Progressive Architecture

April 1971, A Reinhold Publication

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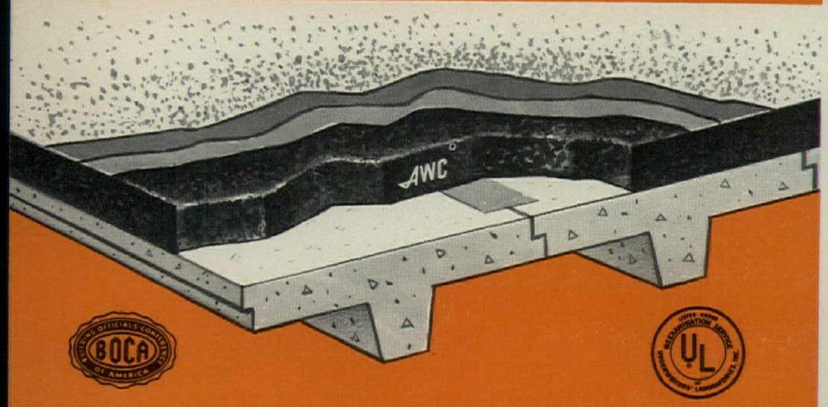

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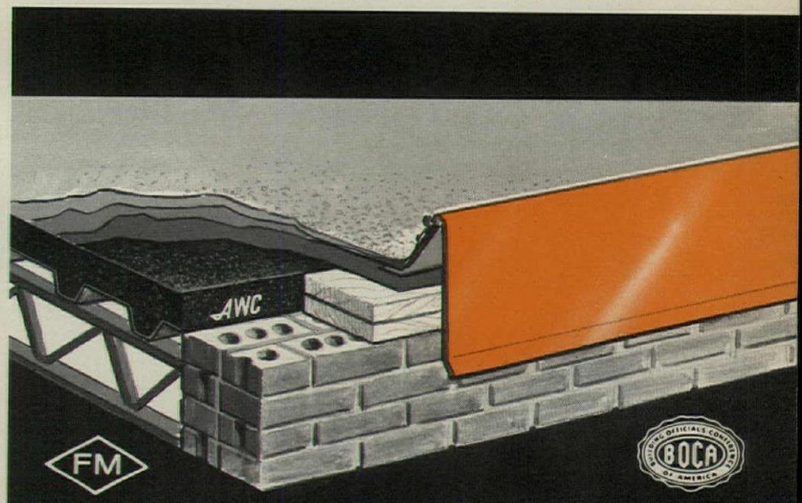
All-weather Crete seamless insulation (K factor .40) is applied over pre-tensioned concrete units. U/L Design No. RC19. It can be sloped to drains, eliminates camber and uneven joints. This provides a smooth even surface for immediate conventional built-up roofing.



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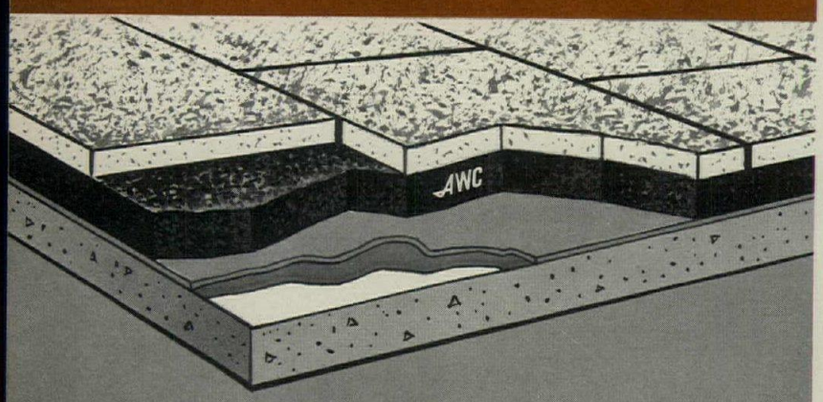
This tested roof deck insulation system meets Factory Mutual requirements for fire hazard and wind resistance. With special Silbrico adhesive, it is an approved U/L deck (No. 360 R13.15) The Silbrico Fascia System shown above also meets Factory Mutual roof perimeter flashing requirements of Data Sheet 1-49 to resist wind uplift of 60/Lin. Ft. of wall. The perfect combination for maximum protection.



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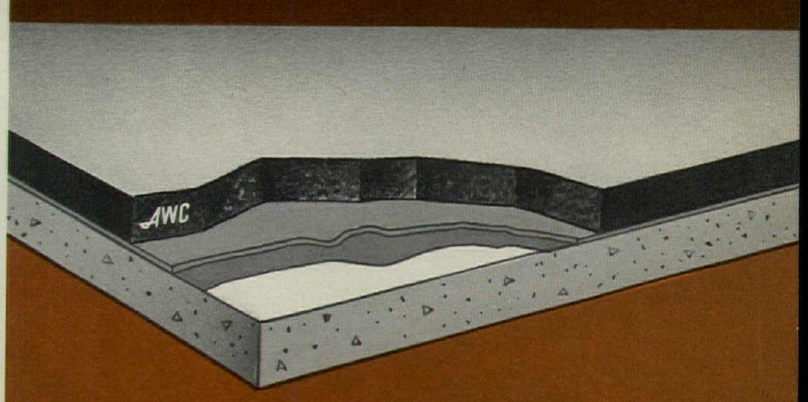
There are eight widely used All-weather Crete plaza systems. Not only does AWC provide the most effective available insulation, but it protects the water proofing membrane keeping it ductile and active for the life of the system.



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April 1971

Progressive Architecture

66 **In search of a place**
For Canal Square, architect Arthur Cotton Moore combined a refurbished warehouse and new construction to make a place to work, shop and just be.

74 **Concrete complex within a complex**
A four-building medical-dental campus for the University of Louisville focuses on a landscaped plaza. Smith, Hinchman & Grylls, architects.

78 **The student underground**
Placing student service buildings underground solved similar space problems at the University of Northern Iowa and Cornell University.

86 **Materials and methods: composite truss spans hockey rink**
An asymmetrical wood, cable and steel pipe truss gives shape to Wesleyan University's "ice house." Warner Burns Toan & Lunde, architects.

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Schemes and drawings from a cycle of considerations called "The research of continuity" by Yale professor Wojciech G. Lesnikowski.

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Keeping patients in touch with life outside is the theme of a proposal for a psychiatric hospital in Sardinia by three Turin architects.

98 **Interior design: A spin-off works both ways**
Evnironments Incorporated, a young interior design firm and The Ballinger Company, with two different images and practices, both gain from spin-off.

102 **Arup Associates and the group practice experiment**
Emphasis on engineering is natural for an architectural firm spun off from a world famous British consulting engineering firm. Profile by Michael O'Hare.

Cover
Canal Square, Georgetown, Washington, D.C. photographed by Norman McGrath.

Space-age appearance and efficiency of Kansas City International airport is made possible by extensive use of Grade 60 Steel. Total tonnage of high strength reinforcing steel is 5350 tons.

the beautiful world of reinforced concrete is taking wings

Kansas City's new International Airport brings a new dimension to air travel. Through bold innovation in airport design, a passenger can now drive to his gate, park and walk as little as 175 ft. to his jet ramp. In this short walk he checks baggage and tickets for anywhere in the world. And "gate arrival" is just one of many convenience features. Quite a change from the 1,000 ft. average hike of most metropolitan airports!

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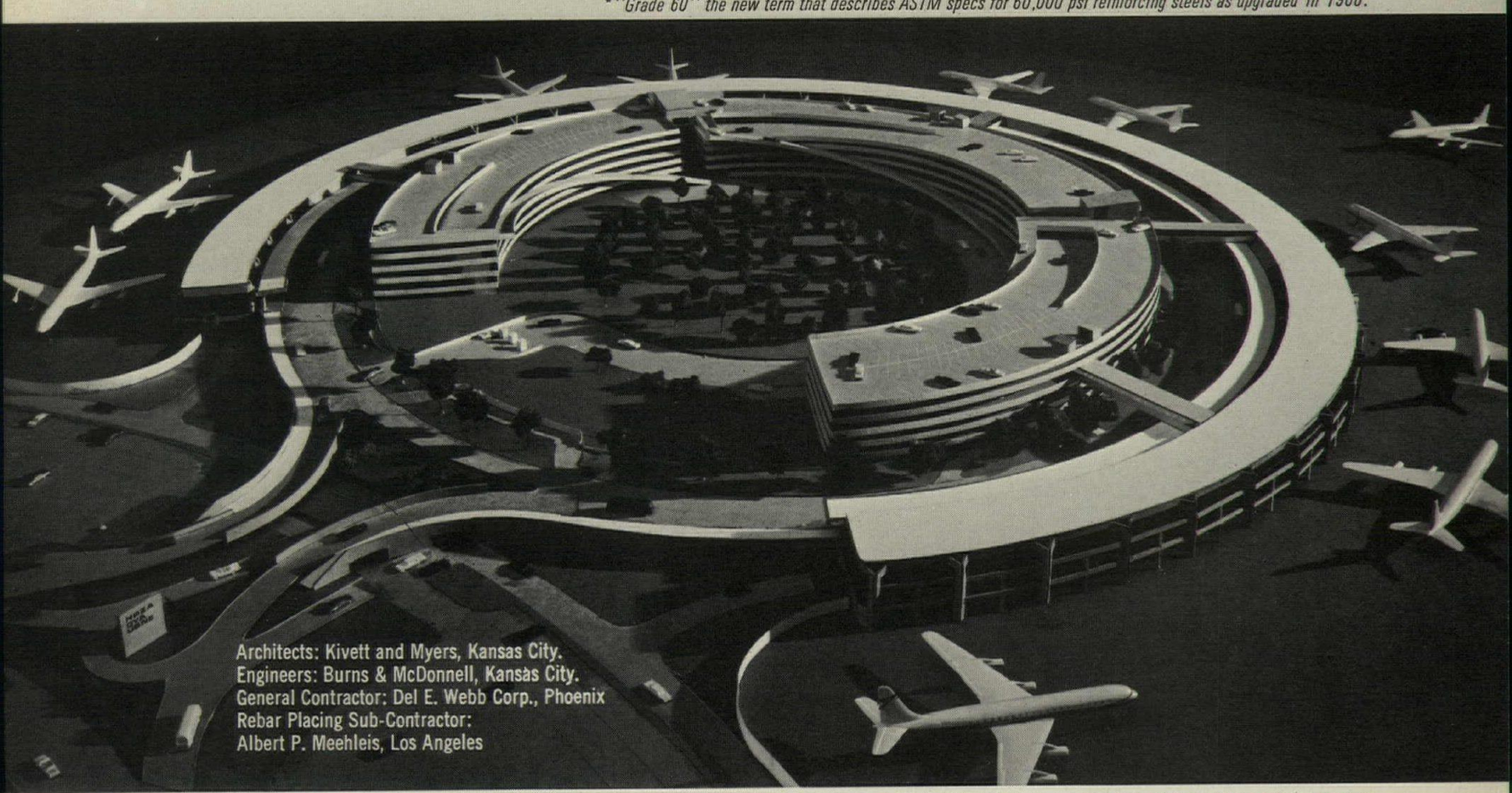

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1-70

Views

New look

Dear Editor: Just a note to congratulate you on P/A's new look. It made for refreshingly brisk, clear and interesting reading.

I am sure it will add to your success.
David S. Wachsman
New York, N.Y.

Dear Editor: Congratulations on your February issue, partly for the vastly improved format but mainly for the excellent articles by your new staff members, Jim Murphy and Dave Morton.
Robert H. Mutrux, AIA
Bridgeport, Conn.

Congrats

Dear Editor: I have just reviewed the February issue of *Progressive Architecture* and think you are all to be congratulated for the excellent section on "schools."
Ben E. Graves
New York, N.Y.

That's my boy

Dear Editor: While leafing through the February issue of *Progressive Architecture,* I noted with considerable interest a photograph located in the lower left hand corner of page 103. The picture indicates a portion of a classroom in the Singer Learning Center, Cherry Hill, New Jersey.

Although the masonry, glass, carpeting and appointments in vivid and appealing colors, accented by carefully placed lighting, presented a most comfortable environment for the young children, I must confess that I was more impressed by the fact that the young lad standing near the work counter is my son David.

A surge of parental pride was soon followed by a realization that he had accomplished in his three short years of existence what I hadn't done in twenty years of architectural experience. He was featured in *Progressive Architecture.* I might have discarded this line of thought except for the fact that I still must struggle for new replies to the clever barbs that my friends and associates have managed to develop.

In this age of "generation gap," you should seriously consider action to bolster the ego of this struggling, aged (44) architect, who is past the magic age of 30.
Joseph A. Di Palma
Cherry Hill, N.J.

[*As a brother member of the generation gap (age 52), with three small sons (the oldest 7), I share your feelings. Ed.*]

Awards: pro and con

Dear Editor: My hat's off to George S. Hoover and Muchow Associates for perpetrating a hoax upon P/A's 18th annual design awards jury (Jan, 1971, p. 60).

The five-story residence, attenuated to maximize its encroachment upon the landscape was offered, as in Ed Barnes' words, as "anonymous . . . camouflaged in some way so that we don't mess up nature." Didn't one of the jurors take the time to realize that the ground area covered by the house is 100' x 200'? Even though 40 percent or so is given over to grass, this is quite a spread for factory finished roofing and mesh metal grating. And, if the garage indicates the angle of approach, all of this is visible.

'Twas a neat trick to construct the model including the surrounding landscape from the same material so as to hide the large swath of trees or other natural landscape which had to be removed. Some other faults, offered as positive benefits, include a stair spine of five stories, which, even though open to the sky by a continuous clearstory, appears to me to be a 200-ft long narrow uninteresting stairwell, which splits the house in two.

I also wonder about the interior evironment created by the exposed ceiling bar joist and the feeling of the exterior metal grating floor decks. Also, the chair lift, even in ski country, to me is an admission of a basic weakness of the design, as mechanical transportation for an eight- or so-room house is a bit much.

Maybe the jury had more material and information available than what was published, but to me the house seemed quite contrived and not at all sympathetic to its surroundings.
Joseph Kleiman, AIA
New York, N.Y.

Dear Editor: While a refusal to choose a house for the top design award may not do anything "to help the cities," the selection of a house *does* do much to indicate where the minds of most architects are still centered—on the individual structure that enhances the overblown lifestyle of an indulgent and insulated America. We discuss angles, and views, and gaps, awarding the best, while most of the world's population is living in shacks and half starving. To some of these unfortunate nations we send our armies to bomb and defoliate what little they do have. While the bombs fall on some hut we give a trophy for a rich American's mansion. (Nonarchitecture or not, it is still a mansion.) Somewhere, somehow, we are all doing something wrong.
Daniel R. Jones
Harvard University, GSD

Dear Editor: I would like to suggest that it might be a milestone should you establish an alternate jury for next year. Same entries but two juries.

For those not of the "establishment," may I suggest: Aaron Greene, FAIA, San Francisco; John Lautner, FAIA, Los Angeles; Alden Dow, FAIA, Midland, Michigan; Marshall Erdman, Madison, Wisconsin (I can't suggest Edgar Tafel of NYC?); Wilbert Hasbrouck, AIA, Chicago. Wow! What a change! What an opportunity for some real excitement—two juries, same entries!

Problem: Maybe you might lose some who might have entered—perhaps you would gain others. Anyway, viewing the last jury, many of us avoided the usual rejection slips.
Edgar Tafel
New York, N.Y.

Dear Editor: I do feel it necessary to comment on the Citation Award to a modular housing system in your January issue (p. 86). I am familiar with the Wells/Koetter system and it has serious deficiencies in marketability, cost and adaptability to mass production. In design, it has the typical flavor of the architectural student modular study . . . it looks like boxes piled on boxes. It is very doubtful that General Shelter will proceed to put this design into production.

The other multifamily award, to a 300-unit garden apartment project in Santa Ana, California (p. 68), in my opinion, is a horror. With around a reasonable ten-unit per acre density, they have managed to produce a ground coverage that appears to be over 50 percent. The high walls and
[continued on page 8]

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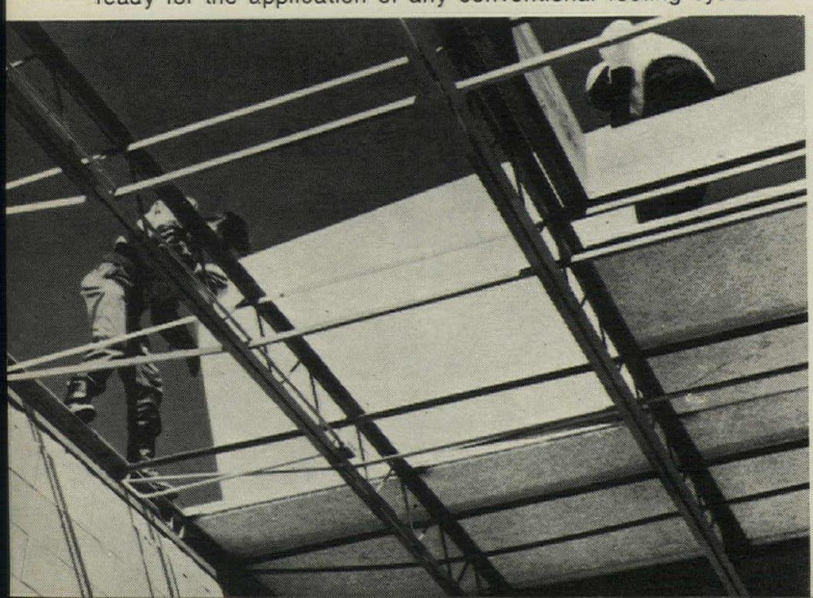

TECTUM II with factory-applied urethane foam is roof deck, acoustical ceiling, vapor barrier and more; all in one beautiful, strong, lightweight, fully insulating material.

Views continued from page 6

alley effect of the circulation pattern system should help to create the livability of the Casbah. The various small outside courtyards should have all the appeal of an exercise yard at a jail.

On the plus side, I did find the first award winner at Sun Valley (p. 61) to be an exciting and original approach to an individual creation which, of course, does not relate to mass housing in any way.
Joseph C. Grasso
Modular Housing Systems, Inc.
Northumberland, Pa.

Dear Editor: As always, your awards issue (Jan. 1971) was most provocative; sometimes pleasing; occasionally infuriating.

While overall I felt this jury's choices were at the same time more pragmatic and idealistic than others have been in the recent past, I found some of the remarks about religious buildings somewhat disconcerting. When Mr. Barnes says (p. 70), "On the one hand you have the church that is kind of a community center, which isn't doing a religious building, it's doing a community center," isn't he being just a shade judgmental in an area outside his immediate concern?

There are many communities where a church is in fact the community center simply because there is no other and the people desire no other; or where the congregation and the society it serves has acquired many aspects of a community and chooses to organize its community life around the local church.

After all, one of the functions of a church is to minister to people; if one of the ministries chosen by a church (hopefully led by the Holy Spirit) can be carried out in this type of structure, who are we to question it, unless we are functioning members of that congregation?

As one who owes a great deal of his past livelihood to designing religious buildings I will readily admit that much of what has been built under the classification seems misguided and poorly carried out. Many churches are beginning to realize how wasteful they have been in constructing large, elaborate and sometimes quite expensive facilities which are used only an hour or so one or two days a week.
If "Churches don't know what they want from a building," quoting Mr. Kouwenhoven, it is because they are going through this kind of self-study and trying to decide what really is, in terms of building, the best stewardship of the Lord's money; and on a broader scale, what they are to be about in this world.
Frank Orr
Nashville, Tenn.

Dear Editor: The open-mindedness of this year's jury is staggering. I'm reminded of a remark Dean Hunt made at *Progressive Architecture's* 1959 or 1960 Awards functions: "As Adam and Eve were leaving the Garden of Eden, Adam said to Eve, 'I think we're going through a period of transition'."
Ronald W. Haase AIA
New York, N.Y.

Dear Editor: Thank you very much for the most enjoyable party at the Brown Palace Friday evening. I enjoyed the Awards Program and am honored that our firm received recognition from you.
W.C. Muchow
Denver, Colo.

Appreciation

Dear Editor: I would like to express my appreciation for your very fine coverage of the Jacksonville Children's Museum in your November 1970 issue. Your recognition of this project has been most gratifying not only to my office from the architectural standpoint, but also to the many citizens of Jacksonville whose undivided efforts made this new institution possible.
William Morgan, AIA
Jacksonville, Fla.

Correction

Dear Editor: I note with surprise that your fine publication has made a rather glaring error in the "News Report" section concerning this city. The item headlined "Anchorage Gets New City Hall By Barge" (P/A, Jan. 1971, p. 36) is quite misleading. The new modular structure is not to become a "City Hall" and, in fact, has not been located within the present corporate limits of the city.

The structure will become the Headquarters for the Greater Anchorage Area Borough. Boroughs represent to Alaska what counties might to you. We wanted to correct this inaccuracy in an otherwise very fine publication.
Stan Stoneking
Anchorage, Alaska

[*That's the trouble with being part of the Boswash megalopolis—you reach a point where you think everyone lives in cities. What is a county, anyway? Ed.*]

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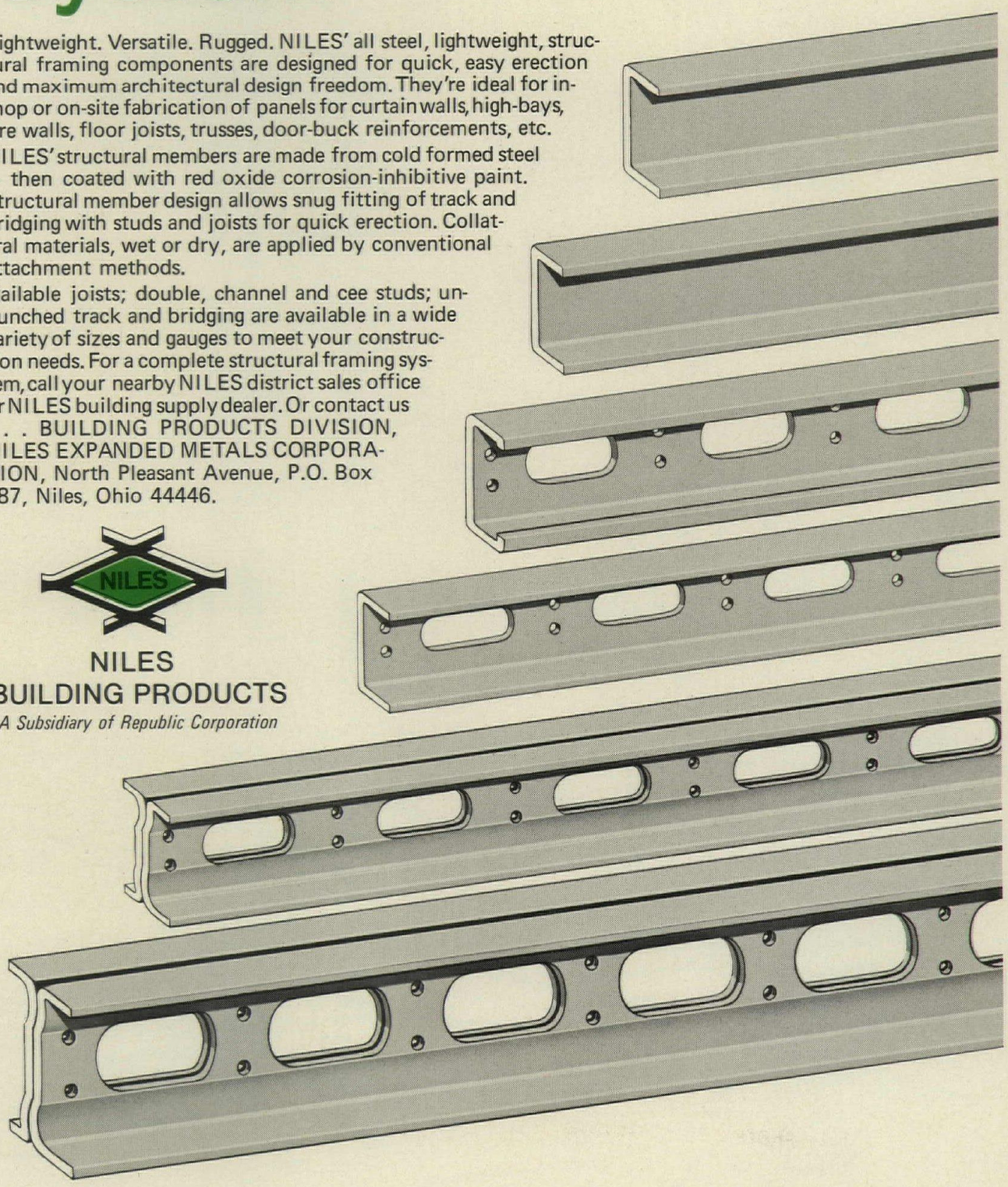

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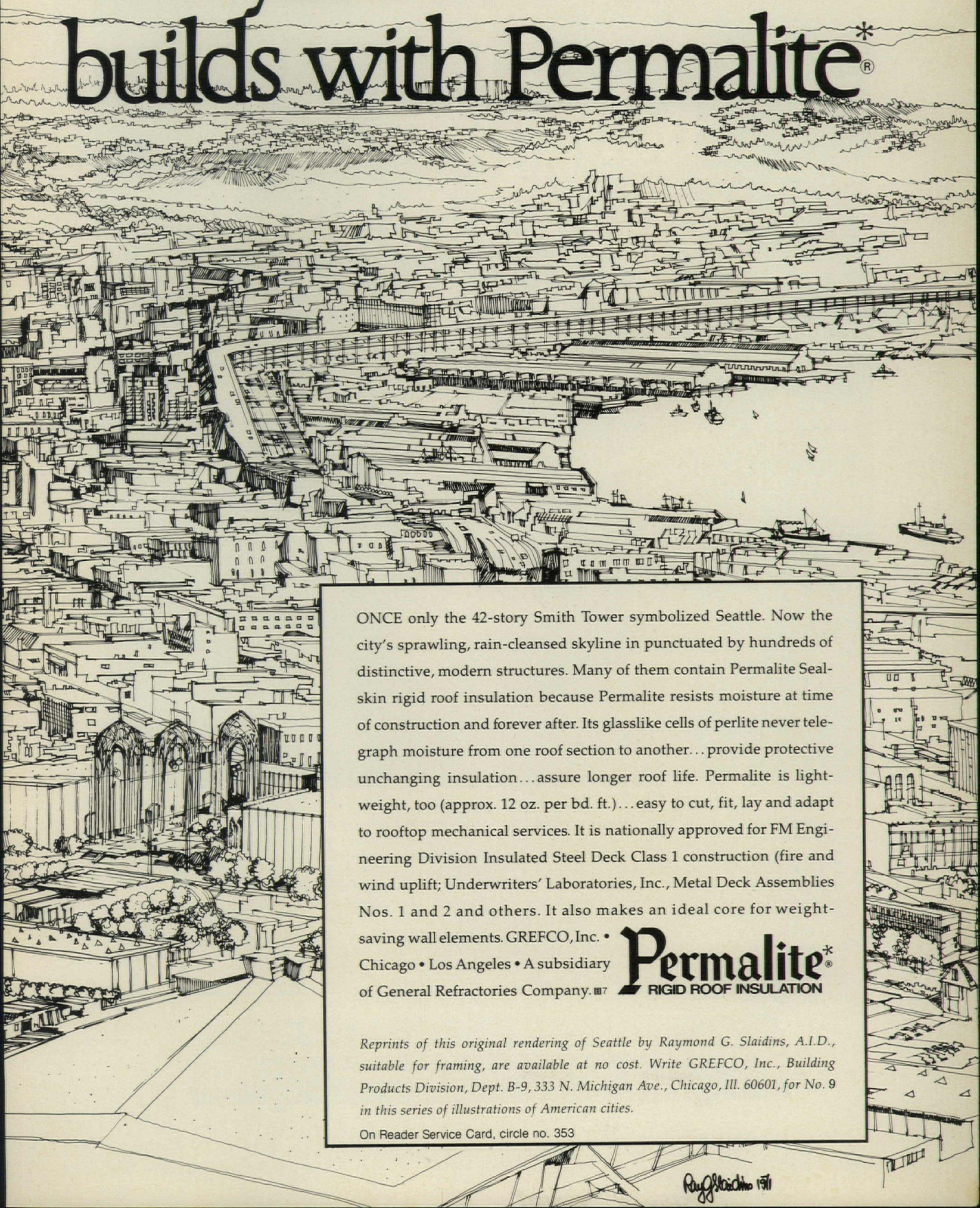

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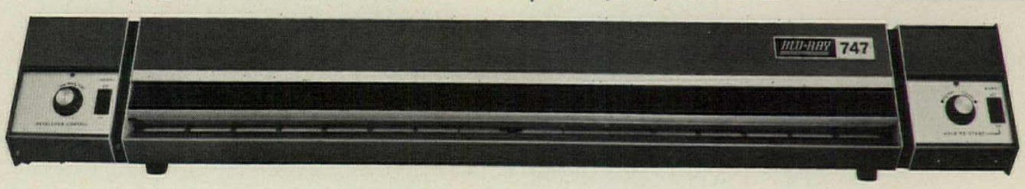

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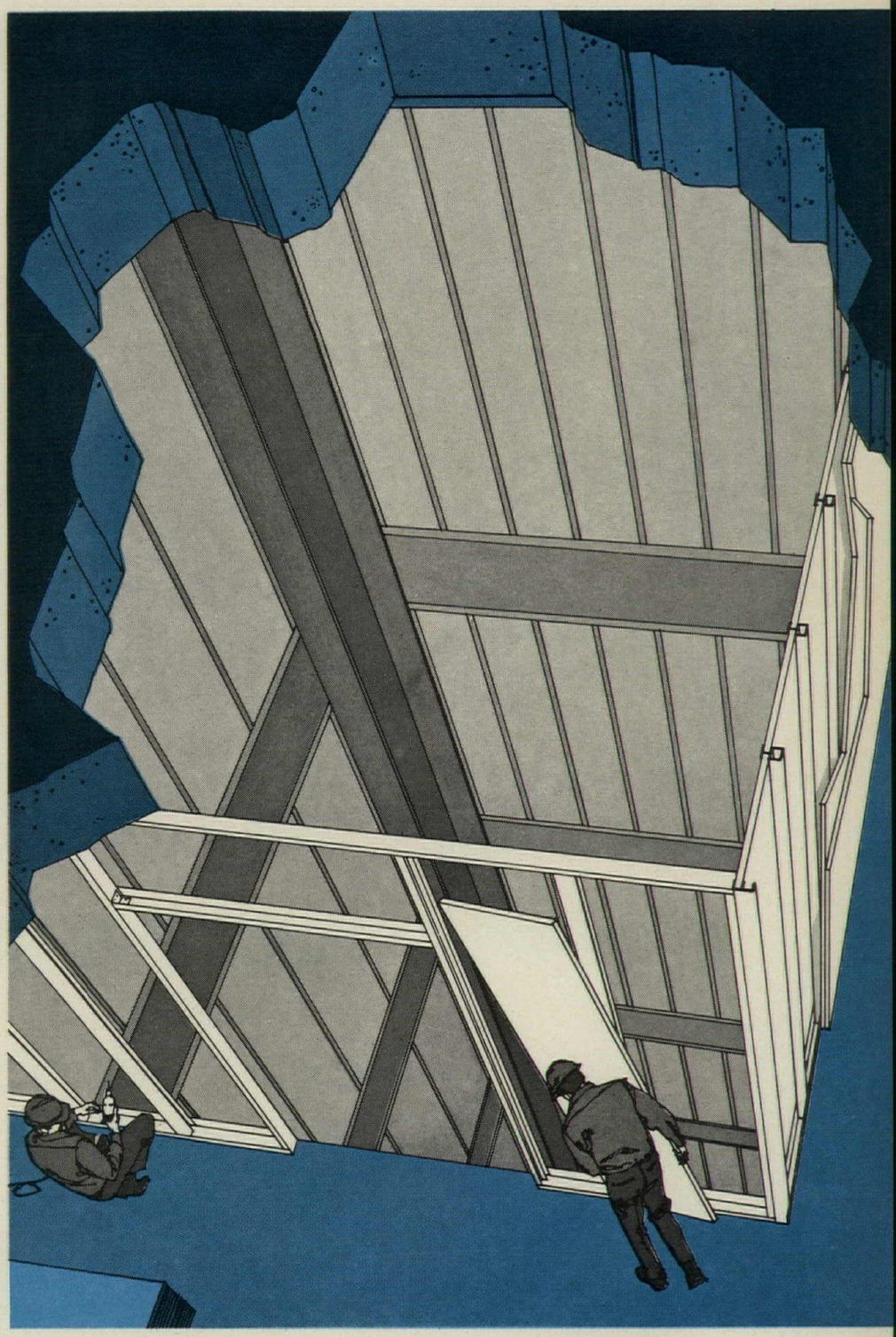

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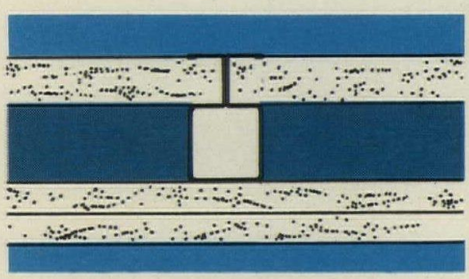

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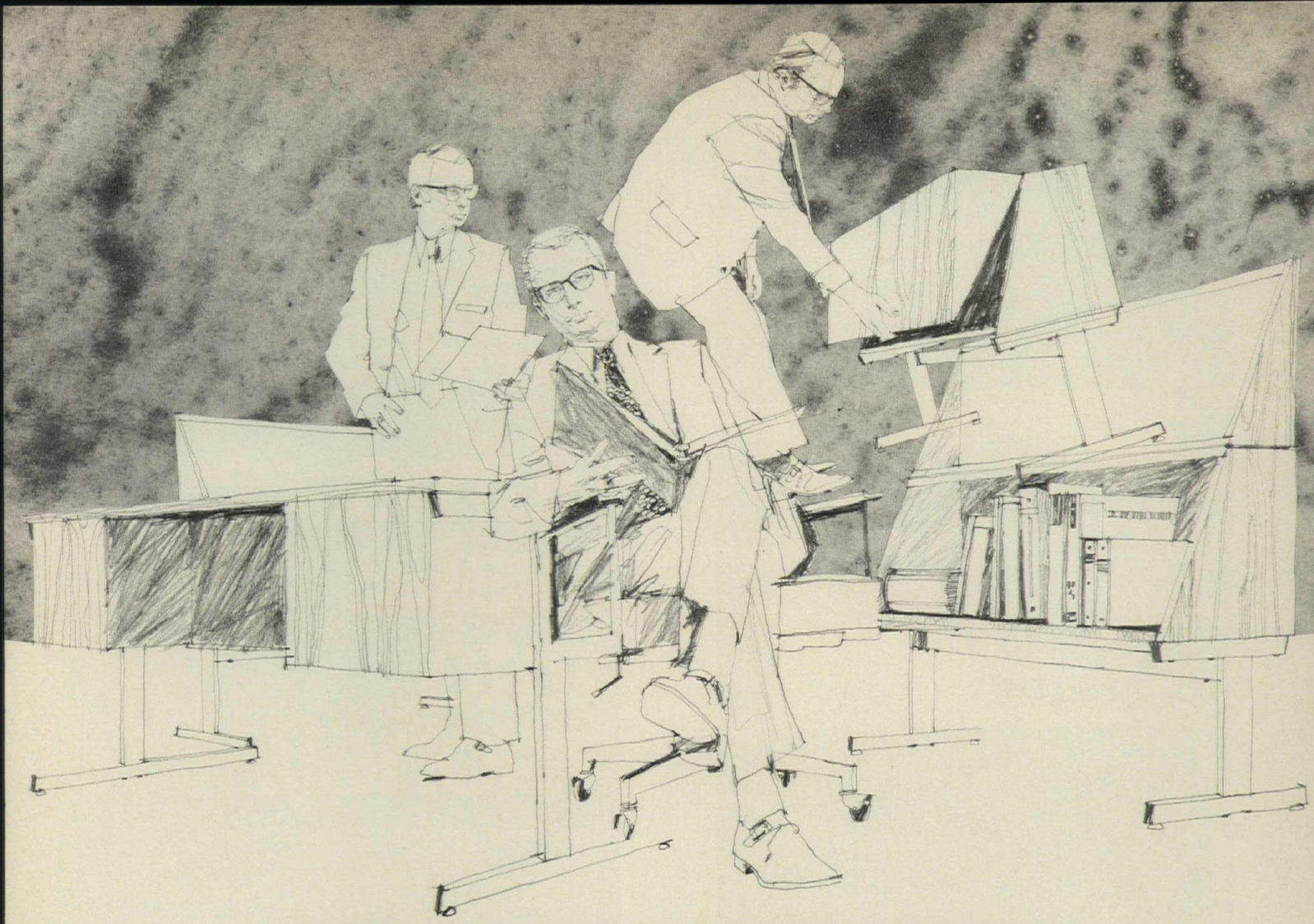

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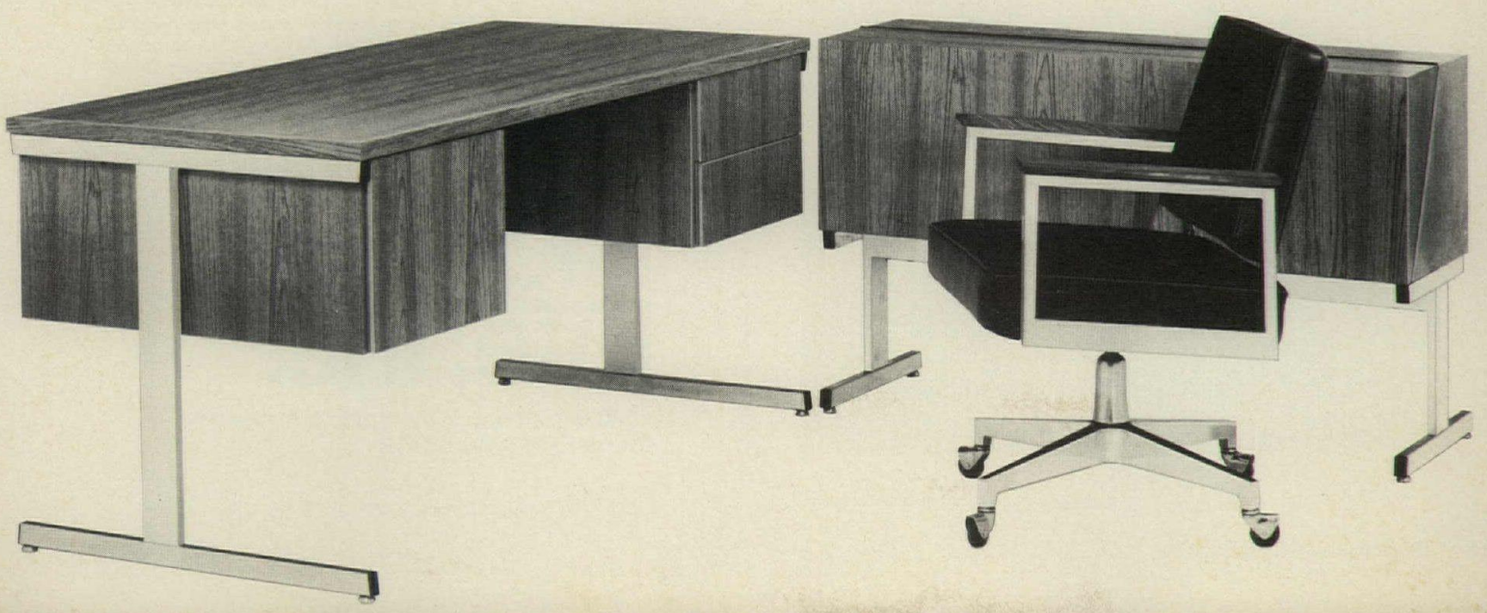

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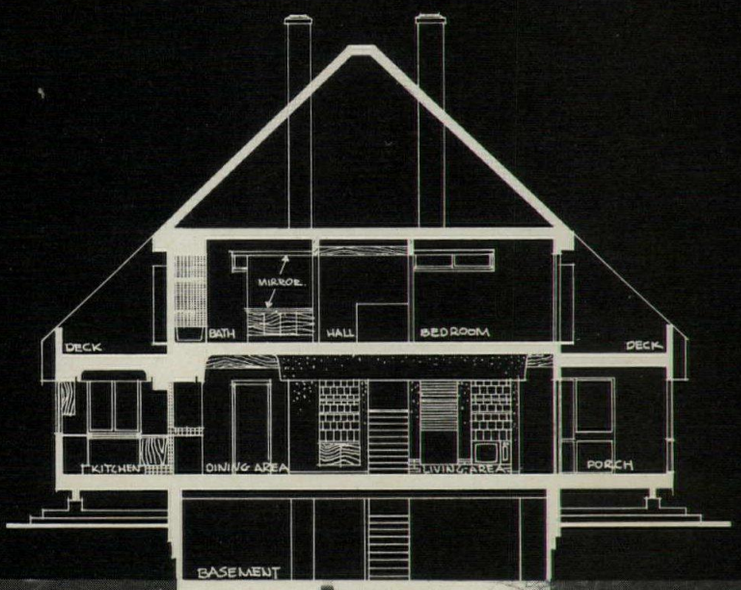

Residence at Gardner, Kansas. Certigrade Shingles No. 1 Grade: roof, 24" Royals; walls, 16" Fivex. Architects: Seligson/Eggen. Owner-contractor: Henry McGrew.

Red cedar shingles restore some great planes to the Great Plains.

Owner Henry McGrew decided some rural renewal was in order after he bought this farmhouse near Kansas City. The building was structurally sound, so minimum cost turned the trick. Red cedar shingles for the expansive plane surfaces of the outside. New wall surfaces and a double-sided fireplace for the inside. New doors and windows for in-between.

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It's no wonder. After all, we do make the broadest line of architectural cabinet hardware on the market. The latest addition to the line is the new extruded aluminum pulls. There are lots of other things too: pulls, hinges, pivots, catches and knobs. They come in all styles, sizes, metals and finishes. You'll find information on the whole line in our new cabinet hardware brochure. Write for it today. We think you'll be glad you've included Stanley. No matter how your plans shape up. Stanley Hardware, Division of The Stanley Works, 195 Lake St., New Britain, Conn. 06050. In Canada: The Stanley Works of Canada, Ltd.

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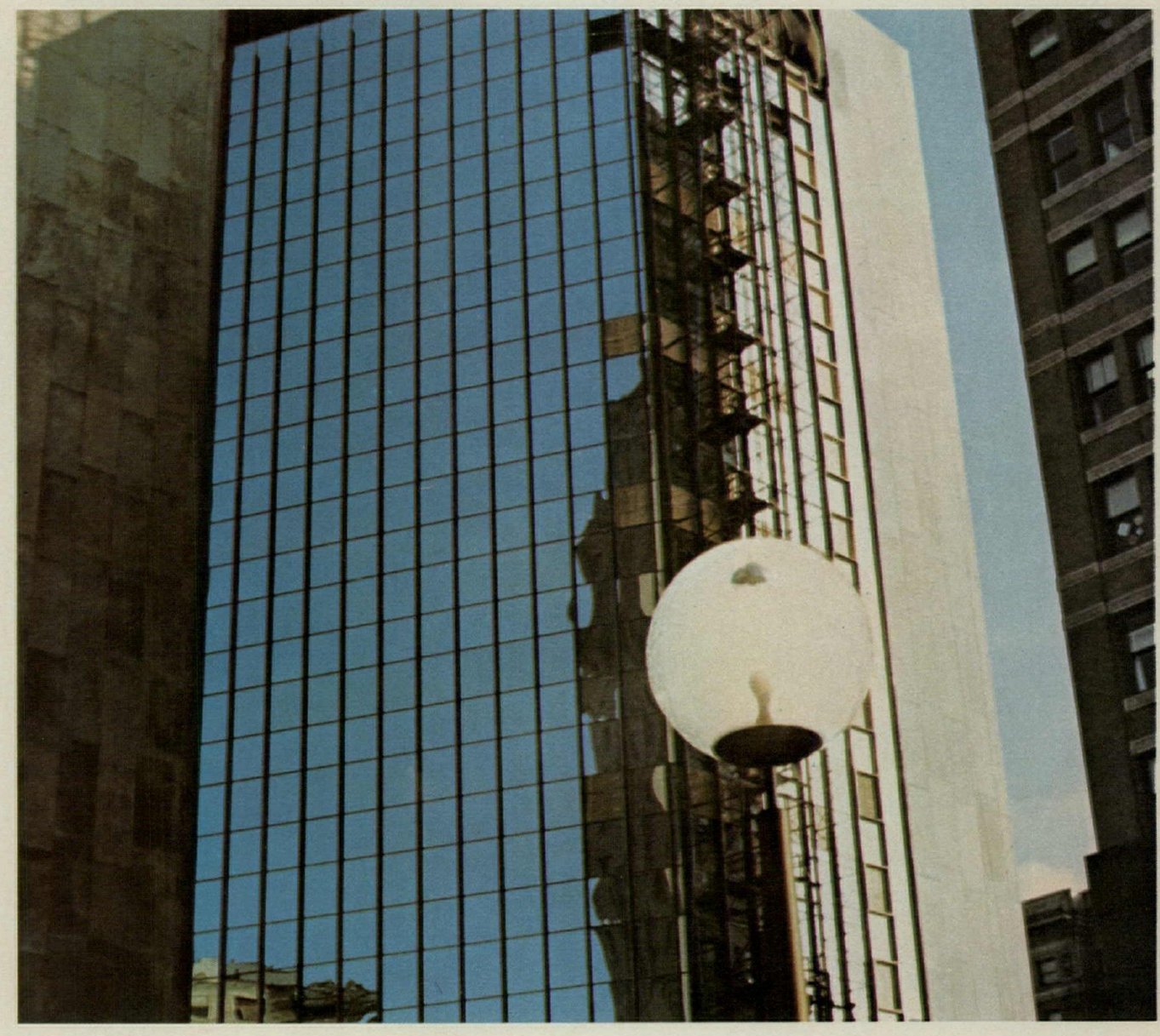
Edison Plaza Building. Owners: Toledo Edison Company. Engineers • Architects • Planners—Samborn, Steketee, Otis and Evans, Toledo, Ohio. • General Contractor: Turner Construction Company.

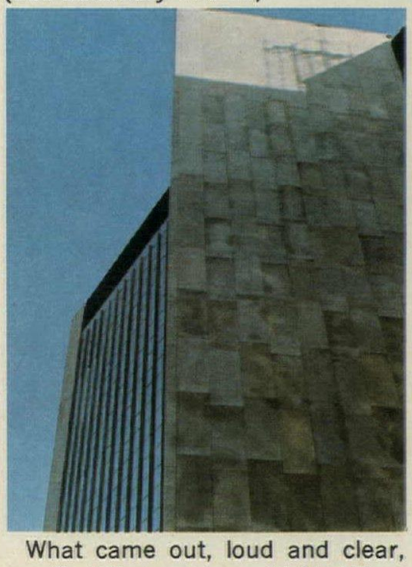
The glass that cuts building costs. LOF GLASS

Here, L-O-F's most expensive glass reduced construction costs, will save in annual operating costs.



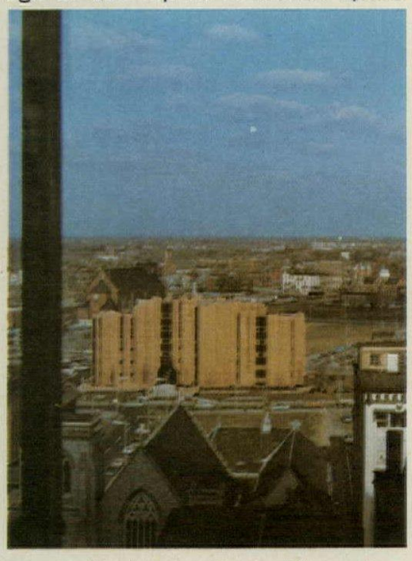
Vari-Tran® reflective insulating glass by L-O-F. Now you may justify it on construction cost savings alone.

The engineering • architectural • planning firm of Samborn, Steketee, Otis and Evans made a computerized cost analysis of their glazing alternatives while the building was still on their boards. They compared various types of glass in terms of year-around heat loss and gain, initial glass costs, total building cost, effects on taxes and insurance, annual operating costs, etc. (See summary in box.)



What came out, loud and clear, was that Thermopane with Vari-Tran 108 coated glass as the outer pane would save the owners money. Less expensive to build. Less expensive to operate.

This was not just because Vari-Tran's superior heat-reflecting qualities require less air conditioning tonnage. Since height of cavities between floors is less because smaller ducts are adequate, the same space is achieved in a shorter building at lower construction cost. And Vari-Tran permitted a simple radiation system 6" deep around the perimeter of the building. An average of 500 sq. ft. of usable space



was gained per floor. The other glasses considered would have required an expensive induction system 18" deep.

As to aesthetics, the silvery Vari-Tran 108 blends with the limestone columns and spandrels of Tuf-flex® tempered glass, also Vari-Tran coated. (Vari-Tran is available in golden as well as silvery coatings in reflectivities of 8, 14 and 20 percent.)

If you would like a computerized cost analysis of the glass wall of a building you're planning, contact your L-O-F Architectural Representative, or Architectural Dept., Libbey-Owens-Ford Co., Toledo, Ohio 43624. It could surely help you solve your budget problem.

ECONOMIC GLASS COST ANALYSIS
by Samborn, Steketee, Otis and Evans, Toledo, Ohio

Uniform annual costs for the glass were based on an anticipated useful life of 40 years for the building, 20 years for the air conditioning equipment. Both costs are for borrowed money at 8% interest.

The initial cost of Thermopane with Vari-Tran and the air conditioning equipment it requires is less than for ¼" plate and the increased air conditioning it would require. And the total annual cost of owning and operating the building will be substantially less and will result in reductions as follows as compared with ¼" plate.

64.7% reduction in capacity of central refrigeration equipment

67.9% reduction in capacity of distribution system

53.2% reduction in capacity of central heating equipment

19.2% reduction in comparative initial costs

24.4% reduction in comparative uniform annual cost

33.7% in total annual operating costs

29.5% savings in comparative annual operating costs

There are also incalculable benefits from glazing with Vari-Tran/Thermopane: greater humidity control in offices and the computer room located on an outside wall; sharp reduction of roomside condensation and down drafts near windows in winter, increasing comfort.

Hi-Performance Glass
The glass that cuts building costs

On Reader Service Card, circle no. 364

The Architect's Guide to Blinds.

In this chapter: Introduction; how to cut costs on air conditioning; surfaces that reflect heat; how to keep heating bills down; surfaces that absorb; color; what to do to learn more.

Introduction.
There are as many different blinds as there are windows. A busy architect can't be expected to know about all of them. This convenient guide should serve as an aid to specifying more creative window coverings. Reprints of this guide and additional information are available from Levolor on request.

How to Cut Costs on Air Conditioning.
We get quite a few letters every month asking about the problem. And the answer is quite simple: blinds are the best window covering for this purpose and the correct *choice* of blind can make a substantial difference in the air-conditioning load of a building. And contrary to what a lot of our correspondents seem to think, white is no longer the best color you can specify to keep air-conditioning bills down.

Surfaces that Reflect Heat.
Levolor has done a lot of research in this area. And we've come up with a bright silver blind with a shading coefficient of .14 thru ¼" clear plate (plain white blinds have a coefficient of .27). What this silver blind can do to an air-conditioning load depends, of course, on the climate, the exposure, etc. But it can make a substantial difference.

HOW LEVOLOR RIVIERAS REDUCE HEAT LOAD

Comparative Shading Coefficients

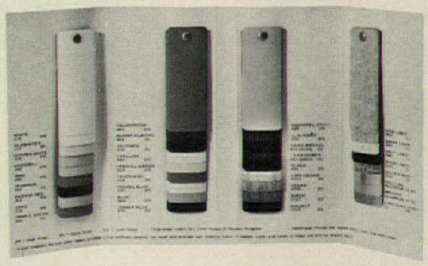
	Thru ¼" Clear Plate		Thru ¼" HA Plate			
Coating of Slat	Open	Closed	Open	Closed	Reflect.	Absorpt.
White	.49	.27	.42	.29	.70	.30
Sand	.52	.38	.45	.28	.53	.47
Raw Umber	.67	.65	.49	.48	.08	.92
Polished Alum.	.45	.22	.34	.27	.76	.24
Brushed Alum.	.50	.25	.41	.28	.73	.27
Polished Brass	.52	.36	.42	.30	.55	.45
High Gloss Alum. Mirror Finish	.37	.15	.34	.23	.89	.11
Low Gloss on Mirror Finish	.40	.19	.36	.25	.81	.19

And don't think that, just because the side of the slats toward the outside of the building is silver, you're limited to silver for the inside. The other side of the blind can be any color you like; you'd choose it to go with the rest of the interior decor. If you wonder how the correct color is maintained for the outside, we've solved that problem with our "tiltone tilter."

How to Keep Heating Bills Down.
Just as you can cut air-conditioning costs with a reflecting blind, you can cut heating bills with an absorbing blind. And you don't have to pick a dull or uninteresting color, either.

Surfaces that Absorb.
Levolor has come up with a raw-umber colored blind with an absorptance coefficient of .92. Which means that your heating system gets a tremendous boost from the absorbed light and heat during the daytime hours.

Color.
People used to think of blinds as dull, drab, bulky window coverings. But that kind of thinking is outmoded. Levolor Rivieras come in a tremendous variety of colors (50 are in stock), from bright silver



and polished aluminum all the way to raw umber and black. And they fit comfortably into areas that other window coverings just can't make use of. No other window covering can do as much.

What to Do to Learn More.
Our whole life is blinds, the way your life is designing. If you ever want to know anything at all about blinds, from the basics to very special modifications, our staff is at your disposal. Just write us or give us a call.

Levolor Blinds

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Levolor Lorentzen, Inc., 720 Monroe Street
Hoboken, New Jersey 07030

Gentlemen of Levolor:

I want to know more, please send me

☐ Architectural Bulletins.

☐ Window Magic,
a booklet about creative window coverings.

☐ Color chips.

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PA-4

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New Primitive... for a beautiful handcrafted look.

New Primitive™ ceramic tile has the uneven, handcrafted look that's so prized today. The surface has a natural cleft finish. The shading varies from tile to tile. The effect is rich, rustic, Primitive.

And permanent. Tough, rugged Primitive is solid ceramic. It's the wall-to-wall floor that wears practically forever.

So clients get beauty they won't want to cover up, durability they can clean up with little effort.

Primitive is vitreous, frostproof, and stainproof. In seven glazed colors, one unglazed, and five shapes. Write for your full-color brochure on our newest idea. Primitive. American Olean Tile Company, 1419 Cannon Avenue, Lansdale, Pa. 19446.

Primitive ceramic tile. It's the natural thing to use.

American Olean
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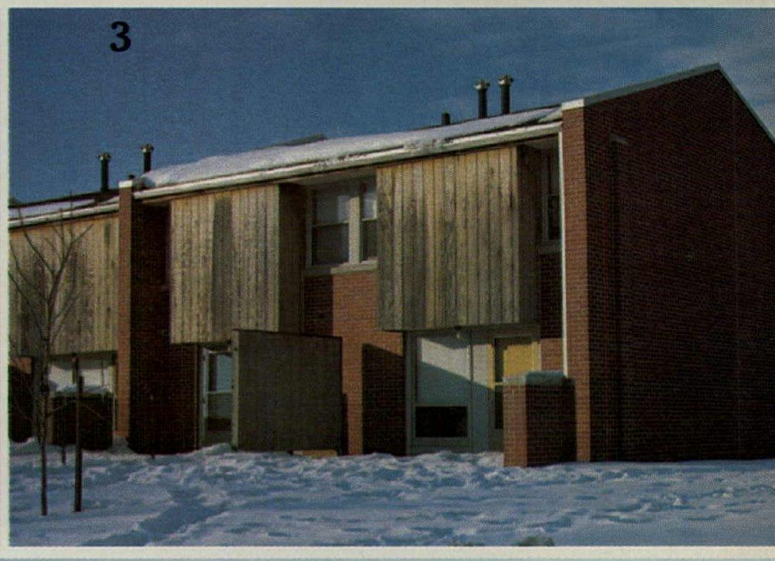
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4

Why high-quality Andersen Windows belong in low-income housing.

If you're planning a public housing project, Andersen Windows are more practical on a total cost basis.

Made in complete units, they cost less to install. And there's no on-site exterior painting when you specify our Perma-Shield® Windows. Made with a thick vinyl sheathing on the outside, these windows will save significantly on maintenance costs over the years. They won't need scraping, painting or refinishing.

Fuel costs are lower. Andersen Windows are made with a solid core of wood—one of nature's best insulators. Our weathertight construction and welded insulating glass (optional) complete the tight design against heat, cold, dust and drafts.

Andersen Windows will cost less over the long run, and their beauty lasts as long as the building. That's why it pays to specify the best.

1. Minneapolis Housing for the Elderly

The architects wanted to make this large, 290-unit housing project into a real "home" for the residents. So Bettenburg, Townsend, Stolte and Comb, Inc. created a living community with friendly courtyard and recreation areas.

Adding warmth and pleasantness to the surroundings are Perma-Shield Fixed and Casement Windows equipped with welded insulating glass which seals out cold Minnesota winters and keeps residents snug and warm.

2. Columbia Court Public Housing

Precast concrete "shadow panels" give this 90-unit complex in Muskegon Heights, Michigan its distinctive look.

The architects, Haughey, Black & Associates, designed special recesses into the panels where Perma-Shield Casement windows fit snugly.

The white vinyl sheathing on the outside blends well with the smooth-surfaced concrete. These windows can be opened straight out, allowing elderly residents to clean both surfaces from the inside—another cost-cutting benefit of Andersen Windows.

3. Family Housing Project

Hackner, Schroeder, Roslansky & Associates received an award from the Wisconsin Chapter of the A.I.A. for this series of townhouse groups in La Crosse, Wisconsin.

They were cited for the use of materials which added dignity and distinction to these low-cost dwellings. Among the materials used were Andersen Beauty-Line™ and Narroline™ Windows.

Beauty-Line windows combine a fixed upper sash with a ventilating, awning-style lower sash. They can be used singly or in groups, making them as versatile as they are attractive.

4. Award-winning Low-Rent Apartments

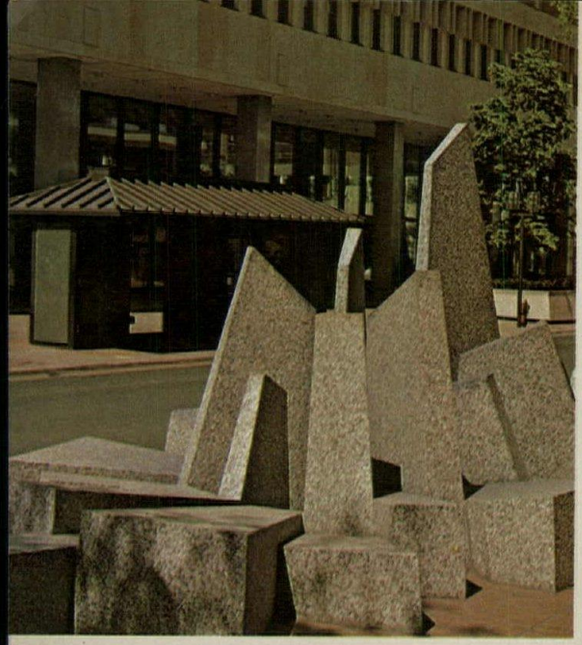
Located in Herman, Minnesota, this group of one-story 4-plexes received an award from the Minnesota Chapter of the A.I.A. for being the best representative example of the theme of "Involvement."

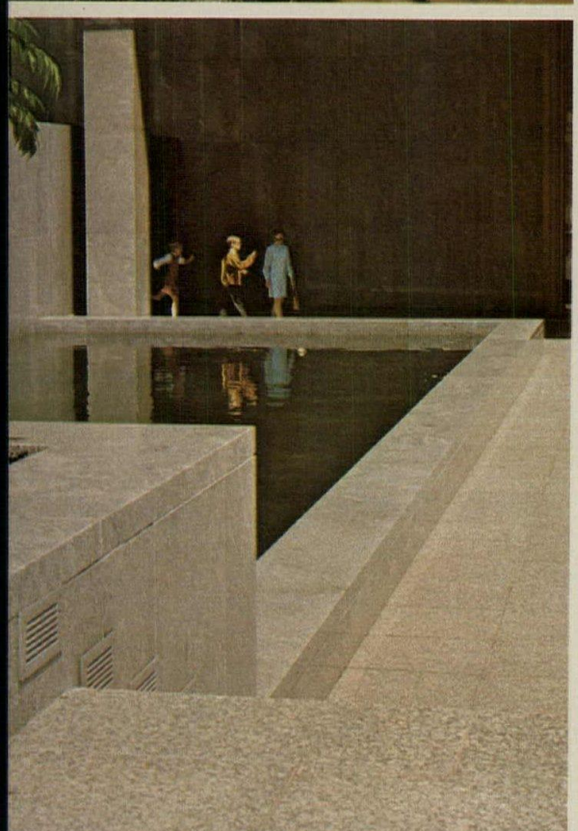
The architects, R. F. Ackermann and Associates, carried the residential character of the neighborhood into these apartments with a warm and simple design.

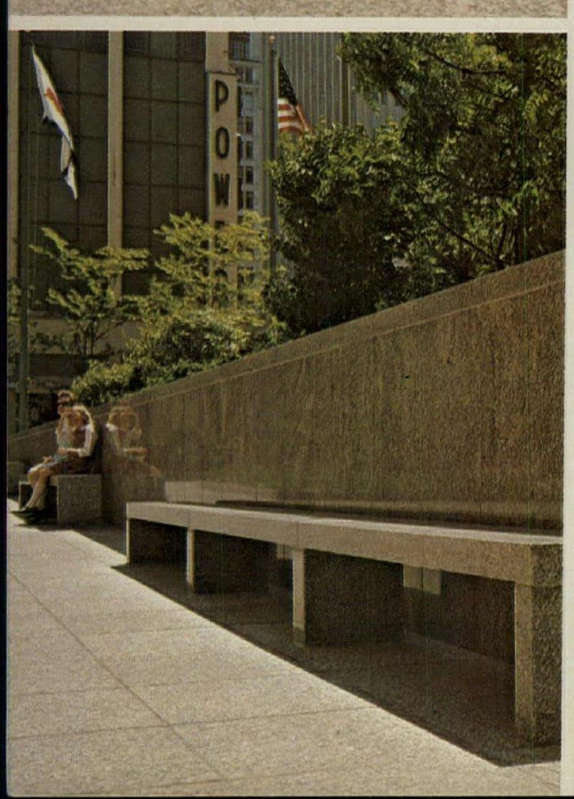
Adding to this feeling are graceful gliding doors by Andersen. They open onto comfortable, private decks. Andersen Beauty-Line Windows provide picture window beauty at a practical price.

For more information on Andersen Windows and Gliding Doors, check your Sweet's file or contact your nearest dealer or distributor.

Andersen Windows™ AW®
Window beauty is Andersen.
Andersen Corp., Bayport, Minnesota 55003





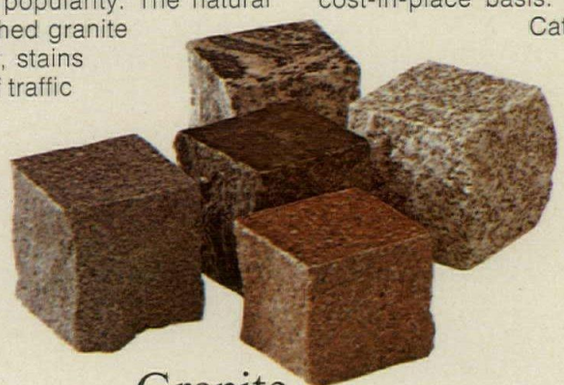

POW

If granite is so expensive, why didn't someone tell the Minneapolis Downtown Council?

The decision to make ample use of granite along the Nicollet Mall in Minneapolis wasn't exactly a snap judgment based on vague notions about cost: it was made after careful consideration of the facts about granite.

And when you consider the facts, it's easy to see why granite paving and street furniture have become significant parts of today's cityscape as malls and plazas gain in popularity. The natural beauty of polished granite resists weather, stains and all types of traffic as no other building material can. It won't fade or deteriorate, and it requires virtually no maintenance. Comes in a wide spectrum of colors, too.

How expensive is granite? Talk to our Customer Service Department about that. Tell them what you want to do and they'll tell you how it can be done. Step by step. And likely as not you'll find that granite fits your plans well on a cost-in-place basis. Refer to Sweet's Catalog No. 4.1/Co. Or call us, (612) 685-3621.



Granite can color your thinking.

Nicollet Mall

Architect:
Lawrence Halprin & Associates

Engineering & Planning:
Barton-Aschman Associates, Inc.

General Contractor:
City of Minneapolis

Cold Spring Granite Company
Cold Spring, Minnesota

On Reader Service Card, circle no. 339

Terrazzo shows its true colors when it's made with ATLAS White.

This terrazzo in the illustration is composed of 80 per cent Georgia White and 20 per cent Cardiff Green marble aggregate with ATLAS White cement in the matrix. It is showing its true colors in the concourse areas of Ohio's newest and largest enclosed shopping center, the Dayton Mall. In a monolithic installation, 155,000 square feet of terrazzo was placed in 30-foot squares. Developed, built, owned and now managed by The Edward J. DeBartolo Corporation, Youngstown, Ohio, Dayton Mall's 107 stores cater to over 100,000 shoppers per week. Edward J. DeBartolo & Associates was the Engineer. The Terrazzo Contractor was C. Quinlan & Son, Dayton, Ohio. ATLAS White is only one of the many cements produced by Universal Atlas Cement Division of United States Steel.

ATLAS is a registered trademark.

USS Atlas
WHITE CEMENT

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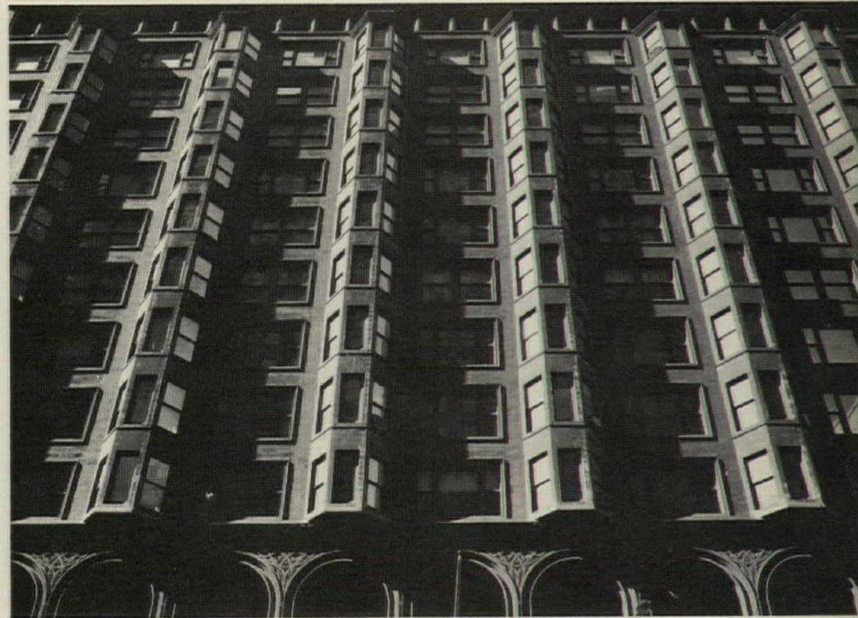

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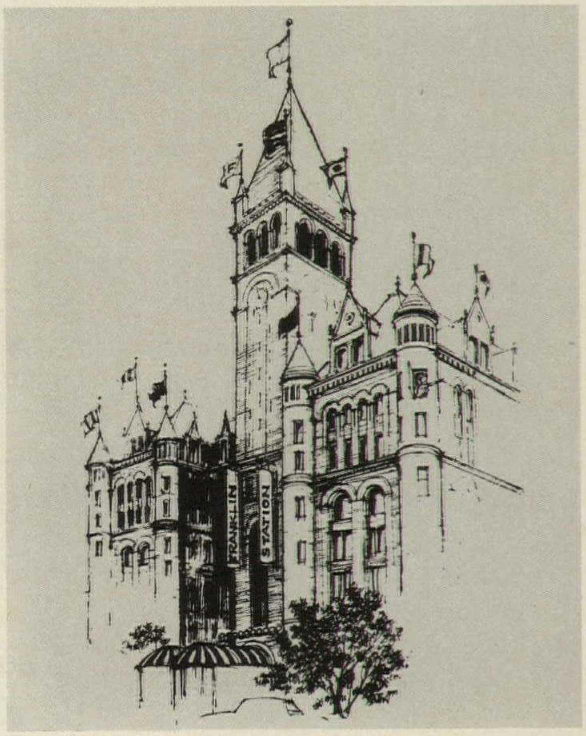


AIA announces 1971 honors

At its annual convention June 20–24 in Detroit, the AIA will present the usual round of honors. The Gold Medal, which will be given to Louis I. Kahn and the Architecture Critics' Medal, posthumously to Sibyl Moholy-Nagy, were announced earlier; the rest follow:

The Architectural Firm Award goes to Albert Kahn Associates; the Craftsmanship Medal to sculptor, furniture designer and artist Wharton Esherick (posthumous); the Industrial Arts Medal to ceramicist Edith Heath; the Allied Professions Medal to landscape architect Daniel U. Kiley; the Architectural Photography Medal to Alexandre Georges; the Citation of an Organization to the San Francisco Bay Conservation and Development Commission; the Architecture Critics' Citation to Perspecta, the Yale architectural journal; the Edward C. Kemper Award to Gerald M. McCue; and a special citation to photographer Ansel Adams.

a **Buildings on the way down**

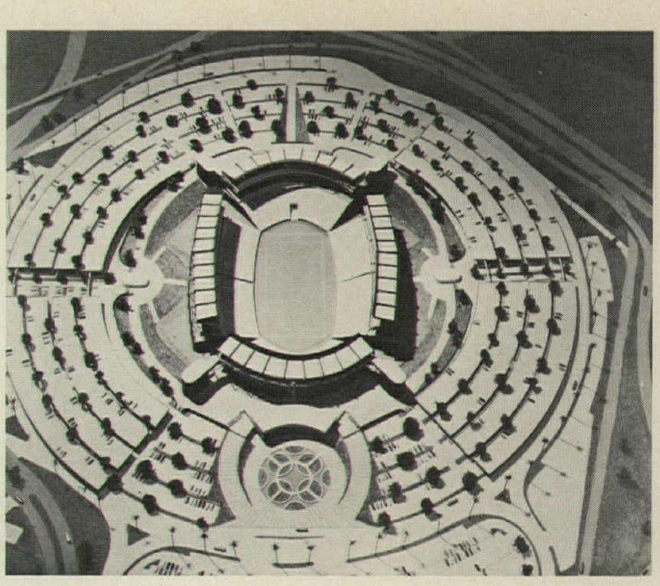
Come summer, The Chicago Stock Exchange Building will go, says a real estate development firm known as 30 North LaSalle Street Partnership. The 77-year-old building, designed by Louis Sullivan and Dankmar Adler, narrowly missed being named a Landmark last year; demolition starts this summer, to clear the site for a 43-story office tower.

Preservationists have long considered the building one of the finest Sullivan-Adler office buildings, but that isn't the only reason some Chicagoans want it left alone. Removing it and replacing it with the proposed high-rise and plaza combination, they say, will destroy the imposing canyon of facades along LaSalle St. Chicago architect Charles William Brubaker gets credit for the proposal.

Meanwhile, in Washington, the D.C. preservation crowd has taken the Old Post Office Building under its wing. The tower of the building is to remain as part of the Federal Triangle project, but the preservationists urge that the whole building be saved as a sort of Ghirardelli Square East. They have some impressive friends: Nathaniel Owings, S. Dillon Ripley, Daniel P. Moynihan all back them up. Architect Arthur Cotton Moore shows one way it might be done in his drawings.

Then again it might not: the matter was pretty well settled [continued on page 35]

Buildings on the way up



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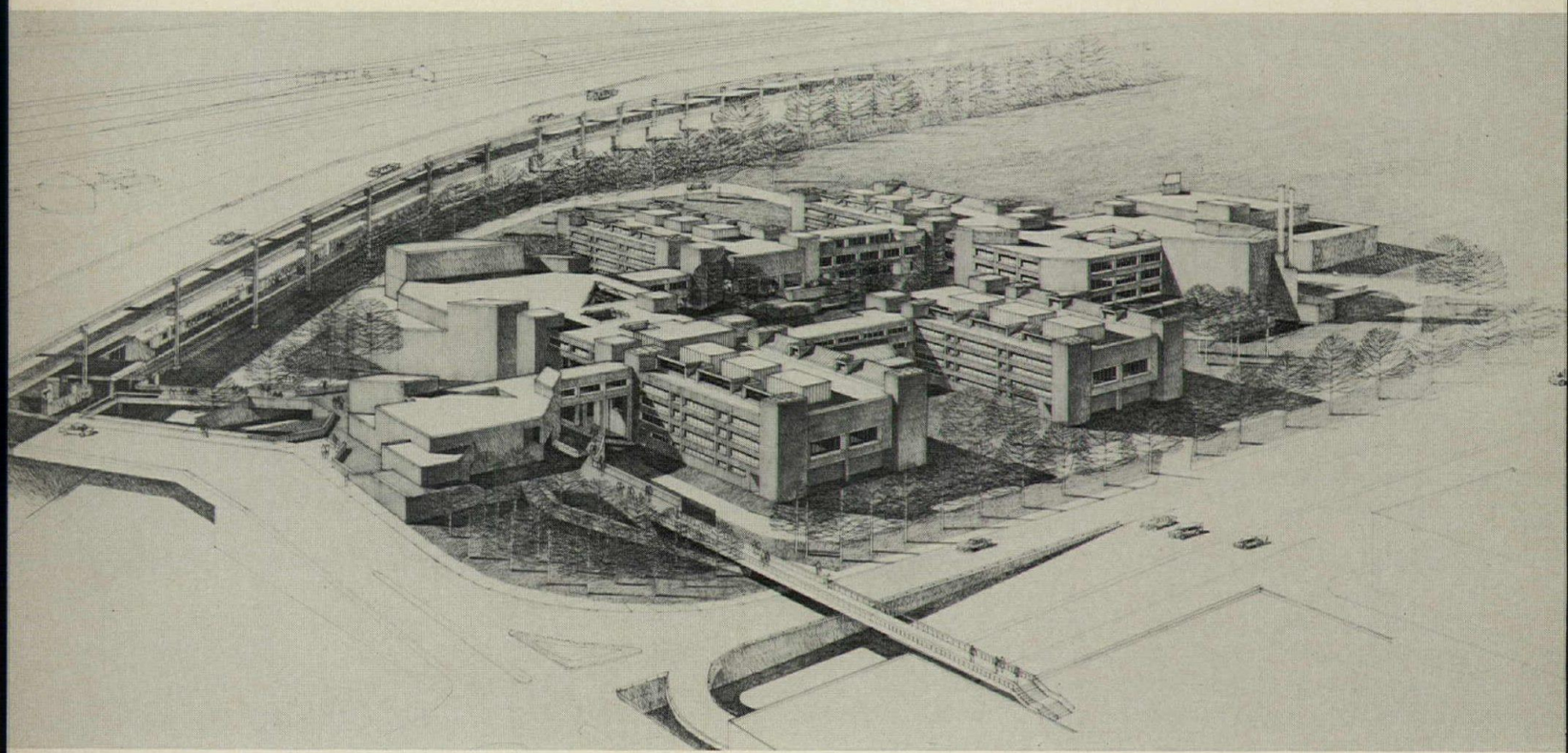

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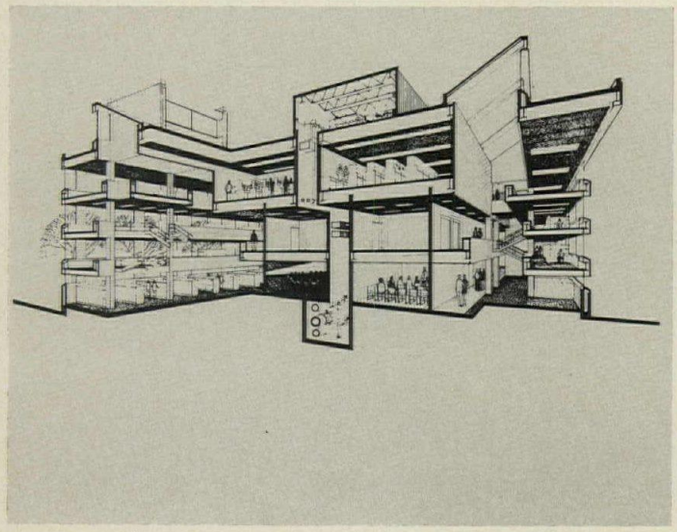

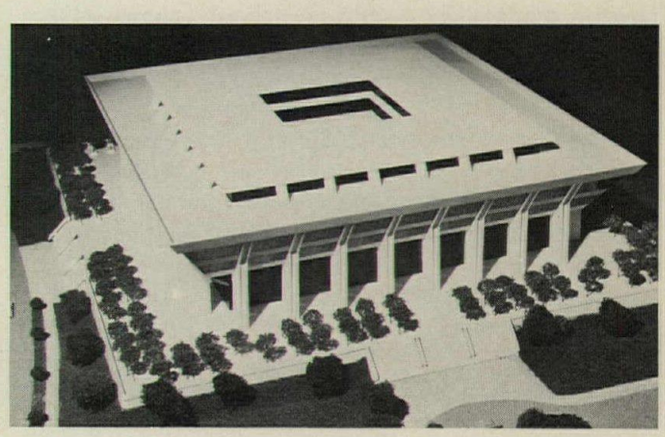

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1 **Four seating sections** will move on air cushions to change Hawaii's Oahu Stadium from football, where the most distant seat will be 280 ft from the 50 yard line, to baseball, where 25,000 seats will be on home plate side of foul lines. Designed by Charles Luckman Associates, the stadium will be built near Pearl Harbor on a 106-acre site, 10 acres landscaped as a picnic area. Principal materials are weathering steel for the space frame structure, plate steel for platforms, plazas and ramps, cast aluminum and plastic for seats. Model shows football setup after second phase expansion to full 50,000-seat capacity.

2 **Rapid transit stop** helps link Massachusetts Bay Community College with surrounding area. Station opens onto raised mall that is Charlestown, Mass. school's main street; auditorium and cultural center, as well as main college activities, are grouped at mall level. Noise from trains and nearby highway are kept at minimum by placing classrooms at interior of site, beneath offices and laboratories. Megastructure is framed in light steel, with non-load-bearing partitions. Concrete block is used throughout, with exterior of corrugated block. Shepley Bulfinch Richardson and Abbott are architects. Engineers: Nichols Norton & Zaldastani (s), Francis Associates (m,e). Bolt Beranek & Newman are acoustical consultants.

3 **Outward slope** of upper floors of Pacific Mutual Life Insurance Co. operations building, Newport Center, Calif., provides sun control for building's perimeter; central atrium, 90 ft square, brings light to interior offices. Executive offices are in penthouse of five-story, 300,000 sq-ft building, which stands above street on large podium. Architects are William L. Pereira Associates.

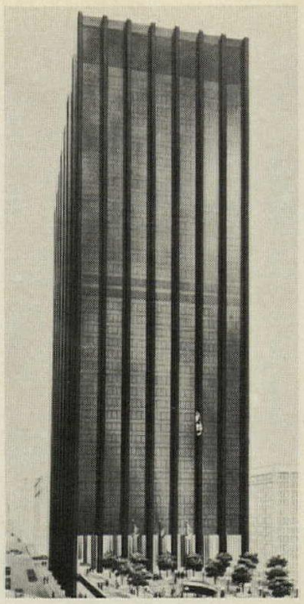
4 **Neighbor to World Trade Center,** 40-story tower for Bankers Trust Co. will rise from elevated plaza. Shreve, Lamb & Harmon Associates and Peterson & Brickbauer are architects for 1.2 million sq-ft building, which will be linked to its large neighbor by pedestrian bridges and walkways. Tower will be sheathed in bronze anodized aluminum and bronze glass. Engineers are Office of James Rudderman (s) and Jaros, Baum and Bolles (m,e).

5 **Everything but façade** of four-story Egyptian Revival building will be torn down to make way for 21-story office building for Philadelphia's Penn Mutual Life Insurance Co. Designed by Mitchell/Giurgola Associates, building will be all glass on north side with glass enclosed elevator for view of Independence Hall. East wall will have recessed windows, at top will be all-weather observation deck. Building will be steel and reinforced concrete; concrete will be slip formed.

6 **Piggy back fire station** needs no pole. From upper level of Wilmington, Del. station, ladder company, engine company and deputy chief run westward; from lower level, another engine company, rescue squad and assistant chief run eastward. Steel framed building, with light brown brick and cast stone exterior, was designed by Dollar, Bonner and Funk.

7 **Standing four square** on campus of St. John's University, Jamaica, N.Y., School of Law center will house classrooms, moot court, law review and seminar spaces as well as offices and law library. Building, designed by Carson, Lundin & Shaw, is 120 ft on a side, seven stories high. Fireproofed steel structure will be clad with buff brick, dark bronze glazing. (Louis Checkman photo).

8 **Mirror, mirror** on all four walls of Detroit and Northern Savings and Loan Association will reflect sunlight by day, glow with interior lighting after dark. Service core will be cylindrical tower 40 ft in diameter, with circular lobbies at all nine floors; tower will be separate from steel framed 65 ft sq office block. Tarapata-MacMahon-Paulsen are architects for Hancock, Mich. project.



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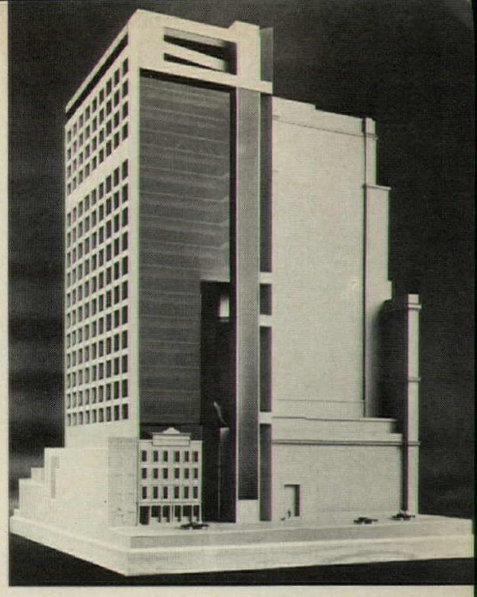

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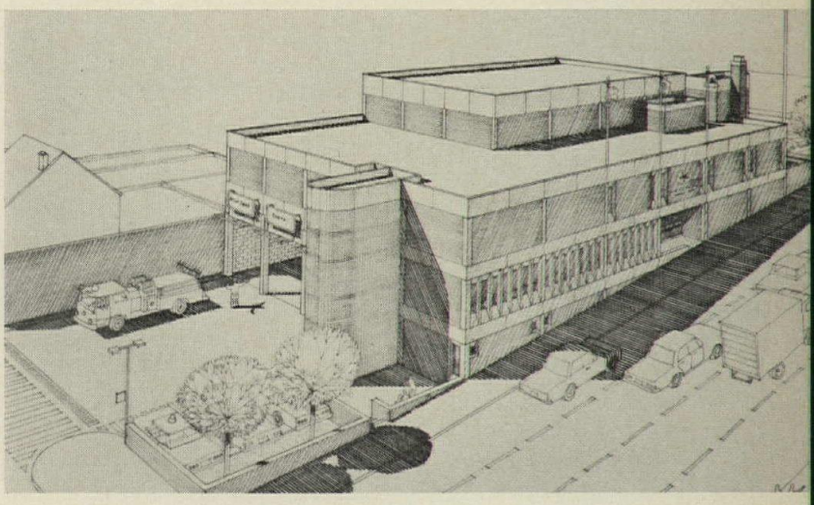

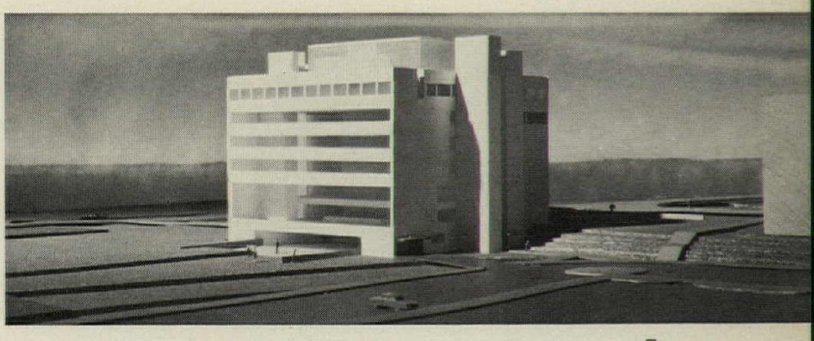

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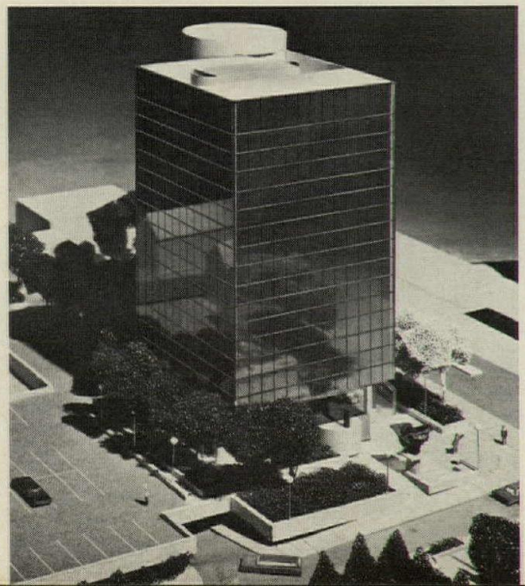

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and another on the floor.
Show us exactly what you want.
And we'll duplicate it. Exactly. Any color,
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Carpet by Roxbury

Framingham, Massachusetts

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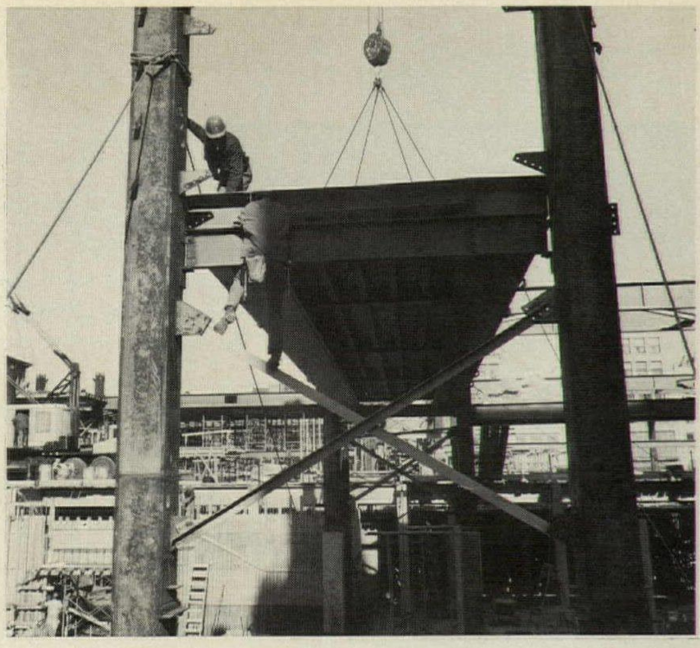
News report continued from page 31



a few years ago when the program for the project was drawn up. At that time the Fine Arts Commission stated that it didn't want the Post Office at all, and the National Capitol Planning Commission wanted the tower as did the Pennsylvania Avenue Commission. NCPC and the Pennsylvania Avenue Commission carried the day, and the program was written to include saving the tower. Saving the whole building would require rewriting the program and also finding a new site for the Internal Revenue building.

b **Steel bridge principles adapted to library design**

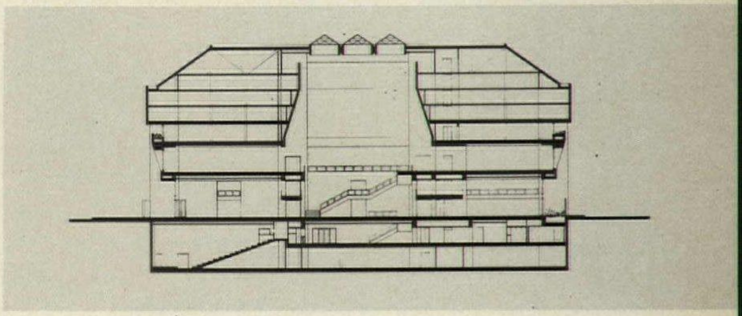
The addition to the Boston Public Library now under construction is a lot like almost any other library building; there is space for books and space for people to read them. What's out of the ordinary, perhaps, are some of the things going on with the structure.

For instance, the central well, which runs the height of the seven-story building, is crossed at the mezzanine level by pedestrian bridges. They are actually orthotropic (a steel plate bridge in which the deck is both a structural member and the roadway, or in this case, walkway surface) bridges, usually used for highway bridges, and not indoors as pedestrian bridges. They span 58-ft open modules at the mezzanine level, yet because of their design are only 19¼ in. deep.

Then there are the upper four floors, which are hung from a grid of 16-ft deep interconnecting trusses, most of which also span the nine 58-ft bays of the building. Some of the trusses will be supported on steel box columns rising from the basement foundation slab; others will rest on 9-ft deep welded plate girders spanning between columns. The bottom chord of the trusses will carry the seventh floor, which houses books and mechanical equipment, while the top chord will support the steel framed roof.

Architects for the building are Philip Johnson and Architects Design Group,Inc. Structural engineers are LeMessurier Associates, Inc.

b



Self-help housing built in New Mexico

A recently opened Federal housing project in New Mexico appears to be a showcase for the highest goals of several housing agencies. It follows the principles of low density (50 tenants on 30 acres), self-help (tenants both designed and built their homes), ecology (the land will be left in its natural state) and low maintenance. The tenants, however, are prairie dogs, which the Bureau of Land Management is attempting to shield from predatory man. Humans will be able to view the village from a nearby highway, but population control will be left to rattlesnakes, the burrowing owl, badgers, bobcats and coyotes, according to an Associated Press dispatch.

c **Space is where you find it**

When Boston's Merchants National Bank gives a garden party, the guests are guaranteed to get high—39 stories high, because the garden is on the 39th floor, just outside the staff dining room and a large reception room. The paved and planted garden is 52 ft wide and 172 ft long, a windy 500 ft above ground.

The wind played a large role in the design of the roof gar-

[continued on page 36]

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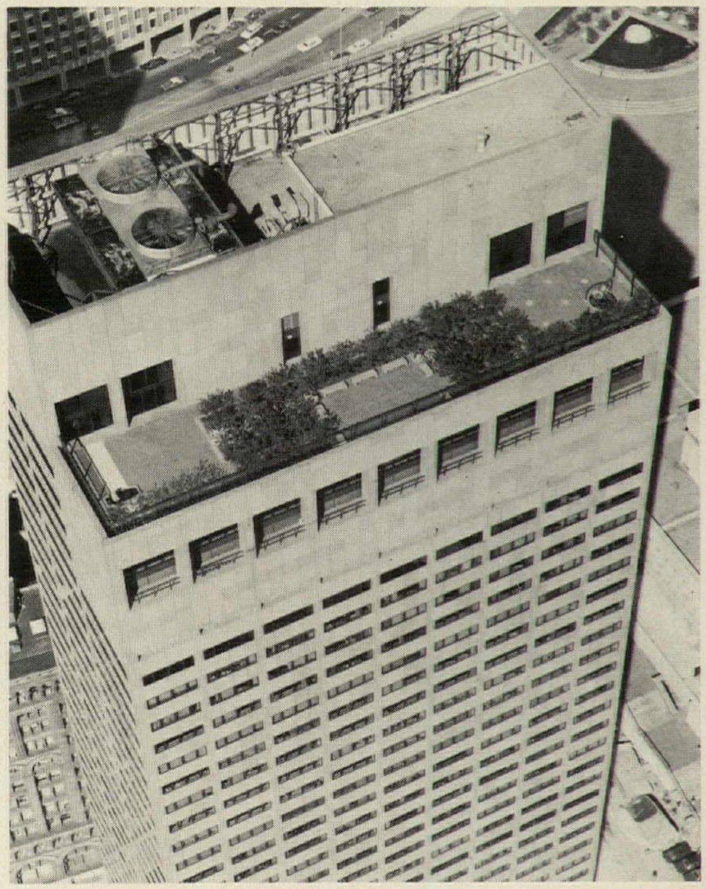

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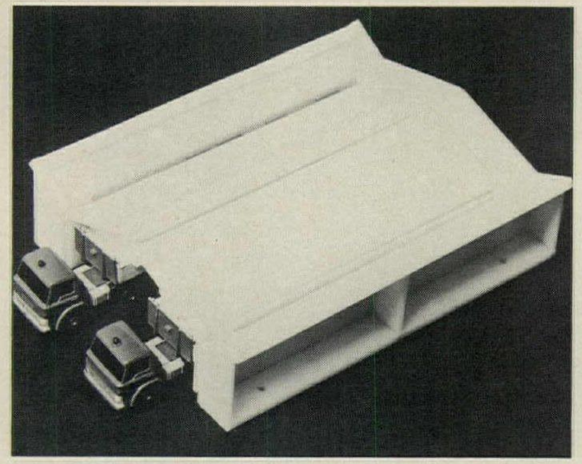

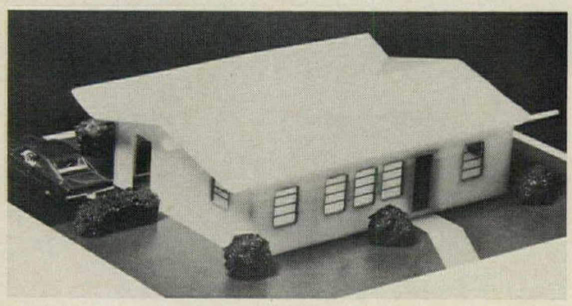

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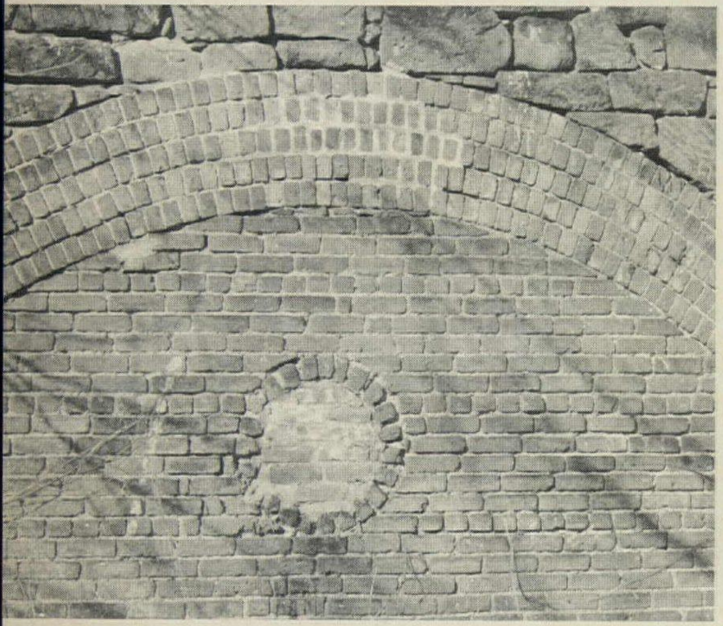

den, according to landscape architects Shurcliff, Merrill & Footit. The original plans for the building, designed by Edward Larrabee Barnes, called for five tall shade trees on the roof, but the landscape architects felt they wouldn't survive the first big storm. Wind tests by a meteorologist showed just where high winds would lop off the tops of the trees, and the landscape architects substituted 30 dwarf crab apple trees for the larger trees. Another suggestion by the landscape architects, a tempered glass wind screen, was also approved after much discussion.

The garden is broken into three distinct areas: two paved areas at either end, and a raised plaza, surrounded by the trees, in the middle. A 4'-6" parapet runs along three sides of the garden; the raised plaza was needed to allow a view. Other planting includes ivy and petunias; each of the end areas has a small fountain.

d **Trailer mounted forms to speed house construction**

Two tractor-trailers make up a factory on wheels that can turn out a structurally complete three-bedroom concrete house in two days; the house will sell for around $17,500, according to the Gray Manufacturing Co., developers of the trailer mounted forming system.

Here's how it works. The trailers carry hydraulically operated metal concrete forms; at the site the forms are jacked into place and a set of outer forms are positioned, along with reinforcing material and templates for window and door openings. Concrete is poured into the forms, and when it is cured (a special quick curing concrete is to be used), the trailer mounted forms are removed, leaving a shell consisting of three walls and a roof. The fourth wall is poured through preformed openings in the roof, completing a monolithic concrete structure in a total of three days. Foundations are concrete slabs on grade. A variety of roof and exterior wall finishes can be used, as well as special roof coverings.

Nothing has been built yet, the developers say; they are still putting the finishing touches on the forming system. A prototype will be built and tested to failure in the near future, and then Gray will have its system ready to go. Gray will build the forms and license them to contractors or developers. For the machines to be profitable (cost will run from $50,000 to $75,000) a total of 100 houses per machine per developed area will be required during the first year. As contractors become more accustomed to them, Gray feels that the construction time might be shortened.

e **Erratum**

In the January 1971 Issue, P/A erroneously listed Balzhiser, Rhodes, Smith & Morgan as associated architects on the citation winning Sacred Heart General Hospital. Balzhiser, Rhodes, Smith & Morgan should have been listed as full joint venture partners with Rex Whitaker Allen and Associates.

f **Highway threatens historic industrial area**

It has been more than five years since some of the residents of Paterson, N.J. went to bat for the Great Falls of the Passaic River and the historic industrial district that surrounds it in the heart of their town. In that time some things have been accomplished: the Falls were named a national natural landmark, 89 acres have been designated a national historic area, consultants have been hired and proposals for

[continued on page 40]

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News report continued from page 36

the future of the area have been developed. But while the potential of the area is more widely accepted than it was five years ago, there is still some doubt about its future, according to John Young of Urban Deadline Architects, who have drawn up a preliminary plan for the area.

Paterson was the first planned industrial area in the country. Planning started in 1792 by the Society for Useful Manufactures, and construction of raceways and the first mill began in 1793. The growth of the area since that time made it almost a museum of the industrialization of the U.S.; unlike museum collections, however, the buildings are still in use.

The key to preserving the area is public support, and a strong effort has been made to show the people of Paterson just what can be done with the area. But public support still wavers, says Young, primarily because of the possible disruption of the area by a proposed highway. If built as planned, the highway will require demolition of a number of the historic buildings; the city has not yet made up its mind about trying to get the highway moved. Then too, the part of the area not destroyed by the highway will be walled off from the rest of the city.

Another unsettled matter is a community college proposed by the planners for the historic area. The city is trying to attract one as a "vital part" of its plans, but nothing is definite.

Architects, engineers surveyed on Federal contracts

Questionnaires have gone out to more than 10,000 architectural and engineering firms in a survey of Federal contracting experience, according to the Committee on Federal Procurement of A–E Services. The survey is expected to provide information for a study of Federal procurement practices by the Commission on Government Procurement, set up by the 91st Congress.

The Commission, well aware that the architectural and engineering professions have been at odds with the General Accounting Office over the selection and payment of architects and engineers, set up a special study group headed by Leo A. Daly to analyze existing practices and suggest changes. The questionnaire will cover a number of areas, including the ways firms learn of Federal contracts, what agencies require price proposals, how fees and profits are determined and how profits on government jobs compare with profits on private projects. Results of the questionnaire will be tabulated by Case and Co.

Federal Construction Council to promote subsystems

During the next year, the Federal Construction Council will be promoting building blocks—dimensionally and functionally precoordinated subsystems, to be specific. The Council, a standing committee of the National Research Council's Building Research Advisory Board, hopes that its new program will make it possible to design and build buildings completely or in part from subsystems (the basic building blocks) including totally integrated ceilings (light, air and noise control), exterior walls and interior partitions.

The program will be in two parts. The first phase will start with a series of meetings to identify subsystems that can be precoordinated; study their market potential; outline procedures for designing, specifying and contacting with sub-

systems; and determine just how widely they will be used. Then the Council will meet with manufacturers, designers and labor and regulative groups to iron out possible problems in the use of precoordinated subsystems and draw up a plan to make the concept a reality. The second phase will involve putting the plan to work and dealing with any new problems that come up.

Washington U. to help plan new town

The School of Architecture at Washington University is going to get involved with a real-life, full-size new town. The school has signed a planning assistance contract with the Missouri Department of Community Affairs for the design development of Pattonsburg, a new town in northwestern Missouri.

The town is a national pilot project for HUD and a state demonstration project, to boot, which means Federal and state funds play a part in it. It is expected to be a model for new community planning. The work at the university will be done by the Urban Research and Design Center; the Midwest Research Institute and the Missouri Division of Geological Survey and Water Resources are also part of the planning process for Pattonsburg.

AIA, Producers Council plan joint conference

The building team and building systems will be the focal points for a conference and exposition to be sponsored by the AIA and the Producers Council. The first of the yearly affairs will be held in Detroit's Cobo Hall, June 21–25, in conjunction with the AIA national convention. The first two days will be devoted to the conference, which will deal with construction management, design/construct operations, performance specifications, labor, building systems and other management problems. The exposition will preview major advances in construction technology. Registration is being handled by the Producers Council, 1717 Massachusetts Ave. N.W., Washington, D.C. 20036.

Here come the men from aerospace

Because there are so few urban specialists and so many unemployed scientists and engineers (many of them shaken out of their jobs by cutbacks in aerospace and defense spending), the Department of Housing and Urban Development has put together a program to do something about it. What HUD plans is a series of special college courses and on-the-job training programs so that as many as 20,000 unemployed scientists and engineers can become involved with Model Cities programs as urban affairs experts.

The program will start in areas where cutbacks have produced large numbers of unemployed engineers and scientists—cities like Boston, Los Angeles, Seattle and Wichita. The engineers and scientists would be trained as planners, systems analysts and technologists of various kinds.

Kansas State offers architectural work-study plan

A selected group of fourth-year architecture students at Kansas State University are trying out a work-study program this spring term. They earn a semester of college credit, while also earning an hourly wage and gaining on-the-job experience with architectural firms.

That way, says Prof. Fred Miles, head of KSU's department

[continued on page 42]

News report continued from page 41

of architecture, they get to look at areas they don't cover in school—finance, administration, client contact, for example. The student interns will spend a minimum of a semester in offices; Miles hopes most will continue through the summer, giving them seven months of experience before beginning their fifth-year studies.

Steel fabrication starts for Chicago's Sears Tower

New York's World Trade Center isn't finished, and it's already time to start watching the progress of Chicago's 1450 ft, 109 story Sears Tower. The first structural steel is scheduled to go into place this summer; fabrication of the components has already started.

Skidmore Owings and Merrill based their design on nine 75-ft square tubes rising to various heights. The tubes will be formed of closely spaced columns (15 ft on centers) to give a column free flexible interior. Each tube will have a constant center-to-center and outside-to-outside dimension from top to bottom; these constant dimensions lend themselves to the assembly line production of many similar components.

That's just the way U.S. Steel's American Bridge Division saw it, and much of the fabrication will be done in plants in Ambridge, Pa. and Gary, Ind. Column units will be made up of a column section and spandrels for two floors. Typical column section will be 25'-8" long and 39 in. deep; width will vary from 14 to 39 in. Columns, fabricated in Ambridge as three piece weldments, will be shipped to Gary, where spandrels will be added. Spandrels will vary in depth from 42 to 48 in. and in flange width from 10 to 14 in. Like the column shafts, they will be three piece weldments.

When steel erection starts, column units will be shipped in order to Chicago. As they arrive, they will be lifted into place and bolted and welded to adjoining components. High strength steel floor trusses, spanning 75 ft, will be bolted to the centers of the columns.

The combination of columns and spandrels used to form the tubes making up the structure is rigid enough to eliminate the need for additional wind bracing, according to U.S. Steel. In fact, they maintain, the tube concept makes the building relatively more rigid than a conventional building.

High strength steels (42,000 and 50,000 psi minimum yield strengths) will be used in the columns on lower floors of the framework. A little better than half the weight of the framework will be high strength steels. In the upper parts of the towers, A-36 carbon steel will be used.

Concrete forming system starts at top

Starting at the top and working down is a practice that is probably common only to miners, but Peter M. Vanderklaauw, a Dutch architect who is an assistant professor at the University of Miami feels it's the way to build buildings. By starting with the roof and pushing the building up as concrete is poured, Vanderklaauw says, formwork is simplified, work is concentrated at ground level, cranes aren't needed, and the building is closed in as it goes up.

Vanderklaauw's system consists of formwork for columns, made of short structural steel sections stacked to form auxiliary columns which transfer the building load to the founda-

[continued on page 46]

Reflections

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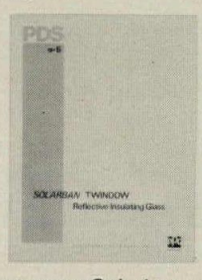

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News report continued from page 42

tions. As the building is jacked up by hydraulic and mechanical lifting devices, the auxiliary column sections are removed from the top and placed at the bottom, where they support the hardening concrete. By the time the columns have reached the second or third floor (depending on curing and the speed of construction) the concrete is strong enough to support its designed load.

Speed of construction varies from one to two floors a week, Vanderklaauw says. Only one form in a fixed position is required for roof and floors, and floors, walls and stairs are equally easy to construct. All the components in the system can be used over again in other buildings, and a staggered elevator system and flexible service connections would let a building be occupied during construction.

Calendar

May 6–7. 23rd Annual National Engineering Conference sponsored by the American Institute of Steel Construction, Sheraton-Cleveland Hotel, Cleveland.

May 10–13. Consulting Engineers Council/U.S. Annual Convention. Diplomat Hotel, Hollywood, Fla.

May 12–15. National Society of Interior Designers' 8th National Conference, Cleveland.

June 7–9. Construction Specifications' Institute, 15th Annual Convention and Exhibit, Anaheim, Calif.

June 20–24. American Institute of Architects, 103rd Convention, Detroit.

June 20–25. 21st Annual International Design Conference, Aspen, Colo.

June 21–25. National Conference and Exposition sponsored by the AIA and the Producers' Council, Cobo Hall, Detroit.

June 23–25. National Exposition of Contract Interior Furnishings, Merchandise Mart, Chicago.

Personalities

Bernd Foerster, professor and acting dean of the Rensselaer Polytechnic Institute School of Architecture, has been named dean of the Kansas State University College of Architecture and Design, effective July 1.

Jose de Rivera, Robert Gwathmey and **Paul Rudolph** have been elected to the National Institute of Arts and Letters, department of art.

Maurice B. Allen, Jr., AIA has been appointed to the Michigan State Committee for Environmental Arts.

Lee Stuart Darrow has been elected president for 1971 of the East Bay Chapter of the AIA, serving Alameda, Contra Costa, Napa and Solano counties, Calif.

J. Gerald Phelan has been named general consulting architect for Fairfield University, Fairfield, Conn.

Philip M. Klutznick has been named to the advisory committee of HUD.

Bernard J. Sabaroff, professor of architecture at Virginia Polytechnic Institute, has been appointed director of the College of Architecture's Environmental Systems Laboratories.

Edward Grafton has been appointed chairman of the National Housing Committee of the AIA.

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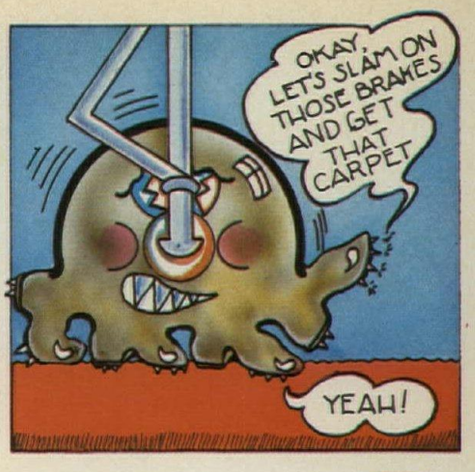

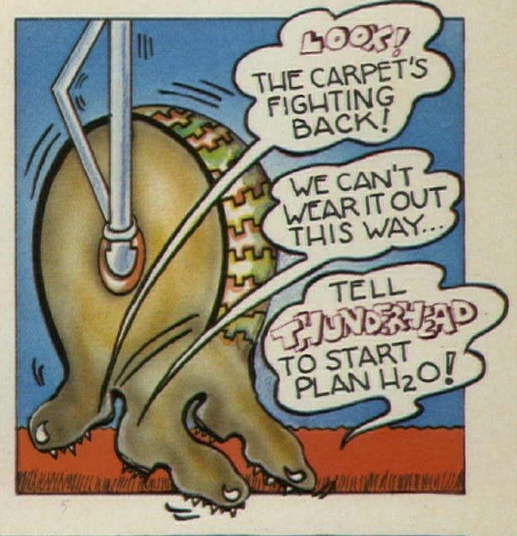

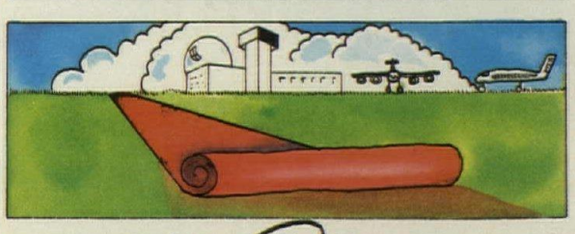

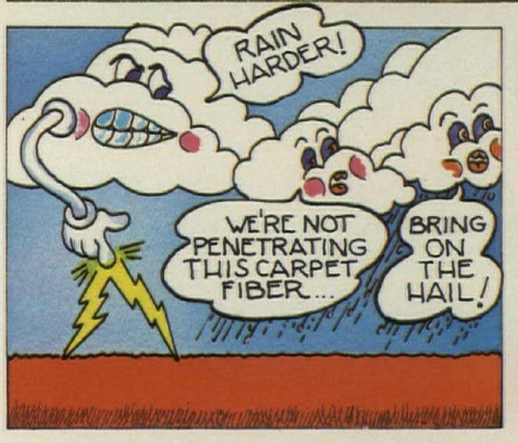

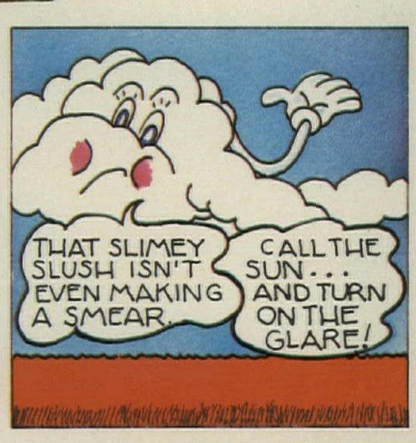

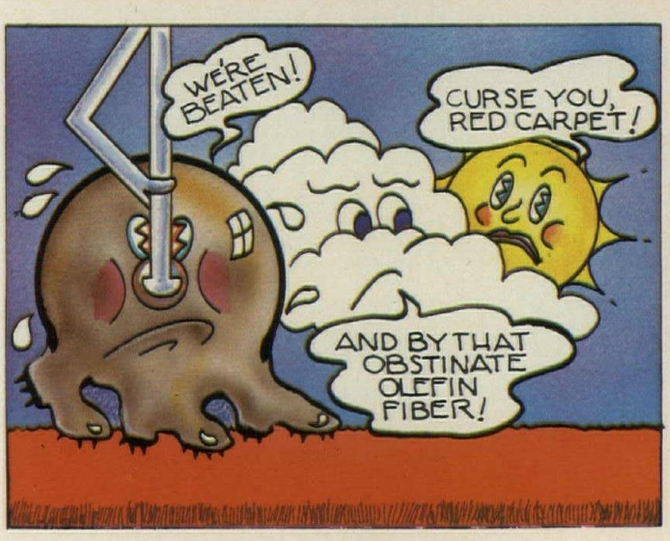

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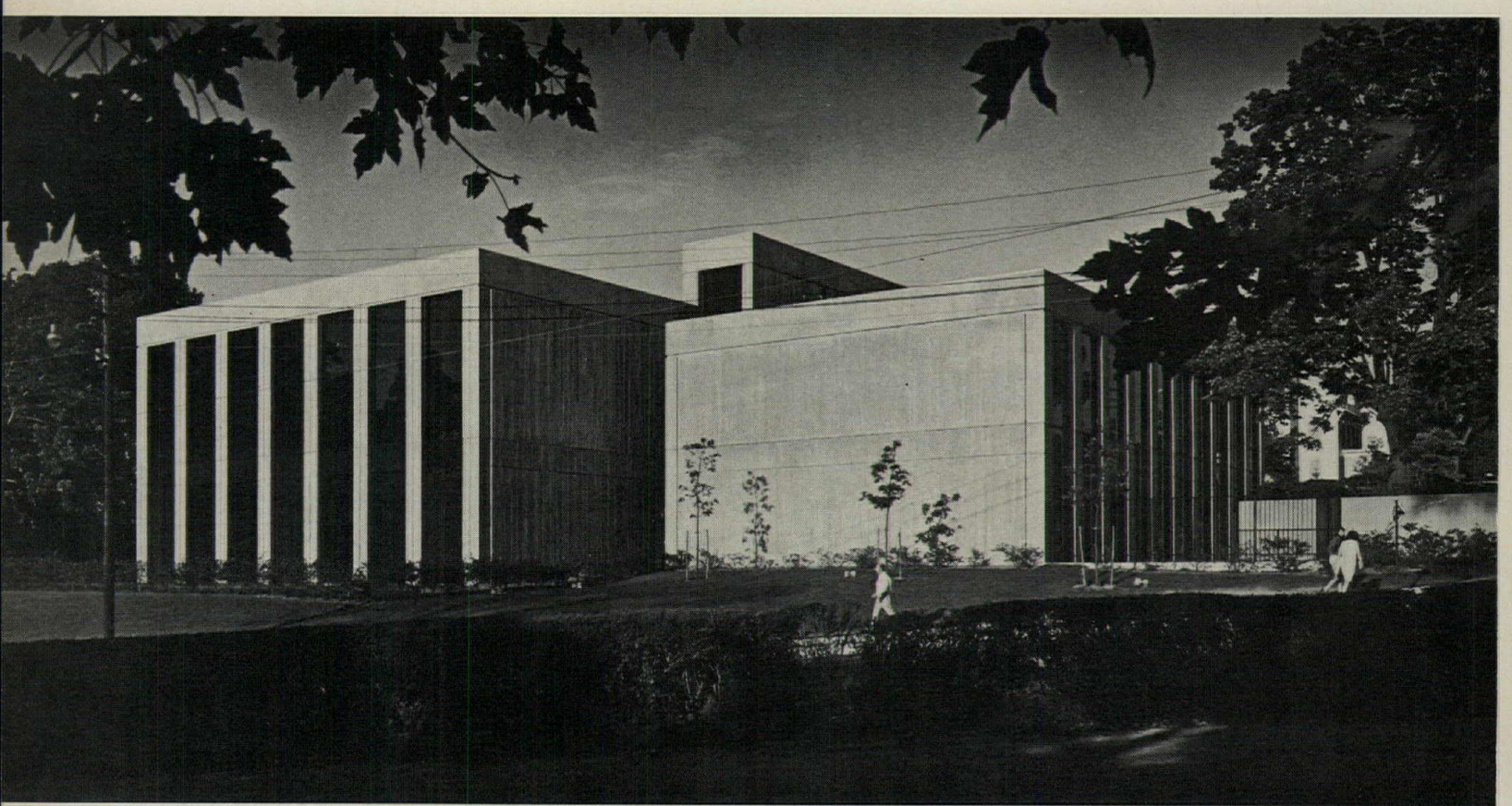

Photographs: Bill Rothschild

Owner: City of Port Washington, N.Y. Architect: Curtis and Davis. Structural Engineer: A. A. Abdalian. General Contractor: M. Stark Construction Co. POZZOLITH Ready-Mixed Concrete: Certified Industries, Division of U.S. Steel, Hicksville, N.Y.

"The most beautiful concrete job I've ever seen in my life." So said one of the committee members of the Concrete Industry Board (New York) in judging the Port Washington Public Library, Port Washington, Long Island. The structure was unanimously awarded the CIB's Annual Award for 1970.

Located on a grassy knoll overlooking Manhasset Bay, the 34,500-square foot, split-level structure displays exposed architectural concrete with formboard finish inside and out. The awards committee stated that the finish shows not the slightest imperfection throughout.

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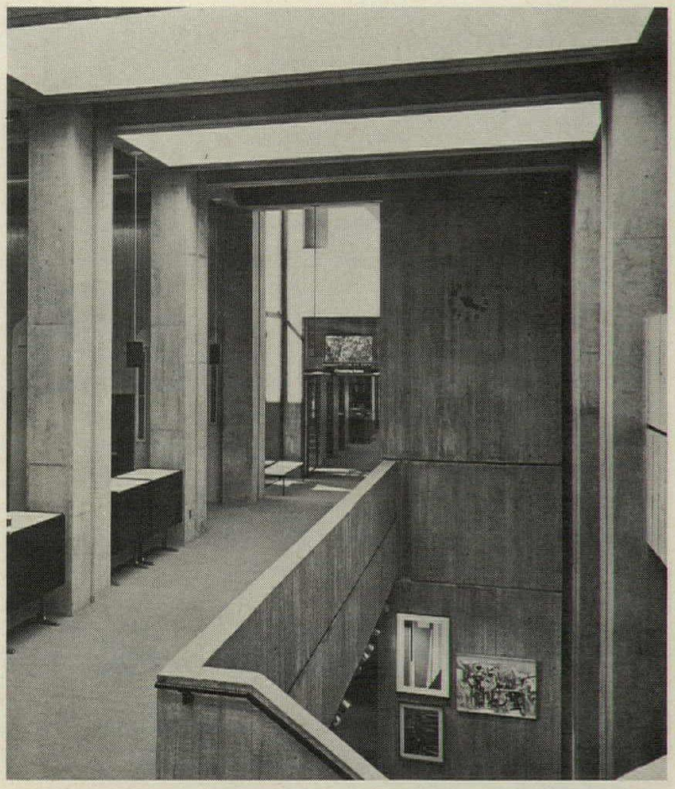

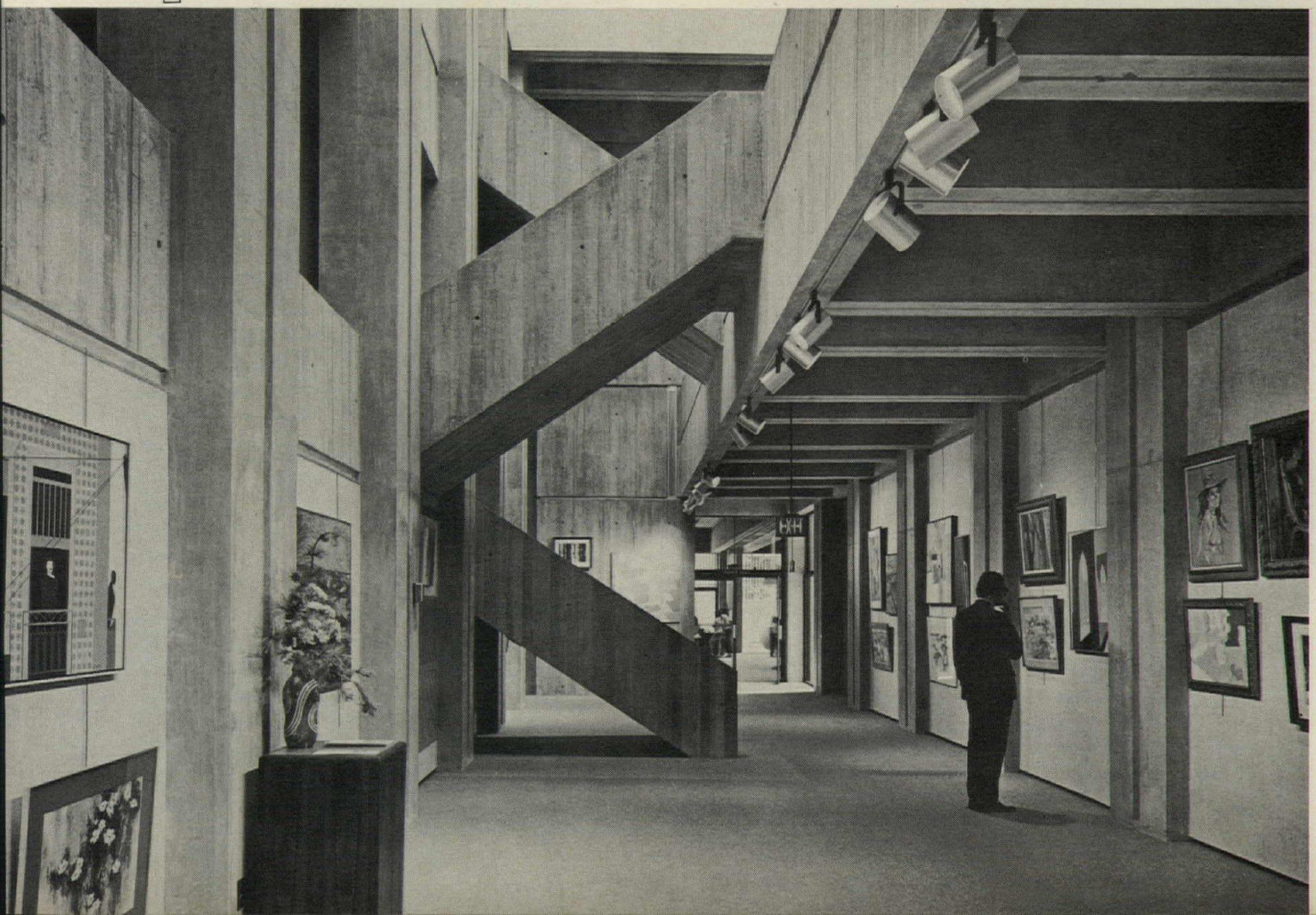

News report continued from page 46

Robert Douglass, AIA has been appointed as special consultant for health facilities design, Pan American Health Organization. Jose Luis Sert, retired dean of the Harvard Graduate School of Design, will visit the University of Virginia as Thomas Jefferson Memorial Foundation Professor of Architecture.
The F. Paul Anderson Award of ASHRAE has been presented to Dr. Donald K. Tressler. The ASHRAE-ALCO Award for distinguished public service was presented to Carlyle M. Ashley.

Washington report

Davis-Bacon suspension: a means to an end

Of itself, the President's suspension of the 40-year-old Davis-Bacon Act wasn't expected to end the mad upward wage-price spiral in the construction industry. But it just might provide the necessary shove that would produce a plan to slow or halt that spiral. The sobering evidence that Mr. Nixon could and would take some action could be what is needed to get labor and management down to meaningful work at the bargaining table. And if it does, it could mean some forward progress for all concerned in the industry.

The move and other maneuverings of the past several months have to be considered against a background with more than a little similarity to a carefully managed major drama. By the suspension, the President has made it possible for labor and contractor leaders to retire with some honor from an untenable position—meanwhile firing salvos against Mr. Nixon, of course; and to come closer to guaranteeing compliance among their constituents, under the threat of further and more drastic actions.

That's not to say that suspension of the depression-born Davis-Bacon law is inconsequential. The law was passed at a time when there was fear that the Federal government might become a union-buster by insisting on low wages, and it requires that employers on government-financed construction work must pay the "prevailing" wages in the area.

In practice, however, the Labor Department—charged with establishing the "prevailing wage"—has made no independent investigation of its own, has simply accepted the highest union wage in the area. Result has been that high wages in nearby cities, for example, have been forced on contractors in suburban and rural areas. A more important result has been that union negotiators have used the "prevailing wage" determination as an ever-rising "floor"—from which they could then escalate further wage demands.

So suspension of the provisions of Davis-Bacon removed a major prop from under labor leaders and they obviously didn't like it. (Contractors have long called for an end to the act.) But the immediate effect will be small. Each year, the Federal government is involved in about $30 billion worth of construction, either directly (as through the Corps of Engineers, Bureau of Reclamation, General Services Administration), or at least heavily (as in grants and contributions toward mass housing, urban renewal, pollution-control work). Projects in which federal money is involved in terms of guarantees (like FHA-guaranteed private housing) are not affected.

The elements of the drama were all present during the past year: The nation's biggest industry had more unemployment than most others, was doing less (or at least no more) business—yet wages jumped about 18 percent, overall costs about 22 percent. The situation was becoming scandalous, but nothing was being done.

So, on Jan. 18, the President called in his "Construction Industry Collective Bargaining Commission," composed of contractors, labor leaders, government people, and told it to "come up with some answers" by Feb. 19.

The Commission huffed and puffed, got down to no business at all. Labor Secretary James Hodgson began shuttling back and forth between a labor meeting at Bal Harbour, Fla., and Washington, "leaking" information as he went as to what the Administration might do. Feb. 19 came and went. So, on Feb. 23, Mr. Nixon stepped in with the suspension and kept up the pressure by sending Cabinet members to Congress to support extension of standby powers to enforce wage-price freezes or cutbacks.

Although both labor leaders and employers immediately issued statements criticizing the President's action (as not enough, as discriminatory, as union-busting, etc.) there was evidence that they really weren't all that unhappy. For instance, it is no particular secret that the top union leaders in Washington have been steadily losing control of their own locals, as rank and file members no longer blindly follow the dictates of older men, repeatedly kick over the traces, reject carefully worked out settlements.

Thus the President has given them a target to fire at while justifying their own orders under threat of further retaliation to their own constituents: they can beat a retreat with some honor, claiming a "victory" of sorts on the ground that their protests at least prevented any worse occurrences. The contractors also really don't mind so much. They also can claim a minor gain in the suspension of Davis-Bacon; and again, the threat of further force from the White House can help them in bringing their own much divided forces together.

The outcome, it now appears, will be some sort of a "voluntary" agreement, such as the 1961 Missile Sites Stabilization Agreement, under which a Presidentially recognized overall board was set up in Washington. Local boards at each missile site, with considerable power to intervene in and investigate all types of disputes, including jurisdictional disputes, attempt to settle them before they reached work-stoppage proportions, even by using compulsory arbitration procedures. A "no strike—no lockout" clause was included.

It would not be difficult to translate such an agreement to the present day, using regional groupings (like the 12 districts into which the Federal Reserve Board divides the U.S.) as locales for regional disputes-settling boards. Another possible result: recommendation for legislation to permit construction employers to bargain with unions on large multi-employer, regional bases, rather than individually or craft-by-craft as is now the practice.

Given this background, it is possible to hope for some industry-sponsored answer. If not, Mr. Nixon has some powerful arrows left in his quiver: wage-price controls; an imposed "stabilization agreement," even the drastic course of a major cutback in federal construction, a call for repeal of a dozen or more special laws now on the books which—like Davis-Bacon—set construction workers aside as a special elite corps of the nation's working forces. [E.E. Halmos]
[continued on page 53]

On Reader Service Card, circle no. 358 →

Architecture west

Atlantic Richfield (top) and General Telephone buildings

West coast editor Esther McCoy opens P/A's new monthly column by commenting on the West's current foremost topic, progress in making tall buildings earthquake proof

The new silhouette of Los Angeles, based on shapes that can take seismic shock, is as much the product of the engineer as the architect. The new tall steel-framed buildings and the 16- to 21-story reinforced concrete ones built after the ductility code went into effect in 1967, turned out to be limber enough to absorb the intensity of a 6.5 earthquake. Determining just what happens to the ground under a building subjected to such force has been mainly guesswork, but this year for the first time we'll have a mass of scientific data from instruments installed on the new buildings.

"When the readings are in we'll know," said Paul Rogers, structural engineer and chairman of the subcommittee on reading the instrumentation. The instruments are accelergraphs, required since 1967 on buildings over six stories of 60,000 or more sq ft and all buildings over 10 stories.

One installed in the basement records the ground motion; others at midsection and at the top record how the building responds to the ground motion. The USGS has already started reading the instruments on some 250 buildings, and Rogers' subcommittee will equate the findings in terms of the code and offer recommendations.

The alluvial soil of the site of the two ruptured hospitals, near the epicenter, apparently magnified the 6.5 force to over 8. What intensity to design for now is the soul searcher. "If we go to three times the existing code for hospitals we'll have few new ones," said Thomas O'Rourke, structural engineer. "To design for 8 eliminates most of the superstructures on the freeways."

The answer may come out of the instrument readings. Up to now we have depended on information from earthquakes simulated in laboratories. The University of California, Berkeley has a shaking table on which they put a model of a building and copy violent earth motions. The Anchorage quake has been simulated in glass boxes filled with layers of different colored sand. Cal Tech makes earthquakes too. But the real earthquake is always random. It can hit and turn 90 degrees and hit again. There were a few readings from instruments on buildings in the 1940 El Centro quake zone. "They were of value," said Rogers, "But this is *it*."

The instrumentation was not in place on Feb. 9 on Albert C. Martin and Associates' unfinished 52-story twin Atlantic Richfield towers. Ed Teal, chief engineer on the steel-framed buildings, said, "We comply with the empirical code and the additive is theoretical. But there's often a spread on the answers, so we design in excess of the empirical." A mathematical model was made of the towers and given a good shaking. Distortions were clues on how to mount the rigid facings so they wouldn't crack up.

Daniel, Mann, Johnson and Mendenhall's General Telephone Building in Santa Monica is a 21-story ductile concrete structure with 16 2-ft dia. service columns at the periphery taking all the lateral forces; interconnecting beams absorb the seismic energy. "The columns should take a force equal to gravity," said Rogers, who engineered it.

Edgardo Contini, engineer and Gruen Associates partner, said of the change in design since the 1933 Long Beach earthquake; "First we were delivered from the superstition that tall buildings are more dangerous than low ones. This changed the urban form. The design form was determined by what section was best suited to withstand seismic shock—one that's thin and uniform. Most unpredictable are buildings irregular in plan and parts, with abrupt changes in section." Many of the 10,000 to 20,000 pre-1933 buildings without lateral bracing may have to go, leaving Los Angeles more historyless than ever. [Esther McCoy]

Products and literature

a The bath. → **The bath.** A super-size fiberglass bathtub, 5½′ x 7′, offers bathing luxury. With an oval-shaped bathing area, the bath is available with single or dual water controls and showers. In blue, gold, avocado and pink. Kohler Co.
Circle 101 on reader service card

b **All glass.** Tables built brick by glass brick are the work of Ari Bahat, an Israel-born architect. Hollow rectangles are piled into various shapes as pedestals for glass-topped tables. Placed end to end they form telephone tables and plant and umbrella stands. Bahat Associates.
Circle 102 on reader service card

c **Light group.** Six silver-topped bulbs with stems of clear glass are combined in a ceiling fixture with white lacquered metal discs set on chrome tubes. A wall up or down lamp, designed by Junko Enomoto and James Howell, consists of two pieces of white Plexiglas joined by chrome-finished clamps. George Kovacs Lighting Inc.
Circle 103 on reader service card

Plastered with vinyl. Vicrtex vinyl wallcoverings are textured to look like a plasterer's trowel has been at work. They come in two vertical designs and an overall pattern that reproduces antique plaster. Many colors. L.E. Carpenter & Co.
Circle 104 on reader service card

Stain and static-resistant carpets. Bold Venture is a polyester spun yarn level loop carpet that is engineered to meet the demands of commercial buildings, hospitals, schools and offices; it is designed for soil/stain release and static-resistant performance. Centurain is a $\frac{5}{32}$ gauge, 40 oz carpet with an alternating loop and cut texture. Stains from lipstick, coffee, mustard, mineral oil, furacin and silver nitrate are fully released. Johns-Manville.
Circle 105 on reader service card

Ceilings. Two ceiling systems are recommended for factory-built structures and mobile homes. DecraPlank gives a look of length with a planked effect; Monolok features panels that fit together with visible fasteners. Simpson Timber Co.
Circle 106 on reader service card

Solid oak. Tables, chairs, sofas and benches are made to take hard public and school use. Table tops are solid butcher block oak or plastic laminate. Seating is modular, and comes as one-, two- or three-seaters. Tech Furniture, Inc.
Circle 107 on reader service card

d **Remove and replace.** Natural cane sections are removable and replaceable in this series of side and arm chairs and benches. Frames of solid ash finished in colored lacquer, transparent dye and wood stains. Intrex Furniture.
Circle 108 on reader service card

Textured steel. Used for contract furniture, desks, credenzas and files, M–Tex is a textured steel with a soft look. Resists fingerprints, dust and scuffing; wipes clean with a damp cloth. In six new designer colors, with color-mated plastic laminate tops. Meridian Inc.
Circle 109 on reader service card
[continued on page 56]

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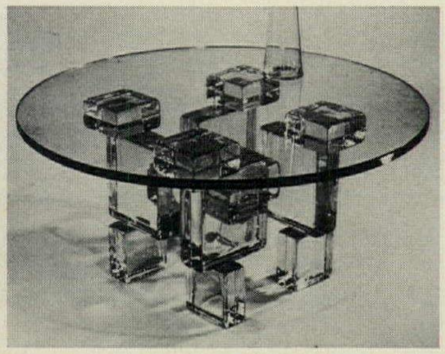

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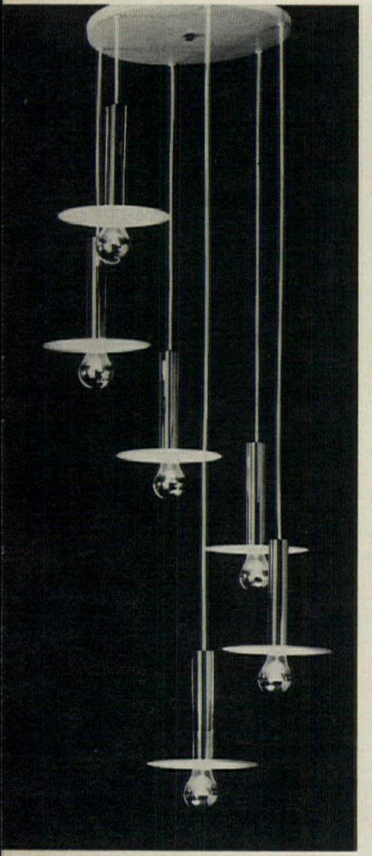

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Steel Doors in Dormitories

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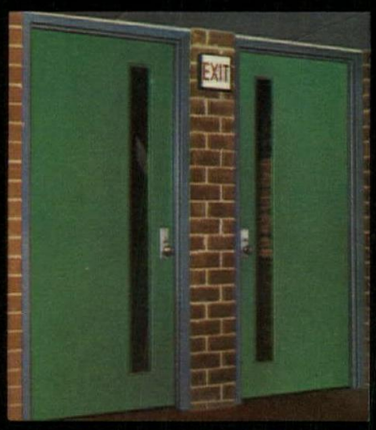

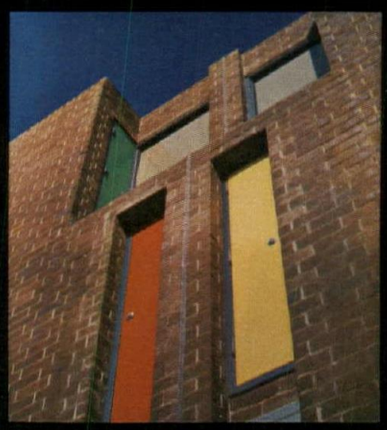

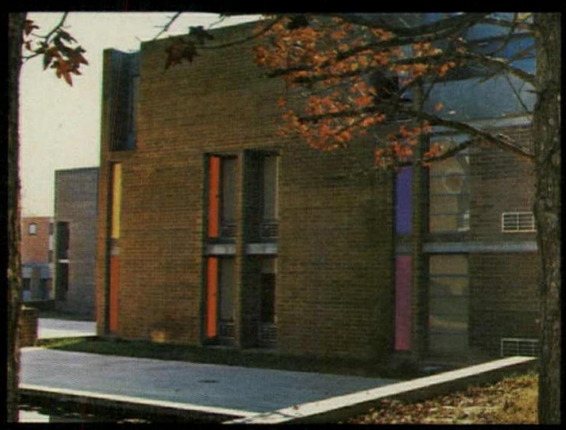

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ARCHITECTS: Bond Ryder Associates
New York, New York

CONTRACTOR: W. G. Yates & Sons
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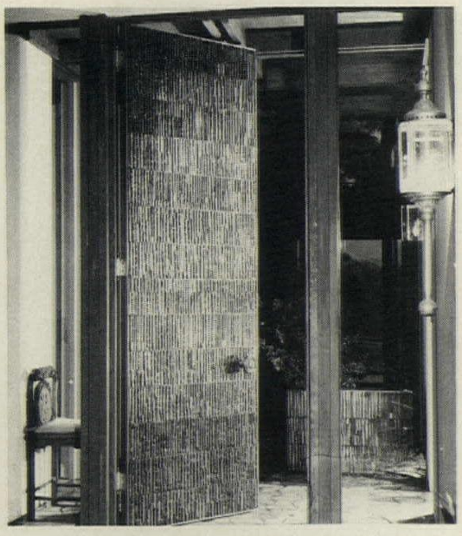
Products continued from page 54



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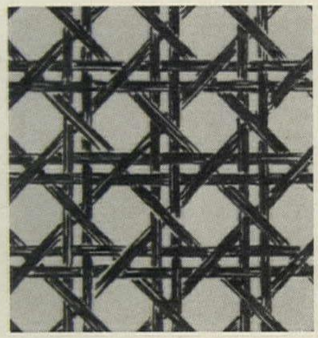

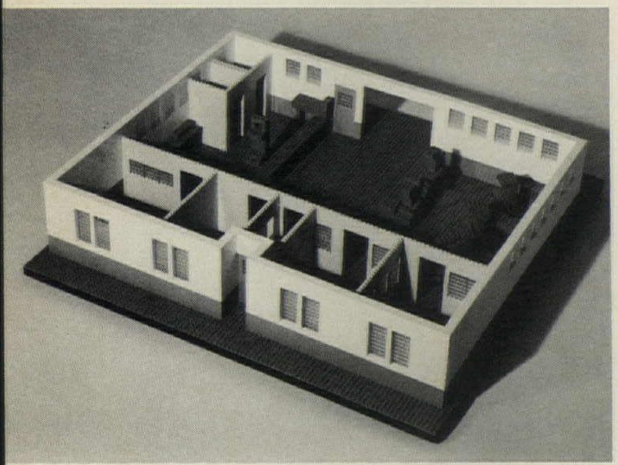

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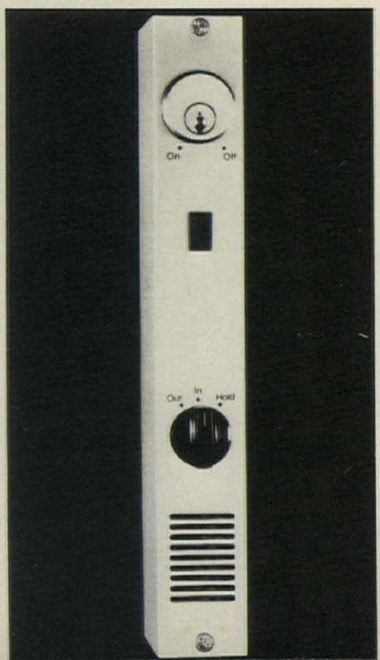


h

e **Tropical.** A collection of hand screened ceramic wall tiles features cane and bamboo designs, to be used separately or combined. Tiles are 4¼" sq and come in gold and parakeet green on matte white; complementary solids in gold or white. Mid-State Tile Co.
Circle 110 on reader service card

f **Bronze-like.** Abstract designs and various textures are cast in Bonded Bronze for large architectural panels. Castings are bonded with fiberglass to produce a material suitable for interior or exterior use. Available as panels or complete doors, also can be used for furniture, elevator doors and interiors, planters, fascias and columns. Carved wood panels available too. Forms & Surfaces.
Circle 111 on reader service card

Whiteprinter. A removable modular electronic components circuit package with simple snap-in connections is said to assure continual operation of this table-top whiteprinter. Mercury contact principle is designed to improve the evenness and intensity of light from the lamp printing cylinder. Prints at speeds to 15 fpm. Model 747 from Blu-Ray, Inc.
Circle 112 on reader service card

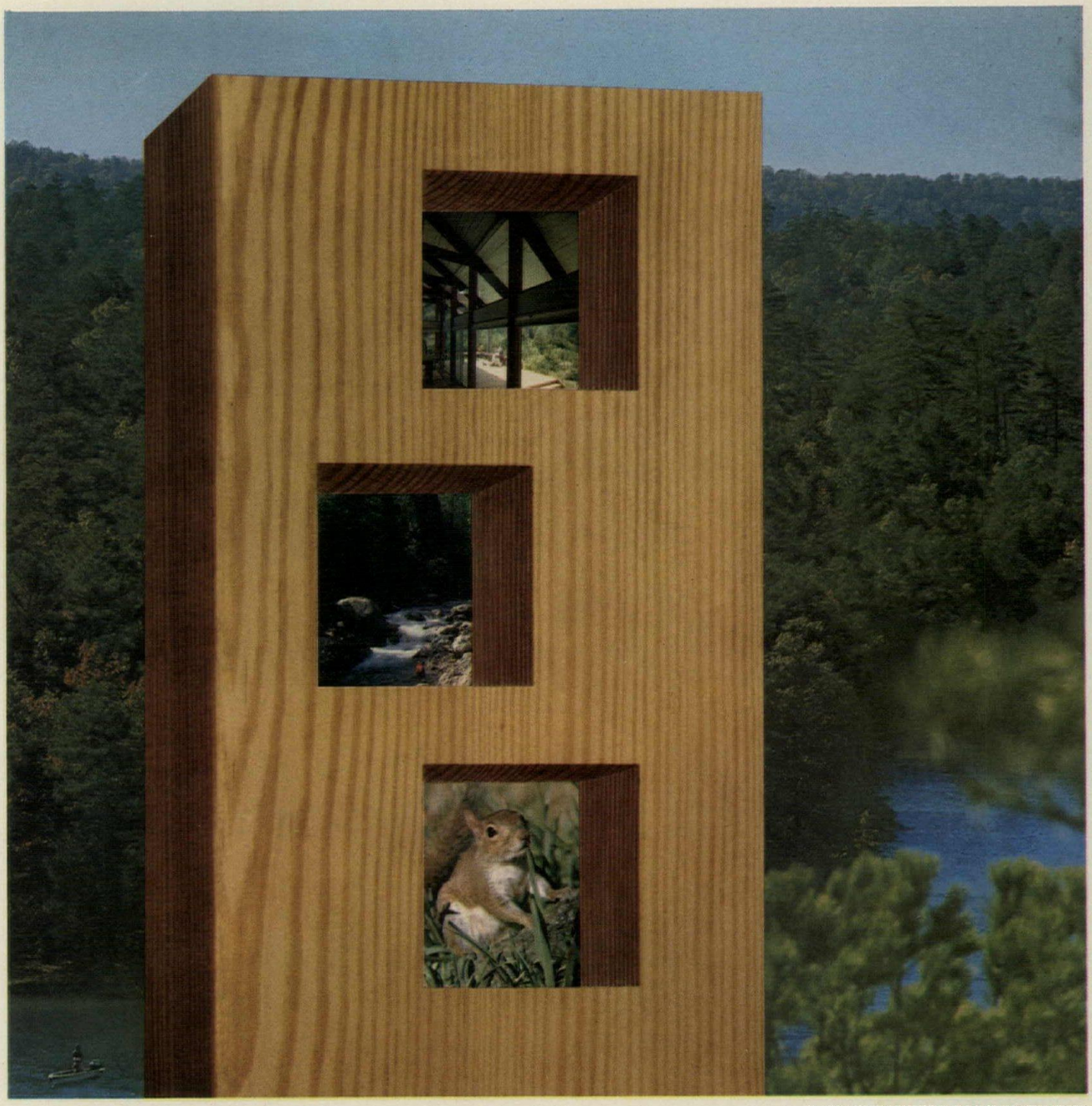
Panels form wall unit. Modular construction panels are made with a core manufactured from treated long wood fibers, coated and pressure-bonded with a fire-retarding, moisture-resistant portland cement binder. The wall system includes doors, windows, trim and miscellaneous hardware. Custom finishes: face brick, stone, marble, wood grains and others. The Flintkote Co. and ESB Inc.
Circle 113 on reader service card

g **Three dimensional designs.** Modulex is designed for making scale models and for business charting. Multicolored plastic components interlock and snap onto studded baseboards. Can be reused almost indefinitely. Varied assortments for layouts ranging from 8400 sq ft to 22,500 sq ft and for charting research, project planning, scheduling. Samsonite Corp.
Circle 114 on reader service card

h **Key protection.** Jamb-Gard is a battery-operated, intruder alarm device with solid-state circuitry which alerts residents to an unauthorized entry. Flush-mounted into the house or apartment door frame, it is key-operated with three settings: instant, hold and delay. Anodized aluminum or gold finishes. Continental Instruments Corp.
Circle 115 on reader service card

Locks. Colonial designs are reproduced in hot forged brass with cylinder locks. Surfaces have baked on enamel protective finish. Baldwin Hardware Mfg. Corp.
Circle 116 on reader service card

Epoxy mortar. Thermoset DC–127 is a two-component epoxy adhesive designed for bonding precision block or masonry tile. The mortar is said to bond masonry materials together with a greater strength than that of the materials themselves and to offer construction economies due to speed of application. Thermoset Plastics Inc.
Circle 117 on reader service card
[continued on page 58]



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SFPA'S ENVIRONMENTAL GOAL: TREES FOREVER FOR MAN AND WILDLIFE

The quality in evidence today in Southern Pine lumber is the result of a half-century crusade in reforestation and forest management. Southern Pine forests, once on the verge of extinction, have been restored to scenic splendor. And, according to State Game and Fish Commissions, there are more deer and other wildlife in Southern forests today than when Columbus discovered America. In these man-made forests, air and water are pure and broad and new vistas of recreation have evolved.

Through its new "Trees Forever" Program, the Southern Forest Products Association is seeking a major extension of conservation policies long practiced by its members. The objective is to double timber growth in the South and thereby fulfill a broad range of environmental and economic needs in the years to come. If you'd like more information on how man and wildlife will benefit from our "Trees Forever" program, write to: Southern Forest Products Association, P. O. Box 52468, New Orleans, Louisiana 70150.

SOUTHERN FOREST PRODUCTS ASSOCIATION

Products continued from page 56

Textured face panels. Bow Rock, manufactured from fiberglass reinforced polyester resin, has the look of weathered or antique bronze. Other earth tones on custom basis. Single sheets in sizes up to 8′ x 20′; for facing sandwich panels largest size is 5′ x 20′. In standard and fire-retardant grades. Kalwall Corp.
Circle 118 on reader service card

Literature

Quakes. "Earthquake Forces on Tall Structures," a revised 24-page booklet defines the effects of ground motion (vertical and horizontal), damping, distribution of earthquake coefficient in building codes, base shear, basic approaches to structural design, analysis of earthquake records, fundamental problems in earthquake design, and other factors. Bethlehem Steel Corp.
Circle 119 on reader service card

Audio digest. A monthly tape cassette service offers listeners the latest housing news, interviews, seminars and key ideas from various magazines relating to "The Housing Scene." Monthly cassettes will be amplified by special cassettes covering finance, marketing management, planning, design, construction. Information from Tech Tapes.
Circle 120 on reader service card

Color comparison charts. For specification simplification, the annual color comparison charts bulletin has been released, showing commercial equivalents for leading manufacturers' color lines and patterns in vinyl asbestos and asphalt tile. Asphalt and Vinyl Asbestos Tile Institute.
Circle 121 on reader service card

The flick. "Marble" is a 20-minute slide film showing modern methods of quarrying, cutting, fabrication and installation. A less technical, more informational film suitable for viewing by students is also available. Marble Information Center.
Circle 122 on reader service card

Photo finish. Literature is available describing Stanpat, triacetate sheets preprinted with title block, symbols, diagrams or other drawings. Easy to use, reproductions come through clean, even when microfilming. Stanpat Products Inc.
Circle 123 on reader service card

Wash. Color catalog features washroom fixtures including washfountains, pre-assembled wash centers, shower room fixtures and special equipment. Included are details of reinforced polyester washfountains in 11 colors. Bradley Washfountain Co.
Circle 124 on reader service card

Plywood concrete forms. A new plywood grade use guide charts suggested design pressures for vibrated concrete. A set of load span curves provides span thickness recommendations. American Plywood Association.
Circle 125 on reader service card

Vinyl carpet backing. Ulok vinyl foam carpet backing is described in a brochure pointing out that this backing is now competitively priced with high density foam rubber. The manufacturer claims to have corrected the problem of plasticized migration while retaining good bond strength. Backing is said to have high resistance to scuffing, shredding or tearing in heavy traffic installations. Union Carbide Corp.
Circle 126 on reader service card

Drapery hardware guide. A comprehensive manual for architects' selection of drapery hardware contains 20 pages of information on ceiling, recessed, wall and overhead suspension installations. Track particulars and specifications are given. "Designers guide" also available. Kirsch Co.
Circle 127 on reader service card

Planning elevators. This 16-page guide offers directions for specifying elevator systems for office buildings, hospitals, hotel and apartment buildings. Charts list optimum number of elevators, speeds and capacities based on building size. "Infinite programming" control system, a constant analysis of passenger demand and car distribution and subsequent dispatch, is described. Armor Elevator Co., Inc.
Circle 128 on reader service card

Alumiframe. An aluminum framing system designed to replace conventional wood framing is detailed in a 20-page color brochure. Incombustible and termite-proof, the lightweight aluminum frame sections are said to offer special advantages. Aluminum Company of America.
Circle 129 on reader service card

Bedding. Epoxy resin-based bedding materials for setting quarry tile and pavers on concrete substrates are described in a series of technical bulletins. Data on this firm's Rezklad series include mortar, water-washable grout, epoxy resin/asphalt setting bed and speed grout. Atlas Minerals and Chemicals Division.
Circle 130 on reader service card

Glass for construction. Selection tables and basic information on architectural glass products are offered in this catalog. It includes a special section listing U values and shading coefficients, effects on cooling and heating load reduction, design load and glazing data and suggested specifications. Libbey-Owens-Ford Co.
Circle 131 on reader service card

Air curtain. Assembled at the factory, this air curtain equipment is recommended for commercial and public buildings. Installation is said to be faster and less costly than on-site assembly. The Stanley Works.
Circle 132 on reader service card

Sealant selector. Technical information is given in chart form about weathertight seals for all types of building joints. Characteristics of five liquid polymer sealants, three polyisobutylene-butyl, a synthetic resin sealant and two oleoresinous products are detailed. An acoustical sealant for use around openings in partition perimeters is included. Brochure from The Tremco Manufacturing Co.
Circle 133 on reader service card

GYMNASIUM: Lake Forest College, Lake Forest, Illinois
ARCHITECTS: Loebl, Schlossman, Bennett & Dart, Chicago
Paul Straka, Associate Architect

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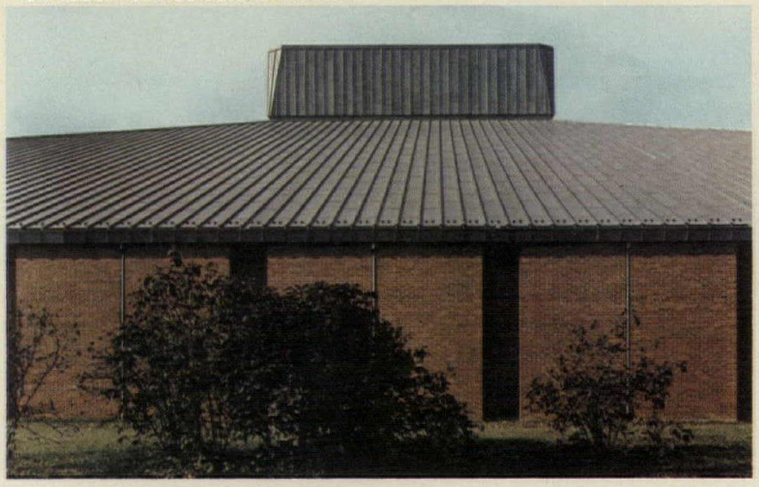

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Tapered FOAMGLAS eliminates roof drainage problems by automatically putting a slope on a flat deck. The roofer simply places factory-tapered blocks in sequence and roofs over immediately. FOAMGLAS is an excellent base, because it's strong and dimensionally stable. It consists entirely of closed-cell glass, so it's waterproof, vaporproof, and incombustible—and guaranteed to remain so for at least 20 years.

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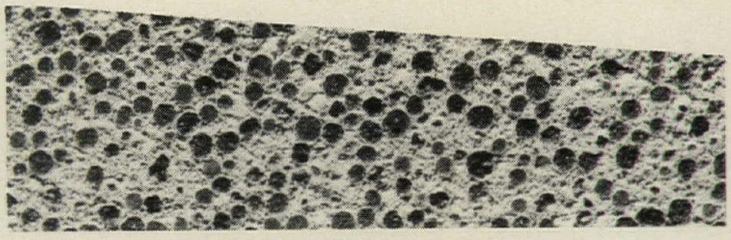
FOAMGLAS or CIRF? We'll help you decide with men, samples and technical data. Write Pittsburgh Corning Corp., Dept. PA-41, One Gateway Center, Pittsburgh, Pa. 15222.



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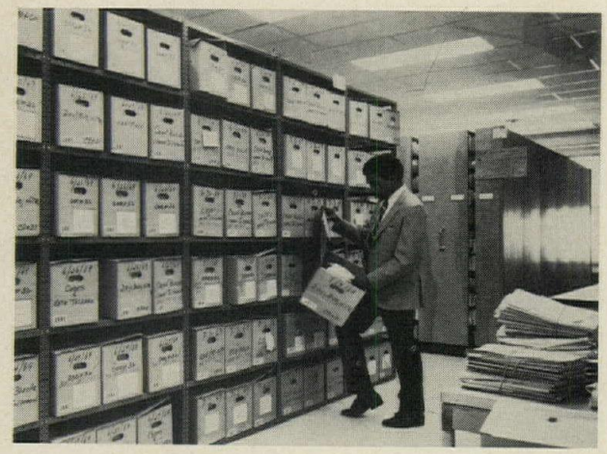

Prior to the installation of LUNDIA FULLSPACE, bank personnel had to remove a heavy, cumbersome box to gain access to the desired item of information. Photo taken during installation of FULLSPACE system showing original storage system using open steel shelves and boxes.

FULLSPACE Lundia PREFABRICATED ADJUSTABLE SHELVING

LOGICAL STORAGE SYSTEMS FOR SEEMINGLY ILLOGICAL SPACE PROBLEMS

Domestic Adjustment Department, Chase Manhattan Bank, where up to 400 accesses per day are made to the LUNDIA FULLSPACE file system holding records of over 500 million checks.

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One of the largest commercial banks in the U.S. handles, among other things, over two million checks a day. Today it has records of over 500 million checks in what may be the world's largest rolling library—LUNDIA FULLSPACE movable storage units. The FULLSPACE system comprising 30 bays each having five movable shelf units and one stationary end unit, was installed four years ago to replace an inefficient steel shelf system. Besides a 50% savings in time to check information retrieval with FULLSPACE, the bank gained 2700 sq. ft. more floor space for storage than was available with its old shelving. Previously, information was retrieved by removing a cumbersome box, propping it on a knee or setting it on the floor so the lid could be opened to remove the envelope containing the information, and the reverse process when the box was returned to the shelf. The versatility of FULLSPACE now makes it possible to store the envelopes on the shelves loosely where access to them is quick and easy.

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And that's a very good reason for spending the few extra dollars it costs to carve them.

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It's not only that they're exquisitely carved. That's impressive enough.

But the big thing is, they're made of an exotic hardwood.

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And that's very impressive. Because Malaysian meranti is basically a furniture wood. And looks a lot like its cousin, mahogany.

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But, frankly speaking, we think Malaysian meranti is better than mahogany in many ways.

It's lighter in color. So it's easier to finish. Especially if you want to use a light stain.

Of course, the style shown here is just one of the many St. Regis door styles. We'll be glad to send you the catalog on all our Malaysian meranti and other fine doors.

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On Reader Service Card, circle no. 383 →

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Progressive Architecture

April 1971

All we know for certain, despite the increasingly anxious attempts to predict the future, is that it will be nothing like the present and will have little resemblance to our prophecies. We are on the verge of qualitative rather than quantitative change, the nature of which is almost impossible to divine.

Most of our institutions are under critical examination or outright attack. Yet never have we seen them so clearly. The fight against segregation exposes the nature of discrimination, the attack on education has made us examine how children learn and the assault on traditional architectural practice has laid bare the profession of architecture.

Predictions of the future for the most part assume an exponential increase in population, production and prosperity. Yet growing shortages of energy, increasingly frequent power crises, brownouts and blackouts, indicate that we do not have sufficient energy to justify predictions of an affluent future.

We are in debt to the past because we have not disposed of the accumulated wastes generated by present affluence. It is difficult to believe in future accelerated production when entire segments of our environment are already contaminated by the wastes of manufacture, animal processing and overpopulation. To predict a future like the present, dependent upon increasing affluence without taking into consideration the danger of drowning in the excretions of our untoilet-trained technology, is unrealistic.

The involvement of architects in process, computers, systems, design methodology, ecology and advocacy is an indication of an increasing awareness on the part of the profession of impending qualitative change. Nowhere is the indication of change in architecture more apparent than in the new curricula of environmental design being introduced in schools throughout the country. These efforts to prepare professionals for the future are often criticized as unstructured and untried. This is undoubtedly true for they are very new. Only a decade ago the major concern of architects centered around changing styles and highway beautification.

Teaching environment as a humanities discipline in architecture schools to a broad spectrum of professionals including architects does not dilute architecture education as its detractors claim. It is now obvious that it can do nothing but create a more favorable climate for architecture. Buildings conceived as environmental artifacts in all of their aspects, from ecological systems to monuments, have a better future with enlightened environmental professionals than they have enjoyed at the hands of all too often laissez-faire clients.

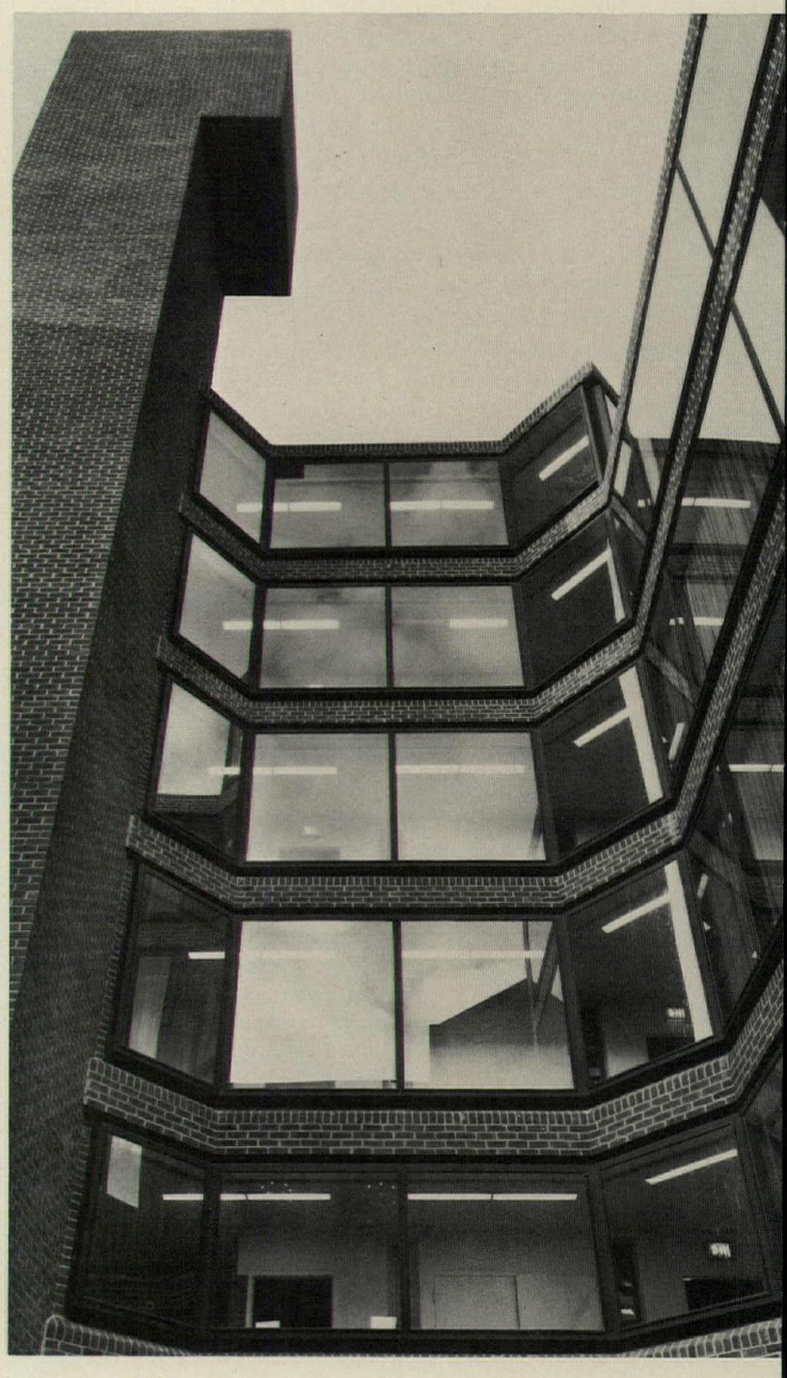
Nervi's famous statement that he who designs and builds a building should be called 'architect' will have to be enlarged to include the qualitative change that is taking place in the architectural profession. Responsibility for keeping the earth's resources, air, land and water, in ecological balance must be added to the architect's traditional responsibilities for aesthetics, health, safety and welfare of the users of architecture. No one can predict with certainty the parameters of the architectural profession of the future, but we do know that all of those who take upon themselves the responsibility for quality of the environment will be considered professionals.

Forrest Wilson

Canal Square

In search of a place

By making a commercial venture into something far more, the owner and architects gave historic Georgetown a place for people to be rather than just a place to shop



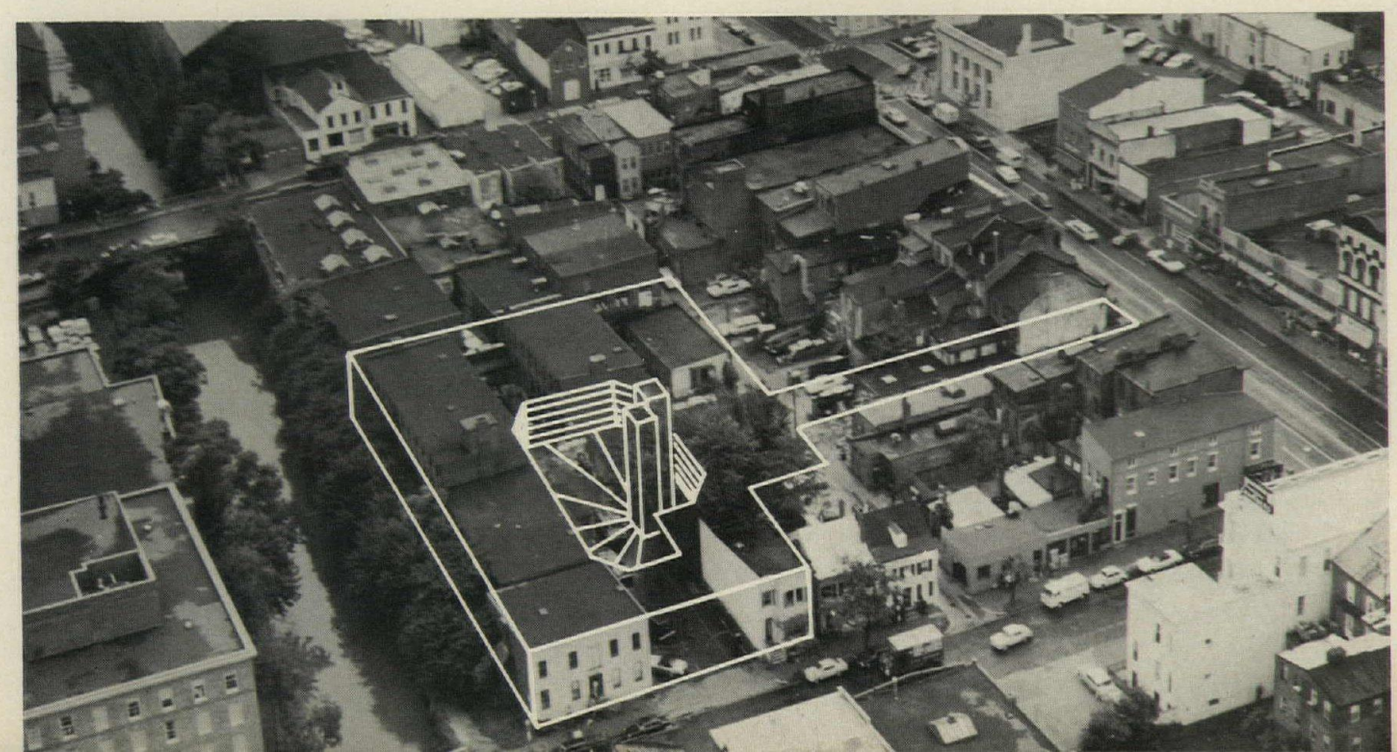
It will come as no surprise to anyone familiar with Georgetown, Washington, D.C. that historic buildings are revered there. Nor is the creation of a building that uses the best of the old to flavor and complement the new a process in the "never been done" category. The problems Arthur Cotton Moore faced in designing Canal Square are familiar ones—the local boards, inspectors, commissions, the requirement for inexpensive speculative office/commercial space. What is unique about Canal Square is not the accomplishment of a brilliant solution to these problems—although that is worthy of note in itself—but that the square is an event, a place for people.

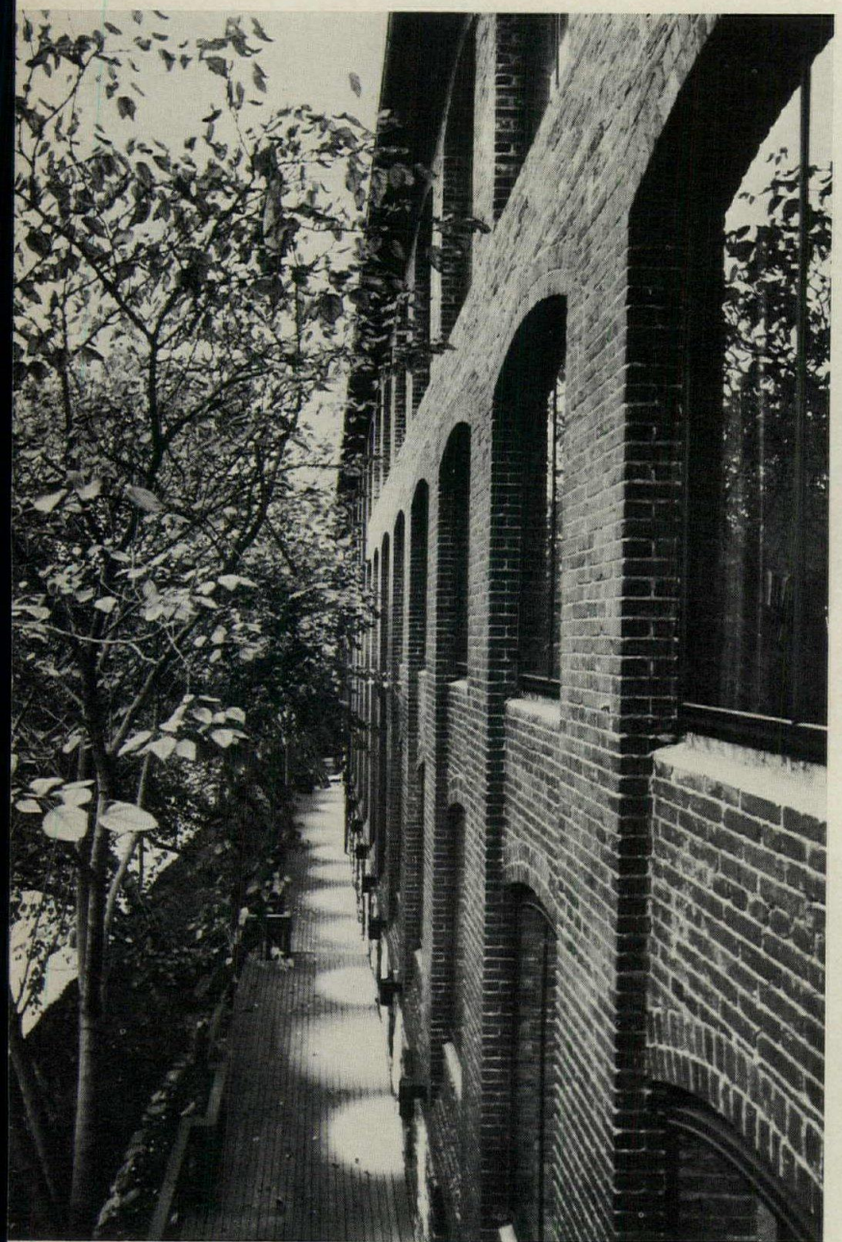
Located beside a Chesapeake & Ohio barge canal, the old warehouse which forms one leg of the square was slated for removal, to be replaced by—what else?—a parking lot. The scene of the compilation of the 1890 census, the building saw the first collation of cards now known as "IBM cards." Inventions of Dr. Herman Hollerith, owner of the warehouse, both the cards and the machine for collating them became the basis for early IBM efforts. More recent times, however, saw the old structure used for the storage of greeting cards, and finally vacated entirely. A somewhat forgotten section of Georgetown, the area south of M St. does not live up to the affluent image which northern Georgetown presents.

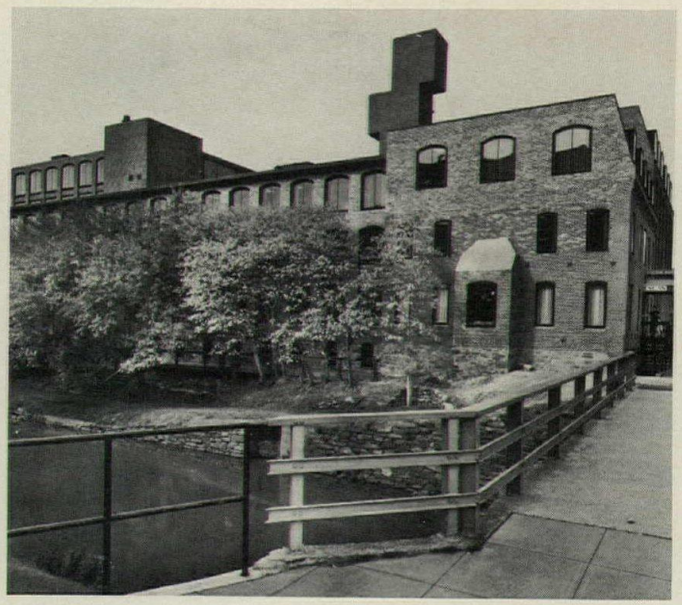
Canal Square, then, began with a concept aimed at quite a number of goals and was beset with at least as many constraints. The site was an irregular array of city lots having meager access on two of its sides, yet it was to hold the largest project constructed in Georgetown in 70 years. The historical nature of the warehouse and two adjacent houses, combined with the need to satisfy not one, but two fine arts commissions (Georgetown and Washington) would be problem enough. In addition, being in Washington, the C&O canal is under the watchful eye of the U.S. Department of the Interior. Appeals to them for permission to construct an outdoor restaurant deck along the canal reached Interior Secretary Stewart Udall before finally finding a sympathetic ear. The Highway Commission could not imagine pedestrian traffic in

David C. Cox photo

Elevator towers (opposite) and plaza (above), out of Fine Arts Commission jurisdiction, assert themselves within the confines of the block. Canal Square, area was a chaos of mixed uses.







A new-old face has come to the banks of the C&O canal (above). Revitalized and new buildings on 31st St. (top right), reflect restrictions of the Fine Arts Commission, and do not necessarily express the opinions of the architect. Elevator towers (center), like periscopes, announce things not observed in a surface view.

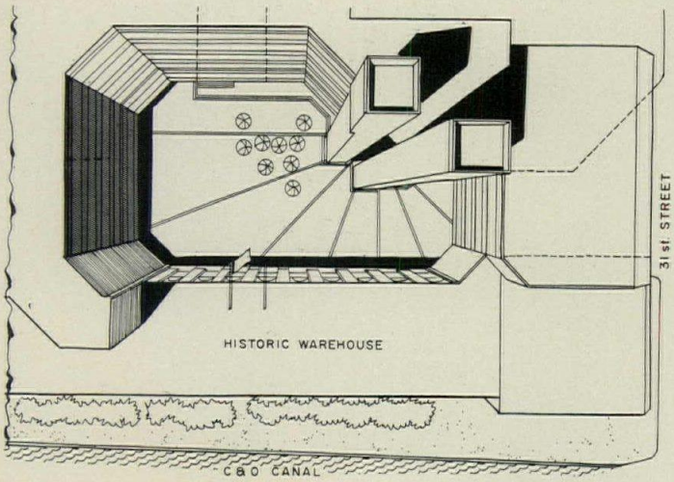
Elevator 'lobby' shows careful use of salvaged material in many details, and the interplay of passage with plaza.

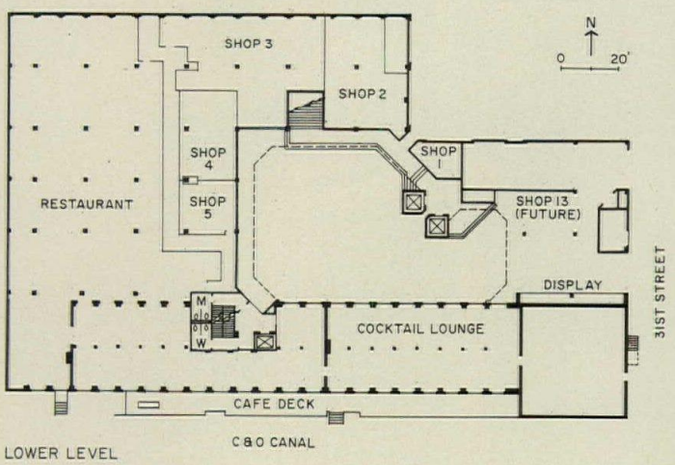
the alley—alleys are for vehicles—and a traffic light was installed there despite Moore's efforts. Add the "normal" range of building department objections, uncharted underground utility line discoveries and a very limited budget.

Underground parking required by zoning made necessary the underpinning of the warehouse, and the plaza level was dropped at the south end to expose the stone foundation walls of that building. The old double-hung windows were replaced by new steel sash units within the arched openings. Inside, brick walls are exposed, as are the heavy timber columns, beams and ceilings. A new floor was placed above the old, however, concealing mechanical and electrical runs and conforming the building to required fire standards.

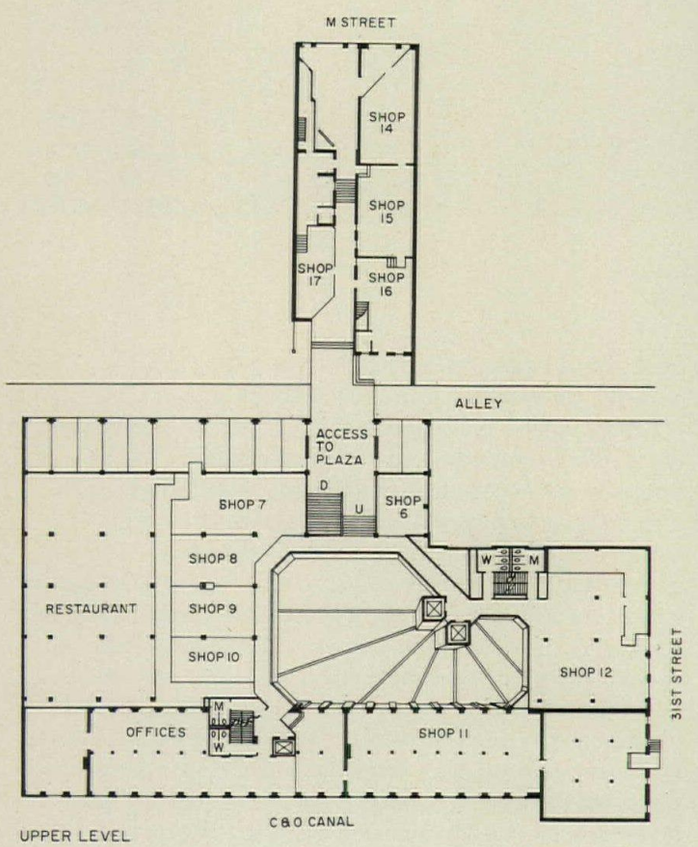
Facing the street, one new building has been carefully handled to avoid conflict with the Fine Arts Commission(s). The interior of the block is not subject to control, however, and the L-shaped building forming the rest of the square is a sympathetic, yet powerful, expression in brick and glass.

A more complete listing of the impediments overcome and architectural goals reached in the completion of Canal Square might make interesting reading, but it would not tell the most important part of the story. Georgetown is full of small vistas of great charm, small areas conducive to limited spontaneity, but it is short on places which either are, or allow for, events. The influx of people there has caused pedestrians and cars to crowd the main streets. Until Canal Square opened, there was no inviting place for people, no retreat from the auto-lined M St. or Wisconsin Ave. Here, however, the people have an open invitation to a place. The list of activities that have occurred there, both planned and spontaneous, attest to the spirit of the Square. From black-tie dinner dances to impromptu rock concerts, the place accommodates. [JM]

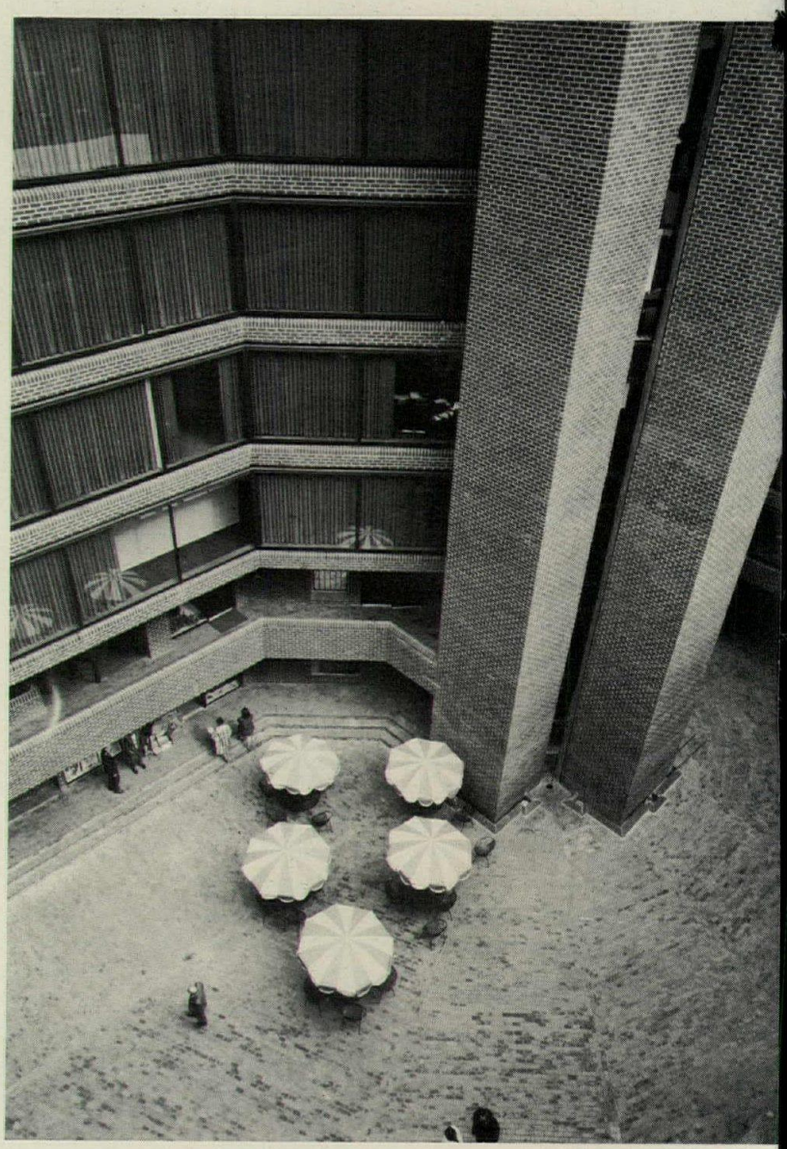


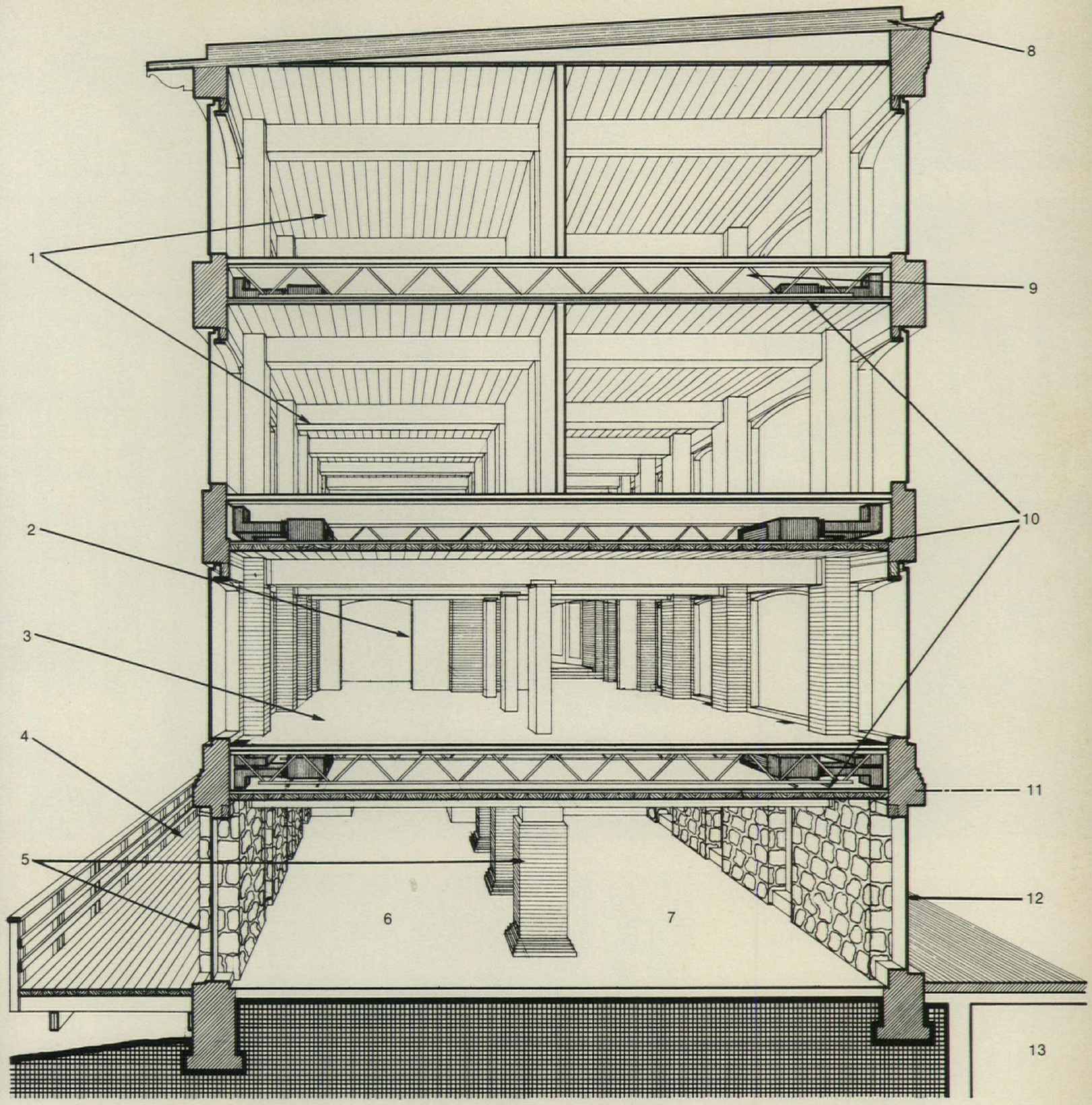


LOWER LEVEL



UPPER LEVEL

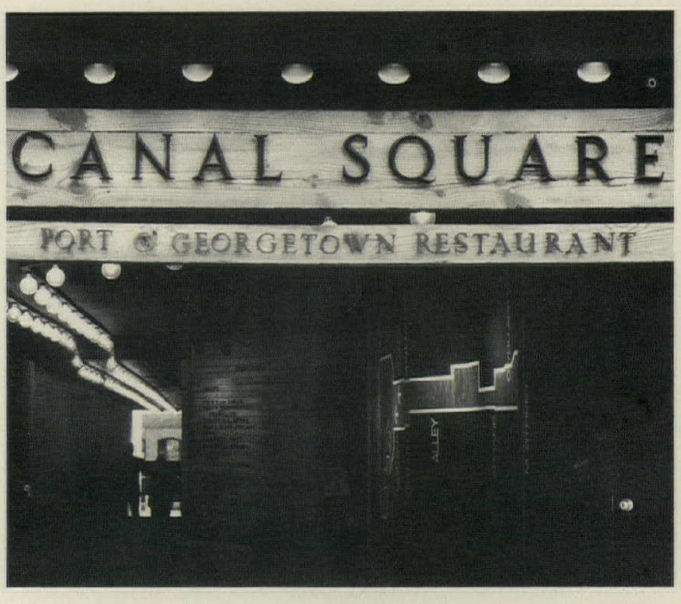


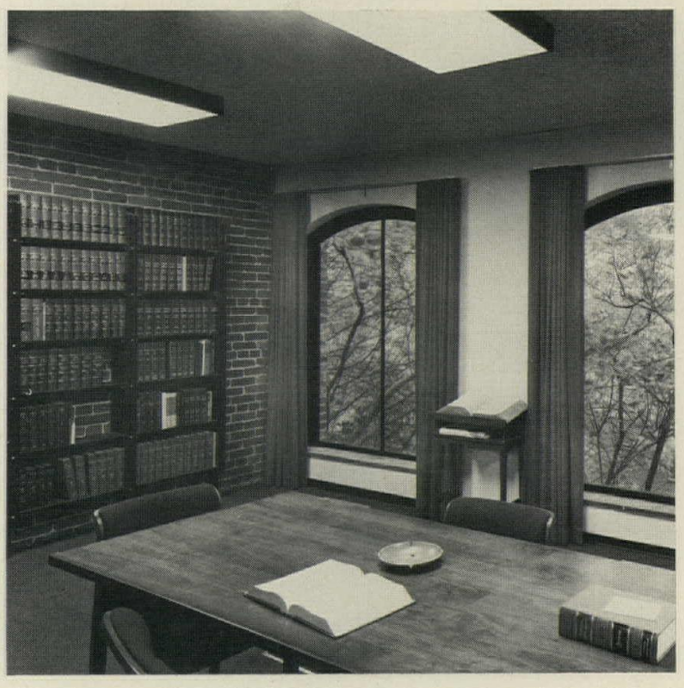


Legend

1 law offices, **2** shop connecting to balcony shops in new buildings, **3** carpet, **4** new cafe deck overlooking C&O canal, **5** original wall and piers, **6** floor lowered exposing stepped footings, **7** restaurant level (former basement), **8** concrete plank roof, **9** new raised floor system to meet code and contain decentralized heat pump hvac system, return plenum, electrical and telephone, **10** original planking and beams, **11** original level of grade, **12** new openings to match original ones on canal side, **13** garage.

Original brick, wood planking, beams and steel ladder rungs in office aisle of the remodeled warehouse (above). IBM archives photo (right) of building in 1900. The third floor machine shop of the tabulating machine company.





Street access to Canal Square (above, left) is through passages to the interior of the block. Library (center) of law offices and private office (below) occupy old warehouse. Gate (above) was provided for owners of an adjoining historic house to offset the disadvantages of proximity by affording them a private connection.

Credits

Project: Canal Square.
Architect: Arthur Cotton Moore Associates.
Program: office and shopping complex.
Site: 31 and M Sts., Georgetown, Washington, D.C.
Structural system: structural steel (existing).
Mechanical system: decentralized heat pumps.
Major materials: gypsum board, original wood framing, carpet (interior); brick, steel sash windows, original stone (exterior).
Costs: $17.20/sq ft.
Consultants: mechanical, Cotton and Harris; structural, Milton Gurewitz Associates; specifications, Everett Spurling.
Photography: Norman McGrath, except as noted.

Medical-dental school

Concrete complex within a complex

Variations on a single design element unify yet identify four separate building programs required for the University of Louisville medical and dental schools

What might have been an ordinary cluster of classroom and laboratory buildings turned out to be an extraordinary expression of design in concrete at the University of Louisville's downtown medical campus. While the major design elements—reinforced concrete frames with round columns, strong cornices and a combination of smooth and finely ribbed concrete finishes—are similar throughout the four buildings and landscaped plaza, each building clearly expresses its own purpose.

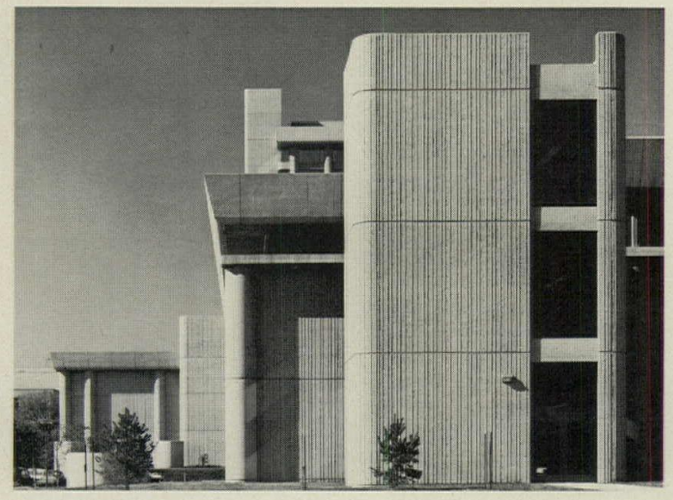
The site, several miles from the main campus, is in a cleared urban renewal area and, except for the adjacent Louisville General Hospital, has no buildings or features to which the complex could relate. It was essential, therefore, that the complex be given an identity of its own, that it not be overpowered by the hospital and that there be easy access between all sections.

Four very different building programs were involved: a medical school, a dental school and clinic, research facilities and a specialized library and commons to serve all three. The general plan that evolved placed four separate structures around a landscaped plaza and tied them together by covered bridges and walkways. These second-level bridges also served to eliminate the existing street as a divisive factor as they formed a strong connection between the fourth side of the square and the other three sides.

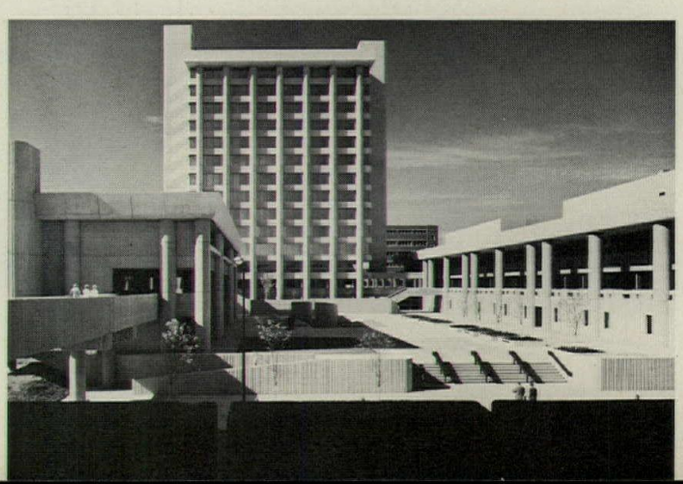
The dental school is the only building used by the general public, so it was located at the east end of the site, across the bisecting street and adjacent to the main parking area. Patients enter the ground level clinic from either this parking area or from the street into a reception area, from which they go to clinic rooms in the center of the two upper levels. Student and faculty rooms are at the perimeter of these floors, so patients and school facilities are kept apart. At the same time, students and faculty have direct access to the rest of the complex via the bridges over the street.

The research tower, with offices and laboratories for faculty and graduate students, is the key to attracting a superior faculty to the institution. The laboratories are placed in two interior rows on each floor, flanking a central service corridor. Perimeter corridors give access to offices and laboratories, providing a contrast to the windowless working areas. The corridors face east and west, so bronze reflecting glass was used to reduce heat gain.

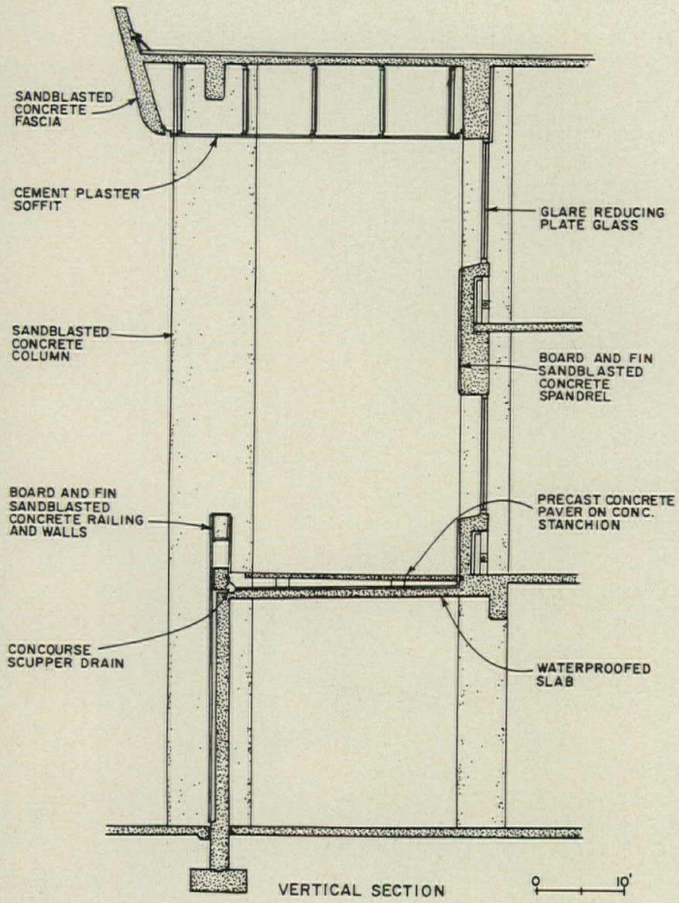
The medical school involved planning for classrooms, lecture halls and a number of clinical and other medical labora-

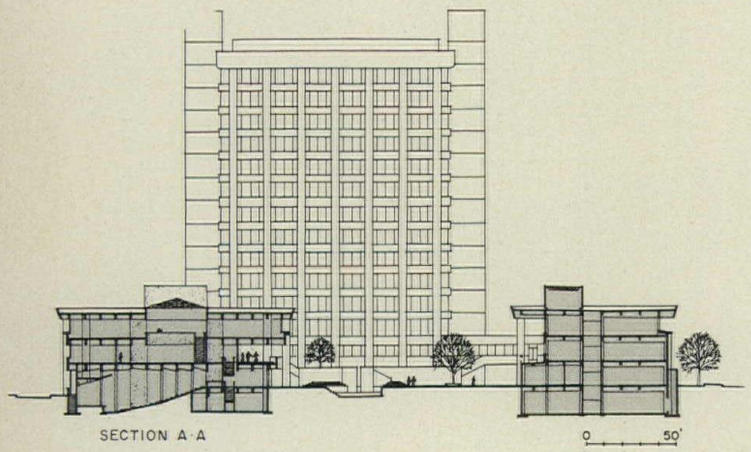


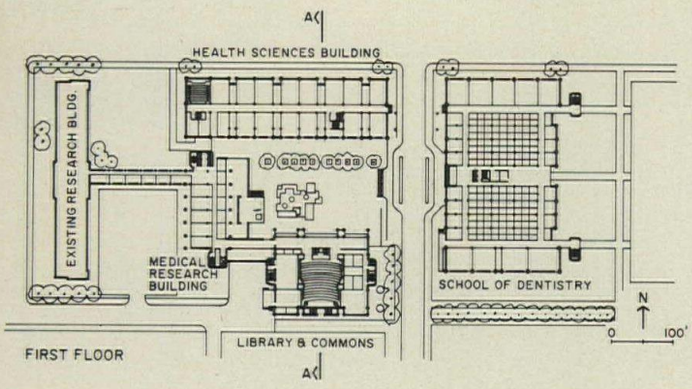
Located in a neighborhood of hospitals, clinics and schools, the medical and dental campus of the University of Louisville is focused on a central plaza to give it a strong identity. Design elements are repeated throughout even though all four buildings differ in form (Balthazar Korab photos).



Concrete complex within a complex







tories. Since a good part of the students' clinical experience is via autopsies, special provision had to be made for transportation and storage of cadavers.

The building that houses the 130,000-volume medical library also acts as a commons and student union for faculty and student body. A cafeteria, lounge and a 500-seat auditorium are included, as the students are too far from the main campus to use its existing social facilities. The plaza was planned as a focus for the entire complex and as a fair weather gathering place. Low walls and planting boxes, steps and concrete pyramids encourage relaxation and conversation. The massive cylinders in the plaza are actually air intakes for the mechanical system.

Steam and chilled water are purchased from an existing plant that serves Louisville General Hospital and other nearby facilities. Controls determine the percentage of outside air that is to be mixed with inside air to obtain desired temperatures and humidities. Mixing boxes are self-balancing, taking air from both a hot duct and a cool duct. In the research tower, from the third floor up, air supply is 100 percent outside air and all used air from the laboratories is exhausted to the outside. The air system has both pre- and after-filters to control air quality.

Waste lines are acid-resistant glass, and there is a separate distilled water system for the laboratories. Dental clinics have air, water, gas, electric and oral vacuum systems to each chair. The entire complex can be served by a standby generator system if local utility power fails.

The concrete work is exceptionally fine throughout the complex. Project designer Dale Johnson explains, "The contractors, Whittenberg and Struck, and Louisville Cement all took it as a matter of civic pride; in fact, one of them is a heavy contributor to the University. They made a number of expensive mock-ups, sandblasted them to various depths, varied the mix and the aggregate until we had exactly the quality of texture and color we wanted. We were even taken to the sawmill to choose the form boards. And then we had workmen who take pride in their work. It sounds obvious, but with men like this, you get work like this, but not without them."

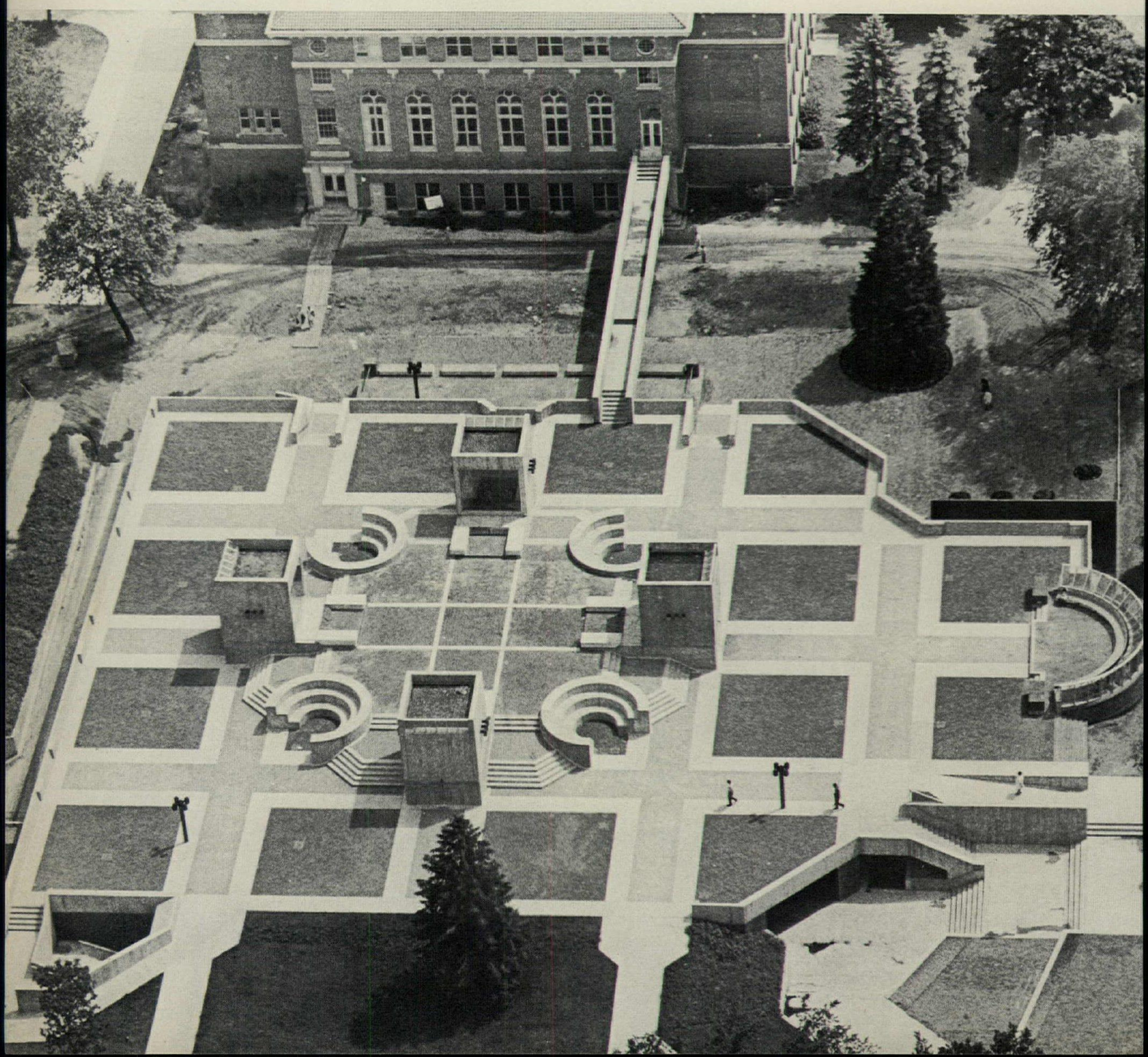
Credits

Project: University of Louisville Health Sciences Center.
Architect: Smith, Hinchman & Grylls Associates, Inc. in association with Arrasmith, Judd, Rap & Associates and Louis & Henry Associates.
Program: education of medical and dental students, providing the first two years of medical education and a four-year program in dentistry. The program was prepared jointly by the architects and the faculty.
Site: 13.4 acres in urban renewal area adjacent to Louisville General Hospital; site bisected by a street that could not be closed.
Structural system: reinforced concrete.
Mechanical system: steam and chilled water purchased from existing plant; hot air and cool air ducts with self-balancing mixing boxes.
Major materials: reinforced concrete, aluminum entrances and sash, glare reducing plate, wire and insulating glass; partitions are metal stud and drywall, concrete block and accordian; vinyl asbestos floors.
Costs: $20,100,000 or $40 per sq ft plus land, site preparation, equipment and professional fees.
Consultants: E. R. Ronald Associates, associated engineers; Eichstedt, Grissim, Young & Associates, landscape.
Photography: Balthazar Korab.

Sculptural forms in pool of landscaped plaza are air intakes. Striated concrete is carried to inside of library (above). Mechanical system delivers all required utilities to each dental bay and lab.

Found space on campus

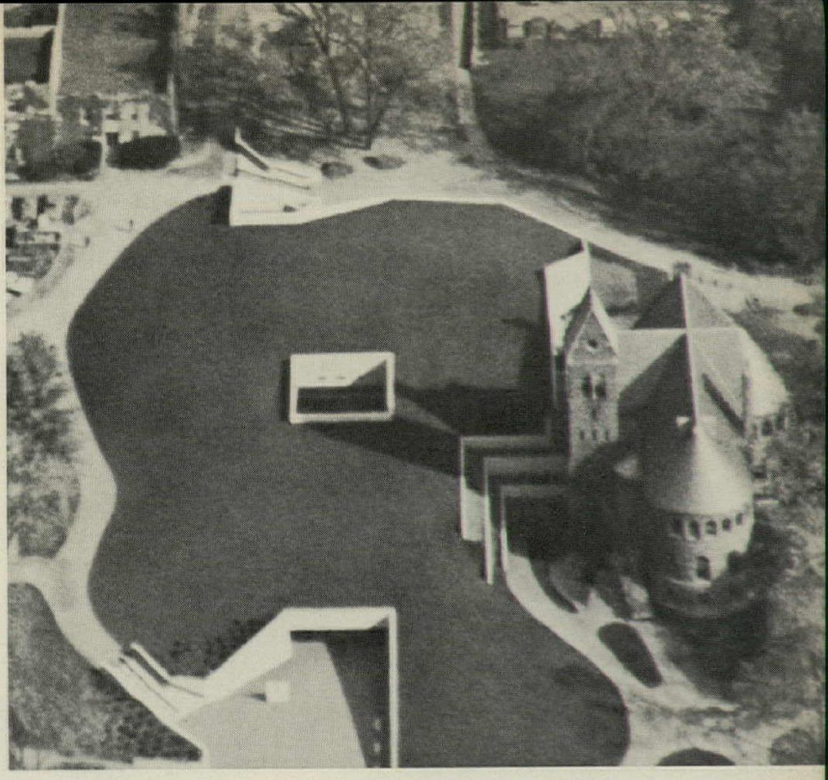
The student underground



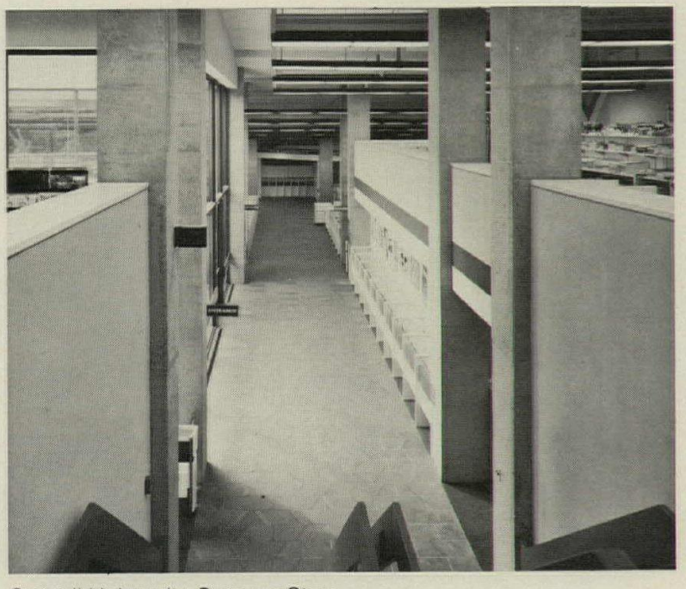
Two universities faced with the problem of campus sprawl have found a solution to part of their problems through the sensitive placement of underground buildings

There was a time when college campuses were ivory towered retreats set in manicured parks. But that was another time and another place. The number of college students grew from 4.6 million in 1965 to a present 7.4 million, according to a new Census Bureau study. To keep apace with this explosive growth, colleges had to build, and they had to build quickly. Urban sprawl, so familiar to the cities, has come to college with its threat of strangulation. There is one difference, though. Because schools are smaller and lack the governmental bureaucracy of cities, they are able to respond quicker and more responsibly.

Two universities that are doing something about this problem are Northern Iowa and Cornell. In the attempt to bring new order and consolidation back to their schools, each wanted to locate new student-service buildings at the center of the campus, but neither school had enough space in an appropriate location. In each case, due to the buildings' purposes, location of existing buildings and walking patterns, a unique solution was possible: they would go underground.



University Union, University of Northern Iowa



Cornell University Campus Store.

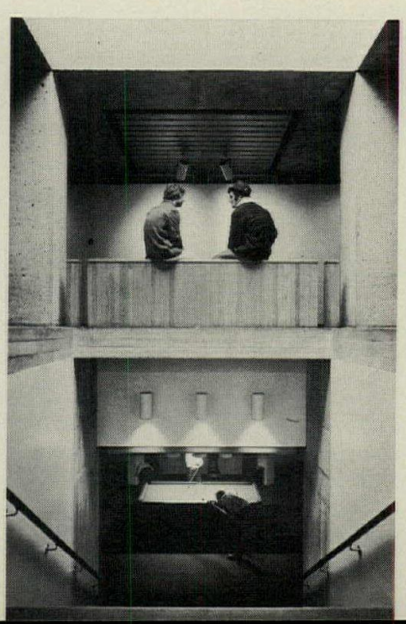
Credits

Project: University Union, University of Northern Iowa, Cedar Falls.
Architect: Hunter Rice and Engelbrecht.
Program: a 60,000 sq ft student union to serve as core for the future academic center.
Site: underground in an open square next to the library and other academic buildings.
Structural system: rough-board formed concrete proportioned to take loads appropriate to a below-grade building. Basic structure consists of waffle slabs in independent bays (29'9" sq). Columns beneath monitors support cantilevered beams that "dome" the commons.
Mechanical system: high-velocity cold air supplied from building unit. Steam heat, supplied by central campus system, converted into forced air. Double-duct system with mixing boxes. Distributed in structural grid.
Major materials: concrete and purple Pennsylvania brick. Inside, white plaster walls and natural finished ash and oak.
Costs: $1,737,000 including equipment and furnishings, excluding fees and landscaping.
Consultants: Brooks, Borg & Skiles, mechanical; Bossenberger, Reitz & Middlebrook, structural.
Client: Iowa State Board of Regents, University of Northern Iowa.
Photography: Jerry Dahl, p. 78, 81; Balthazar Korab, p. 79, 80 (bottom), 82; Mike Schilling, p. 80 (top).

Credits

Project: Cornell University Store, Cornell University, Ithaca, New York.
Architect: Earl R. Flansburgh & Associates, Inc.
Program: campus store in the heart of campus, four times as large as the existing store.
Site: underground, at campus center, near student union.
Structural system: cast in place, set on bedrock, concrete retaining walls, columns, beams and flat slab. Above roof, two feet of top soil over cinders.
Mechanical system: combination steam and 100-ton chilled water system fed from central plant. Two low-velocity air handlers, each with steam heating coil, cooling chill-water coil and humidification control, controlled from main sales area. Individual office control compensated by electric reheat coils. Duct work, lights and sprinklers are integrated, specially designed system.
Major materials: exterior, glass and sandblasted concrete; interior, painted concrete; ductwork, exposed and painted; carpet and slate floor.
Consultants: Mason & Frey, landscape: Francis Associates, mechanical; LeMessurier Associates, Inc., structural; Alexander Zavelle, store/merchandising consultant.
Costs: $1,702,000 including equipment, furnishings, fees and landscaping.
Client: Cornell University and the Dormitory Authority New York.
Photography: Louis Reens

The new University Union at Northern Iowa was placed underground in the center of a future urban, academic complex. The old commons will continue as a viable pedestrian way that will help check campus sprawl.



The student underground

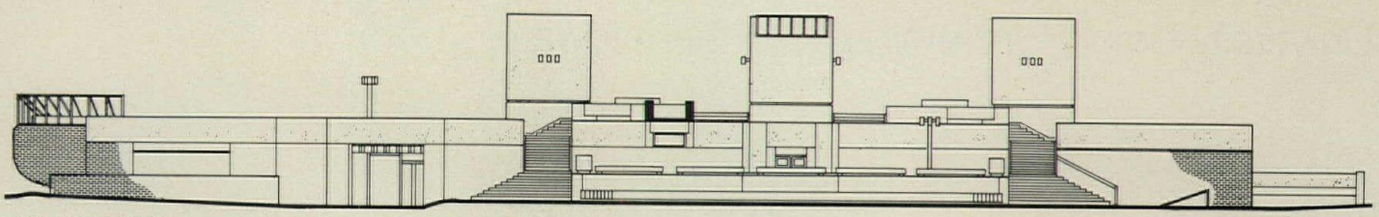
University Union, University of Northern Iowa

The campus at Cedar Falls had spread loosely over the farm land for many years, and, as the school continued to grow, it became clear that a new order had to be brought to the campus. Distances between buildings were becoming unmanageable. A new master plan, prepared by Caudill Rowlett Scott, envisioned concentrating buildings into specific complexes, and it was within the center of what was to become the main academic complex that one of the new student unions was to be located. The most logical site for the union, the place where faculty and students congregate, and where they were likely to be in the future, was a park near the library and academic buildings. But it was an undesirable location because it would destroy the most important open space on campus and disrupt desirable walking patterns.

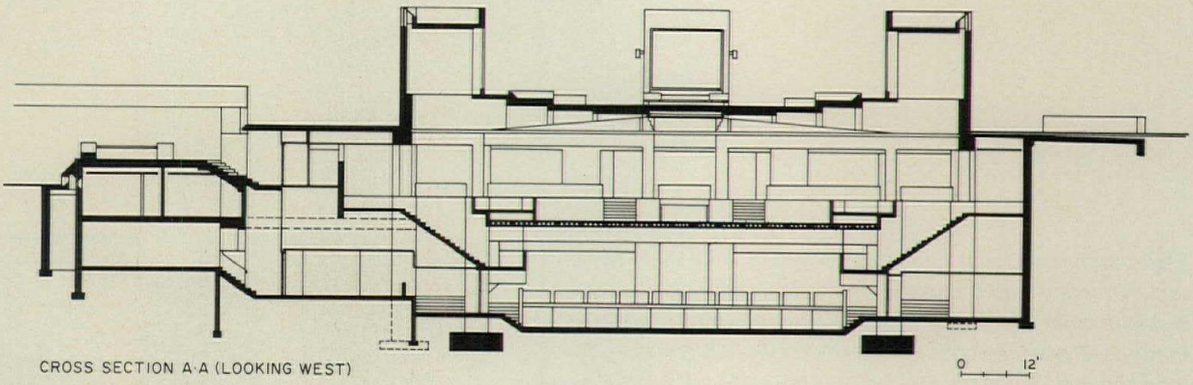
To preserve the center of the academic complex as an open square, the decision was made to place the structure below grade and to allow it to continue to function as a pedestrian trafficway above ground by creating an open plaza on the roof. The plaza would serve informally as a stopping place, with integral seats, benches and steps, and formally as a stage for planned events. The same idea was carried inside, below ground, where the architects avoided emphasis on particularized spaces for specific functions, and instead created a miniaturized urban street where specific functions relate to the street rather than to defined rooms.

Natural light is introduced into the subterranean levels of the structure through the use of four light monitors on top of the plaza. One side of each of these concrete boxes is glass, which "grabs" the natural light and throws it down into the underground levels. By their light-giving nature the monitors orient and dominate the major interior space, and they emphasize the four pairs of cantilevered concrete beams that span that space. At night the monitors reverse their function and become lanterns to light the central plaza.

University of Northern Iowa

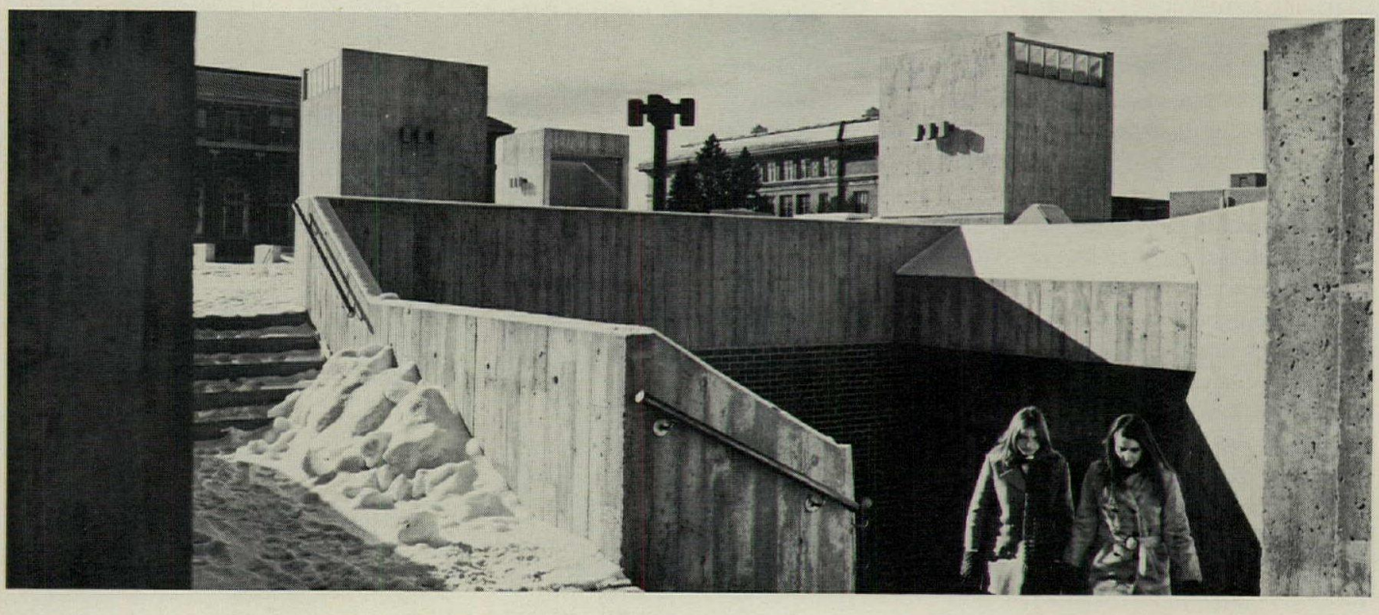


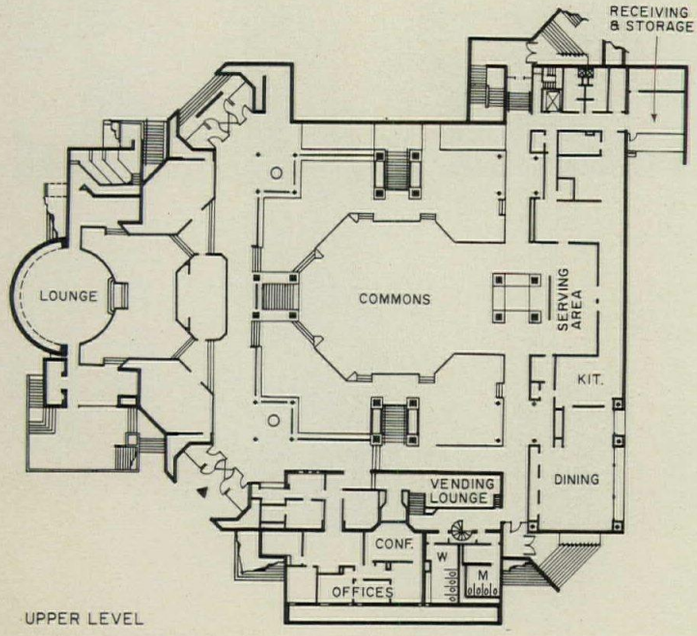
SOUTH ELEVATION



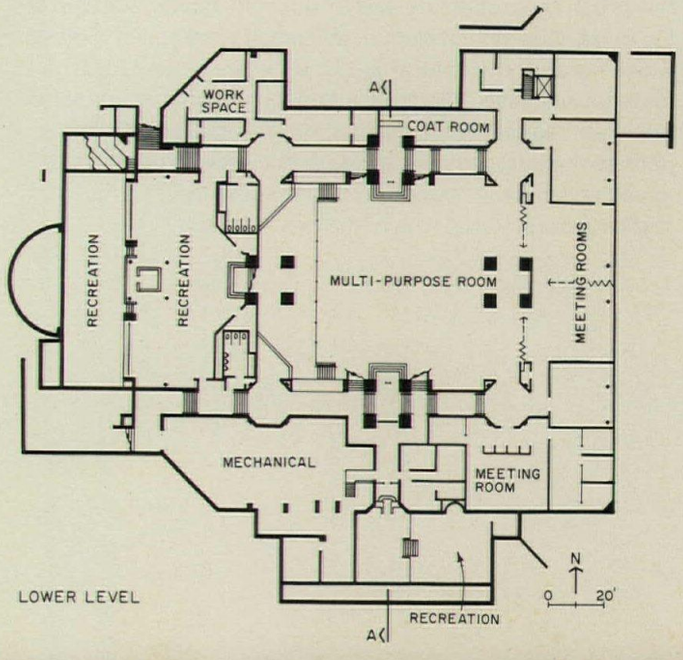
CROSS SECTION A-A (LOOKING WEST)

0 12'





UPPER LEVEL



LOWER LEVEL

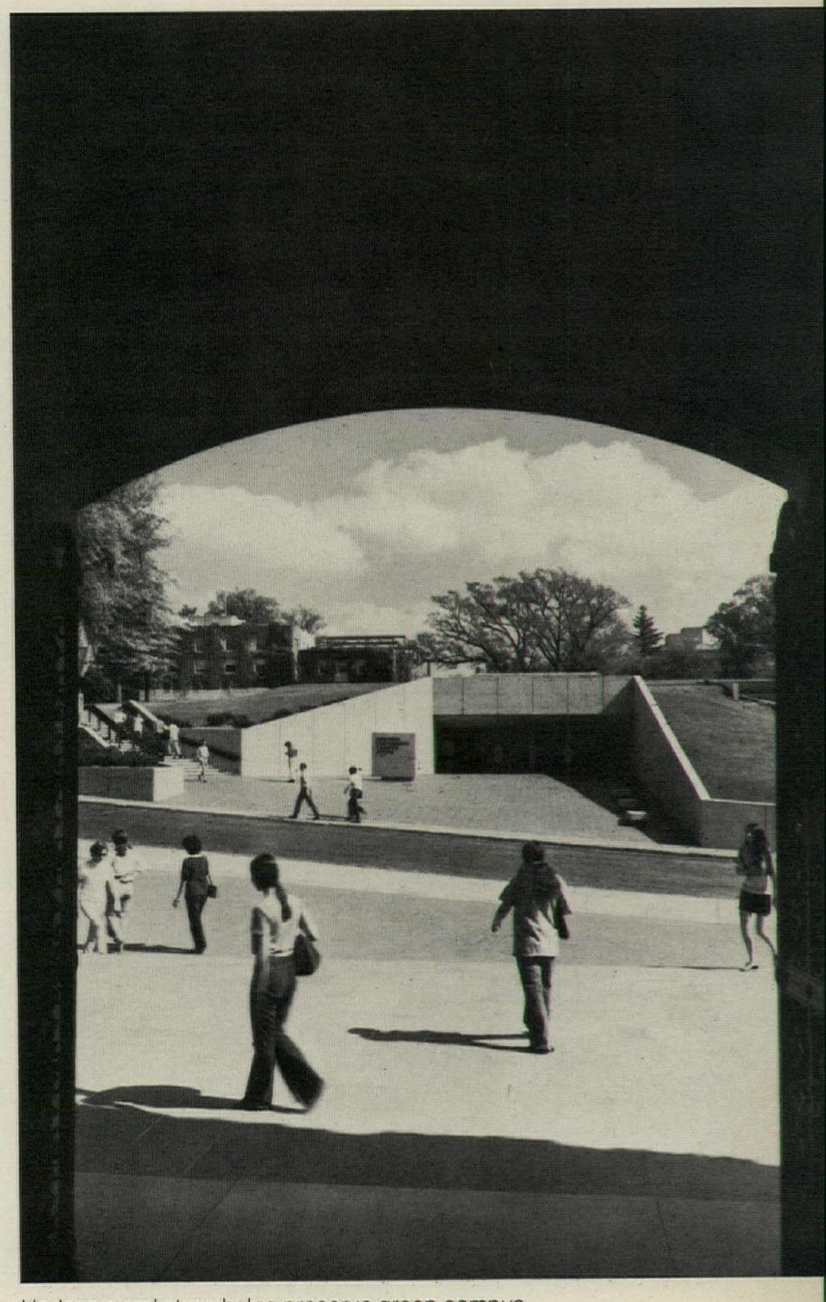
Cornell University Campus Store

Cornell had grown to a point where it was impossible to move around easily; its streets were clogged with automobile traffic and valuable space was being used for parking lots. But several years ago, before preserving the environment had become a popular cause, Cornell had made the decision to ultimately return to being a walking campus: only the minimum of essential through traffic was to be allowed, and parking would be severely limited.

When it became necessary to build a larger campus store the idea of a walking campus was very much in the planners' minds. The store would have to be centrally located, but, again, no central space was available. There was a green in the heart of the campus, but placing the building on that location would have destroyed one of the most pleasant spaces on campus, and would have restricted access to one of the finest views of Cornell's beloved Cayuga Lake. Another proposal was to demolish the old Barnes Hall, a campus landmark, and put the building on its site. Cornell would have neither. They decided to put the building beneath the green, thus saving it and preserving Barnes Hall.

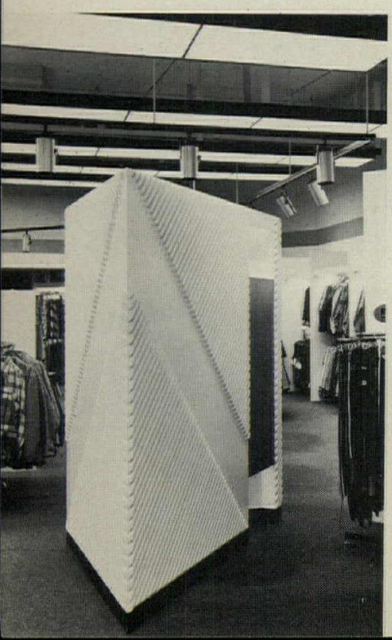
The two-story underground structure derives much of its shape through the decision to preserve existing trees and the contour of the site. The store and its service entrances are blended into the hillside, leaving the walking paths undisturbed. It is built around an open courtyard that brings sunlight into the center, and a depressed section of the first floor allows a view of the court over the book sales area at the front entrance. The departments are arranged to emphasize the bookstore character of the store, and each department is accessible from a main interior circulation path. The interior walls are simple extensions of the exterior concrete retaining walls, and the slate of the entrance plazas extends into the building as a walking surface in the high-traffic areas. Sales areas are carpeted, and the casework was designed by the architect to provide a unified, simple background for the merchandise. In keeping with the store's utilitarian nature, the air conditioning and lighting systems are exposed and integrated.

Both of these buildings are past P/A design award winners. The University Union at Northern Iowa received an award in the 1967 program, and Cornell's Campus Store was given a citation in 1969. [DM]

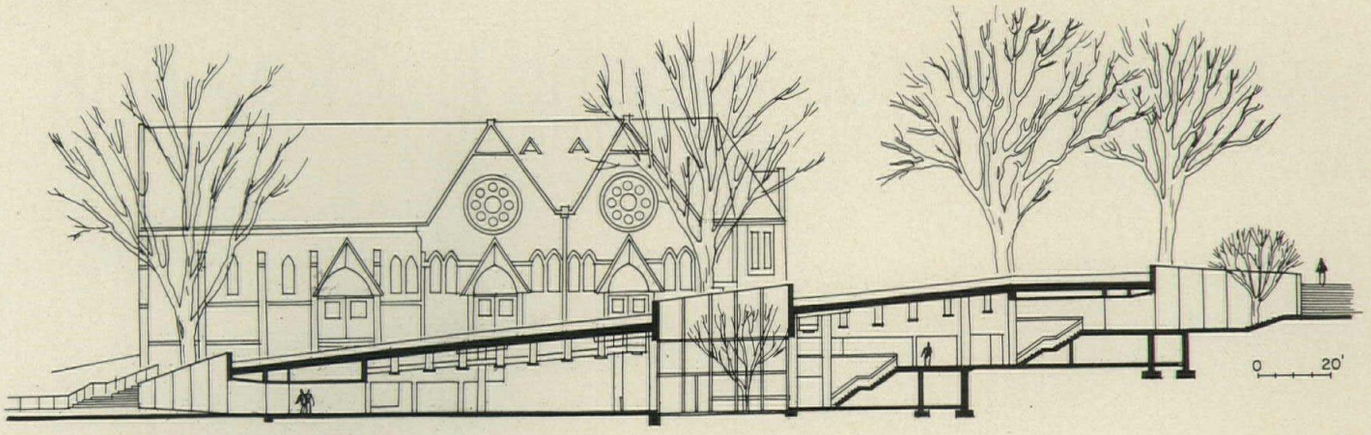


Underground store helps preserve green campus.

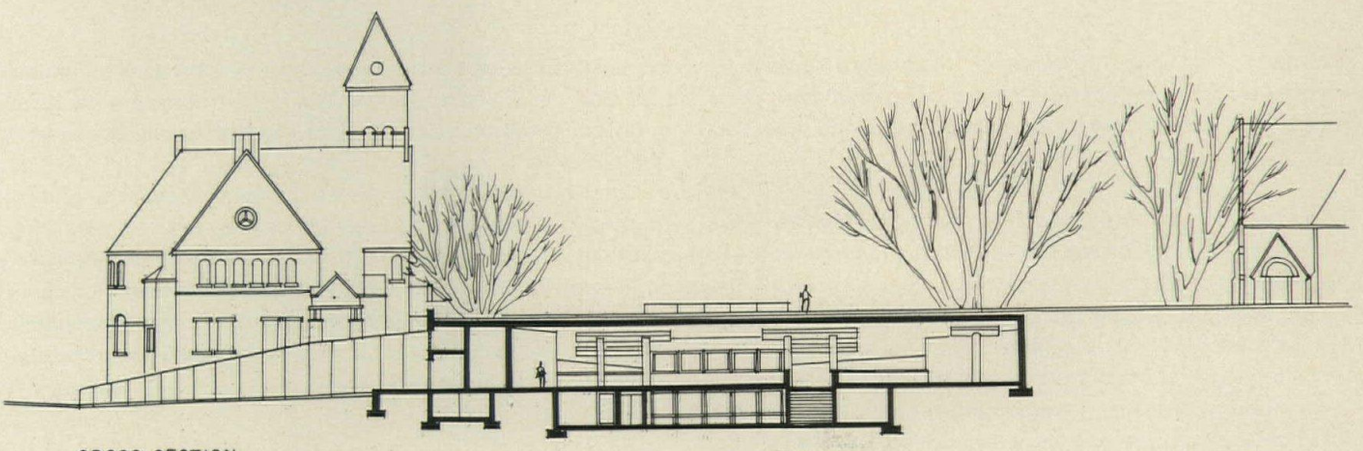
Cornell's underground Campus Store is a first step in the university's return to being a walking campus. It reinforces desired pedestrian traffic and leaves valued old buildings untouched.



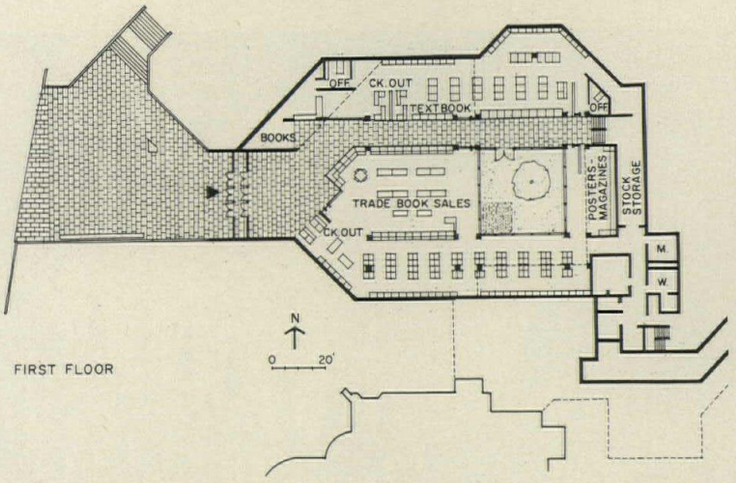
Cornell University



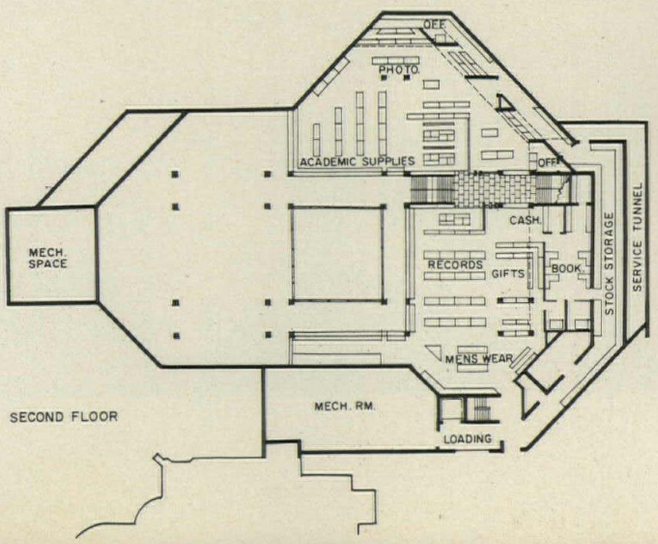
LONGITUDINAL SECTION



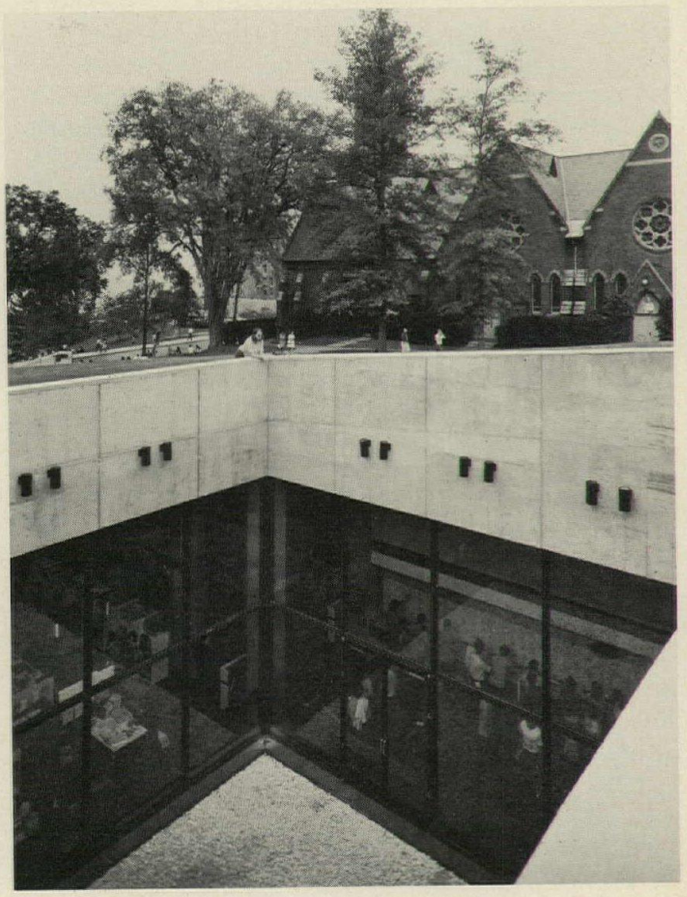
CROSS SECTION



FIRST FLOOR



SECOND FLOOR



Composite truss spans hockey rink

Asymmetric roof shape of Wesleyan University's hockey rink is determined by a three-dimensional composite truss of laminated timber, bridge strand cable and pipe

The two most important program requirements for Wesleyan University's hockey rink were to keep sun and glare off the ice and to devise a structural system with a clear span of 147 ft. The first was met directly: the building is windowless except for a 2-ft clerestory of bronze tinted glass that keeps out the sun. Meeting the second requirement was more complex. Linear wood trusses and inverted bowstring arches were rejected because of cost and ungainly appearance. The solution proved to be a composite truss in which the lower chords parallel the cross sectional outline of the sloped seating and the level skating slab.

The truss has laminated wood compression members at the top, steel cable tension members at the bottom and 8-in. diameter steel pipe compression struts in a diagonal position. The cables are 2-$\frac{1}{16}$ and 3-¼ in. bridge strand. The wood chords are 42 in. deep and 11 in. wide. In the center these are connected with a simple pin and at the support piers the system rests on teflon pads. To reduce moments in the members, the connections were designed so that the axial load is introduced eccentrically, thus producing a moment of opposite direction to the free span bending moments. This also reduced the depth of the truss considerably.

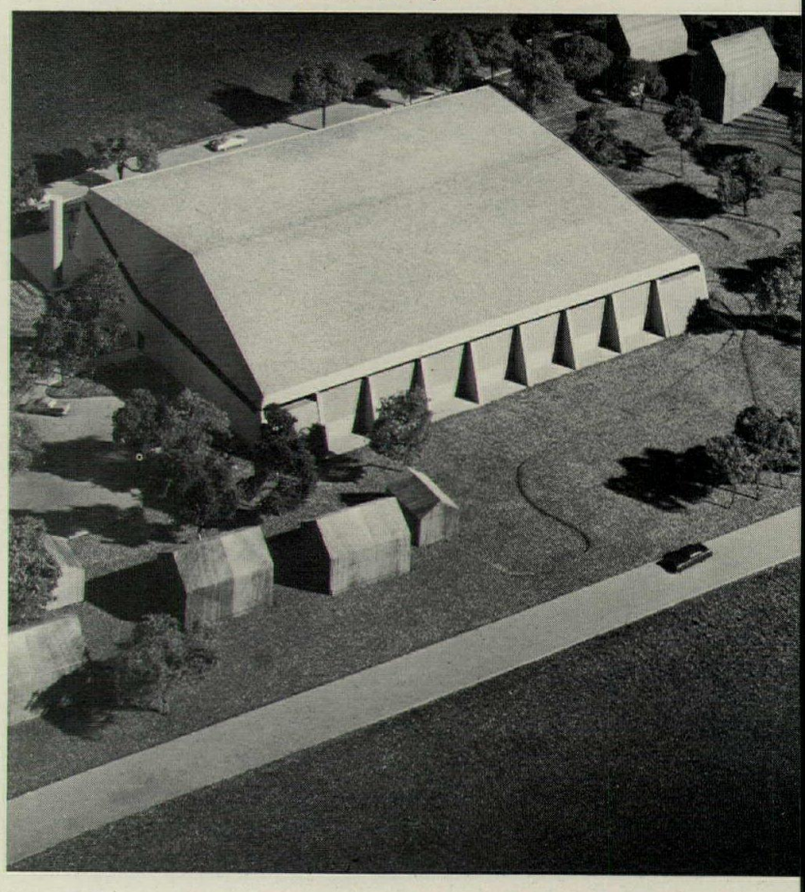
The built-up roof is surfaced with crushed limestone. End walls and the vertical piers on the east and west are rough board formed concrete inside and out. The walls, which reach a high point of 40 ft, were each done in a single pour. In-fill panels are bevel cedar siding; below the siding on the east side are vertical lift garage doors that open onto the playing fields for off-season indoor-outdoor events. The two main entrances, however, are from a plaza at the west side.

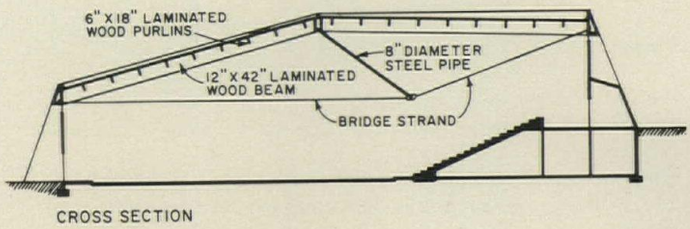
The regulation hockey rink is 85′ x 200′ with all 2000 seats arranged on the west side. Four locker rooms, supporting facilities and mechanical rooms are tucked under the seating and lobby areas.

Three 20,000 cfm units heat the spectators' area. Two, with fresh air intakes, are located above the main entrances; the third, which reheats recirculated air, is directly under the press room at the center of the building. Heated air is drawn across the rink and redistributed by fans located in mechanical rooms at the east corners. The locker rooms are heated by individually controlled unit heaters which treat air drawn from the rink area.

Color-corrected, 400 w. mercury vapor lamps, arranged in four rows of nine dual fixtures, are spaced at 24-ft intervals over the ice. Interspersed with incandescent lamps, they provide three lighting levels: high for hockey and lower for community skating, maintenance and other activities. The seating area is lit by incandescent lamps housed in the same fixtures used for rink lighting. [RR]

Narrow band of windows below roofline admits some daylight but no sun or glare to Wesleyan University's "ice house."

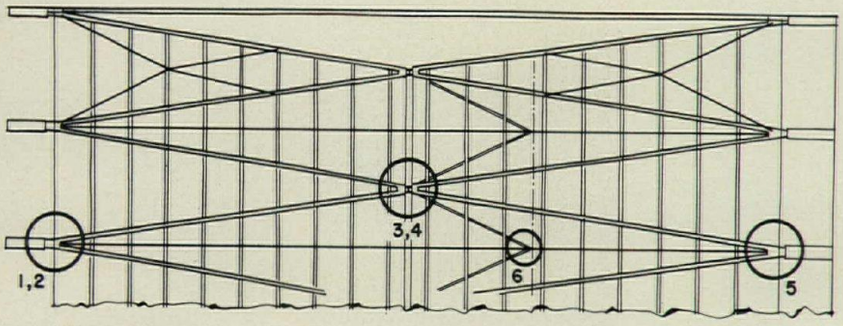




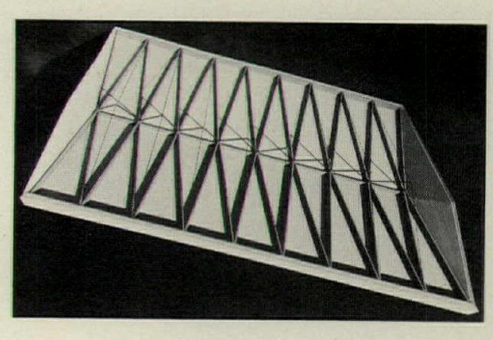
CROSS SECTION

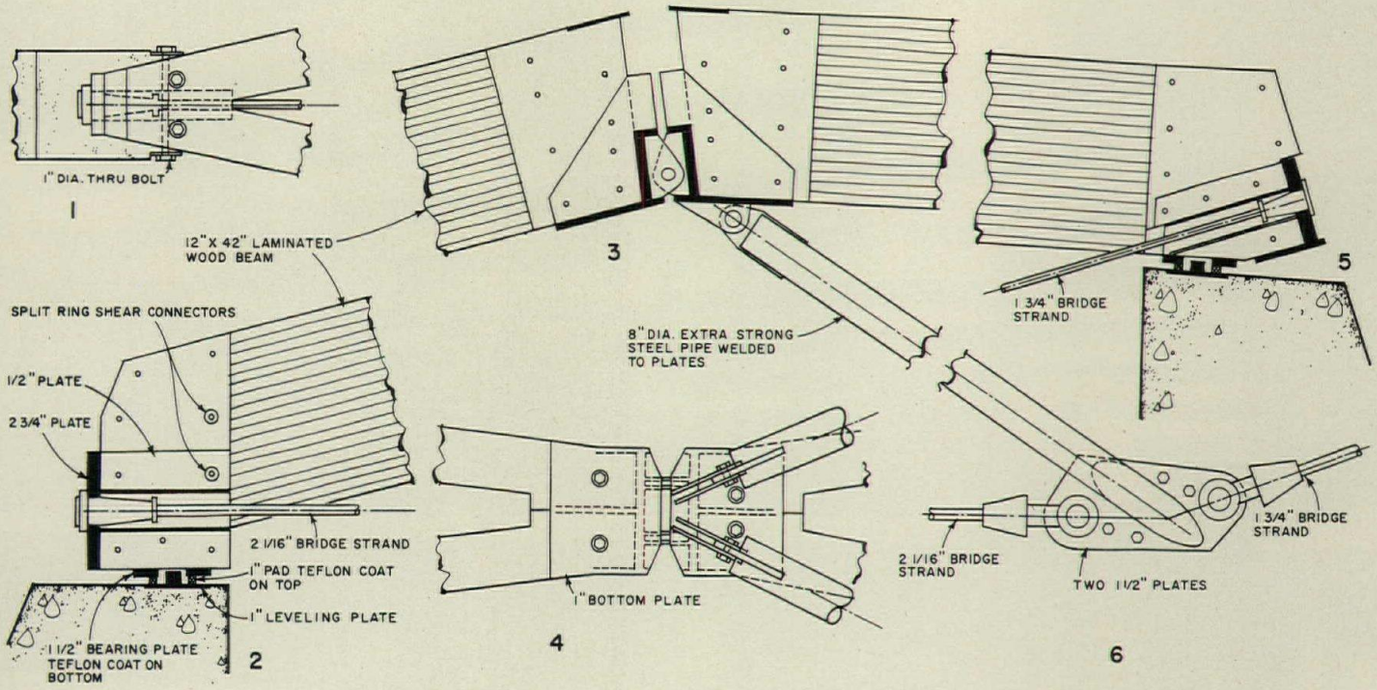
Composite truss has laminated wood compression members at the top, steel cable tension members at the bottom and 8-in. diameter steel pipe compression struts. The lower chords parallel both the sloped seating and level skating slab.

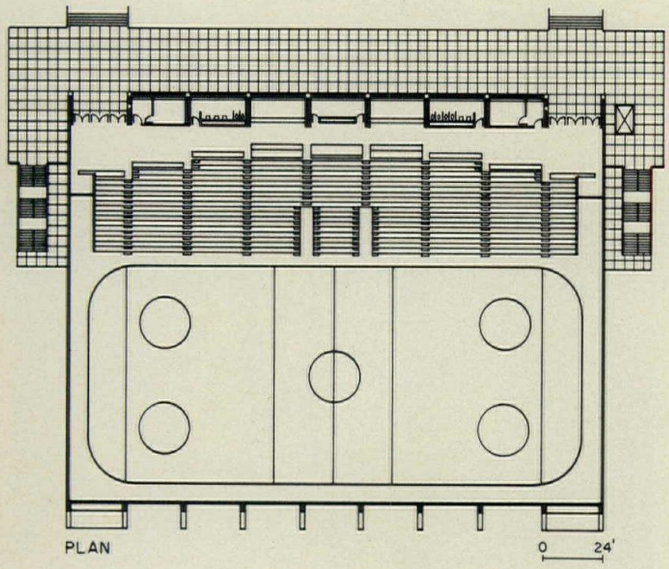
Composite truss spans hockey rink



PARTIAL PLAN



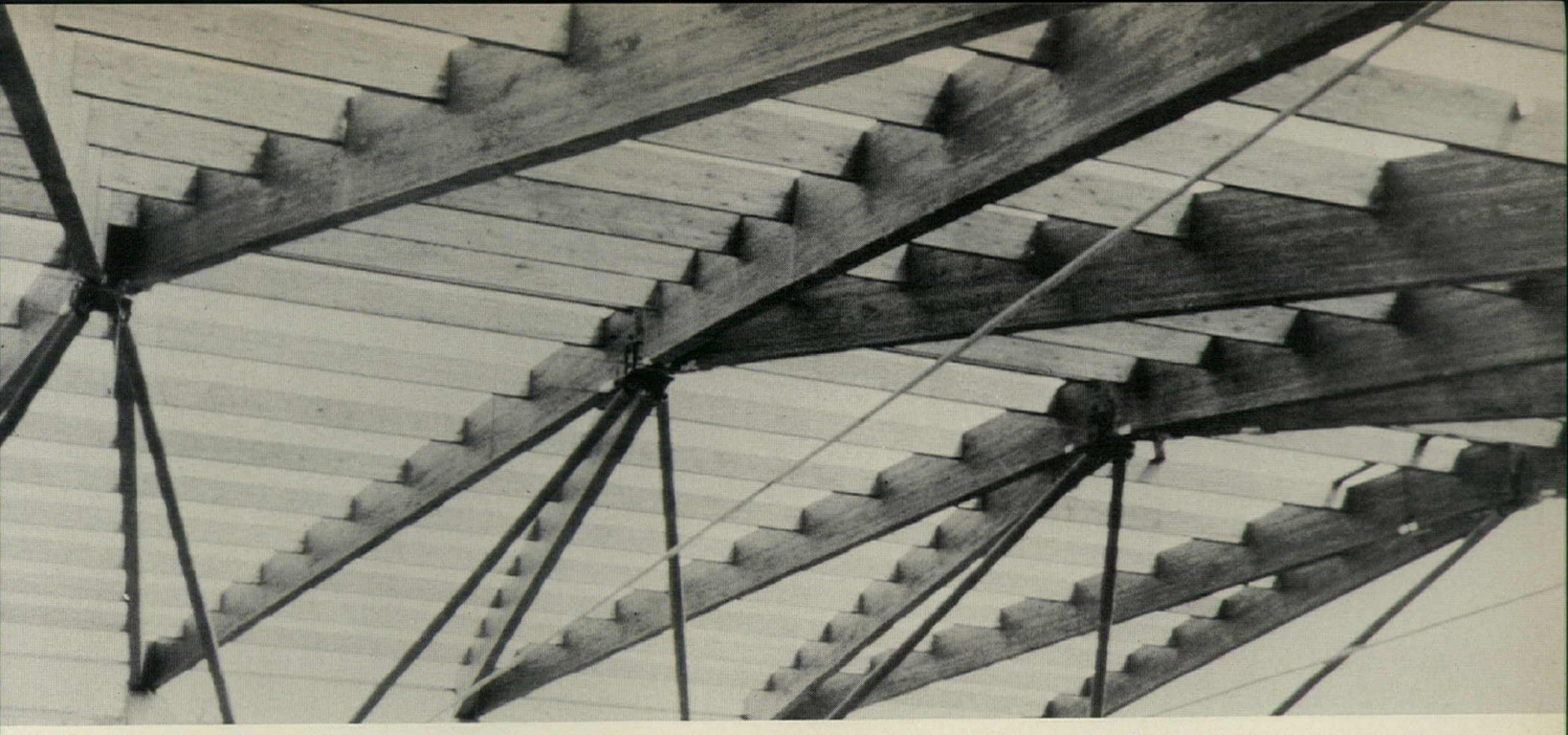




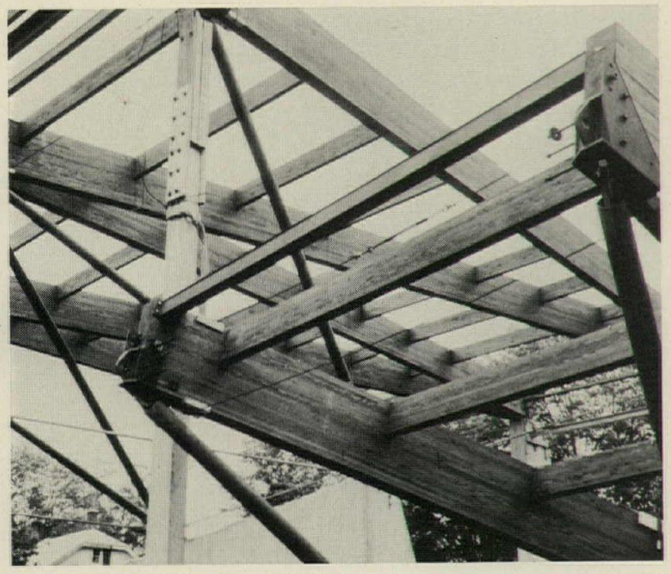
PLAN

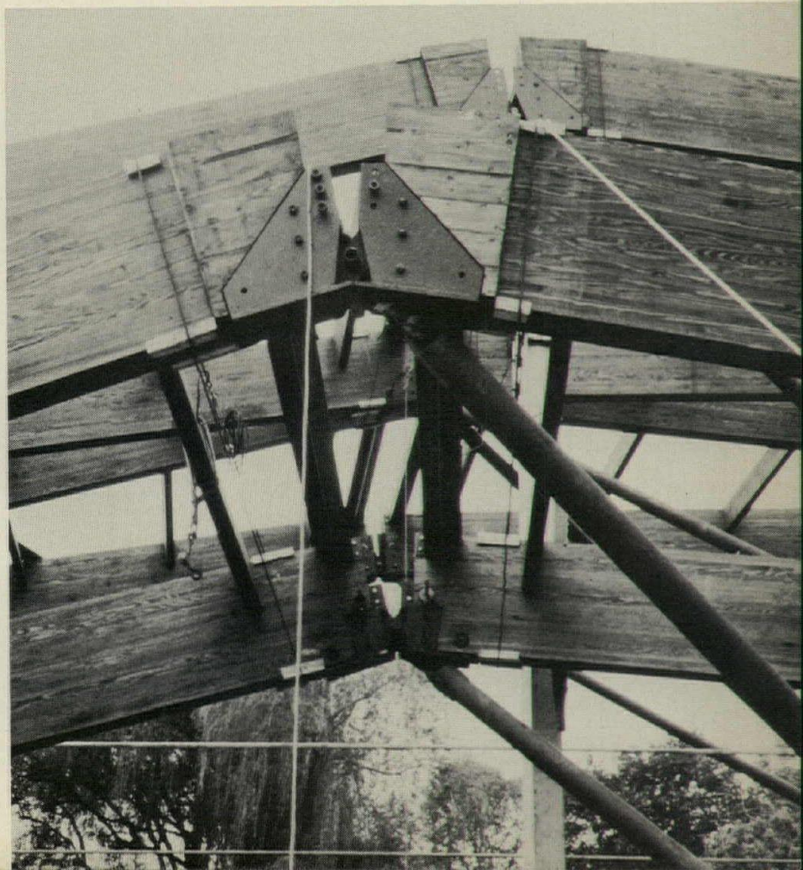
Credits

Project: Wesleyan University hockey rink.
Architect: Warner Burns Toan Lunde, Charles H. Warner, Jr., partner in charge.
Program: skating facility with a regulation hockey rink and seating for 2000 that could also be used for community recreation and off-season events.
Site: part of the Middletown, Conn. campus that will possibly be developed as a physical education complex.
Structural system: concrete; roof is supported by a three-dimensional, composite truss.
Mechanical system: three 20,000 cfm heating units plus individual unit heaters in locker rooms.
Major materials: reinforced concrete; truss is laminated timber, bridge strand cables and 8 in. dia. pipe.
Costs: $1,350,000.
Consultants: Severud-Perrone-Sturm-Conlin-Bandel, structural; Segner & Dalton, mechanical; Rink Consultants, rink; Clarke & Rapuano, landscape.
Client: Wesleyan University, Middletown, Conn.
Photography: Louis Reens.



Construction photos show erection of the composite truss, which was later topped by a conventional built-up roof.





Reflections

Wojciech G. Lesnikowski

Schemes and drawings in this presentation are fragments from a cycle of considerations called 'The Research of Continuity.' An immediate result of this study was the possibility of introducing such a system of studies to the 'Modular Housing Studio' formed and directed by the author at the School of Architecture at Yale University

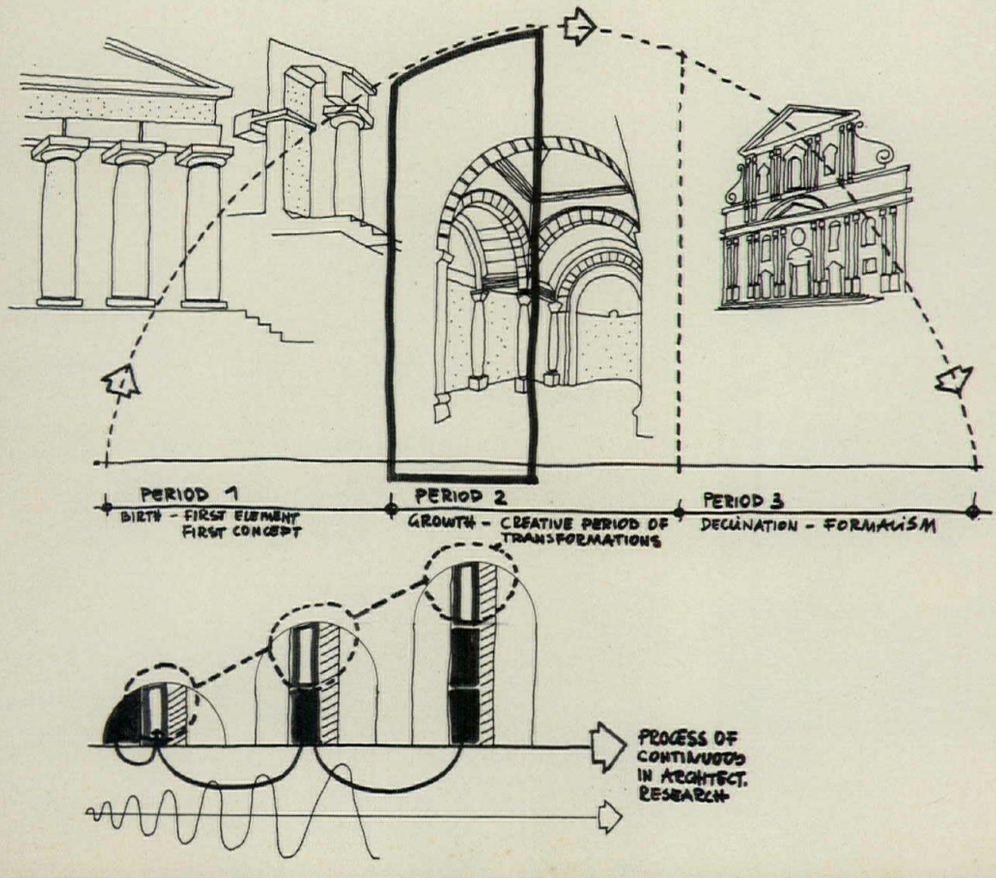
It appears useful to attempt to analyze the various functional, psychological, technical and economic aspects that occur in the process of architectural design; and, at the same time, to expose the existing contradictions within the architectural profession.

This cycle includes the following basic elements: reflections on the problems of methodology or intuition in the process of creative design; the phenomenon of architecture without architects both past and present; the role of the architect today and in the past; the problems of mass solutions; problems of density and urban plasma; economy of design; flexibility; systems in architecture, industrialization and its influence on environment and the planning of urban forms; standardization and the universality of solutions; transportation.

The ultimate goal of these considerations is to visualize the whole gamut of contradictions, conflicts and interrelationships in connection with the role, education and creative possibilities of the architect today. A forceful attempt has been made to present all of these considerations in the form of drawings, schemes, diagrams and propositions.

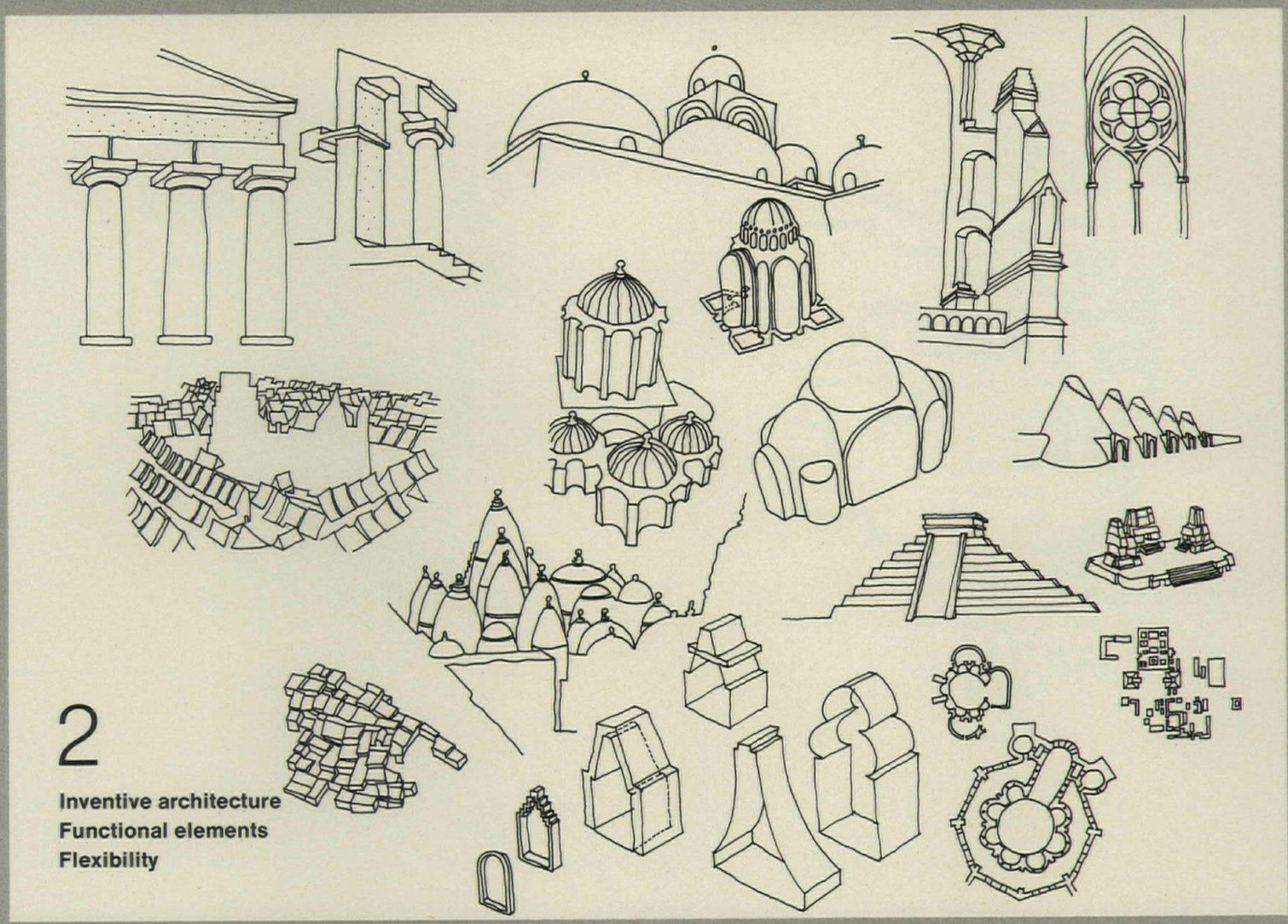
Further, the intention of this kind of work is to reach conclusions in terms of schemes for housing as well as urban design. This second stage of research is called "The Research of the Urban, Organic, Modular Elements" (P/A Feb. 1970).

Author and artist: Visiting Professor of Architecture, Faculties of Design and Planning, Yale School of Architecture.



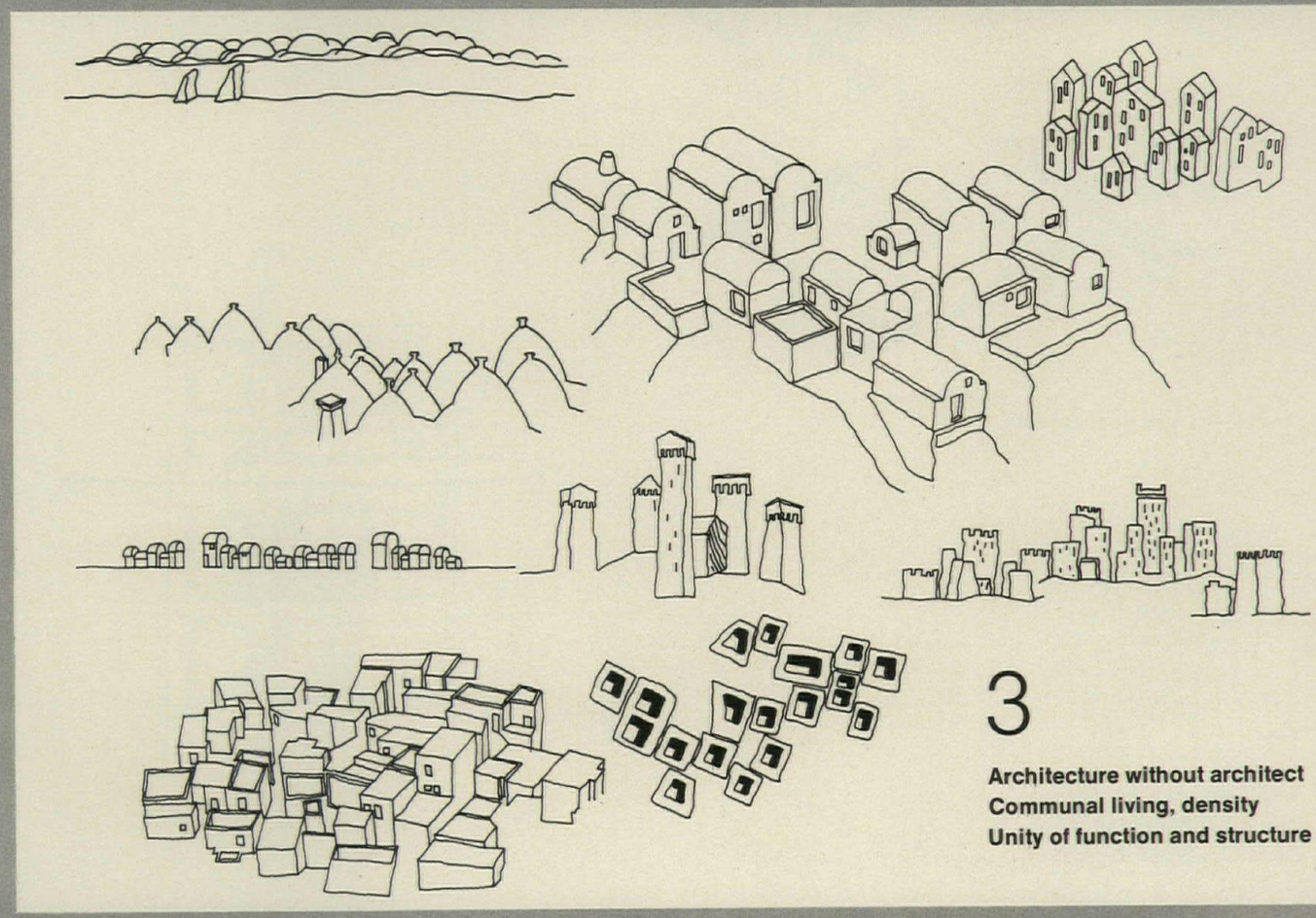
1

Birth, growth, death of element
Functionalism, formalism



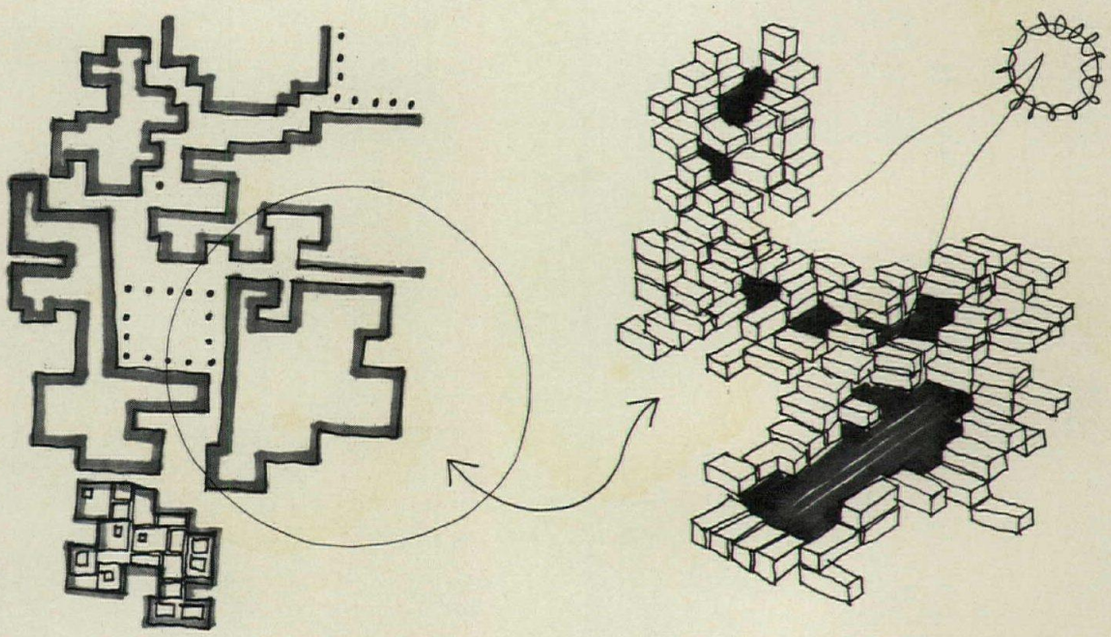
2

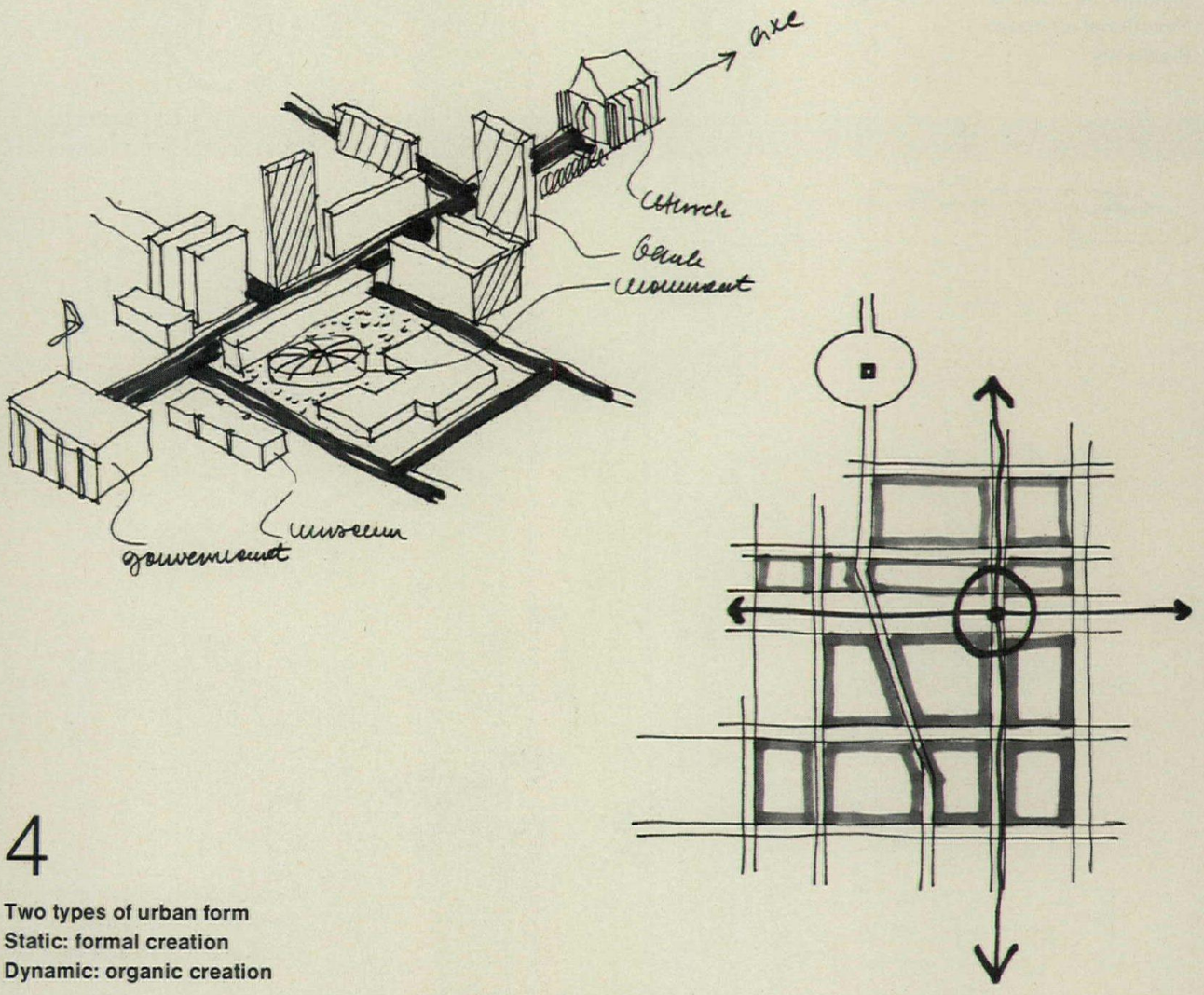
Inventive architecture
Functional elements
Flexibility



3

Architecture without architect
Communal living, density
Unity of function and structure



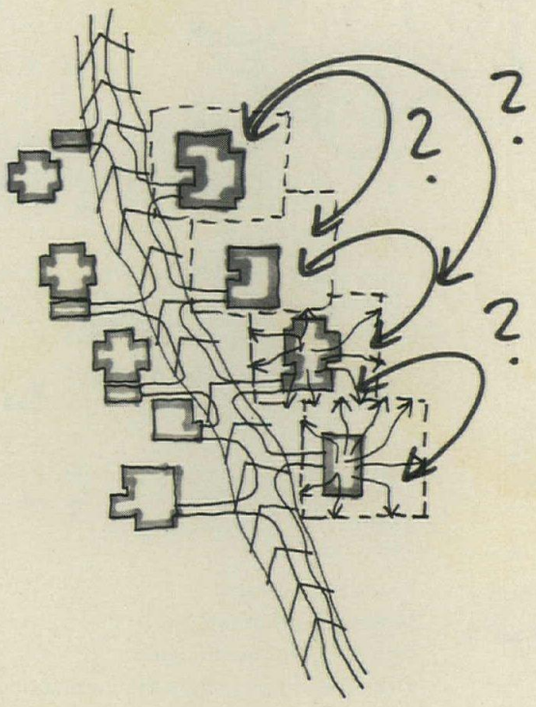


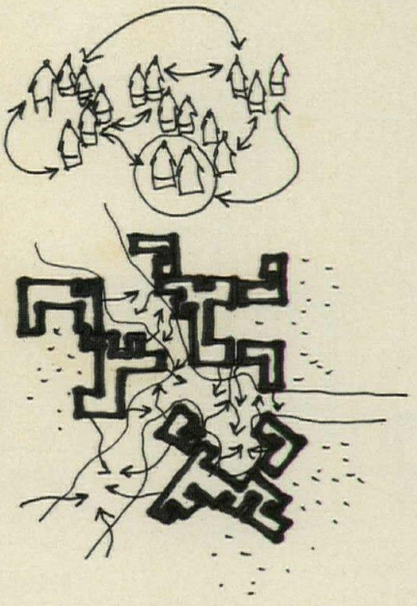
4

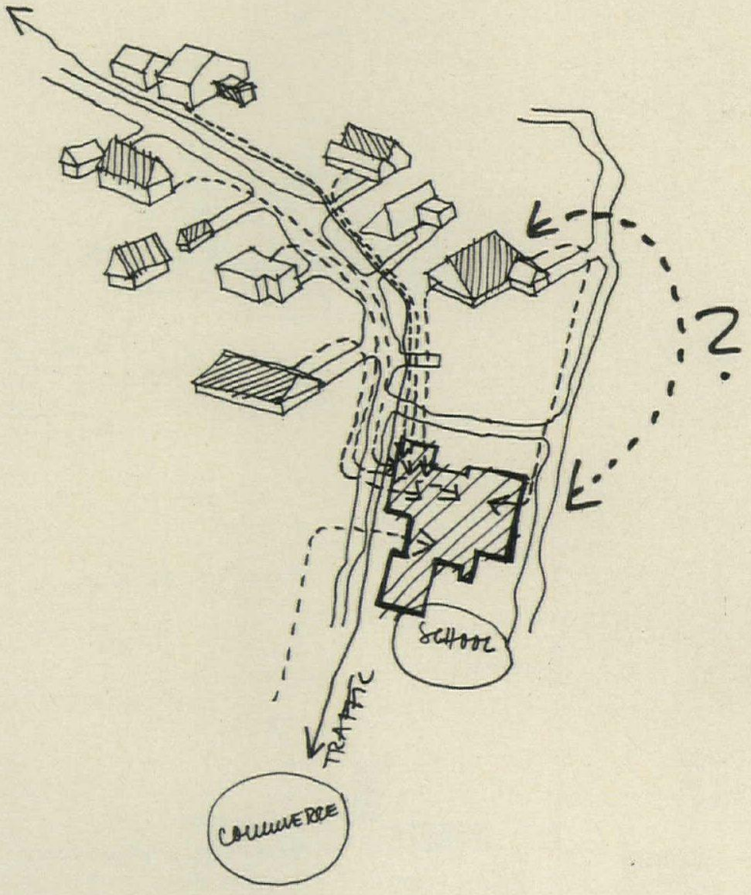
Two types of urban form
Static: formal creation
Dynamic: organic creation

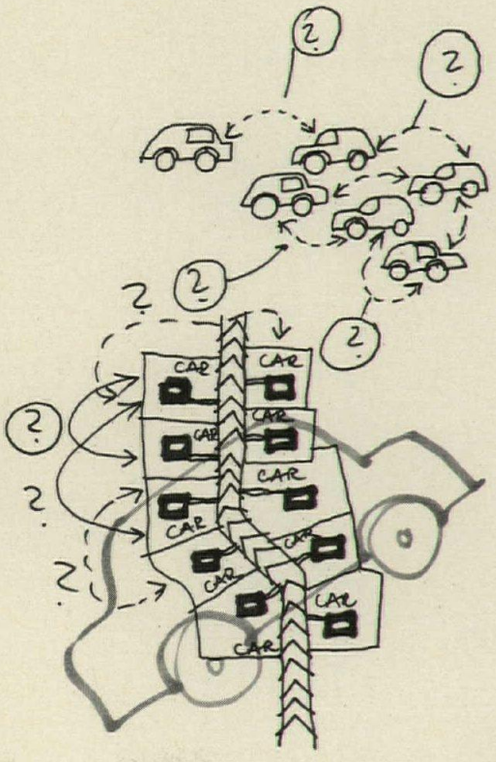
5

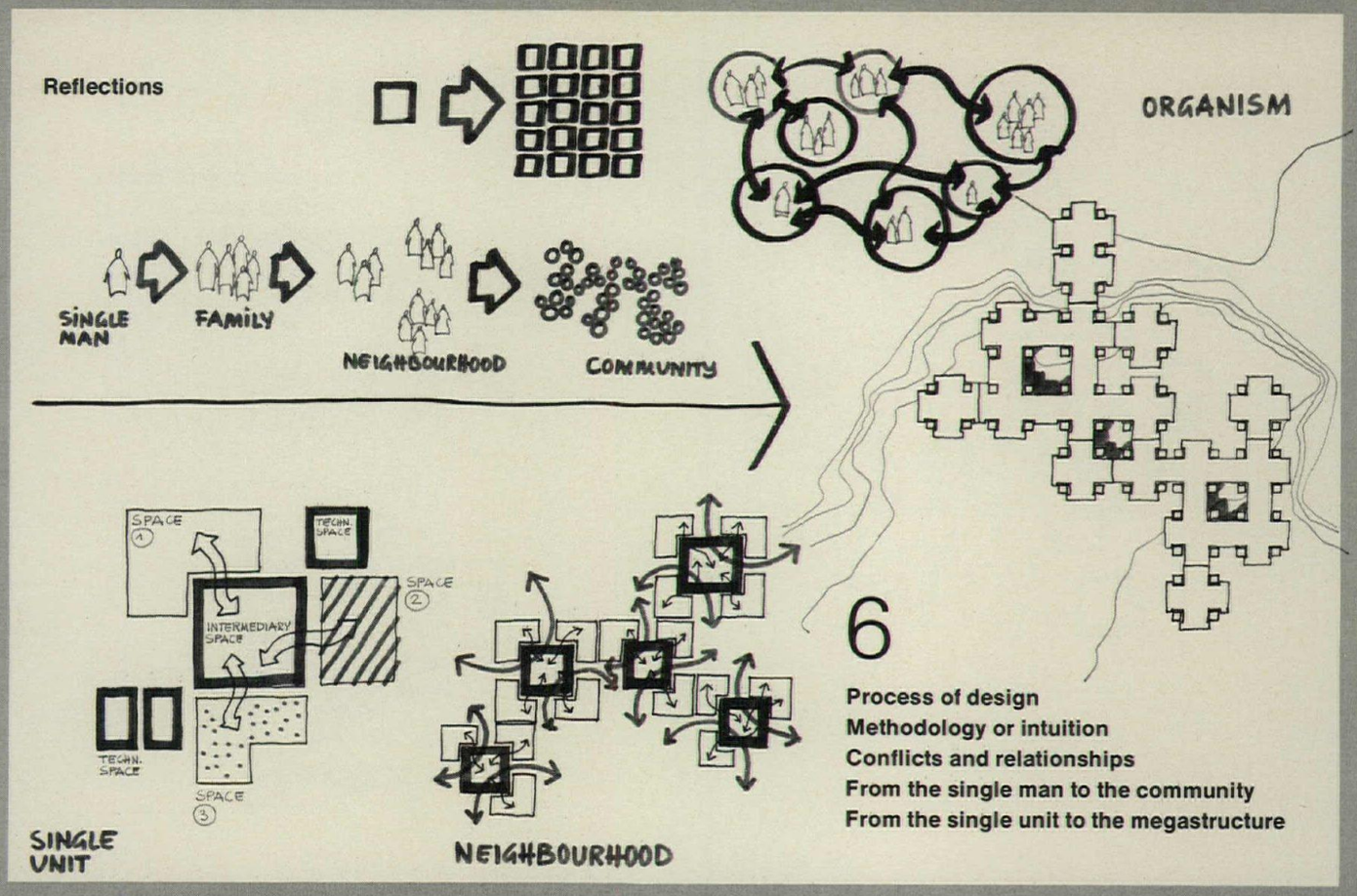
Isolation in architecture
Isolated house
Car as a means of isolating

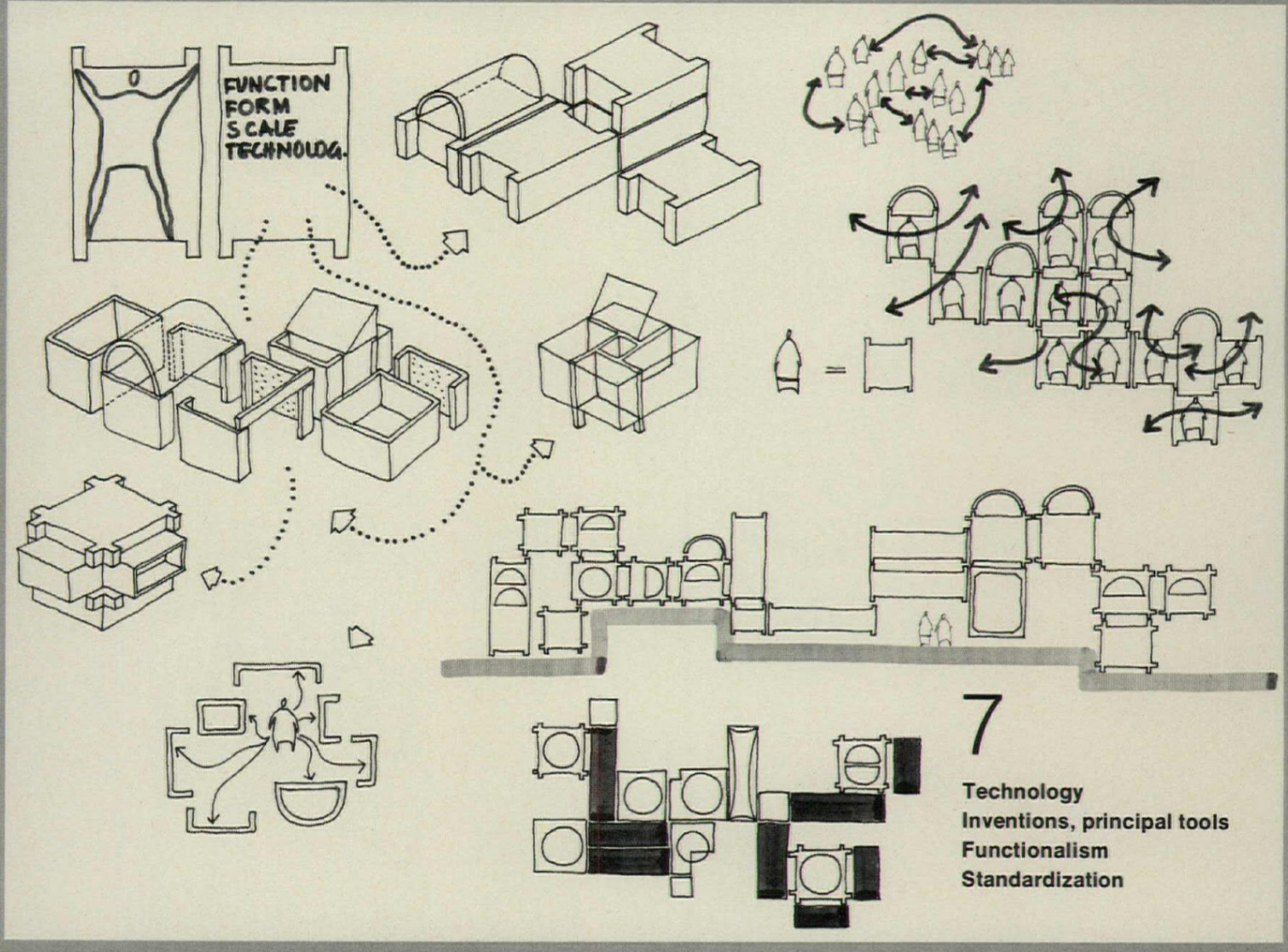


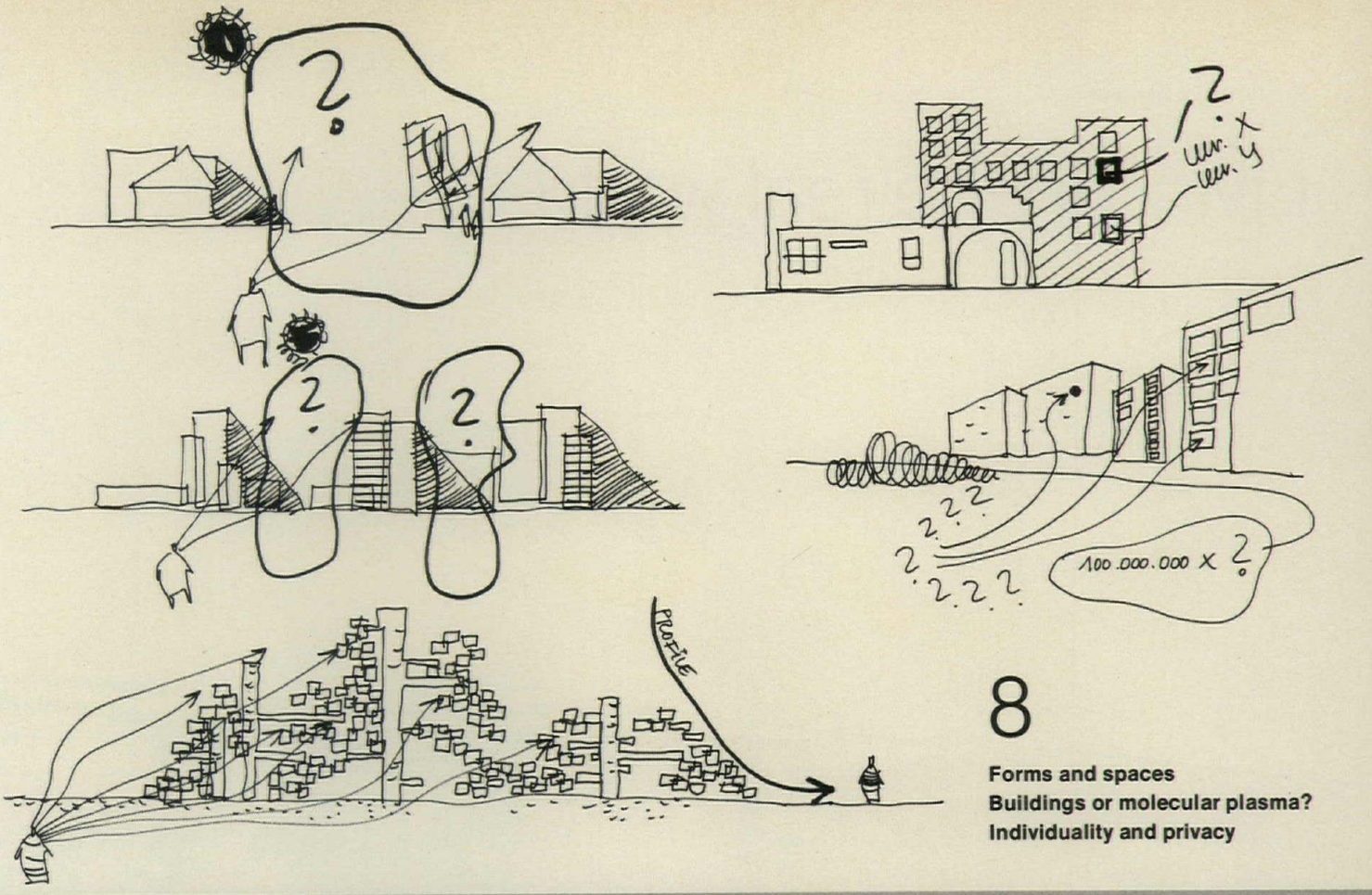






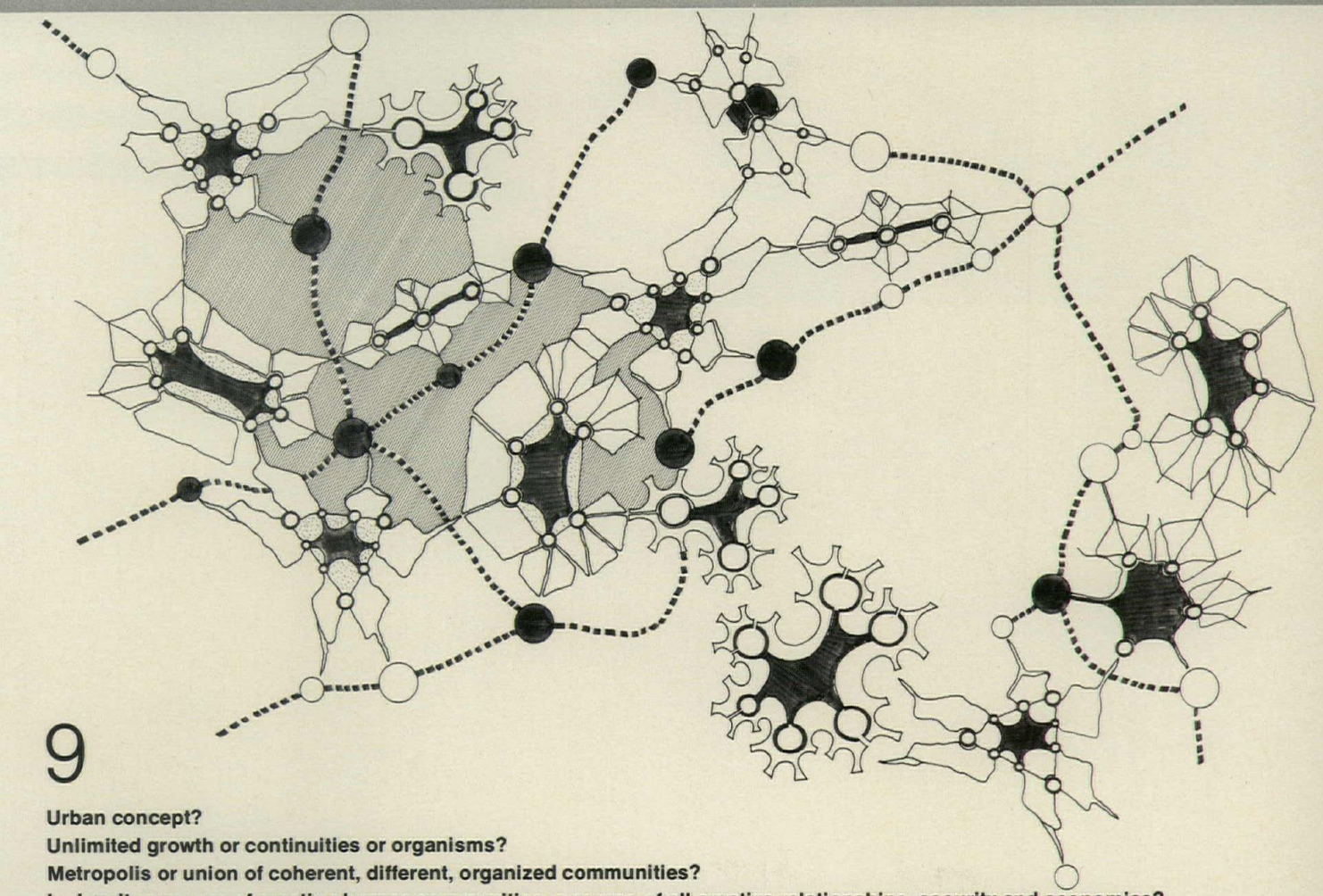

Reflections
ORGANISM
SINGLE MAN
FAMILY
NEIGHBOURHOOD
COMMUNITY
SPACE 1
TECHN. SPACE
SPACE 2
INTERMEDIARY SPACE
TECHN. SPACE
SPACE 3
SINGLE UNIT
NEIGHBOURHOOD
6
Process of design
Methodology or intuition
Conflicts and relationships
From the single man to the community
From the single unit to the megastructure


FUNCTION
FORM
SCALE
TECHNOLOGY
7
Technology
Inventions, principal tools
Functionalism
Standardization



8

Forms and spaces
Buildings or molecular plasma?
Individuality and privacy

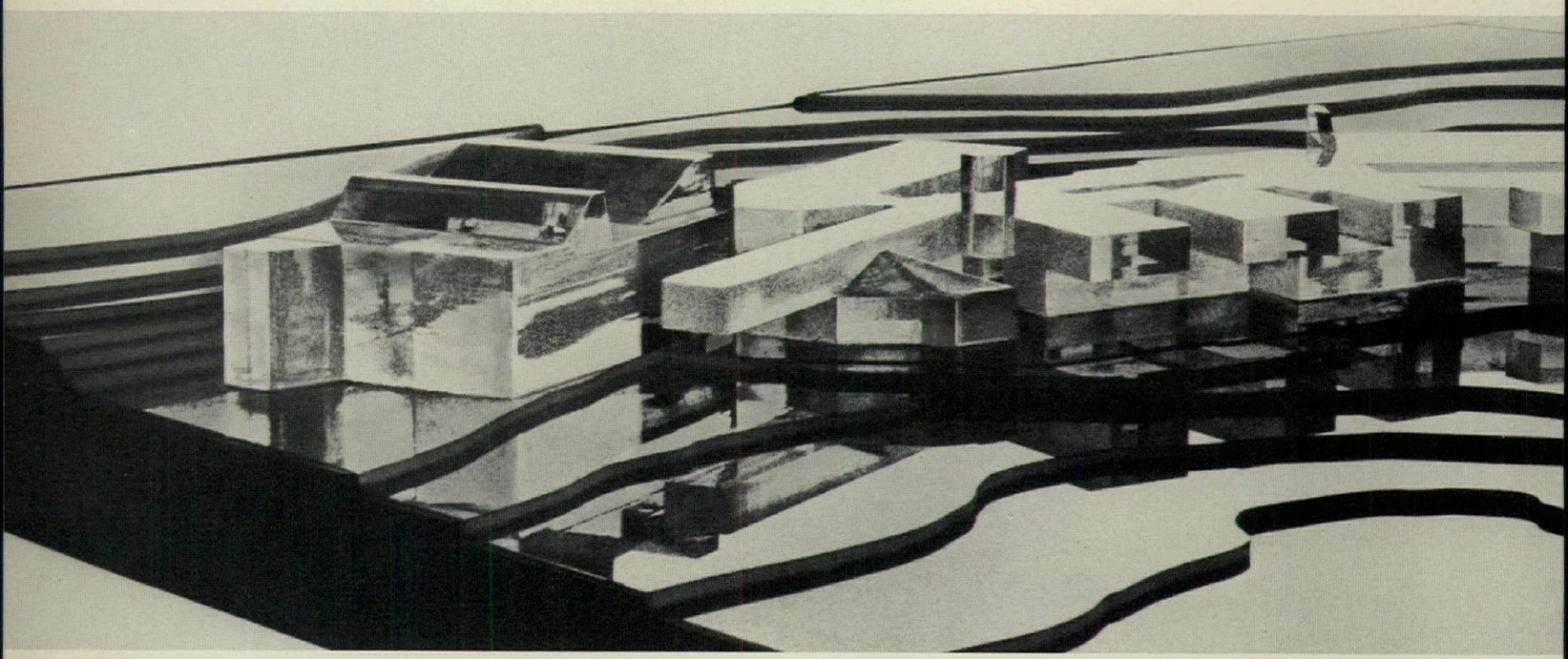


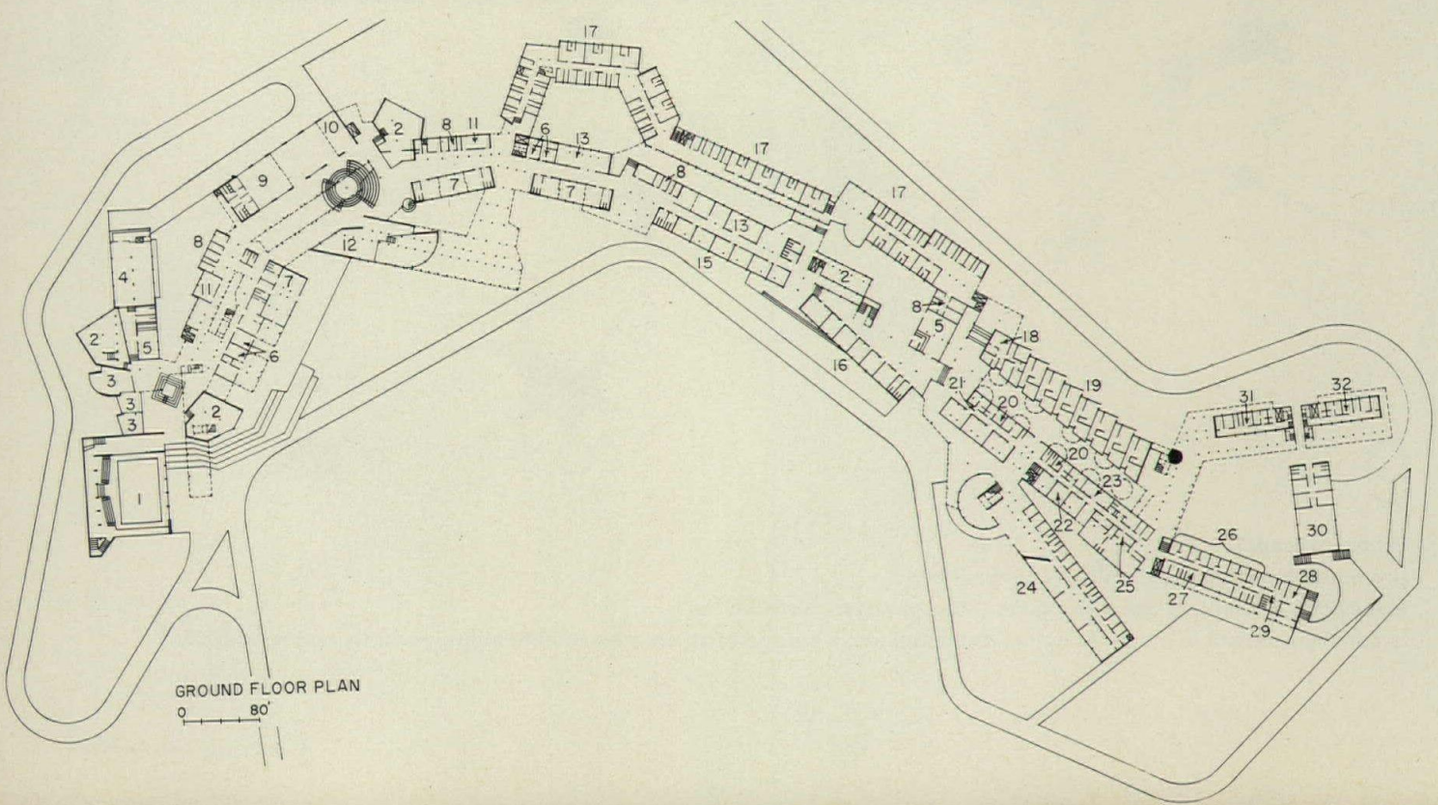
9

Urban concept?
Unlimited growth or continuities or organisms?
Metropolis or union of coherent, different, organized communities?
Is density a means of creating human communities, a source of all creative relationships, security and economics?

Proposed for Sardinia

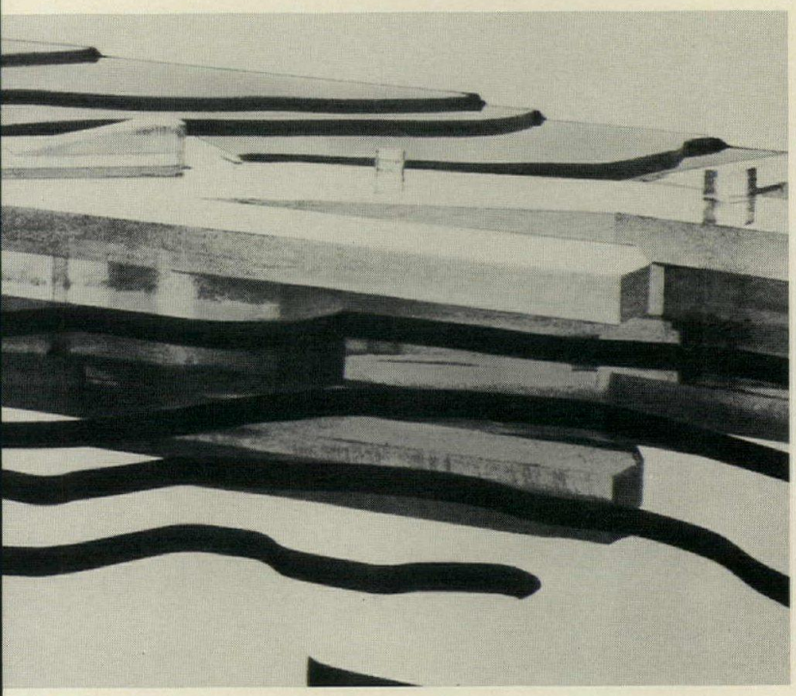
Living in the real world





A proposal for a new psychiatric hospital in Sardinia suggests the possibility of creating a town effect to encourage positive therapeutic results for patients

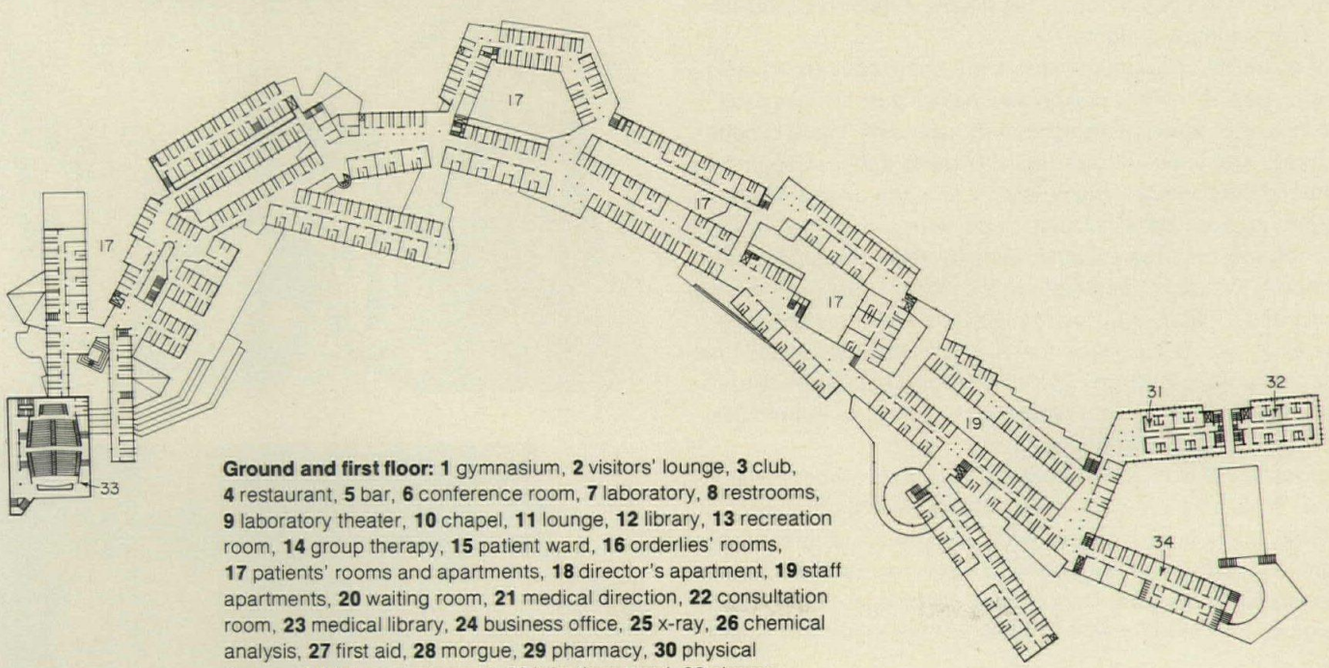
The competition was for a new 500-bed psychiatric hospital in the province of Nuoro on the Italian island of Sardinia. Turin architects Francesco D'Agnolo Vallan, Sisto Giriodi and Giuseppe Raimondi, working with psychiatry professor Gustavo Gamma, did not win the competition, although they presented some startling ideas of what a psychiatric hospital could be. They recognized that a better hospital, in itself, is not the solution to problems of mental health any more than better prisons solve problems of crime or better schools solve problems of education. Their design opposes the usual idea that leads only to better facilities and conditions within the hospital and leaves the roots of the problems untouched. They believed that because the foundations of problems are to be found in the society itself, the psychiatric hospital can only function effectively when it opens itself to and patterns itself on the outside world.



The design of the hospital is based on the concept of constant and free access and contact, or choice, similar to the usual encounters of one's daily existence. The team believed that this openness would encourage and accommodate communication at all levels that would, in turn, contribute important, positive therapeutic results. Their concept acknowledged that the patient came to the hospital from the outside world, and that it was to that world he would ultimately return. He would not return to the life of institutionalized order found in most mental hospitals, but to one of great complexity and contradictions. An individual preparing to return to that life must be afforded the opportunity of free choice in order to learn to live in society, and he must understand the value of the responsibility that accompanies free choice. In this reality freedom becomes the rule, and the responsibility of the hospital becomes oriented more toward looking for problems than toward searching for solutions. Its constant aim is the maintenance of individual subjectivity, even if it is to the detriment of the general efficiency of the organization.

The possibilities of meeting and communication, the "town-effect," is accomplished through the arrangement of the facilities and through the means of circulation within the hospital. The building is easily entered from many points and it can be crossed in any direction inside; there are no "filters" or obligatory passageways. It avoids the crystallization of privileged areas for custodial functions; it upsets the nursing functions. Patients have their own apartments that their families may share with them if they wish and, except for a limited number of diseases, areas are not separated by type of illness. To increase the possibilities of communication, all social areas are shared by and open to all patients, staff and, most important, to the community.

Because the staff and patients are all responsible for the functioning of the hospital, each patient learns to become critically aware of the importance of human relations in his preparation to return to society.



Ground and first floor: **1** gymnasium, **2** visitors' lounge, **3** club, **4** restaurant, **5** bar, **6** conference room, **7** laboratory, **8** restrooms, **9** laboratory theater, **10** chapel, **11** lounge, **12** library, **13** recreation room, **14** group therapy, **15** patient ward, **16** orderlies' rooms, **17** patients' rooms and apartments, **18** director's apartment, **19** staff apartments, **20** waiting room, **21** medical direction, **22** consultation room, **23** medical library, **24** business office, **25** x-ray, **26** chemical analysis, **27** first aid, **28** morgue, **29** pharmacy, **30** physical therapy, **31** tuberculosis ward, **32** infectious ward, **33** cinema, **34** surgery ward.

FIRST FLOOR PLAN

A spin-off works both ways

Vastly different personalities provide mutual benefits for an old Philadelphia architecture-engineering firm and the young interior design firm spun off from it

It's not unusual for an architectural firm to have its own interior design department, or even its own subsidiary interior design firm. What is a little unusual, however, is for the two firms to have personalities as different as those of The Ballinger Co., a staid 92-year-old Philadelphia architectural and engineering firm, and Environments Incorporated, a swinging young interior design firm. And yet from this bridging of what looks like an architectural generation gap come real advantages for parent company and subsidiary. It's a good example of synergy, in which the total effect is greater than the sum of the individual parts: one plus one yielding more than two.

In business terms, Environments started as a wholly owned subsidiary; now, however, it is an affiliate of The Ballinger Co. Its board of directors, which includes Ballinger managing partner John de Moll and Environments president Ken Parker, reports to the Ballinger stockholders. Environments operates as an independent division with support from the parent company; from the beginning, it has taken on its own clients as well as Ballinger projects.

For the parent company, there are some obvious advantages: buying interior design services as they are needed costs less than maintaining an in-house staff. There is better control, and the service is better. Beyond that, Environments often leads Ballinger into new jobs, jobs the parent company might not even know about to begin with.

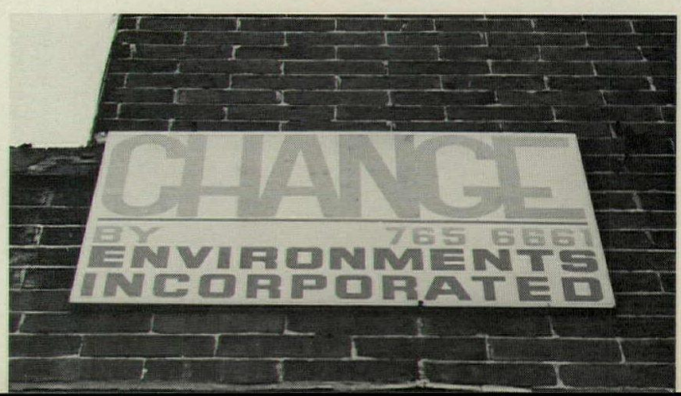
Probably the greatest advantage for Environments is the back-up available from the parent company. Ballinger's architects and its structural, mechanical and electrical engineers are all available to Environments, just as the interior designers are available to Ballinger. When Environments wants engineering or other assistance, Ballinger assigns a man to the job and charges Environments for his time.

Jobs range from the ordinary to the exotic. The firm has done offices for Westinghouse, IBM, Du Pont and other clients, and it is currently working on projects ranging from a school for hyperactive children to a controversial electronics warfare laboratory. Not far from the office is a building being renovated for the Pennsylvania Ballet Company. The finished job will include two large studios with dance floors on stainless steel springs. Then there is a master plan for Bethesda Naval Hospital and a project for the Philadelphia Public Defenders Association.

Setting up Environments was not a new experience for Ballinger. About 20 years ago, the firm expanded its services by organizing Ballinger-Meserole, a consulting firm specializing in materials handling and distribution problems. Another spin-off may be in the offing, this time into the fast growing modular building field.

Their early experience set the pattern for Environments, says John de Moll. "We realized how subsidiaries should operate. You've got to give freedom to outfits like Ballinger-Meserole and Environments. It's a happy chance if something rubs off."

The Environments story started back in the mid sixties, and Lou de Moll, partner in charge of Ballinger's architectural department, says he's the one who started it. "I was frustrated with designing buildings, walking away and then coming back



Key word at Environments is change, whether it's an old auto repair shop changed into the firm's offices (above) or turning two floors of an existing office building into low-budget spaces for the Defender Association of Philadelphia. Shown in the midst of their changing neighborhood are Ken Parker and his staff: designers Beverly Neilson and Harold Coffin, assistant Joyce Holloway and general manager David Vachon (Harris Davis photos).

to find them murdered by interior designers." The answer was an in-house interior designer, and Ken Parker was hired to fill the slot.

There was only one flaw in the solution: there wasn't really enough work to keep an in-house interior design staff busy. "I was looking at the dollars," recalls John de Moll, "and it made no sense at all, but we liked Ken and we wanted to keep our own interior design capability. So we suggested to Ken that we set him up in business."

As a result, Ballinger spun off a new firm called Environments, Incorporated. Ken Parker insisted ("quite wisely," says John de Moll) on a different image and a different location for the new firm. Incorporated in June 1968 but actually in operation four months before that, the new firm started out in a remodeled row house with the improbable address of No. 3 Pigs Alley.

Contracts drawn up at the time stated that Ballinger would do no interiors, and Environments started right in on interior design work on Ballinger projects. The firm soon outgrew its first offices and bought what John de Moll describes as "an old disaster of a garage," which it has turned into a show place office.

Planning for the future

As a direction for the future of Environments, Ken Parker is apt to quote the title page of an environmental standards study done for Burroughs, Inc., describing his firm as a "multidisciplinary space analysis, space planning and interior design organization." The study also indicates another side of that direction for the future—a move towards the conceptual, research-oriented side of interior design.

The end product of the study will be a manual of environmental standards for the client, a tool to be used by anyone involved with the design, construction or alteration of Burroughs facilities. The study took Environments about four months of visits to Burroughs offices and plants, interviews and conferences with officials and employees, surveys of spaces and acoustics—all aimed at pin-pointing environmental goals and needs and then setting them down as a system of standards.

The standards include qualitative and quantitative parameters for spaces (dimensions, proportions and shapes); materials, finishes and colors; temperature, ventilation and humidity; acoustics; power systems; privacy; physical access; furniture and equipment; accessories and graphics; plumbing and fire protection; safety; and economy. They include performance criteria, materials and methods specifications.

As a first step towards the multidisciplinary goal that the Burroughs study suggests, Parker would like to add some specialized experts to his staff. He hopes to find a "conceptually inclined" space planner, a real estate and lease expert and a sociologist; a medical facilities equipment analyst is already on the staff. The movement would be away from architectural designers towards thinkers. Another indicator of future directions is Ballinger's move into modular building. It started with a project to develop a modular building for a major client. The building would consist of square modules 300 ft on a side; one or more modules could be used in a single building. There would be three uses for the buildings—office space, laboratory space and manufacturing space; the buildings would be identical, regardless of use, with the sole exception of a dropped ceiling in the office areas. Whatever the use, the basic drawings would always be the same. Exterior walls would be left to the local architect.

The concrete block cores for these large modules are identical. They contain toilets, class rooms, locker rooms or store rooms and mechanical spaces. The rooms would not change, but their uses might, from one type of building to another.

To meet varying building code requirements, the cores also had to accommodate a long list of items: fire alarms, exits, hose cabinets; stretchers; clocks, drinking fountains, thermostats; waste and ash bins, time clocks, bulletin boards and mail sorting boxes. Environments was asked to devise an industrialized way of handling these varied items in the core areas. The solution was a modular system of panels into which the various devices can be inserted. The panels are cut out to receive the clocks, bins, cabinets or whatever, and grouped on the core walls. They are designed to be movable, changeable and relocatable. Made of 24-gauge steel and gypsum board, the panels have baked-on colors, which in the mechanical spaces are repeated in the exposed mechanical distribution system.

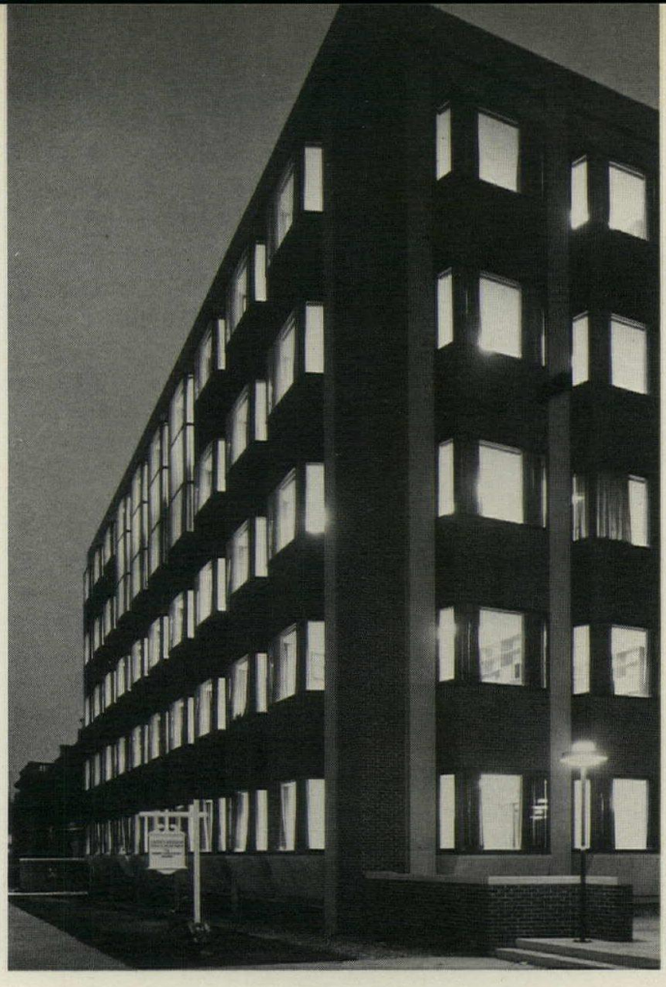
Too large to be really marketable, and built around one specific set of criteria, this modular building will not play a large role in the future. But it provided the jumping off point for another modular building program that will. Ballinger has developed a simple modular system that offers great flexibility at low cost; it is almost a universal building, and it will go by the name of UNIMOD when Ballinger puts it on the market. Because of the flexibility of the system, and the anonymity of its buildings, Environments will play a large part in giving human qualities and identity to the spaces, and interior design will take on added importance.

Working on concepts rather than specific projects, the Ballinger Co. and Environments have come up with their own approach to the design of hospital rooms. It started in 1969 with a study made by Ballinger's Medical Facilities Division, headed by Joe Archut. The problem, as they saw it, was to design patient rooms that combined the best features of private rooms and semi-private rooms.

As part of the study, Ballinger took a close look at its own room designs as well as those from hospitals designed by other firms, evaluating them on the following criteria: square footage, cost, orientation, privacy, flexibility, efficiency, circulation, closeness of beds to exterior windows, screening restrictions, flexibility of toilet facilities and patient-to-patient relationships. From this study Ballinger developed several completely new room designs, which were then evaluated on the same criteria.

Since the time of the original study, some of the patient room designs have been used in actual hospital projects, with Environments called in to help turn the concepts into real rooms for real patients. Both designs shown here, one at Carlisle Hospital, Carlisle, Pa. (above, bottom left) and the other at Good Samaritan Hospital, Lebanon, Pa. (left), provide two private spaces within one semi-private room, along with common toilet and traffic spaces.

The Carlisle room is slightly larger than the average acute



Social Sciences Center at the University of Pennsylvania is typical of collaboration of Environments and its parent, The Ballinger Company. Ballinger partners are Robert E. Wetmore, John D. de Moll, Robert I. Ballinger, Jr., Lauri J. Kurki, Jr., Carl C. Colket and Louis de Moll (Lawrence S. Williams photos).

care patient room. This lets the hospital use the same rooms for acute care, extended care or mental health patients. The Good Samaritan room is about the same size as a regular two-bed room. Both provide more usable space and less dead entrance vestibule space.

In these rooms, both patients have virtually equal access to all facilities; there is no "inside bed," no "outside bed." Each patient has an unobstructed view out the window and access to the toilet. If screens are needed for the privacy of one patient, they do not interfere with his roommate. Yet if privacy is not needed, the room is a comfortable semi-private room.

The nursing units in which these room designs have been used are double corridor units with centrally located nursing stations. Windows are indented from the building façade, providing sun and weather protection, and the angle between the two windows in each room is intended to reduce the time and amount of interior shading that is needed. This provides more natural light throughout more of the day without excessive glare and heat build-up.

There is a sign on one of Environments' projects that pretty much sums up what Parker is doing. The sign announces, in large letters, that the project is "another change brought to the Art Museum Area by Environments, Inc." "Change" of course, is the key word, on the sign and in the office, and the way Environments is changing may be the way of the future.

The big change, and the important one, lies in what combinations like Ballinger and Environments can do, and John de Moll gets the last word on that subject. "Architecture is going through turmoil. We won't be doing in 10 years what we're doing today. It will be aimed more toward starting new operations like Environments. That way you end up with a team, which gives you more opportunities to go different directions. You're not restricted to being producers of plans and specs. That's boring." [CP]

Arup Associates and the group practice experiment

Michael O'Hare

Group practice and comprehensive services are the hallmarks of a fast growing architectural office that was spun off from a world-famous British consulting engineering firm

Architects anxious to discern the nature of their future practices may find a preview in an office spun off from a large British engineering firm. Unfortunately, the worldwide reputation of Ove Arup & Partners as consulting engineers has tended to obscure the unique character of Arup Associates, a total-design office that shares its address, name, computer and ancestry—but little else—with its parent.

The usual description of Ove Arup is that he is an architect at heart who happens to be one of the best engineers in the world. It is true that Arup has a rare ability to understand the kinds of things that are important to an architect, and that his designs have the elegance of expression and visual quality that are usually considered architectural virtues. His work on the Sydney Opera House typifies his ability to understand an architectural conception and bring a spectacular technical ability to its service. With this sort of background, it is not surprising that Arup should have been long concerned about integrating the architectural and technical parts of the building design process in a more complete way than the usual consulting system allowed, nor that he should have collected in his office enough like-minded professionals to launch, in 1955, a modest experiment in group practice. Arup Associates has since grown to a staff of more than 215 people, and has developed a distinctive style in its approach to architecture (using the term in its broadest sense) and an organization uniquely appropriate to its method.

Basically, the firm consists of nearly self-sufficient groups, each composed of about 20 to 25 architects, engineers, quantity surveyors and staff. Common services, such as the model shop, are shared. The firm is headed by five partners: Arup, Philip Dowson and Peter Foggo (architects), Ronald Hobbs and Derek Sugden (engineers). The firm grows by multiplying groups rather than by enlarging them; at present there are seven.

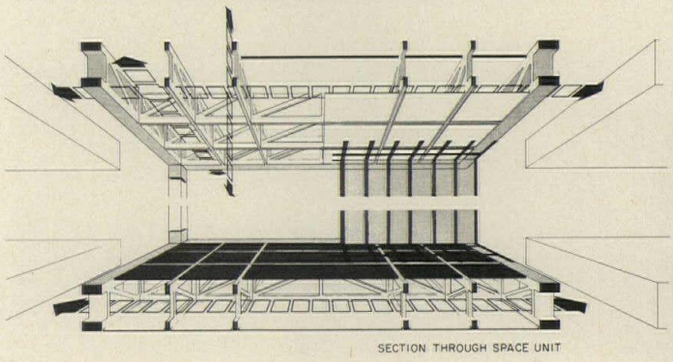
Each group works in an open-plan drafting room and carries projects through—with judicious kibitzing from the partners—from program to working drawings and site supervision. One member of the group is "more equal" than the others: an administrator makes sure that the group's effort is coordinated both internally and with the client. The administrator is likely to be a quantity surveyor, but could also be an architect or engineer. The apparent parallel between him and the job captain typical of conventional offices is false; administrators are extremely careful not to confuse their coordinating tasks with their design responsibilities, which, for the most part, are those of any other member of the group in the same profession.

Although there are no job captains, there is design leadership of a variable sort, exercised by Dowson and Foggo and (at present) two other architects in the office. Obviously, some such direction is required to avoid designing a mess; a multiplicity of skills will not spontaneously produce an integrated result. As Dowson observes, the office is "designing not only buildings but also methods of designing buildings, and building teams, as well." Consequently, within the policy that each group should be as autonomous as possible, the present stage of development of the group idea includes, depending on the job and the people involved, a varying amount of authority and supervision.

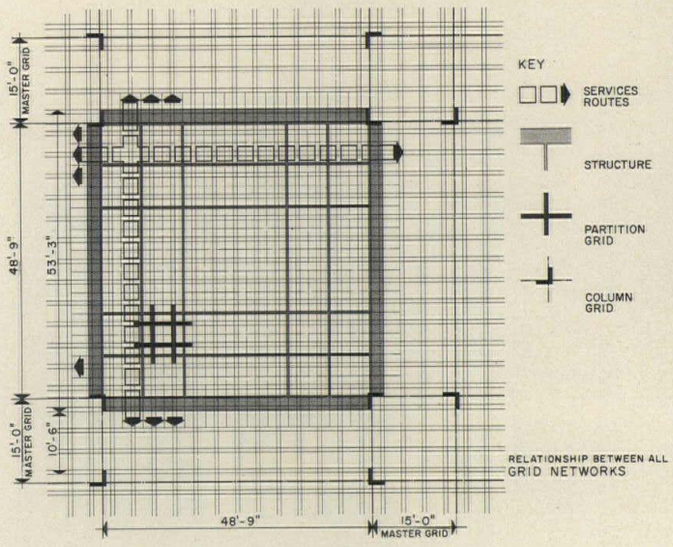
The specific design process is characterized primarily by constant and informal feedback between the architects and the engineers. Where a typical architectural office would develop the design of a building to advanced sketch form in order to explain it to an outside engineering office, the architects in Arup Associates have only to step across the room or lean over to the next desk to consult with an engineer. It has been found that leadership by the architects in the conceptual design development stages is essential, and that no engineering strength in the group can overcome a failure at this point. Members of the group learn quite rapidly how the others' minds work and are able to anticipate the responses of their colleagues. Thus, an architect will absorb general principles of engineering expertise, while an engineer who can see the architectural reason for a certain design proposal is able to zero in on technical changes that preserve the es-

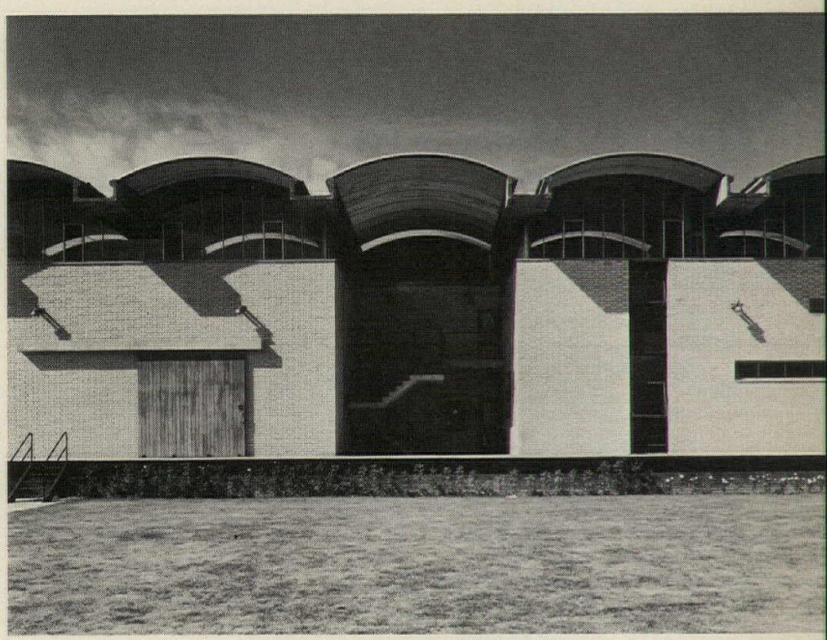
Author: Michael O'Hare, who has degrees in both architecture and engineering, is currently a Junior Fellow of the Society of Fellows at Harvard University. He works with the Environmental Design Group and Ashley/Myer/Smith, Inc.

Corpus Christi College, Cambridge University, points up the structural orientation of Arup Associates; it seems to express more than the building, a graduate residence, has to say.



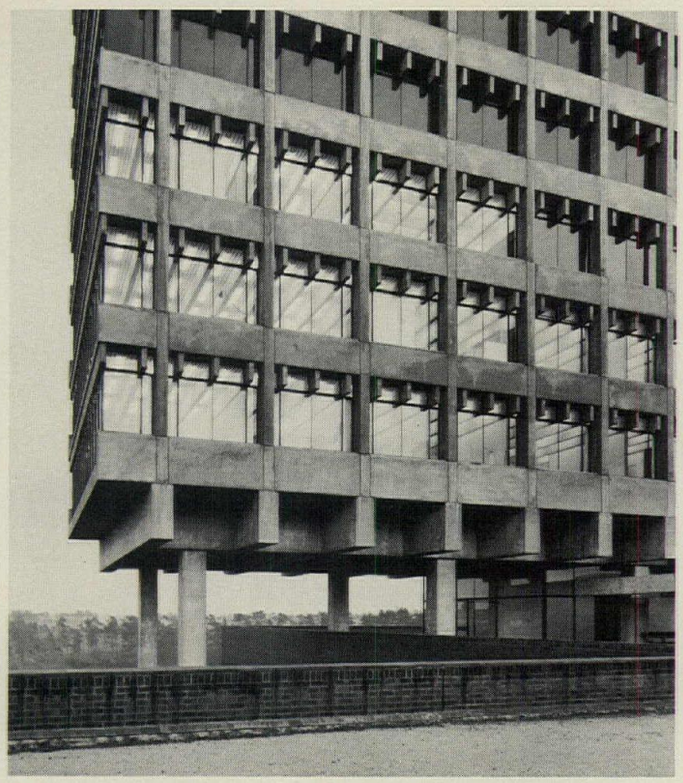
SECTION THROUGH SPACE UNIT





Architecture and engineering are impossible to separate in this multi-purpose building for the Ciba drug firm at Duxford.

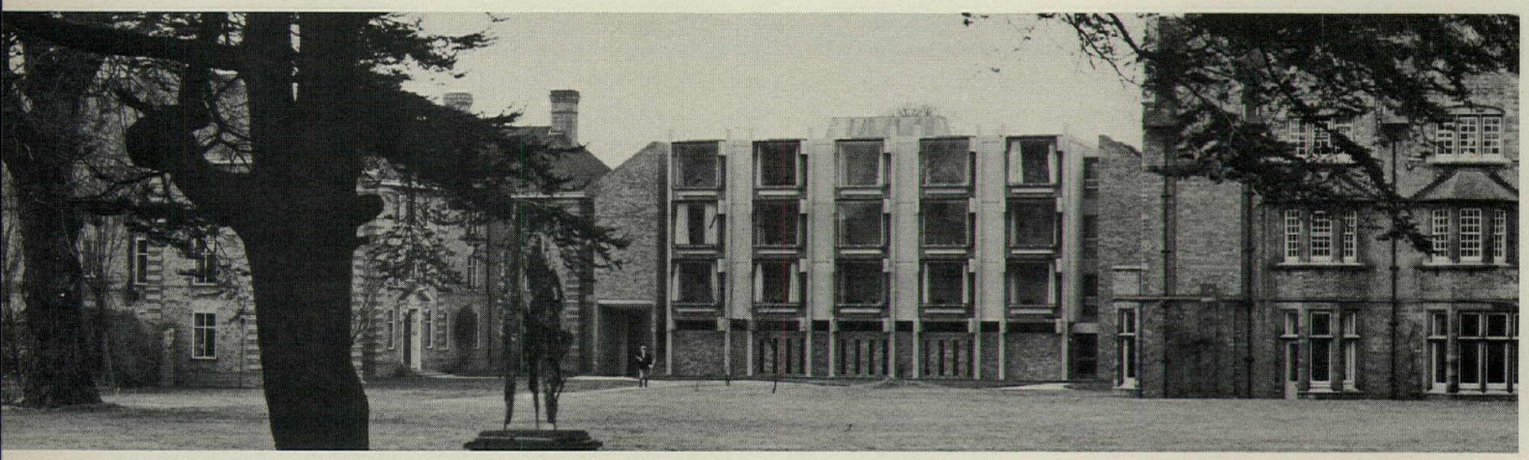
Plan for Loughborough University of Technology shows how two sets of grids determine service runs, structural bays and service networks. Section shows one 2500 sq ft space unit.



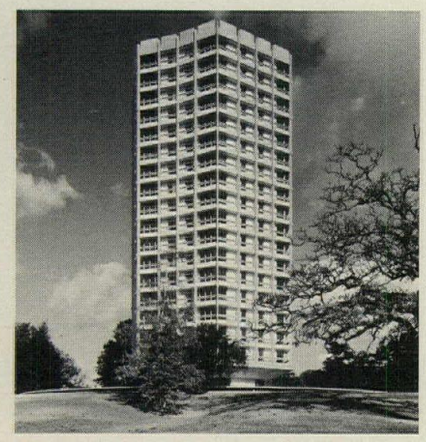
Transposition of load and support relationships from bottom girders to floor beams gives liveliness to clear-span office for Smith, Kline and French Laboratories, Welwyn Garden City.

sential idea. The result is not that architects learn to *think* like engineers, or vice-versa; rather, they learn to *understand* how the other thinks and can consequently establish easy communication. Although the architects are quite clear about their professional function, they tend to be structurally oriented; that is, they seek the expressive language of a building in its structural system. This particular direction leads to an occasional stuffiness in the firm's work and to a few buildings that employ a structure appropriate to a much larger project—sometimes intentionally, to test a system—or seem to have too much engineering. But, examples in which the various professions obviously functioned as fingers of one hand are more common.

Many buildings—such as the residential housing at Somerville College, Oxford—were designed from the inside out, with the individual living spaces refined in relation to the site and the future occupants before the structural system appeared on paper. The architects at Arup are unusually good at isolating the primary requirements of a building and stating them in terms that make it clear whether a particular proposal satisfies them or not. Perhaps this is a consequence of working daily with engineers; at any rate, the firm has had unusual success in dealing with such concepts as "sense of place," as well as with the technical problems that one would correctly assume to be a specialty.

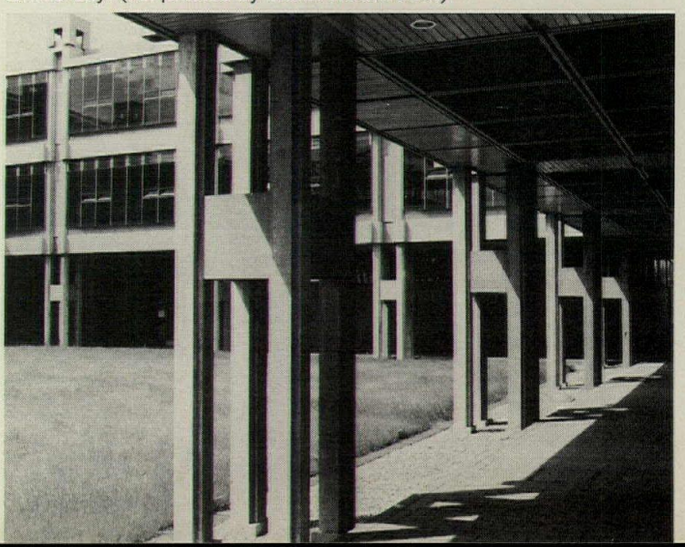


Student housing for Somerville College fits in comfortably at Oxford without aping its neighbors or pulling punches.



Entry and services for apartment tower in Bracknell are tucked below the extensive lawn that surrounds it.

Precast units 20-ft square (floor and four legs), with service zones between them, make up a laboratory for Birmingham University. (All photos by Colin Westwood.)



Integrating structure and mechanical systems

Not surprisingly, the design problem that Arup Associates have taken for their particular oyster is the integration of structural and mechanical systems into a flexible arrangement of widely variable use. The present culmination of this effort is Loughborough Technical University, currently in the first stages of new plant construction that will extend for years ahead. The scheme adopted sets a grid of alternating 48′-9″ and 15 ft bands over the whole site, fixing the locations in which great clear-span barns about 50 ft square can be built for teaching and laboratory spaces, with 15-ft-wide strips for vertical and horizontal circulation. Through this large grid is laid a smaller pattern of 3′-9″ bands for partition locations. The residential units are constructed in a central band on this grid (but in a different system), expanding northeast and southwest, with the academic facilities on either side. The plan is intended to accommodate, ultimately, about 5000 students.

The large clear-span squares are designed for flexibility in original design and in adaptation over time. Roofed with "backwards" (vertical tension members) precast N-trusses, the spaces combine an economical use of material—note, for example, that backwards concrete trusses achieve substantial savings in reinforcing steel—with nearly effortless placement of services off the column lines.

Loughborough also represents a remarkable demonstration of the form-giving utility of structure and services when they are seen with architectural sincerity and the engineer's clarity of purpose. This kind of thinking is obviously difficult to transmit intact to production draftsmen; instead, working drawings are handled by the groups with the assistance of building technicians—usually three in a group—whose particular skill lies in preparing coordinated drawings, with structure, mechanical services, and architectural elements frequently included on the same plans. The other members of the group produce developed sketches, not soft-pencil essays, and everyone pitches in during charrettes, so the designers' control is maintained right to the end.

Managing the group staff

The large-scale organization of the office elaborates on a second diagram titled "Functional Responsibility." It really explains whose job it is to keep different things in order, rather than to show authority, particularly for the design processes.

This is important because design decisions are not made just because the boss says "I like it," but for reasons that can be dealt with logically and advanced in a way that will convince a rational, sensitive person.

Besides a fairly synoptic philosophy of design throughout the firm, low staff turnover within the groups (less than 10 percent per year) is essential to the success of such an effort. Thus, a group should be seen as 18 or so permanent members, and two or three who come and go fairly rapidly, or else decide they like it and join the permanent staff. Group practice normally requires that the members have a fairly narrow spread in competence (though they should differ laterally in the kinds of skills represented). If one group member is obviously a much better all-around architect than the others, the structure of the group will be hopelessly distorted, since he either becomes a *de facto* job captain or sees his colleagues' inferior work incorporated in the finished projects.

Arup Associates, on the other hand, keeps the quality of its groups at a very high level, so such a stand-out is unlikely to appear. In any case, there is really no place to be promoted to—a fact of which the partners are well aware. As Desmond Gibbons, administration chief for the firm, puts it, "The only incentives we have are pay and the satisfaction of doing good work." The staff agrees that after learning how to work in a group, it would be very difficult to go back to the usual architect-consultant relationship.

Arup Associates keeps salaries as high as possible from the start and includes everyone in a profit-sharing plan. The high proportion of the staff who are well paid (as opposed to the usual office's many low-paid transient "shoppers") exert a significant pressure on the firm to look for every possible way to improve the overall productivity of the office per payroll dollar. For example, the Detail Development Group maintains an ongoing effort to study repetitive elements of buildings the firm designs and to refine them for inclusion in a sort of detail library; consequently, instead of being invented anew—and imperfectly—each time, many details result from an intensive study impossible for any single project's budget to support. At the same time, the designers can pay more attention to the unique problems in the commission at hand.

Another way the firm tries to keep its efficiency high is through keeping the client aware of what is happening to his building all the time, which leads to a better fit between the building and the client's needs and also avoids drastic and wasteful changes in the project's direction.

Another virtue of the group practice scheme is that contact with client (and contractor) can be handled through one man; the client contact is a member of the group and only one transmission away from any of the other members, so the information can be moved with little loss or damage.

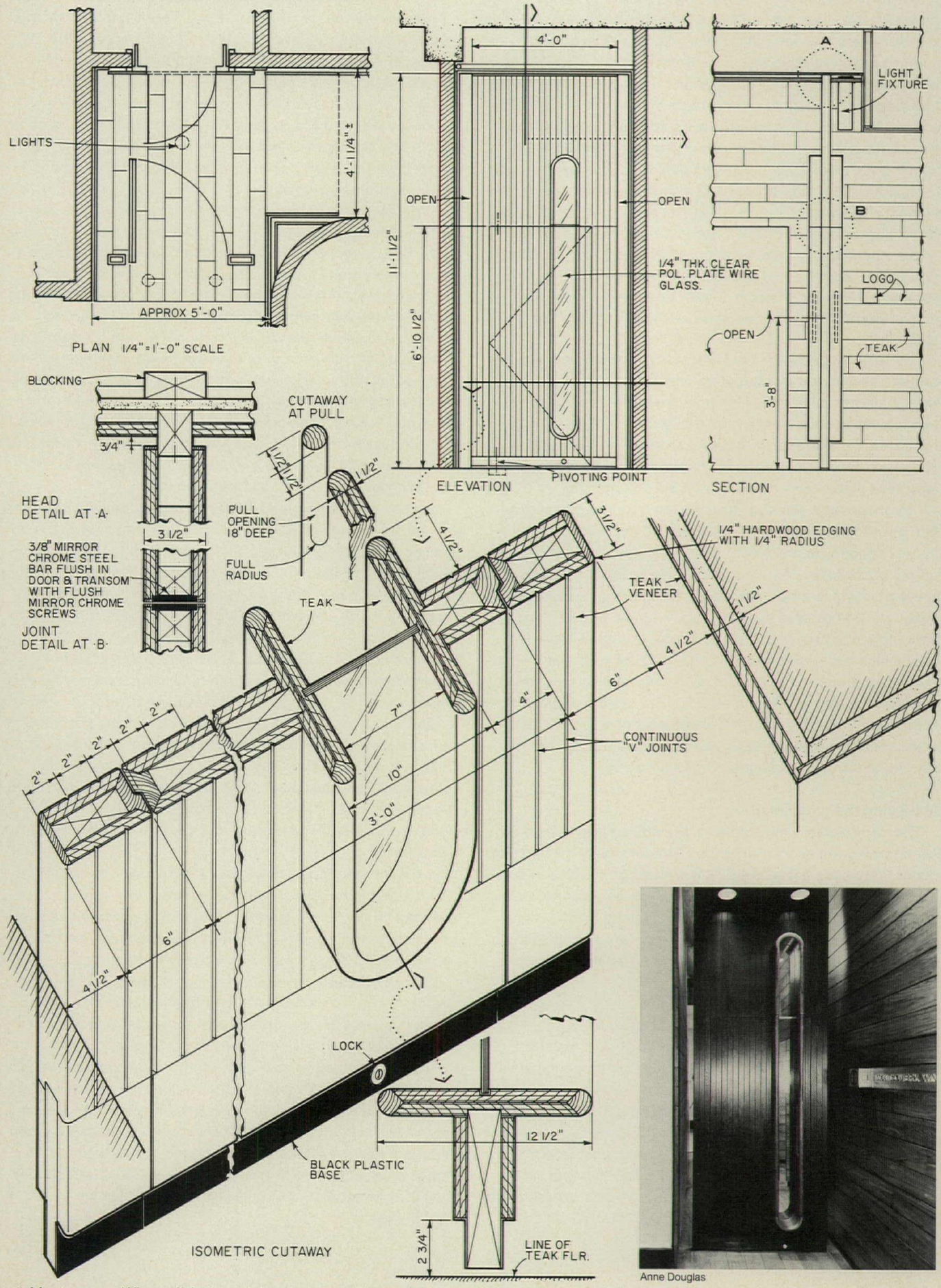
An unusual practice the firm has developed is a postmortem on its buildings. From six months to a year after the defects liability period ends, there is a formal self-criticism session, complete with a detailed cost survey of the building. Although this was originally intended to improve the quality of its designs, it unavoidably points out inefficiencies in the office's procedures.

As growth continues, new groups are formed by cadreing out selected members of existing groups into a new nucleus and then hiring to fill the gaps. Thus, the new group can avoid what has typically been—for individuals—two years of floundering around trying to learn how to work in a group.

A future radical step may be vertical expansion in the other direction—into construction. The model of Nervi's operation, where the same firm programs, designs and builds, has an understandable attraction for architects even in countries where such a practice now violates codes of professional ethics. However the story comes out, it is likely that Arup will be able to demonstrate to the professions involved that, just as they were not trying to sneak an engineering office into architecture to cop the fees when they began group practice, so they are not interested in contracting as a way to unfairly outflank the competition, but primarily to better give the client what he needs.

Selected details

Door for an architect's office



Anne Douglas

Architect: Montgomery Winecoff & Associates, Inc.

Home at Pebble Beach, California
Architect: Mark Mills, Carmel, California
Contractor: Taylor Wheeler Builders, Fresno, California
Prestressor: Delta Prestress Concrete Inc., Sacramento, California

Prestressed concrete speaks with style

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Odor removal systems

Wolfgang Kretschmann

Controlling or eliminating unpleasant odors in commercial, industrial and institutional buildings is achieved by some of the varied methods discussed in this article

By definition, odor is that property of a substance which excites the sense of smell. To be odorous, a substance must be in a gaseous or vaporous state, or possess a vapor pressure. Therefore, to abate or eliminate an odor, it is necessary to remove the objectionable gases or vapors or to reduce their concentration to an acceptable level.

There are basically three types of odors that are predominant in commercial buildings, e.g., office buildings, arenas and hospitals: tobacco odor, body odor and kitchen odor. In medical or research buildings some laboratory exhaust may require special treatment due to the toxic or noxious odors generated from experiments.

Other discomforting and toxic odors involving a high percentage of hydrogen sulphide, industrial effluents or smog, depending on the area, may be introduced from the outside atmosphere.

Dilution of odors

The most commonly used method for reducing the effect of odors is by dilution of internally generated air contaminating impurities by ventilation to a level acceptable to the occupants. How much outside air is required for dilution will depend on the nature and intensity of odor producing sources. A conference room where smoking is permitted requires about 30 cfm per person compared to 7½ cfm per person if smoking is not permitted. A locker room requires about 15 to 20 air changes per hour.

Dilution can be achieved by utilizing either an open or a closed ventilation cycle. In the open cycle sufficient outside air is brought into the space to flush out the odor by dilution This method has limitations depending on the quality of the outside air. If the outside air itself has odors and contaminants they have to be removed before the air can be introduced into the space. In an urban area where buildings are close, exhaust air containing noxious or toxic substances cannot be discharged into the atmosphere without treatment for removal of odors. There are occasions when both the outside and exhaust air require odor removal equipment.

In the closed cycle the odor generated in the space is still flushed out by dilution. However, the air is returned to the space after the odor has been removed. Sufficient outside air is introduced into the system to compensate for natural air leakage of the building and to satisfy building code requirements. The closed cycle has the advantage of recovering the room air, which has already been treated for temperature and humidity. This in turn reduces the operating cost of the air conditioning system. The type of equipment used should be based on engineering considerations, such as initial cost, maintenance and space requirements, since they are important to an owner.

Treatment of odors

Several odor control methods are available: adsorption, removal by washing and scrubbing, control by chemical reaction, control by combustion and odor masking and counteraction. In the commercial field, the most widely used is control by adsorption, the collection of odorous gases and vapors by a solid material. Among available adsorbents are activated charcoal, zeolite, silica gel, activated alumina and mica.

Activated charcoal is most often used commercially since it can adsorb a variety of gases and vapors and a broad spectrum of organic substances. It has been widely used to control exhaust odors from kitchens, animal rooms and toilets.

Charcoal cells are only effective up to 125 F, and they are for gas removal only, and should be preceded by dust filters. These filters require additional space and access for maintenance over and above that normally required in a building. One 1000 cfm cell is 24″ x 24″ x 9″ deep and weighs 45 lb. The cost amounts to approximately $.20/cfm based on a 25,000 cfm system.

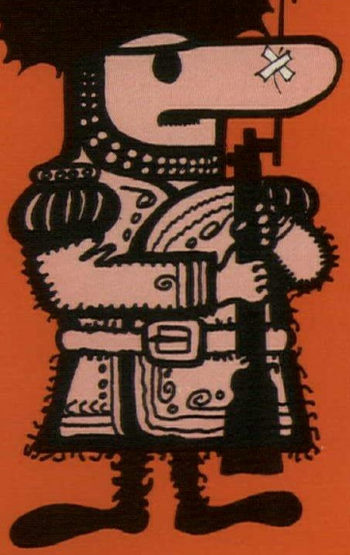
Control of room air where odor is generated

There are installations like the new Madison Square Garden where the smoke and odor problem is controlled by Cosa/Tron units. In comparison to the odor problems encountered in the old Garden this system has functioned to the owner's satisfaction. The manufacturer of Cosa/Tron explained the functioning of their equipment as follows: Cosa/Tron System is based upon the concept of selectively altering the electrical characteristics of both airborne odorous contaminants and the occupied spaces in which these contaminators are either introduced or generated. The staining of room surfaces and the build-up of residual odors on surfaces and furnishings are reduced by control of secondary air.

This type of system is also being used to cope with jet fumes in outside intakes for air conditioning systems at airports. A relatively new development, most of the experience is based on comments of the building owners rather than theoretical performance of the unit.

Author: Wolfgang Kretschmann is an associate partner of Syska & Hennessy, Inc., Consulting Engineers, New York City.

ATTENTION!



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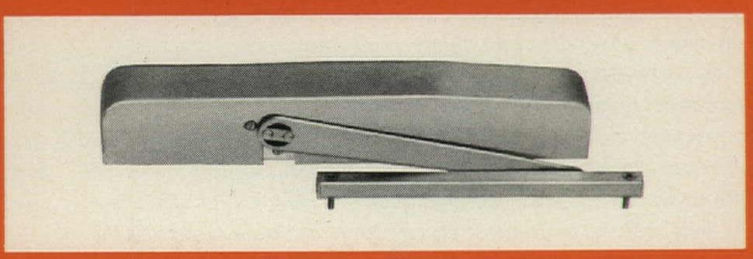


Specifications clinic

What criteria for gasket glazing?

Harold J. Rosen, PE, FCSI

If lock-strip gasket glazing is to be used for major structures, glass and gasket manufacturers must arrive at criteria for use based on stringent testing

Lock-strip gaskets, formerly and perhaps inaccurately called structural gaskets, are elastomeric mechanical devices used for securing and sealing glass or panels to a metal or concrete frame. For the most part, they have been produced from neoprene but are available to a lesser degree in other types of plastics. An ASTM specification, C542, establishes the physical properties for lock-strip gaskets.

Two major basic types are available, the H-type and the spline type. The spline type is also known as the tongue and groove or drive-in type.

A single gasket for a single light of glass is preformed at the factory by injection molding the corners to the straight lengths. Multiple lights can be secured with ladder gaskets which are a series of gaskets completely assembled at the factory with the cross members running either horizontally or vertically.

Lock-strip gaskets seal lights effectively by means of the sealing pressure exerted by the gasket lips after the lock strip is inserted into the gasket groove. After these gaskets are installed very little maintenance is required compared to "wet" sealant joints. There is no need for painting, patching or repairing. The neoprene type of gaskets have outstanding resistance to ozone, weathering and flame. Since neoprene in general has been used since the early 1930s, actual exposure to the elements without significant deterioration has established the material's weathering capabilities.

However, an examination of the criteria for glass size and thickness to be used with lock-strip gaskets for specific wind load design indicates a lack of consistent and specific requirements by glass and gasket manufacturers.

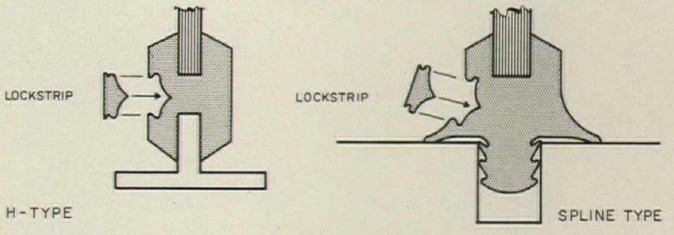
Glass manufacturers have developed wind load charts based on tests to destruction of thousands of lights, rigidly supported four sides in metal frames. The need for this type of information is because glass, unlike metals, exhibits wide variations in strength between samples. These glass charts are based upon an average strength value, or some other value which is not the assured minimum, adjusted by what is termed a "design factor." The term "safety factor" is not appropriate for glass since it does not exhibit consistent strength characteristics. Most glass charts for metal frames are based on a "design factor" of 2.5 which implies that in 1000 lights, eight lights may break before the design load is reached.

When glass designed for wind loads based on the glass manufacturers' charts is set in metal frames and subjected to wind tests it exhibits a close correlation to the manufacturers' chart data. However, when the same sizes and thicknesses of glass are set in gasket frames and subjected to wind tests, failures occur at much lower design factors. The failures in most instances result from rollout of the glass from the gasket frames. As a result of actual tests performed for H-type gaskets, one leading testing laboratory amassed the following:

Glass thickness	Safety factor
¼"	1.6
⅜"	.98
½"	.75
Insulating glass	1.25

For spline-type gaskets, the rollout failure occurs at higher test loadings. However not enough tests have been performed with spline-type gaskets to arrive at a set of design factors that architects can use with impunity.

One gasket manufacturer bases his design criteria for glazing with gaskets at a push-out pressure of 5 lbs per linear inch of gasket. By multiplying the design wind load by the glass area and dividing by the perimeter of gasket, the push-out pressure exerted on the gasket is determined. Unfortunately not enough testing has been done with H-type and spline-type gaskets to arrive at a set of criteria to be used.



In addition, the glass and the gasket manufacturers differ in their recommendations for edge clearance requirements between the glass and the gasket frame. Some glass manufacturers prefer a greater edge clearance than the gasket manufacturers, allowing easier installation of the glass in the gasket frame. Some glass makers insist on setting blocks at the sill of the gasket, while some gasket manufacturers do not favor setting blocks. The glass sizes in gasket frames with larger or smaller edge clearances and the use or omission of setting blocks have not been sufficiently tested to establish the criteria.

It is apparent that if the use of lock-strip gasket glazing is to be considered for major structures, both the glass and the gasket manufacturers will have to produce more meaningful criteria based on more exhaustive test data. Both H-type and spline-type gaskets must be investigated as thoroughly as glass breakage in metal frames from the point of view of rollout pressure failures, and new charts must be established for glass sizes and thicknesses. The investigation also should determine the effect of edge clearance on rollout pressures and the need for setting blocks.

Author: Harold J. Rosen is the Chief Specifications Writer of Skidmore, Owings & Merrill, New York City.

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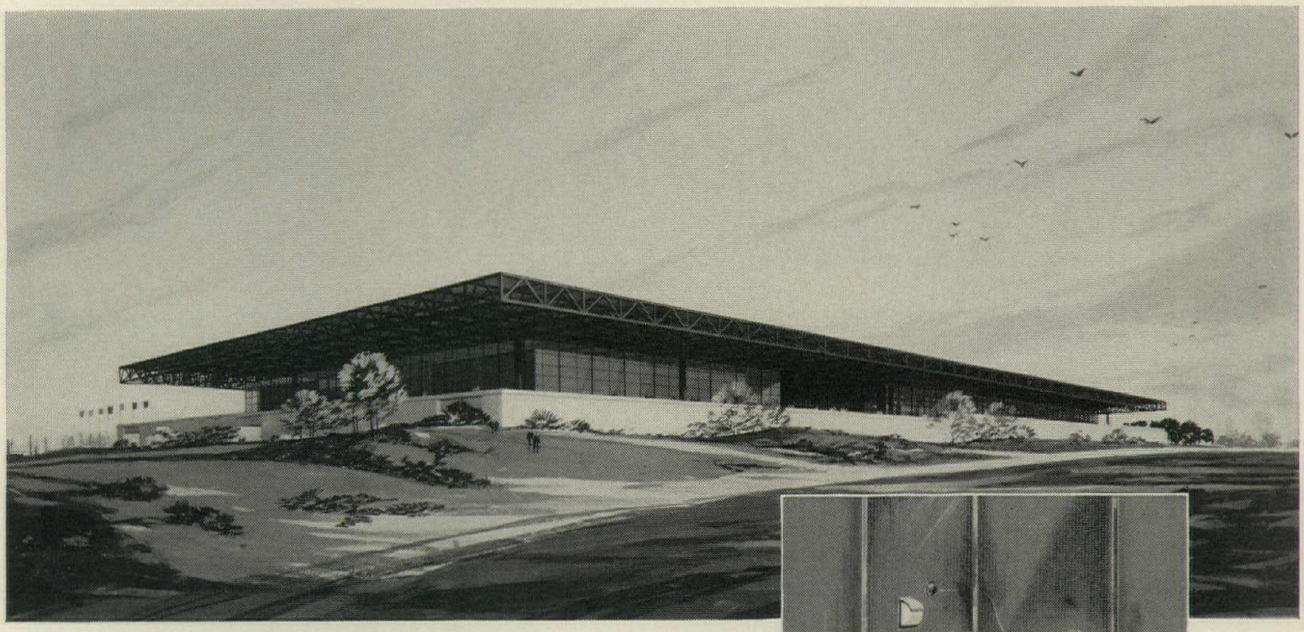

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'The works of . . .'

Kenzo Tange 1946–69: Architecture and Urban Design *by Tange and Kultermann. Edited by Udo Kultermann. New York: Praeger Publishers, 1970. 300 pp., illus., $29.50.*

Reviewed by James T. Burns, Jr. The reviewer is a former senior editor of P/A and is currently working on community development with Lawrence Halprin & Associates, environmental planners.

Confronted with these 800-pound books on "The Works of . . ." (you can substitute Rudolph, Johnson, Breuer, S.O.M., Neimeyer, etc., etc., for Kenzo Tange) I always recall with a great deal of approval the words of George III when presented with the voluminous final drafts of *The Decline and Fall of the Roman Empire.* "Scribble, scribble, scribble, eh, Mr. Gibbon? Another great, fat book!" the monarch is said to have exclaimed. Not so crazy after all, that George.

Thus, despite my admiration for Tange and for his work—particularly since about 1966—I must demur at the suffocatingly superscale production given *Kenzo Tange 1946–69: Architecture and Urban Design.* The editor, Udo Kultermann, is an experienced hand at this sort of thing, seeming to turn one out just about every season, and he has done a workmanlike, if over-devout, job here. However, I think the reader will find Tange's own writings, which are well represented, of greater interest than the editor's straightforward and somewhat dull building descriptions. This is particularly true of Tange's discussion of his ideas and master plan (1960) for Tokyo, a hopefully influential model for us all which is much more progressive than Tange's own master plan for Skoplje five years later, an annoyingly axial and fusty performance.

I am dismayed that the publisher or editor, or both, saw fit to show last year's Osaka Expo '70 in model form rather than in actual on-site photographs. Surely deadlines could have been stretched to permit this. This would have given an opportunity, too, to examine Tange's reported disappointments in losing control of the plan in its final stages instead of simply reprinting his preconstruction philosophies.

Visually, the book lives up to the superior criteria and past acknowledged performance of the Praeger organization for design and production. And it does present in more detail than I have seen elsewhere what I consider Tange's architectural *chef d' oeuvre* thus far, the Communications Center at Kofu. (This one should be examined for a real-life precursor of plug-in megastructural design!).

Ultimately, I have some concern about who will be affected by this book and all the "Works of . . ." books like it. The architects and planners who can afford its $29.50 plus tax price have long since decided on their own professional options and are unlikely to have their heads turned around to any great extent (give or take a little copycatting here and there). The beginning architect, the tyro planner, the student, the interested younger dilletante—all these are priced out-of-luck except for brief visits to see "The Great Work" in the school or public library. I appeal to Praeger and similar publishers to give us modest books and not these spectacular ego trips, to provide books that deal with subjects (as compared to superstars) that people can *use* in dealing with environmental changes, and to price them low enough so that many people of different interests can afford them for their own library shelves! I know that everyone—authors and publishers included—will benefit from the much larger and more widespread reader (and buyer) audience that would result.

Plan for New York City. *1969. A proposal. 1: Critical Issues. The New York City Planning Commission. Cambridge: The MIT Press, 1970. 175 pp. $15.*

Although the problems of New York City are not minimized, the view of the future is optimistic. Extensively illustrated with maps, aerial and ground photographs, and offering history of the past as well as proposals for future developments, the Plan comes to grips with the city as it is, and deals with *processes* for the city's growth. The Plan has four major sections—National Center, Opportunity, Environment and Government.

Open Space for Human Needs. *Prepared by Marcou, O'Leary and Associates (Subsidiary of Westinghouse) in conjunction with Kevin/Lynch, Marvin J. Cline, and Carl Feiss. Edited by Donald Cantry. Washington, D.C.: The National Urban Coalition, 1970. 54 pp. Single copies on letterhead request.*

Proving once again that one picture is worth . . . this report, the third in a series of studies on open space, graphically portrays open space needs and planning solutions in urban areas. The brief text, defining the design concept, the open-space plan and its applications to two communities, and general criteria for open-space design, is inserted among the pages of the dramatic and moving photographs.

Metropolitan Open Space and Natural Process. *Edited by David A. Wallace. Philadelphia: The University of Pennsylvania Press, 1970. 194 pp. $10.*

This study, based on research at the Institute of Environmental Studies at the University of Pennsylvania, and sponsored by a HUD grant, suggests how the process of indiscriminate exploitation of open space can be reversed through understanding and application of natural processes in the environment. With open space in urban regions fast disappearing, the authors demonstrate methods that they claim will permit profitable economic development of the land, while raising the quality of life and saving the environment. It can happen here!

Marcel Breuer: New Building and Projects. *By Tician Papachristou. New York: Praeger Publishers, 1970, 240 pp. $22.50.*

This handsome book continues the ex-

[continued on page 126]

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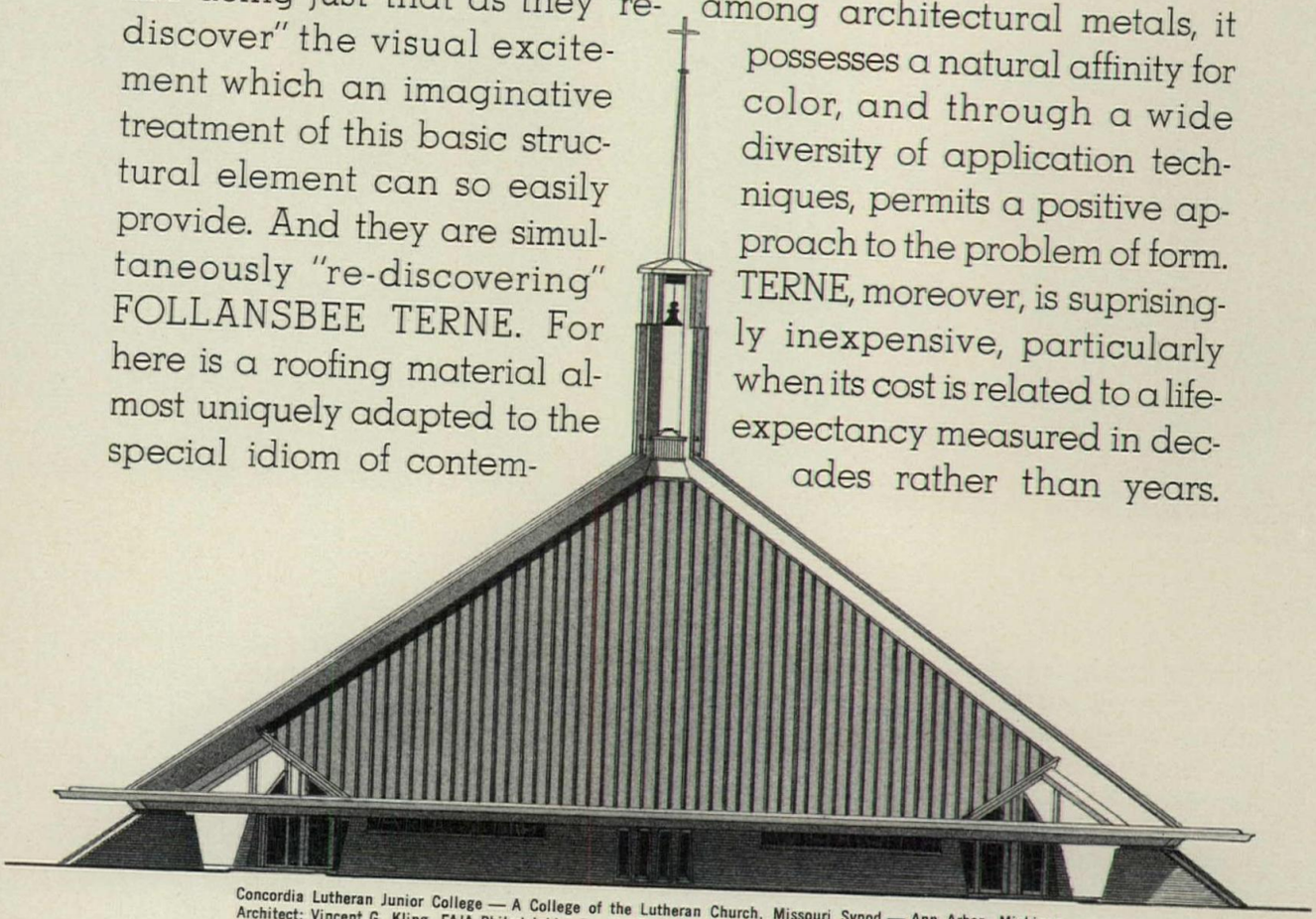

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Architect: Vincent G. Kling, FAIA Philadelphia, Pa. Roofing Contractor: Detroit Cornice & Slate—Detroit, Michigan

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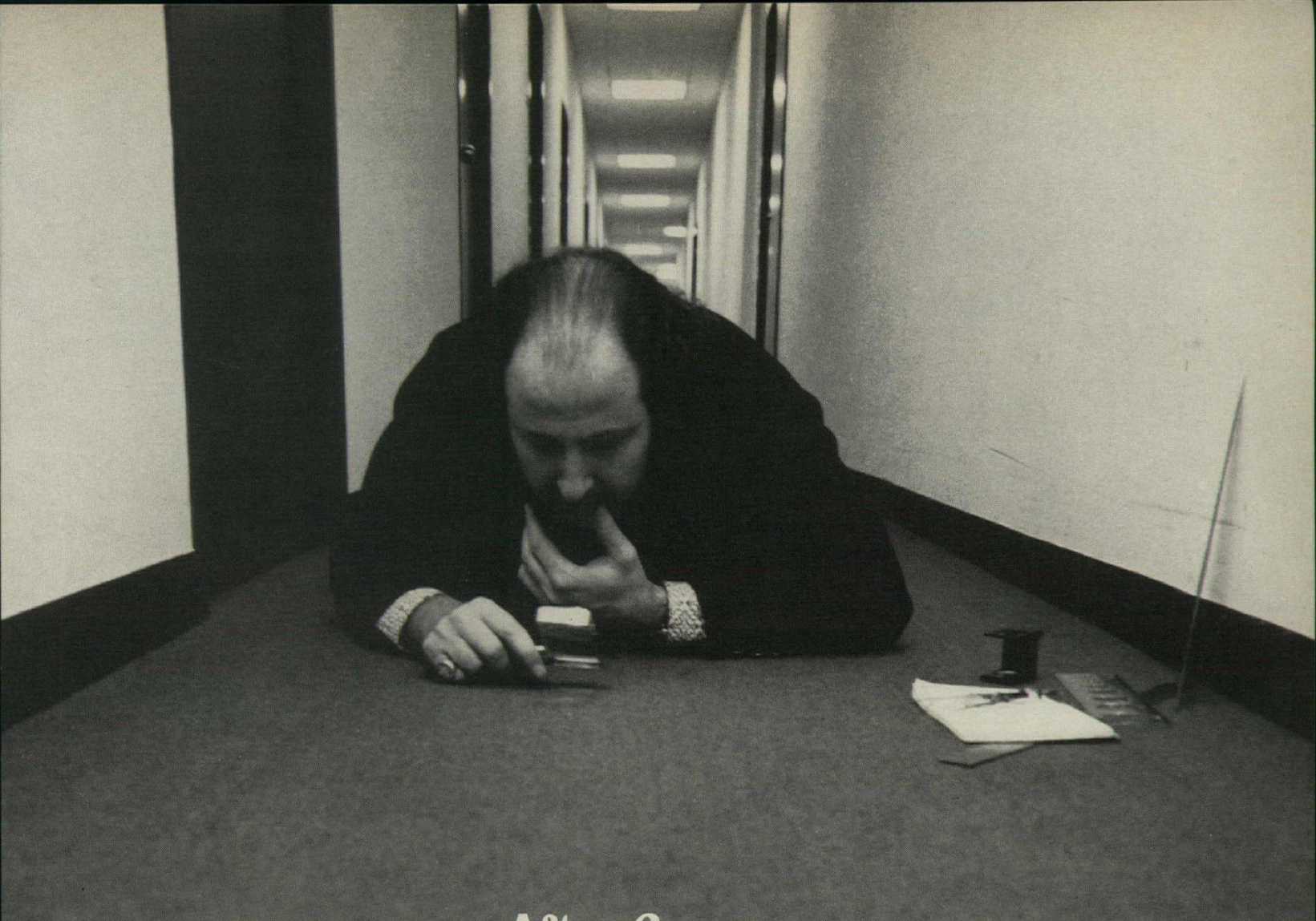

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Details from the industry©

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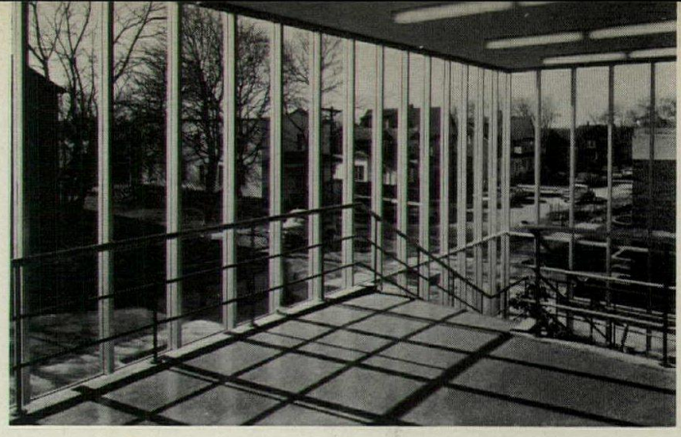


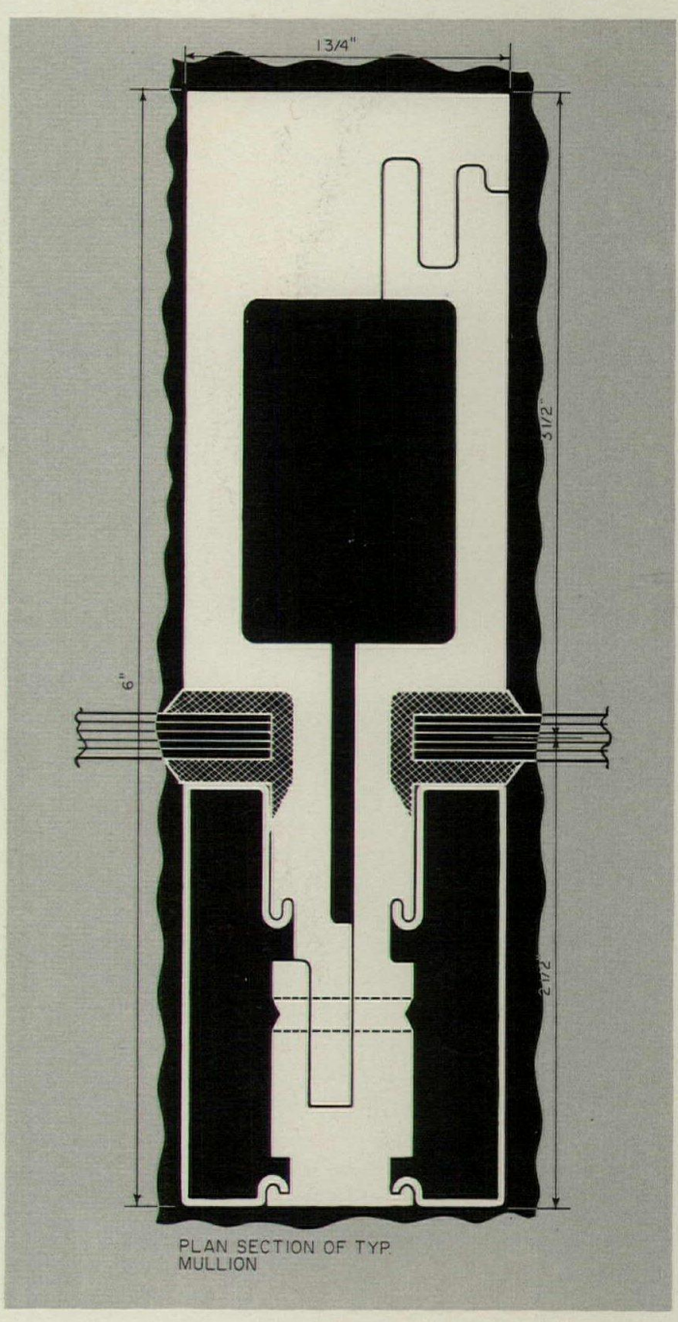
Progressive Architecture **continues its new editorial and advertising feature called "Details from the industry." Indexed for filing under the Uniform Filing System adopted by the AIA, CSI and Producers' Council, these pages may be removed and saved for future reference to various methods of fabrication, joining and protection. On the following pages are found advertising information and detail data from Russwin, Division of Emhart Corporation.**

Ideally, a building material should be used for all its properties. The following case study shows how all the best properties of aluminum can be fully employed in a wall system.

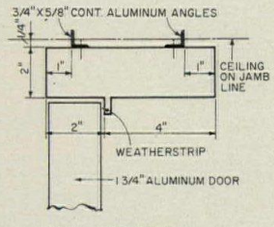
Mullions and columns, by definition, serve different functions—columns being part of the primary structural system, mullions serving to stiffen the wall and provide framing for windows and infill panels. But why shouldn't mullions serve as the primary structure as well? The answer is that they can, provided the material of which the mullions are formed is employed to its full structural potential.

In the aluminum and glass enclosure for the entrance and main stairway of the Gertrude M. Carman Elementary School in Waukegan, Ill., the mullions are the columns, structurally designed to support the roof of the building as well as the entrance canopy and the stairway at the second floor level.

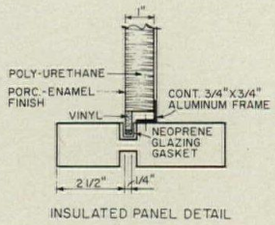
To achieve the maximum economy of design, architects Ganster and Henninghausen worked with engineer James Wilson to develop a basic structural mullion (shown full size at right) which is adapted by small modifications to corner, jamb and door frame applications (details below). Smaller horizontal sections provide lateral bracing.



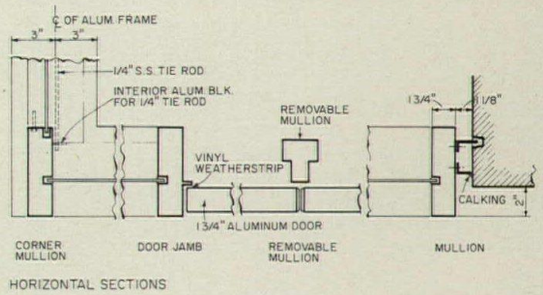
PLAN SECTION OF TYP. MULLION



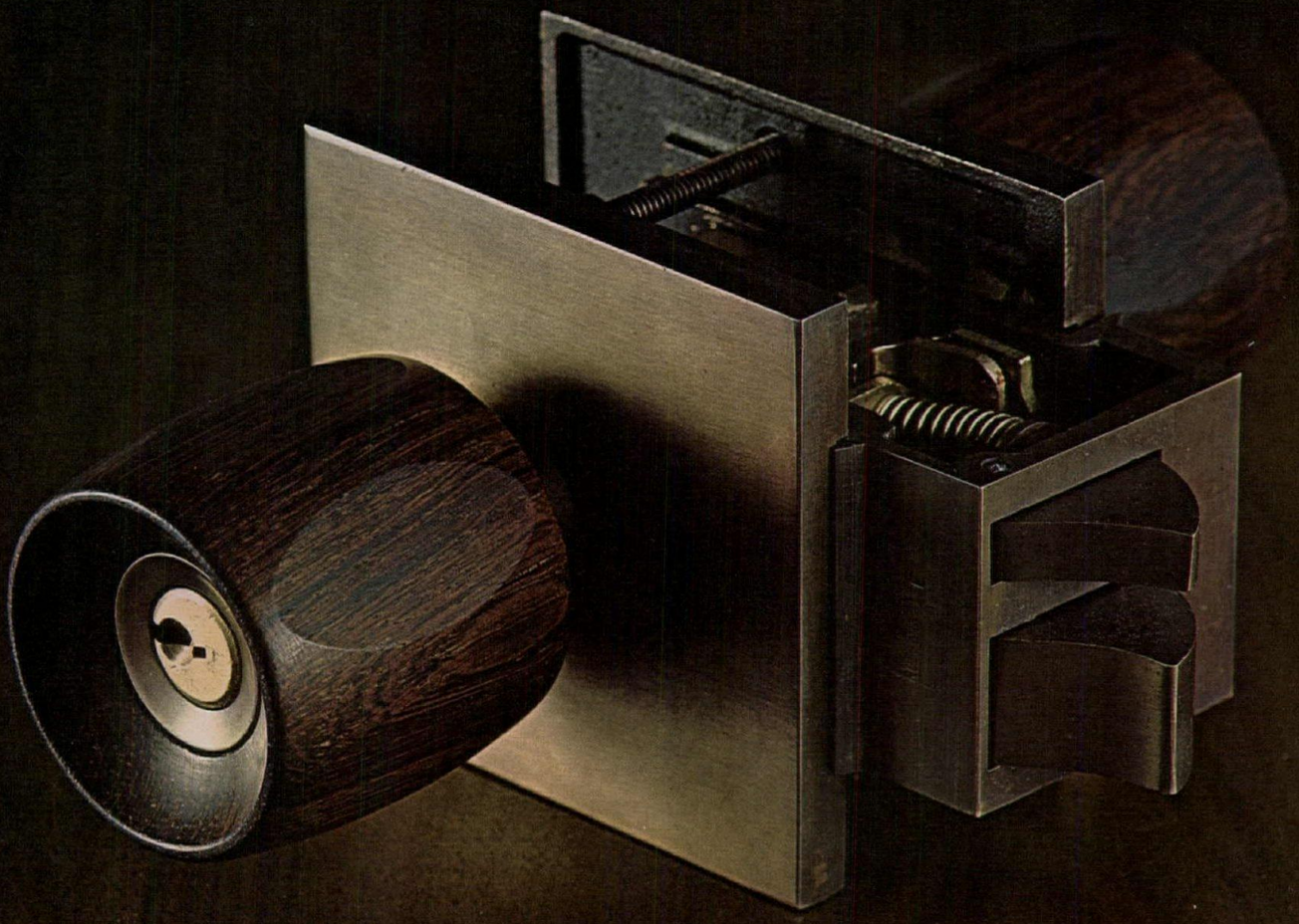
DETAIL AT DOOR HEAD



INSULATED PANEL DETAIL



HORIZONTAL SECTIONS



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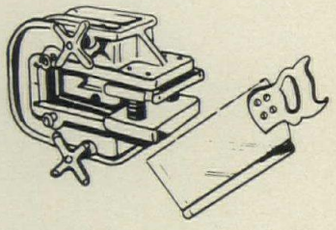
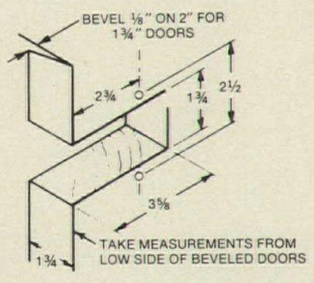
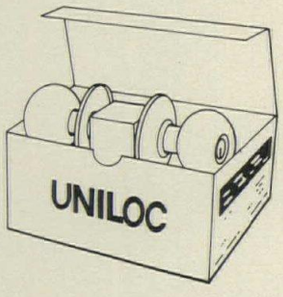


INSTALLATION TOOLS



DOOR PREPARATION



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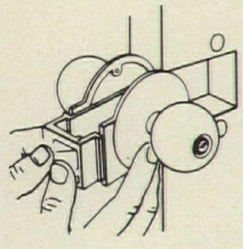

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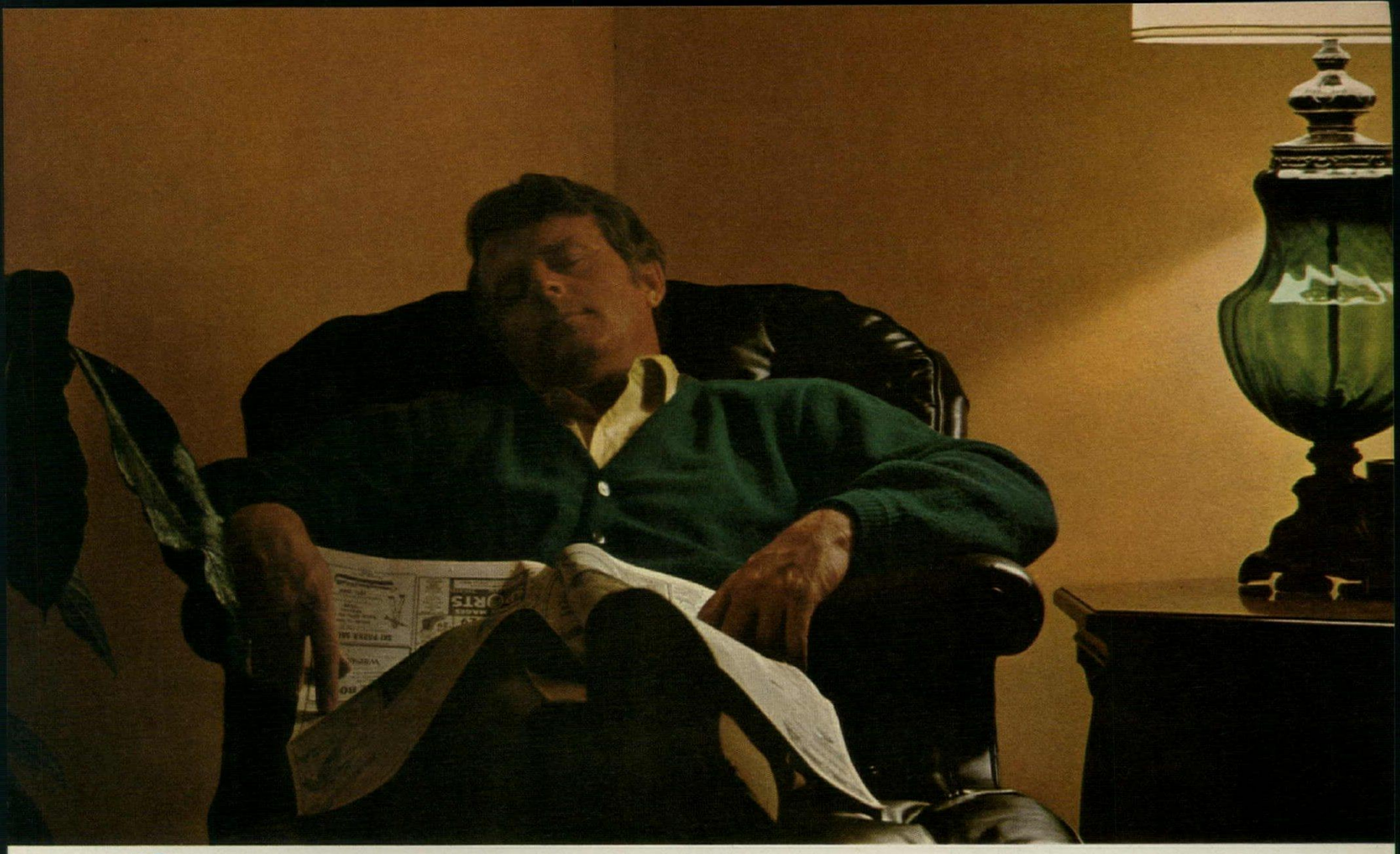

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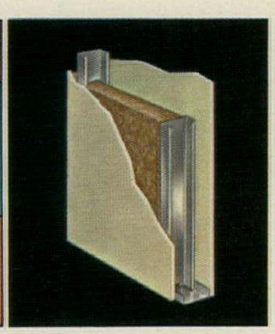

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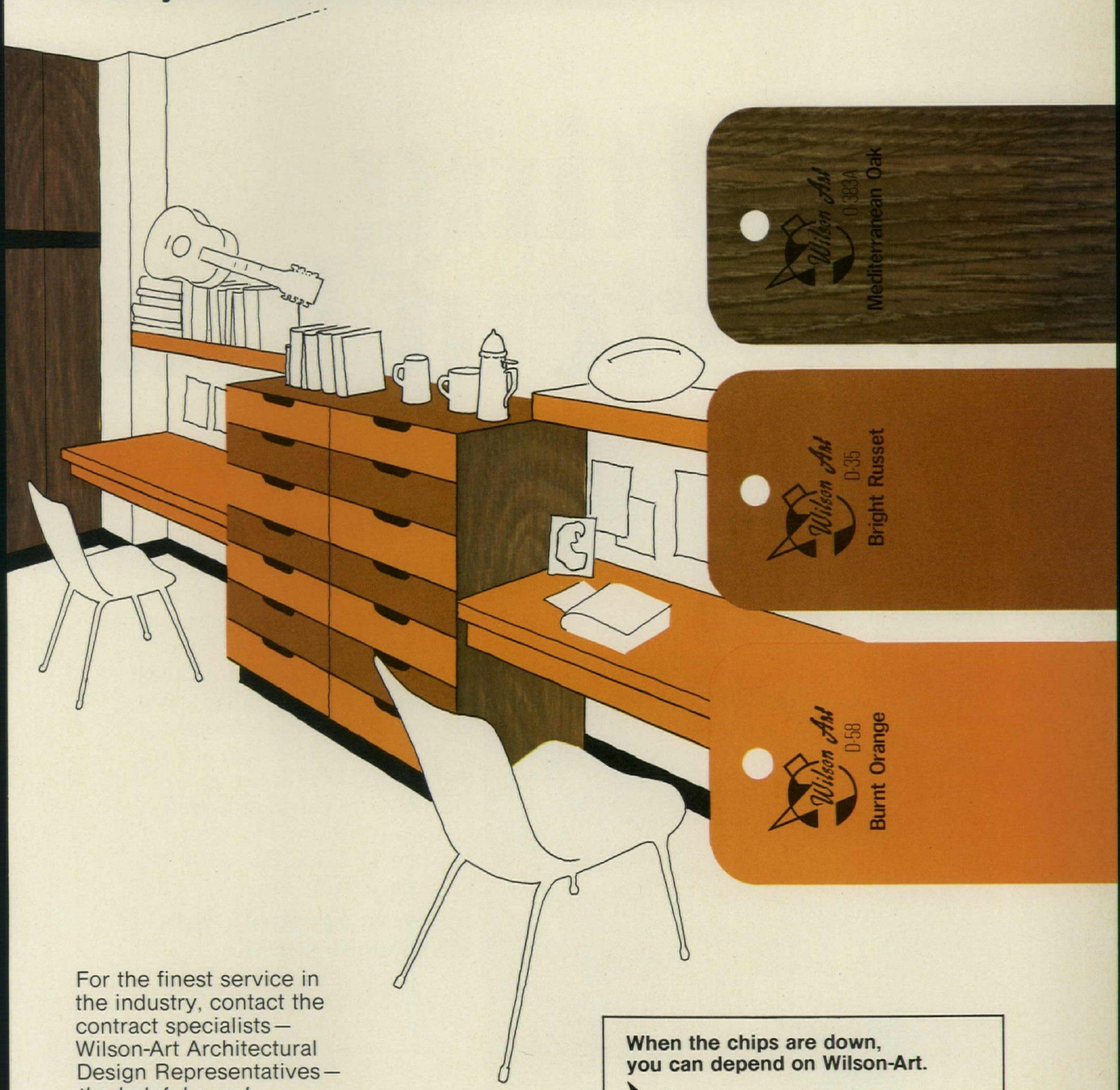

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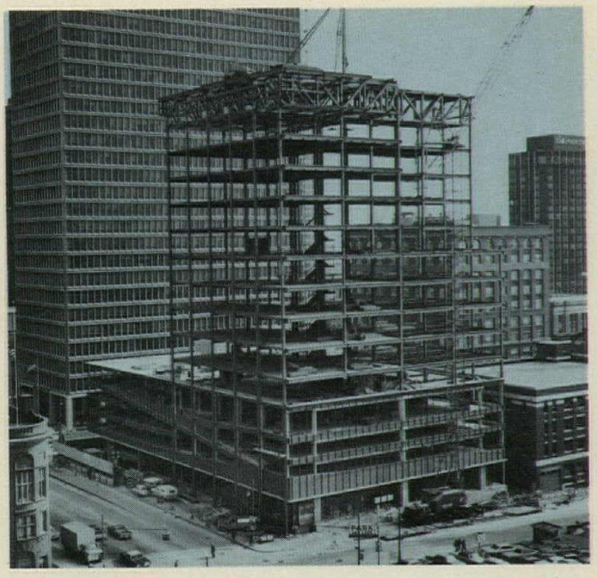
333 West Fort Street Building and garage features a 525-car, 9-level parking garage. The tower contains more than 132,000 net leasable square feet. Owners: 333 West Fort Corporation and Detroit Bank & Trust. Architect: Louis G. Redstone Associates, Inc. Consulting Engineers: Holforty Widrig O'Neill & Associates, Inc. General Contractor: Darin & Armstrong, Inc. Steel Fabricator: Taylor & Gaskin, Inc.

Suspended framing system provides maximum column-free space for 10-story office tower



This framing system shows how suspended intermediate columns help provide maximum column-free floor space in garage and first floor of the tower. Truss support is carried by the 12 exterior and 6 interior load-bearing columns.

The 10-story office tower at 333 West Fort Street in Detroit rises over a 9-level parking garage, three levels of which are below street grade.

In order to reduce the number of columns in the garage and the first floor of the office building, the designers used a system of hanging intermediate columns suspended from trusses. Six rows of built-up trusses span the building on 20-ft centers. Two rows of intermediate columns are suspended from mid-points of the trusses to the second floor of the office tower. Each column is fastened to the truss above with 80 A325 high-strength bolts. Twelve exterior and six interior load-bearing columns support the truss system. Some 1400 tons of Bethlehem structural steel was used in fabricating the building's frame.

The garage roof contains a landscaped terrace, 52 ft above street level. A restaurant and retail store are located in the main lobby of the parking garage.

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Some 1,400 tons of Bethlehem structural steel was used to form the building's steel frame. 773 tons of high-strength low-alloy steel conforming to ASTM Designation A441 was used in trusses and columns; the remainder was Bethlehem steel conforming to ASTM Designation A36. Beam depth and total framing weight were reduced by the use of high-strength steel construction utilizing composite steel floor deck with lightweight concrete topping. The post-tensioned garage required 683 tons of Bethlehem reinforcing bars.

BETHLEHEM STEEL

BETHLEHEM STEEL

Books continued from page 112

aminations of Breuer's work, begun in *Marcel Breuer: Buildings and Projects, 1921–61,* and deals with his development from 1960 to 1970. Selections from his recent writings and lectures betray Breuer's affection for the Bauhaus, as well as his feeling that its philosophy was not sufficiently oriented toward industry to produce a practical architecture. From the famous tubular steel furniture to projects for great urban complexes, his varied output is shown in photographs, plans and sections, and drawings.

International Vocabulary of Town Planning and Architecture. *Edited by Jean-Henri Calsat and Jean-Pierre Sydler, under the aegis of the International Union of Architects. Paris: Societe de Diffusion des Techniques du Batiment et des Travaux Publics, 1970. 368 pp. 138 F.*

This vocabulary-dictionary makes an excellent contribution to the international exchange of ideas. Four thousand terms are given in French, German, and English, many as definitions. Concepts are grouped and classified in systematic lists; in the second part they are classified alphabetically in each language. A numerical cross reference system is used. The exact definition is not always given in each language, but terms as close as possible are used.

The Idea of a New University. *An Experiment in Sussex. Edited by David Daiches. Cambridge: The MIT Press, paperback edition, 1970. 267 pp. $2.95.*

Although the main appeal of this collection of essays (originally published in 1964 and now available in paperback) is to educators, those concerned with educational facilities will find much to interest them in these reports of the planning and designing of this new, nontraditional university. The chapter by Sir Basil Spence, the architect who designed the University of Sussex, should be of special interest.

Bruce Goff. Portfolio of prints. *The Architectural League of New York and The American Federation of Arts. $9.95 ($8.95 for members.)*

Twenty-two 11" x 17" prints of plans, renderings, photographs and half-size sheets of working drawings of buildings and projects designed by Bruce Goff were selected from the Bruce Goff exhibition held at the Architectural League of New York, January 22 to February 11, 1970. Included is a reprint of Mr. Goff's article "Architecture is Art," which first appeared in *Progressive Architecture,* December 1962 under the title "Goff on Goff."

Concrete for High Temperatures *by A. Petzold and M. Rohrs. Published by Maclaren Books, London. Distributed by American Elsevier Publishing Co., Inc., New York, 1970. 220 pp. $16.50.*

The greater part of this book is devoted to heat-resistant and fire-resistant concrete. Questions of concrete mix preparations, concrete mixing and working into place are answered with examples given.

The Entombment of Christ. *French Sculptures of the Fifteenth and Sixteenth Centuries by William H. Forsyth. Cambridge: Harvard University Press, 1970. 201 pp., 273 illus. $17.50.*

These entombments have been studied on a regional basis; where feasible they have been grouped together province by province. The text is followed by a catalog, an appendix of documents, a bibliography, and photographs arranged to illustrate

[continued on page 132]

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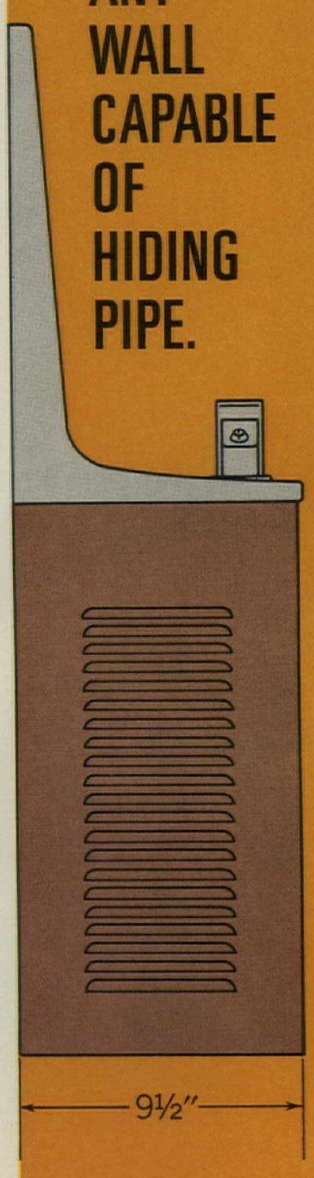

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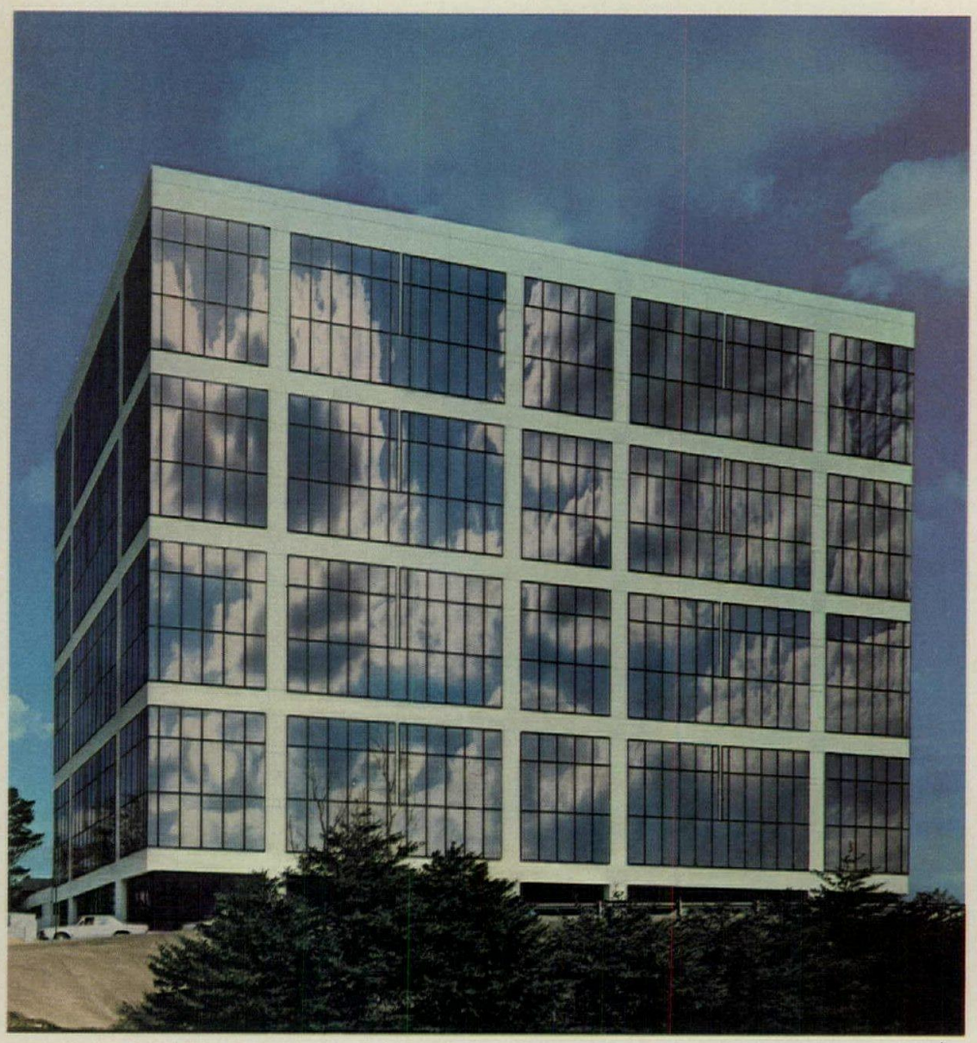

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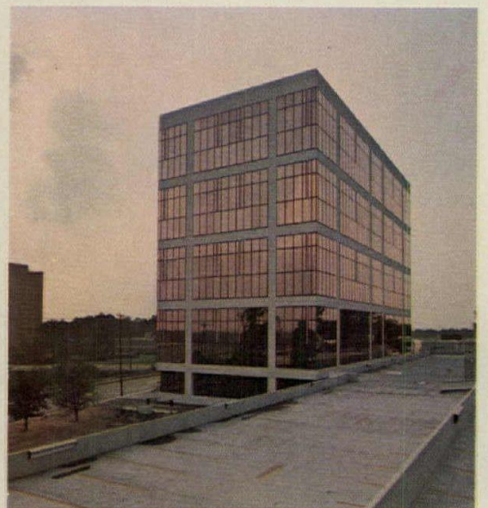
Noon



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5 p.m.

6 p.m.

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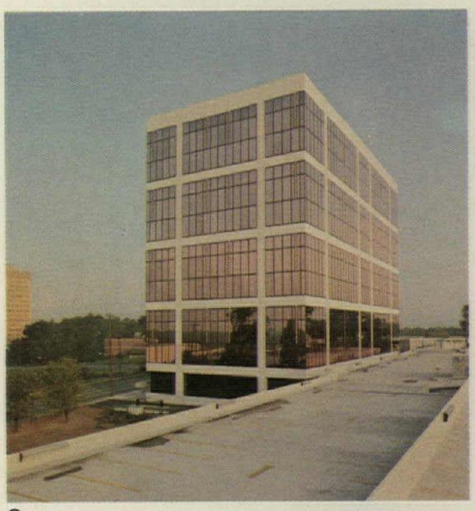
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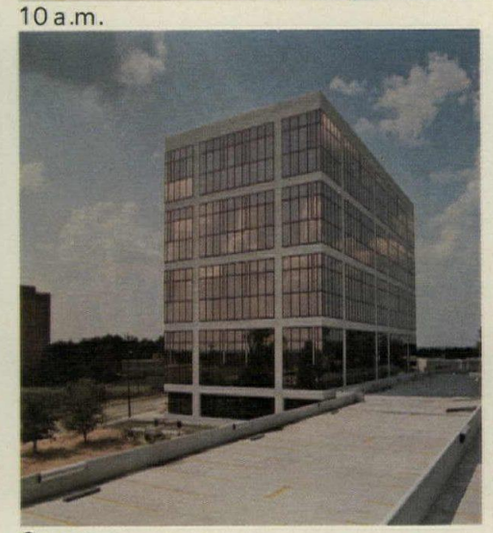
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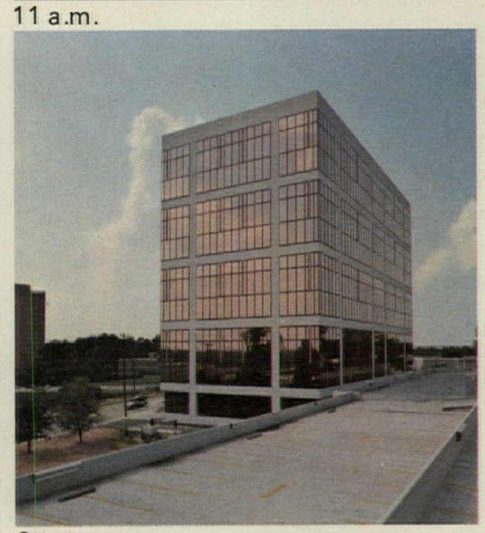
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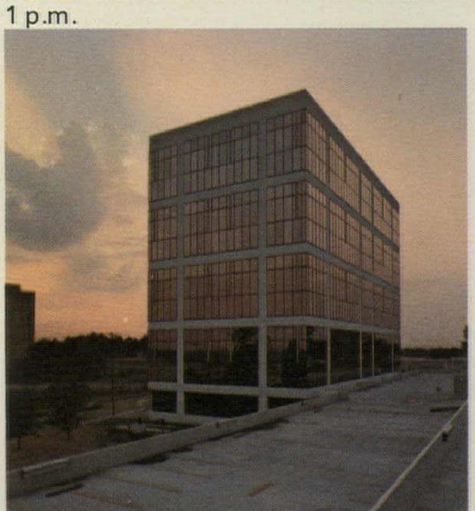
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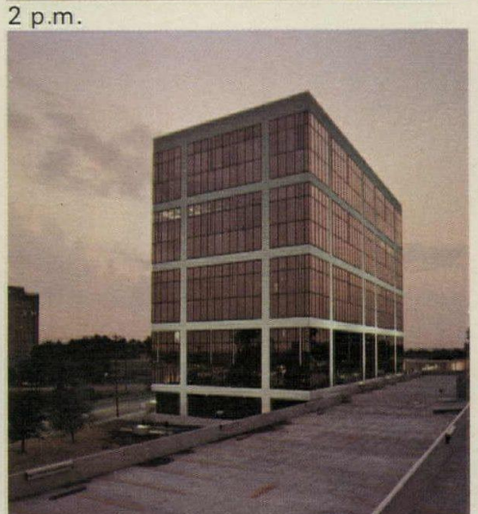
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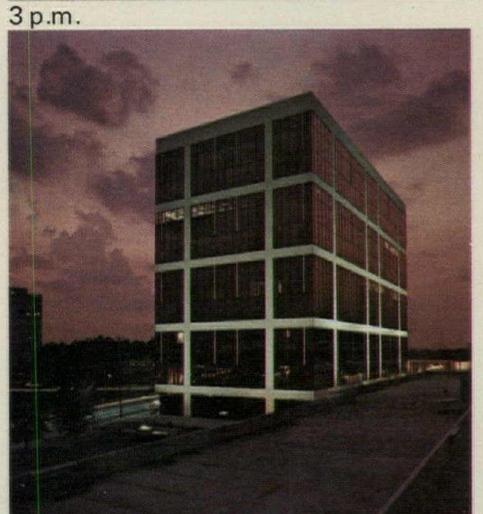
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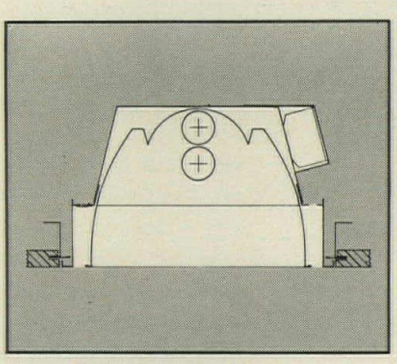

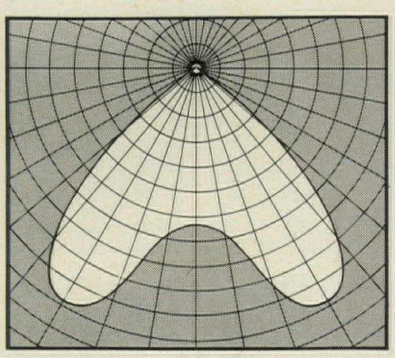

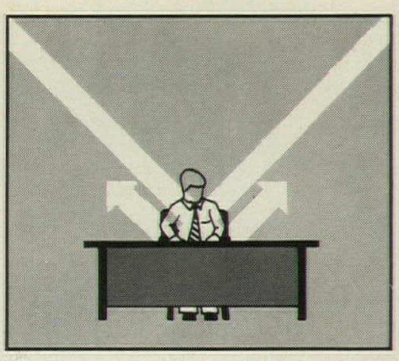

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Books continued from page 126

comparisons made in the text. Published for The Metropolitan Museum of Art, who sponsored the research.

Museum: In Search of a Usable Future *by Alma S. Wittlin. Cambridge: The MIT Press, 1970. 295 pp. $15.*

An analysis of the museum as a public institution, an account of its historical roots, and a forecast of the role of the museum in the future make up this study.

World of Variation *by Thomas F. McNulty and Mary Otis Stevens. New York: George Braziller, Inc., 1971. 147 pp. $6.95 (cloth), $2.95 (paperback).*

The architect-planner authors of this book are concerned with what is happening in urban settlements where, they feel, human existence has been altered without people knowing what processes are at work. Using models, drawings and sketches to amplify the text, new principles of physical and social organization, i.e., the "linear society," are offered as alternatives to more traditional planning processes for both established and new world societies.

Russia: An Architecture for World Revolution. *By El Lissitzky. Translated by Eric Dluhosch. Cambridge: MIT Press, 1970. 229 pp. $10.*

Originally published in 1930, and revised in 1965, this is the first English translation of this important book. El Lissitzky, a Russian Communist, a painter and an architect, was committed to the ideals of the revolution and stressed the significance of architecture as one of the means of fostering a new social order. This book presents his philosophy and some of his work, as well as drawings and photographs of the works of principal Soviet architects of the modern school, which span a wide range of architectural means and social ends. Stalin's 1932 decree, which "reorganized" the arts—no building was allowed that did not conform to the official classical or academic eclecticism—inspired some of the articles in the appendix.

Books received

Modern Architecture in Finland. *By Asko Salokorpi. New York: Praeger Publishers, 1970.* 63 photographs and captions. Fourth in a series documenting the modern arts in Finland.

Oskar Kokoschka Drawings, 1906–1965. *Edited by Ernest Rathenau in collaboration with the artist. Miami: University of Miami Press, 1970. 283 pp. $17.50.* Handsome oversized volume with 134 drawings.

The Study of Architectural History. *By Bruce Allsopp. New York: Praeger Publishers, 1970. 119 pp. $7.50.* Illustrated with almost 100 photographs, this book considers the present state of architectural historical studies, and ways in which history and practice have been interrelated and forthcoming changes.

Houses of Mexico. *By Berna Cook Shipway and Warren Shipway. New York: Hastings House, Publishers, Inc. $13.95.* Mainly photographs of Mexican houses and interiors.

Emergence and Growth of an Urban Region. The Developing Urban Detroit Area. *Vol. 3: A Concept for Future Development. Detroit Edison Co., 1970. 389 pp. $20.* Part of an extensive 5-year study of Detroit and its surroundings in order to analyze, understand and explore growth patterns, potentialities and future requirements.

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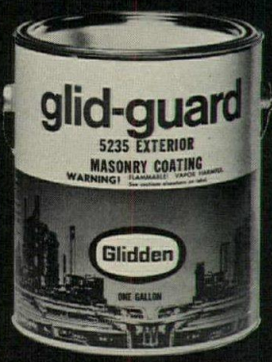

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Notices

Appointments

Alfred Easton Poor, Architects/Engineers, New York City and Washington, D.C., names **Richard Seth Hayden, AIA** as a partner.

Chatelain, Samperton & Nolan, Architects & Engineers, Washington, D.C., announces **E.A. Wareham, 3rd** as a partner.

Donald G. Christian is a director of airport facilities planning for Kelly Pittelko Fritz and Forssen, Consulting Engineers, Los Angeles.

Herman Blum Consulting Engineers, Inc., Dallas, names **Lawrence Rosenblum** as chief mechanical engineer and **Don Lorenz** as specification engineer.

Richard F. Galehouse, AIP and **Richard H. Rogers, ASLA** were made principals of Sasaki, Dawson, DeMay Associates, Inc., Watertown, Mass.

William A. Briggs Jr., AIA is now an Associate of SMS Architects, Stamford, Conn.

Max O. Urbahn Associates, Inc., Architecture and Planning, New York names **Philip F. Moyer**, executive vice president; **Martin D. Stein**, vice president and director of design; **J. Karl Justin**, vice president and director of project administration; and **Robert J. Healy**, secretary-treasurer.

H. Bradley Ver Bryck was made vice president in charge of ISD, Inc., Chicago office.

Team Four Inc., Urban Design and Planning, St. Louis, announces **Austin P. Tao** as landscape architect.

William S. Quinlan, AIA has joined O. Germany, Inc. and The P–G Group, Warren, Mich. as director of architecture.

Maurice W. O'Hare was appointed assistant manager of the engineering department at Ford, Bacon & Davis, Inc., consulting engineers, New York City.

Harold Robinson was named an associate [continued on page 156]

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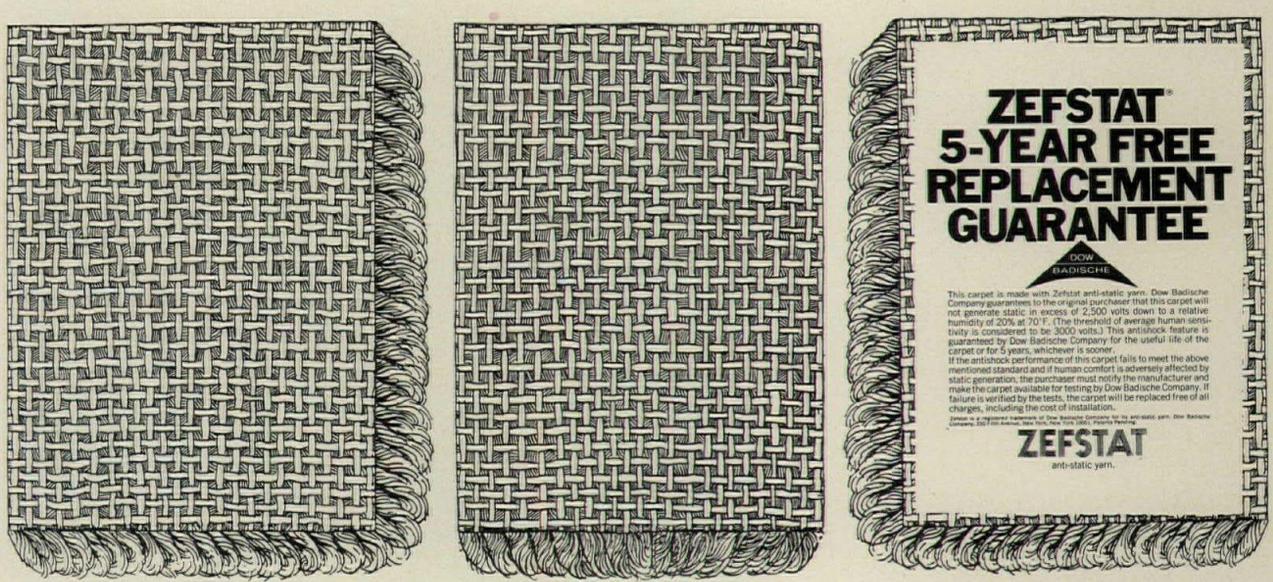

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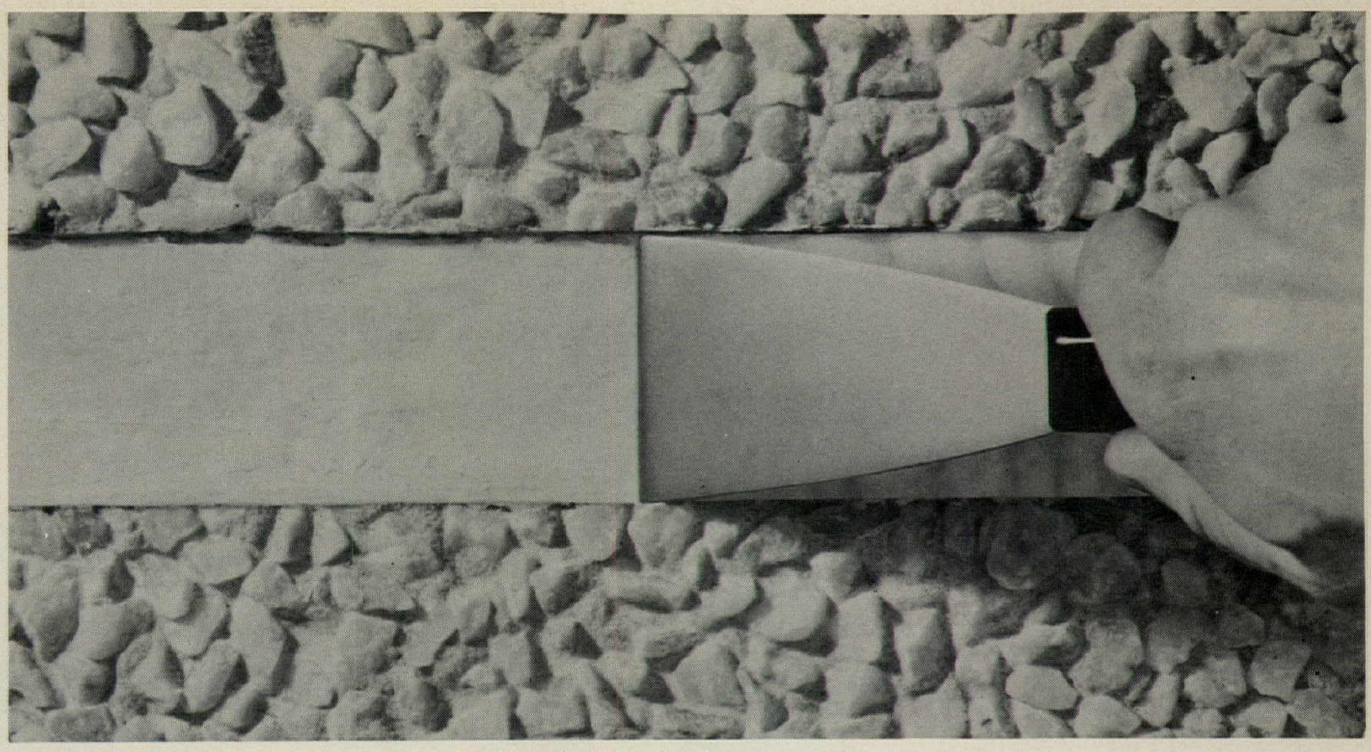

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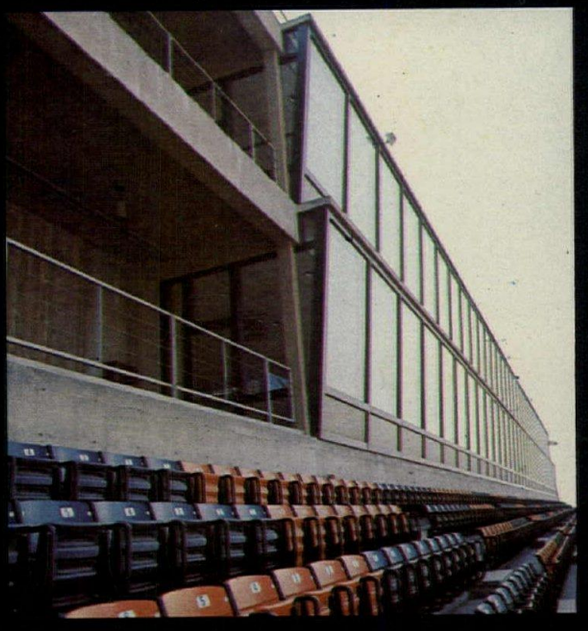
The water stoppers

From v-v-v-vvvrrrroooooommmmmmm to shhh



ONTARIO MOTOR SPEEDWAY, Ontario, California / Architects: Benham-Kite & Associates / General Contractors and Developers: Stolte Inc. / Glazing Subcontractor: Sitelines Inc. / Glass tempered by Guardian Industries Corp.

...with Glaverbel Float Glass

At California's new Ontario Motor Speedway the roar of the cars joins the roar of the crowd in a decibel-defying crescendo of nerve-knotting noise. *Wall it out,* demanded the owners. Wall it out for the race officials... the radio-tv people... the computer installation. With a wall that controls the temperature and humidity of the space it guards. *But a wall so transparent it seems not to be there.* The architects specified Glaverbel Float glass—criterion for flatness and transparency. Tempered Glaverbel Float in huge (eighty square feet), sealed, double-glazed acoustical window units. The sound-stopping power of an eight-inch solid concrete barrier! And a unique compensating system that equalizes the units' internal pressure to ambient atmosphere, keeps the lights perfectly parallel, utterly undistorted, and as clear as—no glass at all!

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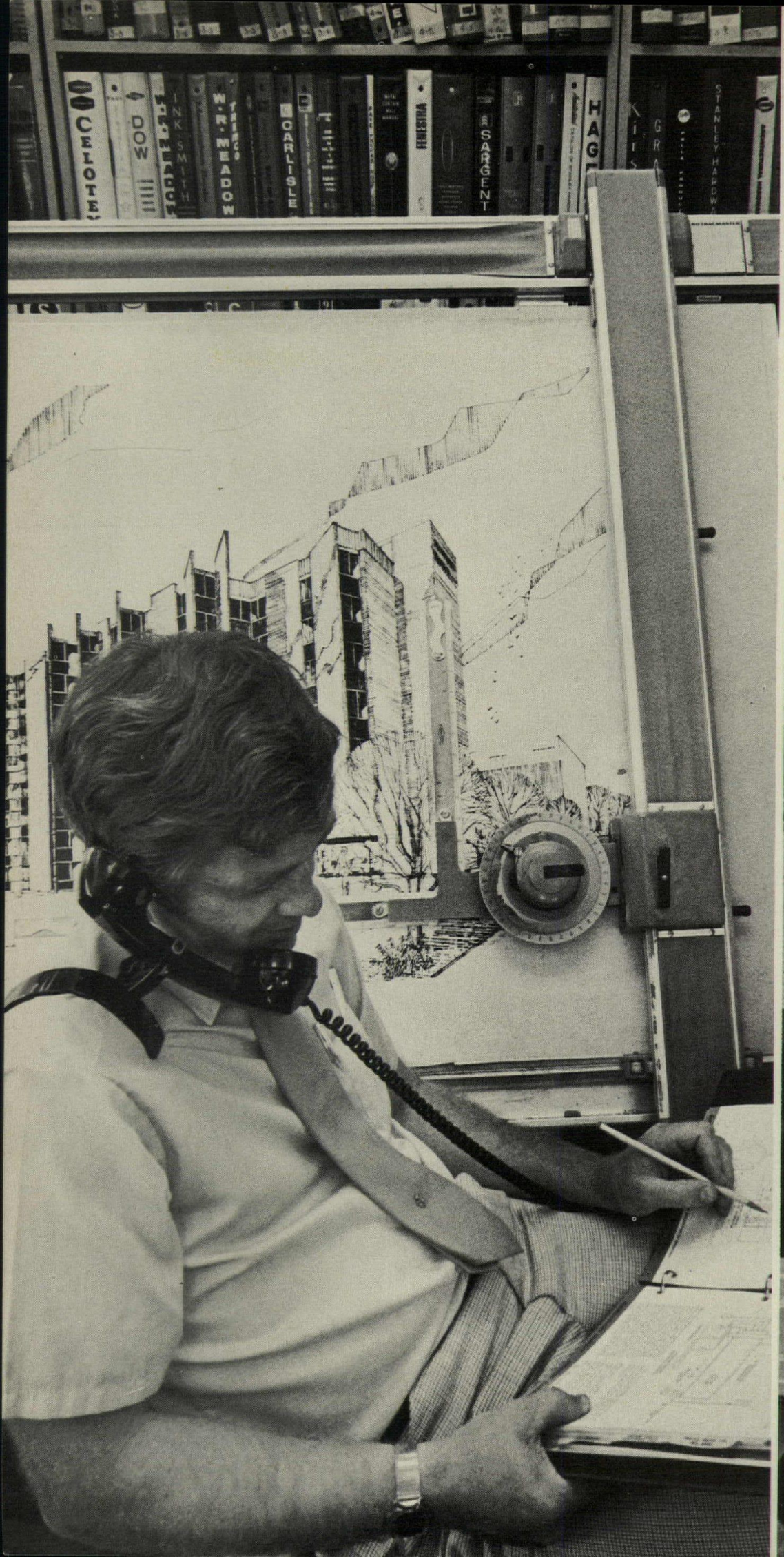
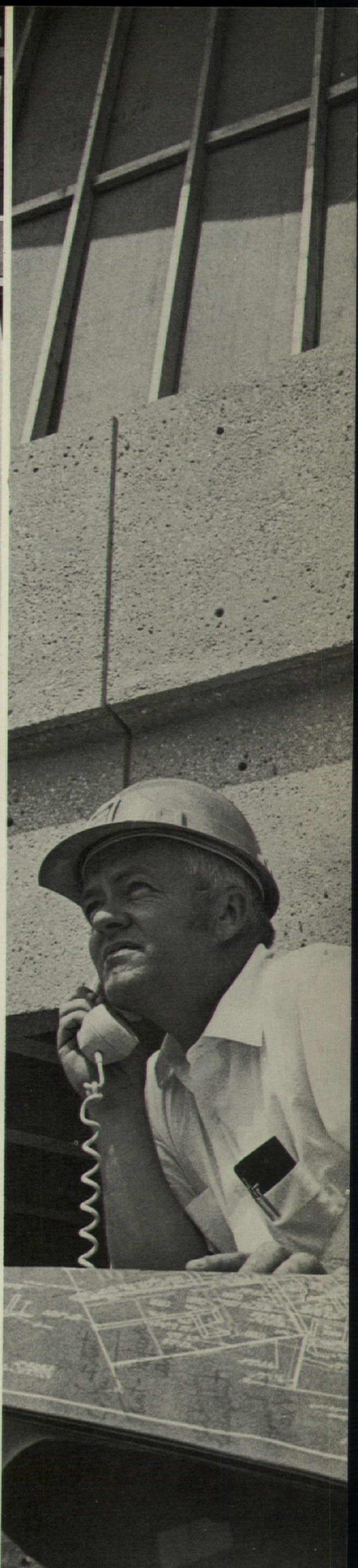

CELOTE
DOW
W.R. MEADOW
CARLISLE
SARGENT
STANLEY HARDW



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A call to Barber-Colman tells you where we have experienced fitters . . . we never bid unless we're properly staffed to handle your job.

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Chances are we can assure you a top-quality pneumatic control installation wherever your next building is going. But, if we can't, you'll always know where we stand.

For more information about our pneumatic control capabilities as well as our many other services and products, call your nearest Barber-Colman field office. Or, write Mr. Peter Van Dae, Director of Marketing, at the address below.

Fact: nobody knows more about pneumatic controls than Barber-Colman.

Barber-Colman mobile managers and experienced pneumatic control fitters can be on the job virtually anywhere they are needed. No matter where you are, you will benefit by checking with Barber-Colman.

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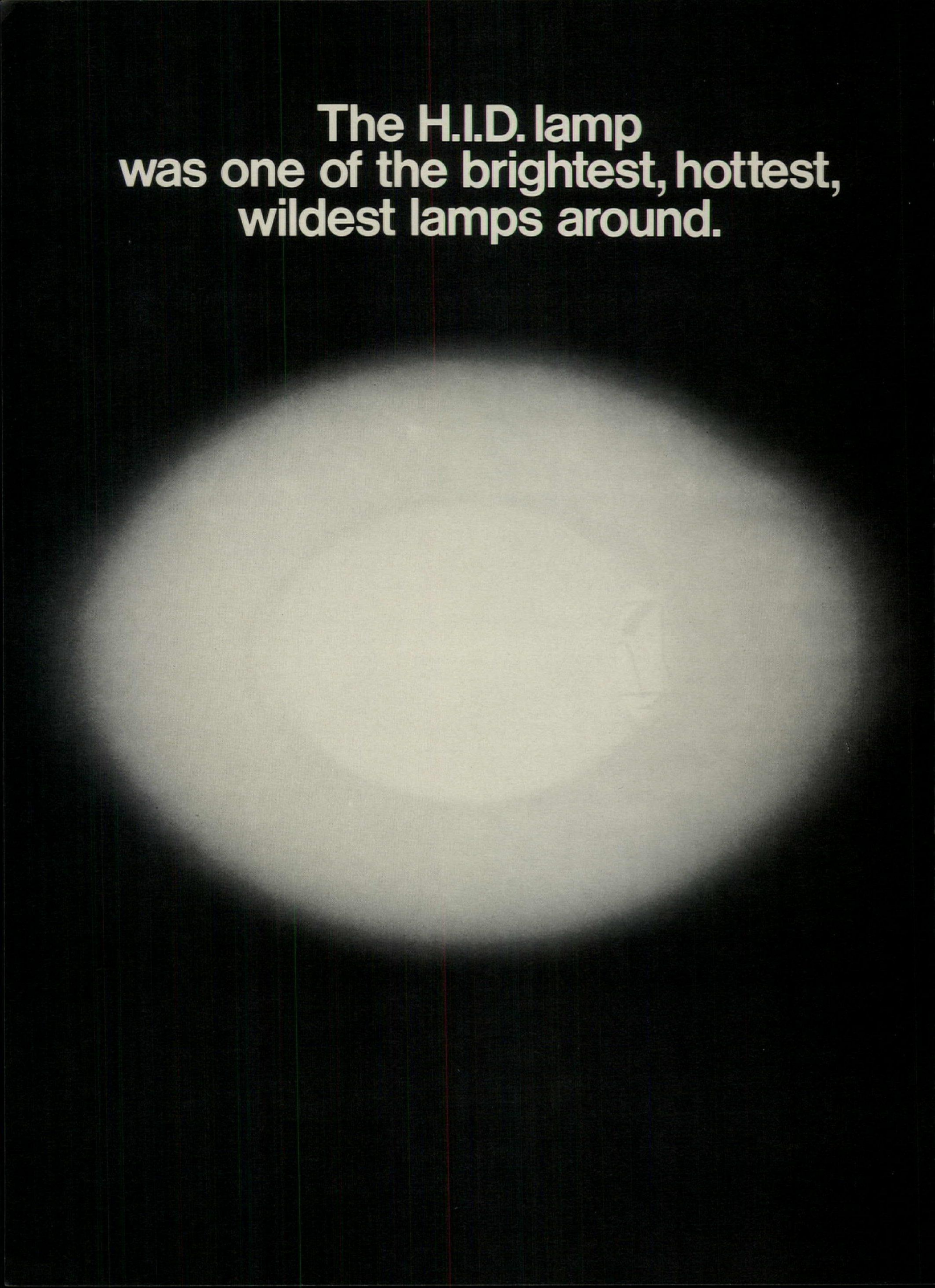
Environmental Systems Division
Rockford, Illinois 61101

BARBER COLMAN

The H.I.D. lamp was one of the brightest, hottest, wildest lamps around.



Until our Merculume 2000 tamed it.

BANKING LOBBY, SECURITY PACIFIC NATIONAL BANK, LOS ANGELES, CALIF.
DESIGNER: PAUL STRAHL

Think of high intensity discharge lamps and you probably think of outdoor lighting. Or of the intense lighting found in an industrial environment.

Now you can bring the advantages of H.I.D. mercury and metal halide lamps into the more sophisticated environments of commercial applications.

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Merculume 2000 looks the way a commercial luminaire is supposed to look, too. It will harmonize with the most tastefully designed interior.

And because of the high output, you'll need fewer luminaires. One 2′ x 2′ Merculume unit replaces 20 square feet of fluorescent fixtures.

Merculume also accommodates a variety of built-in air handling systems – for supply, return or both. That means still less ceiling clutter.

Merculume's snap-in mounting makes for fast, easy installation.

And the long life of H.I.D. lamps makes for low maintenance.

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How we tamed a wild lamp.

1. We took the light from an H.I.D. lamp.

2. Directed it with a precisely angled reflector.

3. Spread it with a prismatic glass refractor.

4. And distributed it softly, without glare, through the precise optical prisms of our Controlens®.

Now you know our secret.

Holophane

Notices continued from page 144

of Freidin Studley Associates, New York City.

Carroll B. Johnston was named director of architecture and planning for Robert M. Thomas, AIA & Associates, Newport Beach, Calif.

Edward Kocman, Jr. has been named project engineer for Richard Weingardt Associates Consulting Engineers, Sterling, Colo.

Rodney L. Henslin was named director of Medical Facilities Associates (MFA), formed by the architectural firms of S.C. Smiley & Associates and Liebenberg, Kaplan, Glotter & Associates, Minneapolis.

Carl M. Kneisel, formerly vice president of Pan Am World Airways, was appointed vice president of Abbott, Merkt & Co., New York architects and engineers.

The George M. Ewing Co., Philadelphia, Washington, D.C. and Maplewood, N.J., announces **Robert J. Mulhern** as an associate.

Ewing Cole Erdman & Eubank, Philadelphia, names **Nathaniel Gaines**, AIA as a partner.

Dales Y. Foster, Inc., Architects and Planners, Dallas, has elected **James E. Moorhead** to vice president.

James F. Whittenburg joins ISD Inc., as a project manager in their New York office.

The Nolen and Swinburne Partnership, Philadelphia, announces **Victor H. Kusch; AIA,** senior partner; **J. William O'Neill, AIA,** partner; **Gunter Buchholz, RA** and **William H. Stewart,** associates.

Schutte, Mochon, Inc. names **Laurent J. Schutte**, chairman of the board; **Clint Mochon**, president; **Frederick A. Schutte**, treasurer and vice president; **Robert D. Hackworthy**, secretary and vice president; and **Raimond Juerisson**, vice president.

Frederick K.F. Lee is now managing director of the Pacific office of William L. Periera Associates, Honolulu.

Mitchell/Giurgola Associates Architects, Philadelphia and New York City, names **R.M. Kliment** and **Fred L. Foote** as senior associate architects; **Rollin R. La France, C. William Fox, John Q. Lawson** and **G. Daniel Perry, AIA** as associate architects.

Economides & Goldberg, consulting engineers, New York City, announces **Peter T. Nicolelis** as associate.

New firms

James E. Palmer, AIA and Associates, 400 Pacific Ave., San Francisco, Calif. 94133.

Environmental Analysts, Inc., 40 Hilton Ave., Garden City, N.Y. 11530.

Kerr-Reno, Architects, Anthony Prado III, Planner, 1054 31 St., N.W. Canal Square, Georgetown, Washington, D.C. 20007.

Environmental Design Collaborative, 1518 Summer St., Philadelphia, Pa. 19102; 201 N. Craig St., Pittsburgh, Pa. 15213.

Environmental Space Planners, Inc., 343 S. Dearborn, Chicago, Ill. 60611.

Frank W. Radmacher, Landscape Architect, 234 E. Yorba Linda Blvd., Placentia, Calif. 92670.

John Swass, AIA and Harry E. Weaver, AIA have formed **Weaver & Swass, Architects-Planners**, 2 Waverly Place, Madison, N.J. 07940.

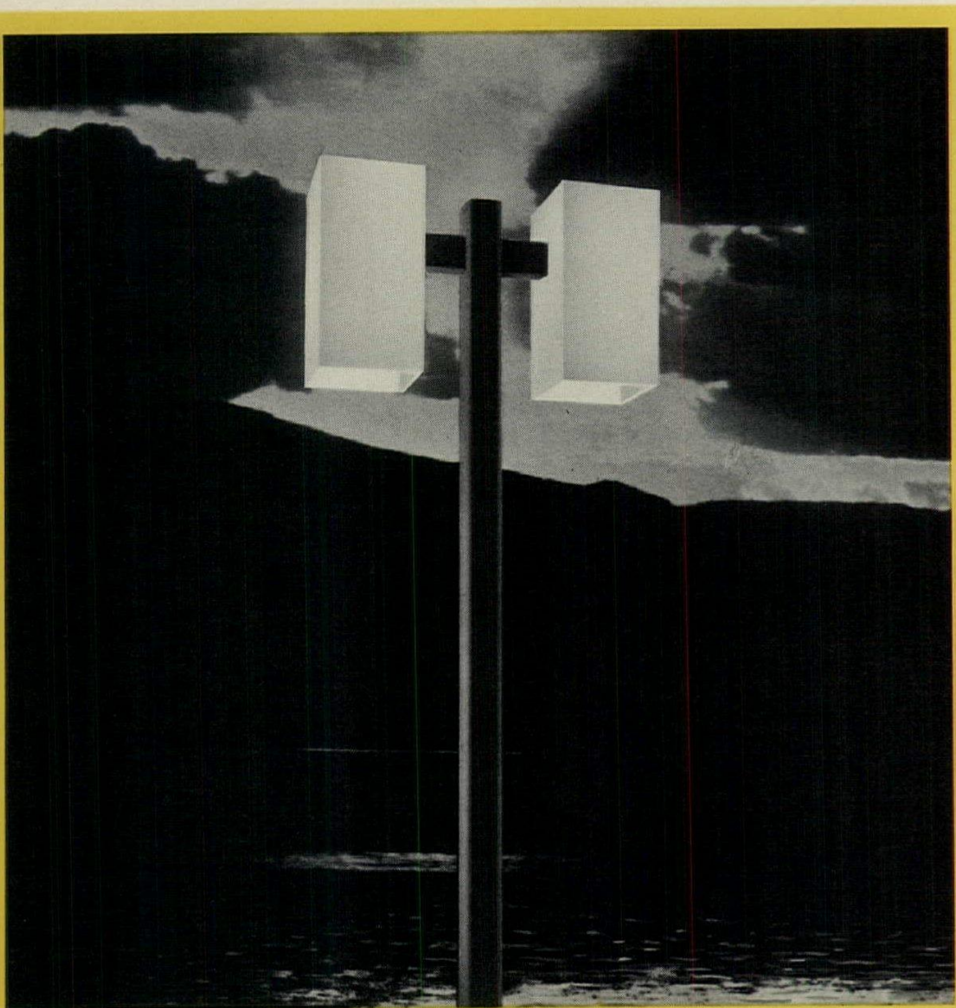
Mergers and expansions

B. Brukoff Interior Inc., Chicago, announces new branch offices, 1620 Montgomery St., San Francisco, Calif. 94111.

Shreve, Lamb and Harmon Associates and Petroff and Jones Associates have become **Shreve, Lamb and Harmon Associates**, PC, 11 E. 44 St., New York, N.Y. 10017.

Jan Hird Pokorny, FAIA and Stuart Pertz, AIA have formed **Pokorny & Pertz, Architects & Planners**, 313 E. 43 St., New York, N.Y. 10017.

George G. Schneider, AIA and Frederick J. Schweitzer, AIA have formed **Schneider-Schweitzer Associates, Architects, Inc.**,
[continued on page 161]



For 25 years Hillyard Gym Finishes protected the old "Garden" floor. Now Trophy enhances the new one.

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Madison Square Garden
Architects: Charles Luckman Associates

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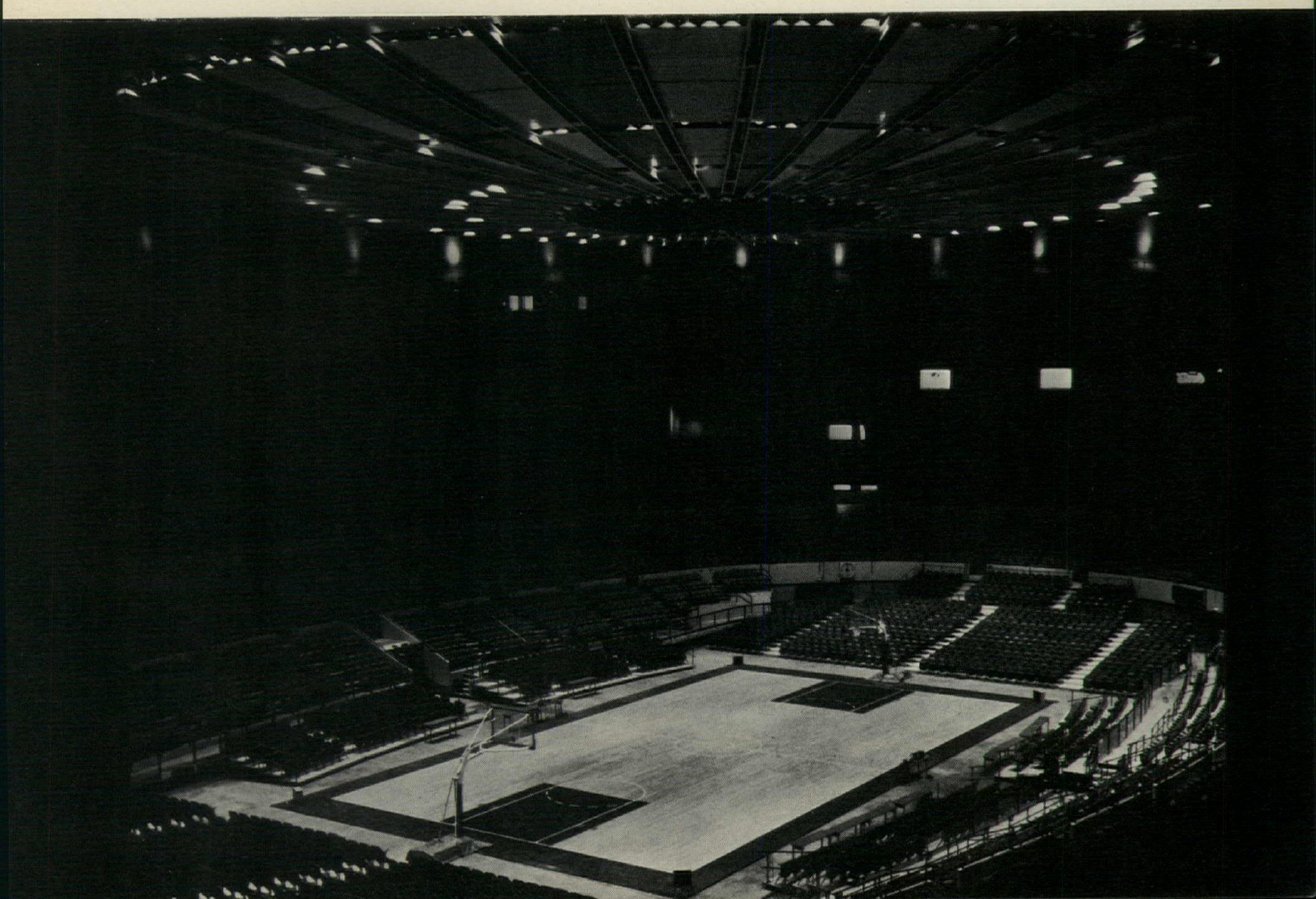

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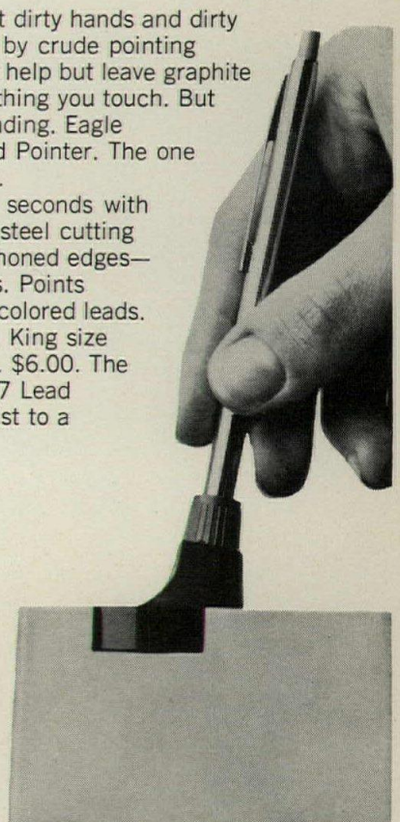

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BEROL

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Making headlines

Direct Jute Glue-Down Carpet Used in New U.S. Steel Building

Double jute-backed carpet being installed directly on concrete sub-floor coated with adhesive.

Installers applying adhesive to concrete sub-floor, for direct glue-down installation of double jute-backed carpets in new 64-floor U.S. Steel Building, Pittsburgh.

The fast-growing concept of direct glue-down installation of double jute-backed carpets is being utilized in the new United States Steel Building in Pittsburgh. This is reported to be one of the largest single carpet installations on record, encompassing about 130,000 sq. yds. Occupancy of floors on an individual basis began in September.

The floors to be occupied initially by U.S. Steel in the 64-floor structure are carpeted by the direct glue-down method, including elevator lobbies and 48 passenger elevators.

Maria Bergson Associates, New York, directing the buildings' interior design, and U.S. Steel officials investigated and tested the direct jute glue-down method in great depth before deciding on it for a project of such magnitude. Based on their rigorous pre-testing, they are even utilizing it in high spillage risk locations such as "coffee break" areas, and anticipate no problems.

In addition to lower initial cost than other carpet systems and practically no strain on seams, one important benefit of this method is easy mobility for conventional wheels and casters and great pile resistance to them with carpet construction of the proper contract type. Hence U.S. Steel is able to place directly on the carpet, without underchair pads, thousands of secretarial chairs with standard casters now in service elsewhere.

Gaymar Co., Pittsburgh, is handling the installation, with the crews under the supervision of Don McGinn. He reports: "Precutting for the large floor expanses between trench headers, with separate carpet strips cut to fit the headers, is greatly increasing our productivity. We foresee no problems in pick-up with the jute when and if it becomes necessa to reach underfloor sections. T jute backing is providing a str bond with minimum adhesive cause it holds the compound a absorbs it thoroughly right on th surface. Carpet edges are consistent in height, so we can butt-seam fast, with the result practically invisible."

Architects: Harrison & Abramovitz and Abbe, New York. General contractors: Turner Construction Co., New Y

Write for Architectural Guide Specification by William E. Lunt, Jr., C.S.I. Case Histories of Installations

Reprinted from Floor Covering Weekly

Specifiers strongly favor double Jute-backed carpet glue-down

Specify this system where you couldn't specify carpet. For the reasons at the right. Plus aesthetics, sound absorption, low-cost maintenance, employee morale, comfort underfoot, insulation.

Double jute backing makes glue-down work. Retains adhesive for strong, permanent bond to any subfloor or previously installed hard flooring. Provides the necessary dimensional stability. Specify both Jute primary and secondary backing in tufted carpets, because their compatibility protects against delamination.

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LOWER INITIAL COST—less than identical carpet plus separate underlayment, or foam or rubber backed carpet with equal pile specifications.

CLEAN PICK-UP FROM FLOOR — carpet can be lifted to reach trench headers, intact for re-installation anywhere.

EASY WHEEL, CASTER MOBILITY — with standard contract pile construction, no mushiness to bog down carts, mobile equipment, secretarial chairs.

HELP IN MEETING FIRE SAFETY CODES — provided the carpet is otherwise qualified.

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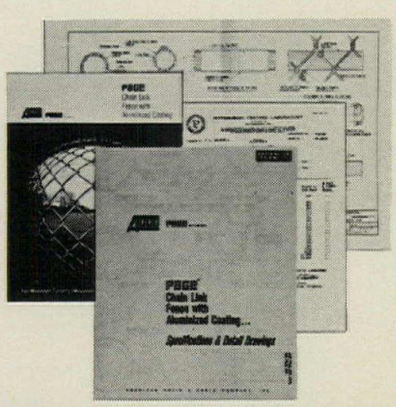

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Helps you plan the right specs for chain link fencing. Packed with data and drawings on styles, wire gages, gates, back stops, framework, ASTM Specification A491-63T, lab reports, work sheets. Write: Page Fence Division of Acco (American Chain & Cable Co.), P. O. Box 390, Wilkes-Barre, Pa. 18703.

ACCO PAGE FENCE DIVISION

Notices continued from page 156

4465 N. Oakland Ave., Milwaukee, Wis. 53211.

Joseph Savin, Richard M. Wycoff and Louis T. Phillips, formerly Green & Savin are now **Savin Wycoff Phillips, Inc., Architects, AIA**, 24500 Northwestern Highway, Southfield, Mich. 48075.

Mackinlay/Winnacker AIA and Associates, 4 Bryant Way, Orinda, Calif. 94563, expands its services to developers and investors through the Developer Services Group.

Name changes

Neill Smith and Associates is now **Smith Barker Hanssen**, architects and planning consultants and **Whole Systems**, communication planning design, San Francisco.

Joseph H. Abel, FAIA and Jesse Weinstein, AIA continue the practice of architecture as **Abel & Weinstein, Architects**, Washington, D.C. following retirement of Julian E. Berla.

Gardiner Thornton Davidson Garrett Masson and Associates announces the retirement from private practice of Ian Davidson, FRAIC who will remain as consultant. The firm will be called **The Gardiner Thornton Partnership/Architects and Planners**, 1 Alexander St., Vancouver 4, B.C.

From: S.G. Vincelli & Associates to: **Environplan Ltd.**, 5801 Westminster Ave., Montreal 268, Que., Canada.

From: Walk Jones/Mah & Jones/Architects, Inc. to: **Walk Jones & Francis Mah, Inc.**, Memphis.

From: Fling & Eeman, Inc. to: **R.S. Fling & Partners, Inc.**, Columbus, Ohio.

New addresses

Wolff, Zimmer, Gunsul, Frasca, Ritter have moved to Crown Plaza, 1500 S.W. First Ave., Portland, Ore. 97201.

Alex Danin, AIA, architect, 207 E. 37 St., New York, N.Y. 10016.

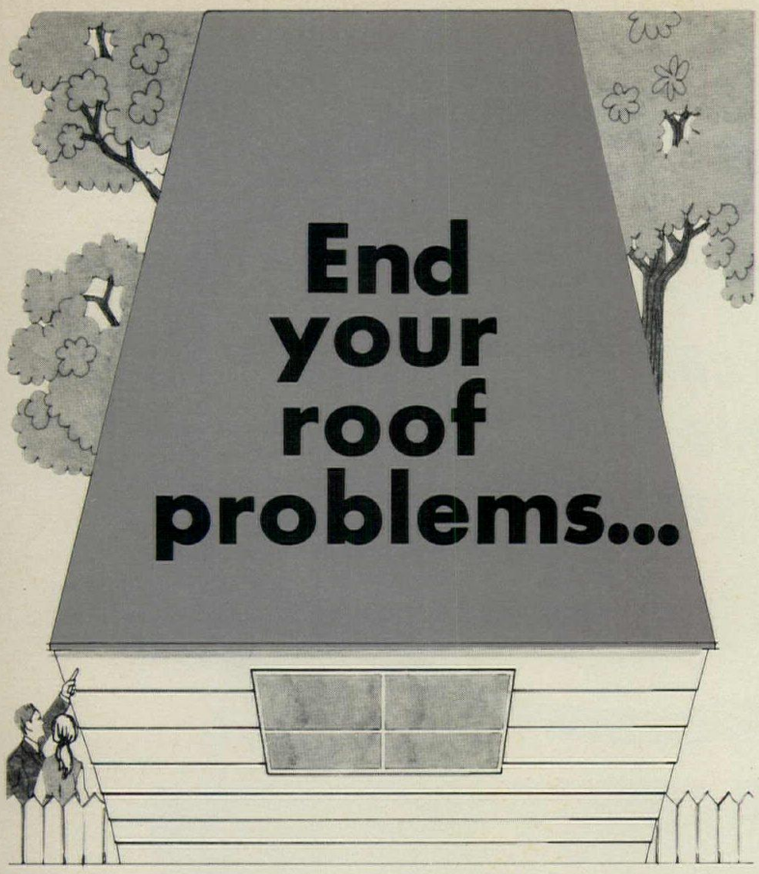
Charles H. Brittain Architect, 819 American Federal Building, Macon, Ga. 31201.

The Office of Samuel Paul, Architect, 107–40 Queens Blvd., Forest Hills, N.Y. 11375.

Schoenwald, Thomas, Harris, Bode & Blayney, architects and engineers, 567 W. Shaw Ave., Fresno, Calif. 93755.

Holewinski and Blevens, AIA, architects and planners, 35 Winham St., Salinas, Calif. 93901.

[Announcements submitted for this column should bear complete address and zip code.]



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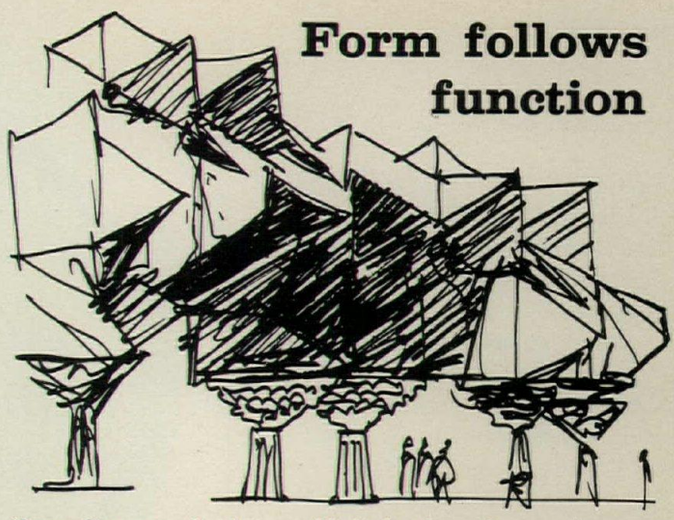

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Architect: Or architectural graduate—three years experience. Position open in small expanding office in central Connecticut. Must be able to design and produce working drawings. Qualified man will work directly with clients and supervise construction. Send complete resume and salary expected. Box # 1361-210, *Progressive Architecture*

Architect: Small firm in small community in Rocky Mountain region needs person capable and willing to accept responsibility. Two years experience in all phases of practice desired. Salary commensurate with experience. Opportunities for outdoor recreation unlimited. Send confidential resume and salary expectations to Box # 1361-211, *Progressive Architecture.*

Architects: Architectural/engineering firm ranking in top ENR 500 with excellent future growth potential and individual advancement opportunities needs qualified candidates to fill challenging positions. Must be design oriented towards medical, educational, commercial and industrial facilities. Liberal benefits package. Within one hour of a variety of sports and cultural activities. Please send confidential resume indicating salary requirement to Box # 1361-200, *Progressive Architecture.* All replies acknowledged. An equal opportunity employer.

Architectural draftsmen: Large established architectural office in northeast Florida needs draftsmen with experience in preparing working drawings for multi-story commercial, institutional and residential buildings. Send resume to Box # 1361-212, *Progressive Architecture.*

Faculty positions: Instructors in architectural design, urban planning, building materials, and construction, and environmental conditions. Masters degree required. Salary and rank commensurate with experience and education. Full five year curriculum leading to B. Arch. degree in large southern university. Equal opportunity employer. Send resume to Box # 1361-213, *Progressive Architecture.*

Project architects: Comprehensive architectural, planning and engineering firm with expanding nationwide general practice has opportunity for experienced well-rounded project designers and draftsmen. License and/or degree not mandatory. Please send confidential resume to: Bellante, Clauss, Miller & Nolan, 130 North Washington Ave., Scranton, Pa. 18503. An equal opportunity employer.

Senior interior designer: With thorough knowledge of non-residential trade resources for Balto/Wash design firm. Experience in corporate design development, project management as well as space design and interior architectural detailing essential. Submit written resume with representative photos to Mr. John F. Walsh, The H. Chambers Co., 1010 N. Charles St., Baltimore, Md. 21201.

Specification writer: Expanding architectural firm has opening for assistant specification writer. Excellent opportunity for the right person oriented to technical writing. Compensation commensurate with experience. Forward resume in confidence to: Bellante, Clauss, Miller & Nolan, 130 North Washington Ave., Scranton, Pa. 18503. An equal opportunity employer.

Situations wanted

Architect: Exceptionally talented designer, 10 years experience all phases of professional practice. Graduate M. Arch. and town planning, University of technology W. Germany. Registration W. Germany and commonwealth countries. 3 years experience in excellent firm in USA. Desire position (with partnership ability) directing design and production. Box # 1361-214, *Progressive Architecture.*

Architect: Seeking special opportunity to earn partnership in a small ambitious firm or established firm with additional potential. Principal and chief designer for successful educational and commercial projects. Strong design background. Enjoy working with clients. Anxious to accept responsibility and illustrate capability. Married, 3 children, 38. Box 1361-216, *Progressive Architecture.*

Architect: Registered New York, NCARB certification, age 36, married. Twelve years of solid diversified professional experience. Presently production manager of firm doing over twenty million dollars of annual work. Seeking responsible position with architectural/engineering firm in the Carribean-Bermuda Island area with objective towards association/partnership. Box # 1361-215, *Progressive Architecture.*

Architect-engineer: Seeks association with design conscious firm in small to medium size city. Strong design-structures background. Presently associate partner in nationally recognized AE firm. Registered architect and PE several states. Age 33. Box 1361-217, *Progressive Architecture.*

Architectural engineer: Europe-German degree and license, US permanent resident, age 31, 3½ years American and 6 years German production experience in architectural offices on large scale projects. Interested in working in Europe. Box 1361-218, *Progressive Architecture.*

Architectural specifications writer: C. S. I., cost estimating and construction supervision, sixteen years diversified experience including five years as principal in own specification writing consulting firm. Resume submitted upon request. Reply to Box # 1361-219, *Progressive Architecture.*

Interior designer, space planner: female, 27, single. M. S. Design. 4 years experience conceptual planning through job completion for commercial projects; client contact, design, presentation, drawing, specification, supervision. Seeking challenging, responsible position. Presently in East but will relocate. Resume upon request. Box # 1361-220, *Progressive Architecture.*

Landscape architect: Registered in several states with 10 years of progressive site planning responsibility on private and public projects. Well diversified experience includes all phases of landscape archi-
[Continued on page 164]

Job mart

Continued from page 163

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