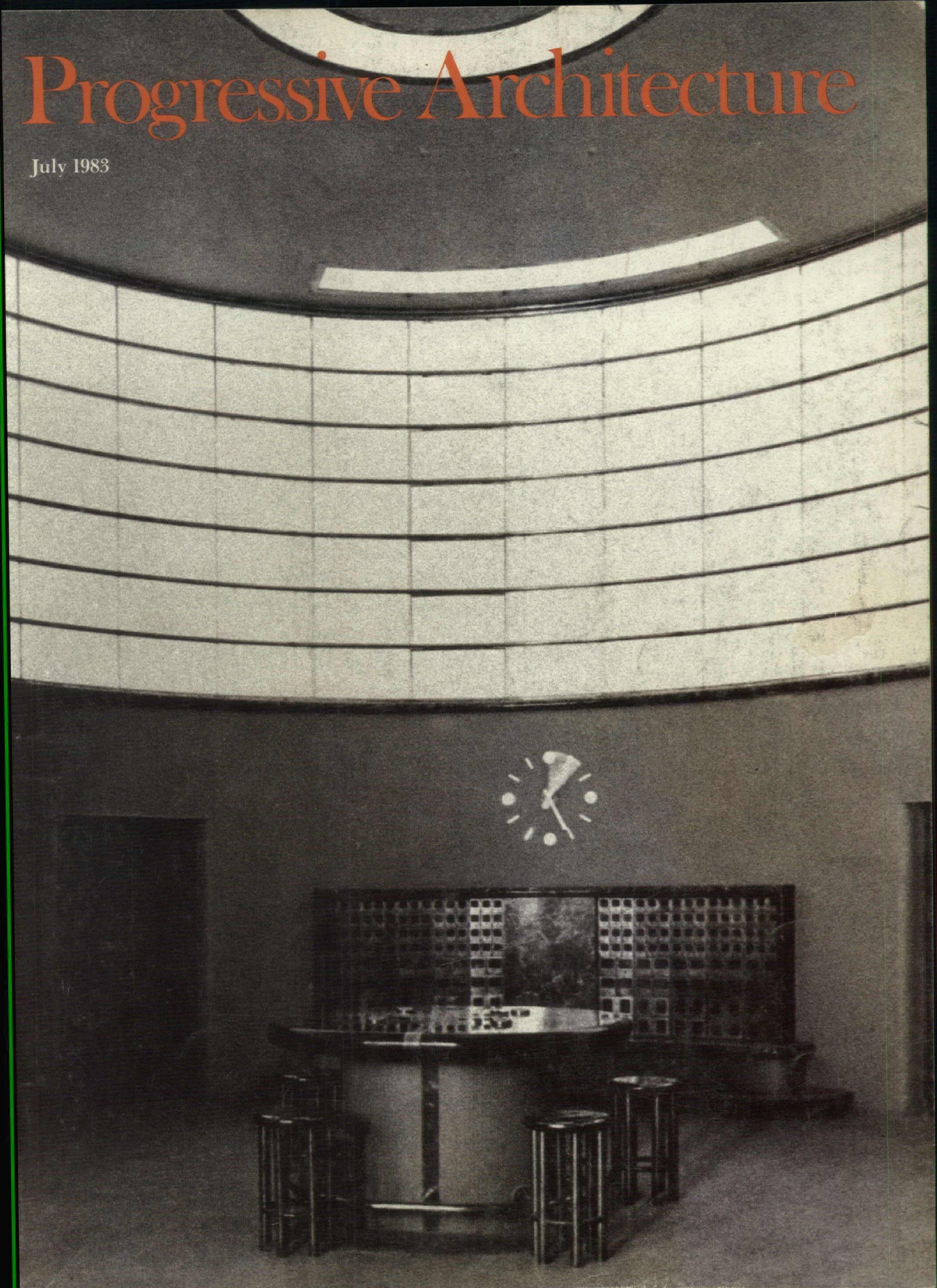
Progressive Architecture

July 1983



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The floor in this setting is a field of Futura accented with a woven design of Flex-Slate and Thru-Onyx.

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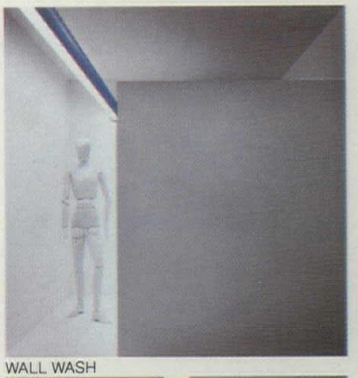
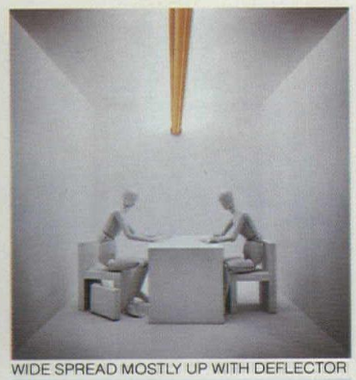
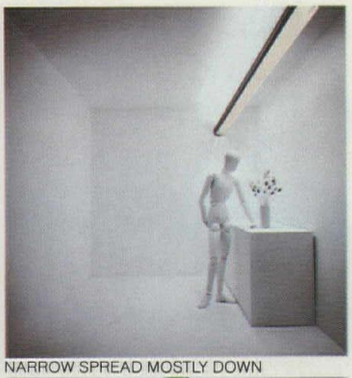
Illustrated: 6" Lite Duct fixtures with specialized and, in some cases, patented Softshine Optics. Lite Duct is one of the 13 Longlite systems and comes in seven diameters and configurations, in any finish, and extends to any length.


WALL WASH


WIDE SPREAD MOSTLY UP WITH DEFLECTOR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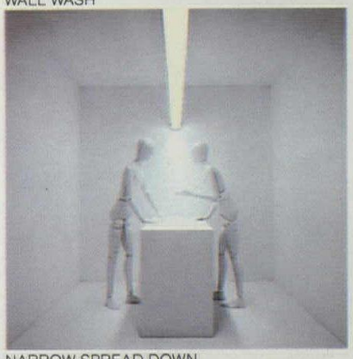
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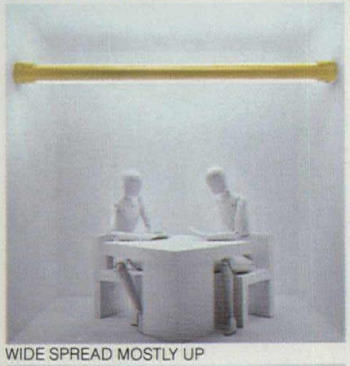
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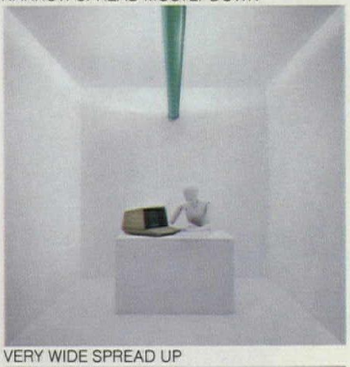
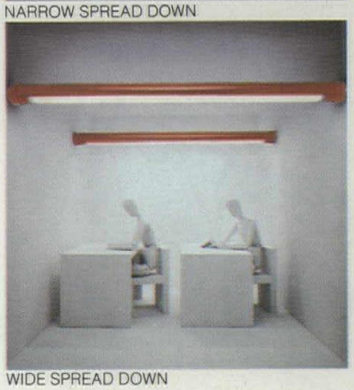
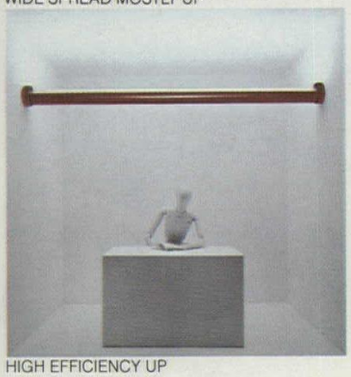
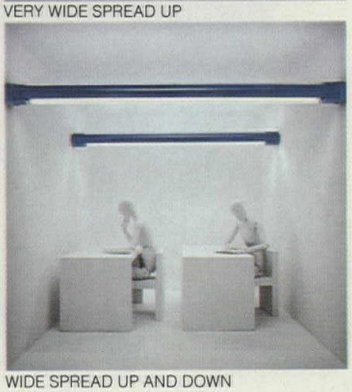

VERY WIDE SPREAD UP


WIDE SPREAD DOWN


HIGH EFFICIENCY UP


WIDE SPREAD UP AND DOWN

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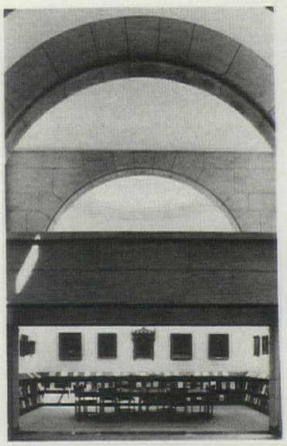

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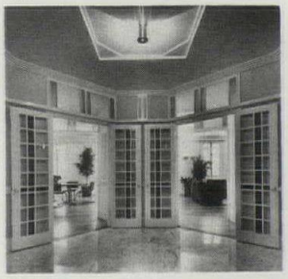

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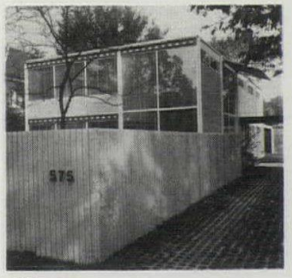

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Cover: *Angiolo Mazzoni Post Office, Agrigento, Sicily, 1931–34 (p. 86). Photo: Mazzoni Archives, Museo Depero in Rovereto.*

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Picture shows underside, section and top view of an S-Floor panel with free-lay carpet surface.

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The computer joins the firm

The costs and capabilities of computer graphics systems now fit the needs of design offices, and architects are beginning to see them as competitive requisites.

Computer graphics systems are about to go to work in many architectural offices. Automated systems comprised a large and active part of the product exhibit at this year's AIA Convention in New Orleans, and crowds of architects attended the A/E Systems '83 automation and reprographics show in Dallas this June. At both events, producers, professionals, and press observers seemed to agree that a propitious moment has arrived.

Systems producers have recently been developing an array of equipment and software for design and drafting. Their staffs have learned the needs of design practice and now usually include people with architectural training. Refinement of software has transformed the rather creaky, esoteric drafting systems of a few years back into fast, flexible tools, accessible to people who are not computer specialists. Considerable potential remains for easier, faster procedures, covering wider ranges of needs, but such improvements could be achieved largely with equipment on the market today.

Rapid evolution of computer graphics systems has been accompanied by price drops that put them within range of small-to-medium-sized firms; some systems are on the market for under $50,000. Lease-purchase plans and tax provisions can soften the impact. Most systems provide for incremental expansion and upgrading, without loss of initial investment or stored input. And the amount of special training required is becoming less burdensome; firms will not necessarily have to acquire a special staff just for the computer, and they can hope for economically useful output in less than a year. Still, experienced architects offer the rule of thumb that training costs are likely to equal purchase costs of the system.

As a supply of less expensive, more accessible systems is offered, architects—by no coincidence—are becoming more receptive to them. Since computer systems are widely used now for nongraphic purposes (accounting, specs, etc.), that next step seems less intimidating. Computer capability is also becoming an important qualification—either spelled out or unstated—for getting larger commissions. And what better way to demonstrate computer capability than going all the way—into graphics?

A recent survey by *Building Design and Construction* found 7.5 percent of responding architecture firms using computer drafting systems, as against 5 percent a year ago; and 36.3 percent said they planned to acquire such systems this year. Even allowing for wishful predictions, an accelerating use of computer graphics is clearly indicated.

And small firms are not out of the race. One architect with only a single other design professional on staff was seen at Dallas, examining the full range of offerings; without the computer, he observed, his work would soon be limited to single-family houses.

All is not rosy, of course. In considering the impact of computer graphics on architectural firms, some serious issues arise:

1 There is justifiable concern that computer systems will supplant entry-level professionals. Two distinct scenarios are being propounded: some experts envision a cadre of computer technicians in each office, with no architectural education or aspirations (parallel in ways to those career draftsmen of 50 years ago); others foresee improved systems as accessible to all professional staff, with little need for computer personnel as such (especially as computer literacy becomes more common among fledgling professionals). I cannot predict which scenario will prevail, but I know we must try to realize the second one if we are to gain creative capacity along with mere quantitative productivity.

2 Architects' traditional reluctance to sink money into capital equipment vs. more flexibly deployable (i.e., hirable and firable) personnel must be dealt with—as well as lenders' reluctance to back traditionally capital-shy professionals.

3 Any high-technology equipment is instinctively seen as affording an advantage to larger firms. Actually, this advantage is diminishing now as equipment becomes less expensive and more widely dispersed.

4 Architects have a built-in suspicion of technical systems—a fear that they are incompatible with art. This threat is real only to the extent that the systems remain concentrated in the hands of technology buffs. As such systems become more common, aesthetically conscious professionals will use them to improve their art. (So, for that matter, will other designers and artists.)

No equipment can, in itself, improve design—aesthetically, programmatically, or any other way. What computer systems can do is make architecture firms more efficient—by reducing the staff hours for many processes, for instance, and by reducing and detecting errors. They can make decisions more authoritative—hence more likely to stick—by providing analytic back-up; they can permit the exploration and evaluation of more design options.

Ultimately, the role of the computer in architectural practice will depend upon the enterprise and imagination of design professionals—and their willingness to learn.

John Morris Dixon

INTÉRICS

The science of creating environments that work SM

In the past decade, the traditional office environment has undergone fundamental changes.

Inherent in these changes has been the growing realization that the physical environment of an office has a dramatic effect on the productivity and satisfaction of the people in that office.

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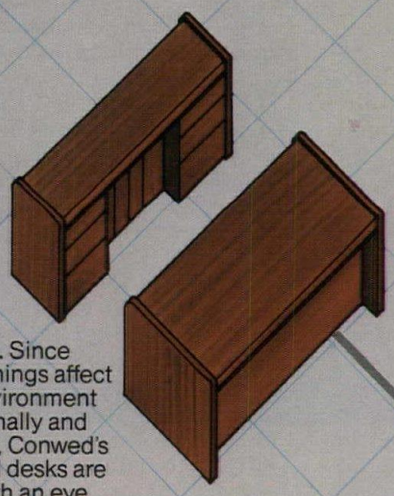
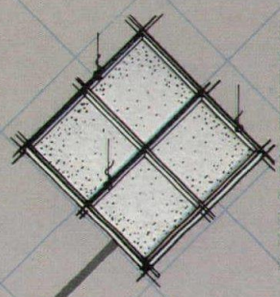
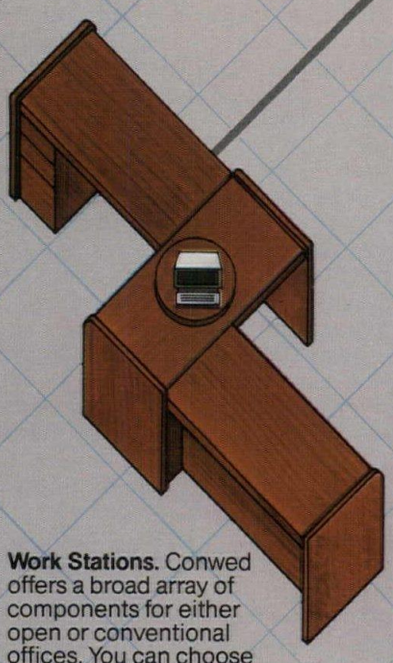


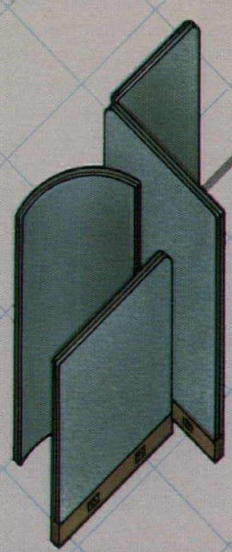
Wood Desks. Since office furnishings affect the work environment both functionally and aesthetically, Conwed's natural wood desks are designed with an eye towards both.



Acoustical Ceiling. The ceiling is the largest uninterrupted surface in the office and is critical to acoustical control. Conwed acoustical ceilings are specifically designed to absorb sound and accommodate sound masking and lighting systems.



Work Stations. Conwed offers a broad array of components for either open or conventional offices. You can choose from freestanding desks or complete work station systems.



Acoustical Panels. Conwed acoustical panels work with Conwed ceilings to reduce noise levels so workers will be less distracted and more productive. These panels are also available with electrified bases to provide wire management and power distribution.

maximize the efficiency and effectiveness of the workplace. Utilizing our technical expertise and experience we have developed a consistent, unified approach which yields predictable performance in the office.

We call this approach **Intérics**: The science of creating environments that work.

Through the principles of Intérics, Conwed can significantly improve the productivity, cost effectiveness and physical appearance of a company's workplace. Each component of the office is selected for its impact on organizational interaction, acoustics, illumination, aesthetics and return on investment. From ceiling tiles to wall panels, from office furniture to task lighting, every element is considered for its effect on the total environment.

To learn how Conwed can put the science of Intérics to work for you, contact Conwed Corporation for the representative nearest you. Write Conwed Interior Products Division, P.O. Box 43237, St. Paul, MN 55164. Or call (612) 221-1177. You can see the wide array of Conwed products, including new finishes, colors and fabrics at our showroom Suite 929, Chicago Merchandise Mart.

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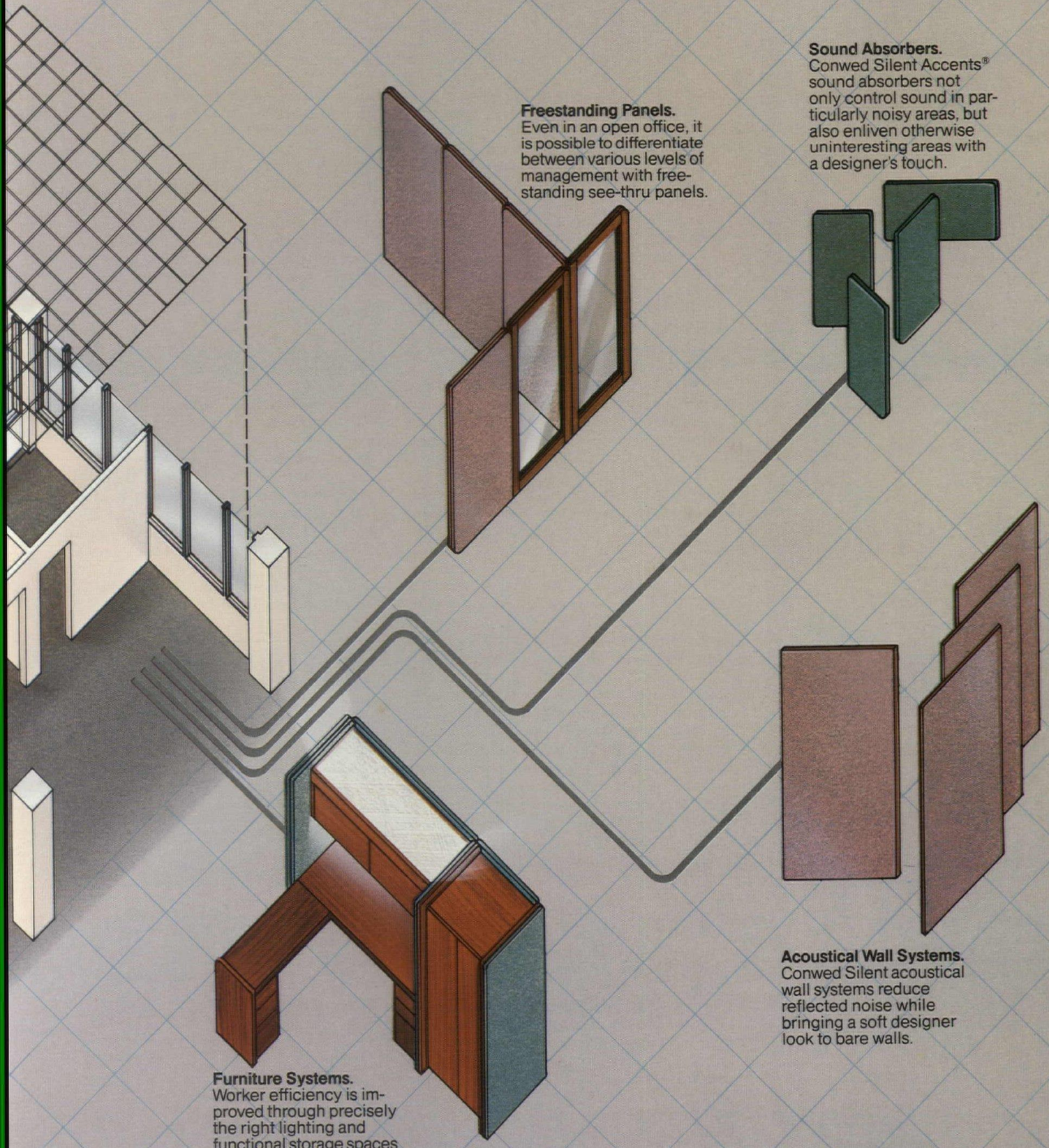

Sound Absorbers. Conwed Silent Accents® sound absorbers not only control sound in particularly noisy areas, but also enliven otherwise uninteresting areas with a designer's touch.

Freestanding Panels. Even in an open office, it is possible to differentiate between various levels of management with free-standing see-thru panels.

Acoustical Wall Systems. Conwed Silent acoustical wall systems reduce reflected noise while bringing a soft designer look to bare walls.

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Views

Energy impact
The April issue of P/A is a noble effort, bringing together diverse bits and pieces of information on the amorphous subject of "Energy and Conservation." Solutions included: bags of salts in the ceiling, a four-foot-wide exterior wall air space, columns of water, a high central room or a narrow plan. My own research indicates that sizing the area of passive solar glazing is simply a matter of multiplying the length of a room by its width and dividing by one's telephone number (add three for New Jersey residents). And, where would we be without Ed Mazria's incisive analysis? His claim is that the industrial age caused the architect to become overly dependent on the engineer, and now, in the enlightened post-industrial period architects can happily go back to rules-of-thumb, intuition and adobe. The fact is that today architects are even more dependent on the engineer, as is evidenced by the fact that in this issue of P/A most of the useful commentary on subjects ranging from indoor pollution to lighting design is made by engineers.

The last ten years have seen profound changes in concepts of energy use, computers, communications and automation. Among these the energy issue alone has had dramatic impact on building design. Architects now recognize that they can no longer simply "fit" mechanical and electrical systems into preconceived designs since these systems now appropriate a sizeable percentage of the total operational and construction costs of a project. A proper and complete understanding of underlying scientific and engineering principles is essential to good design, and architects are finding themselves poorly trained to intelligently integrate these complex networks of systems into building design. Engineering consultants on the other hand are often too narrow within their own specialties to provide the necessary overview.

If architects are to maintain their leadership role in the building process, a role already considerably diminished, retraining and re-education in science and technology is essential. Architectural schools must not only initiate students into the joys of watercolor wash technique and the Doric order but must educate them thoroughly in the sciences.

Also helpful to the profession would be the development of a forum similar in purpose to the scientific journal and conference. Architects, using the scientific method, must honestly share their technical successes and failures. We can no longer afford to rediscover the wheel with each project.

Architects have always exulted in the art of architecture. It is now time to become equally excited about the science of architecture. Our choice is clear. We have to choose between the role of architect-scientist and that of architect-decorator. It is my biased opinion that the universe would be a better place if architects with their special perception were included in the design of electronic cottages and outer space stations. With our present level of technological expertise, we'd be lucky if we got to pick the wallpaper.
Tara D. Lamont, Architect
New Canaan, Conn.

[Technical expertise, by all means, but let's not concede that choice of wallpaper, either.—Editors]

Solar louver self-control
The louvers of the Hooker Building (P/A, April 1983, pp. 82–85) are part of a complete, "stand alone" Moore Daylighting System, which includes louvers and a control system that tracks the sun. This Moore system can be overridden, as in this building, where the main computer can give override commands to meet the thermal demands of the building as a whole.

Credit correction
Credits for two of the entries in the Dolls House Competition (P/A News report, May 1983, p. 27) were reversed. The design in the lower left photo is by Vladimir Donchik; the one in the upper left photo is by Thomas Nugent.

Credit extended
Two people were omitted from the credits for the Department of Justice Building, Sacramento (P/A, April 1983, pp. 116–120). Doug Shoemaker, architect, was a member of the design team in its early stages; James Burns was a consultant for client communications and presentations to the building's users.

A color system for systems furniture, from Herman Miller

The ability of a furniture system to perform functionally should not limit — or be limited by — its ability to respond aesthetically.

For this reason, Herman Miller has collaborated with Clino Trini Castelli of Castelli Design Milano, Italy, to develop a manageable system of colors, fabrics, textures and finishes specifically for the Action Office® system.

The approach represents a fundamental change in the application of color to systems furniture.

As a design tool, this color system provides for a wide range of expression. So you can address your client's preferences, articulating variations of mood and character.

The elements work in virtually any combination to produce a strong sensation of color, yet one that is subtle and wide ranging. And compatible finishes contribute to a more unified overall impression. So you can provide a look unlike any you could previously achieve with the Action Office system.

Importantly, the color system is as adaptable as the Action Office system itself. So entire work areas can be reconfigured at any time without obsoleting the appearance.

Herman Miller's color system for systems furniture. It gives you the tools you need — to develop environments that are both functionally supportive and aesthetically expressive.

We invite you to explore the possibilities first hand. Introduced at NEOCON XV, the color system will be installed in Herman Miller showrooms over the next few months in Atlanta, Boston, Chicago, Dallas, Detroit, Houston, Kansas City, Los Angeles, New York, San Francisco and Washington D.C.

For more information contact your Herman Miller dealer, or write Herman Miller, Inc., Zeeland, Michigan 49464.

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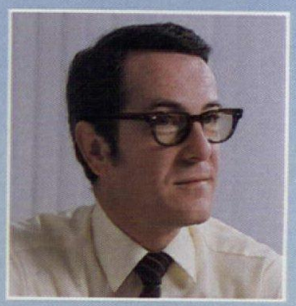

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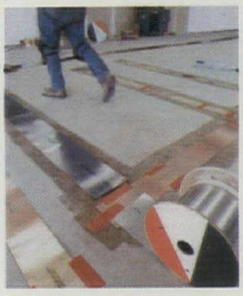

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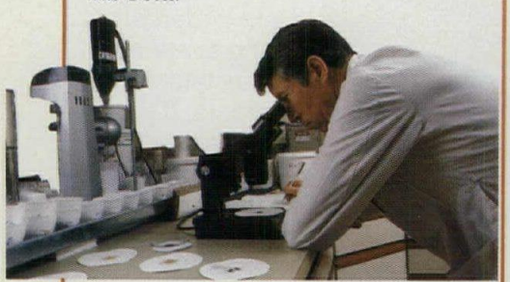

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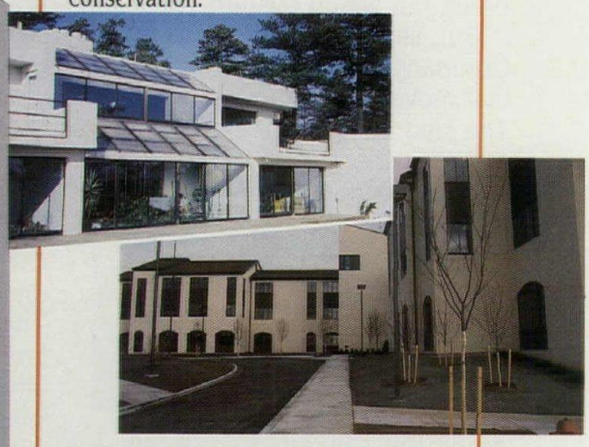

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P/A Awards program

31st annual competition for projects not yet completed

in architecture planning and research

Progressive Architecture announces its 31st annual P/A Awards program. The purpose of this competition is to recognize and encourage outstanding work in architecture and related environmental design fields before it is executed. **Submissions** are invited in the three general categories of architectural design, urban design and planning, and applied architectural research. Designations of **first award**, **award**, and **citation** may be made by the invited jury, based on overall excellence and advances in the art.

Jury for the 31st P/A Awards *Architectural design*: **Sam Davis**, AIA, architect, Associate Professor of Architecture, University of California, Berkeley; **James Stewart Polshek**, FAIA, James Stewart Polshek & Partners, New York, and Dean of the faculty of the Columbia Graduate School of Architecture and Planning; **Julia Thomas**, President, Bobrow/Thomas & Associates, Los Angeles, and Chairman of the Board, Westport Centers, Inc.; **O.M. Ungers**, architect, Cologne and Frankfurt, West Germany, and Professor of Architecture, Cornell University, Ithaca, NY. *Urban design* and *planning*: **Roger Schluntz**, AIA, Chairman, Department of Architecture, Arizona State University, Tempe; **J. Michael Kirkland**, architect, Principal of J. Michael Kirkland, Architect, and of Coombes, Kirkland, Berridge, Urban Design, Toronto, and Professor of Architecture, University of Toronto. *Research*: **John Cable**, AIA, John Cable Associates, Alexandria, Va., formerly Director, Buildings Division, Office of Buildings and Community Systems, U.S. Department of Energy; **Jonathan King**, Hon. AIA, Professor of Architecture and Director of the Architectural Research Laboratory, University of Michigan College of Architecture, Ann Arbor.

Judging will take place in Stamford, Conn., during September 1983. Winners will be notified — confidentially — before Oct. 1. First public announcement of the winners will be made at a presentation ceremony in New York in January 1984, and winning entries will be featured in the January 1984 P/A. Recognition will be extended to clients, as well as professionals responsible. P/A will arrange for coverage of winning entries in national and local press.

Eligibility

1 Architects and other environmental design professionals practicing in the U.S. or Canada may enter one or more submissions. Proposals may be for any location, but work must have been directed and substantially executed in U.S. and/or Canadian offices.

2 All entries must have been commissioned, for compensation, by a client. In the case of architectural design and urban design/planning entries, clients must have the authority and intention to execute the proposals. Work initiated to fulfill academic requirements is *not* eligible (but teams may include students).

3 Prior publication does not affect eligibility.

4 Architectural design entries may include

Deadline for submissions: August 31, 1983

only buildings or complexes, new or remodeled, scheduled to be under any phase of construction during 1984.
5 Urban design and planning entries may include only proposals or reports accepted by the client for implementation before the end of 1984. Feasibility and implementation strategy should be documented.
6 Research entries may include only reports accepted by the client for implementation before the end of 1984. Submissions should yield information applicable beyond a single project. Research methodology and ways of disseminating findings should be documented.
7 The jury's decision to premiate any submission will be contingent on verification by P/A that it meets all eligibility requirements. For this purpose, clients of all entries selected for recognition will be contacted by P/A.

Publication agreement
8 If the submission should win, the entrant agrees to make available further graphic material as needed by P/A.
9 In the case of architectural design entries, the entrant agrees to give P/A the first opportunity among architectural magazines for feature publication of any winning project upon completion.

Submission requirements
10 Each submission must be *firmly bound* in a binder no greater than 17″ in either dimension. Binders 9″ x 11″ are preferred. No fold-out sheets.
11 Submissions must include illustrations and drawings necessary to a full understanding of the proposal—all legibly reproduced. P/A assumes no liability for original drawings. No actual models or slides will be accepted. P/A intends to return submissions intact, but can assume no liability for loss or damage.
12 Each submission *must include* a one-page synopsis, in English, on the first page inside the binder, summarizing the intent and principal features of the entry.
13 Each submission must be accompanied by a signed entry form, to be found on this page. Reproductions of this form are acceptable. All four sections of the form must be filled out, *legibly*. Insert entire form, intact, into *unsealed* envelope attached inside back cover of submission.
14 For purposes of jury procedure only, please identify each entry as one of the following: *Education, Housing (Single-family), Housing (Multiple-unit), Commercial, Industrial, Governmental, Cultural, Recreational, Religious, Health, Planning and/or Urban Design, Applied Research*. Mixed-use entries should be classified by the larger function. If unable to classify, enter *Miscellaneous*.
15 Entry fee of $50 must accompany each submission, inserted into *unsealed* envelope containing entry form (see 13 above). Make check or money order (no cash, please) payable to *Progressive Architecture*.
16 To maintain anonymity, no identification of the entrant may appear on any part of the submission, except on entry form. Credits may be concealed by any simple means. Identity and location of projects should *not* be concealed. P/A will seal stub of entry form in envelope before judging.
17 Deadline for sending entries is August 31. First class mail or other prompt methods of delivery are acceptable. Entries must show postmark or other evidence of being en route by midnight, August 31. Hand-delivered entries must be received at street address shown here by 5 p.m., August 31.

Address entries to:
Awards Editor
Progressive Architecture
600 Summer Street
P.O. Box 1361
Stamford, CT 06904

Entry form: 31st P/A Awards Program

Please fill out all parts and submit, intact, with each entry (see paragraph 13 of instructions). Copies of this form may be used.

Entrant:
Address:
Credit(s) for publication (attach additional sheet if necessary):

Entrant phone number:
Project:
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Client:
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Entrant:
Address:

I certify that the submitted work was done by the parties credited, for compensation, on behalf of a client, and meets all Eligibility Requirements (1-7). All parties responsible for the work submitted accept the terms of the Publication Agreement (8-9). I understand that any entry that fails to meet Submission Requirements (10-17) may be disqualified. Signer must be authorized to represent those credited.

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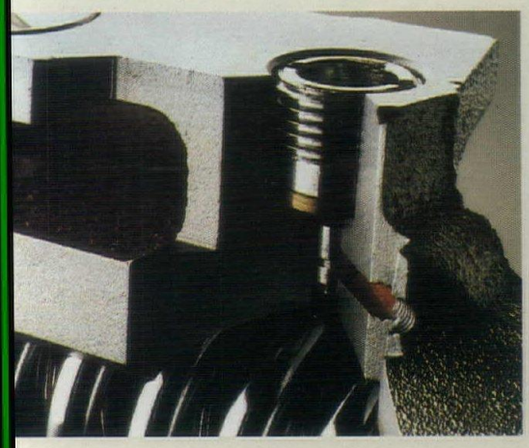

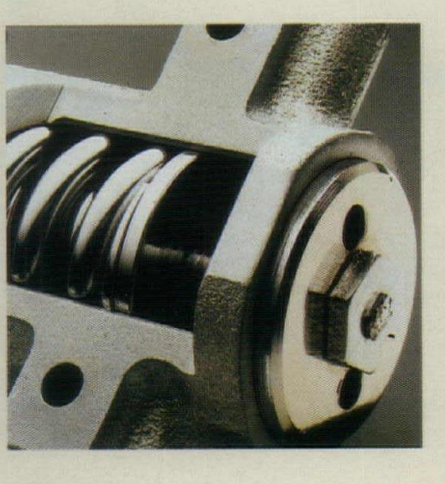

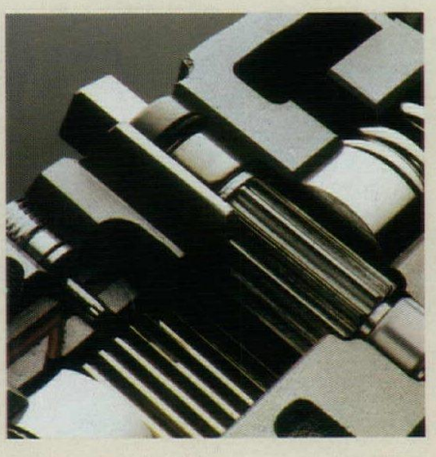

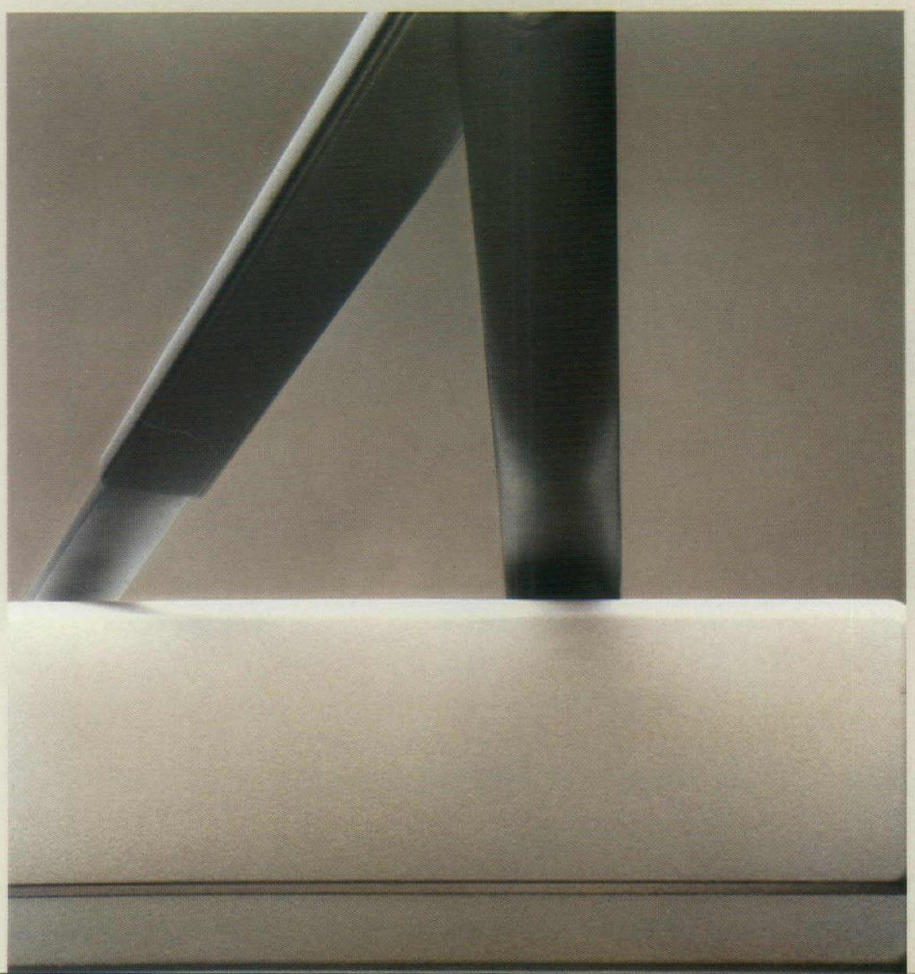

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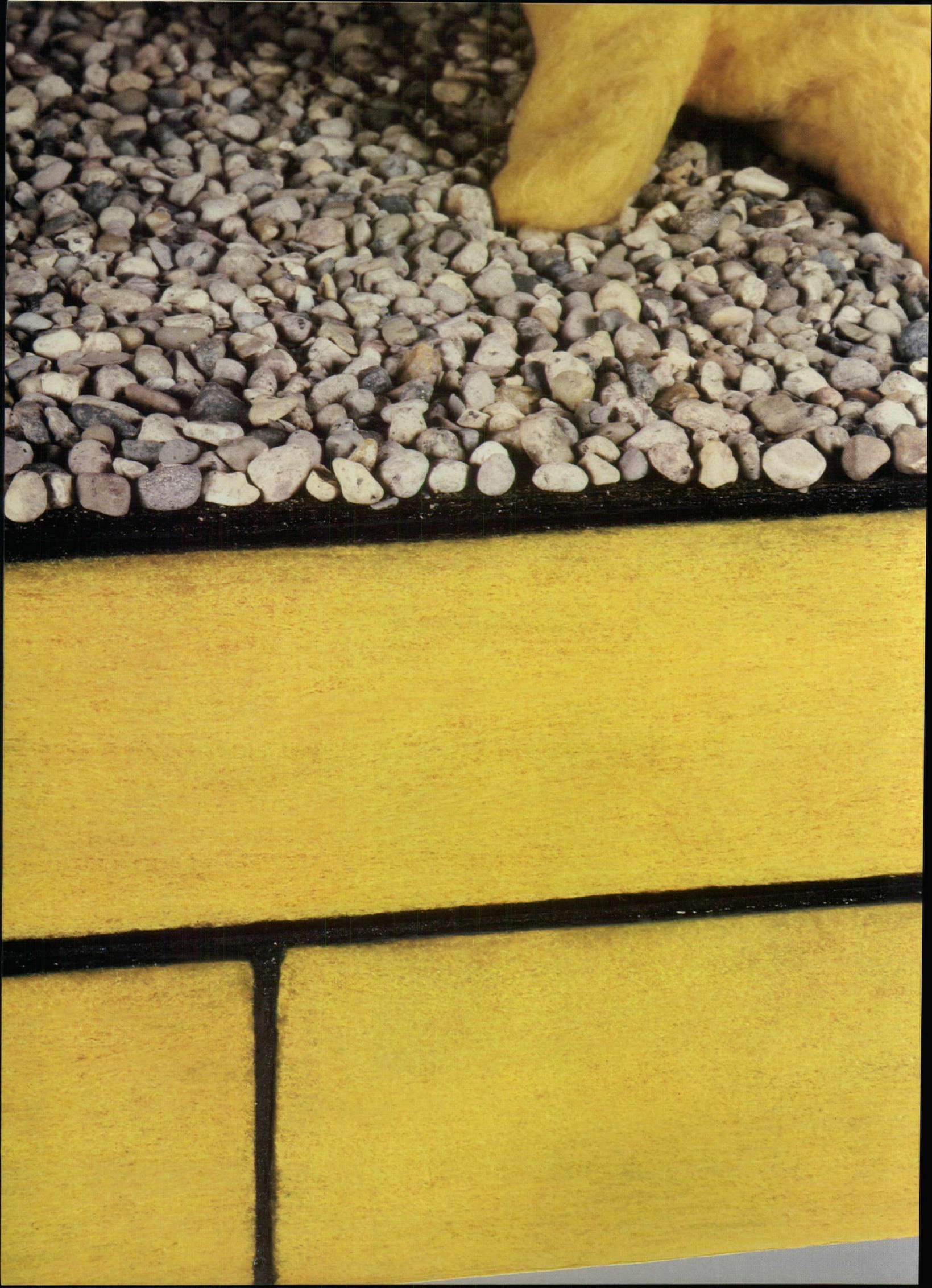

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Pencil points

At last—a Capitol plan

The House of Representatives ended a 20-year stalemate on May 26 when it voted 385 to 86 to approve $49 million to restore the existing West Front of the U.S. Capitol.

¶ The alternative proposal—to buttress the wall by means of a $70.5 million expansion designed by Capitol Architect George M. White—met with mounting opposition in recent months from the AIA, the National Trust for Historic Preservation, and other interest groups, despite the support of Speaker Tip O'Neill and the House Appropriations Committee. The situation came to a head when a portion of the sandstone wall collapsed on April 29.

¶ As with all government expenditures, repair costs are expected to exceed the appropriated figure (White estimates a total $66 million), but the argument that an extension is comparatively a "bargain" remains suspect, as did White's patriotic desire to "improve . . . the symbols of our democracy."

La Défense decided

A 54-year-old Danish architect, Johan Otto von Spreckelsen, has won the prestigious commission for "la Tête de la défense." His winning scheme for offices of the ministries of communications, urbanism, housing, and environment consists of an open cube, 105 m. to a side, situated at the end of Paris's principal axis. An object building, it must perforce compete with the other objets that clutter the district of la Défense.

¶ The scheme was selected from a field of 424 contestants by an international jury, with the choice confirmed by President Mitterrand. A second "first prize" was awarded to French architects Viguier and Jody; two second prizes went to a team led by Jean Nouvel (winner of the competition for the Institute of the Arab World) and to Canadians Crang and Boake.

¶ Twelve mentions were awarded to: Chaix, Confino, Delanne, Duval & Morel; Autran & Macary; Roland Castro; Jourda & Perraudin; Georges Pencreac'h (all of the above were French teams); Bernard Tschumi (U.S., winner of La Villette, see P/A, May 1983, pp. 26–27); Studio 7 (France/U.S.); A.J. Diamond Associates (Canada); and Vittorio Gregotti (Italy).

¶ A more detailed account follows next month.

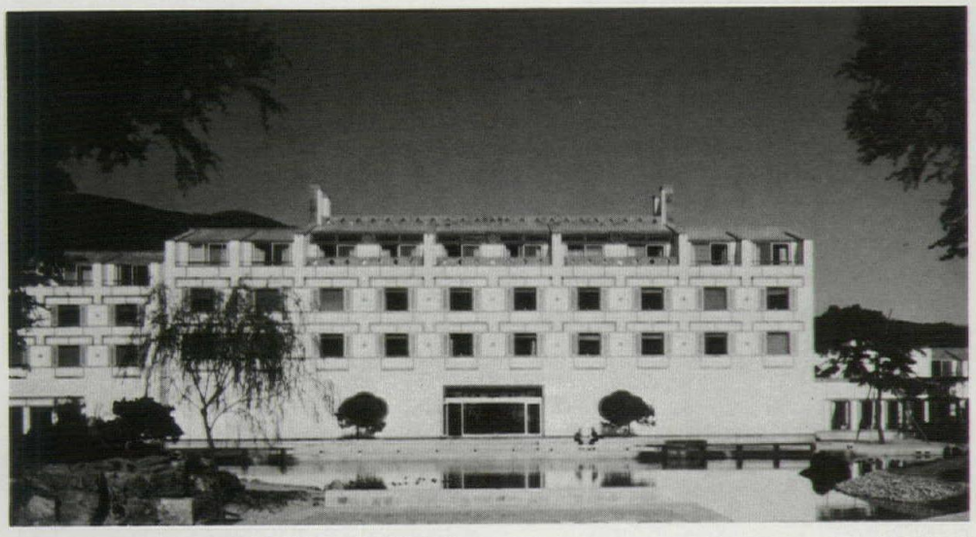
Other international competition notes

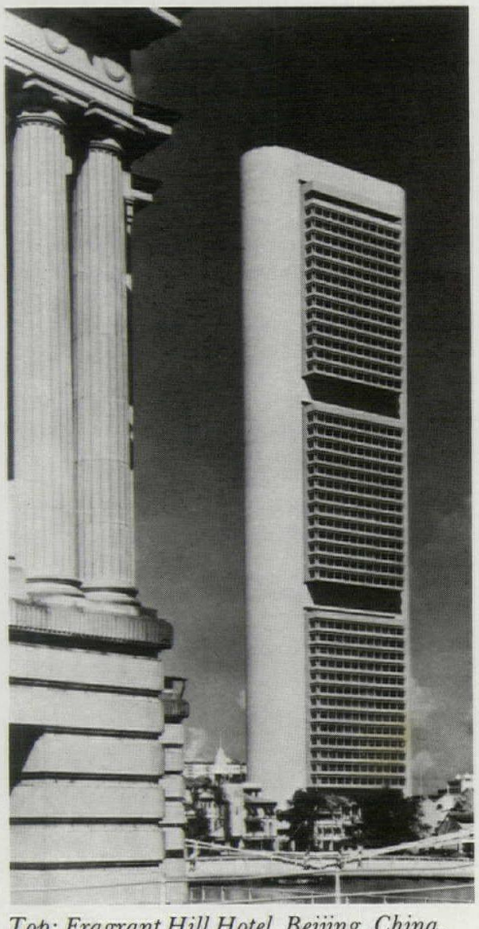
French architect Eugene Leseney has been awarded first prize in a UIA-sponsored competition for the development of a town center for Herouville Saint Clair, France. Jurors included Lucien Kroll (Belgium) and Giancarlo Busiri-Vici, President, the National Council of Italian Architects.

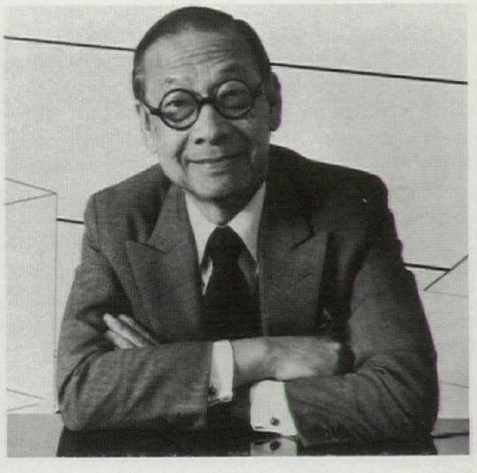
¶ However, the UIA has refused to sponsor two other "international" competitions because their juries do not include the proper proportion of foreign representatives. A competition for the restructuring of the railway network and the construction of a central Bologna station, and one for an Arctic Museum in the province of Lappland have both been boycotted.

[*Pencil points continued on page 39*]

P/A News report







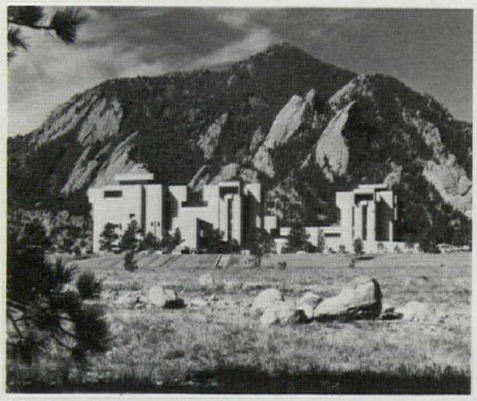
Top: Fragrant Hill Hotel, Beijing, China, 1983; above: Oversea-Chinese Banking Corp. Centre, Singapore, 1976.

Pei's Pritzker: does a pattern emerge?

For the second year in a row and the third out of five, the Pritzker Prize has stayed stateside. Ieoh Ming Pei, principal of the New York-based firm I.M. Pei & Partners, accepted the 1983 award of a Henry Moore sculpture and $100,000 at a dinner held in his honor June 2 at the Metropolitan Museum of Art in New York. Pei joins an elite pantheon: Philip Johnson (USA, 1979); Luis Barragán (Mexico, 1980); James Stirling (UK, 1981); and Kevin Roche (USA, 1982).

Pei, born in Canton in 1917, came to this country in 1935 to study first at MIT and then at Harvard with Walter Gropius. Early experience working for real estate developer William Zeckendorf doubtless stood Pei in good stead in

News report continued from page 21



National Center for Atmospheric Research, Boulder, Colo., 1967.

the execution of such well-known commercial commissions as Kips Bay Plaza (New York, 1962, with Zeckendorf) or the notorious John Hancock Tower (Boston, 1973). But the Pei office is perhaps better known for its public architecture: the East Wing of the National Gallery (Washington, D.C., 1978), the Kennedy Library (Boston, 1979), or the current Dallas Concert Hall project.

Like his Pritzker predecessor Kevin Roche, Pei is a team player. It can be no coincidence that both I.M. Pei & Partners and Kevin Roche/John Dinkeloo & Associates have won the AIA Architectural Firm Award. But team spirit is only one point of congruency between Roche and Pei: each architect has remained steadfastly within the Modernist tradition, Pei's celebrated contextual Fragrant Hill Hotel in Beijing notwithstanding. Each bases his reputation not on theory but on practice; each was awarded the Pritzker as much for sheer professionalism as for artistry. And each put his award to public purpose: Roche established an Eero Saarinen Chair at Yale, and Pei plans an exchange program for architects from China and the U.S. [DDB]

AIA National Convention: Computers/conservation

Those who had hoped to catch an early glimpse of the 1984 World's Fair must have been disappointed: A conventional construction site gave few clues of the Wonderwall, lagoons, amphitheater, and pavilions to come. But for almost 5000 total attendees at the AIA National Convention in New Orleans, La. (May 22–26), there was plenty to see.

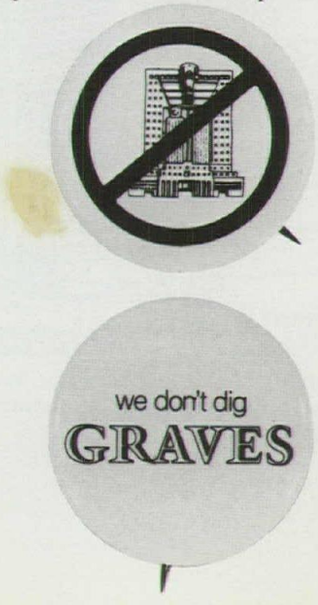
The city itself provided a case study for the convention theme "The Past as Key to the Future: Our Architectural Heritage." Again and again, speakers alluded to their surroundings, bemoaning a crop of utterly undistinguished new skyscrapers or urging the preservation of older idiosyncrasies—the French Quarter, the Garden District, or even the Mississippi River. The three keynote addresses telescoped from broad to particular issues, with *Megatrends* author John Naisbitt at the global, urbanist George Sternlieb of Rutgers University at the regional and city, and sociologist William H. Whyte at the neighborhood or personal scale.

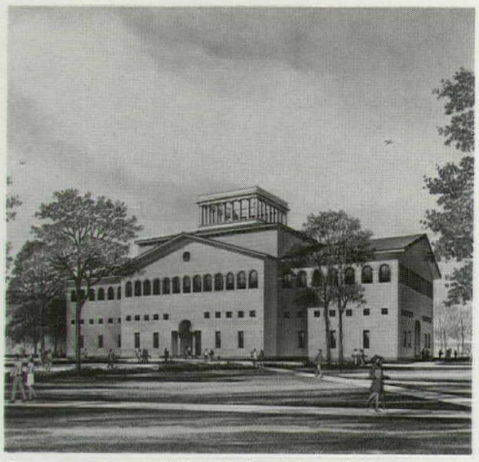
The convention's not-so-hidden agenda was evident in the lists of product exhibitions and professional seminars. The omnipresent computer in all its many manifestations consistently drew the crowds, leaving such typically popular events as the honor awards seminar underattended. The latter event's distinguished panelists—jury chairman Charles Gwathmey and award winners Richard Meier, Michael Graves, Harry Wolf, and the Taft partners—failed to focus their discussion. Opposition to Graves's Portland Building, which surfaced as expected in the seminar, was also heard in corridor conversations and seen in the form of an unofficial, ban-it button.

A close race for first VP between David A. Pugh, Portland, Ore., and R. Bruce Patty, Kansas City (the victor), and a last-ditch effort to stop plans for the Capitol West Front extension (successful) shared center stage. Also elected by delegates were national VP's Gaines B. Hall, Dothan, Ala.; Theodore F. Mariani, Washington, D.C.; and Robert J. von Dohlen, West Hartford, Conn.

But the surprise success proved to be the Gold Medal Forum, staged Thursday morning after many attendees had departed. Moderator Nathaniel A. Owings, this year's Gold Medalist, urged his six panelists to air what angered them as practitioners and critics. Choice remarks ranged from critic Robert Campbell's assertion that "architects are always the last to demand good architecture, the last, for example, to join the preservation movement," to urban designer Richard Weinstein's ominous prediction of a coming "dark time for urban design," brought on by a "decline of belief in the public good." Owings' urgent message of conservationism, theme of his inspired talk to students at Tulane University and of his Gold Medal address, emerged as the convention's powerful and appropriate coda. [DDB]

Anti-Graves propaganda at New Orleans was unprecedented and mean-spirited.





Construction of the University of Houston College of Architecture begins fall, 1983.

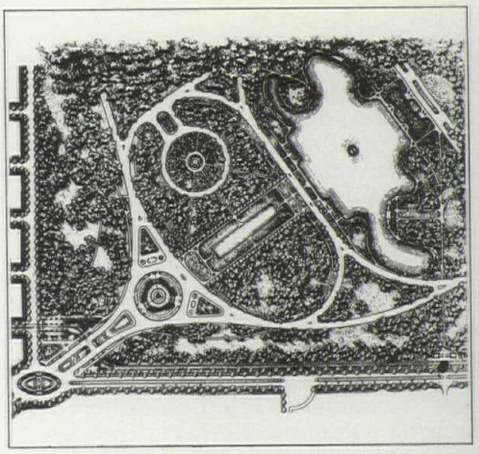
Contextualism? *Au Contraire!*

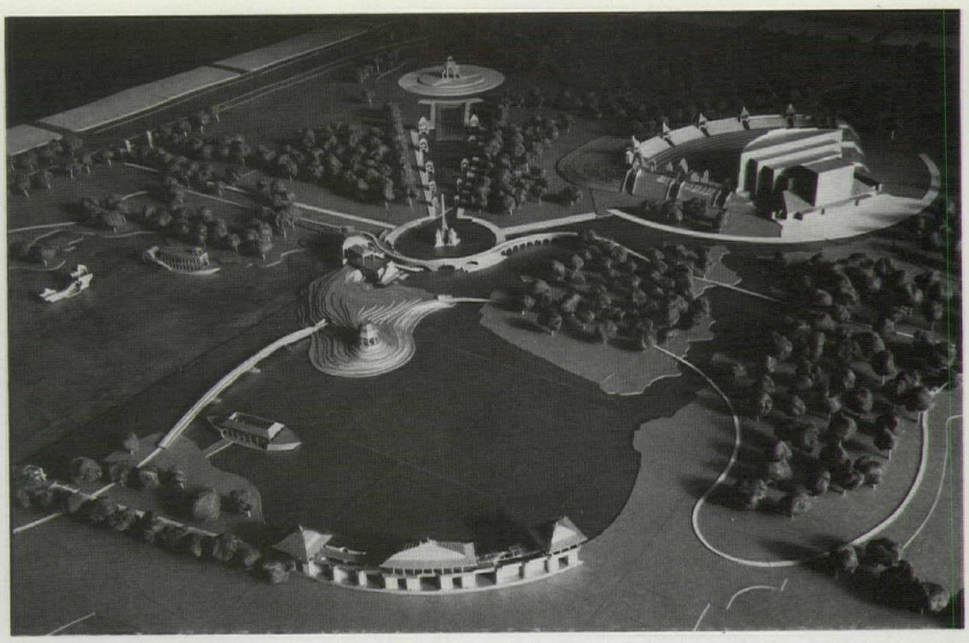
If one thing may be said to characterize the central campus of the University of Houston, it is the lack of consistent character in its plan, open spaces, and architecture. A "response," therefore, becomes an elusive effort. Commissioned to design a new $12 million home for the College of Architecture, John Burgee Architects with Philip Johnson and Morris/Aubry Architects have opted for the "big bang" approach: address the problem of context by flagrantly ignoring it, and thereby pose its resolution.

Their bold gesture is a simple, cross-shaped block with blatant historical allusions. Philip Johnson adapted the plan organization of Claude Nicolas Ledoux's "House of Education," rendered as a Classical brick shell in contrast to the Modernist buildings that surround the site at the edge of the University Park campus.

Simple massing, axial organization, and distinct formal vocabulary make the College of Architecture a gateway "marker" on the campus's north edge, the principal entry point for a largely commuter student body, as well as for visitors to the directly adjacent Fine Arts Building and Blaffer Gallery. Programmatically, the facility consolidates a variety of functions and centralizes library services for both Architecture and Art and Art History. New facilities, such as a small college gallery on the ground floor, augment the use of the building as a walk-through entrance to the campus, whose loosely configured quadrangle space will be completed by the new building.

The Classical styling is carried through a central hall open vertically to all levels. Beyond the terrazzo patterns and the columns surrounding a skylighted atrium, however, the interior finish will be dead-simple institutional style. [Peter C. Papademetriou]





Above: Kessler's Hermann Park, 1916; right: Moore/Phelps proposal, 1983.

The Best solution for Houston's Hermann Park

Houston has never had an extensive system of planned urban parks. Of those that exist, Hermann Park is the most diverse and widely used. The park is located in what is regarded as Houston's "inner city," adjacent to Rice University and the Texas Medical Center. Its initial plan, developed between 1914 and 1933 by George E. Kessler and subsequently by Hare & Hare, exemplifies the planning principles of the Progressive era.

In recent years, problems of traffic, increasing numbers of users, and parking engendered a gradual piecemeal distortion of the historic plan. The 1972 Master Plan went so far as to propose that the Reflecting Basin be filled in and the formal promenade replaced by an irregularly bounded, picturesque ramble. Parking and service facilities planned at the park perimeter would effectively cut the park off from its surrounding city, contradicting its original function as a nexus between Houston's "cradle of culture," with its Museum of Fine Arts and Contemporary Arts Museum, and residential enclaves.

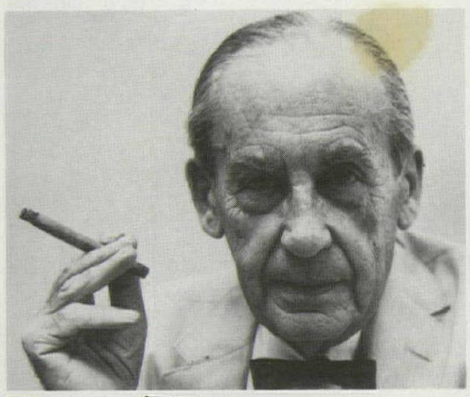
In 1982, the Municipal Art Commission of Houston, in cooperation with the Parks and Recreation Department, undertook an evaluation of the 1972 Master Plan with a focus on the northwest entrance quadrant as a privately funded demonstration project designed by Charles Moore and Barton Phelps with the Urban Innovations Group (Los Angeles).

A year later, this February, the Moore/Phelps scheme went public with an exhibition at Rice's Farish Gallery in the School of Architecture. The scheme clarifies the park's original plan while accommodating requirements placed upon a major urban place in the 1980s. The new plan enhances the great diagonal axis which continues from the rotary entrance into the Zoological Gardens. A 1920s statue of Sam Houston would be placed on a larger arched base, to function as the park's gateway. The reflecting pond is reconfigured in a forced perspective, modulated by changes in level and by a series of howdahs, which decrease in size and spacing. The original Pioneer obelisk is placed in a pool fountain, lifted on the back of abstracted elephants that bear clear kinship to those of Moore's Best Products showroom façade design. The lake is enlarged and elaborated with fantastical nautical "follies" and concession stands. A reconstruction of the rusting Miller Outdoor Theater, a 1960s addition to the park, would limit the impact of performances on nearby residential areas while creating a controlled access facility which the city could lease for commercial purposes and continue to use for scheduled free public events.

The plan's future is at present undecided. Local interest, however, has been aroused by the exibition. If the next director of Parks and Recreation (the post has been vacant for some months) favors the scheme, it will be incorporated into a municipal improvement bond election scheduled for early 1984, with possible first stages of construction late next year. [Peter C. Papademetriou]

Groping for Gropius

During the years following his retirement from Harvard in 1952, Walter Gropius's birthday became an occasion for festivities, a tradition continued after his death in 1969 by the annual Gropefest. His 100th birthday (May 20) was duly celebrated last month in Cambridge and Boston by a series of exhibitions, lectures, symposia, and seminars. These nostalgic reminiscences, however heartfelt, suggested a Gropius so universal as to become, as the events progressed, increasingly unreal. Fortunately, three tributes to the historical Gropius brought him back into focus.



Walter Gropius.

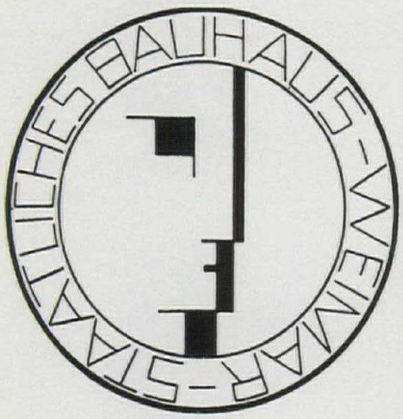
At Harvard's Graduate School of Design, a special memorial lecture (May 18) by Gropius's biographer, Professor Emeritus Reginald Isaacs, described the majestic but accessible presence who continued to dominate the school, despite growing conflict with GSD Dean Joseph Hudnut, from his arrival in 1937 until long after his retirement. Grope's firm, The Architects Collaborative, closed the office for a day (May 20) of lectures and presentations on his postwar buildings. Rich in anecdote if somewhat thin in analysis, these events will doubtless provide valuable raw material for some future historian. Current disenchantment with Gropius was dismissed with an insouciance which illustrated the unquestioning loyalty of former associates to his principles.

Astonishment and admiration were rekindled by two exhibitions. A display of Gropius's own photographs of Japan (Harvard, May 17–June 3) showed him more student than master, capable of rare visual insights. Bauhaus material on view at the Busch-Reisinger Museum (May 14–June 25) attested to his achievement as a sorcerer of modernity, in whose crucible were joined so many magical talents: Klee, Moholy-Nagy, Feininger, Herbert Bayer, Kandinsky, and others.

A Goethe Institute symposium (May 21) offered further insight, in the form of speeches by scholars Professor Willo von Moltke and Winifried Nerdinger. Cataloguer of his graphic oeuvre, Nerdinger resurrected the pre-war Gropius, extinguished by the architect's own later reinterpretation of his autobiography for American consumption. Quotations from early writings revealed a belief in history and the *Zeitgeist,* a will to art, and a desire to create forms emblematic of a new age, goals realized in the 1919 Fagus factory.

[*News report continued on page 24*]

News report continued from page 23



In all, Grope's seemingly impossible testamentary wish, that posthumous "fiestas à la Bauhaus" allow him "to join in, more than in life," may in fact have been satisfied by this 100th birthday party. It was for one day possible to feel, as Gropius had in the 1960s, that he was part of a majority. But the reconstruction of a historical rather than a sentimental Gropius may best serve his wish, for through scholarship he has become a figure even more present than he had ever chosen to be in his adopted country. [Hélène Lipstadt]

Ise Frank Gropius, archivist of her husband's work and guiding force behind the Gropefest tradition, died June 7 at the age of 86.

Hélène Lipstadt *is a Cambridge, Mass., social historian and architectural writer.*

Not since Robert Moses: the Battery Park Esplanade

A prototypical quarter mile of the 1.2-mile Esplanade at Battery Park City (P/A, Feb. 1981, pp. 32–38; March 1983, p. 52) opened last month, just in time for summer. Drawn from familiar precedent, the Esplanade emulates Manhattan's most appealing public waterfronts—Riverside, Carl Schurz, and Brooklyn Heights. Robert Moses would be delighted.

So will be New Yorkers. Designers Cooper-Eckstut Associates together with Battery Park City Authority's Amanda Burden and landscape consultants Hanna/Olin Ltd. and Synterra, Ltd., have revived such old park favorites as hexagonal pavers, old-fashioned lamp-posts (here set at the water's edge—a beautiful touch, especially at night), park benches, and trees—all missing elements in most modern plazas.

Two parallel but quite distinct paths run along the water or beneath an allée of linden trees. It isn't possible to sit on the sea wall—curved railings prohibit such perching—but the iron rails do invite pedestrians to lean and lounge, their height carefully calculated to avoid obstructing a bench-sitter's view. Most benches face the water, but a row of backless ones allow city-lovers to sit reversed and view downtown from a perspective heretofore enjoyed exclusively by boaters.

On the whole understated, the Esplanade plan is also tantalizingly incomplete. Crucial points where the grid of Manhattan intersects the Esplanade at the river are still on the drawing board. Public access to the Esplanade remains a problem, tied to the larger dilemma of Westway, the controversial highway that cuts off Battery Park City from the island proper. Only at Liberty St., where Cesar Pelli's World Financial Center is under construction, have plans proceeded to bridge the chaos of West St. and connect city to park. [DDB]

Below: Battery Park Esplanade, New York.

BPCA, Bo Parker

UIA's Habitat: A house is not a home

The problem of housing the world's population, once a principal subject of architectural inquiries, has received far less attention of late. But the topic has lost none of its urgency. It was therefore reassuring to hear a large gathering of architects spend three days debating the issue, as did the Union Internationale des Architectes' Working Group Habitat at the AIA headquarters, Washington.

Titled "Typology and Density," the international seminar was marked by a nearly unanimous rejection of high-rise housing solutions. New York architect Laszlo Papp described such schemes as suitable only for the very rich or the very old (based upon their respective needs for security). He further suggested that modern architecture faced a choice between the automobile and the elevator.

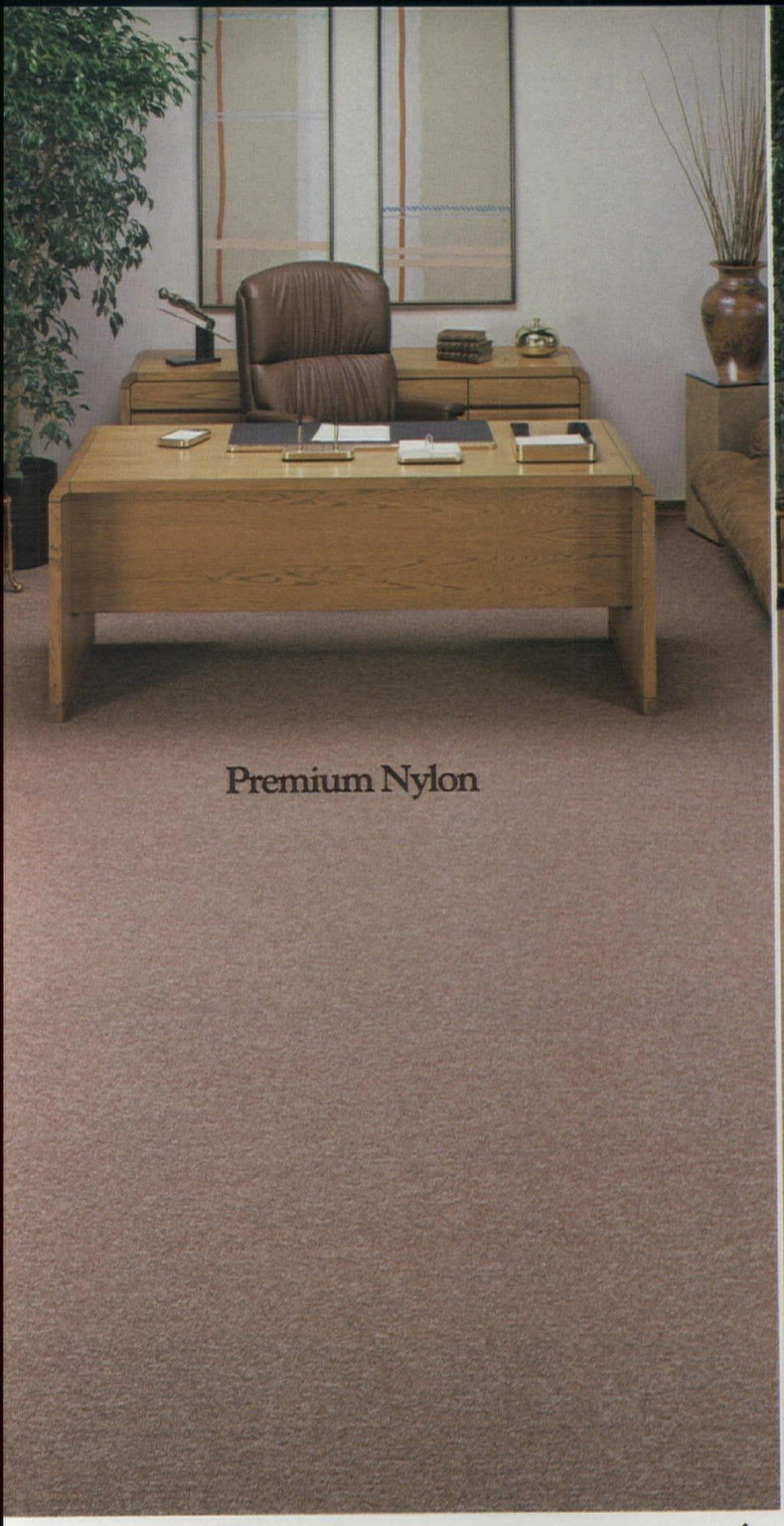
Many joined the call for low-rise, neighborhood-oriented housing that takes serious stock of ultimate users' requirements, as reflected in research. The needs of children were a recurring concern, and high-rise projects were criticized for restricting children's access to the outdoors. Several speakers alluded to evidence that the high crime rates and antisocial behavior plaguing U.S. projects are increasingly common phenomena in high-density, high-rise housing the world around, proving that such problems are not simply a function of poverty.

With references to Constantine Doxiadis and others who have given systematic thought in the past to the ideal numbers and forms for congregating people, Connecticut architect Zane Yost summarized: "The promise of cities has always been better service, better security, and better control. The reality, too often, has been corruption, crime, and no control. We can change this, and we must." [Thomas Vonier]

Sustaining solar

Sustainable communities that are self-sufficient in the production of food, shelter, and energy dominated discussions at the 1983 American Solar Energy Society conference in Minneapolis (June 1–3). Much of the conference dealt with technical issues, ranging from photovoltaics and active solar cooling to solar ponds and biomass conversion. The more philosophical sessions, however, generated the most debate, at least among the architects present: sessions on the aesthetics of solar architecture and on the design and operation of sustainable communities in both the U.S. and India were highlights. A competitive design charrette capped the three-day conference. Architectural students from the Universities of Minnesota, Wisconsin-Milwaukee, and Illinois-Chicago Circle developed plans to convert a section of Downtown St. Paul into a more sustainable community. The Minnesota team won with a three-dimensional "solar" grid laid over the existing urban grid. [TF]

[*News report continued on page 28*]



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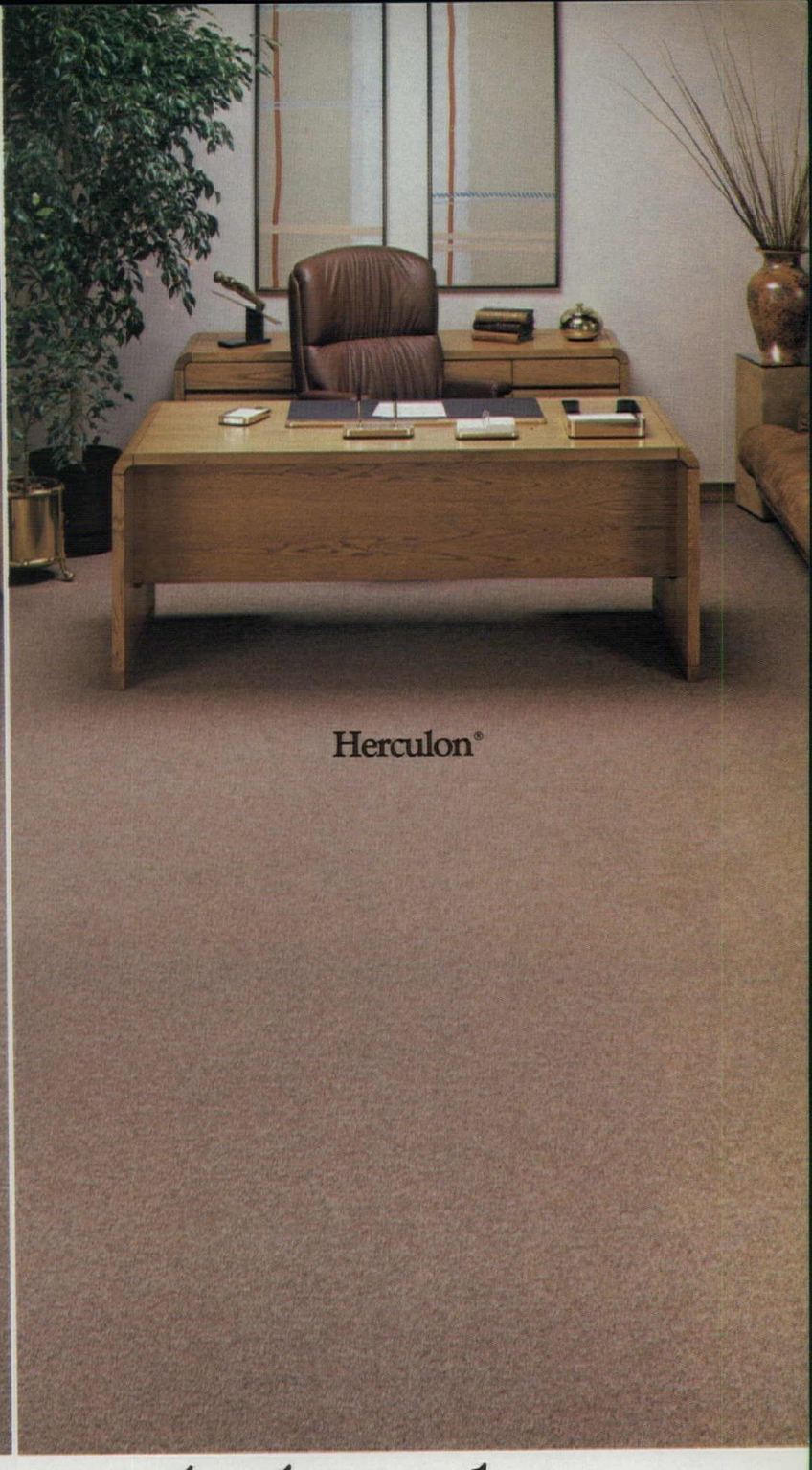

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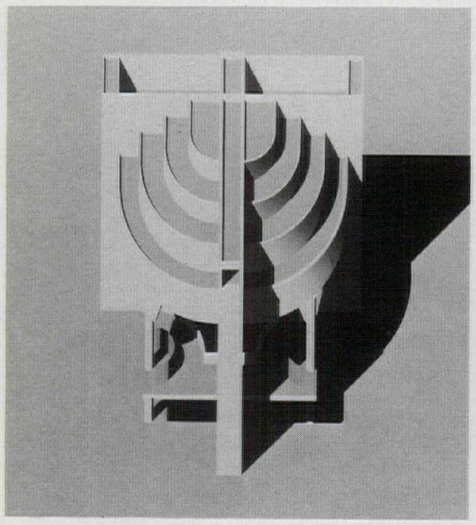
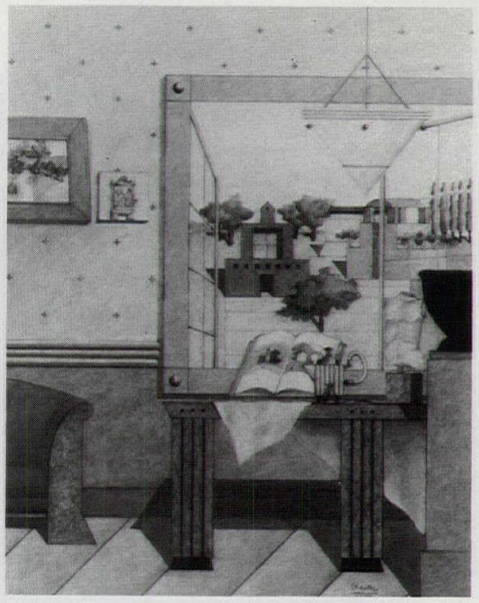




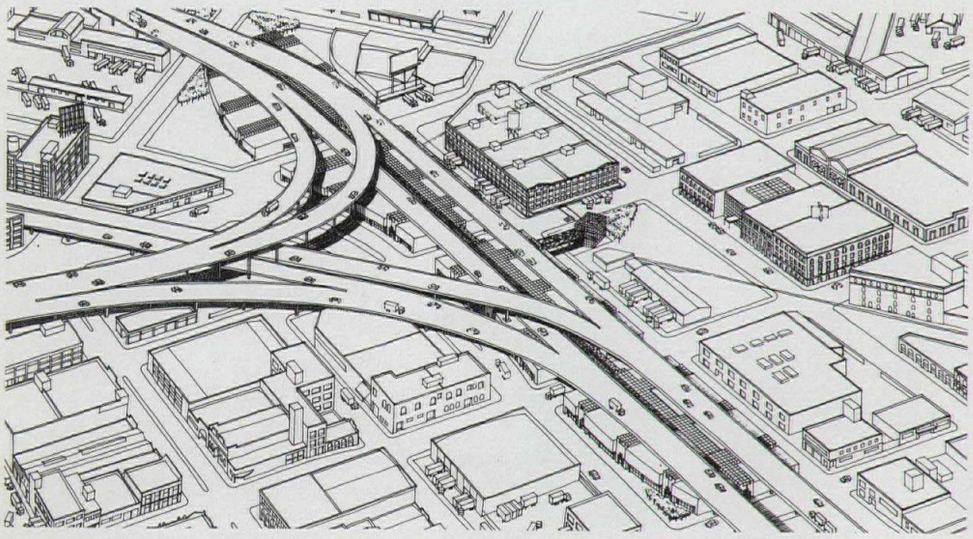
Isozaki originals

An exhibition of work by Arata Isozaki at the Phillippe Bonnafont Gallery in San Francisco (May 18–June 18) included the first showing anywhere of 17 new silk-screen prints from the Villa Series and the Reduction Series. The latter comprises prints of non-dwellings designed over the past ten years. According to Isozaki, these are "the images of buildings as they are momentarily visualized by the architect at the instant when they are first born." Also shown were three lead reliefs, aluminum photographs, and sketch-studies in pencil on tracing paper, which show successive stages of the Los Angeles Museum of Contemporary Art. [Sally Woodbridge]

Encore Graves

The latest show of work by Michael Graves at the Max Protetch Gallery in New York (May 11–June 25) topped all previous productions for elegance and artistry. Crisp drawings, etchings, models, and sketches illustrated the San Juan Capistrano Public Library, the Cincinnati Symphony Pavilion, the Vassar College art center, the Republic Bank, the Humana Building, and other work.

In a separate, smaller chamber was displayed Graves's tea set, with those of Paolo Portoghesi, Alessandro Mendini, and Aldo Rossi. The G.Q. "loving cup" and samples of Graves-designed furniture and fabric were also on display in this very complete collection. [DDB]



San Francisco: under the fast track

As architects and interested New Yorkers struggle with the environmental and economic problems of burying Manhattan's planned Westway, as developers realize the benefits of building over public transit stations, and as unused land becomes scarcer in and around our cities, it would be well to consider the example of Jacques de Brer Associates, the San Francisco firm that has proposed to use the overlooked and usually nondescript space under elevated freeways. The de Brer plan locates a four-block-long furniture design center under a highway just south of Downtown San Francisco, in an old industrial area that recently witnessed the conversion of several warehouses into designer showrooms.

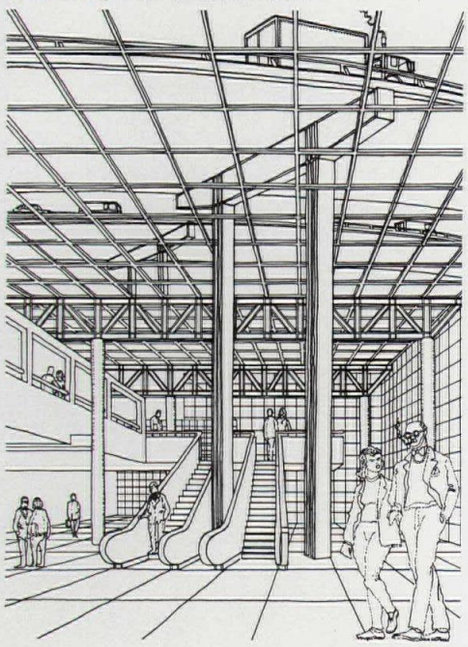
The use of roads as roofs is not a new idea. Robert Moses, for example, in developing New York's Riverside Park, slipped a parking structure and a rather grand pedestrian access to an adjacent marina under a cloverleaf highway exit, and located glazed commercial structures under the Drive. The three-dimensional nature of roadways was developed in a dynamic way by Olmsted and Vaux in New York's Central Park, where pedestrian and vehicular routes intersect and interweave with naturalistic forms.

More recent roadway developments, however, in all American cities, have not woven urban components together but rather have disrupted them, as is now the case for the elevated freeway under question in San Francisco. In fact, recognizing the dismal urban spaces and underused land in the elevated freeway right-of-way, the California Department of Transportation now makes the land underneath its freeways available on long-term lease. According to de Brer Associates, about half of the 900 parcels have been spoken for, mostly in urban areas, generating more than $3.5 million annually in state revenues. Most lessees have adapted their spaces for light manufacturing or warehousing, some actually using the freeway as roof, but the de Brer proposal is more imaginative.

Showrooms and offices covering 300,000 square feet are arranged along a skylit galleria that extends the length of the project and bridges each of the sidestreets. Major entrances connect with existing adjacent showroom facilities. The structure, designed by T.Y. Lin International, consists of a modular grid steel frame that accepts interchangeable panels of glass fiber reinforced concrete, tinted glazing in fixed and operable sash, and ventilation grilles. The freeway and its piers are kept separate from the new structure, thereby minimizing the noise and vibration problem. [SD]

[*News report continued on page 32*]

Left and below: Showplace Square, San Francisco, de Brer Associates.



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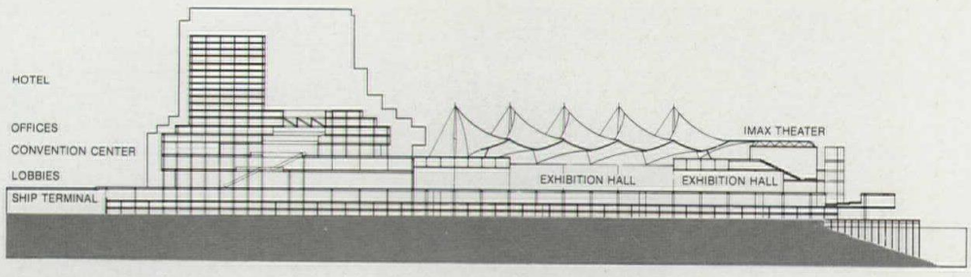
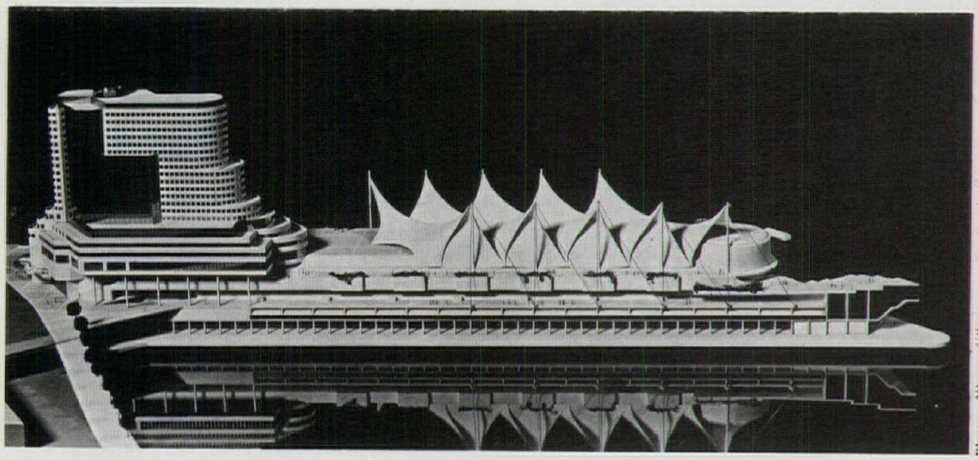
News report continued from page 28

Perspectives

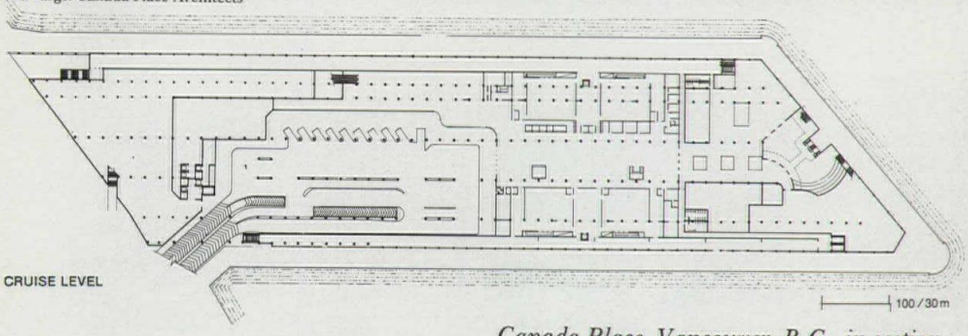
Report from Vancouver

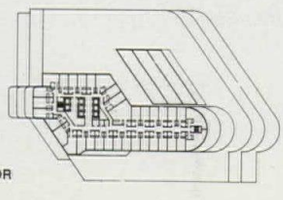




Photos: Wayne Whetstone, Challenge Group

Drawings: Canada Place Architects





Canada Place, Vancouver, B.C., in section, model, and plans.

Canada Place

Backed by mountains, surrounded by water, and endowed with temperate climate, Vancouver's natural setting has encouraged its inhabitants to overlook shortcomings in their city's urban design. The vociferous response to Canada Place, a new development in this westernmost port city, thus illustrates a new public focus on such matters.

Situated on an existing 1100-foot-long pier adjacent to the downtown core, the $137 million project incorporates hotel and trade center space, a cruise ship terminal, and the Canadian Pavilion for Expo '86 (the world transportation fair). Plans call for the subsequent conversion of the pavilion for use as Vancouver's Trade and Convention Center.

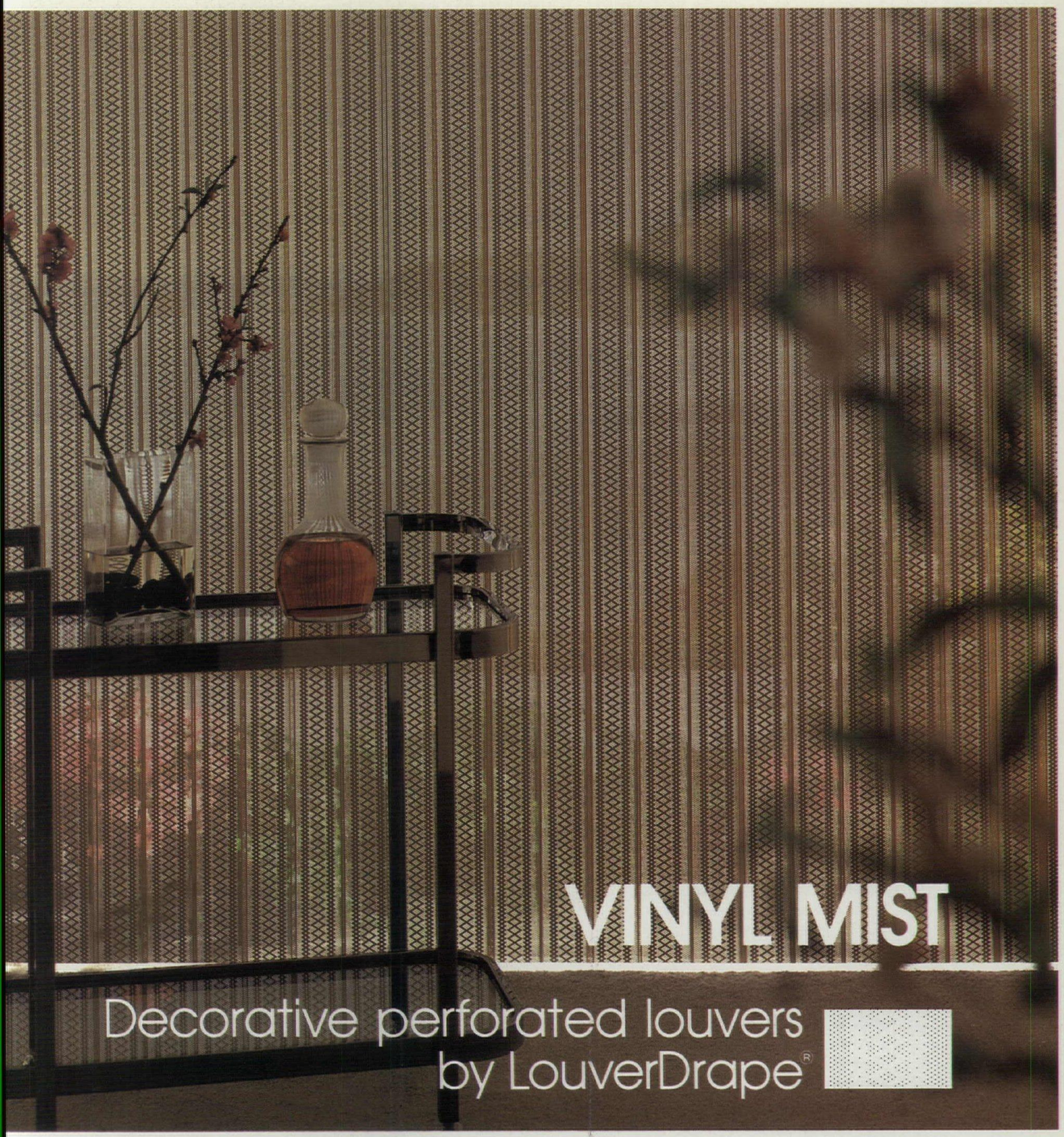
An initial scheme for the pier, sponsored by the Social Credit Party government and designed by two Vancouver firms, Downs/Archambault and Musson Cattell & Partners, was not well received by a public critical of its bulky massing and its questionable financial structure. The federal government came to the rescue in early 1982 with financing and a revised program that included the Expo Pavilion, linked to the main fairgrounds to the south by a new rapid transit system. The Zeidler/Roberts Partnership of Toronto was asked to join the design team.

The new scheme capitalizes on its waterfront site. The prow-shaped cruise ship terminal thrusts into the Burrard Inlet; above, a saillike translucent membrane covers the Canadian Pavilion, while the "superstructure" houses hotel and trade center offices. Public decks line all the water edges, their destination point at the prow an IMAX theater.

Attempts to disguise the tower's actual bulk through the mixing of shapes and façade treatments recall similar devices used in Johnson/Burgee's International Place at Fort Hill Square in Boston (P/A, March, 1983). Unfortunately, this tower's bulky base bears little relationship to the hybrid form above. The Pavilion's sails may, like the shells of the Sydney Opera House, become the new symbol of this city, but the tent fails to relate to either the tower or its base.

Vancouver citizens, however, have quelled their noisy protests. A crowd-pleasing design with public plazas and an exciting theater have them mollified. New jobs for the depressed architectural and construction businesses will ease remaining doubts.

[*Perspectives continued on page 37*]



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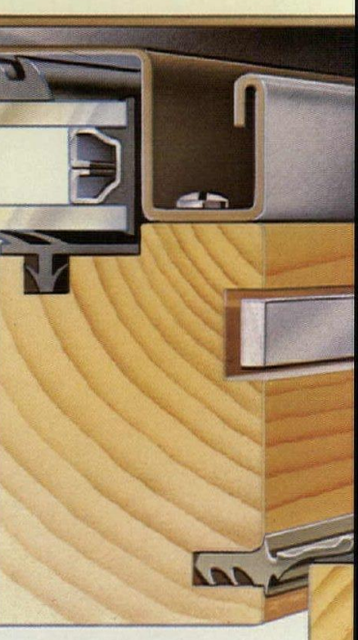

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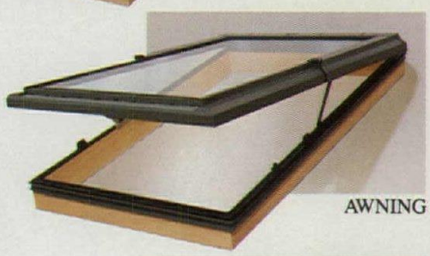
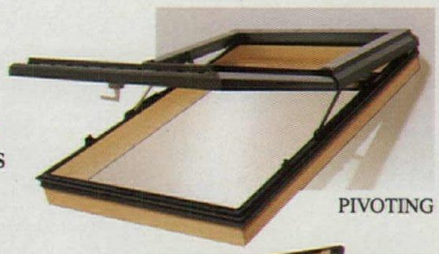


AWNING



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And see how our special step flashing [6] integrates the window with the roof itself, making it truly as weathertight as a roof.*

With Andersen, installation isn't something you work at. The Andersen roof window comes ready to install. Four brackets help you position the window in the rough opening. Fix in place, slip the step flashing beneath the flexible weatherstripping [7] and top off with shingles or tile [8]. It's a quick installation job that's easy on construction timetables.

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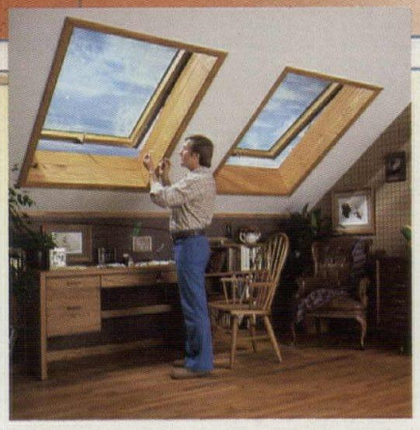
*Weathertightness claims are based upon proper installation performed by a qualified professional.



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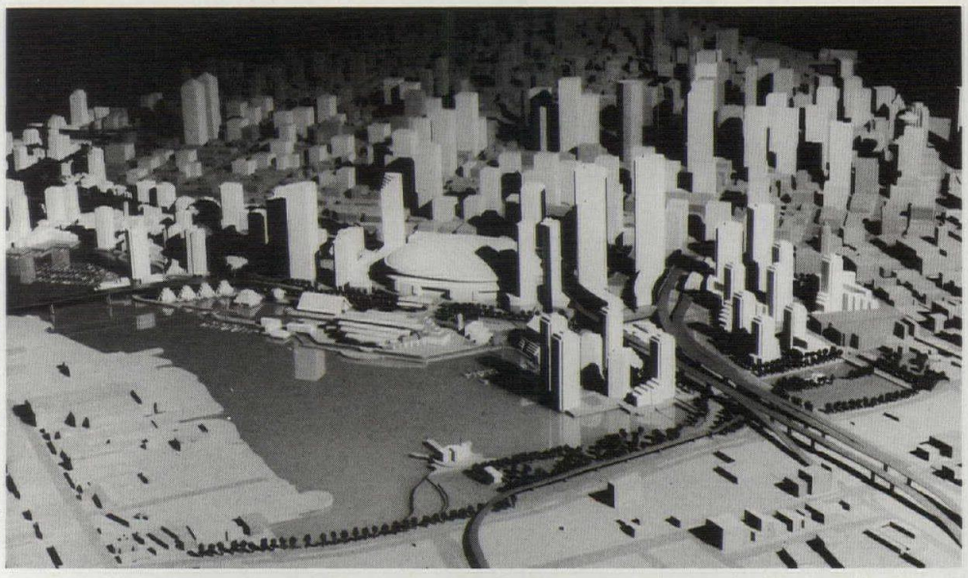
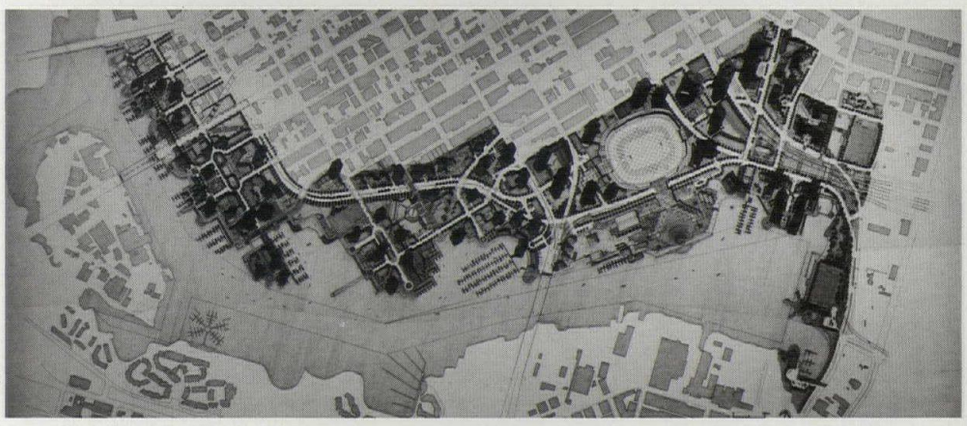
Perspectives continued from page 32



Courtesy of the Architectural Institute of B.C.



Ed Pryor

B.C. Place

The railway, the motivating force for Vancouver's existence 100 years ago, may again become a determining factor in the future of this city, this time in absentia. The Canadian Pacific Railway marshaling yards (located across the Vancouver peninsula from Canada Place) and other underutilized industrial property will become the site for the largest urban development in North America. By the time it is completed in 1993, the project will have cost $2.2 billion dollars and will consist of 11,000 housing units, 7.5 million square feet of office space, and 86 acres of public park on a site totaling 232 acres.

After two previous plans failed to win public support, the politically appointed B.C. Place Corporation, project developers, hired the firms of Arthur Erickson Architects, Vancouver, and Fisher Friedman Associates, San Francisco, for a new study. Several restrictions hobbled the designers from the outset. A six-lane roadway separating the site from the rest of the city and a new 60,000-seat domed stadium (dubbed a "marshmallow in bondage" by the local press), which opened June 19, are among the most obvious. High building density levels, a controversial subject in this relaxed and verdant city, were also predetermined for B.C. Place.

The architects have for the most part handled these restrictions admirably. New roads extend the grid of the city into the site. Height limitations ensure compatibility with existing structures where they abut; the concentration of programmatic components into point towers at the water's edge opens up vistas from the interior across public parks. The shoreline has been sculpted to produce a series of bays and peninsulas. Dramatic bridges, marked by twin towers, cross to the mainland. Even the bulbous stadium has been disguised by surrounding higher structures.

Critical observers, however, still see some rough edges. Commercial densities are so high as to suggest unhealthy competition with the downtown core ten blocks away. Compared with New York's Battery Park City, which has a generous level (70 percent) of low-to-middle-income residential units, B.C. Place offers a paltry 10 to 15 percent.

Construction will commence next year for Expo '86, the world transportation fair that is to be located temporarily on the site. Revisions to the program and design of B.C. Place can be expected in the interim, especially if a change of government occurs.
[Donald Porter]

Donald Porter *is an architect in New York, working with David Kenneth Specter & Associates, and is an associate editor of the Vancouver-based* Architects Forum.

[*News report continued on page 46*]

A "living" building that adapts to its environment.

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From night to day, season to season, the dynamic skin of the Hooker Chemical Center is in a constant state of change. The exterior consists of two glass walls about four feet apart, with louvers between these walls that open and close, adjusting automatically to outside light. The result is an extraordinary energy consumption less than half that of a conventional structure. This energy-efficient building is served by four Dover Traction Elevators. For more information on Dover Elevators for all types of buildings, write Dover Corporation, Elevator Division, P.O. Box 2177, Memphis, Tennessee 38101.

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Pencil points continued from page 21

OCF energy conservation competition
Owens-Corning Fiberglas Corp. has appointed the following jury members for its 12th Annual Energy Conservation Awards: Vivian E. Loftness (VLH Associates, Pittsburgh), chairman; Larry W. Bickle (The Bickle Group, Houston); Helmut Jahn (Murphy/Jahn, Chicago); George M. Notter, Jr. (Anderson Notter Finegold, Boston); William Turnbull, Jr. (MLTW/Turnbull Associates, San Francisco); August J. Vercruyssen (Daniel, Mann, Johnson & Mendenhall, Los Angeles); and Barry L. Wasserman (former California State Architect, Sacramento).
¶ This year's competition adds two new categories—residential and commercial retrofit—to four existing areas of commercial, governmental, industrial, and institutional design.
¶ Entries are due August 26; write Fiberglas, Fiberglas Tower, T 12, Toledo, Ohio 43659 or call (419) 248-8822.

Art am Main
Hans Hollein has won a competition to design a museum of contemporary art on Frankfurt's museum "bank." SITE received an honorable mention.

Egyptologists' paradise
With the opening of 13 new galleries designed by Kevin Roche/John Dinkeloo & Associates and donated by Lila Acheson Wallace, the third and final phase of the Metropolitan Museum of Art's Egyptian art installation is complete.
¶ Every item in what is reputed to be the largest collection of Egyptian art in the world outside Cairo is now on display and accessible to the public. Some items are more accessible than others, however; the study rooms in particular suffer from glare on glass cases, and light filtered through translucent shelves from sources top and bottom leaves the middle shelves obscurely shadowed.
¶ But larger scale statuary is set off well in space, and a corner gallery's effective convocation of four colossal lion-headed Sekhmets and two Amenhoteps speaks of the more mystical and imposing settings this art once adorned.

National Aquarium competition
The team of Cho, Wilks & Burns (Baltimore) and Jones & Jones (Seattle) may eventually complete an 89,000-square-foot $24 million annex for the National Aquarium in Baltimore.
¶ The team placed first in a competition for "ideas" that was limited, with the exception of Cambridge 7, the Boston firm responsible for the initial aquarium building, to local architects.
¶ Tied for second place were James R. Grieves Associates with Whitman Requardt & Associates, and RTKL Associates. Tied for fourth were CSD, Inc., with The Cooper-Lecky Partnership and MLS Associates with The Delta Group.
¶ The aquarium itself has made no commitment to proceed with the annex plan, but held the competition to support its bid
[*Pencil points continued on page 42*]

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Pencil points continued from page 39

for space on a pier just east of the existing complex. The city has not yet decided how that pier, one of few remaining open sites on the Inner Harbor, is to be used.

Also in B'more . . .
A joint venture of Cho, Wilks & Burns (Baltimore) and Cooper Eckstut Associates (New York) has been chosen by the city of Baltimore to analyze land-use strategies for Inner Harbor East, an area stretching from the Inner Harbor to Fells Point.
¶ Old warehouses, lumberyards, and railroad tracks currently fill the area, originally zoned for industrial use and rezoned for residential and commercial use.
¶ Other firms interviewed included Wallace, Roberts & Todd (Philadelphia) and RTKL Associates (Baltimore), two firms long involved in the city's harbor planning; The Jerde Partnership (L.A.), the firm responsible for the renovation of the Pier 4 power plant as a Six Flags entertainment center; Welton Becket (L.A.); Smith & Williams (L.A.); and SOM (D.C.).

Goff goes through
Bruce Goff's exotic museum for the Price collection of Japanese art will be built.
¶ Construction of the $6 million work, one of Goff's last, was made a condition attached to the gift of over 300 Edo-period scroll paintings. Donors Mr. & Mrs. Joe D. Price also gave the Los Angeles County Museum of Art some $5 million towards construction costs.
¶ Discussion with the Metropolitan Museum of Art apparently failed when the Met could not promise to build Goff's building, and the collection went west.

Imas on view
The work of Argentine architect Rodolfo Imas will be on view at the Contemporary Arts Center in Cincinnati, Ohio, from July 8 to Aug. 20. Imas is currently a visiting associate professor at the U. of C.

Tange chair at GSD
Harvard University has received $700,000 from a group of Japanese donors to establish the Kenzo Tange Visiting Chair in Architecture and Urban Design at the Graduate School of Design.

Saluting private enterprise
The first annual Architectural League Award was presented in New York on May 27 to Philip Morris, Inc., for the company's contributions to art and architecture.

Portfolios in architecture
Visitors to the SoHo Storefront for art and architecture last month could paw through the portfolios of 16 young architects. The show, organized by Kyong D. Park, included hypothetical and real projects by American and Belgian architects, some only recently graduated.

Moore Automated Daylighting. A bright idea whose time has come.

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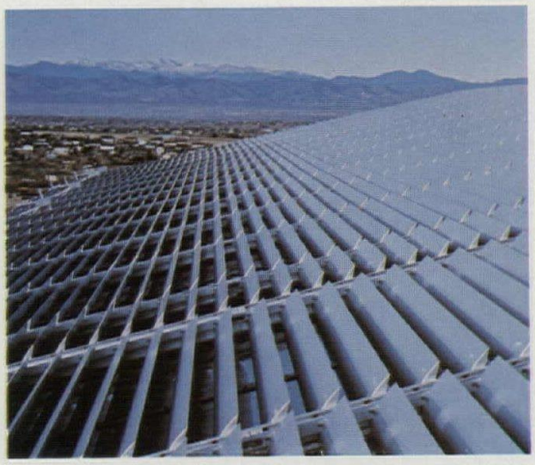

Moore Automated Daylighting—a system of exterior louvers that automatically track the sun and monitor the light level in the space. It even closes on cold nights to provide a thermal blanket.

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For another view of the Moore Daylighting System see the Hooker Office Building, April issue Progressive Architecture and the April 11 issue of U.S. News & World Report.

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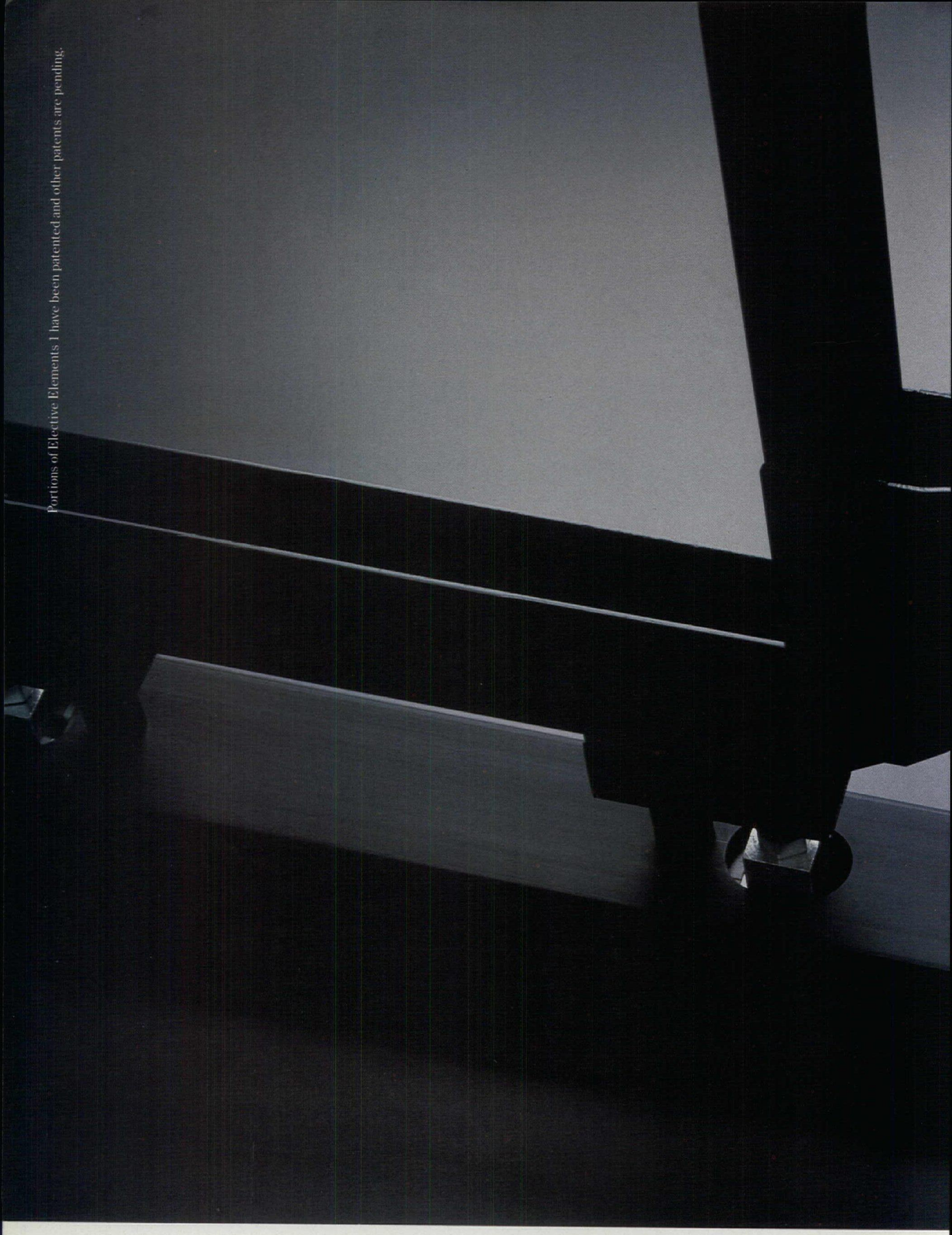

Portions of Elective Elements 1 have been patented and other patents are pending.

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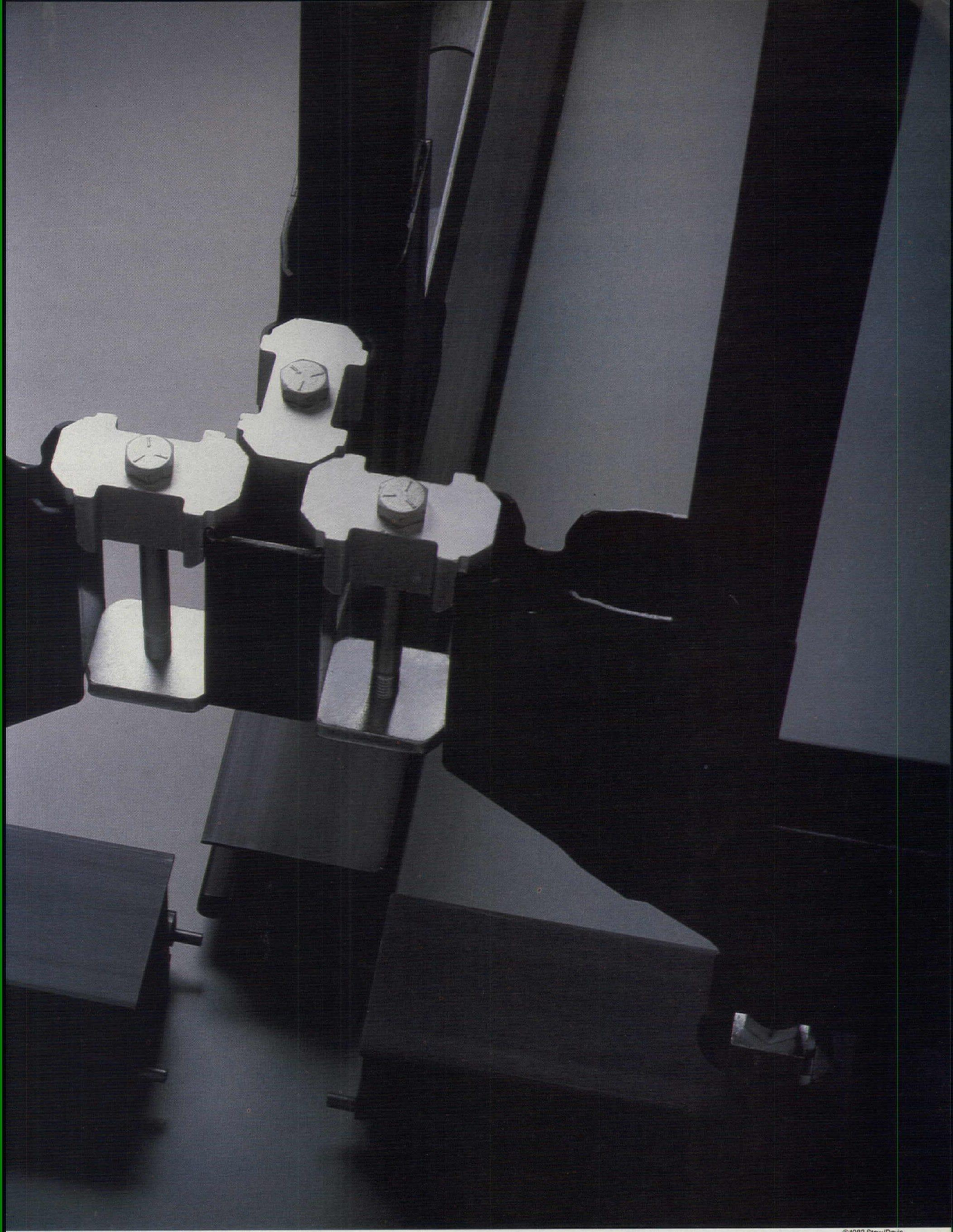

STOW|DAVIS
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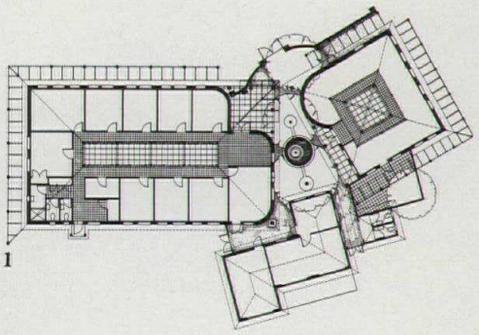
News report continued from page 37

In progress



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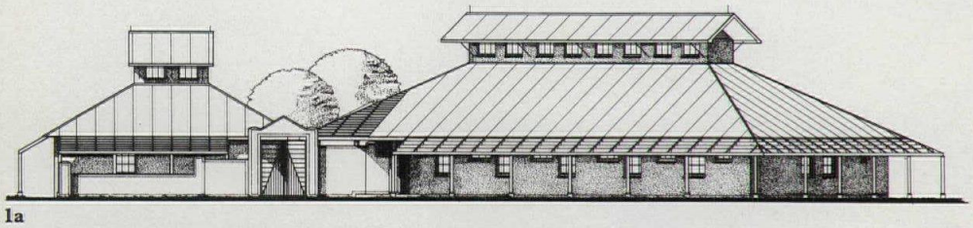

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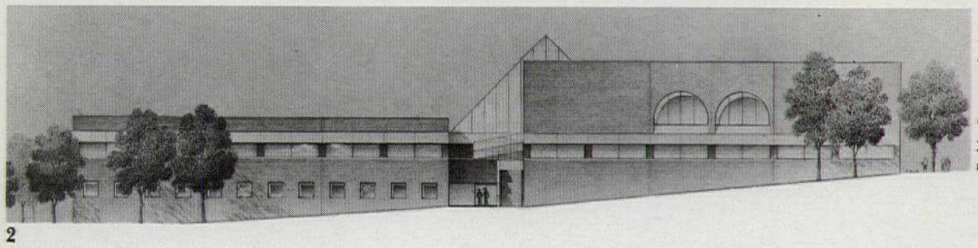

2

Robin Sen, rendering

1, 1a Botswana Technology Center, Gaberones, Botswana. *Architects: Norris, Temple & Associates, New York.* The BTC was formed to bring low-cost, simple building technologies to the rural villages of this South-Central African country. Three structures form a tight, semiprivate space in the form of a triangle symbolizing the Pula—the traditional sign of rain and abundance. At its center is a pool for collecting rain runoff. The buildings demonstrate simple, cost-effective energy systems appropriate for this region, now so completely dependent on energy supplied by the Republic of South Africa. During the summer, cool nighttime air is drawn through the buildings via windows and roof monitors, which are also daytime light sources.

2 Schine Student Center, Syracuse University, Ithaca, N.Y. *Architect: Edward Larrabee Barnes Associates.* Organized around an existing bookstore, this scheme articulates its programmatic components—auditorium, redesigned bookstore, student center, cafeteria, and offices for student services—as four separate buildings. These are arranged in pinwheel formation about a central court capped by a glass pyramid. "Streets" between the buildings, some covered and others open, connect to the central square. The Student Center is sited at the bottom of the Syracuse University campus adjacent to the library. Fund-raising to date has not provided for the auditorium's construction, but the scheme as designed depends upon its completion. Construction on the $13.5 million complex is to begin in spring of 1984.
[*News report continued on page 48*]

For the William Morris Plaza in Beverly Hills, California, the famed theatrical talent agency naturally wanted star quality in its own architecture.

The perfect expression of prestige and elegance – a "jewel box" effect – was achieved with broad expanses of LOF Vari-Tran® 4-108 bronze-with-silver coated glass.

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For the complete Vari-Tran story, write Dan Carnicom, Libbey-Owens-Ford Company, 811 Madison Avenue, P.O. Box 799, Toledo, OH 43695.

Building: William Morris Plaza, Beverly Hills, California
Owner: William Morris Plaza Inc./Subsidiary of William Morris Agency
Architect: Maxwell Starkman AIA Associates, Beverly Hills
General Contractor: Simpson Division, Dillingham Construction, Los Angeles
Glass: Vari-Tran 4-108 Tuf-flex® FT

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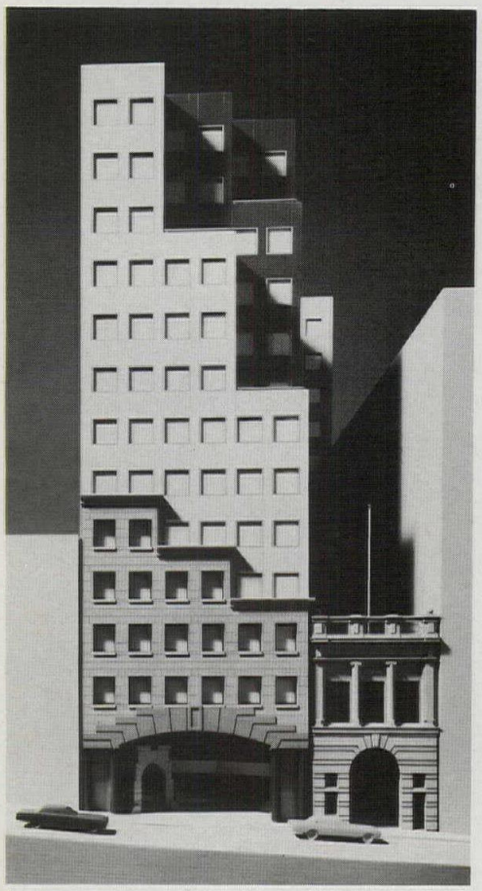
News report continued from page 46



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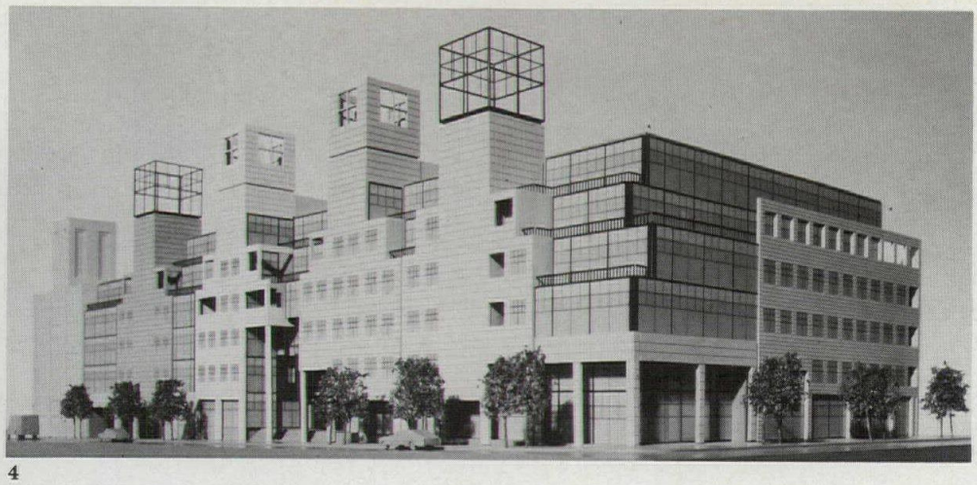

4

3 Firehouse #2, San Francisco, Calif. *Architects: Tai Associates, San Francisco.* Two projects by Tai Associates/Architects, scheduled to start construction this year, exemplify a range of small-to-medium-sized developments, many of which are rehabilitations, now underway in the San Francisco area.

The first, located on Bush St. near the shopping and financial districts, integrates a new 14-story office tower of 88,450 square feet with an adjacent two-story former fire station. Firehouse #2, 1908, a small gem of civic architecture from the City Beautiful era, is a designated landmark; it will be renovated and its development rights transferred to the adjacent tower site. While upper floors are set back from the street and stepped at the northeast corner, the tower's street-level façade is flush with those of its neighbors, and its recessed entry features a freestanding rusticated arch. Above, integrally colored fiber-cement panels coat the tower. [SW]

4 600 Harrison St., San Francisco, Calif. *Architects: Tai Associates, San Francisco.* A second project, one block from the site of Yerba Buena Center, encloses a four-story atrium within a six-story perimeter that incorporates the 1936 Superior Coffee Building at one end of the block. The principal façade has been divided into four parts by tower elements, designed to reduce the project's overall scale and match the older building. Thirties-style materials—stucco and ceramic tiles in various colors—and window treatment give additional variety to the long elevation. A mid-block entrance leads to the interior court. [SW]

[*News report continued on page 52*]

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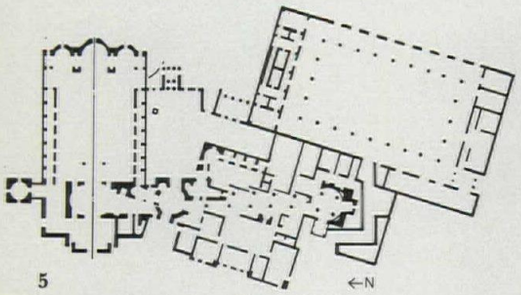
News report continued from page 48



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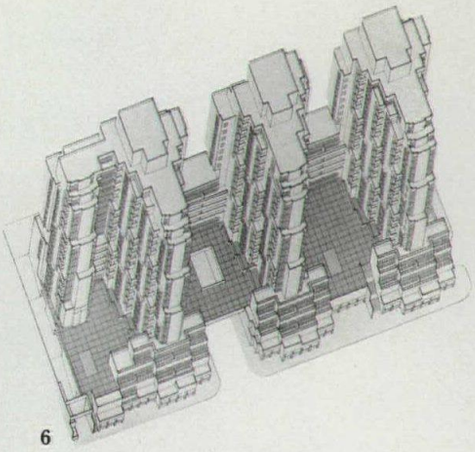

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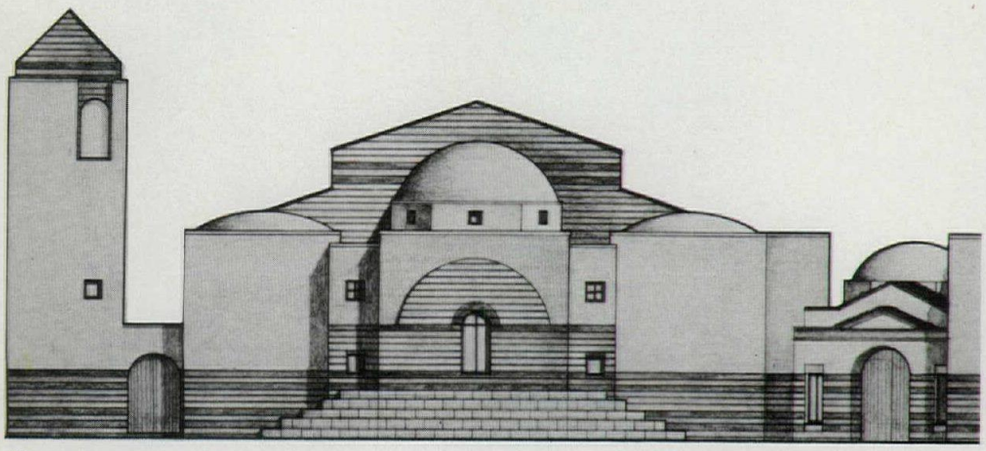
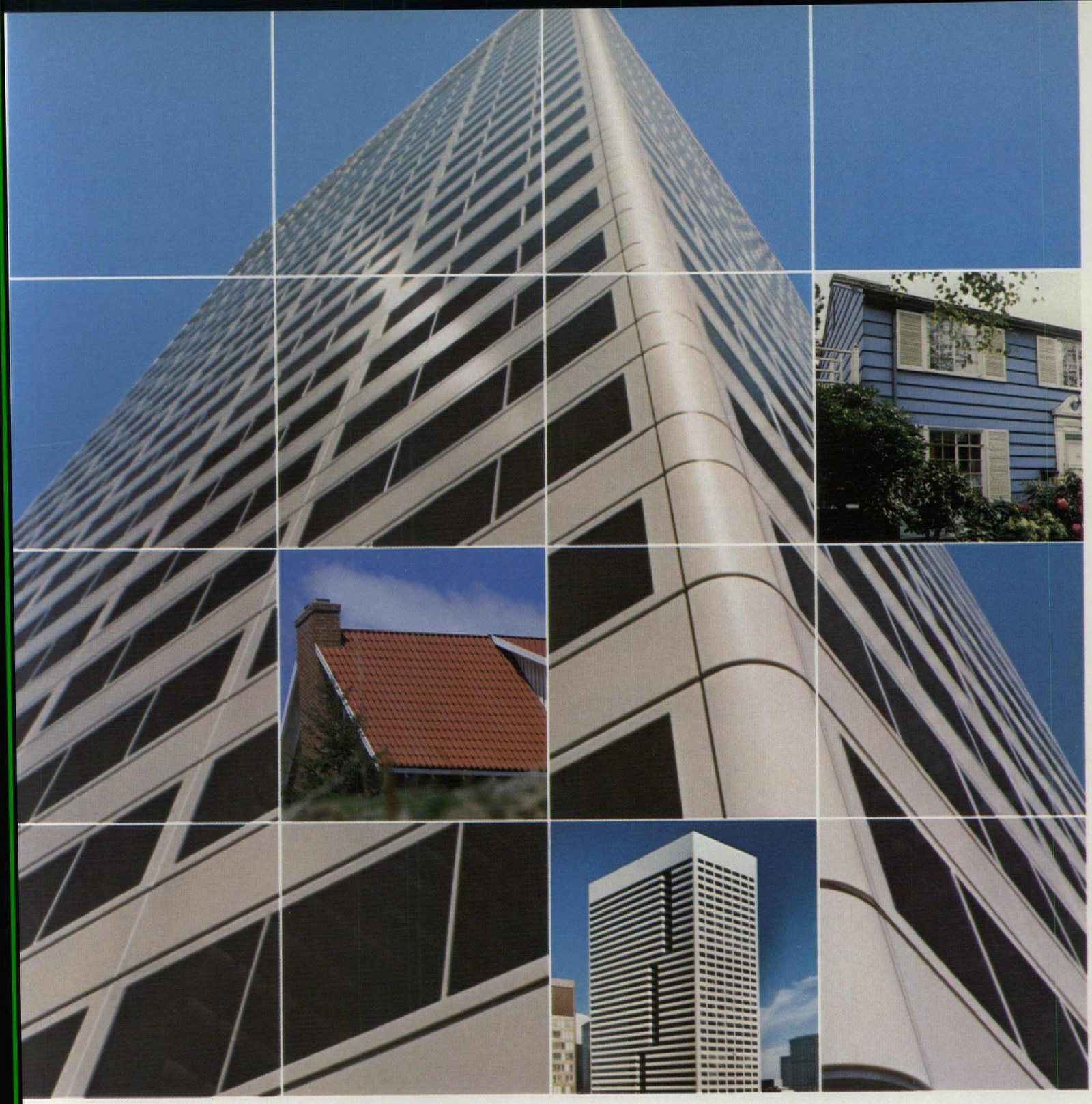


5a

5, 5a S.S. Constantine and Helen Greek Orthodox Church, Annapolis, Md. *Architects: Dewberry & Davis, Fairfax, Va.* The architects have employed Greek site planning and Byzantine architectural detailing to create a Mediterranean town in miniature, turned inward to shut out its suburban surroundings. Set on the crest of a hill, the church sanctuary dominates its "town," with education and administrative buildings arranged along an internal street that leads to a great hall (gymnasium). Small domed pavilions act as propylea, or elements of passage, connecting the separate parts of the complex. The exterior materials are split-faced block and stucco. Interior finishes are plaster, with stone or carpet floor coverings.

6 Grand Avenue Condominiums, Los Angeles. *Architects: Kamnitzer & Cotton, Abraham Shapiro & Associates, Los Angeles.* Located across the street from the planned Los Angeles Museum of Contemporary Art, this 518-unit, glass and concrete complex attempts to evoke the Los Angeles "Zigzag Moderne" style of the 1920s and early 1930s. On Grand Avenue, the flat, formal façade is set back 60 feet to form a street park. Shops located along the street level may soften the impact of an otherwise imposing, unarticulated wall. On the Hope Street side, the building splits into three wings, whose jagged plans greatly increase the number of corner units per floor.

[*News report continued on page 54*]



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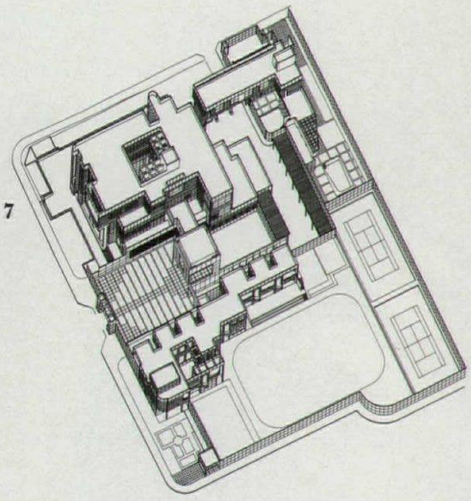
News report continued from page 52

7 United States Embassy, Damascus, Syria. *Architects: Gatje, Papachristou & Smith, New York.* Despite the current tensions in the Middle East, the State Department is proceeding with a new embassy. The scheme will replace the present, fortresslike U.S. mission in Damascus with a secure, yet open compound of three separate buildings. The four-story Chancery building centers on a small courtyard; the adjacent Marine guard quarters is a more modest two-story building. The Damascus Community School building faces playing fields, which are also enclosed within the compound's continuous wall. The structural system will be a concrete frame and one-way glass with masonry infill walls and partitions. All exterior walls will be finished in stucco modulated with a pattern of scored grooves.



7

Calendar

Exhibits

Through July 30. Travel Sketches by Architects II, and 19th Century Egyptian Photographs. Philippe Bonnafont Gallery, San Francisco.

Through July 30. Great Drawings from the Royal Institute of British Architects. The Drawing Center, 137 Greene St., New York.

Through Aug. 14. New Chicago Architecture: Beyond the International Style. Art Institute of Chicago.

Through Aug. 14. Alfred Stieglitz. Metropolitan Museum of Art, New York.

Through Aug. 20. Transformations: Developments of a Grid, Architectural Projects by Rodolfo Imas. The Contemporary Arts Center, Cincinnati. Also, **through Aug. 20,** The End of the Road: Vanishing Highway Architecture in America.

Through Aug. 28. The Esmark Collection of Currier & Ives, New York Historical Society, 170 Central Park West, New York.

Through Sept. 4. Urban Documents: 20th Century American Prints. Cooper-Hewitt Museum, New York. Also, **July 26–Oct. 16,** Photography and Architecture: 1839–1939; **Aug. 2–Oct. 23,** A Penny Saved: Architecture in Cast Iron Toy Banks.

Through Sept. 4. Paris-Rome-Athens: Travels in Greece by French Architects in the 19th and 20th Centuries. Museum of Fine Arts, Houston.

July 10–Aug. 21. Precursors of Post-Modernism: Milan 1920–30s. Walker Art Center, Minneapolis. Also: **July 10–Aug. 21,** Scott Burton Chairs.

July 14–Sept. 27. Mondrian: New York Studio Compositions. Museum of Modern Art, New York.

July 20–Sept. 11. The Frame in America, 1700–1900: A Survey of Styles and Fabrication Techniques. The Octagon, Washington, D.C. Also, **Aug. 13–Sept. 11,** Black American Landmarks: Interpreters of History. AIA Building, Washington, D.C.

Competitions

July 31. Entry deadline, 1983 Historic Preservation Photography Contest. Contact Photography Competition, Historic Preservation Magazine, 1785 Massachusetts Ave., NW, Washington, D.C. 20036.

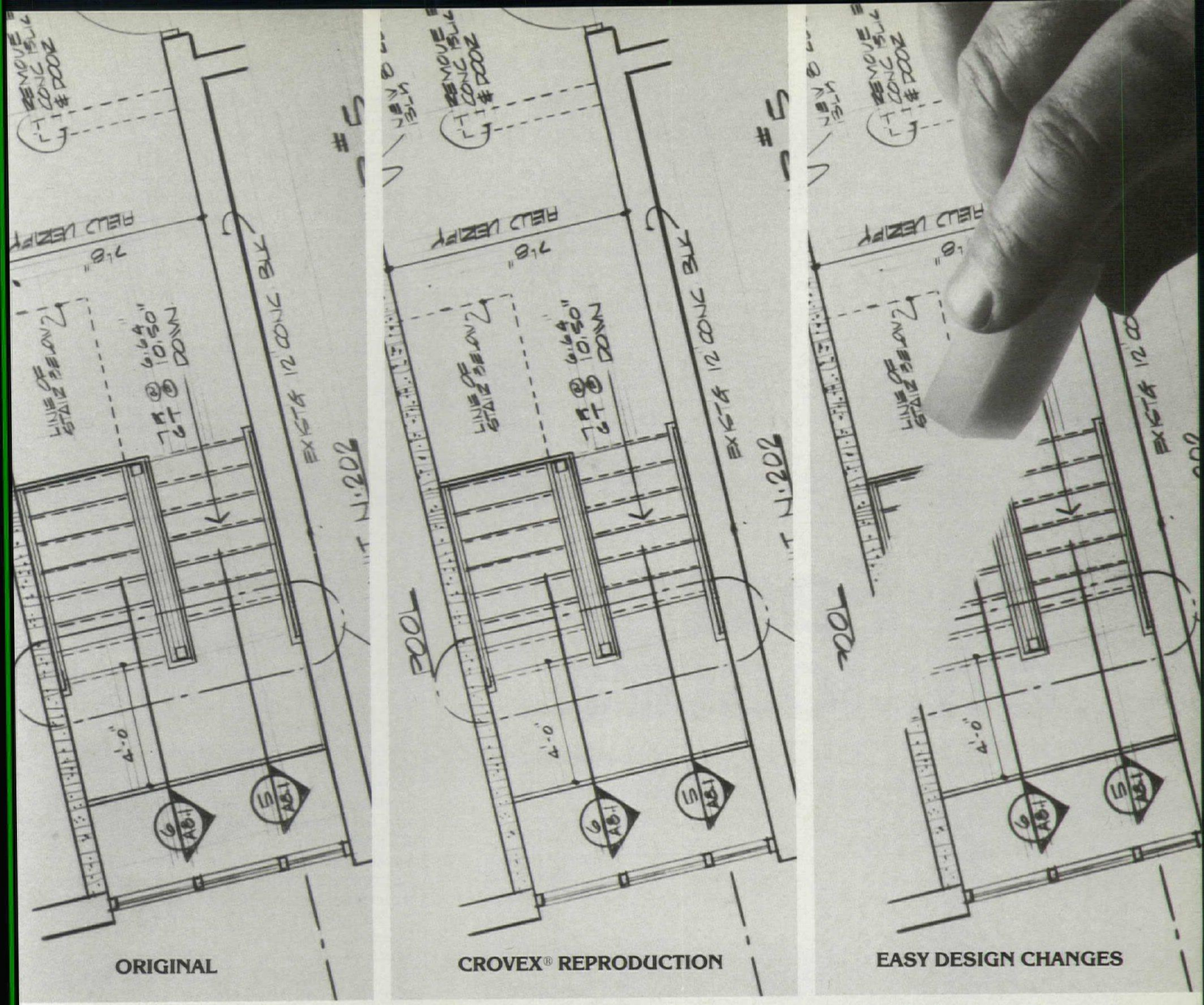
Aug. 12. Entry deadline, First Annual IALD Lighting Awards Program. Contact Stephen W. Lees, Jules G. Horton Lighting Design, Inc., 200 Park Ave. So., Suite 1401, New York, N.Y. 10003 (212) 674-5580.

Aug. 26. Entry deadline, OCF 12th Annual Energy Conservation competition. Contact Owens-Corning Fiberglas, Fiberglas Tower, T 12, Toledo, Ohio 43659.

Aug. 31. Postmark deadline, 31st P/A Awards. See page 15 for information and entry form.

Sept. 1. Entry deadline, GE Precise Lighting Design Competition (for finished projects). Contact General Elec-

[*News report continued on page 56*]



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News report continued from page 54

tric Co., Specialty Lamp Dept., Nela Park #3372, Cleveland, Ohio 44112.
Sept. 1–30. Entry deadline period, Shinkenchiku Residential Design Competition. Contact Shinkenchiku-sha Co., Ltd., 2-31-2 Yushima, Bunkyo Ward, Tokyo 113, Japan.
Sept. 6. Entry deadline, Industrial Design Excellence Awards (IDEA). Contact Kristina Goodrich, IDSA (703) 556-0919.
Sept. 6. Entry deadline, Industrial Designers Society of America international competition for design of IDSA award. Contact IDSA, 6802 Poplar Pl., Suite 303, McLean, Va. 22101.
Nov. 1. Entry deadline, Concrete Reinforcing Steel Institute's Design Awards VII Program. Contact CRSI, 933 N. Plum Grove Rd., Schaumburg, Ill. 60195 (312) 490-1700.
Nov. 30. Entry deadline, Fifth Arango International Design Competition: Glass That Works. Contact Intercon Arts, Inc., 4225 Lennox Dr., Miami, Fla. 33133 (305) 666-7307.
Dec. 1. Entry deadline, 2nd International Colour Design Prize 1983/4. Contact Farb-Design-International e.V., Danneckerstrasse, 52 (Architektenkammer), D-7000 Stuttgart 1, West Germany.

Conferences, seminars, workshops
July 21–24. Color Drawing (for designers and architects), Florida State Conference Center, Tallahassee, Fla. Contact Jane Grosslight, Center for Professional Development and Public Service, Florida State University, Tallahassee, Fla. 32306 (904) 644-3801.
July 25–29. Realities of Historic Preservation, MIT. Contact Sharon Torhon, MIT Laboratory of Architecture and Planning, Room 4-209, MIT, Cambridge, Mass. 02139 (617) 253-1350.
July 28–Aug. 1. Revolution/Evolution, ASID National Conference and International Exposition of Designer Sources, Boston.
July 31–Aug. 4. Computer Graphics Conference, Cambridge, Mass. Contact Computer Graphics Conference, Office of Special Programs, 48 Quincy St., Cambridge, Mass. 02138 (617) 495-9345.
Aug. 1–10. Energy Efficient Buildings with Earth Shelter Protection, an International Conference, Sydney, Australia. Contact Australia 83, Architectural Extension, Oklahoma State University, Stillwater, Okla. 74078.
Aug. 5–11. International Society of City and Regional Planners annual congress, Amsterdam, Netherlands. Contact ISoCaRP, Van Speijkstraat, 29, 2518 EV The Hague, the Netherlands.
Aug. 7–12. Illuminating Engineering Society Annual Conference, Los Angeles. Contact IES, 345 E. 47th St., New York, N.Y. 10017 (212) 705-7915.
Aug. 8–10. Window Energy Show, Las Vegas. Contact Window Energy Show, 350 Endicott Bldg., St. Paul, Minn. 55101 (612) 222-2508.
Aug. 15–18. Second International Federation of Interior Designers forum, Winnipeg, Manitoba, Canada. Contact Department of Interior Design, University of Manitoba, Winnipeg, Manitoba R3T 2N2 Canada.
Sept. 5–10. 8th National Passive Solar Conference, Santa Fe, N.M. Contact American Solar Energy Society, 205B McDowell Hall, University of Delaware, Newark, Del. 19711.
Sept. 14–16. Design Build*Automation '83, Los Angeles. Contact (415) 563-6605 or (714) 979-6316.
Sept. 18–23. National Association of Women in Construction 28th annual convention, Kansas City. Contact Betty Kornegay, NAWIC, P.O. Box 181068, Fort Worth, Texas 76118 (817) 284-7961.
Sept. 22–25. Toronto: Yesterday, Today, and Tomorrow. Royal York Hotel, Toronto. Contact Conference Center Coordinator, 21 Sackville St., Toronto, Ont. M5A 3E1, Canada (416) 864-9753.
Sept. 25–Oct. 1. Chief Executive Officer Conference, Small size firms, Martha's Vineyard, Mass. Contact PSMJ, 126 Harvard St., Brookline, Mass. 02146 (617) 731-1912.
Oct. 17. ASTM Symposium on Building Preservation and Rehabilitation, Bal Harbour, Fla. Contact Kenneth C. Pearson, ASTM Standards Development Div., 1916 Race St., Philadelphia, Pa. 19103 (215) 299-5520.
Oct. 17–18. AIA Committee on Design annual design conference, Houston. Contact AIA, 1735 New York Ave., N.W., Washington, D.C. 20006 (202) 626-7300.

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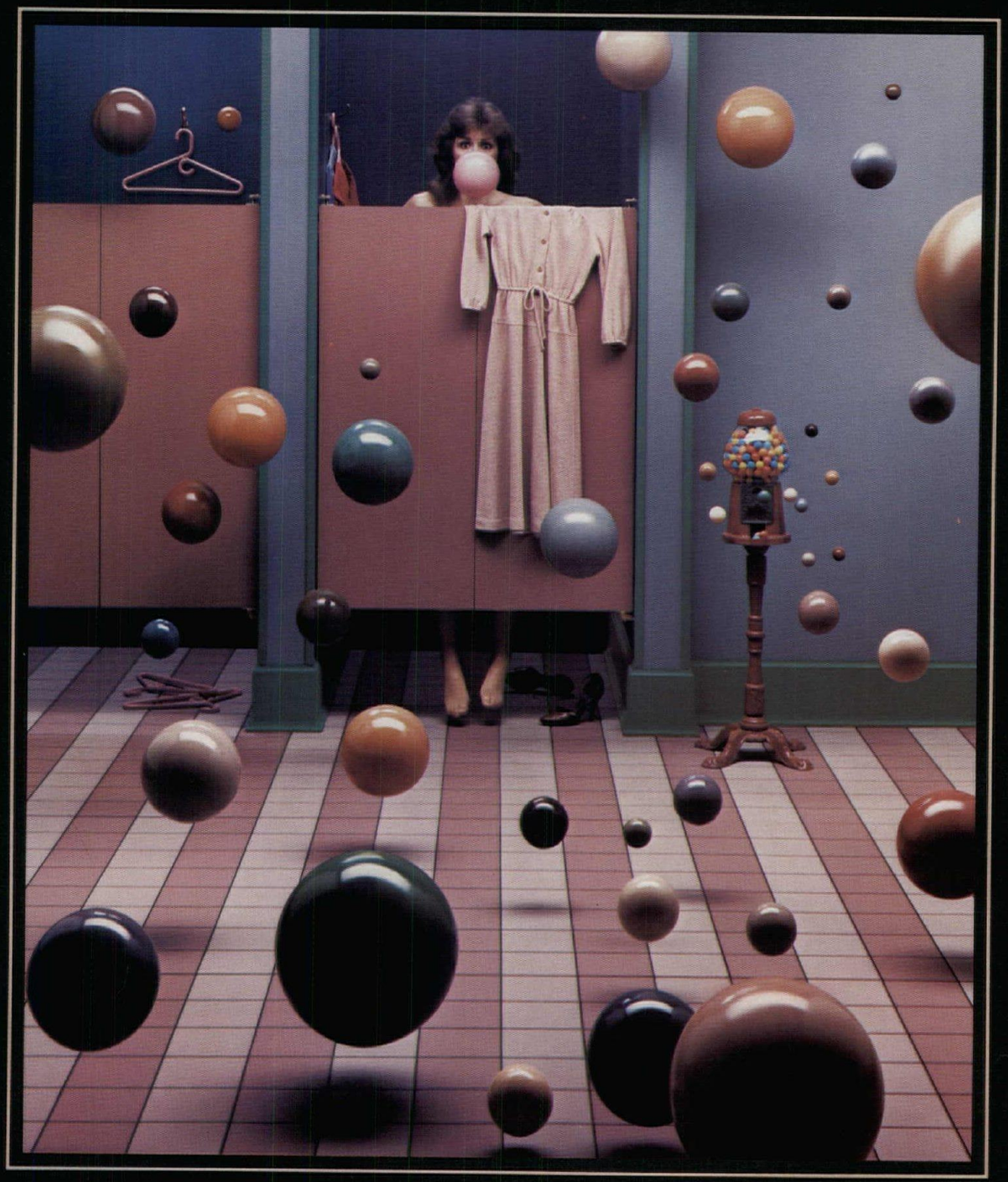

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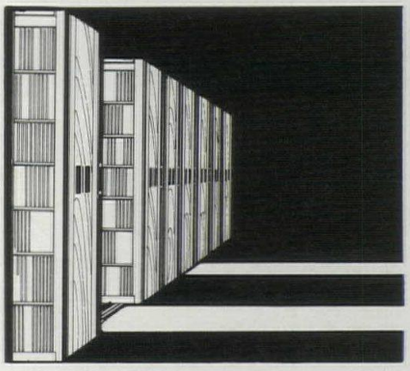

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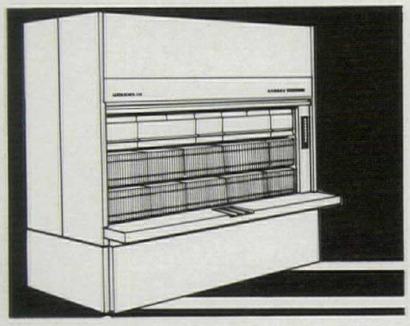

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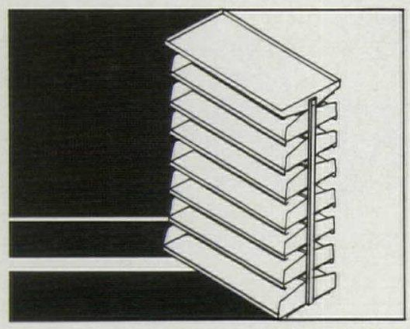

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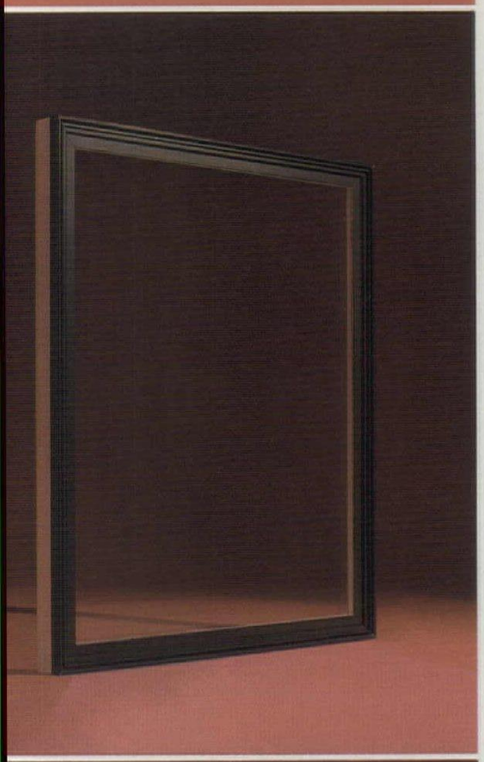

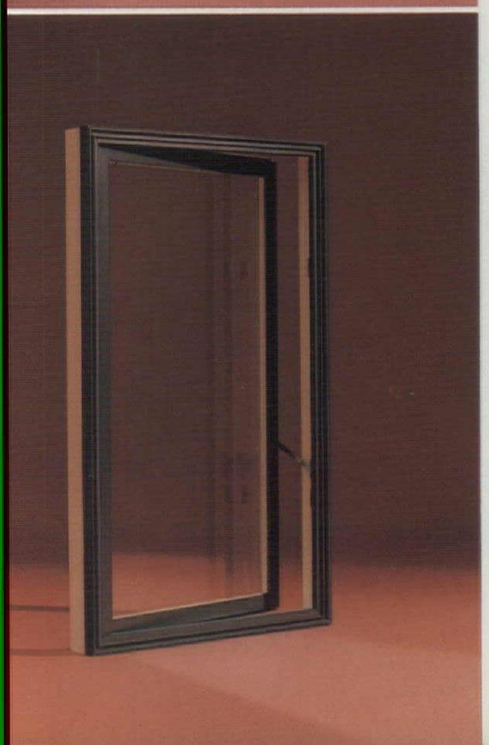

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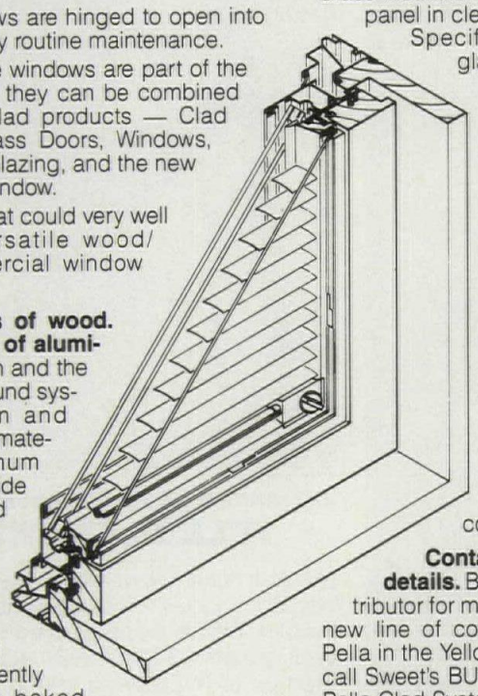

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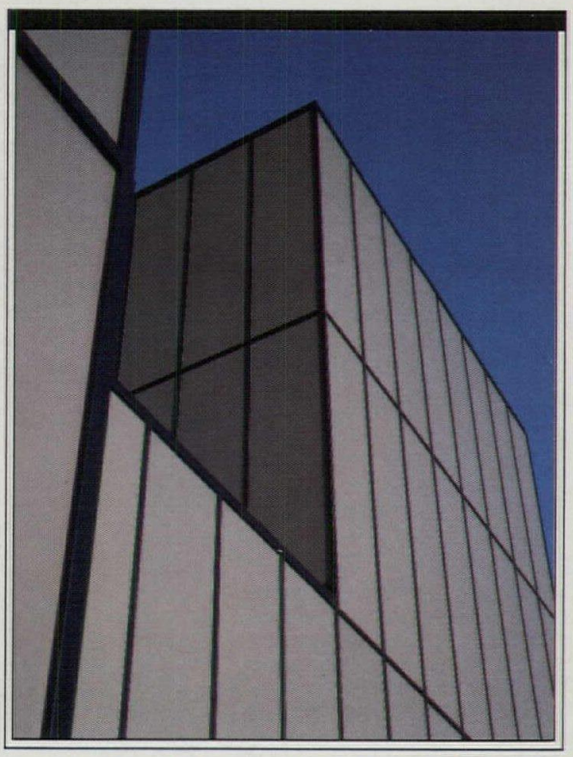

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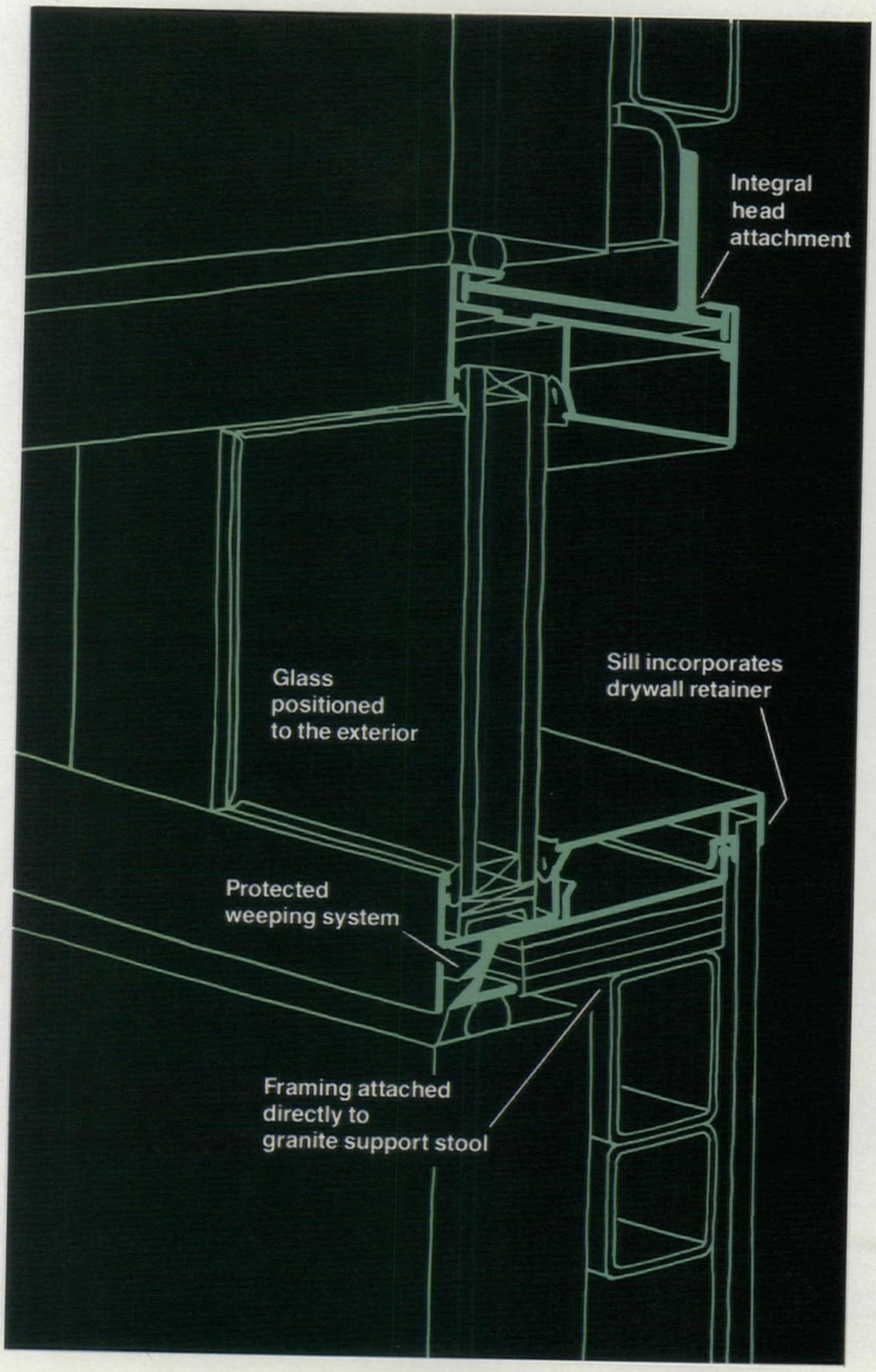

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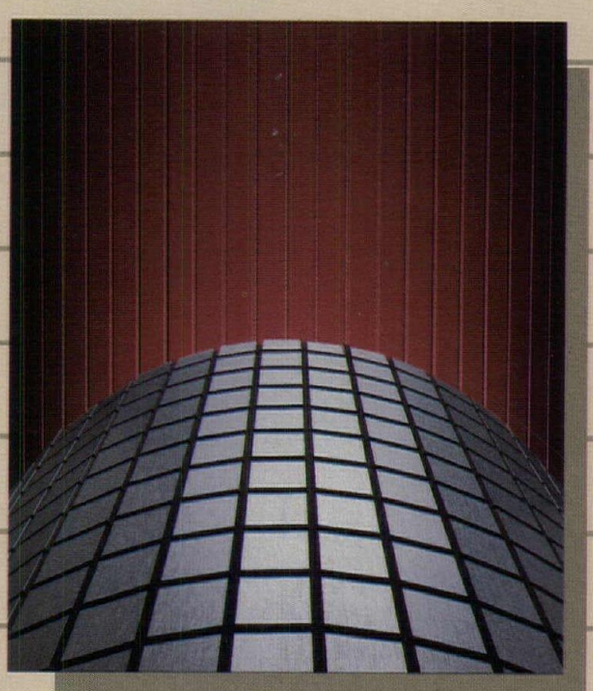

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Folger Library Additions and Alterations, Washington, D.C.

With respect to Cret

Expanding and updating a revered 1930s landmark, Hartman-Cox Architects made most of their work invisible, then added one portion of strong but compatible design.

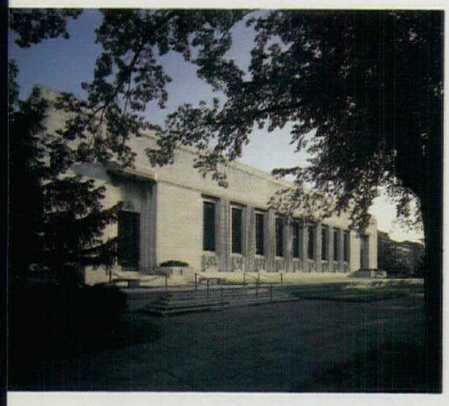
Through a window bay of Paul Cret's original Folger reading room one enters the new reading room. New oak columns recall details of the old portion. The spatial complexity of the added room is revealed only after entry.

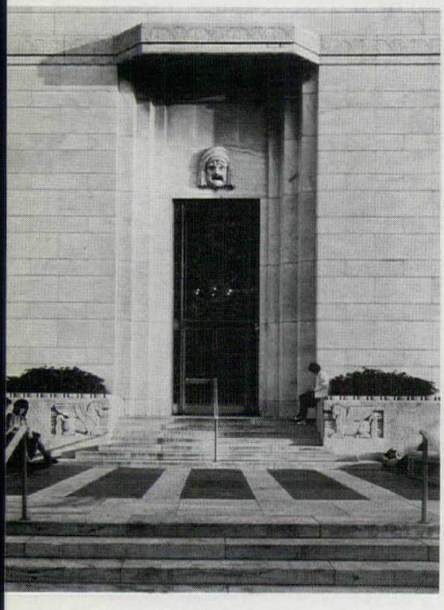
Nowhere in America is the architectural context more demanding than in official Washington. Architects working in the city's monumental precincts face a pervasive Classicism that only a few die-hard Medievalists (in the last century) and Modernists (in this century) have defied. Hartman-Cox have practiced in Washington for 18 years and were among the first of the firms now practicing there to adapt Modernism effectively to this special context (notably in their National Permanent Building, P/A, Dec. 1977, pp. 54–57). In their work on the Folger Library, the firm took on the double challenge of a site in the heart of monumental Washington, and an existing building venerated as one of Paul Cret's most refined.

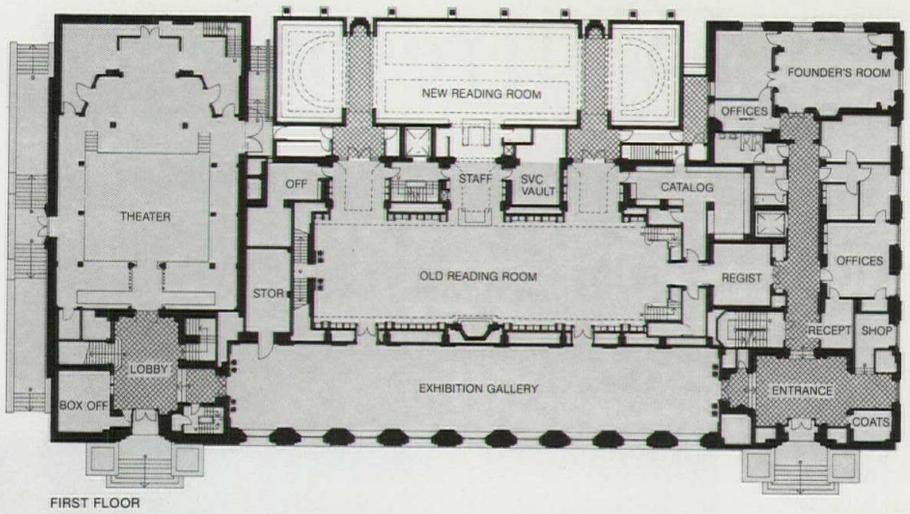
The style of Cret's original library was itself an accommodation to Washington's Classicism. For his great Shakespeare collection, Folger wanted—logically enough, for the late 1920s—a building of Elizabethan style. But because the site, near the Library of Congress, was only two blocks away on axis from the Capitol, he was persuaded to accept a building of white marble in more or less Classical form. Cret seems to have enjoyed the challenge of embedding two large Elizabethan interiors—a period theater and a reading room modeled after a banqueting hall—inside an envelope in the stripped-down Classical style with which he was identified. To mediate between his restrained, white, delicately fluted exterior and these dark, overarticulated Elizabethan halls, he invented a transitional style of creamy plaster surfaces, irregular limestone trim, and sturdy oak casework that provided some valuable cues for Hartman-Cox.

Most of Hartman-Cox's work at the Folger was meant to solve functional problems as inconspicuously as possible. Starting back in 1975, they were asked to expand and modernize the library, in what turned out to be three phases: 1, addition of new stacks; 2, remodeling of existing office and service

Folger Library







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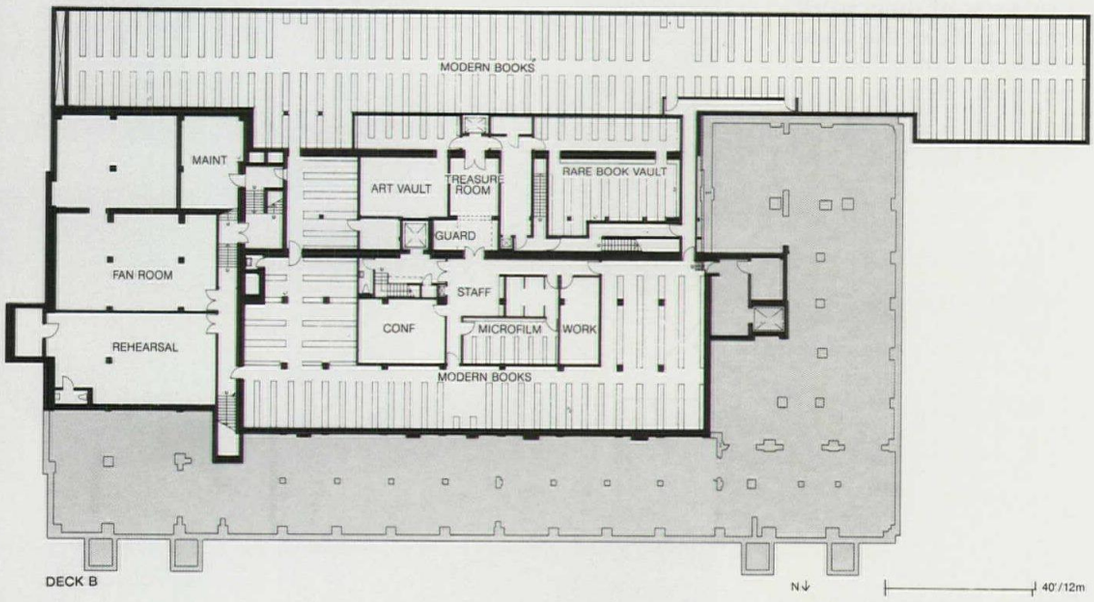

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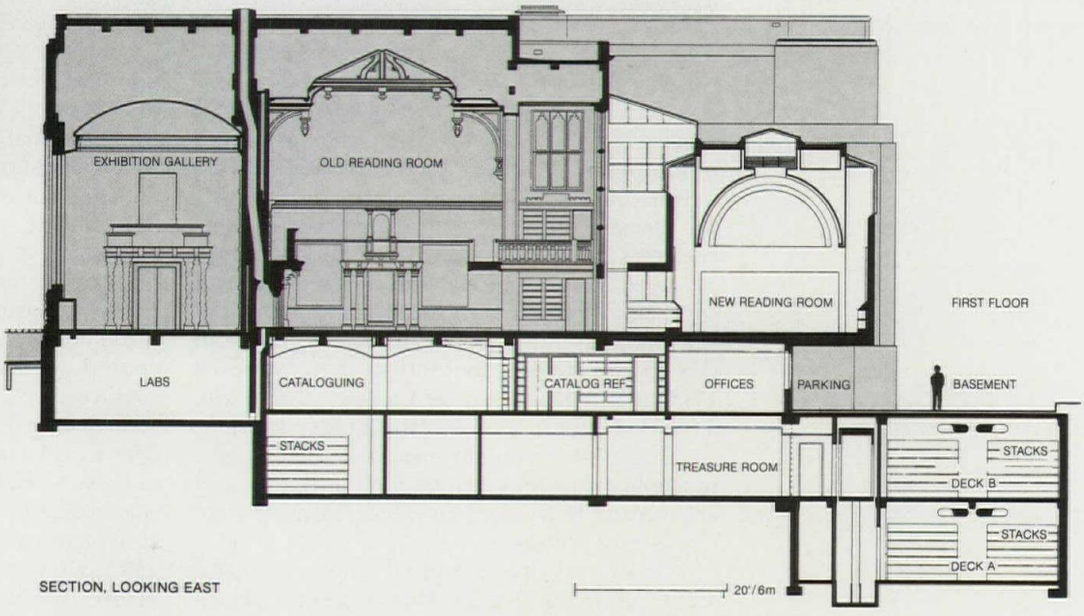
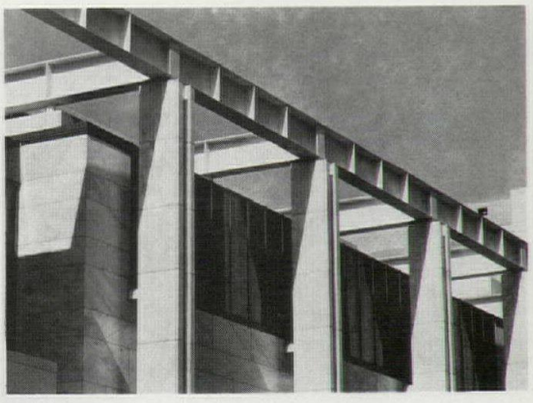


SECTION, LOOKING EAST

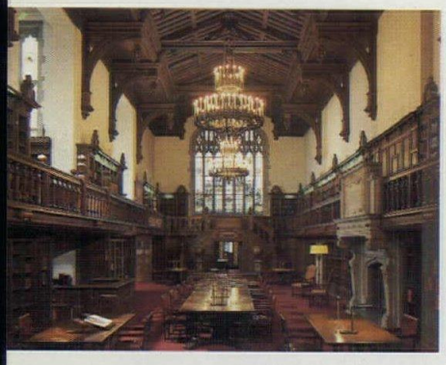
The front of Cret's 1928–32 landmark (above) fits the Classical image of Capitol Hill, but has only hints of historical ornament. New construction facing alley to rear (facing page) has fluted white marble appliquéd to steel frame, placed to be seen in raking views from public streets. Layered marble forms in recesses read as the obverse of Cret's entrance portals.

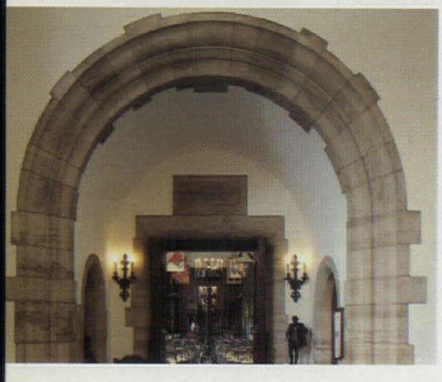


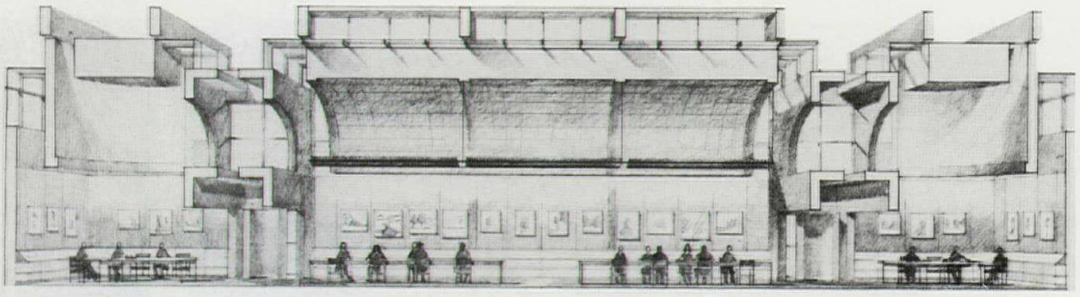
spaces and air conditioning of entire structure; 3, addition—as funds permitted—of more reading room space. Given the constructed site and the need to maintain the original exterior form, there was nowhere for the first-phase stacks to go except under the parking area and alley behind (to the south of) the library. Two levels of stacks were buried there, extending invisibly out to the property line; Warren Cox compares this construction to a submarine, not just because of its long, submerged form, but because watertightness was absolutely crucial. Next, the existing building was reconditioned; it was in this phase that the architects learned to slip new lighting and grilles into Cret's interiors and to duplicate the oak paneled doors and moldings in remodeling office areas.

An addition surfaces

It was only after this self-effacing design work was done that Hartman-Cox was assured that the third phase—the highly visible new reading room—would go ahead. And even this demanded working ingeniously around the existing fabric. The only site for this new reading room was in the shallow U at the back of the original building, along the south flank of the old reading room, whose three tall bays could not be denied natural light. And in this area there was already a basement-level 1958 extension, which was retained and remodeled in Phase 2, while Phase 3 was still uncertain. Because the footings of this extension could not carry the loads of the new reading room, it had to be supported by a steel frame spanning between the original foundations and new piers between parking bays to the rear. To add a further practical restraint, the new







Cret's original reading room (top) is modeled after a banqueting hall at Hampton Court Palace, though less festive in purpose. Loosely historical stone trim of Cret's lobbies (above) appears to have inspired Hartman-Cox's new reading room (facing page). Early cutaway perspective of this complex room (above right) shows scoring on the main vault and suspended luminaires, both since eliminated.

reading room had to be built without interrupting use of the old one next door, which had already been closed awhile earlier for installation of its new mechanical system.

The plan of the new reading room, too, was largely dictated by circumstances. The three projecting bays of the old reading room were the only logical points of contact; a shared desk area was placed in the central one and access to the new room at the other two bays. Having dealt with all these stringent parameters, the architects were finally free to shape some visible architecture, and this they did with understandable eagerness.

The only Hartman-Cox work visible from outside is the wall facing the alley. This is seen by the public only in a sidelong view; only employees, truckers, and curious architects see it straight on. What the public sees is a set of fins, clad in fluted marble, from the tops of which sprouts a framework of exposed steel, painted off-white. The few who enter the alley see that the marble fins are merely applied to the sides of continuous steel bents, which define bays of unequal widths, symmetrically disposed. Cradled with these bays are marble-clad volumes that slip by the structural frame to reveal the different symmetrical order of the spaces inside. Glazing appears only in strips at the top, except for vertical slits in two bays. (Nobody inside wants a view of this alley, or more than a sliver of direct sun.)

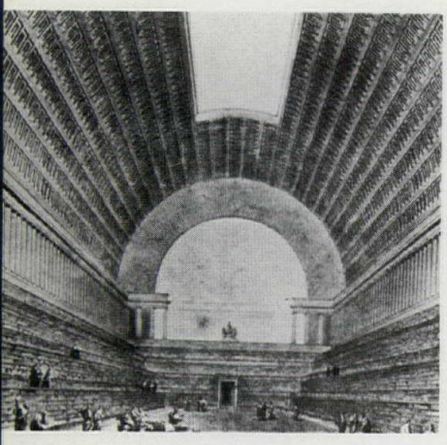
Room to contemplate

On this alley exterior, the architects could practice some innocent architectural and contextual games, but the new reading room inside was a more serious architectural challenge. It had to be compatible with Cret's variegated interiors, but hold its own as a major new room. The clients had certain preferences that influenced the design: they wanted this second reading room to be lighter and brighter than the first one, and they wanted wall areas for hanging some of their paintings. What Hartman-Cox gave them is a Classically ordered room, suffused with natural light (or artificial light from the same sources), a room that is serene, yet complex in both its form and its historical sources.

Superimposed on the straightforward plan of the room, divided in three parts by the two narrow entry bays, is a more complex geometry overhead, with suspended vaults and curved baffles, interspersed with linear skylights and monitors. The arched walls that divide the space are actually only pierced partitions, as light and nonessential as the suspended surfaces. Hartman-Cox say their vault was inspired by a national library scheme of Boullée's. (The vault with the central light strip was also used by Louis Kahn in the Fort Worth museum, but then he had written the introduction to a book on Boullée in which the library is illustrated.) Unlike Boullée's vault (or Kahn's), this one is suspended, with luminous slots to either side. The room does not end bluntly, but in apsidal curves—a device traceable to Robert Adam's Kenwood library. (Says Cox, "When you are doing a library, you look at libraries.")

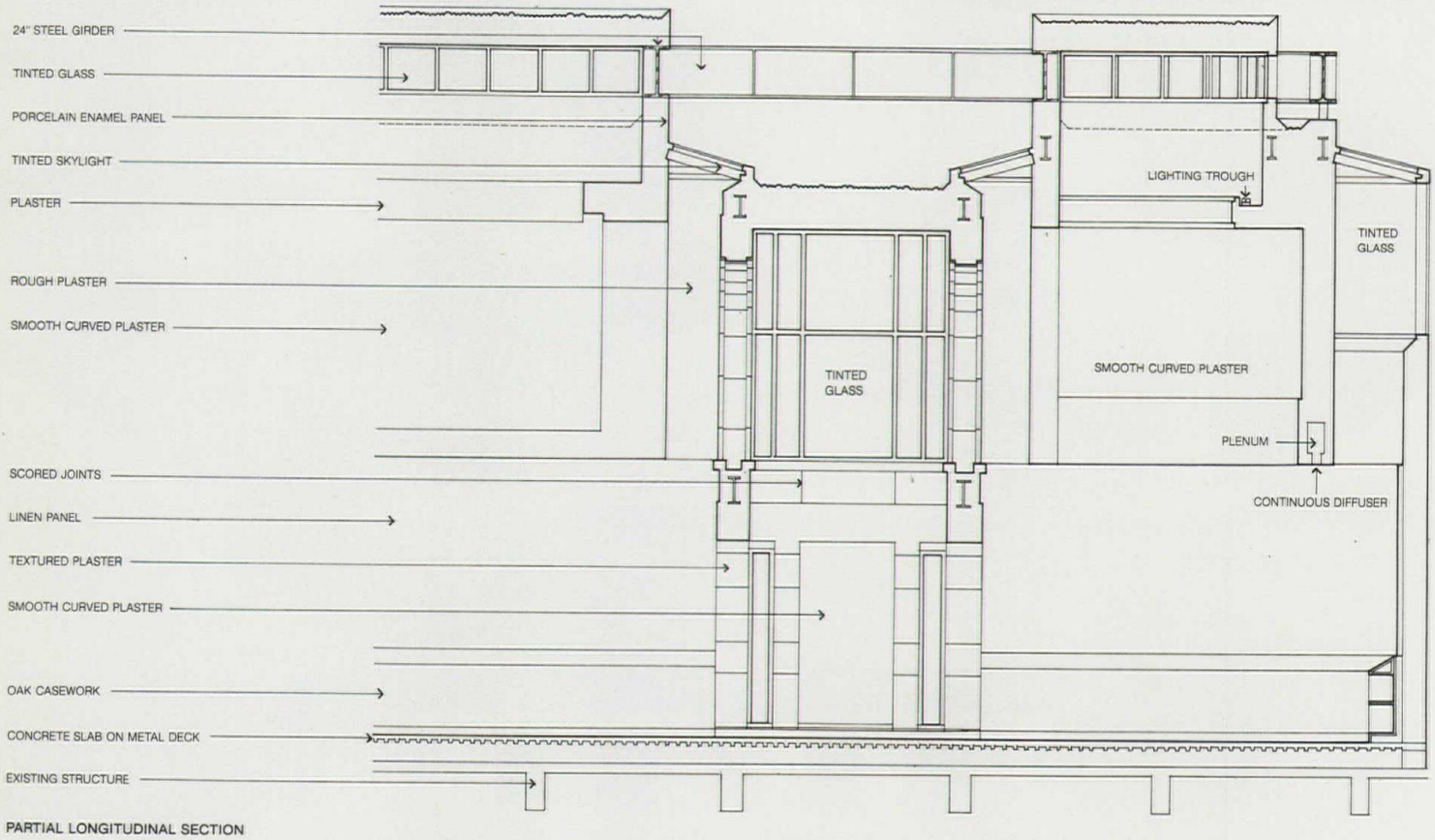
One effect of all the curved surfaces and layered cut-outs, bathed in indirect light, is to make the limits of the space seem indefinitely distant. When you enter from the old reading room, it is hard to believe that the new one is barely half its height; it seems more spacious in all dimensions.

While filling the new room with indirect light, from sources that cannot be seen from the reading tables, Hartman-Cox are not content to leave their light sources hidden. By peering up from the edges of the room and the circulation bays, users are allowed to examine the various glazed areas—and puzzle out their arrangement. When one does this, the room changes from a serene volume, with vague, luminous boundaries, into a kind



Boullée's scheme for a Bibliothèque Nationale (left) provided a precedent, at much grander scale, for the vaulted reading room. The many light sources of Hartman-Cox's room, not visible from reading tables, can be inspected from points along the edges and at partitions (photos, right and opposite).

Courtesy of architects



PARTIAL LONGITUDINAL SECTION

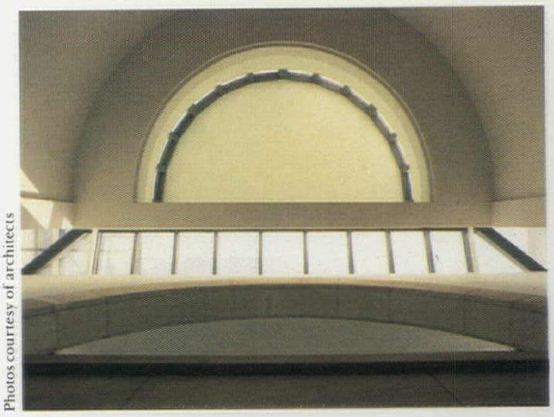
of full-scale exploded axonometric. This exploded-parts imagery, which appears in the alley exterior as well, has little to do with Cret or Boullée; it seems to stem from a basically Modernist intention to explicate an intricate spatial geometry.

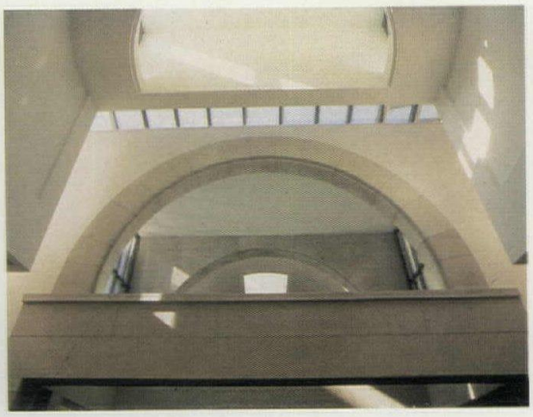
The false stonework around the reading room arches announces most clearly, however, that the architects have no loyalty to Modernism. Obviously related to Cret's irregular limestone trim in some of the library's original interiors, these were meant to be executed in *trompe l'oeil* painting, since limestone would have been heavy as well as costly. (False limestone, popular in the period of the original Folger, is well represented in the lobby of Washington's Sheraton Carlton Hotel.) In actuality, the architects liked the effect of the preliminary brown-coat plaster so much that it was simply left exposed—as a more "honest" conceit, perhaps.

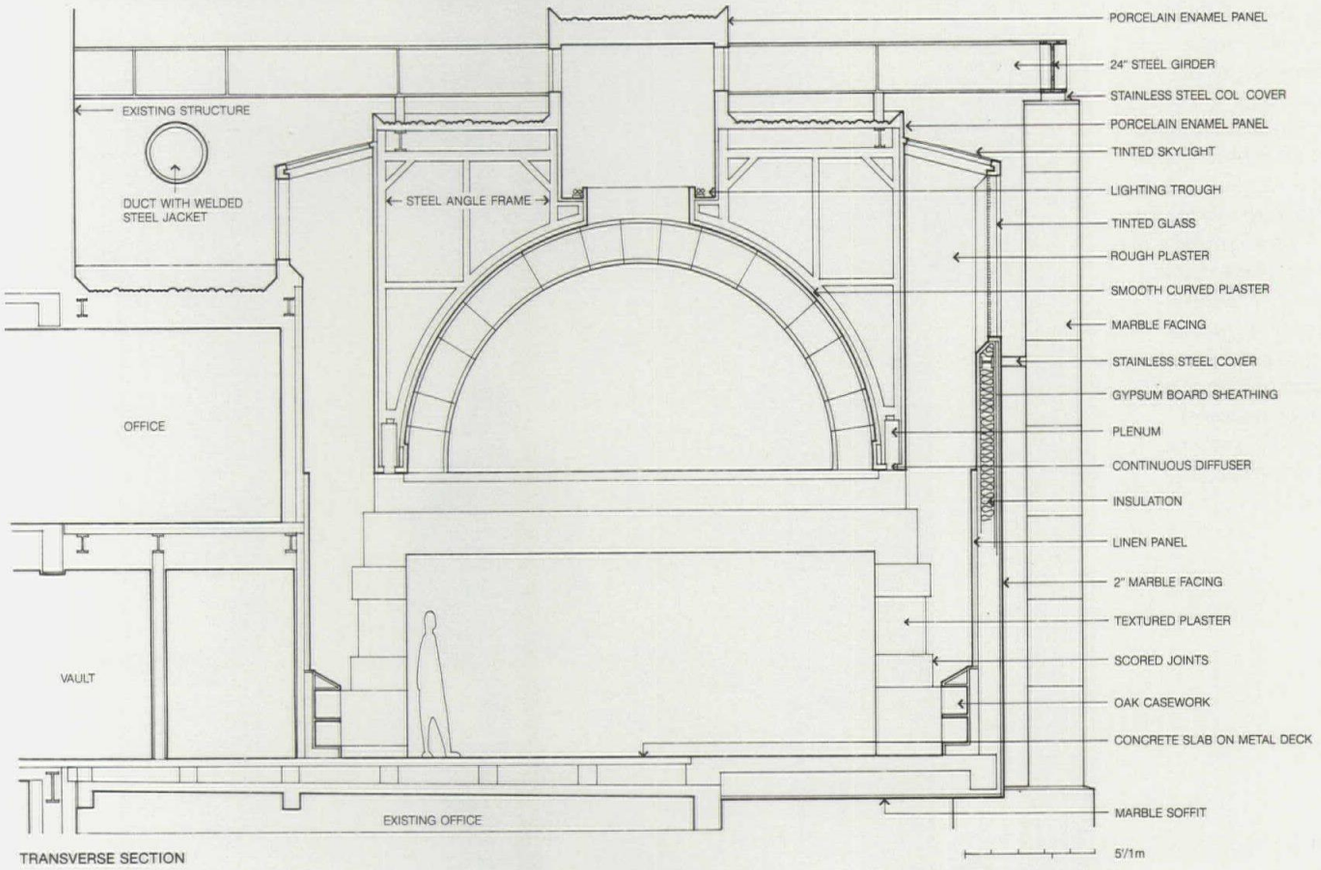
After practice in emulating Cret's oak woodwork details—with original shop drawings for reference—in the remodeling phase, Hartman-Cox adopted his vocabulary for trim and casework in their additions. Their oak columns in copy-book Doric recall the Elizabethan period of "Free Classicism" represented in Cret's original reading room. Similar columns, scaled down and without fluting, form the legs of the new architect-designed reading tables and chairs.

In the basement Treasure Room, a small and special jewel-box space, Hartman-Cox felt they could play more radical games with materials and Classical motifs. Its walls of oak "masonry," with radial grain in the voussoirs, recall not only the fanciful details of Elizabethan times, but the wood "rustication" of the American Georgian landmarks such as George Washington's Mount Vernon. As Cox points out, the first impression of this room is one of solidity and restraint; it is only on closer inspection that its architectural heresies become apparent.

Photos courtesy of architects







TRANSVERSE SECTION

Assessing the sum

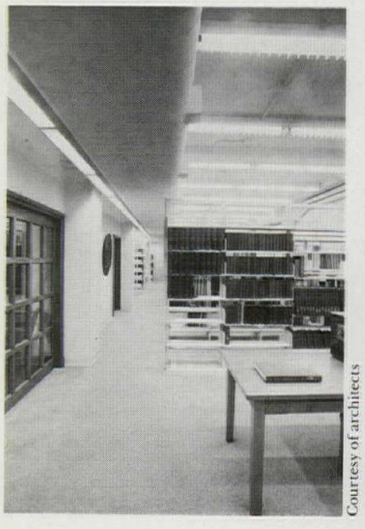
As often happens today, the reworking and expansion of an older building has here elicited the real virtues of our pluralistic design outlook. Working with an original fabric with many tangled strands of style, Hartman-Cox have capitalized on the difficulties presented to reconcile the stylistic stresses and produce an expanded whole with more integrity. Their new reading room is a Classical-Modern hybrid complementary to the Modernized Classicism Cret was striving for 50 years ago. And it forms an interesting companion to the Medieval-Classical hybrid that Cret had to use in the first reading room.

In this reading room interior, all the spatial and stylistic games have produced a room of remarkable—and appropriate—composure. If there is a weakness to this room, it is the insubstantial quality of the surfaces, particularly those suspended from above, as if from a stage loft. This theater-set effect is heightened by the "exploded" disposition of parts—hardly touching—and by the theatrical light effects. The false rustication not only suggests stage scenery, but introduces a literal, casual motif in opposition to the prevailing geometrical abstraction. These conflicts and ambiguities can be interpreted, of course, as architectural commentaries by Hartman-Cox, and evaluated as such. Or one can suspend analysis and simply take pleasure—along with such critics as Paul Goldberger, Jane Holtz Kay, and Benjamin Forgey—in a room where form, scale, light, and function work exceptionally well together.

When one considers how unsympathetically such a remodeling-expansion program might have been handled a decade or more ago—or what plodding respect other architects might bring to it today—one must be all the more grateful for the sophistication and inventiveness that Hartman-Cox have brought to this work. [John Morris Dixon]

[*More illustrations and data overleaf.*]

New oak door and column (above) emulate those of Cret's original interior. New stack areas (below) have standard shelving, exposed ducts; an oak-and-glass screen wall marks the limit of ceremonial interiors. Free Classical detail is recalled in new reading room furniture by the architects (right)—photographed in "circulation" bay, where it does not normally stand. Treasure Room in subbasement (facing page) displays rare holdings and leads to new stacks by way of an original vault door relocated; room's oak "masonry" is shown off in a view of its entry alcove (bottom of page).



Courtesy of architects

Data

Project: *Folger Library Additions and Alterations, Washington, D.C.*

Architects: *Hartman-Cox Architects, Washington, D.C. Mario Boiardi, Associate; Andrew Stevenson, project architect. Paul Cret, original architect, with Alexander B. Trowbridge, consulting architect.*

Client: *Trustees of Amherst College, Dr. O.B. Hardison, Director of library.*

Site: *flat 51,616-sq-ft area on East Capitol St., two blocks from Capitol; streets on three sides, alley to south; original 1928–32 building centered on site, with small 1958 extension to south; parking area to south became site of new additions.*

Program: *Phase 1 additions, 18,079 sq ft of book stacks and mechanical space, all below grade. Phase 2 remodeling, 68,138 sq ft of existing building, mainly basements and office portions; air conditioning, new electrical and lighting systems for whole building. Phase 3 additions, 4451 sq ft of new reading room, support and mechanical space.*

Structural system: *concrete below grade portions, slabs, piers; steel frame.*

Mechanical systems: *constant volume air conditioning, with precise temperature and humidity control (some variable volume in existing portions); some radiation retained or installed in above-grade portions; energy from U.S. Capitol steam and chilled water system.*

Major materials: *Phase 1, waterproofing with Bentonite panels, fluid applied membrane, interior cementitious material, painted concrete and masonry interior, resilient tile floors. Phase 2, plaster and gypsum board, stained red oak woodwork, foamed plastic exterior insulation. Phase 3, marble, glass (several types), interior plaster, oak woodwork (see Building materials, p. 130).*

Consultants: *James Madison Cutts, structural; Lee-Thorp, Inc., mechanical; Peter Barna, lighting.*

General contractor: *Skinker & Garrett, Inc.*

Costs *(excluding fees and Phase 3 furnishings): Phase 1, $1,814,535 ($100.37 per sq ft); Phase 2, $3,795,442 ($53.53 per sq ft); Phase 3, $1,987,053 ($446.43 per sq ft).*

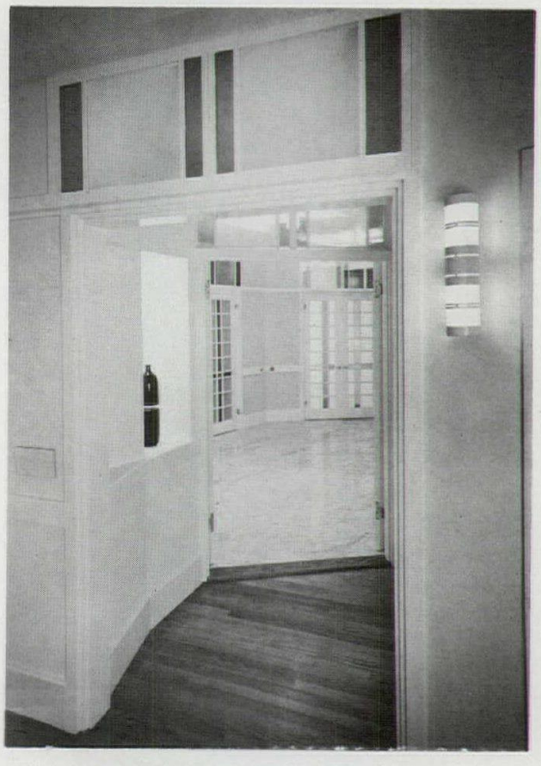
Photography: *Peter Aaron © ESTO, except as noted.*

Geometry lesson

Arrival, orientation, and circulation are celebrated in a pair of spaces—one residential, one commercial.

Circulation and orientation are relatively unglamorous, but nonetheless crucial, aspects of interior design and architecture. When handled ineptly, they can make getting there less than half the fun. The problem becomes even more complicated when the architect or designer is dealing with an existing space, whose program does not call for a total renovation. In two projects, shown here and on the following pages, two different approaches—one complex, the other simple—were taken to create a sense of arrival, direction, and articulation in spaces where there had been none. They are both small in scope, but in their concern for light, proportion, and balance, their accomplishments are considerable.

In the case of a 5000-square-foot cooperative apartment in New York, architects R.M. Kliment and Frances Halsband were asked to carry out a renovation on two programmatic levels: the reorganizing and refurbishing of family bedrooms and sitting rooms; and the creation of a new entrance hall leading to the apartment's "public" spaces—the remodeled living room, dining room, and library.

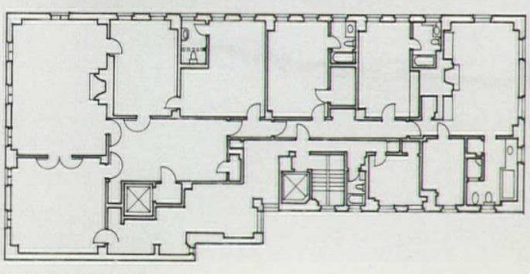


The architects wanted to create an entry that would serve as an organizing and orienting space that would offer a view through the "public" rooms to Central Park and the cityscape beyond. Given the existing orthogonal layout, the architects exercised their preference for a "perfect point of reference" by making the new entry a vaulted octagon, which is entered from the surrounding rooms by means of a slight inflection at the point of entrance; each one of these four *poché* transitions is different in plan and articulation. Kliment and Halsband saw the entry as a place to comprehend the outside surroundings and the daylight that entered the space, but they also wanted it to appear to radiate light of its own.

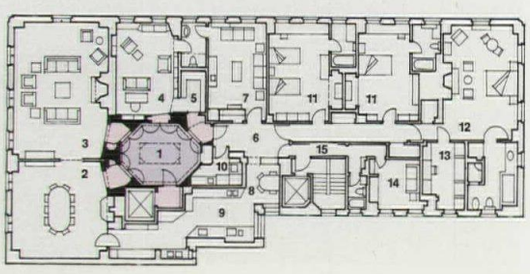
The geometry of the 13′ x 17′ space emphasizes the complex play of doors and windows. The sides of the octagon are multiples of the two-foot door swings, and the doors themselves are only 6′–8″ high, to allow their transoms as much height as possible, thereby creating the illusion of a high ceiling. The glazed doors, with their panes of colored glass, appear to be decorated wall panels when swung completely open; horizontal bands of colored glass echo the room's chair rails. The walls are painted pale gray, while the trim and the stepped plaster vault are white.

From the entry, the deep *poché* of the transitional doorways is invisible; it is only when you walk through them that you are aware of their depth. This admittedly complex language of inflection is, according to the architects, more accommodating of the "circumstantial," selective circulation from one room to another in an apartment of this size. But the "accommodation" is intentional: obviously, Kliment and Halsband feel that it is preferable to offer as many ways in and out of these rooms as possible. In fact, they state their case convincingly. [Pilar Viladas]

1 Entrance hall
2 Dining room
3 Living room
4 Library
5 Bar
6 Family hall
7 Family room
8 Breakfast area
9 Kitchen
10 Laundry
11 Bedroom
12 Master bedroom
13 Dressing room
14 Maid's room
15 Service entrance



EXISTING APARTMENT



RENOVATION

20′/6m

Data

Project: *cooperative apartment, New York.*

Architect: *R.M. Kliment & Frances Halsband Architects, New York. David Knowlton, Patrick Golden, project assistants.*

Program: *a new entry hall, living room, dining room, library, and reorganized and refinished sleeping quarters for a 5000-sq-ft apartment in a 1920s building.*

Major materials: *gypsum board, plaster, and paint (see Building materials, p. 130).*

Consultants: *Howard Brandston Lighting Design.*

General contractor: *I. Mass & Son.*

Costs: *not available.*

Photography: *Norman McGrath, courtesy of* House & Garden, *copyright Condé Nast Publications Incorporated.*

In the octagonal entry space (this page), the glazed doors appear to be wall panels when swung open (top); white, "invisible" doorknobs and a molding strip that is flush with the open doors heighten this illusion. When closed (bottom), the doors are clearly doors, with extremely "visible" brass knobs. The light fixture, designed by the architects, consists of two quartz lights, in faceted glass containers, joined by a long pane of glass. Beams of light radiate outward, reinforcing the geometry of the room. The transition from the entry to the dining room (facing page) is made through an irregular space carved out of the deep poché (see renovation plan), thus mediating between the octagonal entry and the orthogonal rooms surrounding it.

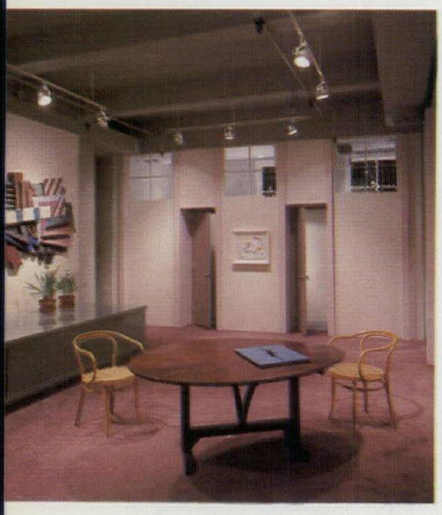
Interior design

Streetscape

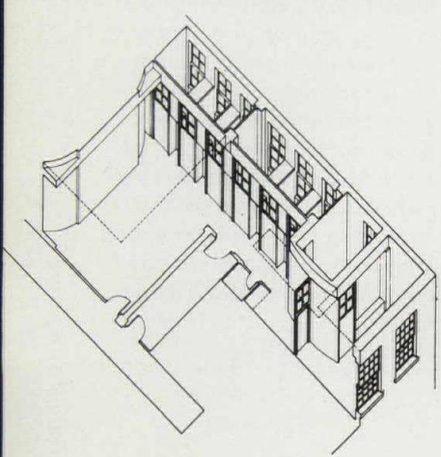
A "façade" of doors and windows organizes several office functions without sacrificing space and light.

While some problems of circulation may call for a complex solution, others require an emphatically simple one. When New York-based art consultant Judith Selkowitz's office was slated for demolition, she found herself in the unenviable position of having exactly one month to get settled in a new space. The program of gallery, conference room, private and staff offices, and storage space, had to be accommodated in a 2000-square-foot space; the client requested that all the office areas be as private as possible, out of sight of the main gallery space, and that there be plenty of natural light. In other words, the client knew what she wanted, and she wanted it yesterday.

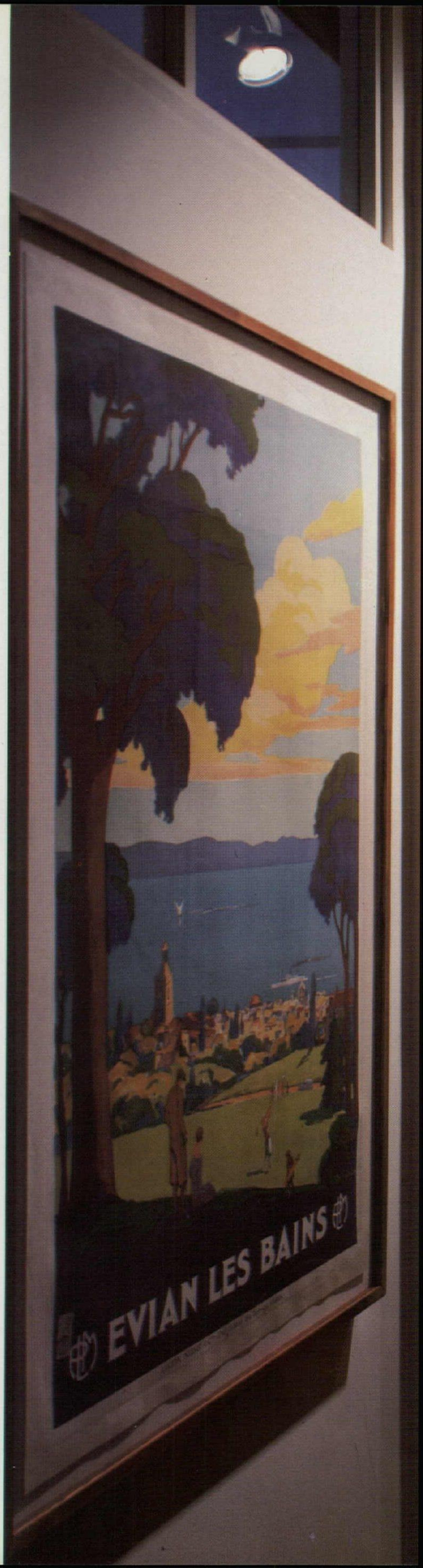
The challenge of designing and completing this space belonged to Samuel J. De Santo & Associates. It was a small job with an even smaller budget—quite a challenge. The existing space, which had been occupied by a printing company, was in such bad shape that much of the budget was spent making it habitable again. Therefore, the existing layout determined the plan of the new offices. An existing curved wall in what is now the gallery space was used to advantage as a display wall for large works of art. The space along the perimeter, with its generous natural light, was used for the offices and conference room. But providing sufficiently private office space for the staff while admitting light into the rest of the space, and maintaining a sense of formal simplicity, was not so easy.



De Santo's solution is clean, simple, and striking: he constructed a "façade" of doors and four-square windows, parallel to the street façade, to screen the perimeter offices while allowing light from the "real" windows on the street into the gallery and circulation spaces. The rhythm of the doors and windows effectively directs visitors along this "façade," on a straight path to the conference room, or, with a slight jog, to Ms. Selkowitz's own office. Windows over the conference room doors afford a clear vista down the corridor to the column, in the private office, that "ends" the axis.



The interior is spare, white, and cool, punctuated only by the artwork on display and a few pieces of the client's antique furniture. Judith Selkowitz will tell you that she wanted a "classic, simple, and elegant" office, and she will also tell you that she got exactly what she wanted. [Pilar Viladas]



Data

Project: *Judith Selkowitz Fine Arts, Inc., New York.*

Architect: *Samuel J. De Santo & Associates, New York. Samuel J. De Santo, Robert Ferland, Alan Orenbuch, project team.*

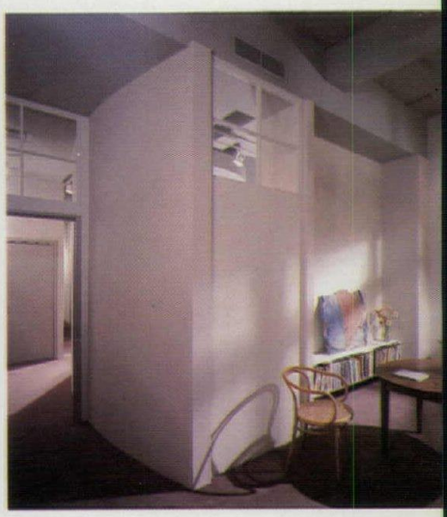
Program: *2000 sq ft of display and office space for an art consultant, including a gallery, conference room, staff offices, storage, and private office, in a 1920s office building.*

Major materials: *gypsum board and metal stud partitions; wood-framed windows (see Building materials, p. 130).*

General contractor: *Structuretone, Inc.*

Costs: *not available.*

Photography: *Peter Aaron, © ESTO.*



A "façade" of doors and four-square windows directs the circulation from the main gallery space (facing page, top left) to the conference room at the end of the corridor (left). The façade screens staff offices from view while admitting daylight from the "real" street façade (see axonometric). A slight jog in the corridor leads to the client's private office (above); another four-square window maintains a vista along the main axis.

House,
Kuwahara-Matsuyama,
Japan

Space forestalls symbol

Hiroshi Watanabe

A suburban house in Japan, while responsive to the family's routine and social needs, also demonstrates the building materials produced by the owner's company.

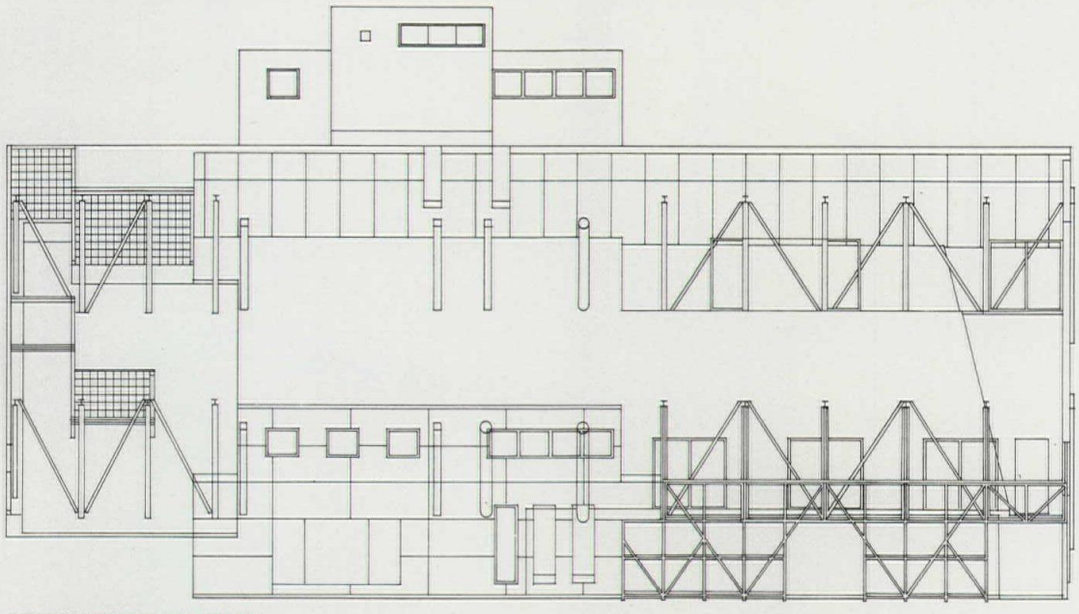
The "Shinohara School" is a journalistic tag given to a group of young architects—including Toyo Ito, Yuzuru Tominaga, and Itsuko Hasegawa—who have been influenced by Kazuo Shinohara (P/A, May 1983, pp. 135–6, pp. 156–9). Though they deplore the categorization, it continues to stick.

Hasegawa graduated from Kanto Gakuin University and worked for Kiyonori Kikutake, the Metabolist architect, before doing graduate work under Shinohara. Like Shinohara, Hasegawa believes in the autonomy of architecture. She states that "a concern for content is like an opaque cover that keeps us from seeing things as they really are." A sharp contrast of light and darkness or direct lighting from a high source is to be avoided. Windows must be at "normal" height and produce an even, "weightless" light. Just as light must be dispersed, space must be stretched to dissipate its power to symbolize. Her houses are always characterized by attenuated spaces which are meant to forestall the attachment of symbolic meanings easily attracted to the verticality of walls. It should be added that her buildings belie the doctrinaire tone of her statements.

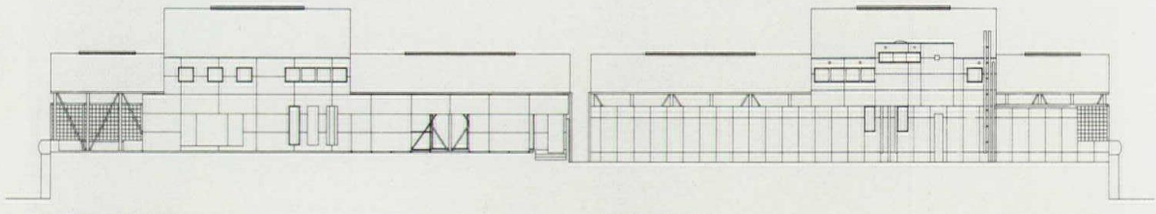
Hasegawa's works are studies in contrasting planar elements. The Tokumaru Children's Clinic (1979), for example, is a tour de force in which sinuous walls are played off against the rectangular framework of the building. In the Kuwahara House shown here, she contrasts planes of different degrees of transparency against the opaque background of concrete walls. Lacelike panels of perforated aluminum, a slender steel-frame structure, and the actual wall of the house overlap and mask each other to modulate light and create privacy. Inside, gauzy steel-mesh screens hung from the ceiling subtly articulate space. At twilight, the metallic quality of the aluminum is softened and the panels begin to lose their definition. The house and its suburban surroundings become one. □

Hiroshi Watanabe, *a Tokyo architect, served as correspondent for* Architecture Plus *and* P/A.

On the south side of the house (above, opposite page bottom and top right), varying degrees of opacity and transparency are contrasted: the openings and perforated aluminum screen walls of the court, the aluminum panels of the building. On the east side of the building (opposite page, top left), exposed concrete is used. A domed pavilion signals the entrance to the house.



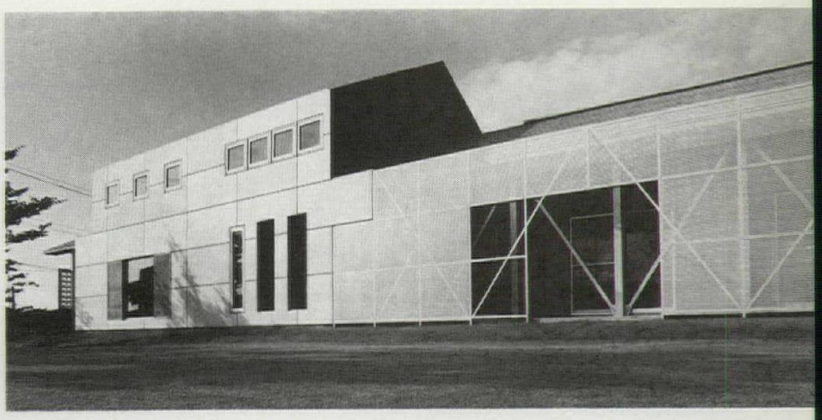
CUTAWAY VERTICAL PROJECTION



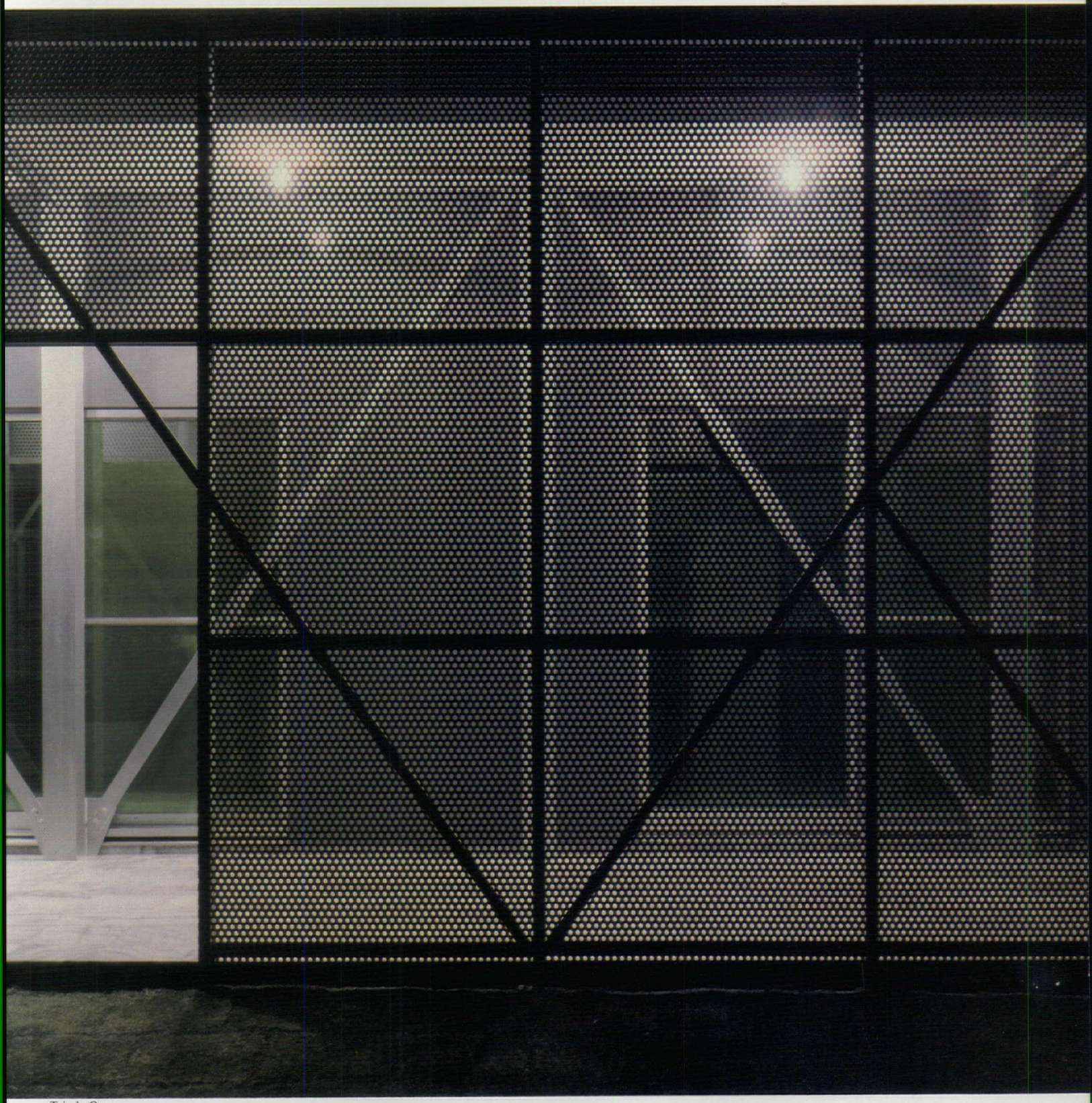
SOUTH ELEVATION

NORTH ELEVATION

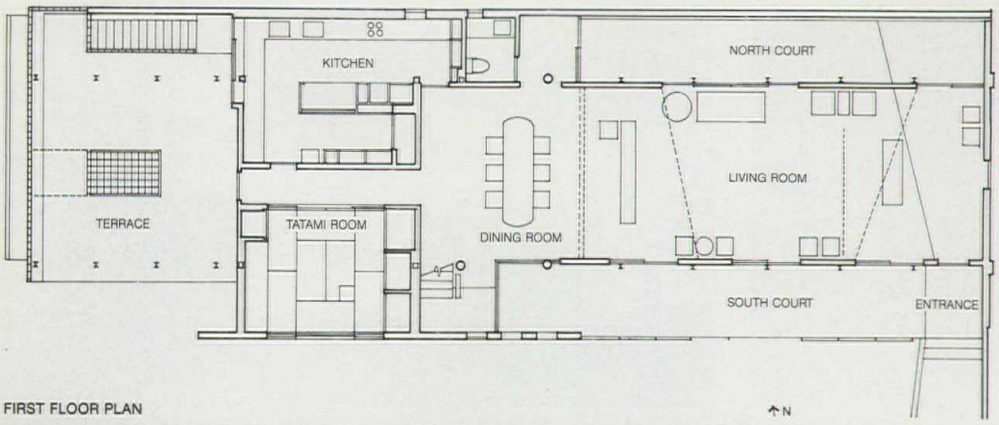
20'/6m



Hiroshi Watanabe

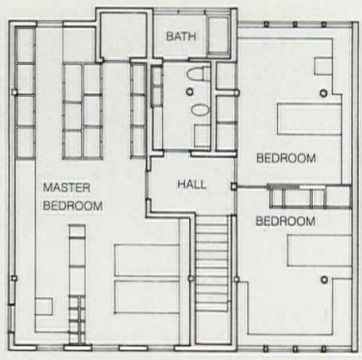


Taisuke Ogawa



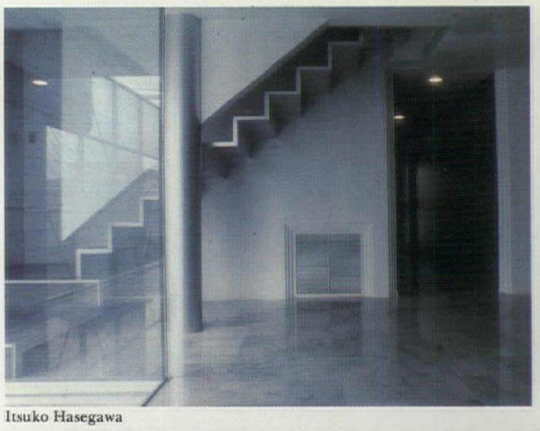
FIRST FLOOR PLAN

N



SECOND FLOOR PLAN 10'/3m

Taisuke Ogawa

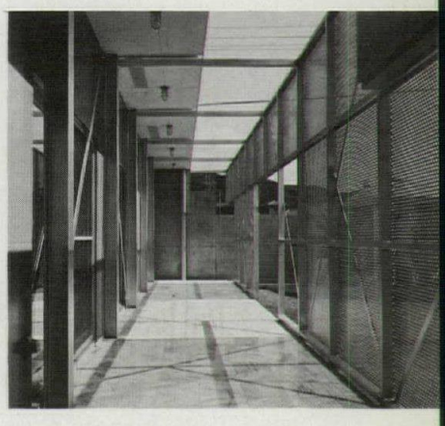


Itsuko Hasegawa

Itsuko Hasegawa

Data

Project: *House in Kuwahara-Matsuyama.*
Architect: *Itsuko Hasegawa.*
Site: *a 6000-sq-ft rectangular plot, bounded by roads on three sides in the outskirts of Matsuyama, an area that still has open space, rice fields, and views of snow-capped mountains.*
Program: *a single-family house, 4000 sq ft on two levels and basement.*
Structural system: *a composite structure of reinforced concrete walls and floors, and a steel frame with pin-joint connections between columns (round, square, and H sections) and beams.*
Mechanical system: *absorption chiller; fan-coil heating unit, and radiant heating.*
Major materials: *east and north façades—exposed concrete; west façade—glass block; south façade—aluminum panels, both solid and perforated. Roof—galvanized iron sheets; acrylfilm laminated roofing. Interior—marble floor, vinyl-painted plywood walls, vinyl-painted plasterboard ceiling.*
Consultants: *Shigenobu Hattori, structural.*
General contractor: *Kadoya Gumi Company.*
Cost: *75,000,000 yen, including landscaping and furnishings.*



The large, marble-floored living room (left and top right) functions also as a reception room for the owner's business. It is flanked by long courts on the south (above) and north. Stairs (top left) lead up from the dining area to the second floor, which contains three bedrooms.

Elm Street Residence, Winnetka, Ill.

Machine meets nature

David Woodhouse

A carefully orchestrated structure is enlivened by intentional paradoxes, sensitive treatment of the natural surroundings, and romance.

Architect David Hovey of Optima, Incorporated, has designed a house for himself that develops, almost to exaggeration, the familiar bipolarities of machine-made/natural and rational/romantic, creating an exciting and articulate visual environment defined by their tensions.

The central opposition that Hovey posits is that between the technological and the natural. The house exemplifies the solution of its program within the context of modern technology; design, fabrication, and erection of prefabricated lightweight structural frames, curtain walls, partitions, and mechanical core components are carefully coordinated. It should come as no surprise that this concern is central to Hovey's work since he studied at the Illinois Institute of Technology and has been deeply influenced by the work of Jean Prouvé.

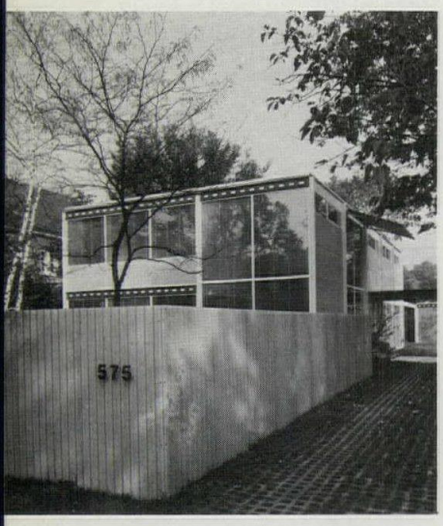
The house is contained in a 30′ x 60′ rectangle divided into five 12-foot transverse bays by its column system, each bay then being further subdivided into four 3-foot transverse sections by the house's joint system. Longitudinally, its columns are arranged asymmetrically, giving 12-foot and 18-foot bays. The structure consists of slender press-formed steel channel columns that support a ribbed galvanized steel deck with concrete fill at the second floor and another ribbed galvanized steel deck with rigid insulation at the roof. The ground floor is a concrete slab on grade. The infilling curtain wall combines large panels of insulated glass and custom prefabricated sandwich panels of unpainted transite exterior panels secured with self-drilling self-tapping stainless steel screws, two-inch-thick high performance urethane insulation, and medium density fiberboard interior panels. Both solid and transparent panels are thoughtfully detailed to be directly attached or pocket glazed to the press-formed steel columns, obviating the need for a separate sash system. Because no studs or stiffeners are needed to give rigidity to the solid panels, they can be kept surprisingly thin (less than three inches). Interior partitions are either medium density fiberboard or gypsum board on steel studs. Most floors are covered with thin industrial carpeting or large no-wax vinyl sheets commonly used for ballet stage floors.

The blue-painted stair provides a dramatic sculptural element separating the central entrance hall from the corner double-height living room, and is also a *tour de force* of elegant, economical detailing. Its treads, risers, and landings are formed from single sheets of ⅛-inch-thick steel. These sheets are attached along their sides at the break-points to two slender steel rods, forming trussed stringers which, with the addition of two steel suspension rods attached to the ceiling deck, are the stair's only supports. The delicately scaled handrails are also made up of steel rods welded to vertical steel pipes.

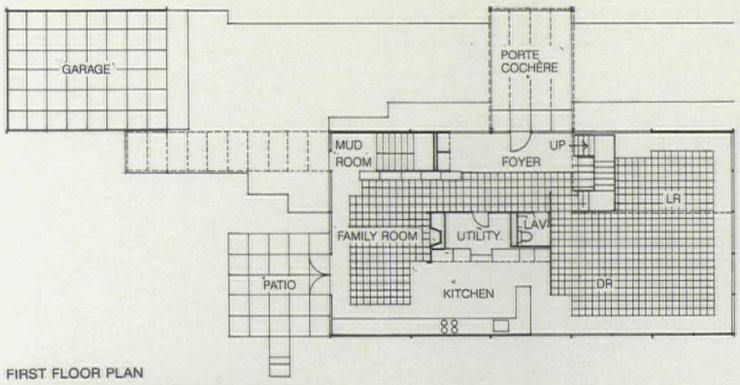
These materials are combined in such a way that each element is particularized and its method of attachment celebrated, while each system forms a well-integrated whole. This kit-of-parts approach is reinforced by the color scheme. Only the three primaries are used—all joists are red, accent walls are yellow, and the stair is blue—as a reminder that they form an irreducible set of parts.

These elements are assembled in an eminently rational way, but with a rationality enlivened by paradox. The house's nominal front and back are really its ends, asymmetrically organized by their steel columnar structures and by their curtain-wall patterns to reflect the private activities that take place behind them. By contrast, the nominal sides (the front and back, in fact) are symmetrically and rather classically organized, with a central entrance emphasized by a latticelike, open joist *porte-cochère,* a brightly colored awning, and a frontal relationship with the public entrance lawn/driveway. The stair, too, offers simultaneous alternate readings. Viewed front-on, its runs seem solid, while from the side they are open and nearly invisible. Finally, the grid itself presents a paradox: a secondary level of directionality, much more subtle than the primary longitudinal/transverse one, is imparted to the structure. This is done by the simple (and, from the technical point of view, quite sensible) device of turning all the open sides of the press-formed steel channel columns and joists in the same direction, thereby making the structural elements look either solid or hollowed, depending on the vantage point of the viewer.

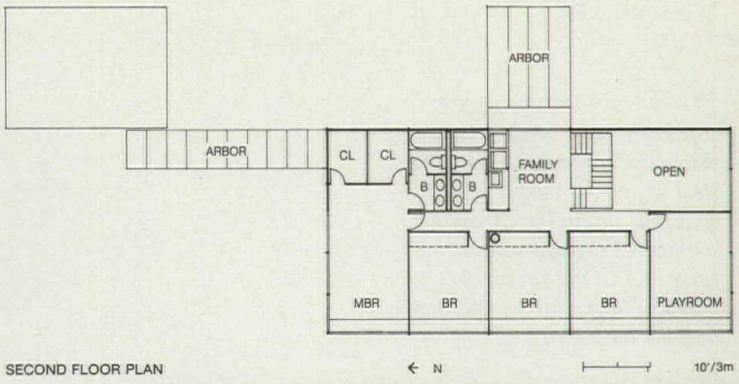
All of this technological expression would run some risk of being just another sterile exercise in machine imagery if it were not for



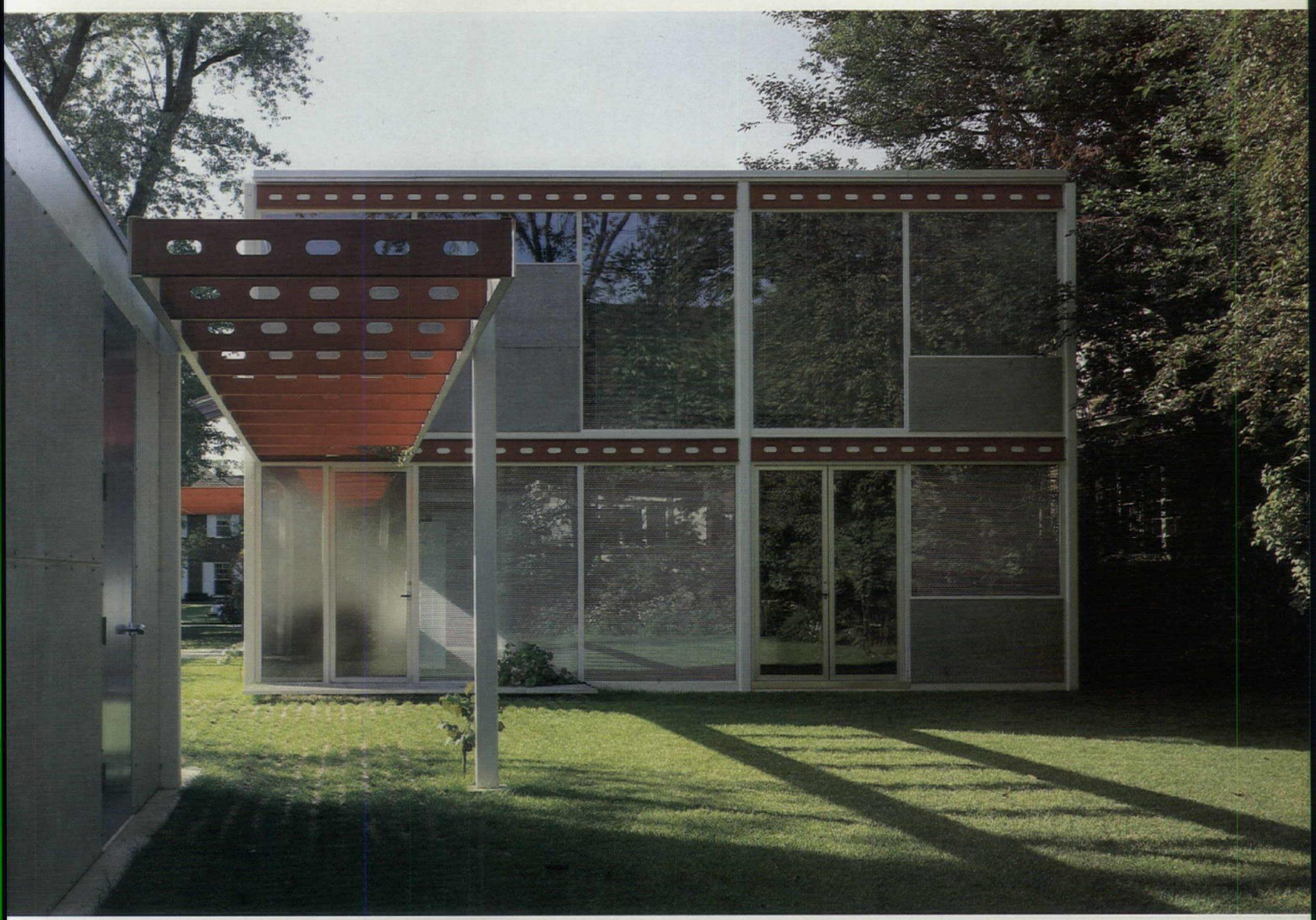
The south side of the house (above) presents a discreet, if technological face to the suburban street. Opposite page: The north side (top) is connected by an open joist pergola (bottom left and middle) to the garage. Open joists also form a porte cochère on the east entrance façade (bottom right) and will be softened in time by ivy.

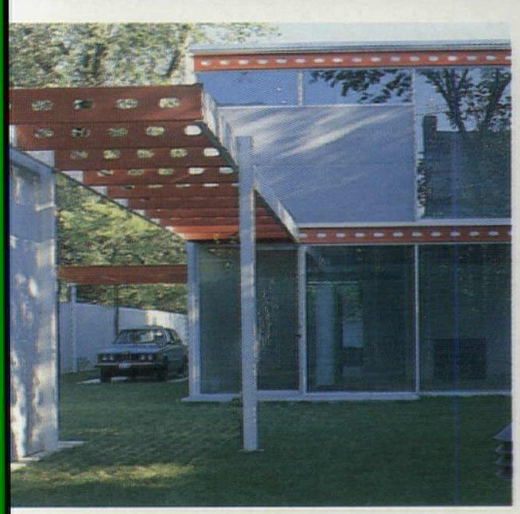


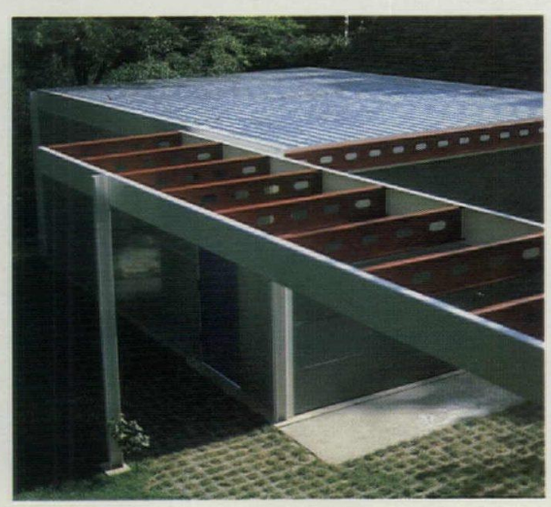
FIRST FLOOR PLAN

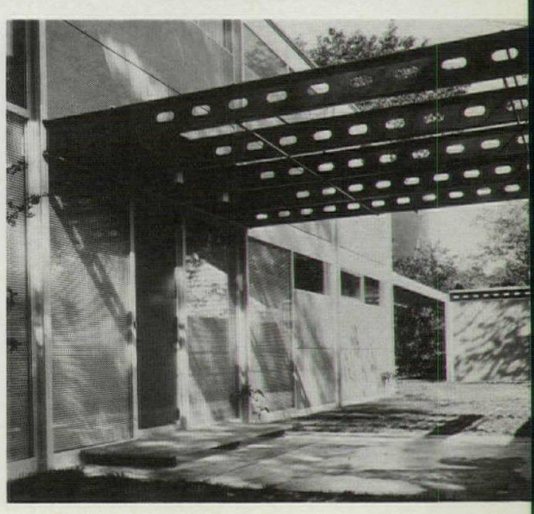


SECOND FLOOR PLAN



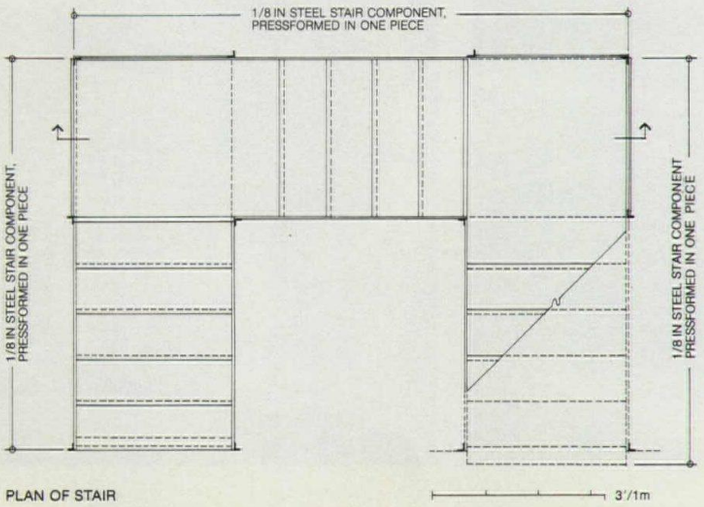




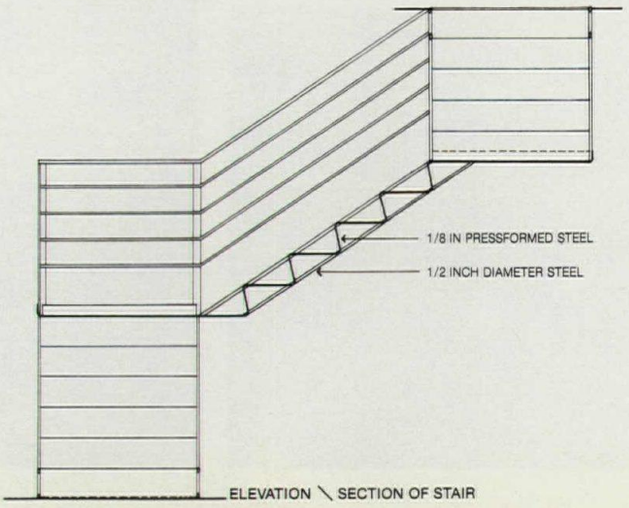


Elm Street Residence, Winnetka, Ill.

The blue-painted stair, fabricated of single sheets of ⅛-inch-thick steel supported by slender steel stringer trusses and suspension rods, provides a dramatic sculptural element separating foyer and living room. The kitchen (far right) extends across half the long west wall.



PLAN OF STAIR



ELEVATION \ SECTION OF STAIR

the sensitive and powerful way in which the house and its elements are placed within their natural surroundings. The house is surrounded by dense and luxuriant foliage that acts as a foil to the machine-made aesthetic of the house, humanizing it. On the side where a neighboring house crowds very close, there are low strip windows, which allow a glimpse of the lawn. The solid panels of the curtain wall, the pergola connection to the garage, and the *porte-cochère* will soon be softened by ivy vines. The living room, family room, and master bedroom all have particularly dramatic backdrops of lawn, foliage, or sky. This opposition of the machine-made to the natural is also emphasized by the house's interior furnishings. Some, modern-classics of the tubular steel and leather variety, fade into the background. The majority, however, are handcrafted natural wood pieces by George Nakashima, flamboyant and expressionistic, glorifying even the flaws in the wood. All this comes together to create a powerful tension between these two worlds.

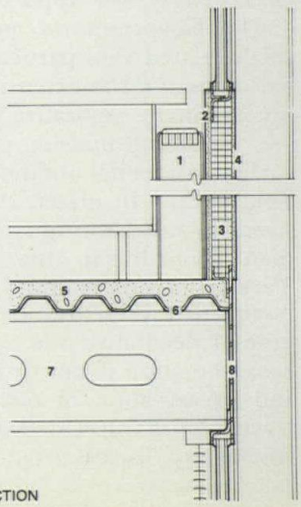
The rational/romantic bipolarity is explored more tentatively than the machine-made/natural. Romantic elements include the sweeping stairway, the blue-and-white striped awning, and the (eventually) ivy-covered pergolas. These reminders of other worlds create their own tensions with the overall technological imagery of the house and are all the stronger for ironically being executed by modern technological means. □

David Woodhouse *is a Senior Associate with Booth Hansen & Associates in Chicago. He has worked for Stanley Tigerman and is editor of the 1983* Chicago Architectural Journal.

Data

Project: *575 Elm Street Residence, Winnetka, Ill.*
Architect: *David Hovey, Chicago*
Client: *Mr. and Mrs. David Hovey.*
Site: *60' x 150' flat site in a prosperous bedroom suburb.*
Program: *3360 sq ft above grade, with a living/dining area, family area, kitchen, 2½ bathrooms, three bedrooms, playroom, studio, foyer; 540-sq-ft basement; garage. Main entrance arbor and garage entrance arbor.*
Structural system: *concrete slab on grade. Press-formed steel channel columns 12'-0" on center, roll-formed sheet steel channel joists 3'-0" on center, galvanized steel decks with concrete at second floor.*
Mechanical system: *two gas-fired furnaces distributing air through underground ducts for garden level and in ducts behind cabinets for second level.*
Major materials: *3'-0" x 12'-0" panels, with ⅜" cement panels on exterior, ½" medium density fiber board on interior, 2" urethane insulation; 1" insulating glass (see Building materials, p. 130).*
Consultants: *Nejat Tokay, structural. Norman Migdal, mechanical.*
General contractor: *Optima, Inc.; Stephen Gawlik, Perry Janke, Michael Glynn, construction team.*
Costs: *$38.2 per sq ft, including interior furnishings; $2.19 per sq ft for landscaping and site work.*
Photography: *Hedrich-Blessing.*

1 HVAC duct
2 Fiber board
3 Urethane insulation
4 Transite panel
5 Concrete slab
6 Steel deck
7 Punched sheet steel joist
8 Press formed steel girder



EXTERIOR WALL, VERTICAL SECTION

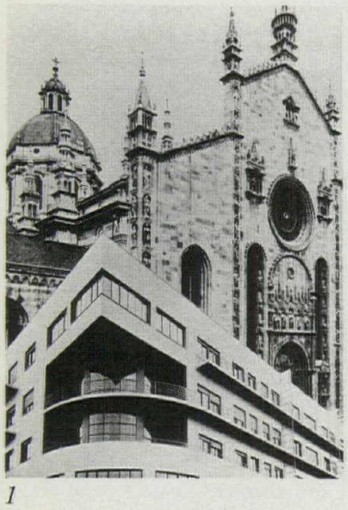
Italian Rationalism

Richard A. Etlin

Italian Rationalist architecture of the 1920s and 1930s should not be seen only as the abstract, geometric vocabulary for which it is most well known; the paradox is that it was often intensely contextual.

When the young members of the Gruppo 7 launched Italian Rationalism[1] in December 1926 with the first of a series of manifestoes, they set the ground work for a double paradox that has received little attention from historians or critics. On the one hand, the Rationalists were heady with the advent of a "new archaic age" whose primitive values were heralded by the modern machine civilization. These Italians drew intellectual sustenance from Le Corbusier's *Vers une Architecture* (1923) and design ideas from Walter Gropius's *Internationale Architektur* (1925).[2] Just how the Rationalists resolved the apparent paradox of an avant-garde architecture that seemed timeless as well has never been properly explained.

When attempts have been made, writers have fallen into the error of taking the architectural forms of Italian Rationalism at face value, that is, as abstract geometries with their own internal logic, sufficient unto themselves. Thus, the prominent Italian historian and theorist Manfredo Tafuri has characterized the work of Giuseppi Terragni and Adalberto Libera, along with the other Rationalists, as "undoubtedly steeped in an atmosphere poised between metaphysics and futurism."[3] While Tafuri is correct in this assessment, he mistakenly proceeds to the seemingly logical conclusion that this architecture of abstraction is alien to the physical and historical settings in which it has been placed: "The architecture enters the town as if 'entering a foreign land'; *and yet it does enter,* at the cost of expressing a sort of amazement at its own presence."[4] Here, critics such as Tafuri ignore the nonmetaphysical aspects of the Gruppo 7's essays to their peril. Since the Rationalists asserted that theirs would be a traditional, Italian architecture, should one not attempt to understand what they meant? In effect, Italian Rationalism was, to a great degree, rooted in a historical past. Furthermore, many of its best realizations were superb examples of what today is called "contextual" architecture. These buildings not only expressed their program as applied to a particular town or city, but many are also so directly rooted to their site that their meaning would be considerably emptied if they were moved elsewhere. This, then, is the second paradox of Italian Rationalism, in which a building, whose pure geometric forms seem both timeless and universal, at the same time creates a specific response to a particular place. The examples are numerous, but this article will look briefly at seven of the most important works by the three leading Rationalists: Giuseppe Terragni, Adalberto Libera, and Angiolo Mazzoni.



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1–2 Terragni, Novocomum, Como, 1927–29.

Novocomum, Como, 1927–1929, Giuseppe Terragni with Attilio Terragni, engineer. Terragni's apartment block, erected by the development company Novocomum close to the shore of Lake Como, was the first major Rationalist building. Finished in 1929, the building provoked a major scandal since it departed radically from the drawing that had been submitted to the Building Commission. Instead of a nondescript Novecento apartment block with Classical decorative detailing,[5] Terragni erected a composition of clear geometric forms in bright yellow and orange, and with dramatic cantilevers engineered by his brother Attilio. According to the Terragni brothers, the building was conceived by analogy to the "Machine" both in its function ("each part serves a precise purpose") and its aesthetics ("the calm rhythm of voids and solids").[6] Photographs in contemporary books and newspapers showed to great advantage the long expanses of glass that gave each apartment a "wall of sky."[7] In particular, the view of the projecting corner with its recessed cylindrical shaft became the icon for the new architecture. In his *Belvedere dell' architettura italiana d'oggi* (1933), written to acquaint foreigners with the achievements of current Italian architecture, Pier Maria Bardi published a photomontage that juxtaposed the Novocomum with the Duomo of Como (1). As the accompanying text explained, the Novocomum was ushering in a new era worthy of that masterful façade (begun 1452) by the Maestri Comacini, with the dome (1731–1734) by Filippo Juvarra.[8]

The Novocomum's message was also directly related to its particular siting. While the balconies and the extensive glazing earned it the originally pejorative epithet *il transatlantico,* its overall massing corresponded to the earlier residential building by Caranchini behind it (2).[9] In effect, the Novocomum answers its neighboring structure with a statement about life in "the Machine Age." The Terragni brothers could well have been referring to it when they wrote, "what is the purpose of decorative and applied Baroque-like ornamentation if not to hinder the cleaning and preservation of our dwellings?"[10] The Novocomum responded with its clean lines devoid of any "useless ornaments."[11]

Perhaps the most dramatic aspect of this dialogue occurs at the corners. One can debate Terragni's originality vis-à-vis the possible influence of the glass cylinder at I. Gosolov's Workers' Club in Moscow (1928–1929).[12] The true significance of Terragni's recessed and glazed cylinders, however, is that they mirror the flattened masonry cylinders that project from the corners of the adjacent building. One could hardly imagine a more fitting response than this reversal of materials, forms, and methods of construction to signal a new age and a new mode of living.

Post Office, Agrigento, 1931–1934, Angiolo Mazzoni

Angiolo Mazzoni's first major building in a Modern idiom, one termed "rationalist" by the architect himself,[13] was the *palazzo postale,* or post office, in Agrigento (3, 4). Under Mussolini, the term *palazzo postale* actually reflected the physical and symbolic importance of the post office as a major factor in the modernization of Italy. Built lavishly with large budgets for fine stone or marble and lush interior furnishings, and often situated on the main *piazza,* the post office was the secular church of the Fascist state.

As a functionary in the Ministry of Communications, Mazzoni had to have his designs approved by the strong-minded Minister Costanzo Ciano. In this case, Ciano dismissed the project as "a 'toilet' or a water closet for modern barracks."[14] Only through the intervention of Senator Roberto De Vita, Counselor to the Post and Telegraph Administration, was Mazzoni able to initiate construction in 1932.[15]

At the public presentation of the model to the authorities of Agrigento on Oct. 23, 1931, Mazzoni's design won the approval of the municipality and the local press as a successful incarnation of modern values in harmony with the antique purity of Agrigento's architectural heritage. If the Greek temples just outside the city seemed to incarnate a timeless beauty, so too did the pure cylindrical form of Mazzoni's modern structure, whose concrete frame was faced in stone and in stucco. The interior, with a circular ceiling that seemed to float above the walls from which it was separated by a continuous band of clerestory windows, presented as bold and magical an optical effect as the harmony of a Greek temple front.

Just as Mazzoni's resolutely pure geometric composition related to the history of Agrigento, it also responded to the specific conditions of its site. Located at one corner of a large amorphous open space at the heart of town, the new post office pinned the corner where several streets converged and gave focus to the oversized *piazza.* Situated below an abrupt drop of the land, the building also connected the upper and lower cities with a staircase that gracefully winds up and around the exterior. Finally, since the hill against which it was built was composed of an unstable and crumbling stone, the cylindrical form was chosen as statically best suited to resist the push of the land.[16] Like the Novocomum before it, the post office in Agrigento was designed for the precise plot of land on which it was to be built.

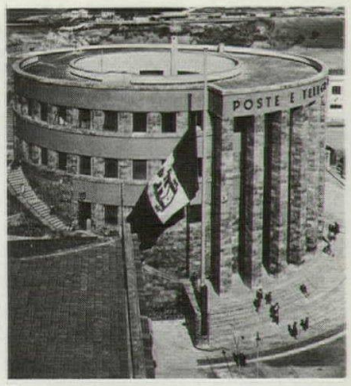
Elementary School, Trento, 1931–1933, Adalberto Libera

In 1931, Adalberto Libera designed an elementary school for the town of Trento, where he himself had been educated until the age of twelve. Mayor Scotoni envisaged the new building from an urbanistic as well as pedagogical point of view: by replacing a group of unsightly houses, the structure would also constitute a "harmonious" addition to the Piazza Raffaello Sanzio.[17] Located at the edge of the old town between the elevated Castello Buon Consiglio, with its buildings ranging from the period of Augustus to the 16th Century, and the equally venerable Torre Verde, so named because of its steep green glazed tile roof, the location for the school coincided with the line of the old city wall. Responding to these various site conditions, Libera conceived his building as a "recollection" of the city wall (5), a concept much appreciated in *Il Brennero,* the regional newspaper.[18]

The newspaper's story that accompanied the publication of Libera's first design on Oct. 18, 1931, is remarkable for its appreciation of Libera's ability to reconcile tradition and modernity as well as abstract forms and urban context. Designed "with exquisite sense of art in an unusually rich historical, artistic, and landscape setting," Libera's horizontal new city "wall" not only joined the castle to the tower, but also permitted a view of the hills beyond. Even the height of the front façade was coordinated with that of the old city wall to the east at the foot of the castle. In Libera's design, the modern flat roof, *de rigueur* for Rationalist architecture, also served the specific purpose of making the school an analogue of the city walls.[19]

At the same time that the elementary school harmonized with its urban and natural setting, it spurned, as the reporter for *Il Brennero* observed, the architectural styles of the castle and of the neighboring 18th-Century Palazzo Salvadori in favor of "a façade of an absolutely contemporary character."[20] The modernistic aspect of this design was progressively strengthened in Libera's second and third projects (6, 7) where he separated the central classroom block, the entrances, and the stair towers to fashion a composition of pure geometric forms. Now the building not only crystallized the Rationalists' goal of establishing a dialogue of simple prisms that both expressed and facilitated the activities within, but also responded more fully to the specific features of the site.

With the rounded stairwells at either side of the classroom block, the building now echoed the city wall to the east, which was also flanked by rounded bastions. As one approaches the school, there are places where a stairwell disappears while the rounded bastion takes its place (8). At such points, the new



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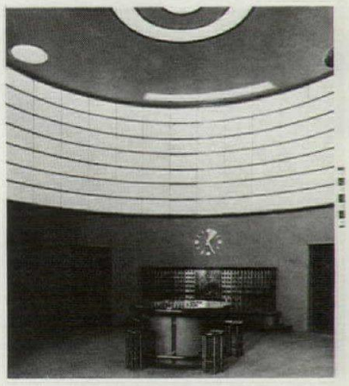

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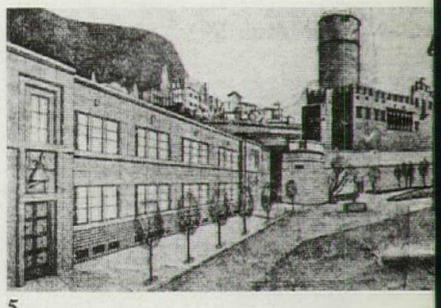
3–4 Mazzoni, Post Office, Agrigento, 1931–34.



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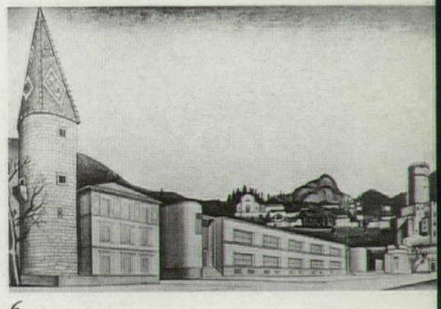

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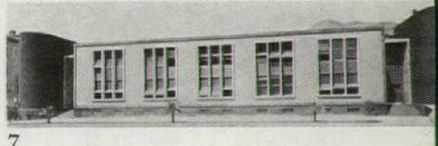

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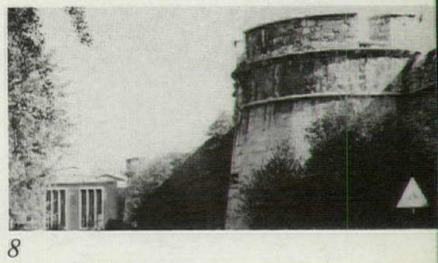

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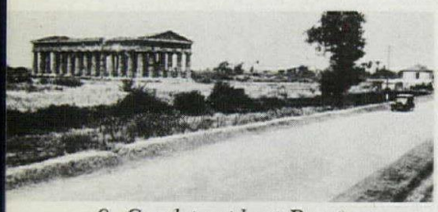
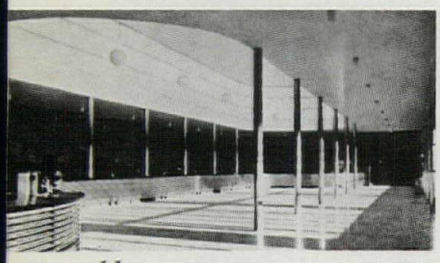
5–8 Libera, Elementary School, Trento, 1931–33.



9 Greek temple at Paestum.

10



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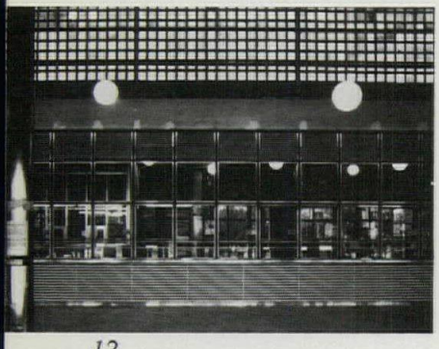

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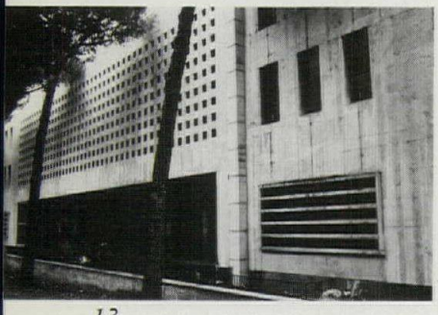

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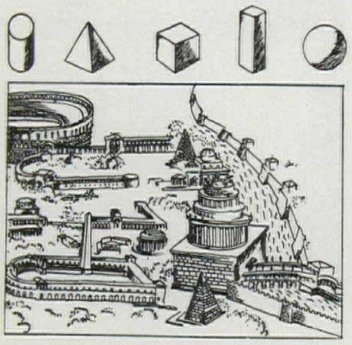
10–13 Libera and De Renzi, Post Office, Rome, 1933.



14 Le Corbusier, drawing, from Vers une Architecture, *1923.*

school seems paradoxically to be an integral part of the old city wall.

On the other hand, the Torre Verde to the west stands independently of its neighboring building (6) in a relationship that Libera repeats with the tall stair towers and the lower classroom block. This analogous effect has been achieved by slightly recessing the entrances to impart a sense of an intervening space. Viewed from this direction, the Torre Verde and the elementary school establish a different type of rhythm across the site. (Even the centrally located circular ventilation stack along the short wall of the school's courtyard, which pins the entire composition from within, enters into a dialogue on one side with the Torre Verde and on the other with the circular tower of the Castello, whose "nucleus" dates from the Augustan era.)[21] By rooting his design in the imagery of the town's towers, castle, and wall through the use of such "volumetric sympathies,"[22] Libera was able to establish a continuity with Trento's past while asserting the arrival of a new *civiltà*.

Post Office, Rome, 1933, Adalberto Libera with Mario De Renzi. Italian Pavilion, Chicago World's Fair, 1933, Adalberto Libera with Mario De Renzi, in collaboration with Valente.

The powerful abstract geometries of Libera's final design for the elementary school in Trento seemed to have been worked out in conjunction with his design for a post office in Rome at the foot of the Aventine Hill (10). In August 1933, Libera was one of four architects to win the competition to erect post offices in four neighborhoods undergoing intense urbanization at the periphery of Rome.[23] Perhaps no building incarnated the dual notion of an archaic age and machine civilization better than Libera's post office on the Aventine. Its pristine geometries with the implied dynamism of its diagonally glazed stairwells seemed to harmonize with both the Parthenon (447 B.C.) and the Grand-Sport (1921) automobile as found juxtaposed by Le Corbusier in *Vers une Architecture*.[24] This pairing had particular relevance as well for Italy, for as a photograph of a modern car on a recently completed autostrada passing in front of the Greek temples at Paestum indicates (9), the new systems of communication were rapidly altering Italian society as well as giving it physical access to its architectural and cultural heritage.[25]

Functionally, Libera's design was a direct response to the physical setting. Facing due south, the building is subjected to the intense rays of the Roman sun, literally from sunrise to sunset. Here the public area, announced by a sheer glass wall, is effectively protected by the deep exterior portico that precedes it. This portico also serves as a covered passageway for cars and small trucks to make fast deliveries and for passersby to cut across a site whose sidewalk follows a wide and inconvenient curve around the front of the property. The glazed clerestory on top of the public hall is furnished with translucent panes that assure diffuse natural illumination throughout the day (11, and 12 with later alterations). The offices are signaled by their own type of fenestration, a series of square, punctured windows that the Romans dubbed a dovecote (13, back of building, and 10).[26] Like the eastern stairwell of the elementary school in Trento, the two stairways on the south (front) façade of the post office are boldly announced with diagonal glazing, here integrated with a crisscross pattern of solid panels and stringcourses. This dramatic arrangement not only coordinated the lighting with the movement of the steps, it also suggested the rapid transmittal of ideas through mail and telegraph that the postal service was to provide.

While the forms of Libera's post office can be explained according to both functional requirements and the general ideological premises of Modern architecture as well as of the so-called Fascist Revolution, they also respond directly to two aspects of Rome's architectural and cultural heritage. The most evident, because directly perceivable, feature is the relationship between the pristine geometrical blocks of the travertine-clad *palazzo postale* and the comparable purity of the neighboring marble-clad Pyramid of Cestius (c. 12 B.C.) Once again, Libera seems to have given a direct response to Le Corbusier's *Vers une Architecture* where, in the chapter entitled "Architecture, the Lesson of Rome," Le Corbusier "reads" the ancient city as an encyclopedia of pure geometric prisms (14). This chapter on the fundamentals of architecture opens with a photograph of the Pyramid of Cestius taken from outside the Porta San Paolo (15) and is followed by views of the Coliseum, the Arch of Constantine, and the Pantheon. Libera's post office could complete the series by virtue of its form as well as its proximity to the neighboring pyramid. Viewed from the post office, the pyramid is framed by the vertical supports of the portico (16). From the other direction and through a new breach in the Aurelian wall opened during World War II, the triangular and cubic blocks, resplendent under the Roman sun, now face each other in silent discourse (17).

The other tie to Roman history can be found in the similarities between Libera's post office and the Campidoglio as restructured in the mid-16th Century by Michelangelo. Like the Campidoglio, the *palazzo postale* orchestrates a series of open and closed forms into a processional sequence with analogous symbolism. The first clue to what seems to be Libera's intentional parallel to the Capitoline Hill is the post office's freestanding *cordonata* (ramped stairs) (10) on axis with the main public hall which, in turn, is enclosed on three sides by the taller building. In a sense, Libera has turned several of the elements of the Campidoglio inside out and around. The oval *piazza* has become the luminous interior space of the main hall; the attached porticoes of the Palazzo dei Conservatori and of the Palazzo Nuovo have become one long, freestanding portico in front of the post office. Both elements, moreover, have been rotated 90 degrees from their position on the Capitoline Hill.

The parallel between the two buildings was no mere formal play, but rather spoke directly to the contemporary vision of the Fascist Revolution. The Campidoglio, as Ackerman has explained, through the stellate pattern of its pavement on the raised oval mound of the *piazza,* symbolically identified Rome as the *Caput Mundi,* or center of the universe. In the middle of the oval is the statue of Marcus Aurelius, considered the successor to Apollo the Kosmokrator or ruler of the universe. This statue replaced the "hallowed" figure of the Wolf suckled by Romulus and Remus, which had sat over the entrance to the Palazzo dei Conservatori in the 15th and early 16th Centuries.[27]

At the post office, the architectural symbolism evokes both traditions of the founding of Rome and of its imperial glory. The procession begins with the *cordonata* that leads up to the portico which, in turn, frames a view of the Pyramid of Cestius. The procession then culminates in the diaphanous oval central hall.

The Pyramid of Cestius was not only a symbol of Roman antiquity, but was known even more specifically as the *meta* or Pyramid of Remus. Romulus had his pyramid at the other side of Rome between the Castel Sant'Angelo and the Vatican Hill.[28] As for the central hall of the post office (11), this room, along with the diagonal patterning on the stairwells, corresponds in form and meaning to the central *piazza* of the Campidoglio. Libera's post office, then, once again posited Rome, now the Rome of Mussolini, as the center of the universe thanks to its new systems of communications.

As original as this architectural solution might be, the message itself was commonplace in Fascist thought. Especially since the celebration in 1932 of the Tenth Anniversary of the March on Rome, this theme had become the leitmotif of Fascist rhetoric, repeatedly enunciated in speeches and portrayed in the visual arts. The post offices by Angiolo Mazzoni in Gorizia and La Spezia, for example, inaugurated in October 1932 and November 1933, respectively, featured murals that celebrated this theme. At Gorizia, Edoardo Del Neri's fresco evoked the breadth of Italian communications and commercial expansion with images of planes and boats spreading out to Africa and America (18). In La Spezia, the Futurists Enrico Prampolini and Fillia (Luigi Colombo) covered the interior of the tall tower with ceramic mosaics placed symbolically at the top of the stairs and depicting Italian radio, telegraph, air, land, and sea communications reaching out over the world (19).[29]

While Libera was designing his post office for Rome, visitors to the Chicago World's Fair of 1933, where the theme was "A Century of Progress," were encountering the message of the Campidoglio as reinterpreted by Fascist society in the Italian pavilion that Libera had just designed with his partner Mario De Renzi and in collaboration with the architect Valente (20, 21). The Italian press quickly recognized the dynamic symbolism of this building that combined the imagery of the ship and the plane along with a suggestion of the locomotive.[30] Situated on the shores of Lake Michigan, it seemed, in the eyes of contemporaries, ready "to take off into the sky"[31] or about to sail out to sea. In this manner, the Italian pavilion seemed to express the dynamism of "Italy on the move."[32]

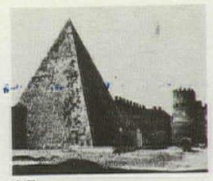
The partial evocations of the ship, plane, and locomotive were joined together by a colossal fasces, explained in the Italian press in terms reminiscent of the cultural and political meaning of the Capitoline Hill: "a giant *Fascio Littorio* whose illuminated axe seems like the beacon lit by Fascism for the renewal of Italy and the pacification of Europe."[33] In the interior, this message was rendered more explicitly through another giant fasces with the word DUX (leader, or duce) beside an enormous portrait of Mussolini, the entire image equivalent to the Capitoline statue of Marcus Aurelius, and accompanied in large letters by ROMA CAPUT MUNDI.[34]

The exhibition pavilion cast Italy not only as the global center of modern communications in a general way, but also reflected the particular accomplishments of Italian aviators. In 1931, General Balbo, with his squadron of 12 seaplanes, made the first transatlantic flight by Europeans using this new mode of transport. The event was celebrated in paintings (22) and even promoted the first exhibition of *Aereo-pittura,* held in Rome.[35] Now, two years later and in conjunction with the World's Fair, Balbo would repeat this feat and then proceed to Chicago both to inaugurate the Italian pavilion, whose forms echoed those of his seaplane, and to dedicate a statue of Christopher Columbus, considered the "Italian" explorer who had discovered America.[36]

Just as Balbo's 12 seaplanes constituted the 20th-Century equivalent to the 12 compartments of the gridded pavement of the Campidoglio, which represented the 12 signs of the zodiac "used to suggest the Dome of Heaven,"[37] so too did Libera's post office on the Aventine translate the symbolism of the Capitoline Hill into a celebration of Italy's new and rapid means of transport and communication. To borrow the terminology from a review of the first exhibit of *Aereo-pittura,* the upward movement of the diagonal gridding reflected the "vibrant," "pulsing" dynamism, the *slancio* or rush of the plane, while the luminous central hall captured the sense of "the ecstasy of a flight that could be compared with the ecstasy of a prayer, a fusion with the infinite."[38] No less than *Aereo-pittura,* Libera's post office realized through light and form what F.T. Marinetti, prime mover of Futurism, had termed the "geometrization of the skies."[39]

Post Office, Littoria (today, Latina), 1932, Angiolo Mazzoni

The exhibition in the Italian pavilion at the Chicago World's Fair celebrated the Fascist victory over the land as well as its outreach to world markets. The most dramatic accomplishment in the former era was the draining of the Pontine Marshes, a task, in the words of a contemporary headline, that



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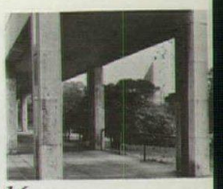

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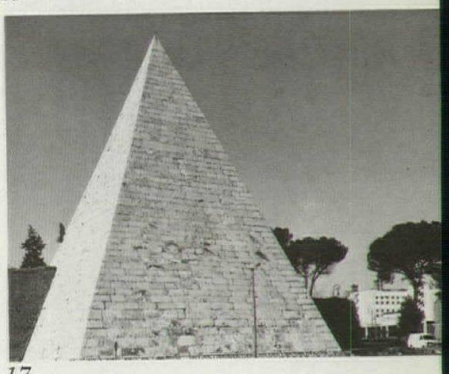

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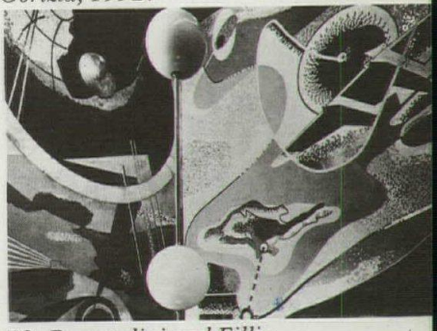
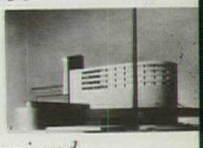
15–17 Pyramid of Cestius, 12th Century B.C.

18 De Neri, Post Office fresco, Gorizia, 1932.



19 Prampolini and Fillia, mosaic, La Spezia, 1933.



20–21 Libera, De Renzi and Valente, Italian Pavilion, Chicago World's Fair, 1933.

22 Balla, Aereo-pittura painting, 1921.

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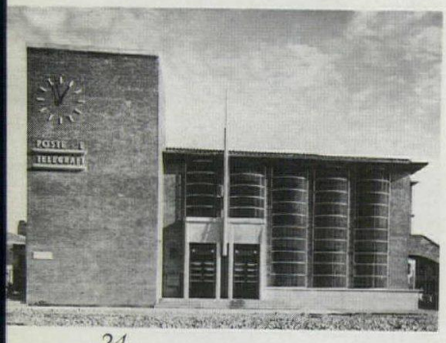

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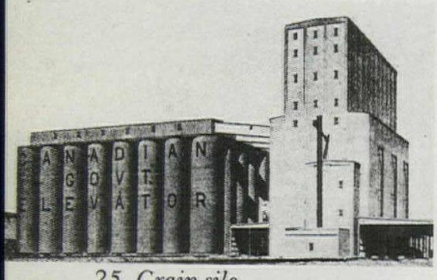
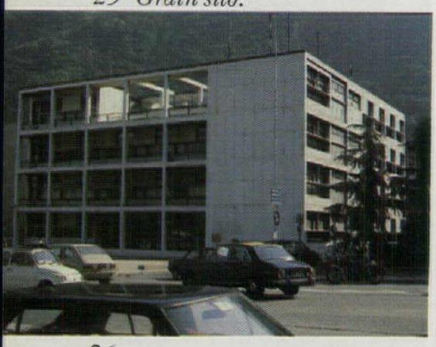
23–24 *Mazzoni, Post Office, Littoria, 1932.*



25 *Grain silo.*



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26–28 *Terragni, Casa del Fascio, Como, 1932–36.*

had been tried in vain for 2500 years.[40] On Dec. 18, 1932, one year after the work had begun and only six months after the ground breaking for the first new settlement, Mussolini inaugurated the town of Littoria.[41] To Marinetti, who celebrated the "velocity, acceleration, . . . warrior-like violence, absolute heroism" of this work in an article entitled "Ritmo eroico" (heroic rhythm), the highlight of the ceremony occurred when Il Duce, accompanied by the Minister of Communications Ciano ("the genial governor of Italian velocity") and Marinetti himself, sent the customary first telegram to King Vittorio Emanuele III from Mazzoni's new post office (23, 24).[42] This was a building that seemed to incarnate the "heroic rhythm" of the Fascist movement in general, and of its particular achievement on the Pontine Marshes.

The analogy between the cylindrical forms of Mazzoni's post office and the North American grain silos (25), published in both Le Corbusier's *Vers une Architecture* and Gropius's *Internationale Architektur,* is self-evident. At Littoria, Mazzoni created an architectural counterpart to these engineering structures whose clean articulation and powerful massing of simple, repetitive volumes had symbolized the spirit of a new machine age to the pioneers of the Modern Movement. Now Mazzoni's contemporaries universally praised his building for precisely this reason: ". . . but I confess that this post office truly fascinated me with the audacious harmony of its lines, the balanced play of its masses, with its ample windows and round walls where every practical detail necessary for the proper functioning of the building finds a decisive and coherent form."[43]

The analogy to the grain silos was not at all gratuitous, for Mazzoni's building was also destined for an agricultural region. The rural character of the setting was further expressed through the arched exterior stairs, reminiscent of entrances to traditional Italian farm houses. Finally, Mazzoni's cylindrical forms were also a practical response to the characteristic hazard of the Pontine Marshes—mosquitos. In effect, the giant cylindrical, metallic grates of Mazzoni's building were antimalarial screens that made an aesthetic virtue out of a pressing necessity, what Marinetti called an "example of utility which has become beauty, *trovata,* lyricism; in other words, a Futurist surpassing of simple Rationalism."[44]

Casa del Fascio, Como (1932–1936), Giuseppe Terragni.

The Fascist party headquarters for Como designed by Giuseppe Terragni combines the various types of meaning found in the previous buildings in a synthesis that makes it worthy of its reputation, since the time of its completion, as the supreme achievement of Italian Rationalism. These categories might be summarized as follows: 1 the combination of pure geometries and abstract forms seen as universal or timeless as well as expressive of the modern machine age; 2 the reference to historic origins whether as indigenous or high-style architecture, both with a political message; 3 the response to site conditions that epitomize the city in general and, in particular, are specific to the building's actual location; 4 the reflection of contemporary Fascist ideology according to the duality of the forward looking motto, "Fascism on the move,"[45] and of the nostalgic glance backward to the myth of imperial Rome that this "thrust" toward the future was seen as reenacting.

Italian Rationalist architecture, in general, and the Casa del Fascio, in particular, had to be defended by its champions against charges that it was not Italian but rather an indiscriminate copying of a Northern European International architecture. Comparisons between the Casa del Fascio and the VESNA School in Brno, Czechoslovakia, by Bohuslav Fuchs with Joseph Polášek (1929–1930) and the Altersheim in Kassel, Germany, by Otto Haesler and Karl Völker (1930–1931) brought double disgrace upon the Italian building for its purported lack of originality and its non-Italian character. Here one would have to consider the degree to which Terragni's Casa del Fascio combined features from his earlier project for a gas works (1927) as opposed to these two foreign buildings. In any event, in the Casa del Fascio, Terragni elaborated a complete, three-dimensional spatial system of gridded forms, shifted rectilinear geometries, and spatial and luminous transparencies that constitutes one of the major achievements of 20th-Century architecture (26, 27, 28). As for the purported non-Italian quality of the building, it is not difficult to demonstrate that it was not only thoroughly Italian, but was also intended specifically for Como and for its particular site.

Located behind the Duomo and just beyond the ancient Roman town, the Casa del Fascio can be considered the ultimate Fascist building. This judgment derives in part from the abstraction of the gridded Roman settlement presented on the principal façade. To Terragni, Como was a town that "until this day has retained within the confines of its walls the character of a Roman town."[46] What better way, then, to characterize the Casa del Fascio for Como than to present the image of the city on the front façade.

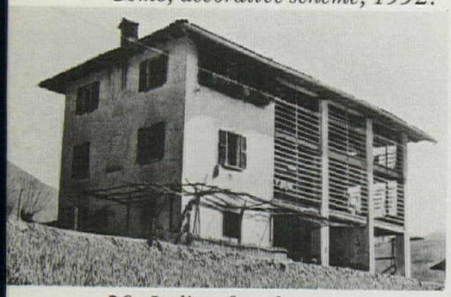
This visual figuration of the ancient Roman town plan enabled Terragni to imbue the Casa del Fascio with "the stately sense of the universality of Fascism," the sense that "Fascism dominates and carries the future of both the nation and of humanity with it."[47] Like Libera, Terragni combined the use of pure geometric forms suggestive of universal and enduring values with references to imperial Rome to convey the customary Fascist themes. For Terragni, the evocation of the advancing Roman empire came through conceiving the Casa del Fascio as "a kind of provincial outpost ("una *Casa Cantoniera*") of the new Roman Road."[48]

The Casa del Fascio, as the modern-day equivalent of the imperial Roman order, also had to incarnate the Fascist motto, *credere, obbedire, combattere* (to believe, obey, combat), which figured in Terragni's description as well as in his various decorative schemes for the front façade (29). Indeed, the uniform, disciplined grid throughout the building con-

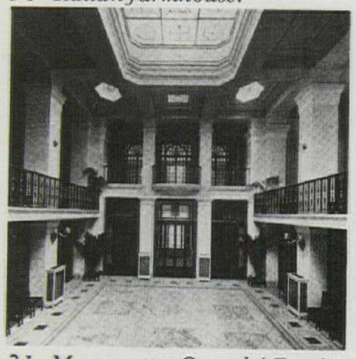
veys this sense as eloquently as the written words. The severity of this architecture also found a perfect analogue in the battery of 16 glass doors that would open simultaneously as the Fascist cadres marched out of the central atrium to join the assembled crowd in the *piazza*. If Terragni had been successful in realizing the final decorative program, the façade would have featured a complementary photomontage of Il Duce along with Fascists either marching or saluting.[49]

While the Casa del Fascio found its legitimacy in the image of the ancient Roman town of Como, it also presented itself as the inheritor of a long tradition of Italian rural architecture that is marked by an extensive front loggia. In 1936, Giuseppe Pagano, editor of *Casabella*, published a study tracing the evolution of this type of rural farm house for the dual purpose of determining prototypical characteristics worthy of incorporation in new rural buildings, and of demonstrating the presence in this indigenous architecture of "the same moral attitude" as found in Rationalist architecture; that is, of responding primarily to "the laws of utility, technics, and economy, yet without actually renouncing aesthetic aims."[50] While Pagano's book

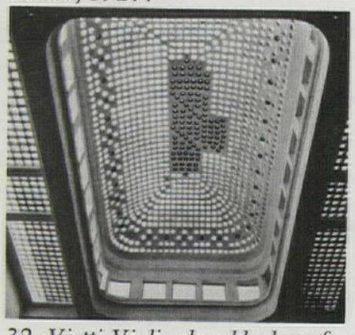
29 Terragni, Casa del Fascio, Como, decorative scheme, 1932.



30 Italian farmhouse.



31 Mezzanotte, Casa dei Fasci, Milan, 1927.



32 Vietti-Violi, glass block roof, Milan, 1930.

33 Casa del Fascio (right).

34 Building opposite Duomo, Como.

appeared at the time of the completion of the Casa del Fascio, its principal usefulness is to remind us about a native building tradition that Terragni undoubtedly knew well (30).

According to Pagano, the Italian farm house with loggia, found throughout Italy but specifically in the region around Como, underwent an evolution of form. The loggia itself progressed from a simple wooden frame attached to the front of the house to a completely masonry structure integrated within the plane of the southern front façade. In this state, the loggia protects the drying grain from the rain while the wall continues the drying process at night by radiating heat absorbed during the day. If one adds to this characterization the most advanced form of roof (flat) and of volumetric configuration (cubic), one has a complete precedent for Terragni's Casa del Fascio as a thoroughly "Mediterranean" and Italian building.[51]

Since many architects and critics today consider the Casa del Fascio as an independent, abstract system of form, it is important to keep in mind that this building's aesthetics correspond perfectly to what Pagano termed the tendency in Italian rural architecture "to limit artistic fantasy in favor of standardizing as much as possible the elements of composition (windows, pilasters, arcades) that yield a rhythmic cadence through the repetition of identical structural elements. . . . This sense of continuous rhythm, so close to modern taste, has its highest expression in the rural loggia."[52] Not only the form, then, but also the aesthetics of Terragni's Casa del Fascio derive from traditional rural architecture to which they seem to make explicit reference. In fact, Pagano would later remark upon this similarity to express his disappointment at Terragni's choice of so common a building type as a model for a building in all other respects so original.[53]

Terragni, though, was not content with simply adopting the type of the farm house as the way station for Fascism on the road from Rome. He also imbued it with a modernity that corresponded to his own idealistic interpretation of the Fascist cause. With its extensive glazing and its rich marble cladding, the Casa del Fascio became the highest form in the successive stages of the rural prototype, now conceived as a physical realization of Mussolini's dictum that Fascism is a "house of glass into which all can look."[54] To Terragni, the Casa del Fascio literally was to render visible to the masses the decision-making processes of their leaders. In this manner, the modern methods of concrete construction that permitted the abundant use of plate glass were employed to fashion a built statement about the Fascist state. Even more, in this way the building was to become an instrument in forging a new Fascist society.

The most significant feature that made the building a transparent "house of glass" was the sequence of 16 doors that placed only a glass wall between the *piazza* and the interior atrium. Certainly the suggestions of immediacy and simultaneity that this juxtaposition of spaces conveyed distinguishes Terragni's building from the other Fascist party headquarters of his time. While Terragni believed that he was rendering the essence of Fascism in architectural form, it must also be recognized that he was repeating a favorite revolutionary conceit of transparency, both physical and moral, common to both the French and Russian revolutions.

The central atrium that figured so prominently in Terragni's design, while used in an unprecedented manner, was actually a variation of similar covered courtyards in other Fascist party headquarters. Paolo Mezzanotte, for example, had organized the Casa dei Fasci (1927) in Milan (31) around an atrium also provided with a peripheral circulation gallery, a feature that Terragni would also employ. Since Terragni made extensive use of glass block, considered a modern material, reference should also be made to the glass block roof over the atrium in the Fascist headquarters for the Milanese district "A. Sciesa" (1930) by Paolo Vietti-Violi (32).

These Fascist buildings were certainly not the first to be organized around a centrally glazed atrium. In effect, the Casa del Fascio can be seen as the culmination of a half-century of Italian public and commercial architecture where the central court with a glass roof, used as the primary public space of the building, both symbolized and realized an essentially modern interior. The first buildings in Italy to develop this type were banks in major cities built at the turn of the century. These were followed by central urban post offices, and finally by Fascist party headquarters.

Finally, the gridded frame of the Casa del Fascio in Como must be considered in relation to its specific site. Just as the mass of the building harmonizes with the older structures of similar height to either side, so too does the loggia respond to the arched arcade and to the colonnades opposite the north and south apses of the Duomo. Facing the main apse, the Casa del Fascio forms a third screen wall to help give closure to the large, irregular *piazza* that bleeds away in its direction (33). While Terragni envisaged replacing several of the buildings around the *piazza* with other civic structures, his proposed substitutes would have strengthened the original effect and, incidentally, would have retained the Neoclassical Teatro Sociale (1811–1813) by Giuseppe Cusi (whose portico is partially shown in illustration 33).[55]

Perhaps the ultimate significance of the loggia of the Casa del Fascio is revealed on sunny days, at a time when the front façade is thrown into shadow while only the more deeply recessed loggia on the top floor remains illuminated with sunlight (26). Then, one is reminded of the façade of another building with an upper story loggia to the opposite side of the Duomo (34). Just as Bardi had once used the technique of photomontage to juxtapose the Novocomum with the Duomo (1), now Terragni seemed to be suggesting a similar comparison between the Casa del Fascio and the Duomo. It is as if the architect were asking the viewer to substitute his building for the analogous one that occupies the prime position in Como opposite the façade of the cathedral. Here, Terragni's message was analogous to Bardi's and yet also


STOP
FINE

Precursor

contained a political component as reflected in the contemporary theme of the great successive Italian epochs: ancient Rome, the Church, and the Fascist state. This message had been rendered symbolically, for example, through statuary in front of Angiolo Mazzoni's post offices in Agrigento (3) and Bergamo (1932).[56] Now Terragni seemed to be conveying the same lesson in an even more abstract way.

If one considers the Casa del Fascio as the symbol for Fascism inheriting the mantle of the Christian era, then one discovers the final significance of the loggia. While other architects had designed Fascist party headquarters with a simple balcony from which the leaders would harangue the crowds, Terragni employed a gridded and tiered loggia reminiscent of the old benediction loggia of Saint Peter's (c. 1461–1495) in Rome. Terragni presented his modern rendition as the appropriate setting for the high priests of Italy's new faith.

Conclusion

With each of the preceding examples, one is tempted to agree with Tafuri that Rationalist architecture does "enter the town as if 'entering a foreign land.' " Terragni's Novocomum (1) and Libera's Chicago pavilion (20, 21) seemed like giant machines only temporarily poised upon the soil. Mazzoni's post offices in Agrigento (3) and Latina (23, 24) and Libera's post office in Rome (9) have the presence of temples quite sufficient in themselves. Libera's elementary school in Trento (5–8) and Terragni's Casa del Fascio in Como (26–28, 33) abolish temporal and spatial distinctions to join an old urban fabric while remaining as fully independent entities. All of these buildings, moreover, either completely or virtually freestanding, have the quality of true architectural monuments. If there is a surrealistic aspect to these buildings, though, it resides as much in their complex responses to discrete urban conditions and political ends as to any abstract purpose.

[1] Gruppo 7: Luigi Figini, Guido Frette, Sebastiano Larco, Gino Pollini, Carlo Enrico Rava, Giuseppe Terragni, and Ubaldo Castagnoli, replaced in 1927 by Adalberto Libera.

[2] "Architettura"; "Architettura II: gli stranieri"; Architettura III: impreparazione, incomprensione, pregiudizi"; "Architettura IV: una nuova epoca arcaica," *La Rassegna Italiana,* Dec. 1926–May 1927. For English translations, see *Oppositions* 6 (1976), 86–102; 12 (1978), 88–105.

[3] Manfredo Tafuri, "The Subject and the Mask: An Introduction to Terragni," *Lotus International,* 20 (1978), 17. See also, Peter D. Eisenman, "From Object to Relationship: The Casa del Fascio by Terragni," *Casabella,* 344 (Jan. 1970), 38–41 and "From Object to Relationship II: Giuseppe Terragni," *Perspecta,* 13/14 (1971), 36–65.

[4] *Ibid.*

[5] For an illustration, see *L'Architettura: cronache e storia,* 153 (July 1968), 154.

[6] Attilio and Giuseppe Terragni, "Relazione sul progetto per la costruzione di un palazzo per la Società Immobiliare Novo Comum," TM,1. May 13, 1928-VI, Como. Terragni Archives. While a typed copy carries the stamp "Ing. A Terragni, Arch. G. Terragni," the handwriting of the manuscript copy was identified for the author by Ingegnere Paolo Terragni as that of his father Attilio.

[7] *Ibid.,* 13.

[8] Pier Maria Bardi, *Belvedere dell'architettura italiana d'oggi* (Milan, 1933-XII), tavola 4.

[9] This similarity was first pointed out by Thomas L. Schumacher, *Il Danteum di Terragni, 1938* (Rome, 1980), 54 and fig. 26.

[10, 11] Terragni, "Relazione," 1.

[12] *L'Architettura,* 163 (May 1969), 13–16.

[13] "Il nuovo Palazzo delle Poste e Telegrafi di Agrigento," *Il Giornale d'Italia,* Oct. 24, 1931; "Il nuovo Palazzo delle Poste ad Agrigento," *Giornale di Sicilia,* Oct. 24, 1931.

[14-16] Angiolo Mazzoni, Manuscript notes, G1, fol. 12 Bis. Mazzoni Archives.

[17-20] "Il Comune per l'educazione delle nuove generazione: Il palazzo scolastico di Piazza R. Sanzio," *Il Brennero,* Oct. 18, 1931.

[21, 22] Agnoldomenico Pica, *Nuova architettura italiana* (Milan, 1936-XIV), 82–83.

[23] *Il Messaggero,* Aug. 11, 1933.

[24] See also the Gruppo 7's discussion of "pure rhythm" and the Parthenon in "Architettura," (note 2).

[25] Ministero Lavori Pubblici, *Opere pubbliche. I (1922)-X(1932)* [Rome, 1932], i–vii, 33ff. See also Tomaso Silloni, *L'Etat mussolinien et les réalisations du fascisme en Italie* . . . (Paris, 1931).

[26] "Palazzi postali a Roma," *Case d'Oggi* (June 1938), 19.

[27] James S. Ackerman, *The Architecture of Michelangelo* (London 1970), 163–173.

[28] Arnaldo Bruschi, *Bramante* (London, 1977), 130.

[29] Gorizia: *Il Piccolo di Trieste,* Oct. 26, 1932. La Spezia: *La Nazione,* Nov. 11/12, 1933; *Corriere del Tirenno,* Nov. 13, 1933.

[30] Alessandro Sardi, "L'Esposizione di Chicago . . .," *La Tribuna,* May 30, 1933. See also, Guido Bardi, "L'Italia sulle rive del lago Michigan . . .," *Il Messaggero,* June 23, 1933.

[31] "Il Contributo italiano al progresso del mondo . . .," *Il Giornale d'Italia,* July 6, 1933. See also, A. Sardi, "L'Esposizione di Chicago e l'Italia . . .," *La Tribuna,* March 18, 1933.

[32] Sardi, "L'Esposizione," *La Tribuna,* May 30, 1933.

[33] "Il Contributo italiano."

[34] *Ibid.;* Bardi, "L'Italia."

[35] Marilena Rossati, "La Prima mostra di Aereo-pittura," *Emporium* (April 1931), 249–250.

[36] "Il Contributo italiano"; Sardi, "L'Esposizione," *La Tribuna,* May 30, 1933.

[37] Ackerman, *Michelangelo,* 170.

[38] Rossati, "La Prima mostra," 249, 251.

[39] Quoted in Rossati, *Ibid.,* 249–250.

[40] Gino Carocci, "L'Opera tentata invano per 25 secoli diviene realtà per il tenace volere del Regime," *Gazetta del Popolo,* Dec. 19, 1932.

[41, 42, 44] Filippo Tommaso Marinetti, "Ritmo eroico," *Gazzetta del Popolo,* Dec. 19, 1932.

[43] Beatrice Testa, "Visita a Littoria," *Il Mattino Illustrato,* Feb. 2, 1933.

[45] Sardi, "L'Esposizione," *La Tribuna,* May 30, 1933.

[46] Giuseppe Terragni, "Como," *Quatrième Congrès international d'architecture moderne. Rapport des séances du lundi 31 juillet 1933.* TM, 10. Terragni Archives.

[47, 48] Giuseppe Terragni, four-page typed manuscript on the Casa del Fascio, Como. Terragni Archives.

[49] For Terragni's decorative program, see Diane Ghirardo, "Politics of a Masterpiece: The *Vicenda* of the Decoration of the Façade of the Casa del Fascio, Como, 1936–39," *The Art Bulletin,* 62 (Sept. 1980), 466–478.

[50] Giuseppe Pagano and Guarniero Daniel, *Architettura rurale italiana* (Milan 1936), 10.

[51, 52] *Ibid.,* 58–76.

[53] Giuseppe Pagano, "Tre anni di architettura in Italia," *Casabella,* 110 (Feb. 1937), 4.

[54] Giuseppe Terragni, "Marmi," TM, 1. Terragni Archives; "La Costruzione della Casa del Fascio di Como," *Quadrante,* 35/36 (Oct. 1936) reprinted in Enrico Mantero, *Giuseppe Terragni e la città del razionalismo italiano* (Bari, 1969), 130. See also, "Casa del Fascio di Como," *Case d'Oggi* (June 1937), 8.

[55] Daniele Vitale, "Casa del Fascio di Como," *Rassegna,* 11 (Sept. 1982), 28–29, 36, fig. 33.

[56] Agrigento: See note 13. Bergamo: Umberto Ronchi, "Una Visita al Palazzo delle Poste a Telegrafi," *La Voce di Bergamo,* Oct. 27, 1932.

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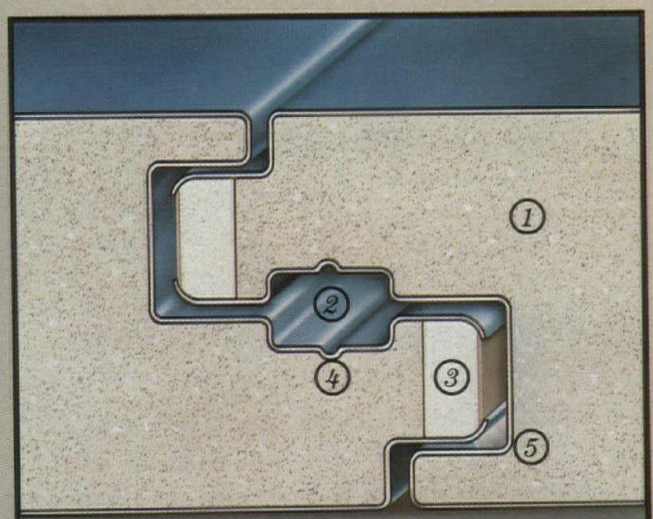

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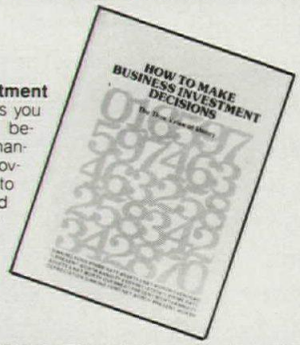

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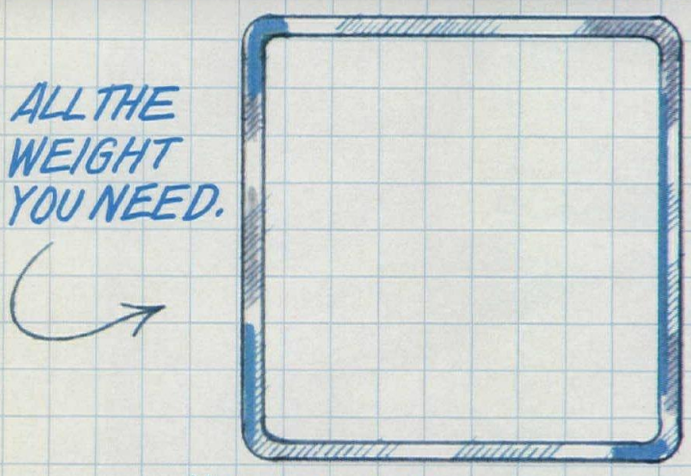

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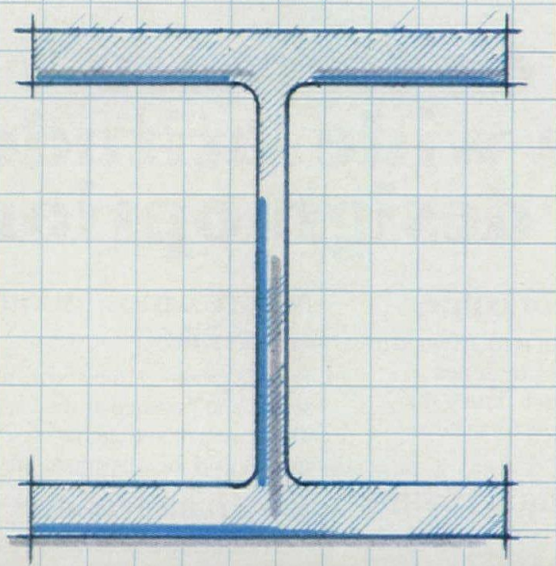

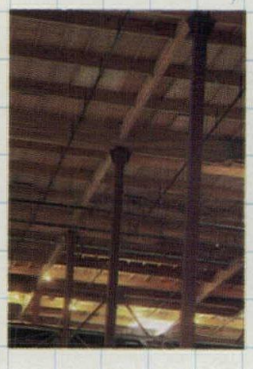

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When the rain comes

The subject of heated political debate, acid rain also raises issues pertinent to the design, detailing, and specifying of buildings.

We read of the physical damage attributed to acid rain: of the rivers and lakes devoid of animal life, of statuary crumbling beyond recognition, of buildings eroding away, with annual losses estimated at $2 billion. We cannot stop the rain. Nor can we easily stop the burning of fossil fuels or the use of internal combustion engines, both of which significantly contribute to our acidic atmosphere.

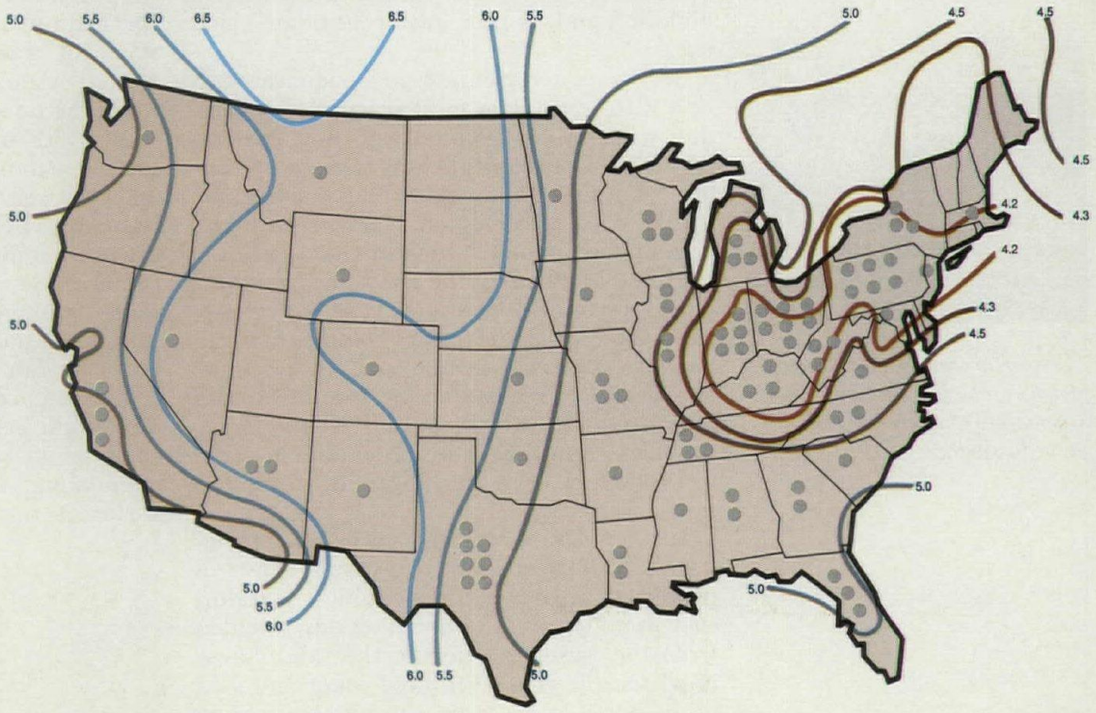
We might think we have no real defense against acid rain, but we have. By understanding how an acidic environment affects materials, the architect can greatly reduce the acid-induced deterioration of buildings through proper detailing and material selection. The threat of acid rain may never go away, for it has several natural as well as man-made causes. But we can moderate its effects by planning for it, by designing buildings with deterioration in mind.

What acid rain is

To understand acid rain, we must first understand the misconceptions that surround it. The term acid rain is itself a misnomer. Acid fog, acid snow, acid soil as well as sulfur and nitrogen oxide gases all contribute to the acid attack of building materials. The more accurate term used by scientists is acid deposition. Also, acid rain encompasses more than the chemical reaction of acids with the exterior of a building. Acid rain has become the general term for a whole series of chemical, physical, and biological processes whose effects on buildings range from minor surface discoloration to the possible destruction of structural members themselves.

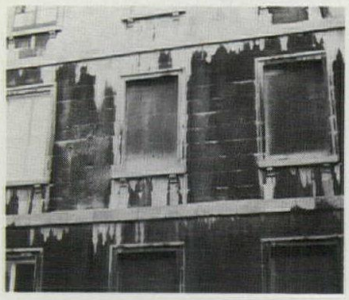
On the pH scale from 1 to 14, everything above 7 constitutes a base or alkali and everything below 7, an acid. Pure rain, which involves the reaction of distilled water and carbon dioxide in the air to form a weak carbonic acid (H_2CO_3), has a pH of 5.6. Any precipitation below that number is considered acid rain. The pH scale is logarithmic, so that an acid with a pH of 4.6 has ten times the strength of carbonic acid at 5.6. Rain with a pH as low as 2.1 has been recorded in the United States.

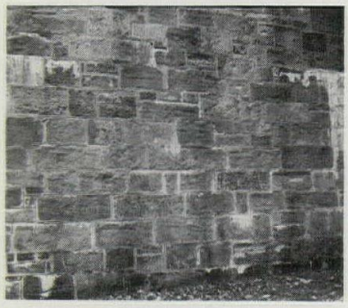
Apart from carbon dioxide, the two compounds that most contribute to the acidity of the atmosphere are sulfur dioxide (SO_2) and the oxides of nitrogen (NO_x). While sulfur dioxide occurs naturally in volcanic eruptions, forest fires, and the organic decomposition of plant life, its levels in the atmosphere have increased since the industrial revolution. Many scientists attribute that to the increased burning of fossil fuels and smelting of ores.



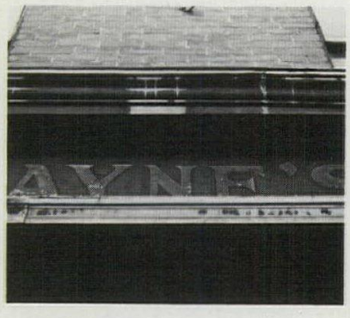
SOURCES AND DISTRIBUTION OF ACID RAIN

This map of the United States, developed as part of the U.S.-Canada Memorandum of Intent on Transboundary Air Pollution, shows the level of sulfur and nitrogen oxide emissions in various states (each dot represents 500 metric kilotons of emissions) and the occurrence of acid rain (the numbers indicate the average pH of rain within each contour). For buildings, the pH of the rain may matter less than the amount of sulfur and nitrogen oxides emitted within a five-to-ten-mile radius of a site.





The surface erosion of calcareous stone occurs in wall areas washed by acid precipitation (top) while subsurface delamination progresses behind the soot-embedded crusts shielded from the rain. Acid deposition also can leach out the lime in mortar (above) and leave behind a salt residue visible as a white powder called efflorescence.



Nitric acid can remove the oxide patina on metals such as copper (above), further eroding the metallic surface.

The United States, for example, emits into the air over 26 million tons of sulfur dioxide every year, with one coal-fired power plant able to release, annually, as much sulfur dioxide as the Mount St. Helens eruption. Sulfur dioxide can react with water in the atmosphere to form a weak acid, sulfurous acid (H_2SO_3), or with oxygen to form sulfur trioxide (SO_3), which can combine with water to form the much stronger sulfuric acid (H_2SO_4).

The oxides of nitrogen also have a natural source in fertilizer outgassing. Their amount in the atmosphere, though, is expected to increase by 35 percent over the next 20 years to almost equal the levels of sulfur dioxide, coinciding with the increased burning of coal and the continued widespread use of the automobile, whose high temperature combustion engine emits nitrogen oxides in its exhaust. The Los Angeles Basin, for instance, has more than twice the concentration of nitrogen oxides as it does sulfur oxides. Nitrogen oxides (NO_x) react with water or, as ammonia (NH_3), with oxygen to form nitrous and nitric acid (HNO_2, HNO_3).

Much of the acid-related damage to structures comes not from acidic precipitation, but from sulfur dioxide and nitrogen oxide gases directly deposited on and absorbed by building materials. When those dry compounds react with dew or other moisture on a building, they can form strong acids. Since sulfur and nitrogen oxide gases have a relatively short life in the atmosphere, local rather than distant polluters often pose the greatest threat to buildings, making structures in urban or industrial areas the most susceptible to acid-related deterioration (see Table 3).

What it does

Once acids reach a building's surface, either diluted in rain and snow or deposited dry as gases, what effect do they have? The effect depends not only on the type of material, but on its grain size, its porosity, its location on a building, and its relationship to other materials.

Several materials undergo a chemical reaction with acids. The most reactive is calcareous stone, such as limestone and marble, whose primary constituent is calcium carbonate ($CaCO_3$), and calcareous sandstone, whose silica is cemented together with calcium carbonate. Sulfuric acid reacts with the calcium carbonate in the stone and with oxygen to form calcium sulfate ($CaSO_4$) or gypsum. Since gypsum is water soluble, rain can wash it away, eroding the surface of the stone. In calcareous sandstone, the rate of erosion seems to vary with the grain size: the larger the silica grains, the more cementing material to erode and thus the slower the deterioration.

Surface erosion actually may be less damaging than the formation of gypsum crusts in protected areas on the building's exterior, such as under cornices or in recesses, shielded from the washing action of the rain. Those impermeable crusts can hold water and salts in the pores of the stone, causing the stone to spall off in layers rather than gradually erode.

Less is known of the effects nitric acid has on calcareous stone. The acid leaves little residue on the stone's surface, although many scientists attribute that to the extreme water solubility of the nitrate residue rather than to a lack of chemical reaction between nitric acid and calcareous stone.

Acid deposition affects building materials more common than limestone or marble. Portland cement, which contains tricalcium aluminate, is susceptible to attack by sulfates or sulfuric acid. (A sulfate-resistant cement with a low tricalcium aluminate content could reduce that threat.) Silicate materials such as concrete can produce a soft, colorless material called kaolin as atmospheric acids accelerate their hydration; oil-base paints can erode when exposed to sulfur dioxide and humidity (vinyl and acrylic paints erode the least); and organic coatings, plastics, and elastomers can undergo an acid-induced polymer decomposition. Also, several metals, such as zinc, copper, bronze, aluminum, and lead, can lose their protective oxide coatings when exposed to nitric acid (see Table 1).

As bad as that sounds, many scientists think that acid deposition damages buildings more through the physical stresses than through the chemical reactions it brings on. The acids leave a residue of soluble sulfate and nitrate salts, which can accumulate on or just beneath the surface of the stone. On the surface, those salts take the form of a white powder called efflorescence, which is easily scrubbed off. Efflorescence, though, usually indicates the presence of salts beneath the surface of the stone, called subflorescence, which can crystallize with the absorption of water to exert enormous stress within the stone's pores. That stress leads to the blistering and spalling of the surface.

The amount of salt-related damage varies with the type of acid and the type of stone; the sulfate crystals in magnesium limestones, for example, absorb over three times the water of those in calcium limestones. Salt-related damage, however, depends most upon the porosity of the stone. Macroporous stone, with pores above .005 mm in width, prove much more resistant to both acid attack and salt crystallization than microporous stone, with pores less than .005 mm. Through greater capillary action, dense microporous stone draws in acidic moisture further and holds it longer, increasing the opportunity for chemical deterioration while offering less room for salt crystallization to take place.

The salts introduced into a wall from acid deposition create problems with reinforced concrete as well. The process of salts accumulating, crystallizing, and spalling the surface is the same. What differs is the salt-

In protected areas, the deterioration of calcareous stone typically begins with its reaction with atmospheric acids, leading to the formation of gypsum crusts (left). Those dense crusts hold in water and soluble salts that, aided by freeze-thaw cycles (middle), exert internal pressures, spalling the stone's surface (right).

David Morton

Ted Spiegel, Black Star

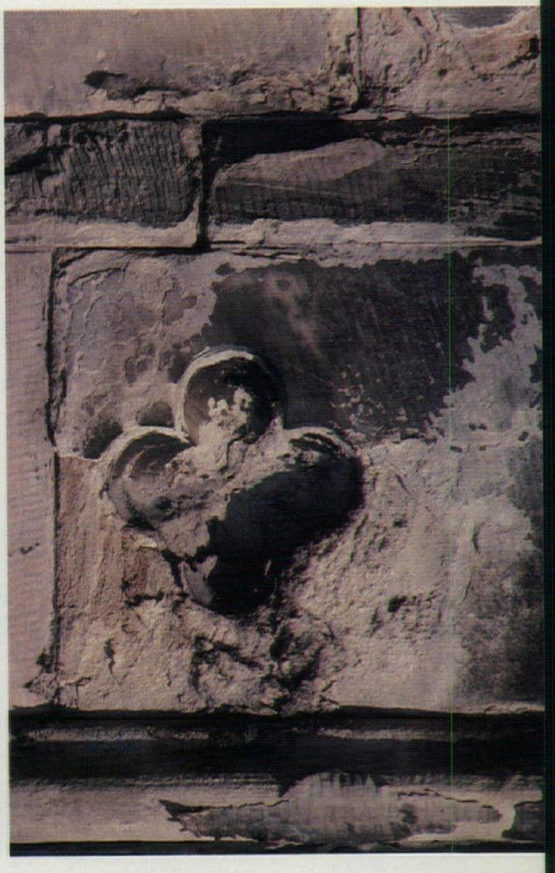


Table 1. Air Pollution Damage to Materials (Yocum, 1981).

Materials	Type of Damage	Principal Air Pollutants	Other Environmental Factors	Methods of Measurements	Mitigation Measures
Metals	Corrosion, tarnishing	Sulfur oxides and other acid gases	Moisture, air, salt	Weight loss after removal of corrosion products. Reduced physical strength, change in surface conductivity.	Surface plating or coating. Replacement with corrosion resistant material.
Building Stone	Surface erosion, discoloration	Sulfur oxides and other acid gases, particulate matter	Moisture, temperature fluctuations, salt, vibration, microorganisms, CO_2	Surface reflectivity, measurement of dimensions.	Cleaning. Impregnation with resins, replacement.
Paint	Surface erosion, discoloration	Sulfur oxides, hydrogen sulfide, ozone, particulate matter	Moisture, sunlight, microorganisms	Weight loss of painted panels, surface reflectivity.	Repainting, replacement with more resistant paint.
Textiles	Reduced tensile strength, soiling	Sulfur oxides, nitrogen oxides, particulate matter	Moisture, sunlight, physical wear	Reduced tensile strength, reduced fluidity (cotton), surface reflectivity.	Replacement
Textile Dyes	Fading, color change	Nitrogen oxides, ozone	Sunlight	Reflectance and color value measurements.	Replacement
Paper	Embrittlement	Sulfur oxides	Moisture, physical wear	Decreased folding resistance.	Synthetic coatings, storing indoors in pollutant-free atmosphere.
Rubber	Cracking	Ozone	Sunlight, physical wear	Loss in elasticity and strength, measurement of each frequency and depth.	Add antioxidant to formulation. Replace with more resistant materials.
Leather	Weakening, powdered surface	Sulfur oxides	Physical wear	Loss in strength.	Store in indoor pollutant-free environment, replace.
Ceramics	Changed surface appearance	Acid gases	Moisture	Loss in surface reflectivity.	Protective coating, replace with more resistant material.

J.E. Yocom & A.R. Stankunas, EPA Environmental Criteria and Assessment Office report, 1980

Table 2. Classification of Mechanisms Contributing to Stone Decay

Mechanism	Rainfall	Fog	Humidity	Temperature	Solar Insolation	Wind	Gaseous Pollutants	Aerosol
External Abrasion								
Erosion by wind-borne particles						●		●
Erosion by rainfall	●							
Erosion by surface ice	●	●		●				
Volume Change of Stone								
Differential expansion of mineral grains				●			○	
Differential bulk expansion due to uneven heating				●	●			
Differential bulk expansion due to uneven moisture content	●	●	●	●	●	○	○	○
Differential expansion of differing materials at joints				●				
Volume Change of Material in Capillaries and Interstices								
Freezing of water	●	●		●				
Expansion of water when heated by sun	●	●		●	●			
Trapping of water under pressure when surface freezes	●	●		●				
Swelling of water-imbibing minerals by osmotic pressure	●	●	●				○	○
Hydration of efflorescences, internal impurities, and stone constituents	●		●				○	○
Crystallization of salts			●	●	●	●	○	○
Oxidation of materials into more voluminous forms	●	●					○	
Dissolution of Stone or Change of Chemical Form								
Dissolution in rainwater	●			●			●	●
Dissolution by acids formed on stone by atmospheric gases or particles and water	●	●	●	●			●	●
Reaction of stone with SO_2 to form water-soluble material	●	●		●			●	
Reaction of stone with acidic clay aerosol particles	●	●		●				●
Biological Activity								
Chemical attack by chelating, nitrifying, sulfur-reducing, or sulfur-oxidizing bacteria			●	●			●	
Erosion by symbiotic assemblages and higher plants that penetrate stone or produce damaging excretions	○	○	●	●				

Table 3. Classification of Mechanisms of Deposition of Gases and Particles

Mechanism	Deposits of gases (G) or particles (P)	Relevant Atmospheric Factors: Rainfall	Fog	Humidity	Temperature	Solar Insolation	Wind
Dry Deposition							
Gravitational settling	P			○			
Inertial impaction	P			○			●
Brownian or molecular diffusion	G,P			○			
Stefan flow (toward surfaces where moisture is condensing)	G,P			●	●	●	
Thermophoresis (toward cold surfaces)	P				●	●	
Diffusiophoresis (toward evaporating surfaces)	P			○	●	●	○
Wet Deposition							
Precipitation	G,P	●					
Inertial impaction of fog droplets	G,P		●				●

Note: Solid circles denote principal atmosphere factors; open circles denote secondary factors.

induced corrosion of the reinforcing steel, which multiplies the internal stresses and can lead to the eventual failure of the concrete assembly.

Biological deterioration

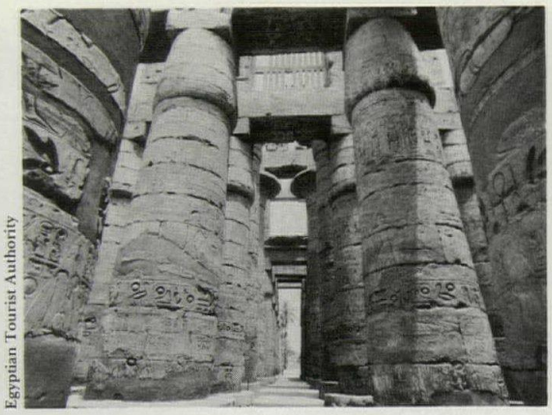
The chemical and physical deterioration related to acid deposition is aided by the biological deterioration caused by acid-converting algae, lichen, and bacteria. A French scientist discovered bacteria literally eating stone at Angkor Wat in Cambodia in the 1950s. The microbes have since appeared as white encrustations on various structures including the Temple at Karnak and the Parthenon. The bacterium Thiobacillus Thioparus seems to be the most destructive, attacking marble, limestone, and cement by converting sulfur dioxide into sulfuric acid and feeding upon the carbon dioxide given off as the calcium carbonate turns to gypsum. The bacteria Nitrobacter and Nitrosomonas do the same by converting atmospheric ammonia into nitric acid.

Surface dampness, necessary for the growth of these bacteria, also encourages the development of algae and lichen. The algae, which usually form within a few hours after a rainfall, mainly discolor buildings with deposits of dirt and humus. Lichen, which has a symbiotic relationship with algae, can do much more damage, for the lichen's rootlike hyphae penetrate cracks in calcareous stone and release oxalic acid to convert calcium carbonate into calcium oxalate. That then forms a dense surface crust on the stone much like the destructive gypsum crusts. The lichen's acids also attack silica in such materials as granite and glass (see Table 2).

Not everyone in the scientific community agrees on the impact acid deposition has on buildings. J. Riederer at the Doerner-Institut in Germany has claimed that "the decay of stone almost exclusively is due to natural weathering . . . (not) air pollution," pointing to instances where noncalcareous sandstones have deteriorated much faster than limestone in urban environments. Others, such as Dr. James Clifton at the National Bureau of Standards, are guarded in their assessment. While acknowledging that acid deposition does affect certain building materials, he admits that "the chemistry is more complicated than we once thought. We don't really know the rate of deterioration nor its economic impact. The research on buildings is just getting started," research which will be conducted by 20 federal agencies over the next few years.

What to do about it

Scientific research aside, what should the practicing architect do in response to acid deposition? Some have argued against the use of any calcareous stone or concrete on the exterior of buildings; others have argued that the incomplete scientific evidence justifies doing nothing. The most common response, though, seems to lie somewhere between panic and neglect.



Egyptian Tourist Authority

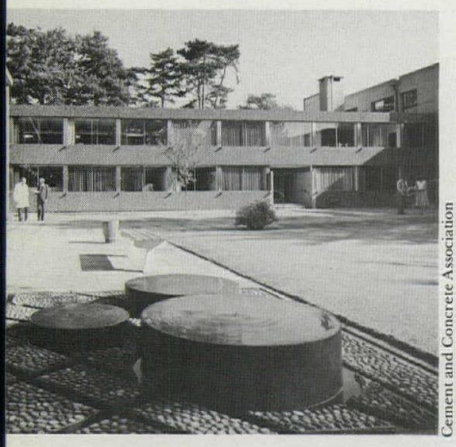
Italian Cultural Institute

British Tourist Authority

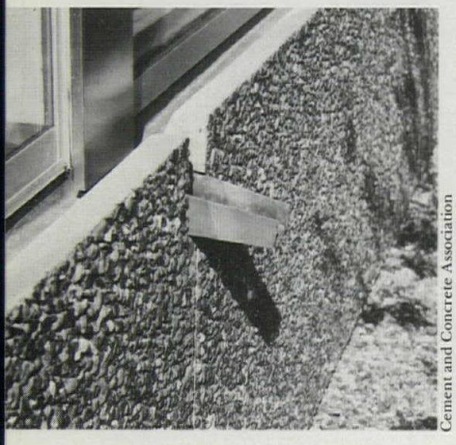
The accelerated deterioration of monuments such as St. Paul's Cathedral, The Temple at Karnak, and the Colosseum (above) has spurred government support of acid deposition research. NATO's Committee on the Challenges of Modern Society has approved a pilot study on the effects of air pollution on stone in Greece, France, Germany, and the United States. Current knowledge on the subject is discussed in the book Conservation of Historic Stone Buildings and Monuments, *available from the National Academy Press, 2101 Constitution Avenue, N.W., Washington, D.C. 20418.*

The details that make a building more resistant to acid-induced deterioration differ in some ways from those normally used to protect a building from the elements. For example, projecting cornices, stringcourses, and hood moldings have traditionally functioned to prevent water from washing down the face of a building, protecting it from surface erosion. In an environment rich in sulfur and nitrogen oxides, however, those same architectural elements can actually increase the building's deterioration by allowing the accumulation of gypsum crusts beneath overhangs. It's a question of trade-offs. Letting water wash down a flush concrete or calcareous stone wall will cause surface erosion, especially if atmospheric acids have reacted with those materials to produce water-soluble sulfate and nitrate deposits. But that slow, granular erosion may be preferable, in the opinion of many scientists, to the severe spalling caused by water and salts trapped by dense, soot-embedded crusts.

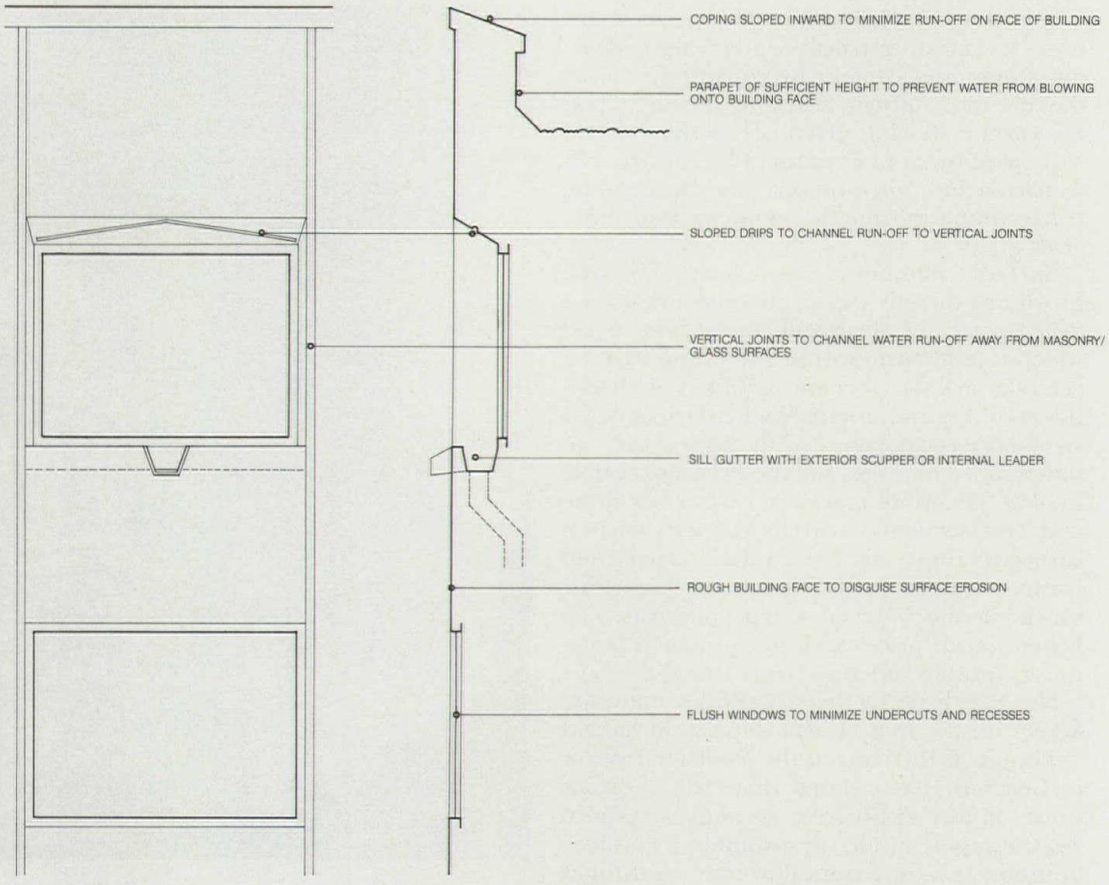
If exterior wall projections are desired for aesthetic reasons, a frequent water washing of the building could prevent crust formation.



Cement and Concrete Association



Cement and Concrete Association



The wall details (above right), suggested by the Prestressed Concrete Institute to minimize the weathering of concrete, can increase a building's resistance to acid deposition by utilizing the washing action of the rain, channeling the run-off, and eliminating the overhangs that cause streaking and crust formation. The Cement and Concrete Association laboratory in Wexham Springs, England (above), has rough concrete surfaces to reduce the visual impact of acid deposition, and sill gutters and scuppers to control the run-off of rain water.

How much water and how often is not known; that is one question current federal research hopes to answer. In areas less polluted with sulfur and nitrogen oxides, acid rain rather than the dry deposition of gases becomes a bigger problem, justifying the traditional use of wall projections to keep rain off the face of a building.

Channeling the rain's run-off is an important detailing consideration in order to minimize the amount of surface erosion and to prevent streaking. That involves precautions such as choosing darker colored or rougher textured surfaces to camouflage soot, providing continuous vertical joints as run-off channels, increasing the number of masonry units to disguise differences in their weathering, and sloping elements such as drips and window sills in plan as well as section to control the direction of run-off.

When selecting materials, one obvious protection against acid deposition is to use resistant materials such as glass and finishes such as baked-on enamel. Chemically susceptible materials can be almost as resistant, however, such as concrete with a low tricalcium aluminate content and a high cement-water ratio, and calcareous stone with a large pore structure. "Acid deposition," says Norbert Baer at the Institute of Fine Arts at NYU, "most affects the surface polish on materials such as marble, even granite. For architects, it's not so much a question of what material to use, but what role they want the surface patina to play."

The juxtaposition of materials in a building can also affect their resistance to acid deposition. Sandstones can deteriorate when placed adjacent to limestone, since the calcium sulfate produced through the reaction of atmospheric acids with limestone can attack the siliceous cementing material in certain sandstones. Mortar and grout with a high salt content from sand contaminated by sea water

can increase the problems created by acid deposition as the salt migrates into the masonry and crystallizes. Also, poor craftsmanship, such as the setting of sedimentary rock with its bedding planes parallel to the face of the stone, can aggravate the spalling related to pollution.

Water repellent coatings

Of all the options open to the architect, the one most appealing and most commonly used is water-repellent coatings. That appeal stems from their easy application, their modest initial cost, and their ability to make a concrete or masonry wall less water absorbent while allowing, to various degrees, a wall to breathe through the exfiltration of water vapor generated inside the building.

The earliest water-repellent materials used were waxes and oils, which fell out of favor because they discolored surfaces and attracted dirt. As the acidity of the atmosphere has increased recently, so has the number of water-repellent materials. The major coating compounds now on the market include chlorinated rubber, polyesters, vinyl latex, polyurethanes, stearates, epoxies, acrylics, silanes, and silicones.

Water-repellent coatings, though, are not without problems. The architect often doesn't know what material is in a particular coating. As Reginald Hough of I.M. Pei & Partners said, "Few manufacturers give out information on the chemicals used in their products." And the owner often doesn't understand the cost implications of using water-repellent coatings, which must be renewed every few years to remain effective. "People," according to Larry Jones with Clean America, "are looking for long-term protection using something with a short life."

What worries scientists most about such coatings, apart from the tendency to discolor surfaces, attract dirt, and weather poorly, is the promotion of subflorescence. While water-repellent coatings do retard the surface absorption of rain water and can allow the evaporation of water vapor, penetrating coatings all tend to trap, behind the surface of an exterior wall, liquid water, which can enter the wall cavity from sources such as leaking roofs and plumbing. Then, soluble salts, which can crystallize in the presence of water, spall the masonry surface and take the water-repellent coating with them. Also, as Hugh Miller, chief historical architect with the National Park Service points out, "Some coatings contribute to a chain of events that can damage the stone itself. With the exception of paint, we don't recommend the use of any water-repellent coatings on masonry." That does not mean that the chemical treatment of masonry to increase its acid resistance does not have potential; recent experiments on stone consolidants, on silane and acrylic coatings, and on machinery to increase coating penetration look promising.

The reason why many building conservators exempt paint from their critique of water-repellent coatings is that, while it can trap salts, paint, says Donald Baerman, an architect who teaches building conservation at Yale, "traps soluble salts on, not behind, the surface of the masonry. When those salts crystallize, you lose only the paint coat, not the masonry surface. The paint acts as a kind of sacrificial layer." That recalls the traditional use of lime-washes on buildings to neutralize and thus protect calcareous stone from acid attack. The argument against the use of sacrificial coatings, like that of water-repellent coatings, is the cost of their frequent renewal.

The consensus among scientists is echoed in the words of one researcher of acid deposition. "Until we know more about the effect of acid deposition on buildings, it seems wise to avoid something as potentially damaging as water-repellent coatings, or at least to use them only as a last resort." Since significant acid-related damage to concrete and calcareous stone comes from the crystallization of soluble salts in the wall, the repelling of rain water itself will not prevent deterioration.

What will prevent the acid-related deterioration of buildings? Proper detailing and material selection, careful separation of incompatible materials and setting of masonry units, certainly more frequent washings, and more attention to the watertightness of the building shell. The only lasting solution, though, will come from the reduction of acid-inducing pollutants at their source. For buildings, affected most by sulfur and nitrogen emissions within a five-to-ten-mile radius, protection may come from a strengthening of local clean air laws, restricting the burning of high-sulfur coal and wood, or limiting automobile access in areas with many susceptible structures. Such nonarchitectural solutions may seem beyond the purview of architects, but they are not if we are concerned that what we build last.

[Thomas Fisher]

Acknowledgments

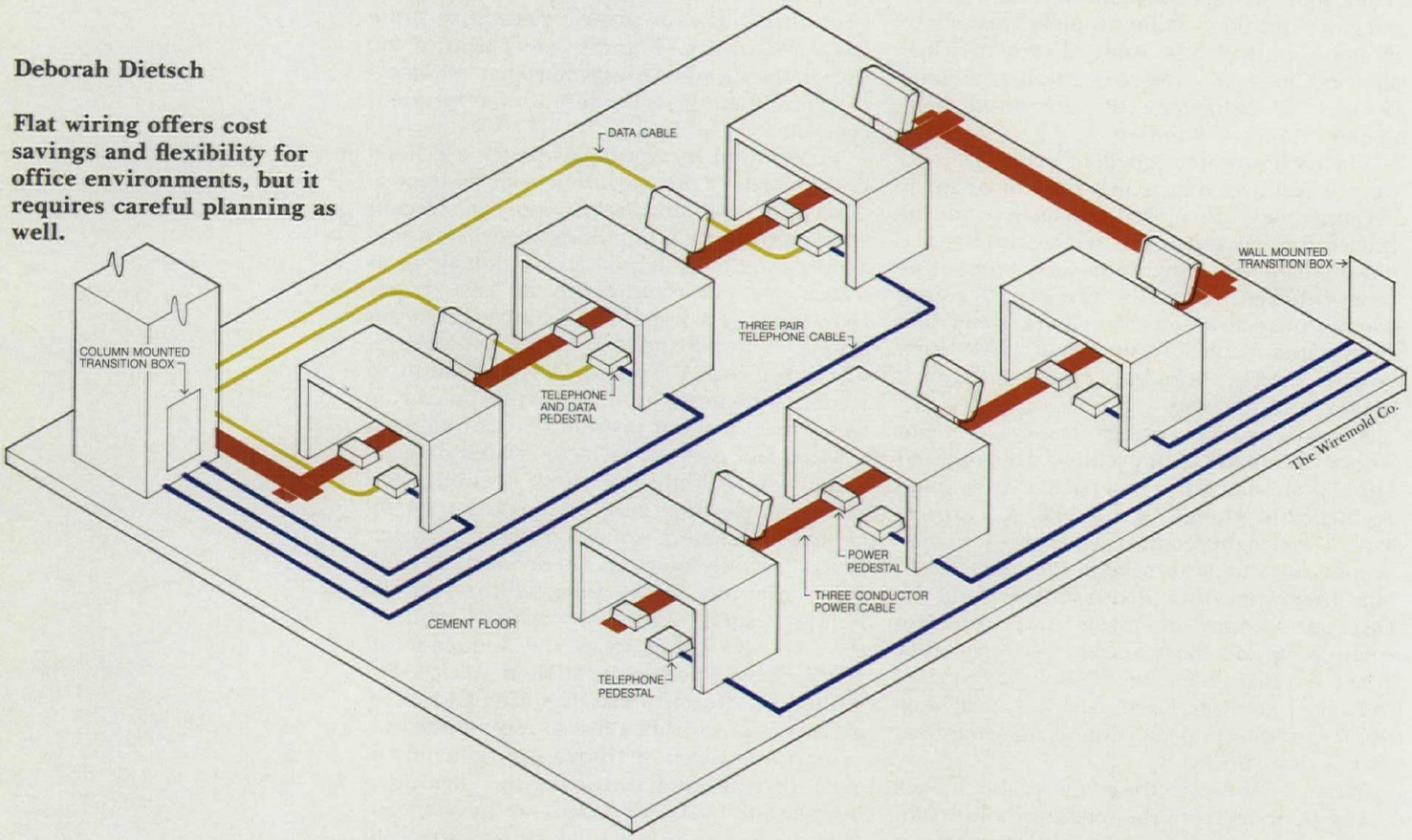
We would like to thank the following people for their information and advice: Norbert Baer, NYU; Donald Baerman, Yale; Arthur Blackman, Hydrozo; Michael Boyer, ProSoCo; James Clifton, National Bureau of Standards; Malcolm Cohen; Sid Friedman, Precast Concrete Institute; Ann Grimer, Hugh Miller, Susan Sherwood, National Park Service; Daniel Golomb, MIT; Reginald Hough, I.M. Pei & Partners; Larry Jones, Clean America; Alan W. Katzenstein; Richard Livingston, EPA; William McDonald, Indiana Limestone Institute; R.W. Moorman, Jerry Amato, Glidden; Jay Wyner, Thermaplex; Terry Rodgers, Cement and Concrete Association.

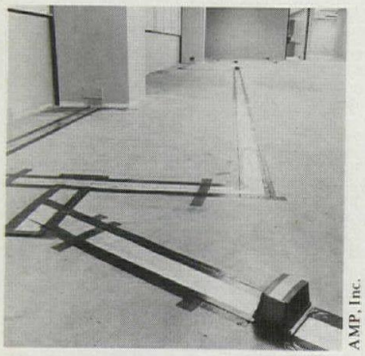
Testing materials exposed to acid rain is the subject of this month's Specifications Clinic (p. 112).

Under the carpet

Deborah Dietsch

Flat wiring offers cost savings and flexibility for office environments, but it requires careful planning as well.





AMP, Inc.

An axonometric drawing of flat power, telephone, and data wiring layout (top) shows how systems are connected to round wiring at column-mounted transition box. A flat wiring system circuit (above) is shown before the installation of carpet tiles.

While the open office has long been marketed for its "total flexibility," its potential as a movable system largely has been prevented by conventional wiring systems. Rearranging panels and furniture may be a simple task, but relocating power pedestals, phone lines and computer wiring has traditionally involved expensive ductwork, intrusive power poles, and time-consuming disruptions to the office environment. With recent developments in flat conductor cable technology, however, the open office is finally gaining the flexibility and design freedom it has promised. Placed directly on a floor and covered by carpet tiles, flat cable enables whole wiring systems to be changed subsequent to workstation and panel assembly.

Originally created by NASA to economize wiring on spacecraft, undercarpet systems began to be commercially marketed by electrical equipment manufacturers after their acceptance by Underwriters Laboratory in 1980. Following UL approval, the 1981 edition of the National Electrical Code (NEC) was revised to include a section (Article 328) specifically outlining installation of flat conductor cable. Today, flat wire systems for power, telephone, and data communications are available from six manufacturers. AMP, Inc., Burndy Corp., Thomas & Betts Corp., and The Wiremold Co. carry all three systems; Brand-Rex Co. offers both telephone and data systems, while Western Electric markets only a telephone system.

Power undercover

Less than $^{1}/_{32}$ inch thick (about as thick as a stick of chewing gum), electrical flat wire is composed of three parts: a PVC bottom shield, which separates the cable from the floor to prevent abrasion; encased flat copper conductors (neutral, ground, and phase); and a steel cover shield for further protection and grounding. The integration of this construction varies according to the manufacturer: Thomas & Betts includes a welded copper grounding shield below the steel cover; AMP and Burndy use the top shield for both grounding and protection; Wiremold's flat wiring incorporates a bonded, Mylar ground

sheathing on both sides of its cable. All of these systems are directly attached to any floor type with a covering of steel tape and are simply folded to change direction.

Like conventional wiring, flat electrical cable carries a 3-, 4-, or 5-conductor load capacity in 10 or 12 American Wire Gauge (AWG) and can be used in 240/120 volts single-phase or 208/120 volts triple-phase systems. Connections between flat and round wiring are made within transition boxes, which can be stud-, column-, or surface-mounted. Transition blocks also facilitate wiring of outlets within floor pedestals. These are available in telephone/data/power combinations as well as in traditional single and double duplex models. Exact termination methods vary according to each manufactured system.

Once the system has been installed, modifying and redirecting a circuit requires nothing more than lifting a carpet square and tapping into a run. Templates, connectors, and crimping tools for aligning, tapping, and splicing can be bought (cost: about $500) or rented from the manufacturer as part of the systems package.

Telephone and computer flat wiring follow the same basic procedures, but unlike electrical flat wiring, there are no strict industry standards for their installation. Each manufacturer provides its own specification, which bases termination methods on the type of phone/computer equipment now on the market. Telephone undercarpet systems are supplied in 3-, 4-, or 25-pair constructions in PVC-sheathed 24 and 26 AWG. Flat wiring for data communications terminates either within a pedestal or in a standard jack or adaptor that is connected directly to the computer's cable. All data flat wire systems are designed to meet 75 or 93 ohm coaxial cable and RS-232 standard communications capabilities.

System advantages

Apart from the design flexibility it affords the open office, undercarpet wiring is being marketed for its long-range cost effectiveness. A 1981 cost analysis compiled by the R.S. Means Company, a Massachusetts-based consultant for AMP, Inc., illustrates that for an owner of a three-story office building with a floor area of 56,700 square feet, a 3-conductor undercarpet power system would cost approximately $34,000, compared to $105,300 for underfloor ducts, $36,800 for poke-through fittings, $35,500 for telepoles, and about the same amount for a conduit-floor box system. However, for an actual 45,000-square-foot installation that AMP completed that same year for the Lincoln National Life Insurance Company in Fort Wayne, Ind., the cost of undercarpet telephone wiring was about equal to conventional wiring with power poles. Flat data and power wiring turned out to cost slightly more than standard pipe-and-wire methods. And for the Dysan Corporation, a 134,000-square-foot computer disk manufacturing headquarters in Santa Clara, Calif., the expense of installing flat electrical wiring was about 20 percent more than power poles.

Generally, costs vary according to the size of the installation and how the flat wiring will be connected to the power system. Fred Schlotterback, telecommunications manager of Lincoln National Life explains: "For anyone considering undercarpet cabling, I would recommend that all three systems—telephone, data, and power—be installed as the most economical means of using this type of wiring."

Other cost savings as a result of using flat wire are gained by earlier tenant occupancy, future reuse of the wiring and carpet tiles, and relocation of pedestals once the system is set up (adding or rearranging a pedestal takes about 30 minutes per location). Architects and facility managers who have supervised undercarpet wiring installations stress, however, that these savings are appreciable only when open office mobility is anticipated at the outset of a project.

The expense of providing extra fire protection in the floor also may be eliminated, since drilling underfloor ducts and filling holes with fire-rated materials become unnecessary with an undercarpet system. This lack of structural intrusion makes flat cable appealing for renovations in which the original architectural integrity of a historic building must be preserved.

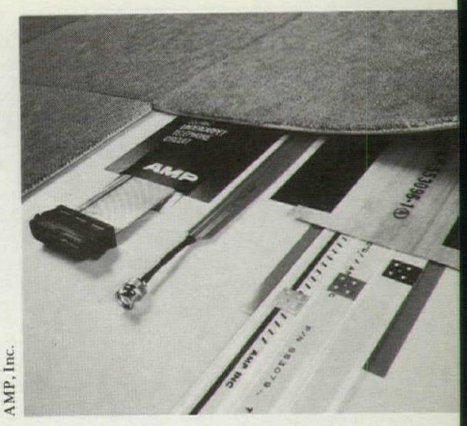
In addition, the use of undercarpet wiring systems precludes the need to buy electrified panels (an option that can cost about 15 percent more than ordinary panels), since flat wire can be directed anywhere on the office floor. Connecting a wired panel to a flat wiring system is accomplished through a flexible conduit (a "whip" or "jumper" usually supplied by the panel manufacturer) that is plugged into a pedestal.

In some cases, investment tax credits may be obtained by using flat wiring. Like open office components, carpet modules and flat cable can be classified as movable equipment, thus subject to accelerated rates of depreciation under the current tax laws.

Lessons learned

Despite these economic advantages, installations of undercarpet wiring over the past three years show that the system isn't without its drawbacks, including extra costs stemming from inexperienced labor, newness of products, and potential difficulties in scheduling construction trades.

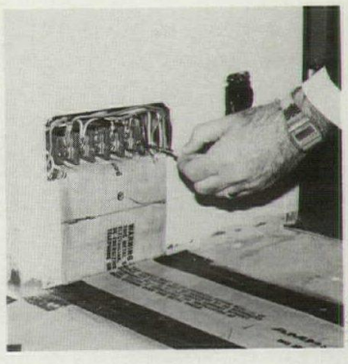
One of the most common complaints from architects who have specified flat cable systems is that they must be covered by carpet tiles of 30 inches or less to meet NEC standards. Many feel this limits their aesthetic choices, although the carpet modules now available on the market have come a long way in palette and construction since their introduction five years ago. Milliken Carpets, for example, stocks 40 colors and patterns in Du Pont's antistatic Antron® fibers, and offers to customize their module designs. Carpet



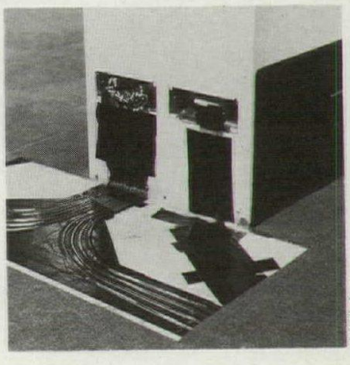
AMP, Inc.

A close-up of three different flat cable systems (above, left to right): 25-pair telephone cable with line assignment adaptor; data communications cable with coaxial cable plug; 3-conductor electrical cable with taps, steel covering, and PVC bottom shield.

A column-mounted transition box (below) reveals 3-phase, 5-conductor flat cable covered by steel grounding shield. On the adjacent side of the column, transition boxes connect data and telephone flat wiring to conventional wiring. (Bottom) 93-ohm flat coaxial cables are notched to curve out from the column, and telephone flat wiring is connected to a 25-pair cable.



AMP, Inc.



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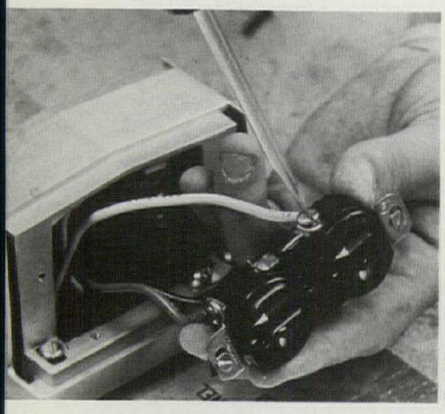
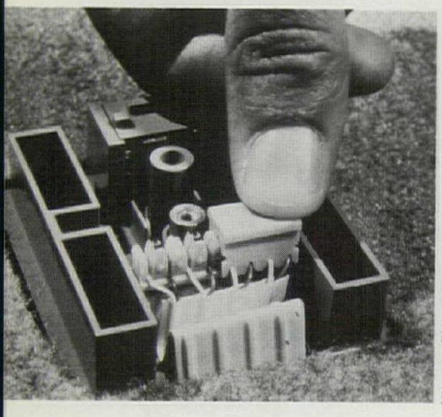


The Wiremold Co.



Western Electric

AMP, Inc.

A power receptacle (top left) includes transition blocks for outlet conversion and a receptacle for 4-pair flat telephone cable (above left). With carpet tiles removed (above right), a pedestal is relocated by tapping cable with connectors that pierce flat wiring conductors. Relocation takes about a half hour with minimal disruption to the office environment.

squares cost about 20 percent more than broadloom carpet, although they can be replaced one square at a time, saving dollars in the long term.

A more practical problem in using carpet tiles is that surface irregularities in the subfloor, normally hidden by a broadloom's underpadding, are made evident by the thinness of the tiles. As a result, flat wiring manufacturers recommend cleaning and sealing a floor before laying out the cable, since any dust will also prevent the steel tape covering from sticking. Some offer their own floor preparation sprays. For rough floors, a cushioning bottom shield of plastic should be applied before the flat wiring is positioned.

Another inherent problem of using carpet squares is the visible ridging or telegraphing in the tiles of the cable underneath. This becomes more apparent at locations where flat wires cross each other, such as near a transition box. Securing a base onto a wall or column over a build-up of flat cable at the transition box also may pose difficulties. Paul Lilly, facility manager for the Facility Management Institute in Ann Arbor, Mich. (an organization that has used flat wiring since 1979), maintains that once panels and workstations have been erected, ridging becomes less noticeable. To minimize visible imperfections, he recommends choosing carpet tiles in dark colors with tonal variations and with a loop, rather than cut pile, so that fibers will spring back when pushed down. When replacing tiles, he points out that the pile should run in one direction to avoid a patchwork effect.

Adhesives used to glue down and prevent shifting of carpet tiles may present additional installation headaches. Generally, these are acrylic-based, pressure-sensitive glues (brands include 3-M's Blue Glue and Durabond D-2) that act like Velcro, allowing the carpet tile to be peeled back and repositioned. In some instances, adhesives have reacted chemically with the insulating shield of the flat cable, causing it to melt. The chance of this melt-down occurring increases with the installation of carpet tiles backed with jute or resin laminates, since they require an all-over application of glue with a paint roller or trowel. In choosing carpet tile,

most flat cable specifiers prefer vinyl-backed tiles, which require only spot gluing in a 12-to-16-foot grid. The added weight of the vinyl helps to keep them in place and prevents static build-up. But for nonporous flooring such as quarry tile, a jute-backed type of tile must be used to allow evaporation of glue solvents.

Codes and construction trades

Solving these technical problems may be a moot point for many architects. For although undercarpet wiring has been approved by the NEC for commercial installations (it cannot be used in residences, schools, or hospitals), many states and local municipalities have added their own amendments to the NEC's guidelines. About half the states in the country have adopted the code in its entirety, including Article 328, outlining flat wiring installation. Others only apply the NEC for state-owned buildings. Several states have not established their own codes, leaving enforcement of safety standards up to local jurisdictions. In New York City, the installation of flat wiring is reviewed on a project-by-project basis, while Chicago prohibits its use entirely. This reluctance is attributed in part to strong electricians unions in both cities that want to maintain their long-established labor practices.

Representatives from the International Brotherhood of Electrical Workers and related organizations, such as the National Electrical Contractors Association and International Association of Electrical Inspectors, view flat cable technology as too new to have a noticeable impact on the industry as yet. Generally, they foresee it remaining an alternative to conventional wiring methods, emphasizing that it is not practical for concentrated wiring applications (such as in computer rooms) or for traditional, partition-divided offices.

Architects and facility managers who have specified undercarpet wiring report that, of the construction trades, electricians are more than willing to learn installation techniques with the help of product specifications and on-site instruction. Many local phone companies and computer vendors, on the other hand, are more reluctant to adapt to flat wiring systems and will charge extra fees for its installation. With the recent growth in private branch telephone exchange systems (PBXs), however, both AT&T and private phone companies are more willing to accommodate phone and data flat wiring in order to corner the competitive market.

In dealing with the various trades needed to complete an undercarpet wiring installation, experienced users stress the necessity of careful planning and scheduling. On the job site, coordination can get complicated, especially when there are electricians, phone technicians, computer vendors, and carpet and panel installers all working simultaneously in proximity to one another. Prior to installing any flat wiring, construction of wallboard partitions and ceiling tiles should be completed to avoid obstruction and wheeling of heavy equipment over an exposed system. Flat telephone cable should be laid over power cable to avoid troubling "crosstalk" in the phone lines. Before pedestals are located, carpet tiles and panels should be put in place to allow for last-minute adjustments to workstation arrangements.

Like open office furniture, flat wiring systems must be ordered well in advance of their installation, including excess materials for replacing circuits and pedestals. FMI's Paul Lilly advises: "Think about how power will be distributed and plan for future needs by providing an extra circuit at the perimeter of the office floor." Fred Schlotterback adds: "In planning the office layout, I cannot overemphasize the need for accuracy in measuring and chalking the positions on the floor for office equipment, undercarpet wiring, and transition fittings."

Product longevity

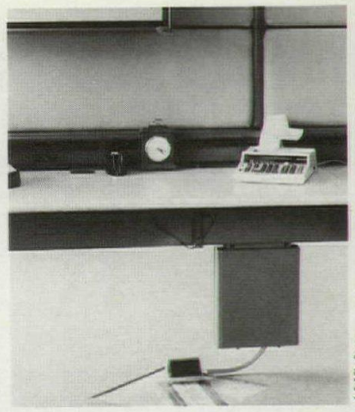
Currently, what worries most architects about using flat conductor cable is its unproven long-term durability. Christine Jordan, a designer with Design Focus, a San Diego firm that has specified undercarpet wiring systems for several interiors, sums up this attitude by stating: "Like all innovative technologies, we don't know how this will hold up ten years from now." Nevertheless, those who have specified flat conductor cable for the open office claim it is a safe and flexible companion to systems furniture. They point out that in addition to UL testing, flat wiring manufacturers continue to conduct their own flammability, insulation, and chemical resistance tests on the products.

Until installation of undercarpet wiring becomes more commonplace, it will continue to be looked upon with the same skepticism that greeted the open office in the 1960s. But just as the "office of the future" has become a practical reality with the advent of the computer, flat wiring also will grow in acceptance, with industry experts predicting an $80 million market by 1985. □

Acknowledgments

We would like to thank the following manufacturers, organizations, and architectural and engineering firms for sharing their information with us: AMP, Inc., Brand-Rex Co., Burndy Corp., Cahners Publishing Co., Design Focus, DMA Associates, Facility Management Institute, Frizzell Hill Moorhouse Beaubois, Hellmuth Obata & Kassabaum, Gelick Foran Associates, International Association of Electrical Inspectors, International Brotherhood of Electrical Workers, Lees Carpets, Milliken Carpets, National Conference of States on Building Codes and Standards, National Electrical Contractors Association, National Fire Protection Association, Schenkel and Schultz, Inc., Thomas & Betts Corp., Western Electric, The Wiremold Co.

Deborah Dietsch *is special features editor of* Interiors *magazine and has written for P/A.*



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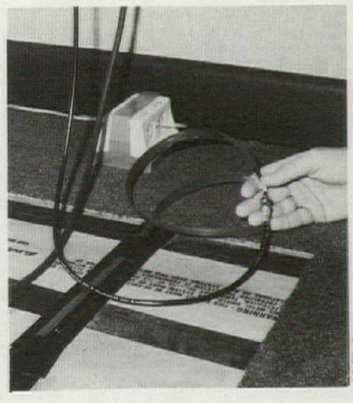
A workstation is connected to the flat wiring (above) by means of a flexible conduit that is plugged into the pedestal.



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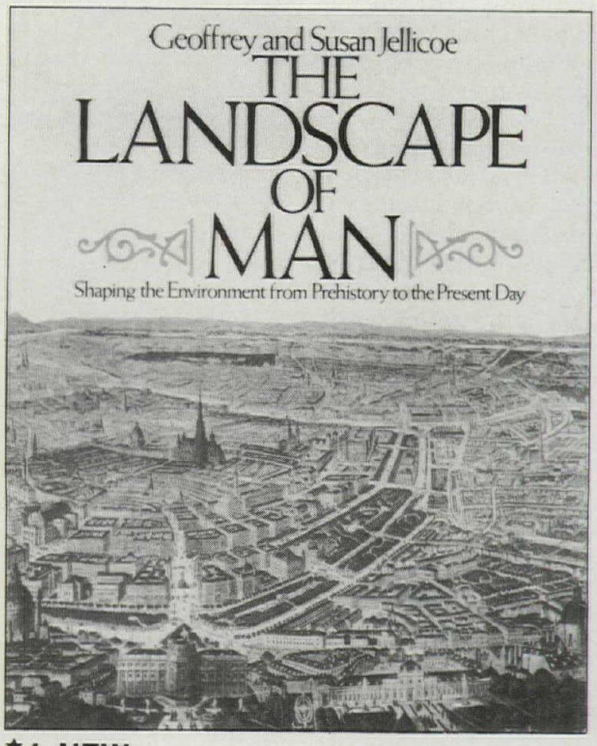
In the foreground (above), flat data wiring is plugged directly into computer cable through standard connector.



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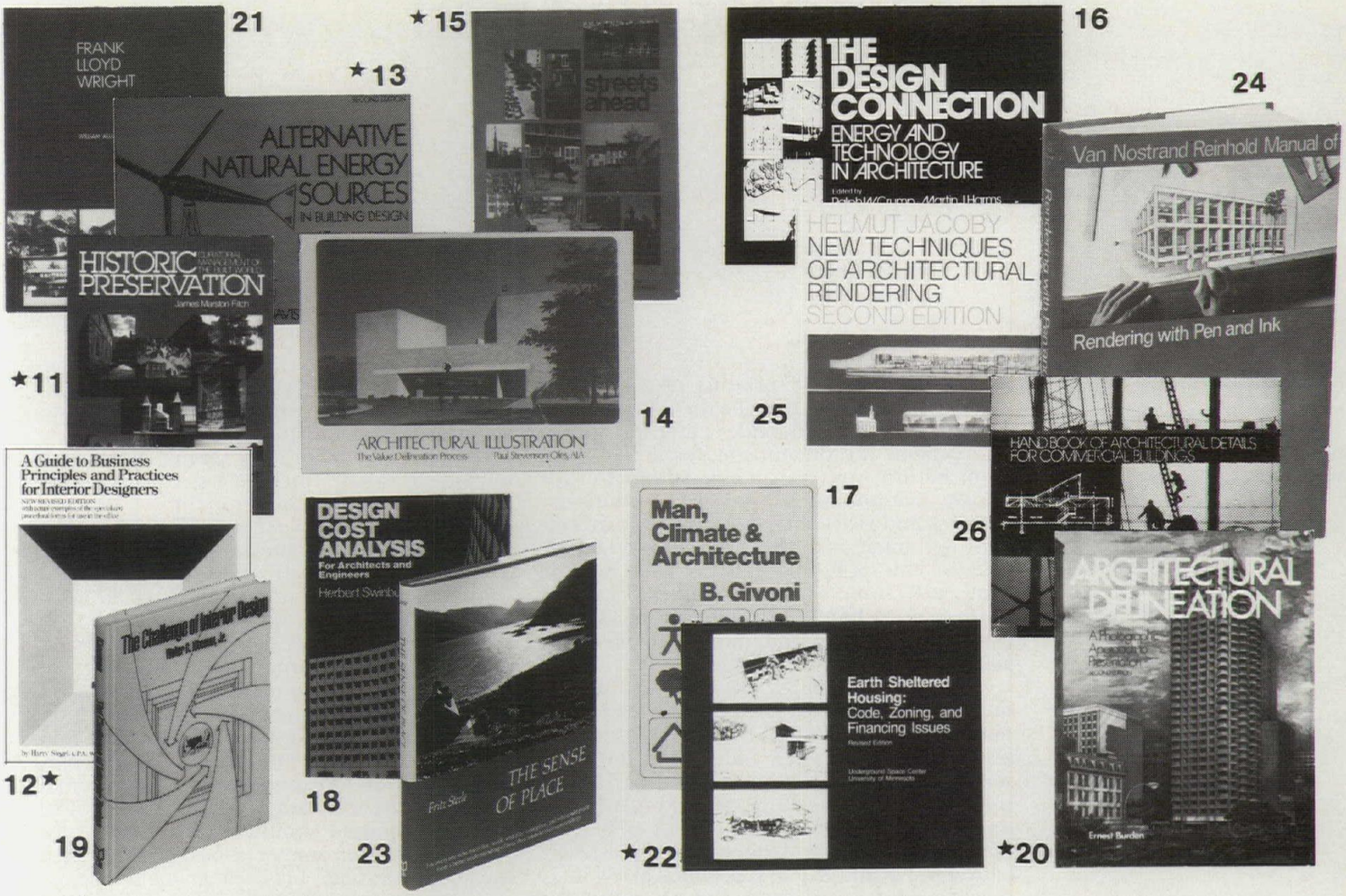

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Edited by Ralph W. Crump
and Martin J. Harms
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This book probes the relationship of formal architectural design to both building technology and human values. Locational, climatic, cultural, and historical viewpoints are all considered in depth. It bridges the gap between architectural theory and practice.
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By B. Givoni
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This book deals with the physiological, physical and architectural aspects of the relationship and interaction between these three elements to interior and exterior building design. It is divided into five parts, including climatic elements and solar radiation on building design.
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This second edition, which documents all of the buildings designed by Wright, replaced a number of photographs with new ones that show the buildings to better effect, changed some copy in the text, and incorporated factual information that has come to light since the original publication in 1974.
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22 Earth Sheltered Housing: Code, Zoning, and Financing Issues

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24 Rendering With Pen and Ink

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25 New Techniques of Architectural Rendering

By Helmut Jacoby
167 pp., illus $24.95

This book contains a broad, international selection of architectural drawings that represent the most outstanding modern contributions to the field. Mr. Jacoby has given consideration to examples that interpret architectural designs in detail, for the layman as well as the specialist.
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26 Handbook of Architectural Details for Commercial Buildings

By Joseph DeChiara
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This Handbook illustrates and examines the full range of architectural details currently used for commercial buildings. Part I features plans, elevations, and sections for office buildings, banks, retail stores, theaters, and more. Part II concentrates on architectural details. Practicality and realism are stressed.
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Testing for acid rain

Alvin D. Skolnik

The author proposes a new standard test method for acid rain.

Acid rain is the end product of a series of chemical reactions that begin when sulfur dioxide and nitrogen oxides enter the atmosphere from the burning of fossil fuels and from natural sources such as volcanic eruptions. Eventually, these gases undergo changes and react with moisture to form sulfuric and nitric acids. Between 50 and 60 percent of this pollution falls as acid rain or snow, with some of the remainder being deposited as sulfate or nitrate particles that combine with dew and mist to form dilute acids.

Acidity and alkalinity are measured in pH, on a scale from 0 to 14, with 7 representing a neutral solution. Values below pH 7 indicate acidity and above pH 7 indicate alkalinity. It is important to bear in mind that the pH scale is logarithmic. Therefore, an acid of pH 5 is *ten times* more acidic than one of pH 6. In many regions of the United States pH levels between 4.0 and 4.5 are commonplace. It is therefore necessary for us to consider this phenomenon when evaluating building materials. Although there has been considerable discussion concerning the problem of acid rain, there is surprisingly very little data on its effect on building components. It will be useful for us to develop a method by which we can evaluate the relative resistance of a building material to acid rain.

Testing of a material for exterior use should include ASTM C67 for freeze-thaw, ASTM G23 for ultraviolet exposure, and ASTM B117 for exposure to salt spray. This article deals with testing for acid rain, for which there is currently no standard test method.

National Geographic in November, 1981, published maps of the United States depicting, by region, the average annual rain fall, the primary pollutants, and the pH values of acid rain (see p. 99). Combined with data available from the U.S. Environmental Protection Agency, the information contained in these sources forms the basis for our testing. For example, let us assume we are evaluating a material for use in New York City. From these sources we can determine that the dominant pollutant in the air stream moving from west to east is sulfur dioxide and in the extreme southern and southeastern section of the city it is nitrogen oxide. Therefore, our test exposure must be to two different acidic solutions; one with a ratio of 70 percent sulfuric acid (H_2SO_4) and 30 percent nitric acid (HNO_3), and the other with a ratio of 30 percent H_2SO_4 and 70 percent HNO_3. Both solutions must then be adjusted to the indicated pH value by diluting in distilled water to obtain the necessary concentrations. The New York rainfall is indicated as approximately 50 inches a year. Twenty years of rain will yield approximately 1000 cubic inches. Working with a laboratory sample of approximately 4 square inches, we require 4000 cubic inches of our "acid rain" to be sprayed over the specimen surface. The procedure should involve alternate wet and dry cycles.

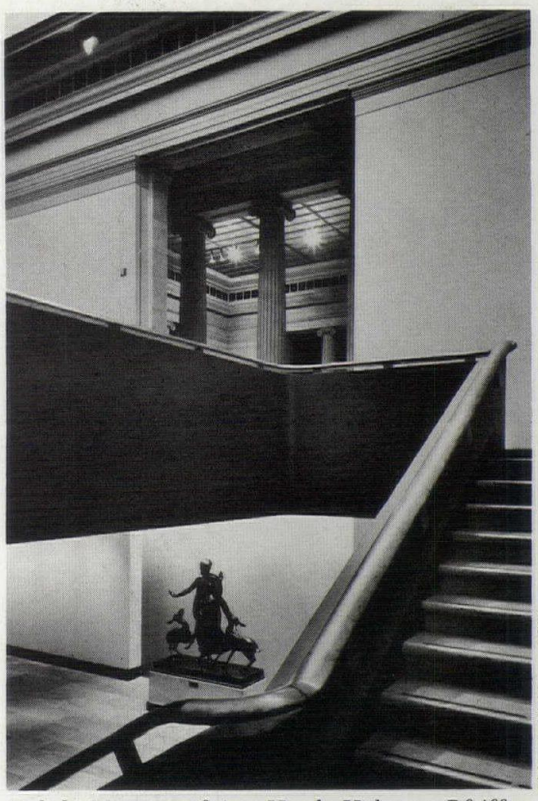
As stated previously, there is no standard test method currently available. Our immediate goal, therefore, is to (1) define acid rain, (2) set test objectives, (3) develop a test method that is accurate, reproducible, and pertinent to the building component being tested, and (4) to set factors for the evaluation of findings. Towards this end, we have defined acid rain as being the sulfuric and nitric acid solutions, at a given pH. Our objective is to determine the effects of acid rain on the specimen. The basic test method should consist ideally of a form of weatherometer modified to accept the acidic solution. This will enable the use of existing instrumentation and the recording of data in a standard format. Sample size should be standardized. Specimens should initially be observed for gloss, light reflectance and, where applicable, color fade. Electron-microscope photographs and color macrophotographs at 20 times magnification should be taken. After exposure, the observations should be made again and any changes noted.

Recent experience suggests that manufacturers are quite willing to subject their products to testing of this type when they understand the value of such tests. What is needed now is a standardized test procedure. □

Alvin D. Skolnik, *FCSI, is Director of Research and Specifications, Skidmore, Owings & Merrill, New York.*

Coming next month

P/A in August: Museums & Roofing



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Toledo Museum of Art. Hardy Holzman Pfeiffer Associates, Architects.

Museums are being built, extended, and remodeled all over the world. The August P/A will include a number of lively, informative features on museums, ranging from Hardy Holzman Pfeiffer Associates' remodeling of the Toledo Museum of Art in Ohio to Bo and Wohlert's latest extension of their own 23-year-old landmark, the Louisiana Museum outside Copenhagen. Included in the issue: the small but all new Environmental Education Center at Liberty State Park, New Jersey, by Michael Graves; a modest room renovation at the mighty Chicago Art Institute by Krueck & Olsen; extensive new galleries in the Classical mode, by Keyes Condon Florance, in Washington's National Gallery; and some alterations to the Dayton Art Institute by Levin Porter Associates that are essays in witty monumentality. A Portfolio of ongoing projects from around the world will delineate the full breadth of what is happening in the design of museums.

Technics: Single-ply roofing will reveal the technological expertise and design implications that lurk within that single ply. Readers will find out when to use synthetic roofing, what to watch for, how to avoid problems in that thin layer of construction that keeps the rain out.

P/A in September will be expanded to accommodate our seventh annual survey of accomplishment in the world of interior design. A related Technics feature will take up the special demands of modern medical equipment in the design of health care facilities.

BENCHMARKS

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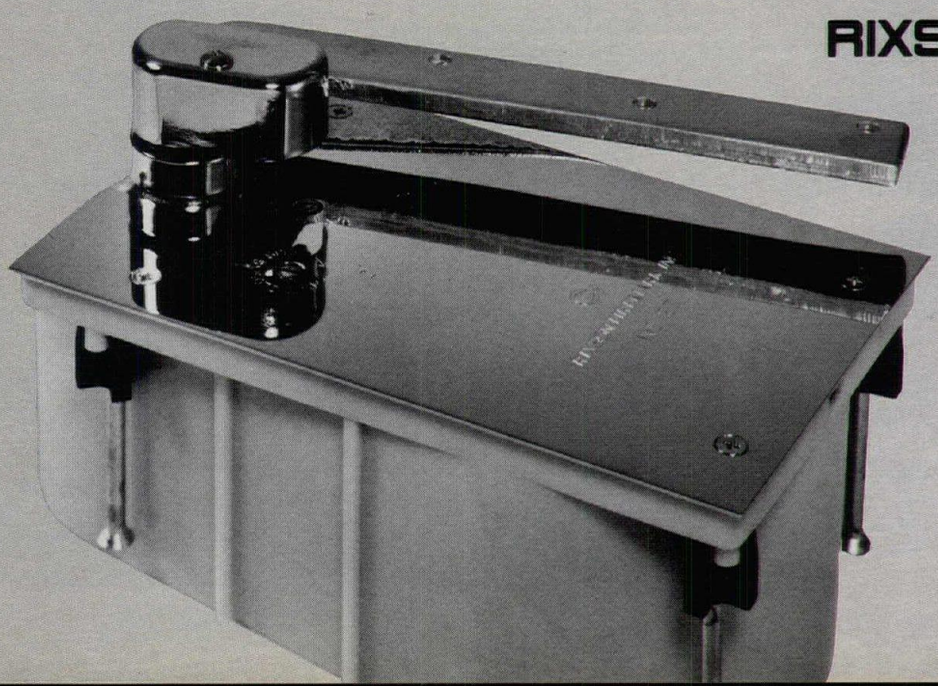

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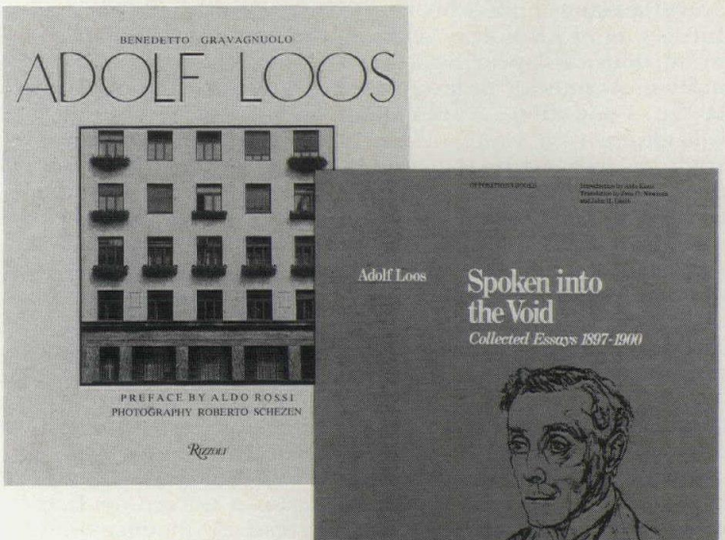
On Loos

Books

Spoken into the Void: Collected Essays 1897–1900 by Adolf Loos, *Introduction by Aldo Rossi, translation by Jane O. Newman and John H. Smith. Oppositions Books, The MIT Press, 1982. 146 pp., illus., $30.*
Adolf Loos: Theory and Works, *Introduction by Aldo Rossi, Essay by Benedetto Gravagnuolo, photographs by Roberto Schezen. Rizzoli International, 1982. 228 pp., 384 illus., $50.*

Reviewed by Aaron Betsky, Editor of Crit *and of* Perspecta 21.



". . . We can see that there is a great difference between speaking about the Greeks and speaking as a Greek. Thus, while lesser artists will seek their own original terrain, the best will choose to imitate the ancients, and speak like them once again. This is the best lesson I have learned from Adolf Loos." With these words, Aldo Rossi ends his introduction to the first English edition of Loos's 1930 collection of essays, *Ins Leers Gesprochen,* published by MIT under the title *Spoken into the Void.* This does seem to be the season for listening to Loos once again. In addition to the MIT volume, Rizzoli has just published a book of precise and simple photographs of Loos's work by Roberto Schezen, complemented by an almost untranslated essay by Benedetto Gravagnuolo. The Albertina archive in Vienna, which contains most of Loos's papers, has published a massive, amply illustrated *oéuvre complete* in German, available at specialized bookstores.

Loos has always represented an enigmatic set of contradictory propositions to most modern architects, and these books—as the quote from Rossi's introduction might indicate—serve only to deepen the enigma. The didacticism of this Viennese dandy's nervously emptied spaces and thinly drawn walls provides less of a pattern book or collection of traceable tricks from the recently deified origins of Modern architecture, than a keen insight into the architectonic qualities of a cultural debate spoken by one critic not just into the void but, in the words of his contemporary Robert Musil, into "the Baroque of the Void."

One senses that Loos himself almost gave up architecture altogether. Certainly he limited its place in his life and in his theories severely, and both the essays and the photographs now available make one look for "design" hidden between the flippant lines of prose or sliding away underneath the slight level changes that order his houses. The imposition of the subjective act of organizing objects was to Loos so fraught with problems as to be almost impossible to justify. Each design decision had to answer to so many of the mandatory contradictions of life in the 20th Century that it had to be as carefully balanced as a severe neurotic's sanity or become nearly invisible. Design often seemed to consist to him of this careful balancing act between indulgence and commitment, between old and new, and between architecture and criticism. He sought to describe this modern stance in all its aspects, and, not surprisingly, was fascinated with the stance itself; fashion in general and clothes in particular. Architecture to him was no more than yet another layer of those skins of cultural signification with which we surround ourselves. Most of the essays collected in the MIT volume indeed concern themselves with the skins closest to us, clothes and interiors. An appropriate and thoroughly modern invisibility, not a lavishness of materials on structure, rationalized by utility, is demanded of these objects of design: "An article of clothing," Loos points out in the 1898 essay "Men's Fashion," "is modern when the wearer stands out as little as possible at the center of culture, on a specific occasion, in the best society."

If the modern condition is one of uncertainty on all levels—he was, after all, working in Vienna at the time when such men as Freud, Klimt, and Wittgenstein were making their unsettling discoveries—then the Modern act is one of careful judgment, and design does not concern objects so much as it does a physical reflection of this critical act. Objects are not sacred; only the way in which they are used can be of importance. His houses, made of simple, unadorned materials, were filled with the detritus of centuries of design, acquired from flea markets and selected for their adherence to the purposes they served and to the era that produced them. The houses have no focus on the inside, so that one must continually choose. On the outside, they are meant to be self-effacing. When Loos was criticized for the unadorned façade of a department store (today known as the Looshaus) he designed opposite an entrance to the Imperial Palace, he defended himself by claiming that he was merely continuing and reinforcing well-established bourgeois techniques. The bizarre shapes of some of his private residences were explained in terms of zoning regulations.

Loos's two design strategies seemed to have been polemical absence and satirical self-contradiction. The first of these is mostly evident in his architecture, and difficult to capture in a photograph or plan. The second is most evident in his biting and often confusing essays. One can watch both at work in his famous essay "Ornament and Crime," unfortunately not reproduced in either of these two books, and in his design for the Looshaus, superbly documented in the Rizzoli book. The unadorned and blank façade of this store caused an uproar, and Loos was forced to defend himself in front of the authorities and an audience of 3000 people. Yet he was using such elements as giant marble columns to echo some of the older designs around him. Against the hypocrisy of the applied pilasters of the Baroque palace across the square, Loos played a game of structural and material contradictions: the columns do not line up with the window openings above, are vastly overscaled, and lack proper stylistic accoutrements. This seemingly oversimplified façade is a mass of historical and structural implications that purposefully contradict each

Books continued from page 117

other. What is left is a perfect interior, a nine-square grid around which several levels float, connected by a grand staircase, and given over to the display of ever-changing fashions.

Such works were the very antithesis of the kind of grand *gesamtkunstwerk* produced by his immediate predecessors of the Werkbund and Secession movements. These works could justify their coherence only by constructing magnificent dream-worlds, physical translations of that secure substratum of shared ambiguities and strange, amorphous images which had just then been discovered to be hiding behind the ordered appearances of the bourgeois world. One senses that Loos preferred to order the world in such a way that the unconscious was forced to act in it, rather than trying to objectify it in his designs.

Loos's architecture held on to existing reality and at the same time proposed an idealized, objective, and antiarchitectural vision. In his review of the 1897 Christmas show at the Austrian Museum, for instance, he admonishes us to build according to our established morality and within the complex social and technological structures we already inhabit: "The modern spirit demands that every bourgeois, every king, and every peasant express his own characteristic qualities in the furnishing of his house." Only in the next world, when class distinctions disappear, will there be an architecture which is not merely interior redesign or slavish reorganization. It will be ". . . a new Zion . . . fulfillment. Soon the streets of the city will glisten with white walls." It is an architecture of pure voids, an architecture that almost denies itself completely. It is also the architecture of death: in a statement quoted by Gravagnuolo, Loos talks of the only true architecture as being a simple gravestone found in the middle of the forest. It is the architecture of a mythical past, such as that of the Greek temples, or of the yet undescribed future, which Loos saw embodied in America, and for which he designed a building as the perfect Greek column, which would be built "if not now, sometime, and if not by me, by somebody else."

The task of the designer was both to make a humble living and to fight for the creation of this ideal, modern, utilitarian, objective, and super-architectural world. Loos was, at the same time, a prominent member of café society and a functionary in the social-democratic town government. His buildings are inward turned and aggressively modern on the outside. Reading the essays or looking at the plans and photographs of his buildings, one can only get lost in the Baroque of the void. Yet that might be precisely what Loos had in mind: "It is the role of the modern artist," he stated in the review quoted above, "to raise the taste of the multitude in its various gradations; in doing so they are fulfilling the needs of the intellectual aristocracy at any given time."

Most of the essays, however, seem unfortunately more concerned with the definition of such nebulous factors as the "shape of space." Gravagnuolo, in particular, seems to want to substitute a poetics about silence for a poetics of silence. It is only the truly abysmal translation that makes his efforts seem sufficiently abstract and self-contradictory. Loos is much better served by Schezen's color photographs. They allow his work to stand by itself, not deformed by specific lighting conditions, angles, or filters, but complete in its simplicity, changed uses, and decay.

The excellent MIT translation, "Spoken Into the Void," allows Loos's critical thought to come through in all its clarity and sarcasm. One could only wish that it would be possible to catch all the double-entendres and ambiguities that seem to be present in the original. The accompanying photographs, however, do a good job of placing the texts in a cultural context, thus allowing the reader to position himself more confidently vis-à-vis such a self-contradictory text.

What one is left with in these books is not grand architecture or timeless prose. Instead, there is only the physical and verbal dialectic between death and design, function and composition, structure and absence, which Loos's friend Karl Kraus, in a passage quoted by Gravagnuolo, stated thus: "Adolf Loos and I, he in facts and I in words, have done nothing but show that there is a difference between the urn and the chamber-pot, and that culture plays on the difference." □

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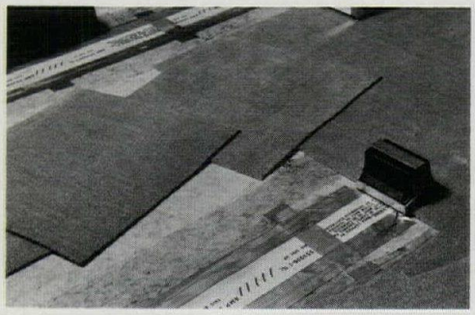
Products and literature

The following items are related to the interior technics article on flat conductor cable.

Products



Carpet tiles, required by Article 328 of the National Electrical Code for use over flat wiring, are available with static-control properties. The 18″ x 18″ tiles are easily lifted for access to wiring or for replacement. They are suitable for use in CRT, data retrieval, and computer areas, and in hospitals to provide a spark-free environment where oxygen is being used. Interface Flooring Systems.
Circle 100 on reader service card

Printmaster Modular II carpet tiles are patterned tufted carpet bonded to a polyvinyl chloride (PVC) backing. Fiberglass scrim is added for durability and stability. The tiles can be rotated to distribute wear or replaced when damaged. Matching broadloom is available. Bigelow-Sanford, Inc.
Circle 101 on reader service card

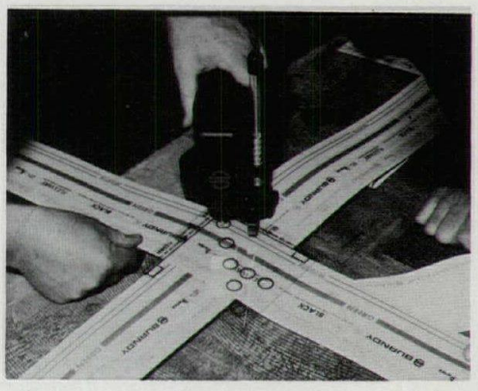
ESCO carpet tiles of durable, soil-hiding fibers, are available in 15 grades and several colors and patterns. Fibers include nylon, polypropylene, 100 percent wool, and wool and nylon blends. Backing is Mexphalt, a petroleum-based product that is said to provide a smooth surface, free of visible ridges or bulges. Suitable for use with flat cable, the tiles can be loose laid for easy cable access. Brigadoon International Flooring, Inc.
Circle 102 on reader service card

A double-hinged floor fitting, adaptable for use with flat wiring, has the capacity for up to five electrical outlets, CRT, and telephone requirements for each workstation. It locates all three services in a single outlet and fits flush with the floor. Mac-Fab Products, Inc.
Circle 103 on reader service card

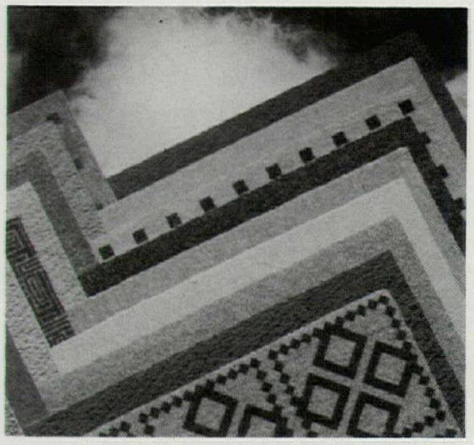
Literature

VersaTrak® undercarpet wiring system provides service for power, communications, and data distribution. It is available in both 3- and 4-pair cable on reels. A low-profile 1⅛-inch-high power pedestal for use with the 3-conductor flat cable can be installed quickly and easily. Data sheets describe VersaTrak and the pedestal. Thomas & Betts Corp.
Circle 200 on reader service card

TUCC™ flat undercarpet cable system provides telephone service to open landscape offices. It consists of connectorized cable, tape strips, overlay tape, floor anchor plates for single and multiple cables, temporary carpet installation cover, decorative housings, and card clips. The system is described in a 6-page illustrated folder. Westinghouse Electric Corp.
Circle 201 on reader service card



Flexway™ undercarpet power system consists of transition boxes, flexible flat conductor, insulators, service fittings, and connector to provide branch circuit wiring in commercial office buildings. An illustrated 12-page brochure describes the system and a magazine-loaded tool for connecting taps, splices, transitions, and current shielded connections. Burndy Corp.
Circle 202 on reader service card

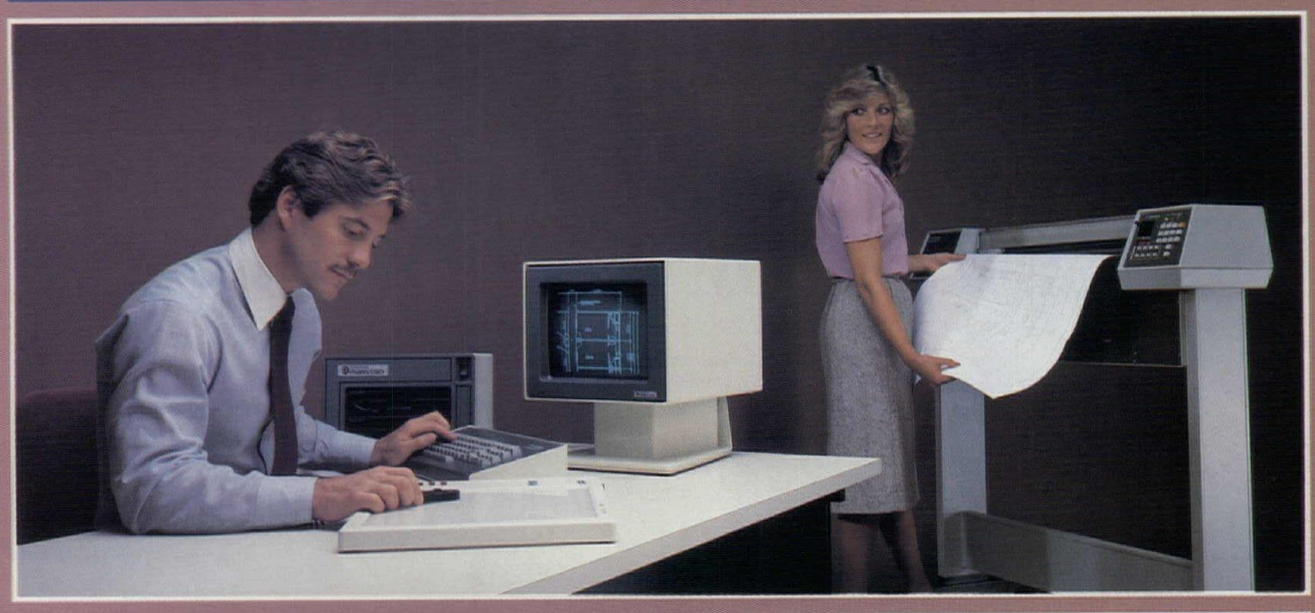


Dataguard® modular carpet is static protected for use in computer rooms and electronic offices. Made from Allied Chemical's Anso® IV nylon, the carpet tiles lift for easy access to undercarpet wiring. A four-page color brochure presents a case history of selection, installation, and performance characteristics. Lees Carpets.
Circle 203 on reader service card

Undercarpet Cabling System III for power, telephone, and data distribution, installs directly on the floor surface. It consists of 3, 4, or 5 flat copper conductors individually sealed within a polyester insulating jacket, which resists moisture, chemicals, and penetration. An 8-page brochure provides illustrations of components of the system, along with descriptions of each and a list of features. Specifications are included. AMP Special Industries, Division of AMP Products Corp.
Circle 204 on reader service card

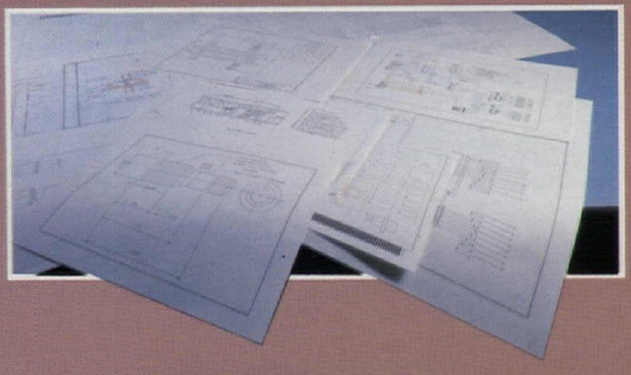
Teletape® flat undercarpet telephone cable connects office communications systems. It is supplied in 25-pair and 4-pair construction with 26 AWG copper conductors in a flame-retardant, abrasion- and cut-through resistant jacket. Teletape is described and illustrated in an 8-page brochure that explains features of the system and provides specifications. Brand-Rex Company.
Circle 205 on reader service card
[Literature continued on page 123]

The Professional System That's *Really Affordable!*



STAEDTLER MARS CAD

Computer-Aided Drafting System



MARS CAD—sophisticated computer-aided drafting at a fraction of the price you'd expect to pay. MARS CAD is a complete turnkey system that can be used in architectural, mechanical, or schematic drafting applications. It's so easy to use, it can be mastered in a few days, without learning computer technology.

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MARS CAD hardware is reliable and easy to use. A 16-bit microcomputer with a 64K byte internal memory and dual 8-inch floppy disk drives anchors the system. A 12-inch high-resolution black and white screen, 71-key detached keyboard, and desktop digitizer pad allow easy graphics input and display. The system is complete with your choice of B-size or D-size plotter.

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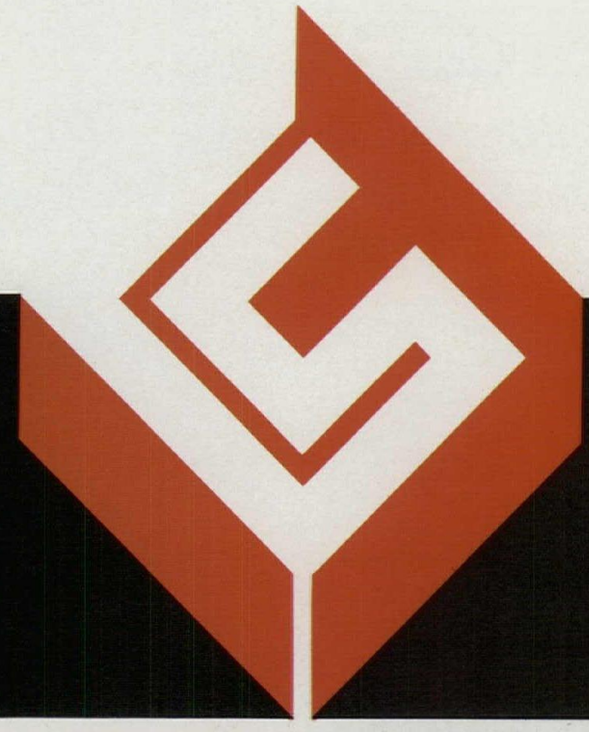

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Circle **No. 315** on Reader Service Card

Literature continued from page 120

Fantomflex™ flat conductor cable, designed to connect with standard electrical systems, provides service for power, communications, and computer systems. Only one fold is required to turn corners, because its fully integrated shield makes it reversible. The system is covered in a 12-page brochure that describes and illustrates components and accessories. The Wiremold Company.
Circle 206 on reader service card

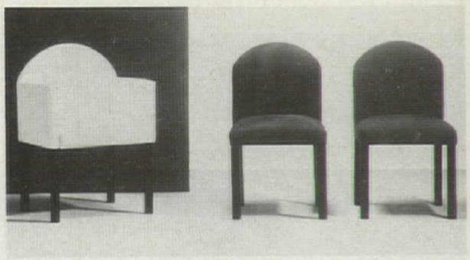
Other products

Desk chairs produced by Gruppo Industriale Busnelli, Italy, include high- and low-back armchairs and a secretarial chair. All have five-prong chromium-plated aluminum bases with casters, steel frames, flame-retardant padding, and leather upholstery. A gas spring mechanism adjusts seat height. Arms are steel, painted black, with leather covering. Scalia, Inc.
Circle 104 on reader service card

Dhurrie area rugs from India, handmade of wool and cotton, are available in more than 300 designs. The flat-weave rugs, ranging in size from 3′ x 5′ to 12′ x 18′, are reversible because the design is identical on both sides. There are modern designs and adaptations of geometrics in pastel colors. The dhurries, also available in custom designs, can be used as wall hangings. Shyam Ahuja Pvt., Ltd.
Circle 105 on reader service card

Prisma display cabinets, in two depths and two heights, have angled doors of beveled glass panels framed in steel, brass, or chromium plated strips. Cabinet bodies are available in four woods or seven lacquer colors. Glass shelving follows the contour of the doors, and high-intensity quartz recessed lighting provides uniform illumination. Cabinets can be used individually or in combination to fill wall space. Cy Mann Designs, Ltd.
Circle 106 on reader service card

Les Saisons textile wallcoverings, imported from France, consist of many types of sheers and nettings in muted tones. There are 55 weaves and colors mounted on colored backgrounds in matching, related, or contrasting tones. Colors include cerulean blue, celadon green, terra cotta, ivories, eggshells, and whites. J.M. Lynne Co., Inc.
Circle 107 on reader service card

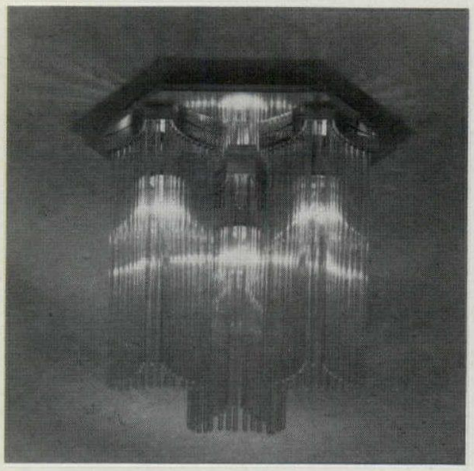


The Domo Collection, designed by Alberto Lievore and Jorge Pensi, consists of sofas in three widths and chairs with or without arms. Coverings for the smaller scaled furniture include aniline-dyed leather and fabrics. Kron U.S.A.
Circle 108 on reader service card

Series 6000 ergonomic seating designed by Geoffrey Harcourt includes low-back, high-back, and high-back with headrest, all with or without arms. The rigid polyurethane shell has a vinyl exterior and is upholstered over injection-molded, flame-retardant polyurethane foam contoured for support and comfort. Bases are five-pronged, die-cast aluminum for stability and have either casters or glides. Several models
[*Products continued on page 124*]

Products continued from page 123

have a gas-activated height adjustment. Castelli Furniture Co.
Circle 109 on reader service card

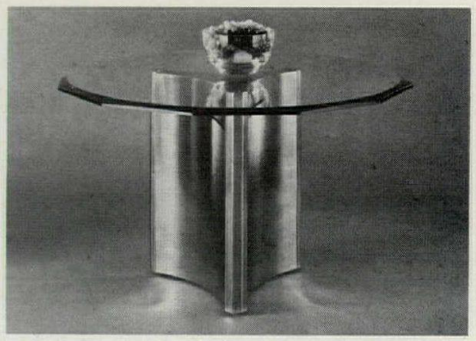


Radiance V chandeliers are made of sparkling glass rods suspended through brass castings. They are available with a chain in 7-light, 12-light, and 21-light sizes. There is also a 2-light wall bracket. Close-to-ceiling chandeliers are based on a hexagonal 3-light module for horizontal expansion and a tiering kit for vertical expansion. Lightolier, Inc.
Circle 110 on reader service card

Nicole conference/dining chair, designed by Bernd Makulik, is available in solid beech with natural, glossy red or black, and matte black finishes; in solid oak or ash with natural finish. Back has either wood slats or natural cane, and the back frame curves to form arms. Solid hardwood seat frame has flat springs that support a polyurethane foam seat. Upholstery choices are leather, fabric, or COM. Monel Contract Furniture Inc.
Circle 111 on reader service card

Plexus armchair modular seating features solid wood frames of red oak, ash, or walnut, with radiused edges and corners. Seats and backs are polyurethane foam upholstered in fabric or vinyl and supported by flexible suspension webbing. Tables have a particle board core, solid wood edges, and plastic laminate top. Modular units can be used interchangeably. Tuohy Furniture Corp.
Circle 112 on reader service card

Adjustable tables and work center consisting of modular machine, work, and printer stations accommodate data and word processing hardware. The table is available in two models and two sizes and will hold a terminal and a keyboard. The complete work center, known as Procenter, holds a printer, a disk drive, and other accessories. Tables are constructed of welded tubular steel and are finished in black or sandstone enamel or chromium. Tops are ⅝-inch particle board with teak or walnut plastic laminate. Garrett Tubular Products, Inc.
Circle 113 on reader service card



A dining table in the Mastercraft series has a three-pointed antiqued brass base, each point capped with a half-octagon. The top is prism-shaped glass with beveled edge. There are 15 new pieces in the Mastercraft group of tables, cabinets, chests, and chairs. Baker Furniture Co.
Circle 114 on reader service card

Jacquard Treasures wallcoverings, imported from Japan, are made from linen and man-made fibers. There are 15 beige and neutral tone-on-tone designs on paper backing. Decor International Wallcoverings, Inc.
Circle 115 on reader service card

Pina Gamba concrete and glass tables have bases of concrete in gray or adobe color, either 14 or 29 inches high, topped by black neoprene bumpers. Glass tops with radiused corners and flat polished edges are ½-inch thick in clear, gray or bronze smoke, with etched lines,
[*Products continued on page 126*]

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An Intrestado installation at Brea Mall, Brea, California.

Intrestado was also extensively used at University Mall, Orem, Utah.

Intrestado® tile.

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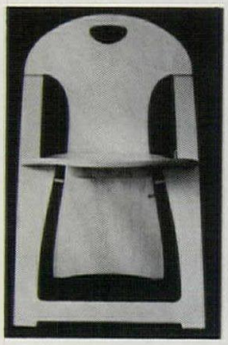
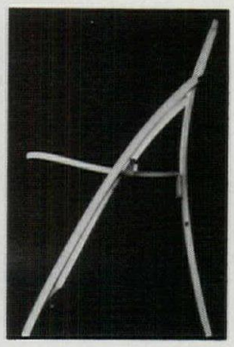
Circle **No. 335** on Reader Service Card

Products continued from page 124

or ¾-inch thick in all but gray. Custom sizes and shapes can be supplied. Frost Design Associates.
Circle 116 on reader service card





The Unfolding Chair, designed by Peter Danko, is two-piece beech molded plywood with or without upholstered seat. A pliable material molded into the chair enables it to fold without hinges. Approximate dimensions are 31″ high, 20″ wide, 22″ deep, with a seat height of 17″. Peter Danko & Associates, Inc.
Circle 117 on reader service card

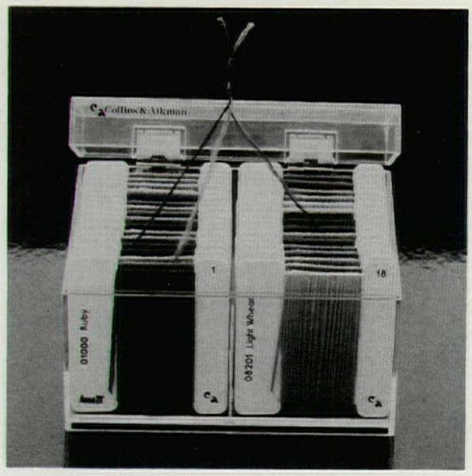
Side-Trac™ mobile cabinet system condenses lateral filing cabinets into compact rows. Cabinets in front can be moved from side to side for access to rear cabinets, eliminating aisle space. TAB Products Co.
Circle 118 on reader service card

Data storage cabinets for EDP media filing are available 30 inches, 36 inches, and 42 inches wide. A variety of drawer and shelf combinations provide flexibility to accommodate tape reels, disk packs, cartridges, printouts, binders, cards, and microfilm. Inotec Systems.
Circle 119 on reader service card

Computer printer material, a pressure-sensitive matte coated appliqué film, will accept direct printing of information stored in the computer. The film is then removed from the backing and applied directly to original drawings, saving time required for transcribing or copying the information. Stanpat Products.
Circle 120 on reader service card

Concourse™ Group site furnishings in oak modules can be connected horizontally or vertically to form planters, seats, or litter receptacles. Plastic laminate, slate, marble, or cushions can be inserted as top panels for seating. Landscape Forms, Inc.
Circle 121 on reader service card

Spacesaver wood folding doors and partitions are suitable for commercial, institutional, and residential use. Real wood veneers include hemlock, walnut, mahogany, oak, and birch. Vinyl hinges are available in five colors or are matched to wood species. Doors are suspended on rollers along steel races and operate easily. Wood Specialty Products.
Circle 122 on reader service card

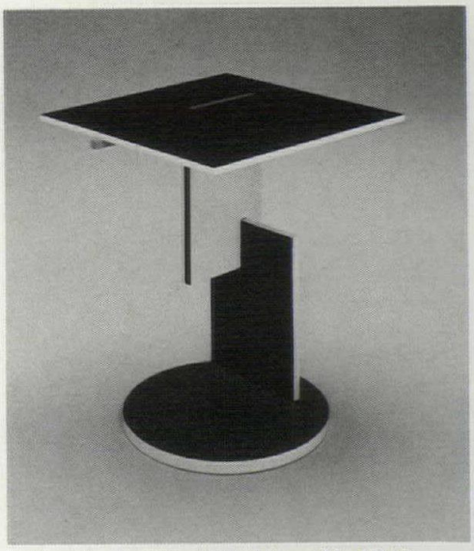


The Carpet Custom Color Program for interior designers allows them to create their own colors. From the Yarn Box, which contains 33 yarn-dyed base colors, strands can be cut and twisted together by hand until the desired shade is obtained. A request card is then filled out and the company will respond by sending a hand-tufted color sample. Carpet samples can be produced within three weeks. At present, the service is available for five of the company's carpet styles made from Allied Chemical's Anso® IV nylon. Collins & Aikman Carpet Div.
Circle 123 on reader service card

Textiles in the Double Façade group for wallcovering or upholstery are made from 54-inch-wide 100 percent wool.

Coordinated colors include crimson, mauve, blue, cameo, and pebble. Three of the four patterns are reversible, extending the possible variations. Joyce Vagasy, Div. of Amicale Fabrics.
Circle 124 on reader service card

Other literature



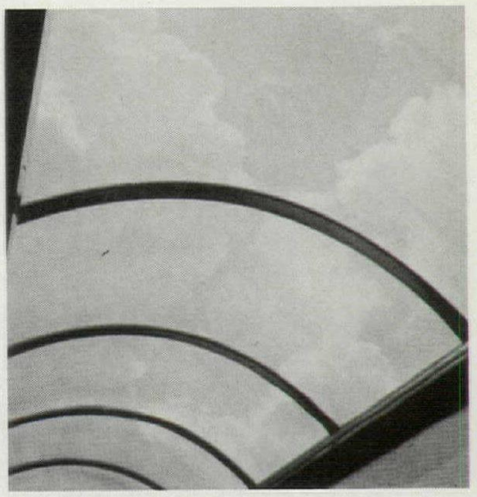
Schroeder 1, Gerrit T. Rietveld, 1918.

The Masters Collection catalog features exclusive reproductions by Cassina of Italy of seating and tables by architects Le Corbusier, Charles Rennie Mackintosh, and Gerrit T. Rietveld. Manufactured under license from their estates, the furniture is shown in color, individually and in installation photographs. Each section begins with a photograph and a biography of the architect, followed by descriptions, dimensions, and line drawings of his designs. The catalog is available for $5 from Atelier International, Ltd., 595 Madison Ave., New York, N.Y. 10022.

Low-voltage series track lighting is the subject of a condensed, 10-page catalog. Included are descriptions of the track system, recessed fixtures, and several styles of lamp holders to meet specific requirements. The low-voltage lighting is suitable for displays, museums, and exhibition illumination. Accessories include dimmers for precise tuning of the lighting and for energy conservation. Lighting Services, Inc.
Circle 207 on reader service card

Composite stone panels have a cement-asbestos board (CAB) or plywood substrate coated with natural stone in a variety of colors and textures. With CAB substrate, the panels have a UL Class 1 rating. An eight-page brochure illustrates four aggregate sizes, several colors, and joint details, and includes installation information and a short-form specification. Sanspray Corp.
Circle 208 on reader service card

Rolling Doors catalog has 28 pages of service doors, insulated doors, rolling and side-coiling grilles, and fire doors. Counter closures also include fire doors and doors with sills and trim. Special items include doors for unusual-shaped openings and rolling doors and screens manufactured from wood. The Cookson Company.
Circle 209 on reader service card



Skylights and heat/smoke vents offered in a 16-page brochure include glass- and acrylic-glazed models. Barrel vaults, ridge skylights, pyramids, domes, and grid systems, as well as single skylights, are shown and described. Heat and smoke vents operate upon release of a fusible link. Specifications are provided along with color illustrations of typical installations. Plasteco, Inc.
Circle 210 on reader service card
[Literature continued on page 129]

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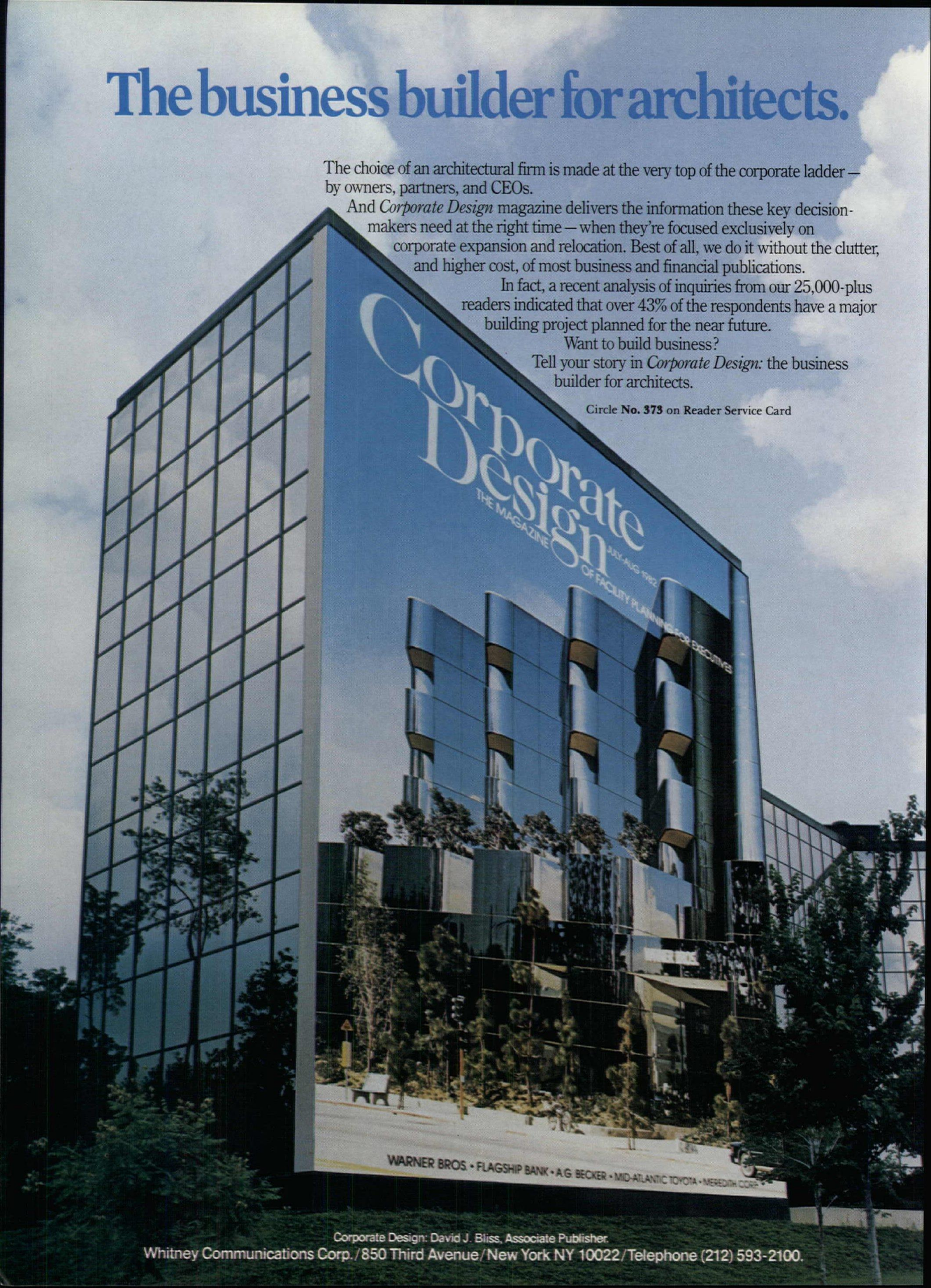

Corporate Design: David J. Bliss, Associate Publisher.

Whitney Communications Corp. / 850 Third Avenue / New York NY 10022 / Telephone (212) 593-2100.

Literature continued from page 127

Architectural panels of aluminum or galvanized steel include roof, mansard, and facia panels in standing seam, batten, span rib, or flush designs. A 16-page brochure shows details of each and includes charts of colors available. Installation details and suggested structural designs are also shown. Span Metals Corp.
Circle 211 on reader service card

Central vacuum system consists of a power unit/dirt canister, tubing and fittings, hose, wand, cleaning tools, and wall or floor inlet. It offers quiet performance because the power unit is installed in a remote location. The operator handles only the lightweight hose, wand, and end tool, with no heavy canister to be moved. Information about sizes and models is provided in a four-page brochure that also includes specifications. Vacu-Maid, Inc.
Circle 212 on reader service card

The Qest plumbing system consists of polybutylene tubing, fittings, and valves for water distribution. A four-page brochure, in a question-and-answer format, explains the system's use and compares it with other types of plumbing. U.S. Brass.
Circle 213 on reader service card

High-density vertical storage and retrieval systems are described and illustrated in an eight-page color brochure. Standard heights are 7½–23 feet; shelves are 6½–8 feet wide and 9–16 inches deep, with capacities ranging from 140 to 4400 pounds, depending on model. A digital push button calls up shelves by number; an optional microprocessor can preselect 99 item locations, and includes provision for interface with electronic inventory control. Spacesaver Corp.
Circle 214 on reader service card

Laminated Plastic Toilet Compartments catalog also covers dressing compartments, urinal screens, and shower dividers. Compartments are ceiling hung, floor anchored, overhead braced, or floor and ceiling anchored. Hardware is satin finish stainless steel located on the inside. Edges are stainless steel or laminated plastic. Laminates include woodgrains, standard colors, and marble. Bobrick Washroom Equipment.
Circle 215 on reader service card

Concrete surfacing catalog covers masonry coating, stucco, mortars, adhesives, and pool plaster. There is a description of each product, a list of uses, specifications, and package sizes available. W.R. Bonsal Company.
Circle 216 on reader service card

'Paints and Stains' catalog has descriptions and application information about several exterior oil-base and latex-base stains, paints, primer, wood preservatives, and sealers. Information is also provided about surface preparation of wood, masonry, and metal. A table of recommended uses lists substrates and suggested coatings for best results. Olympic Stain.
Circle 217 on reader service card

Actionwall® demountable partitions Series 700, of ⅝-inch-thick gypsum board, are nonloadbearing partitions 24, 30, or 48 inches wide. Finishes are vinyl, tackboard vinyl, or chalkboard. There are color-coordinated anodized aluminum components for glazing, door frames, mouldings, and trims. The system, finishes available, detail drawings, and specifications are included in a 12-page brochure. Domtar Gypsum America, Inc.
Circle 218 on reader service card

'Accessibility Checklist for Public Facilities and Housing' covers regulations of the California Office of the State Architect for accessibility by the handicapped. Although it applies to California architects and builders, it is useful for others who need guidance in meeting local, state, and federal regulations. The checklist format presents the information in simple, nonregulatory language, provides illustrations, and allows space for notes. The three parts cover site, occupancy, and building requirements.. To order a copy of the 80-page guide, send $5 plus $1 for postage and handling to Peoples Center for Housing Change, 1424 Old Topanga Canyon Rd., Topanga, Calif. 90290.

Building materials

Major materials suppliers for buildings that are featured this month as they were furnished to P/A by the architects.

Folger Library Additions and Alterations, Washington, D.C. (p. 65). *Architects: Hartman-Cox Architects, Washington, D.C.* Interior wall surfacing: cementitious waterproofing (Phase 1), Heydi. Exterior marble veneer (Phase 2 and 3): Georgia Marble. Steel casement windows (Phase 2): Hope's Windows. Aluminum framed glazing (Phase 3): Kawneer. Skylights: Super Sky Products. Interior hollow metal doors: Allied Steel Products, County Fire Door. Custom oak doors: Ivan C. Dutterer. Rolling doors: Kinnear. Floors: V/A tile (Phase 1 and 2), Armstrong Cork; traffic-bearing membrane, 3M Co. Roofing: Gates Engineering Co. Waterproofing marble joints: Dow Corning. Insulation: Foam glass block (Phase 1), Pittsburgh Corning; Styrofoam RMX and RM (Phase 2 and 3), Dow Chemical. Roof and deck drainage: Dow Chemical, J.R. Smith Co., Josam. Lath and plaster partitions: U.S. Gypsum. Paint: exterior metal work (Phase 1), Duron; (Phase 3), Glidden. Paint, interior: (Phase 1 and 2), Duron; (Phase 3), Pittsburgh Paints. Butt hinges: McKinney. Locksets: Russwin, Baldwin. Door closers: LCN. Panic bars: Von Duprin. Electric door lock (Phase 1): HiTower. Security/detection/fire: Pyrotronics, Ellenco. Closed-circuit TV (Phase 2): RCA. Halon fire suppression: Safety First. Custom millwork: Cavetown Planing Mill. Booklift (Phase 2): Inclinator Co. Elevators: Montgomery Elevator. Interior lighting: fluorescent stacklights (Phase 1), Litecontrol Corp.; incandescent/fluorescent (Phase 2), Lightolier; quartz, incandescent/fluorescent (Phase 3), Edison Price. Exterior lighting: mercury vapor, J.H. Spaulding Co.; fluorescent, Morris Kurtzon. Electrical distribution: Westinghouse Electric. Plumbing fixtures: American-Standard; faucets, showerheads, Speakman; flush valves, Sloan; toilet stalls, Sanymetal; washroom accessories, Bobrick; water fountains, Halsey-Taylor. HVAC system: (Phase 1 and 2), Temptrol AHU; (Phase 3), C.V. Carlson Co. Environmental control system: (Phase 1 and 2), Johnson Controls (Phase 3), Honeywell, Inc. Library bookstacks (Phase 1 and 2): Andrew Wilson Co. Carpets: Patcraft Mills, Stratton Industries. Custom reading lamps: Frederick Cooper. Built-in bookshelves: Ivan C. Dutterer. Custom casework: Cavetown Planing Mill; Davis & Sons Cabinetmakers. Custom reading tables, service desk: Cavetown Planing Mill. Chairs to match existing: The Hanover Craftsman. Catalog files: Texwood. Blinds: vertical, Marathon Carey-McFall; horizontal, Levolor Lorentzen. Linen covered panels: The Robert F. Lehr Corp. Theater lighting control system: Electro-Controls.

Cooperative apartment, New York (p. 74). *Architect: R.M. Kliment & Frances Halsband, New York.* Paint: Benjamin Moore. Lighting: Lewis Smith Lighting, Inc.; Simes Apmann, Inc. Wood paneling and custom furniture and cabinets: B&S Woodworking. Fabric: Knoll International.

Judith Selkowitz Fine Arts, Inc., New York (p. 76). *Architect: Samuel J. De Santo & Associates, New York.* Carpet: Focus. Paint: Pratt & Lambert; Benjamin Moore. Lighting: Lightolier.

575 Elm Street Residence, Winnetka, Ill. (p. 82). *Architect: David Hovey, Chicago, Ill.* Frame: U.S. Steel, plate steel; Wheeling Corrugating Co., steel joists. Deck: Wheeling Corrugating Co. Exterior cement panels: Gold Bond. Windows (operating vents): Custom Fabricators. Doors: Cline Aluminum Doors, aluminum; Landquist & Sons, hollow core doors. Pavers: Wausau Tile. Roofing, waterproofing: Koppers Co. Paint: Tnemec, exterior; Benjamin Moore, interior. Hardware: Stanley, Sargent. Can downlights: Prescolite. Plumbing: Kohler. Plumbing fittings: Moen. Washroom accessories: Charles Parker. Cabinets: Scan-Atlas. Blinds: Levolor Lorentzen.

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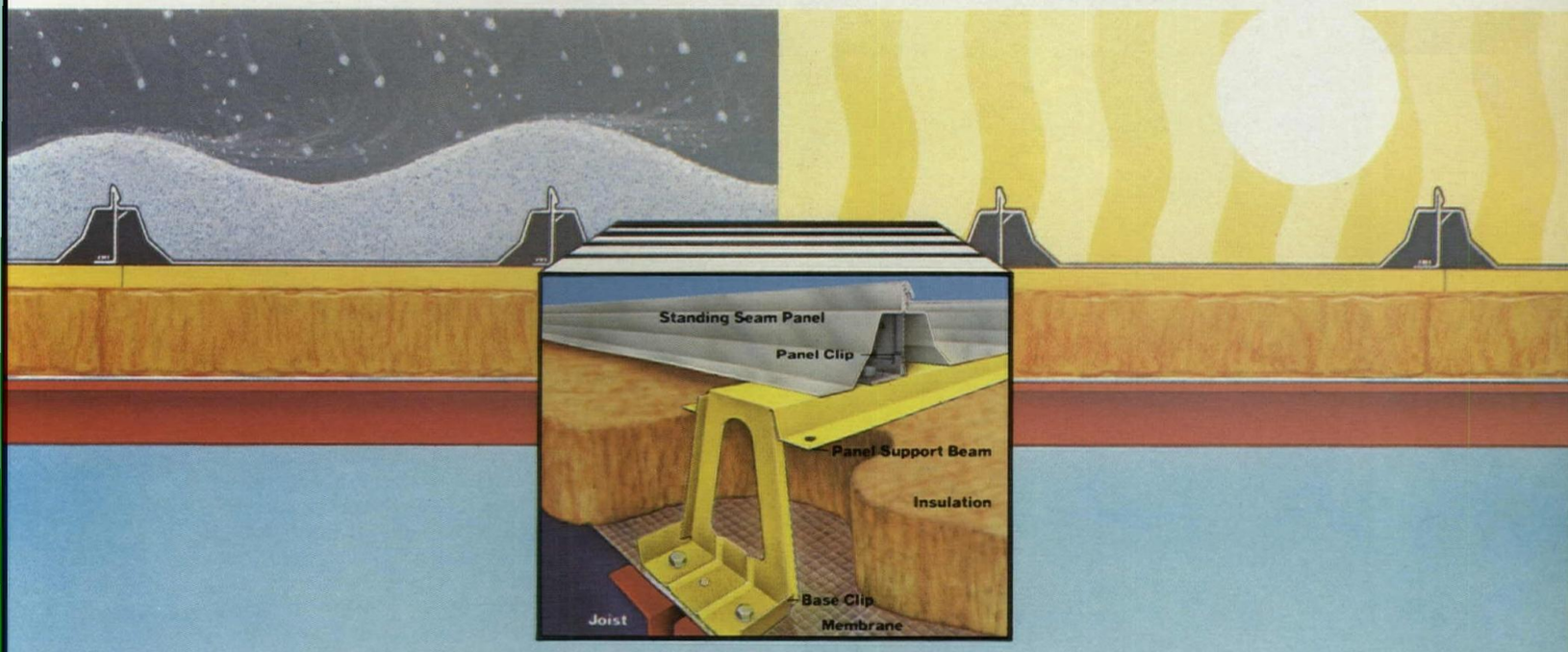

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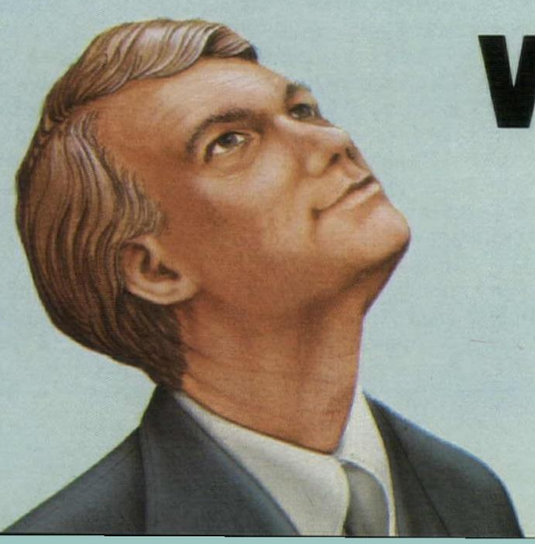

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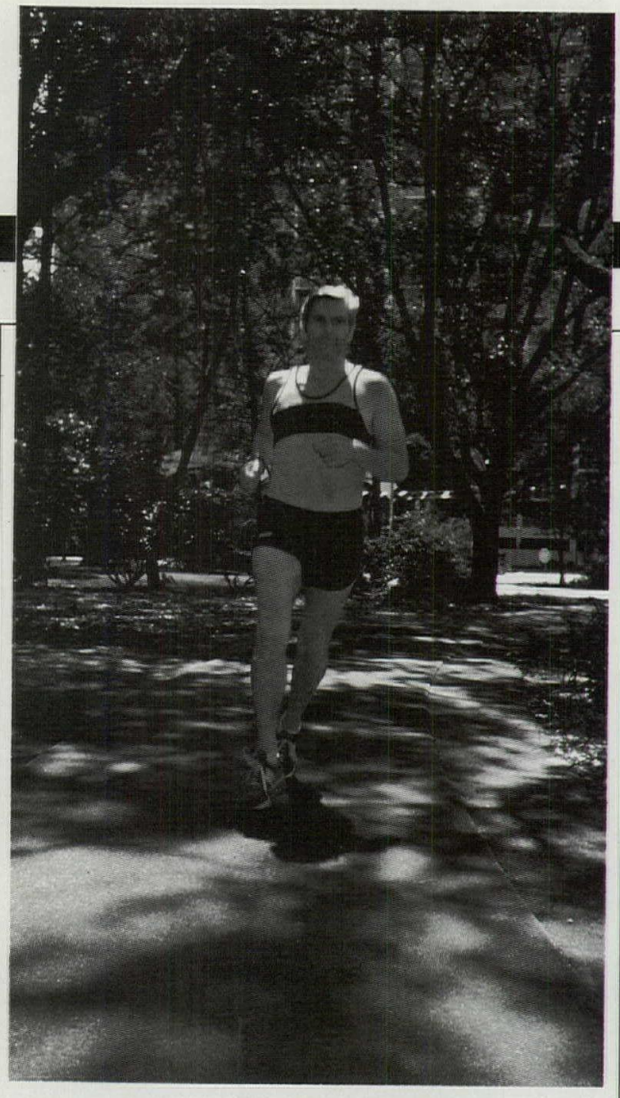

Tom Keefe, president of Galveston-Houston Co., finds the Houstonian's artificial turf jogging path and wooded surroundings easy on the eyes as well as the feet.

SPORTS & FITNESS GO HAND IN HAND

BY JAMES E. BRAHAM

It's half-past 5 in the morning but already the mile-long artificial-turf jogging path winding through the wooded grounds of the posh Houstonian is taking a beating from some of that area's most well-heeled businessmen. Meanwhile, inside the even newer University Club in Dallas, tennis balls are flying back and forth on half a dozen climate-controlled courts.

Elsewhere, lower Manhattan's Downtown Athletic Club pool is filling up with Wall Street's earliest—if not most daring—big plungers. The New York Athletic Club walls resound with the staccato of squash balls. Soon, on the treadmills and exercise bikes at Manhattan's Cardio-Fitness Centers, corporate leaders will be taxed to the limit, every huff and puff duly recorded.

At the Detroit Athletic Club, early-bird executives shape up on the new Nautilus machines. At the Minneapolis Athletic Club, aerobics is the rage, and men have joined women in bouncing to the music. Classical, no less.

Shortly, West Coast bosses will be running around in select circles, such as the indoor track at the Los Angeles Athletic Club. At Seattle's Washington Athletic Club, racquetball is a smash. And at the biggest and perhaps the best of these old-line athletic clubs, the 17,600-member Multnomah in Portland, Oreg., just about every avenue to fun and fitness is being pursued.

At athletic clubs across America these are the times to try men's soles (and legs, and lungs . . .). Not just in the morning, either. The lunch hour-and-a-half (the typical exec's workout time, from office to club and back) and afterwork also bring out flocks of exercising executives.

Houston's spa. Among all these clubs the three-year-old Houstonian stands out as the ultimate executive spa. Situated on a 22-acre, retreat-like setting 10 minutes from downtown, the complex comprises a 300-room hotel, a conference center, a women's health spa, and a 126,000-sq-ft Health & Fitness Center that also houses a Preventive Medicine Center.

Running and jogging, although they have reached a plateau, are still the major athletic activities at most clubs, and the Houstonian's huge (8 laps to the mile) indoor track even features blinking pacing lights. Also included: eight racquetball-handball courts, a gym for basketball and volleyball, Nautilus-type strength-training equipment, three studios for aerobics and other exercises, five outdoor tennis courts, two outdoor pools—plus the usual whirlpools, saunas, carpeted locker rooms, and so on that one would expect from a club charging a $12,500 initiation plus $125 monthly family dues.

"It is an elitist sort of club, exclusive by design," admits Tom Fatjo Jr., who founded the Houstonian to help people have a "more productive way of life." The 42-year-old entrepreneur (he previously built Browning-Ferris Industries Inc., Houston, into the nation's largest waste systems company) purposely went after company chiefs as the core of the 2,000 members.

Eugene V. Amoroso, president and CEO of Coca-Cola Co.'s Foods Div., Houston, is taking the club's health program (Living Well Inc.) back to his firm. "There's got to be a correlation, a payback, between health and good work habits," he believes.

Mr. Amoroso, 47, follows this exercise program, "a conscious effort to improve my physical fitness": calisthenics (to help relieve an old back problem), swimming, and bike riding—45 minutes to an hour, five or six days a week.

"I probably use the Houstonian twice a week," he says. That's where he does any evening workouts. "If it's in the morning, I do it at home," where he has a treadmill, exercise bike, a carpeted area for exercising, and a pool.

It can be boring. Although he plays tennis and golf, they are not part of his fitness program, a regimen he admits many would find "boring," including himself. "I don't get a big kick out of it, I don't get this euphoria that you hear runners get." What he does reap is this: "Mentally, the quality of life is better. You're more alert and you need less sleep. And you work more productively."

Thomas J. Keefe, 50, president and COO of Galveston-Houston Co., runs about four days a week on the Hous-

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tonian's outside track. A typical workout is a 3-miler—"in the very early morning or noon or afternoon, depending on my schedule"—followed by 20 minutes of weight lifting, whirlpool, and shower. An hour and a half later he's back in his office, refreshed.

Mr. Fatjo, who practices what he preaches (daily swimming, running, and bicycling), points out that "people are becoming much more knowledgeable about exercise and nutrition. Seven or eight years ago they were running without regard to stretching or to things like stress fractures. They'd play competitive racquet sports and pull a muscle, for example. Now they're becoming aware of how necessary it is to get ready, to stretch. Racquet sports are good," he allows, "but many people are moving toward jogging and swimming and cycling."

"Sports and fitness go hand in hand," Rudy Riska, director of athletics at New York's Downtown Athletic Club, advises the over 3,000 members. As at many clubs, the Downtown reports a trend to younger members, many of whom pay their own $150 initiation and $1,000 annual dues and are more interested in athletics than entertaining.

Serious swimmers. "Incredible" is what Mr. Riska calls the increased interest in serious swimming. "People used to come in and swim four to five laps. Now they swim a mile, which is 72 laps. That takes about 45 minutes."

Squash is also extremely popular among the 700 or so active players at the Downtown. George L. Ball, president and CEO of Prudential-Bache Securities Inc., plays about three times weekly, usually at noon with club pro Dan Spina. A nationally ranked paddle tennis player, the 43-year-old brokerage boss has, despite playing squash only slightly more than a year, "already beaten 90% of our Class D players," Mr. Spina raves.

Squash is an executive favorite. One reason is that many corporate chiefs learned the game at eastern universities. Also, as Roy A. Gentles, president of Alcan Aluminum Corp., Cleveland, points out, "You can get a hell of a workout in a very short time."

Mr. Gentles, 63, played squash until last year, when he injured his shoulder; he hopes to resume his favorite racquet sport next season. Meanwhile, "always fighting the battle of the bulge," he follows a vigorous daily fitness program.

When he's in town he rides his stationary bike (with bookstand, no less) at home in the morning for about 25

PERSONAL TIME

minutes. At noon, if he hasn't a business lunch, he bikes another 20 minutes and works on the Nautilus machines for 15 to 20 minutes at the Thirteenth Street Racquet Club downtown.

Reciprocation and rooms. Most old-line, private athletic clubs have reciprocal arrangements with other leading clubs around the country so that traveling executives can use their facilities. Most also offer first-class sleeping rooms.

The three Cardio-Fitness Centers in Manhattan offer still another type of fitness facility. Serving some 4,000 executives from 135 corporations, exercise physiologists at these centers develop individual, goal-oriented fitness programs for each participant so that he (or she) can strengthen his or her heart and help reduce coronary risk.

Each center has 30 treadmills and the same number of stationary bicycles among its ten "exercise stations." Most participants use it three times a week, for an hour.

"It's terrific," says Peter T. Buchanan, 48, president and CEO of First Boston Corp., which is putting some 130 of its employees through the program (at $725 apiece annually). "I play a little golf and tennis, but that's not much exercise. I've been going [to the Cardio-Fitness Center] for about a year and I feel a lot better."

Fitness first. John D. Macomber, 55, chairman and CEO of Celanese Corp., uses the center "at least three times a week. It's fitness, not sports. In fact, it's dull," he chuckles, "but they make it as pleasant as possible. And when you're done it's worth it all. You keep your weight down and you feel better, exuberant! And when you feel better you can work better."

His sentiments are echoed by James Damron, chairman, president, and CEO of Bateman Eichler, Hill Richards Inc., a large Los Angeles brokerage. Mr. Damron, 44, runs or exercises (or both) with aerobics or weights four to five times a week at the Los Angeles Athletic Club. He logs anywhere from 3 to 8 miles on the indoor track and "would run every noon if I could avoid the luncheons and meetings.

"We're in a highly volatile business with a lot of strain. I don't think there's anything else as helpful as an exercise program like this," he says. "It's probably the most important thing I do in any one day." ■

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