Progressive Architecture

August 1982

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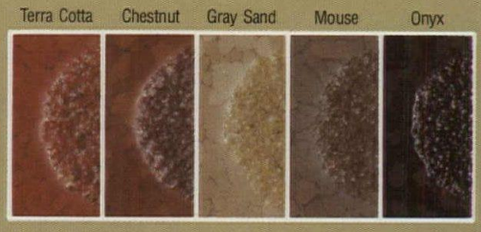

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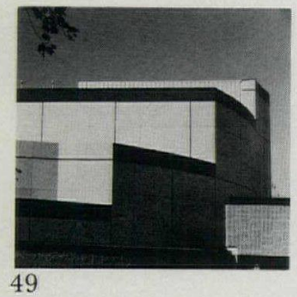
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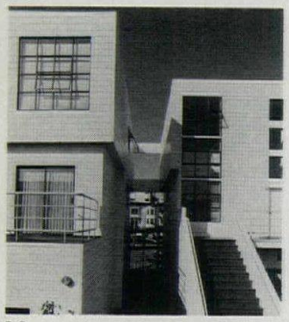
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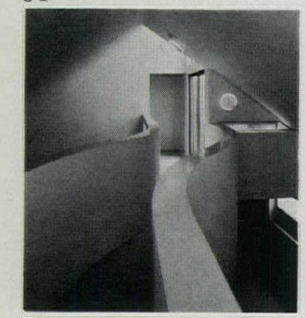
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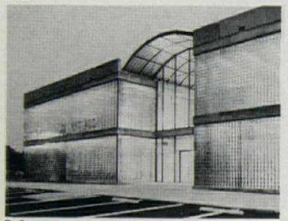
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Cover: *Dixon residence, Venice, Ca (p. 68), by Brian Murphy. Photo: Tim Street-Porter.*

Penton/IPC

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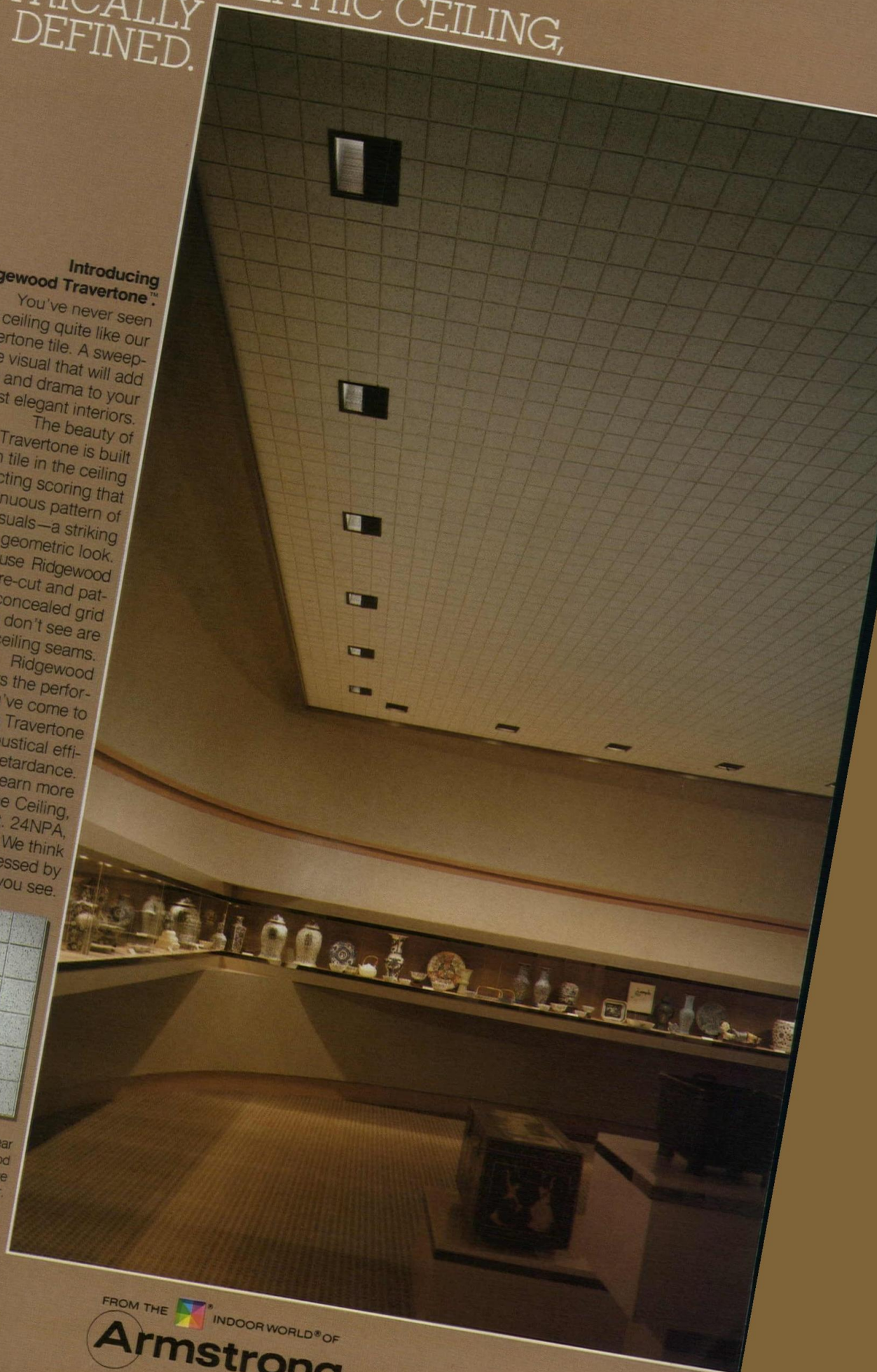
THE MONOLITHIC CEILING, GEOMETRICALLY DEFINED.



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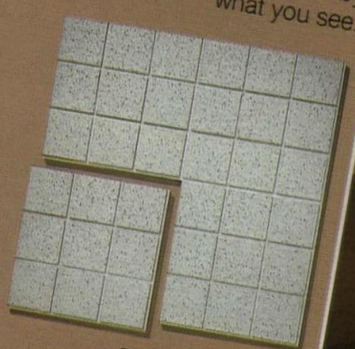

The seams disappear when Ridgewood Travertone tiles come together.

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FROM THE INDOOR WORLD® OF Armstrong

Exterior tube, composite steel frame proves most efficient for wind resistance.

Typical tower floors contain 22,000 sq ft of net rentable space. Structural rigidity is gained through the use of composite steel columns and spandrels. Steel construction contributed to speed of erection and overall efficiency of the frame.

Each level of the 106-ft-high bank is stepped back 15 ft as it rises to its full height.

Credits:

Owners/Developers: Gerald D. Hines Interests, and PIC Realty Corporation, Houston, Texas

Architects: Skidmore, Owings & Merrill, San Francisco, Calif., and 3/D International, Houston, Texas

Structural Engineer: CBM Engineers, Inc., Houston, Texas

Mechanical, Electrical, Plumbing Engineer: I. A. Naman & Associates, Houston, Texas

Fabricator: Mosher Steel Company, Houston, Texas

General Contractor: W. S. Bellows Construction Corporation, Houston, Texas

Steel Erector: Peterson Brothers Steel Erection Co., Houston, Texas

Building Facts:

Project: First International Plaza, Houston, Texas
No. of Levels: 55
Height of Tower: 748 ft
Total Gross Area: 1.5 million sq ft
Steel Supplier: Bethlehem furnished 7,000 tons of structural shapes and 5,000 tons of rebars
Steel Frame Weight: 11.5 lb/sq ft

First International Plaza is Houston's tallest completed office building. Located in the midst of the city's high-rise district, the tower rises 748 ft from grade.

"The project presented two major structural problems," reports Joseph P. Colaco, President of CBM Engineers, Structural Engineers. "The first concerned the torsion of the tower due to wind loads on the building's irregular shape.

"We counteracted the effects of the direct wind load and the corresponding torsion with an exterior tubular designed composite steel frame. This system was even used around the bay window portion of the structure. Extensive wind tunnel studies helped determine the cladding pressure and torsional effects of wind loads.

"The second structural problem involved the adjacent bank lobby. Consideration had to be given to the differential settlement between the heavily loaded tower and the lightly loaded bank lobby. We solved the support problem by using clear span steel trusses extending from the tower to the exterior bank wall—the maximum span being 179 ft 1¾ in."

The tower's structural frame

The structural design consists of an exterior composite steel-framed tube system with columns at 10 ft on center. The exterior composite tube is made up of 44 in. x 18 in. (typical) columns and 46-in.-deep spandrels at each floor. The floor framing members are simply supported, compositely designed wide-flange floor beams, at 10 ft on center. A 2-in. composite steel floor deck is topped with 3¼-in. lightweight concrete. The composite columns and spandrels enable the exterior tube design to carry all of the gravity and wind loads in the frame.

According to the engineers, this construction method maximizes the advantages of both steel and concrete. Steel framing contributes to the speed of construction and overall efficiency of the frame; concrete provides exterior fire protection, structural rigidity, and a continuous back-up system for the exterior granite facade.

Close coordination required

Composite steel frame construction requires close coordination between the various building trades. As a rule, steel erection should stay 10 floors ahead of concrete forming.

Compared to a conventional steel frame, a composite steel frame uses relatively light steel members for the exterior column locations. Exterior columns are braced with temporary steel spandrels. Temporary diagonal bracing is also erected in the core in both directions to provide lateral resistance.

Eight clear-span trusses, extending from the tower to the exterior bank wall, accommodate the differential settlement between the heavily loaded tower and the lightly loaded bank lobby. Maximum span: 179 ft 1¾ in.

Sales Engineering advisory services

Bethlehem's Sales Engineers offer a variety of steel construction technical advisory services. They can answer your questions on steel grades, fasteners, Weathering Steel—anything concerning steel construction.

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California artist, Joy Verner, has been creating Bonded Bronze designs and textures for Forms & Surfaces since 1969. Her latest series has just been completed, providing the architect and designer with a new selection of elegant surfaces applicable to walls, columns, counters, doors and other architectural features. Bonded Bronze designs are available in a variety of forms for rapid and economical installation, including a Class 1 Fire Rated version.

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FORMS+SURFACES

American favorites

All of us recognize as exemplars certain buildings—ones we urge others to visit or want to see ourselves. Here is an inventory of my favorites—limited to American works since 1960.

I wrote last month about judging in awards competitions, the month before about visits to buildings compared to articles about them. I was reminded that the architectural judgment of individuals or groups can be expressed succinctly by their choices of what they consider best—their favorites.

I am always interested in preference polls. I can get quite caught up in a countdown of the top 40 on a pop radio station, or the record prices of antiques at auction (different station). The selections in any architectural guidebook or travel guide get my critical scrutiny (see Views, p. 10, re Kidder Smith's new guide), and I sometimes make tedious meetings more tolerable by making lists of favorite this or that when others think I'm taking minutes.

I'm exposing my preferences here with a list of my favorite American buildings built from 1960 to the present; that's a convenient period during which all the architects working can be said to be contemporary. (It also corresponds to my own years in architectural journalism.) These dates rule out Frank Lloyd Wright, whose masterpieces dominate earlier decades. Also left out, as well, are fine early work by SOM, Bruce Goff, Pietro Belluschi, the best of Richard Neutra, and most of Eero Saarinen.

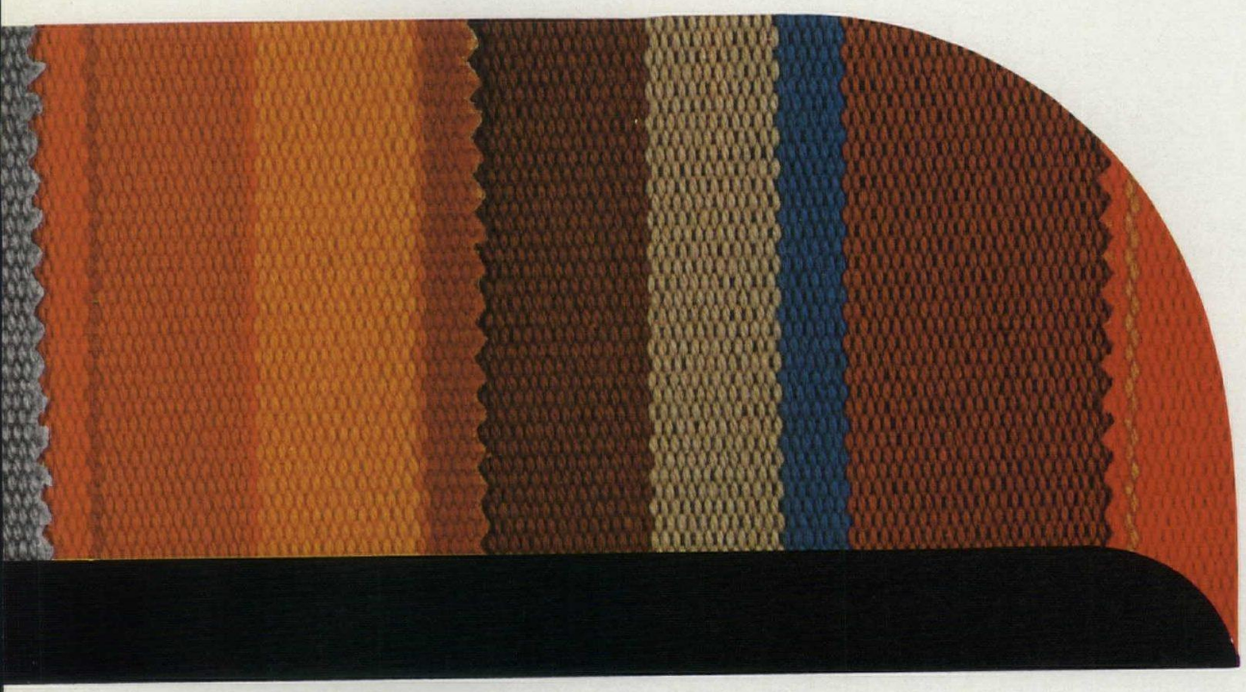
I realized that there are two distinct categories of favorite buildings: those one has seen and been strongly impressed by and those one has not seen but would most like to. I have differentiated them here by listing those I have not seen in brackets. Buildings one approaches with high expectations, based on reports, may disappoint. If a building with a great reputation doesn't appear in this list, it's either because I found it a letdown (likely if it is in a major city) or because I am not much moved to go see it (more likely if it is hard to reach).

A few ground rules for this (alphabetical) list: only completed works by Americans and Canadians, in these two countries, are considered; remodelings were considered only if radical; interiors were considered only if high points in an architect's output; notable plazas and parks—and the period produced great ones—are not here. These all suggest subjects for other lists.

I hope that you'll be encouraged to make some lists of your own. And don't take mine or yours too seriously; they're only means of examining your preferences.

John Morris Dixon

Arquitectonica: *Spear House, Miami.*
Edward L. Barnes Associates: *Haystack Mtn. School, Deer Isle, Me; Scaife Gallery, Carnegie-Mellon U., Pittsburgh.*
Gunnar Birkerts & Associates: *1300 Lafayette East Apts., Detroit.*
Marcel Breuer & Associates: *Whitney Museum, New York; [St. John's Abbey, Collegeville, Mn].*
CRS: *[Desert Samaritan Hospital, Phoenix].*
Davis, Brody & Associates: *Endicott College, State University of New York, Buffalo.*
Peter de Bretteville: *de Bretteville and Simon houses, Los Angeles.*
Arthur Erickson: *Simon Fraser University, Burnaby, B.C.; Smith House, W. Vancouver; Museum of Anthropology, U. of B.C., Vancouver.*
Esherick, Homsey, Dodge & Davis: *[houses in the Bay Area and buildings at Sea Ranch, Ca].*
Frank O. Gehry & Associates: *Own house, Santa Monica, Ca; Santa Monica Place, Santa Monica.*
Michael Graves: *Gunwyn Offices, Princeton, NJ; Sunar Showroom, Houston; [Hanselmann house, Fort Wayne, In].*
Herb Green: *[Own house, Norman, Ok].*
Gwathmey Siegel: *Gwathmey house, Amagansett, NY; Whig Hall, Princeton University, NJ; Shezan Restaurant, New York.*
Hardy Holzman Pfeiffer Associates: *Orchestra Hall, Minneapolis; [Best Co. Headquarters, Richmond, Va].*
Hartman-Cox: *Mt. Vernon College Chapel, Washington, DC; National Permanent Building, Washington, DC.*
John Hejduk: *Cooper Union Foundation Bldg., New York.*
Hodgetts/Mangurian (Studio Works): *South Side Settlement, Columbus, Oh.*
Johnson/Burgee: *IDS Building, Minneapolis; New York State Pavilion, World's Fair of 1964, New York (by Philip Johnson and Richard Foster).*
Fay Jones: *[Thorncrown Chapel, Eureka Springs, Ar].*
Louis Kahn: *Salk Labs, La Jolla, Ca; [Library and Dining Hall, Philips Exeter Academy, NH].*
Kallmann, McKinnell & Wood: *Boston Five Cents Savings Bank, Boston.*
Krueck & Olsen: *House, Chicago.*
Ernest J. Kump: *Foothill College, Los Altos Hills, Ca.*
Richard Meier & Associates: *Schamberg House, Chappaqua, NY.*
Mies van der Rohe: *Museum of Fine Arts, Houston.*
Mitchell/Giurgola: *INA Building, Philadelphia; [Tredyffrin Public Library, Stafford, Pa].*
Charles Moore: *Kresge College, U. of C. Santa Cruz, Ca (with MLTW/Turnbull); [Own house, Orinda, Ca; Condominiums and club, Sea Ranch, Ca (with MLTW); buildings at Cold Spring Harbor Labs, Huntington, NY (with Moore, Grover, Harper)].*
Murphy/Jahn: *McCormick Place, Chicago (as C.F. Murphy Associates).*
Barton Myers Associates: *[Student housing, U. of Alberta, Edmonton (as Diamond & Myers)].*
I.M. Pei & Partners: *Society Hill towers and townhouses, Philadelphia; National Air Lines Terminal, JFK Airport, New York; [State U. of NY, College at Fredonia].*
Cesar Pelli: *Courthouse Center, Columbus, In (with Gruen Associates).*
Perry Dean Stahl & Rogers: *Science building, Wellesley College, Ma.*
Antoine Predock: *La Luz housing, Albuquerque, NM.*
Kevin Roche John Dinkeloo & Associates: *Oakland Museum, Oakland, Ca; Arts Center, Wesleyan University, Middletown, Ct.*
Paul Rudolph: *Chapel, Tuskegee Institute, Al (interior); [Southeastern Mass. Technical Inst., N. Dartmouth, Ma].*
Eero Saarinen & Associates: *St. Louis Arch (designed before this period, but built during it); [John Deere Headquarters, Moline, Il].*
Werner Seligmann & Associates: *[State Hospital Administration Bldg., Willard, NY].*
Sert, Jackson & Associates: *Harvard Married Student Housing, Cambridge, Ma.*
Skidmore, Owings & Merrill: *PepsiCo Bldg., New York; 140 Broadway, New York; Tenneco Bldg., Houston; John Hancock Bldg., Chicago [Mauna Kea Beach Hotel, Hawaii; Weyerhaeuser Headquarters, Tacoma, Wa].*
Robert Stern: *[Lang House, Washington, Ct].*
Venturi, Rauch & Scott Brown: *Franklin Court, Philadelphia; Tucker House, Mt. Kisco, NY; [Trubek and Wislocki houses, Nantucket, Ma; Brant-Johnson House, Vail, Co].*
Wurster, Bernardi & Emmons: *Public Library, Mill Valley, Ca.*
Harry Weese & Associates: *Metro stations, Washington, DC.*
Zeidler Partnership: *Ontario Place, Toronto.*



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Views

Buildings Baedecker

What a senselessly desecratory review of Kidder Smith's "Architecture of the United States" by William Morgan in the May issue (p. 202).

Certainly the book is one man's personal choice of American buildings. As was Pevsner's of English buildings. How else? Certainly they were only buildings open to the public, as explained by the author, so they could be visited by the public. Who cares if the volumes fit into the glove compartment.

So Kidder Smith does value the Gropius-Giedion Modern philosophy, and likes the work of SOM. Why not? An author has to have opinions of his own as does the reviewer Morgan.

Why the reference to the Richard Nixon 1960 campaign, which has no relevance whatsoever to Kidder Smith? Morgan seems to have a personal vendetta for Smith. Why did P/A choose this reviewer?

Other periodicals have commented on this book as follows:

AIA Journal, May 1982, by Donald Canty—"Few guidebooks could be truly said to be as useful to professionals as laymen. But this can be said of *The Architecture of the United States* by G.E. Kidder Smith, FAIA, a three-volume work briefly reviewed in the April issue. The selection of buildings is sure-handed and the commentary on them literate and straightforward."

Preservation News, December 1981—"An encyclopedic and seminal new work."

New York, November 1981, by Carter Wiseman—"Surely the most mature, thoughtful, and useful writing on American architecture out this fall is the staggering three-volume undertaking by G.E. Kidder Smith. . . . The mere compilation of so much information is a feat in itself. But the grace, wit, and erudition with which it is presented make this an invaluable companion on the road or at the desk."

Your publishing of this letter will be appreciated.

Alexander S. Cochran, FAIA
Cochran, Stephenson & Donkervoet, Inc.
Baltimore, Md

[We chose the reviewer for his established expertise in American architectural history. Like him, we disagree with Kidder Smith's choices and consider other aspects—the reproduction of photos, for instance—very disappointing.—Editors]

Light is energy

As one who encouraged the idea of building research as a necessity in the development of the proposed BEPS I found the article "Energy Designs of Office Buildings" (P/A, June 1982, pp. 109–113) of special interest. As someone whose career in lighting spans 36 years I found it highlighted once more what I believe has been a simplistic and often erroneous treatment of lighting energy.

Let me suggest a few things which should be considered:

1 Lighting is instant on/off.

2 Lighting equipment does not use energy just because it's connected.

3 The watt is not an energy metric. Lower watts/sq ft for lighting does not necessarily mean lower energy use.

4 A more energy efficient building may call for a higher watts/sq ft. Greater occupant density generally calls for a high proportion of task lighting levels.

There is an unfortunate tendency to play the "numbers game" with watts/sq ft. It takes no special skill to reduce the connected load of lighting unless one recognizes that any reductions must be weighed against the impact on people performance. For a building to be energy efficient the lighting must effectively support the activity which the building houses.

A good general rule for lighting energy design is to have only *what* is needed, *when* it is needed, *where* it is needed. With the lighting products and controls we have available today we can be energy-conscious and still have good lighting.

George W. Clark, PE, FIES
Manager of Technical Liaison
Sylvania Lighting Center
GTE Products Corp.
Danvers, Ma

[Good points. Energy is measured in watt-hours, an important distinction. We should also bear in mind that the relationship between electrical energy and fuel consumption varies widely.—Editors]

Atlanta underground

Jon Carlsten's News Report article of Atlanta's new rail stations is good but too often subjective. Carlsten shortsightedly supports John Portman and the anxious merchants for forcing MARTA to build its downtown line and station in deep tunnel. Rather than undergo several years of construction aggravation but end up with a station easy to use, directly connected to development and one level below an enhanced Peachtree Street (MARTA originally promoted a pedestrian mall), downtown Atlanta ends up with a station 120 feet deep, 90-second escalator rides, and the same auto-oriented Peachtree Street. Not all is lost of course—the Peachtree Center Station by Toombs, Amisano and Wells, Atlanta, is commendable—but for a little pain we could have had much more. Incidentally and ironically, now that the tunnel work has been completed, North Broad Street above the tunnel is torn up to construct a pedestrian streetscape. To the south this was done as part of the cut and cover construction. This irony escapes Mr. Carlsten.

Richard Stanger
Manager of Urban Design
MARTA
Atlanta, Ga

California Capitol credits

I admire the work on the restoration of the California State Capitol. The architects are good ones and the story well told in the June 1982 (pp. 80–89) issue. But who was the original architect and when was the building started and changes made? P/A should never run such a story without all the credits.

For your reader's information, the architect for the California State Capitol was Reuben Clark, who alas died insane in 1866, and G.P. Cummings brought the building to completion in 1878. An 1878 photograph reproduced on p. 149 of Hitchcock and Seale's book *Temples of Democracy: The State Capitols of the USA,* 1976, Harcourt Brace Jovanovich, shows that little has been changed in the outward form of the building except for the loss of urns and sculpture on the top balustrade.

Please complete the record.

Carl Feiss, FAIA, AIP
Gainesville, Fl

[Yes, original architects should definitely be credited. P/A's earlier article on the restoration *process*—Nov. 1979, p. 88 ff—to which we referred readers in this article, listed the original architect. We also listed Miner Frederick Butler, who won the design competition, but seems to have lost the commission to Clark.—Editors]

Correction

The name of Sandy Hirshen was misspelled in June 1982 Pencil Points (p. 37). P/A regrets the error.

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No. of Fixtures	122	97	122
Maintained FC (10,000 Sq. Ft.)	70	70	71
Initial Cost* Labor & Material	$15,362	$13,440	$15,179
Annual Operating Cost, 3,000 Hrs./Yr. 7¢/KWH	$ 4,984	$ 4,035	$ 3,813
Watts/Sq. Ft.	2.15	1.64	1.54

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Lamp Life (Hrs)	20,000	15,000	15,000
Ballast Factor/ Thermal Factor	.95	1.00	.99
C.U.	.75	.75	.81
LLD (Mean)	.876	.91	.91
LDD (Typical Office)	.732	.768	.768
Watts/Fixture	176	169	127

*Based on GE Tests

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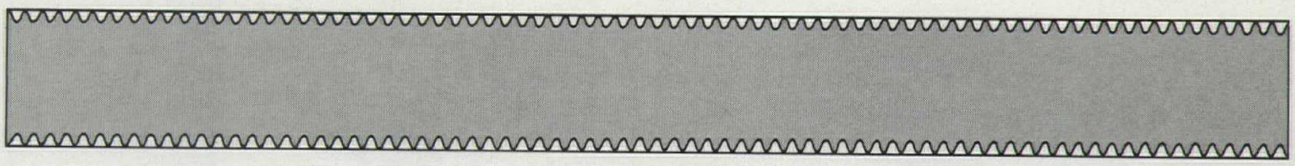

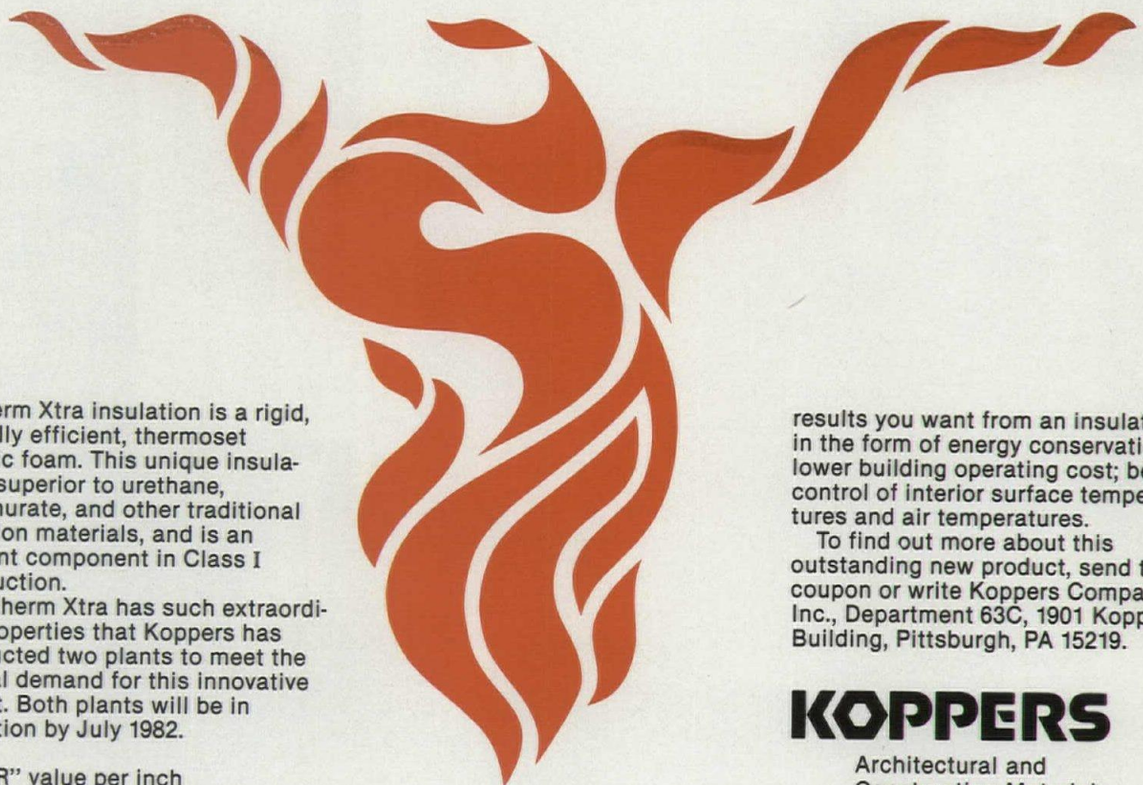

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P/A Awards program

30th annual competition for projects not yet completed

in architecture planning and research

Progressive Architecture announces its 30th 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 30th P/A Awards *Architectural design:* **George Baird,** architect, urban designer, author, Editor of *Trace,* Toronto; **Alan Chimacoff,** architect, Associate Professor of Architecture, Princeton University, Princeton, NJ; **Mark Mack,** architect, Batey & Mack, San Francisco, and lecturer, University of California, Berkeley, and Editor of *Archetype;* **James Stirling,** Hon. FAIA, James Stirling Michael Wilford & Associates, London; *Urban design and planning:* **Stanton Eckstut,** AIA, partner, Cooper Eckstut Associates, New York, and Director, Columbia University Urban Design Program; **John M. Woodbridge,** FAIA, architect and urban design consultant, Berkeley, CA; *Research:* **Sandra Howell,** PhD, MPH, Associate Professor of Behavioral Science, Department of Architecture, MIT, Cambridge; **Marietta Millet,** lighting consultant and Associate Professor of Architecture, University of Washington, Seattle.

Judging will take place in Stamford, CT, during September 1982. 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 1983, and winning entries will be featured in the January 1983 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, on behalf of a client with the power and intention to execute the proposal (or in the case of research and planning entries, to adopt it as policy). Work initiated to fulfill academic requirements is *not* eligible (but teams may include students).

3 Any project is ineligible if it has been, or will be before Feb. 1983, the subject of publication, on one full page or more, in *Architectural Record* or *AIA Journal.* Prior publication in P/A is not a factor.

4 Architectural design entries may include only buildings or complexes, new or remodeled, scheduled to be under any phase of construction during 1983.

5 Urban design and planning entries may include only proposals or reports accepted by the client for implementation before

the end of 1983. Feasibility and implementation strategy should be documented.
6 Research entries may include only reports accepted by the client for implementation before the end of 1983. Submissions may deal with programming, design guidelines, technical problems, or user response and 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.

Entry form: 30th P/A Awards Program

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

Entrant:
Address:

Entrant phone number:
Project:
Location:
Client:
Client phone number:
Category:

Entrant:
Address:

I certify that the submitted work was done, 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.

Signature _____

Name (typed): _____

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

Your submission has been received and assigned number:

Entrant:
Address:

(Receipt)

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

Entrant:
Address:

(Return label)

Publication agreement
8 If the submission should win, the entrant agrees to make available further information, original drawings, or models, as necessary, for publication in the January 1983 P/A. The entrant will also provide appropriate slides for the presentation ceremony and reproducible graphic material for press releases.
9 In the case of architectural design entries only, 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 larger than 13″ x 17″. 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. Synopsis must conclude with a statement on: *why this submission deserves recognition.*
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—using typewriter, please. 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 $40 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 mailing is August 31. Other methods of delivery are acceptable. In any case, entries must show postmark or other evidence of being en route by deadline using means to assure delivery by September 15. Hand-delivered entries must be received at the address shown here by August 31.

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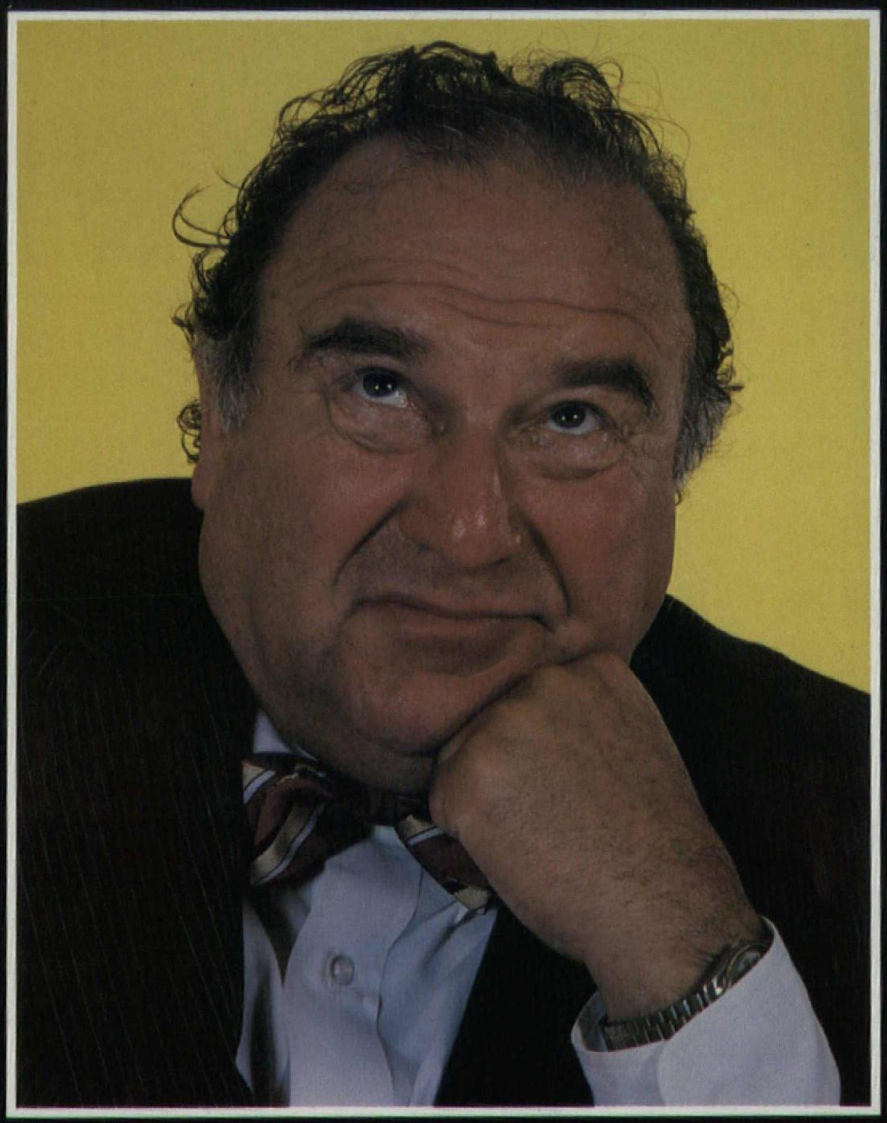
Progressive Architecture
600 Summer Street,
P.O. Box 1361, Stamford, CT 06904

CHARLIE'S ROASTING



Actually, Charlie roasts every sunny afternoon. In fact, during July and August he's well done at about 5:00 P.M.

You see, Charlie's desk is next to a south facing window-wall in a nifty, new office building in Virginia. The architect's idea of collecting passive solar energy was great last winter. But this summer Charlie needs help and neither the building's air conditioning nor solar tint glazing are quite up to the task. Sure he could close the blinds. But Mildred over in accounting would complain that she couldn't see the Blue Ridge Mountains just over his left shoulder. And Agnes in sales service would say she can't work in the dark.

If that nifty, new building had a C/S Solar Control system, Charlie wouldn't suffer and Mildred and Agnes would be happier too.

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Pencil points

Jahn: tallest in Texas
Chicago architects Murphy/Jahn are designing an office building in Houston for the Bank of the Southwest.
¶ At 80 to 100 stories, it will be the tallest in Texas.
¶ Cost: $400 million. Developers: Century. Local associates: Lloyd Jones Brewer Architects.

Classical awards
Classical America has announced the recipients of the first Arthur Ross Awards for major contributions to the Classical tradition. They are:
¶ Philip Trammell Schutze of Atlanta, Ga, architect of numerous classically designed buildings serving modern needs;
¶ Allyn Cox, mural painter, of Washington, DC, who has contributed to the historical murals in the House of Representatives;
¶ Arthur C. Ward, president of P.E. Guerin & Co., New York, manufacturer and importer of fine building hardware;
¶ and Henry Clay Frick II, chairman of the Board of Trustees of the Frick Collection, New York.

L.A. Music Center
The Los Angeles Music Center is planning to expand to a site adjacent to the Bunker Hill site, and almost as large.

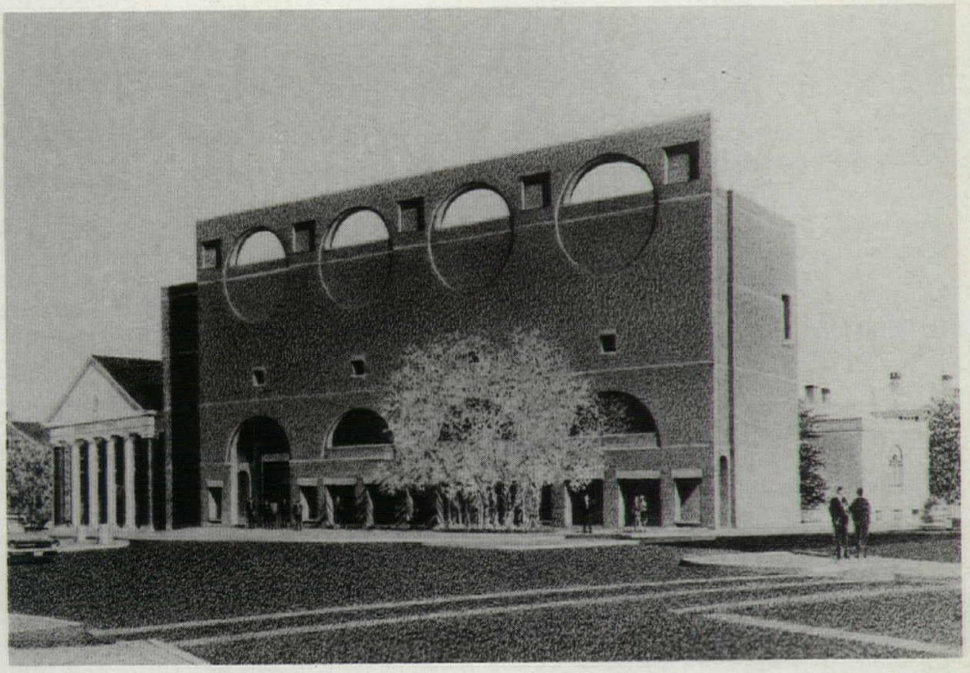
Sartoris serigraphs in Westbury
The 25 axonometric serigraphs executed by Italian architect Alberto Sartoris in 1930 will be on display in the United States beginning this fall.
¶ They will first be shown during September at the New York Institute of Technology at Westbury on Long Island, where Sartoris and Mario Botta will be lecturing for a week at the invitation of the NYIT's new director of Center for Architecture, Julio San Jose.

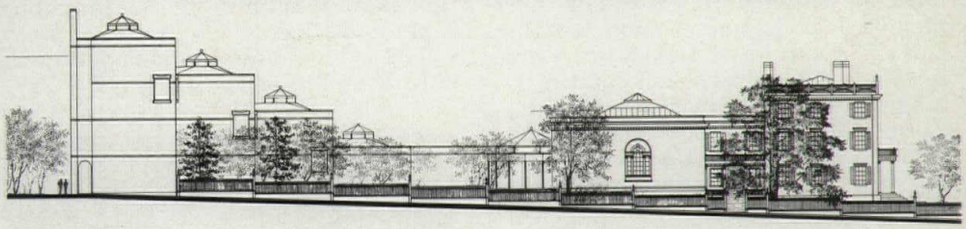
Botta in Florida
Mario Botta is one of the judges for the Fort Lauderdale Riverfront Plaza Design Competition in Florida.
¶ James Stewart Polshek and William Turnbull are the other jury members.

The Vatican collections in the U.S.
More than 200 works of art from the collection of the Vatican will be shown in the United States during 1983.
¶ 'The Vatican Collections: The Papacy and Art' will be exhibited first at the Metropolitan Museum of Art in New York, then at the Fine Arts Institute in Chicago, and finally at the Fine Arts Museum in San Francisco.
¶ It is the first major show of art from the Vatican ever to travel outside Rome.

Performing Arts Centers boom
Five new centers for the performing arts are opening in North America in September:
¶ the Orpheum Theater, a $2 million renovation of a 1921 movie house. Acoustician: Christopher Jaffe;
¶ Peoria Civic Center in Illinois, a three-building, $63.5 million complex by
[*Pencil points continued on page 40*]

P/A News report





Portland Museum of Art.

Major exhibition celebrates museum boom

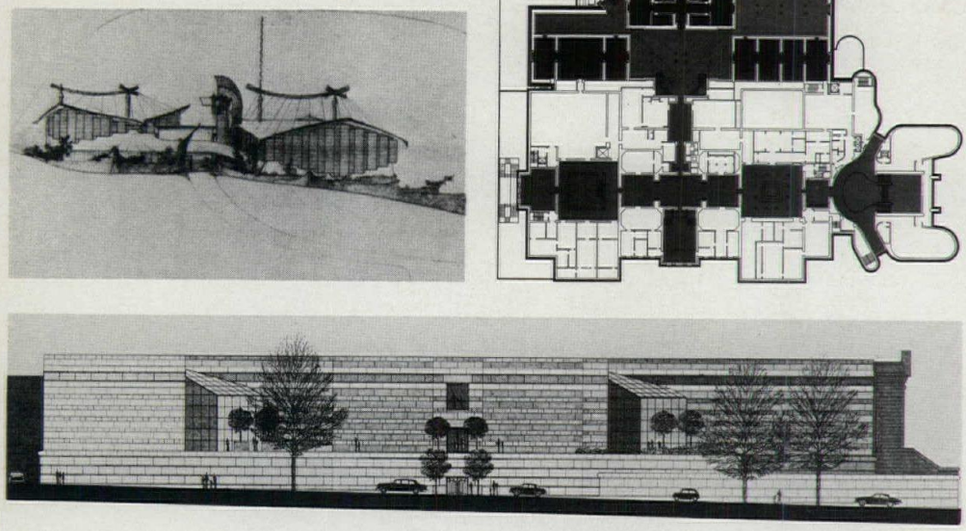
It is an impressive and encouraging sign that a major art institution, the Whitney Museum of American Art in New York, has seen fit to mount a major exhibition featuring contemporary architectural design and has dedicated an entire floor to it. "New American Art Museums," which runs until Oct. 10, proves the perspicacity of the Museum and its guest curator, historian Helen Searing, in recognizing and exposing the current boom in a significant building type. The exhibition features 12 museums and museum additions that are either under construction or scheduled to proceed soon, and represents public, private, and university commissions.

In our unholy society, the art museum, not the church, presents itself as the institution that honors spirituality through material splendor. One expects, then, to find inspiration in the museum's design, both in the loving care taken to refine spaces and details, and in the greater vision expressed by the building's overall form. Especially in the second expectation, that of brilliance of statement, the museums in the Whitney show are disappointing. The work is generally careful but lackluster.

The installation itself is satisfactory. The space is generous and clearly organized, and seven of the museums on exhibit are carefully documented, with drawings, models of the full buildings and, in some cases, of individual galleries, architects' statements, and even full-scale samples of the materials to be used. If there is one widespread weakness in the documentation, it is the paucity of context photographs.

But it is not encouraging to find that the museum with the most memorable presence is the unlovely and retardataire Portland Museum of Art in Portland, Me, by Henry Cobb of I.M. Pei &

News report continued from page 21



Shin'enKan (top left) and the Virginia Museum of Fine Arts, plan and elevation.

Partners. As unwieldy as is the scale of its billboard façade, and as overliteral the ocean references of its huge portholes, it expresses a confidence that most of the other museums lack. Furthermore, the massing blends carefully with the townscape, and the details of its materials and of its daylit galleries seem sensitively developed. Its greatest weaknesses lie in the unconvincing marriage of planar front and volumetric whole, and in the pedantic repetition of the modular form.

The most entertaining inclusion in the show is Bruce Goff's Shin'enKan, a museum designed for Joe Price's collection of Edo Japanese scroll paintings and screens. It was designed with no site in mind, but will probably land in Los Angeles, perhaps adjacent to the L.A. County Museum of Art. Its plan has a wonderfully organic Gaudíesque quality, but the black-framed translucent fiberglass panels cross Gaudí with Holiday Inn, with a touch of Madonna Inn madness in the turquoise chips of the model's landcape. Questionable details include the 3-ft-wide stream of water separating viewer and artifact, a doubtful improvement over the glass cases that are avoided by this means. The architect states that he asked himself, "What will make the art happy?" It is surprising that he found the answer to be, "Water."

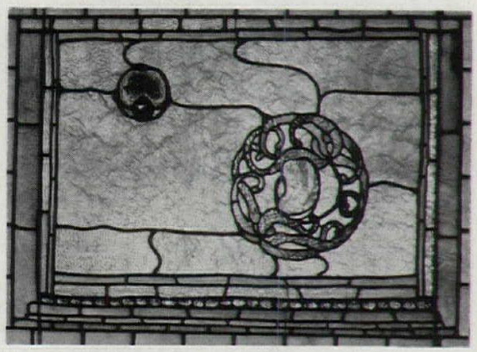
Hardy Holzman Pfeiffer's addition to the Virginia Museum of Fine Arts in Richmond is the fourth in that edifice's history. The new section properly reinforces the classical symmetry of the original 1936 plan, adding handsomely proportioned coved galleries for the 19th-Century collection. It tends to disintegrate towards the rear, however, with a transition to diagonal axes that may be too jazzy and unresolved even for the contemporary collection it will house.

The other fully documented museums are Richard Meier's High Museum of Art in Atlanta (P/A, Sept. 1981, p. 38), elegant in its parts, but frenetic in its composition; Moore Grover Harper's Hood Museum of Art at Dartmouth College, Hanover, NH (P/A, June 1982, p. 32), shown through careless models and drawings; Cesar Pelli & Associates' Museum of Modern Art expansion (P/A, Feb. 1979, pp. 21–22); and Edward Larrabee Barnes's Dallas Museum of Fine Arts.

In a survey section are shown five other museum projects, including Michael Graves's brilliantly massed Vassar College Art Gallery (p. 34), and Emilio Ambasz's Museum of American Folk Art in New York, a beautiful object but certainly not an indigenously Manhattan sidestreet building.

Michael Graves's design for the addition to the Whitney itself, not yet public, is not exhibited.

The exhibition is accompanied by an illustrated 144-page catalog. [SD]



Tiffany, symbolic window.

Tiffany makes return appearance in Chicago

The works of Louis Comfort Tiffany have returned—400 items strong—to the site of their critical triumph at the Chicago Fair of 1893. Displayed at the Museum of Science and Industry, itself a legacy of that fair, "The Treasures of Tiffany" will be on view through Nov. 14.

In contrast to previous shows of Tiffany's work since his rediscovery c. 1960, this one includes a lot more than glass vases and lamps: stained-glass windows, pottery, mosaics, enamel and metal ware—and some revealing drawings, paintings, and photographs by the remarkable artisan/entrepreneur. All of it is drawn from the holdings of the Charles Hosmer Morse Foundation, which acquired most of what could be salvaged from Tiffany's Long Island mansion, Laurelton Hall, after it burned in 1957. The catalog by Hugh McKean, president of the foundation, gives firsthand accounts of rare objects rescued on their way to the dump.

Ornament and objects from Laurelton Hall are shown amid architectural drawings, period photos, and watercolors. Major parts of the chapel Tiffany created as a display for the 1893 Fair are displayed in their original juxtaposition—mosaic altar, lectern, and font in front of the superb central panel of the reredos, with some windows, a chandelier, and an entrance door. Proudly installed at New York's Cathedral of St. John the Divine after the fair, the chapel fell into neglect after the growing church was converted to Gothic; Tiffany reassembled it in 1916 on his estate, where it was abandoned and vandalized after his death.

"Presented by" the *Chicago Tribune*, the display is accompanied by a visually rich but overly theatrical audiovisual orientation. Efforts to evoke Laurelton Hall include such trappings as artificial wisteria on flimsy trellises. And the "Exit Here" gift shop peddles Tiffanyesque trash. This is, after all, not an art museum.

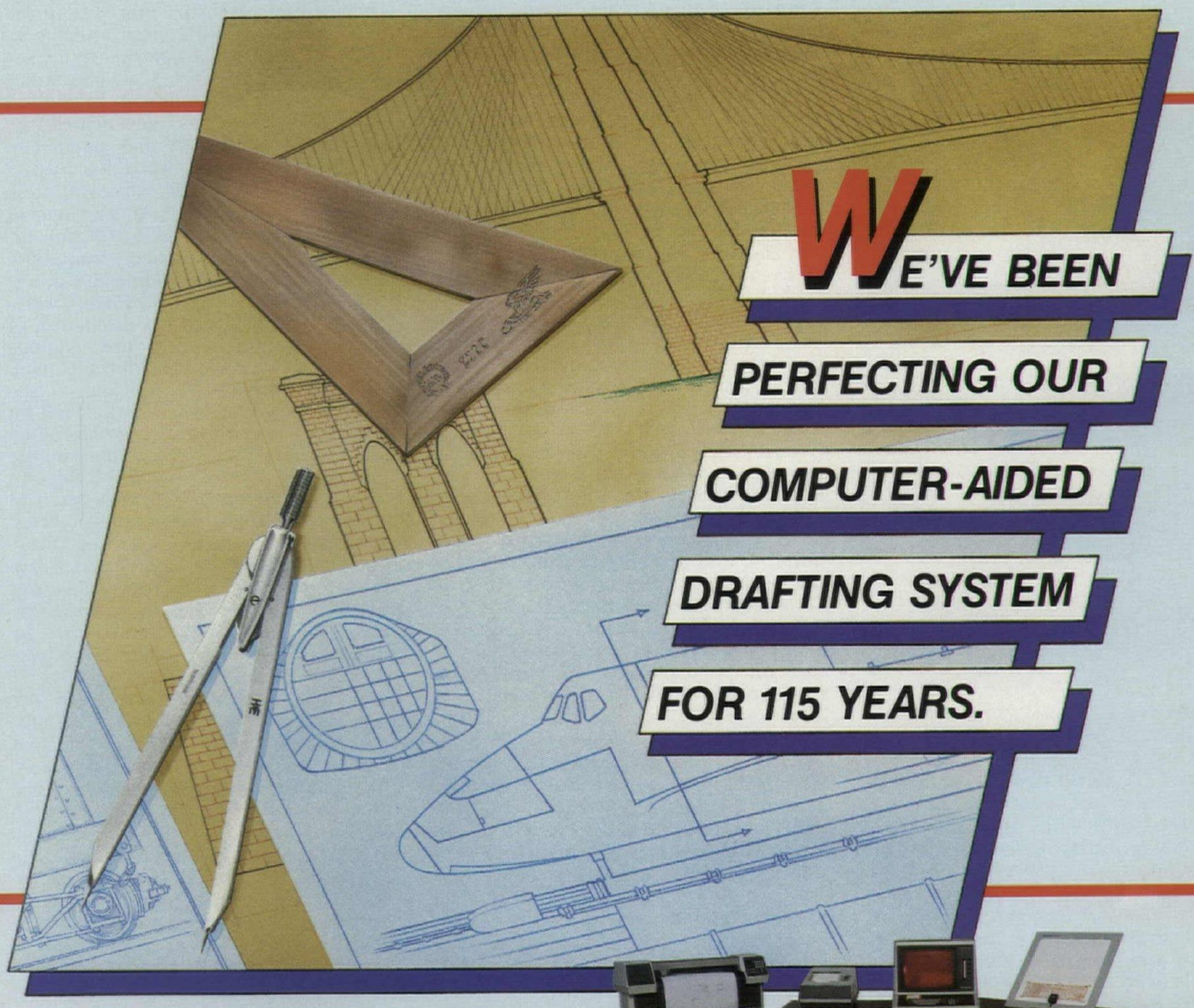
Tiffany's own work, of course, is not without turn-of-the century weaknesses: He was a genius at manipulating light—including the new electric kind—and at shaping glass, metal, and clay. His botanical motifs could be brilliant, but his human figures were often insipid, his flowers sometimes overblown.

After this show, much of the material will return to storage. Varying selections from the collection are regularly on view at the Morse Museum in Winter Park, Fl. The eventual fate of these "treasures"—and such they are, indeed—is not decided. [JMD]

Showrooms upstage products at NEOCON

At the June 15–18 National Exposition of Contract Furnishings—NEOCON—architecture stole the show. This year it was clear that what manufacturers lacked in the way of earth-shaking product innovation, they made up for in showroom design blockbusters. The hit of the show was Arata Isozaki's Hauserman showroom, a surreal composition of violet columns, tunnel vaults, and surpassingly beautiful conference rooms. Iso's wavy black chairs, descending from Mackintosh via Marilyn Monroe, were the most talked-about pieces of furniture in the Mart: not bad for a 1974 design. While Hauserman offered more polemics than practicality, Shaw-Walker's new space, designed by

[*News report continued on page 24*]



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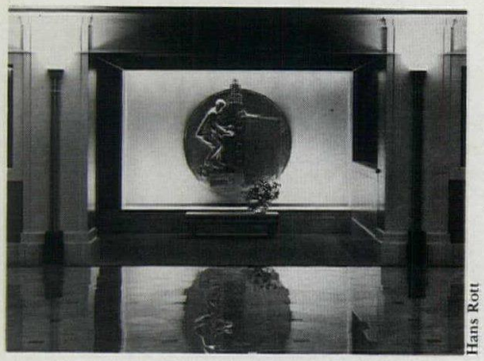
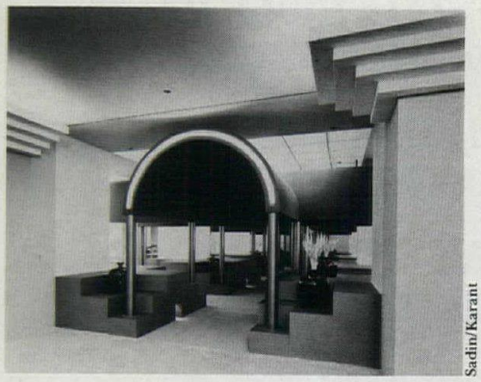
News report continued from page 22



Hans Rott



Sadin/Karant

Shaw-Walker showroom (top) and Hauserman showman (above).

Robert A.M. Stern, struck a perfect balance between the two, combining gracious classicism with aptly jazzy Deco, and making it easy to see the merchandise without wading through a lot of architecture. Michael Graves's expanded Sunar showroom was perplexing, with its uneventful entrance, maze of small spaces, and muted-to-gloomy palette, but it proved an apt foil for Graves's exquisite new textile designs. Finally, Vignelli Associates' Italcenter, with its elegant carved walls and giant geometric solids, was overwhelmed by the acres of furniture that the nine resident manufacturers insisted on packing into it.

Moving from action to talk, Isozaki met Paolo Portoghesi in a much-touted face-off that proved East is not necessarily East, while at the Graham Foundation, Hauserman-sponsored dialogues (to benefit *Inland Architect* and the Art Institute's architecture program) between Stanley Tigerman and Graves, Emilio Ambasz and Thomas Beeby, and Isozaki and Helmut Jahn offered telling glimpses into personalities, if not into work. Architectural psychohistorians, take note. [PV]

Graves saves

The San Antonio Conservation Society, established in the 1920s, is one of the most active preservation organizations in the United States. When the RepublicBank of Texas proposed to destroy the 1926 Texas Theater in order to build a million-sq-ft office building, the Society's threat to mobilize the citizenry and block city council approval caused the bank to back down, at least temporarily. During the two-month reprieve, the Society invited Michael Graves to propose a viable alternative.

The Texas Theater, a masonry and terra-cotta-clad building with a steel structure, was designed by one of the renowned theater design firms of the period, the Bolling Brothers of Missouri. It possesses a very fine interior that features an elaborate tentlike structure fashioned in plaster. Adjacent to the theater, and also threatened, is a pleasant 1906 office building. Both buildings are part of a two-acre downtown site owned by the bank and prime for development. The bank had hired the local architectural firm of Ford, Powell & Carson to design its new building, but its token preservation of the theater's façade far from satisfied the Conservation Society. Bowing to the Society's pressure, the bank agreed to wait until mid-July to consider alternatives.

The Society plans to prove that the Bank can have its million-sq-ft office building and save the theater, too. For this purpose, it has hired Michael Graves Associates of Princeton and San Antonio architects Reyna & Caragonne, as well as financial analysts Shlaes & Company of Chicago, who have extensive experience in historic preservation. Engineers for the project are Espey, Houston Inc.

As P/A goes to press, the Graves scheme has just been released. RepublicBank is under no obligation nor time limitation to accept the Society's proposal. If it rejects it, the Society is considering another possibility: enlisting a sympathetic developer to buy the property and pursue the Graves proposal. Of course, the RepublicBank may just dig in its heels. [SD]

AIA convenes in Honolulu

Marking its 125th year, the American Institute of Architects convened June 6–9 in Honolulu; the tone set by the featured speakers, however, could easily have recalled the 1977 convention in San Diego. As at that earlier gathering, the mood was Futurist-oriented, with computers and technology leading the globe into new civilizations on earth and in space.

The first theme speaker was B. Gentry Lee, chief engineer on NASA's Jupiter Project; his message was that learning is the key to the survival of civilization. "We explore the planets to learn more about ourselves," he noted. "This exploration is a metaphor for our society."

Princeton physics professor Gerard K. O'Neill spoke of "a friendly frontier" that awaits us in the space colonies of the next century. He predicts that man's fastest speed by the year 2081 will be 6000 miles per hour.

Another futurist, Edward Lindamann, addressed the Fellows Convocation dinner, speaking more about the joys of technological change, and future riches, if only the attendees could see the possibilities clearly. Most comments heard from the architects expressed feelings that the messages missed the mark in terms of what they needed to deal with to proceed toward that future. Certainly, the subject of computers seemed to be on target. At least one of the separate seminars, "Computer-Aided Design and Practice," was good, but not for beginners, while the other, "Computers for the Small Firm," was a clear and straightforward discussion of experiences in computer use. Attendance at both indicated a definite need was being served.

Convention business was the farthest thing from the cosmos being offered by the speakers. Approval was voted on the AIA Direction '80s Task Force Report, with amendments; the report sets out five areas of goals and responsibilities, and asks that the AIA Board of Directors implement them and report progress at the 1983 Grassroots meetings and the 1983 Convention in New Orleans. The move is expected to shift the primary AIA concerns from architects to architecture.

All eight resolutions put forth for convention consideration were submitted by California chapters. Of that number, 4 were withdrawn, 3 passed, and 1 was defeated. Voted down was a proposed multilevel dues structure to increase opportunity for AIA membership. A resolution passed calling on the AIA to urge the U.S. Government to lead in achieving total nuclear disarmament, along with strongest diplomatic efforts to achieve world peace through "cooperation, brotherhood, and mutual respect."

Also passed was a resolution calling for an AIA review of training, examinations, and reciprocal registration, now the sole province of NCARB. Still another resolution was passed, calling for an AIA associate task force, to communicate concerns of associate members to the Institute.

In other business, outgoing president Robert M. Lawrence prepares to turn over his office to Robert Broshar, of Waterloo, Ia, and delegates elected George M. Notter of Boston First Vice President/President Elect. Also elected were three national vice presidents—Leroy A. Bean, Sioux Falls, SD; John A. Busby, Jr., Atlanta; and R. Bruce Patty, Kansas City, Mo. Harry Harmon was reelected Secretary, and Henry Schirmer of Topeka, Ks, continues his two-year term as Treasurer.

By far the most interesting facets of the convention centered around design and computers, and on the myriad receptions held for medalist Romaldo Giurgola. The discussion on Emerging Directions in Architectural Design was well attended, and parts of it were enlightening. The issues laid out for the

[*News report continued on page 29*]

Modern technology blends with contemporary charm.

ELEVATORS BY DOVER

Adding to the revitalized downtown area of San Antonio is the new Hyatt Regency, a $38-million, 633-room luxury hotel on the Riverwalk along the San Antonio River. A series of waterfalls flows through the atrium lobby as an extension of the river. Six glass-walled, cylindrical Dover Elevators add their own excitement as they move guests through this dramatic space. For more information on Dover's complete line of Traction and Oildraulic® Elevators, write Dover Corporation, Elevator Division, Dept. 688, P.O. Box 2177, Memphis, Tennessee 38101.

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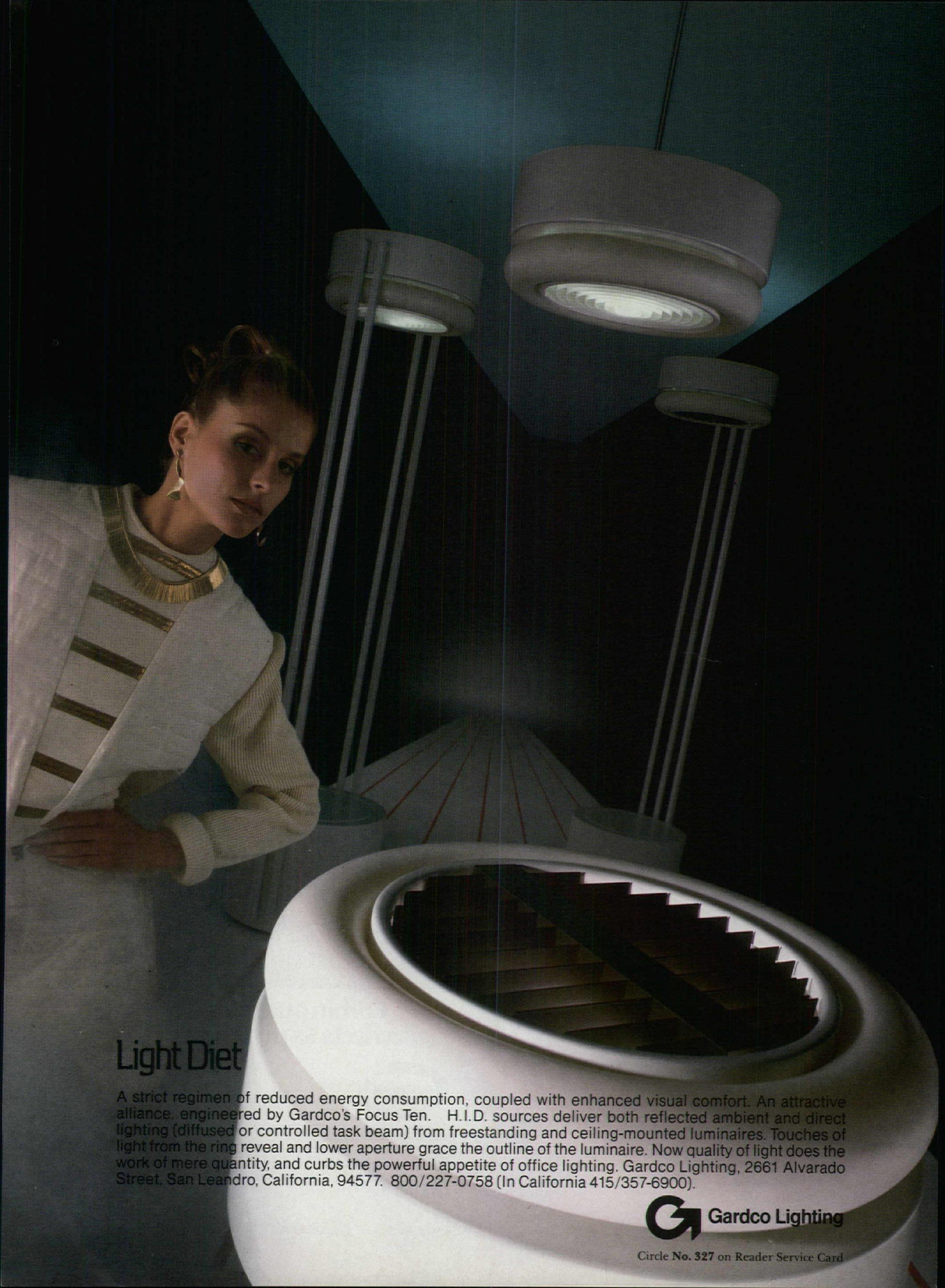

Light Diet

A strict regimen of reduced energy consumption, coupled with enhanced visual comfort. An attractive alliance, engineered by Gardco's Focus Ten. H.I.D. sources deliver both reflected ambient and direct lighting (diffused or controlled task beam) from freestanding and ceiling-mounted luminaires. Touches of light from the ring reveal and lower aperture grace the outline of the luminaire. Now quality of light does the work of mere quantity, and curbs the powerful appetite of office lighting. Gardco Lighting, 2661 Alvarado Street, San Leandro, California, 94577. 800/227-0758 (In California 415/357-6900).

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panel, however, made it possible to take the discussion anywhere, and that's just about where it went. Moderated by Roy Knight, dean of the University of Tennessee School of Architecture, the panel comprised AIA Honor Awards winners Stanley Tigerman, Noel McKinnell, John Vinci, and George Homsey, along with comments by two of this year's jurors, Nory Miller and Joan Goody. Centered around the presentations of honored buildings, the comments that followed soon lost track of that focus. Nevertheless, it was one of the best attended events of the convention. [JM]

The 1982 World's Fair: A fair fair

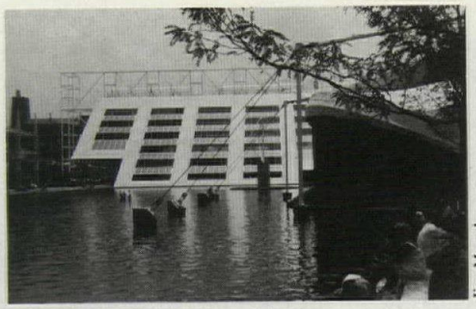
At the Knoxville 1982 World's Fair, the clichés of a modern fair have been achieved: there are national pavilions, souvenir shops, restaurants, rides, and a tower. The reported attendance of the fair, which runs from May 1 to Oct. 31, is high, but the pavilions and exhibits are uninspired. The theme, "Energy Turns the World," is inadequately exploited: the fair committee did not promote thematic concepts; they sold space.

During the opening ceremony, President Reagan stood in front of the fair's symbol and behind a large bulletproof wall and proclaimed, ". . . advances in the human condition can only come from open markets, free trading, and stiff competition. . . ."

Located on 70 acres in Knoxville's downtown valley, still air and black-paved walkways hold inordinate solar heat. Service roads and sanitation facilities are sparse. Marketers of the fair view it as a product aimed at a particular public. Fair publicist Bill Carroll, quoted in the Washington Post Magazine, says, "I like to think God's a good publicist," while an operations consultant points out that the sedate environment and the costs ("close to $100 on admission, souvenirs, and food") create an environment in which "the hippies and the food stamps will leave after 10 minutes."

The Sun Tower, the fair's symbol, mixes ironies. While the Bureau of International Expositions requires that admission to all pavilions of the exposition be free, the Sun Tower, secretively segregated from the official territory, has a $2 admission fee, and at 266 ft, the tower is 84 ft lower than the Latting Observatory tower built in 1853 in New York for America's first International Exposition.

Exhibitors have relied on techniques already seen at modern fairs in New York, Montreal, and Osaka: movies, multi-image slide shows, and TV monitor interaction. Australia and Mexico have the most entertaining traditional exhibits. At the Korean exhibit, costumed women pose gracefully beside computer equipment. Japan features water spilling over a steel wall, robots, and an air structure theater with the audience riding back and forth. Hungary displays a mock Rubick's cube. The popular China Pavilion exhibits 21 bricks from the Great Wall and 3 statues from the Xian burial grounds, but these artifacts are almost lost among the aisles of curios usually found in "Chinatown." Egypt and Peru display exhibits of ancient art. Luckily, the fair does offer a few refreshing areas with bandstands, flowers, and waterways.



Jim Murphy

Larry Zim

The U.S. pavilion (top) and the Sun Tower (below).

The U.S. Pavilion is the only pavilion to treat energy issues in depth. Designed by Fabrap, it is a handsomely detailed, light, and inviting structure of cantilevered steel and glass, although it is cold and factorylike inside. Five and one-half hours of programming on TV monitors and computer-operated video disks are available to the viewer. These humorless video encyclopedias contain glossaries, history, and energy debates, the latter censored after installation to prevent access to ideas out of tune with the administration. No supplementary home-study information is available. Donations from industry to meet a reduced budget resulted in design compromises. To satisfy one donor, a souvenir shop was inserted into the space originally intended as a viewing area for the specially commissioned IMAX movie by Frances Thompson. The final economy reduced the two U.S. flags called for in the design to one.

International expositions are planned for New Orleans (1984), Tsukuba, Japan (1985), and Vancouver (1986), while Paris is being considered for 1989, and Chicago or Miami for 1992. It is hoped that the planners of these events learn from the Knoxville experience. While the city of Knoxville benefited from the fair, cleaning up a neglected downtown area for the event, the fair itself is not world class. Its amusement park aspects dominate, and the support facilities (motels, for example) are of matchstick quality.

Yet events such as the International World's Fair at Osaka in 1970 are benchmarks of humanitarian progress deserving our unstinting and enthusiastic support. The event at Knoxville illustrates that Reagan's "stiff competition" is not enough. Only through cooperative endeavor and full employment of creative talent can we continue to serve our higher aspirations. [Larry Zim]

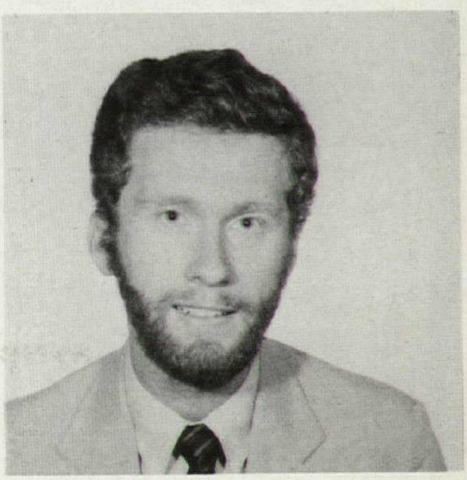
Larry Zim, ASID, IBD, president of Zim Lerner Incorporated, is a New York designer and lecturer who has participated in the design of pavilions in several international expositions.

Thomas Fisher appointed P/A Technical Editor

Thomas R. Fisher has joined the P/A staff as Associate Editor in charge of Technics. In addition to writing and editing feature Technics article, he will be contributing his professional expertise to a variety of the magazine's activities.

Fisher holds a B.A. degree in architecture from Cornell and earned an M.A. from Case Western Reserve, concentrating in the history of building technology. He has served as architecture critic for *Cleveland Magazine* and contributed articles to several magazines, including *Historic Preservation.* He has been Historical Architect for the Connecticut State Historic Preservation Office and, most recently, Director of Project Management for Jeter, Cook & Jepson, Architects, in Hartford.

[*News report continued on page 30*]



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Perspectives

Report from San Francisco

Mixed-use formula in San Francisco
San Francisco's critical housing shortage has inspired a revolutionary proposal by the Department of City Planning which, though not yet adopted by the City Council, is already affecting the design of downtown projects. The proposed Housing Requirement for Office Development applies to buildings with more than 50,000 sq ft of office space. Developers of such buildings must provide housing based on the following formula:

$$\frac{\text{Gross Square Footage of Office Space}}{250} \times .22 = \text{No. of Housing Units.}$$

The formula assumes that office use generates one employee for each 250 gross sq ft, that 40 percent of employees will want to live in San Francisco, that 1.8 working adults occupy each unit, and that each employee will require an average of 400 sq ft of living space.

That developers are not enthusiastic about the new requirement is understandable. There are few such developments in the country and only one example of a high-rise mixed-use building in San Francisco: Fox Plaza, designed by Victor Gruen & Associates and completed in 1967. The 29-story building has retail and office space, and 446 rental units on the top 15 floors. Fox Plaza residents are very content. Most have lived there since 1967 and cite convenience and location as the reasons. Still, this testimony does not quite make the complexity and expense of designing and building a mixed-use building palatable to developers. Floor plans, obviously, must change to accommodate the difference between office and residential space. Services, such as elevators, must be physically separated, eating up rental space. Residential units are more trouble than offices to lease or sell. Finally, in the case of residential condominiums, legal problems concerned with ownership of elevators, utilities, parking bays, even the land itself, abound.

Yet governmental pressure for mixed-use development is increasing at all levels. The 1976 Public Building Cooperative Use Act directs federal projects toward mixed use, while the California State Office of Planning and Research advocates it as a means of lessening environmental problems.

Although there are several projects on the boards for towers with residential tops, only one is actually under construction. This is the Montgomery-Washington building by Kaplan/McLaughlin/Diaz, a 25-story skyscraper with ground-floor retail and restaurant space, a parking mezzanine, 15 floors of office space, and six floors of residential condominiums. The floor between the office and residential space will hold a health club, while the first residential floor will have a patio and pool area for the 40 condominium owners. The building's form expresses its various uses through pedestrian scale and openness on the ground floor, blockiness—except for the corner articulation—on the office floors, and a cut-into, stepped-back top with balconies and greenhouse sections. The total FAR is 18.8:1, with one-fourth the area residential. (The building does not completely fill its housing quota on the site because of density limits, and will fulfill it elsewhere.)

Not all developers have chosen to incorporate housing on site. Other options—off-site construction in areas designated appropriate by the Planning Department, participation in a Housing Development Fund or a City Housing Program—have been more popular so far.

As to the market for this top-of-the-world neighborhood: Will these be corporate condos occupied by transient upper management types? or will they be home to those who want "to live over the store?"

Rincon Hill
If the new housing requirement will not result in a significant downtown resident work force, another area under scrutiny has the potential for significant relief in that direction. This spring, the University of California Housing Task Force under the direction of Daniel Solomon, in cooperation with the San Francisco Department of City Planning, produced a plan for a Rincon Hill Special Use District primarily devoted to housing.

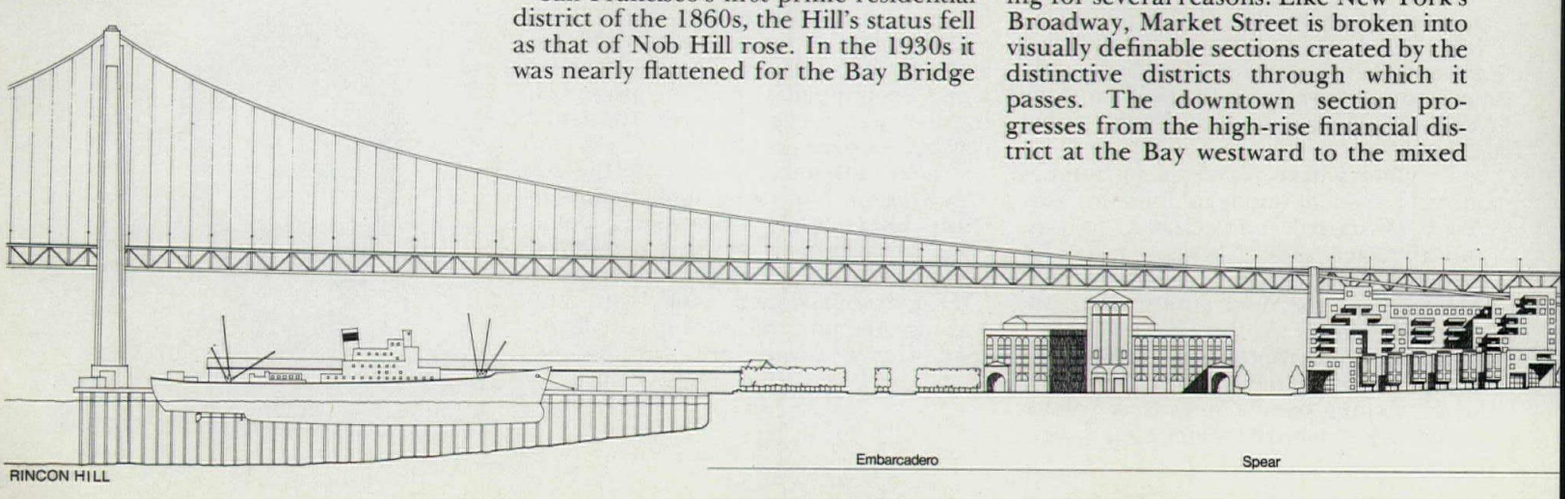
San Francisco's first prime residential district of the 1860s, the Hill's status fell as that of Nob Hill rose. In the 1930s it was nearly flattened for the Bay Bridge approach. Later, laced with freeways, the area was judged fit only for industrial use. Today, its location, a five-minute walk from the financial district, its dramatic views of the city and the bridge, and its stretches of land underused by largely moribund industries have raised a new vision for Rincon Hill.

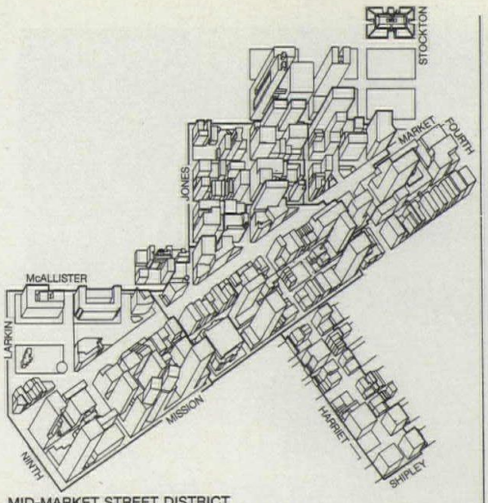
Still, the proposed eight-block site north of the bridge and bounded by freeways suffers from bleakness and noise. In the absence of federal funding, a balanced set of incentives and controls will be necessary to attract individual developers and insure their cooperative action. The creation of a Special Use District enables circulation to be improved, open space provided, height and bulk regulated, and use zoned. The new plan has three categories of land use: Residential High-rise, Mid-rise, and Commercial/Industrial. Only four high-rise buildings will be permitted, and these will be modeled through regulation to have slender faceted silhouettes. From the towers, buildings will step down to low-rise along the freeways and waterfront. Office construction will be permitted to provide daytime support for the services required by the new residents and to create buffers between the noise producers and the housing.

One of the plan's most attractive elements is the system of alleys cut through the large blocks. These narrower streets will both humanize the area's scale and link it urbanistically with established in-town residential districts such as Nob, Russian, and Telegraph Hills. Townhouses lining the alleys will mask the parking garages of the mid-block high-rise towers. So far, the Planning Commission has approved the Special Use District concept. The long road of implementation lies ahead.

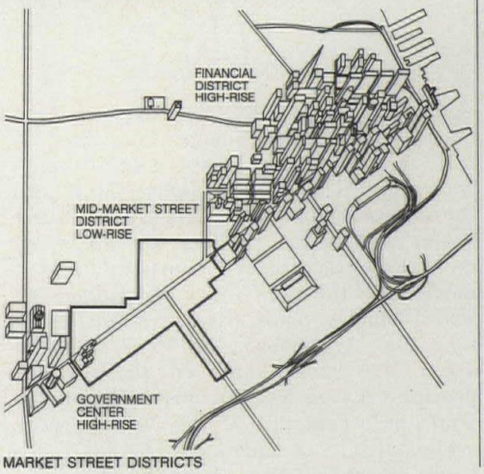
Mid-Market Street development
While effecting some balance between office and housing development is a paramount concern, Market Street continues to provoke urban design issues. The Market Street Beautification Project, which aimed at unification of the long street through tree planting, paving, lighting, signing, and so forth, was finally completed in 1979. But, in the absence of social and economic change, design-amenity remains skin-deep, at street level.

That Market Street has not become the city's Champs Elysées is not surprising for several reasons. Like New York's Broadway, Market Street is broken into visually definable sections created by the distinctive districts through which it passes. The downtown section progresses from the high-rise financial district at the Bay westward to the mixed

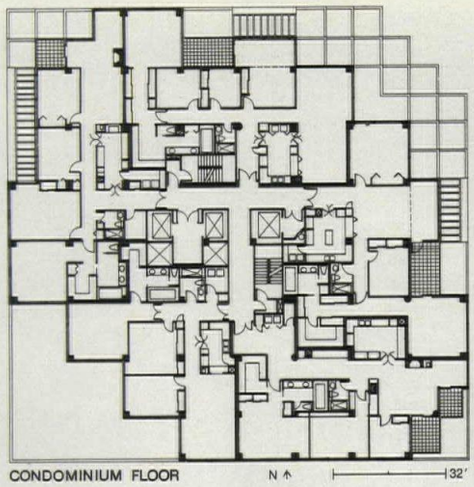




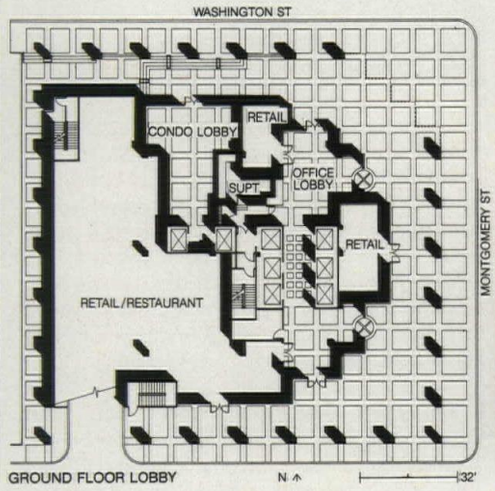
MID-MARKET STREET DISTRICT
CONSERVATION/DEVELOPMENT SUMMARY



MARKET STREET DISTRICTS



CONDOMINIUM FLOOR N 32'



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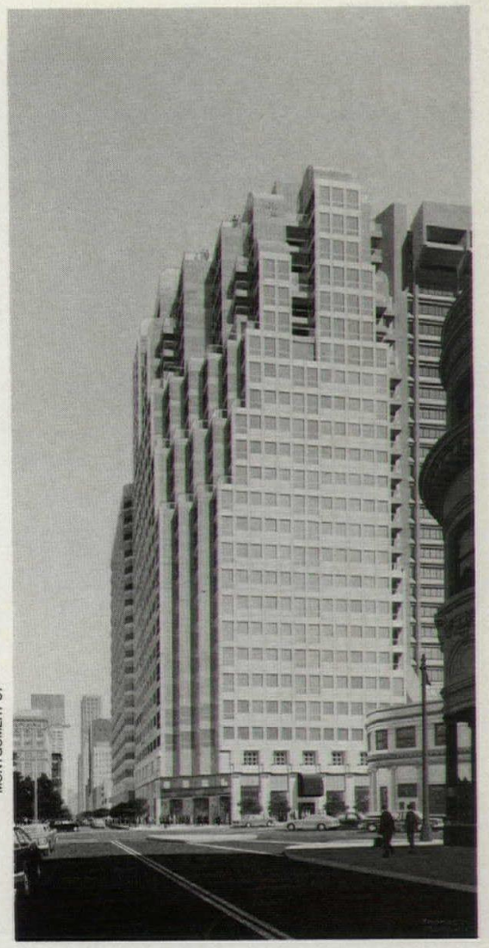


Montgomery-Washington building.

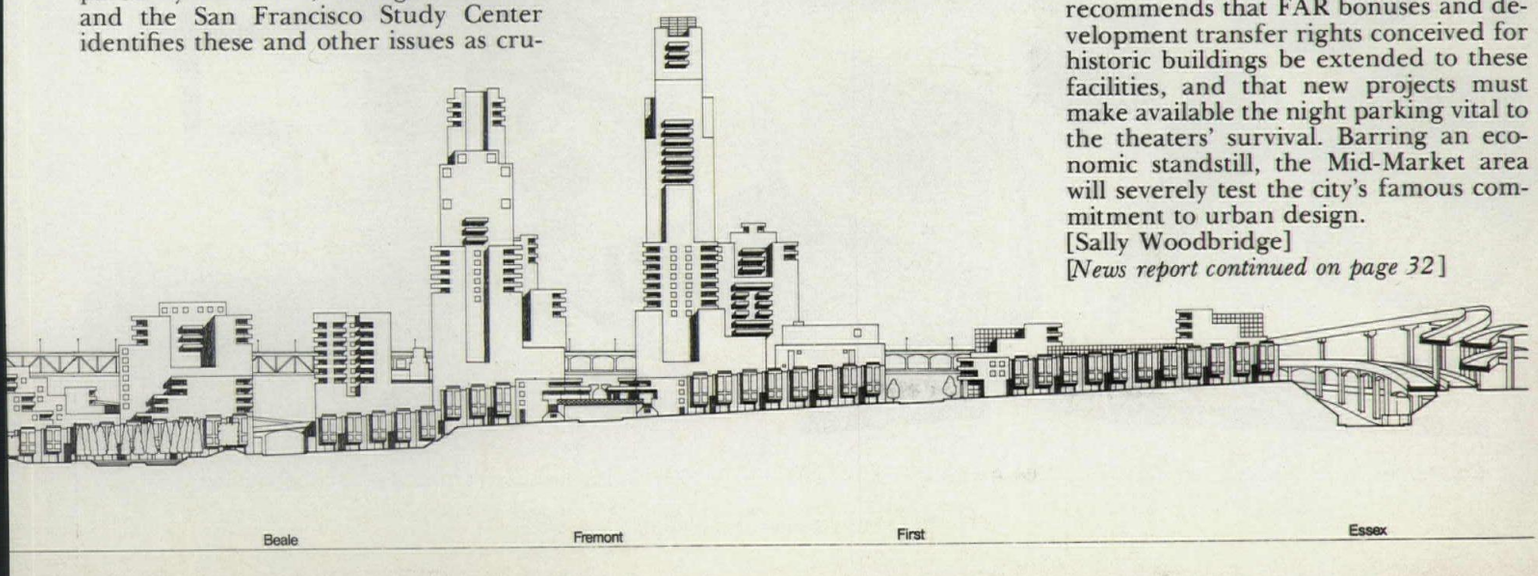
low- and high-rise government area at Van Ness Avenue. In between is a low density area that contains shopping, apartment houses, residential and tourist hotels, and theaters. This area is just now emerging as the next focus of intensive development. Projects that range from modest to mammoth have been proposed for each block. A uniform character for Market Street, entirely reflective of these times, is desirable from no point of view except that of the real estate industry.

The dominant issues are historic preservation, diversity of use, sunlight, and the provision of housing by rehabilitation and in-fill development. A new study commissioned by the Department of City Planning and prepared by Skidmore, Owings & Merrill and the San Francisco Study Center identifies these and other issues as crucial to maintaining the Mid-Market Street area's vitality. Just released, the study makes an interlocking set of proposals. By setting the 90-ft height of the street's historic buildings as the limit for the street front, the physical character of the street will remain, and furthermore, an adequate supply of sunlight will be insured. The area's finest architectural monuments, the old U.S. Mint and the U.S. Post Office and Court of Appeals, will be treated as public squares amidst concentrations of mid-block housing. Nearby existing alleyways will be maintained for service access while new mid-block pedestrian connections will be encouraged between Market and Mission Streets. Concentrations of new housing around the Hallidie (P/A, Nov. 1981, pp. 108–109) and United Nations Plazas will fulfill the promise of these underused spaces.

The areas most threatened by the expansion of single-use development are the midtown residential blocks south and north of Market. As the last housing refuge for low income people, these fragile zones filled with tenant hotels must have adequate protection from demolition and costly rehabilitation. Several strategies are proposed for creating buffer zones between new non-residential development and these neighborhoods, including a special ground floor use district linking the hotel zone to Market Street. One hope for preserving the area's real mixed-use nature is the maintenance of theaters offering live entertainment. The study recommends that FAR bonuses and development transfer rights conceived for historic buildings be extended to these facilities, and that new projects must make available the night parking vital to the theaters' survival. Barring an economic standstill, the Mid-Market area will severely test the city's famous commitment to urban design.

[Sally Woodbridge]

[*News report continued on page 32*]



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In progress

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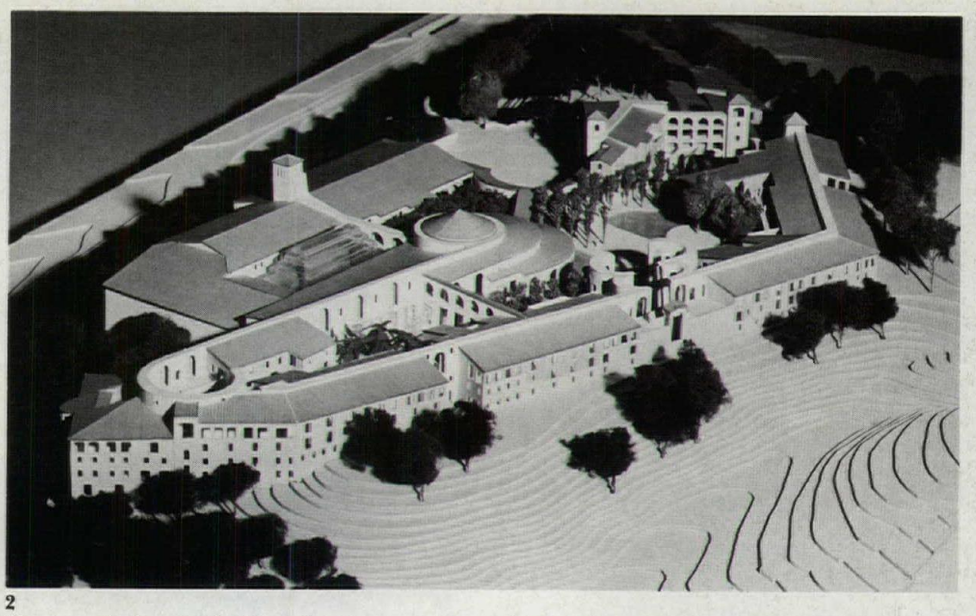

2

1 Mudd Building, Houston, Tx. *Architects: Charles Tapley Associates, Houston.* Rice University appears to be renewing its commitment to its original architectural character, established by Ralph Adams Cram in 1909. The recently completed Stirling/Wilford-designed School of Architecture (P/A, Dec. 1981) may be a major factor in this stance, and the Mudd Building, a new computer center designed by Charles Tapley Associates, furthers the trend. The 27,000-sq-ft facility, scheduled for opening in the 1983–84 school year, freely adapts motifs from the Cram period, using brick and stone, arcades, gabled wing pavilions, and a cupola lantern admitting natural light into the building's central foyer. Where will the trend lead? Another major campus project, the Jesse Jones School of Business, is currently being designed by a firm to which the stylistic constraints may prove to be even more provocative—Cesar Pelli Associates of New Haven, Ct. [Peter C. Papademetriou]

2 San Juan Capistrano Hotel, San Juan Capistrano, Ca. *Architects: Moore Ruble Yudell, Architects and Planners, Santa Monica, Ca.* This 300-room hotel, selected in a limited competition (P/A, June 1982, p. 21) is organized like a small hilltop village. It is sited to minimize the impact on the natural topography, and is kept to a height of 30 ft with the exception of circulation towers. Guest rooms and public facilities are organized around a series of streets, courts, and plazas, movement through which is guided by water—shallow pools, narrow channels, and fountains. A double-walled spine serves to order the rooms and circulation, and provides skylighting for corridors. At key points it breaks out of the building as a bridge, arcade, or aqueduct.

[*News report continued on page 34*]

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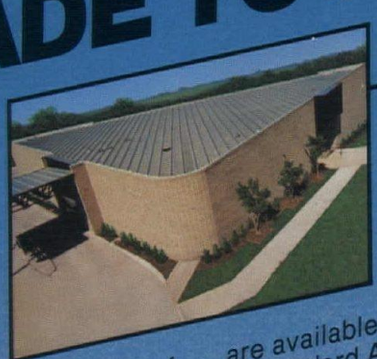

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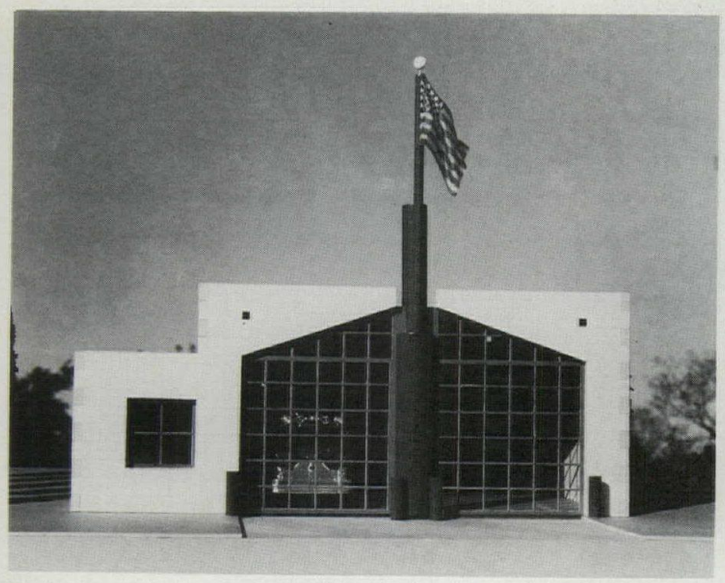

3

4

3 Fire station, Cohasset, Ma. *Architects: Schwartz/Silver, Boston.* Cohasset, a small New England town of white clapboard houses, commissioned Boston architects Schwartz/Silver to design a fire station. The building (construction budget: $95,000) will house two fire trucks and serve the needs of the volunteer fire corps. The bright red framed garage doors flank the central compressed air tank, air horn, and flagpole, also bright red. These are contained within a wall of white quartz terrazzo block, ground-faced, center-scored, and pointed with light blue mortar. Side and rear walls, made of gray block, will be planted with climbing vines.

4 Taylor Hall addition, Vassar College, Poughkeepsie, NY. *Architect: Michael Graves, Princeton, NJ.* The addition to this 1913 Allen and Collens building includes extensive new facilities for the art history department, a 600-seat auditorium, and a large domed hall. The original building, of Indiana limestone, forms the main entrance to campus through its carriage arch. The addition, linked to the original by the new domed hall, will be of stucco with stone only in detailing because of budget restrictions, and does not make overt historical allusions to the original collegiate Gothic structure.

[*News report continued on page 38*]

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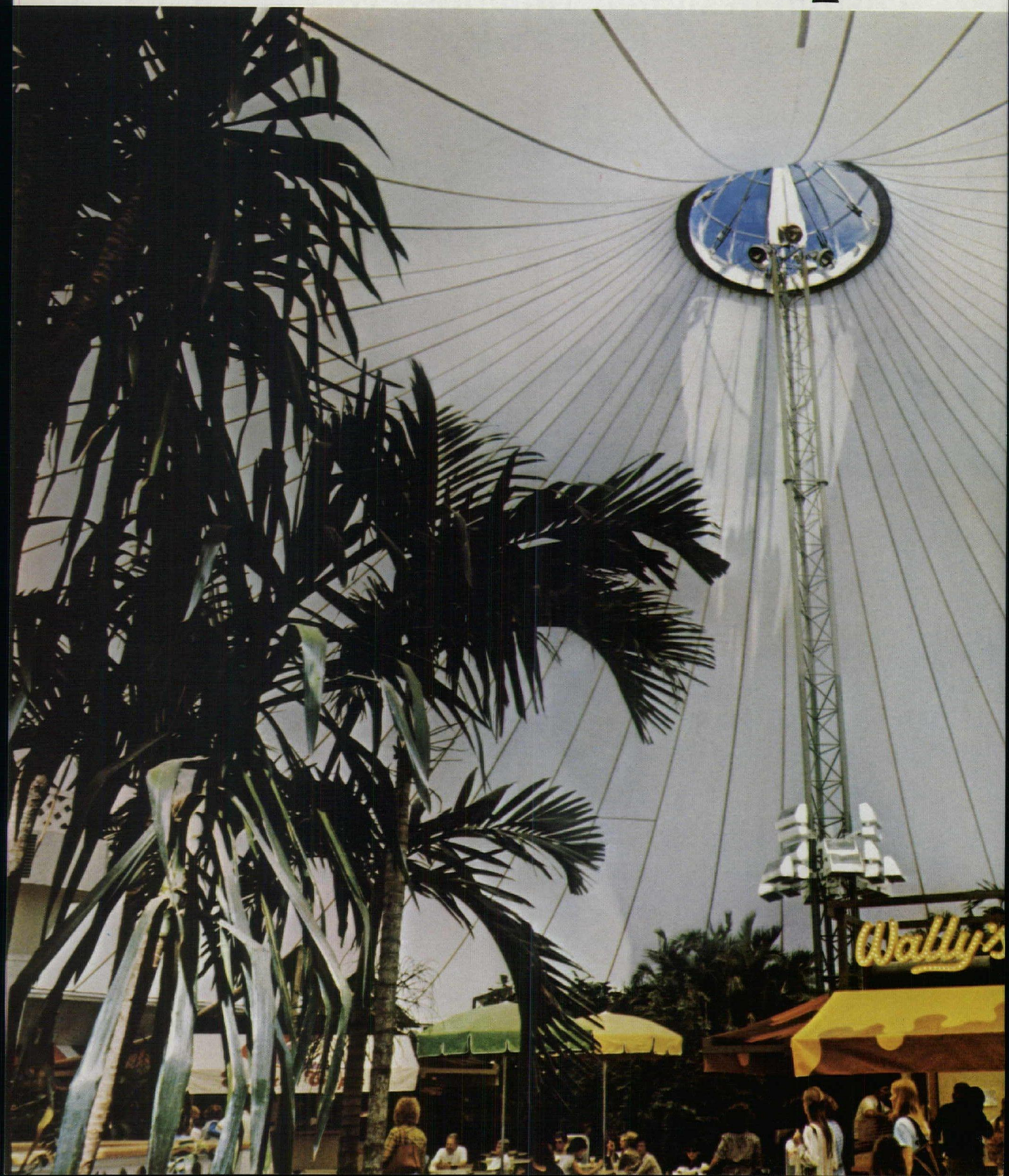

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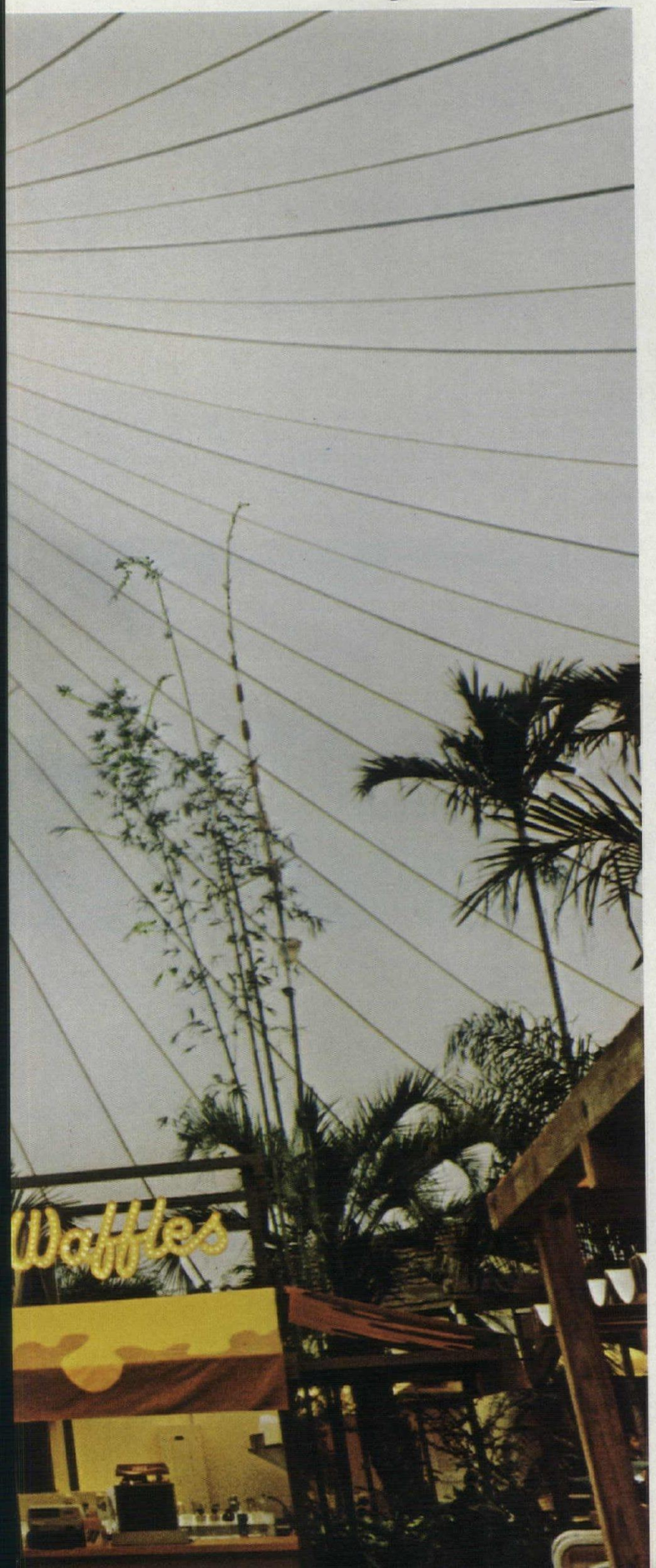

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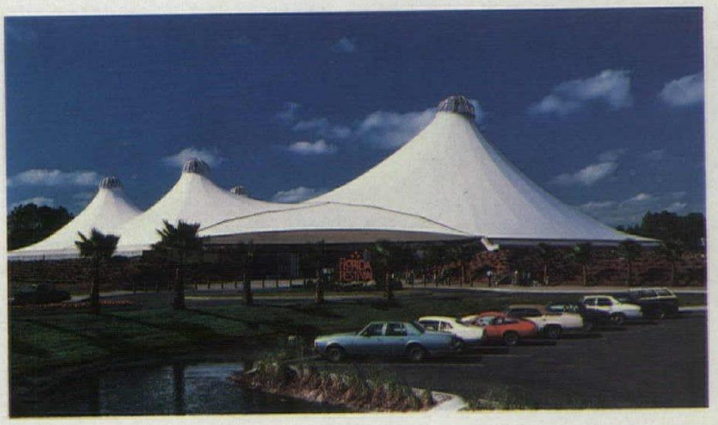

"Florida Festival" in Orlando, Fla., has the highest light transmission (18%) yet developed for a roofing fabric. The permanent structure is a free-form tension canopy made of Fiberglas® fabric coated with DuPont TEFLON fluorocarbon resin. The 60,000 sq. ft. complex is designed to provide recreation, entertainment and a bustling marketplace attraction for the millions who visit Sea World Park each year.

Planning Indoor Ambiance The architects and planners in charge of design and construction made innovative use of sweeping arches, wide interior spaces and the high translucency fabric to create a lush environment in which tropical plants flourish.

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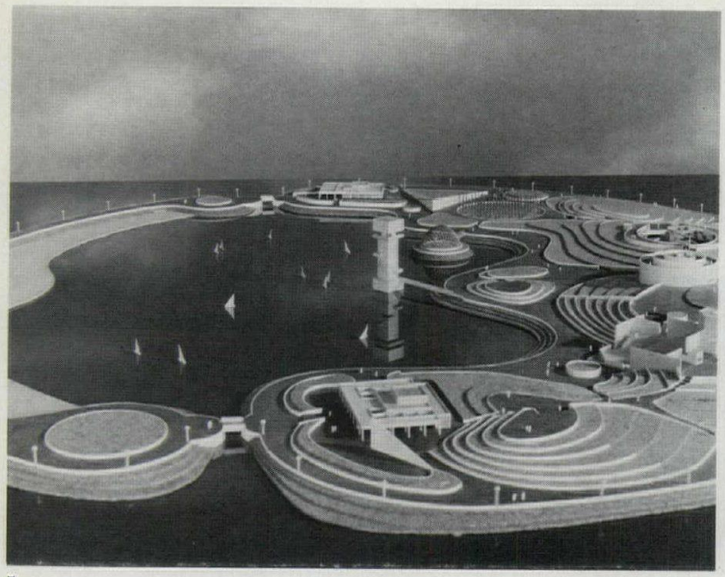
News report continued from page 34



5

Holland Wemple

6

5 Kuwait Waterfront Project, Kuwait City, Kuwait. *Architects: Sasaki Associates, Watertown, Ma.* A $135 million contract for the construction of Phase One of the Kuwait Waterfront Project was signed recently, with work scheduled to begin this year. The project provides for construction, in five phases, of shoreline protection and recreational facilities for Kuwait City's 13-mile coastline on the Arabian Gulf, extending from Shuwaikh Port to Ras Al Ardh Ferry Terminal. Phase One encompasses four miles of waterfront development and includes a new 300-craft yacht basin, a swim club, restaurant, a commercial theater, six beaches, and construction of a new island with a major theme park.

6 Gracie Mansion restoration, New York. *Architect: Charles A. Platt, New York.* Gracie Mansion, built in 1799 and the official home of New York City's mayors since 1942, is undergoing a two-year project to improve its efficiency and historic authenticity. Among the improvements planned are energy-efficient heating and cooling systems, sorely needed modification of the interior design of the mansion, revised planting, rehabilitation of the front porch, and construction of a formal connection between the mansion and its more recent wing. Members of the working group coordinated by Charles Platt include Robert Meadows, preservation architect, and Albert Hadley and Mark Hampton, interior designers.

[*News report continued on page 43*]

Pencil points continued from page 21

Johnson/Burgee. Acoustician: Christopher Jaffe;
¶ Roy Thomson Hall in Toronto, a $43.9 million building by Arthur Erickson/Mathers and Haldenby. Acoustician: Bolt Beranek and Newman;
¶ Joseph Meyerhoss Concert Hall in Baltimore, a $22 million building by Pietro Belluschi with Jung/Brannen Associates. Acoustician: Bolt Beranek and Newman;
¶ and Eugene Performing Arts Center in Oregon, a $27.5 million building by Hardy Holzman Pfeiffer Associates. Acoustician: Christopher Jaffe.

Menil test room
Renzo Piano, named a Fellow of the AIA at this year's AIA convention, has completed a full-scale test room to demonstrate the building systems for his recently designed building for the Menil Foundation's art collection in Houston.

Dallas Arts District
The team of Sasaki Associates and Halcyon Ltd. has been selected by the Dallas Arts District Planning Committee to prepare a master plan for a 24-hour-per-day art-oriented activity center along a 16-block area of the Dallas central business district.
¶ The plan will provide guidelines for new office, hotel, retail, and public development projects along the Flora Street corridor.

Old Custom House renovation
Construction should begin by September on the renovation of the U.S. Custom House at One Bowling Green in New York.
¶ The 1907 building by Cass Gilbert will be used for a bankruptcy court and government offices. An earlier plan for its reuse as a downtown Museum of the American Indian has been dropped.
¶ The renovation will mainly affect the interior. On the exterior, only the south side will be somewhat changed to facilitate access.
¶ The design is by Marcel Breuer Associates, James Stewart Polshek & Associates, and Goldman Sokoloff Copeland, Mechanical Engineers, all selected through a competition.

Honors
The American Academy and the Institute of Arts and Letters have conferred awards and membership upon worthy artists. Architects receiving these honors are:
¶ Cesar Pelli and Minoru Yamaski, who were inducted as new members;
¶ and Helmut Jahn, who has won the $100,000 Arnold W. Brunner Memorial Prize in Architecture.

The costliest federal building
Though the government is making efforts to stem inflation, charity, it seems, begins at home.
¶ The new nine-story Hart Senate Office Building will cost close to $137 million, more than three times the amount estimated when the structure was first contemplated.
¶ While most of the additional cost is due to inflation, some is due to changes in the design, and critics note the serious estimation errors made by the office of the Capitol architect, George White, and by the outside architectural firm of John Carl Warnecke.

New Wright guide
A 500-page illustrated guide by Patrick J. Meehan, **Frank Lloyd Wright: A Research Guide to Archival Sources,** *will be published by Garland Publishing, Inc., of New York and London, in early 1983.*

Transactions
The Royal Institute of British Architects has re-launched its lavishly illustrated semiannual magazine **Transactions,** *which contains papers presented at the RIBA.*

10
Deans of the accredited American architectural schools were surveyed by **The Buildings Journal** *to name the top 10 architects having impact on architectural direction. And the results:*
¶ 1—I.M. Pei.
¶ 2—Romaldo Giurgola.
¶ 3—Cesar Pelli.
¶ 4—Kevin Roche.
¶ 5—Philip Johnson.
¶ 6—Gunnar Birkerts, Charles Moore, and Michael Graves.
¶ 9—Edward Larrabee Barnes.
¶ 10—Richard Meier.

Getty Center
The Getty Museum in Malibu, Ca, is to build three new institutions in the Los Angeles area; site and architect are not yet chosen.

Bridge bash
The City of New York is planning a six-month celebration bash for Brooklyn Bridge's 100th anniversary, next year.

Statue of Liberty restoration drive
President Reagan has committed himself to an effort to raise $100 million to restore the Statue of Liberty and Ellis Island in New York Harbor.
¶ The aim is to restore these landmarks by 1986, the 100th anniversary of the Statue's dedication.
¶ Chairman of the fund-raising drive is that successful businessman Lee A. Iacocca, chairman of Chrysler Corporation.

Best film
Mies van der Rohe, *a one-hour documentary directed by Georgia van der Rohe, Mies's daughter, was named the Best Filmed Biography of an Artist at the 1981 International Festival of Films on Art and Biographies of Artists, held in Asolo, Italy.*

Energy diffused
The Reagan Administration has modified its plan for the dissolution of the Department of Energy.
¶ The bulk of DOE's duties will still be transferred to the Department of Commerce, as proposed in December, but deputy Commerce secretaries for energy and de-
[*Pencil points continued on page 43*]

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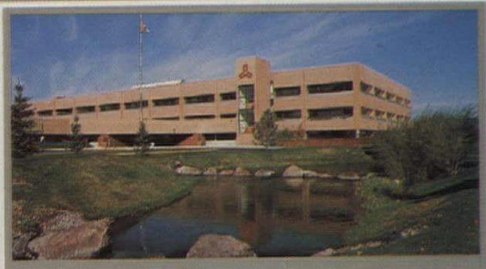

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Pencil points continued from page 40

fense will be appointed, and the plan for a separate Energy Research and Technology Administration unit will be abandoned.
¶ Plans are changing constantly, however, and the above modification may well be modified itself.

Wyoming College master plan
College Planning Associates, a joint venture of Anderson Architects and The BKLH Group of Denver, Co, and Sasaki Associates of Watertown, Ma, has been selected to undertake the master plan and architectural design of a $44 million campus expansion program for Western Wyoming College in Rock Springs, Wy.

Tree debate
Bird watchers, tree lovers, landscape architects, and city officials have been at odds about the felling of trees in New York's Olmsted/Vaux-designed Central Park.
¶ Central Park administrator Elizabeth Barlow calls it "selective pruning"; landscape architect Bruce Kelly says 10 trees were cut; bird lovers contend that over 70 trees were felled, including wild cherry trees that attracted migrating birds; and tree lovers point out that landscape designs presuppose natural change, and that a slavish adherence to the original Olmsted plan is wrong-headed.

Art blossoms
$1 million of art is being installed around the Wells Fargo Building at Fifth and Flower Streets in Downtown Los Angeles.
¶ Commissioned works by Robert Rauschenberg, Frank Stella, Bruce Nauman, Michael Heizer, and Mark Di Suvero are being placed in the building's lobby and plaza.

Turks and Caicos stamp
A geodesic structure housing a wind-and-solar-powered laboratory in Fort George Cay has been chosen to appear on the air-mail stamp for the Turks and Caicos Islands.
¶ The building was designed by Koger Architectural Group in Miami.

Menninger headquarters
The new headquarters of the Menninger Foundation in Topeka, Ks, a P/A citation-winning design (P/A, Jan. 1981) by SOM/Chicago and the Kiene Bradley Partnership of Topeka, was dedicated in June.
¶ The new campus has 18 buildings, including a hospital, a clinical office building, and a conference center, located near seven existing Foundation structures.

Werkstätte lamps produced
Hede and Wolfgang Karolinsky of Vienna are manufacturing about 40 Wiener Werkstätte period lamps, including designs by Josef Hoffmann, Adolf Loos, and Otto Wagner.
¶ Known as the WOKA collection, they are being sold by George Kovacs in New York.

Reynolds
Morozowski & Perry Arquitetos of Curitiba, Brazil, have won the R.S. Reynolds Memorial Award for distinguished architecture using aluminum, for their social, recreational, and sports center in Curitiba.

Multipurpose indeed
The Fourth Annual Arango International Design Competition (an event of the Greater Miami New World Festival) has awarded prizes to:
¶ H.J. Van Herwynen of Rotterdam, Holland, for 'Lean Supporter,' a tubular rest unit/bicycle stand/signpost;
¶ Dee Marie Martin, New York, for 'Table d'Haute,' a room screen/shelving/desk/table unit;
¶ and Ann Mudge, San Diego, for her 'Ladder Table.'
¶ Jurors were Vico Magistretti, Milan; Borge Lindau, Sweden; and J. Stewart Johnson, curator of Design, Museum of Modern Art.

Calendar

Exhibits
Through Aug. 15. Royal Academy of Arts 214th Summer Exhibition, including an architectural section. London.
Through Aug. 15. The Indian Heritage: Court Life and Arts under Mughal Rule. Victoria and Albert Museum, London.
Through Aug. 22. Mies van der Rohe: Barcelona Pavilion and Furniture Designs, Neuberger Museum. College at Purchase, NY. Also: **Through June 20,** Robert A.M. Stern: Modern Architecture after Modernism.
Through Aug. 29. Mondrian's Room. Akron Art Museum, 70 E. Market St., Akron, Oh.
[*News report continued on page 44*]

News report continued from page 43

Through Sept. 3. Group show, including Jackie Ferrara, Frank Gehry, Michael Graves, Aldo Rossi, and others. Max Protetch Gallery, 37 W. 57 St., New York.
Through Sept. 15. Buildings on Paper: Rhode Island Architectural Drawings, 1825–1945. Metropolitan Museum of Art, New York. Subsequent dates: **Oct. 15–Jan. 3,** Washington.
Through Sept. 18. Architecture de Symbiose. Grand Salle, Institut Francais d'Architecture, 6 rue de Tournon, Paris.
Through Sept. 18. Lawrence Halprin, Projects/Design Sketches, Philippe Bonafont Gallery, San Francisco.
Through Sept. 19. The Chicago Architectural Club. The Art Institute of Chicago.
Through Sept. 20. The Everyday Environment in China. Centre Georges Pompidou, Paris.
Through Sept. 26. Mexican architect/muralist Juan O'Gorman. The Schindler House, Los Angeles.
Through Sept. 30. Barry Byrne and John Lloyd Wright: Architecture and Design. Chicago Historical Society, Clark St. at North Ave., Chicago.
Through Sept. 30. From Village to City in Ancient India. British Museum, London.
Through Oct. 3. Grand Central Terminal: City Within the City. New York Historical Society, New York.
Through Oct. 10. New American Art Museums. Whitney Museum of American Art, Madison at 75th, New York.
Through Oct. 12. The Architecture of Richard Neutra: From International Style to California Modern. Museum of Modern Art, New York.

Aug. 15–Oct. 31. Inside State Street: Color Photographs of Building Interiors by Kathleen Collins. Chicago Historical Society.
Sept. 1–10. "Interior Design: the New Freedom," a series of videotapes of distinguished American interior designers. Cooper-Hewitt Museum and the Leo Castelli Gallery, New York. Also: **Sept.–March 1983,** "American Architecture Now," videotapes of American architects. New School, New York.
Sept. 11–Oct. 31. Italian Re-evolution. La Jolla Museum of Contemporary Art, La Jolla, Ca.
Sept. 14–Oct. 31. Frank Gehry drawings. Institute of Contemporary Art, 955 Boylston St., Boston, Ma.
Sept. 14–Jan. 2. Scandinavian Modern, 1880–1980. Cooper-Hewitt Museum, New York.

Competitions
Aug. 30. Application deadline, The Artist Views the City. Contact Marilyn K. Shannon, Gallery at the Old Post Office, Dayton, Oh (513) 223-6500.
Aug. 31. Mailing date for P/A Awards entries (see entry rules, page 15).
Sept. 1. Deadline, letter of interest and statement of qualifications, Triton Museum of Art competition. Contact William H. Liskamm (415) 433-7626.
Sept. 1. Entry deadline, Architectural Review Interior Design Awards. Contact Editor, The Architectural Review, 9 Queen Anne's Gate, London SW1H 9BY.
Sept. 15. Entry deadline, Interiors Fourth Annual Awards. Contact Interiors Magazine, 1515 Broadway, New York, NY 10036.
Oct. 5. Submission deadline, International Committee of Architectural Critics Annual Awards. Contact International Center for Advanced Studies in Art, New York University, Department of Art and Art Education, 239 Greene St., 735 East Building, New York.
Nov. 1. Entry deadline, Compact Home Design Competition. Contact Compact Homes, Garden Way Publishing, Charlotte, Vt 05445.
Dec. 29. Entry deadline, International Open Competition for the Creation of New Office Furniture. Contact Concours Mobilier, Commissariat General du Concours, Pavillon de Marsan, 107 rue de Rivoli, 75001 Paris, France.
Dec. 31. Proposal deadline, General Electric Lighting Design Competition for Architecture and Interior Design Students. Contact Daniel Hayes, GE, Nela Park #4635, Cleveland, Oh 44112.

Conferences, seminars, workshops
Sept. 19–24. American Concrete Institute's fall convention. Westin Hotel, Detroit. Contact ACI Convention Coordinator, P.O. Box 19150, Detroit, Mi 48219 (313) 532-2600.
Sept. 28. Terra Cotta Seminar. Archicenter, Monadnock Building, Chicago, Il. Contact Friends of Terra Cotta, % California Historical Society, 2090 Jackson St., San Francisco, Ca 94109 (415) 556-7741. Also: **Sept. 30,** Mechanics' Institute, New York.

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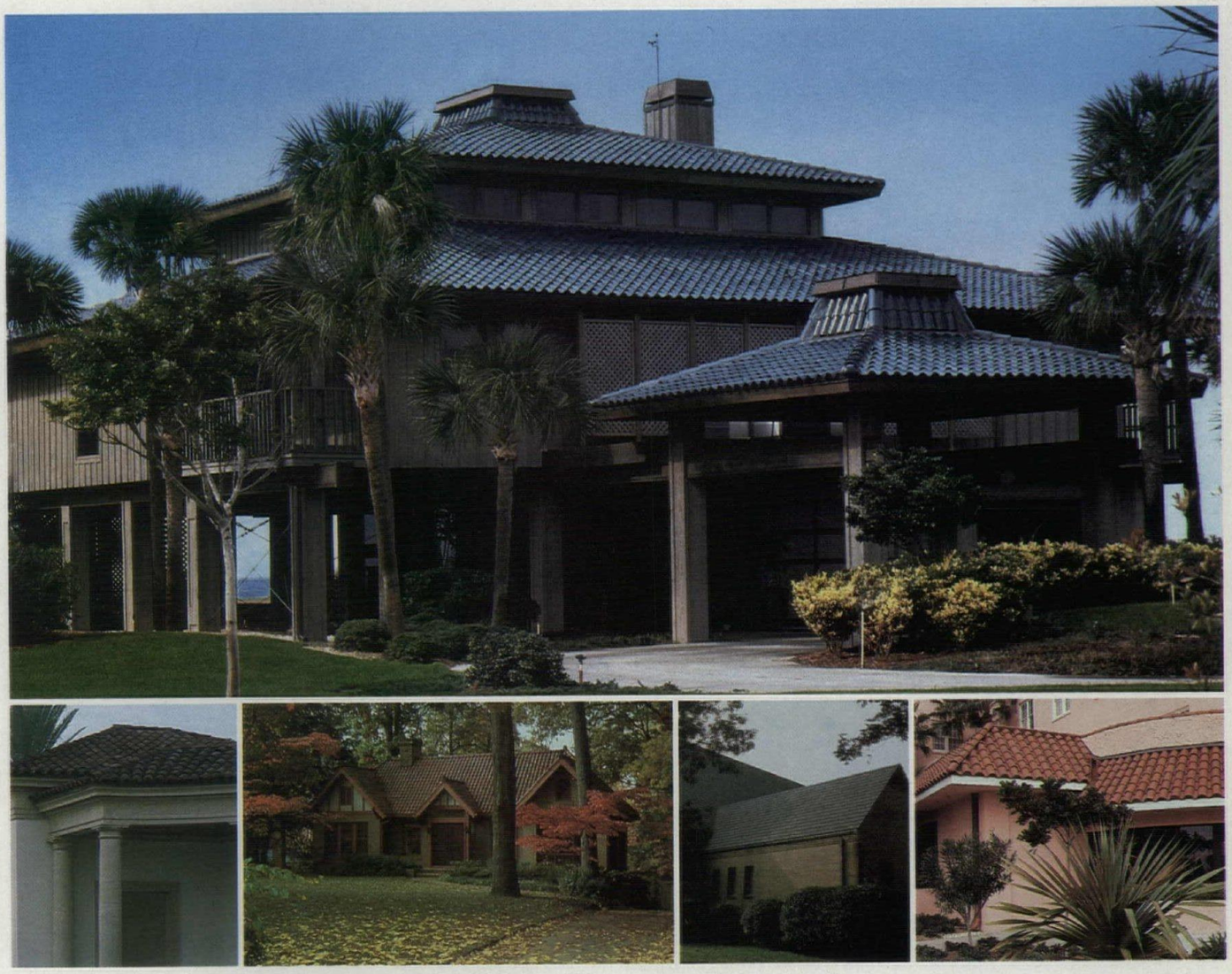

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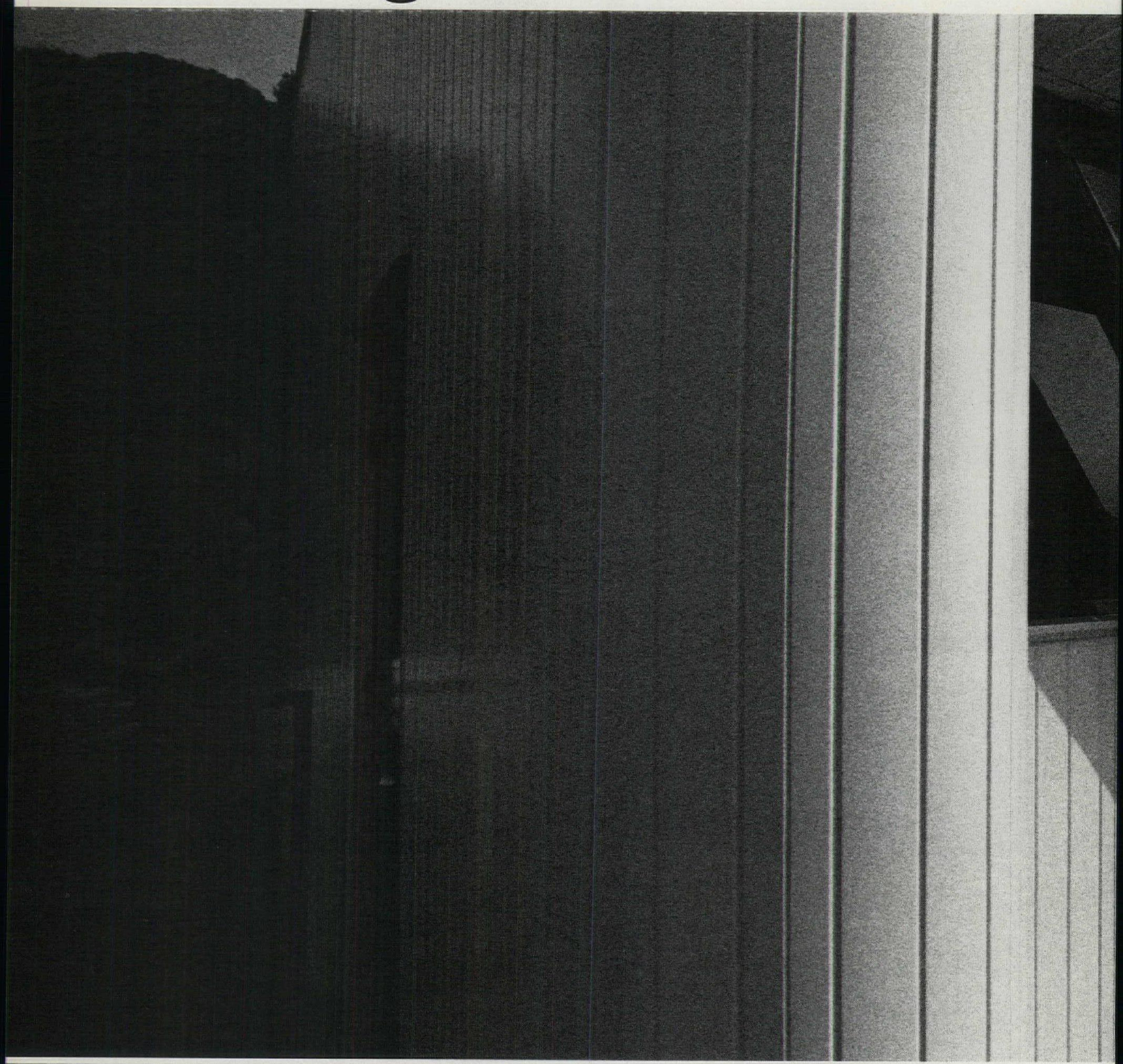

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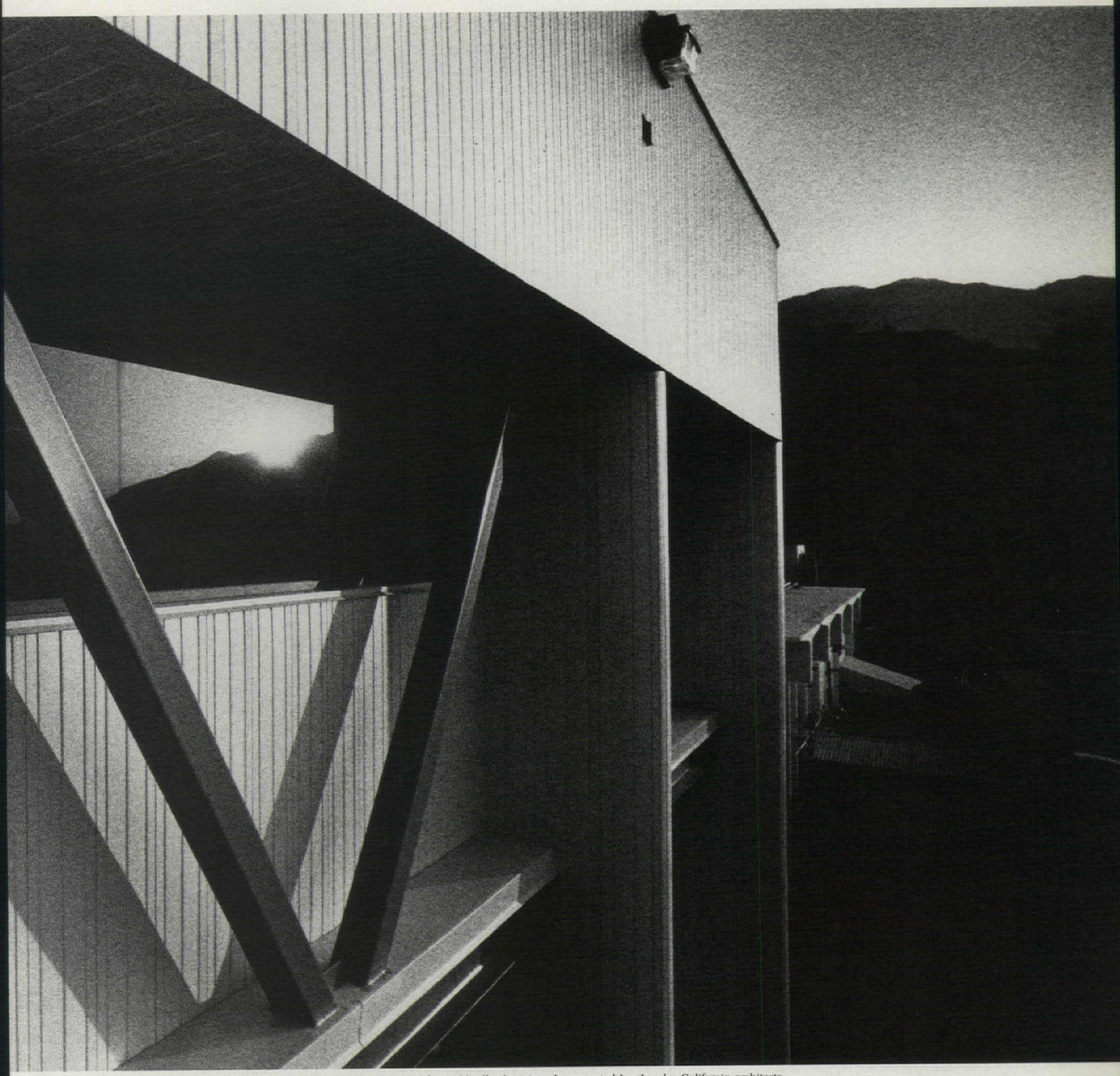

NASA's Energy Conservation Laboratory, Jet Propulsion Laboratory, Pasadena, California; Miralles Associates Incorporated, Los Angeles, California, architects.

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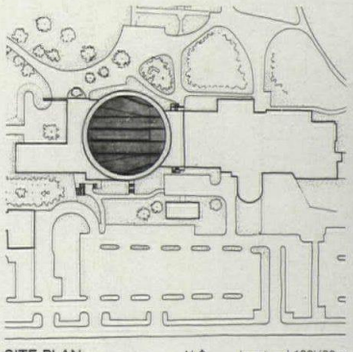
Concert Hall, Greenvale, NY

Out of round

From the wreckage of a roof collapse, a new cultural gem has grown within an existing ring at C.W. Post Center.

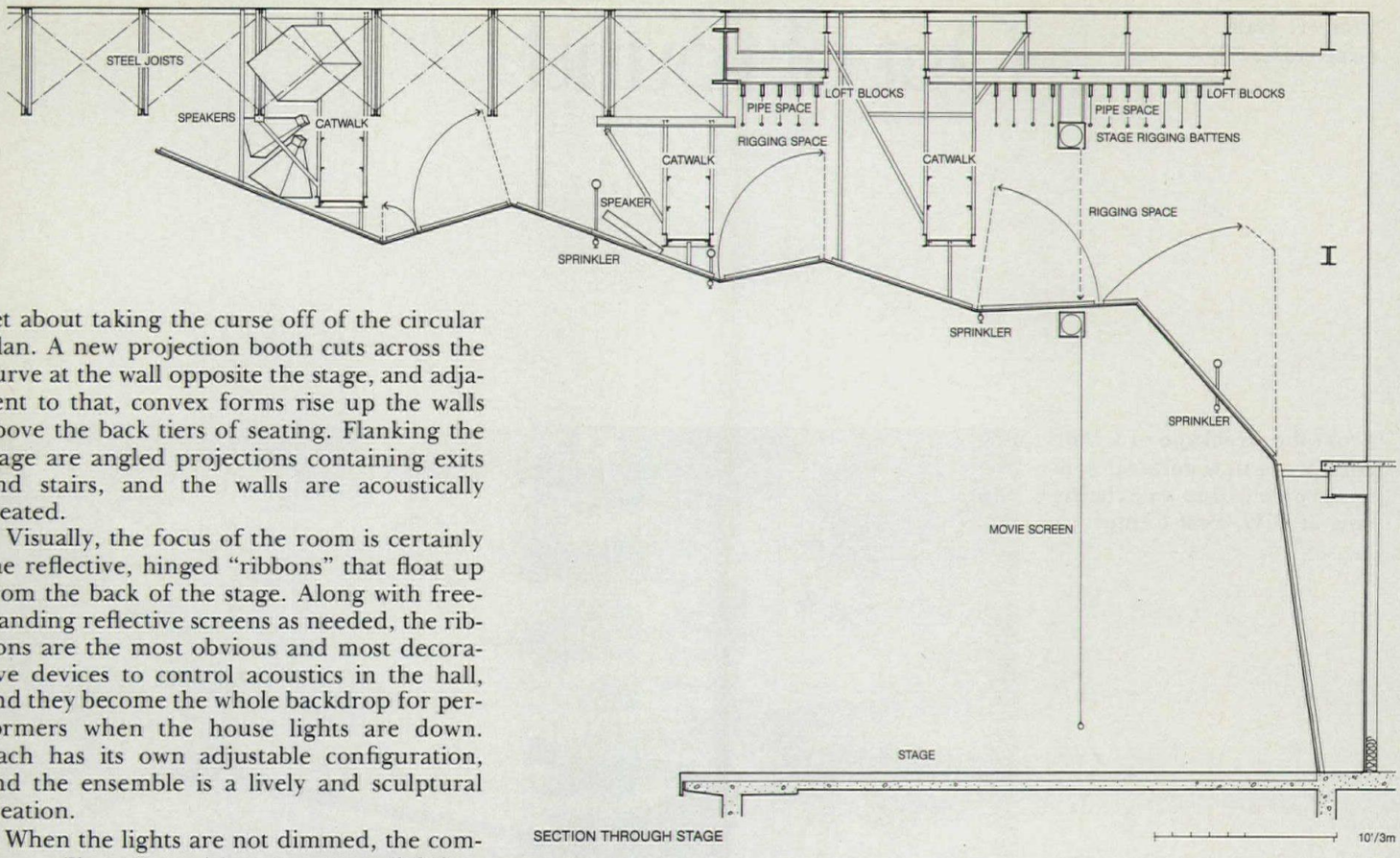


Turning a shambles into a showplace is a definite challenge, even for talented architects. Yet that is what Mitchell/Giurgola did on the campus of C.W. Post Center, Long Island University. They were handed what must be termed a disaster—the former auditorium and sometime gymnasium, which had been covered with a domed roof that collapsed during a snowstorm in 1978 while unoccupied. The university, faced with a decision to salvage what was left or build anew, went the former route, and LIU's Chancellor Albert Bush-Brown and others decided to try to turn the hulk into a first-class 2250-seat concert theater.

But the givens were still strongly at odds with conventional wisdom of music hall performance standards—round halls do not treat music well at all—and did not give the architects an easy beginning. Yet that was the game plan; the perimeter walls were to remain, and a new facility would have to grow inside them. Although the former building was not known for its good acoustics, it was the largest assembly hall on campus, seating nearly 3000, and it was part of a student activities complex. Original dressing room facilities remained intact after the collapse.

Because of limitations of both budget and space, the hall will be used for full orchestra performances, dance, and other performances that do not require elaborate theatrical equipment. Proscenium arch and other masking controls can be used to modify the stage configuration. The new hall will also be used for cinema, and for community and university meetings, lectures, and commencements. Budget limitations also required the maximum reuse of existing construction and allowed only rehabilitation of the perimeter service areas, lobby, and front plaza and ramps. So aside from additional dressing and warmup facilities, the remainder of the project was entirely within the 190-ft diameter of the original circular walls.

Working with Jules Fisher Associates, theater consultants, and Robert Hansen Associates, acoustical consultants, the architects



SECTION THROUGH STAGE

10'/3m

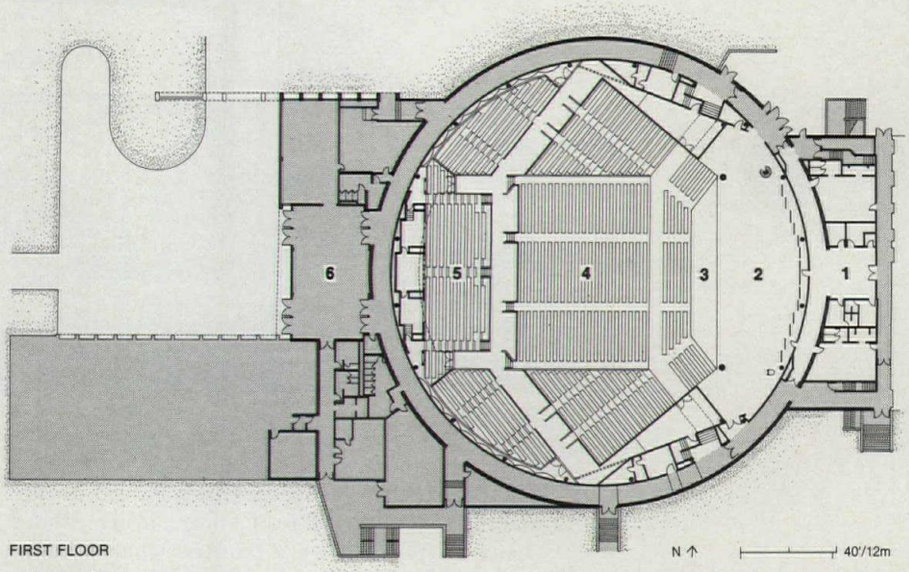
set about taking the curse off of the circular plan. A new projection booth cuts across the curve at the wall opposite the stage, and adjacent to that, convex forms rise up the walls above the back tiers of seating. Flanking the stage are angled projections containing exits and stairs, and the walls are acoustically treated.

Visually, the focus of the room is certainly the reflective, hinged "ribbons" that float up from the back of the stage. Along with free-standing reflective screens as needed, the ribbons are the most obvious and most decorative devices to control acoustics in the hall, and they become the whole backdrop for performers when the house lights are down. Each has its own adjustable configuration, and the ensemble is a lively and sculptural creation.

When the lights are not dimmed, the complex ceiling, comprising structure, lighting, and mechanical elements, also plays a major visual role. The most dominant feature is the series of steel trusses that march the length of the hall, painted white and illuminated, picking up loads from white open-web joists and steel deck. A spidery lighting platform is also visible in the midst of all this, looking very much at home with the fabric set up by all the other elements overhead.

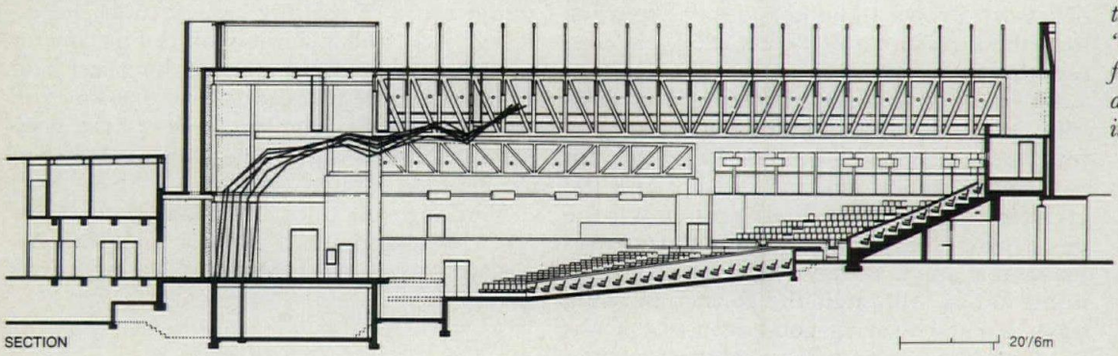
Below this busy yet harmonious kit of parts, the planes in the lower part of the space are more abstract and calm. Around the dominant burgundy of the sloped and tiered seats, the architects have arrayed wall planes of rich gray, bluish purple, and mauve. The combination of the highly technical with the mostly abstract is very powerful when done with this level of skill, and creates a nice ambiance for a performance.

Although not elaborately equipped, the stage has some special features, nevertheless. The orchestra pit is on a lift, which rises to stage height for added stage capacity. Special care was built into the stage floor itself. A "sprung" resilient floor attuned to dancers' needs was installed, and dancers who have



FIRST FLOOR

Legend
1 Dressing rooms
2 Stage
3 Pit and stage lift
4 Sloped seating
5 Tiered seating
6 Lobby
Existing

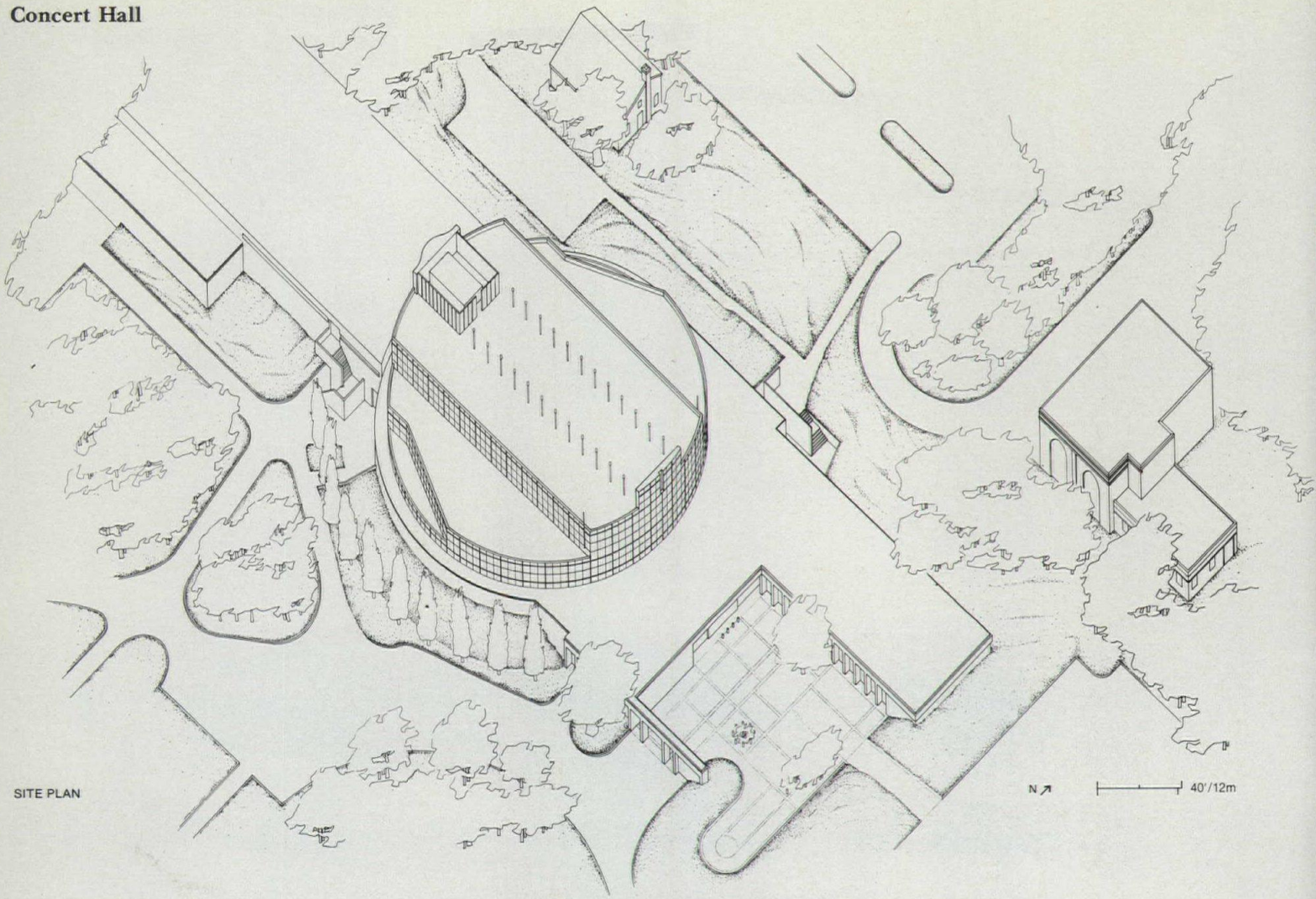


SECTION

20'/6m

Within the existing circular shell, the architects placed angled walls and devices to better distribute sound. Not included in their contract was the plaza (opposite page, top) and the lower lobby of the hall. Adjustable panels, or "ribbons" (opposite page, bottom) form the backdrop to the stage and provide tuning flexibility as it is needed.

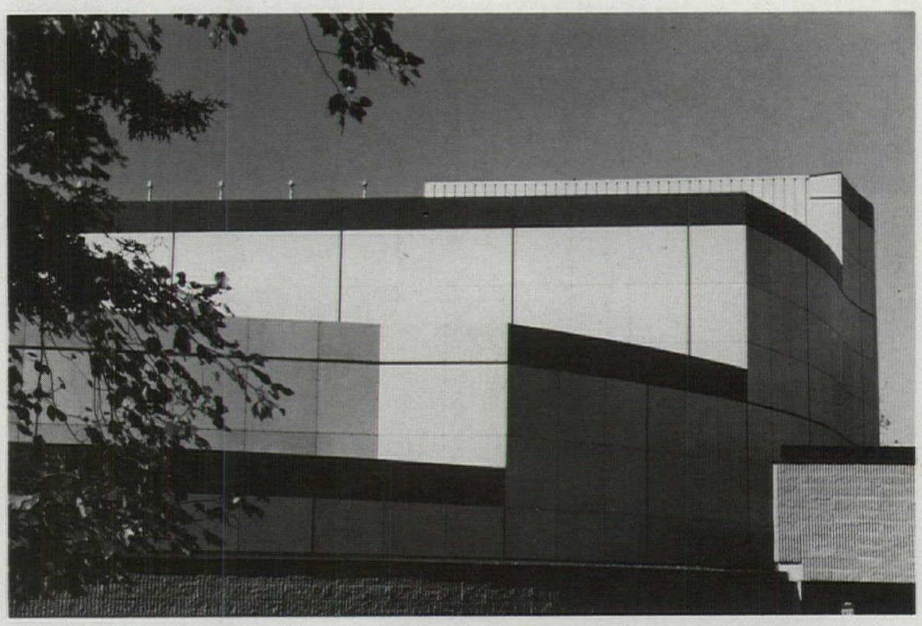
Concert Hall



tested it say that it works well. Lighting for the hall is computer-controlled from the projection room.

Outwardly, the building projects a different image from that on the interior. Rising above the existing walls, aluminum-clad panels form a stepped façade on either end; at the highest level in the middle is a row of poles with lights that indicate, by their intensity or lack thereof, the level of the house lights inside. The top edges of the aluminum skin are trimmed in blue, and the panel joints are punctuated with red scoring. While the expression bears little relationship to surrounding buildings, one cannot feel too remorseful; what exists in the vicinity is hardly stirring architecture, and the new part of the building acknowledges it as much as it should, and no more.

In the end, of course, a concert hall can succeed only if it works well for the performance of music. Since its opening last fall, it has held performances by such names as Zubin Mehta, Pinchas Zuckerman, Victor Borge, Itzhak Perlman, Marilyn Horne, Peter Nero, and Marcel Marceau. Reviews have been extremely positive, usually citing qualities such as "warm," "rich," and "enveloping." Musicians have paid it the high compliment of say-

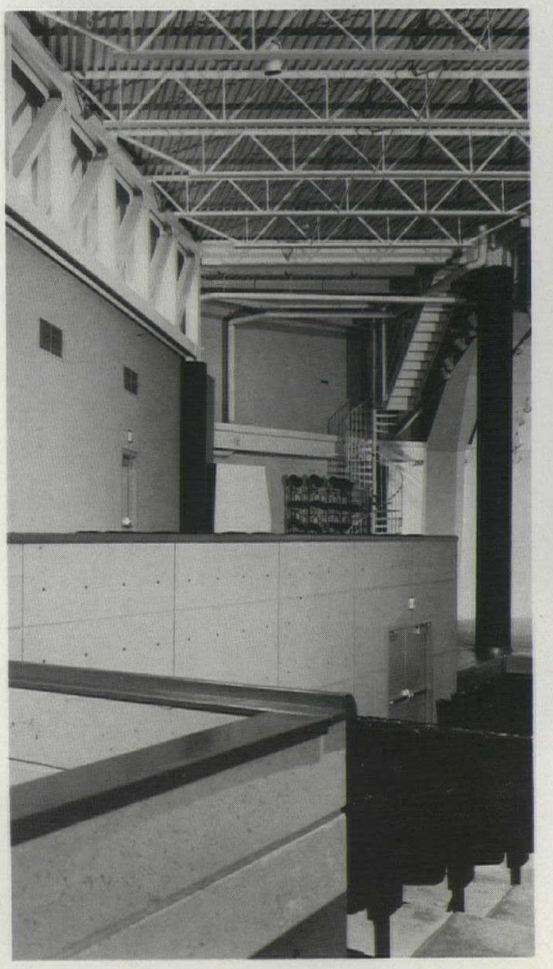


Rising above existing walls, new space is clad in stepped and curved metal planes. On the interior (opposite page), white structural elements, ducts, and lighting platform play off against the cool blue-to-purple planes and

Data

Project: *Concert Theater, C.W. Post Center, Long Island University, Greenvale, NY.*

Architects: *Mitchell/Giurgola Architects, New York. Project architects: Paul Broches, Jack*



Data continued
Site: *the shell of an existing circular building attached to several existing campus buildings.*
Program: *provide a 2250-seat hall to house full orchestra, dance company, and other small performing groups not requiring elaborate theatrical machinery.*
Structural system: *concrete-filled steel deck on open web joists, carried on structural steel trusses that frame into new wide-flange columns and extensions of existing columns. Concrete floor and guard walls.*
Mechanical systems: *hot and chilled water from central campus plant. New air distribution systems are served by reconditioned fan coil units.*
Major materials: *aluminum-faced, metal-framed, gypsum panels, exterior. Gypsum board on metal frames, interior walls. Resilient wood stage floor.*
Consultants: *structural, Weidlinger Associates; mechanical, Kallen & Lemelson; acoustical, Robert Hansen Associates; theater, Jules Fisher Associates; lighting, Fisher & Marantz.*
General contractor: *E.W. Howell Co.*
Costs: *$3,664,500; $75.60/sq ft.*
Photography: *Norman McGrath*

Precursors: Vernacular architecture of the Gurunsi

Genius before industry

Jean-Paul Bourdier

Examples of the African vernacular heritage are examined, not just as exotic forms, but as architecture integral to its physical and cultural context.

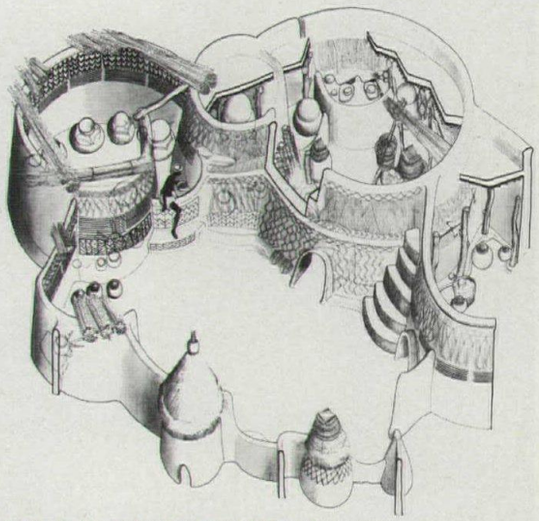
Nankani *(right and opposite): Women's units stand in a circle like those of Kassena (p. 56). On left in drawing is dry season cooking area, shaded by millet stalks; to its right, roofed cooking space for rainy season. Stairs lead to roof, used for drying grains and sleeping in hot weather. Adobe walls store heat for night during cool months; when temperature peaks around 49 C (120 F), inside is 8 C (14 F) cooler. Exterior wall designs bear spiritual, social, and aesthetic significance. Protruding collars around entrances divert rain. Walls are erected by men, but rammed floors, wall coating, and ornament are by women.*

Jean-Paul Bourdier who taught at the School of Architecture at Dakar, Senegal, is an assistant professor in the Department of Architecture at the University of California, Berkeley. Drawings and photos by Prof. Bourdier will appear in his forthcoming book on Gurunsi architecture. Field research was done in collaboration with Trinh T. Minh-ha Bourdier, Ndongo Athj, Innocent Bimenyimana, Makhtar Faye, El Hadj Malick Gaye, Sharon Murray, Mame Dioulame Seye, and Ndary Touré.

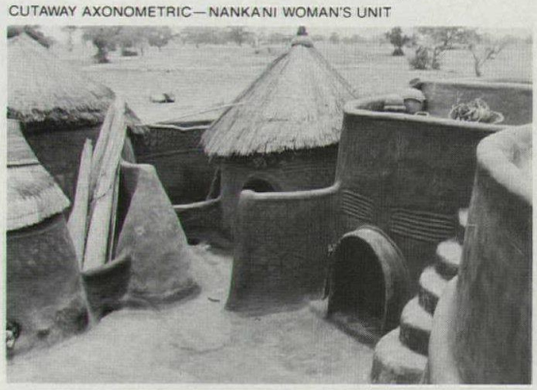
The diversity and elaborateness of African vernacular architecture remain widely unknown, to the general public as well as to architects. The architecture of hundreds of ethnic groups throughout Africa presents, however, an astonishing variety of design principles and building techniques countering the widespread conception of the primitive African hut.

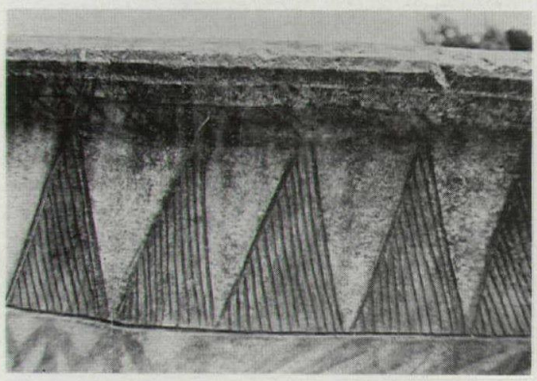
The architecture in West Africa could be roughly classified into three main types. Although climate is only one factor influencing the form of the house, each one of these types corresponds to a climatic zone. In the dry Saharan climate, for example, movable tent structures and semispherical straw shelters predominate. South of the Sahara, in the semidry weather of the Sudano-Sahelian belt, more permanent buildings in adobe appear. Irregular rainfall, as well as the local clayey soil used in the preparation of the adobe, favors in this area an architecture with flat roofs; the material, in turn, allows for various asymmetrical space shapes and their diverse patterns of associations as shown in the drawings here. On the other hand, in the region of equatorial climate with heavy rains along the southern coast, sloped straw roofs and separated units predominate; apart from the impluvium type of house, where units are nested below a single circular roof, dwelling spaces remain separate structures, since no waterproof connection can be made between two adjacent straw roofs.

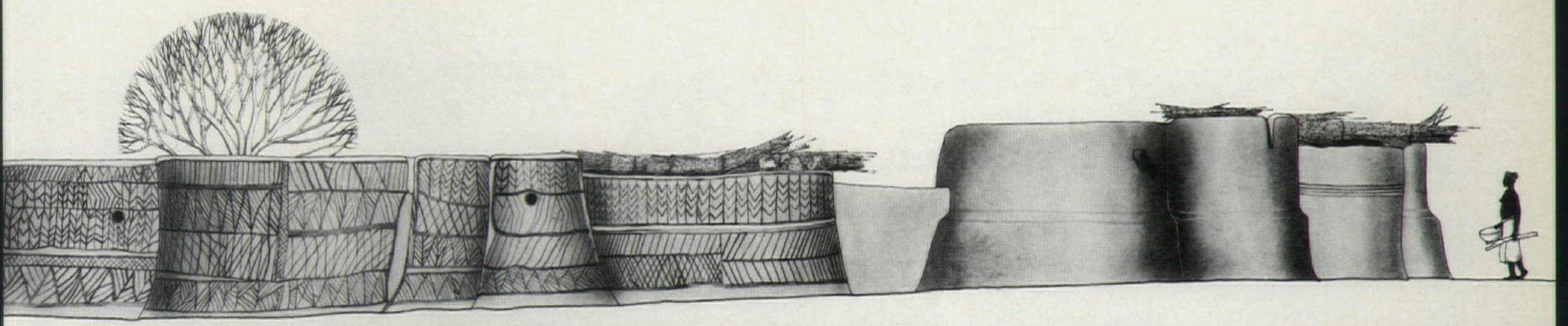
It is in the center of the Sudano-Sahelian zone that the country of Upper Volta is situated. Among its earliest inhabitants are the Gurunsi people, whose presence can be traced before the 12th Century A.D. The generic term "Gurunsi" indicates, in fact, a number of adjoining ethnic groups of Northern Ghana and Central-Southern Upper Volta, who share common linguistic and cultural backgrounds perceptible through their architecture. Their traditional way of building is, however, on the verge of total disappearance. Their houses are often among the last ones that still retain the vernacular values of each ethnic group. On returning to the site only a year after these houses had been measured and drawn, we already witnessed



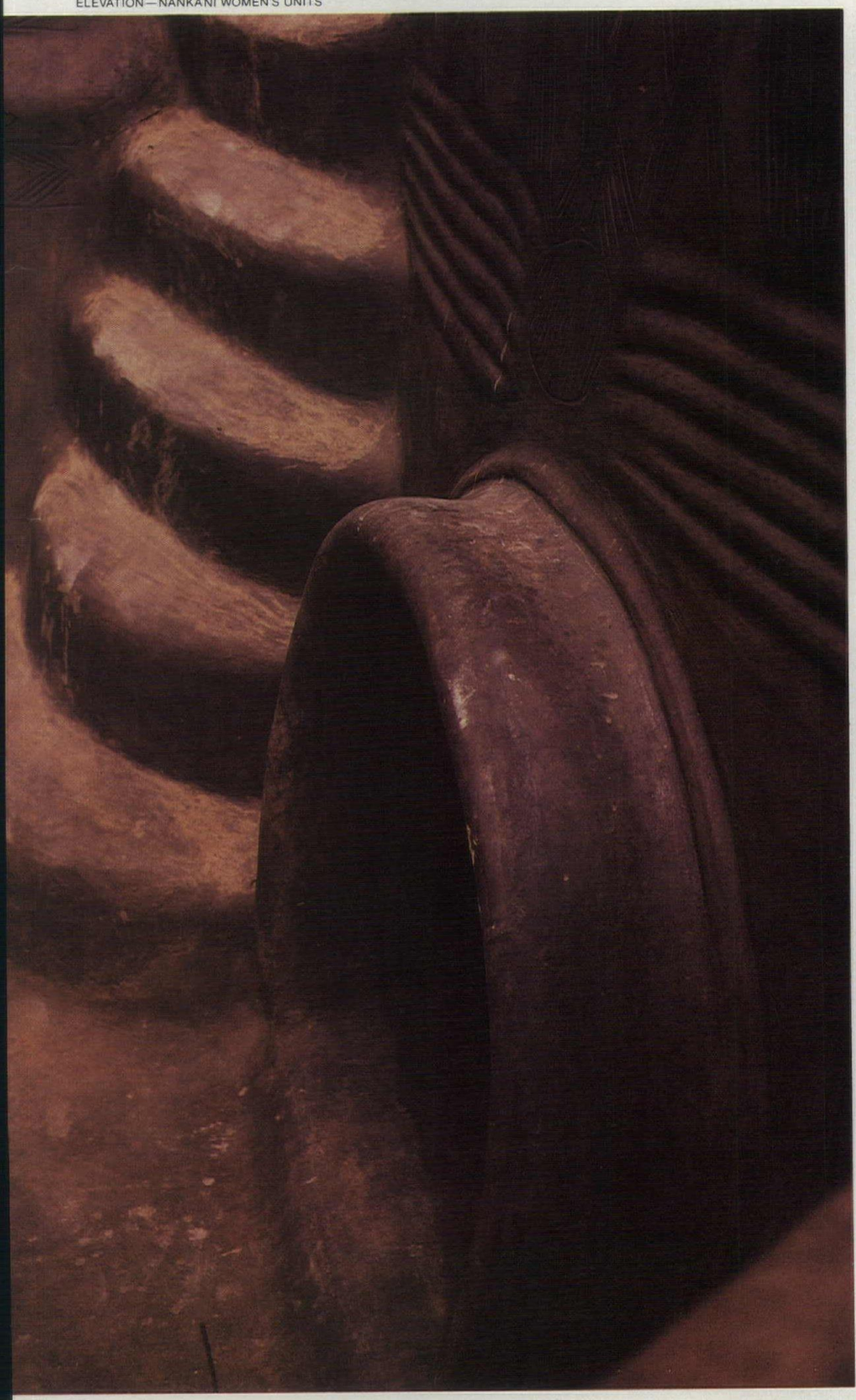
CUTAWAY AXONOMETRIC—NANKANI WOMAN'S UNIT

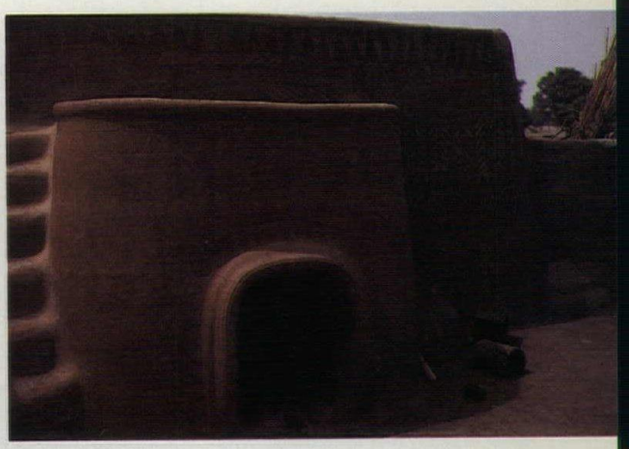


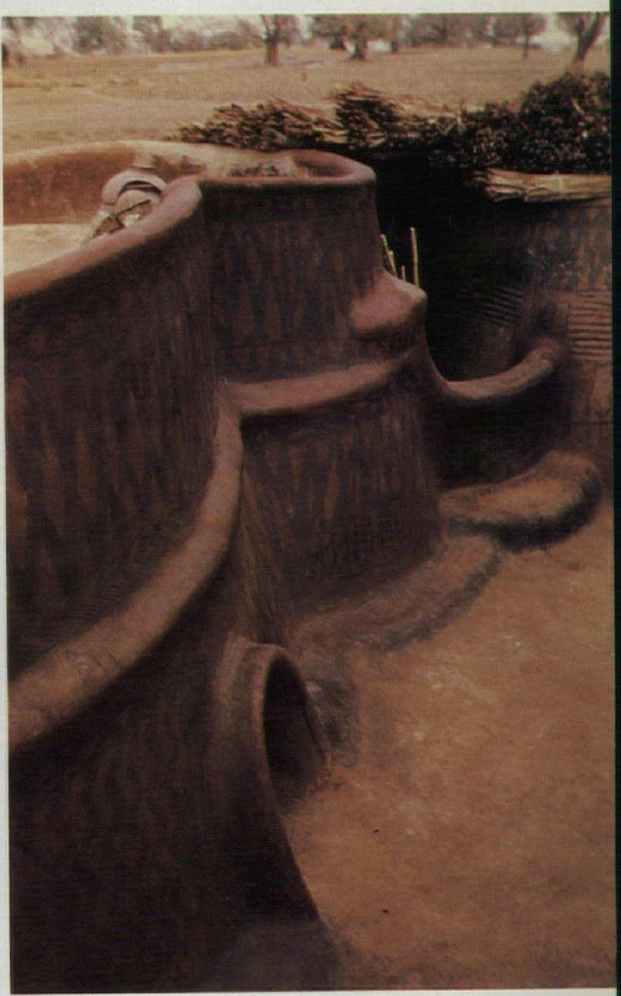


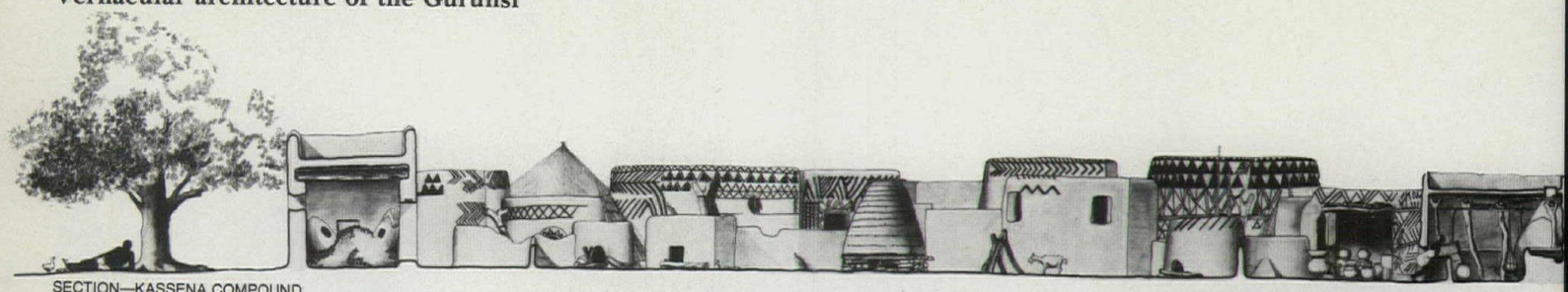


ELEVATION—NANKANI WOMEN'S UNITS









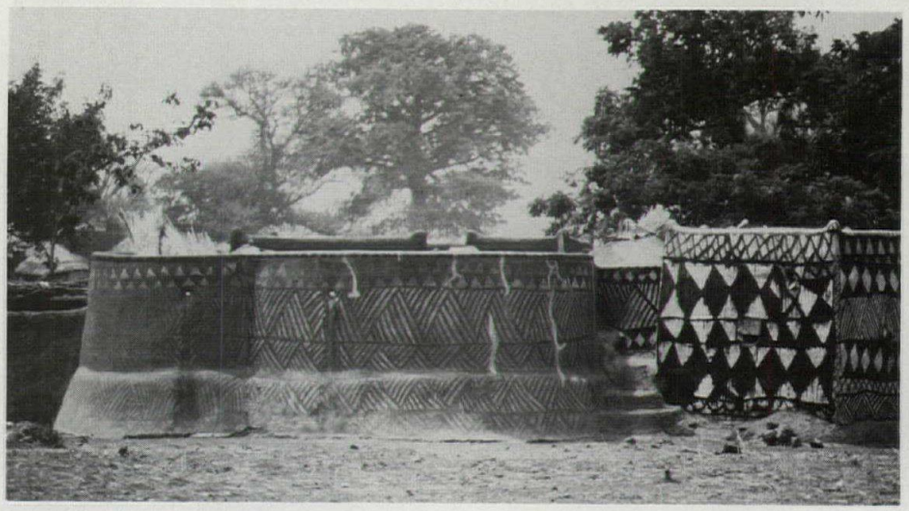
SECTION—KASSENA COMPOUND

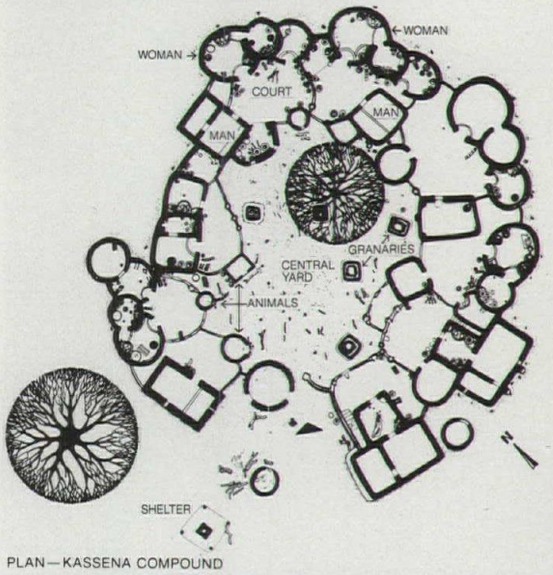
the partial or complete destruction of some and their renovation with imported materials.

In most African societies, and more particularly among the Gurunsi, maintaining one's house is part of the rhythm of life; the dry season—during which no farming takes place, for example—is regularly devoted to refinishing and mending walls and roofs. Maintenance of the house by the whole family—or the entire village in the event of a fire—also serves as a social regulator: It strengthens the cooperative spirit, stimulates creativity, and performs an educational function. A house in these societies is not merely an enclosure to live in, but an environment to live with. It acknowledges the inevitability of decay and assumes that space containment is a means to an end, and not an end in itself.

The introduction of new materials triggers the need for training and specialization indispensable to their use and maintenance. The replacement of adobe by concrete blocks and corrugated metal roofs gives the illusion of permanence, but the long-range consequence is the dissolution of a way of life. The villagers give up their autonomy by becoming dependent on a chain of production beyond their control: the transportation of material, the service of the master builder for the construction, and the need for wages to acquire the money to meet the overall cost.

The last requirement accounts for the depopulation of the countryside and the spread of what Ivan Illich calls planned or "modernized poverty." In the dry season, the villages are left populated only by old people, middle-aged women, and children; in the ab-

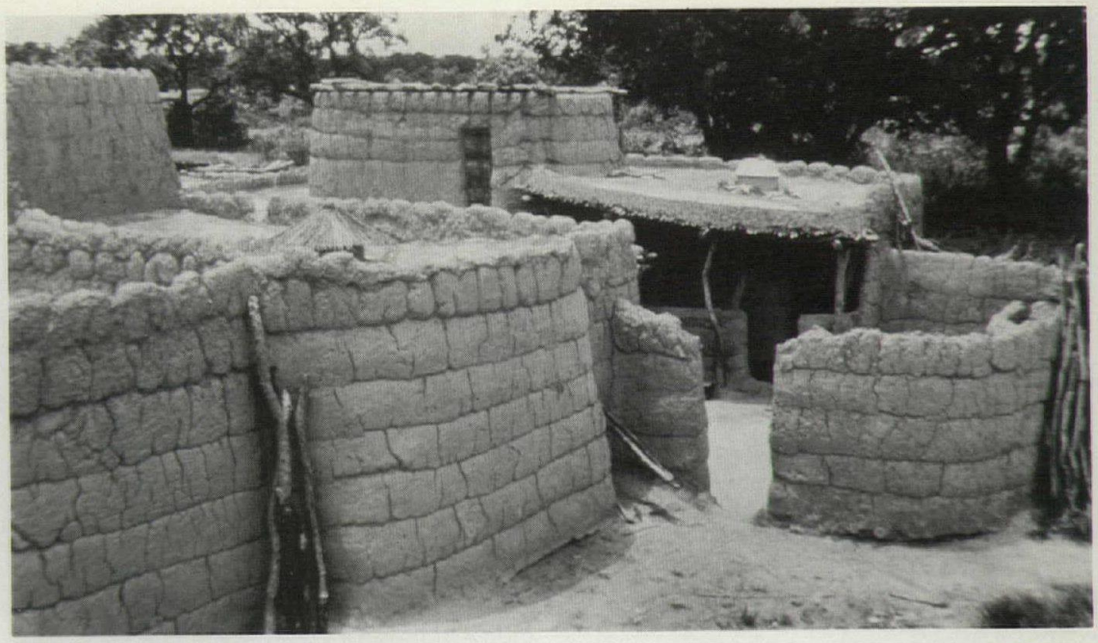


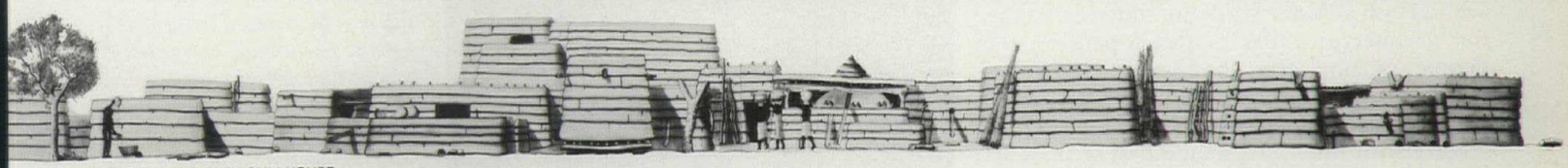


PLAN—KASSENA COMPOUND

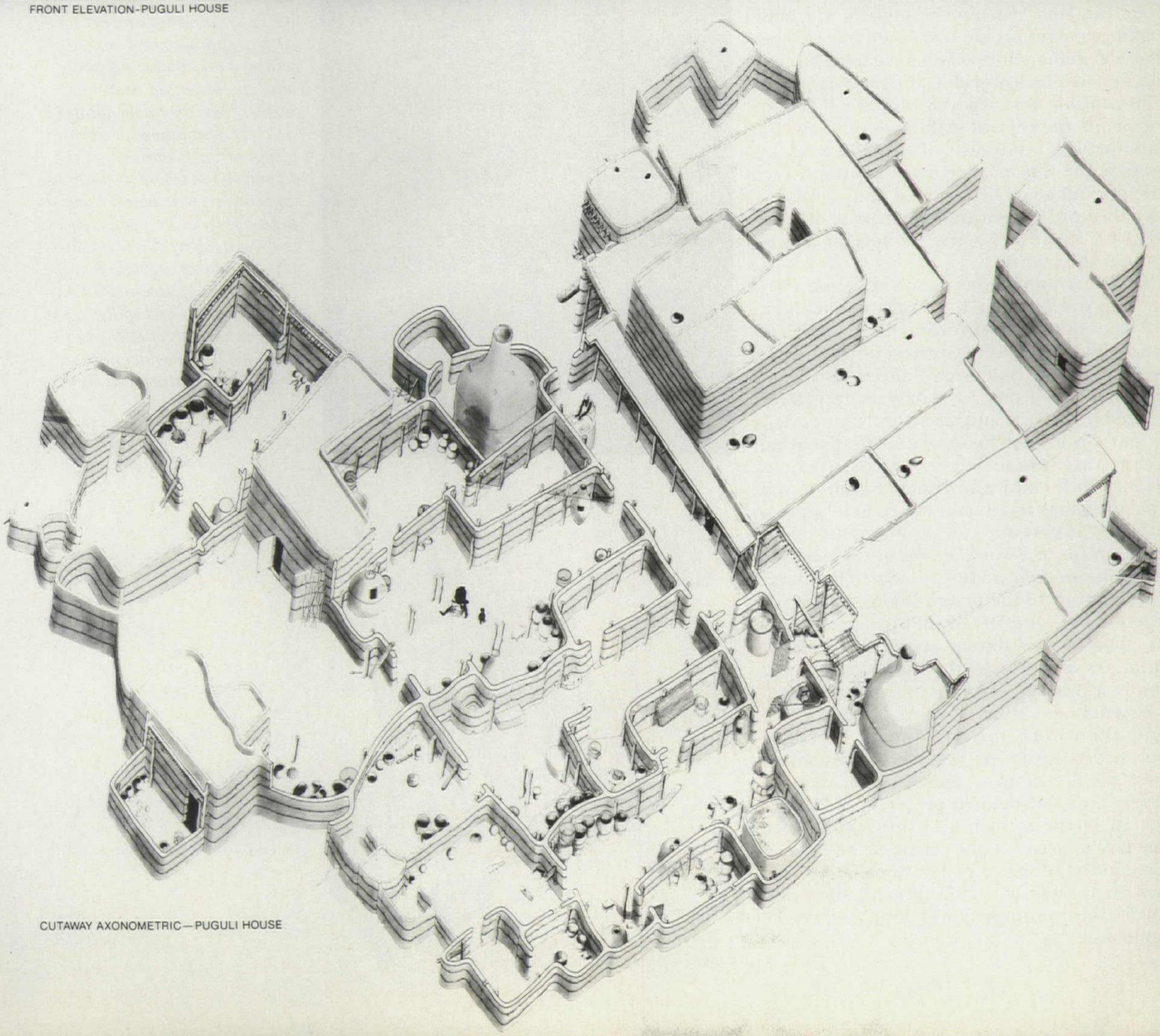
Kassena: *Plan of a compound illustrates layout principles common to many of the Gurunsi: quarters for eight couples (husbands descending from same male ancestor) surround central cattle yard with adobe granaries. The senior male is stationed during the day under a light shelter in front of compound entrance. Each household has a tamped outdoor court, separated from shared yard by walls two to three feet high. Each household plan reflects that of the compound at smaller scale, with man's unit (photo bottom left) at its entrance facing woman's unit. Special provisions allow women to observe without being seen (right end, section above): a low semicircular wall inside the low entrance ensures privacy, protects from rain, wind, and animals, deters thieves, and lays emphasis on the act of entering the woman's realm. This arrangement once allowed an occupant to throw an arrow at an intruder's leg while safe from counterattack. Kassena structures show evidence of recent evolution toward square plans. For exterior ornament, more durable but coarser asphalt (right in photo above) is replacing the traditional coating of ground black schist.*

Puguli: *Post-and-beam structure allows for free arrangement of nonbearing walls, which are built of adobe in horizontal layers. Axonometric shows unique central entrance corridor giving access to several units (center of drawing) and separated by undulating walls that form subspaces on both sides. Location of the senior male space in a second-story penthouse (axonometric and elevation) allows surveillance of territory and signals position to visitors.*





FRONT ELEVATION-PUGULI HOUSE



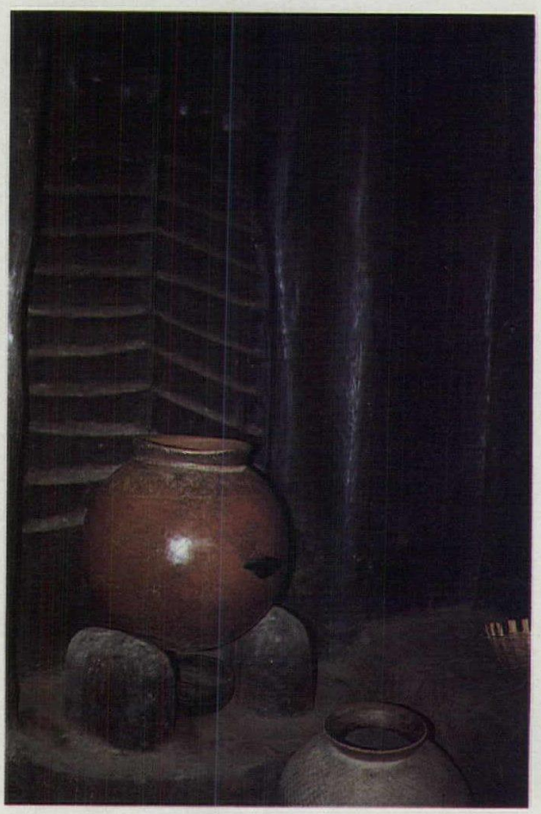
CUTAWAY AXONOMETRIC—PUGULI HOUSE

sence of important young male labor assistance, they are compelled gradually to abandon their traditional ways of building and maintenance. As durable material appears on the scene, neglect of the house becomes commonplace. On the one hand, it is more difficult to keep handmarks, cooking smoke, or other stains from appearing on whitewashed walls than on dark varnishlike or sand-earth colored walls. On the other hand, people do not have the same feelings about purchased as they do about self-made objects; the sense of creativity and responsibility is not at issue when housing becomes a consumer mass-product. Not having participated in the process of their making, people expect houses to last without being cared for, and since maintenance involves more costs, it is usually overlooked.

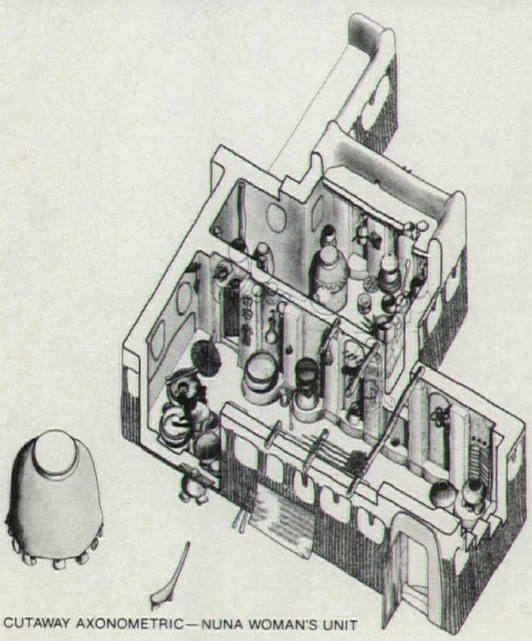
The following photographs and drawings are part of a larger study intended as a plea for architecture that is developed by the people beyond the confines of industrial wares and materials. We are now aware of the problems associated with cement. Fuel, which accounts for one-third to one-half of production cost, and machinery imports are both making cement prohibitive, when one realizes that 500 million houses will have to be built in the non-Western world in the next 15 years. The enormous transportation costs of fuel to the plants and cement to the sites will also be a considerable hindrance, if cement is to be used as the universal remedy. Furthermore, the long-range environmental and social disequilibriums will naturally be irreversible, as we can already observe in several places around the planet.

Breaking away from such a situation does not necessarily suggest a return to tradition; nor does this study of forms and functions in the architecture of the Gurunsi people aim at preserving the traditional houses and their inhabitants as if they were only artifacts to be studied by experts and gazed at with wonder. It may be urgent to record a disappearing architecture whose wealth of constructions belongs to a culture in rapid transition and which remains widely unknown. Our general intent is, however, to retrieve the value not of tradition for its own sake, but of the people's autonomy in their traditional way of building.

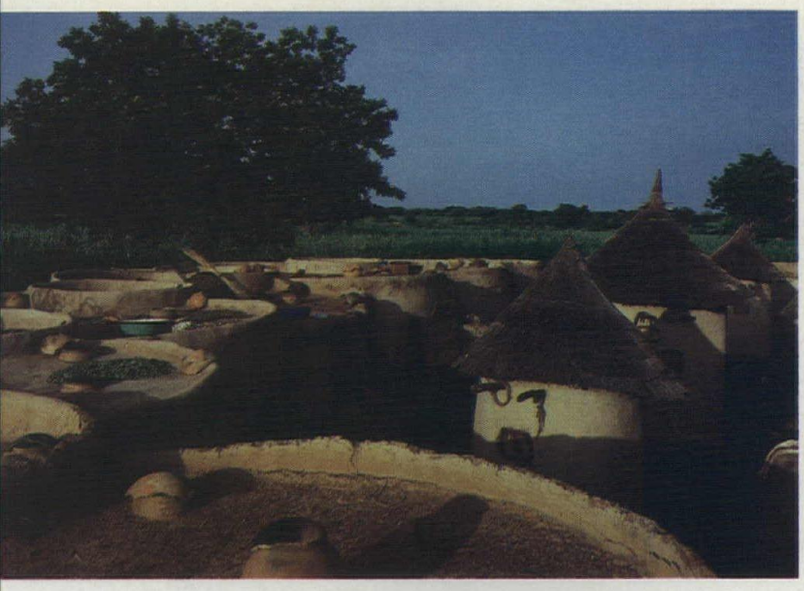
In contrast to the platitudinous and sterile repetition of some of our industrialized housing, these houses display an infinite range of variations on a theme, the theme here being simply a practice carefully transmitted from one generation to another to provide not a rigid framework for conformity, but basic tools for creativity. Its flexibility leaves ample room for life to grow, and its limits depend largely on a self-defined preference. Consideration of the elements of this architecture may give us access to the accumulated experience and wisdom of generations, a wisdom that challenges our conceptual habits and calls for the reexamination of our present environment. □

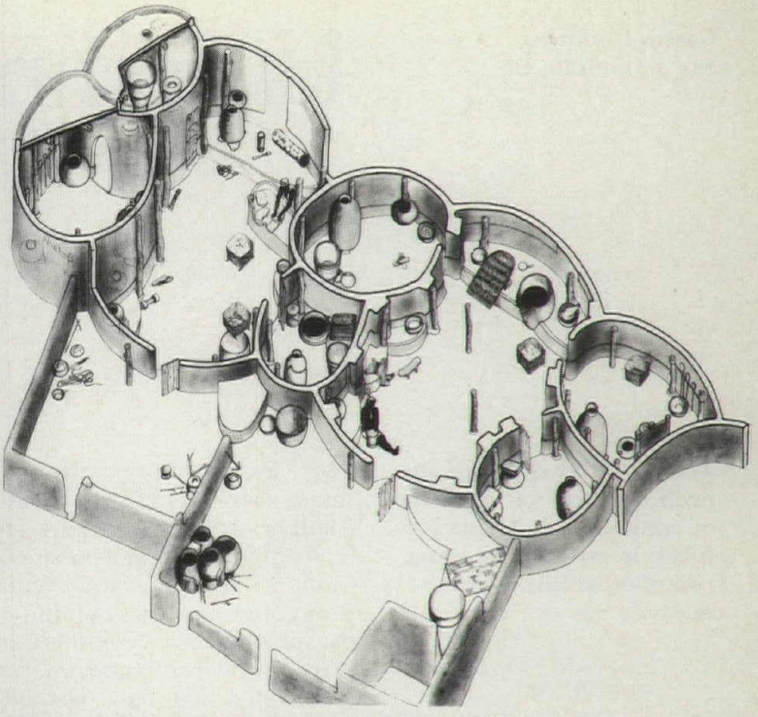


Nuna: *About 30 independent women's units like that in drawing may be grouped in a compound. Location of entrance to one side allows varying degrees of light and privacy—and varying activities—along length of unit. In the lighter portion, visitors are welcomed and activities such as spinning and basket-weaving take place; sleeping mats can be placed nearer or farther from door depending on need for ventilation. A similar layout serves the privacy of the second space, where food storage and cooking take place. Furnishings of interior are wall alcoves and storage jars. View of water jar (left) shows vegetal varnish coating that protects walls and floor from dust and spills. V patterns on exterior of adobe walls, made with corn cobs, adorn it and protect against rain damage.*



CUTAWAY AXONOMETRIC—NUNA WOMAN'S UNIT





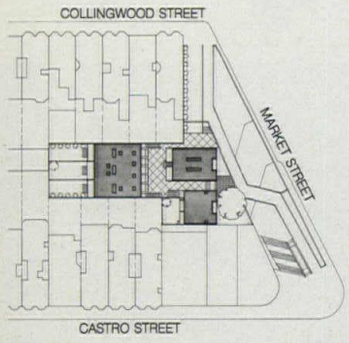
CUTAWAY AXONOMETRIC—ADJOINING UNITS FOR TWO LELA WOMEN

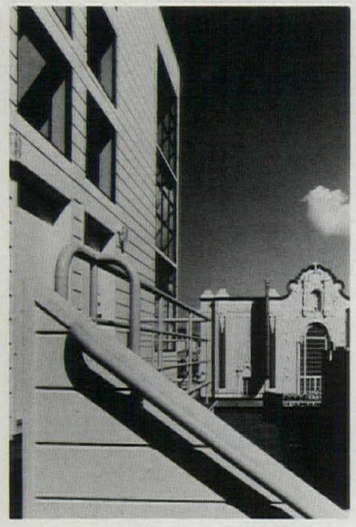
Lela: *A compound may be formed of 20 women's units, two of which are shown in the drawing. Access is through a shared cattle yard and individual tamped courts (lower left in drawing). Each unit has a space for fish smoking (upper left in drawing) and another for food storage and adobe granaries. Very few parts have single functions: family activities may move to the open court or indoor spaces depending on season. Interlocking plan expresses relation of these two women, who are sisters. A post-and-beam structure allows for thin walls—economical of material and labor—reinforced by cylindrical, honeycomb layout. Curved adobe benches along inside of walls (middle left photo) are carved remnants of ground level after a foot of earth is removed to make tamped roof. Recessed floor allows less wall area to be exposed to sun. Benches, used for seating or shelves, keep walls and columns above dampness in case of seepage. Cooking area has prescribed, energy-efficient arrangement (middle right photo): cooking pot rests on three points—on fire wall at rear and on two pots flanking fire, one for bathing water and one for warming leftover food; ashes are stored behind the wall for use in exterior white paint. Patterns of white paint on exterior of compound (photo above) are explained as "just ornamental"; the white deflects some heat and the potash repels ants. Dark vertical strips below gutter holes are reinforced with gravel and coated with vegetal varnish for water resistance. Some Lela compounds have high adobe granaries (right) on which can be seen characteristic V patterns that break up rain flow to minimize erosion and speed subsequent drying of surface.*

Castro Common,
San Francisco, Ca

Uncommon solution

Tempered by difficult site problems and various kinds of context and alternative lifestyle issues, a housing complex handles them easily.



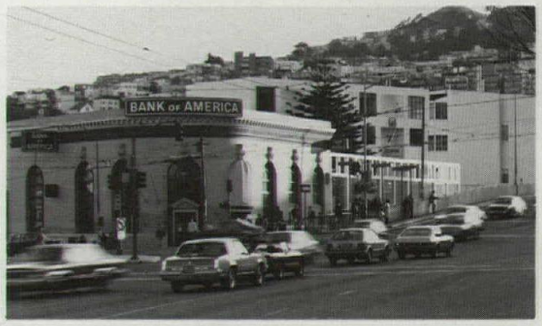


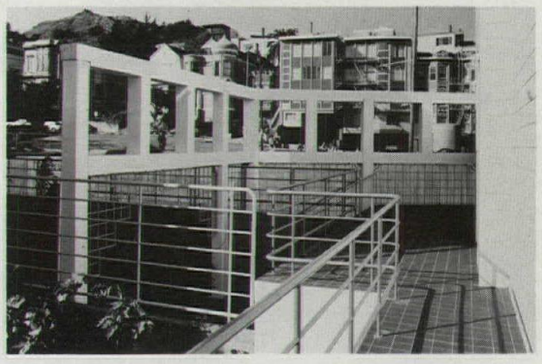
By the scale of its elements, its mid-block spaces, and its clapboard siding, Castro Common recalls typical neighborhood experiences of San Francisco. Fencing and entry steps (right) leading to the central court provide territorial layers and visibility from the street.

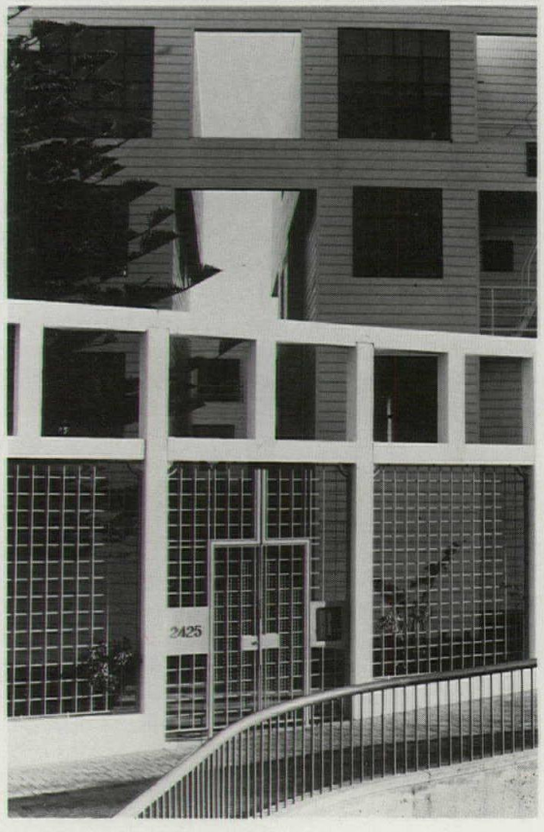
San Francisco remains in most visitors' memories—despite the relatively recent onslaught of highrise towers—for its delightful rows of houses and its cosmopolitan combination of culture and California lifestyle. Longtime advocates of these characteristics, architects Daniel Solomon and Paulett Taggart have considerable interest in the historic principles that have shaped San Francisco (P/A Jan. 1979, p. 106, and Oct. 1979, p. 54). In addition, San Francisco has seen the growing influence of both community groups and the gay population. Castro Common, named for the Castro Neighborhood, is a response to all of these factors, and to certain site constraints as well.

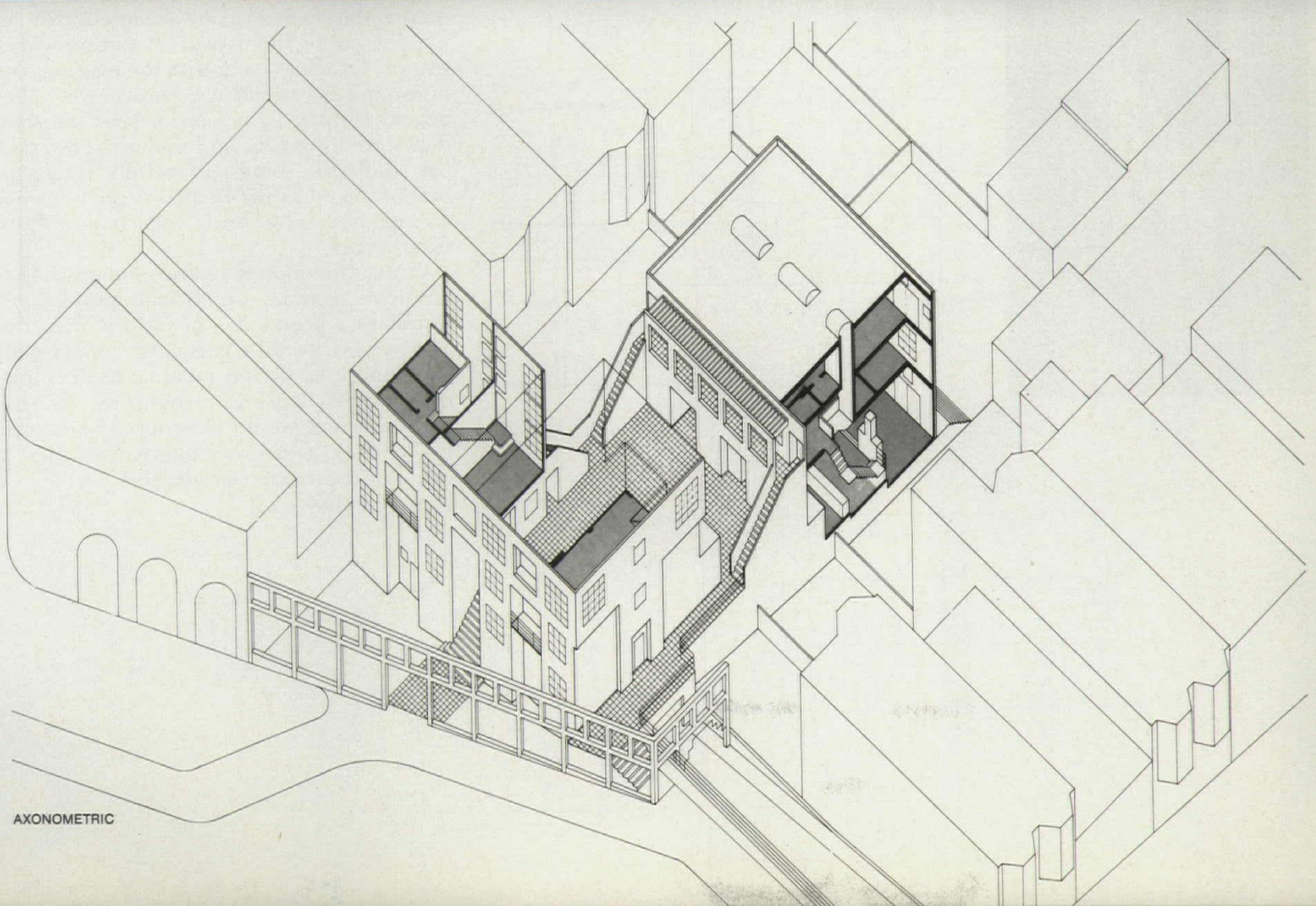
According to the architects' research—credited to Anne Vernez-Moudon of The University of Washington—San Francisco's consistent grid and the indifference of that grid to the topography on which it is imposed, were the result of an 1837 survey by John Jacques Vioget. This Swiss engineer from Chile applied the Spanish measurement of blocks based on a unit called a vara. A vara was 2 ft-9 in., and blocks were 100 x 150 varas, which translates into standard San Francisco blocks of 275′ x 412.5′. When English measure superceded the Spanish in the 1850s, the standard 10-vara lot was usually rounded off to 25 ft, the characteristic width of San Francisco rowhouses. In the 1850s and 1860s, land speculators introduced smaller scale alleys and courtyards into blocks that today comprise some of the city's most valued areas.

While this pattern held until the early 1960s, pressure for land aggregation, parking provisions, and code standards for fire safety and light submerged considerations for street continuity. Things began to deteriorate as preservation groups brought intense pressure to bear, and the Planning Commission introduced interim zoning in 1973 that instituted severe density and lot coverage limitations. In 1978, planning legislation (developed from a study in which Solomon played a primary role) was passed that took



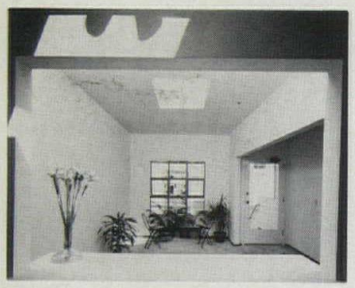


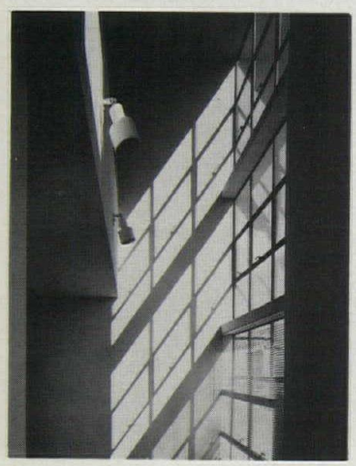


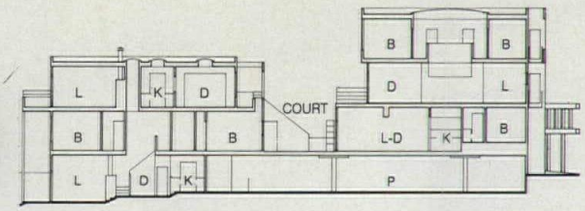


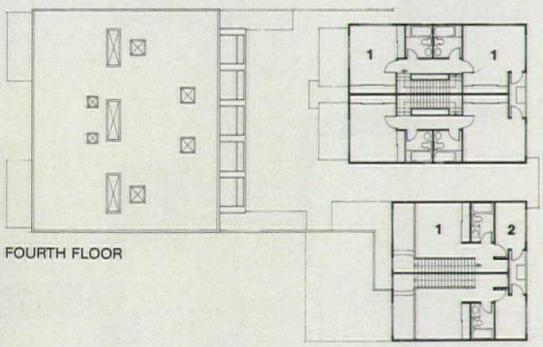
AXONOMETRIC

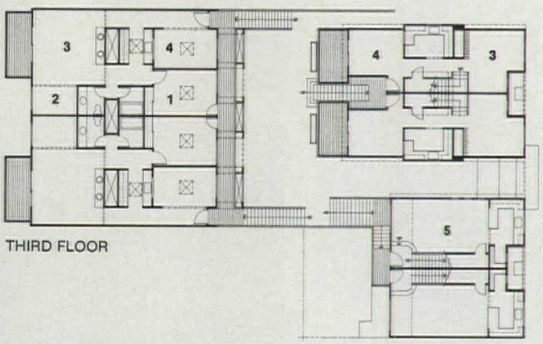
Entered from the court, many units have two-story spaces; generous daylight and views of either the courtyard or the neighborhood prevail.



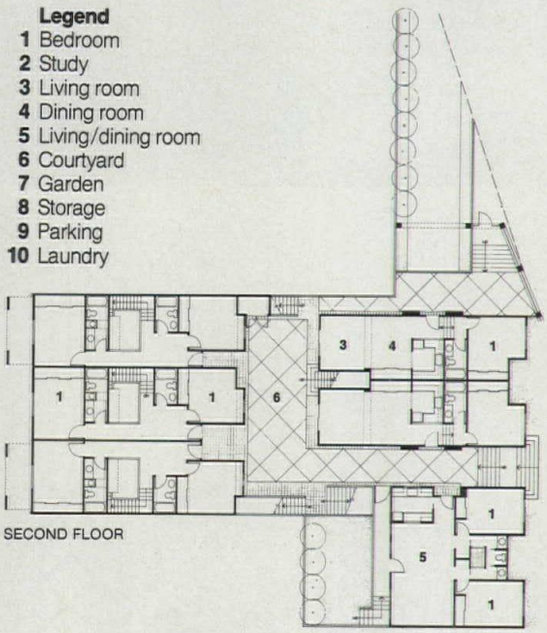


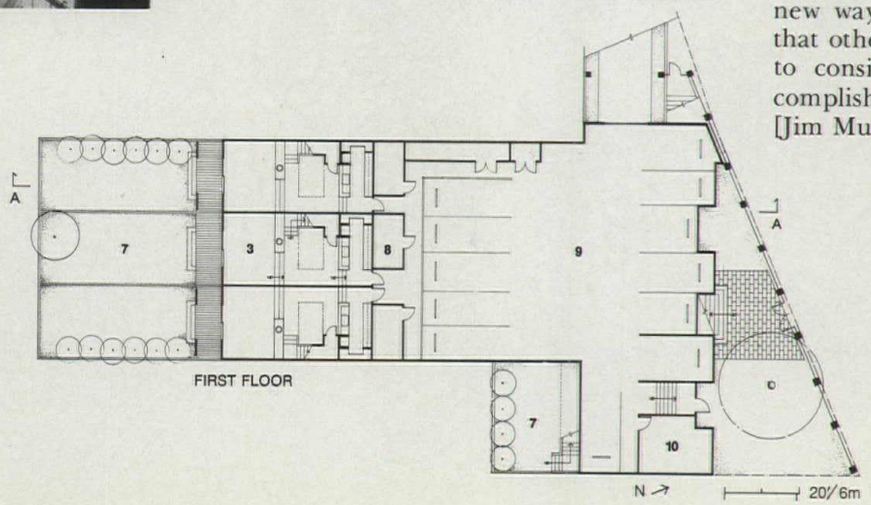






Legend
1 Bedroom
2 Study
3 Living room
4 Dining room
5 Living/dining room
6 Courtyard
7 Garden
8 Storage
9 Parking
10 Laundry





the position that typology, not density and coverage, was the correct concern. The legislation permitted deep buildings where they do not block light to surrounding buildings and reimposed the original 25-ft grid on larger buildings, among other things.

Castro Common represents the deep building concept, introducing a courtyard with private entrances to the tandem blocks of units. There are 12 units, averaging 1050 sq ft, most with two-story spaces, fireplaces, and private open space. The complex was designed principally for occupancy by gay people, reflecting the predominant population in the neighborhood. The larger two-bedroom units have two master bedrooms and two equal baths, and were intended for purchase by two single people, with privacy for each. This allows gay couples with separate moderate incomes to purchase city housing which, if designed with standard floor plans, would have cost much more to accommodate the particular life patterns.

In addition to these considerations, the site is irregular and difficult. Access, both vehicular and pedestrian, is limited by the new Market Street Subway and Market Street itself; parking areas can be entered by only one narrow point on the west end of the site. Immediately east of the complex is an area described by the architects as "a thriving, sometimes raucous, gay commercial" district. West of the site is an older residential neighborhood of white clapboard houses. Security and compatibility with the older houses weighed heavily in the design of Castro Common.

The prominent gate and fences combine with the buildings to form "permeable layers," allowing the court and passages leading to it to be visible from the street. Spaces on the Market Street side are intended to enrich the public space of street and subway entrance. To achieve a fit with the existing older housing, the architects chose white clapboards and the light interior layers of stairs, decks, trellis panels, and railings. The resulting midblock court successfully recalls the best of a typical San Francisco phenomenon, an intricate and intimate collection of spatial experiences.

Castro Common is an uncommonly fine solution to a series of difficult problems. It combines a keen sense of historic precedent with sensitivity to a particular modern lifestyle, and it forms a contextual bridge. It is a new way of housing, recognizing a market that otherwise would be ignored and forced to consider expensive alternatives. Its accomplishments are considerable.
[Jim Murphy]

Data

Project: *Castro Common, San Francisco, Ca.*
Architects: *Daniel Solomon, Paulett Taggart, Architects; project assistant, C. John Long.*
Client: *R.O.A. Corp.*
Site: *irregular 12,400-sq-ft parcel bounded by a major thoroughfare with subway entrance; a commercial district is adjacent to the east, and a residential area to the west.*
Program: *12 units averaging 1050 sq ft, each possibly to be sold to two independent single people with privacy for both.*
Structural system: *concrete block garage with concrete floor and ceiling, wood framing above.*
Mechanical system: *electric heating.*
Major materials: *fence, concrete columns, and 12" x 12" wood beams; white clapboard siding; metal pipe rails, gates, fence.*
Consultants: *landscape, Max A. Schardt; structural, Schaff, Jacobs, Vinson, Inc.*
General contractor: *Shannon Construction.*
Costs: *$1.2 million; $75 per sq ft, unit only.*
Photography: *Jane Lidz.*

Foxhall Crescents, Washington, DC

Learning from Bath

Carleton Knight III

Bath or Levittown?—a developer, homebuilder, citizen action group, and architect Arthur Cotton Moore build a subdivision in the nation's capital with individual price tags up to $700,000.

The first 26 homes of Foxhall Crescents are now completed and selling well—for cash. The architecture is influenced more by historicists such as Robert Stern or Alan Greenberg than the "styles" selections more typical of developer housing. Fragments of English Palladian, American Georgian, 1950s Modern, California contemporary, and other oddments are combined, often as appliqué, to signal various messages of respectability or cost-efficient flexibility.

Carleton Knight III is *Progressive Architecture*'s Washington correspondent.

1600 Pennsylvania Avenue may be the most prestigious address in Washington, DC, but the houses three miles away on Foxhall Road are not far behind. The residents along this street, which winds uphill from the outskirts of Georgetown to Wesley Heights, are among Washington's leading movers and shakers. This is the stablest of neighborhoods in a city noted for its transient population, and the residents observe with mild bemusement the ebb and flow of various administrations.

Their good life was shattered several years ago when one neighborhood resident, tired perhaps of Washington and having been dumped as President Ford's running mate, decided to sell his property, one of the largest undeveloped parcels of land remaining in the city. Nelson A. Rockefeller had purchased the 25-acre estate in 1939. When the neighborhood discovered that developers Rozansky & Kay, who had paid Rockefeller $5.5 million for the estate, planned to bulldoze the heavily wooded property into a checkerboard subdivision of up to 150 houses, they vowed action. It did not matter to them that the houses were to be in the $350,000 price range.

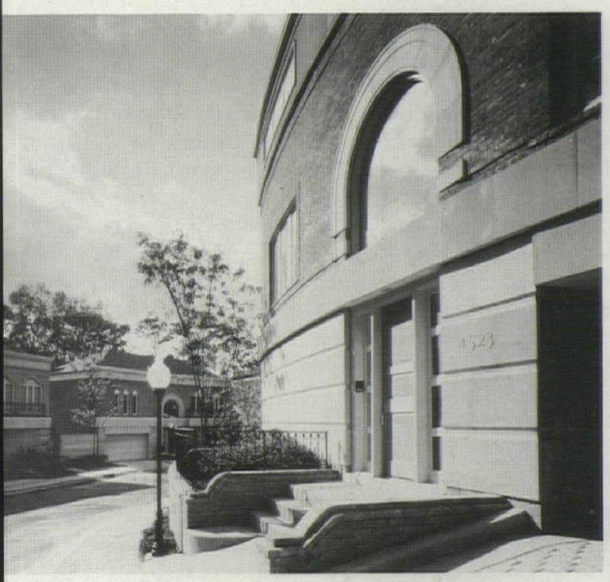
The Coalition for Planned Environmental Development led the opposition, fully using the neighborhood's considerable clout in the city. The developers, sensing trouble, reversed course and commissioned Washington architect Arthur Cotton Moore to prepare a new site plan. Moore was experienced with citizen groups, from protracted battles on the Georgetown waterfront.

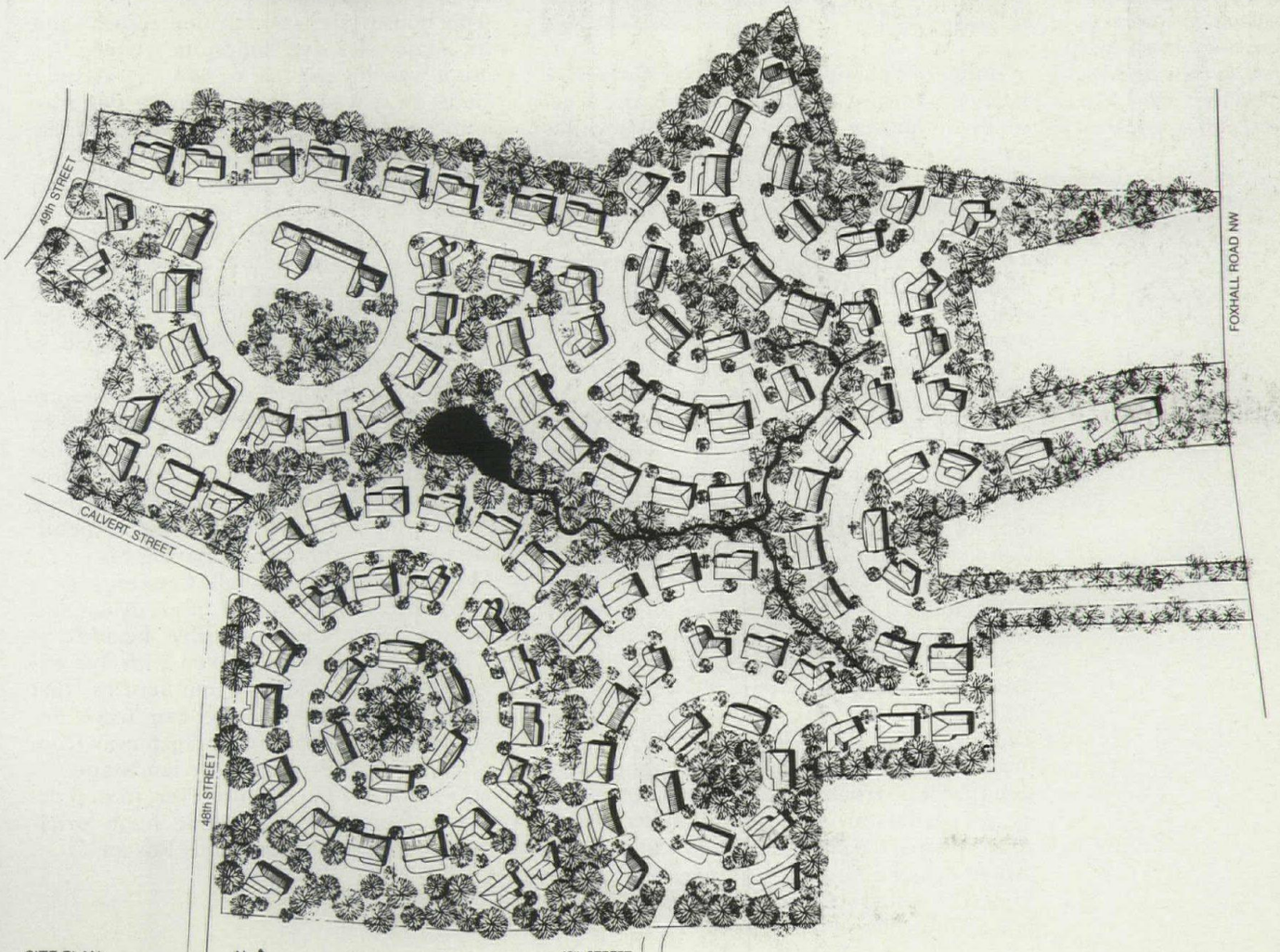
The Coalition, assisted by architect Richard Ridley, eventually negotiated a unique 20-page agreement with the developers that spells out in detail such things as the number of trees that may be cut down and later replaced, how the project must be phased to preserve the natural drainage runs, the amount of land that may be graded, and the installation of a 30-ft band of trees at the project perimeter. And significantly, the agreement specified that architect Moore would be the arbitrator of all disputes.

The major reason the residents approved the development was Moore's plan. The area

has the least dense zoning in Washington—7500-sq-ft lots with minimum 8-ft side yard—and parts of the site are too steep to build on. Cluster zoning is permitted but the developer did not wish to ask for the necessary variance, which would have opened the project to further legal (and neighborhood) review. Moore devised a scheme that uses shallow-depth houses stretched out to the minimum side yard and linked by fences to create visual clusters. These clusters are then curved to follow the natural slope of the land. There are to be four nonconnected clusters of approximately 30 houses; each cluster has a single street access in an effort to minimize traffic and maximize security. The design permits the crescents—they have been likened to the Royal Crescent at Bath, England—to become construction corridors that concentrate disruption and leave 30 percent of the land undisturbed. The plan, in addition to satisfying neighborhood desires, also meets the requirements of the developers by permitting the sale of the maximum amount of land. Lot lines, for example, run down the middle of the streets (a homeowners association will maintain the common areas).

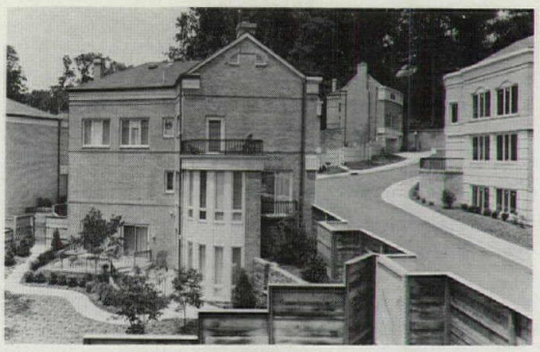
Once the Rockefeller estate with one rambling mansion on 25 acres, the development will fit 120 houses of 4000–5000 sq ft each, set cheek by jowl in arcs along the contours of the site.

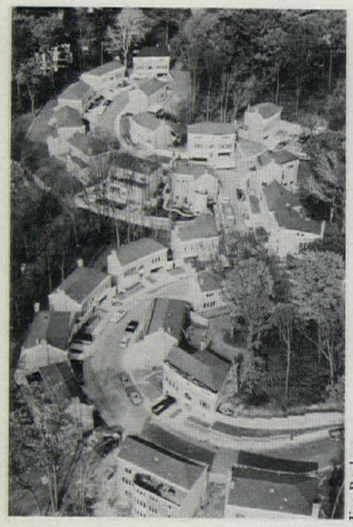




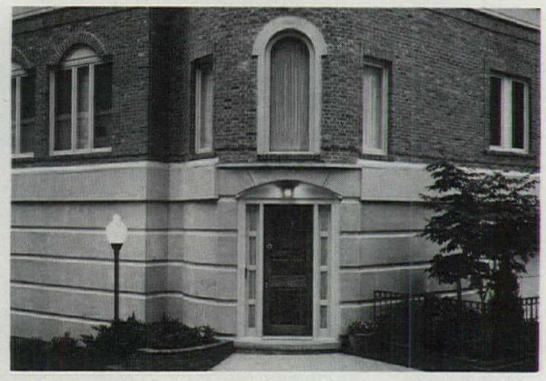
SITE PLAN

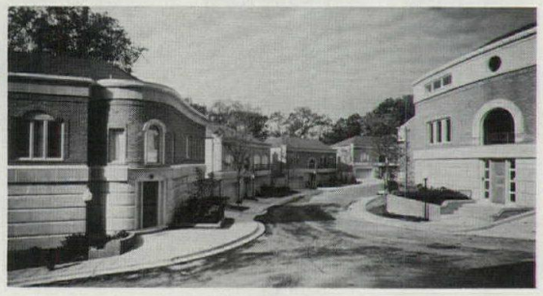
Foxhall Crescents, Washington, DC





Jim Berkon





Moore designed layouts for seven different models, though interior detailing was done by the builders. The models share certain exterior elements in an attempt to provide an overall unity to whatever personal touches might be added by the buyers. Above: the one completed section seen from the air.

Builder William M. Crowell (of Crowell & Baker) calls these the "Rolls Royces and Mercedes of houses," adding that $50,000 was spent on a boxed brochure for prospective buyers to take home and review. These luxury residences of up to 4000 sq ft contain spiral staircases, elevators, spacious living, dining, and family rooms, three or more bedrooms, and up to twice that many baths, as well as having house numbers carved in stone.

"The sense of an expensive house on a small lot" was one of the design goals given to Moore. Another was that, due to the site plan, there would be no service alleys; all houses would be front-loaded with two-car garages. (Moore also had to fight off the builders' early idea of filling each lot with a reproduction Colonial, Tudor, Georgian, or French Provisional [sic] mansion.)

He wanted to avoid the look of what he calls "lots of shouting architecture," desiring instead a sense of unity because the houses would be so close together. Moore contends that nothing like this has been seen in the United States since Radburn, NJ, except perhaps in public housing. He sought a system that was strong enough to retain this unity, yet permit inevitable permutations such as coach lamps, curtains, and door knockers as owners customized their homes. Recalling Robert Venturi's Guild House in Philadelphia, Moore says, "Some resident can put a plastic plant in the window and not make an ass out of the building."

So it is with the houses at Foxhall Crescents, which in just a few months are already taking on individual looks. Moore's design is a contemporary adaptation of the classic tripartite façade: rusticated basement, *piano nobile,* and attic/cornice. There are historical allusions to motifs by Serlio and Palladio in what turn out to be seven different models, each designed to respond to a different site condition. The façades are concave or convex, depending on location, and the corner houses at the beginning and end of each crescent are turreted. Wooden fences, which look very cheap, link the houses and hide service meters and trash receptacles.

(It should be noted that Moore's work on this project was limited to a site plan, layouts for the seven models, and the design of the façades. He had no say in the interior detailing or finishes, and it shows.)

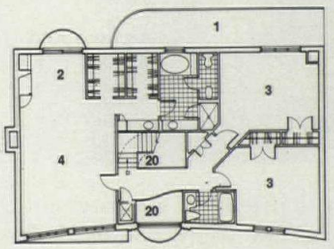
In designing the façades, Moore rejected what he calls "Post-Modern gingerbread" because he thought it would date them. "Lattice and appendages would not wear well with a sense of solidity and dignity," he says. At the front of almost every house is a two-story assembly of arched window and large door with sidelights. This strong statement is intended to compensate for the relatively modest foyer inside. The repetition of the front façades contrasts sharply with the private, rear façades, which relate to the plan of each house. Curved window walls, terraces, and balconies predominate.

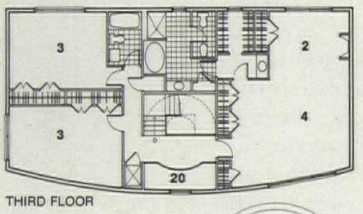
The houses are wood frame construction with a tan brick and limestone veneer. Because it was not possible to hang a limestone cornice on a wood frame, Moore designed one to be composed of carved wood panels. The builders rejected this on grounds of expense, according to Moore, and created one instead out of extruded polystyrene panels covered with a sandlike texture to resemble stone. The fasciae between the rusticated basement and the *piano nobile* are also made of this plastic combination. In addition, the driveways are made of concrete stamped to look like cobblestones.

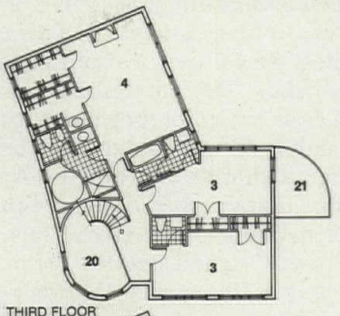
Despite the corner-cutting, the houses are moving. The builders report 20 of the first 26 built are sold and that construction on the next crescent is starting. Prices are now $450,000 to $695,000 and, notes Crowell, the owners, who range from princes to politicians, are for the most part paying cash.

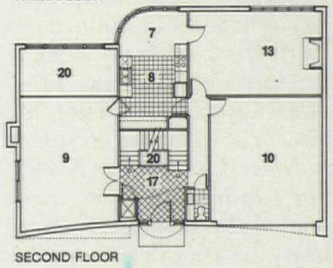
Moore describes Foxhall Crescents as a "suburban problem treated in an urban and rural way." It should be possible, he adds, to "use this plan anywhere, even with less expensive houses." Moore emphasizes that "Citizen groups everywhere can force developers to do a better job and get away from the mindless patterning of the landscape."

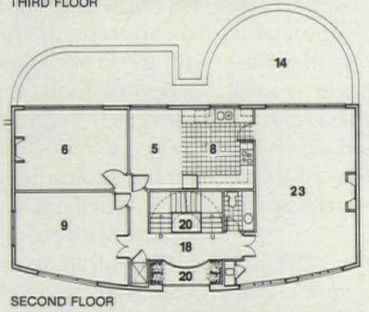
He's right. It's harder, however, to stop developers from affixing plastic hood ornaments to their residential Rolls Royces. □

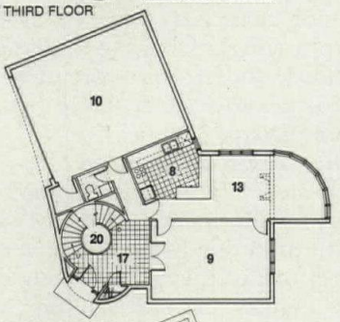


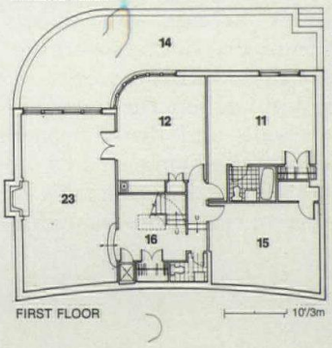


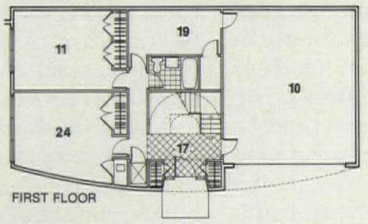


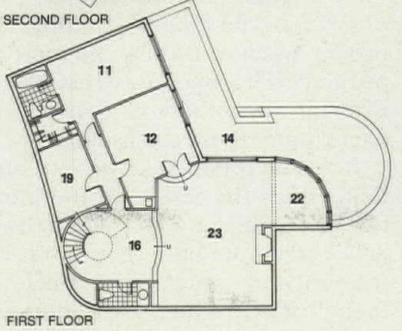












1 Roof **2** Sitting area **3** Bedroom **4** Master bedroom **5** Eating area **6** Library/Family room **7** Breakfast **8** Kitchen **9** Dining room **10** Garage **11** Apartment **12** Library **13** Family room **14** Terrace **15** Rec/storage **16** Lower foyer **17** Foyer **18** Upper foyer **19** Stor/work/laundry **20** Open below **21** Deck **22** Conservatory **23** Living room **24** Studio

Data

Project: *Foxhall Crescents, Washington, DC.*

Architect: *Arthur Cotton Moore Associates, Washington, DC.*

Site: *25 steeply graded, heavily wooded acres with a rambling mansion.*

Program: *120 single-family detached houses ranging from 4000 to 5000 sq ft. Engineering and interiors by builder.*

Structural system: *wood frame with wood truss roof, reinforced concrete block foundation.*

Major materials: *exterior—brick and limestone veneer, exterior insulation on fiberglass and polystyrene. Asphalt shingle roof. Interior—gypsum board walls, oak floors (see Building materials, p. 129).*

Consultants: *EDAW, landscape.*

General contractor (builder): *Crowell & Baker.*

Cost: *withheld by builder.*

Photography: *C. Maxwell Mackenzie, except as noted.*

Dixon residence, Venice, Ca

Floodlit fortress

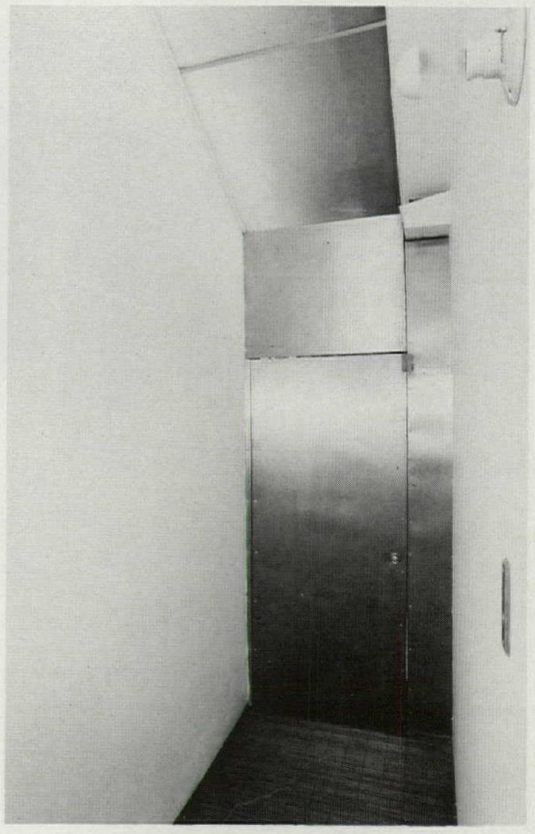
A serene, light-filled house by Brian Murphy maintains a low profile in a high-crime neighborhood.

From the outside, it's not much to look at. A tiny frame house, its front door and twin picture windows covered with asphalt roofing material, sits next to a graffiti-covered, stucco bunker on the corner. Only the steel gate between them signals their connection, but only those who have a key can investigate further. The gate opens to reveal a narrow, 12-ft-long entrance court, with a skylight roof, and a floor of aluminum grating over a bed of white gravel. At the end of the entrance are two stainless steel doors, without knobs, accessible only by key. The one on the right reveals the bunker to be a photographer's studio; the one on the left reveals the mystery behind the dilapidated shingle and fake-brick exterior: an interior that virtually explodes into light, with graceful proportions, sparse furnishings, and an almost Oriental sense of propriety and discipline. It is this contrast between severity and serenity that Los Angeles architect Brian Murphy sought when he remodeled an existing house and grocery store in Venice, Ca, for fashion photographer Philip Dixon (the store became Dixon's studio).

The reason for the secrecy—the shabby, windowless façade, the steel gate and doors—is simply that Murphy wanted to call as little attention as possible to a new house in what is one of the rougher neighborhoods of Los Angeles. There are no windows, no doorknobs, no hinges—nothing that could be broken open or into by the most enterprising burglar. The openings that do exist in the exterior are so narrow that no human being could squeeze through them.

It is this fortresslike quality of the outside that makes the inside all the more remarkable. In the living room, structural expression is honed to the bare minimum; the ceiling is triangulated with fine steel cables and turnbuckles, reducing the notion of "beam" to the essence of tech. Light enters the room through a skylight, baffled for security, and an opening at the far end of the room. Made of gypsum-board-wrapped studs and two layers of frosted glass, it frames an industrial concrete fireplace crowned with a jagged piece of translucent, unpolished onyx. This arresting mantelpiece is God's own version of New Wave rip-and-tear, a seductive graphic image rendered in three dimensions. A low coffee table made of two-by-fours and wire glass, to echo the form of the skylight, is, save for a couple of pillows, the room's only piece of furniture. A pair of "in" and "out" doors (stainless steel and knobless, of course) offer the sole access to the deck and backyard.

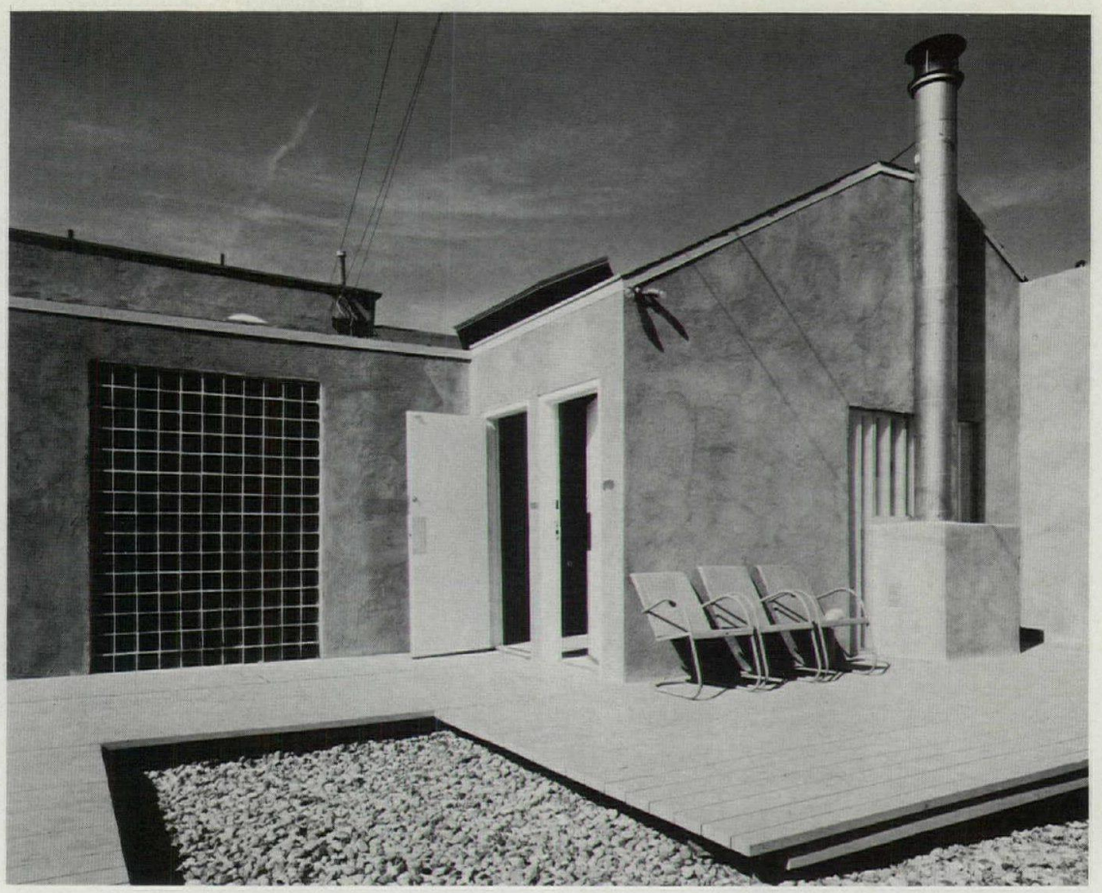
The skylit dining and kitchen areas are defined by punctured walls and flying beams that separate them from the living area without closing them off entirely. A dining table is fashioned from three concrete cylinders, kiln

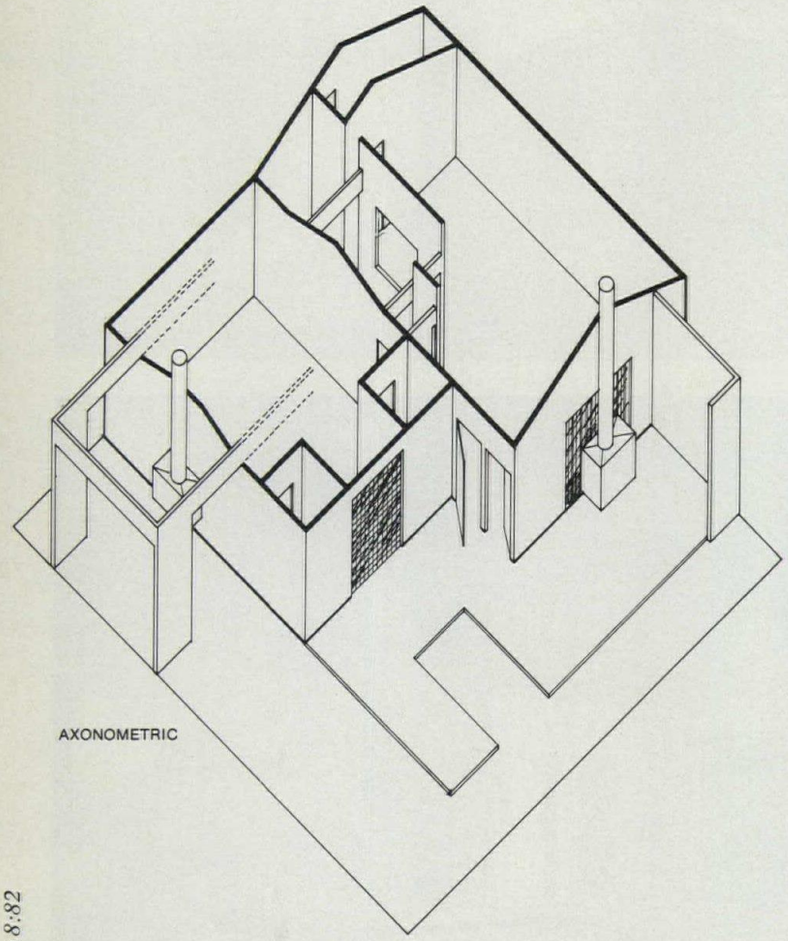


The original façade of the house (above right), with door and windows covered and graffiti untouched, deliberately calls no attention to the house behind (a corner of the client's adjoining studio is visible at right). The living room, however, explodes in light (facing page, top) that is admitted through skylights and a cutout in the wall, which frames a fireplace adorned with a jagged piece of unpolished onyx. "In" and "out" doors lead to the deck and backyard. Beams are reduced to their bare essentials, in the form of thin steel cables and turnbuckles. A rear view of the house (facing page) shows the shear panels of the strongback beams that hold up the ceiling of the bedroom at left.

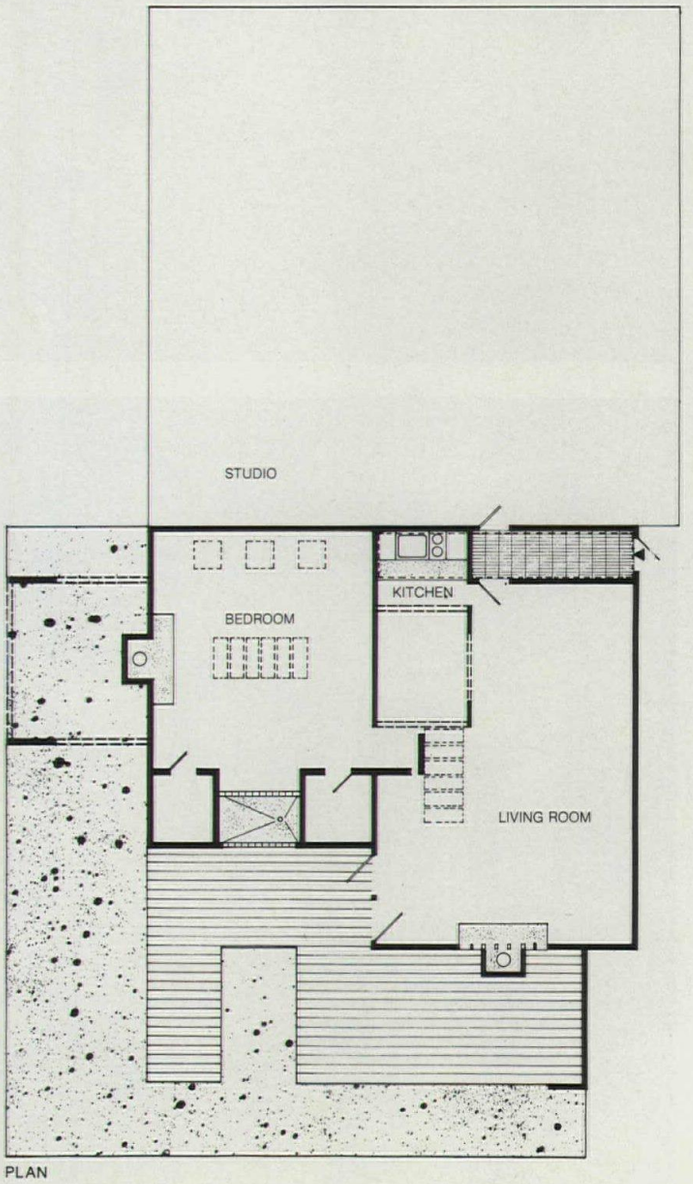
Dixon residence,
Venice, Ca

The exterior view and axonometric (this page) show how the glass-block cutout in the bedroom wall is echoed by the cutout in the deck outside. Skylights in the bedroom, living room, and kitchen (above the appliances) admit profuse amounts of light to an essentially windowless building; the long skylights in the bedroom and living room are baffled for security. Walls and beams frame the dining area (facing page, top); the painting over the dining table is by Pat Patterson. In the bedroom (facing page, middle), the strongback beams on the roof allow the pitched ceiling to float without visible means of support. Opposite the concrete-framed bed, a glass-block bathtub (facing page, bottom) is illuminated by the glass-block wall cutout.

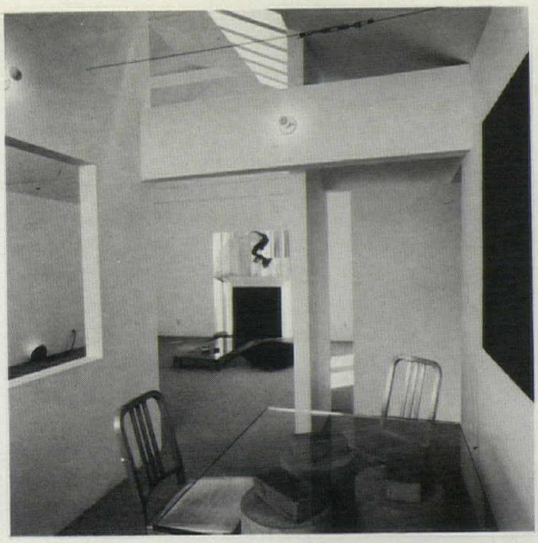




AXONOMETRIC



PLAN

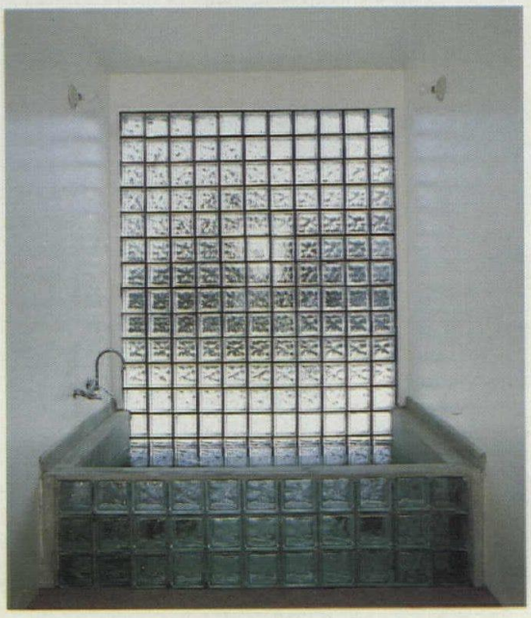


bricks, and a sheet of glass. Dining chairs are standard-issue, 1940s office models, stripped down to the aluminum.

The bedroom is also light-drenched, thanks to another baffled skylight, with multiple white surfaces that increase the amount of reflected light admitted into the room, and three chambered skylights over the bed. The pitched ceiling hovers weightlessly overhead, with no visible means of support. Murphy accomplished this apparent structural sleight-of-hand by employing a textbook solution—that of the strongback beam, which "hangs" the ceiling by carrying the load out beyond the exterior walls, enabling the architect to remove two bearing walls in the bedroom. The beams (there are two) become flying buttresses. Their shear panels are pulled away from the exterior to remove any possible hiding places for intruders; the two panels are joined by a box beam to prevent racking. "The structural engineers loved it," remarked Murphy. On the floor, a cast-in-place concrete curb frames the tatami-mat bed—its shape reflected in the glass-block-filled wall cutout opposite, which forms the back of the glass-block bathtub. A black metal, catalog-order fireplace, set into the wall over a concrete hearth, is raised just high enough to be seen from the bed. The only "furniture" is a concrete bedside table with jagged, rusty edges that strike just the right note of discomfort in a bedroom that manages to maintain a precarious balance between the Spartan and the sybaritic.

Outside, symmetry dictated the repeated use of the bed and bathtub shape for a cutout in the deck, which is skirted in gray gravel—the architect's extension outdoors of the minimalist, Japanese quality of the interior. The backyard is shielded from view by several varieties of pine and cedar trees.

For all its uncompromising toughness on the outside, the inside of the Dixon house is equally uncompromising, offering a portrait of a client whose ideas of domestic comfort run essentially to shelter and light. After visiting this house, anything more seems excessive. [Pilar Viladas]



Data

Project: *Dixon residence, Venice, Ca.*
Architect: *Brian Murphy, Santa Monica, Ca.*
Client: *Philip Dixon, Venice, Ca.*
Program: *remodeling and expansion of an existing house.*
Site: *a corner lot in a residential neighborhood.*
Structural system: *wood frame.*
Major materials: *wood studs, stucco, gypsum board, skylights.*
Consultants: *Les Fejes and Associates, structural.*
General contractor: *BAM (Brian Alfred Murphy) Construction.*
Photography: *Tim Street-Porter.*

Ireland house,
San Francisco, Ca

Light metal

Sally Woodbridge

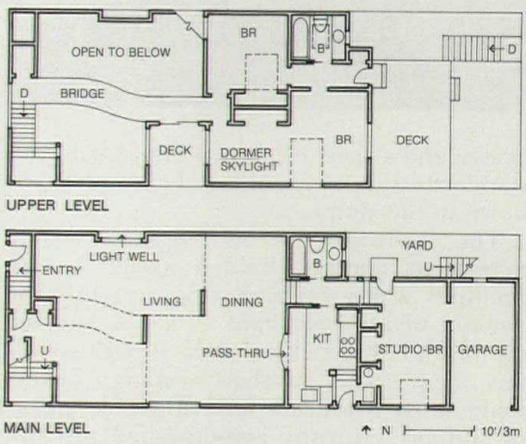
A house built on spec in San Francisco by David Ireland illustrates his ideas about building, and about the fine arts and crafts.

Sally Woodbridge, an architectural historian, lecturer, and coauthor of several books on California architecture, is a contributing editor to P/A.

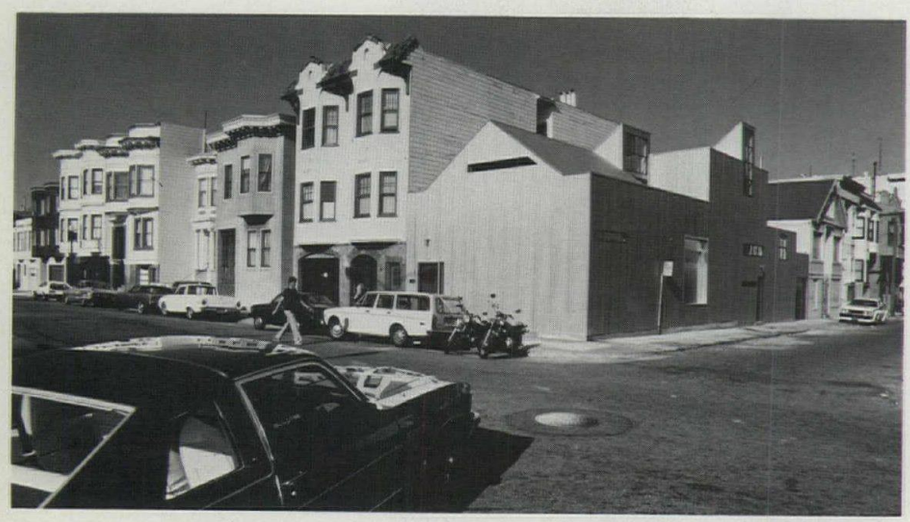
The Ireland house is in the Mission district of San Francisco, a working-class neighborhood being increasingly gentrified (below). The house faces south (facing page top), where light monitors are used both for illumination and for solar gain. There are two upper-level decks, with the larger one at the east end of the house (facing page bottom).

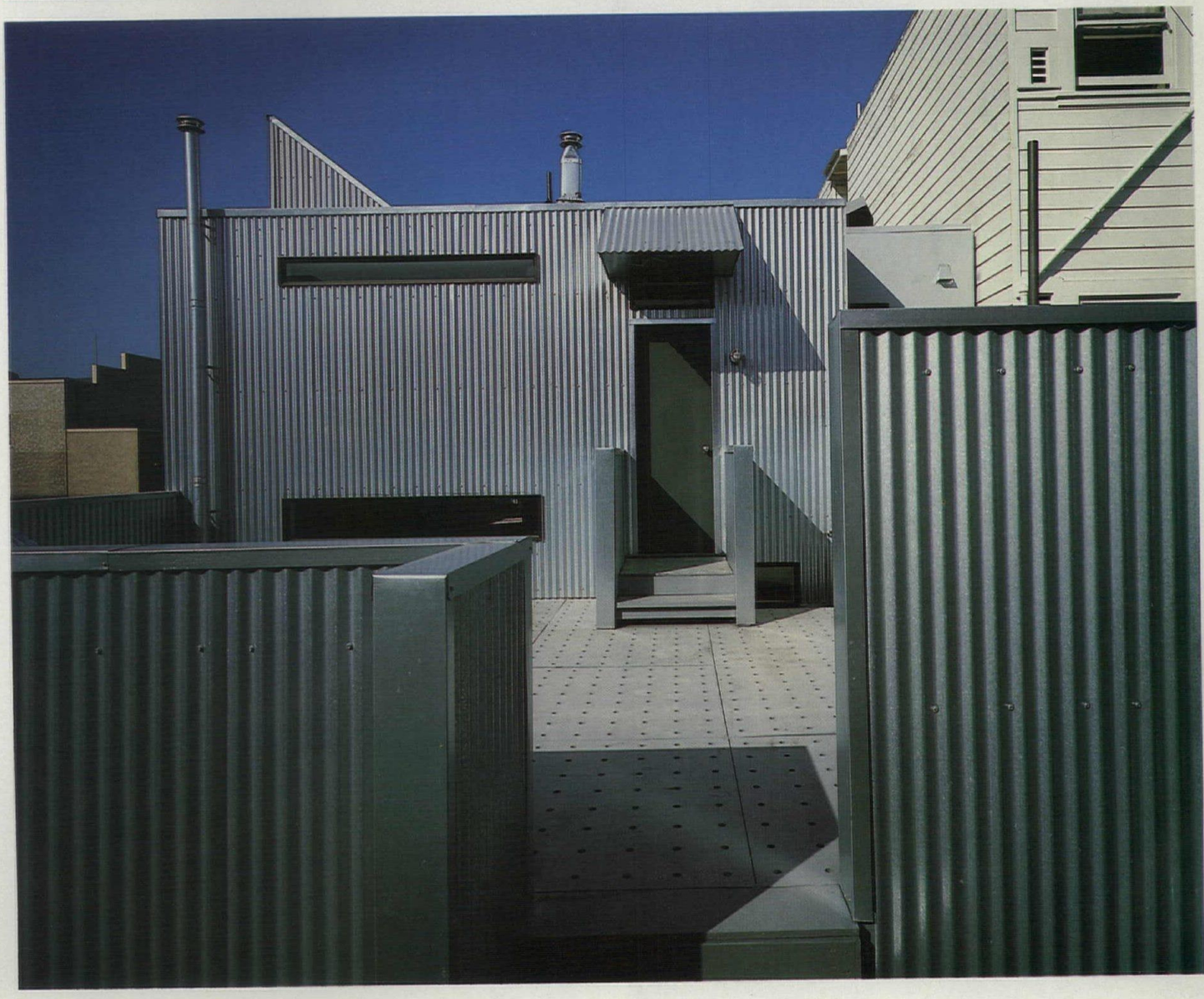
David Ireland does not call himself an architect; in fact, he has no label for himself and wants none. A varied program in Oakland's College of Arts and Crafts in set design, printmaking, and industrial design, plus a Master's degree in painting from the San Francisco Art Institute, provided Ireland with experience and training in fine arts and crafts as well as building skills. Although painting has dominated his long career in the arts, he has also worked in architects' offices in Washington State and South Africa. He has designed furnishings, which reveal both a concern with form and a keen interest in shortening the distance between the idea and its physical expression.

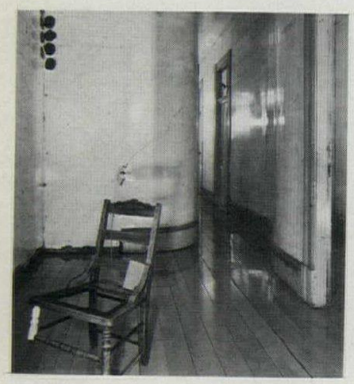
The house shown here was done on spec and came about, according to Ireland, mostly because he had been living down the street for six years and spotted the site as a perfect one in terms of orientation and size for a modest studio house that he could build himself. The location, in San Francisco's Mission district, is rich in historic and ethnic associations. Though increasingly gentrified, the neighborhood still retains its working-class character. It borders on the South-of-Market industrial area, where a mix of residential, commercial, and industrial use well accommodates the simple corrugated metal building. (It should be stated now that Ireland acquired his taste for corrugated metal without any help from Frank Gehry's work in the southland.) Although cost influenced his choice, he was also mindful of the ease with which the metal surface could be cleansed of the graffiti that afflict the neighborhood's buildings from time to time. Mainly, he liked the material's reflective quality and its capacity for being modeled by light, the expression of which has occupied him most in painting and building. Though he did not begin the house as a conscious effort to explore the expressive range of light, after the two-year period of building was over, it was, he says, the quality of the interior light that was his greatest reward.



The plan of the house is both conventional and well adapted to the corner lot. The perimeter follows that of a previous structure that was dismantled except for some portions of the walls, which were incorporated into the new building. The front entrance opens to the main living space with a stair to the upper floor in the corner at one side. Because he wanted a two-story space that could also function as a studio, and because he did not want to sacrifice any of the mid-section of the house for a stairway, the stair crosses from the front entrance to the rear second-floor rooms via a serpentine bridge. The bridge's form comes from Ireland's own house a few blocks away, where in the 1870s a ship's carpenter built an Italianate house with a sinuous wall in the stair hall. (When Ireland purchased the old house in 1975, he stripped the wallpaper down to the plaster, which was mottled, cracked, and patched in a way that reminded him of the concrete paintings he was doing at the time. Rather than give up these complex patterns of time and human use, he coated the walls, floors, and ceilings





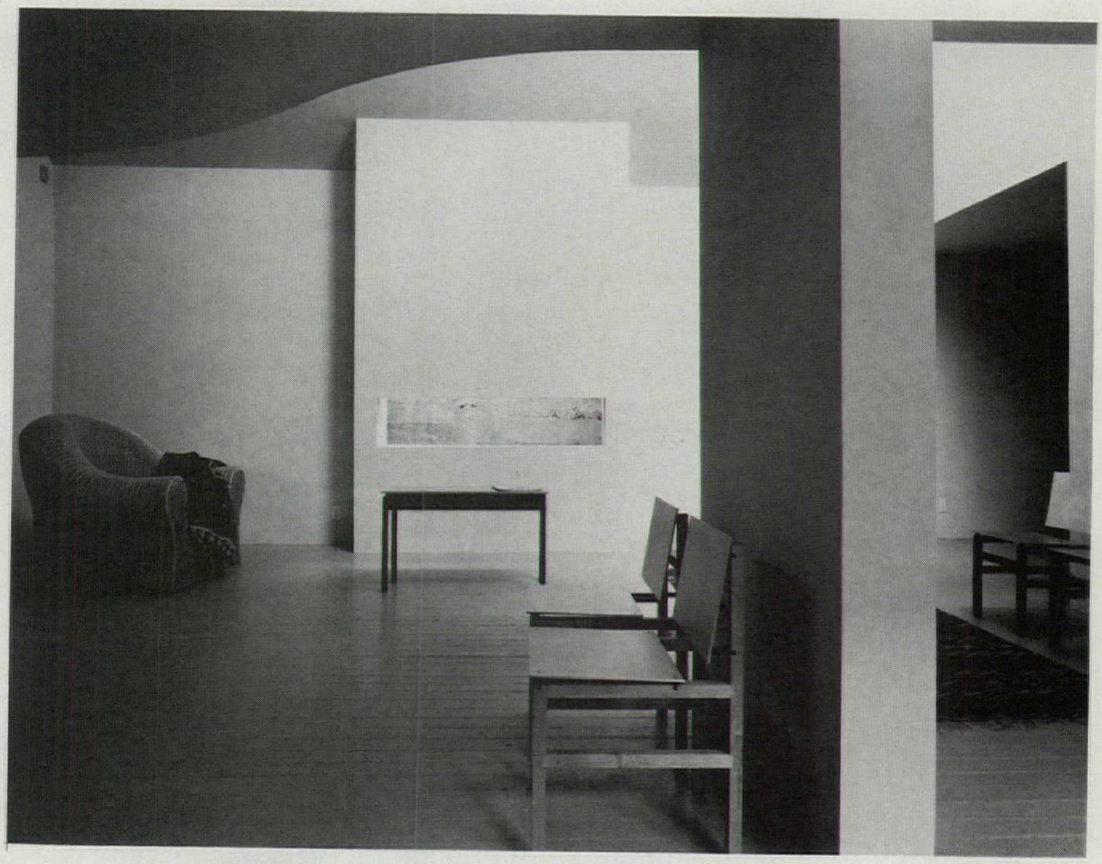


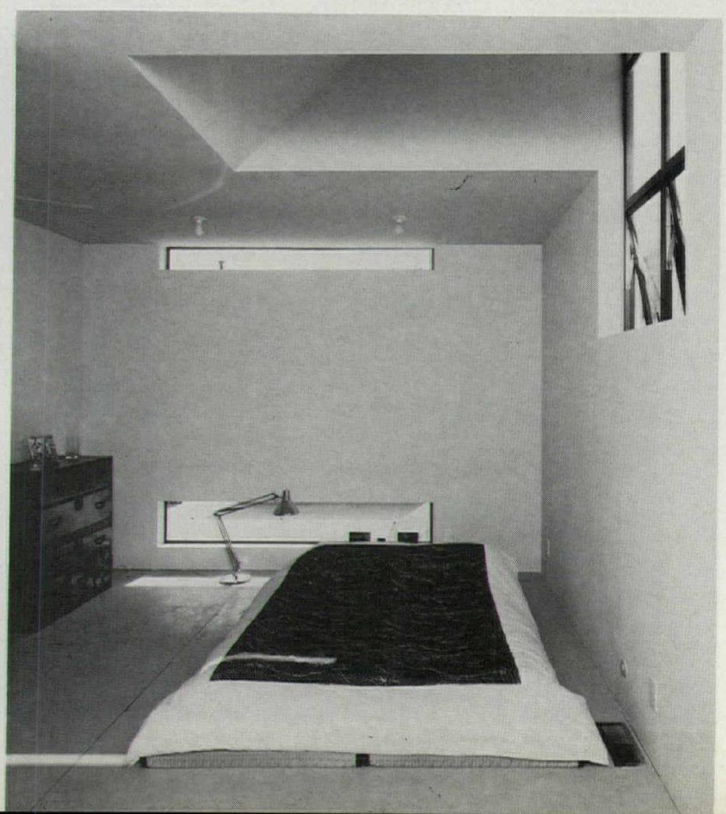
David Ireland lives in an old house (above), where the curving walls provided inspiration for the form of the bridge in the new house (facing page). The straight chairs are by Los Angeles designer Robert Wilhite, as is the hardwood and aluminum-topped coffee table. The monumental roll-back wicker chairs are by Ireland, who had eight of them made while he was in China. The metal base and wood top dining table is by Peter Gutkin. Wall slits, as in the bedroom (below), provide privacy in the urban setting and also give wall space for large paintings on the gray walls.

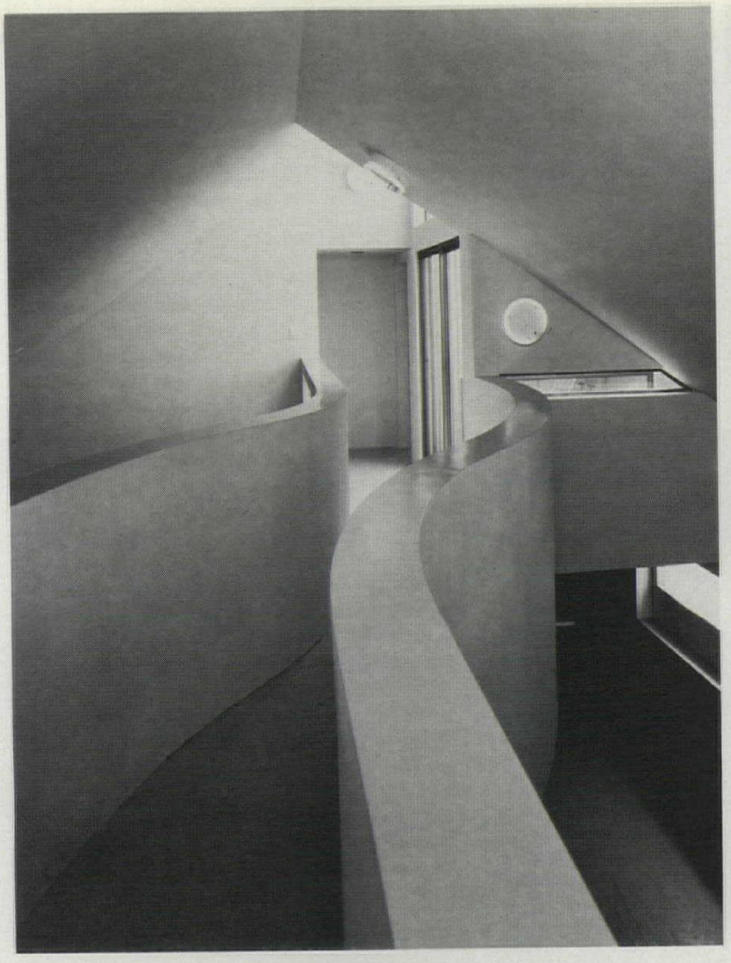
with polyurethane varnish and preserved the interior, as he says, like a bug.)

Because light from a variety of carefully placed sources plays over the gray-painted interior, entering the house is both a soothing and an engaging experience. The raucous outside world is left behind, excluded from this peaceful realm. Yet, Ireland's concerns were not all aesthetic. The two dormers on the south side were placed there for solar gain to reduce heating costs. Beside the need for privacy in an intensely urban neighborhood, the placement of windows for enough wall space in each room to hang large paintings was also a major consideration. To provide such space, Ireland opened up slits in the walls at ceiling and floor levels and left the central areas intact. These windows frame selected views to the outside, and the play of light creates the illusion of a subtle range of grays that changes during the course of the day.

When the house is sold, Ireland will consider another project, but it may not be another house. Just as this house embodies one set of ideas, another set might be better served, he thinks, by a garden. In any case, in this house Ireland has achieved something quite rare in today's architectural scene. Instead of making the house into an object of high art, he has made his art serve life in a rich and reasonable way. □







Data

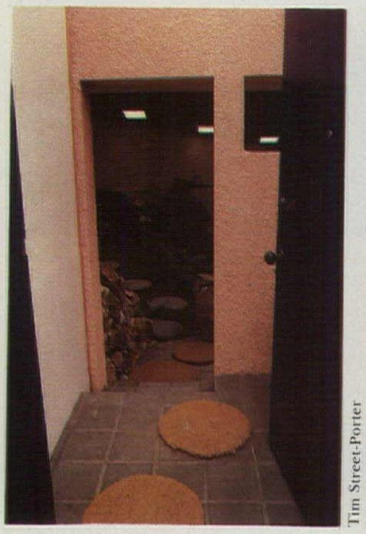
Project: *David Ireland House, San Francisco, Ca.*
Architect: *David Ireland.*
Client: *David Ireland.*
Site: *a lot in mixed residential and light commercial neighborhood.*
Program: *a 2200-sq-ft single-family, three-bedroom, two-story house built on spec.*
Structural system: *concrete foundation, wood frame.*
Major materials: *corrugated metal roof and exterior walls, wood floors, gypsum board interior partitions, anodized aluminum windows (see Building materials, p. 129).*
Mechanical system: *gas-fired hot air.*
Consultants: *Vicky Doubleday of Doubleday/Gutkin, interiors; Bay Area Mechanical Engineering Co., mechanical (heating).*
General contractor: *owner.*
Cost: *withheld at owner's request.*
Photography: *Henry M. Bowles, Jr.*

Johnson house,
San Diego, Ca

Found folie

Sally Woodbridge

A delicious eccentricity from the 1920s—a man-made waterfall and lagoon—is ingested whole in this contemporary San Diego house by Rob Wellington Quigley.



Tim Street-Porter

Round mats lead to round steps (above) leading down the interior hillside (right). Public rooms swing out into the landscape (facing page, top). The architectural vocabulary combines Le Corbusian streamlining (facing page, middle) with Barragán-inspired color. The exterior (facing page, bottom) is almost self-effacing, a structural and mechanical necessity largely hidden by foliage.

Tim Street-Porter

Sally Woodbridge, an architectural historian, lecturer, and coauthor of several books on California architecture, is a contributing editor to P/A.

Of the several forms humans have chosen for their dwellings, the tower and the cave are the most steeped in symbolism. Towers represent aspiration; and grottos are retreats, places to commune with the nether world.

Scott Johnson, the client, is a biophysicist who works with marine animals. His occupation partially explains his attraction to watery worlds. A few years ago he bought a San Diego lot that had been subdivided from a large estate built during the 1920s. In the process of cleaning out the overgrowth, he discovered a rock-walled watercourse, a remnant of the estate's formal landscaping. What began as a chore became an archaeological romance. Upon hiring Quigley as his architect, Johnson told him that he had only three real requirements: total privacy from the neighbors (the subdivision houses are close together), the incorporation of the grotto into the house, and energy-conscious design.

Quigley's inspiration for the relationship between house and internal garden came from the Anasazi Indian dwellings sheltered in the hollow of the rose-colored sandstone cliffs at Mesa Verde. Drawing on this image, Quigley arranged a set of living spaces that are alternately caves and platforms descending the slope beside the grotto. The most private, the owner's bedroom and bath, are at the top while the dining, kitchen, and living areas occupy the middle range. There are guest quarters on a lower level. For the most part these spaces provide a choice between cavelike intimacy and a more open, spectator relationship with the grotto and garden.

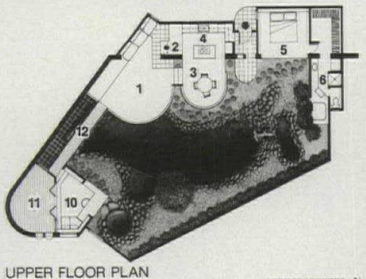
The first practical step in managing this interior ecosystem was to gain a south orientation for the building. This was done by raising the upper section of the roof (by a 6 ft high by 50 ft long stuccoed wooden truss) to permit a south-facing clerestory window running the length of the house. Other windows are small and few. Incoming solar heat is stored in the grotto's dark rocks and the red and rose north wall, composed of stuccoed concrete block with solid grout.

Turbines in the roof exhaust excess heat. In addition, a vacuum active solar system provides pool, domestic hot water, and space heating.

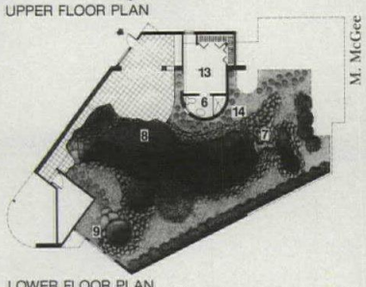
The major problem, however, is not heating and cooling, but control of humidity. Two large vents—the most distinctive visual elements on the exterior—help accomplish this important task. Even so, the interior is finished with waterproof materials and furnished with yard furniture.

The intention on the exterior was to re-create a landscaped form that would suggest, in an inverted way, the former role of the grotto. Though not awe-inspiring like Mesa Verde, this richly colored paradise exerts a lost-world magic that endures after the initial astonishment of its discovery has passed. □

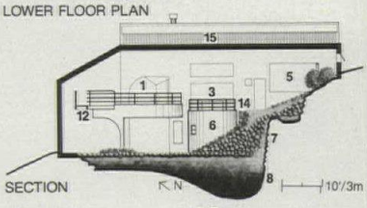
Tim Street-Porter



UPPER FLOOR PLAN



LOWER FLOOR PLAN

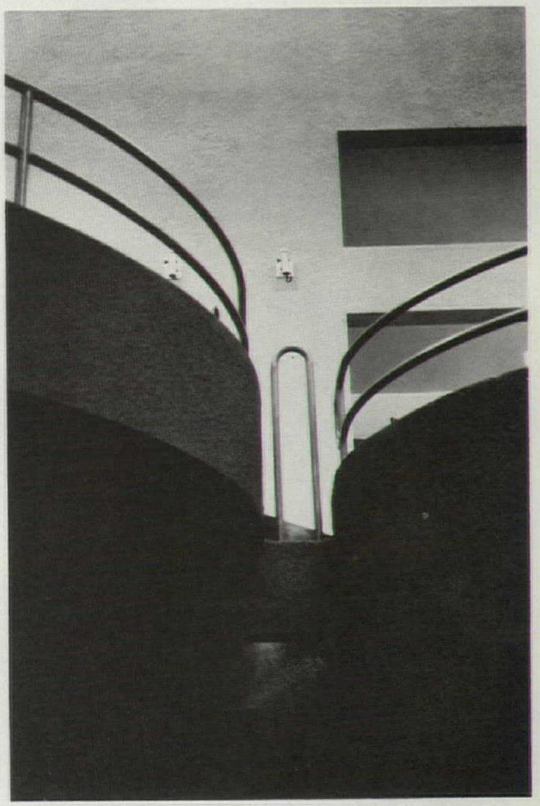


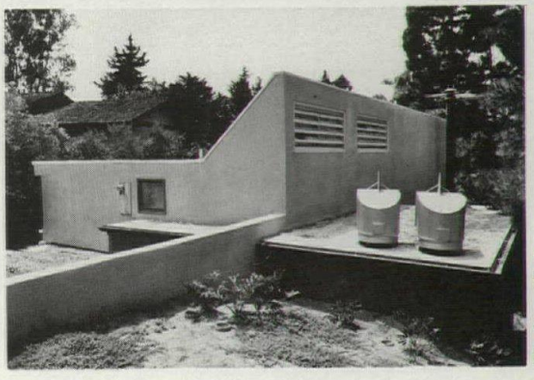
SECTION

M. McGee

Legend

1 Living room
2 Fireplace nook
3 Dining
4 Kitchen
5 Master bedroom
6 Bath
7 Waterfall
8 Pool
9 Hot tub
10 Study
11 Deck
12 Bridge
13 Guest bedroom
14 Steps
15 Solar collectors





Tim Street-Porter

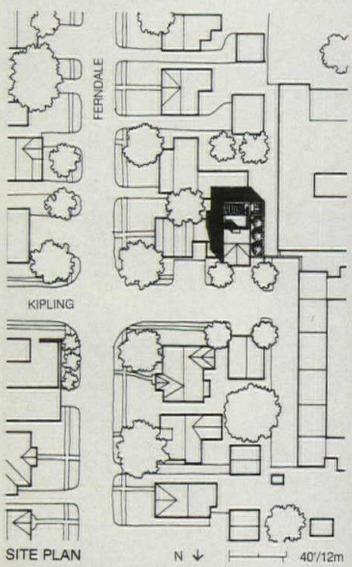
Data

Project: *Johnson house, San Diego, Ca.*
Architect: *Rob Wellington Quigley, San Diego. Ken Ahrentzen, project architect.*
Site: *1/5 acre on hillside with remnants of a 1920s rock pool and waterfall.*
Program: *3491-sq-ft house.*
Structural system: *wood frame and concrete block.*
Major material: *stucco.*
Mechanical system: *passive direct gain; active solar.*
Consultants: *Adams/Wyckoff/Brown, landscape; South Bay Engineering, structural; Kate Hinds, color.*
Cost: *$170,000 (1980).*

McAshan House, Houston

Urban cottage

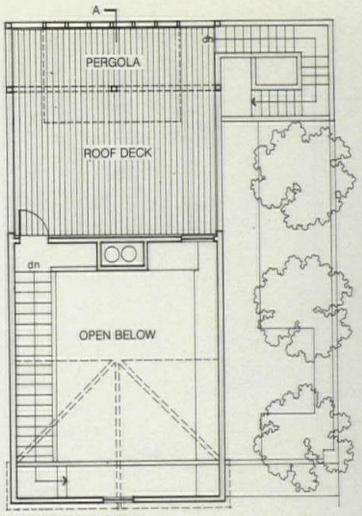
For a single-family city residence, cited in the 1981 P/A Awards program, architect Val Glitsch has set an archetypal detached house form on a plinth of urban wall.



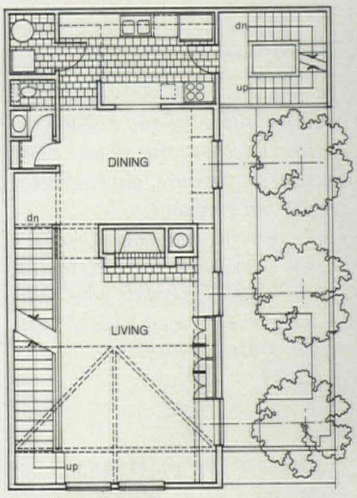
The site is a product of Houston's laissez-faire development pattern: a tiny plot at the end of a street, shoe-horned between the two-story house for which it was once the backyard and a newer growth of low-rise apartments that face away toward another street. Setback restrictions on the property limit the buildable area to a rectangle 20′ x 40′, abutting the lot line at the back and one side.

To give her clients an expansive, well-lighted space for entertaining, Glitsch adopted the *piano nobile* device of many earlier townhouses. In this case, the low first floor houses the owners' study and sleeping space. Above, a tall living space presents large north-facing windows toward the street without sacrificing privacy. The compactness of the house and the limited window area except to the north (plus generous insulation) hold down air-conditioning costs in Houston's long hot season.

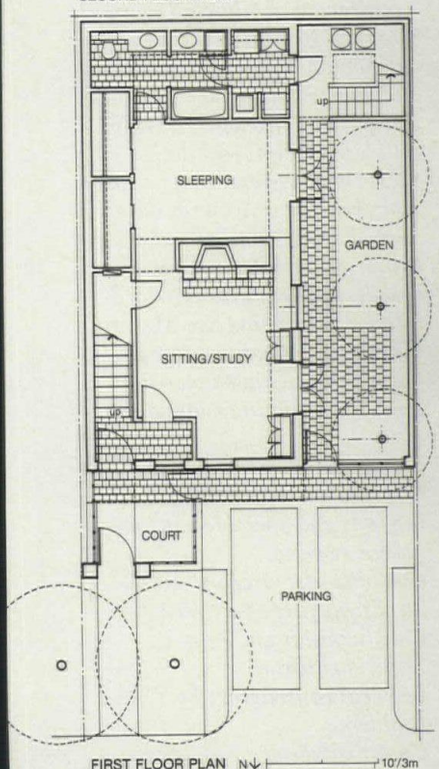
From the front, the living room volume appears as a gabled house front, matching its neighbors in scale and simplified wood detailing. Below it, the more private first floor is walled in concrete block, laid up in a careful



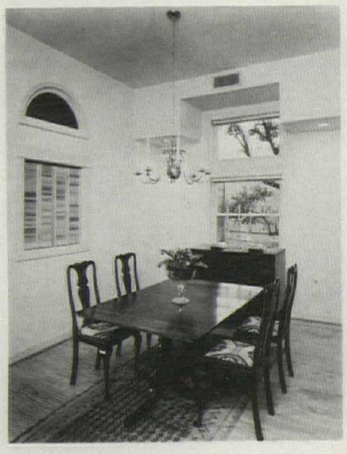
THIRD FLOOR PLAN

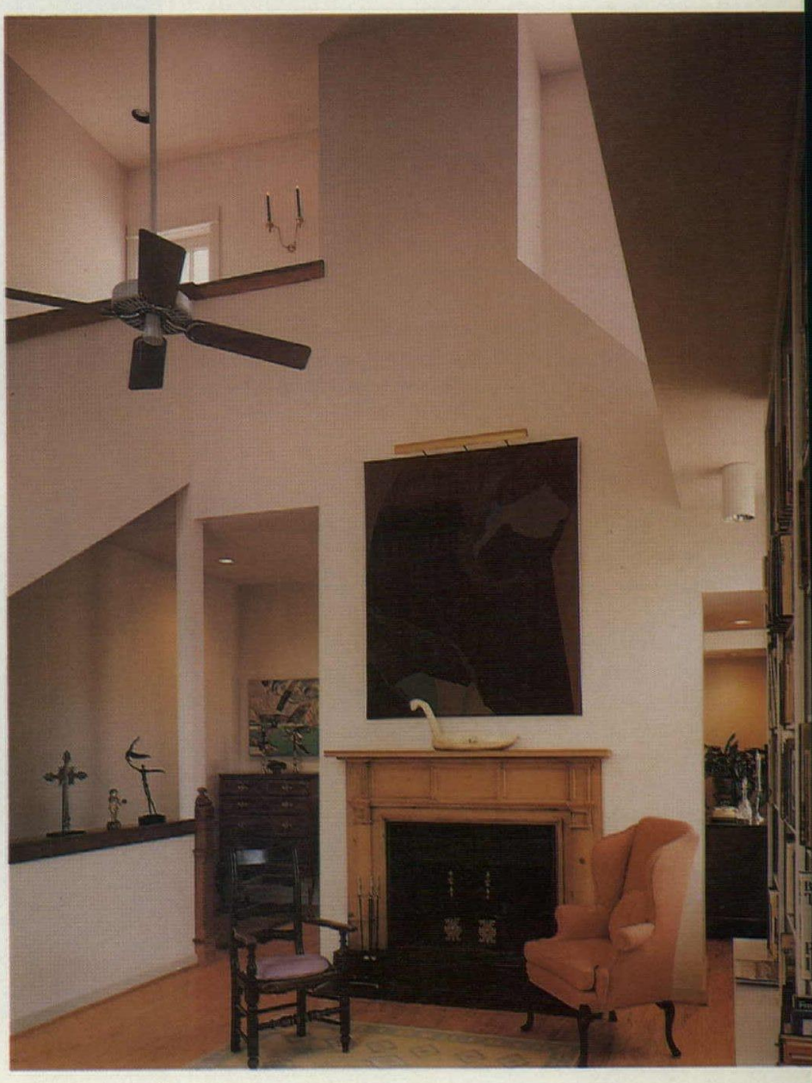


SECOND FLOOR PLAN



FIRST FLOOR PLAN N 10'/3m





The second-floor living room (left and below) fills the overhanging gabled volume that identifies the house from the front (opposite page). The big front window is made up of four standard double-hung units. An old mantel sets the tone for the owners' traditional furnishings. Two openings high on wall behind fireplace admit some south light. Along one side of room are stairs up from entrance and on up to roof deck; notch in soffit over reused front door (far left, opposite) is under stair landing. Dining area (center photo), divided from living by fireplace, has 11-ft ceiling. Ground-floor study (bottom photo) is smaller counterpart of living room, with new millwork for fireplace mantel.

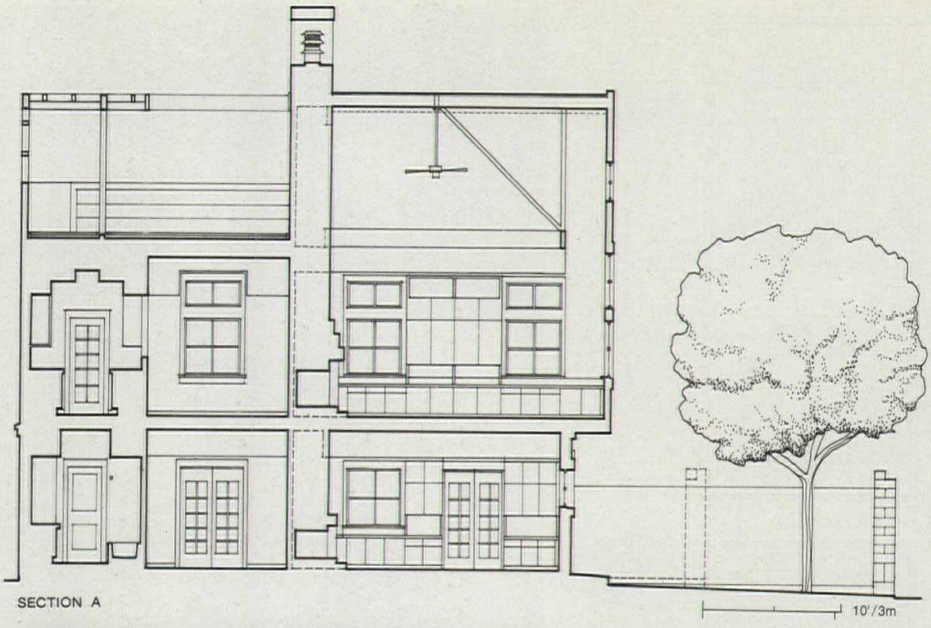
arrangement of different sizes, picked out in subtly different colors to suggest Classical detail; small iron-barred windows and a fenced entry court acknowledge the realities of today's city living. (Drawings showed more distinctive custom grillwork enclosing entry and side yard; the extension of the block wall to the side is effective, but marred by an awkward door frame.)

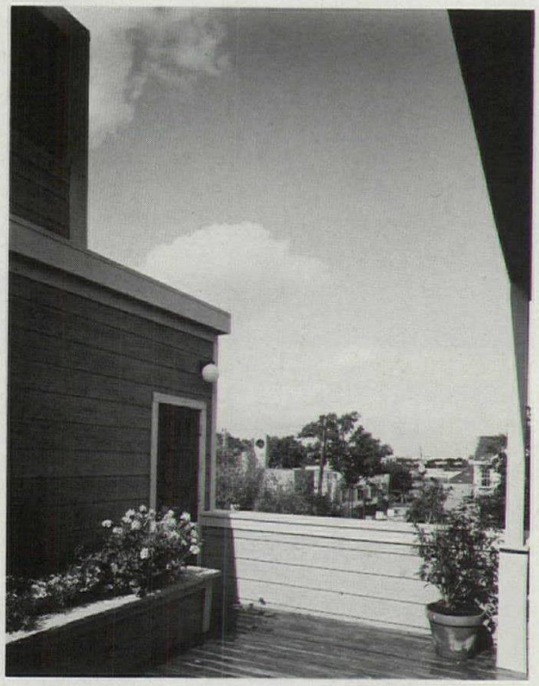
Symbolic silhouette

The small house with a second-story living room rising to fill out a symmetrical roof form calls to mind Venturi & Rauch's weekend house in Westchester (P/A, Oct. 1977, p. 64). Both designs play up the jump in scale to the upper volume; both have oversized upstairs windows. But this house does not have the same kind of inventive image-making: the fireplace that faces the big living room window has not been shaped into a unique icon; the big window itself has not been composed into an idiosyncratic frontispiece, but remains a rectangle with an isolated circular window above. It is not just that Glitsch is not a Venturi (who else is?); she is also showing deliberate restraint. While Taft Associates offer an example of more exuberant ornamental allusion near at hand (P/A, June 1982, p. 65), Glitsch has been working in William Cannady's office and applies vernacular forms—as in his recent work—with more down-home modesty. In this design, the emphasis is on respect for antecedents, rather than ironic comment.

Behind its imagery, the house has a strong spatial order that compensates for its dimensional constraints. On each floor, the fireplace wall forms a demarcation between more public area in front and more private area in back. The volumes before and behind it on each floor are well-proportioned rooms. (The section and plans illustrate this better than photos can.) Even the first-floor rooms have 10-ft ceilings. Stairs to the *piano nobile* share the living room volume and rise at a gentle gradient, going up 11 ft in a 16-ft run (another feature recalling the Venturi & Rauch Westchester house).

The full volume of the house is not indicated by the gabled façade, which accurately represents only the front 10 ft or so. Somewhat deeper than the old false front, the gabled portion scales the house down to fit its situation. Speaking of the design's response to context, P/A juror Robert Frasca said: "It is done artfully and without pretension. It should be recognized because it really demonstrates that you don't have to do acrobatics to solve this kind of problem" (P/A, Jan. 1981, p. 144). Now completed, with only minor deviations from the winning drawings, the house embodies the same lesson: artfulness in proportion to the task at hand.
[John Morris Dixon]





Section (above) shows distinct scale of each interior space. Toward rear of house, gable gives way to flat roof on two levels; lower rear accommodates 20-ft-square deck, with pergola, facing south. Cozy 10-ft-wide garden to west offers privacy, shade, and a patch of Houston's flourishing greenery.

Data

Project: *McAshan House, Houston, Tx.*
Architect: *Val Glitsch, Houston.*
Site: *flat 30' x 50' lot in a dense neighborhood of low-rise houses and apartments.*
Program: *1660-sq-ft house for couple; 400-sq-ft roof deck.*
Structural system: *concrete masonry bearing walls, ground floor; 2 x 6 wood frame above.*
Major materials: *exterior cedar boards, painted; gypsum board interior walls; pine and Mexican tile floors; composition shingle roof on slopes, built-up on flat areas (see Building materials, p. 129).*
Mechanical system: *electric heat and air conditioning; ceiling fans and operable windows to reduce demand.*
Consultants: *Gregory Catlow (landscape); Herbert Wells & Co. (furnishings); Peter K. Speth (structural).*
General contractor: *Fort Bend Builders.*
Costs: *withheld.*
Photography: *Paul Hester.*

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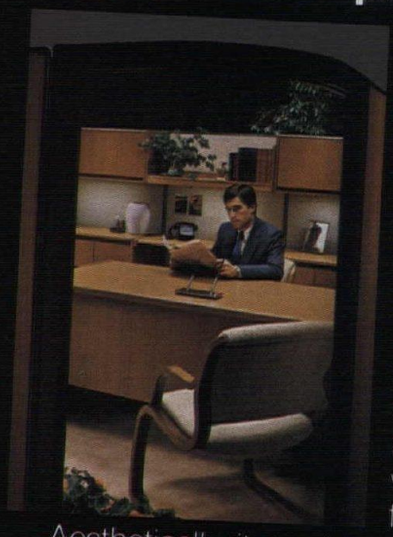

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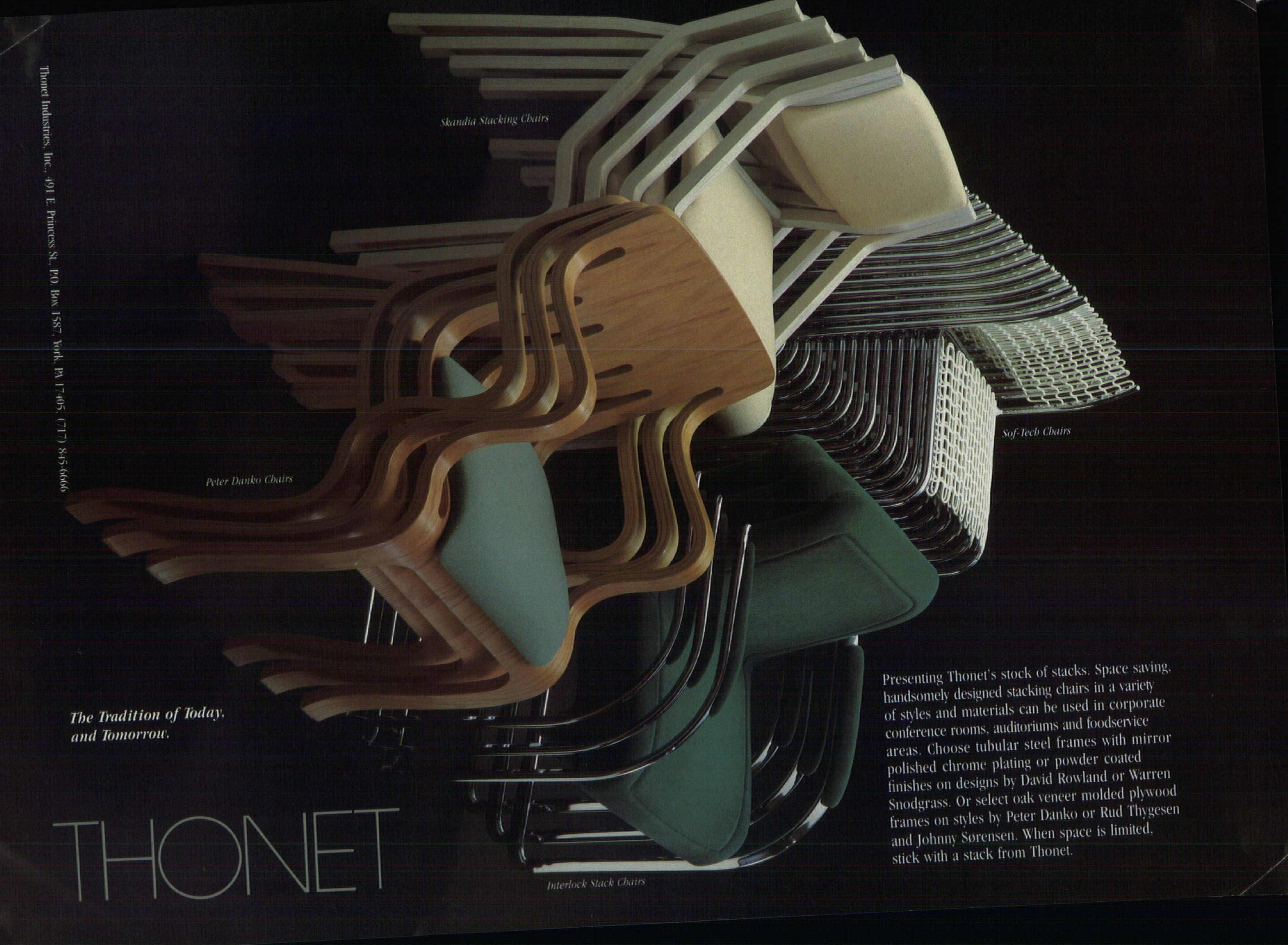

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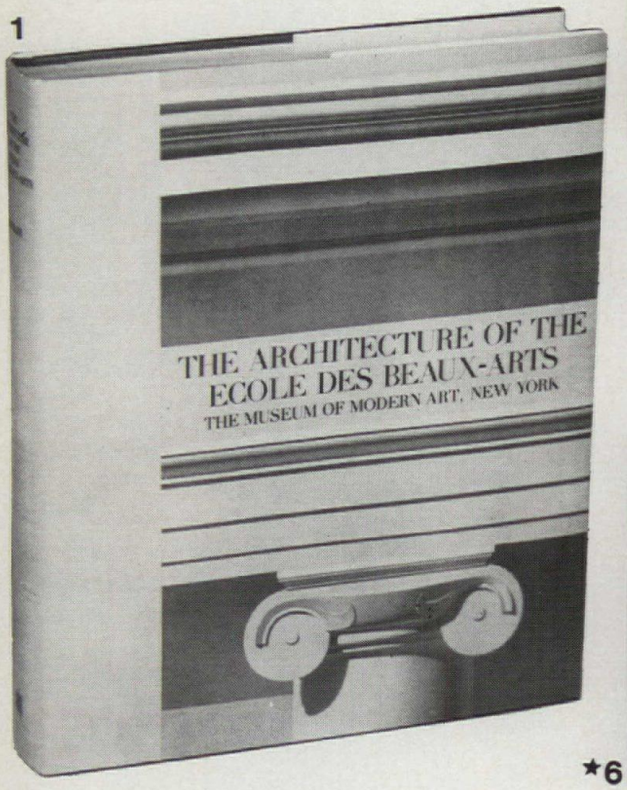

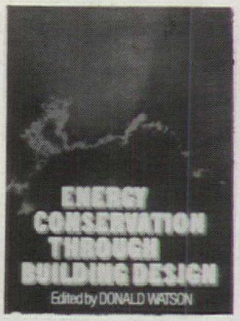

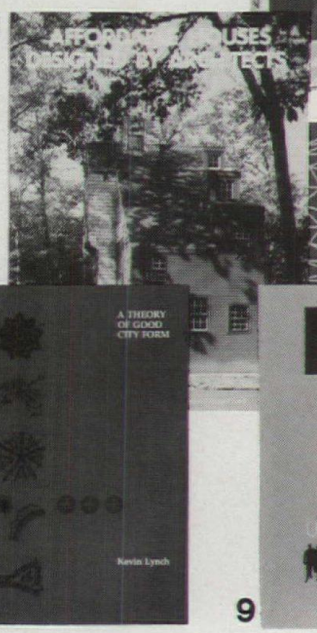

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This lavishly illustrated volume shatters the myth that architect-designed houses are more costly than developer-built houses. The superb photographs, floor plans, drawings, and details of interiors and exteriors present a wealth of ideas on how to construct beautiful and unique houses within limited budgets.
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21 The Architecture of Frank Lloyd Wright A Complete Catalog Second Edition

By William Allin Storrer,
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By Helmut Jacoby
167 pp., illus $24.95

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By Joseph DeChiara
506 pp., illus. . . . $39.50

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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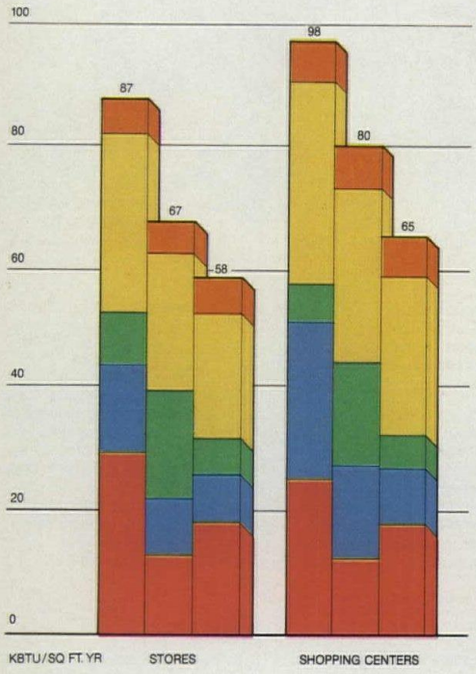
Energy for sales

This month's energy series article* focuses on retail buildings. After reorganizing the original data, the research team discovered both general strategies of great promise and design options of importance only to certain types of retail stores.



Contributors: *A number of individuals and organizations have contributed to the development of this article. Principal researchers: Joseph J. Deringer, President, Gilford, Deringer and Company; Harry P. Misuriello, Principal, W.S. Fleming & Associates.*

Researchers: *James Binkley, Chief, Architectural and Engineering Systems Branch, DOE; John Stoops, Project Manager, and Ray Reilly, Program Manager, Battelle Pacific Northwest Laboratories; John H. Cable, Principal, The Ehrenkrantz Group; Roger Easley, Consultant to Battelle; Santiago Moreno, Mike Gilford, and Richard Meilan, with Gilford, Deringer and Company.*

* A complete description of this series can be found in the April 1982 issue of P/A, pages 110–115.

The 19 redesigned retail buildings featured in this article differ widely in terms of size, merchandise sold, mix of functional spaces, and even their role in the community. Included are buildings ranging from a 7000-sq-ft chain bookstore to a 671,000-sq-ft regional shopping center.

Early in the research effort, stores and shopping centers were proposed as retail categories for promulgating the BEPS design energy budgets; i.e., "mean" levels of aggregate building energy performance (P/A, April 1980, p. 92). It became apparent that these two classifications would not present the redesign strategies in sufficient detail to convey their diversity. For this article, therefore, we have expanded the categories as follows, using size and tenant criteria established by the Urban Land Institute and the AIA: *Regional Centers* with average total area of 580,000 sq ft, with an enclosed mall area and one or two major department stores, each typically not less than 100,000 sq ft. *Neighborhood Centers* of 27,000 to 96,000 sq ft, containing a supermarket as the principal tenant. *Department Stores*—usually stand-alone buildings with single tenant occupancy. In the redesign sample, three were also "anchor stores" for regional malls. *Strip Shopping Centers* are buildings that have no principal tenant but are rather a collection of leased shops.

The 26 percent energy reduction achieved by the retail redesign teams over their original designs is significant, but not as substantial as in other building types. As explained later, a wide range of constraints influenced each of the retail redesigns to some extent.

How is the energy used?

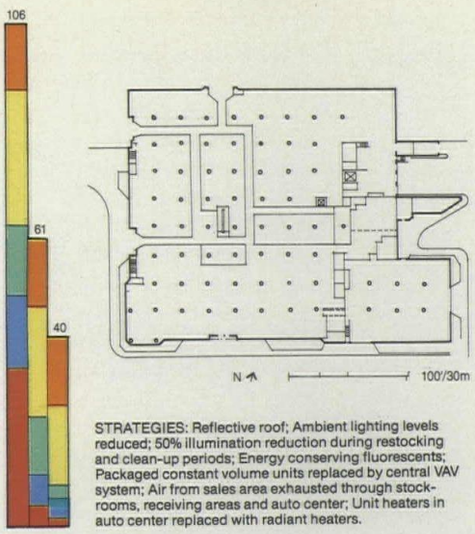
The merchandising mission of these buildings places design emphasis on the building's interior systems more than on its exterior components. The design of lighting systems to promote merchandising has different criteria from that for increasing worker productivity in office buildings (P/A, June 1982, p. 109).

Retail buildings, however, share with office buildings the need for "universal" space design. Shops in regional, neighborhood, and strip shopping centers must accommodate energy-consuming tenants as diverse as a jewelry store, a bakery, and a record shop. Tenant mix and amount of leased square footage may also vary from month to month. These factors influence energy consumption but are difficult to predict or control. Retail buildings operate longer hours than most others. A six- or seven-day-a-week operation for 10 to 12 hours a day is not uncommon. Internal gains from equipment are minimal in most retail operations except for food-related operations, such as bakeries and carry-outs. Nevertheless, they are generally considered to be "load dominated," primarily due to high uniform lighting loads and to high occupant density. As a result, retail energy use is almost "steady state" at given weather conditions and is not subject to time-related load swings such as those found in office buildings.

Design considerations

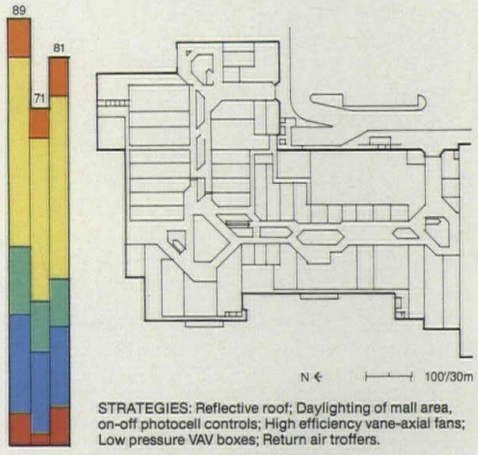
The form and envelope configuration of retail buildings is frequently dictated by functional space requirements and site constraints. Often there is little flexibility to adjust building orientation for energy concerns. Also, façade treatment may be of secondary importance in malls and department stores where interior merchandising is preferred.

Lighting systems are operated for long hours at higher lighting levels than in other building types, and there is a significant need for incandescent display lighting. With lighting about 35 percent of total annual retail energy usage, it is no surprise that much of the redesign effort was concentrated on this area. But the designer's influence can be limited. Tenants often furnish their own lighting systems. Parking lot lighting is also significant but was not studied in redesign experiment.



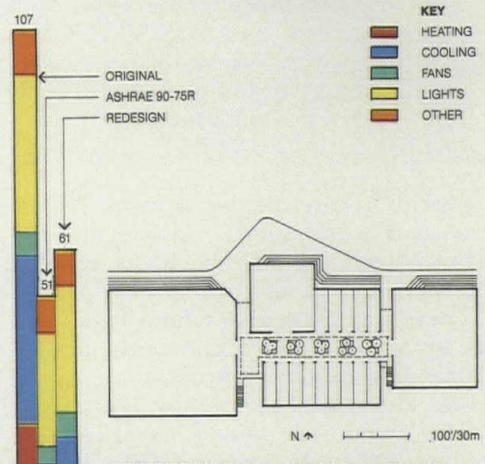
STRATEGIES: Reflective roof; Ambient lighting levels reduced; 50% illumination reduction during restocking and clean-up periods; Energy conserving fluorescents; Packaged constant volume units replaced by central VAV system; Air from sales area exhausted through stockrooms, receiving areas and auto center; Unit heaters in auto center replaced with radiant heaters.

4 DEPARTMENT STORE: PORTLAND, OR



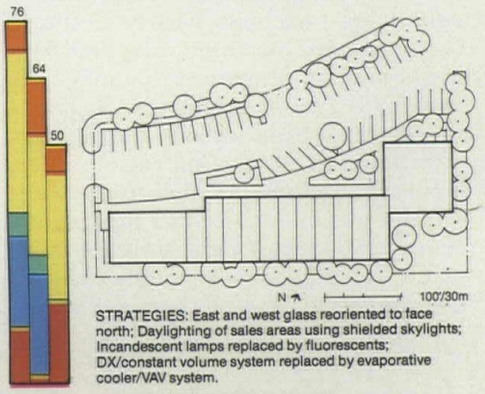
STRATEGIES: Reflective roof; Daylighting of mall area, on-off photocell controls; High efficiency vane-axial fans; Low pressure VAV boxes; Return air troffers.

8 MALL FOR REGIONAL CENTER: NEWARK, NJ



STRATEGIES: Wall and roof insulation almost tripled; Reduced exposed area; Double glazing; Incandescent lamps replaced by fluorescents; Double switching; Air to air heat pumps; Enthalpy economiser cycle; Deadband controls; Exhaust air heat recovery.

11 NEIGHBORHOOD CENTER: WASHINGTON, DC



STRATEGIES: East and west glass reoriented to face north; Daylighting of sales areas using shielded skylights; Incandescent lamps replaced by fluorescents; DX/constant volume system replaced by evaporative cooler/VAV system.

18 STRIP SHOPPING CENTER: SAN DIEGO, CA

FIGURE 1: RETAIL REDESIGN. EXAMPLES BY SUBTYPE

As with offices, the daytime problem of internal loads is largely absent at night, and conductive losses become more important. Long hours of operation and high ventilation code requirements often dictate time-of-day control of HVAC systems, especially for control of fan energy and night heating. Lease arrangements also affect HVAC system design. Unitary or rooftop systems are a popular means of making tenants responsible for their own energy bills.

Key strategies

With these constraints, the redesign teams didn't attempt major reworkings of the original design, as was often done in the office redesigns. Rather, the design strategies emphasized individual building component opportunities as opposed to strategies using whole building interactions. Figure 2 summarizes the key redesign strategies used in each of the four retail building types, where the major targets of opportunity are consistently lighting and HVAC systems. Figure 2 also includes opportunities we feel would increase retail energy savings, but many of these were not tried by the redesign teams.

Lighting

The redesign teams reduced the installed capacity of lighting fixtures in every usage. One regional shopping center had the highest installed capacity at 4.2 watts per sq ft, but it was reduced to 2.3 watts per sq ft in the redesign. Strip shopping centers were typically in the 2.5 to 3.5 watts per sq ft range, which was reduced by about one watt per sq ft. Department stores also had a one watt per sq ft reduction in installed capacity, but initially had lower levels in the range of 1.5 to 2.25 watts per sq ft. The neighborhood shopping centers were lowest of all, at 1.5 watts per sq ft. As individual buildings both increased and decreased installed capacity, however, there was no net change on a collective basis.

Surprisingly, a 36 percent reduction in lighting energy in regional centers and department stores was due to the research team's exact interpretation of ASHRAE (IES) Standard 90-75R lighting requirements. For these, redesign teams were able to achieve a 21 percent saving. In the other retail types, the redesign teams obtained lighting reductions beyond ASHRAE levels. Time-of-day illumination control using photocells or timeclocks was used, although infrequently, but in one case lighting levels during restocking periods were reduced 50 percent with a manual switching scheme.

There was no discernible pattern in the use of lighting fixtures in any of the retail categories, but there was an overall trend to replace incandescent with fluorescent fixtures. The original and

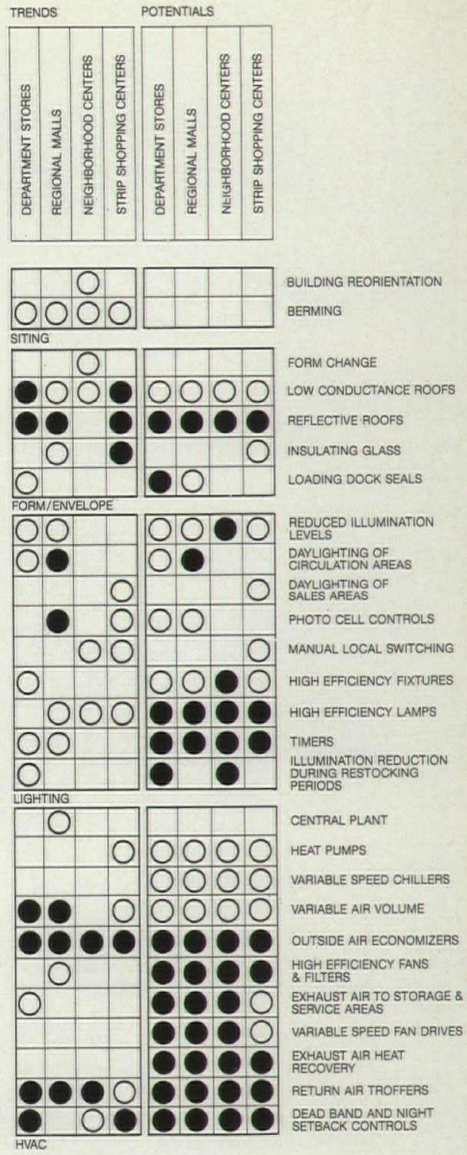
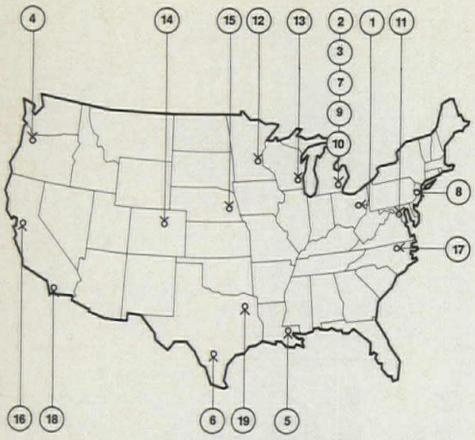


FIGURE 2: REDESIGN STRATEGIES

Areas with the most potential in retail buildings are lighting and HVAC systems. Various constraints can inhibit using site, form, and orientation strategies. Major envelope potentials include increased insulation and reflective roofs. The smaller shopping centers were the least insulated category in the sample, and thus have a larger potential in this area.

High efficiency lamps can meet retail lighting requirements with less energy. Timers and other means of scheduling lighting energy use can be effective in retail stores of all types.

The "air system" in most retail buildings can use efficient fans, filters, and variable speed fan drives. High ventilation rates encourage exhaust air heat recovery. Return air lighting troffers can be used to remove unwanted heat from conditioned space, especially in conjunction with economizer cycle equipment. This exhaust air can be used to condition storage and service areas.



DEPARTMENT STORES—NO's 1-6
REGIONAL MALLS—NO's 7-8
NEIGHBORHOOD CENTERS—NO's 9-11
STRIP SHOPPING CENTERS—NO's 12-19

FIGURE 3: 19 RETAIL BUILDINGS IN 15 CITIES IN THE CONTINENTAL U.S.

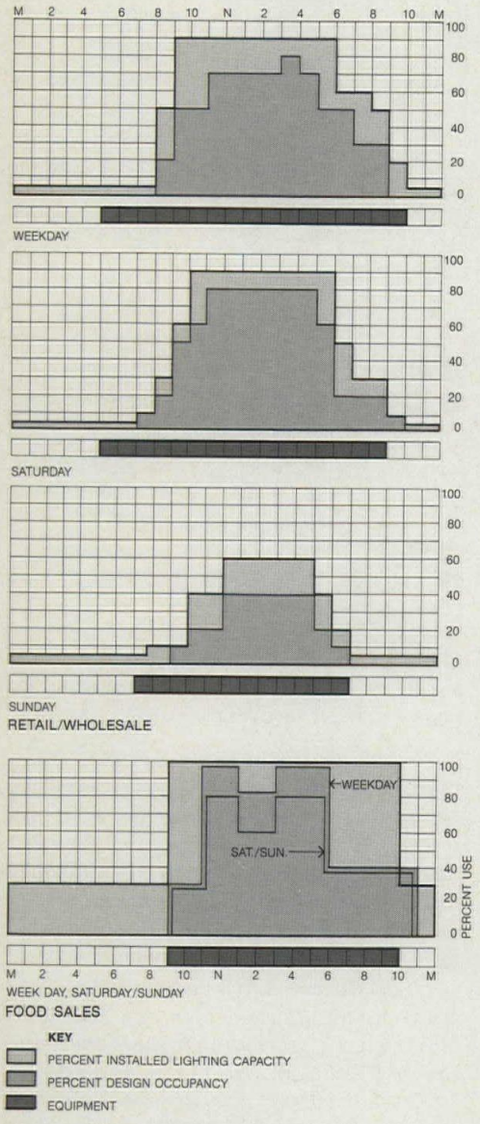


FIGURE 4: AVERAGE OPERATION PROFILES

U.S. map (top) depicting location of sample buildings for the redesign effort. Standard operation profiles (above) derived from actual design criteria used in redesigns. These profiles do not reflect seasonal changes in building usage, although some designers thought this was significant. (Opposite) Total annual energy use for original design, ASHRAE Standard 90-75R and redesign, with change in construction cost for redesign. ASHRAE sidebar explains adjustment of fan energy usage because of Air Transport Factors.

redesign data suggest that retail lighting design within the sample was quite building specific. In department stores, for example, use of incandescent fixtures ranges from 4.5 percent to 17 percent of floor area in the original buildings, and from 1.7 percent to 34.5 percent in the redesigns.

Additional potential for lighting energy savings lies in the use of HID fixtures. While used infrequently by the redesign teams, the higher lumen per watt per output of HID fixtures can deliver required lighting levels with less installed capacity.

In regional shopping centers, natural illumination was not used in the shops, but in the public circulation areas, which can be as much as one-third of the artificially lighted area. Typically, clerestories and skylights were used in conjunction with automatic controls, such as photocells. Only two department stores used natural lighting, but limited its application to the main concourse and main checkout area. In the smaller buildings, such as neighborhood and strip shopping centers, daylighting was used in sales and checkout areas with manual controls.

Space conditioning systems

The retail HVAC systems saw little change between the original and redesign. In all retail stores, constant volume systems were by far predominant, although variable air volume (VAV) systems were used in some instances. HVAC systems were characterized by the near universal use of economizer systems both in the original and redesign buildings. They are particularly well suited to retail buildings, as the natural resource of cool air is usually available when internal cooling loads are present.

One key strategy employed for space conditioning was simply reducing the amount of square footage to be heated, cooled, or ventilated. Storage areas were often left unconditioned or set up for minimal space conditioning. In one instance, an auto shop attached to a department store was heated by a combination of exhaust air from the sales area and radiant panels. Six redesigns reduced net conditioned area by 5 to 18 percent. In a few cases, the redesign teams reduced floor-to-ceiling height to condition a lesser volume of air.

VAV systems with central plants were used in the original and the redesign regional centers, along with more efficient fans and VAV boxes. Department stores also kept their central plants but switched from constant volume to VAV systems in three of the six cases. HVAC systems with unitary equipment were unchanged in neighborhood centers, (except for the use of one heat pump). There was limited switching from constant volume to VAV systems in strip shopping centers. Two of these buildings also used heat pumps, but all systems remained unitary. As expected, there was an increase in COPs, indicating a trend toward the use of more efficient plant equipment.

Most of the retail redesigns used various control strategies in lieu of system or equipment switching. Nearly all the redesign teams increased the deadband limits used in temperature control systems by 6 F to 10 F, and also increased the night heating setback temperature difference by 10 F. Control of HVAC auxiliary equipment, such as fans and pumps, was emphasized by the regional center and department store redesign teams. In addition to generally reducing the connected load of these auxiliaries,

Impact: ASHRAE Standard 90-75R

Section 5.8 of the Standard, Energy for Air Delivery, applied an "air transport factor" (ATF) to all-air HVAC systems, such as constant volume and VAV systems found in virtually all the retail sample buildings. Briefly, it requires that not more than one Btu of fan energy shall be used to remove four Btu of sensible heat from a space at design conditions. Most buildings, including those in the sample, have ATFs which are often much higher. The department stores and strip shopping centers, for example, originally had ATFs of 8 and 19 respectively. This analysis of Standard 90-75R used both the "exact" interpretation and the "upgrade only" methods (P/A, April 1982, p. 114). With minimum ATFs applied exactly to the original retail designs, fan energy increased significantly, rising 97 percent overall. ASHRAE end use data in Figure 5 have been adjusted by replacing the minimum ATF fan energy with fan energy data from the "upgrade only" results. We feel this is more realistic, since typical HVAC design practice provides ATFs that comfortably exceed minimum requirements.

In 5 of the 19 original buildings, total energy usage increased with this exact ASHRAE interpretation. With more realistic ATFs, only two buildings did so. Overall, the exact interpretation of Standard 90-75R, as adjusted above, resulted in lower annual energy consumption than that for 7 of the redesign buildings.

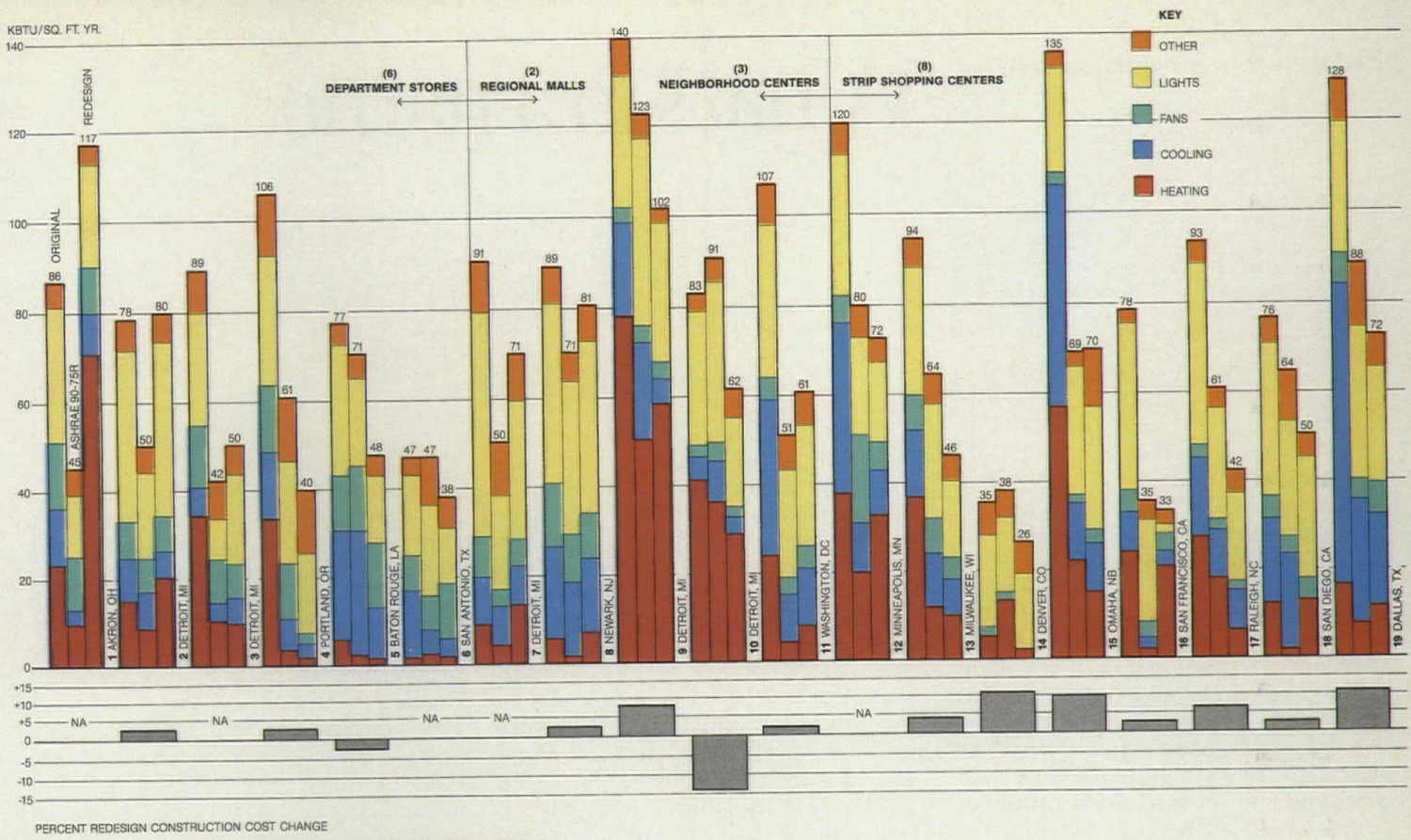


FIGURE 5: ANNUAL ENERGY END USES FOR THE RETAIL REDESIGN EFFORT

improved controls were used to operate them on an as-needed basis, instead of allowing this equipment to operate continuously.

Site, form, and envelope

Only one building, a neighborhood shopping center in Michigan, could be reoriented for energy conservation reasons, but significant changes in the clustering of individual shops were seen in neighborhood and strip shopping centers. In one example, a neighborhood shopping center in Washington, DC (see Figure 1), shops were clustered around a center court to minimize solar gain through store-front glazing. The building form was elongated originally on a southerly exposure.

Of all the retail types, only department stores had overall U-values that met the requirements of ASHRAE Standard 90-75R as originally designed. Indeed, five of the six department stores surpassed these requirements by a wide margin. This contrasts sharply with the 13 remaining retail buildings, as only two strip shopping centers, in Raleigh, NC, and Denver, Co, met these same requirements. Although insulation was increased in nearly every case, three of the retail redesigns still fell short. One reason is that building ownership strongly influences energy-related first costs, such as insulation. Department stores tend to be owner-occupied, while other retail types are generally income properties.

Roof insulation has additional potential, as roof area is significant in nearly all retail buildings. But the same general trends found in the overall U-values appear in both the original and redesign retail roof U-value data as well.

Berming strategies were used in over one-third of all redesigns. In a few instances, buffer zones using unconditioned or minimally conditioned storage and circulation spaces were tried between the exterior and the sales areas. However, these strategies were used to reduce conductive losses through walls, which represent a small percentage of exposed surface in retail buildings.

In the redesigns, glass area was about 3 percent of gross floor area for regional and neighborhood shopping centers and 15 percent in strip shopping centers. In nearly all retail reductions, however, single glazing was replaced with insulating glass, even where its effect would not be significant.

Where glass area is minimal, control of solar gain is generally not critical. But in the strip shopping centers, which had display glass on exterior circulation areas, overhangs were the rule. The use of reflective roofs can be effective in reducing direct solar gain on significant portions of the retail envelope, and this strategy was a prevalent control device in all retail types, with the exception of neighborhood shopping centers.

Two redesigns increased estimated annual energy usage over their original designs. One of these redesigns increased building volume by 20 percent in a cold climate, which was a major reason for the higher energy usage. These buildings are examples of 6 percent of the redesigns from the entire experiment in which energy use increased.

Conclusions

Most of the significant opportunities for energy-efficient designs in retail buildings are associated with interior systems. Lighting and space conditioning strategies were used extensively by the redesign teams, but perhaps not to their fullest potential because of design and economic constraints. Unlike many other building types, design strategies using the retail building's site, form, and orientation may have little impact. Even conservation strategies geared toward the building envelope, such as insulation and solar control beyond minimum levels, appear to have limited potential except in strip shopping centers. In most cases, a simple reduction of consumption rates and improved controls produced energy results close to the average 26 percent energy savings of the retail sample.

It is possible that of all the building types, innovative energy design approaches other than mechanical systems are hard to justify to a sales conscious client. Energy itself needs a hard sell. □

What's in a name?

Thomas Vonier

The inventive genius and entrepreneurial skill of American glass industry pioneers spawned companies that still bear their names. These firms and their products may bear few other resemblances to their origins, but a dedication to research and development has survived, evolving through corporate strategy to corporate *raison d'être*. The effects on the ways we build have been profound and seem likely to continue.

Thomas Vonier, a P/A correspondent, is head of the architectural firm Thomas Vonier Associates, Washington, DC, and a principal of the Urban Development Partnership, Washington, and the Leadenhall Group, Baltimore.

For the uninitiated person who enters Toledo, Oh, by automobile from the airport, mild confusion can turn to complete bafflement: In the middle of a large roadside industrial complex clearly identified as belonging to Owens-Illinois, there sits a dwarfed collection of older brick buildings emblazoned with weathered signs proclaiming Libbey Glass Company. Surely they mean Libbey-Owens-Ford Glass Company? But their plant, one knows, is on another side of town. And why is Owens-Illinois in Ohio? The chamber of commerce calls Toledo "The Glass Capital of the World," so maybe this is one of the foreign embassies.

Downtown you pass the striking new Owens-Illinois corporate headquarters (and *really* begin to wonder what a company with that name is doing in Ohio) and a few blocks further, the Fiberglas Tower, home of Owens-Corning.

Could this be the same Owens? And what about Corning? The Corning Glass Works is in far-off Upstate New York! How could these companies relate to Dow Corning, Pittsburgh Corning, and the other companies one knows are nowhere nearby but bear combinations of the same names?

Only when one passes the Owens Meat Market on a streetcorner at the outskirts of Toledo's downtown is one reasonably sure that here, at last, is an unrelated Owens. But after you have sorted out the questions above, you begin to wonder even about the meat market. . . .

Tangled roots

Modern glass, the corporate histories say, is the unsung hero of the U.S. urban industrial revolution; an acknowledged late bloomer, without which few of the other advances of the late 19th Century—from electricity to automobiles—would have been possible. And without Edward Drummond Libbey, Michael J. Owens, Captain John B. Ford, Edward Ford (son of John B.) and Amory Houghton, there might well be no modern glass.

These men were not alone in establishing what could accurately be called a glass industry (others with whom they were intimately involved and many who came later also made major contributions), but they were the most prominent. Glass development and the personalities of these figures are a fascinating study in the origins of invention and innovation for buildings; they also give an unparalleled example of the ways in which research and development have influenced the course of building technology.

The lives and works of the Libbeys (Edward's father, William, was prominent in the fading Boston glass industry during the mid-1800s), the Fords, Owens, and Houghton reveal a staggering combination of inventive drive and entrepreneurial insight. They established precedents in testing, experimentation, and venture capitalism whose influences endure and make contemporary corporate goings-on seem pale by comparison. Innovation, the process of bringing inventions to the marketplace, is where these men and their colleagues excelled.

Budding branches

Glass is traced by most accounts to origins in Syria around 3000 B.C. Its discovery is sometimes described as accidental—by desert tribesmen sitting around a hot campfire and noting that molten sand cooled to form clear, attractive globules, for example—but many doubt that the heat really needed could have been produced accidentally. Whatever the case, Syrian glassmakers captured by the Egyptians in about 1400 B.C. flourished, and with discovery of the blowpipe in about 300 B.C., glass jewelry and drinking vessels thrived. In the first century A.D., the Romans augmented these uses by employing glass in what we would recognize as windows. Until the advent of the Libbeys, Fords, Owens, Houghton, and the others with whom they worked, glass was made by hand processes in very much the way it had been for centuries.

Even while recognizing the emerging market for window glass and domestic glassware in growing industrial America, the virtual cottage industry was slow

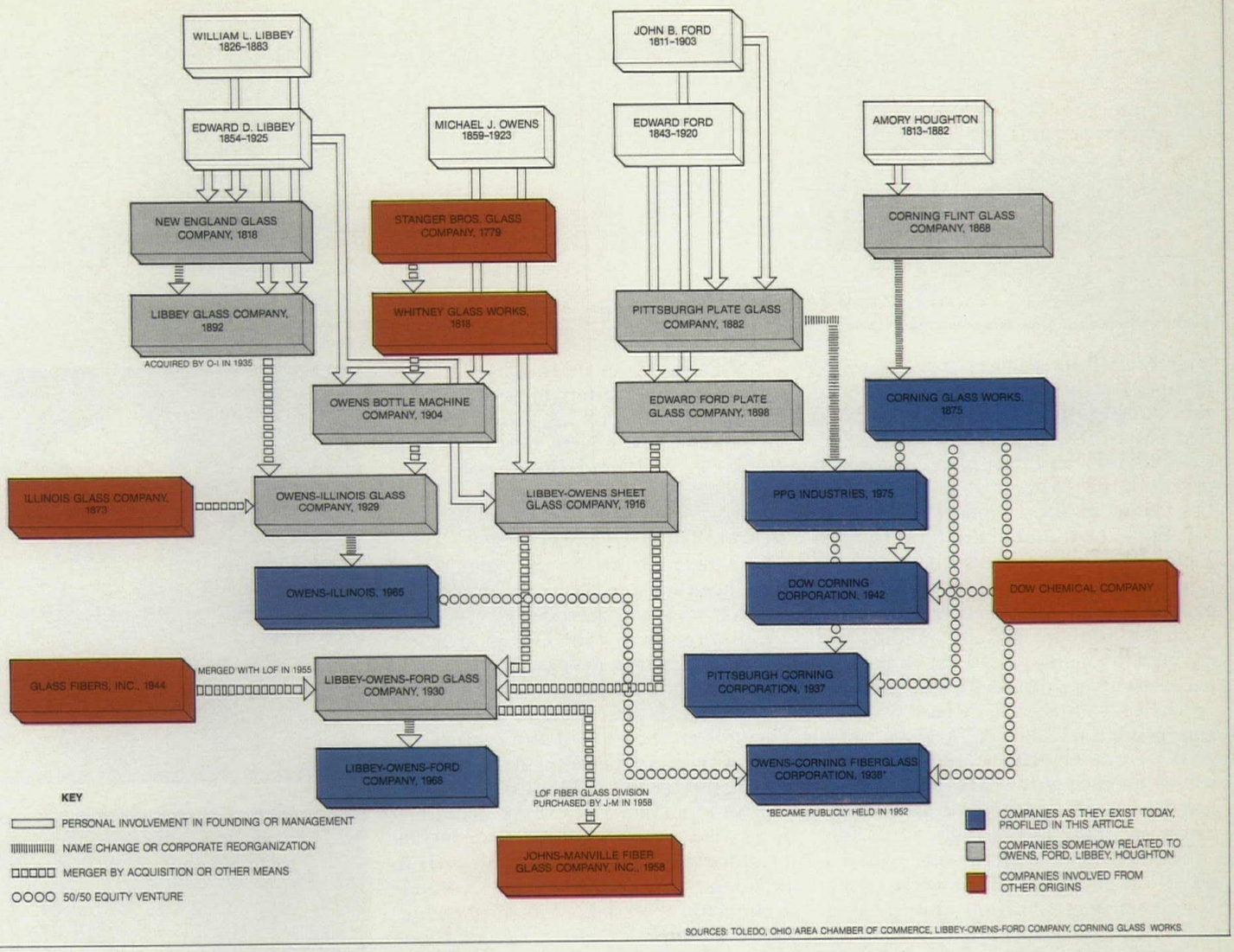


Chart compiled by Thomas Vonier

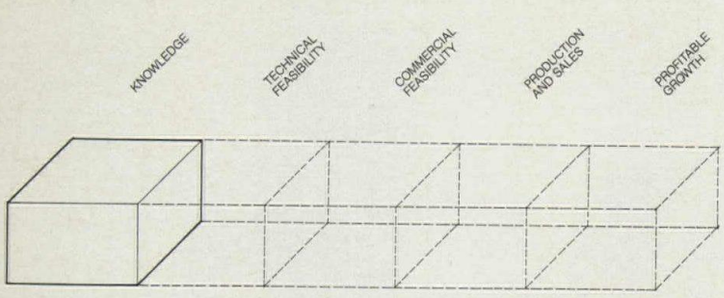
to adopt the industrialized methods and concepts that permeated other manufacturing enterprises. Glassmaking presented technical problems and energy challenges that simply didn't exist for other products. The move to Toledo in 1888 of Libbey's New England Glass Company (later renamed) resulted in large measure from the ready availability there of the natural gas needed for producing molten glass.

Electricity and electric light bulbs provided the impetus for certain advances and, somewhat indirectly, accounted for the early success of Libbey's Toledo ventures. Corning Glass Works had been making light bulbs under contract to General Electric Company and was hit in 1890 by a prolonged strike. To overcome the halt in supplies, GE issued a contract to Libbey's company, where Michael Owens—a coalminer turned glassworker—had recently been hired. Owens soon took over the Libbey plant at Findlay, Oh, and began improving processes and trying new equipment of his design. By 1894 Owens had patented a semiautomatic glassblowing machine for light bulbs and drinking tumblers, thus providing the basis for several new ventures backed by Libbey.

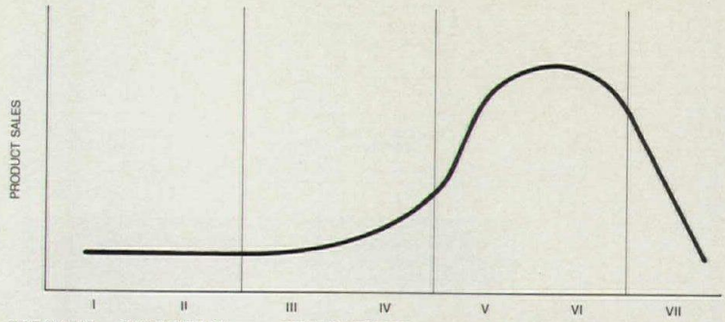
After a huge success at the 1893 Columbian Exposition in Chicago, where Libbey had erected a large pavilion housing a working glassware plant, the company turned toward bottlemaking as a logical outgrowth of its existing activity and in response to a burgeoning market for glass containers. Backed by Libbey, Owens soon developed a generation of automated bottlemaking machines and, again with Libbey funding, launched the Owens Bottle Machine Company. The new company, which had equipped the successful Illinois Glass Company with bottle machines, merged with it in 1929 to form Owens-Illinois, now a leading container company that in 1935 acquired the Libbey Glass Company (hence the Libbey buildings on O-I's Toledo plant grounds).

These new ventures, natural outgrowths of their established ventures in pressed, blown, and cut glass, proved fabulously successful. In the early 1900s, Libbey and Owens turned their attention to flat glass and acquired a number of patents related to its manufacture.

A handful of men active in the 19th Century revolutionized the glass industry and spawned companies whose initiatives and innovations have been influential to this day. Omitted from this chart are scores of other companies with which the Libbeys, Fords, and Michael Owens were involved, as well as firms related to the Corning Glass Works. Dow Chemical, PPG Industries, and Johns-Manville also have related concerns not represented here.



PRODUCT STAGING AND STEWARDSHIP SYSTEM (CORNING)



(DOW CORNING)

Only slightly earlier, Edward Ford (founder with his father and brother of the Pittsburgh Plate Glass Company) had moved west after a feud with PPG's stockholders and complete disassociation with that firm. In 1898, following a brief stint in the chemical business in Michigan, he founded the Edward Ford Plate Glass Company near Toledo.

The growth in markets for window glass was apparent at nearly every turn, from the "sunlight and air" building and zoning laws being passed in the nation's urban industrial centers to the growing appeal of commercial display windows and residential glazing. Freeing sheet glass of imperfections and distortion while increasing the sizes in which it could be produced became paramount concerns. The increasingly important automotive glass applications added a set of unprecedented concerns: freedom from view distortion while moving, and safety. In 1916, with note made of the major role to be played by sheet glass in the country's future, the Libbey-Owens Sheet Glass Company was formed.

In the east, Corning Glass Works—at the time unrelated to any of the enterprises in Toledo—had a related set of concerns. Back in the light bulb business after its strike was settled, Corning was also making a large majority of the country's railroad signal lamps. The color of their glass lenses needed to be matched in batch after batch, and ways had to be found to prevent the lenses, heated by the lamp's internal flame, from shattering on contact with the cold outdoor air.

Corning established an optical laboratory and solved the color consistency problems; in 1908 they created a full-fledged research facility, reported to be among the first in the United States, staffed with chemists, scientists, and engineers of various descriptions. The researchers found a heat-resistant glass—the predecessor to Corning's Pyrex™ material—to prevent the train brake-signal lenses from shattering.

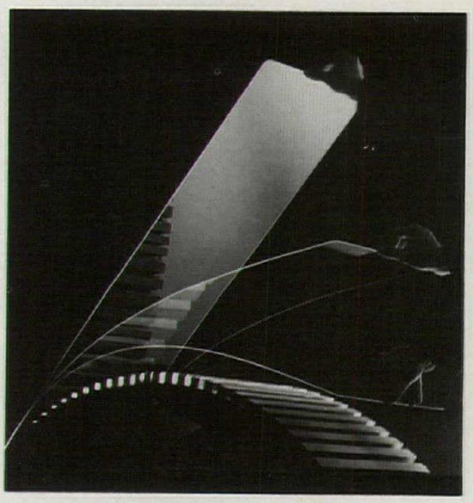
"After that, the inventions just kept on coming one after another," says a Corning veteran of his own company. He could have been describing the others as well, and the process continues.

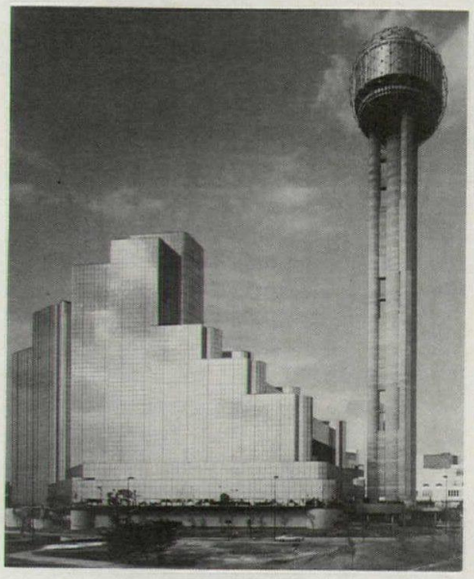
Bearing fruit

The progeny from the early enterprises have been substantial; an incomplete list and a synopsis of activities gives a sense for this. In roughly chronological order:

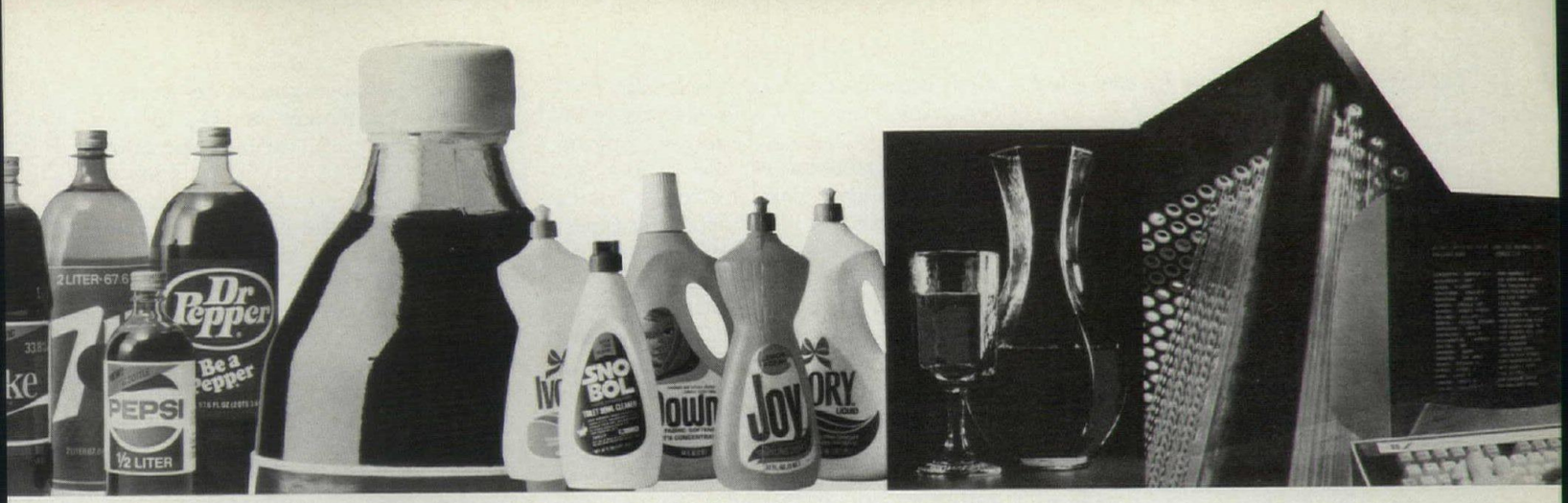
• **Corning Glass Works.** Emerging in 1875 under its present name, Corning made what is described as a conscious decision at the turn of the century "to stay with the 'specialty glass' market, where the technical issues of glassmaking predominate." Corning manufactures few among its more than 60,000 products annually that relate directly to buildings—light bulbs and glass ceramic countertop materials—but their technical accomplishments have shone through in the products of other companies. Corning's thrust toward providing the science side of entrepreneurial partnerships has not diminished over the years; they are well into the use of enzymes for food production and processing and recently joined forces with another company to enter the genetic engineering field. "We're basically glassmakers," said a Corning official, "but tomorrow is always another day." Their annual expenditures on research are placed well above total U.S. industry averages and have grown.

• **Owens-Illinois.** Formed in 1929 and now ranked high among the Fortune 500, O-I also makes few products directly related to the building industry. Its wares are more closely associated with its origins in the Owens Bottle Company and the Illinois Glass Company, makers of containers, but are now well beyond glass products alone (glass was dropped from the corporate name in 1965). O-I's Kimble division, which specializes in glass tubing, has ventured into the solar collector area, but O-I describes this as a small, even inconsequential part of its present operations and one that they say may receive fresh scrutiny with the diminished federal emphasis on energy.





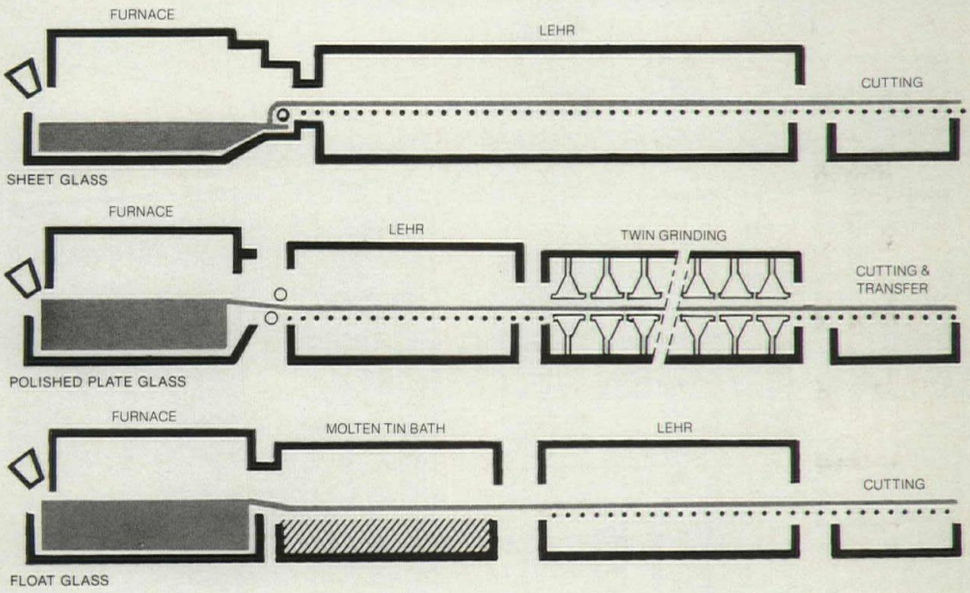
Corning Glass Works research and development continuum (top left) stops short of "product demise," but otherwise resembles the Dow Corning product staging and stewardship system (top right). A chemical strengthening process developed by Corning Glass Works results in glass sheets (center, above) that can be bent repeatedly without fatigue. In the Dallas Hyatt Regency by Welton Becket Associates (above), reflective and thermal properties of an LOF "see-through wall system" play an energy role.



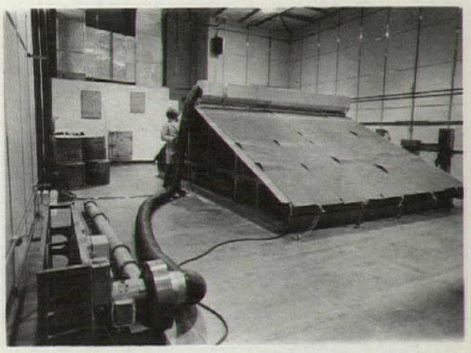
• **Libbey-Owens-Ford Company.** In 1930, the same year in which Ford Motor Company (no known relation to Edward Ford) announced that "safety" glass—a shatter-resistant laminated plate glass—would become standard equipment on all its automobiles, the Libbey-Owens Glass Company merged with the Edward Ford Plate Glass Company to become the Libbey-Owens-Ford Glass Company. The automotive market was a motivating force behind the merger (LOF later filled 100 percent of GM's needs), but the Ford glass operation also had a well-established distributorship for building glass, and LOF today enjoys an extension of that network.

In 1968 the word "glass" was dropped from the company's name, reflecting the fact that its operations had diversified beyond flat glass. LOF was at one time also in the fiberglass business, but sold its activity to Johns-Manville in 1958. Students and practitioners have come to recognize LOF not only for its work with glass, but also for its "sun angle calculator" and daylighting design manuals, which reflect the company's commitment to improving design knowledge.

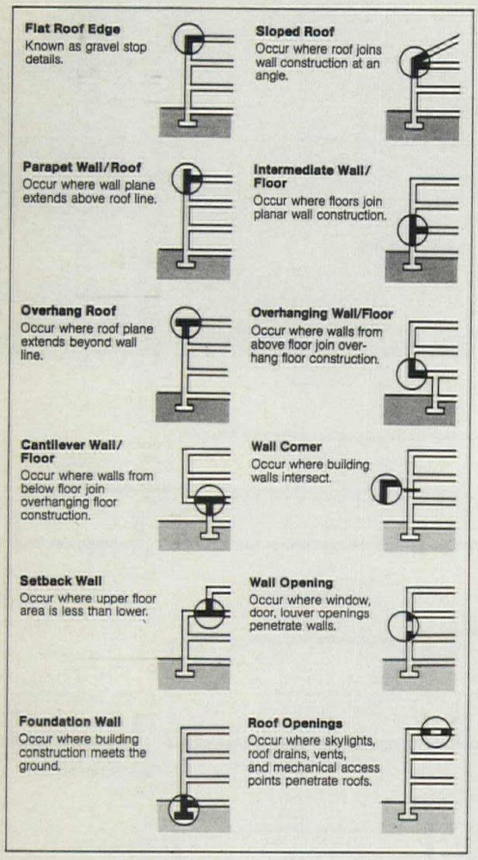
• **Owens-Corning Fiberglas Corporation.** In 1938, following experiments earlier in that decade with drawn glass fibers at Corning Glass Works and the "discovery" of fiberglass, Corning joined with Owens-Illinois on an equal equity basis to form OCF. Its central purpose was to commercialize applications for fiberglass, which of course it has done. OCF has perhaps not quite overshadowed its parents, but it has at least rivaled them in building research and development. With extensive research facilities and a corporate division devoted to science and technology, OCF has moved into a wide range of construction products and systems, each based in some way on continuous and discontinuous glass fibers. OCF products now encompass its familiar batt insulation, glass-reinforced plastic plumbing fixtures, storage tanks, fabric structures, and a host of others. OCF is also using and marketing its knowledge of how to apply its products to particular building projects.

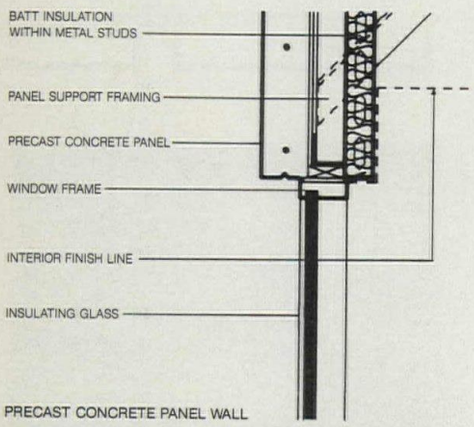


• **Pittsburgh Corning Corporation.** Another 50–50 equity venture, PC was formed in 1937 by Pittsburgh Plate Glass (now PPG Industries) and Corning Glass Works. Having perfected a method for sealing glass block, Corning looked to PPG for the production and marketing expertise that would advance use of the product in the building industry. When presented with the view that glass block's architectural heyday might now be considered long since gone, PC revealed that it had come to the same conclusion; convinced by outcries from the architectural community (including a "most persuasive letter" from P/A's editor) when it announced plans in 1979 to halt manufacture of glass block, PC reversed its decision and remains in the business. "We're amazed . . . demand is still growing," says John Baldwin, PC president, whose company was and is the only U.S. glass block maker (Owens-Illinois once competed but dropped their line). Baldwin credits the resurgent interest in glass block to the unflagging faithfulness of certain prom-

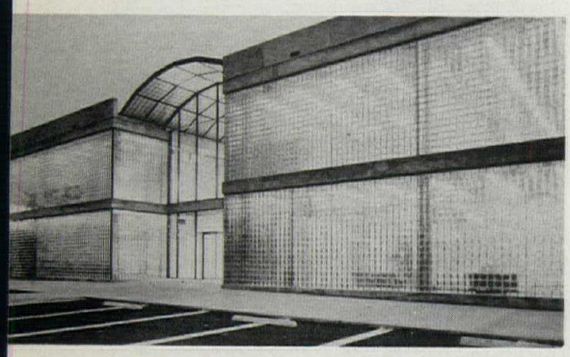


Owens-Illinois produces a wide range of containers and other items (top): polyester beverage bottles, plastic home products bottles labeled in the mold, Libbey glassware, heat exchanger tubes, and display tubes for computer applications are a few. Sheet and polished plate glass production has mostly given way to the "float" process, as shown in the LOF diagram above. Rollers do not contact the molten material until later, in the Lehr, or annealing oven. A climate-controlled chamber (above) tests vertical heat transmission through home components and roof assemblies at the Owens-Corning Fiberglas technical center near Columbus, Oh. The center offers computer services, product testing, and analysis for all OCF divisions.





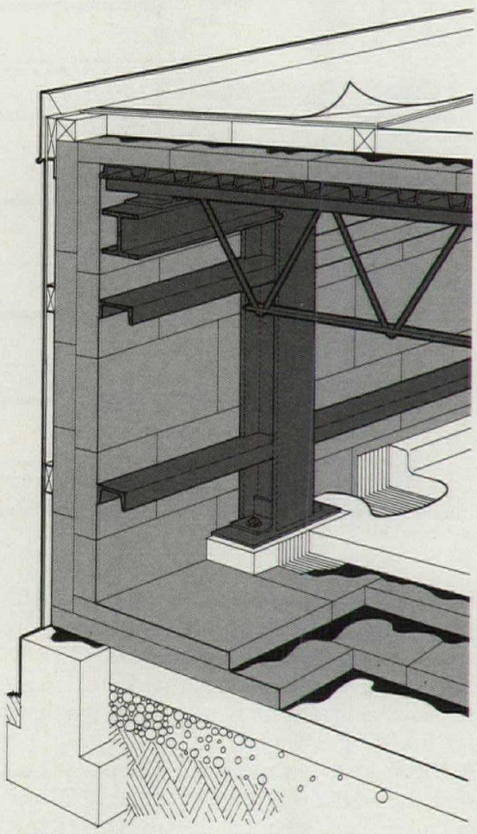
PRECAST CONCRETE PANEL WALL



inent architects, along with energy concerns and a renewed interest in daylighting and "Classical" design among younger architects. PC also produces a line of cellular glass products, Foamglas™, used mainly for insulating pipes, roofs, and cold storage facilities, but also in acoustical tile applications.

• **Dow Corning Corporation.** Formed in 1942 as another 50–50 equity venture, this time between Dow Chemical and Corning Glass, Dow Corning was organized to commercialize silicone, whose properties and potentials were related to the development of fiberglass and other advances in glass technology. Dow Corning now holds a prominent position in what might be described as the glass-complement market for construction, manufacturing specialized and high-durability caulks, sealants, and adhesives—all silicone-based—that are indispensable to the new ways in which glass and other building products are used. Dow Corning is also involved with roofing technologies, fire-resistive sealants, architectural fabrics and coatings, and antimicrobial carpeting.

Although some of these companies have at one time been related to their parent companies (and in some cases still are), each is managed and directed as a separate, independent entity.



BLACK BOX

Among the tools offered to the architect is the Owens-Corning "Design Guide for Insulated Buildings," showing a variety of building conditions for insulation, and details of recommended use (top two illustrations, left). In a low temperature storage facility (above), a "black box" system of Pittsburgh Corning cellular glass insulation is laid up similar to masonry for the floor, walls, and roof. Furring strips to which the skin is attached are secured through the insulation. The latest item returned to Pittsburgh Corning's line is solar reflective glass block (left), shown on the Glassel Art School of Houston's Museum of Fine Arts, by S.I. Morris Associates. The company has reduced the number of patterns it produces, but is studying several new possibilities.

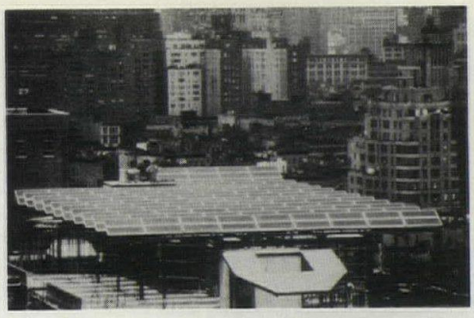
Seedlings

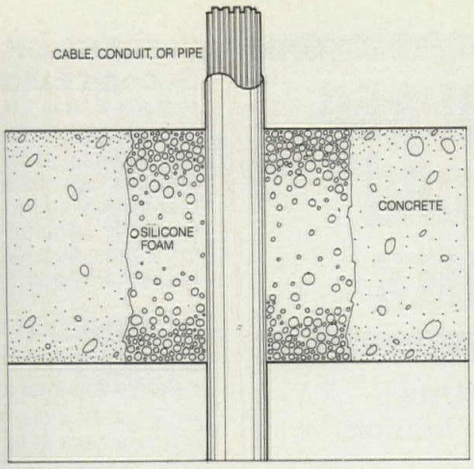
It becomes interesting as one learns of their origins to know if and how the inventive and entrepreneurial spirits of their founders have survived in these companies.

Contemporary research and development are in many ways the latter-day counterpart to the tinkering, experimentation, and testing that prevailed in the late 19th and early 20th Century—the activity is sometimes just a much-tuned-up version of what Owens and his coworkers did in their workshops, but it is also more than that. Now, budgets are set well in advance and there are specific major departments and divisions charged with these responsibilities. Several companies report spending well above U.S. industry averages for research—Corning Glass Works, for example, is known for having made substantial commitments to basic research in the leanest of sales years and in the face of considerable skepticism, even when these efforts were in no way assured of returning a direct profit to the company.

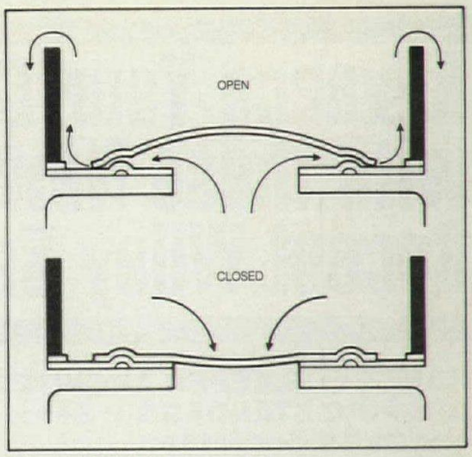
Robert Doban, OCF's vice president for science and technology, presides over an annual research budget that has approached 3 percent of the company's sales and a research staff of nearly 1100. "Eighty-five percent of our work is in the form of support for existing business," he says, "with the balance going to establish the technical basis for new ventures." He contrasts the company's current emphasis on basic research with the "intuitive, inventive, pragmatic, and empirical approach" that was part of OCF's foundation.

The basic research emphasis may be essential to success in the 1980s and 1990s, he believes. "The well was running dry," he says, referring to the prior efforts. "We would never have come to the insights we now have through an 'evolutionary' approach." Doban also stresses the importance of improving production processes—an area that has taken OCF into metallurgy—and transferring the knowledge gained in residential construction to commercial buildings.

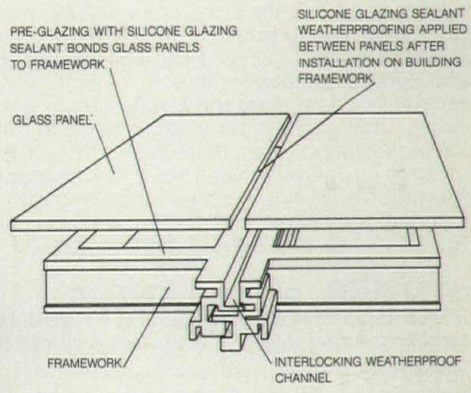




SILICONE FIRESTOP



ONE-WAY ROOF VENT



HORIZONTAL WINDOW WALL DETAIL

An emphasis on basic research does not preclude attention to applications research and testing; OCF, LOF, PC, and Dow Corning have paid particular attention to the ways in which their existing products are used, to the extent that they are as much purveyors of design knowledge as they are producers of products.

"Our recent shift to a market-focused operation has meant that we're much better able to respond to special needs," says Bernard W. McMahon, general manager of construction and home maintenance products for Dow Corning. According to Leon Crossman, Dow Corning's director of technical service and development, their entire development process is more "demand-led" now, with the result that "we have begun to understand both the market *and* the technology, allowing for substantial market feedback into the development efforts." Dow Corning has also been able to bring products developed for other markets into commercial use for buildings.

For those who hold to the view that the U.S. has little or no architectural research base when compared with other highly developed nations, the glass-related companies, among others, seem to provide grounds for changing the view. Their work can't be dismissed as too narrow or specialized, too oriented to specific product applications, because their research has now turned increasingly toward whole or at least integrated exterior and interior construction systems (fully glazed facades have become "see-through" wall systems). Nor are their efforts at all devoid of the user-oriented concerns that enter many definitions of architectural research.

There is good reason to be encouraged by the increasing attention being paid by some of these companies to building markets, both here and abroad, as their traditional major markets—especially automotive applications—dwindle or shift.

The technical knowledge and resources that some have brought to bear on energy-related building problems are a case in point. OCF's detailed work in use of insulating products and fabric structures, the LOF work in daylighting and innovative glass wall systems, and the Dow Corning advances in sealants and coatings show what is possible. As one researcher said, "We are all really in the business of manipulating molecules to meet building needs and opportunities." He went on to allude to the promise of glass technologies and others, sounding as one imagines his predecessor-counterparts might have a century ago: "The basic resources are cheap and very abundant. We have concentrated successfully on ways to lower costs and improve production processes. Based on what we've seen so far, it seems to me there are few limits on what we might expect from the future." □

Several of Dow Corning's range of products handle a diverse variety of situations. Silicone heat transfer fluid will serve the solar collectors on the Printing House (top left), a residential conversion in Manhattan by Stephen B. Jacobs & Associates. Johns-Manville's one-way roof vent (top right) employs a silicone rubber membrane by Dow Corning. Cool atmospheric pressure closes the vent, while solar heat opens it. Silicone foam sealants (top center) are being used increasingly for firestopping in high-rise construction. A silicone-based clear finish, Vestar® (bottom left), is said to resist solvents used to remove graffiti and grime, and to protect against corrosion from acid rain. It must be heat cured, however, which could limit its applications. A glass curtain wall system (above and bottom center) by Tejas Architectural Products, Inc., uses Dow Corning silicone sealants for weatherproofing and adhesion, shop-applied.

Acknowledgements

We wish to thank the following companies for their help in preparing this article: Corning Glass Works; Dow Corning Corporation; Libbey-Owens-Ford Company; Owens-Corning Fiberglas Corporation; Owens-Illinois; Pittsburgh Corning Corporation.

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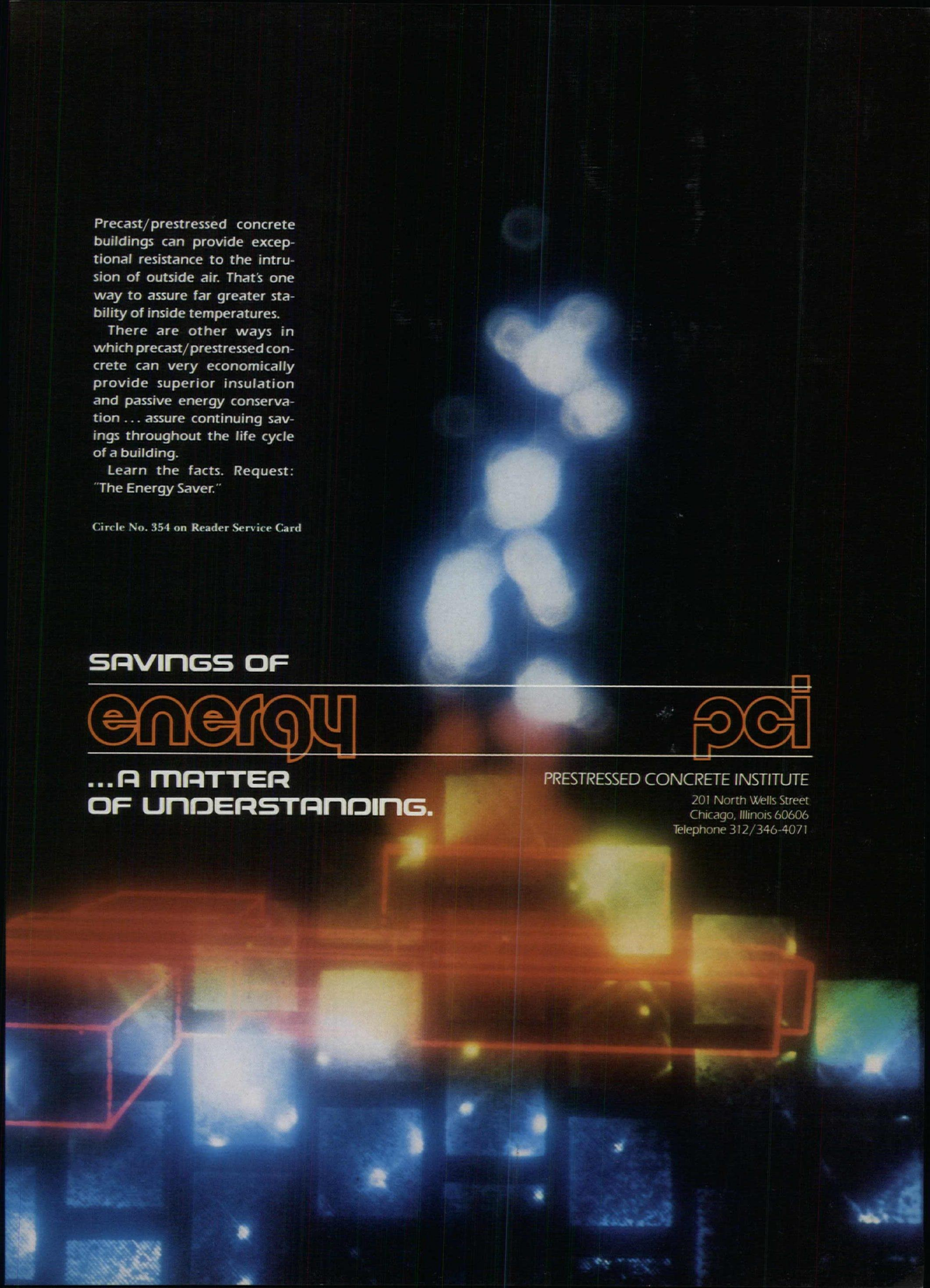

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Specifier Series No. 1

This new General Electric Optimiser lighting system combines energy-efficient 28-watt lamps with specially-designed, hybrid solid state 2-lamp ballasts to save 34% in energy costs compared to typical standard fluorescent systems. Yet, in most fixtures, there is only a slight (about 3%) reduction in maintained light levels.

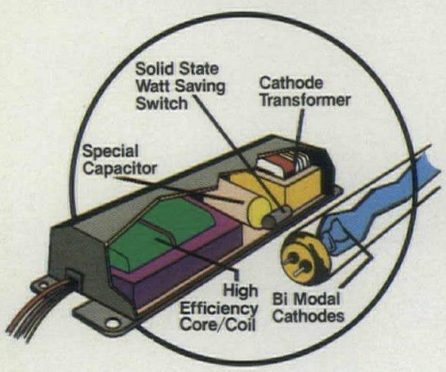
TYPICAL 4-LAMP ENCLOSED TROFFER PERFORMANCE* PERFORMANCE MATRIX			
LAMP TYPE BALLAST TYPE	4-STANDARD 2-STANDARD	4-F34 ENERGY SAVING 2-ENERGY SAVING	4-OPTIMISER LAMPS 2-OPTIMISER BALLASTS
Initial Lamp Lumens	3150	3050	2550
Lamp Life (Hrs.)	20,000	20,000	15,000+
Ballast Factor/ Thermal Factor	.95	.94	1.07
C.U.	.75	.75	.75
LLD (Mean)	.876	.876	.895
LDD (Typical Office)	.732	.732	.768
Watts/Fixture	176	137	116

*Based on GE Tests

The performance-matched Optimiser lamps and ballasts increase system efficiency by 39%.

A typical 4-lamp troffer with standard lamps and ballasts uses 176 watts. The same fixture equipped with the Optimiser System uses 116 watts. In the average office lighting application, the energy savings per fixture will be $12.60 per year (3000 ABHR, 7¢/KWH).

And because the Optimiser fits all standard 40-watt four-lamp fixtures, it's especially suited to retrofitting, in addition to its many applications in renovation and new construction projects.



Technically speaking.

The key to the Optimiser System's performance is the combination of improved electromagnetic circuitry and field proven electronic components in the ballast matched to a specially designed lamp. The heart of the system is a solid state switch in the ballast that cuts off power to the lamp's bi-modal cathodes once the lamp is on. The lamps continue to operate at full light output without cathode heater voltage. The result is a highly efficient fluorescent system that operates at 34% lower wattage than standard.

This also means the Optimiser ballast operates up to 30°C cooler than standard ballasts. Which results in extended ballast life and, depending upon the particular HVAC system, may lower air conditioning costs.

116 watts means reduced watts per sq. ft. with 97% light output.

TYPICAL INITIAL & ANNUAL OPERATING COSTS (NEW FIXTURES)			
LAMP BALLAST	4-STANDARD 2-STANDARD	4-F34 ENERGY SAVING 2-ENERGY SAVING	4-OPTIMISER LAMPS 2-OPTIMISER BALLASTS
Number of Fixtures	122	122	122
Maintained fc (10,000 Sq. Ft.)	70	67	68
Initial Cost (Labor & Material)	$15,362	$15,684	$17,973
Annual Operating Cost 3000 Hr/Yr 7¢/KWH	$ 4,984	$ 4,069	$ 3,784
Watts/Sq. Ft.	2.15	1.67	1.42

It's obvious the Optimiser System is more sophisticated than the standard fluorescent system. In the matrix above Optimiser proves to be the most cost effective system. For your next lighting project compare Optimiser and you'll see how a lighting system that costs a little more initially can be a lot less expensive to operate in the long run.

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Unlimited liability for negligent design

Norman Coplan

In those states having no time limit for instituting suits involving alleged negligent design, architects are at risk for years after acceptance of a project.

An architect may be subject to liability for negligent design to persons who are injured at a building site despite the fact that many years may have elapsed following the completion of his services and the acceptance of the project. A number of states have sought to alleviate this hazard to professional practice by adopting statutes that cut off the architect's liability for injury to third persons if a certain number of years have passed since the architect's services were performed. Such statutes have been upheld in some jurisdictions and have been struck down as unconstitutional in others. This legal struggle still continues.

The rationale for legislation providing a time limit within which an architect may be subject to liability because of an alleged negligent design arises from the argument that it is inequitable and unreasonable to subject a professional to unending potential liability, particularly in view of the fact that a completed project becomes the responsibility of the owner to maintain in a safe condition, and the architect has no function or duty in respect to the safe maintenance of such project. On the other hand, the philosophical argument presented in opposition to such laws is that it is unfair as well as unconstitutional to eliminate a cause of action before it ever arises, i.e., to bar a claim which would otherwise be valid because the injury did not occur until after the time limitation for suit had expired.

Historically, an architect was not subject to liability to third persons because there was no contractual relationship between them. This rule, known as the doctrine of privity, has been abolished in most jurisdictions. Another traditional rule to the effect that the completion of a building project and its acceptance by the owner cut off the architect's liability to third parties has also been abandoned in most jurisdictions. Finally, a rule of a few jurisdictions that if the defect in the project which caused the injury was patent or observable when the project was accepted by the owner, in which case the architect would not be subject to liability to third parties, also appears to be fast disappearing. Thus, in the absence of any statutory limitation, the architect is now exposed to liability for an unlimited period of time, and if the injury occurred 25 or 50 years or more after the completion of services, the architect would nevertheless be subject to suit.

In those states in which statutes containing an arbitrary period for the cut-off of the architect's liability were found unconstitutional, the courts ruled that they violated the equal protection clauses of the constitution or gave special and unusual immunity to a special class and that such classification was unreasonable. In those states in which the statute has been upheld, the courts have reflected the position of the New Jersey Supreme Court in *Rosenberg* v. *Town of North Bergen,* in which it stated that "there comes a time when he (the defendant) ought to be secure in his reasonable expectation that the slate has been wiped clean of ancient obligations, and he ought not to be called upon to resist a claim when evidence has been lost, memories have faded, and witnesses have disappeared."

Recently, a Delaware court in the case of *Gant* v. *Whitaker* upheld a statute which bars actions instituted against architects or engineers if more than six years have elapsed from the receipt of final payment or substantial completion. This case involved injury to a toll collector in 1977 when a vehicle hit his toll booth on the turnpike. He sued the engineer who had designed the turnpike and toll plaza. The project had been substantially completed in 1963, and thus the suit occurred approximately 14 years after the engineer had completed his services. The Court, in upholding the constitutionality of the statute barring the action, stated:

"I am of the opinion that the better reasoned cases uphold these statutes against these constitutional challenges. Under due process concepts a plaintiff who challenges a change in the law must establish that the claim which has been limited or abolished by a challenged statute involves a property right which is eligible for constitutional protection. An individual has such a property right only if that right has 'vested.' In this case at the time the injury occurred in 1977, the statute had been in effect for more than seven years and there was simply no vested right—indeed no right at all—which was recognized by Delaware law as providing plaintiffs with a cause of action. . . .

"The standard of review is well established under traditional equal protection analysis. This statute is a type of economic regulation. It does not interfere with fundamental rights, nor does it create a 'suspect' classification. The rational relationship test is, therefore, the applicable test. . . . After according the appropriate deference to the acts of the General Assembly, the Court is of the opinion that rational and reasonable bases exist for the stated distinction between construction professionals and landowners or tenants in possession or control."

In general, when the statute has been upheld, the Courts have pointed out the unfairness of exposing architects to claims years after a building project is completed, when plans may have been discarded, building codes in force at the time of construction no longer in existence, witnesses deceased or unlocatable, and the architect having had no control over the project once it was completed and turned over to the owner. In those states in which no similar statute has as yet been enacted, it is a continuing and important function of the profession to persuade the legislature of each such state of the unfairness of subjecting an architect to liability unlimited in time. □

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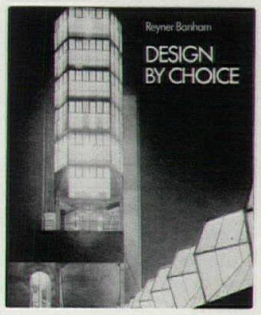
Banham collected

Books



Design By Choice *by Reyner Banham, edited by Penny Sparkle. New York, Rizzoli, 1981, 150 pp., 150 illus., $27.50.*
Reviewed by Aaron Betsky, editor of CRIT *and of* Perspecta 21.

With a zap! and a pow! Reyner Banham is with us again, riding across the architectural prairie in his techno-fantastic bubble and describing Mendelsohn and Mustangs with the same verve, wit, and polemical populism. *Design By Choice,* a collection of Banham's writings dating from the early 1950s until 1977, at times makes one nostalgic for the days when the pure, immaculate forms of Modern architecture were melted down, impregnated with acid colors, thrown into a computer, deconstructed, blown up, and mass produced, emerging as the plug-in components of Spaceship Earth. Even in this pedantically edited and poorly designed coffee table book published by Rizzoli, the Age of Aquarius can be heard calling to us through Banham's writings. The careful insertions and refusals of ideology of our own times cannot but seem timid by comparison.

After establishing his credentials as a well-trained and eloquent reviser of theories of Modern architecture in pieces on such rediscovered masters as Sant'Elia, Taut, and Mendelsohn, Banham sets the framework for his critical theories with an analysis of Le Corbusier as a formgiver in the most literal sense. Corb's success is interpreted as having been based on his ability unconsciously to synthesize the next materialization of our society's tastes and technologies into a slick and eye-catching object at every stage of the cultural game. Le Corbusier, Banham says, was "ignorant" but "imitable." In fact, the revered Swiss is treated in these essays in much the same way that the great industrial designers are. Le Corbusier gave us a new architecture; the industrial designers gave us what Banham calls "the Borax style." Architecture is described as a consumer product, and its forms are judged not only by their internal coherence or composition, but more important, through a critique of their "taste-ful" place in the processes of consumption and production.

The fun of reading the essays lies to a large degree simply in watching Banham reduce architects with less flexible, form-as-fashion notions of their role, to monumental ruins. Sir Basil Spence's Coventry Cathedral, to give just one example, is "really Trad, Dad . . . a ring-a-ding God box that will go over big with the flat-bottomed latitudinarians." Banham warns that this is "not . . . a snap judgment," and in fact offers the reader—in a piece written two years later, but conveniently placed right after the Spence article by the editor—James Stirling as an alternative. His "hyper-sensitivity about appropriate character and design" leads him to have "the style for the job." He is willing, for instance, to use "a good head of glazing . . . like suds from some cubist detergent." With "a take-it-or-leave-it nonchalance," Stirling designs Modernist structures that do not pretend to finality or hermetic rectitude, but to fun, function, and excitement. The difference between Sir Basil and James Stirling lies not so much in the forms they use, but in how and why they use them.

The role of the architect, as Banham posits it in "A Throw-Away Aesthetic," is to crystallize popular dreams and desires—"the pattern as it is about to happen." Not private fantasies of concrete or high tech, but appropriate aesthetics based on an understanding of "the dynamics of mass com-

[*Books continued on page 107*]

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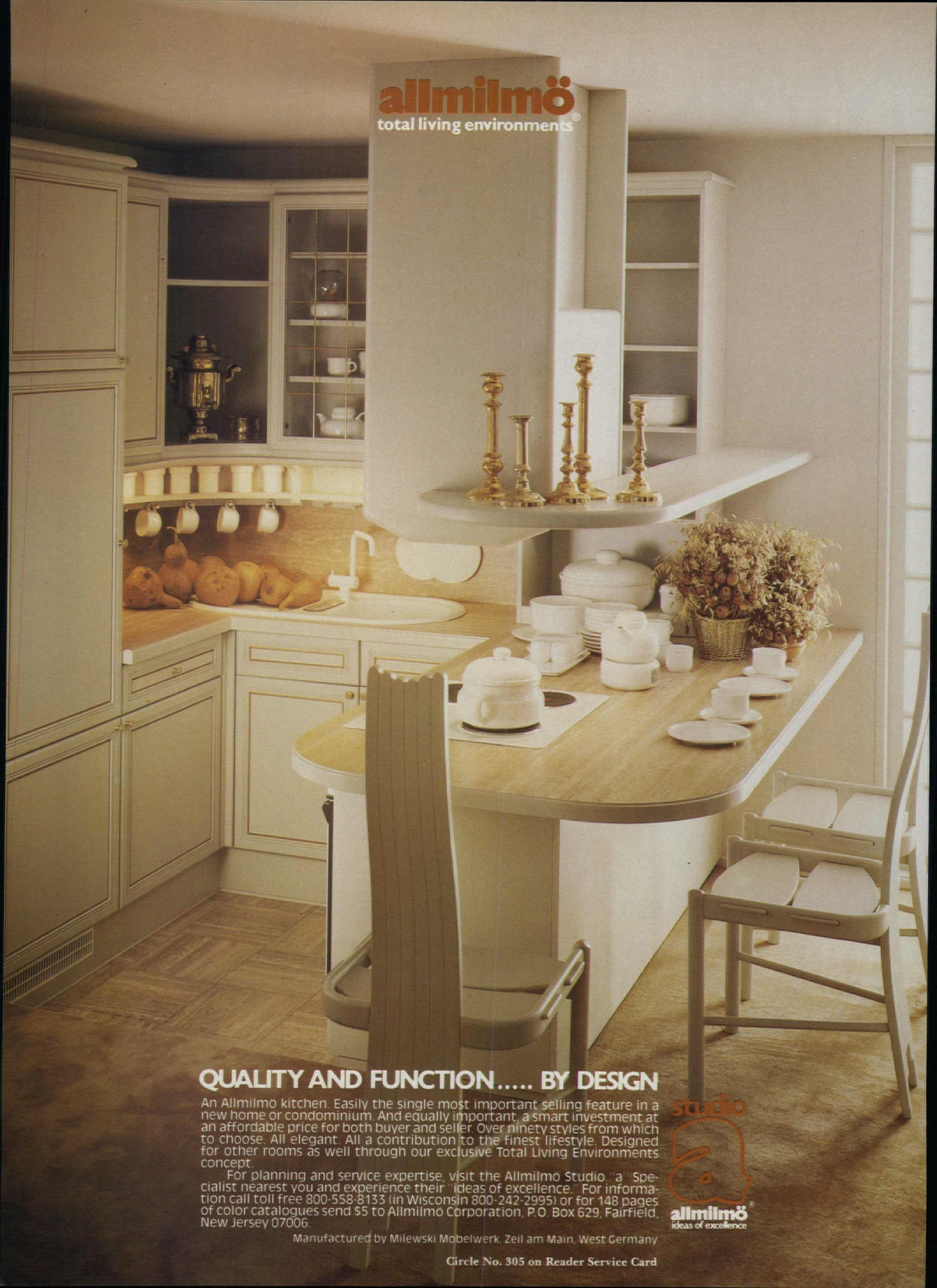

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Books continued from page 102

munication" are required. The architect can then "introduce the element of control that feeds back information to the industry." Unfortunately, Banham restricts himself, as a traditional architectural critic would, to local analyses and critiques of specific applications of the stance described, without asking what criteria the architect should use to direct his decisions.

Where this collection fails, or at least becomes tedious, is where Banham instead deals repetitively with the problems and programs of the London architectural avant-garde of the 1960s. Through the scattered polemics of Banham's articles, we watch the members of Archigram, Zoom, and analogous groups take one last look at the worn-out physical and intellectual landscape of England and dream up a utopian solution in the form of architectural *dei ex machinae*. Banham and his compatriots developed the last great architectural promised land, modeled on the Bauhaus myth of imminent absolution from the marriage of mass production and good design, inspired by the radical refusals of form that pervaded the times, and delivered on the doorstep of a rapidly expanding consumer society.

Unable to build his mechanical dreams in England, Banham moved to America at the end of the decade. One of the most absurdly convincing of Banham's proposals was his collaboration with François Dallegret for an "Environment Bubble" or "Power Membrane House." In these schemes, an insubstantial skin is meant to hover over the unbounded prairie, sheltering naked American pioneers huddled around a "standard-of-living package" that will dispense "goodies" to all these spaced-out, unrestricted, and tuned-in inhabitants. Banham bases this design on a keen analysis of American culture, its "throw-away aesthetic," the democracy of its consumer economy, and its love of gadgets and the great outdoors. He says he realized "the masterplan" for analyzing and designing for this culture while lying by a poolside: "cleanliness, the lightweight shell, the mechanical service, the informality and indifference to monumental architectural values, the passion for the outdoors" must all be composed in appropriate, aesthetically pleasing, and available technology. The answer is not Las Vegas, but a new kind of mobile home.

Lost in this collection is the development of Reyner Banham's views on architecture since, to take a convenient cut-off date, the energy crisis. The last two pieces included are reviews, not of buildings, but of science fiction films. *Barbarella* presents the author with the dream of software destroying the hardware world with which so much of the Archigram-type schemes had been concerned. *Star Wars* is treated as the final iconic summation of those scientific utopias. Such utopias, Banham realizes, seem unable to deliver any kind of humanistic value system (Princess Leia has "all the emotional depth of an underdeveloped Polaroid") and ultimately have Fascist overtones; Banham correctly notes that the model for the set of the final scene of the film has to be Speer's design for the Nuremberg rally. "*Star Wars* is not nostalgia," Banham, perhaps somewhat disillusioned, concludes at the end of the book; "it is history."

Design By Choice is then nothing so much as a historical document. It might be interesting to speculate on how someone with as fresh a mind and as coherent an ideology as Banham obviously had in the early 1960s would treat the contemporary architectural situation, in which the problem is not bombast or Giedionesque determinism, but is often pointless pastiche, ignorant collage, fetishistic reductionism, and aimless abstraction. Banham's cry for an architecture that is aware of its place within the social, economic, and psychological structures of this society is certainly not outdated. What does seem outdated is the optimistic clarion call for the confident molding of those structures through a conscious use of technology to manipulate the attitudes and perceptions of the users towards them. Banham's definition of a "tuned-in" architecture worked for the Automobile Age. For all its historical acumen and wisecracking wit, *Design By Choice* offers little in the way of critical tools with which to approach the age of abstract technology and empty architectural forms, the age in which Pop Art sensibility is as appropriate to AT&T as it is to plastic bubbles. □

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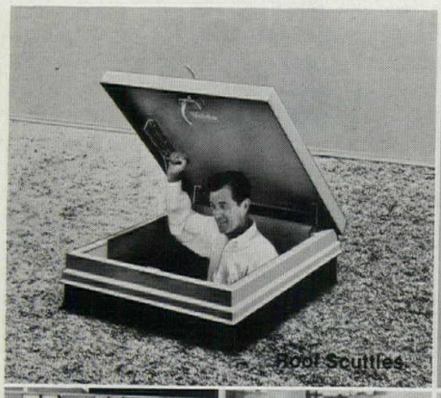
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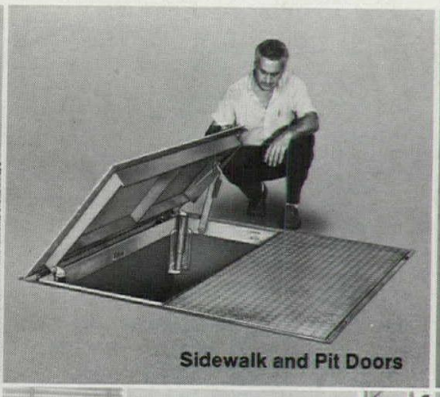
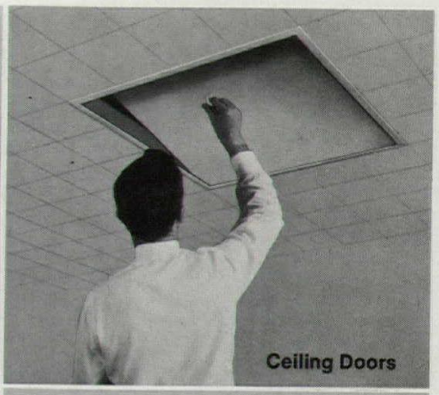

Sidewalk and Pit Doors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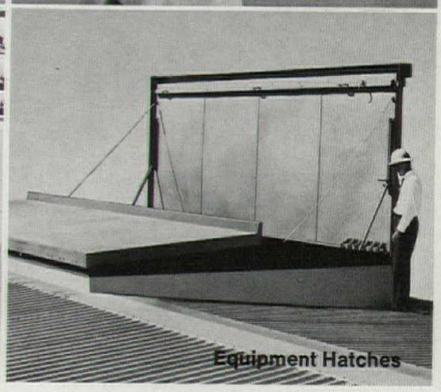
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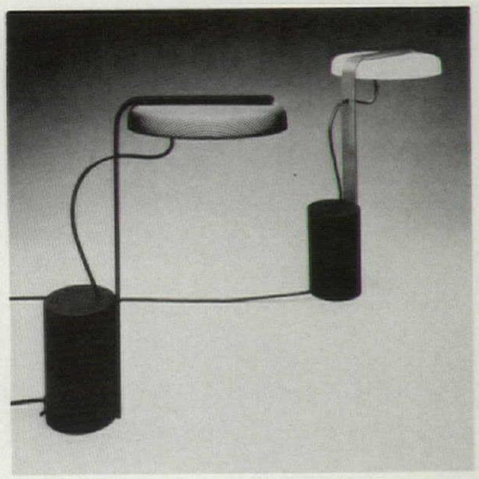

Desk/table lamp No. 110, designed by Ron Rezek, comes in stock colors of textured black, white, red, gray, or combinations of these colors. The 18″ x 9″ x 14″ deep lamp includes a 22-watt Circline fluorescent tube and six-foot cord. Ron Rezek/Lighting.
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Expansion joints permit a building to move without damaging the basic structure. But providing a weatherproof covering for these joints that rolls with the punches often presents a real problem.

It's a problem that can be easily solved with Manville Expand-O-Flash® Expansion Joint Covers, now available in sizes to accommodate openings up to 36" wide. They form a strong yet flexible closure that accommodates moderate building movement, while keeping it water- and weather-resistant.

They're constructed with two preformed metal flanges permanently bonded to a neoprene bellows using a patented process, with closed cell foam insulation cemented to the underside of the neoprene. The metal gives strength, the neoprene provides stretch — two vital requirements for an effective joint cover.

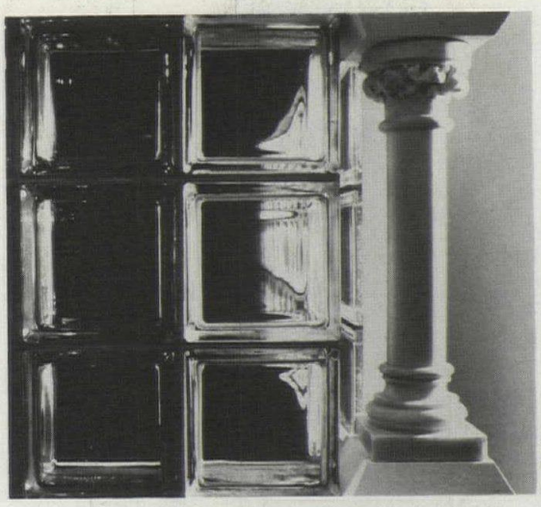
Manville Expand-O-Flash comes in a variety of preformed and custom shapes and fittings, with flanges available in several metals. All of which are eligible for coverage under the Manville Guaranteed Roof Program.

For details, consult Sweet's, write for BU-292A and BU-302A, or contact Jim Magee, Manville Building Materials Corporation, Ken-Caryl Ranch, Denver, Colorado 80217, (303) 978-2783. Produced and marketed by Manville Building Materials Corporation.

Manville

Circle No. 349 on Reader Service Card

Coming next month



Bo Parker

Detail, Knoll Design Center, New York; Paul Haigh, architect.

P/A in September: Interior design

Interior design: the sum of the parts will be the theme of P/A's big September special issue. Eighteen outstanding examples of executed interior design will indicate how to assemble the pieces. The works included are intentionally diverse: they include offices, showrooms, restaurants, and lofts, located at points between Zurich and Seattle, ranging in inspiration from machined Modernism to finely detailed historicism. A separate portfolio will display some exceptionally fine "parts" from interiors that we will not be featuring in this issue.

Technics in September will take up the use of daylight in interiors. Ways of determining light distribution will be discussed, with emphasis on the usefulness of simple models.

Designer's Saturday will be the subject of a special guide to the annual New York interior design event, with information on other goings-on in Manhattan.

P/A in October will include a number of features on housing complexes in other countries, where continued development of this type has been encouraged. P/A will be looking for lessons that can be applied here at home—or in overseas commissions. A related installment of the Energy-Conscious Design Series will take up multifamily housing. And the Technics article will look into the broad subject of designing for hot, arid—that is, desert—climates.

When your next move involves quarry tile, make sure it's a smart one!

You don't want to play games when it comes to specifying floor covering. That's why your next move should be to Summitville ceramic quarry tile.

The quarry tile look is now available in other materials, but only ceramic quarry tile can give you all the important features you need in a floor. And Summitville can give you ceramic quarry tile in a wide range of colors, shapes and sizes.

Summitville quarry tile is extruded for uniform density, strength and rugged performance in high traffic areas. It won't dent, fade, rot, peel, blister, warp, splinter or burn, and never needs waxing. No sealing or preparatory treatment is necessary to maintain its natural appearance.

Summitville offers you six color choices – traditional red, warm golden tones and cool, classic neutrals – and options such as random flashing and textured or abrasive surface.

You can design your floor with classic 6″ x 6″ x ½″ squares, or give it a different character using one of six other Summitville shapes.

When you want the best quarry tile you can buy, at less cost per square foot in the long run than any of its sincerest imitators, make your move a sure win. Summitville ceramic quarry tile. Contact your Summitville distributor for samples and literature.

Take a closer look at

Summitville

Summitville, Ohio 43962

Member: Tile Council of America / Construction Products Manufacturers Council, Inc. / CTDA

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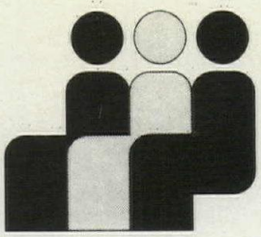
CONCOURS INTERNATIONAL POUR LA CREATION DE NOUVEAUX MEUBLES

INTERNATIONAL COMPETITION FOR CREATIVE DESIGN OF NEW FURNITURE



OFFICE FURNITURE FOR THE NEXT TWENTY YEARS

Architects, interior designers, designers, and plastic designers are invited by the French Ministry of Culture to take part in an International Competition for the creation of new office furniture.

THE OBJECT

Competitors are invited to deal with the various functions of office activity: work surfaces, storage, filing, seating. This equipment must be adaptable to the kind of space available open or partitioned, to the needs and scale of the staff and to the increasing use of computerised office equipment. Special attention should be paid to lighting and visitor facilities.

CONTRACTS

Public orders amounting to 55 millions francs.

AWARDS

The amount of 400 000 french francs will be distributed among ten prizewinners selected by jury assisted by a technical commission.

SCHEDULE

Phase 1: competition of ideas (June 1982 / December 1982)
Phase 2: fabrication of prototypes by the 10 selected prizewinners, in conjunction with industrial bodies.
At the end of the final phase, the jury will then appoint a maximum of five prizewinners.

THE JURY

Edmonde Charles-Roux (France). Charlotte Perriand (France). François Barré (France). Mario Bellini (Italy). Kenji Ekuan (Japan). Hans Hollein (Austria). Yrjo Kukkapuro (Finland). François Mathey (France). Jean-Claude Maugirard (France). George Nelson (USA). Sébastien de la Selle (France). Guy Vidal (France).
Deputy jury members: Marc Emery (France). Keith Grant (United Kingdom).
Commissionner General of the Competition: Jean-François Grunfeld, appointed by the Minister of Culture, will act as Secretary to both the jury and the technical commission which must assist the latter.

THE EXHIBITION

An exhibition will take place the "Musée des Arts Décoratifs" in Paris. All submitted projects together with the manufactured prototypes will be diplayed within a historical perspective "The office from 1900 to 2000". Office units typical of each period will be reproduced.

INFORMATIONS

For all information, call the Cultural Services of the French Embassy
972 Fifth Avenue New York 10021 Tel. 570 44 00

Ministère de la Culture/Délégation aux Arts Plastiques.
Commissariat général du concours ; Pavillon de Marsan 107, rue de Rivoli
75001 Paris. Tél. (1) 260 32 14

Products continued from page 111

and similar information can be stored in the computer and inserted into documents as required. The system operates on Digital Equipment Corp., LSI-11, PDP-11, and VAX computers. The user-friendly system can be used by non-data-processing personnel. Compu-Tome, Inc.
Circle 105 on reader service card

The Gibigiana reading lamp, designed by Achille Castiglioni for Flos of Italy, has an adjustable polished steel reflector to direct light from the halogen lamp concealed in its base. A dimmer controls light intensity. The lamp is either 16½ in. or 20½ in. high, in bronze, anthracite, and red metallic finishes. Atelier International, Ltd.
Circle 106 on reader service card

Hollow metal doors with a thermal break are said to have been successful in reducing heat loss and combating frost and condensation. The barrier is closed-cell polyurethane foam, which is also available in mullions and frames for hollow metal transoms, sidelites, and borrowed lites. Curries Mfg., Inc.
Circle 107 on reader service card

American Renaissance series windows of leaded insulated glass in Cathedral or Diamond design have a decorative border of marbled glass. Casements are either primed wood or aluminum clad. Both designs are offered in metal entry doors, and sidelights are also available. Norco Windows, Inc.
Circle 108 on reader service card

Acousti-Clean® ceiling panels, designed for sanitary and clean rooms, have no crevices where bacteria can grow. The moisture-resistant, nonporous, and nonfibrous panels reduce noise levels by 4–5 dBA. They are completely washable with standard cleaning solutions. Each is 24" x 48" x 1½" thick and weighs 2.6 lb. Lord, Acoustical Products.
Circle 109 on reader service card
[Products continued on page 120]

With Buchtal, shape a new world around you.

The offices of Allen Mushinsky, PA, AIA, Bethesda, Maryland, floor installation using Rustic #972 Gold Antique. Designer: Allen H. Mushinsky

Buchtal architectural ceramics carry your message throughout any commercial development you design. Write or call about the Keraion, Rustic, Unglazed and Monocolor lines for interior and exterior spaces. Or look for us in Sweets', file 9d and call the Sweets' Buyline for the Buchtal distributor nearest you.

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TWX: 810-751-8485

Circle **No. 312** on Reader Service Card

Products continued from page 118

Modulav® II combines a foldaway flush toilet and a cultured marble sink top in 5 sq ft of space. Intended for bedside installations for critical care patients in hospitals and nursing homes, the completely self-contained unit can be attached easily to existing plumbing and water supply lines. When the toilet unit is lowered, water immediately flows into the bowl. The sink has a gooseneck faucet and wrist-operated handles. An optional storage cabinet has two shelves and a drawer for patient's personal items. American Sterilizer Co.
Circle 110 on reader service card

Earth energy heat pumps use the constant temperature of the earth to reduce both heating and cooling costs. They can be used with well water, ground coil, vertical earth coil, or solar assistance, which uses solar collectors to heat water, then store it in underground tanks. As air temperature drops, air-to-air models become less efficient for heating; earth energy heat pumps are up to twice as effective, according to the manufacturer. Command/Aire.
Circle 111 on reader service card

Modular granite cobblestones are preassembled into fan shapes (Roma) and squares (Milano), with custom designs available in quantity orders. Individual stones can be used where prefabrication is not suitable. Colors are gray granite, red granite, and white marble, which can be used to fabricate modules in one color or in a combination of colors. Michael Vandever Associates.
Circle 112 on reader service card

Modular furniture for electronic equipment includes work stations, terminal stands, printer stands, mobile data carts, and turntables. The modular design allows work stations to be clustered in groups of two, three, or four using top connectors. Terminal stands are available at keyboard or terminal height. The components have a wire management system said to have the capacity to accept any wiring system currently on the market. The furniture is available in the company's full range of paints and top laminates. Cole Business Furniture Div., Litton Industries.
Circle 113 on reader service card

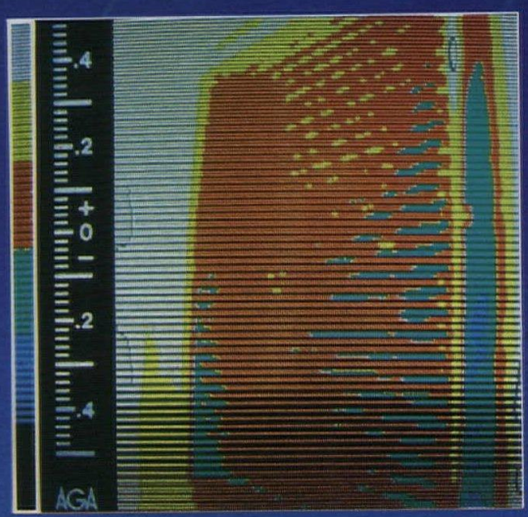
Little Inch fluorescent fixture #4113 is 21¼ in. long and only 1⅛ in. deep. It uses Alkcotronic™ solid state ballast, which is said to provide energy savings over conventional magnetic ballasts. The unit has an on/off potentiometer dimming switch and an opaque-front task lens that directs 25 percent more illumination to the task area, according to the manufacturer. The fixture comes in standard high-gloss baked enamel finish or all stainless steel. Alkco Manufacturing Co.
Circle 114 on reader service card

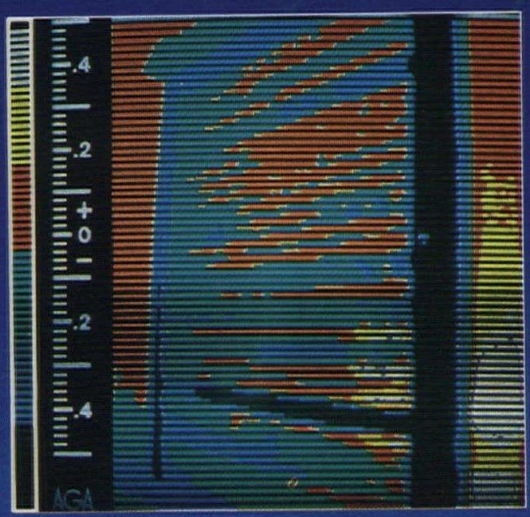
The Life Support Power Column, for critical care patients, is a freestanding column incorporating many patient services. The support services can be included in a variety of combinations to meet hospital requirements. The system can be used in new construction or in existing space and allows greater flexibility in placement of such areas. Electro/Systems.
Circle 115 on reader service card

The Square Beam Cutoff fixture, providing outdoor area lighting at a low scale, is offered in square and asymmetric optical systems. The three mounting arrangements—single, twin arm, or
[*Products continued on page 124*]

GET 96% MORE INSULATING VALUE IN ANY OPENING!

KINNEAR INSUL-TITE™ DOOR





LEADING COMPETITOR'S INSULATED DOOR

These infra-red photos (by an independent laboratory using ANSI/ASTM C-236-66) show the significant difference in heat loss between an opening protected by a Kinnear INSUL-TITE door system and a leading competitor's insulated door. Note: The color scales at the left of each thermogram span the differences in heat loss (from low to high) by grades of color (none to black). You can see the minimal heat loss in the Kinnear door indicated by a preponderance of red shades; a dramatically higher heat loss in the competitor's door is shown by the blue shades. Note also: the black in the jamb at the right of the competitor's door indicates an almost total heat loss.

Kinnear's new INSUL-TITE™ system provides up to 96% more insulating value than any other insulated rolling steel door available today!

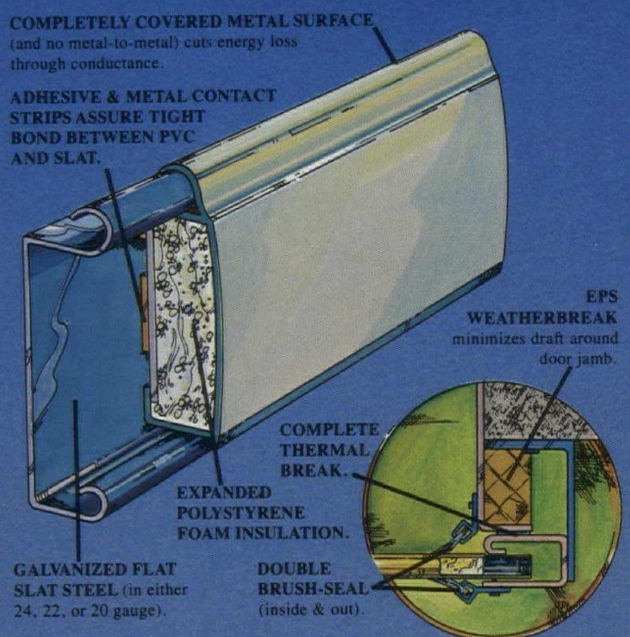
Whatever the temperature differential between the inside and outside of your structure, INSUL-TITE helps keep it that way! That's because Kinnear offers a new and complete *system:* an insulated rolling steel door and a thermal barrier on all four sides of the opening.

Kinnear combines its (#14) flat steel slat with an extruded polyvinyl chloride back cover and expanded polystyrene foam insulation. Double brush-seals (inside and out) affixed to the guides add sill-to-header protection on each side of the door. A lintel neoprene weatherseal at the top and astragal at the bottom complete the weatherstripping. And an EPS jamb weatherbreak affords an extra measure of draft reduction—helps provide a complete thermal break.

Kinnear incorporated yet another advantage over competitors' doors in the design of INSUL-TITE—a completely covered (no metal-to-metal) surface that cuts energy loss through conductance. Reliability and long life are enhanced by the firm bond between the self-locking PVC and steel slats.

Fully counterbalanced INSUL-TITE doors offer a choice of manual, chain hoist, crank or motor operation. And virtually no sign of wear was noted after 27,000 open and close cycles, the equivalent of over seven years' usage.

For complete details about INSUL-TITE, write or call today.



Kinnear makes it easy for you to put it all together.

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Pat. Pending—INSUL-TITE Door System

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Up...and on time

Your Sargent hardware comes in... delivered right on time, just as your Sargent distributor promised. Up it goes, swiftly installed. And you appreciate, once again, the way Sargent helps get the job done right.

SARGENT

Division of Kidde, Inc.

KIDDE

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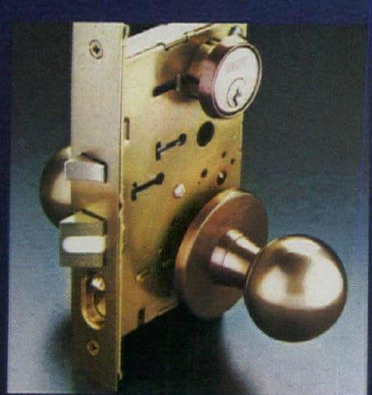
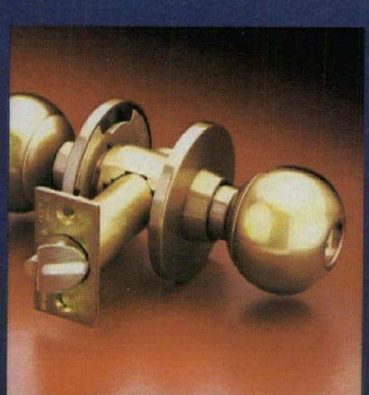
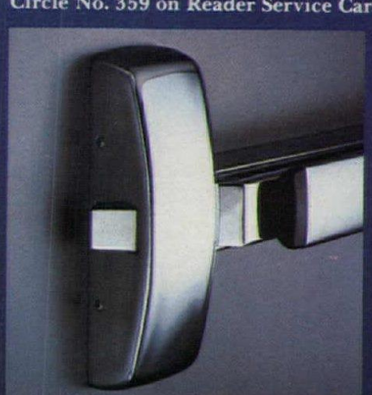
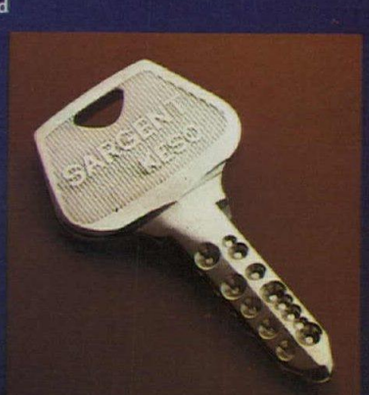




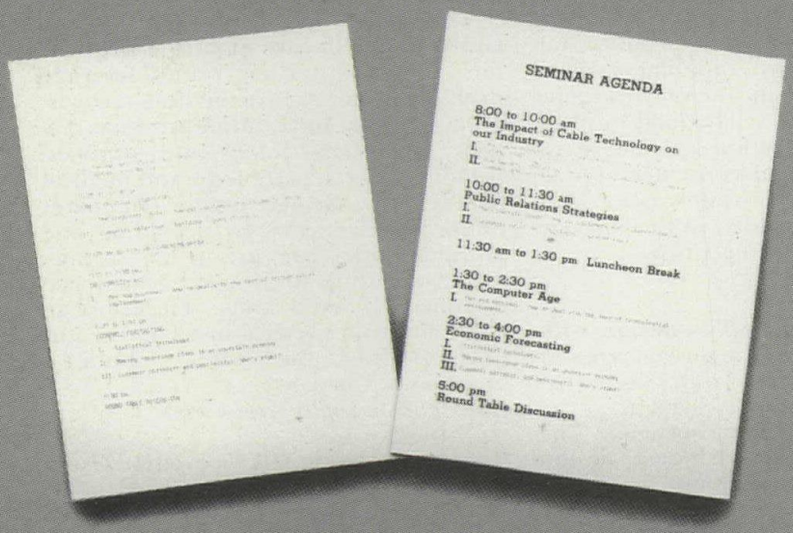




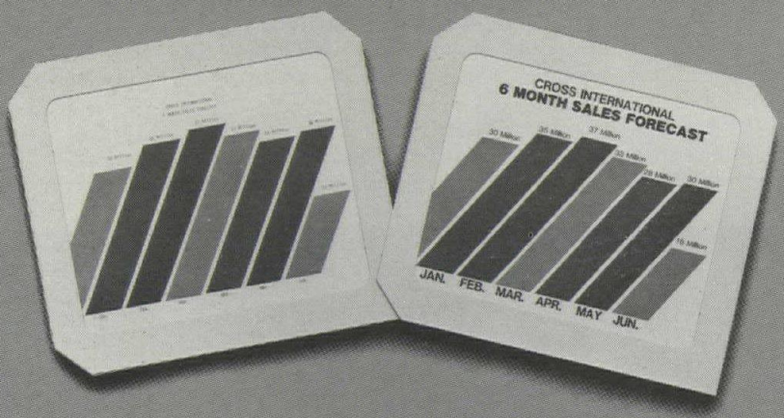
It makes good sense to specify Sargent everywhere. From door closers to exit devices: from bored-in and mortise locks to auxiliary dead bolts. Not to forget the dependable Sargent Keso Security System.

Sargent, New Haven, Connecticut 06511/Sargent (Canada) Ltd.

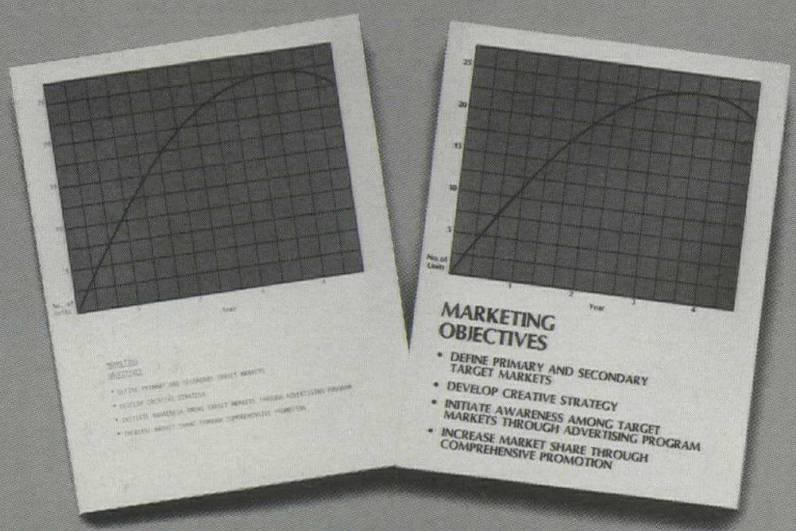
Kroy® lettering gets you read. And remembered.



Memos become memorable.



Graphs get more attention.



Proposals demand to be read.

Never again will your business communications get "lost in the shuffle".

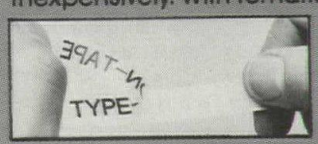
Kroy® lettering makes your work look more professional. More important. So good, it demands to be read.

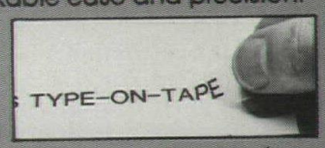
And now, enjoy the time and money-savings of the two latest innovations in the Kroy lettering system line: the Kroy 80K™ keyboard and the Kroy 24™ desktop lettering systems.

The Kroy 80K keyboard lettering system combines Kroy precision and quality with the speed of state-of-the-art microelectronic technology. The keyboard input allows you to produce Kroy lettering up to 5 times faster than with any other Kroy system.

The Kroy 24 desktop lettering system brings you the most compact and affordable system in the entire Kroy line. As the name suggests, it is specially designed to sit on your desk—where it's always easily accessible.

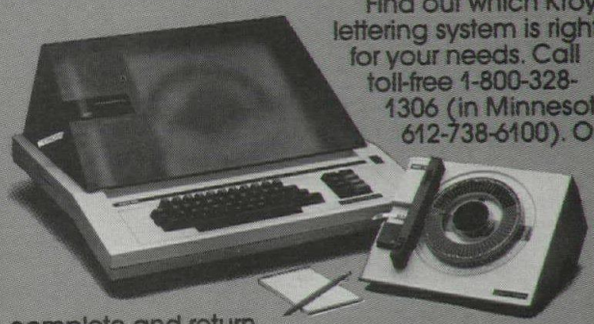
Both new lettering systems produce crisp, clean Type-on-Tape™ that turns your ordinary paperwork into impressive printed materials. Instantly. Inexpensively. With remarkable ease and precision.





Simply type in or dial the desired letter, number or symbol. Out comes perfectly aligned, professional-quality type on adhesive backed tape. Peel the lettering from its backing, position it on your original and make your copies. The tape completely disappears, leaving you with business communications guaranteed to be read and remembered.

Find out which Kroy lettering system is right for your needs. Call toll-free 1-800-328-1306 (in Minnesota, 612-738-6100). Or



complete and return the coupon below. We'll send you a free sample of Kroy lettering plus a copy of our latest brochure. And, if you wish, a Kroy Representative will call you to arrange a no-obligation demonstration in your office.

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City _____ State ____ Zip _____

Phone _____

We must have your phone number to complete your request.

1748

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St. Paul, MN 55164

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Products continued from page 120

wall—provide particular light patterns for area lighting, store lighting, urban renewal areas, malls, and pathways. The fixtures suit both new construction and retrofit projects. Kim Lighting, Subs. of Kidde.
Circle 116 on reader service card

Literature

'Design Guide for Insulated Buildings.' An introductory section to this publication explains its use in planning commercial, industrial, and institutional buildings. Discussions include R-values, moisture control, and cooling load factors. Technical information covers 21 types of walls and 10 types of roofs. The third section features 108 details involving joints between roof and wall, wall and floor, wall and ground, wall and wall, and penetrations of walls and roof. The guide is $15 a copy and can be ordered from Owens-Corning Fiberglas Corp., Insulation Operating Div., Fiberglas Tower, Toledo, Oh 43659.

'Glass for Construction,' a 32-page brochure updated for 1982, discusses architectural glass for various applications. Included are coated, tinted, clear, and insulating glass; glazing for special areas, such as racquetball courts and skylights; heat-treated spandrel glass and tempered safety glass; and glass mullion systems. Technical information covers thickness, light transmittance, reflectance, relative heat gain, U-value, and shading coefficients using blinds and draperies. Libbey-Owens-Ford Co.
Circle 200 on reader service card

'Your Best Investment for Weathering the 80's' discusses silicone products for various applications: building sealant, glazing sealant, silicone/polyurethane roof systems, and a foamed-in-place fire-resistant penetration seal. There is a comparative chart of construction sealants, and property information for each product is included in the 28-page brochure. Dow Corning Corp.
Circle 201 on reader service card

'Glass Block for the 80's—design with confidence' outlines the several types of glass block available, from Vistabrik® solid glass block for security to Solar Reflective to reduce solar heat gain. The 16-page brochure includes design guidelines and installation details of both interior and exterior panels. Pittsburgh Corning Corp.
Circle 202 on reader service card

Ceilings shown in a 24-page catalog illustrate a variety of designs that use baffles, grids, coffers, mirrored panels, and lighted areas with the look of skylights. Included in the group is Pipe & Junction™, a modular system of pipes with which fabric panels or banners can be used. Integrated Ceilings.
Circle 203 on reader service card

Auditorium seating is illustrated in full color in a portfolio of various installations. Some of the many areas of use are churches, athletic arenas, theaters, concert halls, and convention centers. Specifications are included. Irwin Seating.
Circle 204 on reader service card

Guide to health care mobile storage offers solutions to ten critical storage problem areas: x-ray, medical records, bulk supplies, food, administrative records, pharmacy, linens and supplies, personal effects, pathology, and medical library. The storage system eliminates nonproductive aisles by providing one movable aisle per group of storage units, saving up to 50 percent of space occupied by fixed units. The 28-page guide illustrates typical installations and explains how the system operates. Spacesaver Corp.
Circle 205 on reader service card

'Design Professionals Computer Users Directory' lists more than 1500 architectural/engineering firms that have data processing, word processing, and CADD systems. It is organized by hardware type and system model name or number. It includes firm name, size, type, and applications of the system, along with information about software swap and hardware for sale by design firms. The directory, $25 plus $2 for handling, can be ordered from Design Compudata, 45 Van Brunt Ave., Dedham, Ma 02026.
[*Literature continued on page 126*]

THE CONCEALED ULTRA-THIN DOOR CLOSER FROM READING-DORMA.

Put This in Your Plans and Relax. Over 2 Million Are in Use Worldwide.

Now you can realize your design creativity with confidence in concealed floor closers. The Dorma Magnum Series provides quality, engineering, precision, and the performance you want; backed with a five year guarantee.

The Magnum Series will serve every use. Model 75 — only 2" deep — services doors weighing up to 220 pounds and 3'6" wide. Model 80 — only 2 11/32" deep — services doors up to 660 pounds and 4'6' wide. All feature a built-in Thermo-Constant Control which assures uniform closing speeds at high and low temperatures. Both models are non-handed and can be used on single, double-action, offset, or center-hung doors. Versatility assures easy, fast installation.

Get full details on Reading-Dorma Concealed Floor Closers.

SEND FOR FREE PRODUCT GUIDE.

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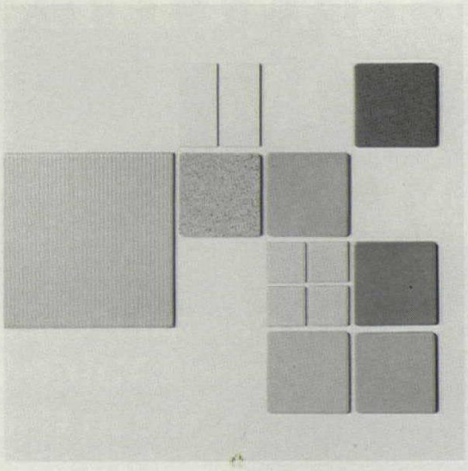
READING DORMA

READING-DORMA CLOSER CORP.
Dorma Drive, Reamstown, Pennsylvania 17567
Phone toll-free (800) 523-8483
In Pa. (215) 267-3881

Literature continued from page 124



High-fired CT 70 porcelain ceramic tiles suitable for heavy traffic areas include three earth tones, which have been added to four granitelike grays. Frost-resistant CT 230 glazed wall and floor tiles, 8″ x 8″, come in white, tan, beige and gray. These and small beige or white 2″ x 2″ and 2″ x 4″ frost-resistant tiles are shown in a 12-page, four color brochure. Forms & Surfaces.
Circle 206 on reader service card

Gypsum products catalog covers technical data and system installation details for gypsum products. They include regular, Eternawall®, and Firestop® gypsum board, sheathing, plaster products, and asbestos-free joint system materials. Area Separation walls, a recent addition, provide two-hour fire resistance protection between townhouses, apartments, and condominium units. Georgia-Pacific Corp.
Circle 207 on reader service card

Superdok series 2000K dock lifts in two models, each with a 6′ x 8′ platform, are described in a four-color, eight-page brochure. It discusses uses, features, and options of the dock lifts, which are used for loading and unloading trucks, and provides detailed specifications and concrete pit drawings. Advance Lifts.
Circle 208 on reader service card

'Enter the Corbin Museum of Modern Art' illustrates in full color unit, cylindrical, and mortise locks, exit devices, and door closers. Cutaway drawings of each point out special features, and descriptions are included. Corbin Div., Emhart Hardware Group.
Circle 209 on reader service card

The Infracon® lighting control senses occupancy, automatically activating lights when the presence of a person is detected. Shortly after the area is vacated, the lights switch off automatically. One control and one sensor cover about 200 sq ft. Sensors are mounted between 8 and 12 ft high. A four-page brochure discusses the product, components, electric consumption, and installation. Infracon, Tishman Research Co.
Circle 210 on reader service card

Cedar siding and roofing brochure discusses the advantages of cedar siding in 8-ft panels that install like lap siding, rather than individually like shakes or shingles. Typical uses, both exterior and interior, are illustrated in color. A selector chart shows standard and fancy cut shingles and provides dimensions. Suggested specifications are included. Shakertown Corp., Cedar Panel Div.
Circle 211 on reader service card

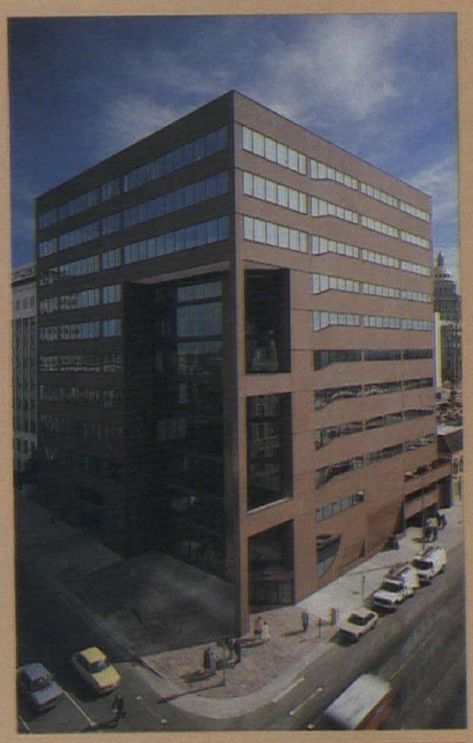
Roof insulation systems brochure discusses heat gain and loss, energy conservation, application, and general design factors. The 20-page catalog includes information about fuel savings, payback on upgraded roof insulations, drainage, and vapor retarders. Tables show thermal values and technical data. Johns-Manville.
Circle 212 on reader service card

'Thermal Wall Systems' brochure discusses energy-conserving curtain walls and windows with thermal isolation and infiltration control. It describes the thermal gasket system and a low-rise thermal system that prevents water infiltration. Howmet Aluminum Corp.
Circle 213 on reader service card

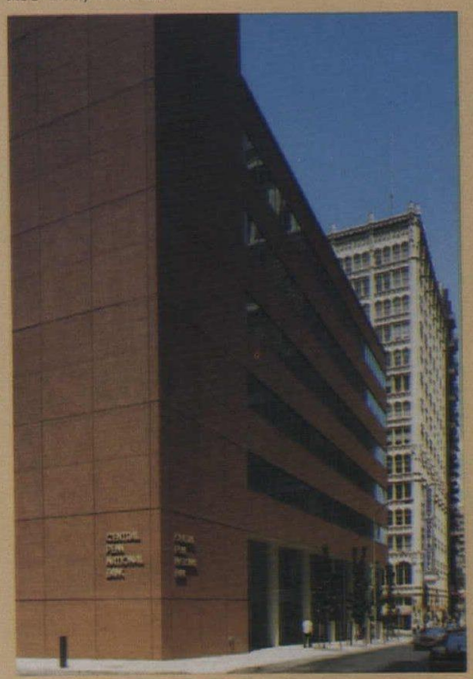
Architectural panels for roofs, mansards, and fascias meet ASTM standards for natural weather exposure, salt spray resistance, and humidity resistance, according to the manufacturer. The panels are factory cut in custom lengths
[*Literature continued on page 129*]

CERAMIC TILE EXTERIOR: PREFAB ECONOMY

First Project in 1980... Scores More in '81–'82 Using Gail Brickplate Panels in Steel Stud Framing



SPECTRUM BUILDING, **Denver, CO. Gail Unglazed Brickplate, 4″x 8″ on prefabricated panels for exterior walls. Architect: McOG Associates, Denver. Gen'l Contr: Turner Const. Tile Contr.: Ace Tile, Denver.**

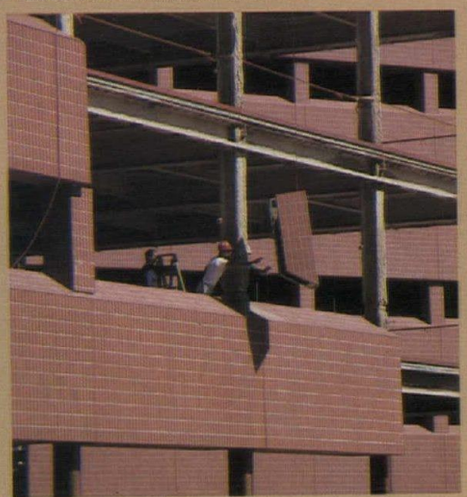


CENTRAL PENN BANK, **Philadelphia, PA. Prefab panels of Gail Brickplate (English Red) prefabricated by Duggan & Marcon in Allentown, PA. Arch.: Ballinger Co., Philadelphia. Gen. Contr.: Nason & Cullen, Rosemont, PA.**

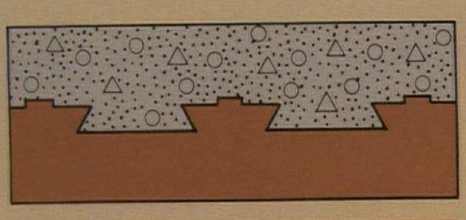
In little more than a year, this new system has become a legendary success. The first project, Denver's new "Spectrum Building," was completed in September, 1980. A host of similar buildings are now in various stages of design and construction.

This remarkable growth is primarily because the concept offers "Mercedes-Benz quality at VW prices." It's more economical and desirable for these reasons:

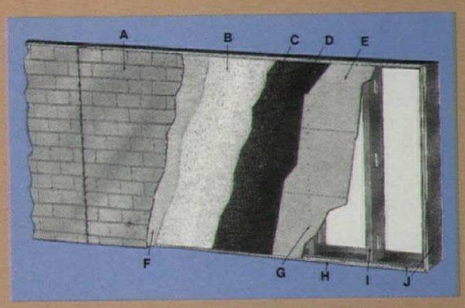
- Tons of expensive design deadload and structural mass are eliminated since panels weigh 80% less than precast concrete;
- Less expensive than glass or aluminum curtainwalls;
- Eliminates costly scaffolding;
- Provides a chase for pipes and wiring in exterior walls for faster, more economical installation;
- Virtually maintenance-free: frostproof, acid-rain resistant and vitreous... not a thin-brick veneer.
- Work proceeds regardless of bad weather since panels can be assembled in an enclosed structure;
- Excellent insulation values: U=0.048.



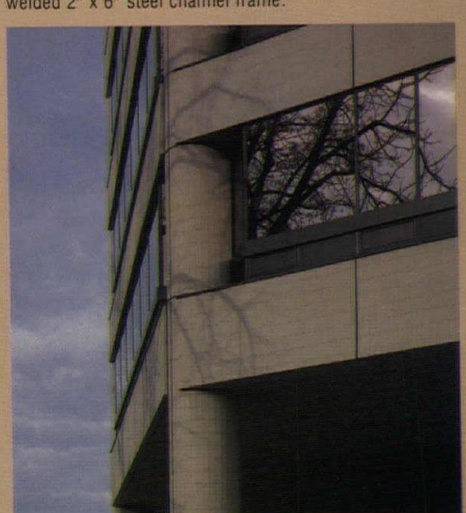
PRUDENTIAL INSURANCE CO., **Philadelphia, PA. Prefabricated 20′ x 7′4″ panels of 4″ x 8″ Gail Unglazed Brickplate being installed at jobsite by Duggan & Marcon. Arch.: Ballinger Co., Phila. Gen. Contr.: Daniel J. Keating Co., Villanova, PA.**



Gail Brickplate tiles are mechanically bonded in portland cement mortar and locked in place on panels with "keyback ridge" design, not possible with thin-veneer brick.



A. Gail Brickplate Tile (Keyback Design) **B.** ¾″ leveling coat of cement plaster with latex and chopped fiberglass strands. **C.** 3.4-lb. self-furred Diamond Mesh Metal Lath (galvanized or painted where rust-resistance is required); secured to studs with self-tapping screws (washers optional) **D.** 15 pound tarred felt stapled to gypsum board **E.** Tongue and groove asphalt impregnated ½″ thick gypsum plaster board (installed horizontally, tongue up) **F.** ¼″ latex modified portland cement; scored, toothed, trowelled **G.** Gypsum board screwed to steel channels **H.** 1¼″ plaster stop, tack screwed to frame 12″ on center **I.** 16 gauge steel channels, 16″ to 24″ on center **J.** 18 gauge welded 2″ x 6″ steel channel frame.



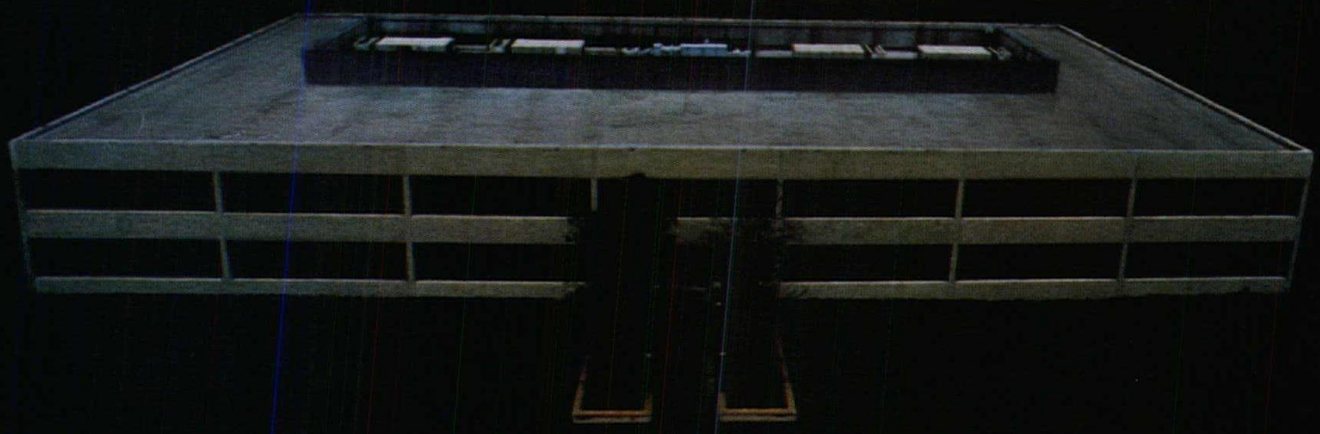
SACRED HEART HOSPITAL, **Eugene, OR. Creative use of curved, quarter round prefab panels to fit around circular columns. Arch.: Balzhiser, Longwood, Smith, Paul & Assoc., Eugene. Tile Contr.: Eugene Tile Co., Eugene, OR.**

For architecturally beautiful exteriors... on a restricted budget... the prefab Gail Brickplate system warrants your interest. Write or call for our new Technical Brochure "Prefab Brickplate Panels." Or, contact Gail to arrange for a viewing in your office of our 15-minute audio-visual presentation on the Prefab Brickplate Panel System.

Gail

ARCHITECTURAL CERAMICS
14791 Myford Road - Tustin, CA 92680
(714) 731-8361

OUR GLASS PLYSHEET HAD TO GO THROUGH SNOW AND HEAT AND GLOOM OF NIGHT BEFORE IT COULD GET TO YOUR ROOF.



GAF'S EXTENSIVE FIELD TESTING GIVES GAFGLAS™ PLY 4 AN EDGE OVER THE COMPETITION.

Gafglas Ply 4, our newest glass roofing product, is now ready for national distribution. But it had to go through all kinds of abuse first. On our roofs, in the great outdoors.

We tested its ability to weather the effects of harsh climate changes. How well it resisted moisture or other harmful elements that could cause premature failures. And made sure it was easy to apply, even under extreme conditions.

This rigid testing ritual is the reason Gafglas Ply 4 has actually exceeded ASTM specification D2178 and UL requirements.

In fact, all our glass built-up roofing products—from our glass vent-plys and standard base sheets to our ply and cap sheets—never leave our hands without being tested both on our roofs and in our labs.

What's more, when you specify GAF Built-Up Roofing products, our highly trained team of experts are at your disposal for technical assistance as well as in-put for job specifications.

So next time you need a glass plysheet, or any glass built-up roofing product, put Gafglas to the test.

Heaven knows we have.

GAF® **GAFGLAS™**
BUILT-UP ROOFING PRODUCTS

ALL YOUR BUILT-UP ROOFING NEEDS ARE UNDER ONE ROOF.

Circle No. 325 on Reader Service Card

Literature continued from page 126

and have trim manufactured from the same materials. Typical installations are shown in color in a 12-page brochure that also shows product shapes and details of installation. Wind-load tables and specifications are included. Span Metals Corp.
Circle 214 on reader service card

'TriAmbient™ Lighting Planning' provides 24 pages of lighting fundamentals, fixtures selection, fixture positioning, designing, and a glossary of terms. Data tables cover color rendering properties and light level loss of various lamp types, foot candle level requirements for various tasks, and reflectance values of different colors. A section deals with plants suitable for areas having low, medium, and high intensity lighting. Haworth, Inc.
Circle 215 on reader service card

Dynamag Shear Lock, with a tested holding force greater than 1500 lb, provides security and safety with any door. A four-page brochure describes and illustrates the lock, security consoles, and mounting hardware. Smoke and fire detectors, water flow sensors, and seismic disturbance sensors can be wired to automatically unlock the door. Specifications are included in the brochure. DynaMetric, Inc.
Circle 216 on reader service card

Building materials

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

Concert Theater, C.W. Post Center, Long Island University, Greenvale, NY (P. 49). *Architects: Mitchell/Giurgola Architects, New York.* Structural steel: Oxhandler Structural Enterprises. Rebars: Capitol Steel Corp. Deck: United Steel Deck. Joists: Standard Building Systems. Cladding (Alucobond): Consolidated Aluminum Corp. Doors and frames: Bilt-Rite Steel Buck Corp. Counter shutter: North American Door. Stage floor: Heywood-Berk Floor Co. Roofing (IRMA): Celotex Corp. Insulation: Dow Chemical USA, U.S. Gypsum. Paint: Benjamin Moore, TNEMEC. Hardware: McKinney, Schlage, Norton, Von Duprin. Smoke detection system: G.S. Edwards. Lockers: Tiffin Metal Products. Theater seats: Irwin Seating Co. Sound systems: Atel Sound Systems. Projection screen: Stewart Filmscreen Corp. Lighting controls: Strand Century, Electro Controls. Circular stair: Woodbridge Ornamental Iron Co. Handrails: North Shore Iron Works. Lighting: Crouse-Hinds, All-Brite Light Co., Day-Brite Div., Emerson Electric, Lightolier, Omega, Versa-Tec, Edison-Price, mcPhilben, Abolite. Steel conduit: Steel Duct Conduit Products; Plumbing: Eljer, Powers-Fiat, Symons Engineering, Sloan Valve Co. Toilet stalls: Metpar Steel Products Corp. Sprinkler systems: Reliable Automatic Sprinkler Co. Water flow detectors: Notifier Co. Valves: Croker-Standard. Air-conditioning system: Lear-Siegler, Monmouth Div., Penn Ventilator Co., Continental Air Filter.

Foxhall Crescents, Washington, DC (p. 64). *Architect: Arthur Cotton Moore Associates, Washington, DC.* Wood frame with brick: Victor Cushwa. Limestone veneer: Cathedral Stone Co. Floor structures: Brandt & Chopp, Vulcraft Div. of Nucor Corp. Exterior wall surfacing: Dryvit System, Inc., D. Compe, Inc. Interior wall surfacing: U.S. Gypsum. Windows: Rolls Screen Co. Skylights: Rosenthal Glass, Twin Pane Indust. Doors: Herndon & Anderson. Roofing: Certainteed "Glasstex." Insulation: Owens-Corning. Paint and stain: McCormick Paint. Hardware: Baldwin. Appliances: General Electric, Amana, Jenn-Air. Radio intercom: Scovill Manufacturing Co. Elevators: Inclinator Corp. of America. Curved stairs: Taney Supply & Lumber Corp. Handrails: Bethesda Iron. Lighting: Hadco Div. Tubs and lavatories: American-Standard, Kohler. Plumbing fittings and showerheads: Kohler, Moen, Delta. Heating system: Carrier Corp.

Dixon residence, Venice, Ca (p. 68). *Architect: Brian Murphy, Santa Monica, Ca.* Asphalt roofing: Johns-Manville. Aluminum grating: Mulholland & Associates. Glass block: Pittsburgh Corning. Fireplaces: Heatilator. Skylights: Lane Air.

David Ireland House, San Francisco, Ca (p. 72). *Architect: David Ireland, San Francisco.* Gypsum board: Georgia Pacific. Corrugated metal: Curoco. Anodized aluminum windows: Bonelli. Hollow steel doors: Forderer. Wood doors: Allwood. Paint: Kelley-Moore. Sealants: Gacoflex. Insulation: Owens-Corning. Hardware: Schlage, Falcon. Plumbing and sanitary: Kohler, American-Standard.

Johnson Residence, San Diego, Ca (p. 76). *Architect: Rob Wellington Quigley, San Diego, Ca.* Windows: Andersen. Skylights: Gordon. Doors: TM Cobb. Paint and stain: Sinclair. Hardware: Schlage. Lighting: Halo. Tubs and lavatories: American-Standard. Saunas and whirlpool baths: Redwood. Plumbing fittings and showerheads: American-Standard, Kohler. Carpets and rugs: Loop Alison, T Seymour. Blinds: Levolor.

McAshan House, Houston (p. 78). *Architect: Val Glitsch, Houston.* Concrete masonry units: Eagle Lake Masonry Products. Gypsum board interior walls: Gold Bond. Wood windows: Marvin. Composition shingles and built-up roofing: GAF. Batt and rigid insulation: OCF. Exterior masonry sealer: Prime-a-Pell. Exterior paint: Pratt & Lambert. Interior paint: Pratt & Lambert, Martin Seynour. Hinges: Schlage. Incandescent lighting: Lightolier, Halo. Plumbing fixtures: American-Standard. Heating and air conditioning: Rheem.