



BOOK

Five Monasteries and a Ghetto

There are plenty of products and materials in your architectural plans that take precedence over the selection of water coolers. We know that. But when you get to the point of specifying your coolers, we'd like you to put your faith in Halsey Taylor. Most architects know our reputation for product excellence and reliability. They specify our coolers more often than any other brand.

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# Low on the totem pole.


Circle 1 on information card

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## Georgia-Pacific

Gypsum Board  
Wall, Ceiling & Floor  
Construction System Selector



1. Set arrow at type of construction and Sound Transmission Class. Read GP System Number, fire resistance rating in upper window.
2. If only a fire system rating is desired, scan pointer through appropriate construction section while viewing fire resistance rating window.
3. Note system number for each selection and refer to G-P's Gypsum catalog (Sweet's) for detailed description of system's component parts, test and code data.

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<p><b>WOOD PARTITIONS</b> (Studs 2 x 4, 16" O.C.)</p> <p><b>WOOD PARTITIONS</b> <b>GYPSON SOUND DEADENING BOARD</b> (Studs - 2 x 4, 16" O.C.)</p> <p><b>WOOD STUDS/Resilient Channels</b></p> <p><b>WOOD STUDS/Resilient Channels/Ins. Blankets</b></p> <p><b>STAGGERED STUD WALLS</b></p> <p><b>DOUBLE WOOD STUDS</b></p> <p><b>WOOD STUDS/Fiber Sound Board</b></p> <p><b>EXTERIOR WALLS</b></p> <p><b>SOLID GYPSON BOARD PARTITIONS</b> (Non-Loadbearing)</p> <p><b>DOUBLE SOLID GYPSON BOARD PARTITIONS</b> (Non-Loadbearing)</p> <p><b>TRIPLE SOLID GYPSON BOARD PARTITIONS</b> (Non-Loadbearing)</p> <p><b>METAL STUDS/ GYPSON SOUND DEADENING BOARD</b></p> <p><b>METAL STUDS/ FIBER SOUND DEADENING BOARD</b></p> <p><b>STEEL STUD CHASE WALLS</b> (1 1/2" Metal Studs 24" O.C. - 6 x 12 - 1/2" Gypsum Spacers)</p>	<p><b>METAL STUDS/ INSULATING BLANKETS</b></p> <p><b>METAL STUD PARTITIONS</b></p> <p><b>WOOD JOISTS</b> 16" O.C. Finished Floor on Rough Subfloor</p> <p><b>WOOD JOISTS - 24" O.C.</b></p> <p><b>PREFABRICATED FLOOR PANELS - 12" O.C.</b></p> <p><b>2" CONCRETE FLOOR</b> on Metal Lath over Steel Bar Joists 24" O.C.</p> <p><b>2 1/2" CONCRETE FLOOR on Metal Lath</b> over Steel Bar Joists - 24" O.C.</p> <p><b>STEEL WOOD COMBINATION JOISTS</b></p>
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# IT'S ABOUT TIME!

## GEORGIA-PACIFIC INTRODUCES A FREE CALCULATOR FOR SPECIFYING GYPSON WALL SYSTEMS.

So, finally, you can have the information you need at your fingertips. This handy little time-saver couldn't be easier to use. Just set the indicator at the STC rating required for the specified wall (all common wall types and ratings are listed). Figures in the upper windows tell fire-resistance rating, partition thickness, weight

per square foot, cost index, and the G-P system number. To find wall system components, look up the system number in our gypsum catalog. (Our catalog is also in SWEET'S.) The back of the calculator lists addresses and phone numbers of G-P distribution centers that carry a complete line of quality gypsum products for wall systems. Mail the coupon for your free calculator (we'll also send you a free gypsum system catalog). It will save you time and effort. And isn't it about time you had things easier?

.....  
Gentlemen:  
I specify gypsum systems. Please send me a free gypsum calculator and 1976 gypsum catalog.

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Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

**Georgia-Pacific**   
Gypsum Division  
900 S.W. Fifth Ave., Portland, Oregon 97204

Circle 2 on information card

# Owens-Corning tells why you this unusual picture next time



**T**he concept of open offices is gaining acceptance *quickly*. No wonder.

Both owners and architects are drawn to their airy, sweeping good looks. To the improved communications and increased efficiency they promote for workers. And to their astonishing economy of 50 cents vs. roughly 15 *dollars* per square foot for inevitable alterations to meet shifting work patterns.

But here's a word of caution. Plant our outlandish basketball "office" firmly in your mind. Because unless you base your design on *acoustics*, as well as aesthetics, you may never hear the end of it.

More than one open office has had to be modified—embarrassingly and *expensively* torn apart,

baffled, receilinged, or refurnished—in order to achieve *workable* sound levels.

Owens-Corning has helped pioneer the development, testing, and matching of open-office components. Look over these highlights of what our experts have learned. Then call on us for *all* the details and *all* the components of a *successful* open-office system.

## **The ceiling. Handsome is as handsome does.**

The ceiling is the single most important acoustical component in an open office. It should absorb, not reflect, sound. A perfect ceiling would have the same

\*T.M. Reg. O.-C.F.

# should remember you design an open office

sound attenuation as the open sky—a Noise Isolation Class (NIC) rating of 23.

An independent acoustical testing laboratory examined eight ceilings, including costly coffered and baffled systems. Their verdict: Owens-Corning's Nubby II Fiberglas\* Ceiling Board, in any standard exposed grid suspension system, is *best* for achieving speech privacy at economical installed cost. In these tests, Nubby II was the *only* ceiling board with an NIC' as high as 20 in a flat configuration.

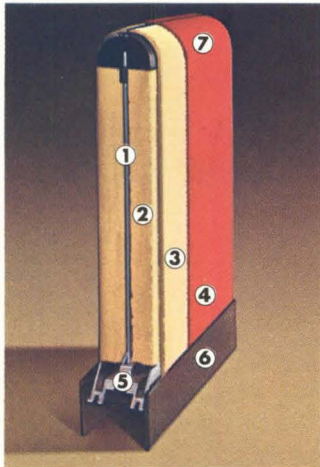
Some architects prefer the look of ceilings with *concealed* grids. Caution: As yet, *no* such ceiling provides the minimum NIC performance necessary to achieve satisfactory acoustical privacy in an open office.

In this league, handsome is as handsome *does*.

## Acoustical screens.

**"Don't just stand there. Do something."**

The sound screen, visual symbol of the open office, offers flexibility, economy, personal privacy, and acoustical control. It has *two* acoustical functions. First, to block direct sound transmission from one work zone to another. Second, to absorb sound, reducing flanking reflections into adjacent zones. Owens-Corning's sound screen is the *most* effective screen available. Its engineering features include:



1. A metal septum—to block sound transmission.

2. One-inch Fiberglas core on each side of septum—to absorb sound.

3. Sturdy special Fiberglas sound diffuser (Glastrate)—for abuse resistance.

4. Stain-resistant Dacron® Polyester fabrics. These fabrics are washable, colorfast, and fire-retardant (Class 25).

5. Extruded aluminum frame, fastened to septum—for strength and stability.

6. Painted anodized aluminum kickplates—for additional abuse resistance.

7. Top and side radii designed to minimize sound defraction over edges.

## Masking sounds. The sounds of silence.

Even the finest acoustical ceilings and screens cannot do the whole job of providing speech privacy. An electronic sound masking system of speakers, installed in the plenum, is necessary.



This sound must be unobtrusive—and *uniform*. Even at a few decibels above the desired  $NC_{40} = 40$  rating, the masking sound causes

people who are working in the office to begin raising their voices, defeating the whole purpose of the masking.

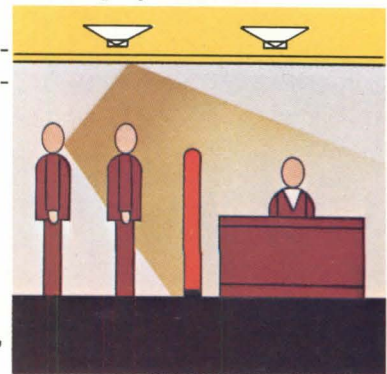
Owens-Corning's experts can recommend a background masking system that meets these requirements.

## Owens-Corning system gets it all together.

For the open-office concept to be successful, the ceilings and screens must be tuned carefully to work *together*, and *with* the masking system.

Owens-Corning will be happy to provide you with all necessary information on achieving acoustical control in your open office. Or to guide the development of the whole acoustical system for you.

Write E. W. Meeks, Building Products Operating Division, Owens-Corning Fiberglas Corporation, Fiberglas Tower, Toledo, Ohio 43659.



Owens-Corning is Fiberglas

OWENS/CORNING  
**FIBERGLAS**  
TRADEMARK ®

# Red cedar rounds out a restaurant.

When the architect designed the *Don the Beachcomber* restaurant in Dallas, his plans included red cedar shingles inside and outside. To quote his rationale:

"The restaurant is a sheltering dome-like form with no demarcation between roof and walls.

"We selected red cedar shingles because they are a warm, natural material that weathers to a color which enhances the spirit of the building.

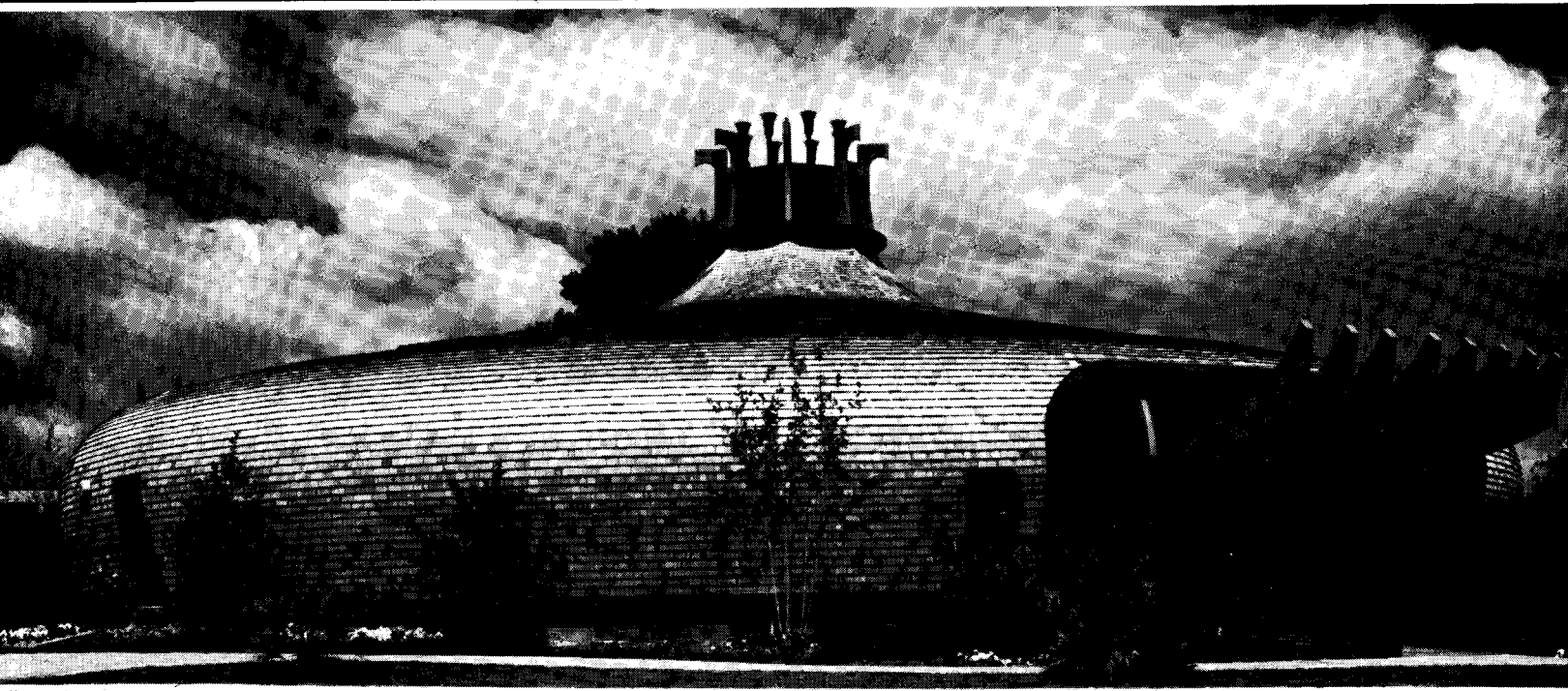
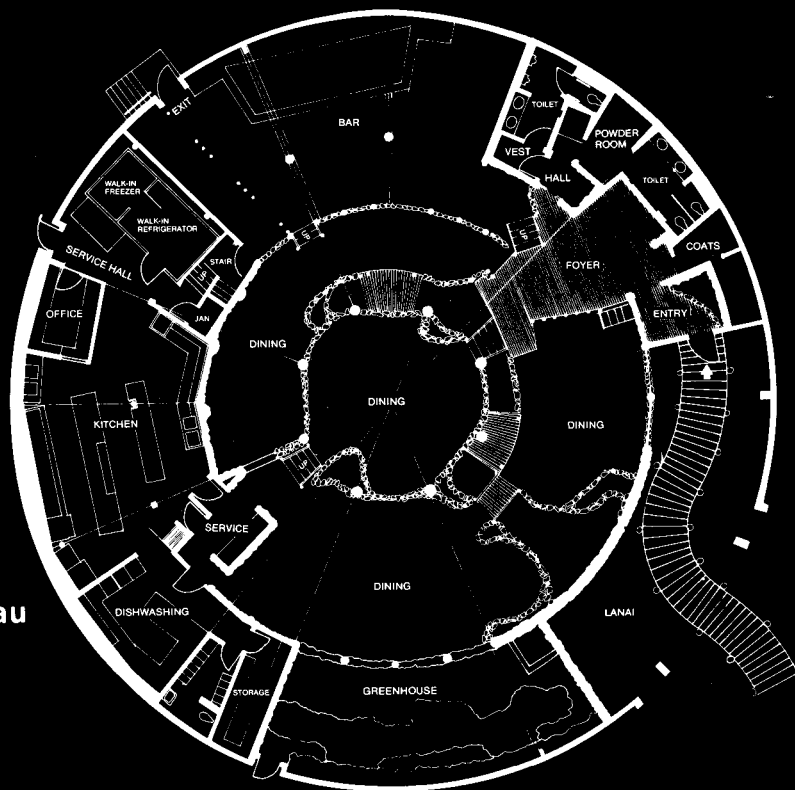
"Red cedar shingles are the ideal material to apply to the convex and concave shapes of the structure."

Next time you're looking for a distinctive interior or exterior covering, consider the product with low maintenance, excellent insulative qualities and unique texture.

Consider red cedar shakes or shingles.

## Red Cedar Shingle & Handsplit Shake Bureau

For details and specification guide on Certigrade shingles and Cert-Split handsplit shakes, write us at: 5510 White Building, Seattle, Washington 98101. In Canada, write 1055 West Hastings St., Vancouver 1, B.C.



Don the Beachcomber Restaurant, Dallas, Texas. William Landworth and Associates, Architects



These labels under the bandstick or on cartons of red cedar shingles, handsplit shakes and grooved shakes are your guarantee of Bureau-graded quality. Insist on them.

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# VULCRAFT IS NOT AFRAID OF SCALING NEW HEIGHTS.

The job was the six-story Cities Service Building in Houston, Texas.

The plans called for a framing system using precast concrete beams and columns, plus steel joists.

But the plans changed. That's when Harvey Construction Company, the general contractor, asked Vulcraft to rise to the occasion.

The first thing Vulcraft did was assist in the redesign of the multi-story building to incorporate joist girders rather than precast concrete beams.

Once the redesign was completed, Vulcraft joist girders and steel joists gave Harvey Construction a number of advantages.

Both Vulcraft products were delivered quickly. On March 7, 1975, the approved drawings were given to Vulcraft. By March 14, the joists and joist girders had been delivered to the job site. All 329 tons of them.

At the job site, the joists and joist girders were easily erected, saving valuable time. In fact, they were all in place only one month and two days after they were brought to the site.

But time wasn't the only important thing saved. Money was saved too, because joist girders were less expensive than precast concrete beams.

That's how Vulcraft helped Harvey Construction make short work of a six-story building. And Vulcraft can help you do the same.

Just contact your local Vulcraft representative. Or write Vulcraft, P.O. Box 17656, Charlotte, North Carolina 28211 for your Joist & Joist Girder Guide. (See Sweet's 5.2/Vu.) Or call (704) 366-7000.

You'll find out we're not afraid of tackling tall orders.

**VULCRAFT**  
A Division of Nucor Corporation

*Building Owner: Gerald D. Hines Interests. General Contractor: Harvey Construction Company. Architect: Richard Fitzgerald & Associates. Consulting Engineers: Mitchell Systems and Krahl & Gaddy. Steel Fabricator: Nu Way Steel, Incorporated.*



*Vulcraft joists and joist girders played an important part in the fast construction of the Cities Service Building, which was occupied only five months after the general contractor started the job.*



*All Vulcraft joists and joist girders were erected easily and quickly. In fact, they were all in place only one month and two days after they were brought to the construction site.*



## Critique Points Out Lack Of Policy Directives in President's Growth Report

Title VII of the 1970 Housing and Urban Development Act directs the President to make a biennial report on the growth and development of the nation. The report is to include recommendations for programs and policies for the implementation of growth and development, "including such legislation and administrative actions as may be deemed necessary and desirable."

The 1976 Report on National Growth and Development by the President is now published and is intended to be a major contribution by this country to the International Conference on Human Settlements (Habitat '76), sponsored by the United Nations, to take place the latter part of this month and in early June in Vancouver, B.C., Canada.

A critique of the 1976 report has been sponsored by the National Forum on Growth Policy (made up of 27 national organizations, one of which is AIA, and chaired by Archibald C. Rogers, FAIA). The critique, intended to be "both supportive and constructive," is authored by a team consisting of Michael B. Barker, AIP, administrator of AIA's department of environment and design; Herbert M. Franklin; John Osman, and Malcolm D. Rivkin, with overall editorial work by Barker. The sponsorship of the critique by the National Forum has been assumed because of its commitment to the concept that "only through the active participation of diverse organizations and individuals will a valid national policy (of growth and development) evolve."

In anticipating the response of the international community at Habitat to the U.S. report, the critique states that "few could fail to be impressed with the scope of the information and the depth of analysis presented." It is predicted, however, that the international community "will be puzzled by the American report," in view of the fact that the report by the Administration includes no policy-making or policy-generating directives. Despite the

fact that this country insists in its assistance programs that developing countries establish policies of growth and development, this nation's own report "takes no position," nor does it set forth any policies on the "future of urban and regional development in the U.S." What the report does reveal, according to the critique, is the "laissez-faire attitude of the Administration toward growth and development programs."

In addition to its statement about the report's lack of any recommended national goals, policies or programs, the critique finds the report to have "little theoretical framework for thinking about growth and development. . . . The data are not organized or unified by any theoretical framework. The meaning is missing." Nor does the report coordinate various Administration recommendations, such as those in the President's State of the Union message, and other legislative proposals before Congress.

The critique finds that the 1976 report does not state any assumptions about the "impact of growth and development on the patterns of urban settlements," although one assumption "appears to be an acceptance of the 'limits to growth' hypothesis. . . ." The so-called "age of scarcity" concept is apparently accepted by the Administration, which suggests a "slowdown or retrenchment in all our activities." The critique questions "whether a free enterprise society should accept such an assumption about the future of the country without a thorough review of alternative growth scenarios and their attendant economic, political, social and environmental policy issues."

The 1976 national report on growth and development indicates that greater effort will be made to incorporate the thinking of a wider range of groups and interests in the preparation of the 1978 report. Hence, the National Forum urges that the 1976 report be read by leaders at every level of government and that it be studied by business people, professional societies and private citizens. "This is an essential part of the process in development of an effective 1978 report," says the critique.

The National Forum hopes that future

reports will involve "significant public participation" in the development process and that a national dialogue will begin among various groups regarding what a national growth policy should be, "with leadership and resolve by the Administration to deal with national growth and development problems."

Further information about the critique, which was made possible by a grant from the Charles F. Kettering Foundation, may be addressed to Michael B. Barker at Institute headquarters.

## Preservation Proposal Is Called Discouraging

Architects believe that "historic preservation, restoration and adaptive use should be given a higher priority among our national programs and goals," said Donald B. Myer, AIA, chairman of the Institute committee on historic resources, in recent testimony before the House appropriations subcommittee on the Department of the Interior. "We are dismayed," he said, "that the Administration has requested only \$14.5 million in fiscal 1977 for the historic preservation programs of the National Park Service." Of this amount only \$10 million would go to the states for historic preservation matching grants.

In fiscal 1976, Congress approved more than \$24 million for preservation activities, with \$19 million appropriated for the matching grants program. Myer said it is estimated that the states will request more than \$200 million in matching grants in 1977 and in view of the states' interest and ability to provide matching funds to finance preservation projects, "a \$10 million federal share is discouraging." Without an appropriation of at least \$24 million, Myer said that "permanent damage will be inflicted upon many existing and planned historic preservation projects."

Last year, AIA proposed an expanded 10-year program for the Historic American Buildings Survey, with an appropriation of \$3.75 million to permit the completion of measured drawings of about 18,000 historic buildings. The amount

*continued on page 12*

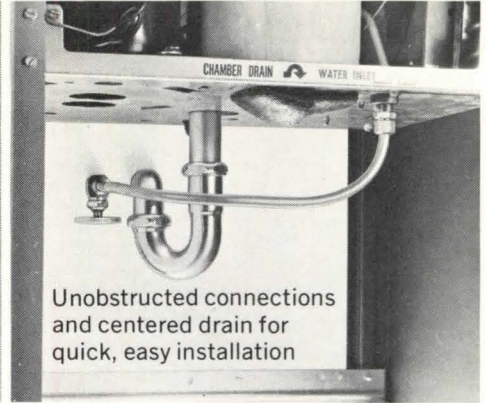
# Why only Elkay water coolers can give you all these features



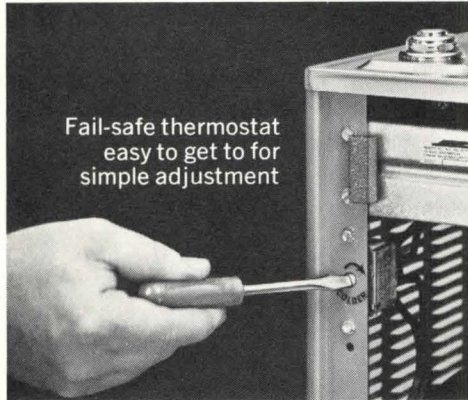
Exclusive tandem-tube-on-tank design for super fast recovery



Non-pressurized tank to protect against tank damage



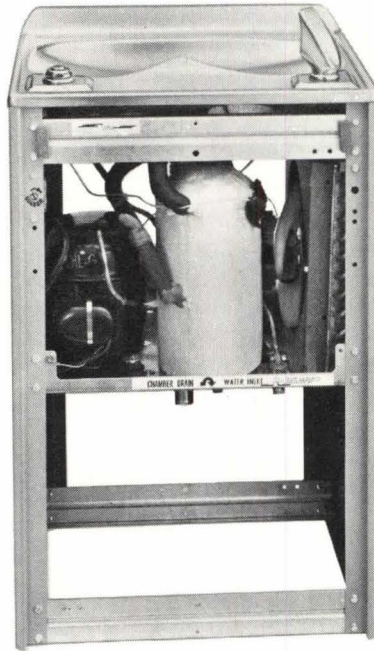
Unobstructed connections and centered drain for quick, easy installation



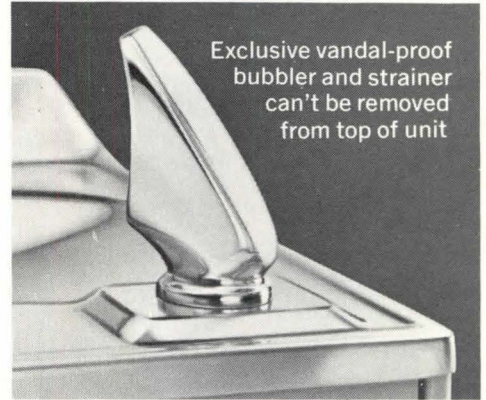
Fail-safe thermostat easy to get to for simple adjustment



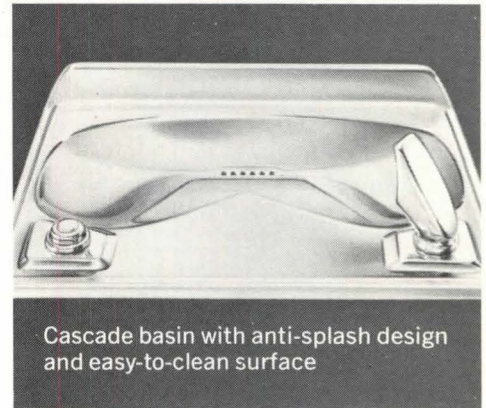
Regulator cartridge located "topside" for maximum accessibility



Features standard on most deluxe series models



Exclusive vandal-proof bubbler and strainer can't be removed from top of unit



Cascade basin with anti-splash design and easy-to-clean surface

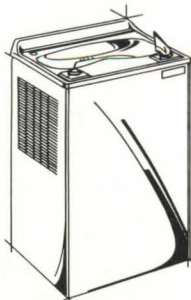
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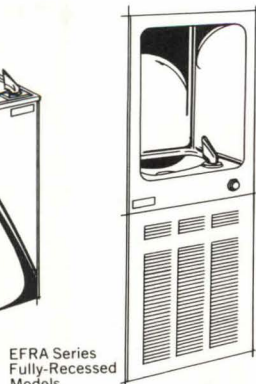
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EFA Series Floor Models



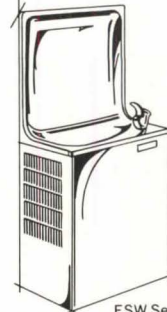
EWA Series Wall Models



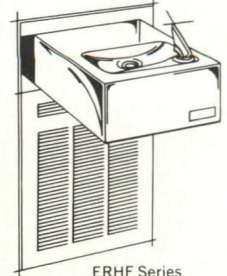
EFRA Series Fully-Recessed Models



ESRA Series Semi-Recessed Models

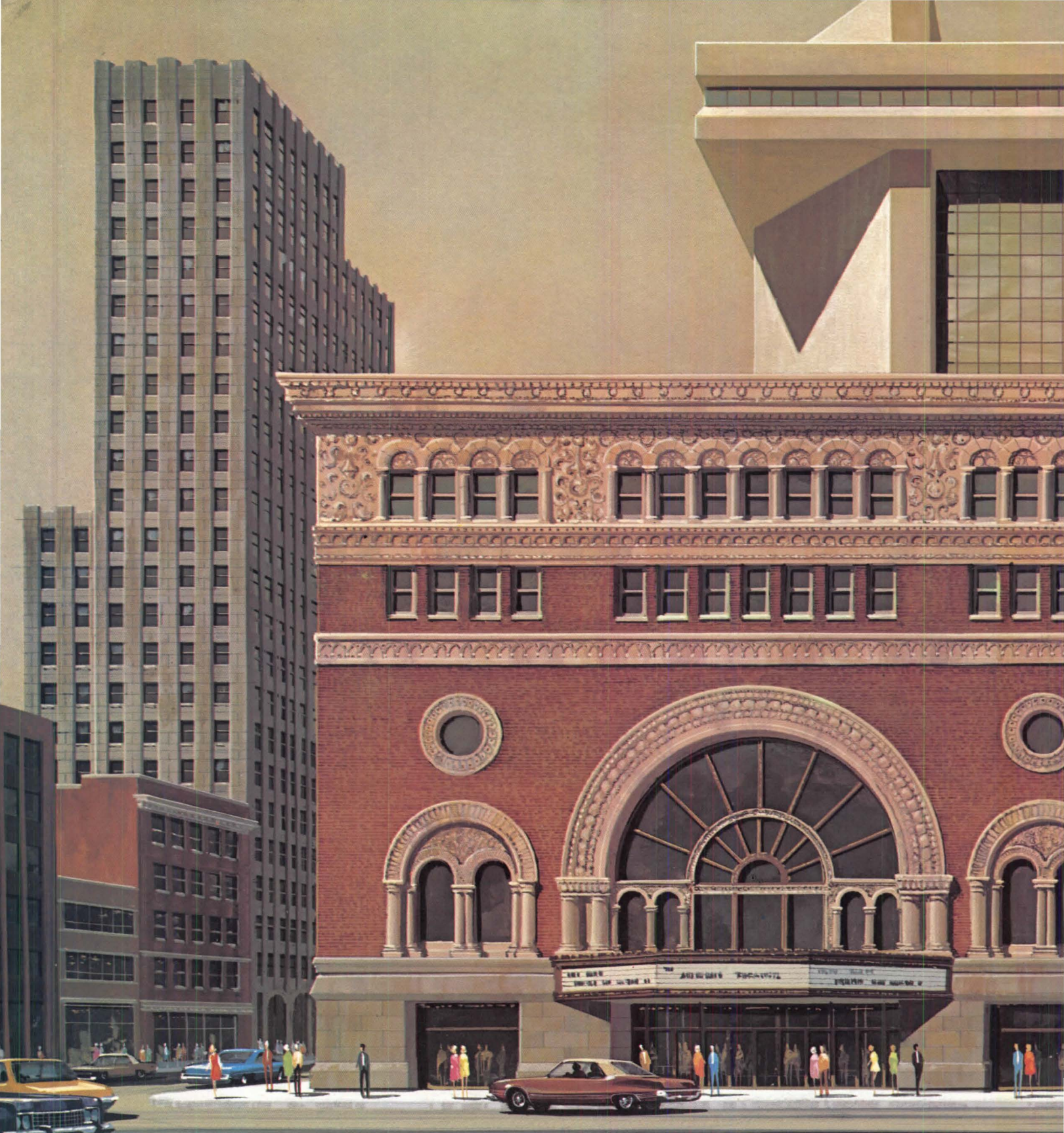


ESW Series Simulated Semi-Recessed Models



ERHF Series Wheelchair Level Models

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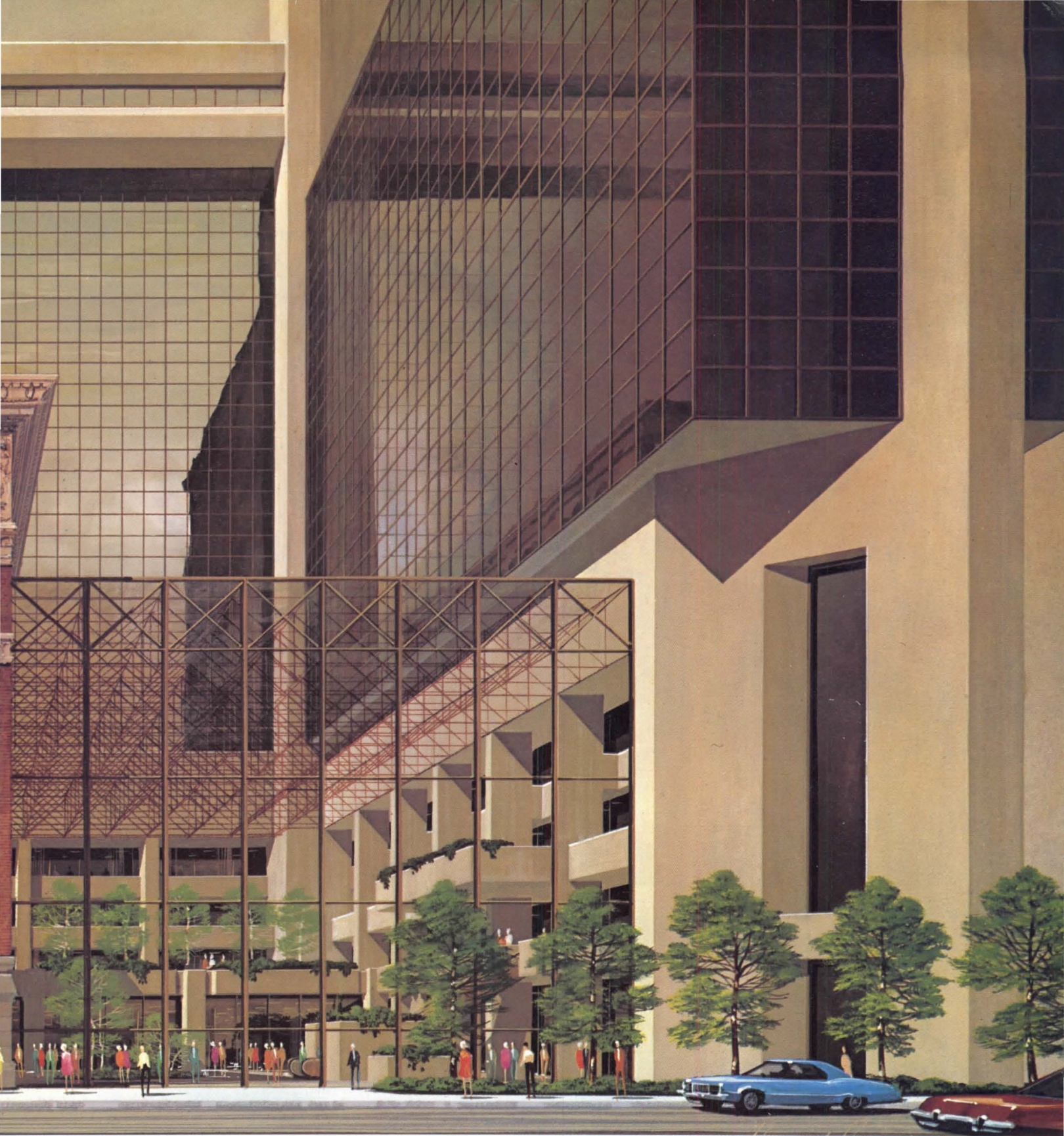
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**DESIGN CONCEPT.** In this urban renewal solution, a 1910 vintage theatre has been restored to its original exterior and integrated with a new convention and hotel facility. The glass-enclosed atrium joins old and new structures and serves as an overflow space for all functions of the complex.

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Going On from page 8

was not appropriated, however, and HABS, said Myer, has been unable to respond to increased requests. For fiscal 1977, AIA recommends an additional \$100,000 over the \$462,000 earmarked for HABS. It is AIA's recommendation that HABS establish a national clearinghouse of information on architectural archives, maintaining a union catalog of architectural materials and acting as a resource and advisory center for national architectural records.

Myer said there is a definite need for such a program in view of the fact that a recent report by the AIA Research Corp. (*Preserving Architectural Records and Creating a National Information System on Architectural Archival Material*) reveals that a "great majority of structures built in the U.S. prior to the 20th century have been physically destroyed without a trace." There is no assurance, he said, that architectural records currently existing will not suffer the same fate.

Architectural archives are held, for the most part, in private research libraries, historical societies, special university collections, architectural firms, with families of deceased architects, etc., and a "central information agency is needed," said Myer, "to coordinate and advise the many local agencies working unilaterally to preserve and service collections of architectural records."

Subcommittee markup on Interior appropriations will begin this month. Nicole Gara, director of Congressional liaison at AIA, has issued a bulletin for the AIA legislative minuteman program in which it is urged that AIA members protest the 50 percent reduction in historic preservation grants. "Architects," says Gara, "can play a credible role in advocating support for historic preservation funding."

## Public Architects Urged To Innovate in Designs

Shapers of public architecture at an April conference cosponsored by AIA and the National Endowment for the Arts were urged to take the lead in design innovations.

AIA Executive Vice President William Slayton, Hon. AIA, cited the Boston, San Francisco and Toronto city halls for their public spaces which lend a sense of community. He also said that because most state-operated buildings are located in cities, state building authorities should devote more attention to the design and environmental needs of those cities.

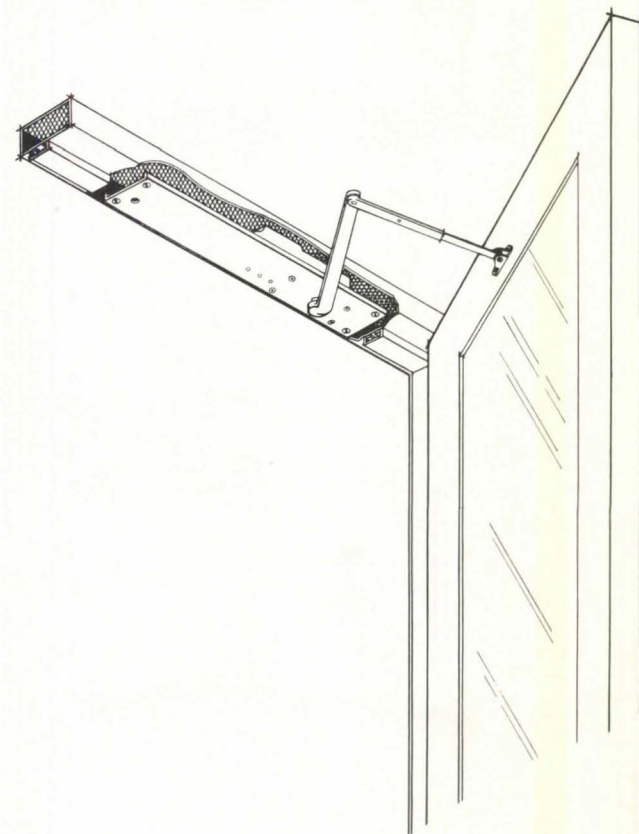
Bill N. Lacy, FAIA, of the NEA suggested that provisions be made for shops, theaters, open spaces, etc., in state office buildings. He pointed out that such attractions serve not only those who work

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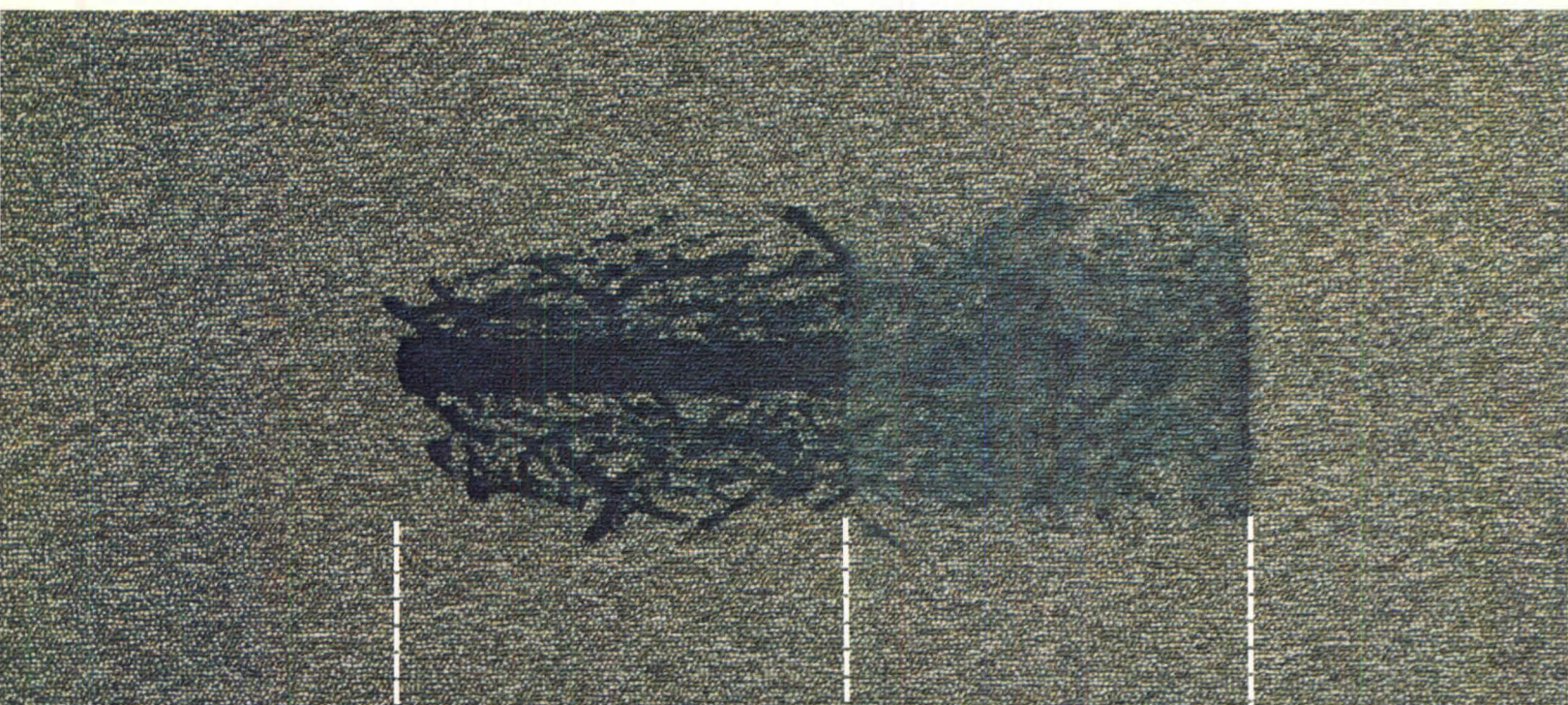
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in the structures, but also those who come for public services and to transact business. Slayton agreed, saying that mixed-use buildings should be a part of the public life.

U. S. Senator Robert B. Morgan of North Carolina addressed the conference in the context of his position as chairman of a subcommittee on public buildings and grounds. He said the "predesign" phase is today the most important for planners of public structures, for this is the "go or no-go" decision stage in what he termed an era of "postarchitectural abundance."

However, despite this implied belt-tightening, he said he sees a place for some monumental concepts in the scheme of public buildings, albeit in a context of functional design.

In addition to suggesting that architects in the public sector set the pace in design innovation, Slayton mentioned two other "exemplary goals" for architects of public structures: restorations for modern use and conservation of energy. Along these lines, Sen. Morgan advocated some forms of experimentation by the federal government in energy conservation.

The two-day conference at the Kennedy

Center in Washington, D.C., attracted state, city and federal building authorities from 28 states and the District of Columbia, and from Chicago, New York City, Boston, Pasadena and Fremont, Calif., Baltimore and Columbus, Ohio. Attendees saw three slide presentations: "Working Places," about adapting and recycling old buildings, by John Karol for the Society for Industrial Archeology; "Post Construction Evaluation and Programming" by Edward R. Olander, Ph.D., of the New York State College of Human Ecology, and historian William Seale's "The Evolution of State Capitol Design." Workshops were held on subjects ranging from budget considerations to design consultant selection, through the integration of the arts and public buildings.

## Tornado-Damaged Schools Provide Data for Survival

When a tornado whipped through Xenia, Ohio, late one afternoon in April 1974, the senior high school was in its direct path. A drama class was rehearsing in the auditorium when a student spotted the funnel cloud and alerted the class in time

for the students to take shelter in an interior hallway.

The auditorium room meanwhile collapsed and two school buses hurtled from the street and came to rest on the stage where the students had been rehearsing. The building was so heavily damaged that it was rendered unsafe and later demolished. But because the 12 students and three staff members in the school at the time of the storm knew where to go and what to do, they lived to describe the horror.

The experience at the Xenia school and at two Indiana schools in the paths of other tornadoes form the basis of a study by architectural and engineering faculties of several universities. The significant finding of the project, presented in a handsomely illustrated report compiled and authored by James Abernathy, AIA, and Denis Schmiedeke, AIA, faculty members of the school of architecture at Lawrence Institute of Technology, Southfield, Mich., is that tornado damage to buildings is predictable. Further, a trained architect or engineer can establish before a storm strikes which portions of a structure will offer the greatest protection, and

*continued on page 20*

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**Q. When are expansion joints required?**

A. The responsibility for determining the need for structural expansion joints is that of the architect and/or structural engineer. However, all agree that they are needed if:

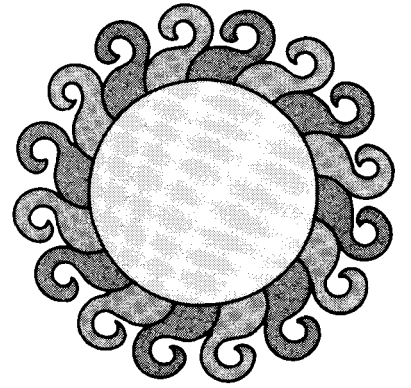
1. There is a change in direction of steel framing.
2. Deck material changes, e.g., between steel and concrete sections.
3. There is a difference in elevation of adjoining decks.
4. A single dimension of a building exceeds 200 feet.

Celotex makes a complete line of Expansion Joint Shields for waterproofing the opening created by structural roof expansion joints. For flexibility in design, they are available with copper, stainless steel, aluminum and galvanized metal flanges, and all are available with straight flange, curb flange and curb-to-wall configuration. Connecting tees, corners and crossovers are prefabricated in the same metals and designs, saving on-job labor.

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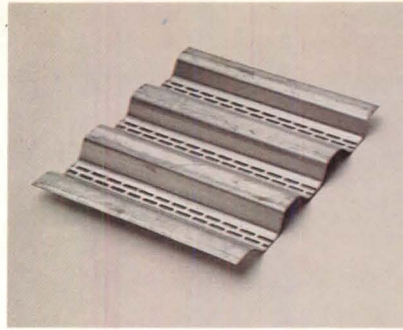
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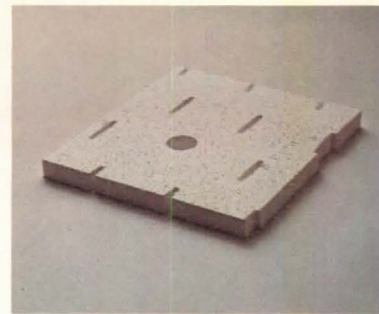
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1. Slotted Metal Base

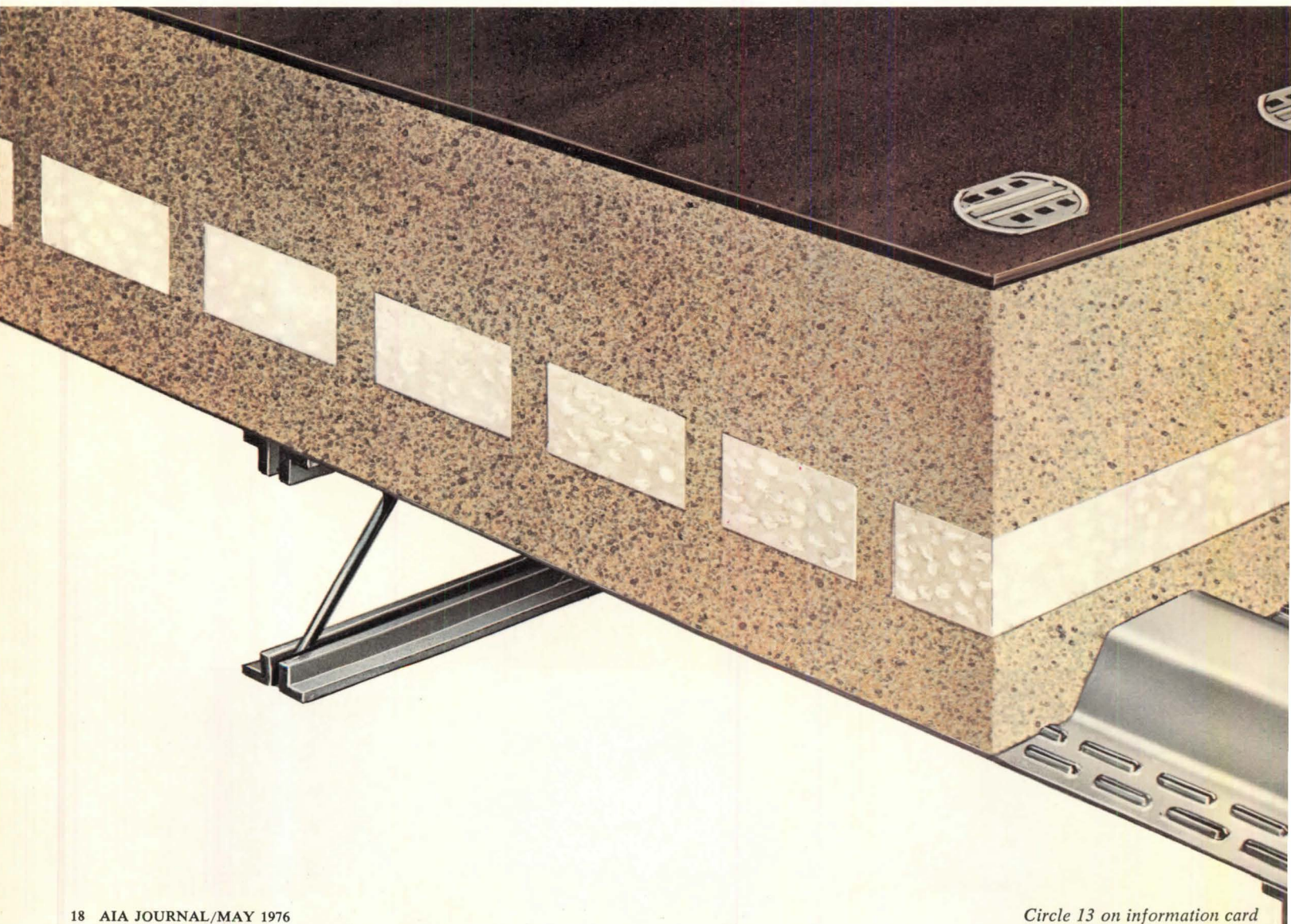


2. Insulperm™ Insulation Board



3. Zonolite Base Ply Fasteners

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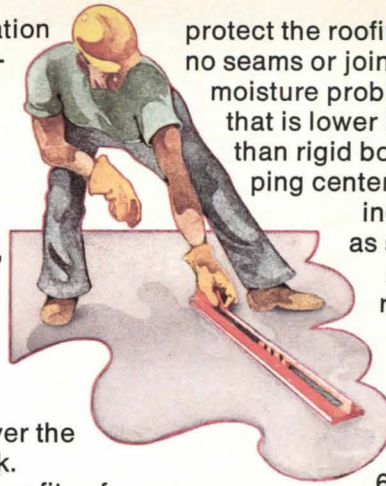
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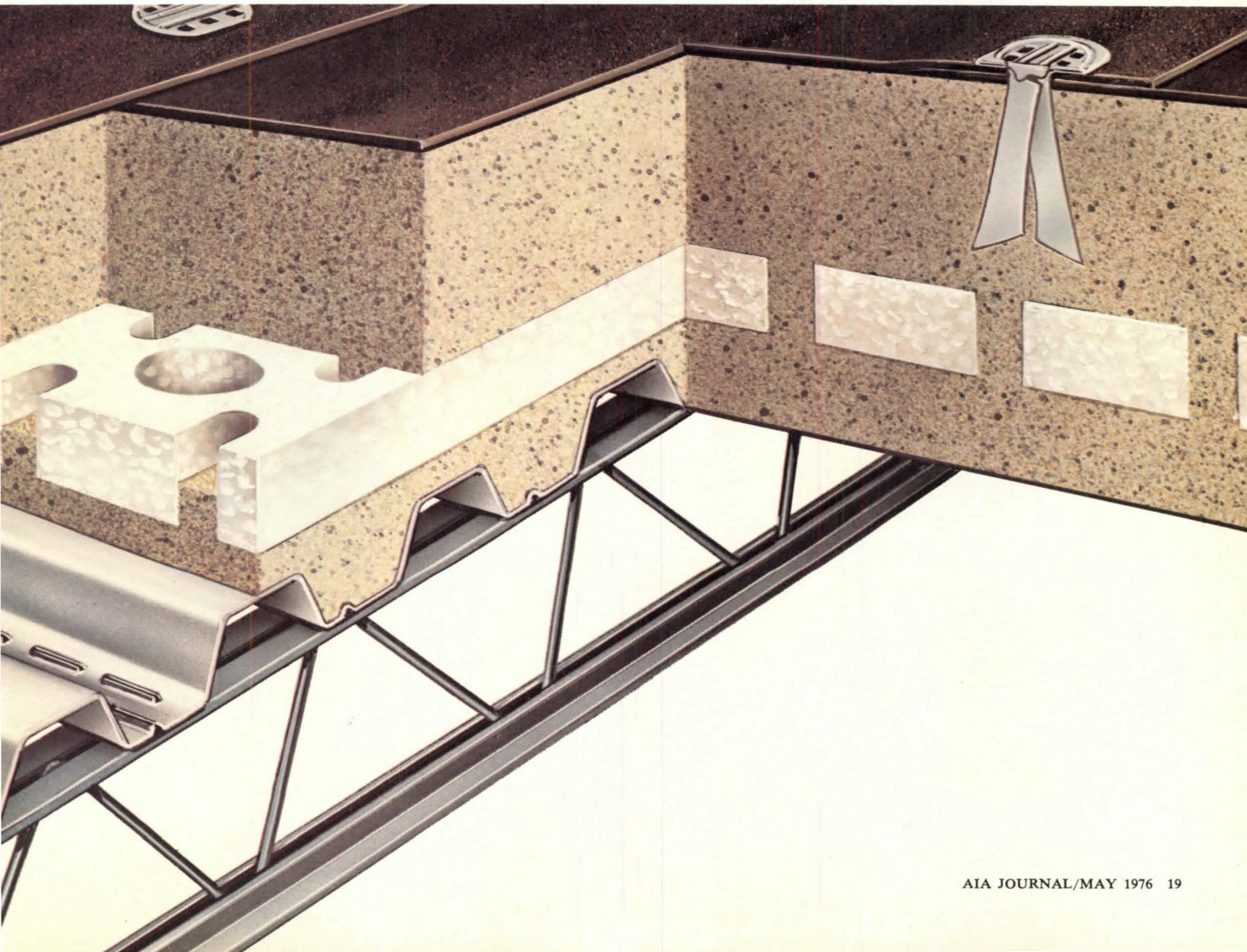


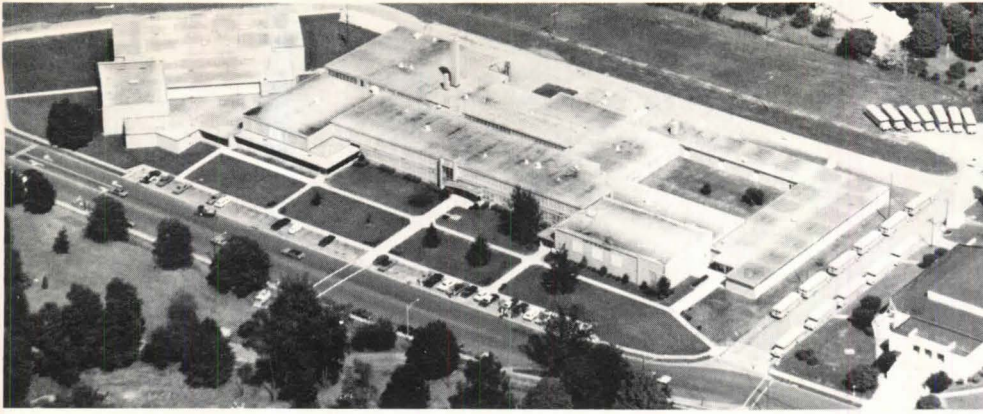
protect the roofing membrane, with no seams or joints to fail and cause moisture problems. And a roof deck that is lower in cost for most jobs than rigid board decks. On shopping centers, warehouses and industrial plants as well as schools and churches.

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Xenia, Ohio, senior high school before and after the tornado of April 1974.

#### Going On from page 15

most buildings provide sufficient shelter for their normal occupancy.

The extreme winds which fell walls, blow out windows and lift roots are the most destructive aspect of a tornado. But the whirling forces also can make any object a deadly missile, and there is additional danger from collapsing objects such as chimneys and higher portions of buildings. A probably overstressed danger is the effect of explosions caused by sudden atmospheric pressure differences.

By recognizing these hazards and understanding meteorological tendencies (for example, 85 percent of all tornadoes nationwide come from the southwest, plus or minus 45 degrees) the parts of a building can be rated as to safety.

Such relatively safe places would be away from windows, particularly windows at the ends of corridors and especially halls facing south and west. Long-span rooms with high ceilings are a particular danger because their higher walls are more apt to collapse. The authors of the report point out the danger of the temptation by building administrators to facilitate crowd control by gathering people into such large spaces.

Protective spaces would include the lowest floor of a building, interior spaces away from the dangers of missiles and wind tunnel effects, short span areas and small rooms and under frame construction.

The report suggests that architects and engineers can perform a lifesaving service by helping administrators to identify areas of buildings that are potentially safe and by ensuring that the information gets the widest possible dissemination.

*What's Left After a Tornado* is the name of the report. It is available for \$1.50 postpaid from the bookstore of Lawrence Institute of Technology, 2100 W. Ten-Mile Road, Southfield, Mich. 48075.

(There will be a symposium on tornadoes at Texas Tech University, Lubbock, from June 22-24.)

## Winning Design Chosen For Charleston Museum

Crissman & Solomon, an architectural firm located in Watertown, Mass., has won first place in a national design competition for new facilities for a museum in Charleston, S.C. Founded in 1773, the Charleston Museum is the oldest museum in the U.S.

The museum's collection is now housed in an exposition building considered "temporary" since 1907. Satellite facilities include the H.L. Hunley and the Heyward-Washington houses and the Joseph Manigault house, built in 1803. Designed by Gabriel Manigault for his brother, the Joseph Manigault house is considered one of the outstanding examples of Adam architecture in this country.

A major criterion in selecting the winning design was the "treatment of the visual relationship" between the proposed new museum and the landmark Manigault house. Harlan E. McClure, FAIA, dean of Clemson University's school of architecture and adviser to the competition jury, says that the Crissman & Solomon design "also satisfied the functional program requirements, including large and flexible exhibition spaces to accommodate

the museum's now disparate collections and the careful arrangement of the museum's activities, making it possible for individual departments to operate independently."

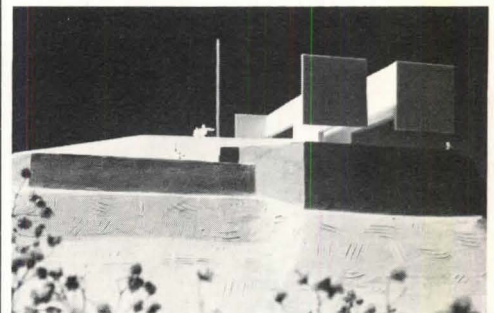
The architects explain that their scheme "is a series of four, two-story rectangles linked by glass corridors which focus on an interior courtyard, reminiscent of the quiet gardens hidden behind brick walls and wrought iron gates that dominate Charleston's historic residential area." The relationship with the Manigault house will be strengthened by the exterior lines of the proposed new building, to be partially concealed with landscaping, and the brick promenade which will connect the main entrances of both structures.

Members of the jury for the competition, in which 92 entries were submitted, were Hugh A. Stubbins, FAIA, Cambridge, Mass.; Ambrose Richardson, FAIA, head of the department of architecture at Notre Dame University, and Robert Hollings, Charleston attorney. Construction of the \$4 million museum is expected to begin early next year, with completion anticipated during the summer of 1978.

## Groundbreaking July 4 For Griffin Memorial

A design of Robert T. Crane III in association with the Philadelphia firm of Cope & Lippincott has been selected as winner of the two-stage international design competition for a memorial to Walter Burley Griffin to be built in Canberra, Australia's capital city. (See Sullivan article, p. 68.)

Griffin, an American architect/planner from Chicago, won a competition in



1912 for the design of the new capital city plan and moved to Australia to oversee its beginnings. The memorial to Griffin is expected to be completed in time for an unveiling ceremony on Nov. 24, the 100th anniversary of his birth. Ground-breaking will take place on July 4 to coincide with the celebration of this nation's bicentennial.

The competition was judged by Edmund N. Bacon, FAIA; Peter Harrison of the Australian National University, and Tony Powell, commissioner of the national capital development commission in Canberra.

*continued on page 24*

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# There goes the neighborhood.



Architect—Rooney, Musser & Assoc., Inc.  
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## Supreme Court Will Hear Challenge to Safety Act

The Supreme Court handed down an order in March that it would hear a Pennsylvania contractor's challenge to the constitutionality of the Occupational Safety and Health Act of 1970. The contractor argues that the act fails to "afford an accused employer his constitutional right to a trial by jury before penalties can be imposed."

The contractor, Fred Irey Jr., Inc., challenged OSHA provisions when a citation was given for a fatal cave-in of a trench and a fine of \$5,000 was imposed by an OSHA inspector. The case was reviewed by the OSHA commission and was argued twice in the Third District Court of Appeals, with all rulings in favor of OSHA. A dissenting judge said, however, that the "administrative enforcement procedures assessing monetary penalties against employers violated the Seventh Amendment right to jury trial."

McNeill Stokes, general counsel for the Associated Subcontractors Association and the attorney representing Irey, said that the issues in the case are "grave and far-reaching, involving a head-on collision with the power of the executive branch of the government to administratively impose

finances on citizens without affording the right to be tried by jury in the courts. . . ."

Stokes also argued a case on the same issues involving the Atlas Roofing Co. of Atlanta, which was also accepted by the Supreme Court for a hearing.

## Buffalo Sullivan Building Is Due Restoration Study

A rehabilitation feasibility study will be made on the 13-story Prudential Building (1894-95) in downtown Buffalo. The last cooperative effort by Dankmar Adler and Louis H. Sullivan, the structure is one of only two Sullivan buildings still standing in New York State. The other is the Condict Building in New York City. The Prudential has been called Sullivan's "finest expression of ornamental terra cotta work."

The study has been made possible by a grant of \$4,000 from the National Trust for Historic Preservation and by contributions of \$4,000 from the New York State Council on the Arts, of \$1,500 from the Landmarks Society of the Niagara Frontier and of \$500 from the Buffalo-Western New York chapter/AIA. The grant by the National Trust has been made to the Landmarks Society from its endangered buildings fund, which also provided money in 1973 to purchase an option on the threatened Wainwright Building in St.

Louis, the first of the Adler & Sullivan skyscrapers.

The study will be administered by the Landmarks Society. Among the results will be a concept and schematic drawings for rehabilitation of the building as commercial office space; cost estimates for architectural restoration; an analysis of market potential, and comparative costs for leasing and building ownership. Alfred R. Bourne, chairman of Gurney, Becker & Bourne, Inc., will act as real estate and marketing analyst. Henry Cohen of Henry Cohen Associates will serve as construction consultant. They will be assisted by Walter C. Cunningham, who managed the Prudential for 15 years.

The Prudential was built originally as a commercial office building. Its future was jeopardized when it suffered fire damage in 1974 and was placed in receivership soon afterwards. The structure, now threatened by forced sale, is badly in need of repair.

## Preservation Trust Gets First Corporate Bequest

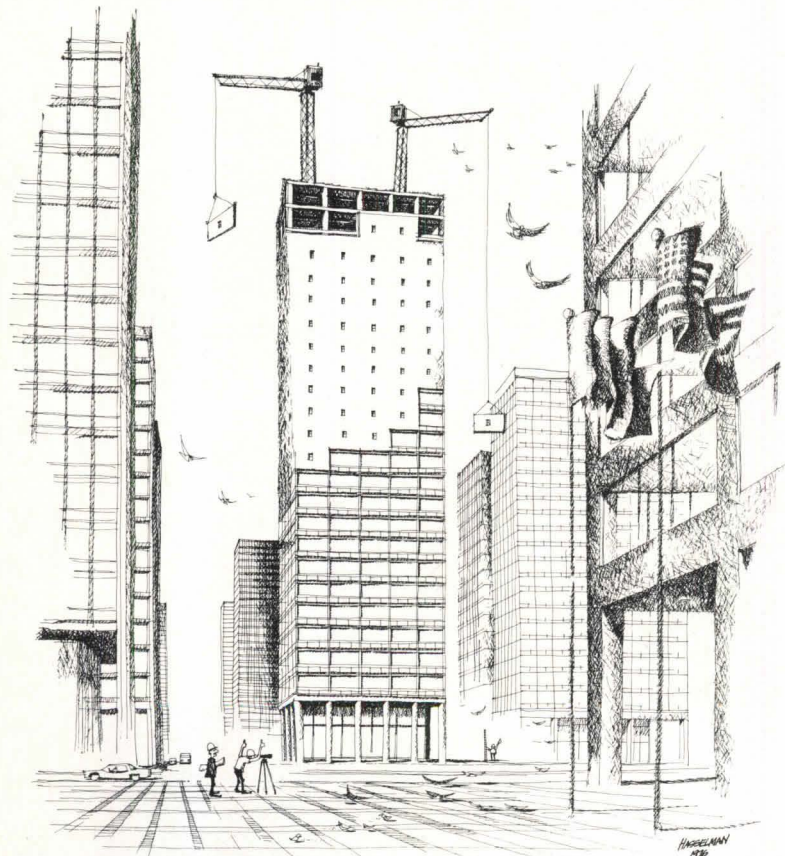
Union Camp Corp., a major firm in the forest products industry headquartered in Wayne, N.J., has donated a plantation home built in 1775 and its surrounding 10-acre site to the National Trust for Historic Preservation. It is the first historic building that the National Trust has received as a gift from a corporation.

Known as Tower Hill, the house is located in Sussex County, Va. Its dormers and exposed end chimneys are similar to other Virginia plantation homes, such as Gunston Hall. "An unusual feature of the five dormers is the jerkin head configuration of the pitched roofs. The classical disposition and fine proportion of the west facade, in conjunction with these architectural details, suggests the presence of a skilled joiner in the design and construction of the house," says Thomas Slade, senior architectural historian at National Trust.

Tower Hill was built originally by Richard Blow for the manager of the plantation that existed in 1775. It was occupied by Blow, owner of the plantation, however, because fire destroyed the plantation mansion. The Blow family retained ownership until it was bought by Union Camp in 1960. The homesite is part of a larger tract once owned by the family of Benjamin Harrison, a signer of the Declaration of Independence and forebear of the ninth and 23rd Presidents of the U.S.

Tower Hill was accepted by the National Trust under its assets properties program, which means that the property will be offered for sale with restrictive covenants and that alterations can be made only as prescribed by National Trust.

*continued on page 28*



*"The damned energy problem couldn't have come at a worse time for us."*

Ed. note: This is the first in a new JOURNAL series of cartoons by Peter M. Hasselman, AIA, of the Washington, D.C., firm of Smith, Segreti, Stillwell & Hasselman.

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The logo consists of the lowercase letters 'ai' in a bold, red, sans-serif font. The 'a' and 'i' are connected at the top. The background of the entire advertisement is a photograph of an outdoor lounge area on a ship's deck at sunset. In the foreground, there are two large, plush sofas, one in a dark brown color and one in a light tan color. A small, square, chrome coffee table sits between them, holding a vase of yellow flowers and a small round object. A potted plant in a woven basket is in the lower left. In the background, a large ship with two circular observation decks is docked. A wooden structure with a red wall featuring black abstract art and a black sculpture is on the right. A few people are sitting at a table in the middle ground. The sky is a mix of orange and blue.

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*Circle 18 on information card*

## Women's School Plans Session for August 8-21

The Women's School of Planning and Architecture will hold its second session in Santa Cruz, Calif., on Aug. 8-21. It is the "first such school to be completely founded, funded and run by women." Last August, the school's first session brought together 52 women from 21 states and Canada.

This year's session "will explore new ways of thinking about the built environment, new ways of working in the design professions and new thoughts on the role of women in these professions." Among the workshops to be offered: "a feminist analysis of design methods and content," "energy conscious design" and "the politics and ideology of the planning process."

Admission to the school is open to any woman of any age and at any stage in the educational process. The one requirement is that participants be working or studying or have a "committed interest in the environmental design field." Enrollment is limited to 75 persons. Cost of the school is \$415, which includes tuition, room and board.

For further information, a self-addressed stamped envelope (24 cents) should be sent to WSPA, Spring Lane, Farmington, Conn. 06032.

## Employment Exchange

### Positions Wanted

Architect, Univ. of Fla. Mar '76 grad, engineering drawing experience (1 yr); will relocate, steady work desired, resume available. John P. Garrett, 3721 W. N.W. 21st Place, Gainesville, Fla. 32605; (904) 375-3180.

### Positions Available

Architect, urban designer; degree in architecture, no experience necessary; fast, free-hand sketch delineation skills, knowledge construction techniques and costs; salary \$12,876; begin June/July. Joseph E. Vitt, City Hall, 15th Floor, Kansas City, Mo.

## LETTERS

**Architecture and Energy:** I have read with interest the article by John P. Eberhard, AIA, titled "Architecture and Energy" in the February issue.

As a person who has been associated with HVAC and building energy problems for 39 years, I forever find myself philosophizing on the subject. The article prompts me to offer some comments.

On page 26, Eberhard says, "We will work with our clients to make sure that their perceived space requirements are reasonably related to their actual needs, and are not in excess." The "brute force systems," to which reference is made, were brought on by the fact that construction costs were so high that we tended to crowd office workers (and others) into tighter floor space densities, i.e., 100 square feet per person or less in office buildings, etc. The natural human space bubble is much larger than this, so we try to offset the larger space bubble needs by artificially climatizing the more cramped space bubble. If building costs would permit the luxury of 300 square feet per person, I am sure we would not need to employ "brute force systems."

I was captured by Eberhard's analogy about power boats and sailing, being a sailor myself. I liked the irony of the "clever device to capture the wind to drive the propeller." I would agree that this would be like putting on rubber gloves to fix a leaky fountain pen—when the direct sail is a more efficient wind propulsion device in the case of a sailboat hull.

This leads me to express my total distaste of some people's logic, using another analogy. That is, there are those who would propose dragging a solar voltaic cell carpet above this planet by satellite and transmitting the captured solar power to our planet for conversion to electrify a clothes dryer. No way! The 50-cent clothes line is a far more efficient solar device for drying clothes.

I submit that we have higher priorities for our limited capital formation.

*Robert G. Werden  
Jenkintown, Pa.*

**Rehashed Diatribe?:** It was incredible to read the Dec. 1975 issue on "The Architecture of Transportation."

If I had found the issue removed from its cover, I would have assumed that it was prepared by the highway lobby about 10 years ago.

What a warmed-over diatribe of the public transportation issues! What appalled me most was the complete lack of sensitivity to the positive effect of attractive and efficient rapid transportation on the mobility and lifestyle of residents in our densely populated communities.

It was when attention was devoted to the alternatives which ended up suggesting jitneys and taxis as the solution to our traffic ills that I realized there is apparently no awareness of the energy crisis, the need to conserve resources, the increasingly high operational and maintenance costs of rubber-tired vehicles and the desperate need to have transportation facilities integrated favorably with the environment.

*Aaron Levine  
President, Oahu Development Conference  
Honolulu*

## EVENTS

**May 31- June 11:** United Nations Conference on Human Settlements, Vancouver, B.C. Contact: Canadian Association Organization Service for Habitat, 390-1575 W. Georgia St., Vancouver, B.C. W6G 2B3, Canada.

**June 1:** Abstract deadline, call for papers, for annual Computer Graphics Conference and Equipment Display, to be held Nov. 3-4 at the Engineering Society of Detroit. Contact: Evelyn Simon, Engineering Society of Detroit, 100 Farnsworth, Detroit, Mich. 48202.

**June 7-11:** Program on Principles of Color Technology, Rensselaer Polytechnic Institute, Troy, N.Y. (Color Technology for Management, June 15-16; Advances in Color Technology, June 21-25.)

**June 13-18:** Institute on Historic Preservation Planning, Cornell University, Ithaca, N.Y.

**June 13-18:** International Design Conference, Aspen, Colo. Contact: Mary Apple, IDCA, P.O. Box 664, Aspen, Colo. 81611.

**June 21-23:** Construction Specifications Institute annual convention, Civic Center, Philadelphia.

**June 23-24:** Institute on Health Care Facility Planning and Design, University of Wisconsin, Madison, Wis.

**June 23-25:** Annual National Exposition of Contract-Interior Furnishings, Merchandise Mart, Chicago.

**June 27-July 1:** Air Pollution Control Association annual conference and exhibition, Memorial Coliseum, Portland, Ore. Contact: APCA, 4400 Fifth Ave., Pittsburgh, Pa. 15213.

**June 30-July 1:** Symposium on Evaluating and Controlling the Corrosive Effects of Chlorides on Reinforcing Steel in Concrete, Palmer House, Chicago. Contact: American Society for Testing and Materials, 1916 Race St., Philadelphia, Pa. 19103.

**July 1-29:** Course in New Towns and Community Planning in Britain. Contact: Institute of International Education, 809 United Nations Plaza, New York, N.Y. 10017.

**July 3-31:** Annual World Game Workshop, University of Pennsylvania, Philadelphia. Contact: Earth Metabolic Design, Box 2016 Yale Station, New Haven, Conn. 06520.

**July 4-9:** World Congress on Space Enclosures, Montreal. Contact: Paul Fazio, WCOSE-76, Building Research Centre, Concordia University, 1455 de Maisonneuve Boulevard W., Montreal, Que. H3G 1M8, Canada.

**July 5-Aug. 13:** Focus on Design Courses for high school and college students and adults, Graduate School of Architecture

*continued on page 32*

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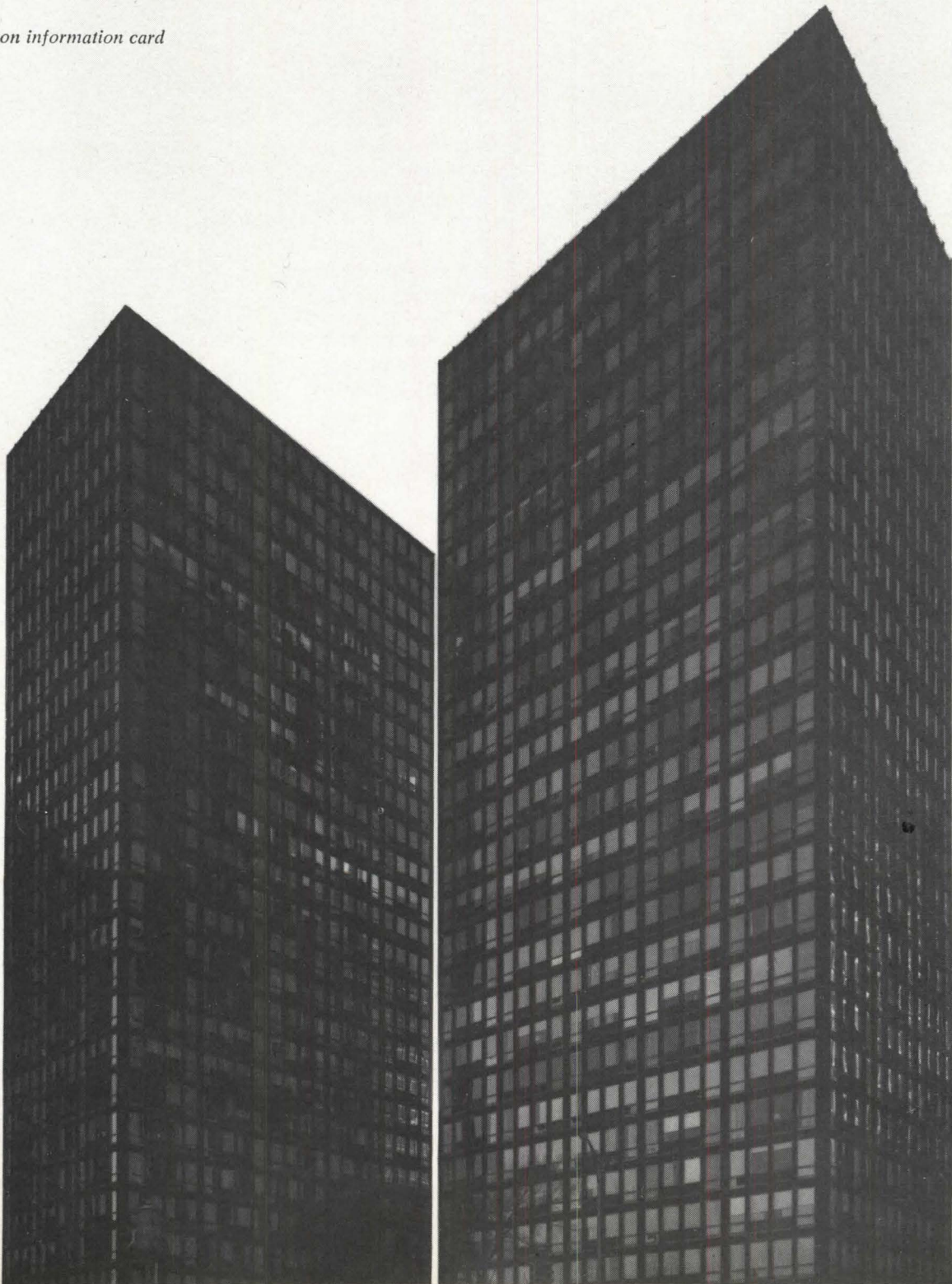
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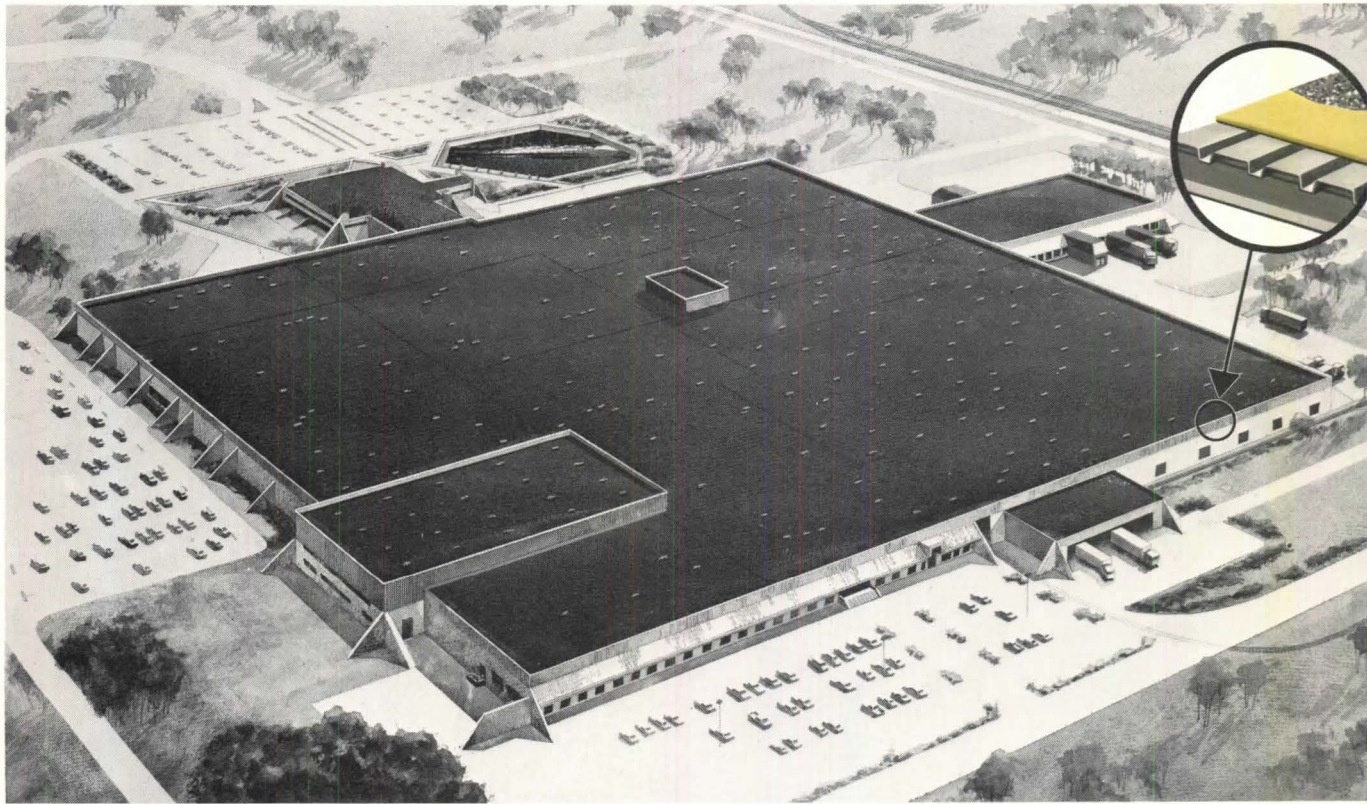
*Circle 19 on information card*



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Projected cost to heat and cool the 46-acre J.C. Penney warehouse for 20 years with only 15/16-inch Fiberglas roof insulation.



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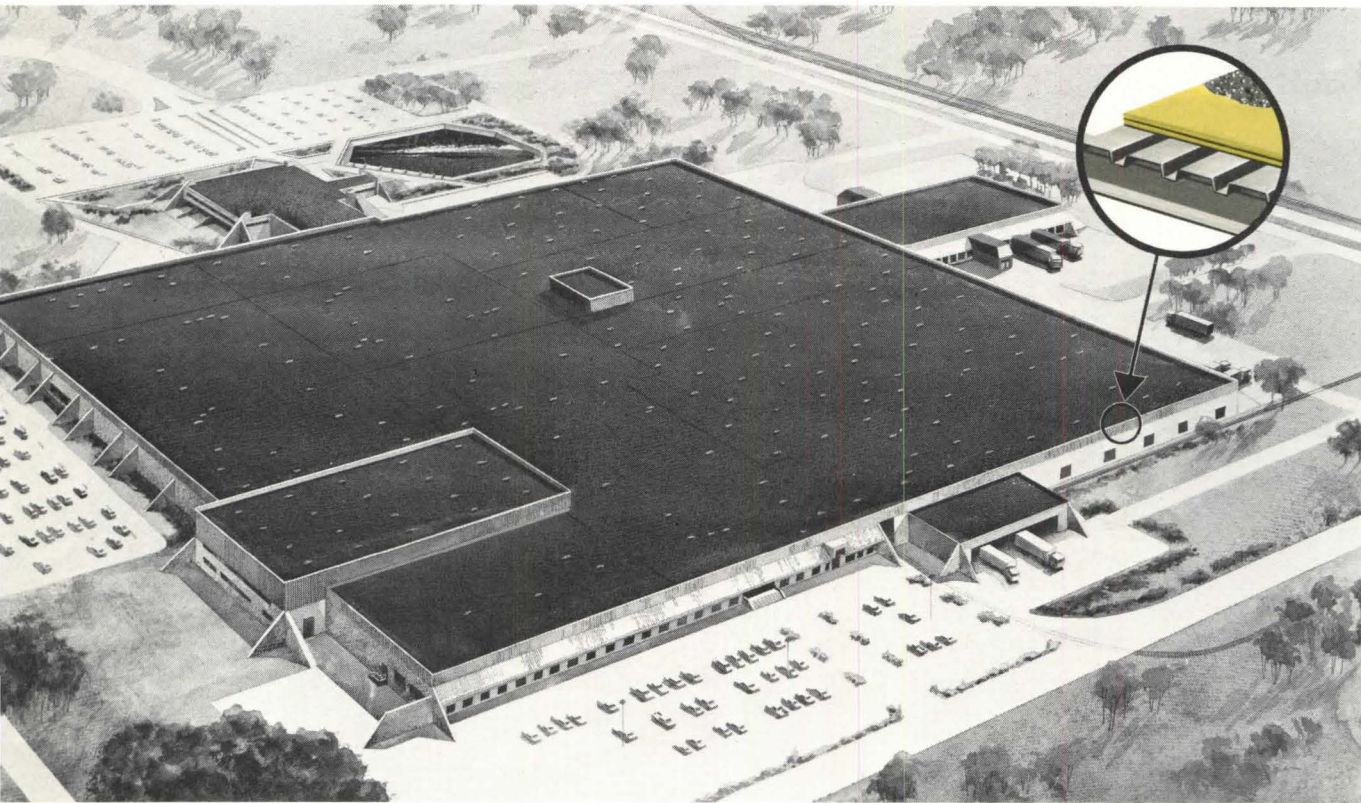
\*T.M. Reg. O.-C.F.



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### Saves money two ways

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1. It saves on energy costs. Estimated savings per year, based on heating and electric cooling in Lenexa, Kansas, with a pro-

jected increase in energy costs at 7% per year and future savings discounted at 10% per year: \$64,160—or \$972,024 every 20 years.

(Due to present availability of natural gas, propane and fuel oil are used as additional fuels for heating, and as a result of using these higher-priced fuels, actual savings may vary.)

2. It saves on construction costs. The first cost of this energy-tight warehouse is actually lower than if a less efficient version had been built! Reason: the improved thermal performance of the roof permits use of less costly heating and cooling equipment. The savings are large

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Events from page 28

and Planning, Columbia University, New York City.

**July 6-8:** National Interfaith Conference on Religion and Architecture, Boston. Contact: Guild for Religious Architecture, 1777 Church St. N.W., Washington, D.C. 20036.

**July 10-15:** Congress of the International Colour Association, Rensselaer Polytechnic Institute, Troy, N.Y. Contact: Fred W. Billmeyer Jr., Department of Chemistry, MRC 217, RPI, Troy, N.Y. 12181.

**July 11-16:** Conference on Wind Energy Conversion, New England College, Henniker, N.H. Contact: Engineering Foundation, 345 E. 47 St., New York, N.Y. 10017.

**July 11-30:** Victorian Society summer school, Hanover Lodge, Regents Park, London. Contact: Victorian Society in America, The Athenaeum, E. Washington Square, Philadelphia, Pa. 19106.

**July 14-16:** A/E Practice and the Law Symposium, University of Wisconsin, Madison, Wis.

**July 22-Aug. 18:** Architecture in Britain study tour (academic credits given; auditors also welcome). Contact: Architecture in Britain, Department of Architecture, Temple University, Philadelphia, Pa. 19122.

**July 26-30:** Institute on Industrial Archaeology, Rensselaer Polytechnic Institute, Troy, N.Y.

## Deaths

**James E. Arnold**, Prairie, Kan.

**Guy A. Carlander**, Amarillo, Tex.

**Will A. DeNeff**, Anacortes, Wash.

**Victor Gondos Jr.**, Washington, D.C.

**John W. Greiner**, Lancaster, Pa.

**Erick Gugler, FAIA**, Palisades, N.Y.

**Walter R. Hagedohm**, Los Angeles

**Herbert C. Hanson**, Mountain Home, Ark.

**Donald C. Johnson**, Beaverton, Ore.

**Charles R. Kaufman**, Lake Oswego, Ore.

**George R. Kennaday**, Honolulu

**Eriks I. Klasons**, San Francisco

**Emiel F. Klingler**, Eau Claire, Wis.

**Noboru Kobayashi**, Wailuku Maui, Hawaii

**Warren L. Ludvigsen**, Los Angeles

**Ian Crawford MacCallum**, St. Michaels, Md.

**Loring H. Provine, FAIA**, Indianapolis

**Dominick Salvati**, Brooklyn, N.Y.

**B. Robert Swartburg**, Miami Beach

**E. Allen Thompson**, San Francisco

**Benjamin D. Trnavsky**, North Charleroi, Pa.

**Searle H. von Storch, FAIA**, Clarks Summit, Pa.

**Herbert Weed**, Lynn, Mass.

**Edwin B. Worthen Jr.**, Boston

**Josef Albers:** Recipient of the AIA fine arts medal for 1975, Albers was praised at that time for his versatility, dedication

and "exhaustive experiments in line, color and form." His widespread influence as a teacher, art theoretician and painter extended for several generations into the realms of architecture, sculpture and industrial design.

Albers, who died on Mar. 25 at the age of 88, was a native of Bottrop, Germany. Before immigration to this country in 1933, he studied and taught at the Bauhaus in Weimar. For 16 years he taught at Black Mountain College in North Carolina, and in 1950 became chairman of the newly organized department of design at Yale University, where he remained until his retirement in 1958. From that time until his death, he continued his work as an artist.

He found many occasions to apply his artistic genius in an architectural context, translating art into the materials of architecture through his imaginative use of brick, glass and marble.

## Newslines

**The Design Professional Merger Registry** has been formed "to expedite the process of matching design firms which desire to grow via the merger or acquisition route." Practice characteristics, growth objectives, etc., are identified and the effect of combined resources projected. Information is available from John F. Dawson, AIA, BDG, 405-A Waters Building, Grand Rapids, Mich. 49502.

"**Metrication: Myths and Realities**," the second annual report of the American National Metric Council, is available for \$3 per copy from ANMC, 1625 Massachusetts Ave. N.W., Washington, D.C. 20036.

**Josep Lluís Sert, FAIA**, former dean of the Harvard Graduate School of Design and founder of the firm of Sert, Jackson & Associates in Cambridge, Mass., has been awarded the gold medal of the French Academy of Architecture. France's highest award for design, the gold medal is given annually to an architect, engineer, artist or historian "who has shown great ability in the service of architecture and construction."

**Senator William Proxmire** (D. Wis.) was presented an award at the recent annual convention of the National Housing Conference for his "distinguished service in housing and urban development."

**The late Saul Horowitz Jr.**, past president of the Associated General Contractors of America and leader in the creation of the National Construction Industry Council, was selected as the posthumous recipient of the F. Stuart Fitzpatrick award. The award is given "in recognition of outstanding individual contribution to the

construction industry" by an award jury composed of representatives of AIA, AGC, Producers' Council, Building Research Advisory Board and National Association of Home Builders. The organizations also sponsor the award.

**I. M. Pei, FAIA**, received the Thomas Jefferson Memorial Foundation award in architecture at the University of Virginia. At the time of the award's presentation during the traditional "founders' day week," there was an exhibition of Pei's work at the school of architecture. Past recipients of the award, given for distinguished achievement in architecture, have included Mies van der Rohe and Marcel Breuer.

**A new bimonthly magazine** titled *Practicing Planner* is being published by the American Institute of Planners. Edited by Gail O'Gorman, its aim is the "exchange of practical information of immediate usefulness to planners and public officials in cities and counties of all sizes." Subscription price for nonmembers of AIP is \$15 a year. For information, write AIP, 1776 Massachusetts Ave. N.W., Washington, D.C. 20036.

**The 1976 "Handbook for Ceramic Tile Installation"** is now available without charge from the Tile Council of America, P.O. Box 326, Princeton, N.J. 08540. The booklet provides current data and quick-reference details to cover most ceramic tile installation methods.

**Architects and educators** served on the first national jury of the National School Boards Association to select school designs for an exhibition at NSBA's recent annual meeting. Architects on the jury were Alva L. Hill, AIA; Robert A. Wright, AIA, and Bruno Ast and Peter Roesch, both from the University of Illinois' college of art and architecture.

**Walter A. Meisen, AIA**, who joined the General Services Administration in 1958 and became acting commissioner for public buildings service in 1974, has been named a vice president in the firm of Daniel, Mann, Johnson & Mendenhall. He will work in the firm's Washington, D.C., office as operations manager for the Eastern region of the U.S.

**Federal law governing political contributions** is interpreted succinctly in a series of questions and answers prepared by Milton F. Lunch, general counsel for the National Society of Professional Engineers. The questions and answers will help any professional "unravel the mysteries" of the recently amended Federal Election Campaign Act. For a copy, write the PR Department, NSPE, 2029 K St. N.W., Washington, D.C. 20006. □

# Builders of Commercial Office Condominium Lure Tenants with Sports Club Memberships and Energy-Conserving Electric HVAC Systems



*Mansard-roof facing and rearward sloping terrain make this new office condominium appear lower than its actual four stories.*

**Firms that purchase space in a new Ohio office building receive all of the benefits of condominium ownership that apartment builders have touted for years, plus electric heat recovery systems designed to keep monthly maintenance charges low.**

**Westlake, Ohio.** Professionals in the nation's real estate markets are watching with more than casual interest a unique experiment in commercial development taking place here. The object of their attention in this pleasant Cleveland suburb is a commercial office building by the name of One King James South.

What makes the structure something to be watched is that it is a condominium, with space available for purchase by business and professional firms.

In the residential apartment field, of course, the condominium concept has been widely applied and with great success. Thousands of apartment buildings, ranging from duplex townhouses up to high-rise structures of 30 stories or more, have already been built specifically for condominium-type operation. In these, each purchaser assumes complete ownership of one or more dwelling units, which he may elect to occupy or to use for investment purposes. Purchasers share ownership of the common or public portions of the building and are assessed monthly charges for maintenance, labor, energy, etc.

**Easy Sell.** The proliferation of condominium apartments is due mainly to

the ease with which developers can assemble convincing sales promotions. There are unassailable arguments in favor of ownership over renting; real estate taxes and mortgage interest are fully deductible. Then, there is the strong psychological impulse of Americans to own property, a desire rooted perhaps unconsciously in words faintly remembered from The Bill of Rights.

But by far the most compelling incentive that causes prospects to sign on the dotted line is the design elegance of the public, social and recreational areas. In some renowned high-rise condominium apartments, these achieve a splendor that can only be described as palatial. If one accepts this premise, he may have found the reason for the fact that condominiums have lagged up to now in the office building field, where palatial lobby design has dwindled since Art Deco days and swimming pools are nonexistent altogether.

\*One of a series of reports giving recognition to the efforts of architects and engineers on behalf of resource conservation.

**The closed-loop water-to-air heat pump system helped the builders' plan to sell the building in stages.**

**Wrong Premise.** "This is not the case at all," says Robert R. Miller, one of the three principals in King James Group, builders and developers. "The major reason that office condominiums have not developed more quickly is that firms desire to retain mobility. They want to be free, for example, to change to an entirely new location should a better building come along or should their needs for space change up or down."

Miller feels that the mobility impasse may end with the result that the condominium concept will be more widely accepted for commercial buildings. "Hardheaded business executives can't avoid the economic advantages forever and that is why we decided to build One King James South as a condominium. We sell on the economic picture alone; business people aren't taken in by amenities. However," he adds with a smile, "we just did happen to have a swimming pool handy."

**A Matter of Convenience.** The conveniently located swimming pool mentioned by Bob Miller is part of The Regency Swim & Racquet Club located a couple of hundred yards from the office building. It was built to serve the entire King James South complex being developed on a 50-acre site. The complex includes up to this time a number of luxury-class private residences; 300 condominium apartments; 73 town house units; a ten-



Engineer John Zwolsky sought a heat recovery system that could be "shelled-in" just as were the structural elements.



Owner Robert R. Miller favors HVAC systems that cut front money and the energy element in maintenance charges.

store strip shopping center; and the office building.

The club, which is owned and managed by the tenants, is an elegant sports and social center for the community. In addition to the Olympic-sized year-round swimming pool, there are men's and women's saunas, a 15-foot-diameter whirlpool, two professional-grade tennis courts, an exercise room, and complete locker facilities. All of these are housed in a 10,000-square foot, two-level brick structure of French Normandy architecture set on two acres of lawn.

The first level of the club contains a large reception foyer and plushly furnished lounge. Off one side of the foyer is a 20-by-30 foot party room with an electric apartment-sized kitchen adjoining. These rooms, as well as an identical pair on the lower level reached by a carpeted spiral staircase, are reserved by owners for private dinner or cocktail parties. In sum, it is a charming inducement to buying a condominium unit—whether apartment or office.

**Special Blend.** The gracious green-lawned residential character of this complex has been carefully nurtured by the developers. Architect Nick E. Del Giudice was assigned the task of implanting on this verdant setting nearly 44,000 square feet of office building. "To give you an idea of how careful we had to be of the environment," he says, "you should look at the equipment inventory of Pacer Construction Co. This is the general contracting subsidiary of the developers. You might expect Pacer to own a battery of bulldozers, power shovels, and such. In reality, Pacer owns only one piece of equipment and that is a tree-moving machine."

The lonely item in the equipment inventory apparently has been kept busy.

Mature trees abound in places where obviously they could not have been left intact during the construction phases. The developers' expressed policy was to save every tree feasible.

Architect Del Giudice used a French Normandy style as a basis for blending the office building with its residential setting. The structure presents a relatively low silhouette despite its four stories. One reason for this is that part of the first level is hidden by the fortuitous natural rearward slope of the site. The top story is softened by a steeply inclined and shingled mansard-roof facing with windows inset in a gabled effect. Left in place in the forecourt are two old trees which serve to partly shield the lightly colored brick facade from the gaze of passersby although requiring slightly more dexterity of drivers entering the grounds.

**Selling Shells.** The first stages of construction brought the building to a semifinished condition—the exterior walls completed but with all interior spaces appearing as open rough-walled shells. Business and professional firms that chose to buy at that point had unlimited freedom in selecting space exactly suited to their requirements. Not until a client had signed a contract did the architects and engineers go about the business of tailoring the needed partitioning, surface finishes, services and utilities.



Architect Nick E. Del Giudice had to factor a tree-moving machine into his site excavation plans and landscaping design.

The type of HVAC system selected for King James South dovetailed nicely with the shell concept of the builders. It is an electric closed-loop unitary heat pump system with heat recovery capa-

bility. In a very real sense it, too, could be "shelled-in" during the initial construction stages.

**HVAC System.** Each finished office suite has its own independently controlled electric heating and cooling system. It consists essentially of an electric water-to-air heat pump operating in conjunction with short runs of metal supply and return ducts. The equipment package, with output rating ranging from 1½ to 3 tons depending on the size, location and occupancy of the suite, is installed in the space above the suspended ceiling panels.

The heat pump units in all of the office suites throughout the building are coupled into a common water supply system. This consists of a closed loop of four-inch plastic pipe carrying water that is recirculated continuously by a ten-horsepower pump installed in a mechanical room. Each heat pump unit is controlled independently by means of a wall thermostat and at any given time can be on either heating or cooling depending on what is needed in the particular suite it serves. In the cooling mode, the heat pumps reject heat to

the circulating water; in the heating mode, they extract heat from it.

**Energy Conservation.** It is the closed loop of recirculating water that makes possible the heat recovery, energy-conserving capability of this system. Heat rejected to the water by units on cooling is available to those calling for heat. In mild weather, for example, some parts of a building require cooling while others need heating. This is particularly true in office buildings with interior zones that require cooling even on midwinter days.

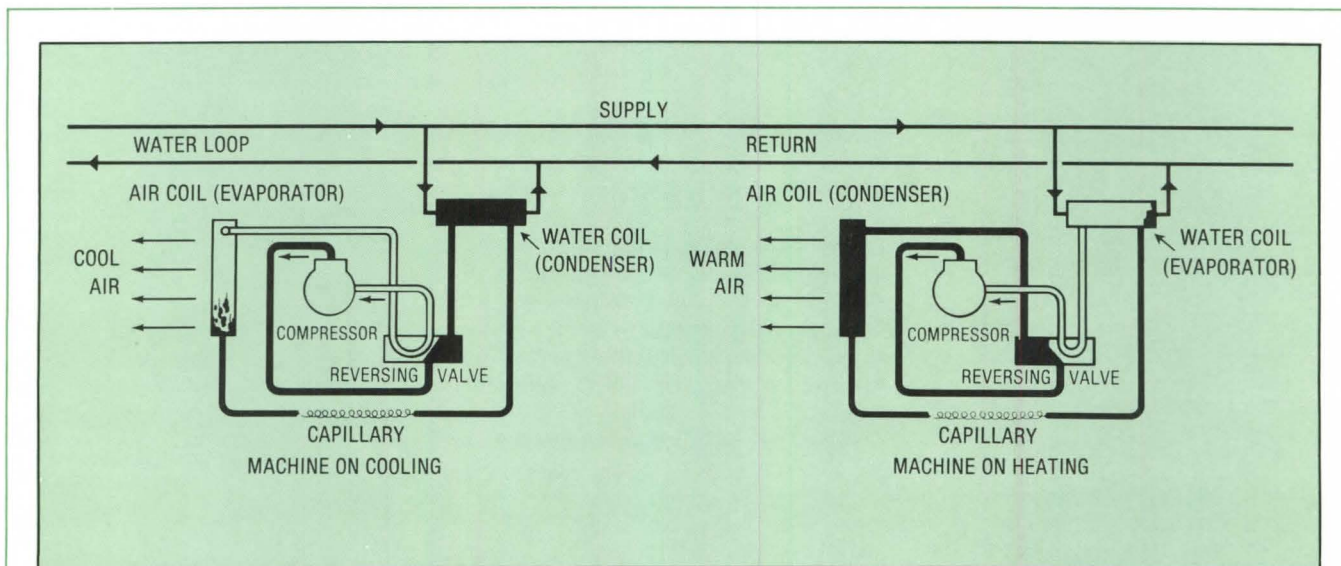
During such times, some heat pumps will be operating in the cooling mode, depositing heat in the hydronic loop. At the same time, other heat pumps will be functioning in the heating mode, extracting heat from the loop to warm the suites calling for heat. When heating and cooling requirements are essentially in balance, the building may be said to heat and cool itself.

**Buyers Aware.** "The heat recovery capability was probably the main reason we selected this type of system," says consulting engineer John Zwolsky. "Our own personal feelings about en-

ergy priorities aside, buyers in the building market have become surprisingly sophisticated about the energy requirements of HVAC systems. We regard this system in itself as a strong selling point."

Another advantage from the tenant's view is that he has, in effect, his own complete central HVAC system. It is custom designed for his particular suite so that the chances of getting uniform air distribution are maximized. He has, in addition, complete control of environmental conditions within his offices. Also, the individual tenant can establish his own working hours rather than having to conform to the existing occupancy schedule for the rest of the building. The water circulating pump is operated on a 24-hour basis.

**Piecework.** Engineer Zwolsky views the closed-loop approach as being highly compatible with construction projects in which interiors are completed piecemeal. "Such was the case here; only after a particular space was contracted for did the architect begin to lay out the partitioning and he could do that without the limitations that would have



ENERGY EXCHANGE BETWEEN HEAT PUMP UNITS

A major advantage of the closed-loop water-to-air heat pump system is its ability to recover excess heat energy from one zone and transfer it to another that requires it. Between seasons, for example, some parts of a building need cooling while other parts are calling for heat. The accompanying schematic illustrates what happens under such conditions, with one heat pump unit operating in the cooling mode and a second unit farther along the loop functioning in the heating mode.

Each water-to-air heat pump has the following principal components: 1) a blower for pushing air through an air-to-refrigerant heat exchanger and into the distribution ducts; 2) a sealed refrigeration compressor; 3) a reversing valve which is controlled by a wall thermostat; and 4) a refrigerant-to-water heat exchanger. In the machine on cooling, the reversing valve guides the flow of hot refrigerant gas from the compressor to the water coil. There heat is removed by the water in the hot gas which condenses into a liquid. The refrigerant then flows through an expansion device and

enters the air coil as a cold liquid. Here the refrigerant boils, becoming a vapor and absorbing heat from the room air passing across the coil. The refrigerant vapor then flows through the reversing valve back to the compressor, completing the cooling cycle.

In the unit on heating, a wall thermostat has caused the reversing valve to shift and reverse the flow of refrigerant in all parts of the circuit except the compressor. Hot gas from the compressor enters the tubes of the air coil. Room air is heated as it passes over the tubes, absorbing heat from the refrigerant and causing it to condense. The liquid refrigerant flows through the expansion device to the water coil, which functions now as a chiller. As the refrigerant vaporizes it absorbs heat from the closed water loop. The vapor is conducted back through the reversing valve, completing the heating cycle.

The point to be made here is that the heat energy being dissipated by the first machine is recovered by the second.



The Regency Swim & Racquet Club is an appealing fringe benefit for office workers.

been imposed by an in-place HVAC system. Up to that point we had installed only basic hydronic work. We then custom-fitted individual heat pump units and ductwork arrangements into the partition format."

In addition to the main pipe circuits, two essential elements of the system were installed as the building's shell was erected. These were a 240-kw electric boiler installed in a mechanical room on the first level and a roof-mounted evaporative water cooler. For proper operation of the system, loop water must be maintained in the 65-90F range and for much of the time the random mix of operating modes of the heat pumps accomplishes this automatically.

In warm weather, however, the balance of the system is upset as more heat pumps switch to the cooling mode and add to the amount of heat being rejected into the loop. Thereupon, the fans and spray pumps of the water cooler are staged into operation to prevent loop water temperature from exceeding 90F.

In very cold weather, the water system again becomes unbalanced as a greater number of units switch to the heating mode and extract more heat from the loop. At such times elements of the electric boiler are energized in steps to maintain the loop water above the 65F minimum.

**Insulation.** King James South is an exceptionally well insulated building. The tar and gravel roof is built-up over a 2¼-inch layer of rigid polyurethane, which is not unusual in itself. In addition, however, the suspended ceiling beneath the roof deck carries a 3¼ in.-thick bed of mineral wool batts. The double layers of insulation keep heat gains and losses through the roof at a markedly low level.

The mineral wool ceiling insulation is used also on all of the three lower levels of the building. "We did this for two reasons," says architect Del Giudice: "One was to provide the sound isolation we think should be expected in a quality building. The second purpose was to provide thermal insulation so tenants wouldn't have to pay for heating and cooling spaces between each ceiling and the floor above."

The HVAC system does not employ the ceiling spaces as plenums. Insulated metal ducts carry both supply and return air.

**Point Stretching.** It may be stretching a point to describe Bob Miller as a kind of aficionado of reverse-cycle air conditioning. But, as a developer, he has selected conventional heat pump systems for upwards of 200 homes and apartments he has built over the years. Now, he is responsible for installing the closed-loop version of the concept in the first condominium office building in Ohio.

"My partners and I are businessmen and appreciate the economic advantage of bringing a system on in stages. It means we have to put up a little less 'front money'—funds we have to invest before actual selling starts.

"But the three of us were also for many years project managers at NASA's Lewis Jet Propulsion Laboratory near Cleveland, deeply involved in the country's space efforts. We learned to view the planet as a vehicle with a

**DESIGN SUMMARY**

**GENERAL DESCRIPTION:**  
 Area: 44,000 sq ft  
 Volume: 456,000 cu ft  
 Number of floors: four  
 Number of rooms: 85  
 Types of rooms: private and general offices, medical suites, mechanical rooms, storage

**CONSTRUCTION DETAILS:**  
 Glass: double  
 Exterior walls: 12" brick & block, 1½" rigid polyurethane insulation (R-11), channel clips, 5/8" gypsum board; U-factor: 0-1  
 Roof and ceilings: built-up tar and gravel roof on 2¼" rigid polyurethane insulation (R-15) over steel deck, 3¼" mineral wool batts (R-13) over suspended acoustical tile ceiling; U-factor: 0.04  
 Floors: concrete slab on grade  
 Gross exposed wall area: 21,056 sq ft  
 Glass area: 5035 sq ft

**ENVIRONMENTAL DESIGN CONDITIONS:**  
**Heating:**  
 Heat loss Btuh: 1,100,600  
 Normal degree days: 6351  
 Ventilation requirements: 7500 cfm  
 Design conditions: -5F outdoors; 75F indoors  
**Cooling:**  
 Heat gain Btuh: 1,113,400  
 Ventilation requirements: 7500 cfm  
 Design conditions: 95F dbt, 78F wbt outdoors; 74F, 50% rh indoors

**LIGHTING:**  
 Levels in footcandles: 25-100  
 Levels in watts/sq ft: 1-4  
 Type: fluorescent and incandescent

**CONNECTED LOADS:**

Heating and Cooling (95 tons)	350 kw
Lighting	136 kw
Pumps and Fans	37 kw
Water Heating	10 kw
Miscellaneous	50 kw
<b>TOTAL</b>	<b>583 kw</b>

**PERSONNEL:**  
 Owner: King James Group  
 Architects & Engineers: Nick E. Del Giudice Associates  
 Consulting Engineer: John Zwolsky  
 General Contractor: Pacer Construction Co., Inc.  
 Mechanical Contractor: Shaker Air Conditioning Co., Inc.  
 Electrical Contractor: Einheit Electric  
 Utility: Cleveland Electric Illuminating Company

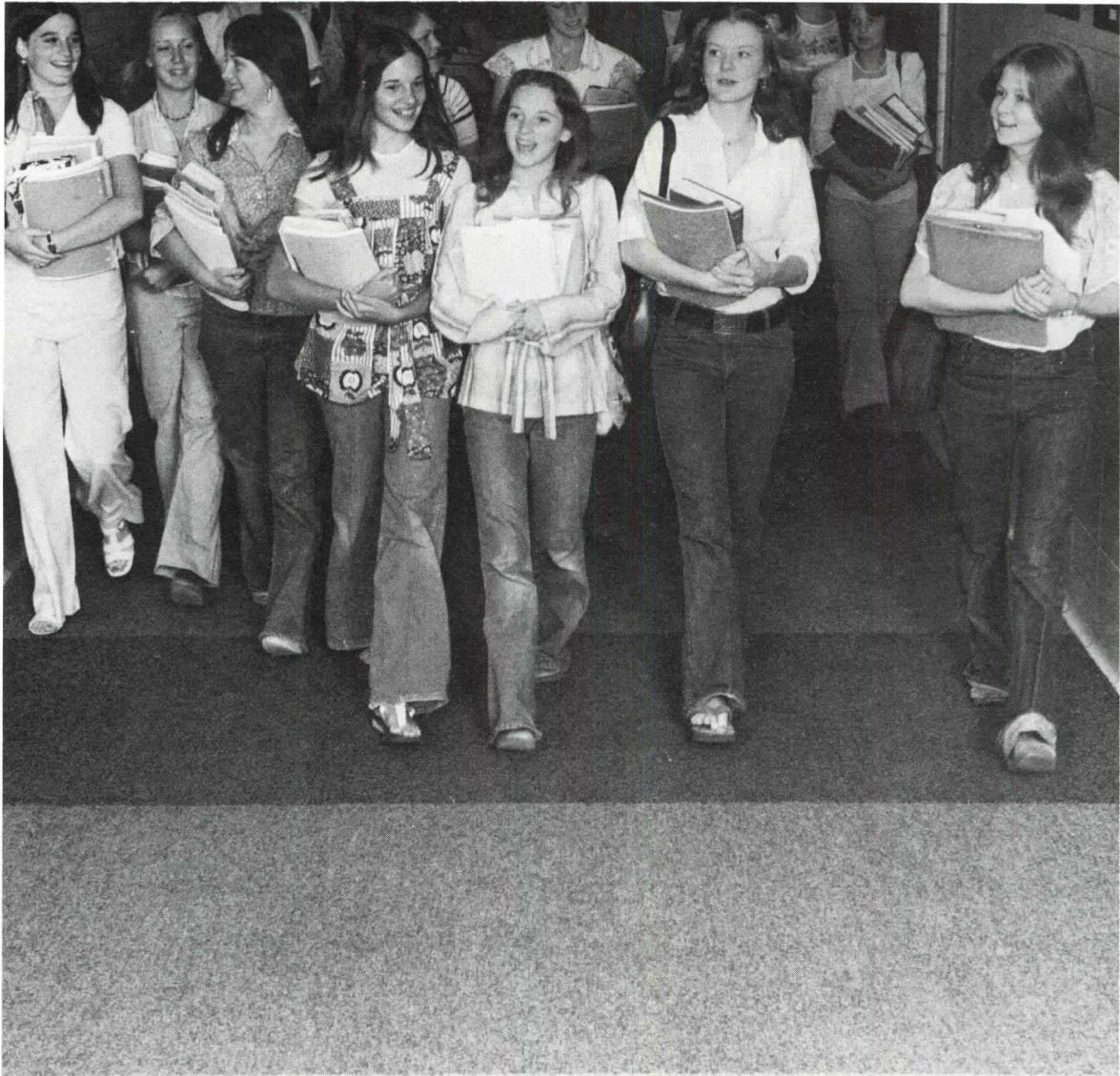
limited resource supply and gained a healthy respect for the environment and conservation. Maybe that's why we've been easy to sell on heat pumps."

It may also account for the lonely tree-moving machine.

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As the cover indicates, the two largest elements of this issue are two quite different items: a progress report (and there is progress) on the restoration of the Bedford-Stuyvesant area of Brooklyn, one of the nation's largest black ghettos; and a portfolio of beautiful European monasteries drawn and described from an urban design perspective.

The two do have one thing in common, however: They are surrounded by walls. The monasteries' walls are of stone, and were built for the sake of voluntary seclusion from the world. The walls that surround Bedford-Stuyvesant and other urban ghettos are made of prejudice, and they result in the mostly involuntary separation of their residents from the larger society outside.

The monasteries' walls are crumbling, but the walls around the ghettos have, if anything, grown stronger in recent years. Last month, however, the Supreme Court drove a substantial breach into them. It ruled unanimously that federal courts can order construction of low-income housing for minorities in the suburbs to relieve residential segregation. It was a decision that gave new heart to those, like the Institute and this magazine, who believe that urban growth and development should increase, rather than diminish, Americans' choices of a place to live. *D.C.*



# New York's Bedford-Stuyvesant: Rare Urban Success Story

Fred Powledge

*You knew that what is given or granted can be taken away, and that what is begged can be refused; but that what is earned is kept, that what is self-made is inalienable, that what you do for yourselves and your children can never be taken away.—*

The late Senator Robert F. Kennedy, announcing in December 1966 the formation of a program to cope with the problems of New York City's Bedford-Stuyvesant ghetto.

The words sounded good and a little different then, and they still do today. There was a lot of political social-problem rhetoric going around in 1966, of course, and we were not certain then, as we are now, that most of it was pure bull. Daniel Moynihan was an urban savant, we thought, instead of a pompous windbag. John Lindsay was going to save New York City, certainly not help bankrupt it. Naive though we were, however, we knew that Bobby Kennedy wanted to be President.

And yet the words sounded good and a little different. The scene was a community, the Bedford-Stuyvesant section of Brooklyn, that was certified as the nation's second largest black ghetto (after Chicago's South Side). It held about 400,000 people, as many as live now in Fort Worth or Toledo. Eighty percent of them were black, many of them in miserable poverty. They lived in 653 blocks of the city, largely in three- and four-story homes and apartments. Almost every index—infant mortality, median family income, median school years, unemployment, subemployment, crime—showed that Bedford-Stuyvesant was in awful shape. Its condition was made more terrible by the fact that at no time since it had become a black ghetto had anybody with power or influence cared anything about it. Everybody knows of Harlem, where the "A" train runs. But few politicians and do-gooders could even recall the boundaries of Bed-Stuy, half an hour or so from Times Square on the same "A" train.

But Bobby Kennedy found out about it, and once he was elected senator from New York he and his staff set about studying ways to cope with the city's problems. He was surrounded by ample evidence of what not to do. Since 1964, with the passage of the Economic Opportunity Act and the firing of the first shots in the war on poverty, the nation had been flooded with a variety of programs that were destined for failure. Bureaucrats hatched schemes which were then imposed on unsuspecting communities. Home-grown leaders were co-opted and bought out or, worse, completely ignored. Slick "new" leaders were created or came out of the woodwork and made off with jobs, funds and prestige. Make-work summertime jobs were created to keep kids from rioting, and in many cases the bureaucrats screwed up their paperwork so the kids couldn't get paid, a clear incitement to riot if there ever was one. Social scientist Kenneth Clark, who had lovingly designed the program, Haryou-Act, that was going to make a difference in the life of Harlem, openly wept as he

watched it being chopped up and consumed by the black politicians. (Some experts swear, by the way, that Harlem, and not Bed-Stuy, had been tentatively chosen as the site for Kennedy's program, but that it had been rejected as "too fragmented politically.")

Kennedy's plan was different, but it was not full of exaggerated promises, so the white press didn't expend too much energy watching it. (And to this day *The New York Times* gets excited about the program almost exclusively on those days when Ethel Kennedy visits it.) First, there was the acknowledgment that there had been a lot of previous failure. "Our past efforts to deal with the problems of our cities have not worked," said Kennedy in a speech. "Their promise failed, their purpose failed." There would be community control over the program, said the senator—a promise often made and rarely kept. There would be the physical rebuilding of the ghetto into something in which, as Kennedy said, "residents can take pride—neighborhoods in which they have a stake, neighborhoods in which physical surroundings help the residents to create the functioning community which must be our goal."

Kennedy also said: "The basic purpose of the program is to create jobs." There would be employment by the members of the community on the community's programs. The existing social service structure would be rebuilt. And, finally, there was the acknowledgment that "an essential element of any program for regeneration of the ghetto will be the active participation of the business community in every aspect of the program, in a partnership of shared costs and effort with government."

The vehicle for all this change would be an organization made up of two separate corporations—one of them representing an attempt to reflect the leadership of the community, which of course was black, the other representing the involvement of the business community which, in New York City as in most places, was white.

The leaders of the black group were not elected in any sort of popular referendum, but Senator Kennedy showed some wisdom in choosing the policymakers. They were people of power, including political power, and they were not hacks. Nor were the white business leaders who were expected to lend their expertise and experience to the venture.

There were some initial problems. Quite a few of the blacks were skeptical about the commitment of the whites, and it took a while for them to realize that the whites were not going to try to run the show. There was an early pro forma, flap over who really represented the grass roots black community. A civil court judge, Thomas R. Jones, emerged as the chairman of the black board. The judge was enthusiastic about the prospects of the program, which came to be called the Bedford-Stuyvesant Restoration Corp. (The whites called their group the Development and Services Corp.) But Jones also was tired of watching programs that were phony. "If this doesn't work," he said back then, "the only alternative is revolution." And he was no radical.

Now it is 10 years later. Senator Kennedy is gone, and so is the war on poverty, as is that other war which, some critics said, was distracting us from our important mission at home. But the

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**Mr. Powledge**, a North Carolinian by birth now living in Brooklyn, frequently contributes to *The New Yorker*. His most recent book is *Born on the Circus*, for children, published by Harcourt Brace Jovanovich.

mission at home has been more or less abandoned, too. Moynihan's "benign neglect" was quickly translated into malign neglect. The streets have been relatively quiet in the past few summertimes, and the public at large isn't very concerned about who is or is not a black leader anymore, and the poverty goes on in the ghettos.

But in Bedford-Stuyvesant something strange has happened. Restoration is still there, and it's working. It is writing mortgages for black homeowners who have discovered that some of New York City's finest brownstone stock is in Bed-Stuy. It built a classy shopping center. It has a job-placement program that seems light years better than the old state employment service approach. One early aim—to attract branches of big, nationwide industries to the community—has borne little fruit, but Restoration has done very well at helping local business people get started and keep going.

There is a scattered housing rehabilitation program that is genuinely exciting and a bargain-rate house exterior renovation program that is a runaway success. Everyone connected with Bedford-Stuyvesant Restoration, and with the white corporation, freely admits that the surface has only been scratched. But the nation is, at the moment, short even of examples of surface-scratching. "Given the lack of federal commitment," said one Restoration executive not long ago, "it's amazing that it's worked at all," and he is right.

From the beginning, Restoration and D&S have had three major goals, none of them surprising. The corporations sought economic, physical and social progress for the community. What was different about the program—which now is one of more than 40 projects recognized nationally as community development corporations—is the way in which the goals were sought.

It was obvious, when an initial grant of \$7 million came from the Labor Department in the summer of 1967, that Bedford-Stuyvesant needed something immediate and flashy. The exterior renovation program was born. It was an effort, said a Restoration official at the time, "to quickly demonstrate something would happen to change people's lives." Restoration hired 272 unemployed residents and put them to work renovating the fronts of people's houses (and, not coincidentally, learning construction skills).

Many of Bed-Stuy's brownstones are owner-occupied. There are vast differences among published sources on the rate of homeownership, but it is high—somewhere between 25 and 50 percent of the brownstone stock. When the exterior renovation program started, Restoration offered a terrific deal to homeowners who took part: painting of the house, repair of stoops, windows, doors and sidewalks, and two garbage cans with the Restoration symbol, a large "R," on them—all for \$25, regardless of the amount of work involved. Now the program is so popular that a lottery is held to determine which blocks get the treatment. The cost has risen to \$50, but it's still a bargain. A recent report of Restoration noted that the program had changed the face of many neighborhoods, and added:

"Other dividends have been equally rewarding. It has helped spur the formation of new block associations and strengthened

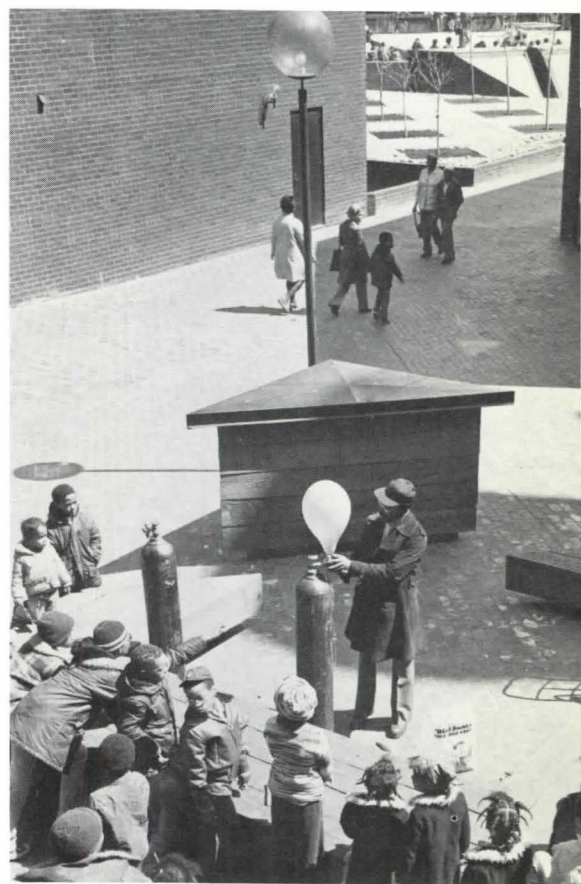


Frontispiece (page 40): Steps to courtyard of commercial center.

existing ones. It has also helped to instill a new sense of pride among homeowners and opened up new vistas of opportunity for local residents who are unskilled and unemployed. Moreover, the success of the program has confirmed what many Restoration officials have contended all along—that if costs were brought more in line with the incomes of the community's homeowners, the upkeep of their homes would rival that of any well-kept community."

After the first summer of exterior renovation, three permanent business organizations were formed by local residents to carry on renovation work in Bed-Stuy. Restoration records show that now 3,074 homes have had their faces lifted, and that 3,351 residents have engaged in *on-the-job* training in welding, scaffolding work, painting, masonry and carpentry. Last summer, the construction workers included women for the first time. The sight of not only a *black* carpenter or mason, but a *black female* carpenter or mason, must be enough to blow the minds of some of New York's segregationist trade unionists.

Exterior renovation was only one of several programs started by Restoration during its decade of existence. During that time, the organization has received a little under \$65 million in grants, about \$50 million of it from the government, the rest from foundations. The other programs include:



*Entrance to the commercial center's courtyard is through the reenforced facade of an old building; balloon man (right) sets up shop.*

**The Restoration Commercial Center:** This is an urban shopping center-promenade-skating rink-headquarters for Restoration designed by Arthur Cotton Moore Associates. Unlike many if not most shopping centers, it is architecturally pleasing. More than that, it is proof, a block and a half from one of the "A" train's busiest stations, that Bedford-Stuyvesant is in resurgence.

In 1967, the land where the center now stands was a defunct milk bottling plant called Sheffield Farms. It was, Restoration noted, "a symbol of failure." The community badly needed a symbol of success. When Restoration asked the Labor Department for funds to help build the commercial center, it wrote: ". . . it will be one of the first significant signs in Bedford-Stuyvesant that promises and expectations relative to environmental improvement can be fulfilled, and that local people can participate and help in their fulfillment." Restoration got the money, and it bought the property for \$300,000. In 1975, \$6.1 million later, the commercial center was almost finished and it opened, with about three dozen stores in 115,000 square feet of retail space, an ice-skating rink, 70,000 feet of office space, the Billie Holiday Theatre (which a critic from the white downtown press referred to as "one of the most modern and comfortable theaters in the city"), and a projected 600 jobs for local residents when everything is completed. Restoration's own offices,

airy and handsome spaces located around a central atrium, stand in the six-story building that anchors one side of the project. An entranceway to the shopping mall leads one through what used to be the front wall of an old brick house.

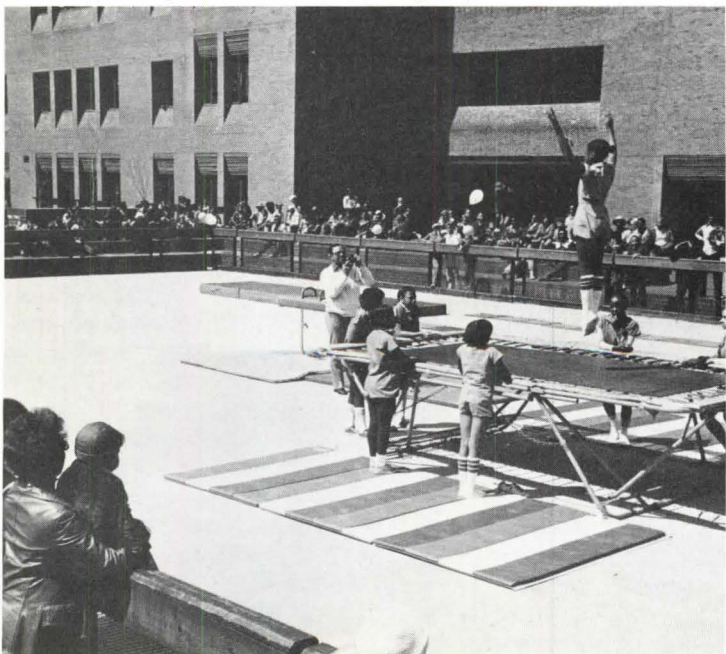
The commercial center was built with about \$2 million from the Office of Economic Opportunity, the rest from loans from two New York banks that were guaranteed by the Ford Foundation. Black labor was used almost exclusively during its construction. And the center represents something else that is very important for Bedford-Stuyvesant: a disruption of the usual flow of dollars from the community to the outside world. It is now possible for people to do a lot of their shopping in Bedford-Stuyvesant, and for their dollars to remain inside the community. That is a distinct and long sought-after reality.

"And there's the reality of the 250 people from Bed-Stuy who built it," says Franklin A. Thomas, the president of Restoration, a former Columbia basketball player, deputy New York police commissioner for legal affairs and a man widely regarded as one of the major reasons for Restoration's success. "They are the people who worked to change this place from the abandoned warehouse what is was to what it is today.

"As you walk around," added Thomas, "look at all the brick we have on this building. We've got brick courtyards, we've got



Atrium of Restoration's office building (above), a former milk bottling plant. Students (below) put on a show in the commercial center's centerpiece, an ice rink that gets year-round use.



facades, we've got brick everywhere. And you don't see one bit of graffiti on it. There just isn't any. And kids are here all the time. Not far away from here is a place that we think is going to be a Medicaid mill. Their doors haven't opened yet; the sign's up and it's covered with graffiti. *Something's* happening here that's right."

There is little question that the commercial center is "right," but Restoration officials probably hope that more members of the community would patronize it. The place is hardly ever truly crowded with shoppers, probably because all its shops aren't open yet and because it doesn't yet have a supermarket.

**The superblocks:** Architects I. M. Pei & Partners and landscape architects M. Paul Friedberg & Associates took two parallel blocks and turned the street portions of one of them into a multilevel plaza, with restricted traffic, play areas, benches and handsome lamps. On the other block, traffic was slowed by elevating portions of the street. Residents of the blocks were asked beforehand what they wanted in the superblocks, and a black contracting firm did the work.

The blocks were financed by a \$1 million contribution from the Vincent Astor Foundation, and they were dedicated in October 1969. Currently they look a bit rundown. Strangely enough, the more developed superblock—the one with the plaza and play area—seems to be in worse shape than the other one. Some abandoned buildings remain there, and there *is* plenty of graffiti there.

"There are some problems," says a Restoration official. One of them is the New York City bureaucracy. The sanitation department, which hates to pick up garbage, thinks it's too difficult to enter the superblocks, and the parks department, which is supposed to sweep the streets in the demonstration area, is hardly ever in evidence. Although there had been talk early on about duplicating the superblock plan at various other points around Bed-Stuy, this has not yet taken place, and superblocks are obviously not high on Restoration's agenda.

**The mortgage pool:** This was the brainchild of Development and Services, the white corporate group. When Senator Kennedy created Restoration and D&S, he filled the D&S board with some of the most influential people in New York and the nation: Douglas Dillon, former secretary of the Treasury; David E. Lillenthal of the Development and Resources Corp.; Andre Meyer of Lazard Freres & Co., the investment bankers; Benno Schmidt, managing partner of J. H. Whitney & Co.; Thomas J. Watson Jr., board chairman of International Business Machines, and William S. Paley, board chairman of the Columbia Broadcasting System. John Doar, a white man of practically perfect credentials, many of them earned in the '60s while shuttling around the South for the Justice Department, was chosen as the executive director of D&S.

It was understood, from the beginning, that D&S was there to lend expertise to the black leaders, not to run the show. Some of the blacks were skeptical anyway; others accepted the premise and agreed with Franklin Thomas that "we're as smart as anybody else; we just haven't had the experience at doing it."

One of D&S's first acts was to invite representatives of 80



*The superblocks: Children do their thing on a plaza playground. A tracery of trees (bottom) graces a superblock's modified street.*

banks and nine insurance companies, most of whom had probably felt Bedford-Stuyvesant was some vast black jungle, defined only by the red lines of lending agencies, to take a walking tour of the community. The result was a \$65 million mortgage lending pool for Bed-Stuy which allowed buyers or homeowners to obtain low-cost, FHA-insured mortgage financing for the purchase, refinancing or repair of one-to-four-family homes. The plan has been a rousing success, and in 1971 Restoration became an FHA-approved lender itself. In the spring of 1975, the corporation began to close Veterans Administration loans.

By February 1976, the latest date for which figures are available, Restoration had closed 1,038 loans totaling \$20,826,046. The foreclosure rate has been less than 1 percent. Restoration estimated that the mortgage pool had saved community homeowners more than \$1 million in excessive fees, "points" and discounts, and that it had brought in more than \$18 million in outside investment money. But the greatest achievement, said Restoration, might be that it had stemmed "the exodus from the community and, having done that, contributed mightily to the future growth and development of Bedford-Stuyvesant."

**Manpower programs:** Back when the war on poverty was being fought, a reporter asked a clerk at a newly opened storefront manpower agency in New York City what the agency did. "Refer people," was the reply. To where? asked the reporter. "I think it's to the state employment service," came the reply.

Restoration's service is a little different. It refers job applicants, but it also wheels and deals with prospective employers itself, screens the applicant to make sure he or she will fit the job, and in general does a quality job. "It's a legitimate referral service rather than a phony one," says Bernard McDonald, a vice president of Restoration in charge of community programs. "We don't send people to other referral agencies. We go to the employers ourselves. We do followup counseling and screening." When something goes wrong, Restoration's job counselors will





go to the job site and talk it over with the employer and employees—something few, if any, other services will do.

Since its inception Restoration has received 8,816 requests for job assistance, and it has made 6,628 placements. The current economic slump has hampered the manpower program's effectiveness a great deal, says McDonald.

**Economic development:** This, of course, was tied directly to jobs, too. It was Restoration's aim both to support local businesses and to entice large, national manufacturing plants into locating plants in the community. There has been a disappointment in the latter category. Only one large firm, IBM, has situated in Bed-Stuy. *That* has been a success, though; IBM set up a computer cable construction plant in a 68-year-old renovated nine-story building in 1968, and this provided jobs for 400 people. It was not just a charitable gesture; the factory was soon ranked among IBM's top 10 plants in efficiency and productivity. The situation became so profitable that late in 1975 IBM announced that it wanted to build a new plant, costing \$10.2 million, in Bedford-Stuyvesant.

But IBM has been the only one, unless one counts the national firms, such as Lane Bryant and Lerner's, which opened shops in the commercial center. Benno Schmidt of J. H. Whitney, the chairman of D&S's board, called it "a disappointment." But, he explained in a recent interview, it was not just a matter of businesses declining to move to Bed-Stuy: "It says something about New York State, and it says something about New York City."

"To begin with," said Schmidt, "most American businesses, while many of them are eager to do as much as they can in the interest of making their communities and their states and their country a better place, in the final analysis act on the basis of what appears to be in the best interests of the corporation. Because that's their job.

"And in talking to businesses about going to Bed-Stuy, I found that, generally speaking, I couldn't even get to the question of whether Bed-Stuy was a good or not-so-good location, because I couldn't get any businesses that were interested in locating in New York City. And *some* of them weren't interested in locating in New York State. The tax climate and other aspects of the business climate just didn't make it attractive. Now, IBM was bold enough and public-spirited enough and big enough and successful enough to be willing to try it. And, actually, it worked out pretty well."

Restoration has had more success with the other half of its economic development operation, and that is the promotion and support of indigenous business leadership. As of February 1976, the agency had given financial aid totaling \$15,770,976 to 113 local businesses. (Twenty-eight of these were construction companies, six were franchise operations, 19 were manufacturers and 24 were service organizations. The remainder were retail stores and others.) Restoration did not just shell out the money, but taught the business people how to keep proper books, how to advertise and promote and so forth. A major success story is Design Works of Bedford-Stuyvesant, Inc., which designs fabrics for outfits such as West Point-Pepperell and which also sells its line of fabrics through high-class New York department stores.

**Neighborhood centers:** Restoration operates five of these, which are in many ways typical of the community centers that came out of the poverty program. There are indications here, though, as in the manpower program, that the centers don't operate just as referral devices but as places where actual problems can get solved. Some centers specialize: One serves the needs of Spanish-speaking residents, one concentrates on health, one works with the aged, one is concerned with the arts and all of them try to deal with the problems of young people.

**Scattered rehabilitation and new construction:** Here is one of the most exciting components of Restoration. The agency has taken 267 units of housing, from all parts of Bedford-Stuyvesant, and completely renovated them. Another 442 units are in the process of rehabilitation. In addition, 190 units of new construction have been completed and another 381 units are in the works.

Abandoned buildings are a part of the way of life of Bedford-Stuyvesant. Walk or ride along almost any street and you will be shocked, perhaps, at the number of buildings whose windows are sealed by gray sheet metal or cinder blocks—not examples of the architectural form that grew out of the riots of the mid-'60s, but testimonials to abandonment. You will be shocked, too, at the number of buildings—many of them fine examples of 19th century architecture—that obviously are abandoned but not yet sealed off. One count puts the total number of abandoned buildings in Bed-Stuy at 1,400. "But what was previously regarded as mere blight," says a Restoration document, "is now seen as a great opportunity, an opportunity to redevelop and reshape Bedford-Stuyvesant."

The thinking, and it is very logical, is that an agency such as Restoration could get the buildings—usually from the city, which owns them because of tax default—and renovate them and put them back on the market, with all sorts of side advantages—the employment of local people in the renovation process, the removal of the buildings as attractive nuisances for junkies and criminals.

It's not that easy. New York City requires that a building remain vacant for three years so that the previous owner has a chance to get it back legally. A lot of deterioration can occur in three years. And if a building looks bad enough, the city's knee-jerk reaction is not to repair it and to return it to the housing stock, but to demolish it.

Still, Renovation has been able to salvage a goodly number of buildings. Its calling card—a big sign stating that the building in question is being rehabilitated by Restoration—looks good and is much in evidence around *the community*. There are some showcases, too.

One of them is the Fulton Court apartment complex by Vitto & Robinson Architects in which five abandoned buildings were combined into a single structure with 42 apartments. A vacant lot behind the buildings was turned into a central courtyard, which now serves as the entranceway for all the buildings. In at least two other places, Restoration is rehabilitating half-block-long stretches of buildings. The lower sections will be commercial space, and the upper floors will be rented as apartments.

David Danois, a Brooklyn native who got his architectural





*The common backyard of five formerly abandoned apartment buildings forms a courtyard for the Fulton Court complex. A building row (right) is to be apartments on the upper floors while the street level portions will be used for commercial purposes.*

training at Pratt Institute, which is situated at one side of Bedford-Stuyvesant, is the director of Restoration's scattered rehab program. When he goes home a night he picks up a hammer and continues renovating his own brownstone.

"In the beginning," said Danois recently, "our job was to try to convince the banks that this was a worthwhile thing—and that, to the banks, meant that there was money to be made by them. We started with five buildings, which were financed conventionally. Since then all the rest have been financed conventionally by New York financial institutions. I think now the banks are convinced. In fact, one of the institutions is willing now to give us a line of credit without even knowing which buildings will be affected."

An important side-effect of the rehabilitation work, said Danois, is the fact that nearby homeowners are prodded into action whenever Restoration moves in to rehabilitate a building. "You see a lot of scaffolds springing up as soon as we start a project," he said. And, it is possible for Restoration to make a contribution to housing integration as well. "The FHA is discriminatory," says Danois. "It sets income levels for the people who live in a building. But we're getting the money from a bank,



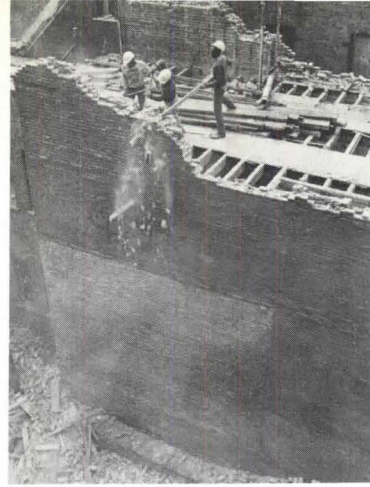
and the bank says, 'All we're worried about is getting our money back.' So we can get low-income and welfare people into our buildings, as well as better-off people. Fulton Court is 20 percent welfare families."

A visitor asked Danois if he felt, in his position at Restoration, as if he were part of the nationwide restoration movement.

"Yes, I do," he replied. "In many places the renovation movement is called 'historical preservation' by the people who're doing it, and it's called 'black removal' by the people who used to live there. But not here. We don't have the problem of the whites coming in and buying up all the fine houses here. There has been a discernible increase in the number of black middle-income families moving in, though. I can personally account for three families that I interested in coming here. I see people at dinner parties, and they're living in suburbia, and they complain about the crime increasing in their home towns, and so forth, and I tell them about the *decrease* in Bed-Stuy."

Restoration must have enemies, but it is difficult to find them. There were quite a few at first, when some existing community organizations were leery about Restoration's coming in and taking over their turf. But some quiet diplomacy and not a small amount of co-optation helped reduce their numbers.

The Rev. Milton Galamison might be expected to be an enemy. Galamison, an important leader of the New York blacks in the '60s, when the civil rights movement finally reached the North, lives and serves as a minister in Bedford-Stuyvesant, and for the past nine years he has been the chairman of the board of the New York branch of the Opportunities Industrialization Center. He was supposed to be an original policymaker for Restoration, but he dropped out in the initial argument over who represented the grass roots. When Milton Galamison talks about



Restoration and its work, he talks about “them” and “their,” not “us” and “our.”

“My feeling about Restoration is rather positive,” he said, though, not long ago. “Of course, everything *anybody* does is just a drop in the bucket. But my feeling, as I look around the community, is that their presence is evident. They *do* involve the community. To the degree that most agencies involve the community, and to the degree that you *can* do it, they do it.”

What, he was asked, about politics? Politics had been fatal to a lot of similar organizations, such as Haryou-Act in Harlem. Had Restoration stayed out of politics, as it seemed to have?

“I think it has risen *above* politics,” said Galamison.

“Politics?” sniffed Judge Joseph B. Williams, who has succeeded his old law partner, Judge Thomas Jones, as chairman of the Restoration board. Williams is the deputy administrative judge of the New York City Family Court, a former Republican who now calls himself a Democrat. “Politics? We haven’t permitted it to happen. Nobody has been permitted to use the corporation to advance himself, except normal staff advancement.

Period. In most programs, you know, you develop little majors and colonels all over the place who just seem to do nothing but knock your program. And if you’re not careful, you spend all your time trying to placate them, and consequently you don’t devote the proper amount of time to running a good program. I think it’s easier to not permit these little sub-power-bases to emerge at all.”

Most other participants in the observers of Bedford-Stuyvesant Restoration agree that politics simply has not afflicted the agency, and that that is one of the major reasons for the program’s success. They also seem to agree that there is no question that the Restoration experience could be replicated around the country, provided there were sufficient interest at the Washington level.

Judge Williams feels, as do a lot of others, that Restoration could not properly be picked up and placed, brick for brick and program for program, in Toledo or Cleveland or Chicago. The problems are different in other places. Bed-Stuy has in its favor, for example, its fantastic housing stock that is only now being rediscovered. That housing stock might not exist in some other city. But the experts believe that, once a community’s own unique problems are analyzed, an effort similar to Restoration could, and should, be mounted anywhere.

The fact that D&S’s board is made up of some high-powered names, they say, should not make any difference. “There’s no difference between a Tom Watson of IBM and the other powerful people in another city,” says Bernard McDonald. “It’s just a matter of the commitment.”

It is interesting to note, as Restoration becomes more and more a force in the life of Bedford-Stuyvesant, that Development and Services—the source of the white commitment—seems to have decreased in importance. When John Doar left D&S to go direct Congress’s investigation into Richard Nixon’s stewardship, he was not replaced, and that was not a reflection on Doar at all but a sign of the growing strength and self-confidence of the black corporation. Gradually the D&S staff disappeared or was absorbed by the Restoration staff. There is talk now of a possible merger of the two boards.

When Restoration and D&S were started, Benno Schmidt spent about 25 percent of his time on Bedford-Stuyvesant matters. Now it’s about two days a month, which isn’t bad, when you consider you’re getting the advice of the managing partner of J. H. Whitney.

Nobody is complaining about all this. Rather, they seem to be saying that this is the way it should be. The whites helped, and they helped, apparently, unselfishly. The blacks still need the whites’ expertise, but they don’t need it as often. The blacks are in charge. It’s like a story Judge Jones, the former chairman of the Restoration board, used to tell about the days of Restoration’s infancy.

“It was important,” said Jones, “that Senator Kennedy not receive too much of the credit. I’d be speaking on some platform with him in the community, and I’d look around at him beforehand and I’d say, ‘I hope you don’t mind; I’m not going to be able to give you all the credit you deserve.’ And he’d say, ‘That’s the way I want it.’” □



# Beyond Disability: A Broader Definition Of Architectural Barriers

Michelle Morgan

Recently, I visited a new bank building that had received an award for its barrier-free design. A handsomely ramped walkway led from the sidewalk level to a wide main entrance. There was a three-inch drop, however, between the sidewalk and the parking area; no curb cut was provided. To the architects, this was a barrier-free design. To my friend who uses a wheelchair and ended up waiting in the car, it was not. Evidently, there is some misunderstanding. What is barrier-free design?

The other day a college student came out onto a bright sunlit porch with white marble stairs. The contrast between interior and exterior light levels was enormous. The marble was glassy smooth, and surface glare made it difficult to determine depth or to distinguish tread from riser. On the first step, the student fell to his knees and narrowly avoided serious injury. Barrier-free design considerations, such as reducing glare, increasing visual differentiation and providing greater traction, might have prevented this accident. In fact, research shows that the cause of many accidents can be traced directly to hazardous design elements.

It is usually believed that barrier-free design is only for a few special people called the "handicapped." In common parlance, therefore, barrier-free issues are often referred to as "handicap design." These two concepts could scarcely be further from the truth.

First, a person with a disability does not necessarily have a "handicap," since a handicap is merely an artificially imposed disadvantage which makes a given task more difficult. Most people with disabilities, however, do operate under an artificial disadvantage in today's built environment. This is primarily because their special needs are not usually considered in architectural design. Yet, with appro-

priate consideration, architectural barriers can be avoided or eliminated in order that persons with disabilities may no longer be at a disadvantage. In other words, such persons, without environmental barriers, are no longer handicapped in terms of mobility and access. It is obvious that a handicap, if it exists, is not caused so much by the disability as it is by the environment that fails to provide for it. Actually, then, barrier-free design is more appropriately "nonhandicap design."

Second, designing for people with severe or permanent disabilities is only a small part of barrier-free design. Many individuals who are not generally considered disabled could benefit from increased environmental accommodation. It is paramount, of course, that barrier-free design enable people who could not previously use the environment to use it freely, but it is equally important to enable those who previously used the environment with unwarranted risk or discomfort to use it with greater convenience and safety. People with extreme needs for environmental accommodation, then, have set the stage for designers to consider human needs in general. Barrier-free design represents an examination of human performance within the physical environment.

To use most architectural facilities in safety and comfort requires stamina, height, sensory acuity, coordination and strength well beyond the capabilities of most people. The present environment is designed for a small minority of "ideal users." In fact, the designed environment is specifically appropriate only for the large, healthy, adult male in his late teens or early 20s. In effect, members of the population who are older, younger, of the opposite sex, or who possess lesser capabilities than this "ideal" are at a disadvantage in the built environment. They operate under a handicap.

Several categories of animals in nature tend to be especially vulnerable to the perils of the environment. These are the very young, the pregnant, tenders of the young, the infirm and the aged. These conditions are usually caused by the natural life processes of growing up, reproducing and aging. Human beings, of course, go through these same life stages, and



some endure long-term disabilities as well. It is not surprising to discover that people in preprime or postprime periods of life, as well as those whose physical or mental capabilities are less than ideal, experience handicaps of varying degrees in the designed environment.

In brief, all people pass through stages of ability and disability: children who have not yet attained adult strength, stature or mental processes; pregnant women who, even without complications, suffer reduced stamina, mobility, agility and balance; persons who tend the very young and are encumbered by carrying infants, maneuvering baby vehicles or moving hand-in-hand with a toddler whose mobility is tenuous at best; aging persons who

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are subject to progressive loss of physical, perceptual and mental faculties. In addition, there are the many people who at a given time may experience temporary disabilities as a result of illness or accidental mishap. The designed environment at present satisfactorily accommodates only a small number of people who are in their prime period of the life cycle and who also possess maximum physical and mental capabilities. All the rest of us who are in the majority could benefit greatly from barrier-free design.

The effects of physical environmental barriers on a large segment of the population can be best illustrated by example. Consider an ideal user, a young adult in full possession of his or her faculties.



Burdened by nothing more cumbersome than a briefcase, he or she can readily negotiate a revolving door. Although this type of door has been accepted as a suitable entrance to a public building, it entails obvious disadvantages for many people, including those who have no disabilities. It goes without saying that a person in a wheelchair would be denied entrance to a building equipped only with a revolving door. Similarly, a person pushing a baby stroller could not pass, and persons leading toddling children, walking on crutches or carrying parcels would also experience difficulty. A child alone, if he could operate the door at all, would risk pinched fingers or perhaps more serious consequences in case of a fall. Like the

child, an elderly person may not possess the strength and agility to cope with the door. These are only a few of the many physical inconveniences and safety hazards inherent in this ill-conceived design.

In order to eliminate similar barriers, the designer must understand the total problem to be solved. Each user group and each environmental accommodation must be considered, not as an isolate but as an integral part of the larger system. Architects are aware that the most obvious type of barrier is the kind that prevents wheelchair mobility, but often the designer has failed to remember that the wheelchair user is only one among a range of users. The designer must ask, "Who are all the users of the system? What type of environmental modification would suit the needs of each user group?"

Then the designer might propose main entrance doors that are wide enough for passage of persons flanked by youngsters, persons walking abreast for support or guidance or persons in wheelchairs; responsive enough to be opened easily by an elderly person, a child, a person with impaired coordination or someone burdened with parcels; slow enough in closing to allow for negotiation by persons using artificial mobility aids, the elderly, the blind or young children; gentle enough in closing to not upset the precarious balance of a person with a cane or with parcels, or a pregnant woman.

When the respective needs of each user group are enumerated, the designer may be faced with a case of conflicting interests. For example, research has demonstrated that stairs are preferable to ramps for users who are physically fit. Similarly, as in the case of curb cuts, there are indications that the clear drop-off of a step is often easier for a blind person to identify and negotiate than is the slope of a ramp. Conversely, steps impose severe handicaps, if not totally impassable barriers, for many would-be users.

This type of situation calls for alternatives: grading to eliminate or reduce the incline, stairs for those who cannot directly climb hills to reach a building, ramps for those who cannot climb hills or stairs, lifts for those who cannot climb hills or stairs or ramps. Obviously, eco-

## The built environment handicaps most of us at some stage of life.

conomic considerations prohibit the use of every alternative in every situation. The designer must choose the solutions which best accommodate the total range of proposed users.

It is important to consider the broad range of application of barrier-free design, but an understanding of how each design element interacts with every other element in the access system is also necessary. In other words, each time the designer considers one design aspect, he must ask, "What comes before it? What will follow? And how are they related?"

Consider the example of the award-winning bank. The architects had identified wheelchair users as potential customers of the bank. This user group, they knew, would require a ramp to the front entrance, but the designers did not consider the ramp as it related to the total access system. The bank was inaccessible because the architects did not explore what elements needed to come before the ramp and what elements needed to follow.

One method of providing an integrated system would be to examine a complete sequence of activities performed by any bank customer. This would provide a barrier checklist based on the tasks that the customer must perform.

Are convenient parking spaces provided? Are they wide enough to permit unloading and transferring to a wheelchair? Is there a curb cut to the sidewalk? Is the ramp suitable for wheelchairs? Can a wheelchair get through the door? Is the floor too slick for traction? Is the carpet too deep to roll on? Is there a teller's counter low enough for interaction of bank personnel with the wheelchair user? Can a person in a wheelchair reach the fire alarm? Is there an emergency exit suitable for wheelchairs? Are rest rooms accessible?

Designers may have the best intentions and employ the most methodical procedures, but projecting the needs of special populations into workable design solutions is not easy. For a designer whose steady hands can draw precise lines, it is difficult to envision the needs of someone with severe arthritis or spasticity. For a designer who can walk, it is hard to know the problems of life in a wheelchair.

An anecdote will illustrate: Participants at a design conference were discussing environmental problems of the blind. It was suggested that placing control elements in a uniform location in public facilities might aid people in locating things by touch. One designer suggested that all light switches be placed at a standard height to the right of every door. The matter was thoroughly discussed before a visitor with a white cane pointed out that light switches, in general, are of little use to persons who cannot see.

This incident and other comparable misunderstandings illustrate the value of a design resource that is often overlooked. Information can be provided by the user that cannot be obtained from any other source. This is particularly important in designing for population groups with which the designer himself cannot identify. People with disabilities, consequently, are becoming increasingly concerned about their environment. Many have already organized to influence architectural design. Special populations themselves, and not the charitable organizations who claim to represent them, are the best qualified experts in the field of design criteria for vulnerable user groups. Designers cannot create a barrier-free environment without the extensive input of users into the design process.

For the last two decades, many researchers have explored the field of environmental perception, yet comparatively little is actually known about what messages come across as a result of the physical environment, nor do we always know how people tend to interpret these messages or how they act upon what they perceive. Still, a few things are known which relate directly to barrier-free design. They are embarrassingly elementary considerations, but they are often overlooked.

Let us reconsider briefly the case of the revolving door. An elderly person might lack the strength and agility to use it. Aging also causes perceptual difficulties, and an older person may have trouble in judging the door's timing, for example. Or he may perceive a drop-off where, in reality, there is only a change in the shade of the carpet at the threshold. Because of these and other factors, the elderly person

will require a longer time interval to operate the door than would a younger person. Confusion about the door itself, coupled with fear of being rushed or of detaining others, could well result in the elderly person's relinquishing attempts at entrance altogether. The person who cannot manipulate his surroundings often experiences confusion, frustration and negative feelings of self-worth. Making the environment physically responsive may reduce or avoid these detrimental experiences.

In addition to reinforcing feelings of incompetence, architectural barriers may convey social ostracism. Edward Steinfeld in *Interim Report: Barrier-Free Access to the Man-Made Environment* (Washington, D.C.: HUD, Office of Policy Development and Research, 1975) has summarized: "Territorial behavior is closely associated with social dominance. Exclusion through environmental barriers can be viewed as a form of territorial behavior whereby the able-bodied claim the best space. The disabled act out their low position in the dominance hierarchy by being forced to occupy stigmatized institutional space." The actual exclusion from architectural facilities can be terminated by removal of physical barriers; ironically, however, the social stigma is carried over even in many barrier-free design attempts.

For example, a new municipal complex complied with code requirements by providing one obscure side entrance that was accessible to wheelchairs. Because this entrance went through the city hall, so did all wheelchair users, regardless of which other facility in the complex they wanted to visit. The location of the entrance, and the fact that there was only one, was inconvenient enough. In addition, many activities took place on weekends when the city hall was closed. All weekend functions, of course, were inaccessible to wheelchair users.

Any time a designer provides a solution for a person with disabilities which is of lesser quality and convenience than what he would provide for himself, he is creating a psychological barrier. An isolated entrance, for example, equipped with institutional looking ramps and railings, and labeled with a wheelchair symbol, is not appealing. Yet, this type of solution is

often proposed in the name of barrier-free design. Such an accommodation takes on the taboo quality of a restricted zone, a service entrance or an entrance for emergency use only. Above all, it lacks dignity. The same kind of disregard is illustrated by the many "accessible" toilet stalls that are wide enough for a wheelchair to enter but not deep enough for the door to be closed. These are strong environmental cues. They seem to label the users of these inferior accommodations as second-class individuals.

This type of environmental stigma is inexcusable. First, such design solutions are degrading to people who have no choice but to use them or stay home. Rehabilitation studies indicate that many persons with disabilities are so sensitive to derision and public exposure that they may well choose to remain confined if going out entails embarrassment. This defeats the whole purpose of eliminating barriers. There is little benefit in these token attempts to provide physical access if it cannot be used with dignity.

Second, if barrier-free accommodations are not convenient, well located and esthetically pleasing, they will not be used by everyone who could benefit by them. Because of the stigma attached to disability, many people with nonvisible afflictions will go to great extremes to avoid being identified as disabled. Given a choice, they would endure the physical stress of climbing stairs, for example, rather than to associate themselves with a stigmatized group by using a ramp.

Degrading barrier-free accommodations also ward off other users. A young person with a baby stroller, for example, may not think to seek out an isolated ramped side entrance. Even if he did, the odds are that he would not use it because of some feeling that it is reserved for someone "different" and is off limits to "normal" people.

The international symbol of access, widely acclaimed by proponents of barrier-free design, unfortunately actually reinforces stigma and segregation. Depicting a person in a wheelchair, the symbol serves to point out the inadequacies of the user instead of the special features of the design accommodation. The purpose of the symbol, presumably, is to show the

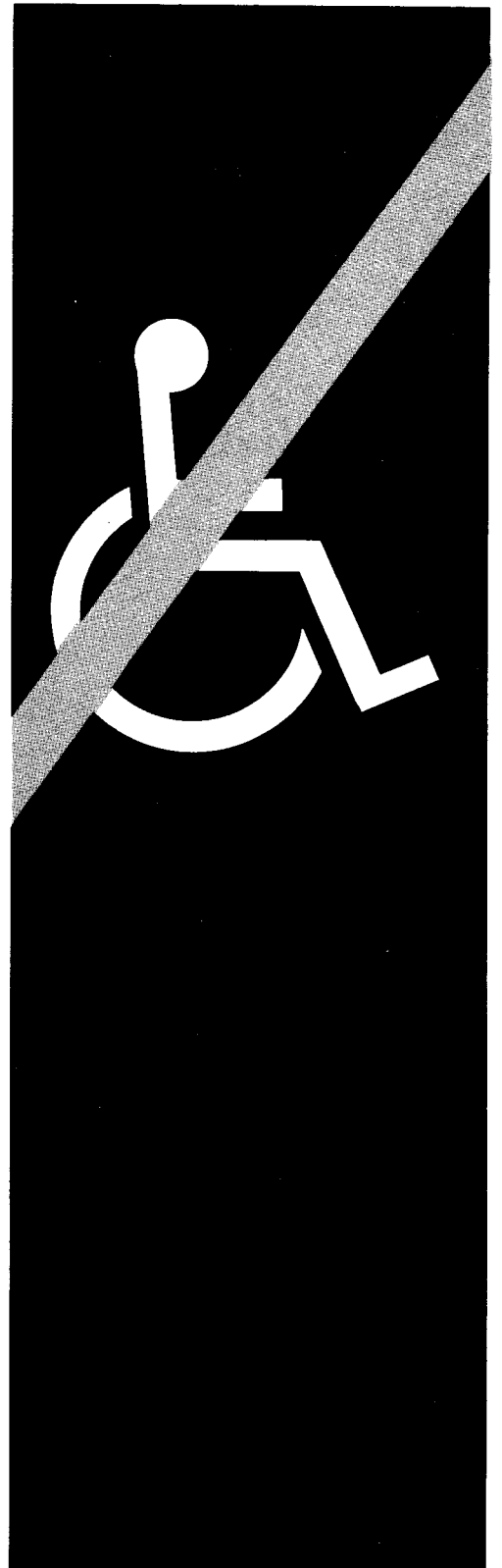
location of wide doors, ramped inclines, elevators, low water fountains, large toilet stalls, pay phones with seating accommodations and the like. Instead, it erroneously signals that the design is only for people in wheelchairs and, by implication, excludes all other would-be users.

How many times have you seen a crowded washroom with people standing in line to use the "normal" toilet stalls while compartments with a wheelchair symbol remain empty? Or how many people, carrying packages or accompanied by young children, would wedge themselves into a conventional phone booth rather than use the accessible booth that bears the wheelchair symbol? Disability and stigma go hand-in-hand at this time in our society. To label architectural accommodations with a symbol depicting disability is to make the use of that facility less pleasant for those who must use it, and out of the question for everyone else who might otherwise want to use it.

Granted, until all accommodations are accessible to all proposed users, there is value in signage that indicates accessibility. But let those symbols convey the strong points of the design, not the weaknesses of a small portion of its potential users.

As stated before, there is little verified knowledge about the psychological effects of the environment on people. As a rule of thumb, however, it can be stated that all users of the built environment must be regarded as worthwhile human beings first. Their differing physical or mental capabilities must be accommodated in addition to—not instead of—this primary consideration. Translated into design recommendations, this means that every alternative mode of access should be as convenient, as safe and as beautiful as every other alternative, to the best of the designer's ability.

Design cannot remove all social and psychological stigma currently associated with disability, but it can provide environmental accommodations which can be used with dignity. Design cannot reduce the number of persons with disabilities, but it can reduce the number of persons operating in the environment under an artificially imposed handicap. □



# The Influence of a Firm's Structure On Design Quality

Judith R. Blau

This article is based on data collected from a random sample of 153 New York City architectural firms and the architects who work in them. One aim was to analyze the influence that organizational characteristics have on such things as staff morale, decision making and the various aspects of project design, including its quality. Another purpose was to examine relationships between office structure and design quality. Although still in the early stage of analysis, the data suggest how the organizational setting affects creative endeavor. The findings, incidentally, challenge some assumptions made by organizational theorists.

Architecture represents the intersection of four distinct roles: artist, technician, businessman and professional. In his study "Architecture and Professionalization: A Comparative Perspective," John Cullen has indicated that architecture ranks relatively low on various dimensions of professionalization because of its important artistic component. A comparison can be made between architects and other professionals who work in organizations and for whom achievement also primarily depends upon unique and creative contributions rather than technical competence. Considerable research has been undertaken on the organizational contexts of such professionals, including, for example,

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commercial artists, scientists and research engineers. But the chief focus has been the dilemma faced by professionals who work in bureaucratic organizations with a nonprofessional management.

This focus, as sociologist John Brewer has pointed out, has led to the as yet untested assumption that within professional organizations such bureaucratic characteristics as extensive rules and procedures, formalized work requirements and narrow specialization hinder the work of professional staff.

These assumptions are made by sociologists, but they appear in architectural literature as well. A derivative proposition is that the large architectural firm does superior work *because* of its vast resources and *in spite* of its essentially bureaucratic structure. The small firm lacks the resources but benefits from the absence of bureaucratic features that its small size makes possible. On the other hand, some researchers maintain that the formal structure which size promotes is one of the reasons for some large firms' excellence in design.

Here I will examine these opposing views of the influence of bureaucratization on design quality, using three indicators of bureaucratic complexity: number of hierarchical levels, number of subunits and diversity of services, as well as the use of personnel regulations.

Another controversy is touched upon here: whether centralized or decentralized offices produce superior work. The traditional view has been that the design architect must maintain autocratic control over decisions so that concept and details add up to a consistent, and perhaps inspired, whole. This view is opposed, however, by advocates of the increasingly popular decentralized or "team" approach who advocate that collaboration among specialists is essential.

The measurement of quality has proved to be difficult and controversial. "Do we suppose," asks William Seitz, curator at the Museum of Modern Art in New York City, "that there exists in all works of art some isolable quintessence 'quality' that can be measured like voltage or baromet-

ric pressure?" In order to answer, first we must ask: Do experts agree among themselves as to what is great and what is significant? And, second, does the work survive through time?

In my study of New York City architectural firms, I have used five measurements of quality: number of awards the firm has received in the past five years; number of articles that have appeared in architectural journals about the firm's work in the past five years; average number of awards per project; index of the firm's visibility among the faculties of architectural schools, and the average evaluation of the firm by the faculties. The correlations among these measures are very high, (ranging from .56 to .73), indicating that experts do agree. For a variety of reasons, the measure that I have used is the number of awards received.

**Bureaucratic complexity:** Perhaps it is not surprising that size is closely correlated to winning awards ( $r = .63$ ). Large firms do more work than small ones, and their statistical chance of winning awards is greater. But this alone does not account for their success. The correlation between ratio of awards to number of projects and size is also positive ( $r = .24$ ).

Indications are that the effect on winning awards of factors usually associated with large size firms becomes insignificant in the absence of large size. To give an example, the age of a firm is highly correlated (.42) with winning awards. If taken alone, this might be interpreted to mean that long experience and established networks with clients and other organizations are beneficial, but the evidence is that only when the older firms are also large do they win more awards. In other words, being old and winning awards are related, but *only* because older firms tend to be large (and large firms are more likely to win awards than small ones).

I will not discuss all of the results, but will instead concentrate on those that deal with the two competing hypotheses men-



## A researcher seeks relationships between organization and output.

tioned earlier. Rephrased, they are: (1) A complex structure and the bureaucratic characteristics that size promotes have negative effects on organizational performance, particularly when creative work is a large component of it. (2) A complex structure is advantageous because tasks can be standardized and delegated to lower echelon personnel.

To measure the degree of bureaucratic routinization, the amount of personnel regulations and written procedures were tabulated, and it was found that the number had no influence on award winning, once size was taken into consideration. The same was true of measures of technological sophistication, such as the use of computers and photocopiers.

However, the findings that deal with the major dimensions of structural complexity—horizontal and vertical differentiation—would seem to provide support for the first hypothesis. In large offices, subdivision into many levels and departments does not correlate positively with awards.

Although this same finding with respect to levels is reported by other researchers, and is not particularly surprising, the one that involves number of divisions is not consistent with organizational theory and results from other studies. For example, James Q. Wilson maintains that the diversity made possible by having many major subunits is a prerequisite for innovation. And Peter M. Blau has found that differentiation in universities and colleges (number of departments) has multiple advantages for academic quality.

A possible explanation as to why our

results are opposite to those reported by other researchers is that the work of architectural offices requires an unusual amount of coordination across departmental lines. It is a rare office that is organized in such a way that a project stays within a division from beginning to end. While some specialization at the top level is necessary, very much specialization apparently taxes the staff's ability to maintain communication and to coordinate the work process. Thus, in large offices, subdivision into many departments does not promote quality work, whereas in smaller firms, without the coordination problems that large numbers pose, such subdivision is beneficial.

**Factors that compensate for small size:** Although it is unlikely that small offices have diverse structures, there is some evidence that if they do, they are more likely to win awards. The data reveal that providing diverse services, such as land use studies, interior design and industrial layout, brings no particular advantage to large firms. On the other hand, if small firms somehow manage to extend the range of their services, they nearly can overcome the disadvantage of having few staff members and are almost as likely as large firms to win many awards.

Similarly, large firms are most likely to have personnel rules, yet are somewhat disadvantaged by them, although not significantly so. Small firms benefit slightly and very small firms benefit tremendously by such rules, although their likelihood of having them is small. Thus, while having personnel regulations is directly related to winning awards, their marginal influence on awards is inversely related to size. This finding distinguishes architectural offices from other types of bureaucratic organizations. In a study of government agencies, for example, it was found that extensive personnel regulations improve performance independent of other organizational characteristics, including size.

To summarize, some of the disadvantages of small size can be overcome by having a differentiated structure, diverse services and formalized personnel rules. Large firms have better chances of winning awards unless small firms have bu-

reaucratic characteristics usually found only in large firms, in which case their chances are just as good as those of large firms. And, strangest of all, these very characteristics do not increase the chances of large firms.

**Staff participation:** There is some indirect evidence that centralization of decision making in architectural offices promotes high quality. John Brewer suggests that excellence is achieved if "architectural design is sharply differentiated from administration and centralized in the hands of design and administrative partners in the firm." This differentiation frees the principal architect to concentrate upon design while centralization allows him to keep control over tasks which must be delegated.

Although little participation, as indicated by few staff meetings, is advantageous for small and very small offices, large offices lose the "natural" advantage they would otherwise have if there is little participation, or few staff meetings. This finding almost exactly replicates one reported by the Royal Institute of British Architects in *The Architect and His Office* (1962). In this study of 63 private and public English firms, RIBA found that if the medium-sized office is under the direction of someone with high esthetic standards, staff members are willing to accept his decisions, resulting in higher overall performance than is generally found in medium-sized decentralized offices. But beyond a certain point, "the attempt to maintain personal control is defeated by the size of the organization, and there is a danger of losing the force of central direction."

The findings here show, then, that large firms are unlikely to encourage wide participation of staff members; failing to do so hurts the quality of their work, which benefits from much staff participation.

*continued on page 106*

# The Varied and Significant Roles Played By Architects in Industry

Architects who work in the corporate world instead of in architectural firms sometimes have felt themselves step-children in both the Institute and the profession. But recently there have been perceptible signs that they are coming into their own.

One reason may be that jobs in industry are looking better to more architects as employment in architectural firms declines. Another is that the corporate architect is assuming an ever more important role on the client side of the \$16.4 billion manufacturing and commercial construction market.

In an effort to get a sounding on corporate architects and their roles, the JOURNAL spoke to several about their responsibilities, rewards and problems. One of them was Tom Howell, AIA, of Caterpillar Tractor Co. in Peoria, Ill., a corporate architect with major responsibilities.

Howell has been with the company since 1951 and directs a staff of some 35 architects and engineers. The main tasks of his group are to define programs for projects, estimate their costs and contract them out to consultants. "I would say that it has been several years since I've considered myself performing the basic functions of an architect," Howell says. "As my responsibilities increased I found that I was becoming a manager of people rather than a technical designer."

Before 1951, Howell had worked in general contracting, the retail lumber business and a small architectural practice. He was attracted to Caterpillar by relatively high wages, security and opportunity for travel. "Even in my younger days I felt the need to get rooted," he says. He believes that such tendencies are fairly common among corporate architects. In addition to security and a relatively high salary, he has found at Caterpillar "broad career opportunities and an unlimited variety of assignments."

When making his decision to join the company he was warned by friends that there would be no design challenge. "Factories—how unimaginative and mundane can you get," he recalls an architect friend saying. But, he says, "We have much the same array of projects that a small archi-

tectural firm might encounter over a number of years, for all manufacturing plants have auxiliary facilities—office buildings, training facilities, auditoriums, food service operations and so on. All in all, he says, he has no regrets.

"My major problem as an architect in industry," says Howell, "is the same as that of any professional in a support function. We are not in the 'mainstream' of the corporate operation—we are to be tolerated, not necessarily fully accepted." (A 1974 survey indicated that only two out of every 10 corporate architects are in management.)

The responsibilities of Walter Hart, AIA, director of facilities planning at American Airlines, are broader than those of most corporate architects. His group of five professional designers and planners is responsible not only for creating the master plans for new facilities, and for designing changes in existing terminals, but also for forecasting future needs for facilities. Working in conjunction with the American Transportation Association, Hart makes forecasts for the industry as a whole. "A lot of our work is to prove that expansion programs are not needed," he says, and claims that by developing careful forecasting methods his team has been able to "do away with the bad and wild planning of the past." Hart's extensive responsibilities make him a more integral element in the corporate structure than most architects because, "we know exactly how the airlines tick in all their aspects—how the market works, how transfer of passenger works and so forth."

A native of Holland, Hart entered the corporate world via KLM just after World War II when private architectural work was scarce. In 1965, he joined American Airlines as director of design, and together with Henry Dreyfuss helped create the corporation's "visual image."

In assessing the opportunities of corporate architecture, Hart quotes one of his young staff members who says that industry provides him with a broader scope of experience than could an architectural firm, allows him to participate in the shaping of important programs, offers experience in administration and finance and provides insight into the decision-making

process of industry. Hart adds that he has more responsibility than he could in a firm unless he were a principal.

Tom Belanyi, AIA, is a staff architect for IBM in Poughkeepsie, N.Y., where his primary function is to advise a medium-sized in-house design group that handles the company's local building rearrangement projects. On occasion Belanyi also does preliminary designs and specifications.

He finds it is no more difficult to sell his ideas to management than to any customer, and for him corporate rules and regulations are no more restrictive than those laid down by other clients. "The steps are clear," he says. "Everybody knows what is expected."

Unlike some corporate architects, Belanyi believes there is ample room in industry for design-oriented architects. "There are no ideal conditions for good design," he says, "unless you design for yourself alone. It's up to the individual to make the most of his situation." Similarly, he doesn't believe that industry's economic constraints are more of a deterrent to distinctive design than those of private practice.

Robert H. Goodenow, AIA, is director of facilities planning and development for the Xerox Corporation's Latin American Group and the highest ranking architect in the corporation.

His office in Stamford, Conn., consists of just one other professional and a secretary, but Goodenow also has responsibility for supervising regional offices in Mexico City, Caracas and Rio de Janeiro. His functions are mainly administrative, but he says he does "a lot of design out in the field on the back of envelopes, a lot of facilities planning, site selection and general coordination."

Although he feels "out of the mainstream," as he believes virtually every corporate architect is, he says, "I've made enough noise and taken enough initiative so that people take notice." He claims to have a good deal of autonomy and to have "developed a system to beat some of the red tape, to adapt it to our needs."

Goodenow's main complaint is that local consultants in Latin America insist upon making their projects look like



“something in Cleveland” instead of using local crafts, idioms and materials, which they consider “unmodern.” He acknowledges that “deep down, and after all is said and done, from the point of view of professional satisfaction and independence, I’d probably be better off in private practice. In a corporation there’s always someone above you.”

J. P. Andrews, AIA, joined the corporate design center at Westinghouse in 1967 and became its director six years later. As such, his position is singular among architects working in industry for at least two reasons: First, he has responsibility not only for architecture and interior design, but also for product design and graphics, and his responsibilities do not extend to budgeting and project management, but are confined to what he calls “establishing design conscience.”

Second, Andrews is also executive assistant to the vice president for personnel and administration at Westinghouse, and in this capacity he works on corporate-wide budgets and programs. Unlike most architects in industry, he has thus crossed the line into the mainstream of corporate operations. He says he will shortly be forced to decide whether to enter general corporate management and abandon his profession, at least temporarily.

Says Andrews, “I don’t believe there exist in American industry very many top-notch architects. Not many corporations want to attract them; not many have a consistent interest in their facilities.” The main reason for this, Andrews believes, is that although corporations have developed effective systems for handling personnel and money, they have no such methods for dealing with long-term needs for facilities. Historically, “Manufacturing types have been responsible for facilities,” says Andrews, “and usually they operate on an

ad hoc basis.” In the long term, this is, of course, inefficient and very costly, and Andrews predicts that in the near future capital shortages combined with energy and resource insufficiencies will force industry to take a more rational approach toward facilities planning. One result, he thinks, will be new opportunities for architects in industry. About his own career choice, he has no regrets, feeling that he has been exposed to a much broader range of experience than he could have as a private practitioner.

Herbert Blackwelder Sr., AIA, is senior design consultant for du Pont de Nemours & Co., in Wilmington, Del. Unlike most corporations, du Pont is almost entirely decentralized, with each industrial department (textile fiber, film, organic chemicals and so on) being a separate “profit center.” While this method does seem to create a feeling of responsibility and furnish incentive for many, the result for Blackwelder and his team is to provide the equivalent of “hundreds, even thousands of clients.” It also forces them to compete with private firms, since du Pont departments have a choice of using either the corporation’s architectural and construction department or calling on an outside firm to do their programming and planning. The system also militates against long-term planning, since each department is mainly concerned with short-term profits.

Blackwelder has been with du Pont for 25 years now and observes that corporate architects tend to be greatly underappreciated by other practitioners. They have made a significant contribution, he says, by “informing industry and selling good design when not long ago corporations ignored it altogether. During my career, change will not have occurred to the extent that we win AIA gold medals, but at du Pont we are no longer doing bare bones

buildings all in du Pont green that show no concern for human beings.”

Robert Fearon, AIA, is manager of design and engineering for Michigan Bell Telephone, and says it’s like running his own firm except, “because I live with the product, I’m constantly challenged to improve it.” Although he claims never to have had to compromise design quality for purposes of economy, Fearon looks upon himself as a business-oriented architect, and along with the corporate architects introduced earlier, has some advice for architects who want to do consulting work for industry.

“The practicing architect does himself a disservice if he does not first learn the corporate structure of the company,” says Fearon, because the consultant must be able to work within that structure to get and maintain his client.

Different corporations have very different ways of hiring and working with consultants. Some, like Westinghouse, want to take the initiative in seeking out architects and will survey completed work before even talking to the firm’s principals; others, like Caterpillar or Michigan Bell, generally wait for new consulting prospects to make the initial contact. Many corporations, Caterpillar among them, give preference to consultants with comparable industrial experience; a few, like Westinghouse, look primarily at a firm’s problem-solving ability and are more interested in a fresh approach than a tried one. Some corporations are more image-oriented (and by extension design-oriented); others are concerned almost solely with economic considerations. The variations and discrepancies go on and, according to Fearon, the consultant who isn’t familiar with his prospective client’s situation will find himself seriously handicapped.

In many cases, he says, the person with the title of “corporate architect” is not an architect at all. Don’t be surprised if he “is a marketing or business major whose greatest involvement in the building process is having finished an attic or a basement for a recreation room.” The main concern of “all of the corporate architects and owners that I have come

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# Ancient Monasteries as Cells of Planned Growth

John J. Desmond, FAIA

In introducing the concept of the "growth unit," the report of the AIA's national policy task force encouraged us to look at the built environment, existing and future, as a composite of time-related elements, each having its own internal structure and unity. In doing so, I was led to the study of monasteries as a sort of prime growth unit for a world emerging from the chaos known as the Dark Ages.

The evolution of monasteries in Europe coincided with the elevation of architecture from the crudest piling on of rocks to its highest esthetic expressions. The purpose and program of this building type remained consistent from the sixth century to the 13th while the concepts of siting and structure grew in sophistication. Their variations in form demonstrate the architectural responses to these evolving concepts.

I believe the study of these cells of planned growth, which exist in an intriguing variety of settings, offer a wellspring to students of planning and to anyone concerned with the three basic timeless imperatives of architecture:

- A building must relate to its site;
- Its form must relate to its manner of construction, and
- Its form must relate to its interior functions.

I have tried to portray this evolution in these drawings.

The monastic ideal seems to have been a spontaneous reaction to the worldliness of the late Greco-Roman world—in Toynbee's words, "a response to the moral failure of the world of Plato and Aristotle." From the densely settled and worldly eastern cities of this era and particularly those of the Nile valley, Christian followers, men of strong moral feelings, withdrew in silent protest into the surrounding deserts to live solitary lives of extreme austerity. St. Anthony became the most renowned of these solitary ascetics; St. Pachoninius became the father of the ascetic community family, forerunners of monasticism.

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**Mr. Desmond** of Desmond-Miremont & Associates Architects-Engineers of Baton Rouge, La., has been a member of the AIA urban design and planning committee and a frequent member of R/UDAT teams.

During the four centuries after the death of Christ, this ideal of monasticism crossed the Mediterranean to Italy and worked its way into Gaul. In North Africa, under St. Augustine, it became allied with the Church, having been an unrecognized offshoot of the structured Church.

In 432 A.D., Christianity reached the perimeter of the known world, the Celtic island, Eire, through the work of the dedicated Welsh-born St. Patrick. Having been a captive shepherd in Ireland, he was imbued with a persistent calling to learn and spread the teachings of Christianity. The learning was accomplished in the monastic centers of Gaul, particularly under St. Martin of Tours and St. Germanus of Auxerre.

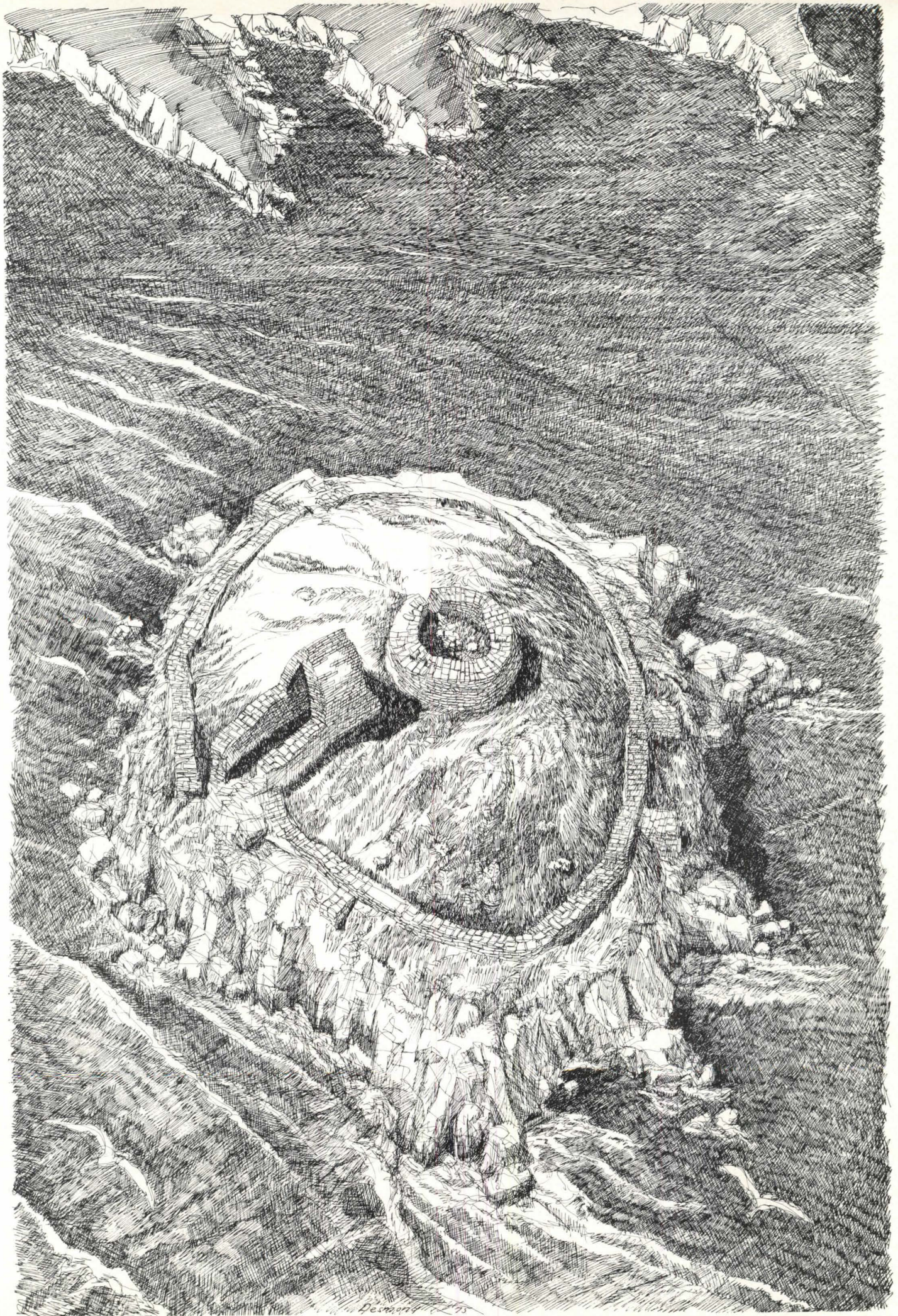
For 30 years, St. Patrick converted the Irish and grafted into the tribal clan society an episcopal branch which became immediately and permanently effective. This branch took a monastic form with the head of the clan's abbot recognizing no superior between himself and Christ.

The urge for renunciation and withdrawal eventually led these Celtic monks to the fog-shrouded, storm-buffed rock islands of the western coast. Here, where survival itself was a superhuman accomplishment, these tough, dedicated men brought their treasured Irish manuscripts, preserving the last remnants of Greek culture known to the Western world. Sir Kenneth Clark has characterized them as being the guardians of civilization, through whom our Greek and Roman intellectual heritage was transmitted by the "skin of our teeth."

While the study of monasticism is in many respects a study of order, stability and fixity of domicile, these crude settlements seem to express the opposite. Indeed, the characteristic restlessness of the Celt, along with his intense love of learning, proved to be his most valuable contribution. From these sanctuaries, the Irish monks sailed northward to the Scottish island of Iona and to Britain's Lindisfarne to Christianize Scotland and England. John Scotus and others penetrated the mainland up the Rhine and the Danube and into the courts of Charlemagne and Charles the Bald.

**Church Island:** Located off the southwestern tip of Kerry in Ireland, Church Island is one of these early sea-bound monastic settlements. The island, only 150 feet in diameter, is rimmed by a stone wall made of a local slate split in natural layers. These slates were stacked without mortar to form an enclosure, probably more symbolic than defensive. Inside were two building types—a dormitory, the round structure, possibly roofed with a beehive dome, and a oratio, the vaulted building to the left. Both were built without mortar by simply corbeling each layer of slate inward. Their corbeled roofs are lost now, but some such structures are still intact nearby.

The outstanding impression here is one of nonplanning. The circular form was characteristic of the early Druid and Celtic clan cultures and was here continued but with no apparent logic dictating the location of buildings within the enclosure. The structure was naive, being beyond the sphere of Roman influence which had reached only the edges of Wales and Scotland.



**Canigou:** By the year 1000, monasticism had become institutionalized (mostly through the order of St. Benedict in Italy) and the ideal of a series of buildings around a central court had been established. Here at Saint Martin-du-Canigou (1000-1026), situated precariously on a mountain spur deep in the Pyrenees, the Benedictines built a remarkable structural complex.

It was at a crossroads between Roman, Moorish and early Christian cultures and it drew architectural techniques from all these sources. The Moorish influence is seen in the horseshoe arches of the colonnades and in the cushion capitals of the nave. The long tradition of Roman structural techniques was carried forward through the Dark Ages by a survival of the traveling Comacine masters.

Originating in Lombardy and building on the ancient Roman and Byzantine techniques, they developed the *opus gallicum*, walls built of small split stones laid like bricks over a rough rubble core. The Roman use of mortar and the vaulting

techniques were transmitted through these generations of Italian masons. At Canigou these techniques give a consistent and rich textural quality to the walls and vaulting. The lack of ashlar stone is especially noticeable in the vaulting.

The nave is barrel-vaulted throughout and lit only at the ends. However, in the bulging east end, there is an embryonic foreshadowing of the elaborate forms into which the Romanesque and Gothic church choirs evolved. The tower which superbly completes this composition shows all of the characteristics of the Lombard style topped by Moorish stepped battlements.

The standard Benedictine plan here imposed on an uneven site has produced a series of spaces and levels which enhance the complex.

In the Burgundian section of south central France, monastic development reached its peak. Here an area traversed by ancient Roman routes and spotted with Roman sites remained a crossroads and received fertilizing contacts from western France, from the Lombard school and

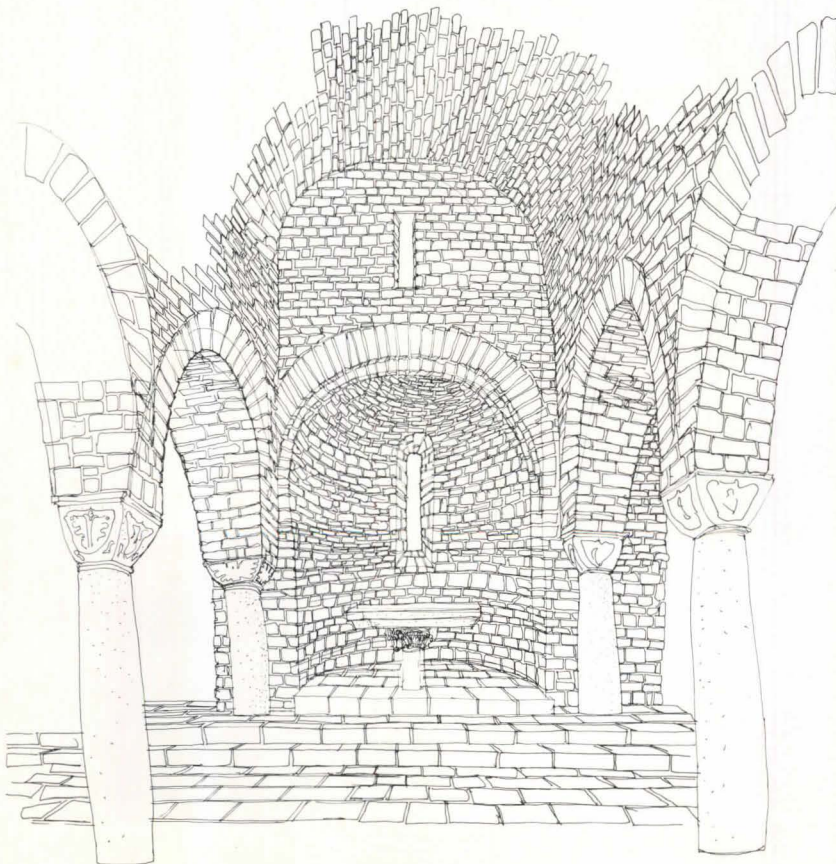
from the Ottoman empire. In 937 and 955, Hungarian raiders sacked and burned existing monuments and caused a reactionary turn toward fireproof vaulted construction which eventually led to the development of the mature Romanesque style.

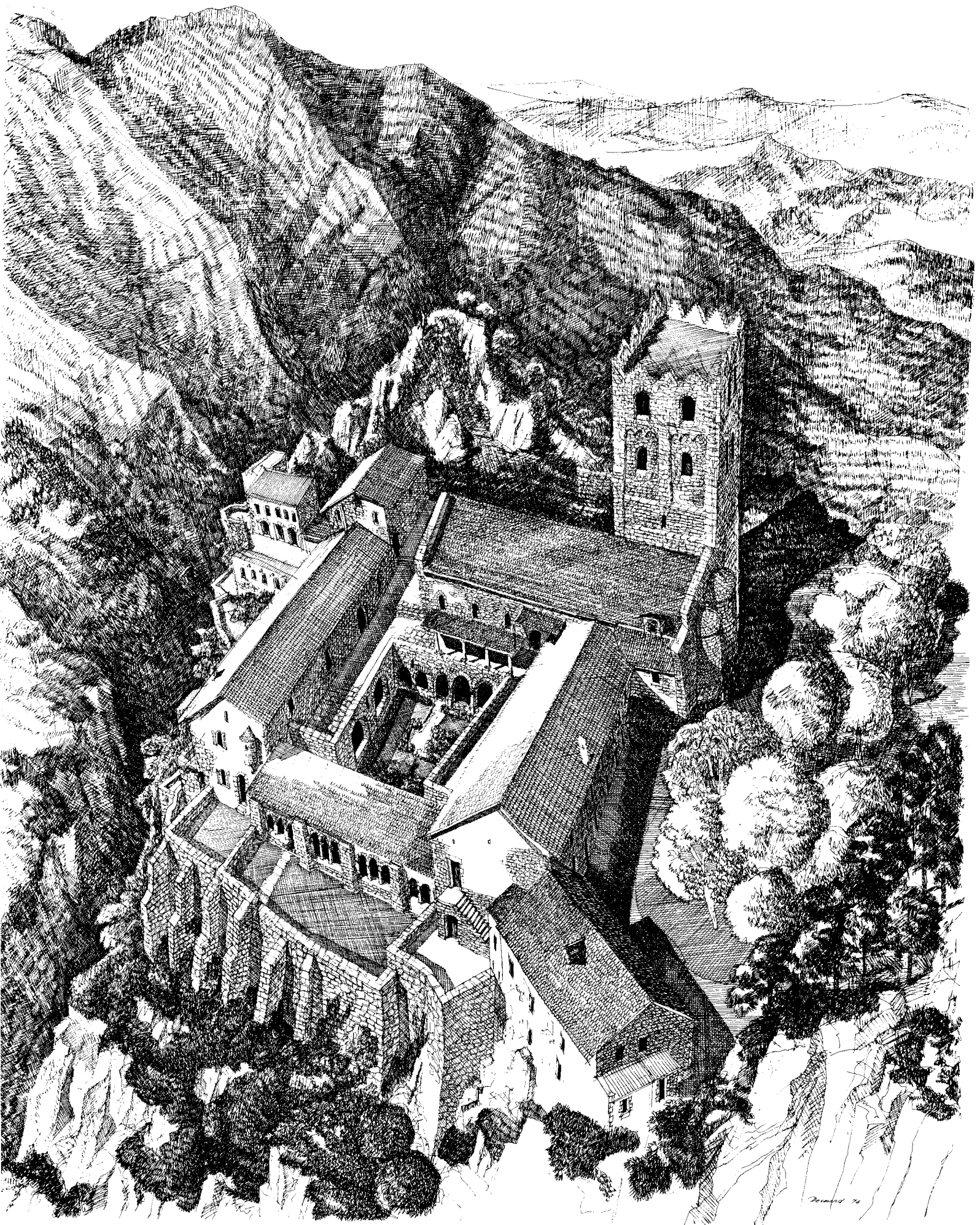
The great Benedictine Abbey at Cluny became the focus of development. At its peak Cluny controlled about 1,450 houses spread throughout Europe. It developed a construction known as Burgundian Half Gothic in which ashlar masonry, flying buttresses, pointed arches and the esthetic organization of these elements were developed boldly and orderly. However, they stopped short of the full Gothic development which eventually expressed the structure as a taut masonry skeleton filled with a membrane of stained glass. The Burgundians retained the mural quality of wall and the tunnel vault so closely related acoustically to the Gregorian chant. At Cluny a sense of monumentality was developed, and in and around Cluny a tendency grew to enliven the structure with sculpture, stained glass and higher and more towers.

A reaction to the worldliness of the Order of Cluny set in between 1074-1110 which led to the founding of smaller, more austere orders. One of those was led by St. Bernard, a forceful and extremely religious man who founded Clairvaux, a Cistercian daughter house near Dijon. Through force of character and intellect, Bernard quickly became the leader of the Cistercians, who controlled 343 houses at his death and eventually a total of 742.

Bernard had positive ideas on every detail of life, including art and architecture. He expressly forbade those elements of luxury and worldly recall: sculpture, capitals, stained glass, monumental proportions and towers. As a result, while *creativity continued its irresistible course* here in Cistercian architecture, it was extruded through a narrow mold resulting in a sensitivity and refinement seldom before or since achieved in architecture.

The sensitive siting, the placement of stones, the windows, the subtle evolution of truthfully expressed structure, all give these simple buildings a deeply satisfying depth of vitality and humanity not found in more monumental architecture.





*De la Roche*

**Fountains Abbey:** The Cistercians dispatched leaders and teams of 12 men to institute new houses and in this way they spread from their initial location at Citraux throughout Europe. In the Yorkshire hills of northern England they built first Rievaulx Abbey and from there, starting in 1135 A.D., Fountains, the roofless ruins of which are pictured across page.

Fountains Abbey was located, as Cistercian monasteries often were, in a secluded and wooded vale, carefully placed in relation to the water source. Usually the Cistercians found a spot where mountain streams opened to a valley which could be developed agriculturally. The basic Benedictine plan around a central cloister is generally followed with some Cistercian deviations, namely the turning of the refectory at right angles to the court and the church nave. The drawing (right) shows their careful and complete exploitation of the water supply. As the stream enters the picture at lower left, it is directed

under and past the kitchen, refectory, dormitory and infirmary, and its water is used for power, fish storage, drinking and disposal, in that order. The tower at lower right is a late addition contrary to Cistercian regulations. The later chapel of the Nine Altars, shown in the right foreground, presages the flat English Gothic east end.

The Cistercians lived and worked here for 300 years, until their dissolution by Henry VIII. These abbeys are credited with giving the sheep raising industry, a later foundation of England's ascendancy among nations, its basic impetus. The buildings brought basic Burgundian vaulting, an advanced masonry technique, to northern England.

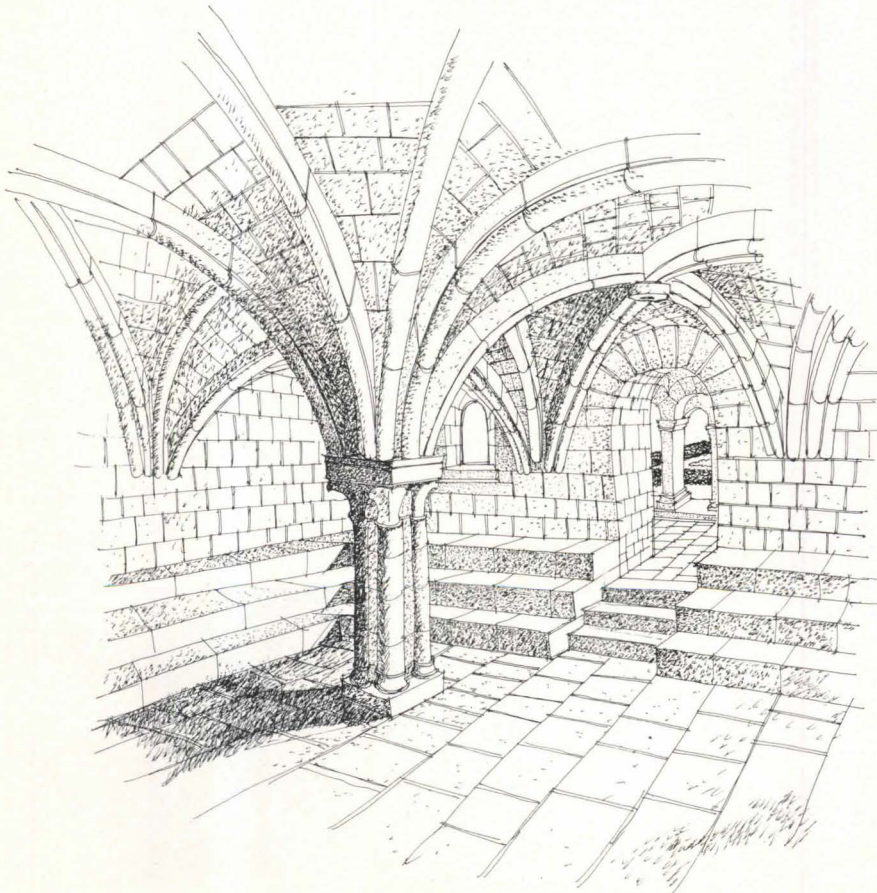
**Senanque:** In southern France, lying in secluded clefts in the Provençal hills, are three sister monasteries of the Cistercian order. As do the others, they relate intimately to hill, stream and valley. As are

most of the others, they are built of the creamy white stone carefully chiseled and placed. These buildings, Le Thoronet, Senanque and Silvacane, have inspired architects and writers and, in our time, photographers. The French architect Poullan (*Stones of the Abbey*) and the American monk and author Thomas Menton (*The Architecture of Truth*) have written of them. Le Corbusier, in his search for light and basic truths in architecture, frequently visited Le Thoronet. All three monasteries are characterized by a tight composition in which each space is defined by a single material, stone. The variations from room to room are subtle and telling. The sketch below shows the chapter or assembly room at Senanque. It is evident that the joy of vaulting the space with stone has been transmitted through the centuries, as well as the care and joy of creating a place of assembly through the careful placement of stone seats, stone floors, steps and an arcade with this one material (left).

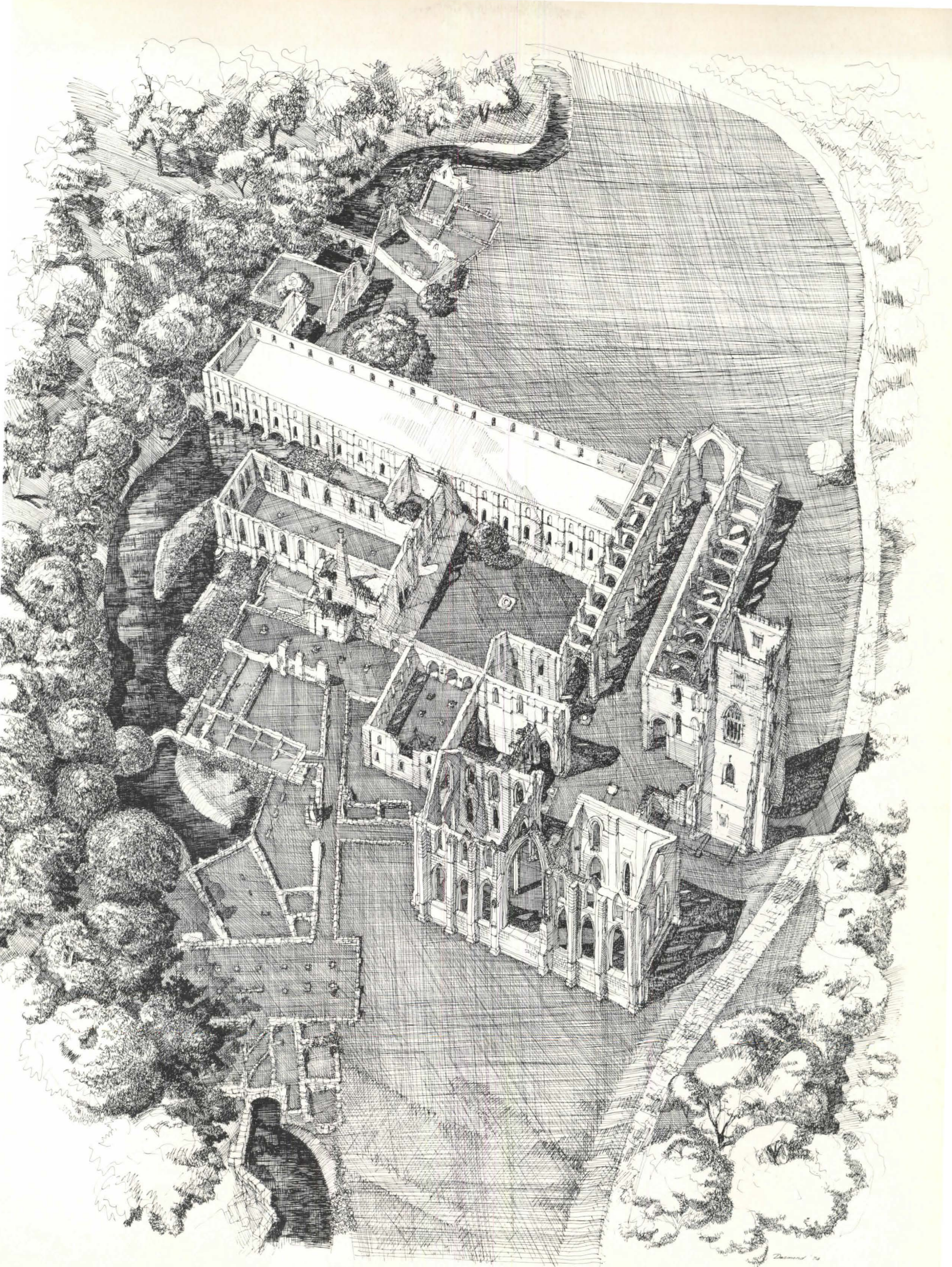
It has been pointed out that the Cistercians were particularly sensitive to and competent in their handling of light and sound. The clear bright light of the Provençal sky is carefully admitted and manipulated by the placement and design of windows so as to provide interiors of varying degree and kinds of luminosity, depending on the functions. This deliberate variance in moods—so lacking in today's buildings—enhanced the lives of those who lived here.

The silence of the monks was broken only by planned and carefully controlled readings at meals, choral prayers at worship and occasional meetings in the chapter room. They were acutely aware of the acoustical properties of these rooms. The choirs were resonant, holding and *muting the liturgical* chants. They were, it is said, able to avoid echoes, allowing for clear scriptural readings in the refectories and nave.

Within these small complexes one moves through several spaces, all of one material, one color, undecorated, which define and celebrate through structure alone the activities which they enclose—worship, conference, washing, dining, sleeping and passage.







**Mont St. Michel:** The famed monastery, fortress and village occupy one of architecture's most dramatic and difficult sites. This ancient Celtic refuge, a granite island in the tidal sands off Brittany and Normandy, first became a seat of monasticism in the eighth century when Aubert, bishop of Avranches, reportedly had a dream in which St. Michel appeared and ordered a monastery built there. According to Henry Adams, St. Michel loved heights and was the symbol of the medieval church militants. At any rate, the adventurous and warlike Normans took over this fortress

site, installed the Benedictine order and began the important constructions seen here now. In this case, however, the typical Benedictine monastic elements were disposed vertically, with the church structure situated on the very peak of the whole.

The indomitable Normans left their characteristic solid and direct round arched forms in the main church nave. The granite stones, each beautifully carved and placed, survived a tortuous logistic performance in their ascent to this difficult site.

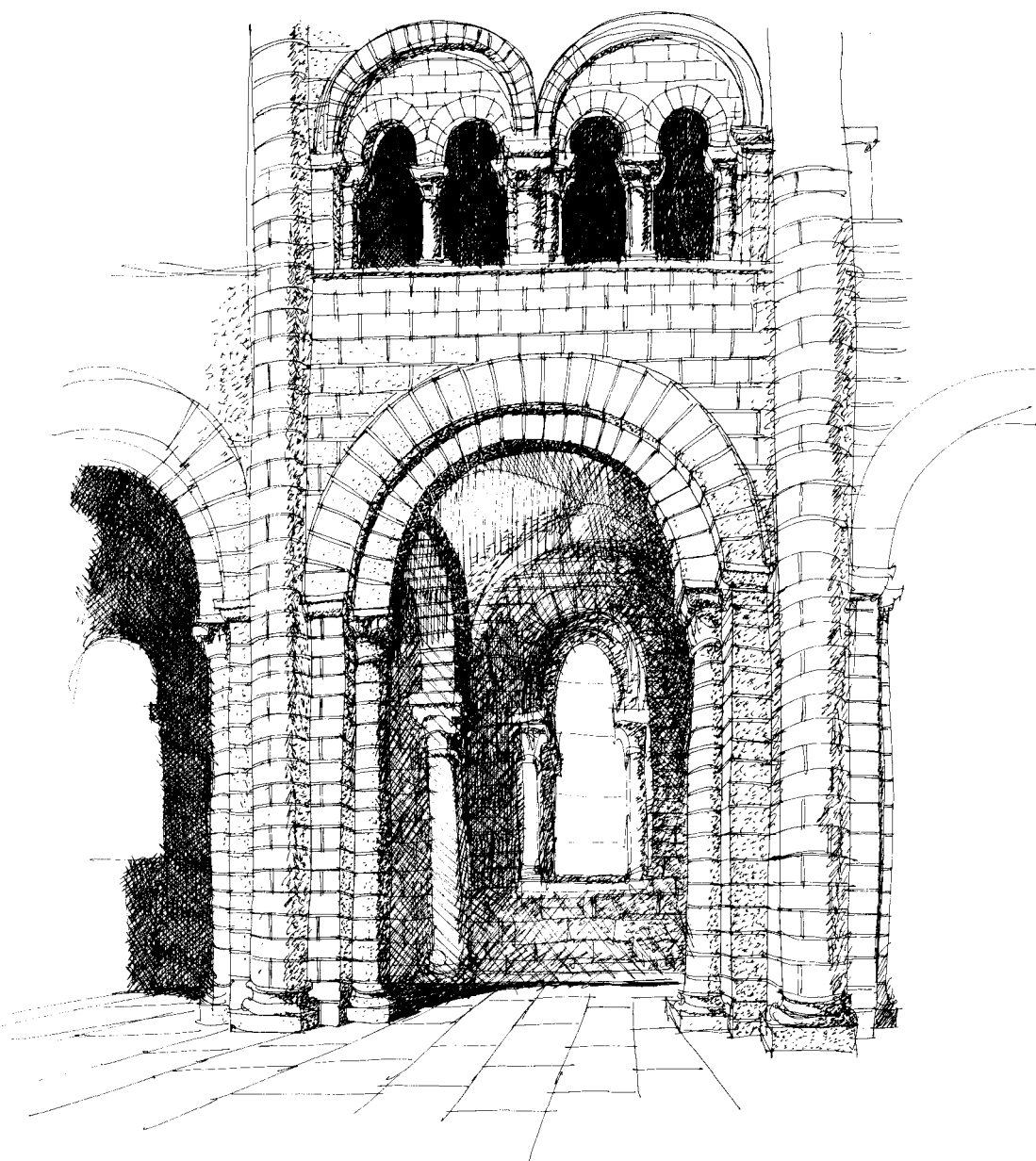
The study of architecture on the mount is a study first of a series of daring concepts executed with a sureness and confidence found only in the work of the Normans.

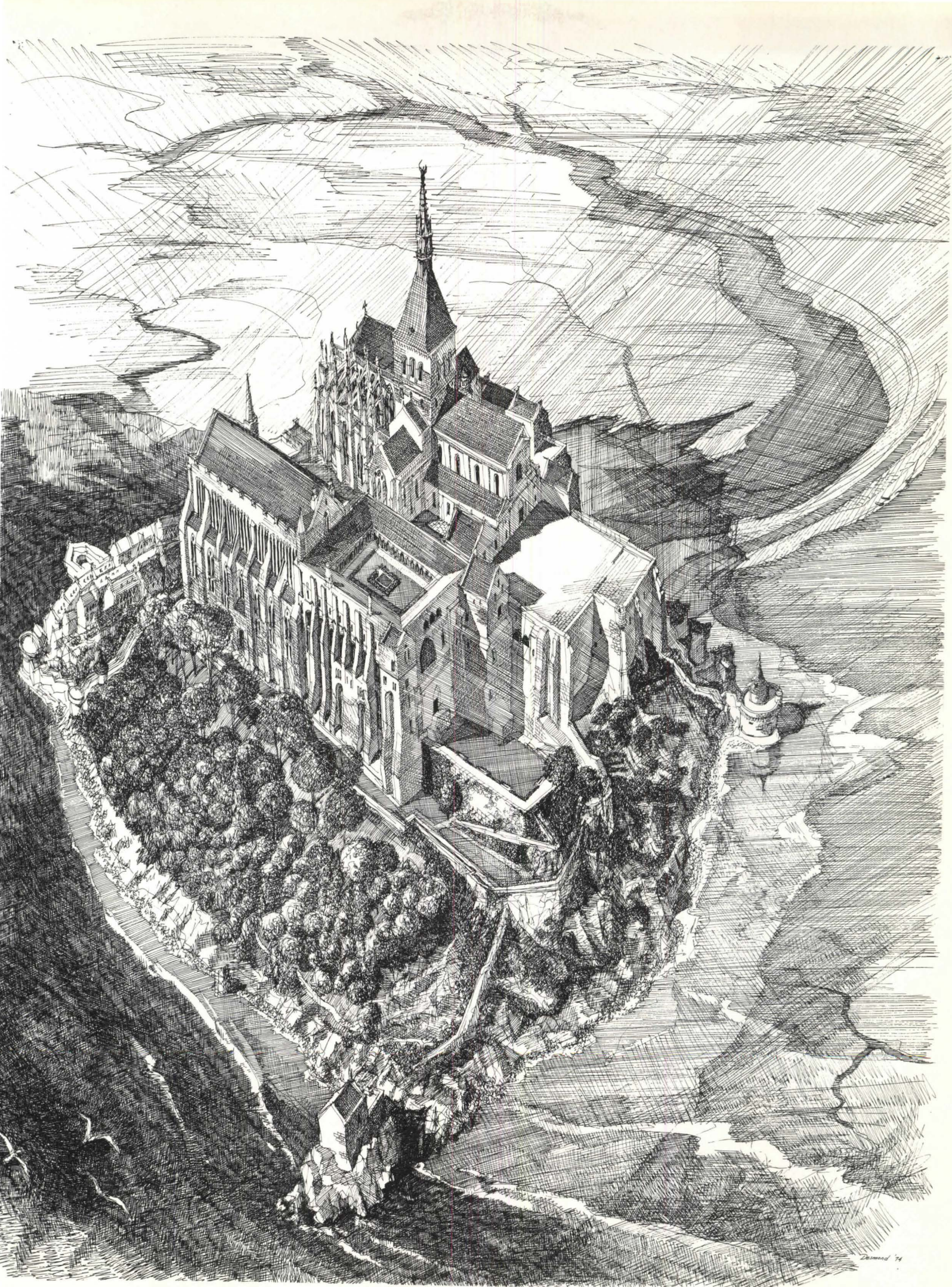
The location of the church and monastery on the peak of the rock allowed their peaceful pursuits to continue through the sieges and battles which shook the lower levels of villages and castles.

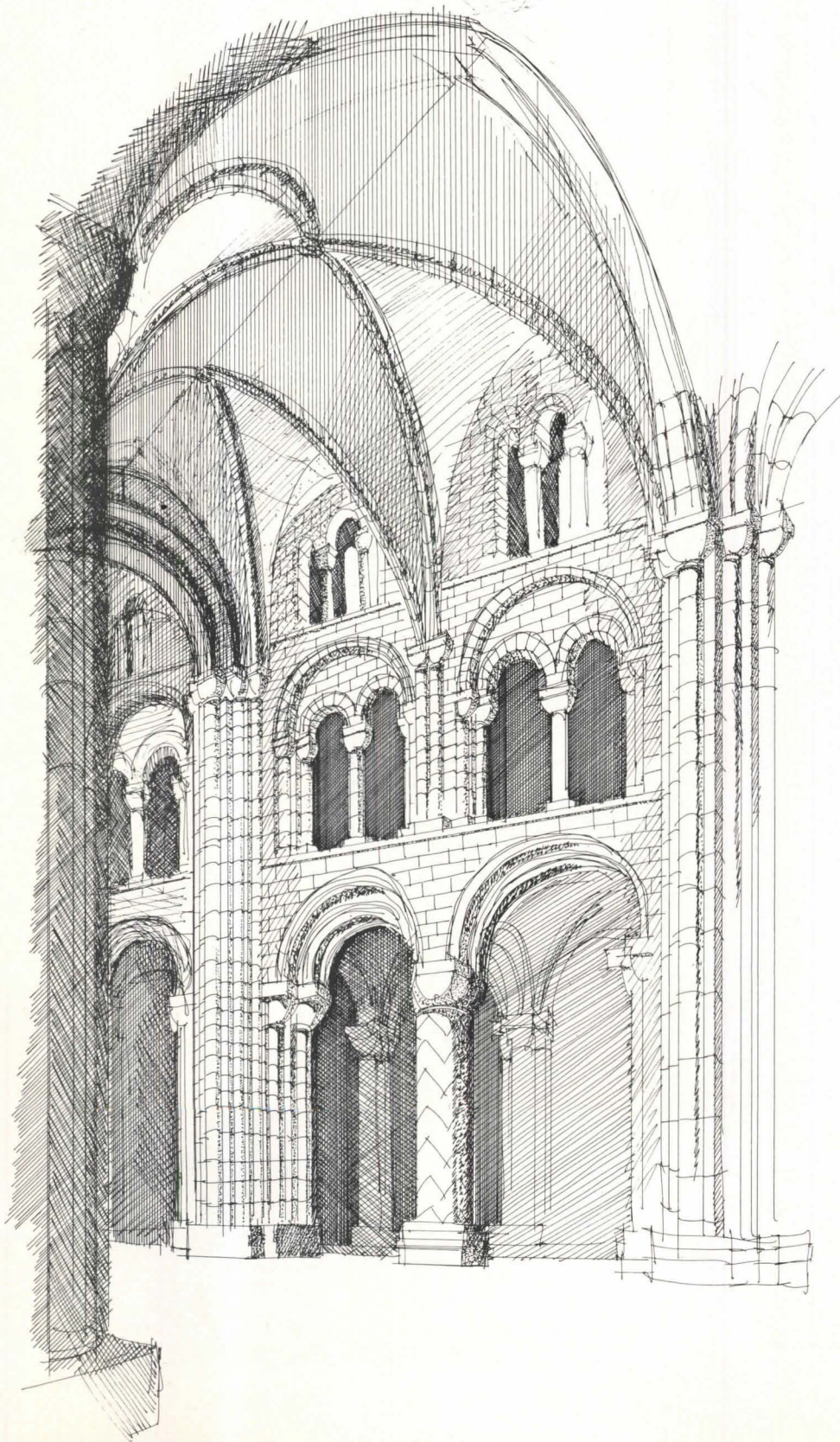
In the early 13th century, the three-story block known as the Merveille, shown on the left of the drawing, was built. The Norman mason-artists exhibited their increasing competence, from cellar to knights hall and guests hall on the second floor, to the graceful refectory and cloister on the top floor.

The church dramatically juxtaposes a Norman nave with a 15th century choir; together these two blocks comprise a visual history of the evolution of masonry from the 13th through the 15th centuries. This evolution of technique in response, as well as ideal, is a lesson of Mont St. Michel.

Mont St. Michel is extraordinarily popular because of its dramatic site, picturesque silhouette and daring and successful construction expressing bold ideals.







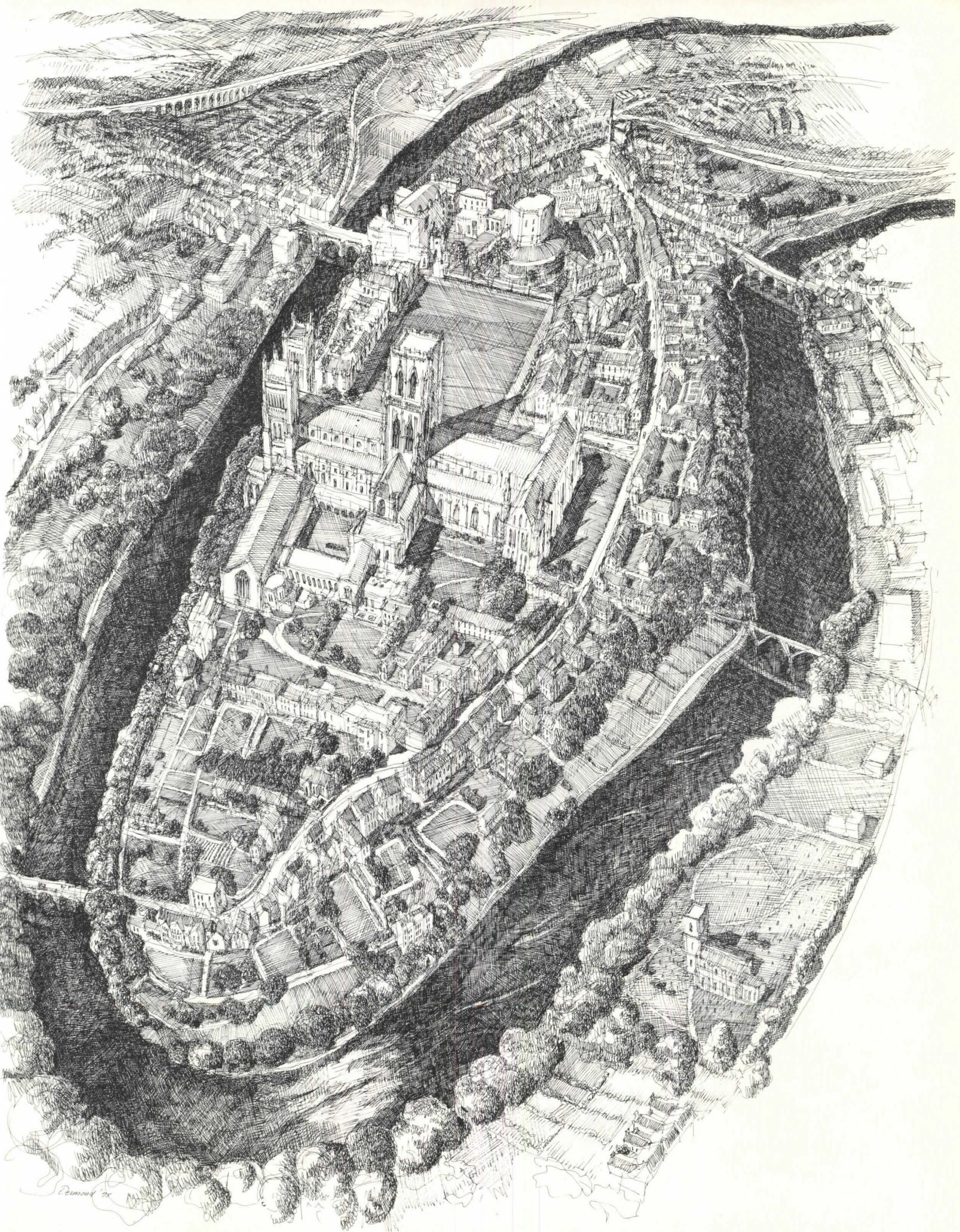
**Durham:** The groups of buildings at Durham are clear expressions of siting a monastery cathedral and defensive fortress, along with the subsequent medieval and the modern settlements, all arranged in topographic order.

The site for the monastery was chosen for its security after the Danes had raided the earlier coastal sites at Lindisfarne. The shrine of St. Cuthbert was transferred here in 995.

The Norman administrations established both a monastery and a bishopric at one time. The bishop's duties were similar to those of local kings and he was responsible for security. His citadel-castle therefore, seen here in upper center, sat on a knoll guarding the crossing of the river Wear and securing the land contained in the river's bend. Athwart this land, the cathedral and monastery were built, following the Benedictine plan of major buildings around a cloister. The prior's house was beyond these in the most secluded area of the site.

On the perimeter were the farm, buildings, storehouses and guest blocks. Later extensions of the medieval village have grown around the site. The view here shows the cathedral itself centered between castle and monastery. Above the castle in this view is seen the medieval village and beyond are the contemporary industrial and academic sections of the modern city.

In addition to its classic site adaption leading into the study of medieval villages, Durham is important architecturally to this series. Located along the area where the Norman conquest met the fierce Scottish border fighters, it was called by Sir Walter Scott "half castle, half church, half fortress against the Scot." It not only represents the peak of Norman construction, but by its use of the pointed arch, leads toward the full development of Gothic which was to be taken up in the Ile de France. □



# Louis Sullivan Builds A Small-Town Bank

Kenneth W. Severens

The directors of the Merchants National Bank of Grinnell, Iowa, announced in a local newspaper on Sept. 19, 1913, their intentions to erect "a building absolutely new and modern, occupied on the first floor by an up-to-date and spacious banking room and above by offices."

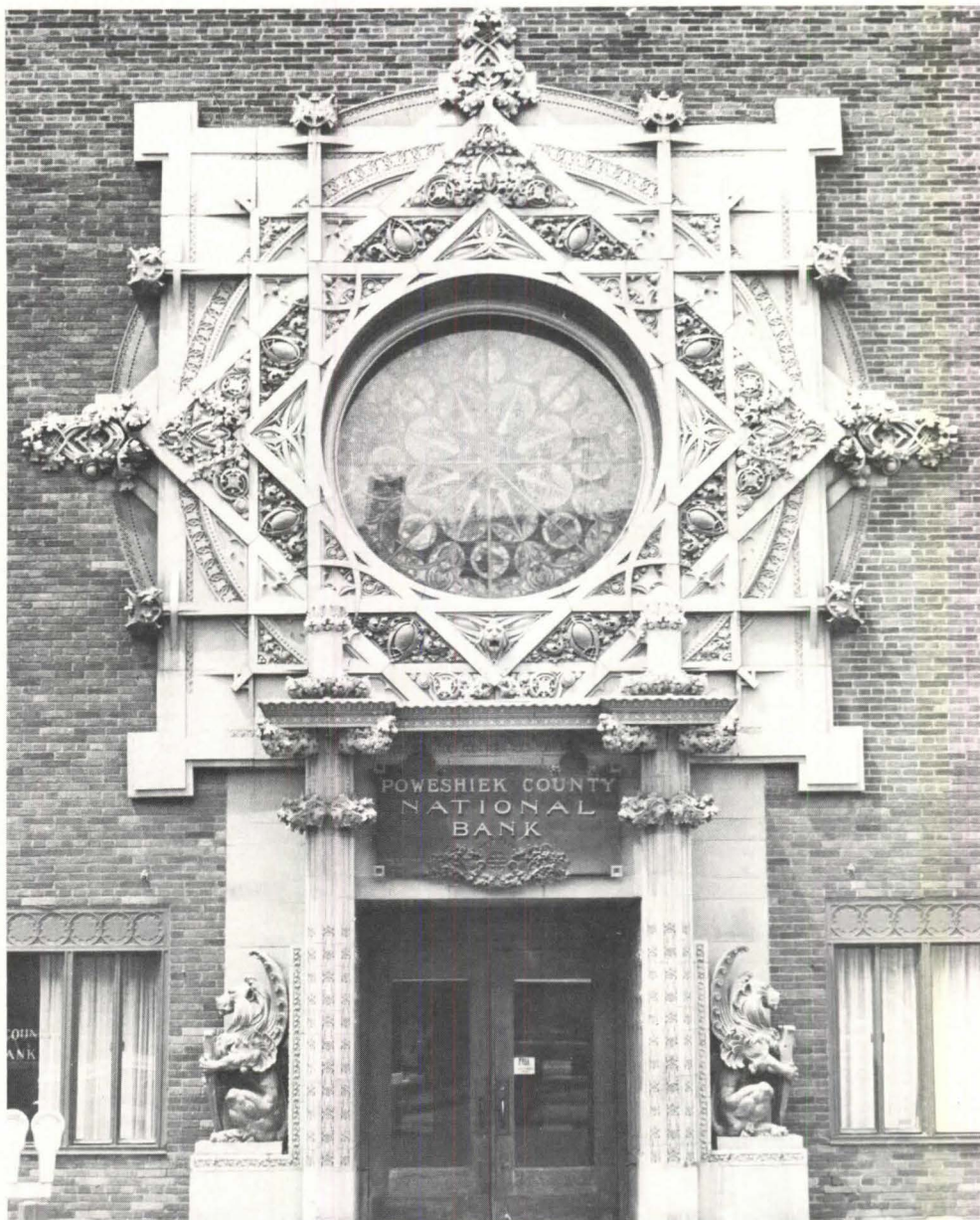
They made careful inspections of new Iowa bank buildings, but their trail to Louis Sullivan has become obscured. Sullivan had designed the National Farmers Bank (1906-1908) of Owatonna, Minn., the Peoples Savings Bank (1909-1911) of Cedar Rapids, Iowa, and the Henry C. Adams Building (1913-1914) of Algona, Iowa. After the completion of his first Iowa bank, he actively promoted himself as a specialist in bank architecture.

The Grinnell directors were on to Sullivan when they visited the Owatonna bank in mid-November. The calling card of George Hamlin, president of the Grinnell bank, documents the trip; it was left with Carl Bennett, vice president of the Owatonna bank, who wrote on it: "This man and two others were here today. Will build bank in spring," and sent it on to William Purcell of the Minneapolis firm of Purcell, Feick & Elmslie. (The calling card and the resulting correspondence are in the Purcell and Elmslie collection of the Northwest architectural archives at the University of Minnesota.)

Purcell and Elmslie both had worked for Sullivan and they also considered themselves experts in bank design. Purcell wrote a persuasive letter to Hamlin on Nov. 21 which was aimed at gaining the Grinnell commission for his firm, but on Nov. 24 Carl Bennett wrote again to Purcell: "I guess the Grinnell people are going to employ Sullivan. They talked like it."

George Hamlin replied to Purcell on Nov. 26: "We have not as yet decided on an architect for our new building, al-

**Mr. Severens**, who earned a doctorate degree in the history of art from the Johns Hopkins University and has taught at Oberlin College, is completing a book on Sullivan's eight Midwestern banks. In September, he will become an associate professor of fine arts at the College of Charleston.



though of course there have been several here and we have some particularly in view. Mr. Sullivan of Chicago expects to be here this week to talk to our directors, but so far we are not under obligations to any one in particular."

The competition for the commission was reaching a dramatic climax. A. N. Rebori described (*Architectural Record*, May 1916) Sullivan's response:

"Being broadminded and up-to-date businessmen, strongly in favor of a rational architecture, [the directors] invited

Sullivan to study their requirements and prepare drawings. Complying with their call he left for the scene of expectations, Grinnell, Iowa, in the central part of the state, personally to interview his prospective clients and look over the original site. After meeting the committee, he set about the customary task of learning the needs of the proposed building, not in a casual way, but in the most detailed manner possible. Judging by the sketches and notes which were made with the aid of an ordinary desk rule on sheets of common



yellow paper acquired at a nearby apothecary shop, not a single part of the machinery that was to make up this bank's organization was overlooked. Here we find not only the allotted space to the various departments, but the different desks, cages, and all minor details worked out to an exact scale. For three whole days he talked and drew, rubbing out as changes were made, fitting and adjusting to the satisfaction of all. The dimensions are clearly marked on these original drawings in plan, section and elevation, leaving no

doubt as to the exact layout of the building."

The preliminary studies, which Rebori called "the most exquisite bits of architectural memoranda that it has ever been my pleasure to see," met with the directors' approval, and a local newspaper announced on Dec. 2 that "Louis H. Sullivan, an architect of great reputation, has been engaged. . . . Mr. Sullivan has been in Grinnell for a few days. He left last evening."

Of the drawings done during Sullivan's

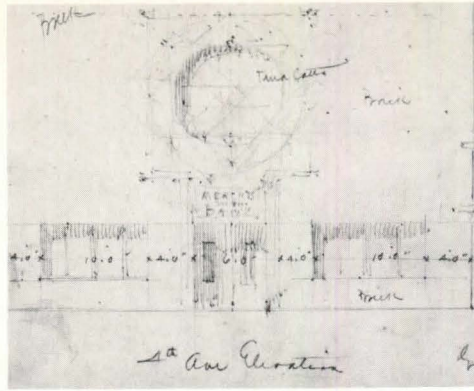
visit, the plan appeared in Rebori's article, but the other sketches were never published. Presumably, they shared the fate of many of Sullivan's papers after his death in 1924. George Elmslie, his trusted assistant from 1889-1909, agreed to be Sullivan's executor and, for reasons which are not entirely clear, Elmslie was overzealous in throwing out invaluable Sullivan material.

However, in a Sept. 12, 1925, letter (now in the Michigan historical collections/Bentley historical library of the University of Michigan) to his brother-in-law Emil Lorch, head of the University of Michigan architecture school, Elmslie expressed interest in some of Sullivan's papers: "I am wondering a bit about some very engaging items and fear a bit that in the moving about some of them may be lost. However I will keep some things in mind that your school might appreciate having, because of your knowledge and sympathy and also because L.H.S. was a really very great man."

Although Elmslie's letter hints at the circumstances, the actual details of his donation are not known. A 1936 inventory of the college of architecture, compiled by Lorch, mentions "a few minor sketches by Sullivan received by me from George G. Elmslie, Sullivan's literary executor." Three of the Grinnell preliminary studies were among Lorch's papers when they entered the collection at the University of Michigan in 1963.

The Grinnell drawings are precisely as Rebori described them: sketched in pencil on ordinary yellow paper of the Storm Pharmacy. The dates—Nov. 28, 1913, for the plan and Nov. 30 for the elevations—fall in that week in which both the bank president and the local newspaper reported that Sullivan was in town. The drawings are numbered 5, 8 and 9, indicating the thoroughness of Sullivan's approach even before he was retained; the other drawings presumably have not survived. In themselves they illustrate the architect's meticulous attention to detail; in relation to the bank building which was erected the next year, they show how completely Sullivan visualized the design from the beginning.

The floor plan is both functional and



ceremonial. Through precise dimensions and numerous marginal comments, Sullivan organized the banking areas in a logical, businesslike manner with the women's room, savings department and men's room on the left, and the directors' consultation room, officers' quarters and tellers' and bookkeepers' areas on the right. From this measured plan, the working drawings were made without major revisions. (Blueprints dated Jan. 30 and Feb. 28, 1914, remain at the bank.)

The planning is not particularly innovative since it conforms to the general arrangement of Sullivan's earlier banks which in turn relate to conventional banks. The plan's distinguishing feature is the processional axis which leads from the entrance vestibule through the public space to the tellers' positions in front of the vault. This axuality and the accompanying ornamentation enhance the financial transaction with quasi-liturgical significance. The vault and the tellers' positions furnish an altar-like environment for the offering of valuables, with the terra cotta frieze of the vault and the urns in front enriched by gilding. One of the few changes was the placement of a customers' room leading to safe deposit boxes to the left of the teller's position. The resulting asymmetry which reduces the longitudinal formalism was not Sullivan's original intention since the preliminary plan shows two tellers' positions in that area.

In sketching the exterior elevations two days after the plan, Sullivan began with the business requirements and the interior spatial organization and then proceeded to the enclosure and its ornamentation. The elevations possess an artistic quality precluded in the plan; they are fresh, deft and economical. Not only are the main outlines defined crisply, but all the essential ornament is indicated in a shorthand intelligible to his assistants.

The drawing of the Fourth Avenue facade is a logical response to the decisions already made concerning the interior. Two low windows with simple moldings correspond to the women's room and the directors' consultation room inside. The central axis is dramatized by the prominent terra cotta frame surrounding the oculus above the entrance. This

feature has been criticized as too large in scale and too sumptuous in ornamentation for the otherwise austere brick wall, but through intentional exaggeration and tension, Sullivan conceived the over-entrance motif as a dominating emblem. The interlocking circles and squares resemble the mechanism of a clock or a vault door—two machines which have both practical and symbolic meaning for a bank. Mundane time and money are elevated to the level of high art in the beautifully modeled terra cotta, some of which is gilded, and in the preciousness of the stained glass.

The entrance was designed as a monumental keyhole which unlocked the meaning of the "jewel box," Sullivan's own words for his bank buildings. The enframed rose window in Sullivan's drawing hovers at the center of the facade with little connection to the entrance below. The thin pilasters or columns flanking the doorway give the impression that the motif is not supported adequately. Sullivan seems to have realized this because the piers became more salient in the working drawings.

He also added the winged lions, or griffins, which may refer to Walter Burley Griffin who had designed three Grinnell projects: a fountain of 1910 or 1911 on the town green diagonally opposite the bank, a house of 1911 for B. J. Ricker, a director of the bank, and a 20-acre subdivision on the north side of town planned in 1912-1913 but never executed. Griffin might have been the architect of the Merchants National Bank had he not departed for Australia in July 1913 to supervise the building of Canberra. The griffins may be Sullivan's tribute to a fellow prairie school architect who had gained international fame. One change in the facade affected the proportions rather than the symbolism; under the height of 35 feet noted on the drawing, Sullivan later added "made it 37'."

The Broad Street elevation presents a tense juxtaposition of the ordinary and the artistic. The brick wall is relieved by the corner window of plate glass and the large panel of opalescent glass. The crisp treatment of surfaces and edges is countered by the one element which unites the ele-

vations—the terra cotta cornice which repeats almost, but not exactly, the frieze of the vault inside. The discordant asymmetry, the jarring change in scale and the strange contrast between austerity and ornamentation are all present in Sullivan's preliminary study.

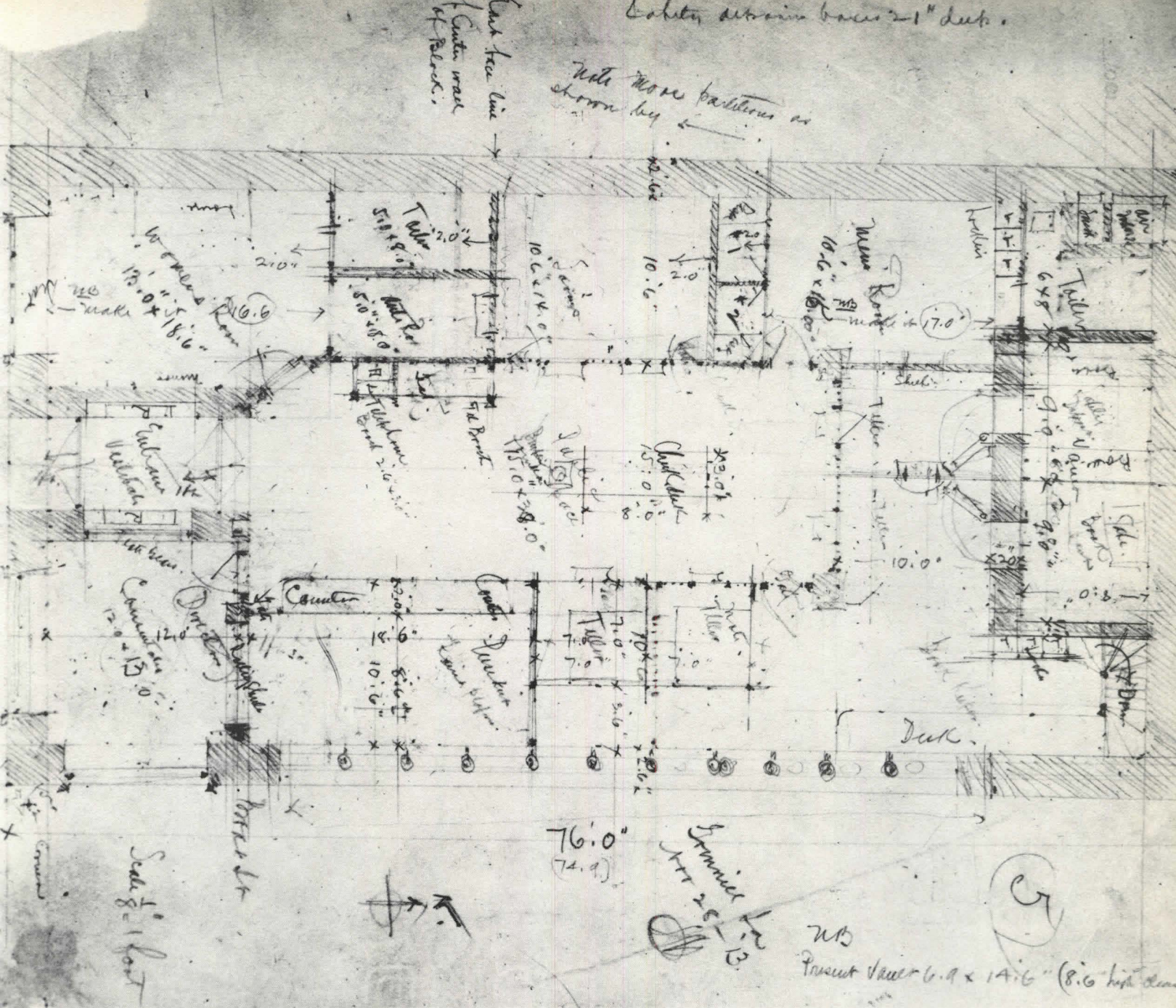
Perhaps the most banal aspect of the entire building is the clock at the corner. It appears in the earliest photographs as that type of feature which the client might add in oblivious disregard to the architect's wishes. Even Rebori concluded this by stating: "At the corner, protruding like a sore thumb, is the 'old clock,' a relic of the bank's former home." But Sullivan included it in both preliminary elevations.

He usually did not allow his clients to interfere in those areas which he believed to be solely the domain of the architect, and it is doubtful that he would have agreed to reuse the clock had he not realized that it could be incorporated into his overall program. Although additive and disruptive to the prismatic character of his design, the clock as a prosaic artifact effectively heightened the meaning of the over-entrance motif as a symbolic time mechanism. Rebori, who derived most of his material from Sullivan, actually described the sequence which the motif generated:

"From the moment the visitor enters past the vestibuled doors the workings of the bank are thrown open to view, disclosing at first sight the intricate mechanism of the open doors to steel-lined vaults on the central axis. . . . It is like the open works of a watch as seen through its crystal back cover."

The preliminary studies not only reveal the formal and iconographic conception, but they also shed light on Sullivan's architectural practice at the end of his career. The eight bank buildings which constitute the major part of his output from 1906-1920 have been viewed as symptomatic of a decline: insignificant commissions in small Midwestern towns. The drawings argue otherwise because they expose Sullivan's method as decisive, businesslike and creative. He went to Grinnell probably knowing that he was in competition with his former assistants, Purcell and Elmslie. Sullivan triumphed by convincing





the bank directors that he could plan a building which would satisfy their needs and give it appropriate artistic form.

Another recurring criticism of Sullivan's late work is that it was done increasingly by assistants—by George Elmslie until 1909 and by Parker Berry between 1913-1917. Again the drawings refute any attempt to reduce Sullivan's role at Grinnell, since he alone conceived the entire design including the ornamental motifs. The three drawings which have survived give full evidence of what the bank building would be; in addition, the numbering indicated that there were at least six other drawings, presumably a site plan, sections and details. With minor alterations, the preliminary studies yielded the working drawings and the building itself.

The final proof of Sullivan's mastery occurred when the building opened on Jan. 1, 1915. Construction had proceeded expeditiously throughout 1914 with no indication of disagreement between the architect and the clients. Both local newspapers responded favorably to the build-

ing at the time of the opening. One writer was enthusiastic: "The new Merchants National Bank building is not a mere building. It is a creation. It was realized first in the mind of Louis H. Sullivan, of Chicago, its architect. Mr. Sullivan dreamed the building. The building is his dream come true."

The reporter on the other paper was carried to romantic metaphors: "The man who drew the designs must have steeped himself in the atmosphere of the Arabian Nights, Arabian Days and the Tales of Persian Fire Worshippers until it worked like hasheesh and the subconscious mind took control and saw, in a vision, the complete semblance of the thing that was to be. . . . Shutting himself up almost without food, he concentrates every thought upon his work as zealously as a Buddhist priest sinks his identity in the larger thought of the Nirvana."

Twenty years earlier Sullivan wrote an essay, "Emotional Architecture as Compared with Intellectual," in which he analyzed architectural creation as a three-

stage process of imagination, thought and expression. During that period, he was giving artistic form to the skyscraper, notably the Wainwright Building (1890-1891) in St. Louis and the Guaranty Building (1894-1895) in Buffalo. He stated: "Imagination . . . is [the] divine faculty which, in an illuminated instant, in that supreme moment when ideas are born, reveals the end with the beginning, and liberates, as an offspring of man, that which before had rested, perhaps for untold centuries, dormant but potential in the inmost heart of nature. This is the supreme crisis. This is the summit of the soul, the fertile touch of the spirit, the smile of nature's bounty—the moment of Inspiration! All else is from this moment on a foregone conclusion, an absolute certainty to the mastermind: a task surely, but not a doubt."

By 1914, Sullivan's architectural practice had shifted to smalltown commissions, but imagination still characterized his brilliantly intuitive design for the Grinnell bank. □

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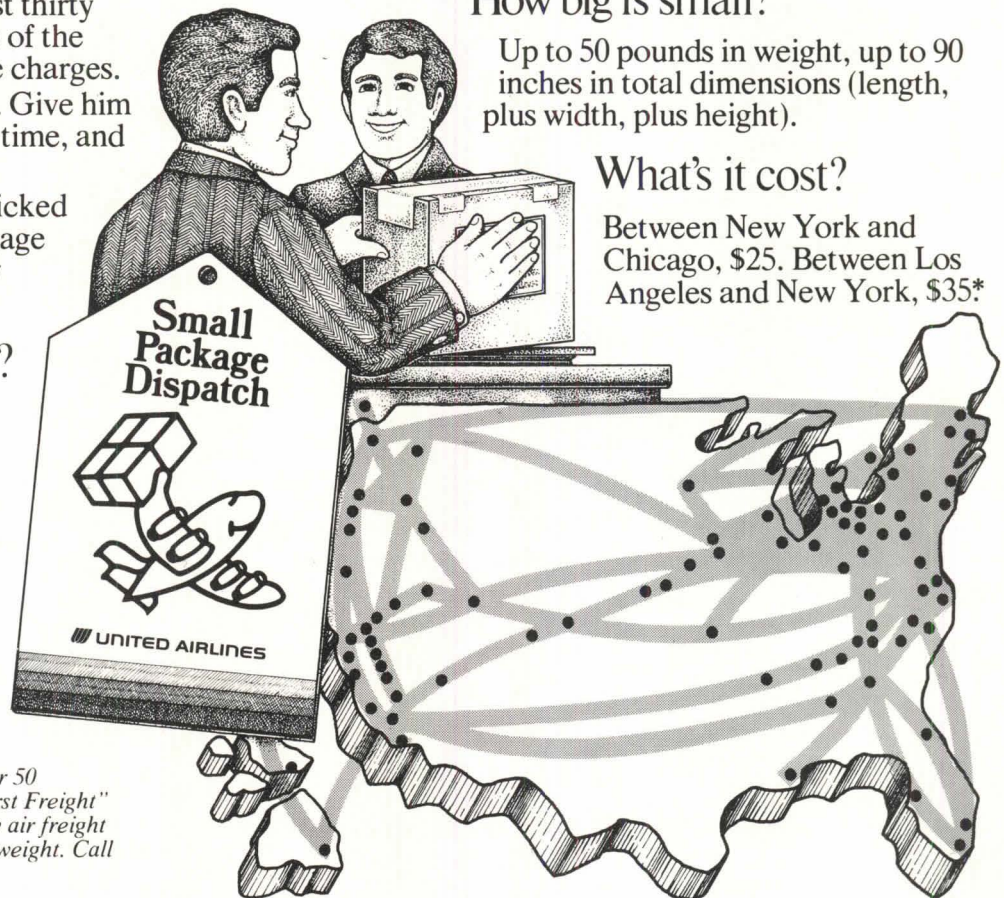
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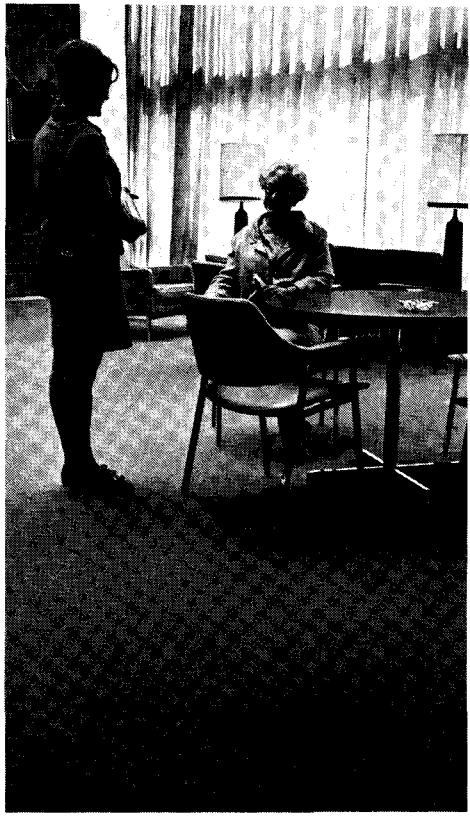
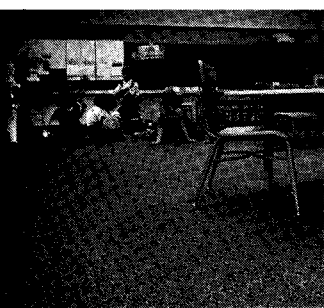
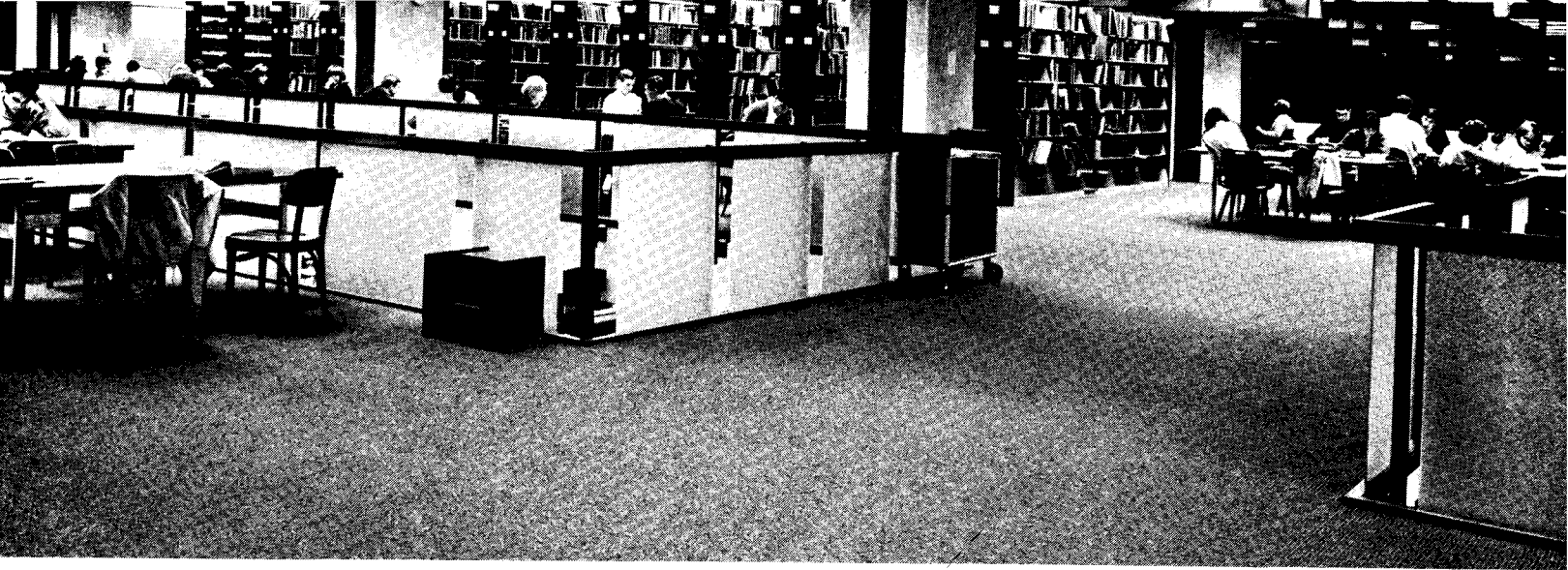


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# How They Built The Pyramids: 'A New Discovery'

Olaf Tellefsen

A recent discovery in the masonry of the Great Pyramid of Egypt has finally provided conclusive proof on how that incredible structure was raised. Actually, what the discovery proves is the sequence in which the regular body stones were placed; but when we know that sequence, it is not much of a step to determine the most logical work routine compatible with then prevailing conditions. It means that we are no longer entirely in the dark on how the ancient Egyptians managed to build with a precision that never since has been surpassed anywhere. But, most surprising, the construction technique indicates that the actual raising of the structure was a comparatively low budget job even by modern standards.

This is certainly something new under the sun, because scholars have struggled with the Pyramid problem since time immemorial without even coming close to a perspective that experts on stone construction can endorse. It means that an opening wedge has been driven into the enigma, exposing a technique that does away with any doubt about the sequence at least.

The discovery is illustrated at right.

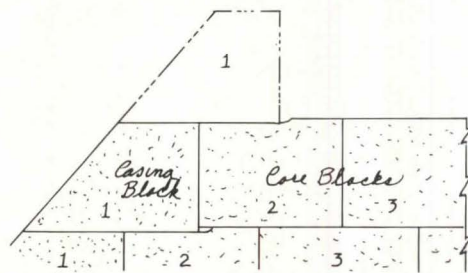
This shows how the outer core blocks have been smoothed down to match the top of the abutting casing blocks to provide a smooth and level seat for the next row up of casing blocks. At this time casing blocks are missing, but the smoothed down part of the core blocks are in evidence all over the Pyramid. It is from the manner in which the core blocks were smoothed down that we know the sequence in which the blocks were placed.

First, it should be obvious that the top of the casing blocks determined the amount to be rubbed down, which means that those blocks must have been in place at the time. Second, as seen on the sketch, the abrasion extends a few centimeters beyond the face of the core block above. That could not have been so if that block had been in place during the smoothing down operation.

**Mr. Tellefsen**, who lives in Everett, Wash., has devoted much of his time since his retirement in 1965 to the study of ancient constructions. A former naval architect, he is also knowledgeable in civil engineering.

These data tell us the sequence in which the regular body stones were placed. The casing stones were placed first, because they had to be pushed into place from the inside where there was something solid to pry against. The abutting core blocks were placed next, which allowed the smoothing down operation for the next row of casing blocks to proceed while the rest of the core masonry for that level was completed.

The good sense of that sequence is as follows: It was imperative that the prepared seat for the casing blocks be perfectly level, because those blocks were beveled to the exact design slope angle, and only when placed on a perfectly level seat could they maintain that angle on all four sides as the Pyramid rose. By no other procedure could the perfect symmetry of the structure have been achieved. Further, the finely finished casing blocks controlled the straight line and, therefore, the perfect plane of the side surface; and they controlled the angle of slope. Engineers of



our time could not devise a more practical sequence than that.

Due to the erosion of the exposed core block edges, it is difficult to get a clearly illustrated picture of how the abrasion undercuts the core blocks above; it has to be verified by close inspection in situ. However, the photograph at right of the Pyramid's present top level, tells the story clearly enough.

This photograph shows the configuration of the abrasion, exactly as drawn on the sketch (above). It proves that the sketch was drawn from life, and that the arguments are founded on irrefutable evidence.

Architects, civil engineers and stone masons understand that kind of evidence, and they understand the rationale of the stone-placing sequence, but that does not

necessarily mean that the Pyramid is their responsibility. Still, it is well known that they are dissatisfied with the conventional archaeological explanation, namely that the structure was built from the inside outwards and that the casing stones were placed last as the finishing mantle. They are not satisfied with that theory because it involves some physical impossibilities. Not even the Egyptians could push the three-ton casing blocks into position from the outside. No platform could be secured solidly enough to withstand the reaction of the pries and, furthermore, the hairline fit could not be achieved that way. For these reasons it may be welcome to interested persons that solid evidence has been found for the manner in which the Great Pyramid actually was raised.

This article is concerned exclusively with the airing of that evidence. Much more has been discovered relative to the superb engineering and craftsmanship that were prerequisites for the planning and execution of the world's most magnificent monument of stone, but those discoveries can keep until the stone-placing sequence becomes generally accepted. The Great Pyramid is in fact, if not by intent, a time capsule, reflecting the knowledge and skills of its day. □



# Assemblage: A Process-Oriented Teaching Method

Robert Wehrli, AIA, and  
Jonathan Bryan

Glance for a moment into design studios in two different schools of architecture. In a traditional studio, a student sketches away at a problem; he has been at it for days. His instructor has just examined his scheme and pronounced it defective in a dozen ways. This has happened before, with today's criticisms being completely unlike yesterday's, covering different building areas, different criteria, different ideas from yesterday's. The student is confused and discouraged.

Over in the other school, a student manipulates plastic blocks on a site layout, referring regularly to a list of design criteria and making progressive improvements in the original concept of his design. Periodically, his instructor goes over a "scorecard" with him, explaining how he rates various aspects of the student's scheme and suggesting improvements.

The traditional teaching method has some obvious inadequacies. Often an instructor has difficulty following the sequence of events, or stages, in a student's design and planning process. As a result, the student can easily take a route which the teacher doesn't recognize as a faulty detour until sketches are well under way.

Traditional methods of design education have not placed much emphasis upon the psychological process of design. For one thing the ability to design has long been thought to be wholly innate and intuitive, hence mystical and beyond analysis. Since the chances of improving students' innate abilities must be remote, according to this view, design educators have emphasized mainly techniques of visualization and graphic representation and have encouraged personal expression.

Thus, in the still prevalent master-apprentice method of the Beaux-Arts approach, critiques of student work tend to be based upon products (of sketches or more finished drawings), rather than upon the manner in which the student has arrived at these products. This is not to say that sketches and drawings ought not to be

critiqued; students learn much from constructive critiques of their schemes. But products are only the results of a process, and the process needs to be researched and understood, so that it can be learned.

Teaching design demands a method which allows the instructor to keep track of all the design criteria from the outset, and to give the student immediate, analytical and consistent feedback on how well he is doing—before the student has invested hours in making sketches.

Assemblage is such a method. In it, the student manipulates special blocks to create design while the instructor evaluates progress against fixed criteria which the student knows and understands. The assemblage method reduces program criteria to scorecard format so that the instructor and student have a mutually agreed upon goal, and it provides prompt feedback. It divides the enormous task "to design" into component parts which are manageable and easily can be observed and evaluated.

It is, thus, an effective addition to the design instructor's repertory of techniques, which is based on the assumptions that design is both intuitive and rational, that ability to design is both innate and teachable and that students learn from immediate feedback and appreciate it.

Assemblage allows students to solve problems that are sufficiently open-ended to be representative of the real world design process, yet can be restricted. And although block design is essentially two-dimensional plan-making, it does permit wide variety in both process and product, and can deal with fundamental principles.

One deplorable oversight in the Beaux-Arts approach to design education is its failure to use the widely accepted pedagogical principle of immediate, analytical feedback. Educational psychologists have long since established that students learn most effectively when they receive feedback at frequent intervals.

An experimental study of assemblage found that the instructor's prompt feedback improved students' learning after six trials. The instructor had the students design a one-story, public elementary school using plastic blocks in various sizes and shapes. The blocks were scaled at 1/16

inch to the foot. They were presented to the design student on a rectangular panel in random array; the student also was given another rectangular "site" panel upon which were inscribed street and alley locations, winter wind and summer breeze direction arrows and the north arrow.

The design students were told that they were to create a school on the site panel by arranging the blocks, which they used to represent the layout of rooms and spaces. The school was to serve eight classes—kindergarten and grades one through seven—and was to have such rooms and spaces as the design students deemed appropriate.

The time limit for creating the design was 30 minutes. During this time, the instructor observed unobtrusively and recorded what process the student was using—noting, for example, whether the student sorted and inventoried the blocks, to what extent he used trial and error, and whether he wrote down the various givens early in the problem, or began directly to assemble the plastic blocks into a design.

The tendency of students to classify and label rooms and spaces was so universal that it was dropped as an experimental variable. A strong tendency to standardize all classrooms was also observed: Students chose identical blocks to represent all seven classrooms. As anticipated, however, many students chose a different block for the kindergarten. The instructor observed and recorded changes in each scheme as it progressed.

Since the main purpose of this demonstration experiment was to ascertain the effect of giving students immediate feedback on design criteria, the instructor gave feedback to one group of nine students and not to another group of nine. All students had completed a year of graphic design and were midway in their first (sophomore) year of architectural design.

The feedback group was given, in addition to the problem statement, scorecard criteria for a wide range of considerations such as parking space, pedestrian needs, climate, esthetics and socio-psychological and economic concerns. The instructor observed their design process and gave them feedback (critiques) on each of their schemes immediately after the first and

**Mr. Wehrli** is chief of the architectural research section, National Bureau of Standards. **Mr. Bryan** is a professor of English at Northern Virginia Community College, Alexandria branch.

## Schemes by the student receiving feedback showed 'remarkable change.'

each succeeding trial. All critiques were based upon criteria on the scorecards.

The nonfeedback group, on the other hand, received just the problem statement and otherwise remained in the dark through the six trials, receiving no criteria whatever and no feedback. The instructor recorded detailed observations of the non-feedback group's design processes and evaluated the schemes that they produced in each 30-minute trial; he then compared the results of the feedback group with those of the nonfeedback group. This comparison appears to confirm the hypothesis that feedback on specific criteria, even on as few as six trials, can help students to progressively improve their schemes. The nonfeedback students improved their schemes very little. Hence, the feedback students learned much more.

By "learning," as used in this context, is meant a more or less permanent change in behavior, which is built on a foundation of previously learned responses acquired in situations similar to the present one. The emphasis here should be placed upon adaptive changes in behavior, which are clearly reflected in the improved schemes of the feedback students. This is a most important concept and perhaps a foreign one to educators in architecture who have traditionally focused upon the quality of each student's final scheme. What really counts is the difference, or improvement, from one interim scheme to the next.

For each trial the instructor recorded 15 process items and 15 characteristics of products (schemes) from both groups. These records were used for experimental results but were not communicated to the students. He also rated on a scale of one to seven some 24 scorecard criteria, which were the basis of critiques for the feedback students.

The following are four of the 24 criteria:

- Indoor space allocation and distribution. (Scale: poor—good.) The instructor rated the student's performance "good" if the student succeeded in including the requisite number of rooms in the scheme (about 30), if he properly designated them and if he chose room sizes consistent with reasonable room sizes.
- Consideration of sound and acoustic problems. (Scale: solved—unsolved.)

The instructor rated these criteria solved to the degree that the student placed noisy rooms (kitchen, mechanicals, toilets, gymnasium and cafeteria) near one another, and noisy rooms away from quiet rooms.

- Pedestrian access. (Scale: solved—unsolved.) The instructor rated this criterion relatively solved to the degree that the student located visitor spaces (gymnasium, auditorium and administration) near parking lots, and ensured that pedestrian access was not endangered by automobile traffic patterns.

- Pupil-teacher interaction. (Scale: solved—unsolved.) The instructor considered this criterion solved to the extent that the student provided space for pupils to meet informally with their teachers—a commons, court or wide corridor—and located this space near other spaces frequented by pupils and teachers.

After a student had completed a 30-minute trial in the experimental study, the instructor photographed the design. The results of one of the students who received no feedback whatever and those of a student who received criteria before beginning and feedback after each of his six trials are set forth in Figures 1 and 2.

Some readers might view the nonfeedback schemes of Figure 1 as superior, offering a simple (if not simplistic) design concept. But keep in mind that this pedagogical method looks for change between successive schemes and for comprehensive satisfaction of 24 criteria.

The student who received no feedback made little more than a few random improvements in completeness and symmetry. His designs are virtually alike, incorporating only trivial changes. (He mercifully provided a teacher's toilet (TT) finally on the fourth trial, and in the fifth and sixth trials he removed it to a less conspicuous spot.)

The schemes in the bottom set of pictures, however, show the benefits the other students derived from direct, detailed critiques. At the beginning of his series of trials, the student was briefed by the design instructor on the critique that the instructor would observe and rate—but *not* what would constitute high ratings on each criterion. At the end of each trial, the instructor reviewed with the student

criterion ratings in reference to the finished design. In giving such feedback, he would tell the student, for example, that his scheme was rated low on acoustics if noisy and quiet spaces were adjacent, but he would not tell the student how to arrive at a better arrangement.

Analysis of the results of the feedback student's trials indicates that his first trial is crowded, unimaginative and generally inadequate. The second is open, imaginative, but still inadequate; it seems to be an overreaction to the critique of the first trial. In the third trial the student is beginning to come to grips with the need for a cafeteria (C) and a gymnasium (GYM), but he places them and the other noisy facility, the mechanical room (M), adjacent to two classrooms. Furthermore, the cafeteria and the gymnasium are not as accessible to the visitors as they might be. Trials four and five show some efforts to solve access and noise problems, first in an imaginative and innovative way and then more conservatively. In trial number five, especially, the student provides for pupil-teacher interaction with a strategically placed commons (COM). The library (L) and seminar room (S), while inconveniently separated into two parts, are nevertheless welcome additions. But it is not until the sixth trial, after five critiques, that he brings together the virtues of the fifth trial and the innovations of the fourth trial to produce a design that satisfies many of the given criteria. The sound and acoustics criterion, for example, is much better satisfied with the noisy areas placed together on the left and classrooms and library on the right.

Even the sixth scheme is not presented here as a "good" scheme, nor should excellence be expected from a sophomore after only six half-hour efforts. What we mean to emphasize, instead, is the student's remarkable change from one 30-minute scheme to the next in response to feedback, and that this program, if continued, would surely lead to a highly competent scheme. The feedback student has experimented with a rigorous design challenge denied the nonfeedback student who, as in the traditional teaching situation, can work for hours, even days, without getting a critique. □



# In Memory of William W. Atkin, Author and Editor

Richard Wilson Snibbe, FAIA

William Wilson Atkin died on Feb. 6, 1976, in Norwalk, Conn., where he lived for the past 20 years with his wife Marilyn and their four children—John, Ethan, Evelyn and Paul. The cause of death was a heart attack.

I asked Marilyn how it happened. She wrote: "Thursday he called Joe Coogan and made plans to go to Philadelphia to start his book on the cost of modern warfare and the uselessness of war and what could be better done with the money than killing people. Friday morning he drove Evelyn to work and then to a bank and when he left the bank he started the car and what attracted the attention of someone was the fact that the motor was racing—it was fast and his foot was on the accelerator, and I called the bank to find out if he had made any transaction, for nothing was in his pockets. . . . The reason he was in the bank was pure Bill—he was applying for a loan to build me a greenhouse. . . . Always practical my man. . . . What more can I say?"

Bill spent most of his time and money on unpopular ideas, like peace and helping people create better architecture.

He served on the first design committee that AIA ever had. It started in 1961 and, in April 1962, we held a Conference on Esthetic Responsibility. We asked: "Who is responsible for ugliness?" The title of the conference and the question were Bill's ideas. He wrote just a month ago: "I am proud to have been a part of this pioneer effort to promote excellence in design. Speakers had to limit their remarks to 10 minutes, and Morris Ketchum, who was chairman, had a timer to keep them in line. I had the honor of being the first speaker and mine was the shortest speech. It follows (in toto): 'Slums, being robbed or mugged by an addict with a \$25-a-day habit, shelters, "Gunsmoke," Park Avenue nouveau: We don't have any esthetic values as long as we are a society that believes in war and spends 50 percent of its income supporting that activity.'"

Architects are notoriously bad writers.

**Mr. Snibbe**, who practices architecture in New York City, was chairman of AIA's pilot design committee in 1961.



Bill made a lot of us at least intelligible. As an editor, he made you want to write and very gently made you better at it, without your knowing it until much later.

We are, I think, a literary-oriented society. The printed word is still the major communicator of ideas. A man, like Bill, who can convey in words the meaning of a visual art, like architecture, is as important to the community as the art. He wrote: "Although I never earned a degree in architecture, the profession has long been my passion. I am humbled at the thought of even being considered for honorary membership in the Institute." His friends were urging this just before he died. Bill was able to make you understand architecture because he was a creative person and he loved the art.

Not many people in the course of a lifetime touch your heart and change you very much at all. Bill was one who did this for me. We worked together and became good friends. It was my fault we were estranged for a while. Then we recovered our friendship. It was recovered because, I think, we both missed it and

because he never mentioned our trouble again.

Speaking of friends, I am proud to be in the company of some of the people Bill himself mentioned: "In activities promoting architecture I have earned many friends. Among them are retired Dean Henry Kamphoefner of North Carolina State, Paul Thiry and Paul Hayden Kirk of the Seattle chapter, Wayne Williams, Whitney Smith and A. Quincy Jones of the Southern California chapter, Dean Pietro Belluschi of MIT, James Morrison Leefe of San Francisco, and many others." I know they will join me in this effort to appreciate what Bill gave us.

He did a lot of things for AIA in addition to the Conference on Esthetic Responsibility. The conference, incidentally, started a profound change in national attitudes that eventually made better design not only possible, but also in demand.

Bill won an AIA citation of honor for Reinhold Publishing Corp. in 1958 for handling the publication of *The Architect in Mid-Century* and another in the same year for work on the catalog for the AIA exhibit for the fifth congress of the International Union of Architects held in Moscow.

The architectural guidebooks to cities in which AIA held its conventions were his responsibility while at Reinhold. His articles appeared in almost every architectural publication, including the *AIA JOURNAL*.

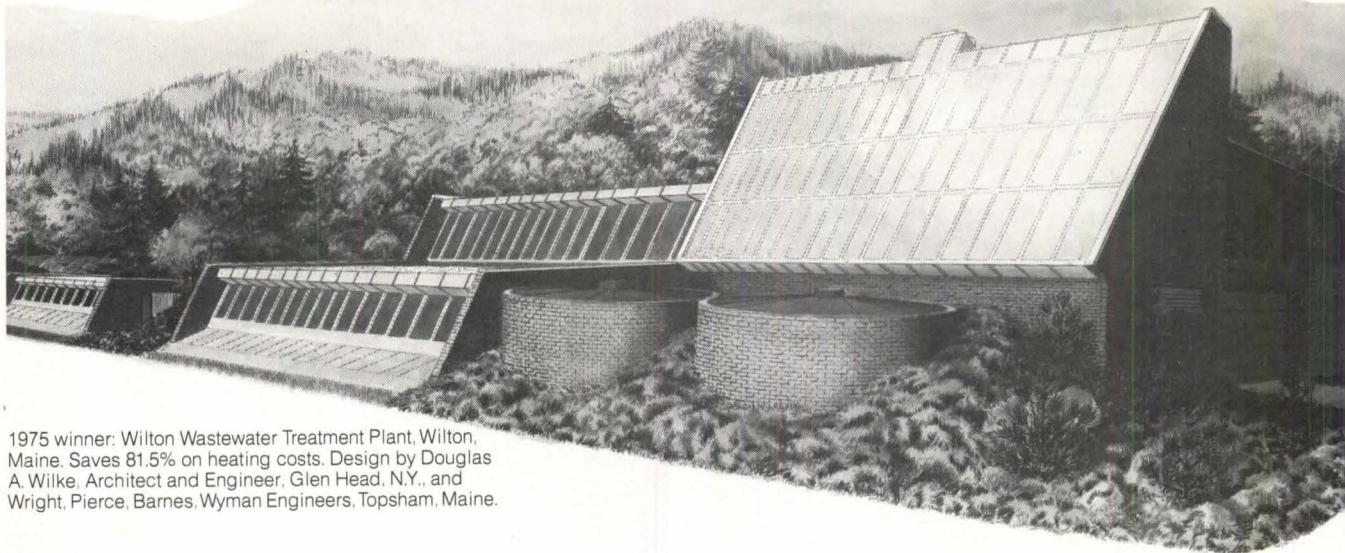
Bill was a teacher, conscientious objector, journalist, editor, lecturer, organizer of good works, publisher and writer. Of all of his books I think he liked best *The William Wilson Atkin Sketchbook*, which he wrote, illustrated and published in 1965. The subtitle is *Drawing Animals for Children*. It is a 30-page, \$1.50, 8½ x 11-inch booklet with a soft orange cover. The text is typed, and it starts: "Drawing animals can be fun for children. Any child—boy or girl—who studies this book carefully will be able to draw any animal as well as I do." The drawings are like kids' stick drawings of all sorts of animals that kids just do anyway if you leave them alone. Every kid loves an adult who lets himself be laughed at and leaves them alone! □



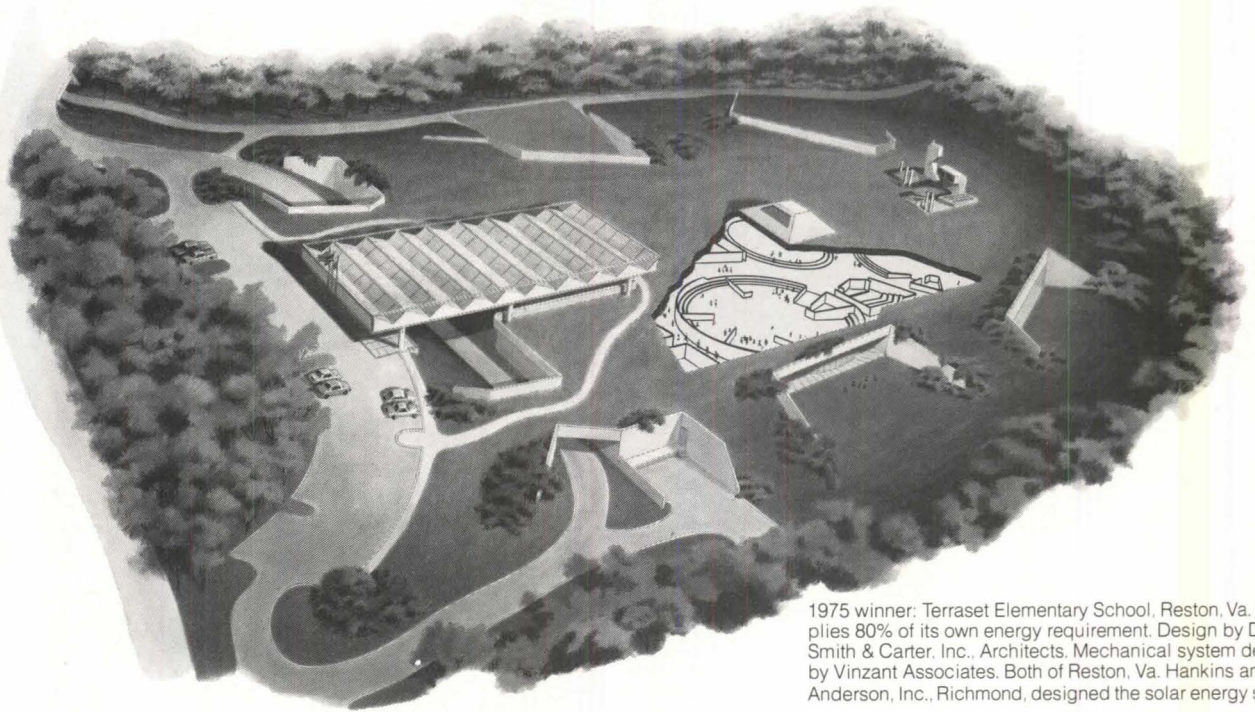
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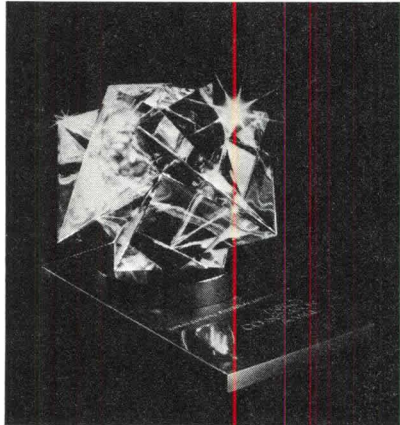


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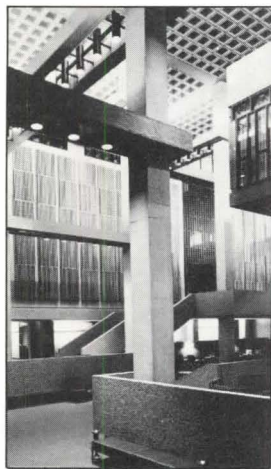
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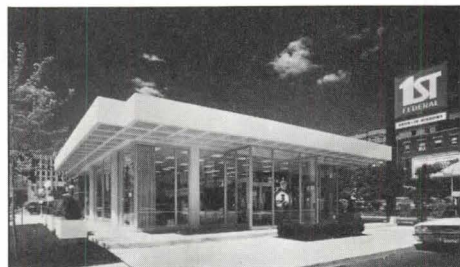
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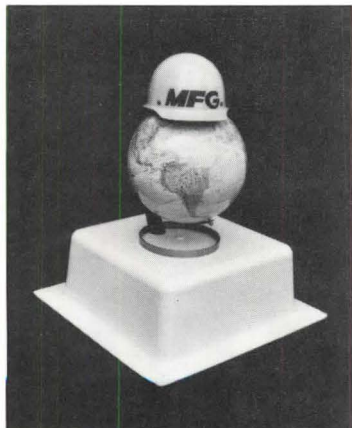


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*Architects from page 57*

into contact with, whatever their professional or technical background," he continues, is the bottom line of the financial statement. According to him, corporate architects are viewed as providing the money-making departments of the company with "necessary and adequate facilities to do their job, which is to make a buck for the company and its investors."

Because the corporate architect is outside of the mainstream of his company's pursuits, "he is usually short-staffed and under tremendous pressure to provide the required facilities in record time at minimum cost," says Fearon. He adds that "the operating people almost always insist on changes throughout the design and construction process which add to his pressure and that of any architect associated with him." For these reasons, it is most important that the consultant be able to meet time and cost schedules and be flexible.

In this connection, American Airlines' Hart, along with others, emphasizes the need for consultants to rely on and accept the guidance of the corporate architect throughout the project. Not infrequently, says Hart, the consultant will need the corporate architect to defend his opinions and decisions. "Cooperation between the consultant and the corporate architect is crucial," he says.

Another point on which this group of corporate architects agrees is that "the consulting firm not kid itself about its own capabilities," in the words of Caterpillar's Howell. "Nothing is more disastrous to the consultant and to the client than to get well into a job and find that the horses aren't there to pull the load." This is a major reason why most corporations prefer to deal with private firms that have already proved themselves.

Most architects working for industry also agree that the best money spent on a project is that spent for careful and detailed design. Says Howell, "We feel that it is returned to us manyfold in reduced construction costs, because the bidders find it unnecessary to put large contingencies in the bid clause since they don't have to guess at what they're expected to do."

The rewards of fulfilling obligations to the letter and paying careful attention to detail are self-evident: For reasons of self-preservation, most corporations will reward good work with more work. For, as Tom Howell puts it, "It takes the best A/E firm about three projects before it becomes completely oriented and familiar with the policies, procedures and practices of a sophisticated client. So once you've brought them through this learning curve with you, you have an investment in them which you don't promiscuously throw away by going to a new firm. As long as a firm continues to provide services efficiently and at a justified cost we do tend to get back to them." *Andrea O. Dean*

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**Energy, Earth and Everyone.** Medard Gabel with the World Game Workshop. Foreword by R. Buckminster Fuller, afterword by Stewart Brand. New York: Simon & Schuster, 1975. 160 pp. \$4.95.

The good news is that there is sufficient energy available from "alternative" sources using present technology to immediately begin the decommissioning of all fossil fuel and nuclear sources. This ambitious plan also anticipates extending the comfortable lifestyle now enjoyed by 40 percent of the world population to the other 60 percent, as well as allowing for population growth.

This optimistic "world game" strategy is based on information already available from a variety of published and accessible sources. The value of this book is in the simplicity of applying this information to the earth's energy systems and man. By using design science, it proposes to offer comprehensive success for all humanity for all time.

In spite of its hackneyed title, the book is a fresh and objective analysis and conclusion of global energy strategy. It blames present accounting methods as being the root of energy problems. It takes the ethical as well as economic argument that oil costs mother nature something over \$1 million a barrel to produce and shouldn't be squandered by burning. It is a source of global facts and potentials.

In soft cover at a bargain price with large, simple graphics, the book is intended for the young, maturing generation. But the clarity of its information and the example of its rational process is a model of professional communication. The choice of words is incisive and the sequence of ideas is logical. In short chapters and tight text, the book's problem-solving method moves to a convincing conclusion. Primarily, energy is approached as a quantitative need to be met by a plurality of sources that are now idle. But, inevitably, any earth question involves human values, and choices reflect philosophic sets. Here the directive from the "world game" leaves little ambiguity: "Evolution or oblivion" are the choices, reflecting a Tielhard commitment. Such alternatives suggest the world game is not very playful.

Proponents of solar or wind or "back to the farm" or autonomy may be quite upset about the proposal for a "global energy utility" to direct and coordinate local and regional activities. A world-scaled Con Edison is a technocratic solution that both humanists and global strategists would question. E. F. Schumacher in *Think About Land* brings attention to the mathematical problem of scale:

"The crucial point is that as a monolithic organization increases in size, the problems of communicating between its components go up exponentially. It is generally reckoned that the maximum size of a productive scientific research team is 12; over that size everyone spends all his time finding out what everyone else is doing."

In other words, scale is a decisive factor in efficiency. Administrative superstructure is the product and punishment of largeness.

On the other hand, the advocated global energy development strategy is based on decentralization and includes lots of diversity. It is a multimedia approach with none of the myopic dedication espoused by single source die-hards and simpletons. But it is in the orchestration of these many diverse sources that the most profound strategist falters, to say nothing of the "world game."

Among the logical particulars that are recommended are conservation techniques, such as the energy piggyback or interlocking of various industrial needs. Architects might note a variety of suggestions for capturing wind energy which range in scale from simple, small building integration through urban highrise clusters with parasitic fans hanging on the side, to regional landscapes, rail rights-of-way and transmission line towers with windmills in persistent array. A global hydrogen system is anticipated as a complement to the existing electricity grid. Architects are challenged to build autonomous buildings and communities within five years.

Both the foreword by Bucky Fuller, without whom the book would have been impossible, and the afterword by Stewart Brand are exceptional short essays. Their dramatically different styles, their humor, their idiosyncrasies and, above all, their

positive human perceptions lend an emphatic underline to the weight of the book's core. Quantitative global conceptions are so new to humanity that such leavening is necessary.

Man's scrambling difficulty in dealing with such global scales is immediately recognized on the title page: "4.14 x 10<sup>15</sup> kwh = earth's daily receipt of energy" may be a workable notation for a physicist, but for the rest of us it is an abstraction probably more demanding than recognizing God. While the concepts of the kitchen sink and the scientific exercises of the high school lab may be microcosms of global and universal phenomenology, the dimensions of that problem are dramatically different. So also is the urgency for response to global human imperatives.  
*Jeffrey Cook, AIA*

**Water and Landscape: An Aesthetic Overview of the Role of Water in the Landscape.** R. Burton Litton Jr., and others. Port Washington, N.Y.: Water Information Center, 1974, 314 pp. \$11.50.

This is a scholarly and comprehensive study by four persons associated with the department of landscape architecture at the University of California at Berkeley. The text was originally prepared as a report for the National Water Commission for its deliberations on water policy. The report is now published in book form so that all those interested in the natural environment may benefit from its suggestions.

Whatever the use of a site—for work, play or habitation—water enhances the environment. This investigation into the complexities of water's esthetic role has as its ultimate aim the establishment of intelligent principles and guidelines for the support of policy and planning regarding water's place in the landscape.

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*continued on page 92*

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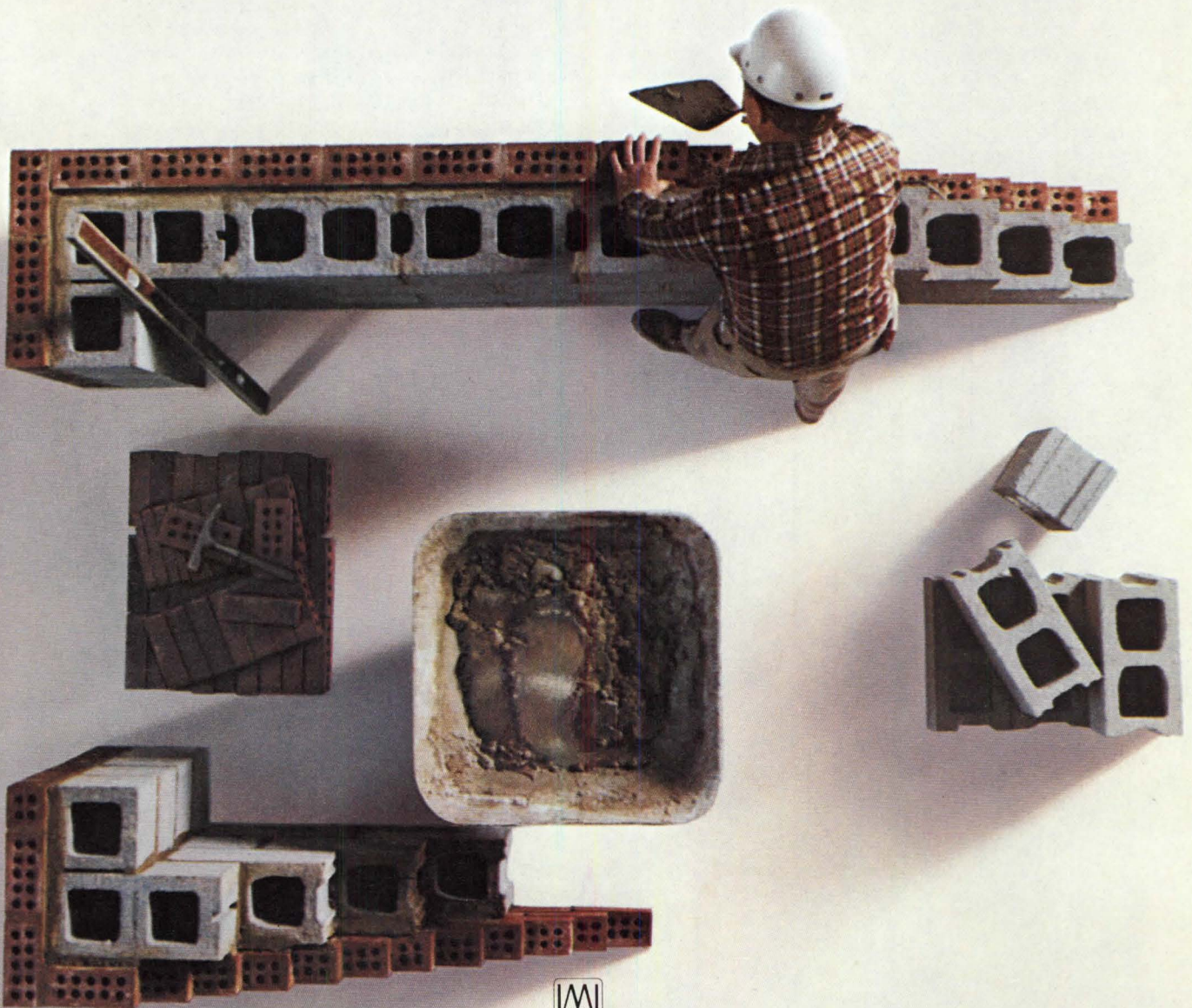
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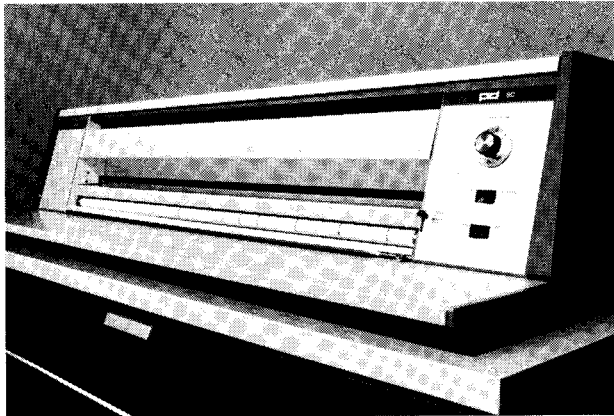
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**New Environments for Retarded People.**

President's Committee on Mental Retardation. Washington, D.C.: Government Printing Office, 1975. Unpagd. No price given.

Here are depicted some of the projects represented in an architectural exhibit at the fourth World Congress on Mental Retardation. The projects reveal "alternatives to the institutional practices of the past" and indicate a "trend for the future." The monograph, prepared by Arnold G. Gangnes, AIA, contains photographs, plans and brief descriptive text for facilities that range all the way from a school for autistics in Australia to halfway houses in Seattle. Readers are advised to write architects directly for more in-depth information about any project of interest, and addresses are supplied.

**The Law and Administration Relating to the Protection of the Environment.** D. A. Bigham. London: Oyez Publications, 1973. 359 pp. Three pounds.

England has a long tradition of excellent urban planning, evidenced early in the various town and country planning acts, the subsequent Civic Amenities Act and various new town acts. Of critical importance to the effectiveness of these various pieces of legislation is their legal interaction and interdependence upon their sister legislation to provide a framework for successful planning and preservation. In the British system, authority to designate and control planning is vested in various national authorities, while the actual administration of such planning is carried out by local authorities.

Urban planning or design and environmental conservation is an integral part of the English system, as is indicated by the organizational structure of the department of the environment. Enforceable criteria were developed for architectural, esthetic and/or physical control which then is enforced by a primarily professional board relatively free from political pressures. It is this concept that is perhaps the most important message of this book.

Bigham has successfully set forth the British legal framework for preservation and conservation, providing an in-depth discussion of the complicated responsibilities to be carried out by national and local authorities. Most critical is the concept that any designation of a "conservation area"—an area designated by national authorities under the Civic Amenities Act for enhancement and preservation on the basis that entire areas may be substantially more worthy of preservation than the sum total of their parts—is the mutual responsibility of both planning and preservation authorities.

In the U.S., the concept and understanding of the integral and intrinsic relationship between the natural and man-

made environment is still in its infancy. Except for a few isolated court decisions, little attention has been accorded the concept of the "conservation area" as an urban planning tool. A number of local and some national designations have been achieved, but an integral and cohesive protection for the landmark or district and its respective environment is virtually nonexistent. In addition, recent challenges to such designations have succeeded in eroding much of the original protective enforcement powers. Control of surrounding areas does not exist. Consequently, buildings and districts can be subject to irreparable esthetic damage.

It is also important to consider that some of the landmark cases in the U.S. have been reversed primarily on the grounds of economic hardship, which seems to open the door for destruction of many significant buildings or districts. Most countries, England included, recognized years ago that to forestall such destruction, building and sites should be considered an essential part of the public welfare; funding, therefore, should become a public responsibility. Since this determination was made in England, various forms of grants-in-aid programs, closely supervised by the proper authorities, can be obtained, ranging from small grants for individual buildings to large sums for conservation areas.

Bigham's book, which presents an in-depth discussion of the various British legal structures, might not always be of direct interest or applicability in this country, but his work is important in concept and methodology. Preservation is a shared responsibility and not just the task of a few; incorporation of the various planning processes, regulatory agencies and financial responsibilities is a must. The book can serve as a guide in that direction. *Theodore H. M. Prudon, Graduate School of Architecture and Planning, Columbia University*

**The New Jerusalem: Planning and Politics.**

Arthur Kutcher. Cambridge, Mass.: MIT Press, 1975. 128 pp., 183 plans and drawings. \$6.95.

To live and work in Israel is an emotional experience which this reviewer can well understand, having been involved, as was Arthur Kutcher, in work for a governmental planning and design agency.

I read Kutcher's book with great anticipation and came away with mixed feelings. First of all, this moderately sized volume is a rare visual delight. All the illustrations, from detailed plans to grand views of the old city and other parts of Jerusalem, are the author's finely rendered pen and ink drawings.

What we have before us, however, is essentially a fervent tract that exhorts the reader to share the author's love of Jerusalem's traditional values and his horror

of the misdeeds of politicians and developers who destroy the qualities of the city. Somehow, when we engage in righteous criticism of actions by the "Chosen People," we commit the ironical fallacy of thinking that Jews must always be better than other human beings.

In the foreword, Vincent Scully calls the book "pure and beautiful" in support of Kutcher's youthful idealism, saying that this is the way "experts and humanists should but rarely do function in the modern world." Yet, Scully admits that the insensitive practices of profit-oriented decision makers in Jerusalem also prevail "all over the world." Kutcher does not analytically relate the events of architecture and planning to the economic and social conditions of the country and to the contradictions inherent in our way of life. This, of course, proceeds according to capitalistic principles.

I share Kutcher's concern about the preservation of the old city and its magnificent setting and his horror of the destructive policies which ignore accepted city development plans and permit the construction of highrise commercial structures and monotonous housing complexes. Devious and ignorant politicians who cherish "progress" and bulldozing profiteers are the natural enemies everywhere of conscientious designers and decent citizens who want to see a city develop organically.

There is no activist practice without an activist theory, and Kutcher's barricades are sometimes built of esoteric esthetic images. He rightly criticizes the bureaucratic idea that esthetic values are a matter of subjective taste and that architectural limitations of developers' plans may entail additional costs. But can this situation be changed by confronting the merchants in the temple with images from the past?

A quarter of the book is given over to Kutcher's philosophy of esthetics. He elaborates on two distinctive approaches, the deductive and the inductive, revealing his own understanding of architecture and urbanism. His whole critique of Jerusalem's planning is revealed in conjunction with this philosophy.

In a way, the drawings speak a more convincing language than the words. I like the dramatic confrontation of Shaked's massive housing estate on French Hill, with the filigree of the Dome of the Rock and the low profile of the city. Shaked, however, is an energetic architect who has the accomplishment of desperately needed housing always very much on his mind—apparently, at any cost.

Times and prejudices are changing constantly—so fast, indeed, that Kutcher does not include the vast new projects by Moshe Safdie. Despite all, there is no place like Israel, where the will to live is displayed so lavishly. *H. H. Waechter, AIA* □

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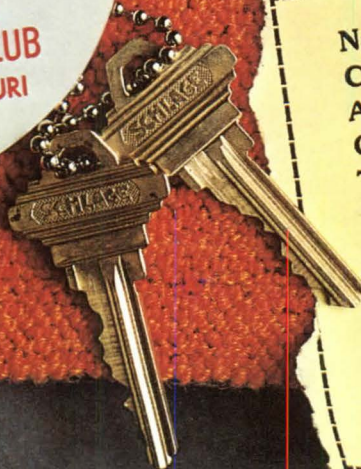
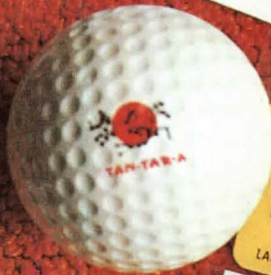
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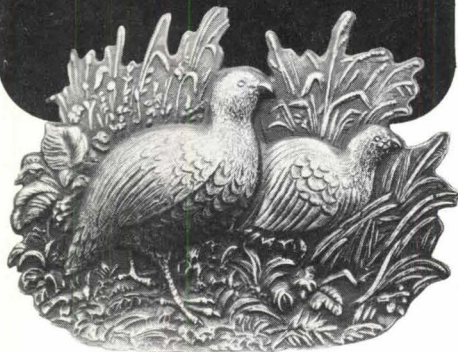
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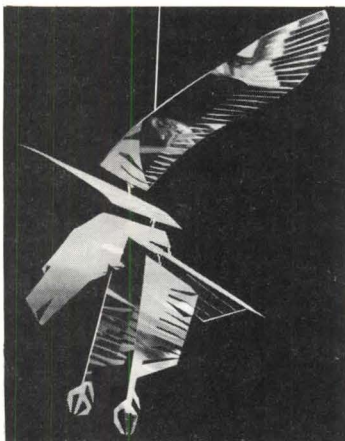
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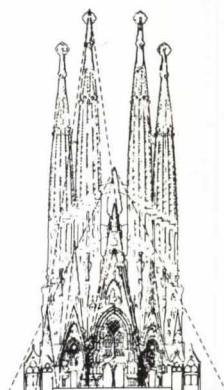


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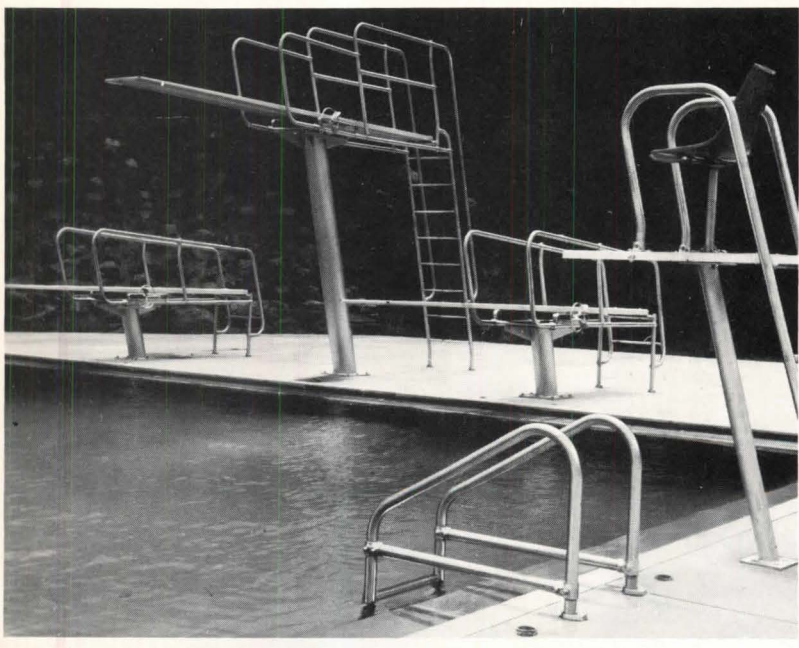
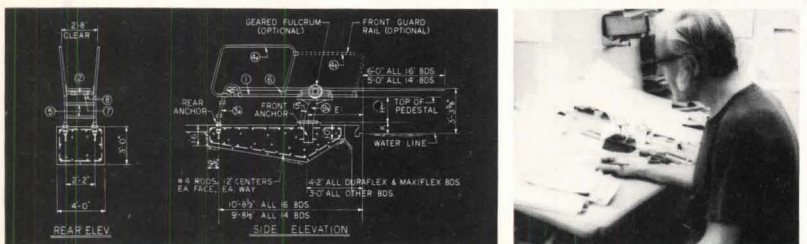
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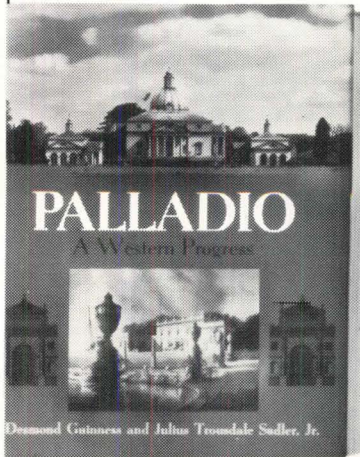
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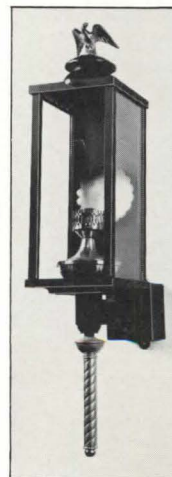
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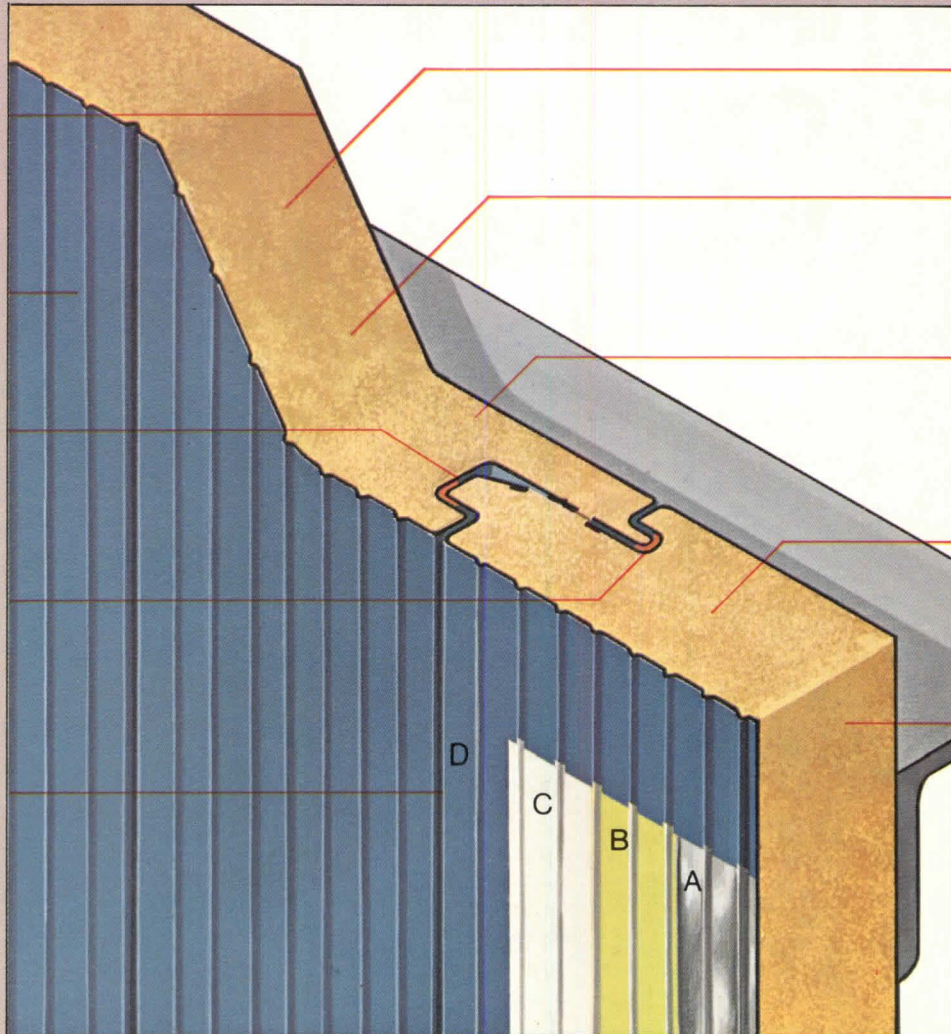
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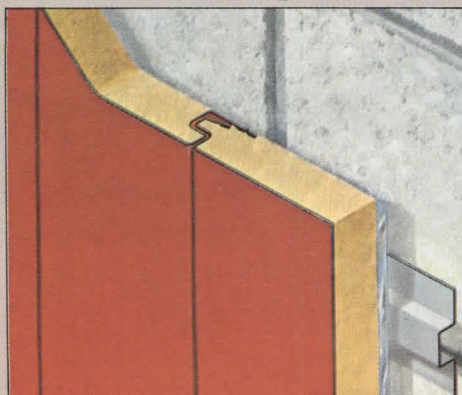
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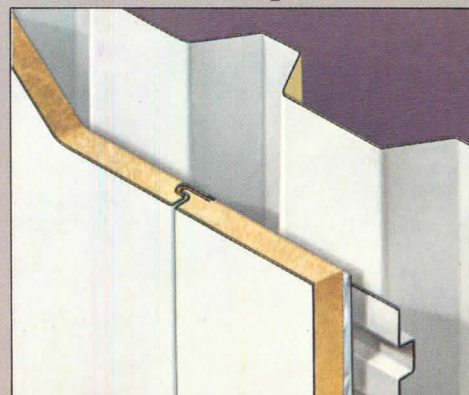
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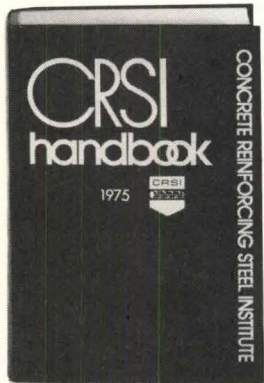
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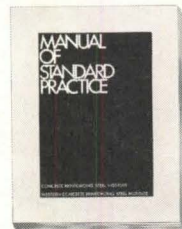
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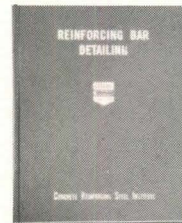
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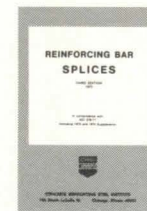
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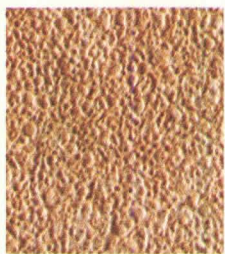
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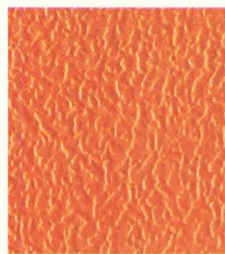
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Blau from page 55

But such wide participation does not bring advantages to small firms, although it is the small firm that is most likely to have extensive staff meetings. Only in small firms is centralization beneficial for design activities. Once again, we see a condition most difficult to achieve for a particular sized firm being most helpful. Before, it was specialization and differentiation; now, it is decentralizing participation for large firms. To summarize, if small firms can manage to resist such built-in tendencies as an undifferentiated structure, few diverse services, informal personnel regulations and too much staff involvement in decision making and can acquire a set of characteristics typical of large size, they are much more likely to do well. Large organizations, on the other hand, have inherent advantages and it makes little difference whether or not they possess the array of characteristics that typically go along with large size: differentiated structure, diverse services, formalized personnel regulations. One attribute is important, however. If top management does not encourage—and it generally does not—wide participation of staff, the work of large offices suffers significantly.

**The role of value orientations:** The data for value orientations and their significance for design activities were obtained from an open-ended question that was asked of principals of large firms in interviews: "What criteria do you use in defining a successful project?" While the opinions of principals may not be shared by staff, work that is done in the office must nevertheless reflect the orientation of the principal.

Answers were coded in terms of 13 categories with the three most frequent being: the project has esthetic value (49 percent); the client is happy with the results (65 percent), and the project is financially successful or stays within the deadline and budget (69 percent). Only the last of these is related to awards, although the value is small (.09). However, an index dealing with project users is also related to winning awards, but negatively (-.11). The three items that form the index are: the project serves people's needs, it improves with use, it continues to give pleasure.

These two value orientations, which I will call pragmatic and user-oriented, correspond roughly with James Ackerman's distinction between the "give-um-what-I-want school of thought" and the "give-um-what-they-want school of thought." (Cited in *Designing for Human Behavior: Architecture and the Behavioral Sciences*, by Jon Lang et al., Dowden, Hutchinson & Ross, 1964).

In looking at the value that stresses financial success and other pragmatic criteria, we find that whether the heads of small firms emphasize such criteria as effi-

ciency and profit or not makes no difference whatsoever. But large firms—whose heads are more likely to stress this—are significantly benefited if they do not. I believe that the explanation for this difference lies in the fact that the management of the biggest firms, with their tremendous investment of funds in large-scale projects, are inevitably drawn into perhaps too great a concern with solvency, keeping costs down and operations efficient. A natural response but, as we see, a harmful one in terms of design quality.

A user orientation has quite different results. Heads of small firms tend to be concerned with user needs, and heads of large firms tend not to be. But if small firms abandon this approach, they win more awards. [*Perhaps this is because awards programs do not measure projects by user-oriented criteria.* Ed.]

In sum, by stressing economic criteria less and by taking a greater interest in the users—not necessarily the clients—large firms would benefit, whereas small firms would profit by being less idealistic and more pragmatic. These two findings are quite surprising. We would expect that if ideas play a role at all in organizations, it would be in smaller firms, in which their impact is not diluted by formal structure and sheer size.

In conclusion, architectural offices share with factories, schools, insurance companies and other bureaucratic organizations such attributes as hierarchy, formalized rules and explicit objectives. But empirically derived theoretical generalizations about conditions favoring creativity and high levels of performance in other organizations are violated with remarkable consistency by architectural firms.

The differentiation of structure and activities that is an inevitable consequence of large size does not bring the marked advantages to architectural firms that it does to other organizations. Differentiation has advantages only for offices that achieve it prematurely (while still small). And this pattern is repeated for other important correlates of size, including extensive consulting, complex joint ventures, a large managerial component and use of personnel regulations. Excellence in design, in other words, is perfectly compatible with bureaucratic characteristics so long as bureaucratization occurs when it "shouldn't" in terms of the so-called laws of organizational theory.

But if superior reputations are earned by smaller firms who breach the natural laws that govern organizational dynamics, those of large firms are earned by those who breach a basic premise about large-scale organization. This premise is that impersonal large bureaucratic instruments are beyond ideology. In fact, ideas do make a difference, and the larger and more bureaucratic the office, the bigger the difference they make. □

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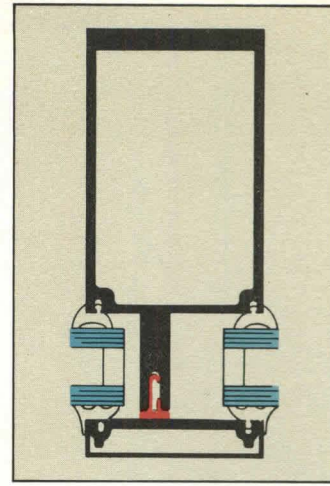
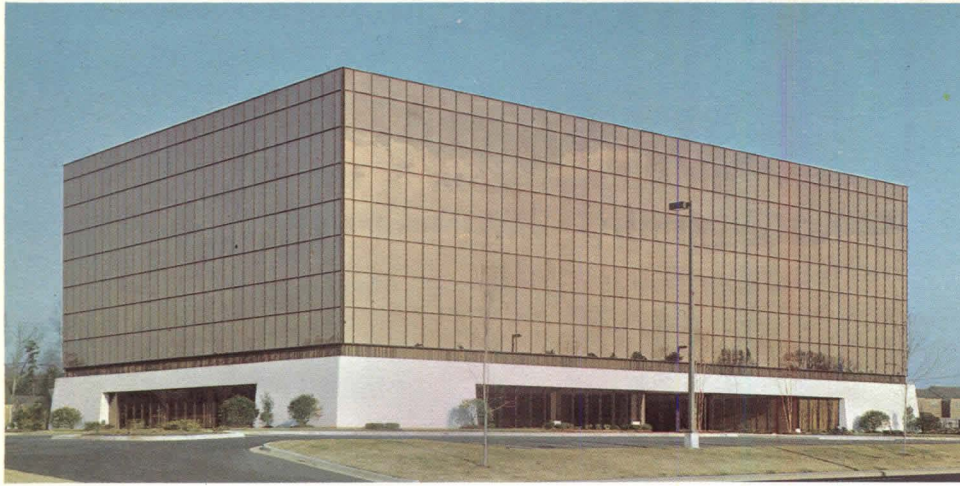
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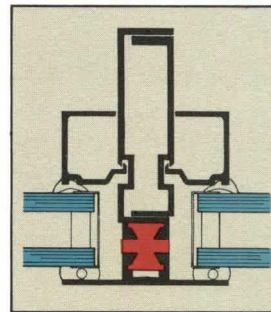
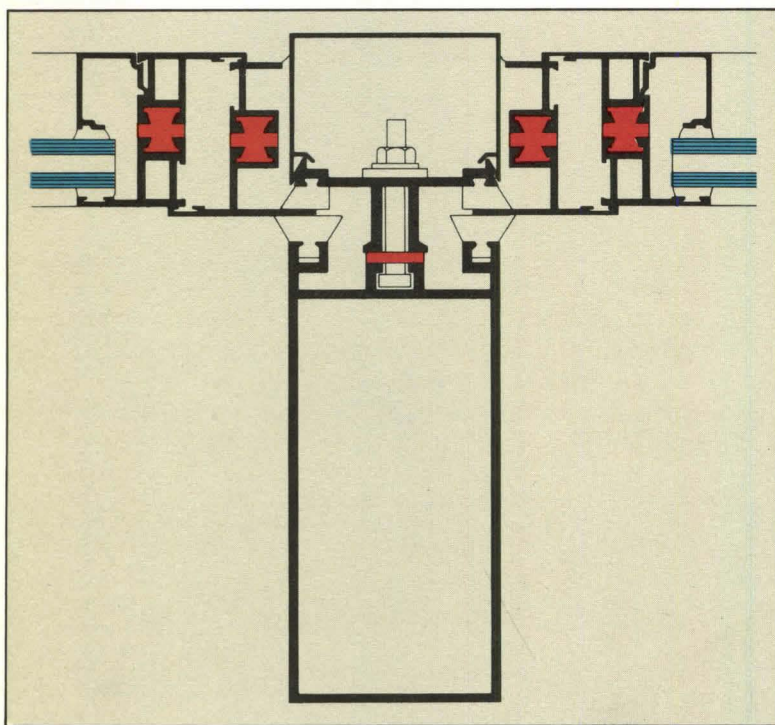


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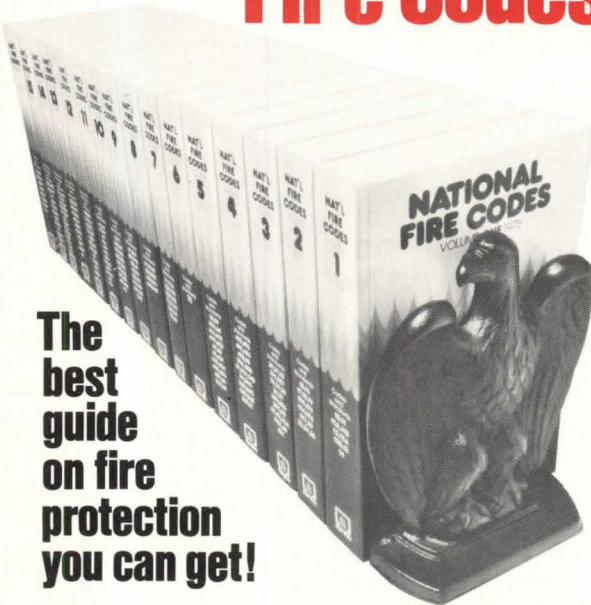


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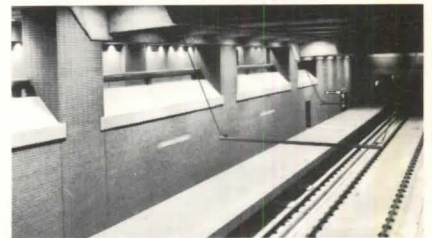
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So let's compare glass walls to

brick walls. Their best vs. our best.

Since you can't insulate glass walls without destroying their primary function, we won't. And since we've always recommended that brick walls be insulated, we will.

The best of the brick wall line-up is the 10-inch insulated brick-and-brick cavity wall with a U value of .058.

That's about six times better than the best, double-glazed

reflective glass in reducing heat loss. And the brick wall is about 30 times better in reducing solar heat gain — and costs less to build and maintain.

That's the kind of comparison that's meaningful.



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