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Letters

In reference to RECORD's article "Pride misplaced: Stern lessons in American architecture," by Roger Kimball [RECORD, May 1986, page 77]:

1. for one, would like to thank the Mobil Corporation and Robert Stern for their efforts in presenting some outstanding architecture to the American people through the public broadcasting system. Regardless of Stern's voice and possibly some weak segments, the program was overall generally very interesting and informative.

Incidentally, who is Roger Kimball?

Charles E. Bullock, AIA
Architecture and Engineering Design Group, Inc.
Beaumont, Texas

Kimball is an architectural critic who writes frequently for the New York Times and other magazines. See also his book review on page 78 of the same issue.—Editor

The Jerde Partnership's Horton Plaza, reviewed in the March 1986 ARCHITECTURAL RECORD [pages 128-135], has certainly created a significant sculptural field through architecture-as-stage-set. It should be applauded not only for its commercial and urban relationships, but also for its reminder that architecture should express a rhythmic reality to be experienced through movement, not simply observed. In this way, perhaps what's most pleasing is its lyrical use of a Postmodern vocabulary, in contrast with the usually funeral and heavily self-conscious applications that seem so prevalent today. It proves that serious architecture can also be fun.

Wesley R. Wilson, Architect
Juneau, Alaska

I'm not usually in the business of writing fan letters, but your Elia Island piece [EDITORIAL, RECORD, May 1986, page 15] was a knock-out. There have been so few people willing to come out and say what you said and then say it so eloquently.

Roberta Brandes Gratz
New York City

Your article on the A. E. D. [RECORD, February 1986, page 59], while offering a 10-question mini-test, regretfully misses the point. It is something like describing a chicken as a pile of stone. Of course that is true, but it barely expresses what the essence of that structure is all about.

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In short, why doesn't anybody listen to the thousands of young candidates who simply want a fair chance to prove their capabilities? Perhaps that question should be addressed in a future article.

Leitor Wertheimer, AIA
Director
Architectural License Seminars
Los Angeles

RECORD intended February's mini-quiz as intellectual entertainment for practitioners, not as a professional examination. Perhaps, however, this month's mini-quiz on structures (page 50) will offer a bit more challenge.—Editor

Corrections

The advisory panel assisting the jurors of the International Association of Lighting Designers awards program [RECORD, May 1986, pages 85-86] should have included Jean Logain of Logain Design.

The stone restoration contractor for New York City's Bethesda Terrace [RECORD, May 1986, pages 180-197] is known both as Palat-Collins, Inc., and Pietra Dura, Inc.

The type of ceiling used in the University of Michigan Hospital [RECORD, June 1986, pages 120-121] was described in Manufacturer Sources (page 290) as "Planar ceiling (throughout); Domn Corp. (Paraline)." Planar is Alcion's registered trademark for ceilings: Paraline is a trademark for ceilings.

The artwork accompanying Richard Wiegand's article "Don't lapse into clichés" [RECORD, July 1986, page 47] was done by Frank Dywer.

August 18-22


September 3-6

Annual meeting, Society for Marketing Professional Services; at the Fairmont Hotel, San Francisco. For information: SMPS, 801 N. Fairfax St., Alexandria, Va. 22314 (703-648-6177).

September 4-6

"Main Street National Town Meeting," a conference on downtown revitalization co-sponsored by the National Main Street Program of the National Trust for Historic Preservation and the North Carolina Arts Council; in Winston-Salem, N.C. For information: The National Main Street Center, 1785 Massachusetts Ave., N.W., Washington, D.C. 20036 (202-675-4215).

September 11


September 11-14

Second annual Inter-American Forum for Architecture, "Housing and the City," sponsored by the New Granada Foundation, American Institute of Architects, and Tulane University; in New Orleans. For information: New Orleans Chapter, AIAs, 380 Exchange Alley, New Orleans, La. 70130 (504-625-8820) or Norberto Nardi (504-625-6380).

September 21-26

CIB, the 10th triennial congress of the International Council for Building Research (CIB); in Washington, D.C. For information: Noel J. Ranfaitse, Director CIB-86, Center for Building Technology, National Bureau of Standards, Gaithersburg, Md. 20890 (301-921-3160).

September 26-27

"Shaping for the Dynamic Church," a workshop for architects sponsored by the Church Architecture Department of the Baptist Sunday School Board; at Winona Lake, Ind. For information: Church Architecture Department, Baptist Sunday School Board, 127 Ninth Ave., N., Nashville, Tenn. 37204 (615-221-3460).

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Kimball Office Furniture Co./Artec
6th floor, 212/753-6661

The Kittinger Company
8th floor, 212/751-2780

Knoll International
2nd floor, 212/207-2200 and 105 Wooster St., 212/219-6500

Krueger, Incorporated
2nd floor, 212/751-2050

Jack Lenor Larsen
232 East 59th St., Main floor, 212/674-3993

Lehigh-Leopold/Cole LBF
38th floor, 212/593-0900

Madison Systems/Madison Furniture
3rd floor, 212/888-9050

Maharam
12th floor, 212/753-5440

Herman Miller Incorporated
600 Madison Ave., 2nd floor, 212/838-8280

Modern Mode Incorporated
306 East 61st St., 4th floor, 212/355-0785

Nienkämper, Incorporated
386 West Broadway, 2nd floor, 212/431-3202

 Pace Collection Incorporated
321 East 62nd St., Main floor, 212/838-0331 and Madison Ave.
at 72nd St., 212/835-9616

Reff Corporation
10th floor, 212/759-3680

Shaw-Walker
666 Third Ave., 24th floor, 212/697-8700

Steelcase, Inc./Stow & Davis
245 Park Ave., 24th floor, 212/370-1707
and 950 Third Ave., 10th floor, 212/370-1707

Stendig International, Inc.
410 East 62nd St., 6th floor, 212/838-6050

Stroheim & Romann, Inc.
153 East 56th St., Main floor, 212/691-0070

Stern Hauerman
730 Fifth Ave., 6th floor, 212/246-5200

Vista Contract
5th floor, 212/832-7011

Zographs Designs Limited
3rd floor, 212/421-6650

IDCNY
Center One & Two, 30-20 Thomson Avenue, Long Island City

All Designer's Saturday showrooms will be open from 9:00am-5:00pm.

Shuttle bus service to and from 911 Third Ave. at 56th St. in New York City.

Alma Desk Company
Center Two, 4th floor, 718/706-7474

Artemide Incorporated
Center One, 5th floor

Atelier International, Ltd.
Center Two, 7th floor, 212/644-0400

Breyton International
Center Two, 5th floor, 212/371-6131

Cumberland/I.M. Rosen & Co., Inc.
Center Two, 4th floor, 718/361-8190

Davis Furniture Industries
Center Two, 6th floor, 212/753-8906

Domore Corporation
Center One, 5th floor, 212/759-5551

Fixtures Furniture
Center Two, 6th floor, 718/937-5474

The Gunlocke Company
Center One, 3rd floor, 212/832-2322

Hardwood House
Center Two, 6th floor, 718/784-8858

Hektor Furniture Company, Inc.
Center Two, 4th floor, 718/236-2299

Holle Furniture Corporation
Center Two, 2nd floor, 718/706-7080

ICF Incorporated
Center Two, 7th floor, 212/750-0900

JG Furniture Systems, Inc.
Center One, 5th floor, 212/621-4213

Kinetics
Center Two, 6th floor, 718/482-8109

Jack Lenor Larsen
Center Two, 7th floor

Metropolitan Furniture Corp.
Center Two, 5th floor, 212/308-9365

Mueller Furniture Corp.
Center Two, 4th floor, 616/438-2738

Myrtle Desk
Center Two, 2nd floor, 718/706-6600

Revington Furniture Systems
Center One, 5th floor, 212/715-0570
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- More than a Saturday, Designer's Saturday is three days of valuable seminars and important receptions. All designed to stimulate the interchange of ideas, all set in the dynamic atmosphere that only New York can provide. - Help unwrap Designer's Saturday 1986 and see the shape of things to come.

TUESDAY OCTOBER 7
Pre-Designer's Saturday Event:
Evening
Resources Council, Design New York Market. Opening Reception, 6:00 pm to 8:00 pm, Tavern on the Green, Central Park West at 67th Street. Admission tickets required. Contact: Resources Council, 212/752-9040.

THURSDAY OCTOBER 9
Facilities Management Day
Designer's Saturday showrooms open 9:00 am to 5:00 pm. Lunch served at 12:00 noon. Four one-hour presentations held at participating showrooms, beginning at 9:00 am, 10:30 am, 1:30 pm and 3:00 pm. A schedule of seminars will appear in the September issue of this magazine. Admission tickets not required.

Evening
Cocktail Reception, 5:30 pm to 7:30 pm, for facilities managers and designers will be held in The Equitable Tower Employee Dining Room, 50th Floor, 787 Seventh Avenue at 52nd Street. Paul Goldberger, architecture critic of The New York Times, describes this room designed by Kohn Pedersen Fox Conway as "...surely the grandest dining space ever put on top of a skyscraper." Whitney Museum branches open in the lobby. Admission tickets, $40. Clip and return card.

FRIDAY OCTOBER 10
Morning
IBD/Contract: Magazine Product Design Awards Breakfast, 8:00 am to 10:30 am, Plaza Hotel, Grand Ballroom, Fifth Avenue at 58th Street. Admission tickets, $50. Contact: IBD National Office, 312/467-1920.

Day
Designer's Saturday showroom open 9:00 am to 5:00 pm. Lunch served at 12:00 noon.

Evening in Manhattan
Designer’s Saturday showroom receptions, 5:00 pm to 7:00 pm. Cocktails and hors d'oeuvres will be served. Check the September issue of this magazine for showrooms hosting receptions.

Evening at IDCNY
Atria at Centers One and Two. Dine, drink and dance the night away, 7:00 pm till whenever. View "40 Under 40," an exhibit featuring nonprofit multi-images of the work of 40 impressive young architects and designers. Showrooms will remain open. Continuous shuttle-bus service to and from 919 Third Avenue at 56th Street.

SATURDAY OCTOBER 11
Day
Designer's Saturday showrooms open 9:00 am to 5:00 pm. Lunch served at 12:00 noon.

Evening
Designer's Saturday Gala Reception, 7:00 pm to 9:00 pm. The Metropolitan Museum of Art, Fifth Avenue at 82nd Street. Buffet and bar in The Temple of Dendur. Refreshments and entertainment in The American Wing Courtyard features a Country Rock group from New York's famous Lone Star Cafe. Preview "Treasures of the Holy Land: Ancient Art from the Israel Museum," the largest, most important collection of ancient Israeli art ever to travel abroad. Gift shops will be open. Admission tickets, $20 (a tax-deductible contribution to the Museum) purchasable at member showrooms or at the Museum on Saturday evening.

Facilities Management Day
Cocktail Reception
Thursday, October 9, 1986
☐ Yes, I will attend. Admission, $40 per person.
☐ No, I cannot attend, but please put me on your mailing list.

Please make checks payable to Designer's Saturday, Inc. and return with this card by September 25th to: Designer's Saturday, Inc., 911 Third Avenue, New York, NY 10021. Due to limited capacity, tickets will be mailed on a first-come, first-served basis.

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TRAVEL
For special discounted travel for Designer's Saturday attendees, call the participating airlines directly. For lodging arrangements, or special air and hotel packages for European visitors, contact:
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212/332-3343 or 800/428-6677
Telex #4953361

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Monday-Thursday: Single $155, Double $175
Friday-Sunday: Single $155, Double $155
Halkorin House
48th Street at Lexington Avenue
Single $125, Double $125
Madison Towers
38th Street at Madison Avenue
Single $85, Double $95
Morgans
38th Street at Madison Avenue
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Advanced studies institute expands

Rethinking downtown Hartford

News briefs

The University of Maryland recently received the largest collection of historic preservation materials in the United States from the National Trust Library. The collection, which will be housed in the architecture library at the College, contains 11,000 books, 500 periodical titles, extensive vertical file items, and microfiche newspaper clippings. Outside circulation will be strictly limited.

Once again, a bill calling for the exemption of all noncommercial, religiously owned property from landmarks laws is before the New York State Legislature. To prevent its passage, New York’s Municipal Art Society is leading a vigorous campaign, masterminding groups to write letters of protest to the New York State Senate.

Another bill to go before the New York State Legislature is a $1.45-billion Environmental Quality Bond Act put forth by Governor Mario Cuomo for a vote in November. The bill proposes to clean up hazardous waste sites, acquire environmentally sensitive land and municipal parks. In addition, it will provide matching grants to government and not-for-profit owners for the preservation, restoration, and rehabilitation of historic properties.

International pact signed by computer graphics organizations

An agreement to support developments in the international computer graphics market has been signed by the National Computer Graphics Association of Fairfax, Va., and the Nippon Computer Graphics Association.

"This cooperative agreement is aimed at the mutual advancement of computer graphics technology, here and in Japan," says Thomas C. Cain, president of the Virginia NCGA and a vice president of ComputerVision. "By entering into this agreement," says Cain, "NCGA is able to dramatically increase the scope of benefits that we provide to our members. This pact allows the groups to pursue establishing an informal network between U.S. and Japanese manufacturers, assist NCGA corporate members to reach Japanese markets, and create a window on Japanese technology.

Construction is under way on a $5-million addition to the Wang Institute of Graduate Studies in Tuftsboro, Mass., under the direction of Boston architects Earl R. Flansburgh & Associates, Inc. The addition will more than double the size of the existing 42,000-square-foot building.

Dr. An Wang, who founded the Institute in 1979, said the new facility is "designed to accommodate our growth and enhance our academic curriculum. This building is a reflection of our progress toward achieving our goal of academic excellence and of the stability that we have achieved in just a few years."

The Wang Institute is one of only a few schools in the U.S. which grants advanced degrees in software. It also offers a post-doctoral fellowship in Chinese studies.

Renovation set for historic cast-iron structure

Considered the oldest cast-iron building in New York City, 254-260 Canal Street is undergoing an extensive renovation. The 130-year-old Italian palazzo-style building, located one block east of SoHo, is regarded as the earliest surviving work of James Bogardus, the renowned pioneer of 19th-century cast-iron architecture in the U.S.

Formerly a factory loft space, the landmark structure will be converted into the new Chinatown Commerce Center, offering modern office and light-manufacturing space to nearby Chinatown professionals and others in the SoHo and Tribeca communities.

Jack L. Gordon Architects, designers of the renovation, will restore the building's elaborate cast-iron facade, working closely with the Friends of Cast-Iron Architecture and the Landmarks Preservation Commission.

In an effort to enliven the sagging features of downtown Hartford, Aetna Life & Casualty and two Hartford developers have asked Cesar Pelli & Associates to come up with a design scheme for Pratt Street.

The first phase of the plan calls for a $35-million renovation of the street, once the home of Connecticut's most elegant shops, but since fallen on hard times. When the Civic Center Mall opened in 1974, many upscale shops moved there, even though Pratt Street is a stone's throw from the mall.

Pelli's scheme includes a pedestrian mall on Pratt Street, linking it with the Civic Center on the west end and Main Street shops on the east end. For most of the day, the street would be closed to traffic. It would be paved over in rough-faced granite, brick, and marble and decorated with benches and turn-of-century lighting to attract boutiques, restaurants, and shoppers.

Other plans include restoring historic buildings on Pratt Street, adding four floors to the four-story Standard Building, at the corner of Pratt and Trumbull streets; and a pedestrian bridge over Trumbull to join the building to the Civic Center Mall, and a new six-story 200,000-square-foot office building to go up behind Pratt Street.

According to architect Flansburgh, the project is designed to allow for expansion in the future. "This building is not only a classroom, auditorium, and office structure," he says, "it is the anchor of an extraordinary educational institution."

Additions to the Institute's main building will house an auditorium, classrooms, an expanded library, computer and dining areas.
Back in the mid-1970s, when energy prices melted Snow Belt economies, the Yankee battle cry became: "The North will rise again, and so it did."

Prime examples: New York, where growth is fueled by finance and other services, and Massachusetts, which plugged into high-tech for high growth.

Massachusetts in particular transformed itself from an old-line industrial state into an on-line computer/software/electronics center in record time. Employment and income soared. Housing starts shot up from 17,500 in 1975 to 38,500 in 1985, according to estimates by Data Resources, Inc. Meanwhile, Boston became a hub for the U.S. office-building boom of the 1980s. Reflecting all this activity, construction employment in Massachusetts hit 107,000 last year, up 30 percent just since 1983 and up more than 50 percent since 1986.

But a slump in computer and electronics sales hit the U.S. in 1985 and continues in 1986. High-tech layoffs have become commonplace along Boston's Route 128, an ill omen for housing construction in the short run and for commercial and industrial construction later on. As elsewhere in the country, Boston's office boom will also be tempered by tax law revisions that target real estate limited partnerships. Near term, in other words, the Massachusetts economy will lose some of its luster; as a result, construction will decline.

New York in the past decade did less restructuring of its economy. But it had the right economic base for the times—a period marked by gyrating interest rates, heightened by public awareness of investing, and ultimately by booming bond and stock markets beginning in the summer of 1982. New York City has enjoyed the most extensive office building boom in the nation, but tax reform will hurt the office market. But both cities have lower office vacancy rates than any other area in the U.S. New York is now generating strong housing markets in the metropolitan area. The computer industry in the Bay State eventually will rebound, making the area fertile ground again for builders, developers, and architects.

**Five finalists named in Brooklyn Museum master-plan competition**

State and city officials in Raleigh, N. C., have approved a 20-year master plan by local architects Paton-Zucchinio & Associates that calls for the creation of a cohesive, 25-block-square government district in the state capital with added office space and open space.

Robert M. Lappas, a Paton-Zucchinio landscape architect, says the master plan incorporates four types of new structures into the area: monumental office buildings along a more formal main boulevard, general state office buildings off the main. And low-rise mix of new and relocated structures to complete the historic area near the governor's mansion, and a visitors' center pavilion.

The first phase calls for the construction of two office buildings, one a six-story structure with 215,000 square feet, the other five stories tall with 175,000 square feet.

**Atlanta mayor expresses reservations on preservation**

On the heels of Atlanta mayor Andrew Young's refusal to support a City Council Plan for a 90-day moratorium on demolition permits for historic structures, both the Atlanta Preservation Center and the Atlanta Design Commission have regrouped to "pursue the development of a comprehensive preservation plan."

Says Eileen Segrest, APC executive director, "Preservationists will have to keep the business and political communities' feet to the fire."

At issue is the fear that three older buildings on the city's famed Peachtree Street would be demolished in favor of a church parking lot and a $50-million, 19-story office building. Mayor Young says the proposed moratorium would keep developers out of town, adding that Atlanta "has no character, but is building character in new developments."

Atlanta architect Peter Drey, who lives at Peachtree Terrace Apartments, one of the doomed projects, says, "The development community is very divided, and not at all in favor of seeing Peachtree Terrace go. What makes midtown attractive to the developers is a mix of old architecture and new, a mix of residential and commercial uses, and a walkable environment."

Five finalists have been selected from a field of 108 architects to design a master plan for the Brooklyn Museum. Each will now draw up a plan for the restoration and renovation of the museum's interior and an expansion scheme to double its space.

The selected architectural teams are Atkin, Voith & Associates with Rothkoel Kaiserman Thompson & Bee; Arata Isozaki & Associates with James Stewart Polshek & Partners; Kohn Pederson Fox Associates; Skidmore, Owings & Merrill; and Stanger and Mills Associates. All the architectural teams are located in New York with the exception of Isozaki, who is based in Tokyo, but will work in New York with Polshek, and Atkin Voith & Associates, a Philadelphia firm, that will work with the Rothkoel team in New York.

**Calendar**

August 4-6


September 4-6

"Main Street: National Town Meeting," the first conference sponsored by the National Trust's Main Street Center and the North Carolina Arts Council; at Stouffer Winston Plaza Hotel, 425 North Cherry Street, Winston-Salem, N. C. 27101. For information: Vicki Onderdonk, National Main Street Center, The National Trust, 1785 Massachusetts Ave. N. W., Washington, D. C. 20036 (202/673-4219).
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A defense against cancer can be cooked up in your kitchen.

There is evidence that diet and cancer are related. Some foods may promote cancer, while others may protect you from it.

Foods related to lowering the risk of cancer of the larynx and esophagus all have high amounts of carotenoid, a form of Vitamin A which is in cantaloupes, peaches, broccoli, spinach, all dark green leafy vegetables, sweet potatoes, carrots, pumpkin, winter squash, and tomatoes, citrus fruits and brussels sprouts.

Foods that may help reduce the risk of gastrointestinal and respiratory tract cancer are cabbage, broccoli, brussels sprouts, kohlrabi, cauliflower.

Fruits, vegetables and whole-grain cereals such as oatmeal, bran and wheat may help lower the risk of colorectal cancer.

Foods high in fats, salt- or nitrite-cured foods such as ham, and fish and types of sausages smoked by traditional methods should be eaten in moderation.

Be moderate in consumption of alcohol also.

A good rule of thumb is cut down on fat and don’t be fat. Weight reduction may lower cancer risk. Our 12-year study of nearly 1 million Americans uncovered high cancer risks particularly among people 40% or more overweight.

Now, more than ever, we know you can cook up your own defense against cancer. So eat healthy and be healthy.

No one faces cancer alone.
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Armadillos are known for tough skins and a body that's built to withstand almost any natural element...features also typical of Aluma Shield products.

- We offer a complete line of panels including our roof system...the only complete one-piece PVC membrane roof available today. Its ease of installation and superior weather-tightness allow for considerable cost savings during construction, and maintenance-free protection year after year.

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Our complete line of industrial and cold storage doors satisfy today's most demanding needs for energy efficiency and material handling. Specify Hercules when you need top quality, cost effective doors that deliver reliable performance under the most demanding conditions.

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Bill Knapps Restaurant Distribution Facility
AIA Convention: In an historic setting, a landmark professional decision

Theme programs, controversial issues, and a closer look at San Antonio

As some 6,500 registrants descended on San Antonio for the 118th AIA national convention in early June, the record rainfall that had plagued the Texas metropolis during the previous week subsided, replaced by the kind of hot, humid weather that had even natives seeking refuge inside the air-conditioned confines of the city's convention center. But for those unfamiliar by the storms of climate, a trip to the Southwest was an opportunity to combine convention business with visits to San Antonio's famous Paseo del Rio (or River Walk) and the Alamo, the most celebrated building in Texas. Preservationists headed a bit further afield to the King William historic district, a stylistically eclectic residential enclave on the edge of downtown, or to San Antonio's four Spanish missions.

Back in town, architects chose from 100 "learning programs," including 20 professional development seminars and 44 individualized consultations. Pulitzer Prize-winning author Tracy Kidder led a session that brought together the protagonists of his best-selling book House, while Arthur Erickson, this year's recipient of the AIA Gold Medal, held informal discussions on his work. The seemingly perennial issues of architects' compensation and the problem of obtaining liability insurance were topics of considerable discussion, while the architect's role in finding new ways to house the nation's homeless was the focus of two seminars. RECORD's report on some of the convention's more significant events follows.

Theme speakers examined a mixed bag of contemporary issues. Consistent with the format established in past years, convention organizers devised a loosely knit "theme" program comprising talks by five invited speakers. The overall theme of the San Antonio meeting—"The American Architect"—provided a rather unfocussed rhetorical framework that resulted in a decidedly uneven group of presentations. The most engaging speaker among the five clearly was Brendan Gill, long-time drama critic at The New Yorker and an active spokesman on architectural matters. In his keynote address Gill provided the current architectural profession as a double-edged sword. On one hand, he observed, architects are enjoying unprecedented public favor. "Until recently, the profession was not one to enter to become rich, much less famous," he said. "It is only within the last decade that architecture has become fashionable. Now, architecture—or rather architects—are all the rage."

More negatively, Gill bemoaned the profession's "mishandling of its public image, befuddlement unequalled at any moment in history. In what direction," he asked, "can the young student of architecture be invited to go? Are not the allurements of Postmodernism being seen for what they always were—parody in the name of paying homage to a technically inferior past? Is it possible that a Miesian revival may soon be looked for—a revival that, unlike Postmodernism, will escape the taunt of a half-concealed and at heart sour and unmunefying look?"

Moving from Gill's thoughtful ruminations to the determinedly pragmatic considerations of running America's 10th largest city, San Antonio mayor Henry Cisneros explained how his administration is attempting to balance the city's legitimate human scale and historic charm with the needs of the future. Cisneros linked San Antonio with cities like Indianapolis and Baltimore that are now thought of as "pro-active, business-type planning strategies necessary in a 'post-Washington' era of federal cutbacks. Calling San Antonio a model for the new "business-friendly" city, the mayor ticked off a mind-boggling array of current and forthcoming downtown building projects that involve the participation of both public and private interests. In particular, that in the major demographic and economic shifts affecting America's urban centers, "some cities will be victimized and others will prosper." The direction that he intends to lead San Antonio was made clear.

William Hammond, a veteran of General Electric's Applied Creative Thinking Program, delivered an intriguing talk that progressed from a general overview of the learning and thought processes in post-industrial America to a more specific discussion of the architect's mind. After defining the four quadrants of learning—sensing, watching, thinking, and doing—Hammond went on to present the results of research on the thought processes of architects, pointing out that most successful firms balance people strong in the first two quadrants (creative or design-oriented personalities) with those who exhibit qualities of the third and fourth quadrants (technical or practical). According to Hammond, is simply a matter of hiring the right mix of people.

The final two theme presentations were less provocative. In an address marred by gratuitous swipes at the forecasting abilities of competing magazines, Robert Blumberg, publisher and editorial...
The Plaza Suite. For those who don't understand the meaning of compromise.

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director of Barron's, gave a largely sanguine economic outlook for what he called the "amazing 90s," predicting lowering interest rates, continued low inflation, and diminished expectations by union labor. While Bleiberg recognized certain weaknesses in the current economy—namely, rising corporate layoffs, softness in the automobile and heavy manufacturing industries, and a decline in advertising—he felt that the boom in the sales of homes, growth in technology industries, and a stable rate of unemployment would result in sustained economic growth through the end of the decade.

If there was an arrogant tone in Bleiberg's talk that was at times annoying, the convention-closing address by Susan Stamberg was downright bewildering. Stamberg, the voice of the nightly news program 'All Things Considered' on National Public Radio, elected to give a travelogue of sorts (without slides) on her recent extended trip to Asia. Focusing on Thailand, Stamberg contrasted the splendor of Bangkok with the humane qualities of its indigenous architecture and, in the most superficial manner, suggested that American architects avoid the stuffiness of European Modernism and instead turn to Asia for inspiration.

Journalism symposium reviewed the state of architectural criticism Perhaps the most successful of all the programs in San Antonio was a morning-long symposium on architectural criticism, sponsored by the AIA Committee on Design, that brought together five leading newspaper critics and the editors-in-chief of the country's three major architectural trade journals. Robert Campbell of The Boston Globe, David Dillon of The Dallas Morning News, Thomas Hine of the Philadelphia Inquirer, Michael Sorkin of New York's Village Voice, and Manuela Hoelterhoff of The Wall Street Journal all spoke compellingly of their week's work, depicting a surprisingly no-holds-barred world of nonintervention by their publishers. Campbell observed that the role of the critic is to "create heroes and monuments for a post-Nietzschean society, to carry the word back and forth between architects and the public, and to raise the consciousness of the profession regarding what makes a city good or bad." Dillon noted that there is no such thing as unbiased criticism: it is the critic's job, he said, to be a subjective advocate on building projects and issues. Dillon added that while his primary obligation is to his home city of Dallas, he views himself as a national critic reporting on important architectural events throughout the country. Hine of Philadelphia agreed, noting that there is a significant difference between a regional critic and a provincial one.

Suzanne Stephens moderated a panel of magazine editors comprising Donald Canty of Architecture, John Dixon of Progressive Architecture, and Mildred Schmeritz of RECORD. Stephens's questions provoked a spirited debate that centered on Williamsburg under the aegis of the Rockefellers. For Kostof, Ostia is an example of the scholarly and romantic approach to preservation practice in its repair of existing ruins: "There is no moral statement about the good old days. What you see is what you get. What you don't see, you have to bring yourself." Colonial Williamsburg, on the other hand, embodies the theory that restoration is synonymous with the attempt to capture an ideal moment in history by creating "a state of completeness that may never have existed." The 18th-century structures still standing in the village were restored, while those dating from the 19th century were torn down. Missing or destroyed buildings were rebuilt in the Federal style to achieve a stylistic whole. Such periodic recreation, explained Kostof, was subsequently employed in Plymouth and Salem, and, more recently, at theme parks such as Walt Disney World. He warned that these "Shangri-las of history" are no substitutes for real culture or for the preservation of our collective memory. "We have to learn how to negotiate the old and the new in cities," he asserted, pointing to such successful examples of "living" preservation as Charleston, S.C.

The San Antonio example: Urban paragon or paradise lost? AIA convention organizers traditionally plan a series of programs that address recent architectural and urban planning in the host city. This year's program consisted of three panels that dealt with the public/private mix of current building in San Antonio, urban design issues involving continued development along the city's famous Paseo del Rio, and the 80-mile-long San Antonio-Austin Corridor, an experiment in planned regional urbanization. Despite the contention by some presenters that San Antonio's aggressive pro-growth plans will be tempered by a concern for quality of life, there are also concerns over the city's destiny to repeat the mistakes of its Sunbelt urban brethren. San Antonio already has the second highest number of freeway miles (after Los Angeles) in the country, and one speaker advocated further highway expansion to stimulate additional growth. During a panel discussion titled Entrepreneurial City: Guiding the Public/Private Mix, David Garcia, the city's special projects manager, revealed that the city had been especially successful in obtaining federal UDAG funding and then joining with private developers on a host of large-scale renewal projects. Most of these proposals, however, involve bolstering the city's convention/tourist trade—a new shopping mall, a Rouse-developed festival marketplace, several new hotels, expansion of the convention center, and conversion of the HemisFair redevelopment site into a 90-acre park—and their implementation promises to turn the city into something of an urban theme park centering on the River Walk and the Alamo. Development pressures along the river are intense, and there is justifiable concern among some that the River Walk may become a victim of its own success, as developers erect tall buildings at the water's edge. As things now stand, downtown San Antonio is really two cities: below grade, the still-compelling charm of the meandering Paseo del Rio attracts tourists strolling past sightseeing barges, lush landscaping, and European-style cafes; at street level the "other" San Antonio comprises a depressingly neglected urban fabric of architecturally significant buildings surrounded by rubble-strewn lots, vacant storefronts in the once-vibrant Houston Street shopping district, and bus stops overcrowded with those too old or too poor to escape the disfavor of the inner city. The panelists never really addressed San Antonio's aesthetic and social woes, but relied instead on predictable praise for the River Walk, which they believe "I know anywhere," said one—and spurious comparisons between the city and other distinctive American metropolises, like New Orleans, Boston, and San Francisco. Disappointingly absent in San Antonio today is the kind of visionary urban planning that created the River Walk during the 1980s. Instead, it has been replaced by unlightened boosterism.
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The ParkLane luminaire integrates with practically any contemporary architectural theme.

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which he called the single most important documents of all, especially for principals. With these documents, architects can determine their profitability per direct-salary expense (revenue divided by expense) and per direct labor hours (revenue divided by hours). In this respect, the cumulative figures are matched against target figures to show not only if one is making money but, if not, why. For instance, a high figure for labor hours may mean that too many senior people are on the job. The system may point out other problems, such as not having billed up to the completed stage of work. It also shows which type of profitable projects to pursue.

**The competitive edge.** Dr. Stuart Rose, who conducts marketing training for the AIA, The American Consulting Engineers Council, and the American Society of Interior Designers, among others, stressed techniques for taking the driver’s seat in presentations, interviews, and general client encounters. His headings included “the flesh and the muscle” (sentence structure and word emphasis that grab attention), “the skin” (tone of statements), and “the drama.” He recommended that, in an interview, you should have a question you have ever done but beat the selection committee to the punch on questions by going around the table and drawing out each member’s concerns. (“If they try to ask questions, tell them questions come later,” said Rose.) Then summarize what they have said. Ask them if your summary is okay. Finally, say you would really like the job and you have the right firm to do it. “Simply saying ‘thank you for seeing us’ sounds obsequious.” Rose discussed techniques for drawing out what clients are looking for ahead of meetings. “If they don’t want to tell you, ask if they wouldn’t rather have a firm that is responsive. Throw the onus on them.” For presentations, he recommended doing what you do best: “If you do good magic-marker drawings and can show enthusiasm that way, do them. If you jingle coins in your pocket when you talk standing up, talk sitting down.”

**Energy as a form giver.** Texas A&M professor Raymond Reed argued for a return to energy fundamentals. For instance, architects seem to have their application of insulation to buildings reversed. People, he pointed out, have their fat on the outside to keep them warm but architects put the thermal protection for buildings within. Still, he saw the major problem with new buildings housing heavy concentrations of lighting, mechanical equipment, and people as cooling, not heating. “There’s something wrong when you see, as you can, air conditioning having to be run on the coldest days in Boston,” he said. He espoused the basic principles used to build older buildings. “How many buildings were built before we learned to harness oil?” he asked. “And how many will be built after it has run out?” He used the remodeling of transportation while the poor people, so displaced, will come to fill up the vacant suburbs.

**CAD: Implementation and beyond.** David Jordan of consultants Jordani & Associates talked about the management of a design firm as having more influence on the success of systems than the choice of which system to use. “The field is so competitive years that a firm’s profit can be seen to be self-generating is applied to that profit. A normal multiple if the firm is healthy is two years.

2. Discounted cash flow. A longer period of profit is projected and then discounted based on the fact that cash in hand today is worth more than cash in hand a year from today.

3. Multiple of net worth. A multiple, usually between 1 and 1.75, is applied to the excess of assets over liabilities.

4. Net worth plus earnings. The return on net worth is used to produce a reasonable multiplier close to that expected in normal business investments.

Hochberg outlined a number of qualitative and quantitative factors that influence all of the above formulas. Under qualitative factors, he included the ratios of senior people and owners to the general staff, and of those with marketing capabilities, the quality of fixed assets, corporation, the staff’s energy level, and the firm’s position within its markets. Quantitative factors, besides net worth and earnings, included liability exposure per employee, the extent and nature of debt, economic conditions within the firm’s markets, and the number of competing firms.

**The AIA Documents: An overview.** Attorney Dale Ellickson, the director of the institute’s documents program, explained not only the growingly complex categories of some 88 documents required for the many different types of contracts that are currently written but the new documents that will be coming out at the end of the year. New provisions, for instance, will mean no more contractors dumping 1,200 drawings for approval at 2:30 on a Friday afternoon.” He said that the documents, first created in 1888, would continue to reflect changes in the ways architects practice and court tests. And one may run into trouble when altering one section without altering others, e.g., A-201 which defines basic responsibilities—and requires the approval of shop drawings, while lawyers will often add an addendum saying that the architect will only review them. Among the factors that influence the choice of documents is the method by which the contractor is to be paid and the design firm’s position. “Architects may want the cost breaks of having his mechanical contractor design the system,” said Ellickson. Other factors include the form of construction contract. “You must produce much more detailed working drawings if a project is to be bid instead of negotiated,” he reminded his audience. C. H. F.
Building and landscape architects joined forces to give the new Showboat Hotel and Casino a roof that will stand out—even in the flamboyant world of Atlantic City casinos.

Landscape and site design specialists Cairone Mackin & Kaupp, of Philadelphia, worked closely with casino architects Martin Stern Associates, of Beverly Hills. They produced a nautical design that combines multicolored crushed stone graphics (such as the compass rose above) with live plantings, trellises and other traditional garden landscaping elements.

Underneath it all went a 45 mil Firestone RubberGard® EPDM roof and Firestone-supplied Foamular® insulation, the value-engineered recommendations of Thomas Roofing & Sheet Metal Co., the Atlantic City contractor for the job. “It would have been prohibitive to put down a built-up roof—more labor, more materials,” said Mike Thomas, of Thomas Roofing, explaining why he chose Firestone EPDM.

Dave Rudzenski, the Martin Stern field rep on the job, agreed. “I personally feel it’s a better product. Much easier to work with. And the life is long.”

Architects across America are finding that Firestone RubberGard® EPDM provides the strength, durability, economy and ease of installation they need to feel true confidence in a roof. And that confidence is increased by Firestone’s unsurpassed field support, from architectural consultation to installation to final warranty inspection.

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### Summary of Building Construction Costs

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### Western U.S.

- Mississippi River and West Central States | 122 | 0.29 | 1.37 | 1663.38 |
- Pacific Coast and Rocky Mountain States | 106 | -0.15 | 0.97 | 1727.97 |
- **Average Western U.S.** | 228 | 0.09 | 0.78 | 1693.41 |

**United States Average** | 505 | 0.34 | 1.24 | 1676.48

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**Costs:**

- They had to go up a little at some point

Of course, conventional wisdom tells us that the prices of everything will always go up. With construction costs holding steady through much of 1985 and finally dropping by a smidgen in the final quarter, something had to give. And it did. Construction costs in the first quarter of 1986 rose—by a smidgen. And this was not in all cities, since Denver, Minneapolis, New York, Pittsburgh, San Francisco, and Seattle continued to show declines. Both components of costs—labor and materials— contributed to the general rise.

- Labor’s gains were strongest in the East, New England, the Northeast, and the South, with the WestCentral States following.
- Paradoxically, strength within the construction markets, both residential and commercial, is credited with keeping labor costs down—along with low inflation.
- Material prices, led by gypsum board, plywood, and lumber, increased slightly due to the strong housing market. However, asphalt products began to reflect the downward trend of the cost of oil, and they may continue to go down some more before the current rising cost of oil catches up. Structural steel, electrical conduit, and copper also declined.

- Projections for the next several months are for continued stable construction costs. The many labor contracts that will be negotiated between May and September are anticipated to be within the bounds of inflation and the major union threats to be fringe-benefit improvements and productivity limitations. However, shrinking profits for the producers of construction materials during the first quarter cannot be ignored. Eventually, this last factor, coupled with direct contact with union nonunion sources, direct-material suppliers, construction-labor consultants, and both general and specialty contractors in each city.

### Historical Building Costs Indexes

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Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other. If the index for a city for one period (200) divided by the index for a second period (300) equals 1.000, the costs in the cost period are 28% higher than the costs in the other. Also, period costs are 25% of those in the first period (200) divided by 250 or they are 25% lower in the second period.
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Practice: Clients are the angels of invention

An architect well known for novel ideas that sometimes raise professional hackles poses his views on what architects do

By Charles Thomasen

Innovation comes from solving real problems in the real world. The only meaningful innovation is that which is wanted by somebody.

Three great firms have, in fact, been shaped by listening to the needs of their clients.

Tom Ellerbe is 94. He has a seventeen-decade perspective on the practice of architecture, having joined his father's firm when he was in his late 20s. Two years later, his father died, and Tom took over. The firm had worked with a small industrial company named 3M and a family of doctors named Mayo.

I thought I'd like advice on being successful from a man who could keep two clients for 75 years. His reply: "It was listening to the Mayo brothers and learning about technical competence." In solving medical design problems—in working closely with these clients—Ellerbe became the country's leading medical architect.

At CRS, Bill Candill found a new way to listen to clients. When the firm was just a few people in College Station, Texas, it landed its first project for a school in Oklahoma. The designer did several schemes, but every time they went up to make a presentation, the design was turned down. Realizing that CRS was losing its shirt on the project, Bill decided that he and his partners should load drafting boards in their cars, drive to Oklahoma, and work in the client's board room until they got their plans approved. They did it. It worked wonderfully. And it worked in two ways. Watching the architects work, the clients began to understand what Bill was trying to do as an architect. And Bill began to understand how they wanted to teach school.

Such "squatters" became a tradition at CRS. Everybody loved it. They would pack up, go off, and sit down with educators to learn how this project differed from the previous one. They learned how schools worked. They didn't get wrapped up in unrelated architectural philosophies. They solved real problems for educators.

Developer Gerald Hines chose 3D/I for his first project and the firm has worked for him ever since.

During Houston's great expansion, 3D/I worked closely with developers and learned what they needed. The firm learned early that to make a project economically feasible, a developer had to have an efficient floor plan, core, skin, and mechanical systems and how to produce them. The firm even learned to quote its fee in dollars per square foot so the amount could be easily used in the client's profit-and-loss calculations.

Today, many firms understand good hospital, school, and office-building design. The basic skills of Ellerbe, CRS, and 3D/I, once innovations, are now a necessity.

So when much of the innovation at the practical level stops, when firms' special building types mature, how do good firms continue to set themselves apart from other architects? Beyond design innovation, there are four classic benefits that attract clients: price, packaging, service, and quality.

When services are seen to be a commodity, price often becomes the decisive selection criteria. The usual strategy is to become a low-cost producer. That's not bad.

Clients benefit from a good price— for construction and fees. We don't give enough thought to ways of reducing costs. The professionals who have worked out ways to design and build economically deserve our respect.

But even in selling commodities, price doesn't have to be the determining factor. One consumer company, Southland Corporation, has taken the world's most basic commodity product—groceries—and added convenience. Its Seven-Eleven stores sell the same quart of milk for more than the local supermarket, but they make it available when the supermarket is crowded or closed.

McDonald's has built success selling hamburgers. Its product is not innovative, nor does it sell its product at a lower cost than its competitors. However, it adds speed, dependable quality control, and, through advertising, familiarity.

After cost, purchasers often see packaging as one of their principal benefits.

Take hi-fi. During the '50s and '60s, technological innovation in sound reproduction took great leaps. You bought components from the innovators—Bogen, AR, Girard. Eventually, technological innovation topped out. A few hundred dollars would buy all the fidelity anyone but an audiophile could want. Only infinitesimal gains in sound quality were available for higher expenditures.

In the mass market for stereo equipment, technological innovation quit being the major buyer influence. Packaging became important. Bang & Olufsen of Denmark integrated components into a beautiful package and added features like remote control and pre-programmed functions. The Japanese began packaging speakers, turntables, cassette decks, tuners, and amplifiers into modular clip-together, super blasters. Packaging included the addition, rearrangement, and alteration of both aesthetic and esthetic solutions all in an economical package.
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Sometimes we don’t understand the difference between good service and good architecture. Let me describe the difference with an analogy. Let’s say you go to a repair garage and find your car’s not ready when promised, and that you have a surprise problem that is said to cost $700 to repair. You go the next night, the bill is not $700, it’s $1000, and the steering wheel is dirty. Would you go back?

Let’s change the service slightly. The garage service manager calls you before you go to get your car, explains its problem, estimates the cost at $100, and says that he will call to confirm that it will be ready the next day. He does. You go pick it up. The bill is $100, instead of $1000. Not only that, the steering wheel is clean and the garage has thrown in a $2 wash job.

The mechanical result was the same. The difference was that the service manager called and leveled with you. He thought about you as well as your car. That’s good service. It’s not quality work, it’s good service.

The client must be a member of the design team. The developer has probably become more involved in design than any client in history. Architect and developer are collaborators until the building works and the pro forma is right.

Recently, I talked to one of our important clients for whom we have done a lot of work. I asked him to tell me how we were doing. I don’t take him for granted. One of the nicest things he said was, “You are all a pleasure to work with.” Well, I suppose it would be easy to be complimented by that, but there are two messages there. One is that Dennis is a successful developer in a tough market. He has a lot of confidence in his own judgment. He wants an architect who will listen—and then add his own thoughts. He didn’t say that we were great at achieving 90 percent efficiency, sizing ducts properly, or doing good design. I believe he thinks we are, but he expects that. What he said was not, “You guys are good architects” or “I can hand a job to you and rest assured that it will be okay.” He said we were good to work with. He wants to be involved, to be a part of the development of our work. He believes his ideas can make a better product. So do we.

Quality is much misunderstood but it is definitely not only in the eye of the beholder. Many years ago, I discovered the speed and economy inherent in using industrialized building systems. We must have built 100 schools around the United States using such systems. When I advocated them, many architects asked, “But is it quality?”

A while after, I got to wondering what they meant. When I asked, I got responses like, “Well, there’s nothing more solid than a good concrete building,” or, “I’m concerned about those light curtain walls,” or, “There’s nothing as solid as concrete block and brick.” Pretty soon, I got the idea that quality, to them, meant heavy.

I’ve also heard people use quality synonymously with luxury, elegance, and expense. Many of us think of quality as deep carpets, marble, and fine woodwork. A Cadillac is quality; a Toyota is not. But to the automobile industry, quality control means conforming to requirements. A few years ago, I was given some statistics—20 percent of the cars off U.S. production lines require some fixing before delivery to a dealer. In Japan, the number is 7 percent. By that definition, a Toyota is a higher-quality car than a Cadillac.

When I was just out of school, I had the opportunity to work on a feasibility study for a high-rise office building. One of the clients was Warren Bellows of Bellows Construction Company. bellows had built most of Houston’s tall buildings. He had just finished the tallest building west of the Mississippi—the Humble, now Exxon, building. For this project, he was both builder and owner.

I went to him to get his ideas on it. I was excited. I was going to meet a great man. After we got over a few preliminary niceties, I asked in my most respectful voice, “Mr. Bellows, what concepts should guide us in the design of this project?” I was ready for the real stuff. I was anticipating break-through construction and profound insight into the problems of office building design. I was prepared for new structural systems, symbolism on the skyline of Houston—at least a slip-formed core. I got it. Warren pursed his lips, leaned back, got very contemplative and said, “Well, I don’t want to skimp when it comes to keeping water out of the building.”

Driving home, I thought, “Four thousand years of architecture, and we still haven’t learned how to keep the water out.”

Here’s the point. Quality comes on the wings of inspiration. Real quality comes from doing a lot of little, mundane, unexciting day-to-day chores properly. Innovation is essential. So is keeping the water out. Our clients want us to design facilities that serve them better. They want us to reduce their cost. They want good packaging, service, and quality. Listen to the clients. They are the angels of invention.

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Circle 42 on inquiry card
By Phillip E. Kidd

Macro economic conditions remain ideal for supporting vigorous real growth: inflation is very low; oil prices have been cut in half; interest rates are at their lowest levels since the mid-1970s; and the dollar is no longer stronger. Nevertheless, these forces have so far not stimulated demand for the output of enough domestic industries to push the economy into the fast-paced expansion that should be occurring. Indeed, there is a distinct uneasiness about activity in many key sectors of the economy.

In the construction industry, housing and retail gains are offset by declining office and industrial building, leaving total construction at midyear just about the same as a year ago. In the automobile industry, when incentive programs are introduced, sales increase; when such programs expire, sales slump. In the capital-goods industry, the industry’s production is below last year’s because advances in defense- and space-equipment production have not been sufficient to counter the slippage in business equipment—as that sector feels the pinch of lower expenditures for domestic oil and gas exploration. Similarly, a search through the statistics of other industries reveals very much the same pattern of vacillating production and sales. As a result, the economy, lacking strong momentum from a number of expanding industries, continues to advance at around a 2-percent rate.

There has been ample time for economic forces to start increasing the output and sales of a broad group of industries—which would be the advance signal that faster real economic expansion was very near. Since there are no such definitive signs, one must reluctantly admit that there will be still more delays in achieving a high rate of real GNP. How much will we see the GNP, now at 2-percent real growth, achieve 4 percent? Significantly, a new force—tax reform—has surfaced that clouds the answer to that question even more than it is usual to cloud economic forecasting. Only a few months ago, it was the impact of the Gramm-Rudman bill, not tax reform, that concerned most forecasters. However the improbable is happening: Congress has begun ironing out the differences between reform bills passed by House and Senate.

It is too early to have a clear idea of what will survive. What is important is Congress’s firm belief that a tax reform bill will be passed this fall, and its perception that it will be revenue neutral—that it will raise the same amount of money for the federal government as the existing tax structure. Moreover, both proposals would collect more funds from business than under the present tax system, with the House generally harder on business than the Senate.

Equally important, the House and Senate measures are heavily front-end loaded, but with different implementation dates. The House version makes the provisions curtail tax benefits retroactive to January 1, 1986; while the tax-rate cuts are retroactive to July 1, 1986. In contrast, the Senate version, which is the early favorite to be closest to the final bill, would limit tax deductions at the beginning of next year; whereas it would wait to lower tax rates for individuals and business until mid-1987.

There would be a storm of protest over a retroactive phase-in plan, so the Senate proposal is more probable. Although projected to be revenue-neutral over a five-year period, such a phase-in process would raise everyone’s taxes in 1987, but lower them in 1988 and for several years thereafter. In 1987, this would increase federal revenues and lessen federal borrowing, which would relieve interest rates. However, it is doubtful if lower interest rates and more financing for private uses could overcome the very negative impact in early 1987 on consumption, production, and investment from the our sudden loss of sizable purchases power.

Because the Senate phase-in plan could have potentially harsh consequences for economic growth in the first half of 1987, the House/Senate Conferences may agree on a more moderate phase-in plan. This would narrow the timing between the curtailment of tax deductions and the implementation of tax-rate simplification and reductions. Nevertheless, some phase-in formula is likely to achieve some of the cuts in the 1987 deficit mandated by Gramm-Rudman.

Passage of a compromise tax reform bill this fall offers enormous long-term potential for real growth; but in the near-term, economic activity is likely to suffer through an erratic period of adjustment. Among those individuals and businesses anticipating the loss of tax deductions next year, many will increase spending during the final months of this year. Such actions will boost real growth in the fourth quarter of this year, but then in late 1986, expenditures and lower real growth in the first quarter of 1987.

Throughout this transition period, shifts in monetary policy will be crucial in minimizing the disruptions to the economy. The Federal Reserve will restrain monetary policy cautiously in the fourth quarter, choosing to follow the financial market signal. The significant increases in tax-related spending combine with very stimulative macro forces to push real GNP growth sharply higher.

In turn, interest rates at year-end will be 100 to 150 basis points (1/100ths of a percent) above their current levels. In the first quarter of 1987, the Federal Reserve will aggressively ease monetary policy to offset the loss of both tax incentive spending and purchasing power from the phase in of the tax reform bill. By the end of the first quarter, interest rates all along the yield curve will be moderately lower than today’s. Short-term rates will range between 6.75 and 8.5 percent and mortgage rates will range between 8 and 10.5 percent. Since the uptick in interest rates will be brief, housing and retail building will not lose their momentum; but an office and industrial rebound will have to wait for that elusive, sustainable, surge in real economic activity.

Mr. Kidd is a prominent economic consultant and former director of Economics Research for the McGraw-Hill Information Systems Company.

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Architectural education: an A.R.E. mini-test—how good are you on structures?

The response to our mini-test taken from the Division A: Pre-Design section of the A.R.E. (Record, February 1986, page 59) was overwhelmingly favorable and enthusiastic, and from the feedback received from the examiners, who take the exam to "s-pack" checking their mettle. This one samples some basic general questions on structures, and again was prepared by the NCARB, along with the following explanatory introduction to reflect the nature of this division of the exam. The rest of the nine divisions will be covered from time to time. The approved answers are inserted below right. H.L.S.

The following ten-question mini-quiz is presented so that you may try your hand at a sampling of general structural problems from recent editions of the Architect Registration Examination (A.R.E.). Such a sampling is representative of the exam in only a limited sense: no matter how carefully selected, eight questions cannot possibly reflect the range of material covered in the A.R.E.'s Division D: Structural Technology—General. The actual exam lasts 2.5 hours and is far more comprehensive than these few questions would reveal. If the mini-quiz whets your curiosity, however, you can find more sample questions in Volume 2 of the A.R.E. Handbook. For information about the Handbook, contact Sharon Costello at NCARB, 1735 New York Avenue, N.W., Suite 700, Washington, D.C. 20006.

The basic orientation and approach of Division D is outlined below:

Division D: Structural Technology—General

The identification, resolution, and incorporation of the technical aspects of construction in structural systems as related to the design of buildings. The problems and questions in this Division are mostly presented in the form of multiple-choice: however, written identification type questions will also be used. This Division is organized around tasks demanding a considerable store of factual knowledge combined with analytical ability. Some conceptual and creative skill is also applicable. The candidates will be asked questions in the areas of: analysis and selection of appropriate structural systems and components; complex structural systems; structural connections; loading; code requirements; costs; structural construction methods; materials and safety; the impact of structure on the design of buildings; and the historical aspects of architecture as related to structural theory and design.

For those of you who tested yourself with our previous mini-test on the Pre-Design section of the Architect Registration Examination, here is an even more challenging one—on general structures. Again, take a few minutes, grade yourself, and let us know what you think.

Questions

1. Which of the following statements about buckling in concentrically loaded long steel columns is INCORRECT?
   (A) Round pipe sections are ideal shapes to prevent buckling.
   (B) Buckling is influenced directly by the strength of the material.
   (C) The slenderness ratio is the effective length of the column divided by its least radius of gyration.
   (D) Column end conditions influence buckling.

Answer ______

2. Which of the following diagrams best represents the exaggerated deflected condition of the rigid frame shown above?

![Diagram A]

Answer ______

3. The numerical value in pounds per square inch for the stress allowed in structural timber is LEAST for
   (A) compression parallel to the grain
   (B) compression perpendicular to the grain
   (C) extreme fiber stress in bending
   (D) horizontal shear

Answer ______

4. When common wire nails are driven into the end grain of a solid wood timber, which of the following can be expected?
   (A) The tendency of the wood to split will be lessened
   (B) The lateral load capacity of the nails will be increased
   (C) The nails will fall out unless a large size is used
   (D) Withdrawal resistance will be less than that of nails driven into side grain.

Answer ______

5. Which of the following statements concerning composite steel and concrete construction are correct?
   I. In horizontal shear, stress is transferred between steel and concrete by studs.
   II. Less structural depth is usually required in composite construction than in non-composite construction.
   III. Compared to all-steel construction, substantial savings in steel weight are possible.
   IV. The deflection under total load is usually greater than in non-composite construction.

(A) I and III only
(B) II and IV only
(C) I, II, and III only
(D) I, II, III, and IV

Answer ______

6. In ultimate-strength design, the American Concrete Institute (ACI) building code requires the use of the coefficient \( f \) in designing concrete members. This coefficient is applied because of
   (A) the possibility of inaccuracies in the design
   (B) wind loads
   (C) earthquake loads
   (D) the short duration of loads

Answer ______

7. Which of the following free-body diagrams best illustrates the horizontal and vertical components and reactions shown on the space diagram above?

![Diagram A]

Answer ______

8. Steel column base plates should be designed to provide for
   (A) shear at the column flanges
   (B) both bending and allowable bearing pressure
   (C) allowable bearing pressure but not for bending
   (D) an adequate I/r ratio for the columns

Answer ______

9. A building code allows a design live-load reduction for snow loads in excess of 20 pounds per square foot for roof pitches of more than
   (A) 10 degrees. If \( R_s = \left( \frac{S}{40} \right) - \frac{1}{2} \), where \( R_s \) is the snow load reduction in pounds per square foot per degree of pitch over 20 degrees and \( S \) is the total snow load in pounds per square foot, what is the total allowed reduced-design snow load for a 30-degree pitch roof with a snow load of 40 pounds per square foot?
   (A) 6 lb. p.s.f.
   (B) 1.5 lb. p.s.f.
   (C) 25 lb. p.s.f.
   (D) 85 lb. p.s.f.

Answer ______

A balcony railing is bolted to a beam as shown above. For the applied load shown, what is the maximum force on the critical bolt?

(A) 425 lb.
(B) 525 lb.
(C) 765 lb.
(D) 800 lb.

Answer ______

The following are the approved answers for the 10 questions:

(A) o—11
   (B) o—6
   (C) o—7
   (D) o—8
   (E) o—7
   (F) o—8
   (G) o—7
   (H) o—9
   (I) o—9
   (J) o—1

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The shifting fortunes of Brooklyn's Brighton Beach

If the 2.9-million-square-foot residential complex currently being planned for a 15-acre oceanfront site in Brooklyn seems more in character with Miami Beach than Brighton Beach, it is no accident. Project developers Alexander Musa & Sons own south Florida's best-known hotel—the Fontainebleau—and architects Beyer Blinder Belle have deliberately incorporated such resort-like design elements as nautical detailing (white-painted pipe railings, a glass-roofed seaside pavilion housing a two-story health club, and lots of festive flags), an enormous free-form pool set into eight acres of open space, and a gently curved building configuration meant to ensure ocean views from most of the project's 2,200 apartments. Dubbed Brighton-by-the-Sea, the proposal comprises six towers ranging in height from 24 to 44 stories, two low-rise townhouse wings, ground-floor commercial and retail space, and parking for 1,500 cars. As the first investment in unsubsidized housing in Brooklyn in over 25 years, the project represents, according to borough president Howard Golden, "the quintessential market test" for the revival of Brooklyn's beleaguered neighborhoods.

Bleak Cleveland plaza bites the dust

When Harrison & Abramovitz designed Cleveland's Eriesview Tower back in 1964, the New York firm followed the general order of the day by setting the 40-story office building behind a vast, three-block-long public plaza. Over the past two decades, however, architects and city planners have come to recognize that some of these open spaces—brought on by well-intentioned post-war zoning ordinances—are not necessarily the urban cases their advocates originally envisioned. In Cleveland plans are afoot to convert Eriesview's plaza into a two-level, 200,000-square-foot arcade housing 70 shops and restaurants. Designed by Koisar Belussi Associates, the 500-foot-long, green-glass gallery will feature an 85-foot-high, barrel-vaulted roof and an off-center food court located under an angled rotunda dome.
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Two current projects by The Stubbins Associates

The thoughtful brand of Modernism that has characterized the work of Hugh Stubbins for almost half a century has been giving way recently to a mode of architecture that combines Stubbins's signature concern for function with a careful consideration of the urban setting. Two current projects exemplify the trend. In Indianapolis, Stubbins has unveiled plans for American Fletcher Center (top photo), a 48-story bank headquarters structure that will be, at 701 feet, the tallest building in the Indiana capital. The steel-framed tower will be located just off Monument Circle, the physical and spiritual heart of Indianapolis, and its symmetrical design, setback facades, and hipped roof topped by twin 100-foot-high communications masts are intended to provide a distinctive southern termination of the vista along the city's War Memorial Mall. Two low-rise wings on either side of the tower will enclose sleek public winter gardens. By cladding the building in light gray granite and dark granite spandrel panels, the architects have attempted to relate the tower to the adjacent Christ Church and Columbia Club.

For a site facing Fort Point Channel in Boston's historic Leather District, the Stubbins office has designed a 162,000-square-foot office building (bottom photo) that maintains a consistent 90-foot-high streetwall before rising in a series of three setback penthouses. In addition to its modest scale, the structure's corbeled brick details, stone sills and lintels, and recessed windows and arches echo the architectural vocabulary of adjacent 19th-century buildings. A rounded corner tower crowned by a copper pyramid is meant to form a visual gateway down Beach Street from South Station to Chinatown.

Office furnishings giant builds new research and marketing facility

Steelcase, the nation's largest manufacturer of contract furniture, has begun construction on a 470,000-square-foot Corporate Development Center, located in Gaines Township, Mich. Designed by architects WBDC, Inc., in the form of a low-profile pyramid, the 128-foot-high building will house nine corporate divisions devoted to product research, development, and marketing. The heart of the facility will be 10 laboratories where environmental researchers can conduct testing in such areas as ergonomics, acoustics, lighting, electronics, and office privacy. The interior will feature "interaction centers"—informal areas meant to encourage impromptu meetings among employees—and a "directors cluster" of executive offices intended "to generate spontaneous interaction of key decision-makers."

Design news continued

Competition calendar

• The Dayton View Historic Association is sponsoring a competition that seeks designs for infill housing in a National Register-listed, inner-city neighborhood in Dayton, Ohio. Cash prizes totaling $2,500 will be awarded to the top three entries. Submission deadline is Nov. 26. For competition packages, send $5 by Sept. 15 to Dayton View Historic Association, P. O. Box 113, Mid-City Station, Dayton, Ohio 45402, or call Jeffrey Wray, AIA, for further information (513/461-4694).

• The Portland Cement Association is requesting entries to its biennial Concrete Building Awards competition. Concrete buildings completed between Sept. 14, 1984, and Sept. 30, 1988, are eligible for consideration, and winning designs will appear in the January 1987 issue of RECORD. Entry deadline is Sept. 30. For information, contact Glen W. Simon, Portland Cement Association, 5420 Old Orchard Rd., Skokie, Ill. 60077 (312/966-6200).

• A 500-seat interior of a place of worship is the program of a design competition sponsored by Classical America. Cash prizes totaling $4,000 will be awarded to three top entries and four honorable-mention submissions. Entry deadline is Nov. 1. For information, write Classical America, Box 821, Times Square Station, New York, N. Y. 10108.

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The German Pavilion that Mies van der Rohe designed for the 1929 Barcelona International Exposition is one of the great paradoxes of modern architectural history. Created by a government about to fall into the depths of Hitler's fascism and located in a country on the brink of Franco's relentless totalitarianism, this sublime aloof icon of the International Style has always seemed a strange embodiment of its period and place. The pavilion, moreover, is one of the most celebrated buildings of the Modern movement yet, because it was dismantled shortly after the Exposition closed, few living today have actually seen it. The building's profound influence on architects over the past 57 years, then, has been primarily through the publication of black-and-white photographs—obligatory fare in virtually every history of 20th-century architecture—and through the occasional exhibition of Mies's drawings. The idea of rebuilding the Barcelona Pavilion had surfaced as early as 1954, but it was not until 1983 that a public foundation—headed by King Juan Carlos I—was established with the intention of
reconstructing the pavilion by June of this year, the centennial of Mies’s birth. Although funding was raised primarily in Barcelona, project sponsors also received technical assistance from Mies archives in New York and West Berlin.

The timing of the rededication could not have been more fortuitous. In addition to providing an appropriate physical symbol for the Mies centenary, the rebuilt pavilion might also stand for the artistic renaissance of Spain in general and Barcelona in particular, both of which stagnated grievously under Franco’s regime. Indeed, the effect of the first color photographs that are beginning to emerge from Spain is overwhelming, our time-honored impression of the Barcelona Pavilion as a seminal work of architecture now joyously confirmed. Although architects in charge of the reconstruction had to alter slightly Mies’s original plans to accommodate electricity, telephones, a new drainage and water system, and a basement, these changes are invisible to the naked eye. More importantly, the signature Miesian elements are all there—his rich material palette of travertine, serpentine marble and onyx, glass, and water; the cruciform, chrome-plated steel columns; the famous Barcelona chairs, upholstered in their original white leather; and a bronze replica of Kolbe’s female nude, a gift from the German government. Risen from the ashes, a building that had belonged to the ages once again belongs to us all. P. M. S.
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Design awards/competitions:
Royal Architectural Institute of Canada
1986 Governor General’s Medals
for Architecture

1. Pyrch Residence, Victoria,
British Columbia; Patkau
Associates, Architects.
Commissioned by a retired couple,
this house is organized around an
irregularly shaped rock outcropping
that commands distant views of the
Pacific Ocean. The dominant
volume of the house is a double-
height living room, topped by a
copper-clad hipped roof that
intentionally breaks with the
structure’s even parapet line. In
order to maintain large wall
surfaces for the display of the
owners’ art collection, the architects
made extensive use of skylights for
interior illumination.

2. Ensemble du Haut-Fourneau
Forges du Saint-Maurice, Trois-
Rivières, Québec; Gauthier, Guite
& Roy, Architects. This visitor
interpretation center, the first
completed component of a 19th-
century industrial village being
restored by Parks Canada,
preserves and exhibits the remains
of a blast-furnace complex.
Eschewing archaeological
replication, the architects chose to
encase the furnace in transparent,
steel-framed structures meant as
stylized suggestions of gable-roofed
buildings that formerly occupied
the site. Hydraulic mechanisms
such as a water wheel, dam, and
raceways are built of modern
materials and are situated at their
appropriate historic locations.

3. House on the Nova Scotia
Coast, Upper Kingsburg, Nova
Scotia; Brian MacKay-Lyons,
Architect. During the renovation of
a 13-room, 200-year-old house, the
architect was inspired by the stone
foundations and central chimneys of
nearby burned-out farmhouses.
Floors and walls of the original
structure were removed until two
basic masses—the perimeter house
and the central chimney tower—
remained, providing the framework
for a modern open-plan interior clad
in native wood and stone. The tower
is intended, according to the
architect, as “a symbol for the
center of one’s world” and contains
a new fireplace, a locally made
wood stove, a bathroom, closets,
bookcases, eight sleeping berths,
and a widow’s walk.

4. St. Stephen’s Byzantine
Ukrainian Catholic Church,
Calgary, Alberta; Hugh McMillan,
Architect, in association with
Radoslav Zuk. The architects’ goal
was to satisfy this church’s
liturgical requirements while
“generating an image both
expressive of our dynamic age and
in character with the building’s
surroundings,” which include the
nearby Rocky Mountains. Toward
that end they designed the lower
portions of the church to harmonize
in scale and materials with new low-
rise houses in the adjacent area;
lofty towers, by contrast, are meant
as time-honored, abstract symbols
of a place of worship.

5. Queen’s Quay Terminal,
Toronto, Ontario; Zeidler Roberts
Partnership, Architects [RECORD,
June 1986, pages 134-141]. A major
mixed-use project on Toronto’s
waterfront comprises a 148,000-
square-foot retail center, five levels
of office space, 72 condominium
units, and 59,000 square feet of
parking—all located in a massive
cold-storage warehouse erected
during the late 1920s. By cutting
away a diagonal section of the
building’s waterfront elevation and
removing some of the floor slabs
surrounding a central atrium, the
architects created a visually
continuous interior space through
the structure’s reinforced-concrete
framework.
A Catholic church in Calgary, a mixed-use waterfront project in Toronto, and a house on the Nova Scotia coast were among the 10 projects recently tapped for Governor General's Medals in the 1986 awards program of the Royal Architectural Institute of Canada. The quadrennial program was established in 1950 "to recognize outstanding achievement in architectural design and to promote public recognition of the contribution architects make to the quality of life in Canada." This year's competition attracted 168 entries and was reviewed by a jury comprising architects John Andrews, Fumihiko Maki, and Moshe Safdie, and architectural historian Kurt Forster. Unusually frank in their assessment of current design in Canada, the jurors bemoaned Canadian architects' "vulnerability to passing fashions and trends"—especially from south of the border—and an attitude toward contextualism that one juror called "paper-thin and artificial." More positively, another juror lauded Canadian architects for their unusual "care and craft handling public spaces, access, and street frontage" in such projects as parks and community centers.

6. Medicine Hat City Hall, Medicine Hat, Alberta; Graham McCourt Architects. A new municipal building for a city of 40,000 in southeastern Alberta is oriented directly toward the South Saskatchewan River, fulfilling the architects' stated goal of "reintroducing this important natural amenity to the citizens of Medicine Hat... and connecting the landscape of the river valley to the downtown core." Inside, the structure has been organized into separate administrative and legislative zones linked by a three-story-high atrium. Parking and computer facilities are located below grade.

7. Metropolitan Toronto Central YMCA, Toronto, Ontario; A. J. Diamond & Partners, Architects. An ambitious recreational and administrative program for Toronto's flagship YMCA facility called for five building wings, joined by a public promenade, that focus on a central rotunda. Although the architects indicated a desire to sheath the facility entirely in cut stone, budgetary restrictions resulted in a building ensemble faced primarily in brick. Continuous limestone bands serve as the complex's primary unifying device.

8. Pacific Heights Housing Cooperative, Vancouver, British Columbia; Roger Hughes Architects. A low-cost housing cooperative in Vancouver's West End comprises 16 maisonette units in a restored row of eight late-Victorian dwellings, and a mix of single-story and duplex units in a new infill building to the rear. The city initiated the project as a prototypical in-town development that combines family units (in the restored houses) with apartments for single people and childless couples (in the new structure). A 33-foot-wide by 300-foot-long landscaped courtyard, designed for use mainly by residents of the family units, separates the old and new buildings.

9. Automotive Diesel Shop, Red River Community College, Winnipeg, Manitoba; The IKOY Partnership, Architects [RECORD, April 1985, pages 138-146]. Located on the site of the original Joseph E. Seagram distillery amid some of Canada's most significant 19th-century industrial architecture, this new museum house exhibits that deals with the history and science of the distillation and wine-making processes. The entrance to the complex is through a renovated 1857 warehouse, where timber barrel-storage racks define a skylit arrival courtyard. The facility's restaurant and museum shop open onto the courtyard. The main museum is new construction—a 17,000-square-foot, 40-foot-high room broken up into freestanding pavilions housing exhibitions and an introductory film theater on the first level, with Seagram company archives and museum offices above.

10. Seagram Museum, Waterloo, Ontario; Barton Myers Associates, Architects [RECORD, March 1986, pages 108-111]. A primary-colored catalog of steel beams, trusses, concrete planks, pipe railings, hvac ducts, electrical raceways, and plumbing fixtures was assembled in this 60,000-square-foot training facility for students of automobile mechanics. The building's elaborate high-tech appearance belies a surprisingly straightforward interior that consists of an open-plan auto shop, into which a mezzanine level housing classrooms and staff offices has been inserted.
A team comprising Michael Pyatok & Associates of Oakland and William Vitto & Ira Oaklander Architects of New York City has been awarded the $15,000 first prize in a national competition to design infill housing for five individual parcels located on a three-block site in the central Harlem section of New York City. Initiated by the New York State Council on the Arts and co-sponsored by the Harlem Urban Development Corporation, Manhattan Community Board #10, and the New York Landmarks Conservancy, the competition attracted 74 entries and was organized with the hope of

1. First place: Michael Pyatok & Associates and William Vitto & Ira Oaklander Architects. The winning architects recognized the traditional composition of a typical block in Harlem—a mix of late 19th-century town houses and early 20th-century tenement-style apartment buildings—and they developed a six-story residential hybrid that the jury felt exhibited "an exuberance that celebrates the central Harlem neighborhood." Intended to attract a mixed-income group of tenants, each proposed structure is essentially a three-story "row house"—designed for occupancy primarily by large families with children—surmounted by three stories intended for smaller families with few or no children. Residents of the lower stories would enter their dwellings via classic New York stoops, while those living on the upper floors would gain access through two-story-high outdoor arcades (locked at the street) that connect with elevator lobbies located off rear courtyards. By this ingenious system, the danger of children using elevators—a major problem in high-rise public housing projects—is eliminated. Throughout the proposal the strategic siting of communal meeting places like stoops, terraces, and shared yards is meant to increase security and encourage interaction among residents. In design terms, the architects have attempted to match the heights of their structures with existing housing along the Harlem streetfronts. Although the new buildings will be clad in decidedly modern materials—namely, concrete block of varying textures, colors, and glazed finishes—their proportions, cornices, and lines of articulation will echo the features of extant structures.
developing "prototypical solutions that might serve as national models for the problems of urban multifamily housing, a recently neglected area of architectural practice." The competition organizers are currently working with the New York City Department of Housing Preservation and Development to investigate funding sources that might be utilized to implement the premiated design. We illustrate below the three top entries, selected by jurors Max Bond, Peter Calthorpe, Lewis Davis, Virginia Fields, Daniel Rose, Donald Stull, and Anne Vernez-Moudon.

2. Second place: Stephen Campbell and Mark Nielsen, Architects. Dubbed Philip A. Payton Place after the realtor who opened up Harlem to black settlement in the early 20th century, this scheme calls for a series of five-story, owner-occupied town houses, each of which would have at least two rental units to help moderate-income building owners cover mortgage and maintenance costs. The jury praised the architects for providing street-facing open space—each range of houses would be set behind raised communal terraces reminiscent of New York row-house architecture dating from the 1920s—while maintaining a consistent street wall. The jury also liked the proposal’s "progressive strategy for economic implementation, which would give a committed person a reason for staying in Harlem."

3. Third place: Adele Nauade Santos Architects. Among the three finalists, this submission perhaps exhibited the most complex urban design plan—an open-space network comprising children’s lots, vegetable gardens, roof terraces, and basketball courts; purposely discontinuous pedestrian mews set at right angles to the street and, unusual for New York, provisions for midblock parking. Five-story residential buildings feature such time-honored row-house features as bow fronts and high stoops; less conventional are dormered, barrel-vaulted roofs on some of the structures. Despite the architects’ attempts to accommodate a variety of family types and incomes, the jury felt the proposal lacked a sound economic strategy, and that the design reinforced some of the negative aspects of existing housing in Harlem.
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Reviewed by Roger Kimball

In his much-admired study of the European origins of Modern architecture, Theory and Design in the First Machine Age (1960), Reyner Banham investigated the "revolution in sensibility" that transformed architecture in the opening decades of this century and found its fulfillment in the passionate rationalism of the International Style. Now in A Concrete Atlantis, Banham complicates the history he set forth in his earlier work, focusing on the contribution that American industrial architecture—factories, buildings, grain elevators, and the like—made to the development of European Modernism.

In fact, Banham's thesis is that there is "a causal, cultural, and conscious connection between such masterworks of explicit architectural Modernism as the Château de Rambouillet or the Villa Savoye and the utilitarian structures of a certain period and type of North American industry." In some 250 copiously illustrated pages, he provides us with a painstaking introduction to the merits of these neglected—and, as it happens, often abandoned—structures and attempts to show how they sparked the imaginations of Modernists from Gropius and Le Corbusier to Mendelsohn and Sert. As Banham points out in his introduction, the forms of American industrial architecture first gained circulation in Europe when seven pages of illustrations of American grain elevators and factories appeared in the Jahrbuch des Deutschen Werkbundes for 1913. The illustrations were accompanied by an article on the development of modern industrial architecture by Gropius, and together they had an enormous impact on incipient Modernism throughout Europe. After outlining his case for the importance of American industrial architecture in the history of Modernism, Banham analyzes a number of the structures whose architectural excellence he wishes to champion. He devotes his first chapter to a study of so-called "daylight factories"—that is, concrete-framed buildings that are "like X-ray images, their very bones on public display." Beginning withBethune Hall in Buffalo (1915-1917), Banham gives a careful account of the ways in which such stolidly elegant factories and office buildings provided inspiration—and models—for the innovations of European Modernism.

Similarly, in his second chapter, Banham discusses the evolution of the technology and building materials of American grain elevators, giving particular attention to the deep impression that these austere, monumental storage containers made upon Modernists searching for an architecture of ever simpler, ever more purified forms. In his third and final chapter, "Modernism and Americanism," Banham details the influence of American industrial structures on modern European architecture, focusing especially on Gropius's celebrated Fagus factory (1911-14), some manifestos by Le Corbusier, and the calculatedly American form of the huge Flat factory (1914-19) near Turin.

Banham has adapted the title of his book from Francis Bacon's description of America as "the great Atlantis." For just as 17th-century America was new and unformed enough to be idealized by scientific rationalists like Bacon, so the products, and indeed the entire ethos, of American industrial architecture at the turn of the century provided pioneering European Modernists with novel alternatives to the 19th-century historicism they were seeking to go beyond. But it was precisely in what seemed least "architectural"—least indebted to the canon of the art of architecture as then practiced—that American stood as a kind of "Atlantic" for European Modern architects. What they admired were not the heavily ornamented productions of "name" architects, but the clean lines and stripped-down monumentality of industrial structures. "Let us believe the words of American engineers," wrote Le Corbusier, "but let us beware of American architects!"

That American architecture around the turn of the century had an enormous impact on the development of Modernism in Europe has long been recognized. But, whereas most historians place the birth of Modern architecture in Chicago and single out the development of the steel frame and electric elevator as the signal achievements that made the International Style possible, Banham's story takes place mainly in cities like Buffalo, Cincinnati, and Detroit, and features innovations in concrete design and construction, not steel. "Around 1900," he writes, "the action and the excitement were not in iron and steel but in concrete, which was about to take off into the most spectacular stage of its development."

Accordingly, instead of reiterating the influence of Richardson, Sullivan, and Wright on the development of Modernism, Banham examines the work of a number of lesser-known figures like Ernest L. Ransome, who has claim to being "one of the greatest of all the concrete pioneers of the later 19th century." In Banham's view, the best of the factories and grain elevators he discusses "represent the triumph of what is American in American building art" just as much as the work of Richardson or Wright. In all this, Banham is both reclaiming a neglected aspect of our architectural heritage and, more polemically, taking issue with the dominant strain of academic architectural history, represented, for example, by the work of his teacher Nikolaus Pevsner. I doubt that most readers will find Banham's story convincing in every particular; like most frankly revisionist history, it has too much of the air of special pleading and is too eager to persuade us of its thesis to be accepted without reservation. But, while A Concrete Atlantis lacks the breadth and balance of Theory and Design in the First Machine Age, it is nevertheless a careful study that considerably enriches our knowledge of a complex and second period of architectural history.

Roger Kimball contributes frequently to RECORD and other publications.

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Manville
Lighting up the town: Architectural illumination in the Jazz Age

By Timothy Rub

Like so many of the new technologies (most notably steel framing and reinforced concrete) that came into widespread use during the late 19th and early 20th centuries, the development of electric illumination opened up to the architect a host of esthetic possibilities and technical problems. At the same time it also served to reinforce an already well-established trend that continues to exercise a profound influence on architectural practice—i.e., the architect's reliance on the services of other professionals in orchestrating the increasingly complex process of building design. 

In this case the manufacturer of lighting equipment and the "illuminating engineer" played important roles. Perhaps more than any other decade, the 1920s witnessed the most significant progress in this field, particularly in the development of new and more powerful lamps, accessories such as hoods and lenses that could shape and color the beam in a variety of ways, and sophisticated electromechanical switching systems. These innovations enabled the architect to exploit an extraordinary, and hitherto unimaginable, range of effects on a building's interior and exterior. In a broad sense, lighting design during the '20s became more "architectural" in character—a shift in emphasis that was most apparent in the gradual transformation of lighting fixtures, or "luminaires." This change was signaled by the rejection of such traditional models as candelabra and wall sconces (which until that time had been primary sources of inspiration for the design of incandescent fixtures) and by an emphasis on coordinating a fixture more closely with its setting. As designer Walter Kantack noted in 1928: "During recent years there has been a gradual awakening to the fact that electricity has definite characteristics as a lighting medium which, when recognized and employed, result in a fixture very different from the candle type and oil lamp of former times."

Even more radical, however, were efforts by lighting designers and engineers to integrate the source of illumination into the very fabric of the building in the form of electrical signage, recessed lighting used to emphasize structural lines, and wall and ceiling panels manufactured of translucent materials. "We are becoming more familiar with the possibilities offered by reflecting surfaces," Kantack noted, "and in designing our lighting equipment actually thinking of light as a definite element built into our structure, having just as important a place as color, materials, and surface ornament have commanded in the past." A characteristic example that incorporated these new luminous architectural elements was the Niagara-Hudson Power Company Building in Niagara Falls, which boasted illuminated pilasters and recessed lighting in the cornice.

Another illustration of the growing relationship between architecture and the science of illumination during the 1920s was the development of floodlighting. By the beginning of the decade this technology was already well developed; yet its commercial and decorative potential remained largely unrecognized, despite the fact that these possibilities had been convincingly demonstrated in a spectacular display of lighting technique at the Panama-Pacific International Exposition of 1915, held in San Francisco.

The new methods of electrical illumination employed at the Exposition were nothing short of extraordinary. There were, of course, all sorts of exotic, and frankly theatrical, lighting effects such as "Novum Jewels" (light-refracting prisms affixed to buildings) and powerful searchlights with multicolored lenses used to create an artificial aurora borealis. More importantly, however, the Exposition revealed for the first time the effectiveness of floodlighting as a means of illumination. Prior to 1915, exhibition buildings both in the United States and abroad had been illuminated by outline lighting—strings of incandescent bulbs so arranged as to emphasize certain structural and ornamental features. This method had its merits, but it also had several disadvantages, chief among them the fact that much of the building tended to be obscured by the glare of the bulbs. At San Francisco outline lighting was superseded by a new technique that afforded the designer the means to "model" the building under artificial light. As W. D'Arcy Ryan, director of General Electric's Illuminating Engineering Laboratory, explained: "At the Exposition" incandescent outlining in the main group of palaces was avoided, and screened or masked flood or relief lighting to produce the third dimension or depth substituted, and great care was exercised with proper relative intensities. For the first time at an international exposition the...
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illuminating sources, whether arcs, incandescents, or gas, lost their identity as such."  

"If the Panama-Pacific Exposition demonstrated the virtues of floodlighting as a decorative medium, its success in the marketplace was largely dependent on the commercial uses to which it could be put. The list of applications is impressive. Floodlighting came to be used for the illumination of airports and construction sites; for nighttime sporting events, from football to skeet shooting and miniature golf; for the enhancement of security at military installations; and for tourist attractions and scenic wonders as varied as the Washington Monument, the Royal Pavilion at Brighton, and Niagara Falls. Recognizing the potential size of the market, manufacturers such as General Electric and Curtis Lighting Company promoted floodlighting in technical pamphlets and journals like Light and The Magazine of Light, and with exhibits at trade shows throughout the country. They also devoted considerable resources to research and product design, out of which came a greater understanding of the complex issues involved in architectural illumination, particularly the reflectivity and absorption of certain materials and more precise ways of calculating the candlepower required for decorative lighting schemes."

Property owners and developers took the bait, realizing that in spite of the considerable expense involved in its installation, maintenance, and operation, floodlighting could be a highly valuable marketing tool promoting it as a form of "brand recognition" that would pay dividends after the close of business. It should come as no surprise, then, that the Woolworth and Wrigley buildings—both of whose owners were noted for their business acumen—were among the first skyscrapers to be illuminated at night. As one representative of Curtis Lighting pointed out: "Floodlighting is one of the most emphatic advertising mediums. It establishes the location of a structure much more convincingly than the street designation."  

Edward G. Neale, the president of Lucas Brothers, Inc., a company which, among other things, constructed illuminated service stations for Texaco, went even further in his claims when he observed that "light has real sales value, and when the commercially wise architect uses light, not merely as an accessory but as an actual architectural element, he has provided his clients with a very distinct advantage in the highly competitive race for business."  

While Curtis, G. E., and a host of smaller firms in the industry were rapidly expanding their product lines, which included bulbs of varying sizes, mounts, reflectors, and lenses that could both color and texture the beam—the illuminating engineer was also actively promoting the services he could supply to the architect, stressing whenever possible the necessity for close cooperation between the two professions. Trade groups such as the Westinghouse Lighting Institute, the Electric Lighting Manufacturers Association, and the International Congress on Illumination played important parts, meeting periodically to discuss the subject and to keep their members abreast of the latest developments. In addition to consulting on the installation of lighting systems, illuminating engineers were also instrumental in suggesting ways that the effects of floodlighting could be studied at the design stage. One of the most common methods was the use of reverse photostats of perspective renderings, which could be worked over with chalk or light colors was to consider the effect of alternate schemes for illuminating the buildings. Another was to wire scale models with miniature bulbs. "Careful architects," The American Architect reported, "experiment extensively in this manner."  

Indeed, one measure of the importance of floodlighting during the late '20s was the popularity of presentation drawings showing the building as it would appear at night. Hugh Ferrers's rendering of the Chanin Building in New York City exemplifies the technique. Selling the idea of floodlighting was one thing; realizing its potential as a decorative medium was another. Several lighting methods came to be widely used: one of the first was to set the lamps a distance from the building, either on the ground or on adjacent structures, in order to obtain an even level of illumination across the entire surface. Of all floodlighting techniques this was the simplest to design and the easiest to implement, as well as the one that most closely approximated daylight conditions. Its main drawback, however, was that it produced a dull, shadowless effect that tended to suppress detail. Architects and illuminating engineers understood that the value of floodlighting should be based on an entirely different set of considerations, both practical and aesthetic. And once this premise was accepted, it opened up an entirely new set of possibilities. "The most successful designers in this field," one critic observed, "looked upon night illumination as an opportunity rather than a difficulty—a chance to utilize dark sky and dim entourage as a setting for beauty of a wholly different type from that which is appropriate in all-enveloping light."  

The implication here was that floodlighting should be used in a selective, essentially dramatic way to produce contrasts of highight and deep shadow, or to place an emphasis upon certain parts of the building—a cornice, colonade or tower, for example—rather than on the whole. Irwin Chanin, a developer who had been primarily involved with theater design and construction before turning his hand to office buildings, had this in mind when he observed that floodlighting had become a valuable addition to the repertory of ornament available to the modern designer. "At the Chanin Building," he remarked, "the effect has been to add light and shadow to the decorative elements available to the architect and builder, and in the original design of the building provision was made for the use of lights as a part of the scheme. Instead of ornamentation in brick, stone, terra-cotta or other tangible materials, lights and shadows in various degrees of intensity, cast at numerous angles, create decorative schemes by optical illusion, much in the same manner that the theatrical producer secures a variety of effects through the manipulation of stage lights."  

Bassett Jones, an experienced designer of stage lighting and a consultant for the illumination of the Chicago Tribune Tower, proposed a slightly different formal theme. One of the first to address the esthetic possibilities of night lighting, Jones was fascinated with the aspect of the city after dark, when buildings appeared as if "glowing from within," and he suggested that this image might serve as a point of departure. The floodlighting of a building, he noted, "may be modulated by illuminating the principal lines or masses of the exterior, or merely by substituting lines of light for structural lines, so as to pull the whole together and develop a definite and appropriate composition. But however it be done, it is the building itself that gives forth light."  

Because it minimized expense while maximizing advertising value, the most popular and certainly the most practical method of floodlighting was to limit the illumination to the uppermost part of the building—usually the roof and, on occasion, the setbacks—which made sense since these were more often than not the only parts that could be seen from any distance. By 1930 nearly every
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By the late 1920s floodlighting had become increasingly sophisticated, a result of experimentation in graduated uplighting, silhouetting, and highlighting of ornament. The resulting union of architecture and illumination was exemplified by the Merchandise Mart in Chicago by Graham, Anderson, Probat & White (1929, top). The Century of Progress Exposition in Chicago demonstrated a new range of innovative lighting techniques, including complicated color effects, sequential illumination schemes, backlighting through structural glass block, and neon lighting. Albert Kahn used neon to great effect at the fair in his General Motors Building (bottom).

Notes
1. The Kaleidoscope (October 1929), p. 5.
2. Ibid.
4. Nola Park, General Electric’s research facility in Cleveland, was the center of this activity in the United States. Matthew Luckshein, the director of research, published several volumes on the art and science of illumination, among them Light and Color in Advertising and Merchandising (New York, 1929).
11. Ibid., p. 22.
12. Ibid., p. 29.
13. Ibid., p. 22.

Architectural Record August 1931
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Many mansions

In my Father's house are many mansions... John 14:2

We have rarely shown a portfolio of religious buildings as catholic (with a small "c") as the collection we present in the following pages: a church in New York City, a mosque near Vancouver, a cathedral in Charleston, South Carolina, and a stupa in Leverett, Massachusetts. This heterogeneous assortment is obviously not meant to be an ecumenical Record Houses of Worship representing every major creed (there are several glaring omissions here). Our modest goal is rather to give a few particular examples of a nearly universal aspiration: shaping the physical stuff of architecture to embody belief in a transcendent reality. Because the varieties of religious experience are so diverse—and there are no clear signs in the modern world of an imminent convergence—the designs that express them take more radically different forms than one finds within almost any other building type today. “Function” has a special meaning for religious structures that eludes the usual programmatic analysis or economic determinants. “Style” becomes a matter of greater profundity than pulling suitably fashionable adornments off the shelf.

The before-and-after story of The Community Church of Astoria (below and overleaf) demonstrates that the strait gate to affluence need not be an obstacle to serving one's chosen mission in a proud and comely manner. Adaptability is not always a virtue, of course, and the need to reconcile tradition with changing ways can sorely test the spirit of any religious body. The Ismaili Jamatkhana, designed for Canadian Muslims uprooted from other lands (pages 90-95), and the Roman Catholic cathedral of Charleston, a turn-of-the-century landmark remodeled to conform with Vatican II (pages 96-99), exemplify disparate responses to unavoidable change. Even the basic requirement of shelter can turn out to be irrelevant to higher spiritual purposes, as at the Leverett Peace Pagoda (pages 100-103). Asked about the impenetrable pagoda, which he designed, architect Louis Mackall commented, “It’s puzzling to Westerners that anyone would build a stupa, especially one you can’t get inside. We’re accustomed to thinking that if you want to make the world better you clean up the streets, you shelter the homeless, feed starving children... For me, the Peace Pagoda is a symbolic attempt to express a hope infinitely beyond the world we live in. As you get older you begin to catch a whiff of that hope.” None of us is young enough to ignore it. Douglas Brenner
When he is not ministering to the spiritual needs of his flock, the pastor of the Community Church of Astoria drives a New York City bus. Hard work and dedicated service, on the part of clergy and laymen alike, have sustained the interdenominational Protestant church since it was established in 1934 as a mission in New York’s Borough of Queens. Of necessity, the founding congregants met for worship in private houses until funds could be raised to erect a permanent church, which opened its doors in 1952 (photo preceding page). One story tall and no wider than a standard 25-foot storefront, that humble structure offered little room to spare for a growing congregation. In recent years, as quarters became uncomfortably tight, the church trustees concluded that they would have to double their space, and somehow provide a multipurpose area for Sunday school classes, choir rehearsals, suppers, and the like. Because a modest treasury ruled out the purchase or construction of a new building, Community asked architect Alfredo De Vido for guidance on enlarging the church it already owned—a tough challenge given a site only marginally wider or deeper than the foundation line. The challenge was logistical, too, since church leaders urged that any interruption of regular services be as brief as possible, knowing that alternative facilities would depend on the kindness of neighbors.

De Vido elected to build alongside and on top of the church, timing construction and demolition so that the interior would not have to be vacated for any longer than six months. During the first phase of the project, while the congregation was still in regular attendance, workmen laid block walls for a 15-foot-wide extension to the south, installed bar joists above the extant ceiling level to link this new space and the old hall under a continuous span, and added a full second story and roof (fortunately, the 1952 structure was sound enough to carry its share of the extra load). Only then, once Community’s congregation had moved into temporary exile, did phase two begin with the removal of the former south wall. Adjusting the nave axis southward to reflect the building’s new center, De Vido created a symmetrical room whose pristine, white enclosure focuses attention on the sanctuary. Plain pine furniture, translucent plastic sandwich window panels, and chandeliers fashioned from lengths of standard electrical conduit accord with this simple esthetic. The windows are vandal-resistant, as are the facades of split- and ground-face block and glazed tile that, on the two most prominent sides of the building, encase utilitarian patchwork in a rugged abstraction of venerable Christian motifs. Some connoisseurs of folk architecture may mourn the quaint “before” elevation immured within the “after,” but those who come here to pray voice no regrets, preferring a solidier witness to their own faith and dignity. 

---

1. Vestibule
2. Nave
3. Baptism pool
4. Choir
5. Pulpit
6. Office
7. Hall
8. Meeting room
9. Kitchen

---

Architectural Record August 1986
Patterns of graffiti-deterrent textured block and easily cleaned tile evoke traditional ecclesiastical forms of portal, clerestory, and cross. The “narthex” lintel houses a roll-down security gate and the “rose window” is glazed with durable plastic. Behind the facade, De Vido doubled usable area to comprise 4,000 square feet. A total budget of $392,500 included installation of a complete hvac system.

Community Church of Astoria
Astoria, New York

Architects:
Alfredo De Vido Associates—Alfredo De Vido, principal-in-charge; David Cook, project architect

Engineer:
Paul Gossen

General contractor:
Spensi&;Paolo Construction Corporation
The triennial Aga Khan Award will be announced this fall, reminding us again that efforts continue throughout the Muslim world to inform modern buildings with the spirit of Islamic culture. Few architects have carried out this mission as sympathetically, or as confidently, as the Canadian Bruno Freschi in his design for the Vancouver headquarters of the Ismaili Muslims, an international sect whose spiritual leader is Prince Karim Aga Khan, patron of the Award. The major influx of Ismailis into Canada began only in the 1960s and accelerated in the '70s with the arrival of refugees from political unrest in East and Central Africa. A prosperous and well-organized community, the immigrants soon joined forces to acquire a site in Burnaby, near Vancouver, where they could build their first permanent North American jamatkhana, or mosque, and establish an administrative base for social and educational activities. Their architect, a descendant of Italian Catholics, had admired Islamic art as a student and traveler long before he received the Ismaili commission. Ironically, it was Freschi (also chief architect of EXPO 86) who found himself advocating the relevance of centuries-old Muslim forms to his clients: eager to be adaptably "modern" in their new country, they had set no program beyond the functional requirements of a prayer hall, gathering place, offices, and classrooms. The Burnaby Planning Department insisted that whatever was built not obtrude as little as possible upon its neighbors.

Ismailis and prominent Islamic scholars helped Freschi sort through a wealth of historical phenomena to identify perennial themes in the Muslim heritage that could translate into currently available materials and technology. The timeless language of geometry—long cherished by Islam but also vital to international Modernism—ultimately seemed to offer the ideal idiom for a New World jamatkhana. An epitome of cosmic harmony and a matrix for esthetic invention, mathematical discipline pervades Freschi's scheme—from the basic symmetry of a double-square plan to the multilayered network of octagons, circles, and other, more intricate, figures that threads through the building and the surrounding garden like a three-dimensional kilim tapestry. In typical Muslim fashion, these motifs weave an episodic sequence of indoor and outdoor rooms, linked along a continuous pathway. Each spatial volume possesses its own inherent order and allure, at the same time that each is perceptibly a transition to the next stage in a physical and spiritual journey whose ultimate goal lies beyond walls and rooms.

Because Freschi's symbolic allusions are neither wholly abstract nor precisely antiquarian, as befits a synthesis of modernity and tradition, the "meaning" of this particular jamatkhana is as multilayered as its geometry. Iconographic intent is as evident in the juxtaposition of exposed concrete structure with sandstone ashlars as it is in more orthodox Islamic details such as calligraphic inlays or ceilings honeycombed with coffers and cupolas aglow with polished brass. Unlike Muslim architects seeking shelter from the hot Middle Eastern sun, Freschi opened up skylights and enormous lanternlike windows of etched, opalescent glass to transmute the cool radiance of the northwestern sky into an all-encompassing force of magical intensity. The Levantine roofscape of copper-sheathed cupolas will eventually almost disappear behind a dense perimeter of trees. These "sentinels," as Freschi calls them, shield the outer limits of a microcosmic paradise, a garden that also forms an axial forecourt to the central portal. With its recessed vault, the portal suggests a giant stylized mihrab, the prayer-wall niche that orients worshippers toward Mecca; more prosaically, the porch is a gateway to the "loggia" that occupies nearly half the main floor. The loggia sometimes serves as a grand reception hall; but as a way station along the building's symbolic pathway, it is simply the place where the faithful doff their shoes before entering the prayer hall. Even the prayer hall offers an equivocal vision of journey's end. As Freschi has written, "Light, pattern, mass, and enclosure center the person in the room, yet the symmetrical room does not have a center. The center is in each person in the room."
What Bruno Freschi calls the "relentless" geometry of his parti is most striking in plan. Repetitive modules not only unite disparate functional zones within the 41,600-
square-foot building but also bind architecture to landscape.
Planting, aromatic shrubbery and plashing fountains were essential
components of the Lamalila's program, in keeping with the
Muslim ideal of a manmade earthly
paradise (from the Persian
pairidaeza, or "walled garden") for
contemplative tranquillity. Freschi's
variation on that theme most closely
resembles 16th-century Mogul
prototypes, although the botanical
display combines flora native to the
Northwest with specimens favored by
gardners in various parts of the
Islamic world. A thick planting
screen around the edge of the 3.5-acre
site and low profile for the

Jamatiyana were stipulated by the
local planning department. The
constraint of suburban height
restrictions necessitated full use of
the basement for administrative
offices and educational facilities.
Externally, the tall, open-crowned
"arch" of the white marble portal
(preceding page) helps to counter the
enforced horizontality, as will
columnar evergreens that can grow
to a height of 10 or 50 feet.

1. Council chamber
2. Meeting room
3. Kitchen
4. Library
5. Classroom
6. Reception
7. Office
8. Caretaker
9. Mechanical
10. Courtyard
11. Loggia
12. Coat and shoe room
13. Prayer hall
14. Social hall
15. Stage
16. Open to below
In the absence of a minaret, a form the Ismā‘īlī specifically forbade, octagonal cupolas rise discreetly to announce the presence of the two-story prayer hall inside. The clustered roof lanterns recall a characteristic feature of Turkish mosques, although the Near Eastern model has been westernized by the addition of skylights. In the same vein, Italian sandstone wall cladding evokes the solid masonry of ancient Muslim monuments, while exposed concrete (as around the windows below, or in the side walls framing the main portal’s Carrara frontispiece) reveals the actuality of modern structure. Large windows are something of a rarity in conventional mosque design: jamā‘āt khāns have customarily been erected on urban sites surrounded by other buildings, and in climates where it is desirable to filter strong sunlight. Furthermore, the extraordinary stepped windows at Burnaby invert the usual Muslim pattern of openings narrowed at the top, another sun-shading device. Freschi turned his ziggurats upside down, and corbeled their central mullions outward, to take advantage of gentler northern light. The panes are translucent, however, since client and architect agreed that full visibility was undesirable.
Faceted and inset with cast opalescent glass, the prayer-hall windows resemble huge lanterns. Throughout the day, one-inch-thick panes etched on both sides with abstract calligraphic motifs tint the light a golden or rosy hue. Stylized calligraphy also adorns brass-inlaid wooden screens, bas-reliefs of ivory-colored marble-dust tile set into zigguratlike concrete piers, and the sand-blasted rose and coral marble prayer wall (which the Ismailis will not permit to be photographed in its entirety). Stepped panels at the center of the eastern prayer wall (detail opposite right), which compose a subtly geometric mihrab in line with Mecca, are inscribed with the names of Allah, Muhammad, and Ali, the Prophet's son-in-law and the Muslim world's first imam, or spiritual leader. Low offering tables called qaas border the prayer hall.
and divide it symmetrically into areas for men and women. The figure of a Chinese cut-pile carpet repeats the octagonal ceiling configuration. Brass rings inside the concrete cupolas vary the predominantly rectilinear geometry. Similar coronas with suspended lamps, in the loggia (bottom opposite) and in the social hall upstairs, were inspired by Turkish oil chandeliers.

Ismaili Jamatkhana and Centre
Burnaby, British Columbia, Canada
Owner:
The Aga Khan Foundation
Architects:
Bruno Freschi Architects—Bruno Freschi, principal; Shanti Ghose, associate-in-charge; Roland Kügler, project architect; Joyce Drohan, Richard Belli, Julia Meadows, Lynne Werker, Elizabeth MacKenzie, project team
Interior designers:
Bruno Freschi Architects—Bruno Freschi, Lynne Werker, Utopia Design Furnishings, Julia Meadows
Engineers:
Bogue Babicki Associates Inc. (structural); Keen Engineering Ltd. (mechanical); W. T. Haggert & Co. Ltd. (electrical)

Lighting:
William Lam and Associates
Acoustics:
Bolt Beranek and Newman
Landscape architect:
Vangelatos Associates Landscape Architecture Ltd.
Artist in glazing:
Lutz Hauschild and Associates Ltd.
Consultants:
Garr Campbell Associates Inc. (landscape concept); Hanseomb Consultants Ltd. (cost); Moheb Khadem (calligraphy); Oleg Grabar (Islamic art historian); William L. Porter (special technical consultant)
General contractor:
The Foundation Company of Canada Ltd.

Architectural Record August 1986 95
Historic preservation is virtually a secular religion in Charleston, South Carolina, and the merest hint of possible "improvements" to an old building there is enough to stir the wrath of the faithful. Knowing this, architect Arthur Cotton Moore was "fairly incredulous" when the Most Reverend Ernest L. Unterkoefer, Roman Catholic Bishop of Charleston, told him he wanted to "bash through" the sanctuary wall of his cathedral. The neo-Gothic Cathedral of St. John the Baptist was consecrated only 79 years ago, making it one of Charleston's younger monuments, yet it embodies a venerable heritage (an earlier cathedral, which replaced a simple wood-frame chapel erected in 1821, stood on the same site from 1854 to 1861, when it was destroyed by fire). Keenly aware that generations of sentimental reverence adhere to every detail of the church, the Bishop proposed a substantial remodeling only from a sense of urgent necessity. St. John's was designed around 1890, when ecclesiastical practice did not favor the more communal, participatory ritual promulgated by Vatican II, and though most of the building needed no physical adaptation to be brought up to date liturgically, the Victorian high altar presented an unacceptable anachronism. Above all, the sanctuary platform, or predella, furnished too shallow an area in which to reorient the mass from a traditional wall-mounted altar and reredos to a now-obligatory freestanding table facing the congregation. (Other circumstances unforeseen by the original architect ranged from televised masses to ordinations where six-foot candidates for the priesthood would be unable to prostrate themselves without hanging their feet over the predella steps).

Bishop Unterkoefer decided that the simplest way to gain space would be to recess the existing altar and its flat surround into an adjacent vestry, thereby creating a new chancel aloft. Moore readily saw the logic of this scheme, but cautioned that it would hardly be simple to execute if, as the Bishop insisted, the historic character of the cathedral were to remain intact. Further complicating Moore's task was a program that also called for thorough interior restoration, readjustment of flood-plain drainage, a total upgrading of electrical capacity, acoustics, and audio service, and the unobtrusive installation of sprinklers, a complete new lighting system, and air conditioning (previously, only a basement chapel had been mechanically cooled, making summertime mass in the main church a test of faith). At times, the project approached archaeology, as when the marble reredos behind the high altar was dismantled into some 200 pieces prior to storage and reassembly. Just as painstaking was the "needling" of the upper chancel wall: four-inch-thick beams were bored through the masonry on two-foot centers and connected with scaffolding on either side, to stabilize the triforium, clerestory, and central rose window while the lower wall was demolished and replaced with concrete piers and steel beams to frame a new sanctuary opening. Eventually, plasterers clad this armature and the rest of the now-gutted chancel in Gothic columns, arches, moldings, and brackets—part replication, part invention.

Painted in shades of gray and blue that graduate upward from dark to light, and picked out with white and gilt trim, the refurbished decor satisfies the Bishop's request for an "uplifting" interior, "noble" rather than "sumptuous." Ingenious concealment of mechanical systems enhances this chaste elegance (cutaway diagram overleaf). Air supply ducts, for example, run behind blind arches that separate chancel and aisles, with grilles set into quatrefoils above the reredos and along the triforium; slot diffusers discreetly parallel the ridge ribs of aisle vaults. Moore neatly avoided the intrusion of 30-inch-diameter return ducts within the nave by burying them under sidewalks outside the aisles; exterior condenser apparatus at the back of the cathedral is out of view behind a brownstone-colored stucco enclosure reminiscent of local garden walls (bottom left). Following the lead of P. C. Keeley, the building's architect of record, Moore rendered plans for a steeple atop the tower. Unfortunately, Charleston history repeated itself and, as at the turn of the century, a budget-conscious diocese vetoed the spire.
Owing to Vatican II directives, a marble communion rail was taken out when the sanctuary floor was advanced six-feet into the nave. Parts of the rail now adorn a crypt under the new chancel. Before reconstructing the turn-of-the-century altar nine feet behind its original location, Moore changed the profile of the former vestry roof, from pitched to hip in order to house the tall reredos and necessary ductwork.
The entire chancel was stripped down to bare brick for structural alterations and insertion of mechanical systems, such as ductwork behind blind arches (above right). Refurbishment of the nave included sound-absorbent pew upholstery, down-lights, and hidden cables for television filming. An elevator for the handicapped was designed to rise inside an oak confessional below the organ loft.

Cathedral of St. John the Baptist
Charleston, South Carolina
Owner:
Diocese of Charleston
Architects:
Arthur Cotton Moore/Associates,
P. C.—Arthur Cotton Moore, principal; Ilk Pyo Hong, project manager
Engineers:
Tadgier-Cohen Associates
( Structural); Glassman-LeReche & Associates ( mechanical/plumbing/ electrical)
Acoustical consultants:
Polyphonics Inc.
General contractor:
Russon Construction
The clearing, which commands a scenic view over the Pioneer Valley, is yet to be landscaped by Katsuo Saito. A shack built as a site office for the pagoda project (right) remains in use for construction of an adjoining temple, designed by William Llan Starkweather. Scaffolding and salvaged barn wood is now being recycled, and timber forms for the stupa dome will become roof trusses in the temple.
The Most Venerable Nichidatsu Fujii built his first pagoda on a mountain in Japan after the bombing of Hiroshima and Nagasaki. A Buddhist monk and founder of the Nipponzan Myohoji order, Fujii consecrated the domed shrine to universal peace and enlightenment, reviving both the form and religious purpose of a 2,500-year-old tradition of stupa design that originated in India. "The appearing of a pagoda touches the hearts and minds of all people," he explained.

"Those who venerate this pagoda absolutely reject nuclear warfare and firmly believe that a peaceful world will be manifested." Before his death in January, 1985, at the age of 100, Fujii had inspired the construction of more than 70 pagodas in Asia and Europe, and overseen the beginnings of the first in North America, the Leverett Peace Pagoda. The site for the latest project, a wooded hilltop in western Massachusetts, was donated to the order, as were the services of the professionals who designed the stupa and the labor of the nearly 1,000 volunteers from many faiths who built it over one and a half years. Louis Mackall, the architect, knew little about Buddhism until he met nuns and monks from Nipponzan Myohoji as fellow demonstrators protesting the Trident submarine. Reciprocal good will (and a joint leap of faith) led to the peace pagoda commission, a collaborative effort with engineer J. Robert Jennings, Rev. Mamoru Kato, senior monk at the small monastery that tends the shrine, and a host of others.

As a Westerner from a professedly "secular background," whose career had focused hitherto on private residences and custom furniture, Mackall approached the creation of a stupa somewhat uneasily. Fujii and Kato had already agreed on a generic model, the second-century-B.C. tope at Sanchi, India, one of the earliest pagodas erected to house Buddhist relics. But beyond determining the basic type of a domical structure with central pinnacle, and a thematic program for sculptural iconography, they hoped their architect would reinterpret precedent according to his own lights, as an American. To that end, Mackall intensively drew and redrew the elementary contours and decorative motifs he was shown in photographs of Sanchi and modern peace pagodas, striving for a sense of intimacy with alien shapes and symbols, and a measure of the plastic vigor he saw in the ancient prototype but found lacking in many contemporary stupas.

Once this research had been sufficiently "edited" by Buddhist advisors and pondered with Jennings to produce a schematic outline of the concrete pagoda's form and structure, Mackall began modeling clay maquettes of sculptural details, such as a lotus blossom frieze and ogee-arched niches. These three-dimensional sketches were then transposed into three-quarter-scale plaster casts. The filigree "water-flame" finial of the pinnacle, largely conceived by artist Shin Higuchi, was laser-cut from aluminum, a rare intrusion of sophisticated technology. In general, construction relied on sweat, ingenuity, and solidarity: "All of the pure energy brought to the process of building the pagoda remains here," says Kato. Trees cleared on site were lashed together for scaffolding, and formwork and trusses for the 80-foot-diameter dome and its podium were assembled by hand from scrap wood. While volunteer Earl Johnson pneumatically sprayed the shell over rebar, a team of Sri Lankans toweled its curved surface (their adjustments by eye were accurate to within an eighth of an inch of Jennings's seered). The same team sculpted freehand concrete statues.

Many non-Buddhists who helped out for a few days or even weeks during construction were perplexed by the lack of any apparent access to the interior of the dome, which in the finished stupa is permanently sealed. Visitors still wonder why there is no "inside," no clear destination, as they watch saffron-robed monks and nuns circumambulate the outdoor walkways beating hand drums and chanting. There are many possible replies to the lingering question. One of them is suggested by Rev. Clare Carter, a nun at the pagoda: "Our teacher was always trying to make the point that heaven is also this world. Our life here is a creation of this heaven through human effort."
Twice daily, monks and nuns walk around the pagoda as a community, making one circuit on the lower walkway and two on the upper, beating hand drums, and stopping at each of four niches (below) to bow and chant a prayer for peace that was first intoned by the 13th-century Japanese monk Maha Bodhisattva Nichiren. The statues in the niches (viewed clockwise starting at the head of the stairs, left to right in photos below) represent the “Birth Buddha” vowing to relieve suffering, a favorite subject of Nichidan Puji; “Buddha defeating evil spirits just before final enlightenment”; “Buddha entering Pari-Nirvana”; and “Two Buddhas expounding Supreme Dharma,” which is inscribed with a quotation from Nichiren, “Establishing righteousness and truth for the sake of the comfort and peace of nations.”
As in the earliest Asian stupas (and modern versions as far afield as London and Vienna), the tower of the Leverett Peace Pagoda is meant to house relics of Buddha, which the Nipponzan Myohoji order generates as emblems of enlightenment and nonviolence. A "prayer in stone," the pagoda itself is regarded as an embodiment of Buddha. Nine undulating "leaves" on the pinnacle symbolize nine ways of consciousness; the finial, or kota, whose base is hung with wind bells, depicts heavenly beings making offerings. Shipped in 140 pieces by the fabricator in Connecticut and bolted together on site, the gilded aluminum superstructure rests on a single-cast concrete tower. Fliers at the core of the dome centered timber framework, which was extracted through openings in the podium now filled in with precast block.

Leverett Peace Pagoda
Leverett, Massachusetts
Owner: The Vows and Nuns of Nipponzan Myohoji
Architects: Louis Mackall & Partner
Engineer: J. Robert Jennings
Graf: Earl Johnson
Sculpture: A. A. Gunnetileke, W. J. Lentis, D. M. Heembinda, W. A. Rajapakse
Finial Calligraphy: Shin Higuchi
Aluminum construction: Lippincott Inc.
Fiberglass formwork: Norman Sypher, Holly Hamilton

Gold leaf:
Rev. Yashio Ishiyama, Rev. Midori Hapinoda, Rev. Jacqueline Gemme, Marianne Gunther
Electrician:
Rupert Clark
Public relations:
Paula Green, John Schuchardt
Core workers:
Landscape:
Katsumo Sato
General contractor:
Nipponzan Myohoji
Back to the future
Lewis Thomas Laboratory
Princeton University, Princeton, New Jersey
Payette Associates Inc., Architects
Venturi, Rauch and Scott Brown, Associated Architects
"Going back . . .", the first words of Princeton University's alma mater, is an obsession for its alumni, like myself, as if the return to campus could somehow transport us all back in time. Although the Gothic quadrangles crisscrossed by worn walkways are, sure enough, just as our mind's eye so fondly recalls, times have changed. Striving to be more than a well-preserved memory, the 240-year-old university has undergone substantial expansion in recent decades in both the size of its student body and in its social and academic facilities. During the past five years, the campus has been subject to a rash of new building and renovation projects—work often steeped in controversy for its seeming rejection of Princeton's proud tradition of pointed arches and gargoyles, and, more unsettling for its sons (and now daughters), its transformation of the way things were.

Lewis Thomas Laboratory, the latest addition to Princeton's increasingly eclectic architectural pantheon, is not only a deeper foray into unfamiliar (for the university) stylistic territory, it also represents a radical shift from its previous build-only-as-a-last-resort policy. Intended for a molecular biology department that had not yet been fully recruited, the $29-million facility, the most expensive in Princeton's history, was meant to prove the university's commitment to the growing field of study of the "genetic engineer." Realizing that it would require more than scant promises of tenure to woo sought-after scientists from the clutches of competitive institutions, Princeton turned to the firms of Payette Associates and Venturi, Rauch and Scott Brown with the difficult task of creating an unsurpassed facility for research and experimentation. The selection was based on the experience of a more-than-satisfied customer: Payette was busy reworking the outdated laboratories of Princeton's chemistry department (and, not incidentally, had just completed a molecular biology building for rival Harvard), and Venturi, Rauch and Scott Brown was basking in the critical success of Gordon Wu Hall, Princeton's newest dining and social hall (RECORD, September 1988-II, pages 86-97). The rules of the joint venture were set forth by university president William G. Bowen, who took pains to broker the overtures that preceded the arranged marriage. Both firms graciously accepted the proposal, each more than willing to assume its own clearly delineated role. Thomas Payette distills the directive to a quite simple "anything on the outside was his [Robert Venturi's] ultimate decision, and anything on the inside was our ultimate decision."

Drawing on its own area of expertise, Payette's office compiled the building's program and Venturi's office joined in to study its siting and the formation of a forecourt bisected by College Walk (above). A combined Payette-Venturi team then reviewed the working habits of biologists and divided the program accordingly. The footprint of the 114,000-square-foot-building was determined by locating the heavily used areas—i.e., laboratories and offices—along the perimeter, in effect designing the building from the inside out. All too familiar with facilities in which the laboratories had been treated by architects as necessary evils that they were forced to accommodate, Payette wanted to remove the suffocating shield around them and to expose the day-to-day operation of these scientific workshops. Indicative of the profession itself, the Molecular Biology Department is not, as departments in related fields are often known to be, just the sum of individual researchers with reputations that precede them who demand their own inner sanctum in which to putter and meditate undisturbed. It is, rather, an interdisciplinary group that depends on collaboration and information exchange. Toward that end, the communal laboratories in Lewis Thomas Laboratory were designed to visually extend into the corridors, and lounges were located at both ends of the three principal experimental floors to encourage interaction.

Once the conceptual organization of the building was developed to the satisfaction of the Payette-Venturi team, Payette's office began refining the interior, and Venturi's office began laboring over the facades. "We were given the module of the workstation," remembers Robert Venturi. "We liked not arguing with them on that. The interior of this building is, by its nature, highly repetitive. We said we would not fight it." Convinced that the correct strategy of dealing with the front was to acknowledge its expanse along College Walk, the Venturi team chose to accept its implied planarity. Avid students of what they refer to as our complex and contradictory built environment, they looked to two sources for instruction on repetition and rhythm—New England mills and Elizabethan manor houses, the former deemed appropriate because of the factory-like nature of laboratories and the latter because of the neighboring amalgam of brick structures. From these precedents came inspiration for the ornamental brick bands that add a layer of historical symbolism to the exterior, befitting the heritage of its academic setting. The pattern, Venturi admits, "was the hardest part. Although we've been advocates of pattern and color for a long time, when I grew up you didn't touch pattern." The polychromatic patchwork quilt of diaper and checkerboard patterns is, in fact, stitched together with the assiduity of a seasoned couturier. Shifts in pattern camouflage the building's bulk and differentiate the spaces contained within, and variations in color enhance the sense of depth. The brick pattern is interrupted only by the Gothic cutout above the main entrance (opposite), where the richly-grained wood doors introduce the material palette of the interior.

For some, Lewis Thomas Laboratory is an unwelcome newcomer to the campus—duly dubbed "S. S. Moly Bio" by its Wittier detractors—that has provoked more than its share of student debate. Comments range from "ugly" and "ridiculous" to "the most interesting thing to happen on campus for a long time." Although the criticism is often not as sophisticated as its levelers are purported to be, Venturi does not completely dismiss it as the spewings of petulant onlookers ignorant in architectural history, but confesses instead that "a lot of things I do myself I don't exactly like, but after a process it seems absolutely the right thing to do and later I get to like it." A Princeton graduate himself, Venturi is reminded of the fruits of his own education: "What I got from my teachers was a sense of history, context, that architecture evolved from something. The implication was that it went on from there."

It's a fitting postscript that Payette Associates and Venturi, Rauch and Scott Brown are now collaborating on similar buildings for the University of Pennsylvania, Dartmouth, and UCLA. They are, clearly, moving on. Karen D. Steir
The brick pattern of the facades was the subject of extensive field testing, a puzzling enterprise to those who passed the piles lining the site before construction began. Princeton has several committees composed of members of the administration and faculty that review all proposed additions to the campus. Although these various groups are more than willing to offer their recommendations, once the basic concept is agreed on, "there comes a time," as Jon Hiefster of the Office of Physical Planning concedes, "when the trustees and the various review committees leave it to the architect to get it right." Getting the pattern "right" and its rhythm in syncopation with the air-intake vents of the front facade (below left) and the greenhouses along the rear facade (below right) was a difficult task, as Robert Venturi readily
admits, but after much travail he did do just that. Some have accused the diaper and checkerboard pattern of being outlandish and disrespectful of Princeton's architectural heritage, but, on the contrary, its studied air makes it exceedingly appropriate to the academic setting. Princeton University, once a bastion of conservatism (so much so that when it finally went co-ed in the late '60s several of its once-beneficent sons wrote in that the university would never again be the recipient of their generosity), has come a long way since Colonial times when all of its functions were housed in one building. Lewis Thomas Laboratory may be the campus's most controversial building of the past decade, but it is destined, as the vacillating reputations of generations of buildings before it can attest, to fall in and out of favor.
Payette Associates organized the three main research floors of Lewis Thomas Laboratory around a main corridor and central stairway that increase opportunities for interaction beyond the confines of the laboratories and offices (plans below and photos right, top and middle); lounges at each end, equipped with the requisite chalkboards, were designed to accommodate spill-over discussions.

1. Electrical switch gear room
2. Mechanical
3. Store room
4. Seminar
5. Equipment room
6. Tracking lab
7. Cage rooms
8. Cage washing
9. Clean cage
10. Work room
11. Lounge
12. Labs
13. Glasswash
14. Conference
15. Administration
16. Mail
17. Reading Room
18. Potting corridor
19. Greenhouses

(opposite) Generous fenestration in the laboratories admits ample natural light during the day that is supplemented with indirect lighting; fixtures are located on top of the air diffusers to minimize clutter under the steel ceiling (bottom right). Project architect James Collins, Jr., refers to the white-painted ducts and wire-support racks, which facilitate changes in electrical demand, as a “noble attempt” to make the laboratories appear more spacious. Collins regrets that his firm had not been able to maintain even tighter control over the mechanical system, which consumed approximately 20 percent of the building’s square footage. Contrary to the deliberate character of the building, the emergency generator exhaust stack that peeks out above the west façade like an inquiring scientist’s telescope (page 102) is not an intentional play on its shiplike shape.
Although maligned by some, Lewis Thomas Laboratory's ornamental masonry have complained that it recalls the Rolston Purina logo or a hodgepodge of computer graphics. Its actual precedents go back farther than that. Venturi and his colleagues looked at Elizabethan manor houses and the 19th-century English Gothic Revival of William Butterfield to learn about variations on diaper and checkerboard patterns. But the problems with their assembly were distinctly 20th-century. Not only were several carloads of the wrong-colored brick delivered, only to be immediately rejected, but the architects soon learned that the different densities of the bricks affected the way mortar dried around them. "Once you begin to play with subtleties, it's much more difficult," admits Jon Hiaater of Princeton's Office of Physical Planning. The deficient installation of the cast-alum window surrounds has no such excuse (page 167).

Lewis Thomas Laboratory
Princeton University
Princeton, New Jersey

Owner:
Princeton University

Architects:
Pamet Associates, Inc.—David Rowe, principal-in-charge; James Collins, Jr., project architect; Ben Tworkon, Bob Schaefner, Ben Davis, Ed Furst, Leslie Glynn, Herman Weimer, Chris Shaffer, Dick Fuller, and Bebe Brennan-Wagner, project team
Venturi, Rauch and Scott Brown, Associated Architects—Robert Venturi, principal-in-charge
Ronald McCoy and Donald Schoof, project architects; John Rauch, Denise Scott Brown, Margot Angellone, Rick Buckley, Sam Harris, Bob Marker, James Timberlake, Ann Bower, David Vaughan, and Maurice Weintraub, project team

Engineers:
R. G. Vanderweel Engineers, Inc. (mechanical, electrical, and plumbing); Simpson, Grumet & Heger, Inc. (structural)

Consultants:
George E. Patton, Inc. (landscape); Ripman Lighting Consultants (lighting)

General contractor:
Barr & Barr, Inc.
Democracy at work

For 20 years, ever since the Massachusetts turnpike muscled its way directly through Boston and Prudential Center built a tower on the highway’s air rights to the northwest, the gaping hole seen opposite discouraged pedestrians and builders alike. The site accommodated not only I-90 and its three-way off-ramp but a set of railroad tracks for Amtrak and commuter trains and another set for the Boston Albion. Moreover, and notwithstanding the unfinishing ambm of Boston pedestrians, neither the hole nor its boundary streets favored foot traffic. The gaping hole thus effectively isolated an assortment of neighborhoods and buildings: the Back Bay to the north, the South End to the south, Copley Square at the northeast corner, and Prudential Center at the northwest corner. No matter where you started, you couldn’t get there from here.

The owner of the site, the Massachusetts Turnpike Authority (MTA), was understandably eager to realize the value of this land for the benefit of its bondholders. Over the years, the small triangular corner that noses into Copley Square—repository of Richardson’s Trinity Church, McKim, Mead, and White’s Boston Public Library, Cummings and Sears’ New Old South Church, and Pei’s Hancock Tower—had many suitors. The bulk of the 9.5-acre site, however, was a wallflower. Even an amateur could recognize that an enormous amount of money would be needed to ready the site for building. The MTA wanted the entire site developed simultaneously, fearing that development of the “easy” site would leave the hole permanently a hole. It therefore welcomed an expression of interest from the Urban Investment and Development Company (UIDC) which, as developers of Chicago’s Watertower Place and a subsidiary of Aetna Life & Casualty, combined experience with financial strength.

Kenneth A. Himmel, a vice president of UIDC in the late 1970s when the Senate of events occurred, concurred that the company thought less about physical constraints than it did about commercial promise. Prudential and Hancock are only two among many office buildings that produce a daytime population of around 30,000. Additionally, the deluxe department store, boutiques, and art galleries around Prudential Center and on nearby Newbury Street already attracted affluent shoppers from the city and the suburbs, a population that UIDC thought would increase with new shopping magnets and the new Back Bay Station (now under construction). UIDC also thought that it would have no trouble renting an office tower and that a couple of hotels would profit from conventions at the Hynes Auditorium (now being expanded) on Huntington Avenue. “There just were very few open spaces left in the city on which to even consider building a big project,” Himmel remembers, “and as it turned out, though I didn’t think about it in these terms when I started, the problems created an opportunity—most people looked at the site and found it such an eyesore they’d rather deal with a big new development.”

The big new development UIDC had in mind was Copley Place, a mixed-use commercial complex to encompass offices, stores, hotels, restaurants, and movies. The establishment of an animated node at this site seemed appropriate, and indeed the Boston Redevelopment Authority (BRA) had already envisioned similar use: the Illustrative Re-Use Site Plan for the Regional Core, published in 1975, posited commercial development here, and even included pedestrian bridges.

The major lesson taught by Copley Place, however, is not how to plan and build a large urban complex but how to engage, fruitfully, the opinions and cooperation of the public in a private endeavor that will clearly impinge on its lives. Such public involvement occupied the dreams of young architects and students back in the ’60s—remember participatory design?—but too often dwindled into unfocused caring and belated complaint. The exacting structure of Copley Place’s Citizens Review Committee (CRC) proved far more useful.

The MTA had resolved to retain its ownership of turnpike air rights by renting them instead of selling them outright as it had to Prudential in the ’60s. The Commonwealth of Massachusetts, rather than the City of Boston, was thereby inevitably drawn into the development process since the law requires the Governor to co-sign all long-term leases entered into by the MTA, an otherwise autonomous authority. The Governor, then (and now again) Michael S. Dukakis, called in urban planner Frank T. Keefe, Director of the Office of State Planning. Keefe, still bearing scars from public protests centered on the recently failed Park Plaza proposal near the Public Garden and a mixed-use proposal for Cambridge, had grown chary of the competitive RFP process—a process he characterizes as “static,” “segmented,” and “bizarre,” one that, for citizens, architects, and developers, “maximizes confrontation and defensiveness, and does not benefit the community, the public agencies, or the best solution.” Keefe wanted no more of that. Moreover, both Keefe and the MTA, recognizing UIDC as one of only a handful of developers strong enough to tame the site and finish the job, were loath to lose a bird in the hand. Both the Commonwealth and the MTA thus favored designating a sole source for development.

However convenient, though, sole-sourcing is fraught with danger for public figures. If elected and appointed officials are to avoid suspicions, let alone accusations, of corruption and favoritism, plans must not only have the approval of the community but must be seen to have such approval. Above all, the public must not learn about unacceptable plans on the eve of construction. It will be quick to express its dissatisfaction, quite possibly causing the developer to cut his losses (often substantial) and thwarting governmental ambitions. It was for practical political, legal, and financial reasons that the Commonwealth formed the CRC, not because of vaguely defined democratic ideals. (Though the MTA funded the staff and operations of the CRC, it otherwise kept its distance, perceiving its overriding duty as running a safe, efficient highway.)

The CRC included, at its head, Tunney Lee, an associate professor of architecture at MIT and formerly with the BRA. It also included representatives of numerous constituencies—business associations, big neighborhood and little block associations, labor unions, special interest groups from the Back Bay and the South End, from nearby Fenway, even from Beacon Hill. Interested groups in the Back Bay, both merchants and the prosperous, well-educated residents, tended to homogeneity of outlook—that is to say, politically liberal. Lee describes them as “full of talent—they always had someone who could read an environmental impact statement or analyze emission standards. Lawyers, scientists—and architects galore.” The South End, on the other hand, “a very complex, very rich neighborhood,” he describes as “a volatile mix of recent gentry, who were very conservative, to very radical organizers, and everything in between, including an old black middle class that had sprung up with the pullmans and the train yards.” And if the neighborhood lacked much of the academic expertise found in the Back Bay, it had plenty of political savvy.

Since the Governor’s office wanted the broadest possible representation of interested parties, an ad hoc group—Keefe, the state representatives from the Back Bay and the South End, a newspaperman familiar with leaders in both districts, and “others”—conducted a painstaking census and notified some 50 groups of the CRC’s scheduled meetings. The first set of workshops, in June and July 1977, aimed at describing the scope of the development in as much detail as available and at identifying the residents’ concerns. Very preliminary plans were explained. (UIDC’s architect later resigned the commission; The Architects Collaborative did not get involved as master planners until spring of 1978.) At this point, Lee wanted to hear everything; he considered no question trivial. “We elicited a lot of concerns. ‘I’m afraid if you build this thing all the cars will park on my street.’ ‘I’m afraid if you build this thing I won’t be able to buy a bottle of milk at the corner.’ ‘When you build this thing we’d really like to get from here to Prudential.’ That was the kind of thing I wanted to hear.
These became the basis of the guidelines—our next piece of work."

The guidelines, which loom large in everyone's narration of Copley Place's planning, were frankly intended to bind the developer, under threat of monetary penalties, to the agreed-upon wishes of the community on specific issues of land use and design, as well as employment. To ensure compliance, the guidelines would be incorporated in the MTA's lease with UIDC and in UIDC's subleases. Enforcement would thus move from criminal law, where legislative act would put it, to more familiar civil law.

The second set of CRC meetings, which delivered final recommendations to the Governor in September 1977, defined particular guidelines to satisfy particular concerns. Lee at the same time made sure that CRC members understood legal and physical immutabilities. The CRC's funding allowed generous access to consultants and expert studies. Almost too much, according to one participant, who felt obliged to absorb the many papers offered but sometimes felt also that he was "drowning." But Lee was stern. "I didn't want feelings but opinions based on measurable fact."

Among the design issues covered in the guidelines—and there were many—massing took in a number of subsidiary issues. Not surprisingly, height worried the mainly residential neighborhoods, which did not want to be overwhelmed by buildings the size of Prudential or the soaring Hancock Tower. Though it had envisioned an office tower, UIDC promised almost at the outset to build no higher than half the height of Hancock, and in the event TAC avoided the adverse impact of the office component by laying it on its side and dividing it into four pods. At the same time, the tower of the Westin Hotel, which occupies the desirable triangle, retreats to the western end of its corner so as not to loom over Copley Square or the Public Library. Meanwhile, dwellers in St. Botolph Street, which debouches into Harcourt Street on Copley Place's western edge, wanted a view corridor to Hancock Tower, the familiar sight of which makes residents psychologically a part of the larger city. Lee allows that being an architect helped at times like this. "We could say, 'You can move the Marriott Hotel over. It may not be ideal from a planning point of view, but this is important stuff—the biggest thing that's happening in the next hundred years.'" Shadow also concerned Copley Place's neighbors, but, as Lee points out, "any architect can show that," given building heights and locations. The shadows here fall mostly on Huntington Avenue and the turnpike's on-ramps or within shadows already cast in Copley Square—and fortunately not on houses in the South End. And they do not obscure John La Forge's cherished lancet windows in Trinity Church, at least not during services.

Other planning and design considerations, like pedestrian circulation and housing, are discussed on the following pages.

Though jobs do not ordinarily affect architectural decisions, at Copley Place they greatly affected real estate matters. In the South End, citizens, especially blacks, ethnic whites, and women, wanted both construction and permanent jobs—not just any jobs, but good jobs. Rigorous percentage quotas were written into the leases: 80 percent minorities for permanent jobs, 50 percent Boston residents, 17.5 percent residents in eight neighborhoods in the "impact area," and 50 percent women. Employment figures are monitored by the Massachusetts Commission Against Discrimination.

In the end, about half the guidelines survived lease negotiations, but the CRC could make sure that the survivors included its most essential wishes. Beyond that, Lee points out, "By working hard for a few months, we saved probably a couple of years." Which all seems to demonstrate that the democratic process, when applied with diligence, means that nobody loses everything and everybody wins quite a lot. In an uncharacteristically reflective aside, Keefe said, "Just goes to show you—you let the citizens in, you have a dynamic process, things move more quickly. Democracy works. Democracy works." —Grace Anderson
Knitting up the ravelled urban fabric torn by the turnpike 20 years ago was one of the major opportunities offered by the development of Copley Place. Only Dartmouth Street and Huntington Avenue had permitted reasonable foot traffic around the gaping hole dividing the tidily orthogonal Back Bay on the north from the more relaxed street plan of the South End. Prudential Center itself, sitting alone on a platform above the turnpike, interfered another barrier. As master planners, TAC proposed outdoor pedestrian circulation from Newbury and Boylston streets along Dartmouth Street. At the Westin Hotel and Nieman-Marcus corners, pedestrians enter Copley Place to complete the loop indoors, ending at Prudential Center and its surrounding department stores.

If an enclosed shopping mall seems somehow un-Bostonian, one must remember that, in addition to the heavy vehicular traffic on Huntington Avenue and Stuart Street, the center of Copley Place had to be raised 90 feet above grade to clear the ramps as it rises above the railroad and to provide a 15-foot truck clearance. Moreover, the original site provided very little area suitable for foundations. As Himmel says, “The moment you build buildings over the turnpike, you’re dead, cost-wise,” and the CRC spent many hours discussing three-dimensional complexities. Elimination and relocation of the ramps (see preceding page) freed one corner of the site for the department store and another for the Marriott Hotel. Within the circle defined by the ramps, the designers placed parking and services. (Zalasinski Associates engineered the three lower levels under a separate design contract.) Site preparation cost $85 million, offset partly by a federal Urban Development Action Grant of $18.8 million obtained by the city. The entire 3.5 million-square-foot project cost $530 million.

Disagreement over the inclusion of housing at Copley Place was heated and at one point threatened the project’s continuation. Members of the CRC from the South End, supported by members from the Back Bay, insisted that the complex include affordable housing to ease predictable pressures on rent in an area already suffering such pressure from gentrification. The developer, on the other hand, had no expertise in this field and was more than reluctant to undertake it. In the end, the complex does include 100 apartments, 25 percent of them with subsidized rent. In a low-rise building at the corner of Harecourt Street facing the South End. It has proved very successful.
Animating the edges of this big complex was an especial concern of the developer and its commercial tenants and of the residential neighbors. None of them wanted expanses of blank forbidding wall along the sidewalks. But at Copley Place, with so much volume at its base taken up by the highway and railroads, such animation was hard to achieve. TAC provided a large open plaza over the turnpike (opposite top), which gives entrance to the Nieman-Marcus store and to small ground-floor retail. Around the corner from Nieman-Marcus, an active opening from public transit promises still more activity when the Back Bay Station and a new transit line are completed. When transportation construction finishes, a landscaped deck will occupy the entire length of the complex facing the South End. The architects of the Marriott Hotel, The Stubbins Associates, sought some liveliness along the Huntington Avenue sidewalk; despite that fact that the hotel’s lobby is on the second level, they persuaded the management to install a downstairs bar.

Though pedestrian bridges are not commonplace over Boston’s crooked narrow streets, even in the high-rise financial district, Copley Place needed them if pedestrians were to avoid vehicular traffic. Stuart Street (opposite top), which receives traffic directly from the turnpike’s off-ramp, is spanned by a short bridge designed by TAC to connect the Westin Hotel with the complex’s central office and retail area. Huntington Avenue, with its on-ramps, is broader and even more intimidating. Its pedestrian bridge, designed by the Stubbins firm, joins the Marriott Hotel and a plaza in Prudential Center (this page and opposite bottom left). Walkers visible through glass enclosures enliven both bridges.

The mere existence of Copley Place has had a salutary effect on the appearance of Copley Square. Since the demolition of the old S. S. Pierce store some 25 years ago, the square’s spatial volume leaked through a hole flanked by the Copley Plaza Hotel and the Public Library. The Westin Hotel now stops the leak (opposite bottom right). Precast concrete panels clad all of the buildings, their arrangements differing slightly to distinguish the various parts. Though the 19th century had far more exuberant tastes in color and ornament than the 20th century, TAC based Copley Place’s palette on the Victorian stone buildings around the square, paying particular attention to the New Old South Church. Copley Place carefully lines up with that church to frame the white marble library.
The urban quality of the mall at Copley Place sets it apart from the familiar notion of internal street. No wide-open stores here, but real shop windows and real front doors. Though each of the shops is individually designed, TAC set some zoning rules for such things as window projection to suggest a street edge. Shoppers follow the brick “sidewalk” to a marble-paved “park” in the middle of the central area, the park furnished with benches, trees, and sunshine falling through a glass dome. The four floors slide over one another to skew the atrium and prevent disorientation in an even circle. One of many sets of escalators leads from Stuart Street to a foot bridge (opposite bottom).

Copley Place
Boston
Owner:
Urban Investment and Development Company
Architects:
The Architects Collaborative (master plan, Westin Hotel, retail, office and parking)—Howard F. Elkus, principal in-charge; John P. Skeehy, co-principal and project architect; H. Malcolm Tickenor, co-principal and project manager; David K. Jacobson, project coordinator; Jeremy Wood, James Sollerson, William Hall, Robert Adams, Vern Herzelle, Mark Robitz, Thomas Van Arle, Peter Thomas, Rainer Koch, team; Nelson Hammer, landscape architect. The Stubbs Associates (Marriott Hotel)—Richard Green, principal in-charge; Michael Krauss, project architect. Vitols Associates (housing)—Victor Vitols, principal in-charge; Marquita G. Major, project architect; Julia Smith, project designer.

Engineers:
Lee Zetlin (structural/Westin Hotel); Zaldastani Associates (structural/retail, office, and parking); Martin & Cogley (structural/Marriott Hotel); Thomas Rona & Associates (structural/housing); Parsons, Brinckerhoff, Quade & Douglas (civil); Syska & Hennessy (mechanical/electrical/Westin Hotel); E. G. Vanderweil (mechanical/electrical/retail and office); Joseph Loring (mechanical/electrical/Marriott Hotel).

Environmental Design Engineers Inc. (mechanical/housing); Johnson & Stover (electrical/housing).

Contractors:
Turner Construction Co. (Westin Hotel); Perini Corporation (retail, office and parking).

Construction managers:
Morse/Diesel Inc. (Marriott Hotel); Barkan Construction Co. (housing).
A garden and its villa

If something in the drawing opposite looks oddly familiar, it's perhaps because you remember the Caravaggio painting in which similar men (and a similar fruit basket) appear, or because the general shape of the building recalls the Villa Giulia, in Rome, or because the surrounding landscape evokes the gardens of countless other villas all over Italy. If the balustrades seem unduly familiar, it's probably at finding themselves and other shades of the Old World across the ocean. In Atlanta, Ga. The rendering is one of a series in which architect Anthony Ames delineated a master plan for the Atlanta Botanical Garden and his design for a $22-million visitors' center and administration building within the 600-acre complex. At the time, Ames was invited to submit his proposal, the Garden had been welcoming the public and conducting other business in two converted trailers next to a parking lot and miscellaneous horticultural displays. Two greenhouses and a cluster of formal rose beds predated the Garden's founding in 1976, and other parts of the Garden's 15 acres of "home demonstration areas" had been donated and laid out as independent entities. Drawing on garden history, above all the classical tradition of Renaissance and Baroque Italy, Ames devised an axial scheme that integrated the patchwork of extant landscape displays, future plantings, and necessary architectural amenities within a readily perceptible, all-encompassing esthetic order.

This organizing principle remained constant while Ames tried out four different locations and parts for the 28,000-square-foot main building. In each instance, he experimented with some variant on the villa, a typology that seemed eminently suited to his program. When, at the client's request, the building site shifted from the center of the garden to the periphery, Ames's design changed from a centralized plan, radiating outward into its setting, to a more linear form, which acts as a facade and a gateway—in essence, moving from Palladio's Villa Rotonda to Vignola and Ammanati's Villa Giulia. Thematically, the former prototype was especially relevant in that it merges garden and architecture into a continuous sequence of dramatic episodes, proceeding from the dignified salutation of the frontispiece to the more intimate embrace of amphitheatral inner courtyards. Pragmatically, this spatial progression afforded a workable model for clustering indoor functions around a pleasant cortile (half the size of the Villa Giulia's) where visitors can gather before moving forward into an exhibition hall or dispersing via cross-axial portals into the garden. As it appears in the finished structure (opposite below and following pages), Ames's debt to Mannerist Italy does not extend to Classical orders, sculptural decoration, or elaborate grottos, nor was it meant to. He conceived the architectural component of his design as a potent transformation of a venerable private building type to suit more democratic modern requirements. This metamorphosis is most visible in rotated circulation pathways, explicit not only in plan, as in a diagonal swath through the courtyard, but in elevation, as in metal-and-glass stair towers angled out of brick walls. Without disrupting the pervasive repose of the entire structure, these Modernist interventions are reminders that, as a rule, when Ames seeks inspiration, he is more likely to consult Corbu or Meier than refer to earlier masters. Indeed, Ames still questions whether the formal quotation of his preModern paradigm may not be "too literal," but asserts that the fit of model to program was "too perfect" to pass up. Though his clients obviously came to share his belief in the appropriateness of this architectural solution, they did not find his arguments for a related garden plan equally cogent, and elected instead to engage an independent landscape architect. The result of this separate commission, a congeries of picturesque plantings that suggests the amalgamation of numerous suburban gardens, fails to compose the sweeping vistas that the building so confidently promises. Would-be visitors to the entire garden complex designed by Anthony Ames must content themselves with site plans and the view from his imaginary balloon. Douglas Brenner
Anthony Ames based the general configuration of his parti on the plan of the 16th-century Villa Giulia. Nevertheless, he explains, “Within this static plan, a ‘rotated,’ activated circulation system struggles to make its presence felt. In the Villa Giulia circulation is private and concealed. In the garden center it is neither—due to the public nature of the building the circulation must be obvious.” This dynamic shift is evident in the cross-axis superimposed on the ground-floor paving and in the volumes of stair towers that orient to the diagonal grid (drawings above and opposite). Contrasting tones of paving blocks emphasize the skewed geometric overlay, just as an ornamental drain cover carved in the shape of the Botanical Garden’s dogwood-blossom symbol marks the “original” center of the courtyard.
Poche created in the interstices of angled and curved volumes was hollowed out to accommodate various service and storage areas, without cluttering circulation or views. The second-story balcony overlooking the wall fountain was omitted from the actual building, as was (at the client's insistence) the longitudinal swath through the cortile. The pathway connecting the stair towers remains intact. Courtyard pavers are an integrally colored composition granite. For the exterior walls, Ames had initially considered glazed white brick, and then gray concrete block, wanting a neutral palette and crisply defined forms to complement the gentler shapes of nature. The client preferred a clay brick commonly used in Atlanta's period-style houses, and this is the material that Ames ultimately specified.
Situated in a municipal park laid out by Frederick Law Olmsted, the Botanical Garden leases its land from the city of Atlanta. Aside from geometrical rose beds at its northeast corner, the Garden's original layout (top plan this page) was decidedly informal. Amea's scheme (bottom plan) sought to incorporate existing picturesque zones within a larger framework of axial promenades, affecting a balance of classical...
gardens with naturalistic landscape. Clear pedestrian routes are essential, given that attendance rises to as many as 1,500 visitors on a Saturday or Sunday. Another draw for crowds is the exhibition hall, used for horticultural shows, an annual ball, and private parties. (A curved access ramp for the handicapped was moved from the right to the left of the main entrance in the completed building.)

Gardenhouse
The Atlanta Botanical Garden
Atlanta, Georgia

Architect:
Anthony Ames—Anthony Ames, project architect; William Panesari, job captain; Clarke Teft, Bayley Pope, Ioa Caballero, assistants

Engineers:
Jack Lynch & Associates
(structural); Newcomb & Boyd
(mechanical, electrical, HVAC)

Landscape:
Anthony Ames (master plan); Edward Daugherty (as realized)

Interiors:
Anthony Ames; E. Gordon Little

General contractor:
Beers and Russell, A Joint Venture

SECOND FLOOR
1. Volunteers
2. Director
3. Storage
4. Offices
5. Reception
6. Snack room
7. Classroom
8. Members
9. Kitchen/workroom
10. Ballroom/exhibitions
11. Vending
12. Gift shop
13. Library
14. Library
15. Library
16. Library
17. Library
18. Library
19. Library
20. Library
The structural art of Santiago Calatrava

Santiago Calatrava’s five-year-old professional practice is phenomenal on at least two grounds. He has built, or is in the process of building, an impressive number of projects in a country, Switzerland, that is traditionally conservative toward architecture, builds very little, and, with no shortage of designers, presents a highly competitive arena for commissions. The work is no less phenomenal for its synthesis. Engineering, architecture, and sculpture are masterfully coalesced. How such a synthesis is possible is hinted at by Calatrava’s background.

Calatrava was born in Valenica, Spain, in 1951, and began studying art in his home town at age 9. After high school, he studied painting and sculpture full time, first in Paris, then in Spain. But eventually he gravitated to the study of architecture, in which he received a degree after five years at the Escuela Tecnica Superior de Arquitectura in Valencia. Toward the end of his degree work, his regard for the importance of engineering in architecture deepened under the influence of works by Gaudi, Nervi, and Candela. He also developed a fascination for technology. So, a second degree was undertaken by Calatrava, this time in engineering, at the Federal Technical Institute (ETH) in Zurich, where he worked closely with Christian Menn. Having completed the engineering degree, Calatrava felt the need to formally regain touch with architecture and consequently studied one additional year at the ETH for which he received an architectural doctorate for his study of dynamic form. Specifically, he pursued an interest in foldable structures. (Incidentally, toward the end of his engineering education he started a series of metal and stone sculptures, an exhibition of which is currently touring Europe.) He began practicing immediately upon leaving the ETH, setting up an office in Zurich. As is typical for Europe, practicing design means entering competitions, and the first one Calatrava participated in, the Eersting Factory (below and opposite page), he won. Since then, many more competitions have been won, and direct commissions given. The projects that follow—built, unbuilt, and under construction—are representative of the range of work in the complete oeuvre, and illustrate recurring design themes.

The structural principles behind Calatrava’s design are simple, leading to structurally determinant configurations. In fact, the forms themselves come from moment diagrams that are formally studied during the initial stages of design. Two structural motifs dominate the work: torsion rings and folded girders. The PTT canopy in Lucerne (pages 132-135) and the canopies and concrete superstructure of the Stadelhofen Train Station (pages 136) exemplify works whose structural character derives from torsion. Unlike the simple linearity of tension and compression, torsion is a spiraling stress. Calatrava knowingly lifts the locus of the torsion away from the boundary of the structure. The result is a dynamic form whose members radiate, as perfectly balanced vectors, from the torsion ring. Somewhat less arcane, Calatrava’s folded girders also reflect his predisposition toward kinetics. The unbuilt Zupa Exposition Hall (pages 134-135) demonstrates an application of folded girders. Conceived of in construction terms as well as structural, the leaf-like form of his girders seems to hold a strong architectural fascination because of its ability to shape volume and modulate light (two of the designer’s folded girder roof structures have been built: the Jaksch Factory in Munchilen, and the Concert Hall roof in Suhr). Conceptually, the foldable girders have much in common with the doors of the Eersting Factory, the splayed arches of the Bridge for Barcelona (page 136), the concrete tower of the Serge River Bridge (page 137), and the graduated progression of trusses at the St. Gallen pavilions (page 138). All exact, or imply, dilation.

Though Calatrava’s structural concepts are fundamental and clear, the technical solutions are often very sophisticated. To a large degree, that sophistication enters at the detailing of connections and is most poetically expressed by the profiles of structural members and the juxtaposition of materials (consider the pavilions at St. Gallen). What Calatrava is seeking to reveal in the details is more than a direct expression of the manufacturing techniques a material undergoes. He is looking for an architectural statement that encapsulates all the complexities that come to bear on a constructed place. Which brings him back to his structural attitude: because of the inextricable complexity of each project, the structure must be direct.

Two general design devices guide the architectural work: duality and symmetry. Calatrava believes that systems of duality give tension: simplicity versus complexity; heavy versus light; transparent versus opaque; compression versus tension; visual weight versus physical weight. Such dualities are evidenced throughout Calatrava’s design, often with dramatic effect when, as in the case of the Lucerne canopy, there is “inversion.” (The delicate steelwork supporting a transparent membrane has been positioned at the anchor side of the structure where you would expect the visually heavy, metal segment to be. This inversion throws the aluminum wing into flight.) Duality is, in his mind, a simple principle of beauty, like symmetry. On symmetry, he has stated, “To date, most of my works are symmetrical, maybe because I don’t yet have the maturity to make asymmetrical works. Symmetry is very simple, a form of primary, regular beauty. But symmetry may not be the highest form of beauty. At this point in time I am more at ease with introducing contradictions (duality) through technical means, than through overall compositional form.” Yet confident asymmetry does appear in many of the projects. In the transverse aspect of the canopies, and the longitudinal elevation of the Serge River Bridge (page 137), a dynamic balance is achieved among elements asymmetrically positioned in relation to their foundation. Asymmetry also appears in the position of the arches of the Bridge for Barcelona (page 136)—a response to the lack of orthogonality between the line of the vehicular road and the line of the railroad tracks it spans.

Clearly, Calatrava is seeking to work on many different levels while jumping comfortably among the roles of architect, engineer, and sculptor. The advantages of being all three at once are tremendous. Very few sculptors have an opportunity to make a form as big as a work of architecture. The architect has incredible possibilities within the sculptural and engineering disciplines. And the engineer’s possibilities are greatly expanded when considered from an architectural vantage point. Each discipline has its own attitude that can be shared by the other two. And so it is in the work of Santiago Calatrava. He is a remarkable creative force with a promising future.

Darl Rastorfer
Santiago Calatrava made his first serious investigations of foldable structures between 1979 and 1981 while doing advance study at the Swiss Federal Institute of Technology (ETH) in Zurich. The first large project to be built in this "structural genre" was a set of segmented doors for the Erzing Factory in West Germany (photos below and opposite page). Calatrava has likened the doors to knees (in fact, he studied the bone structures of animals while developing kinetic forms). The doors' movement is provided by a simple, three-part frame, articulated at the top, mid-joint, and bottom. Movement at the articulations is accomplished by pinned hinges on each aluminum rib. When the doors are in their upright position, they function as canopies. Formally, the doors were conceived as elements intended to sustain the continuity of the wall. The geometry of the static wall, with its exposed concrete foundation, corresponds to the door lines of articulation, including the snake-like curvature of the mid-joint, and the closed and open positions of the doors. The factory was constructed in 1985.
The postal service center (PTT) in Lucerne is sited on the lake, and adjacent to the city’s art museum and main railroad station. Calatrava was commissioned to design a protective structure on the shipping/receiving side of the facility that would reach across a service road to the rail tracks. His solution is a high-strength steel and glass canopy whose power and grace are difficult to appreciate without seeing it firsthand (the canopy covers 8,610 sq ft with its 35.6-ft overhang). The canopy is clearly divided into two sections (rendering below). Running against the pre-existing building is a glazed, transparent zone that provides illumination to the work area, reveals the geometry of its own static system, and preserves the continuity of the earlier facade. The cantilevered box-beam portion of the canopy, with its wing-shaped section, is covered with aluminum. This enigmatic, effortlessly resolved composition which places the opaque, visually heavy portion of the canopy away from its anchor, and the visually light at the anchor, tends to accentuate the cantilever’s sense of flight.
Structurally, the configuration revolves around a torsion pipe (diagram below), putting the Lucerne canopy within a series of projects by Calatrava that explore a common structural theme: the resolution of force vectors around a single point. (The Stadelhofen Train Station, page 139, demonstrates this theme in two places: its platform canopies, and the structures revolving around the concrete torsion ring.) At Lucerne, the suspension strut, bearing strut, and wing-shaped cantilever of the canopy are sized and geometrically positioned in accordance with the lines of stress that develop at the pipe. In molding the form to directly correspond with static forces, an economy is achieved that ultimately enriches the sculptural aspect of the design. The canopy was completed in 1984.
One criterion for the exhibition hall design done for a competition sponsored by the city of Zurich, was that it lend itself to speedy erection. Drawing, no doubt, on his experience with foldable structures, Calatrava’s exhibition hall design is conceived as a simple kit-of-parts which are easily assembled. The maximum size for any factory-made component is determined by the weight and dimensional limitations of vehicular transport from the fabricator to the site (trucking diagram, upper left). The hall was to be built one module at a time, starting with the construction of towers. The second stage of construction involved the building of the roof on grade after which it is hoisted into position (axonometrics). The long span of the roof (98.5 ft) is made with folded girders brought to the site in two segments (top). Leaf-shaped, folded girders are one of two recurring structural elements in Calatrava’s work, the other being torsion rings. Though not shown here, other projects by Calatrava in Switzerland that have been built or are under construction, which incorporate gracefully folded girder-forms, are the Jakem factory in Munchweilen and the roofing of the Concert Hall in Suhr. All three projects employ means of
introducing natural light through the V-form volume of the girders. In the Zupa Hall, sunlight would enter at each end. Corrugated metal was to be used for the opaque surface. With the roof complete, work could continue under its protective covering despite inclement weather. The roof has been deleted in the drawings in red to show the construction process of the above-grade floor. The structural design loads for the exhibition hall are tremendous. To avoid unnecessarily adding to the imposed loads, the structure of the floor itself was designed to be light. A composite construction, curved steel floor beams are hung from steel edge beams, and trusses placed on their side are used as stabilization against horizontal forces. The edge beams and stabilizers are hung from the towers, then covered with light metal decking and a poured-in-place concrete slab. Hanging floors with suspension members is reminiscent of bridge design and relates to an office tower for Buenos Aires Calatrava designed in collaboration with Aldo Rossi. The Zupa Exhibition Hall was designed in 1982.
Currently under design, the 460-ft Barcelona bridge will effect a major vehicular and pedestrian link between two main streets within the 19th-century city. The streets, and the neighborhoods they serve, are now separated by an earthen channel laid with railroad tracks. The pathway of the bridge will align with the existing streets. The asymmetrical alignment of the bridge arches along the road (plan) reflects the line of the tracks below. Designed in steel, each of the two arches opens and splay to allow pedestrian passage (bottom). The line of the arch continues to the ground (top), making the dimension for stairs that will connect to parks and train stations. The midspan of the bridge is supported by pairs of steel cables, hung from the arches. The cable networks enclose the pedestrian walkway. Also, the sidewalk is raised above the road, giving pedestrians additional security from vehicular traffic. (The space between the vehicular and pedestrian roads will be used to introduce natural light to the area under the shadow of the bridge.) Construction of the bridge is scheduled to commence this year and to be completed one year thereafter.
Sandstone bedrock on the banks of the Serge River justified the asymmetrical solution for this pedestrian bridge. Conceived as an architectural point of orientation within the city, the tower of the bridge, directly tied to a foundation, is an organically shaped concrete hanger (elevations). Through the hanger flows the transfer of forces picked up by the steel cables. In this cable-stayed configuration, which resembles an ancient stringed instrument, all concrete segments are working in compression; the steel, in tension. The urban areas the bridge will link are as asymmetrical as the bridge itself. The bridge’s gateway-forming superstructure shares its river bank with an established district in Lleida (site plan below). Calatrava’s bridge will enable development of a new residential center on the opposite bank. On this side, two large ramps lead down to a park along the river (a grand stairway gives access to an esplanade on the tower side). The bridge will have an aluminum-covered passageway along its entire length. Final approval for construction is expected this year.
The commission for this pair of pavilions—one serves as a bus stop with restrooms, one covers the entry to a pedestrian underpass below the street—came to Calatrava after he made a reputation for himself in Lucerne as a canopy-builder. The citizens of St. Gallen made one formal design request: that the pavilions assume the pitched-roof house form that characterizes their historic community. Calatrava sought a fusion between a traditional shape and modern methods and materials. The result, completed in 1984, is as splendid as it is engagingly simple. The beauty of the pavilions is in their exposed truss work. Patterned after spines with ribs, each hollow-tube steel truss in the graded series was individually fabricated. The main structural elements in the trusses are the triangular configurations pointing downward (truss series, right). The upper members, used to hold the glass membrane in place, act as stiffeners to the system. Columns are splayed, true to the force diagram. All electrical wiring and downspouts are contained within the core of the columns.
Now under construction, when complete in 1990, the Stadelhofen Train Station is expected to be the third most active in Switzerland. The 1,650-ft-long station is being built into a hillside that separates a garden section of the city from the town proper. Trees, vines, and pergolas are incorporated into the exposed face of the station to blend and soften it into the site. An underground arcade lined with shops constitutes a major internal feature. There are numerous changes in the section of the station along its length. But the vocabulary of structural forms that cover, bridge, and support, remains consistent. Apart from the inherent beauty of individual pieces (details of the platform canopy structure with torsion ring, bottom four drawings), two of the most extraordinary structural features appear in the station section below. First, a reinforced concrete torsion ring that runs along most of the building’s length is related thematically to the torsion ring of the Lucerne canopy. Both realize an implicit desire to center forces around a position in space before they are resolved into the ground. Second, the bridge in the section, one of three in the design, is long, very thin, and is actually hung from the torsion member.
From June 10 to 13, The Merchandise Mart was again crowded with architects, designers, and contract furnishing manufacturers who gathered in Chicago for NEOCON 18. The showrooms featured a variety of new products, a selection of which is shown here and on the following pages.

1. Fabrics
Unika Vaev has introduced "Crown Imperial," designed by William Morris, the latest addition to its celebrated Archives Collection that includes re-editions of Viennese Wiener Werkstätte fabrics (RECORD, February 1985, pages 164-165). In preparing the pattern for production, Sina Pearson, president of Unika Vaev, paid careful attention to matching the scale of the 1876 Morris original on view in London's Victoria and Albert Museum. The 100 percent worsted-wool damask features floral motifs in a geometric repeat, and is available in a selection of 10 colors. Anticipated additions to the collection within the next year will include two more Morris fabrics. Unika Vaev, Div. of International Contract Furnishings, Inc., New York City.
Circle 300 on reader service card

2. Stackable storage system
The manufacturer's new stackable storage system features modules with reversible drawer access that are available in five standard heights. The drawers are designed to accommodate either suspended printout folders and magnetic tapes, a variety of different-size binders, or half-height tubs for floppy disks or disk packs. The modules are constructed of heavy-gauge steel and have an embossed steel matte finish. Meridian, Inc., Spring Lake, Mich.
Circle 301 on reader service card

3. Table
The new Eccentric table was designed by Paolo Favaretto. The table features a color stripe on the inside of the table leg. The table comes with a variety of table-top sizes and shapes, and the solid-steel legs can be specified in chrome or a selection of Kinkote colors. Kinetics, Rexdale, Ontario.
Circle 302 on reader service card

4. Fabric
Circle 303 on reader service card

5. Cabinets
The new Optimedia II line of cabinets for filing and storing mixed-media was designed by J. Wade Beam. Available in six heights, two widths, and a selection of eight colors, the cabinets are intended to accommodate diskettes, printouts, magnetic tape, video-cassettes, and letter- and legal-size paper. The cabinets can be specified with tambour or receding doors. Wright Line, Inc., Worcester, Mass.
Circle 304 on reader service card

6. Cupboard
The Oxford Group designed by Ron Carter includes a desk and a high (shown) and low cupboard. The units are available in a variety of woods and finishes and can be adapted to meet specific size requirements. Interna Designs, Limited, Chicago.
Circle 305 on reader service card

7. Stool
A stool has been added to the Liverpool collection of chairs, benches, and tables designed by Ron Carter. Available in several different woods and finishes, including teak for outdoor use, the stool can be specified with an upholstered or slatted seat. Interna Designs, Limited, Chicago.
Circle 306 on reader service card
8. Display cases
A line of display cases features units in several sizes. Constructed of aluminum extrusions with an anodized finish, the cabinets feature pedestal or plinth bases, interior illumination, shelves, and opaque background panels. Hinged or sliding doors are available. Peter Pepper Products, Inc., Compton, Calif. Circle 307 on reader service card

9. Shelving
The Primera system of modular and freestanding shelving units is intended to coordinate with the manufacturer's line of tables and credenzas. The units are available with or without doors, in heights ranging from 29 1/2 in. to 86 in. Veneers and matching hardwood edges can be specified, including mahogany, white oak, and walnut. Tuohy Furniture Corp., Minneapolis. Circle 308 on reader service card

10. Upholstery
Highlight is a new wool upholstery fabric collection intended for contract applications. Imported from England, the fabric is 48 in. wide and is available in seven colorways. Sealamandré, Long Island City, N.Y. Circle 309 on reader service card

11. Floor lamp
The new Apennine floor lamp was designed by architect Emilio Ambasz. The lamp's body is made of extruded aluminum coated with a high-gloss black baked-epoxy paint finish. The diffuser rotates 180 deg and contains a 150-watt metal halide bulb that is said to provide consistent lamp color. Artemide, Inc., New York City. Circle 310 on reader service card

12. Desk
An executive desk has been added to the manufacturer's Radial Series of conference tables and credenzas. Designed by Stanley Jay Friedman, the desk features a two-tiered radius-edge wood top with a stainless-steel reveal. The top is available in a standard size of 30-in. by 84-in. or in custom-specified sizes, and is supported by two- or three-drawer pedestals. Brueton Industries, Inc., Springfield Gardens, N.Y. Circle 311 on reader service card

13. Office system
The Com System of office furniture is now available with a new line of cabinets that can accommodate letter- and legal-size files. Overhead storage units and shelves can be mounted on to the system's panels, and a new 6-wire, 2-ground electrical system is designed to facilitate access to power. Krueger, Green Bay, Wis. Circle 312 on reader service card

14. Wallcoverings
The Natural Textures collection of wallcoverings was designed by Laura Deubler Mercuro. The 258-unit collection features a variety of patterns and textures. The wallcoverings have a Class A fire rating, and are said to be extremely durable. J. M. Lynne Co., Inc., Smithtown, N.Y. Circle 313 on reader service card

15. Chairs
The D Collection of German-designed ergonomic chairs includes executive, management, and guest seating. The collection includes a variety of leather and fabric upholstered models that can be specified with tilt mechanisms and swivel or fixed bases. Harter Corp., Sturgis, Mich. Circle 314 on reader service card
Decorative metals
A 4-page color brochure features the manufacturer's line of 15 decorative metals. Included in the literature are a specification chart listing available options, and photographs of the metals in varied applications. Ralph Wilson Plastics Co., Temple, Tex. Circle 400 on reader service card

Hvac system
The manufacturer's hvac system is reviewed in a 8-page catalog. The literature highlights the features and benefits of an adjustable frequency drive and includes tables outlining potential annual electrical cost savings when an existing system is retrofitted to the manufacturer's. Graham Co., Milwaukee. Circle 401 on reader service card

Electrostatic coating
An 8-page foldout color brochure describes the equipment and processes that are necessary to produce electrostatic coating materials. Included are photographs of product applications, as well as a site plan and flow chart of the manufacturer's 80,000-sq-ft facility. Electro Static Finishing, Minneapolis. Circle 402 on reader service card

Sealants
A 16-page color brochure features the manufacturer's line of silicone construction sealants. The brochure includes a comparison chart of various sealant products; cross-sectional diagrams and descriptions of typical applications; and a section detailing product features and benefits. Dow Corning Corp., Midland, Mich. Circle 403 on reader service card

Wall panels
The manufacturer's Indiana limestone wall panels are described in an 8-page color brochure. Photographs of the panels in place are included, along with detailed diagrams of a typical panel, and vertical panel sections. Harding & Cogwell, Bedford, Ind. Circle 404 on reader service card

Curved panels
A 4-page color booklet describes the manufacturer's capabilities for bending profiled panels to specific curves and dimensions. The booklet directs information to the buyer, panel manufacturer, and architect, and includes diagrams of standard corner, common valley, mansard, and mitred details. Curviline, Inc., Ontario, Calif. Circle 405 on reader service card

Louver
A 78-page architectural and engineering manual features the manufacturer's louvers and dampers. Included are installation photographs and descriptions of stationary and operable, horizontal and vertical louvers; special purpose louvers; and mechanical dampers. Airstream Products Div. of Penn Ventilator Co., Inc., Philadelphia. Circle 406 on reader service card

Wallcovering
The Alpine Collection vinyl contract wallcovering book contains large-size samples of each pattern; specification data including flammability ratings, abrasion resistance, washability, and materials used; and ordering information. J. M. Lynne Co., Inc., Smithtown, N. Y. Circle 407 on reader service card

Fencing
A 4-page color brochure features the Steelwood fence enclosure system made from a high-density, pre-stained, exterior hardboard that is said to be stronger than natural wood. Each board is surrounded by a color-coated, galvanized steel channel. Allied Tube & Conduit Corp., Harvey, Ill. Circle 408 on reader service card

Outdoor shading
A 4-page booklet features the Supershade system of controllable outdoor shading for skylights, solar rooms, and other sloped glazing applications. The literature describes the differences between the manufacturer's tiltable, retractable, and nonretractable models. Baumann, Inc., Wanaconda, Ill. Circle 409 on reader service card

Doors and windows
A 24-page 1988 membership and product directory lists wood window and door manufacturers and their products, along with associate supplier members and their product lines. Included is information on sills and rail doors, frames, and wood window units. National Wood Window & Door Association, Washington, D. C. Circle 410 on reader service card

Surface lighting
A 68-page color brochure features the manufacturer's line of surface lighting products designed for decorative, architectural, and commercial applications. The brochure includes product descriptions along with information regarding accessories, lamp types, wattages, and photometrics. Halo Lighting, Elk Grove Village, Ill. Circle 411 on reader service card
"Scrubbing up at The Arlington Hospital is always a successful operation with Sloan OPTIMA® No-Hands Systems."

Cleanliness and efficiency are two essential aspects of providing responsible patient care. In a busy 350-bed teaching hospital, maintaining a sterile environment is a must. The Arlington Hospital has discovered an efficient way to ensure cleanliness with the installation of 58 Sloan OPTIMA No-Hands systems.

In the emergency room, the operating suites, and the labor and delivery rooms, Sloan OPTIMA No-Hands systems are helping to reduce maintenance, enhance cleanliness and promote water savings. An electronic sensor "sees" the user, and the OPTIMA system automatically turns the faucets on and off—only as needed. Awkward arm- or leg-actuated faucets are eliminated to provide a quick, no-hands scrub-up.

The results: a more sterile, efficient scrub station. Reduced maintenance and water usage. And greater convenience for medical personnel.

Easily installed in any new or retrofit situation, the Sloan OPTIMA system meets all building codes and readily adapts to existing sink and plumbing hookups. The system is also compatible with soap dispensers, hand dryers, shower heads, and more.

Ask your Sloan representative about Sloan No-Hands automated systems. Or write us.

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A PART OF THE DALLAS CORPORATION

Circle 66 on inquiry card
TINDALLCAST PRECAST CATCH BASINS

Catch basins
A 4-page brochure highlights the manufacturer’s precast concrete catch basins. Included in the literature are on-site photographs, along with descriptions of product types and sizes, and grate, curb, and ditch inlets. Tindall Concrete Products, Inc., Spartanburg, S.C. Circle 418 on reader service card

Light poles
The manufacturer’s anchor base and direct burial fiberglass light poles are described in a technical handbook entitled The Bluebook. The book includes specification data sheets, guidelines for foundation designs, charts indicating expected wind velocities, and results of lateral load deflection tests. Shakespeare, Newberry, S.C. Circle 418 on reader service card

Skylights
A 2-page color brochure features the Studio Collection of roof windows and skylights. Photographs and product descriptions are included, along with illustrations of optional mini-blinds, sun shades, outside awnings, and roller screens. Burca Corporation of America, West Caldwell, N.J. Circle 414 on reader service card

Ceramic tile
A 4-page catalog features the manufacturer’s line of ceramic tile shapes and trim pieces. The catalog identifies each trim piece by cross section, dimension, product number, and available finishes. Diagrams of common residential installations are also included. Wenczel Ceramic Tile, Trenton, N.J. Circle 415 on reader service card

Construction panels
A 2-page color fact sheet describes the manufacturer’s preinsulated, profile construction panels. The literature includes a labeled, cross-sectional diagram of the panel, along with specifications regarding materials used, available sizes, and the warranty. Bally Engineered Structures, Inc., Div. of Allegheny International, Bally, Pa. Circle 416 on reader service card

Utility board
A 4-page technical binder and sample of Eterboard, said to be a direct replacement for asbestos-cement sheets, is available from the manufacturer. Product features reviewed in the binder include noncombustibility, dimensional stability, water resistance, and long-term durability. Eternit, Inc., Reading, Pa. Circle 417 on reader service card

Furniture system
The manufacturer’s open furniture system, featuring a precast concrete base as a unifying element to its variety of configurations, is reviewed in an 8-page color brochure. The literature contains photographs of the system in use in libraries, offices, and airports. Shogun International Corp., Chicago. Circle 418 on reader service card

Loading dock equipment
A 12-page color brochure describes the manufacturer’s line of loading dock and other industrial equipment. The literature outlines the features of three vehicle restraint systems, truck and railroad dock levels, custom-engineered mezzanine systems, and protective railings. Rite-Hite Corp., Milwaukee. Circle 419 on reader service card

Building system
An 8-page color brochure features the Multi-Story Spacesetter Building Systems. The literature describes the custom-design, turnkey approach, fabrication quality, and appearance flexibility. Interior and exterior photos are included, along with detailed cutaway diagrams. Chief Industries, Inc., Grand Island, Neb. Circle 420 on reader service card

Door hardware
A 72-page catalog features a line of hardware for slide, slide-fold, swing, and vertical lift doors. The listings include complete door packages, hangers, tracks, and hinges. Photographs, specifications, and ordering information are also included. Richarde-Wilcox, div. of White Consolidated Industries, Inc., Aurora, Ill. Circle 421 on reader service card

Software package
A 4-page brochure features the MAFS microcomputer program designed for the analysis and design of concrete foundation mats, combined footings, and slabs on grade. The brochure includes a detailed review of product features and benefits. Portland Cement Association, Skokie, Ill. Circle 422 on reader service card

Store fixtures and furniture
The manufacturer’s line of wooden store fixtures and display furniture is featured in a 32-page color catalog. Photographs of specific store applications are included, along with detailed product descriptions, illustrations, and ordering information. Newwood, Eugene, Ora. Circle 423 on reader service card
No. 62 in a commercial design series.
HOW ANDERSEN HELPED A CHRISTIAN COLLEGE RESURRECT A HISTORIC BUILDING.

The engineers said, “Raze it.” Sentimental alumni said, “Save it.”

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Andersen came through on both counts. First, the clean, simple lines of Andersen windows complement virtually any design.

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What’s more, the Perma-Shield family of products assures a long life virtually free of maintenance at Simpson Hall.

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For more information: Call your Andersen distributor. See Sweet’s File 8.16/An. Or write Andersen Corp., Box 12, Bayport, MN 55003.

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Everything You Thought Vinyl Could Never Be.

Used to be, vinyl siding looked like, well, vinyl siding. Most architects probably thought that this would always be the case. Not so.

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* A copy of the Lifetime Warranty is available by writing Wolverine Technologies Inc., 1850 Howard Street, Lincoln Park, Michigan 48146. ©1986 Wolverine Technologies Inc.

Circle 68 on inquiry card
Printed fabric
The Statley Homes Collection of fabrics features an assembly of five woolen and five printed designs similar to those found in English country houses. The designs, some of which were rescaled and recolored, are made of 100 percent cotton glazed chintz and are available in 44-in. widths. Stroheim & Romann, Inc., New York City. Circle 318 on reader service card.

Slide sorter
The Accuslides 8019 slide sorter features a spot-welded steel frame and six removable grippers. The unit measures 24-in. wide by 14-in. deep, can hold 72 2-in. by 2-in. slides, and can be used with either 3- or 4-ft viewers. Bredford Manufacturing, Inc., Schiller Park, Ill. Circle 319 on reader service card.

Ceiling system
The Panoroma aluminum ceiling panel system features smooth-surfaced panels that come with a concealed carrier system for use in commercial new-construction installation. The panels may be ordered in a 2- by 2-ft flush-fitting profile or a 1- by 4-ft profile with a reveal along the 4-ft side. Alcan Building Products, Warren, Ohio. Circle 317 on reader service card.

Wall system
The manufacturer’s Full Height Wall System features floor-to-ceiling panels that can be dismantled, moved, and reassembled as needed. The panels may be covered with four types of fabric or painted in any of three colors with a choice of six trim shades. Dorn Corp., Westlake, Ohio. Circle 318 on reader service card.

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2. They're easy to install. Stonecast panels can be nailed or screwed in place. Standard 4' x 8', -10' and -12' sizes are easily field-cut to fit, or may be ordered factory pre-cut.

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4. They're economical. Stonecast exterior panels promote savings for the life of your building through low initial cost, simple installation and a long, low-maintenance life. Stonecast Fire-Rated and Granex integral aggregate panels are also available.

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<table>
<thead>
<tr>
<th>Panels sizes, nominal</th>
<th>Nominal Thickness</th>
</tr>
</thead>
</table>
| 4' x 8', 10' and 12' with T & G Long Edges | 4" 5"
| R-FACTOR AGED | 19.2 25.48 |
| R-FACTOR SYSTEM* | 20.43 26.71 |
| Ux per sq. ft. | 4.2 4.4 |
| Foam Thickness (nominal) | 2" 3½" |
| *Includes air film and asphalt shingles. |

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The dining/conference area (photo below) set the Art Deco design referent used throughout the car. The visual expansion is created with a color progression of Mauve Mist to Wildrose to Amethyst gloss decorative laminates on the inset ceiling.

The same palette forms table tops and decorative inlays on Northsea-clad cabinets, with gloss Black accents.

WILSONART Satin Brushed Natural Aluminum clads pocket dividers which open to pass-through service from the kitchen.

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See our catalog in Sweets, the Source, Section 11.270/64.

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As nearly all architects are now aware, TCS (Terne-Coated Stainless Steel) is chrome-nickel stainless coated on both sides with an 80% lead/20% tin alloy.

But the question may still remain as to why any coating of stainless is desirable.

In the first place, the application of such a coating creates an end product which is demonstrably superior to both stainless and copper in durability and corrosion resistance. Secondly, TCS weathers to an attractive and uniform warm gray. Stainless, on the other hand, retains its original bright finish indefinitely, while the weathering of copper has been highly unpredictable in recent years. TCS also solders perfectly without special preparation whereas copper must be pretinned, and stainless requires a time-consuming and relatively costly procedure to obtain a leak-proof joint. Furthermore, TCS, unlike copper, is neutral toward other metals.

Expressed in the simplest terms, where roofing and weathersealing are involved there is no standard architectural metal available in the world today, including stainless and copper, which can match TCS in its performance characteristics and built-in safeguards against failure.
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The idea that you don't have to be concerned about how much waste a siding produces is just a bunch of garbage.

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Compare us, for instance, to random length sidings: Shakertown comes in 8-foot lengths cut precisely to stud spacing. So your crews can spend their time hammering, not sawing.

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Shakertown has some other ways to make haste, as well. Like a self-aligning groove on the back. And direct-to-studs nailing where your building codes allow it.

But don't think our waste has gone to our head. There's still one far more important reason why you should side with us.

It's the way we look. And the way our look sells.

So, as it turns out, no waste not only makes haste. It also makes the sale.
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