

BRAN



Why one of the big savers in this energy-saving building is an Armstrong Ceiling System.

The Gannett West building, shown here, was specifically designed to conserve maximum amounts of energy and provide spatial flexibility. It was completed early in 1976 as part of The Farley Gannett Engineering Center, headquarters complex of the Harrisburg, Pa., engineering firm of Gannett Fleming Corddry and Carpenter, Inc.

Gannett West is about four times more energy efficient than the company's Gannett East building, which was completed in 1968 when emphasis was on initial capital costs. With the new building's design emphasis shifted to life-cycle costing, the result was an average consumption of only 63,250 BTU per square foot during the first year of operation versus 242,905 for the older structure.

Everything that went into the new building was dictated by energy-reduction considerations—its shape, its placement relative to the sun, its window design, its construction materials, its mechanical equipment. And, of course, its lighting.


That's why the architect and engineers specified the C-Series Luminaire Ceiling System from Armstrong. This system's 60"-square vaulted module and tandem-wired single-tube lighting fixture produce virtually glare-free high-quality lighting with a building-wide energy consumption average of only 2.0 watts per square foot. They also provide interior design flexibility, high acoustical absorption, and the cost benefits of through wiring.

Air supply in the integrated system is through a bar concealed in the grid. Air return is through the fixture body to increase illumination levels and service life by cooling ballasts and lamps.

When you want a ceiling system that can reduce the need for energy, provide superior quality lighting, and allow optimum spatial flexibility, the name to remember is Armstrong. To learn more, write Armstrong, 4210 Sage Street, Lancaster, Pa. 17604.

Architects and Engineers: Lacy, Atherton and Davis, Harrisburg, Pa.
Engineers: Gannett Fleming Corddry and Carpenter, Inc., Harrisburg, Pa.



FROM THE  INDOOR WORLD® OF

Armstrong

EVENTS

Oct. 27-28: Illinois Council/AIA state convention, Chicago-Sheraton Hotel in downtown Chicago.

Oct. 30-Nov. 2: Prestressed Concrete Institute convention, Stouffers Riverfront Towers, St. Louis. Contact: PCI, 20 N. Wacker Drive, Chicago, Ill. 60606.

Nov. 1: Seminar on the Hospital-Based Medical Office Building, Holiday Inn South, Philadelphia (repeat seminar on Nov. 3, Airport Atlanta Hilton South, Atlanta). Contact: American Hospital Association, 840 N. Lake Shore Drive, Chicago, Ill. 60611.

Nov. 1-3: Conference on Designing to Survive Severe Hazards, IIT Research Institute, Chicago. Contact: Keith E. McKee, IIT Research Institute, 10 W. 35th St., Chicago, Ill. 60616.

Nov. 1-3: Building & Construction Exposition and Conference, McCormick Place, Chicago. Contact: R. E. Flagg, Building & Construction Exposition & Conference, 331 Madison Ave., New York, N.Y. 10017.

Nov. 2-4: Michigan Society of Architects convention, Detroit Plaza Hotel, Renaissance Center, Detroit.

Nov. 3-6: Energy Fair '77, Anaheim Convention Center, Anaheim, Calif. Contact: Energy Fair, Inc., 15915 Asilomar Boulevard, Pacific Palisades, Calif. 90272.

Nov. 4: Conference on Planning Arts Centers, sponsored by AIA and the Associated Councils of the Arts, Cincinnati. Contact: Harold Glover, AIA Headquarters, (202) 785-7229.

Nov. 8-10: Conference on Energy Efficiency in Wood Building Construction, McCormick Inn, Chicago. Contact: Forest Products Research Society, 2801 Marshall Court, Madison, Wis. 53705.

Nov. 9-11: Workshop on Developing an Accessible Campus for the Handicapped, Riskey Hyatt House, Palo Alto, Calif. (repeat seminar on Dec. 7-9, Hyatt Regency Hotel, New Orleans). Contact: National Center for a Barrier-Free Environment, 8401 Connecticut Ave., Washington, D.C. 20015.

Nov. 9-12: Florida Association of Architects annual convention and building products exhibits, Orlando Hyatt House, Orlando, Fla.

Nov. 10-11: Construction Research Council annual meeting, Omni Hotel, Atlanta. Contact: CRC, 1000 Vermont Ave. N.W., Washington, D.C. 20005.

Nov. 10-11: Institute on Planning and Designing Multipurpose Senior Centers, University of Wisconsin, Madison.

Nov. 10-12: Workshop on Energy Building Codes, Iowa State University, Ames.

Nov. 15: Application deadline, Rome prize fellowships, 1978/79. Contact:

American Academy in Rome, 41 E. 65th St., New York, N.Y. 10021.

Nov. 16-17: Seminar on Construction Cost Control, Hartford Graduate Center, Hartford, Conn.

Nov. 16-18: Institute on Organizing, Preparing and Implementing Value Engineering Programs, University of Wisconsin, Madison.

Nov. 21-25: International Conference on 2001: Urban Spaces for Life and Work, Unesco Headquarters Building, Paris. Contact: Council on Tall Buildings and Urban Habitat, Fritz Engineering Laboratory-13, Lehigh University, Bethlehem, Pa.

Nov. 21-26: Seminar on Continuing Education of Architects, sponsored by the International Union of Architects and Unesco, Unesco Headquarters Building, Paris. Contact: UIA French Section, 51 rue Raynouard, 75016 Paris, France.

Nov. 23-26: Association of Student Chapters/AIA annual convention, Charleston, S.C. Contact: David Hamilton, P.O. Box 2217, Clemson, S.C. 29632.

Dec. 1: Entries deadline, 1978 plywood design awards program. Contact: American Plywood Association, 1119 A St., Tacoma, Wash. 98401.

May 21-24, 1978: AIA annual convention, Dallas.

LETTERS

'In Defense of White': Far be it from me to differ with the eminent Faber Birren. But to add a few points to his observations in his article entitled "The 'Off-White Epidemic': A Call for a Reconsideration of Color" in the July issue:

(1) It seems that architects chose their profession because they are sculptors, working with space and form. If they were mainly intrigued with color, they would have become painters.

(2) If white produces "bland uniformity," the space it covers must not be great to begin with.

(3) White being the absence of color may explain why it is not included in the Lüscher color test.

(4) In interiors, the glare and eye strain which seem to plague Birren's clients is the result of excessive "value contrast," having nothing to do with "hue" or the "quantity" of light.

(5) The juxtaposition of the tiny black and white (rather, shades of gray) photo and the full-page color photo seems to be trying rather hard to prove a point.

Let us hope that architects do not become too concerned about a possible "off-white epidemic." *Hildegard Klene
Fiber/fabric designer
Herndon, Va.*

Terse Praise, but Sweet: Reference to Rudolph Arnheim (see June, p. 48 for article entitled "Thoughts on Durability: Architecture as an Affirmation of Confidence")—you have been enjoyed, believed in and appreciated.

*Gordon Davis
Little Rock, Ark.*

'Scenarios for the Future': I was frightened by the excessive optimism of futurist F. M. Esfandiary's address at the San Diego AIA convention. He presented a more dehumanized world and a cosmos of supertechnology—a tomorrow of overproduction of food, of eternal life, of exodus to other planets where the body parts of artificial creatures will never deteriorate, of captured solar energy for computerized systems, which no doubt will eventually control the world.

Esfandiary told of a world without human beings as we know them—creatures that experience no pain, no hunger, no tears. But will they know what happiness is? The pleasure of eating, of laughing? This future world is a repetition of the world that Aldous Huxley wrote about many years ago.

I do not agree with Esfandiary's optimism. We should be consciously pessimistic—conscious that our truth will rehumanize the world. Technology should be closely controlled and oriented for the benefit of humanity, and not for wars and the destruction of man.

I hope tomorrow will be different from Esfandiary's picture. I hope we will endeavor to make the world more humane before we leave it to go to other planets.

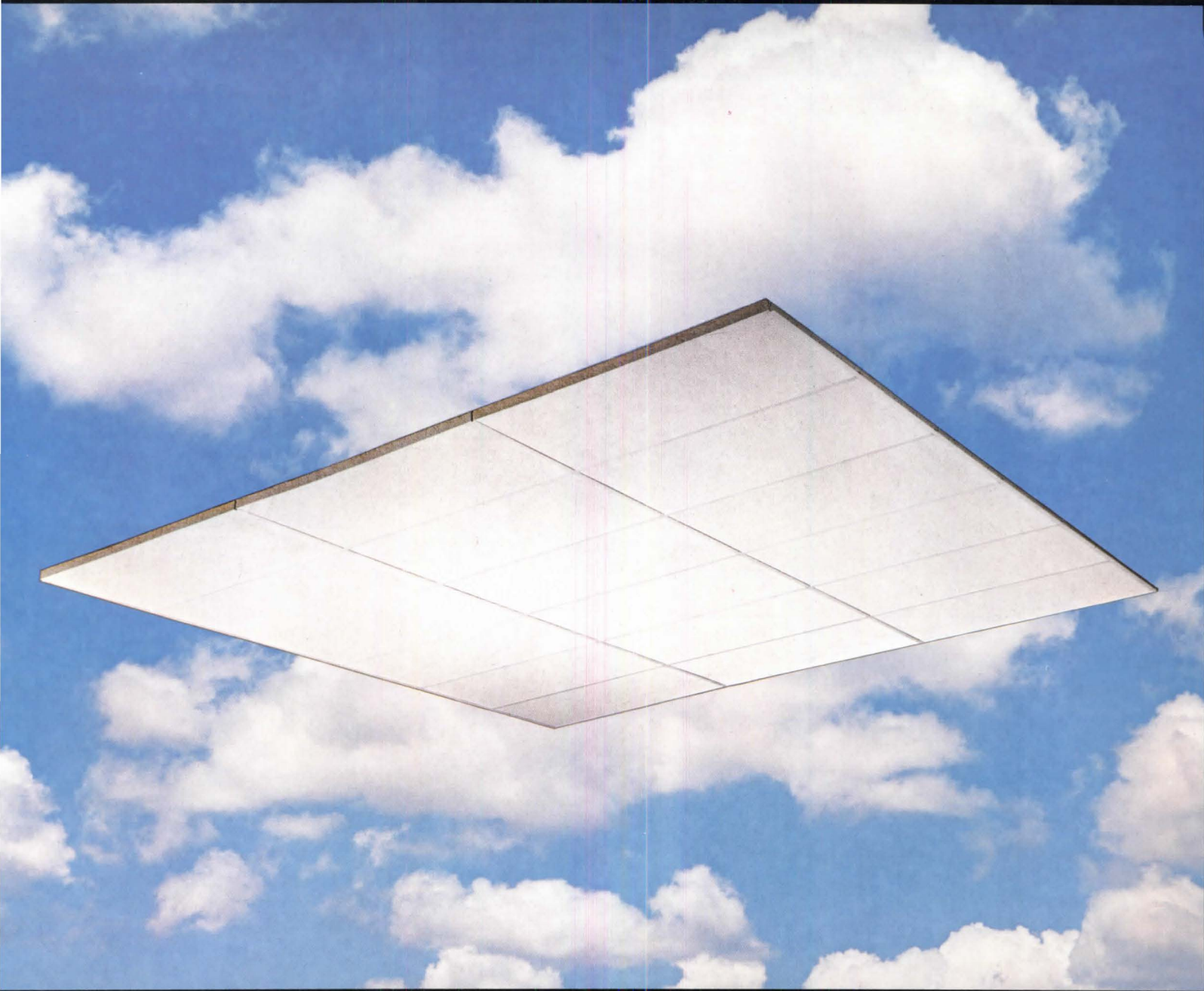
*Manuel Rosen Morrison
Architect
Mexico City*

Correction: The article on winners of the San Diego international chair design competition (July, p. 52) states that the chair (5) is "made of chrome and enameled metal." This is incorrect. The chair is made of aluminum and plastic.

*Gregory John Cook
Houston*

Addendum to a Book Review: John Sergeant's *Frank Lloyd Wright's Usonian Houses: The Case for Organic Architecture* deserves better coverage than provided by Jane Loeffler's review in the May issue (p. 68). By never identifying the book's goals, she never can qualify properly its achievement.

The book is important in both subject area and architectural viewpoint. Its weaknesses in detail and coverage, and variable photography and graphics, may be redeemed by the seriousness of the study which, like my own, goes beyond the 1942 limit of Henry-Russell Hitchcock
continued on page 94



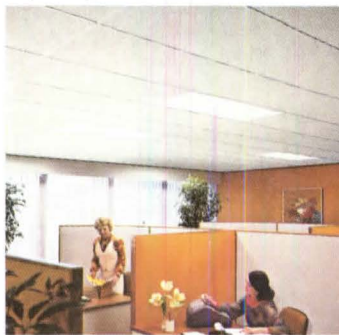
You are looking at two of the world's quietest open plan ceilings. One is made by Armstrong.

Measured by the newest noise-reduction rating system, called Speech Privacy Noise Isolation Class (NIC¹), the open sky—with an NIC¹ of 23—would make the ideal ceiling for the open plan.

But since the sky is hardly practical, Armstrong has developed a new ceiling product that comes remarkably close to this ideal. A new super sound-absorbing ceiling specifically designed to meet the critical demands of open plan spaces.

Known as Silok™, this new ceiling has an NIC¹ of 20 in 1½" thickness—only three points below the near perfection of the open sky. And that means that Silok can combine

with screens and background masking sound to produce confidential speech privacy at normal voice levels.



What's more, Silok has an attractively textured white surface that results in a light reflectance of LR-1 (over 75%). And its standard 2' x 4' lay-in panels provide easy access to the plenum and can be replaced with standard light fixtures.

So when you want an open plan with the speech privacy of the open sky, you'll find that no man-made material can come closer than Silok. To learn more, write Armstrong, 4210 Sage Street, Lancaster, Pennsylvania 17604.

FROM THE  INDOOR WORLD® OF

Armstrong

Circle 35 on information card



Residence: Walnut Creek, California. Architects: Confer Crossen & N...

Red cedar shingles make a difficult site a natural.

The steep site chosen for this residence provided the architects with a challenging problem—to say the least. And on a major part of the design, both exterior and interior, the natural solution was red cedar shingles.

“Our reasons for using cedar shingles were numerous. Aesthetically, we felt that the natural, weathered color of the shingles would blend well with the natural colors of the site.

“The texture of the shingles is in proper scale with the masses of the forms, and their rustic appearance relates to the informality of the structure.

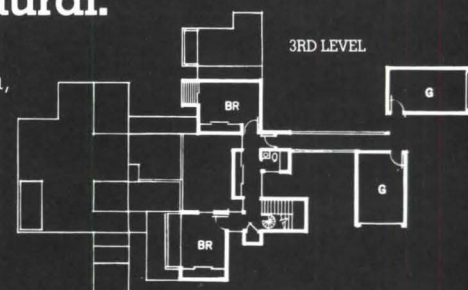
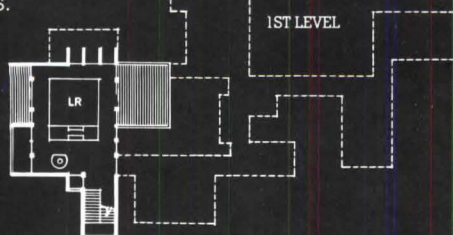
“Functionally, the shingles are long-lived and require no maintenance.”

What’s more, the superior insulating quality of red cedar is especially important to the occupants of a home on such an exposed site.

If you’re figuring on a project with a little different slant, consider a natural solution.

Consider red cedar shingles or handsplit shakes.

These labels on red cedar shingle and handsplit shake bundles are your guarantee of Bureau-graded quality. Insist on them.



For information on “How to Specify,” write

Red Cedar Shingle & Handsplit Shake Bureau

Suite 275, 515-116th Ave. N.E., Bellevue, WA 98004
In Canada: 1055 West Hastings St., Vancouver, B.C. V6E 2H1

Circle 36 on information card

Board of Directors

Officers

John M. McGinty, FAIA, *President*
Elmer E. Botsai, FAIA, *First Vice President*
Herbert Epstein, FAIA, *Vice President*
Ehrman B. Mitchell Jr., FAIA, *Vice President*
Robert L. Wilson, AIA, *Vice President*
Robert M. Lawrence, FAIA, *Secretary*
Charles E. Schwing, FAIA, *Treasurer*
William L. Slayton, *Executive Vice President*

Directors (Year indicates expiration of term)

Whitson W. Cox, FAIA ('77), *California*
Robert B. Marquis, FAIA ('78), *California*
Henry N. Silvestri, AIA ('79), *California*
Joseph F. Thomas, FAIA ('77), *California*
Robert C. Broshar, FAIA ('78), *Central States*
Thomas H. Teasdale, AIA ('79), *Central States*
Lynn H. Molzan, AIA ('79) *East Central States*
James E. Ferguson Jr., AIA ('77), *Florida/Caribbean*
Frank R. Mudano, AIA ('78), *Florida/Caribbean*
David L. Perkins, FAIA ('78), *Gulf States*
Zeno L. Yeates, AIA ('77), *Gulf States*
Eugene C. Swager, FAIA ('78), *Illinois*
William R. Jarratt, FAIA ('77), *Michigan*
William R. Peery, AIA ('77), *Middle Atlantic*
R. Randall Vosbeck, AIA ('78), *Middle Atlantic*
Gridley Barrows, AIA ('79), *New England*
Robert A. Burley, AIA ('77), *New England*
Adolph R. Scrimenti, FAIA ('77), *New Jersey*
James B. Baker, FAIA ('77), *New York*
Anna M. Halpin, FAIA ('79), *New York*
Kenneth Klindworth, AIA ('78), *New York*
Saul C. Smiley, FAIA ('79), *North Central States*
A. P. DiBenedetto, AIA ('77), *Northwest*
James M. Harris, AIA ('78), *Northwest*
Roger N. Ryan, AIA ('79), *Ohio*
Randolph J. Stauffer, AIA ('78), *Pennsylvania*
Jerome M. Cooper, FAIA ('77), *South Atlantic*
Harold H. Tarleton Jr., AIA ('79), *South Atlantic*
Jay W. Barnes, FAIA ('79), *Texas*
J. Harold Box, FAIA ('78), *Texas*
Gerald L. Clark, AIA ('79), *Western Mountain*
Charles Guerin, ex officio, *President, ASC/AIA*
Daniel Sheridan, ex officio, *Chairman, Council of Architectural Component Executives*

Headquarters

William L. Slayton, Hon. AIA, *Executive Vice President*
James A. Scheeler, FAIA, *Group Executive, Program Development*
Richard H. Freeman, *Group Executive, Component/Information*
Nancy W. Truscott, *Assistant Secretary/Legal Counsel*
William G. Wolverton, Hon. AIA, *Assistant Treasurer/Controller*
John P. Eberhard, FAIA, *President, AIA Research Corporation*
Marshall Purnell, *Administrator, Community Services*
J. R. Kirkland, *Administrator, Component Affairs*
James E. Ellison, AIA, *Administrator, Education and Professional Development*
Arnold J. Prima Jr., AIA, *Administrator, Government Affairs*
Michael B. Barker, AIP, *Administrator, Practice and Design*
Muriel Campaglia, *Administrator, Public Relations*
John H. Schruben, FAIA, *President, Production Systems for Architects and Engineers, Inc.*

AIA JOURNAL

Evaluation: San Francisco's Hyatt Regency Hotel as a Spatial Landmark— John Pastier	36
Its lobby, one of the sights of the city, may be John Portman's most dramatic	
Measuring Continued Competence: AIA and NCARB Go Separate Ways— Mary E. Osman	44
As states begin making evidence of professional development a condition of license renewal	
Energy Conservation Through Community Planning and Design— Jane A. Silverman, AIP	47
Exploring a middle ground of concern between single buildings and regional land use and development	
Lighting: The State of an Uncertain Art	50
The pros and cons of affixing lighting to the furniture—Andrea O. Dean	52
Artful, playful objects that deliver light—Andy Leon Harney	56
William M. C. Lam: guidelines on the luminous environment and human needs	58
Lighting designer Claude Engle: illuminating architecture—Andrea O. Dean	60
Architects in the Elementary and Secondary Schoolroom—Aase Eriksen	66
A program that puts them there as educators in the built environment	
Cover: Photo by John Rogers of Thanks-Giving Square, Dallas; Johnson/Burgee, architects, and Claude R. Engle, lighting consultant	

Departments

Events	2	Books	70
Letters	2	Acknowledgments	120
Going On	8	Advertisers	120

Donald Canty, Editor; **Mary E. Osman**, **Andrea O. Dean**, **Allen Freeman**, Associate Editors; **Stephen A. Kliment**, AIA, Contributing Editor; **Suzy Thomas**, Art Director; **Linda Williams**, Editorial Assistant; **Michael J. Hanley**, Publisher; **Michael M. Wood**, National Sales Director; **George L. Dant**, Production and Business Manager; **Gladys McIntosh**, Circulation Manager; **Pam A. Honeyman**, Administrative Assistant; **Richard H. Freeman**, General Manager.

AIA JOURNAL, official magazine of The American Institute of Architects, published monthly at 1735 New York Ave. N.W., Washington, D.C. 20006. Telephone: (202) 785-7300. Subscriptions: for those who are, by title, architects, architectural employees, and to those in architectural education (faculty and schools), and to libraries, building construction trade associations and building product manufacturers: basic rate \$12 a year; \$20 two years; \$8 to architectural students in the U.S., its possessions and Canada. For all others: \$18 a year in the U.S., its possessions and Canada; other countries to those who are by title, architects: \$18 a year. All others outside the U.S., its possessions and Canada: \$30 a year. Single copy: \$2, payable in advance. Publisher reserves the right to refuse unqualified subscriptions. For subscriptions: write Circulation Department; for change of address: send Circulation Department both old and new addresses; allow six weeks. Second class postage paid at Washington, D.C. Quotations on reprints of articles available. Microfilm copies available from University Microfilm, 300 N. Zeeb Road, Ann Arbor, Mich. 48106. Referenced in *The Architectural Index*, *Architectural Periodicals Index*, *Art Index*, *Avery Index to Architectural Periodicals*. © 1977 by The American Institute of Architects. Opinions expressed by contributors are not necessarily those of the AIA.® VOL. 65 NO. 11.



KALCOLOR[®] ALUMINUM SPECTACULAR SUPERSTAR



SUPER STADIUM: Superdome, a gleaming 500,000 sq. ft. expanse of Kalcator aluminum, dominates the skyline of New Orleans.



SUPER TRANSIT: Bay Area Rapid Transit, 34 contemporary stations with lustrous Kalcator aluminum, joins together 15 cities in the San Francisco Bay Area.

To achieve spectacular results, specify the Superstar of finishes: Kalcator aluminum.

From the tallest hotel in the world to the most magnificent indoor stadium, and even underground to one of the longest rapid transits in the world, you'll see Kalcator gleaming beautifully. That's because Kalcator is a lot more than just an ordinary anodic finish.

It's an exclusive integral-color, long-lasting hardcoat anodic finish that's corrosion-resistant, abrasion-resistant and weather-resistant. This special self-coloring, anodizing process developed by Kaiser Aluminum offers you a choice of nine subtle colors.

Whether it's new construction or remodeling, on a magnificent scale as illustrated or a smaller scale such as windows, doors and fascia; Kalcator aluminum will do the job like a Superstar. Superbly.

For more details and literature about Kalcator, write Kaiser Aluminum, Room 776 KB, Dept. AI, 300 Lakeside Drive, Oakland CA 94643.

**KAISER
ALUMINUM**



SUPER HOTEL: The Peachtree Plaza, 70 floors of glass and shimmering Kalcator aluminum, towers above Atlanta.

KALCOLOR® TRADEMARK LICENSEES

Kalcolor aluminum is available only from these licensed architectural aluminum fabricators and finishers.

ARKANSAS

Howmet Aluminum Corp.,
Southern Extrusions Div., Magnolia 71753

CALIFORNIA

The Aluminum Processing Co., Inc.,
Burbank 91502
Alumtreat, Inc., Burbank 91504
Alumtreat, Inc., Monterey Park 91754
Barry Avenue Plating Co., Inc., Los Angeles 90064
Heath Tecna Corp.,
Heathtec Finishes, Hayward 94545
Metalco, Inc., Emeryville 94608
Northrop Architectural Systems,
City of Industry 91748
Quality Metal Finishing Co., Lynwood 90262
Revere Extruders, Inc., Covina 91722
Revere Extruders, Inc., Pomona 91766

CONNECTICUT

The H. A. Leed Co., Hamden 06503

FLORIDA

The Anaconda Company, Opa-Locka 33054

GEORGIA

The Anaconda Company, Atlanta 30301
Southern Aluminum Finishing Co., Inc.,
Atlanta 30318
The William L. Bonnell Co., Inc., Newnan 30263

INDIANA

Aluminum Finishing Corp. of Indiana,
Indianapolis 46202
Architectural Anodizing, Elkhart 46514
Extruded Alloys Corp., Bedford 47421
PPG Industries, Inc., Kokomo 46901

MICHIGAN

North American Aluminum Corp.,
Kalamazoo 49004

MINNESOTA

AaCron Incorporated, Minneapolis 55427

MISSOURI

Metals Protection Plating, Inc.,
Kansas City 64127

NEW JERSEY

Rebco, Inc., West Paterson 07425

NEW YORK

Keystone Corporation, Buffalo 14213

OREGON

Anodizing Inc., Portland 97211

PENNSYLVANIA

Chromalloy Corporation, Philadelphia 19406

TENNESSEE

The William L. Bonnell Co., Inc.,
Carthage 37030

TEXAS

Atlas Architectural Metals, Inc., Dallas 75227
Howmet Aluminum Corp.,
Texas Extrusions Div., Terrell 75160

VIRGINIA

Hankins & Johann, Inc., Richmond 23221

WASHINGTON

Heath Tecna Corp.,
Fentron Industries, Inc., Seattle 98107

WISCONSIN

Gordon Aluminum Industries, Inc.,
Schofield 54476

CANADA

Alumanode Anodizing
Div. of Alumicor Mfg., Ltd.
Toronto, Ont. M9W 2Z5
Indalex Ltd., Weston, Ont. M9M 2L6
Canadian Pittsburgh Industries
Div. of PPG Industries Canada Ltd.
Toronto, Ont. M4V 1M8

KAISER
ALUMINUM

PEACHTREE CENTER PLAZA HOTEL:

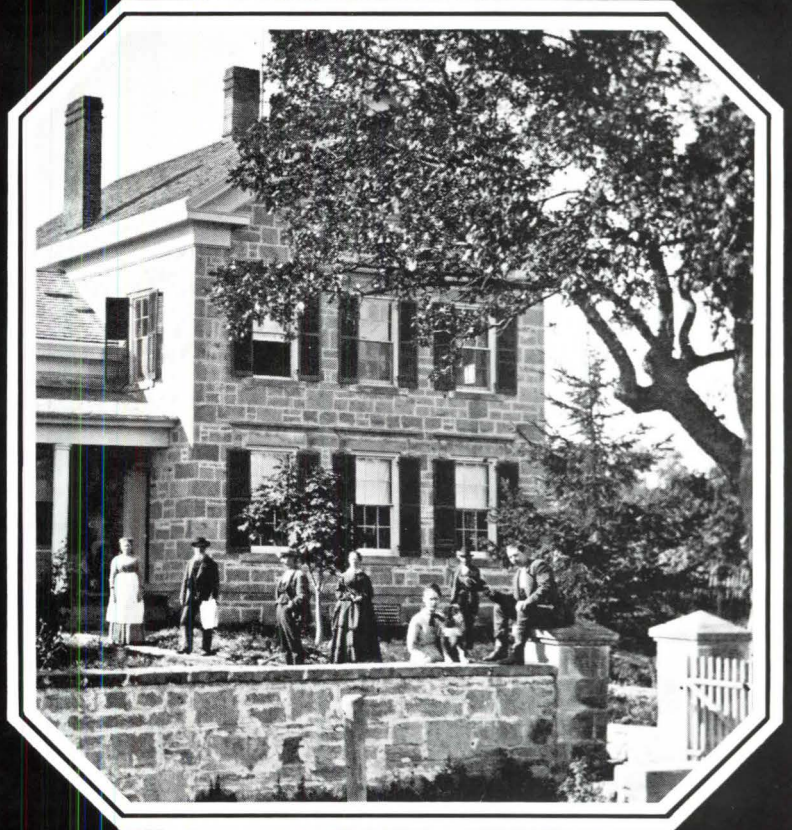
ARCHITECTS

John Portman & Associates, Atlanta, GA

EXTERIOR

Anodizing: William L. Bonnell Co., Inc.,
Newnan, GA
Installation: PPG Industries, Kokomo, IN

The 19th Century Electric Blanket



A hundred years ago, building a house with 12-inch thick stone walls wasn't energy conservation, just plain common sense. Along about sun-up, when temperatures dropped to five below, folks had little else to depend on save for a good warm quilt.

Unfortunately, such solid construction techniques have long since been abandoned. So too have the many fine structures which were built to withstand the elements.

Today, preservationists and business developers alike have come to appreciate the quality craftsmanship of the past. They're finding adaptive uses for abandoned homes, factories and warehouses—turning them into art centers, apartment complexes, shopping centers.

They're also finding that the durable construction of the past yields higher quality and less expensive space than could be obtained in a brand new building. And the skilled artisans of yesterday built structures with a unique character that simply isn't being created today.

Help promote new uses for yesterday's fine buildings. Join the National Trust. For membership information, write: National Trust for Historic Preservation, Department 0608, 740 Jackson Place, NW, Washington, DC 20006.



GSA Raises Percentage For Art-in-Architecture And Expands the Concept

Jay Solomon, administrator of the General Services Administration, has announced a new federal art-in-architecture policy. The amount of funds set aside for artworks in federally commissioned buildings will be raised from three-eighths to one-half of 1 percent of construction costs.

In the past, the program has been limited to new construction, but henceforth existing buildings also will enjoy the benefits of art. Also, for the first time, the program will be expanded by the introduction of new art forms to include earth and lightworks and building arts such as ornamental grills, woodwork, brickwork and stained glass. A greater variety of crafts, such as ceramics and photography, will be included in the program.

"Our expanded program," Solomon said, "will be more people-oriented, concentrating on humanizing the total design of the working environment."

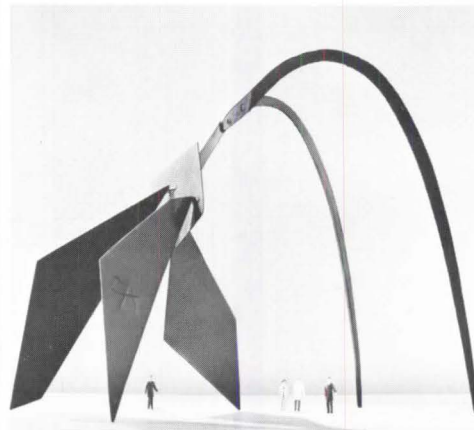
He said that he was "convinced that the government has a responsibility—and obligation—to experiment, to innovate, to be a testing ground for new ideas. By expanding the concept of art-in-architecture, we will be able to give a whole new group of talented artists—craftsmen, photographers, environmental sculptors—a chance to participate in our program. By making more funds available for commissions, we will ensure that the American people will always have a substantial body of public art."

Solomon several times emphasized his desire to "humanize" federal buildings, citing as a means of doing so the arts program and also the inclusion of public use facilities in federal buildings. "We want the buildings to have life by night as well as day," he said. The GSA would thus build less new buildings and put more stress on adaptive use of historic and other existing structures.

The old post office building in Washington, D.C., scheduled to be renovated at

a cost of \$18 million (*see* July, p. 48), is a unique project in several respects. It is the first test of GSA's Level 3 method of selecting architects and engineers by means of a limited architectural competition, and it will be the first federal building in GSA's inventory to incorporate a multiple use concept of private and government offices mixed with commercial shops, restaurants and facilities for cultural and educational activities. Under the revised art-in-architecture program, the sum of \$90,000 would be available for art commissions.

Solomon, who made the announcement to a group of art and architectural maga-



zine journalists at a luncheon given by Mrs. Walter Mondale, wife of the U.S. Vice President, said that the program "will accelerate efforts to start art projects at an earlier point in building design. Initial building concepts will include provisions for works of art—bringing art and architecture together at the very beginning."

Since 1972, GSA has commissioned 55 artworks at a cost of about \$2.8 million for federal buildings nationwide. They range geographically from a painted steel sculpture by Tony Smith in the plaza of the Labor Department in Washington, D.C., to an Alexander Calder stabile in the new Chicago Federal Center (photo above) to five granite boulders arranged by Isamu Noguchi in the plaza of the Seattle Federal Building to a sculpture by George Rickey recently dedicated in Honolulu by First Lady Rosalyn Carter.

Stephen Antonakos' wall-mounted sculpture of neon tubing is the first work

of art commissioned by GSA under the revised program. The \$23,000 artwork is scheduled for completion by Mar. 1978 at the Dayton (Ohio) Federal Building. The sculptor is known for use of neon to dramatize space with glowing light.

The procedure for the art-in-architecture program is as follows: First, the project architect develops a proposal for art as part of the overall design services. The architect includes in the proposal information about the location and nature of the art to be commissioned. After the award of the construction contract, GSA requests the National Endowment for the Arts to appoint a panel of art professionals to meet with the project architect, following which three to five artists are nominated for each proposed artwork.

The panel then meets at the project site and reviews visual materials submitted by the proposed artists. GSA's design review panel and the project architect consider and approve the artist's proposal. When the artist is decided upon, a fixed-price contract is negotiated for the artwork's design, fabrication and installation.

Artists who wish to receive GSA consideration for future commissions may send résumés and 35mm slides of their work to: Art-in-Architecture Program, GSA, 18th and F Sts. N.W., Washington, D.C. 20405.

Design in Transportation Also Gets New Attention

The Department of Transportation has also issued a new policy on art and architecture. Secretary of Transportation Brock Adams has announced that the department's "investment in the quality of the built environment will take the form of increased emphasis and support for architecture, art, graphics, landscape architecture and urban, industrial and interior design." At a ceremony attended by Joan Mondale, wife of the U.S. Vice President and Nancy Hanks, Hon. AIA, chairman of the National Endowment for the Arts, Adams said that use of good design principles "does not mean spending money

continued on page 12

The Gibilterra Chairs/Charles Gibilterra designs Originals for Vecta Contract®

The Gibilterra is a totally original, patented concept in seating — not just another beautiful chair. There are no mechanical adjustments. None are needed, for the Gibilterra automatically and imperceptibly adjusts itself to the occupant's seating positions.

It is a completely flexible chair with airframe type engineering, incorporating unique floating head bolts, flexible side frames, and seat/back elements of steel rod laced with Pirelli webbing. No "bottoming out". Structurally, it may be compared to an airplane wing which would disintegrate if it were not flexible.

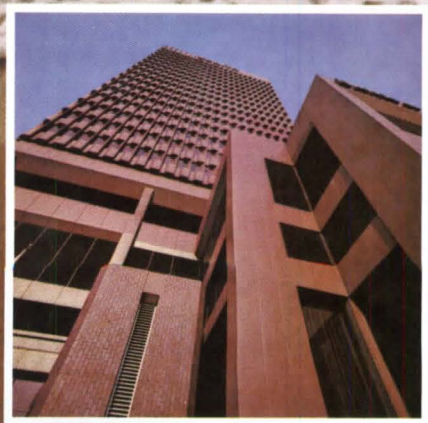
Capacious — a full 21 inches between arms. Yet overall width is only 23 inches.

A true sled base is much kinder to carpet than glides or casters. The Gibilterra is a true sled with superb bearing surface, not a pseudo-sled with glides.

Options include upholstered arms; wood and cane version; finishes in new range of fluidized heat-fused colors or brilliant mirror chrome.



Circle 39 on information card



Will your statement endure until she can understand the challenges you faced?

Architecture demands more than the discipline of creative design. It also requires sound business decisions. And the conflict between budgets and creativity must be resolved by every architect, builder and owner.

During the past ten years, Fluropon[®] has made a major contribution to architectural design and building economics. Fluropon^{*} is the leading Kynar 500[®] fluorocarbon coating formulated full-strength to assure maximum longevity of the metal panel finish.

There are many practical reasons to specify Fluropon: low-cost maintenance, long-life color stability for matching building additions, superior adhesion to the substrate and long-term resistance to corrosion and to many common atmospheric pollutants.

And beyond the practical benefits, a beautiful work can make an enduring statement for the architect himself: here is a place where men and women can live and work in harmony with their environment.

DeSoto, Inc.



Chemical Coatings Division
1700 South Mt. Prospect Road
Des Plaines, Illinois 60018
(312) 296-6611

Write for complete information on Fluropon Architectural Coating, including technical product specifications, colors and uses.

*Fluropon meets Pennwalt license requiring 70% Kynar 500, Pennwalt's registered trademark for its polyvinylidene fluoride resin.

Fluropon[®]: The full-strength fluorocarbon finish for architects who want to make an enduring statement.

Going On from page 8

for cosmetics. . . Good design is not necessarily more costly . . . in the long run it may actually be cheaper."

He presented a report entitled "Design, Art and Architecture in Transportation," which was developed by a special task force formed last January. The report, which contains recommendations on making DOT funds available for better design in transportation systems, has been reviewed and approved by Adams.

Among the major recommendations:

- Review of environmental impact statements to ensure that aptness of design is considered at an early stage in the planning process.
- Availability of funds for research and development, demonstration grants and acquisition of artworks for use in public spaces of transportation systems.
- Establishment of an annual awards program to recognize outstanding design achievement, conducted in conjunction with an annual conference on design quality in transportation.
- Appointment of a permanent task force to coordinate design improvement efforts.
- Establishment of a comprehensive graphics improvement program for DOT publications.
- Development of a uniform set of well-designed and easily identifiable transportation symbols.
- Consideration of requiring DOT grant recipients to set selection procedures for architects and engineers similar to the process used by the department itself.
- Establishment of a design awareness course for federal and local officials.

The report cites various ways in which DOT funds have already been used to promote outstanding design. They include the design of the Dulles international airport near Washington, D.C., proposals for the renovation and rehabilitation of the 15 major existing and architecturally significant railroad stations along the Northeast corridor and murals in Boston's subway stations which depict landmark areas and buildings in the vicinity.

Mrs. Mondale said that Adams has realized through the new policies "that we benefit as a nation when we design for art as well as for utility, that we contribute to the substance of our society when we show as much concern for the potentials of our built environment as we do for the protection of the natural landscape."

Nancy Hanks said: "Transportation shapes the development of our land and our cities, so it is of the utmost importance in creating and maintaining not only livable cities, but a livable country. . . I hope that our friends in the design, art and architectural professions will work very hard to make sure that this report brings about a new emphasis on quality design in transportation."

Senatorial Aide Biddle Selected for Endowment

Livingston L. Biddle Jr., an aide to Sen. Claiborne Pell (D-R.I.) and staff director of the Senate subcommittee on education, arts and humanities, has been recommended to President Carter as chairman of the National Endowment for the Arts. A five-member search committee of White House staffers selected Biddle from among 10 candidates for the \$52,000-a-year position. President Carter, according to White House sources, will interview Biddle before making a formal announcement, an event which at this writing has not occurred. If nominated by the President, Biddle will have to undergo a Federal Bureau of Investigation check and be approved by the Senate.

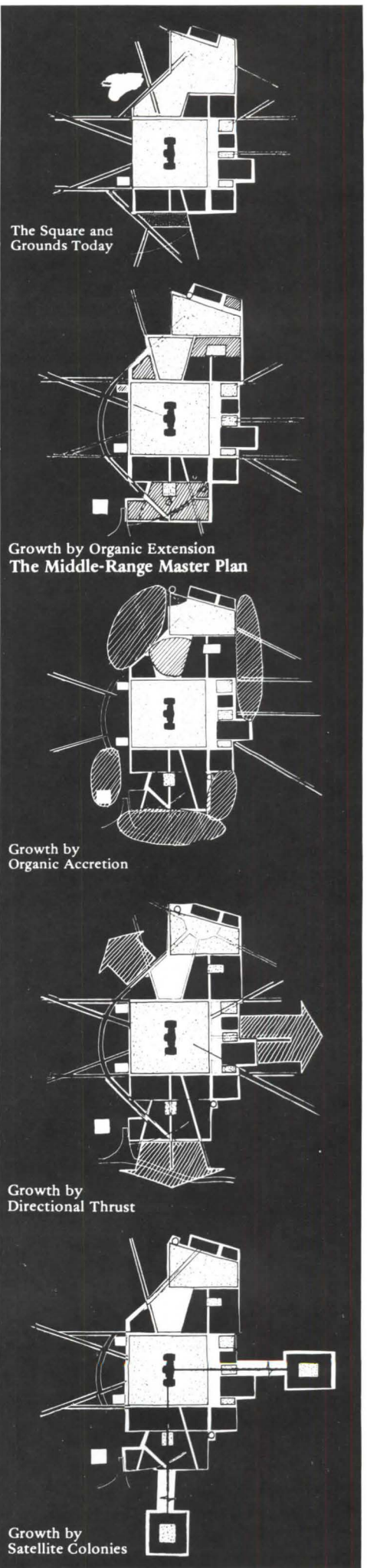
If approved, Biddle will replace Nancy Hanks, Hon. AIA, who has served as director of the endowment for eight years. She told the news media that she was resigning "to rest and reflect." President Carter said that her leadership accomplishments have been "exemplary." Under her "thoughtful and creative stewardship," he said, "the endowment has, among other things, firmly established in the country consciousness [the] importance of broad-based public and private support for the arts."

Probably, one of the new chairman's first duties will be to appoint a permanent head of the endowment's architecture + environmental arts program. Roy F. Knight, AIA, has served as acting director since Bill Lacy, FAIA, resigned early this year to become president of the American Academy in Rome (see Feb., p. 10).

Report Suggests Moving Court from Capitol Hill

The Supreme Court's location on Capitol Hill in Washington, D.C., was one of the few "mistakes" made by the MacMillan Commission's planners, says a report recently issued by Architect of the Capitol George M. White, FAIA. Placement of either the Lincoln or Jefferson Memorial on that site would have been more appropriate, says the report which is entitled "Toward a Master Plan for the United States Capitol: Phase II, the Alternatives." Prepared by a planning group of five firms headed by Wallace, McHarg, Robert & Todd, with David A. Wallace, FAIA, as project director, the report contains analyses and concepts to serve as the basis for a projected master plan. The report contains no specific overall concept; rather its aim is to pose alternative courses of action (some at right) to be considered by Congress and the public.

continued on page 16



For elegant decor, choose a real walnut floor.

And forget refinishing forever.



GenuWood™ II
wood flooring/vinyl bonded

Two years ago, Gump's world-famous specialty gift store in San Francisco installed a new floor of GenuWood™ II in their main display area. They chose the Jeffersonian pattern, in warm, beautiful walnut. The rich tones and patterns of real wood set an elegant background for the quality merchandise that is Gump's hallmark.

After two years of intensive foot traffic, this handsome floor shows no signs of wear. The only maintenance it needs is occasional damp mopping and buffing.

The secret of GenuWood II's lasting beauty is its unique construction, in which real wood veneers are

protected by an invisible layer of 20-mil clear vinyl on top, and a resilient backing underneath. Only 1/8" thick, GenuWood II comes in squares, random width planks up to 48" long, and in a variety of



herringbone and parquet patterns. It's easy to apply directly over any existing flat, sound floor.

You can choose from a wonderful variety of real woods: walnut, oak, English brown oak, dark walnut, teak, mahogany, cherry and rosewood. Find out more about this amazing new kind of flooring by calling us at (215) 557-2200.

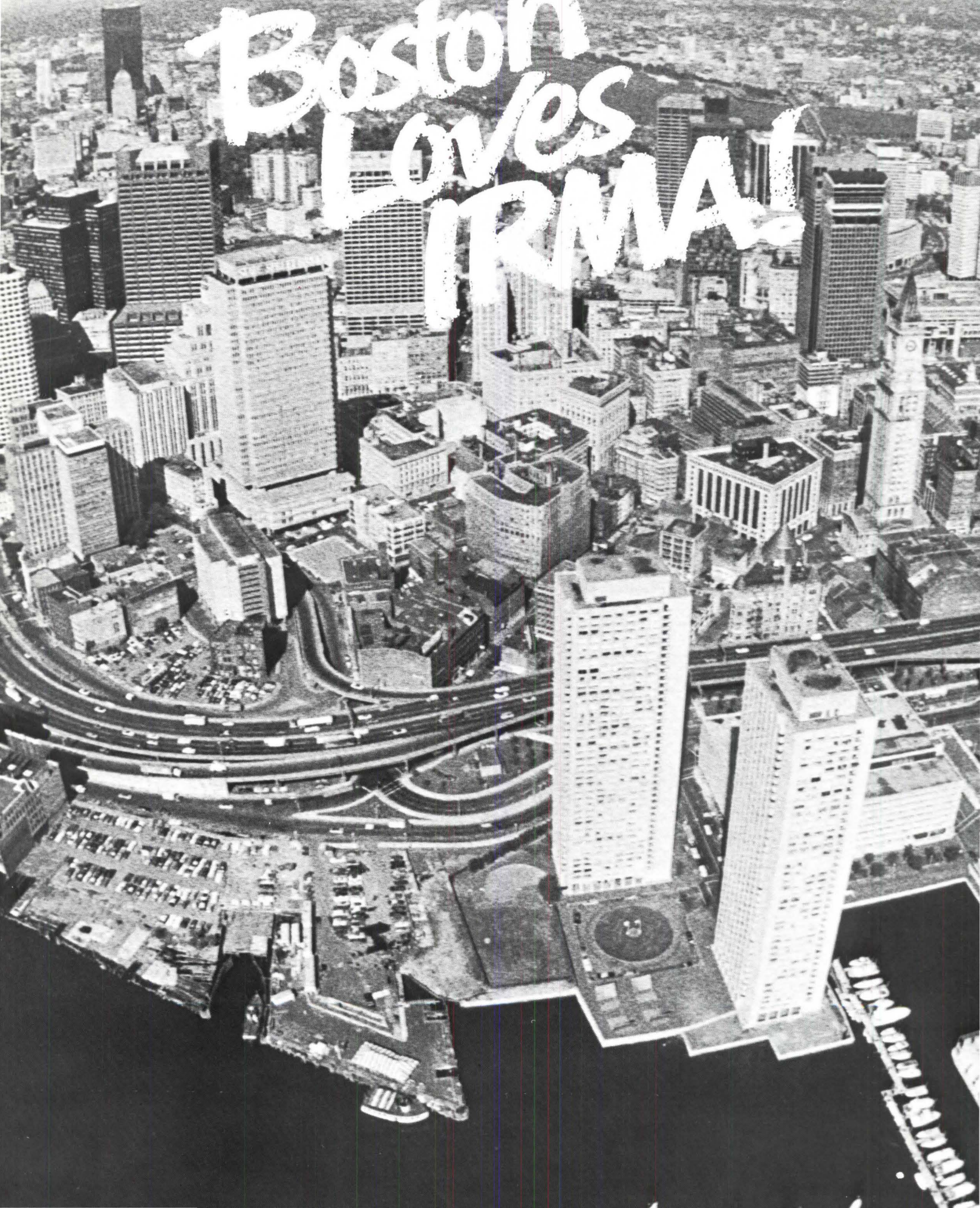
More than just a pretty floor.

ARCO/Chemical Company 

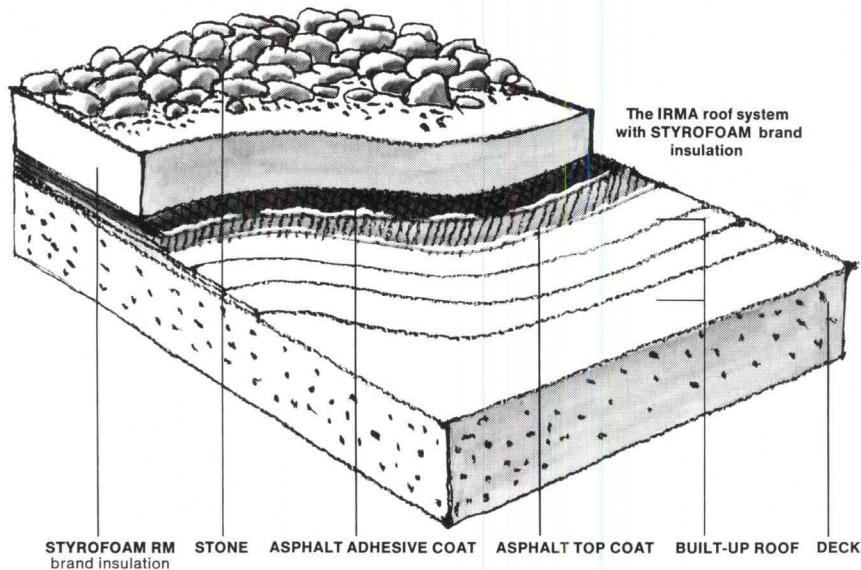
Division of AtlanticRichfieldCompany
Architectural Products
1500 Market Street
Philadelphia, PA 19101

*Trademark ARCO/Chemical Company

Boston Loves IRMA!



In the last 18 months, IRMA roof systems with STYROFOAM* brand insulation were installed on 48 major Boston structures.



The buildings range from the Federal Reserve Bank to Harvard University dormitories and field house.

IRMA's success in Boston isn't surprising. It's the only roofing system that's virtually failure-proof and maintenance-free.

An Unconventional Approach

IRMA (the letters stand for Insulated Roof Membrane Assembly) is a patented roofing system that utilizes conventional materials in an unconventional way. The roof membrane is laid directly on the roof deck. It's then covered with STYROFOAM RM brand plastic foam insulation and finished with crushed stone.

The membrane stays pliable because it's protected from heat and cold as well as the elements. So it lasts longer. In fact, experimental roofs have

functioned for 15 years and more without trouble.

10-Year Water-Tight Warranty

We're so convinced of the durability of the IRMA roof system that we'll warrant it to be water-tight for 10 years. Furthermore, we'll warrant that STYROFOAM RM brand insulation will retain at least 80% of its thermal resistance for 10 years.

If it doesn't perform as warranted, The Dow Chemical Company will repair or modify the roof at its own expense so it will perform. A complete copy of the warranty is available upon request.

Further Protection

IRMA roof systems with STYROFOAM brand insulation are installed only by responsible, reliable licensed roofing

contractors. So you're assured of high quality standards.

For more information or for the locations of buildings protected by the IRMA system in your area, write to The Dow Chemical Company, IRMA System, Midland, Michigan 48640.

STYROFOAM*
BRAND INSULATION



*Trademark of The Dow Chemical Company

WARNING: STYROFOAM brand insulation is combustible and should be properly installed. For roofing applications it should be provided with an adequate protection. For specific instructions see Dow literature available from your supplier or from Dow.

Going On from page 12

The planners suggest alternatives for the future space needs of the Supreme Court, among them the removal to another enclave, "possibly at some major axial focal point of the L'Enfant plan." Under this alternative, the present court building, which the planners call "an Acropolis with wings," would be converted to use by the Library of Congress, creating a "center of knowledge and information linking both Senate and House sides." The building does not lend itself to alterations or additions, the planners say: "Only underground development could be sustained without despoilation of its architectural integrity, inside as well as outside."

Toward this ideal, the planners make some recommendations and propose that feasibility studies be made that would take into account the removal of the Supreme Court to a separate and distinct judicial precinct; pinpoint sites for future House office buildings, one of the candidates being a site four blocks south of the Capitol (a proposal that may draw some fire from local residents who have already begun to organize against such an eventuality); and the underground development of the Capitol's East Plaza for a variety of key uses, with the study establishing "the program of uses, cost, design configurations and environmental impact of such a development."

The planners also want feasibility studies of such matters as the design and construction of an underground "people mover"; a change in Congressional policy on the use of automobiles to discourage single-occupant usage; free bus shuttle service between subway stations and Capitol Hill destinations, and peripheral parking garage development aimed at getting cars out of the community and providing for quick turnover of space for the use of visitors, all available space at this time now being restricted to permit-holders.

For the U.S. Capitol, which is now the subject of both House and Senate commission studies, the planners say that "limited development of underground space adjacent to the Capitol is considered necessary at some time in the future to provide adequate facilities for high priority activities such as small work areas for use by members when immediate and intermittent access to the floors of the House and Senate is required; and conference space and hearing rooms for joint committees."

The planners suggest for future consideration that "two levels of underground space under the paved area of the East Plaza could produce as much as 300,000 gross square feet of space of which 200,000 would be gross assignable. . . . On the Senate and House sides, an additional 150,000 square feet each, with skylit courts, is recommended for future consid-

eration under the grass beyond the Olmsted Terraces, and connected to them at subway level." The planners say that underground construction costs would be almost 100 percent higher than above ground construction. "On this basis, at \$150 per gross square foot, the aggregate 600,000 square feet would cost \$90 million." The East Plaza's surface, they suggest, could be used "as a ceremonial approach and for the quadrennial Presidential inauguration."

In addition to the Wallace firm and White and his staff, the planning group includes Hammer Siler George Associates, economics and social planning consultants; Alan M. Voorhees, Inc., transportation and parking consultant; Frederick Gutheim, AIP, historic consultant, and Mitchell/Giurgola Associates, architectural design consultants.

Trends, Influences Studied In the Return to Cities

"Trendies"—young professional architects, planners, professors, journalists—who are flocking to large American cities may be more important to the city in the long run than returnees from the affluent suburbs. The young professionals have a "taste-making" influence on a large peer group forming households. The suburban returnees are apt to choose luxury and secure condominiums, while the young professionals prefer the racially and socially mixed neighborhoods, where old houses still can be obtained relatively inexpensively. "If a 'rediscover the city' movement is to amount to much, an adventurous middle class subset of the baby boom generation will be on its leading edge."

So says a report entitled "Young Pro-

fessionals and City Neighborhoods," published by the Parkman Center for Urban Affairs in Boston. As part of its continuing study of city neighborhoods, the center brought together a group of young professionals who had moved into Boston to discuss why they chose the city and how they felt about it. The findings at the conference were supplemented by center staff visits to other large cities, and the report is the result. Presented are the issues that emerge from this "new migration," and the report's aim is to stimulate discussions about a phenomenon that is relevant to nearly all American cities.

The young professional phenomenon and its potential effect on urban evolution is just emerging, the report says, and awareness will grow. "From a public policy point of view, a young professional immigration is a plus, but no means an uncomplicated plus, for the city; and a campaign to attract this group deserves some careful thinking through."

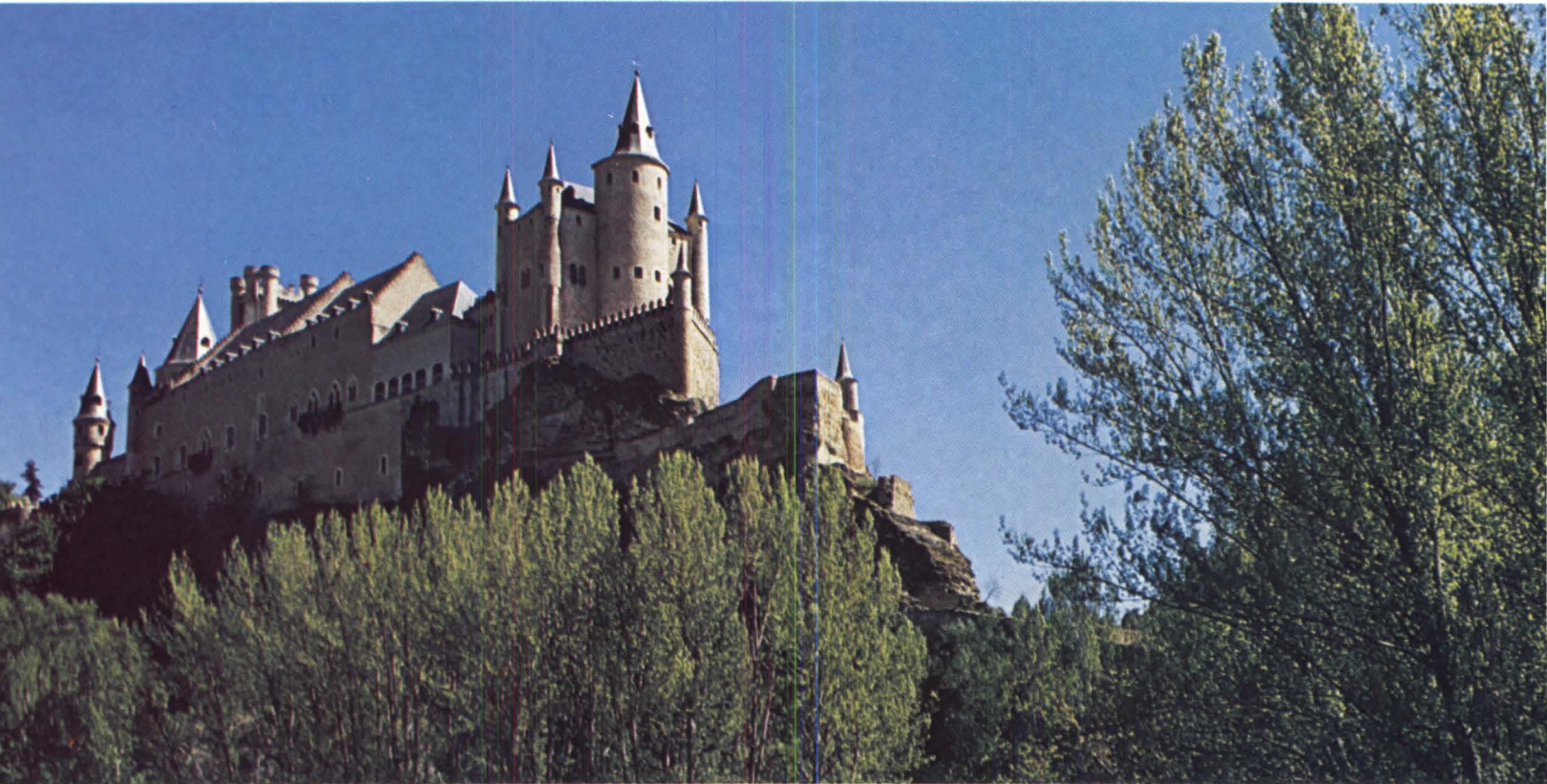
The majority of these trend-setters are white, have episodic marriages, are childless and usually come from without the city, state or even region. As one of them put it, they are "more concerned about intellectual things," and they identify themselves with "an elite within the middle class elite."

They have a taste for "interesting" houses—Victorian mansions or mini-Victorian "cottages." In fact, the report says, "there appears to be a newly emerging taste for a semi-suburban environment *within* the city." The predominate basis on the decision of where to live is the house itself, plus its affordability. The new "discoverers" are found not only in the city's chic sections but also in not so desirable neighborhoods. Although a young white professional may live in harmony

continued on page 20



They don't build offices like they used to.



But, you can still afford the beauty and permanence of **STONE**.

When material and labor costs go out of sight, you can still afford the beauty and feeling of permanence that stone gives to a building.

Sanspray **stone on plywood sidings** give you the natural beauty of stone in a form that's maintenance-free, easy and inexpensive to apply. In use for over 15 years and backed by a 10 year warranty, Sanspray building panels have proved to be weather-proof in every climatic condition imaginable.

Sanspray panels consist of a base of APA grade-mark stamped exterior plywood on which natural stone chips are bonded by a

factory-applied surface protectant of epoxy resins. The panels come in different sizes and can be cut and nailed into place by a carpenter. The aggregate comes in a variety of sizes and colors.

So whether you're building commercial buildings or apartments, you can still afford the

beauty and permanence of natural stone. Call Sweets Buyline for the name of your local stocking distributor. Or tear out this ad and send it with your business card to Sanspray Corporation for information, 630 Martin Ave., Santa Clara, CA 95050. (408) 244-3292.



Oral Roberts University, Tulsa, Oklahoma
Architect: Frank Wallace



stone on plywood siding and decking—elegant, enduring, affordable



Complicated framing problem?

That's what the designers of Columbus County Hospital did. And it paid dividends in reduced construction time and foundation costs.

Columbus County hospital is a 166-bed (all private) acute care general hospital in Whiteville, N.C. The hospital planners conducted a study to determine the most compact nursing unit possible, using 40 to 50 beds as the optimum size.

A circular plan was considered, but later dismissed because it was not

space efficient. Too much space was created for support functions in the center portion of the circle for the number of beds desired.

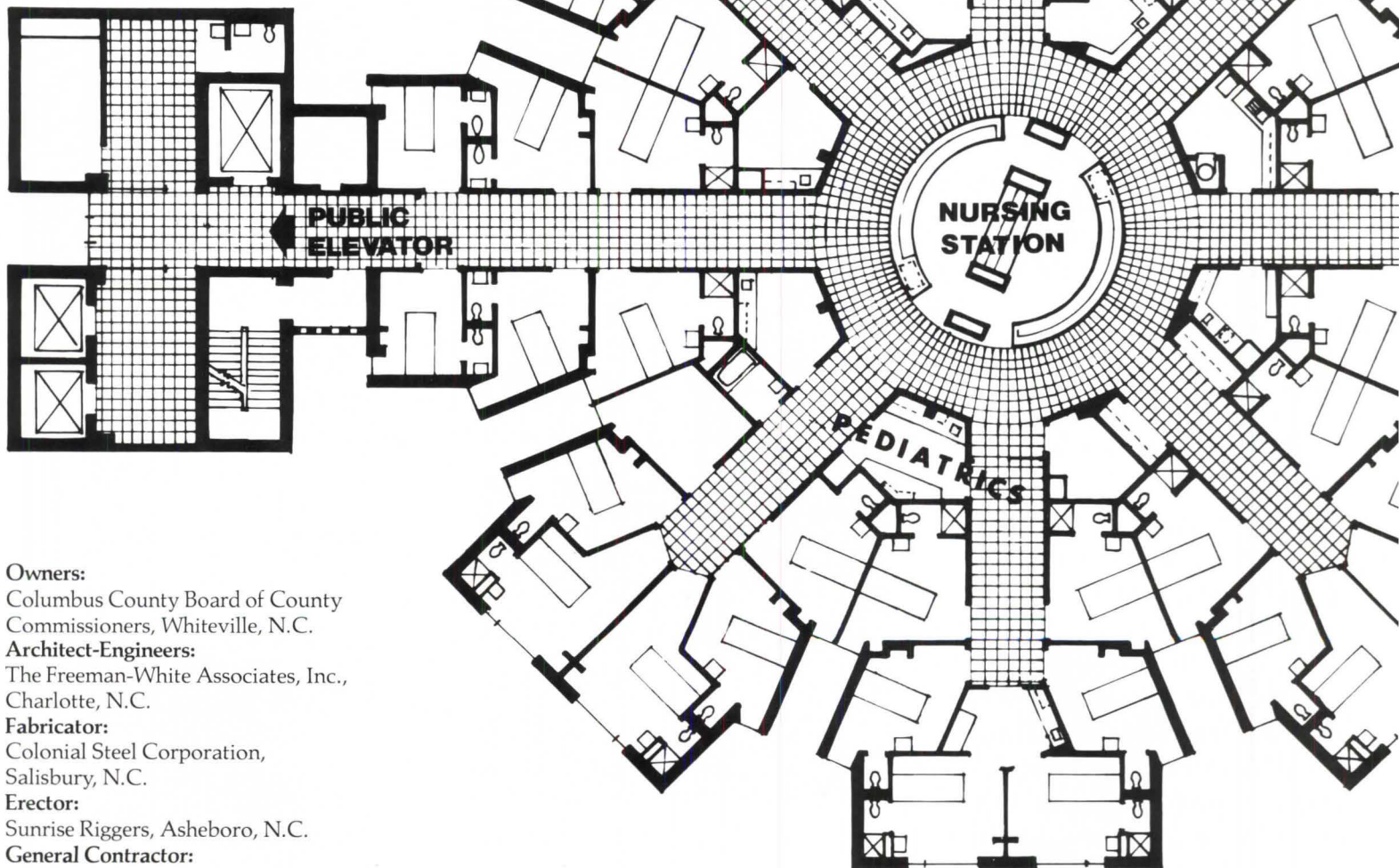
Radial plan selected

By compressing the arrangement of patient rooms around a central nurses' station, the radial plan

succeeded where the circular plan failed. Distance from nursing personnel is greatly reduced. It's only 38 ft from the nurses' station to the most remote patient bedroom.

Furthermore, the undulating exterior walls make it possible to provide windows for all patient rooms,

Minimum column sizes, dead load on the foundations, and rapid erection favored steel framing for this \$8.7-million hospital. Radial nursing floors, containing 46 beds each, proved most efficient. Separation of public and service elevators controls patient traffic.



Owners:
Columbus County Board of County Commissioners, Whiteville, N.C.
Architect-Engineers:
The Freeman-White Associates, Inc., Charlotte, N.C.
Fabricator:
Colonial Steel Corporation, Salisbury, N.C.
Erector:
Sunrise Riggers, Asheboro, N.C.
General Contractor:
D. R. Allen & Son, Inc., Fayetteville, N.C.

Solve it with structural steel.

even those located on the interior of the circle.

Only steel could handle the job

The architects first investigated a concrete framing system, but found it wasn't feasible because of the awkward convergence of beams and large, erratic bay sizes. And because of the configuration of the plan, column locations did not permit the use of a continuous concrete frame. They also found that concrete column sizes were too large for the limited column space available in the radial plan.

John H. Bennett, A.I.A., Freeman-White Associates commented, "Due to the nature of the radial plan, steel framing proved to be more advantageous than concrete. It re-

Columns are fabricated of ASTM A572 Grade 50 high-strength steel; the balance of the frame is A36. Bethlehem supplied 950 tons of steel for the 152,000 sq ft facility.

Web of steel illustrates framing complexity of the octagonal nursing tower. A future tower can be added to the east wing.



sion offers a broad range of technical and advisory services, including preliminary frame analysis (PFA).

PFA is designed to help you select the most favorable steel framing system for your structure.

Get us involved early.

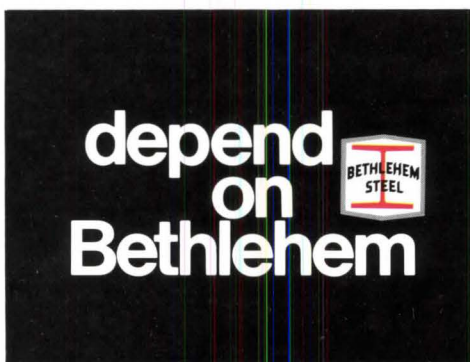
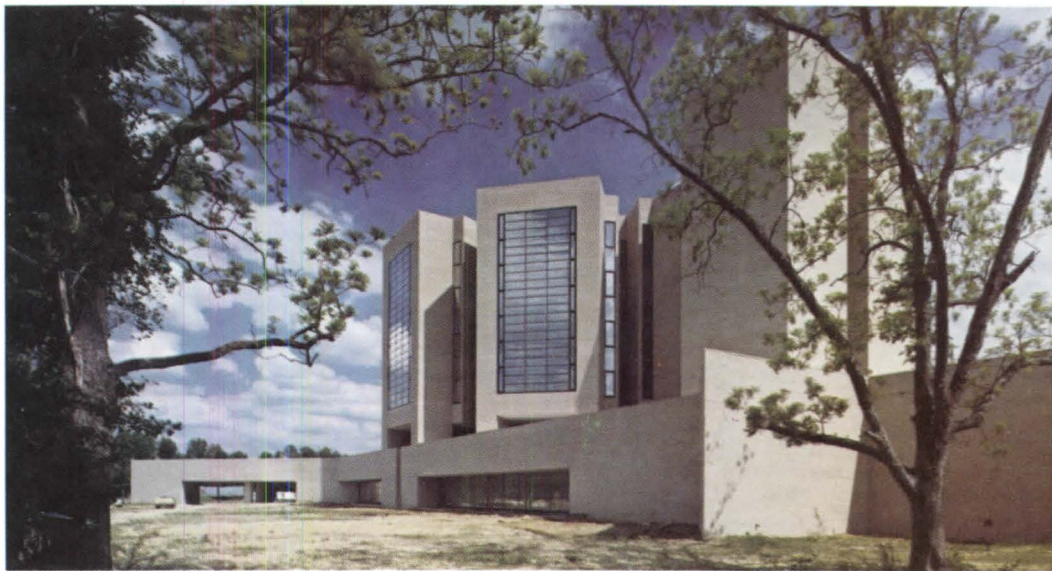
You'll get the most benefit from PFA if you call on us before you commit your design to a particular construction material. This service is free with no obligation whatsoever.

Our District Office Sales Engineers will be happy to answer any questions you may have regarding our PFA program or any of our other construction services. Just call the Bethlehem sales office nearest you for information.



sulted in reduced column sizes, as well as substantial dead load reduction for the foundation."

The combination of high-strength steel and composite design resulted in material savings and reduced live load deflection. The fire-resistant floor system consists of 3-in. composite steel floor deck topped with 3-1/4 in. of lightweight concrete. Welded moment connections are used to resist lateral forces.



Sales offices

Atlanta (404) 522-4918	Los Angeles (213) 726-0611
Baltimore (301) 685-5700	Milwaukee (414) 272-0835
Boston (617) 267-2111	New York (212) 688-5522
Buffalo (716) 856-2400	Philadelphia (215) 561-1100
Chicago (312) 664-5422	Pittsburgh (412) 281-5900
Cincinnati (513) 381-6440	St. Louis (314) 726-4500
Cleveland (216) 696-1881	San Francisco (415) 981-2121
Detroit (313) 336-5500	Seattle (206) 285-2200
Houston (713) 659-8060	

If you have a building project coming up, be sure to consider steel framing. Our Sales Engineering Divi-

Going On from page 16

with a young black professional next door, both "may be very unhappy about the presence of dubious lower class households and especially adolescent members of such households in their vicinity."

Because of their incomes and the fact that they have many choices of living places, the young professionals are mobile to the point of being transient. Because of this they are apt to be problematic in terms of neighborhood development, the report says, despite their potential to enhance property values. They make choices on where to live based on "job opportunities, on marital and other living situations and on tastes which can alter fairly suddenly." In this regard, the group differs from the mass of the population "more in degree than kind."

Interestingly, the report finds that the group "may be more class conscious than their predecessors" and may well "exert considerable pressure for conformity based on a new middle class homogeneity (like the 'suburbanization' of the city)." Their complaints about public services and institutional quality "ought to be heard and earnestly responded to," the report says. The "gadfly" role of the group "can be an irritant to officialdom, but such gadflies are ignored at certain peril." If they become too dissatisfied, they move on and "an erosion of confidence in an existing community may continue to an end-game situation; if the gadflies colonize, new political forces may develop around themes of dissatisfaction."

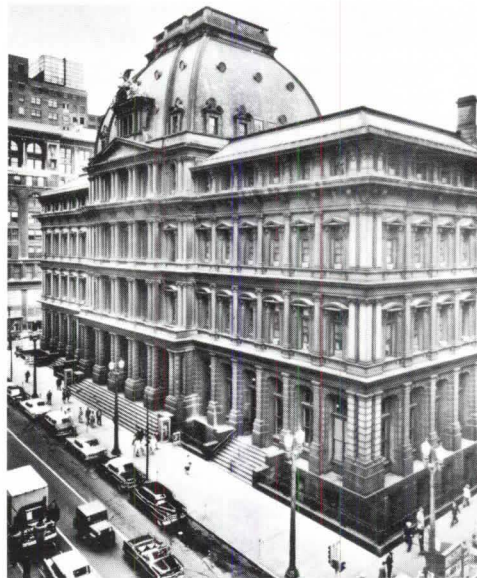
There is also the problem of the colonization resulting in inflation of housing costs and the dislocation of present residents. The poor can suffer greatly from having their neighborhood "discovered." There are two key policy considerations, the report says: "uprooting willing and capable existing residents *before* new social and economic forces overwhelm them, while mitigating (so far as that may be feasible) the 'gold rush' effect where speculation becomes rampant." The goal should be to keep ahead of demand. "Above all, it is in the interests of policy makers to attune themselves to demographic and life style shifts in regional and metropolitan markets."

The trend of young professional migration to the city, along with other factors, suggests that older urban neighborhoods "have a better chance to reinvigorate themselves" than they did 30 or so years ago. "While 'now or never' may be too dramatic a way to put it," the report concludes, "the period of greatest opportunity appears to lie in the years immediately ahead."

Information about the report's availability may be obtained from: Parkman Center for Urban Affairs, 33 Beacon St., Boston, Mass. 02108.

Restoration Competition Is Planned in St. Louis

The General Services Administration, according to J. Calvin Spradley of GSA's regional office in Kansas City, will hold a limited competition to select an architect for the renovation of the old post office building in St. Louis, a 104-year-old structure designed by A. B. Mullett in the Second Empire style. Mullett designed another building in this style that is still standing and which is also admired by architectural historians—the old executive office building next to the White House in Washington, D.C. GSA's proposal to spend about \$14.9 million on the



restoration of the St. Louis structure has been approved by the Office of Management and Budget, and will also require Congressional approval.

The competition for the restoration, which will follow the pattern of architectural selection used for the renovation of the old post office building in Washington, D.C. (see May, p. 8, and July, p. 48), will be conducted in three phases. From the architects who respond to GSA's public invitation to submit qualifications and credentials, three will be selected. The three will have about three months to prepare conceptual designs, and will be paid for this work. The final winner, selected by a jury chosen by GSA, will then prepare working drawings and specifications, incorporating the best features of the other two entries.

GSA's plan, says the *St. Louis Post-Dispatch*, is to leave "unscathed" the building's ornate exterior of gray granite from Maine and pink granite from Missouri. The fate of the interior, however, "with its marble fireplace, mahogany millwork and bronze hardware, remains uncertain." GSA plans to rent the building's lower stories to private tenants and to house federal offices in the upper stories.

The St. Louis landmark, a four-story

structure on prime downtown land, has been the subject of discussion for many years and has influenced the preservation movement. GSA once proposed to tear it down to make way for a modern highrise, but a local preservationist group strenuously objected and succeeded in saving the building despite opposition by downtown businesses. Indeed, it was this building that brought about the so-called old post office bill, enacted in 1972, which permits transfer of surplus historic federally owned buildings to state and local governments for redevelopment and commercial use. The law, however, was never invoked for its namesake. The building has been vacant for some time, ever since a post office ticket sales operation moved out. Over the years, the old post office has seen many tenants. It has housed federal courts, federal offices, recruiting stations. In its early days, it held \$4 million in federal gold bullion. Says the *Post-Dispatch*: "It was equipped—lest the South should rise again—with a moat, bullet-proof iron shutters and rifle slits."

Energy Report to Congress Stresses Small Solar Units

Small solar energy units must be considered a serious addition to the limited options available for meeting the world's demand for energy, according to an analysis by the Congressional office of technology assessment. Its report, "Applications of Solar Technology to Today's Energy Needs," was presented to Congress this summer and is to be made available to the public this fall.

The 1,350-page report is in two volumes. The first volume contains results of examinations of solar installations in four U.S. cities; analyses of federal policies, programs and Congressional proposals; cost analysis along with a look at problems and advantages of on-site power generation; the relationship between on-site generation and conventional public utilities; the legal aspects of on-site solar facilities; the impact on U.S. security and trade, labor, the environment and building designs, and current and projected fuel costs. Volume two goes into the costs of solar components; evaluates collectors; discusses methods of energy conversion and storage, and appraises heating and cooling equipment.

Here are some conclusions in the report:

- "If the price of electricity increases by about 40 percent (in constant dollars) by the year 2000, it should be possible by 1980 to build solar systems which supply 100 percent of the heating and hot water needs of large buildings in three of the four cities examined in this report

continued on page 24

A dazzling new tower in Denver. **ELEVATORS BY DOVER**

Anaconda Tower adds a sparkling new dimension to downtown Denver—forty floors wrapped in reflective glass. Tallest building in the Rocky Mountain region, the Tower is the focal point of Denver Square, a full-block complex that will include a 550-room Fairmont Hotel, attached parking structure, retail space and restaurants. Tenants of Anaconda Tower will speed to the top floors in six 1000-FPM Dover Elevators. Eight other Dover Elevators serve lower and midrise floors, and a service elevator handles maintenance needs for all forty stories. For more information on Dover Elevators, write Dover Corporation, Elevator Division, Dept. L, Box 2177,  Memphis, Tennessee 38101.

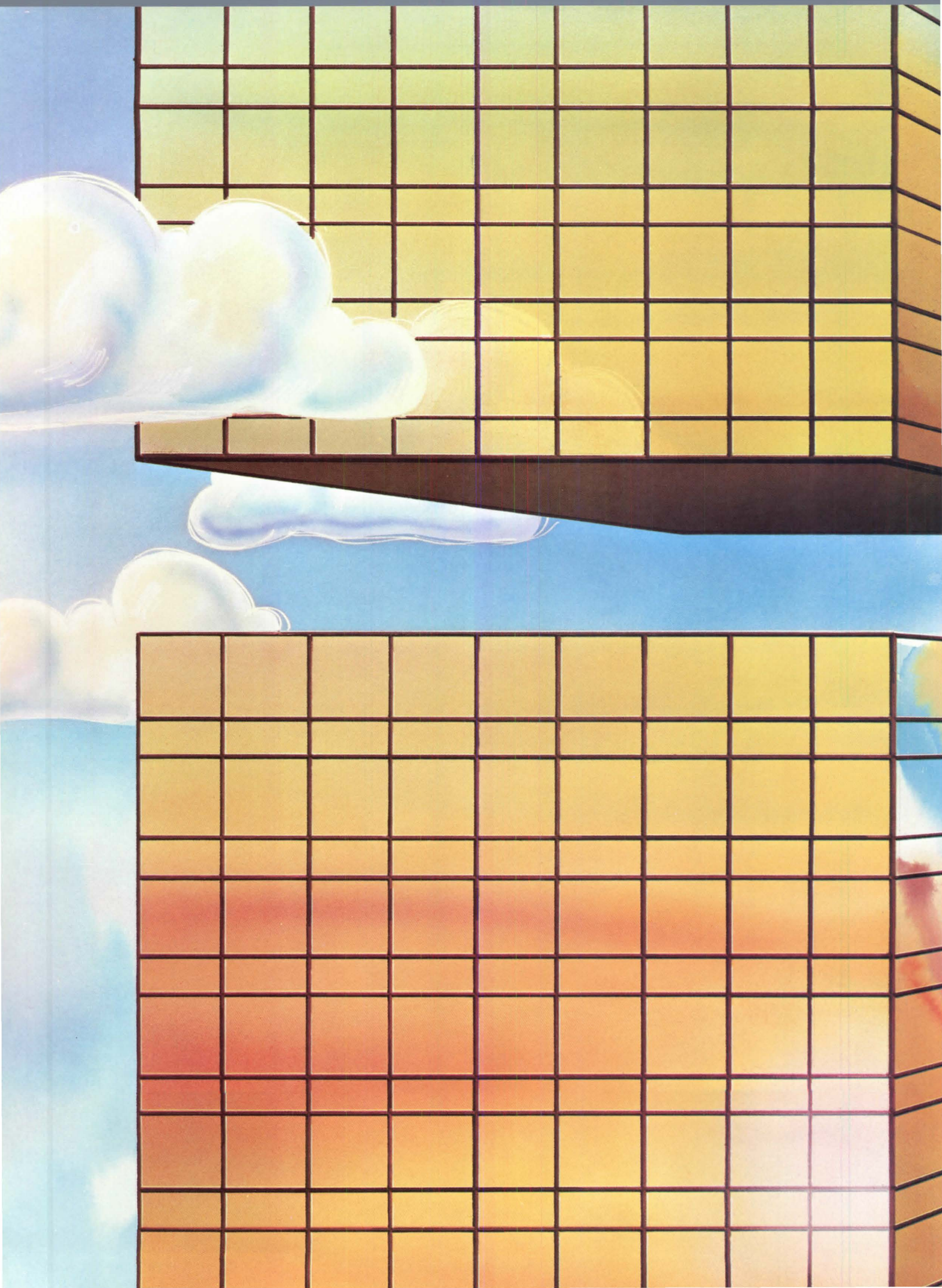
Anaconda Tower, Denver

Owner: Oxford-Anschutz Development Company, Denver

Architects: Skidmore, Owings & Merrill, Denver/New York

Contractor: Poole-Hensel Phelps, A Joint Venture, Denver





In a 20-story building the wall costs of the 20th story could be as little as nothing.

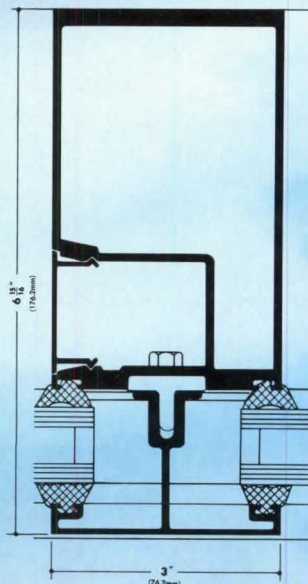
No, there is still no "free lunch," even in building. However, new Kawneer SW 9000 Wall can reduce the overall cost of the skin by up to 5 per cent. And, when the mathematics catch up with construction costs, that comes out to an effective savings equal to a free wall area every 20 floors of a building.

The savings come in many places. For example, the three-inch horizontal and vertical site line dimension not only provides the proper bite for high performance insulated glass but with proper spacing of the horizontal and vertical members, glass costs can be reduced by the use of even incremental glass sizes. The horizontal members run continuously and reduce the number of joints to assemble and seal. Exterior weathering, thermal separators and attachment bolts are factory installed to reduce erection and glazing time. And, since the horizontals are flush with the interior vertical mullions, it is easy and economical to trim off the ceiling and floor areas.

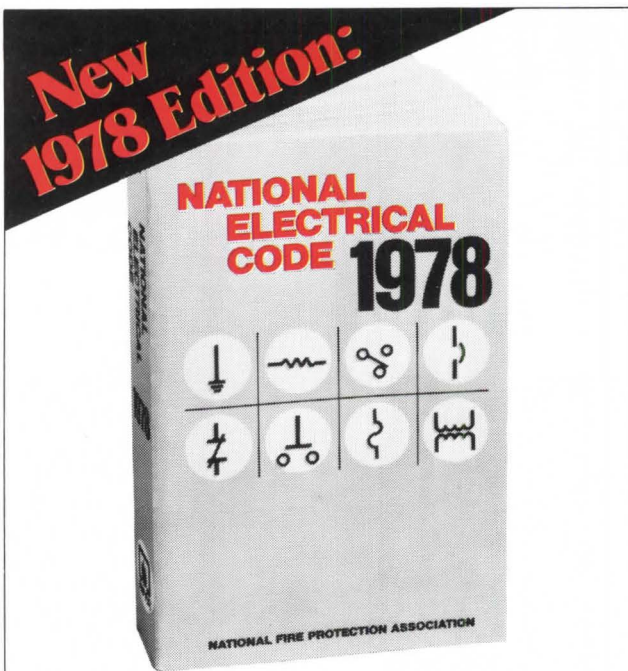
But, the savings don't end at the grand opening. Kawneer SW 9000 Wall provides high performance against water infiltration and heating or cooling loss, so the savings continue throughout the life of the building.

Kawneer SW 9000 Wall gives you more of a building by making less for on-site labor to do. It is economy without sacrifice. It is appealing to the three major senses of construction: eye sense, common sense, and dollars and cents.

For more information about Kawneer SW 9000 Wall and its beauty and economies, please write Kawneer Architectural Products, Dept. C, 1105 N. Front Street, Niles, MI 49120.



KAWNEER
ARCHITECTURAL PRODUCTS



Over 900 additions and revisions 5 new Code articles

World's most authoritative set of electrical safety requirements!

Keep abreast of crucial Code changes to meet professional standards, avoid errors and costly rewiring jobs with this newly-revised and updated National Electrical Code for 1978. The world's standard guide for any electrical project, large or small . . . and the one reliable source for anyone who needs to specify, certify or install electrical jobs. Over 650 pages, 4⁷/₈ x 7¹/₂ in., flexible covers.

JUST \$6.25 PER COPY

Order Yours Today!

(Write or call for quantity purchase savings)



NATIONAL FIRE PROTECTION ASSOCIATION
470 Atlantic Avenue
Boston, MA 02210
(617) 482-8755

Mail to:

NATIONAL FIRE PROTECTION ASSOCIATION
Publication Sales Department
470 Atlantic Avenue, Boston, MA 02210

D-41

Please send me _____ copies of the **NEW 1978 National Electrical Code**, No. 70-78, at \$6.25 per copy.

I enclose check for \$_____. Bill me _____ plus shipping and handling costs.

Name _____ Title _____

Company _____

Address _____

City _____ State _____ Zip _____

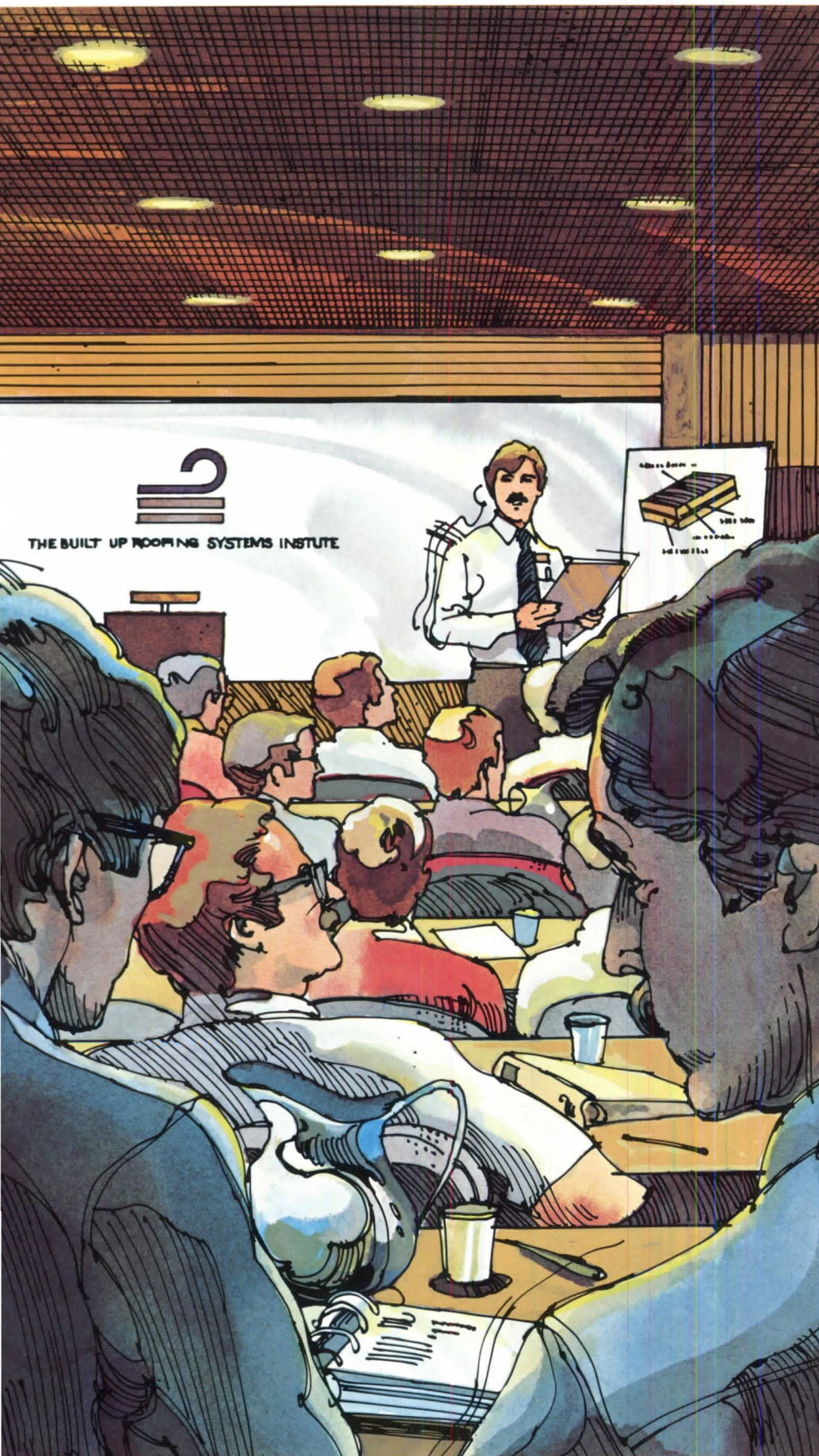
Going On from page 20

(Albuquerque, Omaha, Boston and Fort Worth) at prices which are competitive with electric heating calculated on a life-cycle cost basis."

- "For the most part, dramatic developments are not essential for developing a successful technology. Most of the cost of solar devices lies in mundane and necessary processes such as manufacturing and assembling components, installing devices on buildings, connecting plumbing and electrical fixtures, pouring footings for systems on the ground and digging excavations for storage tanks."
- "Building orientation will not be a major barrier to retrofitting many existing structures with solar equipment. A building must be heavily shaded or have a particularly poor orientation and roof shape in order for a collector mounted on its roof to gather less than 70 percent of the energy that could be collected by a device pointed in an optimum direction."
- "By 1985, combined solar heating and hot water systems should be able to provide supplementary solar heat for residential and commercial buildings at prices competitive with conventional electric heat and heat pumps in all of the cities examined."
- "Solar energy is likely to be economically attractive abroad before it is widely used in the U.S. because domestic energy prices are low in comparison to energy prices in many other parts of the world."
- "Extensive worldwide development of solar energy systems would, in time, relieve some of the strain imposed on international stability by competition for energy resources."
- "On-site solar technology appears to be more labor-intensive than contemporary techniques for supplying energy, thus, in the short term, the introduction of solar energy devices will create jobs in trades now suffering from serious unemployment."
- "On-site solar facilities are currently controlled by laws and regulations written with entirely different energy systems in mind. Although that is the case, this study finds surprisingly few barriers to large-scale installation and operation of on-site solar facilities."
- "The negative environmental effects of solar energy devices stem primarily from two sources: (1) land use requirements, which could compete with other, more attractive uses of land near populated areas, and (2) emissions associated with the mining and manufacture of the materials used to manufacture solar equipment."
- "A 20 percent investment tax credit could reduce the effective cost of solar energy in residential applications by 15 to 30 percent, and the combination of a 20

continued on page 28

What we know about built-up roofing systems fills a classroom 17 times a year.



The classroom is The Built-Up Roofing Systems Institute, sponsored by Johns-Manville.

It's the only program of its kind in the roofing industry. And it exists for one reason only: to promote good built-up roofing design practices.

Since the first class began in April, 1972, more than 1200 architects, specifiers, engineers and decision makers from private industry, schools and universities, government agencies and the military have graduated from BURS I. Have come away more knowledgeable about built-up roofs and roofing systems, and better prepared to design



and specify roofs that deliver long, trouble-free performance. The curriculum, which is non-commercial, includes classroom presentations and actual demonstrations. It

is based on knowledge and experience gained in over 100 years of manufacturing roofing components and systems.

Instructors are recognized leaders in the industry—graduate engineers and architects, research and development specialists, on-the-roof problem solvers—men eager and able to share their many years of intensely practical roofing experience.

Obviously, we're pleased with the response. It confirms our belief that there is a great need for information that will improve roof performance and solve roofing problems.

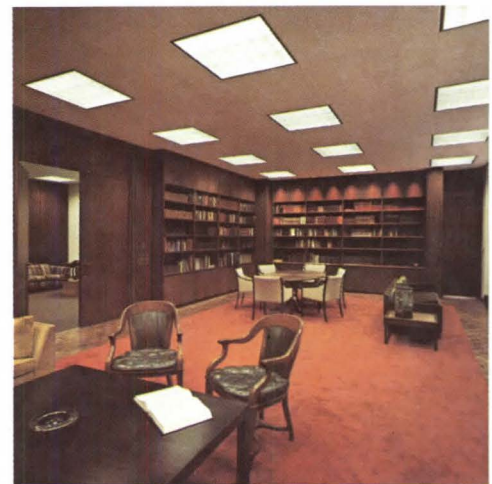
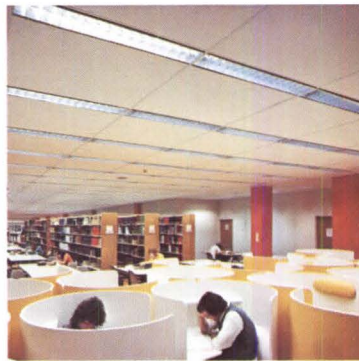
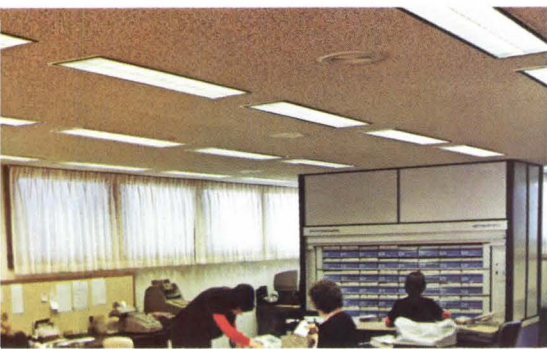
Want to know more about BURS I or J-M's single-source roofing systems? Contact Dick Fricklas, Johns-Manville, Ken-Caryl Ranch, Denver, Colorado 80217, 303-979-1000. AI-10

**For single-source
built-up roofing systems.**



Johns-Manville

Circle 47 on information card



The First Family...

Florida Power & Light
General Office Building
Miami, Florida
Architect & Engineer:
Ferendino/Grafton/Spillis/Candela
2' x 2' with 40W U-lamps

Montgomery Ward Headquarters
Chicago, Illinois
Architect: Minoru Yamasaki & Associates
Consulting Engineer: Joseph R. Loring & Associates
2' x 4' four lamp

Blue Cross - Blue Shield
Oakland, California
Architect & Engineer:
Skidmore, Owings & Merrill (San Francisco)
4' x 4' custom surface

Northeast Junior
High School
Charlotte, North Carolina
Architect & Engineer:
Ferebee-Walters & Associates
*20" x 4' two lamp for 5' x 5' ceiling
module - 70 fc at 1.8 watts per
square foot*

Bank of America
World Headquarters
San Francisco, California
Architect & Engineer: Wurster-Bernardi &
Emmons, Inc. and Skidmore, Owings &
Merrill (San Francisco)
1' x 8' custom

Walker Bank
Salt Lake City, Utah
Architect: Fowler, Ferguson, Kingston & Ruben
Consulting Engineer: Nielson Engineering Co. (Salt Lake City)
3' x 3' surface with gold baffle

Farmers & Merchants Bank
Spokane, Washington
Architect: Groesbeck-Pasold . . . Architects
Consulting Engineer: Aztech Design
2' x 4' two lamp

Penrose Library,
University of Denver
Denver, Colorado
Architect: Hellmuth-Obata &
Kassabaum, Inc. (St. Louis)
Consulting Engineer: Herman
Blum Consulting Engineers, Inc.
*9" wide one lamp troffers—total
lighting load 1.9 watts per
square foot*

American Life & Accident
Louisville, Kentucky
Architect & Engineer:
The office of Mies Van Der Rohe
3' x 3' six lamp—3 Level Switching

... Parabolume!

As an energy saver, Parabolume is an idea that was ahead of its time twelve years ago. Since then, almost two million have been installed—each one a member of this original family of low brightness fluorescent lighting fixtures.

Parabolume is selected for buildings large or small because of low energy performance . . . adaptability to interior spaces . . . or simply because "they look so good."

Don't settle for a copy. Specify Columbia Lighting's Parabolume: the original.

columbia
lighting
inc

Going On from page 24

percent investment tax credit, five-year depreciation allowance, and an exemption from property tax, could lower the perceived cost of solar energy by 50 to 80 percent."

• "Useful thermal and electrical power can be provided by on-site solar devices which are as simple to install and maintain as conventional airconditioning systems."

Inquiries should be addressed to Office of Technology Assessment, Congress of the U.S., Washington, D.C. 20510.

Ten Top Field Appointees Named by Harris at HUD

Ten officials have been appointed by Patricia R. Harris, secretary of HUD, to serve as regional administrators within a multistate area. Included are two women, the first ever selected for the top field positions. Each of the administrators will be responsible for the administration and management of HUD programs within a specified region.

The new administrators are:

• William O. Anderson, administrator of region 7, headquartered in Kansas City, to oversee programs in Iowa, Kansas, Missouri and Nebraska. Anderson re-

cently served as acting deputy director of HUD's office of field support, community planning and development.

• Thomas Appleby, administrator of region 2, headquartered in New York City, to oversee programs in the states of New York and New Jersey and in Puerto Rico and the Virgin Islands. Appleby has been administrator of New York City's housing and development administration.

• Thomas J. Armstrong, administrator of region 6, headquartered in Dallas, to oversee programs in Arkansas, Louisiana, New Mexico, Oklahoma and Texas. Since 1971, Armstrong has been director of HUD's New Orleans area office.

• Ronald Gatton, administrator of region 5, headquartered in Chicago, to oversee programs in Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin. Gatton has served as director of the housing assistance project, U.S. Conference of Mayors.

• Emma D. McFarlin, administrator of region 9, headquartered in San Francisco, to oversee programs in Arizona, California, Hawaii and Nevada. McFarlin was associate professor of urban planning, University of California at Los Angeles, school of architecture and urban planning.

• Thomas C. Maloney, administrator of region 3, headquartered in Philadelphia, to oversee programs in Delaware, Mary-

land, Pennsylvania, Virginia, West Virginia and the District of Columbia. From 1973 to 1977, Maloney was mayor of Wilmington, Del.

• Alfred Russell Marane, administrator of region 4, headquartered in Atlanta, to oversee programs in Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina and Tennessee. Marane was assistant vice president of Hensley-Schmidt, Inc., counseling engineers and planners.

• Edward Thomas Martin, administrator of region 1, headquartered in Boston, to oversee programs in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont. Martin served as administrative assistant to Sen. Edward M. Kennedy (D-Mass.).

• Betty Jane Miller, administrator of region 8, headquartered in Denver, to oversee programs in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming. Miller was recently executive director of the Colorado department of local affairs.

• George J. Roybal, administrator of region 10, headquartered in Seattle, to oversee programs in Alaska, Idaho, Oregon and Washington. He has been assistant regional administrator for equal opportunity in the region 10 office.

Going On continued on page 32

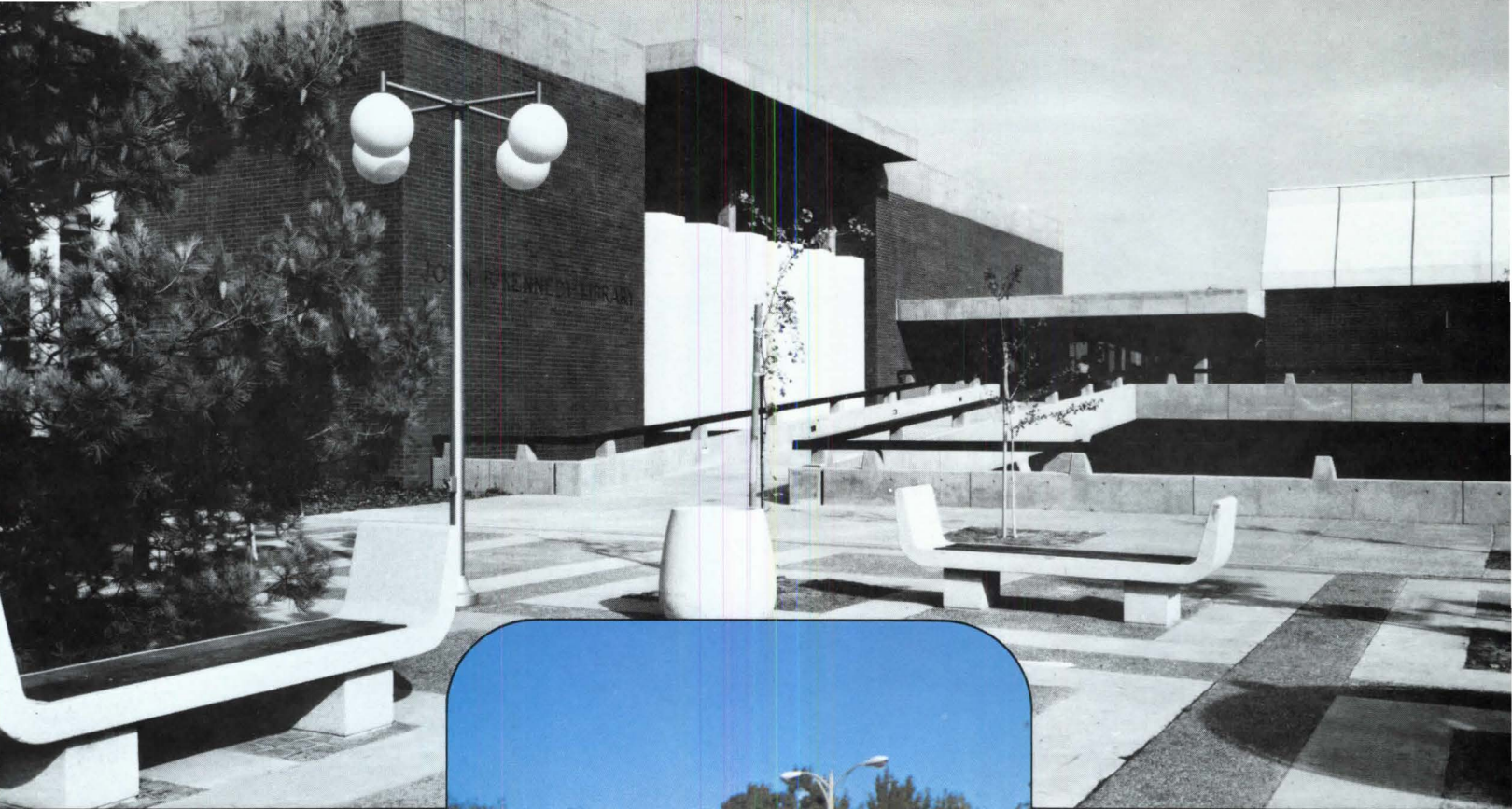


Beautiful surfaces, functional design, quality construction . . .
FIXTURES' wide selection of stacking, conference and dining tables. Choice of tops in all shapes, plus unique one piece metal bases that meet the needs of any installation. To learn the entire FIXTURES story, write for FREE Catalog 10-76.

FIXTURES MFG. CORP.
1642 CRYSTAL
KANSAS CITY, MO. 64126

PHONE COLLECT
816 / 241 - 4500

Commercial Furniture in Advanced Design
Current Catalog 10-76



Model 3176 - exposed aggregate finish.

a fully functional fountain ...for everybody

its truly functional cantilevered design for both handicapped and general public users. It features two lever handle valves for either left- or right-hand operation and is available in light sandblast or exposed aggregate finish, as shown.

Get all the facts; contact Haws Drinking Faucet Company, 1441 Fourth Street, Berkeley, CA 94710.

This Haws unique concrete pedestal drinking fountain will enhance your exterior planning with

its exterior planning with



DRINKING FOUNTAINS

Circle 51 on information card

**For years, our work has
involved controlling sunlight.**



Now we're taking our experience to the top.



The Solar Age is now. And LOF is part of it with SunPanel™ solar collectors like these.

You've probably noticed that as solar collectors have gained in popularity, more and more companies seem to be making them.

And that makes it more and more important to look closely at the company behind each brand, and the quality of its product.

SunPanel solar collectors are the product of 40 years of LOF research in controlling solar heat. And that experience is paying off for people like the Wally Campbells, owners of the Boulder, Colorado, residence you see pictured here.

Installed in the spring of 1977, the three SunPanels on the Campbell residence are used to heat water. The Campbells report they couldn't be more pleased with the way the units keep them in hot water—and the value they believe our solar collectors may have added to their home.

Our experience pays off in other ways, too. Designed for easy installation, SunPanel solar collectors can be put in place with the same skills plumbing and heating contractors use every day.

For more information on LOF SunPanel solar collectors—refer to Sweet's 13.25/LI in the Engineering File, or write Martin Wenzler, Solar Energy Systems, Libbey-Owens-Ford Company, 1701 E. Broadway, Toledo, Ohio 43605.

LOF SunPanels installed by
Solar Heating Systems, Boulder, Colorado.

A large photograph of a house with solar panels on the roof, set against a backdrop of mountains. The house has a stone chimney and a wooden deck. The solar panels are mounted on the roof. The background shows a mountain range under a blue sky with clouds.

LOF

Circle 52 on information card

AIA Wins Challenge, Asks RIBA Golfers Here in '78

An unofficial AIA golf team, after a phenomenal recovery from the initial onslaught of low-handicapped golfers of the Royal Institute of British Architects Golfers Association, brought home the winners' cup by the narrow margin of eight to seven team victories.

The challenge invitation, extended by Capt. David Y. Davies, RIBA, was met by a volunteer AIA group, with Capt. F. Carter Williams, FAIA, assisted by Lieuts. Thomas T. Hayes, FAIA; J. Winfield Rankin, Hon. AIA, and William A. Rose, AIA. Bill Rose and wife Sandy

planned the special events, including a victory celebration by the British ladies over the golfing American ladies. Win Rankin was secretary-treasurer and Tom Hayes was responsible for teams.

Following the matches, team members were bused to the Royal and Ancient Golf Club of St. Andrews for a round on the links, where it all began centuries ago. After a night on the town in Edinburgh, all participants went their individual merry ways to enjoy the British Isles in this very special year of the Queen's jubilee. A majority rented cars and drove mostly on the left side of the road for the remainder of the tour.

A return match is tentatively proposed for Pinehurst, N.C., in 1978, with the first team members continuing the fellowship feud. Interested substitutes or addi-

tional team members may indicate their desire to participate to Win Rankin, 9306 Elmhurst Drive, Bethesda, Md. 20014.

There were 29 American architects and spouses who enjoyed the hospitality of the British architects and the beauty of Scotland, Ireland and England.

F. Carter Williams, FAIA

System of Specifications Is Offered in Publication

"The Representation and Use of Design Specifications" is a pamphlet recently published by the National Bureau of Standards. It is the work of Prof. S. J. Fenves of Carnegie-Mellon University and R. N. Wright, director of the center for building technology in the NBS.

Their stated objective is "to improve engineering practices through better specifications and better methods for their use" by offering a systematic approach to the formulation, expression and use of specifications. The methods are written to be suitable for both manual and computer-aided applications by specification writers, designers and reviewers for building regulatory authorities. With slight modifications, according to the authors, the methods are applicable to three types of design specifications: performance, procedural and prescriptive.

The authors offer an abstract representational model of design specifications and identify ways to formulate specifications and tools for checking them.

The 51-page pamphlet, NBS Technical Note 940 (stock number 003-003-01790-6), is available for \$2 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

New Editor for the Memo

Peter C. McCall has been appointed editor of the AIA Memo, replacing Kevin Green who has joined the staff of the AIA Research Corporation to become editor of its forthcoming research quarterly. McCall was a reporter and business editor of the *Chattanooga News-Free Press*. He came to Washington, D.C., as press secretary to Congressman E. LaMar Baker and later worked as a public information specialist with both the General Services Administration and the Office of Equal Opportunity.

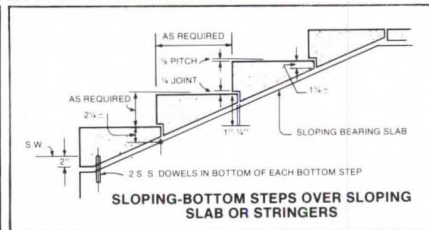
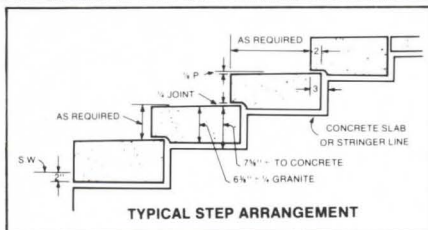
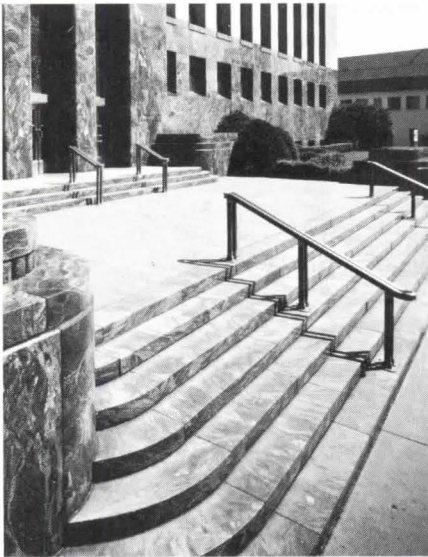
David Alan Caney has been promoted to the position of director of Congressional liaison at AIA headquarters, succeeding Nicole Gara, who resigned in September to take care of her newborn daughter, Kathleen Louise (Kate) Share.

Caney, 30, has been assistant director for Congressional liaison since Oct. 1975. He holds a degree in architecture from

continued on page 114

Granite.

Tough enough to take the thunder of 10 billion feet.



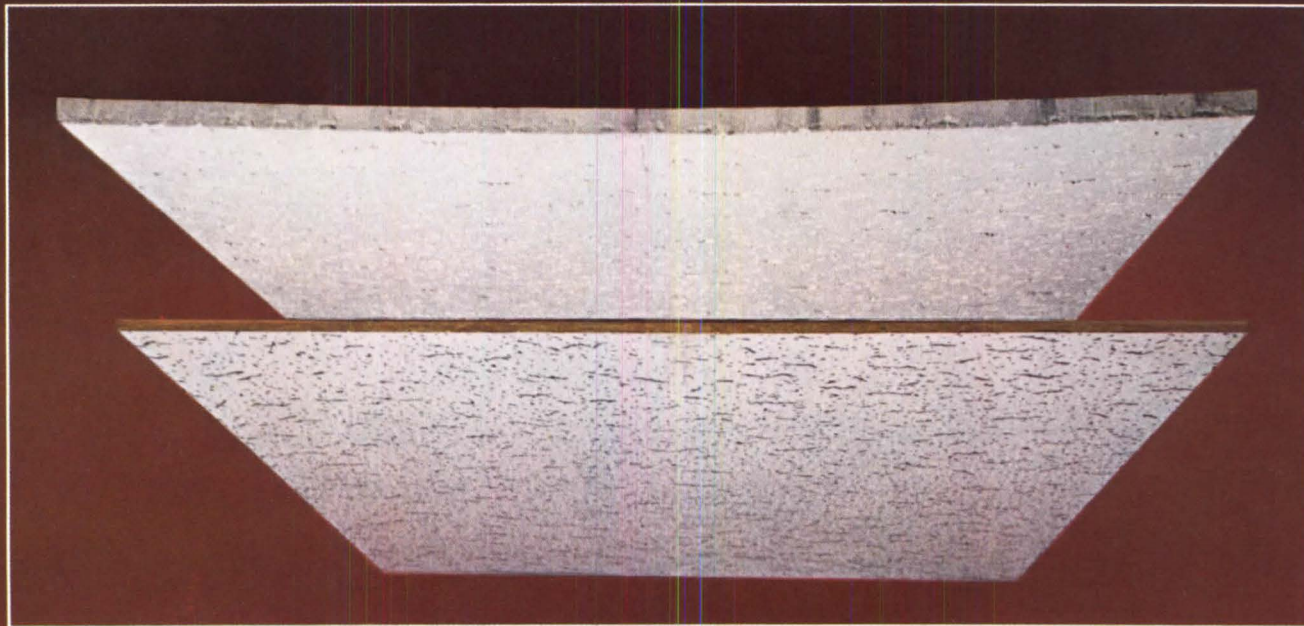
What else but granite can take 38 years of wear and weather without fading, staining, or showing measurable wear? That's what made Cold Spring granite the ideal choice for the Banker's Life Insurance Building when it was built in Des Moines, Iowa, in 1939. And that same unique combination of beauty and unsurpassed durability make it ideal for today's floors, facades, core walls, steps, malls and walkways — wherever you need maximum durability that's virtually maintenance-free.

For more information, plus a free copy of our 16-page, full color catalog showing all 18 Cold Spring colors available, call toll free **800-328-7038**. In Minnesota, call (612) 685-3621. Or write to the address below.

Cold Spring Granite Company, Dept. AIA-10 202 South 3rd Avenue, Cold Spring, MN 56320



THINNER IS BETTER



If we showed you a $\frac{1}{4}$ " ceiling panel that was guaranteed not to sag and offered the same fissured look and sound absorption as standard $\frac{5}{8}$ " panels, would you be willing to pay less for it?

Introducing Celotex Grande lay-in panels. The reason we make it thinner? We use a better binder—resin, which when cured, is insoluble in water, instead of the conventional starch-based binder. The result: Grande resists moisture, is easier and less expensive to install and easier to transport to the job site. And Grande panels come with a 5-year guarantee against sagging. A specimen of the guarantee will be provided at the place of purchase, or by writing to The Celotex Corporation, 1500 North Dale Mabry Highway, Tampa, Fla. 33607.

Your Celotex representative has all the details.
Or contact T.M. Pariso, Commercial Marketing Department, at the above address.

Celotex[®]
BUILDING PRODUCTS
The Celotex Corporation, Tampa, Florida
a Jim Walter company

HOW BEAUTIFUL IT IS TO COME IN UNDER BUDGET.

Engineered loadbearing masonry has established itself as a tight-budget building system. But with its fame for frugality came an undeserved reputation for colorless architecture. Houston's Halbouty Center, developed by Gerald D. Hines Interests, should set the record straight once and for all.

Neuhaus + Taylor, Architects, ignored the traditional notion of compartmentalized loadbearing design and erected an innovative structure featuring two handsome atria.

Wide-open spaces were a requisite for versatile leasing of the property; engineered masonry accommodated every need.

With considerable exposed brick throughout the lobby and interior, The Halbouty Center is a beautiful expression of masonry as a decorative and functional material. But its beauty is far more



than skin deep. The original owner's budget was undercut 15% by the use of engineered masonry, yet architectural detail was not compromised.

Of course, there are long-range economies to an engineered masonry building, too. Fire walls are inherent to the system. The mass of masonry walls makes them highly energy-efficient. And once the tooling is finished on a masonry structure, its walls are virtually maintenance-free. Engineered masonry. It makes any budget beautiful to work with.

For more information, refer to the Engineered Loadbearing Masonry insert in Sweet's, U.S.A. #4.4d/lm & Canada #4uni, or write to IMI.

International Masonry Institute

(The Mason Contractors Association and The Bricklayers' Union of the U.S. and Canada.)

Suite 1001, 823 15th St., N.W.

Washington, D.C. 20005, (202) 783-3908



ENGINEERED MASONRY. BEAUTIFUL IT IS.

Developer: Gerald D. Hines Interests. Architect: Neuhaus + Taylor. Consulting Engineers: Krahl & Gaddy.

Circle 55 on information card



AIA JOURNAL

The article by Robert Brandon, AIA, on the Centre Pompidou in the Paris quartier of Beaubourg (Aug., p. 22) inspired a reader to poetry. By way of introduction to his poem, he quotes from the "New Century Classical Handbook" (p. 864): "Phalaris, tyrant of Acragas in Sicily from c. 570 to 554 BC, was notorious for his sacrifices, notably his human sacrifices in a heated brazen bull." The poet is Robert H. Mutrux, AIA, of Wilton, Conn. The poem follows. Ed.

The legend-monster who, in ancient times
Flamed by the passions of his lord, was made
To incinerate those of different mind
In his white-heated belly, is now free
And lives, under the title of "Beaubourg"
By gastronomical coincidence
Near what was once the Ventre de Paris

Civilized now, restyled in steel and glass
Enlightened, fully airconditioned, with
Not one belly, but five, of gargantuan
Capacity, each one fed through a vein
Of shining color-coded plastic tubing
Consuming 20,000 mortal morsels
Daily, of every contour, creed and color
Each one willingly, gently tumbled
Into a vast culturipetal maze
Then one by one, digested and disgorged
Not immolated, however, but inoculated
With that fertile ever creative strain
That grows in the society of free souls

Of recent date, Monsieur Beauborg has had
A consummated love affair. His offspring
Nestling in the safe shadow of its sire
Delivered by a sculptor-midwife, is
Made up of surplus pieces, not unlike
A children's playhouse, fashioned to entice
The smaller fry into its metal frame
(Responding to the nature of its forbears)
Not to embroil, but rather to amuse
And send them laughing out its curved
entail
Shaped like a children's slide, polished
agleam
By countless youthful bottoms, while
their parents
Follow the more sophisticated course
Through the nine muses' modern galleries
And yet they meet at the same point in
time and space

Two generations are thus forever altered
By similar encounters. Both have dis-
covered
That through a vision of another world
(As is the aim of every work of art)
They don't get burnt up; they just get
happier
As does the Place de Halles, and all of Paris
And all the universe by art expanded



Evaluation: San Francisco's Hyatt Regency Hotel as a Spatial Landmark

Its atrium lobby has become one of the sights of the city and may be John Portman's most dramatic to date. By John Pastier

No doubt because it is a tourist's paradise, and perhaps because it loves itself so well, San Francisco is a place where souvenir replicas of various bits of the cityscape abound. Whether it be a pencil sharpener shaped like the Golden Gate Bridge, a scale model cable car that also lights cigarettes, or tiny pendants in the form of Coit Tower, the Transamerica pyramid or a Chinatown pagoda, each trinket is a tribute to its subject's firm place in the public consciousness.

Curiously, one of the city's finest and most popular sights has not been so commemorated and probably never will. It is the soaring atrium lobby of the Hyatt Regency hotel, and its exclusion from the souvenir pantheon may be a tribute of a different sort, since it hints at a salient distinction between the hotel and all those other landmarks. They are essentially large solids in space and thus are easily reproduced as scaled down objects, but the Hyatt Regency is space itself, and virtually defies such representation.

Space, of course, has long been a hallmark of the hotel's architect and co-developer, John Portman, FAIA. His success in both those roles stems from a rare ability to design and implement grand spaces that most people (whether initiated to the mysteries of architecture or not) can experience intensely and with appreciation. Portman first defied, and then expanded upon conventional real estate wisdom by building generous, dramatic and inherently expensive interior spaces that have paid back their cost handsomely. What initially seemed an act of architectural faith soon revealed itself as shrewd business judgment, since those spaces have given their hotels a strong attraction and unmistakable identity.

By now, Portman has produced six of these grand hotel spaces and other architects and developers have built creditable variants of his invention in such places as Houston, Cambridge, Mass., Kansas City and Indianapolis. Chronologically, San

Francisco came third; morphologically, it stands out as his most unusual. Portman's first hotel venture, of course, was the Hyatt Regency in his home town of Atlanta. Completed in 1967, it looks classic and restrained in retrospect. Yet how amazing it seemed then, with its 120-foot-square skylit atrium rising straight up 23 stories, ringed with balcony corridors and festooned with trailing ivy and exposed, gondola-shaped elevators each bedecked with hundreds of tiny light bulbs. On the main floor, or hovering just above it were shops and eating and drinking spots as well as the main circulation paths for guests and sightseers. Above the roof, a circular cocktail lounge revolved to give a dramatic view of downtown.

This innovative package was so successful that in short order Portman had a 200-room addition on the drawing boards. Property lines and structural conditions led it to take the form of a cantilevered cylindrical mirrored tower a few yards from the main building mass. At

Predecessors of the San Francisco atrium (left), were the Atlanta original (below) and a variation on it in Chicago (right).



this point, the kit of parts for all his subsequently built hotels, except San Francisco, was essentially defined.

The Hyatt Regency at Chicago's O'Hare airport came next, in 1971. Flight paths mandated a low profile, and Portman's response was an eight-story hollow square, with a cylindrical tower of equal height outside each corner: basically a lowrise version of Atlanta with the mirrored towers multiplied. The atrium was crisscrossed by flying bridges that fragmented the space into fourths. Its symmetry was rigid and nearly absolute in comparison to Atlanta's more relaxed disposition of elements.

San Francisco's Hyatt Regency opened at the time of the national AIA convention there in May 1973, and although it returned to the idea of a tall space, its form was nevertheless unique. Symmetry had vanished from both plan and section, replaced by an oblique solid geometry inside and out. The atrium was no longer a forthrightly defined volume, but rather a sloping, twisting one whose perceived shape was elusive and shifted with the viewer's changing position.

These three hotels implied an auspi-



Mr. Pastier is a contributing editor of *New West* magazine and formerly was architecture critic for the *Los Angeles Times*.

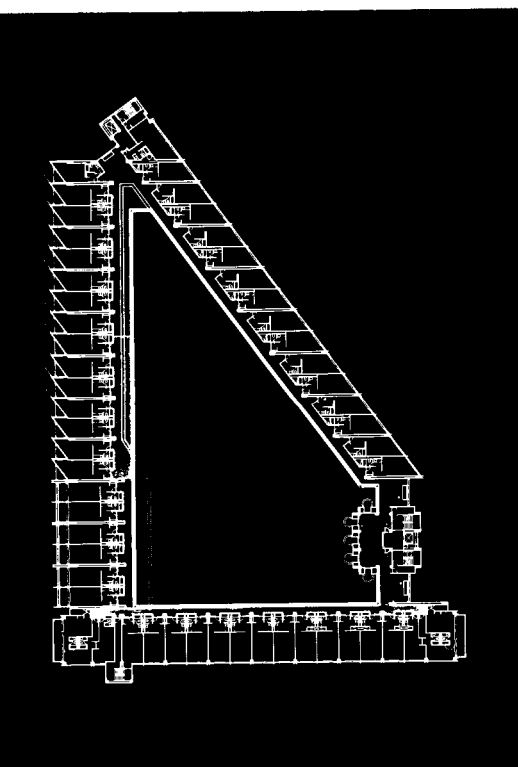
cious design direction. Collectively, they were an exploration of the spatial possibilities deriving from a consistent set of ground rules: a full-height atrium ringed by balconies serving the guest rooms, executed within a straight-lined, angular geometry for the major architectural elements inside. A proposed hotel for New York City's Times Square would have continued the inquiry on an even larger scale, but it has not been built. So far, San Francisco marks the culmination of that process.

The next three hotels, Atlanta's Peachtree Plaza, the Los Angeles Bonaventure and Detroit Plaza, have opened within the last year or two and reflect a new set of rules. They are much taller than the first trio, ranging from 35 to 71 stories, and place their guest rooms above relatively low atriums. Their geometry has become circular and curvilinear, their spaces more fragmented, sequential and intricate in the manner of Piranesi's phantasmagoric etchings of prisons. Their planning has become inexorably symmetrical about both axes. In all, these spaces provide a comparatively unsatisfying and disconcerting experience: Their complexity seems more burdensome than intriguing, and, in Los Angeles at least, invites getting worn out or even lost in seeking a specific destination inside the atrium space.

Seen in this context, the San Francisco and the earlier Atlanta hotel seem to be Portman's high points so far. Choosing

Below, San Francisco's successors: (left), the Los Angeles Bonaventure; Atlanta's Peachtree Plaza (center) and the Detroit Plaza. Above right, floor level views of San Francisco's atrium.





between them is as much a matter of temperament as analysis. My leanings are toward Atlanta, not just because of its marvelous lighting and spatial clarity, but because this is where Portman first reinvented the idea of grand public space for our generation. Perhaps some day that historic event will be marked by a discreet bronze plaque on the premises.

But, for equally good reasons, many observers feel San Francisco to be Portman's best space to date. With audacity and skill he turned a set of site constraints into the basis of an ingenious geometry, producing a kinetic and impressively ambiguous inner volume. Here is a pattern liberated from symmetry, rising from a roughly triangular plan to a top level that centers on a narrow slot of space. The 15 floors between form a complicated but totally disciplined transition wherein each level on the north side overhangs the one below, while jogging in plan as well. The resulting space is roughly triangular in cross section, but because it bends is also similar to a warped surface. In that sense, it is reminiscent of Pier Luigi Nervi's St. Mary's Cathedral built two years earlier and two miles westward. The atrium is not as structurally expressive as Nervi's four converging hyperbolic paraboloids, but is more adventurous and sophisticated spatially.

Nervi's form was derived from the structural properties of thin-shell concrete, while Portman's resulted from urbanistic considerations; in one sense, it was designed from the outside in. When

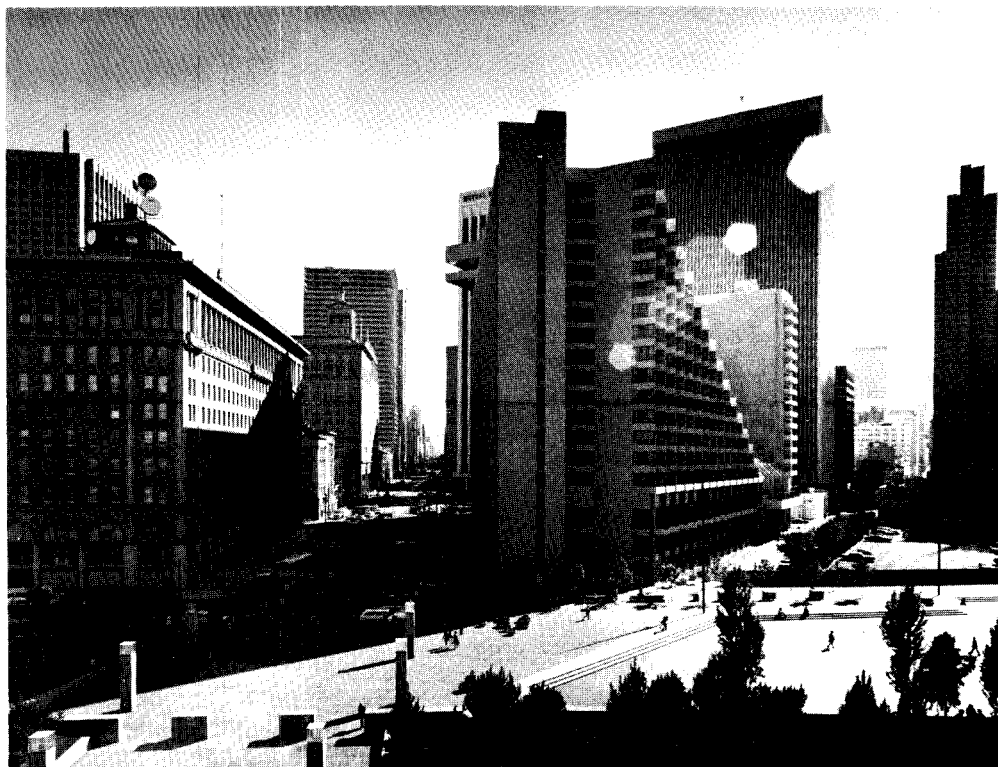
Primary shaping element of the San Francisco hotel's plan, form and even its central space, was its triangular site at the foot of Market Street (below).

Portman 'turned a set of site constraints into the basis of an ingenious geometry.'

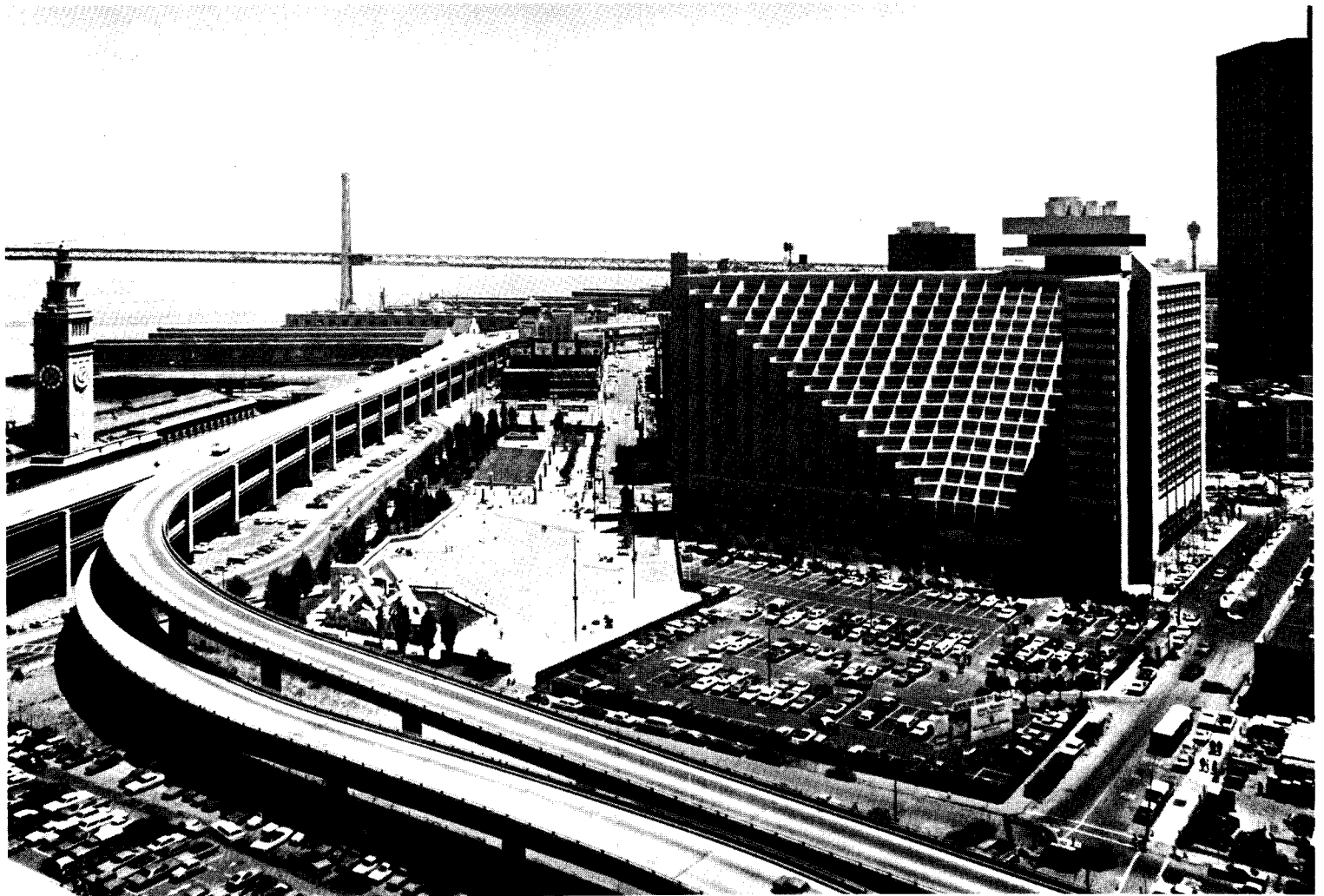
asked what his design goals had been for the hotel, Portman spoke of the cityscape and not about the inner space.

The Hyatt Regency occupies one of those characteristic San Francisco triangular blocks formed by the meeting of two skewed street grids at Market Street. It is part of the Embarcadero Center, a redevelopment area that also includes stores, restaurants and three completed office towers. As architect, and as co-developer with Trammell Crow, David Rockefeller and Prudential Insurance, Portman had design control over all five blocks of the project. Contiguous to it on the north was another multiblock mixed use redevelopment, the Golden Gateway, which included apartments, townhouses, offices, retailing and parks. The Hyatt Regency is the only component of these two ambitious ensembles to be situated on an irregular block.

That circumstance strongly suggested a triangular plan for the building and its interior space. Portman felt it important to maintain the continuity of Market Street, so that wall of the hotel rose sheer and close to the property line. Since the Drumm Street side also faced the city, it was treated similarly. Along Sacramento Street, however, the hotel would confront the Embarcadero Center's colossus, a projected 60-story office tower. Both those buildings would look out over Justin Herman Plaza, a large hard-edged open space, and, beyond that, the double-







The concave north facade was stepped back to 'lean away' from a 60-story tower planned for a site across the street (still a parking lot in the photo above).

decked Embarcadero freeway, and San Francisco Bay. Wishing to open up the space between his buildings and taking into account the sweeping space before them, Portman made the hotel "lean back away" from the tower. This also produced an unusual massing that would help the Hyatt Regency hold its own against a neighbor three times as tall.

Economic factors have postponed construction of the tower and lowered its planned height to 46 stories, so that the effectiveness of the architect's bold stroke still remains a matter of conjecture. It does seem clear, however, that a shorter office building will create less of a David and Goliath relationship with the hotel, and produce both a less dramatic and less intrusive effect on the waterfront. If, as is periodically rumored, the city eventually tears down the elevated freeway stub, those issues of waterfront impact will gain further significance.

Sloping the hotel's north face naturally had major consequences inside. That inclination caused structural complications, but also yielded clear dividends for the atrium. It reduced the enormous volume of that space by roughly half without di-

minishing either its height or its heavily used first floor area. In one sense, this tent-like interior looks larger than it is, since its tapering cross section exaggerates perspective vertically and thus makes the space seem taller. Here, knowingly or not, Portman has revived a favorite trick of Renaissance architects and stage designers.

The slope shaped the atrium in a rich and almost mysterious fashion. The north face is not a single inclined surface, but two sloping planes bent at an angle to each other, somewhat like the corner section of a prewar baseball stadium. This not only makes the inner and outer contours of the hotel that much more interesting, but, combined with some further geometric wizardry, enabled the architects to maintain a constant 54 rooms per floor even though the building narrowed toward the top.

Such vigorous sloping and zigzagging, while creating a visual and structural tour de force, also has its drawbacks. Those 54 rooms per floor are served by a single-loaded balcony corridor, and on a typical floor this walkway has a length of more than 800 feet. Since guest elevators are in a single bank, some rooms are over 400 feet away, and the shorter path is not always apparent. Portman allows that this is a long trip, then adds, "but it's some walk, isn't it?" For guests it certainly is,

since it allows them an elevated and changing view of the grand space along with the sounds (and sometimes food smells) of the activity below. For employees, though, that hike can be a chore. Bellmen must use the passenger elevators and cannot shorten that long walk. Room service and housekeeping staff have two service elevator locations available, but even then their paths can reach 300 feet.

The slope also left little room for a skylight, so that the atrium is lit for most of its length by a narrow strip roughly 10 feet wide. This is augmented by a full-height window strip in the far corner of the space, but even then the light is inadequate. Even with grow-lights, the lobby trees have been replaced twice in four years, each time at a cost of \$25,000. Arguably, the space is visually more successful at night. A slope one or two degrees sharper would have permitted twice as much natural light, and Portman volunteers that "the one thing I'm not totally pleased with is the daylighting. The skylight should have been larger."

Even with design refinements, the Hyatt Regency would still be disconcerting to one segment of people. One Midwesterner prone to vertigo reserved a north face room sight unseen, and found the setting and mandatory balcony walk unnerving. Similarly, a woman from Los Angeles took one step into the revolving

'A splendid stage for eating, drinking, meeting friends . . . seeing and being seen.'

cocktail lounge and immediately informed her companions that she would await them downstairs on terra firma. In contrast, people who enjoy driving on freeways, riding roller coasters and walking on roofs of tall buildings, as I do and as I suspect Portman does, will find all this movement and implied sense of risk energizing.

But there are also real dangers built into this daring space. One friend recalls sitting downstairs and seeing a dropped glass come hurtling down from an overhanging balcony, luckily not striking anyone. So far, unlike Atlanta, there have been no jumpers here. In the words of Terry Williams, the hotel's chief engineer, "We've got the Golden Gate Bridge for that."

There are also more mundane and less publicly visible problems arising from the architecture. The plans made no provision for room service, and the hotel staff had to improvise space for that purpose. Williams feels the building could use a sixth passenger elevator and two more for service—there are only two now. Plumbing and mechanical systems are complicated by the asymmetrical plan and the jagged north face: "There are many crossovers and offset risers, and repairs are often difficult. This is partly mitigated by the open plan, since it allows such common hotel problems as overflowing bathtubs to be seen quickly before they inflict serious damage. In all, Williams sums up Portman's method as "design something beautiful and let other people run it."

Although said with good cheer, these words point to the dark side of Portman's hotel triumphs. Judging mainly from his two in California, they are not designed so much for smooth operation as for architectural impact. Portman's staff deflects the issue deftly: "We don't like to tell operators how to do their job. Those people come up with ideas that we could never dream of."

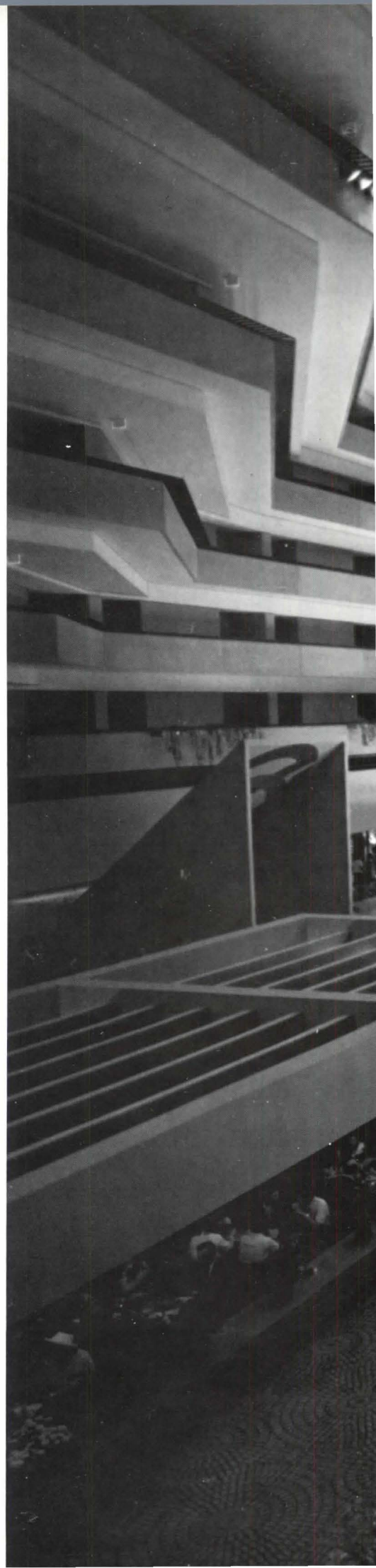
One problem not of the architect's making involves the guest room interiors, designed by Los Angeles consultant Howard Hirsch. Portman vetoed the first design, but even now metal lamp shades cast dark shadows exactly at reading height and drawers are inconveniently oversized and few. Wall graphics are of embarrassing quality, but that seems standard for even the best hotels. In the next few months, all the suites will be re-furnished, and the new arrangements, also by Hirsch, promise to be an improvement.

Portman's designs reflect the assumption that guests will spend less time than usual in their rooms, and more in the public spaces, meeting rooms, restaurants and bars, not only because of the magnetic architecture, but also because these are largely convention hotels. In that respect, the rooms are not so important, and in a broader sense the hotel's functional drawbacks are not as significant as they first seem. Easily or not, the hotel functions and the staff carries on. As a whole, the guests seem very pleased. The Hyatt Regency, although located at the extreme edge of downtown and far from its two hotel districts, nevertheless achieves high occupancy at prime room rates of \$60 and up. It draws an estimated 4,000 sightseers daily, and the atrium lobby is a splendid stage for eating, drinking, meeting friends, dancing and seeing and being seen.

Issues of design, for better or worse, recede before the Hyatt Regency's immense success as a social space and as a mythic pilgrimage point. John Portman may not practice architecture in the same way as some of his high-art colleagues, but he understands people and public behavior better than any of them.

Sometimes that understanding strays across the border into kitsch, mainly in the area of "art" and decoration in public areas. In San Francisco, the main space is victimized by a "sound sculpture" of stereophonically taped bird calls, and by a 45-foot-tall piece of enlarged costume jewelry in the form of the wool industries trademark. But this too must be put into perspective. If art is not Portman's strong point, it is because art is not America's strong point either. We are instead a people in constant motion, always looking optimistically to technology and the future, and that is also the essence of a Portman hotel, with its spinning cocktail lounge, its escalators and elevators gliding along on proud display, and its zappy geometry pointing hopefully toward the 21st century. Unlike the work of post-Jeffersonian neo-Palladians and Corbusian revivalists, this is an unmistakably American architecture.

The last American architect whose name was a household word was Frank Lloyd Wright, and, like him, John Portman is usually showmanlike, often baroque, sometimes kitschy and always passionately involved with space. On top of that, he can play the quintessentially American role of businessman, and build projects that would languish in other architects' plan files. Perhaps that is his greatest genius: making it happen. Why go visit the Hyatt Regency? Because, like the cable cars, Chinatown and the Golden Gate Bridge, it is there, big as life, and San Francisco would not be the same without it. □





Measuring Continued Competence: AIA, NCARB Go Separate Ways

As the states begin making evidence of ongoing professional development a condition of license renewal. By Mary E. Osman

AIA and the National Council of Architectural Registration Boards are pursuing sharply divergent paths toward meeting the growing demand of states for continuing education requirements as a basis for license renewal or recertification.

The two organizations are responding, as are the states, to some powerful current trends in American society, notably consumerism and surging public demand for quality and accountability in the rendering of professional services.

In May, Iowa passed legislation that requires all professionals to participate in continuing education as a prerequisite for license renewal. The legislation imposes disciplinary sanctions and revocation of license to practice unless the licensee continues his or her education.

Under the law, the Iowa Board of Architectural Examiners is required to make recommendations by Jan. 1 regarding a means of assuring the continuing professional development of architects, with approved measures becoming a requirement for relicensing in 1979.

Minnesota has enacted enabling legislation which gives authority to registration boards, if they see fit, to establish mandatory requirements for continuing education for license renewal. To date, the Minnesota Board of Architecture, Engineering, Land Surveying and Landscape Architecture has not adopted specific plans and is awaiting developments from AIA and NCARB.

Florida and California are among the states where AIA components are working toward the introduction of bills in state legislatures that would require license renewal based on AIA's professional development measuring system (PDMS). It is anticipated that other states, including New York, may consider such legislation in the near future.

As long ago as 1970, the Institute initiated a program of continuing education for its members, and in the intervening years has produced programs for architects at every career level. AIA's philosophy in response to the move toward recertification in the various states is based upon the premise that substantive professional development activity is the most legitimate means of keeping abreast of the

most recent knowledge and of developing new skills to remain competent to practice.

AIA's approach is anchored on the PDMS which has been fine-tuned since its initial approval by the AIA board last September. (See chart at right.) Now a single sheet permits the architect at a quick glance to make judgments about his or her professional development and to have means for assessing strengths and weaknesses.

The PDMS was the first system ever devised to measure or record educational activities and the level of participation,

The AIA system (chart at right) takes account of self-improvement in six areas of activity.

providing the architect with a voluntary means of self-evaluation. Developed by the task force on recertification, PDMS includes a method of measuring participation in both continuing education programs and credit courses. It also takes into account five additional activities more difficult to assess, namely practice, teaching, independent study and volunteer service to the profession and to the public (see Nov. '76, p. 60).

The PDMS enables architects to quantify their professional development as a guide to self-improvement. Its measurement is based on already recognized national systems—the continuing education unit (CEU) and the university course credit unit. The CEU is recommended as an appropriate means of evaluating participation in an organized educational activity. The CEU is defined as "10 contact hours of participation in an organized continuing education activity under responsible sponsorship, capable direction and qualified instruction." The course credit is awarded for successful completion of regular, university-based classroom study.

The CEU and course credit are supplemented by an additional unit of measure, the "professional development unit" (PDU), for activities in other than formal educational settings. One PDU is the equivalent of 10 contact hours in continuing education; 0.625 semester hours or 1.0

quarter hours in credit course; 1,500 hours in practice (principal professional role); 100 hours in independent study and in voluntary service to the profession and to the public.

Confidence in the PDMS, although it is only now being tested in a few key states on a voluntary basis, has resulted in further AIA commitment to the concept. At its meeting prior to the 1977 convention, the board passed a resolution which was affirmed later by the convention delegates. The introductory statement to the resolution says that the board recognizes "a need and desire by the architectural profession to continuously maintain the highest level of professional competence," and directs that proposed conditions for AIA membership based on the PDMS be established, and that conditions for license renewal in the various states be supported on the basis of the system.

Comments John M. McGinty, FAIA, president of the Institute: "By going beyond license renewal with its minimum standards, and supporting the establishment of professional development requirements for membership, the Institute is demonstrating its commitment to serve and protect the public through professional standards which are higher and broader than minimum public standards."

"Given the mandate of the convention," says James E. Ellison, AIA, administrator of continuing education and professional development at the Institute and staff executive to the recertification task force, "AIA will work toward a possible requirement for AIA membership based on the PDMS, and in states where license renewal is discussed, AIA and its components will give support on the basis of the system."

NCARB's approach, which the AIA board voted in June to oppose, is based on an "architectural development verification program." A draft proposal for such a program was presented to the 1977 NCARB annual meeting soon after AIA's convention, and NCARB delegates voted to continue the development of the concept.

The proposal calls for the preparation of a series of monographs, each of which would be accompanied by a short, multiple choice test, with permission given for



PDMS

AIA Professional Development
Measuring System
SELF-EVALUATION RECORD

Name: _____
 Address: _____

 AIA Chapter: _____
 Two-Year Reporting Period: _____

CONTENT AREAS

Environmental Analysis	Architectural Programming	Design	Technology	Construction Administration	Architectural Management
------------------------	---------------------------	--------	------------	-----------------------------	--------------------------

PRACTICE

Enter description here, contact hours under content areas (full-time year = 1,500 hours)

Subtotal (hours):

NON-CREDIT PROFESSIONAL DEVELOPMENT

Enter description here, contact hours under content areas

Divide hours by 1,500:
SUBTOTAL (PDUs):

CREDIT CONTINUING EDUCATION

Enter description and credits here, content hours under content areas. (See instructions for conversion of credits to contact hours.)

Subtotal (hours):
Divide hours by 100
SUBTOTAL (PDUs):

CEUs and other credits

Subtotal (hours):

Divide hours by 10
SUBTOTAL (PDUs):

ATTESTATION:

I certify that the above information is true and accurate:

Signature: _____

Add PDU subtotals
TOTAL (PDUs):

CONTACT HOURS

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	=	<input type="text"/>
----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	---	----------------------

PDUs

CONTACT HOURS

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	=	<input type="text"/>
----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	---	----------------------

Maximum allowed: 2.0
See note "A"

CONTACT HOURS

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	=	<input type="text"/>
----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	---	----------------------

PDUs

PDUs

See note "C"

See note "B"

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	=	<input type="text"/>
----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	---	----------------------

See note "D"

The NCARB concept: open-book testing based on study of a specially prepared monograph.

the test to be taken with an "open book." Initially, all subjects covered in the monographs would be required, with electives offered eventually. Subjects of the monographs would range over a broad spectrum relating to new technologies and procedures in building design, solar energy, HVAC systems, etc.

The proposal states: "Since registration renewals occur on either an annual or biennial basis, demonstration of having completed the prescribed number of monographs would be required every four years."

After the architect had studied the monograph (which probably could be done over a weekend), the answer sheets would be filled in and sent to a testing service for scoring. If the test had been passed successfully, scores would be sent to the architect and appropriate registration board and to NCARB if the architect is a NCARB certificate holder. "Thus everyone concerned is advised that the architect has satisfactorily completed a designated amount of continuing education," the proposal says.

In the event of failure, only the architect would be notified. A second failure would result in a warning to the architect, the appropriate registration board and NCARB. Six months would be allowed to correct the deficiency. In the case of a third failure, registration would be removed.

The program, to be controlled and administered by NCARB under the terms of the present proposal, would require only a modest fee for the monographs, scoring of tests and reporting services. New monographs would be developed as required, and old ones would be reviewed and updated routinely. One of the objectives, says the proposal, is the preservation of reciprocity, and it is suggested that the verification program be made a condition for national certification initially and then be adopted state-by-state as a condition of license renewal.

NCARB claims a number of merits for the verification system. For example, says the proposal, the system meets the public's interest in having architects kept up to date and also "requires proof of knowledge through a testing mechanism." Administered and monitored by NCARB, the system would keep expenses to states at a minimum, the proposal says, and registration boards would be "relieved of inventing their own systems which could be so diverse as to make compliance nearly impossible."

Moreover, the proposal says, "the bulk of continuing education programs lies with the seminar concept." Consumer affairs advocates are "leery" of seminars, because there are "no testing aspects," they are "expensive to attend, therefore limiting, and when offered by a professional society are money-making for the society."

"NCARB considers its proposed system to be more measurable than the PDMS in that inclusion of testing provides for an element of 'verification,'" says Ellison. "But unmonitored, open book testing is subject to abuse. Measurement, except in a strictly quantitative sense, cannot be considered an advantage. NCARB overlooks the wealth of existing and planned continuing education resources—available from many sources. The use of these excellent resources would be undermined by the NCARB requirement of reading monographs, all of which must be developed from scratch."

Any system of testing alone, Ellison continues, which establishes a minimum requirement could easily become the maximum. "The problem with testing systems," he says, "is that they generally measure reading comprehension and ability to take tests rather than the ability to actually keep up with the most recent professional advances. With NCARB's dependence on the monograph format, this problem would be made worse."

Ellison points out the importance of establishing a uniform national system for license renewal in order to maintain freedom of reciprocity for all architects. "The PDMS is flexible," he says, "and can be tailored to respond to license renewal legislation in the various states. Most important, it serves to encourage the professional development and competence of architects through its focus on continuing education and professional development. This satisfies both the purpose of license renewal and the public interest far better than tests of reading comprehension."

Currently, in states where there is activity in regard to mandated continuing education, the PDMS is already being used as a guideline, Ellison says. The California Council/AIA, for example, is working to help introduce legislation that would require mandated professional development for license renewal that is consistent with the PDMS. A joint approach is being worked out by the council and the California State Board of Architectural Examiners.

"Some critics contend that a state board's public members will want to keep a professional society at arm's length," Ellison says. "In California, however, a majority of the board is public, and there has been no difficulty in achieving cooperation between the board and council."

Use of the PDMS does not mean that only AIA-created continuing education

programs and resources will be acceptable. Indeed, it would be an overwhelming task, even if desirable, for AIA to produce enough programs to meet conditions for membership and license renewal requirements.

Peter Wood, director of continuing education programs at the Institute, has come up with some statistics that indicate how tremendous the task is. "Assuming 15 hours of continuing education would be required for every architect each year," he says, "then approximately 375,000 contact hours would be required for AIA members alone, and 900,000 for all registered architects. If the only way to achieve a nationwide requirement was through a standard, one-day architectural training laboratory, then 1,785 programs a year would be necessary just to serve AIA members, or about 4,285 programs for all architects."

"The surface hasn't even been scratched yet," Ellison says. "What this means is

AIA's PDMS is being used in California and other states as a legislative guideline.

that as time goes by, AIA will become less and less a producer and more and more a kind of coordinating and administrative operation in continuing education."

AIA's continuing education committee, chaired by P. K. Reibsamen, AIA, of Los Angeles, and staff have other proposals on the drawing board for an overall professional development system. Conceived as a program of several parts, its first element is the PDMS with its procedures for recording and assessing the educational activities in which an architect may be involved.

A second element will be the development of an evaluation system. "If AIA says that other programs than its own are acceptable, then we will have to devise a means of providing AIA recognition of valid programs produced by outside agencies and institutions," Ellison says. The third element is a delivery system which will involve not only the national AIA but also local and state components and regions. "We are going to be interested in developing the capabilities to handle live continuing education on all component levels," Ellison says.

Certainly, AIA, NCARB and individual architects everywhere are compelled to consider mandated continuing education, regardless of any controversial aspects. There is no turning back—societal pressures are too powerful. It is increasingly likely that in the future continued professional development will be a requirement for every licensed professional in this country. □

Energy Conservation Through Community Planning and Design

Exploring a middle ground of concern between single buildings and regional land use and development. By Jane A. Silverman, AIP

"The planning/design professions have impacts on energy use or conservation that stretch far beyond buildings themselves. The spatial layout of the national land-use patterns, and of local land-use patterns, are prime determinants of energy demands such as transportation."

Energy conservation is by no means a foreign subject to architects. According to a 1974 policy statement, "Energy and the Built Environment: A Gap in Current Strategies," published by AIA, buildings account for 33.6 percent of total U.S. energy consumption. The AIA report estimates that conservation measures could add up to savings of 30 percent in old buildings and 60 percent in new ones.

Although the title of the AIA report referred to "the built environment," the emphasis was clearly on individual buildings. The "environment"—that is, the spatial configuration of buildings on the site as well as in the community and the region—was hardly mentioned. In fact, the relationship of energy and land use was given a mere four brief paragraphs in an 18-page report.

Architects have expanded their consciousness since 1974, and so have policy-makers. The relationship between land use and energy savings has now been explored in some important research efforts, most notably the Council on Environmental Quality's "Cost of Sprawl" and the Regional Plan Association's 1974 RPA bulletin, "Regional Energy Consumption." These reports pointed tentatively to the conclusion that denser patterns of development may yield important energy conservation benefits. Denser spatial configurations, especially where uses are mixed, reduce dependence on the automobile, according to these studies. Furthermore, such dense configurations may facilitate some innovative technologies that would not be otherwise possible.

For the most part, our thinking about energy conservation in the built environment has gravitated between two poles: the individual building and buildings

Mrs. Silverman, a city planner and frequent contributor to this magazine, is a free lance writer in Princeton, N.J.

within the regional land use context. (The "Cost of Sprawl" research is an important exception because it dealt with prototype development patterns. However, others, such as the RPA study and research sponsored by the Metropolitan Washington Council of Governments, took the broader regional perspective.)

Some planners, developers and policy-makers are now beginning to look at a middle ground—the development itself. A few private developers are building projects in which energy conservation is an important factor in the site plan, as well as the house. Equally important, a handful of local governments are redrafting their land use ordinances to encourage and, in some cases, require such energy conserving features. Even the federal government is beginning to step in with research money to flesh out the energy conservation potential in development.

The energy savings from most of these land development techniques are never going to be large. Dale Keyes of the Urban Institute pegs it at about .2 percent of the total energy to be consumed by 1985. Furthermore, such savings probably won't be visible very quickly. But there are clearly other benefits: better planned suburban subdivisions and urban neighborhoods. And we shouldn't minimize the energy savings themselves. Although small, they are not inconsequential. Maxine Savitz, director of the Energy Research and Development Administration's (ERDA) division of buildings and community systems, points out that "each conservation measure we work on might have only a small impact, but each measure adds up."

Thinking about energy conservation at the development level is also important because such measures can be implemented at a workable, manageable scale. If private entrepreneurs aggressively advertise some of the energy saving features in their site plan, such as bikeways, and the market responds, we are likely to see such features appear on a wider scale. So far, only a few developers have tried such marketing, but they have found that it has paid off handsomely.

Equally important, since land use regu-

lation remains primarily a local matter, subdivision and zoning controls which encourage conserving features, such as narrower streets, flexible setbacks and shading, can have a much more direct effect than at the regional level where there is not a precise regulatory framework. Cities such as Davis, Calif., and Portland, Ore., are pioneering in this area and their message is getting to other communities, too.

Three major land development projects—Shenandoah, a new town near Atlanta; Mission Viejo in California, and St. Charles, a new community in Maryland—have been breeders of energy conservation techniques. Shenandoah has built a major solar heated recreation center and is planning a subdivision of solar homes. Mission Viejo has designed and built two minimum energy dwellings in cooperation with ERDA and the Southern California Gas Co. A major water reclamation project for the development has resulted in a 37 percent reduction in energy required to pump water to the community. That adds up to about 29,000 barrels of oil a year. St. Charles is constructing a modular integrated utility system (MIUS) which harnesses waste heat to meet community energy needs. The new community also contains a sophisticated two-way cable television network which may be converted into a futuristic tele-work system reducing the need for workers to travel to offices.

Shenandoah and St. Charles are both HUD-funded new communities, and Mission Viejo, with a projected population of 30,000 on 10,000 acres, is hardly a small scale development. "The development of new communities provides a unique opportunity to generate energy conservation features that are inherent within the community design," wrote Robert O'Donnell and James E. Parker, consultants who

Examples of energy-conscious development in both existing cities and new communities.

helped in the planning of St. Charles, in an article in the July 1977 issue of the Urban Land Institute's magazine *Environmental Comment*. "Energy conservation can be programmed into large-scale developments more readily than into smaller projects because a wider range of facilities and services is required," they point out.

Although the designer must look critically at some of the tradeoffs involved in high density projects, including environmental and energy costs, it seems reasonably clear that a mixing of housing, employment, recreation and shopping uses in compact communities could help cut down on energy use. And the density to

support such communities probably can only occur in large-scale developments.

"The new town approach has great potential for energy conservation," asserts Royce Hanson, chairman of the Maryland National Capital Park and Planning Commission. Speaking at a roundtable sponsored by ULI and published in the July *Environmental Comment*, he explained: "What I'm talking about is a strategy of development that focuses on relating jobs and housing and other business activities to each other. It also provides higher density on land that is actually developed and leaves more land undeveloped. Because of the scale of development, it makes possible the use of innovations in energy."

Energy-saving features are proving marketable, but add to front-end costs.

The only problem with the new communities approach is that we're not likely to see much of it. Except in rare instances, major new communities have had a tough time economically. Typical development in the U.S. takes place on a much smaller scale. Nevertheless, many of the less dramatic energy conserving techniques being used at Shenandoah, Mission Viejo and St. Charles can easily be implemented at any scale. These include more attached, single-family units, reducing the width of paved areas, foot paths and bikeways and more extensive tree cover. St. Charles site designers carefully oriented structures and streets to maximize the advantages of seasonal variations, such as summer breezes, and access to the sun. The internal circulation system in Mission Viejo has been designed to reduce traffic congestion and cause traffic to flow more freely. This helps to reduce gasoline consumption.

Alexander A. Simon Jr., developer of Shenandoah, notes that in looking for solutions to site planning for his development his planners consistently found energy savings in reduced lengths of streets, cul-de-sacs and clustering because of the "remarkable savings" in curbing, water lines and sewer lines. "Maybe we're overlooking the obvious," he postulates. "There's no question that cul-de-sacs and short streets and small subdivisions have tremendous savings and they're very marketable."

Marketability, of course, is the key, but not enough is known yet about how consumers will behave. "We have to educate the consumer on the benefits of energy conservation over time, not just now," Maxine Savitz points out. "As an example, if a consumer has \$100 to spend, is he going to buy a clock thermostat or a radio? Our challenge is to convince the

person of some of the advantages of the clock thermostat, not the least of which is that if he buys the thermostat a year from now he will have saved enough money on his heating bill to be able to buy the radio with that same \$100."

Harrison Fraker, AIA, an architecture professor at Princeton University who has studied consumer behavior with respect to energy at Twin Rivers, a planned unit development near Princeton, feels that consumers still place a "higher priority on whether they like their neighborhood and whether it has good schools." Nevertheless, at Shenandoah and Mission Viejo, at least, the market has been quite strong and both developers have actively promoted the energy conserving aspects of their communities in their sales pitches.

Not every energy saving device has taken hold with the market, however. Simon notes that he originally planned to have only attached, high-density clustered homes in the project. Buyers, however, preferred detached housing, so the plan was changed to include several small subdivisions of 12 to 53 lots, all connected by short streets and green areas. Even if consumers "buy" into an energy saving development, there is no guarantee that they will take advantage of its conservation features. The new towns of Columbia, Md., and Reston, Va., are designed so that residents can easily walk to schools, recreation and most convenience shopping. Most, however, prefer to drive. "The prevailing dream of a single-family home and use of the private automobile are well-ingrained in the consumer's mind," says James Roberts, who carried out a study on energy and land use for the Metropolitan Washington Council of Governments. "These features of present life style will only reluctantly be sacrificed."

Another problem is that some of the major long-range energy conserving techniques are very expensive. Clustering and insulation can be assumed in the developer's costs, but more complex conserving techniques, such as innovative utility systems, cannot—at least not yet. "We don't know of anything that a developer is doing that is not related to the building and that can't be included in the price," points out Alan Borut of the Urban Land Institute. "It's the things underground that are hard to rationalize."

Most developers probably are not going to take the obvious, energy-saving site design steps without some push. In the study of Twin Rivers, Harrison Fraker and his coauthor, Elizabeth Schorske, note that the developer's primary concerns were for low first costs, ease of construction and marketability which dominated all design decisions. "It is important," they conclude, "to change the kinds of tasks the developer poses to his profes-

sionals." On the other hand, developers are not going to take the more dramatic measures that could give their project high visibility because the front-end costs are too high. Government probably has to provide the hard push in the first instance and the attractive pull in the second. There are indications that both are beginning to happen.

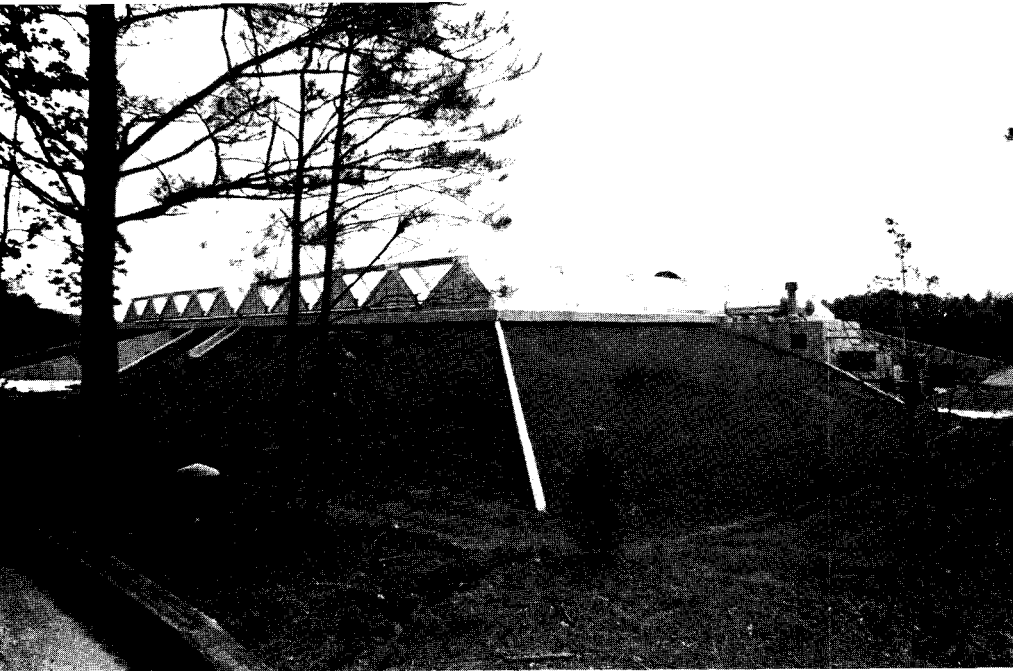
The pull—incentives to test out risky new technology—is coming from the federal government, especially ERDA and HUD. ERDA's division of buildings and community systems is leading the federal government's efforts in research in land use and energy, with major efforts in three areas: integrated community systems, community design and commercialization of energy conservation techniques.

ERDA is sponsoring research on energy conserving land development plans and policy tools that local officials can use in integrating energy conservation into community planning. One of the division's major demonstrations is a prototype for an integrated community energy system (ICES). An ICES coordinates several services, such as the heating and cooling of buildings and solid waste treatment, and harnesses the waste energy from producing or delivering one service to work for producing and delivering other services. John Clark, director of community development and planning for Trenton, N.J., one of the ICES demonstration sites, sees the ICES as having great potential for downtown redevelopment in that aging state capital. "If we can show prospective office and commercial tenants that there is a clear advantage in a downtown location because of lower energy costs, we may be able to overcome some of the negativism about downtowns," he says.

The ICES program is typical of the federal government's efforts in looking at energy conservation and community de-

The federal government is beginning to share some of the risk of energy innovations.

sign efforts on which ERDA's community systems branch alone expects to have obligated more than \$225 million by 1985. One of these roles is to "investigate and to develop innovations in existing institutional mechanisms in order to reduce current constraints." That role is clearly articulated in ERDA's goals for the community and building systems program. The other was voiced by Maxine Savitz, the head of the program. She said: "ERDA's role in the development of energy-efficient community systems is to support innovative approaches. We feel there is risk involved for those initially



Solar heated recreation center at Shenandoah, a new town near Atlanta which also will include a solar subdivision.

using the approach and therefore we provide some funding so that ERDA bears some of the risk.”

Even the most enlightened, forward looking developers can by no means put most of these sophisticated technologies in place without public aid. In fact, the solar house at Shenandoah, the St. Charles MIUS and the minimum energy dwelling at Mission Viejo all received federal funding. To bring new technology into the mainstream, this public/private partnership may, of all ERDA's efforts, have the greatest implications for changing prevailing institutional forms.

New technology, however, is a long-term proposition. We have already seen that there are many energy conserving techniques that could easily become part of community design now. A few local governments are trying to make such energy conservation consciousness an integral part of the site design process through government regulation.

There are many things a local government could do to encourage or force energy conservation. These include building code changes that require more energy efficient design, reducing off-street parking requirements, expanding or improving public transit, providing incentives to induce more energy efficient forms of development or for recycling older buildings and acquiring land for open space to achieve more compact development. Some of these measures would entail expenditures by the local government; others would not.

In a grant proposal to ERDA, the AIA Research Corporation notes: “Community planners and decision makers have a primary responsibility to affect the land use patterns which will impact the public purposes, but they have only secondary impact on the private decisions. For ex-

ample: Community leaders can control the use of energy for street lights, but only indirectly the amount of lighting families will use in their homes. Land use patterns have a direct relationship to street lighting but only an indirect relationship to home lighting.”

Davis, a university town in northern California, has become a trend setter in making energy conservation a part of the public purpose. Davis has revamped its construction standards and is heavily promoting solar heating, but its conservation approach specifically looks at the broader aspects of community design. For example, the city has reduced standard street widths and requires extensive landscaping and tree shading. It has sponsored an extensive bikeway system. Its setback requirements have been made more flexible, zero lot lines are encouraged and developments which orient houses on a north-south access are given a high rating in competing for limited services and building permits. In particular, the city planning department places a high priority on planned unit developments and clustering as energy conserving techniques.

Portland, a major city of the West Coast where urban patterns are already set, faces problems completely different from those of Davis. Changes in Portland, for the most part, become issues of redevelopment rather than development.

The Portland energy project, funded by HUD in 1975, looked at ways such a city might develop energy conservation methods. Portland is now trying to put some of these ideas into practice and many of the ideas could be implemented by other metropolises. One of the most interesting facets of the Portland strategy is to use the capital budgeting process to help steer development to areas where it would be most energy efficient. The report recommends encouraging neighborhood grocery stores, infilling of new housing, neighborhood parks and small offices in homes. In

the transportation sector, major savings could result from centralizing truck terminals and limiting traffic zones, regulating traffic flow, building bicycle paths and improving transit services, the report says.

Although some of the newer planning techniques, such as density bonuses and mixed use zoning, could achieve important energy savings, most of the regulatory tools being used in Portland and Davis are rather traditional—the capital budget and subdivision regulations, for example. On the other hand, local planners will probably have to take a more flexible attitude about the separation of uses inherent in the typical Euclidian zoning patterns. Communities which have adopted planned unit development ordinances (PUDs), in which uses are mixed and clustering of housing is encouraged, may be ahead of the game in energy conservation. The PUD approach is a major feature of the Davis community design regulations. The Twin Rivers subdivision studied by the Princeton University team is a PUD, and the authors of the report

‘We are working to get conservation technologies that are acceptable to society.’

note: “. . . The planned unit development ordinances provide large scale planning procedures which could be expanded to include the requirement of an energy feasibility study, which would demand the investigation of alternative energy systems beyond the normal utility arrangements presently available.” Aside from its emphasis on clustering, the PUD ordinance typically emphasizes site plan review against performance standards, one of which could be energy conservation.

Of course, it is one thing to adopt tough energy saving ordinances in a relatively sophisticated, homogeneous college community like Davis or to have a futuristic, Title VII-backed new town like Shenandoah test out new technology, and another to get these ideas into the mainstream of American life. “We are working to get conservation technologies that are acceptable to society, as opposed to getting people to change their entire lives,” Maxine Savitz of ERDA points out. “Is it realistic to get people out of their cars? Probably not, so we’d like to get people into more efficient cars. . . .”

Energy conservation through community design is a slow process, but it can result in people moving into more energy efficient communities without drastically changing their life styles. And the payoffs are not just in energy conservation. They are in better planned communities and a more healthy, rationally built environment for all of us. □





Lighting Design

“There is no end to the possibilities of light—for it is the source of magic in architecture,” wrote the noted Canadian architect Arthur Erickson. “I believe that light is the ultimate determinant of design,” he continued. “I am convinced that how we see things as a consequence of light is fundamental to the formation of human perception and imagination. . . . It is no accident that algebra and monotheism came out of the desert where sand, sky and stars are irreducible absolutes moving in constant relation to each other. Nor is it surprising that ghosts and poetry have thrived in the countries of mist, like Japan and England where subtle, illusive light brings out the ambiguities and uncertainties of existence.”

There has been little that is subtle in the lighting of many recent buildings, especially office buildings. Nevertheless, current lighting design offers its own set of ambiguities and uncertainties in such areas as energy use, adequate illumination for performing required tasks and, perhaps most persistently, the achievement of a pleasing and humane interior environment.

The problems and new prospects of doing so are examined in the following articles. First, the pros and cons of the trend toward task/ambient lighting, particularly in open office landscapes. Second, a portfolio of some intriguing lamp designs. Third, some rules of thumb developed by a lighting designer whose focus is firmly on quality rather than quantity of illumination. And finally, a profile of another lighting designer who is at least as concerned with natural as with artificial light.

Mortgage Guarantee Insurance Corp., Milwaukee. Skidmore, Owings & Merrill, architects; Warren Platner, FAIA, consulting architect; Claude R. Engle, lighting designer (see page 60).

The Pros and Cons of Affixing Lighting to the Furniture

Use of task/ambient systems in office landscapes is growing rapidly but designers are divided on their merits. By Andrea O. Dean

Dissension within the ranks has marked the lighting profession almost from its inception. Typically, a novel idea or design solution will be seized upon and advocated with almost religious fervor by one contingent, while being opposed with equally strong conviction by another. The most recent popular innovation in open landscaped office lighting is task/ambient (T/A) lighting, which is defended by proponents as a cure-all for the problems of office lighting and decried by some skeptics as a mere chimera, if not a downright hoax.

T/A lighting consists of one or more task-oriented downlights, located under work station shelves or fixed to partitions, in combination with uplights for ambient lighting which may come from the same unit as the downlights or from movable "kiosks."

In the four years since it was introduced as a custom product in a major open plan installation, T/A lighting has become a standard option on more than a dozen systems of office furniture, a manufacturer indication of its expected potential.

Lighting consultant Sylvan R. Shemitz, who heads his own firm in West Haven, Conn., takes credit for inventing T/A and has patented many of its elements (including the kiosk) and stirred up a storm of controversy among lighting consultants and designers, many of whom take issue with every advantage for T/A claimed by Shemitz and the furniture manufacturers with whom he has allied himself.

According to Shemitz, "Of course you're going to have panic in the streets. Lighting manufacturers and unions, electrical engineers and others are hurt by T/A. Suddenly there's a market out there and they have no control over it anymore, because lighting no longer goes through the contractor, the distributor or engineer but through interior designers. Other lighting designers maintain that the advent of T/A has increased their business, since it requires careful planning, but that furniture manufacturers have followed each other in producing systems of questionable quality for which they make exaggerated and unsubstantiated claims.

"My great fear now," says Jeff Miller of the Alexandria, Va., design firm of Hunter/Miller Associates, "is that it's come in vogue. It's like open office planning was five years ago. Done poorly, it's worse than conventional lighting." Shemitz himself firmly agrees, saying that the ideal lighting system, be it T/A or ceiling-mounted, must relate to the architecture and to different lighting needs required for various tasks and by various people.

Nonetheless, T/A proponents, with Shemitz in the forefront, maintain not only that it provides more flexibility than ceiling-mounted illumination, but that it also reduces energy consumption (including airconditioning) and its costs by as much as 50 percent; that by concentrating light on the task, T/A provides a better quality of light; that removing lighting

In the end, the performance of task/ambient lighting depends on design decisions.

from the ceiling cuts installation and maintenance costs while providing a tax write-off; that it can save as much as six inches of height in the plenum to give the builder an extra floor every 20-odd stories; that it improves acoustics, and that people simply like the overall look and feeling of T/A better than ceiling mounted lighting.

T/A lighting is usually compared with conventional all-over ceiling-mounted lighting that delivers uniform illumination throughout an office space. But, as James Nuckolls, president of the International Association of Lighting Designers, points out, although T/A lighting is "easy to move, it is not the only movable system. We now have ceiling systems where we can move the lighting anywhere to light the task."

Concealed tracks, for instance, to which a fixture can be clamped and can be swiveled to almost any position, have been developed by Lightolier, Inc. And Edison Price, owner of his own New York design and manufacturing firm, has developed a batwing distribution

ceiling-mounted fixture for a General Services Administration installation in Norfolk, Va., which casts high quality, nonglare lighting over a broad area. Price is also working on a pendant fixture which can be easily moved. Other manufacturers have developed fixtures in movable "pods" which can be shifted with work stations. Less radically perhaps, more and more fixtures are making use of parabolic louvers, which direct light and control glare.

There are, however, at least two problems relating to flexibility in almost any ceiling-mounted system. First, such systems are often somewhat more difficult to move or manipulate than those at arm's reach. Second, work station partitions will absorb some degree of light and tend to cast shadows where light comes from the ceiling. "Where there are no partitions," says Shemitz, "light from ceiling luminaires is efficient and economical."

He also acknowledges that the effectiveness and economy of T/A lighting will depend very heavily on design decisions made by architects and interior designers. Specifically, dark elements—walls, carpets, ceilings and furniture—will absorb a great deal of ambient lighting, making T/A systems less efficient.

Nuckolls and Price, together with Howard Brandston and Carroll Cline, who are both lighting designers with their own firms in New York City, are among many who doubt the published energy figures on T/A lighting systems, the newest of which, at the Norris Cotton Federal Building in Manchester, N.H., is reported to be about 1.65 watts per square foot. Tests on low brightness ceiling fixtures, such as those being developed by Price, produce at least as good results in terms of watts per square foot, and better results in terms of visibility. Moreover, where there are fixtures in the ceiling, a percentage of the heat produced by lights can be removed before it reaches the room, thus lowering airconditioning and fan coil requirements. In winter, heat from the luminaires can be recycled. With thermostats now set at 68 degrees or below in winter, this becomes a definite plus.

Says James R. Benya of Smith, Hinchman & Grylls in Detroit, "Our findings are that in terms of energy conservation, the advantage comes out in favor of absolutely no one." If the space is densely packed with people, adds John Kaufman, technical director of the Illuminating Engineering Society, the advantage seems to lean toward overhead lighting. Shemitz, however, also points out that where densities are low, additional ambient lighting will be required to light the surround. (The accepted ratio of task to ambient lighting is about three to one.)

Ambient lighting, which is bounced from the ceiling, "will always be less effi-



Atlantic Richfield's Philadelphia headquarters office lighting system has served as prototype for T/A illumination. Developed by Sylvan Shemitz, it reportedly delivers 2.56 watts per square foot.

City engineering firm of Flack & Kurtz says, "The greatest advantage of T/A is that you can use HID for ambient lighting; it is not successful when employed for direct lighting."

Critics also argue that energy consumption must be measured not only in watts per square foot but in terms of the energy it requires for the human being to comfortably and clearly see a task. Edison Price calls this "seeability"; lighting engineers call it ESI (equivalent sphere illumination). A measure of ESI may be considered as a measure of the effectiveness of lighting in making a task visible.

One of the principal claims of T/A advocates is that it provides a better quality of light. In general, however, the highest (best) ESI levels are achieved where light is just behind and above the person looking at the task. The most glare and annoyance comes from lights positioned just in front of the task. Explains Howard Brandston: "You know, if you hold a candle very close to your finger and look at the shadow, you get a very fat shadow. If you move the candle across the room, the shadow becomes very thin. That's what happens to these task lights. If they're too close to you, they cause annoyance."

"I've never seen believable ESI calculations for any furniture lighting, and I'm

suspicious that this is because they produce lousy results," says Peter Kastl. Shemitz does not offer any ESI figures, saying they are just not that important. Price's newest low wattage batwing ceiling-mounted system achieves a very respectable low point of 55 ESI where the light comes from fixtures in front of the person and much higher ESI measurements where light is more suitably positioned.

In terms of "seeability," the main criticisms of T/A lighting focus on the amount of veiling reflections they reportedly produce. These serve to partially or totally obscure details by reducing contrast and are most severe when light falls on a task from just above and in front of the person. Some problems with early T/A lighting are being solved by prismatic lenses and polarizing devices that angle the light from directly in front of the person to the sides. "But this doesn't solve the problem," says Jules Horton. "It's like giving headache pills to someone who has a tumor, because very few persons are frozen or screwed down like a chair on an old ship. You do move, and when you do, you move into the 'offending zone.'" In terms of "seeability" and energy consumption, for each 1 percent loss of contrast from veiling reflections, a 10 to 15 percent increase in illumination is required to achieve equal visual performance.

One obvious solution to the problem of veiling reflections with T/A lighting is to position downlights over the sides of the task, but because two lights cost more

cient than a direct system on an equivalent system basis," writes architectural engineer Ronald S. Helms of the University of Colorado. "Anyone who understands the basic fundamentals of lighting knows that if light is reflected off a surface before it reaches the work surface, energy will be absorbed and lost at that reflecting surface. People who make the broad general statement that their indirect system is more energy efficient must be careful to qualify their statement."

The qualification for Shemitz's assertion is that his uplights use a high intensity discharge phosphor-coated metal halide lamp, which is normally more energy efficient than fluorescent lighting. Reports Peter Kastl of the Ehrenkrantz Group in New York City: "Really efficient high intensity discharge (HID) fixtures need more distance than a normal ceiling height provides." Lighting engineer Sheldon Steiner of the New York

Task/ambient systems get a tax break by being classed as furniture or equipment.

than one this has not been a very popular idea. "It also doesn't make things look neat to have standards on two ends," adds Edison Price. Besides, "There's an old, old saying that light should come from over both shoulders."

Jules Horton, who considers fixed task lights a "straitjacket," uses adjustable Luxo lights, in combination with ceiling lighting. Shemitz's objection to this is that moving lights hither and yon can interfere with the lighting of the "community." Similarly, where his down and uplights are integrated in a single fixture he opposes a switching or dimming mechanism since it will alter the amount of light produced by the ambient light for the surrounding area. "Especially from the point of view of minimizing glare," says Howard Brandston, "the best of all possible systems probably is a pendant, ceiling-mounted system, which illuminates the task, from a reasonable distance and at a reasonable angle." In addition, some ceiling-mounted systems have individual controls or dimming devices for each fixture. One type, for example, is a luminaire employing one lamp above the other, where either the upper or lower can be used alone.

Aside from glare, another problem with many T/A installations is that they often do not illuminate the entire work surface, especially where work stations are L-shaped. As an example, Howard Brandston recently visited a T/A-lit GSA installation and asked people how they liked it. "One old lady had a very funny story," he recounts. "She said the lighting was beautiful, but her typewriter was too heavy. She said that in order to type and see, 'I have to take the typewriter from here over to that desk over there.'" The obvious solutions are the same as for combating glare, namely to use one or more adjustable desk lamps, to affix two stationary task lights—one on either arm of the L—or to use a ceiling-mounted system.

Still other claims for T/A lighting are equally hard to substantiate. One, for example, is that ceilings without lighting fixtures are more fire resistant because, according to Shemitz, mineral tile is more fire resistant than the sheet metal used to frame luminaires. Maybe so, but only to an insignificant extent, according to Gage Babcock, fire protection consultants. Also, according to T/A advocates, up to six inches of space can be saved in the plenum by removing lighting fixtures. But, the airconditioning ducts are much



more space-consuming than luminaires and luminaires can be positioned between airconditioning ductwork to take up only a negligible amount of space in the plenum.

On some other points, however, the evidence seems to favor T/A over ceiling-mounted lighting. Low-standing T/A lighting would seem to be easier to maintain than ceiling-mounted luminaires, despite the fact that uplights gather more dust than ceiling fixtures. For one thing, you don't need ladders to reach them, says Shemitz, who adds that his fixtures have a flue action that draws dust out and away, and that he uses louvers that can be dip cleaned. "We'll have less ballast, less lamps, less louvers and they'll be more accessible," he adds.

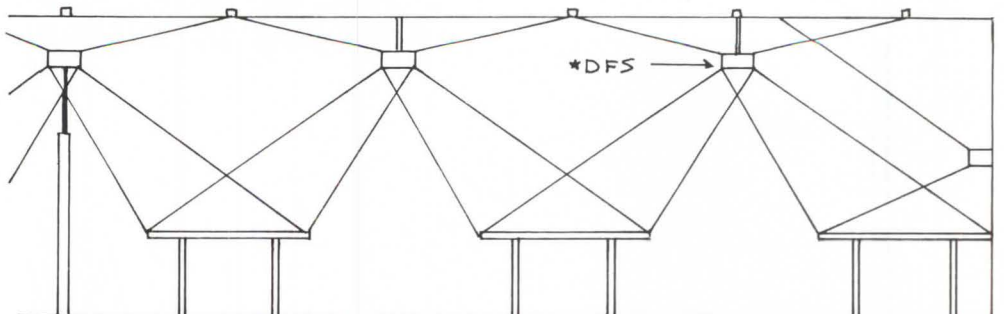
From a cost point of view, although the initial expense is often greater, T/A lighting has the definite advantage of being considered furniture or equipment by the IRS, and can be used for an investment tax credit of 10 percent with a write-off of seven years. The write-off for ceiling-mounted lighting, which is con-

Jules Horton's office uses adjustable Luxo lamps (top). Edison Price's batwing distribution pendant-type fixture (below) throws light at an angle to prevent glare and veiling reflections, thus giving high ESI levels. Easily moved on its track, it uses less than two watts per square foot.

sidered part of the building, is 20 years and there is no tax credit.

Without doubt, lack of acoustical privacy is the number one problem in open office plans. Therefore the acoustical advantages of T/A lighting over ceiling-mounted (other than pendant) fixtures are very significant indeed.

Generally speaking, to achieve speech privacy in open office situations, three ingredients are needed: sound absorptive screens between work stations, an acoustical ceiling and a masking sound which is usually generated through the ceiling plenum. "It's desirable to take everything out of the ceiling which is not highly absorptive. So the only real solution is task lighting," says Bart Spano who heads his own acoustics consulting firm in Washington, D.C. He adds that planning is most important—isolating noisy people, isolating those who need to concentrate, putting people who are more sensitive to noise in the core rather than near the perimeter where acoustics are not as good (because windows and walls reflect sound), raising screen heights where people need to concentrate, not packing people into spaces and so forth. Spano adds that although baffled or louvered ceiling fixtures may reflect somewhat less than conventional fluorescents, they are still backed by hard surfaces which reflect sound. Pendant fixtures, especially small



ones, will, however, often be as acoustically effective as T/A lighting.

Another decided advantage of T/A illumination is that people seem to like it. The importance of lighting to office workers is underscored by a recent survey of 900 administrative employees in a traditionally lighted office. It found that 65 percent of those interviewed considered lighting to be an important environmental factor, while other conditions—adequate ventilation, pleasant temperature, sufficient space—were considered important by only 52, 40 and 25 percent, respectively. The only published user study of a T/A installation is of Shemitz' design for the ARCO headquarters in Philadelphia. The evaluation was conducted by researcher Ronald Goodrich. Goodrich found, first of all, that people ranked

'We find the employees really do love it, which often outweighs practical considerations.'

lighting either first or second in importance among elements influencing the overall quality of the work space. He reported that employees at the center of the building liked the lighting less than those closer to windows and that some 45 percent of those working in the office complained of insufficient ambient lighting. Nevertheless, he wrote, "Task/ambient lighting increased the personalization of work stations by making an envelope for the users. They experience privacy and a sense of ownership and do not pay attention to other workers around them. Attention is focused in the lighted area." He also says that lower light levels tend to improve interaction among workers, but adds that he would like to see dimming controls on each work station for more user control.

Once again, however, T/A lighting is usually compared with conventional ceiling-mounted systems of row upon row of supermarket-like luminaires. There are

One of the earliest T/A systems, completed in 1973 by Shemitz for Joseph E. Seagram & Sons, Inc., has marked dark shadows and ceiling 'hot spots.'

alternatives, such as grouping lighting for a more pleasing visual effect and using parabolic louvers which make the light source unobtrusive, if not invisible, until one is almost underneath it.

James Nuckolls of the International Association of Lighting voices a commonly held opinion: "We find that the employees really do love it, which often outweighs the practical considerations, even if the visual task is not 90 percent effective." John Flynn of Pennsylvania State University's school of architecture and engineering asserts that warm light sources below the line of vision seem to give people a more relaxed feeling, while cooler ones produce more visual clarity. "The best system allows you to move back and forth between these modes, and task/ambient seems to provide that possibility," he says.

Flynn also warns, however, that a danger of T/A lighting is that it produces distracting clutter. Uplights may cast shadows, create puddles on the ceiling and produce extraneous design elements. Although there have been problems with puddles and shadows at T/A lighted offices, Shemitz claims that these can now "be designed out" by using lower kiosks with very well controlled lights that spread illumination evenly over the ceiling. Jeff Miller adds that "if you have a severe case of highlights, it could present a problem. But when the contrast level is modified, it's like using art and plants in an installation; there's a certain visual interest. The human being needs something to focus on that's not sameness."

Another complaint heard about T/A lighting is that it often illuminates only the task, leaving faces and people in shadow, appearing as silhouettes, which is a problem especially for salesmen and others whose work depends on establishing face to face communications. Shemitz replies that the "work I do never allows people to be in shadow, because I work with the total environment. We try to create a balanced surround."

What of the future of T/A lighting? Says Ronald Helms, "As a supporter of the indirect/task lighting approach to some environmental solutions, I plead for more 'science' and less 'art' in the lighting solution. Quality in terms of comfort and visibility will be the key factor. . . . To evaluate the quality, one must have data on the distribution characteristics of the luminaires (indirect and task). To develop the proper photometrics will require research and development money, and I am not sure that the furniture manufacturers are concerned enough or knowledgeable enough in lighting to invest the time or money."

Adds Peter Kastl, "In principle, task lighting is such a good idea that one thinks it will work eventually." □



Artful, Playful Objects That Deliver Light

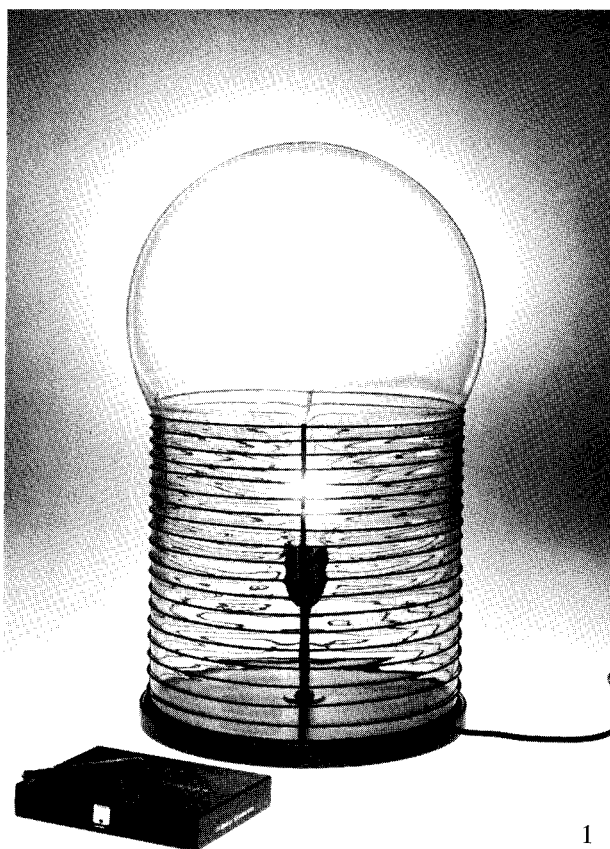
By Andy Leon Harney

The bare bulb look has made a dramatic impact on the international lighting scene. Fascinated with the industrial look in lighting, designers have largely stripped away the window dressing to emphasize the elements of the structure as design.

A second design direction appears to be in direct contrast to the essential light bulb—the hooded lamp. Examples of this trend range from Gae Aulenti's "Pileo" to the elegant white Carrara marble lamp called "Biagio" by Tobia Scarpa.

The Italians (pacesetters here as well as in furniture design) are still experimenting with fanciful forms through a series of hanging lamps which can best be described as stiff white handkerchief lamp shades and spun latex forms, but there is a greater emphasis on controlled forms. The materials used include metal, glass and plastic, with the exception of Scarpa's sculpture that is incidentally a lamp.

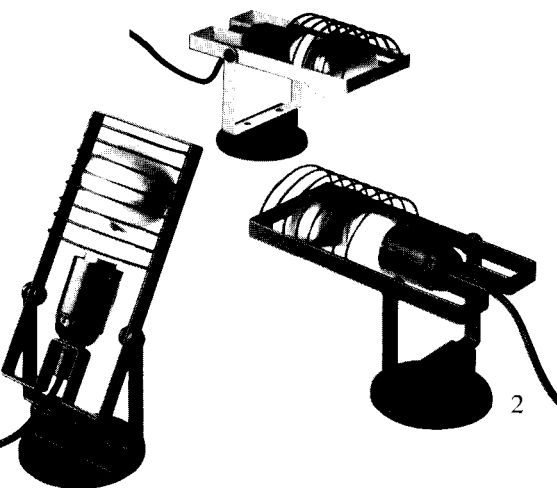
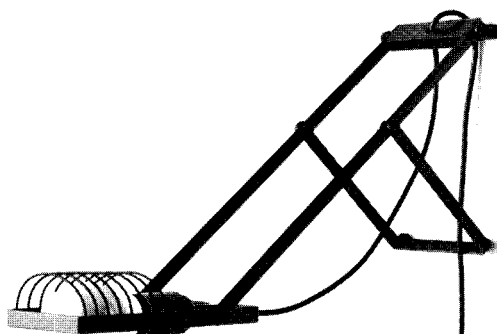
Ms. Harney is a Washington, D.C., writer whose most recent contribution to the JOURNAL was a report on furniture in July.



1



2



2



2

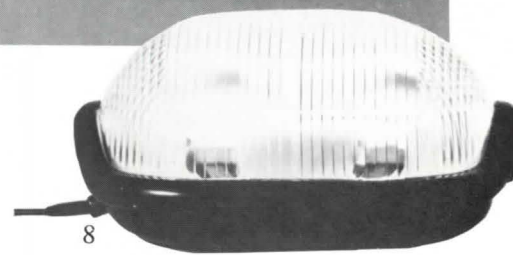
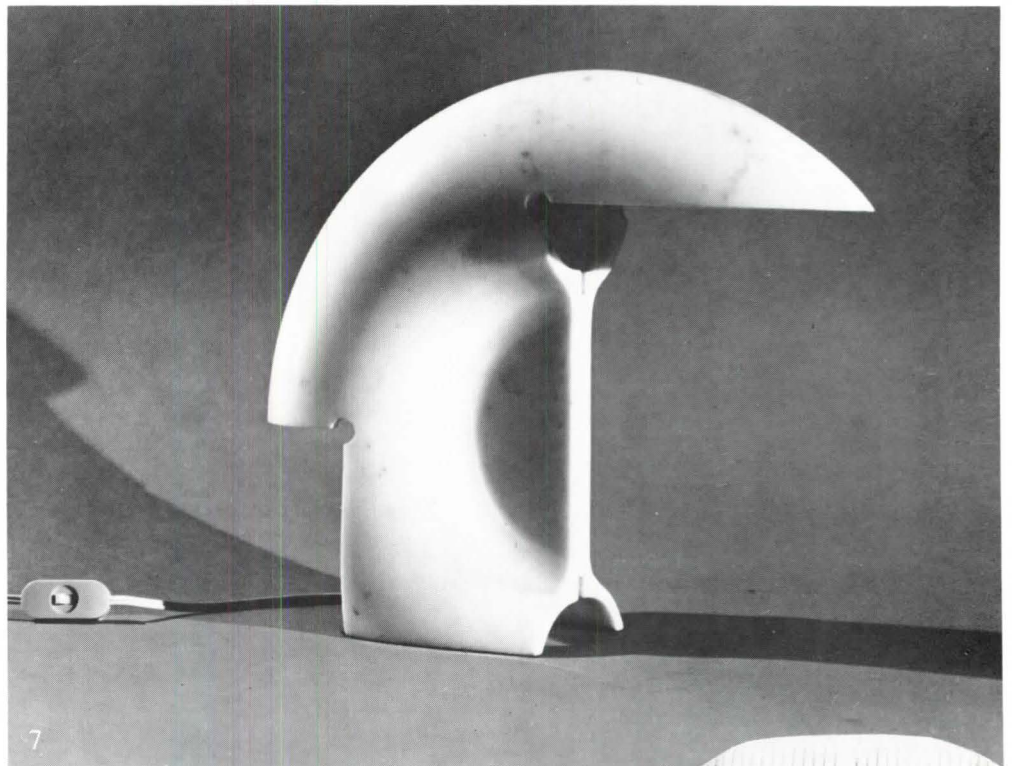
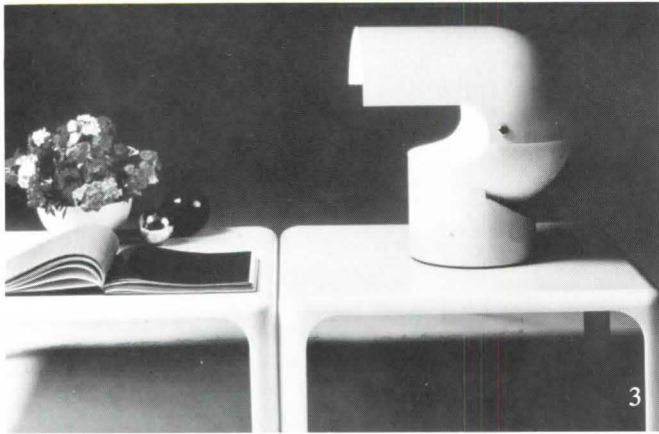
Italian architect Gae Aulenti designed this overblown light bulb in gray-tinted blown glass encircled with a metal grille. The tinted glass softens the effect of the bulb within, but the design remains a kind of elegant cartoon of a light bulb. It is distributed by Castelli as part of the Artemide collection. (1)

Another exciting design in the Artemide

collection is the Sintesi, a series of (2) lamps designed by Ernesto Gismondi. The light is designed for a tripod base or a circular base as a floor lamp. It hangs from the ceiling, clamps onto a drafting table or bookshelf (with a short or long neck as a reading light or a spot), sits on a tabletop or can be set in a cantilevered bracket and hung on the wall. The basic

design is a frame of lacquered metal spanned by a grillwork which shields the painted side of the lightbulb.

A thick white Makrolon shade adjusts to several positions in this fat hooded table lamp by Gae Aulenti called "Mezzopileo" (3). The same Artemide design, called "Pileo," is available as a floor lamp. Both are distributed by Castelli. (4)



A bare bulb painted to appear hooded is the creation of A. and P. G. Castiglioni for Flos (5). The face of the table lamp called "Lampadina," appears to look upwards, calling attention to its metal neck and film reel base.

A small plastic hood which adjusts sheds light on a pencil carrier in this design (6) called "Telegono" by Vico

Magistretti for Artemide.

Atelier International carries Tobia Scarpa's elegant white marble table lamp called "Biagio" (7).

It looks like a headlight, but this design for Flos by A. and P. G. Castiglioni, can be used on the floor, on a tabletop, on the wall, indoors or out. It is distributed in this country by Atelier International (8). □

The Luminous Environment and Human Needs: Some Guidelines

In a new book, architect-consultant William M. C. Lam argues for a reformed process of lighting design. A.O.D.

One of the principal issues dividing lighting designers today is the question of how valid or relevant prescribed quantitative levels of illumination really are to good vision and good lighting design. One of the most outspoken proponents of quality versus quantity in lighting is William M. C. Lam, who heads his own lighting design firm in Cambridge, Mass. His new book, *Perception and Lighting as Form-givers for Architecture*, was recently published by McGraw-Hill.

In its introduction, Lam writes: "Designers faced with an extraordinarily rapid turnover of products and a fast, fragmented process of design and construction which has taken root in this electronic age, have yielded the control they once exercised over the luminous environment to others: to electrical engineers, who have been primarily trained to meet minimum footcandle requirements; to building owners, who come to them with misconceived programmatic objectives, and to misguided government officials, who have been brainwashed by propaganda from the lighting and power industry into adopting and enforcing irrelevant and obstructive codes in the name of progress."

He contends that "once one understands that the brain analyzes and perceives the *entire* visual field, and not individual aspects, the irrelevance of single-parameter numerical criteria such as footcandle levels is immediately apparent . . . it is the *patterns* of light sources and the nature of their *relationship* to other elements in the visual field which largely determine the overall quality of the luminous environment."

In summarizing the human needs and environmental objectives which lighting should serve, Lam writes: "A good luminous environment is simultaneously comfortable, pleasant, relevant and appropriate for its intended uses. The definition of the terms comfortable, pleasant, relevant and appropriate need no longer be left to the vagaries of 'artistry'; they can be defined much more specifically. A good luminous environment satisfies as many of the needs of its users as possible, and must provide the specific qualities and

quantities of visual information which are required for the activities that take place within it. But in addition to activity needs for visual information there are always biological needs which must also be satisfied, and which may be even more important than the activity needs. Designers who give these biological needs for visual information the priority they deserve in the process of programming and design will find that in *most spaces, lighting which provides well for biological needs simultaneously takes care of most activity needs.*"

"In terms of other methodology and objectives," writes Lam, "the conventional contemporary process of lighting design is highly unsatisfactory. The tools at the disposal of the designer are often conceptually deficient, the design process is poorly structured to maximize communication between members of the design team and the objectives themselves are frequently irrelevant and sometimes even counterproductive. There is little attention to energy conservation in terms of both operating procedures and hardware development. There is little recognition of the complexities and subtleties of human perception and of the desirability of using

Primary concerns at present are 'providing required footcandles' and cost of fixtures.

light and lighting equipment to do more than just deliver footcandles—to provide orientation and guidance information, to minimize visual noise, to satisfy biological information needs, etc.

In criticizing prevalent lighting design practices, Lam says that "the hypothetical architect begins his or her design with no further consideration of artificial lighting than to make brief programmatic statements such as 'downlighting' or 'recessed fluorescent, 70 footcandles.' Only late in the design development stage," he writes, "or at the beginning of contract documentation, lighting design proper begins." And then, usually the electrical engineer is put in charge, who is concerned mainly with

providing required footcandle levels and the least expensive fixtures.

"There is a great need for new design processes and tools, more communication between the members of the design team, more relevant objectives and simpler and more visual working tools. The creation of successful, relevant, comfortable, well-integrated and consistent luminous environments must once again be reinstated as the overriding objective of lighting design. We need to do more with less, to fight against wasteful and counterproductive levels of illumination promoted by the power and lighting industry. We need to add positive objectives such as the creation of positive focus, sparkle, orientation and guidance, and lighting for biological needs, to the conventional objectives of eliminating glare, providing adequate task lighting, etc." To this end, a number of design recommendations, illustrated in Lam's book by 55 case studies and based on principles of perception outlined by Lam, are summarized in the following rules of thumb:

(1) "A clear design intent should be evident in all elements of the visual field. Visual perception is a gestalt experience: Clear synthesis of related elements and architectural systems facilitates their comprehension, and establishes a consistent background of visual relationships which can be modulated in a meaningful way to provide subtle but extremely valuable orientation and guidance information.

(2) "When structure is to be illuminated directly, the resulting gradients of light should emphasize its salient characteristics—the module, the shape and the material—in a consistent and complementary fashion. When structural elements cannot be positively and consistently illuminated, the designer should not light them directly at all, but should rather rely on reflected light from other directly illuminated surfaces to light the structure.

(3) "In general, one should illuminate continuous planar elements such as walls evenly, or with even gradients, so that they appear continuous. When an expression of the continuity of a flat surface is not regarded as an important design feature, the surface can be illuminated unevenly without appearing unnatural or distorted—for instance, when a decorative element such as a painting or plant hung on the wall is to be highlighted, or when the wall receives spill light from lamps which clearly relate to furnishings or which are used as wall brackets to define entrances, or when a definite rhythm of light gradients is clearly related to rhythms of panel joints, structural beams or coffers, etc.

(4) "To conform with expectations, use light sources of relatively low color temperature at low levels of illumination, and sources of higher color temperature

at higher levels of illumination. For interior lighting, warm colored sources such as incandescent and warm white fluorescent are preferable.

(5) "Because of adaptation and time orientation, a given amount of artificial lighting in interior spaces will appear much brighter at night than during the day. To conserve energy, provide switching and dimming controls so that illumination may be reduced at night to the relatively low levels which are expected and required for night-time activities.

(6) "Whenever possible, design glazing to satisfy the basic biological needs for a view of outdoor conditions and contact

'The principal function of windows' should be to satisfy 'important biological needs.'

with sunlight. In general, the principal function of windows should be to satisfy these important biological needs, rather than to provide task lighting for activity needs which can usually be more easily and economically provided by artificial lighting. Fenestration should be planned in conjunction with artificial lighting, so that the two complement each other. In most buildings, artificial lighting at the perimeter should be placed on separate circuits with easily accessible switches so that it can be turned off when daylight provides adequate illumination.

(7) "The shape and placement of exterior windows should be derived primarily from the nature of the view. Avoid clerestories through which nothing can be seen, unless they are used to bring sunlight into interior portions of a building which would otherwise have no contact with exterior conditions. In high buildings the portion of windows above eye height is of little use from the point of satisfying biological needs, and usually introduces substantial sky glare. Since the response to unpleasant sky glare is typically to draw the draperies, which cuts off the desirable portions of the view at the same time as the offending portions, it is advisable to restrict window height to less than, say, seven feet. Alternatively, if full height windows are to be used, provide a means by which the upper portion of the window can be screened selectively—blinds, for instance, rather than or in addition to draperies.

(8) "To eliminate sources of visual noise, it is better to use large-scale elements such as deep window reveals for sunshading so that the resulting areas of uninterrupted view are sufficiently large to be comprehensible. If this is not possible, go to the other extreme, using very fine mesh screen, draperies or blinds which overlay an even texture on the view rather

than adding a competing pattern, creating a figure-background conflict.

(9) "There is no unique and perceptually 'correct' method for the illumination of three-dimensional objects. As long as the nature and location of the sources of light are evident, almost any approach which reveals the desired information characteristics of the objects can be used without causing confusion.

(10) "Because of simultaneous contrast and adaptation, objects with identical luminance levels appear brighter when seen against a darker background. The fundamental principle is particularly useful in the design of relevant foci for the luminous environment. When, for reasons of preservation, illumination levels on a painting must be kept low, for instance, the painting alone should be illuminated against a relatively dark background, and both direct sunlight and views of objects illuminated by direct sunlight should be excluded from the space, so that the eye will adapt successfully to the low illumination levels in the display space. Remember that for the eye to detect a noticeable difference in brightness, the luminance of the focal object should be at least twice that of its immediate surroundings. To create a real sense of focus, a brightness ratio of at least 10 to 1 is usually necessary.

(11) "Judgments of an environment as orderly or chaotic are always made with reference to background and context. Irregular arrangements of architectural ele-

'It is just as important to decide what not to light as to decide what to light.'

ments such as lighting equipment, partitions and furnishings seem more orderly and less distracting when seen against plain backgrounds. Partitions which are higher than eye level will be perceived against the context of the ceiling structure, and should therefore be carefully related to the visual organization of the ceiling structure. Irregular or directionless office landscape partitioning should be kept at or below eye level, unless the ceiling is directionless and visually neutral.

(12) "Emphasize potentially dangerous edges in circulation paths by changes in material, the use of color, or definitive shadows, particularly when illumination levels must be low for some reason.

(13) "To maximize the signal-to-noise ratio of backlighted graphics, use signs in which the letters are brighter than the background. Avoid backlighted signs in which opaque lettering is superimposed on an illuminated translucent background.

(14) "The various elements of the visual environment have an inherent hier-

archy of attractiveness to the focus selector, which is influenced in part by their relative (not their absolute) brightness. Where directional graphics are important, avoid placing competing, distracting patterns of informationless light fixtures near the graphic elements.

(15) "To avoid the 'black hole' effect in windows at night from interior spaces, cover them with drapery or, better still, illuminate elements of the exterior environment which you would like to see—landscape, sculpture, etc. The latter solution increases feelings of security by reducing the unknown and therefore potentially threatening aspects of the exterior environment.

(16) "Do not try to backlight draperies in an attempt to simulate the effect of daylight. The human mind is too keen to be taken in by such tricks. For similar reasons, a backlighted Kodachrome mural of a landscape cannot create a successful illusion of an exterior view in an interior or an underground space.

(17) "Grazing light always highlights any irregularities in the surface upon which it falls. It can be used to bring out the texture of a wall, as a positive design element, or, if used incautiously, it can emphasize every defect in workmanship. When a wall is to be illuminated with grazing light, therefore, be sure that it has a desirable and appropriate texture—use raked joints for brickwork or lay the units up with deliberate irregularity. Use rough textured concrete forms, or accentuate joint lines and tie holes when using plywood formwork. If a wall which will be illuminated by grazing light is intended to be perfectly smooth and regular, on the other hand, specify that it should be constructed under illumination conditions similar to the final design. When designing smooth walls which are likely to be imperfect for reasons of workmanship, try to plan the arrangement of likely trouble spots, such as joints in drywall construction, so that their visibility will be minimized—orient them parallel to the direction of the incident illumination rather than perpendicular to it, or hide them with elements such as tack strips, bumper rails, picture-hanging slots, etc.

(18) "Avoid creating a focus in the luminous environment on unpleasant, undesirable or distracting elements. It is just as important to decide what not to light as it is to decide what to light. Obviously, a design methodology which aims only at providing more than some specified minimum level of illumination throughout a space has a built-in bias against this sort of selective illumination.

(19) "Wherever possible, avoid creating figure-background conflicts, such as those caused by striped or "checkerboard" lighting configurations where illu-

continued on page 94

Lighting Designer Claude Engle: Illuminating Architecture

He believes that he can do most for a building by being brought in at the very earliest stages of design. A.O.D.

For a number of reasons, Claude R. Engle's work and approach to illumination make him something of an anomaly among lighting designers and consultants. For one thing, he views lighting as just one among many architectural elements to be used for accurately rendering a design concept, and regards himself as simply part of a team.

Even in his four-person, Washington, D.C., office, Engle has surrounded himself with architects: Bruce Yarnell, John Wood and Danielle David. Engle explains that "architects are generally taught to use their eyes and to trust their gut reactions. Unfortunately, engineers are usually trained to rely more on formulae and have greater trouble trusting their senses."

Among his architect/clients have been Minoru Yamasaki, FAIA; I. M. Pei, FAIA; Warren Platner, FAIA; Bruce Graham, FAIA, and Philip Johnson, FAIA.

According to Johnson, with whom Engle worked on the Pennzoil building in Houston, the reworking of Avery Fisher Hall in New York City and other projects, "Many lighting experts tend to resent and interfere with the work of other specialists with whom they must interact, but Claude is able to accommodate himself, while being energetic and imaginative." He adds that Engle "may be the best lighting designer I've worked with; he has a good intuitive feeling."

Engle is further unusual among lighting designers in making extensive use of daylight, and for having used light sparingly and emphasizing quality over quantity long before energy conservation became the critical issue it is today.

Like many of his colleagues, Engle came to the profession via work in the theater, in his case as an undergraduate at Princeton University in the late 1950s. He spent a term in the military designing television lighting, and then joined his father's Washington engineering firm. "This was very lucky," he recalls, "because I learned a lot about how a building is put together."

His initiation into big-time architectural lighting design came in 1965 when Skidmore Owings & Merrill asked him to design the illumination for the World

Bank headquarters building in Washington. "In that project," he says, "we had exposed structural coffers with no hung ceilings in which to use typical 2x4 fixtures, so we used a special fixture which made each coffer into a light source. I was excited by the use of lighting as an integral part of architecture then, and I still am today."

When Engle first opened his own office in 1968, it was a one-person operation. "I had an answering service, very official looking stationery and was very alone," he recounts. Before long, however, he began sharing office space with an architect and they spent lunch hours together "reacting to each other's ideas." Bull sessions remain the modus operandi of Engle's now enlarged firm.

In working with architects, he says, "we have had the very good fortune of being part of the design team at its very beginning in 99 percent of our jobs. The later a lighting designer is brought in, the less his ability to make use of what the architect gives him." When beginning work with a new client, Engle will visit the designer's projects and read whatever

may have been written about the designer in order to understand the person's vocabulary and philosophy.

The bulk of Engle's time on any job is spent in working out what the problem is, and his main complaint about architects is that some, with an engineer in tow, will begin by specifying solutions rather than stating what they want the building to do and what the problems are. "They'll tell us, for example," he says, "we want a row of wall washers," to which we answer, 'but what do you want the building to look like; do you want the wall to glow?' " He also finds that many architects do not understand the relationship between the materials and colors that are used and the illumination that can, or should, be produced.

"A fun job," says Engle, "is being part of a good design team which has decided that it really wants to do a better job than anyone else has done." What fascinates him most, perhaps, is working with natural lighting. "It's like sailing," he says. "It's a lot of fun to get out there with no gasoline pushing you, using your own ingenuity to move across the water, using something that is free." It is also much harder to design with daylight than artificial light. "The craftsmen who designed magnificently lighted structures like the Prado before the advent of the light bulb," remarks Engle, "had to be much more resourceful than modern technicians."

Among the problems of using daylight,

At the Fourth Financial Bank, Wichita, Kan., Engle created a glowing core (right), using downlights 'where the people are,' but he de-emphasized pedestrians in the walkway to the parking structure (below).







says Engle, is that you have the sky and the sun to deal with and the two are quite different. While the sun itself rarely produces glare and moves 45 degrees north to south, the sky is the real source of brightness and glare, neither of which is diminished by reducing the size of a window. Also, the intensity of light varies on any given day, depending on how cloudy or bright it is, and it changes with the seasons. "So, one of the problems you're going to have to solve," says Engle, "is whether to design a system which gives enough light only on the brightest day and which will have to be supplemented the rest of the time, or a system that gives enough light even on the darkest day but will require shading." He says that his firm tries to keep solutions simple, staying away from those that require "terribly sophisticated, computer-driven, almost always failing devices."

Another variable of daylight, explains Engle, is that color values change, because the sky is cool in value, while the sun is warm. "Daylight possesses a marvelous mix of diffuse light and specular color, or direct light," he says, "which is why people like to see paintings by natural light."

At the recently completed Centre Pompidou in Paris (see Aug., p. 22), for

To objections to use of natural light, he replies 'What happens if the power fails?'

which Engle's firm served as lighting designer, "there was a great argument when we first came in about whether we should block light from all the windows. We thought it terribly important that as you look at a painting you can also see beyond to the Eiffel tower and the rest of Paris. The building is more than an art gallery; it's a happening," says Engle. His firm recommended using screens which would fill the central portion of the viewer's visual field, so that the eye can adapt to the brightness range of the painting rather than that of the sky. "Now, true when you're way across the room" says Engle, "the painting may look dark, but by the time you get close enough to see it, it has the life it needs." He adds that the team also tried to place paintings perpendicular to the glass to obtain side lighting.

At Pompidou, says Engle, the right solution depended in the main on minimizing the bad effects of sky glare by using horizontal one-inch Venetian blinds;

The lighting at Avery Fisher Hall was calculated to enhance acoustics and to clearly illuminate the orchestra on stage.

relatively light floor carpeting, walls and furniture; maximizing the amount of light that could penetrate the building, and "then lighting the heck out the back walls so you didn't have the feeling that you were walking farther and farther from this enjoyable thing known as daylight."

In the glass covered court of Johnson/Burgee's Pennzoil building, a careful balance of lighting was needed to indicate an interim space between the street outside and the tower lobbies within. The decision was to light the lobby "to respond to the outside, rather than treating it as a room," says Engle. His firm used a line of luminaires on the front entry and lit the escalators and elevator lobbies. For the rest, they relied on daylight.

At the airport in Tel Aviv, Johnson and Engle also tried to let sunlight in. "But one of the things you have to struggle with when working in foreign countries," he says, "is making certain that the elements you use mean the same thing to the people who are going to use the space as they do to you." The sun, for instance, much loved by most Westerners, is regarded "as an absolute villain

in much of the Near and Far East," says Engle.

In his experience, "a reason why you almost always get shot down at the start when you suggest using natural light is that the mechanical engineers often add up their solar load on the hottest day of the year, add the artificial light that you're going to run at night, figure out their air-conditioning to freeze ice any place in the building and then announce that 'you can't possibly do this, and what would happen if there were a power failure and you wouldn't be able to aircondition?'" "I always reply," he says, "'what happens if there's a power failure in your system and you won't be able to see your way around. Wouldn't it be better to have natural light coming in?'"

Engle explains that there are relatively simple and perfectly adequate ways of keeping the heat from skylights and windows from entering a building, and that the best is "to solve the problem from the outside; louvers under a skylight reduce glare," he explains. "Placed above a skylight or window they also stop the heat before it enters."

To emphasize the transparency of Buckminster Fuller's geodesic dome for Expo '67, Engle illuminated only the interior.

'The lighting industry tends to jump on things as though they were veritable miracles.'

When it comes to energy conservation in the use of artificial light, Engle is critical of many of the measures advocated by the lighting industry and government. He points out, for example, that "one state is toying with a new energy code which would give you about one watt per square foot to light a church, with the requirement that you be able to turn half the lights out and still light the interior evenly. The only way you can do this is by using mercury vapor light, and who wants to worship in a mercury vapor lit church where everyone looks sick?"

The lighting industry, observes Engle, tends to "jump on things as though they were veritable miracles, usually before there is adequate evaluation." He considers task/ambient lighting as such a fad, and in most cases advocates "using all the tools at one's disposal, rather than awarding a red badge of courage for avoiding a ceiling that's there to be used." He adds that our biggest limitation today "is that we're dealing with outmoded ceil-

ing systems, and we've never worked on a job where the ceiling and lighting work has been brought together. The ceiling is rarely bought with any notion of the other systems it will house."

Engle also objects to task/ambient lighting for visual reasons, saying that the "boxes used for task lighting all over the tops of work stations or partitions" detract from careful architectural detailing, while the shadows and hot spots created by ambient lighting create a distracting miscellany of design elements.

Engle's firm has provided lighting design and consulting services for all manner of buildings—small banks and huge corporate headquarters, rapid transit systems and churches, office buildings and exposition halls. Looking at a few will give some impression of Engle's approach to the use primarily of artificial lighting as an element of architectural design.

With SOM as architects for a Chicago rapid transit station, the design team was concerned first and foremost with creating an efficient and straightforward system that would give users a sense of being in a safe place. They therefore placed a ribbon of light over the leading edge of the platform "to define where the action is," in Engle's words. To create a sense of security, Engle and his colleagues





Making fixtures unobtrusive through proper placement and proportion and good detailing.

put a light in each coffer to make the space "look inviting. We wanted the space to read as one room, not as the opening of a tunnel."

In the case of the U.S. pavilion at Expo '67 Montreal, on which Engle worked with Edison Price for Cambridge Seven Associates of Cambridge, Mass., "It was first proposed that the structure be lighted at night from the outside, but our reaction was that the whole name of the game was what was inside the structure, that its beauty lay in its lightness, and that its transparency should be revealed," says Engle. As a consequence, the designers put no light at all on the outside of the structure but let it be illuminated by a glow from within. Most of the light came from high powered lamps turned up into three parachutes. It was an example of trying to make the lighting system look as invisible as possible, says Engle. Not that he objects to light fixtures showing.

"They will always show," he says. "The way to make them unobtrusive is to put fixtures in exactly the right place and have them be exactly the right proportion and have exactly the right detailing." Throughout his firm's projects, he says, every downlight looks alike, which is achieved by using a similar vocabulary throughout the job. At an Eastman Kodak building near Rochester, N.Y., for example, "people think they see only one light, but there are really 30 to 40 different types," he says.

At Eastman Kodak, with SOM as architects, the designers wanted to project an image of efficiency, while underscoring the rural setting by giving the impression of a building in a park with pools of light and darkness. They made the lobby a focal point by washing one wall with incandescent light. In the rest of the building they used only fluorescents "to be consistent with Kodak's image of efficiency," according to Engle. They also lit the rows of trees in the parking lots to give the impression of brightness, "because people feel safe if the perimeter of a space is defined and they feel the presence of light," says Engle.

When designing the lighting for the mall of Water Tower Plaza in Chicago, for architects Loeb, Schlossman, Dart &

Poured-in-concrete wallwashers illuminate a stairwell at Kodak's Marketing Center (left); the use of daylight creates an outside-inside feeling in Pennzoil's covered plaza (above); illuminated escalator rails become sculpture and orient shoppers at Two Houston Plaza (right).



Hackl, with Warren Platner, FAIA, as consulting architect, Engle's firm was faced with irregular building modules. To compensate, they put a row of lights along the storefronts, spaced from five to seven feet apart. "But we never jumped more than one tile at a time, and always would end up at the right place in the corners, with lights relating to strong terminal points," says Engle. He says that users are apparently not aware of the changes in spacing.

"What bugs me most about shopping malls is that the designer, realizing he has no control over the quality of store design and fearing it will be terrible, will often fill his mall with sculptural objects. Then when the stores come along and are adequately designed, the whole thing becomes so busy that you can hardly bear to shop in it," says Engle. At Water Tower Plaza, the design team put very little light on anything but the storefronts. They did, however, want to accent certain architectural features, such as the scissors-shaped escalators. By adding a light strip to them, they effectively transformed the escalators into a simple piece of sculpture which also acts as a directional aid for shoppers.

The designers further wanted to give

the feeling of being in an enormous light court at Water Tower Plaza, and achieved this mainly by using a great deal of back-lighting. "We wound up flooding the space with mercury vapor, which would have made everybody look green, had we not spotlighted the trees and the people with a warm light source. The net result was very interesting because you have a shadow effect, the same as you get with dancers in the theater," he says.

At Two Houston Center, for which the architects were Pierce, Goodwin, Alexander, with William L. Pereira Associates, the problem was one of giving the visitor a sense of orientation. To do so, the designers created a glowing core and lit escalator rails. Further, since the garage served as main entrance in this vehicle-dominated city, the design team chose to make it into a lobby-like space, or large room, much as Engle had done with Chicago's rapid transit stations.

At the heart of Claude Engle's work is an enthusiasm that goes beyond willingness to accurately and sympathetically use lighting to enhance the architect's basic design concept. "We can't add excitement that isn't there," says Engle. "At best, we can make a great space look great." □



Architects in the Elementary And Secondary Schoolroom

A first-year report on a program that puts them there as educators in the built environment. By Aase Eriksen

The built environment—architecture in its broadest interpretation—is comprised of the cities, streets, houses and parks that man builds and the spaces that connect them. It is the physical framework of our activities and interactions and thus an important determinant of the shape of our lives. Although it has been seen, until recently, only as it impinges upon and destroys the natural environment, it is nevertheless the one in which all of us spend most of our lives. We all need to be trained to be aware of what is around us, to sense the qualities and interrelationships of the colors, textures, noises, objects and spaces that are part of our everyday life.

Built environment education stresses the development, first, of an awareness of surroundings, senses, feelings and needs; then, of an understanding of the functions and the impact of the environment, and finally, of the ability to use the environment and to change it to best satisfy the needs that have been defined.

By developing the senses and acquiring a consciousness of self within the surroundings, children learn to evaluate the environment in terms of human responses; they become aware of how the environment feels, how it influences actions and emotions and how various aspects of it serve or hinder our needs.

Sensory awareness must be accompanied by understanding. Children must begin to think about the functions of the built environment, how it works and how it influences attitudes and activities. As their understanding grows, they will begin to use the environment to its fullest and to make the most of the opportunities it offers. Once children have become full-fledged and intelligent users, they will be able to participate in improving the built environment. They will begin to think about what they like and dislike and about how feelings and value judgments may be translated into changes.

Dr. Eriksen, who holds a master in architecture degree, is national coordinator for the architects in schools program and director of Educational Futures, Inc., in Philadelphia.

The architects-in-schools program, already in its second year of implementation, is attempting to realize the goals of built environment education. A component of the National Endowment for the Arts' artists-in-schools program, it has extended the creative collaboration of artist, teacher and student with the introduction of "spatial designers" to the program.

During the first year, 39 architects-in-schools in 22 states participated. Because of the enthusiastic response by schools and architects alike, several more states,

Providing a new setting for the creation of a dialogue between architect and public.

many with more than one component, are involved in the program during the 1977-78 school year.

These resource people, in residence in elementary and secondary schools throughout the country, involve students, teachers and interested community members in analyzing their surroundings. They help place built environment education within the context of the school curriculum, not as a new subject area, but as an emphasis, a framework for learning in all areas. The built environment is used as a laboratory for learning to observe, to understand and to act. Collaborating with teachers and students, the architects-in-residence contribute their own awareness of space and structure, their ability to analyze the surroundings and their familiarity with the process and tools of design.

Some of the methods they use are field trips, walks and tours, model building, mapping, drawing, writing, lectures and presentations. The desire for action and change is a logical result of the awareness and understanding gained by students through their experiences in learning about the built environment. Students learn to view the school as a place that should fulfill their learning needs and their needs as human beings. They learn, too, to translate these needs into appropriate changes.

The participants in the architects-in-schools program are involved in building activities both inside and outside the school building and in other forms of environmental change. Teachers, too, learn to better assess their own educational goals and to vary the environment to attain these goals. Adults in the community are also involved in the process. The resident architects/designers may conduct community workshops or work with the community to adapt and use old, abandoned buildings. Activities are designed to broaden awareness of the built environment and to educate about the potential for change.

A new role for the architect is being defined through this program. He is seen as a resource, a professional who can communicate the tools, skills and concepts of his discipline to the community at large, beginning with its young people. The program provides a setting for the creation of a dialogue between architect and public, in which both stand to benefit from a heightening of the quality of human life.

The architects-in-schools program is open to registered as well as nonregistered architects, landscape architects, planners and environmental designers. During the past year, it has given many young architectural graduates an excellent experience in seeing the potential of architecture in its broadest ramifications. At some sites a team approach was used, where an experienced, practicing architect worked with a younger, nonregistered architect. The experienced architect brought many of the aspects of the architectural office to the project, and the recent graduate contributed an openness to explore new areas and ways of working.

Architect Dan Brown and environmental designer Nancye Green worked as a team in the small, rural Roosevelt Elementary School in New Jersey. The intent behind the project was a revitalization of the school, both physically and attitudinally, and of the community's involvement with it. All 120 students, five teachers, administrators and parents participated in this project throughout the 38-week residency, which was seen as proceeding through five phases: awareness, design goals, implementation/fabrication of systems, hall design and redesign.

Awareness activities included mapping rooms, listing activities and objects, making models of personal environments and manipulating classrooms with existing furniture. These activities led to making models of proposed room changes, including the design of support structures. Developed in this way, the design goals served as the basis for designing and building classroom furniture to solve perceived problems, such as noise, clutter and functional inflexibility of furniture.

In the implementation phase, the six classrooms were painted, tri-wall private spaces were placed in the classrooms, flexible components (homosote panels on metal frames) were designed and built to support the changing requirements of the classrooms and a handbook to support the continued evolution of the structures was written by students and teachers. All of these activities helped develop a sense of the ability to control the immediate environment; and from this, students and teachers are developing a sense of stewardship over an important aspect of their daily lives.

Martin Beck, FAIA, served as state architectural consultant for the New Jersey residencies, visiting and assisting with program implementation. Landscape architect Damon Ohlerking divided his time between middle school and high school in the small, rural town of Eagle Grove, Iowa. The relationship of students to their community was stressed in this residency. Eighth-grade history and language arts classes explored their town, attempting to

Making models of proposed room changes in Roosevelt, N.J., classroom.

'People . . . are now aware of the possibilities of involving professionals in shaping their town.'

place it within its historical context and to view it as part of the natural environment. A pretour slide show and follow-up projects which involved writing about and illustrating their impressions, helped students to analyze the experience and to relate it to other areas of study.

Other school projects included a study of the cost of building a home, the design of a courtyard, land use analysis, design and execution of a large mural for the gymnasium and design of a kiosk for the front entryway of the school. High school students obtained permission from the school board to turn a vacant lot into a student park/outdoor classroom. They developed a landscape design, built a model, raised money to pay for local professional help and cleaned up the lot. Waste receptacles, benches and walls were built and trees were planted by student volunteers.

Ohlerking worked closely with a community group to develop a five-year project looking towards the town centennial. One aspect of this project was a column in the local newspaper gathering and presenting information about the community's built environment history. According to Ohlerking, the people in this community, who had never before worked with an architect or landscape architect, are now aware of the possibilities of involving professionals in the shaping of their town.

Rengin Holt's residency, in the William Fleming and Patrick Henry high schools of Roanoke, Va., was closely related to the art program.

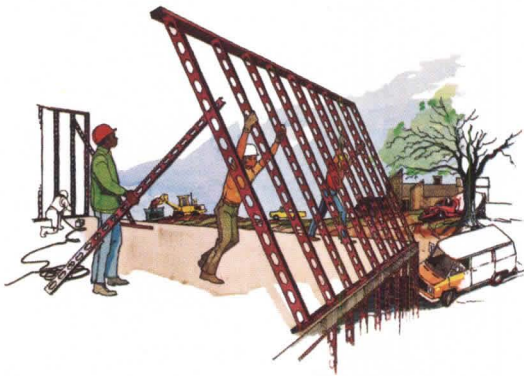
The first project was an introduction to seeing the environment in terms of architectural elements and their different scales. Each student made an aerial design of his or her neighborhood, using abstract shapes and symbols to map the various buildings, roads, boundaries and places. The second project allowed students to manipulate and reorganize the environment using the two-dimensional shapes, symbols and colors discovered in the

Continued on page 112



GET MORE THAN JUST PRODUCT.

Specify Inryco/Milcor[®] Steel Framing Systems



Structural components included in Inryco/Milcor steel framing systems can support the entire weight of buildings up to five stories high. Components are frequently pre-assembled for installation in large sections to save construction time.



Prefabricated steel framing assemblies with exterior facing applied provide lightweight, easy to handle panels that speed curtain wall installation. Framed openings are incorporated. Curved or angled shapes are easily executed.

You'll get an honest appraisal of the suitability of steel framing for your project.

The versatility of our light structural steel components (steel studs and joists) makes them suitable for almost any wall or floor condition... with savings in time and costs, plus other desirable advantages. We'll review your projects in detail and show you how these benefits can apply. If our products will not suit your proposed application, we'll tell you so.

You'll get unexcelled design assistance when you need it.

Our experienced engineering staff furnishes design consultation and assistance on hundreds of projects each year... reviewing plans, detailing efficient solutions for complicated conditions, calling attention to over-design or under-design of specified systems.

You'll get experienced counsel for your framing contractor.

Through longtime involvement in both construction and manufacturing, Inryco has become the recognized leader in the steel framing field. We've worked closely with steel framing contractors to develop system innovations and improvements in fabrication and erection techniques. We stand ready to assist your contractor in developing proper framing construction techniques to help you achieve the maximum benefits of our systems.

Consider our systems and services for your next project.

Other companies manufacture and sell steel studs and joists. None have the experience, capability or desire to provide the extras you get from Inryco. Please review the information on Inryco/Milcor Steel Framing Systems in Sweet's Architectural File (section 5.3/In) or Light Construction File (section 5.3/Inr). Then give us a chance to discuss their application to your projects by contacting:

Milcor Division, INRYCO, Inc.; Dept. K-4127; P.O. Box 393; Milwaukee, WI 53201.

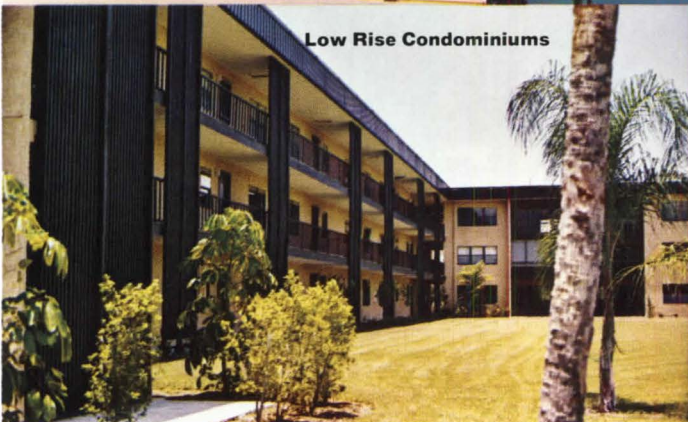
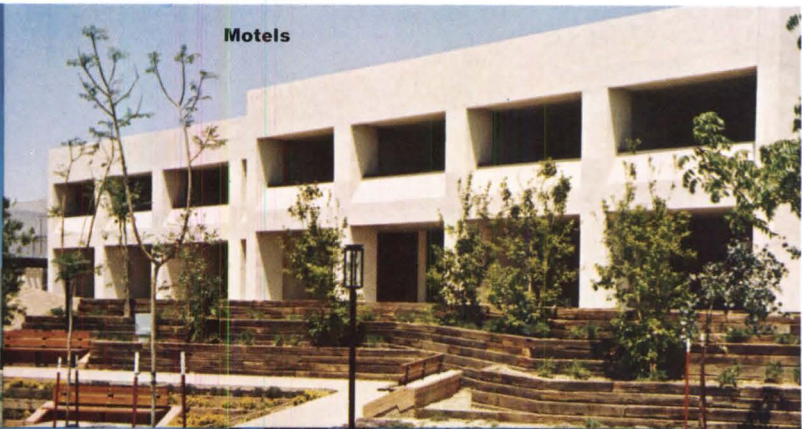


Inryco

an Inland Steel company

General Offices: Melrose Park, Illinois

**Typical applications...low rise and high rise...
residential, commercial, institutional, industrial**



Open Spaces: The Life of American Cities. August Heckscher with Phyllis Robinson. New York: Harper & Row, 1977. 396 pp. \$20.

With its design insight, sophisticated view of public action, historical awareness and literary distinction, only August Heckscher could have written this valuable contribution to the continuing task of civilizing our cities. Presidential adviser on the arts, New York City commissioner of parks and culture, executive director of the Twentieth Century Fund, chief editorial writer of the *New York Herald Tribune* and author of earlier books examining our national culture, Heckscher has come to the present work widely traveled and broadly read.

The meat of this book is a coast-to-coast survey of contemporary urban design. Its up-to-date descriptions are accompanied by excellent literary production and its intended impact is intellectual rather than pictorial. The heavy emphasis is upon Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Houston, Kansas City, Los Angeles, Louisville, Milwaukee, Minneapolis, New Orleans, New York City, Philadelphia, Phoenix, Portland, Ore., Rochester, St. Louis, San Antonio, San Diego, San Francisco, Seattle and Washington, D.C.

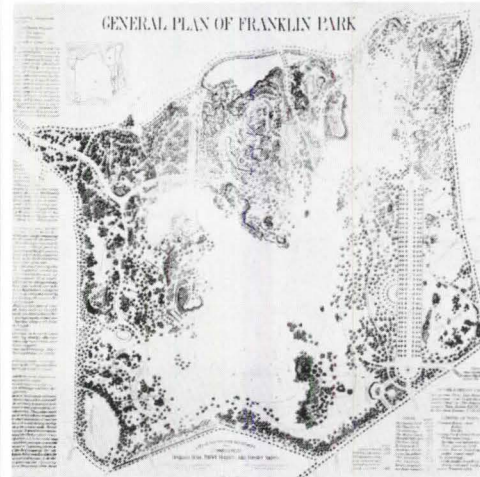
For most of these cities, Heckscher examines the urban fabric in some historical detail before moving to the modern era. He pays special attention to parks and to the heritage of the city beautiful movement. The recent vogue for mixed use developments (see Sept. issue) and jumbo-sized developments such as Albany Mall receive thoroughgoing analyses. Heckscher has been influenced by Edmund Bacon's ideas and experience and, indeed, this is the only book since *The Design of Cities* that matches that pioneering work. Heckscher's indebtedness to Ian McHarg is also evident.

Heckscher's analysis accepts space as the reality of urban design. He looks carefully at the natural endowments of cities, their riversides and lakefronts, their man-made spatial characteristics and inheritance from the great planning of urban squares and city parks; and he

shrewdly appraises how transportation can reshape open space.

While this is not a book about parks—it is about cities—it manages to plug most of the gaps in the present literature on urban parks, and probably anticipates much of what we will learn from the forthcoming work of W. H. Whyte. No bibliography is provided, but the notes are extensively documented and are a satisfactory substitute, although they have been proofread with less care than the body of the book. Altogether, this book must stand as the principal reference in its field and, despite its nature as a survey, it should remain of lasting importance.

While ranging more widely, Heckscher is at his best in discussing large city parks.



Four of these have been selected for detailed analysis: Forest Park (St. Louis), Belle Isle (Detroit), Delaware Park (Buffalo) and Franklin Park (Boston). All are large, natural parks of the type formulated by Frederick Law Olmsted in Central Park (New York City) in 1856. Today, they are described by park executives as "dinosaurs." Their problems are intractable as they are central to Heckscher's thesis. The situation today of these 19th century parks is that the cities have grown up around them and this development has shaped the career of the parks, their use, equipment and facilities.

It has also brought immense social, political and economic problems that seem to me beyond the capability of the cities to solve and to invite some special

form of federal intervention. The alternative is a self-destructing drift toward black-topping, playing fields, deforestation and shrubbery clearance, night-lighting and heavy security measures when there are not the worse perils of invasion by misunderstanding of their role as landscaped parks, or the creeping erosion of expressways, fire houses and other allegedly worthy enterprises. In Heckscher's larger view, the solution lies in regulating such encroachments, large measures of public education and design with public participation as part of the master plan process, all yielding that "clear sense of direction" that is lacking today.

Perhaps something more is needed to which this book makes a powerful contribution. The federal commitment to preserving large, natural urban parks was tested in a bill in Congress (HR 1698), introduced by Rep. Dan Rostenkowski of Chicago in 1973. It failed in the House banking and currency committee, to which it had been referred. Had Heckscher's book been published at that time, it would undoubtedly have changed this tragic result. Perhaps it is not too late to save what must be counted a part of our national cultural heritage.

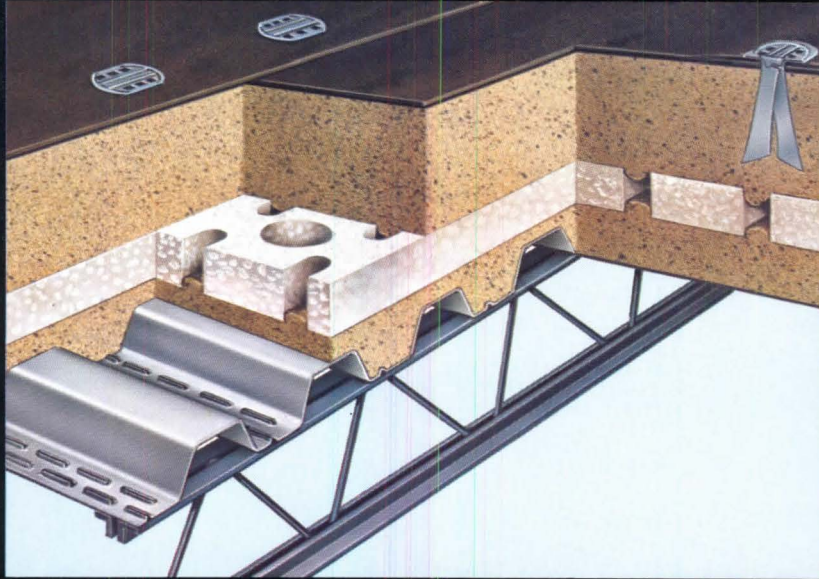
The revitalization of cities today incorporates a large and intuitive recognition of their culture and amenity, and those involved in this movement should appreciate Heckscher's inspiring contribution, not least its mixture of concrete examples and lucid exposition. *Frederick Gutheim, Hon. AIA, Director, Graduate Program in Historic Preservation, George Washington University*

Early Architecture in New Mexico. Bainbridge Bunting. Albuquerque: University of New Mexico Press, 1976. 122 pp. \$12.95 hardbound, \$6.95 paperbound.

This attractive book is about architectural change in the most changeless and conservative region of the U.S. It is about the impermanence of man's most permanent art form, and the appropriateness and timeliness of architecture as a social expression in an area of the country with the oldest urban tradition and the oldest colonial building.

Books continued on page 78

Positive, permanent, in-place performance



Zonolite[®] Roof Decks

Here's a cost competitive, energy saving roof deck that has been designed to ensure insulation efficiency, permit the quick application of built-up roofing, and provide positive, permanent, in-place performance. How?

First, the use of a slotted metal deck speeds drying and venting, and it unites in a unique structural bond with lightweight Zonolite Insulating Concrete for maximum strength and stability.

Second, patented Insulperm[®] Insulation Board, with its special design of holes and slots, provides a strong, composite roof insulation system that maximizes shear strength in the insulation sandwich *and* allows fast, complete venting and drying of the deck. What's more, in combination with Zonolite Insulating Concrete, Insulperm board makes

this Zonolite Roof Deck the most cost efficient way to achieve today's energy saving insulation criteria.

Third, Zonolite Base Ply Fasteners furnish a strong, mechanical attachment of the base ply of built-up roofing while allowing the venting of air over the top of the deck.

Take a new look at the deck that's designed for positive performance. Cost competitive, energy saving Zonolite Roof Decks from the Construction Products Division, W. R. Grace & Co., 62 Whittemore Avenue, Cambridge, Massachusetts 02140. In Canada: 66 Hymus Road, Scarborough, Ontario M1L 2C8.

GRACE

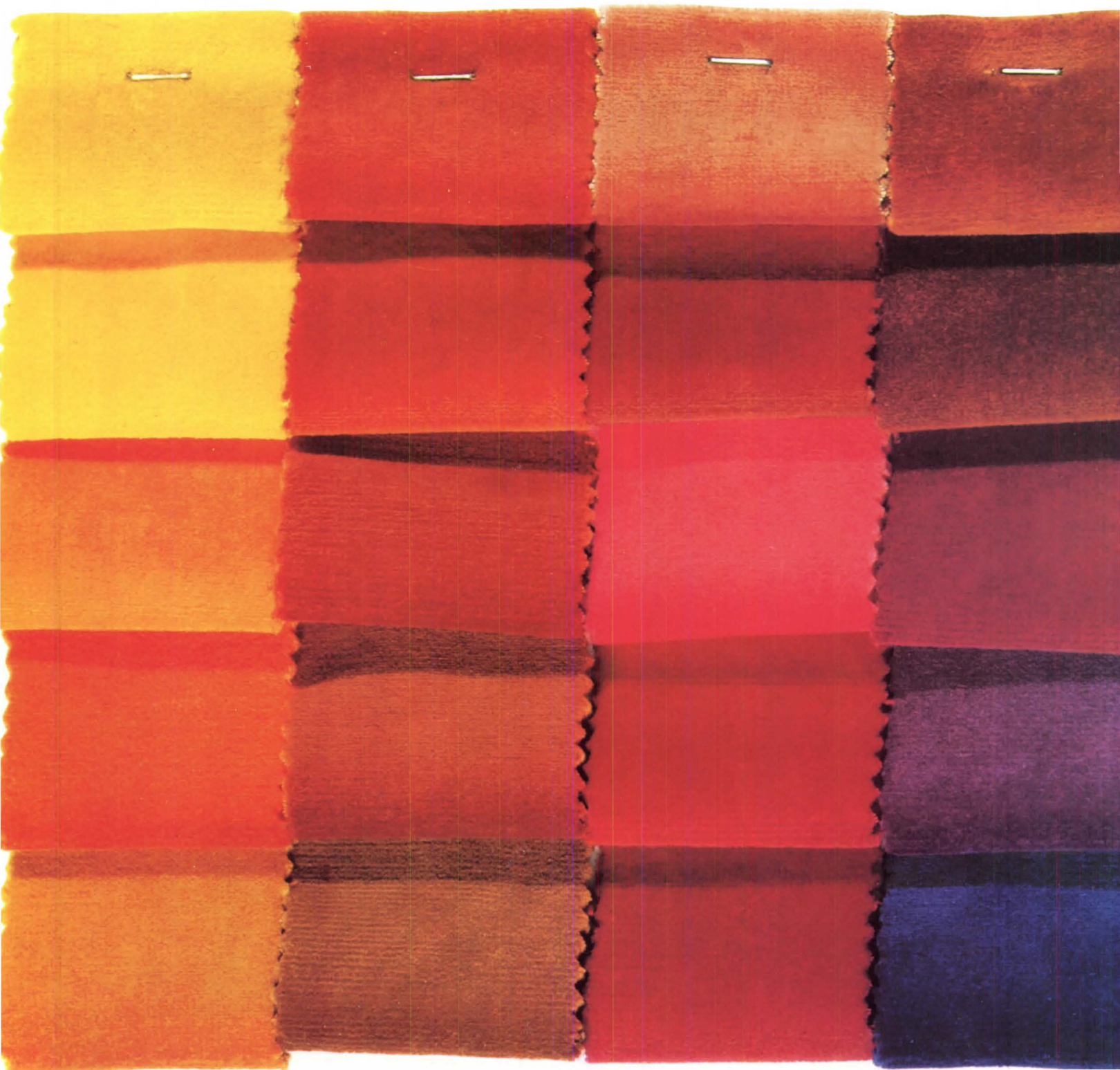
Circle 57 on information card

Knoll

With a single slash of the brush we have surpassed our own enviable record for a thousand and one color choices in a widely varied collection of upholstery weaves.

The new Knoll Cotton Velvet, imported from Holland, gives you forty-one colors to choose from. Each color is made richer and even

more luxuriant by the natural patina of the long staple cotton yarn we've used. Together, they make such a brilliant show we couldn't resist presenting them together. They seem to speak for themselves.



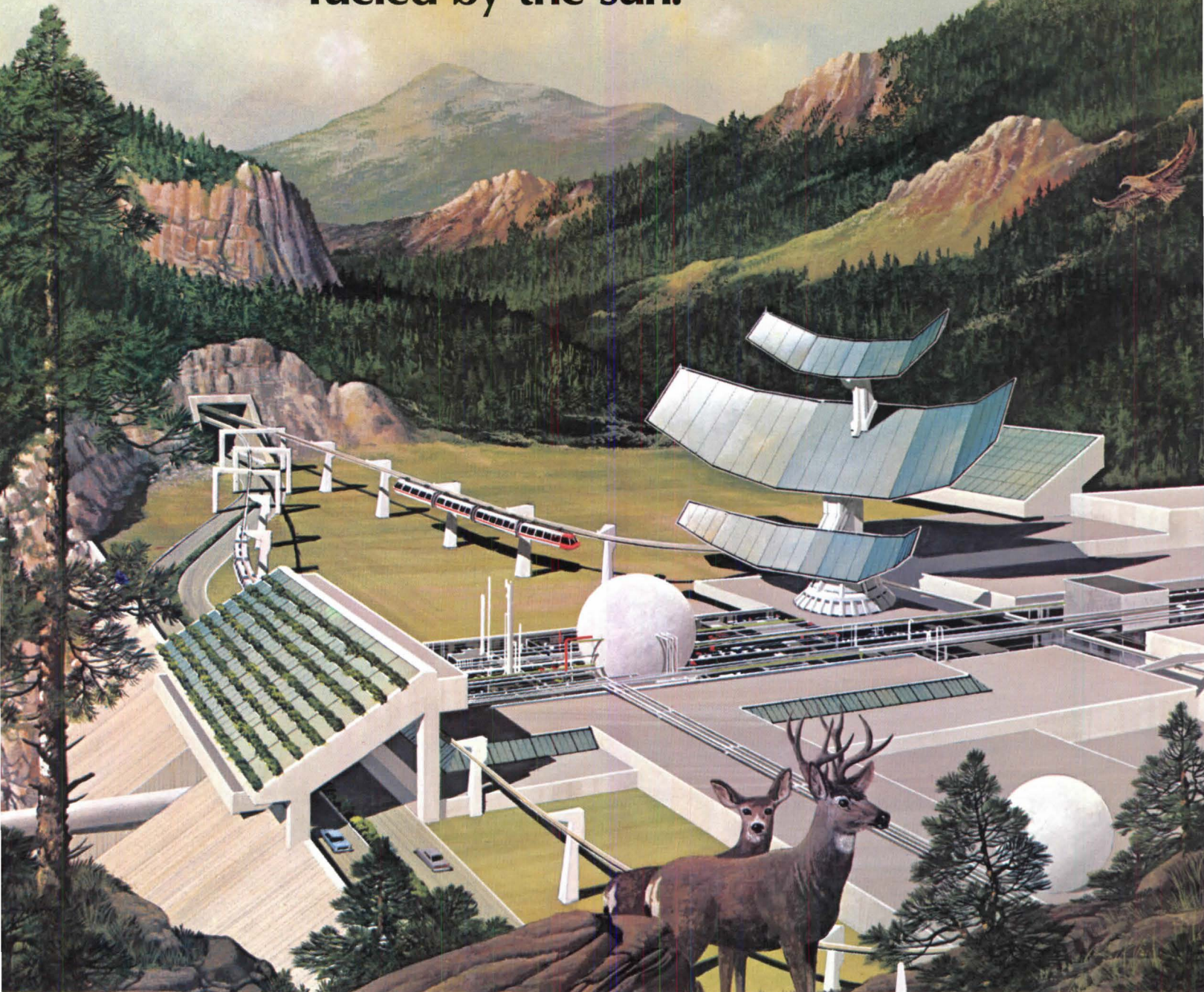
For all its elegance, Knoll Cotton Velvet is designed to be eminently practical for both upholstery and curtains (if portiers are back, Knoll is ready).

For more details about other Knoll fabrics, may we send you a copy of the Knoll Textile Collection tabloid?
Knoll International
745 Fifth Avenue
New York 10022

Circle 74 on information card



Concept: Self-reliant satellite industries fueled by the sun.



Sealant: Tenacious DAP One-Part Acrylic Sealant

To achieve excellent sealant adhesion in hard-to-reach joints, specify DAP One-Part Acrylic Polymeric Sealant. It requires no primer or elaborate surface preparation. Meets Federal Specification TT-S-00 230, Type II. DAP Acrylic Polymeric Sealant provides a lasting bond with most any porous or non-porous construction material. If distorted or torn, it reseals itself upon compression. One-part formulation saves time by eliminating delays of on-site mixing. For your DAP Architectural Sealants Catalog, write to DAP Inc., General Offices: Dayton, Ohio 45401. Subsidiary of Plough, Inc.

DESIGN CONCEPT: Industrial complex sited in a natural forest preserve. A solar heat collector provides power and protects the area ecology. Monorail handles shipments of products.

INNOVATIONS IN DESIGN: One of a series created for DAP Architectural Sealants. Design and rendering by Richard P. Howard Associates, Architectural Illustrators, Sylvania, Ohio. Harold R. Roe, A.I.A.



DAP is a trademark of DAP Inc.

In the ENR 500 League, Shand, Morahan keeps raising its average.

One year ago, we supplied design and engineering E&O coverage to 24% of the world's 57 largest design-constructors. This year, 35% of this group are our clients.

Of the remaining ENR top 500*, we've increased our share from 20% to 25% in the past year.

In short, the switch to Shand, Morahan & Company for E&O by big league design-constructors and design firms continues. And for good reasons: Flexible, custom designed coverage. Competitive rates. And the most prompt, courteous service available anywhere.

If your firm can benefit from a better E&O program, let us go to bat for you. Have your broker give us a call.

*Engineering News-Record; May 19, 1977



SM Shand, Morahan & Company, Inc.

THE FACTS ABOUT STAGGERED TRUSS — THE LOW-COST, HIGH-RISE, STEEL FRAMING SYSTEM.

Many high-rise residential buildings have been built with the Staggered Truss steel framing system. In fact, in recent years over fifty apartment and hotel type structures have taken advantage of the Staggered Truss.

This system for high-rise structures affords an efficient and economical use of structural steel, with far greater flexibility than is possible with other portal framing systems.

HOW THE STAGGERED TRUSS WORKS

The innovative Staggered Truss Steel Framing System consists of story-high trusses that span the full building width at alternate floors of each column line. The trusses are supported only on the two rows of exterior columns and are arranged in a staggered pattern on adjacent column lines.

ARCHITECTURAL FLEXIBILITY

Since columns are needed only at the exterior of the building, the full width of the building is column-free, providing the maximum useable floor space. And with trusses starting at the second floor level, large clear span areas are available at ground level. As a result, the ground level can be more efficiently utilized—for parking, promenades and playgrounds. Also, construction within air-rights over existing facilities is made more simple.

Complete architectural units can be placed between trusses, and by varying truss spacing the number of unit sizes within the spacing can be varied.

For example, in apartment house construction, one, two or three bedroom units can be arranged on a single floor by varying truss and column spacings. And the Staggered Truss system is not only applicable to the basic rectangular configuration: it can also be applied to curvilinear or circular building, or to combinations of offset rectangles.

Trusses can be constructed with any practical distance between chords, so any floor-to-floor height can be met—which might present difficulties with conventional framing methods.

WHY IS STAGGERED TRUSS ECONOMICAL?

To start with, foundations are only needed for the exterior column lines. This means savings in excavation, concrete costs, and the time spent for foundation construction.

High-strength steel can be used economically, because strength rather than deflection controls the truss design.

With minimum types of truss members, important savings can be made in shop fabrication—which in itself accommodates the maximum use of mass-production. And with fewer pieces to handle in the field, erection time and costs can be cut.

All this helps make Staggered Truss more economical than other systems. For example, in a typical twenty story apartment building, we might expect that the steel requirement for a staggered truss frame is only about 60% of

that required in a conventional framed structure. A possible saving of up to 40%!

Naturally, shorter erection time results in faster occupancy—and this means lower-cost construction loans and earlier rental income for owners.

THINK ABOUT IT

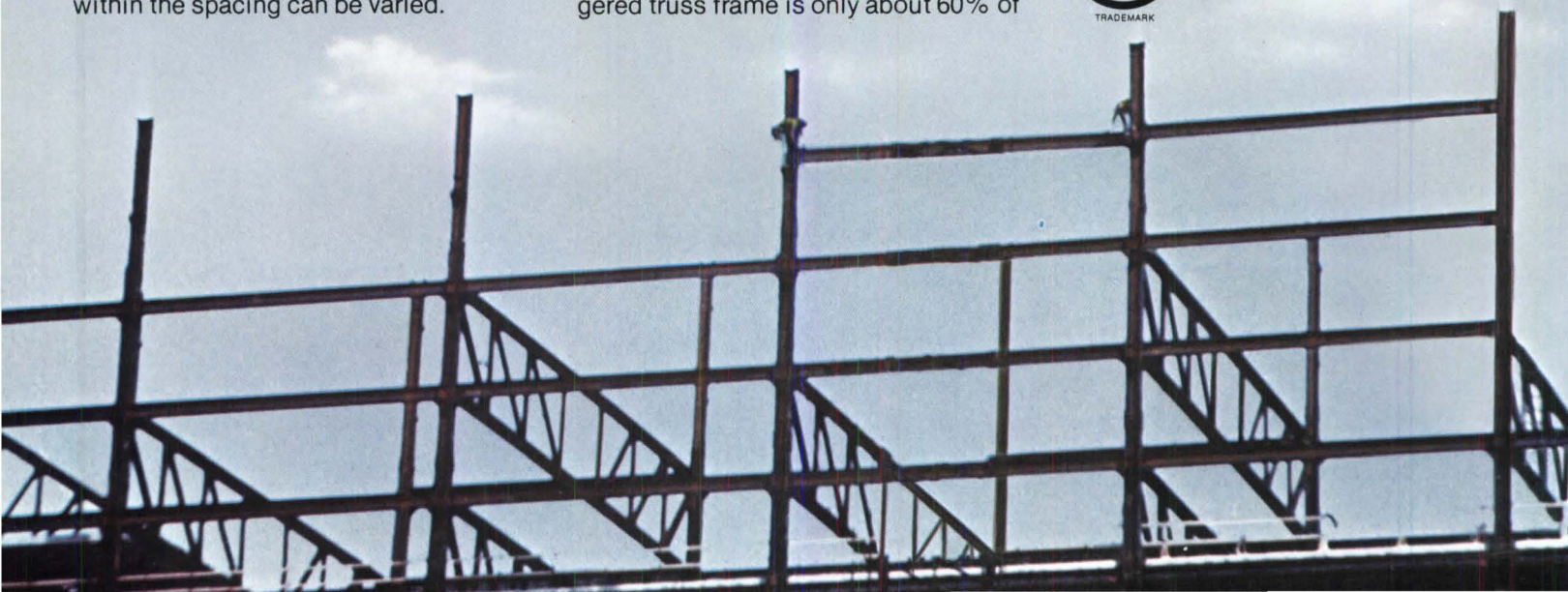
The benefits of the Staggered Truss system are many, but its biggest advantage is the ability to resist lateral loads. So the value of the system increases as the building becomes higher, and this is why it has been so successful for high-rise residential buildings such as apartments, condominiums and hotels.

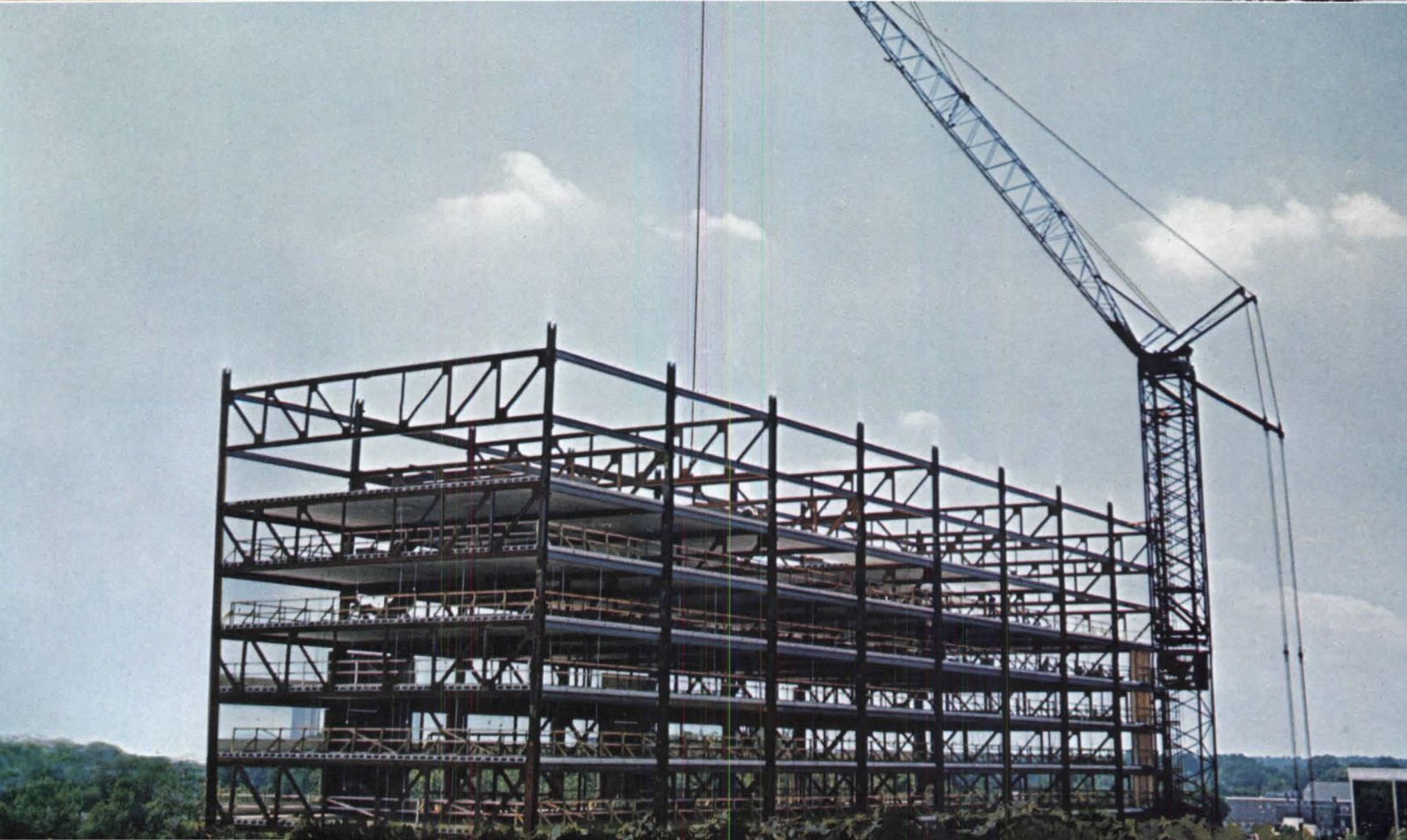
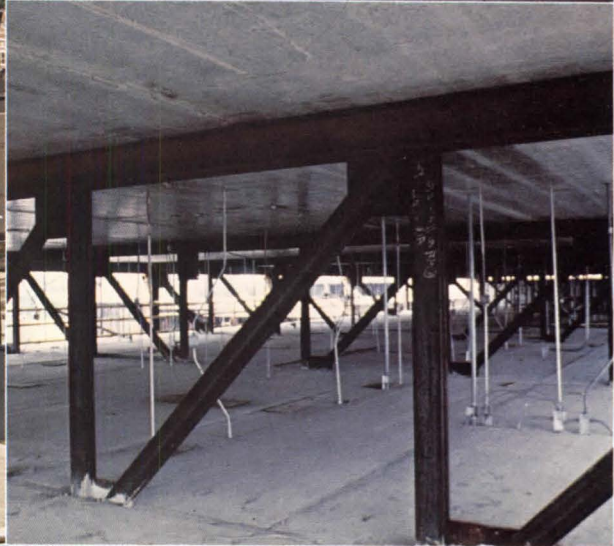
Staggered Truss is worth thinking about. In many recent projects, when evaluated against other systems, it has proved to be the fastest, the most practical and the most economical. You'll be surprised how easy it is to work with.

For more information on the design of Staggered Truss structures, contact a USS Construction Representative through your nearest U.S. Steel Sales Office. Or write for our booklets, "Staggered Truss for High Rise Building" (ADUSS 27-5227-02), and "Staggered Truss Framing System-Design Considerations and Commentaries" (ADUSS 27-7165-01), to U.S. Steel, Box 86, (C776), Pittsburgh, Pa. 15230.



United States Steel





Books from page 70

According to the dust jacket, this account of 1,600 years of architectural history is the "first comprehensive treatment of the subject," but the author has no such illusions. He writes: "A complete history of the architecture of New Mexico is yet to be written and, indeed, such an effort at this point would be premature." All claims aside, this readable outline identifies the skeleton of ideas and the body of materials on which such a definitive work must build.

In fact, the book is an expansion of three lectures, given in 1973 at Columbia University, which dealt with the morphological evolution of American vernacular architecture. It begins rather unevenly with a chapter which tends to summarize and repeat the balance of the book. The following chapter, however, on "Architecture of the Indian Epochs," is the least satisfactory. Of course, it is accurate and selective. Bunting's description of the modular esthetic of pueblos is poetic; his time-lapse sequence commentary on the evolution of the Zuni pueblos begs for an even more thorough exposition. But enthusiasm and confidence are sometimes missing. Indeed, it is with this precise cultural apogee that the Southwest made its most substantial architectural contributions.

In particular, such prehistoric pueblo constructions as Pueblo Bonito (919-1080 A.D.) in Chaco Canyon are impressive, not only as megastructured communities, but as highly refined forms executed in exceptional dry masonry. One disappointing omission from the text is any reference to the energy studies made of Pueblo Bonito by Ralph Knowles and published in *Energy and Form* (MIT Press, 1974). Knowles not only verified the astronomical orientations of the structure to solstice sunrises, but he also documented how seasonal solar positions were both dramatized by the community's form and thermally captured to naturally modify the energy ecology.

The proof of the consciousness of these design consequences is revealed by comparing the performance of successive building stages. The architectural implications of Pueblo Bonito as a kind of regional solar Stonehenge is barely hinted at by Bunting. Indeed, the solar orientation of Southwest pueblos is an incredibly rich but ill-appreciated field. Archeological and ethnographic references for Southwestern pueblos number from several dozen to several hundred sources for a specific settlement. Even today, every pueblo has institutionalized the observation of the sun in the office of the Sunwatcher.

The paucity of mention of the constructions of Pecos is another omission of similar potential. There, a succession of at



least six different stages produced a sequence of pueblos of exceptional composition along a ridge. By 1700, the Spanish church and monastery had been rebuilt to complete the last of these settlement stages that made Pecos the largest and strongest pueblo of its time. Missing from the bibliography is the definitive work on the Pecos: *An Introduction to the Study of Southwestern Archeology with a Preliminary Account of the Excavations at Pecos*, by Alfred Vincent Kidder (published in 1924 and reissued in 1962 by Yale University Press). This classic was the "first detailed synthesis of the archaeology of any part of the New World and, as such, set the pattern for much subsequent work in other areas." Kidder's comprehensive exposition of prehistoric and historic native cultures has only been reinforced and refined by more recent studies.

Bunting's book is not a scholarly treatise; rather, it is an informed and perceptive guide. Aside from the omission of the two important references noted, his bibliography is a model of the description of select sources. It is presented in narrative form with evaluations that make it as lively and informative as any part of the book. Chronologically, as Bunting approaches the 20th century, he gains in confidence and observation. This liveli-

ness is in spite of the fact that more recent buildings have tended to be at least as ephemeral as the stunning, prehistoric remains.

It is revealing that virtually no structure of architectural merit in the region has escaped the ravages of time or the good intentions of remodelers, renovators and restorers. These vagaries are approached skillfully, for the book is indeed a tapestry of fragments and not a series of intact monuments. Thus, the author must weave together a pediment from Albuquerque, a fireplace from Penasco and beam and zapatas from Las Cordobas.

As an historian, Bunting has ventured with some success into the technical and temporal problems of materials and construction. Most impressive is the tactile sense that emerges; obviously Bunting enjoys physical contact with these fragments. The book is a chronicle of the weathering of soft organic materials, and Bunting communicates with great humility the aging process of building materials fragile to a severe climate of geography and man.

Such architecture, like its setting, is neither lush nor lavish. Its presentation in book form is direct and attractive. At first glance, the scattered composite of illustrations appears spotty and inconsistent—historic photographs from 19th century Smithsonian Institution reports are juxtaposed with poor tracings from other books and drawings in several styles and media. These unhomogenous sources, however, underline the diversity of origins that enrich the architecture of an otherwise apparently poor region.

Unfortunately, the book needs editing and proofreading. There are modest errors and sometimes a lack of precision in use of language. And somehow the layout artist managed to mount a ceiling photograph upside down. Scaled, comparative photographs of masonry are unevenly reduced, thus effectively destroying the comparison. Site plans lack orientation, and illustrations are not always located close to their descriptions. There are no location maps to show either topological or geographical relationships, and there are no graphs or charts.

Bunting's material is dominated by understanding and affection. Continuity and change seem endemic conditions of the conscious environments of men and nature everywhere, and the book is a microcosm of these conditions brought into a particular focus by a harsh and arid land. Modest building materials have been enriched by a diversity of human resources. Bunting has contributed to the appreciation of these qualities, not by cataloging monuments, but by narrating buildings as a succession of sensitive and responsive process. *Jeffrey Cook, AIA*

Books continued on page 82

How could a building as beautiful as this come in under budget?



One of the reasons is brick.

Brick contributed greatly to both the beauty and the economical construction of the Social Security Administration's West Programs Center in Richmond, California.

Architects William L. Perreira Associates faced the problem of designing a structure that would meet the demands of a huge and growing government program staff, yet still be human and approachable.

The building provides over half a million square feet of office space, with the capacity to expand vertically to nearly 900,000 square feet as the needs of the Social Security Administration grow.

The use of modular brick panels cut construction time and costs significantly. The five-by-thirteen foot panels were assembled off-site, and the building's external shell went up in less time than scheduled.

By using two different faces on the brick — one a smooth, wire-cut face and the other a rougher, textured surface — in alternating panels and bands, the architects enhanced the attractiveness and ornamental quality of the brick walls.

When they were done, the architects found they had a building that was functional, attractive, human, under the budget, and one month ahead of schedule.

Now *that's* beautiful.



**Brick Institute of
America.**

1750 Old Meadow Road/McLean, Virginia 22101

An aerial photograph of a large, complex copper plumbing system laid out on a green lawn. The system consists of numerous large-diameter copper pipes, elbows, and tees, with several large circular openings. Two construction workers in red jackets and hard hats stand on the lawn in the middle ground to provide a sense of scale. The background is a dense, green lawn.

Copper Sovent plumbing. Replacing costlier two-stack drainage systems in one new building after another.

Copper Sovent combines separate waste and vent stacks into one, saving money and space.



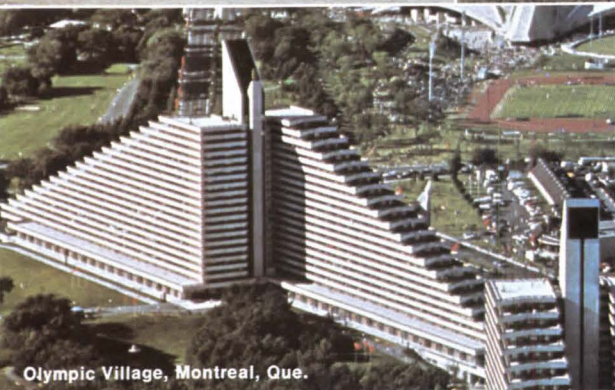
Hospital, Oklahoma City, OK



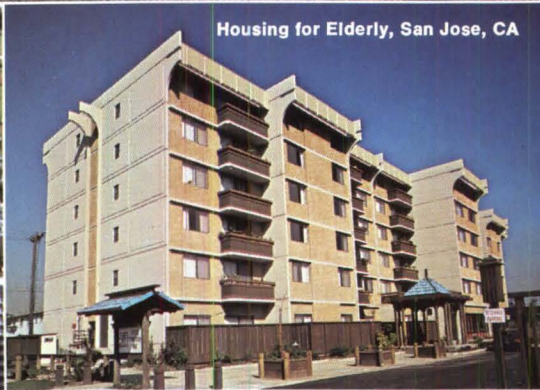
Apartments, Arapaho, CO



Apartments, Caracas, Ven.



Olympic Village, Montreal, Que.



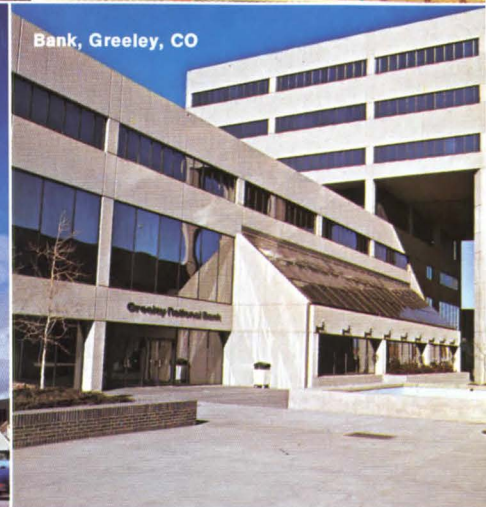
Housing for Elderly, San Jose, CA



Office building, Houston, TX



Hotel, Ft. Lauderdale, FL



Bank, Greeley, CO



Office building, Beverly Hills, CA



Hotel, Sioux City, IA

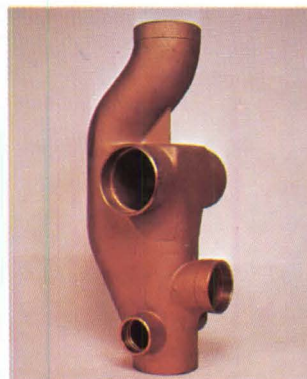


Hotel, Phoenix, AZ

Copper Sovent drainage systems are cutting costs in hundreds of high- and low-rise buildings by replacing the usual two-stack drainage-waste-vent system with one self-venting column. That cuts material requirements by almost half and installation time by nearly a third. And that means direct savings.

Copper Sovent systems take up less space in walls, leaving more income-producing floor space. There is more design flexibility for the architect. And lightweight copper Sovent is approved by major building codes. Right now over 35,000 dwelling units and 23 office buildings are served by copper Sovent systems and many more are in the planning stages.

And the future is bright for tomorrow's supply of copper to meet the needs of the building construction industry. Copper reserves are plentiful in the U.S.A. Natural domestic abundance plus recycling make the nation essentially self-sufficient in copper.



For detailed information on design and installation of copper Sovent systems and copper supply data, write to:
Copper Development Association Inc.,
405 Lexington Avenue,
New York, N.Y. 10017.

The aerator, heart of the copper Sovent system.

Count on Copper

Circle 61 on information card

Continued from page 78

Greene and Greene: Architecture as a Fine Art. Randell L. Makinson. Salt Lake City: Peregrine Smith, Inc., 1977. 284 pp. \$24.95.

Charles Sumner Greene (1868-1954) and Henry Mather Greene (1870-1957), usually referred to as Greene and Greene, have always been difficult to place in architectural history. They have been called California contemporaries of Frank Lloyd Wright, part of a group of important but neglected West Coast architects and, in this book, practitioners within the arts and crafts movement.

Greene and Greene, of course, are most noted for their remarkable wood detailing, especially in their large bungalows and the asymmetrical fragmentation of the profiles of their buildings which tempts one to compare the brothers Greene to Wright. But an examination of their floor plans does not justify a comparison with Wright, and one is left wondering where to fit the Greenses. By whom were they influenced, who did they influence and what is their place in that progression of styles that we understand to be architectural history?

The point is, of course (and it is stated by Reyner Banham in his introduction to this book), that Greene and Greene and their buildings are not to be understood by placing them in history, but rather by regarding them for themselves. The importance of the buildings lies not in influences, but rather in the remarkable love of material and attention to detail which characterizes their construction in wood. The buildings rank outside history and become places in which reside the spirit of a place and the spirit of a material.

Thus, the houses of the Greenses become as timeless as wood itself and, as Banham points out, have as much in common with the northern European wooden architecture of Germany and Scandinavia as with that of Japan, the Greenses often having been placed in this tradition. I suspect that the fact that the Greenses were educated at the Massachusetts Institute of Technology and did not attend the Ecole des Beaux Arts, as did many of their contemporaries, is in part responsible for their success in developing an architecture which stands outside the European tradition.

The reader becomes aware of the Greenses as people through Makinson's book, and Charles Greene is particularly interesting in his ambivalence about being an architect. At the height of his success and during the construction of the firm's great houses, he left to spend time in England. Shortly after returning to Pasadena, where the Greenses had established their firm, Charles left again for Carmel, Calif. There he could escape the worsening air of southern California and the commercialism of architectural practice in an artists' colony where he found peo-

ple who shared his interests in Buddhism and with whom he could form a group to study the works of the mystic Gurdjieff.

Architecture springs from the deepest of sources, and the greatest architects, including Sullivan, Wright and Kahn, have expressed their spiritual concerns very directly. It is interesting to see that Charles Greene had similar spiritual interests which underlie his contributions to the remarkable work of the firm of Greene and Greene.

Until now, the standard source on Greene and Greene has been Esther McCoy's *Five California Architects* which deals with Bernard Maybeck, Irving Gill, R. M. Schindler and the Greenses. The chapter on the Greenses in McCoy's book was written by Makinson, the author of the book under review. Now the information is expanded and beautifully presented, accompanied by photographs by Marvin Rand. This handsome volume is the first of two; the second is to deal with Greene and Greene's furniture, designed for those great houses over which they exercised total design control.

Makinson's presentation provides very little interpretation and does not attempt to place the work in context (except for references to influences from the arts and crafts movement) either in terms of what else was happening in California or in architecture elsewhere. However, the interpretation is not missed—some is provided in Banham's introduction—and, as the book demonstrates, Greene and Greene stand outside history. *John Lobell, Associate Professor of Architecture, Pratt Institute*



Bramante. Arnaldo Bruschi. New York: Thames & Hudson, 1977. 208 pp. \$22.50.

Peter Murray in the foreword to this book says that the High Renaissance was more dominated by Bramante than by Raphael and Michelangelo and that to understand its nature, we must first comprehend Bramante's intentions and ideals. It is strange, he says, that there is so little literature on Bramante of whom Palladio

said that he was "the first to bring back to the light of day the good and beautiful architecture that had been hidden since the time of the ancients."

The "deplorable situation" about the lack of literature about Bramante, says Murray, was changed in 1969 when Arnaldo Bruschi published in Rome his 1,100-page *Bramante architetto*, probably the largest book ever issued on a single architect. Now Bruschi has provided the English-speaking world with this shorter book, which incorporates even more recent research.

The book traces Bramante's development from his early life in Urbino to his work in Lombardy, where for the most part he "worked within the stream of Italian architectural development." It was in Rome, however, that his career reached its zenith and that he changed the course of architecture. In 1502, he designed the first monument of the High Renaissance—the circular Tempietto of St. Peter in Montorio. He went on to be commissioned by Pope Julius II, in 1508, to draw plans for the reconstruction of St. Peter's, although only a part of his plan was realized.

It was Bramante, writes Bruschi, "who, after Brunelleschi, set Renaissance architecture on a new path, a path that was no longer regional, or even national, but European, and which it followed until at least the 19th century."

Waiting for the 5:05, Terminal, Station and Depot in America. Compiled by Lawrence Grow. Introduction by Clay Lancaster. New York: Main Street/Universe Books, 1977. 128 pp. \$12.50 hardbound; \$6.95, paperback.

This is largely a pictorial presentation of the history of the American railroad station, based largely on a Historic American Buildings Survey show, currently being circulated around the country. The material is generally chronological, with emphasis placed on the various styles in which stations were built. Separate chapters on Henry H. Richardson and Frank Furness indicate the important role that these architects had as designers of railroad stations. Two chapters deal with the railroad hotel and restaurant and the station as office building. Adaptive use is touched on briefly.

Outside of Lancaster's introduction, the text is minor. With a selection of examples of station architecture, ranging from the humble shed through the modest small city station to the big city terminal, this book provides a good cross section of such structures, although some well-known ones are omitted. It's a well-done paperback on a current subject of interest. *George E. Pettengill, Hon. AIA, Institute Librarian Emeritus*

Books continued on page 102

High flexibility

Pragmatic. Asthetic.



From hard use lab assignments to easy going office jobs — the flexibility of Cramer Hi-Model is unlimited.

Cramer offers the options on a complete line of Hi-Models. Choose footings, posture backs, casters. All Hi-Models are available in a vast selection of decorator fabrics. Frames and legs in mirror, or brushed chrome. We offer Auto-Lift for immediate height changes — Posi-Lok for less frequent height adjustments.

Whatever the job type or individual need — Cramer is high in design and practicality.

CRAMER

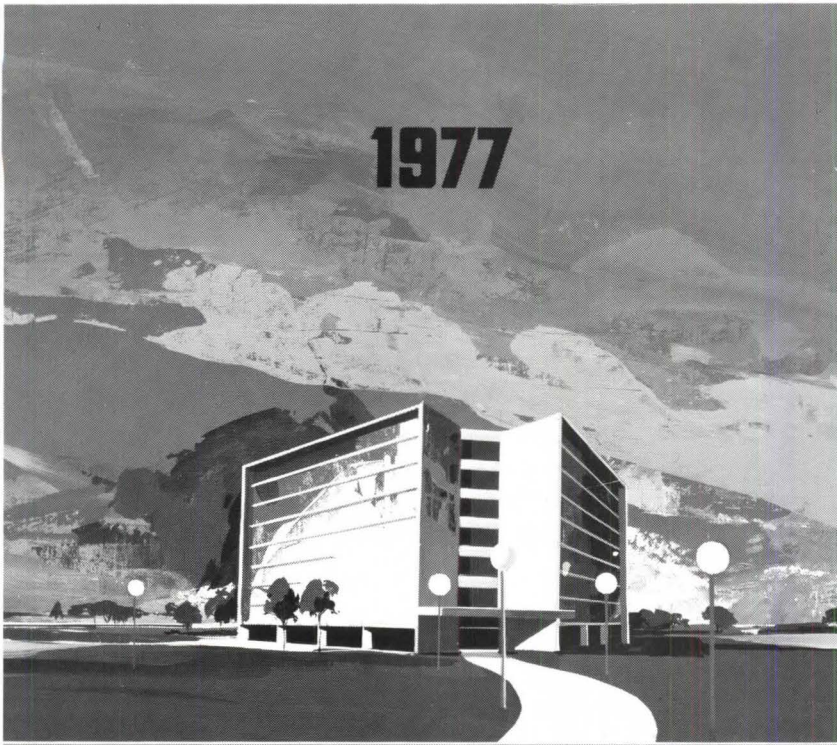
 CRAMER INDUSTRIES INC.

625 Adams Street, Kansas City, KS 66105
Phone: 913/621-6700
Toll Free: 800/255-4096

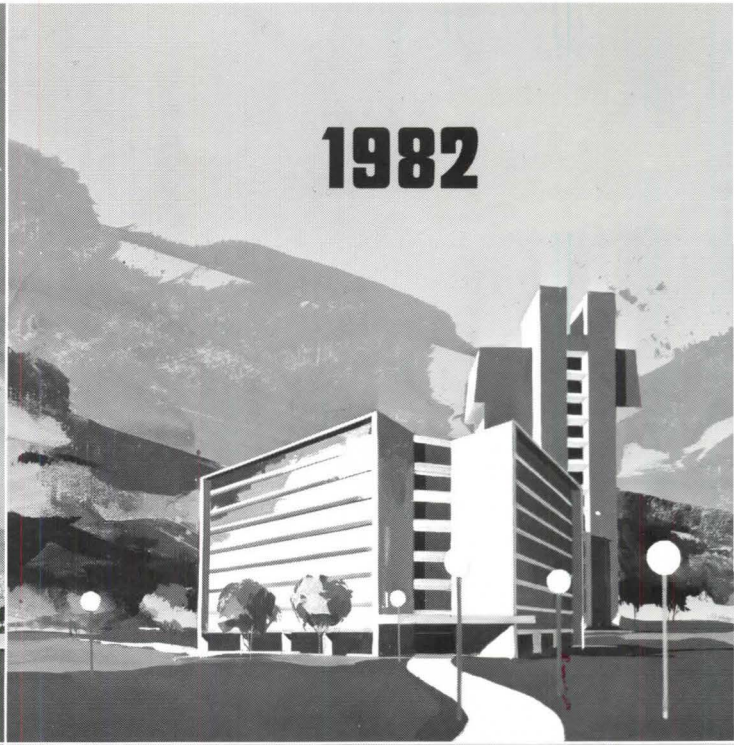
Showrooms in spaces 982 to 985 Chicago Merchandise Mart
Kansas City, Los Angeles

Circle 1 on information card

1977



1982



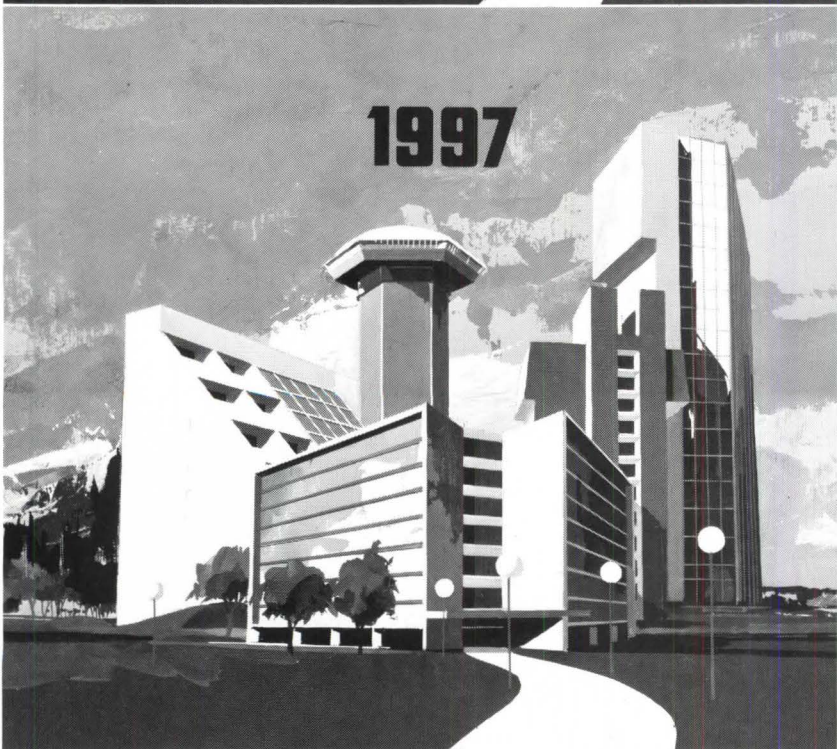
1987



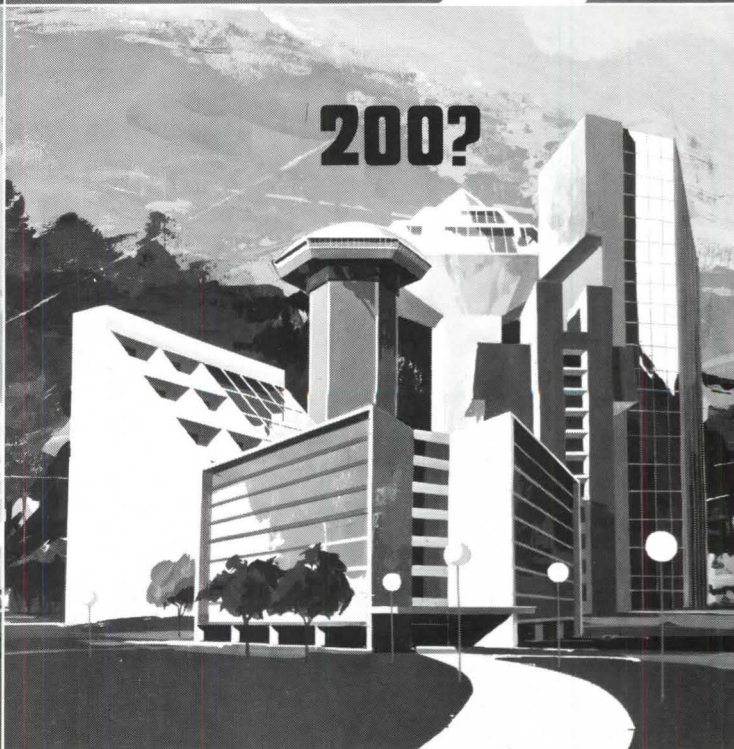
1992



1997



200?



STYROFOAM^{*} BRAND INSULATION SAVES ENERGY COSTS YEAR AFTER YEAR AFTER YEAR.

STYROFOAM brand insulation helps cut heating costs—and air conditioning costs. And it will do its job just about as efficiently and effectively in the 21st century as it does the day it's installed.

One key to the long-lasting effectiveness of STYROFOAM brand insulation is its moisture resistance.

No other plastic foam insulation resists moisture as well as STYROFOAM brand insulation.

And that's important because moisture is the enemy of insulation. When insulation becomes wet it conducts heat away, rather than retaining it.

STYROFOAM brand insulation is also sturdier than most

other plastic foam boards, so it handles easier on the job without breaking. And it acts as its own vapor barrier, eliminating the need for separate vapor barriers.

STYROFOAM brand insulation is accepted by most major national building codes. Inspectors know it and can approve it without delay.

You can install STYROFOAM brand insulation easily in virtually any type of commercial structure, as shown in the illustrations below.

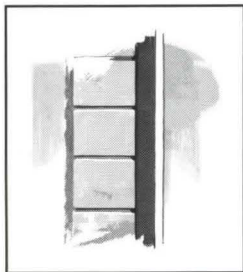
And because it is virtually impervious to moisture it can be placed outside the foundation, around the perimeter of the building, to cut heat loss through the basement walls.

For more information on how STYROFOAM brand insulation can help you, contact your local salesman or write: The Dow Chemical Company, STYROFOAM brand insulation, Midland, Michigan 48640.

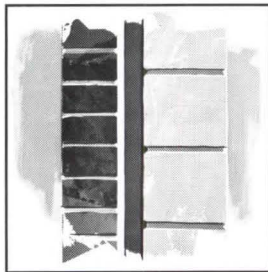
STYROFOAM^{*}
 BRAND INSULATION



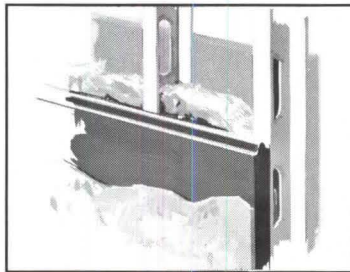
*Trademark of The Dow Chemical Company



Apply to the inside of masonry walls with STYROFOAM brand mastic No. 11.



Insert between interior and exterior walls in cavity type construction.

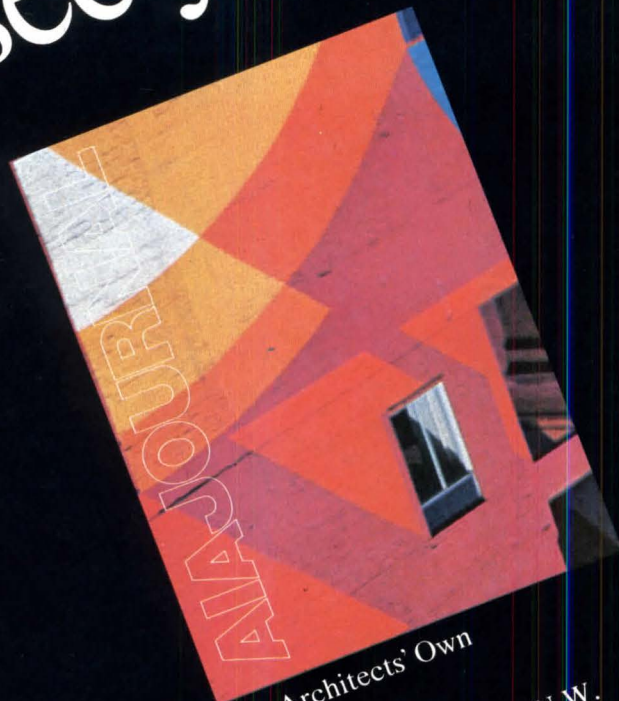


Apply to outside of studs just as you would apply conventional sheathing.

WARNING: STYROFOAM brand insulation is combustible and should be properly installed. For commercial construction a minimum of 1/2" gypsum board or equivalent thermal barrier interior finish should be used. See Dow literature available from your supplier or from Dow.

“The Architect in charge

will see you now.”



The Architects' Own

AIA JOURNAL
1735 New York Avenue N.W.
Washington, D.C. 20006
202-785-7270

Something a little extra comes with Danby Marble. Magnificence.

Minoru Yamasaki and Associates, Architects

The Colorado National Bank building. On the inside, Denver's most luxurious offices. On the outside, Imperial Danby by Vermont Marble. Whitest of the white marbles. The hallmark of exterior luxury. Vermont Marble Company, Proctor, Vermont.

**Magnificence
from
Vermont.**



Circle 64 on information card

DANBY



compare ultrawall[®]

Movable Partitions

move-in costs with fixed partitions.

Vinyl-covered ULTRAWALL partitions frequently start out looking like they cost more than standard fixed partitions. But when moving-in time comes, you'll find material and labor savings have made ULTRAWALL costs very attractive indeed! And you move in much sooner in the bargain!

So if you are comparing ULTRAWALL with fixed partition prices, be sure to add in the cost of laborious measure-and-cut fitting of carpet and ceiling into many cubicles around fixed partitions. Then consider the simple way ULTRAWALL goes up: carpeting, ceiling, lighting and other items are installed an entire floor-at-a-time! Core and perimeter walls are finished in one overall operation before partitions are installed. And doors, reversible

frames, base, finish trim and even glazing can be handled easily, efficiently by the same partition crew.

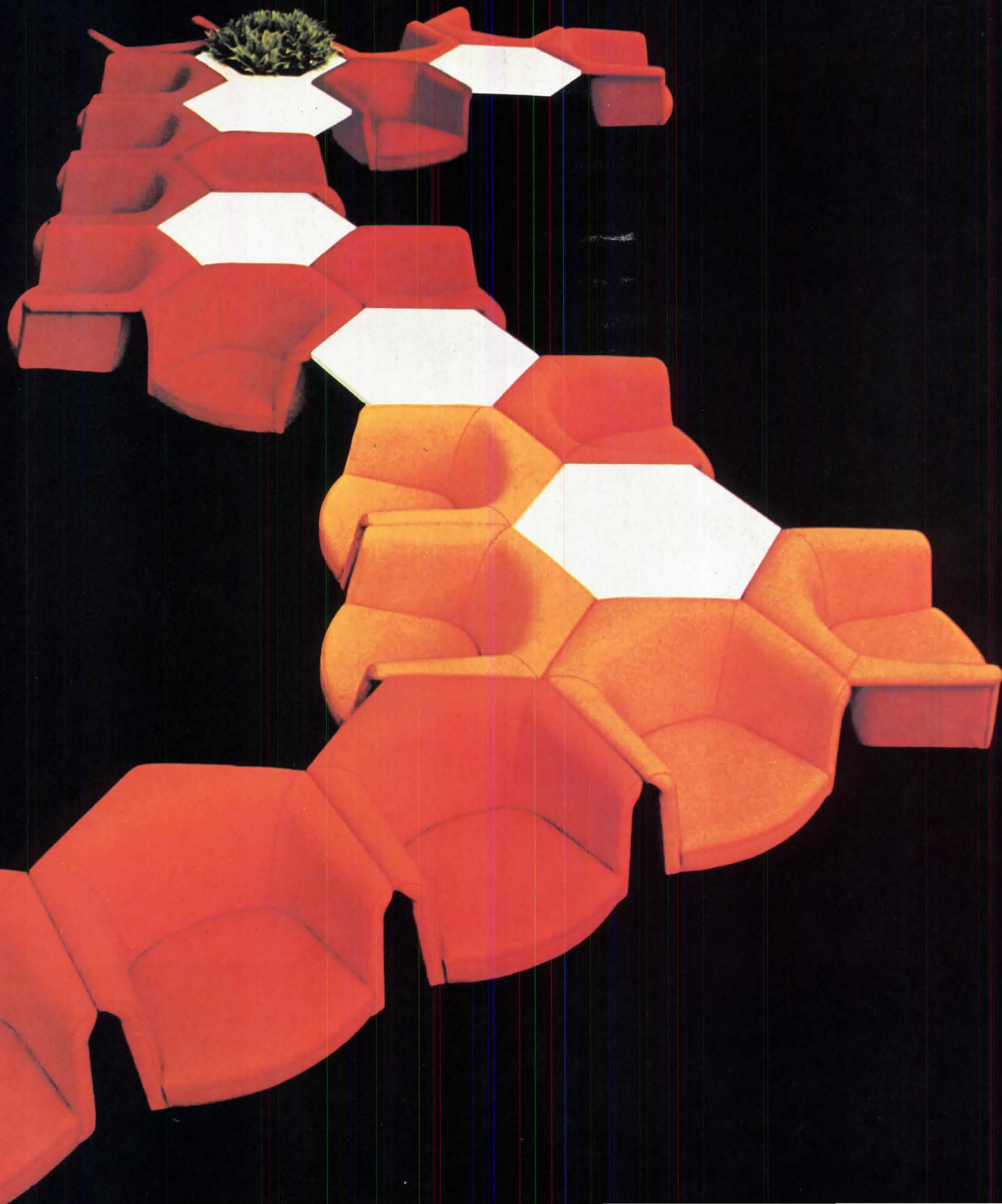
But that's just the beginning of savings. Every time you re-allocate space, ULTRAWALL partitions pay for themselves all over again. Just four basic components speed dismantling and re-assembly without the dirt, din and delays of breaking out fixed partitions. Other benefits include: 1-hr. fire rating, 40 to 48 STC rating, and possible qualification for investment tax credit and accelerated depreciation advantages.

- Call your U.S.G. Representative or write to us at 101 S. Wacker Dr., Chicago, Ill. 60606, Dept AIAJ 107

UNITED STATES GYPSUM //
BUILDING AMERICA

HOMAGE TO THE HEXAGON! #620 SHOWS A "SIXTH SENSE" FOR THE PERFECT MARRIAGE OF DESIGN AND FUNCTION. SEATING, TABLES AND PLANTERS SUPPORT EACH OTHER. THEY'RE WEDDED BY STEEL RAILS TO FORM LIMITLESS VARIATIONS OF HONEYCOMBS... WITH SEATING IN FABRIC, LEATHER OR VINYL. TRADE INVITED TO REQUEST BROCHURE ON LETTERHEAD. TURNER LTD., 305 EAST 63RD STREET, NEW YORK, NEW YORK 10021. TELEPHONE (212) 758-4744. DESIGNED BY ARTIFORT OF HOLLAND.

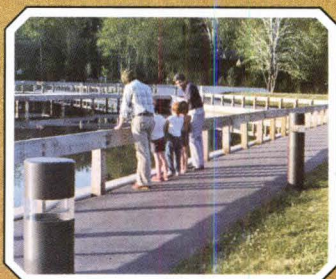
TURNER LTD.



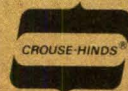
The basic forms of light.

Crouse-Hinds Bollards.

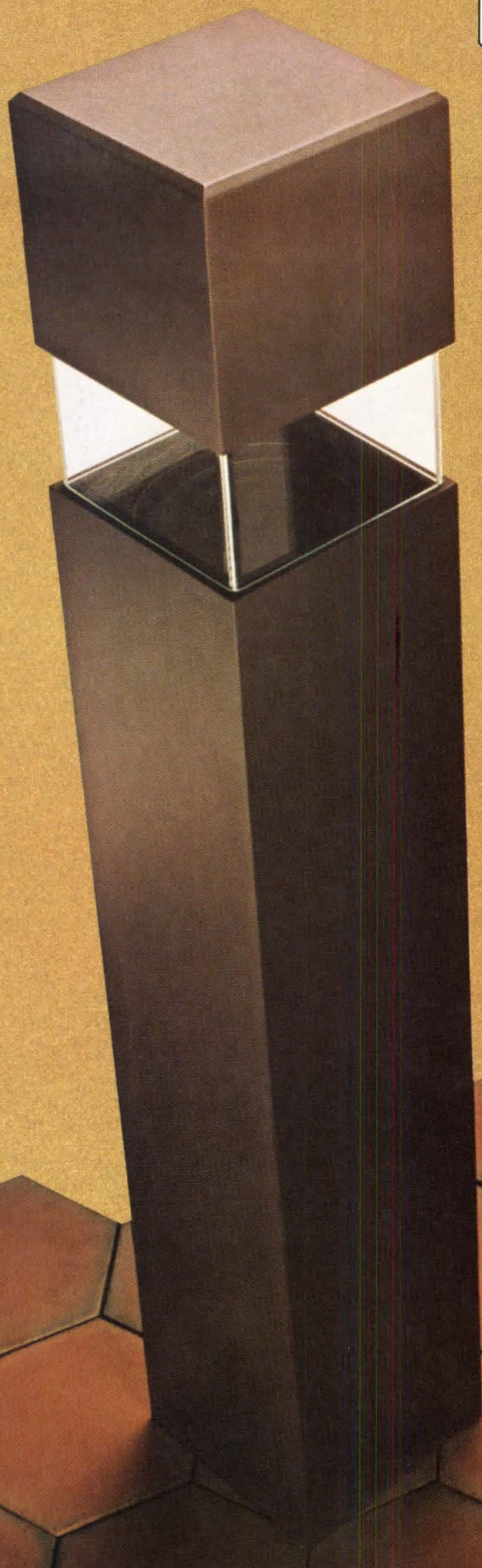
Rugged, strong, and comfortable to view. Superbly constructed with seamless extruded aluminum housings. No exposed set-screws, fasteners, or other hardware to clutter the design. Simple. Clean. Vandal resistant. Basic.



Crouse-Hinds Company
Lighting Products Division
Syracuse, New York 13221.



CROUSE-HINDS



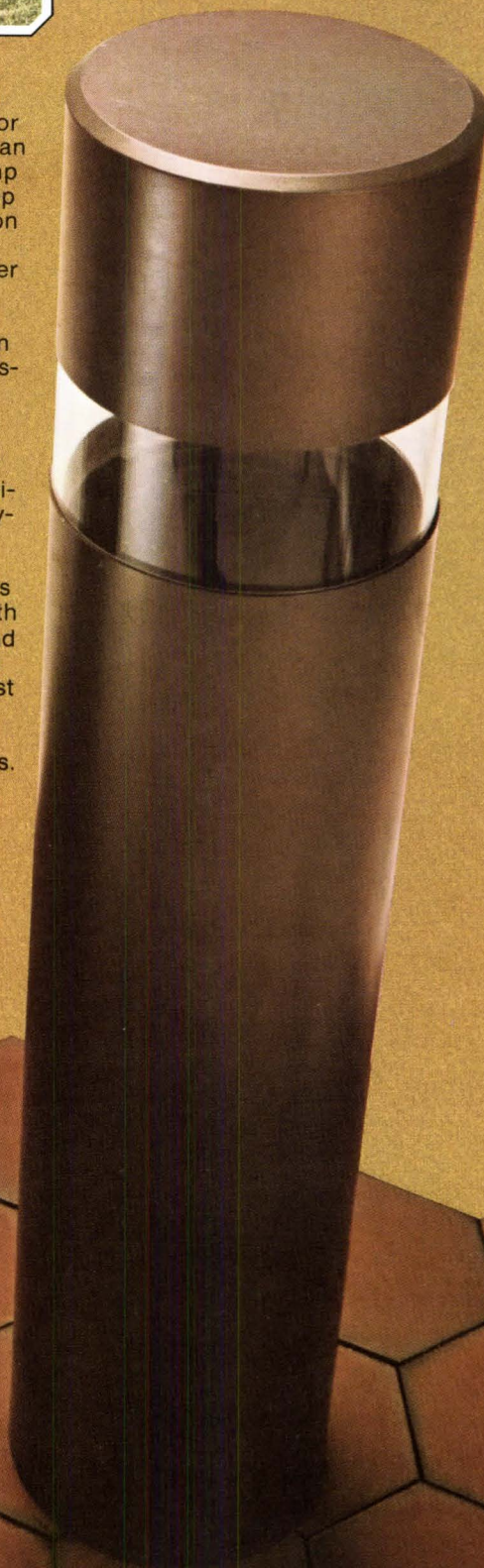
Bollards and people go together. Crouse-Hinds Bollards are designed for people. Beveled tops mean no sharp edges. The lamp is below the lens to keep the temperature down on the top housing. This makes our Bollards cooler to the touch.

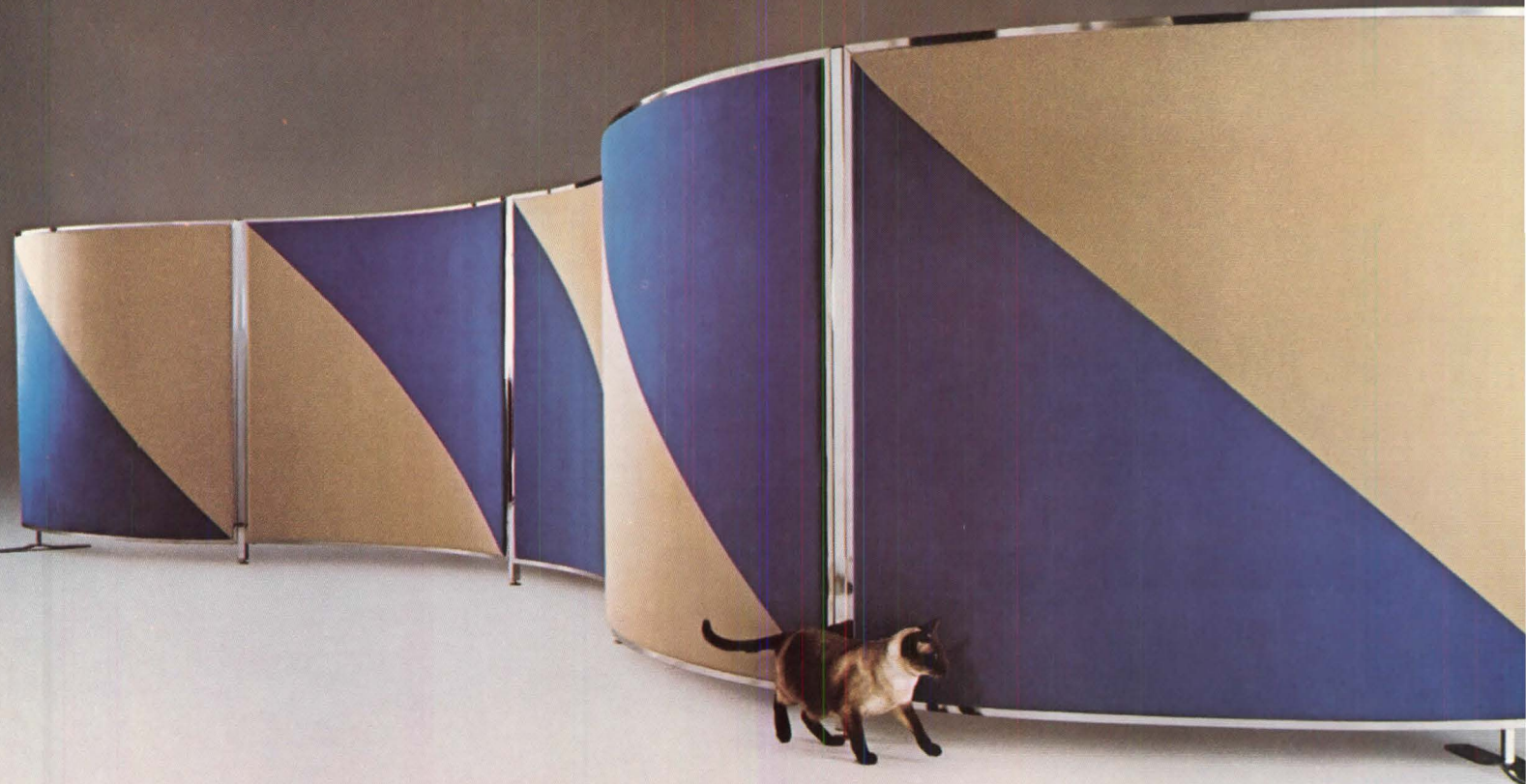
And our unique "see-through" look is easy on the eye. The impact-resistant acrylic lens is an integral element of the housing. There are no reflectors, refractors, or other optical devices visible in the lens area. Polycarbonate lenses also available.

Crouse-Hinds Bollards are designed for use with 70 and 100 watt HPS and 100 watt mercury lamps to accent or set off almost any pedestrian area.

Bollards. A good example of basic shapes.

When you think of "basic forms of light," think of Crouse-Hinds. Write for our literature.





It's called PlanScape.®

And it's designed to bring a whole new level of excitement to office landscape. Ten bold patterns, 33 colors in any combination, three trims, 18 straight and curved sizes. Class A fire rating. NRC .90 (that's right —.90). STC 24. Write for more details. Vogel-Peterson, Rte. 83 at Madison St., Elmhurst, IL 60126.



VOGEL PETERSON



Interior and exterior installations of Stark textured tile.

Textured Structural Tile...

the quality look that lasts

Consider the colors and textures now available in structural clay tile from Stark. They offer new design possibilities with the functional benefits found only in load-bearing clay masonry walls.

Energy is conserved ("U" factor for a 10" insulated cavity wall is only 0.072 BTU/hr./sq. ft./ degree F). Wall colors are permanent and non-fading for the life of the building. The ceramic coating simplifies cleaning, provides abrasion and impact resistance . . . just as with structural glazed facing tile.

Zero flame spread, a minimum compressive structural strength of 1,500 PSI, and sound transmission coefficient (STC) rating of 45 are additional benefits.

Investigate the *ultimate* cost and value of a Stark textured structural tile wall system for high abuse and minimum

maintenance areas as well as for pure beauty and endurance inside or out.

For further information, refer to our catalog in SWEET'S 4.4/St, or call TOLL FREE 800-321-0662. In Ohio, call collect (216) 488-1211. **Stark Ceramics, Inc.**, P.O. Box 8880, Canton, OH 44711.



William Lam: A warning about artificial lighting details as possible 'visual noise.'

Continued from page 59

minated areas of ceilings are approximately equal in size and shape to adjacent unlighted areas.

(20) "Avoid the use of very low (i.e., 10 percent or less) transmission glass when the glazed area will be regularly compared with clear or unglazed openings such as open windows or doors. Under these conditions, low-transmission glass will always make the exterior seem gloomy by comparison.

(21) "Avoid materials such as translucent walls and glass blocks, unless they serve a definite decorative purpose—stained glass, for instance. Avoid translucent skylights which take on the informationless character of featureless fluorescent diffusers, destroying potential contact with biologically desirable sunlight and exterior conditions. Use clear skylights of relatively small area for desirable architectural definition and to introduce elements of direct sunlight into interior spaces. If the skylights themselves would appear too small in proportion to the room, use pyramidal skylight wells to increase their apparent size without increasing the solar heat load or the projected area in which the direct sunlight may interfere with activities.

(22) "In the interests of minimizing visual noise, avoid using light-control devices such as louvers in skylights and artificial lighting details if such devices are not really necessary. Such elements, in and of themselves, are of little visual interest, and they should be used only when the same purpose cannot be accomplished through careful integration of the lighting hardware with other architectural elements. Light sources may be effectively baffled using elements such as the edges of ceilings, beams, valences, cabinets, etc. Fixtures can be concealed in bollards, handrails, recessed slots and in the flanges of major structural elements. Under most circumstances, the use of simple, understandable, unobtrusive control devices such as the low brightness 'black cone' in direct lighting fixtures is preferable to the use of louvers of more complex shape, unless the light fixture in its designed context is intended to serve as a true positive focal element, a piece of sculpture in its own right. Since baffles and louvers used to control light distribution are typically very close to the sources themselves, they can very easily become the brightest elements in the visual field, achieving an entirely unwarranted and inappropriate prominence." □

Letters from page 2

cock's *In the Nature of Materials*.

Sergeant's book purports to offer Wright's "Usonian Houses," yet covers but half the promised territory. The Usonian oeuvre began in 1935 (Hoult residence, not built) and ended *two* decades later. The mid-'50s Usonians, ignored by Sergeant, revitalized and extended the concept's grammar; here we have the stone Lovness, the brick Sunday and the concrete textile block "automatic" Pappas residences. Here is the triumph (and demise) of the Usonian automatic: the Tonkens home. Sergeant includes none such.

By never specifically identifying the Usonian opus and its defining characteristics, Sergeant frees himself to discuss whatever he finds interesting: result, a book full of facts not before between hard covers, and many subjects only partially studied and architectural problems not fully solved.

One instance is the question of plan types. Sergeant's choices confuse genus and species. His "raised" is but a variation applicable to basic types, while "hexagonal" is not a plan type, but rather a module from which to generate plans.

Sergeant seems more architect than scholar. Minor errors abound. Two demonstrate the point: (1) identification of a (fine aerial) photo of a home by father Frank Lloyd Wright for (concrete block specialist) son David as by (architect) son John and (2) the misspelling of the name of Wright's paramour, Mamah Cheney.

It is the aforementioned practical architectural background that is Sergeant's unique contribution to Wrightian literature. Instead of the usual historical insight, the book is infused with architectural interests, particularly the construction factors that are the root of organic architectural grammar.

I sympathize with Sergeant's desire to state *the* case for organic architecture. It needs stating, and he has courageously broken the ice. Others must now look at Wright in the '50s, or his followers (Karl Kamrath, John Howe, Lloyd Wright, Edgar Tafel, the Taliesin Associated Architects, among the notables). Only then will the problems Sergeant found unsolved, in the area of his study, be resolved, and organic architecture have its full say. *William Allin Storrer, Author of "The Architecture of Frank Lloyd Wright," Columbia, S.C.*

Readers are welcome to comment on any subject pertaining to the architectural profession. As invited in the June issue (p. 29), members and nonmembers may use these pages to discuss and debate any aspect of Institute affairs. *Ed.*

Important Passed Resolutions: The July issue on AIA convention business failed to mention two resolutions that were approved. From the standpoint of our image in the world of architects, they are of extraordinary importance.

One of the resolutions states: "Resolved, that the AIA publicize and encourage attendance and participation by its members at international congresses of architects and that active U.S. participation in their programs be promoted."

Another states: "Resolved, that the AIA board of directors charge the representatives that they appoint to international organizations and assemblies, to promptly bring to the attention of the officers of such organizations and organizers of such assemblies, any attempt to violate the nonpolitical nature of international professional meetings, and to insist that any such politicalization immediately be ruled out of order; and further be it Resolved, that the AIA convey this resolution and the Institute's concern to the international organizations in which it participates."

With these two resolutions approved, it is mandatory, first, to stop communist accusations and to insist that such politicalization immediately be ruled out of order, and, second, that the AIA publicize and encourage attendance and participation by its members at international congresses of architects and that active U.S. participation in their programs be promoted.

I wonder how many architects know that during past conventions of the International Union of Architects (UIA) and of the Panamerican Federation of Associations of Architects the members of communist delegations took delight and satisfaction in accusing the Institute, democracy and capitalism of all kinds of crime against the people.

When members of AIA take time and money to introduce resolutions and afterwards to go to conventions to debate them, the only recompense they expect is that other members be aware of the approval of these resolutions. The only information members now have is through the *F. W. Dodge Construction News*.

The numbers of the two approved resolutions are K-1 and K-2. Resolution K-3, submitted by the Connecticut Society of Architects, was withdrawn to endorse these resolutions that were based on our resolution.

As AIA members have been informed, Louis de Moll, FAIA, past president of the Institute, will be proposed for the presidency of the UIA at the congress in Mexico City in Oct. 1978. He will need all the help he can get from our members and other international organizations.

*Hannibal Flores-Jenkins, AIA
West Hartford, Conn.*

JG/UPS Open Planning and Lighting System



Design: Dave Woods

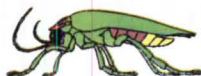
JG/UPS

The fewest parts mean the least visual clutter—no posts, no end caps, no top caps, no metal frames. This coupled with the highest level of performance for task and ambient lighting commercially available. Send for our UPS Brochure, Planning Manual and Illumination Calculator.

Circle 70 on information card

**JG Furniture
Quakertown
Pennsylvania 18951
215 536 7343**

Division of Burlington Industries Inc.



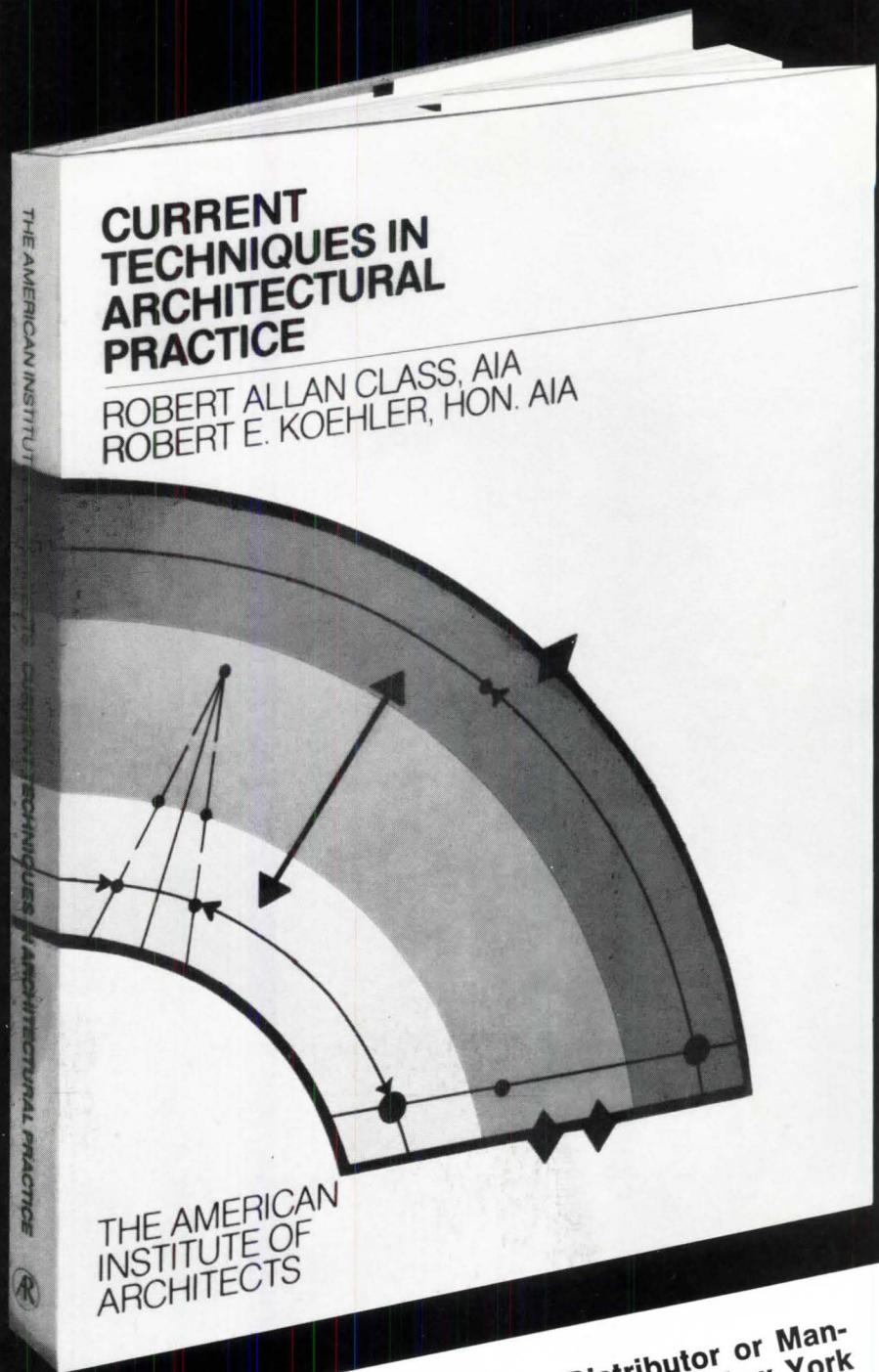
JG

AIA has the book you need . . .

for managing an architectural practice in the '70s **Current Techniques in Architectural Practice**, edited by Robert Allan Class, AIA, and Robert E. Koehler, Hon. AIA, draws upon the considerable professional resources of the AIA to produce *the* critical tool for operating an architectural firm as a soundly run business while providing architectural services efficiently.

The book

- incorporates the latest established advancements in management theory and application
- has individual chapters written by architects and other professionals who are well-known authorities in their respective fields
- covers four general areas of practice management—organization and delivery, business management, project management, and management and production tools
- notes contemporary trends in the practice of architecture and speculates as to how they may evolve in the future
- spotlights the changing role of the architect in creating the built environment;
- provides a bibliography after each chapter to enable you to find whatever more detailed information you need;
- includes an abundance of graphic displays which complement the text
- as a cohesive overview of the practice of architecture, becomes a fundamental and unique reference for all design professionals and their clients



Order now from your Local AIA Distributor or Manager, AIA Publications Marketing, 1735 New York Avenue, NW, Washington, D.C. 20006. Retail price \$25, AIA member price \$20. All orders must be prepaid.

Enclosed find \$ _____.

Please send _____ copy(ies) of **Current Techniques in Architectural Practice (2M701)** to:

NAME _____

FIRM _____

ADDRESS _____

CITY, STATE, ZIP _____

When ordering from Publications Marketing, District of Columbia residents add five percent sales tax. Foreign orders must include an additional 20 percent for shipping.

Before the '76 Olympics, Bruce Jenner had something in common with N. V. Philips, they were both known only to a select audience in the United States. Better known is North American Philips Lighting Corporation, manufacturer of Norelco lighting products.



The Olympic Stadium, Montreal, Canada.

"It took the technology of the world's largest lighting company to help make the '76 Olympics in Montreal a success.

Bruce Jenner
Olympic
Decathlon Champion
World's Greatest Athlete

I know, because I was there!"

N. V. Philips is the world's largest lighting manufacturer. With that distinction also goes an incredible wealth of technology and research. This expertise is available through Norelco to help solve your lighting problems of any nature. Consequently, Norelco not only offers a complete line of the most popular lamps and fixtures for almost any application, but can supply the answers to your lighting problems.

Let Norelco show you how this technology can save energy by improving lighting efficiency.

We hustle harder for you.

Norelco[®]

North American Philips
Lighting Corporation
Bank Street Hightstown, NJ 08520
(609) 448-4000

The RIXSON Combination

**Withstands the
testing of the
most creative
minds:**

**Ultimate door control and
unmatched economy:**

- ★ Q-Series concealed floor-type closer
- ★ M-19 intermediate door pivot
- ★ Checkmate Nos. 1, 8 or 9 heavy duty holder and stop

Like no other hardware can, Rixson's coordinated top-to-bottom control package eliminates damage to door and frame . . . greatly extends closer life . . . minimizes maintenance costs.

Ask the door control specialists:

RIXSON-FIREMARK

ARCHITECTURAL AND
FIRE/LIFE SAFETY PRODUCTS

9100 West Belmont Ave., Franklin Park, Illinois 60131
and Rexdale, Ontario
312/671-5670

A SUBSIDIARY OF
CONRAC
CORPORATION





Now there are four basic exteriors for Type III buildings.

Anyone who's designed or built light commercial structures in the 50,000 square foot range knows about steel curtain walls, concrete and masonry. We'd like to introduce you to something else: Simpson plywood sidings.

Simpson Redwood Plywood offers the natural beauty of redwood at a price that's fully competitive with other light commercial

siding materials. And Simpson Ruf-Sawn 316 gives builders an attractive saw textured resin overlaid surface that takes paint beautifully, and requires virtually no maintenance. Both can be fire retardant treated and successfully restrained or painted. Something that makes the 4-story wood-clad commercial building an economic reality.

That's why architects Ware-Malcomb-Gardner & Associates used Simpson Redwood Plywood in the building you see here. They needed four floors to satisfy the program requirements; and wanted the natural beauty of redwood. Fire treated Simpson redwood plywood was a natural solution.

Either redwood plywood or Ruf-Sawn 316 panels could be the perfect solution for your next light commercial project. We'd like to tell you more about both. Just write Simpson Timber Company, 900 Fourth Avenue, Seattle WA 98164.



Redwood Plywood

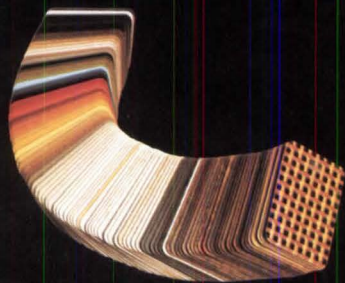
Ruf-Sawn 316

Plywood Sidings
Simpson

Circle 73 on information card



When the need for laminate surfaces...



In the race to develop new design materials as the answer for dwindling natural resources, more and more professionals are turning to high pressure laminate.

Just as our turtle friend reflects the timeless quality of good functional design,



Look for GE on top.

General Electric laminate reflects today's design response for function and beauty.

Our complete line of solids, woodgrains, abstracts and specialties offers the professional a perfect palette for creative interiors. When your laminate needs surface, look for G.E. on top — Naturally!

Contact your local G.E. Textolite Distributor for more information.



Textolite
decorative
laminates

Circle 75 on information card

Books from page 82

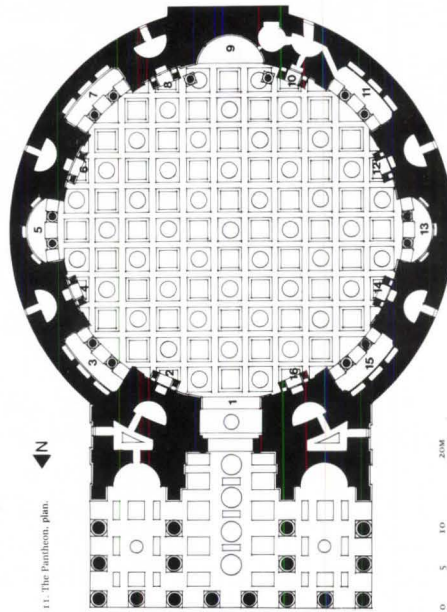
Roman Architecture. John B. Ward-Perkins. New York: Abrams, 1977. 360 pp., 416 plates. \$37.50. (Available from the department of publications marketing to AIA members for \$33.75.)

This book is one of a series being edited by Pier Luigi Nervi under the general title *History of World Architecture*. It embraces a long segment of the past, that of ancient Rome and the Roman Empire, beginning with the original iron age village on the Palatine, ca. 850 B.C., and ending with the transfer of power to Constantinople under Constantine in 324 A.D. Between these dates, the Romans managed to conquer their world and construct extraordinary quantities of architecture. This very interesting book gives us a clear picture of the building of the Roman Empire, historically and architecturally.

In his introduction, Nervi cautions us to look on a building as "a work subject to the limitations imposed by the materials and building techniques at hand." The author, in his introduction, compares the Parthenon and Pantheon (right), concluding that the Pantheon is a far greater monument to creative architecture. Roman architecture, Ward-Perkins tells us, became a distinct entity, developing with the empire, from "materials and

building techniques at hand." But this development was a natural result of Rome's contact with the Mediterranean world.

This is a beautiful and prodigiously illustrated book. Its text illuminates without being excessive. There is a fine synoptic table, which certainly helps refresh the



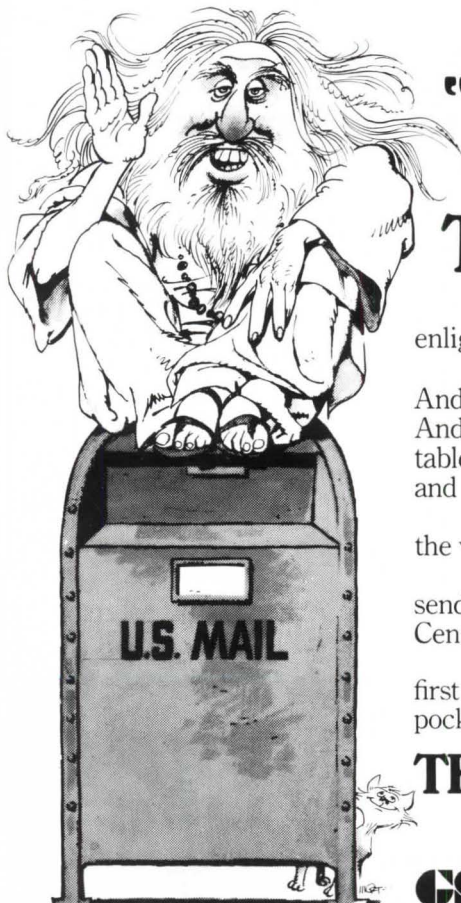
reader on the history of the Roman Empire. But—and it's an important point—there is no map of the ancient world. The Roman world covered the area from Britain in the north to the far reaches of the

Far East and to see it on a map increases the knowledge of it. There are a bibliography, index, list of plates and list of photographic credits.

Early Roman religious architecture developed from the Etruscans who, in turn, had been influenced by Greek colonies in southern Italy and Greeks working in central Italy. Political and social institutions, which were reflected in the architecture, were wholly Roman. Thus the forum developed as a place of meeting, around which public buildings were erected, Roman style, and religious temples were built that show Etruscan-Greek influences. The Roman craftsmen copied or assimilated architectural forms, but used their own methods and materials in construction, resisting a total Greek influence, as had happened in painting and sculpture.

The arch and barrel vault came from the ancient East, descendants of the mud-brick architecture of that area. Roman gateways and monumental arches first used the arch form and it was gradually introduced as a replacement for the Greek rectangular contrast of horizontal and vertical planes in building. The availability of local material governed the type of stone and mortar used. Masonry was covered by stucco in the Republican pe-

continued on page 108



"YOU DON'T HAVE TO CLIMB A MOUNTAIN TO GAIN ENLIGHTENMENT."

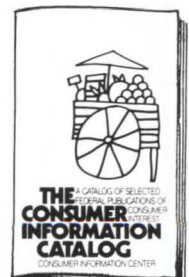
Just send away for the Consumer Information Catalog and a key to enlightenment will appear in your mailbox.

The Consumer Information Catalog is put out by the Federal Government. And it lists over 200 of their booklets that you can send away for. Most are free. And they can help you with things like how to buy a home, how to grow vegetables, how to deal with headaches, simple plumbing repairs and many other everyday and not-so-everyday problems.

So if you wish to learn about the mystic sensibilities of the wayward ancients, put on your climbing gear.

But, if you wish to know about how to fix a leaky faucet, send for the catalog. Write: Consumer Information Center, Dept. A, Pueblo, Colorado 81009.

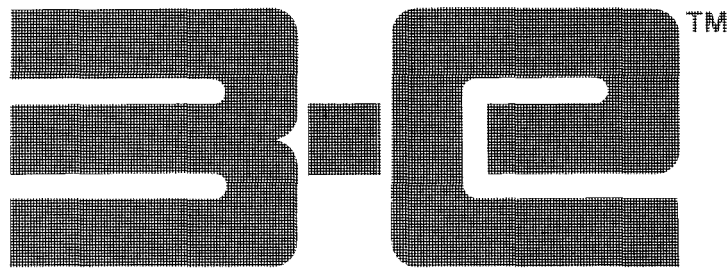
Remember, it's free. Which is only right. After all, the first step towards enlightenment shouldn't enlighten your pocketbook.



THE CONSUMER INFORMATION CATALOG

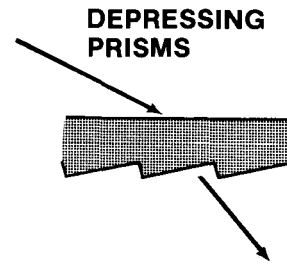
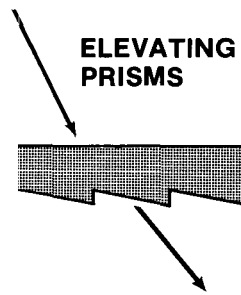
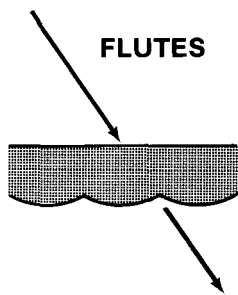
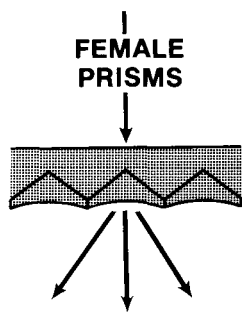
A catalog of over 200 helpful publications.

CSA General Services Administration • Consumer Information Center

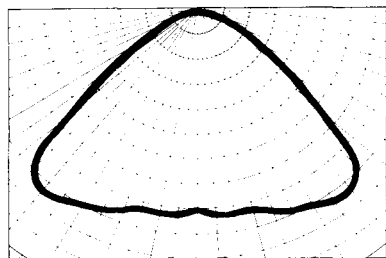
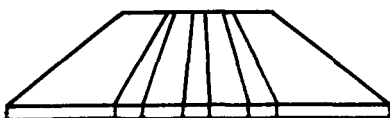


THE BEAUTY IS IN THE EFFICIENCY!

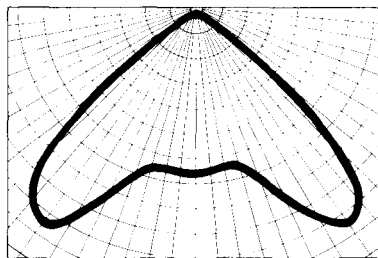
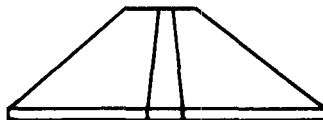
The 3-E fluorescent lighting lens is a scientific blend of optical bands each performing an important function in **reducing energy consumption** while **improving lighting quality**. Female prisms provide the desired degree of downlight. The flutes allow light to pass through the lens relatively undisturbed, but partially diffused for attractive appearance. Light rays traveling at low angles are raised into the preferred direction by elevating prisms. High angle light rays, potential sources of direct glare, are directed to useful angles by depressing prisms.



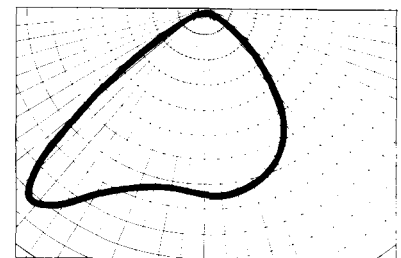
3-E 2x4



3-E 1x4



3-E A



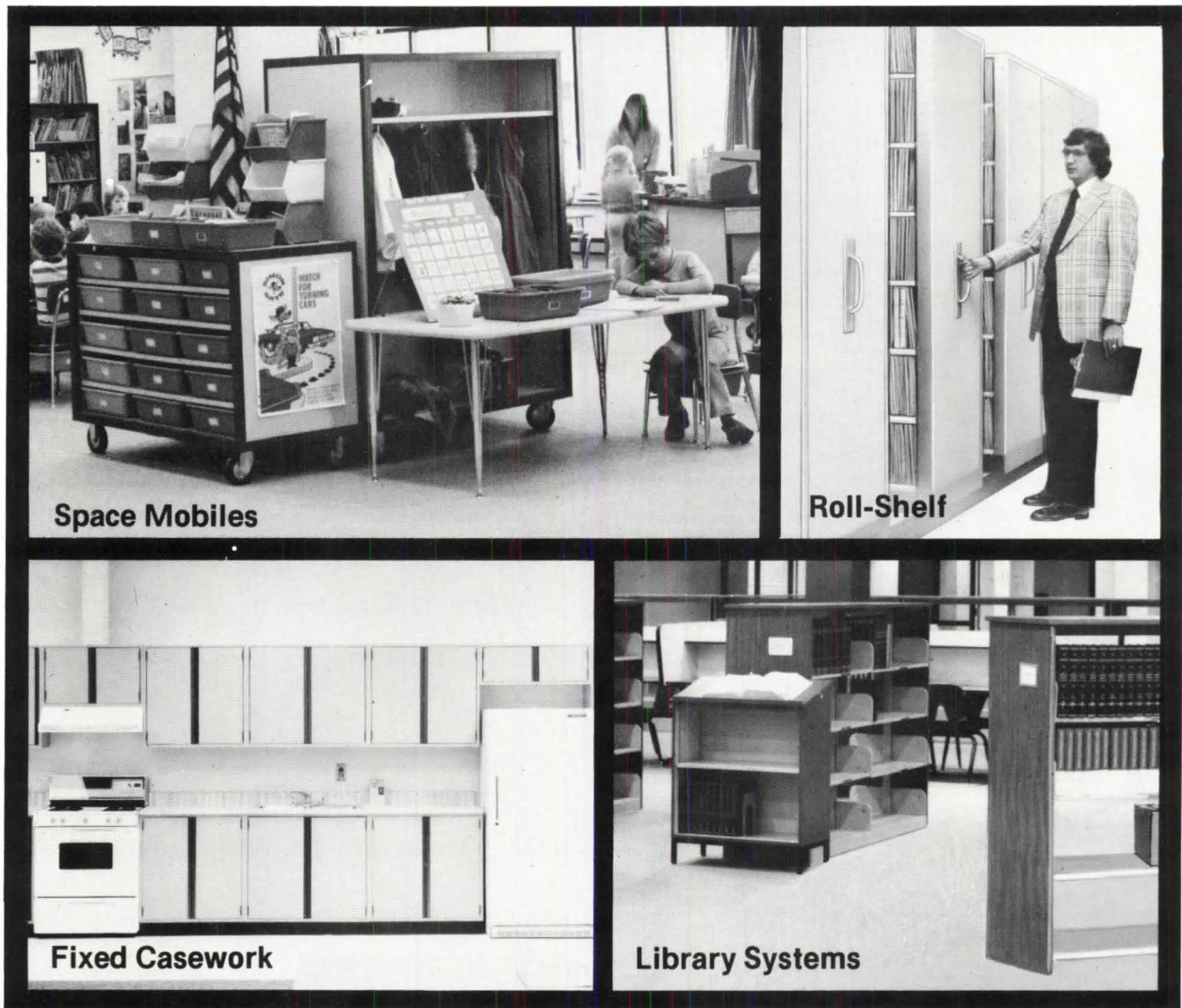
Sophisticated computer techniques were used to generate a unique form of candlepower distribution which provides visual benefits in almost any situation.

Used especially in corridors and small offices and with its widespread bi-symmetrical candlepower distribution, it is a choice lens for coffer systems.

A lens which permits fixture position at the far sides of ceiling. Used in corridors, small rooms and as supplemental lighting for blackboards, etc.

For detailed information write K-Lite Division, KSH Inc., 10091 Manchester Rd., St. Louis, Missouri 63122 or call toll free 800 325-4398.

MEG. The source for more storage space.



Space Mobiles

Roll-Shelf

Fixed Casework

Library Systems

When you want more storage space come to the source—EduSpace by MEG. MEG's space-saving capability includes a wide array of storage systems including: **SPACE-MOBILES**—movable storage units; **LIBRARY SYSTEMS**—an integrated system of bookstacks, furniture and accessories; **ROLL-SHELF**—high density storage shelving on wheels; and **FIXED CASEWORK**—functional, economical cabinetry for improved storage. MEG professional services also provide: design, planning, layout, fabrication, delivery and installation. And MEG offices and manufacturing facilities are located coast-to-coast. Write for free color brochure to: MEG, Dept. A-10, 100 Bidwell **MEG** Road, South Windsor, CT 06074.

MEG Does it All!

TERNE ROOFING FORM, COLOR, FUNCTION

From the standpoint of form,

Terne permits any visual roof area to become an integral part of the total design concept.

From the standpoint of color,

Terne provides the architect with a creative latitude as broad as the spectrum itself.

From the standpoint of function,

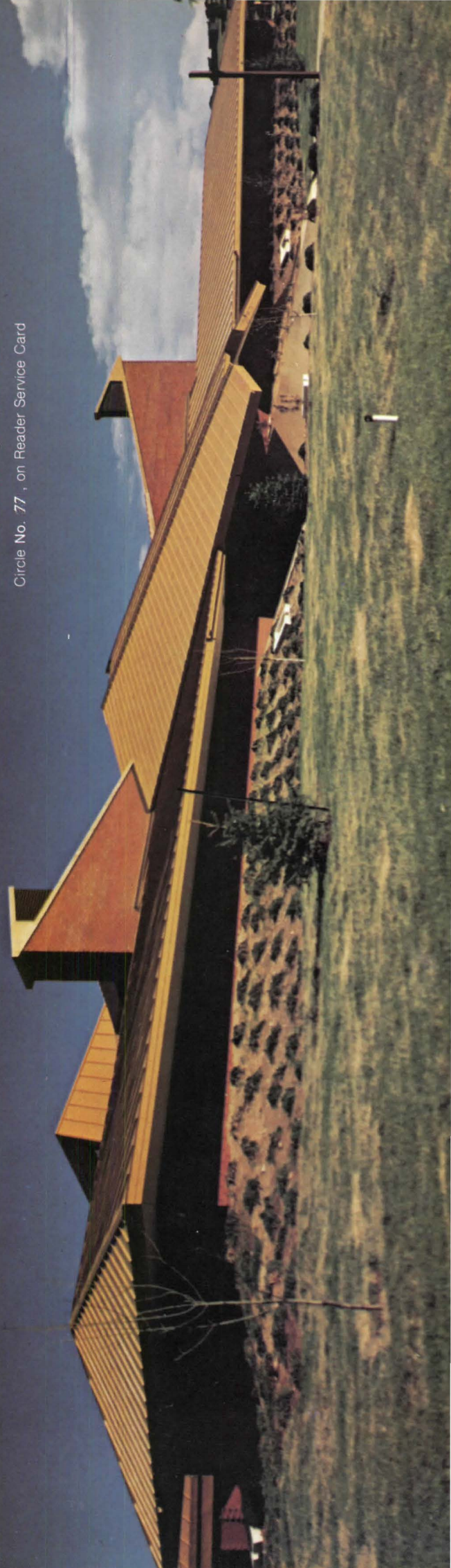
Terne's durability is measured in generations rather than years; it is easily installed, and when measured by the criteria of those to whom ultimate performance is no less significant than initial cost, it is relatively moderate in price.

FOLLANSBEE

FOLLANSBEE STEEL CORPORATION
FOLLANSBEE, WEST VIRGINIA

Boulder Recreation Center, Boulder, Colorado
Architects: Nixon-Brown-Brokaw-Bowen, Boulder, Colorado
Roofers: Reliable Heating, Longmont, Colorado

Circle No. 77 on Reader Service Card



Bruning's PD80 engineering copier lets you breathe a lot easier.

Ah! The sweet smell of fresh air. But the ammonia-free PD80[®] isn't today's most popular convenience copier just because it's ventless and odorless. With instant on-off, it operates on a convenient 115 volts to deliver dry prints of your engineering drawings in seconds.

And here's another breath of fresh air. Our rental plan with an option to buy means no

capital investment, no long-term commitment. At only \$40 a month,* we're sure you'll like it. All rent applies toward purchase for the first three months.

And the PD80 is backed by the respected Bruning tradition of service and support to the engineering profession.

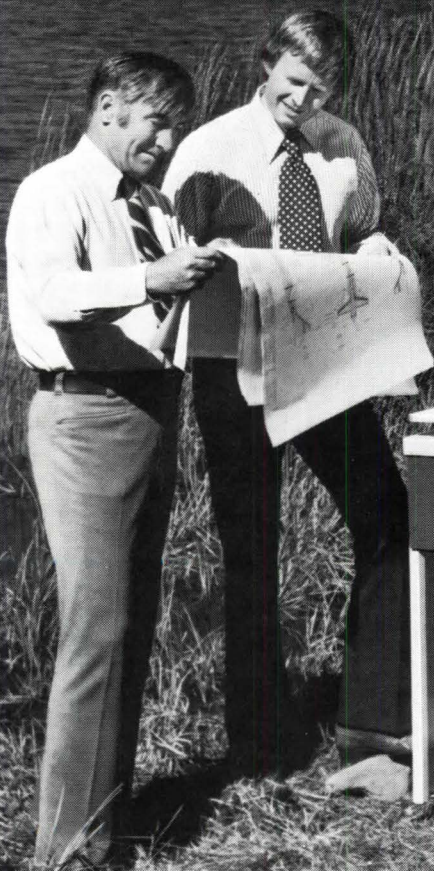
Breathe easier. Call your local Bruning Sales Office. Or write Bruning, 1834 Walden Office Square, Schaumburg, Illinois 60196.



BRUNING

DIVISION OF
ADDRESSOGRAPH MULTIGRAPH

*Rate subject to change.



WHAT'S NEW

ENERGY MANAGEMENT VIEWS FROM THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION Vol. 1 No. 2

CONVERSION TO ELECTRIC HEAT PACING ENGINEER'S* PLANS

In addition to taxes and death, several facts about our society seem fairly certain. About 76 percent of U.S. energy needs presently are supplied by oil and gas. U.S. production of these fossil fuels has peaked and world production probably will peak within 20 years. With the possible end of these fuels in sight, it seems logical that we should now be shifting our energy dependency to more abundant fuels such as coal and nuclear power. The best way of using these fuels, safety and environmental concerns considered, is through generation of electricity.

Since over 68 percent of electric production already is generated from coal, hydro and nuclear fuel, we can use less of our preciously depleted oil and gas reserves if we begin now to shift all applicable energy demands to electricity. Space heating, which draws about one-fourth of all energy use, is a good place to start. Allowing for the heat loss at the remote generator, the energy required for well designed electric space heating is essentially equivalent to direct combustion of oil and gas. Electric heat naturally and logically offers part of the solution to our energy management problems. In fact there are many areas where shortages of gas and uncertainties about oil have already made electric heat mandatory in all new construction.

To learn more about the national trend toward electric heat, NECA recently polled 108 of the 800 largest residential developers. The results are shown in Figure 1. Of 82 developers building single family detached units, 35 stated that all of their units were all electric. Another

12 stated at least half of their units were all electric. Another 13 reported using electric heat to a smaller extent. Of the 74 builders active in the townhouse market, 40 reported installing electric heat in all their units. An additional 6 stated that more than half of their townhouses were all electric. Of the 19 builders in the multi-family high-rise market, 18 reported all total electric dwellings. Concern for the availability and cost of fossil fuels was cited most frequently for specifying all electric (by 33 out of 75 responses).

Other typical reasons cited were low cost single source installations, individual tenant control, operational convenience, small amount of space needed, lower capital investment, customer preference, design adaptability, better utility service and lower operating costs. Competitively negotiated electrical installations were preferred by 81 to 27 over award to the lowest bidder. Contracting directly with specialty electrical contractors was preferred by 80 to 25 over the prime-sub single contract method. Most developers also believe these methods will be more prevalent in the future.

Engineers can select from a growing inventory of electric heating equipment. Either centralized or decentralized systems can be designed for maximum efficiency.

Products available for decentralized applications include floor insert units, baseboard convectors, draft barriers, kickspace heaters, wall mounted units, valence or

cove devices, ceiling mounts, through the wall packages, heating cable, pre-wired panels, and unit heaters. Centralized systems can employ ducted air heaters, electric furnaces, air to air (or water) heat pumps, and hydronic devices.

The ability to precisely control electric heat, especially in decentralized systems, means that temperatures required in occupied areas can be maintained without affecting adja-

cent space. A significant energy savings can be achieved by more selective use of heat where and when it is needed. Available control devices include thermostats, demand controllers, modulators, and automatic clock controlled setback devices. Clearly, electricity generated by coal, nuclear and hydro resources should be supplying more space heating energy for our growing residential needs.

Want to learn more? Consult with a local qualified electrical contractor.

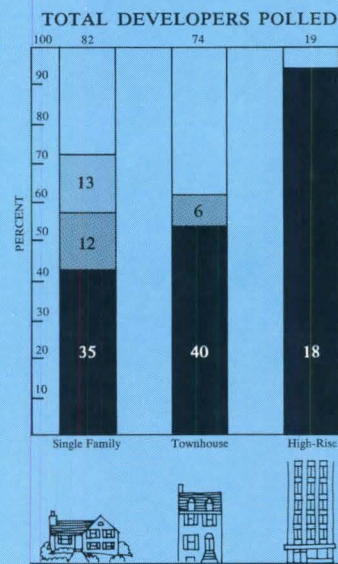


Figure 1—Residential Electric Heat Trends



**WHEN YOU PLAN
FOR ELECTRICITY, PLAN
WITH A PROFESSIONAL.**

*Engineers . . . designers, specifiers, users and installers of energy efficient building systems.

Books from page 102

riod, and later, with the use of travertine or marble, the buildings were sheathed or built in far more visual glory than we see them. Nero rebuilt his Roman villa with vaulted concrete roofs, covering the walls in marble and mosaic.

A new building material—Roman concrete—made possible the inexpensive use of vaulting and dressed stone. There is a chapter on the history of concrete construction which begins by stating that this new material and its use is Rome's greatest contribution to European architecture. There is included the fascinating history of the accidental discovery of *pozzolana* and a description of the use of Roman concrete in subsequent building. Roman architects gradually realized that this new material presented them with a completely different concept of interior space. The author's brief but thorough description of the construction of the Pantheon tells us of the ultimate triumph of Roman concrete.

The opening of the Carrara marble quarries made possible the use of a domestic material that had formerly been imported, reducing the cost and increasing the use of marble for facing. Thus ancient Rome used its local materials and developed its own techniques for construction, responding to changing influ-

ences and the ultimate dominance of practicality.

As the empire spread, the Romans built. This book pictures the astonishing undertakings of the architects of the Roman world. Roman architecture covered all types of building, not just the monumental temples with their familiar classical orders, but theaters, amphitheaters, houses, markets, bridges, viaducts, commemorative columns and arches, baths and more. Most of this seems to be public architecture, but there are survivors from the domestic life in places like Herculaneum, Pompeii and Ostia.

Ancient man spent much time and great energy constructing vast monuments to his creative artistry and none did it better than those ancient Romans.

Ward-Perkins is a scholar of history and archaeology and has been director of the English School in Rome. This book must have been a labor of love. Architects will find it an absorbing segment of the long history of the profession. *Elizabeth and Robert Class*

The New York World's Fair, 1939/1940 in 155 Photographs by Richard Wurts and Others. Selection, arrangement and text by Stanley Appelbaum. New York: Dover, 1977. 152 pp. \$5.

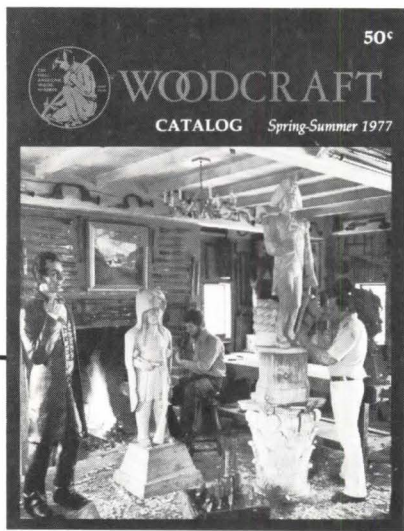
The first world's fair in New York City

since 1853 occurred in 1939/40 when 1,216½ acres were cleared in Flushing, Queens, for the great event. About \$160 million was invested, with construction outlay amounting to about \$42 million. A recorded 60 nations and international organizations joined in, with Germany conspicuous by its absence. About 375 structures of all types were erected, including 100 major exhibit buildings.

The aim of this book is not to give statistics, however, but to record the fair's physical aspects, with emphasis placed on building exteriors and including a sampling of interior exhibits. The photographs have lengthy captions, calling to mind such structures as the 700-foot Trylon and the 200-foot-wide Perisphere, painted gleaming white (Harrison & Fouilloux), the Time Capsule (Skidmore & Owings and John Moss), the shimmering building of Glass, Inc. (Shreve, Lamb & Harmon) and all the other architectural and technological wonders of that era.

There is something about world fairs that delights most people—for them, then, this book is one to while away a few hours in reminiscing. Somehow, it's the color of buildings and humanity in proximity that one remembers, and the book's black and white photographs miss all that excitement.

Books continued on page 110



2500 TOOL CATALOG

This New 104 page, 4-color catalog contains a complete line of woodworking hand tools and accessories chosen from the manufacturers of the highest quality tools in Europe and America. The fine collection includes tools for Woodcarving, Cabinetmaking, Veneering, plus special tools for Miniature Work, Musical Instruments and Boat Building and a selection of Design Books, How-to Books and Measured Drawings. Every tool is fully described and where necessary its use explained.

Catalog 50¢ in Coin or Stamps

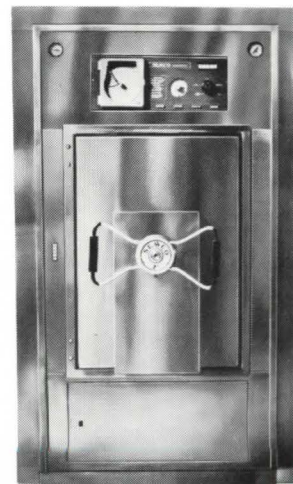
WOODCRAFT
Dept. AJ 107 313 Montvale Ave.
WOBURN, MASS. 01801

Point by point, Vernitron is built to be better.

Compare any Vernitron product with its competition and you'll see Vernitron is superior. Not by coincidence. But by design. Point by point.

VERNITRON BULK STERILIZERS

- Point: Low in-use cost for long-term economy.
- Point: Precision built to eliminate downtime.
- Point: Choice of types—general purpose, ethylene oxide, steam/ETO, hi-vac.
- Point: Sizes from 24" x 36" x 36" to 62" x 84" x 84".
- Point: All meet or exceed ASME requirements.
- Point: Exclusive, automatic Cycleguide controls.



Vernitron products for every area of the hospital; every requirement. What's the point of using anything else?

Learn, point by point, how Vernitron equipment is superior. Write for your catalog today—

Vernitron

V MEDICAL PRODUCTS, INC.
5 Empire Boulevard, Carlstadt, N.J. 07072

Dept. AIA

Future Form

The Kimball 7000 Series



Somewhere, sometime in the future, this Kimball 7000 Series will be museum status. The classic. Today, it is the trend setter.

Kimball has translated generations of woodworking experience into creative designs such as the 7000 Series to suit today's needs and tastes. Not only as furniture, but as a basic element in the overall design.

And the discerning eye will see Kimball Office Furniture as a satisfying choice. In terms of appearance, durability, and function.

Contact Kimball for full information about the 7000 Series and other innovative lines. And see the form the future will take.



kimball[®]
OFFICE FURNITURE CO.

1549 Royal Street, Jasper, Indiana 47546
A Division of Kimball International, Inc.

Circle 82 on information card

Books from page 108

Dialogue of Forms. Introduction and commentary by Milan Pavlik; photographs by Vladimir Uher. New York: St. Martin's Press, 1977. Unpagged, 117 plates. \$17.50.

The year 1700 witnessed a great upsurge in the creativity of Bohemian architects and artists. Prague became a focal point of innovative design. For 50 years, the arts thrived. It was a phenomenon not yet fully clarified, writes Pavlik. The city was transformed. A new reality came into being. "It determined new dominants and perspectives; changed the aspects of entire streets; conjured up many artistically impressive nooks, small squares, arcades; incorporated the ground level with terraced gardens into the townscape; linked sculpture, painting and architecture into an indivisible whole."

This book is the story of that "indivisible whole" as portrayed in Prague's marvelous art and architecture. Architect Pavlik and photographer Uher are also united as they uncover Prague's special qualities, pleasing the reader with the forms and compositions of the city's baroque art and architecture. Even today, says Pavlik, the art and architecture enrich and enliven the lives of citizens. "Architectural works live their own lives, full of quietness and discipline, but they also manifest the dynamics of their materials and theory," he writes. "Within the contemporary esthetic, cultivated by all the progressive art of the 20th century, historical architecture resonates not only as a source of knowledge of events of the past, but also as an important part of a living artistic universe."

Bertolt Brecht's Berlin: A Scrapbook of the Twenties. Wolf Von Eckardt and Sander L. Gilman. New York: Anchor Press/Doubleday, 1977. 170 pp. \$5.95.

The characteristics of a civilization are reflected in the buildings of the period, a phenomenon of which architects are well aware. They relate this insight frequently, however, merely to stylistic appearance and technological status. But there is more to that dictum. It is the whole gamut of life which becomes interwoven with architecture. A knowledge of political and social history is required to acquire an understanding of a period in history.

This book by Von Eckardt and Gilman is important because it sheds light on the origin and significance of European modern architecture in terms of social and political events that basically shaped the architecture. As this reviewer was, Von Eckardt was born in Berlin and left during the Nazi regime's early period to live in this country—he did not experience the Weimar years in Berlin. Nonetheless, he and Gilman have performed excellent research and have assembled now rare

illustrative material of those remarkably eventful short years.

Today's younger generation, separated from those years by depression and subsequent war, relates only in esthetic terms to the heritage of modern architecture.

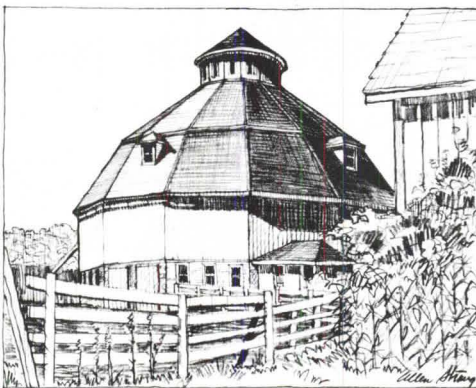
The general cultural and political situation which gave European modernism its stamp can hardly be remembered after years of "form giving." In fact, even Von Eckardt and Gilman do not stress, for example, the important cultural role that the labor movement played in influencing building activities of social concern.

Indeed, the stress is laid upon the unusually large congregation of singularly talented pioneers in all the arts from all corners of the world in the Berlin of that time. What is often perceived as a special Bauhaus architecture was an offshoot of the Berlin era during and after the German revolution. I found the exposure of the more seedy and degenerate aspects of that intensely cosmopolitan life particularly as depicted in the artists' social criticism—including that of Brecht—to be entertaining, but somehow distorted.

Architects who really care to gain an understanding of the roots of modern art and architecture in Europe—much of which came to influence events in this country—should not miss reading this fascinating book. *H. H. Waechter, AIA*

Barns of Wisconsin. Jerry Apps and Allen Strang. Madison, Wis.: Tamarack Press, 1977. 143 pp. \$10.

Jerry Apps; a writer and editor, has provided the text for this book; the beautiful watercolors and drawings are by Allen J. Strang, FAIA. The two "crossed and recrossed the Wisconsin countryside searching out examples that would best tell our story," says Strang. "We have recorded this material with typewriter,



brush and pencil in the hope that this book will serve not only to refresh memories but to provide interesting information about this important segment of our culture." They have succeeded admirably. Apps tells of ideas from Europe incorporated in Wisconsin barns, of the round and polygonal barns, barn roofs, builders and materials, decorations, silos and farmsteads. And Strang's illustrative

materials are handsome. The watercolors especially are a delight. If you love Wisconsin—or barns—or American civilization, order the book from Tamarack Press, Box 5650, Madison, Wis. 53705.

Design of Building Frames. John S. Gero and Henry J. Cowan. New York: Wiley, 1976. 498 pp. No price given.

Despite the interest of architects and engineers in three-dimensional forms, such as shells, the frame remains the principal structural form. The authors of this book think this is so because of the necessity to build economically multistory structures for increased densities of population. The aim of the book is to give the reader "sufficient background" to predict the behavior of a building frame under the action of loads and to give design guidance in preliminary stages of planning.

The first three chapters are an introduction to the basic forms of building frames. Chapters follow on such topics as computer-based methods of analysis and design; buckling; the plastic theory of steel structures, masonry and concrete structures, and optimum design concepts.

Urban Public Works Administration. William E. Korbitz, Editor. Washington, D.C.: International City Management Association, 1976. 563 pp. \$22.50.

Architecture is supported by county and/or municipal public works. There is hardly an architect in the country who has avoided involvement with local public works administrations in the execution of projects. The International City Management Association has produced a highly useful book which covers just about everything architects need to know about the subject of urban public works in order to deal with local units of government.

Some of the key chapters of particular use to architects cover the management and organization of the public works function, computer applications, public works finance, urban street systems, air pollution and regulatory code enforcement.

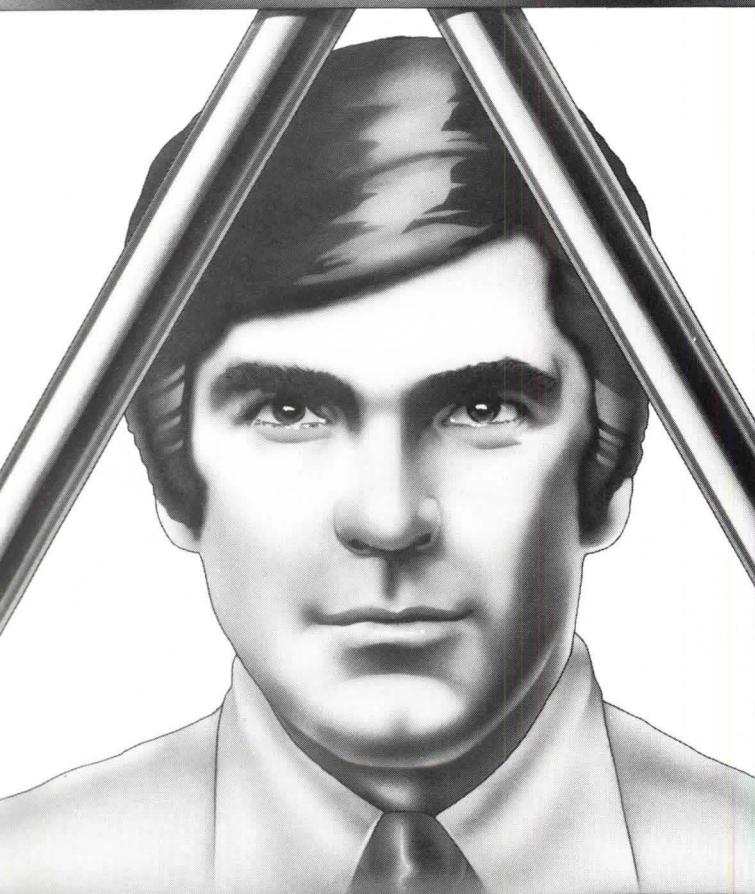
Armed with the information contained in this excellent book, architects should find themselves better equipped to deal with local public works departments, planning commissions and city councils in the programming and development of architectural projects. Further, architects with knowledge of urban public works administration in the local governmental context will be better able to serve their clients who are relying more and more on the architects' knowledge of pertinent regulatory requirements which affect their building programs. This reference book is highly recommended.

*Michael B. Barker, AIP, Administrator,
AIA Department of Practice and Design
Books continued on page 113*

Read a steel joist. You'll find profit between the lines.

Those open spaces in open web joists tell a convincing story in terms of faster, less expensive construction. That space can be there to start with because the joist is made from modern high-strength steel. Steel that gives structural muscle with less material weight and less cost. Open web joists are easy to handle. They go up fast and need no platforms or flooring. And, when it's time to install duct work, wiring or piping, that open web is beautiful. You can do them all simultaneously. Before you start your next job, read the latest edition of Standard Specifications and Load Tables. It gives the facts on Open-Web, Longspan and Deep Longspan Joists. It's free. Just mail the coupon.

between
the lines.



Mail to:
STEEL JOIST INSTITUTE
Room 204B, 1703 Parham Road
Richmond, VA 23229



Please send me your latest copy of Specifications and Load Tables.

NAME _____

TITLE _____

FIRM _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

77-002

Architects in the classroom: roles for individual practitioners and AIA chapters.

Continued from page 67

previous exercise. Using this language, they constructed images of new cities or places.

The third project was a group effort in three-dimensional understanding of geometry, composition and environmental design elements. Using thousands of modular wooden blocks, the students designed and constructed a model of a new city. For their last project, art students redesigned an outdoor area of the school to create a courtyard garden.

The residency of Alan Anderson, AIA, took place in the Rosedale, Highlands and Eastview elementary schools in White Plains, N.Y. He spent part of each week in each school throughout the year, working with teams of students; each team was led through a defined design process leading to a specific built product.

At Rosedale, one team of students designed and constructed a frame and plywood reading corner in a classroom. The structure, which includes a loft, provides interior quiet space and exterior study carrels and bulletin boards.

The second team designed and constructed an overnight campsite in a woods on the school grounds. The lean-to structure provides overnight shelter for 15 children. Another group designed and constructed "furnishings" for the school lobby, including benches, aquarium and display space.

The fourth team's project was the creation of a sculpture garden in an interior courtyard. Students designed, built and placed redwood benches and pedestals.

Eastview served as the meeting place for a group of 16 gifted and talented students, aged 8 to 16 years, from different schools in the district. The group designed a minipark for senior citizens. Each child designed and developed a model for the project. Several of these were presented to the senior citizens and to the parks and recreation commission and one was presented to the common council of the city of White Plains. Construction funds for the project will come from the city.

The design process in each case involved specific activities, including discussion about the built environment, visits to an architect's office and a construction site, measuring and data collection, scale drawings and model building of the students' own rooms; and design, model building, materials selection, budgeting and construction for the new project.

AIA has provided strong support for the program at a national level, through



Children in Abilene, Tex., examine the model they built for an outdoor school.

the resolution passed and communicated to all local chapters by the national board of directors, formally supporting the program. The national environmental education committee has lent much active assistance. The committee has published two handbooks—*Built Environment: A Teacher Introduction to Environmental Education* and *Guidebook: How to Conduct Environmental Education Workshops for Teachers and Architects*—which local chapters may obtain from national headquarters. These publications contain many suggestions for implementing built environment education programs.

Local chapters found many ways of lending support to AIS residencies in their areas during the first year. The Eastern New York and Illinois AIA chapters, for instance, made monetary contributions. The Tulsa, Okla., chapter raised \$1,500 through a house tour and contributed the money to the three residencies in the city. The chapter also worked closely with the Oklahoma arts council and the Tulsa public schools to develop the program. Photographic panels were provided to illustrate one resident's city planning lecture and the AIA slide show "How Architecture Speaks" was made available to another. Architectural firms in Little Rock, Ark., raised substantial funds for the program.

Local chapters were often able to con-

tribute materials to the schools, as in the case of Omaha. The Abilene, Tex., chapter donated old architectural magazines and also appointed a committee to assist in designing construction details for school projects. This chapter has expressed interest in continuing involvement with the program, on a consulting basis, after the architect leaves.

Members of the Portland, Ore., chapter sat on an advisory committee overseeing the program. The Portland chapter was actively involved in teacher training and established a resource center. The Philadelphia chapter set up an architects' book center, making available many curriculum materials on built environment education, and assisted with the architects in schools national training workshop.

There are a number of other ways in which local chapters may help. Environmental education committees may be established and resource centers may be set up. Pools of interested architects may be organized to work in the schools with teachers and students. We are not suggesting that this involvement take the form of the typical one-hour slide show on the Parthenon or on Mies van der Rohe, but rather that it be a continuation of the built focus of the architects in schools program.

This kind of participation would provide a forum for dialogue between the architect and the public, demonstrating the eclecticism of the architectural profession and the different areas in which the architect can be called upon to function.

What the profession needs are "GPs"—general practicing architects—whom community members can go to for professional services. To accomplish this, we need architects who can see themselves in this role and a public that can understand the many ways in which such architects could be used. The architects-in-schools program, by addressing itself to the broader interpretation of architecture and to the whole community, is a beginning step in this direction.

It is in the area of continuity that local architects and AIA chapters may perhaps make their most significant contribution to the program. The actual environmental change that may take place within a school is not the program's ultimate goal. It is, rather, to leave behind a legacy of increased environmental awareness, ability to use the tools of the design process and increased capacity of individuals and communities to participate in changing—and wanting to change—their environment to make it more appropriate to their changing needs. Those who are deeply involved in the architectural profession can help to ensure that this legacy is indeed kept alive after the residency ends, and that built environment education continues to be an important focus for school and community efforts. □

Home-Tech Restoration and Renovation Cost Estimator. Bethesda, Md.: Home-Tech Systems, 1977. 143 pp. \$24.60.

This book is a labor and materials cost manual for use in residential renovation, rehabilitation or repair. The unit cost system given helps the user estimate quickly any size job—from bathroom alteration to the conversion of a building into apartments. It covers such things as replacement of rotted beams and columns, interior gutting, blown-in insulation and installation of security devices. Costs and prices are based on actual time and materials studies, and a method is provided to help adapt the costs to the user's own project with different dimensions and specifications. The publisher offers a 10-day free trial of the manual. Orders may be placed with Home-Tech Publications, 7315 Wisconsin Ave., Bethesda, Md. 20014.

Ancient Greek Architects at Work: Problems of Structure and Design. J. J. Coulton. Ithaca, N.Y.: Cornell University Press, 1977, 196 pp. \$15.

Before the period of 650-50 B.C., the names of more than 100 Greek architects are known, writes Coulton, but "in no case can an architect's career be reliably reconstructed." And the practice of architecture can be given "little more than an

informed guess." The buildings themselves, brief references in literature and inscriptions give some meager information, but the rest has to be pieced from Vitruvius' *Ten Books of Architecture*, written in about 25 B.C. The evidence of the fourth and succeeding centuries, Coulton says, is fuller, and "with caution" it may be applied backward to the fifth and sixth centuries B.C.

This informative book on Greek architecture as revealed through its architects from the early seventh to the first century B.C., begins with a discussion of the client—usually the city-state or a similar body, whether the structure was secular or sacred. There is also information about the architect's education and status, the first architectural treatises, supervision of construction and the development in the Hellenistic period of retention by cities of an official architect.

Chapters follow on the architectural problems of design; scale; form, mass and space, and the application of orders to different types of buildings. The final chapter deals with aspects of structure and technique. The underdeveloped sense of structure, Coulton says, is in striking contrast with the Greek architects' highly developed sense of form. "If Greek architects had required more sophisticated structural methods, they would presuma-

bly have developed them, just as they apparently did in another technical field, that of design procedure, which was more important to them," Coulton comments.

Coulton supplies copious notes, a bibliography and a glossary, and there are many drawings, plans and photographs. The book will greatly interest architectural historians and archeologists.

Multiple Family Housing: From Aggregation to Integration. David Mackay. New York: Architectural Book Publishing Co., 1977. 160 pp. \$30.

David Mackay, a partner in the Barcelona, Spain, firm of Martorelli/Bohigas/Mackay, has gathered in this book a selection of worldwide community housing projects, ranging from small row houses to entire new cities. The projects are copiously illustrated to supplement the text, which is an analysis of such matters as construction techniques, materials and design, as well as social and esthetic solutions to problems. Among the 32 projects discussed are Robin Hood Gardens in London, designed by Alison and Peter Smithson; Southgate, Runcorn New Town, by James Stirling and Michael Wilford; Spring Pond apartments in Painted Post, N.Y., by Louis Sauer, FAIA, and housing for teachers in Pineda, Spain, by the author's own firm. □

Cabot's new TRANSPARENT STAINS

East coast home: Architect James Walker, Boston, Mass. Cabot's Stains on exterior and interior wood surfaces.

Naturally beautiful for wood... the stain that shows the grain.

Cabot's new Transparent Stains bring out the best in wood, produce rich, lively colors in a variegated effect depending on the porosity of the wood surface and the exposure. These new stains accent the beauty of wood grain and texture, beautify in a choice of 28 colors. Like other stains in the Cabot line, Cabot's Transparent Stains will not crack, peel, or blister... are applicable to all types of wood.

Cabot's Stains, the Original Stains and Standard for the Nation since 1877



Samuel Cabot Inc.

One Union St., Dept. 945, Boston, Mass. 02108

- Send color card on Cabot's Transparent Stains.
- Send Cabot's full-color handbook on wood stains.

Going On from page 32

Carnegie-Mellon University and a law degree from Antioch College and has worked for the Senate committee on appropriations.

Highest Power Demand Registered in July Week

The demand for electricity in July of this year reached an all-time high, reports the Edison Electric Institute in its "1977 Annual Electric Power Survey." The highest weekly total for electric output ever achieved occurred for the week ended July 23—more than 47 billion kilowatt-hours. This topped the high set the week before. The summer demand for electricity outpaced last winter's previous output record, which was 5.7 percent above the winter peak load of 1975/76.

During the first 33 weeks of 1977, the survey says, electric output increased 7.1 percent over a comparable period in 1976. "Year to year output as of Aug. 13, 1977, was 1,358 billion kilowatt-hours compared with 1,268 billion kilowatt-hours as of Aug. 14, 1976, for the total electric utility industry in the 48 contiguous states."

The institute predicts that the winter 1977/78 capability for the entire electric

utility industry under adverse hydro conditions is 546.1 million kilowatts, an increase of 7.1 percent over the corresponding winter 1976/77 capability. The total capability for winter 1986/87 is forecast to reach 833.6 million kilowatts, giving an average annual increase for the 10-year period from winter 1976/77 of 5.1 percent. For the entire U.S., including Hawaii and Alaska, the capability by the winter of 1986/87 is expected to be about 850 million kilowatts.

Outer Space Advantageous For Biological Factories

Biological processing factories in outer space could help bring relief to sufferers from chronic illnesses, says Alan W. Burg in an article entitled "Far-Out Factories" in the July/Aug. issue of *The Bulletin*, published by Arthur D. Little, Inc. Biological processing techniques, which can take advantage of the low gravity of outer space, "have the potential of making available human insulin for the treatment of diabetes, for example," Burg says.

The supply of growth hormone in earth-bound laboratories has caused alarm, necessitating elaborate safeguards, Burg says. In space, however, "considerations of hazard would not be so impor-

tant, thus tipping the risk-benefit balance."

In addition to low gravity and isolation, certain manufacturing processes in space would benefit from the "distinct radiation spectrum." Burg says, "Even high cost labor, raw materials, plant construction and distribution costs may be reasonable in relation to the high sales price of a unique or scarce product." The industries involved with "diagnostics, pesticides, fine chemicals, and plant and animal breeding," Burg says, could be interested in biological factories in space.

Before commercial firms invest, there must be "more extensive and application-directed demonstrations of feasibility." He believes, however, that a "new era in space research may be approaching, with current interest in commercial exploitation of this unique environment for manufacturing." The specific studies on physical and biological manufacturing processes initiated by the National Air and Space Administration "are setting the stage for private industry to support further work that could lead to profitable applications."

Burg says succinctly that the most limiting factor in determining the range of potential manufacturers is the "obviously high cost of transportation."

Going On continued on page 116



EFPs used for acoustic treatment at YMCA Pool, Danvers, Mass.

Noise... Control it.

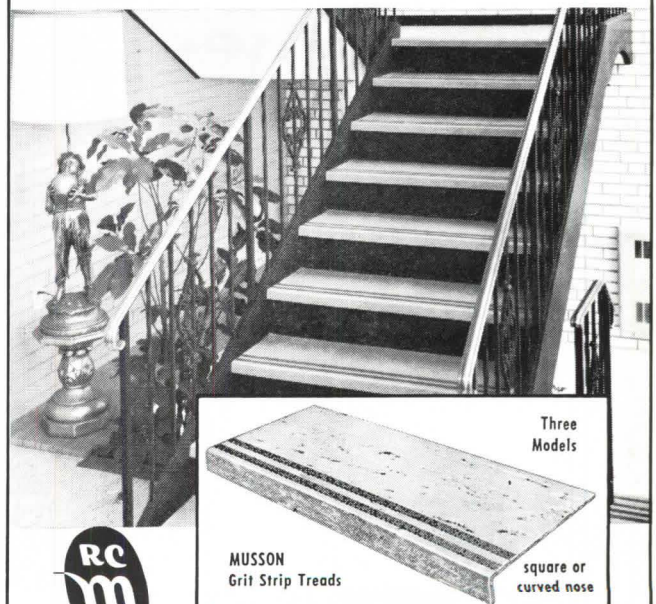
Eckoustic Functional Panels efficiently & effectively reduce background noise & reverberation.

Ideal for auditoriums, gyms, swimming pools, churches, etc. Easy installation. No need to relocate existing utilities. Attractive. Low maintenance.



ECKEL INDUSTRIES, INC. Eckoustic Div.
155 Fawcett St., Cambridge, Mass. 02138 • 617-491-3221

MUSSON Safety TREADS are BEAUTIFUL, too!



MAXIMUM NON-SLIP STAIR SAFETY can be had in beautiful Musson Molded rubber. Accented with $\frac{3}{4}$ " black abrasive strips—one is 1" from front with $\frac{3}{4}$ " separation to second—they give super safe footing. Treads are $12\frac{1}{2}$ " deep, with $\frac{3}{16}$ " and $\frac{5}{16}$ " thicknesses; lengths of 36", 42", 48", 60", 72". For wood, metal, pan filled or concrete steps. Marbleized Colors: Red, Green, Gray, Mahogany, Black, Birch, Beige, Walnut, Oatmeal.

Write For Catalog, Samples, Prices

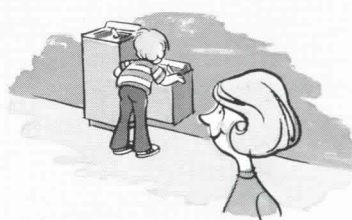
THE R. C. MUSSON RUBBER CO.

1302 E. Archwood

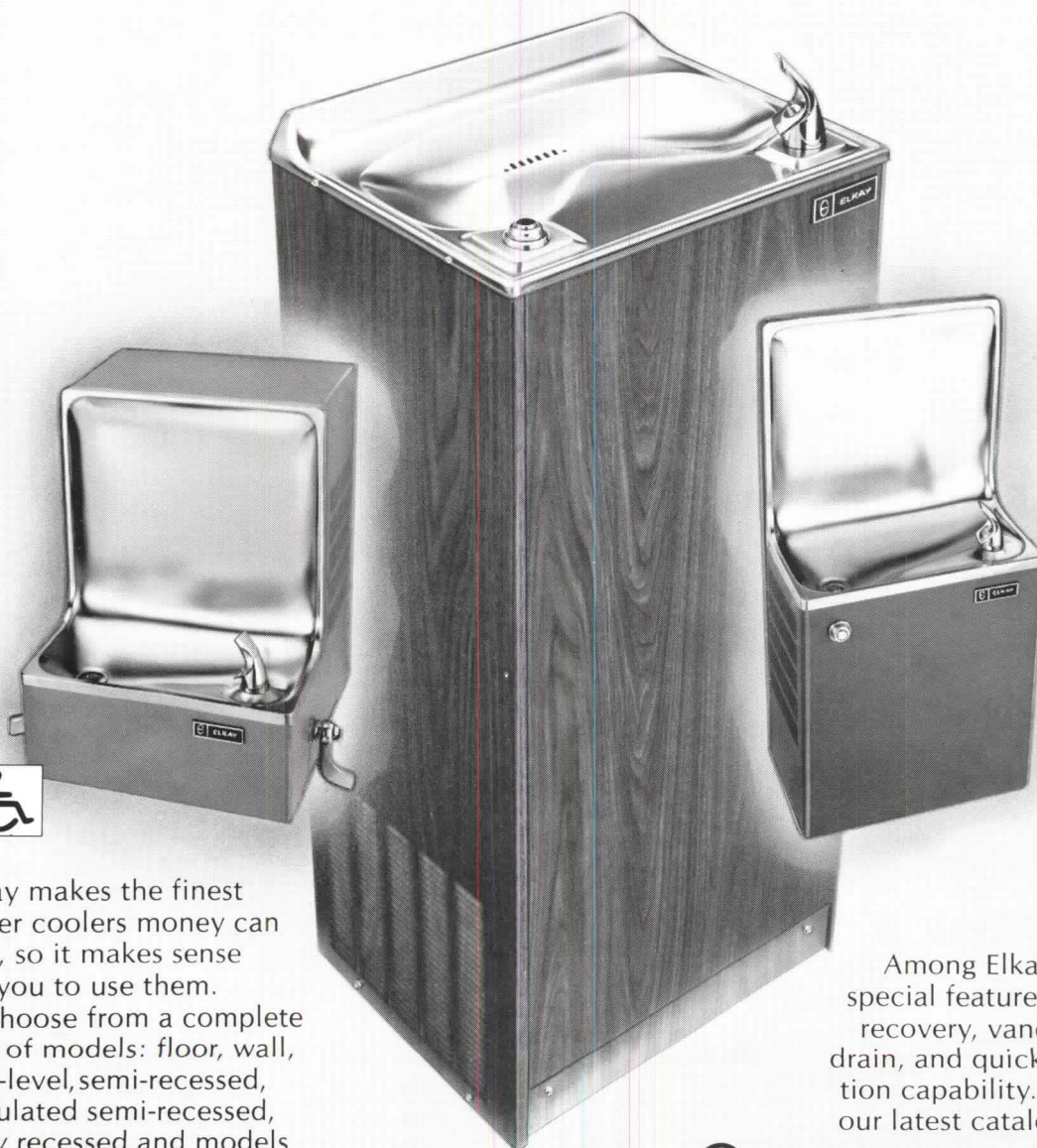
Akron, Ohio 44306



IT'S YOUR BUSINESS,
YOUR CLIENT,
YOUR REPUTATION.



SPECIFY ELKAY.



Elkay makes the finest water coolers money can buy, so it makes sense for you to use them.

Choose from a complete line of models: floor, wall, two-level, semi-recessed, simulated semi-recessed, fully recessed and models for wheel chair service.

**Elkay versus the ordinary.
There's no comparison.**

Among Elkay's many special features are fast recovery, vandal-proof drain, and quick installation capability. Send for our latest catalog today.

ELKAY
MANUFACTURING COMPANY
2700 South Seventeenth Avenue
Broadview, Illinois 60153, Dept. 24-24

Deaths

L. B. Brewer, St. Louis
William B. Fox, Atherton, Calif.
Louis R. Fucito, Waterbury, Conn.
Raymond D. Goller, Columbus, Ohio
Richard C. Heartfield, Beaumont, Tex.
Samuel Levy, Kew Gardens, N.Y.
Robert K. Posey, Scarsdale, N.Y.
Lloyd N. F. Spicer, Harwich, Mass.
Philip A. Wilber, Stillwater, Okla.

Francis Paul Gassner, FAIA: A partner in the Memphis firm of Gassner Nathan & Partners, Mr. Gassner participated in the design of many local structures, including the Shelby County Administration Building, the Memphis State University fine arts complex, the University of Tennessee Center for Health Sciences, the C&I Bank main office, Temple Israel and administrative headquarters of Plough, Inc. He died on Aug. 16 at the age of 50.

A graduate in architecture from the Carnegie Institute of Technology, Mr. Gassner was a former instructor of interior design at the Memphis Academy of Arts. He served as a member of the Memphis Arts Council, the advisory panel of the Tennessee Arts Commission and the boards of the Memphis Symphony Orchestra and the Memphis Opera Theatre.

He was president of the local AIA chapter in 1968 and vice president in 1959 and 1967. He was also a member of a number of Institute committees, and was chairman of the committee on esthetics in 1967. In 1970 and 1976, he served as a member of the jury for the AIA honor awards.

Newslines

John S. Bolles, FAIA, of San Francisco, has been made a fellow of the Institute of Store Planners and of Harvard University's Peabody Museum of Archaeology. The fellowships recognize his work on and recent publication of excavations of Las Monjas, in Chichén Itzá, Yucatan, Mexico.

John N. Richards, FAIA, of Toledo, Ohio, has been awarded an honorary doctor of arts degree by Bowling Green State University. Senior partner in the firm of Richards, Bauer & Moorhead until his retirement last year, Richards served two terms as president of AIA. He holds honorary memberships in the Royal Institute of British Architects, the Philippine Institute of Architects, the Mexican Society of Architects and is an honorary fellow of the Royal Architectural Institute of Canada.

Pratt Institute in Brooklyn, N.Y., has received a challenge grant of \$100,000 from the Kresge Foundation to renovate Higgins Hall, home of Pratt's school of architecture. Combined with a previous grant of \$25,000 from the Charles Hayden Foundation, the Kresge grant brings the institution closer to realizing its goal of making the hall a model architectural education and resource center.

A procedure for calculating the total annual energy effect of skylights added to a building's roof has been developed by the Architectural Aluminum Manufacturers Association. The calculation determines the BTUs per square foot of skylight saved (or lost) by the use of skylight solar energy, and the total BTU savings for the entire installation. The 37-page guide is available for \$2 from AAMA, 35 E. Wacker Drive, Chicago, Ill. 60601.

The Pittsburgh chapter/AIA is one of the sponsors of an exhibition on "H.H. Richardson's Allegheny County Courthouse, Part 1," which documents the architectural competition in which four leading 19th century architects participated. Part 2, which will focus on Richardson's development of the structure, *continued on page 118*

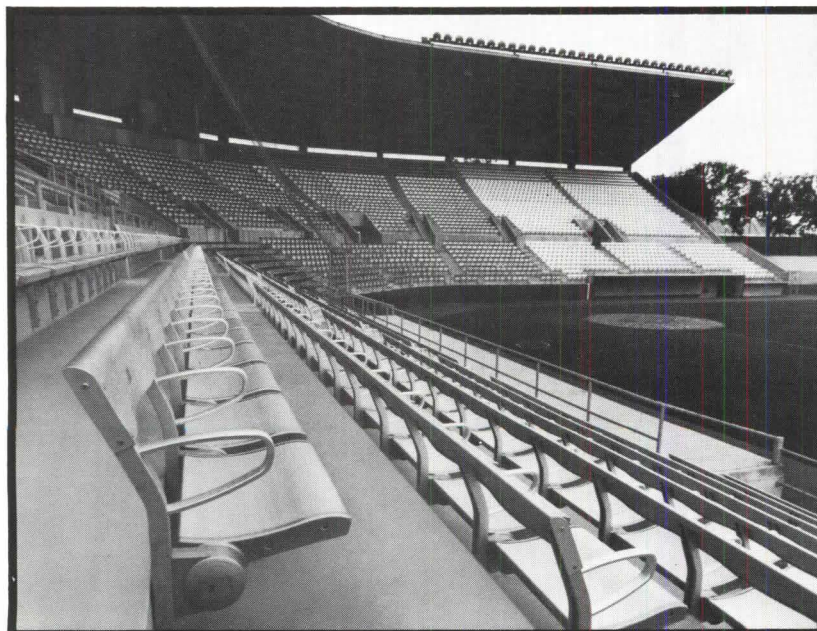
If you've designed the best stadium why not use the best in spectator seating ... Howmet.

Whether it's for an 80-seat natatorium or an 80,000-seat stadium, Howmet has the answer. Howmet all-aluminum spectator chairs are fire-proof, virtually maintenance-free and vandal-resistant. Both seat and back are fully contoured for maximum comfort. And folding seat chairs are available with choice of manual or automatic lift.

Howmet chairs come in eight color-fast enamel finishes and five color anodized finishes. Most components are shipped pre-assembled, saving time and money when work begins.

And, in most cases, Howmet shipments are made in company-owned trucks. You can depend on deliveries to be on time.

For more information on Howmet's full-line of spectator seating, including chairs, benches and portable bleachers, call or write Jim Davis for our full-color 12-page brochure, "Aluminum Seating Systems by Howmet."



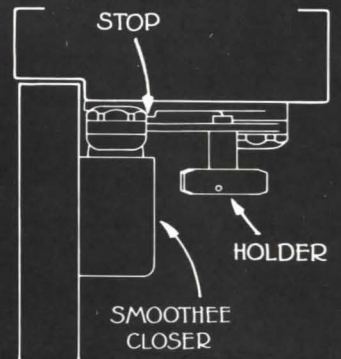
HOWMET ALUMINUM CORPORATION



A Member of The Pechiney Ugine Kuhlmann Group
EXTRUSION PRODUCTS (DEPT. AI)
P.O. Box 40, Magnolia, AR 71753 • (501) 234-4260

Where Ideas and Imagination Are Only The Beginning

LCN 4110H CUSH-N-STOP® Heavy Duty Closer/Stop/Holder



The Kingdome, Seattle, Wa.
Naramore Skilling Praeger Architects, Seattle

THESE STADIUM DOORS ARE AN IDEAL INSTALLATION FOR LCN 4110H CUSH-N-STOP. STOP FEATURE PREVENTS BACK-TO-BACK DOORS FROM COLLIDING WHERE FLOOR OR WALL STOPS ARE IMPRACTICAL. ON-OFF HOLD OPEN CAN BE SET TO HOLD DOORS OPEN AND CLEAR FOR HEAVY EXIT TRAFFIC. WITH HOLDER "OFF" DOORS ARE NORMAL SELF-CLOSING. HEAVY DUTY SMOOTHEE CLOSER PROVIDES EXCELLENT HYDRAULIC CHECKING FOR THIS TOTAL DOOR CONTROL UNIT... 4110H-CUSH-N-STOP... CLOSER/STOP/HOLDER.

SEE SWEET'S SEC. 8 OR SEND FOR CATALOG.



LCN CLOSERS, Princeton, Illinois 61356
LCN CLOSERS OF CANADA, LTD.,
Mississauga, Ontario L5G4L5

Newslines from page 116
will follow after documents are restored. The exhibition is on view at the Allegheny County Courthouse Gallery/Forum through Nov. 2.

An exhibition on architecture for radiology will be held on Nov. 27-Dec. 2, McCormick Place, Chicago, during the annual meeting of the Radiological Society of North America, Inc. Registered architects are invited to submit entries. For information, write: George F. Schuyler, RSNA, P.O. Box 648, Oak Park, Ill. 60303, or call (312) 920-8822.

The "Directory of Architects for Health Facilities," published by the American Hospital Association, is now available in a new edition. It lists alphabetically architectural firms with experience or special interest in the health care field. Listing is open to all registered architects. The new edition is available for \$6.50 from AHA, 840 N. Lake Shore Drive, Chicago, Ill. 60611.

A scholarship program at the master's degree level has been established by the Associated General Contractors of America in honor of Saul Horowitz Jr., the late president of AGC who was killed in a plane crash in 1975. The award will be a

\$4,000 grant, and college seniors or persons planning to enroll in a construction graduate program on a full-time basis for the fall term of 1978 are eligible to apply. Applications are available from AGC, 1957 E St. N.W., Washington, D.C. 20006.

Robert A. M. Stern, AIA, partner in the New York City firm of Stern & Hagmann, is curator of an exhibition on "Drawings for a More Modern Architecture" on view at the Cooper-Hewitt Museum of Design in Manhattan through Nov. 6. A catalog, with notes by contributing architects and photographs, will be published by the British magazine *AD*.

"Designing Structures to Resist Earthquakes" is a 12-page brochure available without charge from the American Iron and Steel Institute, 1000 16th St. N.W., Washington, D.C. 20036.

The Building Officials and Code Administrators International has elected Ottmar H. Becker, building commissioner of Country Club Hills, Ill., as its new president.

Architect David Duplanty, president of the Santa Monica, Calif., firm of Duplanty Huffaker Associates, has been elected

chairman of the board of the international nonprofit medical and dental assistance program, Project Concern. He is also planning consultant for the organization's medical facilities. Last year, Project Concern treated more than 1.5 million indigent persons at 40 facilities in 77 countries.

There may be more women construction workers if regulations proposed by the Department of Labor are passed. Contractors and subcontractors for all federal or federally assisted projects would have to increase the number of women construction workers to 3.1 percent in the first year, 5 percent the second and 6.9 percent the third. Currently, women hold 1.2 percent of construction industry jobs.

A Cabinet-level committee to deal with labor management problems in the construction industry has been announced by Secretary of Labor Ray Marshall. Called the committee on the construction industry, it will not be involved in wage/price decisions but will be a forum for the federal government to use in dealing with labor and management on such matters as shortages and production problems which cause prices and wages to escalate, and will also consider structural changes in industry bargaining. □

Where can 200 architects raise the roof?

In one of our 30 suites and ballrooms. From a convention to a fund raising affair, we'll turn any occasion into an unforgettable event. Parking for 2,400 cars. For information, call 484-0983 or 484-1000.

Loews L'Enfant Plaza Hotel

Questions About Your Subscription

To insure fast service on inquiries concerning your *AIA JOURNAL* subscription, please include the address label from the most recent issue received.

Change of Address

Four weeks' notice required for change of address. Include address label from most recent issue and new address information in space provided below.

NEW SUBSCRIPTION

Please check here if you wish subscription rate information.

Name _____

Address _____

City _____

State _____ Zip _____

MAIL TO:

AIA JOURNAL
Circulation Dept.
1735 New York Ave., N.W.
Washington, D.C. 20006

ATTACH
LABEL
HERE

CLASSICS

See the entire collection at our showrooms, or write on your letterhead for our new catalogue and supplement. Or design your own fixture. We'll do the contract work. We do it all. And we do it here in the U.S.A.

KOCH+LOWY INC.
THE PAST, PRESENT, AND FUTURE
OF MODERN LIGHTING

Showrooms:
New York • Chicago • Los Angeles
San Francisco • Dallas
Atlanta • Miami • Cincinnati

940 Third Ave., New York 10022

1245 Merchandise Mart, Chicago, Illinois 60654

Pacific Design Center, 8687 Melrose Ave., Los Angeles, Calif. 90069



Circle 91 on information card

ADVERTISERS

Michael J. Hanley

Publisher

Michael M. Wood

National Sales Director

George L. Dant

Manager, Production and Business

1735 New York Ave. N.W.

Washington, D.C. 20006

(202) 785-7300

ADVERTISING SALES OFFICES

Washington, D.C. (202) 785-7271

Michael M. Wood

1735 New York Ave. N.W.

Washington, D.C. 20006

New York (201) 729-9331

Thomas R. Crow

79 Hilltop Trail

Sparta, N.J. 07871

Chicago (312) 236-4545

John D. Stewart

20 North Wacker Drive

Room 1425

Chicago, Illinois 60606

St. Louis (314) 569-3210

Richard D. Grater

1466 Summerhaven

St. Louis, Missouri 63141

San Francisco (415) 362-8547

Jules E. Thompson

1111 Hearst Building

San Francisco, California 94103

Los Angeles (213) 378-8361

Bert Charlton

2560 Via Tejon

Palos Verdes Estates, California 90274

Acknowledgments: 16, Robert Miles Parker; 36, Alexandre Georges; 37 right, Alexandre Georges; 38 top, Alexandre Georges; 38 bottom left, Wayne Thom; 38 bottom right, J. G. Standart; 39-41, Joshua Freiwald; 43, Joshua Freiwald; 49, Don Rank, courtesy Shenandoah Development Co. and Urban Land Institute; 50, courtesy Claude Engle; 53, Harris & Davis; 54 top, Louis Reens; 55, Robert Perron; 60-61, Ezra Stoller; 62, Bob Serating; 64, Ezra Stoller; 65 top, Richard W. Payne, bottom, courtesy Pierce Goodwin Alexander, AIA.

Arco Architectural Products	13	Kidde (MEG)	104
<i>Aitkin-Kynett Co.</i>		<i>Braun Advertising, Inc.</i>	
Armstrong Cork Co. . Cov. 2, Pgs. 1 & 3		Kimball Office Furniture	109
<i>Marsteller, Inc.</i>		<i>Keller Crescent Co.</i>	
Bethlehem Steel Corp.	18-19	Knoll International, Inc.	72-73
<i>Van Brunt & Co.</i>		<i>William McDade, Inc.</i>	
Brick Institute of America	79	Koch & Lowy	119
<i>Henry J. Kaufman & Assoc.</i>		<i>Ribaudo & Schaefer</i>	
Bruning Div. of Addressograph		K.S.H., Inc.	103
Multigraph Corp.	106	<i>K-Ad Agency</i>	
<i>Campbell-Mithun</i>		LCN Closers	117
Cabot, Samuel, Inc.	113	<i>Alex T. Franz, Inc.</i>	
<i>Donald W. Gardner Adv.</i>		Libbey-Owens-Ford (LOF)	30-31
Celotex Corp., The	33	<i>Campbell-Ewald Co.</i>	
<i>Mike Sloan, Inc.</i>		Loew's L'Enfant Plaza Hotel	118
Chevron USA	Cov. 3	<i>Weitzman & Associates</i>	
<i>Scroggin Reed Advertising</i>		Musson, R.C. Rubber Co., The	114
Cold Spring Granite Co.	32	<i>The Fred Bock Adv. Co.</i>	
<i>Kerker & Associates</i>		National Fire Protection Assoc.	24
Columbia Lighting, Inc.	26-27	<i>Keyes, Martin & Co.</i>	
<i>Devine, Miller, Carlson & Donaldson</i>		National Electrical Contractors	
Copper Development Assoc., Inc.	80-81	Assoc.	107
<i>Ross Roy of New York, Inc.</i>		<i>VanSant Dugdale</i>	
Cramer Industries, Inc.	83	Norelco (N. American Phillips)	97
<i>Bryan Donald, Inc.</i>		<i>Keyes, Martin & Co.</i>	
Crouse-Hinds Co.	91	Olympic Stain	Cov. 4
<i>Rumrill-Hoyt, Inc.</i>		<i>Kraft, Smith</i>	
DAP, Inc.	74	Red Cedar Shingle & Handsplit	
<i>Kircher, Helton & Collett</i>		Shake Bureau	4
DeSoto, Inc.	10-11	<i>Ayer/Baker</i>	
<i>Baker & Brichta</i>		Rixson-Firemark	98
Dover Corp., Elevator Div.	21	<i>Motivation Dynamics</i>	
<i>Caldwell, Bartlett, Wood</i>		Sanspray Corporation	17
Dow Chemical USA	14-15, 84-85	<i>Sanspray Corp., Adv.</i>	
<i>Campbell-Mithun</i>		Shand, Morahan & Co.	75
Eckel Industries, Inc.	114	<i>Hakanson & Associates</i>	
<i>Susan E. Schur</i>		Simpson Timber Company	99
Elkay Manufacturing Co.	115	<i>Kraft, Smith</i>	
<i>Post, Keyes, Gardner, Inc.</i>		Stark Ceramics	93
Fixtures Manufacturing Corp.	28	<i>Ira Thomas Associates</i>	
<i>Sher, Jones & Litman</i>		Steel Joist Institute	111
Follansbee Steel Corp.	105	<i>Batz, Hodgson, Neuwoehner, Inc.</i>	
<i>Group Marketing & Communications</i>		Turner, Ltd.	90
General Electric	100-101	<i>Alfred J. Goldstein</i>	
<i>Adv. & Sales Promotion</i>		United States Gypsum Co.	89
Grace & Co., W. R.	71	<i>Marstrat, Inc.</i>	
<i>Charles Palm & Co., Inc.</i>		United States Steel Corp.	76-77
Haws Drinking Faucet Co.	29	<i>Compton Advertising, Inc.</i>	
<i>Pacific Advertising Staff</i>		Vecta Contract Co.	9
Howmet Aluminum Corp.	116	Vermont Marble Co.	88
<i>Kerrs, Chapman, Bua & Norsworthy</i>		<i>Provandie & Chirurg, Inc.</i>	
Inryco, Inc.	68-69	Vernitron Medical Products, Inc.	108
<i>Melrose Advertising Assoc.</i>		<i>Alden Advertising Agency</i>	
International Masonry Institute	34	Vogel-Peterson	92
<i>Henry J. Kaufman & Assoc.</i>		<i>Marsteller, Inc.</i>	
J. G. Furniture	95	Woodcraft Supply Corp.	108
Johns-Manville (Bldg. Systems Div.)	25	<i>Meyers Associates</i>	
<i>Broyles, Allebaugh & Davis</i>			
Kaiser Aluminum & Chemical	6-7		
<i>Allen & Dorward, Inc.</i>			
Kawneer Architectural Products	22-23		
<i>Garrison, Jasper, Rose & Co.</i>			

When you're planning to include tennis,

include the expertise found only with Chevron.

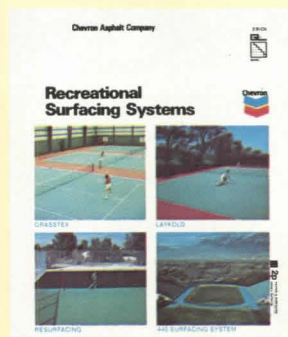
Chevron has amassed a background of expertise, over almost half a century, in supplying materials for all-weather tennis courts that none of our competitors can match.

Our Laykold® and Grasstex® courts have been the standard of the industry for decades. And constant improvements in product quality and construction techniques make their use today "just plain good business."

Either of Chevron's long-wearing all-weather courts can be tailored to most specific financial, esthetic, and type-of-play situations.

Once they're installed, they're practically maintenance free. Yet, when it's time to resurface, you'll find that a carefully constructed Laykold or Grasstex base will enable an easy and economical resurfacing treatment.

If you'd like to receive a complete set of our specifications on new courts and the resurfacing of older courts, just fill in and mail the reader service card in this magazine, phone or refer to Sweet's Architectural File: Catalog No. 2.9/Ch or Spec-Data: Division 2p.



Call Toll Free/24 hours

800-648-5322 ext. 200

(Good in 48 states except Nevada)



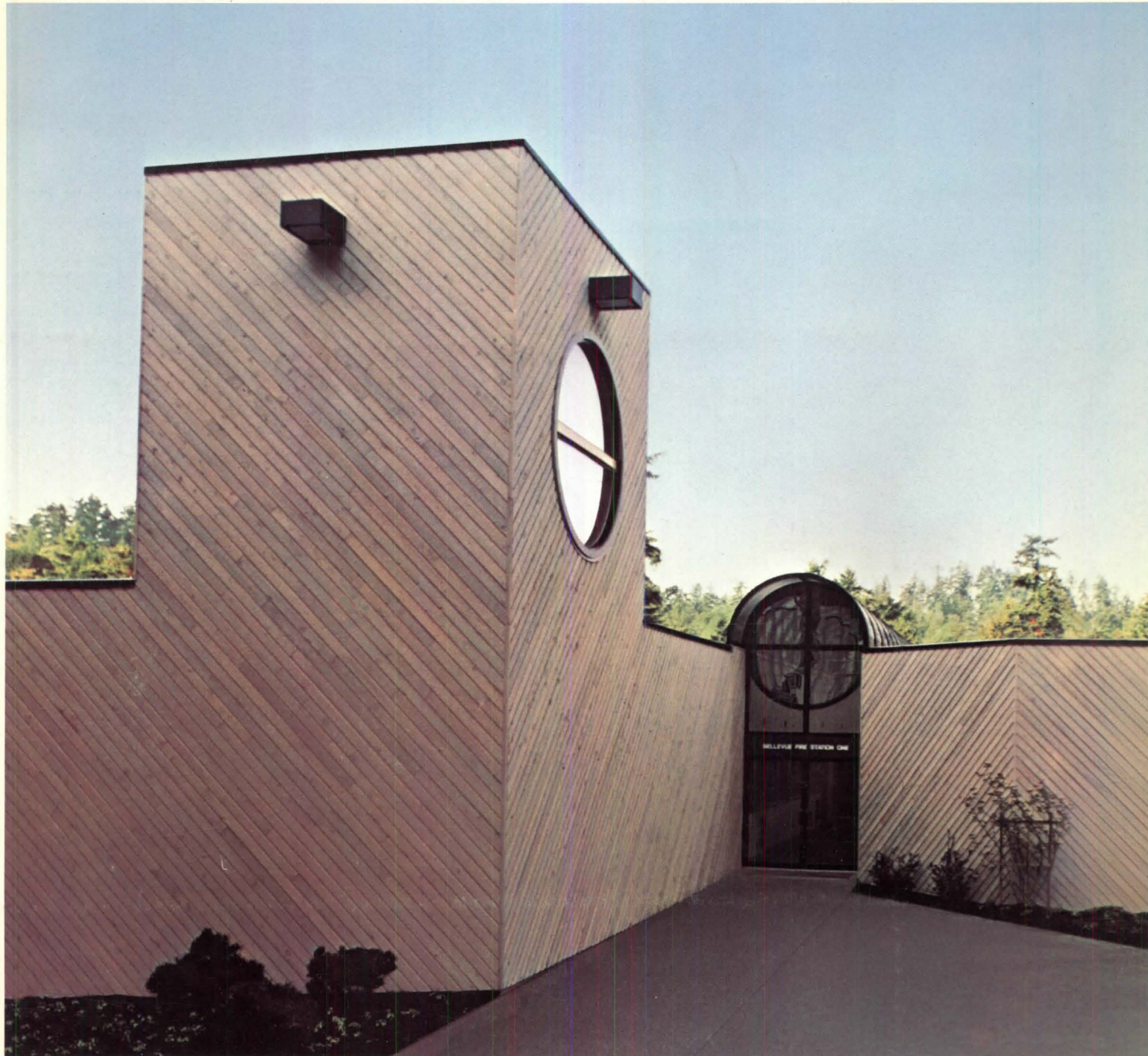
Chevron U.S.A. Inc.
Asphalt Division

P.O. Box 7643
San Francisco, CA 94120

Circle 93 on information card

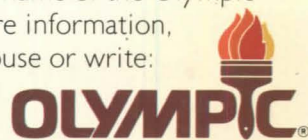
A beautiful way to
save money.
Olympic machine staining.

Architect: Mithun & Associates, Bellevue, WA



Beautiful . . . because the Olympic Stainer System actually forces the stain into the wood, where it dries to a uniform finish that looks as naturally beautiful as the wood itself.

Economical . . . because virtually all job site problems are eliminated: No weather delays, no painting scaffolds to erect, no bare wood exposed by shrinkage. Choose any Olympic Stain semi-transparent or solid color. For the name of the Olympic Machine Stainer nearest you, or for more information, call your local Olympic Central Warehouse or write:
Olympic, Dept. MS, 1148 N.W. Leary Way, Seattle, WA 98107 (206) 789-1000.



Circle 92 on information card