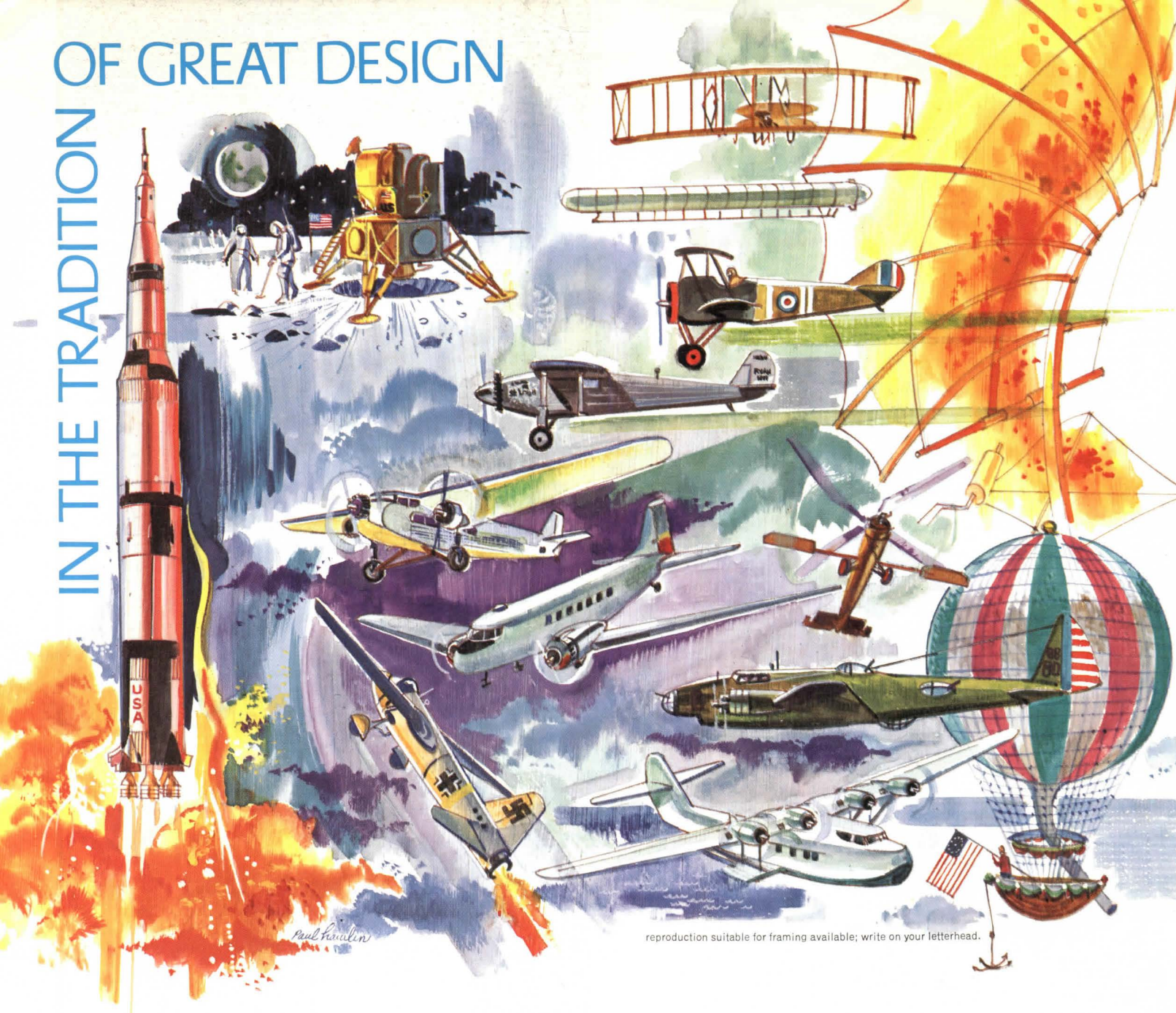
FORUM

IN THE TRADITION OF GREAT DESIGN



reproduction suitable for framing available; write on your letterhead.

Flight, from man-made wings, to the moon landing, has been a constant improvement in technology and design. The new Norton Apollo closer represents a similar evolution.

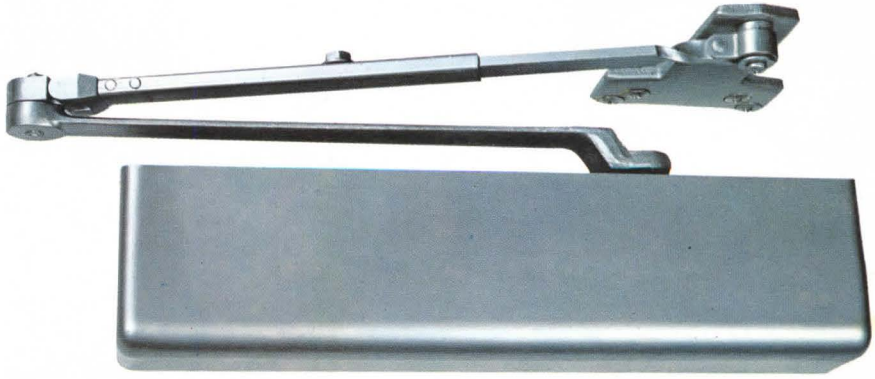
Power adjustment (plus or minus 25%) to tune the closer to its environment. An improved rack-and-pinion design plus adjustable back-check to protect closer and door on all types of mounting. Easy application with non-handed installation; just specify regular arm, parallel arm or top jamb.

Narrow projection for the needs of contemporary decor. With covers; in anodized bronze, brass or clear aluminum; in 67 exotic and native woodgrains for job-site finish; plus all other popular finishes.

A new Norton Closer, an evolution of closer improvements, for today's architecture.

NEW NORTON® APOLLO

SERIES 7700 CLOSERS



EATON YALE & TOWNE INC.

NORTON DOOR CLOSER DIVISION

372 Meyer Road, Bensenville, Illinois 60106
Also Available in Canada.

On Readers' Service Card, Circle 201

THE ARCHITECTURAL FORUM

WHITNEY PUBLICATIONS, INC.

EDITOR
Peter Blake, FAIA

MANAGING EDITOR
Paul Grotz, AIA

SENIOR EDITORS
Ellen Perry Berkeley
John Morris Dixon, AIA
Marguerite Villecco

ART DIRECTOR
Charlotte Winter
Ruth Gosser (assistant)

NEWS EDITOR
Don Peterson

ASSISTANT TO THE EDITOR
Ann Wilson

EDITORIAL ASSOCIATES
Virginia Dajani
Marie-Anne M. Evans

BOARD OF CONTRIBUTORS
Robin Boyd, FRAIA, Hon. FAIA
Donald Canty
Ivan Chermayeff
Rosalind Constable
George A. Dudley, AIA
Henry Fagin, AIP
C. Richard Hatch
Philip H. Hiss
Lady Barbara Ward Jackson
Samuel Kaplan
Burnham Kelly, AIA
Leo Lionni
Kevin Lynch
Donlyn Lyndon, AIA
Walter McQuade, FAIA
Sibyl Moholy-Nagy
Roger Montgomery, AIA
Charles W. Moore, FAIA
Roger Schafer
Vincent Scully Jr.
Bernard P. Spring, AIA

Douglas Haskell, FAIA

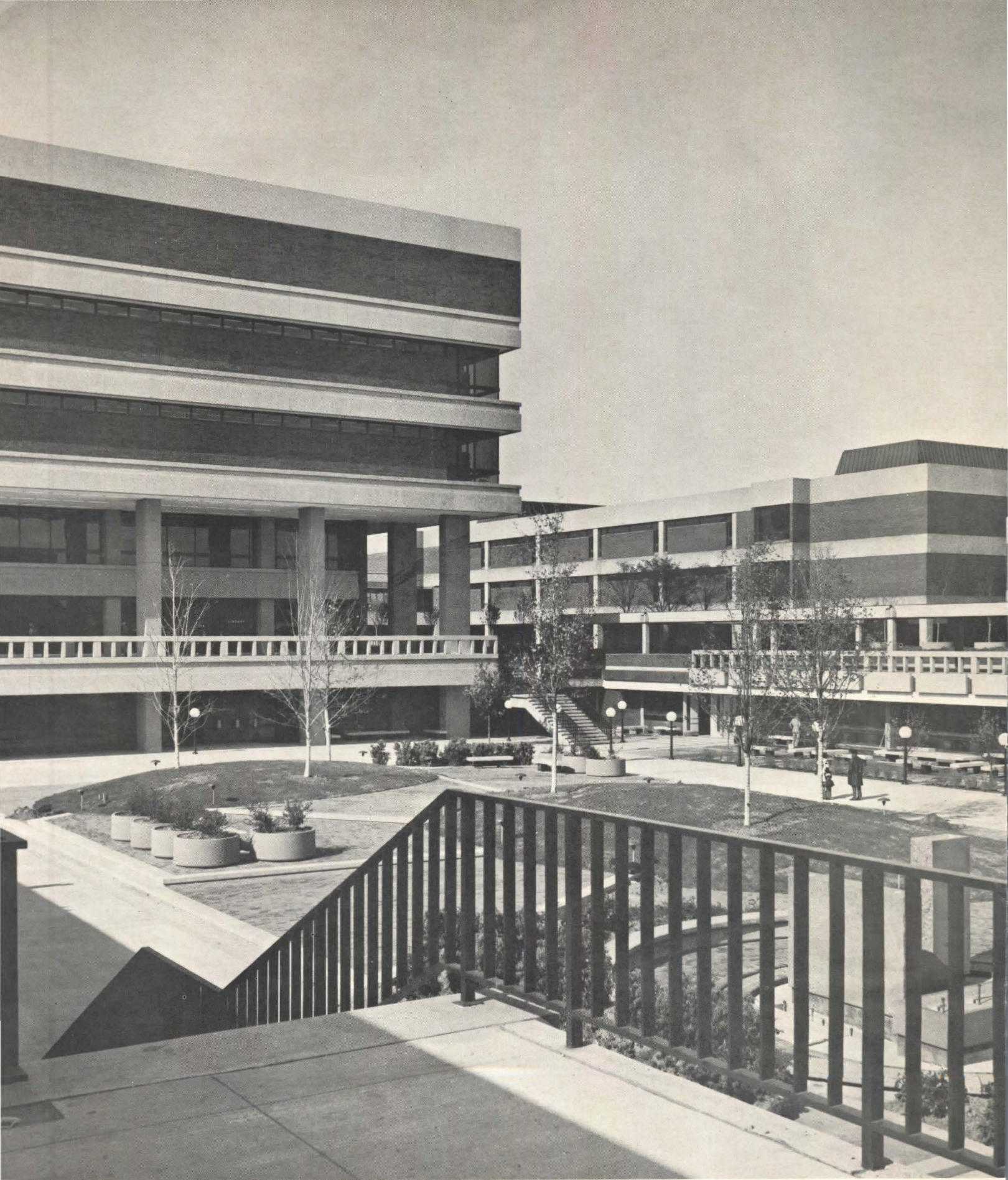
CORRESPONDENTS
Francoise Choay (Paris)
Benita Jones (London)

PUBLISHER
Lawrence W. Mester

WHITNEY PUBLICATIONS, INC.
Charles E. Whitney, President.
Whitney Publications, Inc. also are the publishers of the magazines Interiors and Industrial Design, as well as the books in the Whitney Library of Design.

Cover Design: By Charlotte Winter
From a photograph by Alexander Georges of Philip Johnson's Sculpture Gallery (p. 22)

THE ARCHITECTURAL FORUM Vol. 133 No. 5 December issue.
Published 10 times a year, combining Jan./Feb. and July/Aug. issues, by Whitney Publications, Inc., 130 East 59th St., New York, N.Y. 10022. Sent without charge to architects registered in the U.S.A. and Canada. Qualified persons are invited to write the Circulation Manager on company letterhead. Please give your principal state of architectural registration, your title, and the kind of work you do. Correspondence regarding service, change of address, etc., should be sent to M. M. Stern, Circulation Manager. Subscription rate is $12 within the U. S. A. and possessions and Canada. Elsewhere, $20. College Rate for students and faculty members of U.S. and Canadian accredited schools of architecture, $6. Single Copies, $1.50. Member of Business Publications Audit of Circulation, Inc. Controlled circulation postage paid at Cleveland, Ohio



CUYAHOGA COMMUNITY COLLEGE, Cleveland, Ohio. Honor award winner in the 1970 Community and Junior College Design program. The complex was honored for "outstanding handling of a very limited site in an urban renewal area of the highly industrialized city of Cleveland." Architects: Outcalt-Rode-Kaplan-Curtis. General Contractor: Turner Construction Co. Twelve Dover Oildraulic and Electric elevators installed in seven buildings on the campus by Dover Elevator Co.

Dover delivers
elevators for award-winning architecture

Performance of award winning caliber helps Dover Elevators get specified for buildings of outstanding architectural design.

Comparable high-quality and dependability are provided by Dover in both Oildraulic® and Electric elevators. You can combine the two types for maximum efficiency and economy, while dealing with a single elevator supplier.

Dover Oildraulic elevators, with speeds to 200 feet per minute and travel through six floors, are unexcelled in the low-rise field. For 30 years they have been more widely used than any other hydraulic elevator.

Dover electric elevators, geared and gearless, offer the exclusive Computamatic® control system for fastest service under all traffic conditions. Solid state devices are utilized where appropriate for greater reliability and to reduce maintenance.

Whatever you are building, Dover will deliver award winning cooperation with you on plans and specifications, and on elevator performance. Write for catalogs. Dover Corporation, Elevator Division, Dept. C-6, P. O. Box 2177, Memphis, Tenn. 38102. In Canada: Dover/Turnbull.

DOVER
the elevator innovators

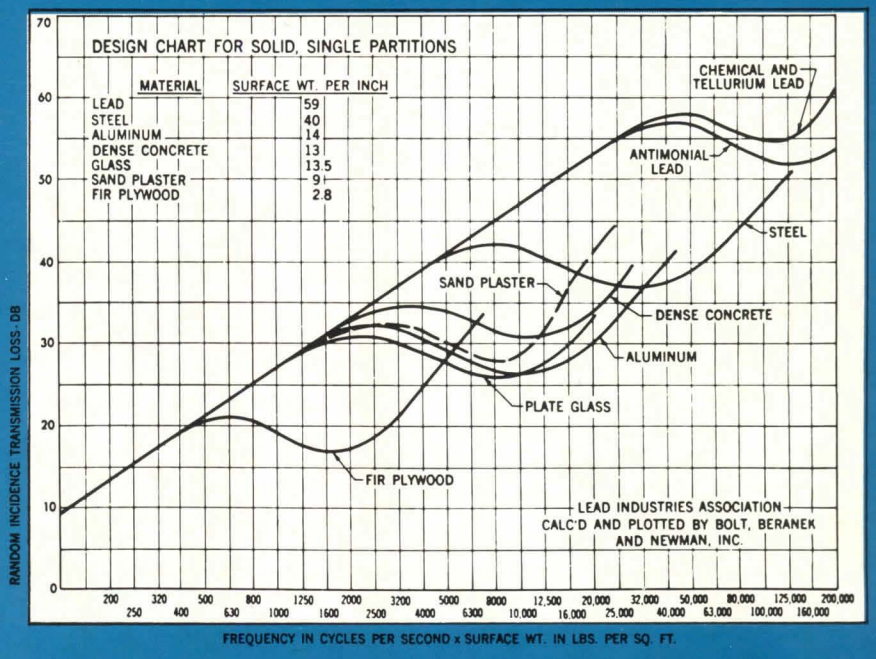
DUKE NUCLEAR LABORATORY, Duke University, Durham, N. C. Cited as one of 16 outstanding examples of campus design for the 1970s by College & University Business magazine. The massive solidity of its design evokes a feeling of security appropriate to its function. Architect: A. G. Odell Jr. & Associates. General Contractor: F. N. Thompson, Inc. Dover Oildraulic elevator installed by Dover Elevator Co.

LEAD–

the lightweight champion of noise barriers

Type of Partition	Weight of Partition lbs./sq. ft.	Weight of Partition equiv. lead* lbs./sq. ft.	Weight Ratio	Thickness inches	Thickness equiv. lead inches
Plywood	2.25	0.47	4.9	3/4	1/128
Sheet Steel[1]	3.0	1.8	1.75	1/16	1/32
Solid Plaster	18	3.75	4.8	2	1/16
Cinderblock	22	5.5	4.0	6	3/32
Plaster on studs	12	7.5	1.6	4-6	1/8
Plaster on double studs	16	11.0	1.4	5-8	3/16
Brick	104	15.0	7.0	8	1/4

[1]as employed in a movable partition, for example.
*Lead required to provide an equal degree of sound transmission loss.



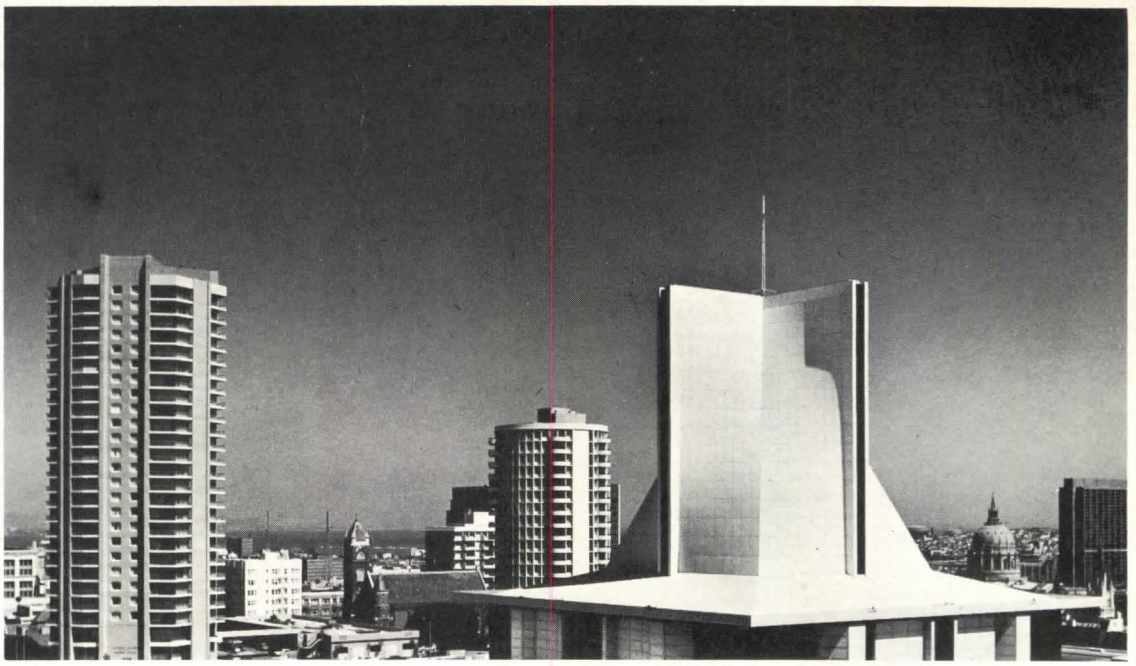
As the table and chart show, lead's unique combination of limpness and density enables it to block sound transmission more effectively than common construction materials. As a result, wherever weight and space are important, it makes engineering sense to use lead for noise attenuation ☐ For further information on the modern uses of lead, including a tabulation of practical sound barrier walls using sheet lead, write for our new book "LEAD—A Metal for the Future."

ST. JOE
MINERALS CORPORATION

250 Park Avenue, New York, New York 10017, Tel. (212) 986-7474

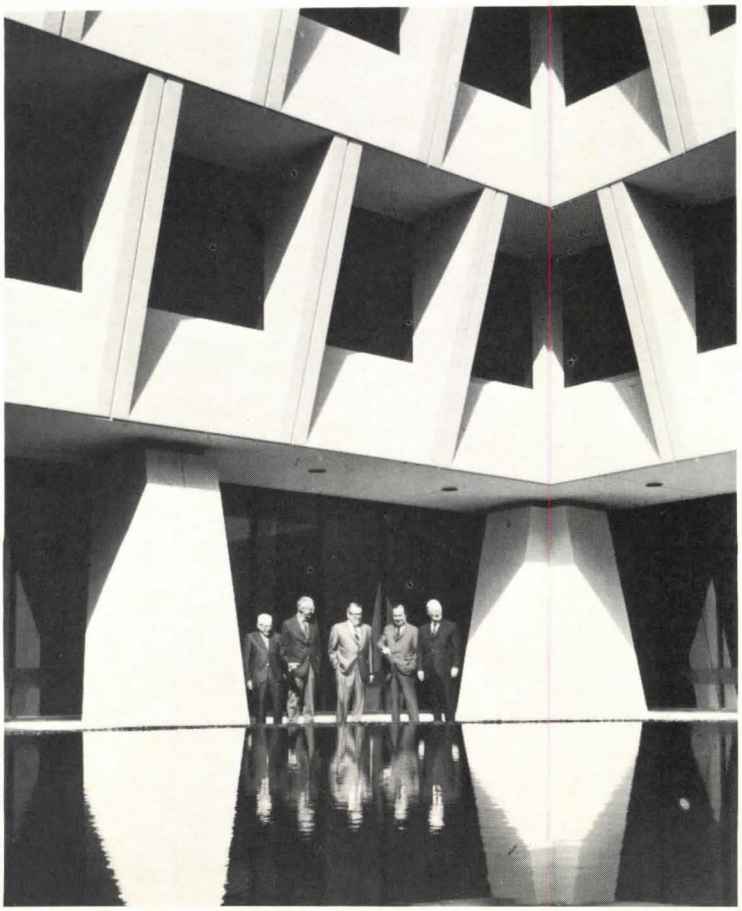
PB-375

FOCUS



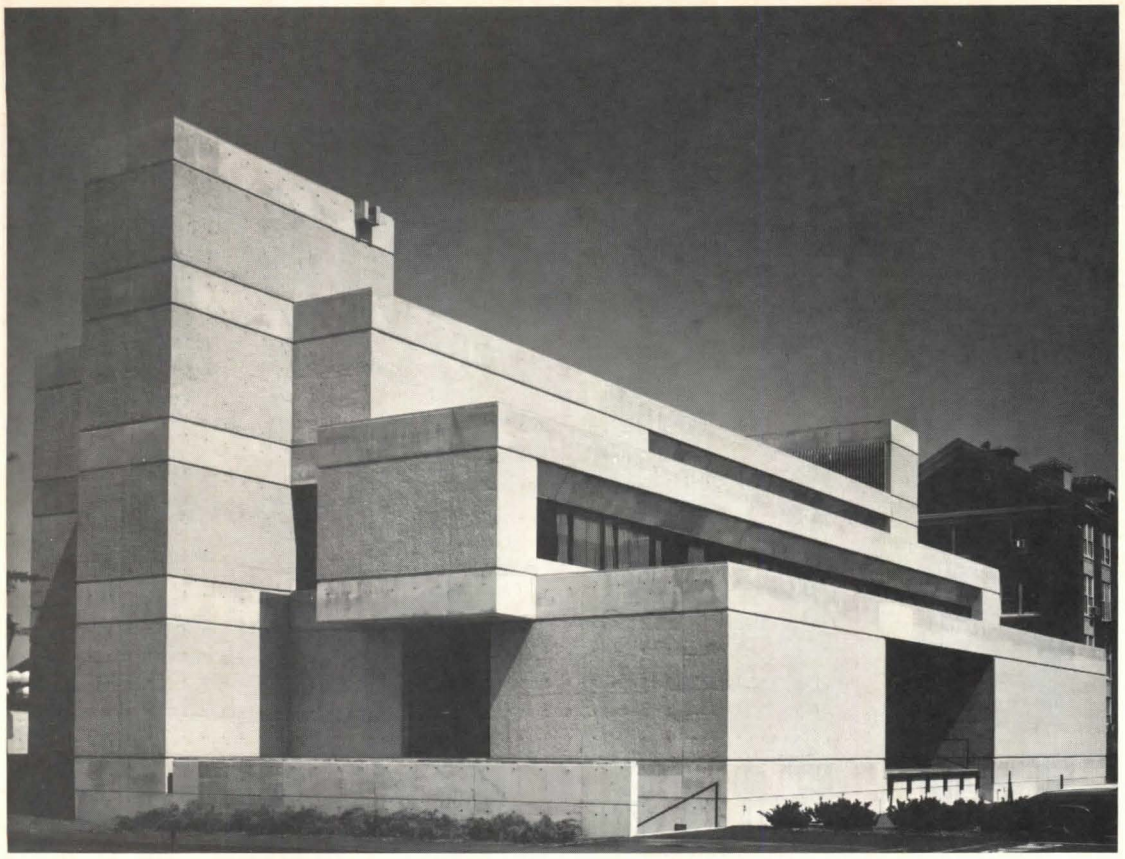
ST. MARY'S CATHEDRAL

The controversial St. Mary's Cathedral in San Francisco's Western Addition redevelopment area is finished. The $8.5 million structure, travertine sheathed, had been opposed by priests and laymen alike, first wanting the money used for housing, then once the cathedral was built wanting the building used for recreation. Nave, sanctuary, transept, baptistry, and narthex are one grand column-free space. The square space, 203 ft. on a side, has an asymmetrically placed altar, so that none of the 2,400 worshippers is more than 100 ft. from the predella. Concrete vaulting springs from four monolithic piers and rises to a square opening 50 ft. above the floor; from here, four hyperbolic paraboloids rise upward to join in a cross of stained glass (each arm is 6 ft. wide by 130 ft. high) designed by Gyorgy Kepes. Architects: McSweeney, Ryan & Lee; design consultants: Pietro Belluschi and Pier Luigi Nervi.



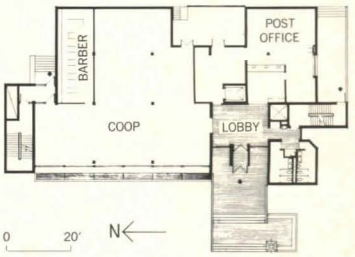
CITRUS CITADEL

Sunkist Growers, Inc., a cooperative that markets over 70 per cent of California and Arizona citrus products in more than 25 countries, has built a new international headquarters in Sherman Oaks, Calif., outside Los Angeles. The $4.7-million building contains offices, auditorium, test kitchens, data procesing center, and cafeteria. The cantilever of 15 ft. allows the building to match Sunkist's space needs (executive offices on the top floor require the most space) as well as shield the interior from summer sun. More than 550 precast concrete units, each weighing five tons, make up the building's exterior. A fountain pool (left) graces the large inner court. Albert C. Martin & Associates were the architects on the project.



B-SCHOOL BUILDS

In the heart of the Business School's Georgian campus, across the river from the rest of Harvard, is the new *Harvard Business Review* building. Constructed of poured-in-place concrete, with the spandrels left smooth and the wall panels deeply sandblasted for contrast, it is one of the first buildings in the area to depart from the traditional Georgian. Principal occupant of the $800,000 building is the periodical published by the "B-School." The building also houses a branch of the Coop, a post office, and supply and mail rooms for the B-School. Architects: Kubitz & Pepi.

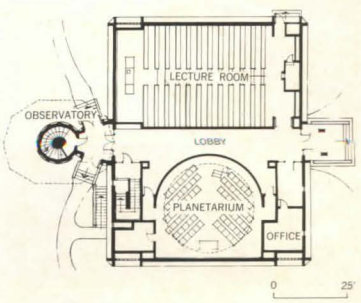


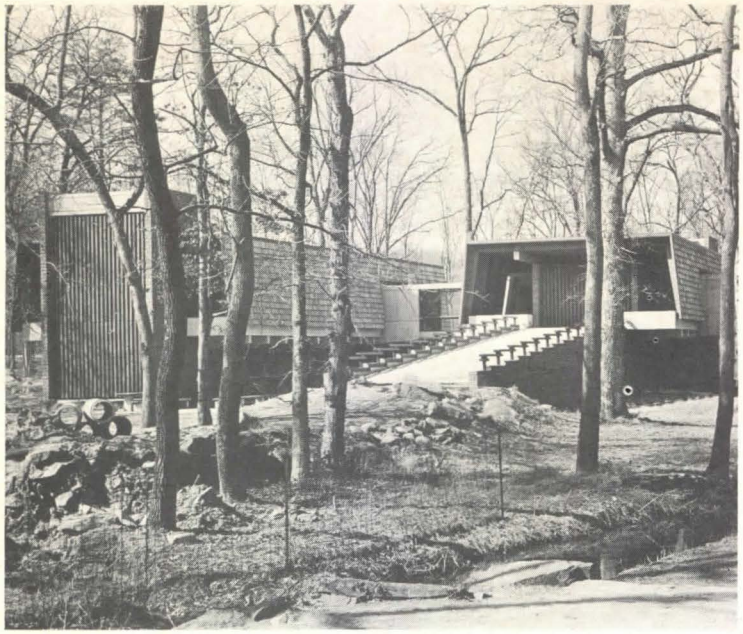
MOUNTAIN MODERN

An old 1890s schoolhouse (right) in the Adirondacks turned into a gift shop of the pop art mode when the owner turned over the renovation planning to Interior Concept, a New York design firm. The requirements were clear: a traffic-stopping facade and display space with a view to handicrafts exhibited inside, plus a rear addition. The solution? "Pure geometry," says one of the designers.

SEEING STARS

An observatory dome and sky lecture platform are new to Augustana College, Rock Island, Ill. Of sand-blasted concrete, the building has brick panels to blend with the existing campus. The observatory tower has a platform, with railing, that screens extraneous light from the telescope and makes an outdoor lecture room for studying the heavens. Built for $508,470, the building received top award from the Illuminating Engineering Society in 1970. Architects: Parkhurst, Appier, Maroff, Mogler.



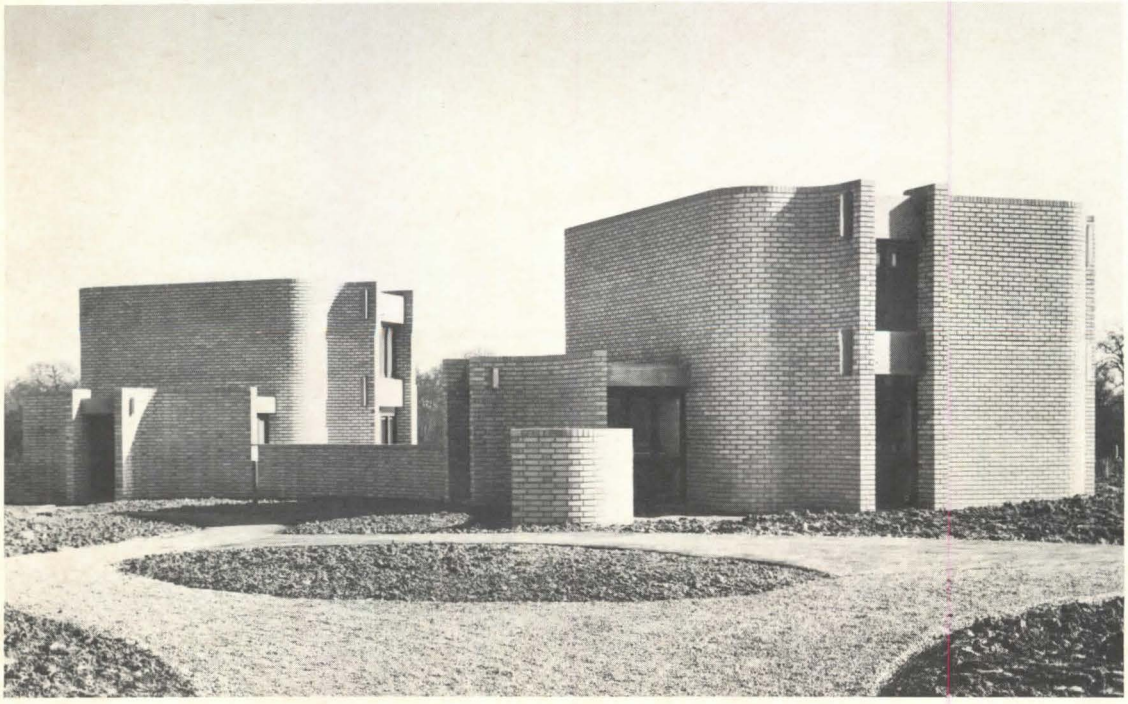


PARK SETTING

The new visitors' center at Great Falls Park, Va. (which is part of the National Park Service's George Washington Memorial Parkway) is designed to fit into the park without obstructing the natural beauty of Potomac Gorge. The center is located between the parking areas and the overlooks for viewing the falls. Designed by Kent Cooper & Associates, the building has an auditorium, offices, exhibit space, and concessionaire's facility. Because the park is subject to occasional flooding, the major public spaces are on the second floor, where they are accessible by ramp.

THEATER ART

One of the last of the plaster palaces built during the 1920s for the glorification of burlesque and vaudeville has traded in velour for polystyrene, and girls for multimedia sound and light. Toronto may never be the same again if architects (and graphic designers) Mandel Sprachman & Marvin Giller wrest control. The new version of the Uptown features color and super graphics inside and out and has five separate theaters (one on the old vaudeville stage, another in the fly tower). There are also rumors of parking facilities for "a zillion" cars.



SCHOLARS' COMMUNITY

The Mathematics Research Centre at England's University of Warwick is a community for visiting mathematicians—five houses and two apartments grouped around a small circular green. No windows face the central area, so children's noise does not disturb the scholars. Each house faces a private patio enclosed by the back of the next house. The system of straight walls and curved corners grew from a 30-ft. continuous run of blackboard in each unit's study. Architects: Howell, Killick, Partridge & Amis.

PHOTOGRAPHS: Page 5 (top), Dandelet; Page 6 (top) Phokion Karas, (bottom left) John Bechtold, (right) Wes Ling; Page 7 (top left) Barbara Hadley, (bottom) Sydney W. Newbery, (right) The Canadian Architect, Aug. '70.

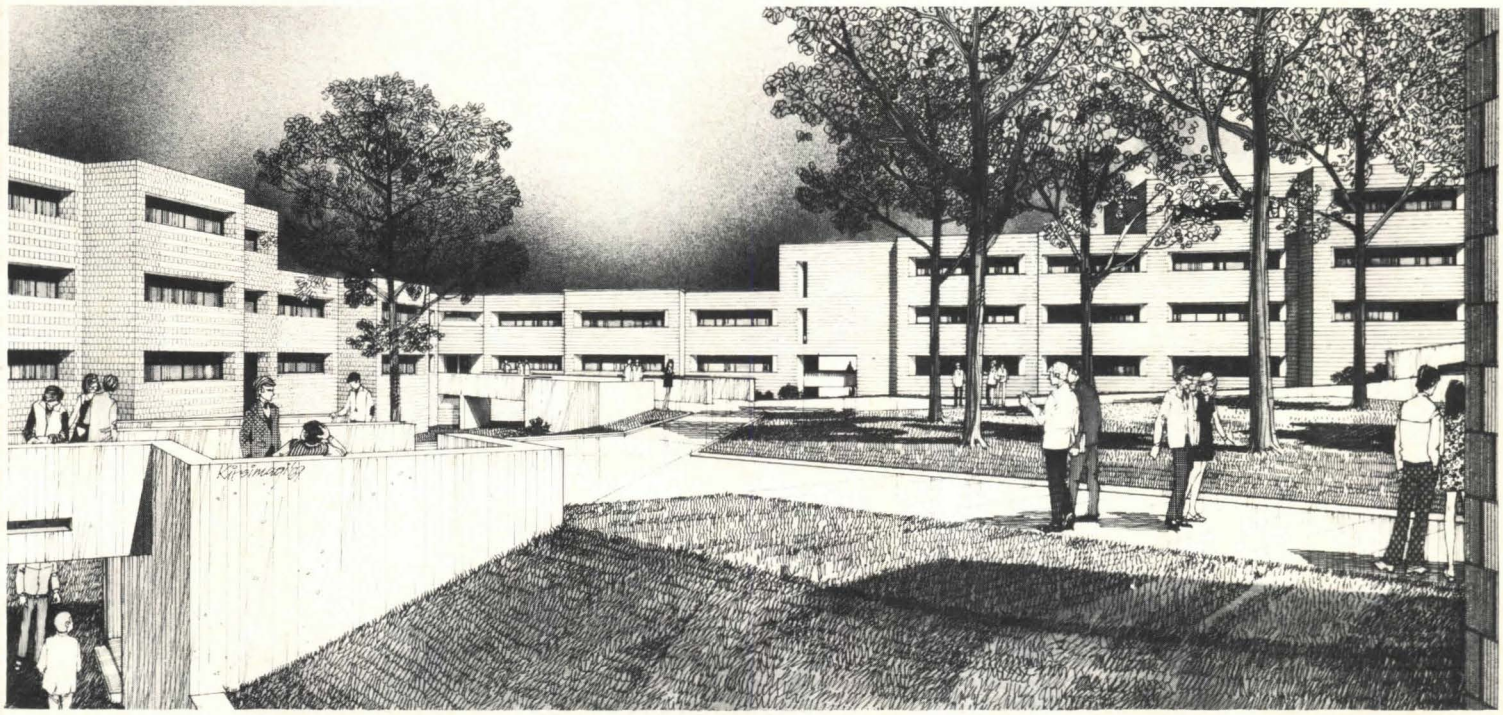
PREVIEW

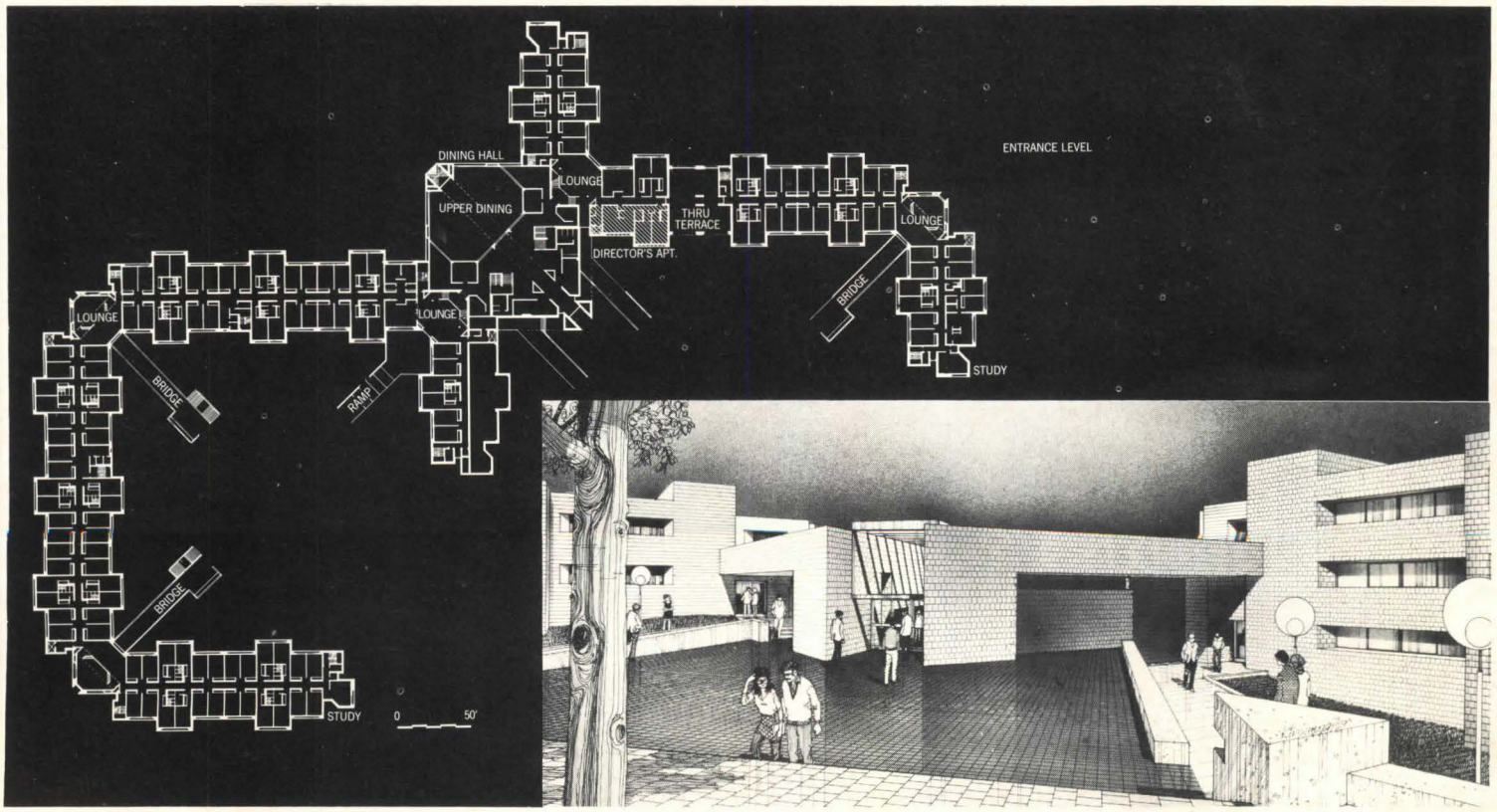
CONTOUR DORMS

For the rolling campus of the State University College at Oneonta, N. Y., Architects Gueron & Lepp have laid out a dormitory complex in an irregular line around three sides of a hill. Placing the buildings just below the hilltop made it possible to enter at the second or third floor, so that residents never have to climb more than two stories. (Most dorms are three stories high, with an additional floor below on the downhill side.)

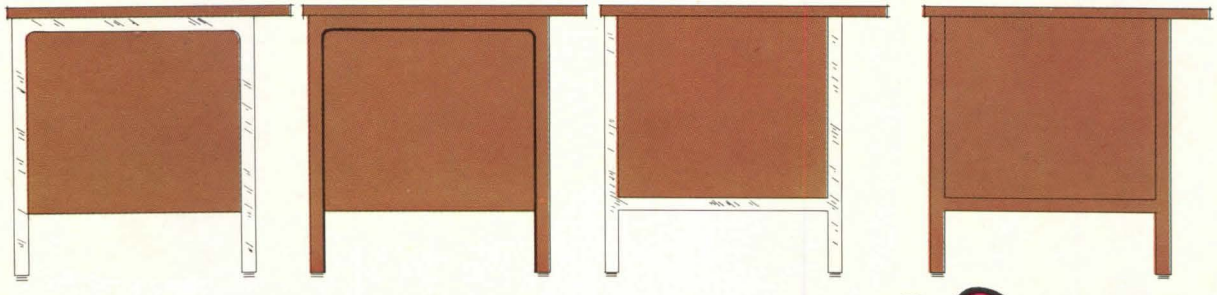
The whole complex is made up of repetitive sections, each with 12 double rooms and a toilet-shower core. Since the program allowed only minimal bedrooms, the architects put as much of the budget as possible into common spaces. Two-story entrance lounges with interior balconies face out across the countryside; study rooms have been secluded at the ends of corridors; covered outdoor terraces penetrate the line of buildings. The 2½-story-high dining hall faces the best of the views, which extends over 20 miles down a valley; a strip of skylight runs from the entrance (bottom view) to its prow-like outer corner.

Walls will be of creamy-gray scored block. Deepset windows, with angled jambs for the wide views—will be framed in black anodized aluminum.





Design Independence



Create distinctive settings by specifying versatile Kimball Office Furniture... the company that encourages creativity. Choose from four refreshing new quality end frame arrangements in mirror chrome or walnut solids. All interchangeable. Write for the "Venture II" series catalog picturing the entire line. It's all available right now for immediate shipping.

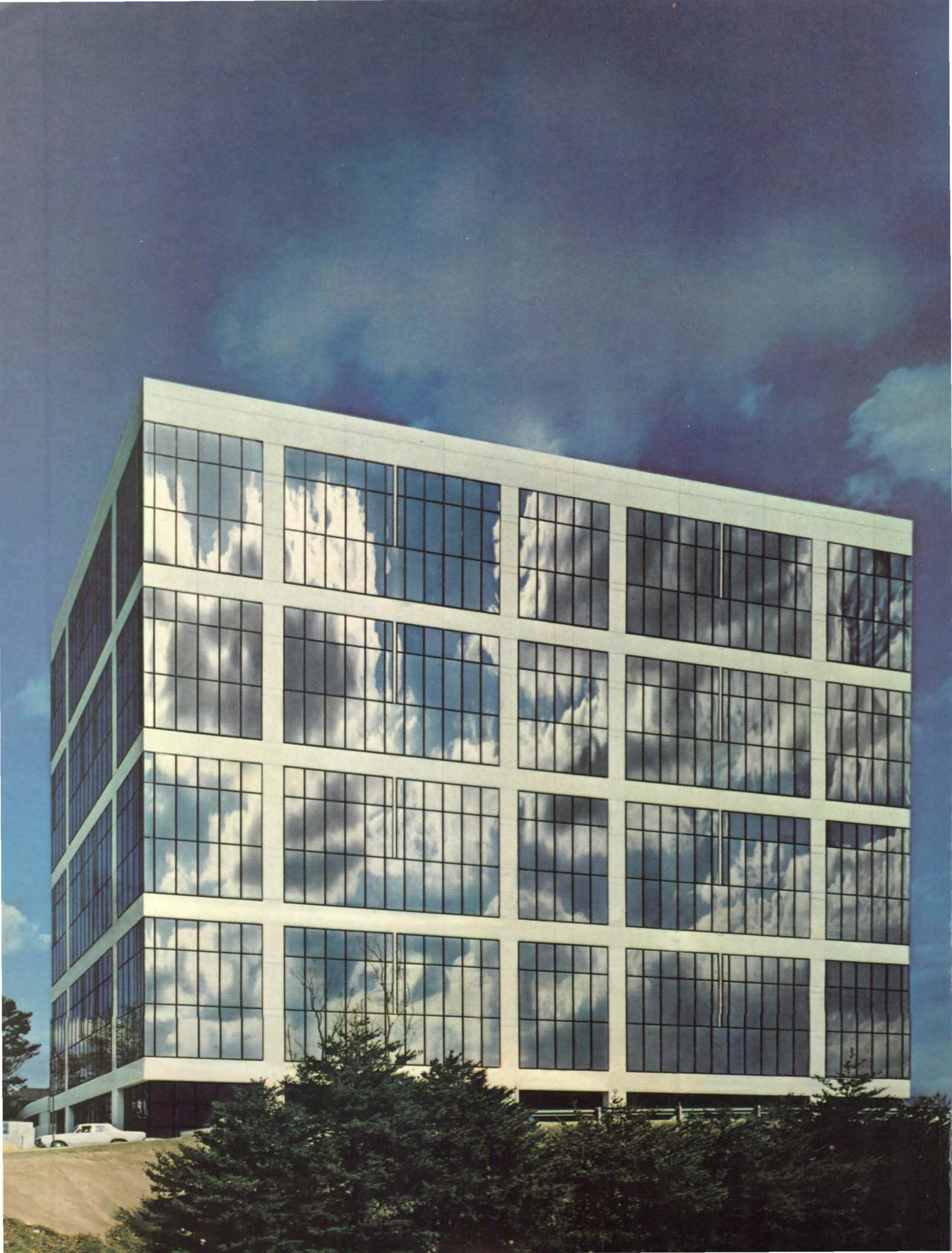
Go ahead. Be creative.

KIMBALL®
OFFICE FURNITURE

Borden, Indiana 47106

A Division of THE JASPER CORPORATION, Jasper, Indiana 47546

On Readers' Service Card, Circle 203



If you look *at* PPG Performance Glass, you can see its beauty.

Look *into* it, and you'll see how to get a better building.

(For the same money you'd spend on conventional glass.)

PPG Performance Glass enabled the architect for the new Cities Service Building in Atlanta to achieve the exact esthetic effect he desired.

He chose to use the reflectivity of the *Solarban® Twindow®* Unit as an active design medium. The facade is never static . . . its color and tone change as constantly as the cloud patterns and sky tones change.

In choosing *Solarban Twindow* Units, the architect and mechanical engineer also found that the performance characteristics of the glass would offset its higher cost by contributing to savings in HVAC equipment and capacity costs.

The result: "We were able to build a superior building at the same cost as with conventional materials."

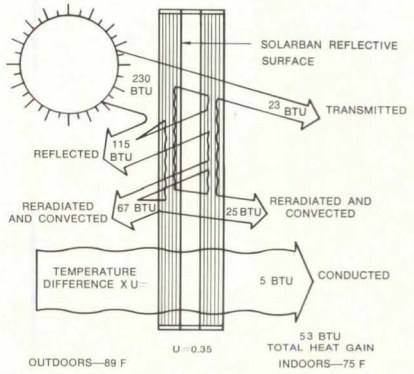
Significant mechanical system savings can be realized with *Solarban Twindow* Units because of the reflective coating which turns back much of the solar radiant energy, rather than permitting it to become a load on the cooling system. This same low-emissivity reflective film on the *Solarban Twindow* Units (normal insulating glass constructions with a ½" air space) enables them to perform like triple glazing in reducing conducted heat loss during the winter. In addition, chilly downdrafts and condensation are significantly reduced.

Put PPG Performance Glass to work in your next building. It can help realize significant savings in mechanical systems costs, reduce brightness, aid in temperature control or reflect to enhance the exterior design.

Contact a PPG Architectural Representative for technical data or write: PPG INDUSTRIES, One Gateway Center, Pittsburgh, Pa. 15222.

Architect: Toombs, Amisano & Wells, Atlanta
Developer: Office Planning Associates, a Division of Cousins Properties Incorporated, Atlanta
Mechanical Engineer: Lazenby & Borum, Atlanta

SOLARBAN(2) TWINDOW INSULATING GLASS



This diagram is illustrative of relationships for a given specific set of conditions.

PPG is Chemicals, Minerals, Fiber Glass, Paints and Glass. So far.

PPG INDUSTRIES

On Readers' Service Card, Circle 204

Most people will remember the Denver Center Building for its reflections of blue skies.

The owners will remember the money they saved on mechanical equipment.

PPG Performance Glass makes it all happen.

The architect for the new Denver Center Building chose a PPG Performance Glass for his building. *Solarban® Twindow®* insulating glass. The results were exactly what he had hoped to achieve: A shimmering facade that would reflect the beauty of the surrounding Denver environment; a surface that would harmonize with vertical columns of weathering steel; a masculine, earthy image for his oil company client; a virtually maintenance-free building; and a building "people will remember they've seen."

In choosing *Solarban Twindow* Units, the architect saw a design medium that could make all this possible, and more. Working with the building's mechanical engineer, he found that the performance characteristics of the glass would offset its higher cost by contributing to savings in HVAC equipment and capacity costs. The mechanical engineer states: "The use of these *Solarban Twindow* Units enabled us to cut approximately 50 tons of equipment out of our mechanical systems. All this, in spite of the demanding conditions here in Denver —we had to deal with the fact that the sun at this high altitude (5,000 feet) contributes to a lot of instantaneous, high heat gain. And the average number of days with sun in Denver is about 300. We still expect the glass to pay for itself in 3 to 5 years in the savings from mechanical system operating costs."

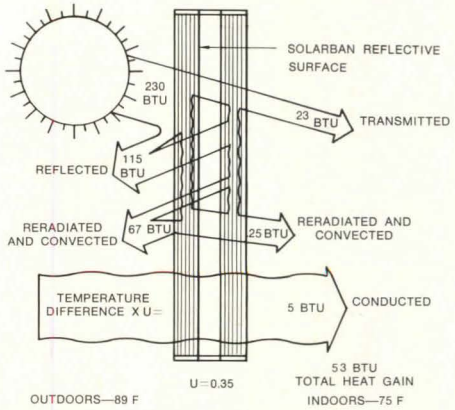
Mechanical system requirements and costs can be reduced when *Solarban Twindow* Units are used because of the reflective coating which turns back much of the solar radiant energy, rather than permitting it to become a load on the cooling system. This same low-emissivity reflective film on the *Solarban Twindow* Units (normal insulating glass constructions with a ½" air space) enables them to perform like triple glazing in reducing conducted heat loss during cold weather. And chilly downdrafts and condensation are significantly reduced.

Put a PPG Performance Glass to work in your next building. It can help realize significant savings in mechanical systems costs, reduce brightness, aid in temperature control or reflect to enhance the exterior design.

Contact a PPG Architectural Representative for technical data or write PPG INDUSTRIES, Inc., One Gateway Center, Pittsburgh, Pennsylvania 15222.

Owner: Webb Resources, Inc., Denver
Architect: Muchow Associates, Denver
Mechanical Engineer: Beckett Engineering, Denver

SOLARBAN(2) TWINDOW INSULATING GLASS



This diagram is illustrative of relationships for a given specific set of conditions.

PPG is Chemicals, Minerals, Fiber Glass, Paints and Glass. So far.

PPG INDUSTRIES

On Readers' Service Card, Circle 205

LETTERS

COMMENTS ON THE CONNECTICUT

Forum: I appreciated receiving "The Connecticut: Priorities in Conflict" from The Architectural Forum—September 1970. The piece evidenced thorough research into the problems, prospects and programs currently affecting this river system. From such a wide array of material that you must have assembled, you were able to fashion a highly readable and informative essay that included a majority of the significant activities on-going in our watershed. And finally, the illustrations and lay-out are most competent, and complementary to the text.

Your concluding remark about seeing the river as an entire, interrelated, eco-system has got to be driven home to more and more people. Only through public awareness and understanding will we have the opportunity to conserve this natural resource. For, after all, conservation is balancing "competing priorities" within the understanding of a total resource.

Congratulations on a fine piece of writing! I only hope it receives the reading it so justly deserves.

CHRISTOPHER PERCY
Executive Director
Connecticut River Watershed Council, Inc.
Greenfield, Mass.

Forum: As you may know, the Senate in October recently passed by unanimous consent, S. 4090, a bill I recently introduced to create the Connecticut Historic Riverway. This action by the Senate is a long step forward in the efforts to preserve the Connecticut River Valley.

ABRAHAM RIBICOFF
Washington, D.C. *U.S. Senator, Conn.*

Forum: I know the Connecticut well, and your essay pinpoints all of the main issues.

STEWART L. UDALL
Washington, D.C.

Forum: Thanks for "The Connecticut: Priorities in Conflict," a good factual summary. You will forgive an old practitioner of the art of environmental reporting for a couple of comments.

1. It is much *too* well-balanced, setting off pros and cons as though they deserved more or less equal treatment, when the picture you describe overall is damnable—"on balance" the polluters seem to be winning.

2. Plenty of good detail, but when a polluting mill is not identified by name in captions, the average reader (far more cynical than yesteryear) will at once assume you're hiding a corporate name. I'm sure this is not so, but this kind of cynicism is universal now, and must be countered with facts.

Hope this is constructive—and that you continue digging into the mire.

GRADY CLAY
Editor, Landscape Architecture
Louisville, Ky.

page 31, top, the Groveton Paper Co., the only game in town; bottom, the Putney Paper Co., one of several mills in the area—ED.

Forum: Your article accurately dramatizes the resource problems that people of the Connecticut River Valley must solve. Your words reflect both the spirit and intent of proposals put forward by the Bureau of Outdoor Recreation in its report, "New England Heritage."

The Department of the Interior is now preparing a detailed master plan based on our study report regarding establishment of a national recreation area along the Connecticut River in the States of Connecticut, Massachusetts, Vermont, and New Hampshire.

The master plan will substantively concentrate on three main units to be contained in the national recreation area:

(1) The Gateway Unit, 23,500 acres of river frontage and adjacent uplands along the Connecticut River estuary, would preserve the scenic character of the lower River. Most of the acreage in this unit would be protected within a "Conservation Zone." Lands in this zone would remain in private ownership, with the requirement that zoning ordinances meeting standards prescribed by the Secretary of the Interior be put into effect.

(2) The Mount Holyoke Unit, to consist of 12,000 acres, would include the heavily forested Mount Holyoke Range near Northampton, Massachusetts.

(3) The Coos Scenic River Unit would be formed from 21,200 acres along an 82-mile section of the upper Connecticut River between Lake Francis in northern New Hampshire and Moore Reservoir near Littleton, New Hampshire. A major portion of the Coos Scenic River Unit would be controlled by scenic and access easements, in order to retain the land on local tax rolls and allow limited access along the river.

Other Federal actions would help create a 300-mile-long Connecticut Valley Trail for hikers, and would designate a Connecticut Valley Tourway for motorists, as well as strengthen programs for pollution abatement, restoration of anadromous fisheries, and stream improvement. State actions are proposed to complement the Federal plans for each of the national recreation area units.

WALTER J. HICKEL
Washington, D.C. *Secretary of the Interior*

TVA CREDIT DUE

Forum: As a reader of more than 35 years of the Architectural Forum, I am taking the liberty to write you regarding the article on page 58 of the September 1970 issue.

I have lamented the passing of Roland Wank as much as anyone, having spent eight years (from January 1936 to 1944) working *with* him, and when he left the Tennessee Valley Authority, succeeding him as Staff Architect until my own resignation in October 1945. I shall not be guilty of bad taste in adding any remarks to your distingushed critic's eulogy.

I must take this opportunity, however, to correct some basic lack of information and perhaps unintentional omissions and distortions, in order to keep the record straight. . . .

I would like to submit the following:

1. Mr. Harry Tour was *never* Wank's "principal architectural assistant or successor." Mr. Tour was in charge of the development of working drawings, based on designs and in compliance with designs prepared by *me* in Wank's office until he resigned, and in my office until I resigned.

2. Mr. Harry Tour has attempted, and succeeded, in taking a lion's share of the credit for the T.V.A. design. In the meantime, I have been silent too long. At least until October 1945, when I resigned, the design of the major projects of the T.V.A. was under the jurisdiction of the Department of Regional Studies, of

(continued on page 16)

INDIAN HILL ELEMENTARY SCHOOL, ROSSFORD, OHIO • ARCHITECT AND ENGINEER: SAMBORN, STEKETEE, OTIS & EVANS, TOLEDO, OHIO • GENERAL CONTRACTOR: JOHN NAUMANN & SONS INC., TOLEDO, OHIO • STRUCTURAL STEEL FABRICATOR AND ERECTOR: ART IRON INC., TOLEDO, OHIO • ARCHITECTURAL PANEL FABRICATOR AND ERECTOR: H. H. ROBERTSON COMPANY, PITTSBURGH, PA. •

For information on bare USS COR-TEN Steel, the original weathering steel, contact a USS Construction Marketing Representative through the nearest USS sales office, check your Sweet's Architectural File, or write to United States Steel, Box 86, Pittsburgh, Pa. 15230. USS and COR-TEN are registered trademarks.

LETTERS

(continued from page 14)

which my office of Staff Architect was a part, and *not* of the Engineering Design Department, of which Mr. Tour's office was a part. Mr. Tour didn't even belong to the Department in charge of the overall architectural design of the T.V.A.

3. Several months after my resignation from T.V.A., Rudolph Mock succeeded *me* and occupied the position only for a comparatively short period. He certainly was not a part of the early team, at the time when things happened, neither was Mr. Passonneau, whom I don't even know personally.

As I stated above, the purpose of this letter is to keep *your* record straight. As for my own reward, which is what I cherish most, nobody can take away from me the fact that my contributions were cast in the concrete of the T.V.A. dams and power houses, in the spans of the T.V.A. bridges, in the functionalism of the T.V.A. structures, and since 1945, in more than a dozen hydro-projects around the World. Ask anyone in the T.V.A.; they know who did what.

MARIO BIANCULLI
Chattanooga, Tenn. *Architect*

FREDERICK GUTHEIM REPLIES:
I am sure Bianculli has correctly stated his role in the architecture of the TVA. Wank himself did not fail to recognize this. My memoir did not intend to sort out who did what. This will be an interesting task for architectural historians of the same kind as deciding who designed Rockefeller Center. Harry Tour's position as a proper AIA, establishment architect may not have been creatively significant but it was politically valuable. The central question in my mind is still the changed climate of TVA and why those who succeeded Wank, including Bianculli, could not achieve the same architectural impact.

HOGBACK RIDGE
Forum: It is distressing to see a responsible architectural publication fall victim to the publicity puffs of the highway lobby.

Your article on the beauties of the Interstate 70 Highway cut through the Hogback Ridge (Sept. issue, page 19) ignores the losing but valiant fight fought by conservationists in Colorado to prevent the cut. The route replaced by this arrogant disregard for nature made no cut through the Hogback. Had it not been for the fight waged by the conservationists, the public relations provided by the terracing would not have been done.

Passing the terracing at 70 mph, one has little awareness of the wonders of geologic history laid bare by the bulldozers. The rock hounds may dismount, but few others.

This is a perfect example of applauding something which shouldn't have been done in the first place.

TOM E. MORRIS
Denver, Colo. *Architect*

Forum: I have read your article in the September issue of the Forum titled "Autoland." There has been much controversy about this gash in the Hogback Ridge approach into the mountains. It is a scar which will be an eternal mark on the land. It is especially unnatural in the terraced cut. To say that much care was put into the terracing, so as to reveal a cross section of 130 million years of our earth's history, is hypocritical. I wonder just how anyone can accept this as a fact or find it a justification.

There is another issue about the Interstate-Highway through the Glenwood Canyon. To have the needed width of the highway would be to build it over the river. What a price to pay for progress. More and wider highways for an increasing traffic problem. This is no solution. In every state in the nation this construction of highways goes on uncontrolled. How many highways do we need?

JOE SIMON
Denver, Colo.

AFTER MATH
Forum: Re Math at Yale, Sayings of Chairman Moore, et al.
Headline: MIND-BLOWING MICROSCOPIC TEACUP TUSSLE ERUPTS!
Dateline: New Haven—In a city littered with architectural egotrips, a mild polemic awoke the sleeping denizens of Architectureland with a start . . . z-z-z . . . STOP . . . z-z-z. It was hours before quiet returned to the sand box. z-z-z-z-z.

JEREMY SCOTT WOOD
M. Arch. '70
Cambridge, Mass.

Nevamar weaves new laminate magic for you.

Nevamar is never satisfied. We're always looking for something new. That's why we've become known as the originators of three-dimensional finishes in decorative high-pressure plastic laminates.

Now, here's Cane . . . the newest and most dramatic entry in our great collection. It looks and feels authentic. Run your fingers over the surface. Feel the weave.

Of course, all the natural disadvantages are eliminated. Our Cane won't split, stain, crack or unravel. It's easy to fabricate.

Applications? Doors, cabinets, toilet compartments, wall panels, furniture . . . in fact, anywhere you want to weave a little magic of your own. Want a sample? Just drop us a note.

Cane . . . another example of Nevamar's leadership in dimensional finish plastic laminates.

ENJAY NEVAMAR
newest look in Laminates

Enjay Fibers And Laminates Company
Odenton, Maryland 21113
A Division of Enjay Chemical Company

Patent Pending

CANE

Dimensional finish plastic laminate

On Readers' Service Card, Circle 208

On Readers' Service Card, Circle 209 →

Plexiglas® lets the sun shine in

Let the sun shine in through domes and skylights of Plexiglas acrylic plastic. Select control of light and heat transmittance is easy by choosing from a series of translucent white or transparent bronze and gray Plexiglas colors.

Domes and skylights of Plexiglas are now available in many standard sizes, shapes, colors and groupings. The time-proven benefits of Plexiglas acrylic sheet are built into every model.

Rohm and Haas Company, Plastics Dept. AR-70
Independence Mall West, Philadelphia, Pa. 19105

Send this coupon for data on standard domes and skylights of Plexiglas, and we'll send you this button.

let the SUN SHINE IN

Name_____

Company_____

Address_____

City_____ State_____ Zip Code_____

FORUM

In the first issue of the "new" Architectural Forum (April 1965) there appeared an item that read, in part: "One of the nicest unfinished buildings we know is the Gandhi Memorial Hall in New Delhi, by Mr. A. P. Kanvinde. The building has been 'under construction' for some years now (budget trouble), and while we feel for our friend Kanvinde, we rather hope his handsome framework will remain 'under construction' indefinitely." Hope, of course, springs eternal in the human breast—even though everybody knows better. And so Kanvinde's Memorial Hall finally got itself enclosed. It is still a very neat sort of Memorial Hall, but not really quite as nice as it once was.

before

after

Kanvinde's building isn't the only recent project that might have benefitted (or might still benefit) from non-completion: Joern Utzon's beautiful piece of sculpture that dominates the harbor of Sydney, Australia, is another. For reasons best known to themselves, the Australians forced Utzon out of the picture a few years back (see Apr. '66 issue), and while most of the exterior of his Opera House is being completed according to his plans, most of the interiors are not. Too bad for Utzon, and much worse for Australia. Another building that would be much better left non-completed is Gaudi's *Sagrada Familia,* in Barcelona, which is currently being "finished" by an organization calling itself The Friends of Gaudi, in a style best described as Princeton Gothic. (With friends like that . . .?) Finally, of course, there are some buildings that might have been vastly improved by never having been started in the first place.

—PETER BLAKE

PRESERVATION

LOST AND FOUND ART

America's preeminence in the international art world, achieved in the Post World War years, was due in great part to a series of New Deal projects for out-of-work artists in the ten-year period from December 1933 to April 1943. These included art programs under the Works Progress Administration (WPA), the Public Works Administration (PWA), and the Treasury Department.

Virtually every celebrated artist of the last three decades—Willem de Kooning, Jackson Pollock, David Smith, Arshile Gorky, Chaim Gross, Mark Rothko, etc., ad infinitum—was, at one time, receiving $23.86 per week, or thereabouts.

During the first six month period alone, the government paid out $1.3 million. For this, it received 15,663 works of art—including seven Navajo blankets—from 3,749 artists. Much of this was easel art, which was given out to schools, post offices, congressmen, etc. Most of it has, for all intents and purposes, disappeared.

Easier to track down are the murals, sculpture, and the like, which were produced for public buildings, usually through competitions. Karel Yasko, assistant commissioner of design for the General Services Administration, with personnel in the field, hopes to catalogue as much of this work as possible in the months to come. His Fine Arts Inventory began in mid-October with Region 8 of the ten GSA regions, which includes Colorado, Wyoming, Utah, New Mexico and Arizona.

The principal object of the inventory is to impress the various local citizens with the value of the works—much of which has risen considerably over the years—and the need to have them maintained and restored where necessary. For example, in Region 8, a canvas mural by Oscar Blumensheim in the Walsenburg, Colo., post office may now be worth $35,000. Blumensheim probably received for it the going rate which was, in such cases, 1 per cent of the total cost of the building, usually about $350 or $400. Said Denver Artist Marion Iserman, who is inventorying Region 8: "That was a year's salary for some of us."

SAVING CORBU

"The greater part of what Le Corbusier has constructed is in danger and it is up to us to save it," says Professor Pierre-Andre Emery, a friend of Le Corbusier's. (One current example is the Clarté apartment complex in Geneva constructed entirely of pre-fab steel elements that is deteriorating and in danger of demolition. The Fédération des Architectes Suisses, in order to save it, is attempting to purchase

Le Corbusier by Marcoussis

it for a headquarters.)

M. Emery is a co-founder of an organization established in 1969 and headquartered in Geneva—the Association Internationale Le Corbusier—which was set up to save and promote Le Corbusier's works, his thought, and his message. Other co-founders are Professor José-Luis Sert, chairman; Mrs. Jacqueline Jeanneret; Architect George Brera; and Editor Anthony Krafft.

The aims of the association are: to contribute in gathering, classifying and filing documents and material relative to the work of Le Corbusier and his influence on others; to instigate the creation of national or local member associations; to protect the built works of Le Corbusier; and to organize or support meetings, seminars, conferences, displays and publications consistent with these aims.

Inquiries may be addressed to the association at 11 Rue Toepffer, Geneva, Switzerland.

REVIVING A RENOVATION

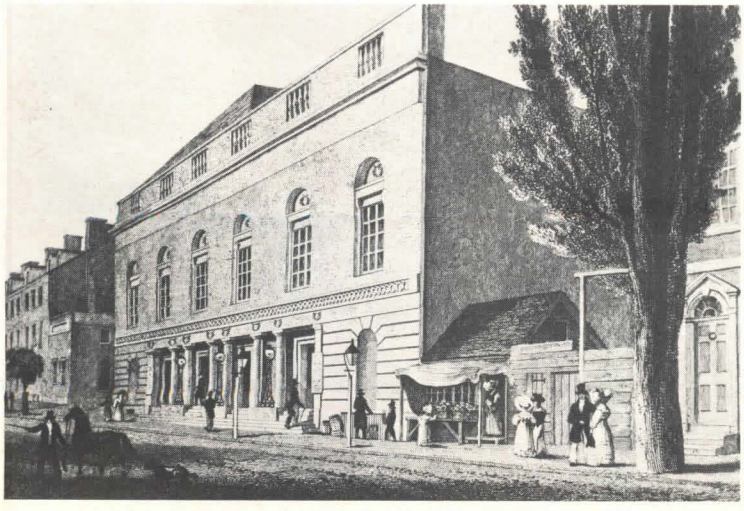
The Walnut Street Theater in Philadelphia, said to be the oldest theater in continuous operation in the English-speaking world, is presently undergoing its fourth renovation. Architects John Dickey and F. Bryan Loving (interiors) are restoring the theater to the way it looked in 1828 when the noted Philadelphia architect, John Haviland, first improved on it. Haviland added a Classic Revival colonnade and marble facing. These were later hidden by stucco and sheet metal.

Built in 1810, the building originally included a riding ring for equestrian exhibitions. In 1930 it was the setting for an unstaged confrontation between police and pioneers of nudity. The show was *Lysistrata,* and in the cast was Miriam Hopkins.

An adjacent loft building is also being restored to serve as box office—at street level—and a theater museum, offices and storage, upstairs.

The refurbished theater is expected to open May 1, 1971, and will host such groups as the Pennsylvania Ballet, a repertory theater and, with luck, visiting off-Broadway plays.

Haviland's Walnut Street Theater *Free Library of Philadelphia*

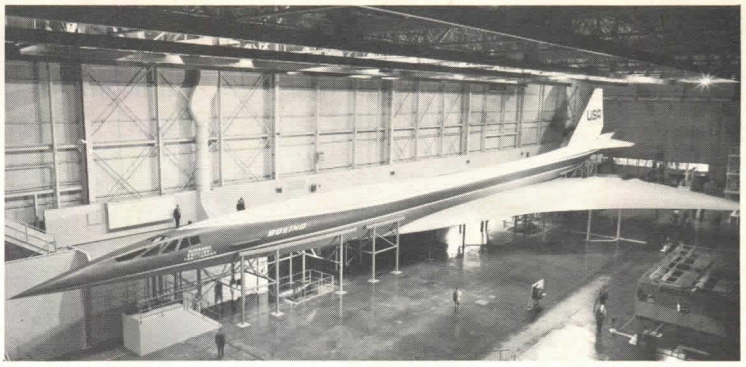


TRANSPORT

THE SST . . .

Supersonic Transport (SST) proponents in the Senate will push for approval in the lame-duck session of the Administration's request for $290 million to build two prototype SST's. They argue that Boeing's design must be tested without delay or America will lose out to the Anglo-French Concorde. The proponents principal argument—that an American SST could tip the balance of trade in our direction to the tune of between $22 and $50 billion by 1990—was disputed recently by leading economists polled by the Sierra Club and a task force of youths working for Senator J. William Fulbright (D., Ark.). The economists agreed 15 to one that the balance of trade argument was fraudulent.

In the face of a well-organized and impassioned campaign by environmentalists against the project, the SST lobby, still frozen into the economics of it, is getting more desperate for arguments. William M. Magruder, the government's SST director, says we have reached the "go–no go point," after which it will be as expensive to scrap the SST as it would be to construct it.



Boeing's big bird

No economists—pro or con—have demonstrated convincingly that the SST could compete successfully with the present jumbo jets. The economic effects are speculative as, indeed, are the environmental effects. But must we fly now, pay later?

. . . AND THE BOOM

One foretaste of what we might be in for if the SST is, in fact, beyond the point of no return:

A Plumas County (Calif.) Grand Jury, in Quincy, charged the nearby Beale Air Force Base with "noise discrimination."

"Rather than shake up all those people [in San Francisco] with these damn booms," said jury foreman Ken Kolb, "they're breaking our eardrums with them —well we're damn fed up with it." George Chaffee, a retired contractor, complained to the jury about a 2-in. crack in his ceiling that had been caused by a boom.

County Engineer Darrell Payne testified: "Look, it's got to be booms that're causing all the damage up here with cracked ceilings in the court and busted window panes. We haven't had any recorded earthquakes."

"We don't think," said Foreman Kolb, "that the Air Force is going to take all its booms and get the hell out. But we certainly do think they could spread 'em around a little."

ENVIRONMENT

ELECTION RETURNS

Tallying scorecards after last month's elections gave environmentalists much to cheer about.

Perhaps their biggest coup was the defeat of one-term Governor Don Samuelson of Idaho who was openly eager to turn the magnificent White Cloud Mountains over to strip mining. He also advocated dredge-mining of wild and scenic rivers, even those under federal protection.

The League of Conservation Voters, the political arm of Friends of the Earth, says that the candidates it backed won 16 of 20 target races. These included a comeback for former Representative J. Edward Roush in Indiana. A leader in the establishment of the Indiana Dunes National Lakeshore, Roush credited his success to the positions he has taken on environmental issues.

As for ballot propositions, the score was also 16 to four in favor of environmental protection. Those propositions which passed included bond issues for sewage treatment in Alaska, California, Florida, and Illinois; for oil-spill clean-up in Maine and water pollution abatement in Washington; for parks in Nevada and Alaska; and for recreation facilities in Washington and wildlife protection in California. Oregon restricted shoreline development of scenic waterways; and Virginia and Rhode Island amended their state constitutions to include an "Environmental Bill of Rights."

The two most innovative ballot propositions—to ban nonreturnable beverage containers in Washington, and to divert gasoline taxes to antismog work and rapid transit in California—were both defeated.

AS MAINE GOES . . . ?

Three years ago, the Maine coast village of Wells dredged its harbor and filled in some wetlands in order to build a marina and a seafood restaurant. Then a sign was put up near the restaurant that reads: "This area is closed to all digging of clams, quahogs, mussels and other marine mollusks because of pollution."

Wells's harbor master, William

Abbott, confessed to William E. Burrows of the *Wall Street Journal* that he has trouble understanding the reasoning of those who complain that wetlands reclamation disrupts wildlife. Small wonder. This is the problem, as Abbott sees it: "Is wildlife going to take over man or is man going to take over wildlife?"

With that for starters, the harbor master expands his theory: "There was an oil spill in the Gulf of Mexico that killed millions of birds. That's a good thing. Those birds were polluting the Gulf. . . . The excrement of 25 ducks has the potency of a family of six people. The federal government is raising ducks and geese to pollute man."

ACID TEST

Following are two simple household tests to determine if your local river is polluted:

- The League of Ohio Sportsmen suggests that "if a goldfish dies within 12 hours in a jar filled with your water, you've got a problem. If it dies within 24 hours, you've got a lesser problem. If it lives, you've got water off another planet."
- In a recent edition, the Japanese newspaper, *Mainichi Shimbun,* published a fuzzy but recognizable photograph developed not with chemical developer but with water collected from rivers, ditches and canals near Mount Fuji.

GAMES

POLLUTION IN THE PARLOR

"Water pollution isn't any fun . . . but *Dirty Water* is," reads an ad for one of a group of adult games promoted for the holidays by a company in Cambridge, Mass., called Urban Systems. *Dirty Water* is an education in water pollution control for from two to four players. Object: stock your stream with "fish, finnies, and other funny creatures," purify it, then let the muck back up into your neighbor's tributary. What he does is his business.

Smog is the company's primer in air pollution. Again, one cleans up by doing dirt to one's neighbor.

A series of five *Ecology Kits*—"Why are leaves green?; Life in the water; Predator-Prey; What moves life?; and Life from death"—come complete with instructions and equipment for performing

How-to ecology

miniature experiments. Example: with "What moves life?" one builds a life system with living organisms, nutrients, test vials, temperature gauge, etc. Here, the only hostility involved is nature's own.

The games sell for $10; the kits for $6.

DESIGN BY COMMITTEE

All urban and environmental games being ballyhooed in the pre-Holiday season were not packaged and sold over the counter. The one we have in mind was played out over two days at Chicago's Ambassador West Hotel.

The game was called Plaza Beautification Committee and, after an "informal get-together" and a continental breakfast, the players got down to it. The idea was to design the plaza for Edward Durell Stone's new Standard Oil Company (Indiana) corporate headquarters, now rising on E. Randolph Street.

The fun took place "behind closed doors" where a large flat surface held specially designed models of the building and plaza. The movable game pieces included trees, fountains, pools, artwork, flags, sidewalks, benches and light fixtures. These got moved around a lot.

The players (in addition to Stone): Mrs. John E. Swearingen, wife of the chairman of

Mrs. Swearingen, Stone, Lady Bird

the board of Standard Oil; Mrs. Lady Bird Johnson, Mrs. Jacob (American Oil) Blaustein, Mrs. August (Budweiser) Busch, Mrs. Richard (Mayor) Daley, Mrs. Everett Dirksen, Mrs. Henry Ford II, Mrs. Jake Hamon, Mrs. Mary Lasker, Mrs. Homer Livingston, Mrs. Henry (Claire Booth) Luce, Mrs. Brooks McCormick, Mrs. Richard (Governor) Ogilvie, Mrs. Henry Salvatori, and Martha Mitchell.

"It could be the start of a trend," said Stone. Parker Brothers please note.

EDUCATION

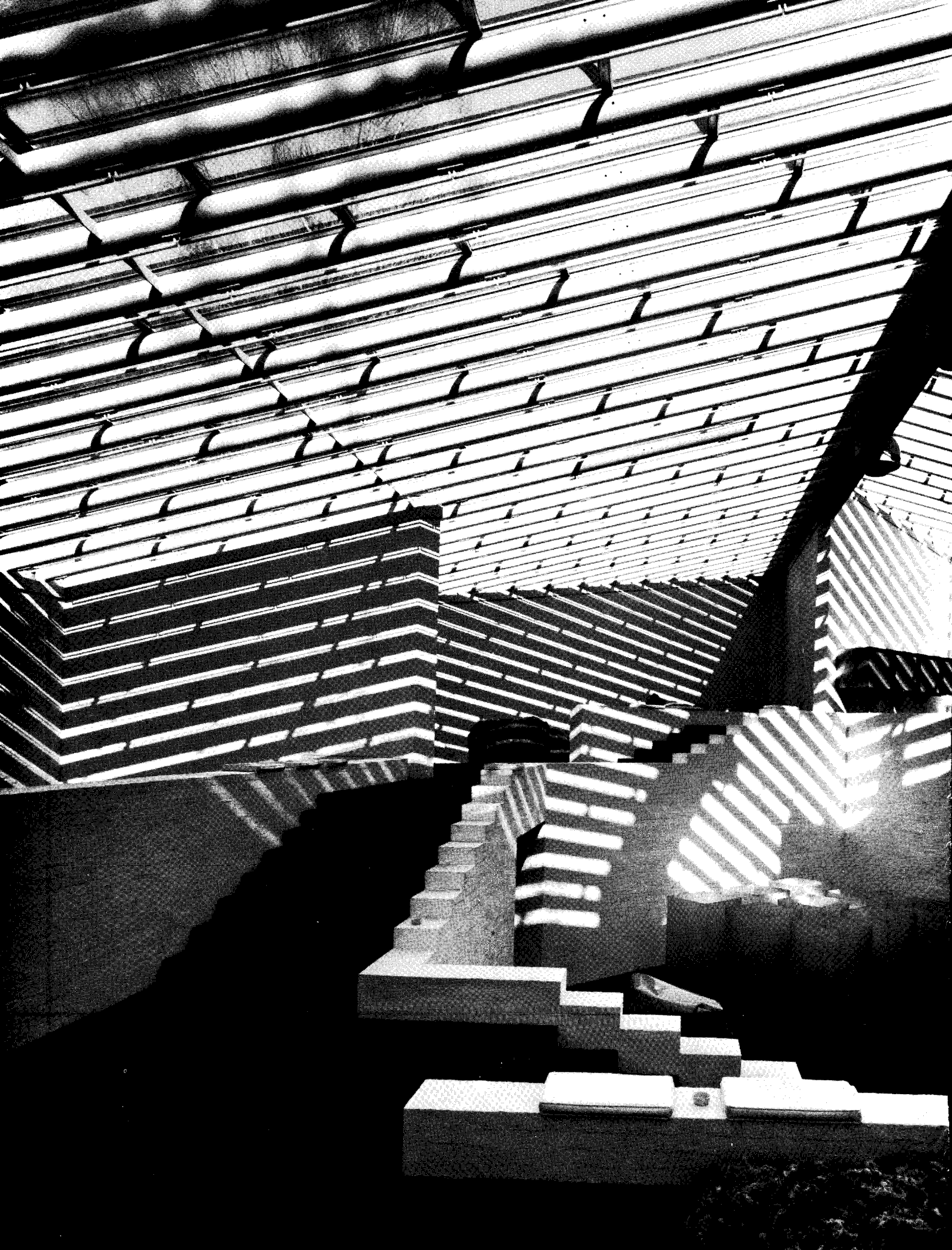
PLANNING FOR A NEW SCHOOL

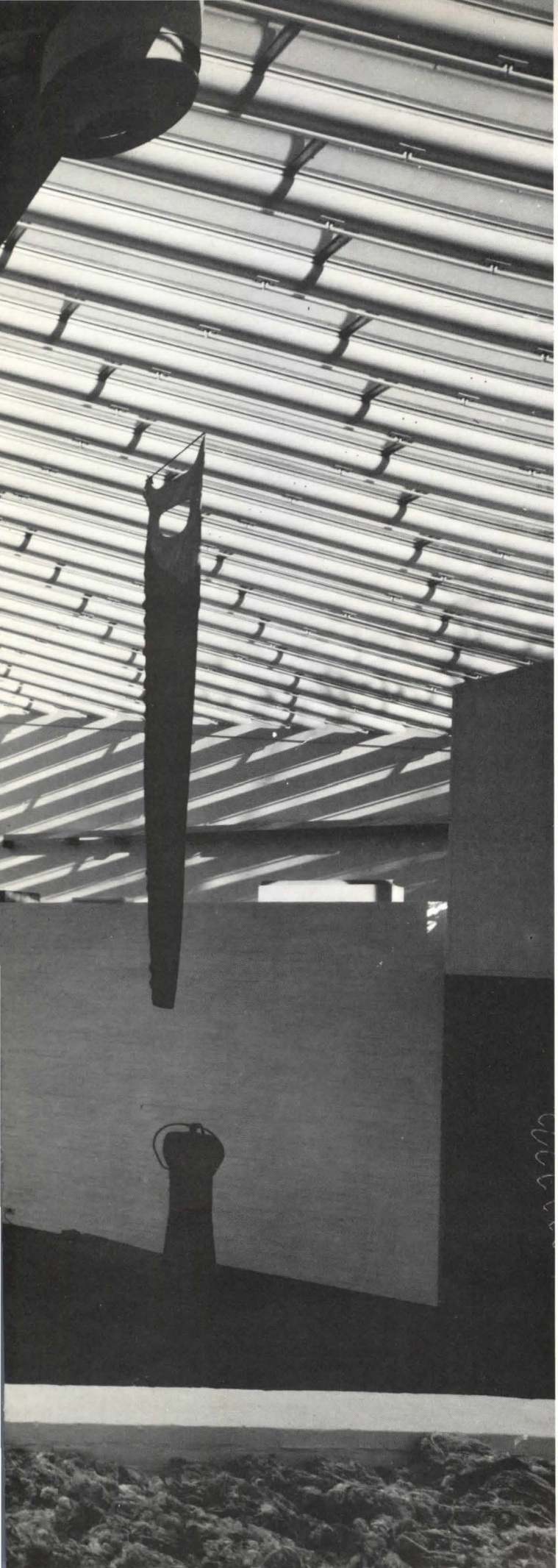
The Charles R. Drew Postgraduate Medical School, to be built in Watts, California, will specialize in a new field—community medicine. Its planners (who will help define everything about this school, its goals, activities, partnership with the community it serves, and physical requirements) were selected in a most unique way, as unprecedented as the school they will plan. The planners are a team composed of Lester Gorsline Associates, Arthur D. Little, Inc., and the Urban Workshop, Inc. (Jan/Feb '69 issue, pp. 58-63).

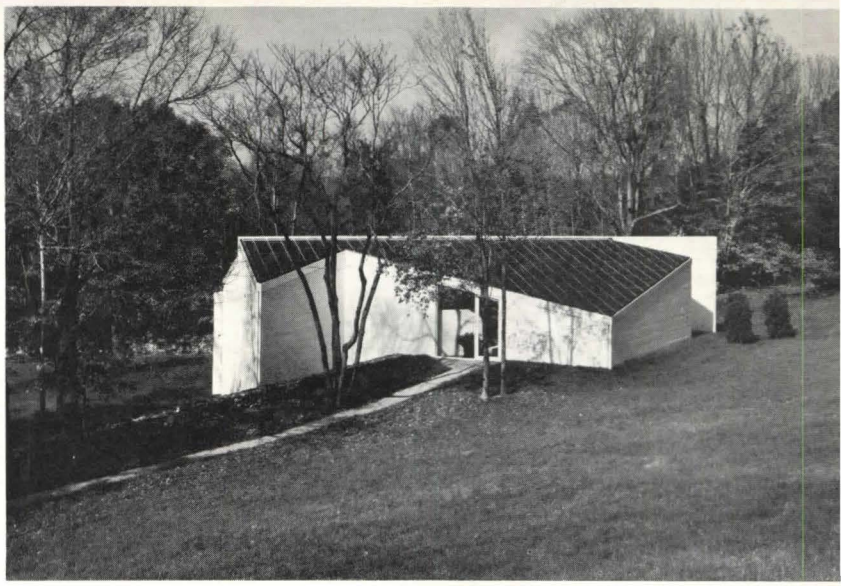
A key factor in the selection of the winning team was their "vast knowledge" of the community and their sensitivity to its needs and hopes. Instead of seeing master planning in its narrowest sense, as "the process that occurs just before construction," the team will be looking at the broadest questions—how to set up an organizational structure that assures a continued focus on community medicine, how to shape the school's involvement in the community so that a responsive network of community health care is created, how to calm residents who see any new institution as threatening dislocation.

The innovative selection procedure was devised by Architect George Dudley (who is chairman of the New York State Council on Architecture and president of the New York State Environmental Facilities Corp.) acting as consultant to the school. His first step was a letter to 55 firms, inviting their attention to the special nature of the new school, and to the special need to involve the community in the planning process. Firms (or teams) were asked to outline not only their experi-

(continued on page 63)







SCULPTURE UNDER GLASS

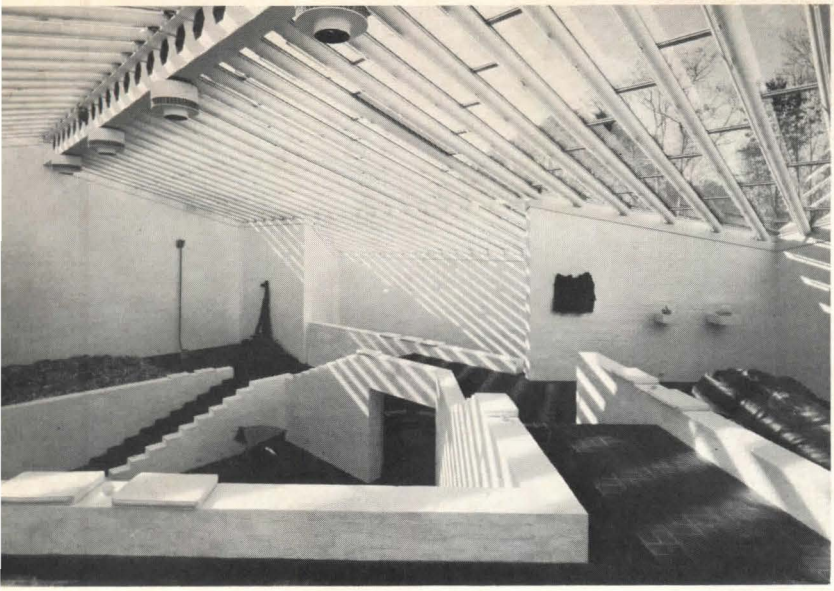
Philip Johnson's personal sculpture collection is shown under a roof that improves on the sky

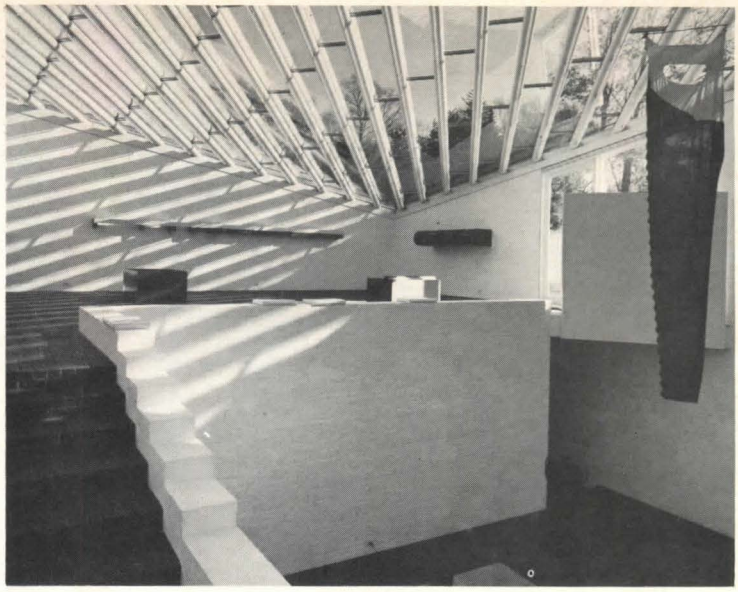
The 5,000 sq. ft. of exhibition space in Johnson's gallery is sheltered by a vast roof of mirrored glass on steel pipe rafters. The many-leveled space is built into a hillside on his estate at New Canaan, Conn. On the entrance side (above) the glass roof swoops down almost to the ground.

The phases of Philip Johnson's architectural progression are summed up in the five buildings on his own tract of Connecticut countryside. Starting in 1949 with his Miesian "Glass House" and the windowless guest house (with NeoClassicism concealed inside), Johnson added the whimsically NeoClassical pavillion by the pond (1962), and the underground painting gallery (May '66 issue, page 57), a brilliant exercise in non-architecture.

The newest addition, the sculpture gallery, is Johnson's first completed building in the angular, prismatic mode that has recently appeared in his designs for large office buildings (Nov. issue, page 63). It is also the first serious challenge to the harmony of his private compound, where earlier buildings were quite consciously designed as part of the view from the Glass House. In striking contrast to the virtually invisible painting gallery, this white-painted building is not subservient to the larger scheme. Johnson may soften the angular forms by growing vines on the walls, but for now he seems to enjoy seeing them sharply defined.

Even though the building stands out in the landscape, it looks deceptively small from the outside. The sheer size of the interior comes as a surprise, and so does the luminous roof. And although the angular geometry is apparent from outside, the great span of the ridge beam—diagonally across the axis of the entrance—is totally unexpected. You look up toward the ridge as you enter, and, in doing so, turn to face the central well and the al-





coves that reach out from it. The experience is very effective environmental theater.

The layout of alcoves around the center makes the whole 5,000 sq. ft. area visible at once. But the angular corners projecting into the space strongly mark the boundaries between the central space and the alcoves. It is all an illustration, says Johnson, of "how to make a building big and small at the same time."

All of the gallery spaces are along a series of stairs spiraling down from the entrance. Instead of railings, there are low parapets (about 10 in. high), which give a surprising sense of security. Stepping down the stairs and stretching along the balconies, this parapet outlines the spiral superbly.

The 5,000-sq. ft. glass roof was shrewdly detailed for economy (but a glass roof can never be inexpensive, Johnson admits). Steel pipe was chosen for the rafters because it can be cut to odd lengths and adjusted in strength—for different spans—by varying its wall thickness. The pipes also house wiring for cathode lighting tubes mounted on them. The ridge beam has a pierced web, exposed to the exterior on one side, where there are electrically operated ventilating shutters, like those of a typical greenhouse.

The rest of the structure is utterly simple. ("No details," says Johnson.) The brick walls have no insulation, there is no air conditioning. Unit heaters, suspended from the roof ridge, maintain a minimum temperature of 50 degrees F in midwinter.

Johnson can explain the form of the gallery entirely as a setting for his sculpture collection. "Outdoor lighting is ideal for sculpture," he asserts, and he has obtained a lighting effect which he calls "reinforced outdoors" by using mirrored glass that transmits 14 per cent of sunlight, then diffusing the light from the white walls and softening the shadows with lighting tubes attached to the rafters. ("When the sun is shining in, I always turn on the lights," says Johnson dryly.)

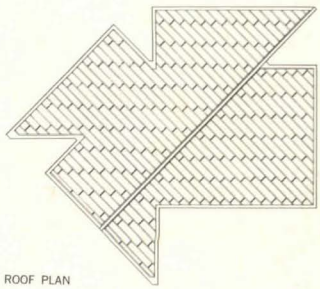
The striped shadow patterns cast by the roof structure—not always there and always softer than they appear in photographs—do not bother Johnson. On some works, especially the minimal ones, he enjoys the occasional addition of a shadow pattern.

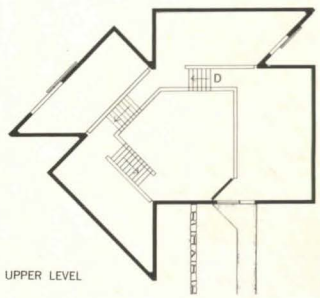
"The trouble with most sculpture gardens," Johnson observes, "it that you always see one work behind another. Here, each object is in its own niche."

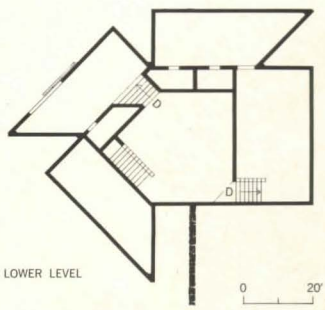
All of the alcoves have roughly the same floor dimensions, but they vary widely in height—from 6 ft. to 25 ft.—and in the angles from which they are seen. One alcove is seen first from a whole story above, for instance, and another is seen from its own floor level as you go down the stairs (allowing a close-up view of textured floor sculpture there).

Johnson may have designed the new gallery as a sympathetic setting for his collection—which it is—but the most interesting sculpture in sight is undoubtedly the building itself. Without seeming to try hard, he has outdone his favorite sculptors—at least the minimalists and the light sculptors—at their own art.

—JOHN MORRIS DIXON





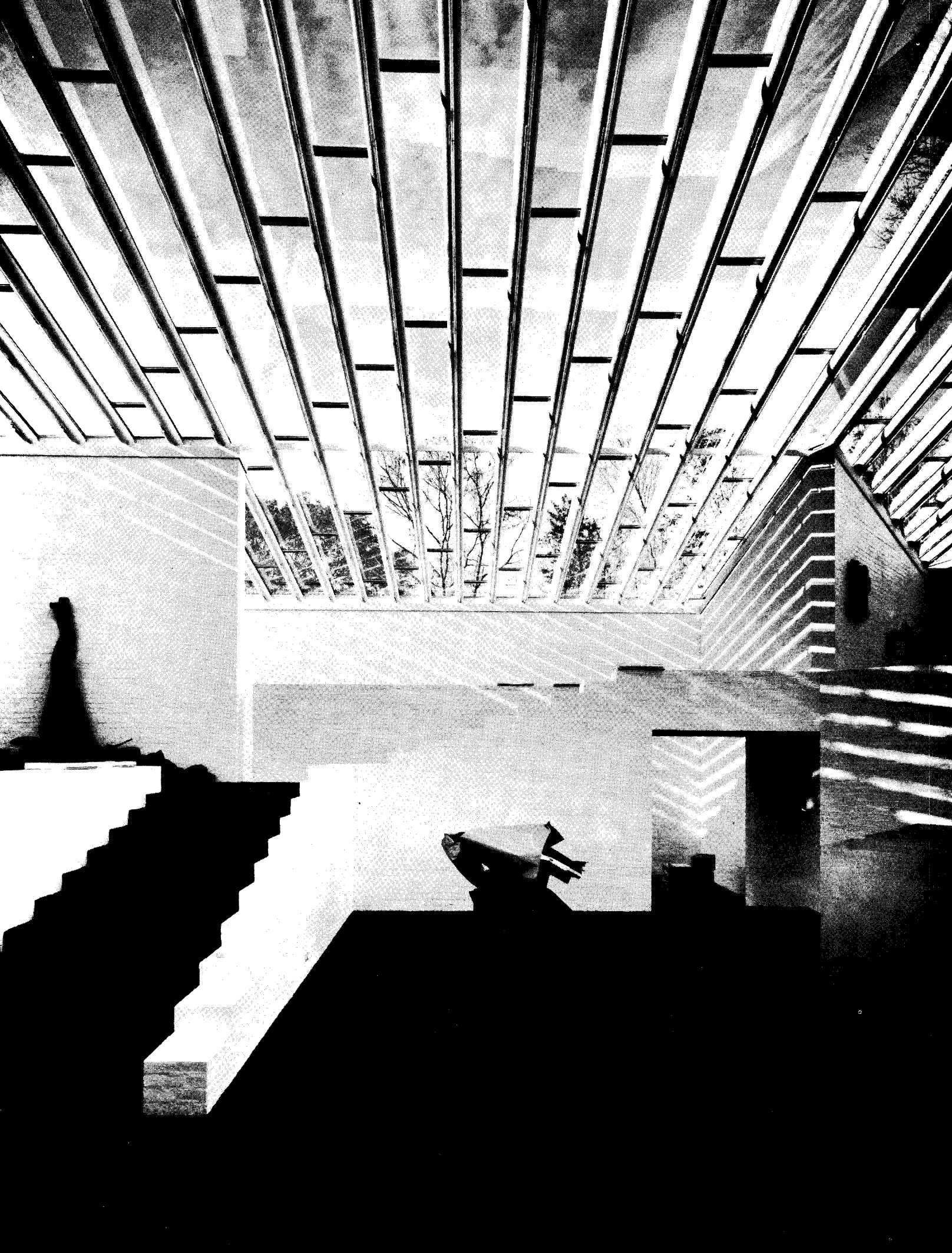


Almost all of the gallery spaces can be seen from the entrance level (top left). From part way down the series of stairs (top photo), the entrance can be seen—behind Oldenburg's hanging "saw." From the central space (right) there is an underpass to a double-height alcove.

FACTS AND FIGURES

Sculpture gallery, New Canaan, Conn. Architect: Philip Johnson. Engineers: Severud Associates (structural); Cosentini Associates (electrical). General contractor: Louis E. Lee Co. Building area: 5,088 sq. ft.

PHOTOGRAPHS: Alexander Georges.



GATEWAYS TO OUTSIDE

Rehabilitation Centers added to New York State's giant mental hospital system are designed to ease the transition to independent living.

"Outside" is where the rest of us live. At least that is how the 65,000 residents of New York State's mental hospitals divide the world. And most of their hopes—and many anxieties as well—hinge on getting back outside.

Ever since the mid-1950's, when tranquilizing drugs dramatically raised chances for recovery, the state's Department of Mental Hygiene has been working on rehabilitation programs to get more patients outside faster—and to prepare them better for the challenges they will face out here.

In 1964, the establishment of the agency now known as the Health and Mental Hygiene Facilities Improvement Corporation (originally just the Mental Hygiene Facilities Improvement Fund) gave the state the means to replace makeshift rehabilitation facilities at the 15 existing mental hospitals with new rehabilitation centers. So far, two of these centers are in operation, eight are under construction, and three more are in design stage.

As the first new buildings at most of these hospitals since the era when patients needed forcible restraint, these centers are symbols of a new kind of openness and ease. Some patients will spend most of their daytime hours in this more encouraging environment. For others, the new centers will be visible goals.

At the rehabilitation centers, patients will learn skills such as typing, sewing, automobile repair, and English, which will give them greater confidence and security in the world outside. They will be able to mingle with other patients in the gym, at the pool, or at the billiard table, and buy things at real-life shops and snack bars. There will also be counseling offices and work-for-pay shops.

The hospitals where these centers are located grew up as vast collection points for people with little hope. Located in the countryside, where the air is healthier —and patients well removed from embarrassed relatives—the institutions were isolated by square miles of landscaped grounds. In the past decade, new treatment methods have reduced the total population of these hospitals from 90,000 to 65,000—even while the number of admissions has climbed steadily. As more and more patients pass *through* the the hopsitals (current average stay: 63 days), the importance of rehabilitation grows accordingly.

These state hospital rehabilitation centers are only part of a larger program to meet this need. New, smaller hopsitals are being built in urban counties, where patients will be able to travel to jobs or schools—or live at home and come in for day therapy. And some of the big existing hospitals are being divided into smaller *administrative* units, each serving a distinct geographic area.

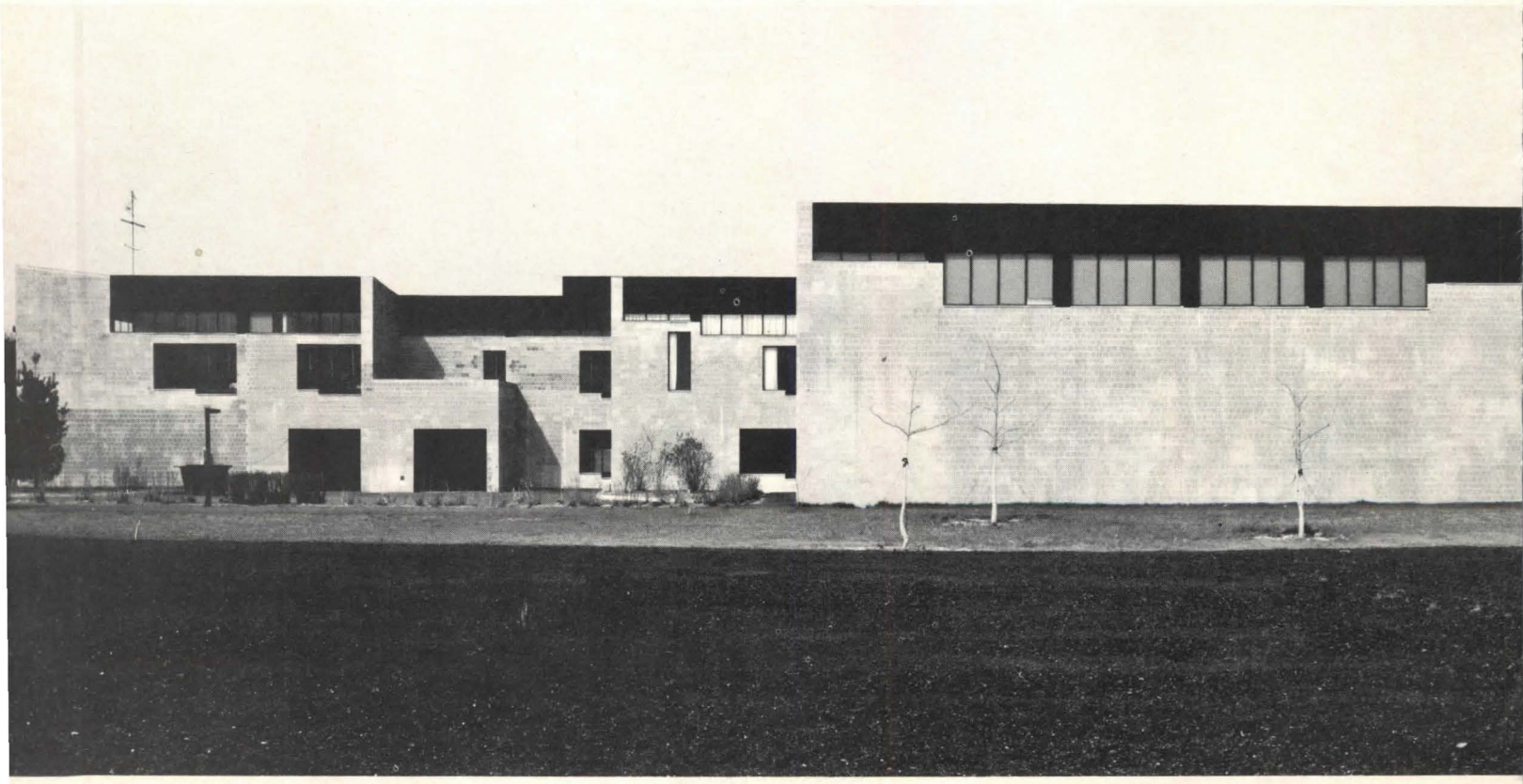
The Health and Mental Hygiene Facilities Improvement Corporation (HMHFIC) is also responsible for a broad range of projects at the state's mental hygiene and narcotic addiction facilities, as well as county and municipal hospitals. Its aggregate construction put in place is approaching $500 million in value. Its structure is comparable to that of New York's well-known State University Construction Fund (July/Aug. '68 issue).

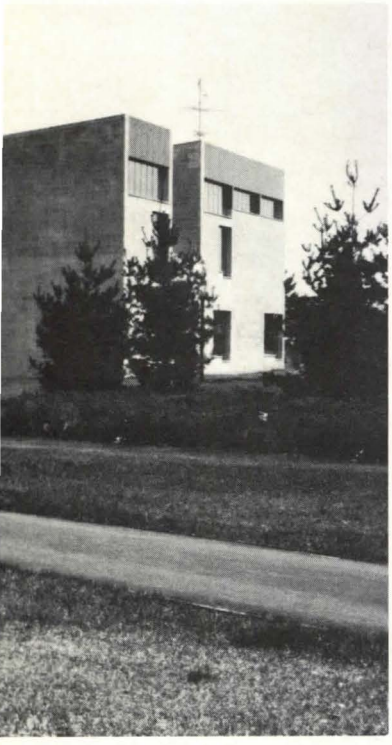
Architects for each project are chosen jointly—on the basis of demonstrated ability, willingness to commit top-level personnel, etc.—by HMHFIC administrators, state mental hygiene officials, and directors of the individual institutions. During the design phase, architects and state officials meet once or twice monthly in no-holds-barred discussion of design proposals. These meetings can become tense confrontations, but they eliminate last-minute vetoes and cut down on change orders.

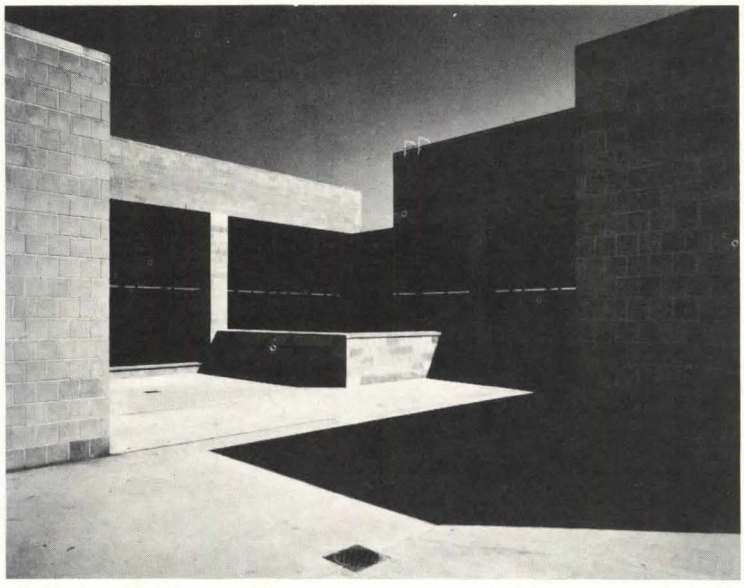
If HMHFIC's rehabilitation center program has one basic flaw: it may be that too much has been built too soon. The design of the centers proceeded so quickly that there was no chance to learn useful lessons from the first one before nine others were under way. The program was pushed ahead not only by the pent-up demand, but by the specter of rising construction cost. Had HMHFIC waited to refine its design objectives, it might have been able to build very little at all.

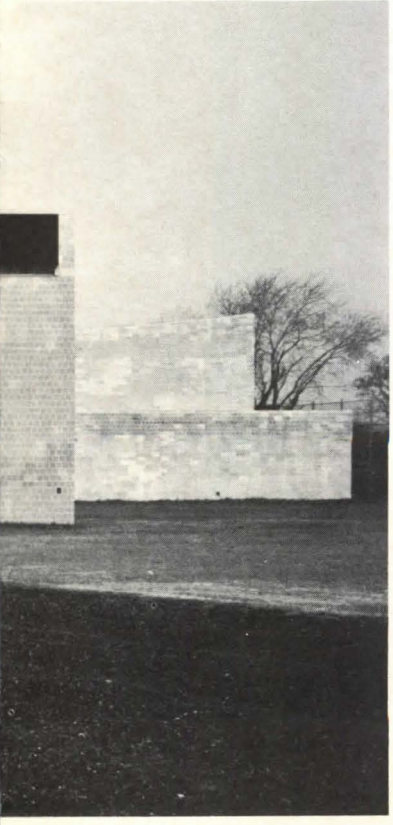
Fortunately, hospital staffs had acquired enough experience with rehabilitation to articulate their needs, and HMHFIC gave them an effective vehicle. Staff members at the centers now in operation seem thoroughly pleased with the buildings they helped to shape, and they report real enthusiasm among the patients.

CENTRAL ISLIP









The roofs of the Central Islip Rehabilitation Center rise consistently from the central entrance toward either side (top left) and toward the rear (left). Walls of sand-colored concrete block—not yet properly cleaned—are capped with dark brown porcelain-enamel fascias above window strips. A monumental stair at the main entrance leads to the second floor by way of a roof terrace (photos above). The stairs are meant to double as bleachers for viewing performances on the paved area below or games on the field.

Central Islip State Hospital sprawls across more than a square mile of flat terrain in the middle of Long Island. Even on a clear fall day, when the rows of sugar maples crossing the site are brightest yellow, the hospital grounds seem bleak and endless.

The new rehabilitation center there by Armand Bartos & Associates is simply not big enough to alter the pervading atmosphere of the place. But for the 1,000 or so patients who visit the center daily, the building represents an important change in their environment. It is the only building they see that does not have built-in barriers to remind them of earlier days, when rehabilitation was only a distant possibility for most.

The most important thing that the new center offers the patient is *variety* of experience, and Bartos has tried to express the fact in the massing of the building. Compared to nearby buildings—three-story structures all primly contained by rectangular walls and hipped roofs—the rehabilitation center seems to be exploding with internal energy.

The rehabilitation center program calls for so many facilities with special spatial demands that the architect is almost bound to express their volumes on the exterior. Many of the other centers have been laid out with low links connecting the taller auditorium, gym, etc. Bartos chose instead to organize his center into a denser, more sculptural mass, with roofs rising from the strongly emphasized central entrance toward large-volume spaces around the edges.

There are actually three distinct wings, but they are clustered so tightly together that the garden courts between them seem like slots or cavities cut into a continuous form. Though small, the courts serve the vital purpose of bringing daylight and a glimpse of greenery into the very middle of the building.

This rehabilitation center does not have broad openings toward the surrounding landscape—as

many of the other centers do. Except around the interior courts and at the dining terrace, which is partially surrounded by the building—the walls at ground level are almost solid masonry. Most of the large openings are located high on the walls, where they let in plenty of light, but outward views are limited to small windows in most of the rooms. Bartos reports that the center staff was "not terribly anxious to have the patients distracted by panoramic views of the outdoors." Besides, the outdoors here, with its regimented planting, is more likely to remind patients of institutional restraint than of natural freedom.

Asked about the somber character of the center's extensive concrete block walls, Bartos explains that the budget offered him a choice between interesting form and interesting surface: "If the building had been a mere box, I could have covered it with brick." Instead, he chose a highly articulated form, folding around all those pockets of daylight and greenery. The 8-in. by 8-in. block —actually more inviting in its true sand-color than it looks in black-and-white—would look considerably less industrial if it were washed down with acid to give it an even color, as required in the building specifications.

At the main entrance—the one point where the walls really open up—it is possible to enter the building at either level. Although the stairs to the second level are quite prominent, most of the center's heavily used spaces are on the first floor, and most people enter through the large vestibule under the stairs. This entrance leads into a large, casually arranged lobby, from which the patients' store and snack bar are visible and readily accessible.

The layout of the building in three irregular wings, and the location of some of the larger spaces at the extremities of these wings, makes the interior circulation pattern quite complex. In some areas, however, circulation routes in the actual building seem more direct than they appear to be on paper. The relatively long walk from the entrance to the auditorium, for instance, seems shorter because it goes straight to its destination with interesting views of the lobby and two interior gardens along the way. The routes to some of the classrooms, on the other hand, are hard to follow because there are several roundabout corridors, all windowless and similar in appearance.

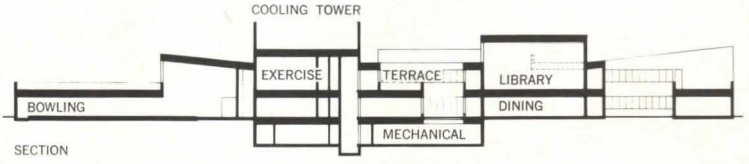
Of course, the atmosphere inside the building is determined in large part by finishes and colors. The architects wanted to counter the large areas of exposed block on the interior with vivid colors in paint and furnishings, and occasional whole walls of bright color. Mental hygiene authorities—so recently preoccupied with restraining patients—were wary of colors that might be too stimulating. The solution was a limited color selection—ochre, avocado green, and burnt orange —for doors, chairs, table tops, and carpet. Now that the center is operating, staff members ask whether colors could have been brighter and more varied. They could have been, of course, and official policy on the subject has already changed.

The program for Central Islip has helped to set the pattern for all of the subsequent rehabilitation centers. Now a few of the lessons learned here—about the use of color, for instance—can be fed back into the construction program in time to make a positive contribution.

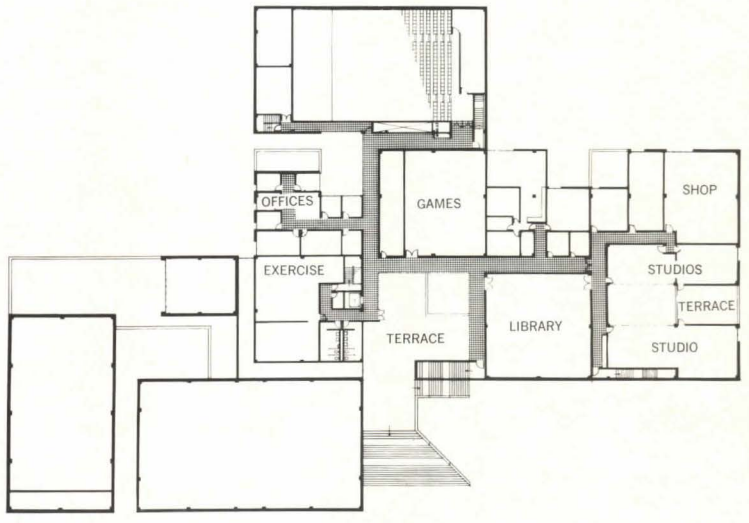
FACTS AND FIGURES

Rehabilitation Center, Central Islip State Hospital, Central Islip, N. Y. Architects: Armand Bartos & Associates (Partner for project management, Roy Friedberg; partner for design management, Martin Price). Engineers: Garfinkel-Marenberg & Associates (structural); F. J. Sullivan & Associates (mechanical and electrical). Landscape architects: Zion & Breen. Construction managers: W. J. Barney Corp. Building area: 70,510 sq. ft. Construction cost (including site work): $2,558,727.

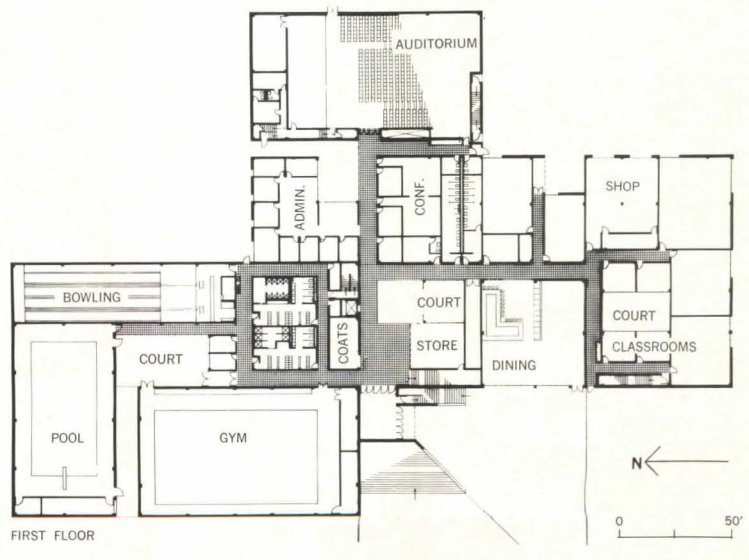
PHOTOGRAPHS: Evelyn Hofer (except page 31, Rothchild).



SECTION

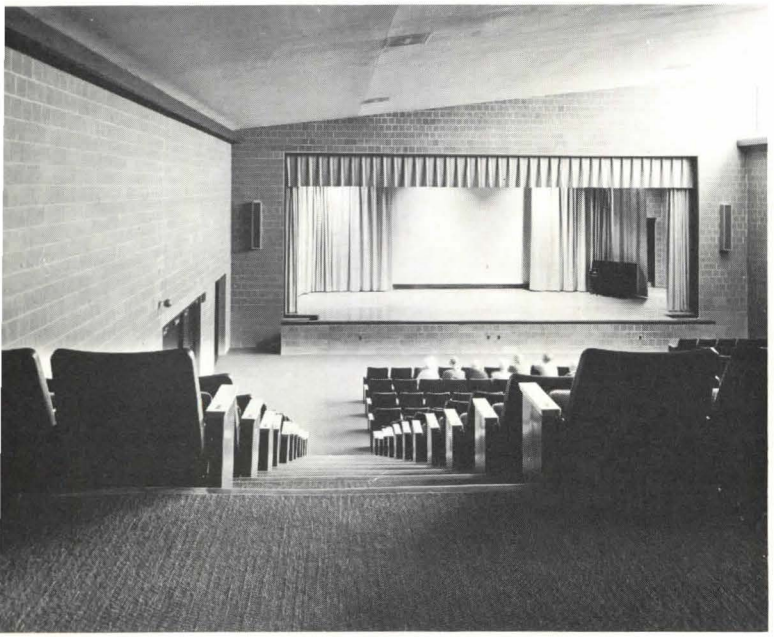


SECOND FLOOR

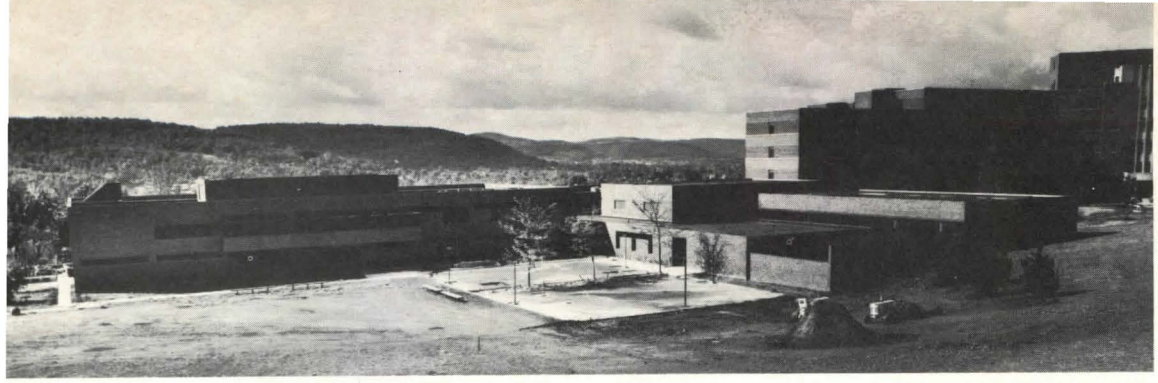


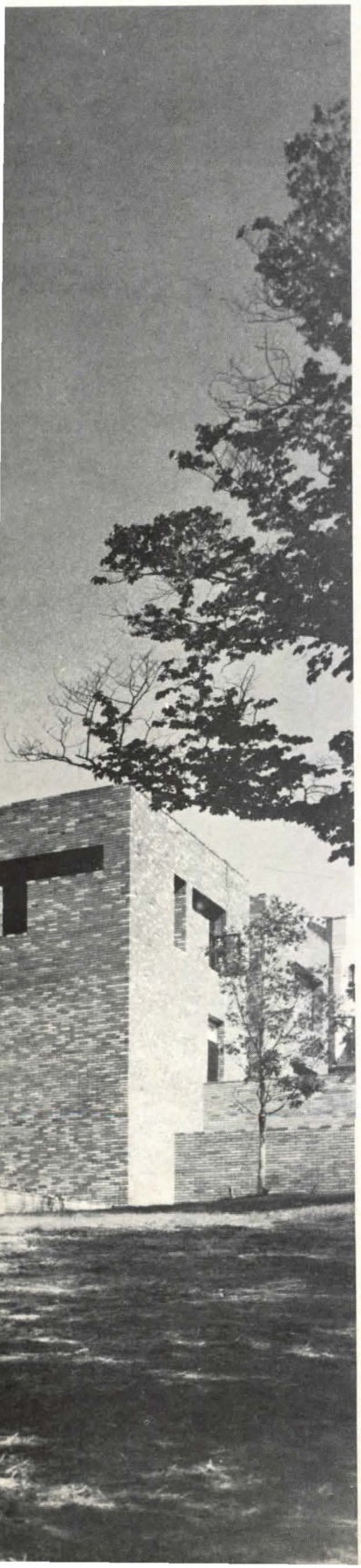
FIRST FLOOR

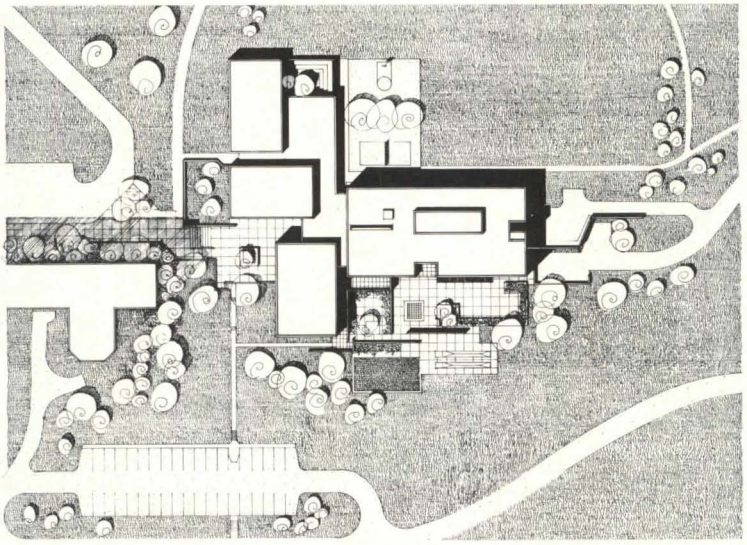
The complex volume of the center (plans and section above) is divided by landscaped interior courts (top right, opposite), surrounded by generous areas of glass. Rooms for specific activities, such as the auditorium, wood shop, and bowling room (opposite) have high windows, usually along the high edges of the single-pitch roofs. Exposed block is used for walls throughout the building.



BINGHAMTON







Top. the rehabilitation center lies at the edge of a small bowl, hollowed out of the slope of the hill. Connection with the older medical-surgical building is direct. To reduce an institutional stigma, the building has extensive outdoor development—a croquet field, a giant checkerboard, patios, planting and benches.

Of all the existing structures at Binghamton State Hospital, the most dominant and assertive is the medical-surgical building, nearest neighbor of the new rehabilitation center. It was determined at the start, by Architects James Baker and Peter Blake, that their rehabilitation center could neither overwhelm the older building nor relate to it in any obvious way.

The link between new and old is a close one in terms of distance, since most of the patients using the center will come from the medical-surgical building, and the link is a strong one in terms of its directional axis. But the new building is on its own—relatively low in silhouette, intimately related to the landscape, and no kin to the medical-surgical building in either scale, finish or detail.

Siting was not easy. The hospital occupies a hill overlooking downtown Binghamton in one direction, and the Susquehanna River in another. The center was originally assigned to a small bowl hollowed out of the slope of the hill, one of the few level areas on the site. But to preserve this bowl, then used for outdoor sports, the architects sited the building at the edge of the bowl, allowing the building to follow the existing contours and step downhill with the natural grade. The result is a center that is on one level where it is nearest to the medical-surgical building, and on two and three levels elsewhere; the gym and pool relate closely to their outdoor areas, and the several levels of classrooms, offices and community facilities get the best view and exposure.

The building's major areas are directly accessible from a single central lobby; with straight-run stairs, and a minimum of dead-ended or confusing corridors, one can clearly sense the various parts of the building and get an immediate ease of orientation. (The efficiency of circulation is measured in the relatively high space-

utilization ratio—gross to net square footage—of 1.36.)

Because of the great range of different spaces, from 90 sq. ft. to more than 4,000 sq. ft., the architects decided that "no simple repetitive structural or planning module could be developed without forcing the program into a building not suited to it."

The plan is on a 20 ft. bay, but this is scarcely obvious to the viewer of the finished building. The windows, in contrast to the structure, are highly expressive of what goes on inside. The typical window is a vertical band under a horizontal one, with the rest of the overall rectangle taken up on the inside by chalk and tack boards.

The southwest facade shows these windows in two different sizes—on the middle floor, at the classrooms, and on the top floor at the counseling offices. In both places, the window hangs on the inside of the wall like a picture frame; from the outside the opening is a deep, dramatic recess. Also custom-designed is the long acrylic-plastic window in the work-for-pay area.

The architects describe one of their major considerations in the design—"how to break up the necessarily large masses of the building, and how to introduce a friendly, interesting, appropriate scale. The deliberately irregular fenestration, the alternating voids in, or projections through the brick exteriors, the exclusive use of iron-spot brick (and glass) for all outdoor wall surfaces, the introduction of planting (or the use of existing trees nearby) and of small courts, terraces, retaining walls, etc.—all these are efforts to avoid an 'institutional' stigma, and to give the building an appearance not likely to frighten or overwhelm."

And indoors, the architects continue, "an effort was made to introduce natural light into critical circulation spaces wherever possible, to use natural and sympathetic materials, to break up long corridors, to avoid overly tall spaces, and to make circulation effortless and obvious. This is not meant to be an imposing building; it is meant to be friendly, low-keyed, interesting and inviting."

The materials work toward this effect. An iron-spot brick gives an unusual glazed finish, with a brownish-blue color varying over a broad range. Islands of red carpet are set in the flooring of brick pavers. Lockers are bright orange; walls white, trim black. The waffle ceiling is exposed throughout the building, except in the corridors which have hung ceilings and soft cove lighting.

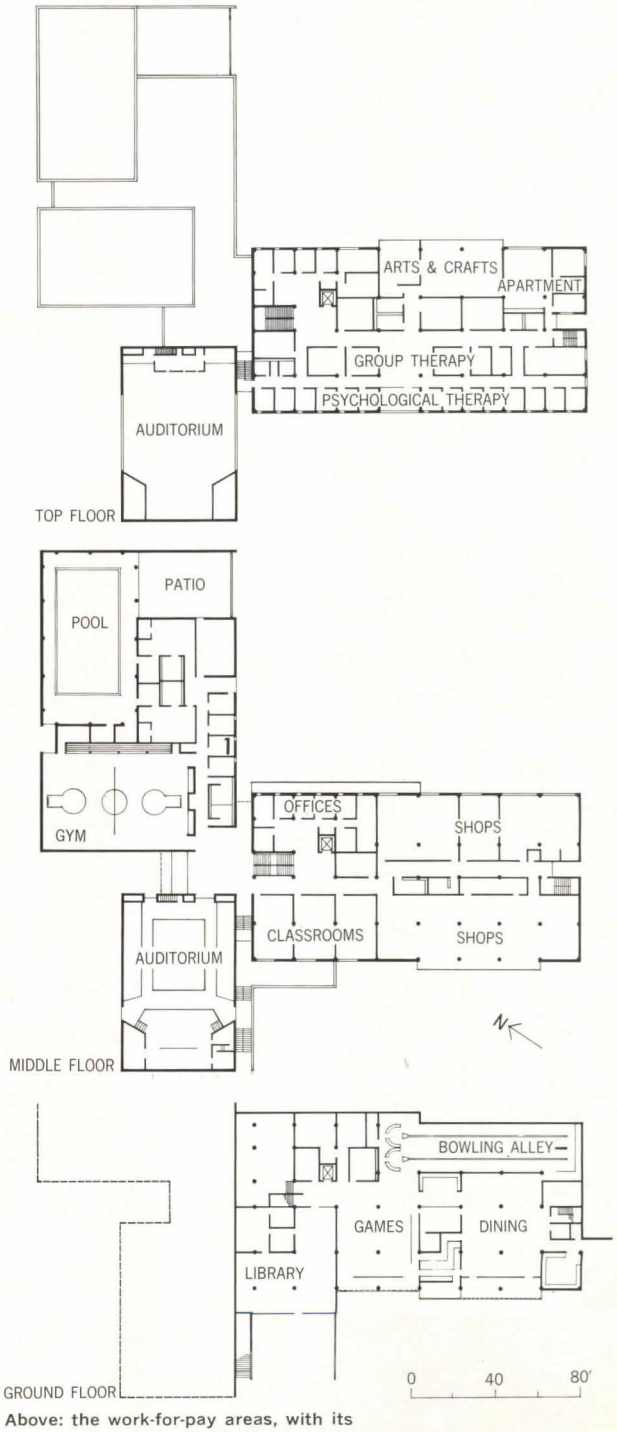
Several interior views illustrate the quality of design. At right is the work-for-pay area, with its window of bent acrylic plastic letting in the maximum light and view. This window was built in sections, although recent advances in technology would probably permit it to be built in one piece. On the facing page, at top, is one corner of the swimming pool, with piping buried in removable sections of white plastic grille. Water overflowing the pool drains into this assembly, as also does water from the walk surrounding the pool. The large photo on the facing page is the main stairway, direct and strong in its design.

Early in the planning, HMHFIC urged that the building be more "animated," but the architects resisted. "We made the building very tight," say the architects, to meet a tight budget. The low bidder was then 10 per cent under the budget.

FACTS AND FIGURES

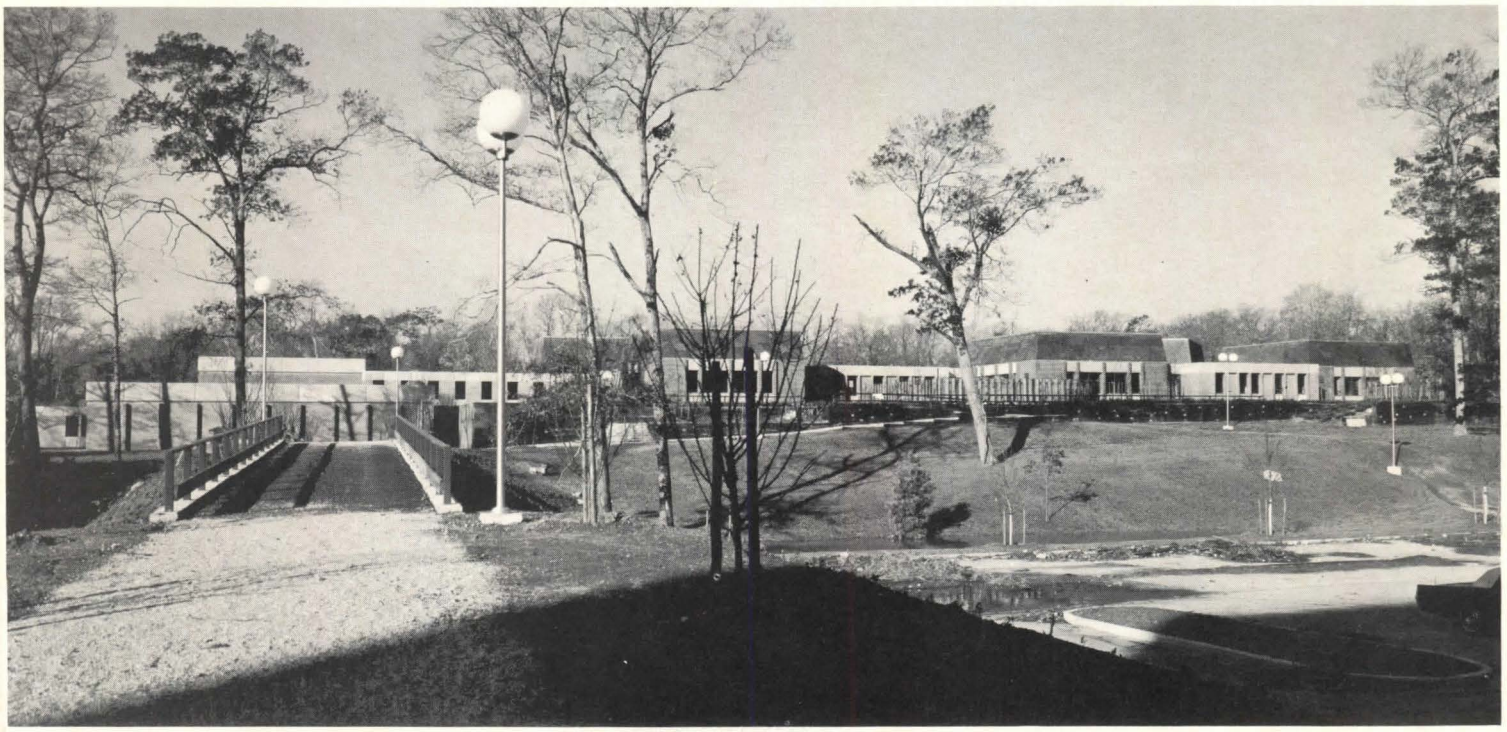
Rehabilitation Center, Binghamton State Hospital, Binghamton, N. Y. Architects: James Baker & Peter Blake (Alexander Grinnell, associate in charge; Alexander Wade, job captain). Associate architects: Fudge and Underhill. Engineers: Aaron Garfinkel & Associates (structural); Flack & Kurtz (mechanical and electrical). Landscape architect: Richard J. Cripps. Building area: 62,000 sq. ft. Construction cost: $2,250,000 (excluding land and site development, furnishing and equipment, and fees).

PHOTOGRAPHS: Nathaniel Lieberman



Above: the work-for-pay areas, with its long window of acrylic plastic that lets in maximum light and view. Facing page, top: the swimming pool, open to its own walled courtyard outside; bottom: the straight-run stairs in the main entry are designed to minimize confusion among patients using the building.

KINGS PARK



An informal layout hinging on a large central court is Architect Edgar Tafel's way of making this center non-institutional.

Tafel explains the court: "Besides its assigned function as an informal meeting place, the court serves as a visual element of identity and orientation." It also "aids in integrating the diverse elements of the building into a whole without destroying the autonomy of the programmed areas."

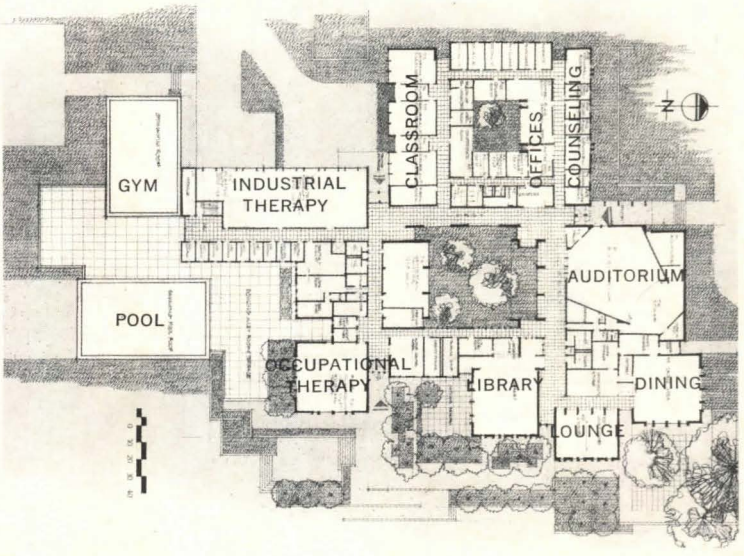
The court was originally open to corridor on four sides, but now has a large room on the north. The south has a covered porch—perhaps useful in the future, says Tafel, as a way of getting more enclosed space.

The building is primarily on one level; only the workshop has facilities underneath (auto shop, secretarial training and mechanical equipment). Gym, pool and lockers are also on the lower floor, adjusting to a site that falls off sharply to the north.

Corridors are open-ended so that patients can always look out. Staff offices surround a court.

HMHFIC wanted tactile, rough surfaces, and the architect used brick 8 in. and 12 in. thick, for a finished wall inside and out. The brick is in two colors of tan; the color changes where a solid mass is interrupted by the glass of a corridor. Other materials: exposed wood planking for ceiling/roof; laminated beams for the large spaces; and slate flooring in all public areas.

Bid at 10 per cent under the $2,600,000 budget, the center is being built for a figure still below the budget. Tafel insisted on limestone cornices, bid as an extra, and he won. He lost on a $2,000 item for artwork, however. It was in the contract from the beginning, but foundered when an artist's first tapestry designs were considered too jarring.



FACTS AND FIGURES

Rehabilitation Center, Kings Park State Hospital, Kings Park, N.Y. Architect: Edgar Tafel (Stanley Wright, project architect). Engineers: Robert Rosenwasser (structural); Arthur Benjamin (mechanical and electrical). Landscape architect: M. Paul Friedberg. Building area: 61,320 sq. ft. Construction cost: $2,198,980 (excluding site development, furnishings, and fees).

PHOTOGRAPH: Gil Amiaga

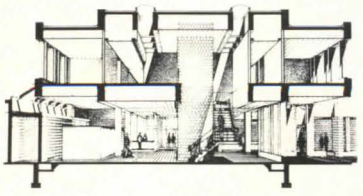
ROCHESTER

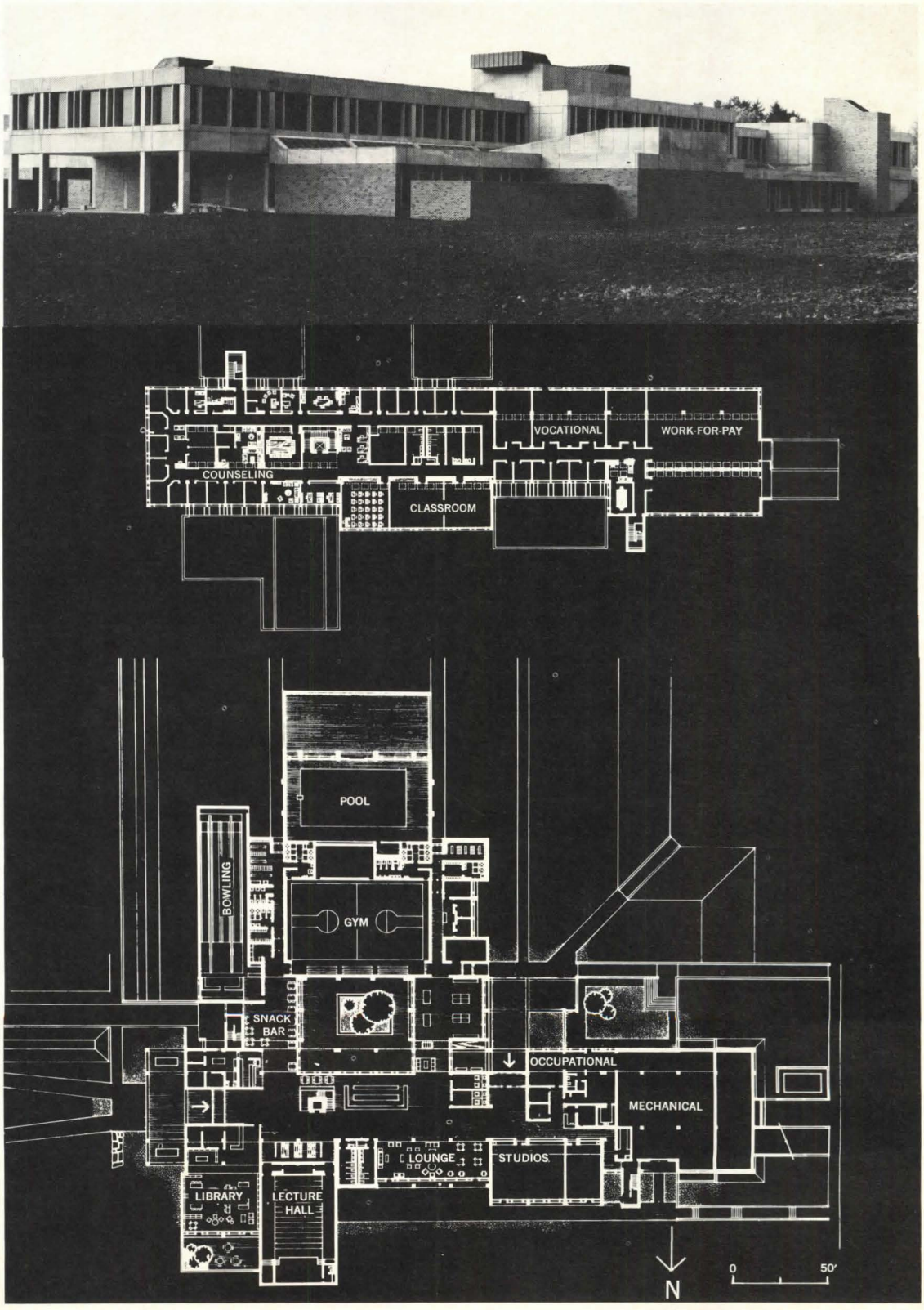
An indoor "mall" that extends through the first floor of the Rochester Rehabilitation Center will not only be the main circulation spine for the center itself, but also an important link between two existing concentrations of buildings—closing a gap that the architects, Northrup, Kaelber & Kopf, call "a stretch of tundra."

Extending out from this mall at the first floor level are the larger activity spaces—the enclosed auditorium and art studios and the quiet library and lounge on one side, the noisier snack bar and game room on the other. The taller volumes of gym and pool are placed beyond a landscaped court, reachable only through the snack or game areas.

The mall and the spaces opening off it will form an extensive area without solid partitions, in which many activities can be observed simultaneously. Glass walls facing in toward the court and out toward the hospital grounds will extend this visual continuity. Large areas of sloping skylight will brighten parts of the mall that are not exposed to the exterior (section below).

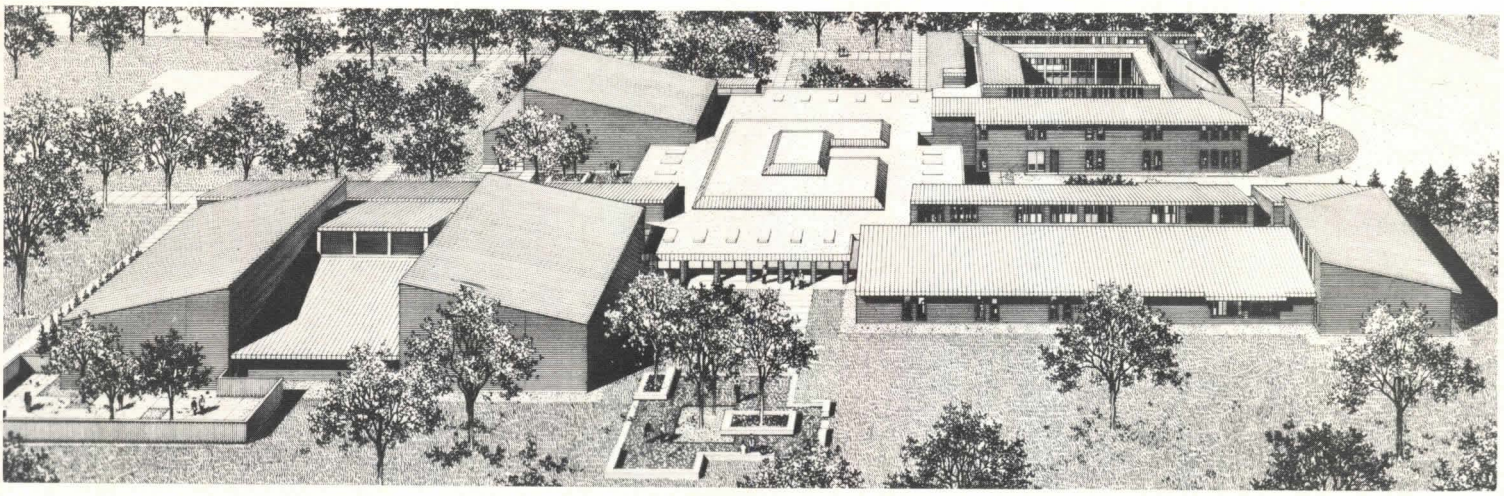
A skylighted central stairwell will lead to the linear second floor, where smaller teaching offices will be completely partitioned for privacy, but open to broad views outward. At the west end of this floor will be the large automotive and "work-for-pay" shops, opening directly to the higher ground level there.





FACTS AND FIGURES
Rehabilitation Center, Rochester State Hospital, Rochester, N. Y. Architects and engineers: Northrup, Kaelber & Kopf. Mechanical and electrical engineer: Cedric R. Acheson. General contractor: John Luther & Sons. Building area: 67,000 sq. ft. Construction cost: $2,328,550 (excluding site development, furnishings, and fees).
PHOTOGRAPH: John Griebsch.

BUFFALO



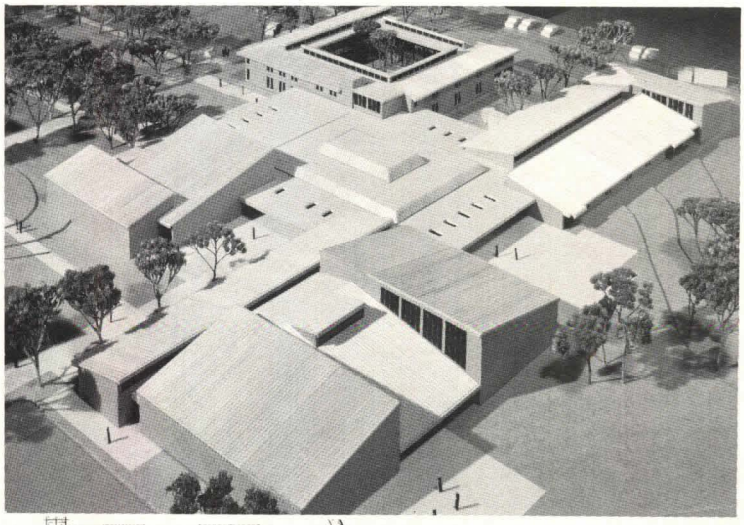
"With the definite functions of this program, the building just grew naturally into separate wings," says Architect Arthur H. Davis of Milstein, Wittek, Davis & Associates, designers of the rehabilitation center at Buffalo State Hospital.

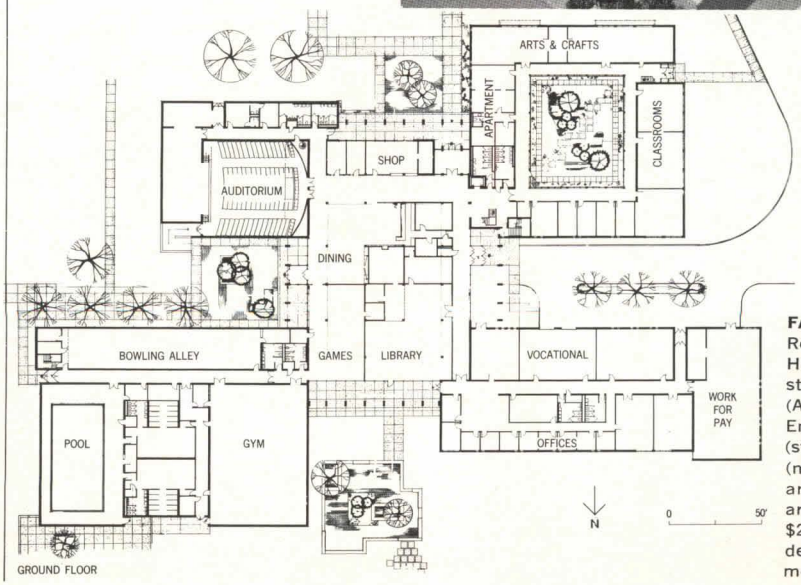
The building is in four wings surrounding a central core. Reading clockwise from the northwest are the wings for vocational rehabilitation, for recreation, for the auditorium, and for occupational and educational rehabilitation (with offices for counseling and administration above). The central core is a kind of community center, with store, snack bar, library, and place for active games.

"It looks like a lot of houses put together," says Warren Wittek, describing the center's scale that tends to minimize an institutional feeling. Another device toward this end was to use "finishes that everyone is familiar with"—brick inside and out, and laminated wood beams. (The roof is standing-seam metal.) As part of their contract, the architects are developing a system of graphics for the building.

HMHFIC would have liked the center entirely on one floor, but site limitations forced a slight doubling up in one wing. As it is, the need for space caused the demolition of three segments of the existing hospital, which is known in Buffalo as "the string of pearls," is mentioned quietly by the Corporation as a group of "outmoded ward buildings," and is familiar to scholars as the work of H. H. Richardson. The center ties in more directly with the later buildings ('40s and '50s) to the south, from which most of the patients will come.

The center will be used not only by patients and their visitors, but also by staff members of the entire hospital, who will convene in the auditorium, the only such space in the existing hospital facility.





GROUND FLOOR

FACTS AND FIGURES

Rehabilitation Center, Buffalo State Hospital, Buffalo, N. Y. Architect: Milstein, Wittek, Davis & Associates; (Arthur H. Davis, partner in charge). Engineers: McKaig Rupley Bahler (structural); Wilson, Klaes & Brucker (mechanical and electrical). Landscape architect: Peter G. Rolland. Building area: 67,541 sq. ft. Construction cost: $2,440,000 (excluding land and site development, furnishing and equipment, and fees).

WILLARD

Quite different in tone from all the other rehabilitation centers is Architect Werner Seligmann's design for Willard State Hospital. With the existing hospital a dark, dirty brick the architect chose a deliberately contrasting environment for the new center.

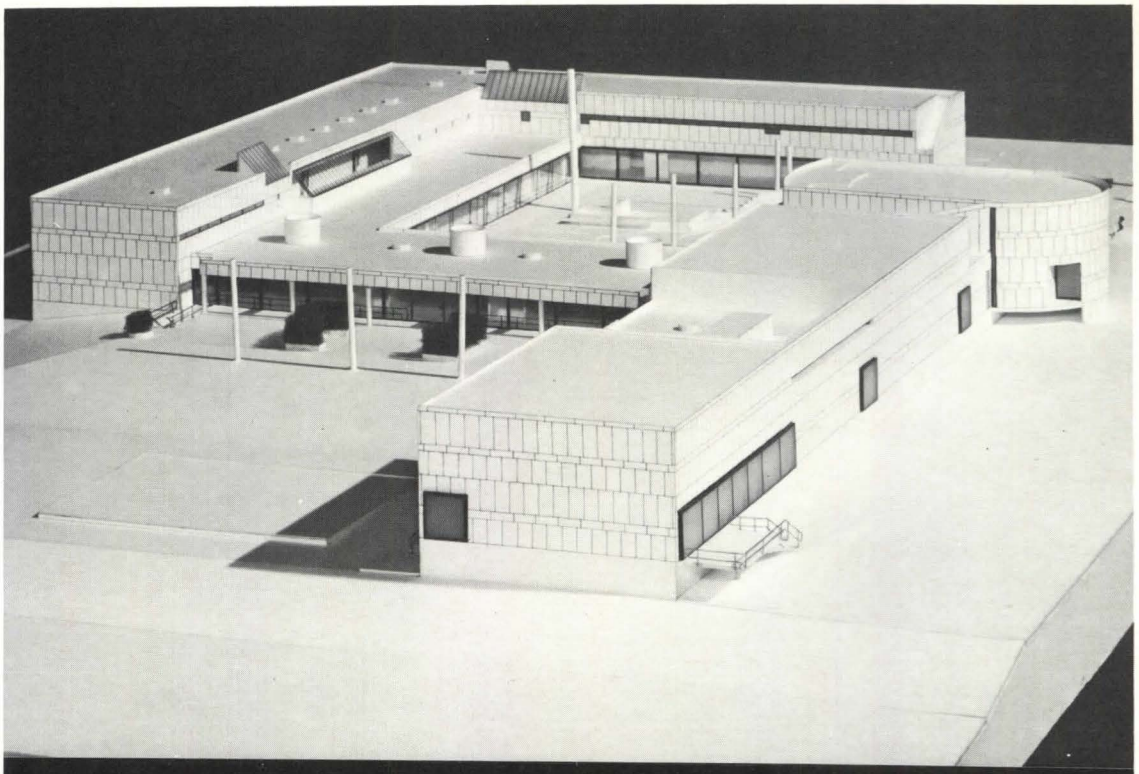
The proposed structure is steel frame, with sandwich panels of porcelain enamel screwed to the light metal framing of the exterior walls. HMHFIC was receptive to this seemingly different approach because the technique was already being proven by Seligmann and the Willard State Hospital in the hospital's new administration building.

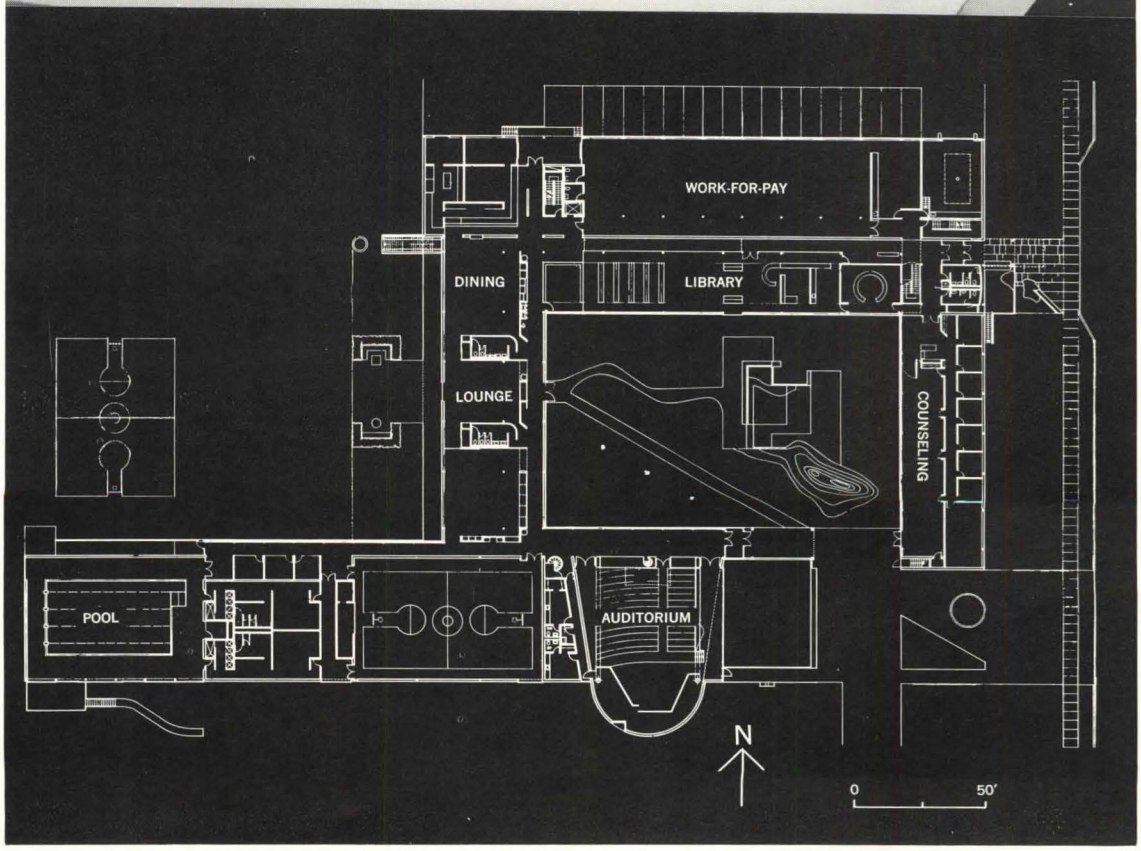
Seligmann had chosen this structural system in the hopes of getting better control over workmanship; he admits that the system won't necessarily save any money—it is probably initially more expensive than more conventional construction, he says, but may go up faster and thus balance out in cost.

In plan, too, the center is something of a departure. Seligmann reports that he "tried to make a whole center of it, a quadrangle, open, like an arcade, to be used in a casual way." Thus he created the very open space on the ground floor, with the different areas flowing into one space.

The auditorium is also a departure from other centers, with its different levels making it work like a small flexible theater.

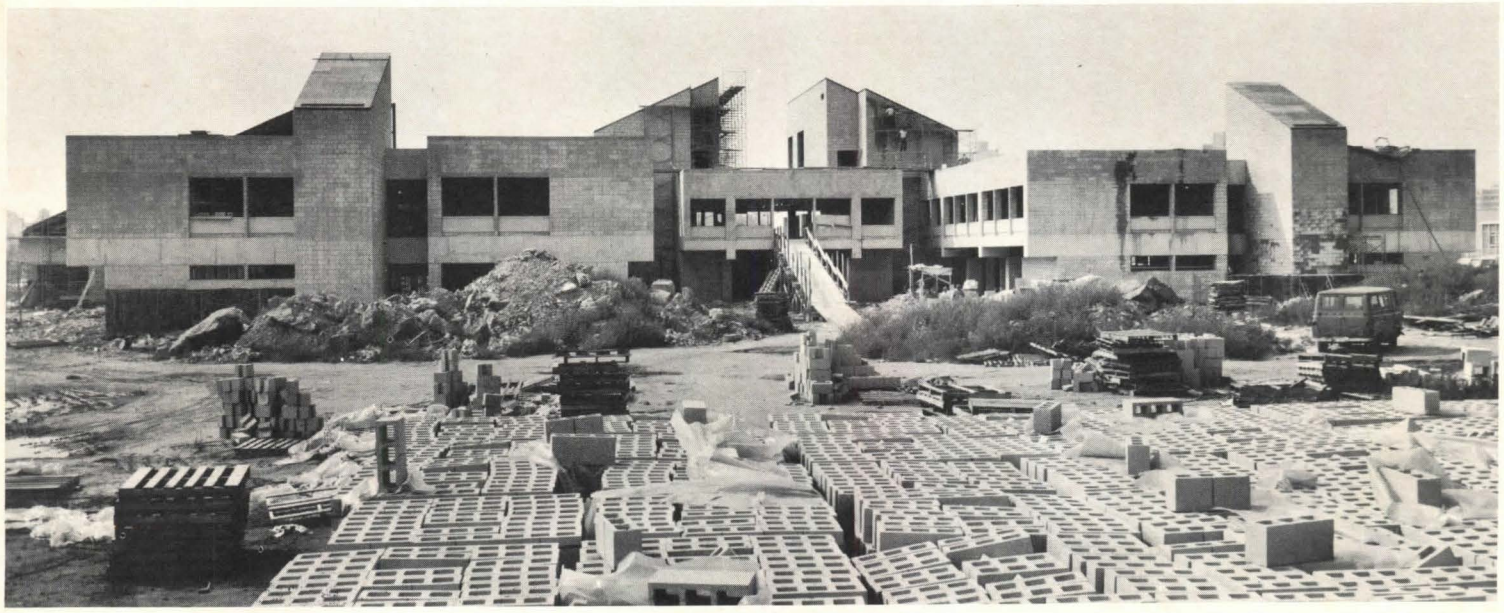
The architect intends to use color "to combat the site," which he describes as "all green in the summer, all grey at other times." The exterior of the rehabilitation center will be completely white (except for several places such as the auditorium superstructure, which will be grey), but the steel will be brightly painted inside.





FACTS AND FIGURES
Rehabilitation Center, Willard State Hospital, Willard, N. Y. Architect: Werner Seligmann and Associates (Siegfried Saur, job captain); Frederic P. Wiedersum Associates, associate architect. Engineers: Severud Associates (structural); Flack & Kurtz (mechanical and electrical). Area: 62,000 sq. ft.

BRONX



The organizing concept of the rehabilitation center at Bronx State Hospital is a long enclosed mall from which the center's varied spaces are directly visible. "They wanted a central area as a mixing place," says William Wilson of Gruzen & Partners, and this developed into a spine.

The north-south spine simply continues the north-south axis common to the hospital's reception building and the medical wards. The corridor/spine is a varied space, opening to the upper levels through open stairwells, and to the outdoors through window walls.

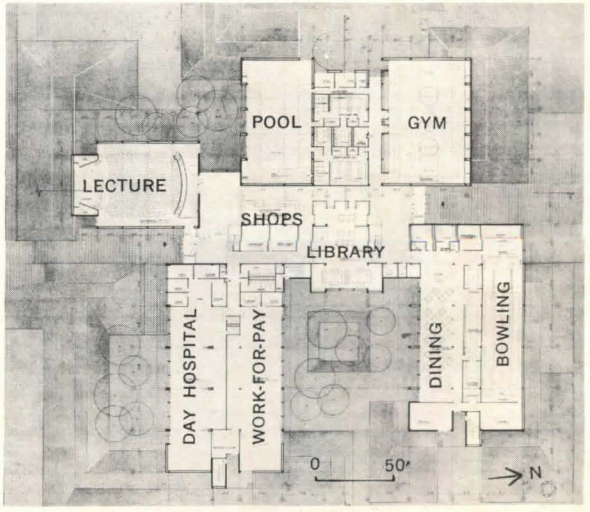
The corridor has most of the "community facilities" either in it or adjacent to it. The commodity store and beauty/barber shops are in lightly enclosed kiosks, to be "informal and attractive" to the patients. The architects wanted the center to convey "a feeling of maximum openness and availability" to patients.

The building is pile-supported; its structure is poured concrete at the second floor, steel elsewhere. Curtain walls are of exposed block.

Outside, large landscaped berms give visual interest to the flat site. A berm "gives you a lot for your money," says Wilson, "but it's money you wouldn't spend if the site were more interesting."

The site was costly in another sense—the land was badly filled some years ago and had a "miserable reputation" in the construction industry. These site conditions, says Wilson, "lost us the pool and bowling alley," neither of which is being built. Then, too, says Wilson, the budget made no allowance for the fact that this center—the only one—is in New York City.

The "day hospital" has been eliminated in favor of more space for "work-for-pay." Unique to this center, the day hospital was actually never explained to the architects; instructions on partitioning it were to have come later. Now, however, the center has a new administrator with ideas of his own.



FACTS AND FIGURES
Rehabilitation Center, Bronx State Hospital, Hutchinson River Parkway, Bronx, N.Y. Architect: Gruzen & Partners (William D. Wilson, partner in charge; Peter Samton, design captain; Gordon Vance, project manager). Engineers: Harwood & Gould (structural); Meyer, Strong & Jones (mechanical and electrical). Landscape architect: M. Paul Friedberg & Associates. Building area: 77,000 sq. ft. Construction cost: $3.5 million (including land and site development cost).

HUDSON RIVER

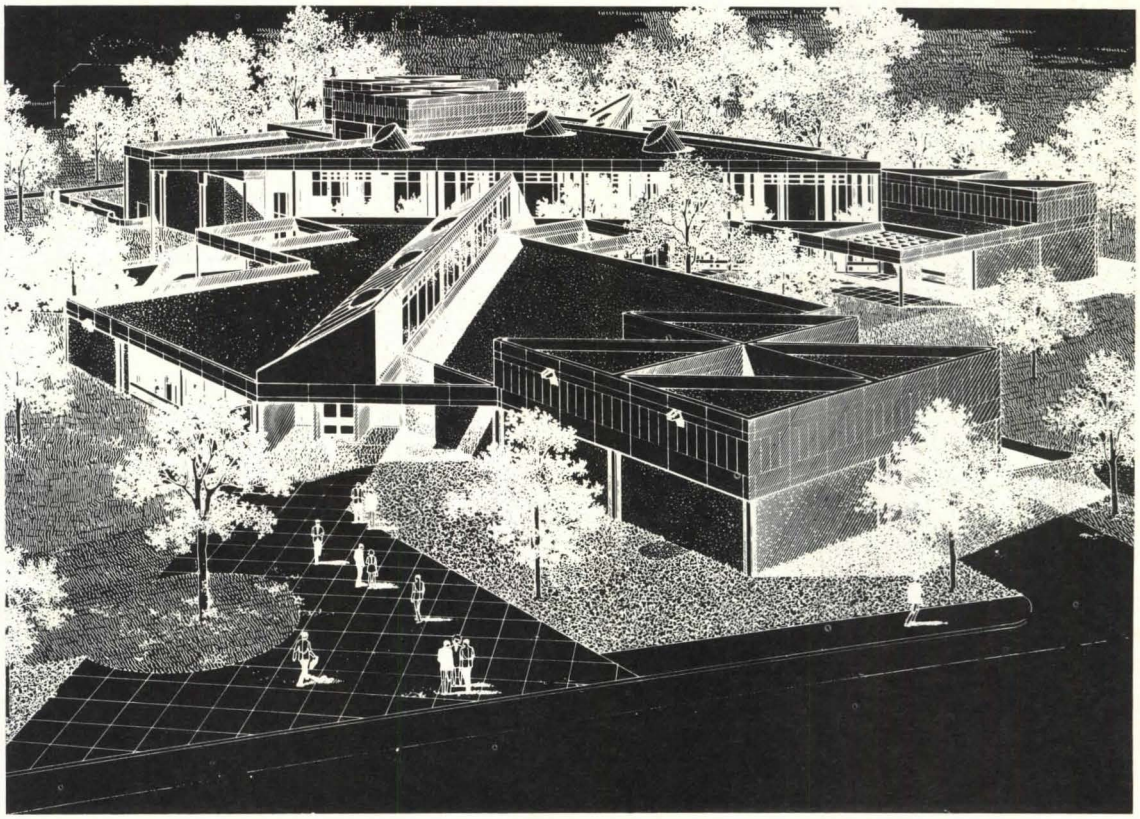
A "street of experiences"—that is what Architects Cadman & Droste call the circulation spine of the rehabilitation center they designed for Hudson River State Hospital, near Poughkeepsie. By running the "street" diagonally across the rectangular grid of the other spaces, they have created a sequence of spaces that "open and close" as the observer walks through, revealing a variety of activities. At some points, the plan is pinched in so that this central walk is exposed to the exterior.

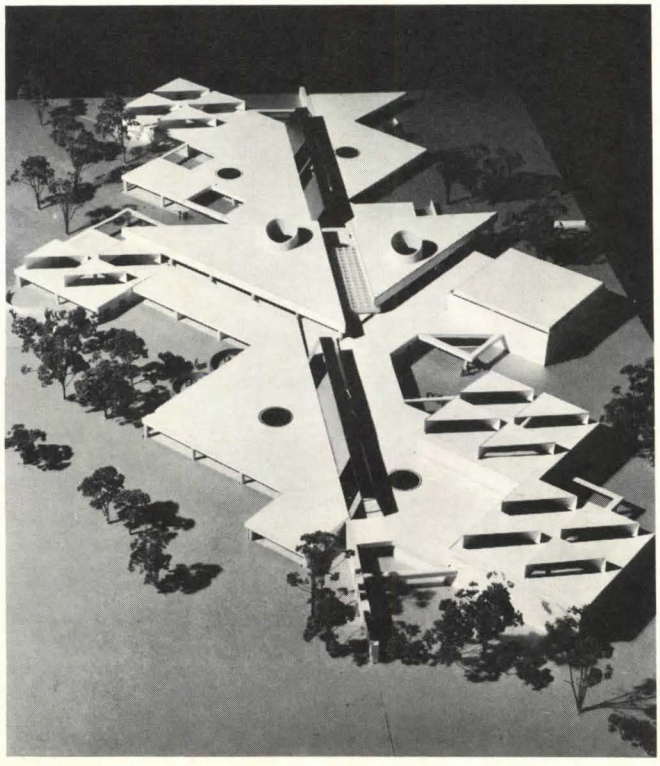
Although the entire building is on one level, the roof height varies widely. Clerestories at the many points where the roof rises —plus numerous skylights—admit generous daylight to the interior and minimize the feeling of confinement. At the center of the plan, the floor level drops to form a sunken seating area in the middle of the "town square."

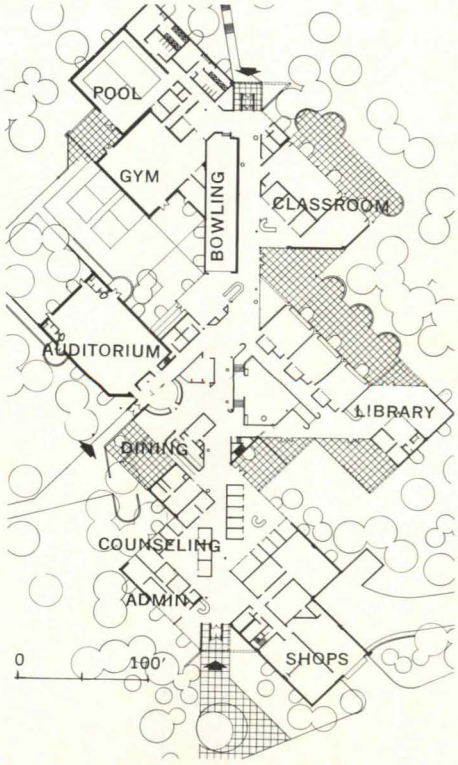
The unusual geometry of the building leaves a number of partially walled-in courts along the perimeter.

Throughout the building, the cast-in-place concete structural frame is separated visually from the walls. (For the mental patient, the architects feel that "things must be designed to appear as what they are.") Pumice block has been used for walls and partitions throughout, because marks on it are easily erased.

Color will be used to assist the patients in orientation. Door color, for instance, will identify zones of the building. Cadman & Droste plan to use color boldly, knowing that it is the easiest element to change later. "The medical people," they observe, "still find it so hard to predict how a vivid green will affect a patient."







FACTS AND FIGURES

Rehabilitation Center, Hudson River State Hospital, Poughkeepsie, N. Y. Architects and engineers: Cadman & Droste. Mechanical and electrical engineers: Rist-Frost Associates. Landscape architect: Vincent Cerasi. General contractor: Levco Construction Corp. Building area: 70,570 sq. ft. Construction cost (as bid): $2,635,162 (excluding landscaping, furnishings, fees).

THE NEW ENVIRONMENT OF THE SOUTH

BY GRADY CLAY

Perpetually re-drawn for us by our eager soothsayers is the image of an ever-normal, ever-growing American metropolitan society. Growth is god, its favors sought by every mayor who rises to challenge in outrage hints from the 1970 U.S. Census that his town has been deserted by the god of eternal growth.

But the United States is, as usual, a mixture of growth and stagnation, of boom and bust, each feeding upon the other. For all the booming places, thousands are dying on the vine, many based on old geographic advantages turned sour, on human or mineral resources now exhausted. Many lie in regions tributary to, and sucked dry by, distant cities and corporations.

As a symbol of those dying places, I was forced in 1969 to invent* the pioneer town of "Gudgel's Cove"—and then of course found it was not unique and it is not alone. Between 1940 and 1960 there were, in the continental United States, 6,034 "declining urban centers." The great majority, 91 per cent, had populations of less than 3,000, and part of their problem is due to the fact that they *are* small in an age when bigness counts. These Gudgel's Coves were concentrated in eastern and western Pennsylvania, in Southern Illinois, in Southwestern Iowa-northern Missouri-eastern Nebraska. Another concentration is north of Salt Lake City on the Utah-Idaho border.

Urban centers "in relative decline" spread across the eastern Great Plains, and in the northern Appalachians, especially east-central West Virginia. Meanwhile, depopulation continues in a great region having few towns in the first place—the woodland plantation belt extending for about 700 miles from South Carolina to Louisiana. There is one 70-mile stretch of land in Southwest Georgia where little exists except large private holdings of pinewoods for sawmills, quail for the absentee owner huntsmen, and barbed wire for what's left of the local population.

This is only one sample of the industrialized agriculture, encouraged by years of federal policy and subsidy, which keeps food prices low for city folks and drives labor off the land, "freed" from the land, as the saying goes—"freed" to move to the slums of distant northern or western cities. In the ten years from 1950 to 1960 nearly a half-million Negroes and over one million whites lost jobs in southern agriculture. Considering their wages and living and working conditions, they had little choice but to wake up some morning and say "Honey, it's time to move out."

Any time a nation "writes off" a whole region, as the South was written out of the national economic and political system for 16 years of Reconstruction; and as other regions have been written off—and as urban slums have been written off—by more subtle forms of oversight and neglect, the after-effects are longlasting and persistent.

And those after-effects include generations of ill-trained, uneducated, deprived and often desperate millions of people from the back corners, the dying towns, the mined-out, eroded, non-industrialized or disadvantaged regions. Why be surprised when such men, black or white, facing new miseries in the cities of their choice, burn and loot and squander in desperation, or turn upon their fellow men in repression?

The South has no monopoly on exporting people. The failures of one region—any region—support the booms in another. Our system of exporting excess population worked well, so long as the receiving regions and cities had need for untrained, uneducated, and unexpectant laborers. Now, this is no longer true.

Many of the so-called "urban problems" of the day are the result of the old system of using

See "Megalopolis in Passing," the first Dennis O'Harrow Memorial Lecture, by Grady Clay in Planning 1969, *the American Society of Planning Officials.*

Mr. Clay is the editor of *Landscape Architecture*, a quarterly magazine, published in Louisville, Ky.

migration to siphon surplus populations about the country—a system that no longer works as it once did so well.

Much of the so-called environmental crisis comes from our throw-it-away-and-move-west history, and our old belief that the environment takes care of you rather than vice versa. That has lasted into the present, especially in the South and West where old attitudes arising from bounty and plenty survive quixotic and antithetic down to this time.

Why has the South, with such a God-given wealth of accessible geographic resources, dealt so harshly with its patrimony? How could a region so lay waste its soils and forests to become in the 1930s "The Nation's Number One Economic Problem," and today still offer squalid lessons in anti-survival?

"Conservation" is a very special problem in the South—*as in any under-developed region of the world today*. To save an environment, to wisely use and protect it today, requires different rules and unique politics, for which under-developed regions and nations are badly equipped. Let us look at the conditions.

First, the design-and-development professions in such regions identify with each other; and are especially hooked by the development mythology. Mostly they consider themselves the Development Establishment. They are tied or hooked to the financial, political and other institutions that build buildings, dams, railroads, highways and all the major structures essential in a developing economy. Among the hooked generations, all building is A Good Thing. To be a Builder is to be a Respected Person. In a nation that was, and a region that still is, perpetually short of the buildings it thinks it needs, any question of location, appropriateness, quality, or side-effects ran against the national and regional grain.

What was true in the nation in the 19th century remains true in the under-developed South today. In such a region, there's something almost instinctive at work among the Development Establishment. Always in the past, one has required so much energy, sacrifice, negotiations and time to get *anything* built that a whole system of ritualistic subsidies has clustered about "development." It has become one of the strongest forces in society, as anybody knows who ever tried to get an interstate highway stopped from going through a park.

This has been, and still is, especially true in under-developed regions such as the South and the Ohio Valley. When you are poor, when your region is being drained of population, *you do not question development*. No; you take the speculators from New York and London offering two bits an acre for state land in the South after the Civil War because that was money, and they weren't making much of that stuff in the South then. You take the runaway textile plants from New England; the anti-union shoe factories from Pennsylvania, and the low-skill employers from Ohio—and you be thankful. You take the Air Force bases and the Army pay because they all look great from out in the "Back Forty." Anything that's built or promised looks good from the Back Forty, and for over 100 years now the South has remained the Back Forty of the industrialized United States. The Back Forty mentality is with us still, especially among Southern architects, engineers, planners, and other dues-paying members of the Development Establishment.

So the situation has remained until recently. Only in the formerly colonial countries, and in much of the developing Third World, has there grown up a body of criticism directed at the forces of development. In the U.S. this criticism has, until recently, been limited to conservation societies, bird-watchers, little old ladies in tennis shoes, and other under-powered objects of high-powered derision among the development elite. But...now the situation is changing. Even President Nixon goes through the motions of pious concern for "environmental quality."

The real gut issue in American politics today is that of local self-determination in the ways local resources and Turf are used and developed. Left to their own local needs and desires, most local citizens and politicians in the south will eagerly take development in any form. The South, for all its great progress in recent years, is, as an under-developed region, still devoting an extra-large proportion of its land and its energies to agriculture, to extractive industries (coal, phosphate, petroleum and to other minerals processing); and has a small proportion of the high-technology, administrative, and higher-education jobs of the U.S.

In such a region, all the pressures for development-at-any-cost build up, and are reinforced by popular political pressures. In the great depression of the 1890s, as C. Vann Woodward wrote, *"The percentage of business failures in the South was considerably higher than the national average throughout the depression years, and approximately twice as high as it was in the West . . ."* The story was similar in the depression of the 1930s.

If you look at the South nationally, it has been and remains much like the Negro—"last to be hired, first to be fired." Regionally it remains the nation's "nigger district."

Thus, the idea that local natural resources ought to be "saved for posterity" has had rough sledding in the South, where so many resources are owned outside the region, and the phrase "What the hell has posterity done for us?" has special favor. A large share of the important wilderness, national park and other protective measures in the South have come about from national, and not from local pressures. The typical Southern conservation controversy, if I may oversimplify a complex local pageant, consists of villainous "foreigners" trying to sequester from the public an important part of the local economic base—"catering to ducks not people," long-range posterity instead of present felt needs, and elitist points-of-view as against the needs of "us home-folks."

This dichotomy can be seen in the fight at Sanibel-Captiva Island of the Florida Gulf Coast—the Yankee winter residents trying to protect the mangrove ecology against highrise development, versus the local county commissioners seeking to build up the tax base; and along the coast of Georgia, where local interests have opposed the National Park Service in trying to extend its National Seashore protection. And in the Beaufort-Hilton Head area of South Carolina where newcomers-resorters have formed the only lobby capable of delaying a $100-million German plastics plant that would normally have been welcome—no questions asked—in this under-developed region. The Southern pattern has been consistent: loose invitations to investors and extractors of every sort, most notoriously during the Reconstruction period when legalized looting became a way of life. More recently,

"The Southeast which for years lured industry by promoting freedom from water pollution control, had found by 1965 that its over 50 inches of annual rainfall and its swiftly flowing rivers were hopelessly insufficient to meet the demands of modern industry. The Georgia State Water Quality Board reported that the Chattahoochee, the Coosa, and the Savannah rivers had reached 'critical' conditions under a prevailing situation in which wastes entering them received either very sketchy treatment or none at all. Georgia, which having been luring 20th-century industry with the promise of maintaining a 19th-century climate of resource protection, found that the very success which this inducement produced has itself been the source of a catastrophic decline in the quality, availability, and utility of the state's water resources." (from Governing Nature, *by Earl Finbar Murphy).*

In the South, it has been possible, through generations of Old South chairmen of important committees in the Congress, to turn to the federal treasury to bail out local resources depleted or ruined by careless despoliation. It became a southern habit to "look to the next larger dimension"—but not in a way that Eliel Saarinen meant. The southern translation has meant "find a bigger taxing district than the one in which the despoliation took place"—and this generally turned out to be the United States government.

At the same time, the South has received an extraordinary amount of federal largesse, chiefly rivers-and-harbors and military base spending, in part because of good climate for year-round flying and training, and in part thanks to southern Senators and Congressmen reelected long enough to become chairmen of key committees. This has helped engender within the South the "don't shoot Santa Claus" psychology, which puts the local district engineer invariably at the head table at Chamber of Commerce dinners, with the "perks" of a Colonial governor. Consequently the South in the hands of the Engineers, like the West in the hands of the Reclamation Bureau, has been a happy testing-ground for single-purpose dam structures. Only in more recent years have the engineers retreated under pressure into multipurpose, which means taking advice from somebody besides navigation promoters.

The idea that *any*body in the South would challenge the military on the location, design and construction techniques of their great projects was almost unthinkable. Even to delay a military base in peacetime was little short of treason, southern style. And the unquestioning acceptance of *any* new industry is part of the same picture. Even the traditional anti-monopolistic attitudes of the U.S. have a tough time in the South, where the ownership of vast timber, mineral and land holdings carries with it the usual concentration of political influence. Pulpwood is king in many parts of the South, and any talk about "cleaning up the air pollution" around a sulphite pulp mill is more of a threat to the local economy than in regions with a diversified list of large and small employers. Since the South is still a region of many one-company towns and one-family economies, the region is dotted with fiefdoms where the local environment is dominated by one large employer.

Given all these conditions, it is little wonder that the "environment movement" has flourished not in the South but most of all in California and in the Eastern Megalopolis, where the environment has been degraded in full view and smell of millions of people. These two regions are best equipped with the multimedia engines of publicity that sensitize citizens to the latest uglifications, while keeping running scores on the running sores.

But the South has something going for it that ought to alert its people to resisting further environmental degradation in ways different from the Pacific Coast and Northeastern Megalopolis. This is its history of populistic thought and political action.

The Populist Movement in American politics was short-lived but significant, beginning in the 1870s and ending in the mid 1890s. As Norman Pollack writes, in *The Populist Response to Industrial America,* the movement had an ideology "stemming from a shared critique of existing conditions . . . seeking a more equitable distribution of wealth.

"It criticized industrial capitalism for not only impoverishing the individual, but in alienating and degrading him.

"Populism had a peculiar notion of freedom. Man was free only when society encouraged the fullest possible development of human potentiality."

In the South, the Populist Revolt often consisted in opposing the financial interests of the Wall Street-money-lending community, and the effects of an impersonal, industrial capitalistic economic system on a region of predominantly small landowners, tenant farmers, merchants and under-capitalized businessmen.

The remnants of populistic thought are still present in many parts of the U.S., sometimes bursting out in George Wallace-type suspicion of "pointy-headed intellectuals running the country from Washington"; or in a provincial resistance to all "outside agitators" which has produced murders and riots and vigilante action against organizers bringing "foreign ideas" about race relations into, or local efforts to change, defensive southern communities. These are only the worst and I hope dying remnants of old-style populism.

But it had far more positive aspects, mirrored today in the Ecology Action movement which culminated April 22, 1970, in the nation-wide Teach-Ins at over 1,000 colleges and universities throughout the U.S. The Ecology Action movement of 1970 is part Populism and part Southern Agrarian reformism, resurrected in new form, different regions, and new circumstances: Eco-logic shares with Southern Populism a number of preconceptions:

1. It has a concern with the processes of nature, a concern which in the South permeates the whole class structure, and goes back to the rural, agricultural or small-town outdoors background of most native Southerners (as distinct from the upper-class-oriented "conservation" attitudes of more vocal megalopolitanites of the Northeast).

2. It questions the historic dominance of industrial power and the primacy of industry over all other processes in the society.

3. It is concerned with alienation—with the separation of the average man from the natural roots of his origin, and from his fellow men by the pressures and tensions of an industrial society.

4. A healthy suspicion (although verging on the psychotic at times) of any concentration of power, whether governmental or economic.

5. A tendency toward extreme and radical solutions. Populism was basically radical. Its adherents sought to change power relationships by almost any means, generally short of armed revolution. Today, much of the ideology and tactics of the Ecology Action groups is openly radical ("Get to the root of things" say their posters) in attacking the system that causes pollution, and not symptoms.

Whether the Ecology Actionists will get bought off, diverted, fragmented, and co-opted as was the Populist Movement is a question yet to be answered.

But because I see such close affinities between the attitudes and writings of Southern Agrarian-Populists three generations ago, and the young Ecology Activists from the East and West Coasts today, I want to suggest that in these affinities lie some constructive directions for architects, planners, urbanists, and all others concerned with the future environment of the Southern United States.

Southerners have many options left to them which do not exist in the Pacific Coast and in Megalopolis. These options exist because of:

1. *Relaxed population pressure:* The South is a low density region. A few of its cities are fast-growing, Atlanta and Houston especially, but it still is less urbanized than the rest of the U.S. Of its 30 million population in 1960, 58 per cent were living in urban areas, whereas the percentage in the rest of the U.S. was 75. Most of its largest cities, excepting Atlanta, are on the region's periphery, and some aren't even Southern by some definitions: Washington, St. Louis, Baltimore, Houston, Cincinnati, Dallas, Kansas City, Miami and New Orleans. The South has vast amounts of usable, under-developed land—it is not "too late" to use them well.

2. *Natural resources:* Texas, Louisiana and Oklahoma are first, second and fourth among the 50 states in the total value of their minerals. West Virginia, Kentucky and Virginia produce half the U.S. coal. The South has ample to high rainfall, (a surplus which the dry parts of Texas would like to siphon off).

But the time has come when dependence on such raw materials becomes less and less a blessing; the frame of mind, and political institutions which surround extractive industries are losing their "survival value." Increasingly, these industries will be restrained in how they mine and extract, and required by law to reclaim and recycle. The great task which the new Development Establishment faces in the South is to apply the lessons from Megalopolis, and force extractors/developers to act with new restraint. If the South can, as I will suggest later, turn more quickly to post-industrial solutions, concentrating on trained people, rather than on extractive industries, it can exercise these new options.

The South, more than any region in the U.S., is now able to consider "doing more with less" in a new light, by choice rather than under the lash of harsh necessity.

This is possible in under-developed regions where there is no necessity to go through 150 years of slow industrialization; there is no need to struggle through the pigiron-steel-heavy manufacturing cycle *in order to boost the* regional economy. Let the steel plants and smokestacks and refineries move offshore—to Japan or Ghana or Venezuela, so the U.S. and its own under-developed regions can shift into high-technology, high education jobs.

Nobody in his right mind in the 1930s would have argued that "getting used to a lower standard of living" was a beneficial thing. The very idea is foreign to any underdeveloped region. Yet in the South, as elsewhere the old southern farm phrase "Use it up, make it do, make it last" has new meaning. In a world fighting for its life, as we shall be doing soon, we will have to cut our use of minerals, change all our relationships with disposable or re-usable goods. We can and should "make do with less."

Now—as to *density.*

It has been the traditional method of architects and planners, developers of all sorts, to look to high density solutions. There's a current wave of fashionability for megastructural arcologies, Mile High Centers and other verticalities, all based on the assumption that the high density way of life will shortly become universal. "What works for Manhattan ought to work for Tokyo Bay, which ought to be applicable in Biloxi, just like it is in Memphis, Nashville and Mobile ...Tange Towers in Tampa Bay and everything will be OK."

By looking at megastructures, concentrating on systems building, and specializing more and more in large scale solutions to the housing problem, architects have *divorced themselves from sites,* from *places,* and the differences between places—and thus cut themselves off from the detailed and difficult understanding of environment in its broader sense.

And in so doing they have lost contact with the regional roots of design, and with the deeper environmental *beginnings* from which all environmental solutions should come.

The traditional architect has always built wherever his client happened to own a site. "Making the most" of a site invariably meant to get either the highest density or the highest return or both. The idea of *not building on a flood plain* or upon an aquifer is a concept only lately penetrating architectural thought from the outside. Thus the most important option left to the South is a chance to make *low density development* succeed. Jean Gottman, in his book *MEGALOPOLIS,* writes:

"The lesson of history seems fairly simple and clear: high density creates a challenge to improve through better organization and fairer distribution, the lot of the people. In many cases in the past, though not all, high density formation has led to economic, social and political development, yielding benefits later enjoyed by mankind as a whole . . . successful dense settlements have always found the means to produce an abundant enough supply or to procure it from the outside in exchange for the services they offered. Density has often been the mother of great resourcefulness."

The same can be said of low density. It creates problems for men simply because distance separates them from each other and from easy joint efforts to solve common problems. And this has produced an amazing array of political and social institutions for overcoming distance—water and sewer districts, irrigation districts, utility districts, and Interstate Highway System, telephone and newer electronic communication networks.

Thus, the low density regions of the South, and the remarkably similar Ohio Valley, need to apply new solutions to old difficulties caused by having population spread out so thinly.

What such regions need desperately is a method of information/education that can overcome this regional isolation, and thus the near-sightedness and provincialism that afflicts us all.

Therefore I would urge the establishment of a *southern regional center for environmental design* that can begin to link together the schools and departments and centers of environmental research and design in the South-Ohio Valley region. Such a center should begin, in my view, as a communications network, rather than as a single building; as a process rather than as a place; as a method for pooling information and talent over distances without the more expensive task of starting with another Great New Center Building.

Such a step could give the region's environmental students, unhampered by the trade-unionism and guild attitudes of their elders, a vehicle for handling the information revolution on a scale that fits their future, and not an established past. It would encourage studies of regional environment, solutions to regional problems, and evaluation of the results, all achieved in the context of quick-access to information from an entire electronic network.

The South-Ohio Valley region now possesses the largest "unspoiled" portions of the United States; it has begun its period of fastest economic change. Thus questions of environmental quality, debates over costs and benefits of environmental change, and controversies over "highest and best uses" of human and natural resources will intensify. Consequently, there will be a growing need for men and women trained in evaluation, skilled in handling environmental information, strong in the ability to make careful decisions.

The next few years will be crucial to the next two centuries of this region.

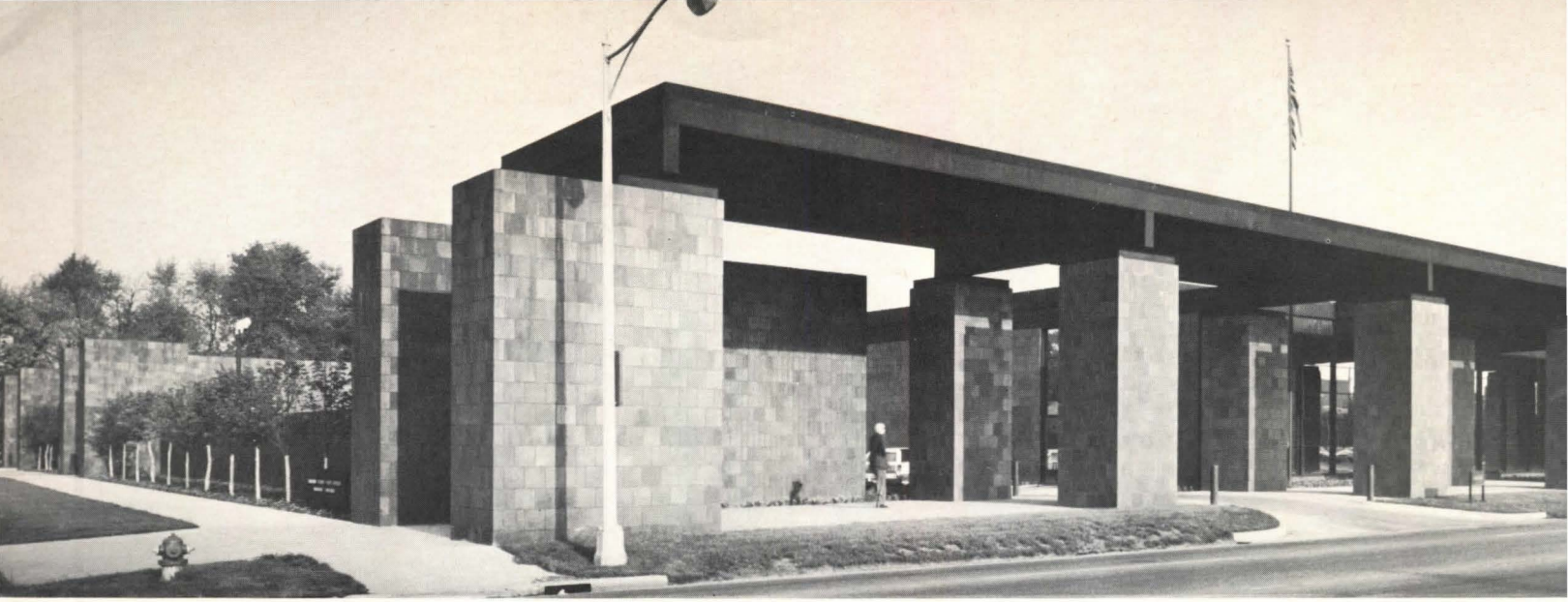
Which brings us full circle to the subject of "the fading environment." I take the pessimistic view that it is bound to fade *if:*

1. The region and its development elite continue to push development-at-any-cost above environmental quality;

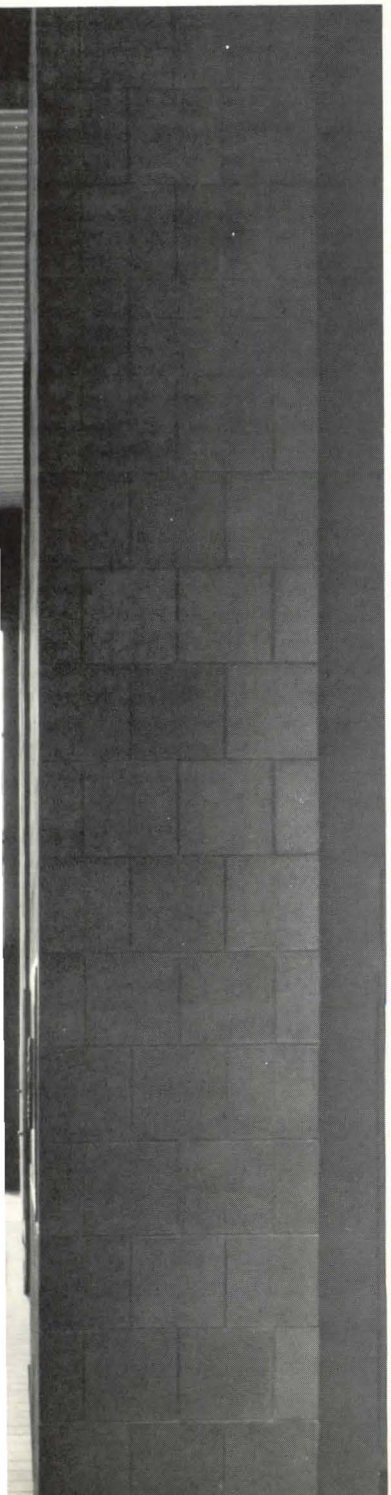
2. The region's developers continue the "filler-up" tradition which looks on all development, especially high density, as an automatic good so long as it produces economic returns:

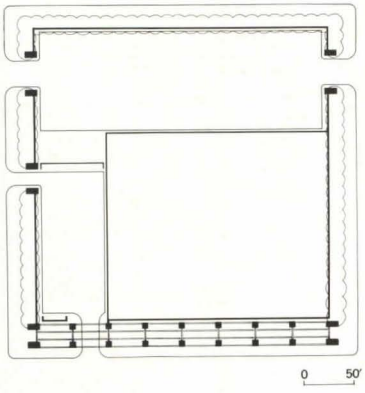
3. Those responsible for future environments refuse to accept non-building as a legitimate alternate solution. Knowing where *not* to build grows more important daily.

4. And it is bound to fade if we do not shift our energies and investments into new institutions and forms of communication that let us compete with the rest of the U.S. in the quality of our information and knowledge, and in our ability to use it well.



POST OFFICE AS A PACESETTER





A pedestrian arcade along the front of the post office (top left) combines with masonry walls along other streets to unify the full-city-block site. Concealed behind the walls are a public parking area to one side and a truck dock to the rear (plan above). In a view out from the lobby (left), the picturesque county courthouse can be seen beyond vacant blocks slated for redevelopment.

Columbus, Indiana—that typical American town with the extraordinary architecture—has scored another breakthrough. The U.S. Post Office Department—best known for its Village Green Colonial and its recently introduced Discount Center style—has graced Columbus with a building designed by Architects Kevin Roche John Dinkeloo & Associates to meet the city's downtown planning objectives.

"The post office is not so much an architectural statement as an urban one," says Kevin Roche. "The main interest is not in the building itself, but in its relation to other buildings." The other buildings in this case are future ones. Columbus planning officials —long aware that isolated landmarks are not enough (Dec. '65 issue) —expect the post office to set a pattern. They hope to see shopping and office structures on adjoining blocks with on-site parking screened from the street and with covered walks strategically placed to form a sheltered pedestrian circulation network.

This post office, which includes a regional distribution center, would not have been located downtown if local government and business leaders had not pressed to keep it there, along with the city's other key activities. Fortunately, Columbus' redevelopment program had progressed to the point where a cleared site could be offered, and the post office became the first major structure in the downtown renewal area. Once the site was approved, the Cummins Engine Company offered to pay the architects' fee if they could choose the firm. (The company has had a similar agreement with the local school board for years; March '70 issue.)

Even so, Roche-Dinkeloo had to design around a predetermined plan. "We couldn't tamper with the insides of it," says Roche. "We could only design a shell."

This "shell" turned out to be a continuous barrier of walls and fences around three sides of the block and, in the front, the imposing arcade. The architects admit that the dimensions of the arcade piers were determined largely by eye. The piers had to be hollow rectangles in order to get enough bearing capacity and rigidity using unreinforced hollow tiles. Visually, they had to be big enough to *look* hollow and to give the arcade a sense of enclosure.

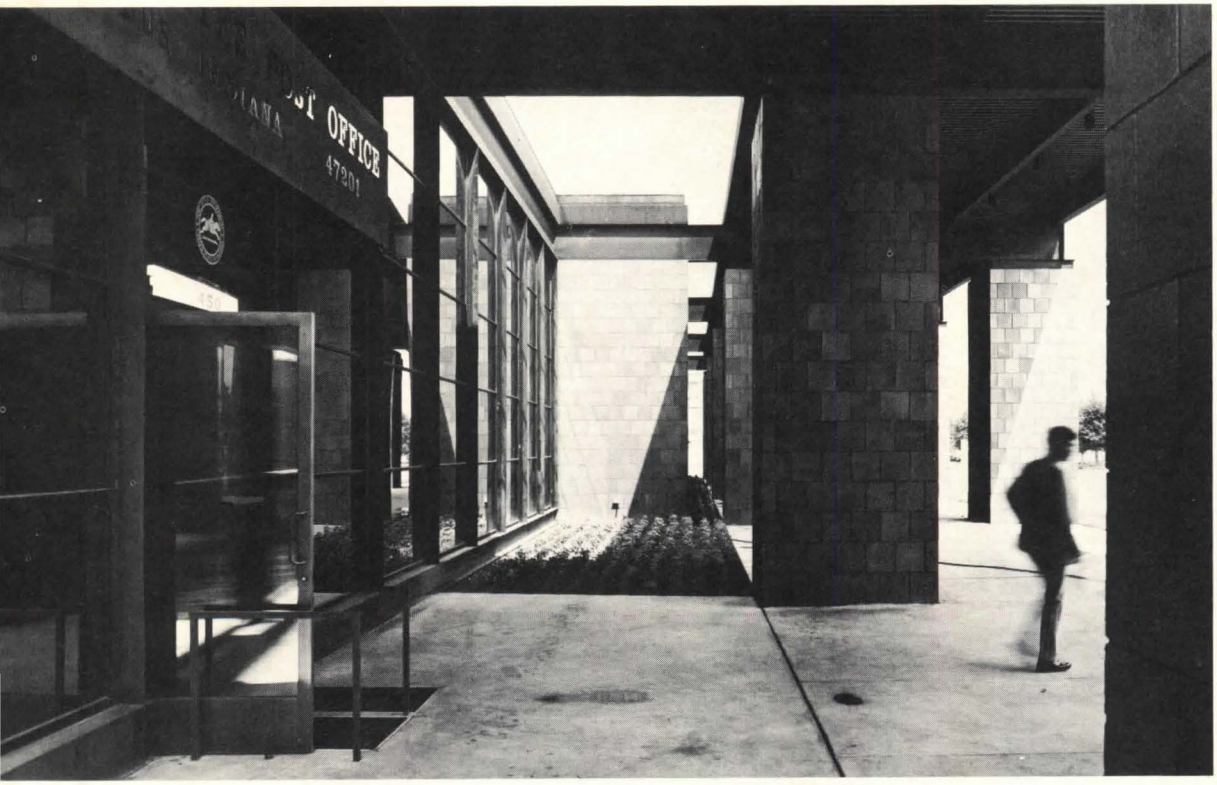
The use of mirrored glass for all of the lobby windows was also based only partly on technical needs. The glass does shield the lobby from any sunlight that may penetrate the arcade. But its main value for the architects is that it produces a reflection. "It doubles the apparent depth of the arcade," Roche observes. "A post office lobby is not the most exciting thing to see from the outside, anyway."

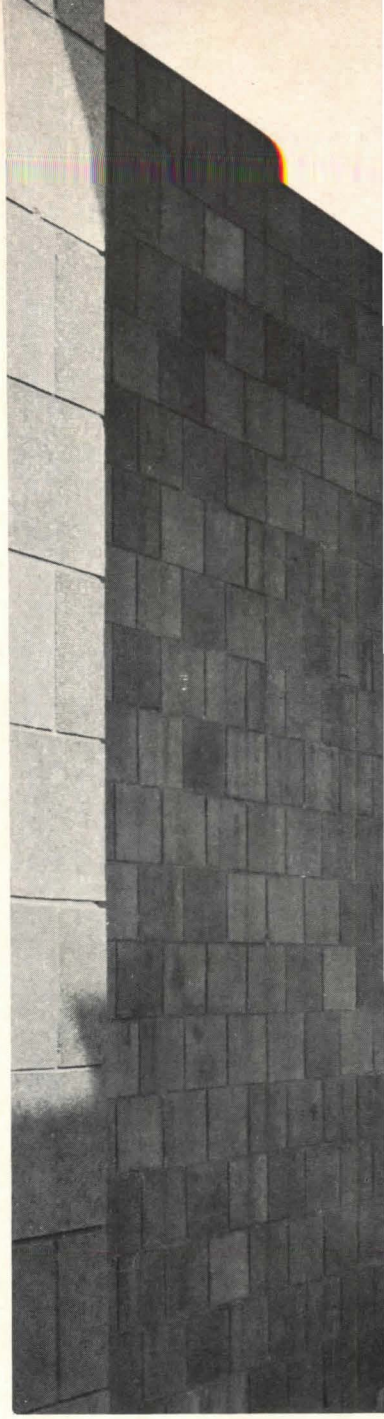
For the present, the mirrored glass reflects a vacant site across the street, where a shopping center designed by Cesar Pelli of Gruen Associates is soon to rise. Standing alone, the arcaded front of the post office has a strangely underscaled monumentality. Once it becomes part of a larger urban pattern, its proportions may seem just right.

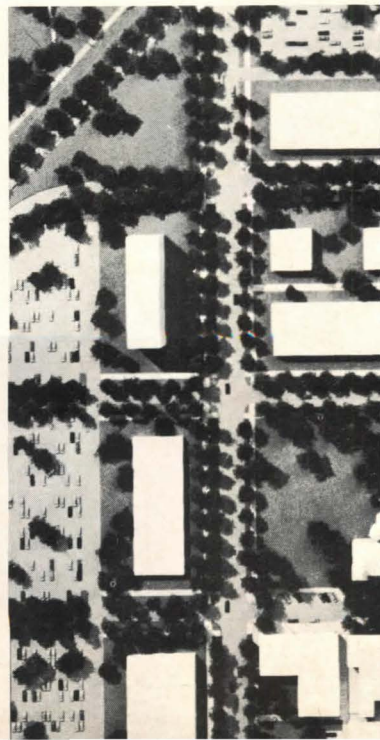
FACTS AND FIGURES
United States Post Office, Columbus, Ind. Architects: Kevin Roche John Dinkeloo & Associates. Engineers: Pfisterer Tor & Associates (structural); *Cosentini Associates* (mechanical and electrical). General contractor: Taylor Brothers Construction Co. Building area: 40,539 sq. ft. Cost: $1,083,080. PHOTOGRAPHS: Chalmer Alexander.

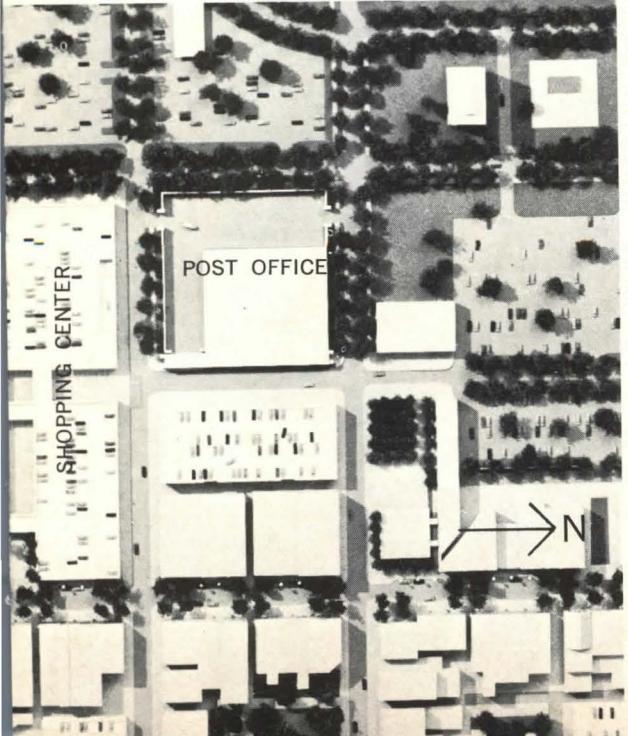
The post office walls (below) are made up of mirrored glass, weathering steel, and hollow, salt-glazed "silo" tile.

Each pier of the arcade (right) is capped with a grid of steel channels to distribute structural loads. Inside the lobby (bottom photo), glass walls similar in detail to exterior ones separate sections open at different hours. Future buildings in the surrounding redevelopment area (plan, bottom right) will have similar pedestrian arcades.








POST OFFICE
SHOPPING CENTER
N

TECHNOLOGY

Spray fireproofing faces controls or ban as research links asbestos to cancer

The snow stopped falling last May in New York City. Residents had long been accustomed to walking near construction sites in any time of year and seeing what looked like snowflakes fall down on and beside them. Few of them were aware that the snow was actually asbestos fallout from spray insulation operations above. And had they known, few would have cared. Asbestos and construction have long been synonymous.

Then all asbestos spraying was halted by order of the city's Environmental Protection Administration. And the word went out to an amazed public about what medical researchers and an increasingly aware asbestos industry had known for years.

Human exposure to asbestos can kill.

Death comes slowly. Often it is 20 or 30 years after significant inhalation of the tiny asbestos fibers that, often invisibly, pollute the air of asbestos mines, manufacturing plants, construction sites and demolition projects. Some, of course, goes into the ambient air of the surrounding areas. How much of this is dangerous is not yet determined.

But the causes of death among persons exposed to quantities of asbestos on the job are known. Of asbestos workers who die in the New York City area, one of five dies of lung cancer. Almost half of them die with other forms of cancer. It is estimated that a man who smokes and works with asbestos increases his risk of incurring lung cancer 92 times over that of a man who does neither.

The chances that a man will die of cancer, however, depends on his surviving Asbestosis, the first disease diagnosed as the result of asbestos fiber buildup in the lungs. Asbestosis results in such fibrosis (scarring) of lung tissue that the victim is effectively strangled by his inability to get sufficient oxygen. Asbestosis also leaves a person prone to infectious pulmonary disease.

A magic mineral

Asbestos, which comes from a Greek word meaning inextinguishable, is used to describe a family of hydrated silicate minerals that have one common property. They can be separated into soft, silky fibers.

The fibers are incredibly—and microscopically—small. One million asbestos fibers is equivalent to only 630 hairs, or 3,800 glass fibrils, such as are contained in some insulation materials.

The known varieties of asbestos include two types and six variations, plus local characteristics of specific mines, most of which are in Canada and the Soviet Union. About 95 per cent of the asbestos used in the U.S. is chrysotile asbestos, mined from serpentine rock.

The most remarkable thing about asbestos is its virtual indestructibility. The tiny fibers are impervious to weather, heat and fire. They have the tensile strength of piano wire, unusual flexibility and they adsorb and filter well. They are also the only mineral fiber that can be woven into textiles.

The strength of asbestos is also its danger. Inside the human lung the fibers are as indestructible as in nature.

The earliest evidence of asbestos was found in the archaeological digs of a civilization in Finland 45 centuries ago. Here, the ancients used asbestos to hold pottery together before it was baked. And, according to legend, Charlemagne cleaned his asbestos table cloth by throwing it into the fire. The Greeks and Romans, however, noted that working with asbestos could cause lung illness.

Modern knowledge of the material dates back to 1879, when the first commercial mine opened in Quebec, producing 300 tons the first year. By 1910 production had increased ten times and it has been increasing ever since, to the present 5 million-ton output.

The U.S. is first

The United States is the largest single user of asbestos, consuming almost one quarter of the world supply. The U.S. is also the most creative user, taking the "mineral of 1,000 uses," as asbestos had been called, and finding over 3,000 industrial applications.

Over 75 per cent of available asbestos goes to the world-wide construction industry, with the asbestos-cement industry followed by the asbestos floor tile manufacturers, the biggest markets. According to the U.S. Department of Commerce, asbestos is used in shingles and clapboard, siding, roofs, interior and exterior wall sheeting, pipe, conduits, ducts and acoustical ceiling panels. Asbestos is also in paints, sealants, caulking, potter's clay, millboard and plastic reinforcement and filler. As a friction material, it is in brakelinings and clutch facings; it also is contained in fire hose, rugs, safety clothing and ironing board covers. Last, *and perhaps least,* asbestos is used for spray fireproofing of structural steel.

According to Johns-Manville Corp., the nation's largest asbestos producer, only a fraction of asbestos (1 per cent of their own) goes into spray fireproofing. (J-M only supplies asbestos to spray manufacturers, but does not manufacture a spray product.)

The company, however, has long been involved in research into the problems asociated with asbestos exposure. In 1928, about the same time British scientists identified asbestos as an occupational health hazard for textile workers, J-M started animal research on the effects of asbestos dust. The conclusion was that inhalation produced fibrosis of the lungs. A J-M study co-sponsored by the Metropolitan Life Insurance Co., in association with McGill University Medical School, followed in 1929, concentrating on the occupational hazards of asbestos dust. In 1935 they published studies showing that airborne asbestos produced pulmunary fibrosis in humans and recommending control measures, regular physical examinations and more research.

Today, millions of dollars and many studies later, the company is still heavily involved in medical research, with about $1.3 million worth of research now in progress. This includes co-sponsorship, with the International Association of Heat and Frost Insulators and Asbestos Workers, of a program called the Insulation Industry Hygiene Research Program. Since the program was inaugurated in 1968, with $362,500 in backing from its sponsors, it has resulted in new industry safety standards and equipment.

The director of this and other asbestos research programs is Dr. Irving J. Selikoff, a pioneer in the field. As head of the Division of Environmental Medicine of the City University's Mt. Sinai School of Medicine, and director of its Environmental Sciences Laboratory, Dr. Selikoff had been working with the Insulation Union since 1962, when they agreed to make the records on their membership available for study.

Dr. Selikoff became involved in asbestos research in the 1950s, when he was head of a New Jersey clinic and had occasion to examine 17 men referred to him with

chest diseases. All had worked in a local asbestos factory, which has since closed, and all were able-bodied at the time. But by 1961, six were dead, and with time, the rest have either died or been disabled by Asbestosis or cancer.

When he approached the union for study, the leaders were all too willing to cooperate. They had been trying to make their problems known for years. What Selikoff discovered spelled out their difficulties in very clear terms.

Joined by two other doctors, E. Cuyler Hammond, of the American Cancer Society, and Jacob Churg, chief pathologist of the Barnert Memorial Hospital, Dr. Selikoff studied the case histories of the 632 union members who were on the union roles in 1942. They calculated there should have been 203 deaths by 1962, but discovered instead there had been 255, an excess of 20 per cent. A study of 370 union members conducted in 1967 had similar results. There were 94 deaths, instead of an estimated 47 among a comparable sampling of the general population.

The number of deaths was not the only alarming finding, but also the causes. None in the general population would have died of Asbestosis, but many of the asbestos workers did. There was also an extremely high incidence of cancer among the workers, especially of lung cancer. (No one died of lung cancer who was not also a smoker, but that is little consolation. Dr. Selikoff estimates that 75 per cent of the adult male population smokes.)

New York acts

Research reports from scientists such as Dr. Selikoff seemingly had little impact on the public or government until recently. But then the news broke.

Conferences, speeches, industrial programs such as Johns-Manville had sponsored and the unions finally caught the attention of officials. New York City's new Environmental Protection Administration, deeply concerned about the declining quality of New York City air, became alarmed at the visible emissions of asbestos fibers from city construction sites, the so-called snowflake effect. Soon they were checking the city for asbestos levels, following up any reports by citizens who had seen asbestos fallout.

After a series of meetings and hearings, which also attracted a good deal of public attention (if, sometimes, misinformation), the city took a stand against asbestos in the air. Working with Dr. Selikoff and representatives from industry, the unions and other advisors, the EPA Department of Air Resources issued regulatinons for spraying in the city, based largely on procedures proposed by the Sprayed Mineral Fiber Manufacturers Association.

To those who protested the city had overstepped its bounds, officials replied that air pollution in the city was its proper concern and that asbestos, which goes from the construction site into the ambient air, was a dangerous pollutant. The city's mayor has introduced a Comprehensive Air Pollution Control Code to the city council that would ban all asbestos spraying permanently. (At press time, Philadelphia's Board of Health issued regulations—pending legal review and hearings—that would prohibit all asbestos spraying and limit concentrations of airborne asbestos.)

Whether or not a complete ban is necessary for public safety is highly disputable. But, since no one knows the limits of human tolerance for asbestos fibers in the lungs, the city has decided to err on the side of safety. Until the ban, however, the word is control.

New York regulations (which may be adopted in similar form by other cities follow in brief:

1. Before spraying, the floor must be cleaned of dirt and objects and then covered with a plastic tarpaulin.

2. The entire work floor must be enclosed with tarpaulins that will prevent the visible escape of asbestos fibers into the city air. Interior open areas must also be enclosed.

3. Wet asbestos materials must be swept up and placed in a covered container immediately, ready for transport to an approved disposal area.

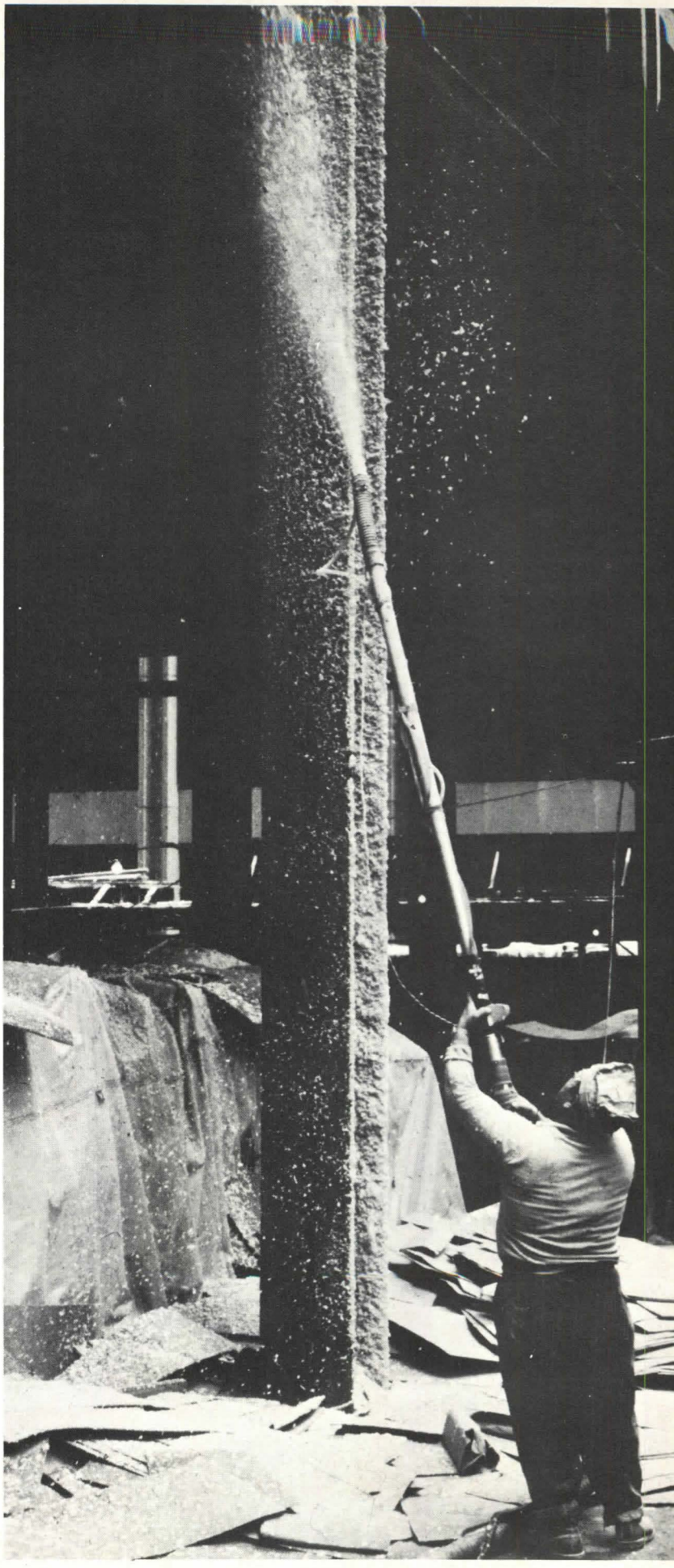
4. Floors must be vacuumed clean shortly after drying and material enclosing the area must also be vacuumed, with window sills cleaned, etc. before dismantling the enclosures.

5. Areas where asbestos supply bags are opened must be enclosed.

6. Signs must be posted outside enclosed areas warning people not to enter without protection.

7. All persons spraying must be furnished with approved respirators and coveralls, which must be left on site.

8. Any plenum or other asbestos-lined structure intended for



air circulation in a building must be cleaned of all debris and waste insulation, then coated with a sealant.

Implementation

Shortly after New York issued an interim version of its asbestos spray regulations, it found contractors still in violation and soon it effectively called a halt to all asbestos spraying in the city. "We cannot continue fireproofing tall steel buildings as in the recent past. If we cannot do it safely, construction might have to halt. But it can be done safely and this is why it is doubly wrong to permit hazardous conditions to continue," says city advisor Dr. Selikoff. He also feels that any regulations affecting the use of asbestos in any form must be industry-wide so that violators will not have a competitive advantage.

The interim regulations were issued April 13. By May 15, the city had followed up with 34 summonses, five to contractors in apparent violation of all the provisions of the regulations, which were then less stringent than the final version.

In addition, the city issued three show-cause orders to seal asbestos spraying equipment on three sites where asbestos emissions in the air were still visible, according to the Department of Air Resources, despite precautions taken. Included was the $600 million World Trade Center, under construction in lower Manhattan by the Port Authority of New York. It and another of the three served voluntarily shut down spray operations by April 23 and agreed to seek substitute materials. The third refused to give written notice of future plans to spray and this led to a hearing on the sealing order.

Today, asbestos, spraying has resumed on 25 city construction sites and, according to the EPA, all are in compliance with the city regulations. The contractors have had to learn to adjust to the extra time and money required. Explains a spokesman for Diesel Construction Co., which is spraying asbestos on two city sites: "In these days of ecology, there's no choice. The Department of Air Resources has the toughest people in the world. You do it their way or stop."

On one site, asbestos spraying has not resumed. The old asbestos spray areas have been covered with unmistakable green plastic sealer and the World Trade Center is using a non-asbestos spray fireproofing manufactured by the U.S. Mineral Products Co., of Stanhope, N.J.

The decision cost the Trade Center about 10 per cent more for the raw material than the asbestos version, with the project requiring a total of about 5,000 tons of the combined materials. (The manufacturer claims this cost differential no longer exists, that the two materials now cost the same since the asbestos price has risen.) The general contractor, for whom a subcontractor performs the spray job, using members of the Plasterers and Cement Masons Union, is Tishman Management Corp. A spokesman declined to comment on either the price or delay of the switch.

The new material is called Cafco Blaze-Shield Type D C/F (the project had been using an asbestos counterpart by the same company called Cafco D). According to the manufacturer, it is the only commercially available direct-to-steel spray fireproofing that is asbestos-free. The contractors are continuing to adhere to city asbestos spray regulations even though they are using the non-asbestos product because its long-term effects are not known.

Ray Monti, construction manager on the project, says the Port Authority decided to "switch and be done with it" when it became clear that asbestos would be a continuing concern. But, he says, the new material has proved a good alternative. "Besides being free of asbestos, the new material has a better K factor (for thermal conductivity), it stays up better and goes on more easily than the original spray with asbestos."

A safety inspector on the job confirms Monti's satisfaction, noting that other trades will now work closer to spraying operations than before, that there seems to be less waste and that the floors seem less slippery.

The lab tests at Mt. Sinai by Dr. William J. Nicholson indicate that Cafco D C/F is primarily mineral wool, or extruded glass, with fibers averaging four to five microns in diameter. Calculations suggested that 75 per cent of the fibers would be classified as nonrespirable. Also, because the fibers are larger and heavier than asbestos, the Mt. Sinai report to the Trade Center says that they are unlikely to remain suspended in the air as long.

Dr. Selikoff cautions, however, that, "We don't know whether or not the new Cafco is really safe. With such materials, many years are usually needed to determine health effects. It is therefore wise to work with it in a safe, approved manner.

More than foresight

The switch to a non-asbestos product is more than a tribute to the Port Authority's environmental foresight. It is also testimony to the autonomy of Port Authority operations in the city as a bi-state empowered agency.

Cafco D C/F does not yet have the full approval of the city's Department of buildings. It has approval only for columns and not yet for decks, pending formula analysis.

In fact, except for the Port Authority, which is exempt from the city code authority, no builder in New York has any choice but to spray with asbestos or close down construction. (Says one private builder: "Not even the city firemen have to answer a call to the Trade Center, but they do or the whole city could burn down.") There is no substitute material yet that has full city approval.

Other materials than Cafco are coming along, however. The city is already testing a product developed by the Spray-On Research Corp., of Ft. Lauderdale, and is awaiting lab test results. About six other manufacturers, including Johns-Manville and the Grace Co., are developing non-asbestos spray fireproofing for structural steel. But none of these is past the development stage.

Cafco's progress was aided by the Port Authority decision to use it, which meant accelerating a lot of the approval and test procedures. But the manufacturer also points out that the product was developed over the past two years and is already being used on "40 or 50" sites outside New York. Cafco D C/F also has been rated by the Underwriters Laboratory and will be listed for eighteen deck and beam applications, five column and wall systems, and three roof constructions. More ratings are expected to follow.

Precedents

Action in the U.S. about asbestos had long precedent in Britain, where, in 1900, a man was diagnosed as having died of asbestos-caused lung scarring at the age of 33. He had been the sole survivor of a crew working in an asbestos factory 14 years earlier.

Not until 1924 was an undisputed death by asbestos recorded in a medical journal. An autopsy had revealed "curious bodies" in the lungs of a woman who had died after 13 years in an asbestos-textile factory. The "bodies" were diagnosed as asbestos.

In 1928, a study revealed that 25 per cent of 263 asbestos workers had pulmonary fibrosis, with incidence in direct proportion to exposure. The average among workers with 20 or more years' exposure was over 80 per cent.

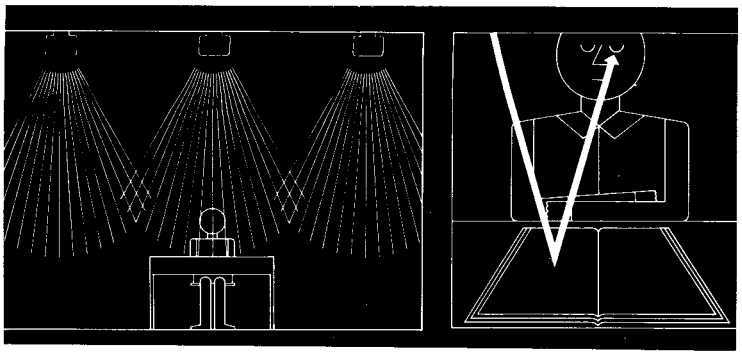
In 1931, Parliament classified Asbestosis a compensatory disease, which made autopsy mandatory and thus aided medical research. (This is an advantage U.S. researchers do not have.)

New regulations and the introduction of antibiotics, which minimized infectious lung disease, apparently improved the situation. But it was then discovered that those who survived Asbestosis were dying of cancer. The first report of an asbestos link to cancer was published in 1935, but there was little stir until 1949, when a study covering 1924 to 1946 revealed that 13 per cent of asbestos-caused deaths were of cancer. (A similar sampling in the general public would have had a 1 per cent incidence.)

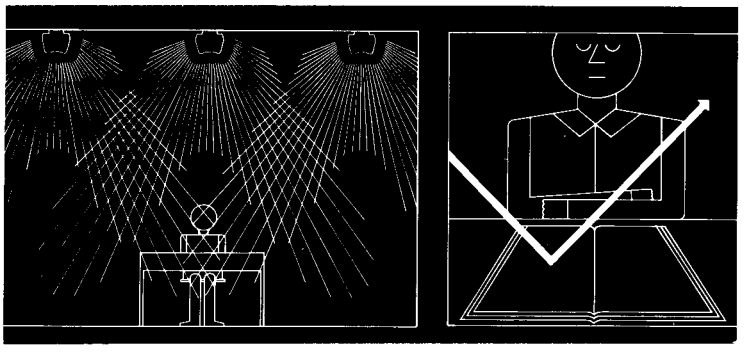
By the late 1950s, other disturbing health problems were attributed to asbestos, including mesothelioma, or cancer of the chest membrane or the abdominal lining, usually a rare form.

Despite these and many other studies confirming the dangers of the material, the United Kingdom did not regulate the building trades until last year. Regulation then virtually eliminated use of the spray and builders turned to block insulation. The regulations for spraying include a written application giving 28 days notice and safety procedures similar to the New York guidelines.

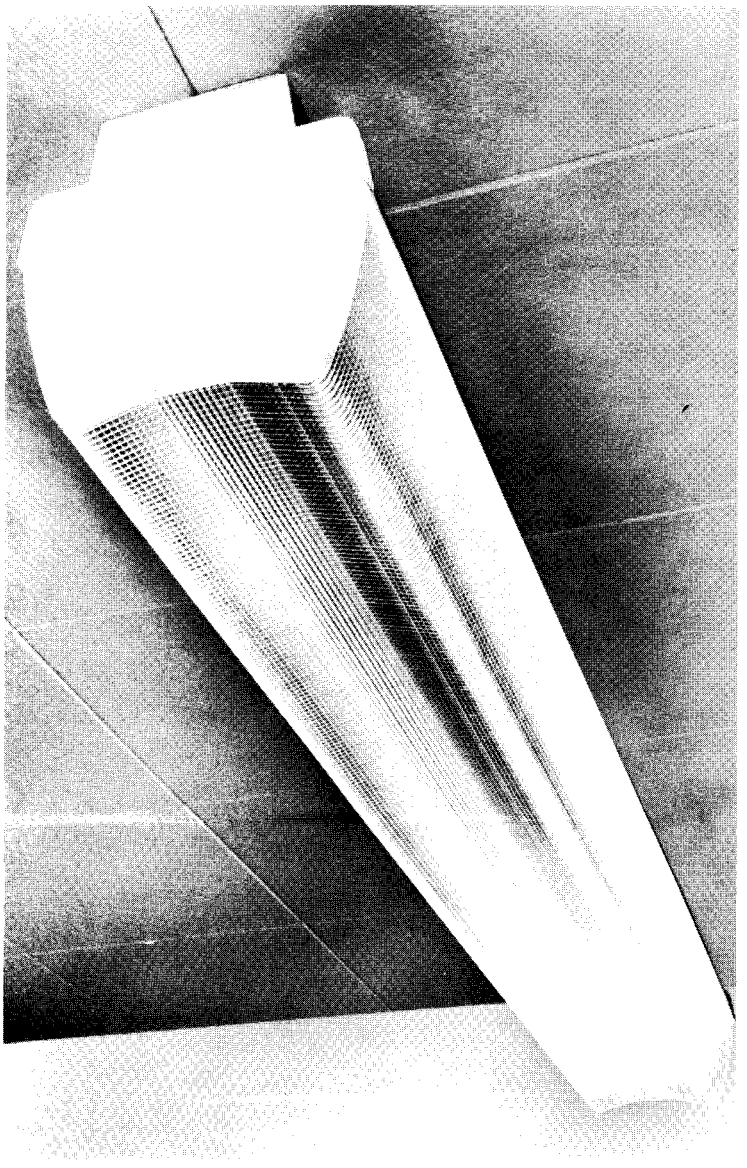
The real importance of the spray asbestos problem may be as a test case of how society must learn to live with a potentially serious environmental hazard by learning to control it. The asbestos and other such problems *can be solved with present technology*. But a partnership of science, industry and government is required. Scientists must define the problem, industry and labor develop solutions, and government ensure that regulation is unilateral. —MARGUERITE VILLECCO



Overhead teardrop pattern of light causes glare by reflecting into reader's eye



Angled beam pattern misses the eye, so glare is minimal and contrast preserved



New lighting lessens reading glare

A new development in lighting systems is the first specifically designed to cut reading glare, yet provide greater illumination with fewer lamps. It is particularly suitable for installation in school, industrial and other commercial buildings where reading efficiency is important.

The system eliminates glare by redistributing light into a twin beam pattern that is thrown out from either side of the plastic fixture, which is designed with small prisms along its surface, inside and out. It minimizes downward directed light that can bounce off a page of type (or any other visual task) back into the reader's eye, causing what are called veiled reflections and lessening contrast up to 80%.

This loss of contrast has been a major shortcoming of conventional lighting systems, according to the Illumination Engineering Society. For every one per cent loss of contrast, there must be a 15 per cent increase in classical footcandles to compensate (chart).

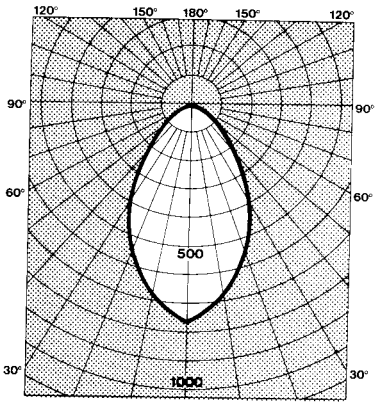
Until this spring, IES standards did not reflect the loss of readability because of veiled reflections. Then the standard rating for a school, for example, was 70 classical footcandles.

Research then showed that lighting standards must include reading glare and the standard was changed to 70 effective footcandles, meaning there must be sufficient illumination to compensate for veiled reflections.

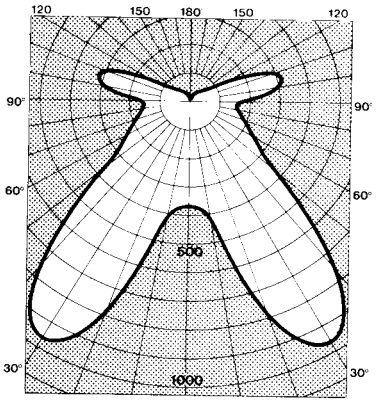
A study of 18 schools by the Ford Foundation's Educational Facilities Laboratory proved that even ten that were designed to 100 classical footcandles could not match the 70 effective footcandle requirement. Of the 18, only one measured up to the new rating.

Called Percepta, and developed at the Holophane Co., of N. Y., the new lighting device fulfilled the new school standard with fewer lamps than any other system, including louvred, recessed and wraparound models.

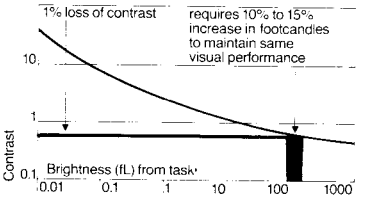
The inventors of the new system were James Griffith, a consulting engineer and president-elect of IES, and Ian Lewin, Holophane's director of research. The system will be marketed by several manufacturers in single and double-length modular fixtures about 4 ft. long.



Conventional light pattern



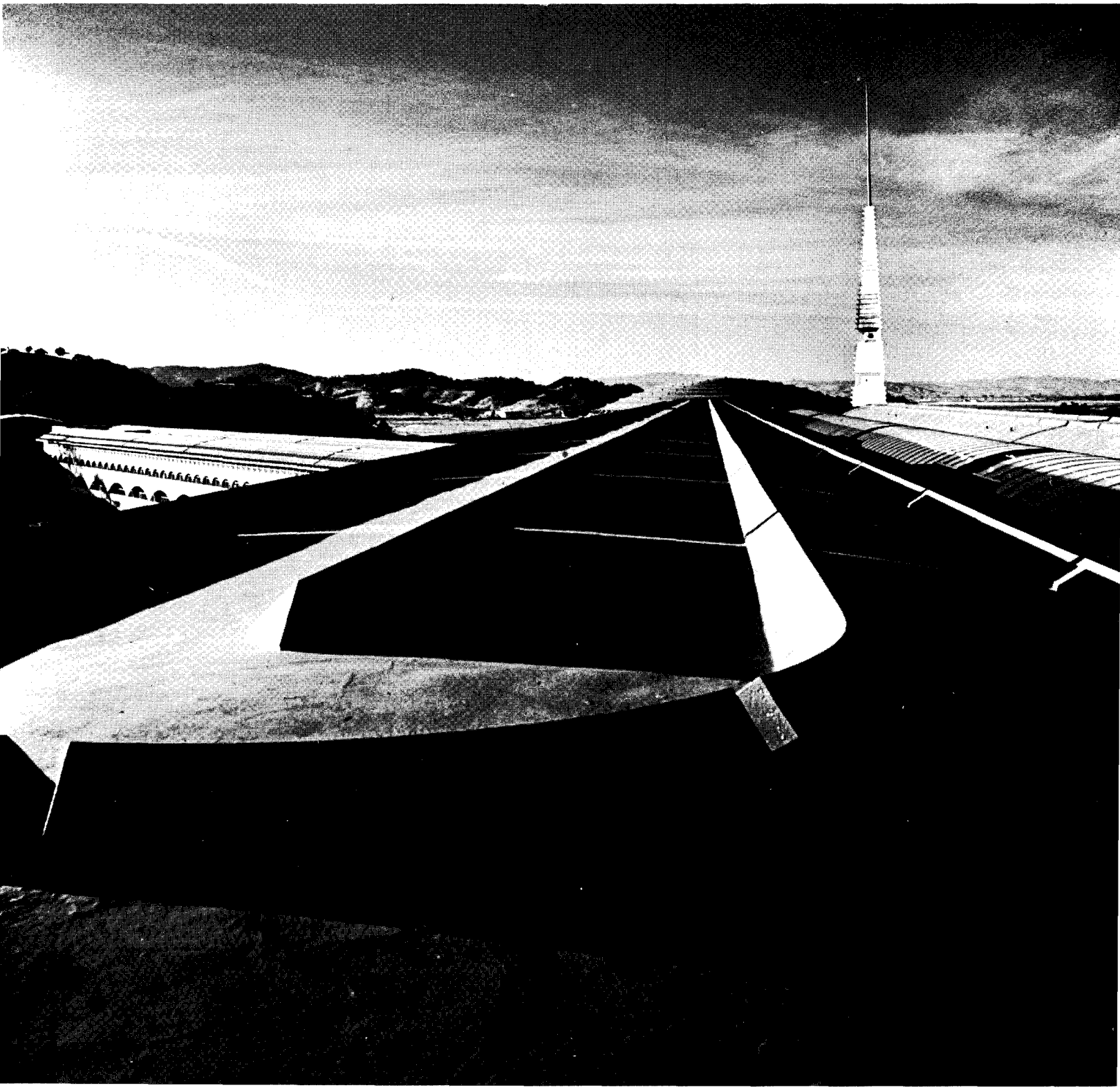
New twin beam illumination

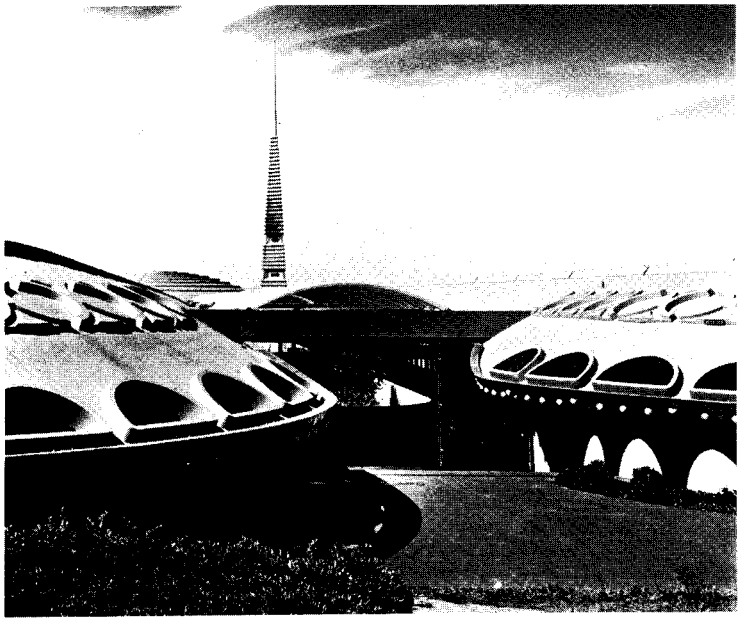


Contrast is vital to light efficiency

FRANK LLOYD WRIGHT'S HALL OF JUSTICE

Two personal responses to the Hall of Justice, latest completed element in Frank Lloyd Wright's ambitious Marin County Civic Center complex in California. Lucille Dandelet comments in photographs, Roger Montgomery in words.





Frank Lloyd Wright's newly finished Marin County Hall of Justice completes the main element in his Civic Center design for that fortunate county just north of San Francisco. Seen from the California 101 freeway when driving south toward Golden Gate, it has to be one of the great works of environmental design in the West. Nearly a quarter of a mile long, its arches spring across the low hills north of San Rafael in a way that magically enhances the landscape, particularly at freeway speeds. Close up its muscular power remains despite its extraordinary decorative embellishment. Conceived as a democratic landmark, completion of the new and final wing of the main structure makes that long-standing promise manifest.

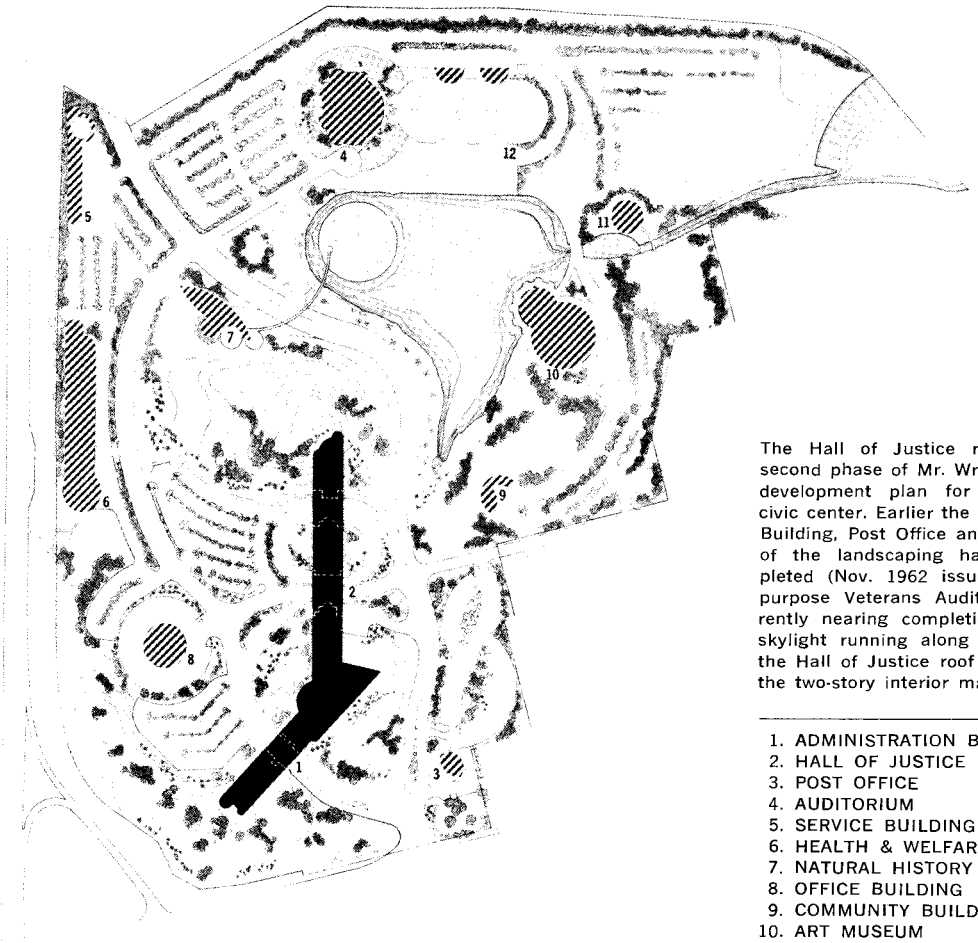
Given its success as public environment, as an architectural work, both inside and out, the Hall of Justice raises the same questions posed by the earlier Administrative wing, particularly for an eye tuned in to East Coast and European *béton brut,* black iron and clear glass. Its pink-brown stucco, electric blue plastic roofing, Wright-red polished concrete floors and interior metal panelling, gold anodized aluminum everywhere, round-edge dark woodwork, and endlessly restated decorative circles and arcs and spheres embarrass me. Yet Marin County people love their Civic Center. If it has faults they excuse them. Even a tight-minded easterner learns to relax and relate.

Underneath the stucco surface of the new wing some important constructional advances occurred. Its frame and floors make wide use of precast concrete. Moveable gypsum, aluminum and glass partitions make its interior unusually flexible. Its programming has brilliantly met two frequently conflicting challenges: main spaces imaginatively researched and shaped to difficult functions—courtrooms, a jail, etc.—and other space provided for carefully time-phased expansion and functional change. Still, as the building neared completion I found it hard to look at its be-arched skin of wire lath and plaster as the proper way to finish a real building. But now it stands somehow surmounting any such contradictions. They must be in my eye, not in the building.

Twice in the brief few months it has been in use, tragedy has crossed Wright's lovely building. In August a lurid prisoner escape attempt began when Jonathan Jackson brought his deadly arsenal into Judge Harold Haley's court room. It ended with four dead and three seriously wounded on the parking lot below, and headlines around the world. Then in October a bomb for which the radical underground took credit blasted one of the court rooms. These events make impossible any attempt at this point fairly to assess the Hall of Justice, let alone speak about it as architecture. With good reason people there feel too shaky. Armed deputies and locked doors block building entrances. No one can think of the building without feeling uncomfortable.

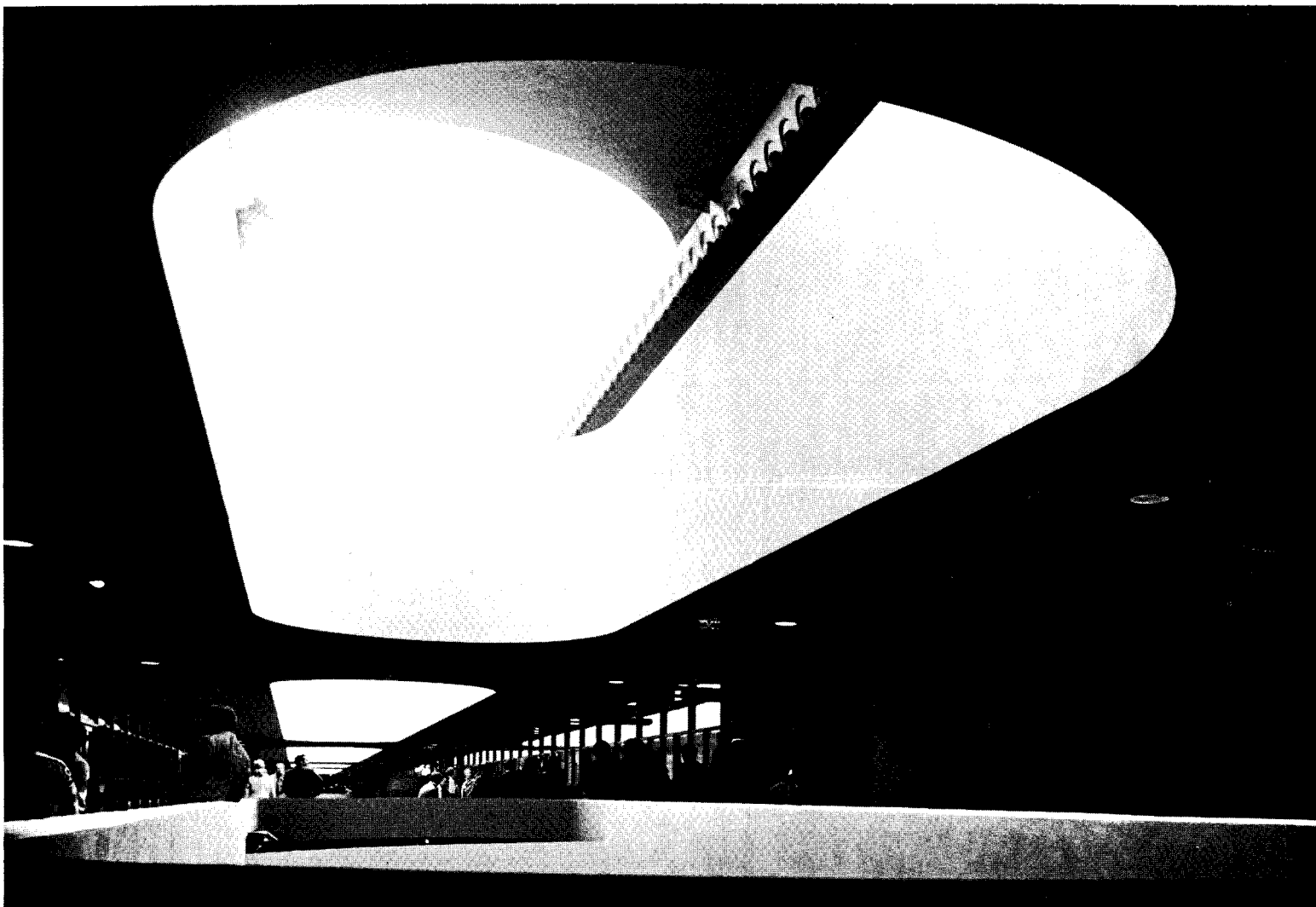
This will pass. Once again people will wander freely through Mr. Wright's exuberant Civic Center returning it to the wonderful, part-pleasure-garden, part-county-headquarters it was until late this summer. Then architects and jurists can look analytically and at the same time enjoy this richly decorated megastructure, its precedent-breaking circular arenas for legal forensics, its intricate three-dimensional circulation geometry, its splendid outlook alike for public corridors and private judicial workrooms, its unique Wright-designed jail and sheriff's department.

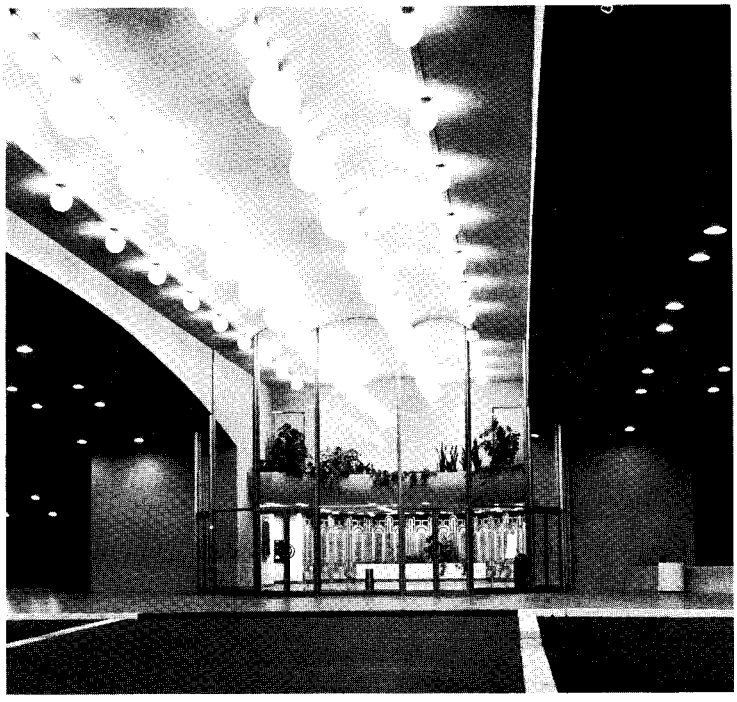
In the meantime, from a distance, it is easy to put local tragedy out of mind and respond directly to this heroically scaled, openly decorative and openly planned architecture which fits so effortlessly into the hills and freeways of California.



The Hall of Justice represents the second phase of Mr. Wright's ultimate development plan for the 140-acre civic center. Earlier the Administration Building, Post Office and a large part of the landscaping had been completed (Nov. 1962 issue.) The multi-purpose Veterans Auditorium is currently nearing completion. A vaulted skylight running along the center of the Hall of Justice roof (below) lights the two-story interior mall (right).

1. ADMINISTRATION BUILDING
2. HALL OF JUSTICE
3. POST OFFICE
4. AUDITORIUM
5. SERVICE BUILDING
6. HEALTH & WELFARE
7. NATURAL HISTORY MUSEUM
8. OFFICE BUILDING
9. COMMUNITY BUILDING
10. ART MUSEUM
11. RESTAURANT
12. COUNTY FAIR PAVILION

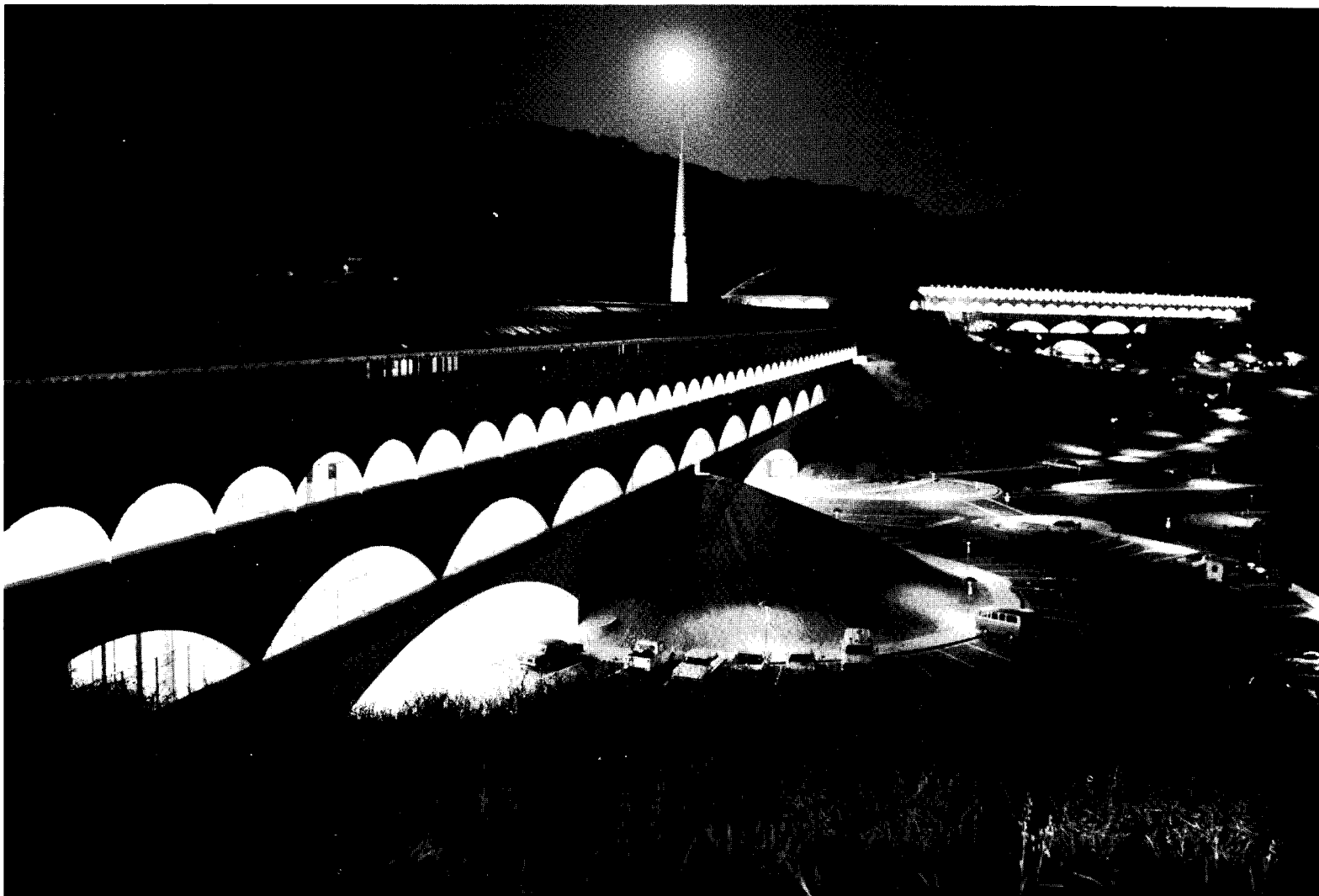


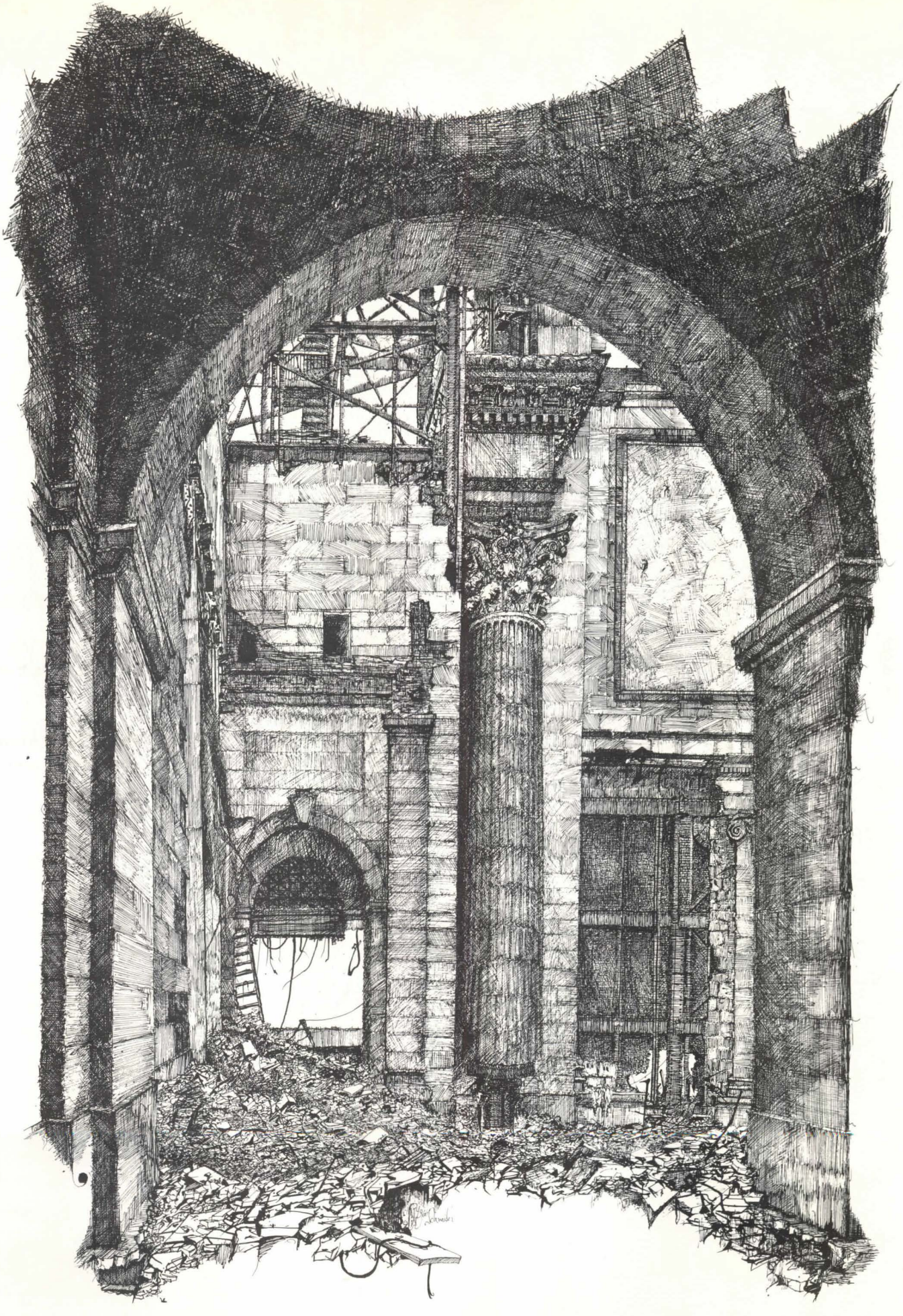


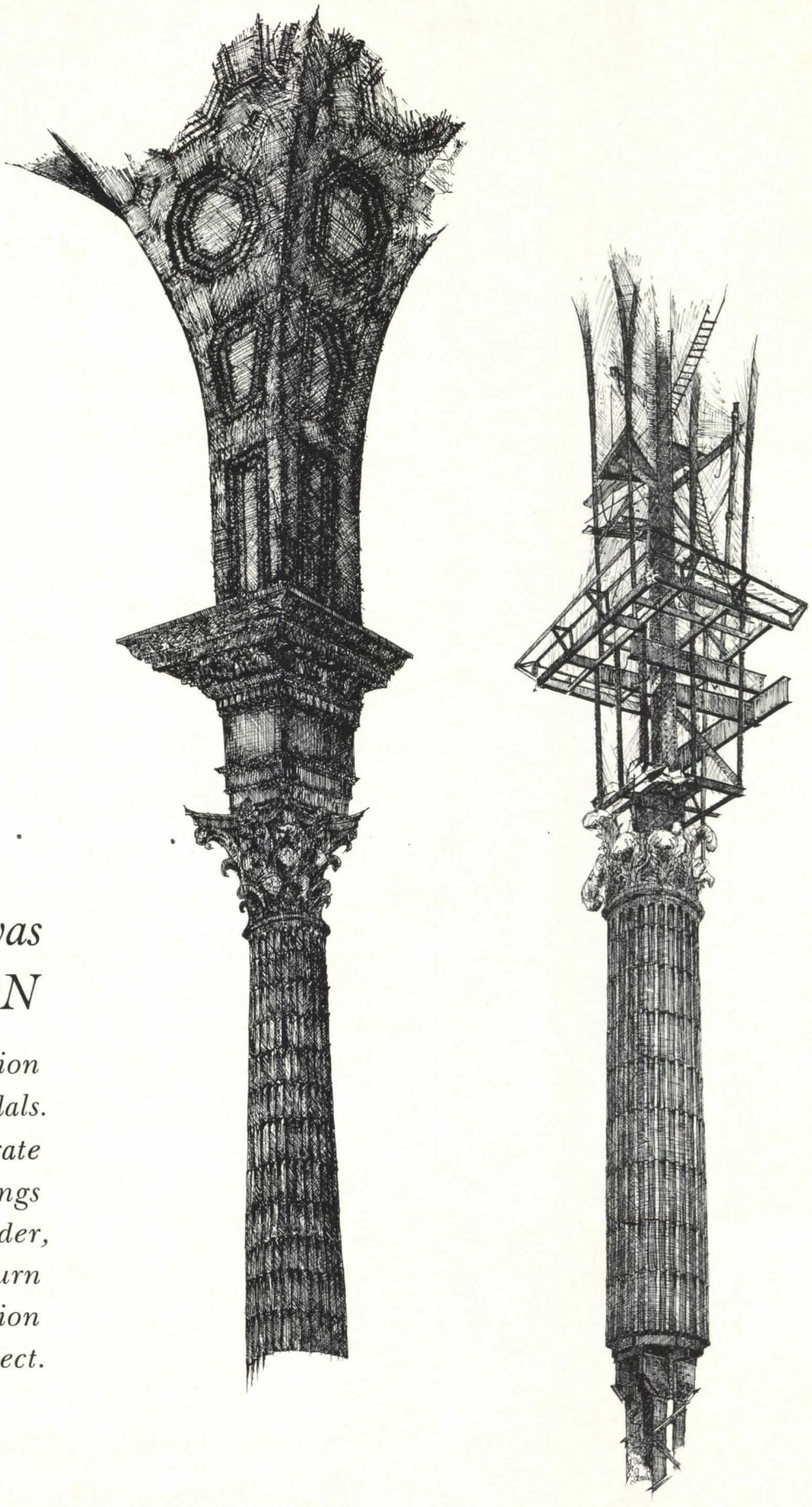
Main entrances (above left) occur within the two great flat, drive-through arches of the lowest floor level (below right). The main courtrooms one floor above open from a 600-foot-long gallery (below) which opens grandly to the Marin County hills and San Francisco Bay (right).

FACTS AND FIGURES

Hall of Justice, Marin County Civic Center, San Rafael, Calif. Architect and structural engineer: Taliesin Associated Architects (William Wesley Peters, chief architect; Aaron G. Green, associate architect). Mechanical and electrical engineer: Gendler. General contractor: Robert E. McKee. Building area: 300,000 sq. ft. Cost: $9.8 million, including furnishings. Interior photographs by John Amarantides.

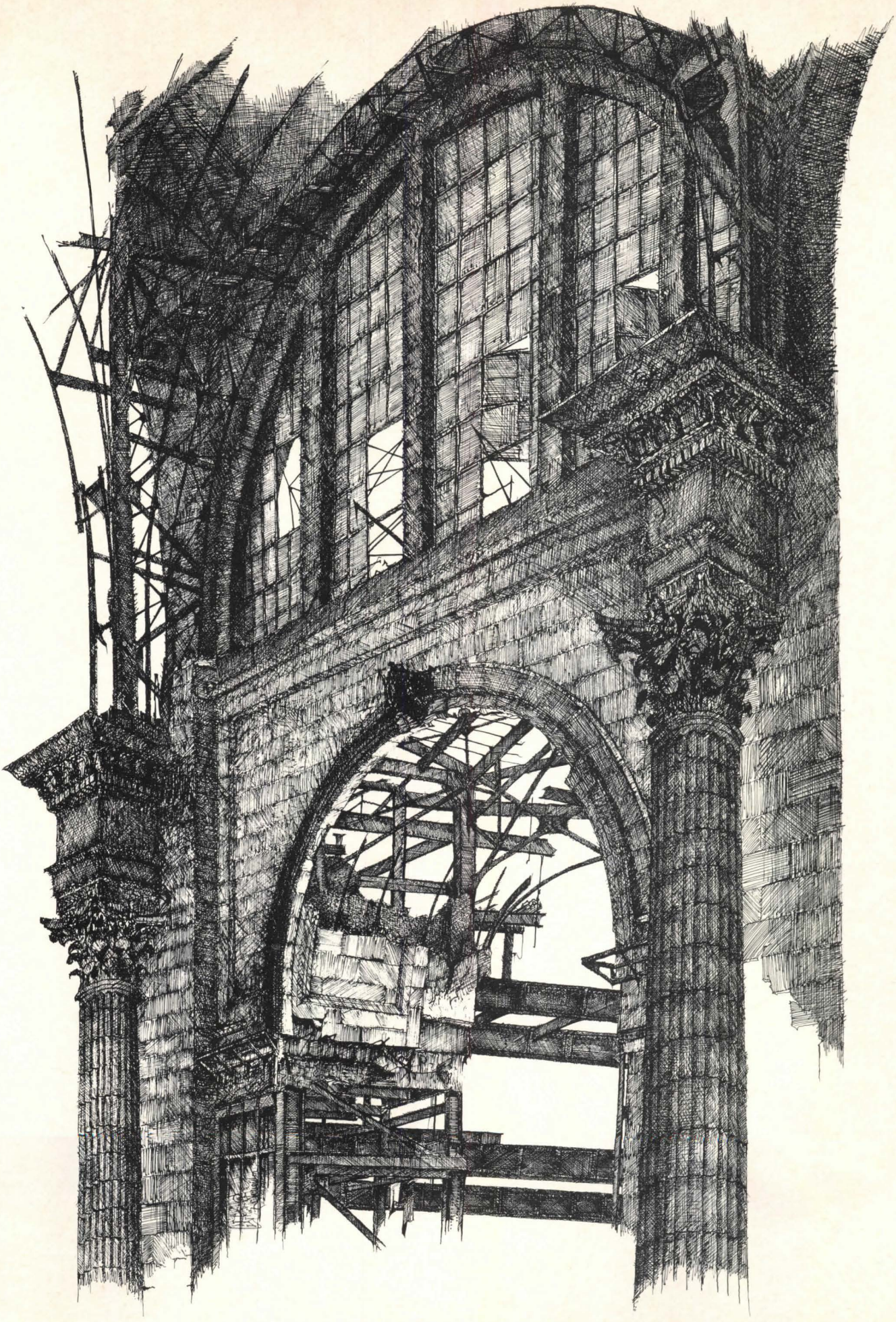






The Grandeur that was PENN STATION

The drama of destruction wrought by modern-day Vandals. While we can celebrate the richness of these drawings by Nicholas Schneider, we continue to mourn the poverty of civic imagination implicit in his subject.



FORUM

(continued from page 21)

ence but also their internal organization (who would be responsible for the project) and their ideas concerning the nature of the work, fees and phasing.

The 22 proposals that resulted were narrowed to a final six by a grading system Dudley devised; his list of 28 criteria included such factors as motivation for the job, other commitments of key personnel, proven record in planning and programming, technical capabilities, and sensitivity to community relations. (Four well-known firms got goose-egg totals at the start, for simply submitting portfolios of past work.) The six finalists then appeared for an hour's presentation.

One result of the process is a planning team chosen on the basis of specifics not generalities; another is the start of an open and informed communication between client and professional.

Planning was expected to be finished by mid-1971, roughly when the Martin Luther King, Jr. Hospital, now being built, will open. (The school will be related to this hospital, and affiliated with the USC and UCLA medical schools. The school is named for the black man who discovered the means for preserving blood plasma and who originated the idea of the blood bank in 1940.) At last word, however, funds were delayed and planning halted.

NOTHING LIKE SUCCESS

The Group for Environmental Education, which goes by the name of GEE! (including the exclamation point) has achieved a peculiar success.

Having produced a pioneering workbook for seventh graders on the man-made environment (June '69 issue, p. 48), GEE! has reached far beyond Philadelphia where the project began. Test programs are currently being conducted in approximately 60 schools throughout the country (13,000 books to the Philadelphia school district are counted as one program in this figure), and there have been inquiries from every state in the union and from about 20 foreign countries. Almost 1,000 inquiries followed a write-up in *Time* six months ago. Teachers using the workbook are very enthusiastic; they find it flexible and stimulating for children of varied intelligence. One teacher gives the ultimate praise—the children never groaned when asked to take out the book.

The rest of the success story is reported by Architect Richard Saul Wurman, one of the founders of GEE! (with Alan Levy, his partner, and William B. Chapman, executive director of the Philadelphia AIA). "Our financial picture remains bleak," says Wurman. "We have yet to receive *any* substantive funding for the continuation of our efforts which continue nevertheless." In the works is Book Eight of "Our Man-Made Environment," and just off the presses is a revised edition of Book Seven. The initial printing sold out at cost—$1.50 a workbook. This may not be any way to run a railroad, but then, who says the railroads are doing so well?

ENGINEERING

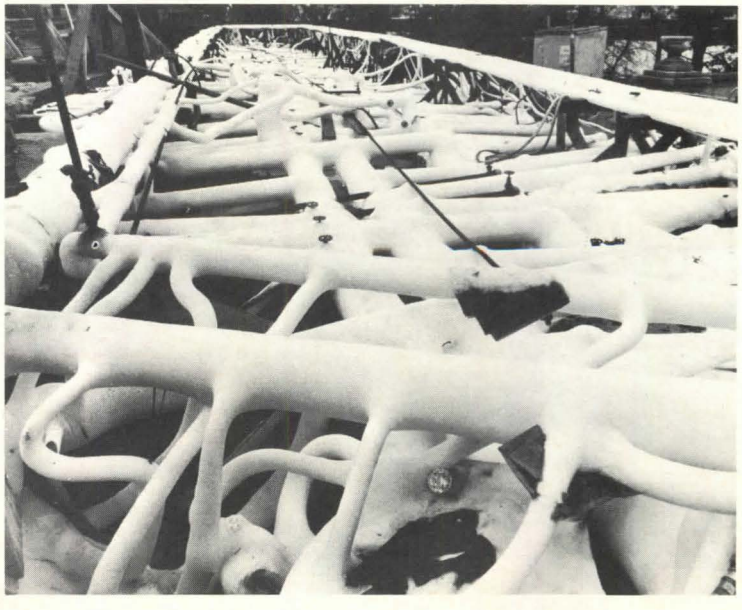
EARTH FREEZE

By now, the beautiful, organic looking sculpture picture below has probably been removed from along Riverside Drive in Manhattan. Not technically a sculpture at all but an engineering feat, the construction was a maze of refrigeration pipes installed by New York City's Environmental Protection Administration at the tunnel site for a sewer pipe excavation.

The freezing of the wet earth around the tunnel was accomplished with five industrial refrigerating units equaling the capacity of 380 tons of ice every 24 hours. The customary, alternative method—pumping compressed air into the tunnel to hold back the dirt—would have raised the noise level and the hackles of nearby residents even further than the blasting had already done.

It was said to be the first such attempt for a horizontal digging project, although a vertical shaft was frozen some 90 years ago in Germany.

Frozen feat *The New York Times*



SCULPTURE

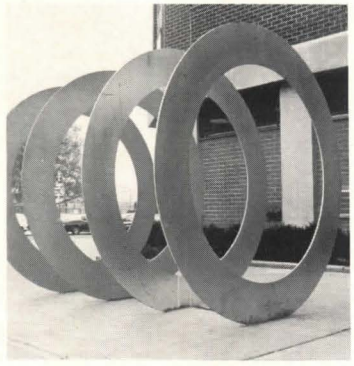
STREET ART IN HARLEM

Johnson's "Ornette Coleman"

Three large, outdoor sculptures by black artists were unveiled recently at the Bethune Tower apartments, a Mitchell-Lama, middle-income housing project in Harlem built by the New York City Housing and Development Administration and sponsored by Kreisler, Borg, Florman, a private construction company.

Kynaston McShine, associate curator of painting and sculpture at the Museum of Modern Art, assisted the sponsors and the HDA in selecting the artists to be commissioned for the work: Daniel Johnson, who designed

Williams above, Edwards below



a 15-ft. high, wedge-shaped pylon called "Ornette Coleman Force No. 1"; Todd Williams, who produced a free-form composition called "Ligion"; and Mel Edwards, whose row of steel rings is called "Double Circles."

CITIES

TOUGHEST IN THE NATION

New York City's Environmental Protection Administrator, Jerome Kretchmer, has submitted to the City Council a proposed new air-pollution code, "the toughest and most comprehensive in the nation."

The code would:

- Raise maximum court-imposed fines for code violators from $1,000 to $5,000.
- Give Kretchmer's administration the power to levy civil penalties of up to $100 a day without court action.
- Award private citizens up to half of the polluter's fine for the evidence leading to conviction.
- Reduce the amount of sulphur permitted in fuel oil from 1 per cent to 0.3 per cent by October 1, 1971.
- Limit for the first time in New York the amounts of smog-causing nitrogen oxide that could be released into the air from boilers of 500 million BTU per hour or more.
- Permit the city to repair or install air-pollution control equipment for violators and charge the cost to the owner.

It is hoped that increased fines would cover the cost of additional personnel needed to enforce the new code. This, despite a budget crisis that forced Mayor Lindsay to announce, on the same day, a lay-off of 500 city employees, for an annual saving of $15 million.

CITY IN THE SWAMPS

Across the Hudson River from Manhattan, and just beyond the high ground of the river's New Jersey bank, lies 19,000 acres of what is politely called meadowlands. They are marshes and tidelands in the valley of the Hackensack River, part primordial, mostly polluted. The Hackensack is nearly dead from the wastes of scattered industrial plants and is used as a garbage dump for 128 New Jersey towns.

One milestone toward the development of this vast wasteland —larger than Manhattan itself— was reached in 1968 when the state legislature agreed to take development jurisdiction out of the hands of the 14 affected municipalities and centralize it under a Hackensack Meadowlands Development Commission (Jan./Feb. '69 issue, p. 108).

Last month, the commission unveiled a master plan for the area. The plan will, contrary to established patterns, use added population and denser development as levers to restore the natural environment.

The plan envisions a population of 200,000 housed in high-rise, island apartment clusters rising from steel piles along the river. All the customary support facilities are provided for, including transportation centers that would serve the northern New Jersey-New York metropolitan area.

About a quarter of the meadowlands would be retained for marshlands conservation, open water areas and parks. "The river will have to be cleaned up to make the housing habitable," said Chester Mattson, chief of environmental programs for the commission. "Then the housing will provide the tax base to pay for such things as sewage plants that will be needed to keep the waters clean." And federal agencies have earmarked funds for the first time to study the air- and water-pollution effects, to show where development will make the least intrusion on the ecology of the marshes.

Meadowlands foreground, Manhattan beyond *The New York Times*

PEOPLE

DOT RETIREMENT

James D'Orma Braman (May '69 issue, p. 93) has retired as head of the office of environment and urban systems in the Department of Transportation.

A long-time foe of the Highwaymen, whom he called "predators on the environment," Mr. Braman, in his 19-month tenure at DOT, was quietly instrumental in accomplishing many of that department's most publicized environmental victories: the abandonment of highway projects that would have destroyed the famous Old Man of the Mountain rock formation at Franconia Notch in New Hampshire, and the historic Vieux Carré French Quarter in New Orleans; and the rescue of the Everglades National Park in Florida from a proposed jetport for Miami (Oct. '69 issue, p. 88).

He was also the chief advocate within DOT of the financing device in the Urban Mass Transportation Act of 1970 which permits UMTA to commit funds to transit authorities before Congress actually appropriates the money.

EPA HEAD

Assistant Attorney General William D. Ruckelshaus, head of the Justice Department's Civil Division, has been nominated by President Nixon to head the new Environmental Protection Agency.

If confirmed by the Senate, Ruckelshaus will have the task of merging several scattered agencies into one, while enforcing the antipollution laws on the books. The EPA will inherit water quality enforcement and research from the Interior Department, air pollution and solid waste programs from HEW, pesticide regulation from the Agriculture Department, and most of the government's other environmental efforts.

The EPA will acquire nearly 6,000 federal employees and a budget, depending on final appropriations, of about $1.4 billion.

ECOLOGY APPOINTMENT

Dr. René J. Dubos, professor of biology and experimental pathology at Rockefeller University in New York for nearly 50 years, will become director of environmental studies at the new State University of New York at Purchase (see our November issue) when it opens for the first time next fall. Dr. Dubos is also the author of 13 books, including last year's Pulitzer Prize-winning "So Human an Animal."

Dr. Dubos, who will be 70 in February, said he had taken the job in order "to continue preaching the gospel" to young people of the need to keep scientific study, especially ecology, concerned with the needs of man.

"We spend billions of dollars on building," he said, "but no one has studied what is the best size room for man to live in or work in. We have millions of children in classrooms with no windows just to save some money on broken glass and soot on the floor, but no one is studying what this does to the children. This should be the concern of ecologists," said Dubos, "and this will be my approach at Purchase."

A UNIQUE CONCEPT IN WATER COOLING

New Simulated-Recessed CORDLEY® COOLER

Here's a truly new concept in drinking fountains to keep pace with new trends in architectural design. This Cordley cooler mounts flush to *any* wall. Creates the illusion of a semi-recessed unit. Provides all the construction and installation economies of a wall-hung unit. Extends only 9½ inches from the wall and hangs like a picture.

Available with lower cabinet colors of tan, grey, or walnut-woodgrained vinyl; sandalwood or mist grey enamel—even stainless steel. Capacities: 6 and 12 g.p.h.

It's available now; contact your Cordley Representative or write for detailed specifications.

EATON YALE & TOWNE INC.

DISPENSER DIVISION
CORDLEY PRODUCTS
799 ROOSEVELT RD. BUILDING NO. 4 SUITE 20
GLEN ELLYN, ILLINOIS 60137

On Readers' Service Card, Circle 210

JUST FOR KIDS

MODEL SW-8A or SW-13A

NEW SW SERIES MINI-COOLERS —
Only 20½ inches from fountain top to bottom of cabinet. Can be mounted at low level for small children.

Two Capacities — 8.0 and 13.5 G.P.H. of 50° water.

Cabinets — Vinyl-clad steel, silver spice, and mocha brown; also stainless steel and gray baked-on enamel.

SPECIAL FEATURES — Can be vandal-proofed. Two-stream, mound-building projector is squirt-proof.

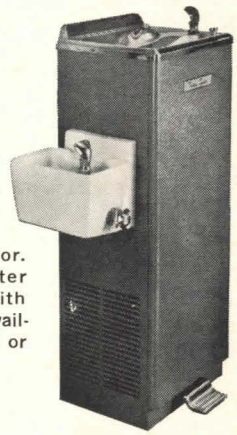
OTHER HALSEY TAYLOR SUGGESTION FOR SERVING YOUNGSTERS

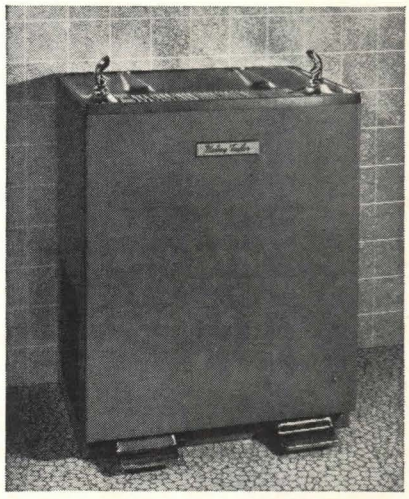
BI-LEVEL ACCESSORY FOUNTAIN

Safe, practical way to serve drinking water to adults and children. Designed for left side mounting on any WM Series water cooler. Gray baked enamel, stainless or vinyl-clad steel cabinets to match adjoining WM cooler. Waste outlet and water supply are integral with electric water cooler.

SIDE-MOUNTED FOUNTAIN

Factory-installed auxiliary fountain has separate valve and automatic stream regulator. Waste outlet and water supply are integral with electric water cooler. Available in stainless steel or vitreous china.





HT SERIES LOW LEVEL FOUNTAIN

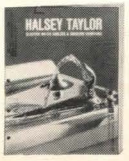
Thirty inches high . . . especially suitable for elementary school cafeterias. Stainless steel top. Individual, self-closing, foot-operated valves with automatic stream regulators. Gray baked enamel or available in stainless steel. Dual projectors or projector and goose neck filler optional.

Write for Catalog and specifications.
THE HALSEY W. TAYLOR COMPANY
1564 Thomas Road, Warren, Ohio 44481
SUBSIDIARY • KING-SEELEY KST THERMOS CO.

Halsey Taylor®

WRITE FOR NEW CATALOG

Latest information on Halsey Taylor electric drinking fountains and water coolers. Send for your copy today.

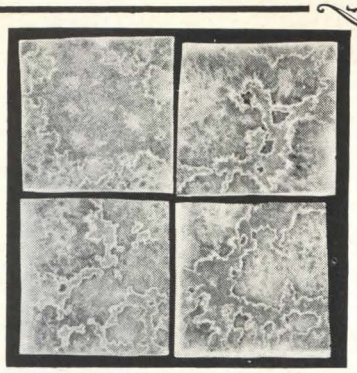


On Readers' Service Card, Circle 211

On Readers' Service Card, Circle 213

A LATCO EXCLUSIVE

shades of old Venice



VENEZICO®

VENETIAN-CUT MOSAIC TILE

Lavish shades, subtly depicting the glory of Renaissance Venice, have inspired Latco's "Venezico" collection.
Vitreous, hand-crafted tiles in 20 decorator colors, including gold, silver and brass.
Designed for interior and exterior application, it weathers all seasons and time itself!
Mesh mounted on 12" x 12" sheets with complete trimmers, for easy installation at low cost. For further information, write to:

Latco® PRODUCTS

3371 GLENDALE BOULEVARD ▪ LOS ANGELES, CALIF. 90039
TELEPHONE: (213) 664-1171

On Readers' Service Card, Circle 214

DESIGN CENTER ASSOCIATES

PRESENT FOR LEASING

a total environment complex for architects, designers, decorators, manufacturer's reps, commercial artists, graphics, builders, draftsmen, planners and developers. created for those involved in building today's society!

presentation rooms, research library, garden restaurant, 24-hour accessibility, answering service, ideal location.

A PROJECT OF

environment design associates, inc.
and
gearon and company
p. o. box 88185
atlanta, georgia
(404) 252-4910

CHANGING YOUR ADDRESS?

We need those numbers on the address label. They help speed up the change—for which please allow up to six weeks.

(Affix old address label below—or fill in former address)

_____
_____
_____
_____

(New Address)

NAME_____
FIRM_____
ADDRESS_____
CITY_____ STATE_____ ZIP_____

Also, if you write us about your subscription, be sure to give both old and new addresses, the type of subscription and your ZIP code.

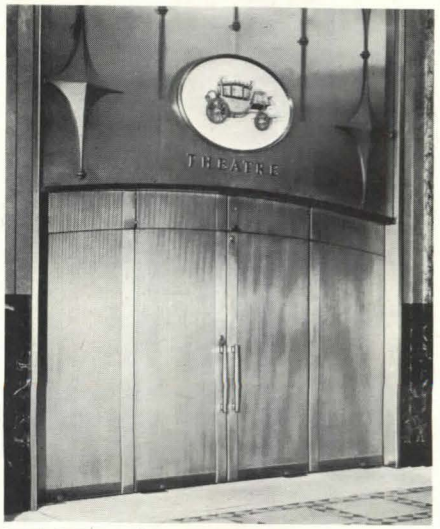
Cut out and mail to: Circulation Manager, Architectural FORUM
18 East 50th Street New York, N.Y. 10022

Doors & Entrances

Quality engineering and construction plus design freedom make Michaels custom entrances in bronze, aluminum, or stainless steel the best investment for service and low maintenance. Request the brochure, "Doors and Entrances."

Also:

- Architectural Metalwork
- Exhibit Cases
- Plaques and Emblems
- Ecclesiastical Metalwork



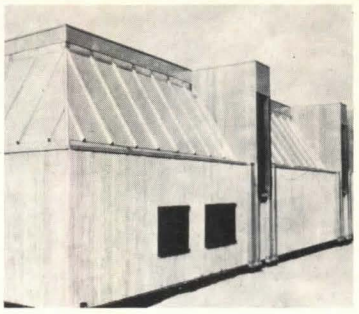
The MICHAELS Art Bronze Co.

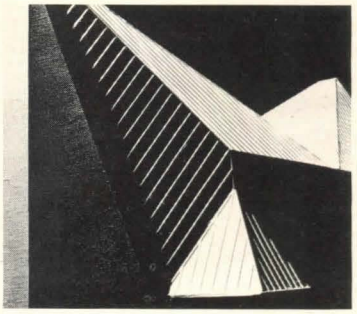
P.O. Box 668, Covington, Ky. 41012/Plant and offices, Erlanger, Ky.

1970—One Hundredth Anniversary—Founded 1870

On Readers' Service Card, Circle 212

PRODUCT REVIEW

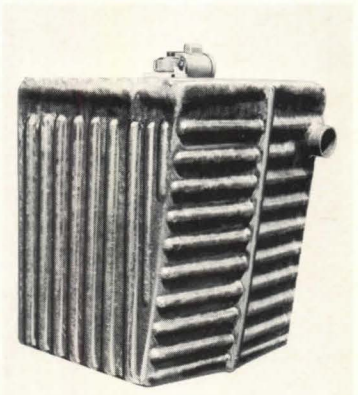




ZINC ALLOY ROOFING

A new zinc alloy sheet for roofing, fascias and flashing combines the best qualities of zinc with a new resistance to creep, grain growth, and dimensional stability (comparable to aluminum). Called Zilloy-20, it costs 40 per cent less than copper and it weathers to a metallic charcoal grey that may also be painted. According to the manufacturer, Zilloy-20 forms its own protective coating (eliminating normal maintenance) that is corrosion resistant; it can be used in direct contact with most building materials and will not stain or streak those adjacent. It is also strong, with tensile ratings up to 40,000 psi (across the grain) and it can be easily formed and soldered. New Jersey Zinc Co.

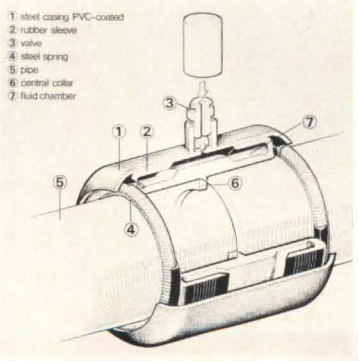
On Reader's Service Card, circle 141.



FAMILY SEWAGE PLANT

A single-family home sewage treatment plant, named Monotank, is available in fiberglass-reinforced, high-impact thermoplastic. This material reduces costs 36 per cent over steel and increases durability, says the manufacturer. The unit, which carries a lifetime warranty, features dual-turbine mechanical aeration and is self-cleaning. Monotank is used after a septic tank and replaces the tile field or reduces its drainage significantly. Suburbia Systems, Inc.

On Reader's Service Card, circle 142.



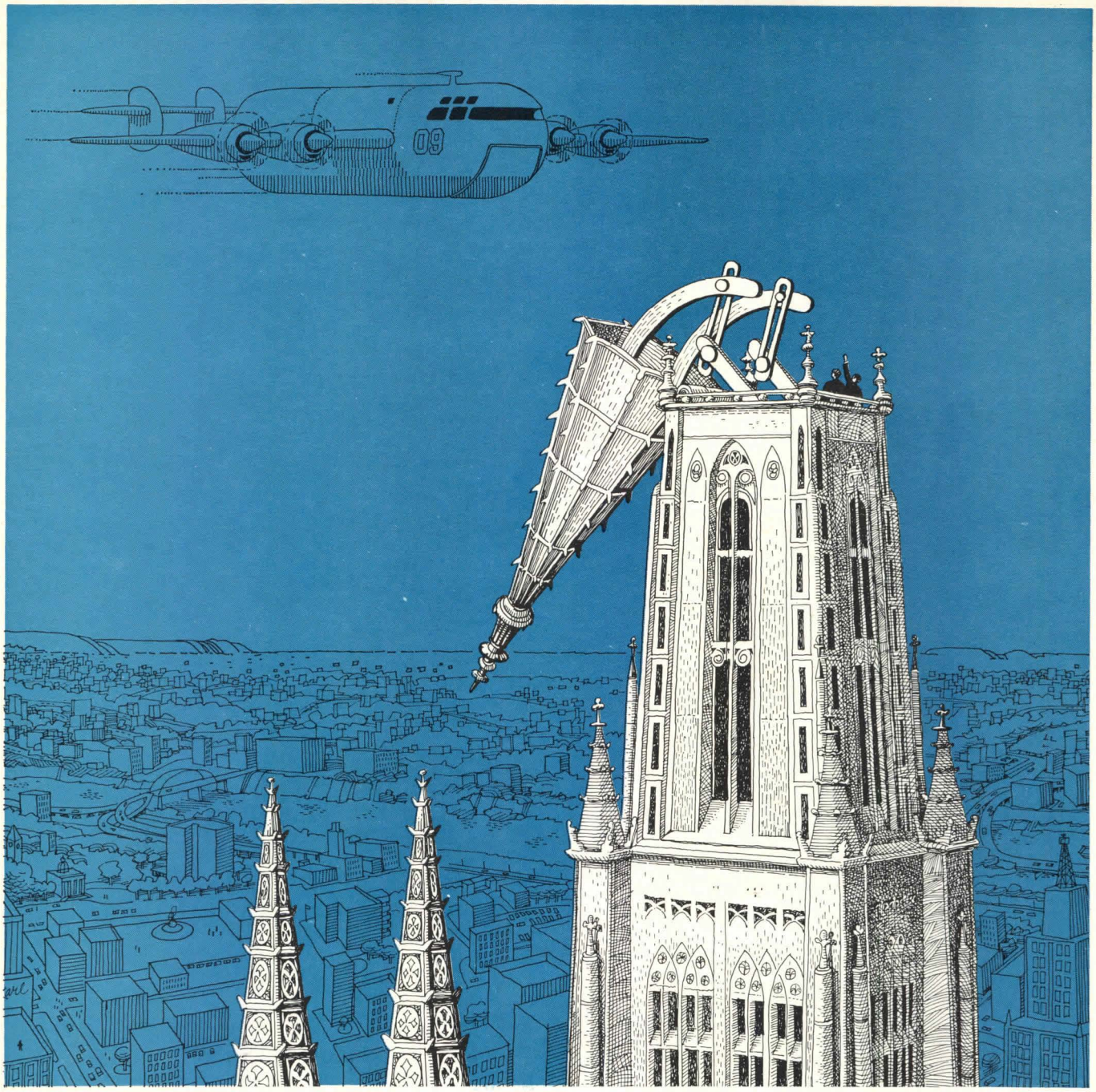
PIPE COUPLING

A new pipe coupling may reduce the costs of pipe erection. The "Straub" coupling provides a fast, leakproof connection for pipes of various materials, including iron, steel, aluminum, glass or plastic, and for every use. Hydraulically operated, the coupling contains a rubber sleeve with a collar for easy pipe insertion. Then special fluid is pumped into the joint until pressure reaches a predetermined point and the joint is sealed. Canron Limited, Montreal, Quebec.

On Reader's Service Card, circle 143.

(continued on page 70)

We're known as difficult people.



We do the difficult spire jobs.

Not many churches require top-tipping spires, but all of them have unique characteristics which indicate specialized design. At Overly, we've designed and erected 1400 spires, and all of them had their own special qualities. In 1926 we designed the first prefabricated spire in the United States for a church in Pittsburgh.

Our spire-framing systems are computer-designed to withstand windloads typical of the prevailing local conditions. We also can give assistance in the selection of materials and finishes. And, through detailed drawings, we can illustrate our design.

We've built spires that cost less than $1,000 and over $70,000, so if you're looking for an inspiring spire, get in touch with the people who do the awe-full jobs. And write for our free booklet describing the evolution of the spire.

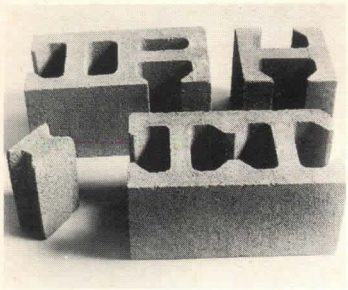
Overly Manufacturing Co., Architectural Metals Division, Department 1D, Greensburg, Pa. 15601.

Overly
MANUFACTURING COMPANY

On Readers' Service Card, Circle 216

PRODUCT REVIEW

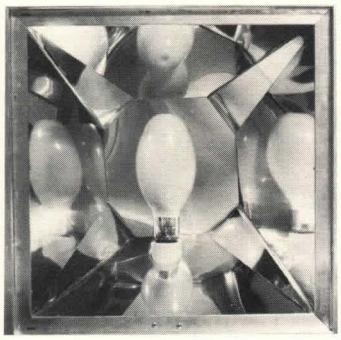
(continued from page 68)



INTERLOCKING BLOCKS

A new mortarless construction technique uses interlocking lightweight concrete blocks. Developed for low-income housing and for do-it-yourselfers, the new system can save one-third of wall construction costs, cuts time and does not require skilled laborers, says the manufacturer. There are four components: a stringer block, a half block, a combination block (for corners and interior partitions) and an insert plug for locking the blocks vertically and horizontally. Interblock Inc.

On Reader's Service Card, circle 144.



RECESSED LIGHT REFLECTOR

The Spectra V indoor reflector is an all-aluminum, dust-proof unit that operates with 400-watt mercury vapor, metal halide or high pressure sodium lamps with as much as 70 per cent efficiency. A high-efficiency and a low-brightness model both come pre-wired and require no accessories for installation in exposed T-bar suspended ceilings. Wide-Lite Corp.

On Reader's Service Card, circle 145.

FLOORING SYSTEM

A new flooring system of marble-like chips bound into 18-in. square panels is twice as strong as Venetian (marble) terrazzo, but only a fraction of its weight, according to the manufacturer. Called Venazzo, the new product does not have to be applied as thickly as marble aggregate and it offers more consistent color control for less cost. The panels are bonded to the subfloor with a resin base; joints are a continuous grout. After grouting, the floor is ground smooth with conventional terrazzo equipment. 3M Company.

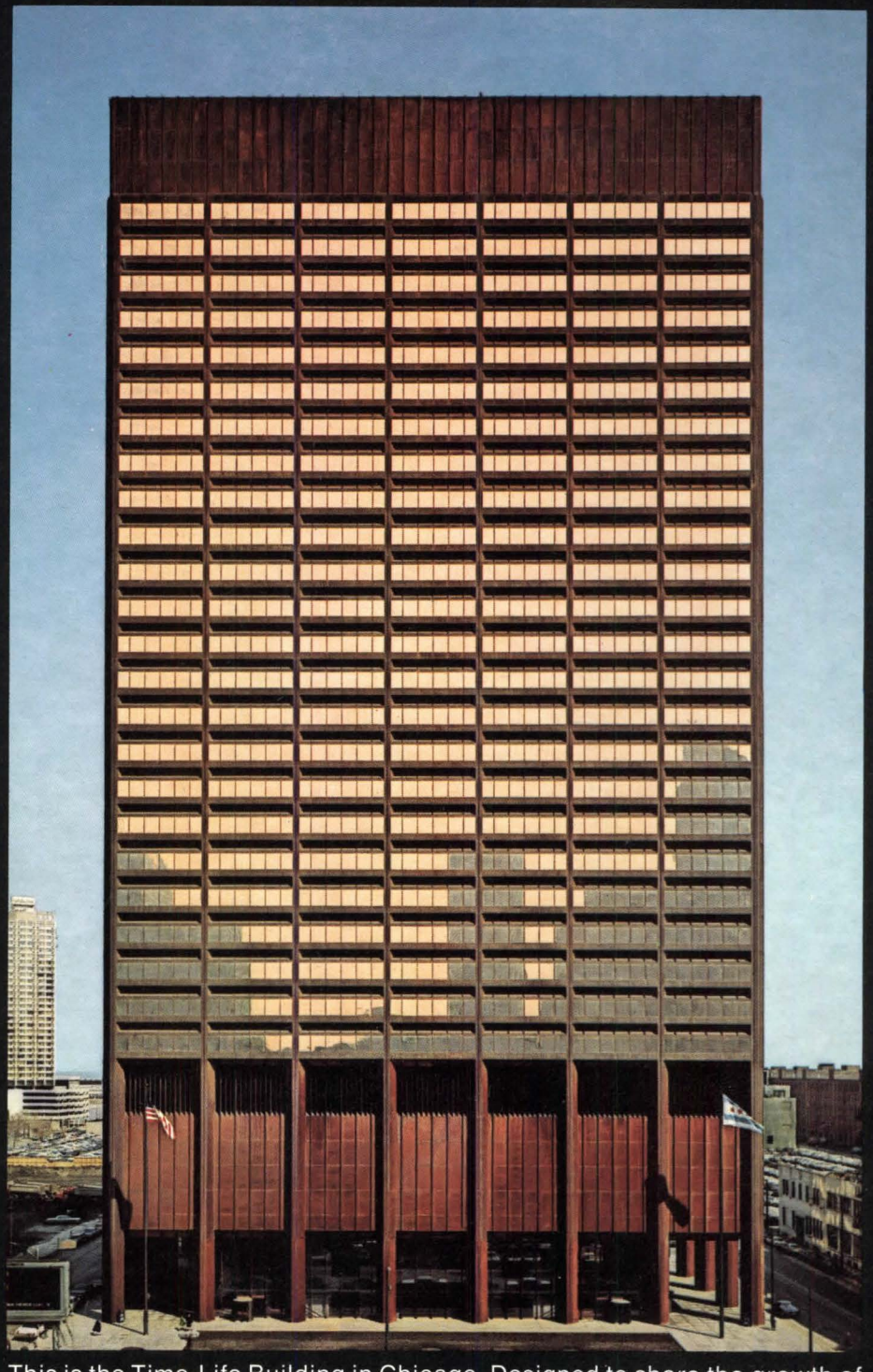
On Reader's Service Card, circle 146.

TAN-COLORED CEMENT

A new architectural cement, called Warmtone, claims to be the first tan-colored cement produced. Cement is usually white or grey, but a new manufacturing process (patent pending) makes the new tan color possible without color pigments or additives. The new product will allow architects to achieve variety of color in building designs without resorting to costly aggregates or artificial coloration, according to the manufacturer, who also predicts the image of the grey highway will end with the new earth colors that Warmtone makes possible. Already in production, it will be distributed to all 50 states. General Portland Cement Co.

On Reader's Service Card, circle 147.

Architect: Harry Weese & Associates



A reflection of it's time.

This is the Time-Life Building in Chicago. Designed to share the growth of the urban center. To be a reflection of its own time. Perhaps a classic in years to come.

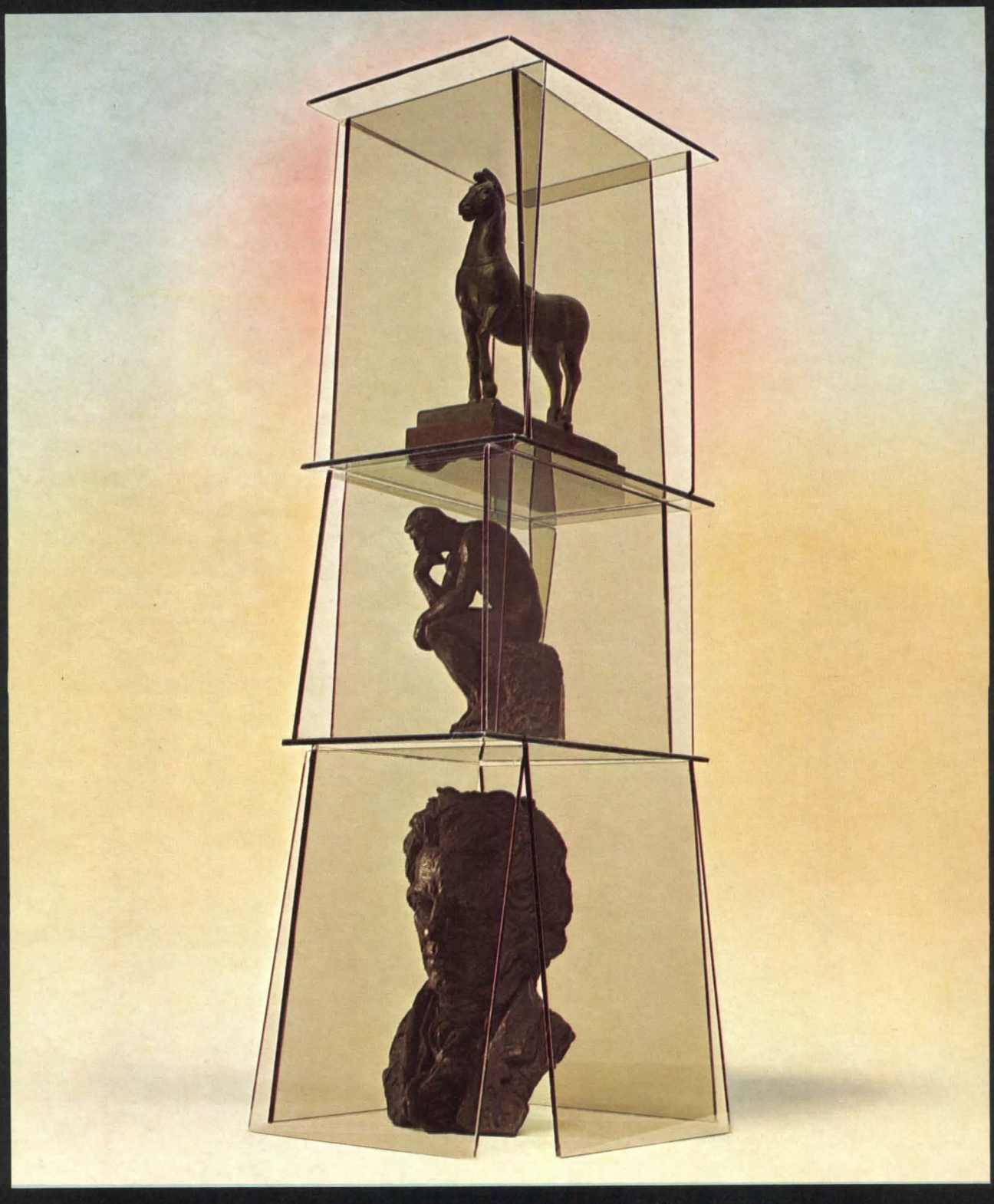
The window walls are of Kinney Architectural Glass. Our unique vacuum process lays a uniform film of pure gold on the glass assuring that each lite is the same throughout. The gold mist of the glass is aesthetically pleasing. Its superior reflective qualities bring to the structure both functional value and the excitement of shared surroundings.

Time-Life Chicago is one of the latest in a number of structures that feature Kinney Architectural Glass. Our booklet "Architectural Reflections" describes some of them. Please write for it. Kinney Vacuum Coatings, 7030 Colonial Highway, Pennsauken, New Jersey 08109.

Kinney Vacuum Coatings

A UNIT OF GENERAL SIGNAL CORPORATION

On Readers' Service Card, Circle 218



The New Bronze Age.

Glaverbel Bronze: A glass for all seasons.

Glaverbel

GLAVERBEL (USA) INC., 75 PLANDOME ROAD, MANHASSET, NEW YORK 11030
GLAVERBEL CANADA LIMITED, 1550 MAISONNEUVE BLVD. W., MONTREAL 107, P.Q.

On Readers' Service Card, Circle 219

EDITORIAL INDEX

ARCHITECTS, DESIGNERS, PLANNERS

(continued on page 77)

READERS SERVICE FILE

PRODUCT LITERATURE

To order material described, circle indicated number on self-addressed Reader Service Card, facing page 76.

DOORS/WINDOWS 601

Full color, 4-page booklet "To Tame Sunfighters" deals with methods for controlling thermal breakage from absorbed solar energy. Outlined in detail is comprehensive explanation of the problem, followed by design considerations, glazing recommendations and a discussion on custom factory fabrication. ASG Industries. On Reader's Service Card, circle 101.

Architectural glass. 8-page color catalog. Drawn sheet, enamelled, floated plate, tinted, solar, figured, Dacobel, diffusing. Properties, applications. Glaverbel (USA) Inc. On Reader's Service Card, circle 102.

Architectural reflections—full color pictorial brochure depicting history of esthetic applications of Kinney reflecting glass. Kinney Vacuum Div. On Reader's Service Card, circle 103.

4-page performance data sheet details acoustical, visual and structural characteristics of Acoustic Twindow (TR) new environmental control window unit, ideal for noise reduction applications. PPG Industries, Inc. On Reader's Service Card, circle 104.

Residential settings for Plexiglas skylights are shown in new 8-page color brochure. Single and multiple skylights can be easily incorporated into most roof systems and slanted side walls. Rohm & Haas. On Reader's Service Card, circle 105.

ELECTRICAL 602

Series of 6 color brochures showing elevators for many different building types. Cab designs, dimensions, freight elevator information are all part of the package. Dover Corporation Elevator Division. On Reader's Service Card, circle 106.

"ANTRON" 11 the no show carpet fiber fights dirt not profits. A three color brochure to guide specifiers in selection of carpet. E. I. DuPont de Nemours Co. On Reader's Service Card, circle 107.

Complete catalog file in true color reproduction is available for Latco featuring specialty and popular mosaic tile such as; Venezico, Valencia, Granada, Candysticks, many others. Latco Products. On Reader's Service Card, circle 108.

FURNISHINGS 605

New 16-page 4 color catalog featuring color mated steel lockers, single and double tier, mesh special and custom lockers. Complete dimensions, specifications, locks included. Interior Steel Equipment Co. On Reader's Service Card, circle 109.

HARDWARE 606

Fire control devices. 8-page brochure contains illustrations and diagrams of complete line of fire control equipment for doors. Norton Door Closer div. Eaton Yale & Towne, Inc. On Reader's Service Card, circle 110.

HEATING/AIR CONDITIONING 607

Selected by nationally known designers are 14 baked enamel colors now available for Modine Mfg. Co. Schemenauer heating and air-conditioning products and 5 formica top selections for unit ventilators in brochure 75-135. Contains actual color swatches. Color availability by product also listed. Modine Mfg. Co. On Reader's Service Card, circle 111.

METALS IN BUILDINGS 612

Porcelain on steel interiors. 8-page brochure illustrates many uses of porcelain on steel panels by AllianceWall for interior design in new construction, expansion and remodeling. Examples include food processing plants, manufacturing facilities, schools, hospitals, offices and industrial washrooms. AllianceWall Corp. On Reader's Service Card, circle 112.

New 8-page 4 color catalog showing illustrations of installations, color chart and numerous detail drawings, with specifications data on company's factory prefabricated all metal products including gravel stop fascia panels, mansard batten panels, reglets, cap flashings and thru-wall flashings. Cheney Flashing Co. On Reader's Service Card, circle 113.

Stainless steel Fact sheet. Gives basic information needed to put stainless steel to work effectively and economically. Includes data on characteristics of the metal, forms available, alloys and finishes. File #15-H-1. International Nickel Co. On Reader's Service Card, circle 114.

16-page booklet highlights various architectural metal products, including doors, windows, curtain walls and custom metal work for architecture. The Michael Arts Bronze Co. On Reader's Service Card, circle 115.

Catalog 170-OV covers typical installations, specs, test performance data, ASTM acoustical testing and rating procedure. Door, frame and acoustical seal details. On Reader's Service Card, circle 116.

Spec-Data sheets. Silbrica Corporation introduces a complete extruded aluminum fascia system for use with galvanized water dams. Specifications, illustrations of exclusive features available, finishes and installation data are included. Silbrico Corp. on Reader's Service Card, circle 117.

Information and literature, 16-page color brochure, USS Cor-Ten Steel, the original weathering steel. United States steel. On Reader's Service Card, circle 118.

OPERABLE WALLS 613

The new 1971 Interior Products Catalog from CONWED. 64-page color catalog utilizes a color-key for quick reader reference to product sections-acoustical, ventilating, suspension, lighting and partition products. Specifications, detail drawings and installation instructions. CONWED Corp. On Reader's Service Card, circle 119.

PLUMBING 615

12-page color catalog shows complete line of laundry machines. American Laundry Machinery Inds., Div. McGraw-Edison. On Reader's Service Card, circle 120.

Cordley Products offers specification sheets, Form C-193 describing a new water cooler design. Unit appears recessed but mounts directly to the wall for ease in installation and maintenance. Cordley Products, Div. Eaton Yale & Towne, Inc. On Reader's Service Card, circle 121.

1970 24-page catalog illustrates drinking fountains, plumbing fixtures and trim. Includes drawings, special application data. The Halsey W. Taylor Co. On Reader's Service Card, circle 122.

STRUCTURAL 617

8-page booklet on KALWALL'S Complete Translucent Wall system. Photographs of actual installations—Technical sketches showing the basic component structure of the KALWALL Translucent Wall System and design specs. KALWALL Corp. On Reader's Service Card, circle 123.

24-page color brochure "Engineering in Wood." Shows illustrations of glued laminated timber arches, beams, domes, trusses 7 decking. Bending and deflection tables and other valuable information included. Timber Structures, Inc. On Reader's Service Card, circle 124.

Completely revised to apply size and grade changes under the new National Lumber Standard, the Western Woods Technical Library is available without charge. The seven "end-use" catalogs covering 11 softwood species may be obtained from Western Wood Products Ass'n. Dept. A-LP. On Reader's Service Card, circle 125.

WALL/LAMINATES 618

New laminated material "CANE" explained in brochure. Also shows specs and includes sample swatch. Enjay Fibers & Laminates Co. On Reader's Service Card, circle 126.

12-page Tech Data File. Illustrating full line of structural clay masonry units. Including the new large 8 square and 12 square Panelbrik sizes. Glen-Gery Corp. On Reader's Service Card, circle 127.

Spec information on all panels. Includes Marlite plank and block, Korelock and fire-test panels. Marlite Div. Masonite Corp. On Reader's Service Card, circle 128.

20-page 4 color brochure, stressing all the quality details for design versatility for toilet and shower partitions. Complete specs and colors, accessories and hardware shown. Sanymetal. On Reader's Service Card, circle 129.

Metal Wall panels, including new Foamwall. 20-page catalog includes complete specs with color photos of walls in place. Elwin G. Smith & Co. On Reader's Service Card, circle 130.

PROFESSIONAL SERVICES 619

16-page catalog of vertical lift dumbwaiter equipment. Complete and easy specifications are included on all models. Features complete details on car capacities, speeds, car sizes, horsepower duty tables, hoistway doors and clearances, controls, signal devices and systems. D. A. Matot. On Reader's Service Card, circle 131.

Praeger Architectural Catalog, 22-page illustrated. Describes new books, international architecture, architectural history, urban planning and profiles of architects. Free from Praeger Publishers. On Reader's Service Card, circle 132.

READERS SERVICE FILE

ADVERTISERS INDEX

ADVERTISERS INFORMATION SERVICE

To order all the material listed under any of the categories below, circle the category number of the Reader Service Card on the opposite page. To order material from a single advertiser, circle the advertiser's number only.

ADVERTISING SALES STAFF

WILLIAM B. REMINGTON, Advertising Manager
SAL TUMOLO, Production Manager
BEN A. LEASCHER, Business Manager

EASTERN TERRITORY
PHILIP E. PETITT, Eastern Manager
130 East 59th Street
New York, N.Y. 10022
212-751-2626

MIDWESTERN TERRITORY
WM. K. MURRAY, Western Manager
JOHN MURRAY
410 N. Michigan Avenue
Chicago, Illinois 60611
312-644-6763

CHARLES S. GLASS
32 West Orange Street
Chagrin Falls, Ohio 44022
216-247-4485

WEST COAST TERRITORY
Cole, Sweeney & Anthony
1830 West 8th Street
Los Angeles, Calif. 90057
213-388-0521

Cole, Sweeney & Anthony
582 Market Street
San Francisco, Calif. 94104
415-986-6342

SOUTHERN TERRITORY
The Dawson Co.
3009 Lookout Place, N.E.
Box 11957
Atlanta, Georgia 30305
404-261-6002

The Dawson Co.
5995 S.W. 71st St.
Miami, Fla. 33143
305-666-4684

EDITORIAL INDEX

JANUARY/FEBRUARY THROUGH DECEMBER, 1970 VOLUMES 132 AND 133

BOOKS

BUSINESS AND PROFESSIONAL PRACTICE

COMMERCIAL

CULTURAL

DESIGN THEORY

ECOLOGY

EDUCATION

GALLERIES

GOVERNMENT BUILDINGS

HOTELS and MOTELS

HOUSES

HOUSING

INDUSTRIAL

LIBRARIES

MEDICAL

OFFICES

PLANNING

PROFILES

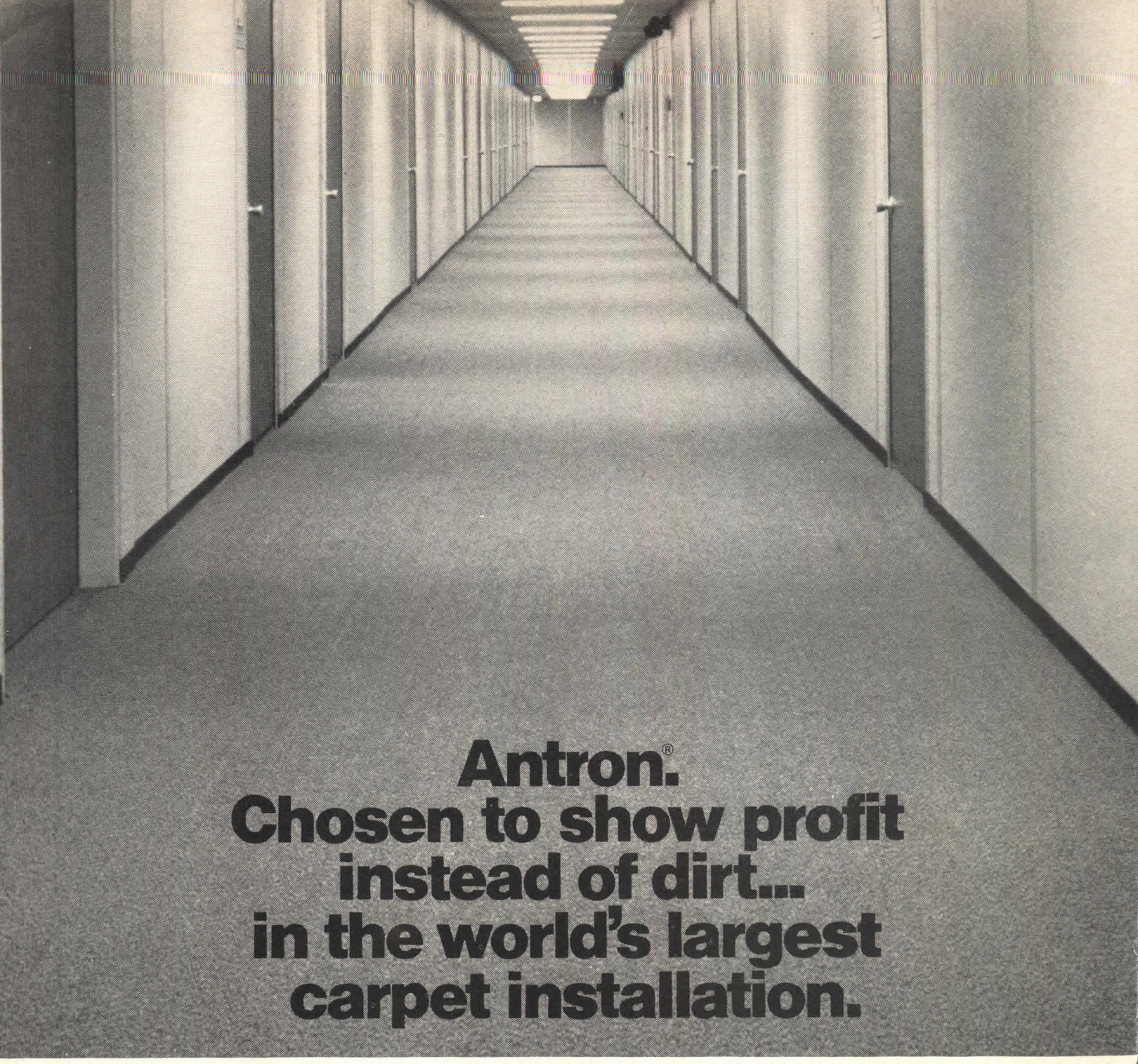
RECREATION

RELIGIOUS

RESEARCH LABS

TECHNOLOGY

TRANSPORTATION



Antron®. Chosen to show profit instead of dirt... in the world's largest carpet installation.

The Nassif Building—housing 6500 employees of the Department of Transportation—contains 128,000 square yards of carpet. All with pile of 100% Antron* nylon.

The operating partners of David Nassif Associates explained why they specified "Antron". "Cleaning is the whole game. Carpeting is less costly to maintain than tile.

"We knew there would be no durability problem with nylon, so we were primarily concerned with economically maintaining the appearance level of the carpet. A maintenance saving would enhance our return on investment, so 'Antron' was chosen for its soil-hiding ability.

"We are confident that we made the right decision."

David Nassif Associates believe "Antron" was the right choice for them. It probably is right for the job you're working on now. There is a broad variety of carpet styles in "Antron" now available. Let us know what you're planning. We'll put you in contact with carpet mills that can solve your problems with a carpet of "Antron"

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

Better things for better living
...through chemistry

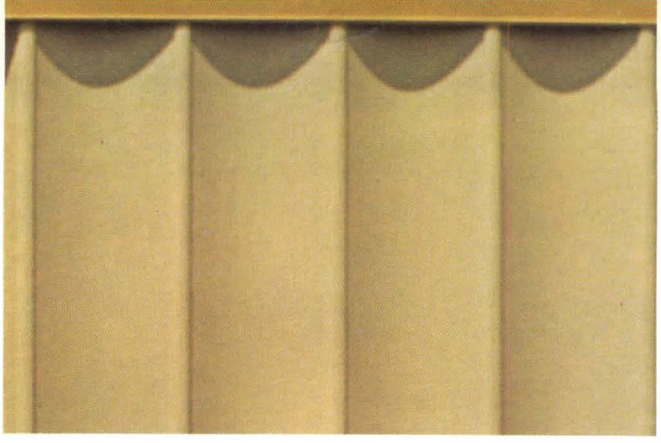
*Du Pont registered trademark. Du Pont makes fibers, not carpets.

Building: The Nassif Building, Washington, D. C.
Owner: David Nassif Associates
Tenant: The Department of Transportation
Architect: Edward Durell Stone
Carpet: Pile of 100% Antron® nylon
Engineering Consulting Firm:
Universal Engineering Corp., Boston, Mass.
Maintenance: Dynaclean Maintenance Company

E. I. du Pont de Nemours & Co. (Inc.)
Eden Park/Carpet Fibers, Box 15638-AF
Wilmington, Delaware 19898

Please send contract brochures describing Antron®.

Name_____
Firm_____
Address_____
City_____
State_____ Zip_____



SMITH CURVEWALL...a bold new profile

Dramatize your new building in an unusual way! Design it around Smith CURVEWALL. The scope of possibilities is limitless.

CURVEWALL insulated metal panels afford a new dimension in building design. The deep flutes of the individual panels, 18 or 24" wide, give a bold, vertical columnar look to your walls. Smith CURVEWALL panels are available in aluminum, galvanized steel or aluminized steel. They can be color-coated with one of Smith's durable finishes and coatings in a wide selection of architecturally-pleasing colors. And CURVEWALL is compatible with other building components of masonry or glass, or even with other metal panel profiles.

For full details and specifications on new Smith CURVEWALL panels, consult your Sweet's Architectural File. Or write direct.

Bermingham & Prosser Co., Hillside, Illinois

Designers: The Mead Corporation, Corporate Engineering Department, Chillicothe, Ohio

General Contractor: Miller-Davis Company, Melrose Park, Illinois

ELWIN G. SMITH & COMPANY, INC. Pittsburgh, Pa. 15201

Sales Offices in Principal Cities

SMITH

On Readers' Service Card, Circle 221

Frostwood Marlite answers the growing demand for light-tone woodgrains.

New Linen Stripe Marlite stays like new for years, thanks to a baked plastic finish.

This new Marlite decorator pattern is Yorktile, a fresh addition to any interior.

Marlite Tapestry has the rich texture of fine fabric, but won't tear or peel.

7015

Marlite gives you 80 ways to be more creative with walls.

Next time you need a really fresh and different wall idea, take a look at Marlite.

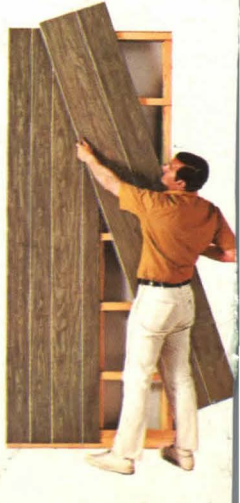
This beautiful line of soilproof paneling includes more than 80 different textures, colors and designs. And now Marlite is completely *color-coordinated*—so you can pick a solid color to blend perfectly with any pattern or design.

Marlite also offers Fire-Test Panels, a special line with low flame-spread ratings to meet building-code requirements.

So when you need walls that save on installation and stay like new for years, remember Marlite. One name for 80 ways to be creative. See your building materials dealer or write Marlite Division of Masonite Corporation, Dept. 1207, Dover, Ohio 44622.

MASONITE CORPORATION **Marlite®** plastic-finished paneling

Marlite is a registered trademark of Masonite Corporation



On Readers' Service Card, Circle 222