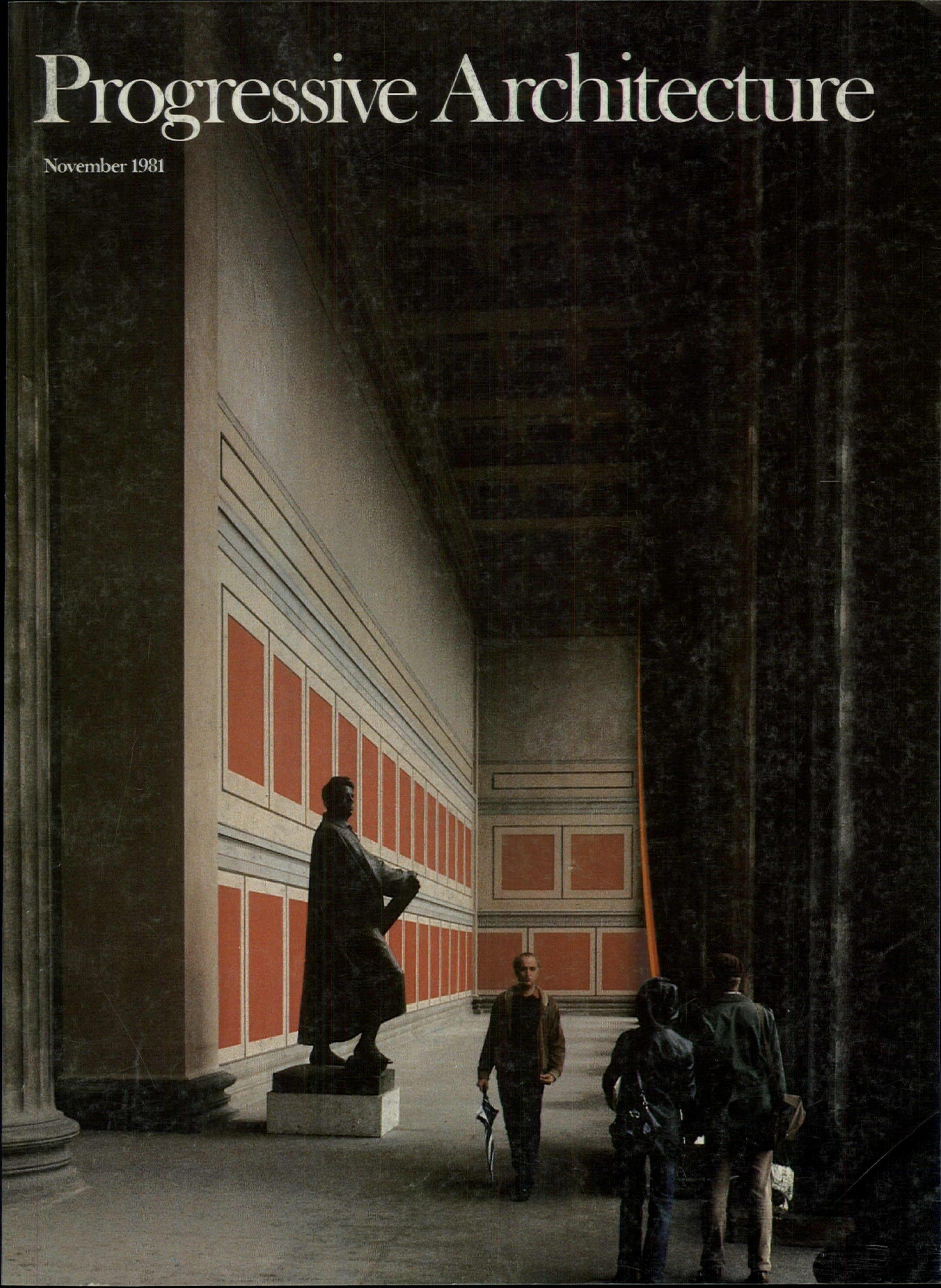
Progressive Architecture

November 1981

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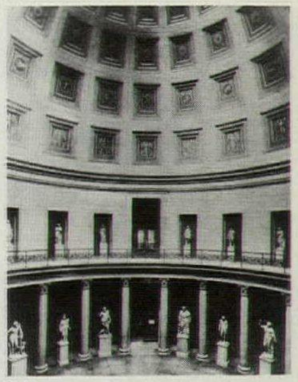
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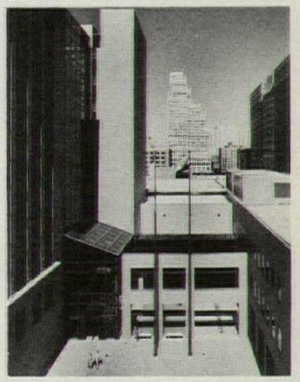
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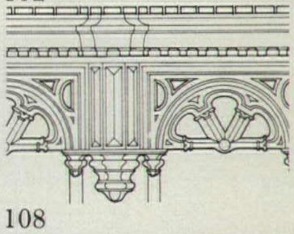
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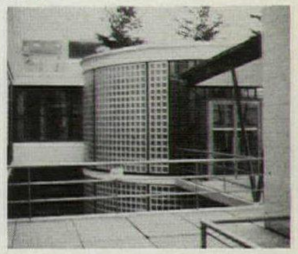
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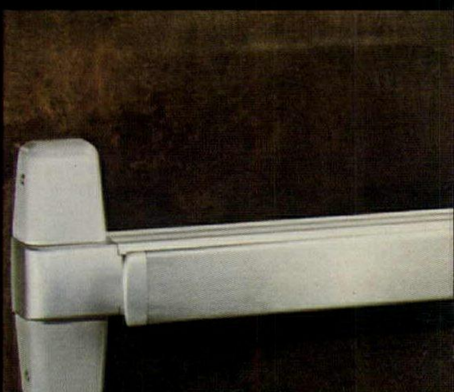
Cover: *Karl Friedrich Schinkel's statue presides in the portico of his Altes Museum in East Berlin. Photo by Stephen O'Malley.*

The end multiplies the means




VON DUPRIN
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Editorial

Period, place, and building

In a professional world no longer compartmentalized by time barriers, the renovation of landmarks has become part of a continuum of experience directly pertinent to all of today's architectural design.

Our architectural establishment has gradually but finally come around to a view of buildings as existing in history and geography. That is, an exclusive preoccupation with the present has been replaced by positioning of today's work in a continuum of time; a view of locations as universally undifferentiated has been succeeded by a belief that a building should be a response to its specific location.

An attendant development has been that the renewal of old buildings and their reworking for altered uses has become as respected an effort as the design of new structures. Our finest talents are involved in this work and vocal in public debate over it.

With this in mind, we can look at a collection of information such as this issue of P/A on landmarks and see it—as most of us could not have even five years ago—as dealing with the subject of architecture—the whole of architecture. P/A could come back to the subject of preserving landmarks this year, not only because there are currently some fine examples of such work, but because this activity is no longer isolated in the professional mind from the renovation of ordinary old buildings, the addition of new wings to old complexes, and the construction of new buildings on virgin sites.

Obviously, there are lessons in the restoration of landmarks that can be applied to the renovation and reuse of any old building. There are serious questions about the technology and craft—materials to be restored or substituted, reconciliation of new building techniques with old (see in particular features in this issue on the Taos church, the Paris Salvation Army, and the restoration of concrete). There is the issue of what elements of a building to restore to what period (see articles on the Altes Museum, for instance, and the New Orleans Mint). For less-than-landmark buildings, of course, such matters are not so sensitive, but even the retention of a single interior or a fragment of façade can be enriching architecturally, if done right—a serious loss, if botched.

Some of the other issues involved in the restoration of landmarks have broader application to any interventions we make in our built environment. There is the matter, for instance, of the use to which it is put: in the best case, as with the Altes Museum, the original use is maintained, but that may still entail much physical adjustment—plus restoration of an urbanistic relationship; in a case such as that of the Villard mansions, a new use is found that requires sensitive compromise. There is much concern today—some of it overly self-righteous—about the commercial exploitation (or "Faneuilization") of landmarks, yet in the case of the Villard Houses, the new uses are the first ones in the history of the buildings that are really public and appropriate to their prominence in the urban scene. The same may turn out to be true of the New Orleans Mint, if nothing serious goes wrong in the process of occupying the structure.

The issues involved in the use of such buildings are related to the whole matter of where we locate critical functions within the urban fabric and what *kind* of architectural container—either new or old—is appropriate to accommodate and *represent* that use. And these are questions to be addressed by public policy, as well as private concerns—the two working in concert where possible. Public policy must often be brought to bear in conversion of landmarks, such as those just mentioned, to uses that reinforce the community. At the same time, public bodies often work to locate key functions—museums, shopping centers, etc.—in new structures at certain locations—then fail to get an architectural setting for these functions that rises above the utilitarian or banal. Something could be learned in that regard from historic landmarks, and passed along through some kind of persuasion to the developers.

There are no longer any periods or places that are not pertinent to our architecture today. Our attention cannot, of course, be everywhere, but we can learn from anything we come upon, in the literature or in the built world. We can see buildings by Schinkel and Strickland and Sullivan—side by side in this issue—along with the current efforts of architects who have made their structures more serviceable and rewarding, and we can learn from it all.

John Morris Dixon

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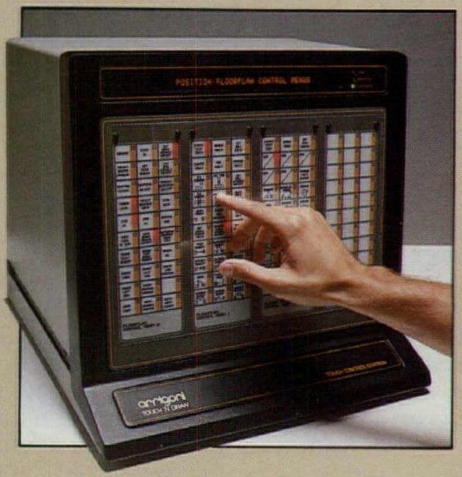

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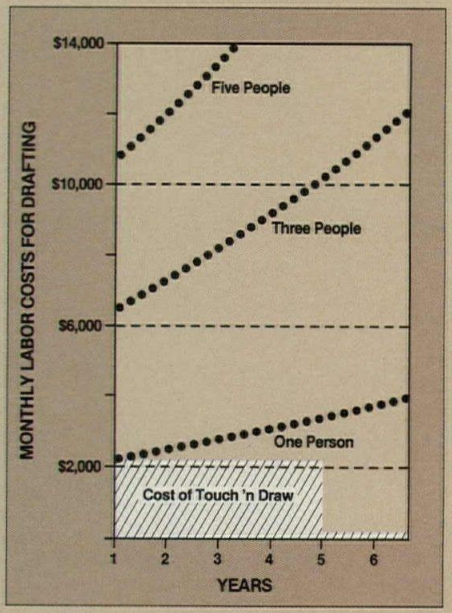

Views

Urbanism in Washington

In the June 1981 issue of *Progressive Architecture,* "Report from Washington," there appeared an article with which I must take very strenuous exception. The article dealt with the Chancellor Condominium on Washington Circle in the District of Columbia.

I found the article woefully lacking in journalistic fact and research. It is "mind boggling" to me that any article in your magazine could be written without proper back-up data to support it. I do not believe that any investigative reporting was done to ascertain the true facts involved in this article.

To begin, let us review the program. The project called for a condominium apartment project of 105 units at an original construction budget of 4.5 million dollars, not the "14 million dollar project" that was reported to be "at almost the same cost." This cost overrun has created considerable hardship for my client, and at one point the project was in jeopardy of being totally abandoned because the cost was so prohibitive and out of line with the market at the particular time.

Given the budget restraint that we were required to follow, coupled with the additional restraints involving the local building and zoning codes, the evolution of this structure was conceived. The design, although not monumental, did take into account all the normal known factors associated with a speculative type structure within the budget and ordinance guidelines. This fact was somewhat ignored in your article. Understandably, this normally is taken for granted and as an architect one has an implied obligation to follow the local codes and client directives. This was not the case with the Martin and Jones scheme. My client was forced to request many zoning variances in order to accommodate their design. With these variances came the many legal fees that were required in the presentation of the case. During the entire construction document phase, we were forced to go back to the Board of Zoning Adjustment (which is the local governing authority that permits variances in codes) to seek additional relief because the schematic design submitted by Martin and Jones did not work properly within the economic restraints placed upon us by the client.

I will not comment on the schematic design accomplished by Martin and Jones; I will, however, take violent exception to the remark made that the design was a "Miami Beach" type of design. Granted, our design was not as ambitious as the design suggested by Martin and Jones, but it did offer our client an affordable structure that could be built and sold at an affordable price. Perhaps I am too old-fashioned and naïve, but I believe that given a specific program by a client, one is professionally obligated to work within the program's guidelines in order to achieve a viable solution that can be marketed at a profit. The present design, aside from creating a financial hardship to my client, has been changed countless times, in an effort to fit units within a configuration created by the facade. It was extremely difficult to design a unit from the outside in. The final solution was to provide office space in as much of the structure as possible. This gave the developer an opportunity to "recoup" some of the economic losses suffered by the tremendous cost overruns due to the design.

The article indicated that "Seymour," whose actual name is Simon Hershon, "gave the job to Martin and Jones." This is totally erroneous. It was our firm's recommendation to the client that he retain Martin and Jones to aid in the design. This ultimately backfired and the client became totally disenchanted with our choice. This disenchantment was so intense that we were obligated to pay part of Martin and Jones's fee since our [*Views continued on page 14*]


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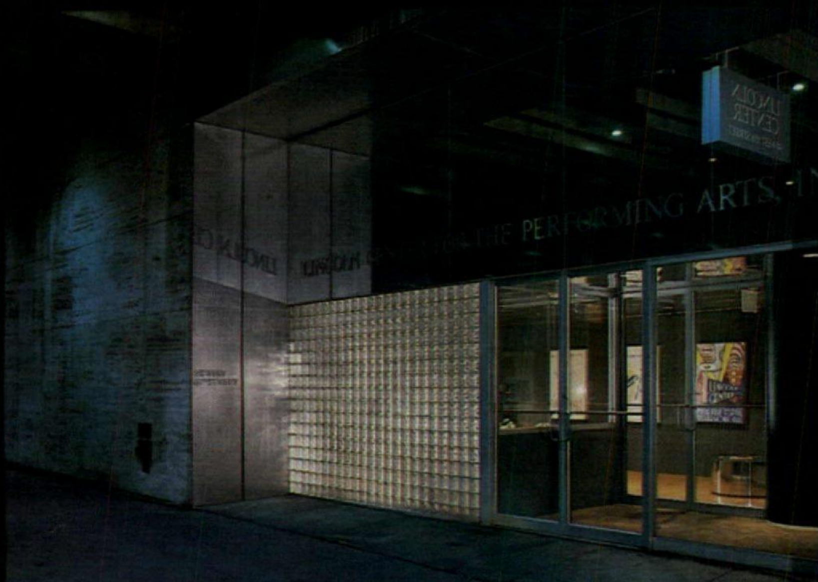

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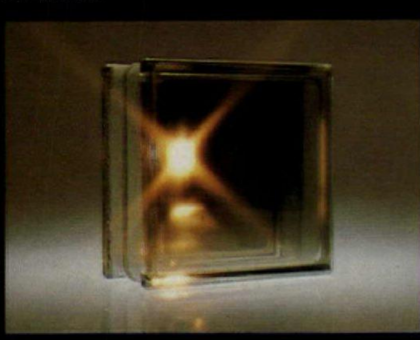

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client held us responsible for their selection as architectural consultants.

Another article under "Report from Washington" appearing in your June 1981 issue concerned the restoration of an existing Powerhouse and how "a few sensitive owners and some imaginative architects" developed an abandoned building into a viable and exciting project. Again, your "investigation" did not include the fact that GMR, Ltd., was the architect and space planner on this project.

Elliott Gitlin, Architect
President
GMR, Ltd.
Baltimore, Md

[P/A correspondent Carleton Knight III acknowledges that the firm of GMR should have received credit for the powerhouse renovation and that the developer's correct name is *Simon* Hershon. He does not dispute the writer's history of the project, but maintains that the developer claims to be happy with the job as executed. It appears that GMR's original scheme, however economically sound it may have been, was not considered acceptable to the citizen group who successfully opposed it.—Editor]

Aspen: opinions aired

Without wishing to rebut Mr. Morton's assessment of the 1981 Aspen Design Conference, "The Italian Idea" (P/A, Aug. 1981, p. 24), I would simply point out that he departed the conference mid-week, missing the architectural panel, and the last (which many say was the best) half of the conference.

Non cé nissuno cosi poco informató come collui che vede solo le mezze veritá.

There are a number of grounds on which the conference might legitimately have been criticized, but with speakers like Giugiaro, Pininfarina, Agnelli, Bertolucci, Ambasz, Bellini, Pesce, Vignelli, Arbasino, etc., etc., it could hardly be called "lightweight."

Bill N. Lacy, President
Cooper Union, New York

[David Morton attended the first four days of the Aspen Conference, missing only a day devoted entirely to a picnic, followed by a final half-day wrap-up session. He had to leave early—as many others did—because of conflicting obligations. "Nobody is so little informed as he who sees only half the truth."—Editors]

Scarpa and Mackintosh

I was sorry no one mentioned the influence of Charles Rennie Mackintosh on Carlo Scarpa (P/A, May 1981, pp. 117–137). Scarpa's Olivetti showroom in Piazza San Marco always seems to me like a Mackintosh squeezed into a small canvas, and the Querini Stampalia could be a Mackintosh elevation laid down flat. During the 1960s I saw signs of Mackintosh all over the Veneto region, then in Conegliano (about 25 miles north of Venice) I walked into a little oenological library that was like the Art School library scaled down to a single level. No one in the library remembered the name of the architect, but later when I mentioned it to some architects in Venice they recalled that Mackintosh was a frequent visitor. One thought the gray skies in Venice reminded him of the mist in Glasgow. Another attributed the affinity to the fact that neither the canny Scot nor the cunning Venetian could continue a line or plane very long without letting go and looking behind him. All agreed that Mackintosh had left a strong mark.

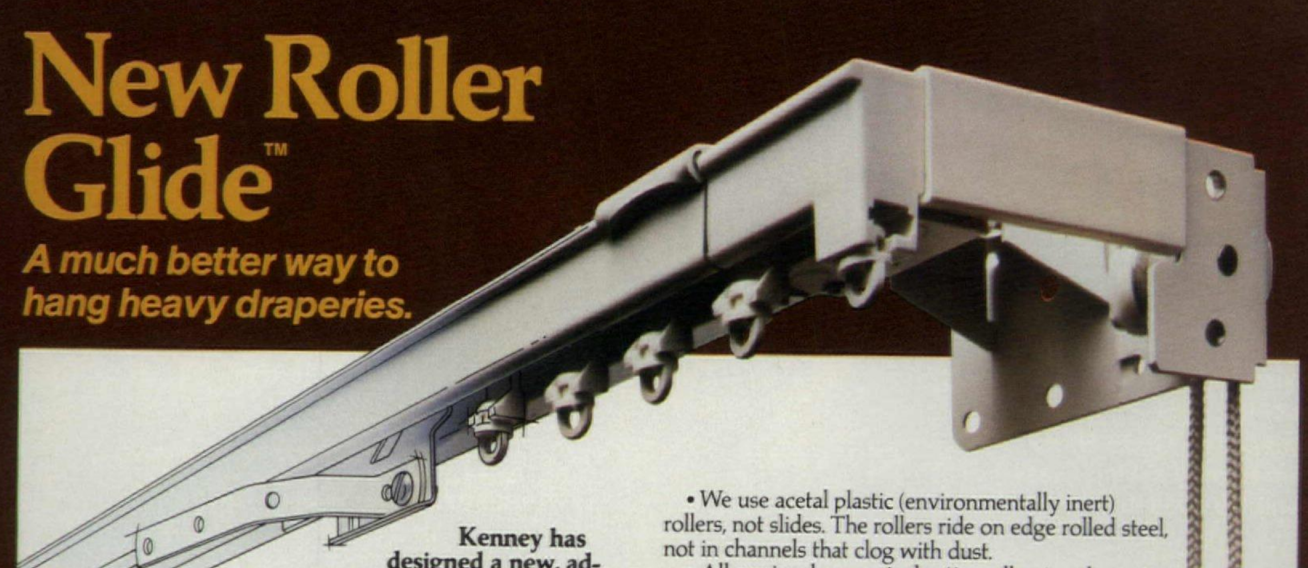
I have just now looked up Mackintosh's travels in Thomas Howarth's biography. He visited Venice once in 1890, at age 22 on a traveling scholarship. I should have left well enough alone.

Esther McCoy
P/A contributing editor
Los Angeles, Ca

Miami Bayfront battlefield

Regarding your August issue "Views" section—Miami Bayfront Sculpture?—I am surprised that your writer Mr. Levinson would misstate the facts as he does when he states re: The Downtown Development Authority plan for the park that "No alternate plan has been endorsed by the AIA"; because the truth is that an alternate plan has been endorsed by the Florida South Chapter of the AIA. He also quotes a spokesman for the Downtown Development Au-

[*Views continued on page 16*]



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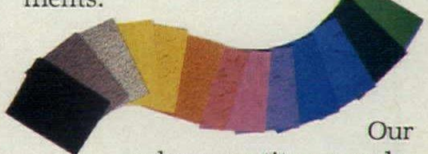

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thority as "confirming" the above and "further noting that the AIA's earlier recommendation has been substantially met in the DDA park design." Why would Levinson ask the DDA what the AIA has done or what they think or anything concerning the AIA? If he had asked the AIA South Florida Chapter President, Michael Bier—or any other responsible spokesman for the AIA—he would have learned that the AIA does not agree that DDA's plan has "substantially met AIA recommendations"—nor has the AIA in any way endorsed the DDA plan.

The major and critical fault in the DDA's present planning for Bayfront Park is an unwillingness to accept the fact that grade level arterial traffic on Biscayne Boulevard is a formidable and unacceptable barrier between the City and the Park; and provide a plan which solves it. The DDA Park proposals are simply obvious and noncontroversial band-aids which do not adequately address the critical issue of access to the park. The AIA endorsed plan does address that barrier; perhaps in a visionary way that some consider impractical—that is to say, by DDA criteria, without controversy and immediately possible, at whatever expense to the longer range well-being of the citizens of the City.

Whether the plan endorsed by the AIA or some other plan is adopted, its major thrust must be "visionary" to the extent that the Biscayne Boulevard traffic is solved and the barrier it presents between the City and Park is eliminated.

Robert B. Browne, FAIA
Coconut Grove, Fl

[Edwin Levinson replies: Three Miami architects, William Cox, Jorge Arango, and Charles Pawley, did indeed prepare a plan for the bayfront, for relocation of Biscayne Boulevard, and for spreading the waterfront parkland into Downtown Miami, as well as tunneling and bridging Biscayne Boulevard. Further items presented in their independently produced plan were for the construction of apartments within the greatly expanded park system. This plan received the endorsement of the design committee of the local AIA, of which all three were members, with Robert Browne serving as chairman. The general membership endorsed principles presented, but the "plan" itself was not endorsed. The local AIA had previously endorsed the principles but not the plan presented by Isamu Noguchi, urging at the time that work move forward on the project.]

Correction

Our building materials listing in the August 1981 issue incorrectly attributed the glued laminated structural elements of the California State Office Building to Cobbledick-Kibbe, who actually supplied the aluminum window wall. Standard Structures of Santa Rosa was the supplier of the wood trusses, beams, and purlins.

In P/A's In Progress item on Battery Park City (Oct. 1981, p. 62), a model photo of a different project designed by Cesar Pelli & Associates—The Four Leaf Towers Apartment complex in Houston—was inadvertently substituted.

Credit extended

Geiger Berger Associates were both structural and mechanical engineering consultants for the Stephen C. O'Connell Center (P/A, August 1981).

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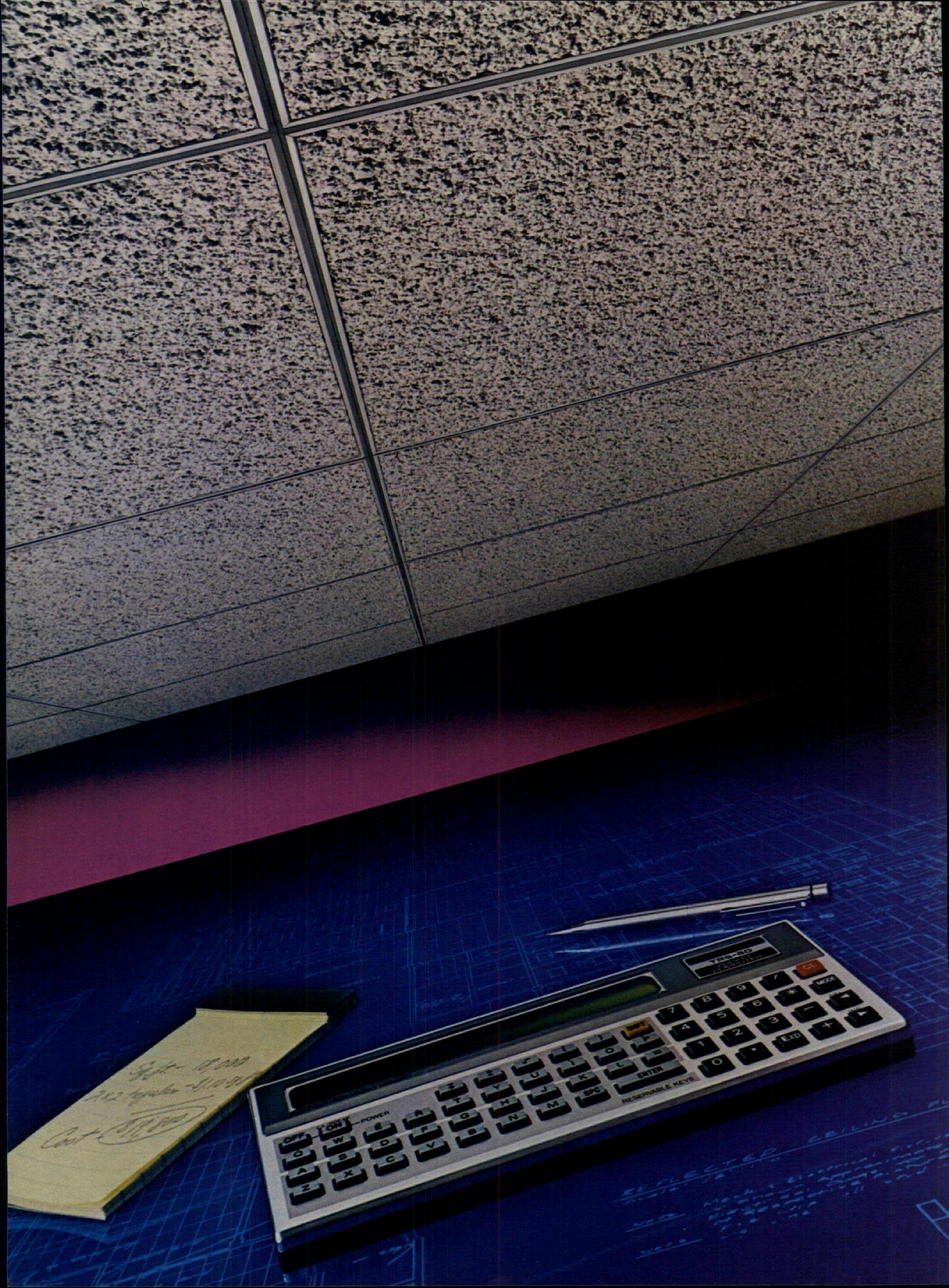
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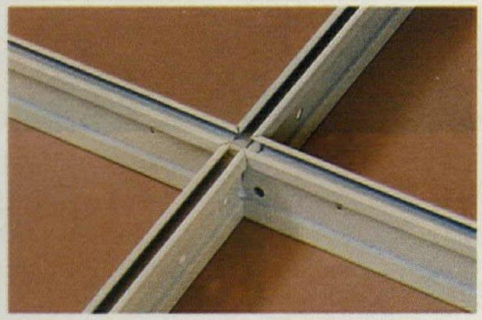

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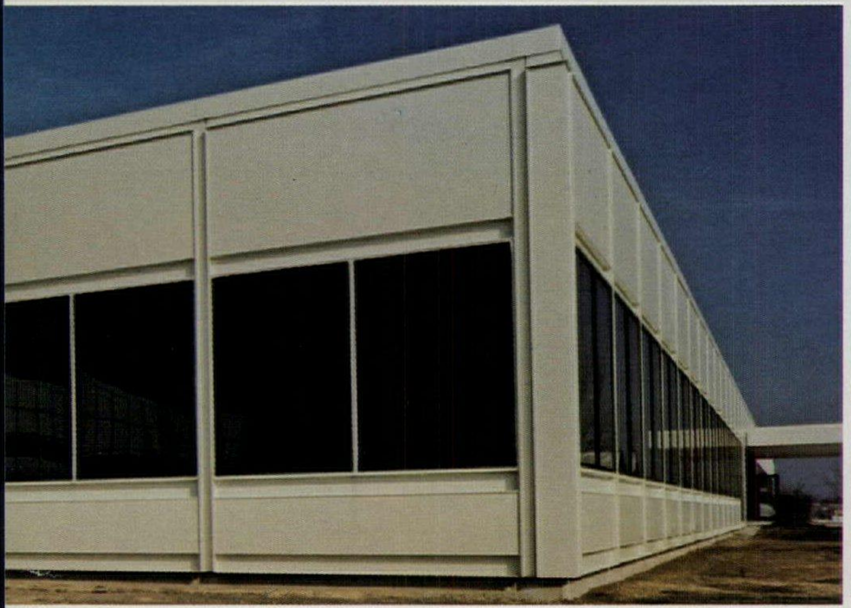
Architectural Awards of Excellence-1981 American Institute of Steel Construction



Juror's Comments:

Briggs and Stratton Distribution Center *(Above)*
"The extremely high quality detailing throughout this project makes it appear to be a very simple building. The articulation of the wall is beautiful; it shows that quality detailing pays off."

Harbor Place *(Right)*
"Well done...a real people place. There is a very tight level of quality here, as opposed to the shopping center quality normally found in America. This quality, in both management and architecture, has done more to revitalize the Baltimore Harbor than anything."

Jury of Awards

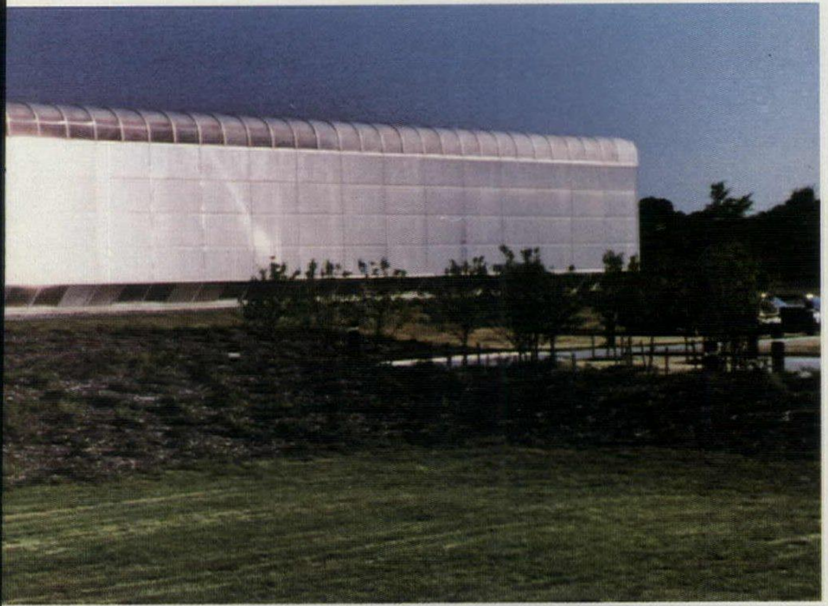
Jacques C. Brownson: State Buildings Division, State of Colorado, Denver, Col.

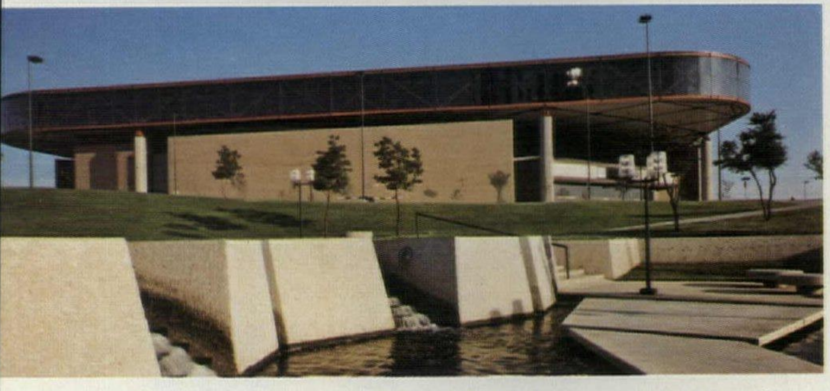
Bruce J. Graham, FAIA: Skidmore Owings & Merrill, Chicago, Ill.

Philip J. Meathe, FAIA: Smith, Hinchman & Grylls Associates, Inc., Detroit, Mich.

Walter P. Moore, Jr., PhD., P.E.: Walter P. Moore and Associates, Inc., Houston, Tex.

R. Randall Vosbeck, FAIA: VVKR Incorporated, Alexandria, Va.





Juror's Comments:

Herman Miller Seating Manufacturing Plant *(Top)*
"This is an amazing structure for an industrial plant. When you look at it, you feel you wouldn't mind working there. The acrylic clerestory both top and bottom definitely makes the project. The steel is very simple...light metal deck and steel trusses."

Reunion Arena *(Above)*
"A fantastic plan, it's a tough building to have been kept as simple as it is. It doesn't appear to be a complex structure at all. The architectural expression of the space frame roof structure is very interesting...neat idea with the glass around the top."

Bethlehem congratulates all the firms involved in the design, engineering and construction of the six award-winners.

Structural steel was chosen for the framing material for a variety of reasons: consistency and reliability of properties...adaptability to unusual design requirements ...speed of erection...and economy.

ARCHITECTURAL AWARDS OF EXCELLENCE

Project: REUNION ARENA, Dallas, Tex.; *Architect/ Structural Engineer:* Harwood K. Smith & Partners, Inc., Dallas, Tex.; *Consulting Engineer (Space Truss):* Paul Gugliotta, Consulting Engineers, New York, N.Y.; *General Contractor:* Henry C. Beck Company, Dallas, Tex.; *Steel Fabricator:* Mosher Steel Company, Dallas, Tex.; *Steel Erector:* John F. Beasley Construction Company, Dallas, Tex.; *Owner:* City of Dallas.

Project: HARBORPLACE, Baltimore, Md.; *Architect:* Benjamin Thompson & Associates, Cambridge, Mass.; *Structural Engineer:* Gillum-Colaco, Boston, Mass.; *General Contractor:* The Whiting Turner Contracting Company, Baltimore, Md.; *Steel Fabricator:* Jarvis Steel & Lumber Company, Baltimore, Md.; *Steel Erector:* Arthur Phillips Company, Baltimore, Md.; *Owner:* Harborplace Ltd. Partnership, c/o The Rouse Company, Columbia, Md.

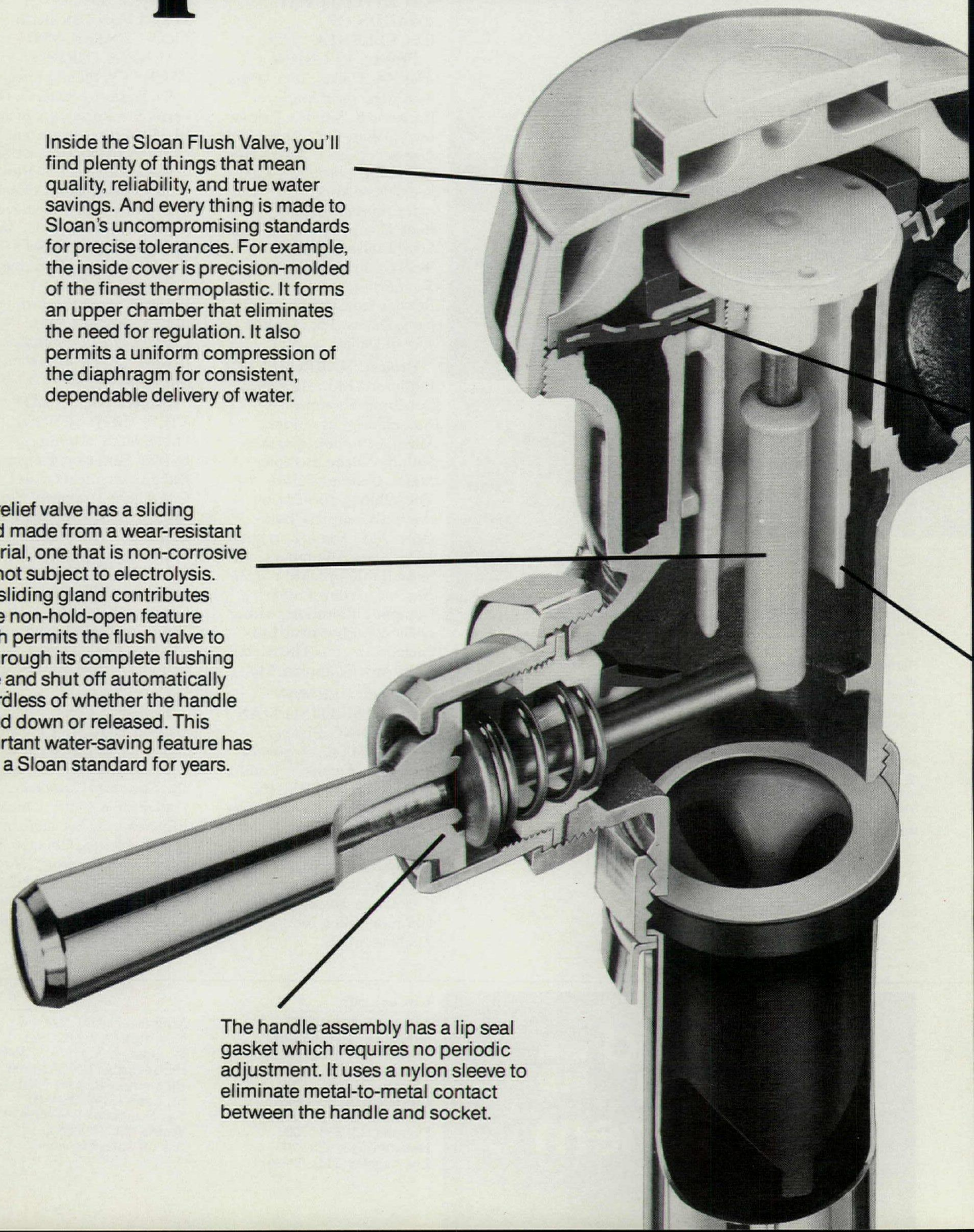
Project: HERMAN MILLER SEATING MANUFACTURING PLANT, Holland, Mich.; *Architect/ Structural Engineer:* Caudill Rowlett Scott (CRS), Inc., Houston, Tex.; *General Contractor:* Owen-Ames-Kimball Company, Grand Rapids, Mich.; *Steel Fabricator/ Erector:* Haven Busch, Grandville, Mich.; *Owner:* Herman Miller, Inc., Zeeland, Mich.

Project: BRIGGS & STRATTON DISTRIBUTION CENTER AND MANUFACTURING FACILITY, Menomonee Falls, Wis., *Architect:* J. D. Ferris & Associates, Chicago, Ill.; *Structural Engineer:* Gillum-Colaco, Chicago, Ill.; *General Contractor:* Hunzinger Construction Company, Milwaukee, Wis.; *Steel Fabricator:* Mid-States Steel, Inc., Stoughton, Wis.; *Steel Erector:* Hennes Erecting, Appleton, Wis.; *Owner:* Briggs & Stratton Corporation, Milwaukee, Wis.; *Curtainwall Fabricator & Erector:* Schomann, Inc., Milwaukee, Wis.

Project: MOUNTAIN VIEW HIGH SCHOOL, Orem, Utah; *Architect:* Fowler/Ferguson/Kingston/ Ruben/Architects, Salt Lake City, Utah; *Structural Engineer:* K.K.B.N.A., Salt Lake City, Utah; *General Contractor:* Paulsen Construction Company, Salt Lake City, Utah; *Steel Fabricator:* Cenmco Steel, Provo, Utah; *Steel Erector:* Clayburn Inc., Midvale, Utah; *Owner:* Alpine School District, American Fork, Utah.

Project: STEEL AND GLASS HOUSE, Chicago, Ill.; *Architect:* Krueck & Olsen Architects, Chicago, Ill.; *Structural Engineer:* Gullaksen & Getty, Chicago, Ill.; *General Contractor:* Harold Meitus, Chicago, Ill.; *Fabricator/Erector:* Schmidt Iron Works, Div. Srind Corp., Schaumburg, Ill.; *Owner:* David Meitus, Chicago, Ill.

What to look perfect flush



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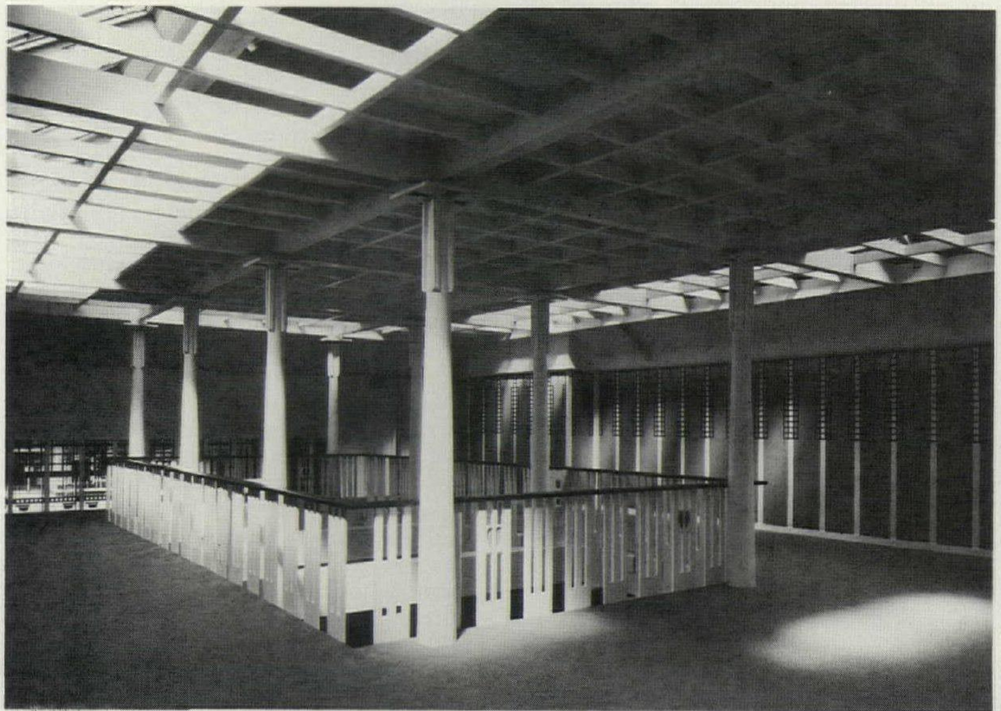
P/A News report



1

The mysteries of the Willow

There were clues and red herrings, missing fireplaces and staircases, and a hide-away no one could find; torn silk, false panels, iron fragments, confusing photos, and witnesses whose memories had faded.

The clues were patched together, the mystery solved—not by Poirot nor Lord Wimsey, but by architect Geoffrey Wimpenny of Keppie Henderson & Partners; and the mystery (not murder nor theft) was preservation: the reconstruction of Charles Rennie Mackintosh's Willow Tea Rooms. Built in Glasgow in 1904, its details had been obscured by time and changing uses, and when Wimpenny was asked, in 1979, to restore it as closely to its 1904 condition as possible, to be rented for shops, only a few original parts remained: some of the plaster panels, the main stair balustrade, part of the ground-floor balcony, and two fireplaces, a fireplace and some paneling upstairs, and the doors and stained glass of the Room de Lux.

First, the wall dividing the Willow from the adjoining building was reinstated and the original parts protected. Then, the five remaining heavily over-painted plaster panels (of which one was found to be a copy) were removed for exhibition and finer casts were made and installed.

Windows had to be renewed, some of them based on photographs, using a system of proportioning based on the dimensions of openings, only traces of which remained in some cases.

Much pseudo Mackintosh work was discovered and removed, often plywood instead of solid timber.

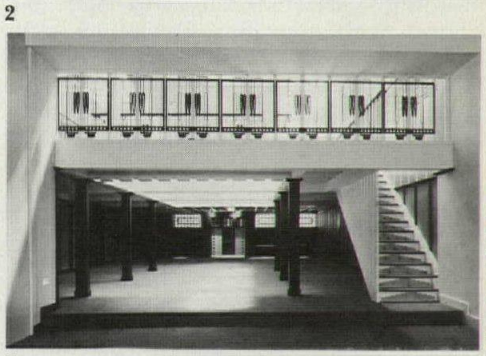
A ground-floor fireplace and staircase had been removed to build an underground dugout in 1917, and the original drawings disagreed with an old photograph with respect to mantel and dado details; the photograph was followed in the end. The main staircase has now been enclosed with a demountable glazed screen, for fire code reasons.

The shopfront was repositioned easily, but the form of its two circular pieces of ironwork could not be traced, and another Mackintosh railing had to be copied.

The staircase ironwork was deduced from an exhibition catalog; wall and upholstery fabrics reproduced (in synthetic rather than silk) from fragments and photographs; stencil patterns copied with difficulty; paint and stain

The restored Willow's Room de Lux (1), façade (2), sales floor without cabinets (3), and with new jewelry cabinets (4).

2

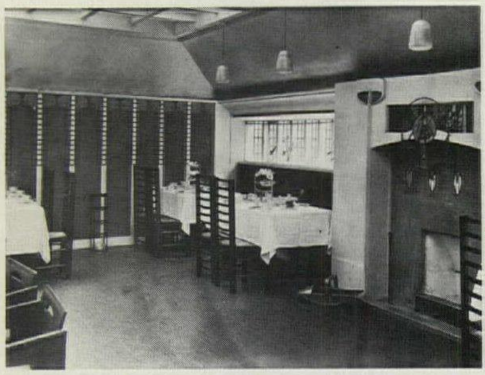


3

Gillanders & Mack

4

News report continued from page 25


Annan Photographer

The 1904 Room de Lux.

finishes achieved after much experimentation; and workmen tracked down after lengthy searches.

It is not a complete reconstruction, emphasizes the architect, and it had to be a commercial proposition. The store's eventual tenant was not known at the time, but it is now (as of June) occupied by M.M. Henderson, a Glasgow-based jeweler who has become a Mackintosh devotee. The lighting and showcases, while simple, are not designed nor arranged in particular harmony with the original architecture. But still, the detective work most definitely has succeeded; the victim has been brought back to life. [SD]

Stirling for Tate

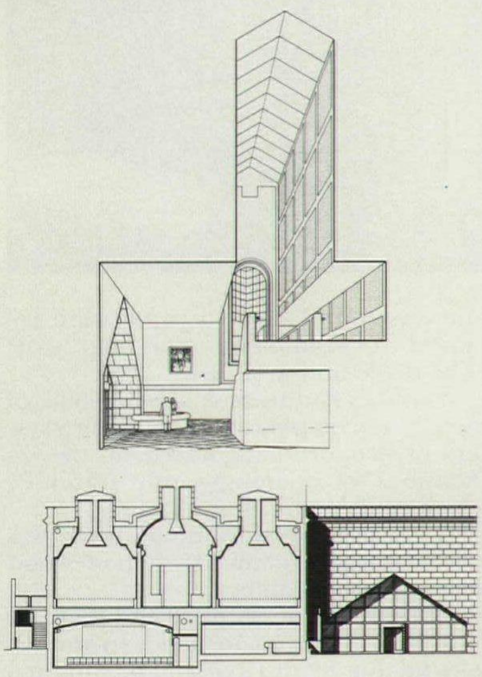
James Stirling, RIBA Gold Medal and Pritzker Prize winner, has only now designed a major building in London. With partner Michael Wilford, he has been commissioned to build the Clore Gallery, an extension to the Tate Gallery, to house the Turner collection.

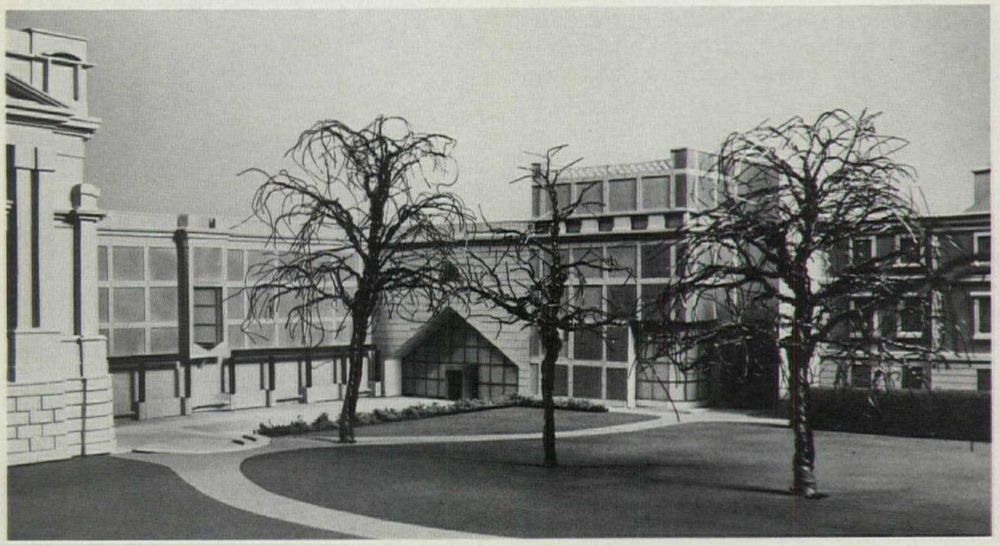
The new building, on the site of an unused hospital complex (several of whose buildings will be adapted for museum use) is to be a "garden building"—an extension to the big house—with pergola, lily pond, and paved terrace. Its L-shape will connect to the existing Gallery, matching its parapet, but setting back and remaining lower than the older building, in deference to its architectural significance.

Portland stone matching the Tate will be used for the "important lines" of cornice and rusticated base, but the façades will consist mainly of ochre-toned stucco and brick. The galleries, located on the second story, are a series of rooms of different sizes and are, for the most part, sky-lit.

Stirling describes the building's style as "deliberately ambiguous—neither modern nor historical." The project has its critics—some due to the Turner overkill. But Sir John Summerson is intrigued, telling the *Architects Journal* (July 15, 1981): "It's a funny building, but no funnier than Soane, who would have enjoyed that deep slot the stair goes up in—and so would Soane's friend, Turner. I like the complexity, the play of layers. It's full of intriguing allusions—1930s 'modernist,' German neo-classicism, 'low tech,' and so on. The great shock is the Newgate-type prison wall cut away with a piece of scissors. It's all a bit mad which is what people say about the Soane Museum. It's just the thing for the Tate."

Section through Clore Gallery staircase "slot," below, and through galleries, middle. Model photo, bottom.




John Donat

Crown Hall.

The travertine it hath cracked

The landmarks of the distant past are not the only buildings in need of restoration; our own Modern cathedrals are no longer pearly white. These buildings—built to be ever changing with their inherently open-ended flexibility, to be ever youthful with their technologically superior materials and construction methods, to effortlessly withstand the passage of time—unfortunately are turning out to be at least as vulnerable to natural forces as were the buildings they superannuated, and have suffered due to unforeseen programmatic changes, negligent maintenance, and some rather ungodly details. The travertine it hath cracked. This situation presents us with a Proustian puzzle wherein the architecture of the future becomes our past, making us look, Janus-like, at the goals both of Modernism and preservationism.

Mies van der Rohe's Crown Hall, the early 1950s landmark at the Illinois Institute of Technology in Chicago, is an apt illustration. Its recent extensive restoration (modestly called "maintenance"), by Skidmore, Owings, and Merrill, replaced the original sand-etched windows with sheets of white plastic laminated between sheets of clear glass, and the original clear windows, which had displayed a tendency to break in high winds, with clear glass half again as thick. Mies's canonical steel bar glazing stops, the backs of which had rusted when they were exposed to moisture due to deteriorated glazing putty, were replaced with extruded aluminum stops, and the putty was replaced with silicone. The roof, whose leakage had allowed water to completely destroy the original acoustical tile ceiling, was stripped to the steel deck, and new insulation and roofing were installed. The original tiles, which had been raining down onto the floor as their mastic bond failed, were replaced with similar tiles with concealed metal splines. And the original travertine stair treads and platform paving slabs, which had cracked over the years, were taken up and replaced, using as many of the original slabs as possible. There is talk of painting the exterior steel and aluminum, which are peeling, and also of making the building accessible to the handicapped. The operation is proving to be a [*News report continued on page 30*]

Victoria Station Restaurant, Fairfax, VA., *Architect*: Donald K. Olsen, Sausalito, CA., *Installation*: Krupnick Bros., Glen Burnie, MD.

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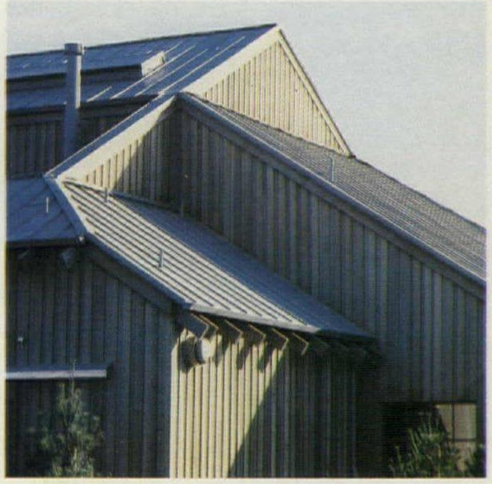

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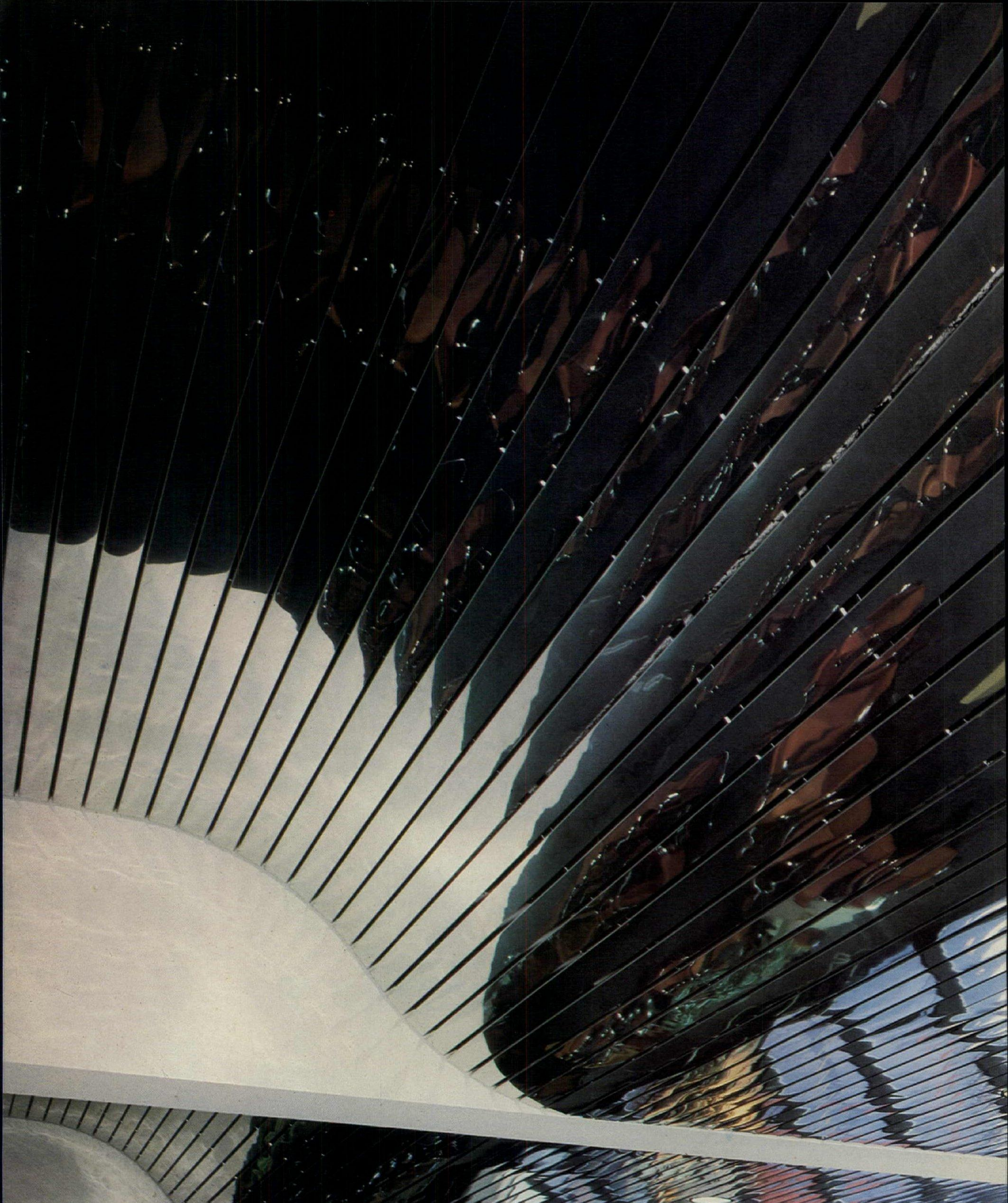

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News report continued from page 26

careful restoration, quite faithful to Mies's original design.

While the forces of nature were being reversed, Mies's ideas of "universal" flexible space at Crown Hall were being tested by James Ingo Freed during his tenure as dean. The school had grown since Mies's time, with an extra department and a much larger enrollment, so the interior partitions were moved to provide an expanded administrative precinct, at the expense of the central gallery space. The result is an uneasy compromise, undermining the universality of the space by further particularizing and emphasizing the administration core: Mies's egalitarian institutional imagery becomes a hierarchical one.

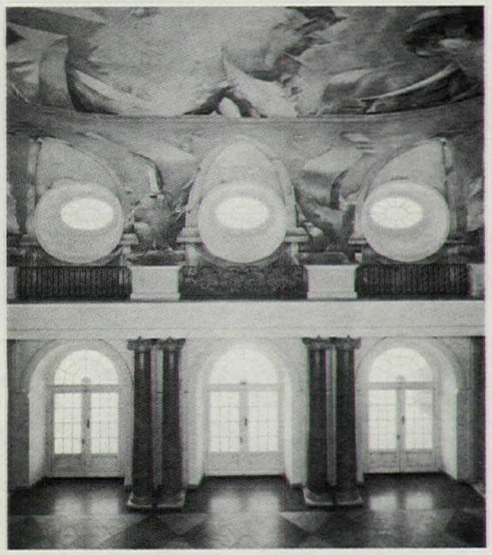
The necessity for and degree of success of these alterations at Crown Hall point up some intriguing ambivalences concerning our Modernist beliefs. They have made some hitherto orthodox Modernists momentarily abandon their erstwhile beliefs in spatial flexibility, dynamic change, and the candid use of materials to embrace a sub rosa and embarrassed landmark preservationism. This newfound Modernist preservationist zeal has even led Holabird & Root, in their current restoration work on Mies's 860–880 Lake Shore Drive buildings, to replace the lobby level aluminum window frames with stainless steel frames which will be tricked out to look like aluminum ones, while the aluminum frames of the residential windows above will remain field painted to look like clear anodized aluminum—a strategy adopted by Mies when the aluminum discolored within a couple of years of their installation. It has been said that the conservatives often make the world's great innovators. Perhaps the converse is also true, and the innovators will become the world's great conservators. [David Woodhouse]

David Woodhouse is an Illinois architect, working for Booth Hansen & Associates in Chicago. He has worked for Stanley Tigerman and has written articles for the Inland Architect, *the* Journal of Architectural Education, *and* A+U.

Interpretive preservation in Berlin

The Charlottenburg Palace, built as a residence for kings and now serving as a museum, was begun at the end of the 17th Century and enlarged in stages over the next hundred years. Badly damaged in World War II, it has been undergoing thorough restoration, most of it historically precise, but some of it interpretive of the original design.

The restoration of the ceiling paintings of the Palace's Orangerie has followed the interpretive approach. The Orangerie was built by Swedish masterbuilder Eosander Göthe in 1709–12, and the vaulted ceiling of its center pavilion was painted illusionistically,



with mythological scenes. Only one engraving exists of the original Baroque decoration, which was painted over, in 1886, by Carl Wendling. When the pavilion, destroyed in 1943, came to be restored as an exhibition space, it was decided to reflect the Baroque intentions of its ceiling decorations by contemporary means. Peter Schubert, a Berlin artist who had studied in Stuttgart, in Dresden, and with Léger in Paris, and who is known for his monumental paintings that attempt to fragment structured space, was felt to be artistically and temperamentally suited for the job.

Indeed the painting, totally abstract, feels in no way out of sorts with the literally reproduced architecture, except insofar as its Baroque tensions intentionally attempt to catapult it to a world beyond. The dialogue between nature and art, between interior and exterior space, and between heaven and earth is depicted in colors both earthy and transparent, and forms at times solid, at times ethereal. It represents, says one German critic, the very stylistic duality of the building itself, somewhere between the self-conscious showiness of the High Baroque and the euphoria of the Rococo.

The interpretive approach has been followed by other artists elsewhere in the Palace, but none are as successful as Schubert's Orangerie. [SD]

Artistic ferment in San Antonio

San Antonio, Tx, is the nation's ninth largest city. But unlike such places as Dallas or Houston, it does not seem to place a premium on growth and newness. Of all the cities in Texas, it is the most active in preservation. Not surprisingly then, when the San Antonio Museum Association needed more space in the early 1970s, it chose an abandoned industrial building rather than a modern showplace for its new facility.

SAMA's network of buildings included at that time a transportation museum at Hemisfair Plaza (site of the 1968 World's Fair) and the Witte Museum, repository of the entire collection of art and artifacts and, with 60 percent of its art in storage, nicknamed "San Antonio's Attic."

In 1971, Jack McGregor, new director of SAMA, discovered the old Lone Star Brewery complex on a site near downtown bordering the San Antonio River, where efforts have been concentrated to define a cultural River Corridor (P/A, June 1975, p. 62). Nancy Negley, then head of the San Antonio Conservation Society and now president of SAMA, became a prime mover in assembling private support for the museum-in-the-brewery concept. Furthermore, the use of a historic structure (the brewery was listed in the National Register of Historic Places in 1972) gave access to government funds.

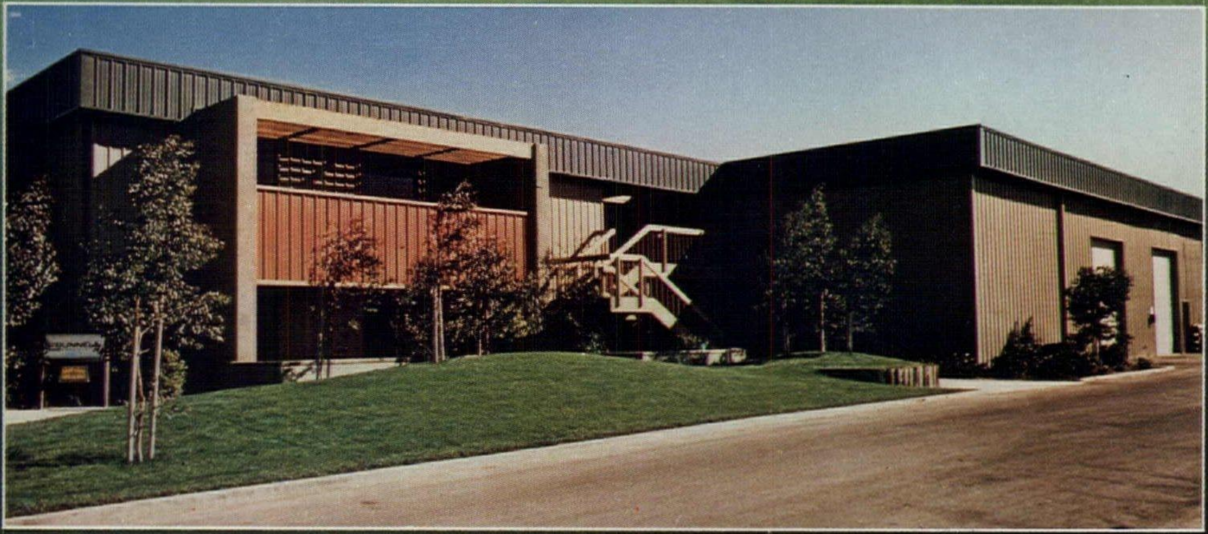
The Lone Star Brewing Company complex comprised nine buildings on generous grounds, efficiently organized for goods distribution but handsomely laid out with a stand of 200-year-old oak trees. Its 1903 structure of pale yellow brick, designed by the "brewer's architects and engineers" E. Jungerfeld and Co. of St. Louis, features arched openings and two castellated, vaguely Italian Romanesque towers. Since 1921 (and Prohibition), it has served variously as a cotton mill, an ice plant, and an army warehouse.

After a feasibility study by architecture students at the University of Texas at Austin approved the project in 1972, the brew house and four other buildings were purchased, and funding was sought from the Texas Historical Commission and HUD. In 1973 work was begun, with the Cambridge Seven Associates as designers. In a significant move, Nancy Negley convinced the Economic Development Administration that the project, as a component of the River Corridor, would boost the city's economy; $3.5 million earmarked for inner-city renovation was acquired for the museum.

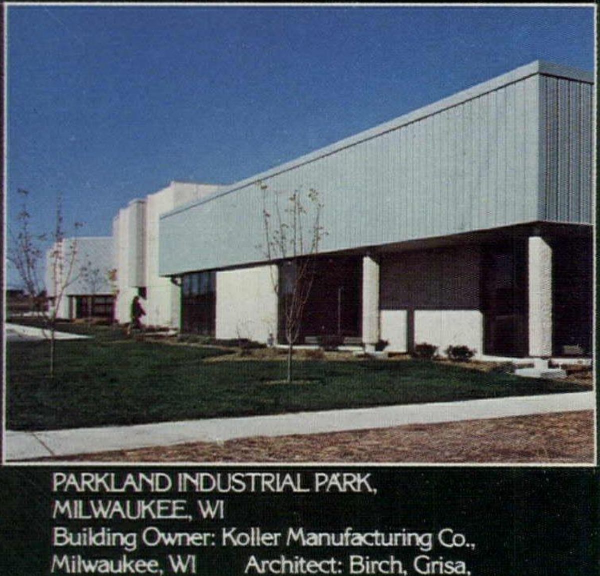
Two-phased design

Extensive documentation of existing conditions and liaison review with local agencies were carried out during the schematic design stage in association with Martin & Ortega Architects. LeMessurier Associates/SCI of Cambridge, Ma, conducted the structural [*News report continued on page 34*]

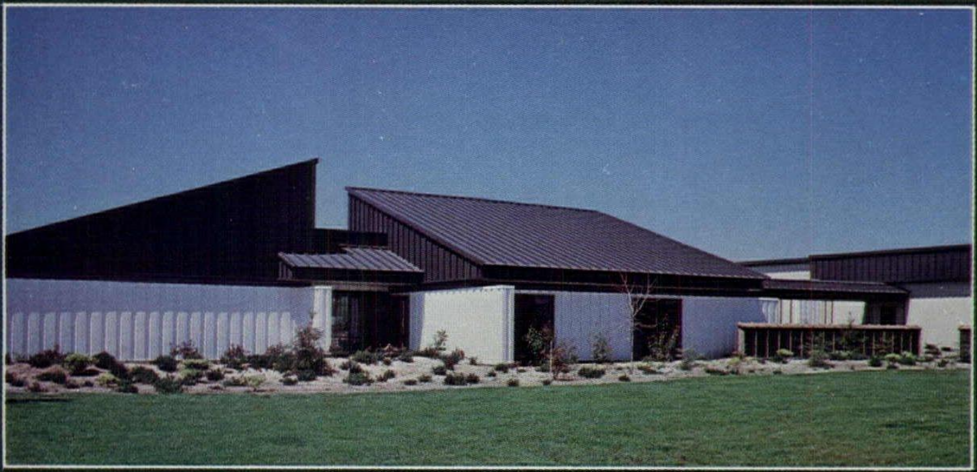
OFFICE PLAZA AT INVERNESS, ENGLEWOOD, CO
Building Owner: Turnmar Development Co., Englewood, CO Architect: Arthur Casselman Ranes, A.I.A., Englewood, CO



BUNNELL INDUSTRIAL COMPLEX, SAN LUIS OBISPO, CA
Building Owner: Bunnell Construction Co., San Luis Obispo, CA
Architect: Ross, Levin & MacIntyre, San Luis Obispo, CA

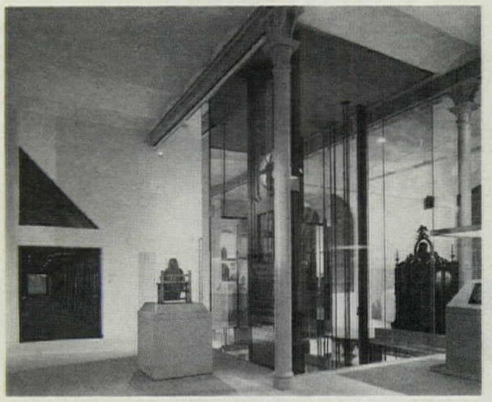


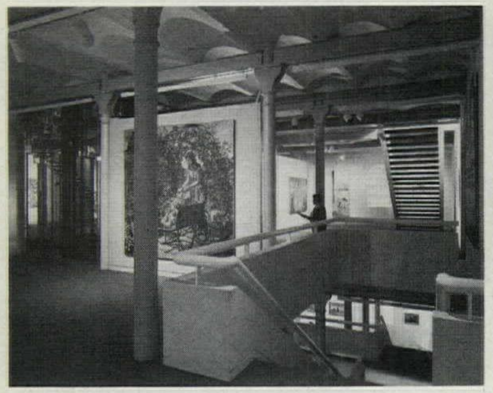
PARKLAND INDUSTRIAL PARK, MILWAUKEE, WI
Building Owner: Koller Manufacturing Co., Milwaukee, WI Architect: Birch, Grisa, Phillips, Inc., Brookfield, WI

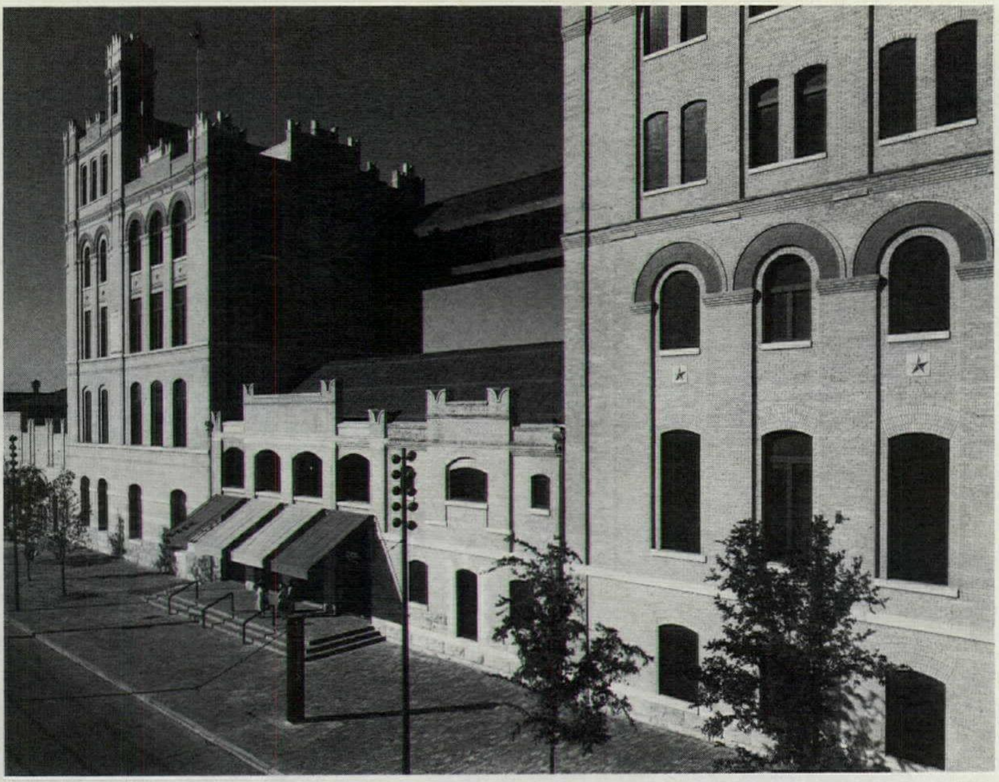


SHERWOOD INDUSTRIAL PARK, PASO ROBLES, CA

News report continued from page 30







Nick Wheeler

San Antonio Museum's entrance façade (right) and two gallery views (above).

analysis. Fund raising proceeded simultaneously, and in 1976 the City of San Antonio was awarded a Community Development Block Grant to implement the first of two distinct phases. Roy McGinnis & Co. began the extensive exterior renovation in March of 1978, completing it by November.

During this time, however, the Texas Historical Commission (which had promised $100,000 to the project) objected to the design direction advocated by Richard Truve and Peter Chermayeff of Cambridge Seven, contending that it would "adversely affect the historical character" of the building. While many of the original double-hung, small-paned windows had been removed and bricked over years before, THC balked at a treatment that would replace the remaining windows with either dark aluminum-framed solar gray insulating glass or blank dark blue panels.

A philosophical issue was at the root of the objections: the contention that true historic restoration is preferable to interpretive adaptive reuse. SAMA resolved the impasse. Supporting the architects' "old is old, new is new" approach, it rejected the THC monies.

By early 1979, phase 2 documents had been completed, the project won a P/A Design Award (P/A, Jan. 1979), and Guido Brothers began construction under the supervision of local associate architects Chumney, Jones & Kell. As additional funds became available (to a total of $7.1 million), the Hops House and the Carriage House were renovated. Midway, SAMA retained Designgroup of New York to collaborate with Cambridge Seven and with the new Art Museum director Kevin Consey, to achieve an optimum display of the selected works and a visual integration of exhibits and architecture.

The design

One of the key design decisions retained the existing pattern of cast-iron columns that supported beams carrying concrete "washboard" ceiling vaults. Servicing, consequently, is channeled in large vertical service volumes and articulated horizontally along beam lines. As interior masonry walls were in poor condition, wall space was furred out for hanging artworks, as well as to conceal additional conduit and piping. Another result of this feature was to provide pockets for a series of large sliding wood louvers, which are further used to control daylighting. As a consequence, a restrained, highly finished, almost sleek interior treatment results which, while it is in contrast to the original structure, also succeeds in avoiding a "Cannery Syndrome" look.

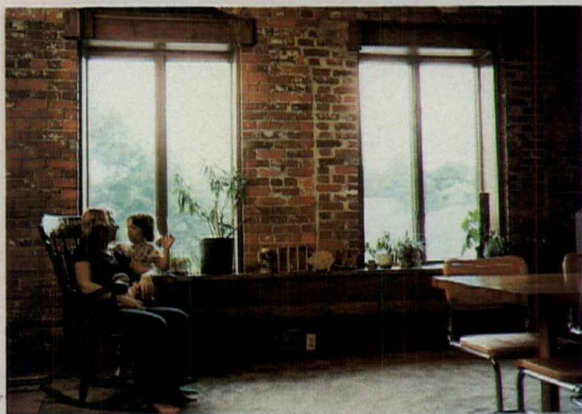
The division of the building into two towers was kept in lieu of a cliché-ridden Portman/Hyatt atrium infill. An existing bridge connecting the upper floors was structurally unsound, although it was somewhat more graceful than its replacement. Nonetheless, the decision to retain the tower organization for galleries and provide a separate elevator in each is the key to the Museum's organization. The elevators themselves, glass enclosed in glass shafts with most operating parts chrome plated, are gracefully slow-moving. They allow uninterrupted views across each space, while providing a sense of summation, or preview. Alternative vertical movement on the West (formerly Brewhouse) Tower occurs via a glass-enclosed staircase outside the main building, over an alley among ancillary buildings that will eventually be developed.

Circulation is biased to enter the West Tower and to connect over to the East (formerly Storehouse) Tower at bridge level, leading down into a two-story roof pavilion containing the lunchroom and an open-air terrace. Here, unseen from the street, the original building elements combine with an equal quantity of late-Modern high-tech elements, and an aesthetic mismatch becomes apparent. Similarly, at the base level lobby, sawtooth skylights with bright bannerlike baffles (a Cambridge Seven trademark) beg for a more subtly scaled treatment. Finally, the design of the entrance canopies and the handling of the museum's name on a chic little slab indicate that Cambridge Seven cannot yet rise to occasions that suggest traditional treatments.

Still, the architects have succeeded admirably in the orchestration of movement through the museum, the provision of spatial connections giving a sense of continuity, the comfortable fit of new uses within the existing pattern of columns, and the flexibility of installations appropriate to the nature of the collection. The net effect combines a sense of orientation with both unity and diversity.

For $7.1 million, SAMA has received 141,000 sq ft of space, of which 66,000 sq ft is exhibition area; a 188-seat auditorium; and a 2.5-acre outdoor sculpture garden. (In contrast, Dallas is spending $40 million for its new Museum of Art.) Most important, in keeping with San Antonio's special nature, a historic building is being given a new life that extends beyond itself, to suggest further cultural and social development along the San Antonio River. [Peter C. Papademetriou]

[*News report continued on page 38*]









At a 120 year old creamery, Andersen blends right in.

Renovating this old creamery into apartments and offices was very important to owner-developer Amasa Marks.

He planned to live here.

So, together with the architects, Mr. Marks created a place of beauty, for his homeowner side, and energy efficiency, for his building-owner side.

To assure beauty inside, the brick and heavy timbers of the creamery were left exposed. Outside, vinyl-sheathed, low maintenance Andersen Perma-Shield® casement windows were specified. Their Terratone color was so blendable that it was used to determine the brown and tan color scheme of the stucco finish.

To assure energy efficiency, a solar-based system was designed using a greenhouse, heat pumps, ground water storage pool and the Andersen windows.

The greenhouse functions as a solar collector. Transfer and storage media is water. The heated water is delivered to a 40,000 gallon storage tank for circulation to the water-to-air heat pump system.

Insulation is crucial to the effectiveness of the energy system. And the Andersen windows play a vital role. A two inch thick layer of urethane with an air space, wire lath and stucco finish was applied to the building exterior.

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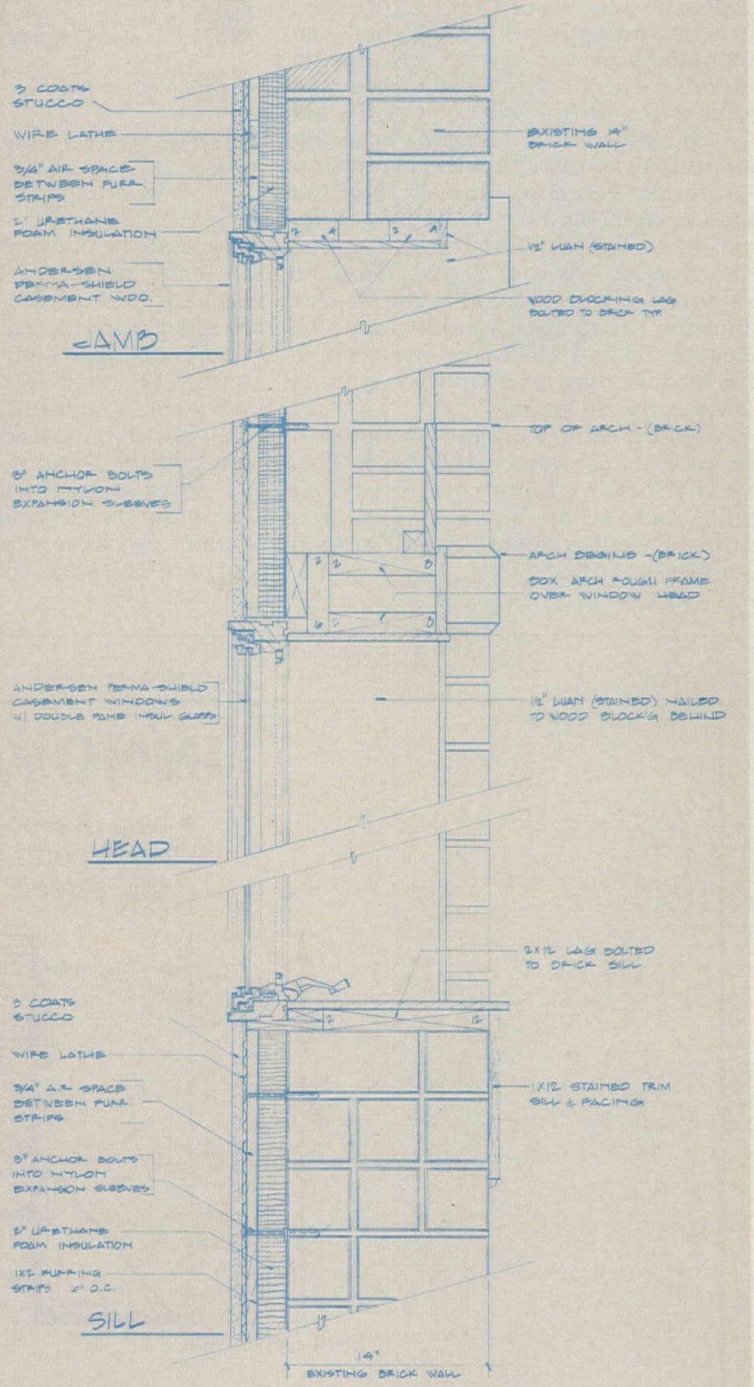


The Creamery
Sussex, New Jersey

Architect: J. Arthur Johnsen, AIA
Sussex, New Jersey

Printing limitations prohibit exact duplication of Terratone color. Use actual sample for building specifications.

News report continued from page 34

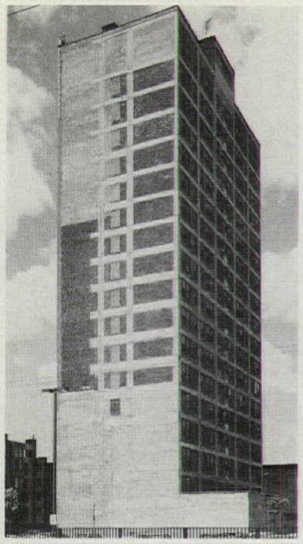
Honors, appointments

The Art Institute of Chicago has established a Department of Architecture, and has appointed John R. Zukowsky associate curator to head it. Since 1978, Zukowsky has been Architectural Archivist for the Institute's Burnham Library of Architecture, where he initiated an active program of exhibitions of the archives' materials.

O. Jack Mitchell, FAIA, dean of architecture at Rice University, has been elected president of the Association of Collegiate Schools of Architecture for a term beginning July 1982. Mitchell, who maintains a private practice in Houston, intends to sustain the "equal partner" relationship with the AIA, NCARB, and NAAB regarding education, licensing, and quality issues within the profession.

Interior Secretary James Watt has named architect Fred E. Hummel and two other Californians to the National Park System Advisory Board. Hummel, a planner and architect, was the state architect in the Reagan administration between 1968 and 1972, and has been active in designing park and recreational facilities for 30 years.

Architect Paul Rudolph, designer of the recently completed William R. Cannon Chapel for Emory University, Atlanta, received an honorary Doctor of Humane Letters degree from Emory in October.




Paul Zakoian

Before (left) and after.

Homage to the Chicago School

The LaSalle Towers in Chicago, converted by architects Cynthia Weese and Richard Green from an apartment hotel to open plan apartment units, four per floor, was drastically altered on the exterior. Or so it would seem. The 18-story 1920s building had (and still has) a west shirtfront façade of cut stone and brick in the "Tudor Eclectic" style. But its other three façades were built of common brick and rough concrete frame, and were exposed to long views. Richard Haas was commissioned to do a 32,000-sq-ft mural on the three raw sides. His theme: "Homage to the Chicago School"; his message: a rebuke to the destruction of landmarks.

The shock of the Nuovo

This year's Salone del Mobile Italiano, the annual Milan furniture fair, was most remarkable for its high novelty quotient. While designs ran the usual gamut from staid to dashing and from practical to whimsical, it was the "Neo-Modernist" furniture, with its discon-

[*News report continued on page 42*]

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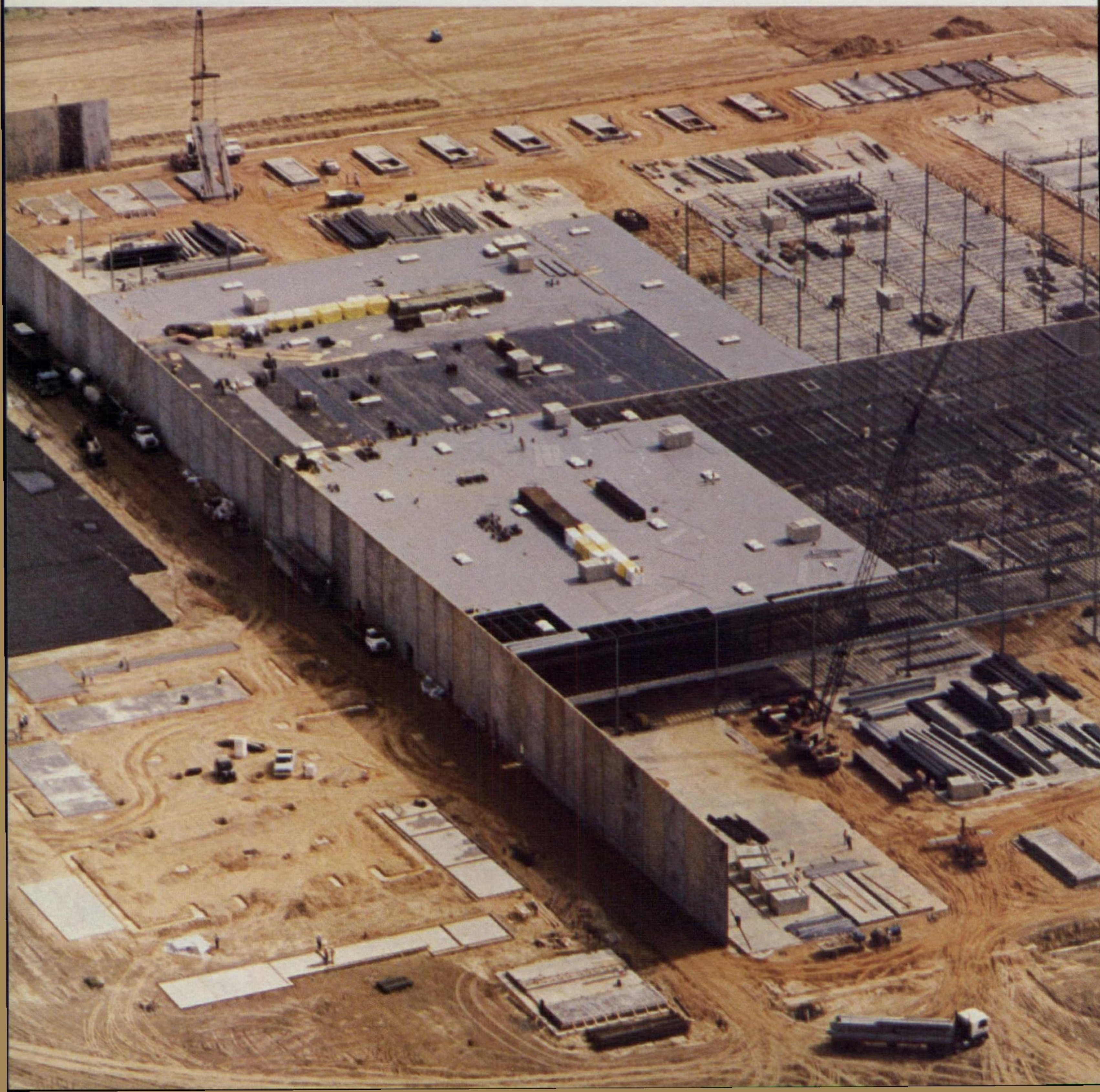

The new Levi Strauss & Co. Jeanswear Distribution Center is big: 720,000 square feet at a cost of $19 million and capable of shipping 50 million units a year.

What's more, it had to go up fast. In time for Levi Strauss & Co. to use it to fill summer orders. So a job that typically would be scheduled for 15 months had to be completed in 11 months or less from the time design work started.

The Haskell Company, which designed and constructed the building at Gluckstadt, Mississippi, relished the challenge. And they knew who to turn to for steel joists and joist girders. In their words, "Only Vulcraft could handle a job this big this fast."

Because Haskell used fast track methods, they specified a precisely timed sequence of deliveries. Vulcraft followed through to perfection. Which didn't surprise Haskell. They had worked with Vulcraft for 15 years, including 20 projects in the previous 30 months.

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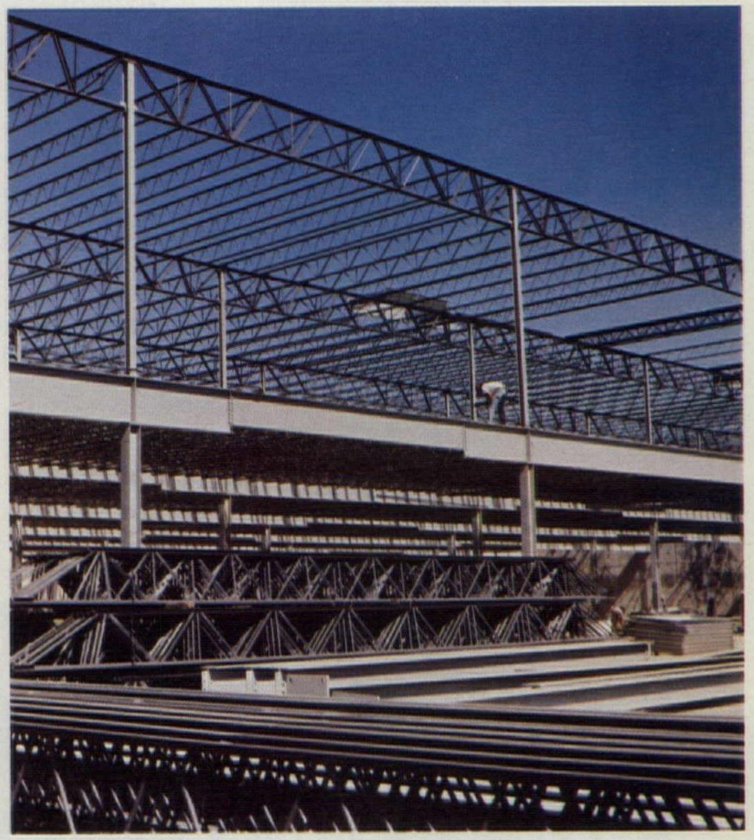

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Vulcraft supplied 1,100 tons of joists and 207 tons of joist girders for this Levi Strauss & Co. Distribution Center at Gluckstadt, Mississippi.

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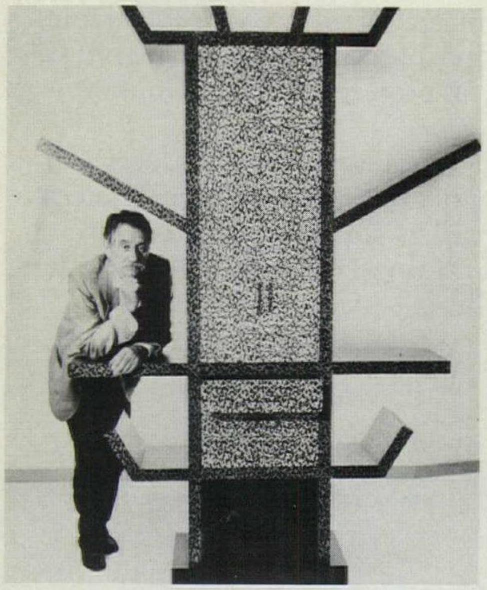
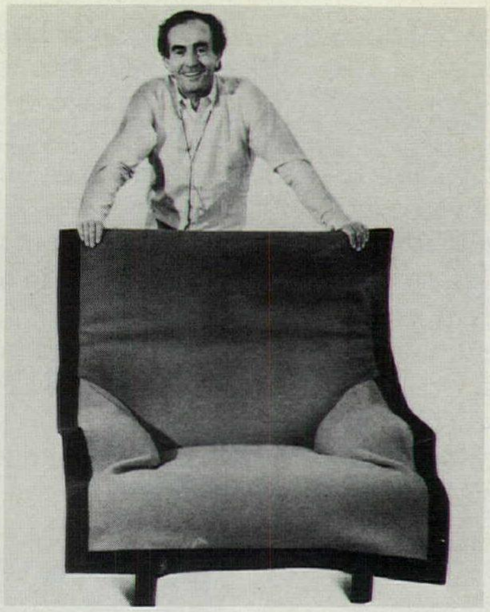
News report continued from page 38





Michel Arnaud/NYT Pictures

Memphis (left) and Sindbad, with designers.

certing combinations of form, color, and texture, that stole the show.

The clear winner in this category was Memphis, a collection of over 50 pieces by an international list of designers and architects led by Ettore Sottsass. Bizarre shapes, hot colors, and an apparent penchant for plastic laminates were the hallmarks of the group which, Sottsass explained, embodied a "New International Style" in its attempt to return to the Modernist mass-production-with-good-design ethic. The result, an international brand of New Wave, was a group of cheerfully jangling designs unmatched for (if nothing else) sheer exuberance.

Functionalism also took gentler—but no less innovative—forms, as demonstrated by Vico Magistretti's Sindbad chair for Cassina. The chair, whose unexpectedly elegant horseblanket covers attach to the frame with Velcro strips, was another Fair favorite. And needless to say, historicism did not go unrepresented. A strong Wiener Werkstatte influence was evident in Paolo Portoghesi's design for Poltronova, a leather sofa with a geometric frieze. So, while exotica drew crowds, there was still something for everyone. [PV]

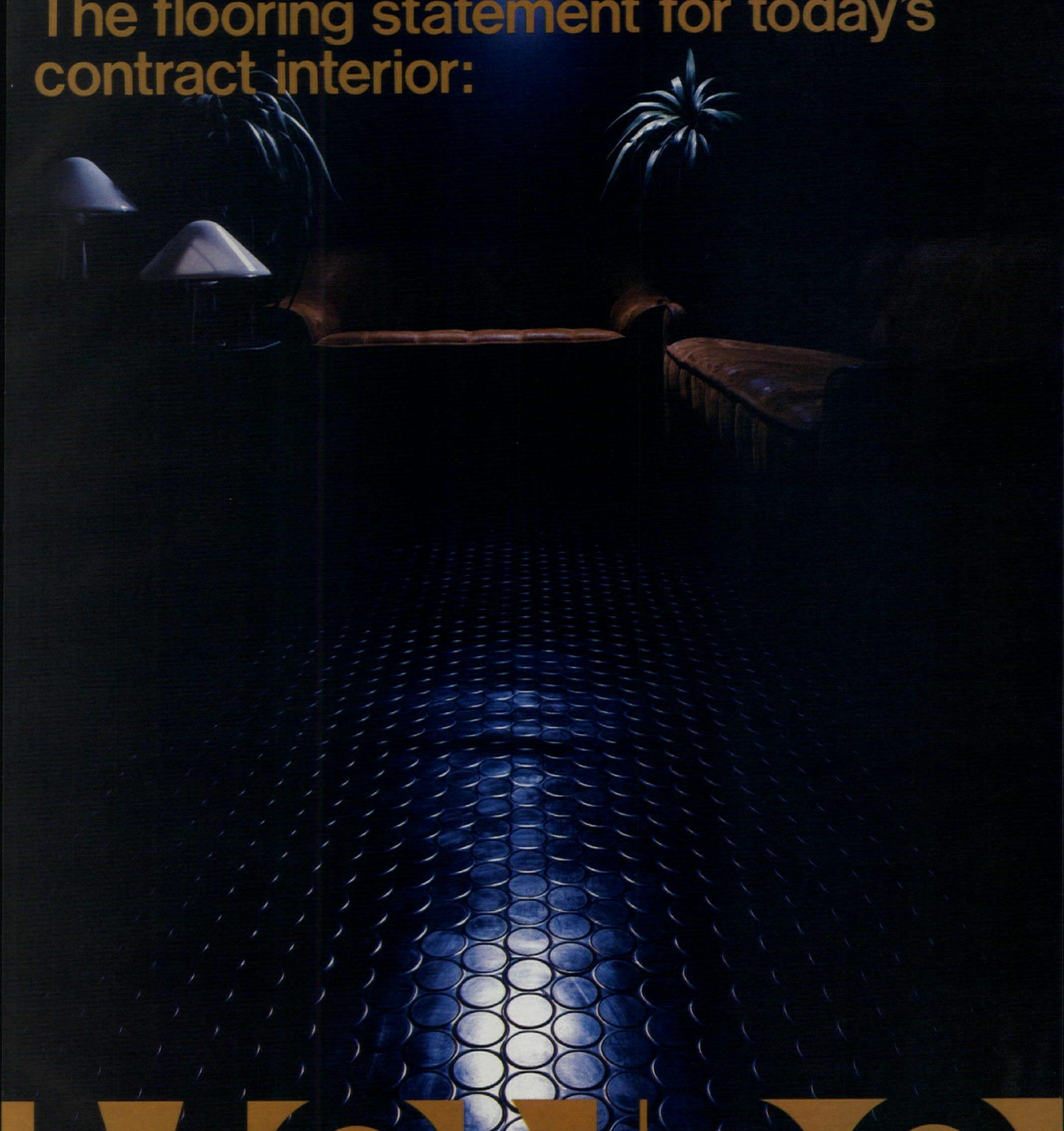
N.Y.C. designation: A chance to think

"Property owners from E. 59th through 79th Streets, from 5th Avenue to Lexington Avenue—your rights are being destroyed. Do you realize that after September 24th, when the Board of Estimates votes on landmarking the Upper East Side Historic District you will no longer be able to change your storefronts, demolish your building or put up a highrise unless you have the permission of the Municipal Art Society and the Landmarks Preservation Commission? . . ."

In years past, such a rallying cry might have stirred any number of people to resist the Landmarks Preservation Commission's intervention. But on the June night when the Borough President of Manhattan held a public meeting to find out how the community felt about the Upper East Side Historic District designation, the speaker was booed. The Board of Estimates voted unanimously to ratify the designation, and with that, secured the city's 41st historic district—its fourth largest, and its most Beaux Arts in character. This occurred 15 years after such a move was first suggested at public hearings, and light years after the Landmarks Preservation Commission first got down to business in New York.

The first designated historic district in New York was Brooklyn Heights, a concentration of irresistible and beautiful urbanity, and to this day one of the largest residential districts in the City. When the Landmarks Law was passed, it

[*News report continued on page 46*]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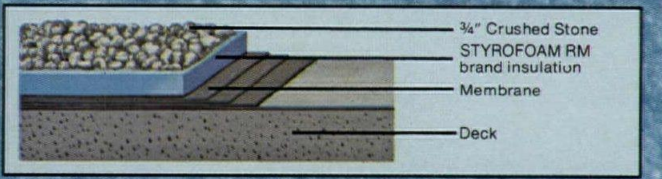

in the cavity walls, the traditional location for STYROFOAM brand insulation's unexcelled, lasting performance; and finally, a two-inch thickness was extended below grade, between the foundation and backfill, down to the frostline. It adds up to a package that'll be delivering big energy savings for the Postal Service for a long time.

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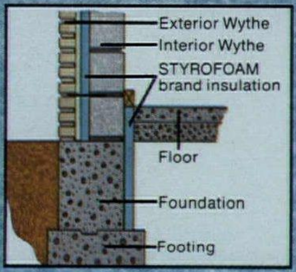

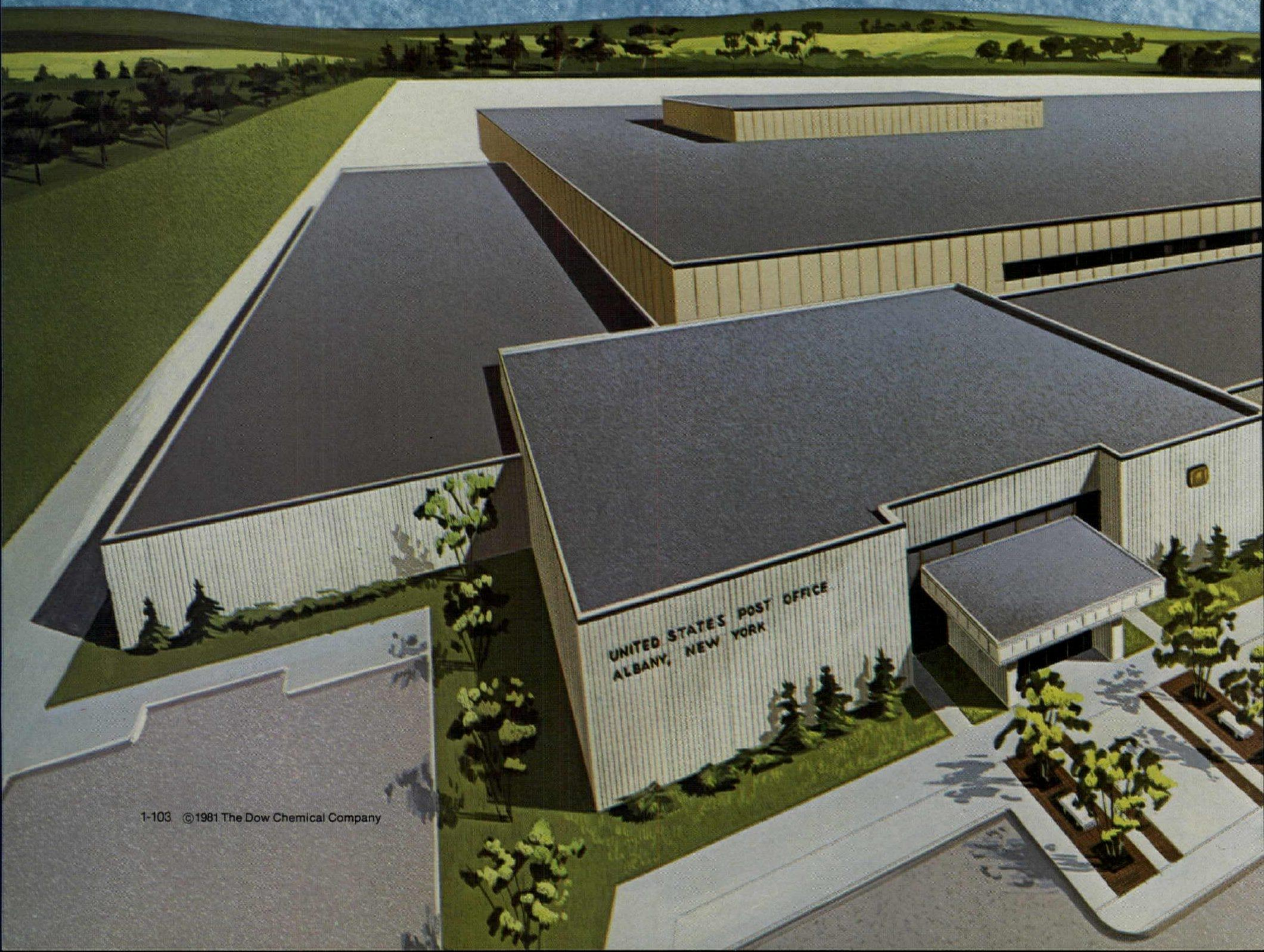


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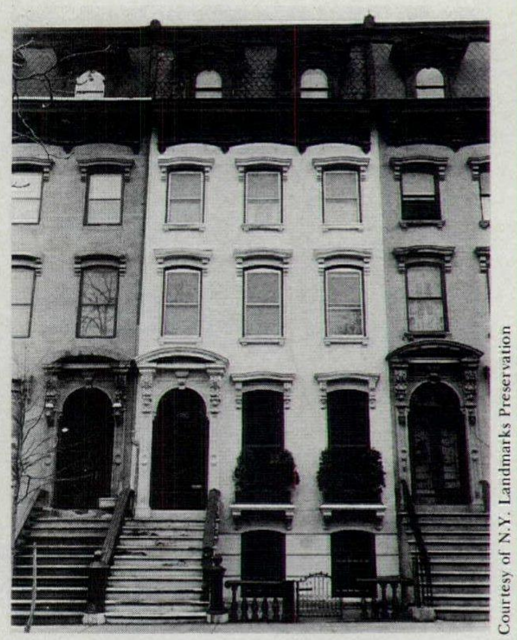

In Fort Greene Historic District, Bkln.

was thought that such designations would be rare. New York's individual architectural gems—the Brooklyn Bridge, Grand Central Station, and the Merchant's House, for instance—took up most of the first Commission's energy in the late 1960s.

But by 1968, the Greenwich Village Historic District, the largest to this day, had been designated. Distinguished historically and architecturally, but maddeningly mapped, it has areas of pristine Greek Revival, as well as motley commercial avenues.

The several-year debate over this designation marked the turning point for Historic Districts in New York City. When it became clear that, contrary to prevalent skepticism, designation had little to do with the normal traffic of buying and selling and adapting to modern life, but instead, in the words of one citizen, "provided a mechanism for making better decisions," communities of all types began to clamor for designation.

With the designation of the Upper East Side, the Commission has come of age in its ability to do political needlepoint. Besides settling on the boundaries and explaining the effects of designation, the Commission also made refinements in the ways in which it applies its jurisdiction, so that property owners—especially those who operate the small chic shops along Madison Avenue—could know what to expect in terms of permission and restriction to change. Building-by-building guidelines were actually drawn up for this area, so that storefronts of key importance could be flagged and those able to withstand change within certain constraints could be identified.

As significant is the streamlining of procedures: a great many alterations can now take place with a simple permit from a Commission staff member and need not go through the public hearing [*News report continued on page 51*]

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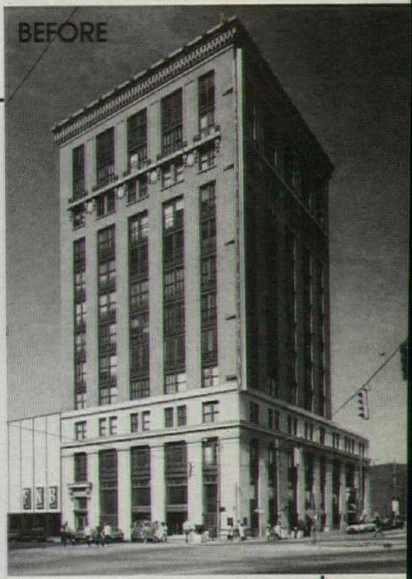

ARCHITECT: Pearson, Tittle, Narrows & Assoc.

What do you do with a valuable piece of 70-year old real estate that's out of step with its contemporary neighbors? The architects charged with the retrofit of the First Alabama Bank in downtown Montgomery, faced a variety of problems.

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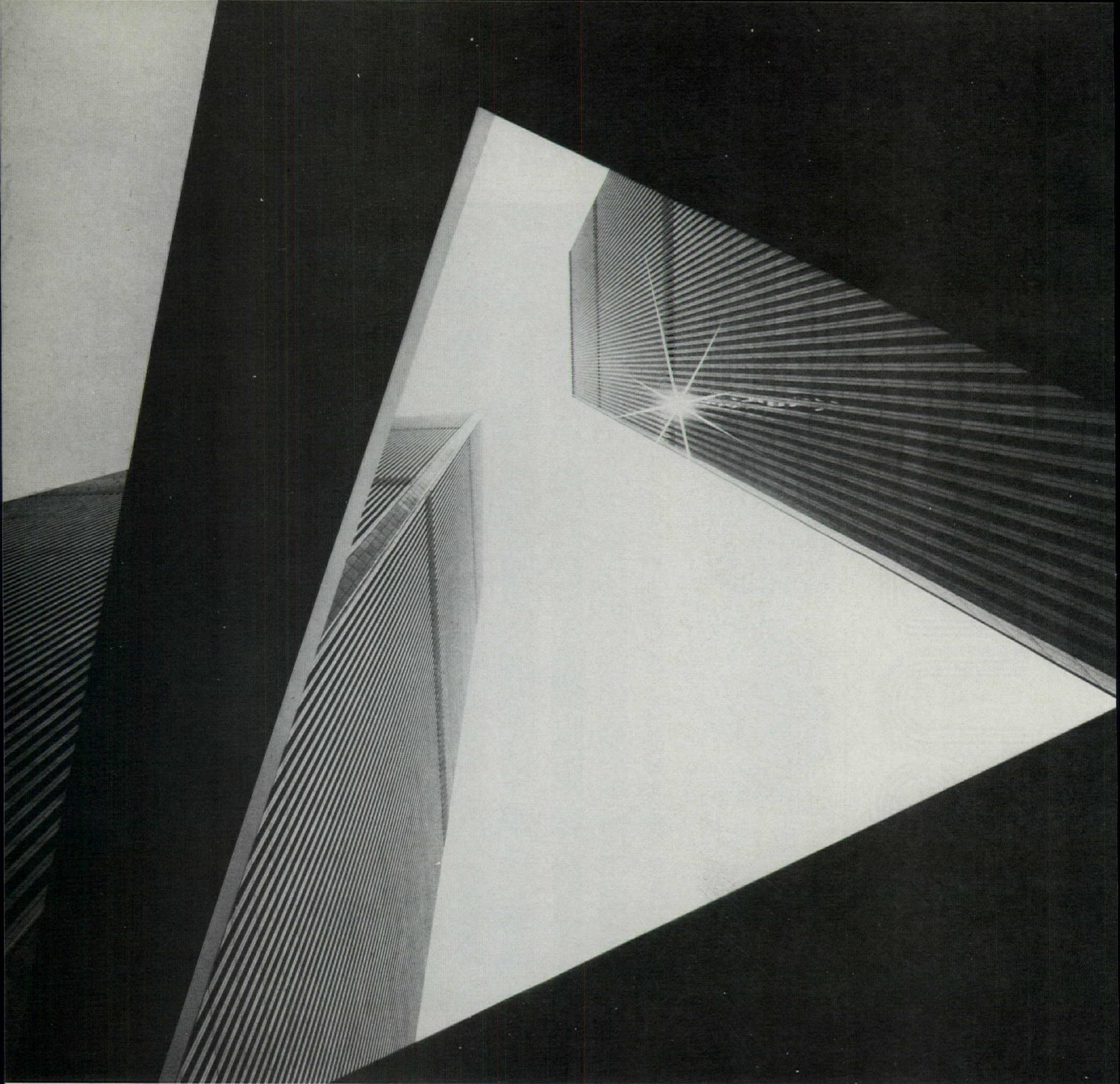

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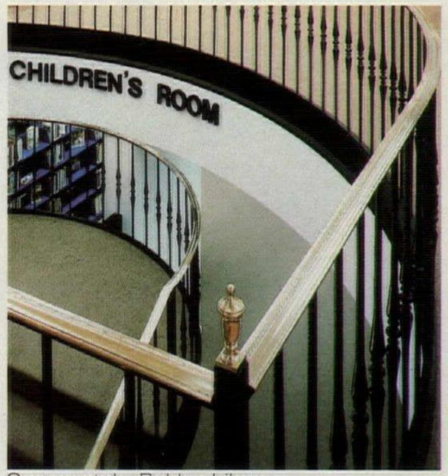

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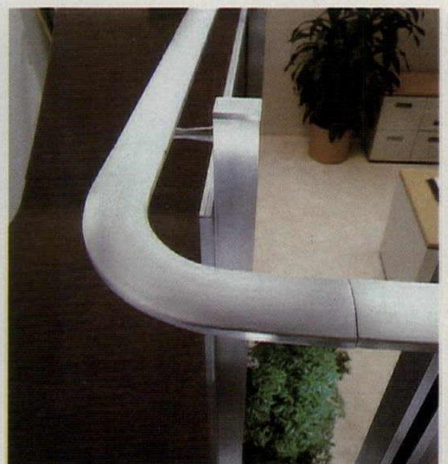
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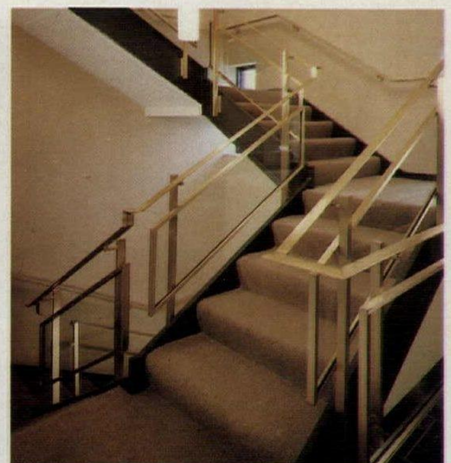
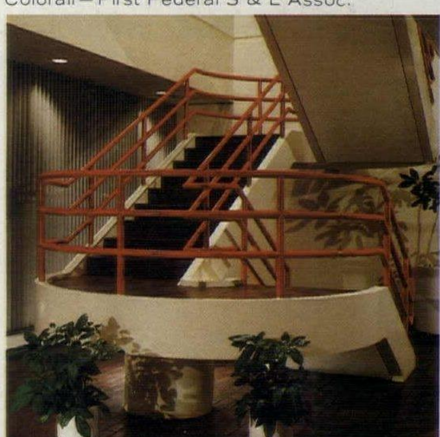

Carlstadt—Umbach & Vowells Building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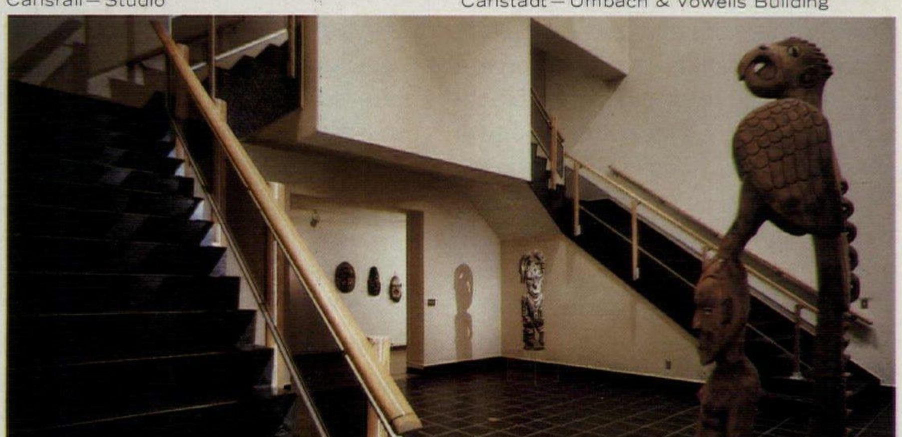
Acrylic/Wood—Birmingham Museum of Art

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News report continued from page 46

process that is normally required for major changes.

The most valuable aspect of the Commission's work remains firm: the issuing of Certificates of Appropriateness provides, for all concerned, a chance to think before change occurs.

The public can be informed and can express itself; the applicant can think through the proposal, perhaps to improve it; and the designer and developer, as well as the community residents, are encouraged to visualize the new element in the existing context. Most interesting of all, the very fact of designation often influences the designer to think about a change as a scrupulous addition rather than as an as-of-right development. Even in concept, the two are worlds apart.

Meanwhile, the 1981 Ditmas Park historic district designation signaled a development of another sort. Far from being a group that required gentle persuasion, the Ditmas Park residents practically threatened a lawsuit to get the Commission's attention. A volunteer program was devised, allowing the designation to be "fast tracked." Every activity that was not the legal responsibility of the Commission, such as legal notification of the owners, was delegated to the community team. The Commission voted the designation, and the staff supervised all the work, but years of research work were saved.

Historic District designation is not an answer to the people who want to save neighborhoods without landmark distinction: the Commission must be careful to demonstrate how each of its districts meets its exacting criteria.

What really concerns people is not the niceties of replacing dentils and cornices, but change, unexpected, uncontrollable, alienating change. They know that although the Landmarks Preservation Commission will not be able to prevent it, it may be able to deliver it to them in digestible bites.
[Adele Chatfield-Taylor]

Adele Chatfield-Taylor is Executive Director of the New York City Landmarks Preservation Commission. She teaches in the Preservation Program at Columbia University and writes frequently about preservation.

Candleworks converted

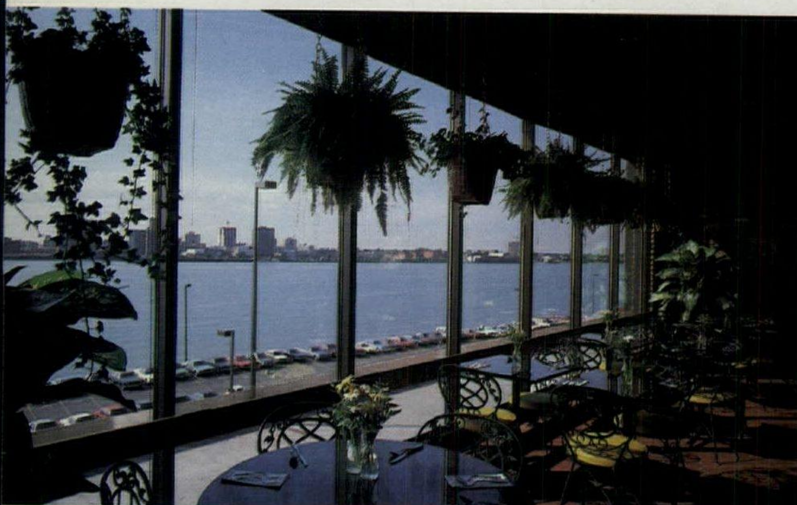
The Rodman Candleworks, built in 1810, is a fine example of New Bedford, Massachusetts', Federal architecture, and an important component of the Waterfront Historic District. It has recently been converted by Cambridge architects Gelardin/Bruner/Cott to hold a bank, restaurant, and legal offices, preserving the integrity of the building's exterior.

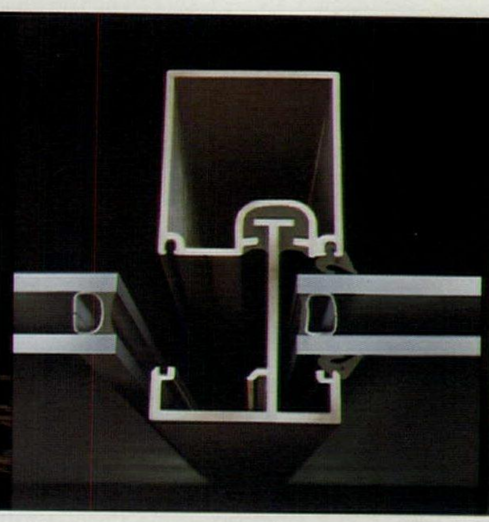
First, a mild chemical wash was applied to remove accumulated dirt and stains. Then, the color, texture, and composition of the original stucco was [*News report continued on page 55*]

KAWNEER.

Energy costs. Life Safety Codes. Better security. Visual appeal. Building costs. Locations. These are just a few of the reasons why there's a remodeling boom happening in America these days. Remodeling in the 80's means more than just a pretty face. Building revisions need to work their way down to the bottom line. Fast.

Since 1906 Kawneer has been helping buildings extend their useful and profitable lives. That's why, today, Kawneer is well prepared to provide your remodeling project with building tools that can help you comply with revised codes, provide better security, improved energy efficiency, and create a handsome, new exterior image. Here's how we can help:





Energy Savings

Long before energy costs were a factor, Kawneer pioneered thermal breaks for aluminum framing members. Energy loss was reduced, convection drafts were diminished, and unsightly condensation damage was virtually eliminated.

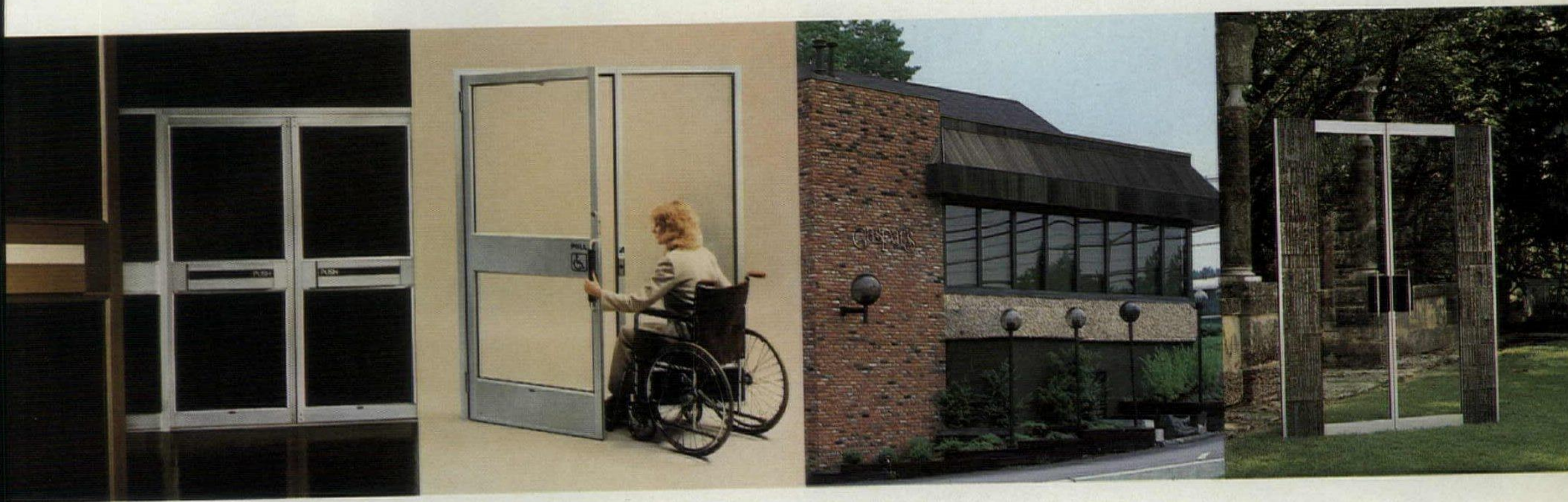
Recent thermal products from Kawneer include a second generation design thermal break, a retrofit insulating window which saves the expense and inconvenience of total window replacement and a revolutionary new entrance weather stripping system. Kawneer's new aluminum Thermal Entrance System complete with functional hardware, utilizes a thermally-clad door with insulating glass and is hung in a thermal frame assembly to help shut out energy losses.

Kawneer can also provide your building with a wide range of framing systems, windows and entrances, every one designed to help you keep your energy to yourself.

Life Safety Codes, Security and Accessibility

Many of yesterday's buildings are actually out of compliance with today's Life Safety and Uniform Building Codes, not to mention societal needs. For these reasons, Kawneer has developed systems such as Panic Guard® Entrances, which help prevent illegal entry through paired panic entrances, and Paneline™, handsome, concealed rod

THE ONE NAME TO REMEMBER FOR ALL THE REASONS YOU REMODEL.



exit devices that don't get in the way of people. For accessibility for handicapped persons, Kawneer Series 800 Barrier-Free Manual Entrances comply with varying state and local codes and also meet the demands of normal traffic flow.

Another innovation is the Controller™ safety flush bolt system in which paired entrances can have the safety required by building codes without sacrificing the security afforded by the traditional 3-point locking system.

Good Looks

Kawneer offers a range of products known exclusively for their ability to transform dull, unexciting facades into bright, contemporary visions. Some of these are: Shadowform, a uniquely-designed facing system with nature as its theme; and I-line Entrances, a collection of designer entrances which utilize narrow aluminum sightlines to create a sleek appearance.

Increased business. More store traffic. Improved property values. Remodeling has always paid good dividends, but today, it's much more than skin-deep. That's why it's important to know who can provide you with products that can satisfy all the reasons you need to remodel. Kawneer.

For more information, write Kawneer Company, Dept. C, 1105 N. Front Street, Niles, MI 49120

Kawneer
The designer's element

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Stark Structural Facing Tile

Summit Junior High School, Ashland, KY / Architects: James E. Moore & Associates / General Contractor: W. B. Fossons & Sons

The face that won't show its age

When you specify Stark Structural Glazed Facing Tile, you design for the future. Because even after 25 years of use - and abuse - walls like these at the Summit Junior High School will still look like new.

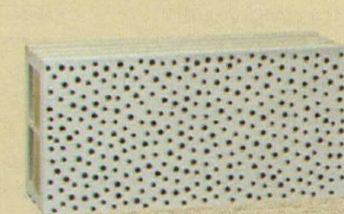
With SGFT, the ceramic glazed face is baked on the clay body. It's not painted on. And it's not plastic. So the face won't peel, crack, fade or discolor with age. That's why it's ideal for applications like schools, food processing, water and power plants, and hospitals.

Because it *never* needs painting, SGFT reduces maintenance significantly over the life of the building. And it resists stains, marks and chemicals better than any other wall material.

Impervious, fire resistant, thermal efficient

During manufacture, Stark SGFT is kiln-fired at over 2000° F. So it won't burn, spread flames or emit toxic fumes.

SGFT is available in a wide range of colors. For lower price and quick delivery, select a Stark Quick Start Color and specify standard stretchers from floor to ceiling. Eliminate all unnecessary shapes and fittings.



In areas such as gymnasiums and swimming pools where noise control is important, choose Stark acoustical tile. Face perforations with fiberglass pads let the wall, rather than the ceiling, absorb the sound.

For new literature, write: Stark Ceramics, Inc., P.O. Box 8880, Canton, OH 44711. Or call toll free: 1-800-321-0662. In Ohio, call collect: 216-488-1211.

stark

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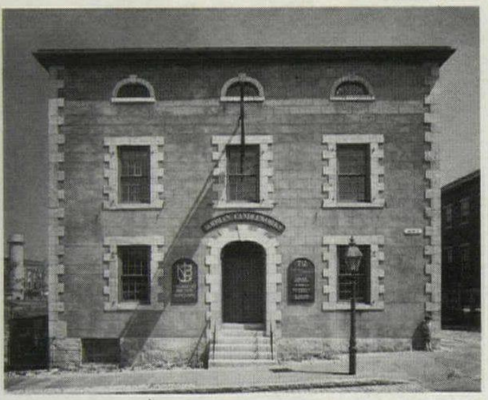
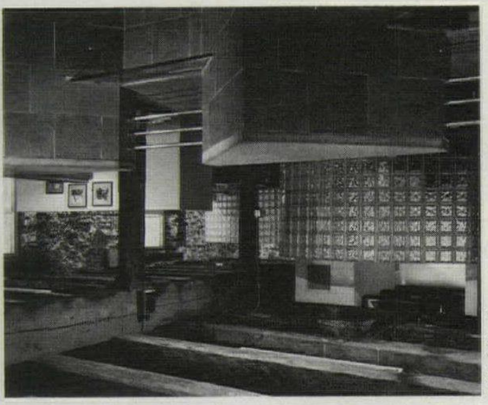




Nick Wheeler

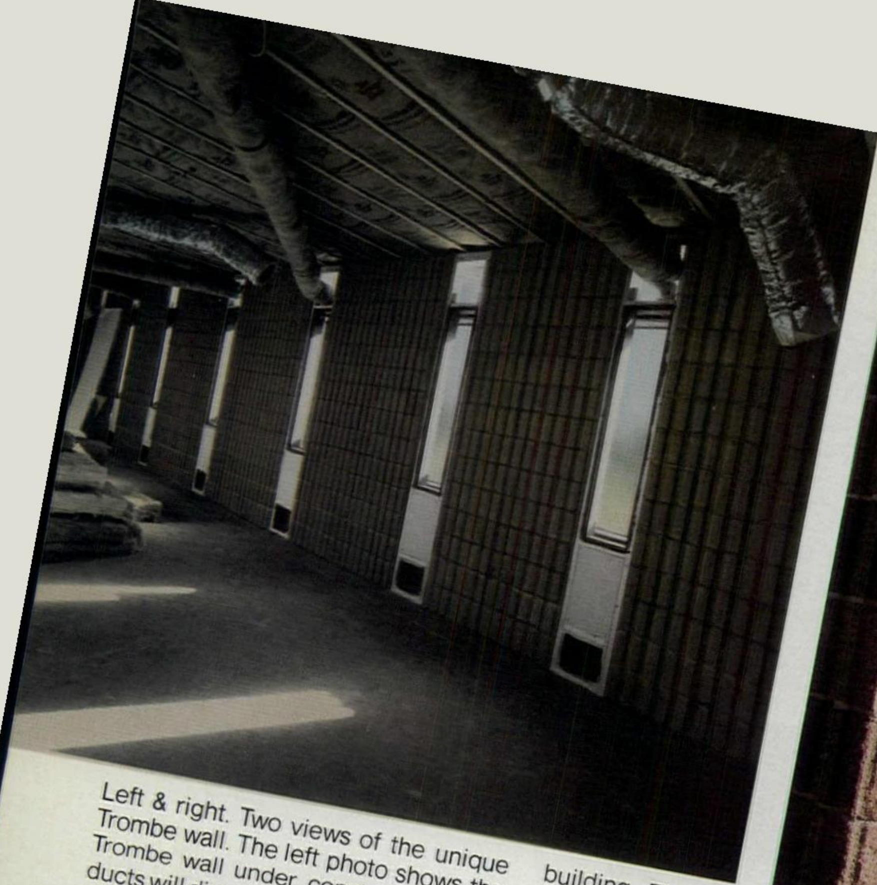
Rodman Candleworks restored façade (top) and new bank interior.

matched, the granite was repointed with a compatible mortar, and on the south and west façades, lines were etched to imitate granite blocks, as in the original design. New 12′ x 12′ wooden frame windows were installed and new exterior doors custom-milled in the period style. A new roof was applied, incorporating two inches of insulation, with copper flashing and wooden gutters.

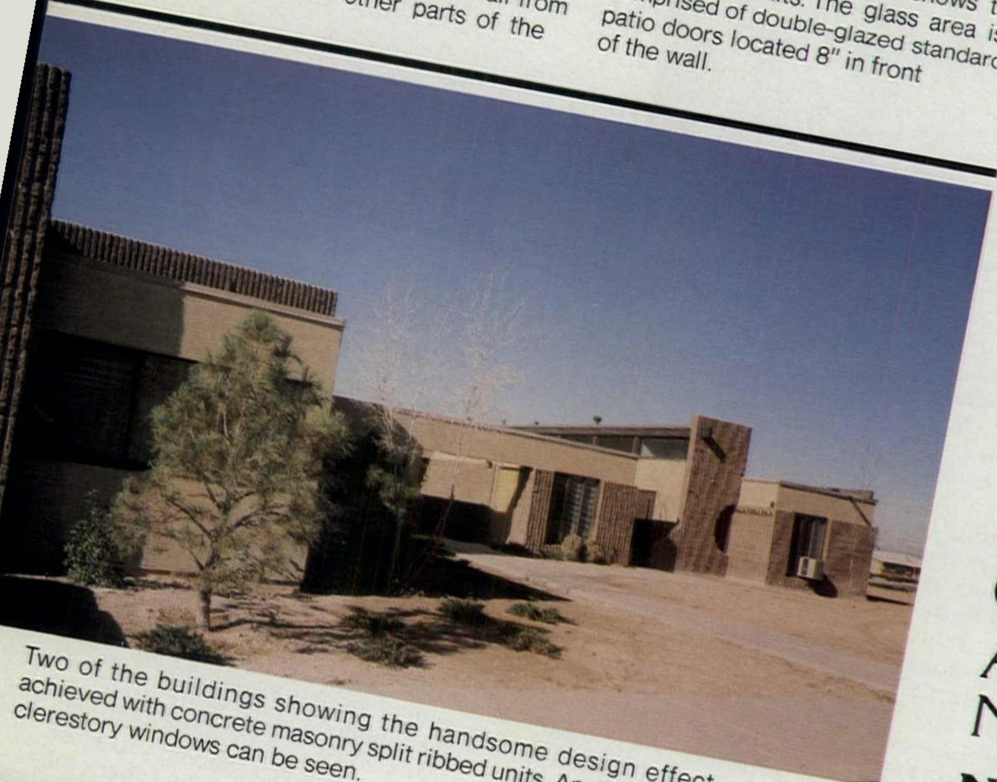
The interior of the three-story 15,000-sq-ft building had little of historic value remaining, and it has been renovated to "modern commercial standards"—right down to the curved glass block wall partitions, brassed pipe railing, and rather bulky slate bank counters within the shell of sandblasted rubble walls and exposed hewn wood structure. Detailing is relatively careful, and while the metaphors are mixed, the result is warm.

Drill hall toned up

Dahlgren Hall, a drill hall located on the United States Naval Academy campus in Bethesda, Md, was designed by Ernest Flagg in 1898 and completed in 1908. The 100′ x 300′ building, spanned railway-station-style by metal truss arches and fronted by a heavily rusticated stone façade, has now been discreetly renovated by Ellerbe Associates of Bloomington, Mn, to accommodate a student center, sports center (including an ice rink with difficult environmental control needs), and meeting, reception, and cafeteria rooms. Cleaning, repairs, [*News report continued on page 58*]



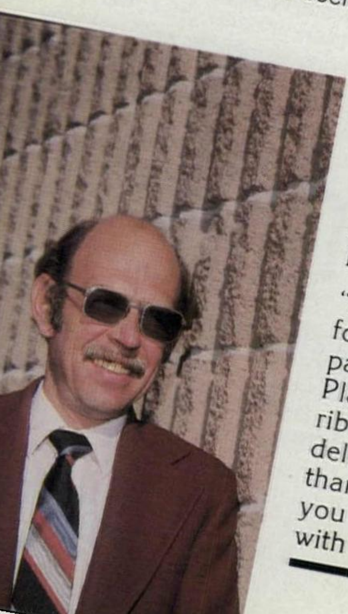
Left & right. Two views of the unique Trombe wall. The left photo shows the Trombe wall under construction. The ducts will distribute the heated air from the wall area to other parts of the building. The right photo shows the split ribbed units. The glass area is comprised of double-glazed standard patio doors located 8" in front of the wall.



Two of the buildings showing the handsome design effect achieved with concrete masonry split ribbed units. Another of the clerestory windows can be seen.

Concrete masonry passive solar architecture expected to save 50% in energy costs at Comanche Place, Albuquerque, New Mexico

New building complex features unique Trombe wall.

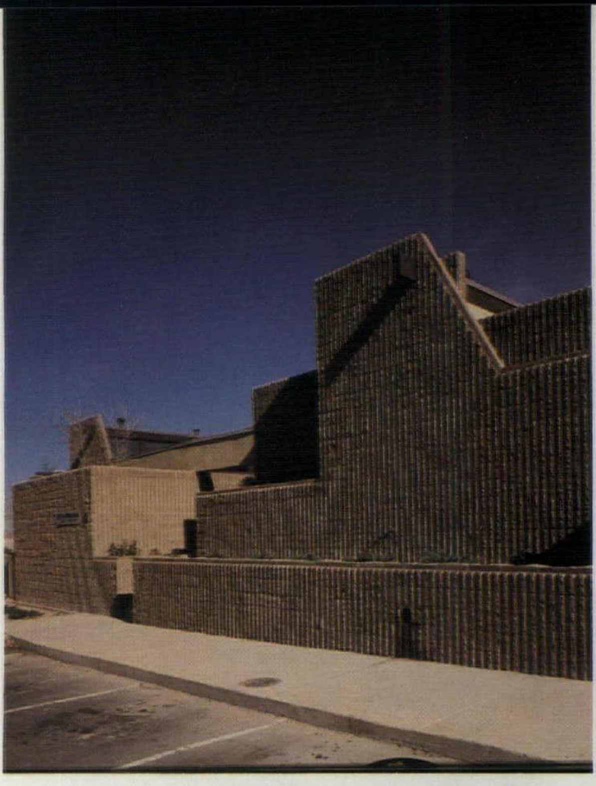


"Excellent heat storage, aesthetics and structural properties in one building material."

Donald A. Krueger, Architect

"I am most pleased with the performance of concrete masonry as a passive solar system at Comanche Place. The craggy surface of the split ribbed units, in our experience, delivers more heat storage capacity than other surfaces. And with block, you have the advantage of working with a proven, available material."

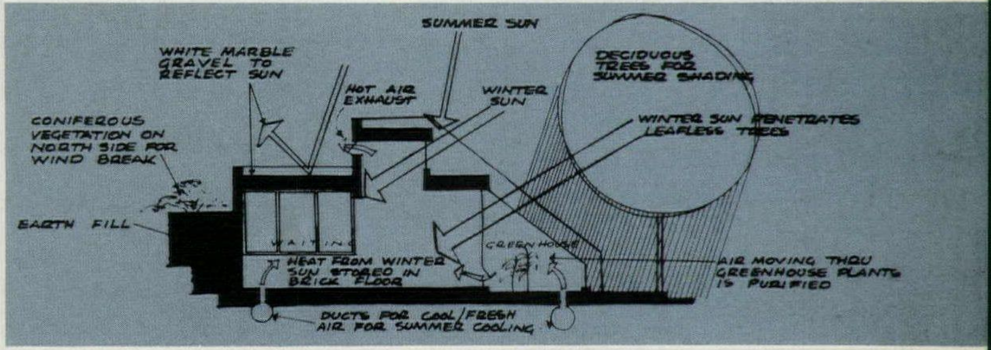
The mile high altitude of Albuquerque produces a Winter climate of comfortable sunny days and crisp, cold nights—and occasionally, mid-western style blizzards. A good test for passive solar concrete masonry architecture.



Another view of two of the completed buildings. One of the clerestory windows, which provides sunlight in Winter, can be seen at the top of the picture.

Above & below. The "greenhouse" provides an additional heat sink which employs the floor and concrete masonry walls for heat storage. The diagram below shows the orientation of the building to low Winter and high Summer sun.

The interior of the "greenhouse" entrance showing the concrete masonry walls and the clerestory window above, which allows Winter sunlight to heat the masonry walls.



totalling over 30,000 sq. ft. Four buildings are complete; another is under construction.

All are loadbearing passive solar concrete masonry structures.

Architect Donald Krueger reports substantial energy savings in the four completed buildings. One of the completed buildings features a unique Trombe wall. Energy savings in this building are expected to be on the order of 50%. This building is the subject of a research study to establish exact energy savings.

At Comanche Place, concrete masonry is the principal component in the passive solar energy system, the principal structural material and provides the aesthetics, economy, fire safety and sound control, as well.

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Please send me, without obligation, further information on concrete masonry passive solar architecture.

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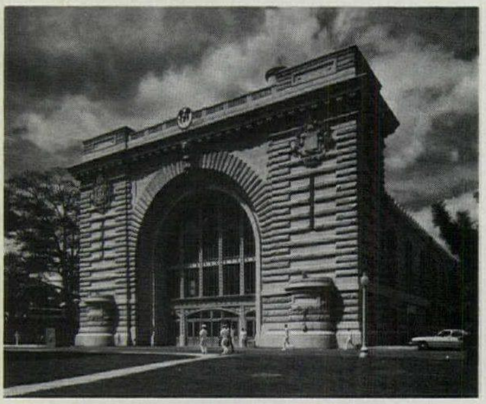
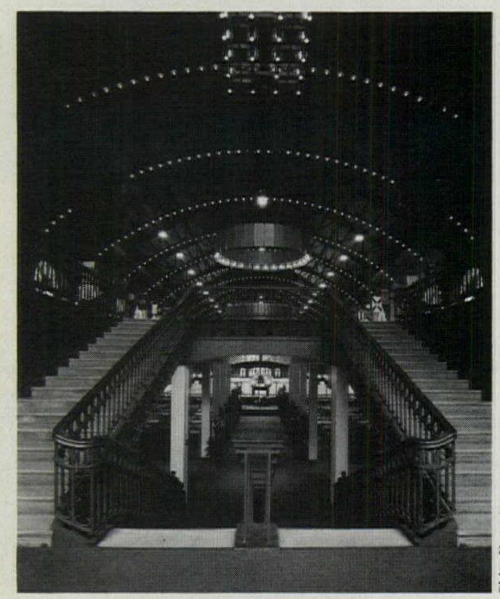
News report continued from page 55





Shin Koyama

Dahlgren Hall's restored façade (top) and staircase.

and color and lighting modifications constituted the major interventions on the original building. Only the lighting fixtures and window valances stand out as somewhat foreign elements in an otherwise consistently detailed space.

St. Louis assets

Long-idle St. Louis structures that had seemed too big, too specialized, and too expensive for adaptation to new uses are being redeemed as prime civic assets. They include a railroad station, a post office, a movie palace, office buildings, even a Mississippi River excursion boat, and hundreds of blocks of residences. Apartment buildings, flats, and houses in neighborhoods that have kept their physical identity through years of neglect are offering—even when rundown—challenging alternatives to suburbia.

The turnabout comes from seeing the handwriting on the bottom line: in enough instances to be persuasive, reusing old structures costs less than new construction and works as well or better; the locations are as good as they always were, although perhaps for different reasons; the venerable landmarks already have community identity; there is often an energy advantage; and the city is regaining its old excitement.

Points like these have helped to unleash entrepreneurial imagination and ingenuity. Powell Symphony Hall, a 1928 Rapp & Rapp movie house renovated and converted for $2.5 million—as opposed to $15 million or more for a new building—set an example in 1968. Its old midtown theater row, a couple of miles west of downtown, is now in stride as a coming cultural district, with master planning by Skidmore, Owings & Merrill.

Across Grand Avenue from Powell Hall is the Beaux-Arts Building, purchased and named last January by Eugene Golden, Los Angeles attorney and arts patron. This Art Deco fraternal hall with attached garage, used as a carburetor factory in World War II, will house concerts and other services complementary to the Symphony programs. Nearby is the old Lyn vaudeville/burlesque house, to be refurbished by the Theatre Project Company for offices, theater classes, and performances. This area also includes the Sheldon Memorial, originally an Ethical Society meeting house and now owned by a black congregation, back in service for chamber music—the best acoustics in town. The vacated Beaumont Medical Building is soon to be remodeled for 120 apartment units.

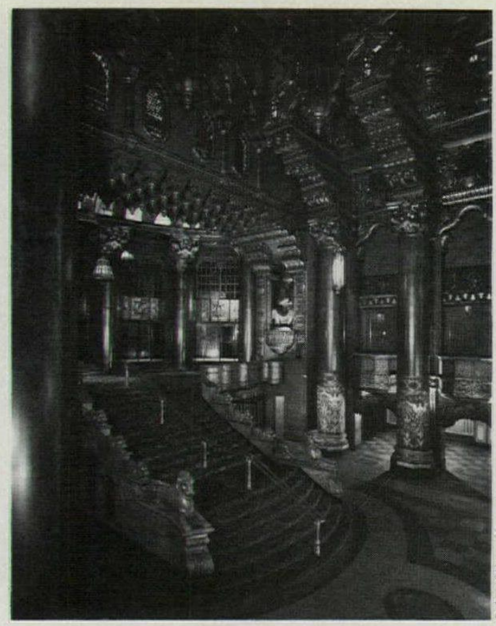
And the Fox Theatre (C. Howard Crane, 1929), closed since 1978, has been purchased by Leon Strauss, the city's preeminent transformer of old neighborhoods and written-off properties, for musical theater, major dance productions, grand opera, and civic occasions. This splendid house had been immaculately maintained.

The issues of new use versus replacement were most prominently defined in the Old Post Office (A.B. Mullett, 1874), in the downtown core. Following years of controversy, it is being remodeled by GSA for federal offices on upper floors, and an interior commercial mall on the first floor and two basement levels. It is scheduled for 1982 completion by Patty, Berkebile, Nelson and Harry Weese.

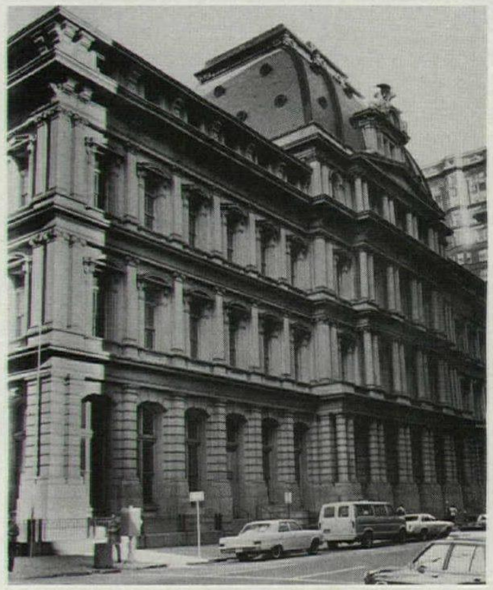
Nobody has wanted to tear down Union Station, with its two-block Romanesque headhouse by Theodore C. Link (1894) and the country's biggest trainshed, but several developers failed to assemble the financing for converting it to an entertainment and shopping complex with a hotel. Now it is underway as a projected $70 million improvement by the Rouse Co. as developer.

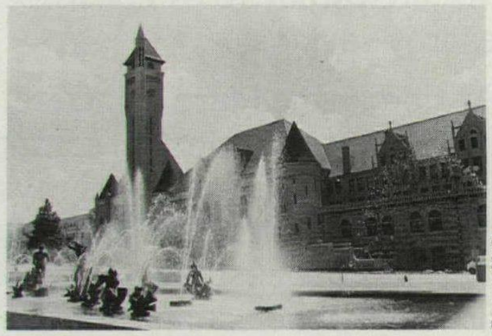
The city actually lost its 375-ft excursion boat, the Admiral (1940), designed by Mazie Krebs in streamlined stainless steel Art Deco. It was purchased for repair and renovation by a Pittsburgh entrepreneur, but is about to be repurchased by a group of 25 St. Louisans, who are looking for a developer with ideas for conversion to riverfront attractions, possibly including floating office space. It is to be permanently moored. [George McCue]

[*News report continued on page 62*]



John Wm. Nagel





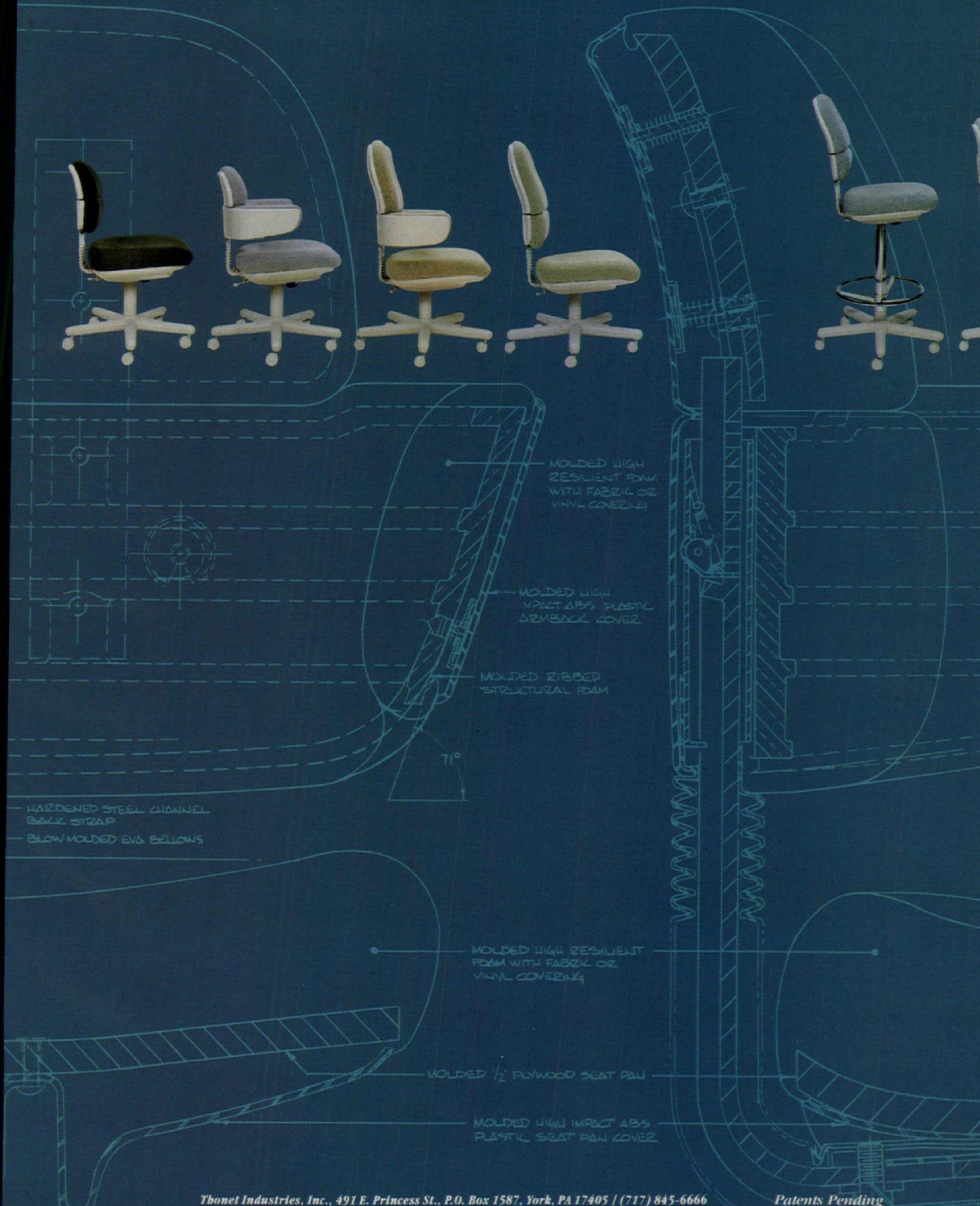
George McCue

Top to bottom: Fox Theatre lobby; the Old Post Office; the Admiral, with Eads Bridge behind; Union Station.

A Coordinated System of Communication Task Seating

CRT™

A look to the future prompted Robert Aronowitz and Bernard Katzanek of Robert Bernard Associates to design the CRT™ System for Thonet. Task swivel seating oriented toward the data processing employee combines dedicated design with refreshingly simple functions. The unique arm version of this group acts as a back that provides support on three sides but does not restrict the movement of the sitter. The elimination of exposed metal makes the chairs completely safe to use near computer equipment while the comprehensive selection provided by this group fits each worker's needs – from programmer to keypuncher.



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Patents Pending

News report continued from page 58

Calendar

Exhibits

Through Nov. 13. Buildings in Progress II: Midtown Office Towers. The Urban Center, 457 Madison Ave., New York.

Through Nov. 13. The Zoning Game. The Urban Center, 457 Madison Ave., New York.

Through Nov. 15. Drawings by Gianlorenzo Bernini from the Museum der Bildenden Kunste, Leipzig. Princeton University Art Museum, Princeton, NJ.

Through Nov. 19. Architecture, Design and Engineering at the University of Cincinnati. Drawings, sketches, and scale models by faculty/students from the College of Design, Architecture and Art and the College of Engineering at the University of Cincinnati. Gallery at the Old Post Office, Dayton, Oh.

Through Nov. 20. Carey Wong's "Creating Within the 'Black Box,'" architectural stage designs for opera. Downtown Gallery of the Portland, Or, AIA.

Through Nov. 22. Marcel Breuer: Furniture and Interiors. Baltimore Museum of Art.

Through Nov. 28. Archi-facts. Spaced Gallery of Architecture, 165 W. 72, New York.

Through Nov. 29. Innovative Furniture in America. The Lowe Art Museum, Coral Gables, Fl.

Through Nov. 30. Justus Dahinden, Architect. University of Texas, San Antonio.

Through Dec. 6. P.B. Wright: Architect, Contractor, and Critic, 1838–1925. The National Academy of Design, 1083 Fifth Ave., New York, NY.

Through Dec. 12. "New Chicago Architecture." Gran Guardia Vecchio, Verona, Italy.

Through Dec. 18. The Best Laid Plans: New York's Altered Buildings. Surrogate's Court, Main Lobby, 31 Chambers St., New York.

Through Dec. 28. Jack Lenor Larson: 30 Year of Creative Textiles. Musée des Arts Decoratifs, Pavillon de Marsan, Palais du Louvre, Paris.

Through Jan. 3. The work of French photographer, Eugene Atget. Museum of Modern Art, New York.

Through Feb. 21. Manhattan Photos. Museum of the City of New York, Fifth Avenue at 103rd St.

Nov. 10–Jan. 24. "Suburbs" from early suburban prototypes to speculative plans for suburbs of the future. Guest curator: Robert A.M. Stern. Cooper-Hewitt Museum, 2 E. 91 St., New York.

Nov. 13–Dec. 13. Landscape, Art and Architecture. Robert Cohanim Studio, 563 Laureal Ave., St. Paul, Mn.

Nov. 14–Dec. 13. Transformed Houses. The Peale Museum, Baltimore.

Nov. 14–Jan. 9. Monumental Sculpture by Architects and Artists (including work by Vito Acconci, Scott Burton, Graves, Rossi). The new Max Protetch Open Storage Gallery, 214 Lafayette St., New York.

Nov. 15–19. International exhibition of Design for Interiors (INSCAPE '81). Barbican Centre for Arts and Conferences, London.

Nov. 15–Dec. 31. The drawings of Andrea Palladio. San Antonio Museum of Art.

Nov. 17 on. Work by Sir Edwin Landseer Lutyens. Hayward Gallery, London.

Nov. 20–Jan. 17, 1982. The Domestic Scene (1897–1927): George M. Niedeken, Interior Architect. Milwaukee Art Museum.

Nov. 24–Dec. 17. The Work of Mario Botta. Gallery at the Old Post Office, Dayton, Oh.

Nov. 29–Dec. 5. Interbuild Trade Show. National Exhibition Centre, Birmingham, England.

Nov. 30–Dec. 18. Architecture as Synthesis, Helmut Jahn. Gund Hall, 48 Quincy St., Cambridge, Ma.

Dec. 1–18. Beach, Boulevard and Boardwalk: The Built Environment of Atlantic City, New Jersey. College of Architecture and Planning, Ball State University, Muncie, In.

Dec. 8–Feb. 14. Renaissance Ornament in Prints and Drawings. Metropolitan Museum of Art, New York.

Dec. 9–Jan. 30. The Making of an Architect, 1881–1981: Columbia University in the City of New York. National Academy of Design, Fifth Ave. at 98 St., New York.

Competitions

Dec. 1. Entry deadline, Plywood Design Awards. Contact American Plywood Association, P.O. Box 11700, Tacoma, Wa 98411.

Jan 26, 1982. Deadline for mailing entries, The Second Annual International Conceptual Furniture Competition. Contact International Conceptual Furniture Competition, Progressive Architecture, 600 Summer St., P.O. Box 1361, Stamford, Ct 06904.

[*News report continued on page 66*]

Laminated architectural glass. How it spruced up this old library is a case for the books.

The restoration of Chicago's 1880's-vintage library has earned the architectural firm of Holabird & Root a coveted 1979 AIA Design Honor Award for the extended use of a building.

The design challenge was to revitalize the structure to meet modern functional standards while preserving its historic appearance. For this project, the glazing specified was laminated architectural glass, reinforced with a Saflex® interlayer of polyvinyl butyral by Monsanto. It was selected for many convincing reasons.

Safety is enhanced because tough, resilient Saflex absorbs and dissipates an impact. The strong adhesion of the interlayer to glass prevents injuries from flying or falling fragments.

Laminated architectural glass with tinted Saflex was used to reduce glare and to control solar heat gain. And it was easily fabricated into special insulated units to provide temperature and humidity control for an area containing valuable rare books.

It was important that the glazing chosen could be cut to fit on site or in the shop because the librarys antique iron window frames were irregular in size and shape. Laminated architectural glass is easily cut to size with simple tools, impractical or impossible with other glazings.

An added benefit is sound attenuation. Laminated glass reduced the din of traffic from nearby Michigan Avenue. And there are no maintenance problems. Laminated glass can be cleaned as easily as ordinary glass without scratching.

If your challenge is renovating one of America's great old landmarks—or building a new one—there are a lot of convincing reasons to use laminated glass. Let us tell you about them. For more information and a list of the leading manufacturers of laminated architectural glass, featuring the Saflex interlayer, write: Monsanto Plastics and Resins Company, Dept. 804, 800 North Lindbergh Blvd., St. Louis, MO 63166.

SAFLEX

PLASTIC INTERLAYER BY Monsanto

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Can a backing really make a carpet? Yes, even break it. Ugly things can happen to beautiful carpets with less than jute. Get the facts and you'll specify jute . . . proven in countless commercial, industrial and institutional locations.
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Has natural porosity to trap and retain adhesive in hot-melt tape seaming and glue-down. Bonds mechanically, the way most adhesives are formulated.
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Helps qualified carpets pass accepted flammability, smoke density, toxicity tests (pill, Steiner, tunnel, critical radiant heat flux, etc.)
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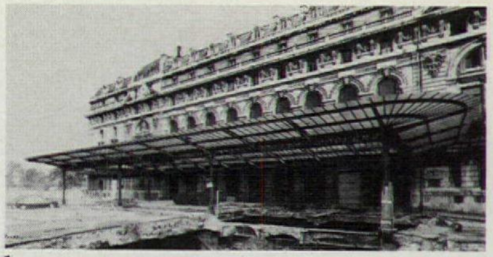
News report continued from page 62

In progress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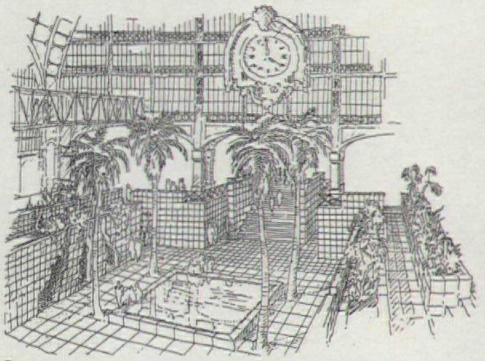
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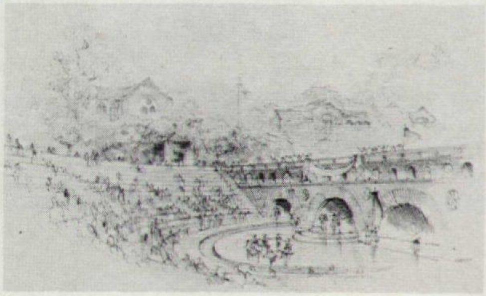
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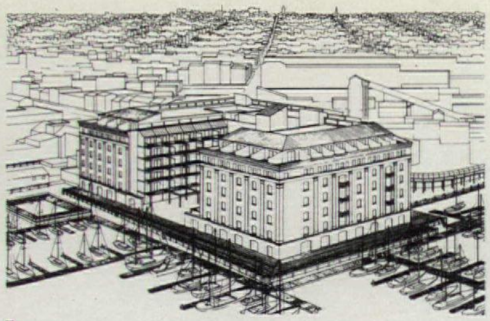
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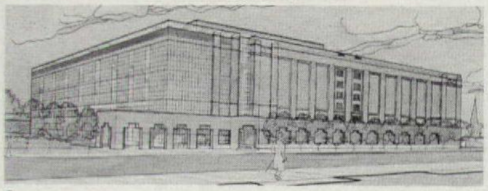
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1, 2, 3 The Musée d'Orsay, Paris, France. *Architects: A.C.T. Architecture, Bardon, Colboc, Philippon, Paris.* The great gare (railway station) and Hotel d'Orsay, built in the heart of Paris in 1900 in time for the World's Fair, is being converted into a museum of 19th-Century art and civilization. The architects, chosen from among six invited participants in a carefully programmed competition held in 1979, managed to increase the existing 100,000 sq ft by the required 50 percent by creating terraces along the sides of the Great Hall, transforming an outward-oriented space into an introverted one, and forming a central "urban promenade." While the original landmark structure is light and airy both spatially and structurally (huge metal trusses arch over the Great Hall), its architect Victor Laloux chose to mask the iron framework associated with industrial buildings with plasterwork coffers. This expression of solidity explains, perhaps, the present architects' choice of solid square stonework to enclose the terraces, but does not justify the impression conveyed by the design model of a disturbingly heavy and boxy solution.

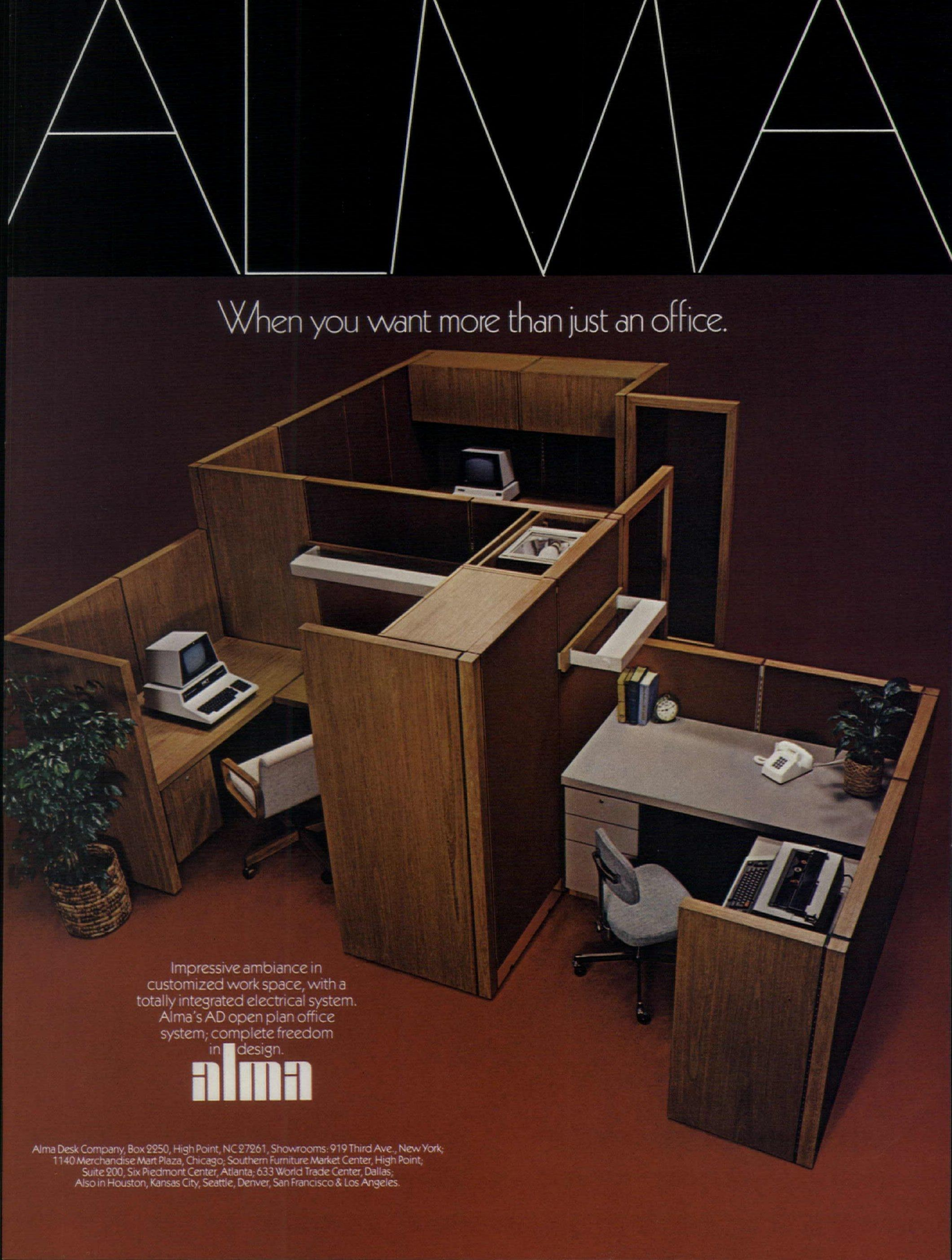
4 The Arroyo Bridge, University of California, Westwood, Los Angeles, Ca. *Architects: Thomas Bobrow Associates, Los Angeles.* The first structure built on the Westwood site of the UCLA campus was the 1927 bridge over the arroyo. Linking the campus to the city, it was designed as part of the campus plan by George Kelham in Romanesque Revival Collegiate style. Following World War II, the arroyo was earth-filled to gain usable land, and the bridge was obscured. The present proposal will unearth the structure, accommodating a Museum of Cultural History within it, an amphitheater on its south, and a restaurant on terraces on the north, with water trickling through. Revealing the old bridge will serve to strengthen the original Kelham axis and to ritually reconstruct the arroyo.

5 Henderson's Wharf Warehouse Condominiums, Baltimore, Md. *Architects: Amsler Hagenah MacLean, Architects, Boston, Ma, associated with Cochran, Stephenson & Donkervoet, Baltimore.* The Baltimore and Ohio Tobacco Warehouse, built in 1897 by railway architect E. Francis Baldwin, is located in the Fells Point Historic District, a part of the Baltimore waterfront currently experiencing a comeback. The building will be converted into 175 condominium units, built on the upper six floors (the top one of which is a new addition) around a courtyard being carved out of the blocklike building. Commercial space, including retail facilities, will occur on the first floor. There will be an adjacent parking structure, a marina, a covered promenade, and a public park. The condominiums will benefit from the building's 12-ft ceiling heights and exposed heavy timber construction.

6 The Washington Design Center, Washington, DC. *Architects: Keyes Condon Florance, Washington.* The Washington Design Center represents the first expansion of the Merchandise Mart outside of Chicago. It will be housed in a 1920s massive red brick warehouse, which occupies the western portion of a city block that will eventually be developed as an office building, in the city's Southwest Urban Renewal Area. The Design Center comprises, as well, an addition, providing, in all, 380,000 sq ft wholesale showroom space, a 75-seat restaurant, and both indoor and outdoor parking. The new glass addition contrasts in its sparkling finish with the existing structure, while referring to its pier structure by employing patterned reflective glass in a grid formed by a structural silicone curtainwall system. Old and new are wrapped at street level by a strangely punctured brick base. The mass of the old structure and the minimal use of vision glass in existing window openings make the structure energy-efficient.

7 Butler Square West, Minneapolis, Mn. *Architects: Arvid Elness Architects, Inc., Minneapolis.* The program of the second and final phase in the renovation of the 500,000-sq-ft 1906 Butler Brothers Warehouse, started in 1973 (P/A, Oct. 1975, p. 74), was similar to the first: to create a second atrium and 170,000 sq ft of Class "A" office and commercial space. This time, more heavy timber column and beam construction, some in ruin form, was left in place to give the atrium more depth and drama. And this time, close attention was paid the energy consumption of the building, and Phase I was retrofitted, producing a 70 percent reduction in the operating costs of the mechanical system.

8 The Netherland Plaza Hotel, Cincinnati, Oh. *Architects: Day & Zimmerman Associates, Philadelphia, Pa.* Built in the 1930s, the Netherland Plaza transplanted to the Midwest a touch of New York. Even today, at 30 stories, it remains the tallest building complex in Cincinnati, and incorporates a 550-room hotel, offices, and a retail plaza. The $25 million renovation aims to restore the hotel's original "architectural grandeur," and will be performed by the office responsible for the remodeling of Philadelphia's Bellevue Stratford—with even greater finesse, it is hoped.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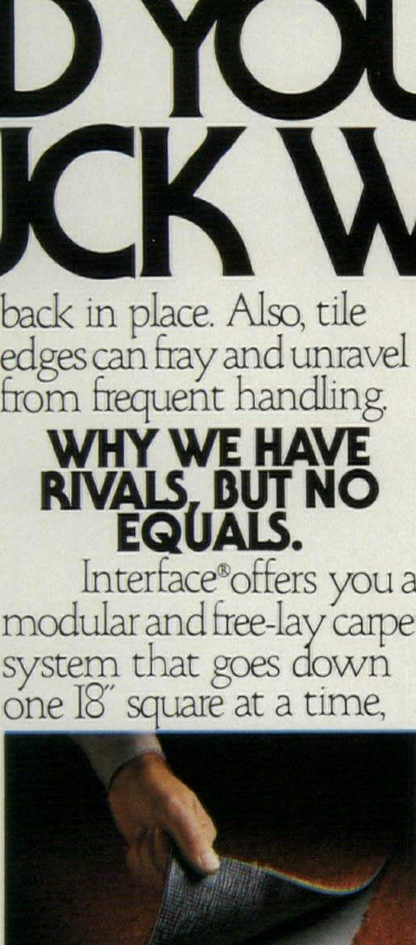

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The knowledge business

Progressive Architecture announces the second annual competition recognizing outstanding furniture and lighting design proposals, not yet being marketed by any manufacturer as of entry deadline, January 26, 1982. The competition is intended to give the design professions a forum to express ideas about the next generation of furniture design. Designers are encouraged to consider the aesthetic and ideological implications for furniture design implied by the current concerns within architecture and other design disciplines. Physical feasibility must be considered, but the design need not be constrained by existing production or marketing practices.

Winning projects will be published in the May 1982 P/A in an article by Nory Miller, P/A Interior Design Editor, who developed the competition, and they will be displayed at NEOCON 14, the National Exposition of Contract Interior Furnishings, at Chicago's Merchandise Mart, June 1982. Awards will be presented to winners in an evening program attended by press, designers, and NEOCON manufacturers. A traveling exhibit of winning projects to major cities is also planned.

In addition to the exposure afforded the submissions, the competition will encourage further discourse between the entrants and respected furniture producers. Any ongoing discussions will, of course, be up to the individual designers and manufacturers, but benefit to both is anticipated.

Submissions are invited in all categories including chairs, seating systems, sofas, tables, desks, work stations, storage systems, lighting, and miscellaneous furniture pieces. Designations of **award** and **citation** may be made by the invited jury, based on overall excellence and advances in the art.

The jury for this competition:

Emilio Ambasz, architect, graphic and industrial designer, former curator of design at The Museum of Modern Art, New York.
Kenneth Frampton, Professor of Architecture, Columbia University, Fellow of the Institute for Architectural and Urban Studies, an editor of *Oppositions*, and author of *Modern Architecture: A Critical History.*
David Gebhard, architectural historian, Professor of Architectural History and Curator of architectural drawing collection, University of California at Santa Barbara, currently president of the National Society of Architectural Historians.
Hans Hollein, architect in practice in Vienna, author, and Professor at Academy of Art, Dusseldorf.
Coy Howard, designer, principal of Coy Howard and Company, Venice, Ca.

Judging will take place in New York City during the month of February. Winners will be notified — confidentially — before March 15. Public announcement of the winners will be made at the presentation ceremony at NEOCON 14 and in the May 1982 issue of P/A. P/A will arrange for cov-

The Second Annual

International Conceptual Furniture Competition

sponsored by

Progressive Architecture

with winning projects to be displayed at

NEOCON 14

June 1982
The Merchandise Mart
Chicago

erage of winning entries in national and local press.

Eligibility
1 Architects, interior designers, industrial designers, and design students from all countries may enter one or more submissions.

2 Design must be original. If found to be substantially identical to any existing product design, entry will receive no recognition.
3 Designer may be under contract to or in negotiation with a manufacturer for this design, but design must not be available in the marketplace as of entry deadline.

Publication agreement
4 If the submission should win, the entrant agrees to make available further information, original drawings or model photographs as necessary, for publication in the May 1982 P/A and exhibition at NEOCON in Chicago and other major cities.
5 P/A retains the rights to first publication of winning designs and exhibition of all entries. Designer retains rights to actual design.
6 P/A assumes no obligation for designer's rights. Concerned designers are advised to document their work (date and authorship) and seek counsel on pertinent copyright and patent protections.

Submission requirements
7 Submissions become the property of P/A and *will not be returned.*
8 Drawing(s) and/or model photo(s) of the design should be mounted *on one side only* of one 20" x 30" foamcore board presented horizontally.
9 There are no limits to the number of illustrations mounted on the board, but all must be visible at once (no overlays to fold back). No actual models will be accepted.
10 Each submission *must include* a 5" x 7" index card mounted on the front side of the board with the following information typed on it: intended dimensions of the piece of furniture, color(s), materials, components, brief description of important features, design assumptions and intentions. This information is to be presented in English.
11 Each submission must be accompanied by an entry form, to be found on this page. Reproductions of this form are acceptable. All sections must be filled out (by typewriter, please). Insert entire form into *unsealed* envelope taped *to back of submission board.* P/A will seal stub of entry form in envelope before judging.
12 For purposes of jury procedure only, projects are to be assigned *by the entrant* to a category on the entry form. Please identify each entry as one of the following: Chair, Seating System, Sofa, Table, Desk, Work Station, Storage System, Lighting. If necessary, the category *"Miscellaneous"* may be designated.
13 Entry fee of $15 must accompany each submission, inserted into *unsealed* envelope containing entry form (see 11 above). Make check or money order (no cash, please) payable to *Progressive Architecture.*
14 To maintain anonymity, no identification of the entrant may appear on any part of the submission, except on entry form. Designer should attach list of collaborators to be credited as necessary.
15 **Deadline for mailing** is January 26, 1982. Other methods of delivery are acceptable. Entries must show postmark or other evidence of being en route by deadline. Hand-delivered entries must be received at the address shown here by January 26.
Address entries to:
International Conceptual Furniture Competition
Progressive Architecture
600 Summer Street
Stamford, CT 06904

Entry form: International Conceptual Furniture Competition

Please fill out all parts and submit, intact, with each entry (see paragraph 11 of instructions). Use typewriter, please. Copies of this form may be used.

Entrant:
Address:

Entrant phone number:
Category:

Entrant:
Address:

Designer(s) responsible for this submission (identify individual roles if appropriate):

I confirm that the attached entry meets eligibility requirements (paragraph 1–3) and that stipulations of publication agreement (paragraphs 4–6) will be met.
I verify that the submission is entirely the work of those listed on this form (or an attached list as necessary).

Signature ______________________

Name (typed) ______________________

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(Receipt)
Your submission has been received and assigned number:

Entrant:
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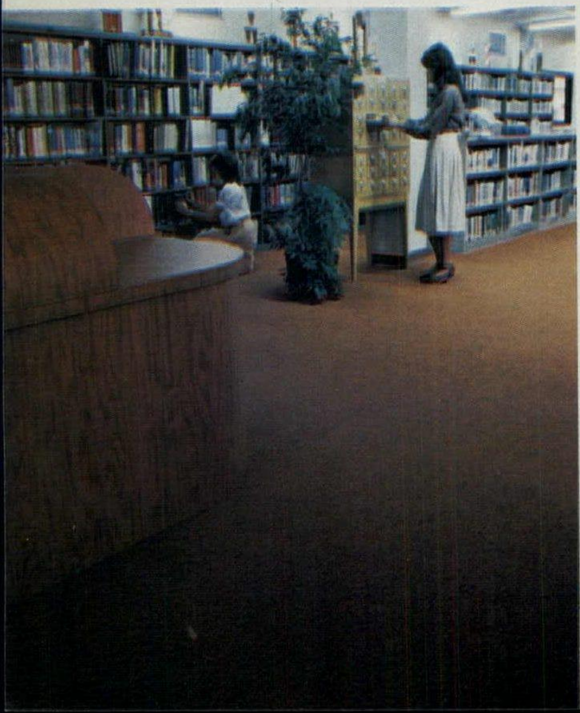
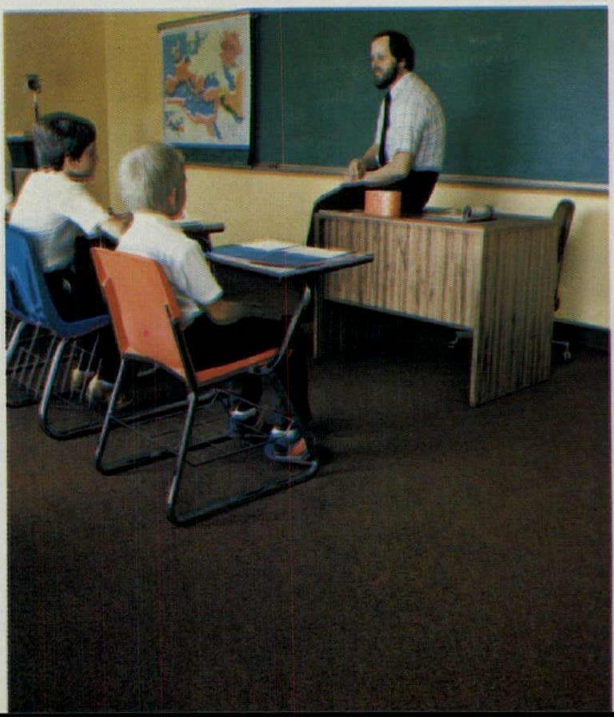




The lives of landmarks

The past few years have seen the preservation, renovation, and reuse of a number of highly significant architectural landmarks. This issue is devoted to some of them.

In its current restoration, owners of the Chrysler Building, Jack Kemp Cook and JKC Realty, have made it the seventh skyscraper to illuminate Manhattan's skyline. The work was carried out by W.A. DiGiacomo Associates with Steven Negrin as project designer, mechanical engineers; and Robert B. Samuels, Inc., electrical contractors.

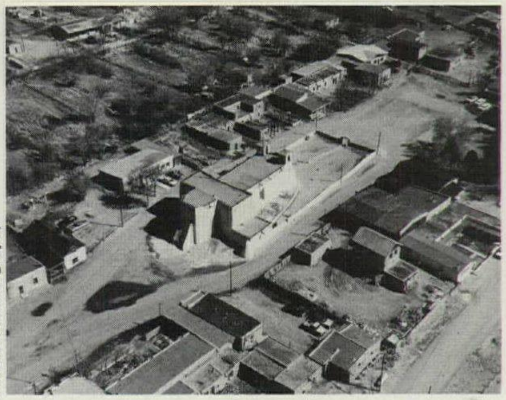
Certainly the happiest and most dramatic event for landmarks this year was the illumination in September of the spire of New York's beloved Chrysler Building. The new owner of the 1930 skyscraper has completed and refined the lighting system originally designed by William Van Alen, which was only partially installed, and consequently never used. Now, floodlighting of the Art Deco spire and fluorescent tubes in its triangular windows add a seventh note to Manhattan's growing display of night-time delights.

Sad losses for the year, especially for San Francisco, Miami Beach, and New York, were the City of Paris Department Store, the New Yorker Hotel, and the Biltmore Hotel. But the past few years have also seen the restoration, renovation, and in some cases, reuse, of a number of highly significant architectural landmarks—those of the type that gave impetus to the preservation movement from its beginnings. This issue of P/A is devoted to some of them. The coverage runs from a 200-year-old church in New Mexico, which had been seriously damaged through well-intentioned earlier preservation efforts, to the questionable restoration of Le Corbusier's Cité de Refuge in Paris.

In the pages between those, in chronological order of original construction, are important works by Karl Friedrich Schinkel, William Strickland, McKim, Mead, & White, Adler & Sullivan, Willis Polk, and Frank Lloyd Wright. Some of these were slated for demolition, one was bombed, and another was gutted by fire. But even with such threats, catastrophes, and other incursions, they are with us today, and all are now in public use.

It may seem somewhat reactionary to devote an entire issue only to important monuments of the past, at the exclusion of other crucial preservation problems covered in previous special November issues of P/A. But the individual landmark is subject to the same pressures that threaten the rest of the environment, and in this era of growing concern for preservation, it still represents the most potent force for focusing attention on the wider range of pressing concerns.
[David Morton]

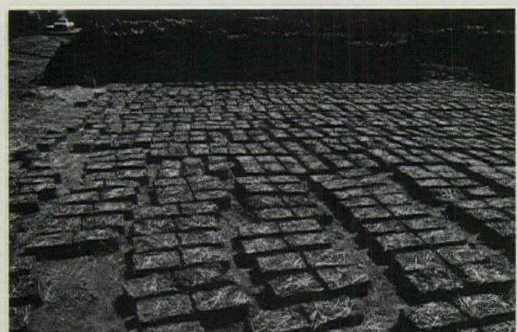
New York Daily News photo.



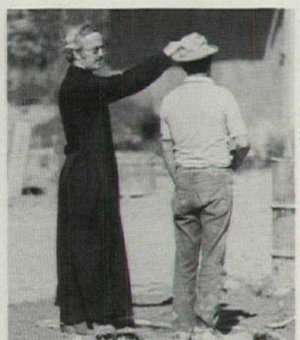
Dick Kent Photography

"The Ranchos de Taos Church is one of the most beautiful buildings left in the United States by the early Spaniards. Most artists who spend any time in Taos have to paint it, I suppose, just as they have to paint a self-portrait. I had to paint it—the back of it several times, the front once." Georgia O'Keeffe

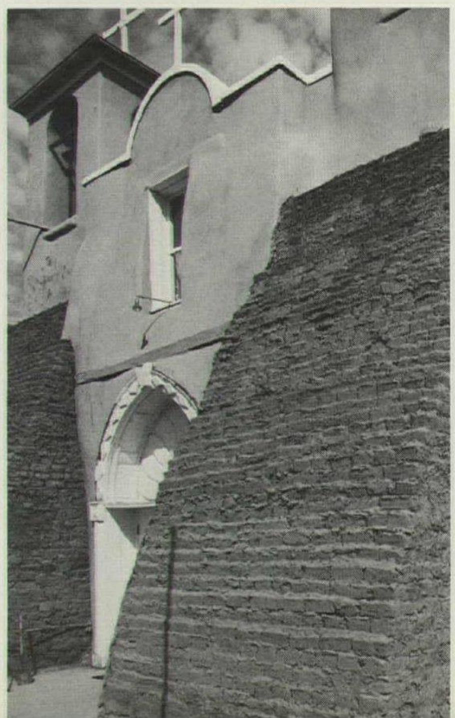
Photo by Malcolm Varon, NYC. Courtesy Alfred Stieglitz Collection, Metropolitan Museum of Art.



Wolfgang Pogzeba



Wolfgang Pogzeba

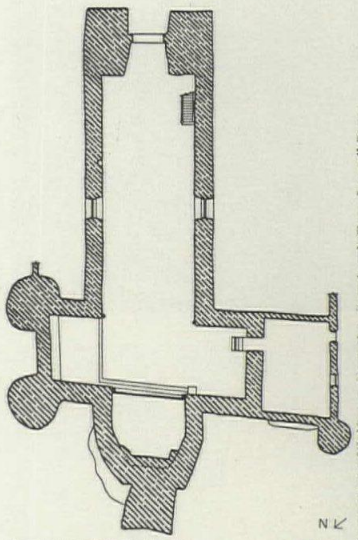


Wolfgang Pogzeba

San Francisco de Asis, Ranchos de Taos, NM

Back to basics

More than Indian raids or torrential rains, the biggest threat to the 200-year-old mission in Ranchos de Taos turned out to be well-meant efforts at preservation, twelve years ago.



Plan courtesy Wolfgang Pogzeba, *Ranchos de Taos*, Lowell Press

Named after the saint who dedicated his life to restoring churches, the New Mexican mission was restored by its own parishioners over the past three years. Shown on facing page is the plaza from the air (top) and in one of Georgia O'Keeffe's famous portraits of its back (middle). Bottom: a field of adobe bricks drying (left); Father O'Brien, to left, with parish member at reconstruction site (center); the front buttresses which were rebuilt—5000 bricks each—here shown without the coat of mud plaster (right).

At the time it didn't seem like a fad, it seemed like progress at its most conservative and practical. Church leaders in the Southwest were faced with an anomaly—working churches in post-war America that required hand rubbing with mud every two years. If they were going to be kept—and they were, after all, some of America's oldest buildings—some one of modern science's miracle cures was in order. The one that was offered with the most assurance was "hard plastering"—replacing the soft mud on the outside with cement stucco. Or with a cement stucco overcoat, as it turned out.

The Ranchos church was so well known that the choice to hard plaster aroused a good deal of controversy even in 1967. Artists and architects in the region protested. Some, like SOM's Nat Owings, even offered money. The Archdiocese investigated some of the alternatives—including an experimental "stabilized" soft mud—but these all seemed too experimental. The church was in a bad state of repair with severe structural cracking. The decision was hard plaster.

In two ways it was significant. It was a commitment to preservation. There had also been talk of letting the Forest Service level the building. And it was an affirmation that the church belonged to the Spanish-Americans who attended it, a recognition of the growing split between them and the newcomer artists.

Great expectations

In a way, hard plaster was the asphalt siding of the west. One modest capital outlay and goodbye maintenance, forever. A real labor-saving device. And in keeping with the once-in-a-lifetime prognosis, many things about Ranchos were brought up to tone. There was a new roof, not of tin like some, but the traditional wooden log vigas. The parapets were rebuilt in concrete block. Adobe walls were shorn up with metal braces, and empty spaces in walls filled with more concrete block. The whole surface inside and out was encased in a wire mesh netting (adobe will not bond to cement) and the stucco affixed to it; $84,000 was what it all cost.

Within months, the first cracks appeared. Then more. A painting contractor in Santa Fe was hired to coat the exterior in a special fiberglass paint with fiberglass fabric strips over the cracks. In six months new cracks had appeared, and old ones had made a shambles of the magic tape.

Adobe, it seems, does not mix well with younger materials. They are at cross purposes. Most materials are chosen to resist weather. Adobe's approach is lumbering passivity. When it's hot, adobe is hot—slowly. When it rains, adobe is wet—slowly. Translated into expansion and contraction, changes in temperature and moisture (stucco is slightly permeable) set the materials against each other. (Soft mud plaster avoids this because it is made of the same stuff as adobe.) Small cracks lead to more seepage which leads to larger cracks. It also leads to trapped water instead of just absorbed and later evaporated water, which was beginning, they feared, to lead to a breakdown of the unfired adobe bricks.

By then Ranchos had a new pastor, Father Michael O'Brien, not only a new broom but young, 32 when he took over. What he took over he describes as "having a band-aid look from being patched so much; buttresses (when later opened) with the consistency of brownie dough, and earthworms living in the courtyard walls." He engaged Johnson-Nestor, a young Santa Fe firm developing a reputation for their work with missions. Their report confirmed the danger and listed three options: repair the stucco, redo the stucco, or return to traditional mud plaster.

When Father O'Brien and the congregation chose returning to the old ways, the earlier (1967) contractor complained—to O'Brien and the Archdiocese as well. Not only were the walls in good condition, he alleged, but if the sphinx-paw front buttresses were taken down for repair, the church would collapse. By the time that the Archbishop arrived for inspection, however, one of the buttresses had already been removed and rebuilt without calamity.

Self-help

The architects had estimated $41,000 for the reconversion. The parish slashed that in half with donated materials and parish labor. To distribute the effort fairly, the church bulletin listed one-quarter of the 700 member families each week. Each family was expected to send one person for one day. Though each family was called on four times that first summer

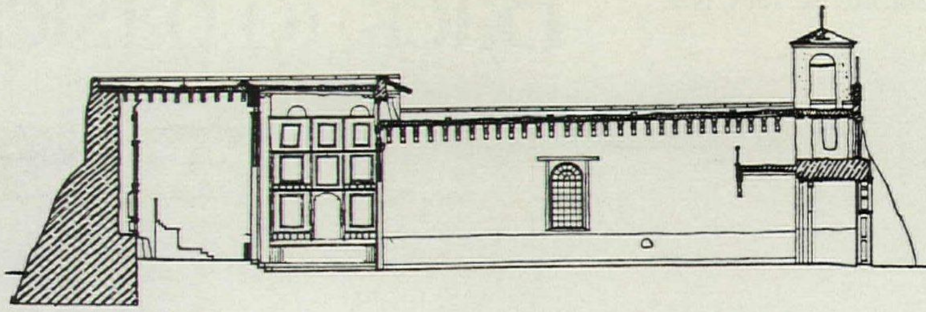
San Francisco de Asis, Ranchos de Taos, NM

(1979), 80 percent participated. They also brought food, refreshment, and the wherewithal for the 5 P.M. beer break. In a fiesta atmosphere they formed and dried 40,000 adobe bricks; hacked away the stucco with pick and hydraulic hammer; and the women (as is traditional apparently) mud plastered the exterior. The next summer required only four weeks and the last only two.

Two or three will be customary every summer, says Father O'Brien. Only one, he confides, is needed, but he wants to go through the whole list of families every year to keep everyone "in the habit." To their pastor, the active involvement in their church is the central issue. The building is opened only for services, and tourism is specifically not encouraged.

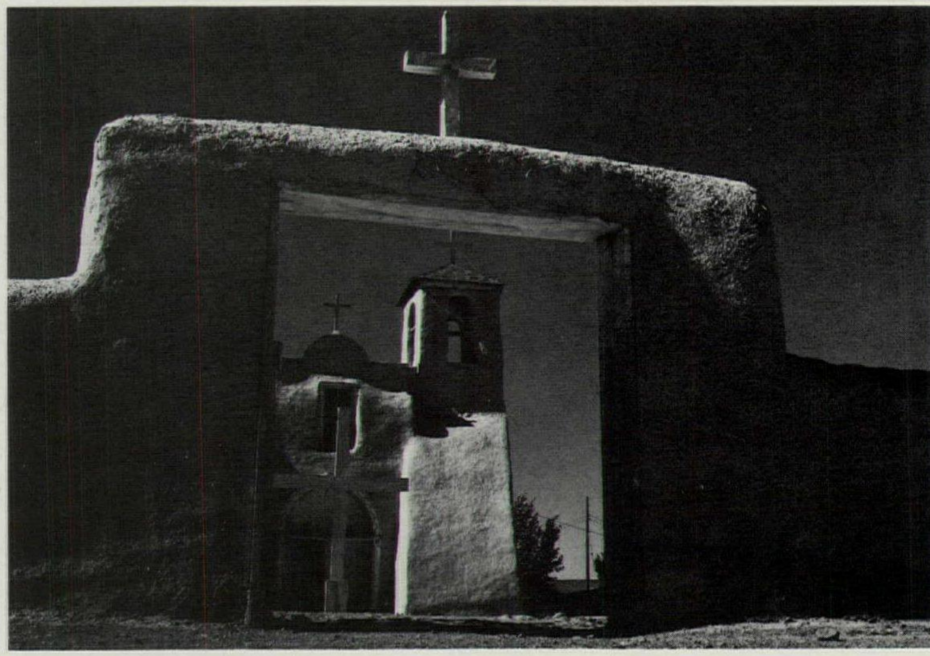
The current restoration project is the reredos (frescoed wood screens) with outside help. Another $20,000 was raised for this with church suppers. The State Historical Board has given Ranchos an award.

Now it seems so clear. A Sante Fe church went back to mud plaster five years ago. Others—some with collapsing walls—are considering. Ranchos still has a hard plaster interior and bits of metal and cinderblock stuck in its walls, but is apparently safe for now and back to the soft light and subtle aging of that magical whipped cream material. As a footnote, the "stabilized" mud plasters have not panned out as hoped either. [Nory Miller]

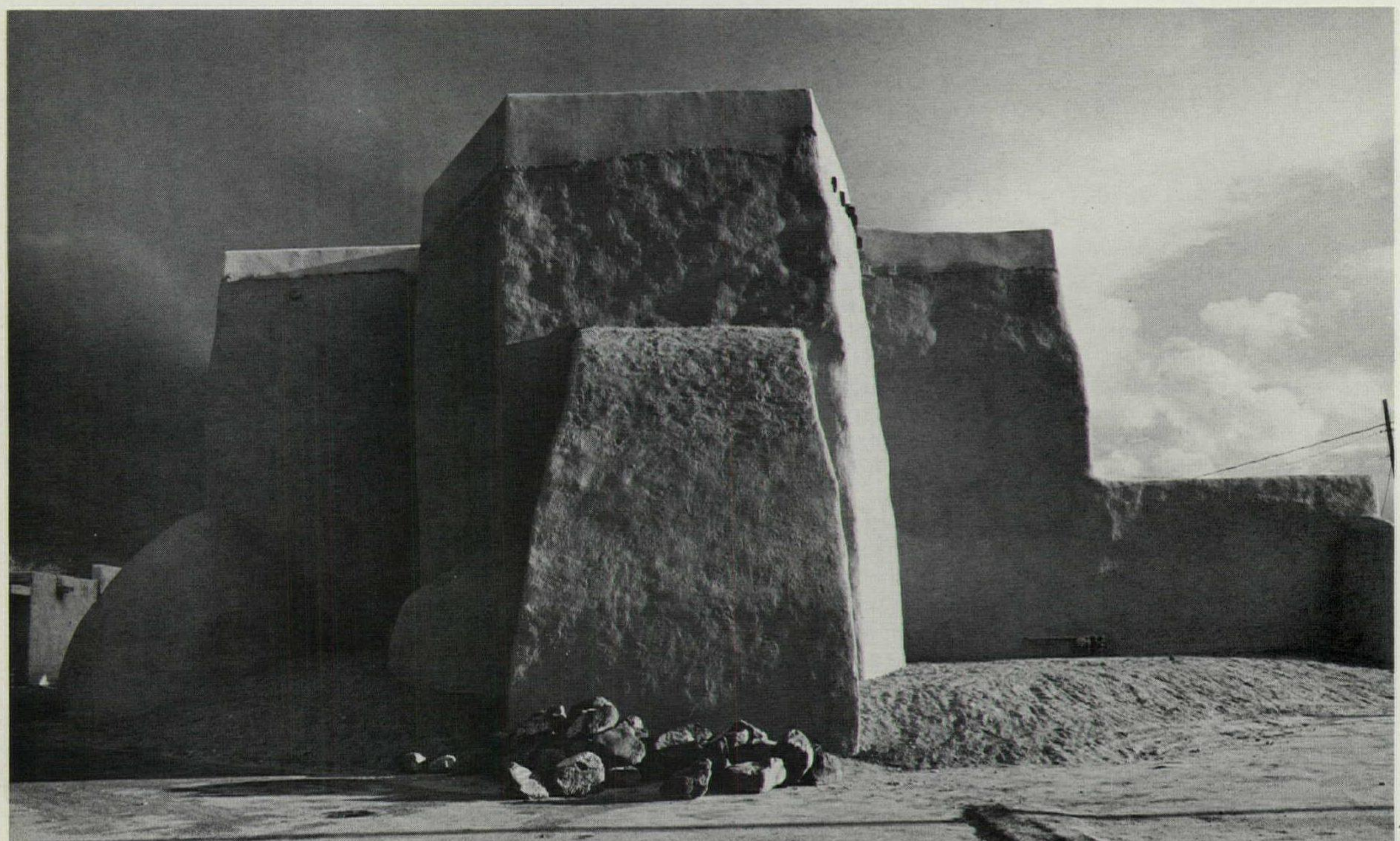


LONGITUDINAL SECTION

Section courtesy Wolfgang Pogzeba, *Ranchos de Taos,* Lowell Press

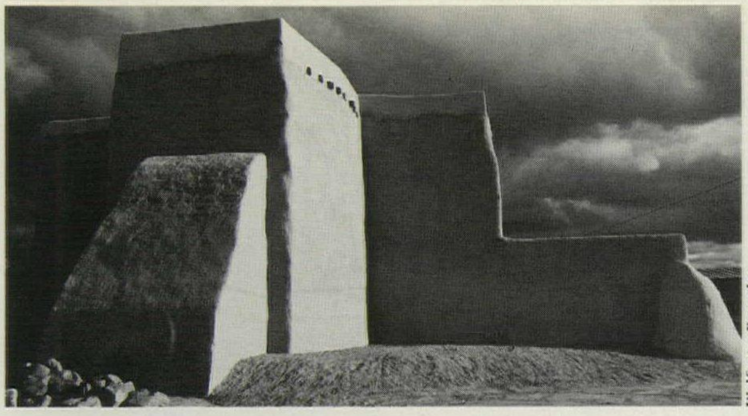


Wolfgang Pogzeba



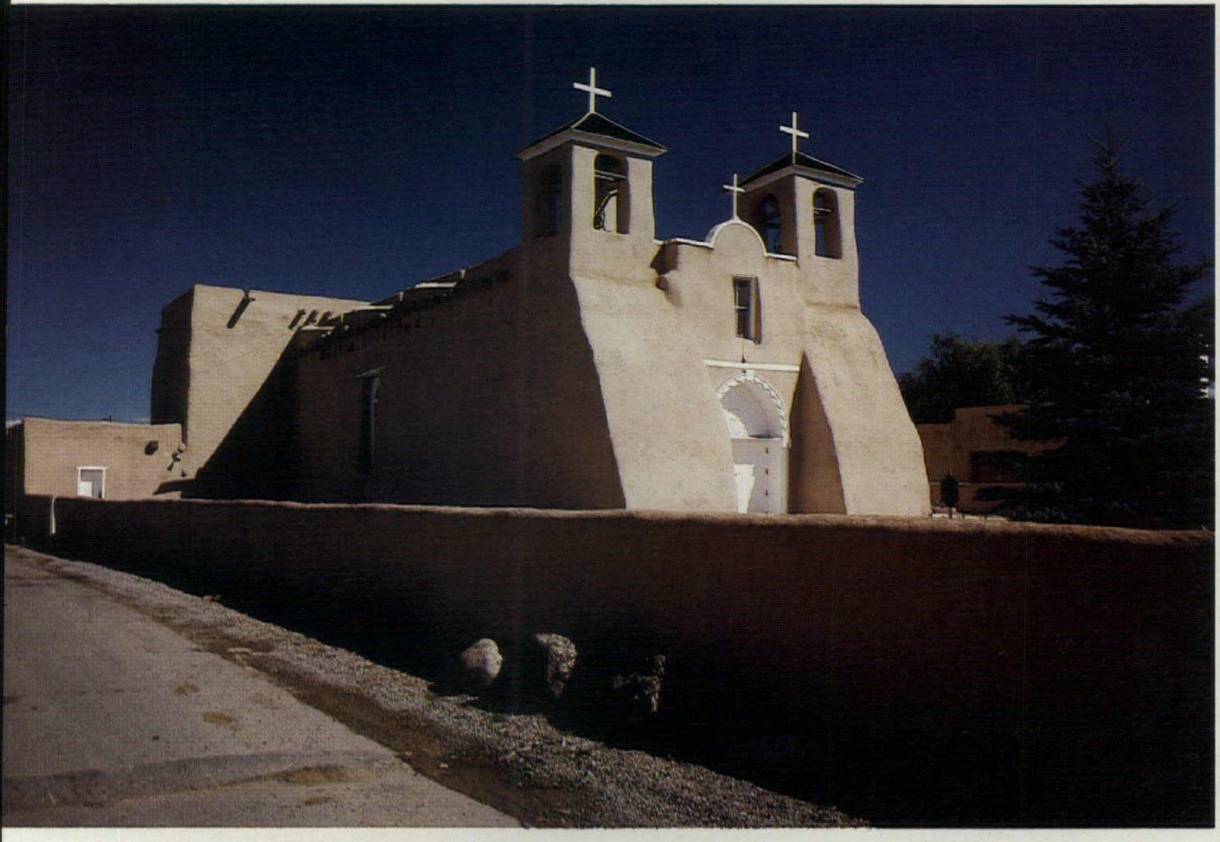
Wolfgang Pogzeba

Data
Project: *San Francisco de Asis, Ranchos de Taos, NM.*
Site: *town plaza.*
Program: *replace stucco with mud plaster; rebuild and put concrete footing under courtyard walls and buttresses.*
Major materials: *mud, straw.*
Consultants: *Johnson-Nestor, Santa Fe.*
Cost: *less than $20,000. Most material, equipment, and labor donated.*

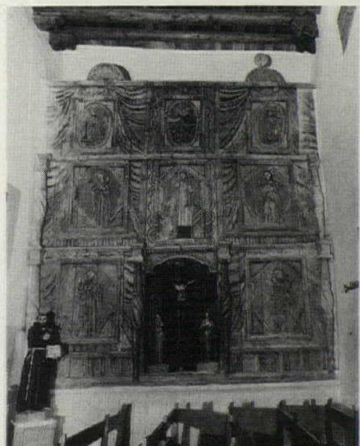


Wolfgang Pogzeba

Built sometime between 1710 and 1818 (there is conflicting evidence), but often ascribed to the 1770s, the Ranchos church is fairly typical of the New Mexican marriage of Spanish Baroque and Indian technology. In front of the church is the campo santo *(cemetery) surrounded by a* tapia *(courtyard wall) with elaborated gateway. In the center of the—now flagstone—path stands a cross. The bell towers—now adobe—are shown in earlier photos in wood. Perhaps still earlier versions were adobe, as wood was scarce. The buttresses may well have been added as needed. The Victorian Gothic door and windows are likely to date from the 1860s. Most of the missions have no windows, or small high windows on one side. Almost always there is the transcept clerestory throwing the brightest light directly on the altar. The interiors were originally all mud (not floored in tile and carpet as here), often with ochre wainscot and white above. Frescoed screens called reredos (bottom left)—sometimes inset with oil paintings—were the principal decoration. The interior and the exterior parapets (behind which is concrete block, not adobe) at Ranchos are still hardplastered.*



Marc Treib



Wolfgang Pogzeba

Wolfgang Pogzeba

The Altes Museum renewed

Contrasting attitudes towards preservation and history are represented in the reconstruction of this early 19th-Century monument.

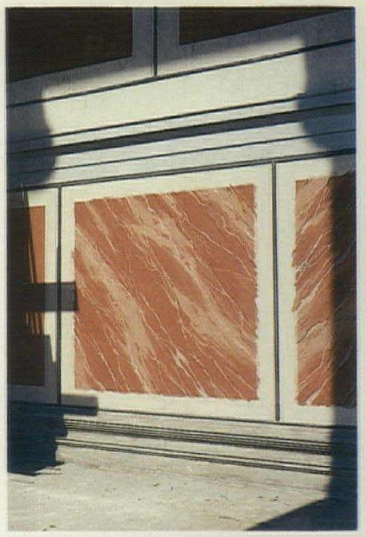
The Altes Museum in East Berlin—simple, majestic, the masterpiece of the early 19th-Century Classical architect Karl Friedrich Schinkel—was badly disturbed during World War II. Bombs damaged the exterior, and the explosion of a nearby munitions truck in May 1945 caused the interiors to burn out almost completely. Restoration was undertaken in two phases. The first, in the 1950s and early 1960s, put the building into working order. The second, begun in 1980 in preparation for the celebration of Schinkel's 200th birthday this year, is still proceeding; its aim: to reinstate as far as possible the conditions of the original building. The work represents striking contrasts in attitudes towards history and towards preservation.

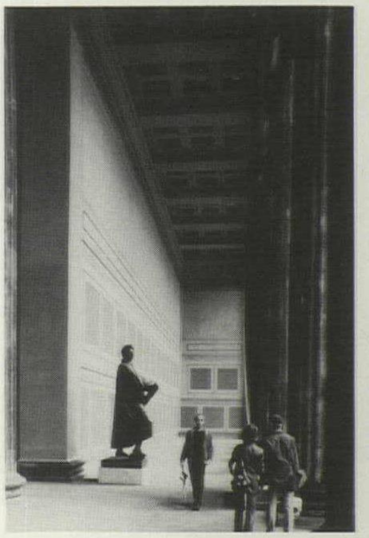
The original parti

The Altes Museum (P/A, Oct. 1981, pp. 72–77), designed in 1823 and completed by the end of that decade, stands at the northern end of what had been the Lustgarten (Pleasure Garden), dominating that space with its elegant, sweeping giant Ionic colonnade, bracketed by sidewalls in antis.

The rectangular art museum building, with two symmetrical courts and a central rotunda, is entered between a double flight of stairs that give access to a second-story loggia hollowed out of the mass of the building. From here one could catch views (represented in one of Schinkel's most renowned drawings) of the Lustgarten and the city beyond. The Durandesque central rotunda, with its first-story colonnade, its second-story niched mezzanine, and its coffered dome and oculus above, almost equals in distinction its ancient original, the Roman Pantheon, according to Henry Russell Hitchcock *(Architecture: Nineteenth and Twentieth Centuries)*. The dome is masked on the exterior by a square attic.

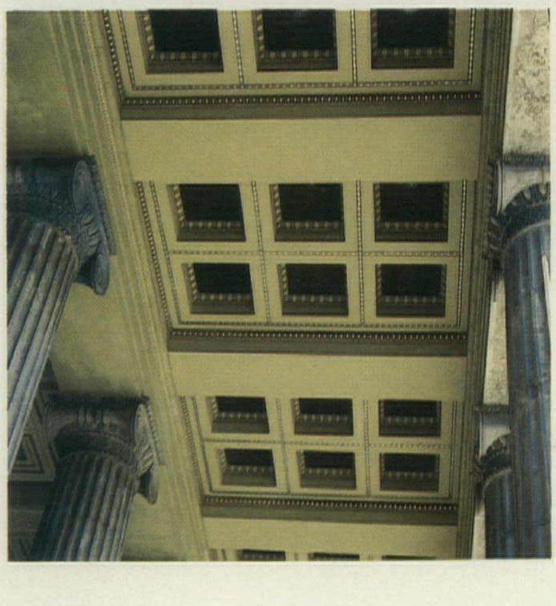
Below: The sweeping stoa of the Altes Museum's main façade crowns the vast Marx-Engels-Platz in East Berlin.

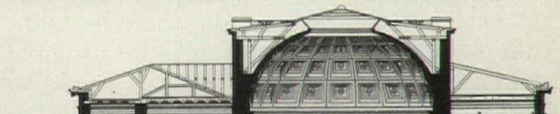




The back wall of the portico, above, is being restored to its pre-fresco condition, with two rows of red squares, marbleized (top).

From the semi-enclosed upper story loggia (right) views of the square and the city can be seen through a screen of columns. The bullet-ridden columns have been repaired and patina-ed, and the ceiling (below) has been reconstructed and carefully repainted.





SECTION

The Altes Museum, Berlin, GDR

Galleries occur along the four sides of the rectangle, on the main and second stories. Originally lined with red linen, they swept the length of the north and of the east and west sides of the building, and were interrupted only by the central loggia on the south. The main-floor sculpture galleries had two rows of columns, while the second-story painting galleries were column-free. In the latter, movable screens at right angles to the windows, free from glare, provided the display space for the collection, which was grouped for the first time according to individual schools. Light, wherever possible, came only from the north. The lowest floor, holding offices and storage, was originally planned to contain rental space, to placate the thrifty monarch.

The Altes (Old) Museum acquired its present name in the 1840s, when a Neue (New) Museum by Schinkel's follower August Stüler was built to the north.

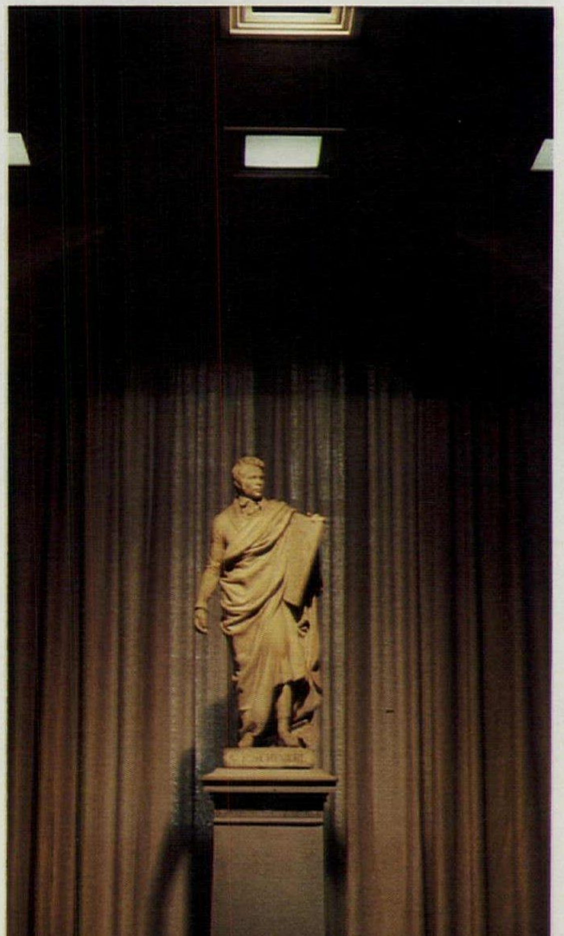
The earlier restoration

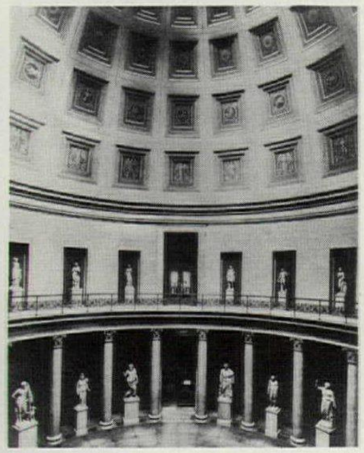
The Altes Museum underwent several changes in the 19th Century. In 1848, seven years after Schinkel's death, a bridge was built connecting the building to the Neue Museum, interrupting the flow of the long second-story north gallery. Towards the end of the 19th Century, skylights were added to the upper-story galleries, thereby contradicting Schinkel's scheme to provide only soft north light.

At the beginning of World War II, part of the museum's contents, including the statues lining the rotunda, was removed for safekeeping, and the premises were used for furniture storage.

In 1951, following the destruction wrought by the war, the Institute of Historic Preservation of the German Democratic Republic (East Germany) began essential measures to protect the structure. In 1954 the Minister of Culture contracted for the design of the reconstruction, which commenced in 1958 under the leadership of the engineer Friedemann Seiler and the architect Theodor Voissem.

The roof structure was rebuilt, and after yearlong discussions, the policy was decided: the exterior and the rotunda would be faithfully reconstructed according to the original design, but all other interior space would be "modernized." Part of the reason for this latter decision was economic: the galleries required complete rebuilding, and the cost of reproducing original furnishings would have been prohibitive. Into this must be read, however, the value placed in the 1950s upon the work of an architect who had been, after all, a designer for aristocracy. Furthermore,





The rotunda's coffered dome (top) has been reconstructed to its original form following extensive research. The rotunda (shown in a 1905 photograph, above) is being completely restored.

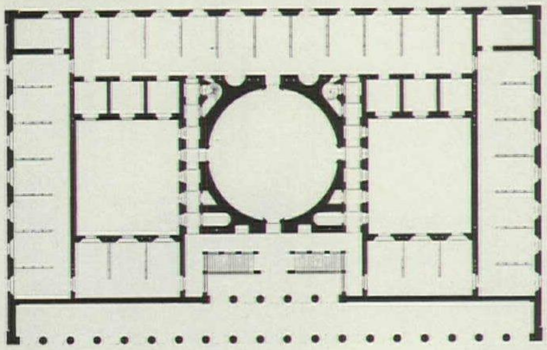
Galleries, on the other hand, have been rebuilt in "modern" fashion. A statue of Schinkel (left and opposite page, bottom) stands embraced in the arms of a 1950s double staircase, while exhibition rooms (opposite page, top) were designed to meet 20th-Century functional requirements.

the State Museum office demanded the "latest" in museum technology, which meant the provision of column-free, light-painted galleries, overhead recessed lighting, and a mechanical system that ironically has never operated properly.

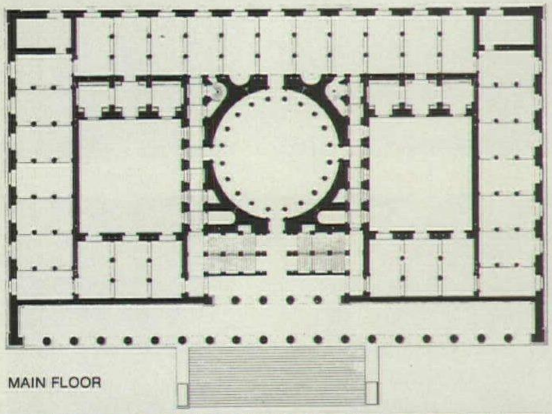
For unspecified reasons, the eloquent double flight of stairs leading to the loggia is no longer open to the public, and a new means of access to the upper floor was added behind the rotunda, completely interrupting the northern galleries, which are now divided by glass entrance walls. These new stairs, again a double flight, are executed in a "modern" manner too light for the majestic building, and are angled in opposition to any ordering system suggested by the original design.

Other than in the galleries, however, reconstruction closely followed the original design. The loggia was restored, and its coffered ceiling was repainted in its original form. The frescoes on the rear wall of the portico, painted by Peter Cornelius in 1841–47 following sketches by Schinkel, were unfortunately so badly damaged that only small bits remained, and these were removed for museum display. Through reconstructive research using drawings and photographs, the painting in the rotunda's coffers was deciphered and recreated.

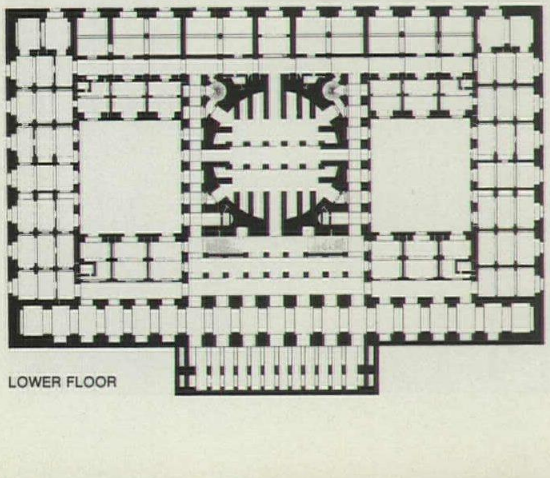
All the sculptural decoration on the exterior, including the bronze door and decorative gate, were severely damaged during the war and vandalized after it, and had to be restored. The sandstone eagles over the main façade had weathered badly, and were replaced by copies. The rough work was completed in 1963, the finish work was carried out during the next two years, and the Altes Museum reopened in the autumn of 1966.



UPPER FLOOR



MAIN FLOOR



LOWER FLOOR

The ongoing restoration

In 1980, restoration again began, with renewed vigor. The official line attributes the inspiration for this phase of the work as the need for a paint job: the back wall of the portico was peeling. But it must also be understood that by this time, Schinkel's status had been revised: his humble origins were recognized, his humanist leanings vaunted, and his work became an asset to be celebrated, in time for the 200th anniversary of his birth. Exhibitions were planned (P/A, July 1981, p. 25), and his jewels were polished: not only the Altes Museum, but also the nearby Schauspielhaus, Neue Wache, the Schloss Charlottenhof in Sanssouci Park, and the Nikolaikirche in Potsdam.

The museum's attic and the rear and side walls, originally plastered, had been rebuilt in sandstone in the earlier renovation, and the holes in the stone columns had been filled. The new surfaces, lighter than the old weathered ones, were now darkened; in the case of the columns, rumor has it that soldiers armed with bootpolish were enlisted for the purpose. The original bronze inscription over the colonnade was repaired and regilded, and the sculptural horse-tamers at the four corners of the attic were reinstated.

In the portico and loggia, the ceiling painting was improved, while the back wall of the portico was prepared to be finished in an interpretation of its original 1830s form, before the application of the Cornelius fresco: two rows of squares of a rather sharp orangy red color have been painted and are in the process of being marbleized, and a maeander frieze runs above them. When the restoration work is completed, statues of personalities from Berlin's 19th-Century intellectual community will be placed in the portico, as will two Roman granite tubs which are said to have been positioned there originally. A huge granite bowl, thought to have been planned for the rotunda, has been relocated in the plaza just in front of the museum's staircase, where it had stood until removed in 1935 by Albert Speer, at the same time as his leveling of the Lustgarten to provide a cobblestoned marching field for the Olympics. The two bronze sculptural groups by Wolff and Kiss, flanking the impressive stairs that extend across a full one-third of the façade, survived the war. Restoration work continues in the rotunda.

The 18 statues acquired for the mezzanine niches, Roman copies of Greek originals, will be reinstated. Ground-floor intercolumniations now contain 16, two having been removed to give access to a cloakroom and a souvenir shop built into the flanking courtyards. The original marble pedestals, carved up to provide flooring for the upper story, will be duplicated in sandstone.

This page: The genteel Lustgarten, envisioned (top) in 1825 by F. Jugel after a drawing by Schinkel, has now (middle) greatly changed. Then, the square was bound by the Schloss on the south, the cathedral (with all but the Schinkel-designed portico screened by trees) on the east, the Museum on the north, and the Zeughaus (still existing) across the canal on the west. Schinkel's Schlossbrücke (bridge) still exists, and will soon have its statues reinstated, thanks to a gift—a humanitarian and political act—by the West Berlin Senate. Today, the museum's portico looks out onto a vast plaza, encompassing the area of the repaved Lustgarten and the site of the Schloss.
The original museum plans (bottom).

Opposite page: The rear of the Altes Museum (top) has been restored to its original form, using sandstone instead of a plaster finish. Its famous corner (bottom) has a huge pilaster set off by grooves.

Data

Project: *The Altes Museum, Berlin, GDR, 1823–30.*
Original architect: *Karl Friederich Schinkel.*
Restoration responsibility: *Institute for Historic Preservation, GDR; Theodor Voissem, architect, Friedemann Seiler, engineer.*
Site: *north end of the Marx-Engels-Platz.*
Major materials: *sandstone exteriors, sandstone and bronze decorative elements; marble, wood floors; painted plaster walls, ceilings.*
Photography: *Susan Doubilet; Stephen O'Malley.*

The Altes Museum is now a part of the German Democratic Republic's National Gallery, providing permanent exhibition space for its 20th-Century collection, which includes work of a Socialist Realism nature as well as the gifts, of a more popular and somewhat more "daring" ilk, of a West German chocolate manufacturer named Ludwig. As policy loosens, Lichtensteins and even Picassos are shown, and an exhibition of the work of Hundertwasser is upcoming.

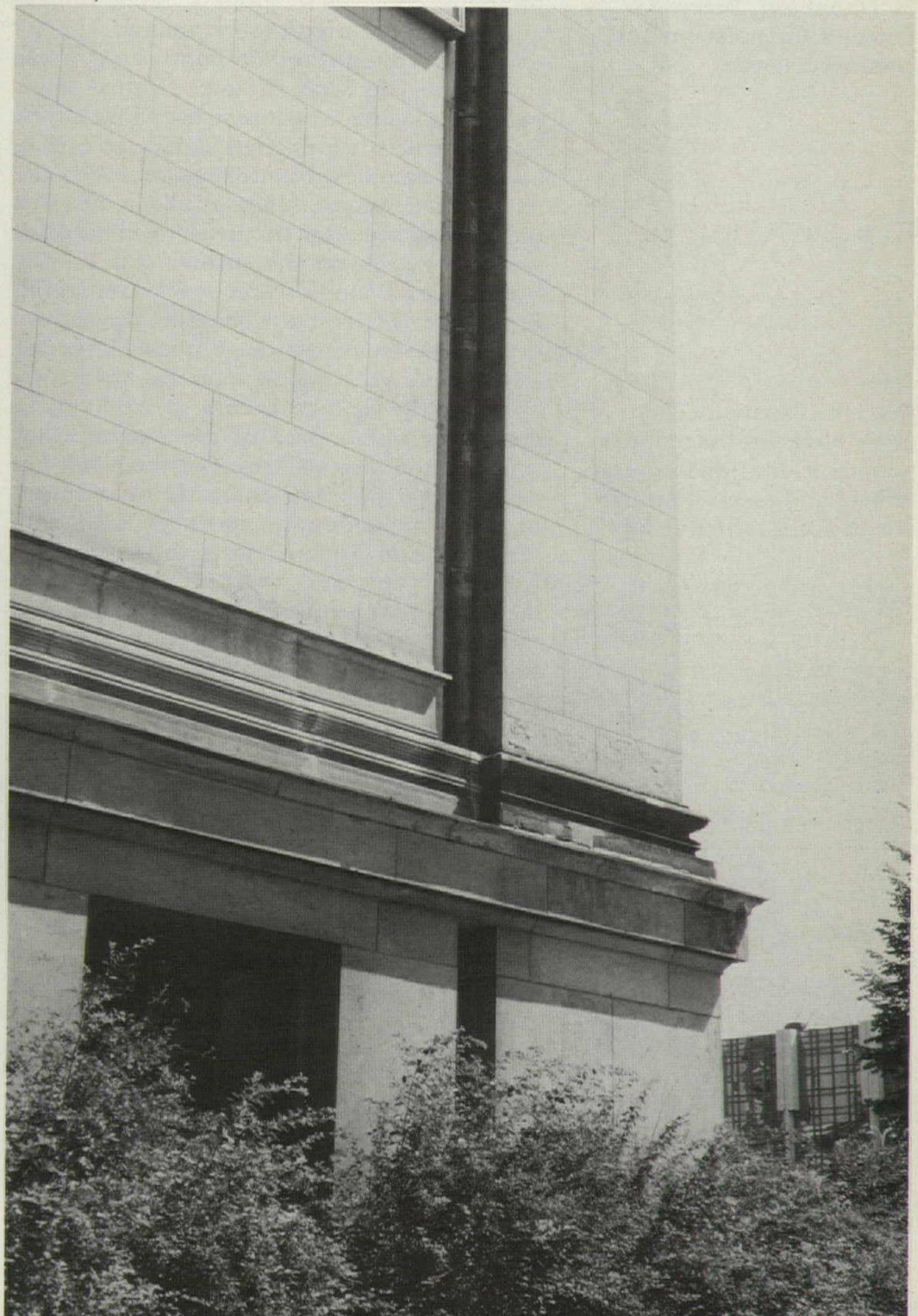
The GDR explains its modern galleries as befitting the nature of the modern collection, while conceding that only lately has the *zeitgeist* promoted authentic preservation. The original forms are felt to render the landmark building "interesting and stimulating," and to stand in a "suspenseful relationship" to the modern function.

The way it wasn't

In the appreciation and preservation of the Altes Museum, one tends to think of the building as a monument at the end of a vast plaza. But Schinkel was an urban designer as well as an architect, and his scheme for the museum was conceived as an integral part of his plan for the Lustgarten, which itself was a section in his broader vision for central Berlin. The Lustgarten design underwent many changes before its execution, adjusting to the demands of Frederick William III, and as an urban square it had its flaws. The given architectural elements were disparate, a problem only partly masked by landscaping measures, and the views and entry into the angled square from the Unter den Linden boulevard were rather weak. Still, its picturesque intentions and urban lessons can clearly be seen in Schinkel's famous drawing from the column-screened upper-level loggia.

But almost all has now changed. The Schloss by Andreas Schlüter, enclosing the square at its south end, was damaged during World War II and pulled down in 1950. The Altes Museum now looks out on Marx-Engels-Platz, which forms with the denuded Lustgarten area a plaza more than twice the size of the original square. Recent buildings for the State Council, the Palace of the Republic, and the Foreign Ministry do little to close the view.

While it is regrettable that the Altes Museum's part within an urban vision has been diminished, and that many of its interior spaces have been rendered unexceptional, the Altes Museum is essentially still with us, thanks to its recent most careful restoration. We can still pass from the plaza up through the portico, under the pyramidal staircase and magical loggia, into the finely proportioned, richly domed rotunda; and we can still view its proud colonnade, as simple and sympathetic as it is impressive.
[Susan Doubilet]



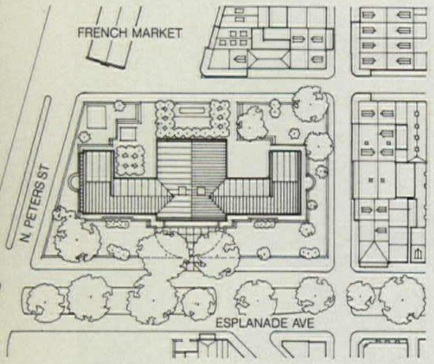
Old U.S. Branch Mint, New Orleans

Crème de mint

Peter C. Papademetriou

In the latest of many remodelings, a Greek Revival landmark in the Vieux Carré has been prepared by the joint venture office of McNaughton, Biery, Toups, Lemann for museum and commercial use.

Peter C. Papademetriou, P/A's Houston-based correspondent, is a practicing architect and associate professor of architecture at Rice.



SITE PLAN N 40'/12m

New Orleans, after the Louisiana Purchase of 1803, developed as three cultures in separate municipalities: the old quarter or Vieux Carré, the "Anglo" Garden District to the west, and the fashionable Creole promenade along Esplanade Avenue, the definite east edge of the quarter. Though the city was united in 1852, these social divisions remain apparent in the urban fabric today.

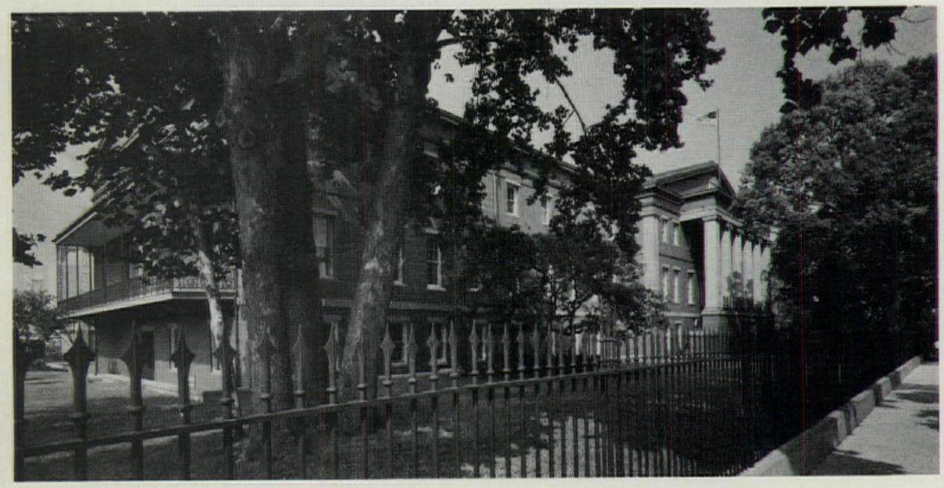
At the conjunction of contrasting areas stands the Old United States Branch Mint, each side facing a different use. The Greek Revival structure, designed by William Strickland and completed in 1838, symbolized the American presence, filling a full city block as the largest building in the area. The Mint turned its back on the smaller scale of the Vieux Carré and fronted the emerging Esplanade. To its south flank lies the activity of the riverfront and the French Market of 1813, sited where a turn of the Mississippi opens up the rigid grid fabric of the Vieux to create the open space of the market. This space, at the original "rear" of the Mint, has recently taken on importance as the terminus of a linear pedestrian precinct extending from Jackson Square along the riverfront, coexisting with and overcoming functional incompatibility with shipping, trucks, and railroad. Both its size and its boundary location gave the Old Mint a potential for reinforcing emerging public activities.

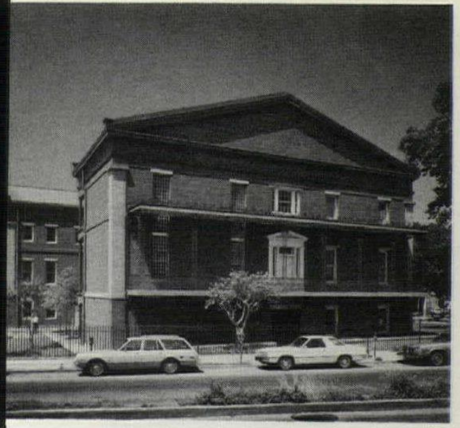
The Old Mint came into being as a result of Andrew Jackson's battle against control of U.S. banks from Philadelphia, through 1835 legislation creating branch mints in the South. Strickland, who had designed various government buildings including the Second Bank of the United States in Philadelphia and the New Orleans Customs House of 1819, prepared a design similar in basic form to his Naval Asylum of 1826–1829 in Philadelphia (now called the Naval Home). He obviously never visited New Orleans, and his design left several aspects of the building somewhat unresolved. There is evidence, for instance, that Strickland thought the building would directly abut a street; consequently, rather than a monumental stair leading to the entry portico on the *piano nobile,* as at the Naval Home, twin stairs slip behind wing walls. As a result, this symbolic entry is somewhat devalued, if not reduced to a mere false front. Stairs on the interior and the galleries depart from Strickland's somewhat indefinite designs.

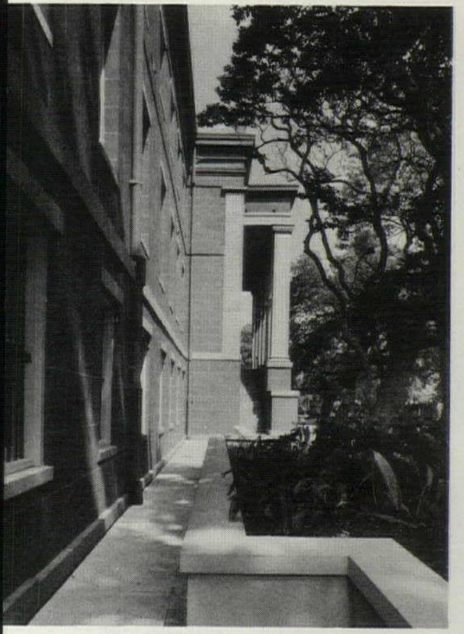
The basic construction was brick masonry with a few details—pilasters, base courses, and column capitals—executed in granite. Over most of the brickwork, Strickland specified plaster scored to resemble stone and painted gray. As he wrote in *Sketches of Roman Architecture* (1846), "*Red* is the last colour that an architect would choose in the composition of any of his designs," a thought to consider in viewing the Mint today.

Architects of the early 19th Century were concerned about fireproofing, and Strickland used masonry piers and groin vaulting for the principal interiors of the first two floors, with cast-iron columns and built-up beams for the galleries. By 1840, however, New Orleans architect James Gallier had to reinforce several vaults with tie rods, which remain today. In the 1850s, wood structure in the roof and rear portions of the building was replaced by segmental barrel vaults spanning between steel beams, and the original slate roof over heavy timber was replaced by corrugated iron on metal trusses (one of which spans 90 ft). Taste had also changed: the exterior was painted "Federal brown," a reddish terracotta hue. Also, as the south wing originally contained the superintendent's residence, a cast-iron veranda (then the rage, and now what we identify with the Vieux Carré) was added. In 1890, double steel-plate storage vaults for gold and silver were installed, as was an early Otis elevator in 1902, before minting operations ceased in 1909.

For the next two decades, the building housed an Assay Office and various other Federal offices. In 1931, it was converted into a "Prohibition prison"; yards were walled in, interior partitions removed, and three levels of cell blocks inserted in the flanking rear wings. In 1943, the building was taken over by the U.S. Coast Guard for two decades, dur-







Monumental front of Old Mint (top right and opposite) faces away from Vieux Carré. Iron galleries to rear face French Market area at edge of tightly-knit old quarter, overlook pedestrian link to city center. Photos above (top to bottom) show: filigreed veranda on south wing, memento of former superintendent's apartment; side stairs to portico entrance, with new walk and retaining wall; approach from market side.

ing which white waterproofing was applied to the exterior. In 1965, it was transferred to the State of Louisiana with the understanding that it be used for museum purposes.

The Louisiana State Museum, based in New Orleans and operating several historic properties in the Vieux Carré, undertook a feasibility study in 1974. Joint venture architects E. Eean McNaughton & Associates, Biery & Toups, and Bernard Lemann as architectural historian were selected in 1976, and in 1977 funding was finally assured.

A mix of uses was fundamental to regeneration of the Old Mint; income from commercial spaces would cover operating costs, and initial improvements to those areas could be minimal. Restaurants and shops on all levels, which are easily reached by outdoor gallery stairs, would energize the whole complex over a different and longer cycle than pure museum activities.

Old U.S. Branch Mint, New Orleans

In locating various functions, the architects sought to capitalize on existing eccentricities of the building. Because of the existing foundations for minting machinery in the ground floor of the central block, they urged placing the Mint Museum there. The main museum galleries occupy the central portion of the second floor, with museum offices, archives, and an auditorium above on the third floor. The south wing still contains three levels of jail cells, as yet undeveloped. The north wing houses the Amistad Institute of Dillard University, a black history collection, and was developed independently of the basic building budget.

At this time, museum installations are nearly a year from completion; a multimedia Louisiana Experience show in the central block will be flanked by artifact displays on the hardly surprising themes of Mardi Gras and jazz. Commercial activities to complement the museum are now being evaluated.

In view of the site conditions and potential urban design impact, the architects decided early that the Old Mint would have to undergo a *volte-face,* as its "rear" became a new "front" to terminate the pedestrian sequence of the Vieux Carré. The E shape of the building footprint provided the plazas to receive this movement, and the gallery tiers could provide an active backdrop.

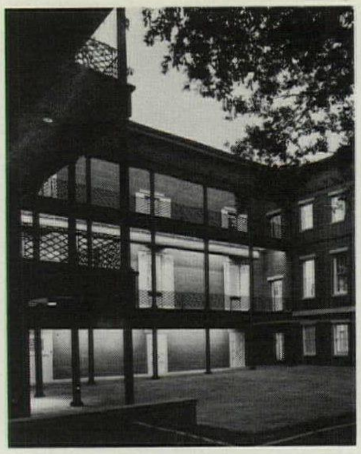
Significant site work had to be done to reorganize drainage. Several feet of fill were pulled back from the building, in part to alleviate interior dampness problems. A retaining wall now defines a path around the entire building, which connects the old front with the new and eases handicapped access.

The building's architectural history suggested a strategy mixing renovation, restoration, and adaptive reuse. Lacking funds for either a historic structure survey or site archaeology, the architects wound up essentially winging it as they made discoveries. Among these was the foundation for the large boiler stack that dominated a rear court until 1931; this is now an accent element in the landscaping. No real structural changes were made, but inserted walls and floor areas were removed to restore a central well linking interior levels. Final bids came in $200,000 below four-year-old budget figures, giving the design team a chance to select from their "wish list."

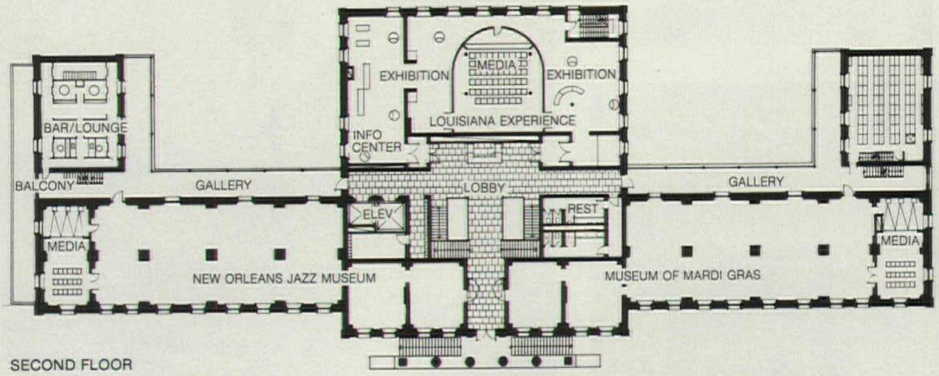
No single time period is represented in the new complex. Selected elements revealing the building's past are enhanced—even dramatized. Security gates from prison days have been relocated as gates to the Mint Museum. A wired-glass partition in the same space reveals a wonderful cast-iron stair retained to serve as fire exit for the assembly spaces above. Balustrades for the gallery were long gone and no designs existed, so those of the Naval Home were replicated and fit the aesthetic theme of the Mint. The provision of bathrooms may have been the most fun: on lower levels, they were incorporated into vaulted spaces; on upper levels, they were cut out of old silver and gold vaults.

Among their decisions, the architects opted for restoring the vibrant Federal brown exterior of the 1850s, reasonably the Mint's most significant period. A sample of the original color was discovered as fill was dug away from the building. This is complemented by exterior iron work painted a dark blue-green common in New Orleans, "Voodoo green" or the "introduction of local color," as characterized by Bob Biery. A more neutral white-gray treatment is used on the interior.

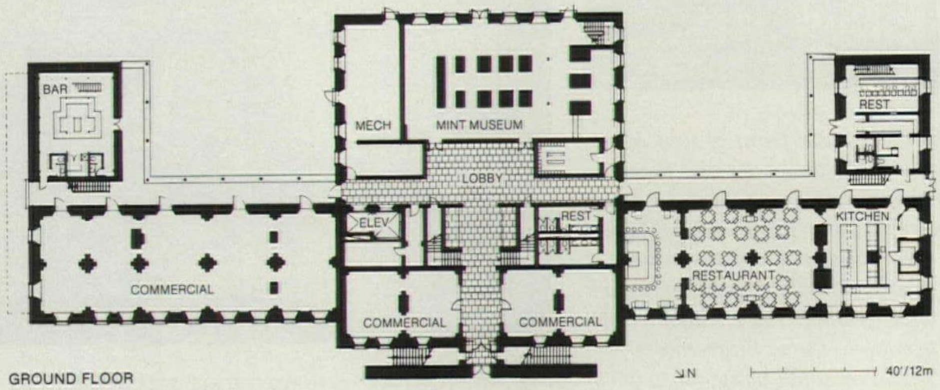
A diverse history, full of alterations: how should one respect the past and further complicate the narrative with new and diverse uses? William Strickland would have been sympathetic to the problems faced by McNaughton, Biery, Toups, and Lemann, as he wrote in 1844, "... I have had more difficulty in reconnecting the proportions of ancient architecture to modern purposes of utility than any one thing else in my profession." □



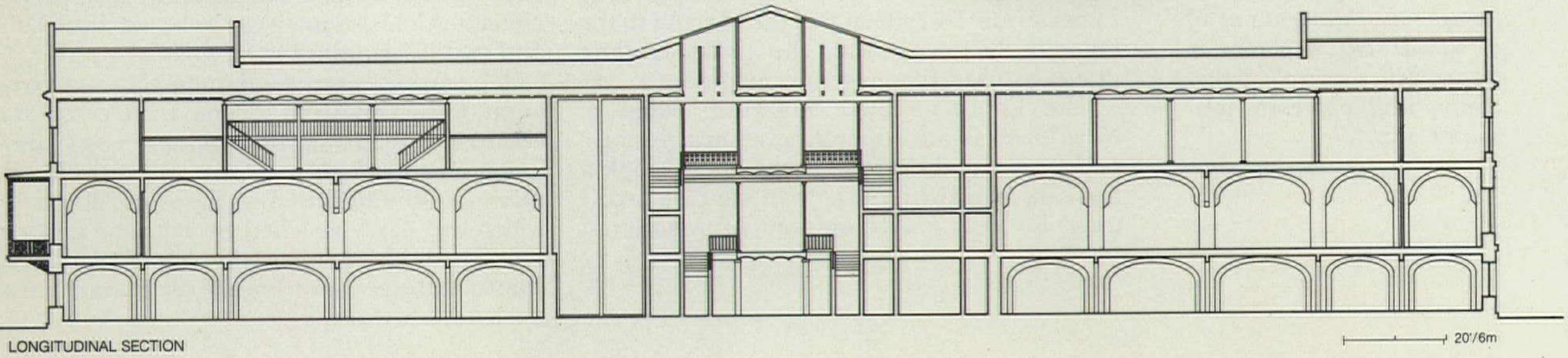
"Rear" galleries (above) form lighted backdrop for garden and market area. Core block of Mint includes (near right, top to bottom): top-floor auditorium; ground-floor Mint Museum, with main ducts from mechanical room passing around massive foundations for old machinery; restrooms in old vaulted vaults. Central stairwell and skylight (far right), sealed over during prison use, were opened and restored. Vaulted loft space in wings (bottom photo) is for commercial use.



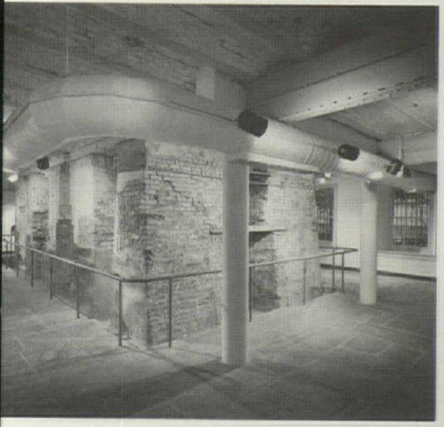
SECOND FLOOR

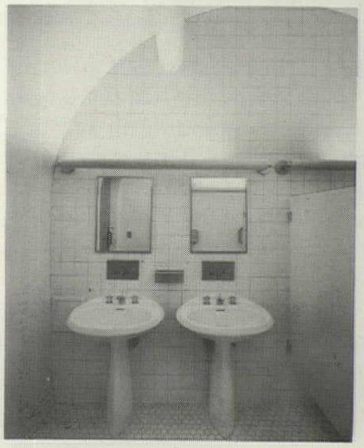


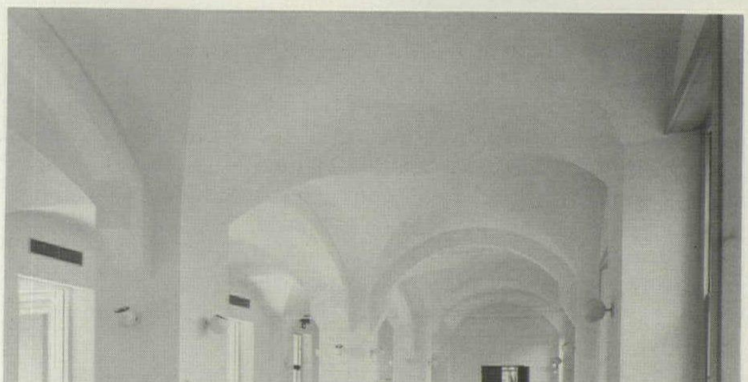
GROUND FLOOR



LONGITUDINAL SECTION





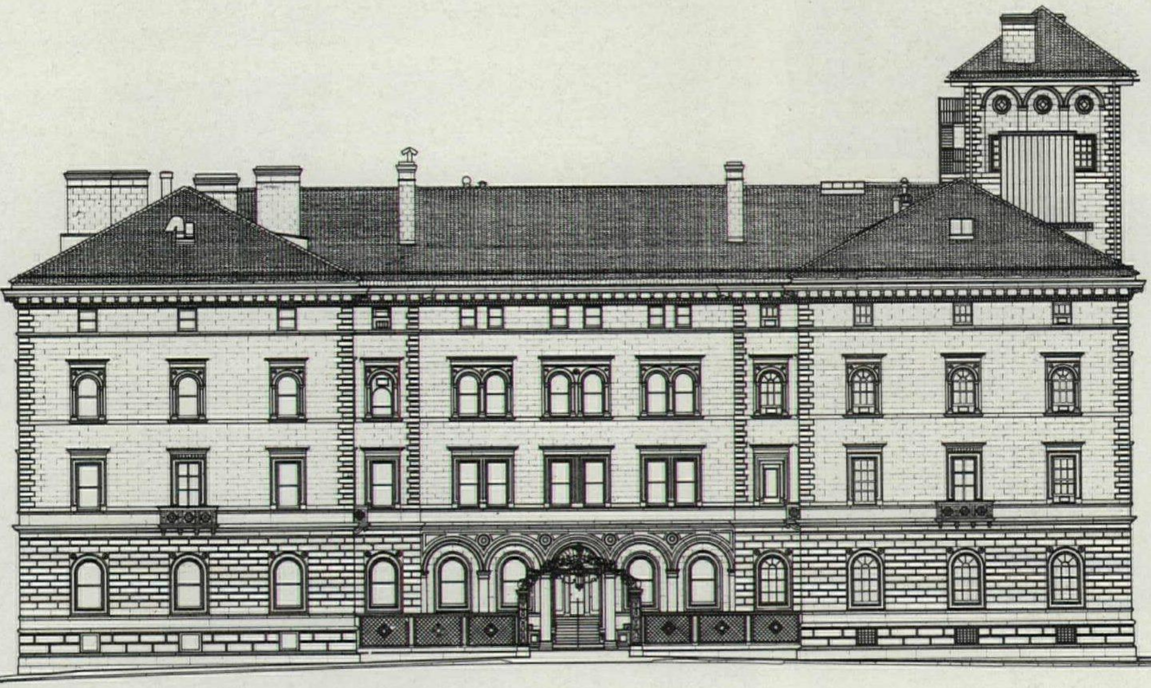


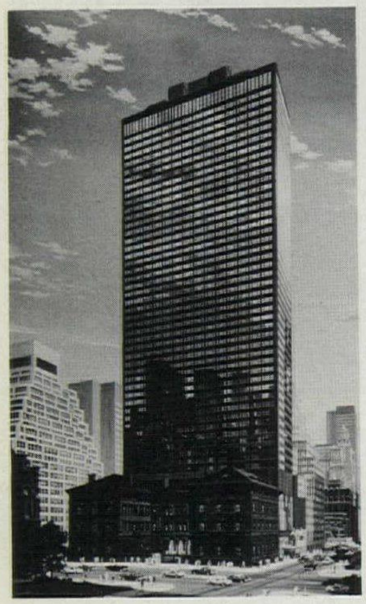
Data
Project: *Old United States Branch Mint, New Orleans, La.*
Architects: *McNaughton, Biery, Toups, Lemann—a joint venture of E. Eean McNaughton, architects; Biery & Toups, architects; Bernard Lemann, architectural historian.*
Original architect: *William Strickland.*
Client: *State of Louisiana, Louisiana State Museum.*
Site: *70,000-sq-ft flat site at east edge of Vieux Carré historic quarter.*
Program: *restoration/adaptation of existing building, with site, for museum, library/archives, and commercial use.*
Structural system: *existing load-bearing masonry; iron columns; brick vaulting.*
Major materials: *restored stucco on brick; granite pilasters, etc.; interior plaster on brick.*
Mechanical system: *decentralized air-handling and fan coil units, with electric heating and chilled water from central chillers (218 tons); humidity control in museum, archives.*
Consultants: *EDAW, landscape; E. Eean McNaughton & Associates, interims and exhibits; Morphy, Makofsky & Masson, structural; Harold E. Faller & Associates, mechanical; Zervigon & Associates, electrical; Chambers & Chambers, paint/mortar analysis.*
General contractor: *J.A. Jones Construction Co.*
Costs: *$3,048,000 (actual, 1979) including site work.*
Photography: *Alan Karchmer.*

Helmsley Palace Hotel and Urban Center, New York

The best of both worlds?

McKim, Mead & White's splendid Villard House complex has been beautifully restored and reused. The new Helmsley Palace Hotel attached to it, though, designed by Emery Roth & Sons, is another matter.





The new 51-story 1100-room Helmsley Palace Hotel (above) rises behind the Villard House complex (above right) where, basically, everything behind the major roof ridge was removed. The restored rooms (facing page), now public hotel spaces, include the Madison Room (top), Gold Room (bottom left), and Hall (bottom right) of the former Villard/Whitelaw Reid wing at the south end of the complex (see plan, overleaf).

By far the most important thing about the new Helmsley Palace Hotel in New York is not the hotel itself, but the fact that its owner, Harry B. Helmsley, saved the famous Villard Houses on Madison Avenue behind which the new 51-story, 1100-room hotel rises. How it happened that Helmsley spent millions of dollars just on restoration, considering he admits he was "dragged kicking and screaming" into the preservation movement, is a very long and very complex story that goes back to the spring of 1974. This story and the entire history of the houses have been well documented, and especially so in William C. Shopsin and Mosette Glaser Broderick's *The Villard Houses: Life Story of a Landmark* (The Viking Press, 1980), and in the February 1981 issue of *Interior Design*.

In 1882, Henry Villard commissioned McKim, Mead & White to design a group of six houses, which were executed by Joseph Morrill Wells of that firm as a single U-shaped building in the style of a Roman High Renaissance palazzo centering on a courtyard facing the avenue. By late 1883, the Villards could move into their unfinished portion, the largest and most elaborate of the houses occupying the entire south wing, but dire financial straits soon forced them to move out. Work on the other five houses continued, but it was halted on the south wing until the Whitelaw Reids bought it in 1886 and subsequently altered some of the decorative schemes under the direction of Stanford White. At this time, changes in the music room, the most famous and admired space in the entire complex, explain why it is called the Gold Room today. Further changes were made by White in 1891 when he converted the three dark front drawing rooms from their richly paneled (but restrained for the time) Italianate style into the single large, bright room of the French Classical manner so beautifully restored today. Under William Kendall, a tower extension was added to the rear of the wing in 1910, which allowed for some new rooms and for the renovation and enlargement of some others.

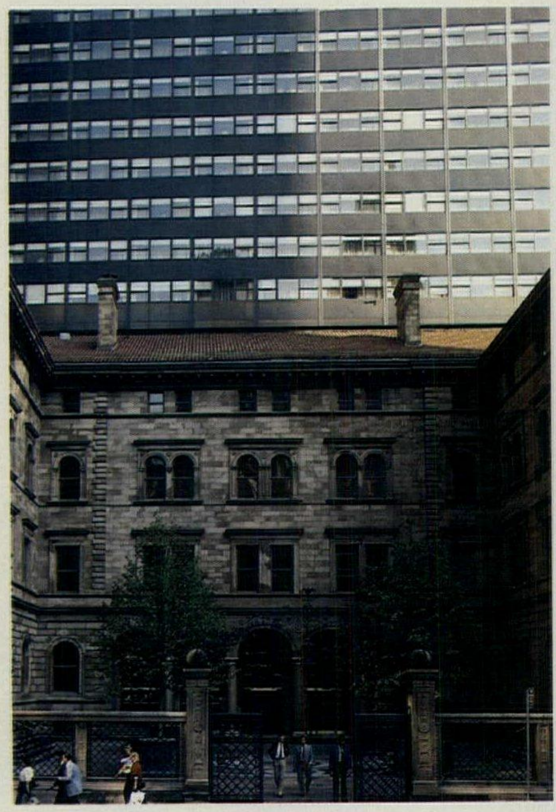
When the front and middle houses of the three that make up the north wing were inherited by one person in 1922, the two houses were converted into one residence and the interiors renovated in the French fashion by Charles Platt. These handsome rooms, which were occupied from 1946 to 1969 by Random House, exist today as the Urban Center.

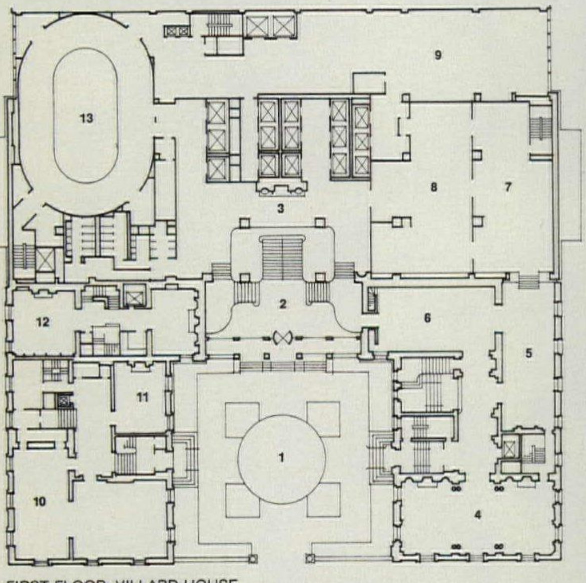
The house at the rear of the north wing was first occupied by its second owner who, in 1886, had the interiors reworked by Babb, Cook & Willard. The house has been occupied for some years now by Capital Cities Communications (Lowell Thomas), and according to Shopsin and Broderick's book, it is impossible to distinguish remains of McKim, Mead & White's original interiors from those of the later work.

The major interiors of the two houses between the north and south wings have been demolished to become the Grand Foyer of the new hotel. The house to the south originally had a Queen Anne style interior, which was never considered very noteworthy. In any case, it was extensively renovated for chancery agencies after World War II by the archbishopric of New York, which ultimately came to own the entire complex. The beauti-

Steven Zane

Helmsley Palace Hotel and Urban Center, New York





FIRST FLOOR, VILLARD HOUSE
SECOND FLOOR, HELMSELY PALACE HOTEL ← N 40'/12m

Legend

1 Courtyard
2 Entry
3 Grand Lobby
4 Madison Room
5 Hunt Bar
6 Gold Room
7 Hunt Room
8 Trianon Room
9 Kitchen
10 The Urban Center
11 Urban Center Bookstore
12 Capital Cities Communications
13 Versailles Ballroom

Steven Zane

Steven Zane

The Madison Ave. courtyard (far left) is repaved in the Italianate manner after years of asphalt topping. The Hunt Bar (left) is in former Villard dining room. The Grand Lobby (top and facing page top right) has arms extending to side streets, with vehicular entry and check-in at south side (above and right before ceiling gilding and carpeting).

ful central stairhall of the north middle house has been preserved at the Brooklyn Museum. Other portions, along with parts of the Whitelaw Reid tower extension, have been incorporated into public rooms within the new hotel.

By the time the archbishopric had acquired the entire Villard complex in 1971, demand for office space had dwindled, and efforts to rent the space foundered. With the recession and New York's severe economic crisis following, matters only got worse. In 1974, Helmsley offered to lease the landmark building and its land, proposing to build a combined office, hotel, and apartment tower on unused air rights at the rear of the site, which would entail removal of some back portions of the Villard complex. Most of the rest of the complex was to be refurbished and rented out.

Since the interiors were not protected by law, a long struggle ensued over concern for them, centered on the Gold Room, which was slated to be demolished in the developer's original proposal. In 1976, the archdiocese hired William Shopsin as historic preservation consultant to represent it in the resolution of conflicts. Through his efforts and those of the Municipal Art Society, the Landmarks Preservation Commission, the New York Landmarks Conservancy, the New York Chapter of the AIA, the Architectural League of New York, and other public and private organizations, agreement was finally reached. The south wing would be incorporated as public rooms for the new tower, to be built as a 51-story, 1100-room hotel.

Helmsley's architects for the tower, Emery Roth & Sons, hired James R. Rhodes as project manager for the restoration of the south wing and its Gold Room. The interior design for the hotel's restored rooms and new public areas was done by Tom Lee, Ltd., and Helmsley Hotels Design Corp. did the guest rooms and halls leading to them.

There is no question that the restored rooms have been given the loving care befitting their quality and splendor. For this one can only be deeply indebted to Helmsley. The rooms, however, are not without certain problems. Some of the carpeting and upholstery, particularly that of the Hunt Bar (former Villard breakfast and dining rooms), are inappropriate and too aggressive in design and color. The principal entrance to the spectacular Gold Room is no longer through the splendid Italian marble mosaic main hall of the restored house, but unceremoniously through a door cut in the back of the room where it abuts the hotel's Grand Foyer. Another problem, especially for the restored rooms, is the atrocious illuminated exit signs (removed in photos) the city requires in public spaces. At least, different versions of these should be allowed for such rooms.

The problems of the south wing, though, are minor in comparison with those of the new hotel spaces. There are some handsome "period" rooms, such as the Versailles Ballroom, and "traditional" ones, such as the Trianon and Hunt Rooms. But most of the rest of the place might make one think one had stumbled by mistake into post-war Miami

Beach rather than supposedly sophisticated New York. Worst of all is the Grand Foyer, mainly because it is the most prominent. Part of the purpose of this space was to connect the restored rooms to the hotel, which were not built at the same floor levels. Consequently, one must go up half a flight of stairs to reach the restored rooms, up a full flight for the public rooms at the hotel's second level, or down a flight for the main lobby. As a result, the foyer is a sea of stairs, which have also been hideously overscaled for the space. To complicate matters, an overpowering ormolu and crystal chandelier 10 ft high and 8 ft in diameter has been hung in the double-height space. This effectively obliterates from view the most important object in the room: the restored marble fireplace on the mezzanine that is considered a major work of sculpture of Augustus Saint-Gaudens, which was removed from the demolished portion of Villard/Whitelaw Reid dining room. The foyer is finished in polished pink marble, silver and gray damask wallpaper, bright metal railings, antiques, and red patterned carpeting, all laid on with a heavy hand. This garish and ersatz attempt at Old World grandeur, in what is otherwise clearly a contemporary space, only seems to mock the true elegance of the restored rooms.

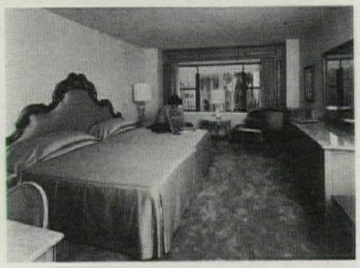
The main check-in lobby is at the hotel's first floor. It is designed as a concourse between the two side streets and is located parallel to, but just behind and below, the Villard complex, which it meets at the Grand Foyer as two arms of a T. This dark, long and low, narrow space does not attempt the grandeur of the foyer, and consequently does not fail as dramatically. But its kitschy Classical detailing, especially in so mean a space, is no less forgivable. It must be mentioned that Tom Lee, Ltd., should not be given all, or perhaps any, of the blame for the vulgarity of these spaces, since it is widely circulated in New York that Mrs. Helmsley exercised very strong control over their interior design.

The guest rooms, designed by Helmsley Hotels Design Corp., are spacious and comfortable with their monochromatic pastel treatment. The furnishings are relatively simple except for the outlandish (Venetian Baroque?) bed headboards. Throughout the guest floors, halls are graced with currently commissioned portraits of royalty who might have visited the hotel had it existed at the turn of the century!

The dark-metal-and-glass hotel tower itself is not only undistinguished, but by knowledgeable common consent, boring. It is not, however, as bad as some earlier schemes, one of which showed vertical travertine-clad piers racing up a dark façade and joined by arches across the top.

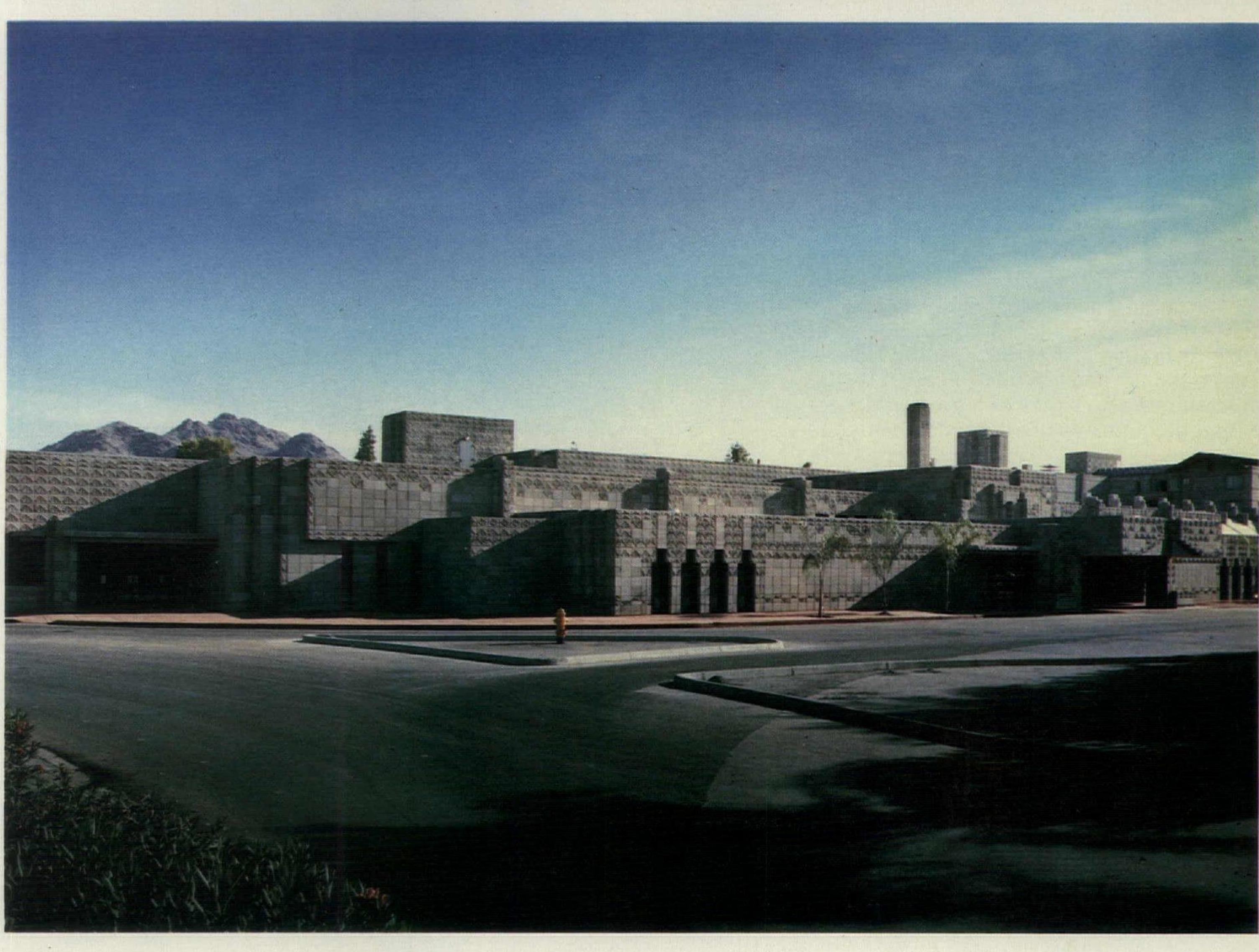
An ironic, and happy, note to this whole story is the Urban Center, which now occupies the front houses of the north wing. It is ironic that the Center should have this space, since some of the organizations under its roof—The Municipal Art Society, the Parks Council, the Architectural League, and the New York Chapter of the AIA—were among the developer's strongest opponents during the planning stages of the project.

In adapting the main floor rooms for public use, a major effort of James Stewart Polshek & Partners was to clear out the suspended ceilings, partitions, and other incursions left behind by Random House. Once the rooms were retrieved, the Center ended up with a handsome series of lecture, reception, and exhibit spaces, and a wonderful new architecture and urbanism book store sponsored by the J.M. Kaplan Fund. Concern has been expressed that the white walls with light trim in shades of what must be called harvest avocado are too self-consciously tasteful for the rooms, which could have benefited from a more vivid treatment. The areas selected for trim do little to enhance the architectonic quality of the rooms. These spaces are also not helped by the new overhead track lighting, which is too horsy for them. But these are minor blemishes to an otherwise well restored group of rooms. The most important thing about the Center is that organizations that can profit through proximity are now together. One can only hope that their new communication will give them an even stronger voice in the future when dealing with the kinds of issues involved in a project such as the Helmsley Palace. [David Morton]



The south side vehicular entry of hotel (top) and a guest room (above). The Urban Center in north wing of old complex has courtyard entry (below), bookstore and exhibit rooms (right, top and bottom).

Robert Beckhard



Koppes Fine Photography
Progressive Architecture 11:81

to presume that Wright occupied himself sketching another's work, which seems rather unlikely.

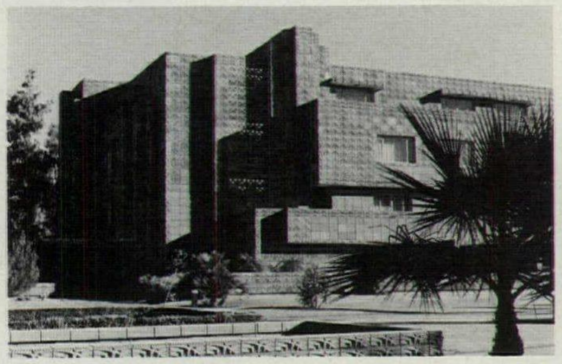
In addition to these sketches, the vaults yielded other treasures, such as original designs for furniture, carpeting, drapery, and other fabrics, some of which had never been produced but which are now used throughout the main building and later additions to the complex. A stained glass mural design of 1927 is now the focal point of the entry foyer. The carpeting designed in the early 1920s for the Imperial Hotel in Tokyo is reproduced for the public areas of the main building and for the new Conference Center. Other previously unexecuted carpet designs are used elsewhere. The upholstered furniture used in the main lobby and public areas of the Conference Center, and in the recent Paradise and Valley guest wings, is a 1950s design for Heritage-Henredon that had not been produced. And the huge octagonal tables in the main lobby were designed in 1932 for Taliesin East.

The new additions

From 1929 until the fire in 1973, the only major addition to the hotel was the grand ballroom of 1969. This room, designed by Flatow, Moore, Bryan and Fairburn, basically enclosed what had previously been a garden. It is a pleasant, airy space that still reminds you it was once a garden. Today it is carpeted in a 1907 Wright design.

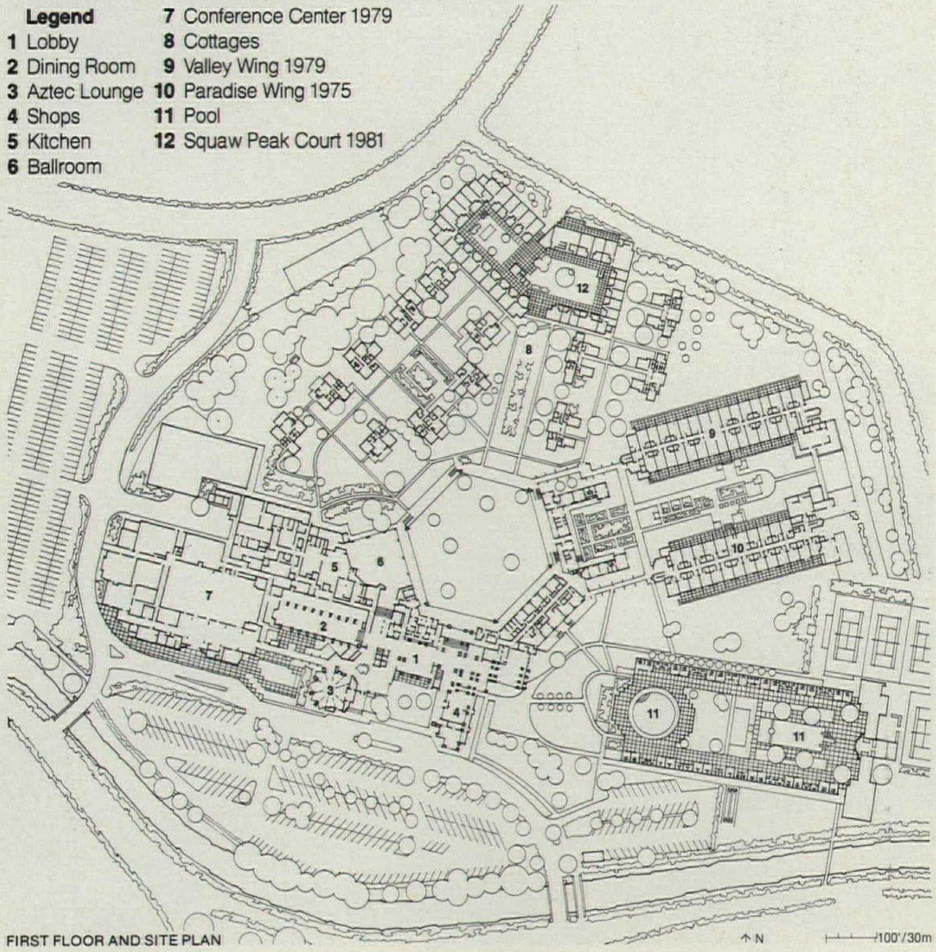
In recent years, the clientele of the Biltmore began to change. To keep it profitable, the hotel had to expand and open its doors to more than the select few. Under Talley Industries ownership of 1973 to 1977, the Paradise Wing was added in 1975. Because the owners wished to maintain an integrated appearance for the complex, they naturally wanted to use the textile block process used for the original building. Wright had first developed this system for the four houses of 1922–24 in the Los Angeles area: the Millard, Storer, Ennis, and Freeman houses. In this process, concrete blocks of a great variety of design are individually cast and then combined into various shapes and designs by "weaving" horizontal and vertical steel rods through hollows at the back of each, which are then filled with concrete. This system was used for both exterior and interior walls.

Today the cost of casting concrete block in this manner is prohibitive, so a different system was worked out for the 72,000-sq-ft, four-story, 88-room Paradise Wing. Standard 8" concrete block is used for interior bearing walls, but a variation of the textured block system is used for exterior walls. Because the original sand-cast aluminum molds still existed, new fiberglass molds could be made from them, which could in turn be joined together to form the mold for a larger panel. About 500 tilt-up panels of 150 sizes and



David Morton

Main lobby (top, and facing page) shows Wright's integration of lighting and structure, and Imperial Hotel carpeting. Valley Wing (above left) is steel frame and tiled; Paradise Wing (above) is tilt-up panels. Aztec Lounge ceiling (left) shows part of 38,000 sq ft of gold leaf used.



FIRST FLOOR AND SITE PLAN

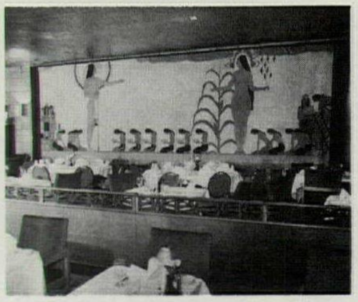
types, weighing from 4 to 16 tons, were site cast, reinforced, and crane-lifted into place.

After Rostland Arizona, Inc., a subsidiary of the Canadian Rostland Corp., bought the complex in 1977, the Valley Wing and Conference Center were added and again different versions of the textile block system were used. For the 73,450-sq-ft, four-story, 120-room Valley Wing of 1979, standard 8″ concrete block walls have been faced with the Biltmore's textile block patterns in the form of individual, 1¼″ thick tiles. For the steel framed 39,000-sq-ft Conference Center of the same year, the same tiles are applied to the exterior. With this structural system, though, they are attached to structural steel studs and then sprayed from the inside with polyurethane foam for stability and insulation, which is then covered with cellulose fireproofing before gypsum wallboard is applied.

An admirable quality of these new additions is that they do not seriously intrude upon or corrupt the original complex. They are low, nicely detailed buildings that work hard at being good neighbors. The new residential wings are tucked away in a back corner as backdrops to the pools and tennis courts. The Conference Center, although at the front, is attached to the dining room at the west end of the main building. It is pushed forward a bit, but since the main entry and Aztec Lounge of the original building at the east end of the dining room also are, these elements now form a handsome enclosure as sides to the terrace and lawn in front of the dining room. None of the new additions follows the Arts and Crafts bungalow form of the original building. But of all, the Conference Center seems to be the most directly influenced by other earlier work of Wright. Its brooding, massive form quickly brings to mind the early Los Angeles works, especially the Mayan monumentality of the Ennis house.

Since the 1973 fire, the Arizona Biltmore has added $25 million in new construction, which has averaged out to about $58.00 per sq ft. The continual refinement of the textile block system was necessitated to keep costs at a reasonable figure. In continuing that tradition, a new 109-room guest accommodation is being added to the 407-room complex. The Squaw Peak Court now in construction at the north end of the site will be of steel frame and textile block tile similar to that of the Conference Center, and will be welcoming visitors this time next year. [David Morton]

The dining room (below and facing page bottom right) has mural of "Legend of Earth and Sun" by Maynard Dixon. The soffit detail (facing page top) is in a room now used for hotel offices. The Orangerie (facing page bottom left) is a cafe newly created from the former Sun Room.



Notes

1. Frank Lloyd Wright, *An Autobiography*, p. 329, New York, Horizon Press, 1977.

2. Olgivanna Lloyd Wright and Bruce Brooks Pfeiffer, *The Arizona Biltmore, History and Guide*, p. 5, Copyright 1974 The Frank Lloyd Wright Foundation.

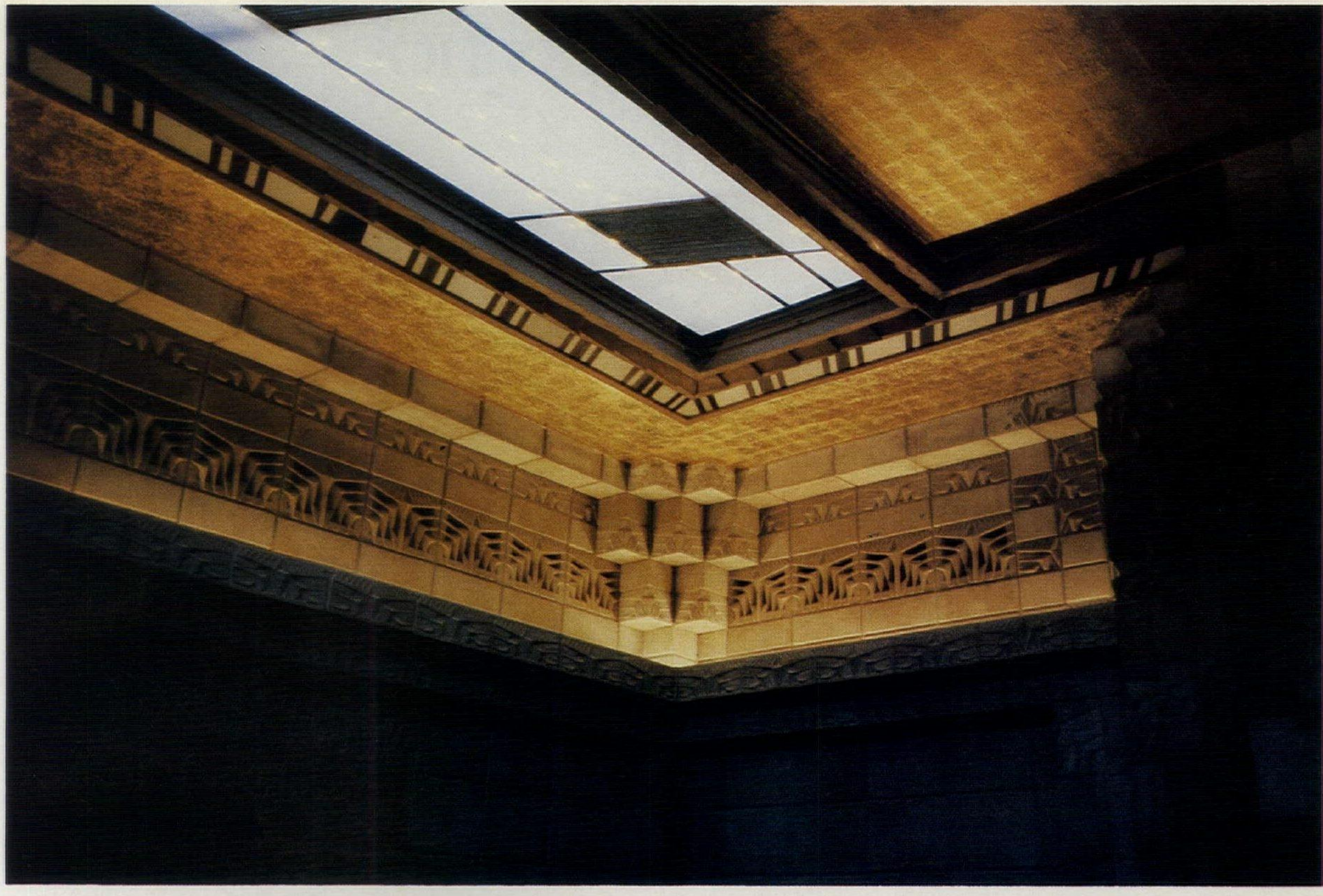
3. Henry-Russell Hitchcock, *In the Nature of Materials*, p. 77, New York, Hawthorn Books, Inc., 1942.

4. William Allin Storrer, *The Architecture of Frank Lloyd Wright*, entry No. 221, Cambridge, Ma, and London, The MIT Press, 1974.

5. Wright and Pfeiffer, *The Arizona Biltmore.*

Data

Project: *Arizona Biltmore Hotel, Phoenix, Az.*
Architects: *Albert Chase McArthur, architect-of-record for original building; Frank Lloyd Wright Foundation, John Rattenbury, project architect for later additions; Frank Lloyd Wright Foundation, William Wesley Peters, chief architect, John Rattenbury, project architect; John deKoven Hill, interior design, Mrs. Franz G. Talley, consultant for reconstruction and decoration of original building.*
Clients: *Talley Industries for Paradise Wing, Rostland Arizona, Inc., for Valley Wing and Conference Center.*
Site: *35 flat acres surrounded by mountains.*
Program: *88-guest-room Paradise Wing of 72,010 sq ft, 120-guest-room Valley Wing of 73,450 sq ft, Conference Center of 39,000 sq ft including 9,916-sq-ft ballroom.*
Structural system: *precast concrete slab floors, bearing walls of concrete block with exterior walls of decorative textile-block tilt-up panels for Paradise Wing; precast concrete slab floors with bearing walls of concrete block for Valley Wing; steel frame with girders and open web joists for Conference Center.*
Mechanical system: *electric heat; electric-powered chillers in basement of Paradise Wing supplies it and Valley Wing, with fan-coil units in dropped ceilings of guest rooms; two electric rooftop package units for Conference Center.*
Major materials: *gypsum board; textile block in the form of 1¼″ tiles applied to concrete walls of Valley Wing; the same tiles attached to structural steel studs of Conference Center. (See Building materials, p. 198).*
Consultants: *Talley Industries, landscape; Mae Sue Talley, interiors; Magadini-Alagia Associates, structural; Lowry-Sorensen-Wilcoxson, mechanical; Ellis, Murphy, Holgate and Johnson, civil, for Paradise Wing; Frank Lloyd Wright Foundation, landscape and interiors; Magadini-Alagia Associates, structural; Sullivan and Masson, mechanical; Collar, Williams and White, civil, for Valley Wing and Conference Center.*
General contractor: *M.M. Sundt Construction Co. for Paradise Wing, Kitchell Contractors, Inc. for Valley Wing, CRS Construction for Conference Center.*
Costs: *$3.5 million, $46.79/sq ft, for Paradise Wing; $4.4 million, $57.52/sq ft, for Valley Wing; $2.8 million, $72.05/sq. ft, for Conference Center.*
Photos: *Tim Street-Porter unless otherwise noted.*



David Morton

Restoration is not salvation

Brian Brace Taylor

Recent renovation of Le Corbusier's Salvation Army refuge in Paris illustrates the difficulties of restoring a much-altered landmark—and the price of doing so with weak conviction.

Le Corbusier's Cité de Refuge (City of Refuge) in Paris, designed and built for the Salvation Army in 1930–1933, belongs in a category with few other buildings. This is not simply because of its uniqueness as a building type, nor is it because of its importance in the total *oeuvre* of an acknowledged innovator in 20th-Century architecture. In fact neither of these qualifications has been fully explored nor generally accepted up to now. Nevertheless, the Cité stands out as a building whose very conception, architecturally and technologically, determined in many ways, and from the very outset, how it was *mis*understood, *mis*used, ill-maintained and thus poorly preserved by its owners and clients. And as an example of restoration, it has the added interest of having been substantially altered by the original architect, Le Corbusier, during a prior restoration.

To put the case a different way, it is almost impossible to imagine today (or perhaps, ever to have known) what specific cultural values might or should be attached to this extraordinary piece of architecture. I have tried, in my recent book about the Cité (*Le Corbusier—Cité de Refuge,* L'Equerre, Paris, 1980) to raise some possible answers by reconstituting the design process through the architect's drawing and correspondence. Yet some of the basic reasons for eventual conservation of this historic building (for example, its hermetically sealed glass façade, its rudimentary systems of environmental control, its display of industrially produced finishes) are undercut by the fact that it suffered nearly continual modification from the moment it was delivered to the owners. When the architect's vision of progress in building at a conceptual level is not fulfilled in the final edifice and is ultimately sabotaged by the client and the architect himself, it is extremely difficult for the historian/preservationist to ascertain (and then defend) the inherent cultural values in such a structure.

The Cité de Refuge which one sees today is the outcome of a program by the Salvation Army for restoring the old building in 1975 and for constructing an annex called the Cité de l'Espoir (City of Hope) on adjacent land to the North. A fund-raising campaign for both ventures went on simultaneously with a contribution from the French Government towards renovating the Cité de Refuge. The latter was made possible because certain parts of Le Corbusier's Cité have been officially designated as historic monuments, notably the south façade and the main entrance hall.

We are confronted immediately here with the crux of the problem raised by the Cité in its last remodeling. The south façade, the original south façade, was *the* principal architectural expression at the time by Le Corbusier of his theory of Modernist architecture and urban planning. Behind this 1000 square meters of glazing, running upwards through five stories and lengthwise for nearly 70 meters, was to have been a mechanically-controlled conditioning of the dwelling environment: filtered, heated, ozonified and humidified air was to be pumped throughout the dormitory spaces and individual apartments for some 500 persons. This primitive system of air conditioning for habitation, as well as the glass curtain wall, were landmark achievements in France in 1933. Le Corbusier foresaw "exact breathing" (as he called it) as the key to the creation of healthy, aesthetically satisfying urban settings for the future.

Change of face

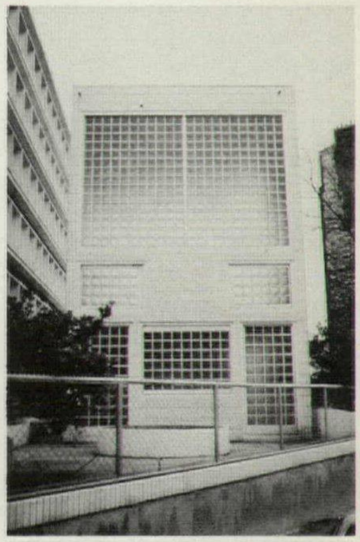
The present façade dates from the first post-war restoration, executed under the voluntary supervision of Le Corbusier according to his own designs and in no way does it resemble the original treatment. The latter was the subject of violent polemical debates between Le Corbusier, the Salvation Army and municipal authorities in Paris almost from the day the Cité started operations, with the architect finally having to bow to pressure in 1934–35 and put operable windows into the curtain wall in order to alleviate suffocating heat due to mechanical malfunction. Wartime occupation (or lack thereof) of the Cité and a *coup de grâce* in the form of a bomb exploded by the Germans in front of the building on the day they evacuated Paris, finished off the glass curtain wall for good. The architect, in the midst of completing his Unité d'habitation in Marseilles in 1950, agreed not to reassemble a glass curtain-wall but to follow the client's wishes for wood panel infill and frames for windows that opened, provided the Salvation Army accept the installation of a concrete *brise-soleil* (whose shallowness, as well as orientation directly to the south, make it practically useless). The metal window frames on the east façade of the Cité were replaced with wood ones.

Brian Brace Taylor is an American architectural historian, who is living in Paris, a former editor of *Architecture d'Aujourd'hui,* and managing editor of *Mimar.*

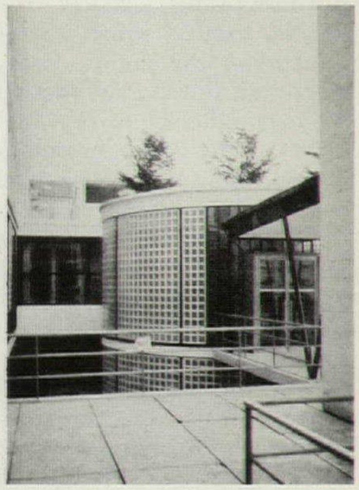
In spite of the radical face-lifting undergone by the Cité in the 1950s its correct place in history as direct predecessor to the Unité in Marseilles is nevertheless underscored by the exterior polychromy applied to the panels of the south façade precisely at the same moment that polychromy for the Unité was being selected. A letter from Le Corbusier to the Salvation Army describes exactly the tones he had in mind—"dark red, dark blue, and yellow that is made with yellow ochre and not with chromium." The client's lack of respect for his wishes in this matter, compounded by his discovery of certain aesthetic license (not to say atrocities) committed in the main entrance hall, including painted frescoes on the glass block, imitation wood wallpaper etc., moved Le Corbusier to resign as consultant. Whether the main hall and the south façade in their modified form should be officially classified as worth preserving today (the fresco no longer exists!) is debatable.

What is not open to debate, it seems to me, is the apparent lack of scientific and moral responsibility in terms of methodology applied in the renovation. On all sides concerned this has been the case. The depart-

John Dixon



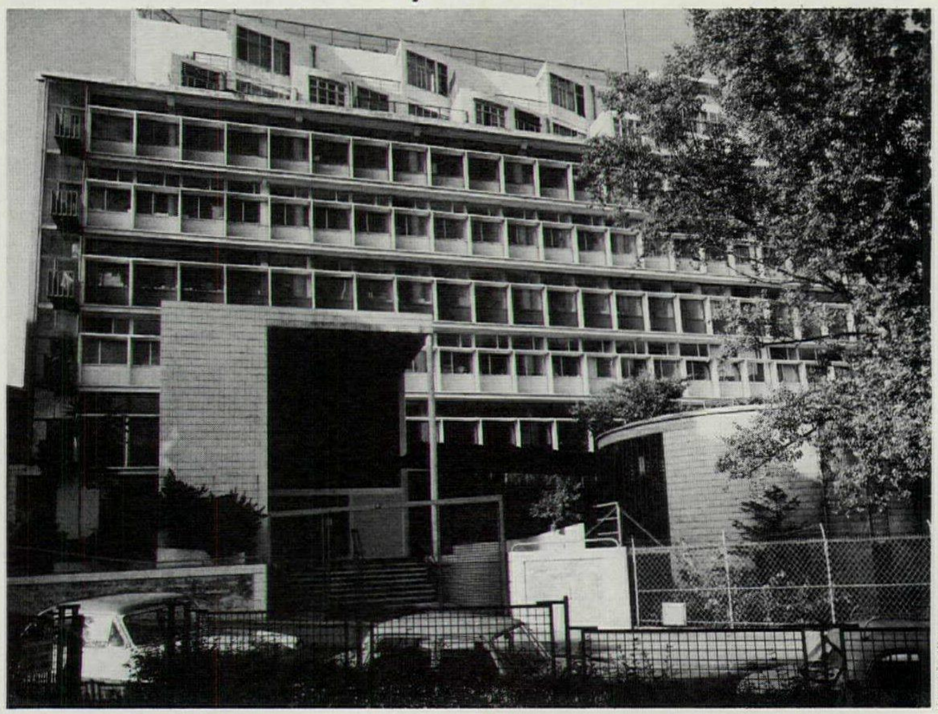
John Dixon



John Dixon

Brian Brace Taylor

Renovated Salvation Army building includes sunshades added in 1950 at Corbu's direction, with colors that do not quite meet his specifications. Entrance from sloping street (photos above) is by stairs up to cubic shelter, from which bridge over service dock leads to cylindrical pavilion.



Leni Iselin

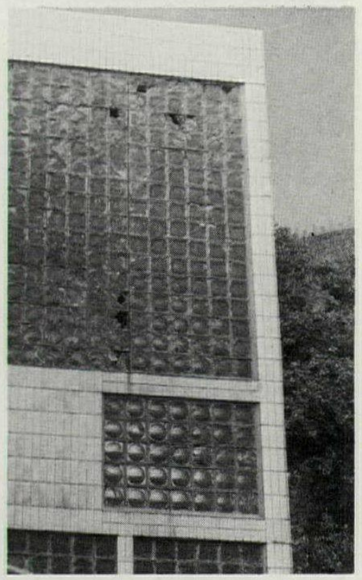
ment in the French ministry concerned with allocating funds could have exercised much greater firmness in dealing with the owners of the Cité, employing the eventual availability of funds for restoration to entice the Salvation Army to consult the historical documents as guides to decision-making. The Fondation Le Corbusier, which possesses a wealth of original archival material, as well as a pool of well-informed and sensitive former associates of Le Corbusier, did not exercise its moral clout sufficiently, even though it has ministerial representatives present on its own advisory board. And finally the clients, while pleading financial impoverishment, continued to demonstrate their ignorant and conservative policies by failing to address themselves to an architect with a greater understanding of Le Corbusier's art than the one they chose.

Enlightened restoration of buildings conceived by Le Corbusier has been achieved, the villas La Roche and Jeanneret in Paris and one of the small rowhouses at Pessac near Bordeaux being cases in point. The Clarté apartment building in Geneva is another example of a reasonable approach, given the inherent structural, social, aesthetic and legal problems involved.

The Salvation Army was prevailed upon by the government authorities to restore only three upper stories to their "original" state. This entailed demolition of brick (and other) infill which had replaced the glass within metal window frames—considered at some time in the past as being too large. The proportions of the large bay window on the south façade, located where the central stairs terminate on the eighth floor, were reconstituted, but tinted glass was selected instead of the original clear plate.

No obligations beyond the above-mentioned, however, were imposed upon the owners. They were free to choose the tones of the exterior polychromy as suited their fancy and to paint the rest of the building entirely white, *including* the sunbreakers which Le Corbusier had specifically said should be left the gray color of the cement. The metal balconies (and the door frames leading to them) on the south were replaced at considerable expense, although the architect did not specify that they should be dipped in zinc to prevent rapid corrosion. Rusting, in fact, did begin to recur after the first winter.

Of the other materials employed as infill walls or for finishing in the Cité, the glass blocks, which recently were replaced, demonstrate vividly a dilemma commonly found in restoring buildings with industrially-produced elements. The particular type of glass block manufactured by the Saint-Gobain company and utilized widely by Pierre Chareau in his Maison de Verre and Le Corbusier in numerous buildings after 1930, was marketed under the name "Nevada." Unfortunately, although he greatly admired the modular aesthetic properties and light-diffusing character of the Nevada, Le Corbusier had little direct practical knowledge of where they could reasonably be used, how they were to be best assembled and consequently what their life cycle might be. Over the years, a tremendous number of these Nevadas experienced severe cracking, especially those at the Cité de Refuge (but also at the Swiss dormitory) when they were located in places exposed to direct sunlight for long periods. The phenomenon may be due to a number of factors, including rigid Portland cement mortar or insufficient space between adjacent blocks, but large areas of these have needed replacing.



The Nevada is no longer being manufactured, however, and even the original molds have disappeared. Large quantities of the old model block are impossible to find. The Salvation Army had to substitute a new model glass block that has different dimensions, surface treatment, color, and perhaps, longevity.

Brian Brace Taylor

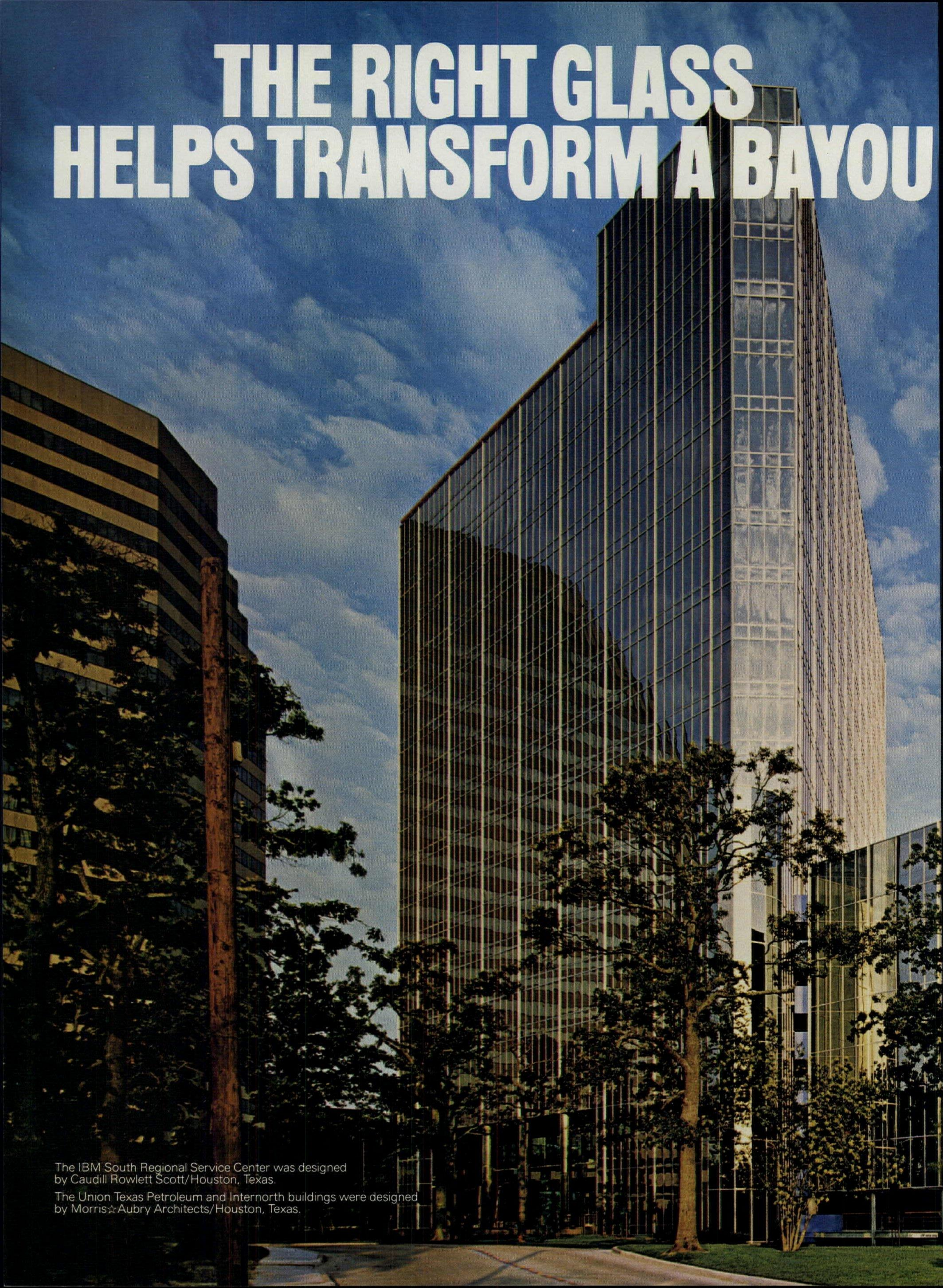
Archive photo (top, opposite) shows main, south front at completion. In view from 1960s (middle, opposite) façade has sunshades added in 1950, penthouse levels show effects of various alterations. Photo of entry shelter before latest renovation (bottom, opposite) shows original scale and pattern of glass block, as well as ruined condition. View from east (above) shows penthouse portions and east end as renovated.

Like so many other standardized, industrially produced elements incorporated by architects of the early 20th-Century into their constructions, the Nevada became obsolete and was superseded by an element with other properties. The irony is that the new blocks are nevertheless still assembled manually on site in much the same way as in 1930.

The manner by which the structural frame of the Cité was executed—but not the rest of the work, including the laying of glass blocks—is certainly the third historically important feature of the building, along with the curtain wall and the air conditioning. Le Corbusier was extremely proud of the fact that his post-and-slab system in reinforced concrete had been executed by the contractor using a program based upon F.W. Taylor's principles of scientific organization of labor (Taylorization). Advanced planning of the division of forces into specialized tasks and crews working in carefully timed sequence managed to trim 13 days off the initial building schedule. This demonstrated, at least to Le Corbusier's mind, the truth of his assertion that industrialized methods were in fact applicable to building sites. Unfortunately, the subsequent finishing work and complete installation of the building was done according to traditional methods, i.e., individual subcontractors working in poor coordination with one another.

This discrepancy between an architect's dream of "high-tech" construction and what the manufacturers and builders are capable of producing at a given moment persists today, 50 years after the Cité was built. Furthermore, restoration of such early examples of industrialized building as the Cité inevitably depends on craftsmen for execution, rather than on specialized technicians. Original elements needing replacement tend to be custom-made, unless they are simply replaced by another element altogether (as in the case of the Nevadas).

The Salvation Army's Cité de Refuge raises a wealth of questions as to what is realistically salvageable in 20th-Century buildings sharing many of its same qualities. Such edifices have in the last century become more complex, partly because the functions they are intended to serve have become more complex—starting with the corporate or institutional client! One lesson at least to be drawn from the Cité's continuous history of change and repair is that when the original architect becomes involved in establishing criteria for restoration it is extremely doubtful that he will remain loyal to his original conception. It would seem that the only antidote in such instances is for the client to seek guidance from competent specialists, such as a historian, an outside architect, and an engineer. Had this been done with the Cité, both in 1950 and most recently, something more of the original creation might have been saved. □



The IBM South Regional Service Center was designed by Caudill Rowlett Scott/Houston, Texas.

The Union Texas Petroleum and Internorth buildings were designed by Morris☆Aubry Architects/Houston, Texas.

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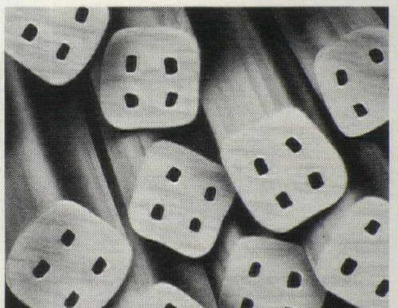

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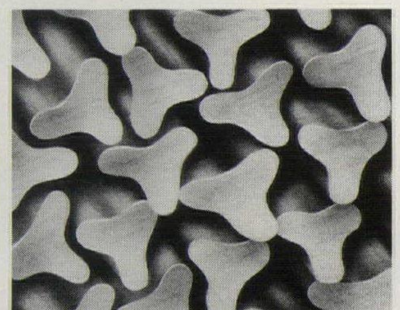

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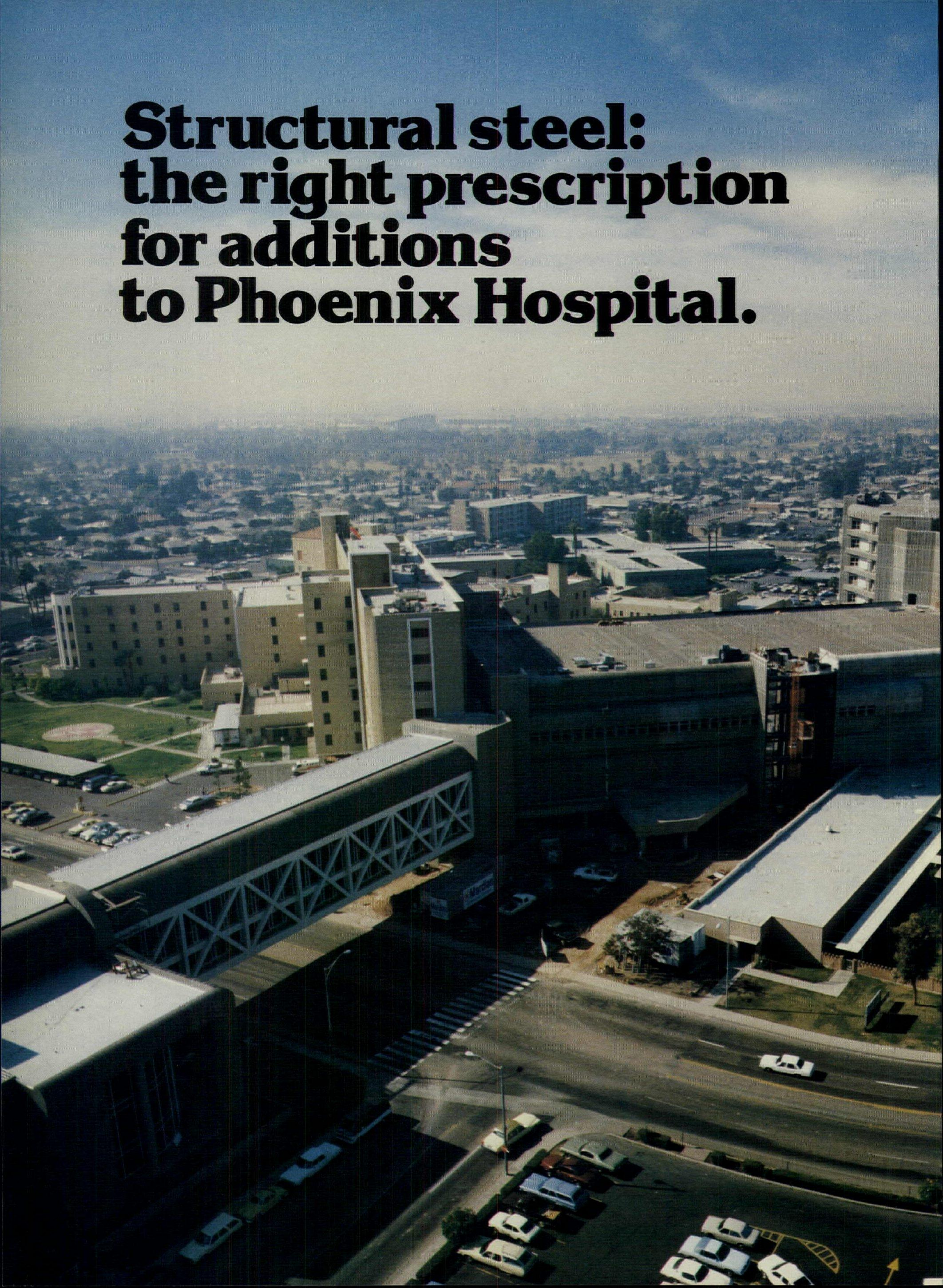
Structural steel: the right prescription for additions to Phoenix Hospital.



For two basic reasons, modifications and additions to hospital/health care structures present complex planning problems. First, every day and night, normal hospital functions must continue without interruption. Second, most hospitals are situated in high-density urban areas where available construction sites are restricted.

The $60.6 million addition to St. Joseph's Hospital & Medical Center in Phoenix, Arizona, was a typical situation—with the location problem compounded by a major traffic artery which intersected the site.

An innovative solution—only possible with steel—proved to be the staging of the structural steel at the plant of the fabricator/erector, nearly 600 miles away. This involved 250 trailer loads of steel, and the most exacting coordination. The steel was set in place directly from the vehicles to meet the tight "fast-track" erection schedule.

The additions represent one of the nation's largest hospital projects currently underway, with completion due in the fall of 1981. The main program includes a five-story ancillary building, an eight-story Nursing Tower with 202 beds, and new outpatient and admitting facilities.

Another challenge was the erection of a three-story, completely enclosed, climate-controlled bridge spanning a major thoroughfare between sections of the medical center.

Interstitial Space Design

The new ancillary (treatment) building is fully integrated with the existing structure and is designed to accommodate future vertical and horizontal expansion. It is an example of the structural framing system known as Interstitial Space Design—often used for hospital structures. It allows a maximum of clear, open floor space, with a minimum of servicing interference with normal hospital functions. It is also a highly flexible system, allowing for future functional changes.

We'd like to tell you much more about this project. For a copy of the St. Joseph's Hospital and Medical Center Structural Report (ADUSS 27-7875-01) or for any other information concerning Interstitial Design or steel for construction, contact a USS Construction Representative through your nearest U.S. Steel Sales Office, or write to United States Steel, P.O. Box 86, (C 1662), Pittsburgh, PA 15230.

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TRADEMARK

Owner: St. Joseph's Hospital & Medical Center, Phoenix, Arizona
Architect: Varney, Sexton, Lunsford, Aye, Associates- Architects, Inc., Phoenix, Arizona
Structural Engineer: Robin E. Parke Associates, Inc., Phoenix, Arizona
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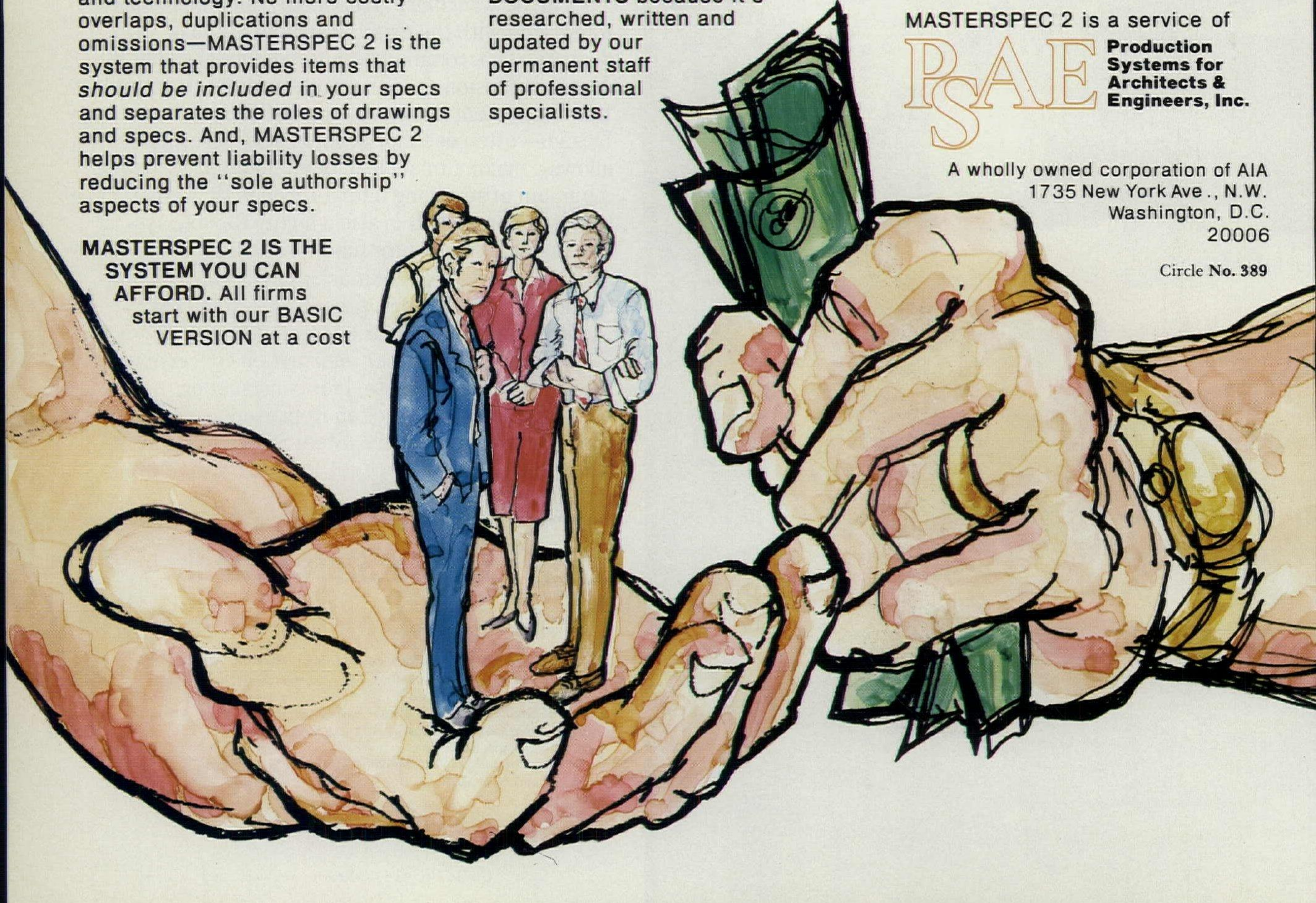


Seven sins of specifying–Part 1

Walter Rosenfeld

Experienced specifiers prevent trouble by avoiding certain practices in their project manuals. Seven such problem areas are the subject of Specifications clinic this month and next.

Next month, a look at Sin No. 5, Puzzlemaking: Obscure or muddled writing leaves the parties confused and keeps lawyers busy; Sin No. 6, Fiction writing: Asking for something that can't be done is asking for trouble; and Sin No. 7, Taking over: Don't assume the responsibilities that belong to the Contractor or the Owner unless you and your insurance company want to assume their liabilities as well.

Walter Rosenfeld, AIA, CSI, is Managing Director for Professional and Technical Services at The Architects Collaborative in Cambridge, Ma.

"Thou shalt not" might be too strong a way to preface these recommendations on what to avoid when specifying, but consider the consequences carefully before getting into any of the situations discussed in this two-part series.

Sin No. 1: Misdirecting instructions: Since the 16-division uniform construction index which forms the basis of the project manual is fundamentally trade-oriented, it is important to keep in mind that each section has its own specialized audience: the trade which does the specified type of work. Although the general conditions may insist that the work is an indivisible whole, there is considerable evidence that each trade reads just those technical sections applicable to itself. Therefore, the specifier should address a trade only in its own section and not somewhere else, however related two activities may seem.

If certain wood trim will be varnished rather than painted, you can say so in the millwork section, but don't go into varnish materials and application there if another trade is going to apply the finish. Of course you must then be sure to include varnish work in the painting section. A "Related Work" paragraph in each section can be used for coordination.

Drawing a line between trades is sometimes difficult and often demands special knowledge. Trade members can help clarify jurisdictions, but where doubt exists it's usually better to assign the work to someone (if you want it included in a bid) rather than to ignore the problem.

Sin No. 2: Cold copying: Without reviewing a reference document for applicability to the project at hand, it is not possible to prepare a competent specification. Whether the reference is an old specification that has been used successfully before, a master from the office file or from a specification service, a manufacturer's draft, or even an industry standard from ASTM or ANSI, don't copy it or incorporate it by reference into your project manual without checking to be sure exactly what it says.

The old office section or master may have obsolete or inappropriate parts. *SpecText* and *Masterspec* are regularly updated and changed. What appears to be a performance specification from a manufacturer may actually be proprietary and exclusive. ASTM periodically revises its standards too.

Unless you've looked at it recently, you may find surprises in a once-familiar reference. Are there choices to be made regarding finishes, optional items, performance categories? The person who takes responsibility for the specifications needs to know what's included and what isn't. You can't be sure if you haven't read it through.

Sin No. 3: Pinpointing: Using the project manual to locate the precise spot in the building where a specified material or product occurs generally causes problems. The item may also be needed in another location not mentioned. Or it may be deleted later from one place and not another. In each case, the specifier has to go back and make changes which might have been avoided. The burden of changes is much increased by this troublesome practice and occasions for error are multiplied.

More important, perhaps, pinpointing violates the necessary division of documentation between drawings and specifications *(CSI Manual of Practice MP 1-7)* under which the drawings show locations, dimensions, and relationship of materials, and the specifications that describe the materials' characteristics and methods of installation. If pinpointing were carried out to a logical conclusion, the drawings would barely be needed and the project manual would be enormous and awkward. This doesn't mean that you shouldn't schedule toilet accessories or light fixtures, or describe locations in a general way or for typical situations. It does mean that specific locations should be left to the drawings unless there is a compelling reason to do otherwise.

Sin No. 4: Potpourri: Since sections of the typical project manual come from several sources for final assembly at the time of printing, it is not likely that there will be much coherence, uniformity, or consistency to the finished product unless the specifier makes a substantial effort to organize, coordinate, and set standards for all the contributors. Failure to do so may result in conflicting requirements for shop drawings, guarantees, temporary facilities, and other job procedures, as well as duplication of work and incorrect or inadequate assignment of work to trades.

Such failure can also lead to the visual chaos in which each section has a different appearance, type face, page format, numbering system, and (even) job identification. Conflicts and confusion tend to result in higher job costs for the architect as well as the contractor (and therefore the owner), so that this sin is not merely one of cosmetics, but of substance. Aside from errors and omissions, coordination failure is probably the largest single cause of avoidable job extras. High priority should be given to coordinating all work included in the project manual. □

Confronting concrete realities

Theodore Prudon

Age has finally caught up with the 20th-Century building material, and carefully prescribed treatment may be called for to keep it in shape.

Cement Age

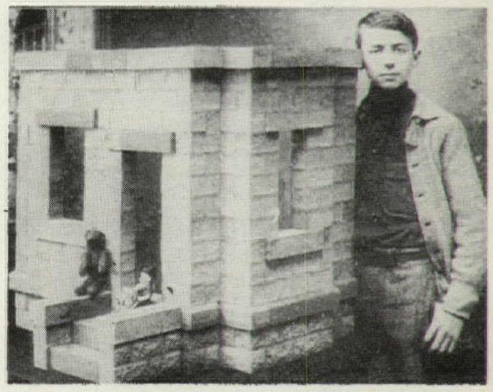
Theodore Prudon is an architect with The Ehrenkrantz Group in New York. He specializes in preservation and is on the faculty of the Historic Preservation Program at Columbia University.

The restoration and repair of older concrete structures has for several reasons become a very significant concern for many architects, builders, and owners. Problems with concrete are not new, but certainly they have become more visible in the last two decades. Concrete has probably been one of the most widely used artificial building materials of the last one hundred years (**1** and **2**). It has been applied as a structural material in reinforced frames or structural blocks, as a cladding material in cast stone, and more recently as precast structural elements and panels. Now the material has reached a critical stage in its lifespan: a whole generation of reinforced concrete buildings and cast stone buildings built between 1900 and 1940 are beginning to require extensive repairs; it is only a matter of time before more contemporary structures will be subject to the same concern.

Scott S. Pickard, an editor of the trade journal *Concrete International,* noted in the September 1980 issue that the restoration and repair of concrete will be a major public works priority of the 1980s. The rapid aging and deterioration of concrete public works structures, coupled with the increased value of the existing building stock, with its often prime downtown locations and available tax benefits, has made this restoration of considerable importance.

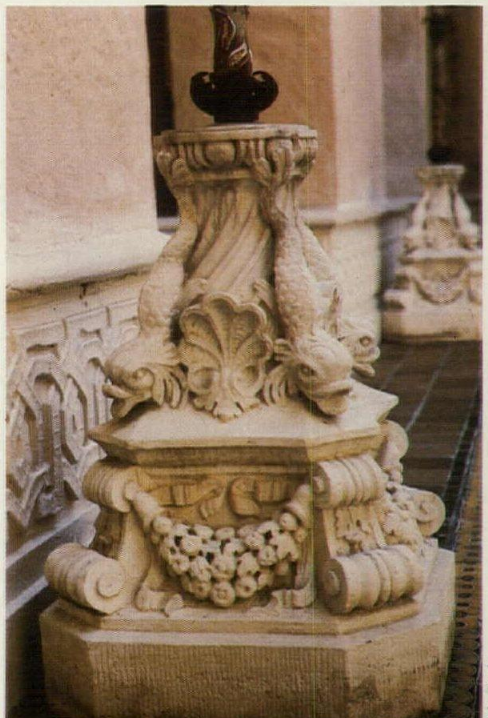
Historical development

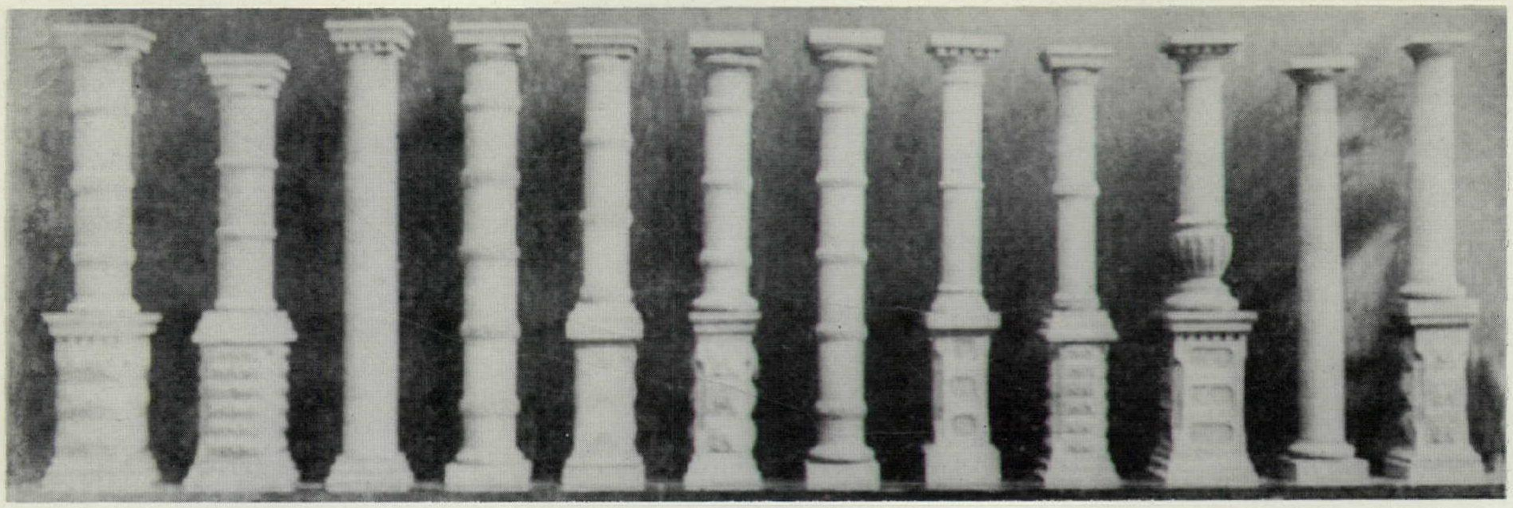
The history of concrete construction is a long one and closely related to the development of other concerns such as the quality of cement, changes in the cement industry, and the need for inexpensive but fireproof construction. In Roman times, poured-in-place concrete using a timber formwork was in common practice. Where necessary, the concrete could be reinforced with brickwork, timber, or bronze beams. The important discovery, however, was the hydraulic capability of the mortar obtained by adding pozzolana, a volcanic ash, to the lime mortar. The pozzolana formed, in presence of water and nonhydraulic lime, such insoluble compounds as calcium silicates and aluminates. These last compounds, which form the basis of contemporary mor-


Cement Age

1 Cast stone and concrete blocks were used extensively for building around the turn of the century, and even provided the inspiration for toys. This photo from an ad headlined "Something fine for your boy and for yourself also" shows a youth with a concrete dollhouse he has made for his sister, using a casting kit.

2 Elaborate cast stone configurations could be made using reinforced sectional plaster molds, sometimes with stunning results.


Judith Fagin



Technics: Concrete restoration

tars, allowed the material to be used for the large Roman construction projects of which the Pantheon, started in 27 B.C., is probably the best example.

Although some of the Roman technology seems to have been lost in later times, the discovery of a material in the Rhine Valley similar to pozzolana, called tras or taras, helped to continue the use of concrete with hydraulic mortars. The Dutch exported this material widely in the 17th and 18th Centuries, and it found application in structures such as St. Paul's Cathedral in London and in civil engineering structures in the United States.

The discovery and improvement of natural cements during the last part of the 18th and first half of the 19th Centuries was the next important development. Lime with clay impurities has some hydraulic capabilities; when these clay impurities equal or exceed 40 percent, a natural cement with hydraulic characteristics is obtained. In England, John Smeaton's work on the Eddystone Lighthouse and the later "Roman cement" patented by James Parker are examples. In 1818, Canvass White discovered natural cement rock in the U.S., and by 1938 he had started a cement works with his brother Hugh near Rosedale, in Ulster County, NY. From that time on, the name Rosedale became more or less synonymous with natural cement, and the product found wide application until the beginning of this century. The Brooklyn Bridge, the Brooklyn Navy Yard, and the California State Capitol were constructed with the use of Rosedale cement.

A problem with natural cement was uneven quality. Because the quality depended to a large degree upon the composition of the cement rock, the development of artificial cement was important. The work of Joseph Aspdin in 1824 in England, among others, led to the creation of "Portland cement." By 1871, this cement was being manufactured by David Saylor in Pennsylvania, but until the turn of the century, most of the Portland cement in America was imported.

The use of concrete saw a rapid increase in the last half of the 19th Century and first quarter of this century. Major developments took place in both the manufacturing of cast stone and in the use and application of steel reinforcement in monolithic construction.

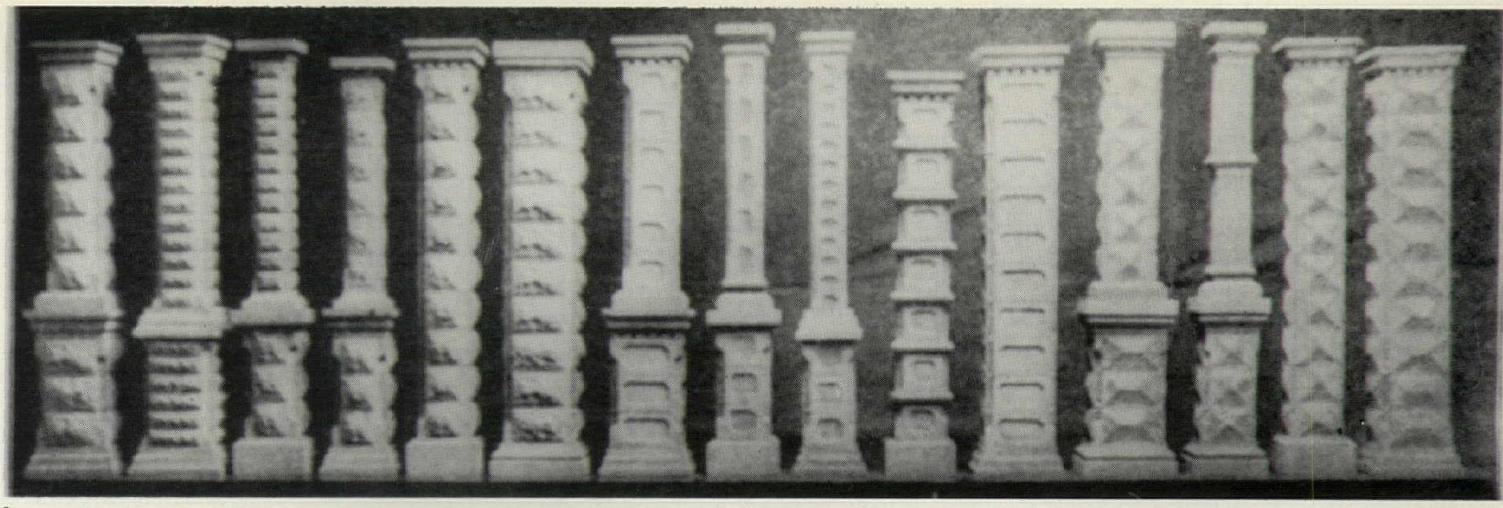
The use of cast stone was closely related to its increasing cost on the one hand and the desire to maintain ornamentation on the other. Terms such as artificial stone, manufactured stone, or architectural stone were commonly used to describe the small prefabricated units. As early as 1868, George A. Frear of Chicago patented an artificial stone product that was widely used, particularly after the Great Fire of 1871, and Frear stone was only the beginning in a long series of similar products. The desire to simulate stone is reflected in the visual characteristics of these products. Until well into the 20th Century, different techniques to suggest stone work were developed; rustication, veining, tooling, and ornamental detailing were common (**3, 4**), as was the use of face mixes to obtain various colors (**5**).

More complicated is the history and development of reinforced concrete construction. Iron bars, beams, rods, in combination with masonry or concrete, were used for fireproof floor systems. A fireproof concrete floor system with steel cables in the concrete patented by William B. Wilkinson in 1854, and other patents dealing with different parts or solutions were developed and included the use of wire mesh for reinforced concrete garden furniture, as patented by Joseph Monier in 1867. Active interest in reinforced concrete construction in America generally dates from the last part of the 19th Century. The 1876 Ward House in Port Chester, NY, now the Museum of Cartoon Art and a National Historic Engineering Landmark (**6**) was unique for its use of light iron beams and rods to reinforce the poured-in-place concrete.

The Ward House received considerable attention in its time and helped to attract many others to the method of construction. Ernest Ransome, starting as a manufacturer of Frear stone in San Francisco, began to develop reinforced concrete buildings in the 1880s. He continued his work and received a variety of patents for the design of floor systems and structural elements, making one of the major contributions to the technological development of reinforced concrete. Widespread interest in the potential of the material extended to Thomas Edison, who began to manufacture Portland cement, built several concrete buildings, and held several patents for poured-in-place formworks for use in low-income housing. The beginning of the 20th Century also saw the establishment of such organizations as the American Concrete Institute (1905) and the Portland Cement Association (1916), which helped to establish and maintain standards and quality control procedures.

With the development of material sciences and engineering, confidence in using reinforced concrete—also at that time referred to as ferro-concrete—began to grow. Reinforced concrete structural frames became common, although they were sometimes still clad with other masonry materials or cast stone, often with very remarkable results, as in the California Building at the Panama-California Exhibition of 1915 in San Diego (**7**). The early industrial buildings of Albert Kahn, particularly for the automobile industry, began to expose the full potential of this type of construction, which soon became commonplace throughout America (**8**).

In the 1930s and 1940s, the designs of architects such as Frank Lloyd Wright



Cement Age

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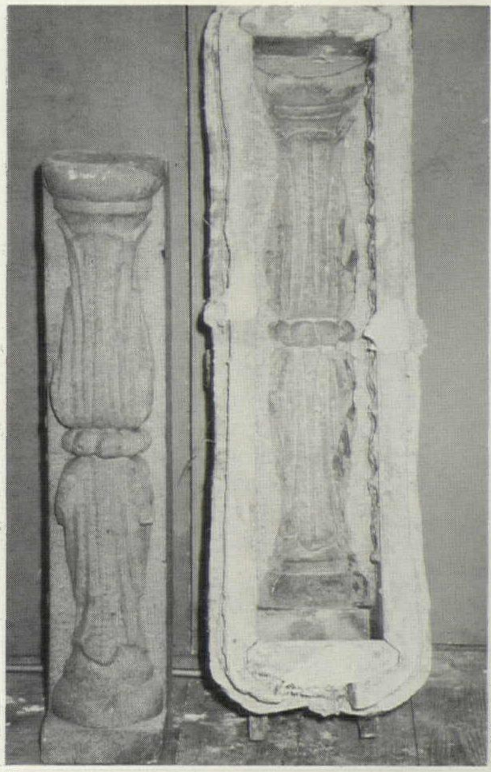


Judith Fagin

4

3 *Cast stone was available in a wide range of sizes and architectural styles.*

4 *Ornamental cast stone element with its plaster mold. The process can be duplicated today.*

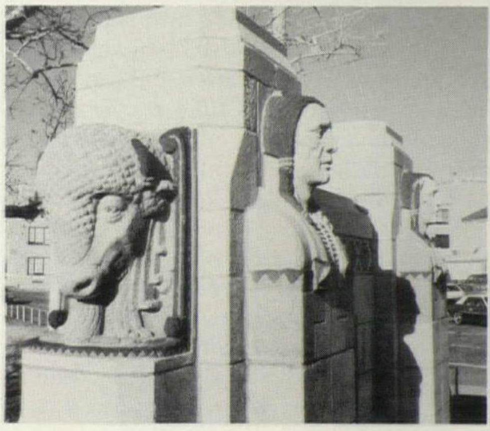
5 *Cast stone around 1930 could be made in a variety of colors and detail as in this entrance to a concrete bridge in Wichita, Ks.*

6 *The Ward House in Port Chester, NY, was designed by the New York architect Robert Mook and completed in 1876. This house, a national engineering landmark, was an early example of reinforced concrete.*

7 *The front elevation of the California Building in San Diego, designed by Bertram C. Goodhue in 1915, incorporated cast stone, stucco, and a reinforced concrete frame. Because of the large chloride content of the cast stone, extensive washing was required. Certain ornamental detail was replaced with fiberglass to comply with seismic codes.*

8 *The industrial building, with an exposed concrete frame, such as this early motion picture studio building in Queens, NY, became common throughout the country.*

9 *Cast stone, with only limited reinforcement to control shrinkage and allow for handling, can be fragile.*



Prudon

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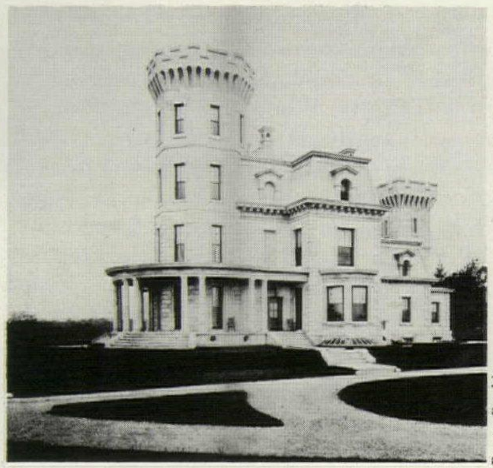

Bruce Popkin

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Prudon

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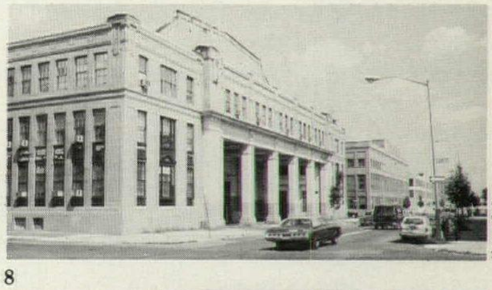

Kate Johns

8

Prudon

9

helped to explore the full aesthetic potential of concrete construction. The relative scarcity of structural steel during the post-World War II period further helped to establish concrete construction as an integral part of traditional practice.

Problems in concrete

Weathering, failures, and deterioration of concrete, whether contemporary or historic, are the result of a number of different factors. Analysis of these factors is crucial before repair or restoration work can proceed. It is important to remember that concrete requires exceptionally strict quality control of both design and execution and therefore is subject to failures due to improper applications. Criteria and code requirements for concrete have developed over a long period of time, however, so what is perceived as failure caused by inadequate design today was possibly built originally in accordance with existing codes. The concrete cover specified at the turn of the century, for example, was probably substantially less than what is required today, when corrosion of the reinforcement has become of major concern.

A critical factor that bears directly upon both the performance of the concrete and the formulation of the concrete for restoration is the composition of the original mix. The characteristics of the old and new concrete have to be compatible if premature failure is to be avoided. In recent years, adequate concrete mixes have become the subject of extensive specifications, which cover the binders as well as the natural and artificial aggregates. For early construction, these requirements were not as strict, and faulty materials and/or insufficient quality control may have contributed to the early deterioration. Prior to 1900, the use of natural cements such as Rosedale was common, but because it was manufactured from natural rock, its composition and therefore the quality of the concrete could vary widely. Moreover, certain materials remained in use long after more advanced ones were developed. Since white Portland cement remained very costly before World War II and was rarely manufactured domestically, for instance, lime remained in use for a long time where light-colored concretes were desired.

Similarly, the quality and composition of aggregates is closely guided today by codes and specifications. In earlier times, however, problems surrounding the shrinking of the aggregate, ferrosulphide contamination, and alkali-aggregate reactions were little known. Chemical reactions between the aggregate and the sodium or potassium alkalis formed during the hydration of the cement were also poorly understood. Nor was it clear how the grading and size distribution of the aggregates might contribute to shrinkage cracking or uneven coverage of embedded reinforcement. Simple contamination of the aggregates with, for example, sodium chloride, as a result of using seawater or beach sand in the mix, was not always carefully considered. Where crushed limestone was used as aggregate—a common method when a more natural and stonelike appearance for cast stone was desired—the deterioration and erosion of the limestone became an integral part of the weathering of the concrete. When too many chlorides are present in the concrete, efflorescence could develop on the surface, particularly in climates with extensive wet-dry cycling. The crystalizing of the salts would damage the surface and cause it to powder and disintegrate.

The use of additives is not new, although they were not always as prevalent as today; the development of the petrochemical industry has contributed a great deal to their increased use. Previously, mineral and other pigments were commonly used to obtain the desired colors, with little or no understanding of their impact upon the concrete's strength. Adding stearate to obtain better waterproofing or chlorides for a more rapid set were known techniques, and the problems surrounding calcium or sodium chlorides were certainly not always realized.

Probably the most serious problem encountered in concrete structures is presented by the corrosion of the embedded reinforcement or structural steel (**9**). In normal concrete, the corrosion of the reinforcing steel is inhibited by the high alkalinity of the uncarbonated concrete. If these alkaline conditions were to disappear, the steel would be very susceptible to corrosion. This alkalinity may be altered as a function of normal weathering. Continuous exposure to the outside air will result in a slow but gradual carbonation process; that is, the formation of carbonates produced from water and carbon dioxide present in air, causing the lowering of the alkalinity. Where the concrete cover is sufficiently large, this process will occur very slowly and over a long period of time and should not markedly affect the condition of the reinforcement. Where the cover is thin or permeable, however, this may become a very serious problem (**10**). Concrete with poorly graded aggregates or a high water/cement ratio, for example, is very susceptible because it is likely to be porous. Minor defects in the concrete surface, such as shrinkage cracking, will also contribute to more accelerated deterioration. Where corrosion has started and cracking of the concrete cover has begun to occur, the corrosion will proceed even more rapidly. Where sufficiently large quantities of calcium chlorides are present, reinforcement corrosion may be promoted even in high alkaline conditions.

Rust-staining and cracking of the exterior surfaces are generally indicative of corrosion of the reinforcement. Regular crack patterns following the direction of the reinforcement or the stirrups are generally a strong indication as well. Where the corrosion has been allowed to continue too far, the concrete cover will have spalled off, completely exposing the rebars. If the rebars have seriously corroded, the effective cross section of sound steel remaining may no longer be sufficient and may ultimately result in extensive structural failure.

Of considerable importance, but more difficult to establish, are the deterioration problems and failures inherent in the design and detailing of the concrete and the structure itself (**11**). Location and size of the reinforcement, for one thing, may vary widely. Rebars as known today evolved around 1900 and had a variety of different shapes and yield strengths (**12**). The configuration of this reinforcement changed over time, as engineering sciences began to explain the nature of reinforced concrete more fully.

Thermal exposure may have a direct impact on the performance and durability of the structure. Expansion joints were not always included in the design detailing, leaving the structure vulnerable to extensive cracking and sometimes the buckling of sections. Thermal cracks are generally found at corners and the ends of walls (**13**), unlike the cracking caused by corrosion of the reinforcement, which is generally more evenly patterned over larger areas.

Similarly, the design of the units or portions exposed may have a direct relationship to the weathering and deterioration. Facemixes for cast stone that were too thin may result in extensive delamination. Cast stone window lintels with a concrete cover considered adequate for vertical wall sections may show marked deterioration because the excess water running off the building over the sills or belt courses is causing saturation and subsequent reinforcement corrosion.

Only rarely will the deterioration of a concrete structure be the direct result of structural failures, particularly when the building has been in existence for a long time. Subsequent changes in loading

Kate Johns

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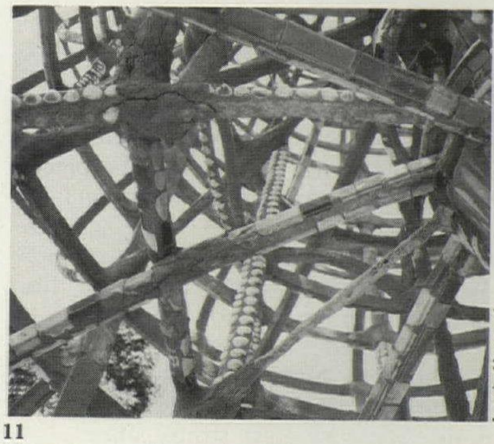

Larrie Hammel

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and use patterns, however, may have caused deterioration to develop in a previously sound structure, especially when lack of maintenance has also been allowed to affect its strength. Overloading, concentrated loading, or other changes may have caused deflection or cracking of the concrete, and such changes should be considered carefully.

Identifying problems in concrete

The causes for the deterioration and failures of historic concrete buildings and products are not always easily identified or isolated. Before any restoration or repair work can be commenced, these causes have to be clearly understood and the condition of the building evaluated. Too frequently a quick and superficial assessment is made, and a readily available repair program started without a proper understanding of the underlying causes. This can result in premature failure of the repairs and serious cost overruns.

An evaluation of existing conditions should consist of the following steps: first and foremost in any evaluation is a visual inspection to identify basic problems and evident patterns of decay. Consistently recording such information, either graphically or photographically, will be of importance at a later date in determining the quantity of work required, the costs involved, and the preparation of comprehensive contract documents. Where the building is too large or too complex, or insufficient time is available to allow for a complete inspection, a representative area can be selected and the results prorated over the total building. While this may provide sufficient information for estimating purposes, it does not eliminate the need for a more comprehensive inspection when repair work is underway and the building is fully accessible.

To provide a good background of information and a better understanding of the building, a study of surviving construction documents or other literature is important. Where such documents are not available, design materials on other contemporary buildings may provide more insight. If repair work or maintenance has been executed previously, review of maintenance documents or interviews with maintenance personnel or supervising architect may be very important. This allows for the identification of recurring problems.

Interpreting results of a visual inspection requires understanding of the building, its construction, and the processes of decay in general. The visual indications of deterioration and damage are limited, but may have different implications. Cracking observed in the concrete, for example, may be the result of corrosion reinforcement, deflection, settlement, thermal expansion, contraction, or even shrinkage cracking. The location, configuration, and pattern of these cracks will be of significance. Spalling in general will be the result of corrosion of the reinforcement, but may also involve the composition and the aggregate alkalinity. Where staining has occurred, the color and location of the stains may be indicative; most often, brown staining will be the result of corrosion, but occasionally it may be caused by the aggregate. Erosion and disintegration of the surface of the concrete can be the result of salt crystallization, freeze-thaw cycles, and weathering. Chemical reaction and dissolving of the cement binder due to weathering can leave the aggregate exposed.

For full evaluation of the concrete, *in-situ* testing to determine quality of the material and causes of the deterioration will be required. Such tests can involve not only sonic tests (i.e., pulse velocity testing), but also monitoring of cracks if any question exists as to their cause. Such equipment as a pachometer may be required to locate and follow the direction of the rebars. Some pachometers will provide an indication of the relative size and condition of the reinforcement. Results should be calibrated and checked, however, by exposing the rebars in some noncritical locations.

In addition to the on-site testing,

10 In early World War I structures, the concrete cover for the rebars was frequently not more than one inch. The permeability of such early concretes would often contribute to problems. In this Queens movie studio building, an unsuccessful attempt to stop water migration and retard corrosion of the rebars was made by covering the surface with a thin asphalt membrane. This also changed the visual appearance completely.

11 Watts Tower in Los Angeles, a colorful and interesting structure, was built in the early 1950s by Simon Rodia, an immigrant tile setter, who used salvage materials. Excessive water penetration has caused corrosion of the reinforcement in spite of earlier waterproofing efforts. The very design of the structure and concrete design mixes contribute to this susceptibility.

12 Where reinforcing bars have begun to corrode, they will force off the concrete cover. Rebars in the first two decades of this century may have a variety of different cross sections, as in this house in Beaufort, SC, of 1910.

13 In the same Beaufort, SC, house, of 1910, insufficient expansion joints led to buckling, as in the balustrade, at the same time exposing the reinforcement bars to corrosion, causing further spalling.

some laboratory testing is generally required. The determination of the compressive strength on cores removed from the building is important. At the same time, composition of the original concrete is to be determined by x-ray diffraction and microscopic analysis. Tests of the aggregate reactivity are important to determine if any reaction between cement paste and aggregate contributed to material deterioration. Chemical analysis is also important to establish the presence of chloride. Tests for absorption, specific gravity, etc., are added to determine how porous and dense the original concrete is. This will provide an indication of the material's durability. The composition and characteristics of the original concrete are not only important to assess the durability of the original material, but are also essential for the formulation of a compatible design mix for the repair materials.

On the basis of the visual inspection results, the on-site and laboratory testing, and the compilation of background information, an analysis and evaluation of existing conditions can be prepared. Such an evaluation will have to include an assessment of the structural capabilities and conditions of the existing building. This will be necessary if the impact of the deterioration is to be assessed properly and potentially dangerous structural conditions are to be identified early. Moreover, such an assessment will be important if the type of use is to be altered. This evaluation of the structural configuration is to take into account the design standards and details of the period 1900–1940, with its wide variety of potential reinforcement systems.

Concrete repair techniques

The need for structural repairs can have two different purposes: first, to reinforce the existing structure to accept a more substantial load for a change in use; and second, to correct inadequate structural repair and other damage that has affected the building or structure.

While generally the increase of loading is accommodated by the insertion of a new structural frame of reinforced concrete or steel, other methods are sometimes possible after careful analysis. A horsebarn in Cambridge, Ma, built in the 1870s had been reinforced in 1916 by the use of one-way concrete joists systems to accommodate use as a garage. This structure had deteriorated partially because of age, but also because of extensive use of de-icing salts, exposing and corroding the reinforcement, a problem often encountered in highway and bridge construction. The firm of Irwin G. Cantor, Consulting Engineers, decided to post-tension the existing floor system. Installation of shoring was found to be more costly and, in addition, to cause loss of height. The ends of post tensioning cables were placed in new concrete along the edge of the original floor slab. Halfway between the wall and first intermediate joists and between each following set of joists a 3- to 5-in. pipe was placed parallel to the direction of the joists. The pipes, welded to the existing reinforcement, are supported by the zigzag of post-tensioning cables, which are guided through holes drilled in the slab on a 15 degree angle. Once the cables were in place, each was individually stressed and secured in the new concrete.

More common in the structural repair of concrete is the repair of structural cracks that are of significant size and depth, particularly when they penetrate through the full depth of the member or where extensive delamination has taken place. Crack injection methods are likely to offer satisfactory solutions. Specific requirements cannot be easily formulated, but are to be worked out on a job-to-job basis. Where cracking of the concrete is the result of corrosion of the reinforcement, pressure injection is not the proper solution, and removal of the defective concrete is more satisfactory.

Various resin systems arenused for pressure injection, but they are generally epoxides, polyesters, or combinations of epoxides and polyurethanes. The advantages of such injection systems are their low viscosity, their ability to bond to wet surfaces, their low shrinkage, and their high strength characteristics. The epoxy system should have a low modulus of elasticity if further movement along the cracks is expected. Otherwise, renewed cracking close to or along the original crack is to be expected. For cracks of very small size, this system may not work, while for very large cracks, a mineral filler may have to be added. For cracks in horizontal surfaces, gravity feed may be sufficient, but generally a pressure-on-line system is required.

Pressure injection requires preparation of the crack, removing loose debris, placement of injection ports and sealing of remainder of cracks, injection of the resin, removal and plugging of injection ports, and finally, removal of sealing strips. Spacing and depth of injection ports, pressure for injection, and formulation of the epoxy grout remain subject to the particular conditions of the project. Because the injection process is a blind process, in some instances testing is conducted by taking cores, radiography, or pulse velocity surveys to determine depth and extent of penetration.

For certain structural repairs, use of reinforced gunite or shotcreting may be available. The process involves conveying concrete or mortar through a hose at high velocity against a surface. It can be used as a system for lining walls, but also as a method to place large quantities of concrete over substantial areas. Generally, the depth of repair is not to exceed some four inches. This method, which has distinct limitations, can be used for several different conditions. It is commonly used for fire-damaged structures. Structures where large sections of concrete cover have spalled away may be repaired in a similar way. Additional reinforcement or wire mesh may be welded in place if additional strength is required. When the original structure is made of poor concrete, the shotcrete can be applied as a separate structure. A lining will be used to separate old from new, but the new will have to be designed to sustain loads independently. This method has been extensively used for repair of masonry structures other than reinforced concrete. The shotcrete or gunite may be placed wet or dry, depending upon surfaces appropriately prepared. Wet application must be in small increments to allow for proper curing and setting. Bonding agents are generally not required.

Reinforcement repair for structures or concrete surfaces spalled by reinforcement corrosion requires several actions. For early cast stone, some reinforcement will generally be present, for shrinkage control and to allow for handling. Because of this function, the concrete cover was not always adequate. Where spalling has occurred, cutting out concrete and cleaning reinforcement before applying concrete patches will usually be sufficient. When deterioration of cast stone elements has become too serious or where detail of the deteriorated units is too complex to allow for repair in-situ, removal and recasting of the original units may be more advisable (**14**). Casting technologies and detail that can be obtained have not changed substantially, and are still available, though quite costly.

Where substantial corrosion of the reinforcing steel is found, additional rebars must be installed. Before patching the spalled concrete, loose, scaly rust is to be removed. Generally more concrete is to be removed than is directly apparent in order to expose the corroded rebars. Where replacement of reinforcement is necessary, lap splices with suitable lap lengths, or welding, is needed. Use of acid rust inhibitors is not recommended. Generally, additional protection of the steel is not required because of the protection offered by the alkaline environment of the concrete. Where necessary, galvanized steel or stainless steel can be used, at greater cost.

Before patches or repairs can be executed on the existing concrete, thorough removal of defective concrete and cleaning of the areas to be repaired must be done. Unsound concrete may be chipped away with the use of a cold chisel and hammer or power tools if a larger area is to be repaired. Where half of a reinforcement bar is exposed, that section of the bar should be exposed completely to provide a better bond between the new concrete and the existing rebar. The area can be cleaned to remove loose debris by flushing with high-pressure water or vacuum cleaning. Where surface contamination is from oil spills, a strong detergent such as trisodium phosphate may be necessary. Asphalt or tar coatings in general can be removed only with the aid of sandblasting before a new surface can be applied.

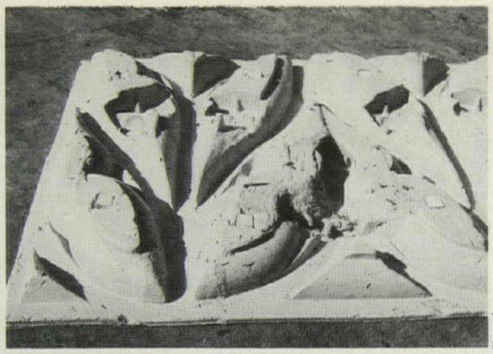
Patching or repairing reinforced concrete surfaces or cast stone elements presents a difficult problem for which no particular method is easily recommended (**15**). The method and materials selected for repairs will depend upon the nature and composition of the concrete in question, its location and exposure, and the visual effect to be obtained. Compatibility between the new material and the repair material is recommended and can usually be assured by the use of identical or similar materials.

More often than not, early Portland cement structures will present no serious problems. Although the composition of Portland has changed somewhat over the years, it is sufficiently similar to contemporary materials that they can be used to obtain compatibility. Where the original concrete was made with lime or a natural cement, the problem is somewhat more complicated. Only a small number of structures of this type are likely to be in this category and will probably date before 1900. For a lime concrete, using Portland cement for repair is not recommended. A lime concrete with a small addition of white Portland cement is advised, as it will provide some early strength. In general, it can be argued that the repair material should be as close as possible to the original material so as to prevent differentials in movement and in performance. Matching the original appearance will require some care; several sample applications will be needed. New repairs, for the most part, are likely to be slightly darker even if the same or similar aggregates are used. Adding some white Portland cement may be necessary to lighten the patch material. This will be particularly necessary for earlier structures where lime was often mixed with Portland cement. In dealing with older buildings it is particularly important to note that the match should be made in comparison to the *cleaned* surface of the original material.

For most concrete repair work, a mixture of Portland cement and aggregate will be sufficient. A latex emulsion, of which different types exist, to modify the concrete is recommended to obtain better results. The mixture is to be stiff and applied in small thin layers after the repaired surface has been thoroughly wetted. Other modifiers such as methamethacrylate can also be used. Where possible, the area to be repaired should have a slight undercut. To repair small areas, an epoxy mortar can be used as well. This is a mortar in which the binder is a low modulus epoxy. Because of the cost of the epoxy, large areas are not usually repaired in this manner.

The repair and restoration of early and multicolored cast stone is far more complex. *In situ* casting of detail is possible and can be accomplished with an appropriate formwork. Quality control will be complex. Where the cast stone unit in place has become so faulty that repair in place has become too difficult or too costly, manufacturing new replacement units is likely to be more satisfactory. Where large decorative pieces are involved, the use of a lightweight concrete or a glass-fiber-reinforced plastic can be considered, particularly when seismic code requirements are involved (**16**).

The restoration and repair of historic and other older concrete structures is not without problems and complications. However, good results can be obtained (**17**). Moreover, unlike the repairs involving materials no longer in common use (such as terra cotta), most materials and skills required are readily available.



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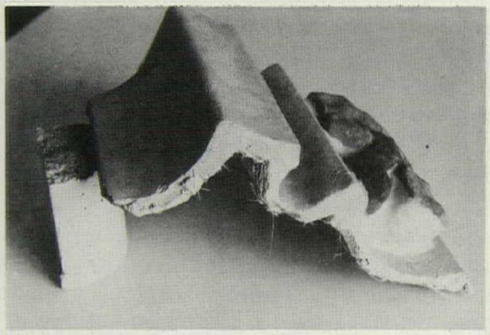

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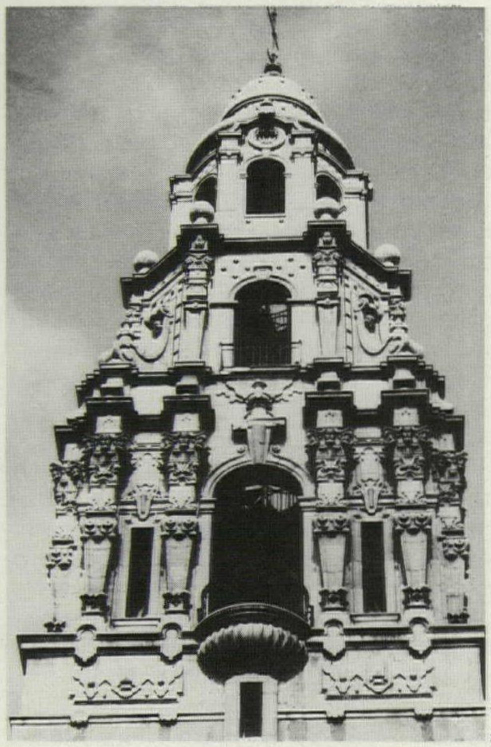

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14 Cast stone units can be duplicated today, including some integral color if necessary.

15 Improper material selection and insufficient quality control may lead to repairs that show extensive shrinkage and after setting are not effective and will deteriorate rapidly.

16 Glass-fiber-reinforced concrete can be used to duplicate intricate detail, particularly for large overhanging sections such as cornices.

17 Cast stone was used extensively in California, particularly to recreate Spanish Colonial detail. The California Building in San Diego's Balboa Park, designed by Bertram Goodhue in 1915, was recently restored.

Acknowledgments

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Through a glass, brightly

Daylight illumination can be an energy asset—or a liability, if windows are not managed properly. The right interior shading device lets the sun shine in, while keeping out unwanted heat and glare.

Daylighting as an illumination strategy is making a comeback after years of neglect. Lighting has become a major issue in the face of rising energy costs, especially in commercial buildings, where artificial lighting accounts for 50 percent of the total energy consumption. Architectural solutions to daylighting design have received a good deal of attention recently; there has been much less discussion, however, of the strategies available to manage daylight in interiors—that is, at the window.

Ideally, the entire building, inside and out, should be designed for maximum daylight utilization, but for existing buildings, there are quite a few options for interior daylight control. For the purposes of this article, discussion will be confined to commercial buildings, since these generally interior-load-dominated structures need careful control to minimize heat gain, unlike residential buildings, which are generally skin-dominated, and for which heat gain (and prevention of heat loss) are far more important than lighting consumption. Daylighting can offer the opportunity for substantial energy savings by reducing lighting loads, while contributing greatly to human comfort, worker satisfaction, and productivity.

One of the seldom-considered benefits of daylighting has been discussed by Steven Selkowitz of the Lawrence Berkeley Laboratory. According to Selkowitz, daylighting can be a valuable form of productivity insurance in the event of a power failure. He points out that a single hour's worth of productive time from one worker is equal in value to the annual energy cost of lighting the space that worker occupies. Technical improvements in artificial lighting fixtures and energy conservation programs have already made many buildings more energy efficient; properly managed daylight at windows can go a long way toward reducing energy consumption even further, especially during peak demand hours.

What's in a window?

There are a number of issues to be addressed when dealing with window management. The window itself should be seen first of all as a source of energy, and any window that is large enough to admit significant amounts of daylight needs to be shaded at various times of the day.

The seeming contradiction between the need to light and the need to shade is explained by Timothy Dirr of Architectural Alliance in Minneapolis: "Specifically, the conflicts appear to be caused by the spectral and conductive heat transfer properties of the glass necessary for daylighting. Striking the balance between savings due to reduced heat transfer versus savings in lighting energy is the major concern." Whatever the benefits of increased daylight illumination, it is generally acknowledged that the primary goal of daylight control is to provide natural illumination while effectively blocking direct solar radiation, since it usually carries uncomfortable levels of heat and light.

More than meets the eye

To understand the distinctions between this heat and light, it is necessary to understand what sunlight is made of, and to draw a necessary distinction between sunshine and daylight. Approximately 50 percent of the incident solar energy at a window is *visible* light; the rest is *invisible* infrared radiation, or heat.

Three things happen when solar radiation strikes a window. First, some of this radiation is reflected right back to the atmosphere. Second, another portion of the sun's rays is absorbed by the window glass itself; when the glass gets warm enough, it radiates heat in two directions—back to the atmosphere and into the building interior. Finally, the majority of that solar radiation is transmitted *through* the window directly to the building interior; this radiation enters as shortwave infrared rays and warms whatever it strikes—walls, floor, furniture, and people. When these surfaces themselves get warm enough, they re-radiate heat back into the room; this re-radiated heat, however, is longwave infrared, which cannot pass back through the window, since glass is opaque to longwave infrared radiation. Therefore, it remains in the room. While this heat gain is desirable in passive solar designs, it is generally undesirable in most commercial buildings, which are already interior-load-dominated, since it creates uncomfortable levels of heat that can be reduced only by air-conditioning, thereby adding to the building's cooling load.

The trick is to intercept this radiation before it gets inside the building. That is done most effectively by exterior shading devices such as overhangs and awnings; ideally, interior shading devices should be used in conjunction with exterior devices that block direct radiation *before* it reaches the window, since even the most effective interior devices absorb a fair amount of heat that will eventually find its way inside the building. But if these exterior devices have not been designed into a building at the outset, then it is important to have the appropriate interior devices block as much direct radiation as possible. What should *not* be blocked, however, is visible radiation—light.

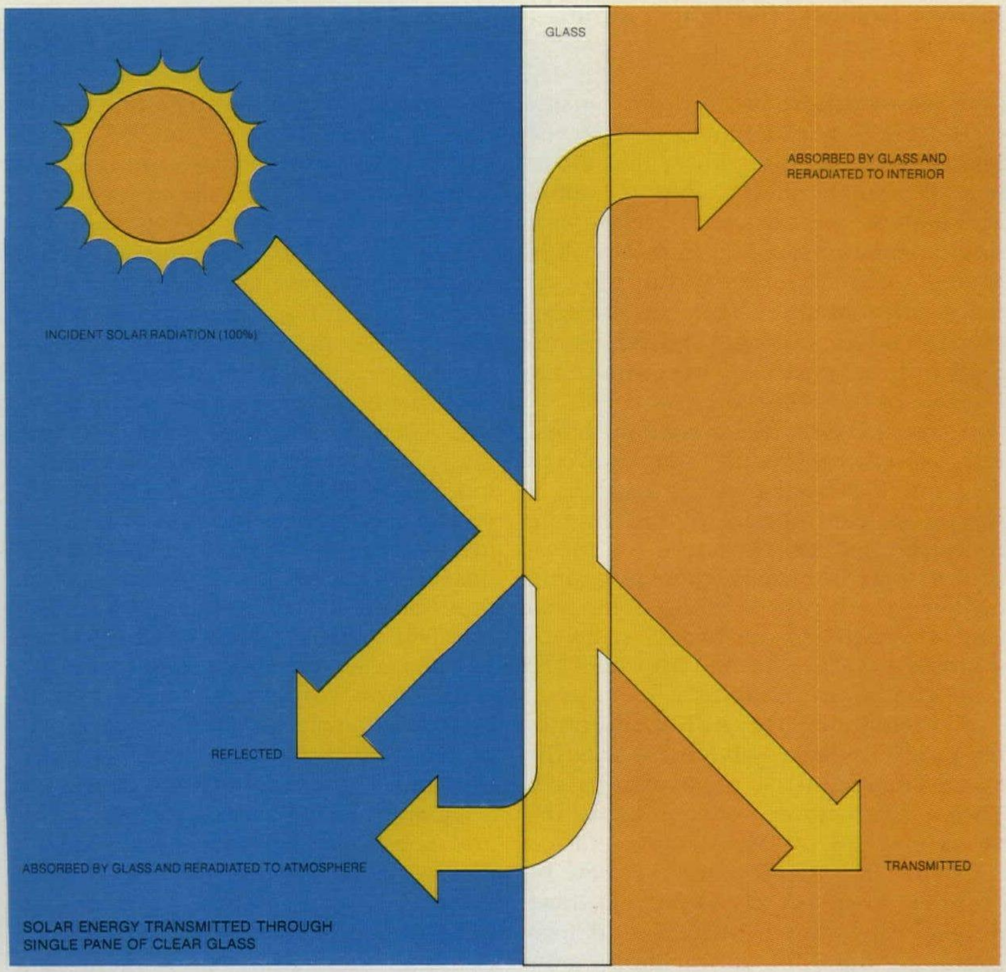
The problem boils down to one of maximizing the potential of daylight to provide illumination while minimizing solar heat gain. This brings up the issue of thermal comfort—which is, after all, a question of human comfort. As Ross McCluney of the Florida Solar Energy Center explains, "You want to heat or cool the person, not the room." This involves maintaining a comfortable mean radiant temperature (MRT), which is a weighted average of the various radiant surfaces in a room relative to the position of a person occupying that room. So if the surface temperature of the window (on the inside) is significantly greater than that of the other room surfaces, the window will radiate heat into the room, causing the occupant to feel uncomfortably warm. If the window surface is too cold, the interior surfaces (occupant included) will radiate heat to the window, thereby causing the occupant to feel uncomfortably cold.

For the purposes of this discussion, however, daytime heat gain is more important, since nighttime heat loss is not usually a pressing concern for commercial buildings. However, in cases where heat loss must be minimized, the window treatment chosen must provide some insulating qualities by creating a "dead air" space between the room and the window surface.

Visual comfort is another major consideration. Taking into account the lighting system used in the building and the reflectances of the interior surfaces, as well as the type and amount of fenestration, comfortable levels of contrast must be maintained throughout the day for maximum productivity. If the daylight at a window seems too bright relative to the light levels in a room, people will turn on additional lights, thereby defeating the very purpose of daylighting. An extensive and straightforward discussion of visual comfort is included in Benjamin H. Evans's recently published *Daylight in Architecture* (McGraw-Hill, 1981).

Orientation is another key factor. In commercial buildings, south windows almost always need shading. East and west windows need shading at different times of day, and so are suited to easily adjustable shading devices. North windows receive the most diffuse light, but may require shading on a bright day, and may require thermal protection at night. Reflected light—from the ground and adjacent buildings—must also be considered, since it can represent a sizable percentage of the light reaching a window.

At this point, it should be mentioned that while low-transmission reflective or heat-absorbing glass has been used extensively in commercial buildings, it is not generally a good choice for daylighting design; nor are the metallized films that are applied directly to clear glass, thereby giving it many of the same properties. Use of these glazing materials and films can severely limit the amount of light admitted into a room and often adversely affects the view outdoors, as well. Furthermore, these materials are fixed and therefore not adjustable to changing light conditions.



The diagram illustrates the effect of incident solar energy upon a window of single-pane, clear glass. A small portion of the radiation that strikes the window surface is immediately reflected back to the atmosphere. Another small portion is absorbed by the glass. This radiation is eventually reradiated in two directions: back to the atmosphere, and into the building interior. The greatest portion (more than three-quarters) of this radiation, however, is transmitted directly through the glass into the building interior. Over 40 percent of this radiation is visible (light), while the rest is invisible (heat). While this heat enters the window as shortwave infrared radiation, after being absorbed by objects and human beings in the space it is reradiated as longwave infrared, which cannot pass back out through the glass, and which is then trapped in the interior. Thus, it becomes important that an interior shading device block this direct solar radiation before it has a chance to heat up the interior—while still admitting enough diffuse daylight (visible light) for good illumination.

We may soon have selective-transmission glass, which would admit visible light while blocking heat, as well as photochromic glass, which changes color in response to changes in available light. But until these technologies are developed further, many daylighting experts agree that clear glass with a combination of exterior and interior shading offers the best solution for effective, energy-efficient daylighting.

What the numbers mean

Before discussing the many interior shading options now available, it is important to know the standards by which these devices are judged. It would also be helpful to make the distinction, at the outset, between products that are intended for daylight control and those that are developed primarily for their thermal properties, such as insulating shades, draperies, and shutters, and to disqualify them from discussion. For the most part they are intended to prevent heat loss at night and would offer neither effective nor economical daylight control, since many of them darken a room to the point where artificial lighting would be necessary. In any event, it is helpful to know how to judge the relative merits of those products that do offer effective daylight control.

The two most commonly applied performance standards are those of U-value and shading coefficient (SC). The U-value represents the rate of heat flow per hour (in Btu) through one square foot of the window for each degree (F) of difference in inside/outside (or outside/inside) temperature. So the lower the U-value, the lower the rate of heat flow through the glass. U-values are highest on unshaded, clear-glass, single-pane windows—as high as 1.10 in winter, when the inside/outside temperature differential is usually the greatest. (For full tables, see the ASHRAE Handbook of Fundamentals.) In summer, the U-value of that same window is .94.

A reflective-surface venetian blind, fully closed, can reduce that figure to .83, and a reflective shade can cut it two-thirds. But there is still the shading coefficient (SC) to consider—the measure of solar heat gain when a shading device is used, relative to the solar heat gain through an unshaded pane of double-strength window glass under the same conditions of latitude, date, time, and orientation. The ASHRAE Handbook of Fundamentals (1977) lists the SC of single-pane, ¼" clear glass as .87. With a light-colored venetian blind, the SC is lowered to .55. With metallized reflective film shades, the SC can be brought down to .21. However, these numbers measure heat gain, and heat gain is not the whole story. The variable nature of all the criteria mentioned above, not least of which is human comfort, would seem to indicate that the shading devices offering the greatest degree of flexibility can often be the wisest choices.

Blinds

Of all interior shading devices, horizontal, or venetian, blinds offer the most versatile forms of daylight control, since they can be adjusted to direct sunlight deep into an interior, as well as to reflect solar radiation (and glare from bright skies) while admitting a great deal of diffuse light. Blinds are adjustable to any exterior light condition, are relatively inexpensive to maintain, and have a fairly short payback period; furthermore, new types of blinds, both horizontal and vertical, are suitable for use on angled windows and skylights. A venetian blind with a high-gloss white or reflective finish can, according to some manufacturers' figures, reduce the SC of a window to .32 when the blind is fully closed (check product literature for specific testing conditions; manufacturers will generally furnish independent test results on request). When fully closed, a blind can reduce solar heat gain by 60 percent simply by preventing direct transmission. That same blind can, however, absorb 25 percent of incident radiation—which is why exterior shading is so desirable. Blinds can also reduce heat loss through conduction by up to 25 percent by creating an insulating layer of air between blind and glass.

Blinds are now available in a staggering array of colors and finishes; white or reflective aluminum blinds reflect more radiation than do other colors, but it is now possible to have venetian blinds that are white or reflective on one side and another color on the reverse side. Levolor Lorentzen markets a blind called Cryotherm, which is reflective aluminum on one side and matte black on the other. The reflective side blocks direct radiation, while the black side can be used as a sort of solar collector.

Horizontal blinds are especially effective when used between two panes of glass, since the blind functions in essence as an exterior shade, stopping direct solar radiation before it reaches the inmost window surface. This method has been in use in Europe for some time, but it has traditionally had to be installed with the double-pane glazing. However, an American manufacturer, Nanik, now offers a between-the-glass blind system that is suitable for retrofit of existing buildings. The product, called the Secondary System, consists of a second sash, which contains the blind and is added to the existing window. The system is operable with a fixed knob or by means of a key, and the inside sash can be opened and the blind raised for cleaning. The manufacturer claims that this system reduces conduction through the existing window by more than 50 percent, depending upon the colors of the existing glazing and blind slats. Horizontal blinds are also available in wood, although they have a lower reflectance than, say, a reflective aluminum blind.

Vertical blinds offer another alternative. Unlike venetian blinds, which must be fairly rigid, verticals can be made of fabric; but the fabrics should be light-colored and tightly woven. Fabric louver blinds have good insulating properties, while blinds with aluminum, PVC, or vinyl-coated fiberglass yarn louvers offer better reflectivity. LouverDrape now offers a rigid vinyl vertical that it claims has a shading coefficient of .25 when closed, versus .45 for the majority of light-colored horizontal blinds, although some horizontal blind companies claim SCs as low as .38 for reflective aluminum models. According to the manufacturer, the initial air-conditioning cost for these rigid vinyl verticals is $7.89 per sq ft of glass with blinds, as opposed to $29.23 for unshaded glass.

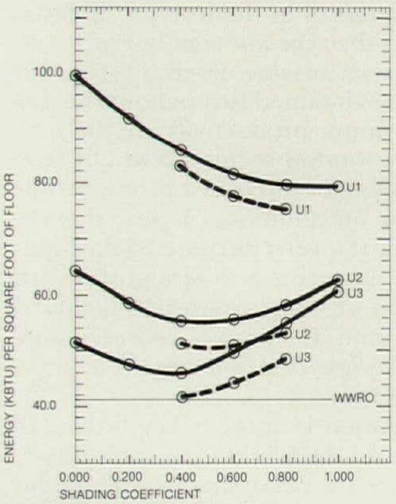
Vertical blinds are easier to maintain than horizontals since they do not collect dust. Verticals with loosely woven fabric or perforated vinyl louvers can also be used with tinted or reflective glass to minimize mirror effects. A disadvantage

Approximate U-Values for ¼" clear glass with various shading methods (Summer)

Single glass	1.04
Horizontal blind closed	.81
Double draperies	.65
Reflective shade	.52
Light translucent shade	.39

Approximate shading coefficients for ¼" clear glass with various shading methods (Summer)

Single glass	.94
Horizontal blind (closed)	.45
Reflective shade	.39
Light translucent shade	.39

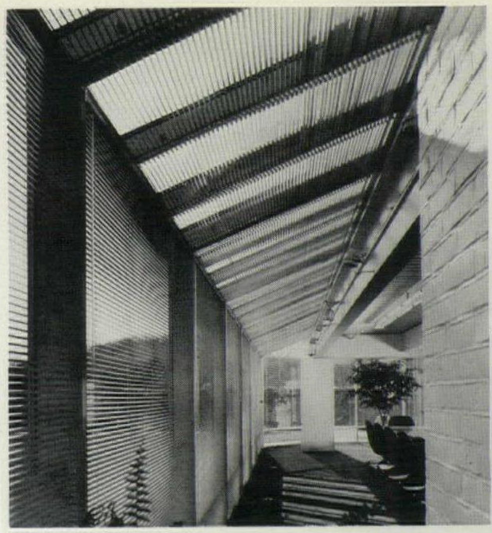


NEW YORK SOUTH ZONE WWR=0.9

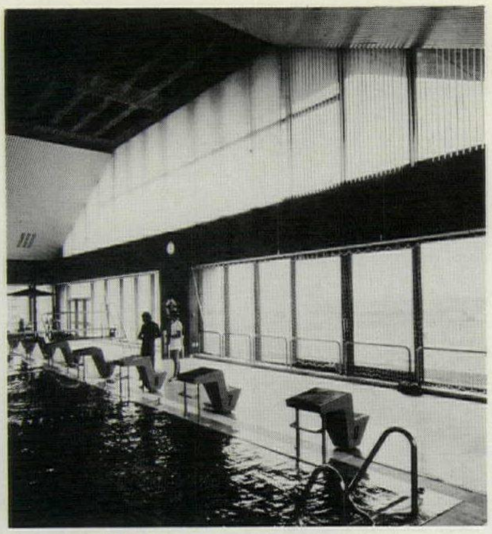
COMPARATIVE ANNUAL ENERGY CONSUMPTION IN PERIMETER ZONES FOR A MULTISTORY OFFICE BUILDING IN NEW YORK CITY

Legend
No daylight utilization ———
With daylight utilization – – – –
U1: Conventional single glazing
U2: Conventional double glazing
U3: Conventional triple glazing
WWRO: No glazing, R 10 perimeter wall

(Above) Two tables compare U-values and shading coefficients (summer) for windows with several different interior shading devices, relative to those of unshaded clear glass. For a more complete table, see the ASHRAE Handbook of Fundamentals (1977). (Right) A chart, excerpted from the September 1981 issue of P/A, illustrating the value of window management. The chart describes the comparative annual energy consumption at the perimeter (within 30 ft) of the south zone of a New York multistory office building, including heating, ventilation, and lighting (at two watts per sq ft); there is no external shading on the perimeter wall, which is 90 percent glass. Visible transmission of the glass is taken at a constant 80 percent; depth of usable daylight is assumed at 15 ft, with 70 percent dimming possible. For daylight utilization, operable interior shading with a shading coefficient of .60 is used 80 percent of the time. While energy benefits increase with the use of multiple glazing, the benefits of daylight control devices are still obvious.

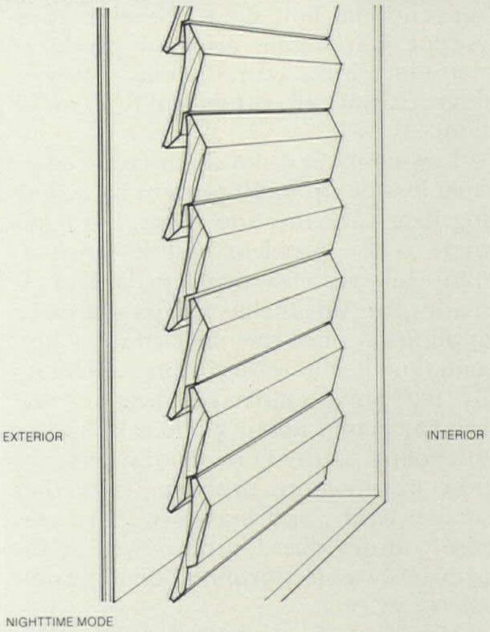

Levolor Lorentzen

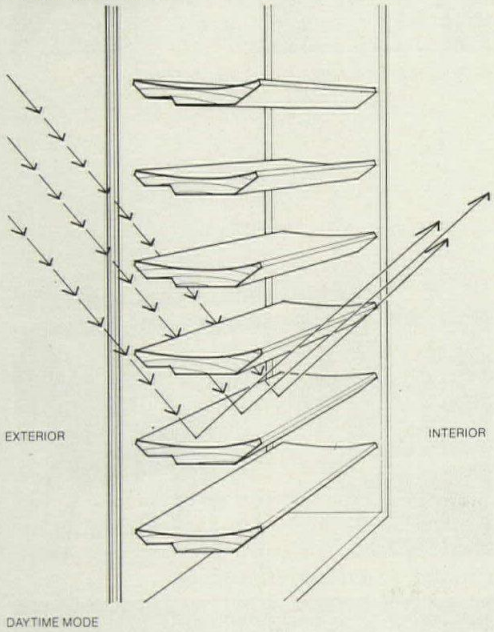
Horizontal blinds.


Hunter Douglas Inc.

Vertical blinds.

Oak Ridge National Laboratory





REFLECTING-INSULATING BLINDS

(Above) Blinds are easily adjusted to a broad range of window and light conditions. (Top left) Horizontal blinds can be made to fit angled windows and skylights; motorized controls are used for the overhead blinds. They can be fully closed at times of direct solar radiation, or opened at a variety of tilt angles to admit a soft, diffuse light. (Top right) Vertical blinds can also be used with motorized controls for ease of adjustment in inaccessible locations. (Bottom left and right) Blinds can also be used to beam daylight deep into an interior by bouncing light off the ceiling. The illustration shown here of the Reflective Insulating Blind, developed by Hanna B. Shapira of the Oak Ridge National Laboratory, demonstrates how the blinds work in the daytime and nighttime modes. In the former, the reflective-surface slats are tilted to beam daylight to the ceiling (in this case, for passive solar heat storage); in the latter, the grooved slat edges allow an airtight closure for maximum insulation benefits at night.

of this type of blind is that the vertical openings between louvers tend to create sharper contrasts between shaded and unshaded glass than do horizontals; glare problems may result. Furthermore, vertical blinds cannot be used to beam daylight deep into a room, as can horizontal blinds.

Horizontal blinds have been instrumental in recent beam daylighting experiments, in which blinds are used on clerestory windows with "light shelves" to bounce daylight deep into a space, or to direct solar radiation to the ceiling, where it is stored in phase-change salts (P/A, April 1981). These experiments, according to Steve Selkowitz, who has been involved in beam daylighting at Lawrence Berkeley, do not yet indicate that it is a cost-effective solution. Modified beam daylighting experiments, however, have proven successful at the offices of Architectural Alliance, where inverted 1-in. blinds are used to bounce light into relatively shallow spaces. Blinds used in this way can also be a boon to direct-gain passive solar buildings, where severe glare and heat problems on south windows cause discomfort to people in the buildings, and where use of the floor as thermal mass is hampered by placement of furniture.

It was precisely these problems that prompted a new development in blind design. Hanna B. Shapira, a research architect at the Oak Ridge National Laboratory, developed, with the aid of analyses by Paul Barnes, a blind that has a concave reflective surface and an insulated slat. Known as the Reflective Insulating Blind, it can beam daylight to the ceiling, and its grooved slat edges create an airtight closure for night window insulation. The blinds will be made of a rigid plastic to which a metallized film can be applied. Shapira states that in the Oak Ridge area, RIB can save about 80 kWhr per sq m of window for a heating season simply by reducing heat loss. Shapira hopes to see this multitalented blind in production within the next year.

Harvey Bryan, associate professor in the department of architecture at MIT, predicts the eventual use of "heat mirror" coatings on horizontal blinds for similar insulation purposes. Finally, blinds can be used in conjunction with an automatically controlled lighting system to ensure constant illumination levels without reducing the energy-saving potential of daylight illumination.

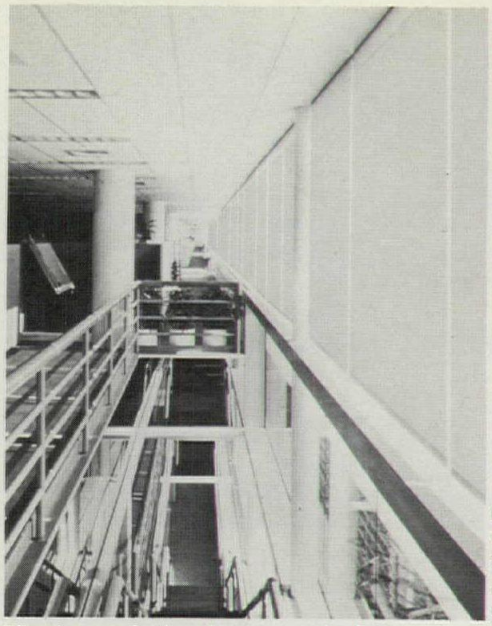
One major disadvantage of blinds is that they require educated management to be really effective. A study published in 1978 by Rubin, Collins, and Tibbott of the National Bureau of Standards concluded that while people will readily close blinds to control glare and heat gain, they could not always be counted on to reopen the blinds to achieve daylight savings. Automatic controls would, of course, eliminate this problem, but user education would seem to be a far less costly option.

Shades and draperies

Shades offer another practical, easily operated method of daylight control. Opaque shades are not a practical option in daylighting designs, since they block both light and view when fully closed. There are, however, an increasing number of transparent roll shades on the market that are designed to reduce solar heat gain while allowing good visibility. Vinyl-coated polyester or fiberglass yarns are used in a number of these shades; they are, by the way, 100 percent resistant to ultraviolet radiation damage and protect interior furnishings as well. They can be of relatively open- or closed-weave fabrics. The Mecho Shade Corporation also manufactures a system in which one of these shades is installed with a reflective film shade on a single roller. The resulting dead-air space between the two layers considerably lowers the U-value of the shaded window. The manufacturer maintains that when a 20 percent reflective film layer is used with an 18 percent open-weave outer shade, visibility is still quite good. And at windows where the reflective layer is unnecessary, the outer fabric can be used alone, thereby ensuring a uniform appearance at all windows. With these polyester or fiberglass-yarn shades, however, it is important to note that medium to dark colors, while having rather low reflectivity, are far easier to see through than light-colored or white shades, because darker colors result in lower brightness levels on the shade surface. This material is extremely effective when used as an exterior shading device. One manufacturer cites a shading coefficient of .64 for a gray, fiberglass-yarn shade when used on the interior; the same shade, used on the outside of the window, achieves an SC of .12 (with ¼" clear glass).

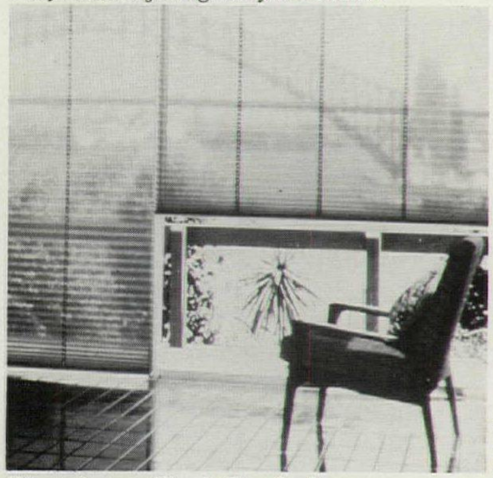
Shades made of various forms of metallized aluminum, vacuum-bonded to semi-transparent polyester film, offer good shading performance while screening out UV radiation (although there is some debate these days as to whether that is an altogether wise plan from the standpoint of human well-being. (For a discussion of the UV debate, see P/A, April 1981.) These film shades offer shading coefficient figures that are considerably lower than those of horizontal blinds when open at a 45-degree angle (for comparable visibility).

(Right) Window shades can prevent direct solar radiation from reaching interiors while offering good visibility through the window. (Top) Vinyl-coated polyester or fiberglass yarns are woven into a screen-like fabric for a roller shade. (Second from top) A pleated shade made of reflective metallized film and polyester film also allows a good view to the outdoors while preventing solar heat gain and glare; note the difference between shaded and unshaded areas of the window. (Third from top) Reflective metallized film shades can be track mounted for effective night insulation of windows, and can be especially effective for large expanses of glass (bottom). Note, however, that the insulating shade shown here is intended primarily for protection against night heat loss and is not the best choice for daylighting design, since it severely limits the amount of visible light transmission.



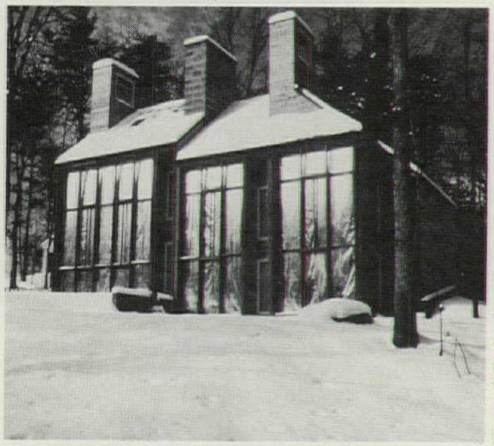
Mecho Shade Corp.

Vinyl-coated fiberglass yarn shade.



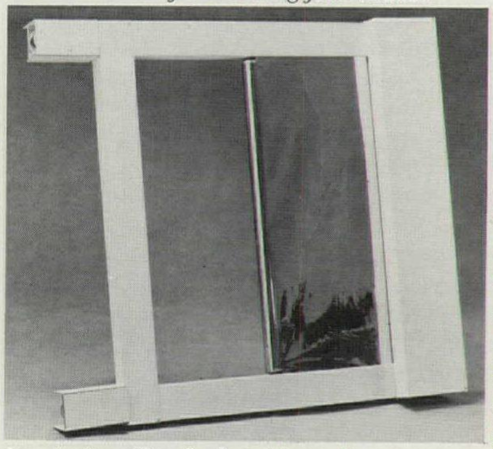
Verosol

Pleated, metallized film shade.



Thermal Technology Corp. of Aspen

Exterior view of insulating film shade.



Thermal Technology Corp. of Aspen

Insulating film shade with track.

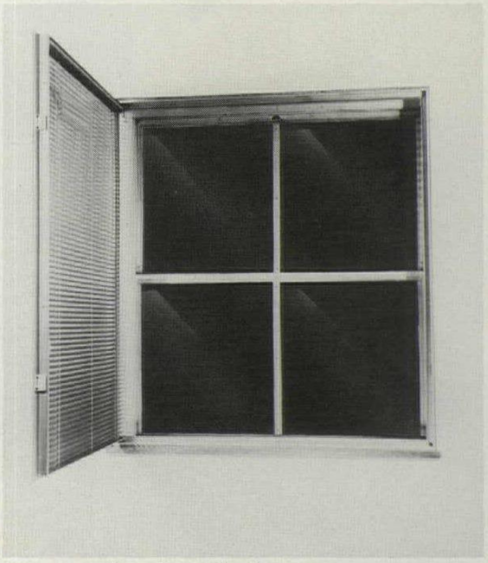
One manufacturer offers a pleated shade, while others produce roll shades that seal tightly against the window frame—one, for example, by means of magnetic sealing tape on the sides and bottom. The manufacturer of this shade reports that it reduces heat gain by 64 to 70 percent; glare by 83 to 94 percent; and UV radiation by 81 to 98 percent. Still another manufacturer claims a summer heat gain reduction of up to 80 percent and winter heat loss reduction of 43 percent. A reflective metallized film laminated to a loosely woven fabric is produced by Sun Control Products of Rochester, Mn; the manufacturer claims that the fabric, when used as a drapery, produces a U-value of .34 and SC of .22; visibility, however, is far less than with a conventional film shade. Several transparent film shades are now produced that block infrared radiation to varying degrees, and all screen out UV radiation.

Low-emissivity film shades can reduce heat loss by up to 90 percent by reflecting heat back into the room, but again there is the problem of low-emissivity film's low visibility problem, and these shades are unsuitable for passive solar application since they block winter heat gain. Furthermore, according to Harvey Bryan, "Solar shades can heat up and become giant radiators," thereby adding to cooling loads. Film shades may also pose maintenance problems since they scratch easily, and excessive glare may result under direct sun, as well as the previously noted problem of nighttime mirror effects.

Metallized films have been used in space-exploration programs since 1960, for everything from satellites to space suits because of their ability to reflect up to 88 percent of solar radiation. Of course, one of the biggest drawbacks of the films is that they reject too much visible light. "In theory," says Ross McCluney, "the best you can do is a 50 percent reduction in heat gain without reduction in visible light." McCluney believes, however, that an operable film shade with a reflective exterior surface is preferable to a film applied directly to the window surface. We may soon see spectrally selective films that admit twice as much light as heat; these films, used in shades, may prove to be an economical option for retrofit of windows where exterior shading is not feasible, says McCluney. He also cites the availability of film with an absorptive interior surface to reduce mirror effects. McCluney cautions that with all reflective surface shading materials, there may be damage to plants and trees outside the window from excessive heat.

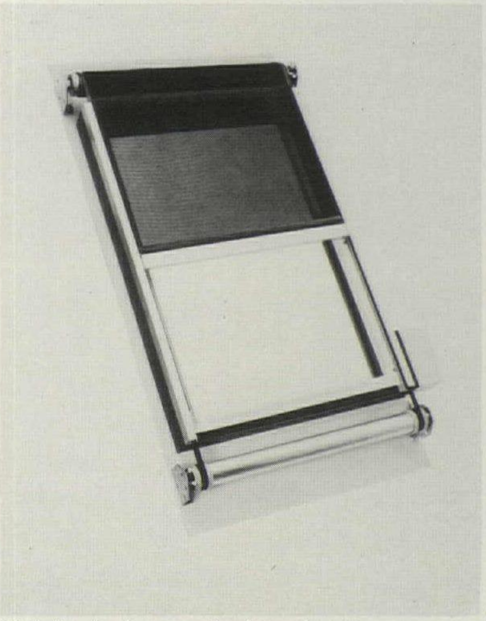
InsulShutter

Wood insulating louvers.



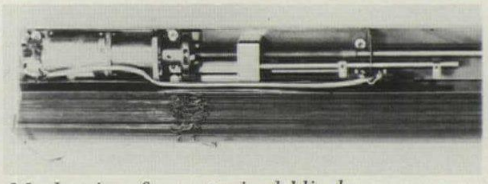
Nanik

Between-the-glass blind.



Somfy Systems Inc.

Fabric shade motorized track system.



Fabco

Mechanism for motorized blinds.

Films are also used in multi-layered insulating shades, including those that self-inflate, to reduce nighttime heat loss, but again, these are not usually suited to daytime use.

While draperies are not currently being promoted as a state-of-the-art option for commercial application, they can offer very respectable protection against excessive glare and heat. A single layer of tightly fitting drapery material, tightly woven, can cut the summer U-value of a window from 1.06 to .81. Use of double draperies can further reduce this figure, to .65 (see the ASHRAE handbook for complete tables). A double-track system for draperies is now being produced by Kirsch; with it, insulating draperies can be used in conjunction with more decorative outer draperies.

Acoustical properties and increased thermal comfort at the window are two major benefits of draperies, but when fully closed, they may block views and light if made of heavy fabric; they are also relatively expensive to maintain and must be removed for periodic cleaning. A loosely woven inner drapery combined with a heavier outer layer, however, affords a fair amount of versatility. When draperies are used with heat-absorbing window glass, it is important to make sure that the window will withstand the excess heat that may build up between a tight-fitting drapery and the glass.

There are several types of automatic controls for blinds and shades available today. They can raise and lower shades and adjust the tilt of blind slats. Remote control and solar-powered mechanisms are also available. When used with an automatic lighting control system, these devices can result in substantial energy savings by consistent balancing of natural and artificial illumination. Gary Gillette of the National Bureau of Standards cites the need for more extensive use of individual photosensors to control lighting loads on sunny days.

(Left) Examples of other daylight control options. (Top) Wood louvers, shown here installed in a skylight, function primarily as night insulation, but are adjustable to daylight conditions. (Second from top) Between-the-glass blinds combine daylight control with the added benefits of exterior shading, as the blinds stop direct solar radiation before it strikes the interior window surface. (Third from top) A track system holds fabric shades securely to the window frame, increasing their insulation value. (Bottom) Various automatic control mechanisms offer ease and efficiency of operation of blinds and shades, and can be used with automatic lighting controls to effect maximum energy savings.

This is by no means an exhaustive survey of daylight control devices. The selection of products on the market is growing all the time, and with it, the potential for confusion. It seems necessary—and is certainly desirable—at this point to have uniform standards by which to measure the potential energy savings of any window management system.

Ross McCluney has drafted a set of proposed indices for the ASTM which will evaluate both solar energy and illumination performance of fenestration systems: "There is no generally agreed-upon method of evaluation. Existing studies on windows don't consider daylight *and* energy performance of a window at the same time." Studies like this one should be of help in determining the appropriate type of interior shading for a given type of window.

In the meantime, there is no one option that can be all things to all windows. Location, orientation, site, climate, and type of fenestration are all important considerations, but then so are aesthetics and human comfort. Initial costs and payback periods are often determining factors; an expensive, high-tech solution may not always be the appropriate one in the long run. And interior lighting systems should receive careful attention. In other words, a fragmented approach to daylight control can be a costly one. Taking into account the building, its surroundings, and its occupants is the best insurance of efficient, practical daylighting. [Pilar Viladas]

Acknowledgments
Architectural Alliance; Harvey Bryan, Massachusetts Institute of Technology; Fabco; Gary Gillette, National Bureau of Standards; Hunter Douglas; Insul-Shutter; Levolor Lorentzen; Louver-Drape; Mecho Shade Corporation; Marathon Carey-McFall; Ross McCluney, Florida Solar Energy Center; Marietta Millet, University of Washington, Seattle; Nanik; Arthur Rubin, NBS; Saxon Industries, Inc.; Steven Selkowitz, Lawrence Berkeley Laboratory; Hanna B. Shapira, Oak Ridge National Laboratory; Somfy Systems Inc.; Sun Control Products Inc.; Thermal Technology Corp. of Aspen; Verosol.

For product and literature information related to this article, see p. 183.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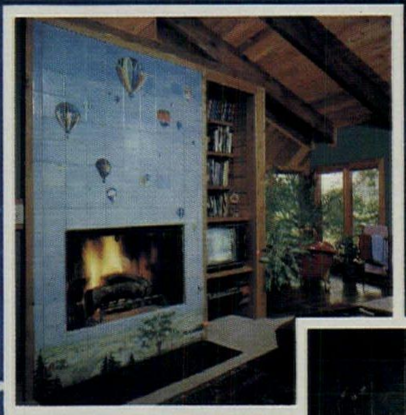

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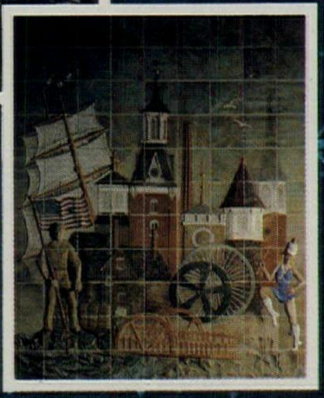

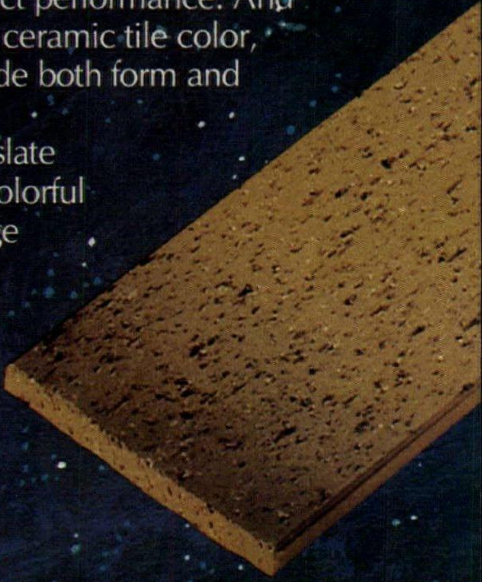

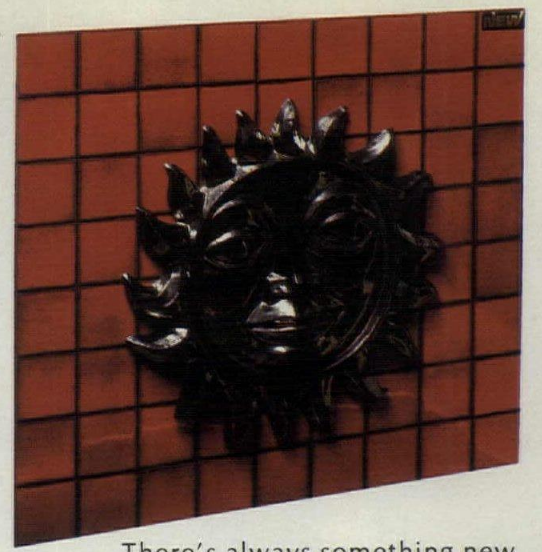

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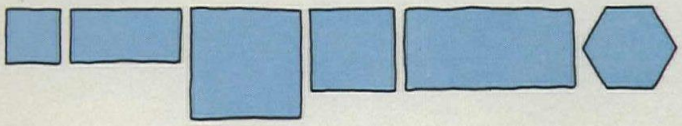

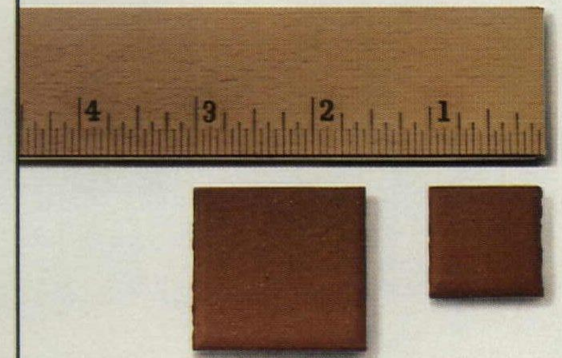

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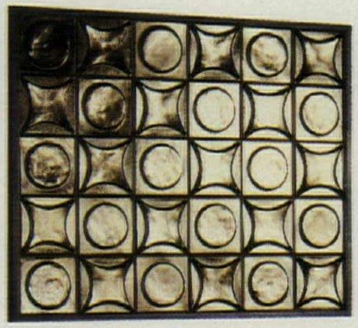

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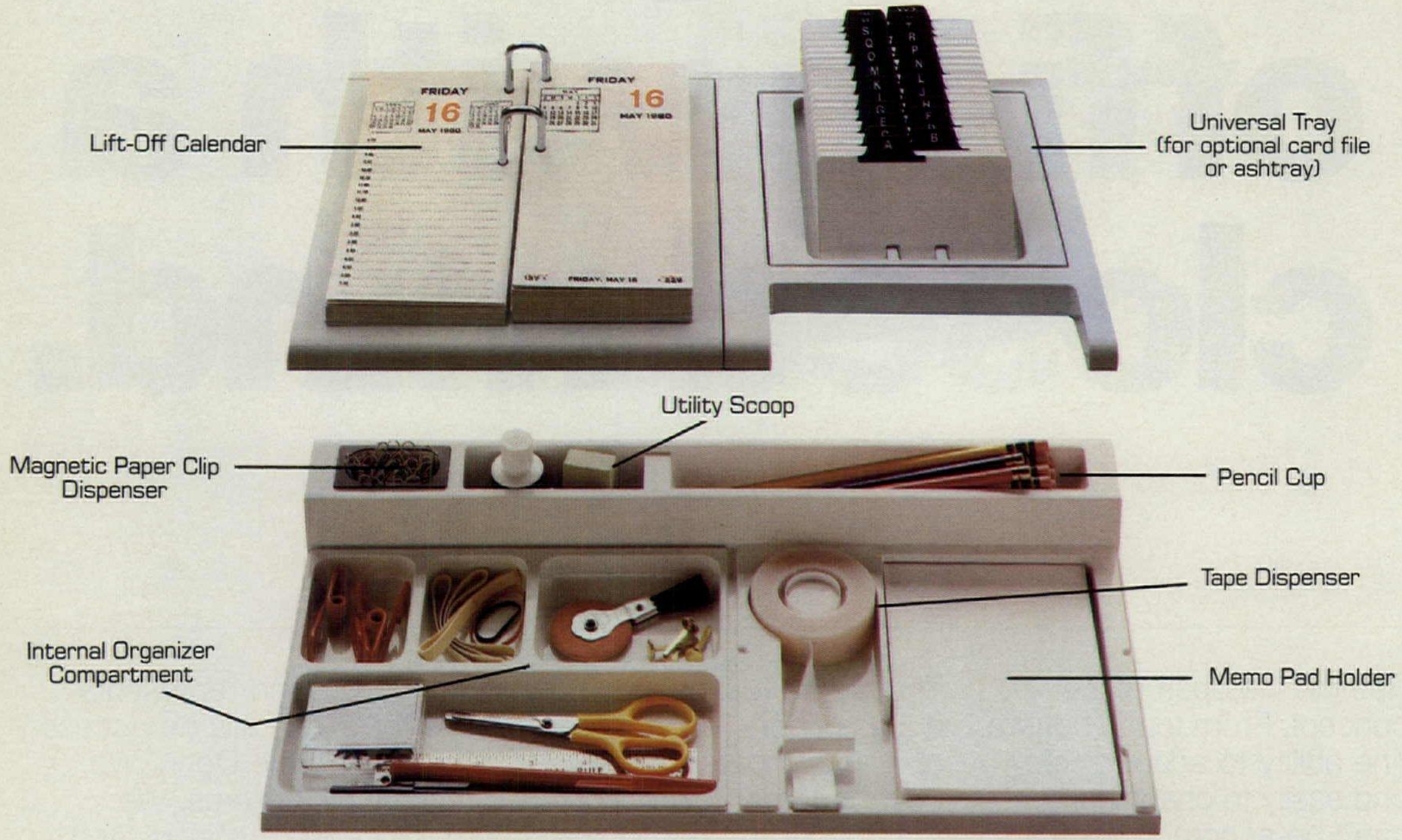

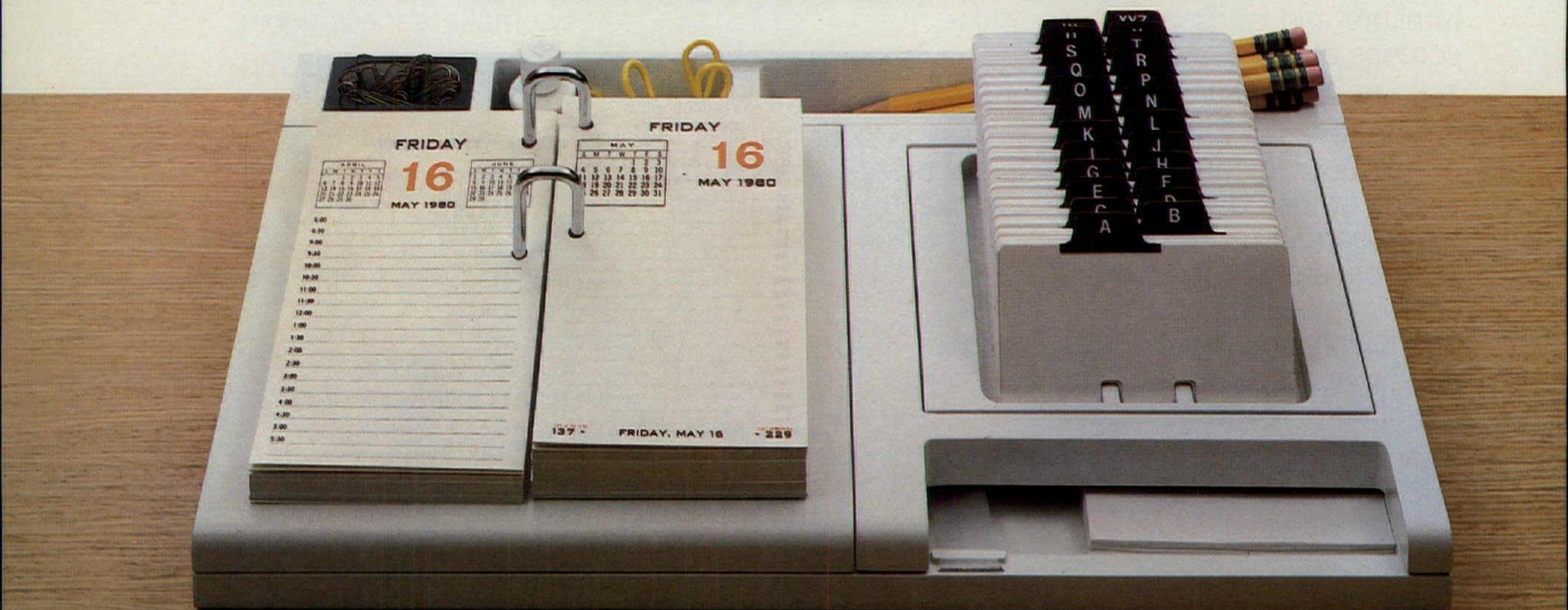

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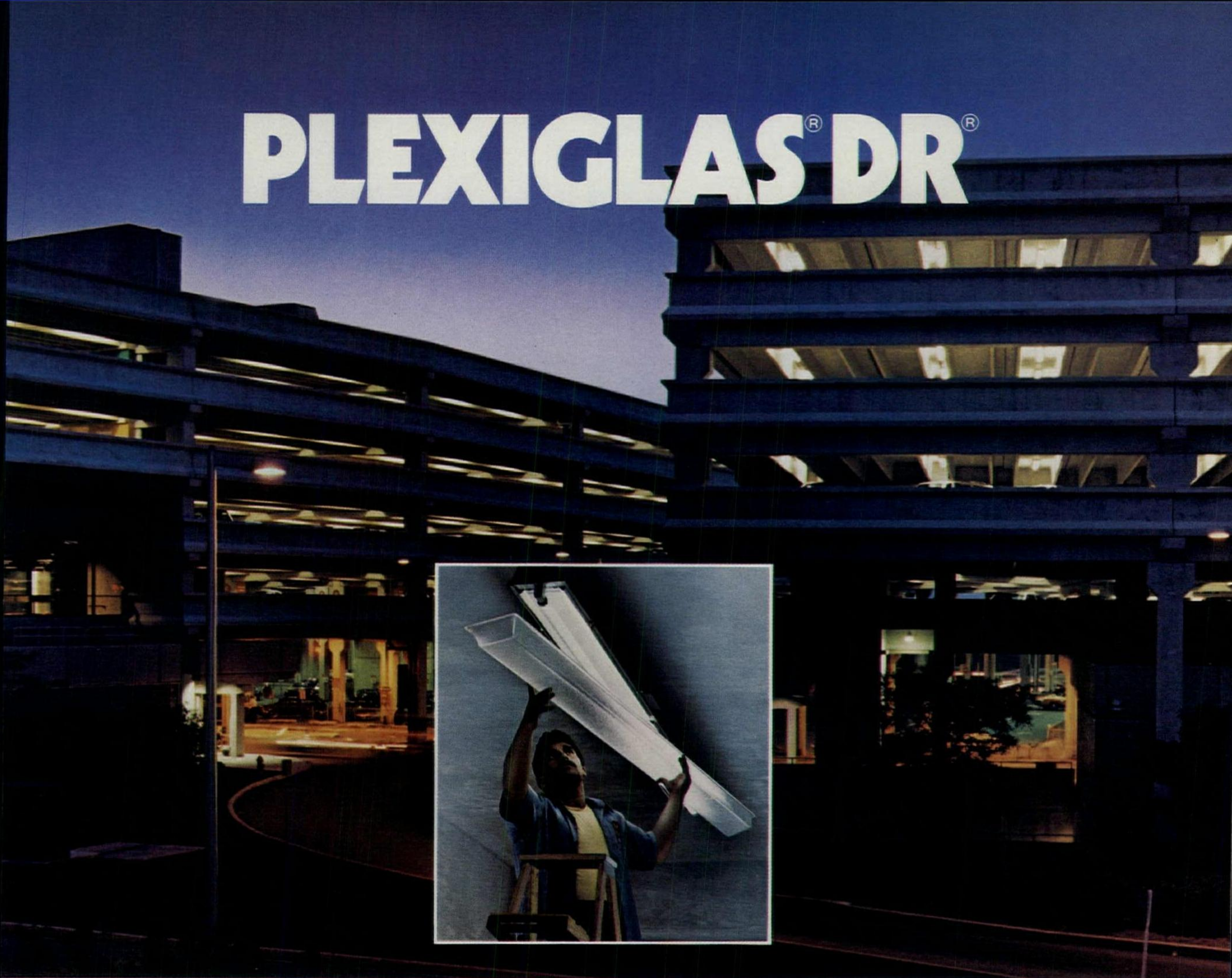

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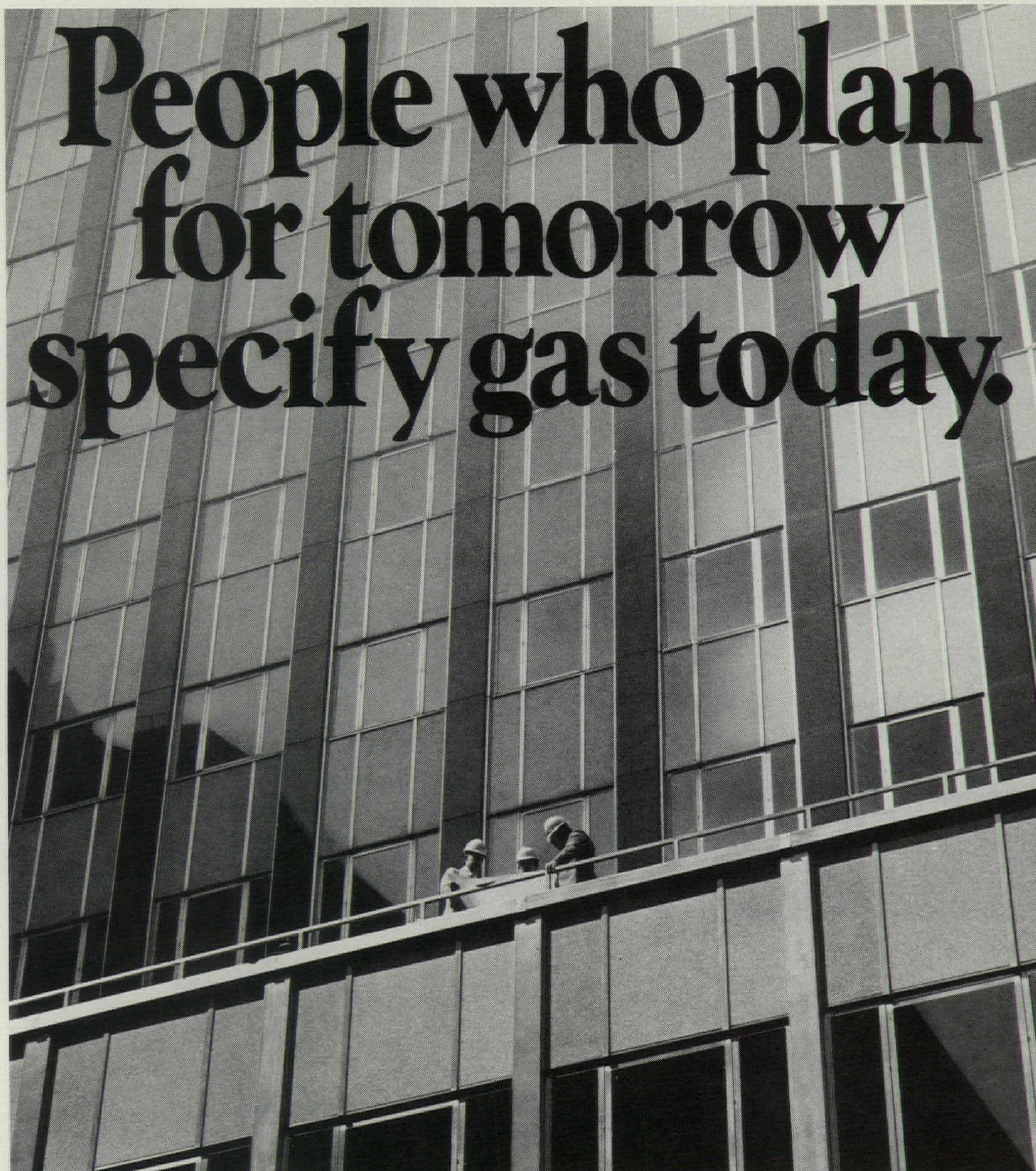

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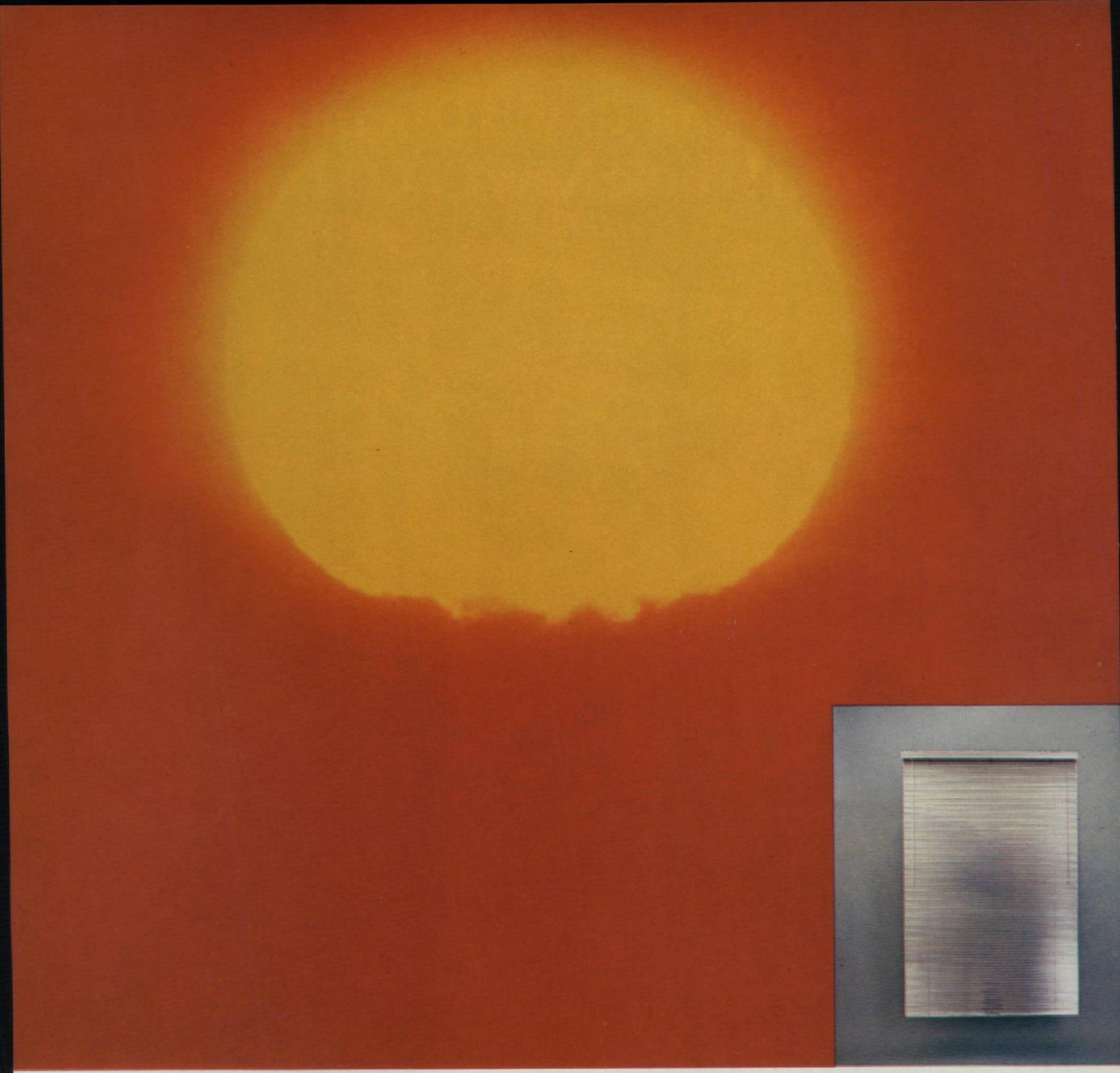

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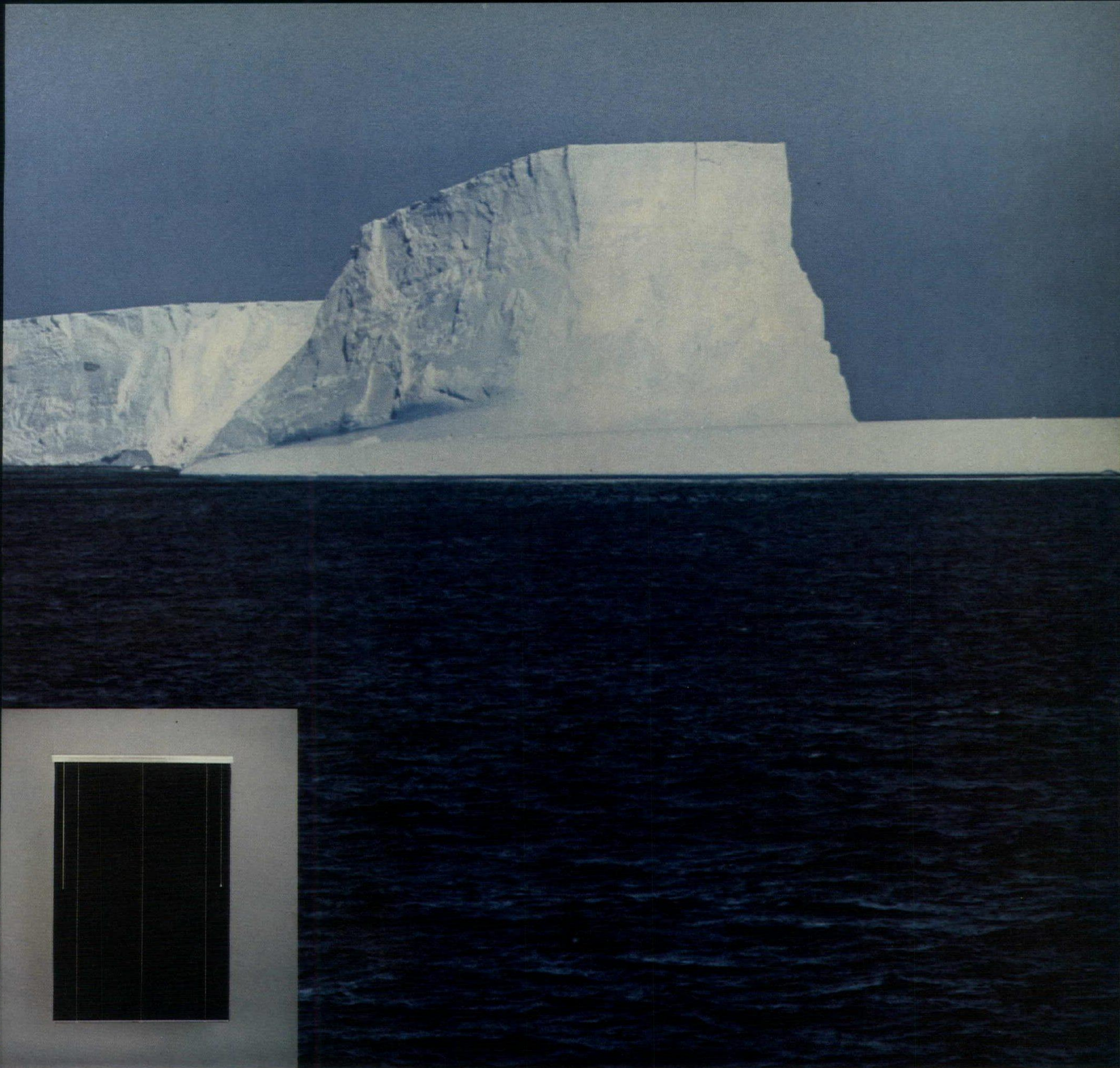

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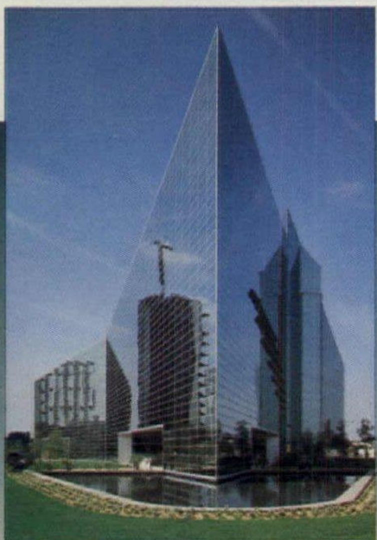
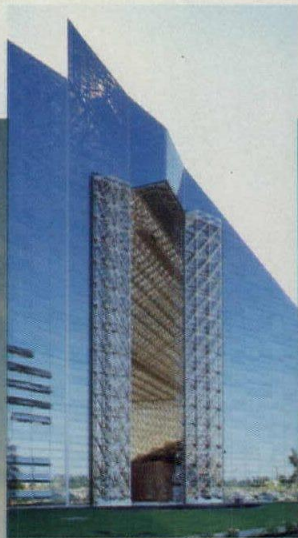
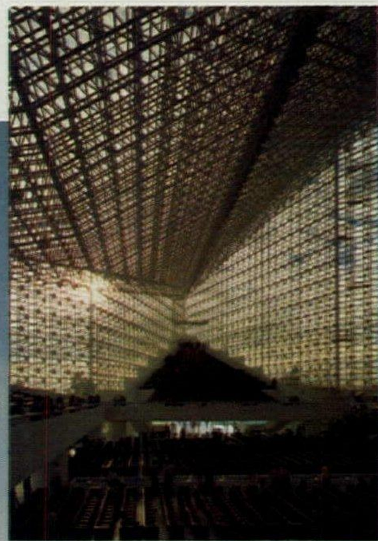


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The architect as arbiter

In resolving disputes between owner and contractor, it is prudent for the architect to reach a decision without involving attorneys or principals on either side.

The architect as an arbiter of disputes between owner and contractor may be called upon to determine claims by the contractor against the owner for additional monies because of alleged extra work or delays in the work. In many instances, the contractor will submit to the architect insufficient information or back-up material, which makes it difficult for the architect to make an appropriate determination. The architect will then require the contractor to provide additional data or documentation to support his claim before he will reach a conclusion. In such a situation, the question is presented as to whether the request of the architect for more information can be treated by the contractor as a denial of the claim, freeing him to proceed to arbitration without first obtaining the architect's decision.

In a recent case (*New York Telephone* v. *Speciner*, 184 NYLJ No. 107 p. 6) the Court was called upon to consider the rights of the contractor to submit to arbitration a delay claim against the owner of over $400,000 and a claim for extra work in excess of $32,000. These claims had originated with a subcontractor who asserted them against the general contractor, who in turn contended that the owner was responsible for the payment of the same. The owner, upon receipt of the claim, moved to stay the arbitration on the ground that the contractor had not complied with the requirements of the construction contract that all claims, with necessary supporting evidence, be submitted to the architect for initial determination. The contract in this respect provided that "all claims of the owner or contractor and . . . all other matters relating to the execution and progress of the work or in the interpretation of the contract documents" be submitted to the architect within a reasonable time. The contract further provided that if the architect did not render a decision within ten days from the time the matter was submitted to him for determination, either party could demand arbitration.

Although the contractor had furnished the architect with a copy of the subcontractor's claim letter as against the contractor, and the architect had not ruled on the same within ten days, the Court granted the stay of arbitration on the ground that the contractor had not provided the architect with any evidence supporting the claim. Thereafter, the architect requested the contractor to provide a written analysis and specification of the claim as well as all supporting documentation. Some weeks later, the contractor made a submission which was adjudged to be inadequate by the architect after the owner's counsel had reviewed the same. The architect again asked for a detailed presentation of the claim. The contractor first objected to the reliance by the architect on advice by the owner's attorney and further stated that no additional submission would be forthcoming. He requested a determination based on the information which had been furnished, which the contractor contended was sufficient. No determination was made by the architect.

Eventually, the general contractor became bankrupt and the trustee in bankruptcy, some five years after the matter had been submitted to the architect, brought a motion to compel arbitration of the general contractor's claim. The trial court granted the trustee's application on the ground that the submission of the general contractor had been sufficient to enable the architect to make a determination and that in any event, the architect's request for additional information, which had been made more than ten days after the submission of the claim, although requesting analysis and full documentation, constituted a rejection of the claim thereby fulfilling the condition precedent to arbitration. This decision was reversed on appeal.

The trial court had relied upon an earlier decision in which the contractor's claim letter to the architect stated that it contained all evidence that the claimant would present and the architect's response, more than ten days after the submission of such letter, that insufficient evidence had been presented, was construed by the court to be a rejection of the claim. The Appellate Court distinguished the earlier case, pointing out that the architect's request for additional information, in the case before it, was not intended to be a rejection of the claim and further the contractor had not asserted, contrary to the earlier case, that it had submitted all of its evidence, but merely contended it had furnished "sufficient evidence." Consequently, concluded the Court, the contractor, in not complying with the architect's request for further information, had not fulfilled the condition precedent to arbitration.

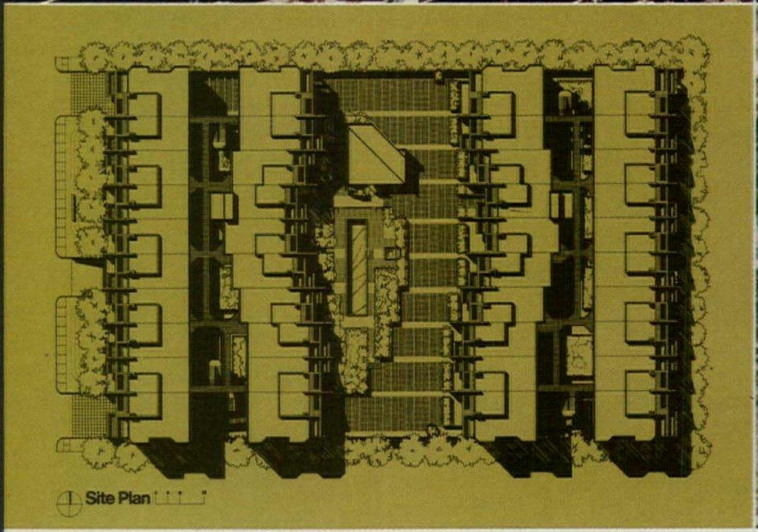
The Court further concluded that arbitration as a remedy had in fact been abandoned, stating:

"Here there was a stay of arbitration in effect when (the contractor) made its submission. It is worthy of note that in the time between its submission . . . and its bankruptcy (the contractor) did not make any attempt to vacate that stay as it was entitled to do if it reasonably believed that it had presented sufficient evidence.

"It is clear that (the contractor) never did comply with the . . . orders directing submission of the evidence requested by the architect and therefore never did fulfill the condition precedent to a demand for arbitration.

"These inexcusable delays are sufficient for a finding of abandonment and respondent is hereby held to have waived the right to arbitrate."

It is of interest to point out that the Court did not refer to the objection made by the contractor that the architect's initial demand for additional information or documentation may have resulted from the advice or pressure of the owner's attorney. It would appear that in fulfilling his role as an unbiased arbiter, the architect would be on safer ground if his judgment that the submission by the contractor was insufficient was made without the involvement of the owner or his attorney. □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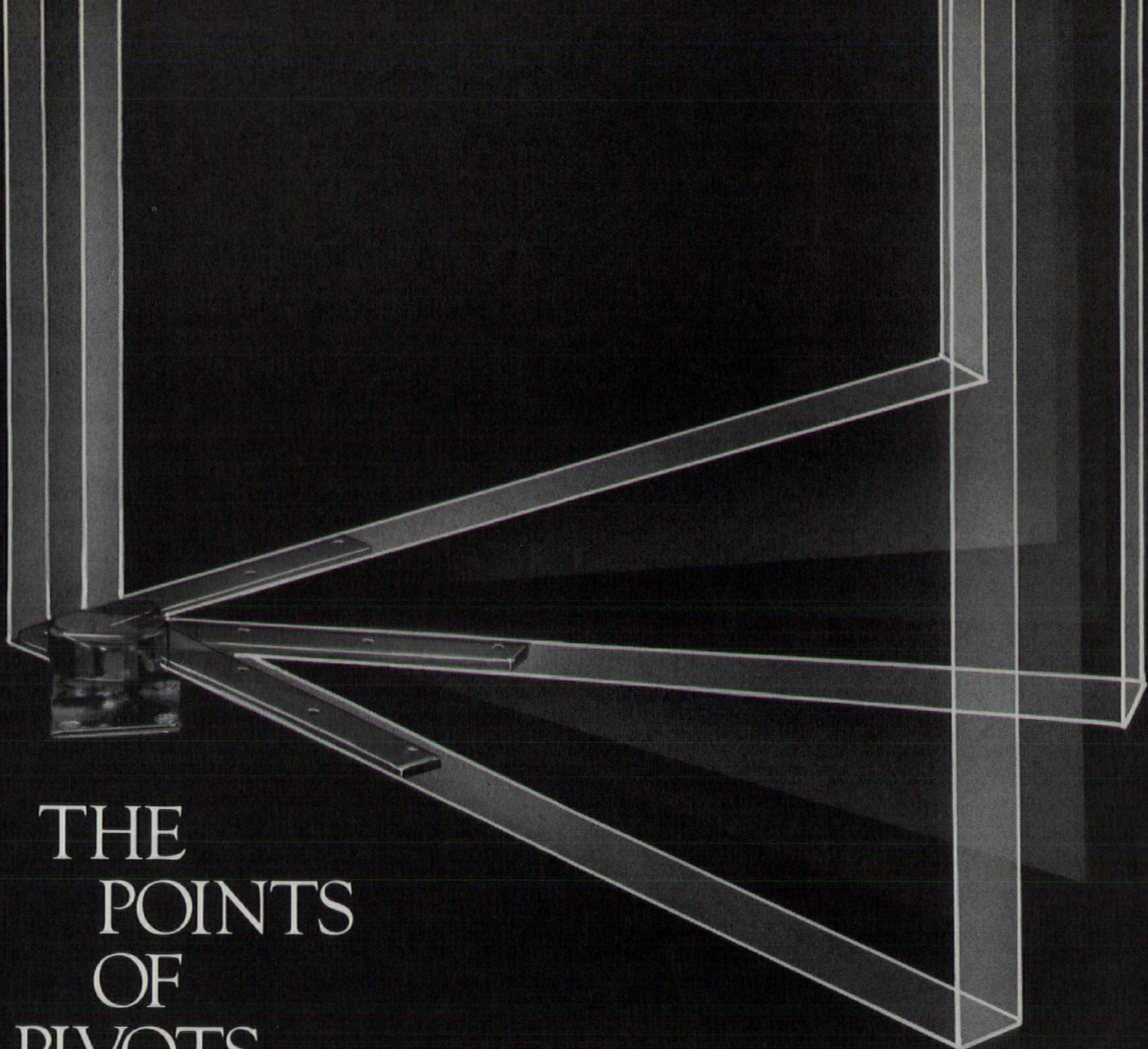

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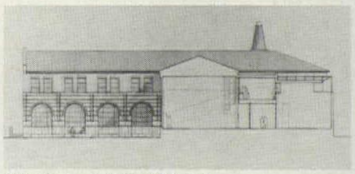
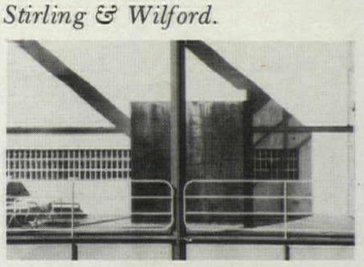
P/A in December


Stirling & Wilford.


Krueck & Olsen.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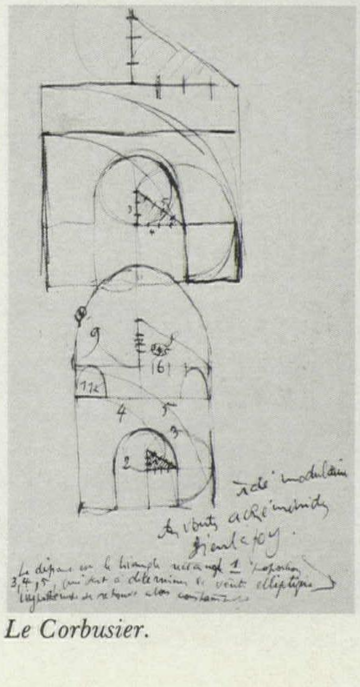
Le Corbusier.

A rich diversity: Drawing on a wide range of architectural expression, the December issue of P/A will present both striking new work and historical perspective. In their first major work in this country, James Stirling and Michael Wilford have created a new and fitting addition to the architecture school at Rice University in Houston. Also included in December will be a house in Chicago by Krueck & Olsen, a serene horse farm in Kentucky by Theodore Ceraldi, and two recreational facilities in Oregon by architects Broome, Oringdulph, O'Toole, Rudolf & Associates.

As promised in the October issue, P/A will further review work in New Delhi by Sir Edwin Lutyens in the period after 1912. Another in the series of articles on architectural precursors, the Lutyens feature will also be joined in the December P/A by recently unveiled sketches by Le Corbusier.

P/A in January will, as always, present the winners of the annual P/A Awards program. From a record number of 1069 entries, the jury selected 24 for recognition, and the extra large January issue will show them in greater detail than ever. Also included will be winners of other competitions and reports of major projects, with a follow-up on previous P/A winners.

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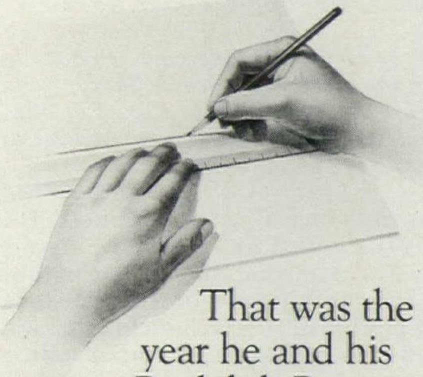

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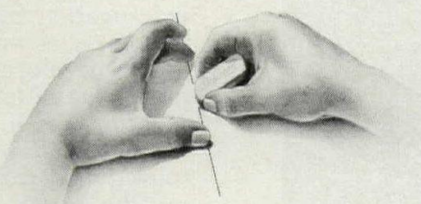

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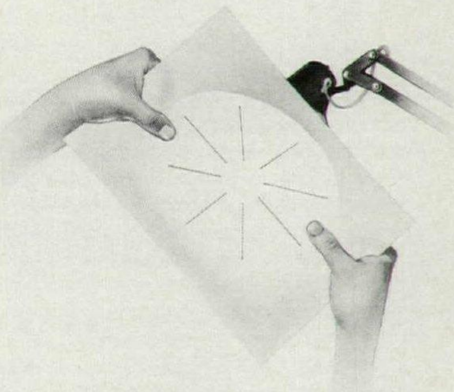

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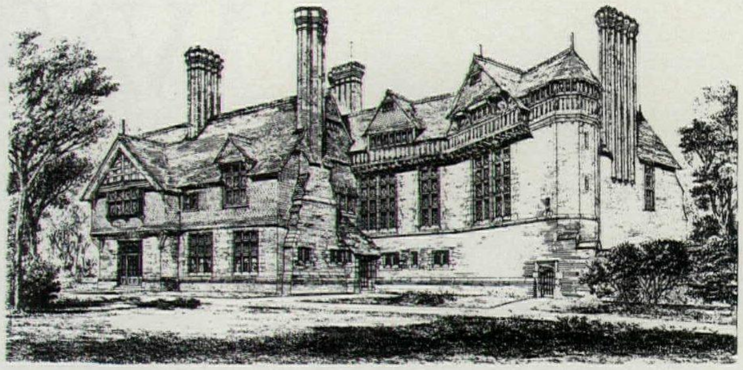
Domestic England

Books



Richard Norman Shaw, Goodall House, Pinner, 1872.

The English House *by Hermann Muthesius. Preface by Julius Posener, edited with an introduction by Dennis Sharp, translated by Janet Seligman. New York, Rizzoli, 1979. 272 pp., 524 illus., $75.*
Reviewed by Richard Guy Wilson, Chairman, Architectural History Division, University of Virginia, Charlottesville.

In October 1896, an unknown German architect, Hermann Muthesius (1861–1927), arrived in London as an attaché to the German embassy with a mission for the Prussian Board of Trade: to study the accomplishments of the British in industry and architecture. His initial research included a wide variety of reports on railroads, gasworks and other industrial installations. This, however, was not his real passion, as revealed in a letter home: "I am hoping in the near future to find time for a project that is dear to my heart, namely, a thorough investigation and exposition of the English House. . . . There is nothing as unique and outstanding in English architecture as the development of the house. . . . Indeed, no nation is more committed to its development, because no nation has identified itself more with the house."

The result would be both immediate and long-term. He toured the British Isles, lugging along his camera and seeking out the newest and best examples of English housing, from Mackintosh to Lutyens. His choice was unerring; he identified many, if not almost all, of the important houses built in England between 1860 and 1900. One result would be a series of articles and two books, the most important of which, *Das englische Haus,* was published in three volumes in 1904–1905, and a second edition in 1908–1911. Muthesius returned to Germany in 1903 and began propagating the reform of architecture and industry and the integration of craftsmanship, along the lines of William Morris, one result of which was the founding in 1907 of the *Deutscher Werkbund.* While he did not attend the initial meeting, Muthesius was the Werkbund's spiritual father, and by 1911 he was the leading spokesman for Modernism in German architecture and industrial design.

Because of difficulties in the language and the book's scarcity, *Das englische Haus* has been known more by reputation than actuality in England and America. Hence the decision to translate and republish substantial portions of the book is a major accomplishment, to be welcomed on both sides of the Atlantic. Based upon Muthesius's second edition, the English language edition has been superbly translated by Janet Seligman. To republish all three volumes would clearly have made

[*Books continued on page 170*]

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Books continued from page 168

the price prohibitive, so of necessity some of the historical coverage, such as on the Palladians, and material that Muthesius took from Kerr, Eastlake, and others was cut. These make little difference to the overall text, which reads with a cleanness and vigor that should be a model for architectural writing. The illustrations accompanying the translated sections were retained with the plan legends converted into English.

What do we have as a result? First, a book of seminal historical importance; and second, a book with perhaps some suggestions for the contemporary architectural scene. Historically, Muthesius provides the most detailed account available of the development of the English house between 1860 and 1900. This analysis includes not simply the large country manor house, but the smaller country house, urban houses, interiors, furnishings, land tenure, building laws, practical details of the installation of sash windows, the revolving bolt lock for the windows, and the bathroom. Throughout, Muthesius's rational intellect is clearly evident as he explains and classifies what he considers "a cultural achievement for which England is certainly to be envied." To do this he does look at determinants, geography, weather ("the air is extremely damp and it is generally inhospitable"), social patterns ("the obstinacy with which the English observe the minutest conventions often tends to be exaggerated"), and even childrearing. The result, while smacking of a certain German "historical inevitability," logically explains the nuances of the English house. That he admires the English and their homes is without question: "that to live in a private house is in every way a higher form of life"; yet he is not blind: "English cooking is the most artless, most uncultivated cooking in the world."

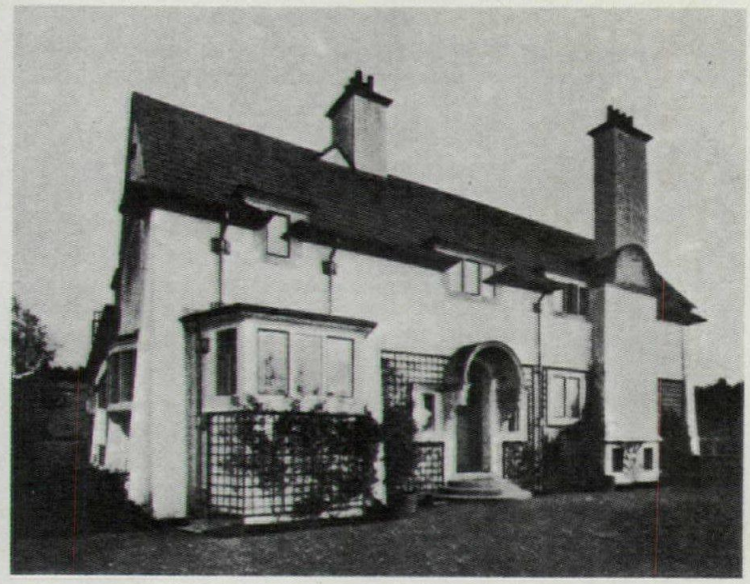
For Muthesius, the supremacy of the English house came in the period 1860–1900, the result "of a new departure in the tectonic arts that had originated in England." It was to the pre-Raphaelites, Ruskin and then especially William Morris, "a pioneer in every field of his activity," and particularly in the "Red House" at Bexley Heath by Philip Webb, that the new house owed its origins. The hero, however, for Muthesius is not Webb, but Richard Norman Shaw. Shaw is viewed as "the first of the modern architects," in that he used traditional forms in a new way, and transformed the material of history into his own. A tinge of disappointment does appear regarding the shift in Shaw's later life towards "historicism." For Muthesius, historicism meant formalism, and he disliked intensely what he felt was the Academy or the French system of the École des Beaux Arts. He was committed to the modern—an informal tradition based upon the vernacular and craftsmanship.

Essentially, Muthesius recognizes two directions in English domestic architecture. One, led by Shaw, reinvigorated historical forms and had followers such as Ernest Newton, W.R. Lethaby, Ernest George, and Peto. Among the younger members was Edwin Lutyens, with a career scarcely ten years old, yet who, according to Muthesius, "may soon become the accepted leader among English builders of houses like Norman Shaw." Lutyens, Muthesius circumspectly notes, "would refuse to have anything whatever to do with any new movement," and he goes on to describe some of Lutyens's imitations of "ancient" buildings. This is not the real Lutyens, however, and Muthesius carefully notes the "modern" or "personal" or "unusual" character of houses such as the Orchards in Surrey. Innovative plans, the simple exteriors, the superb relation to site, and the connections through the garden, terrace, pools, and pergolas are amply described and illustrated.

The second direction that Muthesius identified was that of architects who abandoned history or worked in a "new vocabulary of forms." Very directly connected with the Arts and Crafts (certainly more so than with Shaw), this group adopted a vocabulary of pure, simple forms called "primitivism" by Muthesius at one point. While there are a number in this group—C. Harrison Townsend, Walter Cave, and W.A.S. Benson—it is Charles Francis Annesley Voysey who stands out for Muthesius. Voysey's extreme simplicity, his willing-

[*Books continued on page 172*]

Books continued from page 170


C.F.A. Voysey, New Place, Haslemere, Surrey, 1897.

ness to abandon almost all ornament and to achieve effects through color, proportion, strips of small, narrow windows, corner buttresses, projecting roofs, and long and low forms, is displayed in such houses such as Broadleys on Lake Windermere. Yet how correct Muthesius is in assessing Voysey's "total abandonment of historical tradition" is questionable. Most recent scholarship has shown, indeed as Voysey himself claimed then and later in the 1930s when Pevsner made him a "Pioneer of the Modern Movement," that Voysey was really closely connected with tradition and his source was honest English yeomen's cottages.

A subgroup of those working in the new vocabulary is found in the more poetical and imaginative North, in the work of M.H. Baillie Scott and, far more important and intriguing for Muthesius, Charles Rennie Mackintosh and the "Glasgow Movement." Here he feels is an attitude "of the room as art, as a unified organic whole embracing colour, form and atmosphere. . . . It seeks a highly charged artistic atmosphere or more specifically an atmosphere of a mystical, symbolic kind." Mackintosh, Muthesius feels, was misunderstood, especially in London, and it should be noted that although several houses and plans by Mackintosh are included, it is as an interior designer that he and his wife Margaret McDonald are praised. Muthesius sees a link, in spite of the tremendous differences, between the circle of Voysey and the Glasgow group: "The former seek extreme plainness in which imagination is suppressed, the latter are virtually governed and led by imagination. Common to both, however, is a strictly tectonic underlying factor that holds qualities of material and construction sacred and in this respect never descends to the unnatural and artificial."

As a historical document the book makes a claim on us, for it is here that the connections between the essentially conservative, anti-machine-age Arts and Crafts movement of England, and the machine-oriented new school of Germany come into being. Muthesius is ultimately ambiguous in his feelings toward tradition and the Modern.

Muthesius makes another claim on our attention: the relationship with the situation today. To seek exact parallels with a situation one hundred years past is too facile, and yet there is a similar conflict between those who call for reinvigorating tradition, and those committed to new forms and a new vocabulary. That is certainly obvious, but Muthesius may be of more importance for his method: the attempt to understand houses as the outcome of a specific set of cultural and physical conditions that were understood by the architect and not imposed or transmuted. Even more important is the essential humaneness of Muthesius's argument: housing is not simply a matter of stylistic attributes, but a method of life—decent, sympathetic, and not full of pretentious nonsense.

The English House deserves to be read and treasured, as a rich book of major importance and for its insight into houses.

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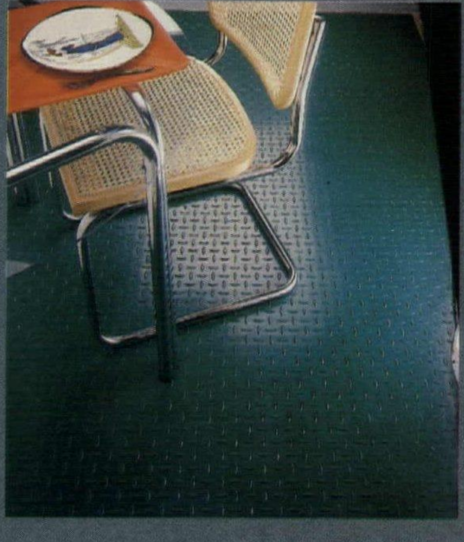

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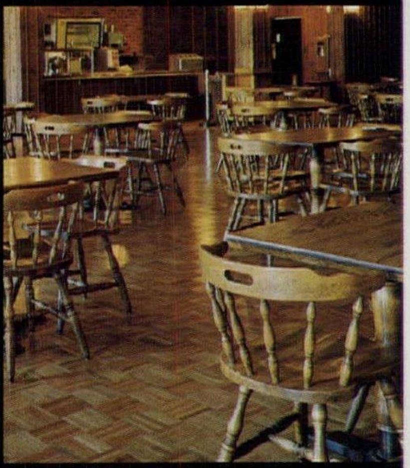

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Top: Pearl Ridge Center, Honolulu, HI
Middle left: Tower National Bank, Lima, OH
Middle right: Foothill Junior College, Los Altos, CA
Bottom: Penn Mutual Life Insurance Building, Philadelphia, PA

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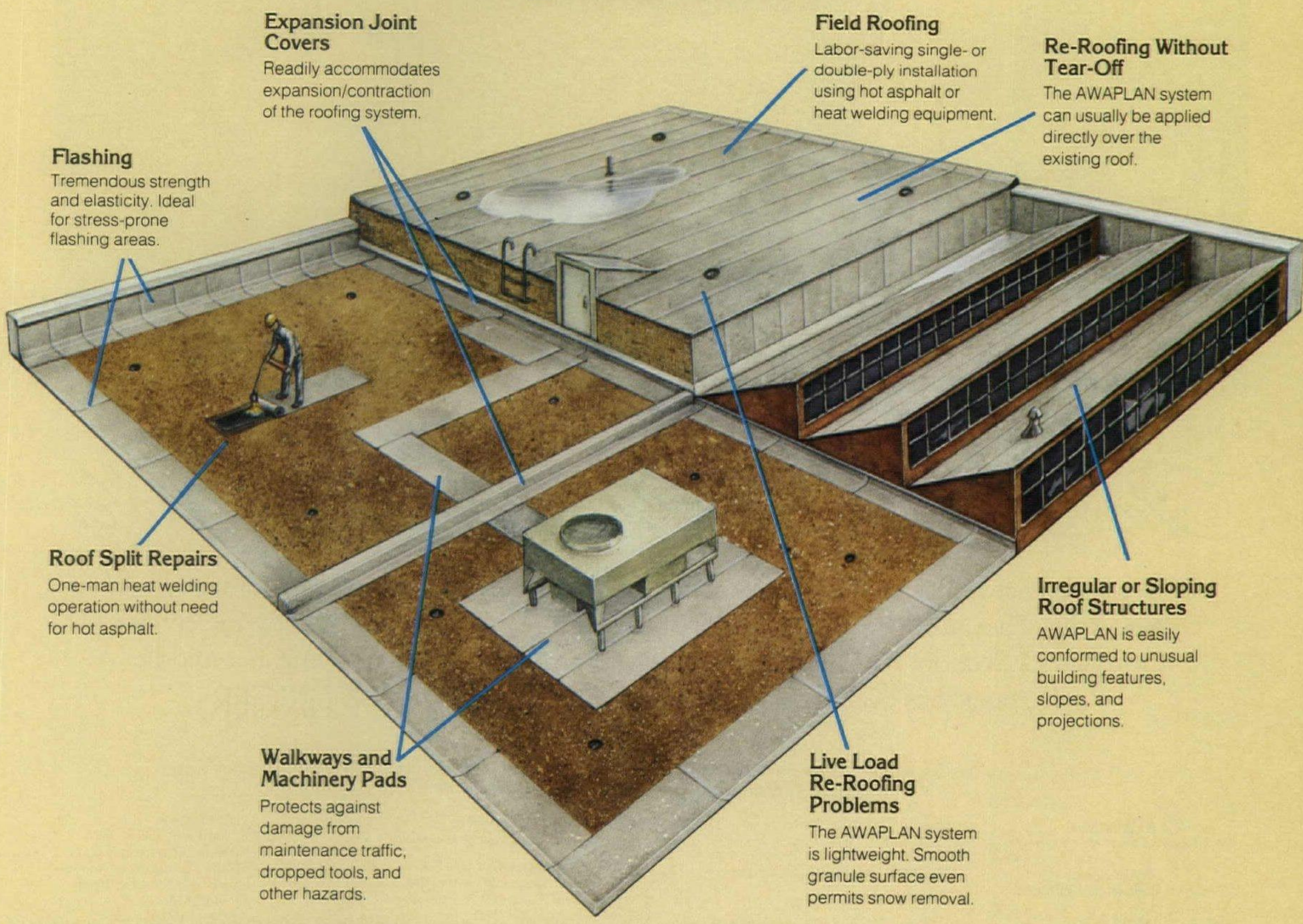

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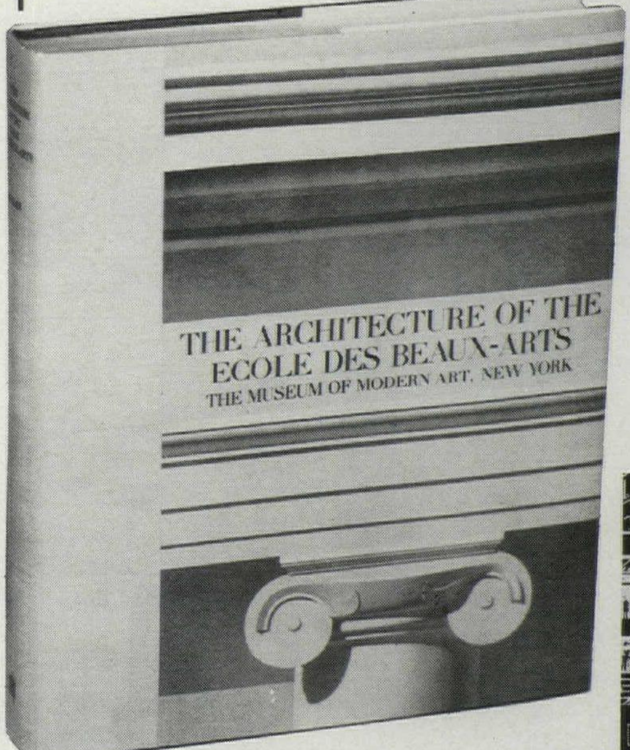
1



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This is a comprehensive guide to preliminary structural design using a minimum of mathematics and numerous illustrations to describe structural forms and their mathematics. It has a strong emphasis on graphic presentation and is an instant-access reference to structural design. Full consideration is given to the internal and external forces that a building must withstand, and the interaction of structural and environmental design.
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4 Architecture: Form, Space and Order

By Francis D.K. Ching,
294 pp., illus. . . . $22.50

Written to foster understanding of design concepts, this rich source of architectural prototype demonstrates how to extract the fundamental principles of form and space from the environment, whether in the architectural one views or inhabits, in architectural visualization, in drawing, or in actual design.
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5 Affordable Houses Designed by Architects

Edited by Jeremy Robinson,
168 pp., illus. . . . $22.95

This lavishly illustrated volume shatters the myth that architect-designed houses are more costly than developer-built houses. The superb photographs, floor plans, drawings, and details of interiors and exteriors present a wealth of ideas on how to construct beautiful and unique houses within limited budgets.
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6 Design Competitions

By Paul D. Spreiregen,
310 pp., illus. . . . $27.50

The first comprehensive guide to design competitions based on American practices, it examines in detail all important aspects of this timely subject, including how competitions work and the ground rules that govern most competitions.
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7 Design and Planning of Swimming Pools

By John Dawes,
276 pp., illus. . . . $49.95

A comprehensive manual that describes the essential characteristics and consequent design requirements of every type of pool imaginable. Also deals in great detail with more technical matters, such as structural problems and how to solve them, finishes, filtration, circulation and water treatment, heating and ventilating.
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8 Architectural Rendering: The Techniques of Contemporary Presentation

By Albert O. Halse, 326 pp., illus., 2nd edition, 1972 . . . $44.50

This completely up-dated revision of the most widely used guide to architectural rendering covers all working phases from pencil strokes to finished product — and shows how to obtain the desired mood, perspective, light and color effects, select proper equipment and work in different media.
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NEW

9 Cities For People

By Ronald Wiedenhoeft
224 pp., illus. . . . $22.95

This book is a thoughtful analysis of the dehumanization of cities and the urban blight that results. It demonstrates how we can reverse this trend, making cities more responsive to human needs and improving their economic viability. It offers a number of economically sound steps that have proven effective in revitalizing cities all over the world.
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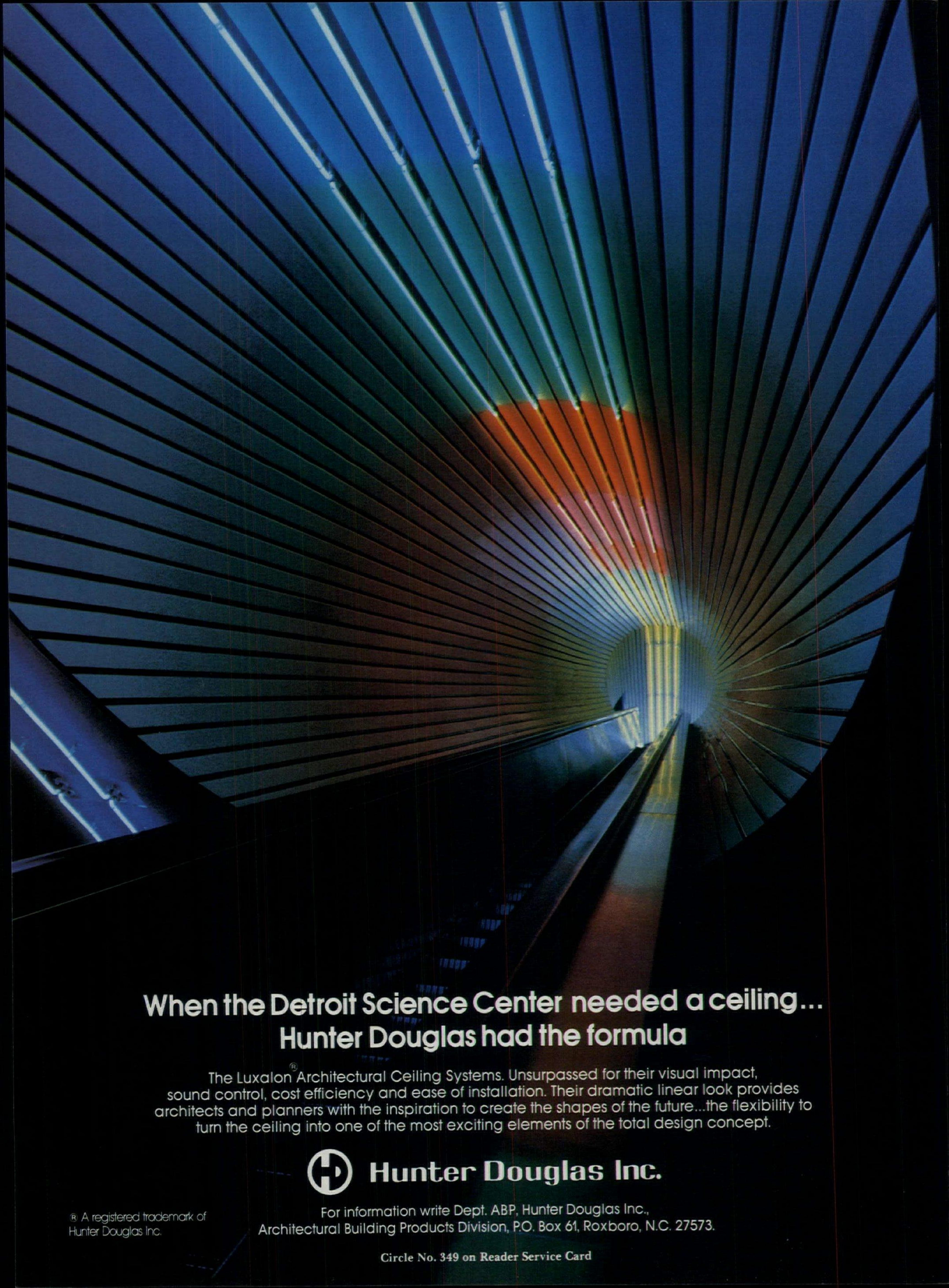
10 Water in Landscape Architecture

By Craig S. Campbell
128 pp., illus. . . . $15.95

This profusely illustrated book is the first published work that deals in substantial detail with the technical as well as the aesthetic principles of fountain design. Covers basic hydraulic principles, practical limitations, environment and available equipment.
Circle B610 under Books.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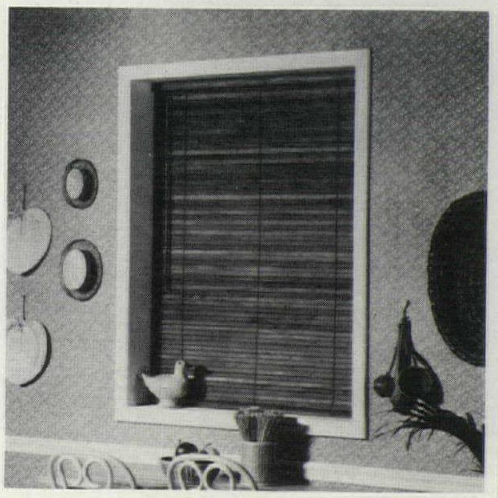
Products and literature

The following items are related to the Interior Technics article about daylight control. They are grouped here for the reader's convenience.

Daylight control products

Secondary System window is an interior storm window and Venetian blind. When the window is installed, the blind is enclosed between it and the existing window, providing energy efficiency said to be 50 percent better than that of single glazing. The window tests at a U-value of .47, according to a report from the National Certified Testing Lab. Nanik, Div. of Wausau Metals Corp.
Circle 100 on reader service card



Wood mini-blinds with 1⅛-in. slats have greater overlap for better insulation. They are made from basswood with a choice of finishes: walnut, pecan, cherry, maple, and natural. Wooden valance, bottom rails, and batons are matched to the slats. Kirsch Co.
Circle 101 on reader service card

Insul-Light skylight shutter assembly provides insulation against energy loss and controls daylight. Birch panels with a concealed polyisocyanurate core have an R-value of 9.1 and positive seals against infiltration. They are available with manual or motorized controls. InsulShutter, Inc.
Circle 102 on reader service card

Insulating window shades come in both light-filtering and room-darkening types. Properly installed, they can keep out 80–90 percent of the summer sun's heat through windows and reduce winter heat loss through windows by more than 40 percent. Used with double-glazed windows, they have an R-value up to 2.7. The roller type shades are designed to fit conventional brackets and come in four standard sizes. Graber Co.
Circle 103 on reader service card

Solor Loc fabrics for daylight control come with white, natural, Solor bronze, or Solor gray backing to provide a uniform look on the outside of a building. Interior face is offered in a choice of designs. Fabrics come in several degrees of density, depending on the amount of heat and glare control desired. Maharam Fabric Corp.
Circle 104 on reader service card

Decoray™ shades of laminated film and fabric reduce glare, cut heat gain and loss through windows, and minimize fading of carpets and upholstery. Although the shade covers the entire window, the fabric is designed to allow light transmission. Vinyl tracks seal the sides, and a heavy batten seals the bottom. Sun Control Products, Inc.
Circle 105 on reader service card

Window Quilt™, which operates as easily as a standard window shade, provides insulation against heat loss through windows. Consisting of five layers of material, one of which is aluminized polyester, it slides in tracks that seal all four sides. It is also available in fire-retardant material that has passed the National Fire Protection 701 test. Standard versions come in four colors: bone, navy, camel, and white. Commercial quilts in bone white are 22 to 75 in. wide and up to 148 in. long. R-value is [*Products continued on page 186*]

NOW RESIDENTS AT THE WILSHIRE MANNING CONDOS CAN BUY CERAMIC TILE FLOORS WITHOUT DISTURBING THE PEACE. ENKASONIC™ MATTING GIVES THE BEST SOUND-RATING.

The facts are in. People like ceramic-tile floors. Because they're durable. Because they're maintenance-free. But most of all because they're beautiful.

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But how do you put down ceramic-tile floors in a high-rise without disturbing the neighbors below? Easy. You specify Enkasonic matting as the soundproofing material.

Enkasonic matting gives an STC rating of up to 60, plus an IIC rating of up to 55. It also meets building code requirements for interior sound-rated floors, no matter what flooring is used. Yet it's thin and strong and, above all, cost effective.

Basically, Enkasonic matting consists of two layers. A polyester nonwoven filter fabric on top. And Enkamat® compression-resistant, 3-dimensional nylon matting below. Together, they work to obstruct the passage of sound so efficiently that no other material can match Enkasonic matting's rating at the same thickness. What's more, it meets all the industry standards for deflection and performance levels. Some floor systems even received heavy commercial ratings.

If Enkasonic matting will help keep the peace at the Wilshire Manning, think what it can do for you. To find out more, contact Enkasonic Sales Dept., American Enka Company, Enka, North Carolina 28728; (704) 667-7713. Or consult Sweet's Catalogue's General Building & Light Residential Construction sections (13.10), or call toll-free Buyline (800) 447-1981.

ENKASONIC MATTING, FOR SOUND-RATED, THIN, STRONG FLOORS BY ENKA

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Products continued from page 183

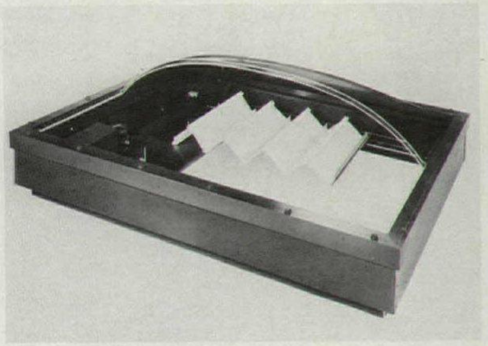
said to be greater than three layers of storm windows. Appropriate Technology Corp.
Circle 106 on reader service card

Vertical blinds combine the functions of blinds and draperies. Flexalume verticals come in earthtones of 100 percent wool, as well as other natural fabrics. They can be hung to stack at right or left or with a center opening. The verticals can also accommodate sloping openings. Standard vanes are 3½ in. wide; 5-in. vanes also are available. Hunter Douglas, Inc.
Circle 107 on reader service card

Telòs® 90 sliding curtains, produced in Italy by Modular®, are available in various fabrics and other materials. Each pack contains all the items needed to make one complete 36″ x 128″ panel. For shorter lengths, surplus material can be rolled into the lower holder. Hillman Co., Inc.
Circle 108 on reader service card

Insalume® metallized polyester film, laminated to napped polyester knit, polyester felt, urethane foam, and spun bonded polyester fibers, offers varying degrees of insulation. R-values, according to ASTM C-236-66 standards, range from 2.57 to 1.22, depending on the backing material. Drapery liners, solar awnings, solarium and greenhouse shades are suggested applications. John Boyle and Co., Inc.
Circle 109 on reader service card

A magnetic insulating shade, using Scotchtint window insulation film, is raised and lowered on a shade roller to admit or reflect the sun's rays. It is said to filter out 83 percent of glare, as well as 81 percent of ultraviolet radiation to reduce fading of fabrics and furnishings. Available in smoke and silver tints, it reflects interior heat back into the room. In summer it rejects 70 percent of the sun's heat, lowering air-conditioning requirements. 3M.
Circle 110 on reader service card



Skyview™ skylight system includes a motorized acrylic shade that allows daylighting without the discomfort of direct sun. On sunny summer days, the shade is closed to control heat gain and decrease loss of cooled air. On winter days it can be opened to admit sunlight and solar heat. On cloudy days, it is opened for maximum daylighting. Skyview Control Systems, Inc.
Circle 111 on reader service card

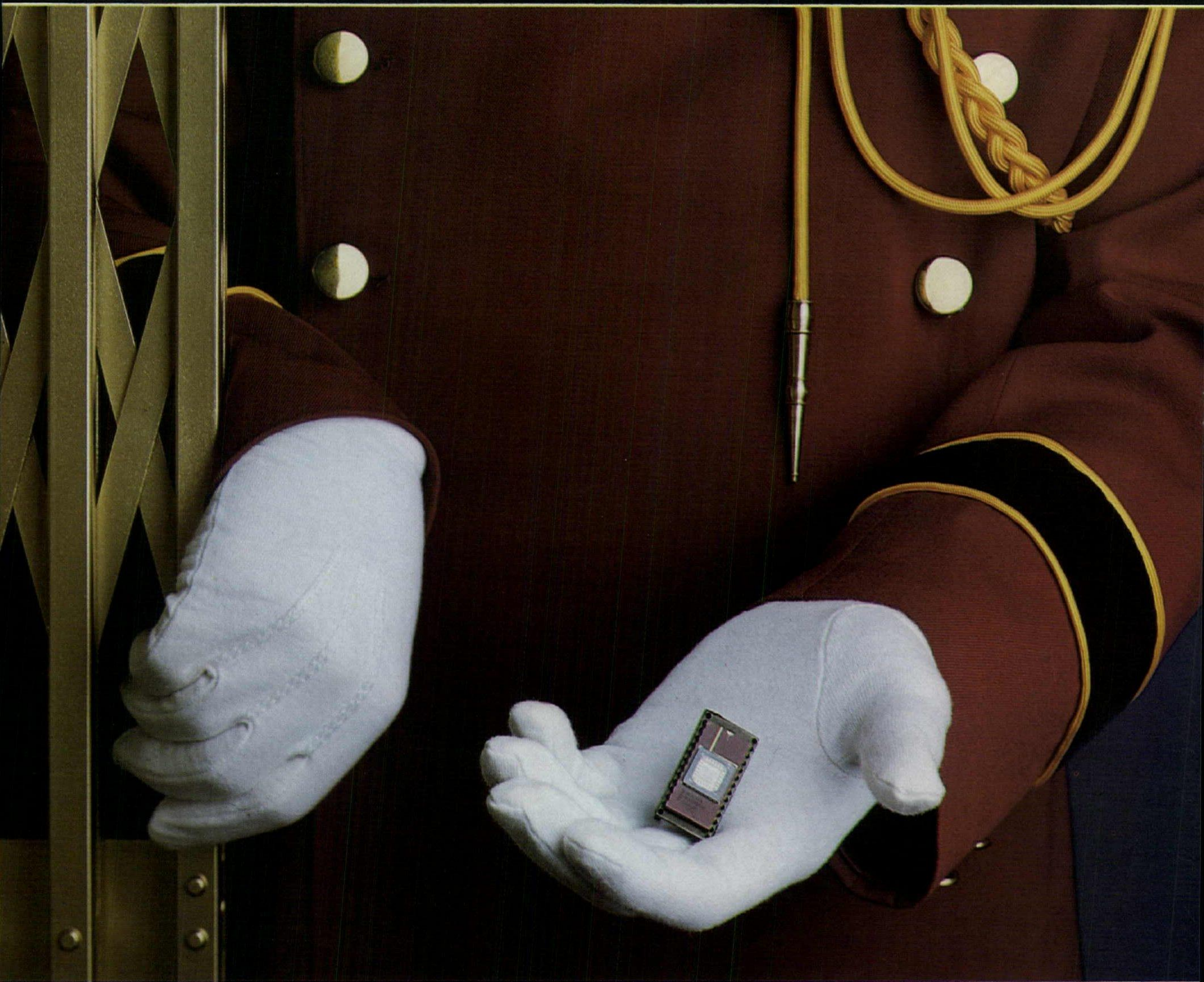
Daylight control literature

'Architectural Guide' is a 40-page catalog describing and illustrating the various styles of vertical and horizontal blinds available and showing in color several special installations. Detail drawings of components are included, along with tables of performance data on energy saving and shading coefficients, and suggested specifications. Levolor Lorentzen, Inc.
Circle 200 on reader service card

Wood blinds for special applications, as well as horizontal and vertical styles, are included in a 12-page brochure. Technical and product specification information is provided for 1-in. slats, along with energy-saving characteristics. The 20 standard stain colors are also shown. Nanik, Div. of Wausau Metals Corp.
Circle 201 on reader service card

Flexalum® aluminum window blinds for shading and energy conservation are covered in a full-color, 20-page brochure. Product descriptions, specifications, illustrations, and detail drawings are provided for Decor 1-in. blinds, special purpose blinds, between glass applications, fully motorized blinds for large windows, and Twi-Nighter/Audio-visual blinds. Hunter Douglas, Inc.
Circle 202 on reader service card

'Blind Imagination' discusses the use of Bali blinds for controlling daylight and conserving energy. The eight-page [*Literature continued on page 190*]



Announcing for Architects..

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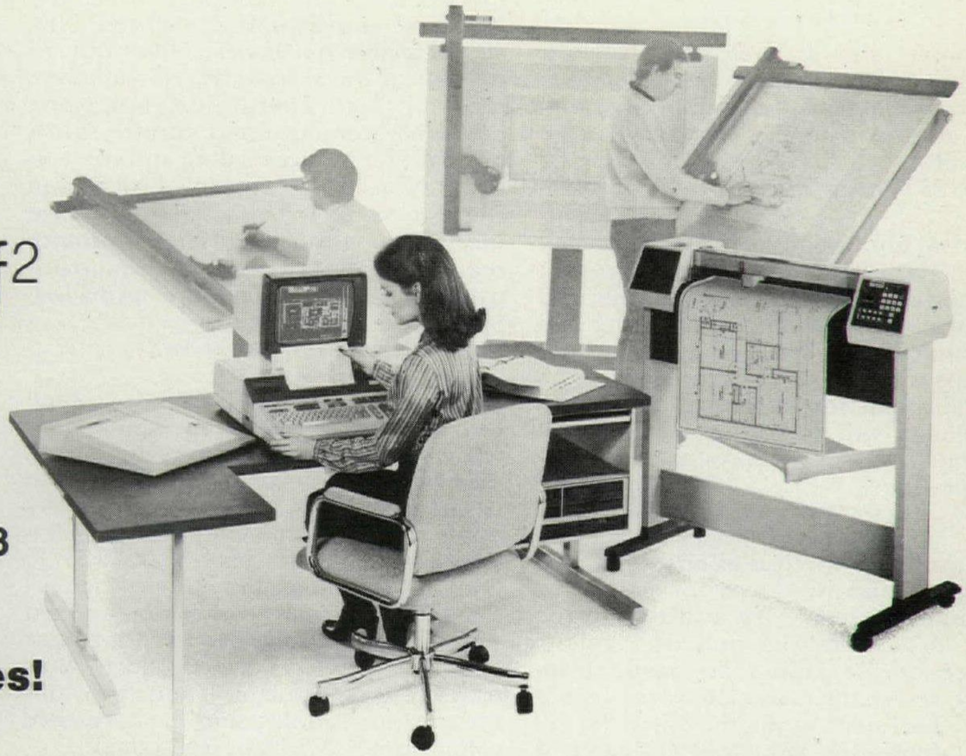

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EasyDraf^2 makes it easy to store and re-use specialized symbols and details such as pre-cast concrete, columns, doors, windows or furniture. Up to eleven overlays in exact registration can be maintained for each drawing. Changes can be made in the absolute size and scale of architectural elements, such as steel shapes, precast units and hollow metal. And, compared to hand-drawing, accuracy is far greater.

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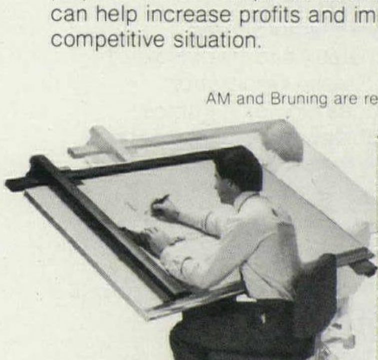

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Literature continued from page 186

brochure shows and describes the hardware components and illustrates colors available. Suggested specifications are also provided. Marathon Carey-McFall.
Circle 203 on reader service card

Vertical blinds brochure describes their light, glare, and heat control, acoustic properties, operating mechanism, and savings offered in air conditioning and cleaning costs. The 24-page brochure discusses fabrics available and provides specifications for several types of vertical blinds, both traversing and those that operate in a fixed position. Louver-Drape, Inc.
Circle 204 on reader service card

Fretric fabric vertical blinds, originally designed and produced in Europe by Creation Bauman, are available in the U.S. in five fabrics and 154 colors. Three of the fabrics are made from flame-retardant Cordelan yarn, one is polyester/linen, and the fifth linen/cotton/polyester. For a greater degree of room darkening, a sixth fabric is sealed on both sides of a polyester substrate. Metal weights sealed into the hems hold strips straight. Fabric weaves and their colors are shown in a 12-page brochure that includes specifications, fabric compositions, and an illustration of the track system. Carnegie Fabrics, Inc.
Circle 205 on reader service card

Insulating films that adhere to glass are described in an eight-page brochure. Nunsun® transparent metallized film, also available as shades, filters out 75 percent of the sun's infrared radiation, reducing both energy use and glare. Sumsun® nonmetallized bronze, gray, or clear film reduces fading and controls glare. Nunsun II® controls heat loss in winter. Saxonite® on window glass meets most government and insurance regulations for safety glazing. Comparative performance data are provided. Saxon Industries, Inc.
Circle 206 on reader service card

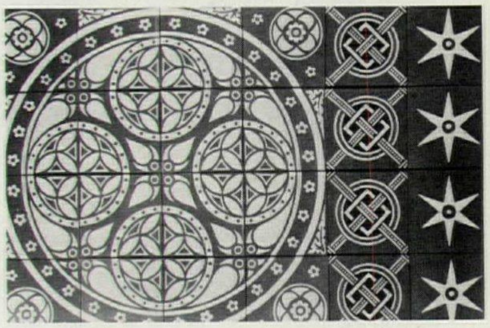
Rolling screens of fiberglass coated with flameproof PVC admit light and air while screening out summer heat gain. They are also effective in winter, said to be equal to dual glazing. The thermally stable material will roll up or down at a temperature range of −33 to 125 F. Control is manual, remote electric, automatic with solar control, motorized with manual override. A four-page brochure describes the product, illustrates colors available, and provides specification guides and performance comparisons. 3-S Halu-Rollscreen.
Circle 207 on reader service card

Solar Rollerscreen Systems brochure covers motorized systems, verticals, and shades. Fabric is thermoweldable Owens-Corning Fiberglas coated with Plastisol, which filters out the sun's heat while permitting natural light in. It also acts as an insulator against cold, providing the equivalent insulation of an extra pane of glass. Operation is manual by means of crank or tape, or solar-activated motorized control. The screens can be used on either interior or exterior of windows. Sol-R-Veil, Inc.
Circle 208 on reader service card

Solar shading systems, operated either manually or electronically, are described in a four-page brochure. Fabrics for varying sun conditions are also discussed. Drawings and photographs show how the systems operate. Mecho Shade Corp.
Circle 209 on reader service card

The following items are related to the general theme of this issue, restoration and renovation.

Restoration products



Encaustic ceramic tiles, used extensively in the latter half of the 19th Cen-
[*Products continued on page 193*]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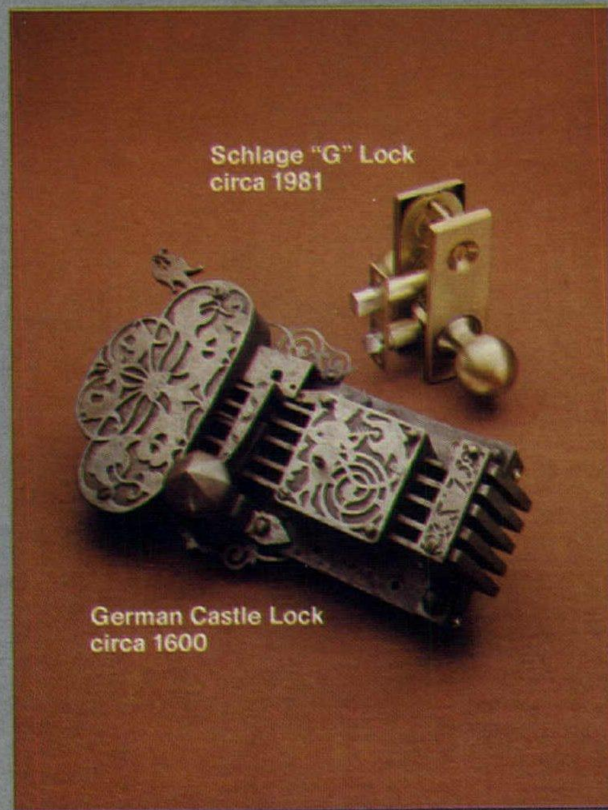
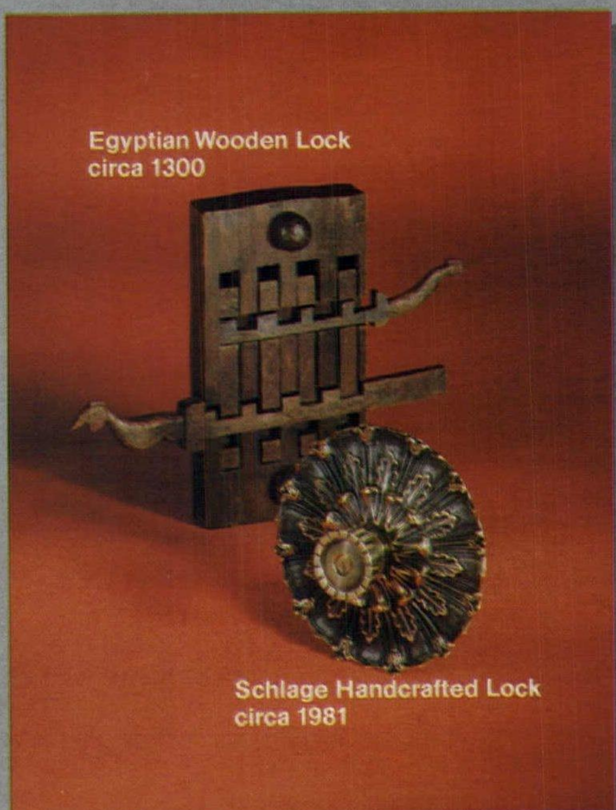
Creative Redesign

New locks for old buildings with new looks.





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Circle **No. 404** on Reader Service Card

Products continued from page 190

tury, are being manufactured to order in England. The firm works from sample tiles and tiling layout photos to reproduce or restore tile flooring. Inquiries should be sent to David Malkin, H. & R. Johnson Tiles, Ltd., Highgate Tile Works, Tunstall, Stoke-on-Trent, Staffordshire ST6 4JX, England.

Victorian-style lamps, made in Britain from the same materials and designs as they were at the turn of the century, are available in the U.S. Handmade to order by a firm founded in 1837, the fixtures come in polished brass or copper in either gas or electric versions. There are both interior and exterior models. Bradford Consultants.
Circle 112 on reader service card

Medallions, moldings, and relief panels, molded in lightweight plaster and fiberglass, are available in traditional designs of various periods. The firm also offers custom work. Dovetail, Inc.
Circle 113 on reader service card

K154 waterproofing solution, a complex aluminum stearate, is brush- or spray-applied to exterior surfaces to make them completely waterproof, according to the manufacturer. It can be used on stone, brickwork, concrete, tiles, slate, and even raw sandblasted surfaces. The coating allows substrate surfaces to breathe, and paint applied over it will not lose adhesion. It is used to protect buildings against the damaging effects of weathering and airborne fumes and chemicals. Pentagon Plastics, Ltd.
Circle 114 on reader service card

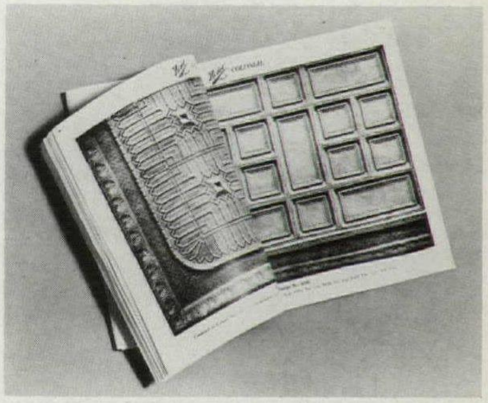
SikaTop no-water mortar can be used for repair and rehabilitation of concrete floors, platforms, and sidewalks. Applied by conventional means, the material cures quickly, allowing pneumatic tire traffic in four hours, foot traffic in two hours. Sika Corp.
Circle 115 on reader service card

Sure Klean Restoration Cleaner removes air-borne carbon and dirt, oxidized paint, and other stains from brick, granite, marble, terra cotta, and other types of masonry. Requiring only a cold water rinse, it is said to clean with greater safety to masonry work than sandblasting or steam cleaning. ProSoCo, Inc.
Circle 116 on reader service card

Restoration of interior and exterior building ornamentation is a service offered to replace missing or damaged architectural moldings. Molds are made of existing pieces to be duplicated. The fiberglass materials used for casting can be weatherproofed for exterior use. It can be reinforced, if necessary, and finished to match existing forms. Sirmos, Inc.
Circle 117 on reader service card

A suspended stamped metal ceiling, reminiscent of pressed metal designs, can be installed in 2′ x 2′ inverted T-bar grids for fast installation and access to plenum space above. The "Western" design, one of the Impressions series, is available in standard baked enamel ivory finish, polished brass, or polished chrome. Integrated Ceilings, Inc.
Circle 118 on reader service card

Restoration literature



Reproductions of metal ceiling designs are illustrated in a 72-page catalog. They are stamped from the original dies using turn-of-the-century production methods. Included are center plates, corner plates, borders, cornices and friezes, miters, and others. Copies of the catalog, at $3 each, are available from [*Literature continued on page 195*]

Freeze/thaw buildups.

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Plaza 7000 office building, Denver, Colorado. *Panelized system used. Desert Brown Mini-Brick was mounted on panels within the building, then the panels hung from the inside. No scaffolding. No downtime from weather. Estimated savings: $1 per sq. ft. compared with 4" brick for the 18,000 sq. ft. facing.*

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Literature continued from page 193

The W.F. Norman Co., P.O. Box 3230, Nevada, Mo 64772.

1981 catalog of concrete technology lists more than 200 publications. Among them are several related to repair and restoration. ACI standards, codes, and specifications are included. American Concrete Institute.
Circle 210 on reader service card

Reproduction building supplies offered for renovation and restoration include tin ceilings, brass hardware, plumbing fixtures, lighting fixtures, hardwood moldings, and doors. A catalog for professionals of approximately 100 pages is available, at $10 a copy, from Renovation Concepts, Inc., P.O. Box 3720, Minneapolis, Mn 55403.

Directory of sources of softwood moldings details products and services available from association members. Wood species used and types of moldings produced are listed, along with company name, address, and telephone number. The 28-page directory, at $2 a copy, can be ordered from Wood Moulding and Millwork Producers, P.O. Box 25278, Portland, Or 97225.

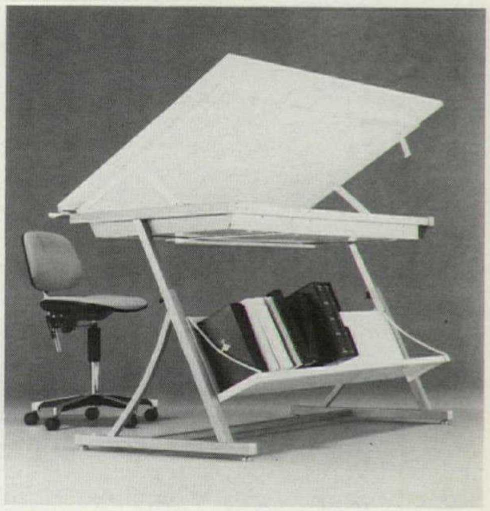
Materials for concrete repair and protection are the subject of a guide to improving, protecting, and renovating surfaces of all types of concrete structures. The 72-page handbook is organized on a problem/solution format covering a wide range of applications. It includes a glossary of terms and tables for determining volumes, thicknesses, and coverages. American Metaseal Co.
Circle 211 on reader service card

'Repair and Remodeling Cost Data 1981' is an estimating guide concerned with reuse and renovation of existing structures. In over 360 pages there are 9000 unit costs and building systems prices, along with 160 illustrations. It can be helpful in making accurate estimates for renovation projects. Order the book, at $32 a copy, from R.S. Means Co., 100 Construction Plaza, Kingston, Ma 02364.

Other products

SFK surface-mounted indirect lighting fixtures have a quick-connect feature that reduces installation time. Once the ceiling mounting plate is in place over the junction box, the fixture can be installed in a matter of seconds. Since the fixture is portable, faster tax depreciation is possible. Lighting Products Div., McGraw Edison Co.
Circle 119 on reader service card

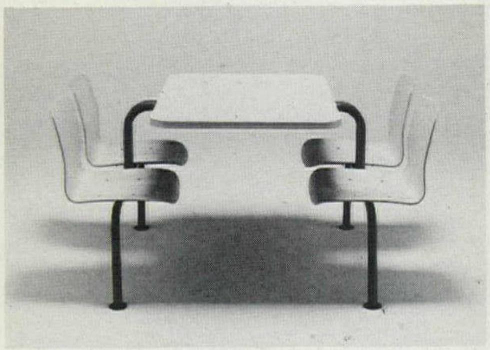
Energy-Kote® ceiling panels heat room occupants rather than the surrounding air, providing comfort at lower temperatures. They are UL approved and available in a wide range of sizes and wattages for contract or residential installation. The core of the panels is a graphite element laminated between two layers of high dielectric polyester film, which transmits heat without resistance wires. They can be flush or surface mounted or dropped into existing T-bar grids. TVI Energy Corporation.
Circle 120 on reader service card



PlanMasterPLUS drafting table has a high-pressure-laminate top with a matte finish to reduce glare. The drawing surface has 13 preset angles, and height is adjustable from 30 in. to 37 in. for use with either a chair or a drafting stool. Top support construction has stiffeners to insure board flatness. Accessories that [*Products continued on page 196*]

Products continued from page 195

can be added are tool and plan drawers, storage trays, bookcase, and pencil trough. Plan Hold Corp.
Circle 121 on reader service card



Dicipline seating units, with tables, are suitable for restaurants, cafeterias, and recreational facilities or as a two-place seating unit for lecture rooms and similar use. Molded plywood shell finishes are natural, colored, stained, or white. Table tops are plastic laminate with self-edge or bullnose PVC edge, or maple butcher block. All have floor mounting plates. Frames are offered in 17 colors. Kinetics Furniture.
Circle 122 on reader service card

Dacotherm® insulation is a pourable product offering an R-value of 4.0 per inch. According to the manufacturer, it will not burn, cause itching, or rot; it is odorless, does not release toxic fumes, or create irritating dust. It can be used in wood-frame sidewalls and hard-to-reach areas, as well as over existing fiberglass or loose fill for added insulation value. Diamond Shamrock Corp.
Circle 123 on reader service card

Internal telephone system TB-T, with 10- to 20-station master units, can be expanded to provide up to 60 stations. It has an integral handset and paging capabilities. Master units have tone and LED display to signal incoming calls. The system is suitable for nursing homes, motels, schools, and similar internal phone system requirements. Aiphone.
Circle 124 on reader service card

Wolff wire paper management, developed by industrial designer Douglas Wolff, is intended for use on open office systems; it can also be wall mounted. The three basic elements are a supporting V-beam, locking end caps, and a variety of hang-on components. The system provides storage space for papers, checks, computer cards, printouts, books, binders, folders, mail, and similar items. Yasmin, Inc.
Circle 125 on reader service card

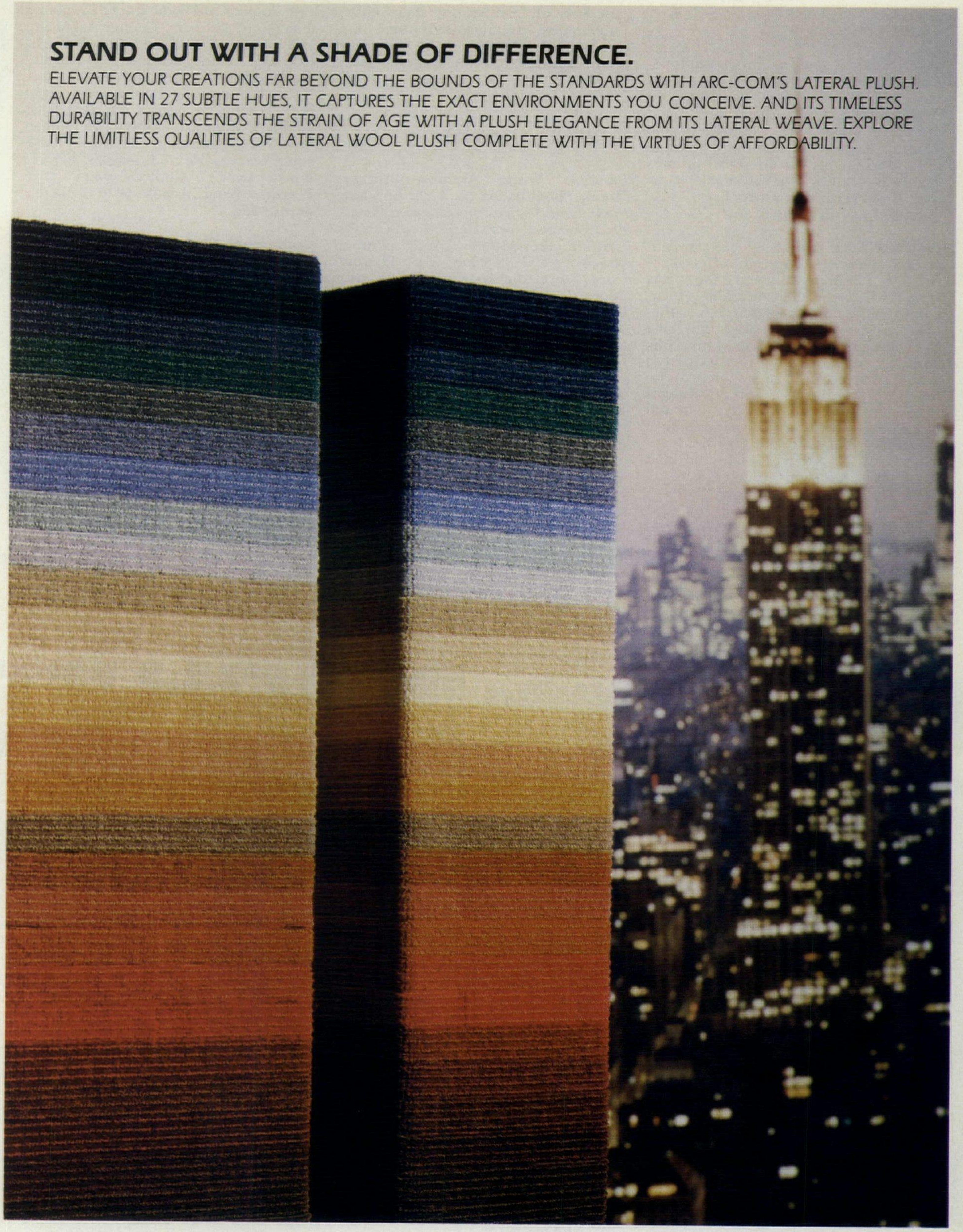
Other literature

Folding closures and grilles brochure illustrates their use in mall shops, banks, airport/bus/railway terminals, and similar locations to provide security and crowd control. Grilles can be unglazed, but where glazing is desired, burglar-resisting polycarbonate or tempered glass is used. The 12-page brochure includes drawings showing mounting and stacking details and illustrations of typical installations. Dynamic Closures Corp.
Circle 212 on reader service card

Solaris® hollow glass blocks transmit up to 84 percent of daylight. They are weatherproof, shock resistant, and insulate against both heat and noise. The blocks are available in several sizes, surface textures, and tints. An eight-page brochure illustrates the various styles and shows typical installations in color. Bienenfeld Industries, Inc.
Circle 213 on reader service card

The Color Key Program™ of color selection is explained in a six-page brochure. Divided into two groups in which each color harmonizes with all the others in the group, the system can be used in selecting colors for carpeting, fabrics, and paints. The brochure describes the forms in which the Color Key Program is available: Index, library, fan pack, and chip display cabinets. Devoe & Raynolds, Div. of Grow Group, Inc.
Circle 214 on reader service card

Aluminum replacement windows, described in a 12-page brochure, include single-, double-, and triple-hung; pro-
[Literature continued on page 198]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Literature continued from page 196

jected, sliding, and casement windows. Thermal breaks, insulating glass, and reduction in air leakage contribute to energy savings. Windows install from the inside, making replacement possible in any weather. Cut-away drawings show their construction, and photographs show the styles available. Graham Architectural Products Corp.
Circle 215 on reader service card

Concrete form panels are described in an eight-page brochure, which has illustrations of buildings on which the forms were used. Reversible, reusable Form-Guard high density panels have phenolic overlays on both sides that give the concrete a glossy finish. MultiPour medium reuse, medium density panels give a matte finish to concrete. The brochure lists the uses and advantages of each panel, and provides material description, construction specifications, and technical data. It also provides loading factors in concrete design and load span tables. Simpson Timber Co.
Circle 216 on reader service card

Mirrors and washroom accessories of stainless steel are vandal resistant and virtually theft-proof. A four-page brochure illustrates products and provides descriptions. Detail drawings show construction features that make it almost impossible to pull frames from the mirrors. Shelves, mirrors, and shelf-mirror combinations are included; some mirrors have tilted mounting for the use of the handicapped. Meek Manufacturing Co., Inc.
Circle 217 on reader service card

Building materials

Paradise Wing, Arizona Biltmore Hotel, Phoenix, Az (p. 110). *Architects: Frank Lloyd Wright Foundation, Scottsdale, Az.* Concrete block: Superlite. PC slabs: Arizona Prestressed. VWC, plywood panels: VWC Plywood, U.S. Plywood Corp. Storefront system: PPG. Interior doors: U.S. Plywood Corp. Carpeting: Couristan. Ceiling surfacing: U.S. Gypsum. Roofing: Johns-Manville. Roof draining: Zurn, J.R. Smith. Paint: Deer-O. Hardware: Lawrence Bros., Corbin. Kitchen equipment: Hobart, Traulsen, G.E. Annunciator: Notifier. Elevators: Dover Corp. Lighting: Prescolite, Gotham, Day Brite, Lightolier, Art Metal, Halo, Marco, Sechrist and Stonco (Keene). Lavatories: Standard. Washroom accessories: Bobrick, Parker. Fan-coil units: McQuay-Perfex. Chillers: York. Cooling tower: Baltimore Air Coil, Johnson Controls.

Valley Wing, Arizona Biltmore Hotel (p. 110). Concrete block: Superlite. PC slabs: T-PAC. Decorative block tile: ETL Conc. Windows: Torrance Window. Storefront system: Kawneer. Interior doors: Cal-Wood Door. Carpeting: Couristan, Berven. Ceiling surfacing: U.S. Gypsum. Built-up roofing: Owens-Corning. Paint: Deer-O. Hardware: Lawrence Bros., Corbin. Annunciator: Notifier. Elevators: Dover Corp. Lighting: Prescolite, Art Metal, Halo, Gotham, Moldcast, Hubbell, McPhilben, Day Brite. Plumbing: Standard. Washroom accessories: Bobrick. Fan-coil units: Lanco. Chilled water from Paradise Wing. Acoustical wall panels: Armstrong.

Conference Center, Arizona Biltmore Hotel (p. 110). Steel frame: Armco, U.S. Steel. Structural studs: U.S. Gypsum. Open-web joists: Tex-Ark. Decorative block tile: ETL Conc. Storefront system: PPG. Interior doors: Weyerhauser. Carpeting: Couristan, Alexander Smith, Philadelphia Carpet, Karastan, V'Soske, Berven. Ceiling system: Armstrong. Built-up roofing: Flintkote. Waterproofing: Permalune Plastics Corp. Insulation: Celotex. Roof drainage: J.R. Smith. Movable acoustic walls: IAC Trackwall. Paint: Deer-O, Chromotone. Hardware: Lawrence Bros., Corbin. Kitchen equipment: Traulsen, Montague, Hobart. Annunciator: Simplex. Lighting: Kurt Versen, Columbia, Globe, Art Metal, Halo, Prescolite, Columbia, Hubbell. Plumbing: Standard. Washroom accessories: Bobrick. Heating: Northrup. Roof-top units: Tjernlund Custom Air, Inc. Acoustical wall panels: Armstrong.

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Faculty: The Department of Civil and Architectural Engineering at the University of Wyoming is seeking a candidate to fill a full time faculty position in the Architectural Engineering program beginning Spring Semester, 1982 (January), or Fall Semester, 1982 (August). Required are Master's degree in Architecture or Ph.D. in Engineering or Professional Degree and extensive practice. Teaching experience at college level and the undergraduate program include (a) building materials and construction methods, (b) architectural illumination, (c) junior and senior architectural design, and (d) specifications and estimating. Appointment will normally be made at the level of Assistant Professor for the two semester academic year. Candidates should send applications and resume to Arthur P. Boresi, Department of Civil and Architectural Engineering, University Station Box 3295, Laramie, Wy 82071.

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