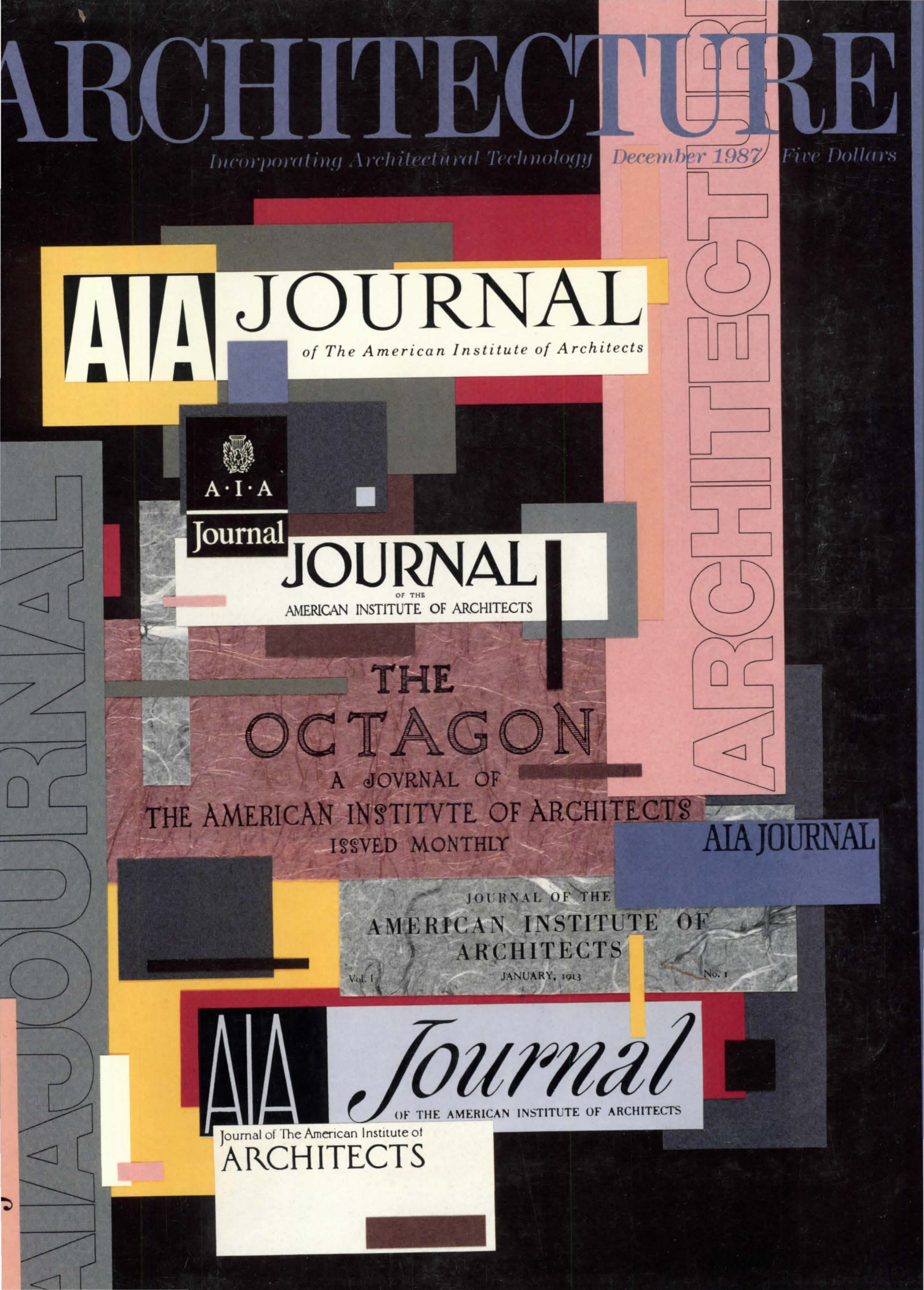
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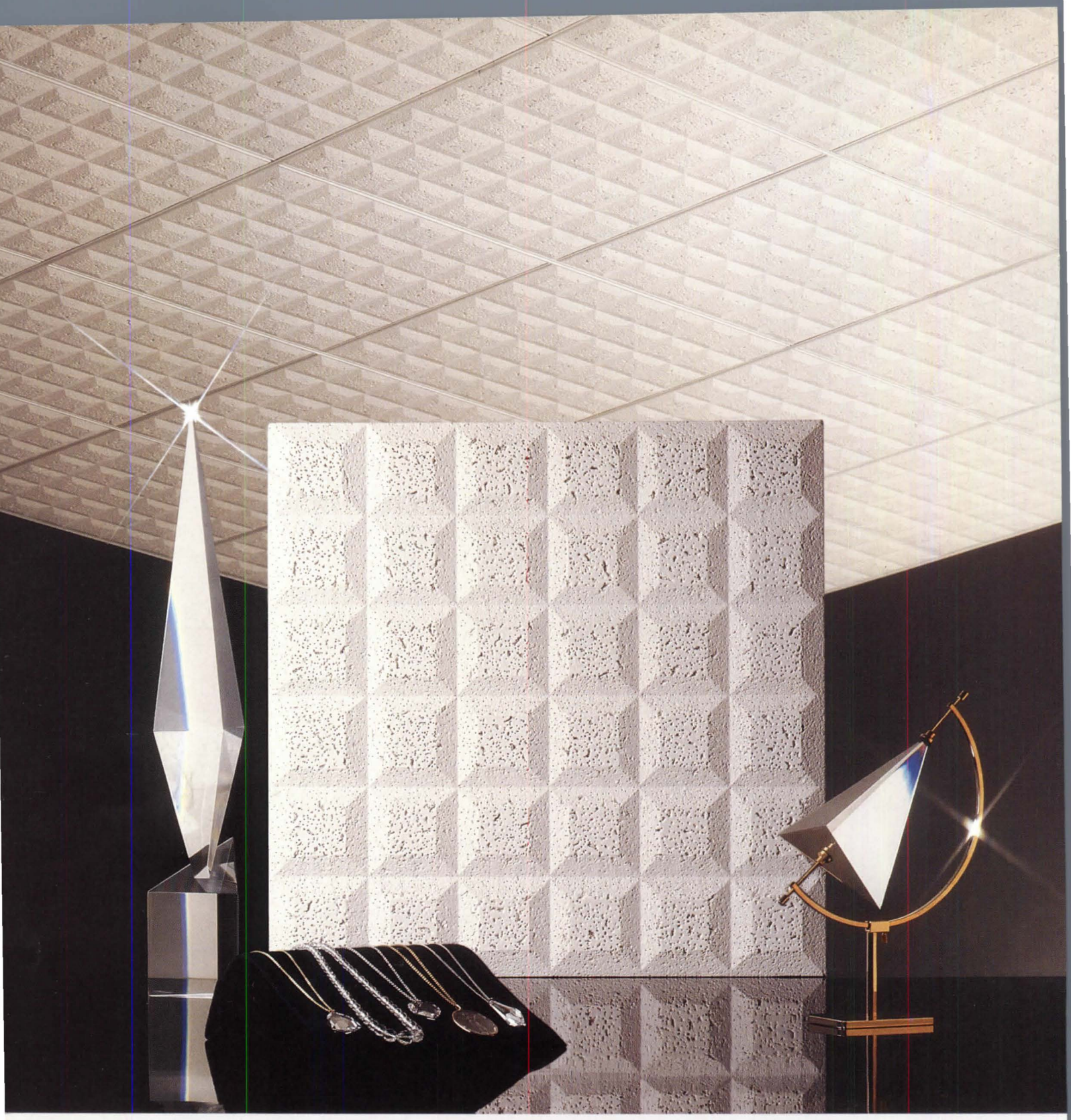

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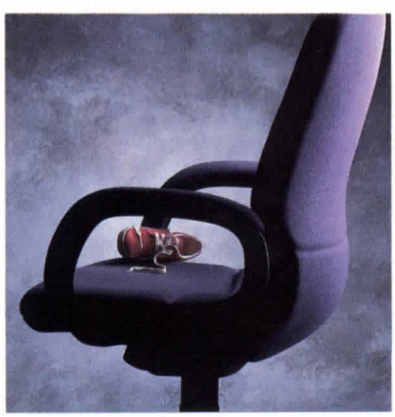

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VOL. 76, NO. 12.

Technology & Practice

Cover
Collage by David P. Schaap

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General Contractor	General Construction Company
Architect	Allison-Moses-Redden
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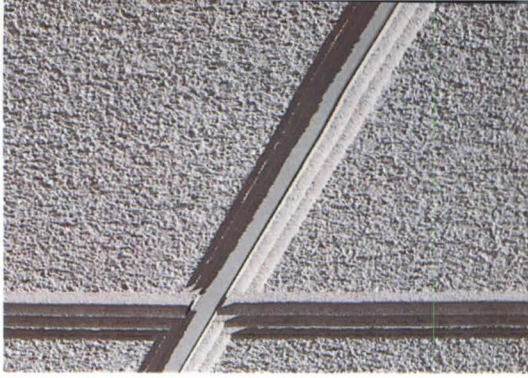

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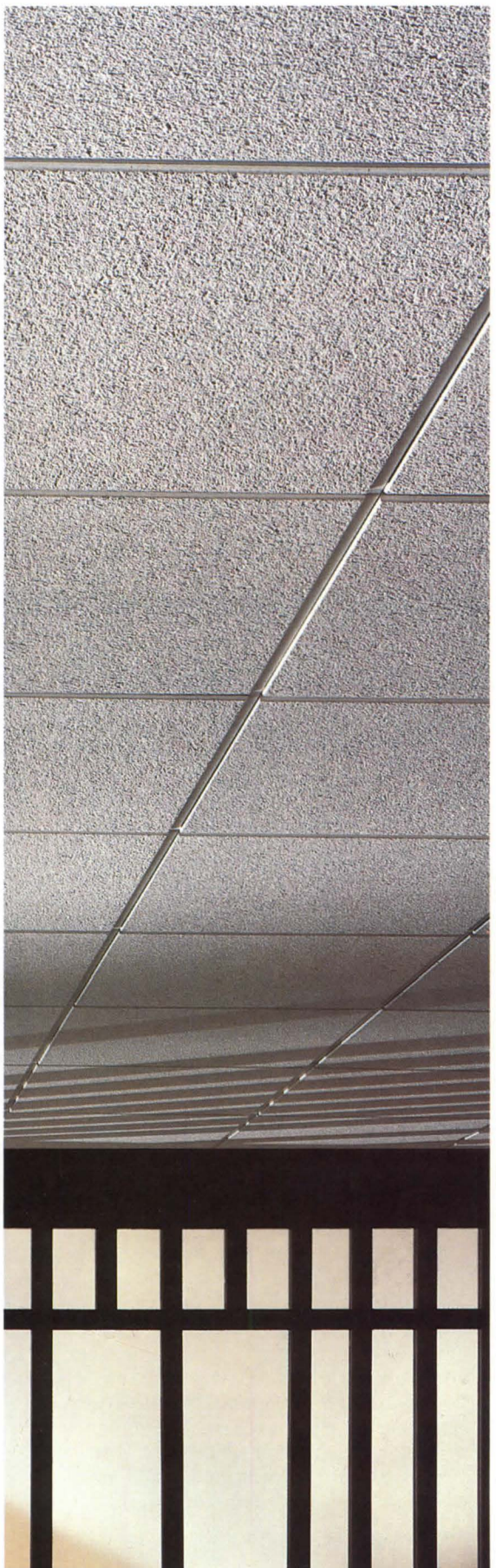


EVENTS

Nov. 20-Dec. 20: Exhibition of drawings and constructions by John Hejduk, Philadelphia. Contact Kirby F. Smith, The University of the Arts, Broad and Pine Streets, Philadelphia, Pa. 19102.
Jan. 6-7: Seminar on Structural Standing Seam Roofing, Charlotte, N.C. Contact: Roofing Industry Educational Institute, 7006 S. Alton Way, Englewood, Colo. 80112.
Jan. 10-14: Energy-sources Technology Conference, New Orleans. Contact: American Society of Mechanical Engineers, 345 E. 47th St., New York, N.Y. 10017.
Jan. 11-15: Seminar on Effective Project Management for Building Design and Construction, Madison, Wis. Contact: Philip M. Bennett, Dept. of Engineering, University of Wisconsin, 432 N. Lake St., Madison, Wis. 53706.
Jan. 13-15: Conference entitled "Bringing Back Urban Vitality," Miami Beach. Contact: National Trust for Historic Preservation, 1785 Massachusetts Ave. N.W., Washington, D.C. 20036.
Jan. 19-22: Seminar on Basic Roofing Technology, Orlando, Fla. Contact: Roofing Industry Educational Institute, 7006 S. Alton Way, Englewood, Colo. 80112.
Jan. 19-Feb. 28: Exhibition entitled "Long Island Modern: The First Generation of Modernist Architecture on Long Island, 1925-1960," Octagon Museum, Washington, D.C. Contact: Ann Carper at Institute headquarters, (202) 626-7467.
Jan. 23-27: Annual Meeting of the Single Ply Roofing Institute, Ft. Lauderdale, Fla. Contact: Sue Ciezadlo, SPRI, 104 Wilmot Rd., Suite 201, Deerfield, Ill. 60015.
Jan. 26-28: Material Handling Institute and Institute of Industrial Engineers Annual Trade Show, Anaheim, Calif. Contact: William J. Clayburg, MHI, 8720 Red Oak Blvd., Suite 201, Charlotte, N.C. 28210.
Jan. 29-30: Workshops on Seismology, San Francisco. Contact: AIA/ACSA Research Council, (202) 785-2324.

LETTERS

University of Virginia: I believe that one of the unique virtues of the University of Virginia school of architecture is, as Marguerite Villecco pointed out in her August profile [page 42], the commitment to grounding architectural study in a knowledge of architectural history. I have found that Virginia alumni tend to know more history and how to use it than their peers trained elsewhere. As a student (class of 1975), I was aware of the subject not as a succession of names and dates or of socioeconomic phenomena, but as a study of the culture of building. It was not difficult to understand this emphasis in a setting so dominated by the remarkable achievements in architecture of the university's founder, Jefferson.

Steven W. Semes, AIA
San Francisco

General Conditions: In his October article, "An Individual Look at the New A201" [page 90], Edward D. McCrary, FAIA, raises some legitimate questions, but I wish it had occurred to him that the documents committee had thought of the same questions and addressed them. This is particularly true regarding the definition of "Work."

The committee began drafting the new edition in 1981 using the 1976 draft as a baseline. The term "Work" was of particular concern, especially the distinction between it and lowercase "work." The latter term was used to refer to a number of items not part of the "Work," including temporary facilities, shoring, etc., and the work of the owner and separate contractors. This distinction was not recognized by the public, however, nor were there any court cases that noted it even in passing. Therefore, the committee eliminated lowercase "work" from the document, substituting the term "construction" for the work of the owner or other contractors.

Mr. McCrary is correct in inferring a conscious decision to include temporary facilities in the definition of "Work." The decision was based on the recognition that Subparagraph 3.3.1 (4.3.1 in the 1976 edition), which assigns responsibility for construction means, methods, techniques, sequences, and procedures to the contractor, includes responsibility for temporary facilities. The architect's observations are indeed made to determine ". . . if the Work is being performed in a manner indicating that the Work, *when completed,* will be in accordance with the Contract Documents" [emphasis added]. As in the past, the architect is concerned with the final result. The means of achieving it remain the responsibility of the contractor.

It is true that Subparagraph 4.2.7 is vague as to the time to be allowed the architect to review shop drawings, and necessarily so: A201 is a general document intended for nationwide use, and cannot possibly be specific as to a matter that must vary from project to project. In the event of a dispute, however, the phrase "in the Architect's professional judgment" makes it absolutely clear who decides how much time is adequate.

I am somewhat mystified by Mr. McCrary's problems with the "Construction Change Directive." What happens to it, he asks, when final costs are never totally resolved and the parties don't want to arbitrate? This is dealt with in Subparagraph 7.3.8, which states that ". . . the adjustment or the method shall be referred to the Architect for determination." The form itself is not intended to give worksheet instructions for tracking project cost. A201 is a legal document, and any step-by-step instructions contained in it would be mandatory. This is why the process is only outlined. If more detailed guidance is needed, the proper place for it is in Division 1 of the specifications or in the architect's business manual.

Regarding claims for concealed or unknown conditions, it is correct that the contract sum and contract time may now be adjusted to the contractor's benefit (as well as the owner's). This is only fair, however, and Subparagraph 4.3.6 specifically gives the architect authority to investigate and determine when a concealed or unknown condition has been encountered.

Mr. McCrary's question regarding hazardous materials is understandable, as the distinction here is a rather fine one. B141 addresses a broader range of materials than A201 for two reasons: first, the architect is the first one on the job and may legitimately require broader protection, and second, the B141 provision is a simple disclaimer. The A201 language includes a disclaimer, but it also includes a stop-work provision. The intent is to give the contractor the specific right to suspend operations in the presence of certain known hazards without defining that right so broadly as to invite abuse.

Regarding contingent assignment of subcontracts, I trust that I am reading Mr. McCrary correctly and that he means that the owner must specifically accept assignment in order for it to be valid. The owner is *not* contractually bound to accept assignment, and may decline to accept certain subcontractors, either because of poor performance or for other reasons.

Mr. McCrary seems unable to accept the clear language of Subparagraph 12.2.2. The one-year correction period does now apply to punch list items—as it should. There is no reason why the contractor should be off the hook with respect to work performed after substantial completion. On some projects, the punch list may not be finished until a year or more after substantial completion; in that case, the correction period is "extended with respect to portions of work first performed after substantial completion by the period of time between substantial completion and the actual performance of the work."

As Mr. McCrary admits, the procedure whereby the contractor arranges and pays for testing and inspections has become normal practice throughout much of the country. Communications with testing laboratories need not go through the contractor, however. Subparagraph 4.2.4 applies to communications with subcontractors and material suppliers.

Regarding the length of Article 4, I am tempted to sympathize with Mr. McCrary. The general conditions have been getting longer and more complicated ever since 1911, as a review of the successive editions will show. In this case, however, provisions dealing with claims and disputes have simply been moved from their previous locations and assembled together under the article entitled "Administration of the Contract." The intent is to set out the procedures for dispute resolution clearly and sequentially, and in the place where they belong.

Dale R. Ellickson, AIA
Senior Director, AIA Documents

Conferences

Spirit of Frank Lloyd Wright Still Pervades Taliesin West

On a warm October Sunday morning on an Arizona hillside, some 250 disciples of organic architecture from around the world gathered under a tent to reminisce, celebrate, and listen to words of inspiration. The occasion was the 50th anniversary of the founding of Taliesin West, and the atmosphere was that of a religious service.

The prelude was a suite for violin and piano composed by Olgivanna Lloyd Wright—confident, big-boned music with more than a whiff of Rachmaninoff in it. The sermon was a recording of Frank Lloyd Wright speaking on the spiritual value of education. The missionary report previewed an exhibit of Wright's philosophy and work, including a life-sized Usonian Automatic house, that will tour the nation by van in 1988.

The zeal, the optimism, the sense that Wright's principles of organic architecture constitute Truth and that this Truth ultimately will prevail have not changed here in the 28 years since the master's death. "We feel this exhibition has the possibility of changing the architecture of America by the 21st century," said Richard Carney, managing trustee of the Taliesin Fellowship, "and possibly the world."

A visitor who looks in on the fellowship every few years is struck most of all by its apparent changelessness. The architects and students still make the seasonal pilgrimage from Wisconsin to Arizona and back. The Frank Lloyd Wright School of Architecture still instructs students in a curriculum more like a medieval apprenticeship than a modern university education. Most controversial, the design vocabulary of Taliesin Associated Architects has not changed. The architects talk about preserving the *spirit* of Wright's philosophy, but in practice they also perpetuate his exuberant geometry, his contrapuntal massing, his abstract ornamentation—all those elements that together make up that thing Wright said he so virulently despised: style.

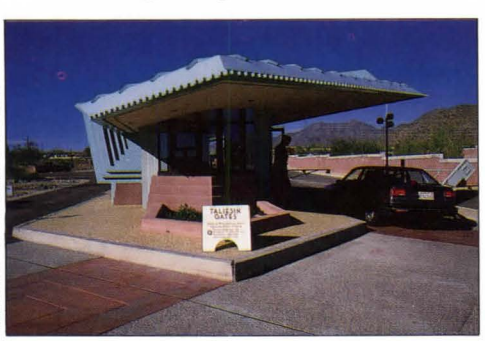
For the 50th anniversary, the drafting room was decorated with renderings of recent projects, and every one evidenced the gravitational pull. A "House of American Ideas" for a Phoenix developer recalled Wright's Usonian houses of the 1930s, with its low, prairie-hugging elevation penetrated by two vertical thrusts, a chimney and oversize skylight shaft. Another residence, to be built in the lee of a red butte in Utah, featured sloping beams over the living room that looked very much like the sloping beams over the drafting room of Taliesin West.

After enough visits, an inquiring visitor eventually can break through the shell of polite formality that surrounds the fellowship and find that the ghost concerns the architects, too.

"We have the problem—or perhaps the inspiration—of living in the path of a man who created almost every possible architectural form," admitted Taliesin architect John Rattenbury. "It's easy to be bizarre—not at all easy to come up with a house on a hill that grows naturally out of that hill, and do it in a form that Mr. Wright didn't already think of.

"It's a problem that concerns us all the time. Every one of us here would give our eyeteeth to be able to design a building, then have the others come up and say, 'My God, you've done it!—a completely original expression that remains faithful to Mr. Wright's principles.' "

Wright used to rail at students who could do little more than draw knockoffs of his own work, although it happened with such regularity that one has to wonder whether at some level he encouraged it. William Wesley Peters, at 75 the senior architect of the fellowship today, recalled that Wright once growled, "I feel like a dog that's been compelled to eat its own vomit." Edgar Tafel, FAIA, who worked for Wright from 1932 to 1941, told this anecdote: "Once Mr. Wright was in a certain city where a former apprentice was practicing. The apprentice took him to see three houses he had designed. After the third, Mr. Wright turned to him and said, 'Now show me something of yours.' "



Lawrence W. Cheek, Hon. AIA

Right, Taliesin Associated Architects' guard house for the 74-acre 'Taliesin Gates' housing development.

Another former student, back at Taliesin West for the anniversary, offered this explanation, although he didn't want his name used: Those who leave the fellowship go on to do varied kinds of work. Some copy Wright, some use what they learned here to do good, original work, and some, like children repudiating a domineering father, design things that are violently nonorganic. "But the ones who stay here live in these [Wright's] buildings, and live with these archives, and they are part of the lineage," he said. "For them, it's very difficult to pull away from it."

But Taliesin West is not, in fact, entirely unchanging. The sense of the fellowship as a sealed bubble is gradually eroding. Carney put it this way: "We want to reach out and bring the outside world in."

To this end, the Frank Lloyd Wright School of Architecture last spring won accreditation from the North Central Association of Colleges and Universities. Now there are 35 students, and while they all cook, tend the grounds, lead tours, and shovel rocks as well as study architecture, their lives are not as monastic as they were in earlier days. A few work off campus, and an apartment building for married students is under construction.

One also could say Taliesin West is under assault from the outside world. Fifty years ago, Wright wrote of this site, "There was vast room so we took it and didn't have to ask anything or anybody to move out or over." Today the relentless sprawl of metropolitan Phoenix has overtaken the once-isolated encampment. About five years ago, waves of stucco and mission tile housing developments with names like Suntree East lapped at its feet, and the fellowship, in alarm, undertook a fortification-cum-demonstration project. The result is a development called "Taliesin Gates."

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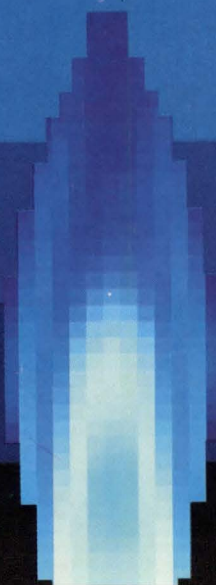

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Left, William Wesley Peters's 'Focus House,' the 4,300-square-foot model house for 'Taliesin Gates.'

Conferences *from page 19*

According to Carney, the fellowship dedicated 24 acres of its own land, bought 50 adjacent acres for $2 million, and created a 74-acre development for a projected 62 houses. All must be designed by a Taliesin architect, unless a client chooses one of "a limited number of unbuilt Frank Lloyd Wright originals" available for the site.

So far, the outside world has not beaten a path to Taliesin Gates. Its first house, a 4,300-square-foot spec designed by Peters, has been on the market since April and was still unsold in October. Carney and Peters blamed it on the season—anyone with money and good sense leaves Phoenix for the five-month summer—but it could be that the $1.6 million price and the design are part of the problem.

The most distinctive feature of the "Focus House," as it is called, is the articulation of the walls. Wright frequently abstracted the form and textures of things he found in the Sonoran Desert—mountains, cacti, even lizards—in his designs. Peters has done likewise, echoing the vertical corrugation of the saguaro cactus. On the house the furrows are four inches deep, and they are ubiquitous: on the fence, around the sauna, in the halls, up the stairway, even on the inside of the parapet that rings the rooftop terrace. It's a unifying rhythmic theme, yes, but it's drummed too loudly and too long. In the hall, for example, the corrugation forms a kind of visual friction—it's like walking next to a giant file.

But it would be wrong to suggest that Taliesin's distinctive work is being scorned in the public arena. Taliesin Associated Architects has executed more than 450 buildings since Wright's death, and there were an even 50 projects in-house on the occasion of the 50th anniversary. Geographically they ranged from a law office remodeling in New York City to a 450-acre residential community in Hawaii with 30 Wright-designed houses. "We always have just a little more work than we can handle," Carney said.

Yet, what the Wrightians would like most is to influence the direction of architecture, which they see as having plunged into darkness with the advent of the International Style. This they have not done. A bit sadly, Peters said there has been no major publication of TAA's work, no serious critique of the school. The profession largely ignores them. The reason, he conceded, is that the fellowship has cast itself in the lonely role of heroic outsider—just as Wright did during his life.

"We're certainly not part of the establishment; we're proud of that," Peters said. "We talk about architecture in a higher sense. In the world today, that higher sense is practically lost."

Nobody made a point of it at the anniversary party, but a few of the former students, friends, and followers who came back might have been reminded of the old Welsh saying that the Wright clan early on adopted as its motto: "Truth against the world."

—Lawrence W. Cheek, Hon. AIA

Mr. Cheek is an architecture critic who writes frequently for the Tuscon Citizen *and* City Magazine.

Southern and Northern Views of A Natchez Design Conference

The AIA design committee cooked up a simmering gumbo for its 1987 design conference, Oct. 17-19. Hoping for a pungent mixture, the cooks threw in a diverse blend of personalities to explore the topic, "Sense of Place/The Southern Experience"—from well known writers (Shelby Foote, Hodding Carter, and Ellen Gilchrist), artists (Mississippian Ke Francis), historians, and planners to contemporary Mississippi architects.

Setting for the retreat was the remarkable town of Natchez, Miss., which has survived wars and pestilence with a groaning treasury of late-18th- and 19th-century buildings intact. The town is museum quality, yet lived in. Visiting architects got the full treatment—from mint juleps at mammoth Stanton Hall to sunset over the river at the Briars, site of Jefferson Davis's marriage to Varina Howell.

The recipe for the weekend included immersion into the city and surroundings and visits to architecturally significant buildings, with stops along the way for individual presentations by speakers and a final wrap-up discussion.

Ostensibly, visitors and speakers were on retreat, examining one particular part of the country, soaking up its past, and speculating about its present. Has the South produced artists equal to its authors? What sort of buildings are going up from Lake Pontchartrain to the Alleghenies? What tensions, what energies are forging its future cities and towns? And ultimately, what effect does the place itself have on the people and their art?

From a Southerner's perspective, the conference succeeded in evoking place, in calling up one special milieu for visitors who had never visited the deep-down South, as when Shelby Foote rose to the pulpit at Carmel Church, a chaste, rural building outside the city, and read a description of Lee's surrender to Grant. For a group largely uninitiated to the enormity of the Civil War, time flew away. It did again when Ellen Gilchrist brought her birthplace in rural Issaquena County to resounding, ironic, rich life.

What the conference lacked, from a native's point of view, was a rounded picture of the contemporary South. As a group, Southerners are intensely and self-consciously aware that the region has changed, that it is urbanizing, abandoning farmland, *integrating*, building skyscrapers, and normalizing. With some irony, Southerners on the panel and in the audience seemed apologetic for "hierarchical" Natchez, while New Englander Harold Roth, FAIA, asserted the architecture's validity despite its association with an earlier, repressive social order.

Another shortcoming was the lack of exploration of contemporary architecture. Although Sam Mockbee, AIA, showed examples of work being done in Missis-

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Conferences *from page 29*
Northerner recognized as being archetypal in the literature and history of the South.

Another thing was the way the different parts of the society—the older parts of it—reflected one another. The dogtrot house, about which we saw a marvelous slide lecture, was clearly the same architectural concept, morphologically, as the mansions we saw the next day. Both had the same long front-to-back hall through which a cool breeze might flow and in which the members of a household might meet one another. Both seemed as well adapted to climate and culture as the more modern architecture of the South seemed disruptive and disjointed. We weren't taken to see any contemporary architecture, and very little appeared even in the slide presentations. In Natchez, the newer buildings seem to be regarded as a sort of regrettable infilling among the old monuments, something you simply have to pick your way through to reach the real architecture. The old mansions stand among this infilling as tall, white, widely separated objects, signaling to one another like passing ships.

The conference thus succeeded in evoking a sense of Southern culture but failed to connect that sense to any image of what an architecture of today, growing out of such a culture, might be. The fear was often expressed that the unique, highly self-conscious Southern culture of the distant and recent past may now be dying, and that nothing comparable may be replacing it.—Robert Campbell, AIA

Design

Architects' Varied Responses to Television's 'America by Design'

Public television's second major series on architecture is over, coming sooner than 18 months after Robert A.M. Stern's "Pride of Place." This year's series, "America by Design," written and narrated by architectural historian Spiro Kostof, was conceived to deal with the social, economic, and technological forces that have influenced America's built environment rather than the styles, forms, or esthetics of architecture. If Stern's series was criticized by some architects as being two personal, too gossipy, and too ideological, "America by Design" has received a different but in some ways more biting criticism. Kostof's series has been largely ignored by architects.

A random (and unscientific) survey found that a surprisingly large number of architects had seen little or none of the series. Nevertheless, everyone who commented praised the concept and the approach of the program and agreed, in the words of Joseph Esherick, FAIA, that "the series presented a broad message for everyone and a message that all architects should listen to and take more seriously."

David Childs, FAIA, was one who admitted he had not found the time to view the program although he said he respected Kostof's work. "I guess the reason more architects watched Stern's series was because it was a lot of fun, *People* magazine kinds of things, showing architects you knew in different settings," he said.

Each of the five segments of "America by Design" addressed a straightforward and general topic: the house, the workplace, the street, public places and monuments, and the shape of the land.

From the outset, Kostof (working with Guggenheim Productions and director/producer Werner Schumann) intended the program to concentrate on American architecture in the broadest possible context. "How did we mark the land with farms and cities and highways," Kostof asks, "and what do these patterns say about us—who we are, where we have come from, and where we are going?"

Architects interviewed for this informal survey agreed that Kostof successfully placed architecture in a social and historical context. "The series didn't give the impression that the history of the United States was the history of its architecture, but rather that architecture is the logical

result of what went on in our country," said John Hartray, FAIA.

Several architects praised the program for viewing buildings not as objects but as social facts integrated with other social facts. "The series looked at the full richness of architecture," said Richard Bender, FAIA, "rather than at specific buildings and helped put architecture in context with the lives and aspirations of the people."

Not all architects were impressed. The series aired at 11 P.M. in New York City, and one who watched a bit of the first episode there said, "If I'd been more interested I guess I would have figured out how to work my VCR so I could have taped the other segments. I just went to sleep."

Design critics for several newspapers panned the series. Paul Gapp of the Chicago *Tribune* wrote, "One sits there watching it, hoping to heaven it will rise above tedium, but it never does." Along the same line, Sam Hall Kaplan of the Los Angeles *Times* wondered how a "subject that is so pervasive, so vivid, and so fraught with conflict [could] be made so boring."

One architect who took issue with these criticisms was Frances Halsband, FAIA. "I had read reviews saying that the program was dry and boring and scholarly," she said. "Those were exactly the things I admired about it. I enjoyed it and I learned a tremendous amount."

Others called the series a "solid documentation" and a "very healthy general history of the built environment." Esherick also praised Kostof for his "wonderfully forthright analysis." In Chad Floyd's opinion, Kostof addressed the appropriate subjects and dealt with them "articulately." In agreement was George Notter, FAIA, who said, "I thought it focused on the issues and had the right balance of values."

However, several architects who praised the content and intent of the series faulted the delivery. "I wish the whole production had more of the vitality of the idea," said Bender. "I think the medium, finally, was not quite up to the message."

Some suggested involving more people and "letting the architecture speak for itself." Floyd recommended making the presentation a story rather than a lecture to engage people's interest. In recalling moments in film where architecture came across with an enormous impact, Bender said, "I remember scenes from old movies where people danced to Mozart in spaces brought much more to life than the camera panning and someone telling you what to look at."

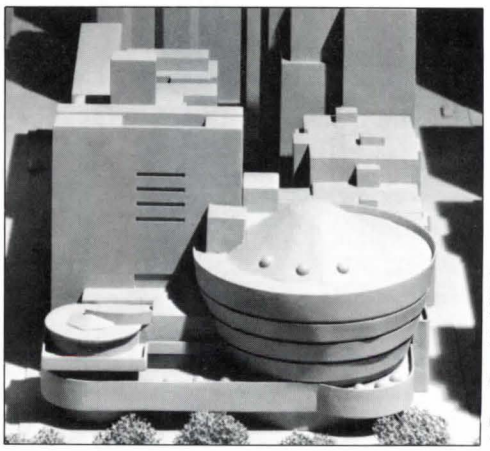
David Dillon, reviewing the series for the Dallas *Morning News,* wrote, "At one level 'America by Design' is a commendable effort to free architecture from its own solipsistic concerns and return it to the public domain, where it belongs. But Kostof's almost obsessional even-handedness also reduces important issues to mush. That doesn't serve anyone well, least of all the concerned layman searching not only for ways to read the existing environment but for guidance in making it better in the future."—Lynn Nesmith

Gwathmey Siegel's Guggenheim Addition Wins Final Approval

More than two years after a proposal to expand the Guggenheim Museum was announced, the New York City board of standards and appeals has granted the variances and given the final approval needed to proceed with construction of the proposed addition.

Gwathmey Siegel's original expansion scheme drew mixed reactions from architects and was strongly criticized by preservationists and neighborhood groups, who argued the addition would overshadow the original Frank Lloyd Wright museum. (See Aug. '86, page 10, and March '87, page 40). The present Gwathmey Siegel scheme has undergone several major revi-

continued on page 40



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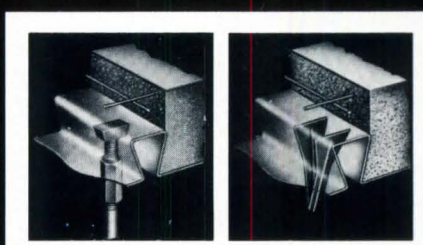

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COLLECTION

Design *from page 35*
sions, and the final proposal has been significantly scaled down in both bulk and height. The addition, approved in late October, will be 99 feet long and 133 feet high, and the primary exterior material will be limestone, chosen for "its consistency with adjacent buildings and for its neutrality and color unity within the original structure," said a museum spokesperson. Construction is expected to begin in the summer of 1988.

Paris Exhibition Explores Chicago's European Roots

Chicago has long been considered the cradle of modern American architecture. Now a new museum exhibition argues that Chicago's architecture was born in Europe. "Chicago, Birth of a Metropolis 1872–1922" (presented in Paris, Frankfurt, and Chicago) examines the architects, construction techniques, and design styles that gave the Windy City its distinctive character during this pivotal time in its development.

According to John Zukowsky, architectural curator at the Art Institute of Chicago and the show's organizer, the Chicago and Prairie schools "have generally been viewed in a regional or national perspective. . . . This exhibition examines them in an international context, insisting on their links with Europe."

Those links were personal and direct. Europeans came to Chicago: Augustus Bauer, a German, arrived in 1853 as the city's first architect, and in 1875 his compatriot Nathan Ricker reorganized the architecture school at the University of Illinois on the German model. Chicagoans went to Europe as well, beginning with William Le Baron Jenney, who received his diploma of engineering in Paris in 1856 and later employed Louis Sullivan in his firm. Sullivan, William Otis, Edward Bennett, and John Holabird were among those who studied at the Ecole des Beaux-Arts and sketched the monuments of Europe.

The full impact of these experiences became manifest during the massive reconstruction of the city after the Great Fire of 1871. European influences took two paths: stylistic and structural. Solon Spencer Beman's Pullman Building (1883) culled ornamental details from Richard Shaw's Albert Hall Mansions (London, 1879), while an oak desk by Howard Shaw (1897) borrowed timidly from art nouveau. Daniel Burnham's Columbian Exposition of 1893 and his Chicago Plan of 1909 (a vision of "Paris on the Lake") capitulated completely to Beaux-Arts esthetics and urban planning.

The building lessons were ultimately more fruitful because more applicable to the American context. Exhibition models show the evolution of construction techniques from the wooden balloon frame to structural iron skeletons. A catalog essay points out that Chicago's innovation in skyscraper building was not the frame itself, derived from such European works as Labrouste's Bibliotheque Sainte-Genevieve, but a method of fireproofing it. Burnham & Root's celebrated Rookery Building (1886) directly echoes Gustave Eiffel's Bon Marche department store of 1876 in Paris in all but facade treatment.

The show's argument generally holds, but finally overreaches. It concentrates on three architects—Burnham, Sullivan, and Frank Lloyd Wright—each less plausible than the last as a disciple of European design. Burnham was indisputably Francophile, but his influence is generally seen as misguided and short-lived. Sullivan absorbed European currents but spent his life conceiving a specifically American system of ornament. And references to the rationalism of Viollet-Le-Duc fall far short of explaining Wright's idiosyncratic genius.

Thure de Thulstrup's perspective view of the World's Columbian Exposition.

Courtesy The Chicago Historical Society

With the Tribune Building competition (1922), which closes the exhibition, it is clear that architecture suffered the same dichotomy on both sides of the Atlantic. Its new directions, derived from an international industrialism, would consider regional and historical styles obsolete.

The exhibition is a joint effort by the Art Institute, the Frankfurt Museum of Architecture, and the Musee d'Orsay. It comprises more than 200 objects, most from Chicago collections, including photographs, sketches, renderings, models, building fragments, and furniture. In Paris, where the show opened in October, the dining room set from the Robie house (the first substantial display of Wright's furniture in Europe) attracted considerable admiration. Stanley Tigerman, FAIA, will design the Chicago installation; the show opens there next summer. A scholarly catalog with striking illustrations explores the exhibition's themes –Thomas Matthews

Mr. Matthews is a freelance writer and design critic based in Bordeaux, France.

Technology

Government Fines Contractors In Bridgeport Collapse

After a six-month investigation into the collapse last April 23 of an apartment building under construction in Bridgeport, Conn., the U.S. Labor Department revealed the probable cause to be the failure of the lift-slab construction system used to raise the concrete floors into place. The lift-slab process involves casting cement floor slabs on site and then lifting them into place with hydraulic jacks. In what has been described as the worst construction accident of the decade, 28 workers were killed and 10 others injured when three floor slabs being hoisted gave way, causing the 13-story building, which was 60 percent complete, to collapse.

The Labor Department fined five of the project's contractors responsible for the lift-slab construction a record $5.11 million. The contractors fined included Texstar Construction Corp. of San Antonio; joint venture firms TPM International of Darien, Conn., and B.H. Macomber of Boston; Lift Frame Builders of Elmsford, N.Y.; Fairfield Testing Laboratories of Stamford, Conn.; and Preforce Corp. of New York City. TPM Architects, designers of the project, were not fined.

Assistant Secretary of Labor John A. Pendergrass said that the investigation found a "pattern of sloppy construction practices throughout the project and an overall sense of employer complacency for essential workplace safety considerations." Pendergrass said that a "rudimentary engineering analysis" of the lift-slab system in use on the Bridgeport site would have revealed "obvious and unacceptable deficiencies" in the system's design. He noted

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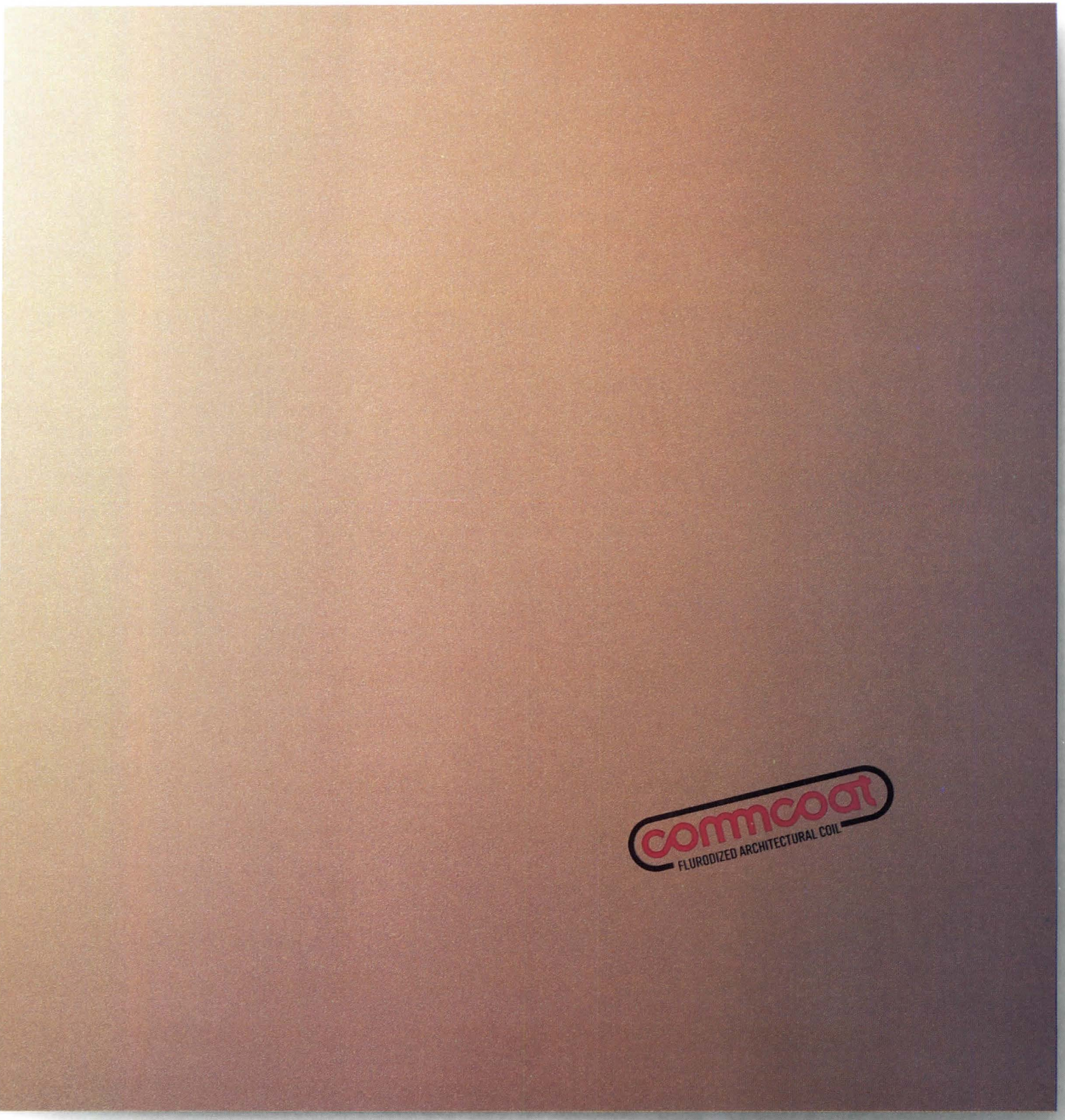

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Technology *from page 40*
there had been a lift-slab failure at the same construction site resulting in minor injuries (not required to be reported), two months before the fatal accident. According to the report, the contractor repaired the damage but did not probe into its cause or verify the system load capacity.

The lift-slab technique involves pouring the floor slabs on the ground and imbedding into them steel shearheads that connect to threaded hydraulic jack rods. The slabs are then lifted into place with the support of steel columns.

The Labor Department's investigation, conducted by the Federal Occupational Safety and Health Administration and the National Bureau of Standards, found that a steel lifting angle—a bracket that is part of the shearhead—bent under the load, causing the jack rod to pull loose from the angle. Three slabs of 320 tons each were being lifted when the system failed. The slabs, floors 9, 10, and 11, crashed into the floors below, setting off a chain reaction that collapsed the structure like a house of cards.

The Labor Department's report cited several factors at the Bridgeport site that may have abetted the building's swift and total collapse, specifically a lack of temporary lateral bracing with cables, inadequate backfill around footings, and shear walls that had not been poured high enough to provide additional lateral support.

The investigation into the collapse, completed by NBS at a cost of $375,000, utilized eyewitness accounts and laboratory and computer analyses of the building's debris.—Michael J. Crosbie

Roofing Industry Sets Long-Term Research Goals

Roofing experts gathered in September in Washington, D.C., for the "Roundtable Seminar on Roofing Research—The Challenge and the Opportunity," a joint conference sponsored by the National Bureau of Standards and the National Roofing Contractors Association. The conference goal was identification of areas in need of research in nonresidential roofing. It resulted in a brainstorming session to catalog all that is wrong with single-ply and built-up roofing. Modified bitumen was discussed with single-ply.

Twenty-five members of the roofing industry, including contractors, manufacturers, researchers, consulting architects, and engineers, took part in the day-long discussion. Following is a synopsis list of potential research topics and related comments brought out at the conference.

• Collecting and pooling data among roofing material manufacturers would be valuable to all members of the industry, most attendees agreed. Sharing such data is especially important for the newer systems and particularly in retrofit applications.

Collecting performance data from the field, especially the performance of a material over time, is a critical issue for roof membrane research. However, attendees cautioned that field research must go hand in hand with laboratory data because failures of chemical bonding may remain hidden in field research even though failures of installation become apparent.

Many of the panelists believe that the National Bureau of Standards would be an appropriate repository for a roofing performance data base that would provide valuable indicators for the direction in which research should flow. "The industry has underreacted to some problems and overreacted to others, like wind, because we don't have the data," said Don Backenstow, director of research and development for Carlisle SynTec Systems. But because it was not on the conference agenda, the issue of a national data base was tabled.

• Lack of performance standards for materials, components, systems, manufacturing processes, and installation procedures was singled out as a major stumbling block of the industry. "For elastomerics, thermoplastics, and modified bitumens, we need to look for performance specs and characterizations of the materials by fatigue tests, puncture tests, tear [tensile] tests, and thermal/mechanical properties, especially when exposed to accelerated testing," said William C. Cullen, research associate at NRCA. "For example, we need to look at modified bitumen. It is 15 percent of the market, and there are no specs for it. We need recommendations and guidelines for manufacturers, standards makers, and inspectors," he said.

A possible role for NBS, in addition to the aforementioned (and tabled) data base management, would be to develop objective guidelines for the roofing industry, which could be gleaned from the data base, conference participants suggested. The advantages, they said, are NBS's objectivity and its speed—an average of six years is necessary to develop a consensus standard through one of the testing agencies, such as ASTM.

Backenstow suggested that the industry look for ways to develop consensus standards more quickly. "Two years is the best you can hope for," he said. "The information is there, but we can't get it through ASTM because everyone wants his product to meet the spec."

• Basic materials and systems research revolves around improving products already on the market instead of inventing new ones, and improving the interfaces among the products in any given system, attendees commented. "We need simultaneous engineering for single ply systems because they are zero-fault systems that almost don't work," said Rene M. Dupuis, vice president of Structural Research Inc. and moderator of the session on single

Computers have developed to where they may soon play a major role in systems research. "We need to explore the interaction between the components in a system," Cullen said. "Given the products on the market, there are some 195,000 combinations of systems and membranes. Simultaneous modeling by computers would test all of these systems."

• Installation methods and inspection merit close scrutiny, attendees agreed. They suggested that NBS establish criteria and guidelines for how much training a crew needs to install a particular roof system. "We need user-friendly materials, and systems that are easy and foolproof to install. The best lab numbers mean nothing if complex preparation and installation guarantee misapplication. We need to take into account field abuse, because that's the reality of the situation," Backenstow said.

• Increased communication among all players in the industry was the starting and the ending point of the discussion and, in fact, the reason behind the roundtable. It was noted that communication among the various members of a job team can be a major problem, beginning at the prebid conference, especially if the job is a single ply installation. The "loose electrons" in the industry as a whole appear to be the contractors in the field, and that is not entirely of their own fault, according to one attendee. It seems a given that, although responsible manufacturers conscientiously perform laboratory testing, new products are field-tested in place on top of somebody's building.

"As roofing contractors, we are guinea pigs doing [the manufacturers'] research. Manufacturers come up with a product and an installation spec that are experimental," one contractor commented.

Both sides of the table agreed that better translations of laboratory to field data are necessary to the successful development of the industry, and that the reverse is equally true.—Douglas Gordon

DEATHS

Edwin F. Ball, AIA, past president of the Maryland Society of Architects, died in July at the age of 60. His firm, Edwin F. Ball Associates, designed schools, churches, houses, and public and commercial buildings. Ball also served on the AIA committee that helped modify the Metrorail in Washington, D.C., to provide access equipment for disabled persons.

Philip Ives, FAIA, of New York City, was author and editor of *The Nativity in Stained Glass.* He was graduated from Yale University in 1927 and opened his own architectural firm in 1932. Ives's works include St. Barnabas Episcopal Church, Greenwich, Conn.; the Chapel of St. Jude at Georgetown University, Washington, D.C.; and guest suites at Colonial Williams-

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Deaths *from page 44*
burg Foundation, Williamsburg, Va. He was consulting architect for the Pan American World Airways terminal at Kennedy Airport, New York City. He died in July at the age of 83.

Donald W. Kennedy, FAIA, was a vice president and managing principal of Gensler & Associates and director of its San Francisco office. His projects included numerous law offices and regional headquarters for Marsh & McLennan Inc. Kennedy received his Bachelor of Architecture from Oklahoma State University. He died in September.

Louis Menk, FAIA, vice president of Albert Kahn Associates, died last summer at his home in Southfield, Mich. He was 78. A graduate of New York University, Menk was assistant dean of its former school of architecture from 1938 to 1940. In 1971 he received the Michigan Society of Architects' gold medal award for "leadership and contribution to the profession and the community."

J. Walter Severinghaus, FAIA, died at his Scarsdale, N.Y., home in October. He was 81. Until his retirement in 1975, he was a partner in the New York City office of Skidmore, Owings & Merrill, which he joined in 1938. He was involved as a manager with the Gordon Bunshaft-designed Chase Manhattan Bank headquarters. Severinghaus's projects also included the International Arrivals Building at Kennedy International Airport, Texaco's corporate headquarters in Harrison, N.Y., and the Chapel House at Colgate University, Hamilton, N.Y. Severinghaus earned his bachelor's degree in architecture from Ohio State University.

Darlene Weidert, director of corporate communications at Gensler & Associates, San Francisco, died in September. Weidert joined the firm in 1978, and in 1985 became a vice president.

BRIEFS

AIA Names New Senior Executive
James M. Bentley, AIA, who has practiced architecture for nearly 30 years in Kalamazoo, Mich., and Davenport and Waterloo, Iowa, has been named senior executive for client services of AIA. His primary roles will be to determine new services the public and clients require of architects and to coordinate Institute support for the profession's response to these emerging opportunities.

AIA Institute Scholars Program
Patricia O'Leary, AIA, a faculty member at the University of Arkansas, and Richard Redden, AIA, of Allison Moses Redden in Little Rock, have received AIA Institute scholars awards for 1987, in a program developed by the AIA architects in education committee to promote new knowledge useful in teaching and practice. The program will fund up to three joint educator/practitioner project teams for 1988. The specific goals are to improve architectural education through joint research in design, building systems and technologies, management, practice, and architectural education. A $5,000 prize will be awarded to each member of the winning teams. Applications will be available Jan. 1; deadline for submissions is March 1. For more information, contact Karol Kaiser at Institute headquarters, (202) 626-7356.

Reynolds Architectural Awards
The R.S. Reynolds Metals Co. of Richmond, Va., each year confers an award on an architect or a team of architects that "has designed a permanent, significant work of architecture in which aluminum is an important contributing factor." The award consists of a $25,000 honorarium and an original sculpture created in aluminum. Since 1957, when the award was established, the company has commissioned 31 pieces of sculpture and has retained a duplicate collection of the sculpture. Recently the company donated this collection to the Virginia Museum of Fine Arts in Richmond.

Historic Preservation Awards
A two-part, nationwide awards program to honor privately funded or federally assisted historic preservation efforts will be sponsored jointly by the White House, the Advisory Council on Historic Preservation, and the Department of the Interior.

The first awards category, the President's Historic Preservation awards, will recognize private citizens whose achievements exemplify the contributions of free enterprise to historic preservation; the second category, the National Historic Preservation awards, will honor projects and programs that have been federally assisted. For entry forms and more information, contact the Office of the Executive Director, Advisory Council on Historic Preservation, 1100 Pennsylvania Ave. N.W., Suite 809, Washington, D.C. 20004.

Call for Competition Entries
The American Architectural Manufacturers Association has set Dec. 31 as the deadline for its "Aluminum Siding Achievement Awards" competition, open to builders, architects, and remodelers of houses and light commercial buildings. To obtain a copy of the entry form contact AAMA, 2700 River Rd., Suite 118, Des Plaines, Ill. 60018.

Concrete Masonry Design Competition
A design competition honoring the "excellence of architectural design using concrete masonry as part of the design element" is being sponsored by the National Concrete Masonry Association. Entries may be any work of architecture completed no earlier than June 1985. The deadline for entries is Jan. 5. For more information, contact Chris Weitzel, NCMA, 2303 Horse Pen Rd., P.O. Box 781, Herndon, Va. 22070.

Arts and Architecture Fellowships
Applications are being sought by the U.S. Capitol Historical Society Fellowship to support research and publication on the history of the art and architecture of the U.S. Capitol. Graduate students and scholars may apply for fellowships of one month to one year with a stipend of $1,250 per month. The deadline for application is Feb. 15, 1988. For more information, contact Barbara Wolanin, Curator, Architect of the Capitol, Washington, D.C. 20515.

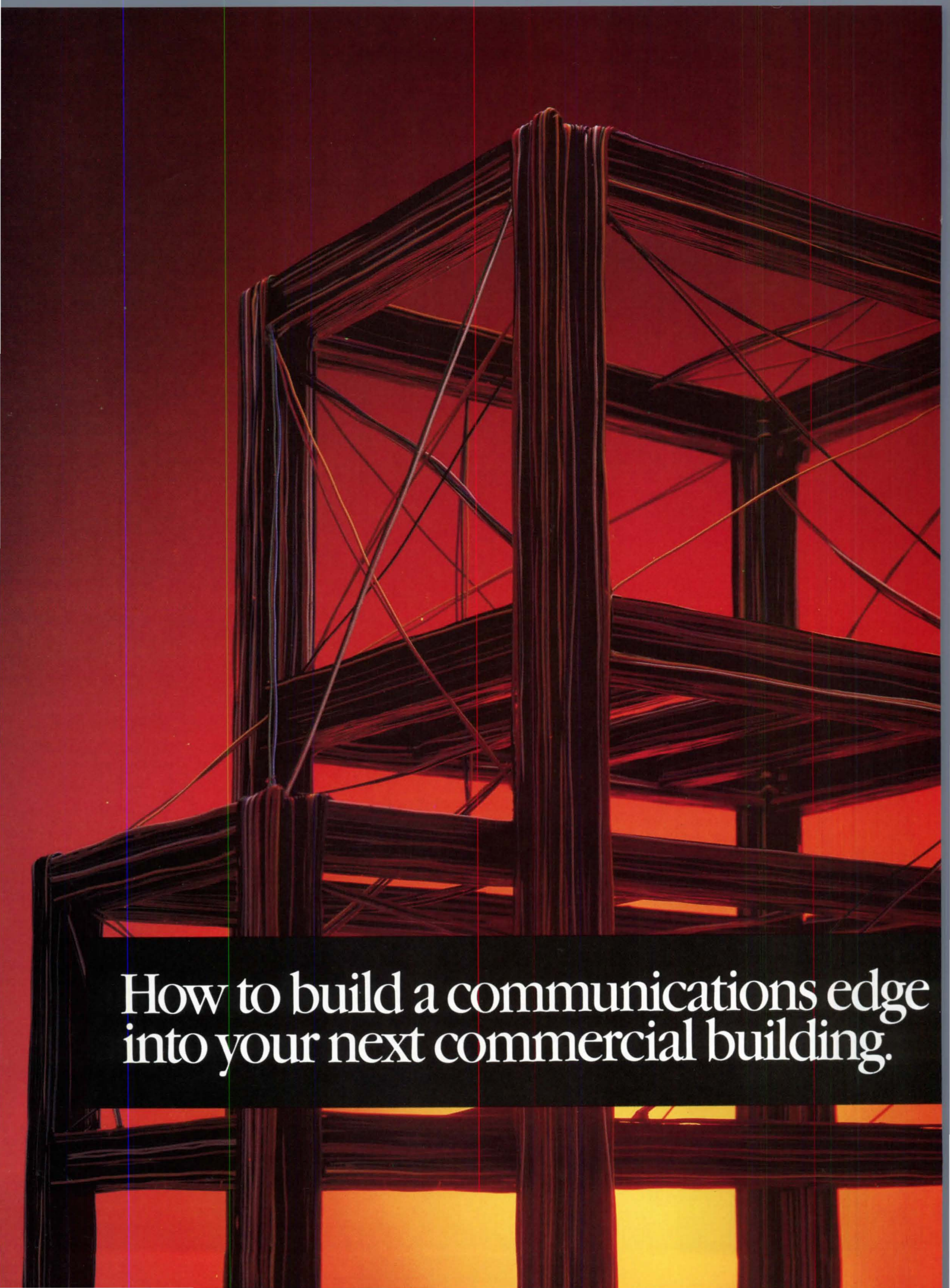
Student Award for Acoustics Study
Thomas J. Rovero of the Boston Architectural Center, James Neheri Jr. of Clemson University, Chandler R. Rozear of the University of Florida, and John Hill Martin of Harvard University have received the Robert Bradford Newman student award for excellence in the study of acoustics and its applications to architecture.

IDCA President Named
Bill N. Lacy, president of the Cooper Union for the Advancement of Science and Art, has been named president of the International Design Conference in Aspen. He suceeds Julian Beinart.

NAAB Officers
The National Architectural Accrediting Board has appointed Lee G. Copeland, FAIA, dean at the University of Pennsylvania school of fine arts, as president for 1988. Other officers are W. Cecil Steward, FAIA, vice president elect; Edward A. Sovik, FAIA, secretary; and David L. Pugh, FAIA, treasurer.

One Hundred Years of Women in Architecture
An exhibition entitled "That 'Exceptional One': Women in American Architecture, 1888-1988" will open May 15 at the Jacob Javits Convention Center in New York City in conjunction with AIA's national convention and will travel to 14 cities during the next three years. The exhibit will present a series of case histories of women architects and their firms and will include reproductions of artifacts from the Women's Building at the 1893 Columbian Exposition, photographs, correspondence, academic catalogs, and architectural exams. Produced by the American Architectural Foundation with the cooperation of the AIA women in architecture committee, the exhibition has received additional support from the National Endowment for the Arts, AIA's College of Fellows, the Graham Foundation, and Mrs. Jefferson Patterson.

Indoor Air Pollution
The American Society of Heating, Refrigerating, and Air Conditioning Engineers has published a 622-page book of the proceedings of its conference, *IAQ '86: Managing Indoor Air for Health and Energy Conservation.* The book consists of 54 papers and the price is $74. Contact: ASHRAE Publications Sales, 1791 Tullie Circle N.E., Atlanta, Ga. 30329. □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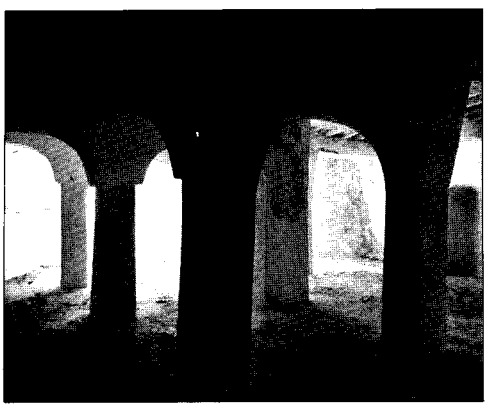
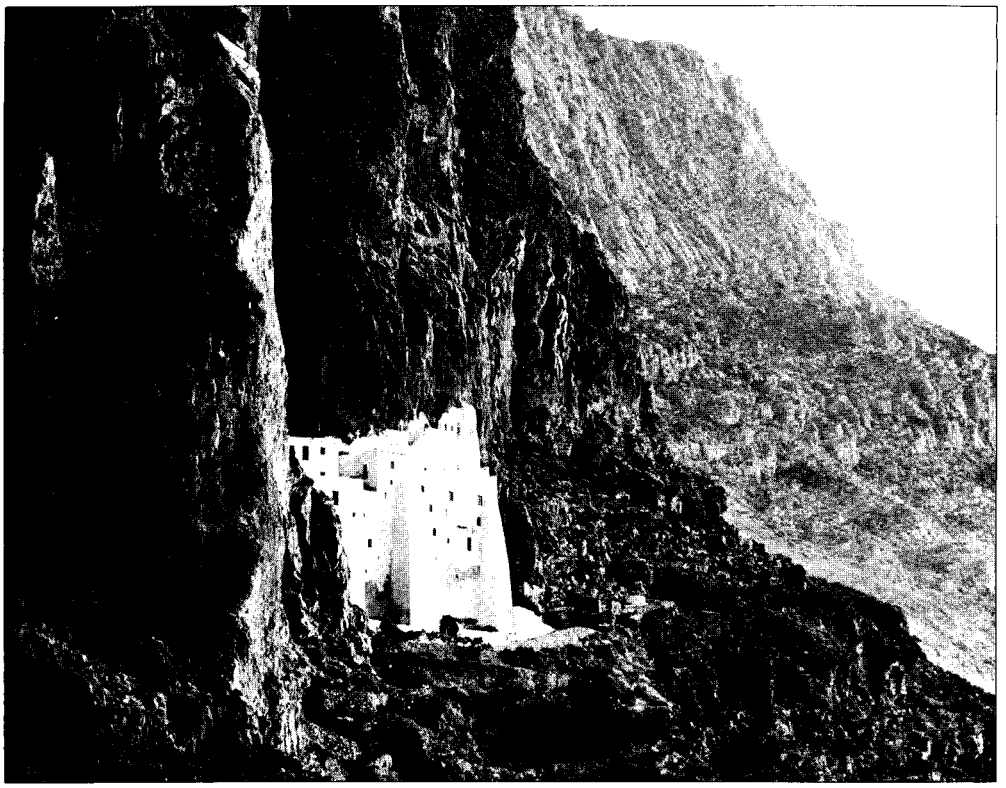
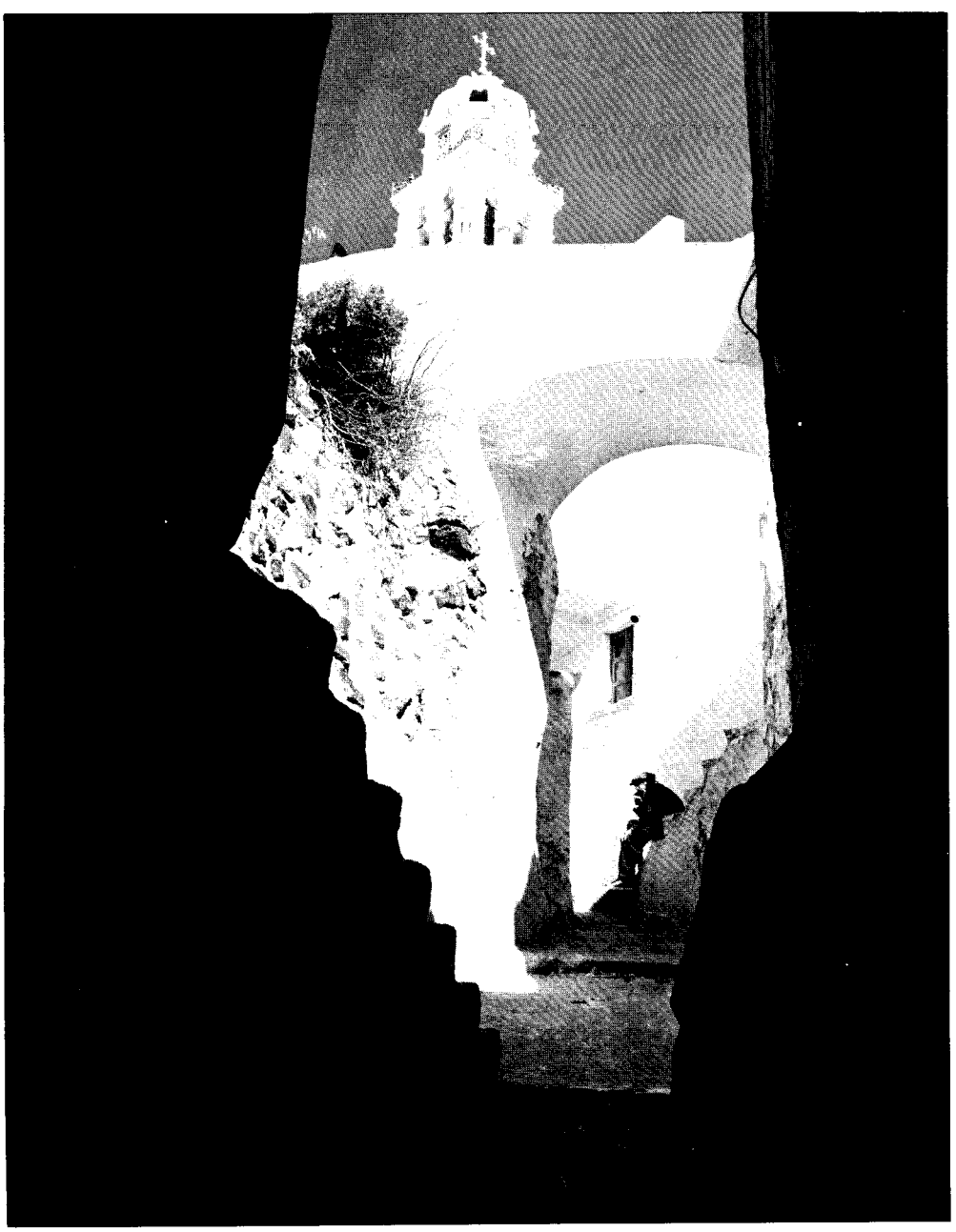
Right, fortified monastery on the Cycladian island of Amorgos, occupied for more than a thousand years. Below, the tiny mosque of Sidi Brahim in the Mzab Valley of central Algeria. Bottom, street in the Grecian island village of Santorini.







The Arts

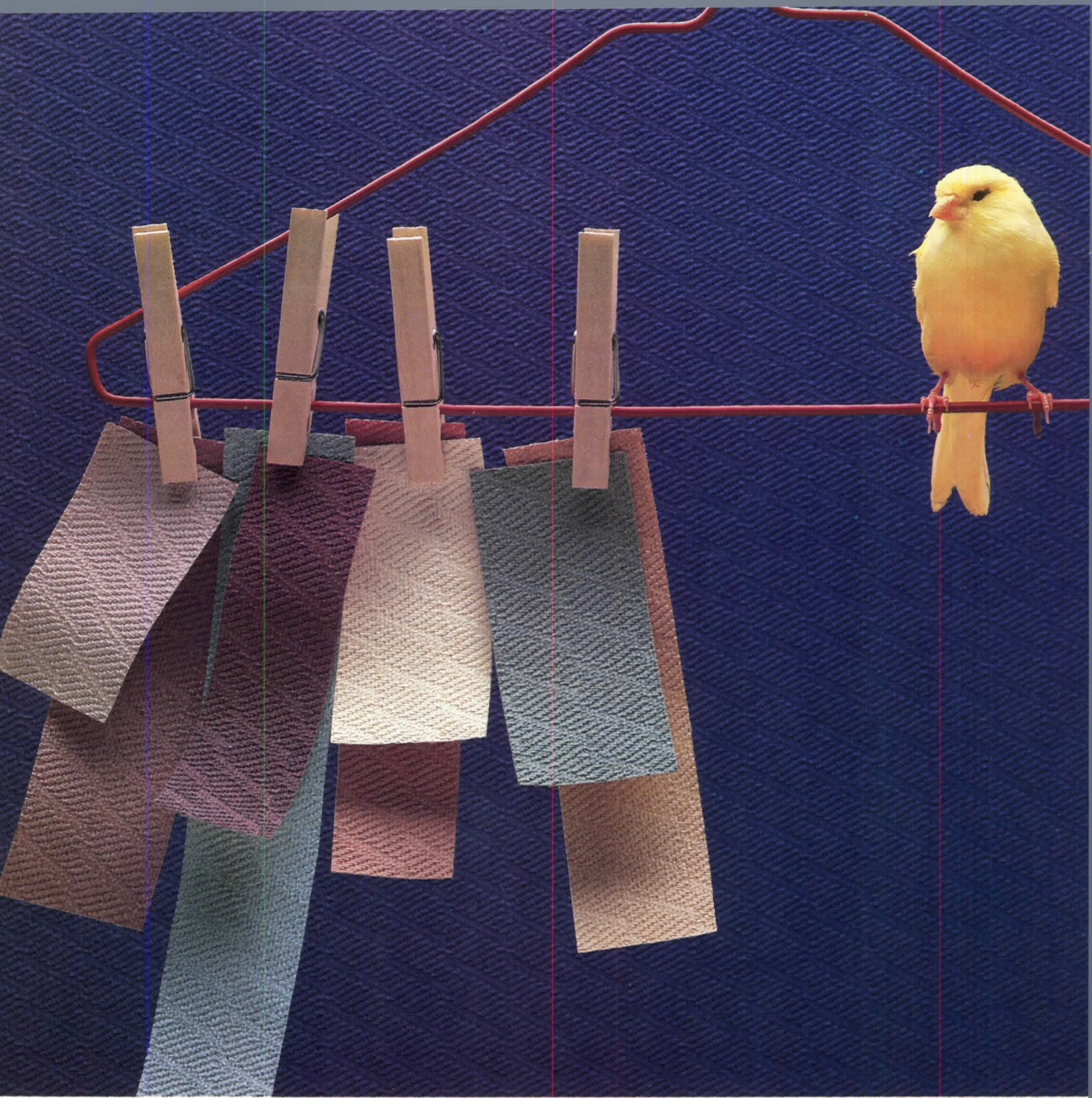
Carver's Focus

The photographs on this and following pages are from past and future books and calendars by Norman F. Carver Jr., FAIA, who practices architecture in Kalamazoo, Mich., and photography around the world. The unifying theme of this small collection is architecture for religion.

A serious photographer for more than 25 years, Carver has focused his Hasselblad's lenses on vernacular buildings and exotic settings in Spain, Portugal, Italy, Greece, France, Switzerland, England, Yemen, Morocco, Tunisia, Algeria, Yugoslavia, Cambodia, Japan, India, Mexico, Guatemala, and the United States. In composing and printing photographs he is a meticulous technician with an architect's eye for composition, and he commands high book-printing standards. He also designs his books.

Carver's most recent work is *Silent Cities of Mexico and the Maya* (Documan Press, Ltd., Box 387, Kalamazoo, Mich. 49005; $26.95 hardbound, $19.95 paper). It is an update of a book from the '60s that is now out of print. The current edition comprises new prints from the old negatives, supplemented by images of recent restorations. It is photography and bookmaking of a high order.

His 1988 calendar, also available from Documan Press ($8.85), ranges in subjects from Katsura Palace in Kyoto, Japan, to grain elevators in Illinois. —ALLEN FREEMAN



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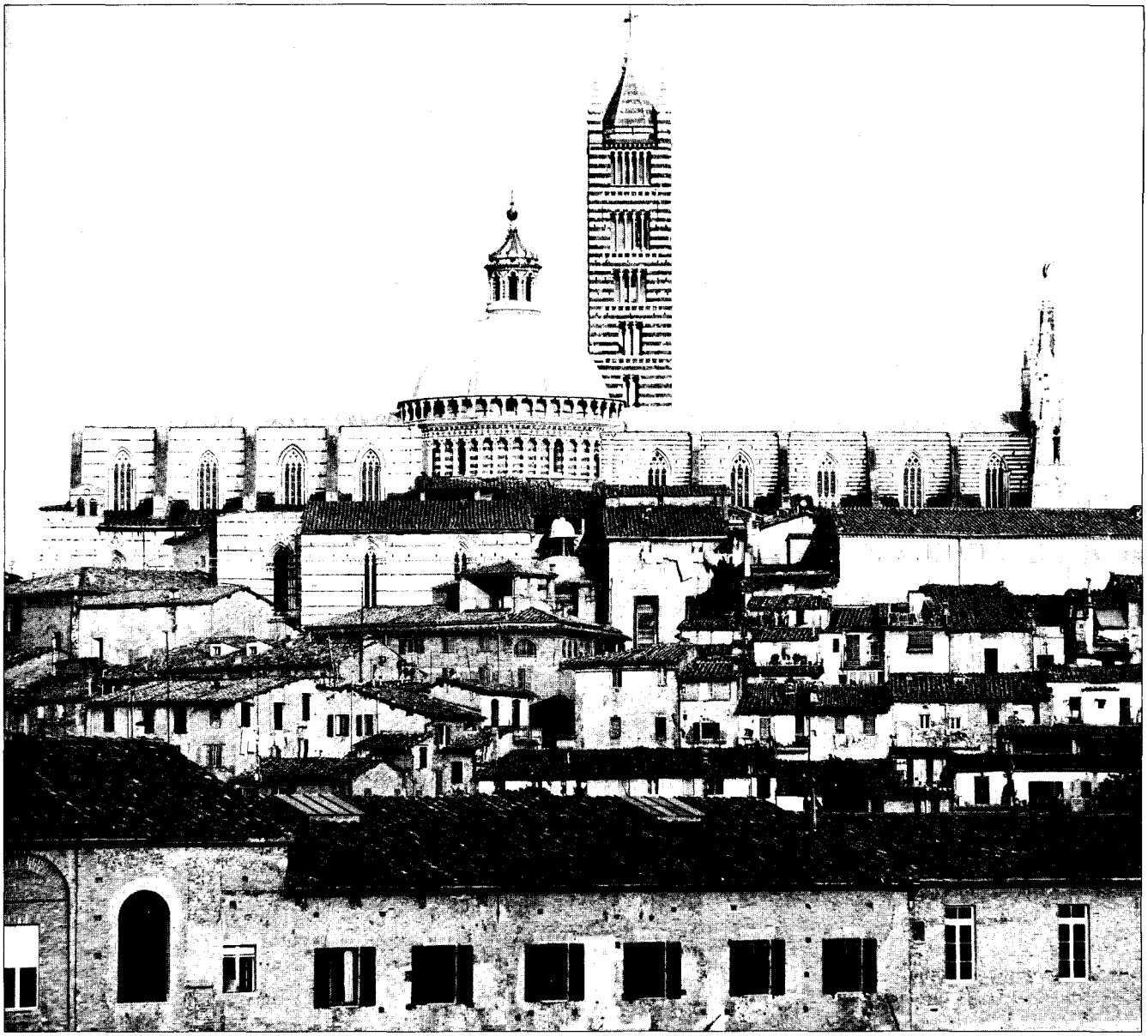

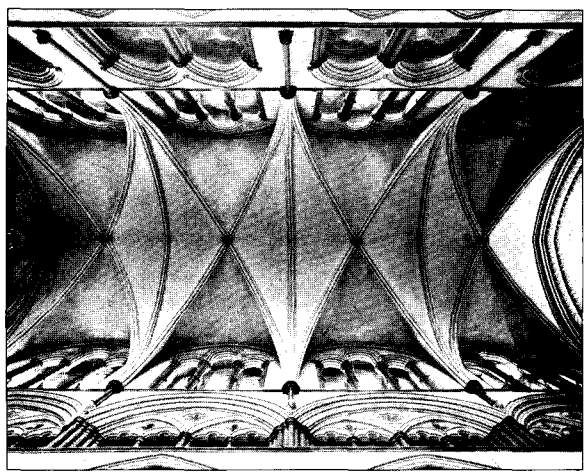

Top, Siena's dramatic duomo dwarfs somber stone houses. Left, the fantastic west front of the cathedral at Florence. Above, the roof vaults of Mont St. Michel.

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SMOKE STOP SEALANTS:

Smoke-resistant seals put finishing touch on fire-containment assemblies.

Smoke infiltration can be more deadly than the spread of fire, and sometimes assemblies that are effective in stopping the spread of fire will allow smoke and hot gases to pass through or around them. In these instances it is critically important to use a system designed to stop smoke infiltration as well as fire.

Since smoke can be as lethal as fire, fire-protection assemblies must not only work well in stopping the spread of fire, but they must also stop the spread of smoke and hot gases. In recent years many new fire-containment systems have been developed to afford protection for newly developed construction designs or to provide improved protection for traditional fire-protection problems. One of the recent advances is an improved system for fire-protection of through penetrations or "poke-through" openings in concrete-floor slabs.

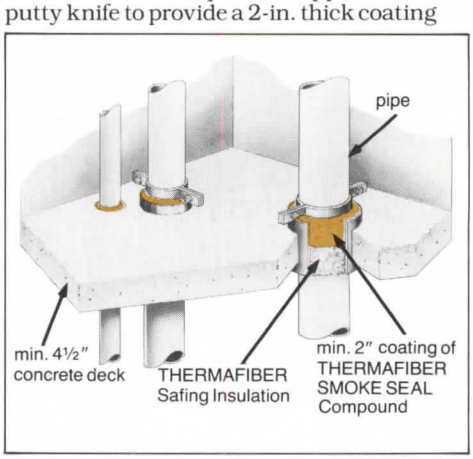
However, while these systems are highly effective in preventing the spread of fire, extensive testing of these fire-stop assemblies has indicated that they sometimes allow smoke and hot gases to pass around them. Manufacturers have worked hard to devise products and systems that not only resist the passage of fire, but also have special characteristics that check the passage of smoke.

The following checklist contains the most important features and tests applicable to systems that provide both fire protection and a seal against smoke infiltration for through penetrations or "poke-through" openings in concrete-floor slabs. The checklistings may be used as criteria for measuring the qualities of the various systems available. Comparing these criteria against the product literature from various sources will show whether a selected system or "equal" has all the needed features:

- The fire-protection assembly and smoke-resistant seal must be tested according to ASTM E814 for fire containment and resistance to hose stream in through penetration applications.
- The smoke-resistant seal must demonstrate that it effectively stops smoke infiltration.
- The smoke-resistant product must be compatible with the fire-protection materials in the fire-protection assembly.
- The materials should have surface burning characteristics no greater than flame spread 25 and smoke developed 0 when tested according to ASTM E84.
- The smoke-resistant product must bond sufficiently with other materials in the assembly to provide an effective seal.
- The product must be easy and trouble-free in installation on fire-protection assembly.
- The materials must be economical to purchase and use.

THERMAFIBER™ SMOKE SEAL™ Compound, used in conjunction with THERMAFIBER Safing Insulation from USG Interiors, Inc., is superior or equal to any other system in the industry in satisfying all the criteria on the checklist above. The compound is a gray, elastomeric water-based material for sealing THERMAFIBER Safing Insulation in through-penetration assemblies. The surface burning characteristics of SMOKE SEAL Compound are flame spread 5 and smoke developed 0 when tested according to ASTM E84.

THERMAFIBER SMOKE SEAL Compound is designed to enhance the smoke-containment capability of THERMAFIBER Fire-Containment Systems from USG Interiors, Inc. In through-penetration applications, SMOKE SEAL Compound is applied with a putty knife to provide a 2-in. thick coating over THERMAFIBER Safing Insulation stuffed into openings around pipes, conduits or other utilities that must pass through a floor. This same compound can also be used to seal safing insulation applications around perimeters of structural members to inhibit the passage of smoke through these openings and penetrations.



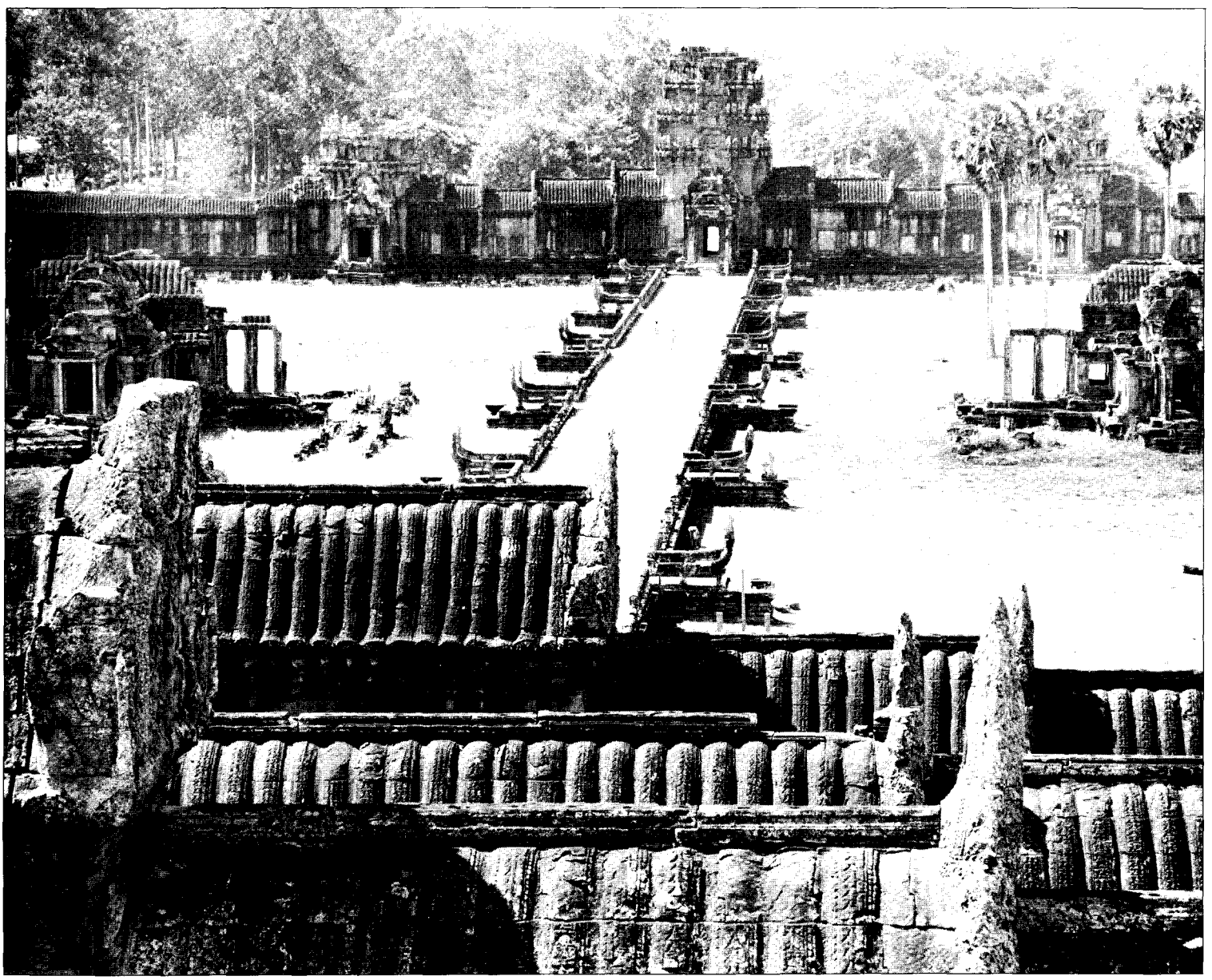
Smoke barrier for through-penetration applications is provided by sealing top of penetration with 2-in. thick coating of SMOKE SEAL Compound over THERMAFIBER Safing Insulation. Note that compound is colored for illustration only.

As a fire-containment assembly for through-penetration applications, THERMAFIBER Safing Insulation, in conjunction with SMOKE SEAL Compound, has been tested according to ASTM E814 for fire containment and hose-stream resistance. In tests conducted according to the standard "Fire Test of Through-Penetration Stops," U. L. design No. 1479 (ASTM E814), assemblies with 1½-in. to 4-in. electrical metal tubing (EMT) were protected with 2½-in., 4-lb./cu. ft. THERMAFIBER Safing Insulation and 2-in. THERMAFIBER SMOKE SEAL Compound in through penetrations of 4½-in. thick, lightweight-concrete floor slabs. A ¾-hr. temperature transmission rating was established for 1½-in. diameter tubing and a 3-hr. fire rating was established for 1½-in. through 4-in. diameter tubing.

Because no test standards exist for smoke containment in fire-protection assemblies, USG Research designed a testing procedure to demonstrate the performance of the complete THERMAFIBER Smoke-Stop System, using a pressure-differential apparatus. The system, consisting of Foil-Faced THERMAFIBER Safing and Curtain Wall Insulations plus SMOKE SEAL Compound, permitted essentially no passage of air or smoke through the assembly. Thus, the THERMAFIBER SMOKE SEAL Compound provides the needed extra plus of an effective barrier to particulate smoke in fire-protection assemblies.

For more information about the tested performance of THERMAFIBER SMOKE SEAL Compound with THERMAFIBER Safing Insulation to seal through penetrations, see your USG Interiors representative or write to Dept. 124, USG Interiors, Inc., 101 South Wacker Drive, Chicago, IL 60606-4385.

Right, in the Paestum near Salerno, Italy. Greek colonists in the 6th century B.C. erected a temple with unusually flared capitals and columns of exaggerated entasis. Below, Cambodia's Angkor Wat in view from the central temple to the main gate. □



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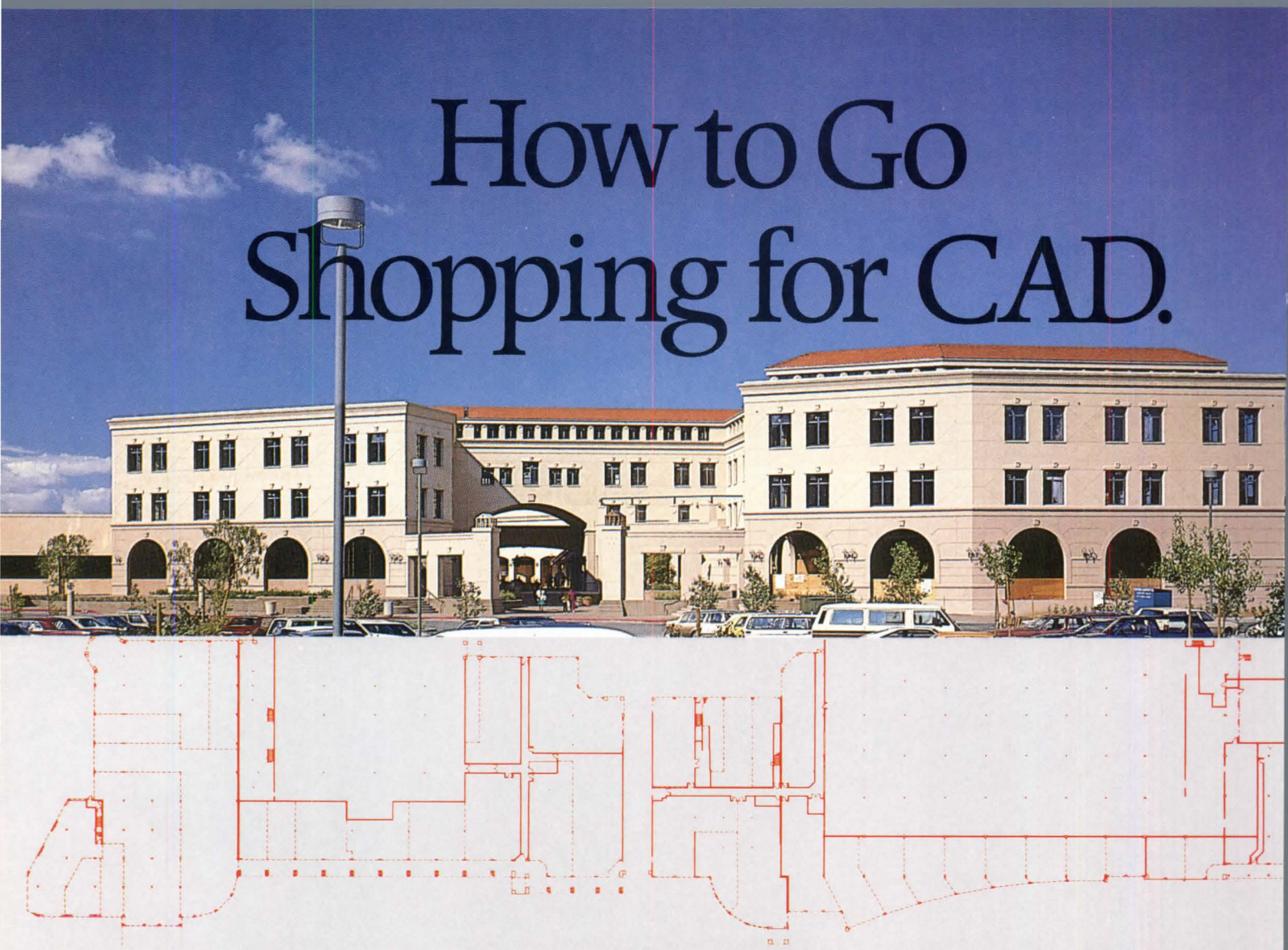

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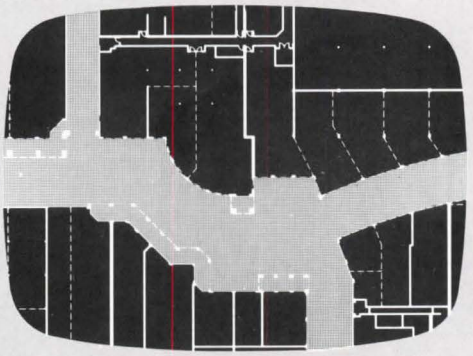

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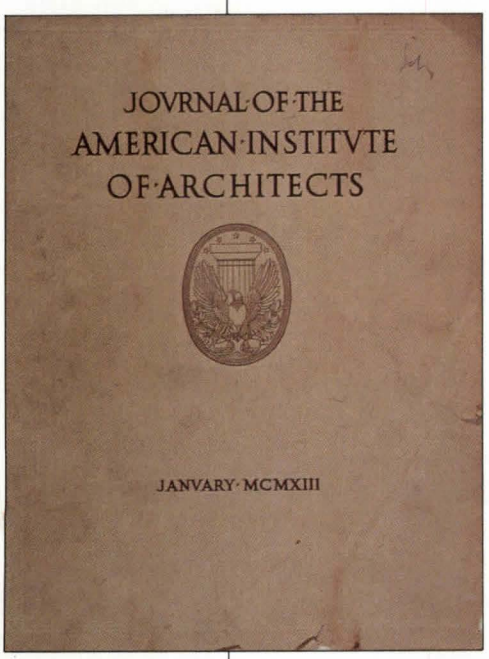
With this issue this magazine completes 75 years of publication, first under the logo below, then the OCTAGON, then AIA JOURNAL, and then the one above. Its history is recounted in very lively fashion in the article beginning below. Then follows a fascinating review of the architecture of the 75 years as portrayed in the architectural press in general; then a kind of group obituary for some significant buildings demolished during the period. The Books section looks at five still in print that have significantly influenced architecture since 1913. In the Technology and Practice section are chronicles of change in both areas and also in building codes and standards. Finally there is a roundup of developments in metals, first of a series on basic materials that will continue into the anniversary year. Now on to the next 75.—*D.C.*

The Autobiography Of a Magazine

By Allen Freeman



The early years of this magazine were marked by journalistic vigor, social concern, and vision. In the first decade, 1913-22, its energetic editor, Charles Harris Whitaker, published Lewis Mumford's first article and Louis Sullivan's last written work and engaged the prolific, 35-year-old Clarence Stein as associate editor and contributor on community planning and housing.

A committee of AIA members edited the first three issues of the JOURNAL OF THE AMERICAN INSTITUTE OF ARCHITECTS, as it was called, and then retreated, presumably exhausted, to an advisory role. Whitaker, in his early 40s when appointed, had little in his background to suggest talent as an architectural journalist. The son of a New England machinist, he had traveled and studied art and printing in Europe and was a collector of lithographs (later donated to the Library of Congress). Once he caught his breath as editor, he made his first mark in 1916 with two articles on "Our Stupid and Blundering National Policy of Providing Public Buildings." In them, he exposed patronage and reported that the federal government was leasing private office buildings from developers at great cost to taxpayers—a shocking $604,000 yearly in the capital city. Congress became sufficiently aroused to appoint an investigative committee.

A little later, another Washington investigative report was attacked by gremlins. A story about a government proposal to build a central power house featured two large photographs of Washington's skyline. In each, a balloon was supposed to show the location and height of a proposed chimney, except that one of the views was balloonless. The mystery was explained in the next issue when the photo was reprinted as intended. In a rather sheepish caption, Whitaker said that an "over-zealous pressman" had thought the balloon a spot on the engraving and had "removed it at the last moment, and without giving the editor an opportunity to approve his work."

The editor was refining the JOURNAL's graphic design at about this time. The March 1916 issue carried the magazine's first cover photograph, a 3x5-inch image of Marmion, a 1674 house in Stafford County, Va. And the next month, the magazine began with a column of notes called "Shadows and Straws." Whitaker kept it going for years, writing on a variety subjects—for instance doggedly following in Congress the course of a bill to reform public buildings.

Whitaker's most enduring literary contribution as editor was his commission and serialization, beginning in June 1922, of Louis Sullivan's *The Autobiography of an Idea.* According to *Chicago History* magazine, which last year published selected correspondence between Sullivan and Whitaker, the JOURNAL editor "always thought of the *Autobiography* as literature rather than biography. The poetic prose and missing facts that have baffled and frustrated historians seeking insights into Sullivan's life did not bother Whitaker."

The correspondence reveals Whitaker as a sympathetic editor. During the book's conceptional stage in February 1922, Sullivan wrote, "Our thoughts seem to run in parallel time," and later, "Our minds are going nicely in double harness." Once Sullivan began, the words came quickly; by late June he was quibbling over a change in wording in Chapter 6. "...I am curious to know through what avenue of information [your] proof reader came to learn that my father was 'an enthusiast regarding hygiene,' whereas I had described him as 'a crank on hygiene.' I am still under the impression that I knew my father pretty well." "Dear Sullivan," Whitaker replied. "I'm damned if I know who changed your father from a crank to an enthusiast, but I suspect Rosalie Goodyear, who is now in the hospital, but whom you would instantly forgive for she is a passionate admirer of your tale, a real Whitmanite....Rosalie does things, some things, for reasons only known to womankind!"

Magazine serialization concluded in the September 1923 issue. Two months later Sullivan wrote Whitaker about the book, "...As to a foreword: I like the idea, for the book was written mainly for the general reader, who may not know me from Adam. But who is to do it? Frank Wright could if he would, for I took him into my office in 1885 and he staid with me seven years."

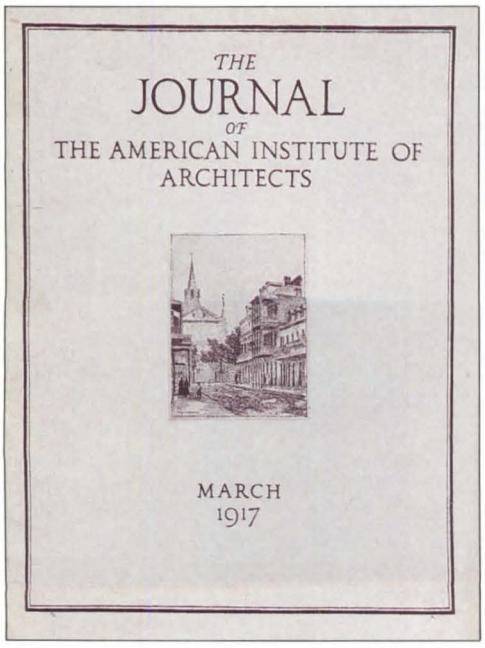
Mumford's magazine debut was "The Heritage of the Cities Movement in America," a 1919 article critical of the idea that "beauty could be superimposed upon the work of the jerry-builder and the speculator." Also during the first decade: Bertram Grosvenor Goodhue's competition-winning drawings for the Nebraska State Capitol, the first published proposal for the Appalachian Trail by the pioneer regional planner Benton MacKaye, "A last message from Auguste Rodin to the artists of America," a news note that Princeton planned to open an architecture school at the beginning of the 1920 fall term, an advertisement stating, "When you think of asbestos you think of Johns-Manville," and, among new AIA members (October 1921), Julia Morgan of San Francisco.

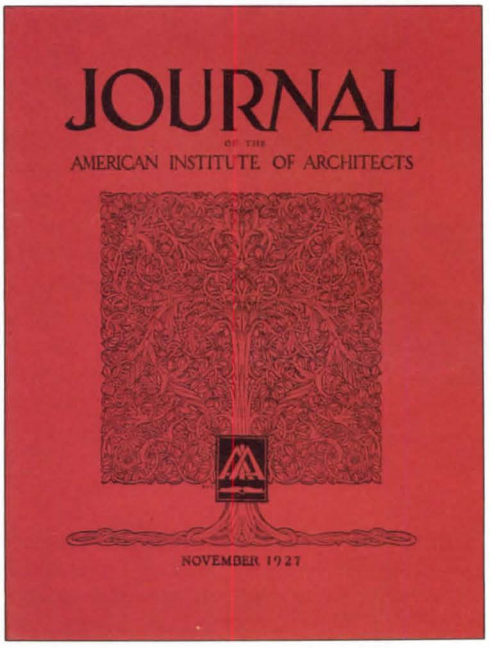
Whitaker's hyperbolic description of AIA's pageant honoring gold medalist Henry Bacon at the gleaming new Lincoln Memorial opened the magazine's second decade. The period closed somberly with a 1933 New Year's message from AIA President Ernest John Russell urging each member to "determine for himself to give no room to despair, and to go out and create opportunity for professional employment by all honorable means."

In the twilight pageant for Bacon, held at the conclusion of the Institute's 56th convention in 1923, AIA members in togas walked solemnly along the torchlit reflecting pool and held ceremonies on the steps at Lincoln's feet. "It was a Venetian carnival; it was a Roman emperor holding court and receiving his vassal subjects; it was a Grecian play; it was a medieval pageant before the king after the tourney; it was a ceremonial of the old Indian guildsmen," Whitaker effused. Another writer, Henry F. Cunningham, was anecdotal about the event. "A portly gentleman appeared from nowhere in particular, and the chief usher directed him in a whisper to a seat on the right," Cunningham wrote. "The portly gentleman...was discovered to be Mr. Taft, chief justice of the Supreme Court of the United States. He smiled—he can do it so beautifully. The usher apologized for the informality of his reception and informed the chief justice that he was expected to come 'in a burst of glory.' 'No,' said Mr. Taft, 'I came in a Dodge.'"

Mumford, meanwhile, was critizing Bacon's memorial to Lincoln and other architecture reflecting the "Imperial Age," as he called the 20 years in American architecture following the 1893 World's Columbian Exposition. In a passage later excised from his book *Sticks and Stones,* Mumford wrote in the August 1924 JOURNAL: "In the Lincoln Memorial...one feels not the living beauty of our American past but the mortuary air of archaeology...Who lives in that shrine, I wonder—Lincoln, or the men who conceived it? The leader who beheld the mournful victory of the Civil War, or the generation that took pleasure in the mean triumph of the Spanish-American exploit, and placed the imperial standard in the Philippines and the Caribbean?"

A few months later Mumford apologized in the JOURNAL for an "injustice" to Charles McKim (who had died 15 years earlier) in that same essay. Mumford had reported that McKim had "indignantly" withdrawn from the New York Public Library competition because "the demands of the librarian for a convenient and expeditious administration of his business interfered with the full-blown conception which Mr. McKim had in mind." In fact McKim had stayed to the end of the competition and had received third place. Found too late, the error was repeated in the first edition of *Sticks and Stones.*





The magazine maintained a serious but seldom dull voice, occasionally leavened with articles like one in May 1925 comparing Sir Edwin Lutyens to George Bernard Shaw: "Both men have that peculiar elfishness which in 20 years or so will be so embarrassing to the earnest who want to honor them as the grand old men of their professions." Clarence Stein was no longer associate editor, but Henry Wright and Frederick Lee Ackerman provided enthusiastic coverage of housing and regional planning. Wright wrote in April 1926, "If one-half of the technical skill that will be devoted to the 1927 model motor car were put upon the home building problem, the [low-cost] housing bugaboo would be well on its way to a rational solution."

That December, Whitaker reported that

the government had just set aside $50 million to build what would become the Federal Triangle office enclave in the capital. Permitting himself a bit of self-congratulation, Whitaker mentioned his exposé articles of 11 years earlier, saying, "President Wilson called [the JOURNAL's investigation] 'the most intelligent presentation of "pork" that had ever been made.'"

Mumford later wrote that Whitaker "made the JOURNAL the organ of the new social tradition in architecture, picking up the thread here at the moment that *The Craftsman,* going out of existence, dropped it." Whitaker, described in this magazine a decade after his death in 1938 as "brilliant but temperamental," resigned or was fired in 1927 during a wrangle between managers of the AIA Press—publisher of the JOURNAL since 1920—and the Institute. Dissatisfied with the balance sheets, AIA first reined in the Press by eliminating advertising from the JOURNAL and limiting its cost of operation to a set allocation from membership dues. At the end of 1928, after engaging two successive editors, the AIA directors realized that the new plan was impractical and shifted course again. Supplanting the JOURNAL in January 1929 was THE OCTAGON, a monthly of diminished trim size (approximately 8x10 inches), page count, and scope of coverage. This was a bulletin of Institute affairs, occasionally laced with un-AIA-related contributions by members.

Modernism's rise was THE OCTAGON's recurring topic of the early '30s. Roger Gilman wrote that in his three-week trip to Berlin, the Rhine valley, and the Ruhr he saw 70 modernist buildings "of real interest, most produced during the preceding five years." He concluded his essay: "When you walk around these buildings...when you talk with the architects or professors or students, you will be brought up standing against a new point of view. You will feel the gears change in your mind. You will come home a younger man and you will ever after look at architecture with new eyes."

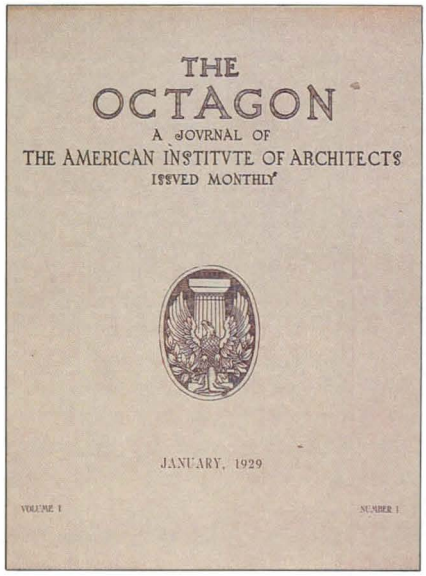
AIA members elected in December 1929 included William Edmond Lescaze and Henry Hodgman Saylor, the former to make a name for himself with George Howe three years later in Philadelphia and the latter to become the fourth editor of THE JOURNAL OF THE AIA when it took that title 14 years later.

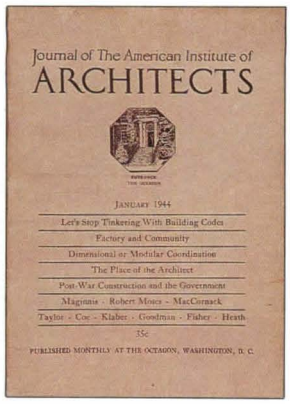
AIA's slim journal began its third decade chronicling depression—national, professional, and personal. Reports of component presidents published in January and February 1933 included: "The Oregon Chapter has waived chapter dues since May due to the financial conditions of practically all the members." From Utah, "Conditions here are bad, there being only one or two small buildings under construction. The majority of architects are pessimistic as to the immediate future."

In November 1933, THE OCTAGON announced what was to become one of the federal government's important legacies of the era, Charles Peterson's plan of relief for architects and draftsmen to study, measure, and draw up plans, elevations, and details of important historic buildings around the country. The first campaign of the Historic American Buildings Survey, employing 772 people, began on Jan. 1, 1934; six weeks later, HABS had produced its first 5,110 sheets of drawings representing 882 measured structures, with brief historical sketches and 3,260 photographs. In November 1934, THE OCTAGON published HABS's memorandum of agreement involving the National Park Service, Library of Congress, and AIA.

AIA, which omitted its 1933 convention, did convene in 1934; at the headquarters hotel in Washington, the Mayflower, a single room with bath cost conventioneers $3.50. President Roosevelt presented the gold medal to Ragnar Ostberg (two years after the Swede had won the honor) and surprised architects in attendance at the White House when he said if he had it to do over, he would have taken up architecture.

As the decade wore on and architects found work again, THE OCTAGON's preoccupation with the economy and relief lifted. A member in Michigan, Roger Allen, contributed a plea in 1935 for tolerance of criticism. "Does hostile [published] criticism deprive an architect of lucrative commissions by frightening off clients?" he asked. "I doubt it very much; in fact I think the





exact opposite is true.... Architecture cannot be a popular art, or even a lively art, until it is freely and frankly discussed in the same manner in which the sister arts are examined and discussed."

One topic of the mid-'30s—restoration versus extension of the central section of the U.S. Capitol—was to reappear in the late '50s and again in the early '80s. A 1935 bill would have replicated in marble the Thornton-Latrobe-Bulfinch sandstone east facade, moving that central section forward from 12 to 40 feet. The measure passed the Senate but died in a House committee; the same proposal suffered the same fate in 1937, and the topic receded until after World War II. THE OCTAGON presented both arguments of the 1937 debate, and that year the Institute passed a resolution at convention opposing "any material alteration of the central portion of the Capitol."

Perhaps the most significant writing published during the 15-year life of THE OCTAGON was Elizabeth Coit's report on her four-year study of low-income housing design and construction. The Institute funded her research and published the report in October and November 1941. Beginning in 1937, Coit had visited some 120 developments in the eastern United States and recorded in detail tenants' views of where they lived. Coit's conclusions ran against the grain, as when she wrote: "Especially striking is the record of how little apparently some of the not so very poorly housed, as well as the slum dweller, care about modern housing and the major comforts, conveniences, and safeguards considered their right by safety, hygiene, and other welfare organizations, while valuing highly a feeling of freedom, of independence, and of opportunity for self-expression."

Among those elected to the Institute during the decade were Louis Skidmore (1934); Pietro Belluschi (1936); Nathaniel Owings, Walter Gropius, and Eero Saarinen (1938); and Marcel Breuer (1941). Gropius, recently arrived at Harvard, told the 69th AIA convention in Boston, "Our educational aim for the coming architect is...a man who tends to find the right expression for our new civilization of the machine age, a man of new vision."

The magazine's 31st year, 1943, was its last as THE OCTAGON. Many articles were anticipating peace, as in "The Place of the Architect in the Postwar Period," "We Will Build Again," "Postwar Programs of the Chapters," etc. That August members were prodded for ideas to revise publication format, and the December issue heralded a new JOURNAL as "the answer to a wide and insistent demand from many in the Institute for a mouthpiece to speak the confidence we have in ourselves and in our profession."

Based on trim size alone—roughly that of *Reader's Digest*—one might infer a lack of confidence. The wartime paper shortage was one reason for the diminutive size, but the JOURNAL retained that format for 13 years. For the first time since Whitaker's departure in 1927, the Institute employed a full-time professional editor, and the person chosen, Henry H. Saylor, today seems to

personify the Institute leadership at the time—older men with Beaux-Arts sensibilities, looking back to McKim for inspiration and unsympathetic to modernism.

Saylor, a 1901 graduate in architecture from MIT, was 63 when appointed editor, having carved out a career in journalism as editor of *The American Architect,* the old *Architecture, The Architect's World,* and associate editor with Howard Meyers of *Architectural Forum.* By all evidence and accounts, he was an admired, good-humored, gentle man. According to a 1950s biographical sketch, "The JOURNAL is his chief activity—editorial, circulation, advertising, and business departments gathered at one pair of desks, the editor's and his secretary-assistant, Miss Audrey Teele. But in hours of relaxation, on weekends and holidays, he will usually be found in overalls, with spade or trowel, in the Octagon Garden. To inquiring visitors, seeking the identity of some shrub, tree, or flower, the editor removes his pipe, touches the place where a forelock would be if he had one, and assumes the role of head gardener."

As editor, Saylor captured the Institute's lingering dichotomy when he published in successive issues articles by Gropius and Ralph Walker, the former still dean at Harvard and the latter the immediate past president of the Institute. In "Not Gothic but Modern for Our Colleges," Gropius concluded, "We cannot go on indefinitely reviving revivals. Architecture must move on or die....Neither medievalism nor colonialism can express the life of the 20th century man. There is no finality in architecture—only continuous change." Walker saw "Good Design in Architecture" (his title) in terms of the ideals of wisdom, workmanship, beauty, etc., and concluded: "All these qualities have been found in the past in Athens, in Kyoto, in France; in the Parthenon, at Ise, in Chartres, and Amiens; in Venice, in Rome, in Paris—but not yet anywhere in the modern world which believes classicism lies in wider expanses of polished glass, in the impersonal qualities of the factory."

Like the *Reader's Digest* the JOURNAL resembled, much of what Saylor chose to publish had appeared elsewhere, and he was criticized in his own pages for merely "sitting in Washington with a scissors." His reaction: "If [the editor] were not criticized he would suspect the post office of having failed to deliver the magazine to its subscribers." When a reader wrote that an article about "Slum Prevention" should have been accompanied by an editorial disclaimer of AIA agreement, Saylor replied that the JOURNAL was a "platform for debate, not a Delphic oracle" and "not a mirror of the Institute's official thought. It is, we hope, a mirror of what architects are thinking."

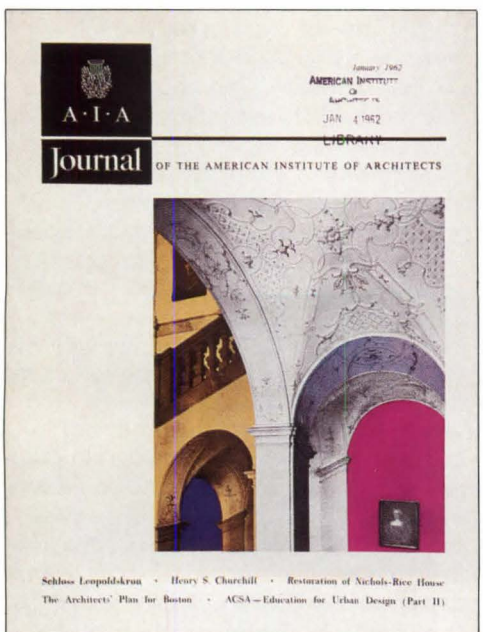
Frank Lloyd Wright was always good for stirring up the waters. In a 1944 transcript of radio's "The American Forum of the Air," Wright twitted mercilessly two of his fellow panelists, a planner and a realtor. "I am suspicious of all planners" he said. "Planners jump in on the middle of this or that problem, splash around, and come out—all wet." Minutes later: "We should have taken [all realtors] out and shot them at sunrise years ago when the city began to go downhill....It is their trick to find out where the crowd is headed, run out in front of the crowd, beat them to it, buy up the ground, and then divide it up into little small pieces of pie and sell them and start the iniquity all over again. It is their specialty."

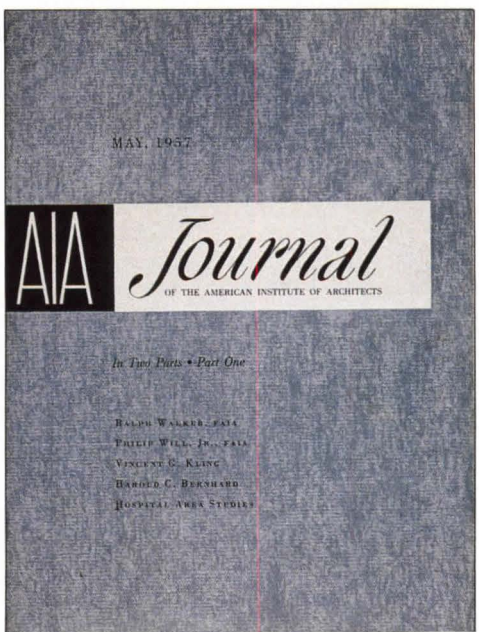
Again, when plans for the United Nations headquarters were published, the JOURNAL quoted *Architectural Record* ("The proposed plans utilize and capitalize to the full all the advantages and possibilities offered by the midtown location"), Philip Johnson, architectural adviser to the Museum of Modern Art ("the best piece of planning I have seen"), and Wright, who blasted "a super-crate to ship a fiasco to hell."

A member in St. Louis charged at another Wrightian red flag, the old iconoclast's caustic reaction to William Wurster and others placing a plaque on the house in Boston where Sullivan was born 90 years earlier. "Monuments are made by those who, voluntarily or not, never did anything but betray the thing the great man loved most," Wright had said, to which John Albury Bryan asked in the JOURNAL, "Wasn't it AIA who...helped [Sullivan] over those last, rough days? Or was it his patron Frank Lloyd Wright?"

When Wright accepted the AIA gold medal at the 1949 convention in Houston, he was by turns humble, insulting, arrogant, searching, preachy, and self-serving. "Now, of course, architecture is in the gutter," he said after boasting that he had never sought endorsements to obtain clients. "I have heard myself referred to as a great architect. I have heard myself referred to as the greatest living architect. I have heard myself referred to as the greatest architect who ever lived. Now, wouldn't you think that ought to move you? Well, it doesn't. Because in the first place they don't know. In the next place, no architect, in the sense that a man now has to be an architect, ever lived, and that's what these boys in front of me [AIA's leaders, presumably] don't seem to know."

AIA conferred its first national honor awards at the 1949 convention in a program Saylor characterized as hurriedly put together and unrepresentative of current work. Entries, screened by chapters, were limited to residential and school buildings. From only 38 residential entries, one jury chose a modernist house by Frederick Langhorst of San Francisco for an honor award and eight other houses for merit awards. From 36 schools submitted, a second jury gave the top award to a Corona Del-Mar, Calif., elementary school by Marsh, Smith & Powell and seven merit citations. In all, nine of the 17 awards went to California firms, a Westward tilt that persisted during the early years.





To hype Ayn Rand's cockeyed view of the profession, Warner Brothers previewed "The Fountainhead" to the Southern California Chapter/AIA, and the *Valley Times* of San Fernando reported the film had "won the highest approval of the AIA." The source of the story, the JOURNAL reported, was the Warner Brothers' publicity department. The JOURNAL's review by Ted Criley, editor of the chapter's "Bulletin," said, "Some scare-easies have wondered whether or not architecture can survive the release of 'The Fountainhead.' Personally, I would venture that architecture's chances are a great deal better than those of the motion picture industry."

Two measures of change since the postwar years: In 1946, an excerpt from *Hospitals* magazine said "the use of DDT in water-soluble paints has proved to be satisfactory....Caution should be taken [because of] an extreme chalking tendency,

powdered paint mixed with chemicals resulting in food contamination." That same year, in an announcement to fill "Three Key Positions on the Institute Staff," it was specified that only men should apply, and each position had maximum age requirements.

Near the midpoint of its fifth decade, 1953-1962, the magazine resumed a larger trim size (8½x11 inches) and, after a few uncertain years, began to fulfill the promise of its expanded format.

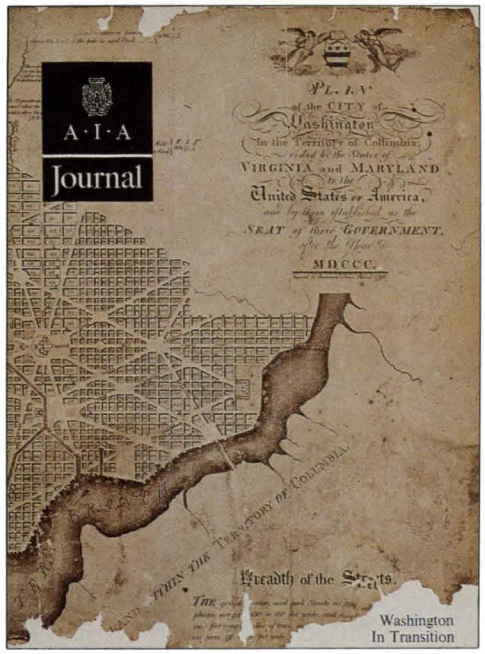
Before that, however, until his retirement in 1957, Saylor's small JOURNAL increasingly preoccupied itself with the inconsequential. There was a protracted squabble between the head of the Avery Library and a JOURNAL author, another librarian, over an article about the Avery. Bombastic crossfire escalated for 11 months through charges of bad faith, plagiarism, and libel. Most issues included a verse of some kind, as in this excerpt from a poem by a pseudonymous Pete Pausanius: "They speak of form and function/ and imply with utmost unction/ that ornament is spurned by all elect,/ but a Fellow has a feeling/ that his dress is more appealing/ with a lovely ruby ribbon round the neck." The practice of publishing photographs of buildings by new AIA Fellows ("Favorite Features of Recently Elected Fellows") was yielding routine school buildings and even parking garages, and there were more and more photographs of graying architects assembled for meetings at the Octagon.

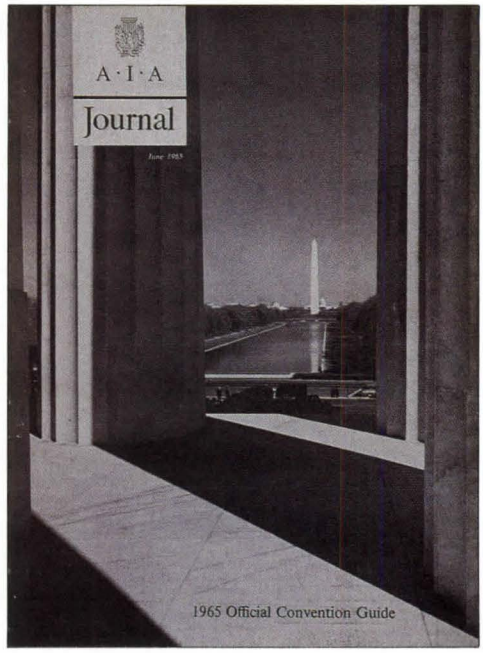
With the December 1956 issue, Saylor retired to write a brief history of the Institute for the 1957 AIA centennial. He remained AIA historian until 1965, conserving the Octagon and cultivating its garden. He died at age 87 in 1967. His successor as editor was Joseph Watterson, 55, an architect with a practice in Mineola, N.Y., and a former art instructor who had little journalistic background. Watterson wrote pointedly in the April issue, ". . . we hope that many new contributors will be heard from, especially the younger men and the leaders in contemporary architectural thought."

The new editor sought a breezy, informal style. Alfred Bendiner, a Philadelphia AIA member with an irreverent voice and a gift for cartoons and caricatures, contributed "Life in a Martini Glass," which later became "Through the Martini Glass." "A few months ago, *Harpers Magazine* published a snide article on the history of the Penn Center, that great 'memorial' to the Philadelphia City Planning Commission and Art Jury," began one Bendiner column. "In picturing the struggle to bring this hideosity to fruition, the author takes the liberty of noting that the architect, Louis I. Kahn, 'is the only genius which Philadelphia can endure'—I think that's the correct quotation. The author credits Mr. Kahn with a lot of nasty remarks against other architects, city planners, landowners, the poor downtrodden rich, real estate men, etc., and pictures him as one who suffers terrible for his ART and ideals and lack of recognition of his great abilities. All these are the accepted clichés and marks of a true Genius."

In June 1957, the JOURNAL began what became an annual practice of devoting an entire issue to gavel-to-gavel coverage of the Institute's convention. The meeting in Washington that centennial year produced rhetoric in abundance, which the magazine recorded on 130 pages punctuated by photographs of assemblages, speakers and attendees holding cocktail glasses, and Bendiner's drawings.

In his first issues Watterson displayed what can most kindly be called eclecticism. Dione Neutra contributed "How a Wife Can Help Her Husband Become a Good Architect." She wrote, "I think that any girl in love would like to help her chosen one to achieve his aspirations, especially if this ambition is to make a better world and not only to become rich and influential." And the Institute's executive director, Edmond Purves, produced long, chatty columns about his days at the Octagon: "Not everything comes to the Executive Director's office, although it sometimes seems that way. . . ."





In December 1957, the JOURNAL published without comment "New Office for the White House" by Douglas W. Orr, former Institute president and a member of the President's Advisory Commission on Presidential Office Space. Orr and his colleagues recommended demolition of A. B. Mullett's 1880s Old Executive Office Building in order to allow for "design and construction of a building in keeping in size and character with the White House," thus permitting "an arrangement of structure and grounds that will serve to enhance the White House, rather than overshadow and detract from it."

This was the period in which great attention was paid to Edward D. Stone. On the occasion of Stone's *Time* cover story, the puckish Bendiner wrote, "Evidently this grille stuff is the new look for hiding old brownstone eyesores and anything else the AIA Beauty Committee don't like, and I am all for it . . . . Suppose you hate your old front—you can billboard it with an aluminum solar screen or some other worthy. Then, about 40 years from now the architectural historians will start bellyaching about ruining that masterpiece of Latrobe so you just burn off the metal connecting rods, fill up the bolt holes, resell the aluminum, and there is that same old architecture ready to be adored by the next generation."

Stone was elected a Fellow in 1958, and that year he won both an honor award for a Pasadena pharmaceutical plant and a merit award for the U.S. Pavilion at the Brussels World's Fair. When he keynoted the 1959 convention, the slightly wide-eyed Stone said he had discovered "evidence that our people are ready and eager for good architecture. Observe the notice that a job well done receives, not only in our technical journals, but in all the national publications and newspapers."

The JOURNAL's first ventures into design criticism included Allan Temko's "Down to Skin and Bones," reprinted from the Columbia University *Forum*. Temko wrote, "Compared with the clean, weightless optimism of [SOM's Air Force] Academy, so modestly placed at the foot of the Rockies, the ungainly and impractical [McKim, Mead & White Columbia] buildings which disfigure Morningside Heights come off rather badly."

In another article, "Day of the Stunt," William Lyman of Detroit wrote, "Let us look beyond the structures and mechanical systems for inspiration in design. Do any of us care what Marilyn Monroe's bones or lungs look like?" In this, Morris Lapidus of Miami found a "kindred soul." He wrote to the editor saying, "Many of us just do not want to conform with what the architectural editors consider the architecture of today."

Although the JOURNAL seldom published new work—the big,

bland buildings prevalent in the other architectural magazines of the period—its pages were peppered with plans and drawings by AIA chapters promoting revivification of downtowns with paste-on facades of metal, glass, and precast, with freeways ringing the cores, with landscaped malls, and with high-rise slabs rising from cleared land. The schemes carried such futurist titles as "Main Street—Little Rock, 1969," "Replanning Downtown Detroit," "Nashville 1970," "Operation Buffalo," and "KC/80—an Urban Transfusion."

The JOURNAL's most clearheaded contradiction of the rush to recast urban America was Lewis Mumford's 1961 speech to the AIA convention in Philadelphia. "Sterile, bureaucratic, and technocratic images," he said, "dominate every architectural school today. And why? Because the greatest architects in the world, the very greatest, Frank Lloyd Wright, Mies van der Rohe, Le Corbusier . . . unwittingly—or rather, quite wittingly in the case of Wright—have been destroying the city by replacing . . . it with a hollow shell, a huge, mechanical hollow shell."

He concluded with the admonition, "If you are thinking of the culture of cities, forget about the damn motor cars and plan a city on the human scale for lovers and friends. If you think of them first, the culture will come by itself; and in the end, even the motor car will be properly taken care of."

Another countercurrent was reflected in Wolf Von Eckardt's report on a visit to Brasilia. "Only for a minute was I able to see how these buildings relate and add up to a city. It was from a distance of almost 10 miles," he wrote. "Niemeyer and Costa have realized not just their own dream but that of Le Corbusier and a generation of planners and architects who followed him. They have realized it because it has only today become technically possible. Perhaps, as some suspect, they have demolished the dream by this achievement."

Von Eckardt (who later wrote design criticism for the Washington *Post* and *Time* magazine) in 1959 became the JOURNAL's first art director, and he gave the pages a much needed redesign. The magazine's current editor in chief, Donald Canty, joined the staff briefly in 1962 before moving to *Architectural Forum.* Also during the decade, the JOURNAL reported that a young graduate of Cincinnati and Harvard, Michael Graves, had won a 1960 Rome Prize. Watterson editorialized: "The current interest in Gaudí is a puzzler. The exhibitionist was purely a product of art nouveau, and as such of purely historical interest—and not too much of that." In accepting AIA's gold medal in 1961, Le Corbusier said cryptically, "If you will excuse me, I am going to become very vulgar. One day in my studio in rue de Sevres, where I've been for the last 40 years, I told my collaborators, 'It is Le Corbusier who cleans the toilets of the 35 rue de Sevres, and that's why I am the boss.'" And Gropius, in accepting the medal at the 1959 convention in New Orleans, said memorably, "I only wish I could live long enough to be able to attend a future AIA convention in New Orleans from which the shadow of segregation, which now so deeply disturbs our minds, has at last been removed."

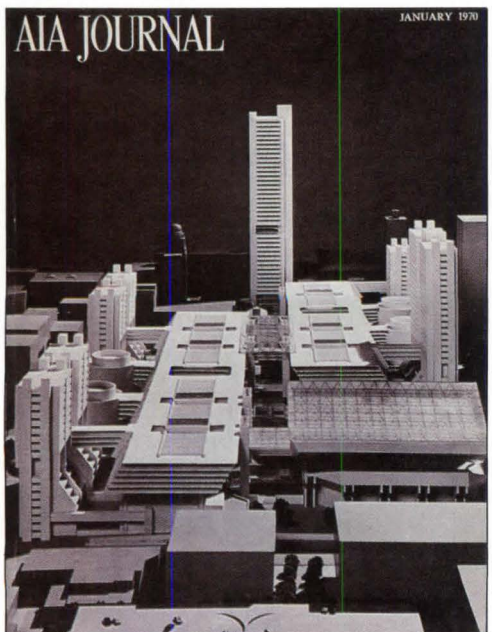
Nine years after Gropius's aside at New Orleans, Whitney Young Jr. of the National Urban League galvanized a collective conscience when he keynoted the AIA convention in Portland. "You are not a profession that has distinguished itself by your social and civic contributions to the cause of civil rights, and I am sure that this has not come to you as any shock," he said. "You are most distinguished by your thunderous silence and your complete irrelevance." Young's address, which the JOURNAL published in full, came at the midpoint of the magazine's sixth decade, 1963-72, a period in which the JOURNAL became increasingly practice oriented, with emphasis on the small firms that comprised most of AIA's membership. The content closely paralleled concerns at AIA headquarters, with essays illustrated by graphs, diagrams, and flowcharts.

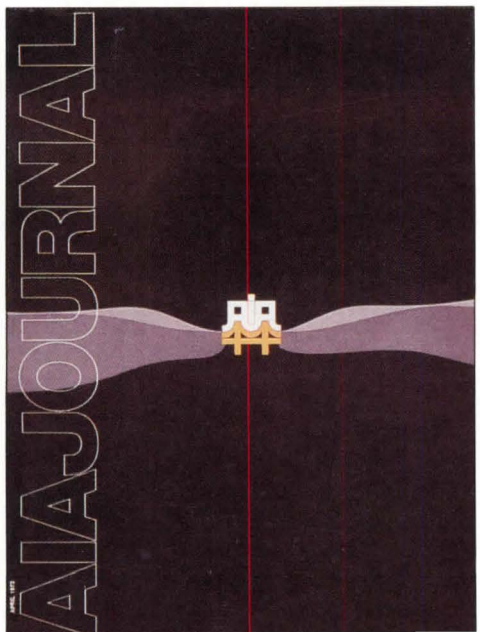
With the February 1964 issue, William Dudley Hunt, a former senior editor of *Architectural Record* who had contributed an architectural practice series to the JOURNAL, became the first person to have the title of publisher. And in July 1965 Robert Koehler, 41, who had joined the staff as associate editor in 1962 and before that had edited *Architecture/West,* succeeded Watterson as editor. Koehler brought a journalist's approach, for instance starting a lively news section and reporting instead of recording the events of AIA conventions.

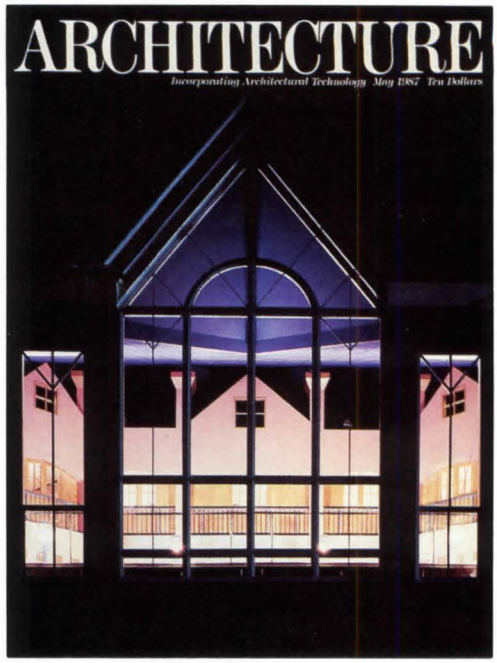
There was copious coverage of the profession's infatuation with urban design until about the time William Caudill cast a cold eye in a 1967 JOURNAL article. "The trend manifests itself at every school of architecture," wrote Caudill, then dean at Rice. "Young professors and students are committed, as were members of no previous generation, to redeem the social and architectural imperfections of the cities. . . . Practitioners, too, are protesting against the narrow individual-building view of architectural practice. . . . Urban designers talk of the monotony of surburbia and of the exciting new scale of the cities. If we are not careful when we invent a new scale, we will create a new monotony. . . . Urban design has a place in tomorrow's practice, sure—but will there be anybody to plan the buildings? Not unless current infatuation with urban design is balanced by a healthy respect for the architecture of individual structures."

Architectural preservation seems to have permeated mainstream architectural consciousness only very slowly during the decade. A January 1963 issue on Washington, D.C., included "New Hope for Washington's Grand Avenue" by Daniel P. Moynihan, then a Labor Department official and member of the advisory council on Pennsylvania Avenue. To Moynihan at the time, the Richardsonian Old Post Office that interrupts the neoclassicist Federal Triangle was "a monster Gothic derelict abandoned at midpoint on the most important avenue in the nation."

Similarly, a news section report the following year listed as "accomplishments" of the plan for Pennsylvania Avenue "completion" of the Federal Triangle, meaning demolition of the Old Post Office and creation of National Square near the Treasury, which would have demolished the Willard and Washington hotels, National Theatre, and the National Press Building. "It is hoped, of course, that these facilities will be replaced," the JOURNAL casually added. By April 1966, Vincent Scully was reported questioning plans for National Square, asking, "What will happen here other than that people will be windswept and sun struck?" But a November 1970 news item reported AIA's continued support for plans







Meanwhile, the JOURNAL chronicled AIA's own problem in getting Washington Fine Arts Commission approval for a new headquarters building design. The program preserved the Octagon House and its garden but called for demolition of the stables that in the early '50s had been adapted for the Institute library.

January '65: Report that Mitchell/Giurgola won the Institute's design competition with a red brick and glass, five-story, 50,000-square-foot building whose fan-shaped glass facade would have ascribed a semicircle behind the Octagon and its courtyard.

March and April '65: Publication of five runner-up designs. I. M. Pei's seven-story building was in plan like a hockey puck; its concrete facades resembled a folded screen. Perkins & Will arced a two-story base behind the Octagon and projected a three-story tower above one wing. The design by Jean Labatut with Carr Bolton Abernethy had precast concrete facades that rose only to the height of the Octagon's cornice, but the building edged close to the historic house. Charles R. Colbert's design comprised landscaped platforms rising from the garden. And C. Julian Oberwarth & Associates proposed a sculptural design in brick with a series of shed roofs. Oberwarth's articulated main elevation was broken into elements whose scale approximated that of the Octagon.

December '65: Purchase of the Lemon Building adjacent to the headquarters site is under consideration.

January '66: Mitchell/Giurgola is to be architect of a larger building if convention delegates vote to enlarge the site.

August '66: Delegates vote to enlarge the building site.

July '67: Second Mitchell/Giurgola design is shown at the AIA convention. This scheme, in which upper floors project forward over slanted glazing, "appeared to win the delegates' wholesale endorsement," the JOURNAL reports.

August '67: The Fine Arts Commission rejects the design by a six-to-one vote. The action, taken in closed session, "appeared to stem from a belief that the headquarters concept was overly domineering of the Octagon in terms of scale and strength." Commission member Gordon Bunshaft says the proposed design is "too bold," making the Octagon "look like a toy."

September '67: AIA representatives meet with the commission, on which two members have been replaced since the previous vote.

November '67: Still unsuccessful with the commission, AIA asks Mitchell/Giurgola to redesign the building.

August '68: Mitchell/Giurgola presents a new scheme to Fine Arts. This design reduces floor area and overall height from 90 to 72 feet and increases the setback from the Octagon Garden. The commission objects to a space well, or "notch," at the hinge of the building's two wings. AIA asks the architect to resolve with the commission this single remaining difference.

November '68: Unable to reach agreement with the commission, Mitchell/Giurgola bows out of the project.

January '69: A committee of nine AIA members, including Romaldo Giurgola and I. M. Pei, is named to select a new architect.

June '69: The Architects Collaborative is named.

June '70: The JOURNAL publishes sketches and text by Norman Fletcher, TAC principal in charge, who writes, "In essence, the building should create an active *environment* rather than an aggressive architectural form."

March '71: Having won Fine Arts Commission approval, AIA begins clearance of its site. The building is occupied in 1973.

With the January 1970 issue, the magazine grew to its current trim size and in 1973 was completely redesigned.

In 1971, the JOURNAL published its first postoccupancy evaluation—of a moderate-income housing project in San Francisco. In her article, Clare Cooper reported widespread approval by residents. Robert Marquis of the firm Marquis & Stoller, which designed the project, replied that the study "shows how well design decisions worked; it also points out where they failed. I do not wish to present such studies as a panacea. They cannot be fed into a computer to get a successful design. There is no substitute for talent or intuition."

Donald Canty, who was managing editor of *Architectural Forum* in the mid-'60s and then created and edited the lively and eminently readable *City* magazine, became editor of the JOURNAL in February 1974. He wrote soon after that his goal was simply "to enrich the literature of the profession." In the ensuing years, changing from a focus on the Institute's internal affairs to today's coverage of design, technology, and practice, the magazine has introduced innovative and overlapping strains of content, some of them continuing today.

A notable one-shot was the July 1976 bicentennial issue, which took an affectionate look at the nation's architectural past through the eyes of 46 invited architects, critics, and historians. They selected Thomas Jefferson's University of Virginia as premier among the "proudest achievements of the first 200 years," followed in order of choice by Rockefeller Center, Dulles Airport, Fallingwater, and Carson Pirie Scott. More than 250 works were mentioned. Mary E. Osman gathered and edited the responses. Also in 1976, the JOURNAL began its continuing series of evaluations of serious buildings after several years of use. The articles have ranged in approach from impressionistic to technical.

The first annual review of new American architecture was in May 1978, combining coverage of AIA's honor awards with buildings of the editors' choice and essays on current directions in design. In July 1983, the AIA JOURNAL masthead was retired in favor of ARCHITECTURE, signaling the beginning of the magazine's coverage of new work in regular issues. A second annual—a compilation of recent world architecture edited each year by Andrea Oppenheimer Dean—was added in 1982, and the first in an annual series of architectural school profiles, many written by Michael J. Crosbie, was published in August 1984. Carole J. Palmer has refined the magazine's graphics in recent years.

During the early '80s, the JOURNAL published special issues on structure, skin, and light, combining considerations of technology and form. This breadth of viewpoint and content was further widened when ARCHITECTURE merged with ARCHITECTURAL TECHNOLOGY magazine in October 1986.

That brings us to the present. What is ARCHITECTURE's future course? Unpredictable as architecture's. Based on the past 75 years, the only predictable constant is change. □

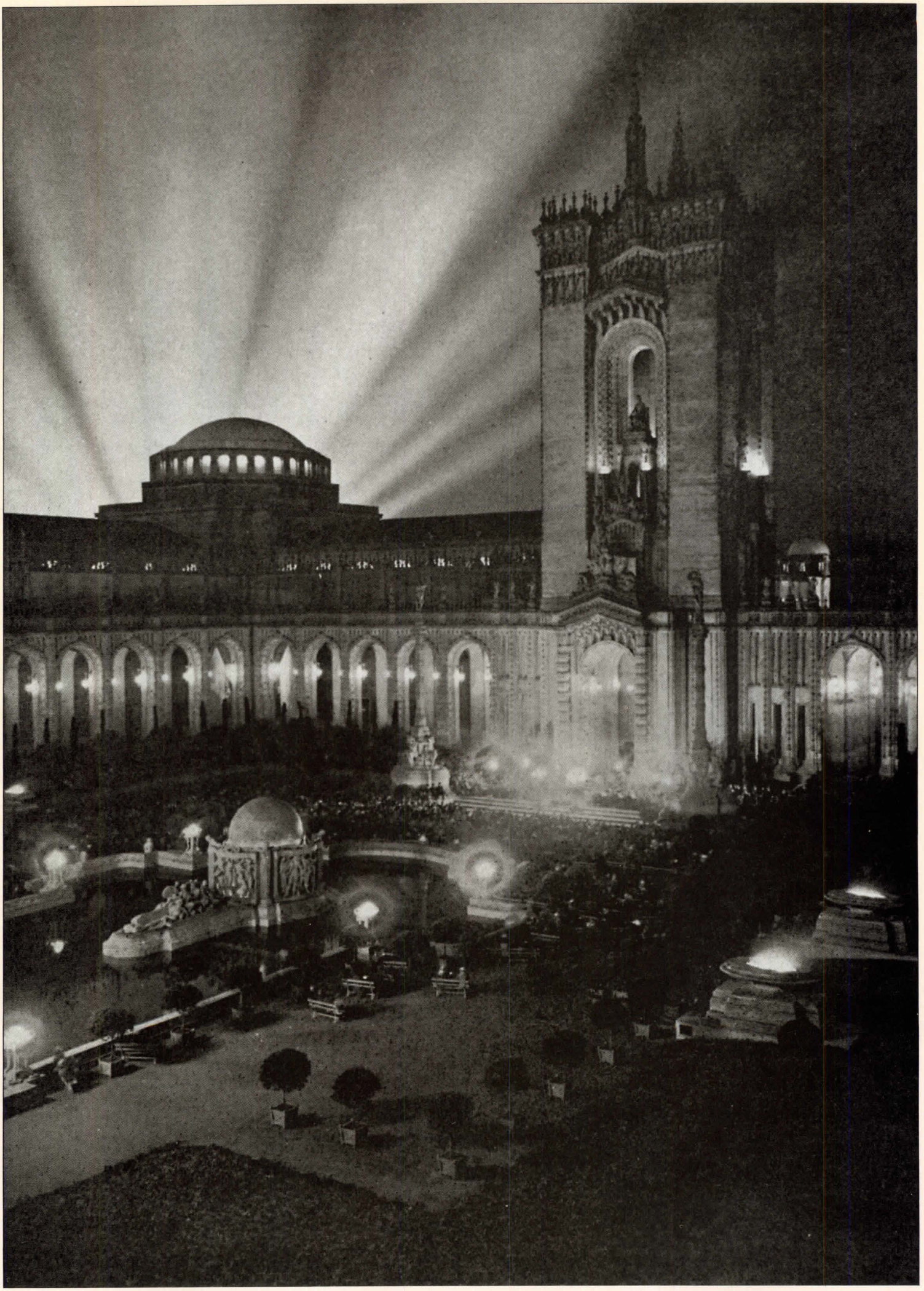
Seventy-five Turbulent Years Of American Architecture

As recorded in the professional press.

By Andrea Oppenheimer Dean

Every generation sees the past in its own image, aggrandizing, belittling, or ignoring events altogether—the better to congratulate itself on reinventing the wheel. But the last 75 years of American architecture were especially ill served by the many historians for whom American cultural progress was as closely equated with European modernism as classicism with Rome. For example, the period preceding the arrival, of Neutra, Mies, Gropius, and other European refugees, 1913-33, was characterized as "empty and eclectic froth" by James Marston Fitch (*American Building*, 1947) and as "years of confusion and retreat" by Burchard and Bush-Brown (*The Architecture of America*, 1961).

Our vision today is less skewed by ideology (though it is bound to have other distortions). A number of surprises emerge, therefore, from a survey of the years 1913-87 as they are depicted by the major architectural magazines: *Architectural Record*, *Progressive Architecture*, which began as *Pencil Points* in 1920, and *Architectural Forum*, which folded in 1974 and was gradually replaced as the AIA JOURNAL was transformed into today's ARCHITECTURE. More surprising now than to find modernism well rooted in American soil by 1933 is to discover that many progressive notions, which we claim as recent inventions, were current by the end of World War II, if not World War I.



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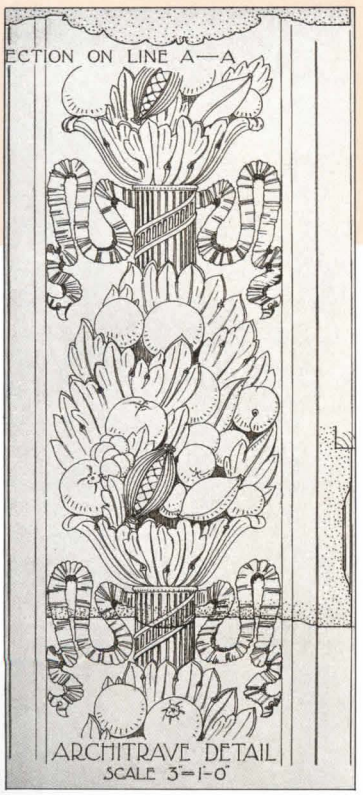

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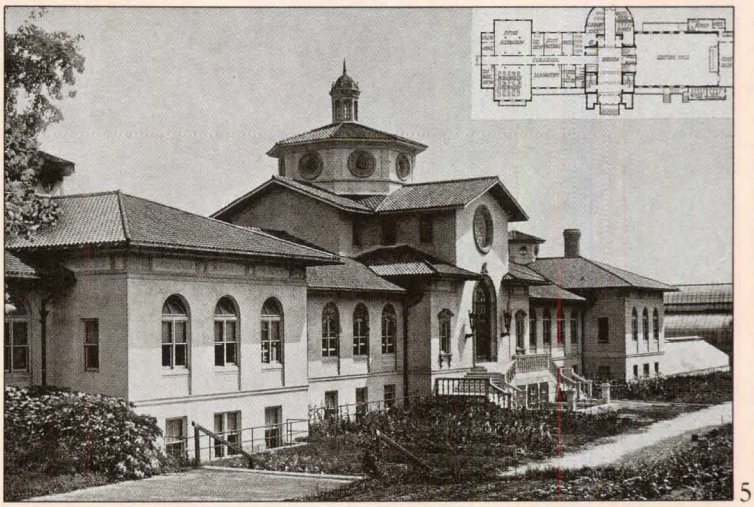

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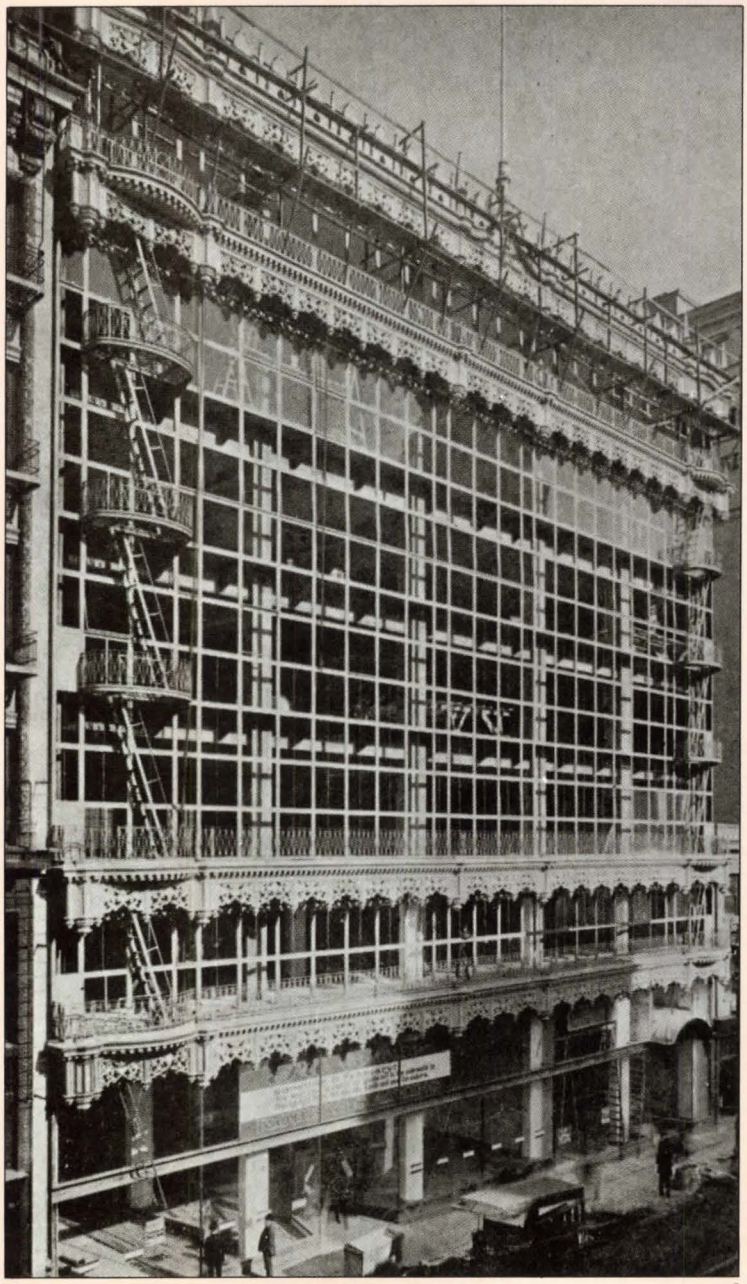
The year 1913 was momentous by any standard. It was the first year of worldwide American industrial pre-eminence, and it welcomed Cass Gilbert's Woolworth Building (then the world's highest at 792 feet) as "a cathedral of commerce." The year saw completion of New York City's Grand Central Terminal by Reed & Stem, Warren & Wetmore in the then-popular, eclectic, classical style. Nineteen thirteen was also the year Henry Ford began producing the low-priced Model T, which put America on wheels and began the dispersal of its population. And the Armory show opened in New York, giving the United States its first glimpse of modern art. The architectural magazines would remain impervious to it for another decade.

The early 'teens were inarguably conservative and provincial, as evidenced by architecture's neglect of Frank Lloyd Wright, who was already an influence in Europe, and the self-imposed exile in Paris of the country's most talented artists and intellectuals. In 1913 the *Record* wrote that "l'art nouveau, that iconoclastic socialism, not to say anarchy of art, has gone like wild-fire from end to end of Western Europe these last years, while we are still on the hunt for aristocratic distinction." There was a fear, expressed by C. Matlack Price in the *Record,* that "imported architecture [would] quite drown out such American architecture as really does exist." Implicit, if not directly stated,



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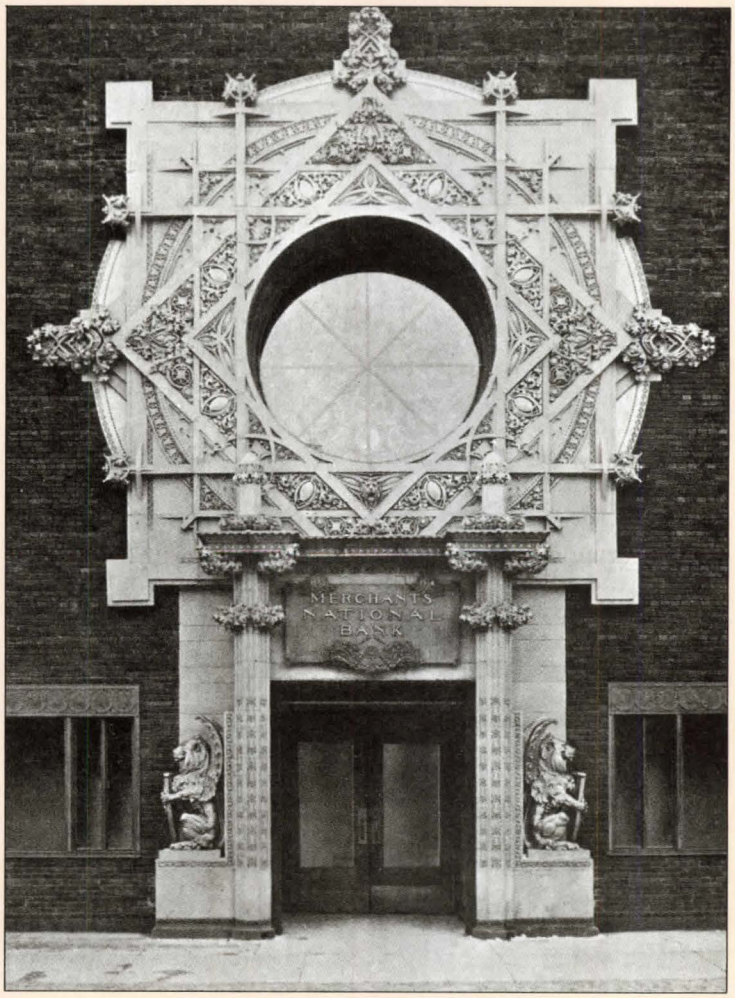

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were a feeling of cultural inferiority, a search for identity in the past—both homegrown and European—and an equating of the prevailing eclecticism and regional styles with America's physical and cultural expansiveness. As Richard F. Bach wrote in 1917 in the *Record,* "A land so widespread as ours necessarily encourages diverse development."

Philip Johnson's proclamation that "anything goes" in the 1980s applied to the eclectic 'teens. Their early years saw a predilection for mostly Gothic and colonial designs, which yielded, as the *Record* said, to "domination of the classical spirit" by 1919. At decade's end, the arts and crafts movement had become an influence, and there was a "general distaste for anything florid or baroque," according to the *Record.* Most frequently published during these years were Ralph Adams Cram, Bertram Goodhue, Daniel Burnham, Bernard Maybeck, McKim, Mead & White, Greene & Greene, and Holabird & Roche.

During the 'teens, the *Record* was consistently conservative, while the *Architectural Forum's* broader view of architecture revealed a more progressive American turn of mind, for which World War I was a turning point.

"One of the many interesting and unexpected by-products of the war," said the *Forum* in 1918, "has been the inauguration in this country of the policy of building workingmen's dwellings

Preceding page, San Francisco's 1915 Panama-Pacific Exposition was for the Record *'a nearly perfect arcadia.' Images such as (1) Soissons Cathedral's ruin brought home World War I's destruction in Europe. (2) Paul Bartlett beside his monumental sculpture 'Philosophy' for the New York Public Library. (3) Frequently published measured drawings and details from Renaissance monuments showed Beaux-Arts influence. (4) Among characteristic buildings of the day were Hotel Traymore in Atlantic City by Price & McLanahan and (5) the Laboratory Building, Brooklyn Botanic Gardens, by McKim, Mead & White. (6) Willis Polk's San Francisco Hallidie Building was a first in glass curtain wall construction. (7) Louis Sullivan's Merchants National Bank in Grinnell, Iowa, prompted critic Montgomery Schuyler to write, 'A new work by Sullivan is the most interesting event... in the American architectural world today.'*

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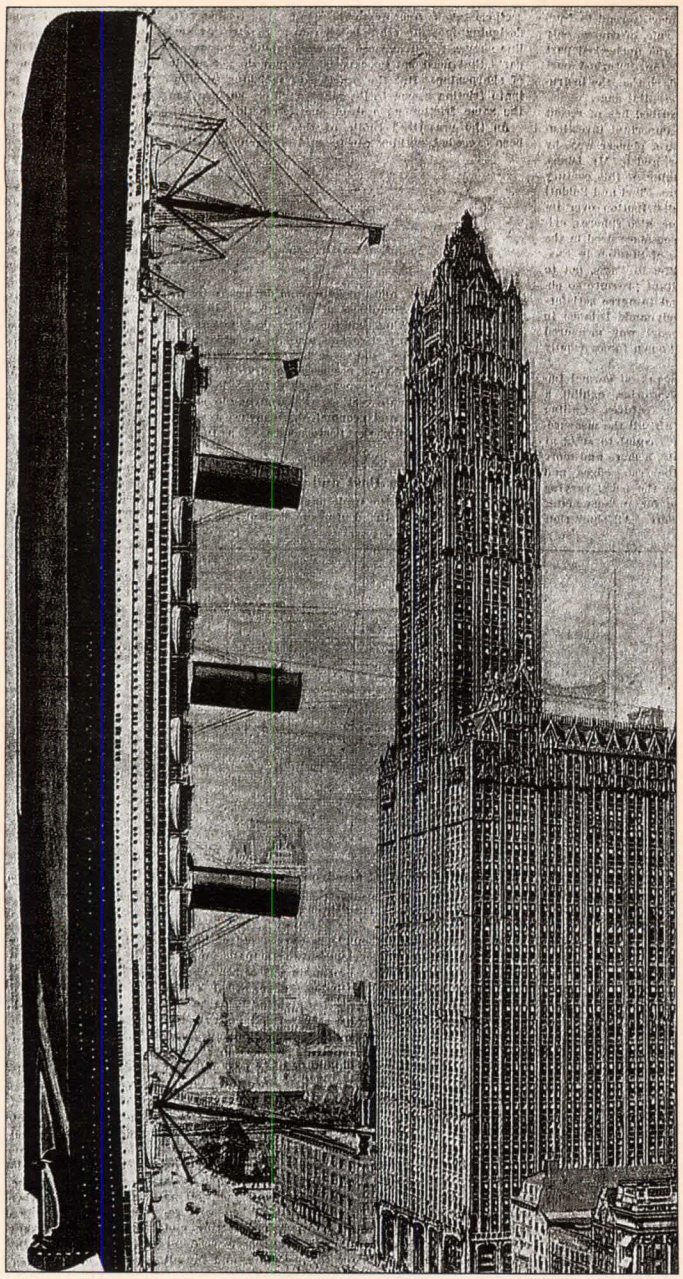

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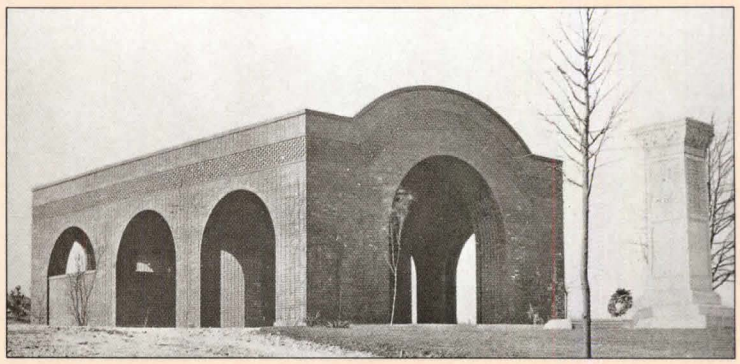

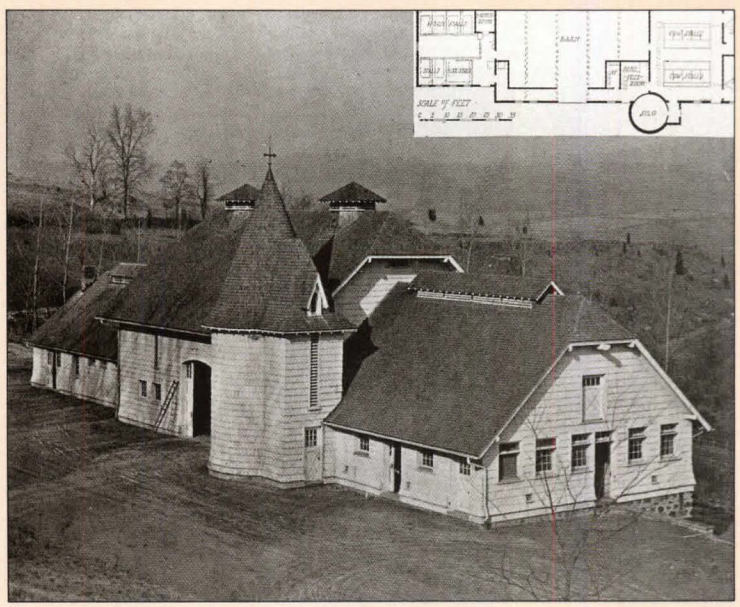

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by the Federal Government" and by industry. With labor in short supply and commanding high wages, "what was formerly regarded by many employers as welfare work, as a matter of debatable policy, has suddenly loomed up as the stiffest requirement in their emergency program," wrote the *Forum* in 1918. The magazine also reported greatly increased demand for office space, especially in "the quiet little southern city that Washington was before last April."

But civilian housing and office buildings comprised only a fraction of wartime construction, for which "engineers and contractors who furnished the 'know how' were given precedence, while architects were dismissed as visionary artists," according to the *Forum.* Following this "humiliating snub," it added, "the profession was given another jolt by the President's amazing request that all construction work be abandoned until the close of the war. This . . . put architects and contractors in the same class with brewers and saloonkeepers." In response, the *Forum* in 1918 urged architecture to become "a very monster of efficiency" and, until its demise in the '70s, the magazine informed its readers about "all matters bearing on buildings and their investment value," including finance, engineering, marketing.

By the end of 1919, when building recommenced, the *Forum*

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to improve the living conditions of all who labor, war or no." The *Forum* explained that "the problem of industrial housing in its broader phases may perhaps be best expressed by the term *'community development'"* (italics added). Though manufacturers had already begun moving from central, urban areas into less congested, less expensive districts, at war's end "the greatest single interest in the building field [was] . . . large numbers of moderate cost homes in and near the more congested districts of our cities," reported the *Forum.* It therefore embraced "redevelopment" to make "our cities proper dwelling places for Americans."

In 1919, decades before Jane Jacobs's campaign against modern isolated high-rise housing, the *Forum* wrote that "the former idea of housing large numbers of people in buildings of the block type several stories high is rapidly being displaced by . . . buildings approaching, as far as possible, the character of a private house in which a smaller number of inmates may mingle on social terms not possible in the larger community." Both the *Record* and the *Forum* published innovative plans for hospitals and orphanages; single-story, "open air" schools designed around courtyards; modernized industrial buildings to which World War I brought "greater changes . . . than in any other type of building" (*Forum,* Aug. 1919); and prisons in which "liberality of treatment for the offender is now conceded by all" (*Forum,* Feb. 1918).

(1) Cass Gilbert's Woolworth Building, at 792 feet the world's tallest building when completed in 1913, is shown here in relation to the world's longest ship, the 900-foot 'Imperator.' (2) R. Clipson Sturgis's typical worker cottages, completed in 1918 for the Bridgeport Housing Co., embodied a desire following World War I 'to improve the living conditions of all who labor.' (3) Stripped-down mortuary chapel in Pittsburgh by Palmer Hornbostel & Jones looks remarkably modern. (4) Farm buildings, such as this one by Delano & Aldrich on Robert S. Brewster's estate in Mt. Kisco, N.Y., were common building types for architects during the 'teens. (5) Grand Central Terminal, completed in 1913, was designed by Reed & Stem and Warren & Wetmore in the classical vocabulary popular at the time. Emblem of an age of explosive growth nurtured by railroads, Grand Central became known to radio listeners as the 'crossroads of a million lives.'

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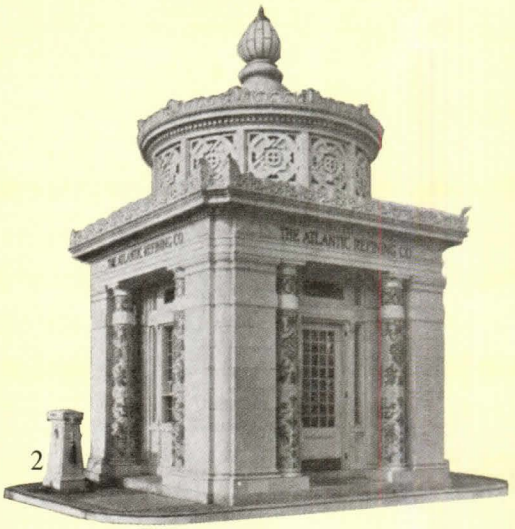

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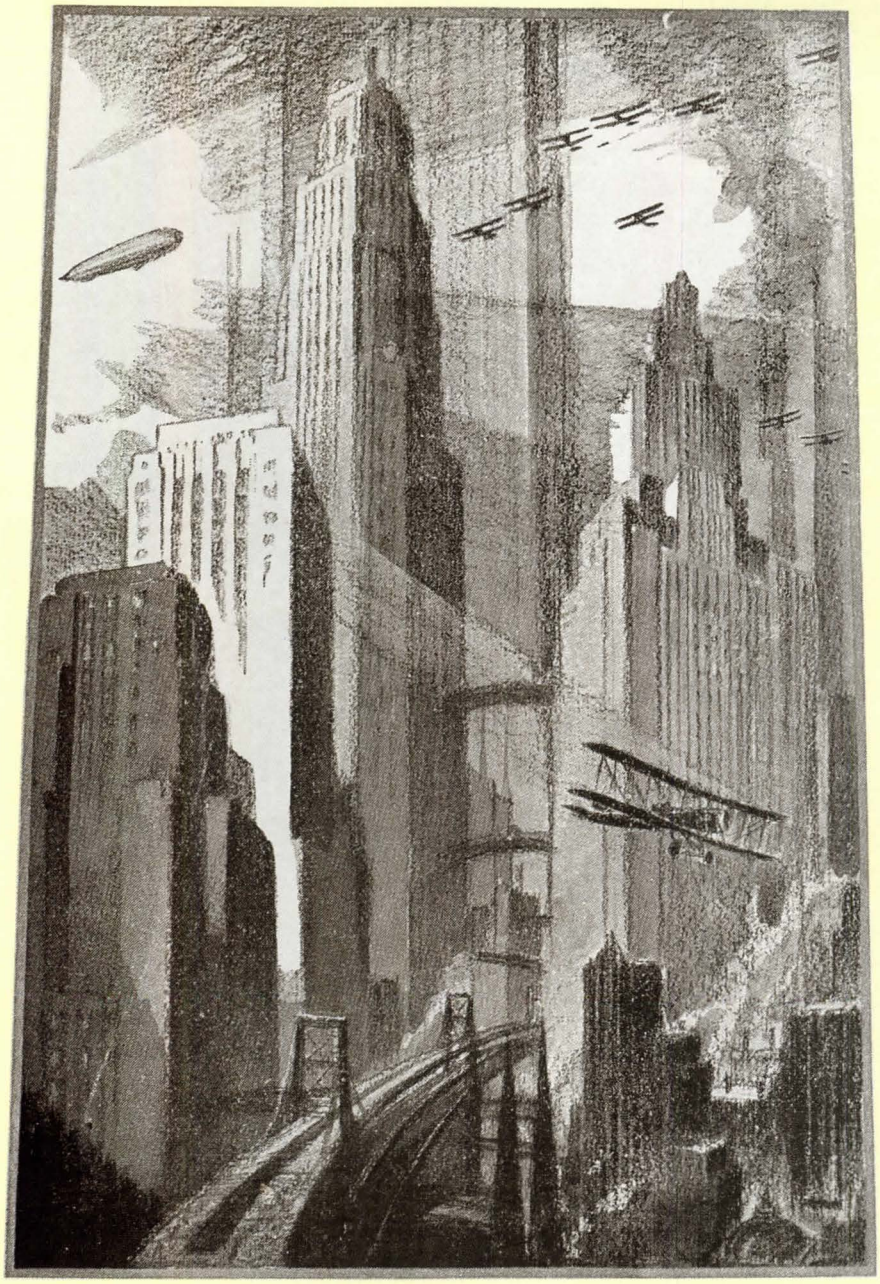
Characterized as the Roaring Twenties, the third decade of the 20th century read like a Hollywood script by F. Scott Fitzgerald, a Great Gatsby-like fantasy world abruptly undone by the Great Depression. After 1922, when postwar inflation, labor unrest, and material shortages had abated, the boom years were on. Though sobered by Prohibition, lingering puritanism, and widespread poverty, these were years of unprecedented industrial and commercial expansion, soaring skyscrapers, vast wealth, lavish country houses, spectacular theaters, splendid hotels—jazz, glamour, glitz.

The magazines devoted page after page to country houses, some pretentiously reminiscent of Gatsby's at West Egg, Long Island. Most upscale residential work remained patterned on the English mansion, though sometimes influenced, by the end of the '20s, by Frank Lloyd Wright, art moderne, and heightened craftsmanship. Middle-class and blue-collar, urban housing by contrast was soon stripped of ornamental excess; its units were streamlined for function and reduced in size.

Pencil Points first appeared in 1920 as a technical journal, concentrating on perspective drawings and "things that will help [the draftsman] get on." But its early advertising copy, editorials, and letters offer surprising insights into the period. New technologies such as nighttime floodlighting gave its ads a dramatic look, and the new aerial photography and ascendancy of the airplane showed buildings from a novel perspective. A letter to *Pencil Points* in 1927 predicted that "buildings will be constructed with an idea of presenting the most favorable impression to the observer in the air, as well as on the ground." A letter in 1928 foresaw "the coming metropolis with its great towers piercing the night with shafts of light to guide the airship to safe harbor." Such futuristic fantasies were portrayed in frequent *Pencil Points* cover drawings by Hugh Ferriss.

Skyscrapers were the decade's boldest symbol and fact. A nonarchitect, Edward Rush Duer, described them in a letter to the *Record* in 1926 as revealing "the spirit of the new era. They have nothing to do with Europe or the past; they are symptomatic of America . . . [and represent] our country's only contribution to architecture of an entirely original style. . . . The thing that happened," explained Duer, "was [the architect's] combination with industry in the latter's desire to advertise itself appealingly." The skyscraper also served as the arena for the debate between modernists and traditionalists that dominated most of the '20s.

The arguments were ignited by the 1922 Chicago Tribune Tower competition for "the most beautiful building in the world." The entries, including Hood & Howells's winning Gothicized Beaux-Arts scheme, built between 1923 and 1925, were



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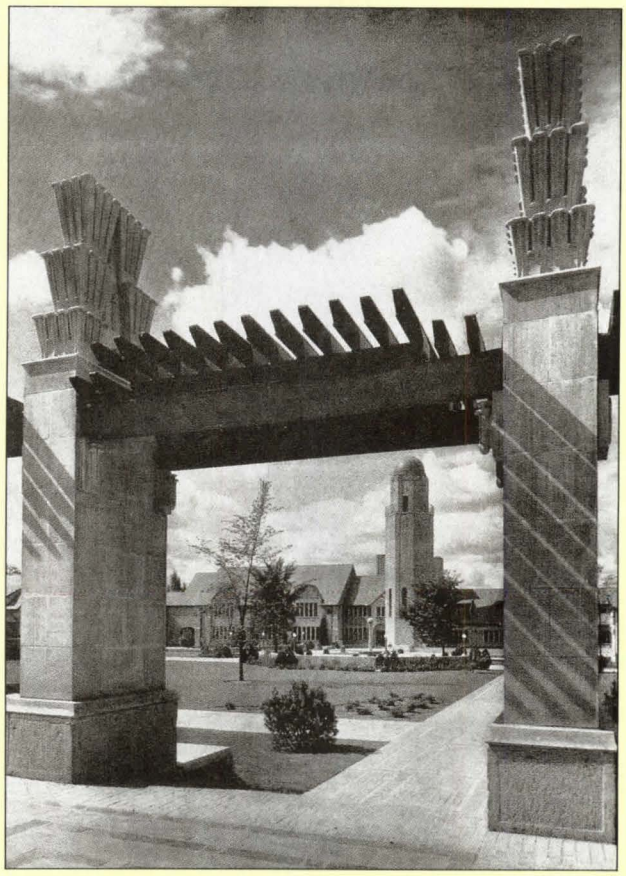

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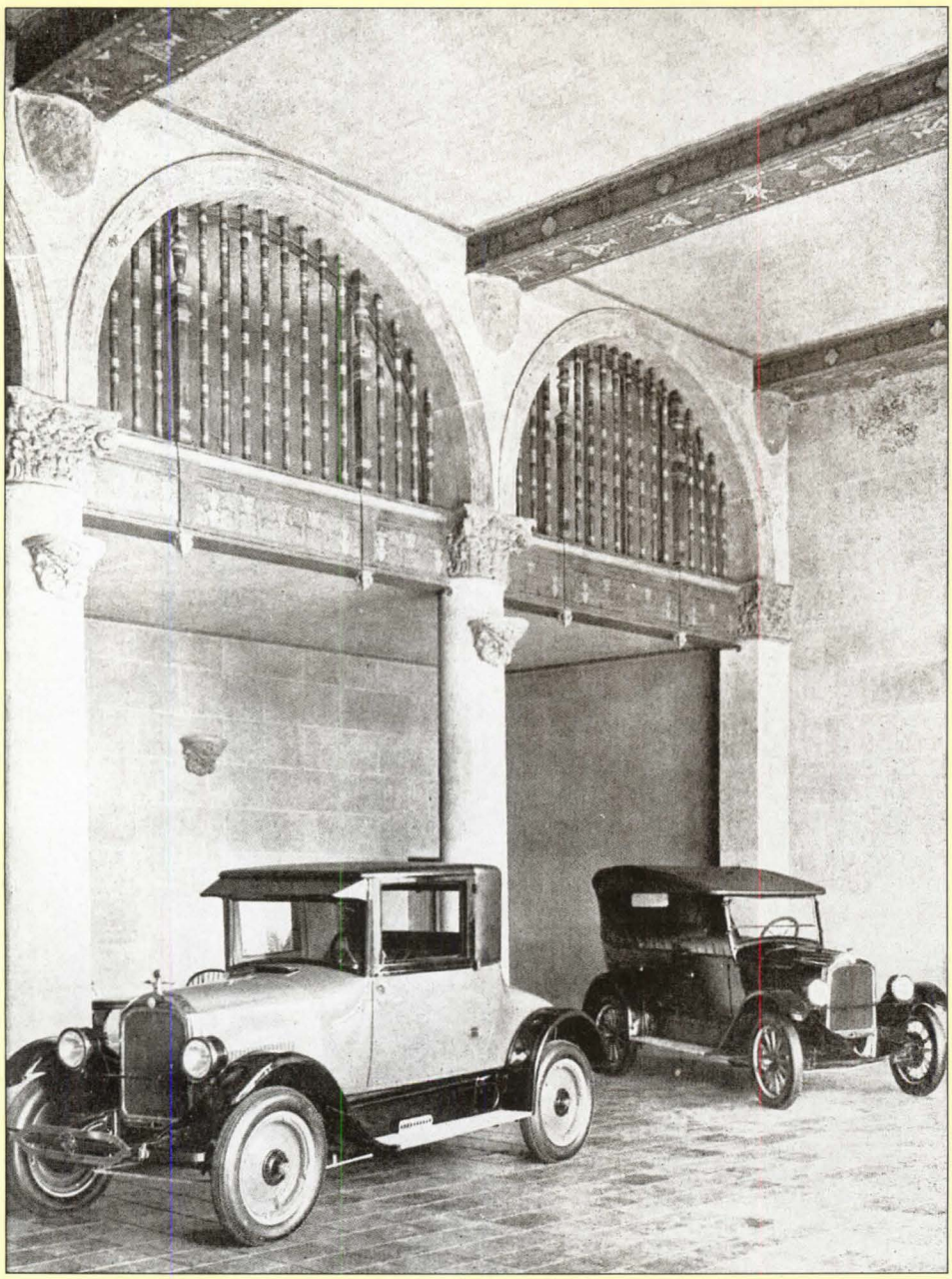
widely and severely criticized. As Irving K. Pond wrote in the *Forum* in January 1923, "With few exceptions, those who rose above the commonplace contented themselves with . . . placing unrelated mortuary chapels, crypts, cathedral spires, and 'Boston stumps' under under-developed office buildings. . . . Only in one design, that placed second by the jury (but placed first by over 90 percent of the public, lay and professional, who saw the drawings) did the element of exalted spirituality enter. . . . This design was by Saarinen of Helsingfors, Finland." In July 1923, the *Forum* wrote that modern commercialism "warrants its own symbolism and should not be decked out in forms that for ages have represented civic and religious dignity."

Until the late '20s, however, this was a minority opinion. The conservative *Pencil Points* deprecated the influential 1925 Paris Exhibition of Modern Decorative and Industrial Arts as "a riot of modernism." As late as 1927 it said of the skyscraper, "We pride ourselves on what should be our shame." Though the *Record* published articles favoring modernization, it supported the traditionalists. A 1925 editorial, for instance, pronounced the skyscraper "a monstrosity . . . barren of those balances, proportions, and refinements, which characterized the successful architecture of the past." Nonetheless, by the mid-'20s, art moderne (or art deco) had penetrated first the interior and

(1) William Van Alen's art moderne Chrysler Building of 1930 typifies the last years of the '20s, while (2) the elaborate little Beaux-Arts gas station found in a 1921 Pencil Points *advertisement was characteristic of the decade's early years. (3) One of the most important competitions of the decade, for the Nebraska State Capitol, was won by one of the decade's most renowned architects, Bertram Grosvenor Goodhue. (4) Although* Pencil Points *restricted its editorial content mainly to technical tips, perspective drawings, and sketches, its advertisements often gave insights into the period. Among Hugh Ferriss's drawings for the magazine was this one for an advertisement showing a futuristic city replete with swooping aircraft. (5) The Cranbrook school showed a revived interest in crafts, materials, and workmanship, which were also influential during the late '20s. Cranbrook was Eliel Saarinen's first executed U.S. work.*



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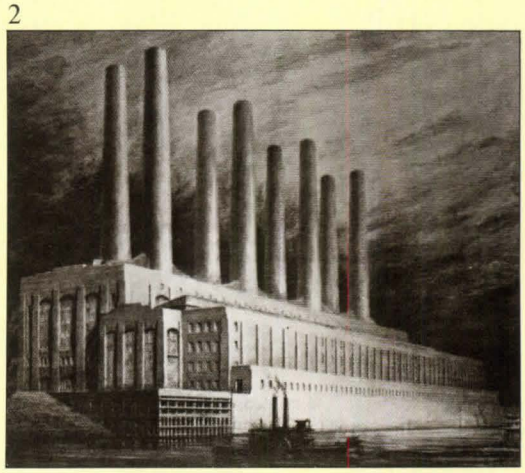

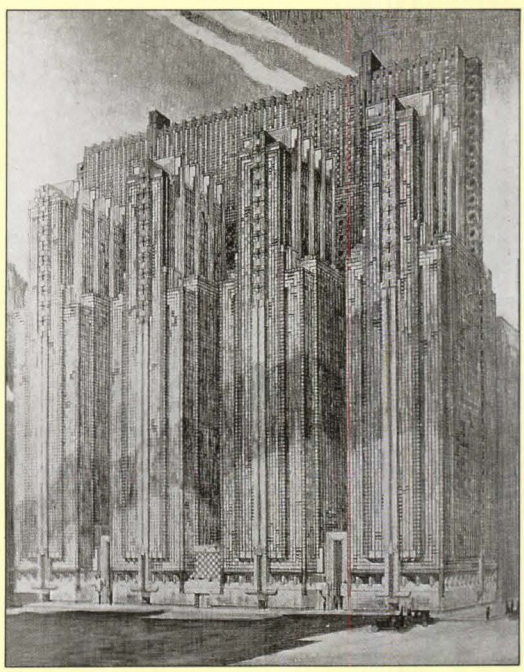

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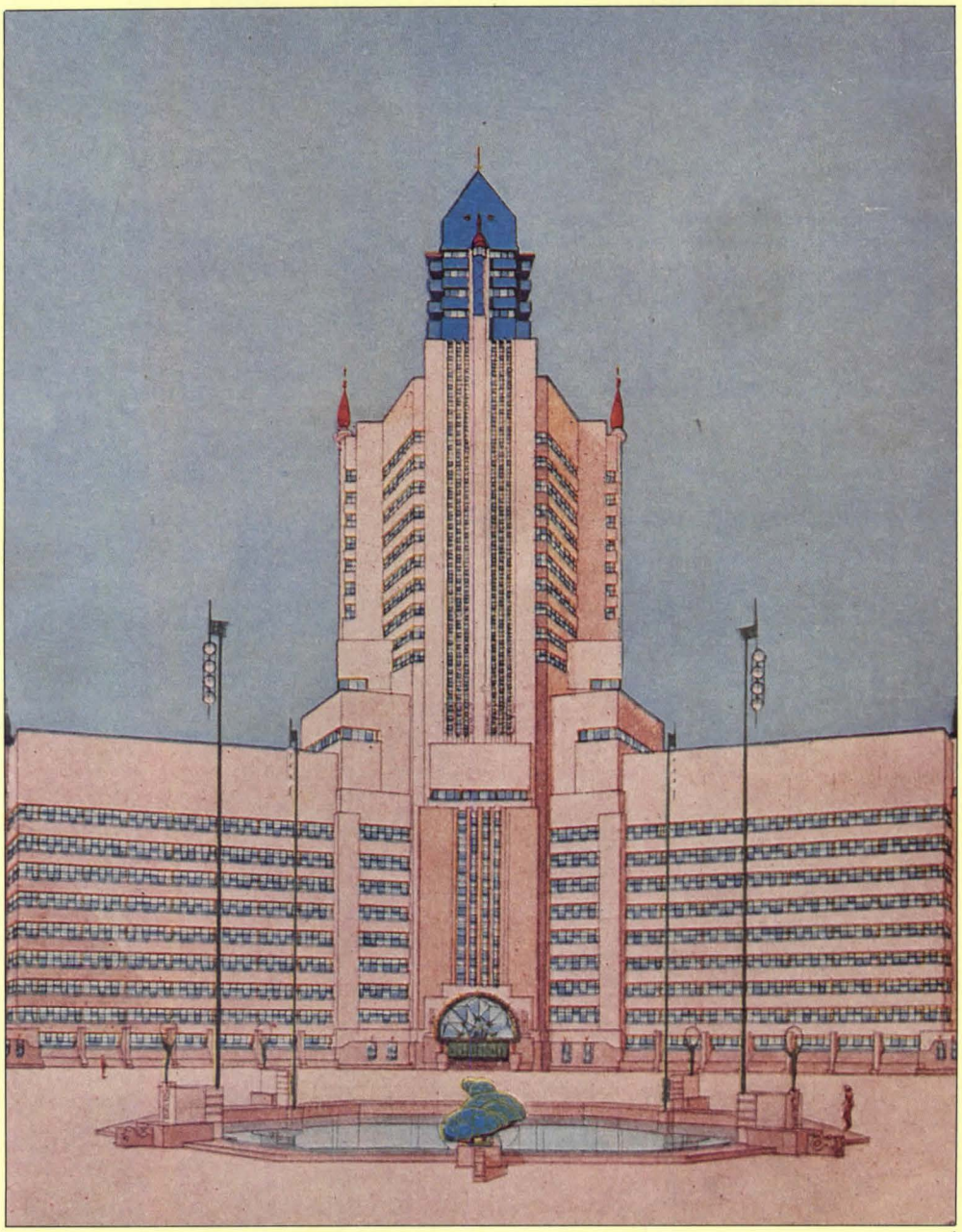
public spaces, then the facade detailing of commercial buildings.

A major shift in opinion was registered in 1927 by both *Pencil Points* and the *Record. Pencil Points* published in full an address to architectural students stating, "We cannot sit forever like old colonels in a club. . . . [Modernism] cannot be suppressed." But "modern" in America had a different meaning than in Europe. "The American will perhaps think of the Washington Memorial, while the Hollander and German will think of Lloyd Wright, when speaking about modern American architecture," wrote a Dutch professor of architecture in *Pencil Points* in 1927. "At present, however, the work of Wright is outside the pale of American architecture and evidently possesses elements beyond the American mentality." Perhaps, but that same year the *Record* began serial publication of Wright's *In the Cause of Architecture,* in which he equated a modern architecture of steel and concrete, stripped "to the bone" by the machine, with *"wondrous freedom! Freedom worthy of democracy."*

Before 1928 the magazines were silent about the new group of young European modernists. That year, the *Record* published Henry-Russell Hitchcock's "The New Pioneers"; in 1929 it carried articles by Le Corbusier. American architects tended to go their own way, as the *Forum* wrote in 1928: "European designs are helpful principally as a stimulant rather than as a source of inspiration, for they are not usually assimilable. This may be because they are too essentially European." Europe's situation during the post-World War I years was very different from that of the United States. In Europe, the physical and economic devastation, resulting in a need to rebuild rapidly at minimum cost and provide inexpensive state-sponsored housing, plus the urge to overthrow traditions identified with deposed monarchies, combined to advance modern architecture. By contrast, the United States, unburdened by tradition and seeking expression for an era of unprecedented commercial prosperity, found art moderne more suitable than modern art. By 1929 art moderne had become mainstream.

If Hood & Howells's Tribune Tower symbolized the early part of the decade, its last years were embodied in New York City's 1929 art deco Chrysler Building by William Van Alen. As Charles D. Maginnis wrote in the *Forum* in January 1929, "Commerce has found at last an appropriate format, an architecture of integrity, of resource, of nervous vigor."

At the end of 1929, the *Forum* reported that October construction contracts were 25 percent lower than the previous year. It was the only indication from the architectural magazines that the Roaring Twenties had been muzzled by the stock market crash.



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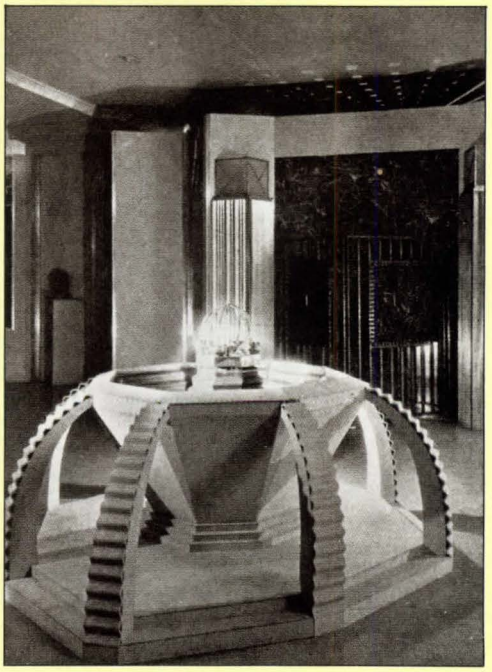

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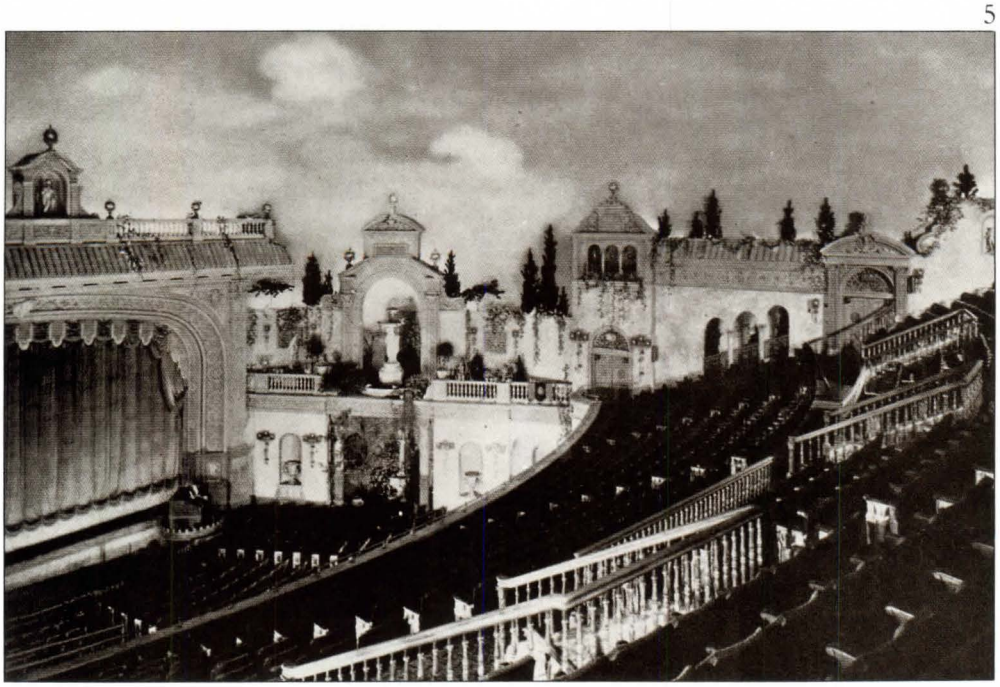
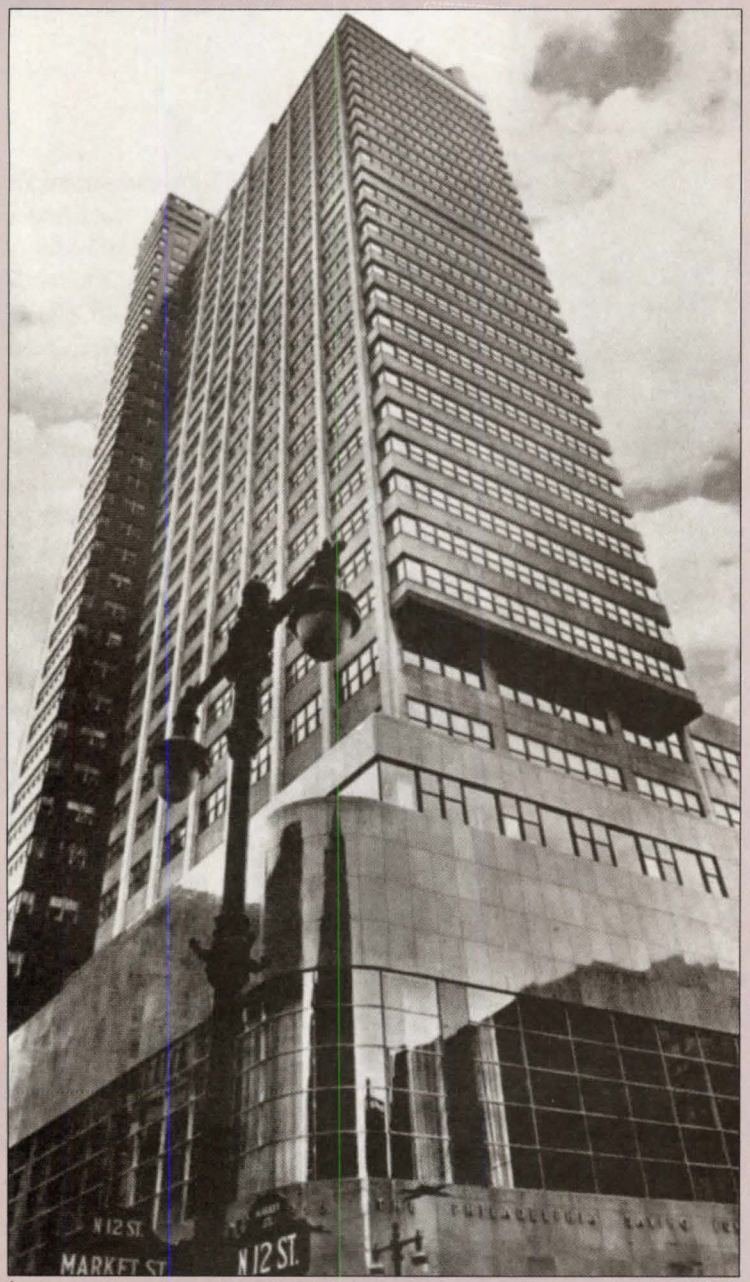


(1) An automobile salesroom of 'distinction... leisurely, detachment,' in the words of the Forum. *Located in Hollywood, Calif., it was designed by Morgan, Walls & Clements. (2) A drawing by Hugh Ferriss of the Cahokia power station in St. Louis emphasizes simplicity and surface treatment in industrial design. (3) Frank Lloyd Wright's 1928 'Practical Solution of the Skyscraper Problem' uses sheet metal and standardization, according to Wright's text in the* Record. *(4) J. Beckening Vinckers's 1926 design for a polytechnic school 'makes few concessions to accepted precedent,' said the* Record. *(5) John Eberson's Riviera Theater in Omaha typified '20s theater design in its splendor. (6) This penultimately art moderne, 1928 fountain by Lee Simonson was designed for the Macy Exposition of Art in Industry.*



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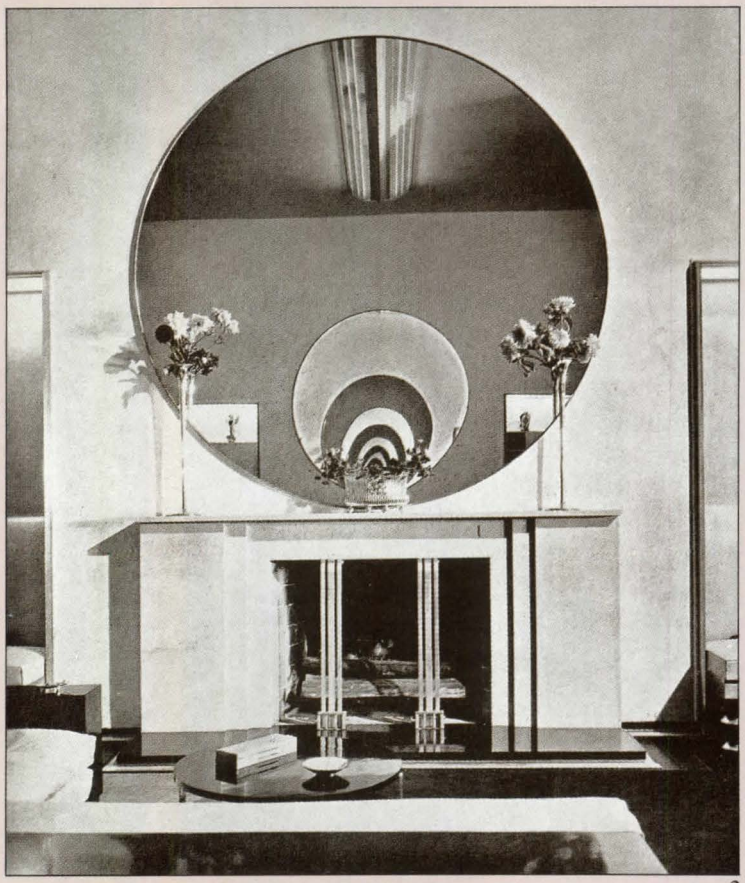
Unlike the '20s, the '30s were dominated by a sometimes unbearably hard, real world. Through necessity, the decade of the Great Depression scraped away most fatty flesh remaining on the bones of late-'20s American architecture and left a minimal, functional, and unornamented vocabulary.

Nineteen thirty and 1931 were years of self-delusion. The *Forum* nursed the belief that superior business techniques could vanquish the Depression. "Business has to be fought for, and demand must be created," it wrote in late 1931. Both the *Forum* and the *Record* began portraying architecture as a business rather than a profession and abandoned theory and history to concentrate on more practical issues. *Pencil Points* wrote with gallows humor in 1930, "It has been rumored that at least six members of the Architectural League are selling apples in the financial district. How they managed to get the apples has not been learned." But it failed to draw ominous conclusions and remained optimistic until 1932. For one thing, there was still evidence of building. The modern PSFS building by Howe & Lescaze was nearing completion in Philadelphia; in 1931 Shreve, Lamb & Harmon's Empire State Building was finished, and in 1932 New York City's modern McGraw Hill building by Raymond Hood, with its huge exterior letters for corporate advertising, opened on West 42nd Street.

During the first two years of the decade, all three magazines published a diversity of new European work by Gropius, Le Corbusier, Mies, and others. In part because of Europe's enthusiasm for large-scale planning, in part because the first plans for the 12-block, multi-use Rockefeller Center were unveiled in 1931, all three magazines looked for economic salvation in planned urban renewal and the growing popularity of multi-use buildings. In November 1931, *Pencil Points* editorialized: "Our cities are being recreated, giving new and almost unlimited opportunities to the equipped architect." (In fact, it would be 1938 before any large-scale planning got under way, including Metropolitan Life's $50 million low-rent housing project on 120 acres in the Bronx, and Greenbelt, Md., the only built example of Interior Secretary Rex Tugwell's plans for creating a number of rural communities loosely modeled on the Garden City ideas of Ebenezer Howard.)

By 1932, construction contracts had fallen to 77,900 from 5.2 million in 1928. All three magazines were much thinner and grayer, and each recognized the Depression's massive effects. The search for a way out now centered on housing, and the *Forum* published, among others, an article by Clarence Stein on the community he designed for Radburn, N.J. Stein advocated comprehensive planning based on social, economic, and architectural considera-

(1) The modern, 1932 PSFS building by Howe & Lescaze, devoid of frills and fuss. (2) Main concourse of the Chicago Daily News *building by Holabird & Root. (3) A very deco, 1933 New York City apartment by Joseph Urban. (4) TVA's Norris Dam by Roland Wank was meant to endure for centuries and therefore was designed without stylistic trappings. (5) The 1935 Griffith Planetarium in Los Angeles by John C. Austin was an odd combination of reinforced concrete with applied classical detailing.*



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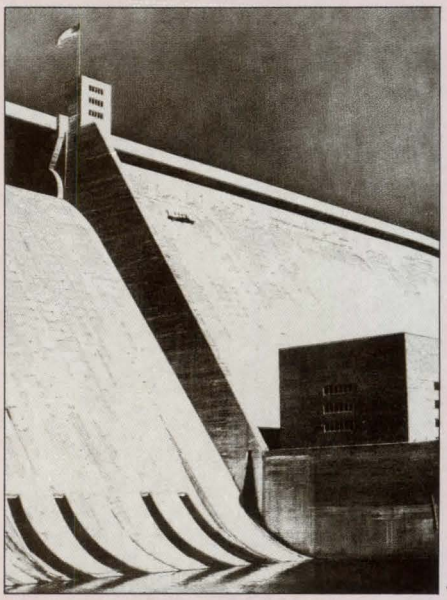

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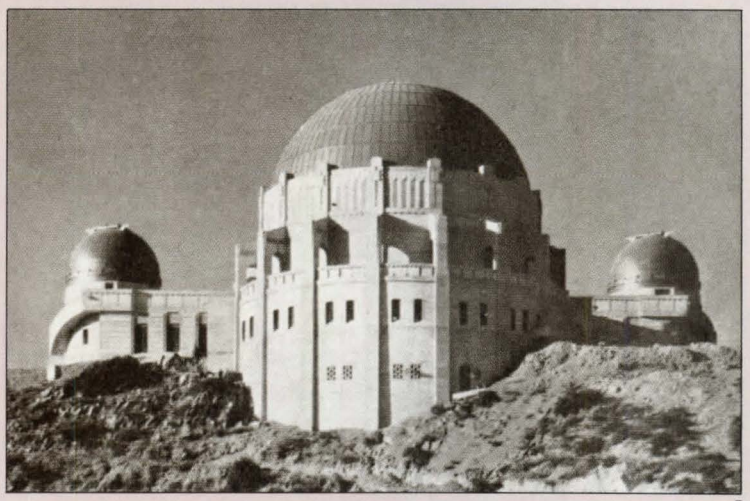

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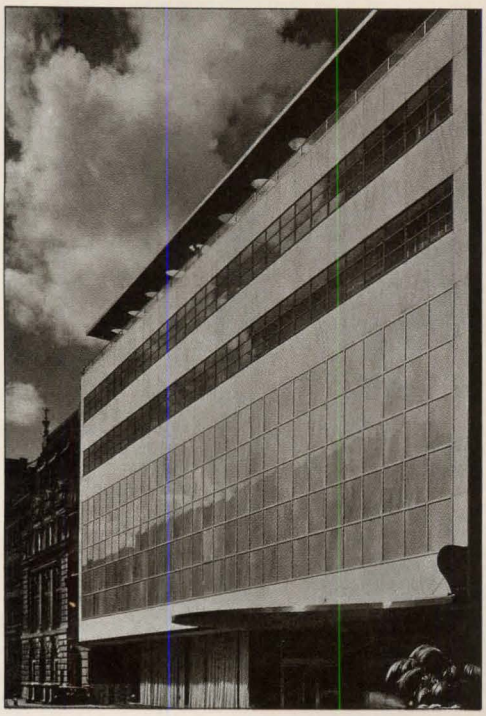
reverted to publishing more conservative U.S. designs, and all three magazines tended to look inward and ignore Europe.

The profession viewed the momentous 1932 "International Style" exhibition at the Museum of Modern Art as though through a glass darkly. Albert Kahn, whose work was already modernizing American industrial architecture, wrote in *Pencil Points,* "May Providence and our common sense save us from such aberrations! Whatever one's opinion of [Frank Lloyd] Wright's work, there can be no question about his constant aim at beauty to which certainly most of this ultra-modern can lay little claim." The *Forum* summarized the exhibit as "'design' limited to the simple structural necessities." The magazines themselves, however, were beginning to show some idiosyncratic, homegrown examples. The *Record* published Buckminster Fuller's Dymaxion House in 1930 and H.T. Lindberg's modular houses in 1933. That same year, the *Forum* headlined an article on a house near Des Moines, "Modern Architecture Has Invaded Iowa." In 1934, George Keck's House of Tomorrow was published in the *Forum*, which reported on its "walls of metal and glass, conditioned air from June to June, and an 'electric eye' to open the kitchen door."

Criticism of modernism persisted, of course. In 1933, Talbot Hamlin wrote in *Pencil Points,* "The Parthenon does not live because it was a good temple, nor the Thermae of Caracalla because they formed an efficient bathing establishment." In August, Paul Cret told *Pencil Points,* "I cannot see in [modernism] anything but the age-old method which consists in being logical, truthful and functional in design as long as it is convenient and being decidedly less so when certain esthetic results are wanted." In 1935, however, the still conservative *Pencil Points* conceded, "The battle is over. The radical modernists have gained control leaving the old school still critical but defensive."

By 1935, the battle against the Depression had also taken a new turn. In March 1933 President Roosevelt began putting into place a host of new federal programs, including the emergency housing division within the Public Works Administration to finance private slum-clearing projects, and the Federal Housing Act, which among other things began by providing federal mortgages for home repairs and additions and then for commercial remodelings. The legislation promised a broadened role for architects, since eligibility standards included all factors bearing on the stability of real estate values, including economic, social, and physical planning. By 1937 *Pencil Points* would call the architect "the messiah who will reconstruct the world."

During the first six months of 1935 construction began picking up, and in October the *Forum* reported, "The architect has discovered that skyscrapers are thrilling only when they are



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being built. Now he is learning that the small house is the most important and the most challenging architectural problem that remains somewhat unsolved." Low-cost housing, homesteads, and rural-industrial communities were planned under the emergency relief program, and cinder block houses, starting at $2,325, were built for the Tennessee Valley Authority at Norris, Tenn. In May, the *Forum* showed prefabricated "motohomes," and in December declared, "Prefabrication is today's most exciting prophecy." A General Electric-sponsored "house for modern living" competition focused on "flexibility, open planning, and leisure-giving equipment." In addition, entries in a *Record*-sponsored "Main Street" competition included windowless stores, to make airconditioning and lighting systems "work more efficiently" and increase display space. Airconditioning for commercial buildings was catching on.

In 1936, the *Forum* published its first full issue on new and previously unpublished work by Frank Lloyd Wright. Beautifully done, it was designed and written by Wright. Also in 1936, the *Forum* reported "a boom in the making," featured concrete as a material "ideal for precision, lightness, and economy of space," and showed extensive use of glass block. In October 1936 the *Record* reported a new concern in apartment design for natural light and fresh air, and a demand for "increasing conveniences and comforts [that] has gradually changed the purposes and character of rooms and given a totally new appearance to furniture and furnishings." The *Forum* wrote, "While we have not generally accepted the Le Corbusier house, our kitchens and bathrooms, at least, reflect his ideas."

The years 1936-39 produced a mix of buildings and events. In 1936, the *Forum* published a living/dining room/study combination designed by Eero Saarinen and houses by Richard Neutra and William Wurster, "depending on neither old nor international styles, possessing a strong local character." By 1938, the restoration of Williamsburg, Va., had ignited renewed conservatism and "re-emphasized the simple, sturdy virtues of [colonial architecture]," as the *Record* put it. Meanwhile, Albert Kahn had revolutionized industrial architecture for clients such as Ford, General Motors, Chrysler, and Republic Steel. The *Forum* reported that modernism had become, "almost without our knowing it, a part of the everyday environment," and had "the tremendous advantage of [not being] European or transplanted examples." By then many of Europe's leading modern architects were in America, but almost the only news from the magazines about the catastrophe from which they had fled was a 1939 *Forum* article entitled "Architecture of the Dictators." It featured "grandiose monuments designed to convince dubious citizens

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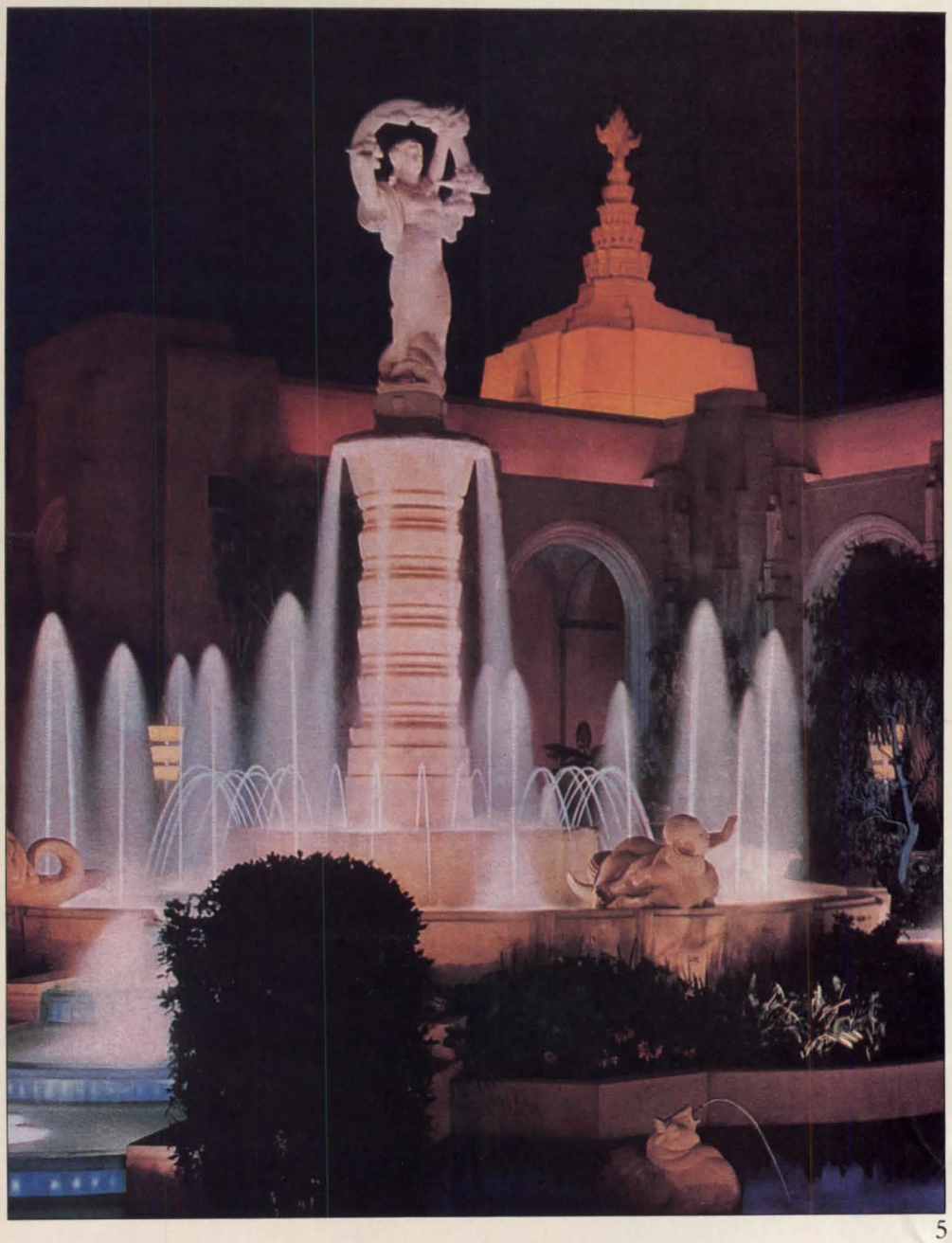

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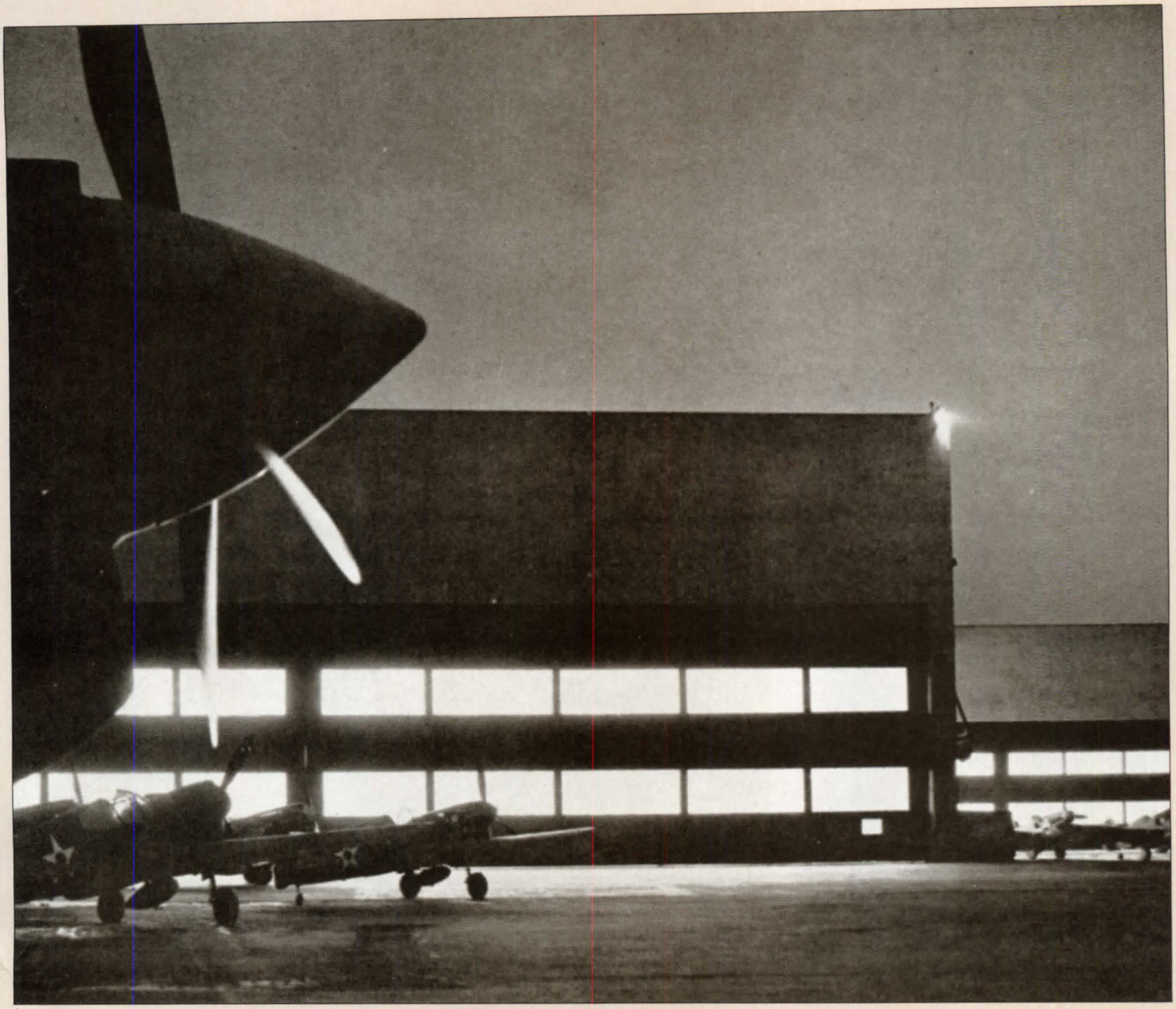
of the eternal stability of the existing regime," said the *Forum.*

The magazines showed the '30s ending with a bang. There was Wright's 1939 tower for Johnson Wax in Racine, Wis. There were powerful images of dams, industrial and power plants, bridges, and whole new communities for the TVA in Tennessee. All three publications covered the New York City and San Francisco world's fairs of '39. The *Forum* characterized New York's "World of Tomorrow" exposition as "arriving mostly in the middle of today" and described its buildings as "inoffensive uniform mediocrity." In contrast, Douglas Haskell, in the *Record,* called the New York fair "a pioneer" for its "fluid" buildings with "controlled conditions" and its handling of crowds.

The architectural standard bearer of 1939, however, was the unglamorous but widely published small house, specifically, "the house which carries $4,000 or less on its price tag," as the *Forum* described it. The Depression had squeezed incomes to the point where over 70 percent of U.S. families earned less than $2,000 a year. In 1929, well over half had earned more. About the esthetic quality of the austere little houses it published in April 1939, the *Forum* anticipated "more than one raised eyebrow." Austerity had left little grace or delight in architecture. It took World War II finally to wring out the Depression, and wartime requirements produced a further denuding of design.

(1) The Museum of Modern Art by Philip L. Goodwin & Edward D. Stone was regarded in 1939 by the Forum *as among 'the best modern architecture has produced.' (2) Fallingwater, seen under construction in 1936, combined principles of prairie architecture with those of modern European design, despite Wright's denunciation of the International Style. (3) The New York World's Fair of 1939, showing Harrison & Fouilhoux's Constitution Mall at night, with the Trylon and Perisphere—symbolic of the fair—in the background. Among the fair's attractions was dramatic night lighting. (4) The RCA of 1935, Rockefeller Center's first completed skyscraper. (5) Color was seldom used by the magazines at this time. Among the rare exceptions was a series of plates, including this one of the Golden Gate International Exposition in San Francisco. With the New York World's Fair, it formed a high point of the decade's end and gave it closure.*



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The war years and the late '40s were largely a consolidation of what had come before and a preparation for things to come. By 1940, the *Forum* had begun calling itself "the magazine of building," in an effort to involve contractors, bankers, and developers. *Pencil Points* changed its name in 1942 to *New Pencil Points* ("to explore, to crusade"), in 1944 to *Pencil Points-Progressive Architecture,* and in 1949 to *Progressive Architecture.* That magazine along with the *Forum* and the *Record* perpetuated the late '30s image of the architect as reformer rather than artist, while presenting a more technical, efficient face. It was a response to architects' fears of being displaced by engineers—as had happened in World War I.

Even before America entered World War II, the magazines began focusing on a strategy for peacetime, the centerpiece of which was housing and urban development. As Douglas Haskell wrote in the *Record* in 1941, "When the defense boom recedes, and the international crisis recedes to a domestic one, then what? The foresighted are saying: 'Housing in a big way, or else.'" The estimate was that between 4 million and 10 million new houses would be needed after the war. The reasons for focusing on redevelopment seemed obvious. "Already serious problems of blight and obsolescence will be compounded by cessation of defense activities; disrupted industrial output, idle plants, idle organizations, idle skills, idle money," the *Record* explained. The only security, it avowed in 1943, was in "dynamic, unfettered expansion." To prevent architects from being displaced in the planning effort ahead—this time by social scientists—Joseph Hudnut, dean of the college of architecture at Harvard, urged in the *Record* that "the range of architecture" be "enlarged."

As early as 1941 the *Record* predicted, "Mobility is the key to changes in architect, mobility of people and things (transport)—but also in the increased mobility of ideas (communication)." By 1943, a *New Pencil Points* article noted "an exodus of people to the numerous suburban communities." By 1944, "the cultural, recreational, and social centers" of the new neighborhoods, according to the *Record,* were schools—planned for all-day and evening use, featuring flexible classrooms, large windows, and clerestories. In 1945, a *Forum* headline read, "Highway Restaurant for a 100-Octane World." By the time the first suburban shopping centers were published in 1947, the *Forum* observed, "Downtown is doing no better than holding its own." In 1949, *Progressive Architecture* declared, "Megalopolis is disintegrating." It also announced a "clear trend" toward supermarkets, necessitated by "traffic and the time consumed in traveling from shop to shop."

Because of wartime material restrictions, the watchwords of the era were "save, simplify, and substitute," as the *Record* said

in 1942. One might add, "standardize." The result was a wealth of structural and other innovations. Plastics were developed and "after the war will be lifted out of the gadget stage," predicted *New Pencil Points* in 1943. There were new "windowless factories that the glass and metal sash companies and many psychologists consider inhuman," as *Pencil Points-Progressive Architecture* reported in 1946. Advances were made in "large, light-weight materials of all types. Glass, as heat-resistant panes and as fiber insulation, had made "notable headway," said the *Forum* in 1943.

The first plans for a glass-curtain-wall building, an unbuilt scheme for Schenley Distributors by industrial designer Woody Garber, were shown in *Pencil Points-Progressive Architecture.* The following year saw publication of the first aluminum-faced skyscraper by Harrison & Abramovitz for Alcoa in New York City, as well as the first plans for the U.N. complex by an international team headed by Wallace Harrison, which included Le Corbusier. News of the Secretariat building, especially, with its green-tinted glass curtain wall, subdivided by thin aluminum mullions and spandrels to create a nondirectional grid, dominated the magazines during the last years of the '40s.

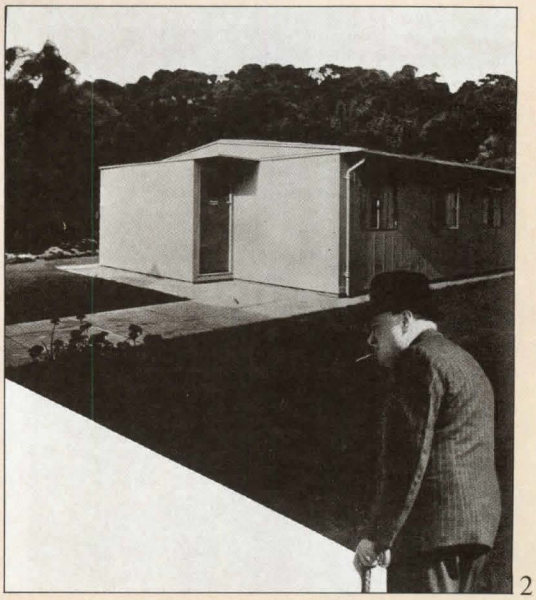
While eclecticism in residential design remained prevalent during the late '30s, by the end of the war, "not a single building was illustrated which was not designed in a contemporary, nontraditional manner," wrote *Pencil Points-Progressive Architecture* in 1946. It had, by then, adopted a policy of "searching for progressive architecture."

Hugh Ferriss called 1940s houses "machines to live in that seemed intended to be lived in by machines," while Hudnut, in a 1944 *Record* article headlined "Post-Modern Houses," wrote, "These strike my eyes but not my heart." He recounted that a soldier had written to him describing his ideal house as "a Cape Cod cottage which, upon being opened, will seem to be a refrigerator-to-live-in." After reviewing the consumer magazines, the *Forum* concluded in 1945 that the public found "the modern approach to be acceptable," and the magazines started publishing more glassy houses. The *Record's* prediction in 1947 was that television with "its hypnotic screen will change our approach to designing living rooms and making love."

Notable other news from the magazines in the 1940s included Robert Moses's work as New York City parks director, including his regional plan, bridges, roads, and community of Staten Island. In 1942, Albert Kahn won the AIA gold medal and the magazines showed Eames's and Saarinen's molded plywood chairs. Nineteen forty-two was also the year of MOMA's "Built in the U.S.A." exhibit, whose objects the *Forum* called "frequently self conscious in their straining for modernity." In 1945, Wright unveiled his model for the Guggenheim and told a gaping press, "Don't call it bizarre. Is a flower bizarre? Why stack up the buildings? Why not pull them out—like a spring" (*Forum,* Oct.). That year the *Forum* also published the Seabee naval chapel by Bruce Goff, whom it called "the high priest of individualism." Nineteen forty-eight saw completion of the Equitable Savings and Loan building in Portland, Ore., by Pietro Belluschi, whose work was widely shown during the final years of the decade, along with that of Le Corbusier, Mies, Saarinen, Gropius, and others.

By 1948, however, *Pencil Points-Progressive Architecture* seemed rudderless, and changing its name to *Progressive Architecture* (herein *P/A*) didn't seem to help. The *Record's* look and content were disheveled, and all three magazines began looking like promotional publications for the building industry. As Philip Johnson and Peter Blake wrote to *P/A* in 1949, "If *Progressive Architecture* wishes to promote more building, then that will be fine for building and it will be fine for your advertisers. . . . It will not necessarily result in better architecture."

During the decade's last year, Wright was awarded the AIA gold medal, while his proud Larkin building was razed in Buffalo. The brothers Levitt put up an initial 4,000 look-alike houses in the New York suburb bearing their name, while the magazines startled their readers with Philip Johnson's one-of-a-kind Glass House in Connecticut. As though prescient about Johnson's future, the *Forum* called it "quite classical, quite traditional."



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(1) Military aircraft plant 'in the East' by Albert Kahn, whose work for clients such as G.M., Chrysler, and Republic Steel revolutionized the design and construction of industrial buildings in the '30s. This 1942, 'high-speed, mass production factory,' was, according to the Record, *in operation seven months after construction began. (2) 'Mr. Churchill's Prefab,' an all-steel, completely industrialized house produced by U.S. war plants, was on view at the Tate Gallery in London in 1944, and was dubbed 'Churchill villa' by delighted Brits, as the* Forum *reported. (3) The Westchester Project in Los Angeles by Kaiser Community Homes included 607 completed houses when published by the* Forum *in 1947. They were to be followed by 3,800 more to meet the housing shortage caused by the war. The project was one among thousands that resulted in the coast-to-coast carpeting of America with the unchecked sprawl of suburbia.*

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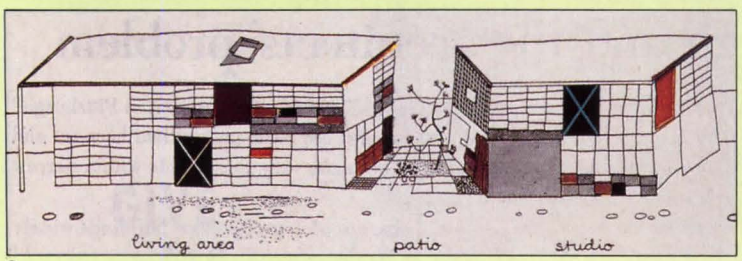

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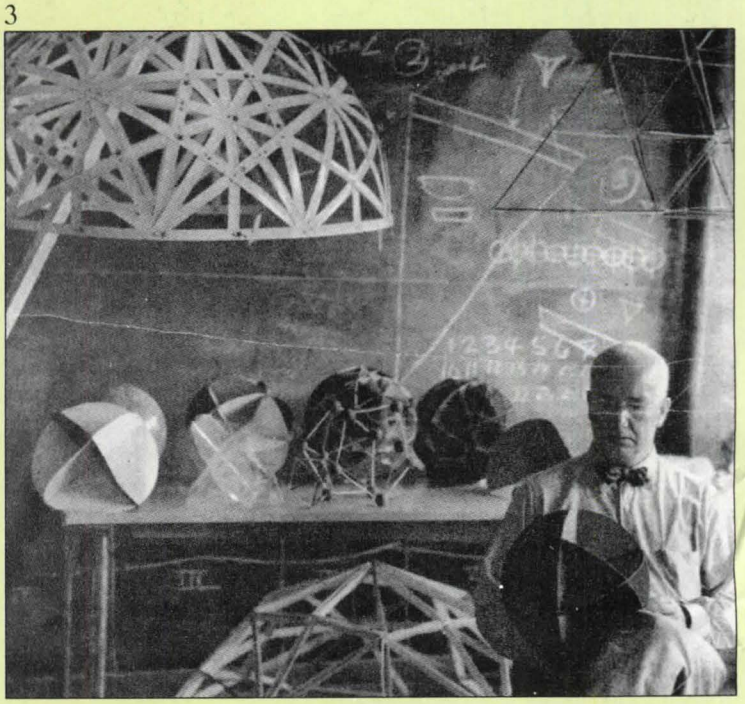

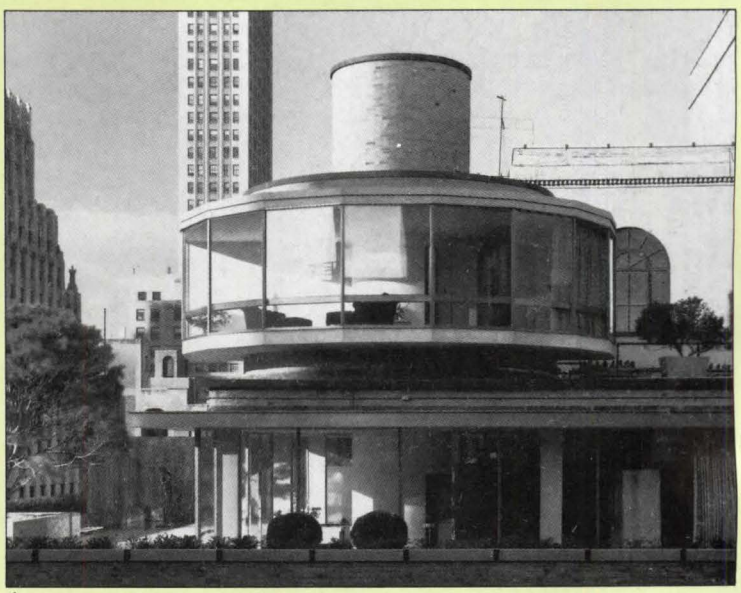

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The self-styled clichés of the '50s came from the movie "The Man in the Gray Flannel Suit" and William H. Whyte Jr.'s book *The Organization Man,* and like all clichés these contained a measure of truth. The '50s was a bland decade, prone to "group think," debilitated at its start by the Korean war, the perceived Communist threat, and fear of atomic attack, which furthered decentralizing population centers. Eager to forget past deprivation and present anxieties, Hollywood's Mr. Blandings in the late '40s was content to build his "dream house" in the suburbs, whose spread in the mid-'50s was assured by federal highway construction programs.

While Mr. Blandings's 1950s neighbors built ranch-style houses, split-levels, L-shapes, T-shapes, and more, the *Record* lamented "the debacle of public taste, the only hope, a vigorous counterattack by those who know what looks well and why" (Feb. 1957). Though numerous architects were working in personal styles influenced primarily by Wright's organic architecture, the majority of houses shown in the magazines tended toward "a logical expression of our industrial age and of our American manner of living" (*Record,* 1956). Most flaunted their bones with great expanses of glass—which were then covered for privacy. In 1958, *P/A* said, "The glass wall and the picture window have become the bikini of architecture. Nature around the dwelling has become meaningless, because it is overexposed." The most influential early 1950s houses included Mies's for the Farnsworths and Charles Eames's house for himself in Santa Monica, Calif., which *P/A* described in 1950 as "standard industrial products assembled in a spacious wonderland." The open plan was popular, though its lack of privacy was sometimes criticized "in these days of sizable families," explained the *Record* in 1955. Lewis Mumford lamented in the *Record* that in absorbing the lessons of the machine architects had "neglected the valid claims of the human personality." In compensation, there was by decade's end increasing use of curved forms, cantilevering, decorative materials, textures, and color.

With suburbs sprawling—and automobiles, throughways, freeways, and drive-ins spreading—came ever larger shopping centers. Most were windowless buildings surrounded by parking, with corner entrances to free peripheral space for large stock areas. In 1956, the *Forum* commented that the prototype Southdale mall by Victor Gruen, outside Minneapolis, "is where things happen, all sorts of things that ought to be there if downtown only weren't so noisy and dirty and chaotic." The pedestrian mall concept was also applied to cities. A shopper at one of its first incarnations, Gruen's Northland in Detroit, exclaimed about it to the *Forum:* "You wouldn't know you were in Detroit."

(1) Charles Eames's influential house for himself in Santa Monica, Calif., described by P/A *as 'standard industrial products assembled in a spacious wonderland.' It was designed with a constructivist esthetic typical of the time. (2) Diagram by Eames shows facade pattern. (3) Buckminster Fuller with one of his geodesic domes. (4) Webb & Knapp's Madison Avenue Penthouse offices by I.M. Pei with William Lescaze as consulting architect. (5) Pruitt-Igoe public housing in St. Louis in 1953; its demolition 20 years later was widely interpreted as the end of modernism. (6) Harrison & Abramovitz's Alcoa building in Pittsburgh was called a '30-story aluminum waffle' by the* Forum *in 1953. (7) A New Orleans automobile showroom by Curtis & Davis, who sought 'an eye-catching appearance'* (P/A). *(8) U.N. General Assembly and Secretariat, which, the* Forum *said in 1951, 'gave modern architecture an aura of respectability.'*

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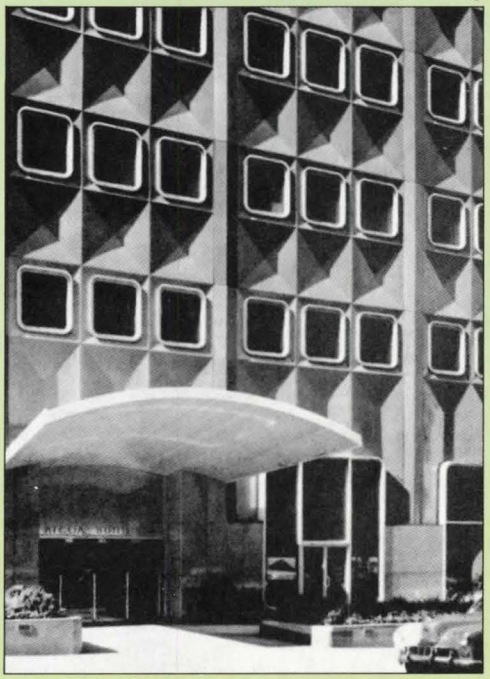

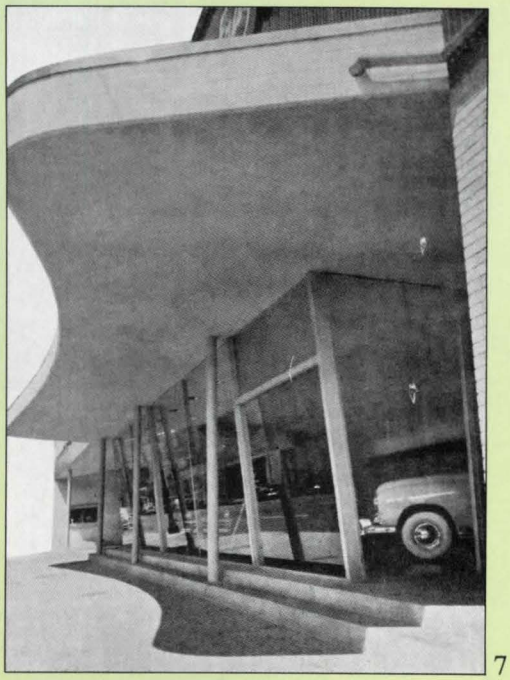

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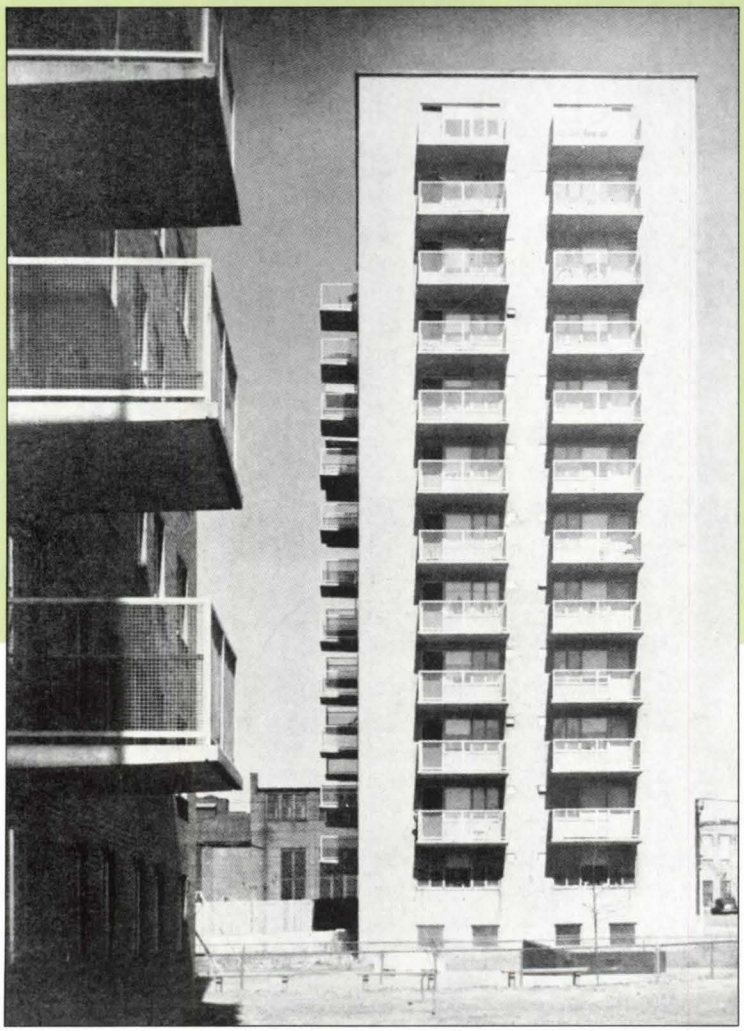

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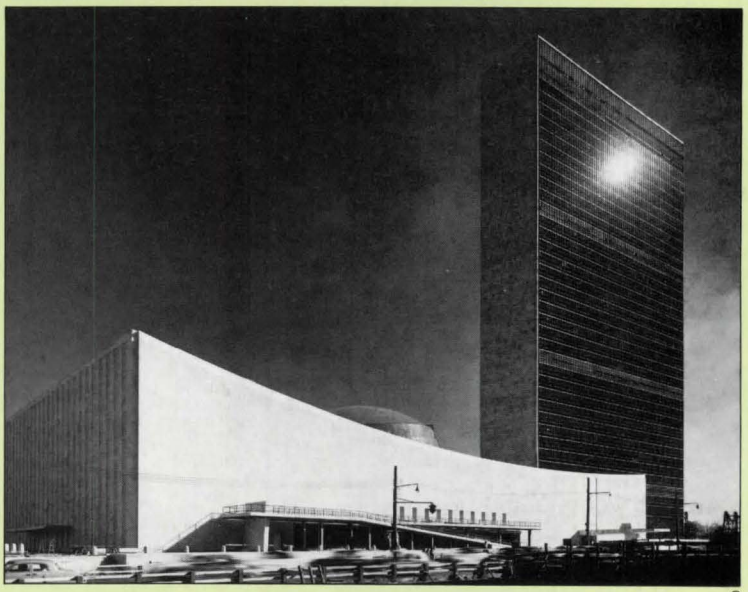

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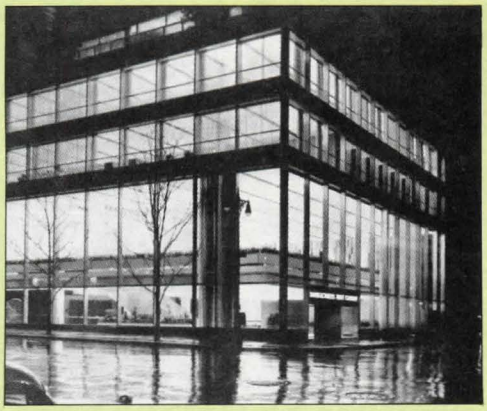
As the Korean war wound down and the period of economic boom began in the mid-'50s, slum clearance and urban renewal plans finally got under way as "the heart of the new housing program," said the *Record* in 1954. It reported on huge projects planned for Chicago, Boston, Philadelphia, Baltimore, Detroit, and other cities. In 1956, the *Forum* touted a scheme for Washington, D.C., "as demonstration that the scope and scale of city building today has a relationship to the past like the liner United States to a harbor tug." The very scope and scale of '50s urban renewal—"the most profitable financial enterprise ever proposed to American cities," the *Forum* called it in 1957—transformed the self-image of architects. In the *Record,* Sigfried Giedion referred to them as "builders of contemporary life" in 1954, and Emerson Goble described the architect as "the complete man of design" in 1956.

Criticism of the often huge, isolated, and regimented-looking urban projects was immediate. Jane Jacobs, then a staff writer for the *Forum,* wrote in 1956, "Corner stores have an important place in neighborhood life, but our new housing developments are being built without them. We are greatly misled by talk about bringing the suburb into the city. The city has its own peculiar virtues." The housing programs were unpopular, wrote Catherine Bauer in 1957 in the *Forum,* because "life in the usual public housing project just is not the way most American families want to live. Nor does it reflect our accepted values as to the way people should live."

One consequence of urban renewal's bulldozers was to stir preservationist sympathies and an initial interest in history. In 1956 the *Forum* commented, "The very things that Americans adore abroad they destroy systematically at home. Without our historic buildings we are perpetual juveniles, starting over and over, a people without a memory." At the same time, however, a "modernization" movement was afoot to give old facades "a new look." A remodeled facade, said the *Forum* in 1954, "can be even more modern than today's 'modern' built new." As



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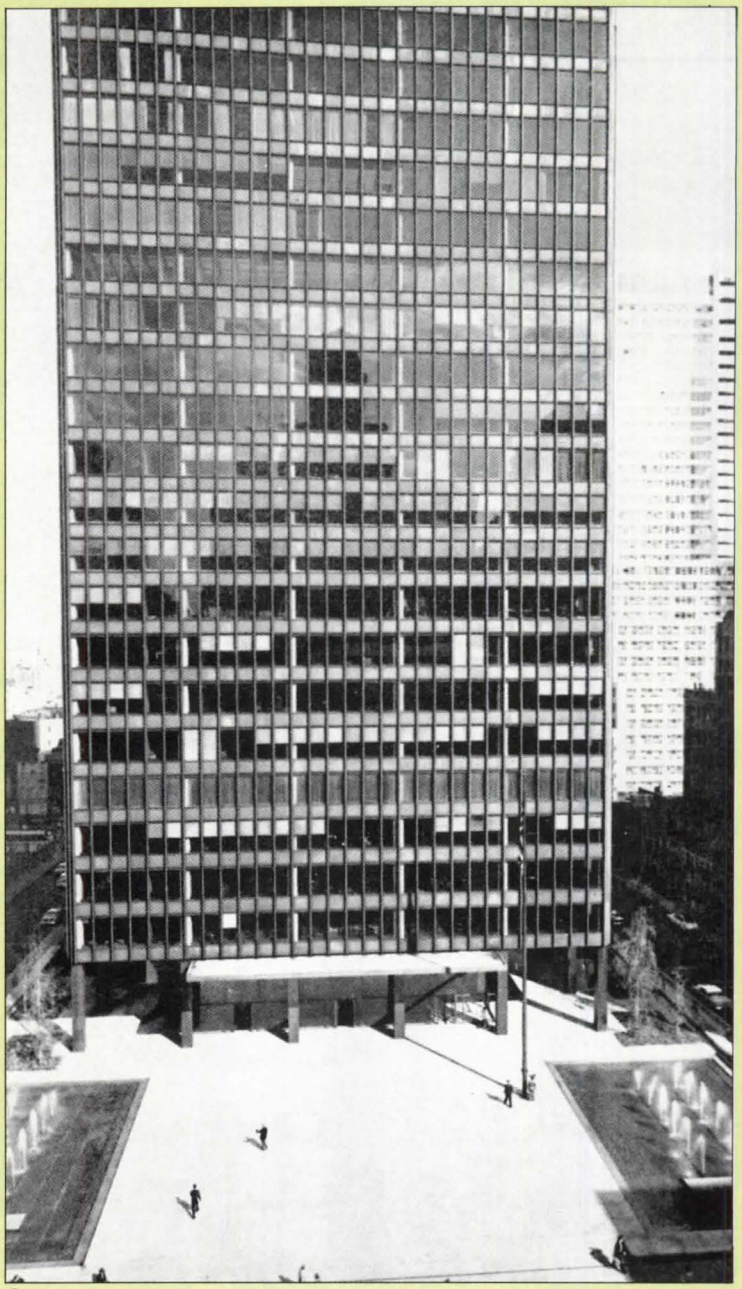

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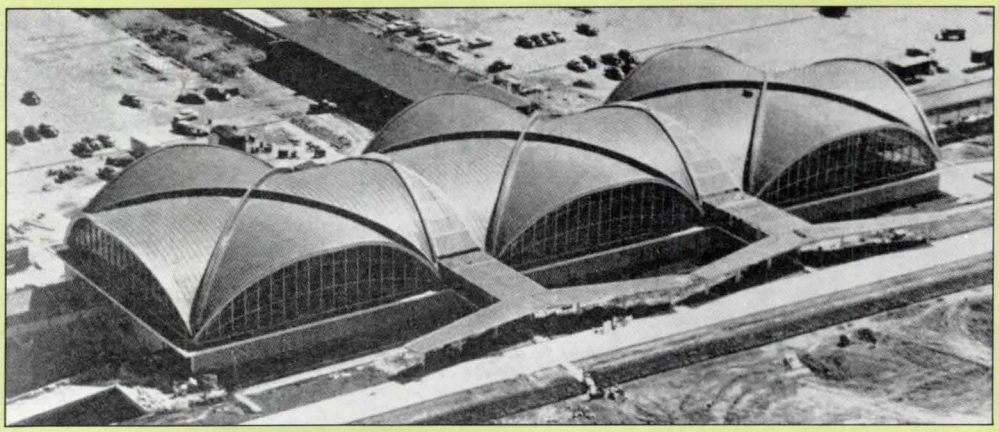
Wright said in the *Record,* "The old sham front has had its face lifted. What radical change may be seen lies wholly in appearance." Another consequence of large-scale renewal was a recognition, as Pietro Belluschi wrote in 1956 in the *Record,* that architecture "is no longer limited to the mere sculptural quality of individual buildings, but is for the rightness and humanity of the total environment." But attempts to integrate new buildings with each other and with their older neighbors remained halting and clumsy, at best.

In the boom years of the '50s, as in the far more colorful '20s, the skyscraper was the ultimate architectural symbol and the primary arena for critical debate. By 1951, "the U.N. look was beginning to sweep the country," said the *Forum,* observing that it "made steel-and-glass prisms more palatable, more acceptable to conservative investors. It gave modern architecture an aura of respectability and association with world-wide prestige." The U.N. building was followed by Gordon Bunshaft's Lever House, about which the *Forum* said in 1952, "The building says 'I am completely expressive of this industrial age. My personality is the image of yourself you see in my shining walls.'" Then came the Seagram tower by Mies and Philip Johnson, which the *Record* heralded as "probably the most heralded new building in the U.S.," and Mies's Lakeshore Drive apartments. The pre-engineered, factory look, expressing structure and function, was adapted to burgeoning college campus work, as at Mies's I.I.T. buildings, and to low-rise industrial complexes, whose high point was the Saarinens' technical center for General Motors in Detroit.

"We are now critical of modern design while still favoring it," summarized the *Record.* Mumford wrote in 1951 in the *Record,* "In properly rejecting antiquated symbols, [architects] have also rejected human needs, interests, sentiments, values." Calling the skyscraper "the crate now consecrate" and our "American heartache in architecture," Wright, in 1953 in the *Record,* bemoaned "the rising tide of mediocrity." The next year, Paul Rudolph criticized skyscrapers as "merely diagrams of buildings" (*Record,* Aug. 1954) and complained about "facades finished in wallpaper" and the "tyranny of endless streets" (*Forum,* July 1954).

By the mid-'50s, yearnings for more heart, soul, and delight combined with the publication of Le Corbusier's expressionistic 1955 chapel at Ronchamp, plus technological advances in curved, sail-thin, nonbending concrete shell construction, to start a new generation of more expressive buildings. Among them were Eero Saarinen's vaulted, curved hockey stadium at Yale University, Hellmuth, Obata & Kassabaum's St. Louis airport, Yamasaki's Gothicized commercial buildings for Detroit, and Wright's Price



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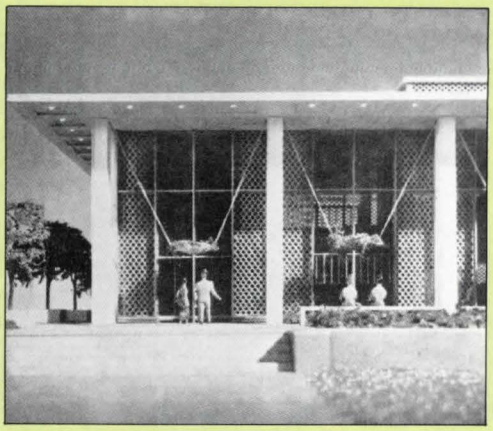

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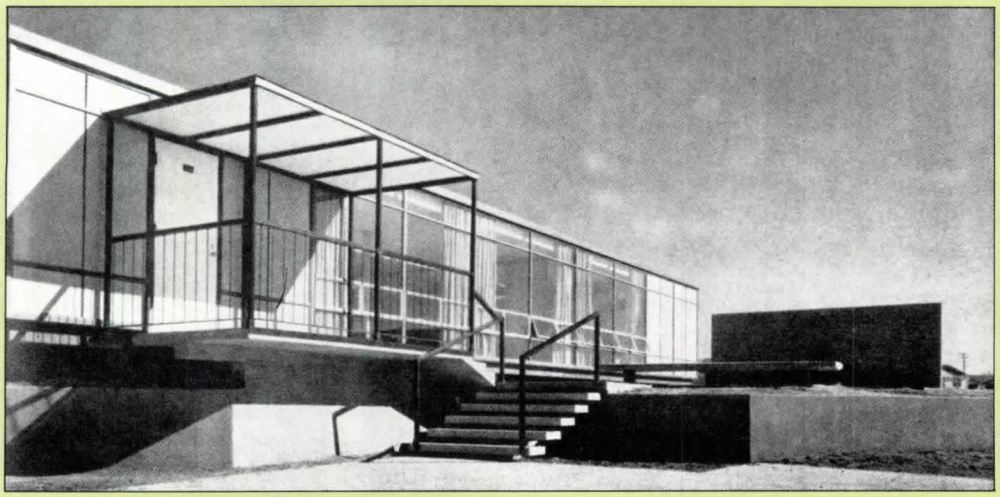

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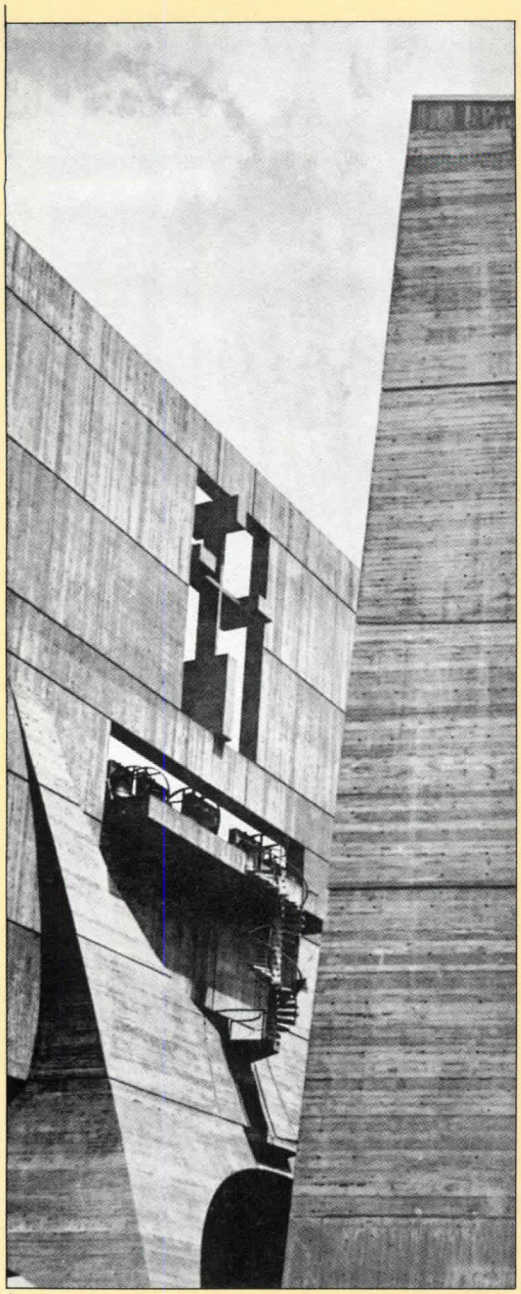
Tower, which inspired the *Record* to say, "One reason Wright himself towers above his profession with the public is his lifelong undeviating battle for architecture as a fine art." The artist-architect of old had given way, as Hudnut wrote in *P/A* in 1958, to the "shadowy personality of the corporate architect [producing] tedious uniformities of a technological architecture."

In 1958, the term "new brutalism" came into use as Edward Durell Stone's concrete U.S. pavilion for the Brussels World's Fair was widely praised, despite its "structural exhibitionism" (*P/A*, Dec.).

The next year, a MOMA exhibition featured "a striking and controversial departure." It comprised the fluid, sculptural work of Saarinen's TWA building, Jørn Utzon's Sydney Opera House —which the *Forum* likened to "abandoned umbrellas"—and Harrison & Abramovitz's First Presbyterian Church at Stamford, Conn. By July 1959, *P/A* had dubbed the work "the new sensualism," aptly warning, "If a street of curtain-walled buildings is depressing, a community of sculptural-sensualist structures is frightening to contemplate." The article also warned of "covert ornamentalism."

In 1959, the magazines recorded a postscript to an entire age: "The greatest architect that the U.S. has yet produced died on April 9," as the *Forum* reported.

(1) All-glass Manufacturers Hanover Trust building, New York City, by SOM's Gordon Bunshaft. The Record *compared it to 'a jewel on the breast of a beautiful woman.' (2) Victor Gruen's Northland shopping center in Detroit. A 1954 shopper praised it, saying, 'You wouldn't know you were in Detroit'* (Forum). *(3) Seagram Building by Mies van der Rohe with Philip Johnson, about which H.R. Hitchcock wrote, 'Never have I seen more of less'* (Forum, *1958*). *(4) Minoru Yamasaki's airport terminal in St. Louis, one of several increasingly sculptural, sensual designs of the late '50s. (5) Caudill, Rowlett, Scott's Bartlesville, Okla., elementary school. (6) Experimental house X-100 for Eichler Homes by Quincy Jones & Frederick E. Emmons, San Mateo, Calif. (7) E.D. Stone's University of South Carolina library—'50s classicism. (8) Wright's Guggenheim. (9) Yamasaki's ACI headquarters, Detroit.*



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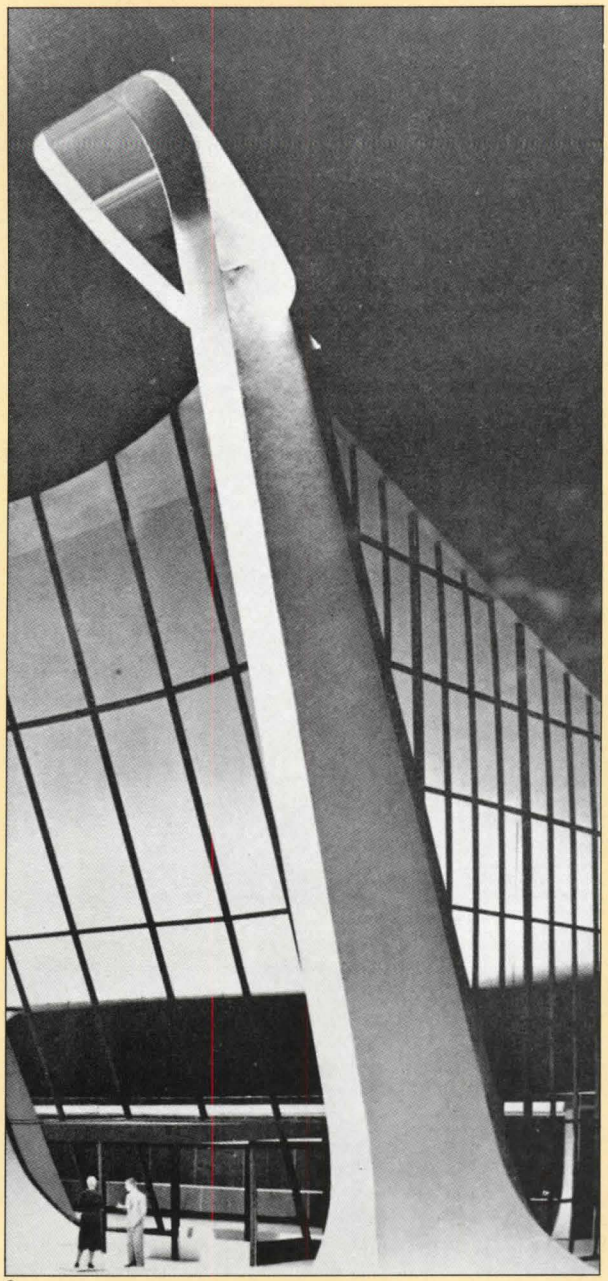

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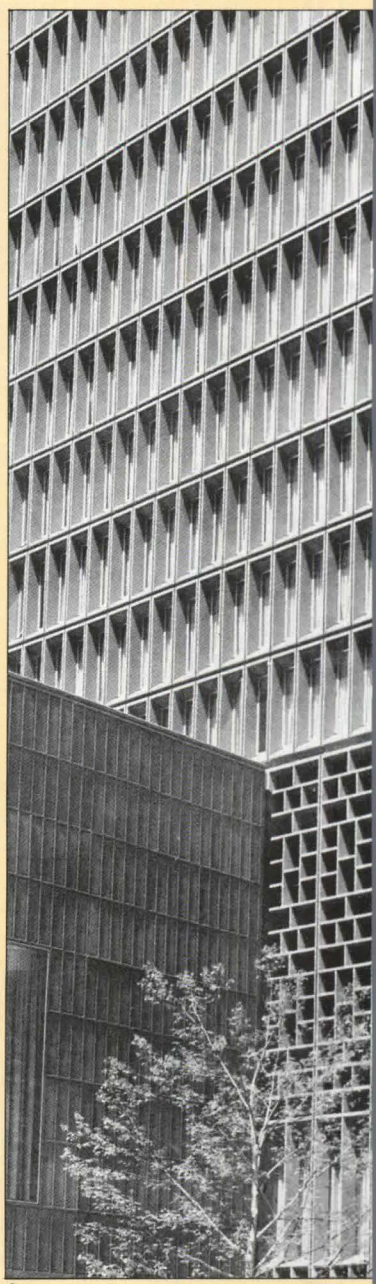

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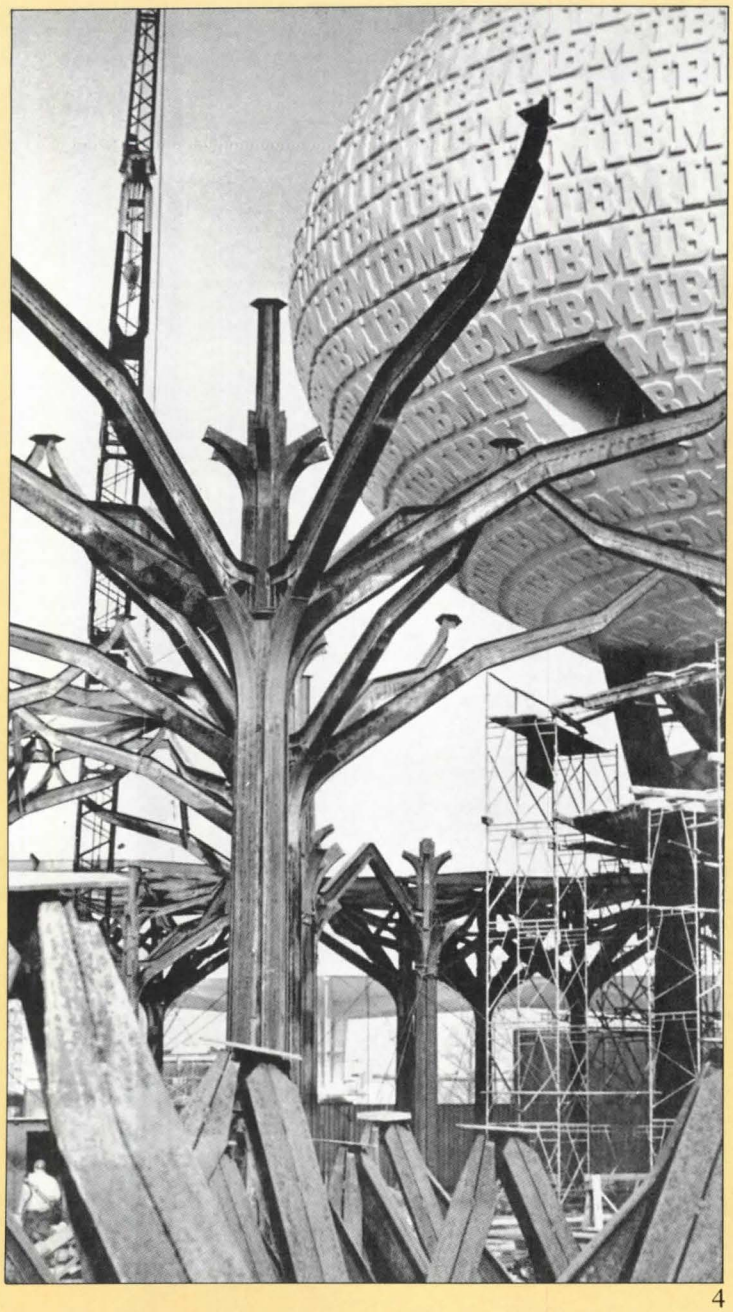
The 1960s seemed a time without limits on what society could do for—and against—itself. President Johnson's Great Society promised the most far-reaching reforms, while the United States came closer to tearing itself apart than at any time since the Civil War. President Kennedy's assassination in 1963 jolted the nation from its 1950's doze, and was followed in 1964 by bloody civil rights protests and in 1965 by the first demonstrations against U.S. involvement in Vietnam. By decade's end, the "affluent society's" bumper crop of offspring had turned from flower children into revolutionaries as the war escalated, more national leaders were murdered, and U.S. cities burned.

Architecture reflected the times, even predicted them. As early as 1960, Gropius described the state of architecture in the *Record* as "confusion and chaos," while Mumford, also in the *Record,* characterized it as "disintegrating into a multitude of sects and mannerisms [in] reaction to the uniformity and regimentation of the highrise slab." While '50s criticism was directed toward improving modern architecture through refinements, the '60s began questioning its very foundations.

The decade began in optimism, in the belief that renewed freedom of expression would yield a new architecture. In 1960, the *Record* took hope in "the strong structural shapes" of Le Corbusier's monastery at La Tourette, while the *Forum* rejoiced that Louis Kahn's Richards laboratory at Yale "lifts technology to the level of art by putting it firmly in its place." In 1961, *P/A* proclaimed that the new Philadelphia school under Kahn's leadership "heralds a new Renaissance." In 1962, it praised Kallmann, McKinnell & Knowles's winning scheme for Boston City Hall as "a keystone between the historic past and the brilliant future which is to come"; welcomed Saarinen's Concordia College at Yale as "blending an exciting new concept with older styles"; and lauded the variety of new concrete curtain walls "that offer bold texture and solidity."

But by 1963, John Burchard wrote in the *Record,* "Contemporary architecture is losing its solid momentum in a display of unfocused pyrotechnics." *P/A* concluded that the new freedom in design resulted in "much noise" rather than "symphonies."

The reaction to urban development was especially strong. Now affluent, America emphasized as never before the creation of gigantic projects, especially as 1965 Great Society legislation put new stress on accommodating a large influx of poor, rural blacks into the major cities. In May 1965, the *Forum* excerpted Martin Anderson's *The Federal Bulldozer,* advocating that "the entire program be dropped." Urban renewal to date, said Anderson, had "eliminated 126,000 low rent homes and replaced them with 28,000 new ones" at higher cost. Two months later



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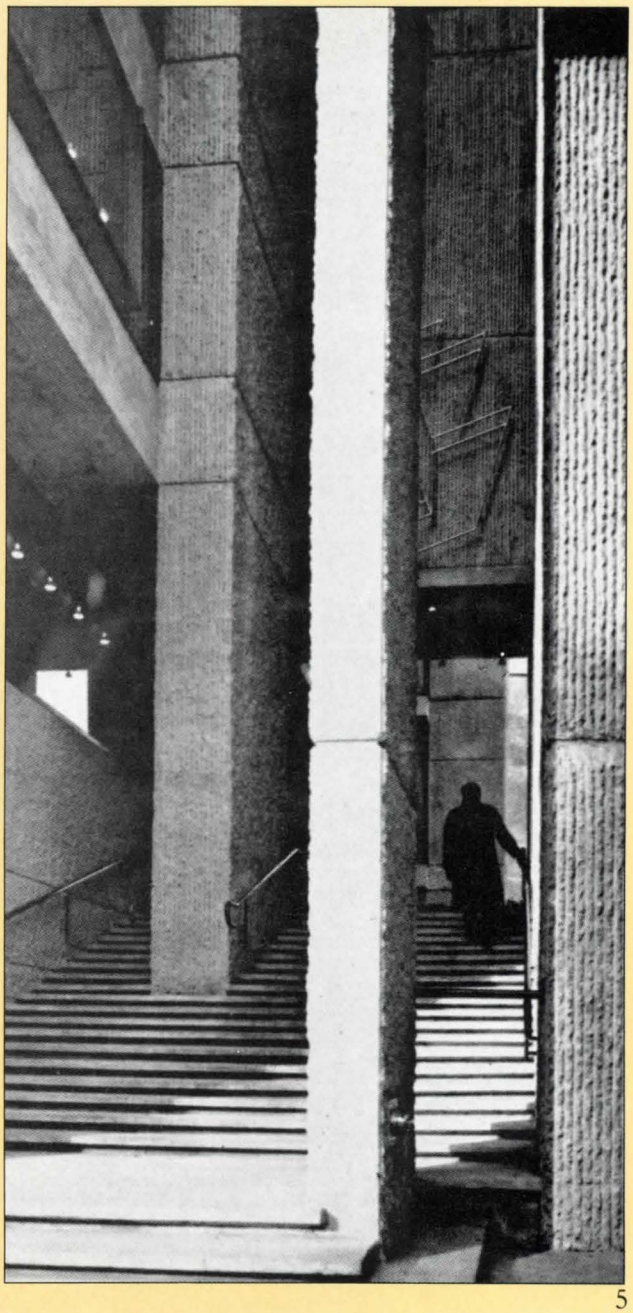

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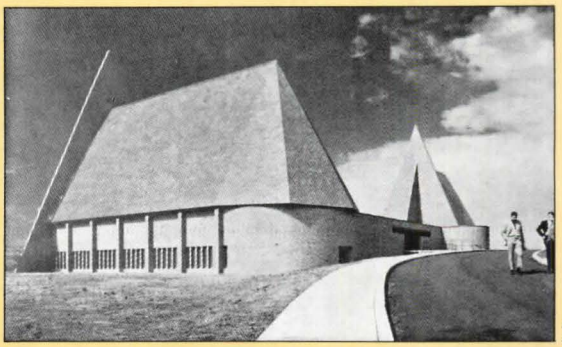
Donald Canty argued in the *Forum* for the more enlightened strategy of "making architecture of urban housing . . . responsible to the marketplace, to broad social concerns, to individual human need." What was needed, said Mumford in the *Record,* was to limit numbers and density, mix social and commercial activities, balance internal architectural elements, and integrate them with their surroundings. "A truly modern design for a city," he wrote, "must allow for both its historic and social complexity."

But in design itself, "bigness seems to be the biggest fact of our time or our future," wrote Emerson Goble in the *Record* in 1965. Among other things, new technologies such as cable structures "allowed limitless shapes and space frames with almost no limit in size," as the *Record* noted. Giant space frames were used for stadiums in major cities, while bulky concrete forms were erected for booming museums, college campuses, and civic institutions. A *Record* article lamented, "We do not build cities any longer. Instead we build centers—cultural centers, government centers, medical centers . . . industrial parks [and] housing projects. People are supposed to live in projects and work in parks."

In editorials, the magazines all agreed. Yet they exulted in bigness and the enlarged role of the architect as creator of "total environments," as the *Record* said in 1966. The magazines praised such unfriendly urban megaliths as the University of Illinois

(1) A 'modern fortress for an ancient faith,' as the Forum *in 1961 called Marcel Breuer's Abbey Church of St. John in Collegeville, Minn. (2) The magazine described Eero Saarinen's 1960 Dulles Airport as 'a machine for jet traveling.' (3) About I.M. Pei & Associates's Denver Hilton, the* Forum *ventured, 'In a hotel-building boom more distinguished for its flash than its finesse, [this] stands out as the greatest design since the opulence of the '20s.' (4) The IBM pavilion at the 1964 New York World's Fair by Charles Eames and Eero Saarinen. (5) Paul Rudolph's Art and Architecture Building at Yale, a widely praised icon of the mid-'60s, was later burned by protesting students who deemed it an inhumane product of an unfeeling 'establishment.'*



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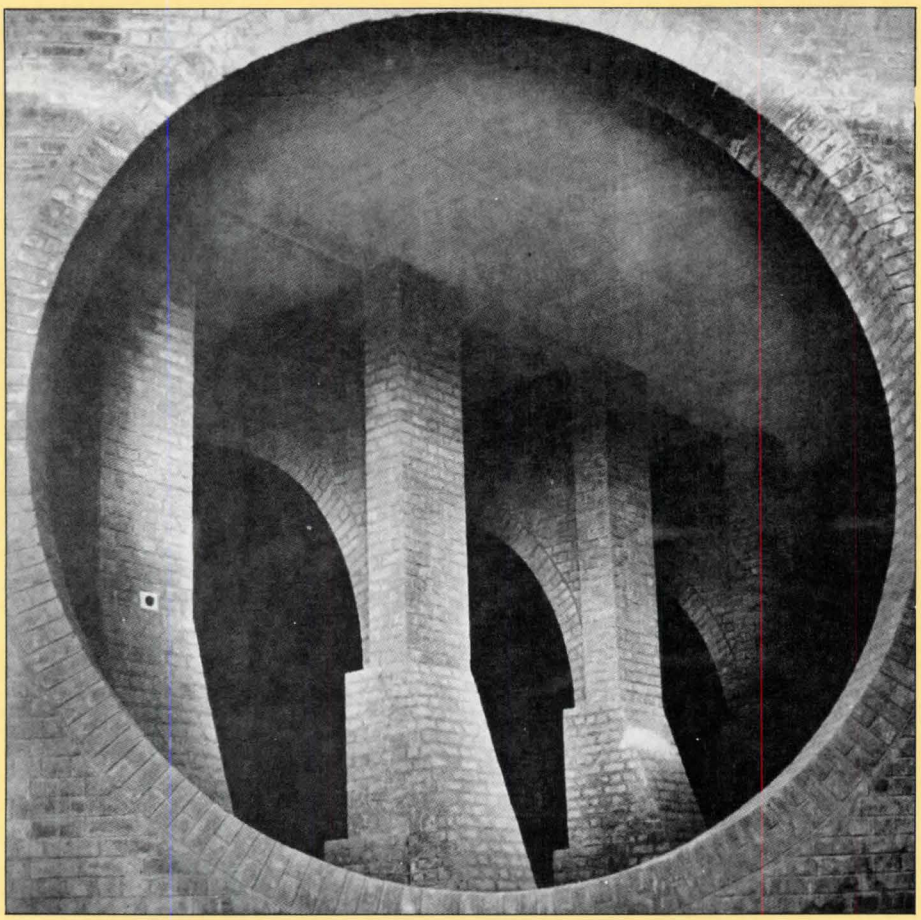

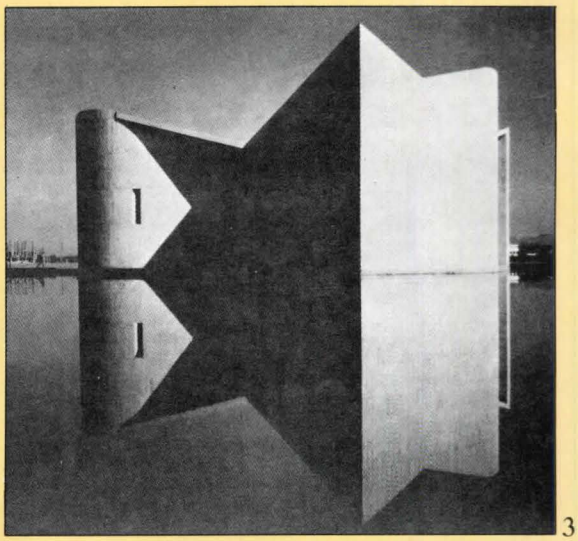

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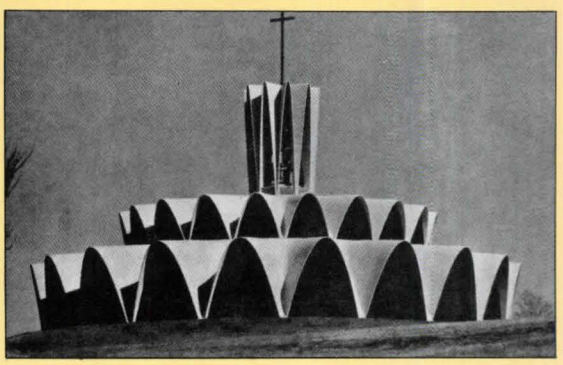

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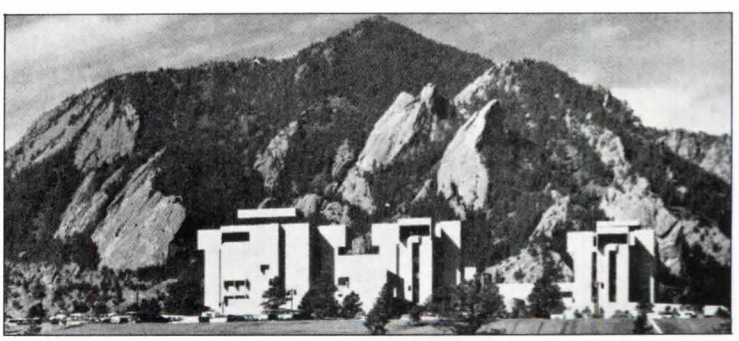
Chicago Circle Campus as "a slightly scaled down model of what a 20th century city might be" (*Forum*), and the windowless, brutalist Place Bonaventure in Montreal as "an architecture for all the senses" (*Record*). The magazines seemed lost.

P/A's decisive Tom Creighton gave up his editorship in 1963, lamenting "the confusion in architecture," and "the deplorable urban monotony." By 1966 *P/A* had become pseudo-intellectual, cynical about architecture, and seemingly more interested in pop psychology than issues of design. The main inspiration at the *Record,* which, among other things, was advocating demolition of New York City's Pennsylvania Station, came from outside contributors, most notably Mumford. Though Time-Life suspended publication of the *Forum* in 1964, it reappeared the next spring under the aegis of Urban America. There it remained an advocate, especially for social issues, until 1974. Among buildings covered in some fashion by the magazines at mid-decade were Saarinen's CBS tower and Breuer's Whitney Museum in New York City, Atlanta's Hyatt Regency Hotel by John Portman, whom the *Record* called "a one-man urban renewal program," Kahn's Salk laboratories, Pei's museums at Syracuse and Des Moines, SOM's Air Force Academy, and Fuller's geodesic dome for Expo '67 in Montreal. As a space structure, it served as an appropriate symbol for a country about to set foot on the moon.



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While the summer of 1968 brought riots in cities across the country, a new housing and urban development act promised "a decent home for all—well almost all—within 10 years," as the *Forum* put it. The magazines began reporting on "advocacy" architecture such as Richard Hatch's work in Harlem, while Mumford made this plea: "The time has come for architecture to come back to earth and to make a new home for man. . . . The cult of power has made us impotent; and the cult of speed has created an environment so uniform that the faster one travels the less the scene changes" (*Record,* Feb. 1968). Nevertheless, in August of that year, the *Record* editorialized in favor of erect-

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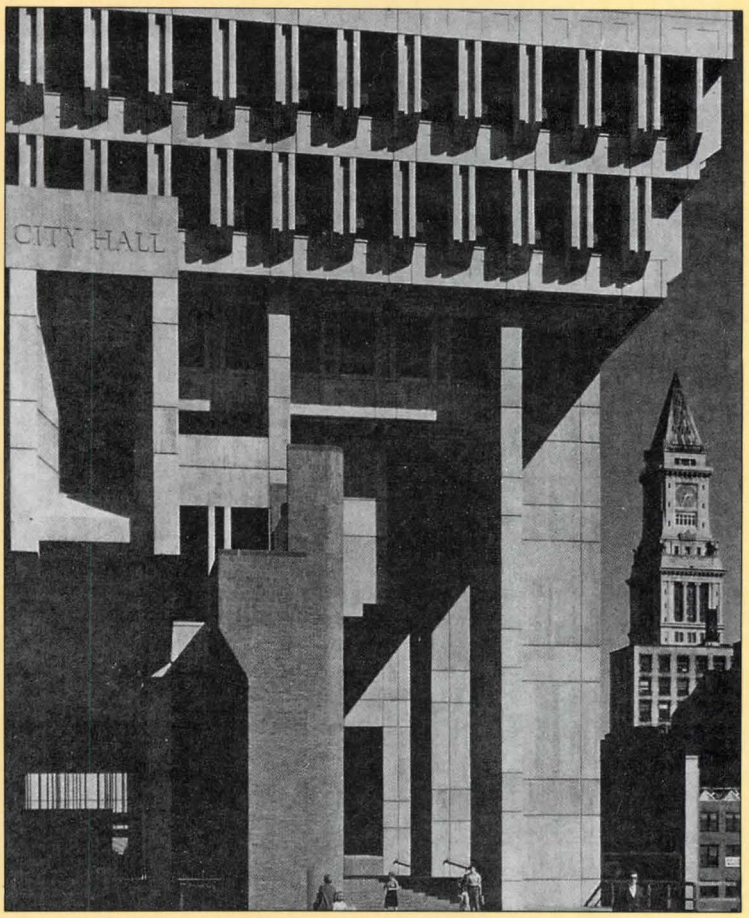
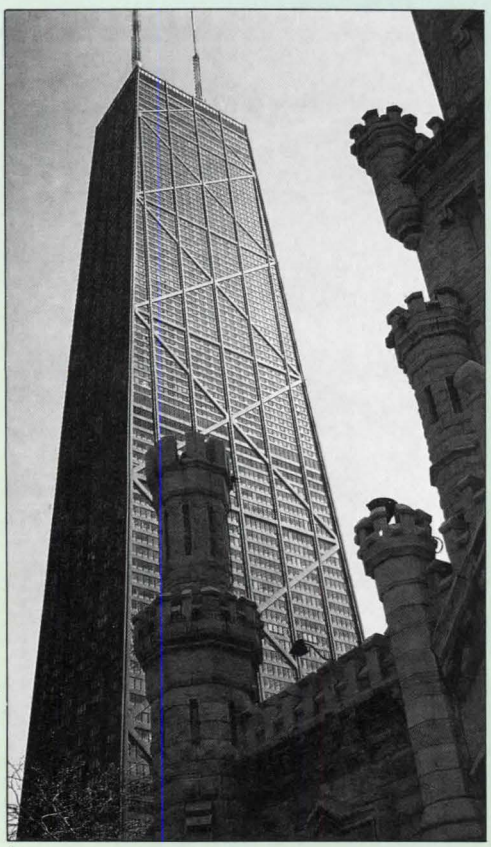


ing the Pan Am building overshadowing Grand Central Station.

As college students pitted themselves against "the establishment," in 1968 the *Forum* and *P/A* began publishing work by a new generation of architects. Three projects by Venturi & Rauch were premiated in the annual *P/A* design awards and were considered by the jury to be "centered on what is perhaps a main turning point in architecture today." *P/A* quoted a juror saying, "We are getting away from the 'architecture of exclusion.'" In 1968, the *Forum* published Venturi's and Scott Brown's "A Significance for A&P Parking Lots or Learning from Las Vegas," which argued for "learning from the existing landscape as a way of being revolutionary." Shortly thereafter, *P/A* published Robert A.M. Stern's first eclectic, history-quoting house, in Montauk, N.Y. "The revolt of the third generation architects," said *P/A*, "is to secure an integrated human implementation of function [sic] and a richer formal language."

During 1969 both Mies and Gropius died. By the end of that year, the economy showed the first alarming signs of weakness in over a decade, the federal government had cut back its urban development programs, and the *Forum* published "Technology vs. Nature," an early warning by Barry Commoner on the damaging "environmental effects of technological progress." The decade without limits had ended.

(1) Indian Institute of Management, Louis Kahn's first large grouping of buildings having varied functions. (2) Of his First Baptist Church of Columbus, Ind., Harry Weese said, 'Forced with the choice, I would rather be right than contemporary.' (3) Le Corbusier's Gandhi Memorial, University Campus Chandígarh. (4) Hellmuth, Obata, & Kassabaum's Priory of St. Louis and St. Mary, St. Louis, Mo. (5) I.M. Pei & Partners' National Center for Atmospheric Research, Boulder, Colo., 'a direct response to the character of the site,' as the Record *said. (6) Kevin Roche John Dinkeloo & Associates's Ford Foundation Headquarters, N.Y.C., called 'a new kind of urban space' by the* Record, *which praised its garden court as 'an oasis of tranquillity.' (7) Boston New City Hall by Kallmann, McKinnell & Knowles, completed in 1968, which the* Forum *called the 'closest emulation of Le Corbusier's late style in the U.S.'*



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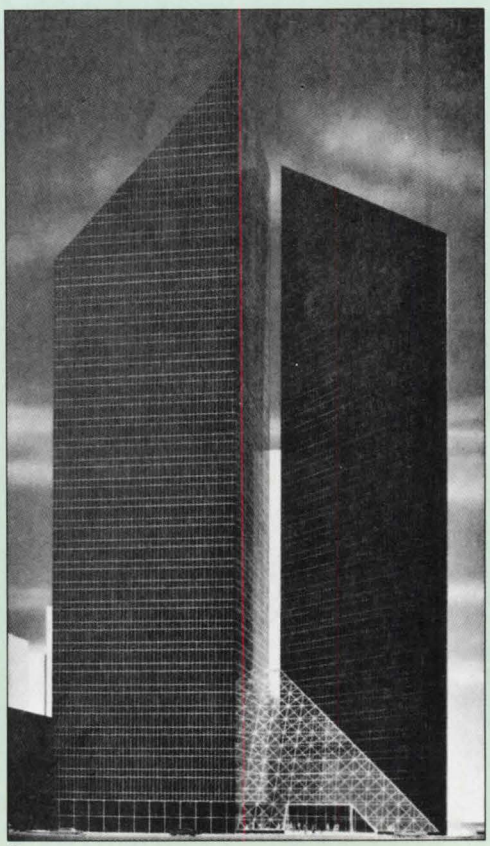

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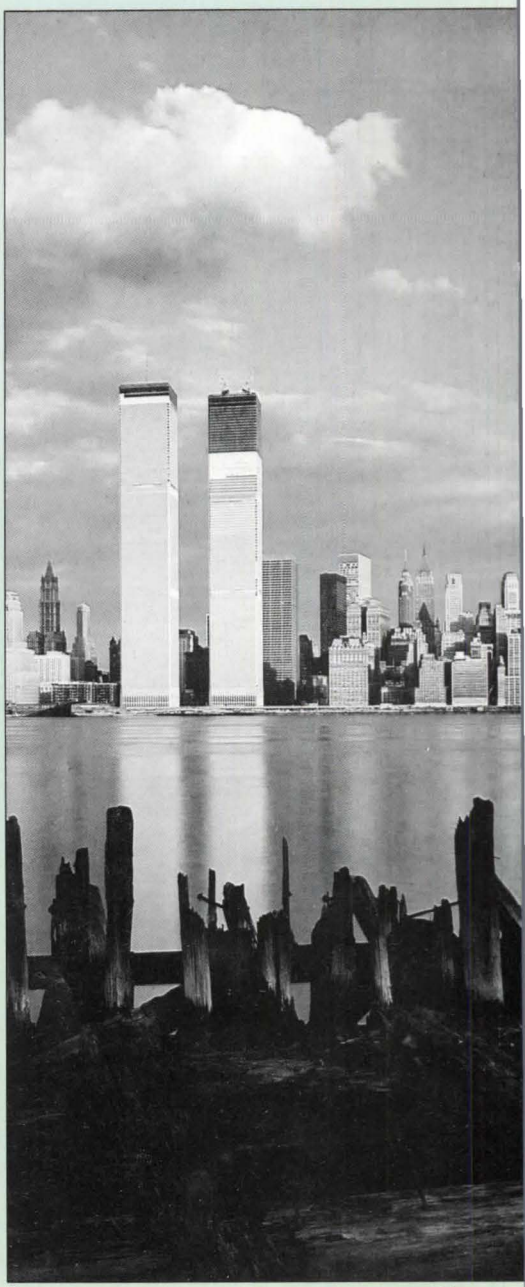

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The 1970s tested and found wanting the trustworthiness of America's government, the nation's presumption of world-wide industrial pre-eminence (even of self-sufficiency), and its equation of growth with progress. By 1970, the word "recession" had crept back into the public vocabulary, U.S. industries languished, unemployment soared, inflation heated up. The country had hardly extricated itself from Vietnam and Cambodia in 1972 before being mired in Watergate the next year, while Americans waited in gas lines, feeling cynical about government, outraged and humbled by OPEC. As Alvin Toffler wrote in *Future Shock,* our very "life support systems" of energy, welfare, industries, and cities seemed to be cracking. As power and bigness were devalued—and the architect's role diminished—a search began for more manageable, more provisional, and smaller solutions. "Small" became "beautiful," in E. F. Schumacher's words. Disillusionment with the present and fear of the future strengthened the environmental movement and encouraged escapism and a turning inward. Tom Wolfe called the 1970s the "Me Generation." By mid-decade, *P/A* described architecture as "looking forward to the past."

The early years of the decade were *P/A's* heyday. The *Record* was slow to react. "Coming up soon superscale," it said in 1970, adding that "architects stand in the strongest position they have held for a very long time." It took *Record* until 1976 to recognize "a new pluralism." Its pages, filled with broad-shouldered hunks, bespoke institutionalism. As the government abandoned housing and cities, the *Forum* seemed to lose heart and purpose while advocating the rights of minority groups and women and berating the administration. "Less public housing has been constructed in the 23 years since the 1949 act was signed than that act called for in the first six years," it charged in 1972. The next year, the *Forum* was further demoralized as several staff members left it to join the newly formed *Architecture Plus,* a lively, highly professional, international design publication, which, for financial reasons, lasted only two years.

By 1970 *P/A's* annual design awards had gained importance in pinpointing new directions, though probably not, as the magazine thought, in creating them. "Process, advocacy, social crisis, conservation, pollution are the proper concerns of the architect," declared *P/A's* awards jury in 1970. By 1971 the magazine had rejected both functionalism and formalism. Editor Forrest Wilson wrote, "We have technologied ourselves into a corner labeled 'energy crisis.'" The magazine embraced "old forgotten lessons" of passive solar design. In 1972, when John Morris Dixon became editor, *P/A* ran a whole issue on preservation and, in an article on Pruitt-Igoe's demolition "for reasons

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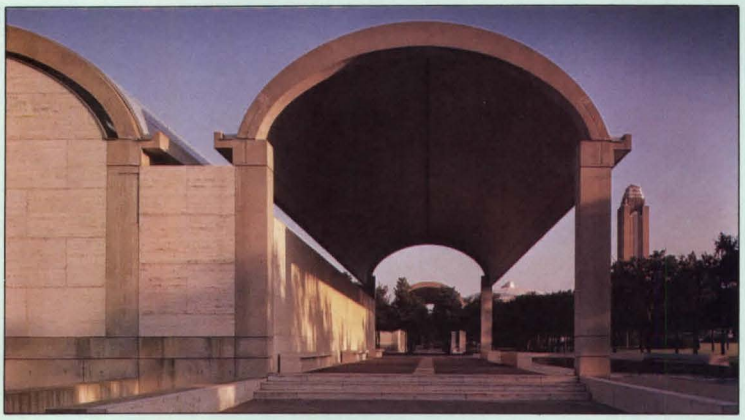

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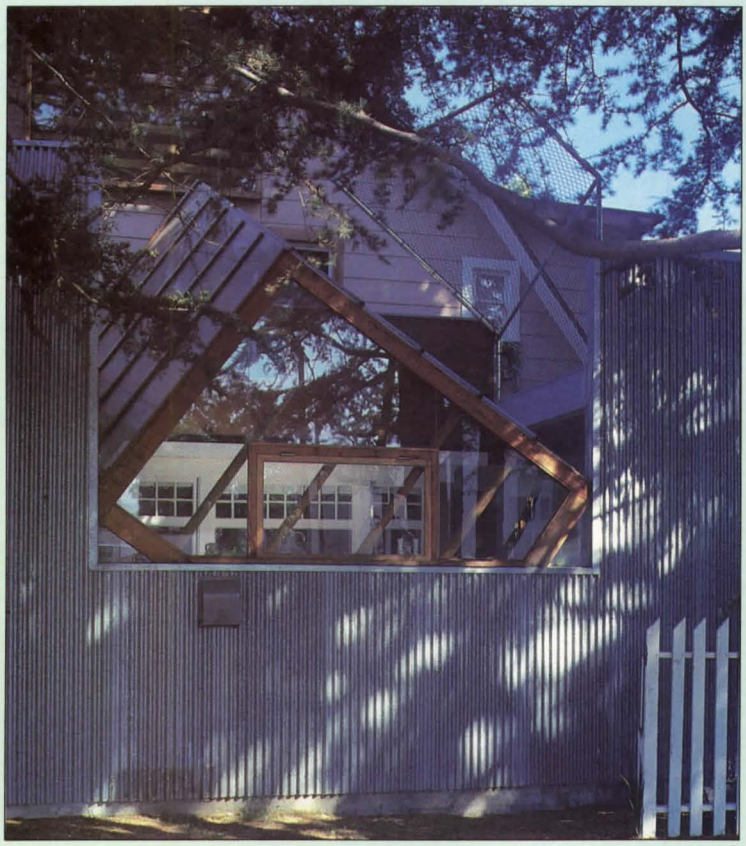

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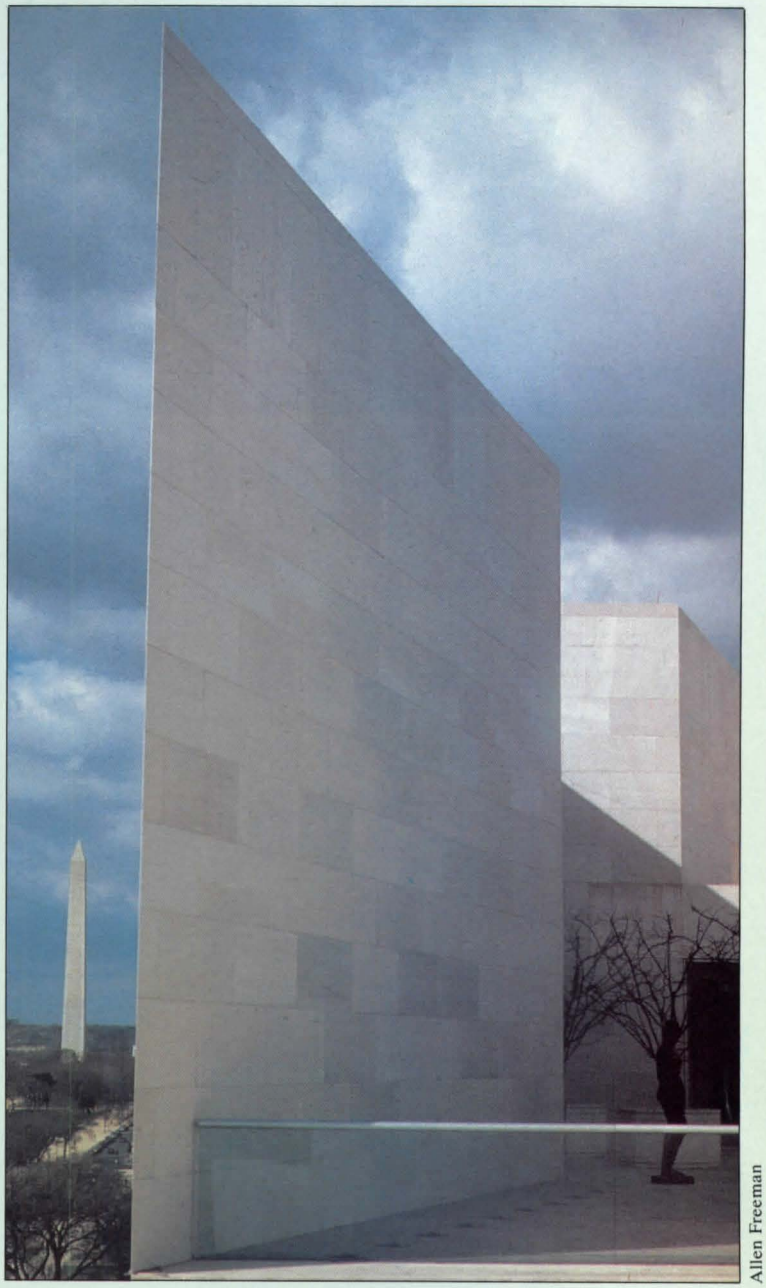

Allen Freeman

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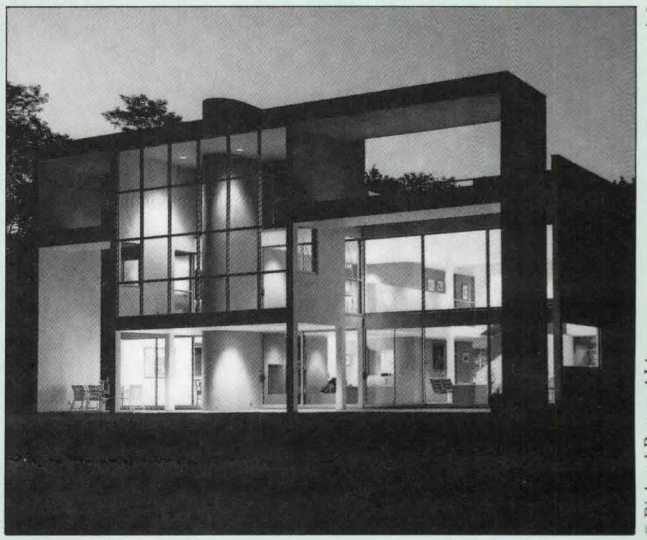
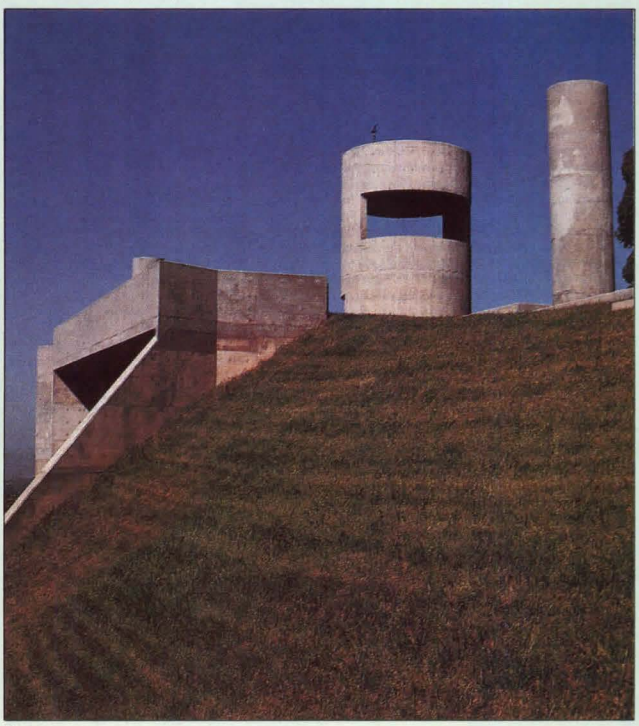
of safety," it presented Oscar Newman's ideas about "defensible spaces" as "alternatives to fear."

Nineteen seventy-two also saw Buckminster Fuller win the AIA gold medal; the *Forum* described him as a rare "adventurous American, respectful of the past, conscious of the present, but preoccupied with the future." The *Forum* that year also "rediscovered" Wright and did a whole issue on Kahn, for whom "form never followed function" and whose "mind is a cross between a gaslight and a laser beam." Among its many other interests were community-run Acorn schools that capitalized on "found spaces."

A few months before the *Forum's* demise, the *Record* said, "We enter the year 1974 in what clearly is a gloomy mood." The "oil shock" of the previous year brought recession on top of President Nixon's moratorium on new public housing. As in the '30s, architects looked to rehabilitation, remodeling, and interiors for work. *P/A's* 1974 design awards jury endorsed "responsible use of resources: the re-use of old structures, the control or retrieval of solar energy, the recycling of wastes, the conservation of natural landscape." It ventured that "the energy crisis, together with the conservation movement, could have much more impact on building design than the great 'form-givers' of the last three decades." That was an exaggeration. But with energy concerns now demanding that design fit local climate (while universal

(1) John Hancock Center, Chicago, by SOM, 'will serve a resident's needs so completely that, if he chose, he'd never have to leave' (Forum, *1974*). *(2) Johnson & Burgee's Pennzoil Place broke the high-rise box 'suggesting the shape of things to come'* (P/A, *1977*). *(3) Yamasaki's World Trade Center 'shattered records'* (Forum, *1973*). *(4) Kimbell Museum in Fort Worth, Tex., 'Louis Kahn's most transcendant building'* (Journal, *1978*). *(5) Frank Gehry residence, Santa Monica, Calif. Gehry explained, 'It was just a dumb little house with charm, and I became interested in trying to make it more important.... It's very surreal, and I am interested in surrealism.' (6) East Building, National Gallery of Art, Washington, D.C., 'the most adventurous, most sculptural... piece of contemporary architecture in the federal precinct'* (Journal, *1979*).





answers were devalued), and with conservation arousing interest in suitably scaled indigenous architecture (while large-scale urban renewal was pronounced a failure), regionalism wasn't far away.

The urge to conserve also prompted the recycling of old buildings and the salvaging of long-neglected city waterfronts. "Suddenly, it seems the romance and practicality of waterfront living have inspired the imagination of planners and developers," said *P/A*. Conservation also elevated preservation to a major force, which in turn focused attention on the past and on Philip Johnson's dictum that "you cannot not know history."

During the first half of the decade, the buildings the magazines covered included the John Hancock tower in Boston by Henry Cobb of I.M. Pei & Partners; San Fransisco's Bank of America by Wurster, Bernardi & Emmons, SOM, and Pietro Belluschi; the County Government Center in Goshen, N.Y., by Paul Rudolph, whom the *Record* called "the architect of the decade"; Harvard's Gund Hall by John Andrews; Kahn's Exeter library; Mitchell/Giurgola's unbuilt scheme for AIA's headquarters in Washington, D.C.—"the very best that architects designing for themselves can do," according to the *Record's* Mildred Schmertz; Portman's San Francisco *Hyatt*—"a serious statement about what 'reality' in our downtown should be" (*P/A*); Johnson's IDS tower in Minneapolis, which created "a there there" (*P/A*); housing by Davis, Brody; art centers by Pei and Barnes; and by Gwathmey Siegel, Richard Meier, and Stanley Tigerman, a house or two each.

By the mid-'70s, the single-family house was declared "a relevant object" by *P/A*, after a decade of being denigrated as socially useless. In 1976, *P/A* called it "the only thing the architect has any power over, any level of control. If the battle of the styles has once again started raging, the house serves as its heraldic emblem." It added that "architecture is or should be moving in the direction of 'Post-Modernism.'" Generally, the magazine viewed postmodernism, à la Robert Stern, as concerned with contextualism, historical allusion, and applied ornament, but in the end it tended to use the term as an all-purpose repository for buildings other than International Style.

By 1978 nonmodern architecture had gained legitimacy from a 1975 MOMA exhibition re-evaluating the Beaux-Arts and from the U.S. bicentennial, which intensified the focus on history, roots, and nostalgia. In addition, in 1977, Philip Johnson had broken the high-rise box with his pointy-topped Pennzoil building in Houston; both Venturi and Frank Gehry had won their first AIA honor awards; and Charles Jencks had published his *Language of Post-Modern Architecture.* Social programs seemed shelved for good, and as a result the architect's principal role reverted

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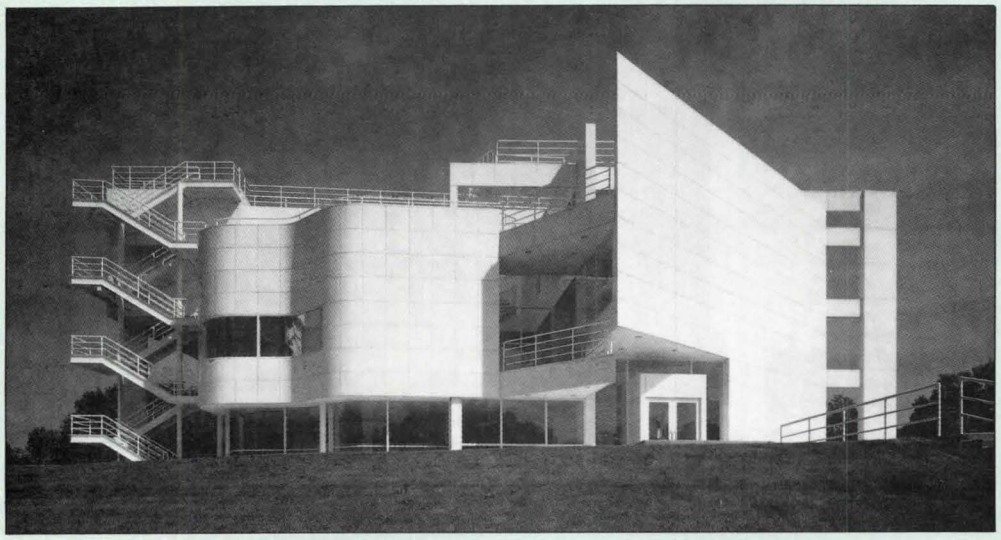

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(1) Piazza d'Italia in New Orleans by Charles Moore with August Perez & Associates: P/A *in 1978 called it 'urban redevelopment with emphasis on delight.' (2) Gwathmey Siegel Architects's house outside Cincinnati, an exploration of 'varying relationships of whole compositions to their parts,' said the* Journal. *A product of the underground movement in architecture that grew out of energy and environmental concerns is (3) Roland Coate's Alexander house, Montecito, Calif. (4) Richard Meier's Atheneum in New Harmony, Ind., whose strong presence, said the* Journal, *'heralds a new degree of Meier's confidence as an artist... the most uncompromisingly Meier-like of all Meier's work so far.' (5) Benjamin Thompson & Associates's restored and recycled Faneuil Hall in Boston initiated the festival marketplace concept that has spread to cities across the United States.*

to that of artist. In fact, the changes overtaking architecture prefigured those in the other visual arts. "If any characteristic seems to be on the ascendancy now, it is the tendency toward historical allusion," said *P/A* in 1978.

Nineteen seventy-eight was also the year the AIA Journal initiated its annual review of new American architecture. On its first cover was Kahn's Yale Center for British Art; the other buildings represented a mix of styles and attitudes. The issue also contained critical essays on current directions. "I think of it as 'The Emperor's Postmodernism,'" wrote Alan Chimacoff in the 1978 annual. "But unlike the fairy tale, here there are only clothes, and no emperor—no corpus, no body, no structure, only trappings." David Gebhard, in contrast, wrote, "Postmodernism has freed us from the rhetoric of architecture as a social instrument, and now we can once more (without hiding) concentrate on that which architecture has always been about—the creation of images." Romaldo Giurgola, the next year, portrayed postmodernism as "escaping the crucial critical step of rational thinking," while Robert Campbell worried more broadly "that the people who worry so much about art and Lutyens don't talk to the people who worry just as much about the sun and rock-storage, and that neither talks much to anyone else."

Nineteen seventy-eight also saw the first publication of a house by Michael Graves and of the AT&T scheme, which *P/A* pronounced a "cunning blow to the whole sprawling body of American architecture." *Time* magazine deemed it sufficiently cunning for a cover story. Though postmodernism "remained more discussed than visible in built form," as Stanley Abercrombie wrote in the Journal, it was ironic that the most publicized building of 1978 was Pei's totally abstract East Building of the National Gallery of Art in Washington, D.C. Its opening was feted nationwide via television. Architecture had become a media event.

According to a *P/A* survey, the architects most frequently covered by the *Record* in the '70s were SOM, CRS, HOK, Charles Moore, Kaplan & McLaughlin, Paul Rudolph, TAC, Edward L. Barnes, Richard Meier, and John Carl Warnecke. Most published in *P/A* were Moore, Venturi & Rauch, CRS, Hardy Holzman Pfeiffer, Mitchell/Giurgola, SOM, Graves, Stanley Tigerman, Victor Gruen, and MLTW/Moore Turnbull. The most frequent AIA honor award winners were SOM, I.M Pei, C.F. Murphy, Hardy Holzman Pfeiffer, Johnson, Meier, Harry Weese, Mitchell/Giurgola, and Ulrich Franzen.

The decade's dualism was summarized by conferral of the AIA gold medal on Philip Johnson in 1978 and on I.M. Pei in 1979. As the '70s ended, American hostages were taken in Iran and another oil embargo sent the economy into another a nose dive.

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(1) Johnson & Burgee's AT&T Building, 'an awesome, totemic, just slightly overbearing wonder' (Journal, *1982*). *(2) Cesar Pelli's Battery Park City, N.Y.C., 'an embodiment of peculiarly 1980s ideas and attitudes toward urban design and architecture,' especially in accommodating the existing city and focusing inward.* (Architecture, *1986*). *(3) Seaside Point, Washington, Fla., master plan by Andres Duany & Elizabeth Plater-Zyberk, 'well-detailed homes in the woods'* (Architecture, *1986*). *(4) Michael Graves's Portland Building, 'the nation's first executed monument of a loosely defined postmodern style'* (Journal, *1983*). *(5) Kohn Pedersen Fox's Procter & Gamble headquarters addition, Cincinnati. '[One draws] one's style from the place to create a personality for a building that fits into but isn't distorted by the context,' as William Pedersen said* (Architecture, *1985*).

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2

In 1980, America elected its first movie-star president, mainly because of his comforting style and his promise to cure the recession. Ronald Reagan suceeded in ushering in a 1920s-style boom, fueled by a high-tech service economy dominated by managers and "communications" experts rather than professionals, and led by 1960s revolutionaries-turned-careerists. Mideast terrorists were the revolutionaries of the day and the principal challenge to U.S. security, resulting in the bombing of Libya and military intervention to prevent Iran from blocking oil shipments in the Persian Gulf. By mid-1987, power balances seemed topsy-turvy as America became the world's largest debtor nation during a period of apparent national affluence. Further underscoring that things were not as they seemed, news of the Iran-contra diversion was accompanied by steamy scandals linking pious-talking TV preachers with sexual promiscuity, self-righteous presidential candidates with flaws of character, soldiers with espionage, Wall Street moguls with lawlessness.

In architecture, also, theater and image dominated, as the first large-scale postmodernist buildings took shape. Frank Gehry wrote in the JOURNAL in 1982, "What we are seeing today is an 11th-hour return to style, in which architectural work is providing fantasy for future life to people who are finding it necessary to tighten their belts." The 1980 building of the year, according to *P/A*, was Johnson's Crystal Cathedral—all glassy surface—for television preacher Robert Schuller in Garden Grove, Calif. The same year, Helmut Jahn wrote in the JOURNAL, "So today we are confronted by an architectural intermission, the stage between the death of one paradigm and the birth of another. True, there are those who dance on the stage briefly, one more outrageously insubstantial than the next. Andy Warhol predicted that in the media society we all would be famous for 10 minutes."

Architecture itself became famous for a few minutes with the publication in 1981 of *From Bauhaus to Our House,* pop culture pathologist Tom Wolfe's best-seller thrashing modern architecture. *P/A* shifted from perceptive observation in the 1970s to sighting 10-minute fads in the early 1980s. These included "new wave," "historical pastiche," "postmodern ornamentalism," "abstract invention," and Lutyens, Schinkel, and "neoclassicism" ("a right wing movement—not just architecturally but politically").

The JOURNAL's approach was more ecumenical, as evidenced, for example, by its choice of cover stories for its May annual review issues of the early 1980s. In 1981 it featured Fay Jones's Thorncrown Chapel in Eureka Springs, Ark. The obverse of glitz, it was all structure, "a highly personal, handcrafted structure." In 1982, Richard Meier's Hartford Seminary captured the cover, "a remarkable sculptural object," where "light is the dominating

3 © Stephen Brooke

© Greg Hursley 4

5 © Timothy Hursley/The Arkansas Office

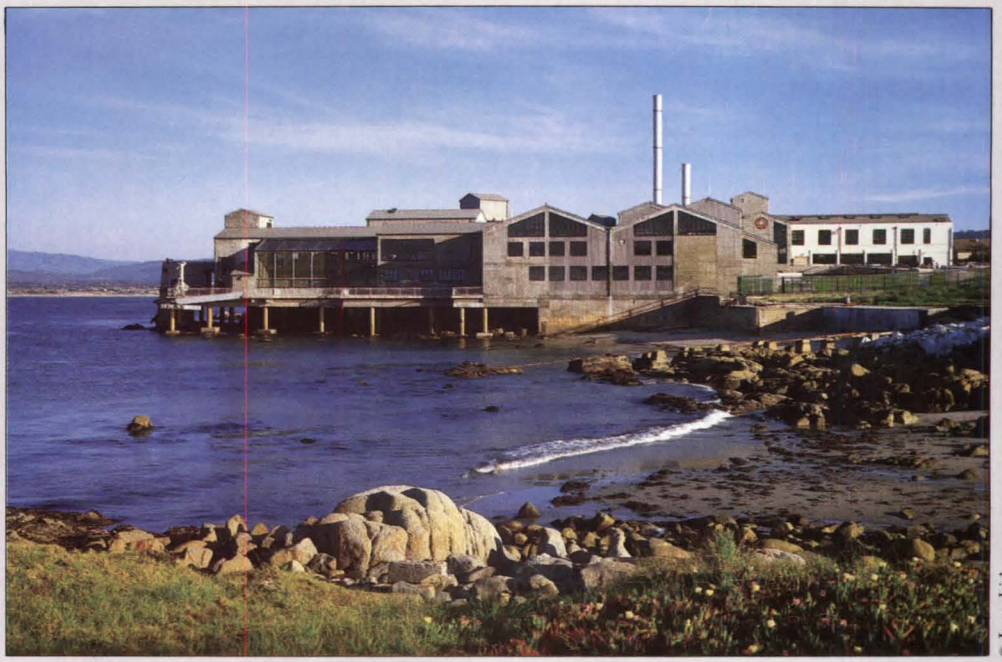
presence." In 1983, it was the controversial Vietnam Memorial by Yale student Maya Ying Lin, about which Robert Campbell wrote, "It reaches out beyond itself to engage and transform its surrounding world."

By 1986 *P/A* wrote, "Concerns such as energy, preservation, and accessibility have . . . been absorbed into the prevailing architectural culture." Among the beneficiaries were the cities. Young professionals, especially, had begun moving back, first to reduce fuel bills and then for the "life style." Their return, combined with architecture's new emphasis on "sense of place," resulted in downtown renewal with a new stamp. As the *Record* said, "The successfully rejuvenated downtowns have competed on their own urban terms, respecting the street, restoring what's left of the fabric built over time, weaving the new to fit in with the old, and continuing the layering process through which cities evolved in the first place." Developer James Rouse and architect Ben Thompson adapted the "festival marketplace" concept to Baltimore, Washington, D.C., and New York City (South St. Harbor), and the idea was copied in cities across the country. But the resulting gentrification also displaced the poor, while real estate inflation excluded the middle class, leaving mostly the rich, the slums, and millions of homeless people living on city streets with little hope of help from financially strapped governments.

New architecture by governments and public institutions was scant and was all but monopolized by buildings for a new art museum boom. A reflection, in part, of the period's search for cultural continuity and permanence, and intended as flypaper for tourists and prospective patrons, the new museums "became showcases for many of the prevailing architectural ideas of the period," the JOURNAL said. Many had glassy public atriums, most curtsied to history, and virtually all were formed of rooms rather than undifferentiated spaces. Their hallmarks were the dramatic, eye-catching gesture. Among the new buildings were Richard Meier's High Museum in Atlanta and his addition to the Des Moines Museum of Art; the Portland (Me.) Museum by Henry Cobb of I.M. Pei's office; Edward L. Barnes's Dallas Museum; Hardy Holzman Pfeiffer's additions to the Los Angeles County Museum of Art and the Virginia Museum of Fine Arts; Arata Isozaki's Museum of Contemporary Art in Los Angeles; James Stirling's Sackler Museum for Harvard; and Charles Moore's Hood Museum for Dartmouth.

There was a handful of other noteworthy university buildings, such as Cesar Pelli's Herring Hall for Rice and Venturi, Rauch & Scott Brown's Wu Hall for Princeton. But so far the 1980s—like the frothy, doom-impelled 1920s and the pre-high-tech, prim '50s—have belonged to commercial developers, principally of sky-

Allen Freeman



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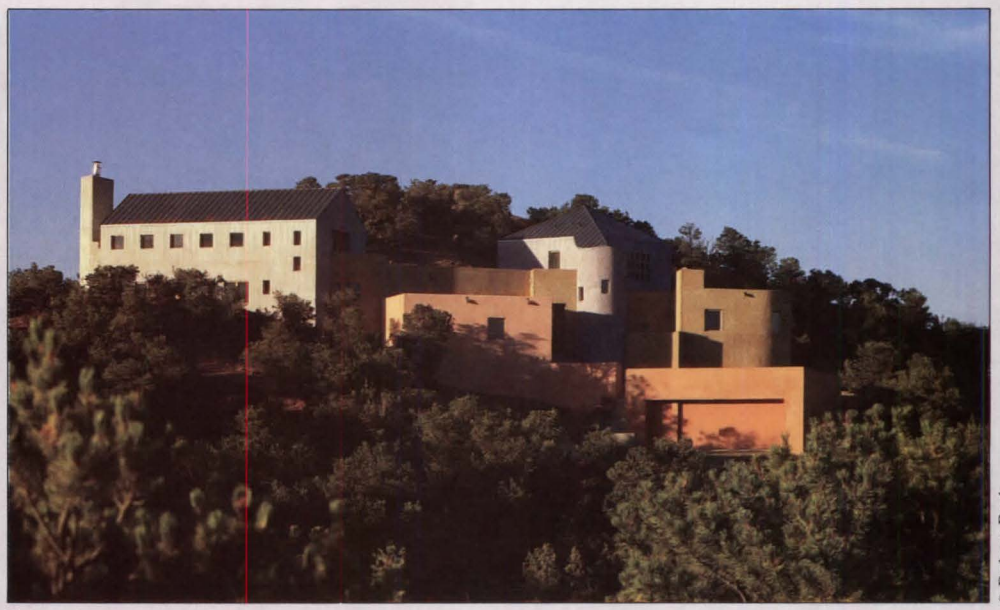

© Robert Peck

scrapers, and to their architects, suddenly themselves big business.

"Skyscrapers have been popping up like asparagus in cities across the country," the *Record* observed in 1983, "and they almost all have bases and middles and tops." By far the most significant was the Portland Public Services building, because it was Michael Graves's first large building and a testing ground for many postmodernist principles. As the *Record* said, when the building's plans were revealed in 1980, "three generations of architects took their battle stations." When the JOURNAL began publishing new buildings in regular issues and changed its name to ARCHITECTURE in 1983 (to reflect its primary concern with "architecture rather than architects"), the magazine carried an article by John Pastier describing the Portland building as "inert, essentially flat, and sometimes more an outsized object than a real building." *P/A* called it a "precedent shattering application of postmodern classical motifs." The Portland building was followed two years later by Graves's Humana Corp. headquarters in Louisville, Ky. This time, ARCHITECTURE's Pastier assessed Graves's work as "the best large-scale building in the city," and "the company's most successful heart transplant to date." The *Record* also had come around: "Humana is eloquent testimony to the much-debated merits of 'postmodern classicism.'"

By mid-decade, virtually all the major high-design commercial architects, including SOM, Kohn Pedersen Fox, and Murphy/Jahn, had moved from a late-modern to a postmodern vocabulary. Ada Louise Huxtable in the *Record* characterized the new work as having "a narrow narcissistic intelligence and sensibility, even among the exceptionally gifted." She wrote, "Unexceptional personal preoccupations are offered as epochal creative advances; shallow observations are touted as profound, and small ironies are passed off as cosmic widom. This seems to be the intellectual distemper of our times."

But postmodernism was now mainstream, and many of its trendy towers were as urbanistically ruinous as their modern predecessors. *P/A* looked elsewhere for a trend to champion, and found it in the sole remaining candidate for revival—modernism. *P/A's* 1984 design awards jury had "little patience for the more obvious examples of postmodern ornamentalism" but looked for "basic forms in organization with a historical basis . . . without recourse to historical pastiche." In an appreciation of Louis Kahn the same year, *P/A* suggested that Kahn's "particular, personal blend of Beaux-Arts and modern methods, his mix of universal archetypes and regional materials, and his emphasis on techtonics have new relevance, proposed this time as an alternative not to modernism, but to postmodernism."

Modernism, by now safely in the the past, was also ready for

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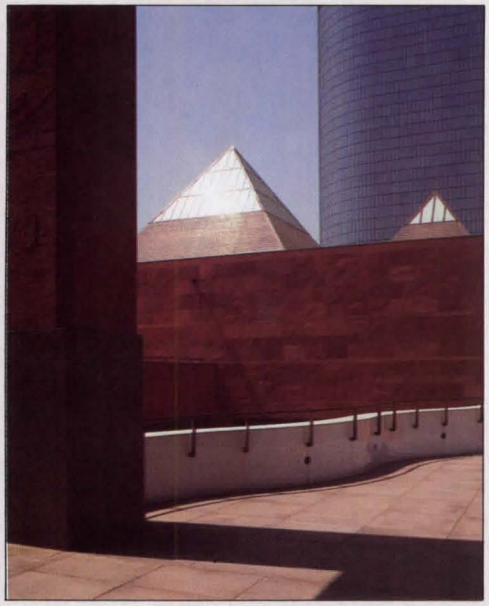

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landmark status. Lever House was declared a historic landmark, and a proposed addition by Graves to Breuer's Whitney Museum and another by Gwathmey Siegel to the Guggenheim aroused passionate opposition to tampering with the originals. A Mies revival was started by a MOMA exhibition and restoration of the Barcelona Pavilion, both in 1986. But, as the *Record* said, "By celebrating the 'look' of modernism at the expense of its 'meaning' one . . . reduces it to merely another ornamental gesture." Modern architecture was based on an optimistic vision of the future and a commitment to social responsibility, while the '80s have been years of disillusion, cynicism about the ability to solve social problems, and neglect of the problems. "The profession," said *P/A*, "has followed much of society in turning attention largely away from altruistic concerns to narrower interests."

Last May, in an assessment for ARCHITECTURE of the last 10 years of building design, Jonathan Barnett singled out "the creation of an architecture more accessible and more open-ended." As for the future, all we know is that it will make history, which will unfold—as in the last 75 years—in the pages of the three major architectural magazines. □

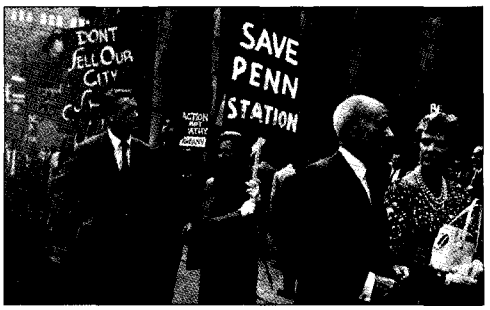
This article was written with research assistance from Stevens Anderson, Bryan Lane, and Elizabeth Updike.

(1) Vietnam Veterans Memorial by then-student Maya Ying Lin: 'a memorial to individual human beings rather than to any larger but vaguer concept of country or sacrifice' (Journal, *1983*). *(2) Monterey Bay Aquarium on Cannery Row by Esherick, Homsey, Dodge & Davis. 'It looks and feels like the old canneries that Steinbeck haunted'* (Architecture, *1985*). *(3) House in Tesuque, N.M., by Antoine Predock. 'The pieces bear resemblance to nearby vernacular houses and the ensemble to villages in the hills of northern Spain'* (Architecture, *1987*). *(4) Hood Museum at Dartmouth by Charles Moore and Centerbrook: 'an architecture of verve and invention'* (Architecture, *1986*). *(5) Museum of Contemporary Art, Los Angeles, by Arata Isozaki: 'ingratiating,' 'well crafted'* (Architecture, *1987*). *(6) Thorncrown Chapel, Eureka Springs, Ark., 'an original' by Fay Jones, with a Wright-influenced love of the well crafted and the simple.*

Courtesy, National Trust for Historic Preservation

Gone But Not Forgotten

Some significant losses of the 75 years.
By Tony P. Wrenn



What follows is not necessarily a look at the most significant demolition of the last 75 years. Surely adjectives such as "most" are relative anyway. The most significant demolition in Coburg, Neb., might be little remarked in New York City, and vice versa. Demolition, in this case like preservation, is a local story and its importance can best be assessed locally.

Presented here, however, is a sampling of losses in the built environment during the past seven and a half decades. It is a look at the disappearance of rich, productive farmland beneath a mobile home park or industrial complex; at the landscaped lawn of the library blacktopped to provide parking for a few cars; at the site of the cemetery, once the best, and only, outdoor sculpture garden in town, now buried beneath a freeway; at the downtown landmark church, which disappeared beneath a high rise when its congregation moved to the suburbs and sold the church to a developer. This is an incomplete look, for no one seems to have been keeping tabs on how much of the urban, suburban, and rural built or natural environment has been destroyed in the last 75 years.

It may well be that demolition has always been with us. Fiske Kimball, writing in the AIA JOURNAL in November 1926, suggested as much: "To make way for the Gothic cathedrals many a fine Romanesque basilica was razed. Raphael was called on to efface the frescoes, not a generation old, in the Stanze of the Vatican. In turn, little more than a century after their building, his own palace and a multitude of the finest works of the Renaissance in the Borgo were swept away for the Piazza of St. Peter's." Having said that, though, Kimball could note a change in the pace of destruction: "No one in New York can fail to remark how rapidly the great landmarks of the '80s, '90s, and even the first years of this century are being swept away by the march of commerce or the pressure of population."

Kimball, writing after World War I, could not know how much the pace would accelerate again after World War II. The four horsemen of destruction in the 40-year era since the war have been riding bulldozers and swinging wrecking balls. If the horsemen's names are not familiar to us, surely their work is:

One is the scrape-clean-and-build-anew brand of urban renewal, the now discredited process by which whole areas of cities disappeared. *Two* is the federal highway program, in which was advanced the revolutionary idea that, no matter what was in the way, the straight line was the shortest distance between two points, or the circle the quickest route around one. *Three* is the changing economics of land use, marked on the horseman's insignia in dollar signs that get larger every year. Escalating property values are fed by the process of urbanizing, suburbanizing, or malling the countryside—a process quickened by all those roads built by the second horseman and in many cases necessitated by all the destruction of the first horseman.

Four is the growing popularity and public acceptance of preservation, which may be its own worst enemy. In the name of preservation, buildings and neighborhoods are vandalized by new and improbable uses and interiors disappear with only facades retained. Architectural and historical threads with the past become Disneylike dreams as facades are "preserved" with details replicated in glass fiber or plastic.

This last horseman may well have been the most successful demolitionist. One perceptive wag remarked several years ago that when Washington, D.C., adopted its Historic Georgetown Act in 1950, the area to be preserved had perhaps 200 pre-1825 buildings. Twenty years later, the observer reported, it seemed as if Georgetown had 2,000 such buildings.

To many, of course, the process exemplified by Georgetown is preservation, though others may question that definition. Preservation is, depending on the definition one accepts, a continuing process, involving maintenance; or, it is the whole course of identifying and then continuing in use or finding a new use for parts or whole segments of the built environment. Preservation is a solution for the present but not necessarily a final solution. Demolition, on the other hand, is the final solution. Between the two there is no compromise, and there are few common constituencies in promoting the one and staving off the other. In another example from Washington, D.C., the citizen's group known as "Don't Tear It Down," which had great success in calling attention to the tempo of demolition in downtown, renamed itself "The D.C. Preservation League," with a concurrent switch of image and adjustment of supporters.

The architectural press also has found preservation and demolition difficult to deal with. Over the past 75 years, the architectural journals in the United States have published little about preservation and even less about demolition. In June 1925, *Pencil Points* did report the "regretted demolition of one of the finest architectural works of McKim, Mead & White"—Madison Square Garden—and noted "the close of the period of many years during which the sight of Diana has gladdened the eyes of the throngs passing through Madison Square." But Kimball's 1926 article in the AIA JOURNAL, quoted above, is a book review.

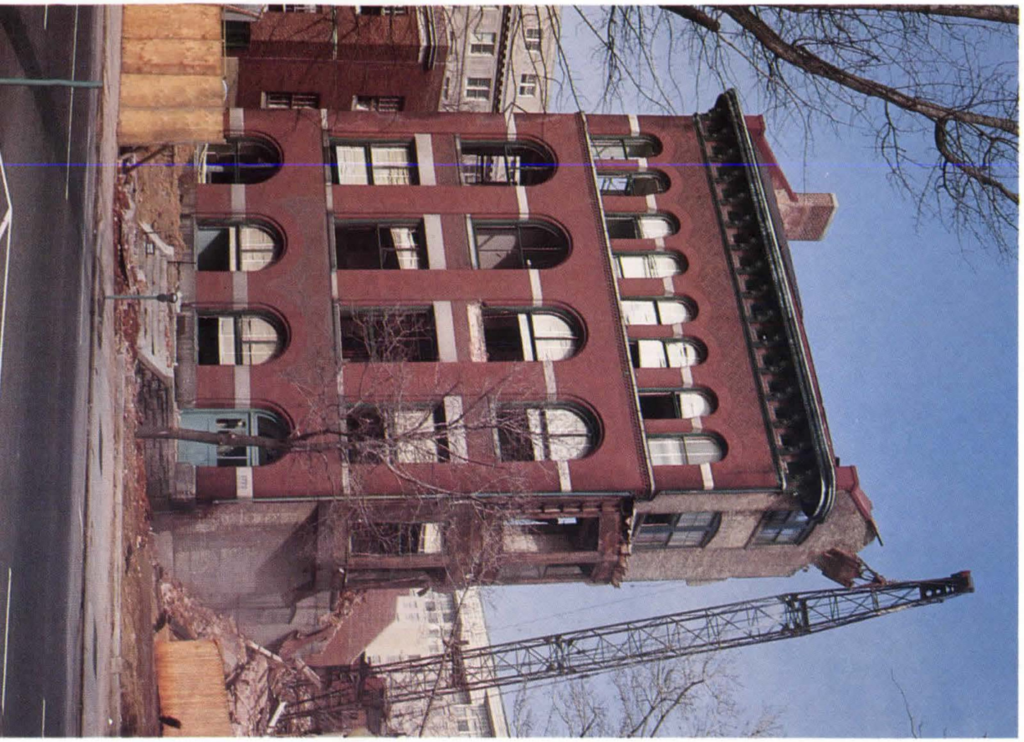
In the late 1940s *Historic Preservation,* the journal of the National Trust for Historic Preservation, arrived on the scene and made demolition a part of its scope in early issues, though that is not a function of the journal today. In 1952 the heading for demolition in the then-quarterly journal evolved from "By Fire & Progress" through "Destruction—Desecration—Decay" and "Passing Parade" to "Demolition." The obituaries under those headings provide a fertile resource for charting demolition, with pithy, well-written, and often entertaining notes.

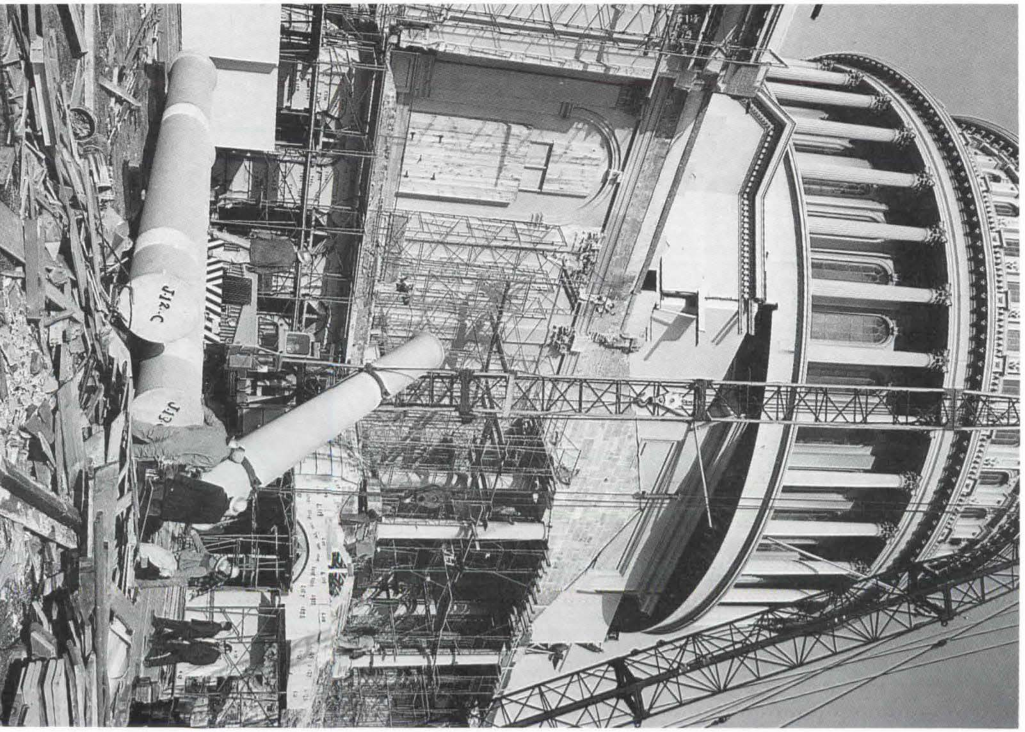
The heyday of reporting and writing about demolition seems to have occurred in the 1960s and early 1970s. *Progressive Architecture* in its December 1963 appreciation of Manhattan's Pennsylvania Station noted that Lewis Mumford called the destruction of McKim, Mead & White's masterpiece "an act of irresponsible public vandalism," and concluded, "the great hall will go, the great concourse will fall, the traveler will be mashed into subterranean passageways like ancient Christians while the wrestler and the fight promoter will be elevated to the vast arena. The Decline and Fall of the American Empire—*sic transit gloria mundi.*"

A New York *Times* piece, reprinted in the January 1964 issue of the AIA JOURNAL, indicates perhaps the height of journalistic outrage at demolition. "Any city gets what it admires, will pay for, and, ultimately deserves. Even when we had Penn Station, we couldn't afford to keep it clean. We want and deserve tin-can architecture in a tin-horn culture. And we will probably be judged not by the monuments we build but by those we have destroyed."

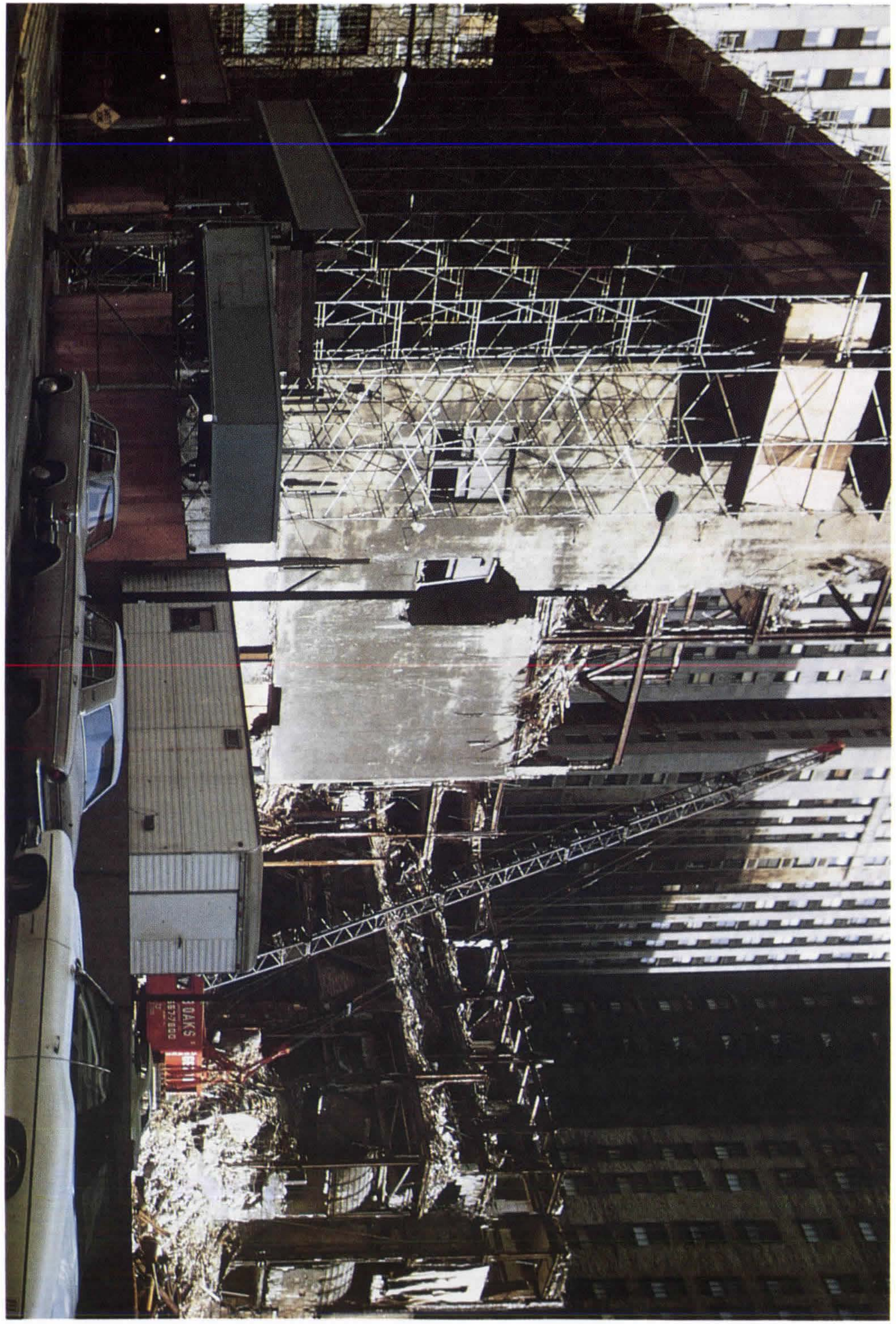
Mr. Wrenn is AIA archivist and co-author of America's Forgotten Architecture *(Pantheon Books, 1976).*

Courtesy, National Trust for Historic Preservation





Courtesy, Architect of the Capitol



Courtesy, National Trust for Historic Preservation

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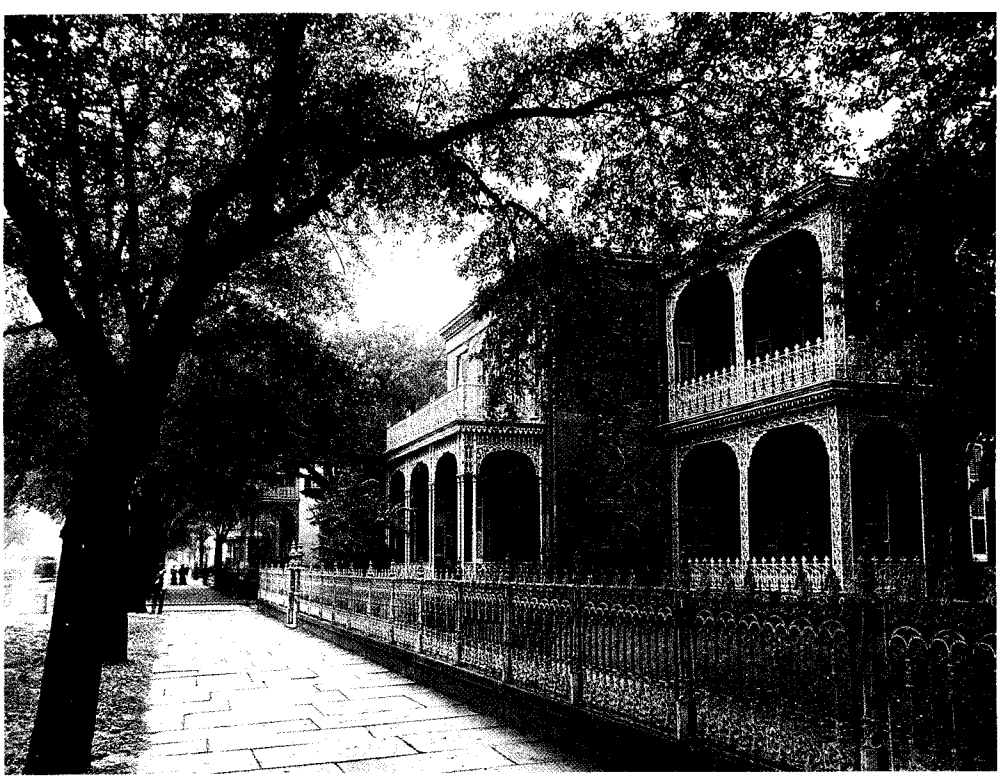


Courtesy, Alabama Historical Commission

Trains still operate on the site of McKim, Mead & White's 1910 cathedral of the gilded age of transportation, shown on the preceding pages, though one would hardly call the successor building a cathedral. A gift to the city from a railroad, this great gateway could not withstand the value of its midtown Manhattan location. Above left, Adler & Sullivan's 1893 Chicago Stock Exchange, demolished in 1972. Sullivan's architecture and ornament raised Chicago's pride and international concern, but they were insufficient to save the building. Near left, East Front of the U.S. Capitol, 1824-1850s, by Thornton, Latrobe, Bulfinch, and Walter, destroyed in 1958. Removed were part of the dome's skirt, 24 grand columns and their capitals, tons of sandstone, historic statuary, and the site of every inaugural from the 1820s to the 1950s. The gain: 32.5 feet of space. Far left, the Lemon Building, circa 1900, Washington, D.C. Its superb brickwork, metal grilles, terra-cotta ornament, and a fine cornice would make Harvey Page's New York Avenue building a prime candidate for facadism today. Demolition, for AIA's 1973 headquarters building, may have been a kinder fate. Above right, Harral-Wheeler mansion, Bridgeport, Conn., built in 1846 and demolished in 1958. Willed to Bridgeport in 1956 for 'educational and park purposes,' the house fell after the city won court approval for demolition—an American Gothic tragedy. Below right, Government Street houses of the mid-19th century, Mobile, Ala. Delicate cast iron porches, balconies, fences, and balustrades on substantial brick houses—as distinctive and evocative of their age and social strata as nearby earlier and simpler cottages—all succumbed in the postwar slum clearance/urban renewal era.

Clarence Fuermann, Metropolitan Museum of Art

Courtesy, National Trust for Historic Preservation

When new, as in the circa 1904 photograph at left, Frank Lloyd Wright's Larkin Building in Buffalo was controversial. Sold in 1950 for $5,000, the building was immediately razed and replaced with a truck storage garage. 'In less than 50 years, the initial antagonism turned to acceptance, and then to apathy,' observed Ada Louise Huxtable. Below left, Dodge house, Los Angeles, by Irving Gill; built in 1916, torn down in 1970. Unadorned cubes of white concrete bathed with light and opening onto porches or patios and landscaped lawns, the Dodge house was a universally accepted architectural landmark. A developer demolished it for the higher returns of an apartment complex. Right, Biltmore Hotel, Oklahoma City, at the moment of death in 1977. Well placed explosives and, at the appointed hour, sickening puffs of dust. Such demolitions provide photo opportunities but deprive building lovers and city lovers of a proper wake. □

A Time of Relentless Technological Change

Chronicling how it has revolutionized building during the 75 years. By Forrest Wilson

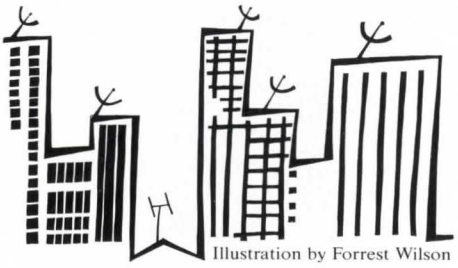


Illustration by Forrest Wilson

Our understanding of history changed in 1936 when V. Gordon Childe published *Man Makes Himself,* in which he traced how human beings have shaped themselves with their technologies. It was Childe whom Sir Winston Churchill quoted in his famous remark, "We shape our buildings: thereafter they shape us," during the debate over the rebuilding of the Houses of Parliament, destroyed during the bombing of London in World War II.

This history of building technology of the past 75 years views technology as Childe suggested—as if passed genetically from generation to generation in cultural "genes" that direct our building patterns and determine the forms of our architecture. The building technology of 1913 was the product of many generations' inheritance, and technology from 1913 to the present must be understood in light of its "parent"—the technology of the 19th century.

Preview: Where we were

The age of electricity dawned with Michael Faraday's first electric generator in 1831. Though the generator had little effect on manufacturing until the end of the 19th century, by 1887 at least 15 American manufacturers had produced more than 10,000 motors of 15 horsepower and under. Constraints on machine design and operation were lifted and the way was paved for the mass manufacture of building products. Building technology thus changed from a 19th-century handcraft to a 20th-century industrial art.

Materials: From 1838 until the end of the century, the name "Rosedale" was synonymous with natural cement. The Brooklyn Bridge and Navy Yard and the California State Capitol all were constructed with Rosedale. Portland cement was an expensive import until it began to be manufactured in this country at the turn of the century.

The craft of the stonecutter was duplicated in cast iron, cement, terra-cotta, and plaster. Terra-cotta ornament flourished from the late 19th century through the first half of the 20th century. Words such as "artificial," "manufactured," and "architectural stone" were used to describe precast concrete, from architectural ornaments to entire buildings. Thomas Edison patented a poured-in-place concrete housing system.

Concrete block was manufactured in a rough-and-tumble industry. A three-man crew could turn out 200 blocks in a 10-hour day. Block plants were set up all over the nation and gave rise to suits and countersuits involving patents. By 1905, 1,500 companies were manufacturing concrete block; the product had been virtually unknown five years earlier.

Shortly before 1900, Augustine Sackett sandwiched three layers of plaster of paris between four layers of paper and created plasterboard.

By 1840, balloon framing had a major effect on the growth of urban and rural building. Lumber became lighter and more uniform in size, shape, and quality although there were no uniform mill sizes. Retail lumber yards cut it to size and surfaced and seasoned it for the building trades.

Transportation of wood products changed little from 1880 to 1930. Lumber was supplied from local forests and delivered by water or rail. Sawing was done by handsaw, pit saw, water-powered single blade, circular, and sash saw.

Aluminum was a rare and precious laboratory product until 1886. King Frederick VII of Denmark had a helmet of aluminum and gold. Emperor Napoleon III of France served important guests on aluminum plates and guests of lesser stature on plates of gold. The first recorded architectural use of aluminum was a cast, 6¼-pound, nine-inch-tall aluminum pyramid for the tip of the Washington Monument in 1884. Before the pyramid was installed it was displayed in Tiffany's window in New York City.

Following his discovery of an economic means of manufacturing, Charles Hall produced 50 pounds of aluminum on Thanksgiving Day, 1888. Three years later, the Aluminum Company of America (Alcoa) was producing about 700 pounds of new aluminum per year.

Chicago's 16-story Monadnock Building by Burnham & Root had load-bearing masonry walls, some of them six feet thick. It was the last such structure ever built and the first with inexpensive aluminum architectural fittings. Aluminum was proposed for violins, bathtubs, typewriters, and surgical chairs. A line of aluminum shoes was considered, but the idea did not wear well. By the turn of the century aluminum electric wire and cable were common, but the most popular aluminum items were teakettles.

Structure: The first steel section, a seven-inch rail rolled in 1847 at the Trenton Iron Works in New Jersey, weighed 90 pounds per yard. Two years later, these sections were used as beams for the Cooper Union Building in New York City. The first I-beams were rolled in 1854.

The 10-story, steel-framed Home Life Insurance Building in Chicago, designed by William Le Baron Jenney in 1885, ushered in the skyscraper. It was followed in 1891 by the 20-story Masonic Temple in Chicago and in 1909 by the 50-story Metropolitan Life Insurance Building in New York City.

Mechanical: Industrial airconditioning was introduced early in the 20th century. The first paper mill was airconditioned in

New York City in 1906; the first pharmaceutical plant in Detroit in 1907; the first celluloid-film plant in New Jersey in 1908.

The first assembly line opened at Ford's Highland Park, Mich., plant in 1913. Three years later, automobile frames were being conveyed, formed, and riveted without human intervention. The Spanish inventor Leonardo Torres y Quevedo combined electromechanical calculating techniques with principles of automation to demonstrate that a machine could perform tasks that were thought to require mental ability.

In a period of three years, the industrial revolution reached maturity and the postindustrial revolution was born. The ensuing 75 years will see building technology advance in developments that are the logical fruition of the industrial revolution's seeds, and in quantum leaps that could never have been foreseen—genetic "mutations," for better or worse—that, by the late 1980s, will have created what is arguably a whole new species.

1913-1920: From handcraft to machinecraft

Materials: By 1913, the annual production of natural cement falls to 800,000 barrels, and production of portland cement rises to 82 million barrels.

A three-man crew in 1914 tamps out 1,800 concrete blocks a day, and by 1919 almost 50 million concrete masonry units have been produced by 2,000 manufacturers.

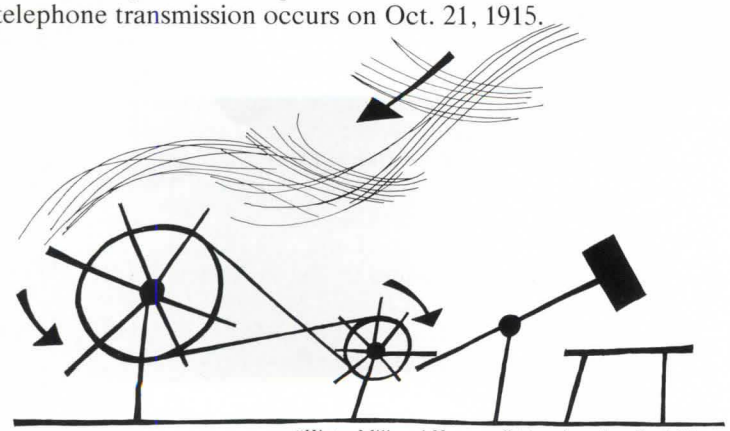
In 1917, U.S. Gypsum refines Sackett's invention of plaster-and-paper wall panels and markets "Sheetrock."

Until the 1920s, trees are cut by hand and hauled by oxen or floated down rivers. Then steam power is brought to the woods, and locomotives reach timber stands unreachable by water. "Donkey engines" pull logs by cable to landings where they are loaded on flatcars. Vast acreages of forest are cut to justify manufacturing costs.

U.S. production of aluminum foil to wrap hard candy, chocolate, and chewing gum begins in 1912.

Structure: New York City's 55-story, 792-foot-high, terra-cotta-clad, steel-framed Woolworth Building by Cass Gilbert is the tallest building in the world when completed in 1913. It remains to this day, Ezra Ehrenkrantz once remarked, the world's tallest building designed without expansion joints.

Mechanical: On Jan. 25, 1915, the first transcontinental telephone line is installed. By 1919 there are 8 million telephones; in 1920, more than 13 million. Lead-sheathed, dry-core cables make underground wires practical. The first transatlantic radiotelephone transmission occurs on Oct. 21, 1915.



"Water Mill and Hammer" (drawing after Paul Klee)

1920-1930: Mechanization takes a stand

Materials: Portland cement production rises to 150 million barrels per year in 1927. Cinder block with a compressive strength of 700 psi is adopted in many city building codes. Concrete blocks have 30 different lengths, 20 different widths, and 26 different heights. By 1927, 95 percent of the blocks are manufactured to standard sizes.

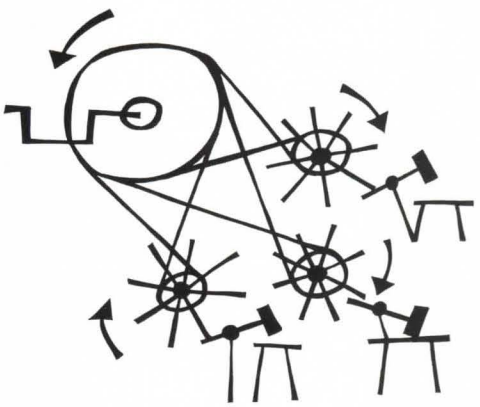
The National Gypsum Co. opens its plant for manufacturing wallboard in 1926, and markets the product "Gold Bond" in 1927.

The lumber industry is fragmented until 1924, when the American Lumber Standards Committee establishes a system of voluntary product standards. Increasing mechanization brings rapid change in wood technology. Porter Cable introduces the hand-held belt sander.

The Wright brothers' airplane of 1903 had incorporated several aluminum parts. From this time until the end of World War II, aluminum technical development is geared to the aircraft industry; research is concentrated on lightweight alloys. The first aluminum-skin airplane and household aluminum foil appear in 1920.

Structure: Buckminster Fuller creates his first industrialized house design. A later version, the Dymaxion House, including library, furniture, and swimming pool, is designed to be air-delivered by dirigible.

There are hundreds of skyscrapers on Manhattan Island. In 1927, plans are filed for 65 buildings of more than 12 stories, including one of 52 stories. The 77-story Chrysler Building is completed in 1929.

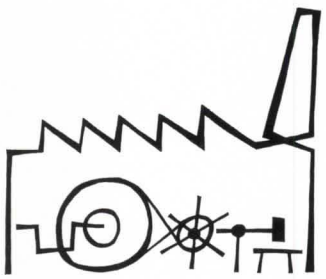


Mechanical: The first colored bathroom fixtures are introduced in 1920. Assembly line production reaches the electric lamp industry. Seventy percent of American industry is electrified by 1920, and 40 percent of the steam engines in the United States are scrapped by 1927.

Basements are no longer required to house water mills and steam engines. Machine belting and shafting is discarded. The design of factories changes from vertical to horizontal. Machines are arranged in a rational system of work flow. The factory itself becomes a large machine.

The centrifugal refrigerating machine—the first major advance in refrigeration since Boyle's ammonia compressor in 1872—uses a safe refrigerant that makes possible the airconditioning of public spaces. The Rivoli Theater in New York City is airconditioned in 1924. In 1926, an eight-story building in Fresno, Calif., is the first office building fully airconditioned. The tallest concrete-framed building in the world, the 21-story Milam Building in San Antonio, Tex., is airconditioned in 1928.

1930-1940: Idling



Materials: Architects, including Frank Lloyd Wright, explore the use of reinforced concrete. Brick masonry walls hung on frames of steel and concrete are reduced in thickness; high-strength portland cement mortars and increased compressive strength make brick walls thinner, stronger, and more brittle. Factory panelization of wooden houses becomes more popular. Welding is now permitted by the New York City building code. Aluminum windows, doors, and other building products gain acceptance.

Structure: The 102-story Empire State Building, completed in 1931, has aluminum spandrels, trim, and tower; it is not airconditioned.

In 1937 a drive-in bank, reportedly the world's first, opens in Vernon, a Los Angeles suburb. Motorists drive into the bank building and transact their business without moving from their seats.

Mechanical: Office and residential buildings are draped with awnings against the summer heat. Few office buildings are airconditioned because owners are unwilling to trade rentable space for ductwork. Later, high-velocity ducts with warming and chilling coils make airconditioning of major buildings economically feasible. A 1938 study of Edison workers in Detroit indicates a 51 percent increase in productivity due to airconditioning.

The coil system frees architects from environmental constraints. Windows are sealed or eliminated; air shafts are no longer necessary. Interior areas are rentable. Howe & Lescaze's Philadelphia Savings Fund Society building is among the first to use these principles.

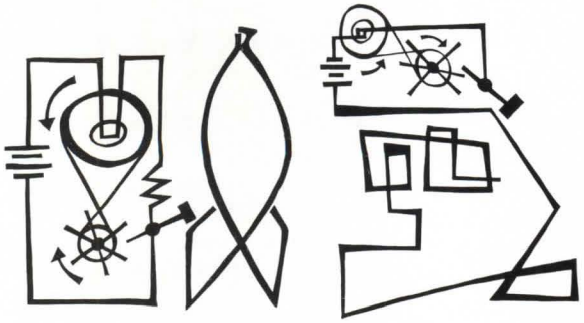
Pullman cars, cafeterias, hospitals, ocean liners, hotels, and funeral parlors are airconditioned. But, of the 22 million wired homes in the United States, fewer than 0.25 percent have a single airconditioned room in 1938.

1940-1950: Boom and aftermath

Materials: Steel shortages during World War II stimulate wood, masonry, and concrete construction. Heavy timber structures are accepted for industrial buildings. Platform-frame construction is used in 95 percent of housing.

Wood panels take the place of solid, sawn lumber in roofing, flooring, and sheathing. Gas-powered engines supplant steam for logging. Log trucks replace locomotives, and gas-powered saws replace handsaws in the woods.

Aluminum foil wrapping of field rations during World War II encourages the postwar expansion of aluminum into food packaging and reflective building foil. Alcoa manages plants for the federal government during the war; later, after an antitrust judgment against Alcoa, the company is left with one plant, while the remainder go to competitors.

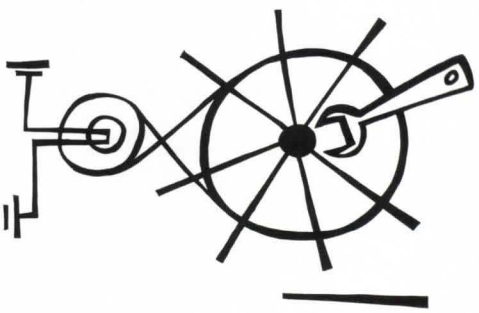


Illustrations by Forrest Wilson

Mechanical: Textile workers make airconditioned factories a bargaining issue. The right of schoolchildren to be cooled during the summer as well as warmed during the winter is asserted.

The Mark I computer developed by Howard Aiken is tested in 1943 and installed at Harvard in 1944. It has 750,000 parts and 500 miles of wire, and is used by the Navy to solve ballistic problems. ENIAC (Electronic, Numerical, Integrator, and Computer) is completed and in operation in 1945. On July 1, 1948, the world's first large-scale digital computer appears, using transistors.

1950-1960: Back in gear



Materials: The concrete block industry reaches an annual output of 1.6 billion in 1951; half are lightweight blocks.

Douglas fir and ponderosa pine, the most popular species of wood since the early 1900s, are replaced by white fir, hemlock, spruce, and redwood. Prices have risen as much as 340 percent since 1944. Large-diameter trees are rare.

Carroll Sanford invents the toothed metal connector plate in 1952. The wood component industry allows site builders to compete with factory panelizers.

The Bostich Co., which had manufactured jackhammers for mining during the 1800s, patents hand-held pneumatic staple and nail drivers for use on construction sites.

Aluminum building products enter the market in quantity as the production of aluminum increases. The number of smelters worldwide increases from fewer than 20 to 140. Aluminum residential siding and curtain walls appear.

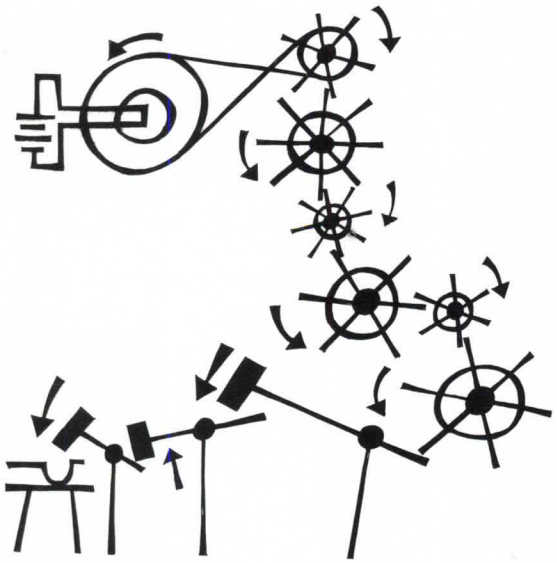
Float glass is developed by pouring and stretching liquid glass over a bed of molten tin.

Structure: Frank Lloyd Wright proposes a mile-high tower; it is never built.

Mechanical: New York City's 40-story United Nations Secretariat building in 1951 is the first glass office tower to integrate service floors housing airconditioning zones. Airconditioning units, manufactured as self-contained, plug-in appliances, sweep the market. Awnings are discarded and the rumps of window airconditioners dotting the city leak condensate on pedestrians below.

Sales of unit airconditioners increase from 74,000 in 1948 to 1,045,000 in 1953, and dealers turn away 100,000 customers. A National Association of Home Builders research study claims that families in airconditioned homes sleep 10 percent longer, enjoy their food more, do three times as much entertaining, spend one-third less time cleaning house, and are less likely to kick their dogs than families in nonairconditioned homes.

In 1951, the first reliable junction transistor appears. Texas Instruments announces the birth of the integrated circuit in 1959.



1960-1970: Full throttle

Materials: Sophisticated wood testing methods for commercial softwood species encourage precise engineering and high-tech wood products.

The flat-chord, metal-plate-connected floor truss is introduced in 1973. After remaining basically unchanged since the late 1920s, sawmills, in response to rising timber costs, increase the amount of lumber cut from a single log, and wood residue is used for pulp, paper, and chipboard.

Brick panelization (prefabrication) is introduced, and thin-wall brick construction is born. The 15-story Episcopal House in Reading, Pa., the 20-story Park Lane Towers in Denver, and Woodlake Towers in Fairfax County, Va., all are built with six- and eight-inch, single-wythe masonry walls.

Between 1960 and 1980, worldwide aluminum consumption quadruples. The aluminum beverage can arrives; 90 percent of soft drink cans and almost all beer cans in the United States are aluminum. Alcoa introduces residential aluminum framing.

Structure: The computer becomes an engineering tool. The Gyrotron, an aluminum space frame at Montreal's Expo '67, is claimed by the architect, Boyd Auger, to be the largest single space frame ever analyzed, requiring two hours of computer time on the world's largest computer (the equivalent of 30,000 human lifetimes of hand computation).

A leap in high-rise structural systems occurs as Fazlur Khan of Skidmore, Owings & Merrill proposes a range of structural systems: semirigid frames, rigid frames, and frames with bracing in the core of the building.

New York City's Chase Manhattan building by SOM, completed in 1961, is said to be one of the least efficient buildings of its size ever built. Nine years later, the John Hancock Center in Chicago uses a trussed tube system with half the steel per square foot to go twice as high as the Chase Manhattan.

The 20-story Control Data building in Houston is the first composite-system structure erected. The world's tallest composite structure, the 40-story Texas Commerce Tower, follows. In 1969, SOM's One Shell Plaza is completed in Houston; at 50 stories it is the tallest lightweight concrete building.

Mechanical: Lighting levels increase dramatically. Utility companies enthusiastically endorse a recommendation for 400 foot-candles at desktop.

In 1962, 6.5 million houses, six out of 10 hotel rooms, and half of all office buildings are airconditioned. Airconditioning is a standard feature of the American house in warm climates.

The microchip is developed and reduced in size. In 1968, a memory chip is developed that can store an entire kilobit (1,024 bits) of information.

Quantum advances take place in life safety systems.

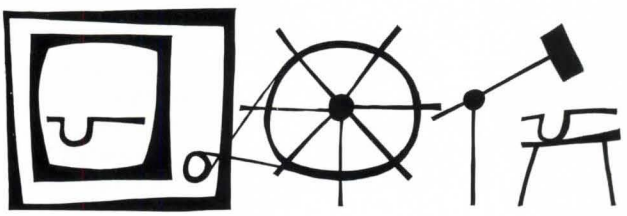
1970-1980: Smart machines

Materials: Mills cut smaller logs as big timber becomes scarce. The computer revolutionizes the sawmill—fewer mills with fewer workers produce more lumber.

A study by the Brick Institute of America finds there are 10,000 colors, sizes, shapes, textures, and combinations of fired clay masonry.

Reflective glazing appears with the development of new coating technology, improving the shading coefficient of tinted glazing.

Structure: In 1974, the 110-story Sears Tower, designed by SOM, is completed in Chicago, using a little over half the steel per square foot of the Chase Manhattan Bank. The 856-foot-tall Water Tower Place, completed in 1977, becomes the tallest concrete building in the world.



Restoration of the Woolworth Building by Ezra Ehrenkrantz and Wiss, Jenney & Elsner establishes building diagnostics as a building science.

Mechanical: The energy crisis results in drastic reduction in lighting levels.

The first video game, a version of Ping-Pong, is installed in a Sunnyvale, Calif., tavern. The first video display-based word processor, containing all the functions of a computer's central processing unit, is introduced. When linked to chips that contain memory, control, and input-output circuitry, it becomes the microcomputer—as powerful as mainframe computers of the mid-1950s.

1980-1987: Smart buildings

Materials: The industrial woodlands in the western United States are cut over and depleted. Environmentalists, gaining in legal power, oppose higher lumber cuts on federal lands. With balloons and helicopters, logging reaches forest areas previously inaccessible. Aerial photography, genetically altered trees, helicopter seeding, and computer inventories enter the field of forestry.

Superplasticizers increase concrete strength up to 20,000 psi. Thin cutting of stone stimulates a renaissance in the use of that material. Annual U.S. aluminum use is over 7 million tons.

Selective glass coatings transmit or reflect specific wavelengths depending on levels of daylight or heat required. A transparent system with 60- to 90-minute fire ratings is introduced in 1984.

Structure: The first seismic base-isolation building in the United States and the largest in the world, the Foothills Communities Law and Justice Center, is constructed in Rancho Cucamonga, Calif.

Space frames come of age, with longer spans and new geometries.

In Minneapolis, the 900-foot-tall headquarters of Norwest Corp., designed by Cesar Pelli and constructed as a tube of 10,000 psi concrete, is the world's tallest concrete building.

Mechanical: Energy conservation continues to change building configuration, window walls, automation systems, lighting, HVAC equipment, natural resources, thermal storage, energy alternatives, use and control of daylighting, window heat loss, solar gain, shading, and siting. Lighting levels drop to as low as 25 footcandles at desktop; further reductions are predicted due to increased efficiency of lighting hardware. The focus is on lighting use and video display terminals.

Divestiture of AT&T in January 1984 turns Ma Bell into numerous Baby Bells. Bell assets—including 182 million telephones and a billion miles of wire, much of it in buildings—are up for grabs and create a sudden market in maintenance.

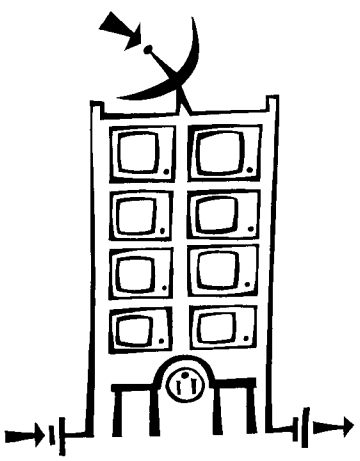
Demand grows for power to operate equipment and remove generated heat. Electronic equipment requires greater power supply capacity, better quality, and more flexibility. Computer equipment demands power of higher quality, reliability, and uniformity. Cooling loads vary widely, and distribution system design focuses increasingly on microclimate control. Lower lighting decreases electrical loads, but office machinery increases electrical demand.

Design and control of complex wire systems become increasingly difficult. Microwave and satellite dishes on roofs upset traditional bottom-up wiring systems. Telephone closets must be designed to accommodate unknown future cables and equipment. Most furniture systems have cable raceways integrated within the panels and partitions.

Concern for indoor air quality grows due to toxicity of building materials, new electronic equipment, and increased tightness of building shells.

Two-thirds of all new houses and 83 percent of new cars are equipped with airconditioning. It becomes a necessity for computers, jet travel, drug and silicon chip manufacture, synthetic fibers, precision instruments, and foodstuffs.

The first 32-bit microprocessor, so complex that it takes a team of engineers 18 months to design, appears in 1981.



Illustrations by Forrest Wilson

The patterns

The hereditary progression, fairly constant over most of the 75-year period, has undergone sudden and far-reaching mutations in the last few years, especially in mechanical systems. The present state of building technology encompasses a whole new set of "genes" to pass on to the next generation.

Materials: Almost all materials have been "enhanced" since the beginning of the century. Metals are lighter and stronger. Wood is cut, sawn, mashed into smaller pieces, and glued back together into sheet material with exotic adhesives. Stone, brick, and plaster are lighter, stronger, and thinner. Plastics continue to move into the building market as substitutes for plain and decorative materials. Concrete strengths double and triple. Innovative buildings are more efficient in the use of materials but more expensive to construct.

Structure: Technology has moved ahead of architects and developers. In the 1960s and early 1970s, architects asked engineers to calculate exotic forms. Today engineers say, "Here are the solutions, give us the problems."

The computer's enormous flexibility in dealing with variables encourages the prediction that analog testing will disappear.

The problems of tall buildings have little to do with gravity but everything to do with dynamic behavior. Drywall, lightweight steel, fireproofing, and the computer make the "100-year-wind" building of yesterday a happening every winter.

The stack effect on very tall buildings in zero-degree weather is extreme. Elevator lobbies may require triple vestibules, and buildings may have to be tightly sealed against enormous pressures.

Elevators may have reached their physiological limit. People decompress easily on the way up, but with difficulty on the way down. The Sears Tower's elevator speed of 1,800 feet per minute may be the maximum that human beings can bear.

Egress from tall buildings can no longer be accommodated with the traditional stairwell system. Fire-safety design will have to provide for defending people in place.

Mechanical: The change in mechanical systems, according to Piero Patri, FAIA, chairman of the committee on technologically advanced buildings for the National Academy of Sciences, is as fundamental as the invention of shelter itself, yet it has passed almost unnoticed. Whereas shelter had always been passive, today it is an active membrane between the person and the external environment.

The seeds of the shift were sown a century ago with electricity, telegraph, and telephone, which came to fruition in the transistor and information processor. Now the building shell is tied to the building interior, to the furniture, to the equipment.

The frightening image of a robot building shell acting automatically, beyond human control, is a reality. The calming of psychological fear is an architectural challenge.

The process of building does not stop when the people move in. People and equipment are constantly changing; the building is never finished. The plan is but a moment in time.

Electronics is no longer solely the province of the engineer nor design solely that of the designer. Technology must be accommodated collectively. Yet, technology is relatively simple compared with the people in the building and their relationship to the environment and each other. Self-education is a continuing process; and architect, engineer, user, and client educate each other.

The old way of doing architecture is by procedure. Today, if anything is done the same as it was five years ago or as learned in school, it is probably wrong.

Architecture is basically a social art, and changes in architecture reflect the enormous changes in the way people are thinking and relating to one another. "The needs of the client are changing and will be met by someone," Patri says, "and I dearly hope they will be met by architects." □

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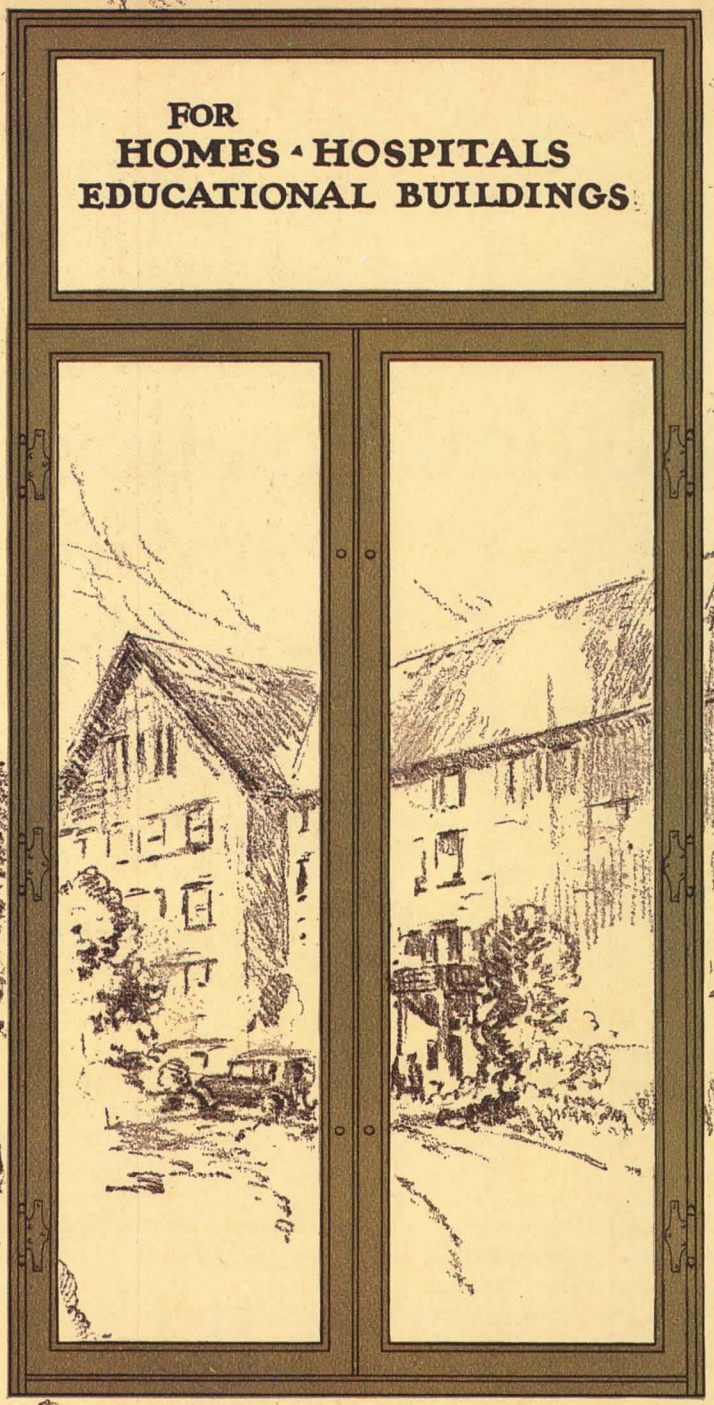

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The Evolution of Architectural Practice

As recorded in 75 years of the 'Architect's Handbook.' By Douglas E. Gordon

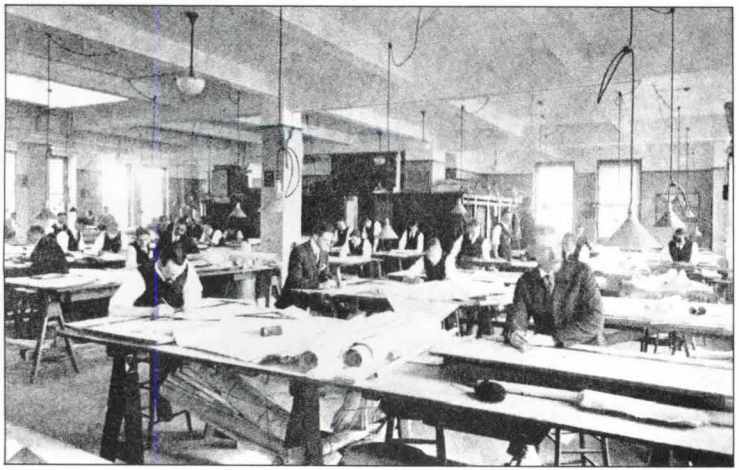
"The traditional practice of architecture has changed much since World War II. Earlier, in an age of simpler technology, a gentler legal climate and a less critical concern for getting the most value for each expended dollar, the architect in private practice was able to adequately cover most of the bases.

"No more. To survive and prosper in today's complicated and toughened practice climate, most firms have found that specialization among their staff is a necessity. . . . In addition to the traditional design and delineating functions, these areas include: marketing . . . marketing communications . . . programming . . . project management . . . practice management . . . specification writing . . . estimating and cost control . . . construction contract administration . . . [and] other specialties." (Architect's Handbook of Professional Practice, *Chapter A-4, 1982.)*

If there is one consistent trend throughout the past 75 years, it is increasing complexity. Liability is greater, budgets tighter, building systems less forgiving, and contracts more convoluted. But the feeling that technology is overwhelming the architectural profession is not new. In 1920, the *Architect's Handbook of Professional Practice* sounded a strikingly similar chord:

"A new element entered the practice of architecture with the remarkable development of the applied sciences during the latter half of the 19th century. The scientific application of heating and ventilating to buildings, with the accompanying mechanical power for their operation, the many uses of electricity requiring complex equipment, the great expansion of the science of plumbing, and the invention of the elevator, which lifted the skyline of buildings far above the reach of public water-supply and fire-fighting equipment and created problems for the hydraulic and other engineers; these, together with sanitary and other problems, required for their development and intelligent operation professional specialists who could give their entire time to the study and advancement of these sciences. So highly specialized are the subjects that technical schools and universities devote separate courses to them, and degrees are given in mechanical and electrical engineering and kindred subjects."

Drafting room, McKim, Mead & White, New York City, 1913.



The *Architect's Handbook of Professional Practice,* published in 11 editions since 1917, is a barometer of practice as it developed to accommodate shifting political and economic realities, construction booms and busts, a relatively recent liability crisis, and the information age.

The areas where change is most evident, in a backward glance at the handbook, include architects' registration requirements, compensation, liability and insurance, involvement during construction and relationship with the contractor, strategies for office efficiency and automation, and marketing.

The 'teens and '20s: Branching out

At about the time the first handbook was being published, during World War I, the United States was under a government moratorium on private construction. When the war ended, construction began furiously to make up for lost time. To monitor this rapid growth, states began enacting registration laws and architects began thinking of themselves as design professionals as well as artisans and taking a growing interest in the architectural practice as a business.

By 1917, architectural registration laws had been enacted in 12 states and were being "contemplated in several others," the handbook reported. By 1928, 29 states had passed registration legislation. *"The primary purpose of registration laws is to eliminate pretense and incompetency. . . . [and] encourage a higher standard for the competent,"* the 1917 handbook noted.

Despite a move toward architecture as a business, some architects apparently were reluctant to negotiate a fee up front for their services, as the 1917 handbook lamented:

"The strange timidity that architects display in informing clients of their charges, and their willingness to go forward without any understanding whatever is discreditable to them as men of affairs. Such conduct leads to . . . disputes, and litigation."

Fee schedules were common, and the 1920 edition of the

handbook included one, recommended for national use, in its appendixes. The editors stopped short of a mandatory schedule:

"Recognizing the great variation in the basic rate in various circumstances, and because it is fundamentally opposed to the methods of trades unionism, the American Institute of Architects does not make the Schedule of Charges mandatory upon its members, but since the basing of fees upon a percentage of the cost of the work has long been and is still largely in use, the Institute names, for the guidance of the public, a certain rate lower than which, in ordinary cases, competent and complete services are not to be expected."

The 1920 edition also described a new concept in fee negotiations—cost plus a fee—which it judged *"useful where the ultimate cost . . . cannot be foreseen,"* and *"applied with entire success to new buildings, even to those of the very greatest size and complication."*

Professional liability was not much of a concern before the 1960s. The 1917 handbook stated confidently that *"the average architect, endowed with honesty and a fair degree of skill, using such well-prepared documents as the Institute has now made available, is not likely to become involved in litigation."*

This is not to say architects faced no legal difficulties. Contractor surety bonds posed one problem before stable bonding institutions and standard contracts brought regulation to the system. The 1917 handbook warned that *"surety companies having in their employ a legal staff alert to every avenue of escape from what would seem to be their obligations and being untroubled by the thought 'How shall we then dispense with that contract, and not deface our honor?' it follows that extreme caution must be used in dealing with them."*

At the time, architects and their staffs apparently spent a lot of time on construction sites. Field observation was a standard office routine for staff at all levels:

"It is very desirable that assistants should see the buildings while in course of construction, on the drawings and specifications of which they have worked. They learn much from such inspection and gain a sense of the reality of their work and of the relation of the drawing to the forms arising from it. The work of other architects should be included in such visits and notes should be made. Fixed times should be set aside for such excursions, and the architect or some other competent leader should be in charge of the party."

Even with frequent supervision, the architect administering the construction contracts in 1917 was in a dilemma similar to that of a construction administrator today:

"The inexperienced or ignorant owner is perfectly willing to award his work to the lowest bidder, saying, 'Let the architect see to it that the contractor gives me a good job.' He defeats his own ends by pretending to believe that the architect has some occult power unknown to other men."

A strategy meant to circumvent the problems of the architect/contractor relationship was touted by AIA in a 1913 convention resolution, only to become the subject of much controversy in the '60s and '70s. The "system of several contracts," later called design/build, looked promising when the designer/builder was assumed to be an altruist. According to the 1917 handbook:

"It must not be supposed that when the architect directs the work of many contractors instead of a few his professional status is lost, or that he becomes in any sense a contractor. The owner signs the many contracts, just as he would the few, and the relations of the architect to the owner and to each contractor remains without change."

Design/build has come full circle since the second decade of this century. Marketing of professional services, on the other hand, has undergone a definite linear development since 1917, when the handbook was uncommitted to even the most basic principle of marketing: that the architect should pursue work rather than wait for unsolicited offers.

"Those who imagine that today all architects pursue the method of forcing themselves on a prospective client show ignorance of the conduct of that great number, among them the ablest and most distinguished, who still do not undertake a task until after being asked. Those likewise who imagine pushfulness to be an especial characteristic of modern times should read the amusing story of the way in which Dinocrates forced himself on Alexander, as told by Vitruvius in his second book."

Office management also has developed step by step over the past 75 years to monitor increasingly voluminous records and tasks. In the '20s, all records were written, and paper had become inexpensive. As a result, office efficiency was tied to clever manipulation of disposable paper records.

Discussion of filing and duplicating paperwork in the absence of automation took a good deal of space in the 1917 handbook (and showed some admiration for engineering offices).

"Highly organized offices, such as those of certain engineers, have prepared for their own use books of office management. Such a book contains a careful description of the organization and operation of the office. . . . [and is] especially valuable when one unused to the duties of a given position has to occupy it either temporarily or permanently. . . . Here and there architects have made beginnings, but it is not known that in an extended way, any architect has applied such a system to his practice."

The '30s: Survival

"The Depression hit no professional group harder than it did those architects whose only training wedded them to the whims of an inflationary economy," wrote John Burchard and Albert Bush-Brown in *The Architecture of America* (Harper & Row, 1961). Architects were fighting for survival, and the market for the *Architect's Handbook of Professional Practice* apparently dried up. The handbook went without revision or reprint from 1929 until 1943. That this gap in the evolutionary continuum of standardized architectural practice has affected practice today seems likely from a 1943-edition passage on quantity surveying:

"[I]n 1926 a group of quantity surveyors established a national organization to standardize procedures and form a basis of recognition of persons qualified to perform this technical service. Whether as a principal result of [the Depression] or otherwise this national organization apparently ceased to function after a very few years, and by 1940 little active interest in the quantity system was apparent."

Eyewitness accounts of the Depression years, from interviews published in *The Centennial History of the Washington Chapter AIA* (1987), help bridge the gap in handbook updates and offer insight into how little work was available until the New Deal programs began generating jobs on a large scale.

Theodore W. Dominick recalled the supportive attitude and lack of formal business obstacles among architects when he was setting up practice in the late '30s:

"I used to borrow people from the Justement office [Justement, Elam & Darby]. He would carry them on his payroll and they would bill me. . . . [In the early '30s, we] did all the detailing on

every job at [the architecture firm]. Of course the . . . man who ran the drafting room was very helpful. He would say, 'Dominick come on up here. Is that the way you think it ought to be?' 'Yes, sir.' 'Well,' he'd say. 'I'll show you how it should be.' He stood there and would draw the stuff up properly. And boy, would you learn quickly! . . . This was the old-fashioned training, I don't think that goes on anymore. This was more or less transitional from the old turn-of-the-century practice."

Harry E. Ormston remembered the tight job market:

"During this period of 1931-1934, different offices would get government contracts in Philadelphia and I would work for them. Well, as soon as the job was put out for bids, everybody would be looking for a job. During this period I had a job about half of the time and spent the balance looking for work or doing Beaux-Arts problems at the T-Square Club. . . . I never made more than $25 a week.

"It was still tough to find a job in 1935. . . . I just made the rounds until I found a job with a small architectural group in the Biological Survey in the Department of Agriculture. When CCC funds for that office expired, I then got a job at the Procurement Division, Treasury Department. When that job terminated in a year I then formed an architectural partnership with my brother-in-law. That was 1937, the 'Recession year' —we kept busy but had no income."

Boom in the '40s

With new editions in 1943 and 1949, the handbook prepared aspiring architects for an unprecedented rush of construction and many emerging specialty building types. As it had during World War I, the U.S. government imposed a wartime moratorium on private construction and, again, a construction boom followed the lifting of the moratorium and the return to private practice of those who had served during the war. Communities were planned and built whole, complete with hospitals, schools, and shopping centers. Building codes surged in response and architecture became even more businesslike than before.

By 1949, architectural registration was the norm *"in all but a negligible minority of the States of the Union,"* according to that year's edition of the handbook. Reciprocity among states was a problem, however, which spurred the development of the National Council of Architectural Registration Boards (NCARB), *"whose aim is to facilitate admission to interstate practice,"* the 1949 handbook explained. *"A further service of the National Council is its sponsorship of the mentor system."*

That edition also reported the development of business practice aids such as the double-entry accounting system devised for *"smaller architectural firms of from one to three principals"* with limited business training.

Professional liability was still only a minor problem in 1943. The handbook that year stated that *"with few exceptions,"* those architects who found themselves drawn to court were *"the stupid, the negligent, the dishonest, and the unreasonable."*

The handbook did give a warning concerning the architect's role during construction as opposed to the contractor's. It involved the monitoring of safety conditions on the job site:

"This is a responsibility which an architect is not paid to assume nor usually fitted to exercise. He is a supervisor, not the active manager of the work. Responsibility for the safe and proper completion of the building operations lies with the contractor, and he should be held fully responsible for the adequate meeting of any emergencies that arise out of such operations."

The 1943 edition also reported on new refinements in the AIA-issued standardized agreements for surety bonds:

"Shortly after the 'Owner's Protective Bond' was issued the Surety Association became convinced that it was better practice to issue two bonds, one a 'Performance Bond' to protect the owner, the other a 'Labor and Material Payment Bond' to protect the interests of mechanics and suppliers of material. In this way there is no possible conflict between the owner's financial interest and that of the labor and material men when either bond is invoked."

Design production techniques developed little during the '40s compared with the previous generation, as evidenced in the 1949 handbook. Architects' rapidly increasing work load combined with outmoded production procedures created an imbalance:

"The volume of work in the office, the rapidity with which certain sets of drawings have to be gotten out, unforeseen needs for drawings, all influence the organization of the drafting room, so that a theory of management has often to give way to the exigencies of the moment."

Normalcy in the '50s

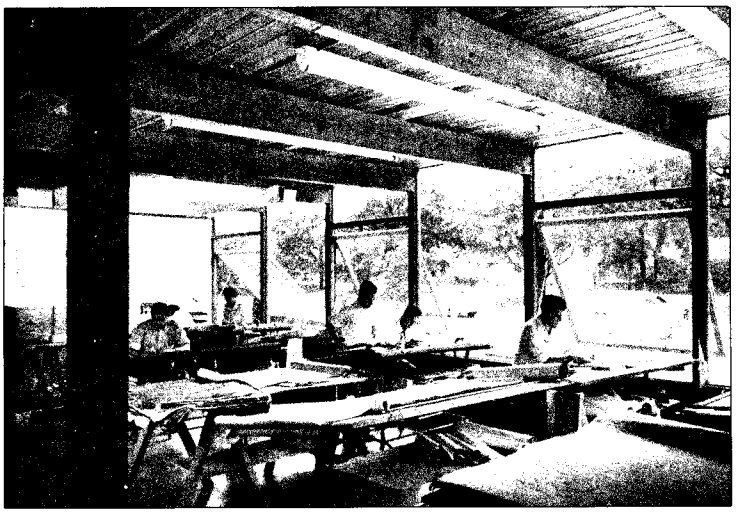
New editions of the handbook were released in 1951, 1953, and 1958, by which time it read more like a textbook than a handbook. It gave detailed advice on efficiency in each phase of project delivery, expanded its discussion of fee-setting techniques, commented on an increasing level of architects' liability, roundly condemned design/build, and warmed to marketing architectural services.

By 1958, architects were matching increased construction complexity with more efficient project delivery. That year the handbook devoted a separate section to each project phase as well as one to estimating. Partly in response to increased building complexity, AIA in 1951 dropped national fee schedules entirely, although local chapter and firm schedules continued to be the norm. In fact, the 1953 handbook advised that an architect *"who does not follow one of the recommended schedules of charges should print one of his own in order to remove his basis of charges from the field of negotiation."*

With a perceptible rise in the number of lawsuits against architects in the '50s, professional liability became an issue of increasing importance as the decade progressed. After assuring architects in 1953 that *"the use of the AIA Standard Contract Documents may be well considered a fairly sure preventative of litigation,"* in 1958 it warned them to *"keep accurate records in order to be prepared for possible lawsuits."* The 1958 handbook maintained that liability risk was manageable, although its editorial conviction softened somewhat when it stated that, *"by using his general knowledge of the law and consulting his attorney, the architect is generally able to avoid litigation."*

Liability was also becoming a problem during construction contract administration. Architects' attorneys were beginning to see that architects contracting to "supervise" construction were taking on too much of the contractors' liability. The 1958 edition contained a study in the art of redefinition:

"Supervision of construction is something the contractor does. The architect performs administration of construction, as does the project inspector (who used to be called the clerk of the works). . . . The general adminstration of construction by an architect should not be confused with the supervision which a



The Bloomfield Hills, Mich., office of Eero Saarinen, 1953.

contractor is required to give the work. . . . The supervision of a contractor might better be called construction management. . . . The general administration of construction is part of an architect's normal service, and should be distinguished from the superintendence, which is customarily performed by the project inspector [who] is paid . . . by the owner, but works under the direction of the architect. Employment of a project inspector provides for more continuous inspection of the work than would otherwise be possible, but it lessens neither the architect's duties nor his responsibilities."

With respect to project inspectors, the 1958 handbook observed that the *"use of project inspectors seems to be surprisingly rare."*

That edition had no sympathy for multiple contracting (design/build). The AIA Mandatory Standards stated quite clearly, *"An architect shall not engage in building contracting."* But architects nonetheless were offering design/build package services, to the consternation of the handbook editors:

"Some architectural firms, even now, are prepared to offer some or all of the advantages claimed by the unit design-construction services without the accompanying disadvantages. If all architectural firms should suddenly transform themselves so as to offer such service, however, it would be a revolution without results, the desirability of which would be debatable."

In another area where the erosion of professional standards was in debate, the handbook took a more lenient stance. In 1958, housing was being built on a massive scale. To keep pace with the market, the AIA allowed its members to sign royalty contracts for multiple use of plans. The rationale took another poke at full-service developers:

"With the help of architects and by skilled management, some home builders have been able to produce more well designed and equipped space in relation to cost than commonly results from either the conventional procedures, or from the efforts of the home builders without the benefit of an architect."

Despite the jostling between architects and developers for shares in the mass housing market, an indication that work was abundant was the soft-sell approach to marketing expressed by the 1958 handbook:

"Little that is useful can be written about securing a commission. . . . To impress [the client] with one's qualifications, the restraints of modesty should be observed, but favorable facts need not be withheld. Recently reported methods of explaining proposed architectural services include the use of: 1. photographs; 2. colored projection lantern slides; 3. exhibits; 4. a presentation book; 5. reprints of published articles; 6. scrap book; 7. motion pictures. . . . Brochures are used by many."

Although marketing of architectural services was becoming more common, advertising was still considered unethical *"not merely on the basis of abstract ethical ideals, but also because it is not in the public interest,"* the 1958 handbook stated.

The last generation

In 1963, AIA began publishing the *Architect's Handbook of Professional Practice* as a series of topical pamphlets updated as developments warranted throughout the '60s and '70s—a response to the rapid but inconsistent change in various areas of practice. The latest edition of the handbook was released this year. The major developments apparent from updates of the past 25 years are an increased sophistication in programming and construction contract administration, an explosion in lawsuits brought against architects, a consequent focusing of attention on liability and insurance, a slow re-acceptance of design/build services, a move toward marketing and away from any nuance of fee setting, and a computerized revolution in office automation.

The handbook showed architects becoming keenly interested in expanding their services. The traditional extended services—programming, site design, and postoccupancy services—received more attention, as did urban planning. Two of the most recently added chapters, "Architect as Preservationist" and "Interiors Practice," illustrate a parallel move toward specialization.

While the scope of architectural services was expanding under market pressures, architects' fee setting was subjected to regulatory pressure. As late as 1963, the handbook referenced local chapter fee schedules as a source for *"minimum amounts for basic services."* In the late '70s, the U.S. Department of Justice condemned professional fee schedules as a restraint of trade. In the interim, the handbook continued its disassociation from fee schedules, as in this 1970 statement:

"In computing compensation, architects often consult the suggested compensation schedules adopted by local AIA chapters for assistance. It should be understood, however, that these schedules are in no way obligatory or binding upon any architect. These schedules are not available through the Institute, nor does the Institute publish a national schedule."

Of the three principal design factors—cost, quality, and scope—cost took clear precedence in the past quarter-century. *"To exercise the freedom of judgment necessary in rendering full professional service, the architect must be given control of at least two of the three factors. Generally, cost is the only firm stipulation given the architect by the owner,"* stated the handbook in 1970.

The methods by which cost was estimated and controlled grew in sophistication to accommodate increasing financial pressure. Using value management, life-cycle costing, geographic cost indexes, and cost-per-man-hour data bases, estimators strove for increased accuracy. But, as the handbook noted in a 1984 printing, *"any estimator who can bring 60 percent of the projects estimated within 5 percent of the low bid is probably doing better than can be expected, and it is statistically probable that, on the average, one project in five will fall outside a 10 percent range."* Economic vagary was one likely culprit. Even in 1963, when the economy was stable relative to today, the handbook was warning that *"costs of the same type of structure have, in*

Skidmore, Owings & Merrill's office, Washington, D.C., 1987.

extreme cases, varied as much as 20 percent within a year on account of changes in the market."

Since the '60s, specification writing has gained from increased standardization and systemics. The 16-section Uniform System and the AIA-sponsored Masterspec service became established during the '60s and '70s. *"Unfortunately, only the most progressive schools of architecture or engineering include in their curricula comprehensive courses in specification writing,"* the handbook observed in 1969. It went on to warn that, when specification is *"relegated to someone not interested in or, in other instances, considered not capable of design or drafting responsibilities . . . , those responsible for such a practice are indeed tempting fate, and could possibly find themselves in court as defendants without valid defense."*

Finding oneself in court had become a real threat by 1969. The former belief that professional liability risk could be managed through careful quality control was exposed to painful reality as early as 1963:

"Young practitioners as well as students are inclined to assume that whoever does right need not be concerned with the law. The awakening may not occur until one hears of a misfortune suffered by a fellow architect or even until one experiences litigation first hand that results from his own unintentional misdeeds or those of others. Law and ethics demand that the architect use reasonable care, be moderate in his demands, and scrupulous in all professional relationships. Even this may not insure the architect freedom from litigation because he may be sued as a result of an accident for which he was not responsible."

The rationale the handbook gave in 1969 for the increase in professional risk is insightful for its time:

"Architectural practice has become more comprehensive, more detailed, and more technical. Specialization and complexity make it impossible for the principal to perform every detail of design and contract administration himself—he must rely on his employees and consultants. The principal remains responsible none the less.

"At the same time society has become more claims conscious. . . . One who designs a building or structure may be liable not only to the owner but also to other persons with whom he had no contractual relationship for injuries or damage resulting from his negligence in the design of the building or in the administration of the construction contract."

One result of the increase in liability from construction contract administration was architects' declining interest in visiting job sites. Partly as a result, specialists began offering construction management services.

On the other hand, more firms moved in the direction of total project control by offering design/build services. With a growing number of architects pursuing design/build, AIA softened its stance in the late '70s, and in 1985 reversed its former position by issuing a design/build contract form, A191.

Marketing came of age as a professional service in 1963. And, in a shift even more radical than that with design/build, AIA accepted in the early '80s the principle of advertising professional services. Advertising had been strictly taboo in 1963:

"The use of paid advertising to increase demand for an architect's services violates ethical ideals since it attempts to purchase the very thing that no professional can buy—only earn—namely public respect for and understanding of his profession. Further, advertising by architects would tend to destroy or compromise a reliable basis for selection. Finally, advertising by professionals does not make good business sense. Since (unlike retail sales or manufacturing) the unit cost of architectural service is not reduced by any quantity production that might be caused by an increased demand for services, advertising costs would necessarily be passed on to the client in increased compensation or reduced service."

Quite a different story came in a 1980 edition:

"The architect advertises for one or more of the following reasons: To obtain leads to sources of work. To build up a mailing list. To build up an image with existing or past clients. To offer specialized services to clients or other design professionals. To become known (especially new firms or firms with new names). To reach large groups of similar clients requiring modest-scale services (e.g., residential or store-front remodeling).

"One rule of thumb is to advertise whenever the firm wants to bring out a single feature that makes it distinctive from competitors. . . . Another rule is to advertise when one wants to reach large numbers of readers with news of a low-cost service that requires a high volume of business."

The turnabout regarding advertising was likely an outcome of increased competition. Another outcome has been increased interest in efficient office practice, most notably through computer innovations.

One example is the development of critical path management (CPM) for construction. CPM theory, popularized in the early '60s, involves a sophisticated bar chart of construction activities that links all trades and tasks in a web of cause/effect relationships. With any but the smallest of projects, CPM quickly becomes humanly impossible. Because business computers were not generally affordable until very recently, most architects wishing to take advantage of CPM used time-share computer services. The same was true for other computerized applications, such as accounting, project information storage, and specification writing. The success of the computer time-share ventures, as awkward as they were with frequent errors and mail-order lag time, gave proof (as if proof were needed) of the quantum leap computers brought to practice management automation.

With the advent of affordable, powerful personal computers, the ever-dynamic evolution of architectural practice is certainly headed for more radical—and as yet unpredictable—change. □

The Widening Web Of Codes and Standards

It may soon be at least partially untangled. By M. Stephanie Stubbs

New York City issued the first bona fide American building code just before the beginning of the Civil War. Thirty years later, the code and its successors in other cities were causing enough concern among architects to be the topic of a feature article in the premier issue of *Architectural Record* (Jan. 1891):

"The subject of laws relating to the construction of buildings most likely would be promptly rejected by the ordinary reader of magazine articles as dry, uninteresting and unprofitable. In reality the subject is one of uncommon interest to whoever has the courage once to give it attention."

The same song is sung by today's building code proponents, telling architects how important and timely the topic is, while chorusing a profuse apology for boring them to tears. One explanation might be that building codes, like most of the products of cooperative and democratic process, do not bear the marks of personality or of individual effort that make other elements of architectural practice infinitely fascinating. Secondly, while few professionals would deny that building codes indeed are necessary to protect the public health, safety, and welfare, words like "quagmire," "labyrinth," and "morass" surface quickly in discussions of the current code state of affairs.

Interestingly enough, today's building codes, considered separately, do not seem to be the target of the complaints. It is rather the situation of architects working in more than one jurisdiction, facing the system of three model codes and their thousands of locally adapted offspring, plus myriad related standards, that elicits complaints such as these:

- The three codes are not consistent.
- Different editions of the same code are used in different locales, and many localities have their own technical amendments.
- The building codes are supplemented with a variety of specialty codes.
- Codes conflict with other regulatory requirements in a given jurisdiction, including zoning ordinances, preservation requirements, and federal requirements for government-funded projects.
- Building officials and product manufacturers dominate the codes amendment process, and there is not enough input by design professionals.

The architect considering the current complex and confusing condition of the model building codes system might wonder, "Did it start out as a straight and narrow path and slowly get tangled up? Or did it originally resemble a small spider web, which just got bigger and bigger as codes grew increasingly complex?"

When this magazine came to be in 1913, most large municipalities had some sort of local building regulations in effect. These local regulations, commonly referred to as "building laws," originally were paved with the best of public-welfare intentions. They commonly regulated building heights, areas, and sometimes construction methods, mostly as a means of fire safety. Codes had little, if any, relation to each other. In December 1913, the AIA JOURNAL published an account of a typical city code, the recently enacted Seattle Building Code: "... The [Seattle AIA] Chapter has worked for two years in conjunction with The Building Code Commission to achieve [the code]. The ends sought were greater economy in construction of commercial buildings; greater protection to health, life, and limb in public buildings and places of habitation; more consistent construction in each particular kind of building, and prevention of conflagrations.

"Based on the history of conflagrations revealing the enormous fire loss of the country, a careful study of fire districts was made. The result is division of the city into four concentric zones. Within the first district, comprising the inner zone, fireproof buildings are required. . . .Within the second district nothing of a lower type than a mill building is permitted; in the third district, nothing of lower type than an ordinary masonry building is permitted; the fourth district comprises the frame building district. . . ."

The huge number of urban conflagrations occurring around the turn of the century and culminating in the great fire of Baltimore in 1904 caused professionals to question the effectiveness of local building laws and to raise the battle cry for model, or even national, building standards. (This response set a precedent carried through to today. Whenever there is a major building disaster, amendments and additions to the codes and calls for a national building code resurface.)

In answer to the fire problem, insurance underwriters formed the first model code organization. Insurance companies set standards that building owners who wished to become members were required to meet, and owners, through an insurance company, pooled money for payment should fire disaster occur. The National Board of Fire Underwriters (forerunner of the American Insurance Association) was set up to provide insurance companies with technical and engineering information on which to base their claims, an effort that resulted in publication of the National Building Code in 1905.

Concern by regional groups of building officials regarding the efficacy of the National Building Code in their own locales slowly led to the formation of three regional code groups. Interestingly, each of the three had a developmental quirk that determines its tenor even today. When Building Officials and

Much of the historical data in this article was gleaned from reports prepared for the U.S. Department of Housing and Urban Development: "Existing Buildings and Building Regulations" (1982) and "Evolution of Building Regulation in the United States" (1981).

Illustration by Lynn Nesmith

Code Administrators (BOCA, publisher of the National/Basic Building Code), the first group, was formed in 1915, all of its member jurisdictions already had their own local or statewide codes in place, and unifying these code requirements seems to have been a major issue right from the start. When BOCA's building code was finally written in 1950, it was designed to encourage both uniformity and innovation in the field, a practice to which it still adheres.

On the West Coast, the International Council of Building Officials (ICBO), formed in 1922, published its first code (the Uniform Building Code) in 1927. The UBC was the only code that contained information from National Bureau of Standards reports, and in format it is still the most detailed of the three. It contains more "numbers," formulas, and standards-type data than the other two codes.

The Southern Building Code Congress (SBCC) was founded in 1940 and published its first code in 1945. The authors meant their code to be used in small towns as well as large metropolitan areas, and it maintains that character.

In 1976, when the three model building codes established by building officials' organizations were well recognized by the building industry, the American Insurance Association ceased publication of the National Building Code.

The three model building codes as we now know them did not evolve in a regulatory vacuum. For example, the Life Safety Code of the National Fire Prevention Association, which was first promulgated in 1913 and is still referenced by many jurisdictions, was written as a direct response to New York City's Triangle Shirtwaist Factory fire in 1911 (in which 145 people perished, many as a result of locked exits). Thus the Life Safety Code began as an egress and exits code.

However, fire and structural safety were only half of the reason for building codes. The other half was addressed in regulations attempting to alleviate the deplorable conditions of urban tenements, which had sunk to their nadir at that same time. Many of these laws, forerunners of the modern public health regulations and zoning ordinances, were patterned after the New York Tenement Laws.

Fire protection requirements in the building codes, as in the Life Safety Code, developed over the last 75 years as a direct response to building fire disasters. The major concerns emerged in the codes as follows:

Fire zones, such as Seattle's, were established as part of the foremost goal of the first building codes—to end conflagrations. A city was divided into zones of varying economic importance or conflagration potential, and wood-frame construction was prohibited in certain zones. The concept of fire zones has changed little from its introduction in the 1905 code, although now fire zones are usually set by zoning ordinances, which separate buildings by occupancy type or accessibility to the fire department.

Heights and areas requirements originally set the height for a fire resistive building at 125 feet. From their inception, the codes have always allowed an increase in area as a trade-off for automatic sprinklers; the increase has grown from 33.3 percent in 1905 to about 200 percent today.

Fire resistance, the ability to resist structural collapse during a fire, has been increasingly regulated by the codes. Over the past 75 years, the acceptable area of fire containment has shrunk from a city block to one building, to a room, and down to the item first ignited. Though the technology of fire resistance in buildings has improved significantly, the concept has remained constant, governed since 1918 by the ASTM E-119 standard fire resistance test, which measures a building component's performance in time—hence, the "two-hour wall" type of rating for components.

Exit requirements have changed markedly over the years. When the codes first were established, open interior stairs were the most common means of escape. Beginning in the late 1800s, fire escapes were required on new buildings as a second means of egress. Interior stairs for exiting were required to be enclosed in 1915, about the same time fire escapes fell out of favor. In the 1920s, the definition of exit requirements was expanded to include the pathways that lead to the doorways, and fire-rated corridors were required starting in 1927. Perhaps the most interesting trend in the model building codes is in the requirement for two exits. It was in force from 1915 to 1931, then relaxed, and revived again in 1976.

Interior finishes common at the turn of the century, such as plaster and heavy timber, were not considered much of a fire hazard. Not until the widespread use of synthetics as interior finishes was there a problem. The codes began to regulate them stringently in the 1940s, at which time the ASTM E-84 test (how fast and how far flames spread across a material) was refined, leading to specifications for level of performance.

Automatic sprinklers were required by the 1905 edition of the NBC, in basements and cellars of mercantile properties, and where two stores or warehouses adjoined. In 1915, the code required sprinklers in "hazardous" areas and required them to have two water supplies, one of which had to be automatic (for example, a tank on top of the roof). Not until 1949 was municipal water supply deemed reliable enough to allow for a single water supply. Buildings without operable windows were required to be sprinklered in 1952, and portions of a building over 75 feet from an exterior wall opening were required to be sprinklered in 1961.

Fire detection and alarm systems became prominent late in the codes game, when residential smoke detectors were the alarm breakthrough of the 1970s.

High-rise buildings, at the onset of model code development, were the object of control for firefighting purposes. The 1905 edition of the NBC limited the height of a building to 125 feet and required buildings over 55 feet (the limit of fire department access) to be of fire-resistive construction. The UBC, on the other hand, did not restrict the height of fire-resistive buildings but required buildings over 100 feet to have a passenger elevator in "readiness" for fire department use.

No special provisions for tall buildings appeared in the 1949-1976 editions of the codes. Tall buildings (defined as over 75 feet tall) re-emerged as an issue in 1976, most likely as a result of extensive research on fire and smoke, wind behavior, and seismic mitigation in the early 1970s.

Existing buildings were not a separate issue in the earliest editions of the codes, which pertained to new and existing buildings alike. Gradually it came to be understood that buildings constructed prior to a particular code edition were "grandfathered" out of compliance to that edition, and that the building codes were meant for new construction. Health codes and housing codes, on the other hand, policed the conditions of existing structures. Codes later established requirements for what percentage of an existing building had to undergo renovation before it was required to be brought up to existing code.

A proliferation of renovation projects in the late 1970s led to

examination of the renovation rules, and existing buildings became a major topic for debate again in 1984, when the BOCA code adopted "Article 25," a performance-based code for rehabilitation.

Structural considerations apart from fire safety form the other major branch of the building codes and govern use of most new methods and materials. Conceptually, the basic structural requirements have changed little from the original codes, especially compared with fire protection requirements. For example, vertical load limits, the backbone of structural calculations, have stayed fairly constant since the National Bureau of Standards developed a set of requirements in the 1920s. Likewise, floor loads then were and still are based on a measure per square foot according to occupancy type. Roof loads and wind loads show little change, although they traditionally are adjusted locally, and have been revised progressively to account for buildings of greater heights.

Seismic design is one exception to the consistency of structural requirements in the codes. Not surprisingly, seismic requirements progressively have been strengthened in jurisdictions on the West Coast, through both local codes and the UBC. As with fire disasters, major earthquakes catalyze development of new legislation by revealing clues about the nature of the destructive phenomenon. For instance, the San Francisco Building Code first dealt with seismic mitigation in its revision of 1906, following the great earthquake in that city. Recognition of significant factors influencing seismic design progressed through the years to include, in 1935, soil pressure; in 1943, the effect of the number of building stories; in 1960, the type of structural system and fundamental period of the structure; in 1973, more dynamic design requirements; and in 1976, soil factors and the importance of building factors. Design for seismic mitigation has been in the research forefront lately and is likely to result in significant code revisions in the near future (see July, page 86).

Factors of safety were specified in most early local building codes, as well as the first model codes. Specified factors of safety began disappearing from the codes in the mid-1920s as allowable stress design theory (with built-in safety factors) became acceptable practice. Generally, increased understanding of stresses in materials, quality control of production, and higher-strength materials such as glue-laminated wood and prestressed concrete have led to specification of reduced safety factors.

While the model codes have continuously regulated fire protection and structural safety, they have also at various times governed light and ventilation, plumbing and sanitary facilities, privacy, glazing, acoustics, and stairs. Some of these requirements, notably plumbing and electrical requirements, have found their way into specialized model codes; others are covered now by housing codes and public health ordinances, which traditionally have established levels of safety and health in existing buildings. Housing codes more closely resemble maintenance codes than building codes. Hazards abatement codes, a more recent development, also pertain to maintenance of existing buildings.

Even with the dispersal of specialized requirements, model code books have grown progressively fatter. Many ambiguous requirements that were subject to broad interpretation have been explained at length. There are new technologies and materials to regulate, while the old ones are updated or preserved intact. Moreover, as all three codes move to a performance-based rather than a prescriptive methodology, there are more options to explain. It simply takes more words to describe methods for accomplishing performance than to present a "number" that must be achieved.

Additionally, as professionals have found and codified the means to control major structural and fire hazards to protect health and safety, the ideology of codification seems to have shifted gradually to other areas. For example, some codes now set energy standards for building performance. While one might argue that this is a laudable or necessary goal, it is expanding the boundaries that define "public welfare." The central question of the building codes world over the past 75 years seems to have traveled full circle, through "*How* should codes regulate?" back to the original "*What* should codes regulate?"

Beginning as the insurance companies' bailiwick, then quickly becoming the domain of building officials, the promulgation of model building codes historically has not seen architects in the limelight. From backstage, however, architects have always been involved with codes. The first issue of the AIA JOURNAL, in January 1913, praised its members who had "unselfishly" given of their time "to procure better building laws."

In July 1914, AIA declared that it was the proper role for architects to be involved with the writing of building codes. The JOURNAL reported: "The [AIA committee's] report showed convincingly the importance of the preparation of a Basic Building Code, proposed that the Institute should plan for it, outline its general scope, provide proper places for details, and invite other societies specializing in the respective branches to cooperate in its preparation."

The AIA board approved the plan and appointed a committee to take charge of the effort. After two years, the committee concluded that the task was too great for AIA to undertake single-handedly and recommended that the National Bureau of Standards, with support from AIA and major engineering societies, draw up a national building code.

But a national building code, at least to date, seems destined not to be. AIA later changed its position to support the existing system of multiple codes, while calling for codes that are "consistent in their development, adoption, interpretation, enforcement, and application."

The current AIA codes and standards group, called the Building Performance and Regulations Committee, monitors code change processes and, with Institute approval, proposes changes and testifies on proposed changes at model code hearings. It is up to the model code committees, composed of building officials, to vote on the changes.

The limited, albeit important, role that architects have traditionally held in formulating model codes has been a source of frustration for many architects, particularly AIA committee members who would rather be more active in the process. This year may prove to be a landmark in the history of architects' involvement with the building codes process because the BOCA board, at its meeting last June, extended to design professionals the right to vote on code changes. Time will tell whether this will encourage more architects to actively participate in the process.

The other major factor likely to influence the future relationship of designers to building codes is microcomputers. Some codes already have been programmed into self-contained software data bases, with various types of key-word and search functions. The potential for determining compliance, updating editions, cross-checking, and eliminating inconsistencies is great, and the increasingly intricate spiderweb of codes may soon be untangled. □

Illustration by Lynn Nesmith

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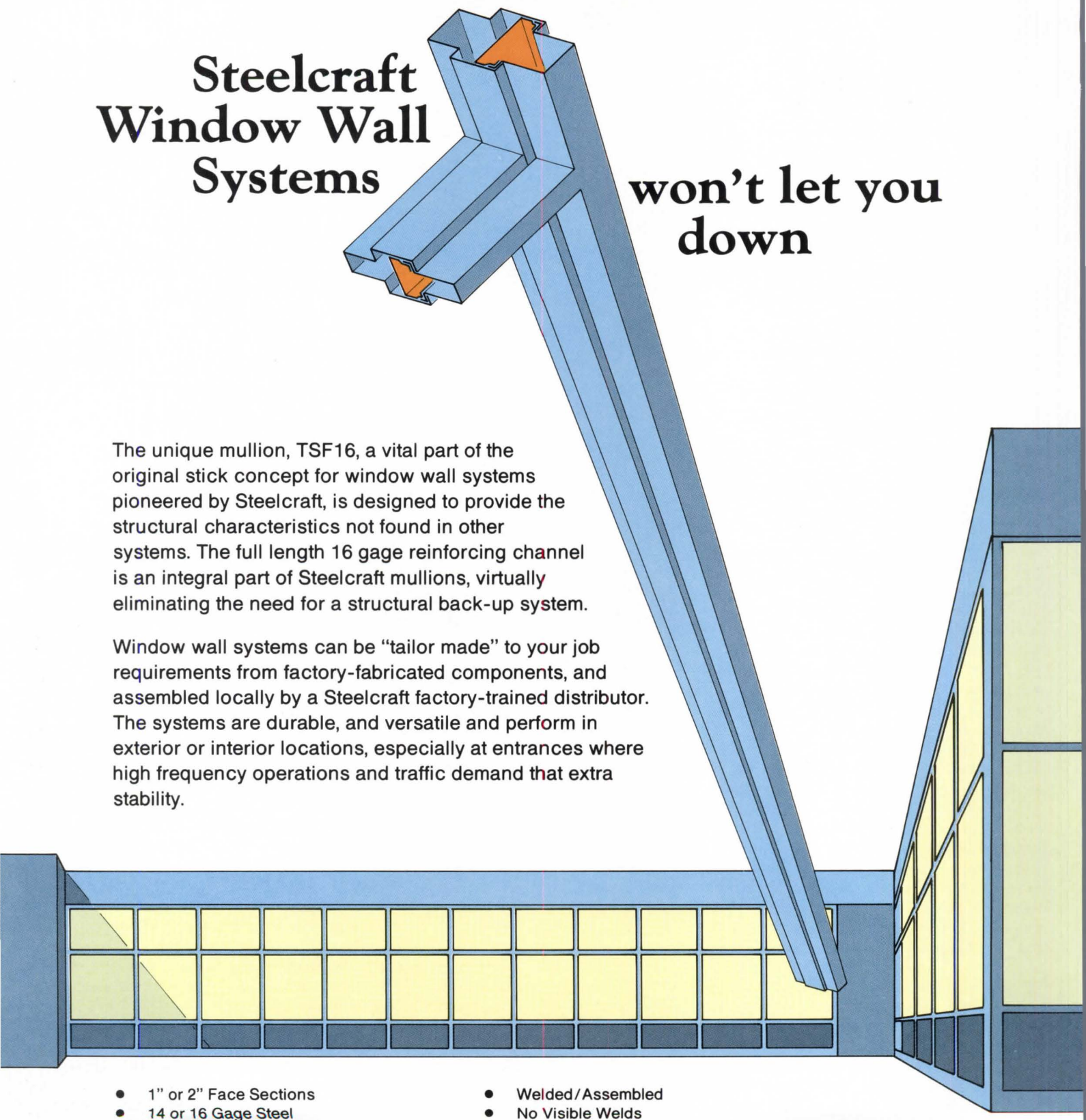

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Metals as Determinants Of Design Developments

Their influence has been enormous. By Elena Marcheso Moreno

Many of the dramatic changes that have taken place in the design and process of building over the past century can be traced almost singly to metals. The history of architecture since the late 1800s has been dominated by developments in cast iron, steel, and aluminum.

By the 1880s, cast iron facades had been embraced by designers in major cities around the world; prefabricated and often intricately ornate panels of cast iron were supplanting stone and other masonry walls to a large degree. Sanding and painting the cast iron made it look like the stone it was replacing in both ornamental and structural applications. Costly stone carvings and large decorations could be reproduced in cast iron for substantially less money.

Cast iron was used mainly for commercial buildings—offices, hotels, and storefronts—which were ornate and often palatial in appearance, if not in scale. "Many [cast iron] buildings were done in the Renaissance style, replete with columns and cornices, balustrades and brackets, arched windows and pediments," noted Margot Gayle, as quoted in the book *Cast Iron Decoration* by Graeme and Joan Robertson. "Yet cast iron never seems to have caught on for residential construction. From the beginning it was associated with manufacturing and public works, as in the building of mills and factories and bridges. By the time it took root in the United States, iron architecture had a totally commercial connotation."

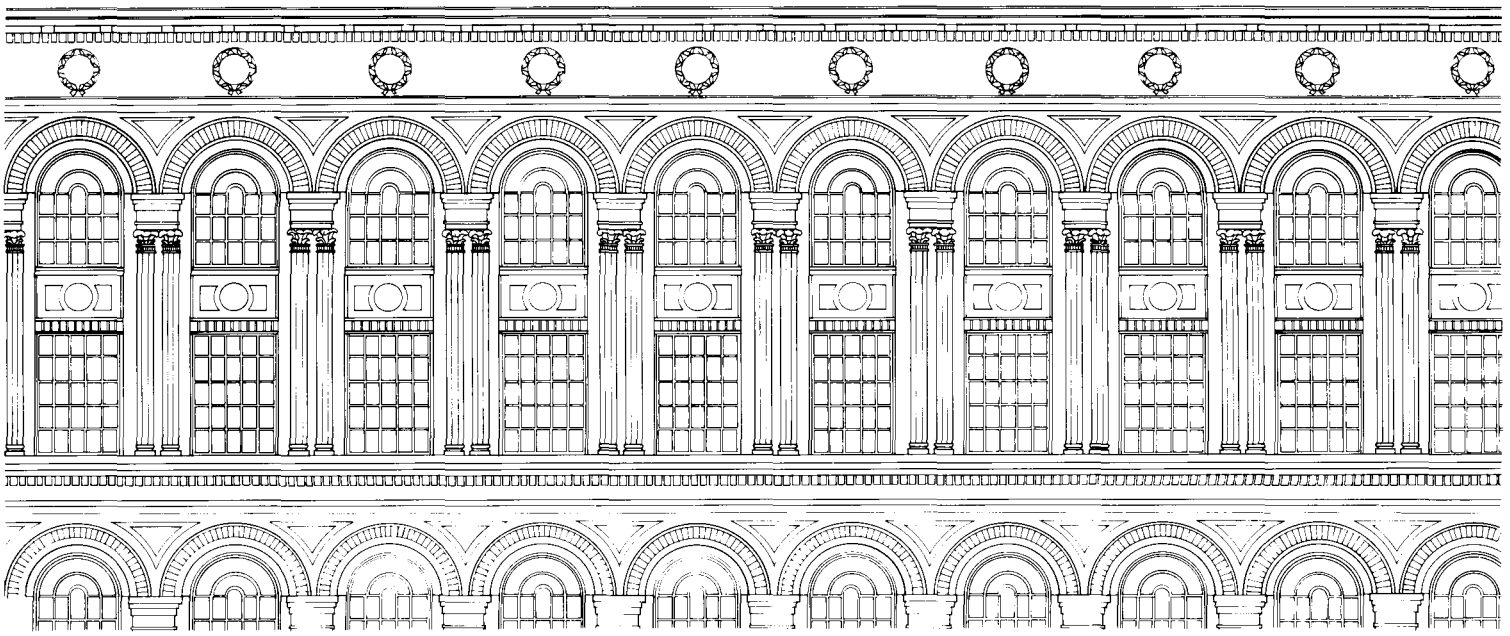
The Crystal Palace, designed and built by Joseph Paxton for the London Exhibition of 1851, was framed in cast iron. Both the cast iron and glass components were premanufactured; as a result the building was completed in four months, at a time when conventional construction would have taken years. The Crystal Palace was the first building in the Western world to enclose space by a metal frame holding a transparent envelope. But the concept was ahead of its time, and it would take until the turn of the century for metal and glass again to be used in this way, this time by Louis Sullivan.

One of the largest remaining monuments to iron wall construction is lower Manhattan, where more than 200 cast iron facades and entire cast iron buildings remain. Manhattan also was home to the Wanamaker Department Store on Broadway, which boasted iron beams and cast iron columns on its facade.

We may soon see a rebirth of cast iron building materials. In the May 1986 issue of *Architect's Journal,* David Yeoman reported a re-emergence of cast iron in the construction industry, partly to replace damaged or lost components but also because cast iron is relatively inexpensive and competes well with other materials for repetitive work.

Modern applications of cast iron require a few special considerations. For example, thicker castings cool more slowly than thinner castings; therefore, thicker castings have less strength and hardness. Also, larger components are more likely to be

The front elevation of the I.M. Singer Co., Sewing Machine Manufacturers building was typical of the ornamentation found on cast iron industrial buildings throughout lower Manhattan.



distorted upon cooling, potentially creating problems at fittings, where dimensional accuracy is important.

Yeoman said that many metal components that appear to be cast are actually castings combined with rolled or wrought metal. Examples include the roof structures of old train stations, where cast iron spandrels may be riveted to rolled sections. Today, mild steel would be the other logical metal for this kind of application, and the variety of shapes available offers designers great freedom. For example, simple steel sections can be welded to complex castings for railings and lampposts. Ductile irons now have greater strength and impact resistance, making iron castings a logical choice in certain structural applications.

Steel frames for tall buildings

Louis Sullivan's job of designing the Carson Pirie Scott building in Chicago was eased by the earlier discovery of the Bessemer process that greatly reduced the cost of steel and allowed the first steel I-beams to be rolled. Until then, masonry was unquestionably the standard for load-bearing construction. Exterior masonry walls were built to carry all floor and roof loads and to support themselves and any walls above them. For practical purposes, the height of this type of construction topped out in 1891 in Burnham & Root's 16-story Monadnock Building, which has six-foot-thick, load-bearing masonry walls.

In the decade before the Monadnock Building set the masonry height record, the first Grey-iron rolling mill was installed to make wide-flange structural shapes—the basic material of the structural steel industry—and the skyscraper was being invented in Chicago by a young engineer named William Le Baron Jenney. He determined that a frame of structural steel could replace massive masonry walls for high-rise construction, and that the steel could carry the weight of the floors, the roof, and the walls. The walls would not support the entire building; they would instead support their own weight for a single story, and from there the loads would be picked up by the steel structure. What Jenney proposed was unheard of—walls that would be of a minimum and uniform thickness throughout, without regard for the height of the building. To prove his theory, between 1883 and 1885 Jenney designed and built the Home Insurance Building, considered the world's first steel-framed office building.

Others in the industry reacted to skyscrapers with uneasiness and a general opposition that was formalized in 1894 at a meeting of the Architectural League in New York City. The league proposed a law against the erection of skyscrapers, which it said made the streets a hotbed of malaria and were themselves eyesores. The league's opinions were well received by the press, the Brooklyn and Buffalo chapters of AIA, the City Club of New York, and a number of art societies. But the proposal never came to fruition, and steel skyscrapers were erected in increasing numbers. Then, in 1923, the first building standard for structural steel design was published by the newly formed American Institute of Steel Construction.

That steel could provide remarkable design options was pointed out by Lewis Mumford in *Sticks and Stones* (1924): "Where the need for spanning a great space without pillars exists . . . structural steel has given the architect great freedom; and in these departments he has learned to use his material well; for here steel can do economically and esthetically what masonry can only do at an unseemly cost, or not at all." Steel building frames had ushered in the 20th century.

Large quantities of structural metal were used in the pre-World War II skyscrapers—the massive beams and diagonal bracing of the Empire State Building, still one of the world's tallest structures, weigh over 40 pounds per square foot. That much steel was needed to carry the building's floors and to withstand the winds that would bear on it, according to the engineering of the time. But giant leaps in structural technology and in materials development have lowered the weight of structural members substantially. Buildings of the same general height and shape as the Empire State Building would be constructed today with approximately half the unit weight of steel.

Stiffness is another important design criterion for structural systems of skyscrapers. Stiffness, or the ability to withstand deflection, is the factor that limits the volume of material needed to support a building under both static and dynamic loading. The amount of steel must be sufficient to make the structure stiff, but not so great that it becomes uneconomical.

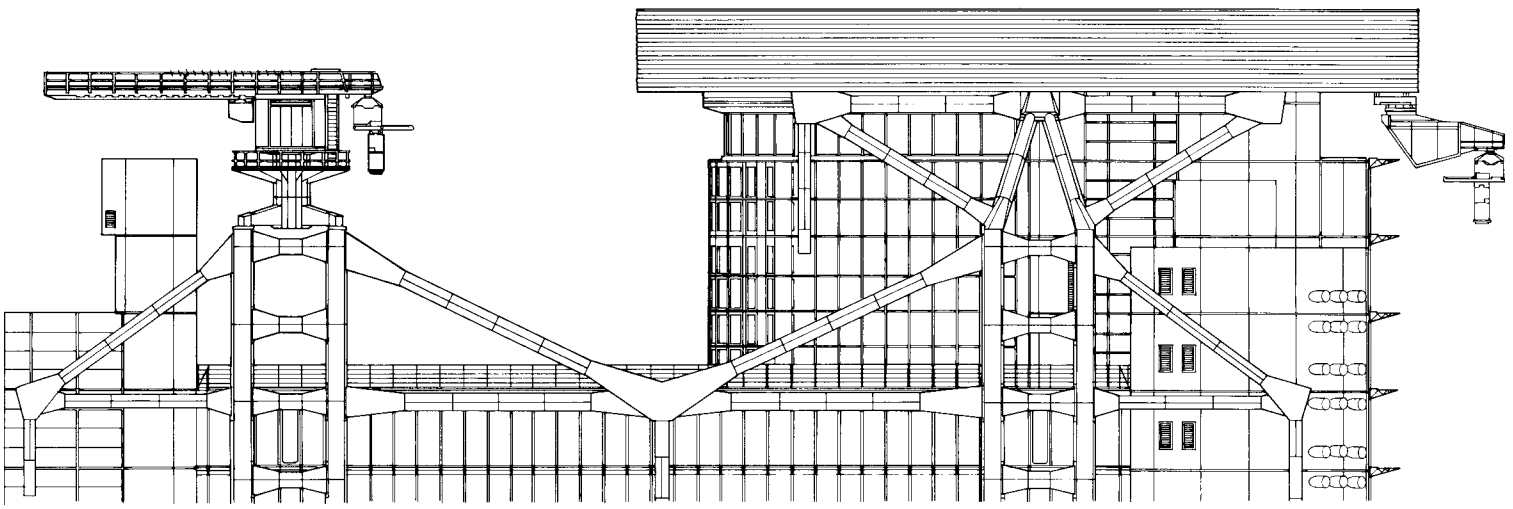
Over the past two decades, tubular design has moved steel bracing and support from the building's interior to its perimeter, essentially providing a hollow tube for space planning while increasing the overall stiffness on a pound-for-pound basis with older types of steel frames. In tubular design, stiffness depends on joints and connections; therefore, high-strength bolts and welds are critical. Still, this design permits some deflection of the structure in wind loading, and consequently it recently has undergone a number of iterations. An example is modular tube design, such as in Skidmore, Owings & Merrill's Sears Tower in Chicago, which bundles together a number of structural units or tubes to avoid the shear lag that can build up around a particularly large perimeter in other tubular configurations.

Another area of steel design showing a surge of interest lately is the use of structural trusses. In trussed tubes, diagonal members connect perimeter columns. Triangular trusses are a variation on the same theme, but the geometry of the triangle inherently provides more stiffness than the other shapes, and so uses considerably less material.

Although the concept was developed in the 1960s, staggered steel truss framing has only recently come into vogue. In this system, which is free from interior columns, the framing is composed of story-high trusses that span the width of the building at each line of columns on alternate floors. The trusses themselves are supported only by perimeter columns at their ends. Diagonal members can be removed to accommodate openings for corridors and doorways without significantly affecting deflection. The staggered truss system uses 20 to 40 percent less steel than conventional beam and column framing.

Trusses seem to be the future of high-tech structures. Norman Foster's building for the Hong Kong and Shanghai Bank uses tubular steel trusses as bridges from which hang the steel structure. As many as nine floors hang from two rows of "masts" through its 47-story height. The building, which has no structural core, uses four sets of the suspension trusses on five levels, supported within rectangular trusses. The result is an economy of framing materials and floors with load-carrying capabilities 20 times greater than in conventional modern office buildings.

The development in the early 1970s of alternative methodologies for the design of simple and continuous beam and girder steel structures has been responsible for a number of advances in the design and construction of bridges. One method, called the Load Resistance Factor Design (LRFD), which improves upon the inherent economy of steel for structures, has recently been adopted by the building industry. Steel building design has



Exposed steel structural members often are used as a form of ornaments, as in this elevation of the top trusses of Foster Associates' Hong Kong Bank building.

generally been governed by the concept of Allowable Stress Design (ASD), a straightforward means of accounting for real loads and comparing those loads to industry standards. The standards always account for less than the ultimate strength of steel. LRFD goes a step further and borrows from the concept of plastic stress distribution to calculate the strength of a member, thereby allowing a design to take advantage of the steel's true ultimate strength, instead of limiting the design to carrying loads that fall in the material's elastic range.

The LRFD concept is based on the probability of load occurrence, so allowable dead loads are increased by one safety factor—for example, 1.2—while live loads, which are less predictable, receive a greater safety factor, say, 1.6. With this approach, much less steel is required to do the same job as steel designed under the ASD method. Both methods have been approved by the American Institute of Steel Construction.

Jenney's skyscraper concept continues to be expanded as new calculation and construction methods and new configurations of steel structural skeletons appear, making fast-tracked construction possible. The 110-story Sears Tower, built in 1973, is still the world's tallest building. But, due in large part to lightweight and superstrength construction, skyscrapers of 200 stories and more are technologically possible.

Aluminum curtain walls and coatings

Curtain wall construction was another important step in the progression of developments that changed the look of architecture over the past 50 years. Walls, no longer needed for structural support, became sheer screens enclosing space. These screens could be of almost any material, and the primary function of exterior walls was to keep out the elements.

But this concept was largely shunned for decades. Architects for the most part held tenaciously to the more substantial appearance of masonry for walls in high-rise construction, even when the masonry itself was in reality only a thin veneer. The few architects who did take advantage of the wall-as-enclosure-screen concept faced difficulties beyond daring to be different. Foremost, only a few suitable nonmasonry wall materials were available in the early years of this century; today's ubiquitous curtain wall materials—large sheets of glass, aluminum, porcelain enamel, and most sealants—had not yet been developed. In addition, the building codes of the time were biased in favor of masonry to the point that they specified not wall performance but construction.

The tide turned slowly toward curtain walls, especially aluminum curtain walls, but it began to turn in 1886, when Charles Martin Hall invented the modern means for refining aluminum, and the aluminum industry commenced. Until that time, aluminum in its elemental form was a precious or semiprecious metal. Aluminum was to undergo a variety of product transformations before settling into its niche as a sheathing material.

By the late 1920s, aluminum was being used in few architectural applications, but they were significant. Two important examples are the spire of the German Evangelical Protestant Church in Pittsburgh and the 6,000 spandrel panels and the storefront and ornamental trim on Shreve, Lamb & Harmon's Empire State Building, completed in 1931. Architects in all parts of the country followed the progress of these two buildings, intrigued with the potential of the new metal.

Once inexpensive aluminum was available, uses for it multiplied. When small amounts of aluminum were used as an alloy in steel ingots, the problem of blow holes (gas pockets caused by entrained air) was eliminated. Ironically, the inclusion of aluminum to form steel alloys made steel a formidable competitor of aluminum itself.

Aluminum wire and cable were a major product line for a short time, but questions about the fire safety of aluminum in certain circumstances eventually led to the end of its electrical applications in most buildings. More successful were aluminum doors and windows; by the 1930s they had emerged in stiff competition with wood.

But it was aluminum skins that had the greatest effect on the way buildings were constructed. Today, many of the world's tallest structures are sheathed in aluminum, including the Sears Tower and the twin towers of New York's World Trade Center.

The modern concept of the aluminum curtain wall took hold sometime in the 1950s, according to the American Architectural Manufacturers Association, and, after an initial surge, interest in it fell off. But by that time industry standards had been adopted, new sealants appropriate for the purpose had been developed, and architects had become better acquainted with curtain wall technology. Today, it is extremely difficult, if not impossible, to find a city in which most of the newer downtown buildings are not clad in aluminum and glass. Although other metals—stainless steel and copper—can be employed as cladding, prefabricated aluminum panels have the vast majority of the market, and their competition comes not from other metals but from stone and glass.

The beauty of aluminum is that it does not deteriorate rapidly. Upon exposure to air, aluminum will form a gem-hard, microscopic coating that seals off any further oxygen penetration to the metal below. The natural oxide film, however, is not thick enough to protect the metal over prolonged environmental exposure, particularly on architectural work where good appearance is essential. Therefore, the next important breakthrough in aluminum panels was the use of anodizing as a method of finishing the surface. Anodizing artificially produces an oxide coating that is thousands of times thicker than the natural one, and is also much harder. Like the natural film, the anodized coating is actually a part of the metal and resists weather, corrosion, and abrasion.

There are two common anodizing processes, each an electrolytic process in which the metal is immersed in a tank containing an acid solution, through which an electric current is passed, causing oxygen in the acid to combine with the aluminum at its surface. One is the conventional hard coat process, which needs from 12 to 18 tanks of acid; the other is a newer, shorter, two-step process. Manufacturers disagree on which is better. The two-step process results in less expensive cladding, with an appearance that some claim to be identical to that achieved by the conventional anodizing method; but others attest to a more consistent color match and better color repeatability with the conventional method.

Standard anodized panel colors range from clear aluminum to bronze to black. For some time now, other colors have been achieved by including organic dyes in the acid solution. During this process, which is similar to electroplating, the metal pores open, become filled with dye, and then close to some degree. The problem is that the pores never close completely, leaving the pigment subject to attack by solar ultraviolet rays.

Recently, though, the technology to introduce inorganic dyes into the aluminum oxide coatings was imported from Europe to the United States. The process produces anodized coatings in reds, coppers, pinks, yellows, and blues that are not subject to attack from oxygen and sunlight. These colored panels tend to be more expensive than the standard bronze series, but they are said to be competitive with high-quality painted surfaces.

Another big breakthrough in panel coatings was the development of fluorocarbon paint additives, which impart a high-performance architectural finish. A member of the Teflon family, the fluorcarbon coating must be factory-applied, is almost totally impervious to the effects of the sun, and does not peel or chip. Its greatest advantage over anodizing is its consistency of color. Some new fluorocarbon products that simulate the metallic look of anodizing are about to come on the market. With the advent of coil coating systems, in which the metal is finished before it is cut into panels, saving both time and labor on the site, the cost of finishing aluminum on large projects has dropped dramatically.

Metal roofs and building systems

Metal roofs have been around for a long time. The standing-seam roof, revived at the Chicago World's Fair in 1934, has become popular again over the past decade. Like all metal roofs, it requires relatively little maintenance and is very durable. The joining of metal sheets in seams that rise two to three inches above the roof surface, and the design's resistance to through-the-roof penetrations, help to minimize water leakage (see page 141).

Lightweight metal framing is another growing use of metals in architecture. According to a representative of the Metal Construction Association, as recently as three years ago light metal framing was rarely specified. Now it is being used in multi-story buildings from schools to hotels. Unlike conventional metal buildings, with heavier steel and rigid frame construction, lightweight metal framing uses small, light-gauge pieces of metal, usually galvanized steel. Although there are some standard components, the standardization is similar to that of lumber—framing members come in the same nominal dimensions and can be site-cut with saws. All components are fastened with self-drilling and self-tapping screws and fasteners.

Unlike light-gauge framing, which involves components, metal buildings are systems, points out the Metal Building Manufacturers Association. They are sets of interdependent components and assemblies—including primary and secondary framing, coverings, and accessories—that form a building. All components and assemblies are tested to ensure they meet load requirements and building codes. The premanufactured buildings industry, which suffered from a "tin shed" image for years, has been working to provide architects more design options than they had before premanufacturing. Once limited to warehouses and industrial buildings, metal buildings today are increasingly being designed for commercial and retail uses.

Premanufactured metal buildings of up to 10 stories are technically feasible. Most manufacturers, however, say that the economies of scale are lost in buildings over three stories, because taller structures need more construction management and because the value added by pre-engineered steel can be negatively affected by the additional stresses and load factors.

The next decade promises more advances in metals technology. Superplastic forming techniques are in the research stage, as are means to precision-forge complex shapes that require little or no machining. Metal matrix composite materials, in which nonmetal fibers are combined with metals to enhance structural properties, are being studied. And new configurations of high-strength steel structures are under investigation, paving the way for superskyscrapers. □

Standing Seam Metal Roofs

The market for standing-seam metal roofs is growing by leaps and bounds for both pre-engineered and conventional buildings, and for new and retrofit applications. The major types of such roofs are as follows:

Galvanized steel for metal roofs is manufactured in a wide range of thicknesses from 20 to 30 gauge. It is the least expensive and consequently the most popular metal for roofing. However, steel doesn't resist corrosion and must be plated, usually with zinc. Left unpainted, the zinc coating wears off and the steel rusts, so galvanized steel may be more expensive in the long run because of its need for regular maintenance.

Stainless steel, durable and resistant to corrosion, maintains a bright finish even through years of exposure. The steel used for roof panels resists corrosion because it is alloyed with chromium and nickel. To cut the bright finish of stainless steel, it is often annealed or "rough-rolled." Corrosion in stainless steel takes the form of small pinholes that cause leaks in what appears to be a sound roof.

Terne, an alloy of lead and tin bonded to steel, turns dark gray when left to weather naturally. Lead and tin make the alloy porous, which can cause the steel base beneath it to corrode. The architect should specify that a terne alloy on mild steel be primed with an iron oxide primer mixed with linseed oil, and then painted. This procedure will have to be repeated every 10 years. Terne on stainless steel forms a more permanent roof—the terne, more reactive than the steel, will weather away before the steel core begins to corrode.

Copper was the metal traditionally used when the roof was meant to last the life of the building and the building was built to last for generations. Copper's longevity and distinctive green-brown patina are due to a thin layer of surface corrosion that protects the metal from further corrosion. Its drawbacks include high cost; drainage runoff that will stain paint, stone, and other metals; and black stains resulting from lime and other alkalies.

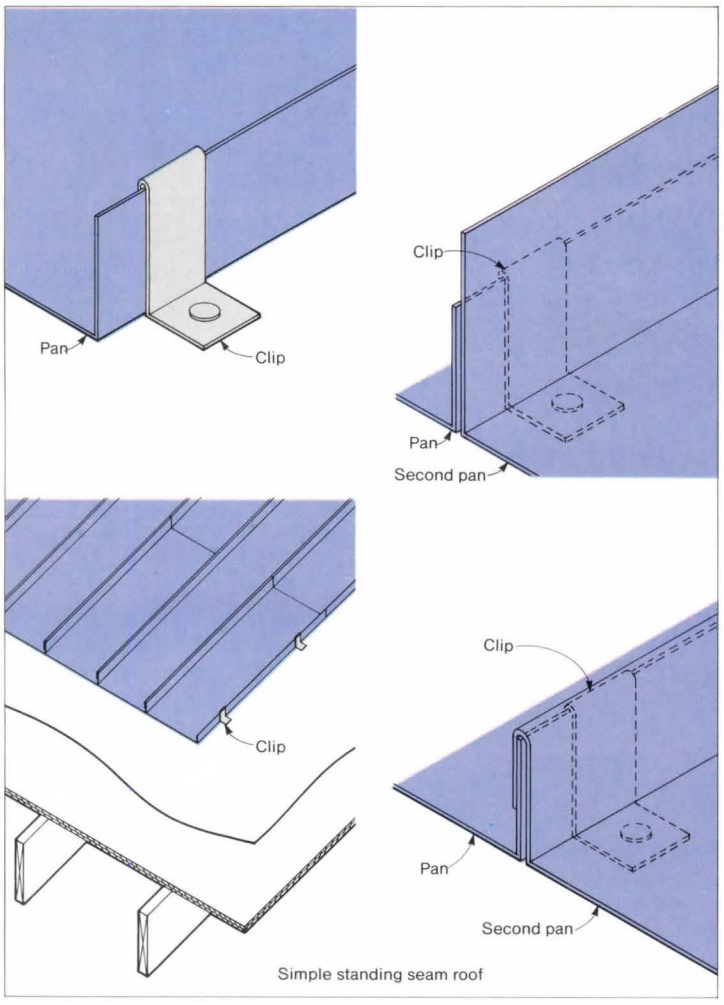
Cor-Ten roofing also forms a thick oxide scale that helps protect it from further deep corrosion. Cor-Ten is a United States Steel trade name for a steel alloy of carbon/manganese, with small amounts of silicon, phosphorus, chromium, copper, and nickel added to resist deep rusting. Cor-Ten roofing panels are generally thicker and heavier than other metal roof panels. Because the reddish color can stain the sides of the building, sidewalks, or ground cover, careful detailing to carry roof runoff is necessary.

Aluminum, because it expands and contracts more than most other roofing metals, and also because it is very active galvanically, must be carefully detailed. Pure aluminum is too soft and weak to be used for roofing; hence it is alloyed with other metals, such as manganese. Like copper and Cor-Ten, aluminum builds a protective surface coating of gray oxide as it weathers. Aluminum panels can be anodized, painted, or dipped in hot zinc for corrosion resistance.

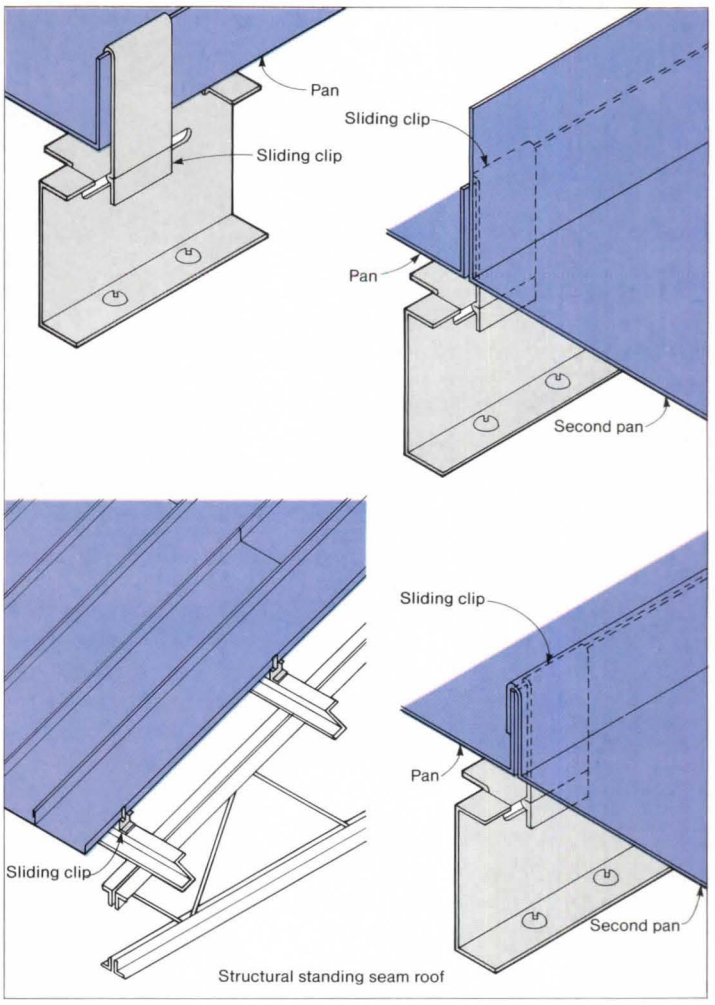
Coatings on metal panels are best applied in the factory under controlled conditions. Hand-applied paint is likely to flake and peel in no time (except on terne metal, which has a natural affinity for paint). Polyester enamels, which come with a 10-year film guarantee, are the most commonly used paints. Silicone-modified polyesters, which have a 20-year guarantee but are more expensive, are a close second.

Fluorocarbon coatings are more flexible and longer lasting than the enamel coatings, and usually come with a 20-year film integrity and fade guarantee. Acrylic films—the top-of-the-line coatings—are stretched over and then heat-laminated to the panels, producing a thick, UV-resistant film that stays flexible without chipping or peeling. These coatings are most often applied over galvanized steel or aluminum alloy panels.

A nonstructural metal roof is merely a covering, supported continuously by the roof deck or some other rigid component of the roof. Structural metal roofs, on the other hand, are designed to span between purlins, supporting themselves and the loads they are designed to handle. In the past, structural metal roofs were used primarily in pre-engineered metal buildings. Today, manufacturers of these roofs



Simple standing seam roof



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are moving successfully into the conventional building market.

Standing seams are the most common method of fastening for both structural and nonstructural metal roofs. The seams give the panels additional rigidity, help direct water off the roof, and create strong, rhythmic lines. The traditional nonstructural metal pan is normally 10 feet long and no wider than 20 inches; wider pans show a greater tendency to "oil can" (buckle).

Traditionally, clips functioned only to tie the metal pan to the substrate. If needed, a rivet was fastened through both the seam and the clips to prevent movement.

For the traditional metal roof, each pan is held in place on its upturned lip by clips that are in turn nailed to the roof deck. The architect should specify clips that are galvanically compatible with the panel.

Once the panel is secured to the substructure, the next panel is butted up next to it. The new panel has a taller lip on the butted side that is bent over the lip on the first panel, creating the seam. With a double-locked standing seam, the lip of the pan is U-shaped and the seam is bent over an additional time. A batten seam also has a U-shaped lip, and a wood batten is placed between the panels and topped with a metal cap that interlocks with the lips of the two panels. The edges of the cap are then bent down to produce a mechanical seal.

Newer structural and nonstructural metal panels are often up to 30 inches wide and as long as 40 feet. To accommodate the greater thermal movement of these panels, manufacturers supply a variety of clips and snap-on covers that allow the individual metal panels to move freely of one another and the clips. The most common fastener is a two-part clip. The top portion of the two-part clip is fastened rigidly in the seam during the seaming operation, while the bottom portion is fastened rigidly to the substructure. The connection between the two halves of the clip allows them to slide independently of one another.

A second method employs a rigidly fastened clip, with the seam's seal made beyond the outer edge of the clip. A third method is a one-piece clip, slotted at the base where it attaches to the substrate. This type of clip must be attached to the base loosely enough so that it is able to move. If fastened too tightly, it binds inside the seam, displacing the sealant and compromising the weathertightness of the roof. This type of clip, because it must resist thermal forces inches below the seam, can twist rather than slide.

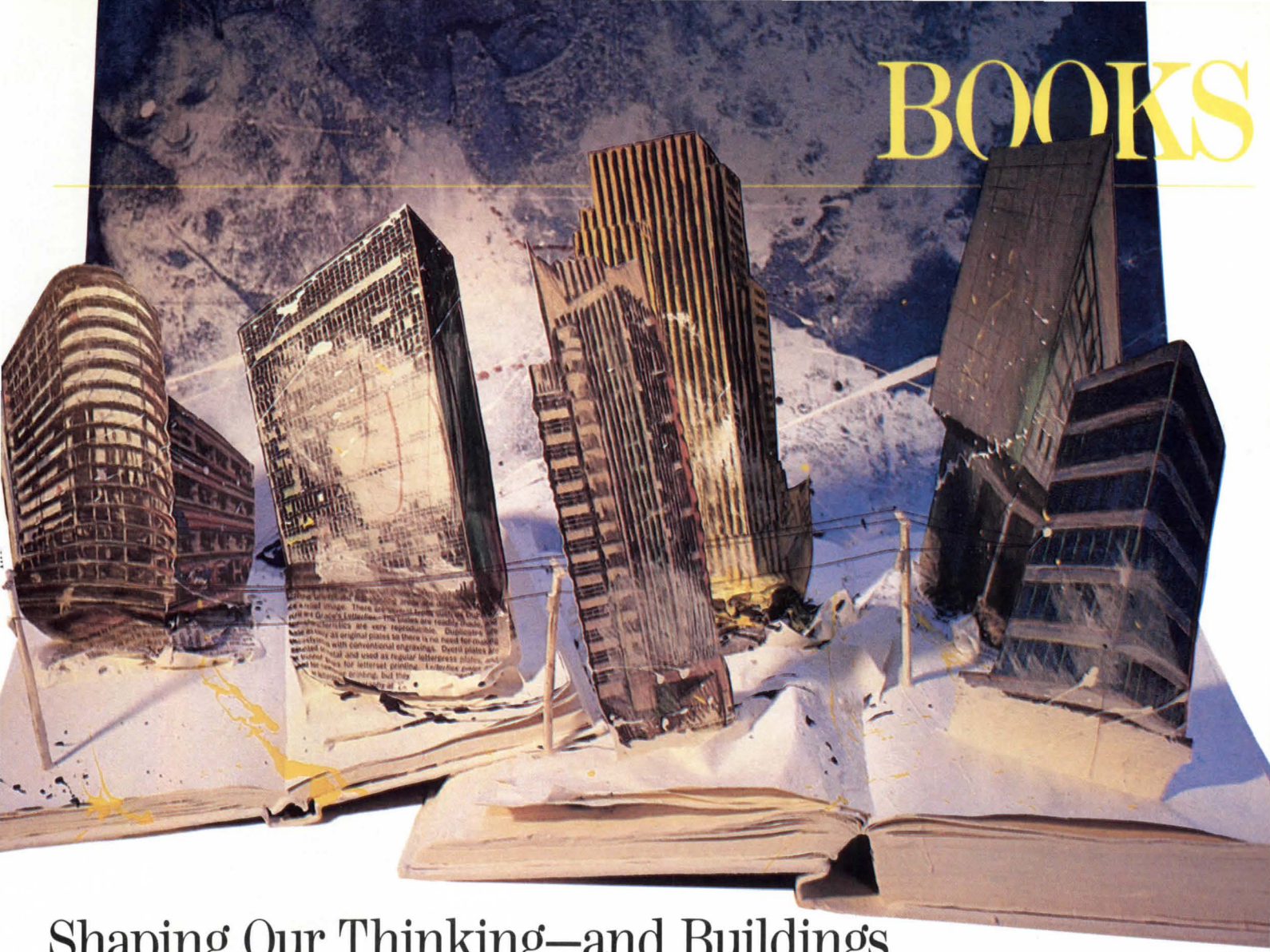
Some clips are quite tall and are meant to allow the metal deck to "float" above the structure, providing a space for insulation. Attaching these clips to conventional construction, as opposed to preengineering building systems that use factory prepunched holes, requires a good deal of accuracy to avoid poor appearance and loss of weathertightness. Structural panels span between their supporting clips, which must be located so they are directly supported by the substructural elements.

Other considerations for standing-seam roofs:

- Simple roof configurations with square end cuts are recommended for both structural and nonstructural metal roofing panels.
- Small penetrations can be located in the flat of the panel, but penetrations across an entire panel or a number of panels require termination of the seam at the uphill and downhill ends. A cricket on the uphill end can divert the water around the curbed opening, but both ends may require additional support.
- Because metal roof panels can float as much as two inches due to thermal movement, flashing and in some cases the equipment itself will have to be designed carefully to accommodate the float.
- Finally, gutters for standing-seam metal roofs should be designed to avoid leaks and with enough control joints to allow for thermal expansion.

—Timothy B. McDonald

Ten-Year Forecast: Clear, Warm And Beautiful.



Shaping Our Thinking—and Buildings

By Michael J. Crosbie

Architecture books of pivotal importance have been few and far between in the past three-quarter century. My list includes just five (all still in print) written by architects or architectural historians that have influenced the course of architecture's development in this country since 1913.

It's difficult to say whether the reason for this paucity is that architects do not have a reputation for being particularly well-read, or that they're more apt to be influenced by buildings than by books. For example, 75 years ago, Frank Lloyd Wright's *Wasmuth Portfolios* were taking Europe by storm, but the book was merely a vessel in which architects discovered an incredible collection of projects and built works representing two decades of Wright's practice.

Drawing a line between any book and its supposed influence is always easier with hindsight, but it's bound to be specious. The books on this list are landmarks, but they appeared at just the right moment in history when architecture was ready for (or already in the process of) a change in the direction in which they pointed.

Towards a New Architecture. Le Corbusier. (Dover, $8.95.)

Le Corbusier's masterwork of modern architectural theory, *Vers Une Architecture,* appeared in Paris in 1923. Four years later it was translated into English by Frederick Etchells and became one of the most discussed manifestos among English-speaking architects. The book was a curious combination of photos of biplanes, steamships, and roadsters juxtaposed with Greek architectural ruins, baroque basilicas, and grain elevators. Through it all Le Corbusier's text wove in weighty, one-sentence paragaphs, intoned as if God himself had handed down the treatise from the Alps.

"The mood of the book is certainly exalted but it is surely often bombastic and frequently boring," wrote Herbert Lippman of *Towards a New Architecture* in the June 1928 issue of *The Arts.* He took umbrage at Le Corbusier's now famous dictum that a house is a machine for living in. "Thus tersely, radically, Le Corbusier brushes the cobwebs from the home, and discards all the involvements of generations of tradition and cultural habitude and puts himself in the position where he can think of the design of the home on a basis comparable to that of the designers of modern machine or mechanical structures."

A reviewer of the book in the *RIBA Journal* questioned the logic of the author's analogies. "In this book," wrote A.S.G. Butler, "there is below the entertaining flutter of its sentences, I think, some confusion of thought. One might call it heresy. It appears that we must have an architecture which has the beauty of machines and not the beauty of architecture. We are to have buildings designed with all the hard, polished, snappy obviousness of an aeroplane. But why should we? Houses do not fly about; most factories do not float."

We tend to think of the critique of modern architecture as cold, lifeless, and boring as being of recent vintage, but here is Butler's appraisal of Le Corbusier's ideas, 60 years ago: "[He] subtracts all humanity from architecture. His dream is to see us all living in the small but deadly efficient myriad cubicles of towering blocks of building—all buttoning and unbuttoning, I suppose, similar suits of clothes. There will be no adventure in living and no mystery in architecture."

The International Style. Henry-Russell Hitchcock and Philip Johnson. (Norton, $6.95.)

Historian David Gebhard's axiom of the intercontinental travel of architectural ideas states that, somewhere en route from Europe to America, the sociopolitical baggage falls into the Atlantic and we gladly apprehend the empty crates. There is no better proof than *The International Style,* which debuted in 1932. Written by two young art historians, Henry-Russell Hitchcock, 29, and Philip Johnson, 26, the book was actually the companion to a show at New York City's new Museum of Modern Art heralding the arrival of European modernism in America.

Hitchcock and Johnson jettisoned all the "modern architecture will make us free" Bolshevik nonsense and got down to the important stuff: how to make architecture look modern. It was the movement's first pattern book, a sort of architectural connect-the-dots that presented the elements of a formal style in terms of mass, plane, volume, rhythm, materials, etc. It translated the rhetoric of modernism into formulas that could easily be mastered by American architects accustomed to designing in styles.

The architectural pundits were not amused. "A book of sound criticism and analysis of the movement headed by Le Corbusier, Gropius, Oud, and Van der Rohe is sorely needed," observed Henry C. Churchill in the June 1932 issue of *Creative Art.* "Unfortunately, *The International Style* is just another volume of propaganda; and considering that the authors are the self-appointed high priests of the 'Style,' not very good propaganda. The attempt to lift a current phase, interesting and valuable as Cubism was interesting and valuable, to the level of a great formed style, should be combatted by all who have the future of architecture at heart. What is vital in its ideas will survive and grow; but a great new architecture can never reach maturity by fixing it in the infantile mould of the International Style."

Space, Time, and Architecture. Sigfried Giedion. (Harvard, $35.)

This magnum opus on the history of modern architecture—in fact, the first and for a long time the authoritative history—appeared in 1941, the ferment of a series of lectures Sigfried Giedion delivered at Harvard. Like John Ruskin before him and Vincent Scully after, Giedion was an architectural historian who championed a particular movement and in effect served as its spokesman.

The book was literally Giedion's bible of modernism, chronicling the technological, scientific, and theoretical developments—the "spirit of an epoch," as he described it—from which blossomed a new architecture for a new age. It was a comprehensive investigation of modernism's roots (which Giedion found in baroque architecture, with its undulating walls and flexible ground plan) and presented reams of little-known information (such as the development of balloon framing in early-19th-century Chicago).

Twenty years after the book's appearance, in the preface to its fifth edition, Giedion bemoaned the cheapening of modern architecture cast as the International Style, "implying something hovering in mid-air, with no roots anywhere: cardboard architecture." And he saw evidence of modernism's mitigation by architects "engaged in a romantic orgy . . . with historical fragments picked up at random. . . . I have no doubt that this fashion will soon be obsolete, but its effects can be rather dangerous because of the world-wide influence of the United States."

Communitas: Means of Livelihood and Ways of Life. Percival and Paul Goodman. (Random, $3.95.)

Lewis Mumford described *Communitas,* first published in 1947, as ". . . witty, penetrating, provocative, and above all, on many

essential matters, a wise book . . . a fresh and original theoretic contribution to the art of building cities." Percival and Paul Goodman surveyed the history of planning, critiqued what they surveyed, and distilled their critique into city forms that would accommodate and reflect the lives we chose to live. The book cast design as a social, political act (20 years before the idea became fashionable) and forever alerted generations of architects and planners to their role as instruments in the implementation of social policy.

The Goodmans' central thesis was this: postwar America's boom and wealth offered the opportunity to guide the fate of our industrial society by manipulating its physical container. The critical question "what kind of city?" could not be answered before first deciding "what kind of society?" At the heart of their argument was the relationship of people to their livelihood, and how that relationship gave cities form. They presented scenarios for possible city futures: one for efficient consumption, another dissolving the line between consumption and production, and a third offering maximum production with a minimum of social security.

Forty years after *Communitas,* in which of the three scenarios do we find ourselves living? Here is reviewer Talbot Hamlin's description of the first: "[It] is the world of things, of goods, of the department store gigantic, of the most rapid and even wasteful consumption. It is naturally a world of concentration, of extraordinary centralized great cities, where all the work is done in one circular building 20 stories high and a mile in diameter, and people live in standardized apartments around communal gardened areas. It is a world of speed and spending, with mass amusements, mass education, and mass advertising to establish mass fashions and the mass mind. The individual exists for consumption; his value is as consumer only." Sound familiar?

Complexity and Contradiction in Architecture. Robert Venturi. (Museum of Modern Art, $10.95.)

Over two decades after its publication in 1966, Robert Venturi's *Complexity and Contradiction in Architecture* remains a landmark in the history of architecture: a book, and not a body of built work, that appears to have changed the course of American architecture.

Venturi laid out his case for an architecture that was richer, more relevant for an age of ambiguity and pluralism than black-and-white modernism. The architecture that appealed to Venturi was one of idiosyncratic vitality and picturesque messiness, an architecture about architecture that reveled in the contrived as well as the accidental, the mannered as well as the ill-mannered, the ugly, and the ordinary.

Exactly how many architects actually read *Complexity and Contradiction,* and understood what they read, is impossible to say, but all those pictures of gooey, mannerist cream puffs unleashed an architectural food fight of formalistic exuberance—rule-breaking, witty, half-witted, polychromed, pompous, historicist architecture from a generation of architects raised on oatmeal modern. As David Pyle foretold in his review of *Complexity and Contradiction* in *Interiors:* "However much we may be bored with dull modern buildings, their replacement with a new wave of pointlessly eccentric modern buildings will not be any advance; in fact, it might give rise to a period of architectural horror that would make the worst of Victorian building seem restrained and sensible."

Things have since calmed down into comfortable contextualism and neomodernism, but *Complexity and Contradiction in Architecture* earned its place in the pantheon of architectural literature by altering our design sensibilities and enlarging the architectural vocabulary. □

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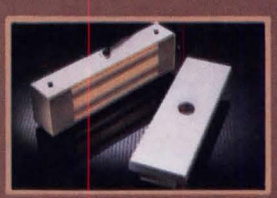

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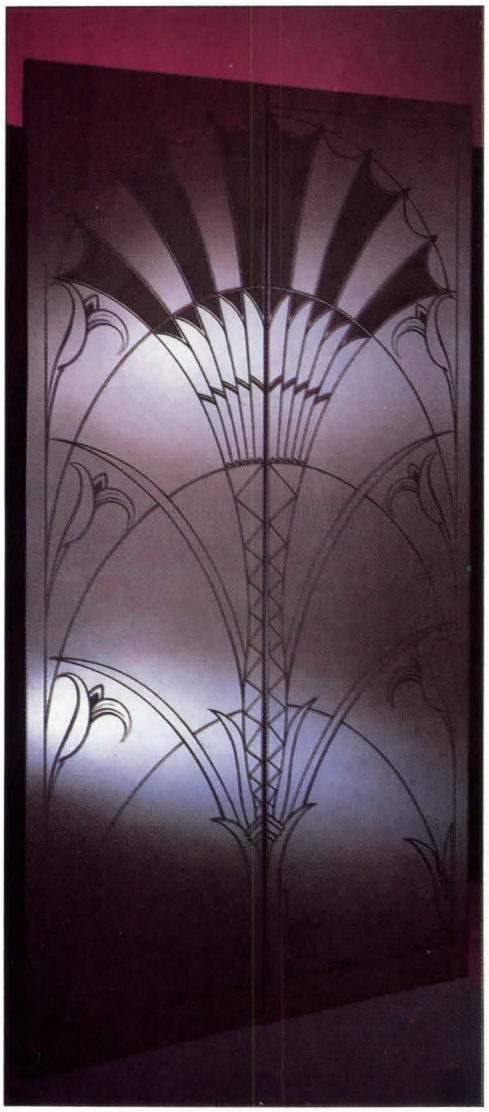

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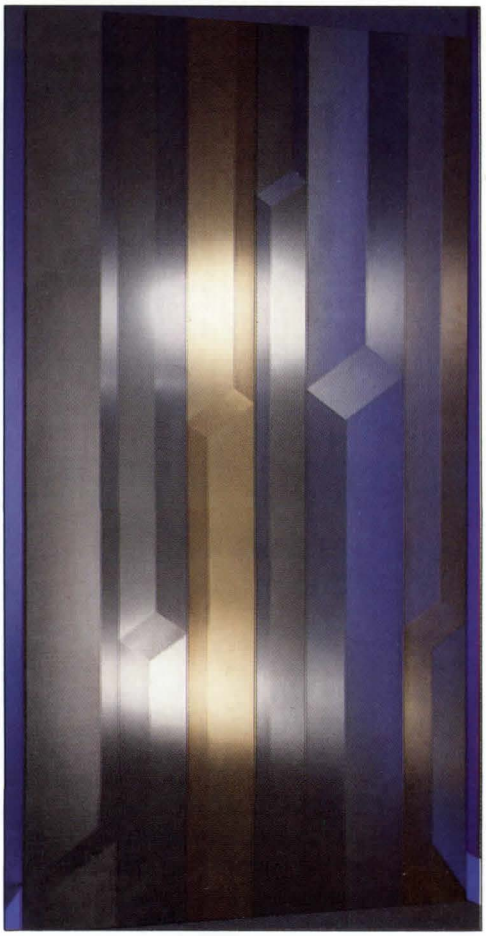
Curveline Inc. offers standard or customized steel and aluminum sheeting for roof, wall, decking-type profiles, and other applications. As long as the desired panel is within the guidelines set by the manufacturer's technical information sheet, it can be shaped to form specific curves and dimensions.

Galvalume sheet steel from Bethlehem Steel Corp. has a coating of aluminum-zinc alloy applied by a continuous hot-dipping process. The alloy coating combines properties of both metals, resulting in corrosion resistance, high-temperature oxidation resistance, and heat reflectivity. Galvalume can be formed as readily as continuously annealed galvanized sheet steel. Other options are lock forming and roll forming. The coating is available as a regular spangle or extra-smooth surface, with or without chemical treatment. An oil coating may also be specified.
Surface Design + Technology makes customized or standard graphic designs on metal sheets and panels. The metal designs (shown above and at right) can be made by overlaying, perforating, sandblasting, engraving, embossing, handbrushing, or by treating the surface with color graphics. Designs can be worked into sheets or panels, with or without finished edges, for areas 48 inches wide and as long as 120 inches, except for engraving, which can be done on areas as large as 20x120 inches. The manufacturer will shear, form, and perforate designs to order. Interior and exterior doors, panels, walls, and railings in brass or bronze can be plated on site with nickel or gold to aid in corrosion protection.
Surface Design + Technology
Circle 250 on information card
Curveline Inc.
Circle 251 on information card
Bethlehem Steel Corporation
Circle 252 on information card

Standing Seam Metal Roofs
The Weather Seam-24 standing seam roof system from ASC Pacific Inc. features a floating system of watertight components including concealed, self-centering clips that allow up to 2⅛ inches of thermal expansion and contraction; three-inch-high ribbed panels; and mastic that's applied to both clips and ribs. Specially engineered flashing and installation procedures handle all types of penetrations and special conditions. The surface is either high-tensile Zincalume or Galvalume coated steel, which is said to stand up to foot traffic and to resist scratches. The Weather Seam-24 system has prepunched fastener

continued on page 157



Products *is written by Amy Gray Light*

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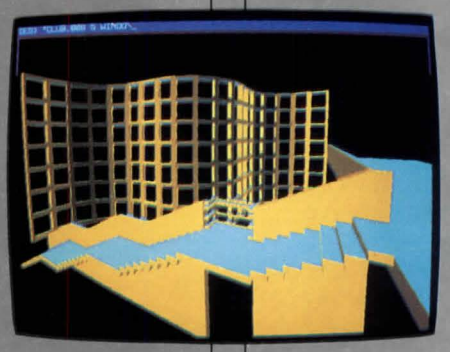

Get more business done. *On-screen menus (left screen) facilitate the production of contract documents. Drawing courtesy of Heard & Associates, Chicago, Illinois.*

Get more business. *Shaded pictures (right screen) like this help clients see your vision clearly from any perspective. An invaluable selling tool. Drawing courtesy of Stephen Douglass, Architect, Cambridge, Massachusetts.*

For more information call 1-800-248-PSBU (7728). In Massachusetts & Canada, 617-276-1094. Or write to: Computervision Corporation, PSBU, Building 16-2, 100 Crosby Drive, Bedford, MA 01730.

COMPUTERVISION
Personal Architect

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Products *from page 155*

holes compatible with any new construction or retrofit subframe system, including bar joists, steel or wood purlins, and steel or concrete deck. The system is also suggested for use over existing built-up roofs. Each panel is interlocked to its neighboring panel and support clips without through-fasteners. The system requires no special tools, hand crimping, or seaming machines. Mastic is injected into the seams and the clips at the factory. Splice and ridge areas are prenotched and prepunched to save time. The system has a UL Class 90 rating for wind uplift.

Armco Building System's Roof Panels have ribs on each side of flat-profile panels that interlock, forming a seam that stands two inches above the weather surface. To help provide weathertightness, a rib sealant is applied to a built-in reservoir in the panel at the factory. Ribs and every joint on the roof are then mechanically seamed. All flashing surfaces are flat.

Bethlehem Steel's prepainted Galvalume sheet uses a patented aluminum-zinc alloy coating applied by a hot-dip process developed by the manufacturer. A chromate pretreatment helps provide corrosion resistance and an epoxy primer is applied to improve sheared edge paint adhesion without adversely affecting other properties. With the use of these primers, edge creep performance of prepainted Galvalume sheet with sheared edges is said to be comparable to that of prepainted G90 galvanized sheet with sheared edges. The Galvalume sheet comes in a wide variety of colors, patterns, textures, and finishes.

A prepainted steel roofing system that simulates the look of clay tile is Met-Tile, from Met-Tile Inc. The roofing system is manufactured from 26 GA G90 hot-dipped galvanized steel sheets. Panels come 36 inches wide by two to 20 feet long in one-foot increments. Met-Tile is recognized by the National Research Board of the Council of American Building Officials, NRB Report 287; it meets all Fire Retardant Roof Test class ratings for new construction and a Class B rating for reroofing applications.

Architectural metal roofing systems, building facings, mansard systems, soffits, and flashing are available from Fashion, a subsidiary of Kidde Inc., in standing seam, batten seam, concave, convex curved standing seam, "T" seam, and integral lock-batten-look roofing panels. The panels are attached by clips, allowing for expansion and contraction movement. The roll forms are made from copper, aluminum, or galvanized color-coated coils. Ridges, flashings, and other shapes are factory formed in identical material or formed on the job from flat sheets.

The RS-18 and RS-20 standing seam roof systems from Steelite Inc. are designed for maximum weathertightness and long-lasting esthetics. The new roofing panels are stocked in 22- and 24-gauge, G90 galvanized steel in four colors, and in primary metals and finishes. Steelite stocks Galvalume in 24-gauge as a standard for the RS-20, 20-inch coverage panels.

Zip-Rib long-length concealed fastener standing seam system for new and reroof construction from Zip-Rib Inc. features custom-fabricated panels in aluminum or steel in a variety of finishes. The panels carry a UL Class A fire rating as roof coverings and a Class 90 wind uplift rating in steel and aluminum for 12- and 16-inch widths up to five- and six-foot spans. Floating clip attachments allow roofs to expand and contract while securing the panels against wind uplift. Nylon coating on aluminum fasteners helps prevent wearing of aluminum panels at contact points. In areas where standing snow or ice dams could force water past the capillary groove, a sealant bead can be added prior to joint closure as a positive barrier against water penetration.

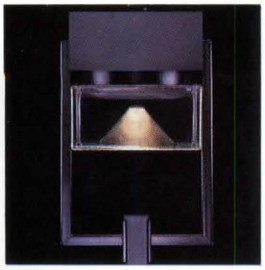
The Epic standing seam roof covering from Epic Metals Corp. is an insulated floating system supported by steel liner panels and anchored by concealed clips, which allow roof panels to withstand normal thermal expansion and contraction. The standing seam aluminum-coated panels are 18 inches wide and have ribs on each side that interlock to form a seam standing two inches above the weather surface of the roof. Steel liner panels are available in 1½-, two-, and three-inch-deep profiles in either painted or galvanized

continued on page 159

HOLOPHANE PARKLANE. SHINES WITH THE LIGHTS ON OR OFF.

Holophane® brings a great new look to outdoor lighting with the ParkLane.®

This high-powered fixture's extruded aluminum housing, with internally-welded seams, is available in either painted or anodized finish.



The seamless acrylic prismatic cone/cube helps reduce "puddles" of light at the pole base while projecting light in a wide overall pattern; one wide enough to reduce the number of fixtures and still provide up to a 6:1 spacing-to-height ratio.

The ParkLane luminaire integrates with practically any contemporary architectural theme.

ParkLane uses either metal halide or HPS lamps and is available in 4 mounting configurations: C-bracket, tuning fork, straight arm, and flush mount. Plus, the cube can be replaced with a flat door assembly. In addition, ParkLane is backed by an exceptional 5-year warranty.

For more information, including photometric data on floppy disk or isofootcandle templates, call or write on your letterhead to Neil Thompson, Holophane Division, Manville, 214 Oakwood Avenue, Newark, Ohio 43055. (614) 349-4123.

HOLOPHANE
LEADER IN LIGHT CONTROL

Manville

Products *from page 157*

finishes. The panels are said to allow reflection of up to 80 percent of solar radiation, resulting in decreased airconditioning costs.

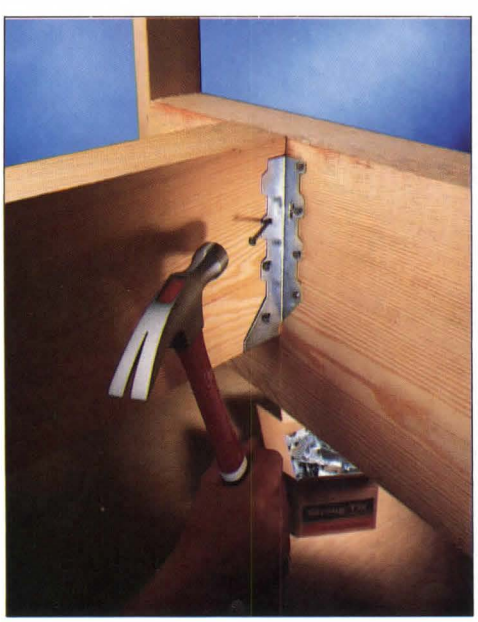
The Thermax Star AP Insulation Board for standing seam roof systems by Celotex Corp. secures to the roof deck with fasteners installed through the system manufacturer's clip plates. Because no spacers are needed, required R-values are achieved with the thinnest possible insulation board product.

ASC Pacific Inc.
Circle 241 on information card
Armco Building Systems
Circle 242 on information card
Bethlehem Steel
Circle 243 on information card
Met-Tile Inc.
Circle 244 on information card
Fashion, a subsidiary of Kidde Inc.
Circle 245 on information card
Steelite Inc.
Circle 246 on information card
Zip-Rib
Circle 247 on information card
Epic Metals Corporation
Circle 248 on information card
Celotex Corporation
Circle 249 on information card

Metal Fasteners

Elco Industries' Dril-Flex self-drilling, self-tapping fastener for metal applications is heat-treated to SAE J429 Grade 5 specification requirements. Only the point and lead threads are then selectively hardened to the Rc 52 minimum needed for drilling and thread forming, yet the rest of the screw remains ductile, eliminating hydrogen embrittlement and stress corrosion cracking.

A double-shear, angled-fastener sheet-metal connector from Simpson Strong-Tie Co. uses regular nails that are directed at an angle through die-stamped slots so that penetration is not only through the joist but through the header as well. The load is transferred to two shear points on each nail—at the header and at the hanger.



Elco Industries Inc.
Circle 256 on information card
Simpson Strong-Tie Company Inc.
Circle 257 on information card

Metal Doors

Ceco Corp. introduces the Universal 1¾-inch steel door and frame system for pre-engineered metal buildings. The Universal system uses honeycomb core construction for rigidity and insulating properties and a fully reversible door and frame system with reinforced corners and optional jamb extensions. A new Stop-Lok steel weatherstrip door frame introduced as an option features a factory-applied weatherstrip and a built-in kerf in the frame that mechanically fastens the weatherstrip.

Industrial service doors from American Metal Door include horizontal sliding doors; multipaneled, telescoping, motor-controlled doors; all-steel swinging doors; horizontal sliding 3700 fire doors and 4700 Series composite/steel fire doors. Available options include pass-through doors, windows, speed-controlled closures, and door operators.

Johnson Metal Products, a part of Dallas Corp., introduces the Manor House collection of six- and 10-panel entry doors constructed of 24-gauge electroplated steel skins prefinished with the pattern of natural

continued on page 160

Products *from page 159*
oak or walnut. The look of real wood is further enhanced by deep embossing and an alternating wood grain pattern created by silk screening. The doors have the stiles and rails running in the direction of natural wood. Foamed-in-place polyurethane insulation provides the doors an "R" value of 14.7. The doors have a 1½-hour "B label" fire rating. Security features include a safety stud hinge and a polyurethane lock block. Factory-installed, color-coordinated vinyl trim covers all door edges.
Ceco Door division, Ceco Corporation
Circle 258 on information card
American Metal Door
Circle 259 on information card
Johnson Metal Products, Dallas Corporation
Circle 260 on information card

Finish for Metal Casting
Lab-Metal is a one-part, no-mix metal repair material from Alvin Products that spreads like paste right from the can and hardens to adhere permanently to metal, wood, plaster, glass, or plastic, with no special tools or heat required. Withstanding heat up to 350 degrees Fahrenheit when hard, Lab-Metal can be milled, drilled, tapped, or ground. It is suggested for finishing metal castings and hollow metalwork, for metalwork requiring filling and grinding smooth, or welding and grinding smooth after fabrication. It is also valuable as a filler on metal or wood for castings, patterns, and in metal-fabricating industries where permanent adhesion is required. The product can be sanded to a feather edge and painted, and can also be thinned to paint consistency with Lab-Solvent and brushed or sprayed as a waterproof, rustproof protective metal coat.
Alvin Products Inc.
Circle 270 on information card

Metal Coatings
Rust-Oleum's alkyd, acrylic, epoxy, and polyurethane coatings comply with Federal EPA guidelines with respect to volatile organic compounds (VOC) in architectural and maintenance coatings for metal surfaces. These guidelines recommend limiting VOC in coatings as necessary to meet the air quality standards set by the Clean Air Act as amended in 1977. In general, these guidelines call for the VOC of air-dried coatings used on metal parts and products to be no more than 3.5 pounds per gallon. The Rust-Oleum products include HS1500 System Speedy dry acrylic modified alkyds; HS9300 System two-component epoxy coatings; and JS9400 System two-component polyurethane coatings. In addition, Rust-Oleum's Rust-O-Crylic 5700 System acrylic emulsion coatings are also below the 3.5 pounds of VOC per gallon level.

Metal coatings from Copperlock Inc. applications on various types of substrates are long-lasting coatings originally designed for marine hulls and maritime structures because they contain no biocides and toxins hazardous to people or the ecology. Coating of composite materials such as complex shaped antennae, EMI/RFI shielding, and architectural surfaces for functional and decorative facades is possible.

Duragard coating for use on galvanized steel, aluminized steel, or aluminum, from E.G. Smith Construction Products, is designed to provide good color retention, formability, and immunity to chemical attack from corrosive elements. Duragard is based on a urethane primer modified with epoxy. The color coat is a Kynar 500 resin topped off with a Duranar clear coat.

NiZinc* metal coatings (a blend of nickel and zinc) from Duncan Industries hot-dip galvanize steel with NickelZinc*. Besides producing a patina containing corrosion-resistant nickel (the principal ingredient in stainless steel), the new NiGalv* process improves the appearance of high-silicon-bearing steels that have a tendency to develop a mottled appearance when galvanized with zinc alone. The result is a bright, smooth appearance. The process is said to meet or exceed all provisions of current ASTM and industry specifications for hot-dip galvanizing.

continued on page 163

Products *from page 160*

A heat- and light-reflective aluminum single-ply coating called Rac Roofd-X from Andek Chemical Corp., a member of the 3E Group, is a compound that can be used for sealing skylights and flashings on metal roofs, over sprayed-in-place polyurethane foam insulation, and on most other roofing materials. Rac Roofd-X is solvent-based and developed from an aluminum extended polyurethane resin formula. It can be applied in a single coat from a single component, without the need for priming in most cases, and forms a permanent bond to almost any substrate. The seamless coating is chemically compatible with most building products. It can be applied by brush, roller, or spray equipment. According to the manufacturer, Rac Roofd-X provides a complete, joint-free roof membrane with excellent light- and heat-reflective properties. Because it is a heavy liquid, it can be applied to both vertical and horizontal surfaces. Its permanent elasticity enables it to withstand the stress movements in buildings, particularly those caused by temperature changes.

The Du Pont Co. has a newly released brochure that helps architects select protective finishes by giving the results of environmental performance tests for six Du Pont plastic coating systems. The coatings were subjected to laboratory tests designed to simulate elements that attack and deteriorate coatings, assessing their resistance to color change, staining, abrasion, humidity, air pollution, and corrosion. The coating materials tested were Du Pont "Tedlar" polyvinyl fluoride film; polyvinyl chloride plasti-sol; 70 percent polyvinylidene fluoride; silicone-modified polyester; and two epoxy-polyester multilayered coatings. All coatings were applied to primed galvanized steel plates. Testing was based on standard testing procedures established by ASTM and the National Bureau of Standards.

PPG Industries' Duranar, Duranar XL, and Duranar XLT fluoropolymer coatings contain Kynar 500 resin combined with PPG pigmentation and formulation to provide coatings with color integrity and film flexibility. The coatings are reputedly resistant to weathering, industrial acids, graffiti, chalking, ultraviolet deterioration, and erosion from wind, rain, sleet, and snow. The coatings exceed all physical test requirements of AAMA specification 605, which covers all high-performance organic coatings on architectural extrusions and panels.

Two fluorocarbon coatings with Kynar 500 from The Glidden Co. are for the aluminum extrusion market. They provide ultraviolet radiation and chemical degradation resistance. Nubelar S coating is formulated to exceed AAMA 605.2 specifications, combining special pigments to achieve weather-resistant finishes for extrusions and panels, window and door frames,

continued on page 164

Products *from page 163*

curtain walls, railings, and other similar applications. The Visulure S fluorocarbon coating gives a metallic-appearing finish without using a metal pigment in the coating formulation. It is a three-layer system, consisting of a Glidden primer, a basecoat, and a topcoat, factory-applied and oven-baked over the substrate. The coating may be applied as long-life exterior finishes for louvers, fascia, curtain walls, roofing, spandrel paneling, and column covers.

Stainless steel can now be colored so that it changes with each play of light. Prismatic stainless steel from B&M Finishers is an oxidized finish created by applying a thin film of chrome oxide to stainless steel. The film's thickness is regulated through computer engineering to ensure color uniformity. Pearlescent hues that may be achieved include black, bronze, green, gold, blue, red, and champagne. The stainless steel can be bent, fabricated, notched, punched, drawn, and laminated without losing its color intensity. Its colors may be enhanced with polished and mirrored finishes, or with more than 65 textures ranging from leather and stucco to designer patterns, and it is also available in mesh finishes. The color can be applied to items ranging from the smallest components to 4x8-foot structural sheeting. The three-dimensional surfaces reputedly disguise marking, scratching, scuffing, and denting, and tests reveal no surface change in marine, industrial, and urban environments after seven years' exposure.

Rust-Oleum Corporation
Circle 261 on information card
Copperlok Inc.
Circle 262 on information card
E.G. Smith Construction Products Inc.
Circle 263 on information card
Duncan Industries
Circle 264 on information card
Andek Chemical Corporation
Circle 265 on information card
Du Pont Company
Circle 266 on information card
PPG Industries
Circle 267 on information card
The Glidden Company
Circle 268 on information card
B&M Finishers Inc.
Circle 269 on information card

The following manufacturers are among those exhibiting display booths during the AEC Expo '87 show in New York City's Javits Convention Center, Dec. 16-18.

Auto-Trol Technology will demonstrate its Series 5000 Advanced Graphics Software, which is customized for design, drafting, and documentation for architectural use. Two new systems—a Relational Database Management System (RDBMS) and Facility Layout/Industrial (FL/I) application software—will be introduced.

Carrier Corporation. The E2000 ToolKIT

continued on page 167

Products *from page 164*
CADD program uses interchangeable templates that include a large library of symbols and complex macros, allowing architects to design their own specific symbols and macros. The program runs on both VersaCAD and AutoCAD drafting software, and on most microcomputers.

Computecture Inc. An authorized dealer of AutoCAD and a CADD consulting company specializing in microsystem integrations and software development, the company will exhibit the AutoCAD program as well as a variety of other applications software, hardware, and peripherals.

Constructive Computing will introduce QuickEST/CAD and QuickEST Basic programs. QuickEST/CAD allows architects to automatically extract quantities, lengths, and areas from AutoCAD (or DXF-compatible CADD systems) drawings and input them into the QuickEST Basic system with no AutoCAD attributes required.

Data-Basics Inc. Two job-costing and accounting packages will be shown. The Construction Master Accounting System (CMAS), designed for contractors, will be demonstrated along with the new Advanced Automated Invoicing module, and the Architectural Engineering Master Accounting System (AEMAS) will be featured along with a newly released Advanced Automated Invoicing Module (AAI) as part of the AEMAS package.

Scientific Devices East Inc. will demonstrate Houston Instrument's DMP-56A Plotter and Scanner; Mitsubishi Hi Res Displays, driven by Number Nine computer product's Pepper Pro 1280 and Pepper SGT Boards; Tektronix PC 4100 Graphics Card and Monitor with Tektronix 4105 and 4107 terminal emulation software; Seiko digitizers; and Optotech Laser Databank, optical WORM (Write Once Read Many) drive with 400 MB per 5¼-inch disk.

Skok Systems Inc. Drawbase, a micro-based CADD package that integrates 2D and 3D drawing capability with data base management, will be introduced. Drawbase is both a CADD package with an on-line data base and a data base package with complete CADD capability.

SofTrak Systems. The MultiGantt creates project management graphics that may be plotted on transparency film, or plotted or printed to be included in reports or proposals.

Summit Computer Systems will display a turnkey CADD system that includes a 386 CPU using a 80387 chip and a high-resolution 265 color 19-inch monitor.

Wind-2 Research Inc. Wind-2 One Plus financial management program provides project invoicing and management, profit analysis, and employee evaluation and management. The program consists of five modules: Business Management, Cost Proposal Development, General Ledger, Accounts Payable, and Payroll. □

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Now you can quickly reference the articles from ARCHITECTURE and ARCHITECTURAL TECHNOLOGY magazines on the topics you have told us are important to you: asbestos and indoor air quality; the new A201 General Conditions; a construction documents checking system; design requirements of the elderly; and tips for producing better specifications and details.

Technical Tips Collection, Vol. I. A compendium of 16 "Technical Tips" columns from the pages of ARCHITECTURE and ARCHITECTURAL TECHNOLOGY. Specification, design detail, and code information are covered. The 36-page booklet includes tips on roofing details and flashing for built-up roofs, paints and coatings, steel coatings, terrazzo and stucco, ceramic tile, concrete formwork and wood foundations, curtain wall, stair design, metal lathing, skylights and glazing, and renovation.
40 pp. R663 1987 $15/$13.50

Design for Aging. In 1985, the AIA Press published *Design for Aging: An Architect's Guide*, the seminal design reference for this building specialty of the future. As humans grow older, their habits and expectations grow more varied and inflexible while their physical requirements begin to homogenize and become less stable. This 8-page article, written by an editor of the 1985 book, explores the quest for the confluence of the many often conflicting design problems involved with designing facilities that accommodate the aging process.
12 pp. R664 1987 $6/$5.50

Indoor Air Quality. Yet another potential liability issue, indoor air quality adds a new dimension to current concerns. Pollutants from cigarette smoke, formaldehyde, and micro-organisms to radon and asbestos are examined, as well as hazard mitigation strategies.
20 pp. R665 1987 $8/$7.25

Asbestos Abatement. A practicing architect explains the asbestos situation, including a detailed description of the asbestos abatement process. Written before liability issues forced asbestos abatement and architects to go separate ways, this article looks at the topic from a contractor's viewpoint. Two asbestos risk assessment specialists also describe a rational and systematic approach to identifying existing asbestos-containing materials, assessing the risk the asbestos poses, and planning the eventual removal of all asbestos with minimal risk over time.
16 pp. R666 $8/$7.25

Quality Control Guide. Concentrating on the phases that follow design development, this series of articles includes a strategy for structuring an overlay checking system to coordinate interdisciplinary construction documents, an analysis of problems in checking shop drawings, and a discussion of construction contract administration, including opinions on construction administration and monitoring responsibilities from a representative architect, engineer, contractor, building official, and insurance underwriter.
24 pp. R667 1987 $10/$9

General Conditions (A201). In 1987 AIA issued a new edition of document A201, General Conditions of the Contract for Construction. The ARCHITECTURE reprint collection on A201 includes an enumeration and explanation, written by AIA documents staff, of the changes in the new document.
4 pp. R668 1987 $3/$2.75

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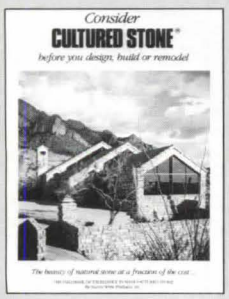
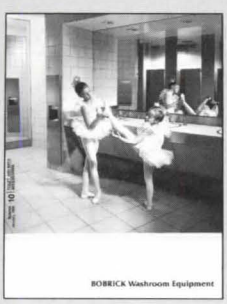
Circle No. 150

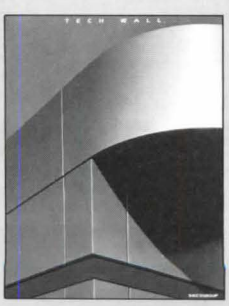


Stucco Stone's architectural catalog covering Cultured Stone, Cultured Brick, Stonebrick, Hearth products, and Sequoia Stones. It also includes an all-product brochure, Spec Data, Manu Spec, installation instructions, and dealer information. Circle No. 151

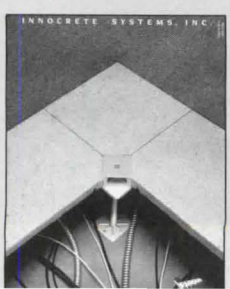
Columbia introduces the Lighting Imprints catalog, which features the newest lighting products for the designer/architectural community. Attention has been given to flexibility, style, performance, and color to provide the final touch for fine interiors. Circle No. 152



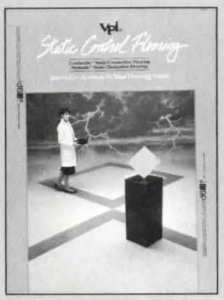
Bobrick announces the release of its 1988 washroom equipment catalog. This 52-page catalog features Bobrick's new Quick Ship program. The company will now ship more than 300 of its most popular items within two working days after receipt of order at no extra cost. Circle No. 153



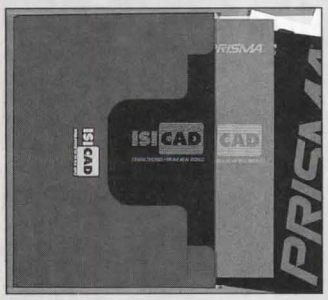
Conspec Systems' new eight-page brochure describing Tech-Wall, the uncompromised wall panel systems, is now available. Photos, drawings, and an in-depth discussion of the system, including finish options, allow the specifier to evaluate the premier aluminum panel system available today.
Circle No. 154



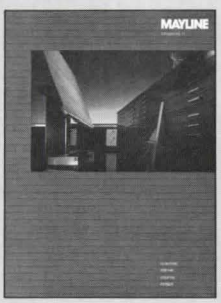
Innocrete Systems' new eight-page brochure outlines its revolutionary access floor panel—S-Floor. Manufactured from reinforced concrete, S-Floor was exclusively developed for use in offices and performs exceptionally well under both concentrated and rolling loads.
Circle No. 155



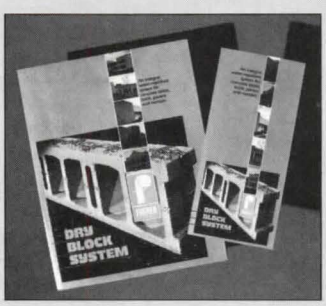
Vinyl Plastics' new eight-page catalog describing its static control flooring is now available. The catalog highlights VPI's newest product, Statmate™ static-dissipative flooring as well as Conductile static-conductible flooring.
Circle No. 156



ISICAD Literature Pack contains extensive information on ISICAD's full spectrum of product solutions. It includes informational brochures and data sheets outlining applications and system requirements.
Circle No. 157

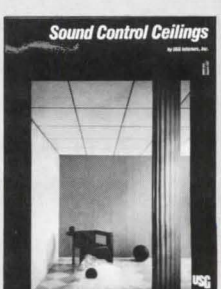


Mayline, manufacturer of precision drafting furniture and instruments, offers a full-color catalog. The catalog features illustration and specific information on size, color, and features of Mayline's full line.
Circle No. 158



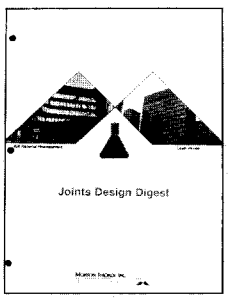
Forrer Industries announces its revised literature now available on DRY-BLOCK integral water-repellant systems for concrete block, concrete brick, and pavers. Circle No. 159

Brite Vue Glass Systems Inc. offers a complete line of tempered glass entrance systems. Door types include swinging, bottom rolling, top-hung stacking, and balanced. Swinging doors can be full-framed or without vertical frame members.
Circle No. 160

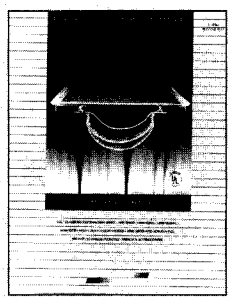


USG Interiors Inc. offers a new brochure on the ACOUSTONE® and AURATONE® sound control ceiling line. Most ceilings are available in a variety of colors and textures.
Circle No. 161

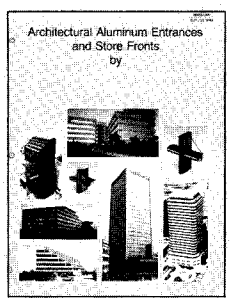
L.M. Scofield Co. offers its latest Concrete Coloring Systems brochure for information on its extensive line of colored admixtures, color hardeners, stains, coatings, and curing agents. Color by Scofield makes architectural concrete come alive. Circle No. 162



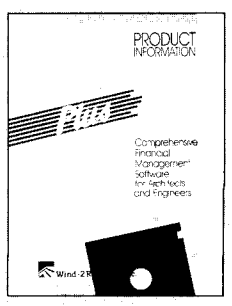
Morton Thiokol Inc. offers its Joints Design Digest, which includes tips on LP® polysulfide-based joint sealants for metal curtain walls, width to depth requirements, joint movement, tooling, concrete/masonry construction, and more. Circle No. 163



Balco is the first expansion joint cover manufacturer to offer its entire line of fire-rated expansion joint covers that are U.L. listed. Circle No. 164



United States Aluminum Corp. manufactures a full range of entrance doors, framing systems, window walls, and curtain walls. Shipped worldwide. Circle No. 165

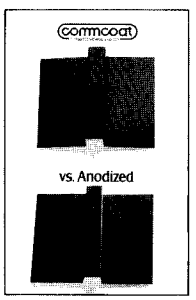


Wind-2 Research Inc. provides a free 56-page product booklet and demonstration diskette for WIND-2 ONE PLUS, financial management for architects. Circle No. 166

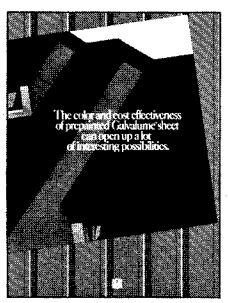
Monier Roof Tile is the nation's leading manufacturer of concrete roofing products. The company produces seven different tile designs in a multitude of exciting colors. Circle No. 167

Ebco Manufacturing Co. offers a free OASIS® catalog to help you size and select water coolers accurately. This new 24-page, full-color catalog includes an application guide, sizing chart, and model selector guide. Circle No. 168

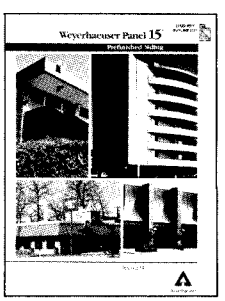
Sternberg Lanterns offers elegant Victorian, historic, and colonial outdoor lighting that is illustrated in its 24-page, full-color catalog. Decorative posts and bollards cast of heavy-duty aluminum for maximum durability. Circle No. 169



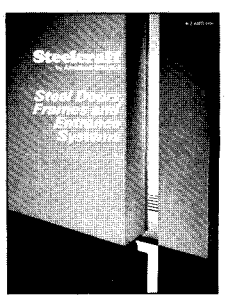
Commonwealth Aluminum introduces its new product Commcoat Flurodize Coil, which offers the architect the metallic sheen and color and the cost advantages of anodized aluminum, but eliminates the well known problems of color match, staining, and weathering. Circle No. 170



Bethlehem Steel offers the color and cost effectiveness of prepainted Galvalume™ sheet. Send for our free brochure and we will help you open up a lot of interesting possibilities. Circle No. 171

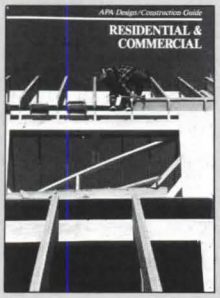


Weyerhaeuser Co. announces its new Panel 15 eight-page, full-color catalog showing five stock and eight special-order colors available, details of matching trim, application details, and photographs of typical installations. Circle No. 172

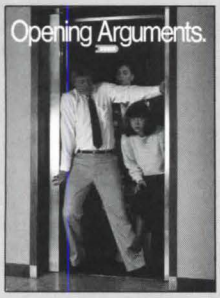


Steelcraft offers this full-line catalog providing detailed information about the manufacturer's selection of steel doors, frames, and entrance systems. Information on testing, finishes, construction, thermal rate entries, specification, and a selection chart are included. Circle No. 173

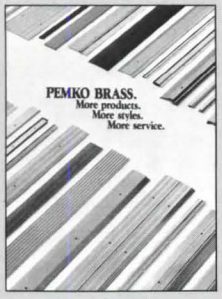
ASC Pacific Inc. is offering its full-color catalog showing a wide variety of architectural preformed metal roof and wall panels in both concealed and exposed fastener design. Describes easy installation, low maintenance, and durability of products. Circle No. 174



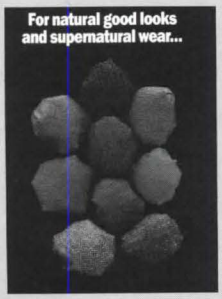
American Plywood Assoc. (APA) now has available a 56-page, full-color guide covering construction applications of plywood and other structural panels. This guide includes extensive information on panel applications for floors, walls, siding, and roofs. Circle No. 175



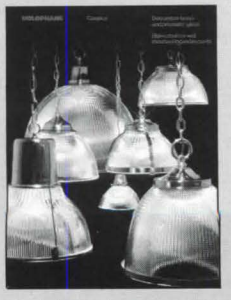
Dover offers many cost-efficient ways to improve and update elevator performance and appearance. Worn-out door operators cause 75 percent of elevator shutdowns. Dover door operator conversion kits can eliminate most elevator door problems. Send for free brochure. Circle No. 176



Pemko offers its new full-color, six-page brochure in which richly detailed, architectural bronze (brass) thresholds and weatherstripping are highlighted. This literature also provides a broad overview of the manufacturer's high-quality brass products. Circle No. 177



Dupont CORDURA® for upholstery. Fabrics of CORDURA® come in an ever-expanding range of styles, colors, weaves, and textures, from wovens to velours and suedes. Send for more information.
Circle No. 178



Manville-Holophane Division offers its eight-page brochure. The new Holophane area luminaire utilizes a prismatic glass reflector with metallized rear surface for better light control.
Circle No. 179

Western Red Cedar Lumber Assoc. has two brochures available in which a wealth of uses for Western Red Cedar siding, paneling, boards, and lumber is presented. Send for your

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Mayline. Whatever your decor or application, Mayline offers a full line of drafting furniture and precision instruments. *Circle No. 19*

Morton-Thiokol Inc. Joint Design Digest: LP® polysulfide-based joint sealants for metal curtain walls, concrete/masonry construction. *Circle No. 62*

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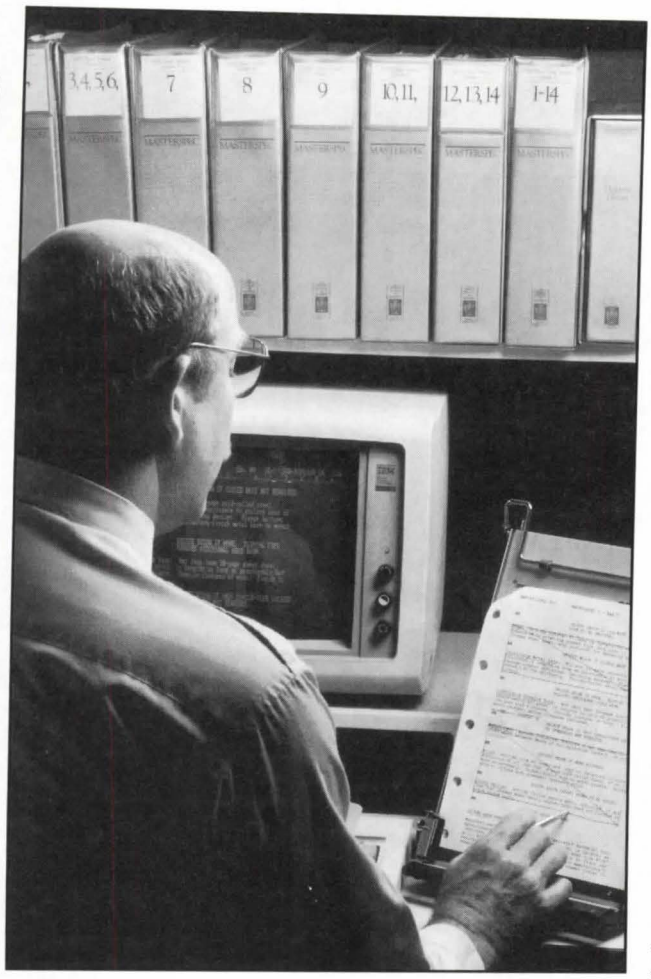

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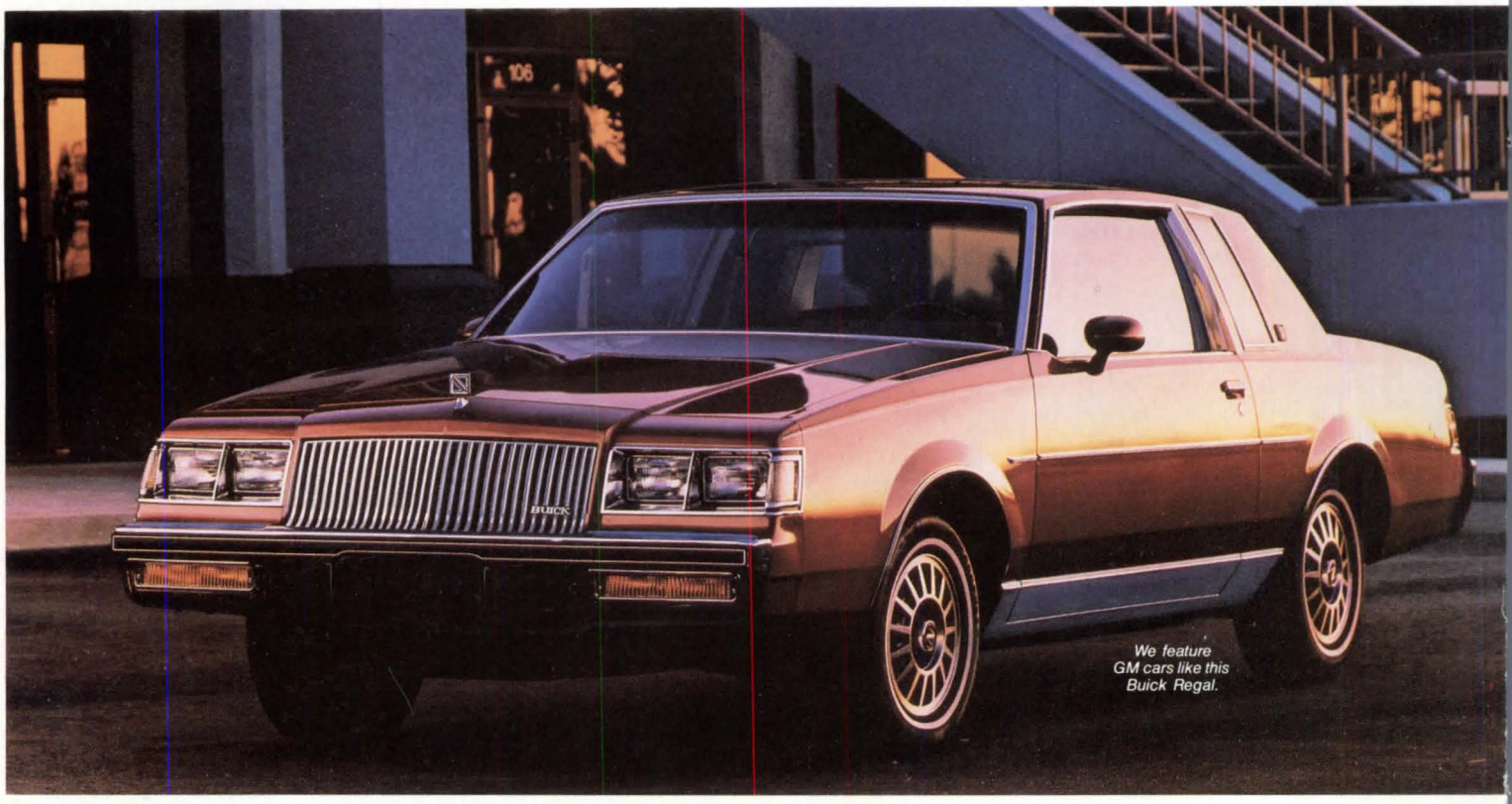

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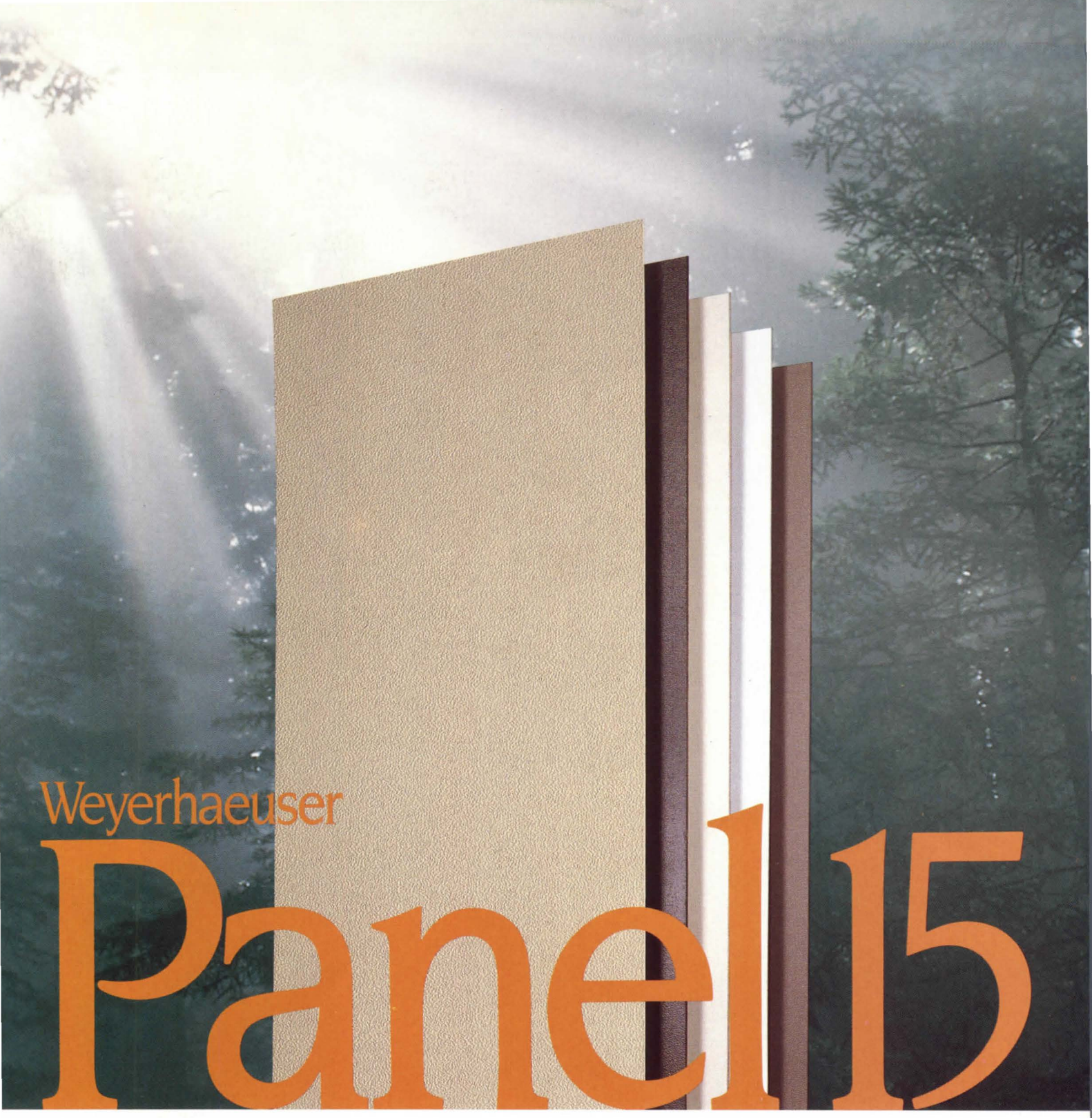

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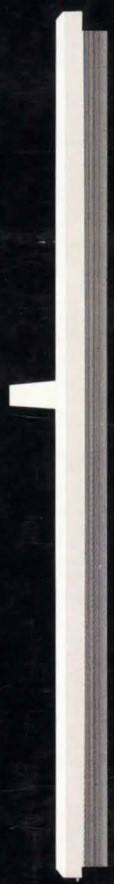

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