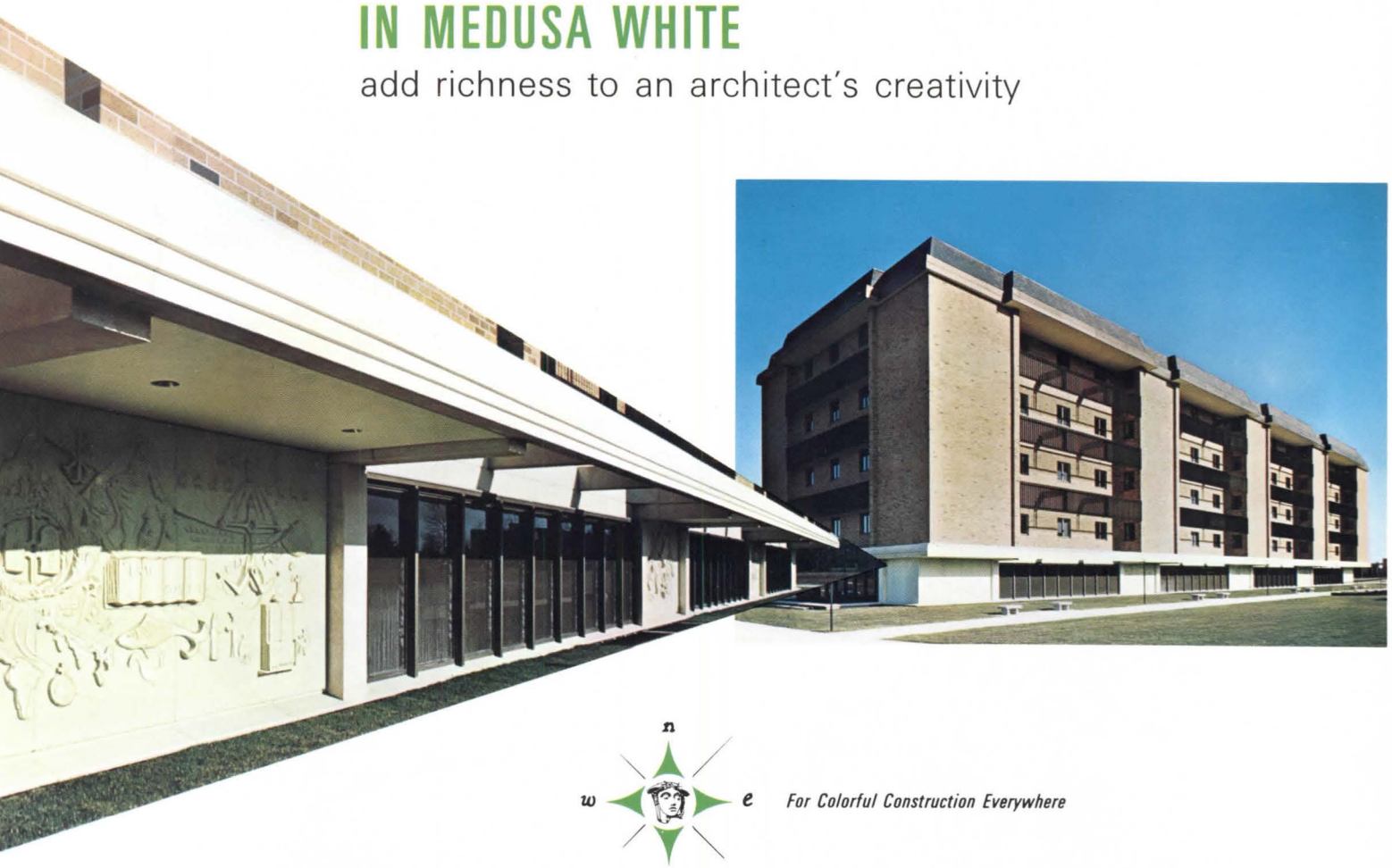
SCULPTURED PANELS

IN MEDUSA WHITE

add richness to an architect's creativity



n w e s

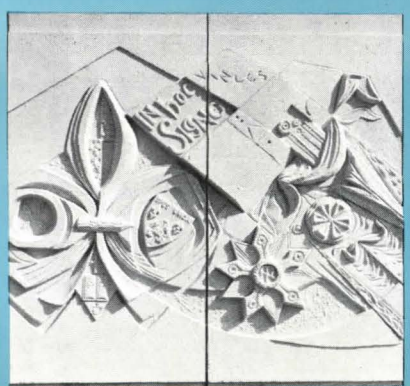
For Colorful Construction Everywhere

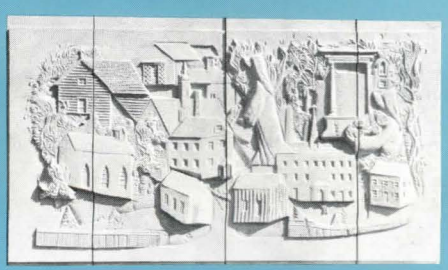
Medusa — the original White Portland Cement is especially suitable for exquisitely sculptured panels of the type shown as well as for those of unusual shape, color or texture. It is equally suitable for plain panels.

Because Medusa White is true white, it gives excellent color results whether used in its natural whiteness or with color pigments. Accuracy in meeting color themes is more easily attained, and Medusa White meets all ASTM and Federal specifications for strength. Write direct or contact your nearest precast concrete products manufacturer for more data.

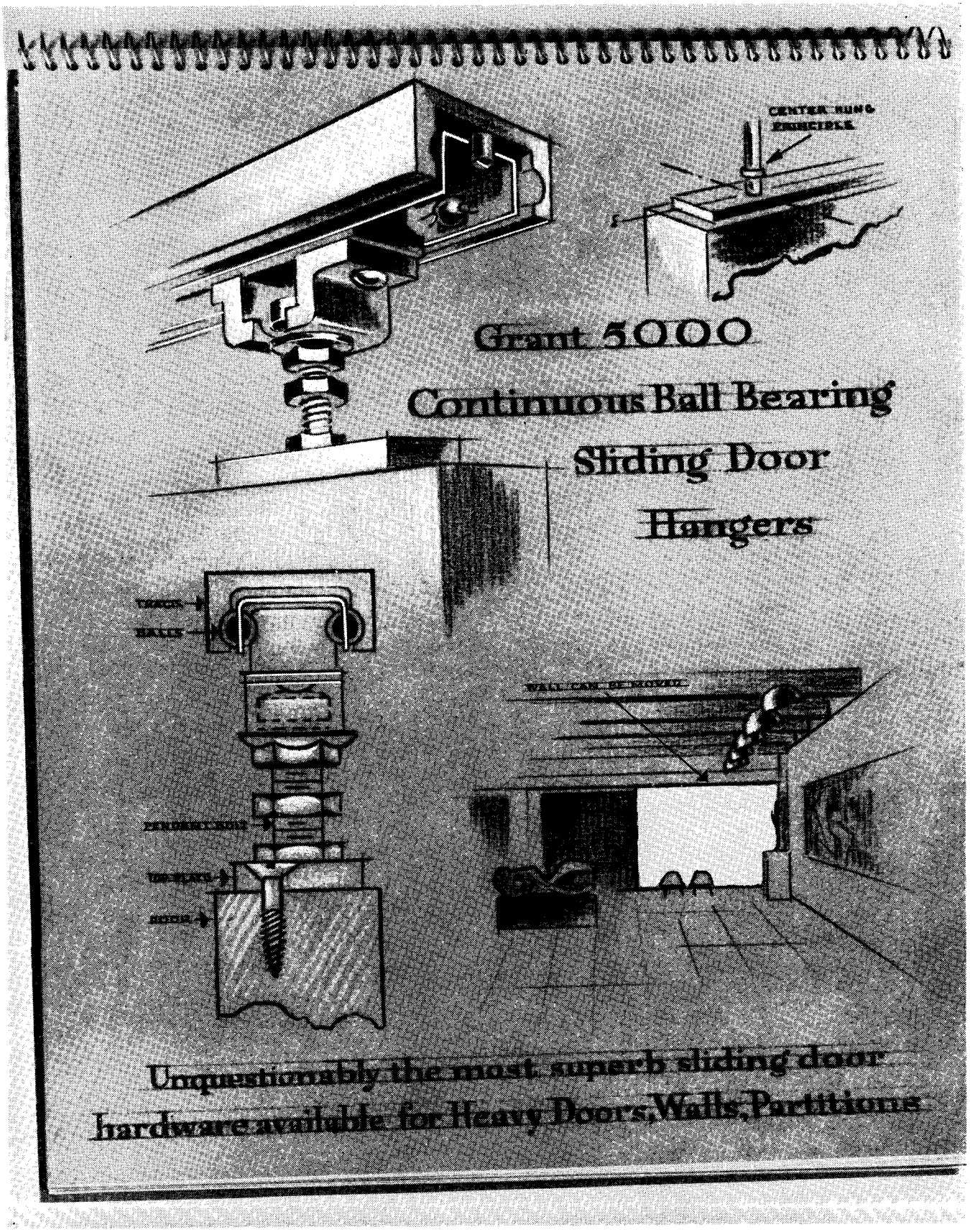
MEDUSA PORTLAND CEMENT COMPANY

P. O. BOX 5668 • CLEVELAND 1, OHIO





St. Mary's College Dormitories, South Bend, Indiana. Architect: Leo A. Daly Co., Omaha, Nebraska. Gen. Contractor: Thomas L. Hickey Co., South Bend, Indiana. Sculptor: Bill J. Hammon, Omaha, Nebraska. Precast Panels by: Midwest Concrete Industries, West Des Moines, Iowa.



GRANT HEAVY DUTY SLIDING DOOR HARDWARE

GRANT PULLEY & HARDWARE CORPORATION Eastern Division/ 49 High Street, West Nyack, N. Y. Western Division/944 Long Beach Ave., Los Angeles 21, Calif.

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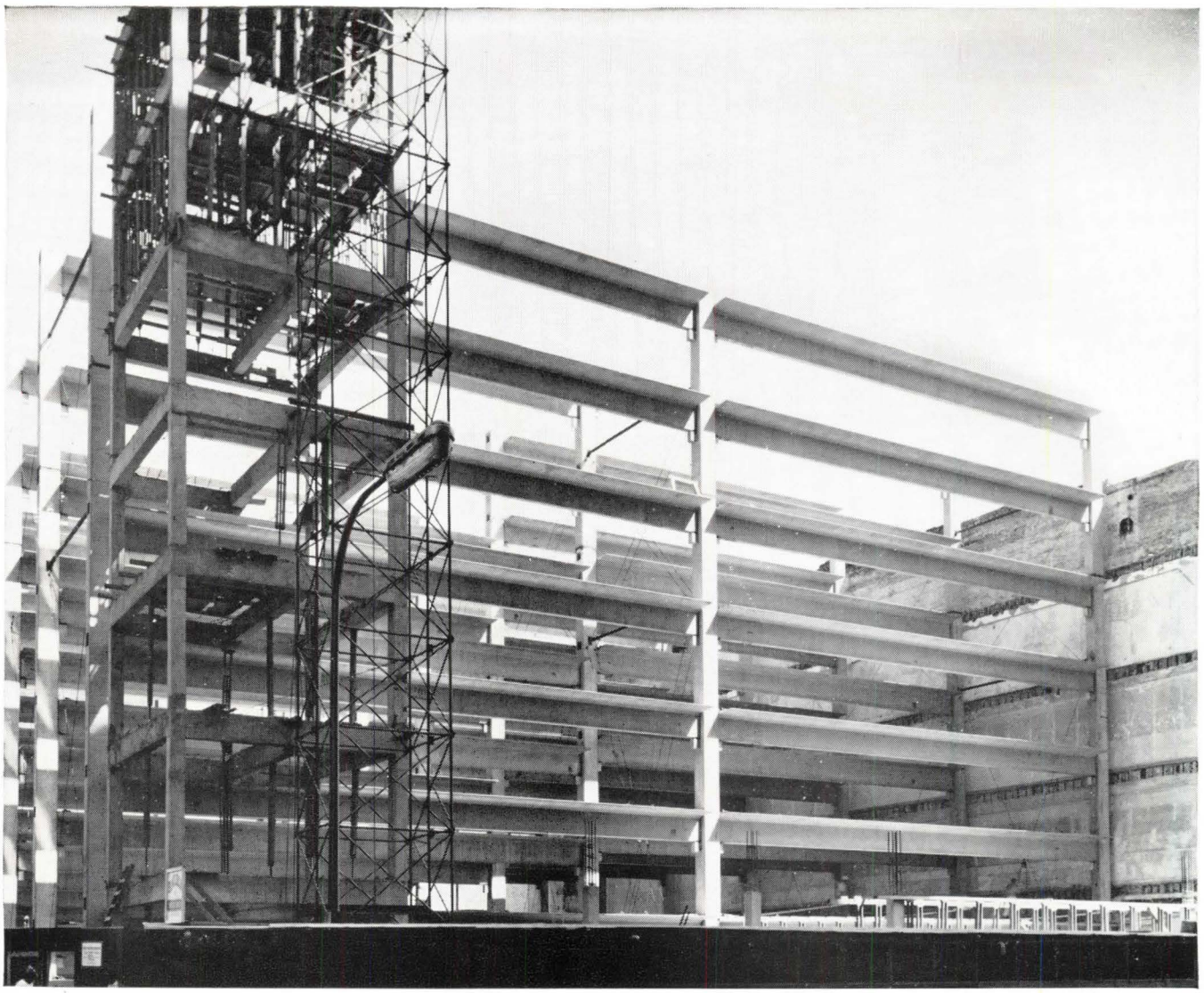
Flair PATTERNED PLEXIGLAS

The excitement of brilliant or subdued stained glass effects are now economically attainable with Flair patterned PLEXIGLAS® acrylic plastic. Used in the room dividers and sliding cabinet doors shown below, Flair sheets are beautifully textured and available in 17 rich colors and colorless.

Because Flair is PLEXIGLAS, it is impact resistant, light in weight and easy to cut and install. A slow burning plastic, its use is generally subject to the same regulations as untreated wood. Write for names and addresses of local suppliers, color samples and a descriptive brochure.

ROHM & HAAS
PHILADELPHIA, PA. 19105



Structural Engineers: T. Y. Lin & Associates, Chicago, Illinois
Contractor: F. A. Wilhelm Construction Co., Inc., Indianapolis, Indiana
Prestressed Fabricator: **Precast Industries, Inc., Kalamazoo, Michigan**

60-foot prestressed concrete tees carry loads in 8-story parking garage

High rise parking for 650 cars in busy Indianapolis will get its big lift from 98 pretensioned concrete single tees. Spaced on 25-foot centers, the tees span 60 feet. Supporting columns are also of concrete. For the lightweight concrete deck, post tensioning was employed.

Prestressed concrete construction such as this provides an excellent combination of light weight and high strength. The result is maximum use of space, economical construction and rapid completion. For this structure, erection of the entire framework was programmed for three weeks.

To help assure the excellence of their product, prestressed fabricators for this project and for many others throughout the country are relying on Union TUFWIRE® and TUFWIRE Strand. These products have been *proved* in service. For an up-to-date catalog on TUFWIRE Products for Prestressed Concrete write **Union Wire Rope Sales, Armco Steel Corporation, Steel Division, Department W-1515, 7000 Roberts Street, Kansas City, Missouri 64125.**

ARMCO STEEL ARMCO

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FOR MEN IN HIGH PLACES

DIRECTION IN PLANNING to meet the complex elevator needs of high rise office and professional buildings is a first consideration for building management.

For "Men in High Places" the vital problem of getting everybody there on time can be the difference between smooth administration and a continual source of irritation.

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Who says lockers have to be dull?

Look what we've done to them! Spectrum 45 Lockers...45 colors!

Eliminate the "long gray line" in *your* school design with new Republic Spectrum 45 Lockers. Your choice of 45 durable, baked enamel hues, to blend with and complement any school interior colors—and lift everyone's spirits! Colors that educators have asked for—and you're not limited in choice of locker style either. Ask for built-ins, freestanding, single-tiered, double-tiered, or box lockers, in a total of 91 different sizes, in the colors you like best.

No delay in deliveries, and you'll be getting famous quality Republic Locker construction—double-flanged, with extra steel throughout, double-leaf hinges (three of them, two inches wide), big rubber silencers, plus extra thorough five-step rust inhibiting.

Ask your MAN FROM MANUFACTURING or write today for complete printed information on Spectrum 45 Lockers—the most exciting thing that's ever happened to lockers!

Steel
Modern
Versatile
Economical

REPUBLIC STEEL

MANUFACTURING DIVISION
REPUBLIC STEEL CORPORATION
Dept. PA-1051-A, Youngstown, Ohio 44505

CALL THE MAN FROM MANUFACTURING!

Please send catalog and color chart on new Spectrum 45 Lockers to:

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SCHOOL OR COMPANY_____

ADDRESS_____

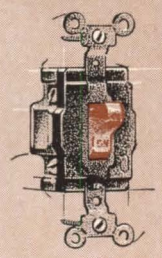
CITY_____ STATE_____ ZIP_____

OVER 100 AC SWITCHES TO CHOOSE FROM

SPECIFICATION GRADE
TOGGLE SWITCHES
15, 20 and 30 Ampere

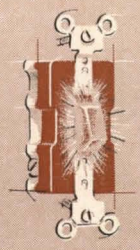

Toggle


Lock-Type

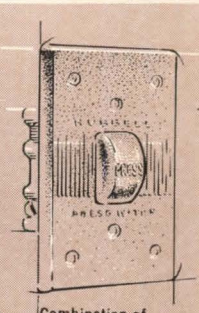

Toggle

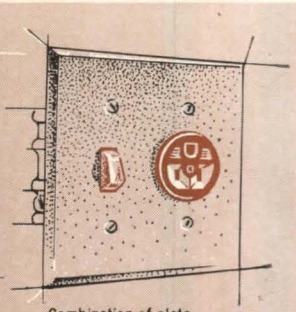
SPECIFICATION GRADE
PRESSWITCH®
SWITCHES
15 and 20 Ampere


Ivorine Button


Lighted Button (Button lights in "OFF" position)

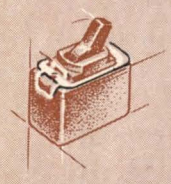

Red Pilot Light Button (Button lights in "ON" position)

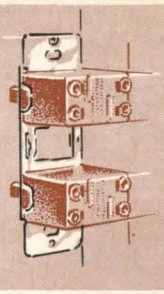

Combination of PRESSWITCH and weatherproof Hypalon plate


Combination of plate, pilot light PRESSWITCH and grounding outlet

SPECIFICATION GRADE
HUBBELLETTE®
INTERCHANGEABLE SWITCHES
15 and 20 Ampere

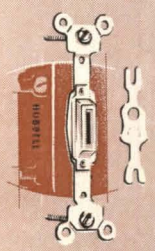

Screw Terminals


Screwless Terminals


Three fit one strap in standard boxes

SPECIFICATION GRADE
TWO-CIRCUIT
MOMENTARY CONTACT
SWITCHES
15 and 20 Ampere


Toggle


Lock-Type

SPECIFICATION GRADE
MAINTAINED CONTACT
SWITCHES
15 and 20 Ampere
(Double throw, center off)


Toggle


Lock-Type

SHALLOW
INTERMEDIATE GRADE
PACEMAKER®
SWITCHES
15 and 20 Ampere


Ultra-shallow Toggle


Lock-Type

STANDARD GRADE
PACEMAKER JR.
STRAP-TYPE SWITCHES
15 Ampere


Screw Terminals


Screwless Terminals

The cost of replacing "or equal" switches is your soundest reason for installing

HUBBELL AC SWITCHES

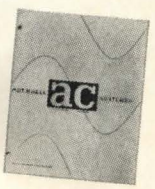
You have more than 100 AC Switches to choose from in the Hubbell line. It includes switches for every possible application and budget.

Hubbell specification grade switches are the sturdiest that money can buy. In fact, our intermediate and even standard grade types have more quality built into them than many so-called specification grade products.

So, if your application requires good, better, or best . . . Hubbell has the right switch for your job, *engineered* and built to operate with complete reliability. To contractors this means freedom from profit-eating call-backs. To users, it means protection from work stoppages and needless labor costs for replacing switches that fail in service.

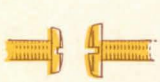
The chart at your left is a digest of the basic categories of AC switches available from Hubbell distributors. Each group comes in several ratings and types.

Your local Hubbell representative or franchised distributor will give you specifying information. Available for ready reference is our brochure "Hubbell AC Switches." Write for your copy today.

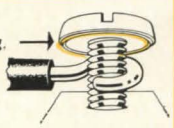


These Design Refinements Mean Faster Wiring . . . Faultless Performance

Hubbell binding screws have extra-deep slots and 20% wider heads for faster installation.



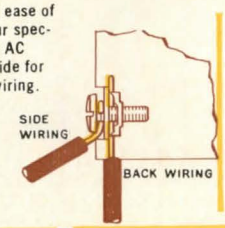
On the underside of screwheads, annular ring, above right, penetrates oxide on wires for better contact.

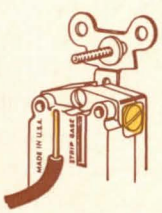


Long lasting silver cadmium contacts.

Only 21/32" deep, our "Pacemaker" AC Switches free more inner space for wiring, even in 2" boxes.

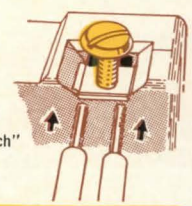
For speed and ease of installation, our specification grade AC Switches provide for back or side wiring.





Convenient strip gage, molded in housing of switch, indicates proper length of insulation to be removed from conductors.

Patented feed-thru terminal provided on single pole "Presswitch" Switches saves time and splicing.



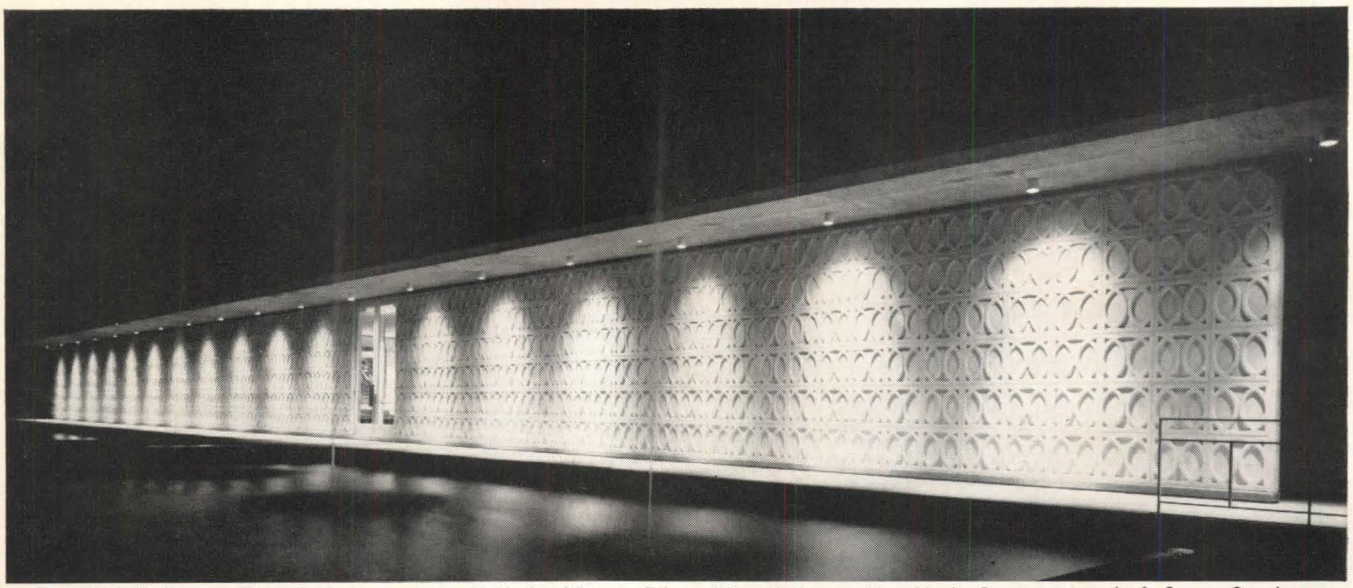
IT PAYS TO HAVE HUBBELL GOOD CONNECTIONS

HARVEY HUBBELL INCORPORATED

Bridgeport, Connecticut
In Canada: Ajax, Ontario

NEMA MEMBER

SCREEN PATTERN UNITS OF PRECAST WHITE CONCRETE GIVE STRIKING EFFECTS IN WALL DESIGN

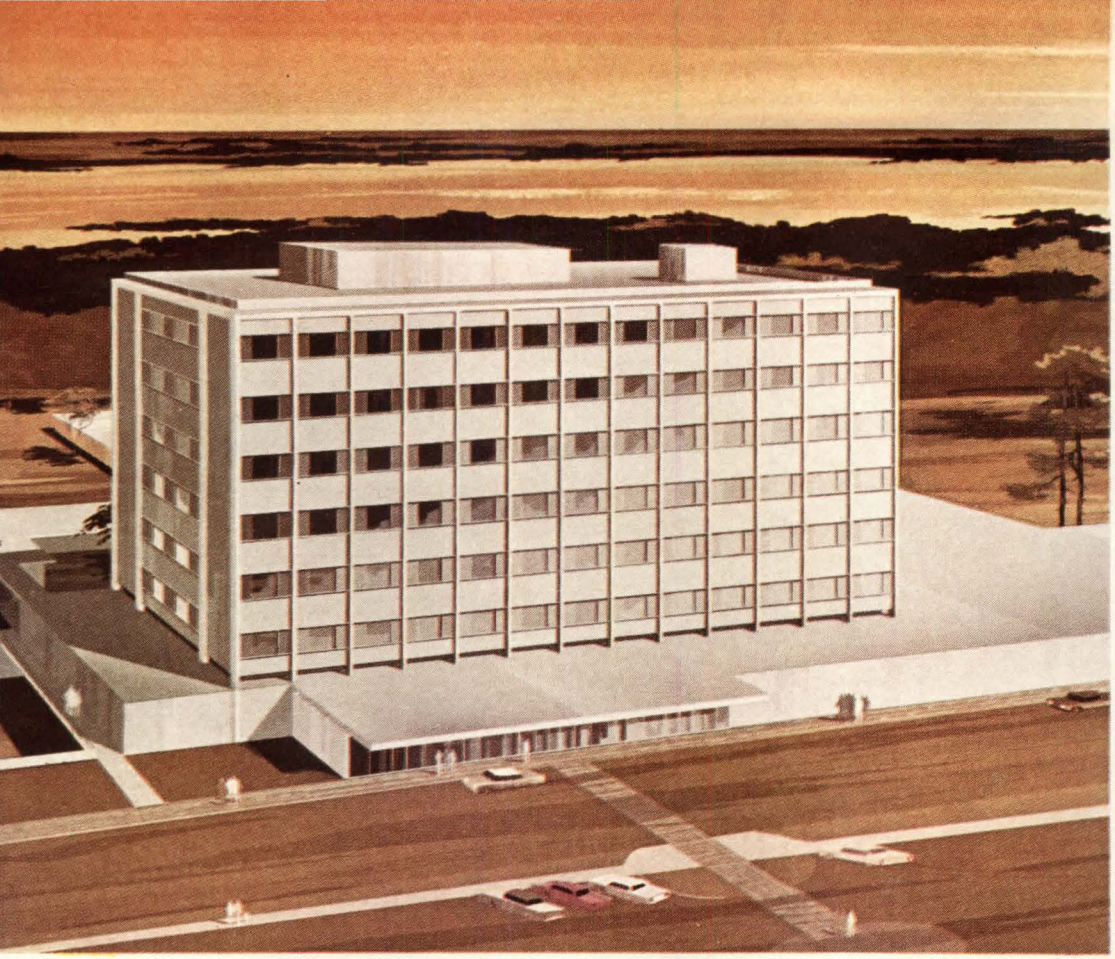


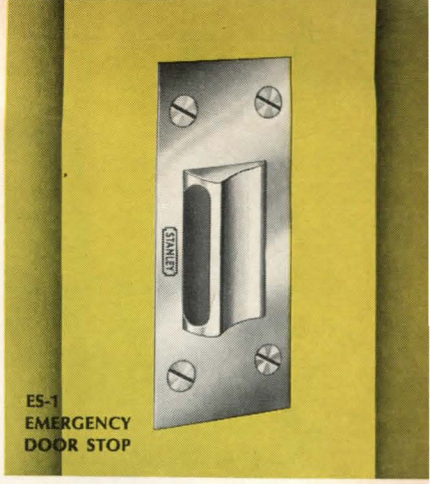
The First Unitarian Church, Schenectady, N. Y. **Architect:** Edward Durell Stone, New York. **Contractor:** L. A. Swyer Co., Inc., Albany. **Structural Engineers:** Harwood & Gould, New York. **Precast Concrete Panels:** V. Zappala & Co., Inc., Rensselaer.

Virtually unlimited patterns are possible in designing precast white concrete units. Designs can range from simple squares and oblongs to intricate patterns of lacelike circles, diamonds, triangles and webs. ■ This church building features an interesting solid-back screen pattern unit made with ATLAS WHITE portland cement. The units are 2 foot square and 3 inches thick. The surface finish is smooth. About 4,000 of these precast concrete units were laid up with a masonry mortar of ATLAS WHITE cement. ■ Where a uniform white surface is required in precast concrete units, architects are specifying ATLAS WHITE cement. Its whiteness also makes it an ideal matrix for colored or exposed aggregate concrete surfaces. For details, see your local precast concrete manufacturer. Or write Universal Atlas Cement Division, United States Steel, 100 Park Ave., New York, N.Y. 10017. *"USS" and "ATLAS" are registered trademarks.*

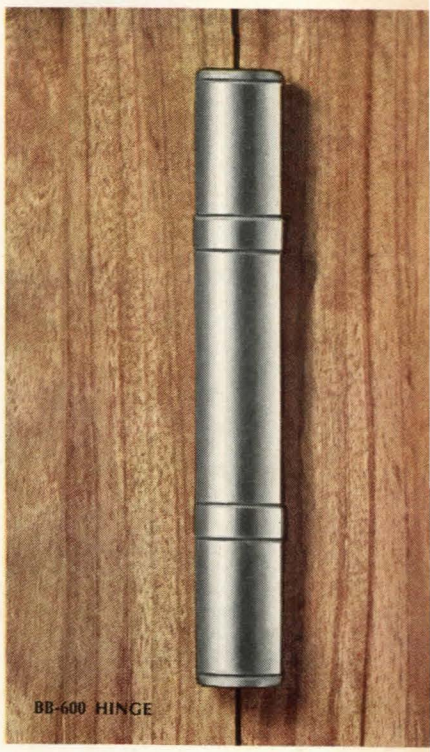
WF-75

USS Atlas WHITE CEMENTS





ES-1
EMERGENCY
DOOR STOP



BB-600 HINGE

Design excellence in every detail... including Stanley Hardware

At the 350-bed Jess Parrish Memorial Hospital in Titusville, Florida, over 1,000 pairs of handsome and functional Stanley BB600 hinges accent the over-all excellence of the building. And Stanley emergency door stops help assure safety for patients in bathrooms throughout the hospital.

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.

JESS PARRISH MEMORIAL HOSPITAL
Titusville, Florida

ARCHITECTS AND ENGINEERS:
Hirshberg, Thompson & Associates
Titusville, Florida

HOSPITAL CONSULTANTS:
Hillman-Jones Associates
Miami / Ft. Meyers Beach, Florida

GENERAL CONTRACTOR:
Daniel Construction Co. of Florida
Jacksonville, Florida

HARDWARE SUPPLIER:
Dunn Brothers Hardware
Daytona Beach, Florida

HARDWARE CONSULTANT:
W. R. "Bob" Stigler, AHC
(Dunn Brothers Hardware)
Daytona Beach, Florida

THE STANLEY® WORKS

STANLEY HARDWARE
DIVISION OF THE STANLEY WORKS
NEW BRITAIN, CONNECTICUT
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Stanley salutes you on your 25th Anniversary.

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NOW—ALL KAISER ALUMINUM ARCHITECTURAL ALLOYS ARE PRODUCED TO KALCOLOR® STANDARDS

And here is a list of manufacturers who now produce extrusions from KALCOLOR billet and fabricate architectural building products from Kaiser Aluminum architectural alloys. □ Alert to the architects' requirements for quality, they know that "produced to KALCOLOR standards" means the finest in aluminum alloys—that no producer of basic aluminum exercises greater control over production practices than does Kaiser Aluminum. □ These manufacturers stand ready to serve your design needs in aluminum. We urge your consideration of their products.

THE ADAMS & WESTLAKE CO.
Elkhart, Indiana—Telephone: 219/CO 4-1141. The Architectural Products Division designs, constructs and installs a broad line of reversible, double hung, projected, sliding, venetian blind and thermal break windows and curtain walls. It extrudes, anodizes and assembles all components in its own plant.

AMARLITE
DIVISION OF ANACONDA ALUMINUM CO.
4785 Fulton Ind'l Blvd., S.W., Atlanta, Ga.—Telephone 404/344-2750. Offices in Paramus, N.J., 201/CO 2-1540; Chicago, 312/RE 1-6050; Dallas, 214/ME 1-6620; Atlanta, 404/355-0915; Cleveland, 216/OR 1-1819; Montebello, California, 213/685-6340. Manufacturer of architectural aluminum products. Doors and entrances in standard and custom sizes. Store fronts including sash, division bars, fascia, and awning bars and hoods. Curtain walls from light to monumental construction. Sliding doors in residential (suburban series), commercial (metropolitan series) and also multi-sliders and pocket units. La Porte decorator doors with aluminum or vinyl laminated steel skin and foamed urethane core.

THE WILLIAM L. BONNELL CO., INC.
Offices in Newnan, Ga.; New York City; Miami; Houston; Springfield, Mo.; Nashville, Tenn.; Virginia Beach, Va. Complete aluminum extrusion package with extrusion presses of 1,500,000 lbs. capacity per week. Conventional and Kalcolor anodizing. Hard coat anodizing. Thermo setting acrylic lacquer applied electrostatically. Primary fabrication of all types, including mechanical finishes, welding, drilling, punching, tapping. World's largest independent aluminum extruder with the knowledge, capacity and experience to serve every extrusion need.

THE CECO CORPORATION
5601 West 26th Street, Chicago, Illinois—Telephone 312/BI 2-2000; in Cicero: 312/TO 3-4000. Manufacturers and erectors of a full line of steel and aluminum building components for the construction industry, including aluminum windows, curtain walls and grid wall systems with Kalcolor finishes. Inquiries are solicited from other manufacturers requiring large volume Kalcolor work. Sales offices in principal cities.

FENTRON INDUSTRIES, INC.
2801 N.W. Market St., Seattle, Washington—Telephone 206/SU 2-2000. In California: South El Monte—Telephone 213/448-7671; Sunnyvale—408/RE 6-2020. Manufacturers of architectural metal products. Complete facilities for design, engineering, research and testing, aluminum billet casting, extruding, fabricating, natural and color anodizing and erection. Competitive and custom curtain walls, windows, doors, store front systems, glass and glazing building wall panels, service stations, guard railing. In-plant facilities for producing related products permit fully coordinated building package.

KAWNEER CO.
Division of American Metal Climax, Inc. Offices in: Niles, Michigan—Telephone: 616/683-0200. Richmond, California—Telephone: 415/BE 2-1821. Atlanta, Georgia—Telephone: 404/478-8841. Products in Kalcolor: Duty-rated entrances, narrow line framing, unit wall systems, custom curtain walls, extruded store fronts, Sealair windows, railcraft, sliding doors.

MILLER INDUSTRIES, INC.
Reed City, Michigan—Telephone 616/832-4911. Custom extruders and fabricators of architectural aluminum shapes. Complete line of standard and custom narrow line and wide stile doors. Full flush panel doors and commercial sliding assemblies, frames, grids, guard rails, etc. Quotations on custom and specialty items will be furnished on request.

NAARCO™ (Formerly Modu-Wall, Inc.)
NORTH AMERICAN ALUMINUM CORP.
5575 N. Riverview, Parchment, Michigan—Telephone: 616/349-6626. Products include curtain wall, windows, interior door frames, solar screens, fascias, panels. We supply complete fabrication, including extrusion press and both sulfuric and Kalcolor anodizing. Our facilities include 94,000 sq. ft. of plant area.

SOUTHERN EXTRUSIONS, INC.
P.O. Box 750, Magnolia, Arkansas—Telephone 501/CE 4-4260. Quality extrusions and sheet with Kalcolor finishes and other anodized finishes. Engineering, design and custom fabrication services available.

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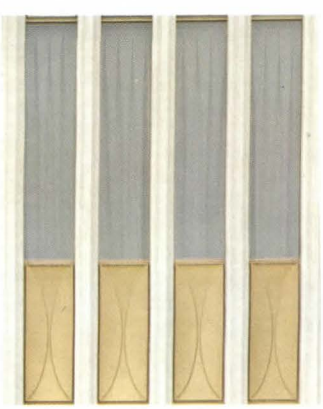
University Properties, Inc., IBM Building, Seattle; Associated Architects: Naramore, Bain, Brady & Johanson; Minoru Yamasaki and Associates; KALCOLOR® aluminum curtain wall: Kawneer Company

FIGURED PANELS ADD TO IBM'S GRAND TOTAL—THEY'RE DEPENDABLE KALCOLOR® ALUMINUM



Between the new IBM Building's bold mullions you'll see a rich example of sculptured KALCOLOR aluminum—amber colored spandrel panels formed to the architect's design. KALCOLOR anodizing provides superior color uniformity and endurability for this application. KALCOLOR is sunfast, highly corrosion resistant, twice as resistant to abrasion as ordinary anodizing and may be applied to almost any aluminum building product. Most important, only KALCOLOR can be specified in ten color values—in the wide range represented by the circles below. See Sweet's File 6a/Ka for technical information on KALCOLOR aluminum. To locate KALCOLOR products of our fabricator customers, call Kaiser Aluminum in your city... or write Kaiser Aluminum, Dept. 845j, Kaiser Center, Oakland, Calif. 94604.

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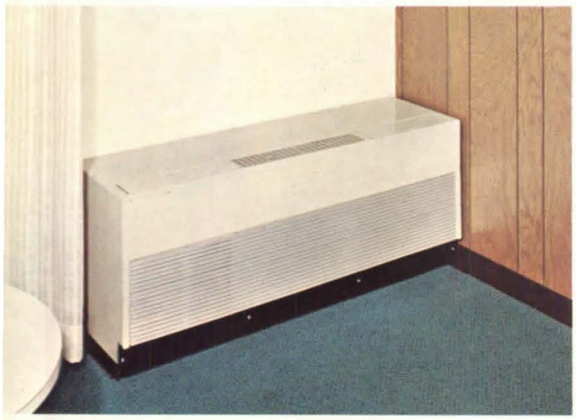
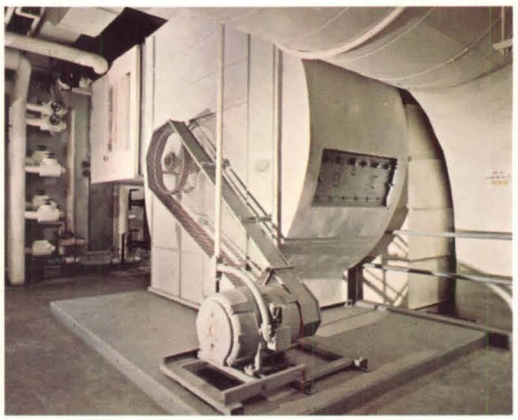
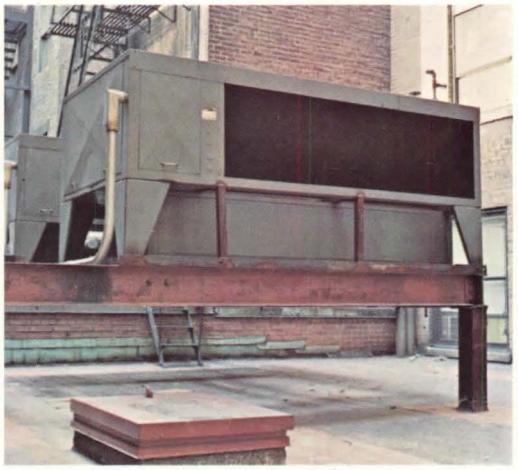


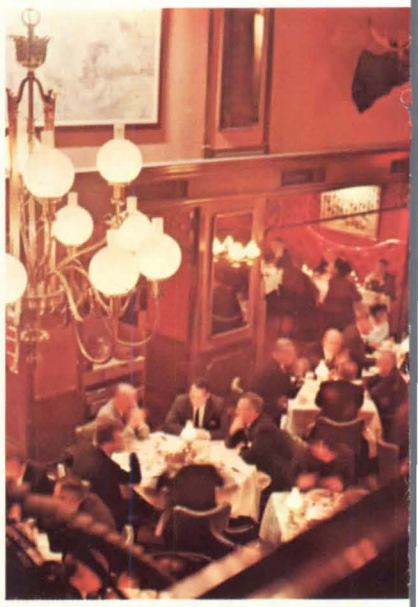
A. Complete through-the-wall heating and cooling system with individual room control. Called the Type-Y, it combines steam, hot-water or electric heating with direct expansion cooling. Ideal for hospitals, motels, nursing homes, offices, dormitories and apartments.

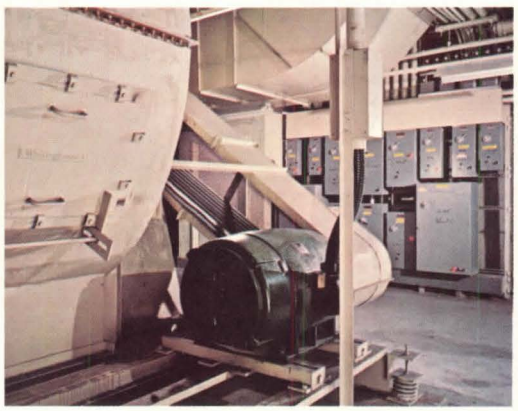


B. 110 Westinghouse-Sturtevant 73-inch fans, like this one, take in, circulate, return and exhaust air through large built-up air handling system in new home of Smithsonian Institutions' Museum of History and Technology (right). Total area serviced is 754,000 square feet.



E. Westinghouse completely air-cooled packaged chiller on roof of famous Cattleman's Restaurant in New York (right), keeps customers comfortably cool while they enjoy elegance out of the Old West.





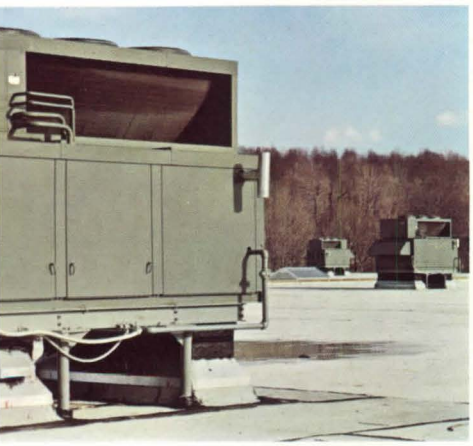
G. In the famous Pan Am Building, world's largest commercial building, every cubic inch of air is handled by Westinghouse equipment. Total of 82 Westinghouse fans includes Centriline® fans, industrial fans and centrifugal fans. 236 Westinghouse specially designed large air handling units complete the job.

H. Ten tons of air conditioning in a window New Westinghouse UJ-120 unit make buildings modern, cool and comfortabl without major remodeling expenses. Onl connections needed are ducts and elec tricity. So quiet, employe of Capriel, Inc works undisturbed next to unit. Cools u to 4,000 square feet.

actories, shopping centers, restaurants, and museums.

. Quiet, vibration-free Westinghouse air handling equipment gives the First Methodist Church in LaGrange, Georgia, a peaceful, comfortable environment for its congregation. Installation includes Westinghouse-Sturtevant air distributing units, hot-water coils and two 0-ton PB packaged water chillers.

D. Westinghouse Precipitron® electronic air cleaner removes up to 95% of all dirt particles, smoke and pollen circulating throughout a building. Traps particles as small as 1/100th micron. Holds contaminants on electrically charged plates, without reducing flow of air through the cleaner.



. Zoned heating and cooling control is provided y ten Westinghouse IC Roof Mounted units at the erox Corporation's Eastern Regional Distribuon Center, Blauvelt, N.Y. The unit's low silhouttes do not interfere with looks of building. Four apacities available: 7½, 10, 15 and 20 tons.

B. Architects: McKim, Meade and White, Washington, D.C.
Associate Architects & Engineers: Mills, Petticord & Mills, Washington, D C.
Consulting Engineer: Jaros, Baum and Bolles, Washington, D.C.
Contractor: Norair Engineering Corporation, Washington, D.C.

C. Architect: Bothwell & Associates, Decatur, Ga.
Mechanical Engineer: Donald Lindstrom & Assoc., Atlanta, Ga.

E. Architect: Raymond Loewy and William Snaith, New York, N.Y.
Mechanical Contractor: Jaffie Contracting Company, Inc., New York, N.Y.

F. Builder: Milau Associates, Inc., Great Neck, N.Y.
Engineer and Mechanical Contractor: Abbott, Lester & Company, Inc., New York, N.Y.

G. Architect: Emery Roth & Sons, Inc., New York, N.Y.
Consulting Engineer: Jaros, Baum & Bolles, New York, N.Y.
Mechanical Contractor: Raisler Corporation, New York, N.Y.

H. Engineer: Fred Roslyn, New York, N.Y.
Mechanical Contractor: Temperature Design Corporation, New York, N.Y.

J. Architect and Engineer: Stevens & Wilkinson, Atlanta, Ga.
Mechanical Engineer: Brewer & Mundy, Atlanta, Ga.
Mechanical Contractor: Sockwell Company, Atlanta, Ga.

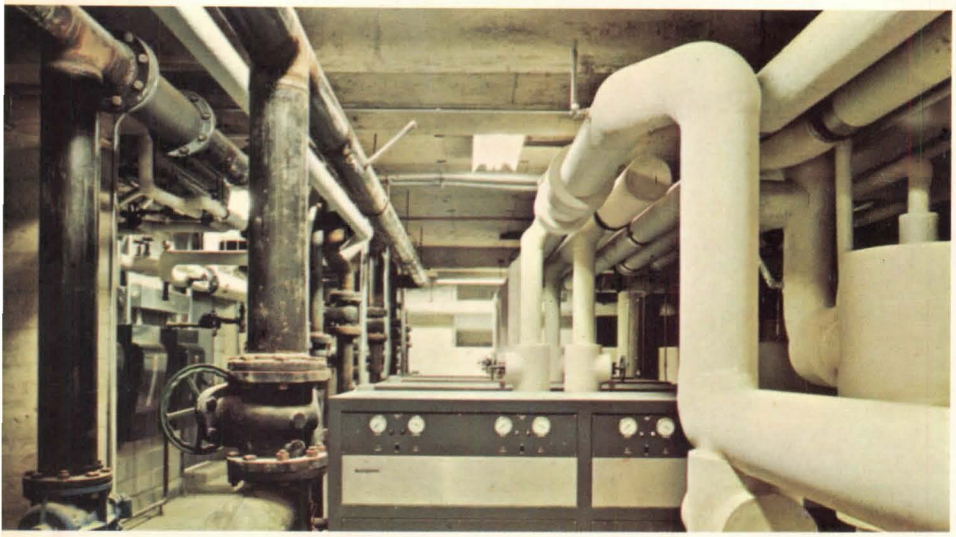
K. Architect: Percy H. Perkins, Jr., A.I.A., Atlanta, Ga.
Engineer: Derek C. C. Peters Jr., Atlanta, Ga.

M. Architect: Emery Roth and Sons, Inc., New York, N.Y.
Engineers: General Engineering Associates, Washington, D.C.
Mechanical Contractor: William Schlosser Company, Washington D.C.

. This 137-ton PE direct expansion packaged hiller fits through a 30-inch door. Installed in ree-story addition to the Sheffield Memorial uilding, Atlanta, Ga., it is completely factory ssembled, pretested and charged. Also included job are Westinghouse-Sturtevant fans and air andling equipment.

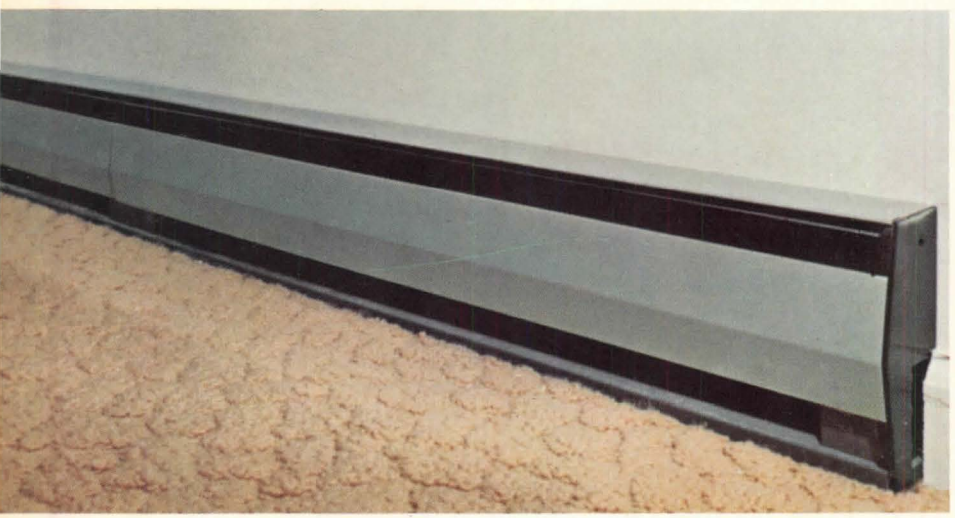
K. Hinesville, Ga., award-winning school has total heating and cooling comfort in one through-the-wall system: It's WhispAir®, the complete family of packaged air conditioning and heat pumps for apartments, homes, schools and small commercial buildings. Uses no indoor space. Requires no usable outdoor space.

In homes, apartments, hotels—more comfort by Westinghouse



L. Four 60-ton packaged chillers air condition 250,000 sq. ft. of ballroom and adjoining banquet rooms in the Shoreham Hotel in Washington, D.C. Cooling controlled in 12 steps to suit various-sized crowds and outside temperatures. Quiet, reliable operation through factory pretesting, Guardistor® motor protection and single-unit construction.

M. Individual-room-controlled air conditioning is used in Shoreham Hotel's new 168-apartment addition. It is supplied by two new Westinghouse centrifugal PE chillers. PEs are smaller, quieter, simpler than any centrifugal equipment now available. Capacities range from 100 to 140 tons.



N. Handsome Westinghouse Plug-Together Baseboard heating system, the most convenient, easiest-to-install heating system you can buy. Gives individual room control. Other Westinghouse heating equipment includes electric and gas furnaces, heat pumps and infrared lamps.

P. Westinghouse space-saving ceiling system gives lighting, acoustical control and air handling capability in one installation. Flexible to fill individual requirements. Eliminates separate lighting and air-handling fixtures. Gives architect complete design freedom.

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The installation I am considering it for is_____

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☐ Please have a salesman call

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FIRM_____

ADDRESS_____

CITY_____

STATE_____ ZIP CODE_____

Total Westinghouse capability in air conditioning, air handling and heating installations ranges from individual room units for use in the smallest spaces to a variety of roof-top systems for use in the most spacious areas. If you're interested in any further information for your new building or modernization program, *just fill out and* mail this coupon.

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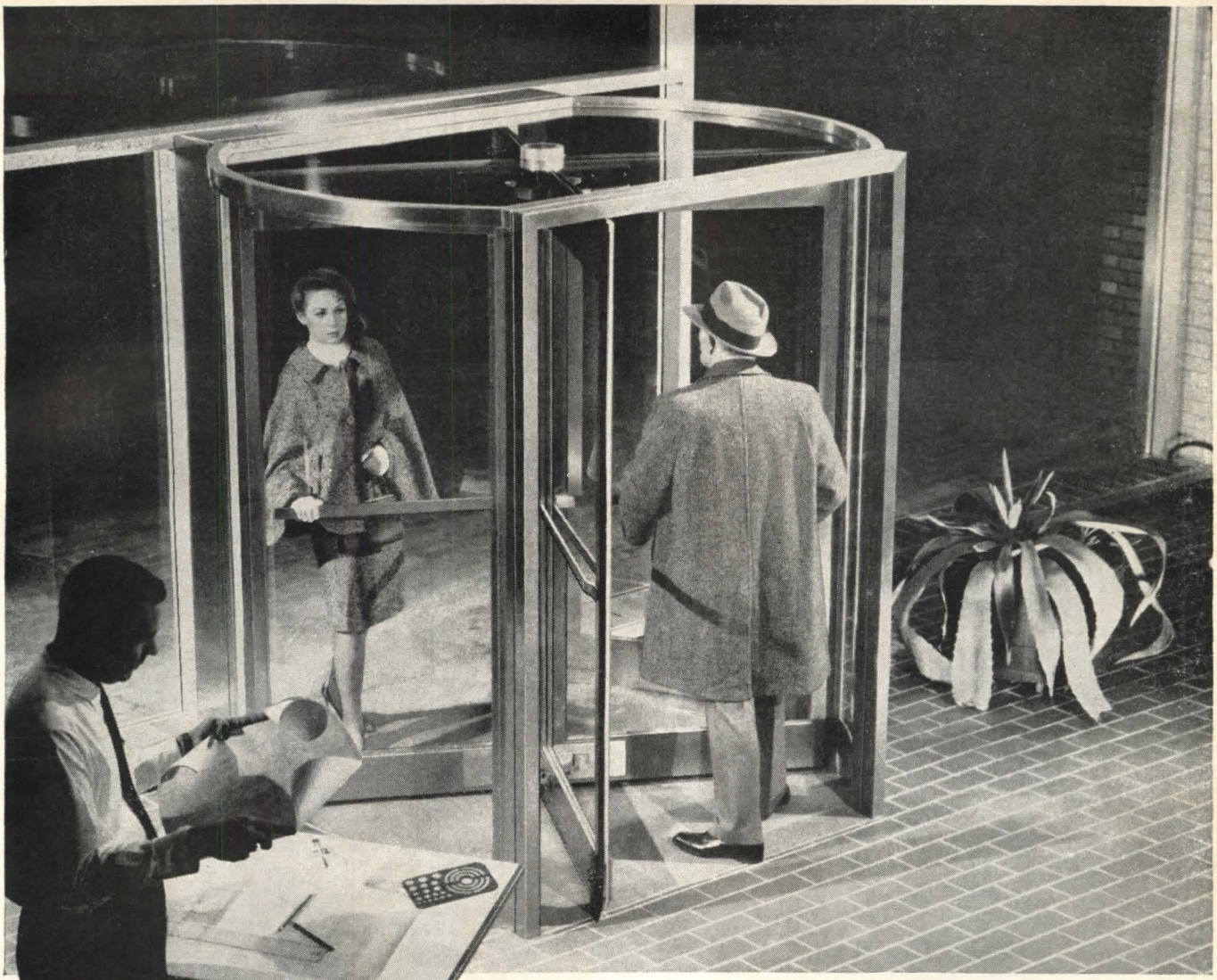
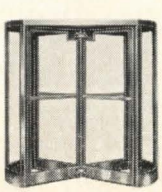


If you worked in the lobby, what entrance would you design?

For your comfort, an entrance without drafts, of course. This would surely be the International *Controlled Air Entrance** Revolving Door, the only type that stops drafts. It is always open yet always closed because at least two wings always touch the enclosure, ceiling and floor. A drafty lobby means an unhappy client. Specify International *Controlled Air Entrance** for draft-free comfort.



NEW CONCEALED SPEED CONTROL: Nothing to get in the way of your straight-line design. Speed control is hidden within revolving door ceiling.

75 YEARS

International originated revolving doors over 75 years ago. Experience says, "They must be the best."

CONTROLLED AIR ENTRANCE — ALWAYS OPEN — ALWAYS CLOSED

INTERNATIONAL STEEL COMPANY

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Panels with TEDLAR cost 25% more than panels with ordinary paint—and last three times as long.

These panels are surfaced with TEDLAR® PVF film. Because TEDLAR is a film—not a liquid or spray—it forms a completely smooth and uniform surface. It has no thick-thin variations, no pinholes to let in damaging moisture. And TEDLAR is remarkably durable: although it looks like fresh paint, it wears 3 to 4 times longer than paint. Even after years of exposure to sun, rain and frost, panels surfaced with TEDLAR still look new.

TEDLAR is inert, too; however corrosive the atmosphere, this finish will not crack, peel, blister or flake. Stains, even normally stubborn marks, clean off easily, so maintenance is little more than occasional washing to remove dust. Certainly TEDLAR costs 25% more than ordinary paint, but it also outperforms it three to one. For more information, write Du Pont Film Dept., Box 2800-A, Wilmington, Delaware 19898.

*Du Pont registered trademark.

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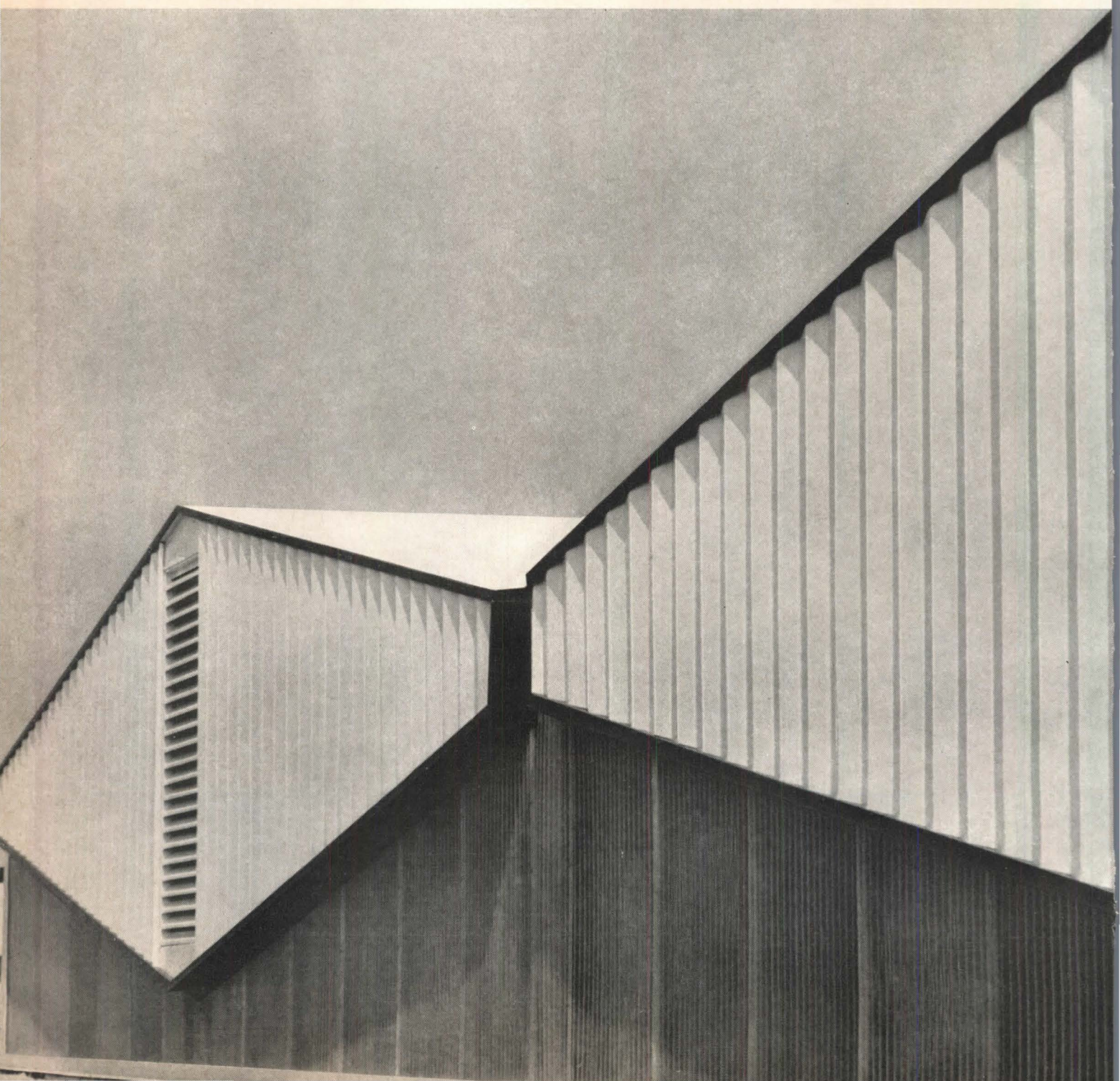
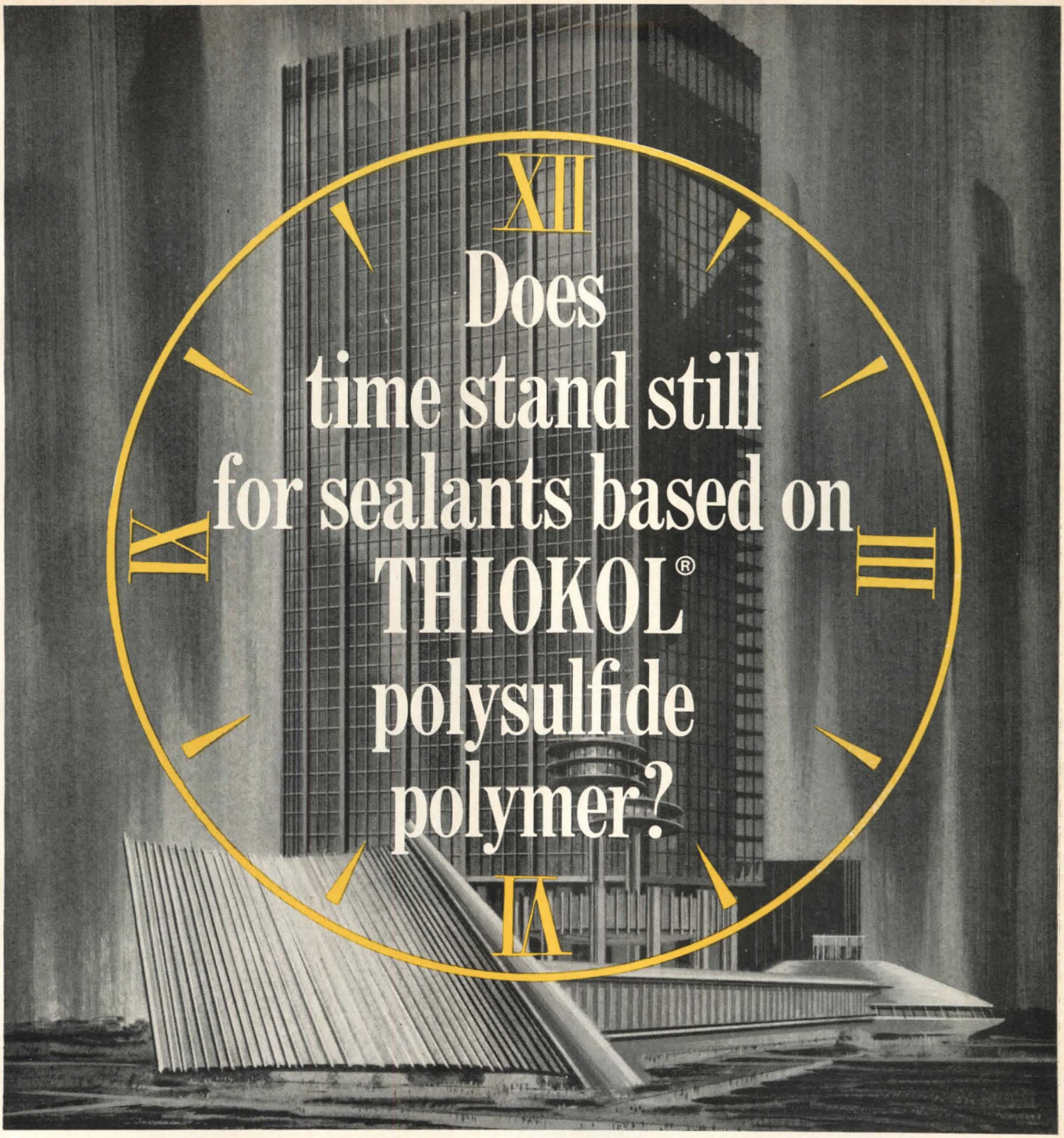
...THROUGH CHEMISTRY

DU PONT





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In building after building – some sealed as long ago as 1950–polysulfide base sealants have retained adhesion, cohesion, flexibility, vitality ... continue to provide total weatherproofing without flagging, faltering, or sign of failure.

Other types of sealant point to accelerated aging tests as evidence of longevity. Polysulfide base sealants' proof of long service life is found in the most demanding laboratory of all –on-job-performance. Write for our case history portfolio which offers structural joint details and time-tested weatherproofing methods. Base your next sealant specification on a record of reliability.

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

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

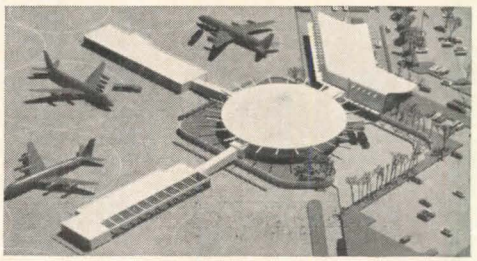

Photo of architectural model of the completed Spokane International Airport.

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

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

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

Sheffield Open Web Steel Joists—both in H- and J-Series—also offer design economies in more conventional structural frame designs. For more information on these joists, see our data in Sweet's Architectural File. Or, write for a copy of our latest catalog. All Sheffield Joists are produced to meet current specifications of the Steel Joist Institute. Armco Steel Corporation, Steel Division, Department W-1715B, 7000 Roberts Street, Kansas City, Missouri 64125.

ARMCO STEEL

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Meet CLYMATRON II, son of Clymatron. Better than its pa. Puts out more footcandles of cooler light. Better looking, too. Has extruded aluminum trim, regressed splay, frameless or framed enclosures. Besides lighting, Clymatron II handles air...lots more of it in fact, with a new adjustable baffle controlling its direction from vertical to horizontal...transfers heat...even provides total heating. In fact, it does so many things, it takes a brochure to explain the whole story. Better write for it!

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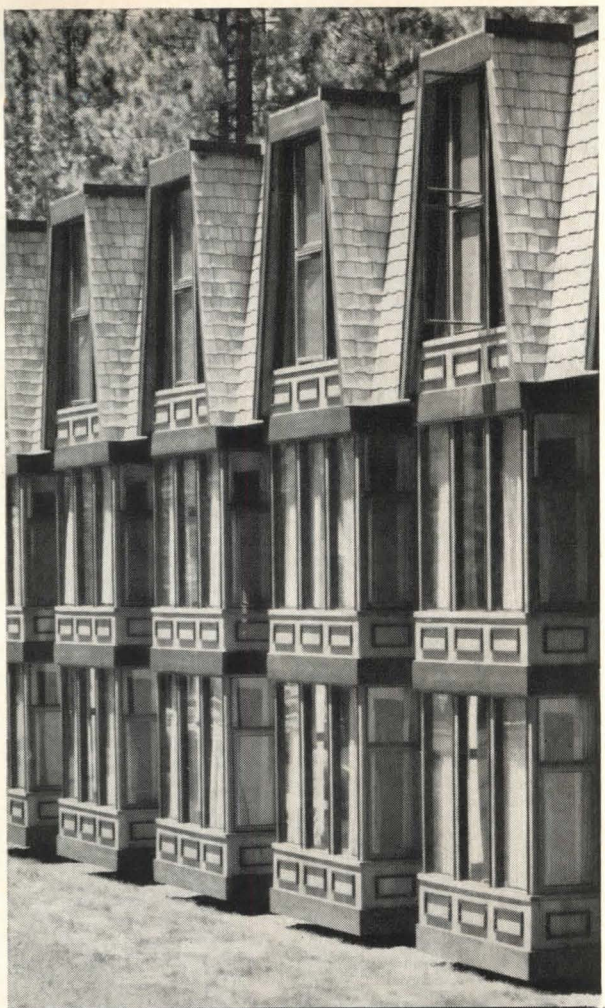
DAY-BRITE LIGHTING · 5411 BULWER · ST. LOUIS, MO. 63147
A DIVISION OF EMERSON ELECTRIC CO.

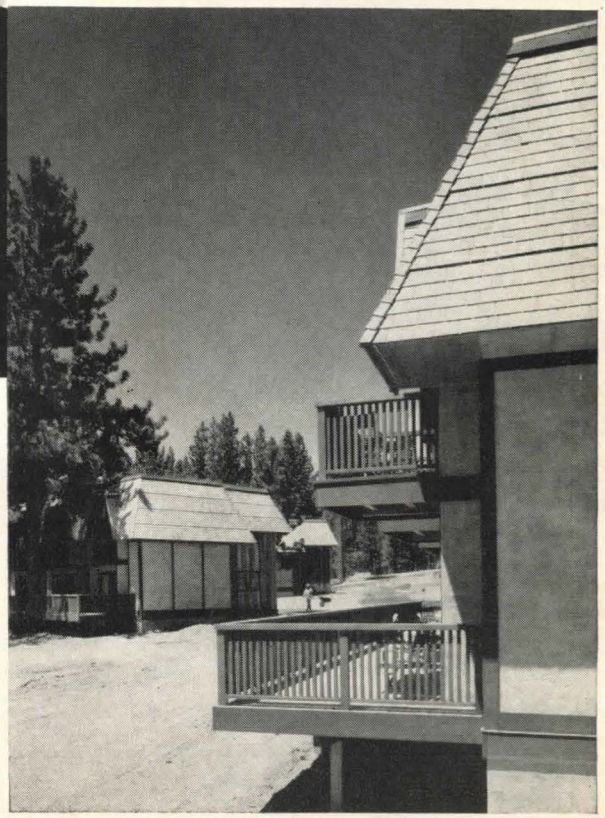
Rustic, rich and restful:

Red Cedar Shingles and Handsplit Shakes



The new Sierra Tahoe Lodge at Incline Village, Lake Tahoe, Nevada, has the tingle of elegance about it. Yet it also seems to say "make yourself at home." Part of this appeal — and part of the elegance, too — is a characteristic of the roof material used: Red Cedar. Notice also how well the Red Cedar shingles used here adapt to the various designs used on the site. Aesthetics aside, Red Cedar shingles and handsplit shakes are eminently practical on a roof or sidewall. They're strong, light in weight, durable, dimensionally stable in all kinds of weather, and they insulate. Altogether, a sound business proposition. If you'd like more information, just write the Red Cedar Shingle & Handsplit Shake Bureau, 5510 White Bldg., Seattle, Washington 98101. (In Canada: 1477 West Pender St., Vancouver 5, B.C.)

THE CROWNING TOUCH OF QUALITY • RED CEDAR SHINGLES & HANDSPLIT SHAKES •



Architect Charles Warren Callister and project associate John S. O'Brien specified Certigrade Blue Label No. 1 shingles, 16" long, with 5" weather exposure. The 3-story lodge hotel (*both upper photos*) has a thatched mansard application. The beach pavilion restaurant (*lower left*) shows a straight application with a reverse mansard roof while the lodge's 2-story shoreside cottage group features doubled courses every sixth row. The site is bisected by a two-lane highway, spanned by a shingle-covered footbridge wide enough to accommodate electric carts. Donald Sandy, Jr., was associate architect on the hotel and bridge.

for an unobtrusive, low profile . . . the

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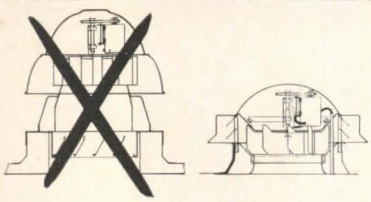
Hi-Temp (PVDC) VINYL EXHAUSTER

by JENN-AIR

The UNITARY Exhauster is available in 72 models with capacities up to 35,000 cfm . . . belt drive, direct drive and relief vents are identical in basic profile and contour. Furnished in pleasing slate gray vinyl.



Preserve the lines of your original renderings and still get the same air-moving performance . . . in a L-O-W silhouette.

The UNITARY design provides roof curb, fan, back-draft dampers and bird guard protection into a single, easily-installed unit.

This new profile, developed through the unique characteristics of HI-TEMP GEON* VINYL, enables Jenn-Air to help keep the unbroken lines of the client-approved rendering. The roof-hugging unit, developed through nesting the wheel into the curb area, relocates back-draft dampers at the outer perimeter of the cover . . . preventing entry of snow and moisture . . . eliminating the need for bird guards . . . and allowing ease of damper adjustment.

A reduced noise level is made possible by a 25% larger air inlet, resulting in lower intake velocity. An optional, in-the-roof sound attenuator, recessed to maintain the unit's low profile, assures quiet operation for sensitive areas of the building.

You can protect the lines of your contract-winning design and still provide quiet, efficient air circulation when you specify these new, low-profile roof exhausters in your mechanical requirements.

Note these unique features

- **New Hi-Temp vinyl material (PVDC) is impervious to nearly all acids and alkalies and is also resistant to salt spray.**
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Write for your copy of Bulletin No. 5-UV or call the Jenn-Air Representative in your area . . . he is listed under "Fans-Ventilating and Exhaust" in the Yellow Pages.

JENN-AIR

*Geon is the registered trade name of B. F. Goodrich Chemical Company.

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World's Largest Producer of Power Roof and Wall Exhausters

"If human history has any meaning at all, no one period can comprehend it or exhaust it, nor can it provide a measuring stick by which one judges all the other works of man. For it is only with reference to the full span of human experience that we can distinguish what is genuinely creative in the work of our own time from what is just crazily 'original.' Without that connection with man's continuing life, all value and significance disappear."

LEWIS MUMFORD

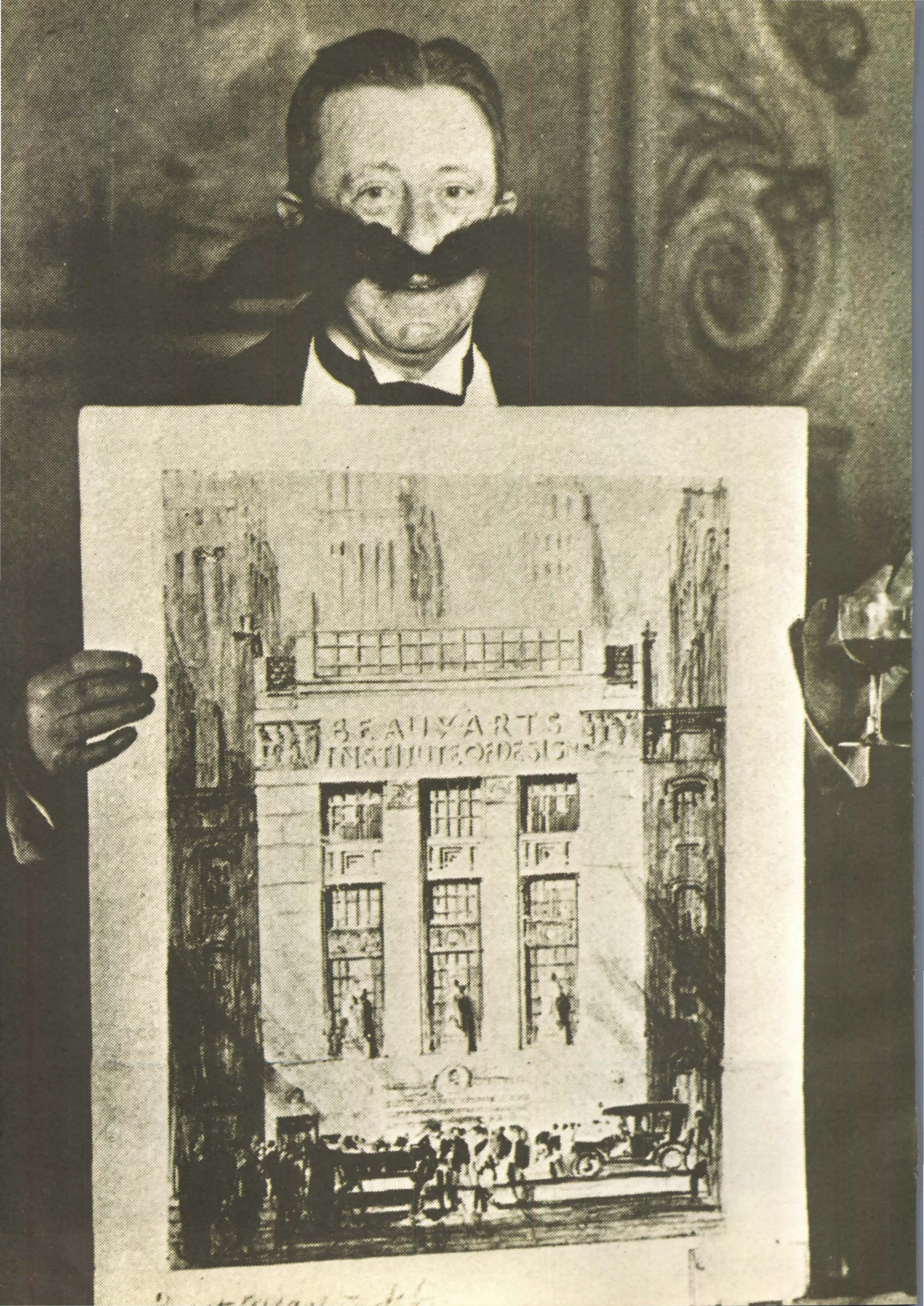

BEAUX ARTS
INSTITUTE OF DESIGN

Image of an Architect, or how others see us, seems to preoccupy a great number of architects. This is not surprising, considering that we live in an age of image-building, an age where the mask is more important than the face behind it, and camouflage is no longer a sly deceit but a respected marketing technique. Many of us frantically deodorize not only ourselves but also the world in which we live.

A few months ago, one of the local television stations ran a series of programs on personalities in New York City. The first person they chose was architect Philip Johnson—not because he is an architect but because he is a well-known personality.

Philip Johnson is a wit, has a jumpy nervousness about him, loves to make wild statements for the sake of shocking people, and his interest in architecture is purely aesthetic. These are some of his most salient characteristics and the director of the show put considerable emphasis on them. Even the cutting of the film purposefully accented the speed of movement, shifts of thought, tenseness of action, and the contradictory, volatile nature of the character being portrayed.

After the program was put on the air, there was a great outcry from the architects: "Our image has been ruined," they said, "it will take us 50 years to build it up again."

The "image" they were talking about is of an architect as a sensible, serious, competent, businesslike technician—a sort of well-qualified, pseudo corporation-man who thinks, talks, and acts in the manner of the committee-encrusted corporation-men whom he usually serves. Why this should be the ideal image of the present-day architect I don't know, but it is an image favored by the AIA and probably by most practitioners.

Perhaps it is due to a reaction to the excesses of the Beaux-Arts period, when the arty beard-cum-beret get-up was the rule and emphasis on peculiarity often got to the point of clowning. The illustration on the facing page, taken from the January 1928 issue of P/A's predecessor, *Pencil Points*, is a good example of such clowning: in this case, a winner of an architectural competition proudly displaying his entry.

So clowns they were, but did they have less prestige in the community, fewer commissions, less control over the job? From the biographies I read, it does not seem so. And they certainly had more fun.

H. H. Richardson, whose portrait, reproduced on the cover of this issue, provided me with inspiration for the "image" subject, was a giant of the 19th Century architectural scene. Kimono or no kimono (or whatever it is he is wearing), he managed to snare important clients, and to design and build important buildings. Perhaps that dangling tassel even helped him in his task. Perhaps his was the right image—for him.

After much effort, the American Medical Association managed to build up the image of doctors into efficient, never-wrong, scientific super-beings. It is no coincidence that one of the curses with which the medical profession now has to live is an avalanche of lawsuits. People never thought of suing the friendly, often bumbling, always human doctors they used to know. But when faced with the new image of impersonal and supercilious machines for curing, they took delight in slapping them down.

Today, to talk about the image of an architect is quite futile in any case. The profession is much too diversified. As long as the word *architect* can apply to somebody who is basically a businessman, or an engineer, or an administrator, as well as to a person who is primarily an artist, there will never be a "correct" image. It is as silly for a businessman to parade as an artist as it is for an artist to parade as a businessman.

No doubt the public would benefit greatly if industry would cease being preoccupied with its images and concentrated on producing better products; chances are it would also benefit if architects would stop worrying about their images and concentrated on designing better buildings. ■

Jan C Rowan

MOTATION

In line with current directions in "kinetic art," a movement notation system has been evolved that may prove valuable in architectural design. Landscape Architect Halprin's work has always been nonstatic, due partly to the influence of his wife, Ann, who is a dancer; today, he is involved in urban freeway and rapid transit design as well as in landscaping.

BY LAWRENCE HALPRIN

In a world intensely involved in the development of motion through space, little has been done to express it graphically. Movement is all around us; mobility has permeated not only our engineering but our arts as well. High-speed engineering for freeways and rapid transit systems has become an obvious concern of environmental designers; recently, even sculptors and painters have broken through the barrier of static form, and musicians have dropped their fixations with established instruments, scales, and positions-on-stage in a search for mobility in space as well as in time. It is imperative that we have a system to express this movement graphically—a tool that will permit us to work with movement itself as an essential and determining element in design.

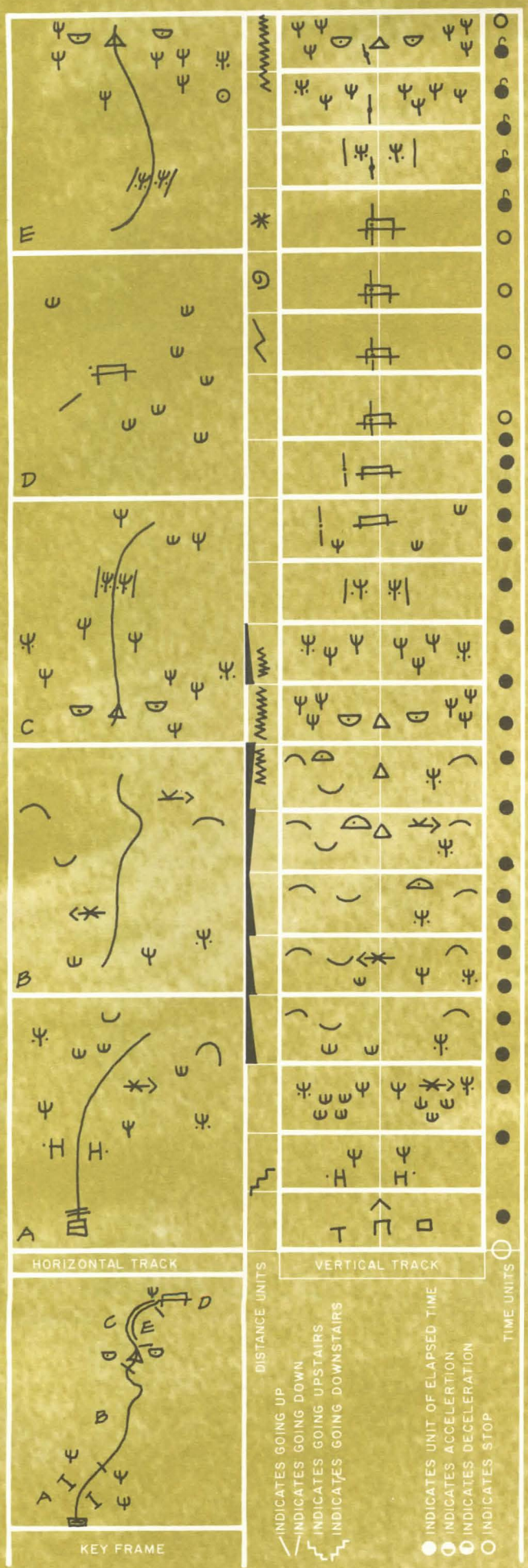
I noted this need some two years ago in my book *Cities* (Reinhold Publishing Corporation, 1963), where the subject of motion through environment is discussed in relation to urban design:

"In order to design for movement, a whole new system of conceptualizing must be undertaken. Our present systems of design and planning are inevitably limited by our techniques of conceptualizing and our methods of symbolizing ideas. We know only how to delineate static objects, and so that is all we do. Since we have developed techniques for showing buildings and objects, and outlining the spaces which they confine, we plan by architectural symbols, projected in conventional methods, on paper. We use the plan and the elevation, the isometric projection, and sometimes a model. But all these accepted systems of architectural language describe only the fixed surroundings, the structures and the spaces which they enclose. Landscape plans, which tend to be less rigid and exacting, are still limited to a description of plants as static phenomena, or of hard masonry structures in the environment. This limitation of symbols affects our results. Since we have no techniques for describing the activity that occurs within spaces or within buildings, we cannot adequately plan for it, and the activity comes, in a sense, as a by-product after the fact. It is true that any good designer or planner will think, while he is designing, of the activity that eventually will occur within his spaces. But he cannot design the movement, for he has no tools to do so. Even highway engineers, who deal exclusively with movement, have no method for describing it.

"A new system should be able to focus primarily on movement, and only secondarily on the environment. This would have use as a technique for designers working kinesthetically. Though many painters have painted action, they naturally have always been completely qualitative and subjective and have not intended to codify a transmittable or universally understandable system. We need a system to program movement carefully and analyze it, a system which will allow us to schedule it on a quantitative as well as qualitative basis. Since movement and the complex interrelations which it generates are an essential part of the life of a city, urban design should have the choice of starting from movement as the core—the essential element of the plan. Only after programming the movement and graphically expressing it, should the environment—an envelope within which movement takes place—be designed. The environment exists for the purpose of movement."

For some time now, even prior to the publication of my book *Cities*, I have been working toward a system of movement notation, and recently the system has been considerably refined. In setting myself this task, I assumed that such a system ought to be useful for designers working with pure movement: in dance and theater; for the newer choreographers whose aim has been to fuse sculpture and painting with theater; as well as for those of us designing for environment—architects, planners, and landscape architects. My system of notating movement is a tool that should prove very useful for environmental design, but it was not developed for that purpose alone. I hope it will have universal application for every kind of movement.

Immediate parallels with other explorations in notation come to mind. The most comparable are those in music. Traditionally, music has isolated notes for established instruments and has fixed their positions in space and time on bars, using clefs and variations in note duration. In most cases, the musicians themselves have stayed in one position; only the sound has varied. More recently, musical notation has burst its accepted form, for various reasons comparable to ours. In electronic music, for example, sound is developed, and the resultant tones cannot be scheduled in reference to any fixed system of instruments or notes. The need for new notation arises out of the inability of the traditional system to express new concepts.



MOTATION SYMBOLS

SYMBOLS IN GENERAL

1 VERTICAL ELEMENT
2 HORIZONTAL ELEMENT
3 DIAGONAL ELEMENT
4 CURVED ELEMENT

SYMBOLS FOR STRUCTURE

5 HIGH BUILDING
6 LOW BUILDING
7 MEDIUM BUILDING
8 GROUP OF BUILDINGS
9 TOWER
10 DOOR OR GATE
11 UNDERPASS

SYMBOLS FOR LANDSCAPE

12 HILL
13 MOUNTAIN
14 VALLEY
15 BODY OF WATER
16 RUNNING WATER
17 FOUNTAIN
18 TREE
19 SHRUB

SYMBOLS FOR MOVING THINGS

20 HUMAN
21 CAR
22 TRAIN
23 BIKE

SYMBOLS FOR DIRECTION

24 DIRECTION OF MOVEMENT
25 BELOW EYE LEVEL RIGHT
26 ABOVE EYE LEVEL LEFT

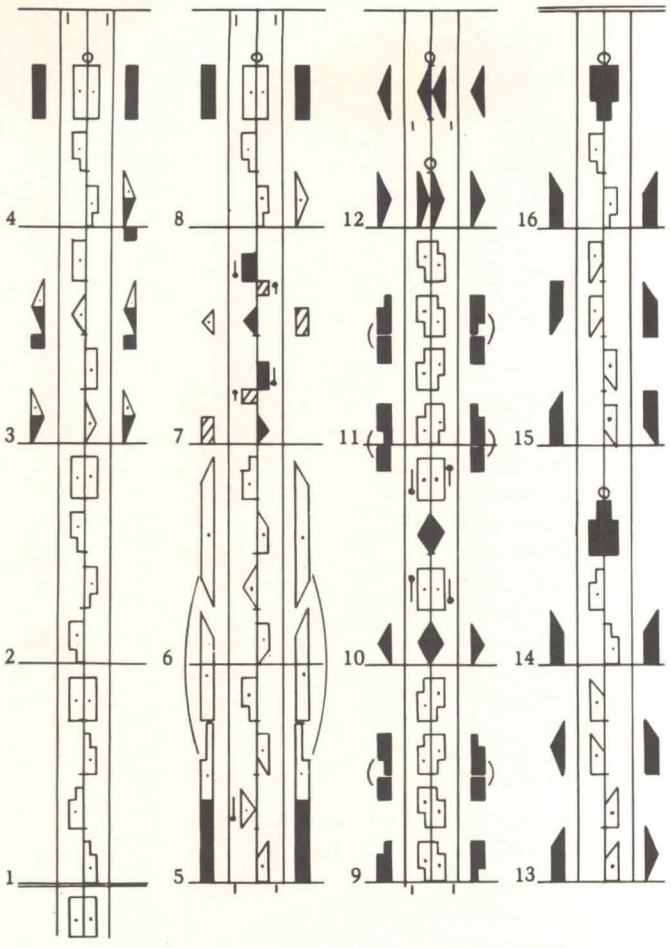
MOTATION — LAWRENCE HALPRIN & ASSOCIATES

TITLE MYSTERIOUS JOURNEY MOTIVE POWER FOOT

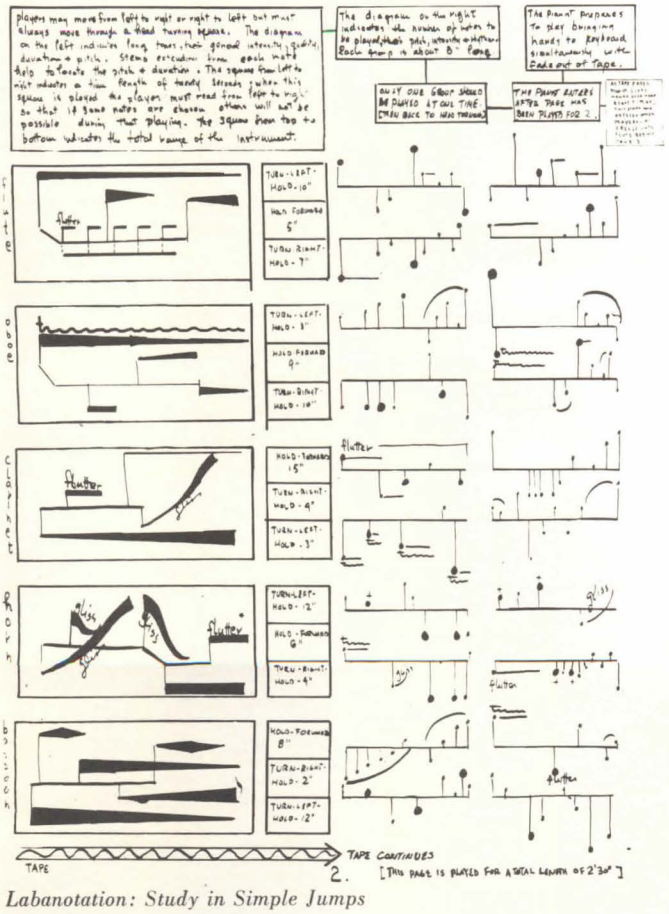
UNITS OF SPACE 50 FEET UNITS OF TIME 1 MIN.

TOTAL DISTANCE 1500 FEET TOTAL TIME 1/2 HOUR

DATE JANUARY 20, 1965



An Electronic Score by Morton Subotnick



Labanotation: Study in Simple Jumps

The escape from the traditional note scales can be seen in a score by Morton Subotnick, titled "PLAY! (1) for Wood Wind Quintet, Piano, tape" (*left, top*). Here, the composer is no longer indifferent to the environment in which his music is played, but makes the environment become a part of the music. Some of the composer's instructions read: "Players may move from left to right or right to left but must always move through a head turning square. The diagram on the left indicates long tones, their general intensity, quality, duration, and pitch. Stems extending from each note help to locate the pitch and duration."

Further changes have occurred in music. In many of the newer works, such as those of John Cage, an essential element in the presentation is the movement of the performers, who change position on stage in a kind of choreographed processional, moving about from instrument to instrument while they make their sounds. Dance has invaded the environment of music.

In the dance itself—the purest form of movement—choreographers have been working for centuries to devise systems with which to record their movements. The most recent and complete system to date is Labanotation (*left, bottom*), developed in Europe by Rudolf Laban. This is a system whose purpose is to record dances so that they can be compared and analyzed and to serve as a record for other dancers in reconstructing the dance. Labanotation is detailed in its recording of gesture; it is a fine tool for conveying precise movements of arms, legs, step patterns, and attitudes. It does not attempt to grapple with the issue of the environment of movement. But Labanotation is, in certain important ways, parallel to our system in its use of vertical staves. And where a detailed portrayal of finite gesture is important, the system can be used concurrently.

Motation

Environments change their qualities with the variation of speeds they generate. As we move through them, they move around us. On our freeways and rapid transit systems, the variation in environmental speed becomes clearer when we observe the contrast in the high-speed foreground and the low-speed background. Sitting at the window of a train, for instance, one gets a certain feeling from passing a series of verticals, a feeling very much determined by their number and the distance between them. Passing piers that are quite close to each other surprise the passenger again and again with a sense of their nearness. The change of speed is made more apparent in this way, so that, on a route, a pattern of acceleration is soon established. We have all observed telephone poles and track markers alongside a railroad track rush by at great apparent speed while objects on the horizon seem to move hardly at all. As another example, an automobile can be defined as an instrument for moving you to the city, but it can also be defined as a means of moving the city to you. In terms of the individual whose only true continuity is his own awareness, it can be said, with all psychological justice, that the environment moves. This is an essential basis for my notation system.

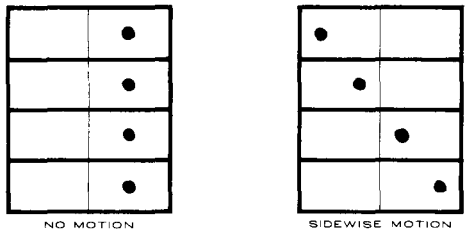
The System

For clarity, I have called this system of movement notation "Motation," a name that is very close to auto-definition.

Any notation system should be reasonably simple, readable, and should possess a graphic quality that expresses at a glance the nature of what is being recorded. The idea of the Motation system resembles the technique of the animated film in that individual pictures or "frames," separated in space, are related in time to form apparent movement.

An environment—which can be a stage, a city block, a forest, or a continent—is set off in divisions of space. The notater bases his record on what is to be visually inventoried —depending on the purpose of the voyage—at each of these divisions. The primary features affecting the movement are indicated. For instance, the record will be conditioned by the speed of the journey, and when the separate notings are read serially, they should reflect a sense of speed—just as if running off the still frames of a film at different speeds **(Fig. 1)**.

FIG. 1



The Symbols

In Motation, the "frames" are notated with a series of 26 basic symbols; other symbols have also been devised to augment the symbology. By themselves or in combination, this "alphabet" produces the "words" of the Motation "language." The dot, the arc, and the straight line are the basic symbols. Using these geometric elements, a rational linguistic structure has been developed that is symbolic and purposely nonpictorial.

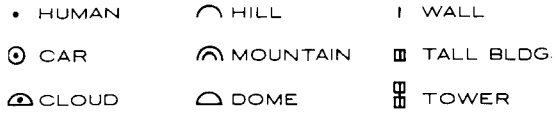


FIG. 2

The symbols lend themselves to meaningful associations. For instance, the dot stands for a human being. A human is a moving being; the dot, therefore, is used as a part of the symbols for other things that move. The circle, for example, which is an open dot, suggests a wheel; further, a dot within a circle symbolizes a car. The arc represents organic forms in the landscape and is used to symbolize a hill. With an interior semicircle, it becomes a mountain. The half-circle of "hill" becomes "dome," but by placing a dot within it, suggesting movement, it changes to "cloud." The straight line is symbolically abstracted to represent vertical, horizontal, or diagonal elements, regardless of their real categories. A straight line can be a wall on edge, but also a standing human, on the Vertical Track, when notating stage events. (See **Fig. 2** and full list of basic symbols on p. 132.)

The Motation Form

The Motation system employs a standardized form (see superimposed form on second page of this article, and **Fig. 3**), the purpose of which is twofold. First, standard sheets can be joined end-to-end to form a movement composition or record of any length; this is convenient to read, like a scroll. Secondly, movement notations on standard sheets are easier to compare with each other. Since a subjective element is unavoidable, a significant consensus of a given route demands the uniformity of standardized Motation forms.

On the lower right corner of the form, in which are noted: title, an indication of the means of movement, the units of time and distance, and the total time and distance.

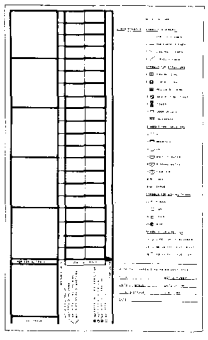


FIG. 3

The basic symbols are listed above this title block, with space adjacent for additional symbols and special notes.

The basic unit of the Motation system is the "frame," which is comparable to motion picture film.

The frames are read vertically from bottom to top. By convention, we read left- and right-hand observations along a straight centerline, and this vertical usage graphically conforms to the experience of moving through an environment. As we walk, ride, or drive, we carry the notion of looking "ahead." Psychologically, we orient upward rather than downward.

The Horizontal Track

On the left side of the form is a row of large frames that compose the Horizontal Track **(Fig. 4)**. This track is used to map the path of travel within an environment. It is on this

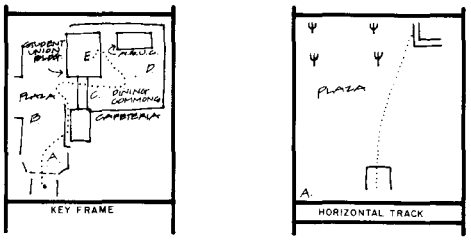


FIG. 4

track that all the horizontal turns, directions, and motion relative to other mobile elements are plotted. First, the basic outline of the voyage is drawn in the Key Frame at the bottom of the Horizontal Track. This outline is then segmented in succeeding frames on the track above. When the Motation is extensive, these frames are keyed to the Key Frame. These successive frames of the Horizontal Track repeat only the section of the trip that is being notated in the corresponding frames of the adjacent Vertical Track. In these segments, additional topographic features can be added.

The Vertical Track

On the right of the Horizontal Track is a stack of smaller frames that make up the Vertical Track **(Fig. 5)**. This track is plotted

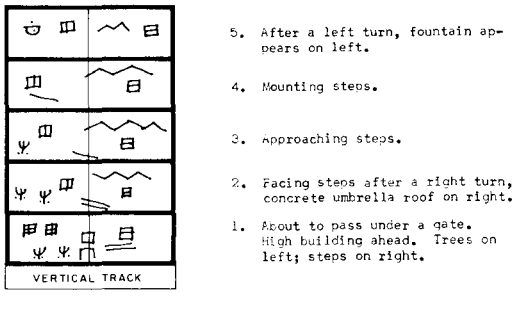


FIG. 5

as a record of the "normal" visual horizon—what we see ahead of us as we ride or walk. No turns are shown on the Vertical Track; the motion is always plotted "dead ahead." To account for side-to-side looking, the vertical frame from one side to another (180°) is split by the centerline into two 90° quadrants. The top of the frame is equal to an overhead horizon of 45° **(Fig. 6)**. This is the spatial context for relating the environment on paper. Frame position should be noted as nearly as possible to real position.

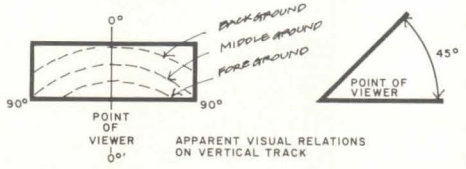


FIG. 6

The Horizontal and Vertical Tracks are read together to give, *in toto*, the qualities of three dimensions—that is, of height as well as distance.

Speed and Distance Tracks

In order to indicate speed, two strips on either side of the Vertical Track are used to mark off units of distance and time **(Fig. 7)**. The distance strip is also used to indicate the rise and fall of the surface that is moved upon: a diagonal is graduated to fit the degree of elevation or declination, thereby showing ramps, steps, ladders, etc. In addition, special events that need to be recorded, such as sound, smell, color, or rain, are indicated in this strip. In the Time strip, the irregular spacing of the dots indicates change of speed. For example, one might visualize Hansel and Gretel dropping bread crumbs as they fled from the witch: when they walked, the crumbs fell close together; when they ran, the crumbs fell farther apart.

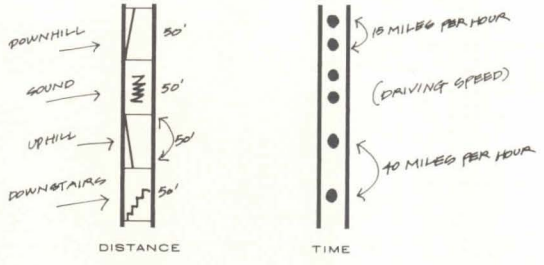


FIG. 7

If there is a change from walking to riding a train, it is shown by a break in the track, a noting of a shift in motive power and changes in units of distance and units of time. While it is sensible to notate 10 yards as the unit of measure afoot, it would be too small a unit at 60 mph to be practical, and vice versa.

Finally, the combined tracks **(Fig. 8)**, which indicate all the elements of horizontal space, vertical space, time, and distance, can be read effectively to plot the movement of a person or object through an environment at understandable speeds. A completed section of the Motation form looks like this:

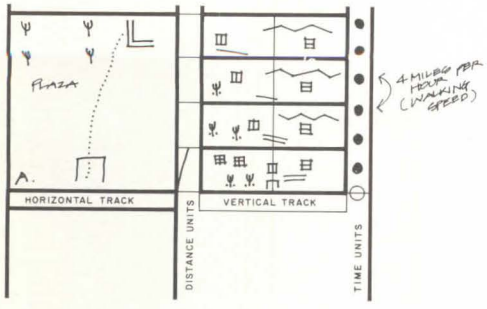


FIG. 8

Recommendations

In reading Motation, it is important, particularly for architects, to remember that these are not substitutes for plans and elevations but rather abstract representations of three-dimensional visual experience—a new symbology.

Furthermore, it should be pointed out that any new language requires some effort and time before facility in its use is acquired. Musicians, accustomed as they are to "reading" notes in space, have found this new system simple, direct, and readily understood. However, for those unaccustomed to such systems, it requires patience and practice in the learning process.

On these pages are three examples of completed Motation forms, which apply to actual journeys and events. One of these —a stroll through the Berkeley campus of the University of California—is shown in full; the two others, in abbreviated versions. One of the abbreviated examples records a scene in a dancer's workshop (*facing page, top*), and the other, a trip along the San Francisco Freeway (*facing page, bottom*). In all cases, verbal descriptions and photographs, which are keyed to corresponding Vertical frames by number, have been provided to aid the reader in visualizing the graphic system.

A fourth Motation notation, called "Mysterious Journey," is also included, and appears on the second page of this article. It was described verbally to a member of my staff, who notated it. Normally, the journey would take one half-hour. It will serve as a fine exercise for those trying to learn the system to see if they can decipher what happened. I will be interested to see readers' descriptions of the Mysterious Journey. Send them to me at 1620 Montgomery Street, San Francisco, California 94111.

Conclusion

This, then, is Motation. What can be done with it? The system is a tool both for recording existing events involving mobility and for designing for mobility. It can be used to describe existing conditions or to create new conditions. It is a scoring system for motion through space, just as musical notation is a scoring system for sound. Its uses are the same. As a musical score can describe a piece of music that then can either be heard in the mind's ear or actually played, so Motation can describe motion through spaces that can either be seen through the mind's eye or moved through in actuality. (It could, for instance, record our landscaped spaces at the IBM Building in San José, which are shown further along in this issue.)

Motation is a tool for choreography as much as description; choreography in the broadest sense—meaning design for movement. As the accompanying illustrations indicate, Motation can be used for choreographing dances for stage and theatre, for the design of movement through urban spaces at pedestrian speeds, or for the qualities of motion through space at the speed of freeways and rapid transit systems.

In the long run, our cities—our whole environment—are perceived and experienced through movement. As I pointed out in the prologue to *Cities*, "The city comes alive [only] through movement and its rhythmic structure. The elements are no longer merely inanimate. They play a vital role, they become modulators of activity and are seen in juxtaposition with other moving objects. Within the space, movement flows; paving and ramps become platforms for action; the street furniture is used; the sculpture in the street is seen and enjoyed; and the whole city landscape comes alive through movement as a total environment for the creative process of living."

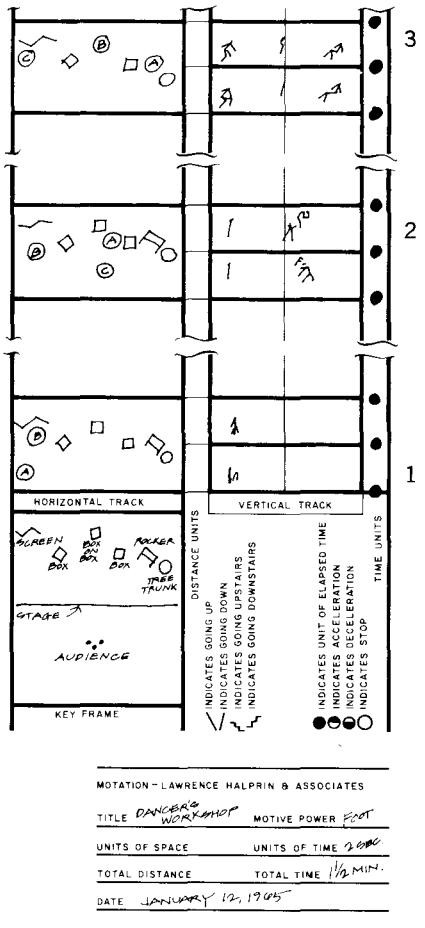
It is as a tool to help achieve these aims that the Motation System has been developed.

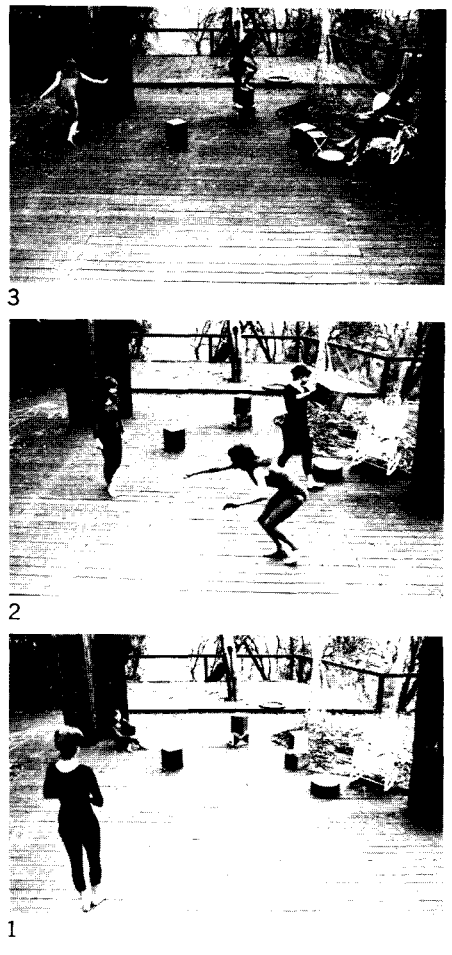
The Motation (right) is a variant approach to the Motation System in that the dancer is in motion rather than the notator. Photographs record selected vertical frames. Numbers correlate frames, photos, and verbal description.

There are three dancers, labeled A, B, and C: their positions are noted on the Horizontal Track. The action begins with A and B at audience's left ***(1)****. A is standing downstage, B sitting down upstage. While B remains still, A moves audience right and to the rear. Then B rises as C enters from the right* ***(2)****, crossing the stage with an exaggerated low stride, while A reaches a piece of stage furniture, a box, and picks it up. A then drops into a chair as B moves to center stage and mounts a pedestal* ***(3)****.*

In spite of the different way in which this kind of action is recorded, it could be conveniently keyed into a moving notator's record at any point. For instance, if a walking notator, who is recording a standard Motation of his changing environment, pauses in front of a puppet show, he merely stops and notates it. In so doing, however, he shifts into a different "key," and then he changes back to the former method when he moves on. Although the example here is of a stage experience, it could be a record of any action observed from a fixed point.

Clearly the system is also workable for designing *a movement sequence. (See list of symbols overleaf.)*

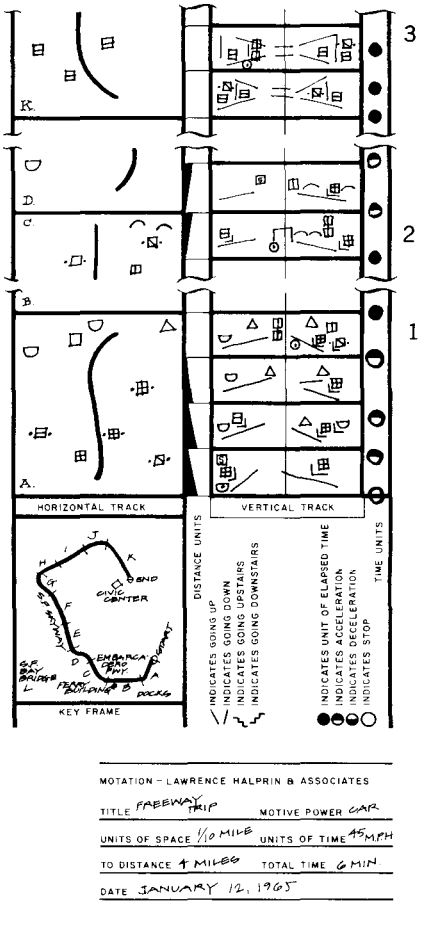


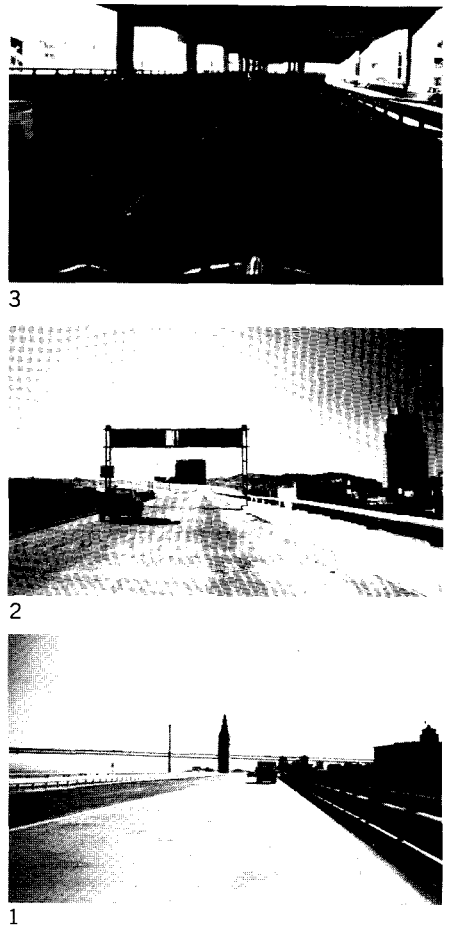


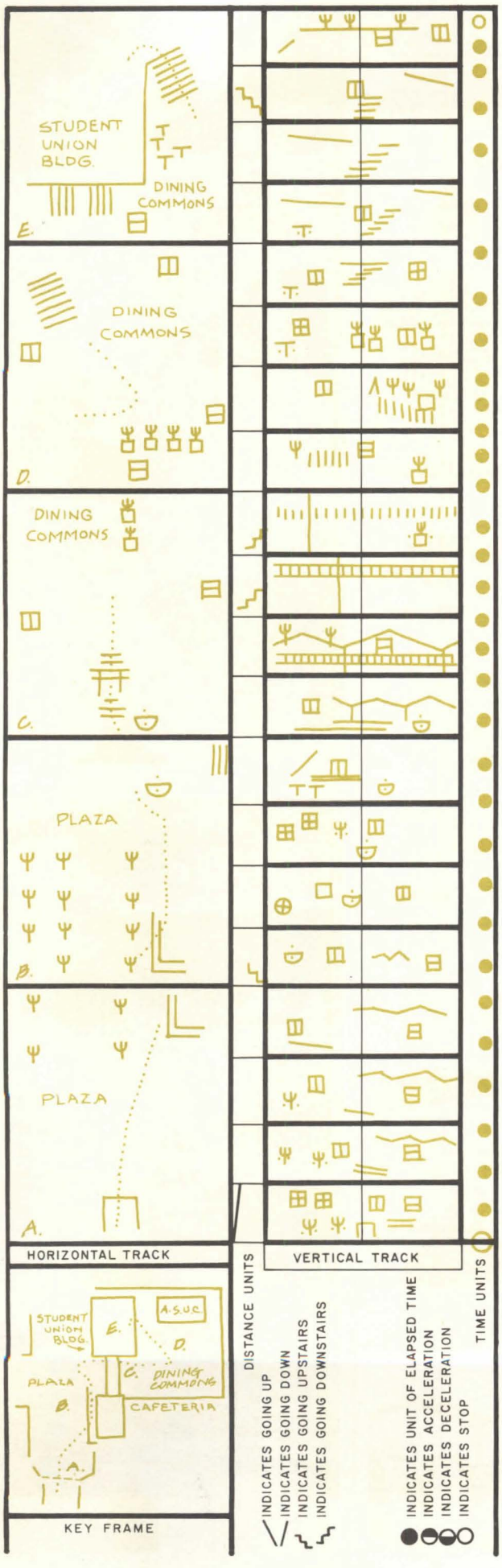
The Motation form (right) is an excerpted record of an automobile trip on a freeway in San Francisco. For this extended journey, the Horizontal Track is keyed to the Key Frame.

The roadbed used is elevated on a supporting structure for the entire length of the route; therefore, except for the high surrounding buildings, foregrounds are out of sight. Furthermore, this is a record of what is seen by a driver (rather than a passenger) of a car on the freeway. Since a driver properly keeps his eyes on the road, that is primarily what he sees, but there is always the horizon, which never escapes his peripheral awareness, like running a gauntlet of neonized super-billboards.

At the start, the car ascends a curving ramp amidst a scatter of low- and medium-sized buildings. A turn is made to the right as two striking landmarks make their appearance: the tower of the Ferry Building rises on the left ahead; and beyond that lie the silver spans of the San Francisco-Oakland Bay Bridge ***(1)****. Beyond that are overhead arches used for traffic signs* ***(2)****. Nearing the Civic Center, what was once an upper roadbed becomes the lower one, as opposing traffic is routed overhead. The car enters a rather cubistic professional experience, in that the road below, at a point ahead, meets the concrete of the roof above* ***(3)****.*







What happens to a person notating a walk through the Student Union Plaza of the Berkeley campus is shown in the black Motation form, in which the symbology is executed in color (left), and in the photographs on these two pages. Vertical frames are keyed to photographs, both of which are to be read from bottom to top. A verbal description, also keyed to these graphic presentations, follows:

The notator is walking by herself, starting before the portals of Sather Gate ***(1)****. She notes the gate ahead and the trees on either side. Beyond the gate rises the form of the Student Union Building. After passing the gate, the view opens into a wide vista of the Student Union Plaza* ***(2)****, flanked by buildings that delimit the space. The middle ground is broken by trees and other elements (notated according to whatever the notator wishes to emphasize). The notator has turned to her right and is walking toward the platform steps flanking the Cafeteria* ***(3)****. Mounting the steps* ***(4)****, she turns to the left* ***(5)*** *and walks toward the fountain* ***(6, 7)****, which she watches for a moment* ***(8)****. She then turns* ***(9)****, walks down the steps* ***(10, 11)*** *toward the Dining Commons, and, while doing so, passes under a pedestrian bridge* ***(12)*** *that connects the Student Union to the Cafeteria. Along the right of the Dining Commons Plaza is a row of boxed trees with benches built into them* ***(13)****. She walks toward these trees, and then turns counterclockwise* ***(14)*** *and walks diagonally across the Dining Commons Plaza* ***(15)*** *to the staircase at the side of the Student Union* ***(16)****. She passes among a group of outdoor dining tables* ***(17)*** *and goes up the stairs* ***(18)****. At the head of the stairs, her view is guided by the balcony line of the Student Union* ***(19)*** *toward the Cafeteria* ***(20)****, which is ridged with a bank of trees against the sky in the background.*

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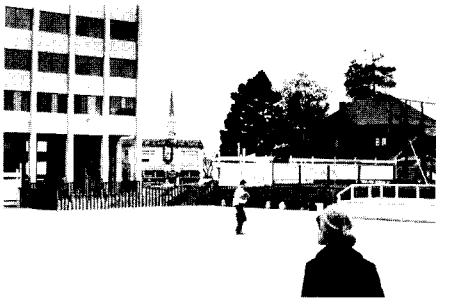

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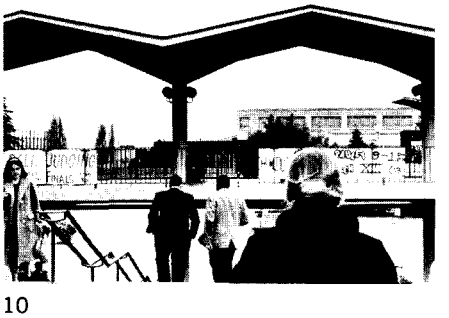

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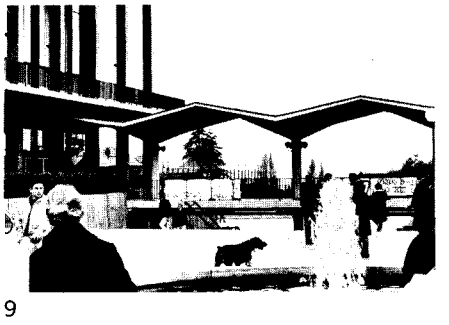

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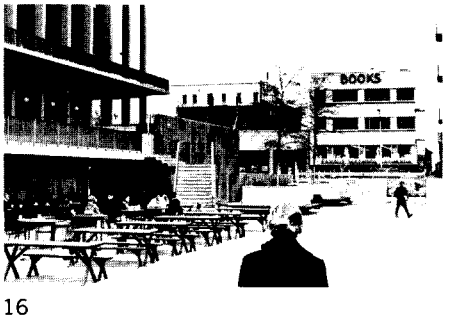

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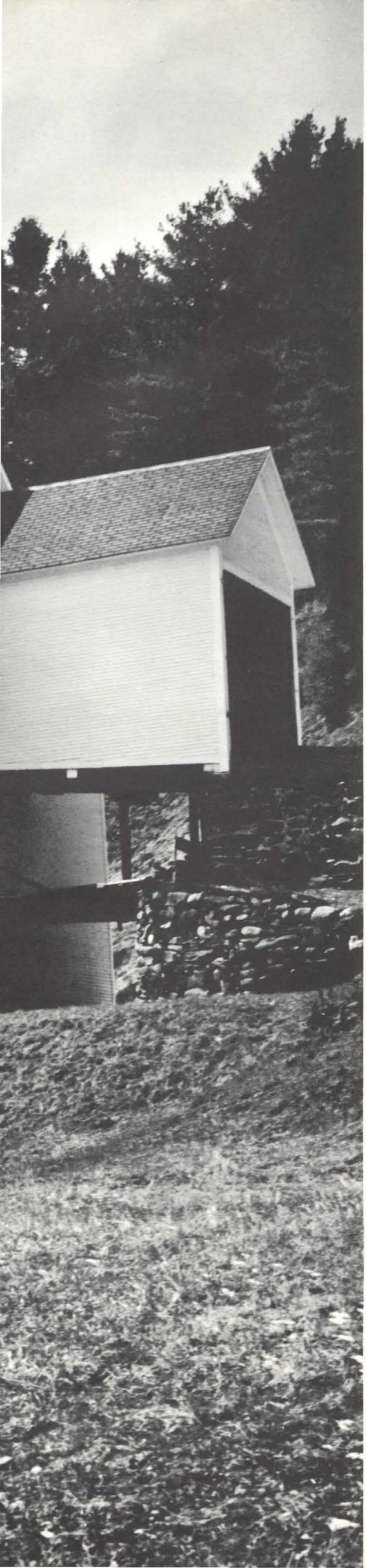


TRADITIONAL NEW ENGLAND DAIRY FARM NEAR WHITE RIVER JUNCTION, VERMONT. PHOTOS, EXCEPT AS NOTED: MAUDE DORR

NEW ENGLAND TRADITION CONTINUED

At a time when New England is polka-dotting itself with the universal A-frame and Techbuilt houses and assuming Tyrolean airs with Swiss chalets, it is encouraging to find an architect who is more responsive to the regionalism and the traditional architecture of the area.

The six country houses shown on the following pages skillfully keep within the familiar vocabulary of wood construction, plain siding, and simple but ingenious carpentry. They are reminiscent of rural New England: they fit it, and at the same time are modern, sophisticated, and surprisingly varied.

The houses were designed by a young Cambridge architect, John Rogers, whose approach to architecture is refreshingly undogmatic. Rogers takes the rather Proustian tac that a house should be an expression of a multitude of associations and images; a house is a chance to relate a man to his environment, to evoke a variety of moods and emotions produced by different kinds of shapes, spaces, structures, and qualities of light. It is an opportunity to interrelate the maximum number of elements: "Our civilization is too analytical," Rogers maintains. "We separate things, put them into boxes, and we are continually dividing one thing from another and examining it as an isolated thing. We are always moving out into the ends of the tree branches instead of trying to pull things together and relate them. Eastern philosophies have more understanding of the synthesis between man and his surroundings."

Rogers is thoroughly familiar with the New England environment. Born in Boston, he was brought up in Connecticut and on a farm in New Hampshire, and received his schooling at Putney, Vermont, "where everybody milked cows during the war." He then studied physics at Reed College in Oregon, and received a degree in architecture from MIT. Rogers is a combination of Frostian intuition and Ivy League education—plus a healthy dose of skepticism.

He has a sound understanding of the New England countryside: He knows the lay of the land, the meaning of old hedgerows (or "handkerchief parcels of property") and, like some sharp-nosed Cape Cod sailor—which he is—he is always aware which way is north and which is south. Rogers is atuned to the moodiness of New England—a brooding quality that has more to do with Robert Frost, Eugene O'Neill, and Andrew Wyeth than with *Lederhosen*, yodeling, or carved balconies.

One of Rogers' first houses, a vacation cottage on his father's property at Cape Cod, illustrates a Thoreauian philosophy. The house is a plain deck, caught up in the woods with trees poking through the floor and butting up against the sides. The bedrooms are open to the four winds —they have only screened openings, not windows with glass—and are the closest thing to living outdoors. The plain siding is left to weather in the wind without paint, and no part of the structure is hidden. Even Thoreau plastered over his boards—regretfully, but as if he had no choice.

From the formal point of view, Rogers is intrigued with the cubism of New England architecture: the strong sloping roofs, the volumes butting up against one another, and the slanting sheds and rooms added on to barn or house. His houses also express an exuberant sense of space; he remembers sleeping high up under the eaves in attics with low windows, the fun of cupolas, ladders, and hiding places.

The value of retaining such early impressions of space must have been confirmed by two years' work with Robert Woods Kennedy, whose approach to architecture is equally intuitive. Kennedy's

book, *The House*, is a polemic against "styles" of architecture, against preconceived patterns, and instead suggests a *probing, searching* type of architectural mind that recognizes the wealth of emotional or intellectual effects of space and shapes: from the cultural and historical associations down to the basic responses to bowers, caves, and chimney stacks.

As a result, the Rogers houses have more articulation of space and shapes than the traditional New England house. Here chimney stacks stand free, surrounded by space, and there are strong contrasts between small and open areas—a continual sense of compression and decompression. Rooms take on special meanings: there are high, small hiding places under the eaves for privacy, work, or study; living rooms with floor space just small enough to comfortably allow conversation, but with tall rafters and overhanging balconies—à la the Globe Theater—for kids to stage an exit on; and there are low rooms—caves for the cocktail crowd. Spaces are also carefully controlled to accentuate the dramatic scenery: they enclose and blind around an entryway, tease around a corner, and then propel the viewer's sight down through an open room, underneath a sweeping sloping roof, and out over a spectacular view.

The variety of the Rogers houses no doubt stems from a genuine concern for the needs and character of the client and the nature of the site (many architects profess this virtue but emerge with only questionable success). Rogers has a peculiar ability to withdraw himself, his own personality, and to listen to the client and feel out the situation, and the houses strongly reflect the different personalities of the inhabitants. There are formal, ordered shapes for more sedate couples; a lively curling house (too lively for the architect himself) for a romantic couple who can still see leprechauns in the fireplace fieldstones. There is a generous barn for a couple who like a pile of guests, and, right next door, a house more withdrawn and close, for more private people.

Because of Rogers' strong respect for landscape, the site always plays an important part in dictating the shape of a house. A 360° view may demand a circular form, an old row of trees bordering a broad field requires a long narrow shape; a house may stand stock still in a meadow or amble up and down the hillside.

Whatever the requirements—of plan, site, or client—Rogers is remarkably flexible in giving them a suitable if unconventional form. His degree in physics from Reed helps him to do most of the engineering himself and to explore a variety of structural improvisations that will fit the needs of the moment. Once the emotional and practical requirements have been decided on, he will avoid modifying the design of the house to fit the manufacturers' catalogue of components—windows in particular—and he adopts ingeniously simple and often extremely economical solutions: sliding barn doors with marine hardware and a little weatherstripping create windows using a minimum amount of casing. Rogers' own closet is littered with samples of pegs and various wood joints, and books on New England carpentry that provide practical and plain solutions to many construction problems.

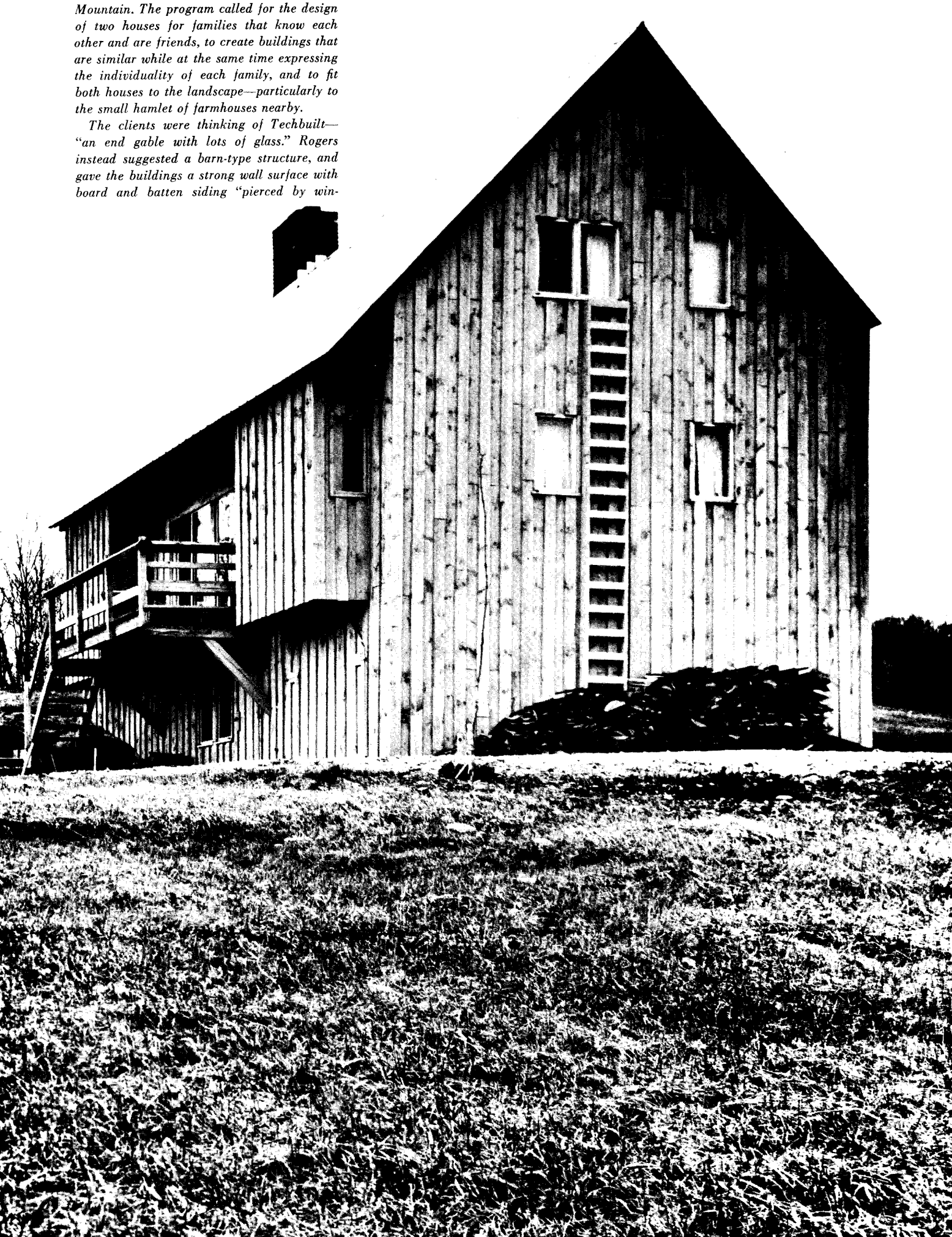
But although the carpentry may be deceptively simple in his work and rustic in appearance, it is carefully scaled and there is a deliberate articulation of the different parts of the construction: a clear definition between the size of beams and boards to express the different work they do and to relate them to the size of the space they cover. An upside-down suspension bridge may carry the roof load across a broad span, so that the architect can use a smaller beam in a smaller space. The planks in a low overhead space are grooved, scaled down, as they are in Cape Cod Cottages, to tailor their size to the small passageway.

Through a continual articulation of the environment, of different space types and construction, the client becomes more aware of where and how he is living. Things start to "come out of boxes" in a Rogers house. "One client," says Rogers, "is particularly responsive to what has happened to him. He has begun to hang up his ties on an exposed rack in the bedroom, or a shaving mirror in the window, framed by a beautiful landscape."

Many of these design elements need not disappear in mass housing. The traditional New England architecture, with its varied geometric components and aggregate, growing structures, is particularly suited to standardization and variety. At the present moment, Rogers is working on a series of component designs—of building units that could be combined in a variety of ways according to a client's needs. "One of the difficulties with most prefabricated housing," says Rogers, "is that it confines people to one box, hems them in, and allows no growth or individual expression." In a scheme such as Rogers proposes, the client might have the best of both worlds—and gain a wealth of New England associations besides.

1 *This ski and summer vacation house near Londonderry, Vermont, is one of a pair situated on a knoll looking out toward Stratton Mountain. The program called for the design of two houses for families that know each other and are friends, to create buildings that are similar while at the same time expressing the individuality of each family, and to fit both houses to the landscape—particularly to the small hamlet of farmhouses nearby.*

The clients were thinking of Techbuilt—"an end gable with lots of glass." Rogers instead suggested a barn-type structure, and gave the buildings a strong wall surface with board and batten siding "pierced by win-



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*dows" **(4)**. The houses have similar floor plans (below and overleaf): a tall central space clear up to the rafters, with a balcony spanning the second stories on either side.*

But the houses are also quite different. For the more formal, conservative couple (who have fewer weekend guests but who do enjoy the cocktail après *ski scene) the central space is occupied by a rather formal dining room **(2)** and a low side room is devoted to a comfortable, cozy drinking pit **(5)**.*

*Upstairs, in the dormitory **(1)**, the post and beam structure of Douglas fir is exposed, and a truss and hammer beam support under the roof permitted the architect to use a fewer number of beams in the roof and create a simpler design. Wall construction is unusual and economical—with an unorthodox placement of the insulation (see wall section). The aluminum roof—a jarring note to wood-shingle aesthetes (including the architect, at first)—actually follows the more recent construction customs of New England barns: and, surprisingly, it works. One piece of old-time craftsmanship **(3)**, a morticed porch railing, was ignored by the carpenter, who simply "hammered the nubbins on top, instead of putting the post through."*

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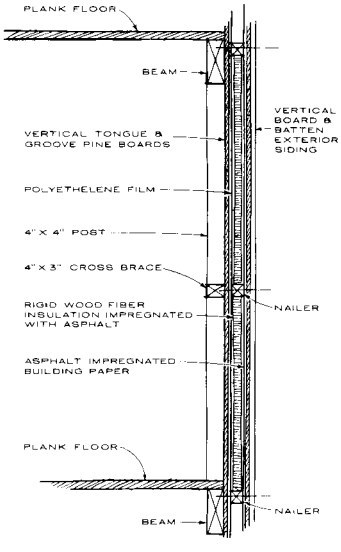
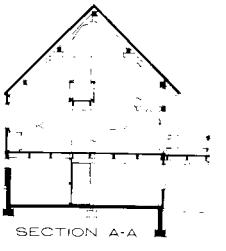
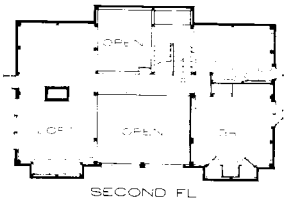
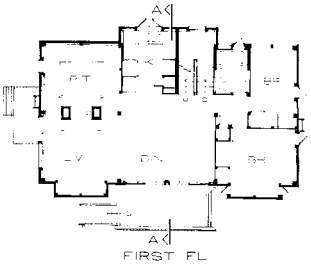
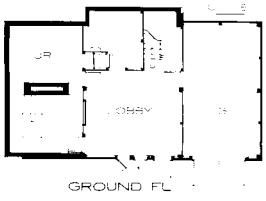


WALL SECTION









2 *The second house* ***(1, 2)*** *on the same site (near Londonderry, Vermont)—a dark red barn—was designed for a more exuberant couple. It can hold approximately 22 people at a time (some sleep in lofts atop the bathroom) and is gregarious and informal in layout. The high central area is a living room* ***(5)*** *with a generous cavelike fireplace that also serves the dining room on the other side* ***(4)****. The balcony overhangs the fireplace, in a somewhat Globe theater manner, and provides an excellent and exciting stage for children or an observation post. Other amusing spaces include a cupola at the top of the structure* ***(3)****, reached by a ladder* ***(6)****; and a laundry chute from top floor to basement, which provides an excellent slide for a certain stuffed teddy bear and is therefore labeled "Pearly's Fall."*

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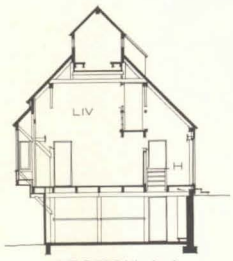
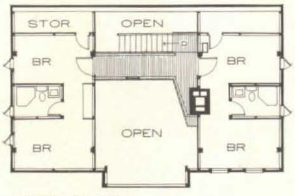
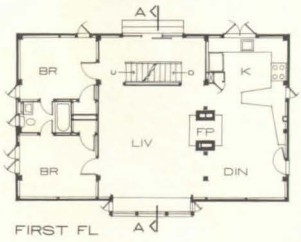


SECTION A-A



LOFT PLAN



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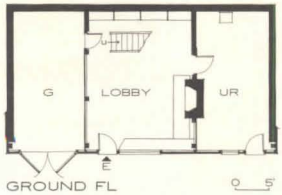

GROUND FL

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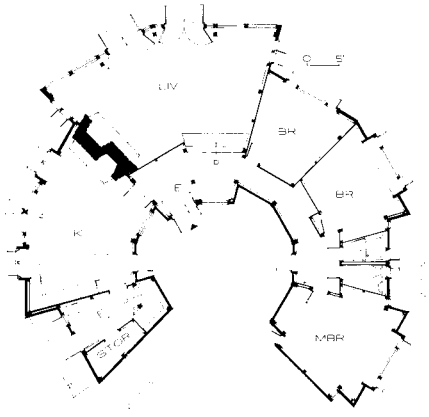
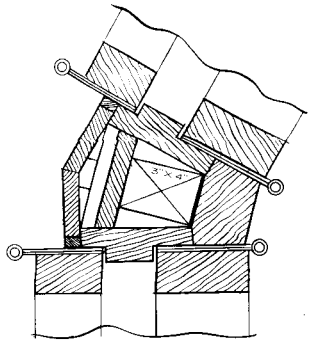
3 *The round summer house of West Stockbridge* **(1)**, *Massachusetts, was designed to take in a spectacular 360° view surrounding a high knoll. The landscape is a curiously civilized one—the bumpy end-on view of the Berkshires to the south and the broad valley to the north are climaxed by the small old village of West Stockbridge, lying below the house, which surrounds a series of small reflective ponds. The foundations of an older farm house still remain on the hilltop. The client, who is manager of the Boston Symphony, frequented the spot with the orchestra for picnics during the summer months at Tanglewood. A house on the spot had to be hospitable enough for entertaining, yet be modest and simple.*

It is a civilized, well-ordered structure. The geometrical center is an entrance court whose height and strength are deliberately emphasized to balance the powerful scale of the site. A backbone corridor **(3)** *surrounds the court and is very private, since it curves and permits no long views. The corridor has windows on either side to pass light on from the court to the radiating pie-shaped rooms.*

In all the rooms **(2)**, *the space moves—from a tall, narrow shape to a low, wide one as the roof slants down close to the skyline to frame the view. The main entrance* **(4)** *leading onto a blind wall is carefully designed to tease the mind, to obstruct the view before turning into the panorama of the living room. In spite of the strong geometric pattern of the plan, the front view shows the extraordinary variety of doors, windows, and details—a variety within a dominant ordered theme. The informality and articulateness of the*





DETAIL OF CENTER JAMB AT KITCHEN DOORS

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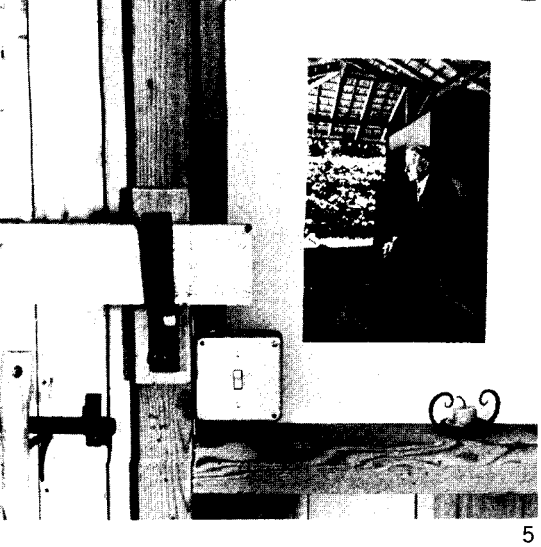
OTO: JOHN ROGERS



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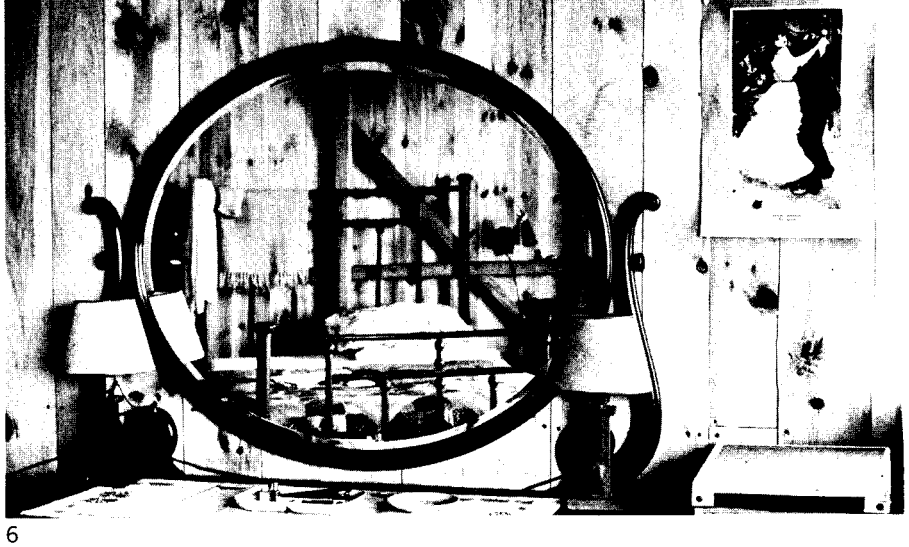

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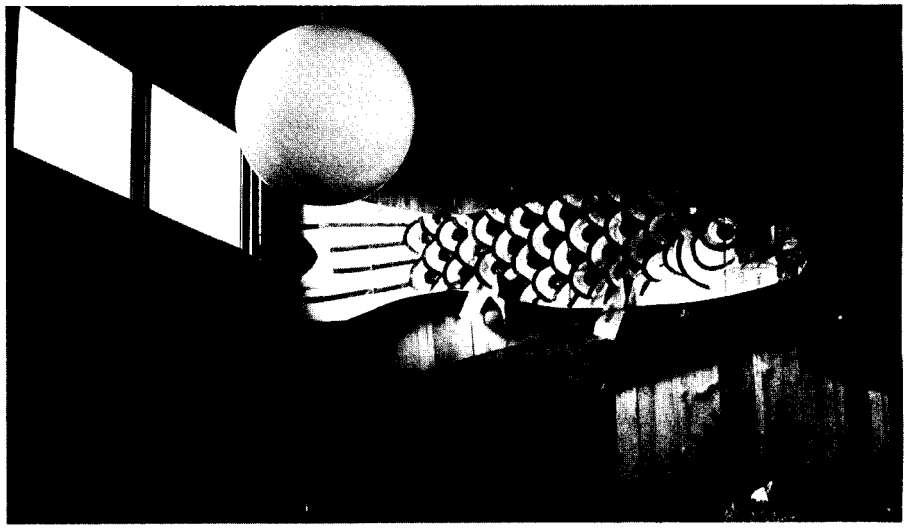

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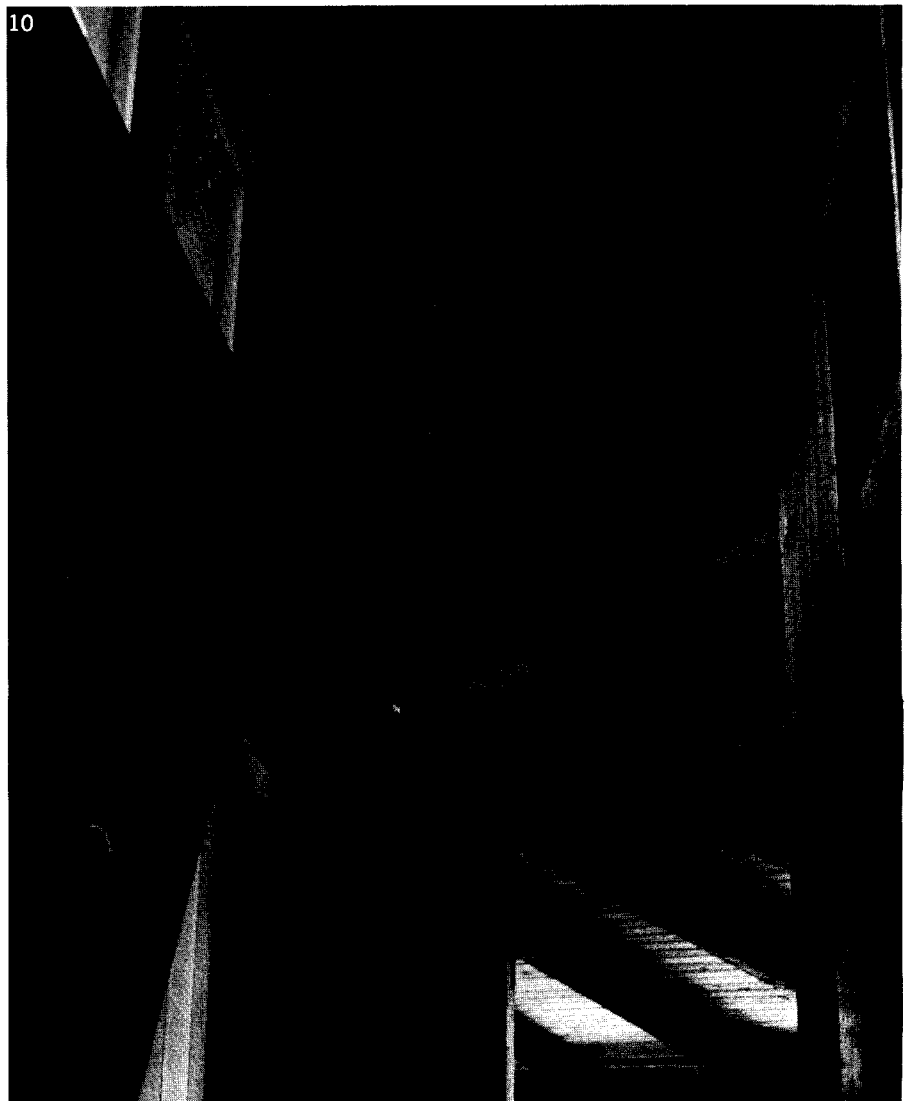

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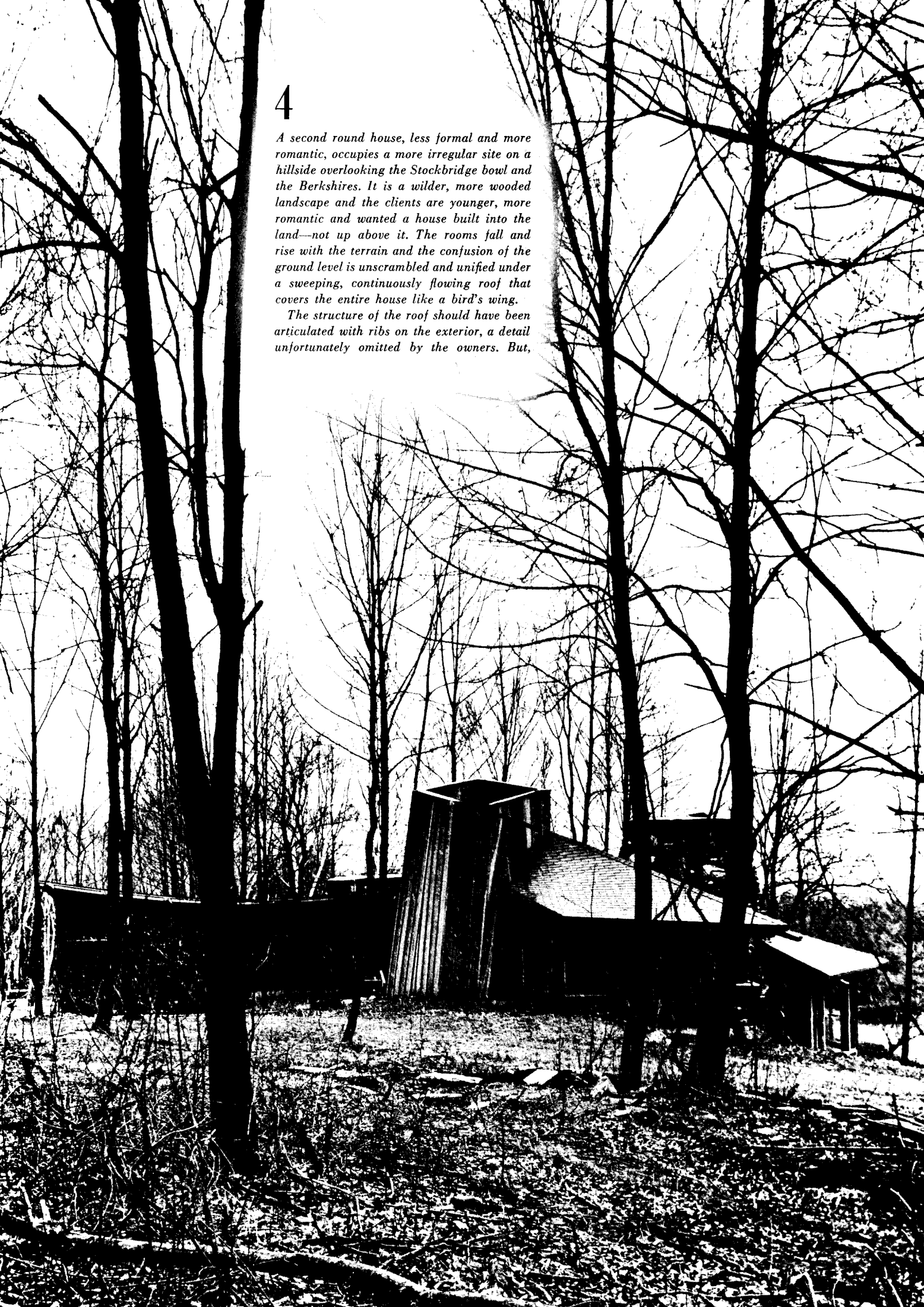
structure ***(10)*** *has been well understood by the client, who, with delightful casualness, places objects on the exposed beams* ***(5, 8)****, and hangs brooms up on the wall* ***(9)****, like the tools in an old New England home, and has in general adopted a comfortable, country style of living* ***(6, 7)****.*



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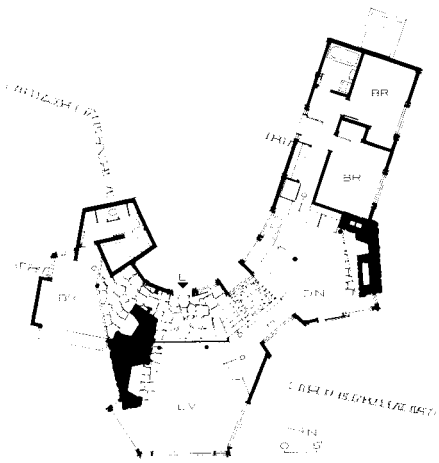
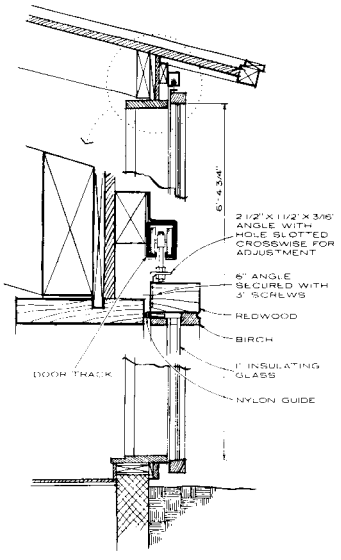
A second round house, less formal and more romantic, occupies a more irregular site on a hillside overlooking the Stockbridge bowl and the Berkshires. It is a wilder, more wooded landscape and the clients are younger, more romantic and wanted a house built into the land—not up above it. The rooms fall and rise with the terrain and the confusion of the ground level is unscrambled and unified under a sweeping, continuously flowing roof that covers the entire house like a bird's wing.

The structure of the roof should have been articulated with ribs on the exterior, a detail unfortunately omitted by the owners. But,

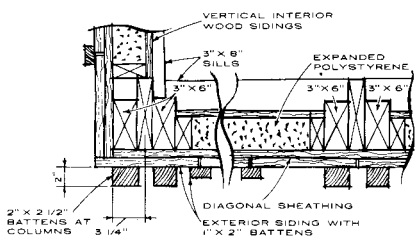
*more happily, the clients also insisted on the smooth redwood siding (**3, 4** front and rear views); they did not want a rough, shaggy look. "And maybe they were right", says Rogers. "Many round shapes in nature have smooth surfaces. Think of a pine cone or a sea shell. Also, at a certain point, the client has to make changes in the house, to begin to live in it, to own it. These changes often break the regularity of the plan and make it breathe. If the over-all design is strong, minor changes cannot harm it.*

*Natural materials are used throughout the house: trees serve as posts in the bedroom **(1)**, living room **(2)**, and kitchen. Local fieldstones, complete with lichen and leprechauns, form the fireplace. Windows (detail below) are kept simple—framed in wood and attached to a sliding track like a barn door, or hinged. They batten down with marine hardware.*

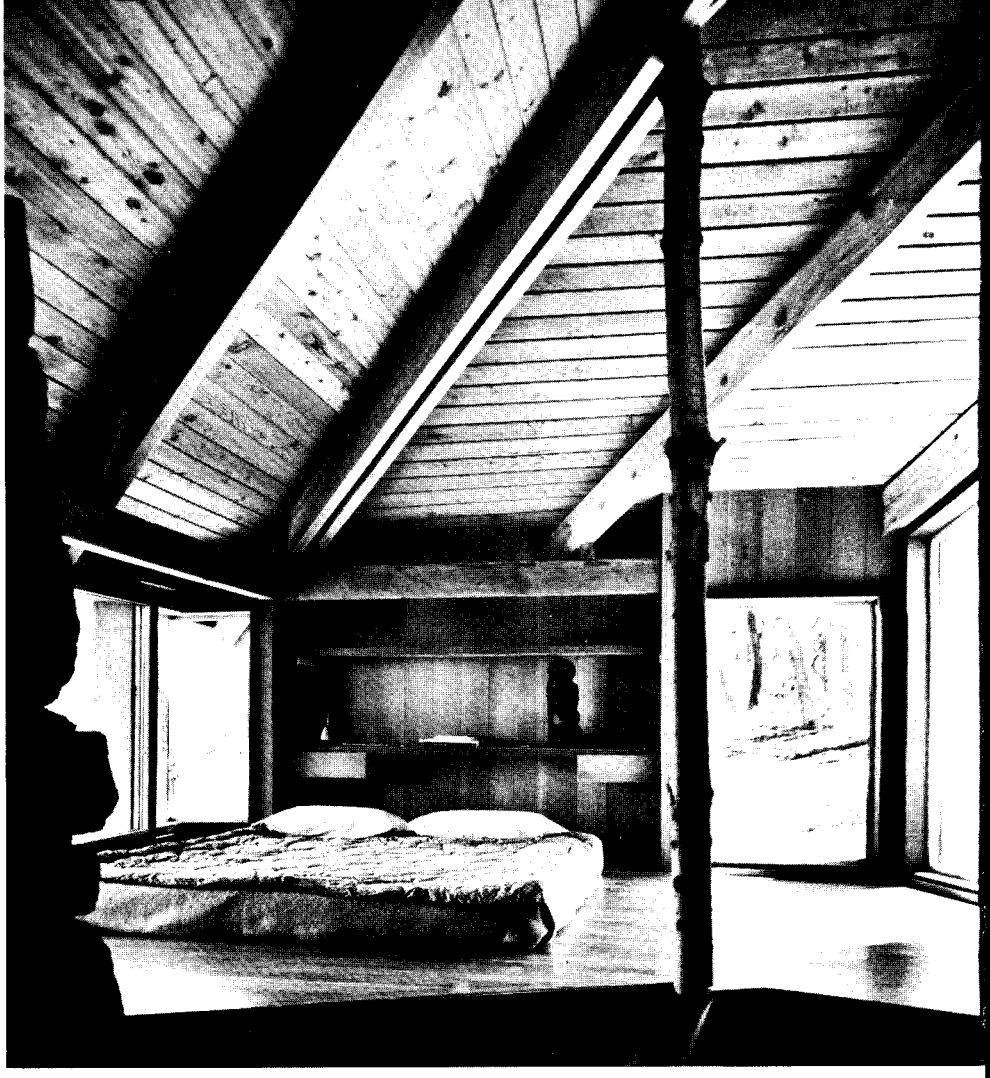




KITCHEN DOOR DETAIL



TYPICAL POST DETAIL



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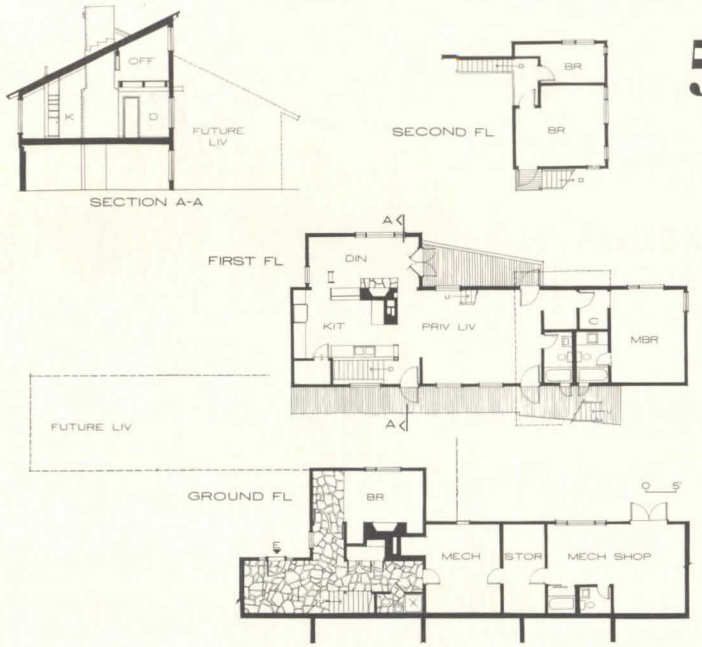

5 *The director's house for a school in northern Vermont was designed to fit along an old hedgerow* ***(1-3)*** *bordering a field in front and a hill in back. The site is more desolate, the climate harsher, and the local architecture is a bit meaner—"with more small sheds and shacks"—than in southern Vermont.*

The design of the house was complicated by the fact that it was to be annexed to a dormitory to be built later on. It had to connect with a formal school reception room, a common room for boarders, and a row of dormitory rooms. A site was chosen that was away from the majority of school buildings, on the grounds that it was "between buildings," that the students come in contact with nature, and that, by locating activities far apart and in various settings, students would grow familiar with a variety of landscapes during their years at school.

In order to prevent the complex from turning into one long building and long corridor, the two sections—house and dormitory—

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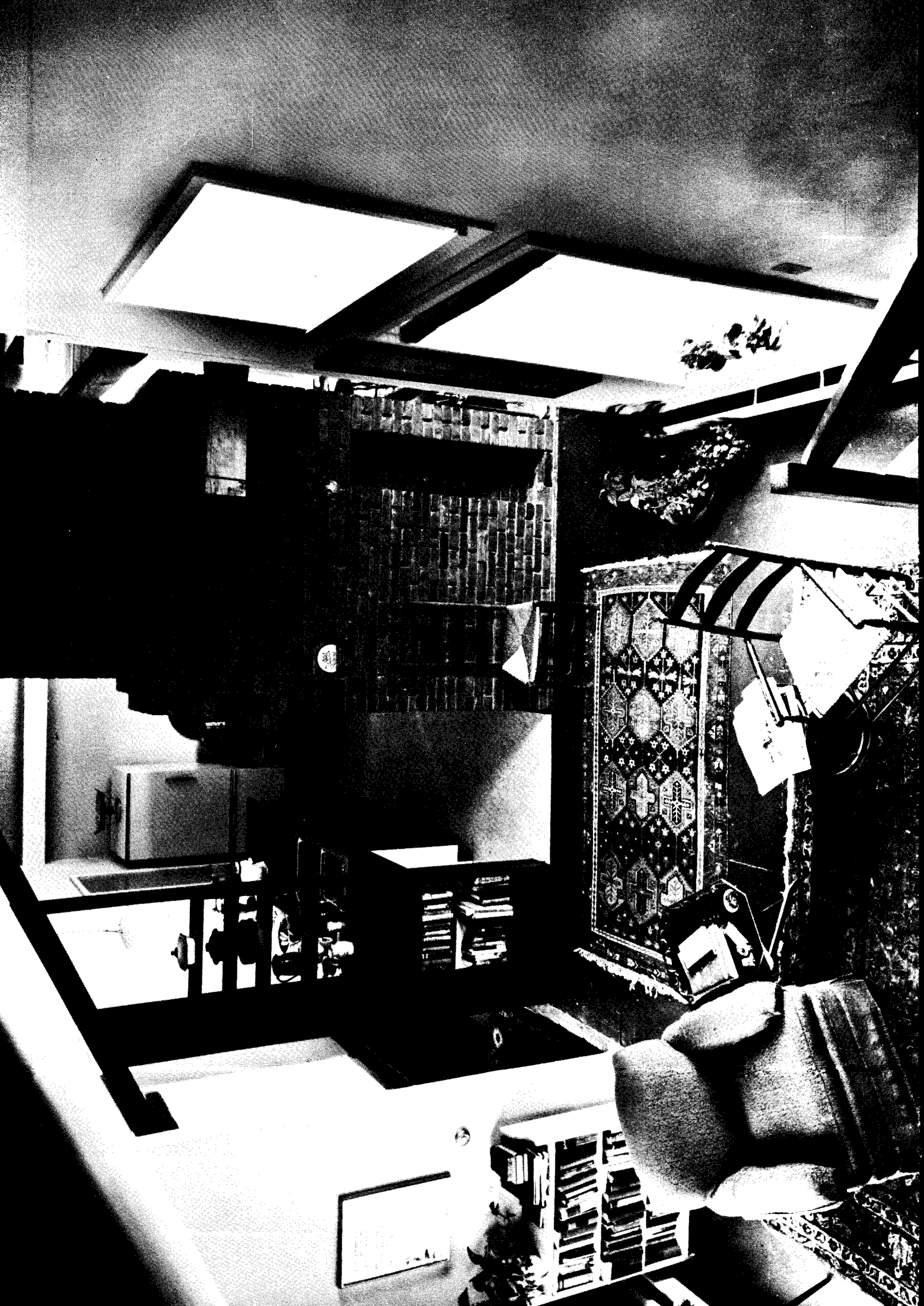

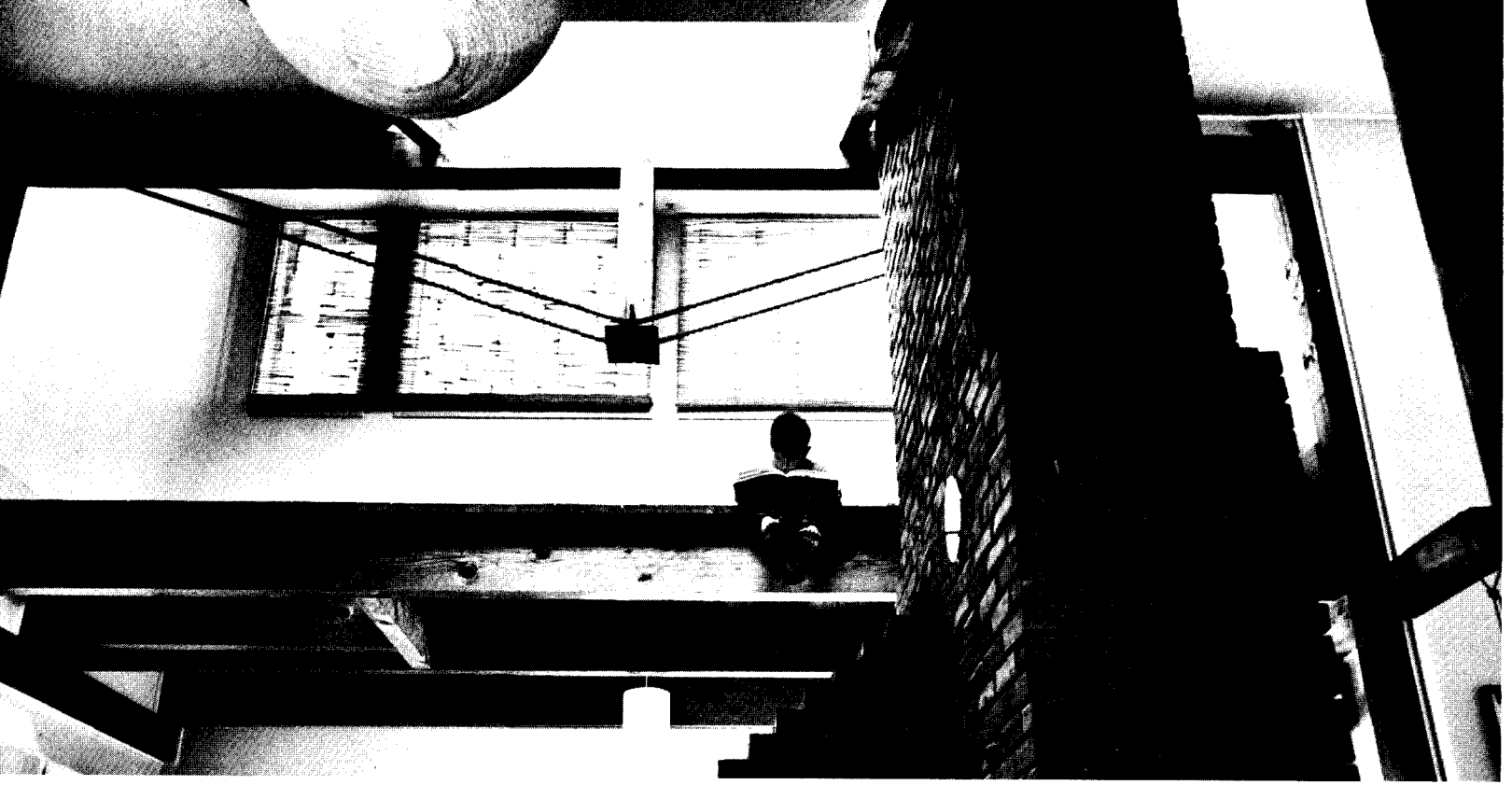

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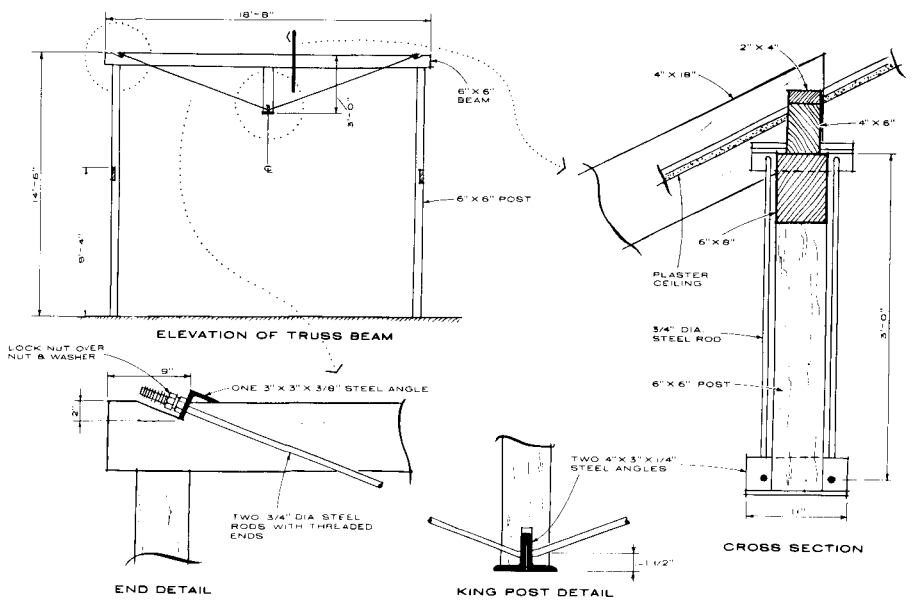

were separated and turned into an exercise in vertical overlapping. The geometric block architecture and slating eaves of the region are brilliantly exploited. The children's bedroom in the house is placed like a shed at right angles above the director's private living room ***(4)****, which in turn will overlook the school reception room. A small room perched under the highest part of eaves* ***(5)*** *will serve as an office.*

The house is a frame structure with a smooth interior finish (gypsum wallboard), which creates a rather Scandinavian quality while still keeping the plain pine board and batten siding on the exterior. Heaters are fitted into the baseboards, and doorways ***(6)*** *are boldly but carefully carpentered. The truss (****4*** *and drawing) in the "office" above the kitchen permitted the architect to use a smaller beam to span the space.*

6 *The simplest house by Rogers is a summer cottage built on his father's property in Cape Cod.*

The program called for an inexpensive guest cottage ($8,000, including utilities), located in the woods below a protecting bluff. In terms of its design, it had to be as open to nature as possible—to be part of it. A minimum number of trees were cut, and several were left to butt up close to the sides and through the floor. The house, sitting on top of concrete posts, is like a compact ship with a simple wooden deck. An enclosed sitting room cabin occupies the front area, a mechanical core sits in the middle, and screened-in bedrooms are aft. It is a plain frame construction of Douglas fir and finished pine siding. The roof of matched spruce is given a high peak for aesthetic effect; it is covered with wood-fiber insulation and black asphalt shingles. The house won an award at the Boston Fine Arts Festival in 1964.

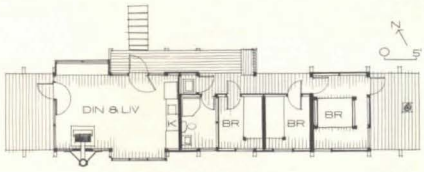

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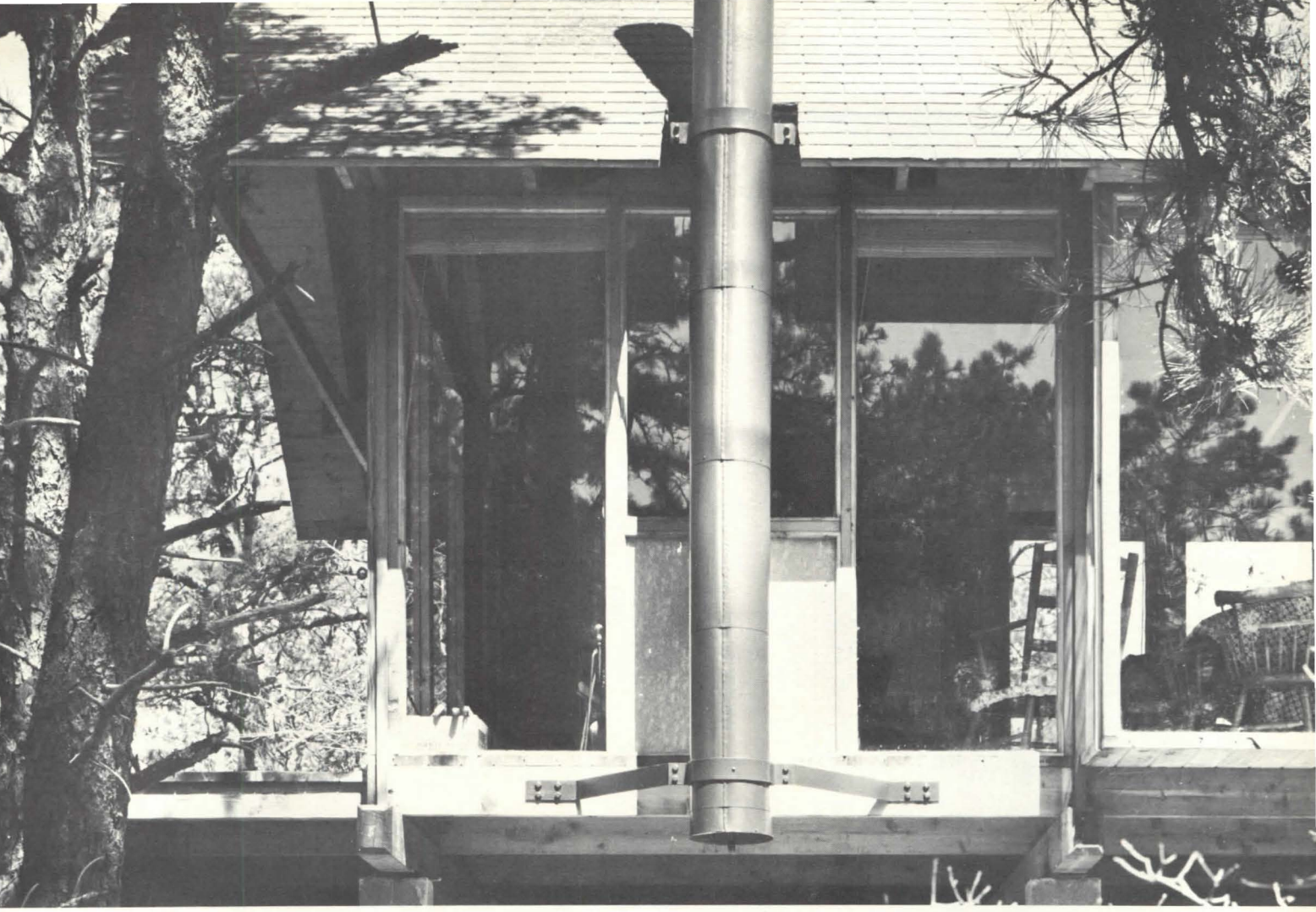
PHOTO OF JOHN ROGERS: MAUDE DORR

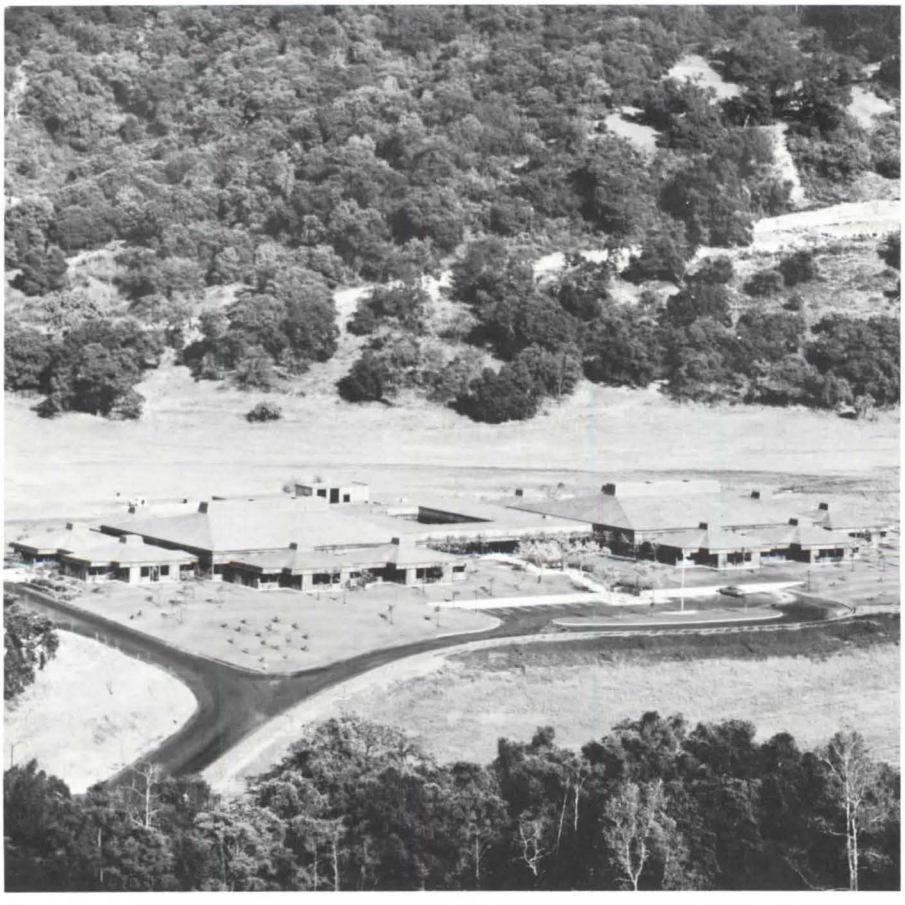


CHANGES IN THE OFFICE ENVIRONMENT

The garden, shown at left, where scientists of the Los Gatos IBM laboratory may do their reading outdoors, is only one of many indications that the office building, like most other building types, is undergoing a change. "Pauses are as important as the working periods," suggested one of the IBM executives in outlining the basic requirements; "the opportunity for frequent respites by glancing at pleasing outdoor vistas is in accord with modern psychological theory on the nature of efficiency." Two other buildings—the IBM building in Jackson, Mississippi, with its promenade, and the office building in Waltham, Massachusetts, with its skylighted center court—are excellent cases in point that the office environment can be humanized and that, designed well, can pay dividends in working efficiency.

Research Facilities

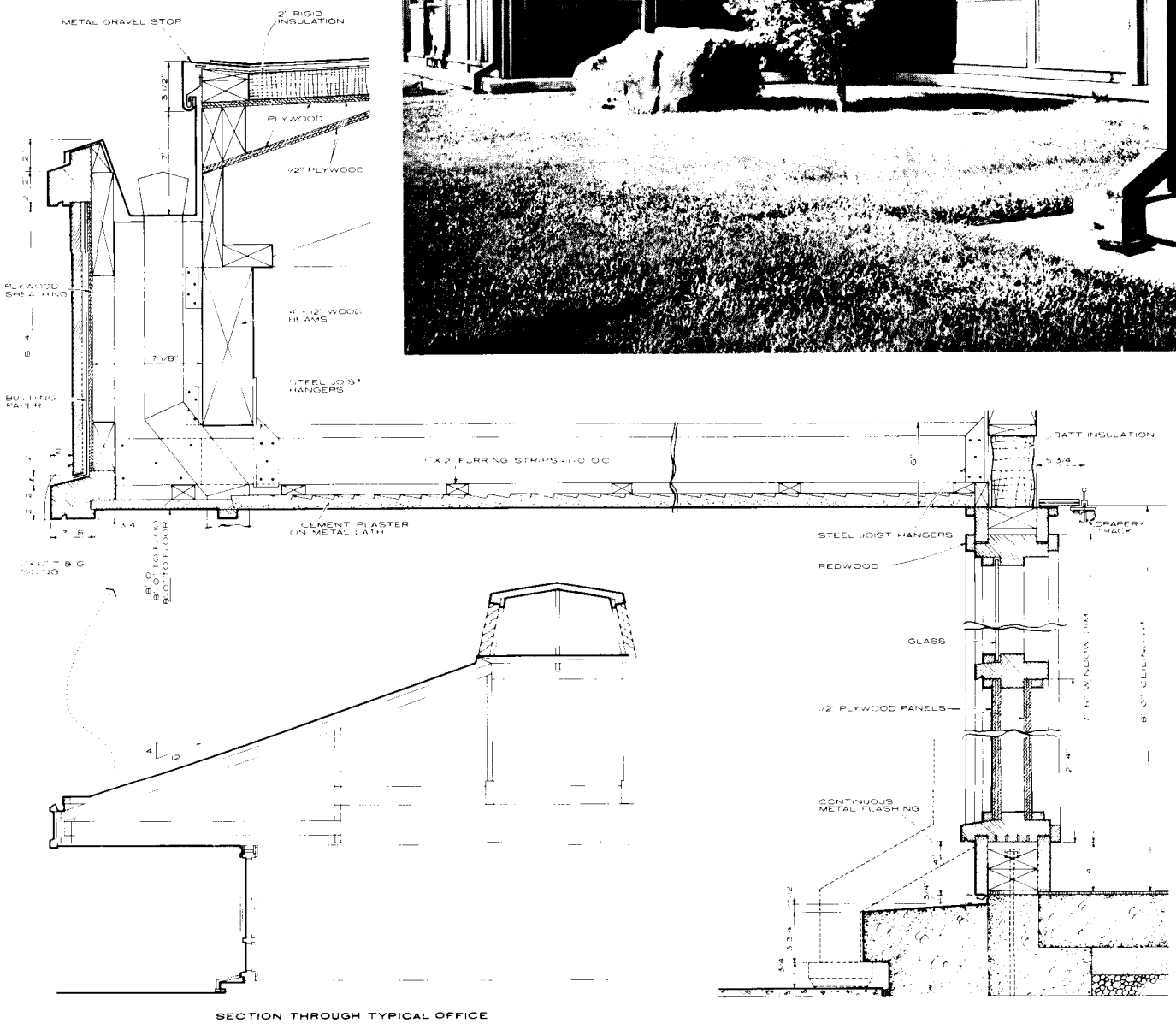
IBM ADVANCED SYSTEMS DEVELOPMENT DIVISION LABORATORY, *Los Gatos, California.* ***Architects:*** *Hellmuth, Obata & Kassabaum, Inc.; Gyo Obata, Designer; William J. Harris, Project Manager; Lawrence Halprin & Associates, Landscape Architects.* ***Site:*** *80-acres in a suburban area near San Jose; golf course on one side of property; climate favorable for use of outdoors.* ***Program:*** *Offices and laboratories for more than 300 researchers.* ***Structural System:*** *Standard wood beam and joist framing; 3½-in. steel tubes for heavier loads; glu-lams for large spans.* ***Mechanical System:*** *Heating and air-conditioning equipment housed in individual roofs.* ***Major Materials:*** *Redwood; dark glass.* ***Cost:*** *$2,408,231 for total construction; $25 per sq ft for architectural, heating, air conditioning, plumbing, and electrical work; $3.40 per sq ft for site work and required sprinkler system.* ***Consultants:*** *Gilbert, Forsberg, Diekmann & Schmidt, Structural Engineers; Harold P. Brehm, Mechanical Engineer; Flambert & Flambert, Food Service; Swinerton & Walbert Company, General Contractor.* ***Photography:*** *Morley Baer.*



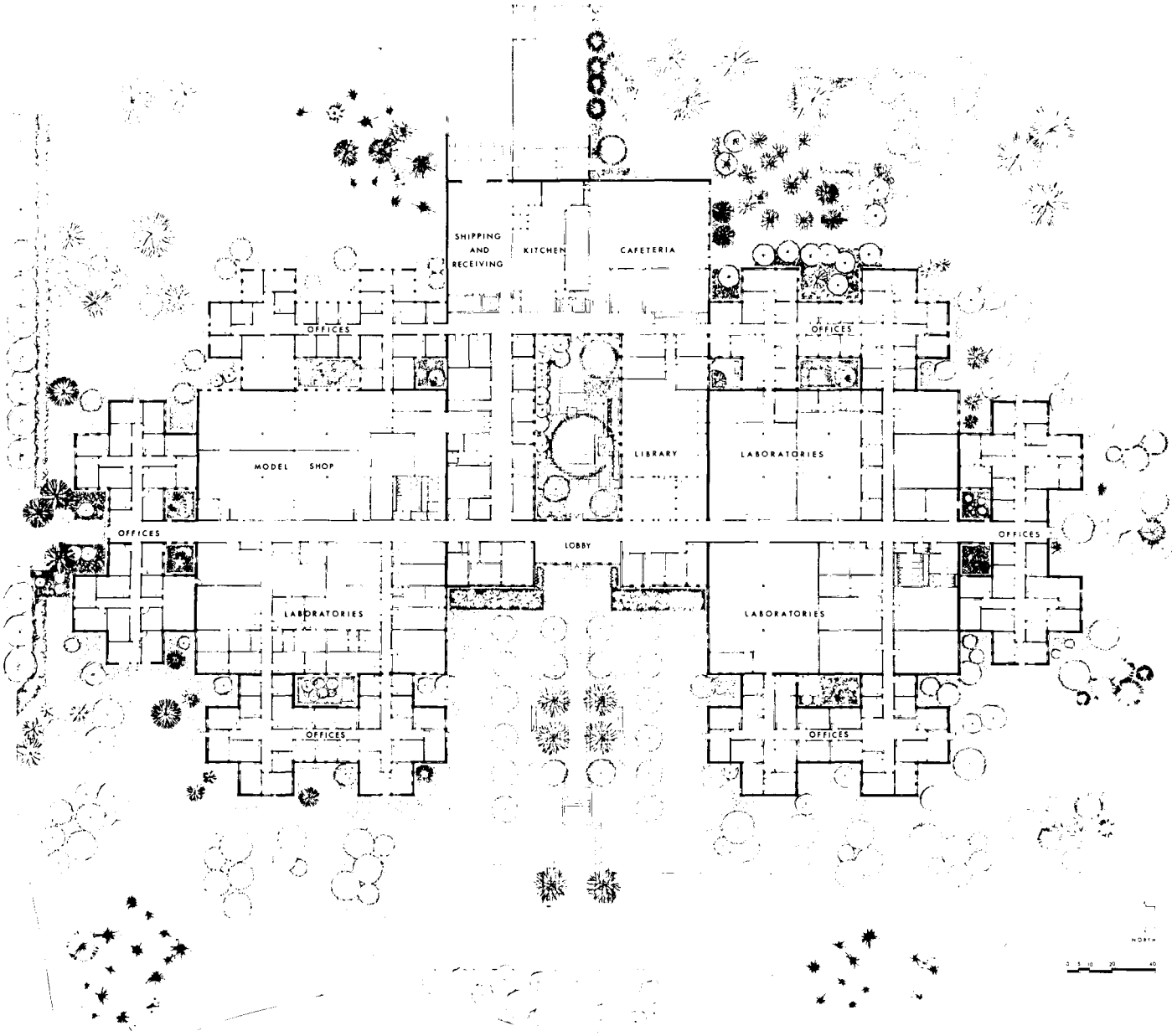
It is not surprising to learn that this new building complex has had a strong morale-building effect on the 300 research scientists who moved into it in December 1963, for it is not merely a thoughtfully planned piece of architecture but one that has been skillfully tied into a setting of exceptional natural beauty.

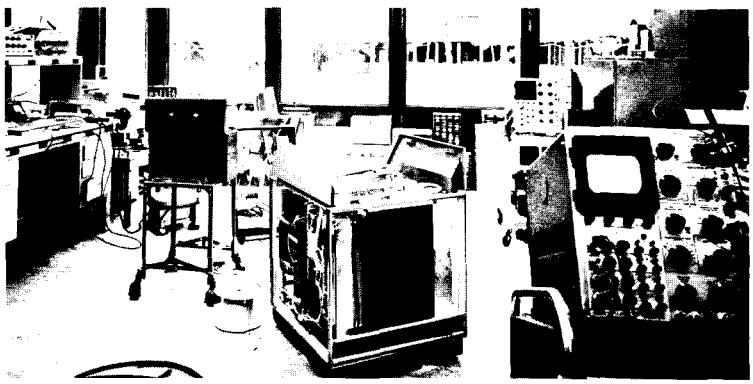
The site is an 80-acre property, high on a plateau in the rolling foothills of the Santa Cruz Mountains near San Jose. "We wanted to make the natural environment as much a part of the building complex as possible," says Gyo Obata, "and planned the office spaces so that each person would have a view either of the valley, the mountains, or a carefully landscaped interior courtyard." To obtain the building perimeter required for this number of outside exposures, he used a series of cross-shaped structures, based on a 5-ft module. This grouping of 10 to 12 offices, according to the designer, helped "to retain human scale in the rather large project" and enabled the architects to put laboratories and shops in the interior, where they would be readily accessible to all. Paralleling the progress of ideas being developed in the offices, the architectural spaces flow from the individual "think spaces" to the larger laboratory and shop spaces, and on to the still larger outdoor courts. Carrying the humanizing process of the office building still further, the architects chose redwood as the major building material. This material, they felt, would best blend with the natural surroundings, provide the necessary tie-in with anticipated nearby residential developments, underline the desired warm and friendly atmosphere inside and out, and would, above all, be economical and easily adaptable to possible future changes and additions.

The structural system, typical of residential rather than industrial construction, uses standard wood beams and joists. Where heavy loads occur, 3½-in. steel tube columns are employed, and glu-lams span the larger laboratory and shop areas. Exterior walls are sheathed with rough-sawn board and batten redwood, pressure-treated with a preservative that gives the boards a natural golden-brown finish. Dark window glass aids color consistency and sun control. Interior partitions are of wood and gypsum board with redwood trim. Ceilings—8 ft high in office areas, 9 ft in lab/shop spaces—have 1' x 4' fluorescent fixtures in each 5' x 5' module. The heating and air-conditioning equipment is housed in the attic space above, from which air is conveyed through the lighting fixtures into the rooms. Vinyl asbestos surfaces all of the floors except the library, which is carpeted for sound control.

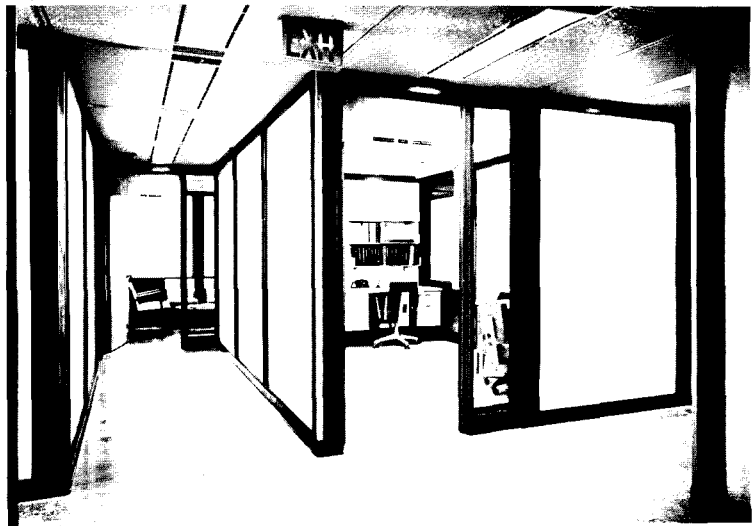


SECTION THROUGH TYPICAL OFFICE





Typical offices (left and below) and laboratory.



"We attempted to make a transition between building and background by a series of man-made elements that would extend out from the building into the man-made landscape. You surround yourself with a clearly defined man-made landscape, and then, at certain points, you walk on paths ***(1)*** *out of it into the native landscape. This series of man-made landscape spaces—related in scale, size, and even form to the forms of the building—carries the quality of the building out a certain distance into the landscape and then becomes married with it.*

"We made the entrance road lower than the building platform ***(2)****, and instead of coming straight up at the building in a formal axial relationship, we preferred to wander through the landscape. We were trying to emphasize the fact that it is the whole environment that is important, not only the building. The guest parking was dropped about 10 ft below the elevation of the building to avoid spoiling the magnificent view to the west. The path from the parking area to the building is not linear; instead, we started the process of moving through a series of related environmental spaces. The first is a courtyard surrounded by low walls* ***(3, 4)****, approximately the same size and shape as one of the building's pavilions. You pause for a moment and then move on into the building. From here, you can go into the various parts of the interior or dead ahead into the main courtyard* ***(5)****, completely enclosed by the building. This interior courtyard brings in some of the qualities of the landscape; at the same time, it is a contrived and definitely designed interior space. It is an outdoor space with planting, birds, but mostly it is an interior environment that happens to be un-roofed. And, since this is a very hot and dry environment, it emphasizes the play of water* ***(6, 7, 8)****. There is a cascade; water falls from bowls, over lips of steps, makes lots of sound, and cools the air. Another kind of exterior space is the outdoor dining space* ***(9)****, which is the same size as the first arrival court, again related to the various pavilions that surround it in size and scale.*

"From there, you can look out at the panorama of mountains. This is the final court of the three—each interpenetrated by the buildings and surrounded by them; each one an experience of its own; one progressing to the other.

"These are the architectural elements of the landscape. All are surrounded by a series of transitional plantings—from plantings quite domesticated, quite small in scale, to the broader scale, where the planting begins to merge, first through planted lawns and then uncared-for plantings, to the hillside. Through these devices of very controlled courtyard spaces, lesser controlled plantings, and then more native plantings as you move out into the native landscape, we hoped to achieve a marriage of a very dominating kind of landscape with a man-made landscape, which, in its own way, is very dominating. It was hoped that each would enhance and add to the other through contrast, rather than through copying."

LAWRENCE HALPRIN

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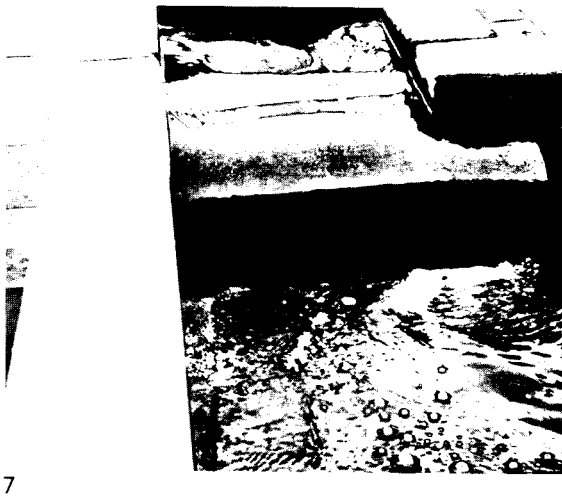

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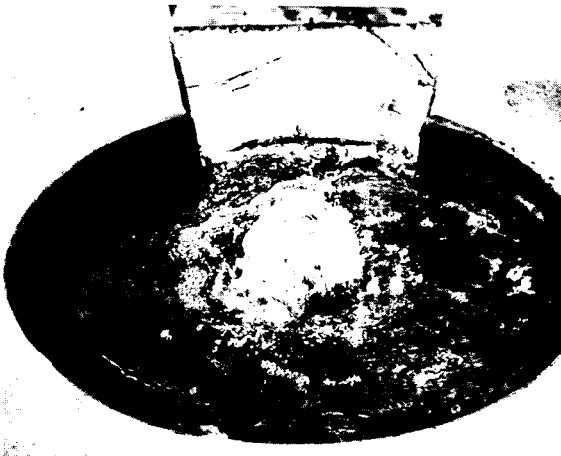

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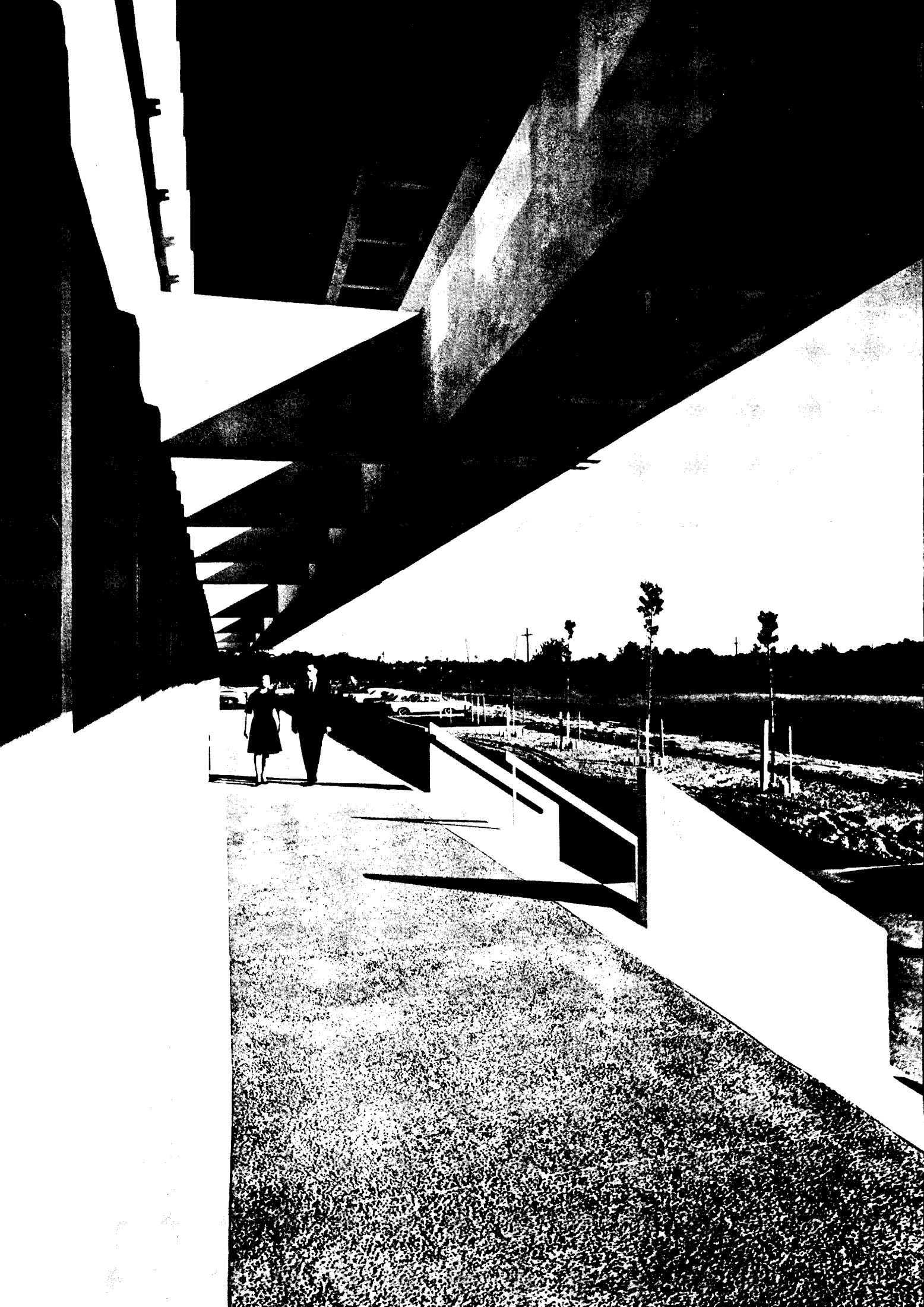
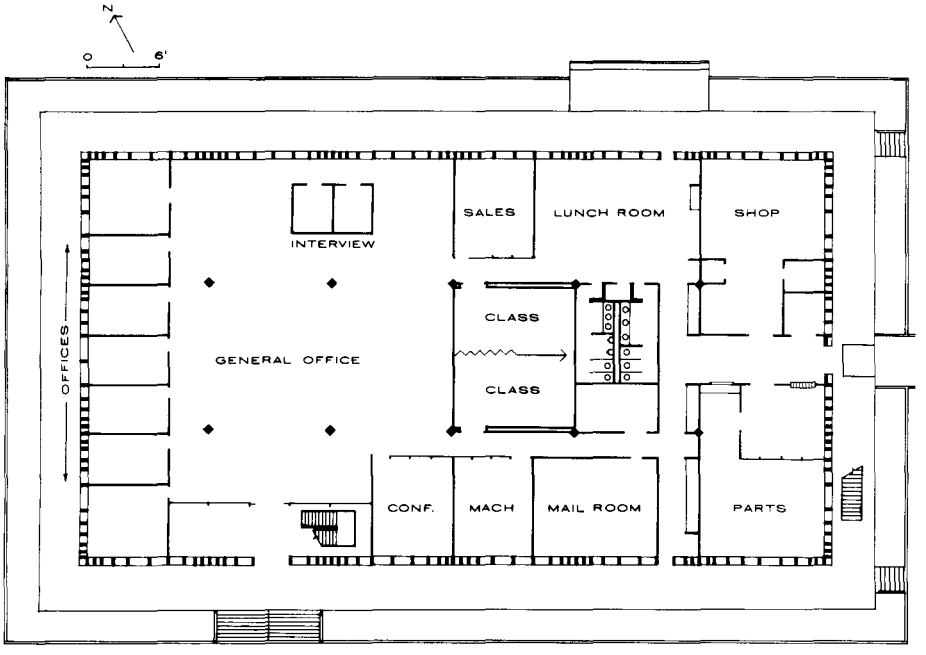
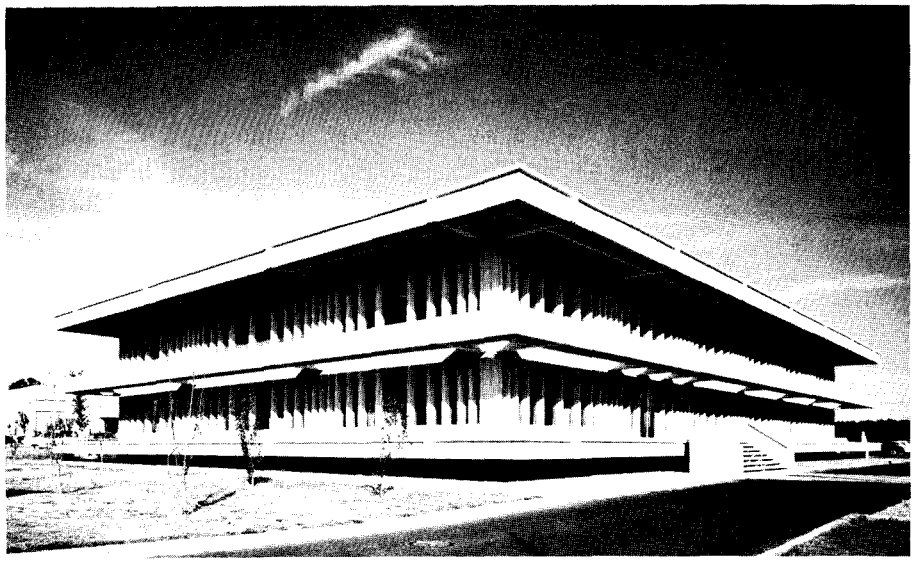


Regional Headquarters



FIRST FLOOR

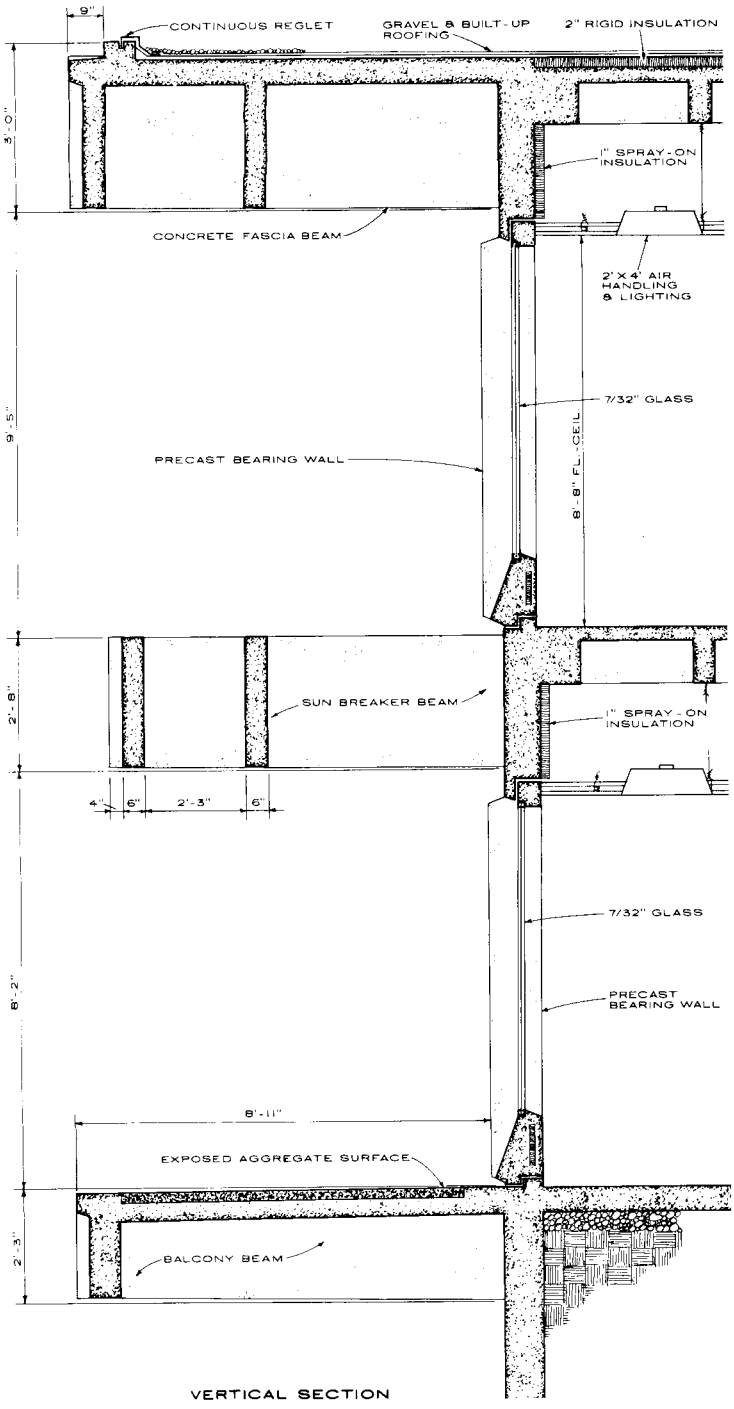
IBM REGIONAL OFFICE BUILDING, *Jackson, Mississippi.* ***Architects:*** *Curtis & Davis; Walter J. Rooney, Jr., Partner in Charge; Abe J. Rothenberg, Job Captain.* ***Site:*** *Along limited access roadway for U.S. highway 51; ground water conditions required building to be raised.* ***Program:*** *Facilities to accommodate sales department for data processing equipment and electric typewriters, customer's service center, administrative offices, facilities for personnel education, and rentable space for future expansion; parking for 87 cars.* ***Structural System:*** *Precast concrete bearing members for perimeter walls; poured-in-place interior columns, floor slabs, and overhangs.* ***Mechanical System:*** *Gas-fired hot water heating; year-round air-conditioning.* ***Major Materials:*** *Precast concrete elements with light aggregate finish; poured concrete with smooth, hand-rubbed sand finish; roofing slag aggregate for promenade; tinted glass.* ***Cost:*** *$448,342 for building; $17,827 for site work; $16.25 per sq ft.* ***Consultants:*** *Albert H. Walters, Mechanical Engineers; Leigh H. Watkins, III & Associates, Electrical Engineers; Post & Witty, Structural Engineers; IBM, Interiors; Howie Construction Co., Contractors.* ***Photography:*** *Frank L. Miller.*



The promenade, which encircles this building and is its distinguishing feature, serves not only as a pleasant sheltered walkway but contributes in several other ways to a more gracious working environment. Most importantly, the 8-ft-wide promenade visually extends the interior space, framing exterior vistas and generally lending an air of quiet and dignity to the work areas. Seen from moving cars along the highway, the promenade and overhangs at the second floor and roof level furnish strong horizontal accents, achieving the visual effect desired by the client. The overhangs offer protection from sun and sky glare, and recall at the same time the sheltered porches of the earlier plantation homes of the area. And, an advantage not to be overlooked, the cantilevered elements serve as convenient platforms for window washing.

These strong, smoothly finished horizontal elements have been interestingly contrasted with aggregate-surfaced, load-bearing mullions, whose rythmic spacing (they are more closely spaced when they face columns) add further visual interest, as observed from the inside as well as the outside.

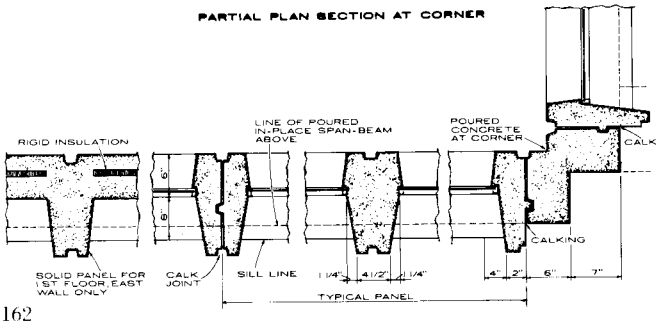
Landscaping of the site has been limited to rows of native water oaks along each property line, and groves of flowering crab-apple trees of a dwarf variety.

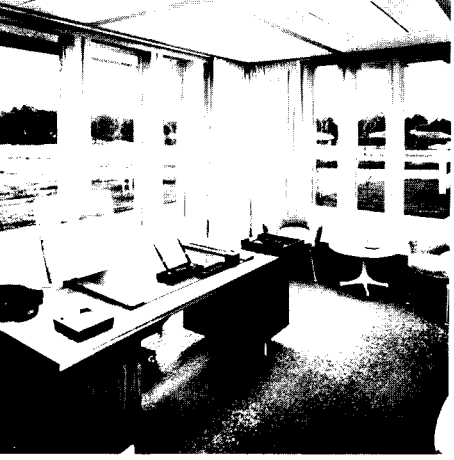


VERTICAL SECTION

The building combines two structural systems: first, a precast concrete bearing wall at the glass-line of the building; and second, an interior slab and column system of cast-in-place concrete. Precast framing members of the exterior wall also serve as window mullions for fixed panels of tinted glass.

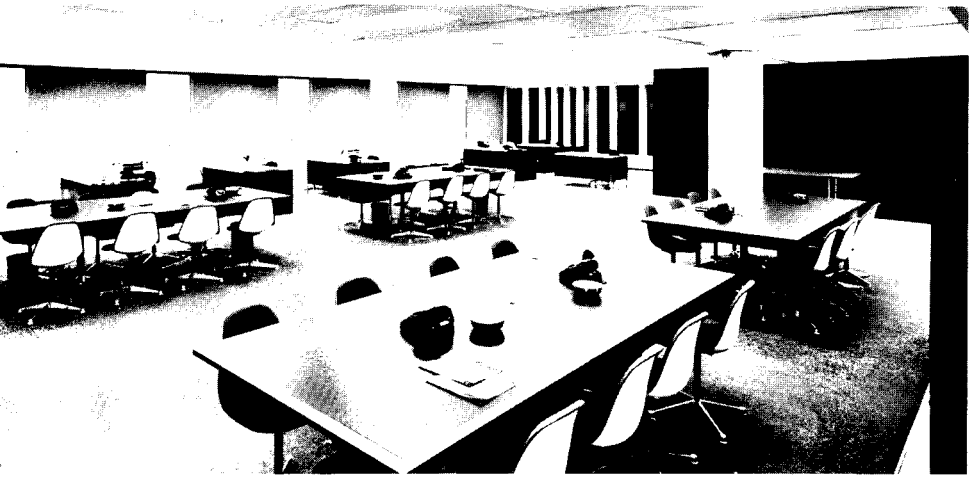
PARTIAL PLAN SECTION AT CORNER

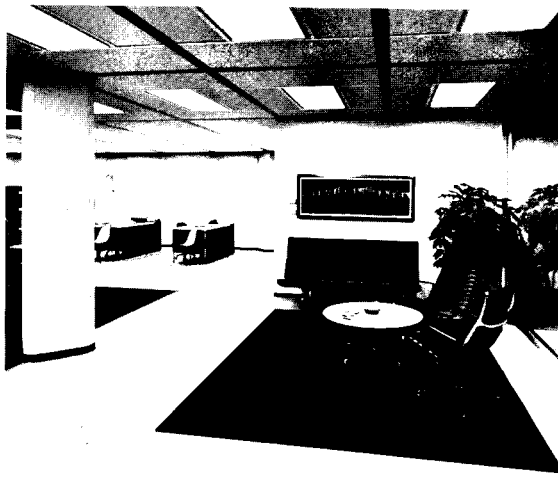




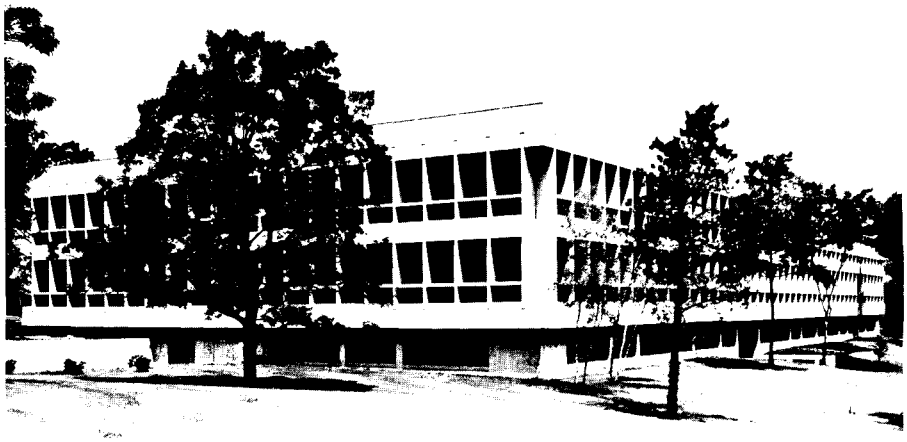
Within the building, a minimum of interior partitions have been erected to assure exterior views from all work stations. Where interior partitions do occur, they meet the interior columns at a 45° angle, making a more fluid transition between column and wall. A 5'-2" x 8'-8" module has been used throughout the building. Each module contains one 2' x 4' light fixture with air diffuser and an underfloor duct system for electrical and phone service.

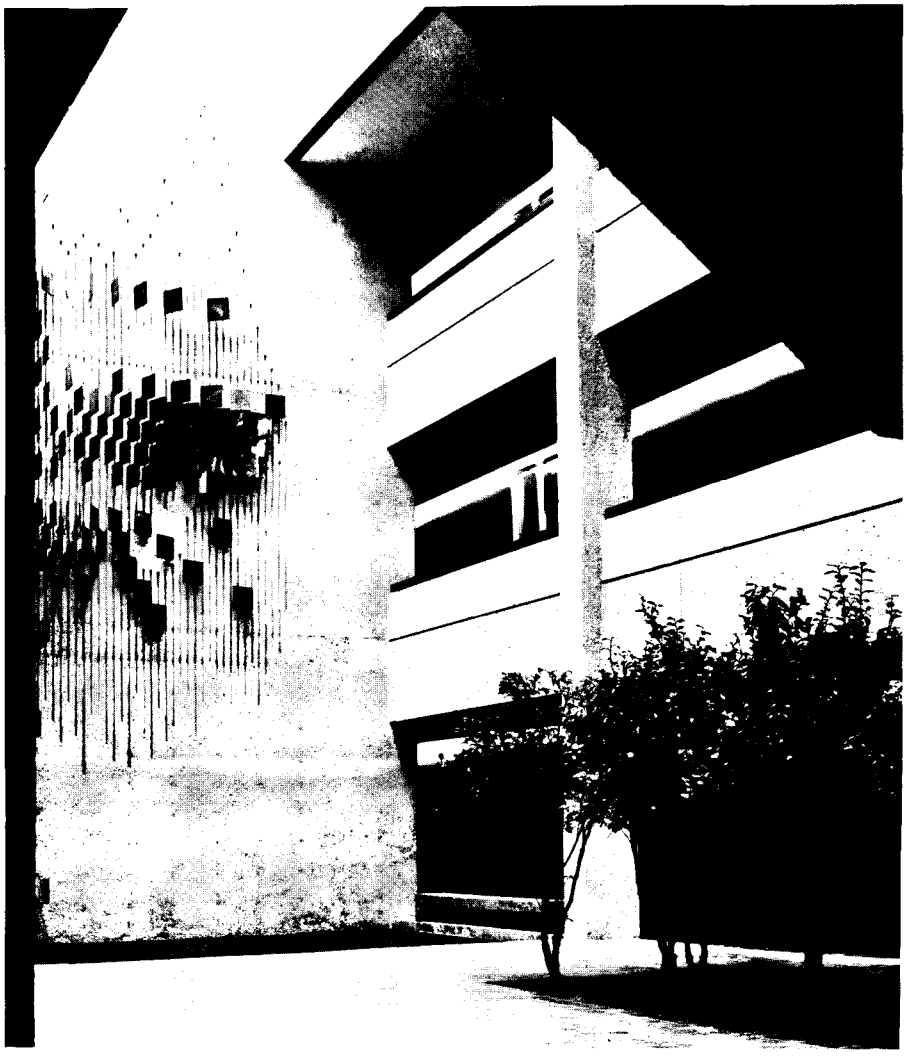
The color scheme is off-white and gray, with accents of primary colors in the interior.





Rental Offices



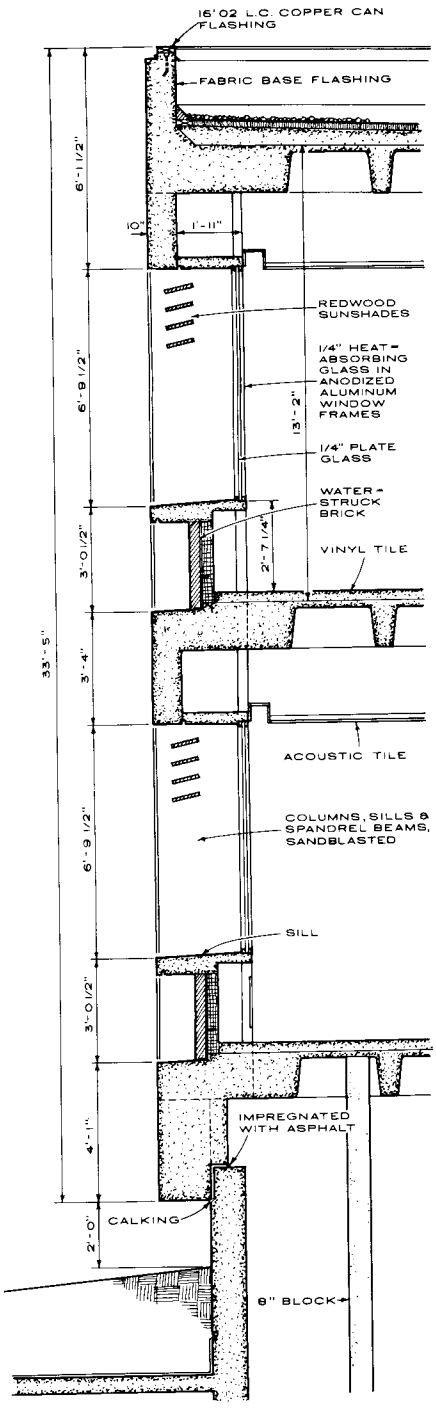


OFFICE BUILDING, *Waltham, Massachusetts.* ***Architects:*** *Anderson Beckwith & Haible: William E. Haible, Partner in Charge; E. Verner Johnson, Ted A. Niederman, Job Captains.* ***Site:*** *Heavily wooded and sloped; entry to building on two levels; view west toward lake.* ***Program:*** *80,000 sq ft of office space; provisions for sun control; partitions, mechanical and lighting systems on 6-ft module; cafeteria to seat 160, with possibility of future enlargement or conversion to office space; parking for about 200 cars.* ***Structural System:*** *Reinforced concrete structural frame (30' x 30' bays); two-way waffle slab construction (30-in. pans, 3'-0" o.c.).* ***Mechanical System:*** *Forced warmed and filtered air with zone control for heating and ventilating; oil-fired boilers (in adjacent building); cooling by central freon system integrated with ventilating system.* ***Major Materials:*** *Sand-blasted concrete for columns, sills, spandrel beams; water-struck brick for panels under sills; 1-in. thick, double-layered, sealed window units (¼-in. heatabsorbing glass on outside, ¼-in. plate glass on inside); anodized aluminum window frames; redwood sunshade blades on east, west, and south exposures; bushhammered core walls; quarry tile for court floor and public areas; vinyl-asbestos tile for office areas; suspended acoustic tile.* ***Cost:*** *$2,143,577 for 105,201 sq ft building (not including alterations to boiler room in adjacent building, connecting tunnel, furnishings, or landscaping); $20.38 cost per sq ft.* ***Consultants:*** *LeMessurier Associates, Inc., Structural Engineers; Syska & Hennessy, Inc., Mechanical Engineers; William Lam, Lighting; Michio Ihara, wall mural.* ***Photography:*** *Mark Power of Fred Stone Reprographics.*

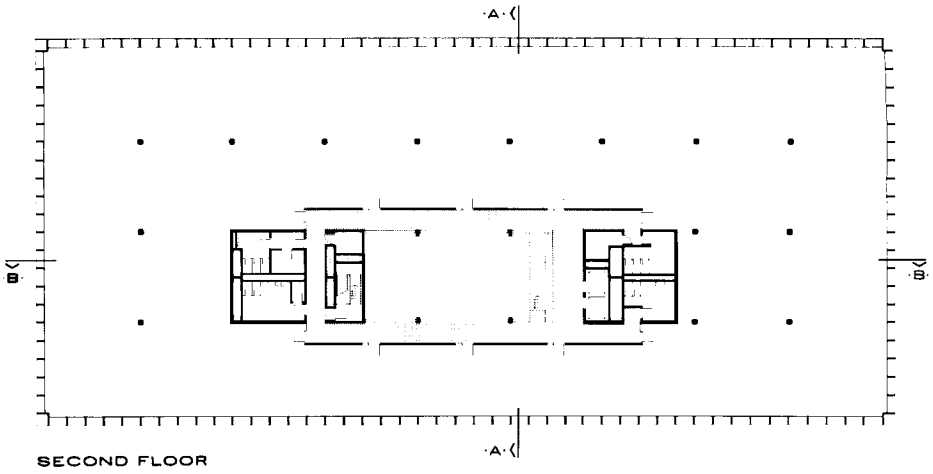
The architects' original design objective —"to provide a central area that would serve as entry space for the building as well as the various tenant areas; help unite the various levels within the building; bring natural light and a rich spatial quality to the interior"—has been handsomely met by their design of a central court that serves in effect as living room for all of the tenants in the building. "We intended to bring an active, lively area to the building where the tenants could meet," say the architects, "particularly since the building is removed from the center of town." And because of severe weather conditions in New England and the desire to have this area directly accessible from the offices, they created an interior, rather than an exterior, space.

Office space surrounding this central well has been arranged in such a way that it can easily be subdivided for tenants requiring only 1,000 sq ft, or 5,000–10,000 sq ft, or entire floors of 25,000–30,000 sq ft. A modular grid of 6 ft in both directions, to which lighting, electrical and mechanical systems, and partitions correspond, make any number of interior arrangements possible—and all within easy range of the corridors around the central well.

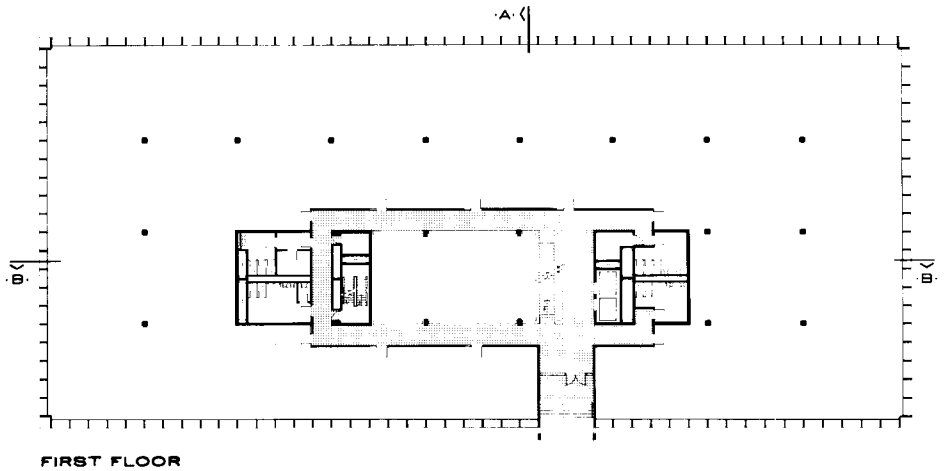
Corridor walls have been painted dark blue to make them recede from the main central space, which is, in contrast, brightly bathed in natural or artificial light. Light serves to define the court spatially and to heighten the effect of several well-integrated embellishments—a pool, fountain, cluster of camelia trees, ground-cover planting, and a wall sculpture. The latter, a three-story high mural on the south wall, is composed of 1-ft-square copper plates, set into the wall at various angles. Viewed from different vantage points along the galleries and stairs, and exposed to the moving rays of the sun, the mural introduces ever-changing patterns that enliven the simple forms of the architecture.



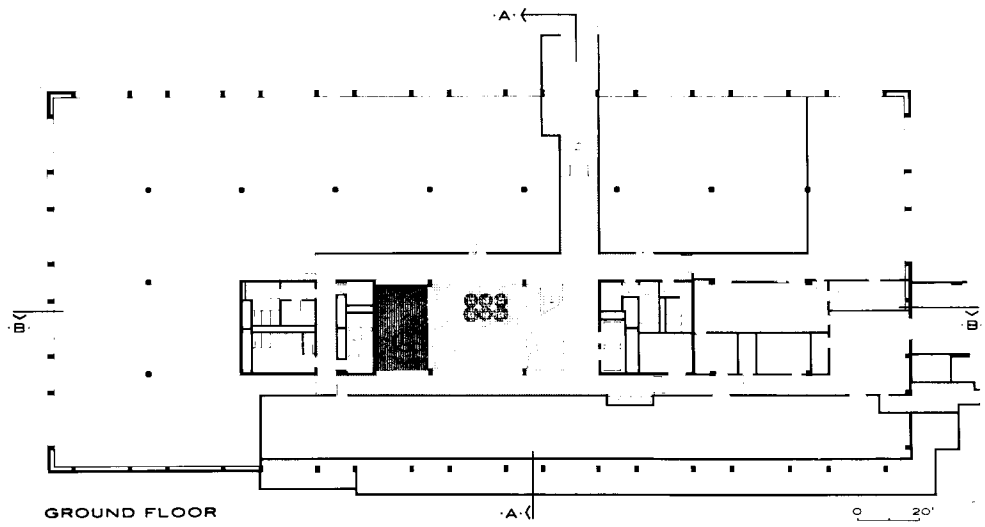
VERTICAL SECTION



SECOND FLOOR

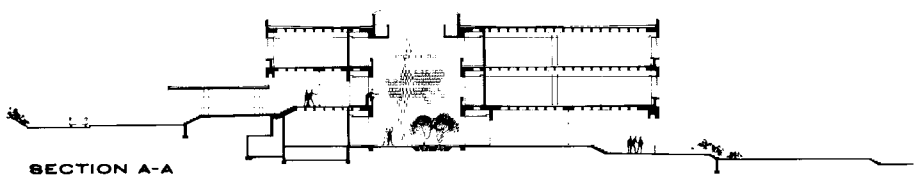


FIRST FLOOR



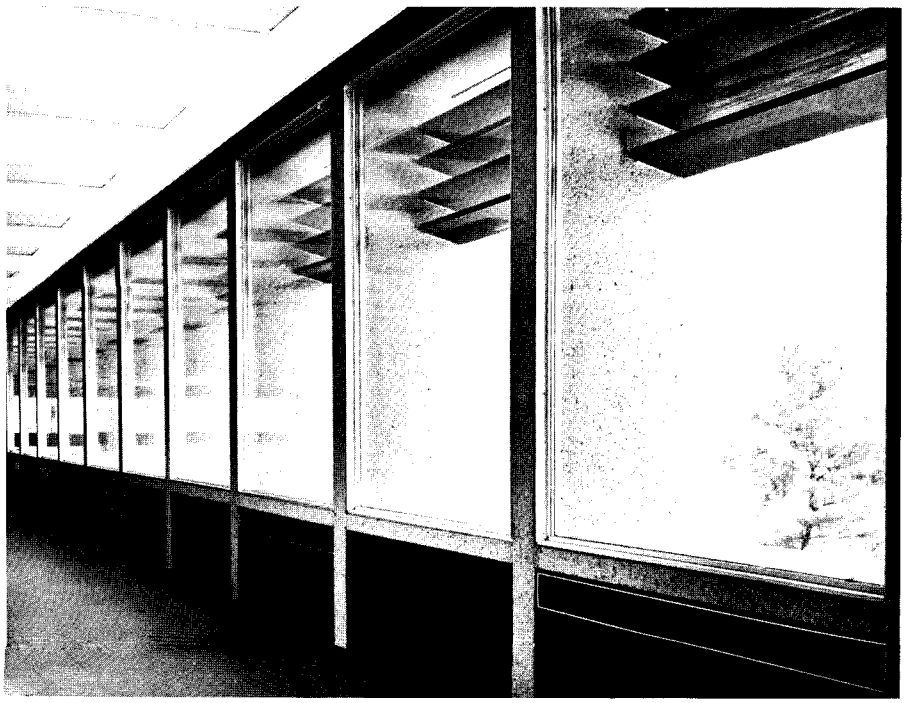
GROUND FLOOR

Exterior columns were precast for speed of construction and control of finish. Placed 6 ft on centers, they serve as load-bearing members and provide the points of contact for interior partitions, which are also based on the 6-ft modular system. Movable metal partitions are used inside tenant areas; 6-in. concrete blocks divide tenant areas from each other; and 8-in. concrete blocks with ¾-in. plaster on both sides separate tenant areas from public areas.



SECTION A-A

SECTION B-B



Natural light is brought into the court through acrylic skylight domes (top); artificial light by continuous cove lighting along corridor walls (right) and incandescent downlights. Office areas (above) have 2' x 4' fluorescent fixtures centered within each module. These also serve to supply and return conditioned air. Cooling and air circulation is supplemented by fan coil units mounted below windows along perimeter walls. Deeply recessed columns and redwood sunshades control natural light.

INTERIORS FOR THE FEDERAL GOVERNMENT

UNITED STATES COURTHOUSE AND FEDERAL OFFICE BUILDING, *Chicago, Illinois.* ***Interior Design by:*** *Chicago Federal Center Architects (a joint venture): Schmidt, Garden & Erikson; Ludwig Mies van der Rohe; C. F. Murphy Associates; A. Epstein & Sons, Inc.* ***Photography, except as noted:*** *Balthazar.*

The Miesian dictum "Less is more" gained a new, practical dimension when the Federal Courts building opened in Chicago recently. First of all, the building was "on the budget," which the Government considers "average for this type of building." (Some buildings are more "average" than others, as the photographs prove.) And secondly, it was completed

months ahead of schedule (in contrast to Washington's notorious new House Office Building). A portion of the Federal Courts building was occupied a full six months prior to the original expected date of completion; three months before the scheduled opening, the entire building was occupied, thereby saving the Government a considerable sum in rent.

All of this is a forceful demonstration of the practicality of the Miesian rule. If one wonders fondly how the old master did it, the answer is—with a young and energetic team. And it is to be hoped that the four architectural firms engaged in this joint venture will be as successful in this practical respect with the other two projected buildings of the Federal Center complex as they have been with this first unit.

The Miesian principle, of course, is essentially an aesthetic one, and the architects adopted it consciously, not only in the detailing of the building but also in the "decision to limit the number of materials used." In the courtrooms, for instance, the visible materials are restricted to the aluminum of the ceiling grid, beige-brown wool of the carpet, and American walnut, which is used for wall surfacing, partitions, and for furniture. Black leather chair upholstery, much of it hidden behind the low walnut partitions, and touches of stainless steel are used sparingly as accents.

The tone of this disciplined palette is consistent throughout the building (except in private offices, which were largely furnished by their occupants)—from the exterior to the lobby, to the employee cafeteria, and to the courtrooms; the latter, being the primary reason for the structure's existence, therefore epitomize the building.

Fifteen two-story courtrooms (18 ft high) are located in the upper part of the building, on floors 17 through 28; provisions have been made for five addi-

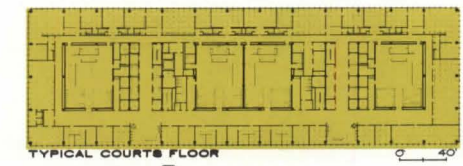
tional two-story courtrooms "without necessitating revision of the structural or mechanical systems" (see section).

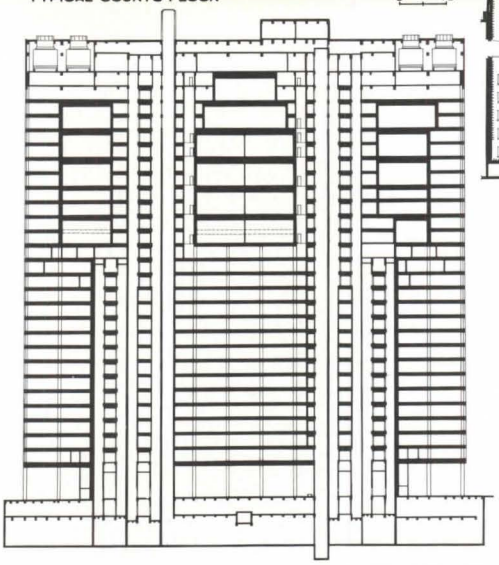
Each courtroom achieves the effect of being a *focal center*, and therefore of possessing a degree of autonomy. This is accomplished by several means: first, by the central location on the plan within the surrounding buffers of corridors and perimeter offices; and second, by the isolation of each room in terms of environmental control and circulation. Each courtroom is individually air conditioned. Since they are centrally located interior rooms, they are entirely free from outdoor sounds, and they are also free of visual distractions since they are windowless. Consequently, all attention is focused inward.

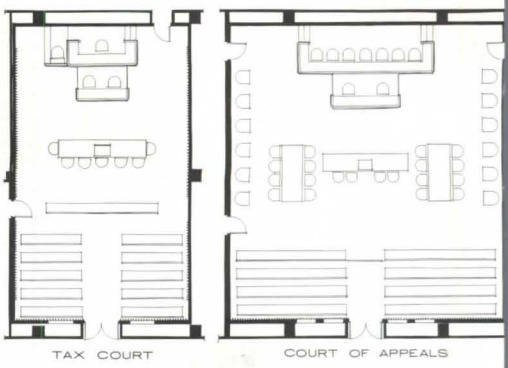
In terms of circulation, the floor plan not only provides each courtroom a central location but also a separate elevator system. There is a further separation of the participants in the courtroom ritual. Judges, for example, use private elevators that connect with the underground garage; so also do prisoners, who are thereby kept separated from the public while in custody. Similarly, judges and jurors use offices and corridors on one side of the structure that are partitioned off from the public corridors and spaces on the other side.

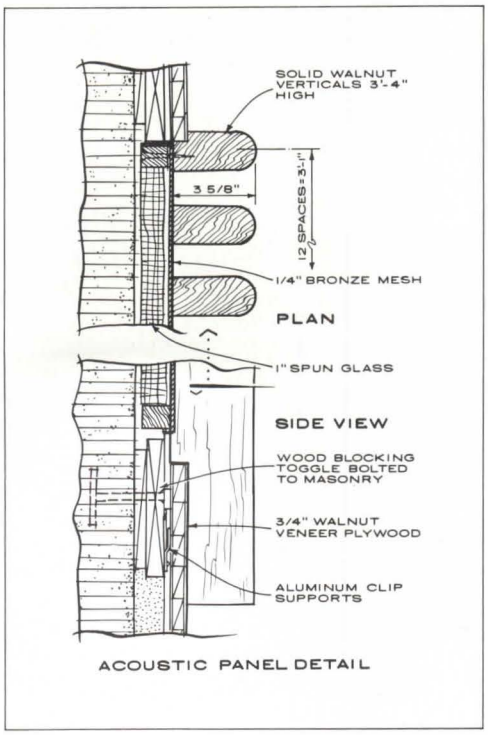
The effect, as the visitor passes through the buffer zone of offices that are ranged like an army of bureaucracy between the outside world and the courtrooms at the center, is as though he were approaching the ominous isolation at the eye of a storm.

Acoustically, the courtrooms are similarly isolated by the elevator banks between them and by double walls. They are individually sound-controlled by means of carpeting, which is spread over the entire floor (including the elevated areas at the bench and jury box), and by means of the ceiling above the open grid—a reflective, hard-plaster surface with a 6-ft perimeter of acoustical tile. In addition, the rear walls of the courtrooms are treated as acoustical baffles,









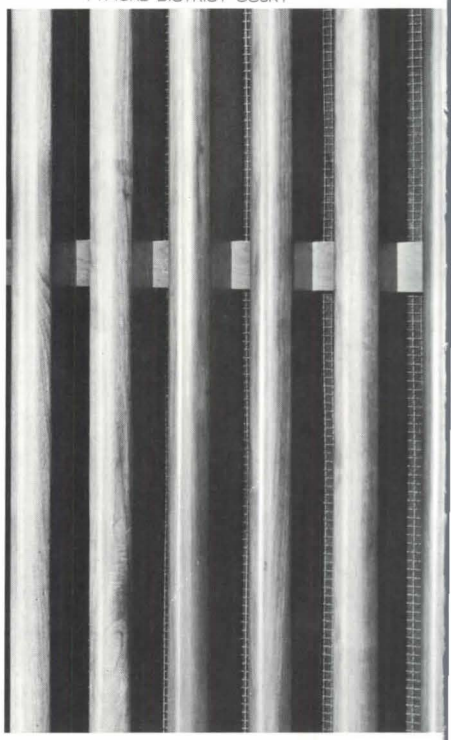


PHOTO: COURTESY, WEYERHAEUSER CO.

PHOTO: COURTESY, WEYERHAEUSER CO.

Acoustical treatment of the walls is provided by walnut baffles over bronze mesh and glass-fiber insulation (right, above). Horizontal panels of this treatment are used on the side walls of the courtrooms (facing page, top); the rear walls are entirely finished in this way (right). Side-wall panels have short baffles of solid walnut (see detail); rear-wall baffles are made up of white-pine cores with walnut veneered sides and half-round nosing. The baffles, incidentally, also provide a variation in the linear decoration of the wall paneling.

PHOTO: HEDRICH-BLESSING

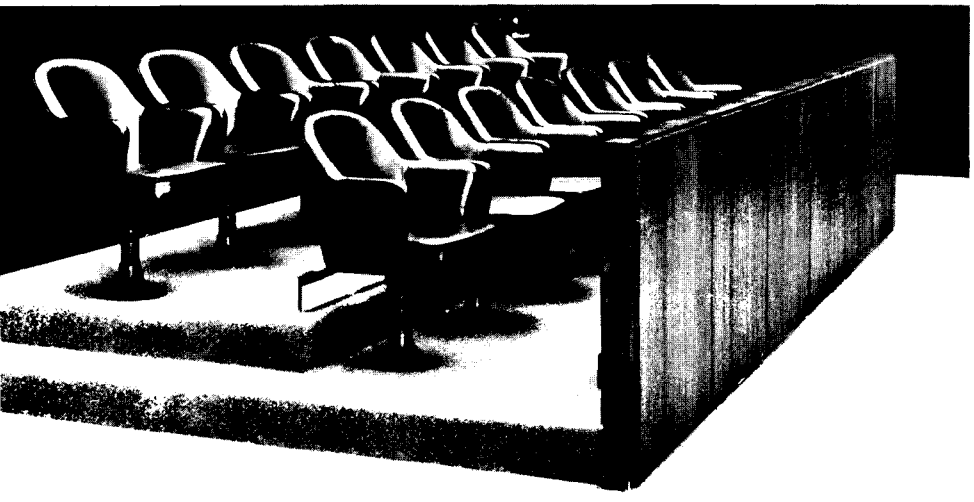


PHOTO: COURTESY, WEYERHAEUSER CO.

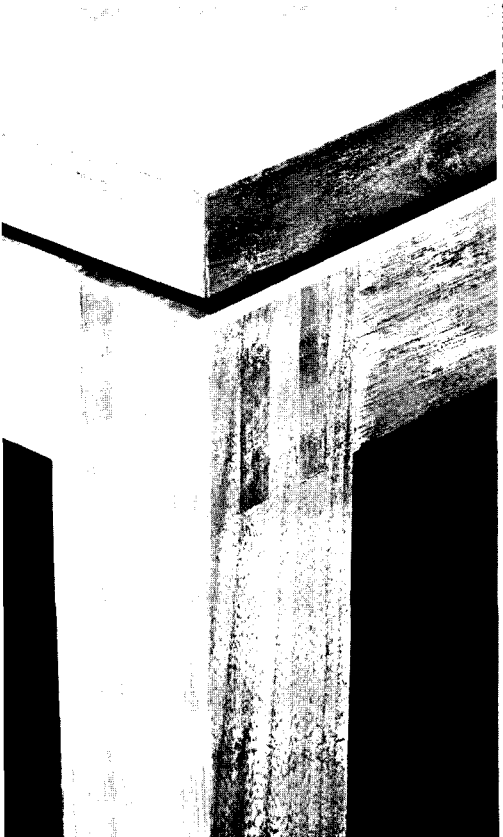
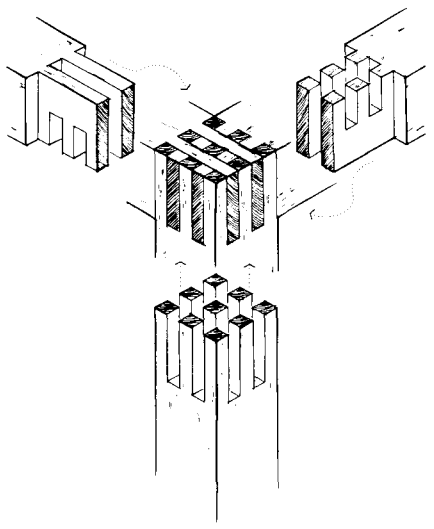


PHOTO: HEDRICH-BLESSING

Cynics observe that the dovetailing of the apron and legs of the attorneys' tables goes in both directions (left), and, finding this a physical impossibility, they tauntingly say that it shows up "a phoney bit of Miesian veneer work." Yet the drawings reveal how the detail was honestly (if uneconomically) achieved with a complicated Chinese puzzle of joinery (below), and the believer rejoices to see the master vindicated.

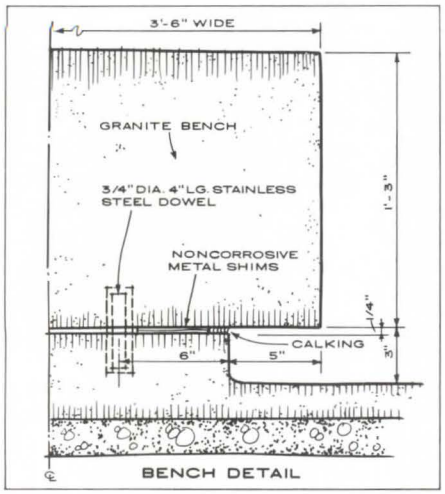


composed of walnut fins over glass-fiber insulation and bronze mesh; smaller panels of this baffle treatment are used on the side walls behind the jury boxes. This restrictive influence on sound also makes its effect on the restrained stylistic atmosphere of the courtrooms.

That atmosphere is awesomely appropriate to the judiciary. When one is alone in the courtrooms, the atmosphere is almost oppressively insistent: the stark discipline of the design is expressionistic, evoking the mechanistic regimentation of legal enforcement, and the awful power of the courts and of government. It is as though one were in the invisible glare of focused scrutiny. This may be the physical statement that, so far, most closely approaches the Orwellian picture of governmental power in 1984.

Everything in the design contributes to this air of all-pervasive control: the expanses of walnut, the uniform carpeting, the continuous luminous ceiling. Each reinforces the image of all-encompassing, ever more powerful, almost automatic control. It is a restrained, perhaps abstinent, discipline, which is exercised with meticulous elegance of the proportions and details. It is a "less" that says more about the potential of the law and of government than we might have wanted to have expressed. Yet, in the service of those agencies, it is patently efficacious. For, when court is in session, the rooms manage to perserve an aura of dignity and respect, even in the face of that often lively American courtroom behavior.

COURTROOMS: ***Walls, doors:*** *plain sliced American walnut paneling/Weyerhaeuser Company/millwork—Pontiac Millwork Company.* ***Floors:*** *carpet throughout/wool/beige-brown/A. & M. Karagheusian Inc.* ***Ceiling:*** *open grille/cast aluminum/hung on extruded aluminum tees, steel bar hangers/architect-designed/Alcoa/by Garcy Lighting; hard-plaster ceiling above.* ***Lighting:*** *fluorescent tubes above grille/Sylvania/fixtures by Garcy Lighting.* ***Acoustical control:*** *on perimeter of plaster ceiling/6-ft width of acoustical tile/Celotex: in walls/walnut baffles/Weyerhaeuser; bronze mesh: glass-fiber insulation/Owens-Illinois.* ***Judges' benches, jury boxes, lecterns:*** *American walnut/Weyerhaeuser/architect-designed/made by Pontiac Millwork Co.* ***Attorneys' tables:*** *American walnut/architect-designed/Hartmann Sanders Co.* ***Chairs:*** *bases/black steel, stainless ball casters, black steel swivel pedestals/Carsons, Inc.: upholstery/black leather throughout/purchased by G.S.A.* ***Spectator benches:*** *molded walnut/American Seating Company.* ***Judges' seals:*** *cast aluminum, painted, surface ground off/architect-designed/Michaels Art Bronze.* ***Aisle barriers, footrests for jurors:*** *stainless-steel tubing/architect-designed/Rippel Architectural Metals, Inc.*



BENCH DETAIL

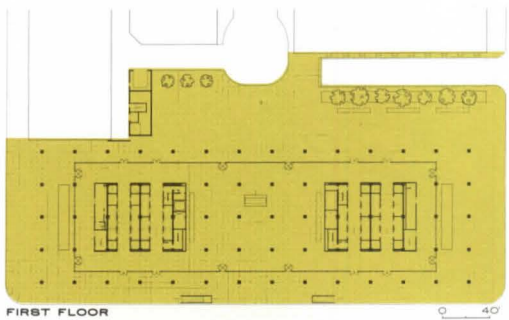
The ground-level lobby of the Federal Courts Building is a glass-enclosed area that serves both as a circulation area and an information center (note desk in right of top photo). Set back from the face of the building mass above, the lobby is visually continuous with the over-all site (plan, right), owing to the consistent use of the same gray granite from curb to curb across the property, through the central hall that the lobby provides. Chicago architects were abuzz recently with this success story of the team of architects being able to persuade the GSA to use the granite in such a way as to contribute not merely to the building itself but also to the entire three-building complex.

Since the core elements at the ends of the plan are also faced in the same granite, the calm, restricted palette of the scheme is consistent with the remainder of the building. Yet, unlike the courtrooms, the lobby is woodless; it is correspondingly chillier.

At each end of this great hall, Government seals executed in black outline on granite base-plates hang on the granite walls of the core. The columns of the four-bay plan bisect both the lobby and the great seals (photo, top).

Columns are faced in velvety, flat-black painted steel—the color of the building exterior. Unlike the distinguished, conservative exterior, however, the lobby interior is on the dowdy side in atmosphere. It is certainly a giant step beyond the tiled, dairy-like facilities of many previous Government buildings, however.

The space is huge—about 116-ft long, bays are 28' square—and provides, according to the architects, "a public space in scale with the magnitude and functional character of the building." Monumental granite benches at each end of the lobby measure approximately 35 ft in length.



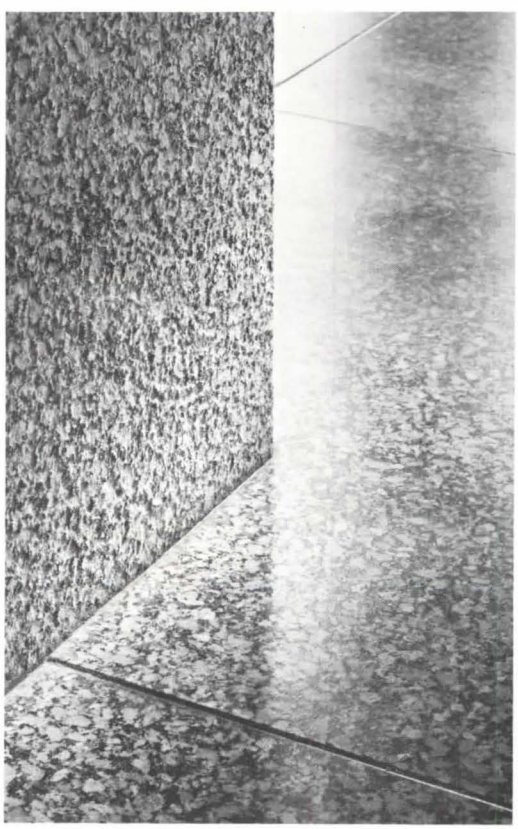
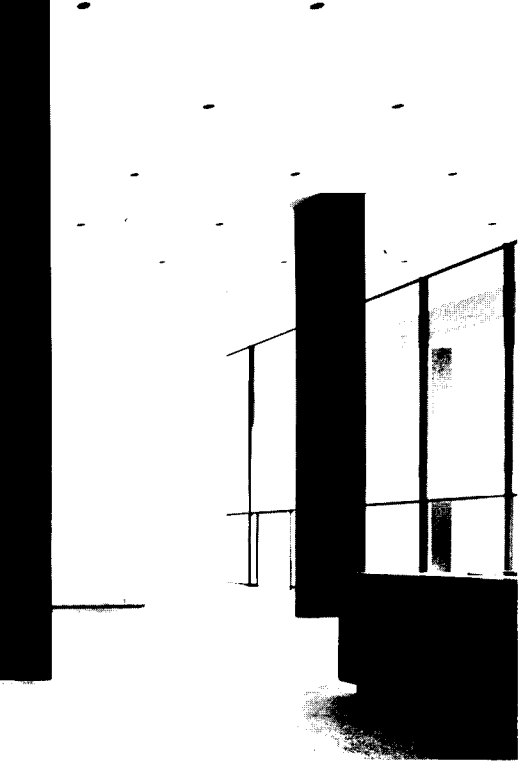
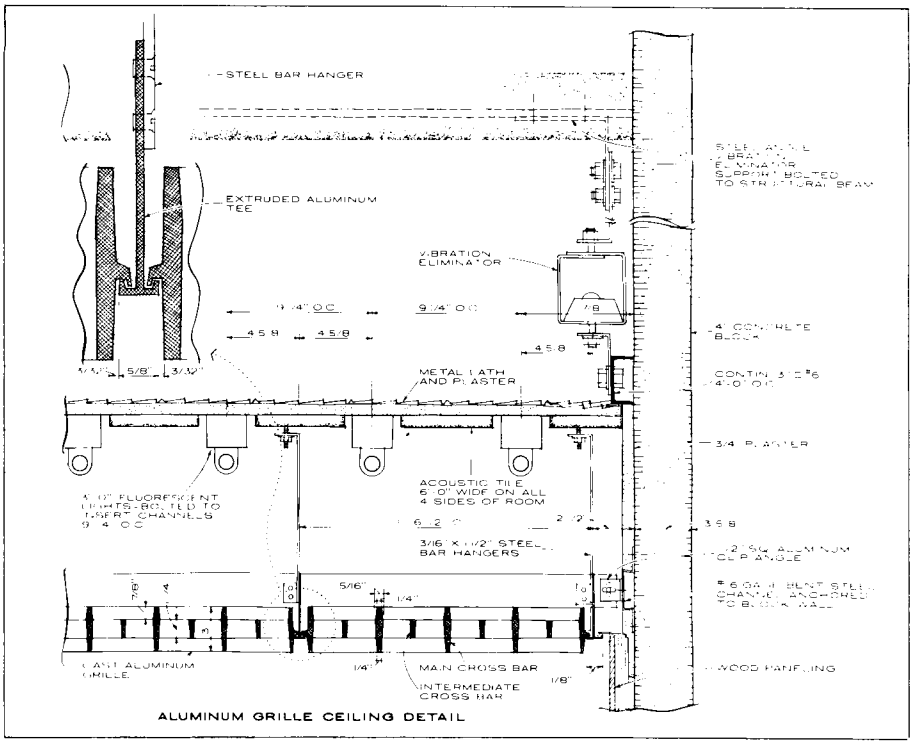


PHOTO: HEDRICH-BLESSING

At the lobby level, gray Rockville granite is used as the predominant material. Chicago architects were recently debating the fact that Miesian theory had been revised to permit the use of the same material on adjoining planes—here for both floors and walls (left). The texture of the granite varies, however, from a flame finish, which is used as the exterior flooring and on the walls of the elevator core (above), to a honed finish, which is used for the interior flooring and for the long granite benches (see detail) at each end of the lobby.





ALUMINUM GRILLE CEILING DETAIL

Both the in the courtrooms and in the lobby between the elevator banks, a cast aluminum open grille system is used as the ceiling (left and detail above). It is handsomely sculptural. The variety of the double grille effect was arrived at to provide a high level of illumination without glare, to produce visual cutoff for the exposed lighting above it, and to satisfy air supply and sound penetration requirements. It is also aesthetically strong, suggesting an army of behind-the-scenes machinery, as in a highly engineered recording studio.

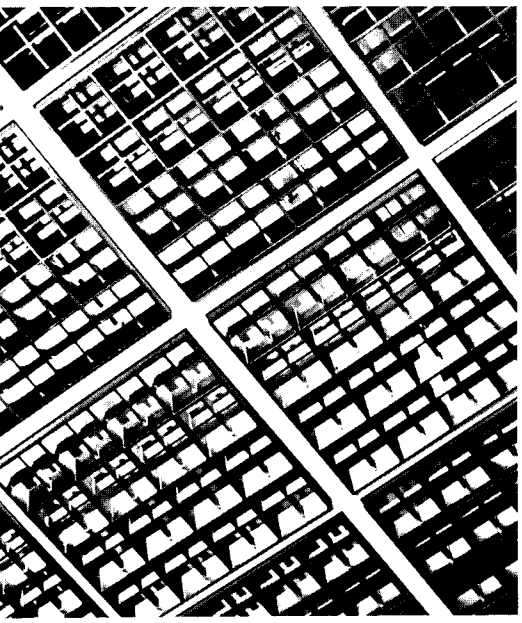
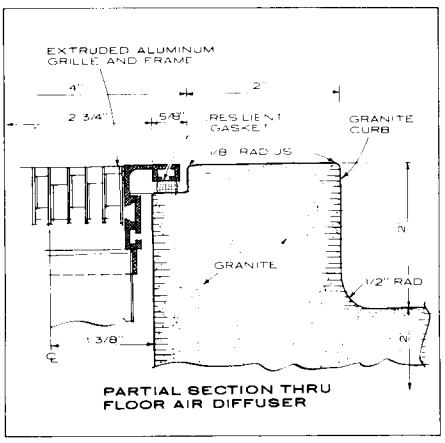


PHOTO: HEDRICH-BLESSING

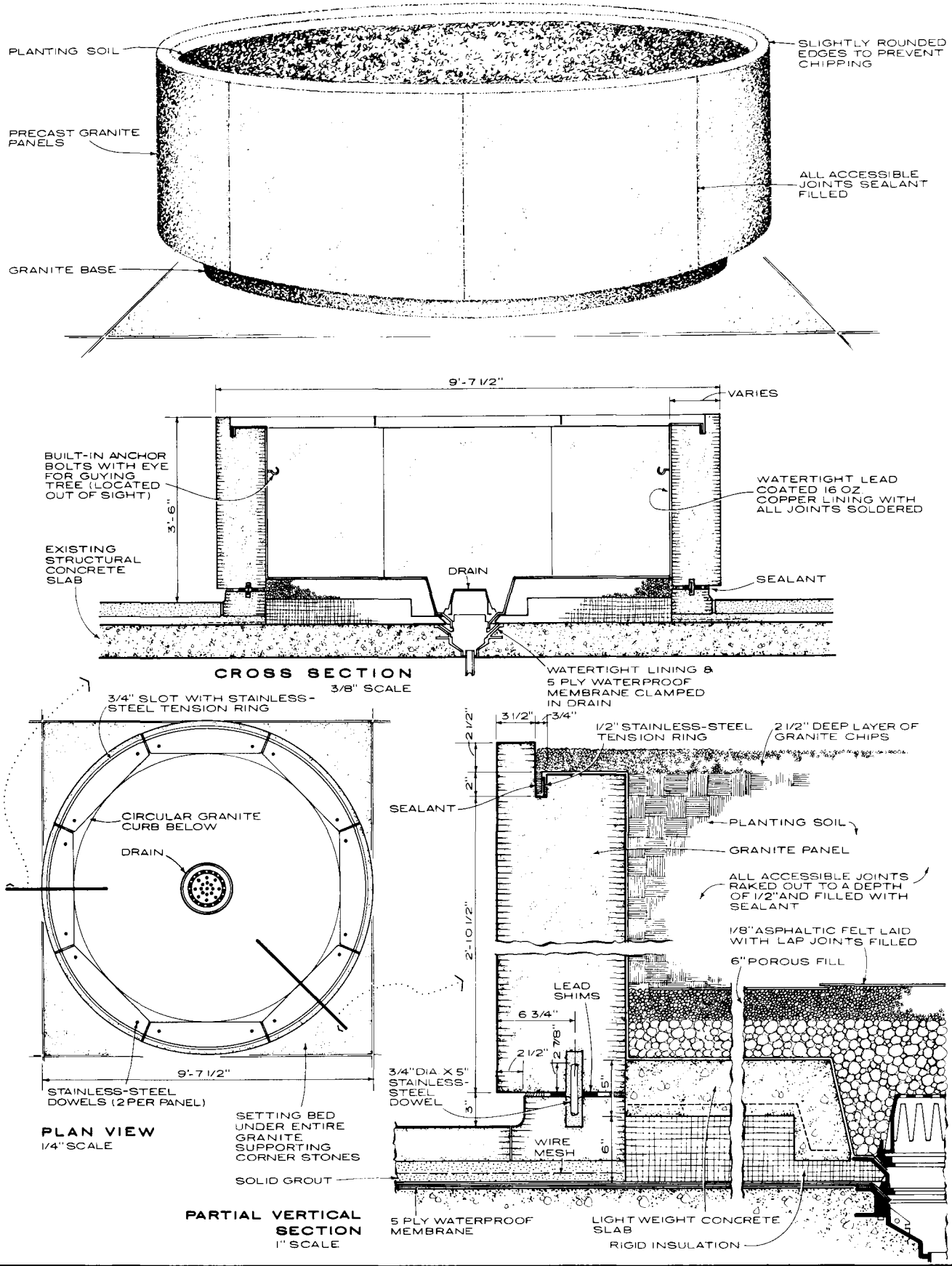
PHOTO: HEDRICH-BLESSING



PARTIAL SECTION THRU FLOOR AIR DIFFUSER

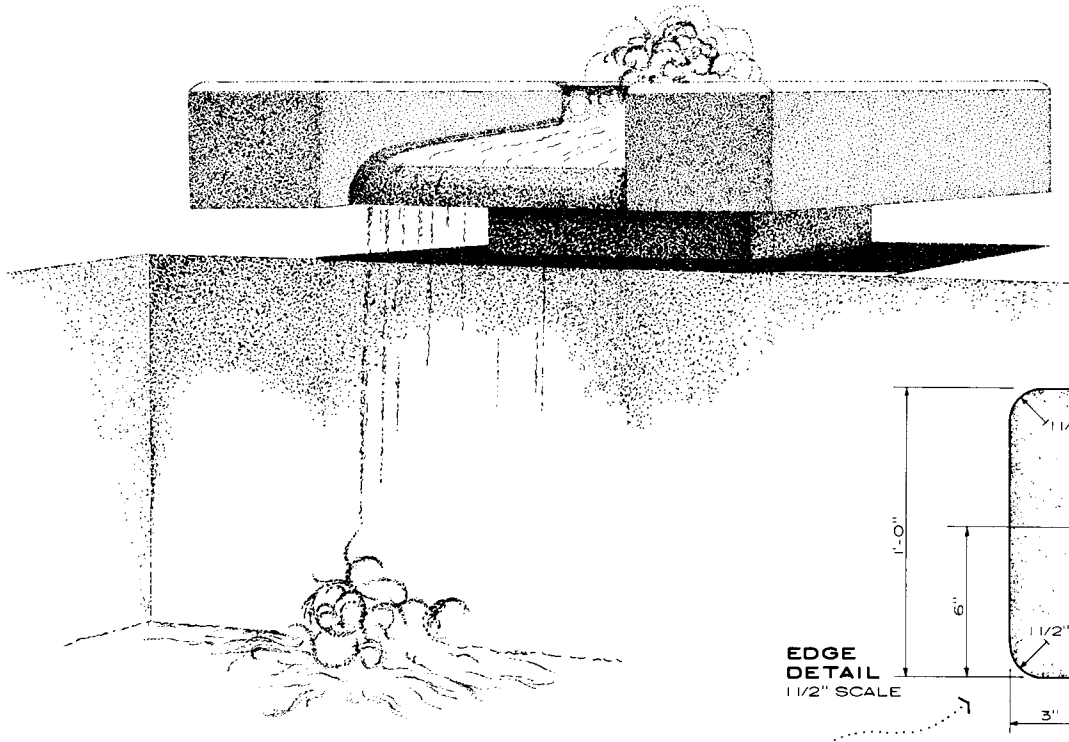
Floor registers at the window wall in the ground-floor lobby (left), are raised up on 2-in. granite curbs with radius corners (detail above) so as to prevent water spilling into the ducts when floors are being cleaned. This not only makes sense functionally, but also is a straightforward aesthetic expression of the mechnical system.

LOBBY: ***Walls, floors:*** *"Rockville" granite/gray with black flecks/large grained/quarried in Minnesota/Delano Granite Industries.* ***Ceiling:*** *plaster painted white.* ***Column facing, framing of glass wall:*** *steel/Bethlehem Steel Co./painted flat black/Detroit Graphite.* ***Glass:*** *1/2-in., clear, polished plate/Pittsburgh Plate Glass Company.* ***Doors, frames:*** *stainless steel/satin finish/Rippel Architectural Metals, Inc.* ***Elevators:*** *satin stainless/Otis Elevator.* ***Revolving Doors:*** *Ecklund Revolving Door Corporation.* ***Floor Registers:*** *aluminum extruded grilles/Vesco Inc.* ***Ash urns:*** *stainless steel/McDonald Products Corporation.* ***Lighting:*** *recessed incandescent downlights/Maurice Kurtzon & Company.*

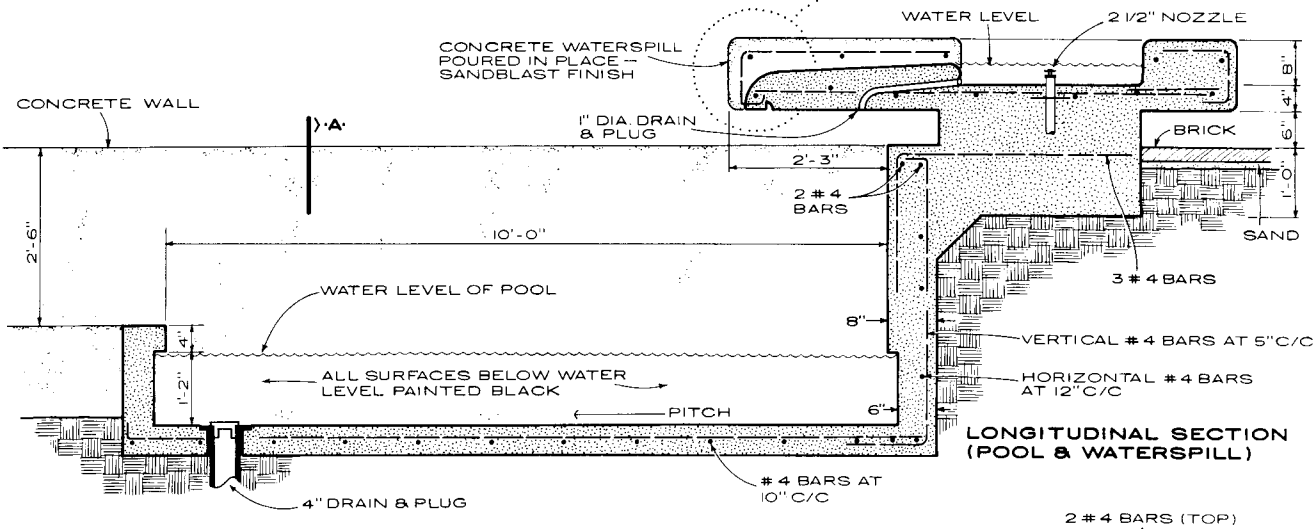


U.S. COURTHOUSE AND FEDERAL OFFICE BUILDING: Chicago, Ill.
SCHMIDT, GARDEN & ERIKSON; LUDWIG MIES VAN DER ROHE; C. F. MURPHY;
A. EPSTEIN & SONS, INC., Architects

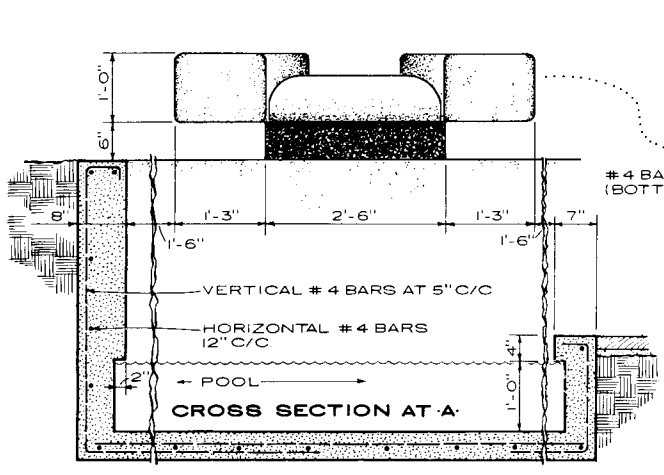
SELECTED DETAIL
TREE POT



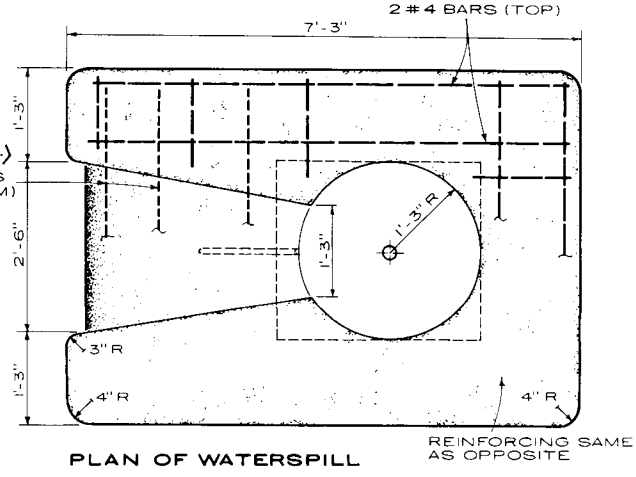
EDGE DETAIL
1 1/2" SCALE



LONGITUDINAL SECTION (POOL & WATERSPILL)



CROSS SECTION AT A



PLAN OF WATERSPILL

REINFORCING SAME AS OPPOSITE

3/8" SCALE TYPICAL

IBM ADVANCED SYSTEMS DEVELOPMENT DIVISION LABORATORY:
Los Gatos, Calif. LAWRENCE HALPRIN, Landscape Architect;
HELLMUTH, OBATA & KASSABAUM, Architects

SELECTED DETAIL
POOL

BRICK-FORMED CONCRETE TOWER

Structural design of new memorial tower having four joined concave sections is reviewed.

Design of Trinity University's 166-ft T. Frank Murchison Memorial Tower, built to stand for hundreds of years, has "the flavor of the worker, of the vernacular, and of native artlessness rather than the sophistication of professionals." Such were the aims and achievements of its architects, O'Neil Ford & Associates, San Antonio.

Structurally, the tower is a brick-formed reinforced-concrete building consisting of four concave sections joined for rigidity by a series of vertical Vierendeel trusses. Horizontal truss members form landings for stairs, observation platform, and bells. Although its horizontal section contributes directly to the strength of the finished tower, its configuration is especially suitable for the application of the 4-in. brick wall as a concrete form. Use of masonry as both form and finish has an additional advantage. Two-material towers have long suffered from disintegration due to expansion differential as the sun's heat shifts from east to west during the day. The resulting marked changes in temperature cause racking and grinding as well as subsequent spalling and/or fracture of horizontal connecting members. Thus by making concrete and brick one homogeneous mass, it has been possible to avoid the separation of structure and veneer that is frequently encountered in tall structures. Since the expansion and contraction of the brick and veneer are almost the same, there is no tendency for the veneer to shear off or to break its ties with the structural framework.

Many tall towers have also suffered from water penetration into masonry joints at their tops where they are not readily accessible for inspection. Serious damage of this kind was avoided by placing a protective "lid" over the tower.

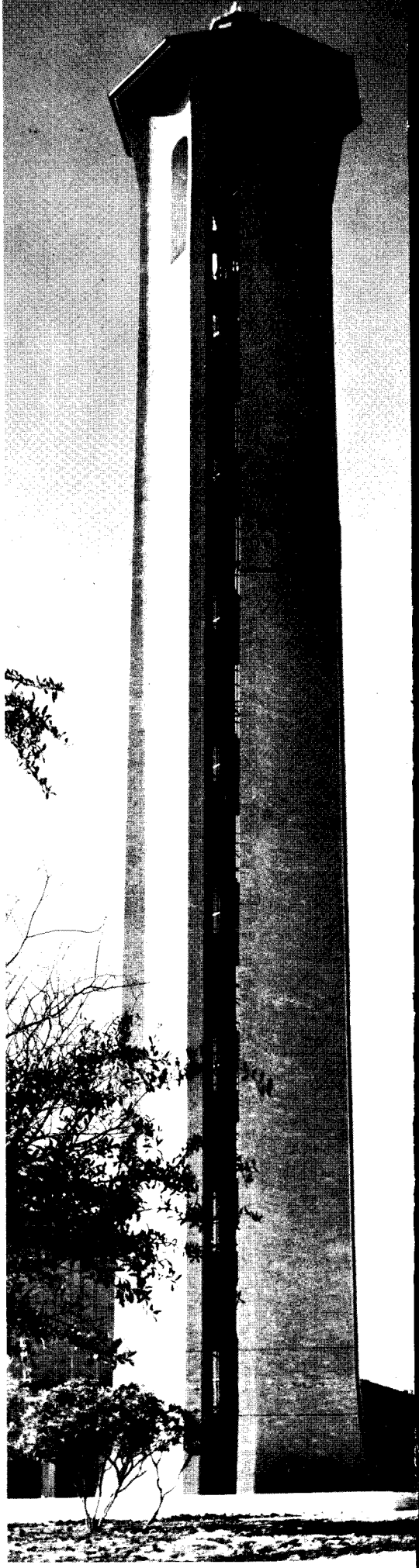
Total weight of the structure is such that a 140 mph wind will exert practically no measurable stresses on the reinforcing. "The reinforcing is there," say the architects, "because the engineers felt that no modern building or tower should be without it. Although the steel does guard against unforeseeable shocks that are highly unlikely, it is more of a luxurious precaution than a necessity."

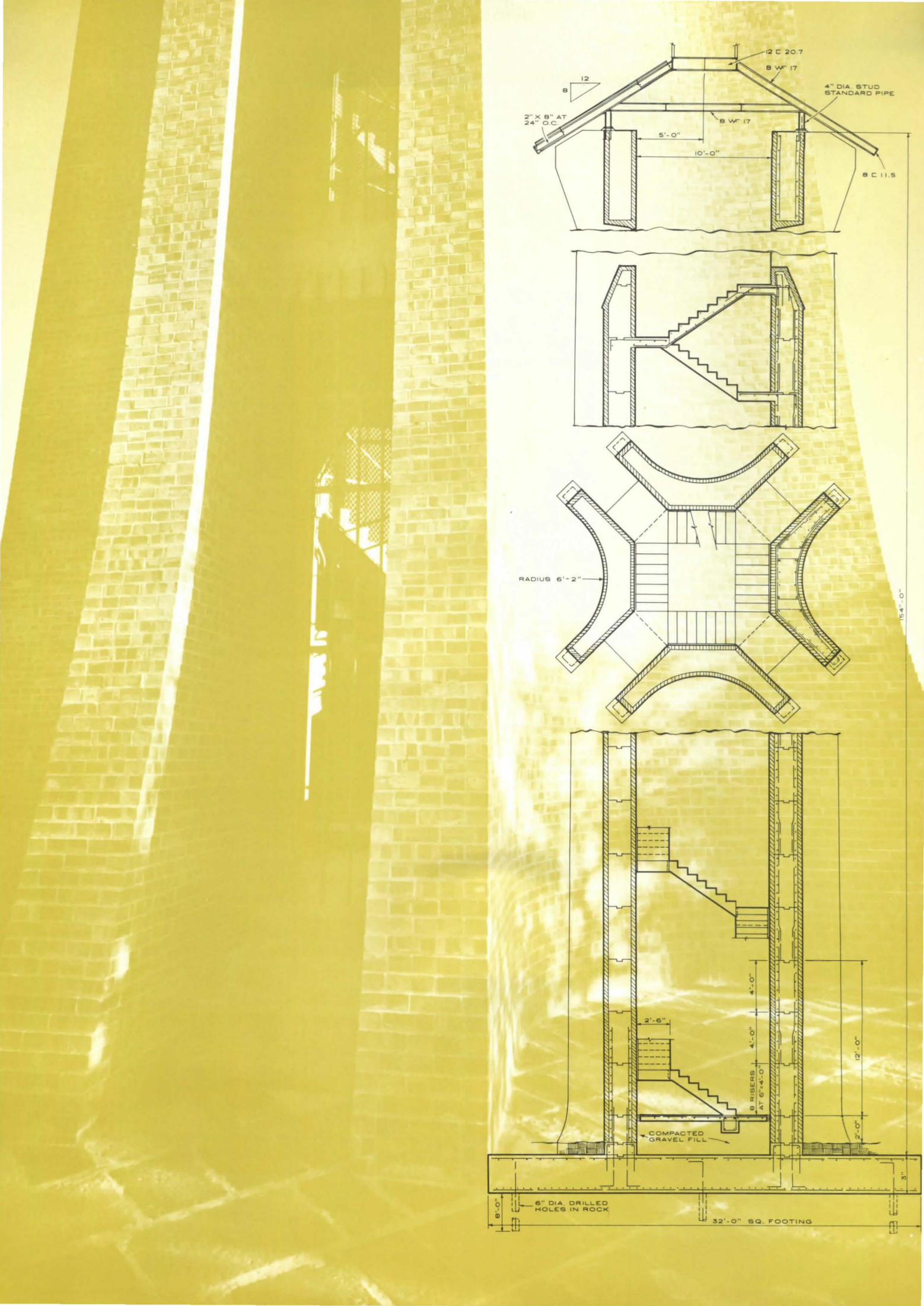
Foundation requirements were greatly simplified by the existence of hard chalk rock located almost at existing grade. The 3-ft slab, 1-ft below plaza level, is doweled to the limestone through numerous 6-in test holes originally drilled in a search for caverns prevalent in the area. One such cavern was found during excavation for an adjacent building. Small fissures, found at the site, were filled with grout.

Construction sequence consisted of laying up a 4-ft section of cavity masonry wall, then filling this void with reinforced concrete. Subsequent 4-ft wall forms and pours to the full tower height complete the process. Two master masons were able to build at a rate of about 2½ ft per day.

Although the original plans called for the tower to be built without the aid of exterior scaffolding, the masons elected to use it. The architects would have preferred, however, to have seen the structure built without conventional forms *or* scaffolding.

Structural engineers were Feigenspan & Pinnell.




12 C 20.7
8 WF 17
12
8
4" DIA. STUD STANDARD PIPE
2" X 8" AT 24" O.C.
8 WF 17
5'-0"
10'-0"
8 C 11.5
RADIUS 6'-2"
15'-4"-0"
4'-0"
2'-6"
4'-0"
8 RISERS AT 6"=4'-0"
12'-0"
2'-0"
COMPACTED GRAVEL FILL
3'
8'-0"
6" DIA. DRILLED HOLES IN ROCK
32'-0" SQ. FOOTING

THE NEW WALL COATINGS

BY JOHN BROOKS

The following discussion will assist the architect in drawing meaningful comparisons between the various classes of new coatings. Author is President, Desco Chemical Company, Inc., Buffalo, N. Y.

As we all know, a technological explosion is underway in our Western civilization. Reverberations from that explosion have been sounding in the architectural arts and sciences, as well as elsewhere. In recent years, for instance, an increasingly large selection of specialty-coating materials has become available. These surface coatings have been developed to meet specific architectural needs. But their number and diversity has created some confusion within the profession.

The confusion arises, first, because the coatings are chemical formulations of different classes and families. Each has its specific attributes. It is sometimes difficult to draw meaningful comparisons between the various classes of coatings.

The architect has special problems in interpreting the data supplied by the manufacturer on life expectancy, performance, maintainability, and the like. Laboratory test results, however precisely derived and accurately stated, cannot always be directly translated to field use. Furthermore, misunderstandings exist as to the desirability of hardness, the difference between hardness and toughness, the difference between elasticity and flexibility, and other characteristics.

The result is that, while architects and other specifying authorities know generally that the new specialty coatings are good, they often find it difficult to answer for themselves such questions as how good, or good for what, or whether good enough for a particular application.

The significant differences that exist among specialty coatings makes the specifier's job complex, but it ultimately works to the architect's advantage. He can select coatings with just the right combination of attributes for his particular requirements. Armed with realistic data on the characteristics of the various coating types, he can make intelligent selections that will fulfill both the aesthetic and the functional requirements of his design in the once-problematical area of interior and exterior surfaces.

No Perfect Coating

Ideally, there should be a single coating material that would be easy to apply on vertical, near-vertical, and horizontal surfaces; infinitely flexible in color and texture possibilities; infinitely resistant to either interior or exterior environmental factors; and infinitely tough, durable, maintenance-free, fireproof, and inexpensive. There is no such single material, of course, or we would all be making and using it—and many chemists would find their occupation gone. All modern coating materials possess at least one of these valuable attributes to at least an acceptable degree; some possess several; a few have most; but none has them all.

The two broad classes of specialty coatings are the two divisions of the chemical technology: inorganic and organic. Inorganic coatings can be grouped into two general categories, cementitious and noncementitious, with the latter largely replacing the former in most recent applications. Organic coatings likewise fall into two general categories: thermosetting resins, such as polyesters and epoxies; and both rigid and elastic thermoplastics.

Either class can be employed in either interior or exterior applications. Interior applications should generally be able to withstand physical abuse, continual cleaning, and such environmental factors as the room may present (such as corrosive chemical fumes). Exterior applications must sometimes be able to "breathe" (permit the transpiration of water vapor to the outside air), must sometimes be an impervious waterproof film, and should be able to stand up under atmospheric and climatic conditions.

Functional Qualities

Functional attributes of especial interest to the architect are toughness, surface texture (which affects maintenance), adhesion, and durability. Toughness is a more valuable characteristic than hardness: a surface should be hard enough to withstand impact, but no harder than the backing material over which it is applied. Otherwise, it may shatter on impact. Architects frequently judge coating samples on the basis of hardness, without considering that this may involve brittleness—and brittleness is never desirable. In weighing the question of toughness versus hardness, it is well to remember that a tough rubber tire takes thousands of miles of road wear, while the hard-steel wheel-rims would be badly damaged after only a mile.

Surface texturing may be aesthetically desirable, but it usually involves a loss of maintainability. A glossy surface is easy to keep clean. Dirt generally stays on the surface, and in some cases will not even adhere: a child's dirty, sweaty hand, for example, will hardly leave a mark on a glazed surface. And such dirt as does adhere can generally be wiped right off.

The ability to withstand environmental abuse—whether the fading caused by sunlight or the surface destruction of corrosive chemical fumes—is an attribute that may be significant; it is always an attribute inherent in the chemical formulation itself. Additionally, some installations may require a coating with the ability to bridge minor settlement cracks, to adhere to a variety of backing materials, to take a broad spectrum of colors, to hold texturing aggregates, or to form an impenetrable surface on which bacteria or fungi cannot grow. All these factors, functional or aesthetic, affect the architect's decision as to choice of coating materials, and his weighing of the various factors dictates the trade-offs which must be made in the specification.

Interior Finishes

Cold-glazed inorganic finishes are among the oldest of specialty coatings. The original cementitious coatings were introduced into North America in 1933; in recent years, these formulations have mostly given way to vastly improved noncementitious formulations.

Inorganic coatings are often specified for interior use because they are fireproof, easily maintained, and totally unaffected by oxidation or moisture. They possess the same coefficient of expansion as masonry backing materials, and so are not susceptible to shearing due to temperature changes. They retain their appearance through a long, useful life.

The statement that inorganic coatings are durable, long-lived, resistant to weather and oxidation damage, incombustible, and essentially maintenance-free, must be understood with a proviso. No specialty coatings marketed today are completely inorganic; all are made up with organic resins added to increase tensile strength, impact resistance, adhesion characteristics, and the like. If resin content is held to about 10 per cent, the essential characteristics of the inorganic material predominate for the life

of the coating. Organic content substantially greater than 10 per cent reduces the effectiveness of the inorganic components.

In interior applications, inorganic coatings are generally glazed: that is, a clear, nonyellowing glazing coat is applied over the final color coat. This procedure has distinct advantages. If a naturally glossy (unglazed) coating is scratched, the surface is marred and the scratch shows prominently. Scratching the clear glaze, on the other hand, does not show; a scratch must penetrate the glaze to and through the color coat in order to show.

The high gloss resulting after application of the glazing coat virtually eliminates the possibility of stain penetration, thus minimizing maintenance. To eliminate glare, these coatings can be cured to a slightly irregular texture, which diffuses incident light.

Textures

Variations in surface texture can be achieved through the addition of aggregates. Inorganic formulations can hold aggregates from the very fine to the very coarse. Aggregates as large as 1¼ in. in diameter, including marble chips and stone, are used to provide a variety of interesting and decorative surface-texture effects. Exposed-aggregate coatings are effective for both interior and exterior surfaces, can be left either in their natural state or glazed to bring out aggregate colors. Sound-absorbent aggregates may also be used for acoustically treating ceilings.

The thermosetting resins (polyesters and epoxies) are most useful in industrial applications, to withstand corrosive environments. The films are hard and possess excellent chemical resistance. The coefficient of expansion of these organic materials is substantially higher than that of masonry backings; as a result, they are susceptible to shear stresses due to temperature changes, which may result in adhesion failures. In thick films, thermosetting resins are likely to be flammable.

The rigid thermoplastic formulations have largely become popular because of their decorative qualities and relatively low cost. The rigid thermoplastics are not particularly elastic; they are quite flexible, however (that is, they do not stretch but they do bend). A wide variety of textures and colors are available in formulations of this class; perhaps the best-known of these are the vinyls.

Solution vinyl formulations are made to be elastic by the addition of plasticizers. The gradual migration of the plasticizer with time, especially when subjected to ultraviolet exposure, reduces the elasticity of the film. Vinyl films are highly resistant to chemical damage, do not support fungus growth, adhere well over masonry backings, and are decorative.

The polyurethanes, besides offering a wide selection of color effects—varying from subtle pastels to bold mass tones—are noteworthy for their abrasion resistance. Polyurethanes have many uses; one of the most salient is in combination with fine silica aggregates. In this type of application, pigmented polyurethane resins and fine silica aggregates are blended within a special spray gun, to form a textured coating with excellent filling and hiding properties.

Exterior Coatings

In exterior use, the silica-polyurethane formulation has a special advantage in that its permeability rating can be controlled to three perms or better, permitting vapor transmission. Such a breathing coating is needed if a vapor barrier is not included in the basic wall construction. The breathing coating allows water vapor to pass freely, where otherwise it might build up, condense behind the coating, perhaps freeze, and certainly cause film failure. While permitting vapor to pass to the outside air, the breathing coatings restrict the penetration of exterior water.

Solution vinyl formulations are sometimes effectively employed on exterior surfaces, where their ability to bridge minor settlement cracks, to withstand chemical and weather damage, and to adhere to masonry backings are useful attributes. It is important to remember, however, that the ultraviolet component of sunlight hastens the migration of the plasticizer and the possible embrittlement of the film.

Inorganic coatings can be employed in exterior applications as readily as in interiors. A requirement for a breathing coating, however, requires the omission of the final glaze (since the glaze, of course, is impervious to moisture or water vapor). Unglazed inorganic surface coatings have actually proved to lengthen the useful life of concrete exteriors.

The elastomers, which are also thermoplastic resins, have a natural elasticity that makes them especially useful for problem surfaces. They have made possible the effective decoration and protection of the unusual exterior surfaces that characterize contemporary architecture: surfaces that are neither horizontal nor vertical, free-form curves and conic sections, pinnacles, ovoids, and the like.

Synthetic Rubbers

Among commonly used elastomers are the synthetic rubbers—neoprene and hypalon. The characteristics of neoprene-hypalon systems are too well known to require much repetition: excellent resistance to sunlight and heat, ozone, oxidation aging, abrasion, and oil and chemical damage; excellent adhesion to concrete, metals, and wood; usefulness over a range of temperatures from −60 F to +175 F, and nonflammability (both are self-extinguishing materials). Neoprene and hypalon are tougher and more resilient than natural rubber, and they possess valuable attributes that the natural material does not.

Neoprene and hypalon are usually used together; neoprene forming a tough, elastic foundation and hypalon providing a wide variety of light and dark hues as a finish. A neoprene-hypalon coating is a completely waterproof, seamless, weather barrier. Weather and fade tests indicate that such coatings will have a long life span. The coatings cure to a dense surface that is impervious to detergents or cleaning materials and is easy to maintain.

Neoprene-hypalon formulations can also be employed in conjunction with aggregates and reinforcing fabric to form an excellent waterproof walking deck.

The whole broad array of specialty coatings, most of which have evolved in the last 10 years, exists for a reason. They have been summoned into being by the requirements of our contemporary architecture. Since all the possible attributes architects require cannot be embodied in a single formulation, the chemical technology has produced families of materials, each of which has its specific advantages.

Architects cannot be expected to keep all the various coating characteristics at their fingertips, any more than they keep all the characteristics of all the special structural steels at their fingertips. But it is important that they realize that the significant differences in properties and characteristics do exist.

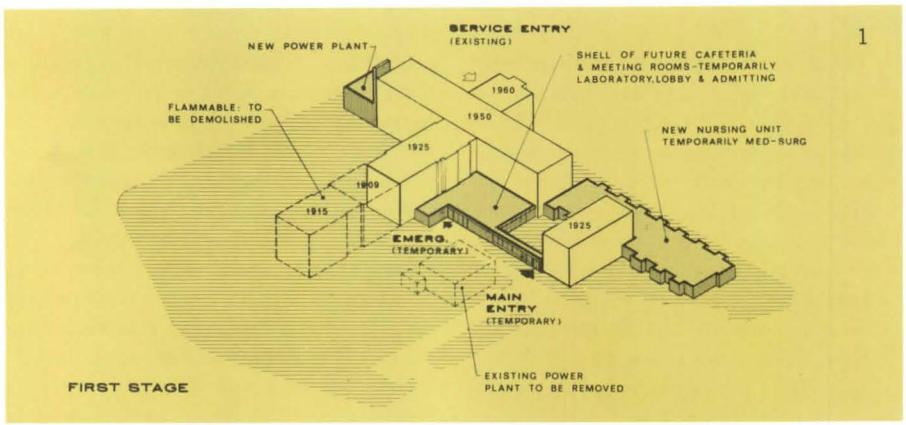
Choice

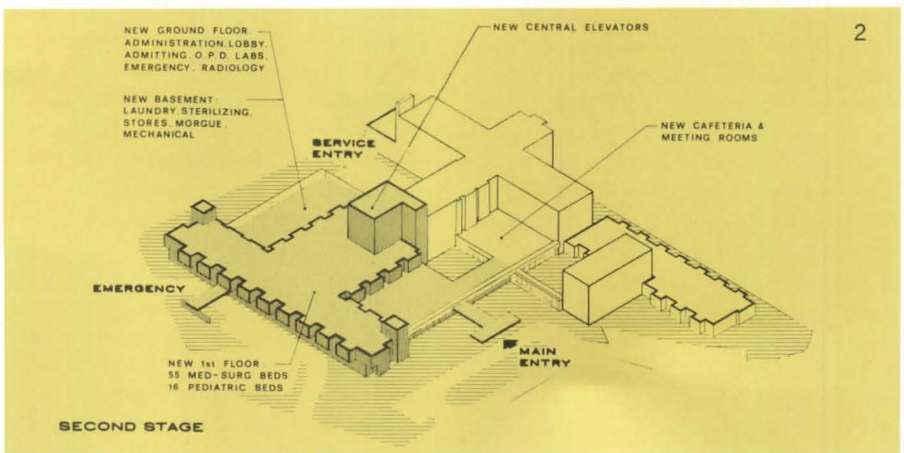
As always, the ultimate choice lies with the architect. He evolves his specifications in terms of his functional and aesthetic requirements—as answers to such questions as these:

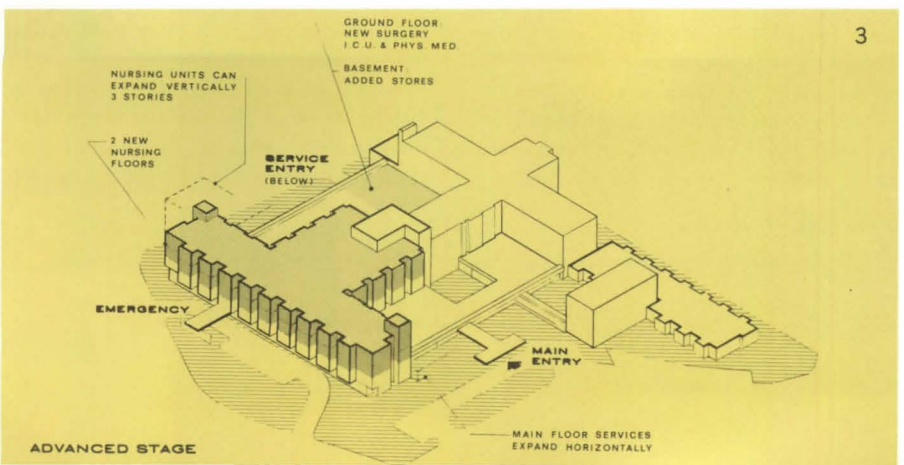
Is the surface in question to be an interior or exterior? If interior: What are the desirable aesthetic effects? What physical, chemical, or mechanical abuse is likely? Must the surface be fireproof to protect the occupants? What are probable maintenance factors; how often will the surface have to be cleaned? Must the surface remain unbroken even if the

Continued on page 263

SINGLE-DUCT AIR CONDITIONING FOR RECONSTITUTED AND EXPANDED HOSPITAL







A typical small-town hospital has found that a need for rehabilitation and additional beds has given it the opportunity for a fundamental reconstitution. Existing structures that are salvageable will be incorporated into a new, medically and economically efficient plant with a capacity for growth. Meshed into the architectural planning are developments in hospital air conditioning that, among other refinements, achieve the clean, low-bacteria-level environment of a 100-percent fresh-air system at reasonable cost.

The Griffin Hospital, in Derby, Connecticut, serves the growing Lower Naugatuck Valley area. Its medical-surgical beds are presently overcrowded and its physical plant is, to a considerable extent, not only inadequate but also obsolete. During its growth over the past 56 years, nursing units, administrative, supporting, and medical facilities have become scattered and intermixed, making the traffic pattern chaotic, hampering the physicians' work, and resulting in overly costly operation.

Being fully aware of its limitations, Griffin's administrators, with community participation, made a two-year study of the hospital's problems and the needs of the area. As a result, a broadly conceived program of service goals was already prepared when Isadore and Zachary Rosenfield, New York architects and hospital consultants, were selected.

The architects' primary assignment was a master plan for the hospital's future development as far as the limited 3.6-acre site and other conditions would permit. Consulting all levels of the hospital hierarchy, the Rosenfields reanalyzed the proposed program, studied departmental needs, the condition of the plant, and the hospital's external environment. Griffin already had a history of adding wings, and it was clear that a thorough replanning was as essential to its future as the required expansion.

The following were the immediate

objectives on the part of the planners:

(1) To increase the number of beds from 186 (77 of which were "not acceptable" by state standards) to about 250.

(2) To reassemble the scattered and inadequate medical facilities in logical contiguity to each other and make them equally accessible to in-patients and out-patients.

(3) To similarly reassemble the inadequate supporting services into a logical sequence for supply, processing, sterilizing, repair, and delivery to the point of use.

(4) To remove or fireproof the flammable buildings.

(5) To keep the hospital fully in operation during construction, not depriving the community of any existing services or beds, or the hospital of income. (Any reduction of income or increase in operating cost must be considered an addition to the real cost of construction).

Solution

To clear a site for the new work, the combustible buildings and the run-down boiler plant had to be removed, and their contents—laboratories, parts of administration, X-ray, emergency, the boilers, and 48 beds—had to be relocated. A structure that will later be the cafeteria will temporarily house laboratories and administration; emergency will have a temporary structure; a new power plant will be built; and a new one-story nursing unit will house the 48 beds **(1)**.

In the space cleared, the main new structure will be erected: It will have a two-story horizontal base with all supporting services on the lower floor, administration and all medical services on the main entry floor. Mounted above will be the new nursing units. A new central elevator bank will serve new and existing nursing units **(2, 3)**.

The new main floor is zoned into public and medical activity areas by a double spine of public and staff corridors, flanking the two sides of the central elevator bank. Access from the corridors to the elevators is via separate public and staff lobbies **(4)**.

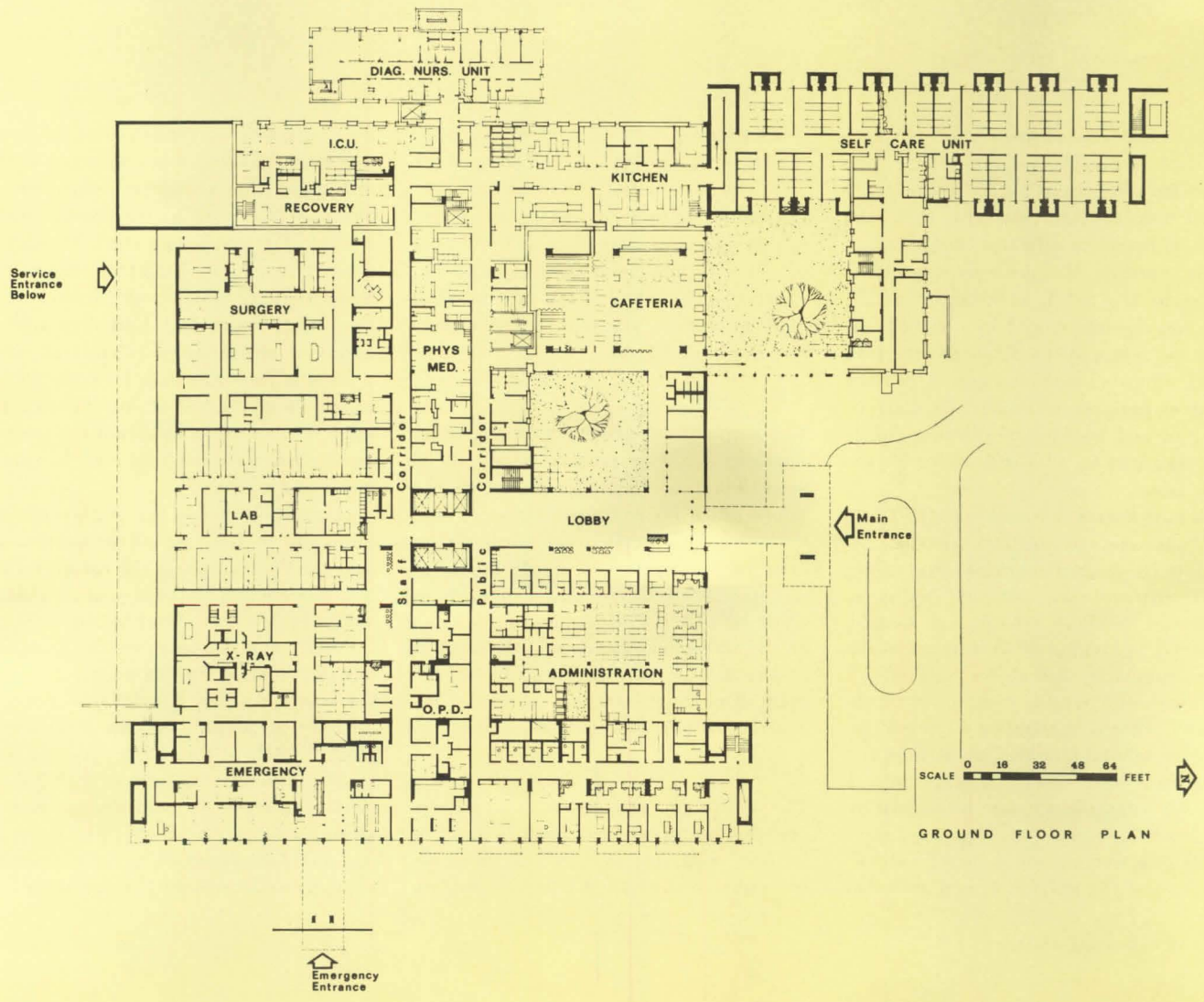
Planning for Improved Medical Practice

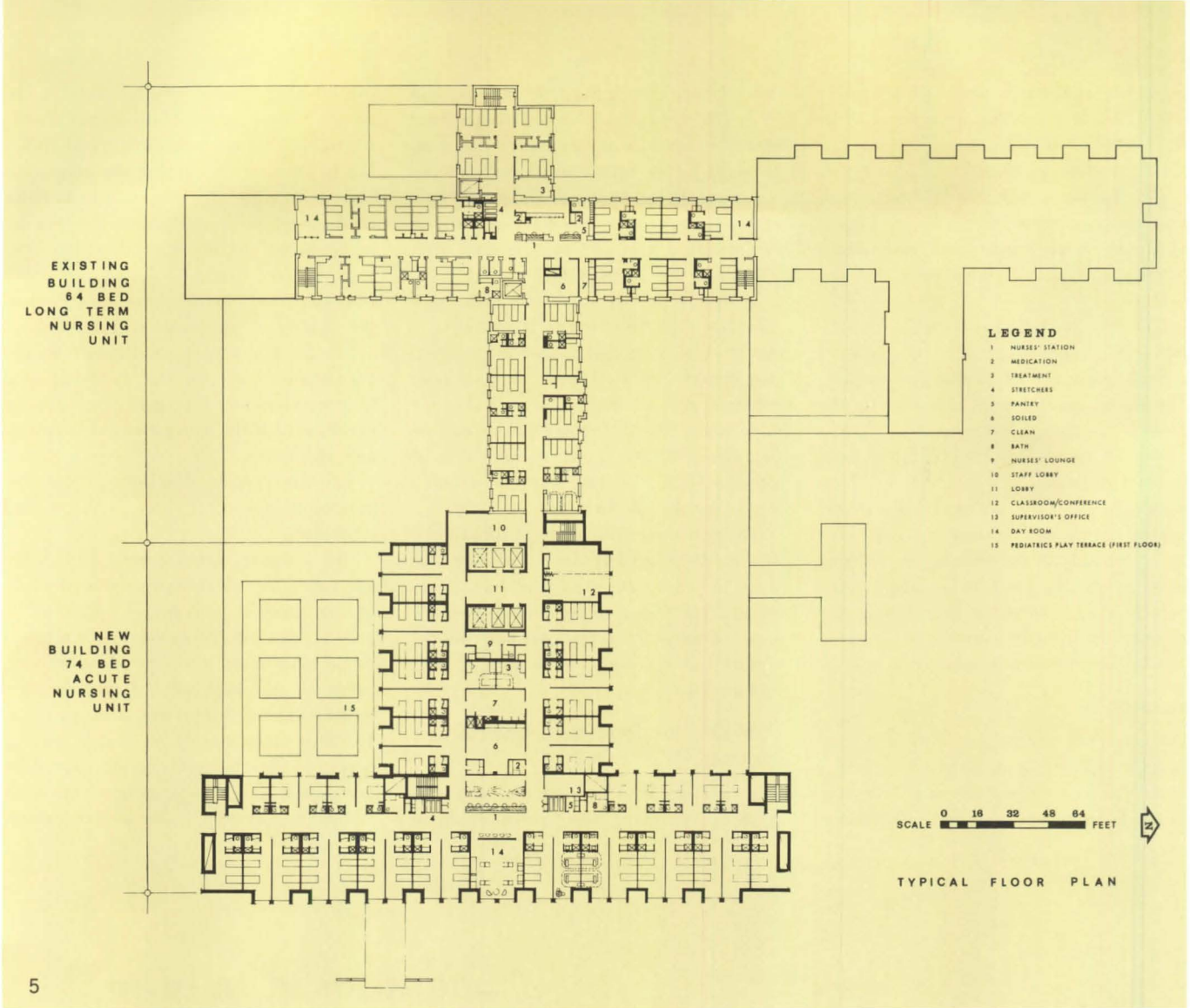
The medical facilities, off the staff corridor on the main floor, are grouped in overlapping chains of relationship to assist in the practice of medicine. This is a notable demonstration of current thinking in hospital design that the diagnostic and therapeutic facilities must be in close relationship to properly serve the increasingly "team" nature of medical practice. It is, in fact, recognized that physically contiguous relationships can contribute to the quality of the medicine practiced.

(1) Emergency is contiguous to the out-patients' suite, so that, routinely, and in a catastrophe, emergency service can overflow into the out-patient department and vice versa.

(2) Emergency and out-patient departments are contiguous to X-ray and laboratories.

(3) Surgery, laboratories, and X-ray are not only advantageously contiguous to one another for ease of consultation, but they can also be conveniently reached by patients from the upper-floor nursing units via the staff side of the elevators leading directly into the staff corridor. The only members of the public having reason to use the staff corridor would be private out-patients who enter via the main lobby for services such as laboratory,





5

X-ray, and physical medicine.

(4) A desirable relationship is provided between surgery and recovery, between recovery and intensive care, and between intensive care and emergency.

(5) Existing diagnostic nursing unit is served by the public corridor for admission and discharge, and by the staff corridor for access to the diagnostic services.

(6) Physical medicine can be reached easily by patients, who will come down by elevator, and by doctors' private patients and out-patients, who will arrive via the main lobby.

Administration likewise gets tied into the "pancake" of medical functions. It needs to be situated near emergency, since many patients are admitted there on weekends. Medical records are needed. Cafeteria is connected to administration to accommodate staff visitor feeding.

Though the Griffin project starts out with an existing hospital on a limited site, all these related facilities, out-patient and in-patient, have been brought into a logically contiguous relationship—all on one level.

The new nursing units are "T-shaped" and are actually pairs of 37-bed units that share common nursing services bracketed between two corridors in the stem of the "T." The nursing stations are at the crossing and face a single corridor. Advantages of this type of unit are: compact grouping of services and good control. The old nursing units, also "T's," are attached stem to stem to the new at the central elevator bank **(5, 2)**.

Expansion

The hospital's components can expand independently: New nursing units can be stacked vertically up to six stories. Blanks are provided for additional elevators, and there are no rooftop mechanical equipment penthouses to relocate. In this manner, the 250 beds planned can grow to about 600. Each of the supporting services on the lowest floor and each of the medical and administrative departments on the main floor is designed to expand horizontally without internal disruption.

Environmental Control

The year-round, 100-per-cent fresh-air, air-conditioning system has been tailored to hospital needs. It is designed to contribute to patient recuperation and to eliminate the possibility of recirculating airborne infection. To keep costs reasonable and also meet the architects' objection to obtrusive ductwork or mechanical units, a single-duct, zone-controlled system was evolved, based on a high temperature differential, high-velocity air movement to keep ducts small, high humidity, and recovery of energy from exhaust air **(6)**.

Even in New England, air conditioning had to be considered if only because the large interior areas, required for medical and operational efficiency, must be cooled much of the year.

In exterior rooms, the supply plenum built into the precast sill distributes air over the full length of the window **(7)**. Sill and plenum are designed as radiant surfaces. Air is discharged upward through a slot, washing over the glass, and out the front at approximately 250 fpm velocity, but within 2 ft this goes down to a barely perceptible 50 fpm. Heat loss is offset directly at the source, and air leaving the immediate vicinity of the windows should be close to room design temperature, generating no drafts. The return at the corridor side drawing from the long plenum should achieve a comfortably uni-

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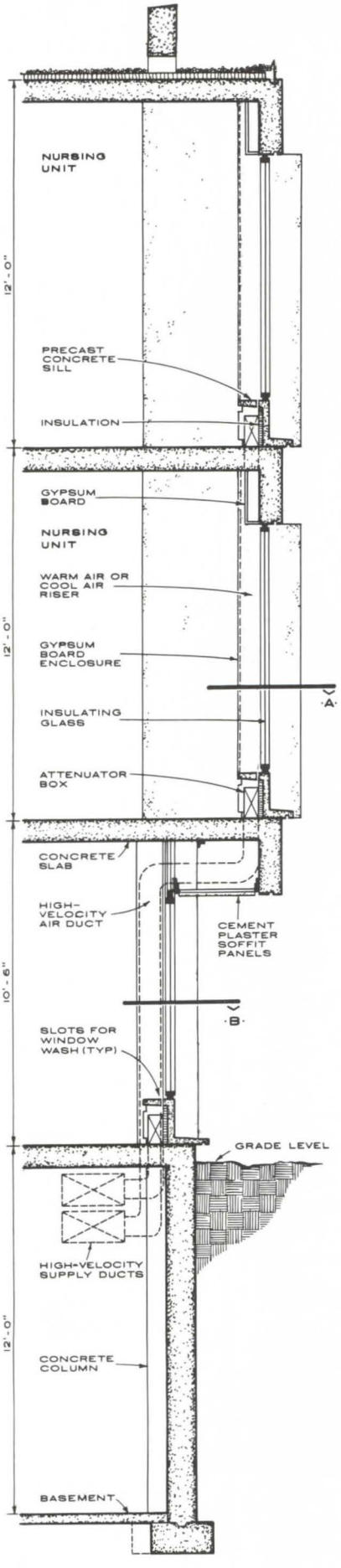

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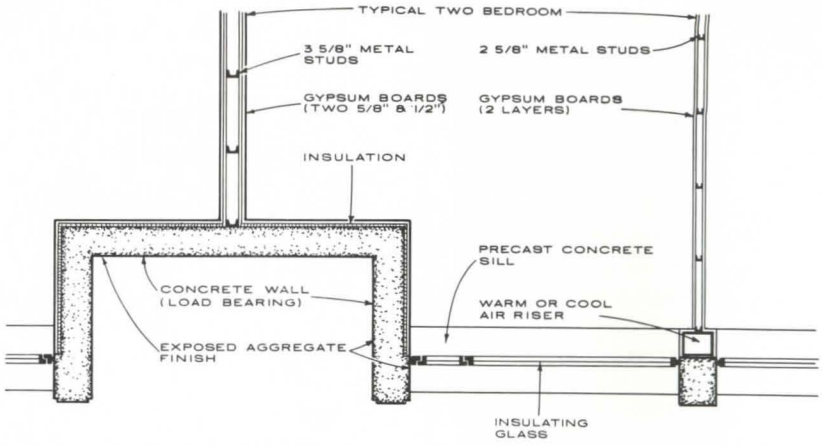
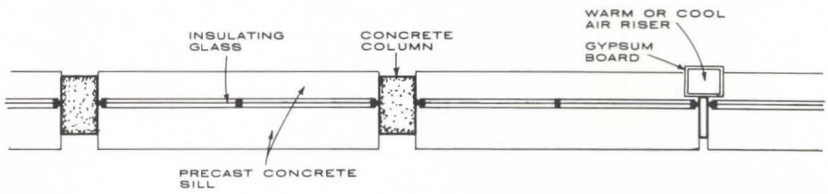


·A· PLAN-EXTERIOR WALL AT TYPICAL FLOOR



·B· PLAN-EXTERIOR WALL AT GROUND FLOOR

6

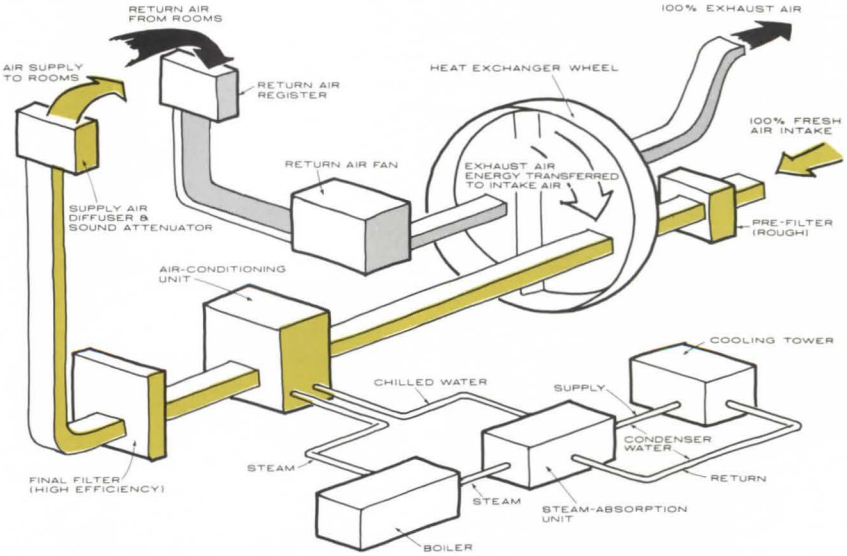


DIAGRAM OF 100% FRESH AIR CONDITIONING SYSTEM

form flow of air.

Sound attenuators trap noise from ducts and between rooms.

Since no air is recirculated, only one return duct is needed. It carries all exhaust air, including toilet, surgery, and other contaminated exhausts, to a rotary heat exchanger that recovers 80 per cent of the sensible heating and 72 per cent of the sensible cooling. Since so much of hospital return air must be thrown away in any case (averaging about 50 per cent for the hospital as a whole), this system recovers more energy than is saved by conventional recirculation.

Asepsis

It is generally recognized that exhausting all used air would contribute to asepsis, because bacterial contamination comes from people: from patients, personnel, visitors, and also from hospital procedures. But in the light of the cost of heating or cooling large quantities of outdoor air, varying percentages of fresh air are usually recommended. The spread of contamination is then controlled chiefly by filtering and by restricting recirculation to separately zoned air handling systems for the different departments.

In patient rooms, it is usually recommended that recirculation be kept to the same room and 25 per cent fresh air be introduced. Recirculation of the 75 per cent retained air sets up an uninterrupted circuit within the room (or the zone) carrying potential infection from occupants, present and past, from corridor leakage, and from the mechanical unit.

In Griffin, this potential cross-contamination is removed: There is no recirculation from one room to another, or from room to corridor, or within the room; and there is no closed heating/cooling unit to act as a reservoir of infection.

Positive bacteria-killing factors are brought to bear by the high relative humidity (50 per cent, except in extreme cold) and by the high temperature air supply (110 F in the ducts). These figures approach the 49 per cent relative humidity and 122 F, each of which is an optimum condition for bacteria die-off. (At the National Planning Conference on Designing for Asepsis, New York, May 1964, Lawrence B. Hall, chief of planetary quarantine at NASA, envisioned a method of decontaminating operating rooms by maintaining temperature and humidity at *these optima* for four hrs.) Air supply and the ducts themselves are thus under constant decontamination action as a result of the high temperature, while the 50 per cent relative humidity promotes bacteria mortality in the occupied spaces.

There are thoughtful physicians who also feel that 50 per cent relative humidity contributes to a healing environment for a broad spectrum of diseases.

Comfort

Over and above the benefits of asepsis, 100-per-cent fresh-air smells and tastes better than vitiated, recirculated air. The radiant effect of the massive precast sill offsets radiant loss through the window and lessens the effect of the hot-cold cycle of supply air. This, plus insulating glass, permits comfortable seating at the window bays in each patient room. As there are no cold surfaces in the rooms, no condensation results if a window is opened during the cooling season. Each room has individual temperature control.

Easier Construction/Maintenance

Simplified supply and single return makes cost of ductwork comparable to that of the simplest systems. Room supply devices contain no fans, compressors, coils, filters, or nozzles to be cleaned, changed, or maintained—or not maintained, proper maintenance being a problem in hospitals.

In a further exploitation of the energy in the return air, the cooling tower is placed in the exhaust stream. This makes possible an indoor tower, located in the machine room. The moving air stream, plus the percentage of cooling value not recovered by the heat exchanger, also make possible a smaller cooling tower. Indoors, it will not freeze or need winterization for the winter cooling of areas like surgery. It is also more likely to be maintained properly; and relocation will not be a problem when nursing units expand vertically.

Architectural Bonuses

Carrying supply ducts on the building perimeter contributes to flexibility for the internal alterations characteristic of hospitals. Slab soffit can be exposed, omitting the suspended ceiling, thus providing greater ceiling height.

Often an excrescence, the cooling tower is concealed and there is no spray drift.

The large horizontal ducts that bypass the pancake and the vertical ducts in the nursing stack have been integrated into the structure—and the disposition of these mechanical/structural elements is a major element in the architectural character of the building.

Project Associate was Herbert Beinstock of the Rosenfield office; Consulting Mechanical Engineers, Starr/Miller & Serot; Structural Engineers, Lev Zetlin Associates; Landscape Architects, Zion & Breen.

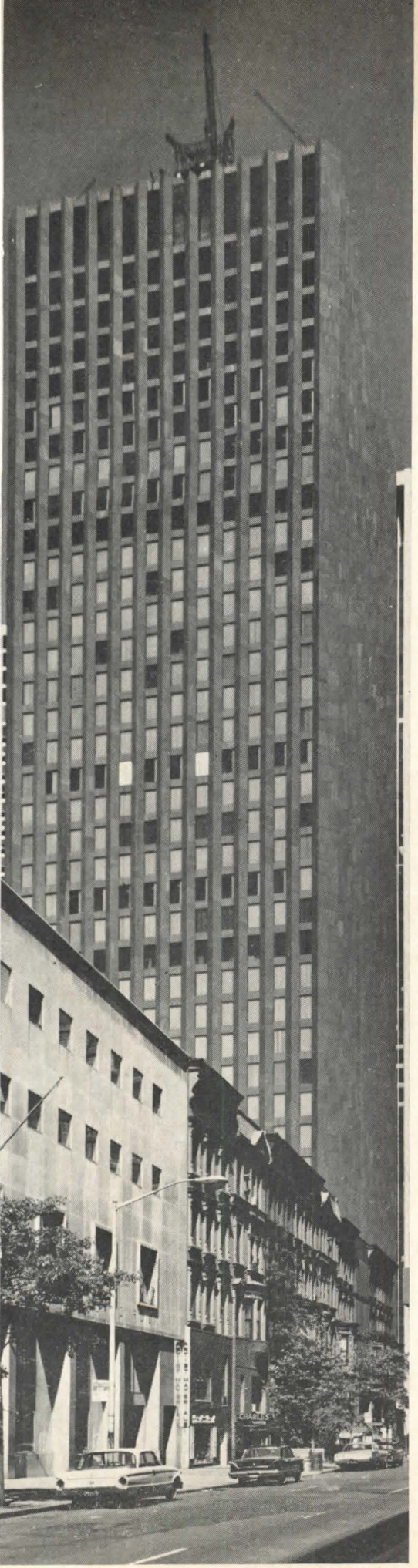
CBS: SOMBER POWER ON SIXTH AVENUE

BY BETHAMI PROBST

The writer was senior newswriter for the American Broadcasting Company in Hollywood, London correspondent for "Editor and Publisher," and has covered the Geneva headquarters of the United Nations for the United Press.

Architects, designers, and workmen are putting the finishing touches to the interior of the new Columbia Broadcasting Company building in New York. When the interiors—designed by the Knoll Planning Unit and Carson, Lundin & Shaw—are completed, P/A will publish them.

Meanwhile, the work of the building's designer—Eero Saarinen—is



Photos: Louis I. Reens

finished and can be commented upon. Saarinen hoped to carry the entire project through and design the interiors, but the client decided otherwise, making the building's exterior and interior two separate design matters. This article, therefore, presents a view of the skyscraper Saarinen contributed to New York's cityscape.

The CBS building's visual distinction comes mainly from its Canadian Black granite-clad triangular pillars, closely spaced on all four sides and running uninterruptedly from ground to roof. At the corners, the triangles merge into doubled columns in the same broad plane. The granite imparts a somber darkling quality that recalls ancient monoliths. As one approaches or walks around it, the building's appearance changes: from a block away across the street, the glare-resistant gray glass between the pillars appears as narrow slits; at a more acute angle, the pillars blend into an opaque wall. Head-on, of course, the alternation of stone and glass is emphatic. Light and shadow cause further changes. At certain times, the granite is dappled by reflections from the glass curtain walls across Sixth Avenue. At other times, the stone seems to absorb all the light. Partner John Dinkeloo of Saarinen Associates cites a precedent for such "op architecture," as it is now called: the pillars of the Parthenon, with their faceted brilliance in the Attic light.

CBS and the architects set out to erect a distinctive, timeless, honest, simple, dignified building that would be, in the words Saarinen used, quoting Louis Sullivan, "a soaring thing." The structure also had to be economically competitive with space rented in an ordinary commercial building, which the company had considered doing. (Except for the ground floor and part of an upper floor occupied by local CBS radio studios, CBS is exclusively an office building. Broadcasting, news, and other facilities are housed in another building linked to headquarters by a station wagon shuttle-service.) "We wanted a building," President Frank Stanton says, "actively, insistently, inexorably on the cutting edge in the evolution of the skyscraper." Board chairman William Paley adds, "We had made up our minds not to have steel and glass."

The economics worked out. Dinkeloo says the structure is less expensive than any other major building in New York City, such as Seagram, Chase Manhattan, and Union Carbide. Paley comments, "The cost per square foot is well within the limits we set." No official figures have been released but the generally accepted cost is put at about $40,000,000. As specified, CBS is also a new departure in skyscrapers—a dignified, pertinent rebuke to its more strident high-rise neighbors. A striking confrontation of the understated and the flashy occurs in the neutral skies where the CBS tower rises one block away from the coruscating, stamped-metal Tishman Building at 666 Fifth Avenue.

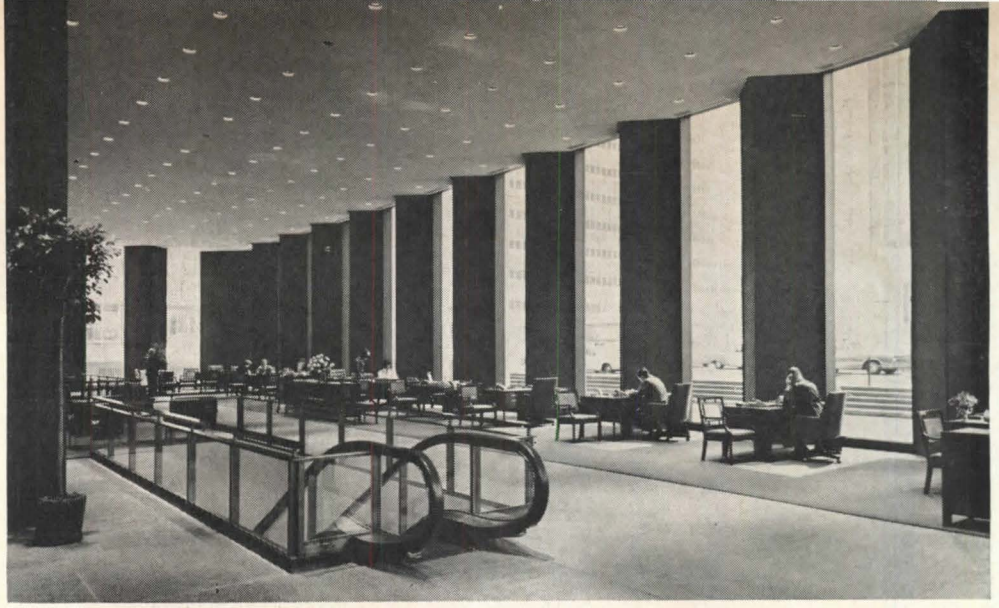
The inevitable comparison, however, must be with the Seagram Building by Mies van der Rohe and Philip Johnson three blocks distant on Park Avenue. Here CBS fares less well. If Seagram is the Rolls Royce of recent skyscrapers, CBS must be content with being in the Bentley class (which is by no means bad). Partly it is a matter of economics, for every detail of the bronze, amber-glass and green marble Seagram structure is luxurious, and its site is more spacious. This is partly the result of an irreconcilable contradiction: Saarinen's longing to soar is repeatedly sacrificed in order to communicate permanence, strength, and pride. Like Icarus yearning to fly higher and higher, Saarinen struggled consciously against being earthbound: "All the time one works," he said, "one concerns oneself with the fight against gravity. Everything tends to be top-heavy and downward-pressing unless one really works at it."

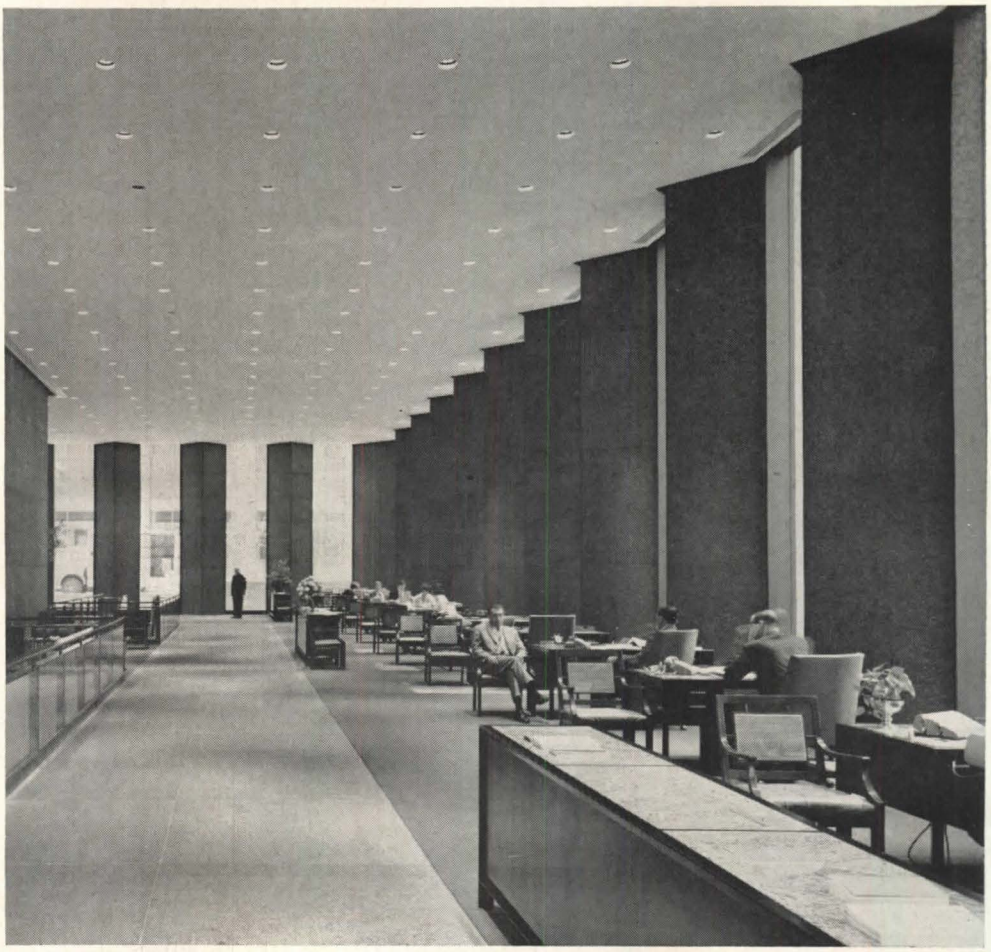
Seagram becomes airborne in its two-story lobby, all glowing travertine, elegant terrazo, and glass. The 18-ft-high CBS lobbies, one on each side of the central core, seem meager. A bank cuts off the west side, a projected restaurant for 220 persons cuts off the east. The architects have tried to lift these lobbies by placing

closely spaced vertical bronze batten walls on each side of the entrances, but their beloved granite crushes the effort. The triangular pillars are repeated inside; the floor is of granite, except in the elevator area, where travertine flooring carries up the walls of the elevator shaft. Most crucially, the load-bearing core walls, separated from the shaft by narrow corridors, overwhelm the lobbies with granite monoliths. The lobbies become high-ceilinged caves.

Both buildings are 38 stories high, although Seagram rises 525 ft to CBS's 491 ft. Both buildings boast plazas. The raised Mies plaza is a public place with two formal pools, fountains, and trees; the Saarinen plaza is sunken and lacks even these amenities, existing exclusively to help articulate the tower. Moreover, the surrounding parapet (vented to provide air-intake grills for the basement) is too high in most places to be accessible as a resting place either to sidewalk pedestrians or CBS employees. Supremely confident, Mies used his plaza as a grand, monumental approach to his tower. The CBS plaza is a bravura declaration of apartness. Moreover, the tower settles itself so firmly into the depression that once again the possibility of lightness is sacrificed. Where Seagram is weightless, CBS is massive; where Seagram is expansive, CBS seems small—even though each CBS floor measures 20,000 sq ft to Seagram's 14,900. In one sense—the disparateness of Saarinen's and Mies's conceptions—the two buildings are no more comparable than a delicate ash and a sturdy oak or than the Verrazano and Brooklyn bridges. Generically, however, skyscrapers *should* soar, and CBS's failure to do so is its principal flaw.

This failure is all the more striking when one considers that verticality obviously had the highest precedence with the architects. Entrances were sacrificed. There is no ingress at all on Sixth Avenue despite the broad flight of five steps leading to the plaza. Each of the 14 doors, 7 to each side, is squeezed into the 5 ft between the pillars; they are identified by the black projecting slabs that incorporate the above-door





Photos in The Bank of New York on the ground floor of the CBS Building show the optical effect of the great columns when seen from different angles. At top, the distinction between column and glazed area is pronounced. When the viewer moves to a more acute angle, however, the columns seem to come together to form a single, monolithic wall (bottom).

Architects for the interiors of The Bank of New York were Smith, Smith, Haines, Lundberg & Waehler. The power of the space is such that even the "modern traditional" furnishings do not detract from its awesome feeling.

lighting fixtures; no other exterior protrusion is permitted.

Although Saarinen died 10 months before excavation began, the design was substantially completed before his death. The structure, the piers, the sunken plaza, the use of dark granite had all been decided upon. Additions subsequent to his death were mostly interior refinements, such as the bronze batten walls in the lobbies. The actual granite used was also chosen later. From the beginning, Saarinen envisioned a dark building. His widow, Aline Saarinen, suggests that her husband had in mind the dark-gray flannel suits associated with communications executives. Dinkeloo compares the character and strength—recurrent words—of its darkness with the "flimsiness" of transparent buildings. They went to extraordinary lengths to obtain the darkest possible granite. Since no one wanted polished stone, and since granite lightens when fractured, they worked out a completely new method to get the best of both worlds: thermal stippling under a 5000° flame provided the roughness, then a technique borrowed from the aircraft industry—liquid honing with a slurry of spherical glass beads and water—restored the stone's darkness.

The "rectangular doughnut," to borrow Saarinen's homey description of the building's plan, has a central vertical core joined by 35-ft-long clear spans to cast-in-place peripheral columns. The columns do not intrude on the interior to support the floor slabs. Instead, column and slab, meeting edge to edge, are anchored together by steel rods running through both. The central floor slabs have one-way ribs 17 in. deep; in the four corner areas, two-way ribs form waffle patterns. Core walls vary in thickness from 12 in. to 28 in.

Everything except for interior partitioning is on a 5-ft module: columns (16 on the long crosstown sides, 13 on the short north-south sides), the interior lighting fixtures and electric outlets. This, and the uniform cross-section, enable CBS to standardize different executive levels: a presidential suite is 20′ x 20′, a vice-president's office 15′ x 15′, a director's 10′ x 15′, a manager's 10′ x 10′. The suites of President Stanton and Chairman Paley occupy the thirty-fifth floor, with the legal department on the floor above insulating them from vagrant vibrations from the cooling towers on the top mechanical floor. Another utilities floor in the high second story contains plumbing, heating, and ventilating equipment. Both mechanical floors are expressed on the façade by closely-spaced dark-anodized vertical grills. The square, recessed fluorescent lighting fixtures in the ceiling were custom-designed and integrated with air-conditioning ducts to serve interior areas. Perimeter areas are served by a high-velocity system using induction type units located in low window sills. Hot and cold air risers run through chases in the exterior pillars. A happy marriage of functions allows the pipes and chases to get larger going up, as the structural load decreases on the pillars and the mechanical load increases on the pipes. The return is in the core, as are the fire stairs, washrooms, and elevators.

Windows are 18 ft high on the ground floor, 9 ft on the other floors from ceiling to 6-in.-high sill. The windows are recessed 2 in. on the outside, 18 in. on the inside. Despite their height, the return of the outside granite and the recessing discourages vertigo. All windows are covered with metal, two-way vertical blinds. The two outer rows of interior lights remain on at all times to affirm the building's existence at night.

At the rear, an inconspicuous black brick 75-ft-high building takes care of CBS's mechanical needs. Two emergency tower systems are located in the cellar. Designed to harmonize with neighboring brownstones, the service building also provides truck docks for deliveries. The shipping and receiving department is located in the plot-line-to-plot-line basement of the tower.

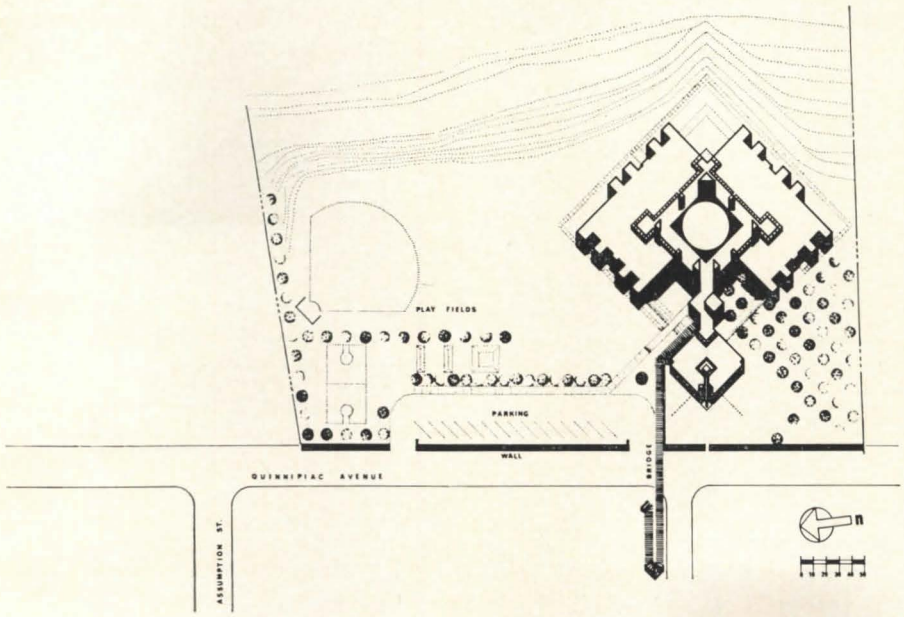
Although a CBS committee has been collecting art for the office floors, no decoration is planned for the lobbies or plaza. Dinkeloo welcomes this. "A building is the greatest piece of art I know," he says. (Asked on another occasion what the finished structure means to him, Dinkeloo was more restrained: "A lot of sweat and tears.")

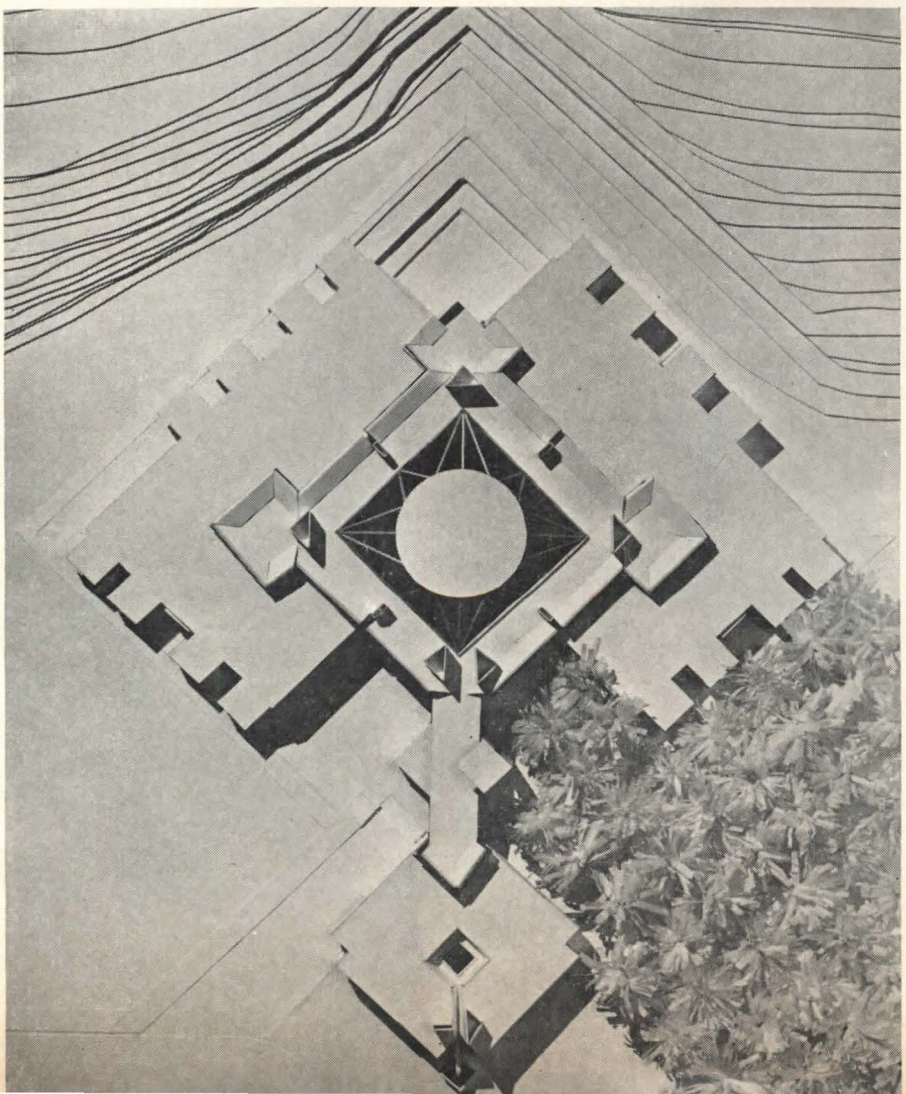
Saarinen once said of CBS, "Its beauty, I believe, will be that it will be the simplest skyscraper statement in New York." Indeed, the building is so straightforward that it looks disconcertingly simple. One wonders why—despite intermittent comparison of CBS to several classic Chicago buildings—such a solution of forthright, uncompromising strength has not been used before. (One prosaic reason: earlier zoning regulations did not make a free-standing, sheer building economically attractive.)

Superlatives about CBS/51W52, as CBS has dubbed it, are arguable. As with all individualistic works of art, the final answer lies with posterity, or, as Saarinen once cogently put it, "The practice of architecture has to be measured in elephant time." Today, in flea time, even carping critics will agree that CBS is a building to be reckoned with, a powerful, brooding presence.

General Contractor: *George A. Fuller Company;* ***Interior Design:*** *Knoll Planning Unit;* ***Interior Architect:*** *Carson, Lundin & Shaw;* ***Mechanical Engineers:*** *Cosentini Associates;* ***Structural Engineer:*** *Paul Weidlinger.*

UP-AND-DOWN, IN-AND-OUT FLEXIBILITY

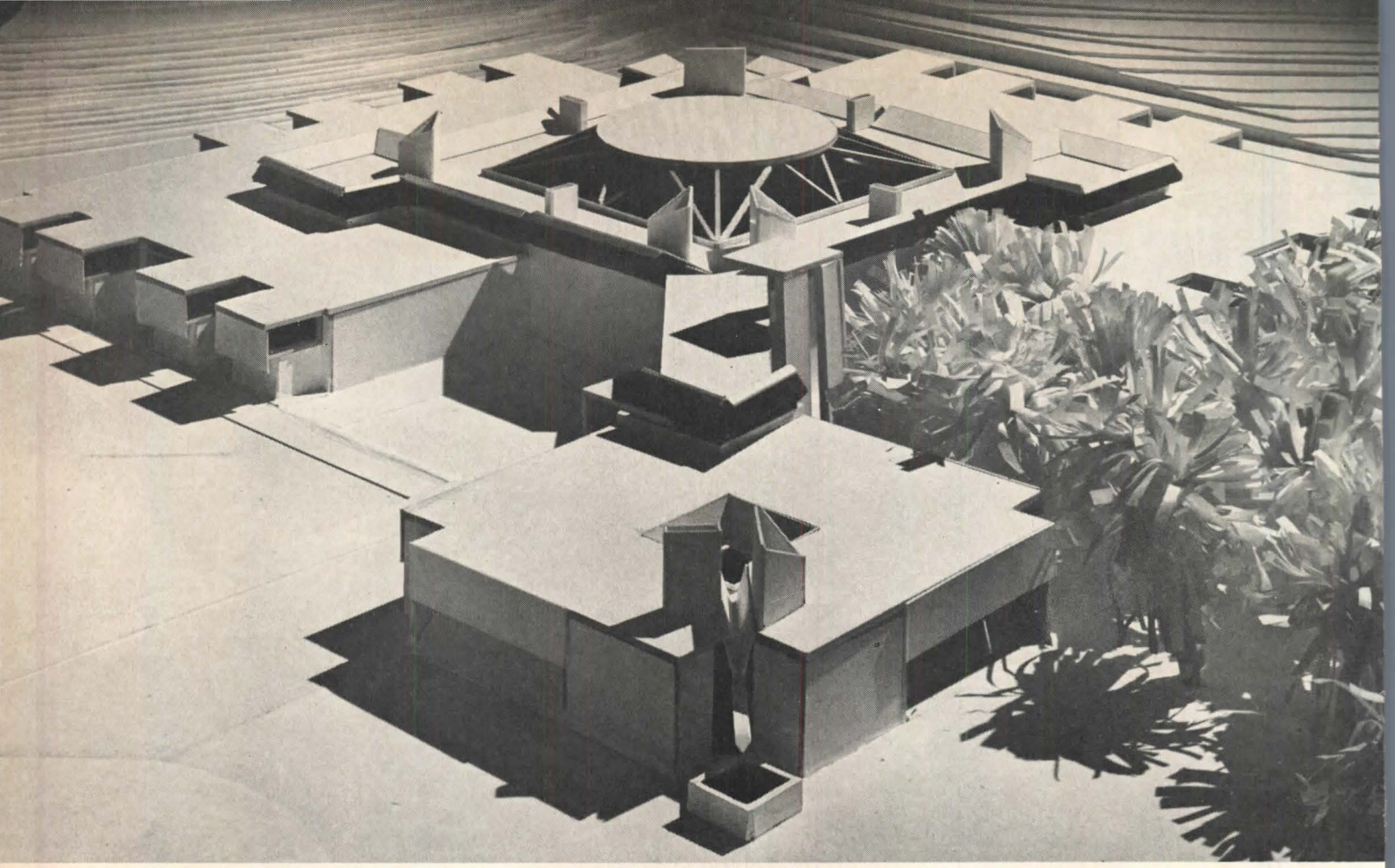


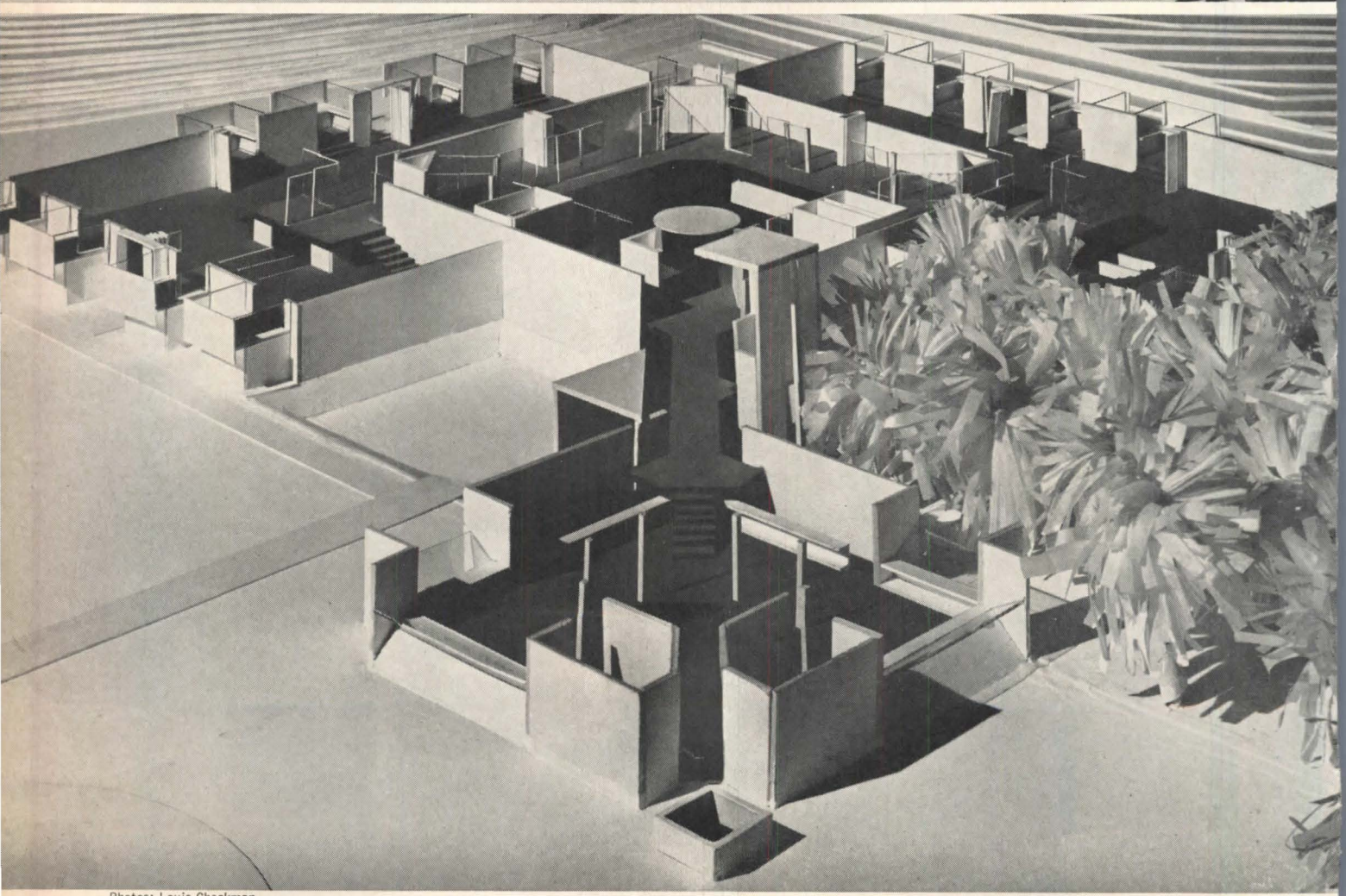


In August of 1962, New Haven (Connecticut) issued new educational specifications for its K-4 primary schools. Included in the generally admirable set of standards was the statement: "It seems reasonable to suggest that a concerted effort must be made to design primary schools that are sufficiently flexible as to space and facilities that a smooth transition can be made to a new pattern of organization [for teaching elementary students]." Since many quarters are exploring advanced methods of teaching, the report pointed out, "it follows that the buildings to be constructed in the next few years must be so planned that they are adaptable to the developing educational program."

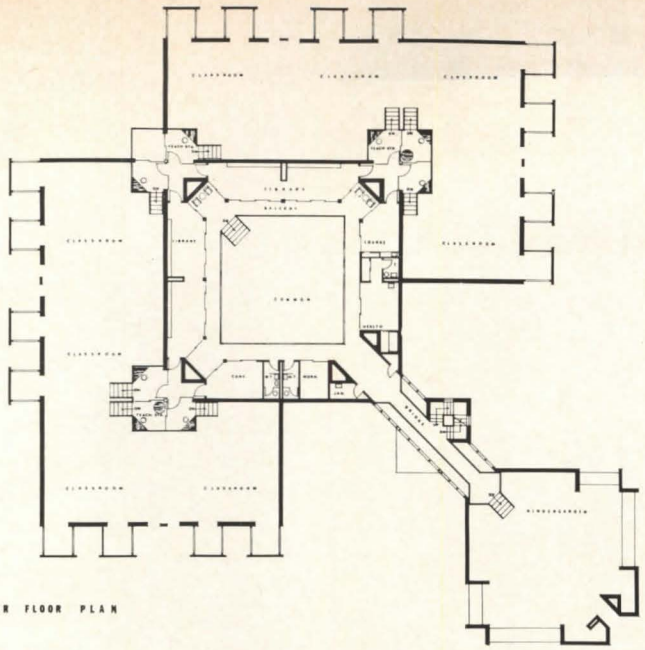
In conceiving the design for the North Quinnipiac K-4 Elementary School of New Haven, William Mileto of McMillan, Griffis & Mileto determined to follow the "ideal" New Haven program, extend it, and make the architecture part of the entire learning and teaching experience. He wanted to provide a building that would influence children instinctually and at the same time give the teacher a "physical program" that would bring him into relationship with the children. He feels that recent school planning, with its emphasis on flexibility and expansion, has been stressing horizontality; but verticality should also be important, so that the child can, in a sense, both grow *up* and expand *out* in the learning situation. "An explosive expansion," the architect calls it. "With Montessori, Bertrand Russell, the tentacles of space, the 'continuum,' pop and op art, and, of course, television, our new generations are being told of a multiplanal expansion, of Guillard de Chardin's 'noosphere.' " Only recently have the rooms in which they hear about these things begun to move, and so far only on the horizontal plane, making ready perception of these dimensional phenomena difficult for the small mind.

In the North Quinnipiac School, Mileto wants to expand this perception. Children will move from space to space horizontally and vertically,

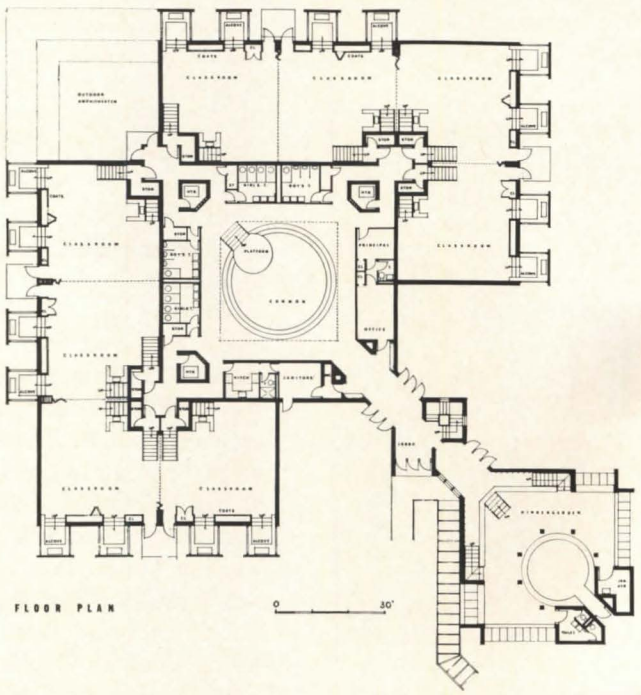




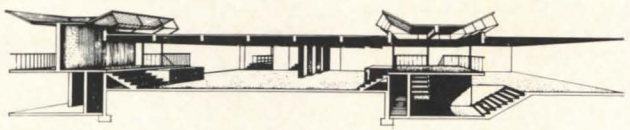
Photos: Louis Checkman



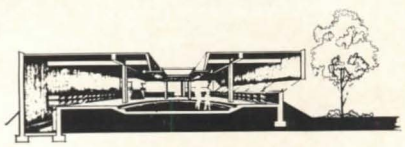
UPPER FLOOR PLAN



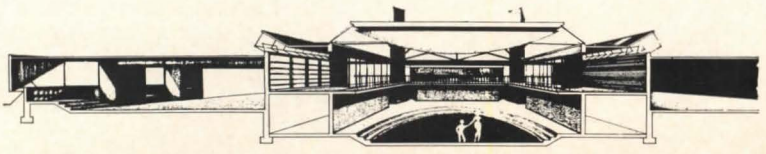
MAIN FLOOR PLAN



SECTION THRU CLASSROOMS & TEACHER'S STATIONS



SECTION THRU KINDERGARDEN



SECTION THRU CLASSROOMS, BALCONY & COMMON

from low, narrow, intimate space (entrances to classrooms) to "great" space (the common), to high, "privileged" space (the teacher's stations). School life, consequently, will have a physical and emotional meaning in addition to the subjects taught, and will, it is hoped, educate young minds to an easier apprehension of relationships of size, space, volume, etc. The kindergarten will repeat these experiences but on a "more primitive level."

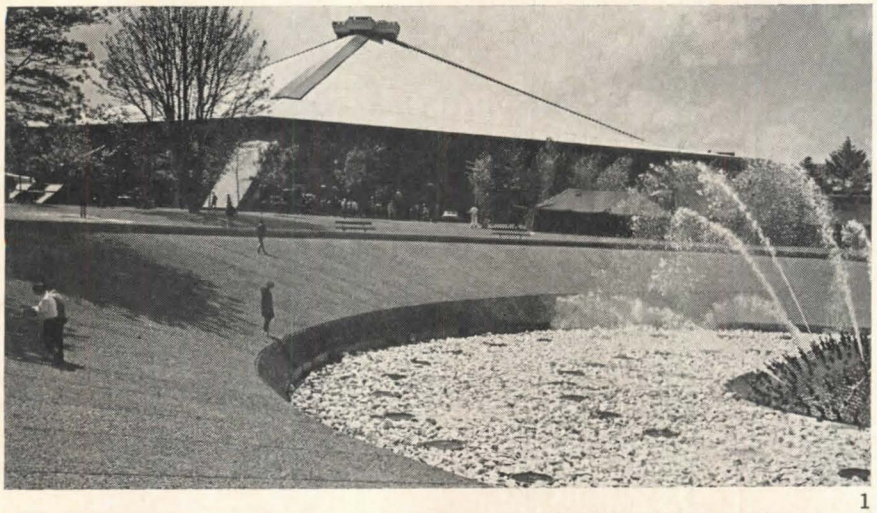
The main common of the new school will be surrounded by the teaching spaces, which will, in turn, be surrounded by alcoves for small study groups. The classrooms will be expansible and interchangeable in the currently accepted sense (folding walls, rearrangeable furniture). They will be reached via a student-scale course of steps from the common. Teaching stations will overlook the classrooms, and be approachable from them by a few steps. This is the teacher's domain, where he meets his colleagues and prepares lessons, but students might come up to recite or talk over other matters, thus moving into another realm and experience than those experienced in the classroom. The balcony around the common, where the library is located, will bring the child into clear contact with the most "inaccessible" element of the school, the skylight over the common. In this way, he will be aware of the interelation of all parts and spaces of this environment, from the "cave" he takes up to class to the canopy that soars over the assembly area.

Highest point of the school, marking the entrance and also the demarcation between the elementary school and the kindergarten, will be the stair tower. Towers of the separate heating and mechanical systems will also jut above the roof, providing a distinctive silhouette.

One of the proposals in the design, not actually covered by requirements or zoning in the area, is a footbridge connecting the school with the other side of the avenue. When Mayor Richard Lee saw the plans, he was so enthusiastic about them he promised Mileto he would get him the footbridge.

SEATTLE:

METAMORPHOSIS FROM FAIR INTO CENTER



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Photos: Hugh N. Stratford

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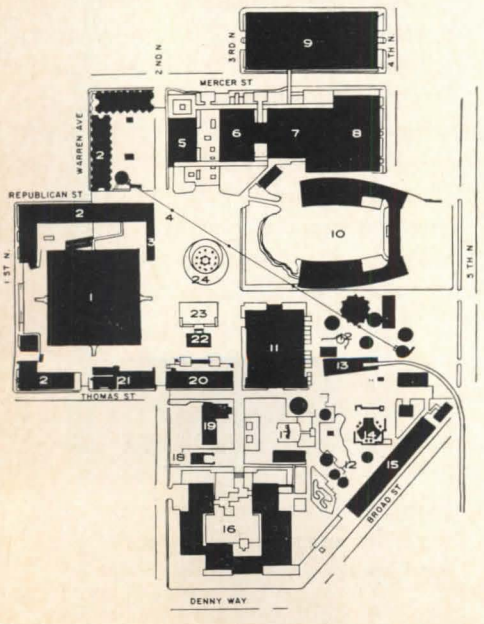

PLAN A

Plan A: (1) Coliseum; (2) Exhibit Building; (3) Northwest Craft Center; (4) Skyride; (5) Playhouse; (6) Exhibit Hall; (7) Opera House; (8) Arena; (9) Parking Garage; (10) Stadium; (11) Armory; (12) Fun Forest; (13) Monorail Terminal; (14) Space Neddle; (15) Fun Circus; (16) Pacific Science Center; (17) Horiuchi Mural; (18) Information Center; (19) Nile Temple; (20) Pavilion; (21) Seattle Art Museum Branch; (22) Restaurant; (23) Flag Plaza; (24) International Fountain.

BY DONLYN LYNDON

Author Lyndon is head of the Department of Architecture, School of Architecture and Allied Arts, University of Oregon, a partner in Moore, Lyndon, Turnbull & Whitaker, Berkeley, and a member of Lyndon Design Counsellors, Los Angeles.

"Think Clean—Think Underground Wiring." This pithy sentiment can be acquired on bumper stickers at the Seattle Center Northwest Crafts Center. It has a peculiar relevance to Seattle Center, where the architects responsible for transformation of the grounds of Century 21 into a Civic Center have been thinking clean **(1)**. A short excursion beyond the Center's boundaries will suffice to indicate the extent of their accomplishment **(2)**. With most of the Fair's temporary structures now removed, the permanent skeleton established for the long-range plan has become evident. The area seems to be perceived most easily as a series of quasi-independent zones (Plan A). The Arena, Opera House, Exhibition Center and Playhouse form one complex along the north border that is probably best visualized by Kirk, Wallace & McKinley's gracious loggias that surround it **(3)**. The Coliseum and its attendant peripheral buildings **(4)** form a distinct place along the west edge of the Mall that runs from the rear of the Playhouse to an exhibition hall by Robert Billsborough Price that closes the space. One edge of the Mall continues as an avenue leading directly to Yamasaki's Science Center vaults **(5)** that, like the stamen of an exotic flower, beckon one into a compound of ghastly prettiness. To the east of the Science Center is a loosely defined area of park, fountains, games, rides and concessions dominated aloft by the Space Needle **(6)** and bisected by the present

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monorail terminus. The symbolic focus of the Center is the Fuji-like International Fountain designed by Matsushita and Shimizu, a waterless crater that erupts jets in an electronically dictated variety of patterns. Sensing a challenge greater than that of the lawn sprinkler, children dash around its slopes in defiance of its unpredictability **(1)**. The operational hub of the complex, however, is a cumbersome old Armory building which is leased as a Food Circus and International Bazaar for the snack shops, specialty foods, and marginal commercial establishments that are necessary to continued family participation in the Center: a fair turned outside-in with its glittering lights reflected in the elevator bubbling from level to level **(7)**.

The framework of the Master Plan was developed within the context of an existing gridiron street pattern **(8)** and around the presence of four sizeable buildings: the Arena; the former Civic Auditorium (now Opera House); a Stadium belonging to the school board; and the Armory. City, county, state, Federal, and private funds were involved in the development, and planning and coordination were duly complicated. Primary Architect for the Fair Master Plan, and, in turn, for the development of plans for Seattle Center, was Paul Thiry. By planning from the beginning to retain the key structures of the Fair as basis for the continued development of a permanent Center, Seattle has extended the scope of an initially projected Civic Center into an impressive array of convention, assembly, and exhibition spaces that accommodate a variety of uses. (A mid-May weekend, for instance, included a junior chamber of commerce convention and parade, an armed forces spectacular, a high school musical, the Pacific Northwest Coin Dealers Show, three marching high school bands, a fashion show, a bathing suit show, a variety show, a military retreat ceremony at dusk, a roller derby march, the Lutheran Bible Institute Choir concert, Seattle drill team competitions, and a series of events culminating in a teen-age dance to raise money to fight muscular dystrophy.) In addition, there is a developing group of permanent institutions: the Federal Science Pavilion has become the Pacific Science Center; the building which housed Great Britain's exhibit has been transformed into an extension of the Seattle Art Museum; the Northwest Crafts Center, an outlet for craftsmen of the region, presently occupies a building scheduled for demolition, but will presumably be relocated; the Playhouse has had, through the winter, an active repertory theater; and the Space Needle Restaurant has become a central destination for tourists and affluent residents alike.

The popularity of the Needle seems to have diminished little; despite the $1 tariff on its elevator ride, the restaurant is thriving and


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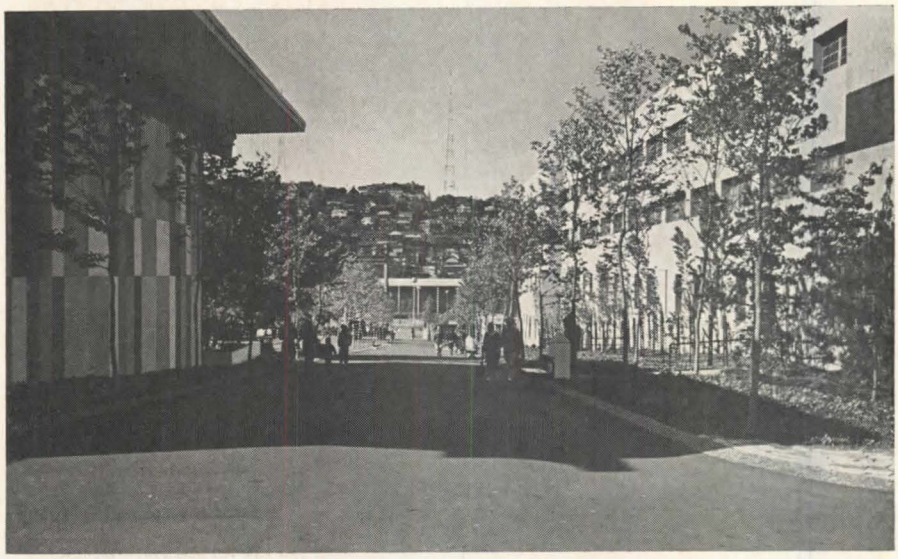
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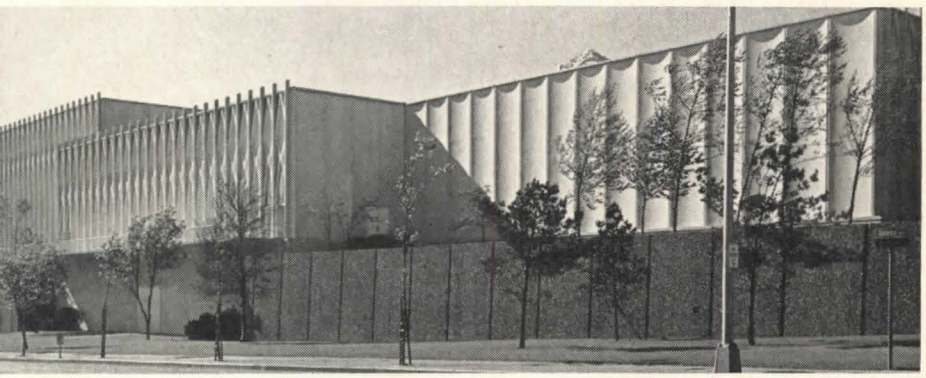

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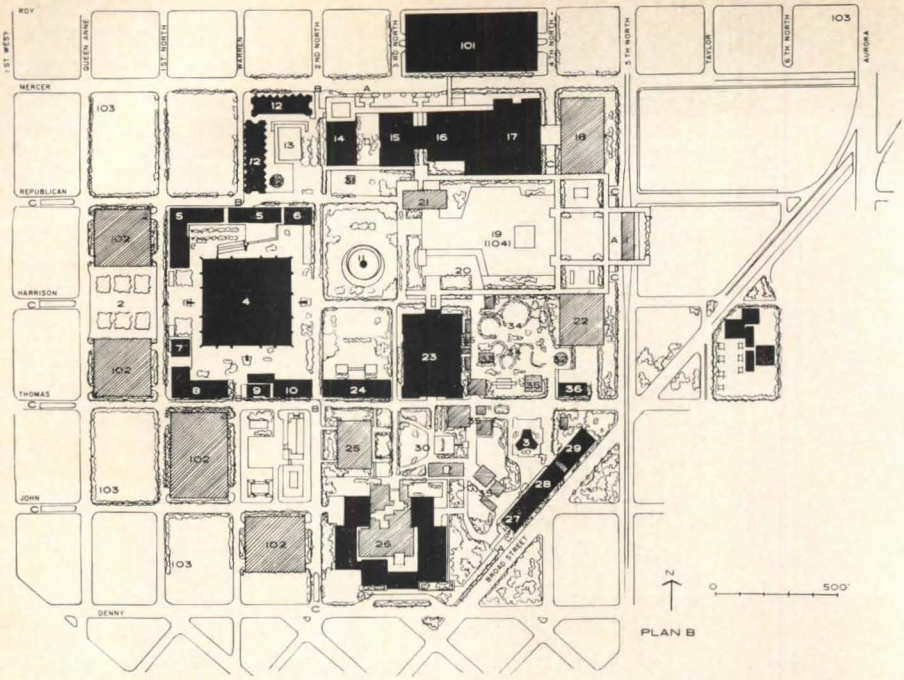
there are often lines waiting in its lower lobby. Its silhouette dominates the city from most points of view, and, not surprisingly, is often used as a symbol of Seattle in promotional literature. A late entry in the master plannng, the Needle was necessarily but arbitrarily located by legal expediency, and although it dominates the site, it does little to organize it.

The Monorail, with its other end buried in the central business district, plunges merrily into a "Fun Forest" at the base of the Needle—or so it would seem from the plan. The expectant rider in reality disembarks onto a view which, despite the neon gaiety of the carnival, is singularly depressing **(9)**: the Armory and Stadium buildings combine to block completely his view of the major spaces and buildings of the Center and a messy aggregate of tar, white gravel, and exhaust occupies the immediate foreground. (It is amusing to note that the Fun Forest Snack Shop's sign-maker knew that his wares would be seen from above, but the building's designer apparently did not.)

At present, arrival by car is similarly unclear; a change in grid direction at the south boundary of the site combines with the generally closed perimeter to rebuff any interest in the site from beyond its boundaries **(10, 11)**. The one major parking facility now built is beyond the Center's north boundary, connected to the Opera House colonnade by an alarmingly discreet pedestrian bridge **(12)**. Its behind-the-bush location relative to the central spaces of the Center is partially compensated by a controlled and dignified entry court **(13)** leading from the colonnade to the International Fountain and its surrounding open space, a striking contrast to the barren street entry on the opposite side of the Playhouse **(14)**.

A major obstacle to satisfactory resolution of many of the Center's problems has been retention of the Stadium, which crowds absurdly close to the Arena, Opera House, and Armory, and cuts malignantly into the boundaries and spaces of the Center. Paul Thiry's present



Plan B: (1) Monorail Station; (2) West Plaza; (3) Space Needle; (4) Coliseum; (5) Exhibition and Meetings; (6) Restaurant; (7) State Building; (8) Maintenance and Storage; (9) Administration; (10) Art Museum; (11) International Foundation; (12) Exhibition Buildings; (13) Festival Court; (14) Playhouse; (15) Exhibition Hall; (16) Opera House; (17) Arena; (18) Building Site (Natatorium); (19) Memorial Plaza; (20) War Memorial; (21) Building Site (Restaurant); (22) Building Site (Theater); (23) Exhibition Building (Armory); (24) Exhibition Building; (25) Building Site (Museum); (26) Pacific Science Center; (27) Exhibition (Aquarium-Museum); (28) Arcade and Shops; (29) Exhibition (Child Activities); (30) Horiuchi Amphitheatre; (31) Kobe Bell; (32) Skyride Terminals; (33) Restaurant; (34) Amusement Rides; (35) Amusement Pavilions; (36) Alarm Center; (A) Main Entrances; (B) Secondary Entrances; (C) Underground Parking Entrances; (101) Parking Structures; (102) Building Sites (Parking); (103) Alternate Parking Development; (104) Underground Parking.

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guide plan for future development (Plan B) visualizes transformation of this area into a plaza-topped parking terminal with above- and below-ground linkage to the Fountain Mall, Food Circus, Opera House, projected Natatorium and Theater buildings, and a grandiose Monorail station. The guide plan also proposes packaging many of the carnival activities in pavilions capped by the ubiquitous truncated pyramid and acquisition of a swatch of land around the west border of the site for parking and entry. The privately owned Nile Temple, another "given" of the initial site, is scheduled for removal and will be replaced by a large pavilion to "terminate the vista stretching from the Space Needle" —a vista that, from the Needle's waiting area at least, seems doomed to obscurity **(15)**.

Some skepticism has been voiced as to how this will be implemented: The school board seems to like its Stadium, and a new post office—shunted beyond the boundaries of the Center after making a bid for Yamasaki's elegant warehouse—has been built immediately adjacent to the Coliseum on land designated for

future parking; while just beyond, a new bank and office building stands on the corner of Queen Anne and Harrison, ready to service the throngs for whom Thiry had intended an approach plaza.

The most extensive internal revamping has taken place in Paul Thiry's Coliseum, a previously unobstructed hall that has been transformed into a multiuse Coliseum with a remarkably ingenious set of arrangement and partitioning possibilities. In any project executed in haste for a Fair deadline, then transformed over a period of years to suit new demands, there is of course ample opportunity for devaluation of the initial organizing idea. The internal requirements have been satisfied with great skill, but the observer will be hard put to discover why his attention has been attracted from all over the city of Seattle to the tops of four trusses whose interior existence has barely been noticed by whoever laid out the seating. Strong-armed aside by their buttresses as he enters **(16, 17)**, he might expect the architect to treat the trusses with greater respect than he has **(18, 19)**.

Perhaps, though, consistency is not a major criterion for a building necessarily at odds with its neighbors. Conceived as a foil in scale to the Armory and Opera House, the mountainous shape of the Coliseum has a tendency to pull away from its surroundings. It is most profitably seen across the International Fountain, with which it has affinities in scale and imagery **(1)**. It is less comfortable with its immediate neighbor, a group of peripheral buildings also designed by Thiry & Associates that seek to make a virtue of cheap, lightweight panel construction adorned with cut-out shapes inserted into the formwork in a pallid effort to recall Northwest Indian forms. The thinness of their construction, although direct and clear, is seriously at odds with undulating plaza levels and the aggressive scale of the Coliseum. A stair railing caught between the two seems plausible when related to the Coliseum but an unlikely adjunct to the adjoining building **(20)**. Similarly uncomfortable is a

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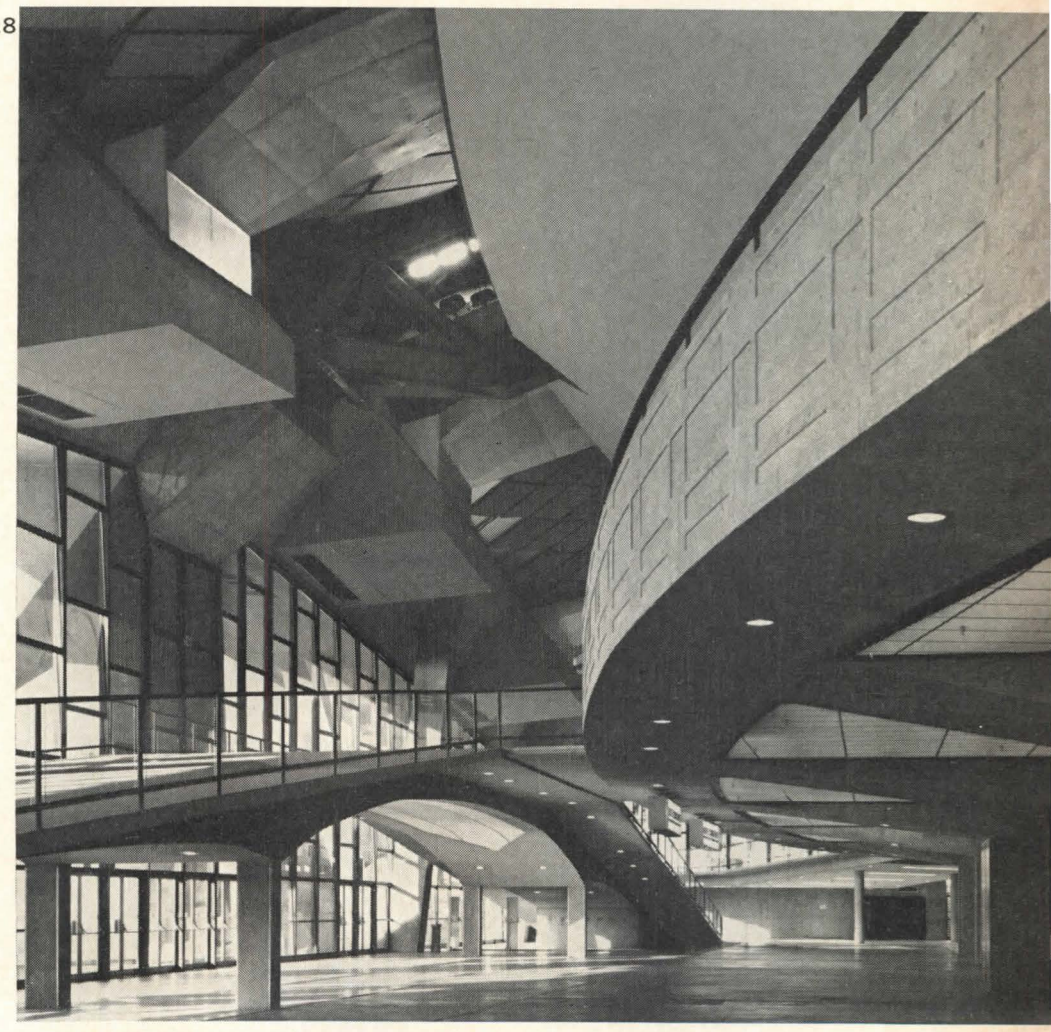

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grotesque block of concrete in one of the plazas that spatters water in several places as perpetual evidence that fountains are difficult to design. The Coin Show flag festooned, against the management's wishes, from the nearby colonnade is more important to a sense of the place and its activities than is still another set of water squirts **(21)**. Although such a banner does little to reinforce the architect's order, it is a cheerful and inviting indication that is badly needed. Similarly, a trash can (one of many littered about the site) nestled against the finial of a retaining wall **(22)** seems an apt diagram of needs and forms that have not yet recognized each other.


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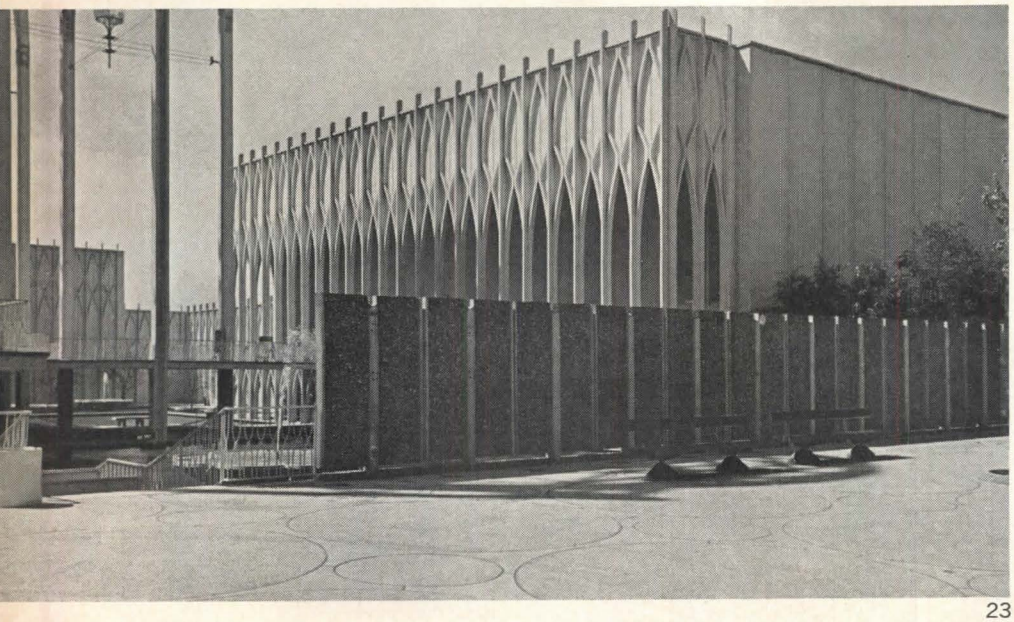
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Such small evidences of disorder are, of course, trivial instances in a generally reassuring atmosphere of coordination and sympathy that is highly admirable. They seem, however, emblematic of the probability that a highly tenuous order will decay even under watchful vigilance. What is Seattle Center the center of? It clearly is not the center of Seattle; without a trip up the Space Needle, it is very difficult even to know where it is. Although the boundaries of the site are complex, the Master Plan carefully severed views out from the site by an almost continuous ring of peripheral buildings and walls that protect it from intrusion. The exception was at the south boundary where the Science Pavilion was to have taken advantage of a rise in the ground to look over existing buildings to the City and the Sound. Left with the task of viewing what Seattle had previously wrought, it seems that Yamasaki also quailed at the sight. He barricaded his site on all sides by buildings and walls, thrust a "theme structure" high in the air for all to see, splashed a lot of water, and in almost every respect repeated the *parti* of the Master Plan **(23)**.

Leaving the Center can seem like waking from a dream, one which, although generally pleasant, had neither the relevance of ordinary discourse nor the strength of a prophetic vision. The dream may have been of a campus, replete with athletic and cultural facilities, Collegiate Gothic and lawns—tolerant of some boisterous fun but free from aggressive mercantile interests. The architects have built an approximation of that dream that will be of continuing benefit and pleasure for Seattle, but perhaps not too instructive as a general example. They have demonstrated that investment in a fair can coincide with on-going civic investment, and that common space need not be a litter-can for heedless conflicting decisions. But someone still needs to learn how to forge into visions the dirty real stuff of which our cities are made.

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Electric Draft Barriers

BY WILLIAM J. McGUINNESS

How electric draft barriers were successfully employed to prevent large exterior glass areas from cooling interior air is explained by a practicing mechanical engineer.

It has long been generally acknowledged that large exterior glass areas cool interior air. The vertical layer of cool, denser air thus created then drops to the floor and blankets it like a chilly carpet. Unless one has witnessed tests using smoke and recording thermometers, the speed and the attending discomfort of this phenomenon is seldom fully comprehended.

Under the worst conditions, it is necessary for this cold layer to cross the space and reach a thermostat on an interior wall before a below-the-glass heating element takes over. When it does, its problem is a dual one—to reverse the down-slip of air *and* to warm the space. It is seldom properly adapted to correctly meet both challenges.

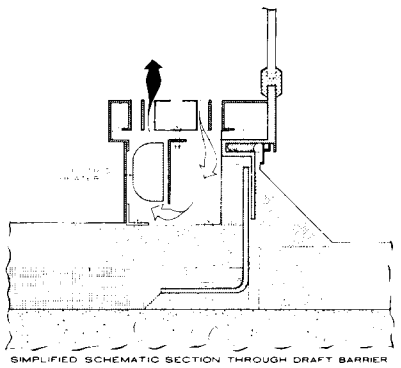
Admittedly, the use of a modulated heating medium—water or air—provides a more continuous operation to maintain a warm upflow of air at glass, yet during even brief intervals between these heating periods, the cold air slides quickly past the nonoperative heaters.

A successful solution, and one of the first to provide glass with its own insurance against drafts, has been designed by I.A. Naman & Associates, Consulting Engineers of Houston, Texas.

In this first of Naman's several similar applications, the electric draft barriers have been used in the new home office building of the Great Southern Life Insurance Company in Houston. Architects were Skidmore, Owings & Merrill, associated with Wilson, Morris, Crain & Anderson.

This supplementary system goes into action instantly when cool air descends to meet thermostats placed at 25-ft intervals along the electric heating strips below the glass. It permits no cool air to pass this barrier. The heaters provide 50- to 75-w/lin ft, just enough to stop the downflow of air. Temperature in the space is separately regulated.

The building is dramatically adapted to this new feature. North and south



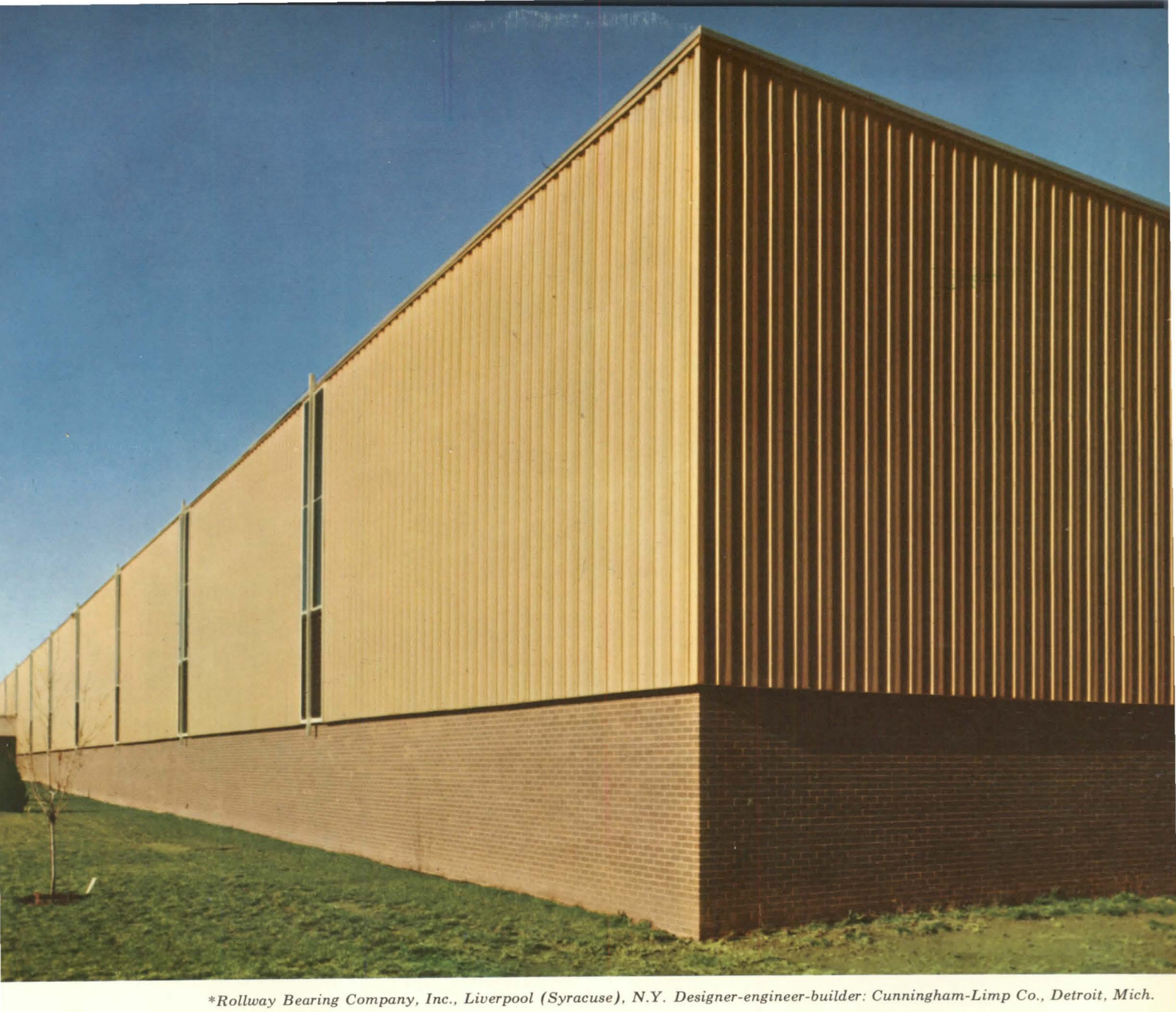
SIMPLIFIED SCHEMATIC SECTION THROUGH DRAFT BARRIER

walls are of glass; east and west walls are of concrete (see photo). In concept, the former unsteady performance of glass has been tamed to correspond to the more stable thermal qualities of masonry.

The electric draft barriers draw 100 kw of power. The maximum total building demand to date has been 1800 kw. It will be greatly increased during the summer and when full occupancy (now 80 per cent) has been achieved. Two 500-ton compressors serve the air conditioning.

Should it be thought that a heating problem is unusual in a "warm" Southern state, it can be said that the winter design temperature for Houston is commonly taken as plus 20 F. The region has 1276 degree days.

In this custom design, the architects wish to acknowledge the collaboration of the manufacturer, the Edwin J. Wiegand Company of Pittsburgh and of the Houston Lighting & Power Company.



*Rollway Bearing Company, Inc., Liverpool (Syracuse), N.Y. Designer-engineer-builder: Cunningham-Limp Co., Detroit, Mich.

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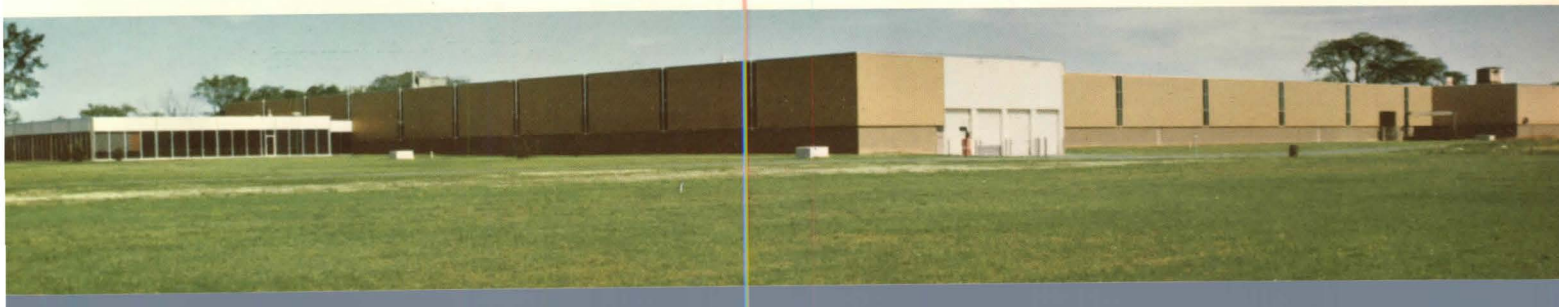


Arrangement of the "Section"

BY HAROLD J. ROSEN

A uniform system of presenting information in the technical section of the specifications is outlined by The Chief Specifications Writer of Skidmore, Owings & Merrill, New York.

In the SEPTEMBER 1964 P/A, the technical section of the specifications was defined in this column as a unit of work that a contractor may let to a subcontractor; a unit of work that a materials supplier may furnish for someone else to install; a unit of work that combines several subcontractors so that a single responsibility is established for this portion of work; or a unit of work that may be performed by a single union jurisdiction.

The organization of specifications into technical sections on a nationally accepted, uniform basis has finally been achieved through the CSI Format for Construction Specifications. However, the arrangement of the subject matter within the technical section has not yet been formulated or promulgated by any professional body in an organized manner.

A technical section in a book of specifications may be considered as analogous to a chapter in a book; the chapter in turn consists of paragraphs. The material that comprises the section consists essentially of paragraphs and subparagraphs. Any other names to describe the breakdown of the material within the technical section—such as "articles," "clauses," "heading," "categories," or "units"—are redundant and lead to confusion.

A uniform system of presenting information in the technical section is important for several reasons. The specifier, in following a definite procedure, is less likely to overlook any item. The contractor, estimator, materials manufacturer, and inspector will find the information more readily.

The technical section contains basically two categories of paragraphs—namely, the technical and nontechnical—as follows:

Technical	*Nontechnical*
Materials	Scope of Work
Fabrication	Delivery of Materials
Workmanship	Samples and Shop Drawings
Installation	Permits
Tests	Guarantees
Schedules	Cleaning

In arranging for a logical order of paragraphs under a technical section, both the technical and the nontechnical should be presented as they occur chronologically—in the sequence in which the contractor would ordinarily do his work.

If the specifier follows this course, he is less likely to omit something and his reliance upon a checklist at his side diminishes.

The following arrangement is suggested in general (there are always exceptions to the rule) for the orderly, chronological make-up of the technical section. Each paragraph heading should be simple and self-explanatory.

(1) *General.* Make reference to the contract documents as being part of the requirements for this section of the work.

(2) *Scope of Work.* Describe briefly or in detail (whichever method the specifier elects) the scope of the work of the section.

(3) *Work of Other Sections.* Describe those items normally part of this section that the specifier has for one reason or another specified elsewhere. Do not list items that are not normally the work of this section.

(4) *Materials.* Specify the materials to be used. Reference standards can be noted briefly: *Structural Steel*-ASTM A-36.

(5) *Samples.* Require submission of samples for approval. List item, size, and quantity.

(6) *Shop Drawings.* State precisely what is required for approval and scale of drawings.

(7) *Tests.* Tests of individual components such as cement, mortar, concrete, and brick. (Tests of completed systems and installed work are specified later.)

(8) *General Requirements.* This paragraph may include subparagraphs as follows:

(a) Delivery and storage of materials
(b) Weather conditions
(c) Building codes, applicable industry standards.
(d) Field measurements

(Note: If any of these subparagraphs is a major item for a specific section, make it a major paragraph.)

(9) *Fabrications and Manufacturing.* Describe shop fabrication of preassembled items.

(10) *Installation, Application, and Erection.*

(a) Preparation of surfaces
(b) Reference to existing conditions
(c) Details of installation
(d) Construction methods
(e) Workmanship

(11) *Tests of Completed Installation.* Include test of mechanical systems, piles, structural elements.

(12) *Protection and Cleaning.*

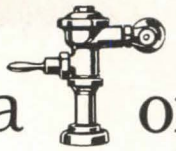
(13) *Guarantee.* Use only if standard one-year guarantee is extended for this section.

(14) *Measurement and Payment.* Use only where unit prices are involved. Not required for lump-sum bids.

(15) *Schedules.* Useful for hardware, lighting fixtures, painting, plumbing fixtures.

Do not use these paragraph headings when they do not apply. Introduce new paragraph headings when applicable. Deviations are proper when awkwardness would result from too close adherence to this rule.

Beginning in 

with a  of basic practical design which created a phenomenal demand  , THE SLOAN VALVE COMPANY has become the 

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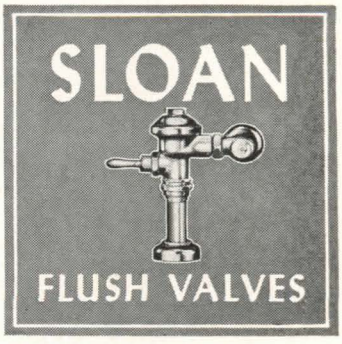

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Owner/Contractor Arbitration

BY BERNARD TOMSON AND NORMAN COPLAN

P/A's legal team discusses a recent case in which an owner unsuccessfully sought arbitration against a contractor's defective work some eight years after final payment for the project was made.

The remedy of arbitration contained in a construction contract can be lost or waived if the provisions of the contract are not closely followed or the statutory law of the place of construction is ignored. This is illustrated by a recent decision of a New York court, which was required to interpret "The General Conditions of the Contract for the Construction of Buildings" issued by the AIA in a dispute between a contractor and an owner involving the right to arbitration (*Thompson-Brinkworth, Inc.* v. *St. Luke's Evangelical Lutheran Church*, N.Y.L.J., 4/9/65).

In this case, it was established that the general contractor and the owner entered into an agreement in September 1955 for the construction of a church building for the agreed price of $419,890. The work was to be commenced on October 3, 1955, and to be substantially completed by September 7, 1956. Upon substantial completion of the structure, a defect in the work involving a water-seepage condition was discovered and notice furnished to the general contractor of such defect. Upon completion of the project, certain monies were held in escrow by the owner to insure the correction of the claimed defective work. However, on May 27, 1957, the monies that had been held in escrow were paid to the contractor, although, at that time, the defective condition had not been corrected.

The owner alleged that this money had been paid because "he succumbed to the pleas of [the contractor's] principal officer, who persuaded him to make such payment on the assurance and implied promise by [the contractor's] president 'that he was a man of honor and would correct any defective work.'" It was further alleged by the owner that, for a period of three years, "numerous letters were sent, telephone conversations had, personal inspections of the subject property and conferences were arranged between the parties, their representatives, and others interested in the performance of the contract." Despite these negotiations, however, the defective water-seepage condition continued, and, according to the owner, was never corrected.

In 1965, arbitration was demanded by the owner for the damages claimed to have been sustained, arising from the failure of the contractor to correct the defective condition. The contractor, although not denying the facts as alleged by the owner, contended that any arbitration was barred by the applicable statute of limitations of the State of New York and by Article 40 of the AIA General Conditions. The owner, on the other hand, relied on Article 20 of the General Conditions to support his demand for arbitration. The pertinent section of Article 40 of the AIA General Conditions provides as follows:

"Notice of the demand for arbitration of a dispute shall be filed in writing with the other party to the Contract, and a copy filed with the Architect. The demand for arbitration shall be made within a reasonable time after the dispute has arisen; in no case, however, shall the demand be made later than the time of final payment, except as otherwise expressly stipulated in the Contract."

It was the contention of the contractor that the owner's demand for arbitration had not been made within a reasonable time after the dispute had arisen, and, in any event, had been made subsequent to final payment and was therefore permanently barred.

The owner, on the other hand, argued that Article 20 of the AIA General Conditions preserved his right to arbitrate, and that the rule of Article 40, relied upon by the contractor, was not applicable under the modifying phrase "except as otherwise expressly stipulated in the Contract." Article 20 provides:

"The Contractor shall remedy any defects due to faulty materials or workmanship and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from the date of Substantial Completion as defined in these General Conditions, and in accordance with the terms of any special guarantees provided in the Contract. The Owner shall give notice of observed defects with reasonable promptness. All questions arising under this Article shall be decided by the Architect subject to arbitration, *notwithstanding final payment.*"

It was the owner's position that the obligation of the contractor to correct the defect in the work was not affected by final payment as provided in Article 20, and that consequently he was entitled to arbitrate the issue. The owner also contended that a new promise had been made by the contractor to correct the defective work upon the receipt of final payment and that this new promise was independent of the application of Article 40 of the General Conditions.

The applicable New York statute provides that, "If, at the time that a demand for arbitration was made or a notice of intention to arbitrate was served, the claim sought to be arbitrated would have been barred by limitation of time had it been asserted in a court of the State, a party may assert the limitation as a bar to the arbitration on an application to the court." The applicable statutory time within which an action must be brought in court involving a breach of contract in New York is six years from the time the cause of action accrued. Consequently, the Court vacated the demand for arbitration, stating:

"Since the final payment was concededly made in May 1957, and the demand to arbitrate served almost eight years later, the court is constrained to find that the demand for arbitration was not timely made and that the statute of limitations has run against the matters sought to be arbitrated."

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Constancy and Change

Built at the peak of Egyptian architectural prowess, during the reign of Amenhotep III, the hypostyle hall of the Temple of Luxor demonstrates that "the Egyptians loved half-darkness."

BY PAUL ZUCKER

THE ETERNAL PRESENT: II. THE BEGINNINGS OF ARCHITECTURE. *S. Giedion. (The A.W. Mellon Lectures in the Fine Arts, 1957) Bollingen Foundation. Distributed by Pantheon Books, 22 E. 51 St., New York, N.Y. 10022, 1964. 583 pp., illus. $12.50. The reviewer is Professor of Art at Cooper Union and the author of* Town and Square: From the Agora to the Village Green.

As a pupil of Heinrich Woelfflin, Giedion began as an art historian, and he naturally was strongly influenced by his master. For many decades afterwards, he became essentially a fighter for the new movement in architecture, centered around the *Bauhaus* and the work of his friend Walter Gropius. With this book, based on the Andrew Mellon Lectures, Giedion has returned to the less polemical attitude of the historian.

His earlier, somewhat one-sided glorification of functionalism, especially its right-angular version, which was so often ultradogmatic and intolerant toward all movements outside the *Bauhaus* and the sometimes ultraprimitive principles of the C.I.A.M., has given way to the historical approach—still strongly subjective and often surprising, yet entirely different from his earlier, more personal, and time-bound concepts.

We expect from all books by Sigfried Giedion that their reach extend much further than their title implies. This holds equally true for *The Eternal Present: The Beginnings of Architecture*, for it is not merely a new approach to the history of the first two great civilizations, the Egyptian and the Sumerian-Mesopotamian. The fundamental character of those two earliest civilizations and their relation to modern architecture and art is

Continued on page 218

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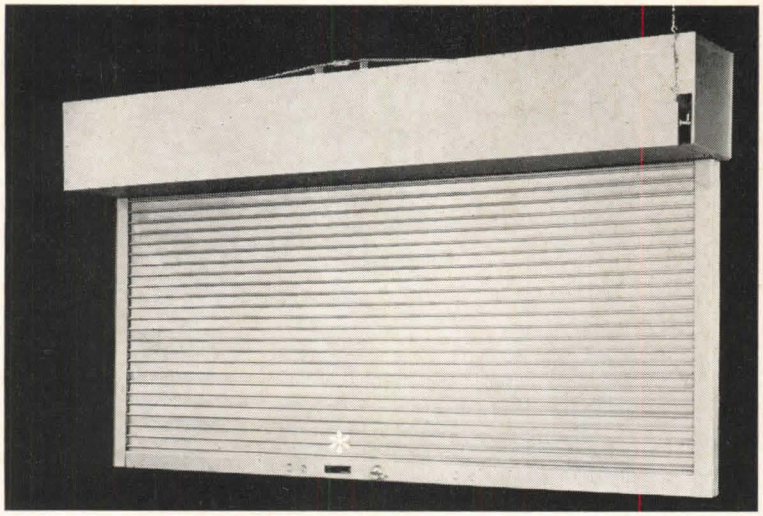

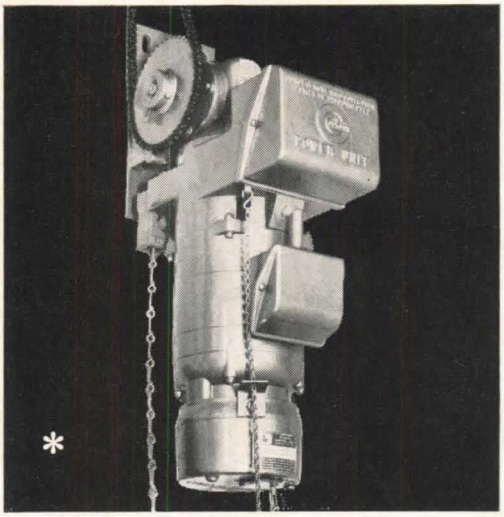

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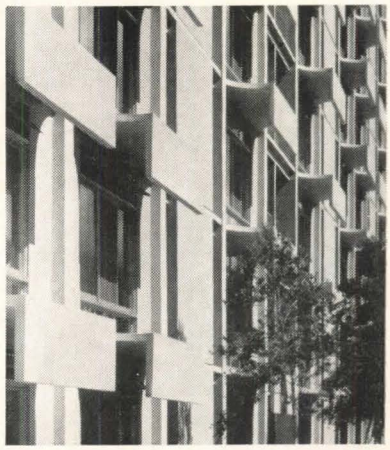

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Continued from page 210

carefully elucidated—more than that, strongly emphasized.

I regret not being able to convey to the reader the copious amount of factual information that enriches this volume. But that is impossible within the framework of a brief review. Certainly, such information is not its main purpose. More important is understanding the principles that, in Giedion's opinion, determined the transition from prehistory to history and the flowering of the two first great civilizations of the West.

Giedion's vision dominates the entire book; it is so absolute and conclusive that the book emerges as a general philosophy rather than mere architectural history. As Giedion sees it, the nucleus of all architectural and sculptural problems, as well as their solution, is contained in the relationship between volume and space, both limited and unlimited space. In the present book, the contrast between horizontally and vertically directed volume reaching into space is more strongly accentuated than in the first volume, *The Eternal Present, The Beginnings of Art*. Thus, Egyptian architecture is conceived primarily as a continuation of passing and fleeting existence; horizontality is its visual expression. It is crystallized in the basic forms of Egyptian architecture, from mastabas and pyramids to tombs and temples. The individual great monuments of Egyptian architecture and sculpture are analyzed, and the meaning of their abstract shapes elucidated. On the other hand, Mesopotamian architecture has a predominantly vertical thrust, piercing space and expanding into cosmic infinity.

Giedion's discussion of space in prehistory formed the most challenging part of the first volume (see SEPTEMBER 1963 P/A); here it is the emphasis on "constancy and change" which for Giedion replaces the historical sequence of styles. His concept of intricate fluctuation opens much wider vistas than the traditional labeling of different historical styles in chronological order, bound more or less to the concepts of gradual evolution and the rhythmical dance of various *Zeitgeists*.

The combination of the author's almost religious enthusiasm and fervor with thorough scholarly research compels every reader to think through not only the historical panorama of these ancient civilizations but also their sequences and analogies in later developments. And that holds true even for those to whom this kind of approach appears at first alien. This book is a success that can

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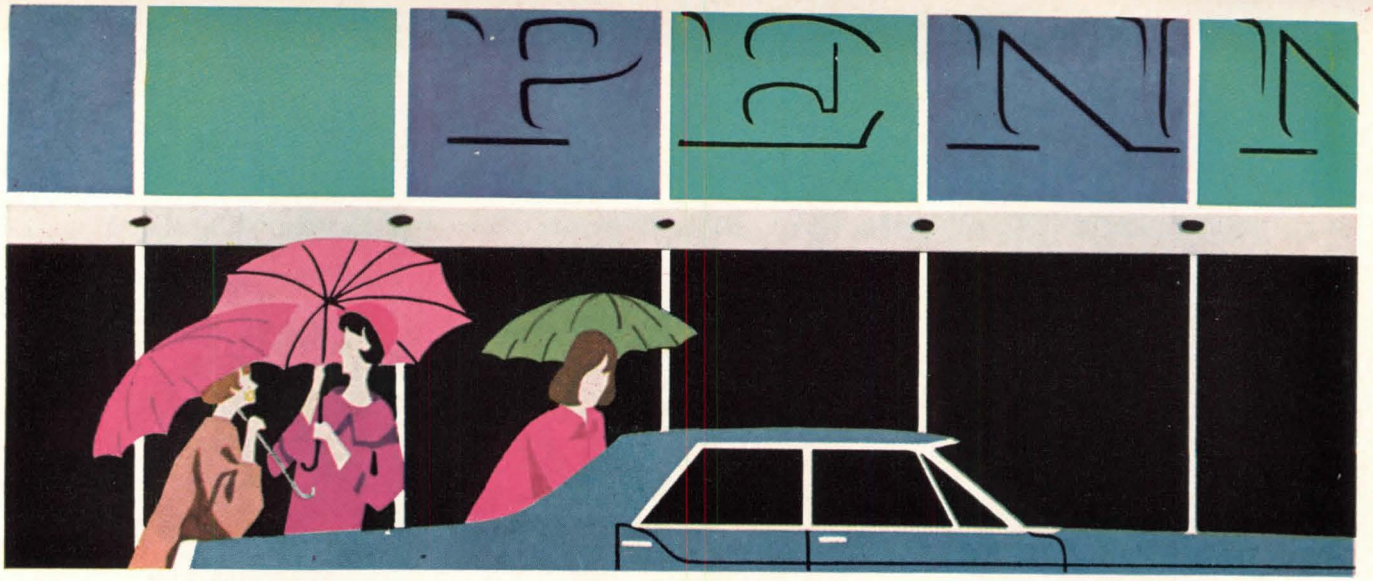

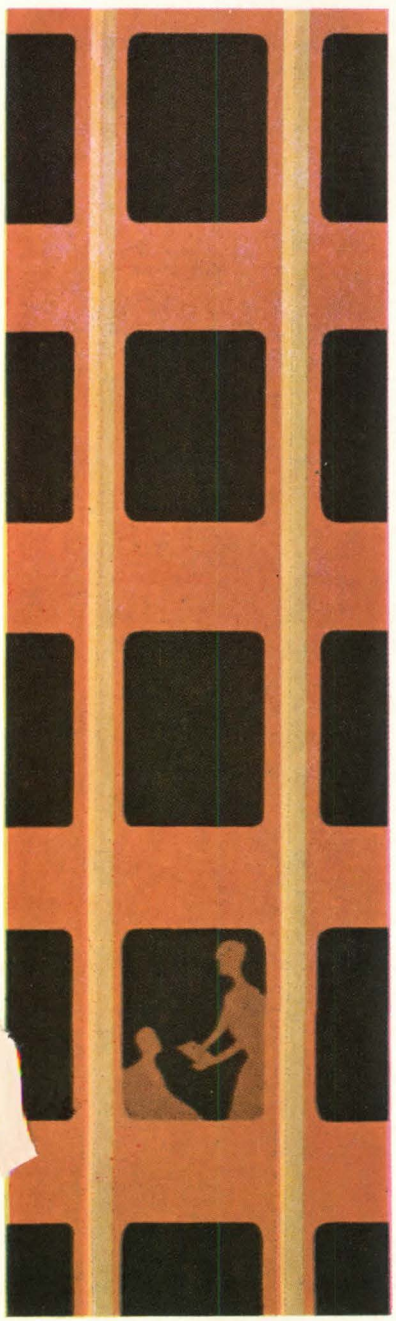

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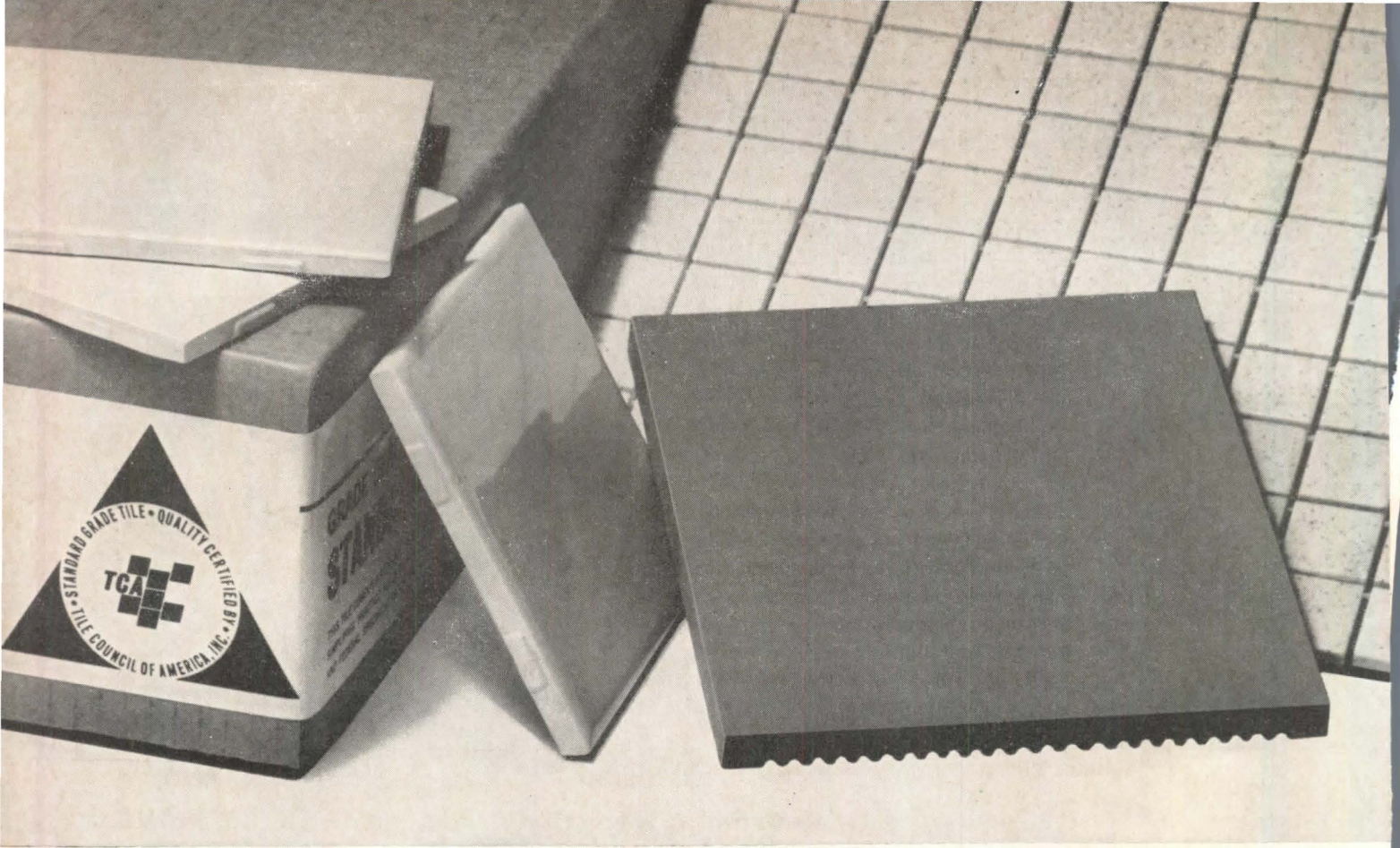

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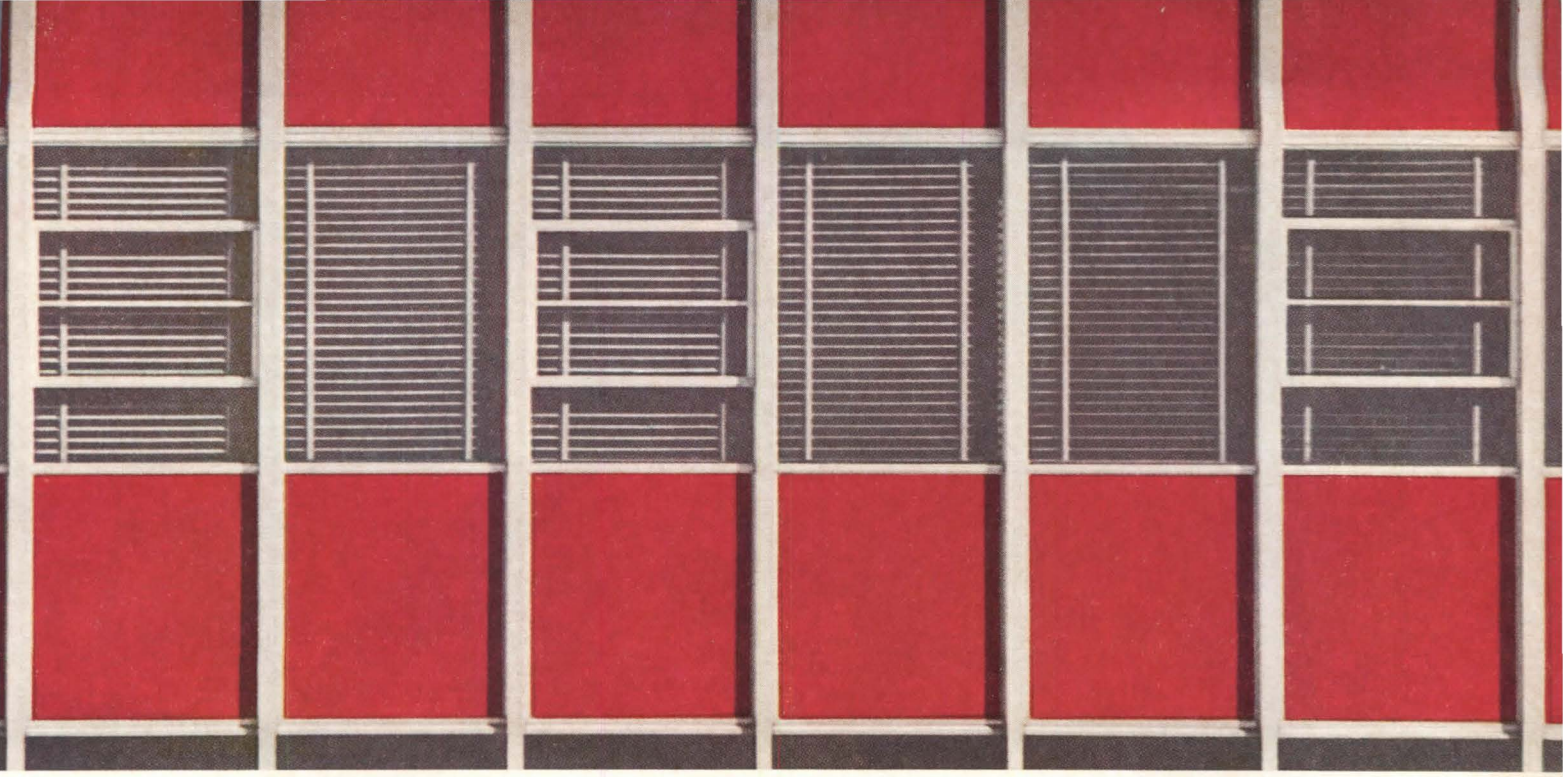

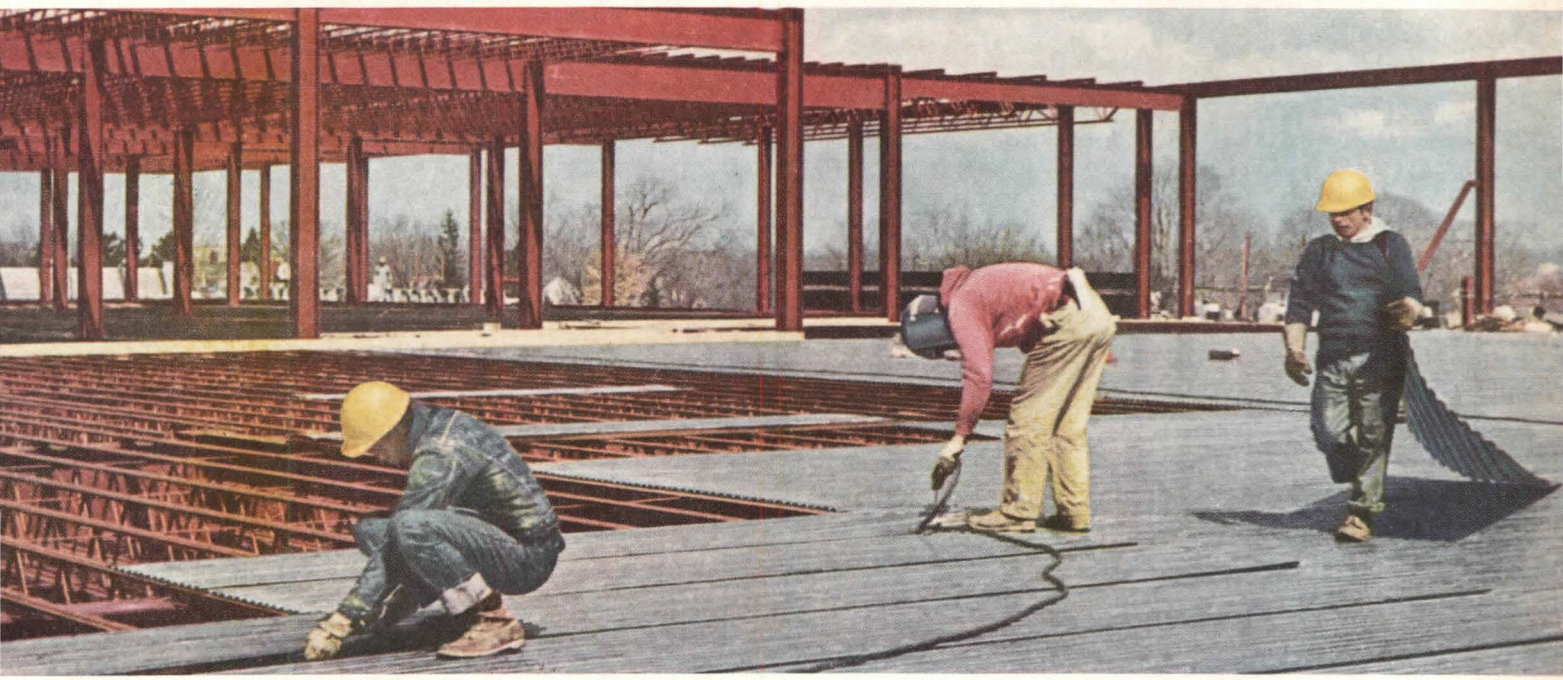

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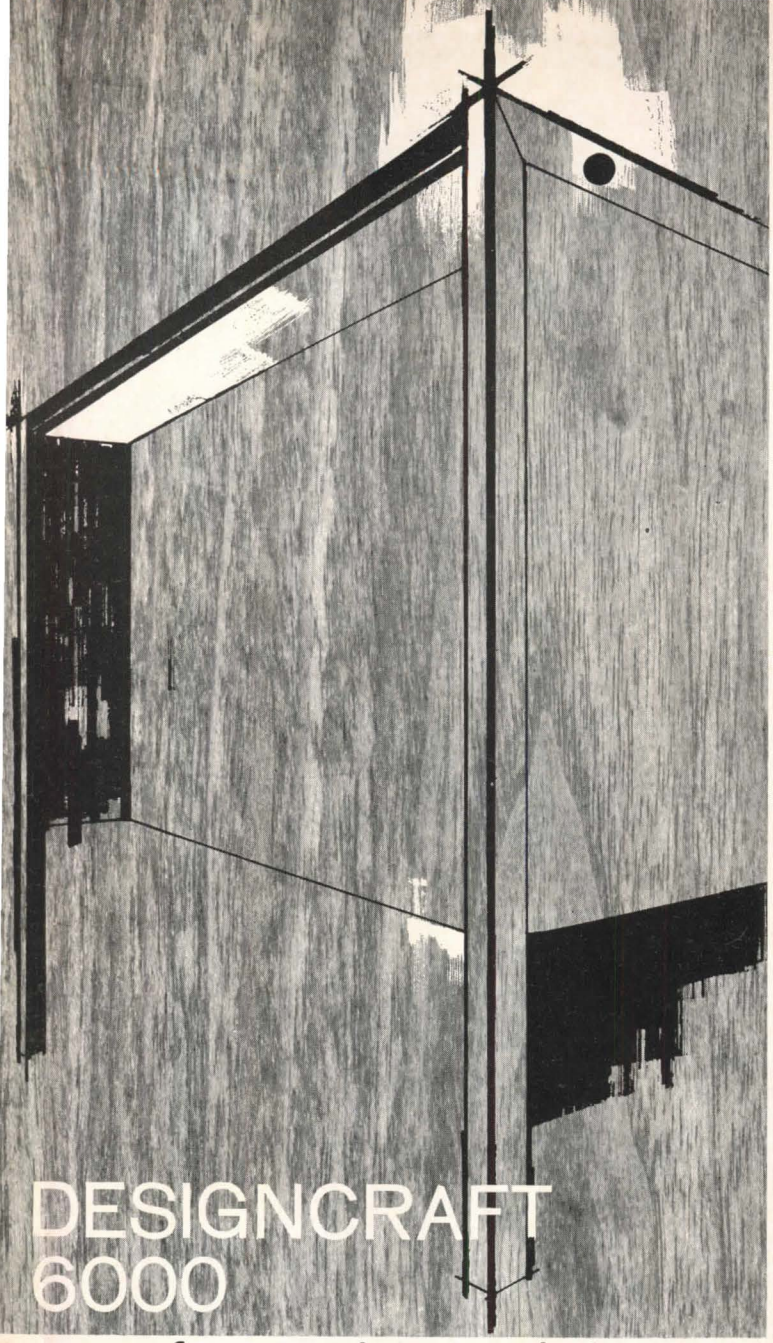

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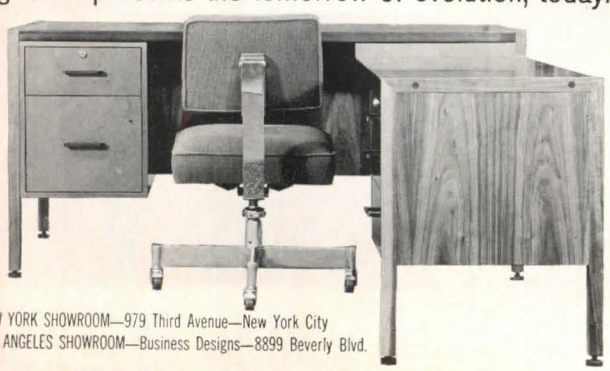

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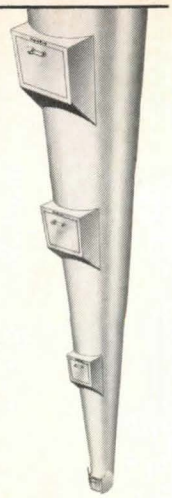

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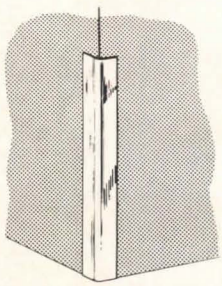

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Continued from page 218

never be achieved by so-called "painstaking" philological research papers that are so fashionable as an alleged proof of reliable scholarship.

The Language of Gardens

BY FORREST WILSON

GARDENS MAKE ME LAUGH. *By James Rose. Illustrated by Robert Osborn. Silvermine Publishers, Inc., Distributed by Taplinger Publishing Co., Inc., 119 West 57 St., New York 19, N. Y., 1965. 151 pp., illus., $4.95. The reviewer is an Associate Professor in the Interior Design Department of Pratt Institute.*

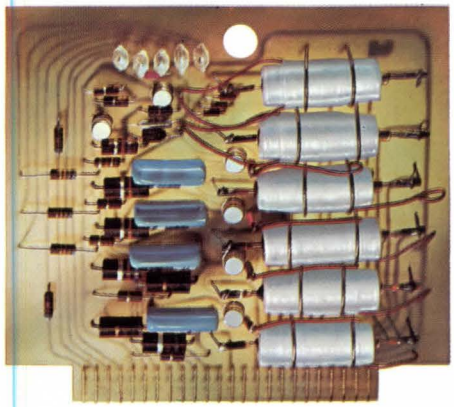
Gardens make Mr. Rose laugh; but it is clear that he does not consider gardens a laughing matter. This justly famous landscape architect has written a humorous book that is not very laughingly directed at *you*—the collective *you*, including me and all of the non- and particularly the un-garden makers.

In a style faintly reminiscent of a disillusioned Saroyan, the author describes gardens and the creative process of garden making. "Gardens do have a language, but it is not made of words, in fact words get in the way of gardens." The consequence is a book to "get with" gardens. If the author had chosen to be literally descriptive, the result would undoubtedly have been a one-word book, *Garden*, and, in Rose's terms, this would have been sufficient.

To sum up the "where" and the "why" of a book in a paragraph, we might quote from another book published by Rose in 1958. In *Creative Gardens*, he wrote: "In considering the plight of suburban houses, tacked to their landscapes with scotch broom and forsythia, it is too easy to blame the architect and builder for their 'economies,' the antiquated building code for its restrictions, and the enterprising developer for his dollar planning. These conditions can exist only in a culture that is suitable to their growth. The homeowner is not the victim of this culture; he is the culture, and aids the process of environmental decay." There you have the *you* the author is writing around, about, and to in *Gardens Make Me Laugh.*

Rose may take his place with those who are strongly convinced that the practice of architecture was devised to infringe upon their particular function. As a landscape architect, he sees the house as an extension of the garden, much as the architect sees the garden as an extension of the house. But the interior de-

Continued on page 236



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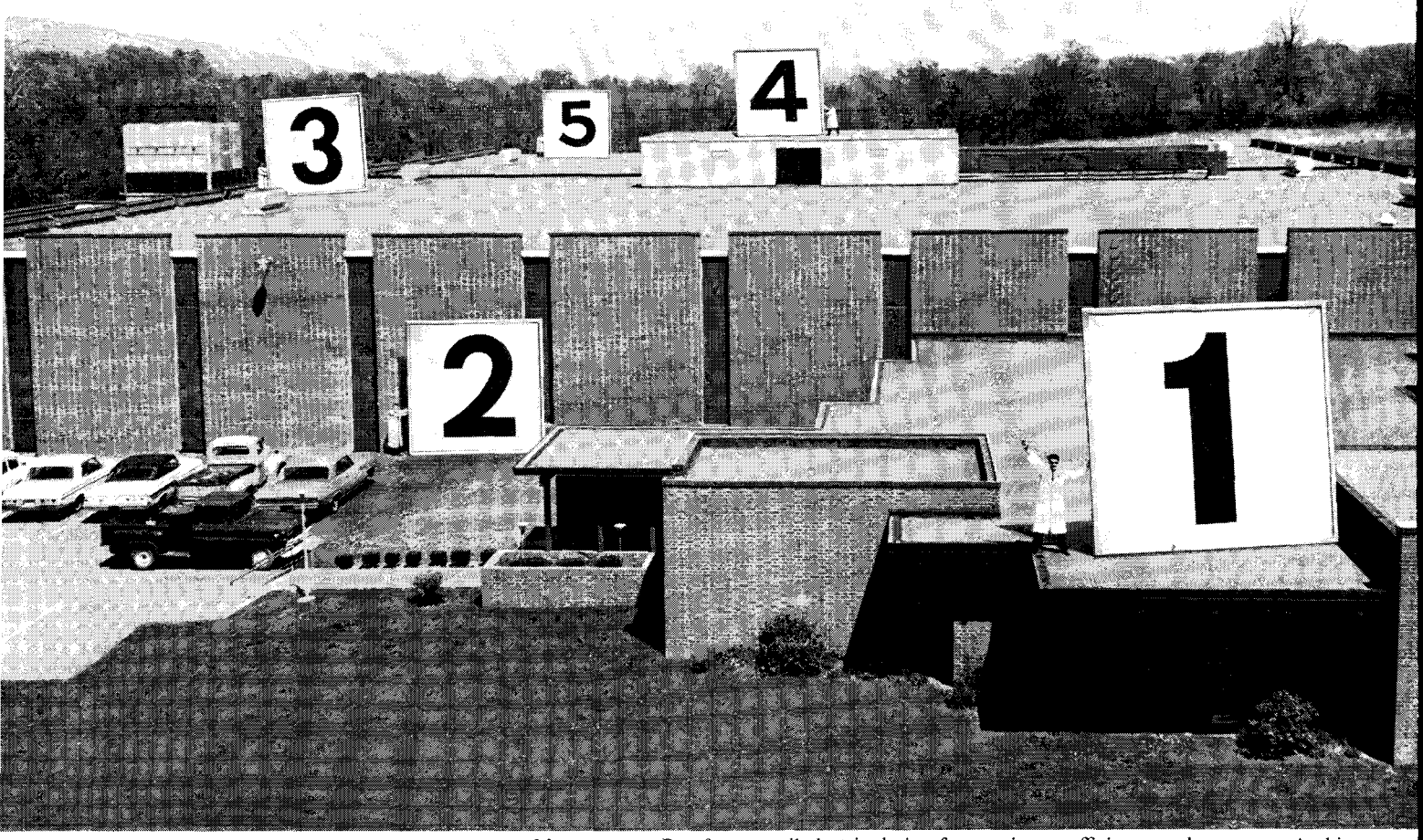

NEW PLASTI-VAC PLANT, Montgomery, Pa., features all-electric design for maximum efficiency and economy. Architects: Wagner and Hartman Associates, Williamsport, Pa. Engineers: Nicholas-Cowley Associates, Harrisburg, Pa.

New Pennsylvania factory points up five exclusive benefits of all-electric design!

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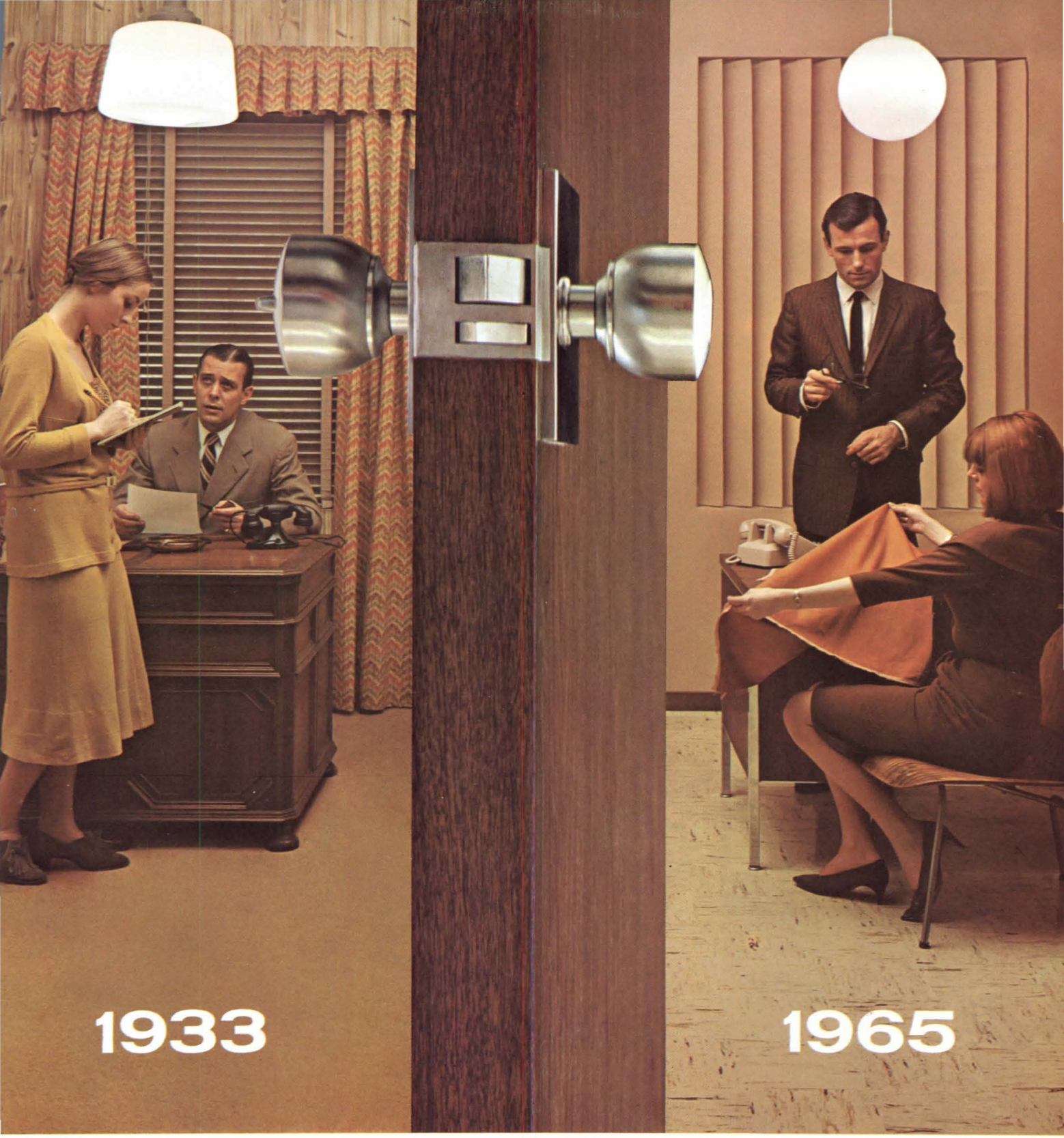

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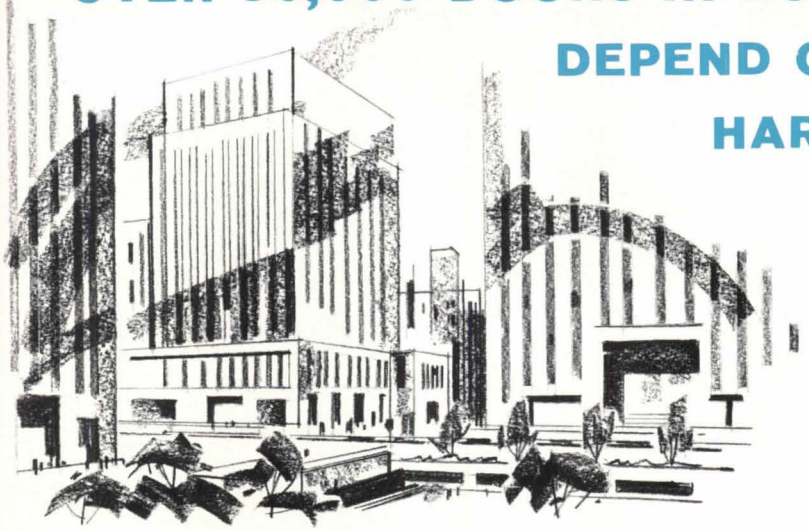

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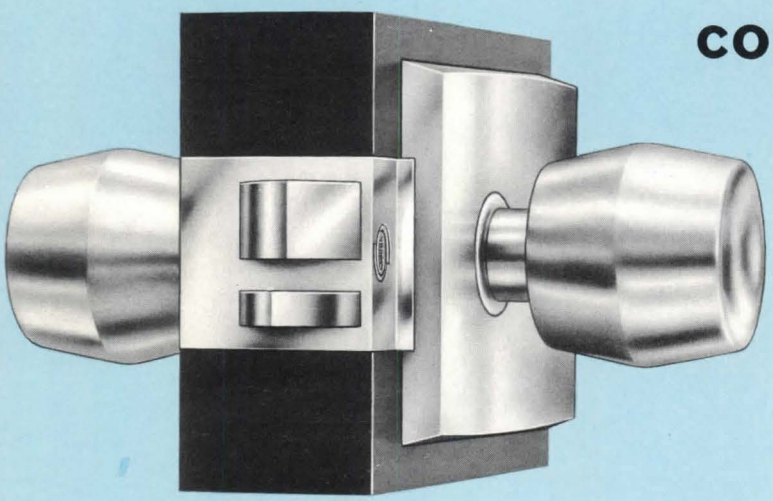

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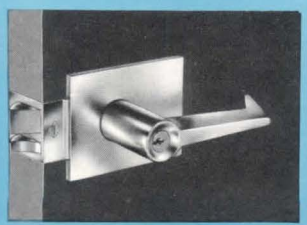

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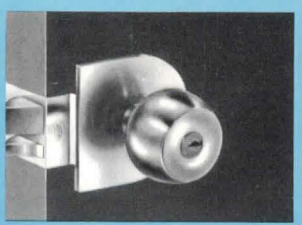

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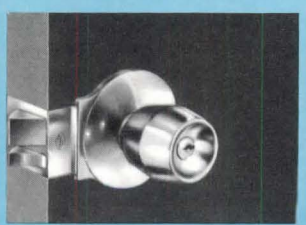

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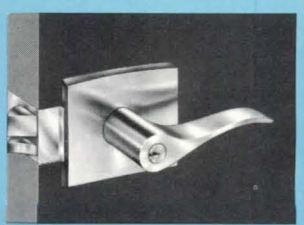

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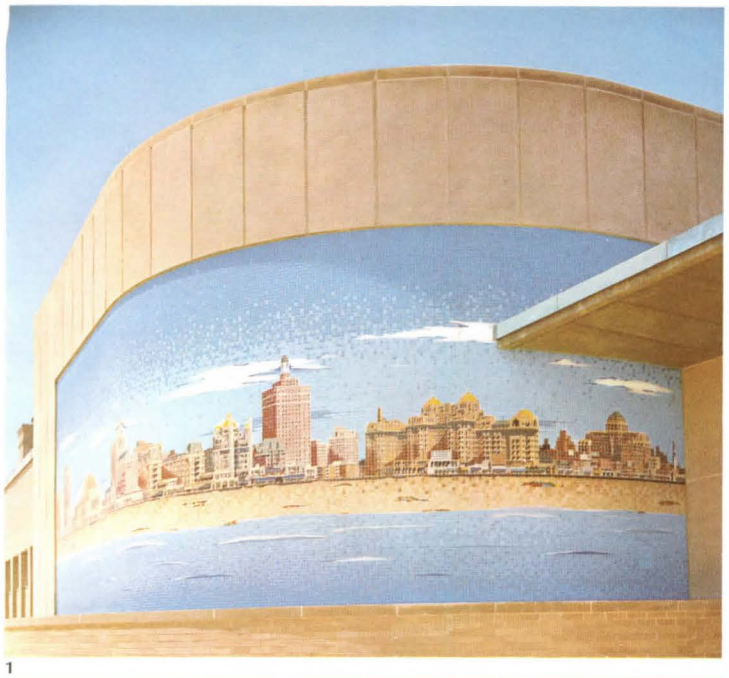

1

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3

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5

Architectural Showcase...exteriors in tile

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

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

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

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

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

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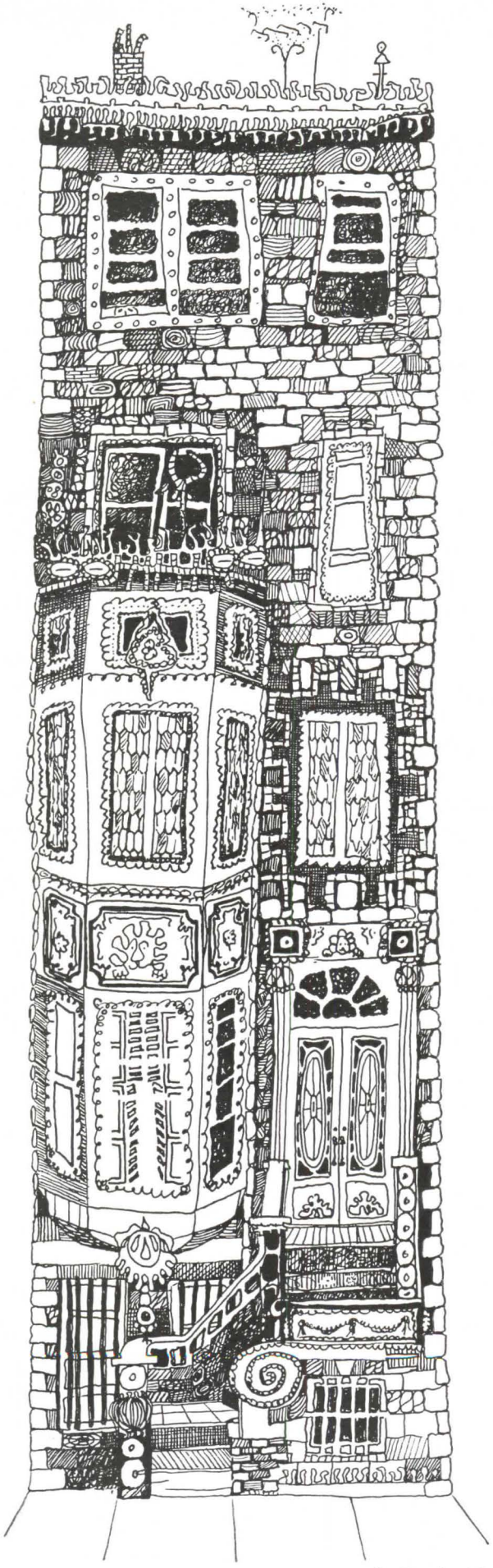

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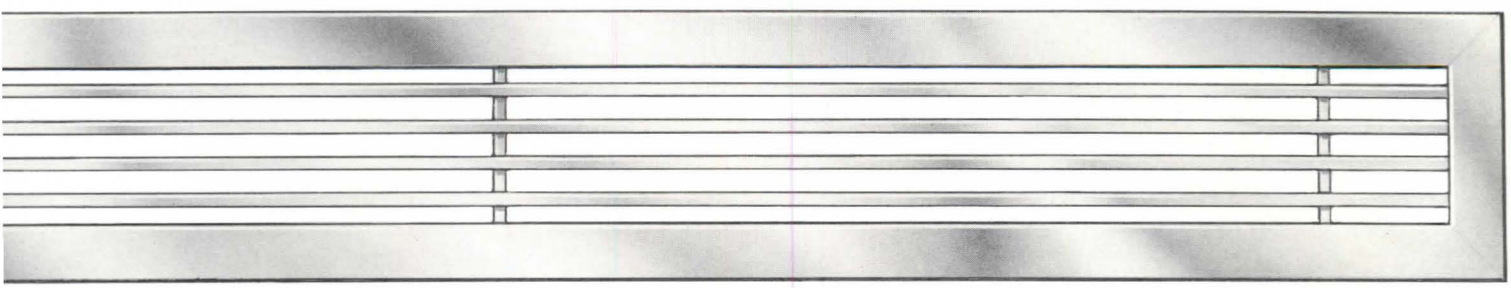

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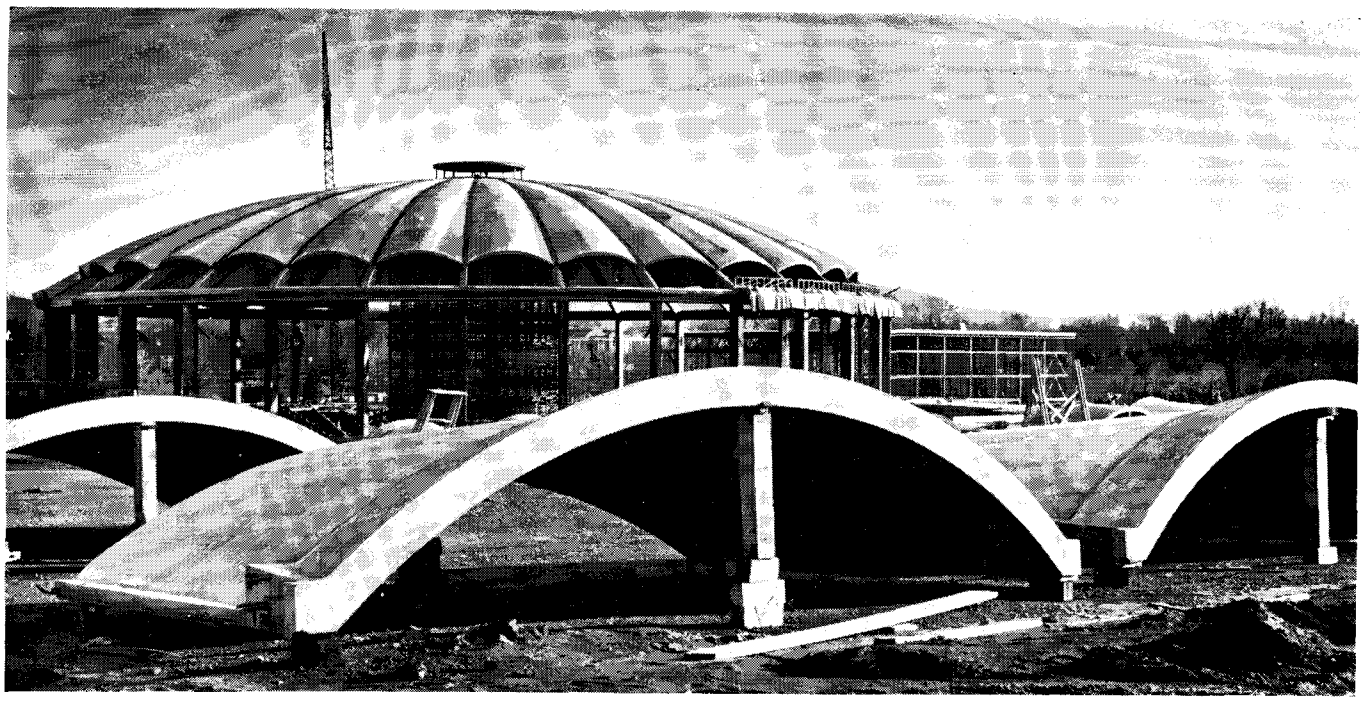

Eight tapered, thin-shell units make up each section of the roof. They range from a 4′ span at center to a 27′10″ span at roof edge. The edge units are shown in foreground. Peripheral ring is supported by 44′ cast-in-place columns. More than 100 miles of wire was wrapped and post-tensioned around this outer ring.

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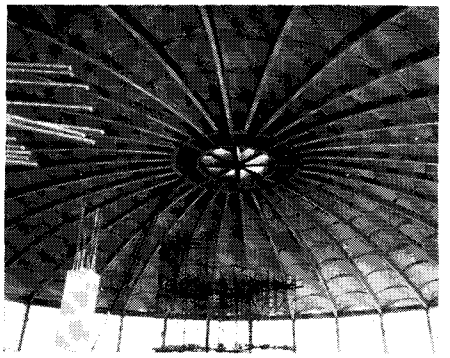
General Contractor: McDevitt & Street Company, Charlotte, N. C.

Ready Mix Concrete: Southern Materials Co., Charlottesville, Va.



The architectural effect of the dome interior is most attractive. Compression ring is 52′ in diameter.

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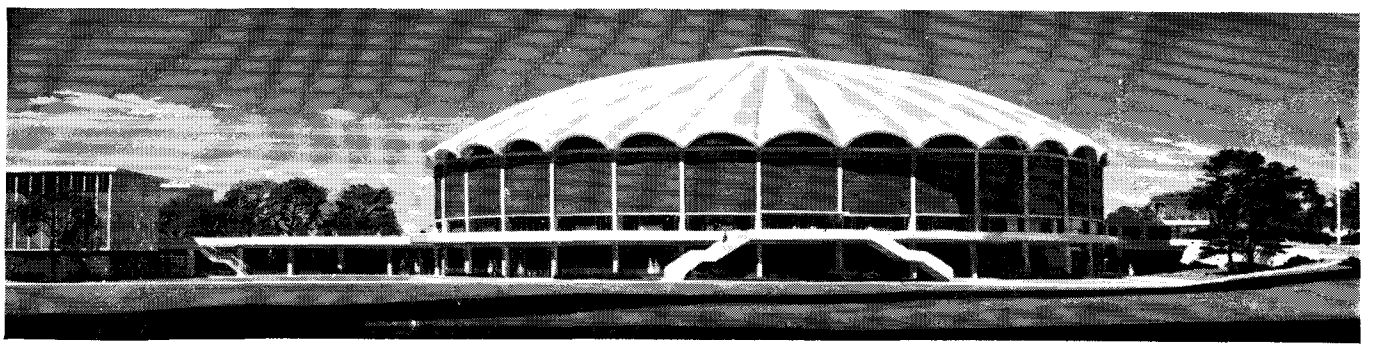
This new auditorium-gymnasium, to be known as University Hall, will provide seating for 9400 persons under the interesting fluted roof. The structure is 87′ high at center; has a 282′ clear span.



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Continued from page 224

signer considers the house a convenient device to keep the interior from spreading, and the plumber views the structure as a necessary covering to keep pigeons off the fixture branches. A house is, of course, all of these things—none of them singly, and all of them collectively.

The author is at war with the designed house, the developer's house, or the just-happened house that forces him to "build a nest for birds that have forgotten how to think and feel." It is a war waged on many fronts—all of them fronting on the garden.

We are all undoubtedly guilty of the lunacy of our landscape, as Rose describes it, and perhaps each man's garden is the place to begin the healing therapy. However, it would seem that the social problem is more immediate in that misnomer, the "industrial park," and in the commercial rending of the earth with psychopathic frenzy to create "God's own junkyard."

That gardens should adhere to the same design sensibilities that dimension other forms of architectural activity, that they are of a distinct time, and that they were created by individual people thinking in a particular way and therefore cannot be duplicated or transplanted without an intrinsic loss, is not a new thought, although it is amusingly presented by Rose in the chapter, "Where, Whose, What and When"—particularly in his reference to Japanese gardens. Rose's view of the scrutable Japanese in his own inscrutable terms is delightfully amusing.

When the author describes approaching a project involving sculpture, it is obvious that he refers to a condition where there exists nothing between the creator and the garden: no paper diagrams, no building inspectors, no bankers, and no client interference. He prefers to let his gardens happen—with a bulldozer—which is akin, I suppose, to Michelangelo's simply removing the excess stone from the statue.

The description of a teaching interlude at Princeton finds the author in the role of professor, one he is not particularly enamored of. Rose describes the students as bright individuals, but then goes on to say that "the director had not told me they were all the same individuals."

In its simplest terms, design is an idea about people and the ability to see that idea realized. For people to realize themselves, as Rose advocates, involves an educational process, which, if it were to come into being, would make design

Continued on page 238

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Continued from page 230

schools, designers, and landscape architects unnecessary—which is of itself a commendable endeavor. Perhaps Rose is right in his premise that realizing and creating ourselves in time, space, and gardens is the best way to "go sane."

The illustrations for the book were done by Robert Osborn. While they are executed in his fine style, they fall short of the author's comment.

The Vastness Eluded a Myopic Englishman

BY EDWARD K. CARPENTER

THE AMERICAN LANDSCAPE, A CRITICAL VIEW. *Ian Nairn. Random House, Inc., 457 Madison Ave., New York 22, N. Y. 1965. 152 pp., illus., $5.95. The reviewer is an Associate Editor of P/A.*

What is best, and also what is worst, in Ian Nairn's book is the result of his English background. Because he is English, Nairn, who is an editor of the *Architectural Review*, brings to the American landscape a critical eye trained on the tight, tidy playing fields of Essex, Sussex, and Middlesex. Loosed on the vastness of America—its sprawling towns, its broad networks of superhighways, its deserts and mountains—that eye still sees microscopically, like an ant looking at an elephant. What he sees is accurate, and his perception true, but when he tries to suggest improvements, to take his microcosms and with them make beautiful "townscapes" using the twin tools of "relationship" and "identity," he trips over vastness he has not perceived.

"Townscape," he explains in his introduction, "depends on two things: relationship and identity. Relationship means making the parts of the environment fit together—the supermarket, the gas station, the car lots; identity is the recognition and enhancement of the specific needs and qualities that make one place different from another. And here, right at the start, a big warning: that no identity is better than a false one." He goes on to point out that "Identity, in this physical, townscape sense, is a unique configuration of all the objects that go to make up the town, natural and man-made." What he has in mind is the type of identity a cathedral gives a European town, and when he comes upon Wright's Price Tower in Bartlesville, Oklahoma, he sees immediately that here is identity without relationship. It is the European cathedral without the town clustered around it. This is true—the accurate microscopic view. What to do about it? How do we make it fit the picture? Well, we rearrange Bartlesville: "It could still be remedied, by drastic street realignment, rearranging of parking lots, pulling the center of Bartlesville over to one side. In this case it would undoubtedly be worth the effort, unless the net result of it would be to put the Price Tower bang at the end of a formal axis." What he wants is the sense of surprise offered by the convoluted streets of an English town. He misses the vastness—and other things.

In other towns, small towns, he finds everyday items that might provide identity if highlighted properly. Here again his English background betrays him, for his choices are too mundane to American eyes to work or to have the "elegance, vitality, or robustness" he sees in them. He chooses an A&P sign, a DX service-station sign, a railroad-crossing sign, a rough, frame storage building with black lettering at one end saying "Decatur Lumber & Coal Co." Both his prescription and his choices smack a little of the approach of the decorating hints in slick women's magazines. How are you going to highlight your dressing room? Why, you take your grandfather's hunting horn, hang it on the wall, and fill it with

Continued on page 246

This canopy was under flood water for 8 days, yet was *completely undamaged!*

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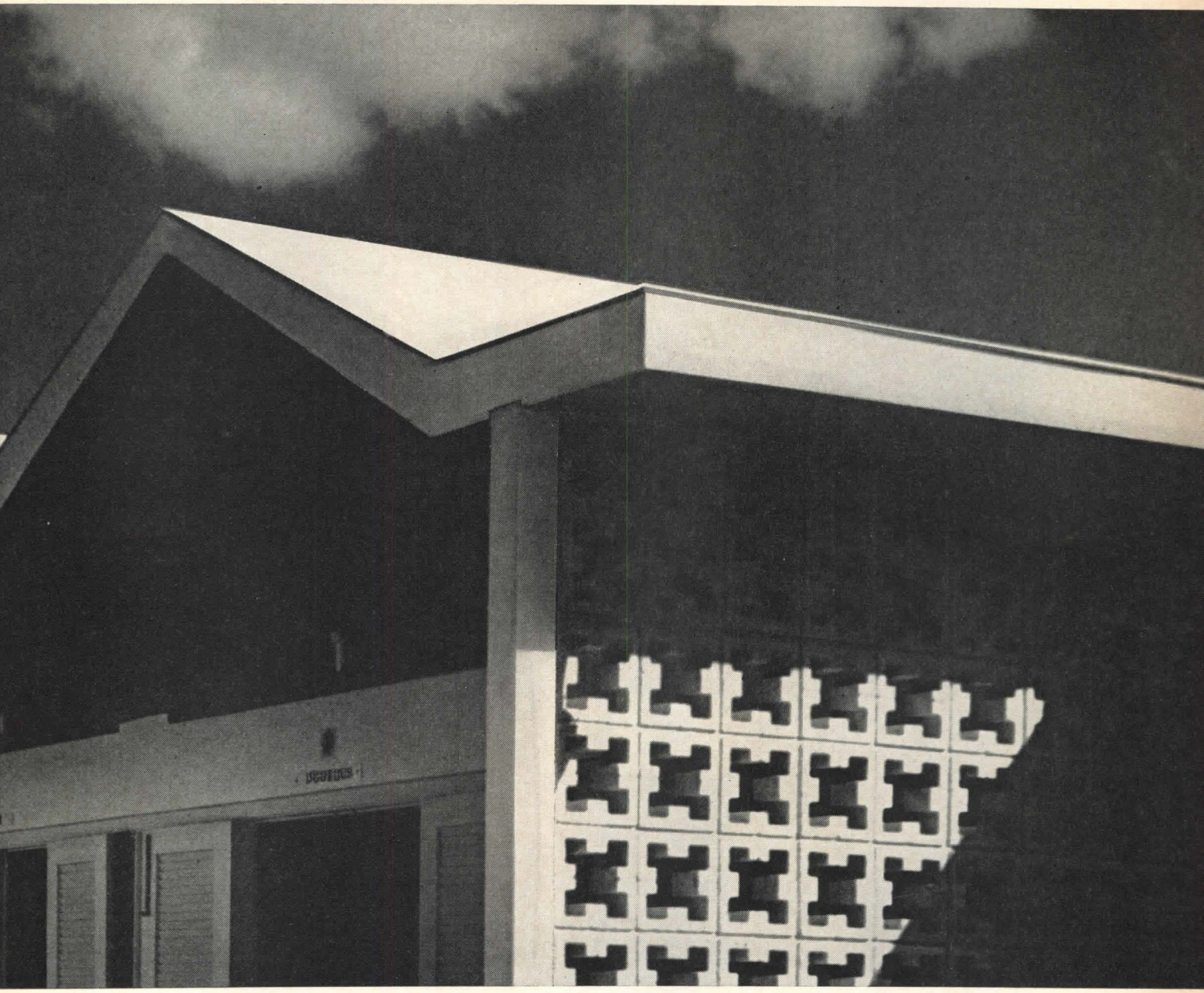
New Du Pont TEDLAR® keeps this cabana roof

A single ply of roofing gives long-lasting whiteness to the prominent, folded-plate roof of this hotel cabana. The surface of Du Pont TEDLAR* PVF film will remain a brilliant white, even after years of exposure. The roofing is Ruberoid T/NA 200† with TEDLAR. T/NA 200 is easily installed with conventional roofing techniques. It weighs less than conventional built-up roofing, and it can fit roofs of unusual contour and of any slope.

The whiteness of the surface of TEDLAR gives high reflectivity (it has less than

brilliantly and lastingly white—without maintenance



half the solar absorptance of crushed stone or marble), which lowers under-roof temperatures and air-conditioning loads.

The whiteness stays white because TEDLAR is a tough, inert, flexible film that's too smooth to trap dirt. There is no loss of color with TEDLAR because the surface cannot erode as it can from liquid topcoats applied in the field. Re-coating maintenance is eliminated. The roofing stays tough and flexible from minus 50°F. to over 250°F.

More and more architects are specifying TEDLAR as the finish on roofing and siding for their new designs. For a detailed case history and a sample, write Du Pont Film Dept., Box 2372A, Wilmington, Delaware 19898; or, for more information, see Sweet's Catalog.

Kenilworth Hotel Cabana, Miami Beach, Florida
Architect: Stefan Zachar, A.I.A., Miami Beach, Florida
Contractor: John C. Woodruff Co.. Miami Beach, Florida

*Du Pont registered trademark
†Ruberoid's registered trademark

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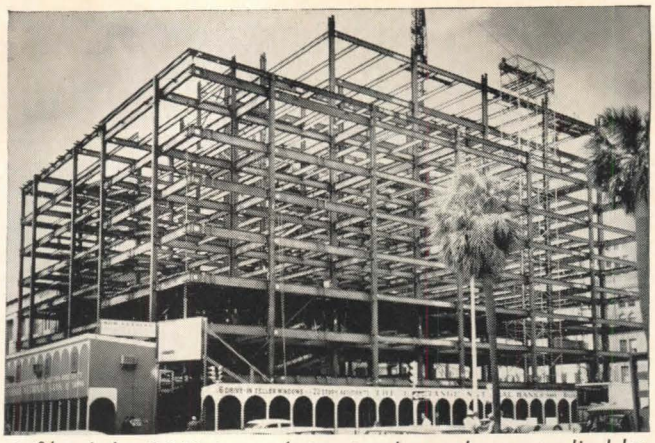
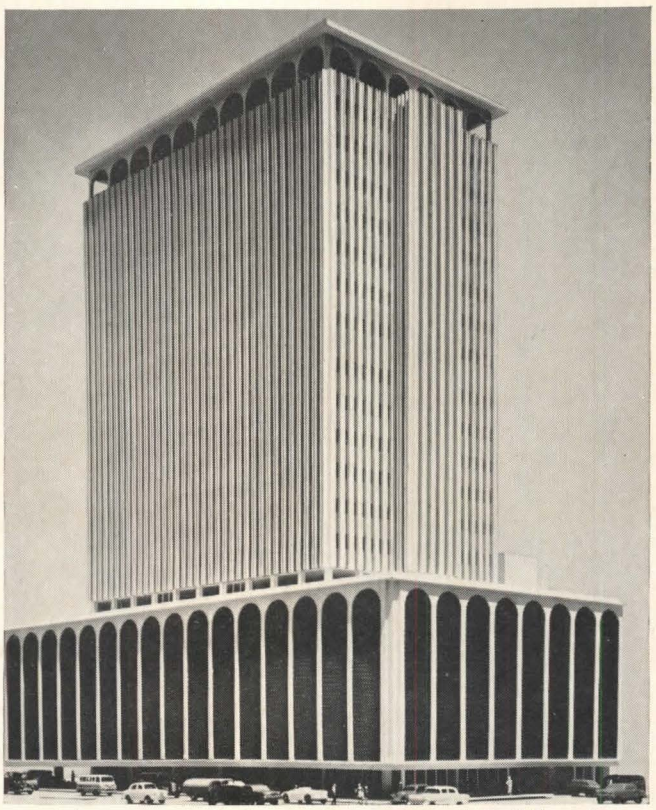
BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*



34% of the 3,200 tons of structural members supplied by Bethlehem is V50 and V55 high-strength steels. Field connections were welded and high-strength-bolted; shop connections were welded (V Steels are readily weldable).

Redesign in Bethlehem V Steels saved this bank $45,000

A simple redesign of some columns and a switch from A441 to Bethlehem V50 and V55 steels saved $45,000 for the owners of the 22-story Exchange National Bank Building, Tampa, Fla. Bethlehem V Steels are high in strength (45,000 to 65,000 psi min yield), but truly low in cost. If you'd like to know more about these economical structural steels, just get in touch with our nearest sales office.



Model of 22-story Exchange National Bank Building shows ground floor for banking facilities, six-story parking garage, and office tower section with floors designed for composite action.

Owner: Exchange Realty Corp. Architect: Harry A. MacEwen, A.I.A. Consulting Engineers: William J. McGraw, Inc., and Randolph C. Jackson, III, Inc. Fabricator and Erector: Florida Steel Corp. All are Tampa firms. General Contractor: J. A. Jones Construction Co., Charlotte, N.C.

BETHLEHEM STEEL CORPORATION, BETHLEHEM, PA.

BETHLEHEM STEEL

Steel

Steel for Strength

BETHLEHEM STEEL

Urethane foam-backed siding is the newest, easiest way to insulate a house...

and can save your customer up to 30% in heating and cooling costs

This new, unitized siding was developed for the builder who finds himself dealing with home buyers who are getting a lot smarter about insulation.

Preformed interlocking panels are backed with closed-cell rigid urethane foam that is permanently bonded to the substrate to form a strong, weather-proof, moisture- and fire-resistant barrier that can save up to 30% in home heating and cooling costs. Urethane-backed aluminum siding is accepted by the Architectural Standards Division of the FHA.

Urethane foam's high efficiency as an insulating and structural material is well-known and established in the refrigeration and transportation fields. Now you can build its sales advantages into your structures with pre-finished panels that complete the painting, insulating and siding jobs in one quick operation.

This is another development from the fast-moving urethane foam industry that is engineering home-building improvements designed to give the home owner a better buy for his money and to put more of the profit dollar into your pocket.

Write for the full story about urethane building products and a list of urethane material suppliers who are ready to serve you with cost-saving methods you'll find hard to believe—until you check out the arithmetic yourself.

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Code PA-15, Pittsburgh, Pa. 15205

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First in Urethane Chemistry

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Drenched, deluged and wind-whipped

...at hurricane force and still weather-tight!

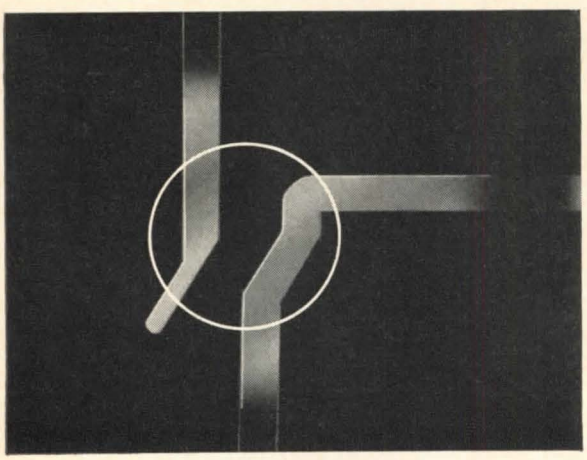
Independent Laboratory Tests Prove Kawneer Sealair Windows* Solve Weathering Problems!

The new Sealair window is weather-tight even when subjected to winds and rains of 70 to 80 miles per hour according to recent tests by an independent laboratory.

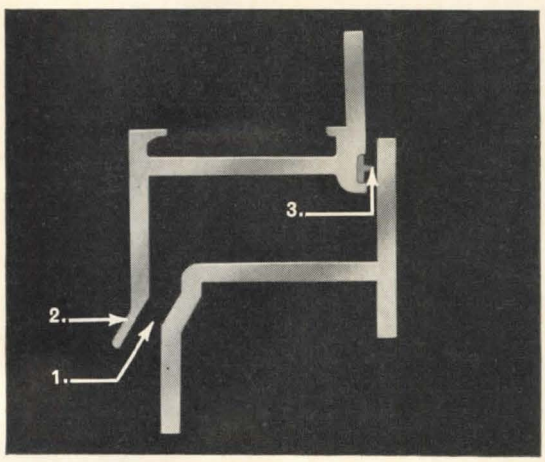
In these tests, the Sealair was installed in a weather test chamber. The window was water drenched as inside pressure was lowered to represent severe weather conditions. Sealair did not leak even when the static load reached 25 p.s.f. Many conventional windows leaked at 3 to 7 p.s.f. The superior weathering performance is the result of a Triple Weather Guard including an exclusive Pressure Equalization Slot. This Kawneer innovation is the most important metal window design change in recent years.

In air infiltration tests, the new Sealair was again far superior, at less than .2 c.f.m., well above industry standards. Here is a window so vastly superior that building interiors remain dust and draft free . . . reducing loads on heating and air conditioning systems. *Get all the facts about this remarkable window.* Write for your copy of the Sealair Window File.

Commercial and Monumental—Projected, casement and top hinged Sealair windows are available in commercial or monumental (2″) series. Finish: Alumilite is standard—or, non-fading, abrasive-resistant, Anodic hard colors (light bronze, medium bronze and black) are optional.



Pressure Equalization Slot—Keeps water out. Pressure within the window sections is equal to pressure outside the building. No pressure difference . . . no partial vacuum . . . no leakage.



Triple Weather Guard—1) Pressure equalization slot, 2) integral drip, and 3) neoprene weatherstrip. The Sealair window offers triple weather protection. Weathering where needed, scientifically designed.

Kawneer

Kawneer Company, Inc., a Subsidiary 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

*Patent Applied For

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Continued from page 238

little colored powder puffs.

Good as Mr. Nairn's eye for small detail is, it sometimes goes bleary. In San Clement, California, a waterfront pier cut off from town by railroad tracks is approached by an underpass. Nairn rightly sees and painstakingly explains in photos and text why the underpass is exactly right because its approach takes you up to a view of the harbor across the tracks, then curves down into the underpass, which carries you onto the pier. But once on the pier, his view becomes dim, as if affected by salt spray. The pier has two rest stations, public toilets. Nairn sees them as unselfconscious design, which they may be. But why come 6,000 miles to point them out? Certainly there must be something else in America worth attention, even if it isn't the Saarinen ice hockey rink at Yale, which has a "silly Viking-boat shape."

OTHER BOOKS TO BE NOTED

Aght'amar: Church of the Holy Cross. Sirarpie Der Nersessian. Harvard University Press, Cambridge, Mass., 1965. 60 pp., 77 plates, illus., $12.50

A study of the history and art of a 10th-Century Armenian church on the island of Aght'amar in southeastern Turkey.

The Architectural Index For 1964. Ervin J. Bell. The Architectural Index, P.O. Box 945, Sausalito, Calif., 1965. 70 pp., $5.00 (paperbound)

Every architect, professor of architecture, and student should order a copy of this invaluable index. It catalogues articles on buildings and materials and methods of construction published in 1964 in all seven major architectural magazines and cross-indexes them under general building type, architect, and location. Back issues to 1950 are available.

Building Construction Handbook, Second Edition. Frederick S. Merritt, Editor-in-Chief. McGraw-Hill Book Co., 330 West 42 St., New York, N. Y., 1965. 842 pp., index, diagrams, $19.50

The printing in this textbook is the size of newspaper print (we measured it) and the lines are three times longer and closer together than in newspapers. Page numbers begin anew in each section—and there are 29 of them. Though students will go broke buying it and blind reading it, the "Handbook" is a valuable book. This edition added material on CPM; the treatment of thin shells and folded plates has been expanded. There are many other additions and revisions—all done by experts. For students, engineers, foremen, and management interested in building economically.

Constant Companions. Art Department of the University of St. Thomas, Houston, Texas. Distributed by Withers Swan Public Relations, 4 East 89 St., New York 28, N. Y., 1964. 95 pp., illus., $1.00

Man has always expressed his deepest anxieties through art. This catalogue of an exhibition held at the University of St. Thomas in December 1964, entitled "An Exhibition of Mythological Animals, Demons, and Monsters, Phantasmal Creatures and Various Anatomical Assemblages," provides a spine-tingling tour into the dark recesses of historical and contemporary fears. Creatures, the excellent introduction tells us, were powerful symbols; they warded off evil spirits. When man had the sense, or temerity—or both—to domesticate them, they then guarded man against his grotesque imaginings. The exhibit included the following gems from all over the world: "Dragon Swallowing a Goat," "Two Lizards, One Biting Its Tail," and "Human Body, with Walrus Head, and Aquatic Birds."

Design in Structural Steel. John E. Lothers. Prentice-Hall, Inc., Publishers, Englewood Cliffs, New Jersey, 1965. Second, Edition, 585 pp., illus., $17.35

First edition material has been updated and revised to include a section on moment-resisting footings, an appendix of up-to-date engineering data, and a chapter on the plastic analysis and design of statically indeterminate steel structures.

Design with Glass. John Peter. Introduction by Albert G. H. Dietz. Materials in Modern Architecture Series. Reinhold Publishing Corp., 430 Park Ave., New York, N. Y., 1965. 156 pp., illus., $12

This is the first in a series to analyze and examine the use of wood, steel, concrete, plastics, clay products, and glass in building today.

Fountains. Introduction and selection by Minor L. Bishop. October House Inc., 55 W. 13 St., New York, N.Y., 1965. 48 pp., illus., $3.25. An American Federation of the Arts Publication.

This large (9" x 12"), inexpensive volume contains over 40 photographs of contemporary fountains that complement the architecture of buildings or that stand in parks and gardens.

Four Great Makers of Modern Architecture: Gropius, Le Corbusier, Mies van der Rohe, Wright. Edited by Richard A. Miller. The Trustees of Columbia University. Distributed by Wittenborn and Co., 1018 Madison Avenue, New York 21, N.Y., 1963. 296 pp., $7.50. (paperbound)

This is a verbatim record of a symposium on the four masters held at the Columbia School of Architecture from March to May 1961. A prodigious number of dignitaries spoke, including Jacques Barzun, Edgar Kaufmann, James Marston Fitch, Philip Johnson, and Corbu and Gropius themselves.

Furniture Forum: Contemporary Design Source Reference. Published by Furniture Forum, Inc., P.O. Box 3791, Sarasota, Fla., Vol. 15, 1964. 128 pp., illus., $6

A source and resource for the interior-design-minded. The products of major companies appear under the headings of furniture, wall and floor coverings, and accessories. Illustrations are large and well-produced.

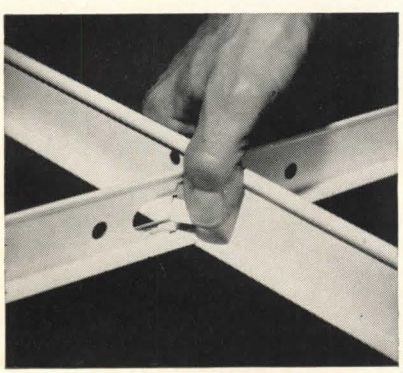
George Washington Smith. Text of exhibition book written by David Gebhard. The Art Gallery, University of California, Santa Barbara, California, illus.

A pictorial study of the Santa Barbara

Continued on page 254

Insert tee... bend tab! Make quick work of every ceiling with Eastern's TAB-LOCK* Grid Systems

Die-formed to precision tolerances, Eastern's cross tees align perfectly . . . resist torsional movement . . . are locked in tension with *slight finger pressure*. Bridging and splicing, too, require no tools or clips. Complete interchangeability in three weights plus fire-rated design allows greater support where needed . . . lighter components wherever possible . . . *maximum economy for all load and spanning conditions.* See Sweet's 11c/Ea, or write today for complete specs. *Patent pending



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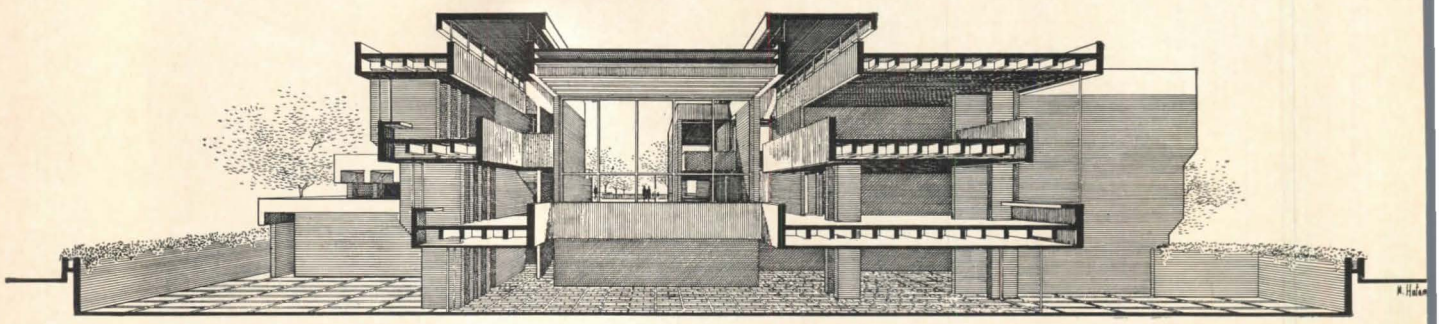
Zonolite prototype building #9: A college library



Marvin Hatami designs a college library.

Utilizing Zonolite® Masonry Fill Insulation in walls reduces initial equipment costs, saves $700 per year on fuel, substantially raises indoor wall surface temperature.

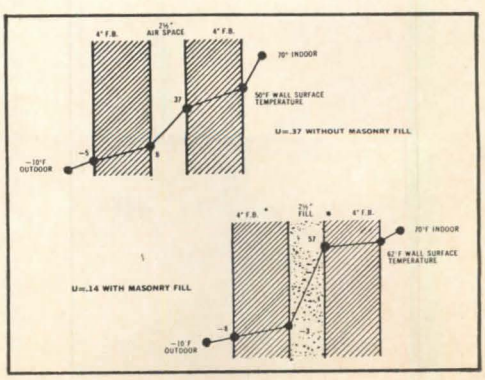
What would seem to be an added cost for insulation, in reality, is a highly profitable investment for your clients.

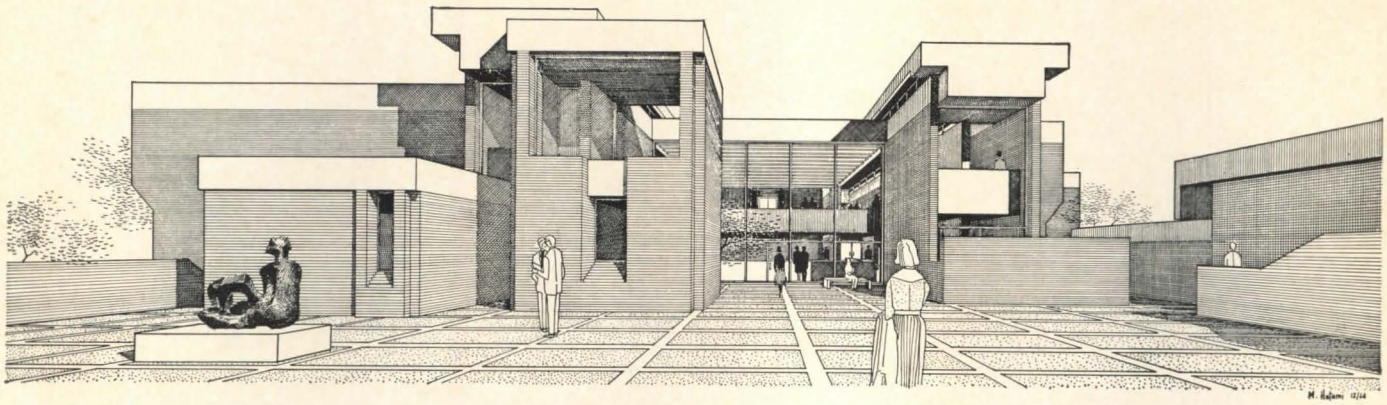
Consider this library designed by Marvin Hatami and engineered by Cator Ruma of Denver, Colorado.

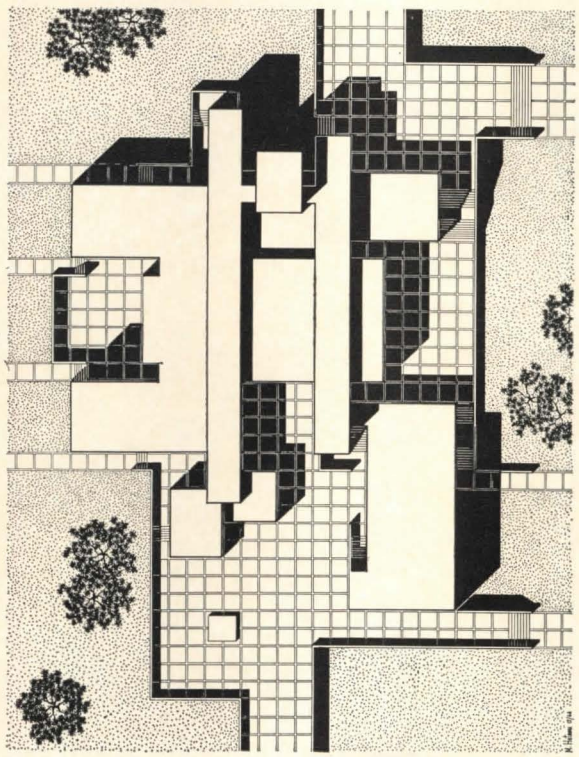
Its reinforced brick cavity walls feature Zonolite Masonry Fill Insulation. Installed cost? 10¢ per sq. ft. or $3245 total. As part of a 20-yr., 6% mortgage, it figures out to $279 annually.

For this investment, the client saves $700 per year on fuel. That's a direct 250% return on his yearly investment in Zonolite Masonry Fill Insulation.

There are indirect savings, too. (1) Smaller, less costly heating equipment can be used. (2) Indoor wall surface temperatures are raised from 50° to 62° F. This reduces body radiant heat exchange, minimizes wall surface downdrafts. (3) The interior surfaces of the walls can remain unfinished. And (4) the building is quieter because of Zonolite Masonry Fill Insulation's excellent sound absorption characteristics.







DESIGN CONDITIONS			Winter Heat Loss in BTU/Hr. Assuming 70°F Indoors —10°F Outdoors		Summer Heat Gain in BTU/Hr. Assuming 95°F, DB 64°F, WB Outdoors 78°F, DB 65°F, WB Indoors	
	Without Masonry Fill	**With Masonry Fill**	Without Masonry Fill	**With Masonry Fill**	Without Masonry Fill	**With Masonry Fill**
Walls	4″ Face Brick 2½″ Air Space 4″ Face Brick	4″ Face Brick 2½″ Zonolite Fill 4″ Face Brick	962,000	**364,000**	201,000	**76,000**
Roof	Roofing, 3½″ Concrete		225,000	**225,000**	107,000	**107,000**
Floor	4″ Concrete on Grade		56,000	**56,000**	—	—
Glass: Solar & Transmission	¼″ Heat Absorbing Plate		730,000	**730,000**	443,000	**443,000**
Ventilation	15,000 DFM		1,080,000	**1,080,000**	229,000	**229,000**
Lights	175 Kilowatt		—	—	596,000	**596,000**
People	500		—	—	200,000	**200,000**
Totals			3,053,000	**2,455,000**	1,776,000	**1,651,000**
% Savings with Masonry Fill			$\frac{3,053,000-2,455,000}{3,053,000} \times 100 =$ **19.6%**		$\frac{1,776,000-1,651,000}{1,776,000} \times 100 =$ **7%**	

Additional facts of significant interest are available in our Bulletin MF-113. For your copy, please write Dept. A, Zonolite, 135 South LaSalle Street, Chicago, Illinois 60603

ZONOLITE
GRACE ZONOLITE DIVISION W. R. GRACE & CO.
135 SO. LA SALLE ST., CHICAGO, ILL.

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BAYLEY WINDOWS FOLLOW FORM

For the University of Kentucky's College of Commerce, architects Brock, Johnson & Romanowitz designed an exposed formed-in-place concrete skeleton. The fillets transfer forces to the horizontal members, and the Bayley window panels were designed to echo this functional form. The windows in the floor-high panels open for cleaning.

William Bayley Company, one of the oldest and largest manufacturers of steel and aluminum windows, is on the move. We're looking for creative challenges, new architectural ideas, ways to be more helpful. May we discuss your newest job? The William Bayley Company, Springfield, Ohio.

BAYLEY

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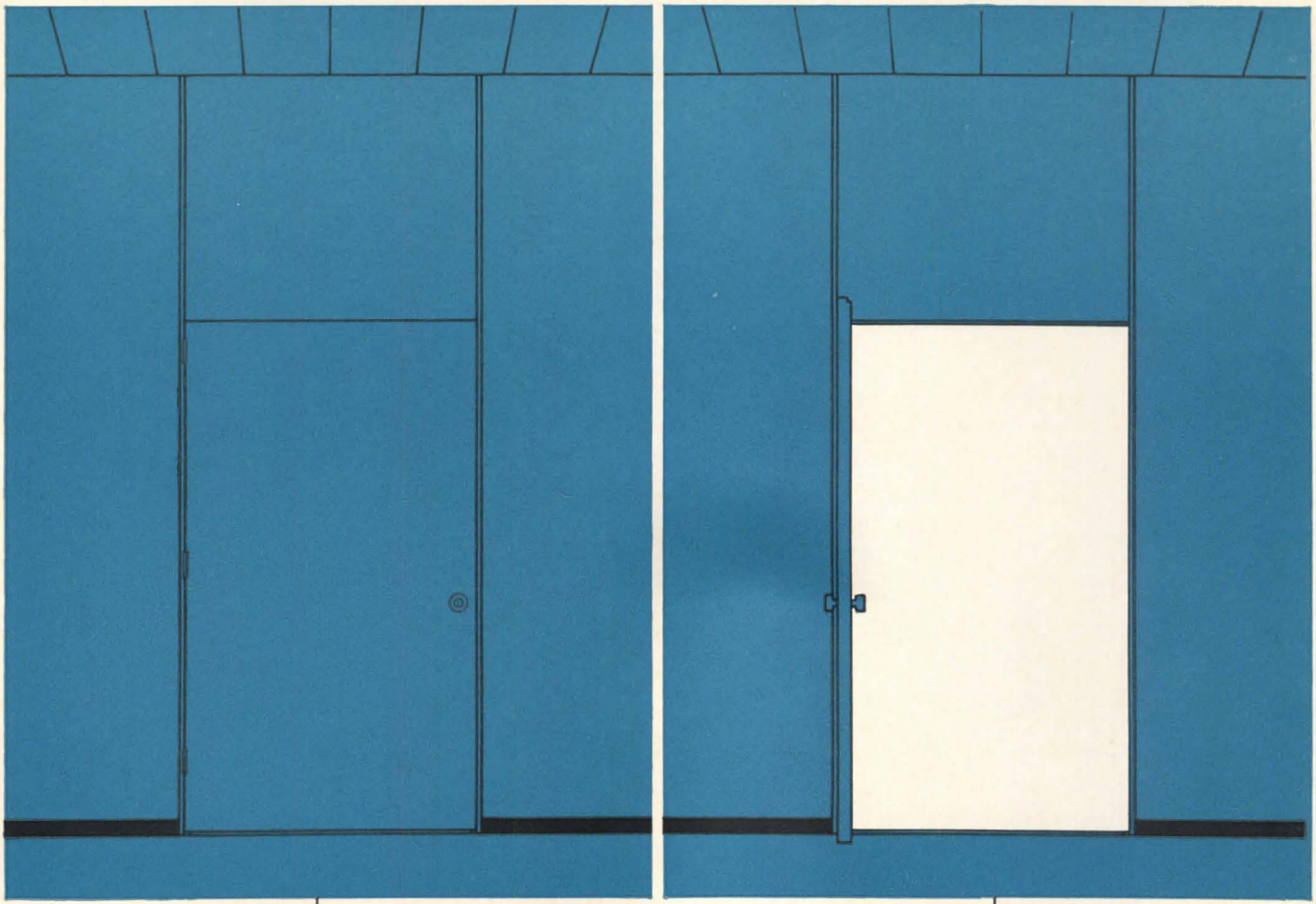
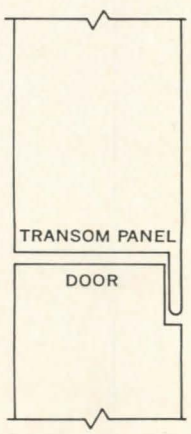
Architects—Brock, Johnson & Romanowitz, Lexington, Ky.
Contractor—V. L. Nicholson Company, Knoxville, Tenn.

A NEW CONCEPT IN METAL: OVERLY TRANSOM PANEL DOOR AND FRAME SYSTEM



What's so unusual about it? It's headless. No transom bar. No lintel. No protrusions (except the door knob). Transom panel rabbets into top of door. Jambs go floor to ceiling. Provides a vertical look. Saves installation costs. Furthermore, it bears up to an "A" fire label from U/L (45 min. to 3 hrs.). Ideal for corridor to stairwell or room entries and lobby to stairwells. Available in singles or pairs, in steel, up to 11′4″ high, with frame trim thickness of only one inch; also in stainless steel with up to 1½ hr. label. It's a new concept in metal: Overly Transom Panel Door and Frame System.



For more information, write to Manager of Product Development, Overly Manufacturing Company, Greensburg, Pennsylvania 15601.

Overly

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Model of Life of Georgia Tower, Atlanta. Architects: Bodin & Lamberson, Atlanta. Associate Architects: Eggers & Higgins, New York City. Glazing Contractor: Binswanger Glass Company, Atlanta.

L·O·F offers New Glass Cost Analysis* for any building on your boards

An analysis that compares the economics of using various glass types: *Thermopane*® insulating glass; one of L·O·F's heat-absorbing plate glasses or regular plate.

It considers heat gain or loss through each type of glass: effect of heat gain on air-conditioning load; comparison of glass costs, taxes, insurance; all other factors affecting costs for the life of the building.

If you wish a cost analysis for any building on your boards, get in touch with your local L·O·F representative. He is prepared to work with you, or your mechanical engineer, in selecting the most economical type of glass on the basis of your plans. Give him a phone call. Libbey·Owens·Ford Glass Company, Toledo, Ohio 43624.

MADE IN U.S.A.

LOF GLASS

Libbey·Owens·Ford
Toledo, Ohio

*Example

An L·O·F Glass Cost Analysis for the Life of Georgia Tower compared the economics of *Thermopane* insulating glass (with an outer pane of ¼" *Parallel-O-Grey*®) with single glazing of ¼" *Parallel-O-Grey*. The uniform annual costs for the glass were based on an anticipated useful life of 40 years for the building. For the air-conditioning equipment, a 20-year life was used. Both costs are for borrowed money at 5% interest.

The $0.80 per sq. ft. for the Grey plate glass and the $2.30 for Grey *Thermopane* were contract glass prices and did not include installation, since installation costs for both would be the same according to the glazing contractor. The $1,100 per ton figure of the air-conditioning equipment was estimated by the mechanical engineers.

The initial cost of the *Thermopane* and the air-conditioning equipment it would require is slightly higher than for single grey plate and the air-conditioning equipment needed for it. But the total annual cost of owning and operating the building glazed with *Thermopane* will be substantially less.

	¼" Parallel-O-Grey	Grey Thermopane
Initial glass cost (57,520 sq. ft.)	$ 46,010	$132,300
Initial cost of air-conditioning equipment to overcome heat gain through glass ($1,100/ton)	301,400	220,000
Initial cost of glass and air-conditioning	$347,410	$352,300
Uniform annual cost for glass	$ 2,670	$ 7,670
Uniform annual cost for air-conditioning equipment	24,110	17,600
Annual operating and maintenance costs	27,490	22,980
Total annual owning and operating cost for glass and necessary air-conditioning equipment	$ 54,270	$ 48,250

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Continued from page 246

leader in the early 20th-Century Spanish Colonial style of southern California. His work is recorded from the Herberton house of 1916 to the Heimann house of 1928-29. Though little more than a catalog, this is a worthy little book.

Great Palaces of Europe. Introduction by Sacheverell Sitwell. G.P. Putnam's Sons, 200 Madison Ave., New York, N.Y., 1964. 288 pp., illus., $22.95.

Great Houses of Europe. Introduction by Sacheverell Sitwell. G.P. Putnam's Sons, 200 Madison Ave., New York, N.Y., 1964. 320 pp., illus., $25.00. Second Edition.

Two large, lavishly illustrated volumes that celebrate the taste and opulence of by-gone, splendiferous eras. Thirty palaces are described and illustrated in the former; all have been the residences of monarchs or princes, all are classics of their kind and period, and, best of all, all are in perfect condition, fully furnished, and some are even occupied. Included are Windsor Castle, Versailles, the Escorial, Caserta, Schoenbrunn, the Winter Palace, Huis Ten Bosch, Holyroodhouse, and Kronborg. Identical with the enormously popular first edition, Great Houses, *second edition, illustrates and describes 40 of the finest houses from Leningrad to Portugal. Rich art collections and magnificent gardens are shown also. Each house is described by an author familiar with its history, builders, and owners.*

NOTICES

New Partners, Associates

LIGHTING & ELECTRONICS, Inc., Brooklyn, N.Y., have named RICHARD D. THOMPSON manager of the theatre division.

ALBERT C. MARTIN & ASSOCIATES, Architects-Engineers, Los Angeles, Calif., have named CHARLES H. GRIGGS and MILES PERLIS associates.

MAYER & KANNER, Architects, Los Angeles, Calif., announce that DANIEL KRAVET is an associate.

FREDERICK A. MUHLENBERT & ASSOCIATES, Architects, Reading, Pa., announce the admittance to partnership of LAWRENCE A. GREENE, JR., and ELMER VERES.

NARAMORE, BAIN, BRADY & JOHANSON, Architects-Engineers, Seattle, Wash., have made DONALD A. WINKELMANN a senior associate and HARRY G. WIDENER a partner.

J., N. PEASE ASSOCIATES, Architects-Engineers, Charlotte, N.C., announce that JOSEPH O. RALEY, JR., is now an associate.

THE PERKINS & WILL PARTNERSHIP, Architects, Chicago, N.Y., and Washington, D.C., have announced as partners: EDWARD C. COLIN, ALBIN B. KISIELIUS, and WESLEY V. PIPHER.

JACOB ROBBINS, ARCHITECTS, Oakland, Calif., have named RALPH GARETH GRAY an associate.

ROBINSON, GREEN & BERETTA, Architects, Providence, R.I., have named GEORGE J. JEZIERNY and RAYMOND A. DECESARE as associates.

SCHAFER, FLYNN & ASSOCIATES, Architects, Cleveland, Ohio, announce that PETER VAN DIJK has become an associate.

SCHAUDER & MARTIN, Architects, Toledo, Ohio, have appointed ROLAND Y. ENGLER an associate.

SMITH, SMITH, HAINES, LUNDBERG & WAEHLER, Architects, New York, announce CHARLES L. MACCHI as a senior associate and BRONISLAUS F. WINCKOWSKI as an associate.

Continued on page 263

Modern Door Control by

LCN

Closers concealed in head frame

Church Center for the United Nations
New York City

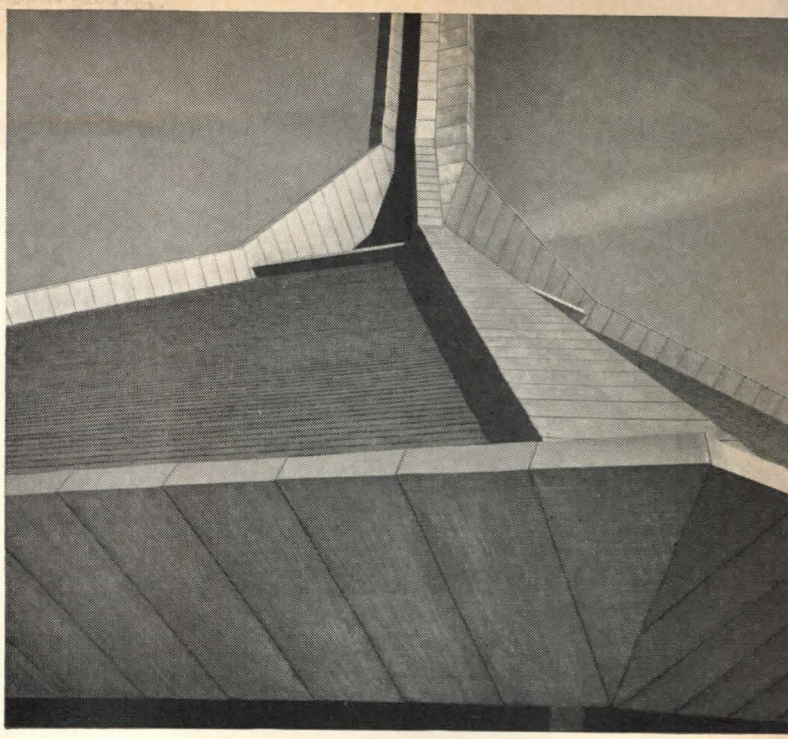
William Lescaze, F.A.I.A.
Architect

LCN CLOSERS, PRINCETON, ILLINOIS

Construction Details on
Opposite Page


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

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



CLOSE-UP showing unusual fascia design.

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

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

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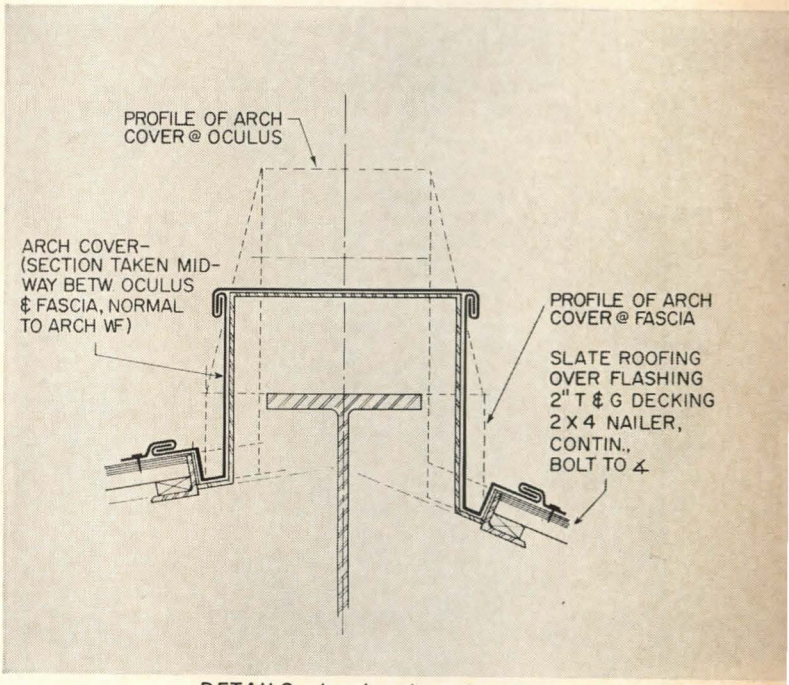
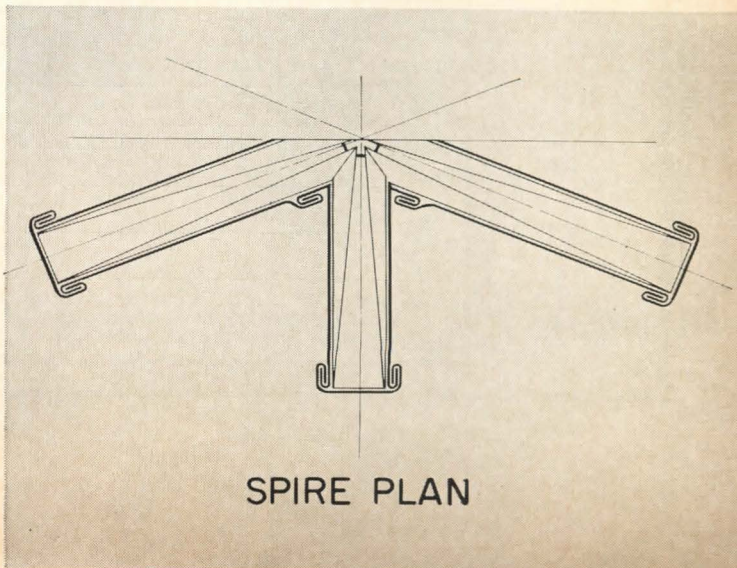


DETAILS showing how Leadtex was applied to arches and spire.



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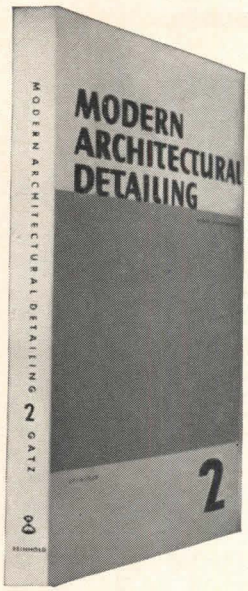

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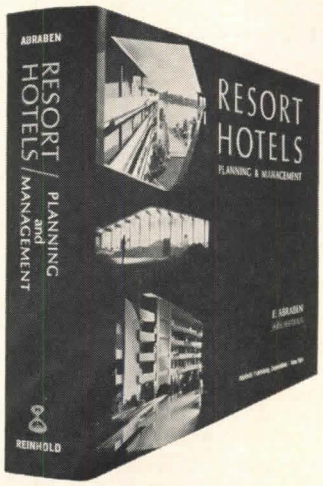

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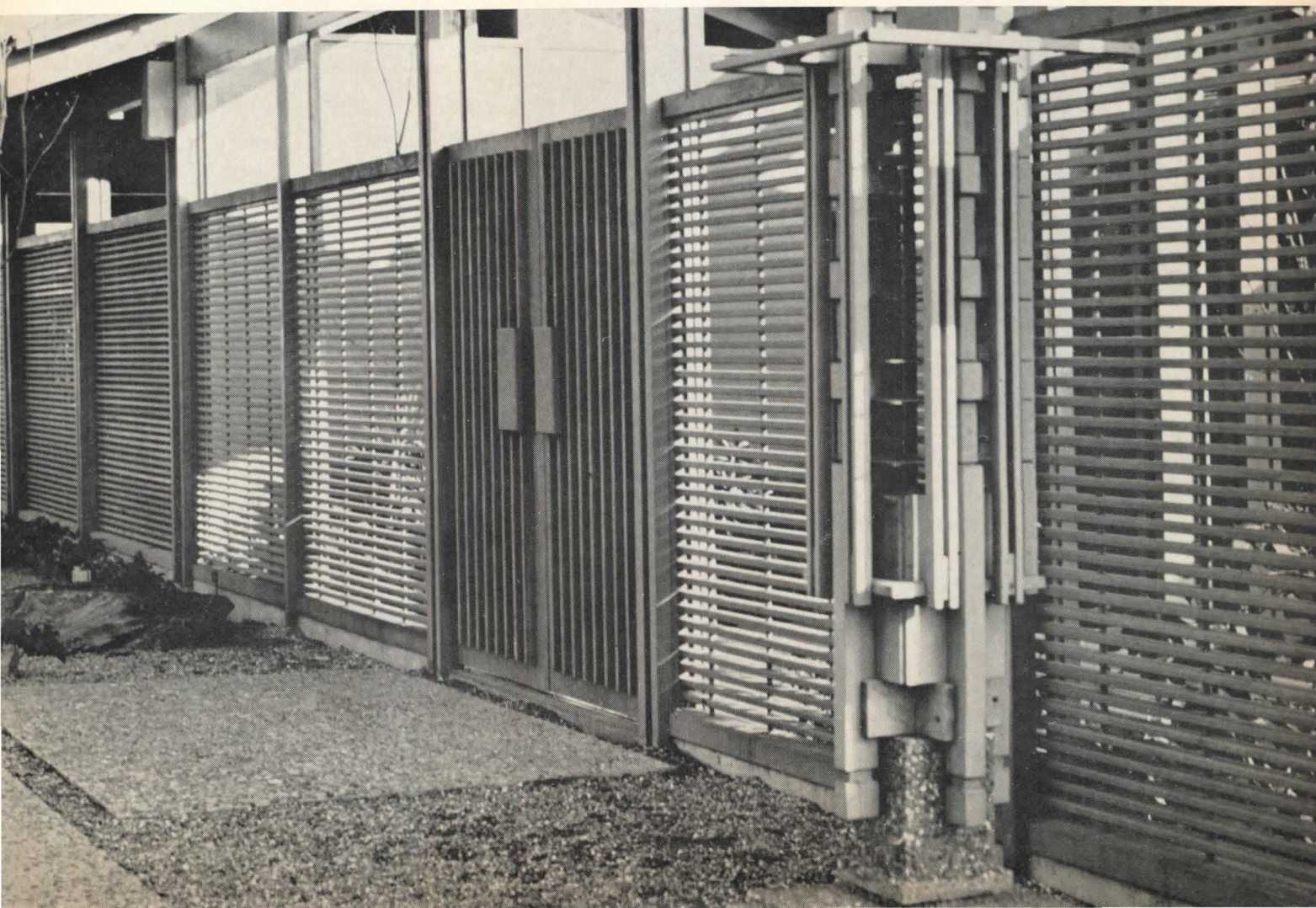

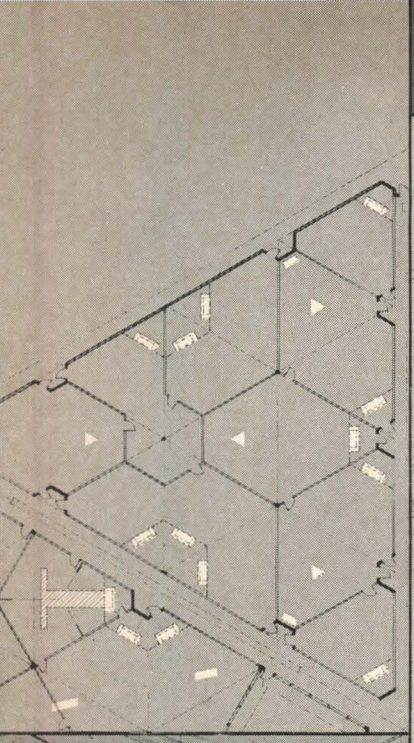

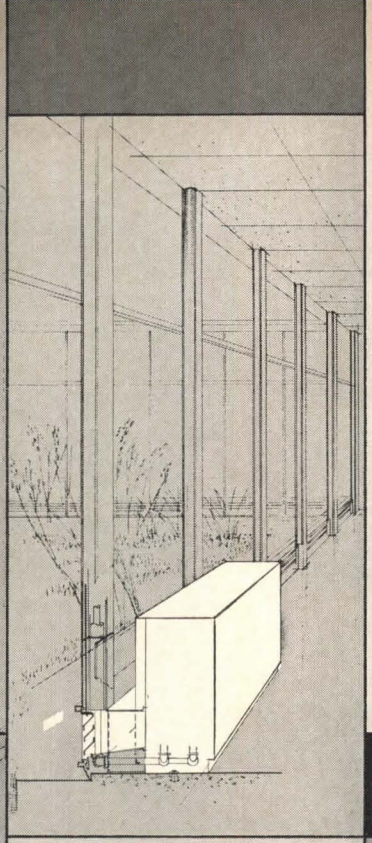

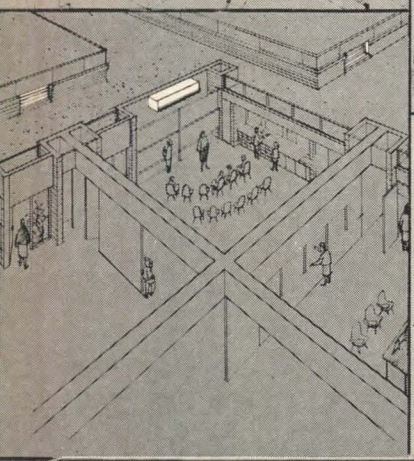

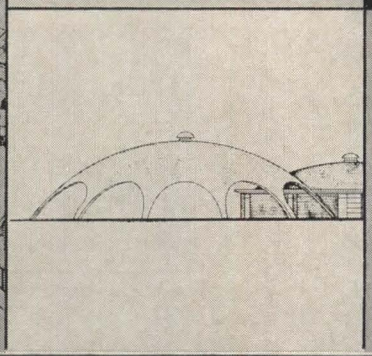

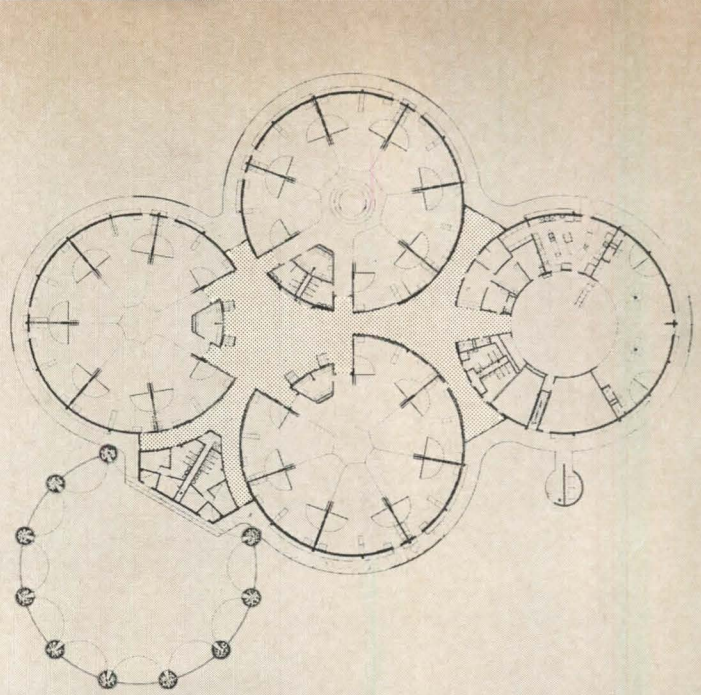

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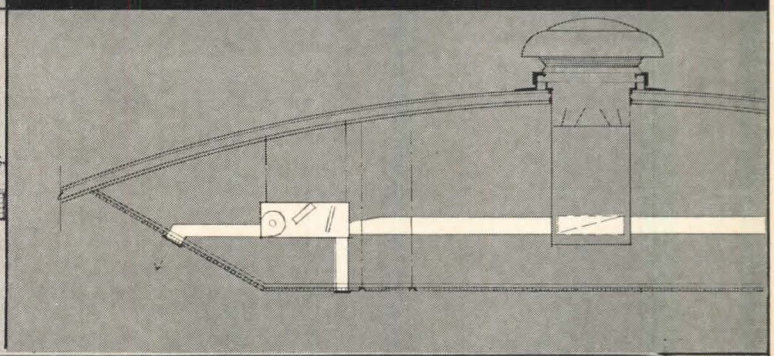

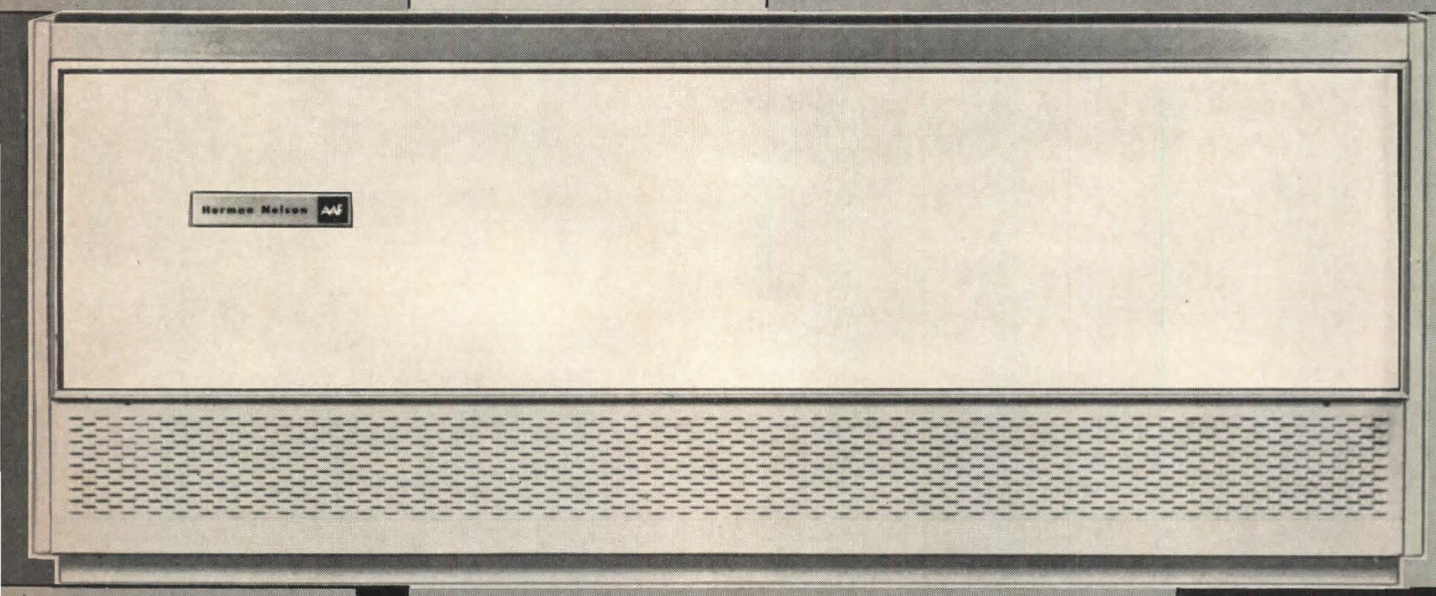

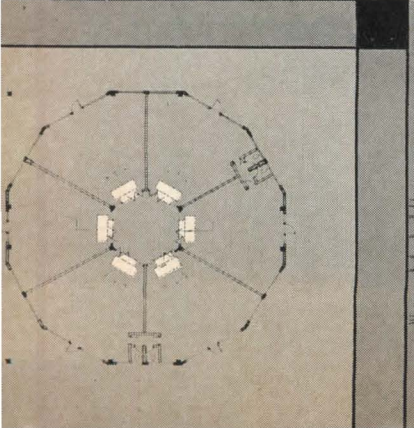

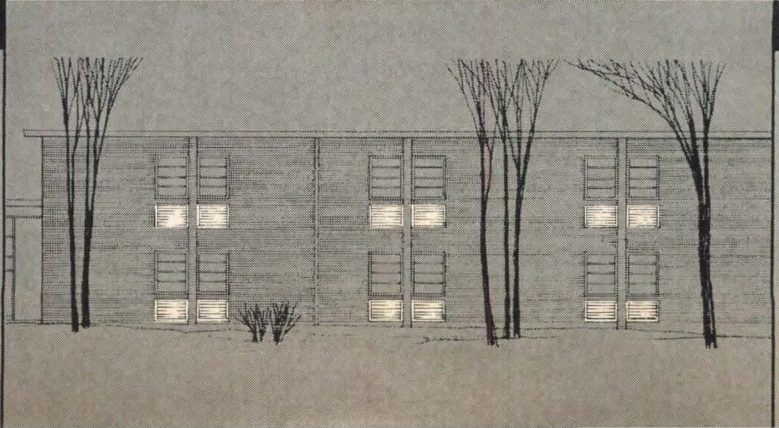

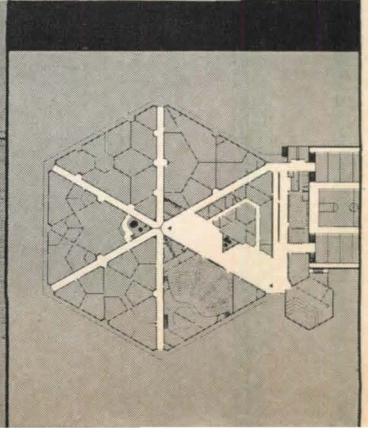

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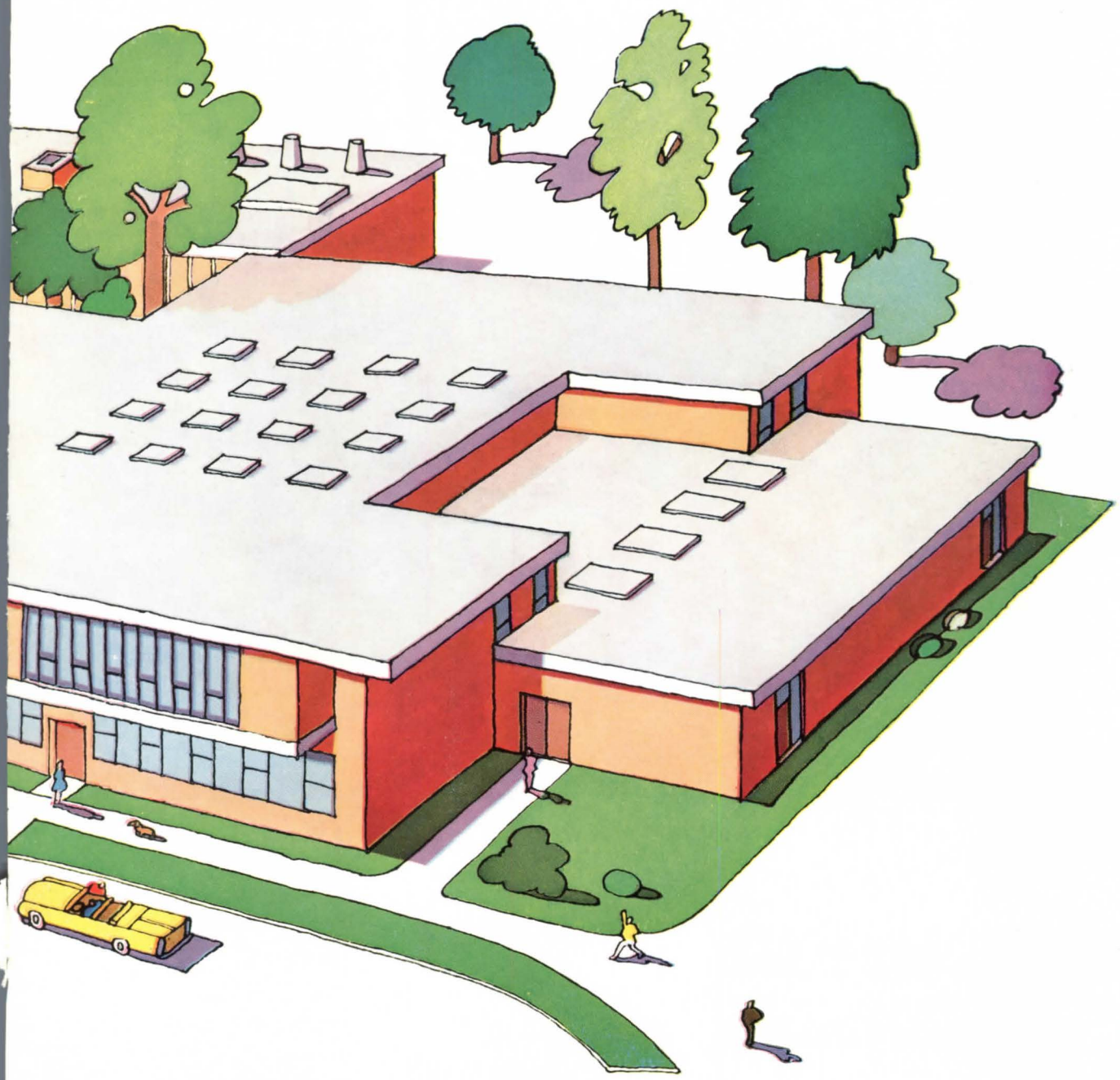

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