AIA JOURNAL

JULY 1968

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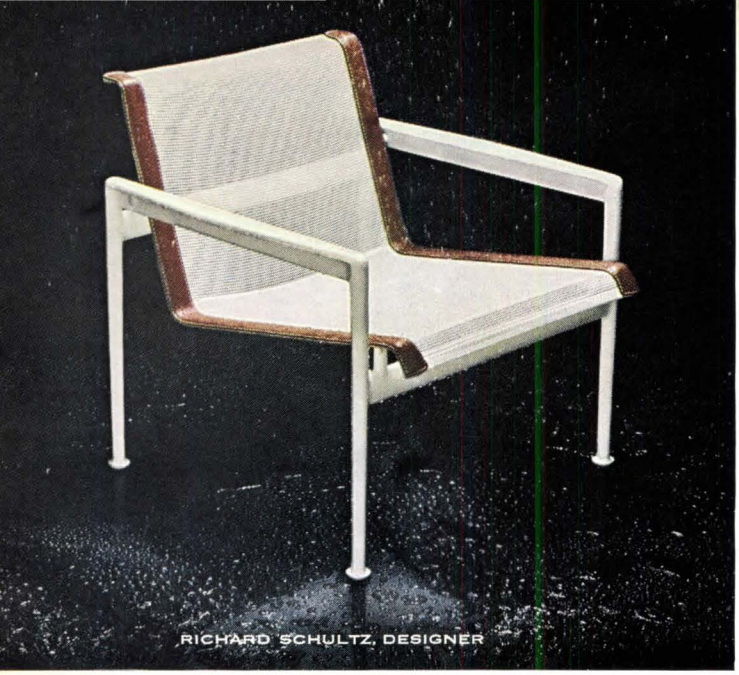
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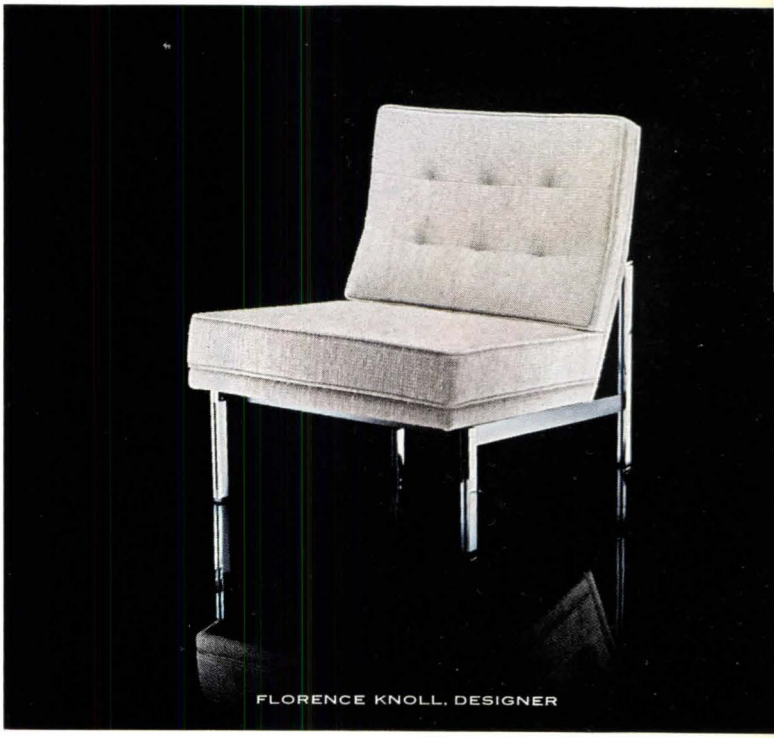
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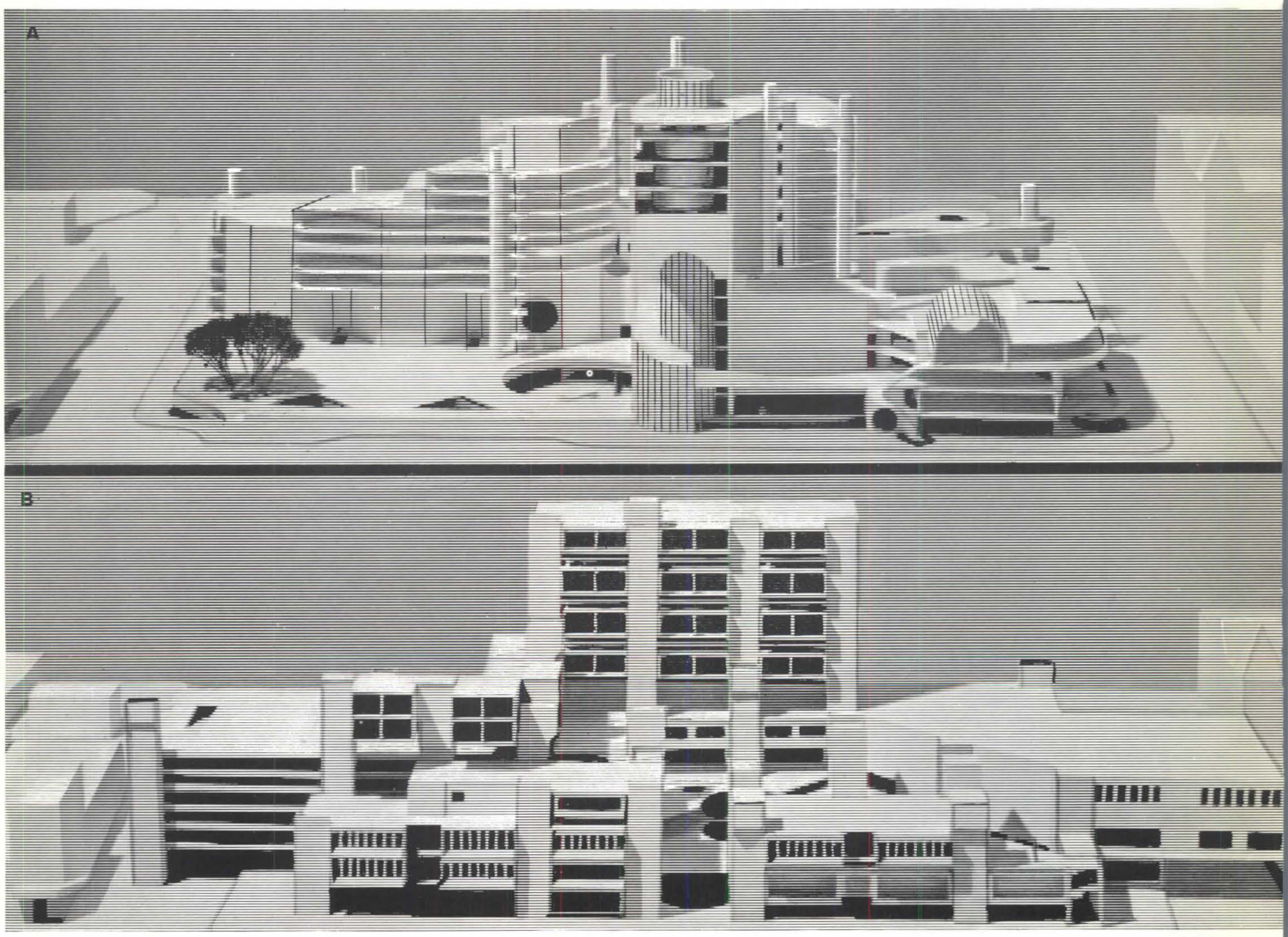

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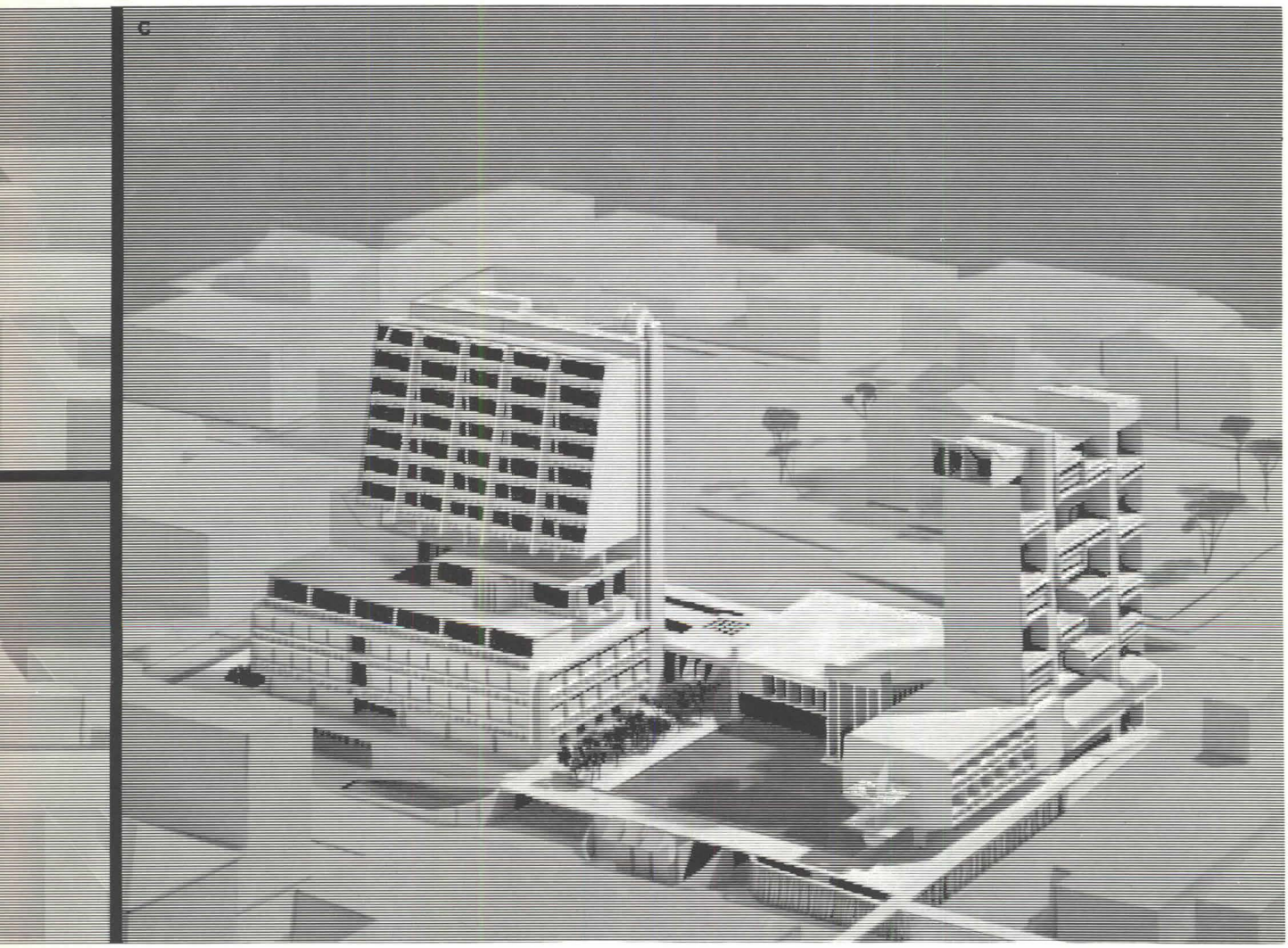

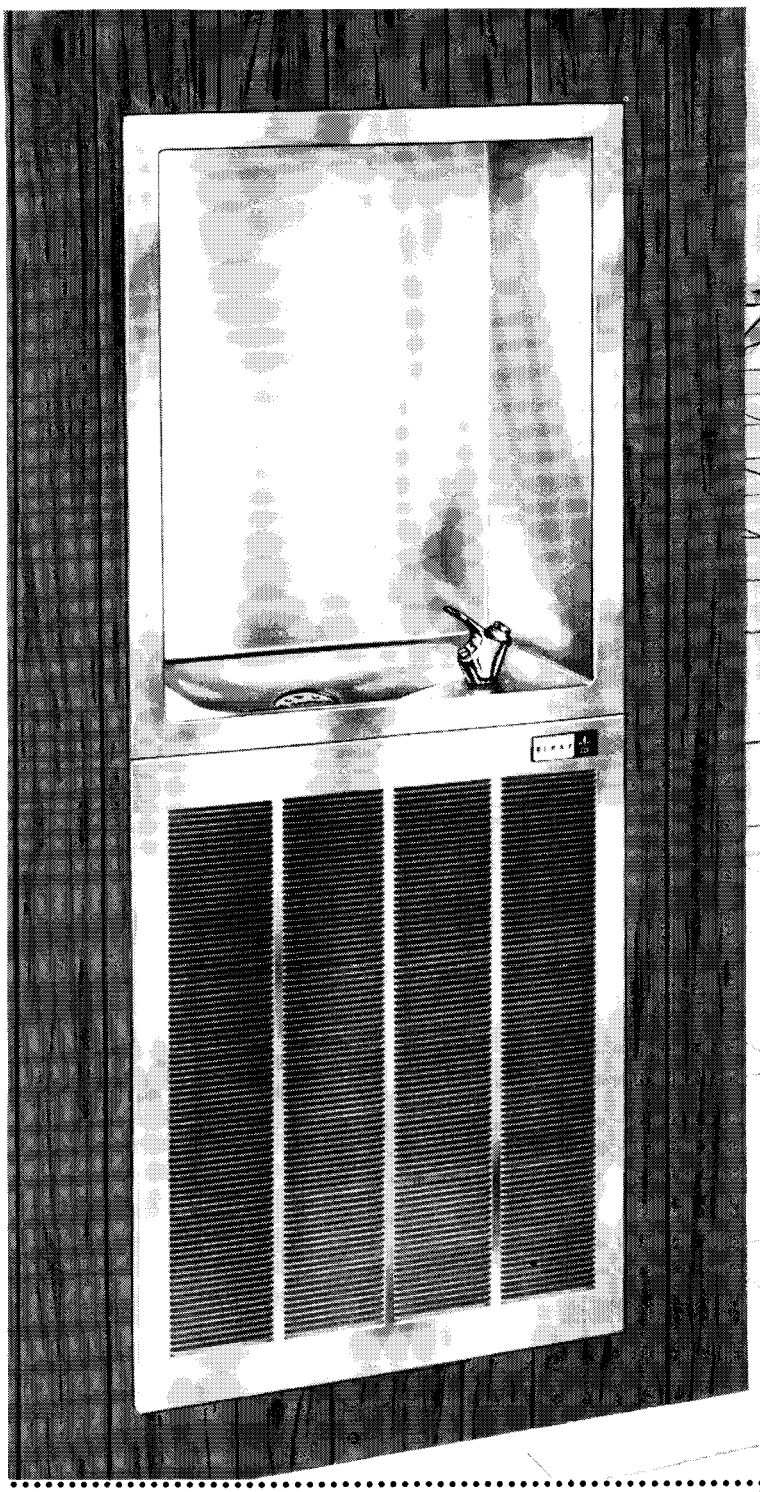

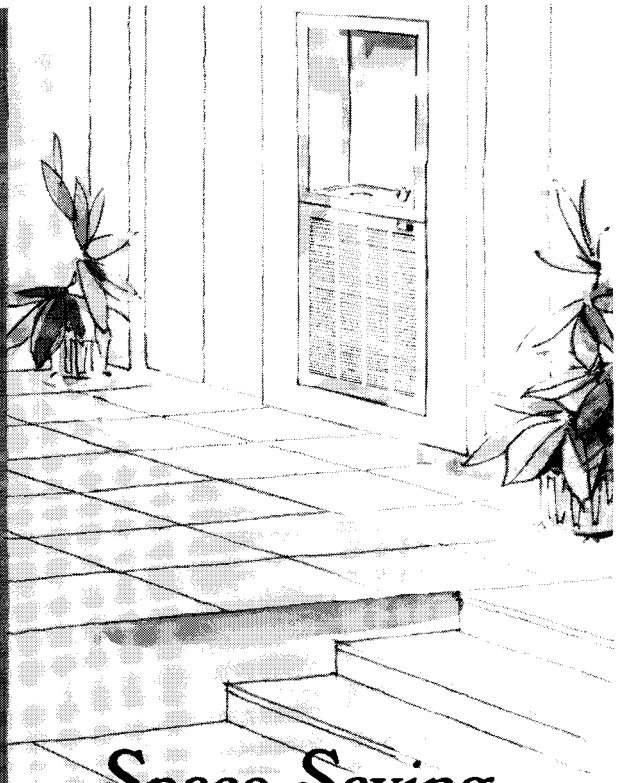

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BPA

VOL. XLX, NO. 1

Comment & Opinion

Planning for and with People: "The miracle of trees and parks reaffirms the human scale." If this statement of Le Corbusier's is true, then thousands of New Yorkers have had, in the past year, their lives and those of their children reaffirmed, thanks largely to the efforts of the city's Department of Parks Administration of Recreation and Cultural Affairs.

Under the direction of Commissioner August Heckscher, Hon. AIA, the administration has published its 1967 annual report which, instead of assembling a bunch of cold statistics, has heightened its pages with lively photographs. The pictures show, in the most effective way, the happiness of a fine year's work, with the contributions of design professionals playing no small role.

Parks with trees and play sculpture—adventure playgrounds minus the chain fences—have been created for the youngsters. And other events from a soap box derby to a "Kenetic Environment" exhibit have exemplified the department's new outlook which espouses grassroots involvement all along the way.

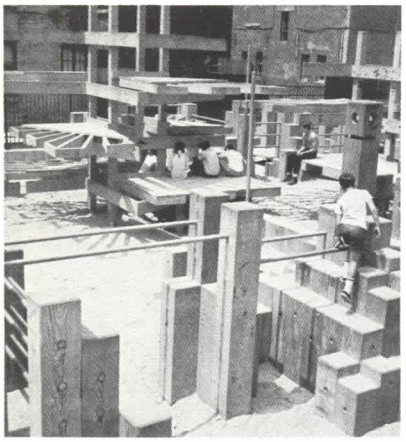
The approach is more than token pacification for the community. It is an intense probing into the hearts of the residents, especially the urban poor, and an attempt to direct energies and emotions into constructive channels.

With the belief that art is not an adjunct to civilization but is civilization itself, the department has brought outdoor scultpure exhibits to Central Park, and mobile music units through the streets, and has sponsored theater, film and dance workshops on the grass.

A community relations division was established in 1966 through which meetings are held in various

areas of the city where new parks, some vest-pocket size, are planned so that they will be designed "for the people who use them and not by some remote bureaucracy," as the report puts it, adding that architects are invited to these meetings to become acquainted in the early stages.

Among the professionals who have participated in what the report calls "the design revolution, begun by Thomas P. F. Hoving," former commissioner, is landscape architect M. Paul Friedberg who de-



veloped a system of modular play equipment which can be bolted together, quickly dismounted and transferred from one location to another.

It should be noted that all park department activities are free. Says the report: "The basic aim of outdoor presentations is to create museums and concert halls without walls so that people who do not have easy access to commercial entertainment will have the opportunity to see it."

Over and over again, it has been said that to meet the challenge of the cities, there must stem from the communities themselves a multifaceted response. Culture and recreation are only two aspects of a solution. By itself, a vest-pocket park can give no sense of self-esteem to the poor. But the overall program developed by the parks department has visibly added to a sense of pride and purpose which is so needed in the ghetto.

The program not only speaks to the people; it speaks with them. Its very strength is found in the resources of the community, along with the sensitivity and capable planning of the administration.

Hopefully, New York will set an example for other cities to strengthen or organize similar programs as one point of attack on the chaotic urban scene.

ROBERT E. KOEHLER

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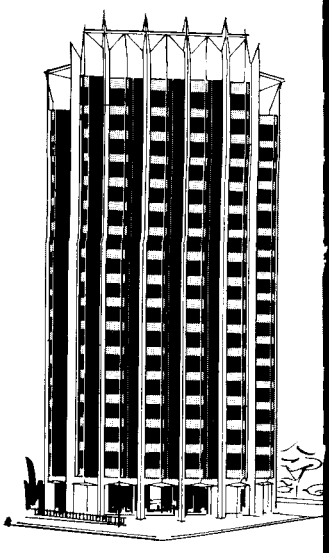

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Newslines

New Urban Institute Gets $3 Million Research Job From HUD; First Contract

The independent but primarily government-supported Urban Institute — concentration, continuity and detachment are its hallmarks —has received its first contract, a $3 million order.

The contract came from the Department of Housing and Urban Development, and under its terms, a HUD statement said, "the institute will develop new knowledge and obtain information useful to the department."

According to its prospectus, the institute will provide

1) a concentration of high caliber professionals — scientists, economists, planners, operations analysts, architects, engineers — working together to solve real problems;

2) a continuity of study providing progress built upon experience; and

3) a detachment from program responsibilities, thus encouraging objective analysis of existing government programs.

The institute was first proposed by President Johnson in a speech in March of last year. In December the President assembled a group of outstanding Americans who designed its charter and, in April, executed its incorporation.

The incorporators named a 15-member board of trustees. Arjay Miller, vice chairman of Ford Motor Co., was elected board chairman, and William Gorham, former Assistant Secretary of the Department of Health, Education and Welfare, was made president and chief executive officer.

The institute has been compared with the Rand Corp. which in 1946 was organized as a civilian nonprofit research arm of the Air Force.

It will provide, besides detachment, higher salaries than those paid by the government in order to draw top-level personnel. Gorham's salary is $55,000.

The institute will perform these principal functions:

- Contract not only with HUD but with other federal agencies and local governments to analyze problems and efforts to solve them, ranking priorities of need, effectiveness and investment.
- Conduct long-range studies to gather data in such urban problem areas as employment, housing, transportation and education.
- Become a focal point for various disciplines to share information and ideas.

"The success of the institute depends upon the talent we can attract," Arjay Miller said.

It is expected that contracts with other federal departments will follow the HUD pact with the nonprofit institute. Private foundation funds are also expected to go to the institute which is based in Washington and which is now recruiting the nucleus of its staff.

Large Outfits Dominate San Fernando Housing

The Playground of the Giants—so Southern California's San Fernando Valley has been called. Little wonder.

More than $1 billion has changed hands in the past few years in the purchase of large blocks of land for planned communities, according to Robert L. Follett, vice president of Calabasas Developers, Inc., and general manager of the planned community of Calabasas Park.

Follett, predicting the replacement of the small tract homebuilder by industrial giants, noted that some of the major investors in the valley are such concerns as Union Oil Co., Janss Corp., Great Lakes Carbon Co., Twentieth Century Fox Studios, Pennsylvania Railroad, American Hawaiian Steamship Co. and the Bechtel Corp.

"The appearance of companies like these on the housing scene indicates that we are probably facing the largest housing boom in history," Follett said. It also means, according to Follett, the heyday of large, planned communities within the capabilities of the big outfits. Small builders will cease to exist and small custom homebuilders will in the future negotiate with the large developers, he said.

The interest of major corporations in the housing industry is not restricted to Southern California, he pointed out. "General Electric Co., Sears & Roebuck, Westinghouse Corp. and others have recently purchased large holdings across the country," Follett said.

Mobile Home Makers, Big Producers, Move Toward Possible Shelter Solution

The nation's fastest growing housing industry is running 41 percent ahead of last year's record 240,390 units. The industry is the mobile home industry and its stepped-up pace, covering the first four months, was reported by the

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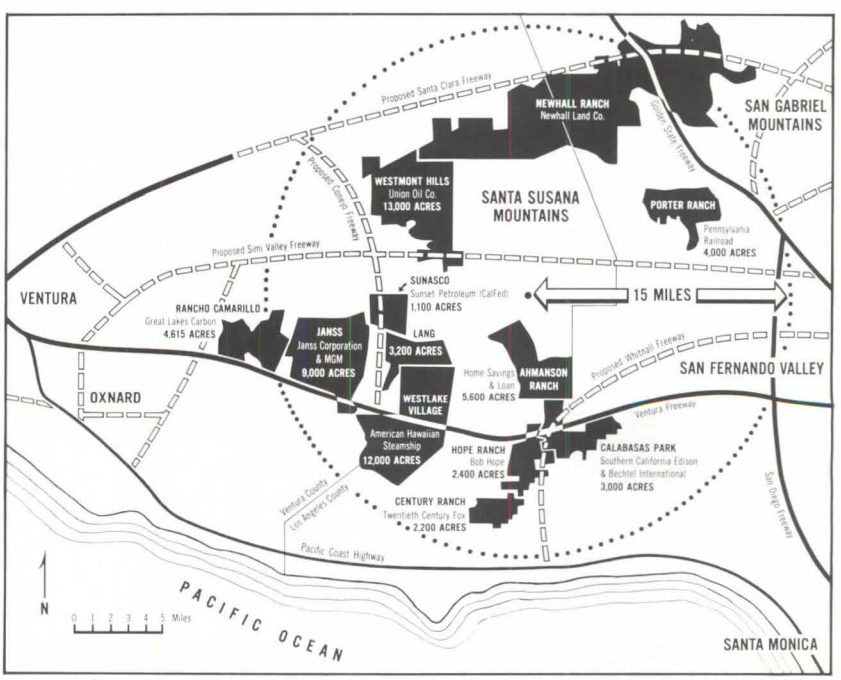

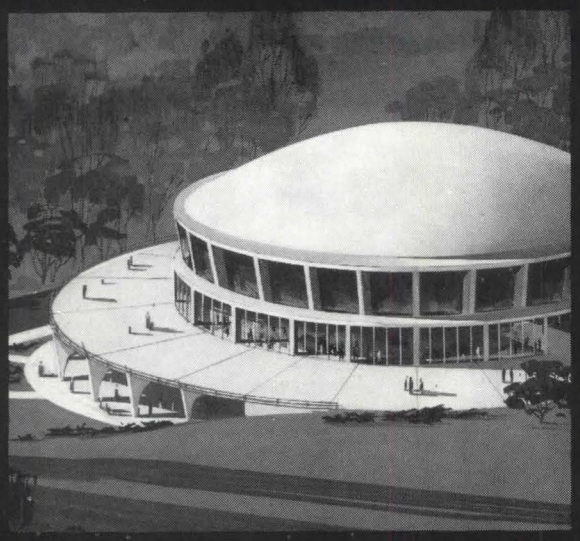

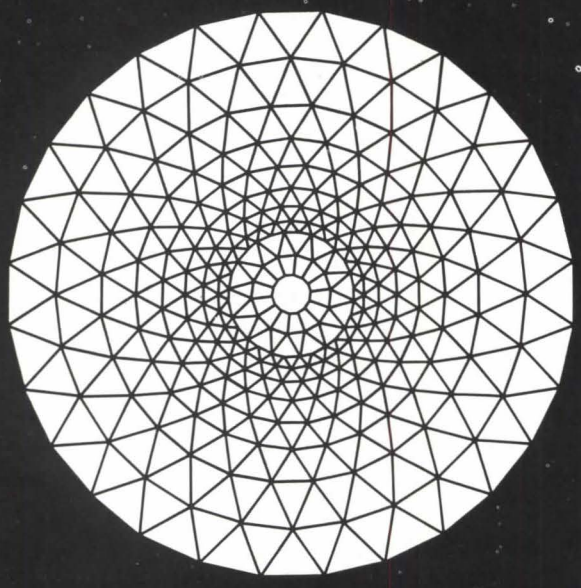

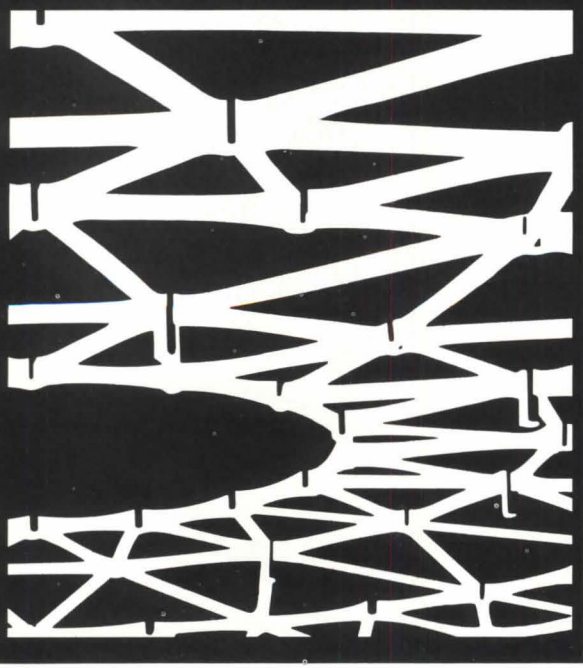

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Soon, America will shelter two hundred million people—focused mostly in cities and towns. Every gathering then becomes two—three—four times the humanity of 1950! And in theory at least, the dome should come into its own as the ideal, space-enclosing form. Practically, dome structures present forbidding difficulties on most budgets.

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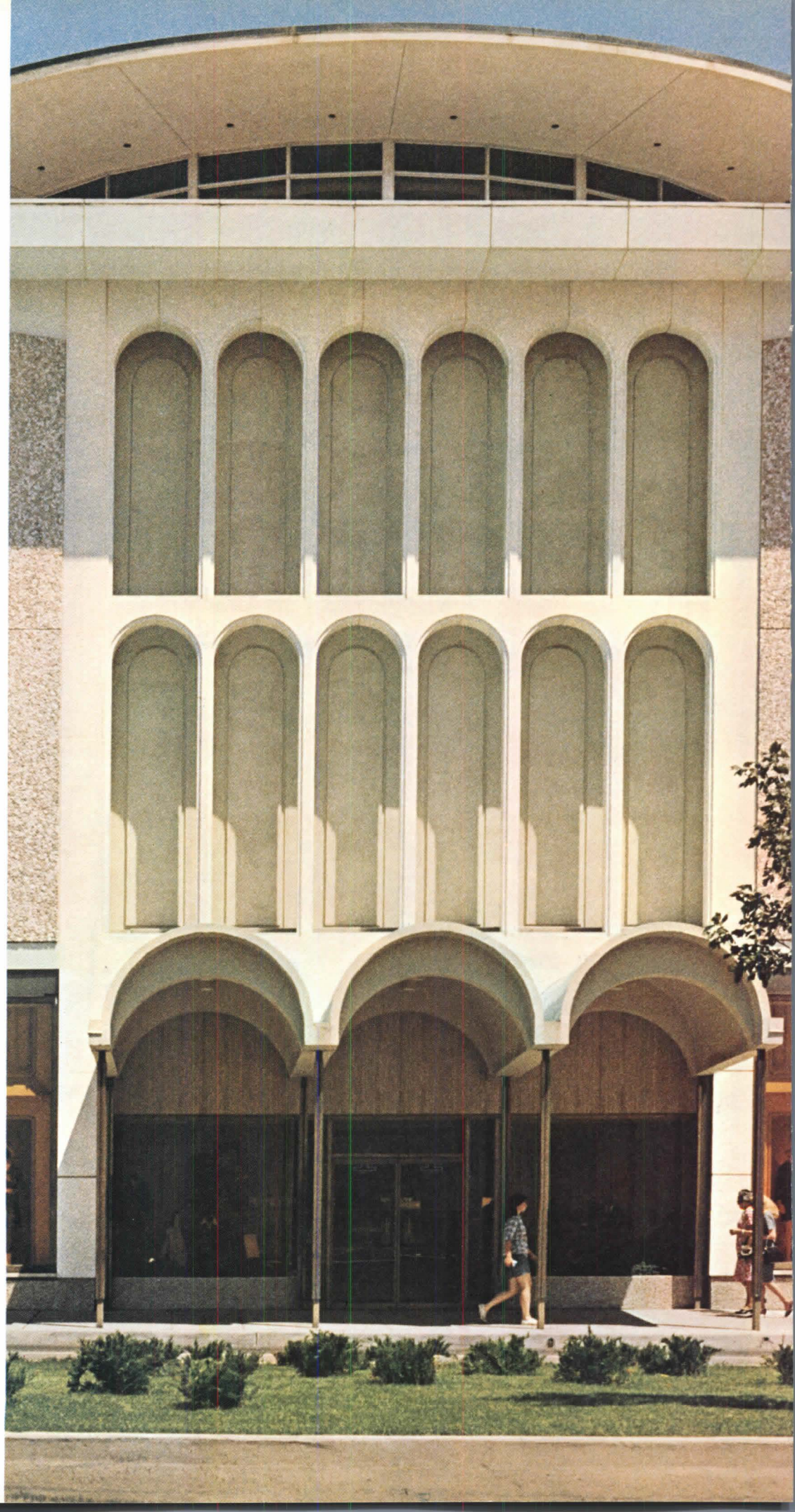

VERSATILITY BY TERRAZZO. UNIFORMITY BY ATLAS WHITE.

General Time Building, Stamford, Conn. This handsome building is a showcase of terrazzo's versatility. The floor, desk and the wall all contain white chips imbedded in a matrix of ATLAS White Cement. This sculptural use of terrazzo is a dramatic demonstration that terrazzo can take the shape of imagination. ATLAS White Cement was chosen because it insures uniform whiteness and lifetime beauty. Terrazzo Contractor: D. Magnan & Co., Inc., Mt. Vernon, New York. Architect: Victor Bisharat, Stamford, Conn. General Contractor: F. D. Rich Co., Inc., Stamford, Conn. Write Universal Atlas Cement Division of U. S. Steel, Room 5456, Chatham Center, Pittsburgh, Pennsylvania 15230. ATLAS is a registered trademark of United States Steel.

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Newslines *from page 10*

Mobile Homes Manufacturers Association.

The association was predicting a 20 percent gain, but says prospects now look even brighter.

The mobile home industry, meanwhile, is presenting its case for the solution to the low-income housing problem.

At a luncheon and demonstration in Indianapolis last month, government and civic leaders toured three double-wide mobile homes priced from $10,500 to $13,500.

"Reaction to our product by Indianapolis leaders was very positive," said James Redman, president of the Mobile Homes Manufacturers Association. Building inspectors were impressed, he added, and such groups as the Urban League and Chamber of Commerce "were amazed at the economy, size and furnishings in our homes. Our industry must continue to educate our leaders and provide other demonstration projects in other locales."

Another group seeking to impress —although it says it has merely taken a "leadership position as an advisor to help solve the nation's housing crisis"—is the Council of Housing Producers.

Comprised of 11 leading builders (Levitt, etc.) the council has filed an 18-page report with the President's Committee on Urban Housing. Contents cannot be made public until the committee, commonly called the Kaiser Committee, reports to President Johnson, the council said.

The council did, however, give its views and recommendations on the problems of land costs, financing, restrictive codes, zoning, labor practices, marketing, taxes, labor shortages and present federal programs.

But while the more conventional industries pressed toward a solution of the shelter question, some attention had to be reserved for the promise of a technological breakthrough.

In West Lafayette, Ind., Midwest Applied Science Corp. announced the development of a foam-spinning technique which it says can produce a building of 1,000 square feet in six hours with a crew of two at a cost of $3,800.

Also involved in the project are Amicon Corp. of Lexington, Mass., and a Lafayette architect, Elliott Brenner, AIA.

The technique uses a new epoxy resin material, which can be foamed in place, and a mobile, truck-mounted erector system.

Air Force Colonel Named NCARB Executive Head

An Air Force colonel who retires from military service this month has been named executive director of the National Council of Architectural Registration Boards.

He is Hayden P. Mims, 45-year-old McLean, Va., resident who was selected after a nationwide search, an NCARB spokesman said, for a man to head the organization's new system of simplified and streamlined procedures.

James W. Rich, AIA, who has been serving NCARB as acting executive director, has been named director of professional affairs and will, among his activities, coordinate efforts with AIA and other organizations.

Mims comes to NCARB as the organization prepares to move into new office quarters in Washington. NCARB, which has been renting space in the AIA headquarter

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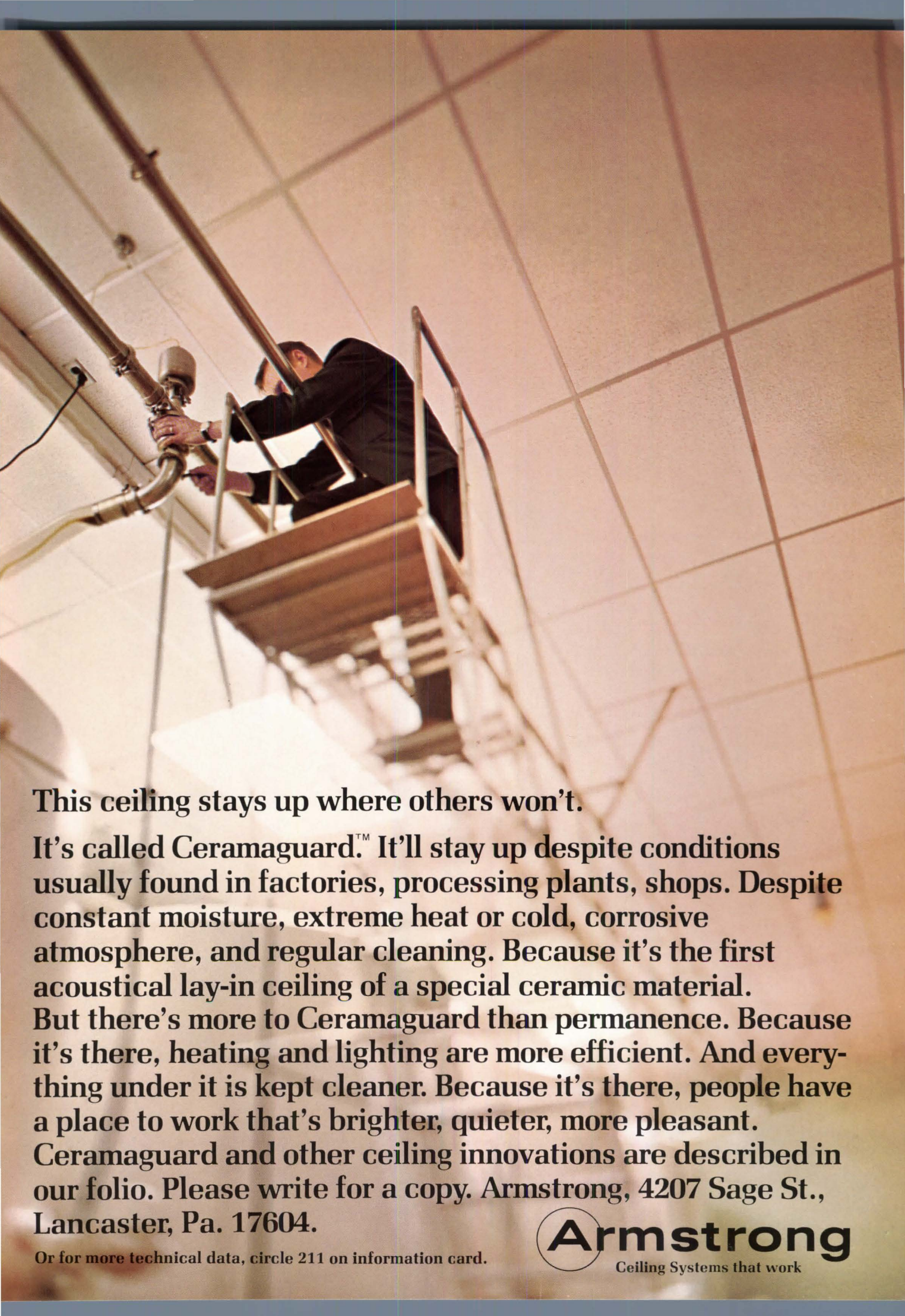

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Newslines *from page 14*

building, earlier this year bought a large house in the capital's Dupont Circle area. It will move into its new quarters, which after renovation will present a substantial increase in office space, late this year.

Mims entered the Army Air Corps as an aviation cadet in 1942 and received his commission and pilot wings in 1943.

The Durham, N. C., native was discharged in 1945 but accepted a regular Air Force commission and returned to active duty in 1947. Subsequently, he was graduated from the University of Maryland and served in varied assignments, most of which were in administration, public relations, personnel and executive management.

He has for the past eight years served with the Office of the Secretary of the Air Force in the Directorate of Legislative Liaison, which handles liaison between the Air Force and Congress.

New Engineers Directory Available from NSPE

A new "Directory of Engineers in Private Practice" is now available from the National Society of Professional Engineers.

The directory is divided into five sections, one of which lists 13,200 engineering firms said to be qualified by experience and technical ability in specialized fields, numbering 104 and including structural engineering, airconditioning and heating, acoustics, foundations, etc.

Another section gives brief sketches of the services offered by more than 1,100 consulting firms, including addresses, telephone numbers and names of principals.

Nearly a year in preparation, the directory—for 1968-69—was put out by the Professional Engineers in Private Practice, a section of NSPE. It is available from NSPE, 2029 K St. N.W., Washington, D.C. 20006, at $10 per copy.

UIA Seminar in Detroit Hears Broad Discussions

The architecture of the past was, more or less, only for the powerful, but the architecture of the future will be "something for everybody, and it is going to be by far the most important of the sciences because it will have that funda-

Continued on page 21

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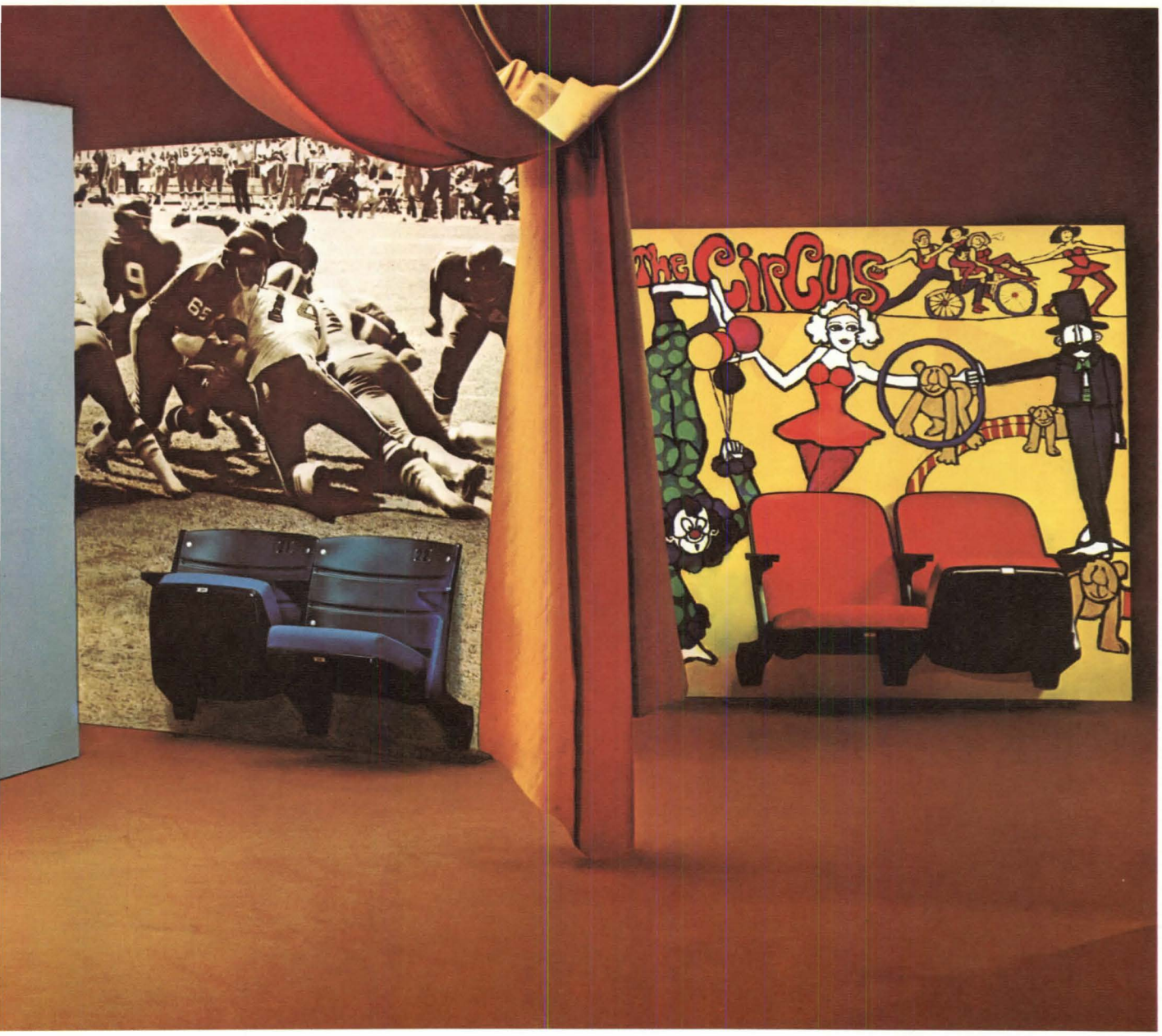

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Newslines *from page 17*

mental task of making all of humanity a success."

This a Union of International Architects' seminar, held in Detroit, was told by R. Buckminster Fuller.

For architecture to achieve its mission, however, it must do "ever more with ever less" until, Fuller said, it becomes "invisible."

The seminar theme, "The Effect of Industrial Architecture on People and Environment," was not confining; the latitude within which speakers ranged was generally wide. The presentation of a Russian, Nikolai N. Kim, was notable for its broadly environmental cast. "Let there always be for all people," Kim concluded, "a bright sun, clear air and clean water!"

Industrial architecture is "of great social significance," Kim said.

"For example, as a result of hydrotechnological, land reclamation and industrial construction, thousands of acres of salt marshes in Kazakhstan, Ubezkistan, Turkmenia and other republics of our country have been turned into blossoming gardens with dozens of nice new, modern cities and towns springing up all over the place. And this is done for the sake of man and man alone."

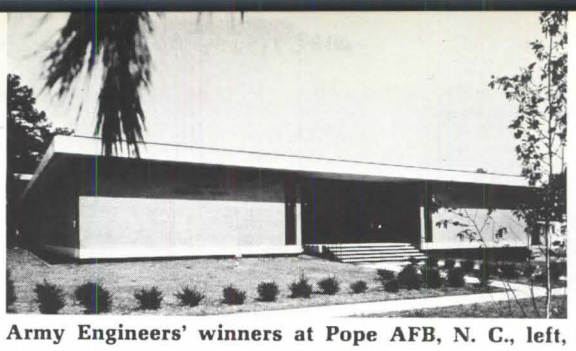
An Englishman, H. G. Huckle, said that new town factories have a higher rate of productivity than those in older areas of his country. Indeed, noted Huckle, "the whole question of environment is not to be lightly brushed aside."

A Dutchman, E. F. Groosman, argued that industrial architecture has great "educational" value because it is, aside from budget considerations, "usually not bound by regulations regarding surface requirements and finishings to the extent that dwellings and schools are."

Louis A. Rossetti, AIA, who participated in behalf of the AIA at 1966 and 1967 UIA conferences in Europe, was president of the May seminar. Rossetti was also named chairman of the UIA Commission on Industrial Architecture.

Two Projects Share Honors In Army Design Program

The Academic Building at the Defense Language Institute in Monterey, Calif., and the Aero Medical Evacuation Facility at Pope Air Force Base, N. C., are co-winners in the Chief of Army Engineers 1968 Architectural Design Contest. The former was by Dean Price & Associates, Ltd., San Jose, Calif., and the latter by J. N. Pease & Co., Inc., Charlotte, N. C.



Army Engineers' winners at Pope AFB, N. C., left, and in Monterey, Calif.

The Army Chief of Engineers annual award program was established three years ago to encourage improved design in Corps of Engineers construction programs. This year, for the first time, the judges chose two winners.

Continued on page 22

Newslines *from page 21*

The judges were O'Neil Ford, FAIA; Pietro Belluschi, FAIA; and Ulysses Floyd Rible, FAIA.

Honorable mention awards were given for a chapel annex at McChord Air Force Base, Wash., designed by consulting architect-engineers Robert Billsbrough Price & Associates, Tacoma, Wash.; and the McClellan Air Force Base, Calif., Logistic Facility Depot, by Dreyfuss & Blackford, Sacramento.

The judges also gave a special mention award to the new enlisted men's barracks at Fort Myer, Va., by Hayes, Seay, Mattern & Mattern, Roanoke, Va.

Pratt, Pitt Receive Grants To Train Negro Planners

The Ford Foundation, citing Pratt Institute's "ghetto-oriented planning program," has given the institute a $214,000 grant to recruit up to 20 Negroes for training as professional city planners.

"It is our hope," said Dr. James B. Donovan, president of the institute which is situated on the edge of Brooklyn's Bedford-Stuyvesant section, "that with the help of this generous grant, Pratt Institute, utilizing the resources of its Center for Community Improvement and its department of city and regional planning in the School of Architecture, can play an even more meaningful role in the campaign against urban decay."

Another grant for the training of Negroes in city planning went to the University of Pittsburgh. It is in the sum of $130,000.

The Ford Foundation said the Pratt program "will provide intensive counseling and remedial work where necessary in a two-year course aimed at the master's degree."

AIA Cites Island Resort For Planning Excellence

The AIA's "Community Citation" award series has turned out a special honor for Sea Pines Plantation on South Carolina's Hilton Head Island.

A Citation for Excellence in Private Community Planning was presented to Charles E. Fraser, president of the vacation-retirement settlement, during the summer meeting of the South Carolina Chapter AIA.

It was the first time that a privately developed community was honored under the community citation program.

The community, begun in 1957, includes three golf courses, boating facilities and hotels along with a variety of residential accommodations. Under its master plan,

land is reserved for a fourth golf course, schools, apartments, experimental farms and research operations, a college and a two-square-mile wildlife preserve, among other uses.

The master plan was developed by Hideo Sasaki, and many leading architectural firms have designed buildings in the community.

Do the Job, Says Planner, And Let the 'Best' Lead

Forces demanding solutions to our urban ills "couldn't care less" whether the leadership of an environmental design team comes from an architect, engineer, landscape architect, planner or "some hastily catalogued new expert who might be called environmental coordinator or urbanologist," some 500 engineers were told at a national meeting on environmental engineering.

Addressing the Chattanooga, Tenn., session, conducted by the American Society of Civil Engineers, was Herbert H. Smith, head of a New Jersey planning firm.

Leadership, Smith said, should be secondary to unification and collaboration so that "we really have an effective, meaningful environmental design team. Let the best-qualified person lead . . . but let's get started doing the job the right way and meet the challenge before it is too late."

Smith advocated the design team concept and warned against federal encroachment of private practice.

"Through the guise of so-called

Continued on page 26

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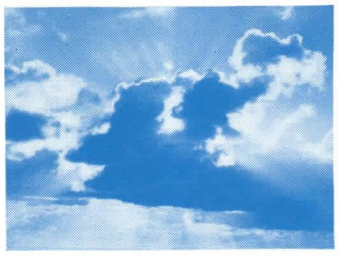
A Report from the Prestressed Concrete Institute:



Pioneering is a lonely business.
Only when you go it alone.

■ When pioneers join forces,
have a good idea where they're headed
and have the heart to hang in there, pioneering
is usually a gratifying group adventure.

So it has been for the ever-widening circle of membership in the Prestressed Concrete Institute in the decade since its inception. While lacking the almost-lost-in-obscurity beginning of ancient building materials, prestressed concrete is no patiently plodding frontiersman. Rather, like the jet, it has spread its swept-back wings and soared. Evidence of that is everywhere for all to see. In terms of what has already been accomplished, prestressed concrete has long since passed the point of no return.

PCI represents all facets of precast and prestressed concrete, whether pre-tensioned, post-tensioned, or architectural precast. Its members include producers, architects, engineers, industry suppliers, educators, students, and technicians.

■ The Institute serves principally in three areas: (1) To gather and disseminate knowledge of whatever nature will advance the industry's cause; (2) Through

continuous research and development, to increase the use of prestressed and precast concrete; (3) To establish and maintain industry-wide design and production standards.

■ The entire construction industry has benefitted significantly from many Institute-sponsored activities. Among them were original PCI specifications, the first published in the U.S. The PCI Building Code was the first national code on prestressed concrete. An Institute committee developed and recently released new guide specifications for the industry. A PCI-AASHO joint committee is continuing to prepare design standards that assure economy in bridge structures.

As a result of PCI fire tests, two, three and four-hour U.L. label service is now available on most prestressed concrete building elements.

■ Each year, an internationally prominent Awards Jury selects and suitably recognizes excellence in design originality. This competition does more than merely herald those so recognized. It spotlights design creativity to benefit the entire construction industry.

Annually, PCI convenes to offer stimulating technical forums on design, research, production, and new developments. Formal presentations, panel discussions, and shirt-sleeve sessions combine to form balanced, rewarding meeting programs. State and regional conferences throughout the year augment this annual event.

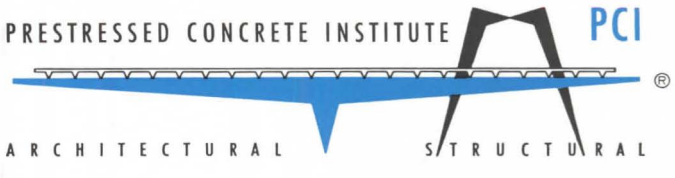
■ Numerous publications regularly keep PCI members aware of industry advances as they occur. Among the most recent are a long-span bridge study, one on fire resistance, and a 156-page book containing 341 illustrations, *Schools of Prestressed Concrete,* which covers planning, design, and construction in all areas of educational building.

Several high-priority PCI programs of promise are currently in various stages of development. They include preparation of a prestressed concrete handbook, industry-wide product standardization, intensive fire research, further implementation of quality-control techniques, safety practices, coordination of research by agencies throughout the U.S. and Canada, and cooperation with foreign countries in exchanging design concepts and manufacturing procedures. *(PCI is the sole U.S. representative to the world prestressed concrete organization, Federation Internationale de la Precontrainte.)*

■ It is perhaps no accident that design and management people of pioneering mind should have become attracted to prestressed concrete. Although modern as tomorrow, the credentials of prestressed concrete as a trustworthy construction material are beyond question, providing as it does the strengths of both concrete and steel. No mere building *ingredient,* this. No commodity. But a unique structural and design medium with inimitable, innate characteristics.

The use of prestressed concrete faces ever more far-flung horizons, as broad as the true professional's endless quest for the new, the better, the lower-cost way to improve mankind's lot. And, in the process, his own.

■ In the belief that those of like mind get further, faster, when banded together, we invite you to consider joining PCI. If, of course, you are not already a member. Simply call or write us.



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Circle 302 on information card

Newslines *from page 22*

'free money' in the form of federal aid . . . local, regional, county and state governments are being browbeaten into the illusory trap of establishing and maintaining expensive and ineffectual public planning staffs under the threat of withdrawal of aid for non-compliance," he said. If professional planning services can be made to appear to be the sole prerogative of the public employee, it is a short step to public sector technical services in landscape architecture, architecture and engineering, Smith declared.

Sculpture garden in gallery's lower level, and St. Matthew's Church beyond.

West Berlin to Soon Open New Art Gallery by Mies

Scheduled to open in West Berlin on Sept. 15 is the New National Gallery, the work of Ludwig Mies van der Rohe, FAIA.

A part of the emerging cultural center in the Tiergarten, the gallery will open its doors just 35 years after those of another Berlin institution were closed. The institution was the Bauhaus and it was Mies, its director during the Berlin period, who was forced to close it.

The New National Gallery is a $6.5 million, two-level home for art of the 19th and 20th centuries.

The glass-encased upper level of some 27,000 square feet is to be used mainly for temporary exhibits. "Walls" can be suspended from a 28-foot ceiling to accommodate large canvases.

The 107,000-square-foot lower level includes a permanent collection, an art library, restaurant and a landscaped sculpture garden. The gallery owns 15,000 paintings and drawings, 100 sculptures and several thousand prints representing two combined collections.

It will open with a Mondrian exhibit.

Continued on page 28

There's a lot of Ohio deep in the heart of Texas.

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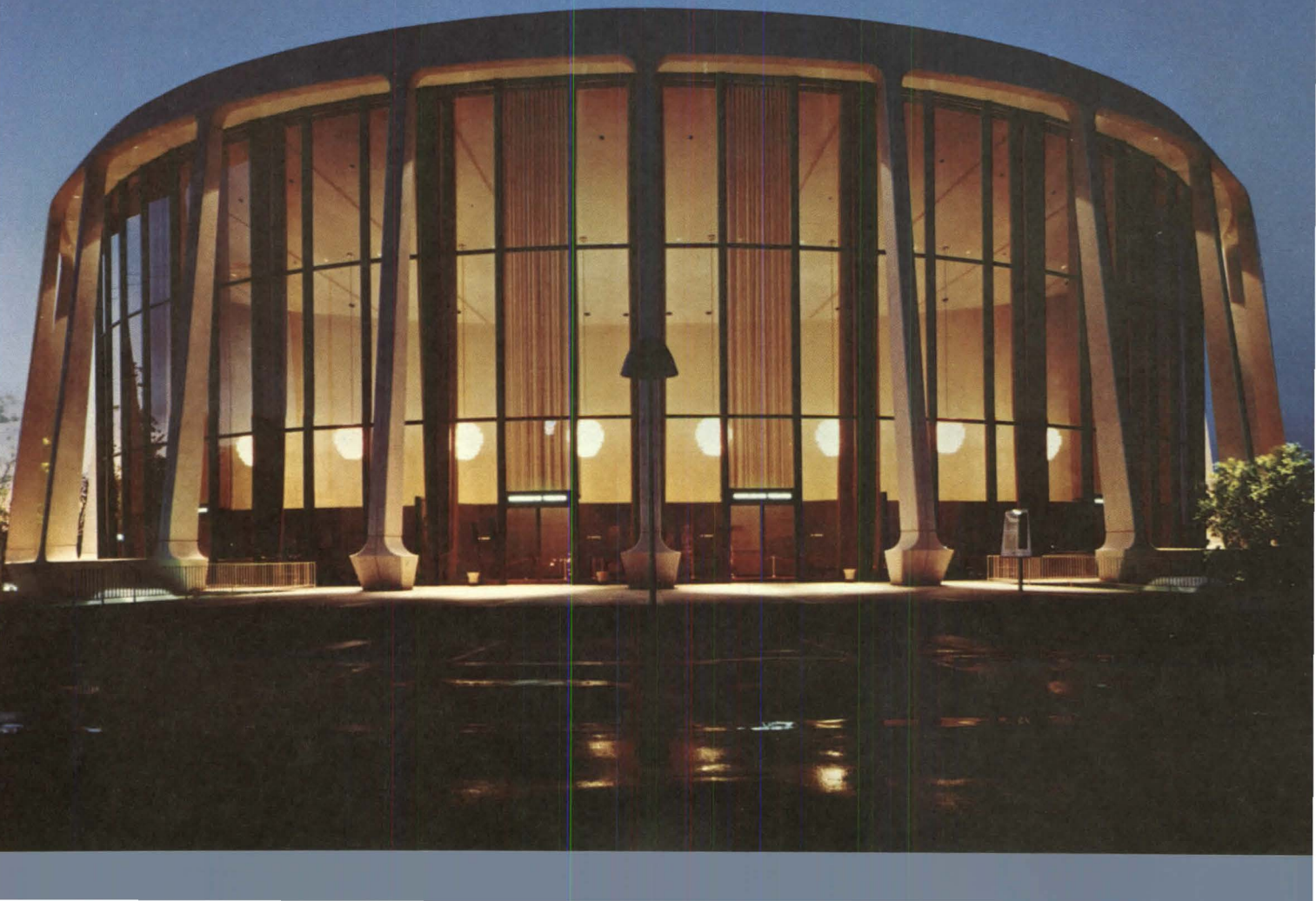

Newslines *from page 26*

Cincinnati Renewal Effort Leans on Both Town, Gown

The City Council in Cincinnati is going about an urban renewal program with a unique approach.

The council has entered into a $300,000 contract with the University of Cincinnati for a plan to renew the Queensgate II area in the city's West End. Resident participation in the planning and a multidisciplinary approach are keys to the effort.

Under the contract the university will carry out exhaustive studies and arrive at specific proposals for the area.

In the process, proposals will be submitted for continual review to the Queensgate II Advisory Committee, a group composed of individual residents and representatives of citizens organizations.

Proposals will also go before the West End Task Force, made up of delegates from city, business, religious and citizen groups.

Finally the plans will be submitted to council for approval and implementation.

Thomas H. Jenkins, Boston planner, will direct the university efforts, reporting to Dr. Robert L. Carroll, assistant vice president for research. Carroll noted that it has often been proposed that "the diverse expertise housed in urban universities be brought to bear on the complex problems of urban affairs. The Queensgate II project not only accomplishes this but also relies heavily on citizen participation in the planning process."

A detailed inventory of the Queensgate II area will be compiled under the plan. This data will be studied and various proposals made. Consultations with the residents of the renewal area and the city government will be particularly concentrated in efforts to achieve consensus on the various proposals. The final step will be a synthesis of a comprehensive plan involving models and drawings, time schedules, recommended population mixes and use mixes.

Necrology

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Allan H. Neal, FAIA, of Pittsburgh, was mistakenly included in Necrology of June. Apologies to Mr. Neal, who was also inadvertently listed as a member emeritus. The errors were due to misinformation supplied.

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UNFINISHED BUSINESS

BY WILLIAM H. SCHEICK, FAIA
Executive Director

Project Vital Questions

Did you see the story on design centers for ghettos written by James Britton? The pamphlet's logo displayed the words "VITAL QUESTIONS."

The idea behind this new AIA project in journalism was generated by concern for two aspects of the rapidly changing climate in which architects practice today.

First, things are happening which seem sure to have far-reaching effects upon architectural practice as a business. Some of these developments also are raising hard questions about architecture as a *profession*. The architects most fully informed about these forces for change include the leadership of the AIA and many other perceptive practitioners.

Some view these developments so darkly that they express fear of the demise of the profession as obsolete for the times ahead. Others optimistically predict that the profession will respond to the changing needs by changing itself.

In fact, the great surge of demand for expanded activity by the AIA is predicated on confidence that we can meet every challenge.

How must we respond? This central question can be answered only by understanding the questions being forced upon us. These are the VITAL QUESTIONS of the day.

Second, as many AIA members as possible—preferably 100 percent—should be familiar with these questions and contributing to their solution. The AIA functions like any democratic body politic. Its elected leaders plan and execute courses of action to implement the will of the electorate.

But the elected leadership must also come to grips with problems at first obscure to the electorate. It must identify and describe these problems, determine solutions and recommend courses of constructive action which literally must have the support of the membership.

Out of this concept comes the realization that we must do our utmost to inform our members about vital questions affecting them as architects.

Some of the most serious questions faced by the profession today do not have ready solutions. Nor will they "go away" if we try to simply wait them out. Consequently, the leadership becomes involved with protracted efforts—and sometimes protracted battles—for the solution of these problems which may take months or even years.

What should be done and said meanwhile to bring the members to a full comprehension of these problems and contributing to their solution? This is not adaptable to ordinary, brief news treatment in the *Memo*. This is not a case of problem identified, action taken, problem solved, all neatly tied up in a news item.

The story of the question and the problem solving becomes a kind of serial story, as complicated as Peyton Place, and as full of good and bad influences in unsuspected places.

We have begun to take problems of this kind to the Grass Roots meetings to achieve both comprehension and feedback. By publishing our stories on vital questions we want to broaden the scope of both. We especially hope to develop feedback from member readers previously unaccustomed to writing letters to the editor.

For example, one set of vital questions affecting architecture as a *business* are those related to liability. Solutions of the related problems are being attempted through liability insurance. That this is only a partial solution is demonstrated by the continuing increase in insurance rates which architects find hard to understand.

Another solution is being continually attempted through better wording of the contract documents. Remember the controversy with the contractors over new liability clauses about a year ago? We tried every device available to help our members understand why the questions involved were vital to their practice and why we had to fight for their protection in the documents. (*See* AIAJ, May '68.)

A new chapter of this story seems to be unfolding as AIA's Bob Cerny comes forward with his proposal to *write a body of construction law* to replace outmoded laws upon which construction liability cases are judged. Bob proposes to attack the roots of the problem rather than its symptoms.

Another set of vital questions affects the very foundations of our *professionalism*. The symptoms are widespread, varied and complex. The federal General Accounting Office wants to require architects and engineers to *bid on the basis of fee* for contracts for federal work. The AIA and several engineering societies are fighting this move.

At the same time, a federal agency conceives turnkey housing—the delivery of a public housing package by a "developer." The obscure standards for design and the architect's role in turnkey housing are of real concern to our profession. We have surveyed our members on their experience with turnkey housing and will soon issue guidelines to warn against pitfalls that exist. This must suffice until constructive work with government can improve the situation.

Meanwhile, the Department of Housing and Urban Development asks for *bids* on a major housing research project intended to result in experimental construction for the model cities program. Can architects bid as prime contractors for a research and development project, but not for a building design project? Our Executive Committee believes that bidding of any kind is a threat to professionalism. So do the engineers.

This illustrates the point that forces are at work—by no means all in the *government*—which forecast sweeping changes in all aspects of the construction process in which we make our livelihood.

I could have listed a page of vital questions and you would recognize many of them. We will reach you with them with fuller stories by James Britton. Read them and join the battle for the future of architecture. □

News from ***the Potlatch*** *Timberline*

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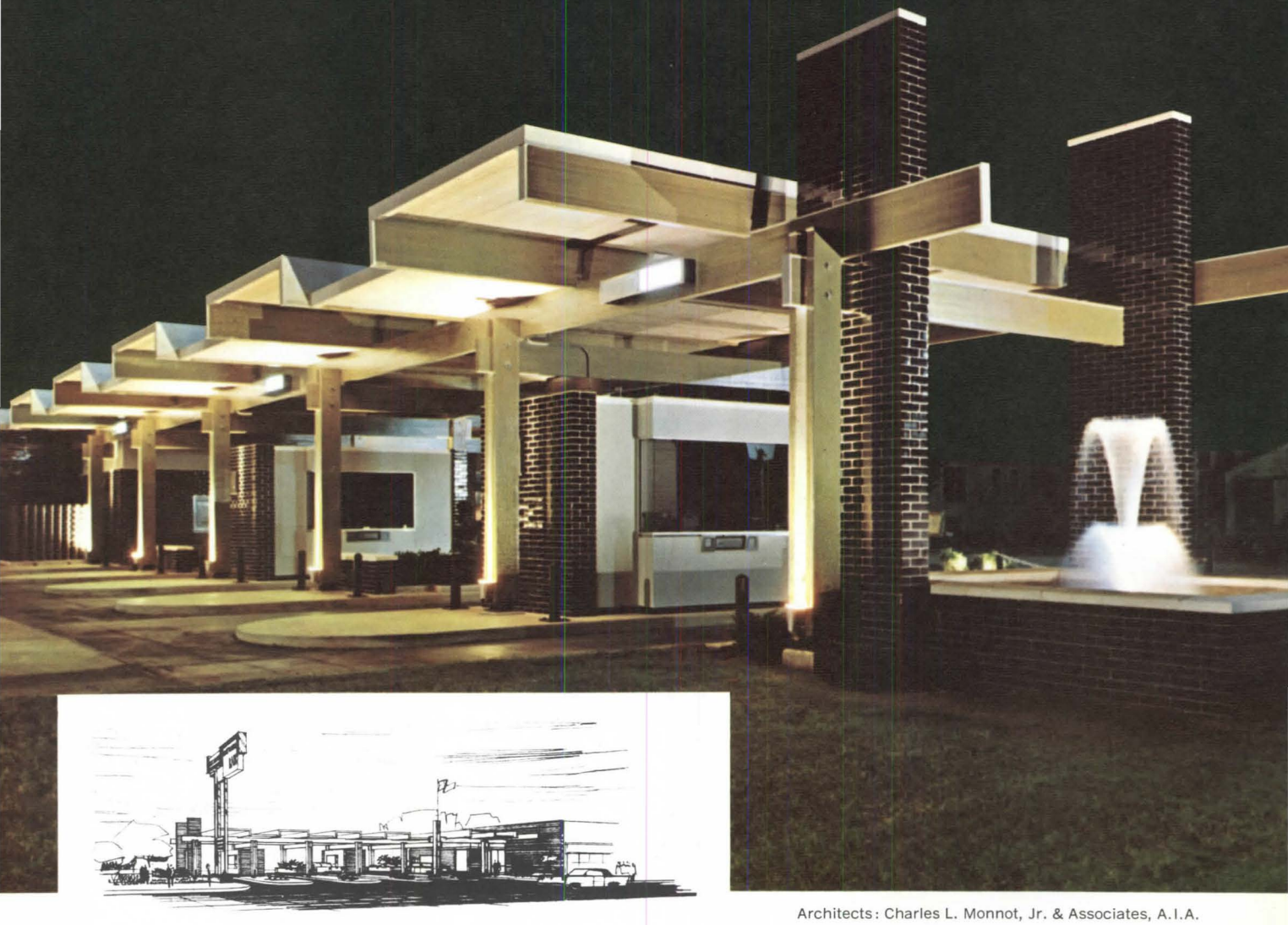

Architects: Charles L. Monnot, Jr. & Associates, A.I.A.

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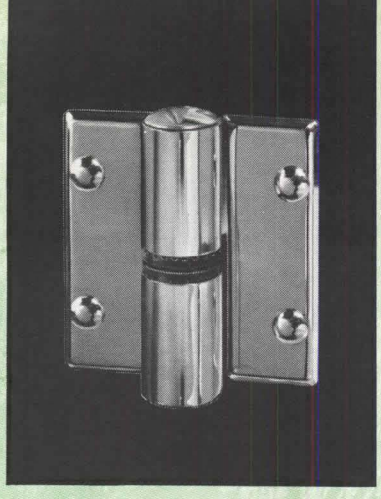

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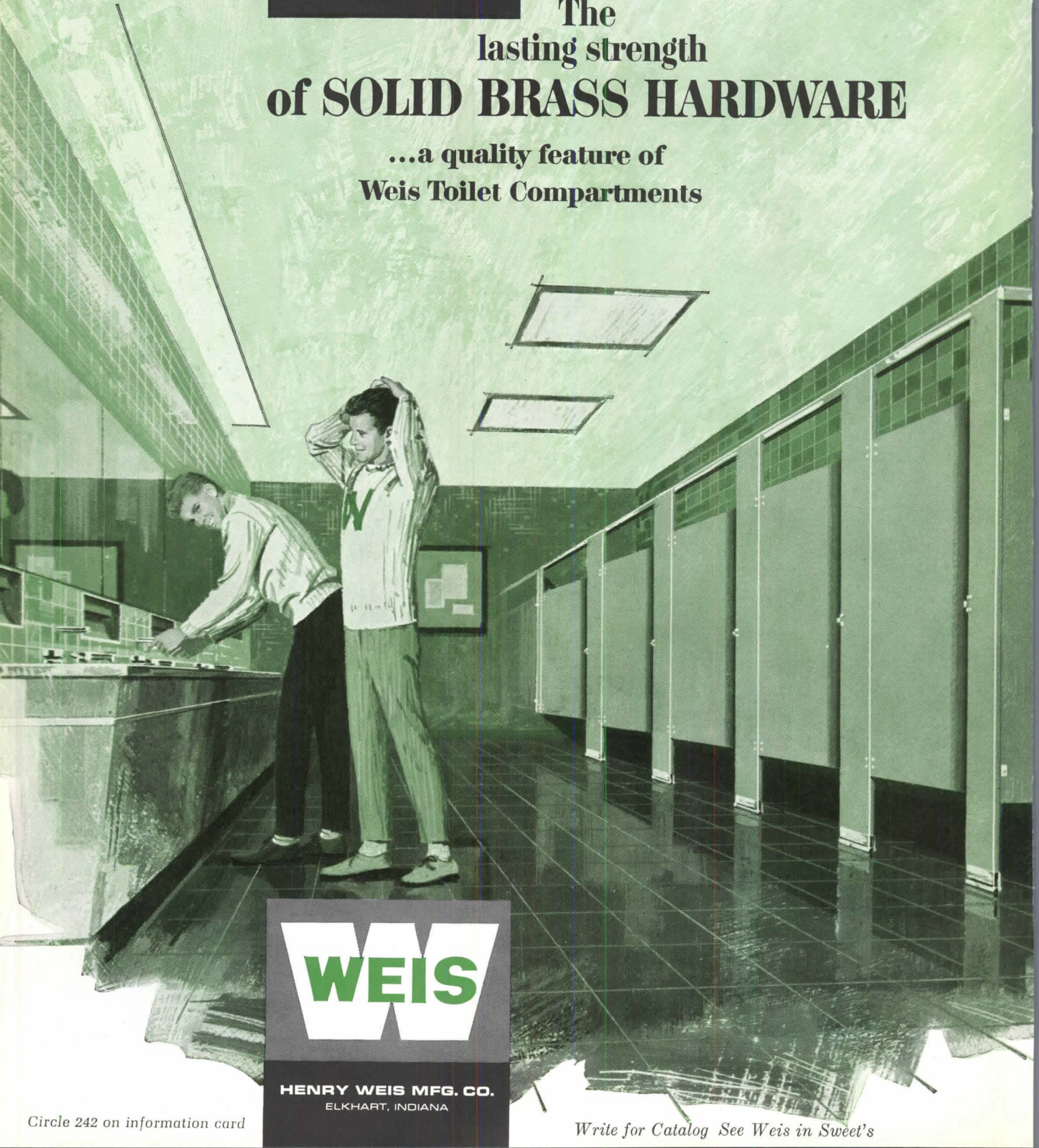

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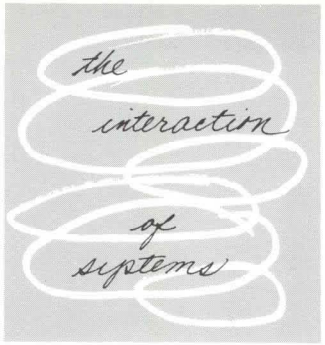
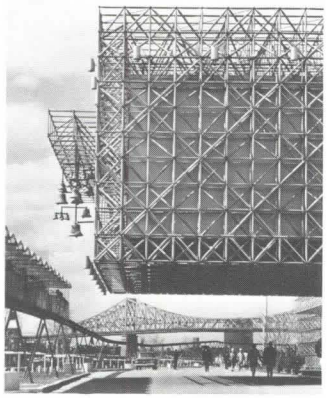
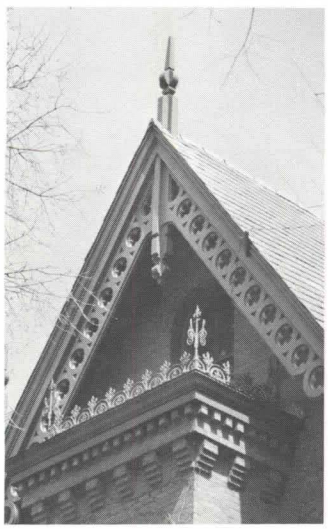






A Humanist Case for the Systems Approach

An advocacy that lays the stress on process, not to the relegation of product but to the enhancement of product—and to the reinstatement of an emotional content in our urban environment so beset today by disintegrating alienation.

BY JOHN P. EBERHARD

There is available to architecture a means—the systems approach—to combat a noteworthy affliction pressing upon the public that our profession must somehow better serve.

This affliction, to me the dominant characteristic of our urban life, is loneliness. It is not just the loneliness of the poor, of the widow or of the orphan; not just the loneliness of the wife whose husband is immersed with business or friends; not just the loneliness of the child in a new and strange neighborhood—but it is the depressing, isolating loneliness of those who no longer hope or even care.

I am concerned, as an architect, citizen and human being, that it is so pervasive a loneliness as to leave no group, however defined, untouched, and that it is, indeed, a marked characteristic of one group—those who have opted out of a social system that promised and nourished expectations but which, for them, in the end failed to deliver.

It is a loneliness of noninvolvement and apathy. *Walter Lippmann* has said it this way:

"I'm more worried about the state of the country than I think I've ever been before. But it's not because I'm afraid of a nuclear war. I don't think we'll get to that. What I see is the disintegration of hope and belief and willpower and morale. That's what's bad."

Link Between Knowing, Feeling

I would like to argue that the systems approach —correctly understood and correctly used—provides a means of utilizing the techniques of the scientific/engineering community in the service of the artist/humanist community. It is an inclusive concept that requires for its truest application the linking of our ways of feeling to our ways of knowing — to realize emotionally what we know intellectually.

We lack now the knowledge to effectively relate our buildings and our urban complexes to man's needs and aspirations, but we feel that there must be an impact of one upon the other. This is not a one-way relationship. Our aspirations, individually and collectively, shape the nature of our decisions about what we will build

and the quality we will seek. Our aspirations, therefore, become an important determinant in shaping the nature and content of our building system—our *ways* of building.

The resulting products — our hardware systems, our buildings, our urban technology—are in turn having an impact on our daily relationships with one another, our pride, or lack of pride, in what we have. They contribute in a substantial way to the emotional content of our way of life.

It is the reinstatement of this emotional content within the urban environment that challenges all design professionals.

'Systems' as a Noun, as a Verb

I may only add to the existing confusion regarding the overworked word "systems," but let me attempt to define its use and then apply the general definitions to the building industries. "Systems" as in the systems approach may be understood in two ways: as a noun or as a verb.

When systems is used as a noun it describes a collection or set of objects and their dependent relationships. A single thing is not a system; a system has to include two and normally many things (or components). A system's components may in turn consist of other components, ad infinitum. But any haphazard collection of components is not a system.

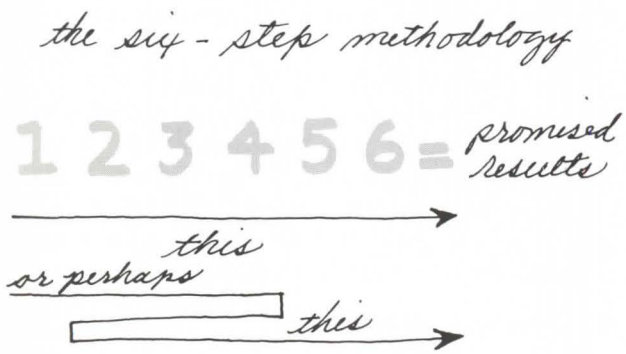
The components, if they are to form a system, must represent by their interdependence some inherent unity which can be defined and limited. We may speak of our solar system, a weapons system, or we may choose to look at a molecule of matter as a system. In each case it is possible to identify and describe the components and their relationship to one another.

The author: Mr. Eberhard, until recently director of the Institute for Applied Technology of the National Bureau of Standards, is dean of the School of Design at the University of New York at Buffalo. The school is in the process of being formed.

When we say we manufacture systems or design systems, we need to be certain that we mean a collection of components with this characteristic of inherent unity.

When we use the word system as a verb we

mean to describe a way of doing something. But it is not just any way. There is a built-in intention, or promise, that through the process relevant factors may be detected and evaluated and predictable results expected. Thus I might suggest a system for horse betting that promises you will do better by following my way than simply bet-



ting at random. Euclidean geometry is a system which promises, if you accept its set of assumptions and follow its rules, correct deductions about the properties of points, lines, angles and figures in space.

Not Just a Way: A Promising Way

If we talk about a systems approach to building, therefore, it is not sufficient to suggest a set of formal steps unless we also hold out the promise that these steps form a series of events or actions which promise certain results to the user. Most of the formal systems methodologies include, with variations in complexity and terms, the following general steps:

1. A period of problem definition.
2. The invention of alternative solutions.
3. The selection of means to test the validity or effectiveness of the alternatives.
4. A testing of the alternatives by the means selected, and a return to problem restatement or invention of additional solutions if none of the first set of alternatives qualifies.
5. The implementation of the alternative finally selected.
6. An evaluation of the results to improve the next attempt at solving problems of this kind.

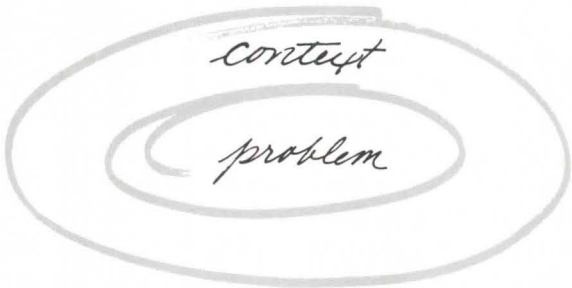
These systems methodologies have been found effective in approaching space and defense problems; they hold promise in approaching the problems of the building industries. There are cautions to register, however, against any assumption of an easy adoption.

Because the systems approach sounds much like the methods now used by architects, it is necessary to caution practitioners not to dismiss it as "nothing new" or embrace it without really understanding what they need to do that is different. For example, I believe it is clear that we lack in our architectural methods at present any reliable or consistent means of evaluating the performance of finished buildings in terms of their ability to satisfy human needs. We thus lack the crucial sixth step of the methodology outlined, namely feedback.

Another caution is that we should not assume we are prepared to make adequate problem statements. We seldom explore, in our present practice, the underlying requirements or the intended user behavior for the buildings we design—we accept the clients' statement of them, a statement usually based on the clients' preconceived notions of solutions. We lack formal or rigorous means for evaluating alternative solutions.

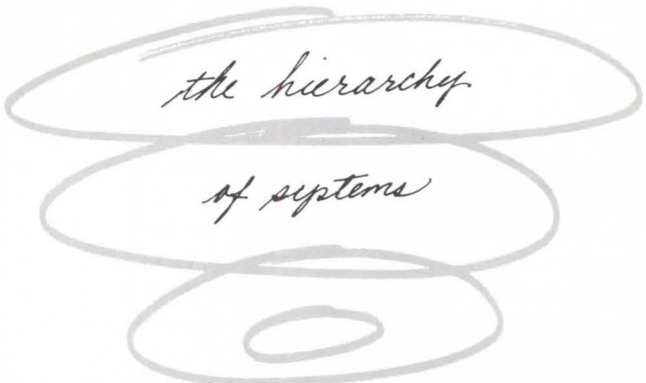
The Context of Statements, Solutions

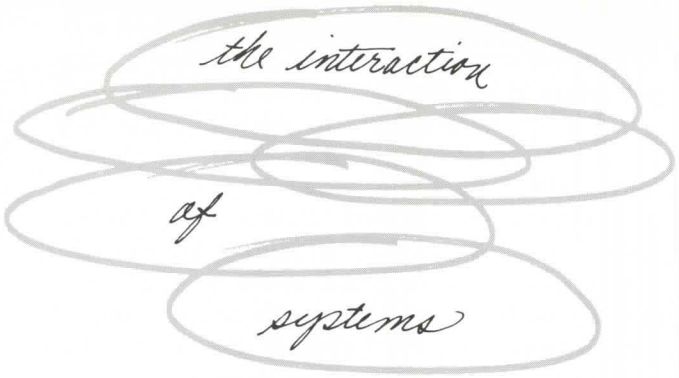
It is also most important that we evaluate correctly the context in which we are attempting problem statements and seeking solutions. In the case of urban systems, we need to explore what



sort of fit we have between our society and our building methodologies and industries.

The concept "system" contains an important and beneficial internal structure: It is hierarchical by nature. A plumbing system, for example, can be seen as the combination of fixtures and pipes within a single house having a function to perform for the occupants of the house, but this system is in turn a part of community systems that include reservoirs, sewage treatment plants, etc. The community systems are in turn part of a regional water control and pollution abatement system that includes dams, rivers and lakes.





As long as we are reasonably rigorous in insuring that what we call a system has an inherent unity which we can define, we may encompass as small a set of components as we wish or as large an aggregation as we can understand.

In the same way, but perhaps less readily understood, there is a hierarchy of systems when we use the word to describe a method of doing something. The fit of the simplest system within the hierarchical combination of systems of which it is a member is not casual or detached—it is irrevocably and intrinsically dependent.

This interdependence makes it useful to consider the social and institutional systems in which we operate as influencing, and being influenced by, the technology of building—the system of building in which architects are engaged. We should recognize the ability of the emotional content of the one to affect the emotional content of the other.

It was the aspiration of their society that made possible the cathedrals for the people of Europe in the 13th and 14th centuries. It should be one of our aspirations to provide decent housing for all Americans.

In the Land of Promised Results

In the largest sense, our society is a constellation of systems which organize the affairs of men, their relationships to one another in pursuit of the common good, protection against common enemies and attainment of shared aspirations. As systems they promise that if their precepts and methods are followed, certain kinds of results are predictable and reasonably to be expected by those who use them.

We have been advocating our governmental system to developing nations, and we fight wars to prevent the overlaying of opposing systems on people reluctant to accept them. But some of us are wondering now about our ability to make our systems work effectively, to provide promised results to all of us. Roger W. Wilkins, director of the Community Relations Service of the Justice Department, has said:

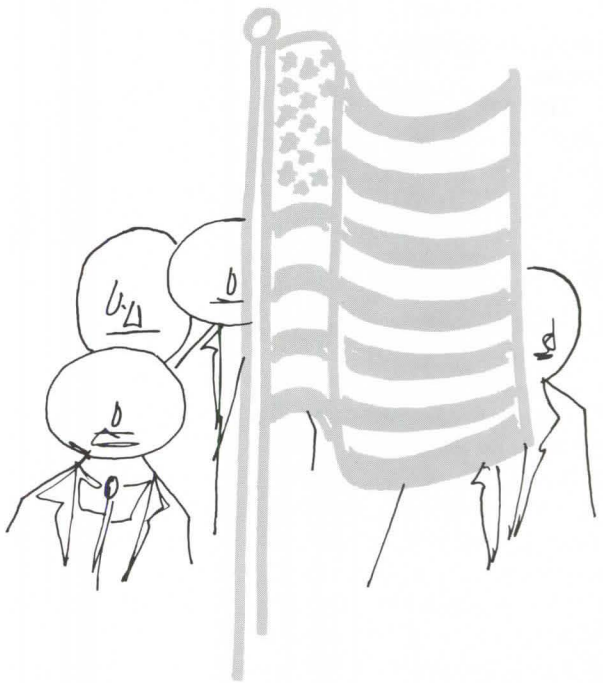
"We think that the riots [in our cities] are not about outside agitators. We think that they are not about conspiracies. We think they are not about interstate travel or even a couple of obstreperous fellows in their mid-20s.

"We would conclude simply and directly that they are about the failure of the *system* which we Americans have developed and which we sustain to serve us and keep our nation going. It's about the failure of that system to serve the needs of poor black people."

John Gardner in leaving his post as Secretary of Health, Education and Welfare warned Congress and the public that we are not "fully aware of the alarming character of our domestic crisis. We are in deep trouble as a people," he said, "and history is not going to deal kindly with a rich nation that will not tax itself to cure its miseries."

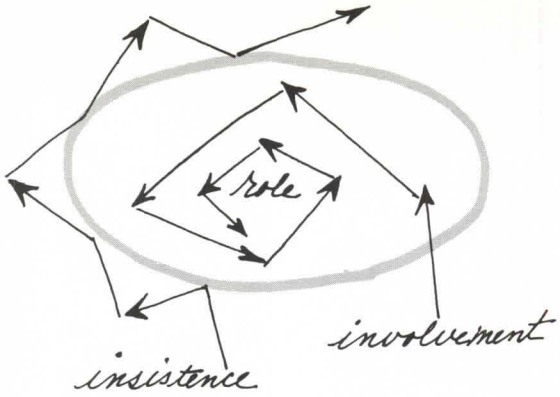
A Dwindling Capacity to Feel

Our apparent disability to provide within our system a cure to a major social "misery" would concern me less were it not for misgivings that this is merely the most conspicuous failing in a wider set of shortcomings. I have the uneasy and



unhappy feeling that we have lost, or are fast losing, our capacity for emotional involvement, our ability to "realize emotionally what we know intellectually."

It is not, by way of illustration, and particularly if we are urbanites, the fashion to be moved by patriotic experiences—Fourth of July celebrations or the playing of the Star Spangled Banner. It is not very common in urban centers to find people with deep religious convictions. As a social unit bound by bonds of human affection, the family is disappearing, as evidenced by the rising



divorce rate, the large number of fatherless poor families, and increasing juvenile delinquency.

We relegate concerns for the aged, the incurably ill, the poor and the orphaned to institutions and then complain about the pressure from United Fund drives.

We must, however, differentiate between being emotionally *concerned* and being emotionally *involved*. This is the difference, to analogize, between being concerned about justice and being just. This is the difference between being concerned about the ugliness of urban slums and being involved in rebuilding them through an inner compulsion to make man's environment fit for man.

This is the difference between insisting on the professional leadership role for building design and being involved as designers in finding ways to extend our skills across as wide a spectrum of society as possible because we feel a sense of social responsibility.

Involvement That Stresses Process

The sense of involvement which would grow out of an emotional concern, oriented in the way I have been trying to suggest, would mean concern with the ability of the *processes* in which we are engaged to effectively respond instead of preoccupation with the attributes of the *products* we produce.

It would mean a concern with systems, as a way of building and serving, more than with systems as products to be designed. It would mean being involved in the beauty of the system as a verb as contrasted to being concerned about the beauty of the system as a noun—in short, as has been written, with "art not as adornment to civilization, but as civilization."

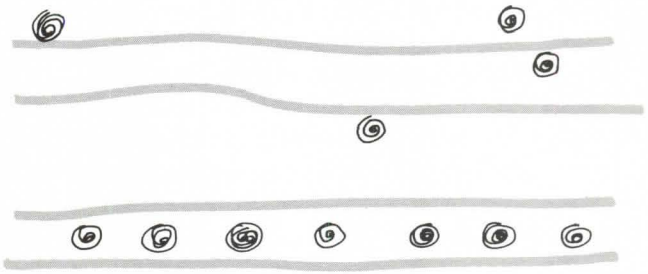
Professional design journals have dealt almost exclusively with the beauty—or design quality—of products. The general paucity of any satisfactory design content within the vast majority of our buildings, or the dreariness of most of our urban environment, is a *concern* of the design professionals who write about and talk about such matters, *but they are just not involved.*

Less than 5 percent of the housing built in the United States and less than 1 percent of the urban environment is exposed to the skills of the design professionals. Designers may not have opted out of the system of building intentionally, *but the* fact is they are not *engaged.* There is a certain amount of clamoring by the professionals to be let in, but they want in on their terms and with handsome remuneration for their services.

A gnawing realization, however, is that even if they were let in they would number far fewer than necessary to adequately respond to the societal demand, given the present methods of practice. Our system of building, as a way of realizing our urban environment, is not well related to the needs of our society so long as those with design skills are not committed and involved in the entire process.

An emotional concern that amounts to anger with not being asked to participate, or self-gratification by a selected practice, is not the same as being involved in a mode of participation which requires a dedication to extending the skills of the architect to every member of society, and in a way which holds us all responsible for failure.

The question rising appropriately is how this art can become "the score providing harmony with knowledge." I believe the key lies with the



formation of policies, educational programs and institutions which have as their purpose the enfranchisement of design.

Notice I did not say we need to enfranchise the designer, the actor, but the process of design—to link our imaginations and emotions in a conscious way to our systems for making and building.

Here is the largest opportunity the architectural profession has faced since this country was first established as a system which promised *all* of its members equal opportunity to share in its rewards. A profession is by definition responsible for its actions and its own modes of involvement.

Collectively and individually, we need to actively seek ways to extend our skills—our ways of feeling—to the broadest possible base of realization. In the final analysis, our test as a civilzation may well be our ability to include within the systems we use for producing our urban environment a genuine capacity to realize emotionally what we know intellectually. □

The key element in all air rights structures is the utilization of space by two entities with separate legal, tax and financing responsibilities, just as in the case of contiguous properties in the conventional sense. Air rights may be sold or leased and may be over highways, railroad yards and existing or planned private and public facilities such as garages, firehouses and schools. Described here are a public school-apartment house air rights structure and a similar private school project both now underway in New York City.

NEW DIMENSIONS IN AIR RIGHTS

BY THOMAS F. GALVIN, AIA

In the revitalization of the city, the air rights principle of construction is now commanding wide attention.

Specifically, the use of air rights above government-owned real estate for dual-purpose structures combining public facilities and residential or commercial structures represents a productive area for government and private teamwork.

The emergence of this trend received signal recognition with the formation in 1966 of the New York City Educational Construction Fund. Legislation creating this public authority expressly set as its objective the development of air rights sites and of income-producing properties over public schools.

Initial results of this significant process are becoming evident. Construction of the first combined public school-apartment house air rights project is underway in New York City and some 10 similar jobs are envisioned in the near future.

The current interest in the air rights concept derives from the staggering, almost insuperable, complexities of the present urban situation. One of the most acute problems is the growing scarcity of usable building sites and the consequent steep rise in land costs. Another is the severe economic burden on governments in providing funds for construction of such vitally needed facilities as schools, libraries, health centers, fire and police stations, transportation centers and so on.

Efforts to meet these important capital budget needs continue to run up against the spiraling cycle of higher land, materials and construction costs. At a time when normal housekeeping duties for an expanding population are straining government budgets, capital projects vital to social progress are often the first to be postponed. In this context, therefore, there is a continuing re-evaluation of the traditional policy of building public service facilities as single-purpose structures—for example, one lot, one school and nothing more. Properly exploited, the dual-purpose principle can benefit both governmental agencies and nonprofit institutions.

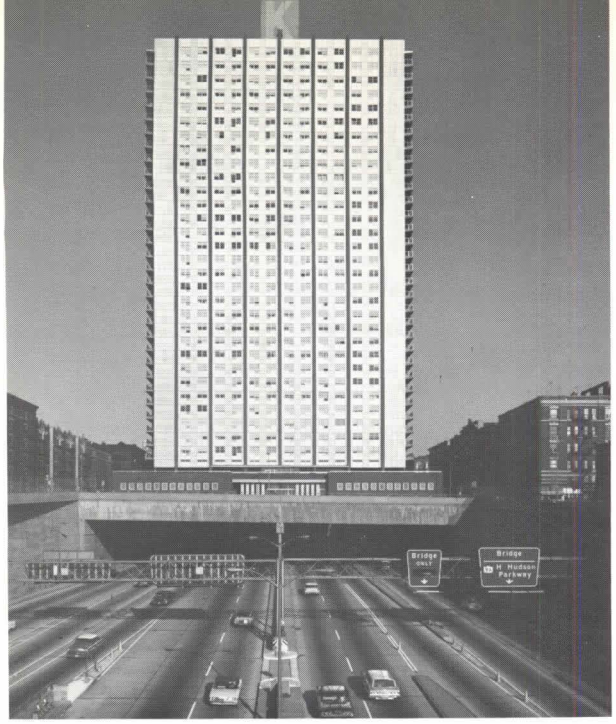
Air rights are inherent in every parcel of real estate. Ownership confers on the proprietor not only the value of the leasehold but also the potential of the air space above. A stroll through any urban area will soon reveal that air rights are perhaps the richest untapped source of building "sites" and revenues. This is particularly true of governments which, from the local to federal level, collectively constitute the largest owners of real estate in the nation.

Air rights have long been recognized as a valuable, usable resource as, for instance, in the structures along New York's Park Avenue above the subsurface railroads. The acceptance of the principle for public service facilities has been slow in developing. Its recent emergence, therefore, is noteworthy since the concept is particularly applicable in this area.

Thus the construction of four middle-income apartment towers in the air rights above the approaches to the George Washington Bridge demonstrated the value of the concept in maximum dual-purpose land use: highways and housing.

The combination public school and apartment building—P.S. 126 and Highbridge House—now under construction in the Bronx, New York, will yield a rich air rights harvest: a three-story elementary school for 1,400 children and a 25-story middle-income cooperative for 400 families.

Additionally, advantage has been taken of the



Noise and fumes problems are the same at Bridge Apartments as at any major traffic avenue in the opinion of the architects, Brown Guenther Battaglia Galvin.

sloping site to create two major recreational areas. A large school playground will be located on top of a two-story garage whose roof is on grade with the school. Apartment tenants will have their own recreational area on the school's roof, accessible from a loggia under the tower.

The author: Mr. Galvin, a partner in the New York firm of Brown Guenther Battaglia Galvin which has designed the three projects he describes, has served as consultant to a state legislative committee studying the use of air rights over government-owned real estate. Chairman of the Contracts Committee of the New York Chapter AIA, he was a member of the Architects Advisory Committee of the New York City Housing and Redevelopment Board, 1966-67.

The air rights principle also is being explored in the field of private education. In the vanguard is Trinity School, New York's oldest continually functioning private school for boys.

Trinity School has long been a vital component of New York's West Side area. The air rights project—Trinity School and Trinity Tower— is expected to be an anchor in the area's urban renewal program. Significantly, it was the air rights principle which permitted Trinity School to attain its objectives of expanding on a site adjacent to its present facilities. This was made possible by the school's sponsorship of a 200 middle-income apartment tower being built above the new three-story school on an urban renewal parcel.

Government participation in air rights projects offers valuable near- and long-range benefits. The initial advantage is the the conservation of land through the more efficient use of available sites—an important consideration in urban renewal.

At the same time, the sale or lease of air rights to private developers opens a new source of revenue. A continuing financial benefit is the return to the tax rolls of land that was formerly tax-exempt. Taxes, of course, derive from the private segment of the combined structure, based on the assessed valuation of the leasehold and the improvement. The combined revenue from sale or lease of air rights and taxes can pay for the entire cost of the public facility in many cases.

Additional savings to public agencies also are possible in the form of reduced maintenance costs in those projects where the private developer builds the entire structure and leases back space for the public facility.

The collaboration of government and private industry in air rights projects also serves to reduce competition for scarce construction sites. To some extent, this helps free government agencies from the essentially nongovernmental functions of real estate and construction.

The nature of air rights projects, which involve government and private interests, adds a new parameter to the role of the architect in executing his professional responsibilities. Such an assignment projects him into a more hectic milieu where the interplay of political, social and economic forces has full scope.

Let there be no mistake about it. Air rights design, in the area of combined public facilities-private structure, is a demanding and, at times, almost agonizing challenge. Nevertheless, the solution of these problems can be a deeply satisfying experience in contributing to the improved quality of urban life. From the very outset, a wide spectrum of considerations seems to impose the most rigorous limitations on design.

There is, first of all, the social, functional aspects of the dual-use structure. In a school-apartment building, as indeed in most multipurpose projects, complete separation must be achieved so that there is no contact between school children and apartment tenants. This rules out any compromise using common corridors, entrances or combined use of any interior facility.

Additionally, in the planning of the school, the design requirements of school boards may seem beyond attainment because of the need to incorporate the structural requirements of the superimposed air rights structure. Windows, for example, may not be feasible in certain classrooms or other study areas grouped around the core of the upper structure.

Legal ramifications are endless. While the ground structure and air rights structure occupy separate parcels (for taxing purposes), their con-

tiguous physical relationship mandates a full clarification in such areas as insurance, liability, maintenance and easements. In addition to the usual documents, therefore, special ones must be prepared for this purpose, requiring continual consultation with legal counsel at virtually every stage of planning and design.

The legal problems become even more intricate in the areas of land use, urban renewal, zoning and taxation. Inevitably, these questions involve a multiplicity of public agencies with overlapping jurisdictions and functions. The development of air rights projects also involves unusual and highly complex financing arrangements. Where mortgage financing is forthcoming from both public agencies and private institutions, the allocation of financing costs of common features, such as foundations and columns, can be a critical influence on design.

Allocation of construction costs also can be a complicating factor. This can be particularly difficult when open bidding is required on the public facility sector of the project. The problem of coordinating overall cost estimates and controlling construction timetables requires considerable time and effort.

Do these and similar problems suggest that a compromise or hybrid structure—anathema to good design—is inevitable in air rights projects? On the contrary, the challenge of meeting real needs through functional solutions entails the utmost clarity in design as well as esthetic integrity.

The need to define entities, in terms of usage and structural and mechanical functions, is basic to solution of the problems. Points of demarcation must be rigidly defined to insure that the final design will be a workable one.

Precise programming and planning are essential to coordinate participation in the project. This is necessary to establish construction timetables compatible with financing arrangements and to clarify and coordinate relationships with contractors.

A typical air rights project has its origin in a combination of problems. The genesis and development of Trinity School and Trinity Tower offer instructive insights into the problems—and opportunities—that are directly related to the concept. Five key considerations:

1. The need to expand school facilities and the desire to do so at the school's present location in the city. This desire was reinforced by the improving character of the neighborhood resulting from the West Side urban renewal program.

2. Inability to expand on the only site contiguous to the school, a 30,000-square-foot urban renewal parcel designed for housing and commercial use.

3. The desire to avoid disruption of operations by a major alteration of its present school.

4. A determination to preserve the school's existing playing field—a unique recreational area in the heart of the city.

5. The conviction that the school's expansion program offered an increasingly positive involvement as a force in its community.

Now educating its 13th generation of boys, Trinity's need for enlarged facilities have become increasingly urgent in recent years. To fulfill a greater role in private urban education, the school had set as its objectives a major increase in its enrollment from a student body of 360 and a broadened educational program encompassing academic, athletic and civic activities.

The expanded facilities were projected to serve an additional 360 students and to provide a school environment in keeping with contemporary educational trends. An extensive study was undertaken to find a solution. The air rights concept clearly offered the most satisfactory approach.

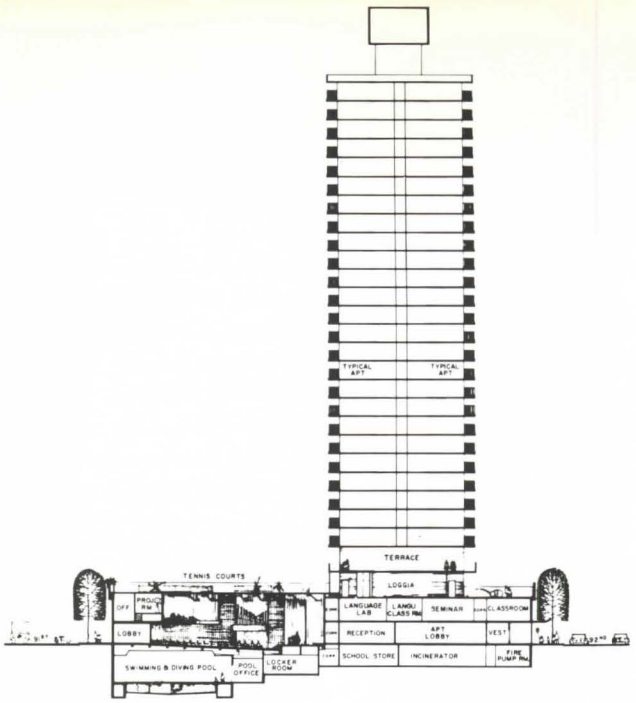
The basic element was a commitment by Trinity School to participate in the West Side urban renewal program by sponsoring a 200 middle-income apartment tower in the air rights above a three-story school. The board of trustees enthusiastically accepted the plan. The sequence of its unfolding spotlights the challenges in overcoming the enormous complexities involved in air rights developments, particularly where public agencies are concerned.

As approved sponsors of Site No. 24 of the West Side urban renewal area, Trinity School purchased fee title to the parcel at ground level from the City of New York.

It became apparent as preliminary plans developed that the urban renewal site alone was not adequate to meet zoning requirements for floor area, open space and setbacks (sky exposure plane) for a combined building. Thus a portion of Trinity's present school land was added to create a single zoning lot to obtain approval of the New York City Planning Commission and Department of Buildings.

The urban renewal large-scale plan had to be modified to permit these adjustments. A change also was made in the use of the parcel to permit a school and housing combination and allow the school roof to qualify as open space to meet residential requirements.

A separate tax lot or air rights lot was created beginning at the fourth-floor level of the apart-



Air rights neighbors Trinity School and Trinity Tower.

ment structure. Title to this carved out air rights portion was acquired by a limited-profit housing corporation established by Trinity under New York State's Private Housing Finance Law (Mitchell-Lama).

A 102-car garage required for the apartment structure will be built over the school's playing field and leased to the housing company which, in turn, will lease back the roof over the garage for the creation of a new playing field.

The acquisition by Trinity School and the housing company of separate fee interests creates two separate tax lots. The middle-income housing company pays real estate taxes after a 50 percent abatement in accord with the assessed valuation of its air rights lot by the City Tax Commission. Trinity School maintains single ownership of the land at ground level of the combined lot for zoning purposes. The land at ground level used for the school, a nonprofit institution, is tax exempt.

The housing company has acquired from Trinity School certain core areas running through the school portion for elevators, public stairs, mechanical distribution, incinerators and basement space. Formulas were developed for allocating costs of footings, foundation walls and columns which support both school and apartment house functions.

In direct proportion to the floor area, 80 percent of the land costs of the site were assumed by the housing company. The cost of abnormal conditions, such as rock excavation, was distributed between school and housing, using the formula developed for other costs.

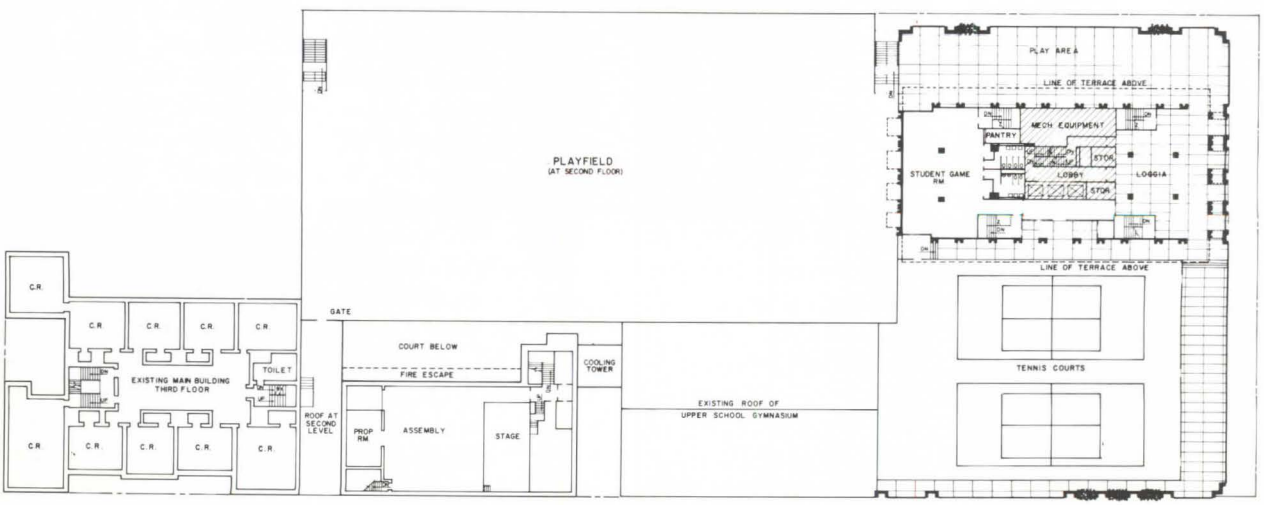
The school portion of the structure will be financed wholly by Trinity School. Mortgage funds advanced to the housing company by the city under the middle-income housing program will not be used for school construction.

Construction costs reflect the integration of the structures. Savings have been achieved in excavation and foundation work and job overhead. The large volume of construction is also productive of indirect savings in awarding subcontracts.

Conversely, the necessity of carrying mechanical equipment and structural columns four stories before reaching the first residential floor also is reflected in costs. An additional housing cost resulted from the necessity of building a terrace floor to provide exclusive recreational space for apartment residents.

The project is a 29-story structure, with school facilities housed in the first three stories. They include 16 classrooms, 4 science laboratories, faculty and administrative offices, swimming pool, locker rooms, dining room, kitchen, music prac-

The Trinity project's third floor is, with joint recreational areas, only plane of contact between pupils and tenants.



tice rooms, seminar rooms, library, language laboratory, school store, rifle range and roof tennis courts. A major feature is a multipurpose chapel-auditorium which is subdivisible into a tripartite study-lecture hall.

The superimposed apartment tower contains 200 units, ranging from efficiencies to three-bedroom suites.

The plane of contact between school and apartment tower incorporates recreational areas for both school and tenant use. Tennis courts will be situated on part of the school roof outside a school lounge on the third floor. The courts also will be available to residents of the apartment tower. The terrace floor of the structure will include apartment house facilities—community, recreation and laundry rooms—as well as a loggia overlooking the tennis courts.

As design evolved, a number of solutions were necessary to cope with problems of site limitations and floor area restrictions imposed by urban renewal controls, along with the built-in complexities of integrating the school and apartment house in a single structure.

To achieve the most efficient use of the educational space, a "closed doughnut" plan was developed. Exterior perimeter walls were utilized for classrooms and laboratories. Interior spaces were reserved for administration areas, service functions and special teaching facilities such as language laboratory and seminar rooms. Smaller educational spaces, for seminar and language preparation rooms, were carefully located to permit a subtle integration of the apartment structure with school planning requirements.

Mechanical features of the apartment tower are collected at the apartment terrace level, distributed horizontally in a suspended ceiling and passed vertically through the school in central locations.

The location of the school's chapel, an integral part of daily school activities, was a major design consideration. Because of height, size and shape, this major space had to be kept out from under the 26-story apartment house with its inherent structural system of closely spaced columns.

In addition to providing for preservation of Trinity's playing field, design of the garage also held the key to solution of several important problems. This included the need to construct a new dining room and kitchen to permit uninterrupted operation of present facilities. There also was the need to relate the new wing to the existing school, both for ease of communication and direct access for all students to the new facilities.

The decision was made to build a one-story structure on the present playing field. The structure contains a two-level garage (including one below street level), a new kitchen and dining room, a new small gymnasium and a new corridor linking new and existing school wings.

The location of the school in a heavy traffic area dictated the maximum possible reduction in outside noise and air pollution.

Since a major portion of the school space is interior or abutting other structures, the new school will be completely airconditioned. This also makes possible the elimination of windows except for a continuous strip of high windows around the second-floor perimeter.

Mechanical systems of the school and apartment houses are separate. Apartments will be heated by a vacuum steam system with convectors, utilizing street steam supplied by a public utility.

The school's central airconditioned system provides for year-round environmental control except for the pool, locker rooms, utility rooms and storage areas. The cooling is by steam absorption system. Hot water to air induction units provides heating.

Reinforced concrete flat plate construction is planned for both school and apartment tower. Structural steel and concrete slab will be used in the auditorium and adjoining areas. Exterior walls of the apartment house will be of cast-in-place architectural concrete; the school exterior walls, brick and cast-in-place architectural concrete.

Entrance to the apartment tower will be on 92nd Street, while the school entrance is on 91st Street.

The Trinity project marks the first phase of the school's expansion program. An extensive renovation of the existing 19th century building is planned. In the final phase, the roof of the gymnasium will be replaced by a flat area providing for additional tennis courts on a level with the roof tennis courts of the new wing.

Because Trinity is a prototype structure, the architectural responsibilities will not be concluded with the completion of construction. In actual operation, the architect's counsel and supervision will be available to eliminate any unforeseen frictions or conflicts in use.

The progress in bringing together government and private groups in this, as well as in other air rights projects now underway, reaffirms the validity and increasing role of the concept in contributing to urban redevelopment. □

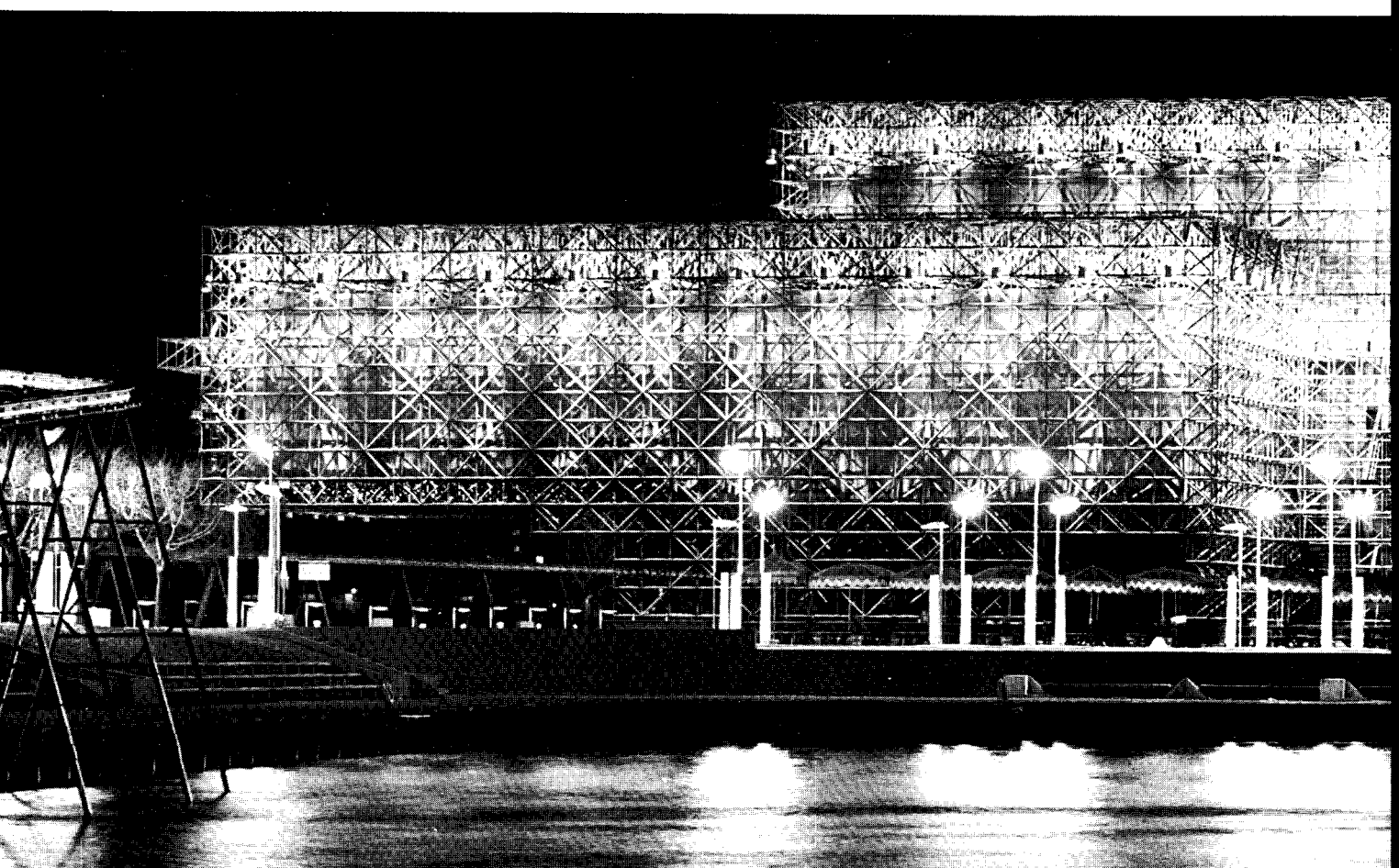
SPACE FRAME

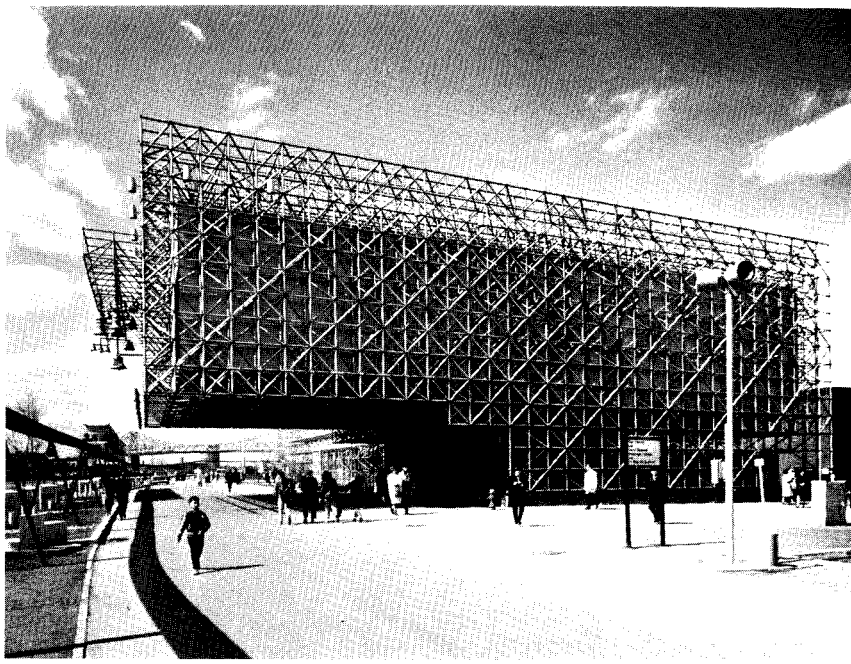
A giant tinkertoy, a do-it and undo-it-yourself space frame, a delicate-looking work of filigree, a flexible, portable structure are some of the attributes given the Netherlands Pavilion at Expo 67.

They all fit. For the frame of the pavilion consists of 57,000 pieces of 3-foot-long tubing that snap together without welding or riveting. Suspended within the cobweb-like frame is 23,000 square feet of column-free floor space, including a 45-foot-long cantilevered lounge. It's a construction/design combination that won the R. S. Reynolds Memorial Award for its three architects—two of them Dutch, one a Canadian.

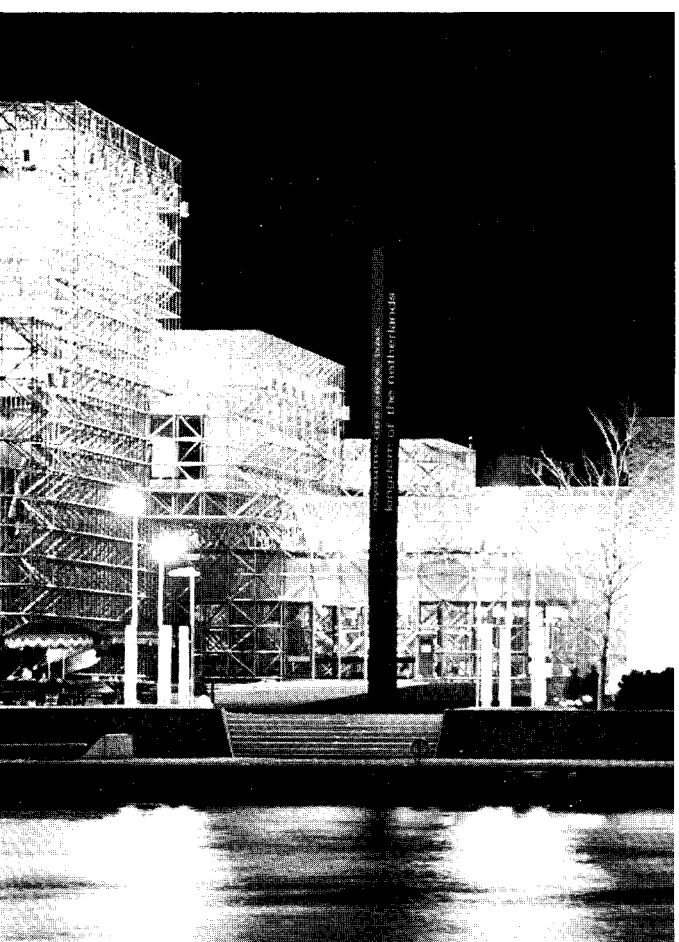
The lightweight parts—unit weight of the frame is 2½ pounds per square foot—went up without a scaffold and can be disassembled, moved and re-erected or or rearranged to accommodate just about any requirement.

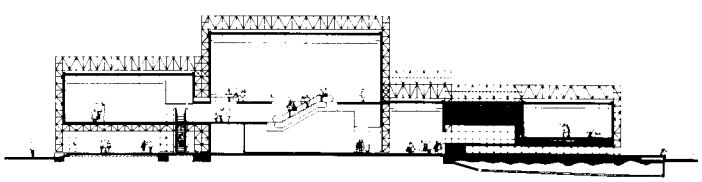
Walter Eijkelenboom and Abraham Middelhoek of Holland, architects, and George F. Eber of Canada, associate architect, let human functions determine the building design rather than letting the envelope or the frame force the arrangement of space, commented The American Institute of Architects jury. The space frame fully supports the walls, floor slab and roof, eliminating

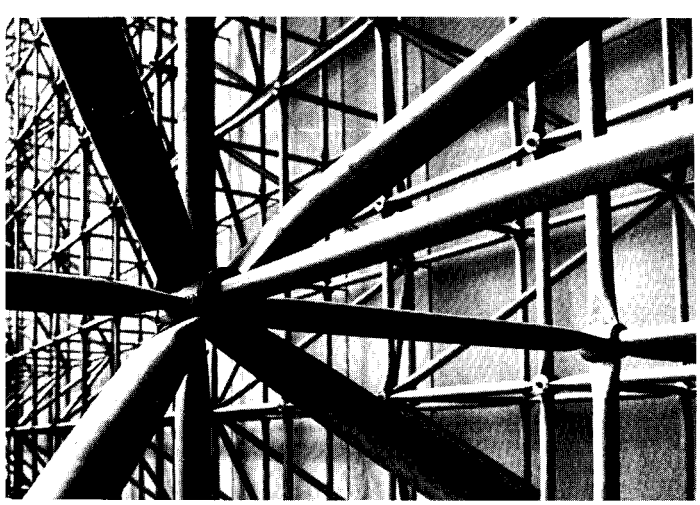




AT EXPO/REYNOLDS '68







columns or beams and leaving a completely open view throughout each exhibition area.

The drama of the building, said the jury, "is achieved entirely through the intrinsic nature of its design rather than the imposition of superficial forms."

The basic modules of the frame are 3-foot aluminum cubes of tubes flattened on each end and inserted into slotted connector hubs of extruded aluminum which provide three-dimensional linkage. Each of the primary connector hubs holds nine vertical tubes, four diagonal tubes connecting to the opposite side of the cube, and one spacer tube perpendicular to the two sides.

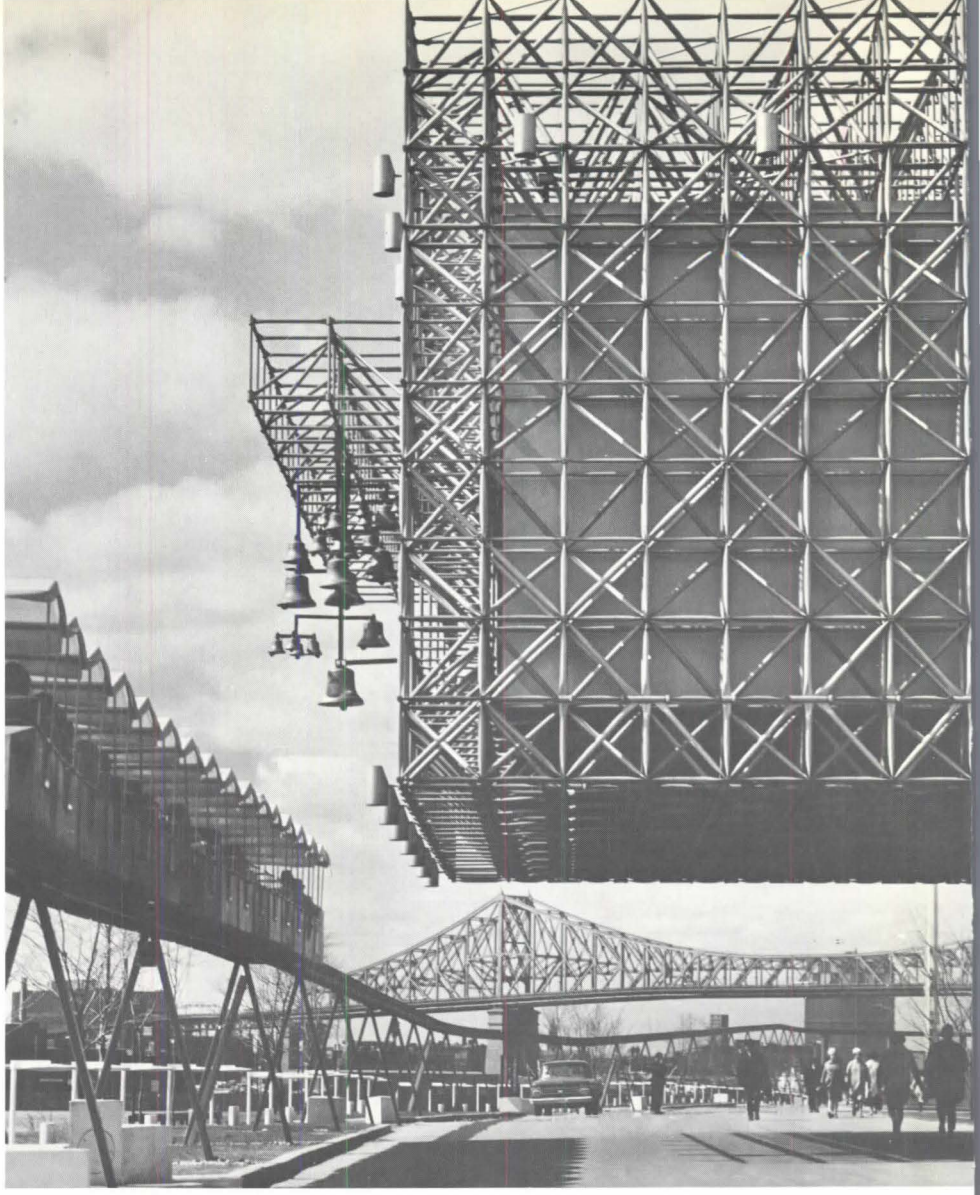
The "Triodetic" connector hubs are a patented design from F. Fentiman & Sons, Ltd., of Ottawa. The system was modified for use in the Netherlands Pavilion.

The aluminum tubes are $1^1/_2$, 2 or 3 inches in diameter with .120-inch wall thickness. In areas of special stress, comprising about 15 percent of the structure, 3-inch-diameter galvanized steel tubing is used.

The suspended walls are 2 inches of batt insulation sandwiched between asbestos and gypsum sheets in 3-feet widths, separated by plastic ducts. The floors are wood over precast concrete slabs; the steel deck roofing is suspended by hangers from the space frame tubing. The concrete foundation is covered with imported Dutch brick.

The R. S. Reynolds Memorial Award—$25,000 and an original sculpture—goes to the architect or architects anywhere in the world selected for "a significant work of architecture, in the creation of which aluminum has been an important contributing factor." It is sponsored by the Reynolds Metals Company and administered by the AIA. This year's jury consisted of Theodore C. Bernardi, FAIA, chairman, San Francisco; Victor F. Christ-Janer, AIA, New Canaan, Connecticut, who was the 1967 award winner for his design of the James F. Lincoln Library of Lake Erie College in Ohio; Edward D. Dart, FAIA, Chicago; Victor D. Gruen, FAIA, Los Angeles and New York; and Hector Mestre, HON. FAIA, Mexico City.

The $3.5-million pavilion remains on its waterfront site as part of Montreal's "Man and His World" exhibit which will continue through October 14.



A Foreigner Views Our Ways with Cities

BY W. L. STUART

Plan with reality, suggests an English architectural professor who drives his points on city planning in the United States against strong traffic. Impressed with us primarily as a nation on wheels, he underscores the car as one modern commodity to which we should synchronize while getting rid of that backseat driver: nostalgia.

With or without a Vietnam war on its hands, the American nation is faced with a massive program of city planning and replanning over the next few decades. It will affect every city dweller in the United States and should be a matter of concern for every citizen, particularly because part of the money required may come from taxation. The amount will be astronomical, and for this reason only the best results are permissible. But how are the best results to be achieved, by what methods are they to be evolved and by what criteria are they to be judged?

The whole question is fraught with difficulties stemming from 1) the basic lack of a field of study since historical precedents are of limited value to the contemporary situation and 2) from the time lapse which militates against the use of test models, the measuring of performance standards and the validity of follow-up studies. Even in the related field of architecture where research is somewhat easier, it is difficult to bridge the time lapse between research and execution.

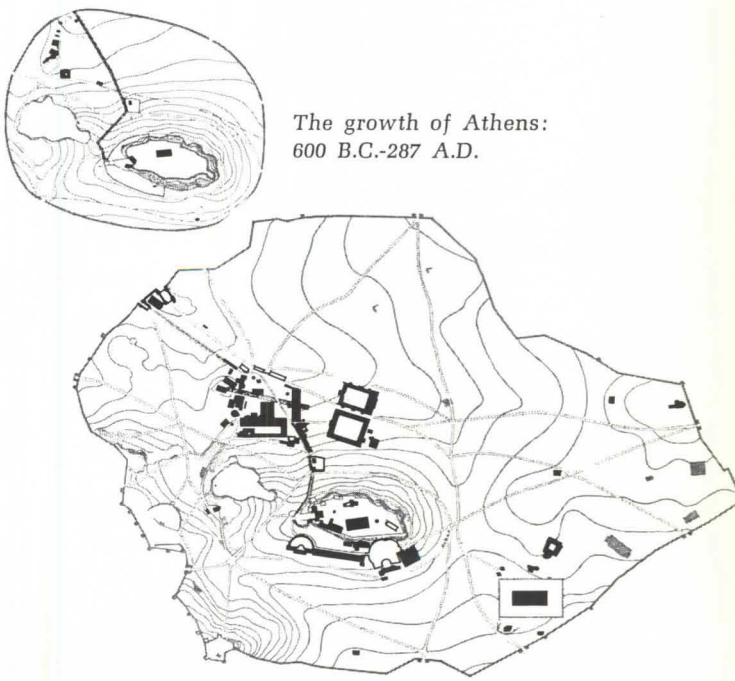
For example, results of research being conducted now in housing requirements for the elderly will be implemented in buildings to be occupied by people at present dressed in brass-studded leather jackets or with flowers in their hair. Equally, in a field more susceptible to direct results from research, that of systems building, in spite of advances in building science no system or method has been evolved to alter the fact that buildings now being erected will still be in use in the 21st century. An extension of the latter point is that the work of today's students of architecture will still be standing in the 22nd century — a sobering thought for the most sanguine of men.

Fortunately, it is always possible to modify individual structures to meet unforeseen changes and, if ultimately necessary, raze them and rebuild without necessarily causing financial loss. However, if the foregoing analogy of architecture is applied to city planning, the enormity of the consequences due to serious miscalculation or wrong assumptions precludes the simple expedient of knocking down and rebuilding. Hence the need for ensuring that the proper decisions are made now if current programs of city planning are to provide a suitable framework and background to city life in the next two centuries.

In the vocabulary of architects and city planners, there is a recurrent series of words used in descriptive analyses and criticism — proportion, scale, pattern, texture, unity, enclosure etc. — which have come to be accepted as the *lingua franca* of esthetic appreciation. Attempts to determine and codify specific effects in art forms were almost certainly not made before the revival of Vitruvian principles during the Renaissance, but since Renaissance canons became the basis of all art forms for almost five centuries, it is understandable that a consistent vocabulary should grow into general use and that the comprehension of architecture and urban space in those terms should be common all over the Western world.

Whether such values will remain valid in Europe after the 20th century is debatable and whether they will be valid in America in the future is extremely unlikely. That they are still adhered to and advocated is beyond question and the current rethinking of urban living in the US unfortunately is overlaid with a misplaced confidence in outmoded European values.

The accepted norms of size, space and scale in



The growth of Athens: 600 B.C.-287 A.D.

European town building can be traced from the Greek city states through each of the eras of great architecture and civic design. These same values are always recognizable in spite of the different social, political and technological changes which distinguish each period. It is to these norms that the Renaissance formula-type words are applicable and appropriate. To visit cities like Sienna or Dubrovnik is to experience urban environment

The author: Mr. Stuart, visiting professor of architecture at Kansas University, 1966-67, is head, department of advanced studies, faculty of architecture, Leicester College of Art and Design, England.

of an extremely high quality, the result of a sophisticated set of civic functions coordinated within a hierarchy of building forms and open spaces providing a fascinating series of esthetic and visual stimuli as a backcloth to everyday living. It is only right that our schools of architecture and planning should ensure that their students are exposed to this aspect of history — but essentially as history.

However rewarding it may be to return to the cities of the past, it is unreasonable to expect that they have much in common with cities of the present, if only for the reason that European cities changed in every way after the 18th century. Up to that time, cities were so small in area and population that they were visually and sociologically comprehensible to their occupants.

In addition to their urban characteristics, European cities were closely related to each other in a settlement pattern of habitation derived from an agricultural economy which had been a constant factor for over 10 centuries. In brief, the mutations wrought by successive distinctive eras of civilization took place very, very slowly and against a static background.

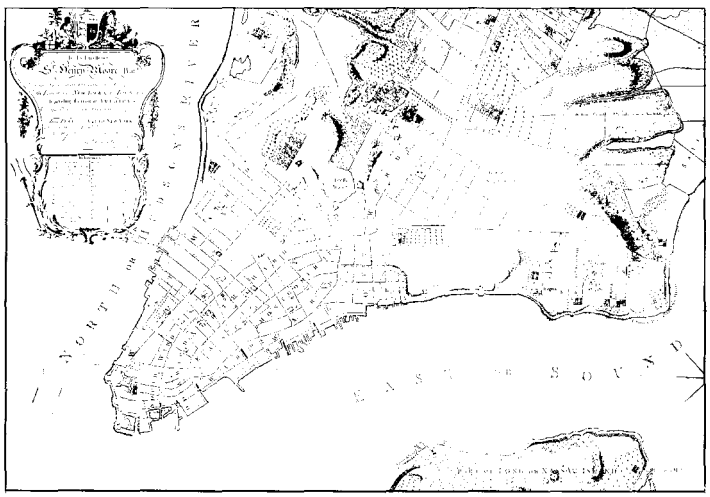
There is no comparable situation in the urban growth of the US apart from certain areas on the eastern and western seaboards, but here the time scale is not comparable. The majority of American cities exploded into existence in the 19th century as a result of forces without *parallel in* history. In the main they are found at centers of natural resources essential to industry.

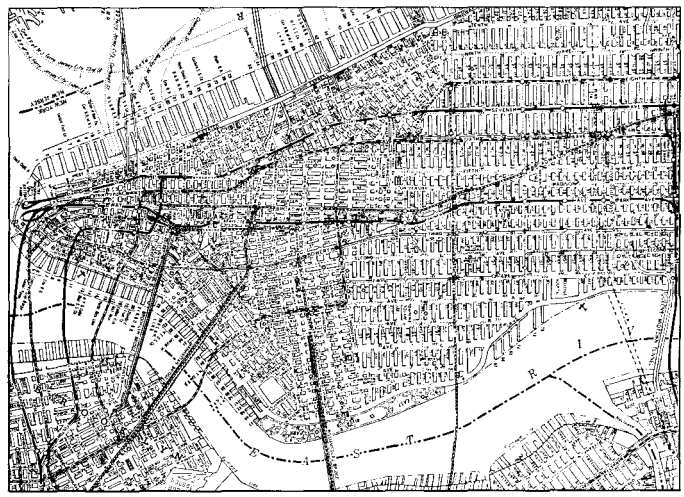
Many factors contributed to the unique background of urban growth, such as the ethnic patterns of society, the psychological attitudes engendered by the frontier mentality, the emergent socio-political systems, the new and expanding technologies, the rate of growth etc. None had any historical precedent and, therefore, European traditions of town building should have been invalidated. Yet, they were adhered to even with the advent of the automobile.

If all other motivations had not been sufficient to call forth new city forms, the automobile should have been and certainly, its influence overshadows every other on town planning in the US. The American people wholeheartedly accepted the car with all its advantages, particularly those of personal mobility, and by building a national and urban network of roads they have produced some of the most outstanding engineering symbols and exciting components of the built environment in the 20th century.

Inevitably, a way of life has grown around personal mobility demanding new forms for the city to meet the new patterns of living. No justification is ever offered for the apparent chaotic conditions of the cities which have resulted from the acceptance of the automobile, but the question must be asked: Why are the cities considered bad environmentally and by what criteria are they judged chaotic? Is it not just possible that US cities are still being compared to pre-19th century cities in Europe with their consistent characteristics of scale and size, of face-to-face contacts, of market squares and piazzas, of architectural identity symbols, of centrality and containment? Is it not just possible that the apparent chaos is

The explosion of New York: 1767 and about 200 years later.





the expression of an order which 20th century man cannot recognize?

To attend a convention on architecture and town planning is to be bombarded by eminent speakers on an almost esoteric range of subjects: theology, Japanese farming, epidemiology, medieval philosophy, urban anarchy, ecological determinism, etc. Frequently there are films or color slides of life in a jungle village or a bazaar in India or the Middle East, showing the virtues of gregariousness and human contact which, apparently, are lost forever to Western man. But where is the parallel? Given time and enough financial aid to raise their standards of living, the inhabitants of Calcutta, or wherever, will no longer be seen in the bazaars; they will be too busy commuting in shiny automobiles to their split-levels in the suburbs. In any case, what has any of this to do with Detroit in the mid-2000s?

It would be futile to deny the usefulness of conventions as platforms for exchange of ideas and as demonstration centers for the enthusiasm and knowledge which surround the subjects. The test of their real value, however, lies in the evidence of such knowledge reflected in the realization of live projects. In terms of built forms, the urban renewal solutions in the big cities all too frequently follow the Lincoln Center pattern with the counterparts of El Barrio still suppurating alongside.

New towns solutions are very often based on outmoded sociological concepts in the form of neighborhood units or village cores separated by green wedges, all nucleated around a town center. Undoubtedly people are gregarious and do seek to meet, but having regard to the freedom of movement obtained by the universal ownership of automobiles, why should the physical form of towns be based upon the assumption that outlets for social interaction need to be sited within walking distance of the participants?

Similarly, if the centers of the downtown areas are no longer providing the focus formerly expected of them, does it make sense to attempt their revival with cultural centers interlaced with pedestrian precincts? Why should culture be "centered" or pedestrians be "cloistered"? And why downtown?

Even small towns are not safe from well intentioned "improvements." In the interests (presumably) of keeping America beautiful, the rugged, lovable old cow towns of the prairies are having their main streets converted to resemble the worst of the town centers in the British new towns, when in fact their original form is still valid and part of American history, a carving out of the wide open spaces to make the roads West, the great, majestic roads of which America has reason to be justly proud.

Although town planning is of its nature anticipatory, lack of foresight in the past was never serious when changes in every aspect of life were slow and gradual. In our century, lack of foresight is disastrous, yet no one can deny the difficulties of trying to recognize, to know and to understand the present, the now-culture, the era of the plugged-in, switched-on, transistorized, frozen-fed man. The past has little to offer of relevance and therefore does not lessen the difficulties; technology has overtaken society so overwhelmingly that it is easily forgotten to which extent people today differ from those of previous peak periods in history.

Ironically, the political ideals of American democracy are inimical to town planning as it is taught and practised, that is, in the neo-beaux-arts set-piece fashion, when in fact town planning is part of a huge political exercise of which only a small part has to do with buildings. Town planning as a series of architectural models brought to life is a potential disaster. Town plans should be nothing more than a two-dimensional framework, a set of guidelines along which a series of happenings can be expected to take place within a changing social, political and technological pattern. To evolve a *modus operandi* for building within such an open-ended framework to accommodate needs as they arise would be infinitely more valuable than theorizing on ideal town plans, or making models of urban renewal projects based on existing conditions and tested against their economic viability.

America must come up with the real answers if only because no other country in the world has the means to carry out proposals of the scale necessary to meet the challenge. British and Russian experience shows that something more dynamic than government finance and backing is needed if good ideas are ever to be built. The answers must come up soon: Politically speaking, time is a commodity in short supply.

In the meantime, why not start with cities as they are and not as nostalgic romantics would like to make them? Why not guide the peripheral developments of the drive-in-gas-up-plug-in-neon-juke-box-motel-three-car-split-level-tree-lined-suburban dream of home? Why not acknowledge the whole infrastructure of the city as it is, a huge, gaping zero at the center where downtown used to be, with new focal points scattered around it as though some giant centrifugal force had spun them into position.

This is the American urban scene and nothing points to it going in any other direction. Nostalgia for the past, conscious or otherwise, can never justify attempts to reverse the course of history. There are no Italian hill towns in the US. One cannot even see where one might have been. □

Grope Throws His Hat

Photographs by Steven A. Hansen

They weren't even holding a primary election in Massachusetts, but the straight Bauhaus ticket carried the day when Walter Gropius, FAIA, celebrated his 85th birthday among architectural colleagues, fellow educators, former students and friends on May 17 at Harvard University. Seaver Court in Harvard Yard and Robinson Hall, headquarters of the Graduate School of Design, where Gropius was chairman from 1937-52, became the political arena as colorful streamers and placards proclaimed "There's Hope with Grope" and "Total Scope with Grope."

Beginning with a march from the Brattle Street offices of the Architects Collaborative, Inc., of which Gropius is a senior principal, the gathering was reminiscent of the festivities in the Bauhaus almost half a century ago. It was, in the words of the honored guest himself, "the grand finale of two weeks of birthday parties in Germany from which I have just come." He admitted that "the greatest present for me" has been the "50 Years Bauhaus" exhibition in Stuttgart (continuing on to London, Amsterdam, Paris and New York), sponsored by the German president and personally dedicated to the architect.

Among the several hundred guests there was a special surprise: the appearance of Jack C. Pritchard of London, the single individual responsible for getting Gropius and his wife Ise out of Germany in 1934.

After the drinking of toasts, the delivering of speeches (excerpts follow) and the donning

of the butcher's jacket—the latest vogue with the design students—Gropius ended his brief response by saying, "One must be always progressing to the future. Live longer—through endurance you may become somebody!"

For an active candidate, it must have been the shortest talk on record. But, then, as "the first of the flower children," in the eyes of one of his campaign promoters, Grope seemed to be piling up potential votes.

in the Ring

Grope Throws His Hat in the Ring

Gropius is in an enviable position. His name will be carried along in the stream of history for his contributions to architecture. As a professor, he transformed the world of architectural education when he came to Harvard. His career here has been remarkable in fusing architecture and technology. He sensed the developments of the 20th century and encouraged ways for the professions to come together to create better spaces for human beings.
—Nathan M. Pusey,
president, Harvard University.

Your dreams of the '20s, dreams for a better environment in which architects and planners will join in building a better world, are materializing. I wish and hope that you and all of us who dream with you will see its beginnings; your tenacity and faith in man will have helped make it possible. Architects will have to follow your broad approach and become generalists rather than specialists. We share your faith in teamwork, but at the same time we believe we should remain architects in the broadest sense of the word and not get sidetracked, which is very easy today. Design remains our field. It is complex enough, difficult but full of promise.

There are no new cities that embody your ideas and ideals in this country today, but Resurrection City is coming up on L'Enfant's Mall in Washington; and the juxtaposition of the prefabricated tents and marble monuments is an expression of an attitude of constructive protest which should perhaps be emulated by architects and planners setting up our own tent cities to help make your dreams come true.
—José Luis Sert, dean, Harvard Graduate School of Design.

We have all noticed the sincerity and intensity of children. They paint with pure colors—right out of the pot. They speak with pure, unqualified words. Most of us, as we grow up, tend to lose this sincerity and directness of purpose and expression. We hide behind a screen of pseudo-sophistication. Our writing uses bigger words and says less. We strike negative postures which are safer than having the courage to come out for something.

There are a few people in the world who grow in depth and understanding, without ever losing the sincerity and enthusiasm of childhood—and Grope is certainly top on my list.

The Bauhaus was not only a blow at the self-satisfied status quo. It was also a powerful, positive statement, painted with pure undiluted colors. Grope's writing has never descended into incomprehensible wordiness. It is boiled down (to borrow his phrase) in the quintessence of a subject.

Most important, Grope's enthusiasm for life remains undiminished. When he and Ise return from one of their many trips, he tells you about it as if no one had ever been there before. He sees with the direct vision of childhood and the explorer.
—John C. Harkness, principal, the Architects Collaborative, Inc.

I can't help thinking that there would have been less restlessness among students throughout the world if we had learned more from the Bauhaus experience. Gropius insisted that the students learn to understand their materials by working with their hands—making mistakes and profiting thereby.

A lesson that has not been sufficiently appreciated is Gropius' insistence on the close association of artist and technician. Science must play an increasing part, but the artist's imagination so often seems to say something of the bewildering feeling. About 100 years ago Kelvin, the great scientist, refused the invitation to join the Royal Aeronautical Society saying that he had no faith in aerial navigation except perhaps ballooning! Within a few years your Wright brothers were flying. Whereas the imaginative poet Byron 60 years before had said, "I suppose we will all be flying in air machines and eventually reach the moon."
—Jack Pritchard, London.

Walter Gropius has been the great cross-pollinator of modern architecture. Unlike Frank Lloyd Wright and Le Corbusier, whose works were more loudly individual, Gropius has played the quiet collaborator.

Yet his achievement has been as significant as theirs. He has brought talents and discipline together to synthesize a stronger architecture. . . .

Gropius, 85 this week, could look back if he weren't so busy, to a series of collaborations with eminent colleagues that began in 1911 when he and Adolf Meyer designed the Fagus shoe-last factory in Germany. In 1924 he took up work with Maxwell Fry in England. The American phase of his career started in 1937 when he was named head of Harvard's School of Architecture. For several years he collaborated with Marcel Breuer, and in 1946 he and several younger architects founded the Architects Collaborative, his present base of operations.

It was in his role as head of the Bauhaus in Weimar that Gropius showed his collaborative genius.

He assembled there a counterpoint of talents—Lyonel Feininger, Paul Klee, Wassily Kandinsky—to create a school whose purpose was to unite art and craft. Study of theories of form and design was combined with practice with materials and machines. The school stressed that buildings should be a collective effort, reflecting harmony in the style and material of the structure itself, in its furniture and decorative elements.

Gropius is still at work. In the past few days he was in Saxony on assignment. And his Architects Collaborative is busy with designs for the new University of Baghdad in Iraq. Thus he seems bent on earning still more accolades than those he so deservedly is receiving this week.
—Reprinted with permission from the *Christian Science Monitor*, May 18, 1968.

Putting Criticism into Practice

When the 43-year-old *Journal of the Royal Architectural Institute of Canada* changed its name to *Architecture Canada* in January 1966, it became committed to an editorial policy that includes "learned criticisms." And, in so doing, it has been concerned with the formation of performance standards, about which author Diamond writes in the accompanying article.

But he hastens to admit: "We do not, however, have a rigorous policy of enforcement, perhaps because the task of identifying these standards is vast." And yet he feels that a contribution is made to this criticism series, simply by exploring how these standards might be spelled out and in which areas they could be usefully formed.

As Diamond explains further: "While remembering they are interdependent, the two areas are physical and behavioral. In the former, we do have, by way of an uncoordinated, empirical basis, some criteria of performance standards. This is, of course, because we can more easily qualify them. But we do not have an even primitive yardstick to demonstrate failure in the behavioral category." The AIA JOURNAL welcomes correspondence from any readers who have something to offer in this area.

As an added note of interest, the 1968 RAIC annual convention in Regina recently dealt with architectural criticism by nonarchitects, a program developed by the magazine's managing editor, Walter W. Bowker. THE EDITORS

BY A. J. DIAMOND

Among the many reasons why architects object to criticism is that in a competitive field there is always the possibility that adverse comment might alienate a source of work. Another is that the professions in general prefer an image of omnipotence. And further, architects frequently consider their prime responsibility as being toward their client with little regard for the public good. Nor is hurt pride a small concern.

A quotation from Taine, written in 1865, sums up the form of criticism, if it can be so described, that many architects consider the only kind permissible today. "The new method I am attempting to follow, and which is beginning to find its way into all moral sciences, consists of viewing all human works, and particularly works of art, as facts and phenomena of which it is essential to mark the characteristics and seek causes, nothing more."

The author: Mr. Diamond, in addition to his duties as associate editor of *Architecture Canada*, is a practicing architect-planner and heads the University of Toronto's Graduate Design Studio.

In truth, underlying all objections to criticism is this difficulty: the lack of agreed terms of reference. Clearly, in order to *judge*, *criteria* are required. And in order to evaluate judgment, the criteria should be explicit and communicable. Further, *disciplined* advances in a field can be made only by evaluating the criteria themselves rather than ending our concern with the specific effects of a particular criticism.

It is seldom in architectural criticism that we find a clear enunciation of standards. The reasons for the absence of stated premises lie in the

Architectural Criticism. Once performance standards can be identified, criticism becomes evaluation, says a journalist north of the border. Thus both performance and standards can be scrutinized, the basis upon which *Architecture Canada* attempts to communicate value systems in its review of current projects.

A Plea for Performance Standards

nature of much criticism, which is frequently based on intuition or emotion or taste and preference and on how the subject appears to the critic. To quote John Dewey, it is also often "an act of intelligence performed upon a matter of direct perception in the interest of a more adequate perception" and not *"a process of acquittal or condemnation on the basis of merits and demerits."* [Italics are mine.]

The field of art is rife with both these forms of comment—of either the bland view of Taine's or the subjective views of critics. Neither of these alternatives, in my view, performs a useful service. However, the process of "acquittal or condemnation on the basis of merits" measured against enunciated objectives would assist the advancement of the field. Our concern is the need for developing more adequate means to clarify aims, for appraising achievements in relation to them, and for promoting larger degrees of consistency in both the aims and the implementation of programs. What, then, are the objectives that are relevant and communicable?

It is not surprising that the arts abound in word mongers, voluminously interpreting, verbally applauding and vociferously deriding works of one kind or another, for beauty lies in the eye of the beholder. Thus it is futile, even destructive, to attempt to form agreed terms of reference for *artistic* criticism.

It is also interesting to note this difference between sciences and arts. There are no "critics" for the former because operational standards are obvious: It is redundant to criticize a beam which has collapsed; it demonstrates its own failure. Continued speculation will not alter the performance of a building, nor does speculation itself authoritatively reveal success or failure. What can reveal success or failure are objectives that lie in areas that can be tested and, once tested, can be communicated—operations and behavioral criteria that assess buildings as meeting, on the one hand, the demand of physics and, on the other, the behavioral standards required by their occupants in the use of the spaces and the spatial relationships.

In a more or less haphazard way, standards of the physical performance of buildings are improved because failure demonstrates itself. Via an empirical process, alternative solutions are devised to solve problems that have arisen in the past. Of course, it is more difficult to demonstrate behavioral failure than structural failure. But it is in precisely this sociological area that the changing field of architecture is required to make its most urgent contribution. Architects in the field of building provide only differences and not true alternatives. This is because specific sociological factors are not included in the design equation, and few attempts at evaluating behavioral failure or success are made. These factors are the appraisal of purpose, costs versus benefits, consistency of objectives and results, and the setting and reviewing of priorities.

Once the results of such concerns become demonstrable, once the success of the enterprises judged by these standards becomes apparent, it would become redundant to dispute the terms of reference, information being the best cure for dogma. Such objective criteria, with explicit premises, speak for themselves, as does the collapse of a beam or a leaky roof.

If we accept the relative unimportance of literary interpretations of artifacts as art and demonstrate results either physical or behavioral, then there would be no need of criticism as we know it. Criticism could, and should, assume a more purposeful, didactic role. □

The ugly duckling is what people in Manchester, New Hampshire, called their town—until they got the right picture of it at a photographic exhibition conceived by a citizen who saw things in a different light.

Manchester on the Merrimack

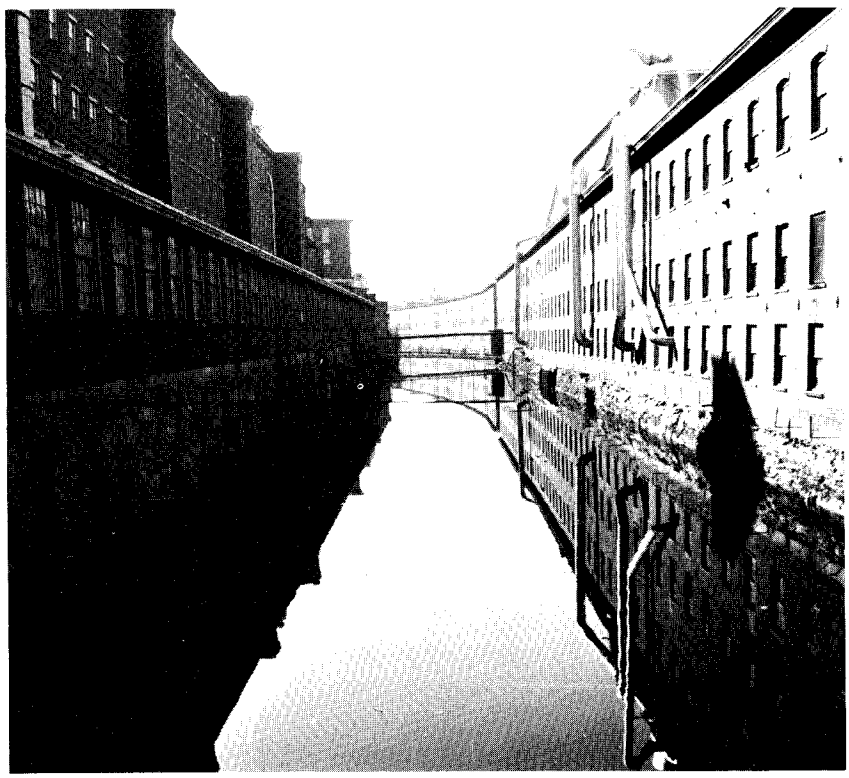
BY GERDA PETERICH

Start of it all was the finish of Manchester's splendid Richardsonian railroad station. Watching its walls crumble, Charles E. Buckley, former director of the Currier Gallery of Art in this New Hampshire town, decided to race the wrecking crew to its next target—which might likely be City Hall—by rallying the citizens round their relics.

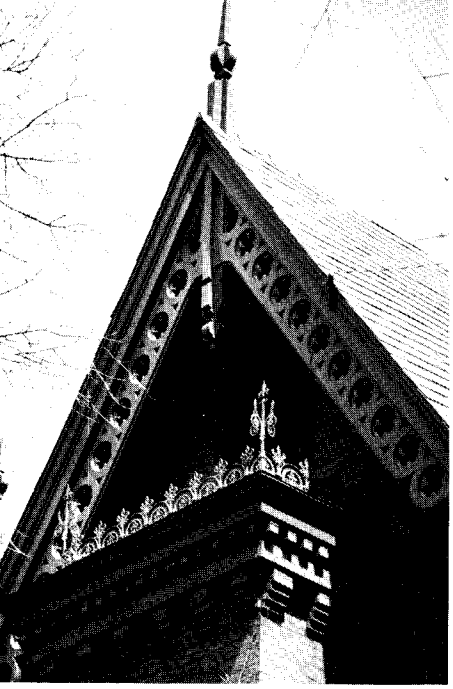
Mr. Buckley would try to do so by commissioning a photographic exhibit of that glorious mix which is Manchester architecture: jigsaw and Victorian Gothic, Second Empire style, Greek and Gothic Revival, Italianate plus Richardson and Hunt derivations thrown in for good measure. Playing up design, details, materials and textures in the photos, he would convince Manchesterites that their ugly duckling had, in its own way, fully as much to offer as the pristine colonial agricultural townships sprinkled around its New England neighborhood.

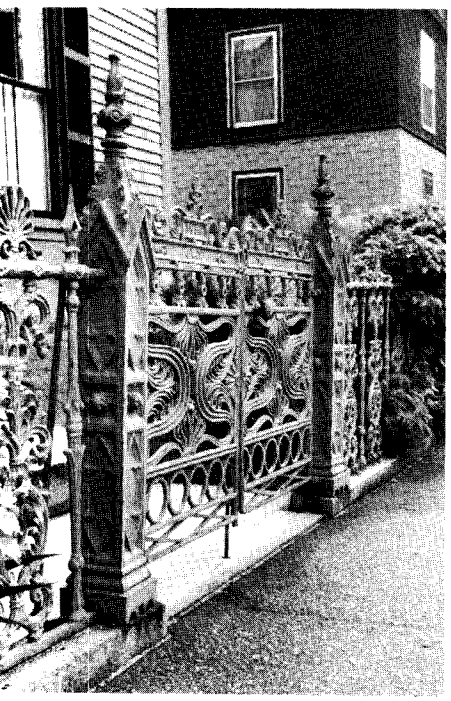
Like Lowell and Lawrence in Massachusetts on the lower run of the Merrimack, Manchester is a planned industrial city of the early 19th century. Unlike Lowell and Lawrence, Manchester has preserved the original layout of mills and city and has an accumulation of fine architecture of sound construction, durable materials and fine craftsmanship.

The Merrimack's quarter-mile rapids and 50-foot drop at the north end of Manchester, the



The chaste, almost classical style of the mills was perpetuated until about 1870. Some of the buildings are obsolete or unsafe and must be demolished; parts of the inner rows will be removed to give necessary room for trucking. The river view and the curved side on the canal will be maintained.





The Amoskeag company offered its workers block after block of ample and dignified boarding houses and single family or semidetached dwellings of pleasant proportions. The buildings on Payson Street, from about 1850, are still lived in but not too well kept. There are strong efforts to preserve them.

Amoskeag Falls, soon attracted milling which became the core of the town's early existence. Here, duck-cloth mill owner Samuel Blodget, finding the speed of oxcarts too slow, built the Blodget Canal and locks. Opened in 1807, the canal was the most important means of transportation between Boston and Concord until the railroad arrived by 1842.

And here, the Amoskeag Cotton and Wool Manufacturing Company was founded in 1810. Fifteen years later it changed its name and, as Amoskeag Manufacturing Company, grew to be the largest single cotton firm in the world. The company, owning land and canal rights, also built mills for other companies along the Merrimack.

The author: Gerda Peterich, associate professor of art history at Syracuse University, has worked extensively on architectural documentation. The photographs presented here are part of a survey she undertook for the Currier Gallery of Art in Manchester. Malvin E. Watts, museum curator, helped Miss Peterich secure architectural data.

The mills, a mile-long chain of brick of native clay curving along and between two canals along the river, form an imposing view. The secret of their beauty is to a great extent their uniformity —additions made even in our own century have never a jarring note because of the purely functional character.

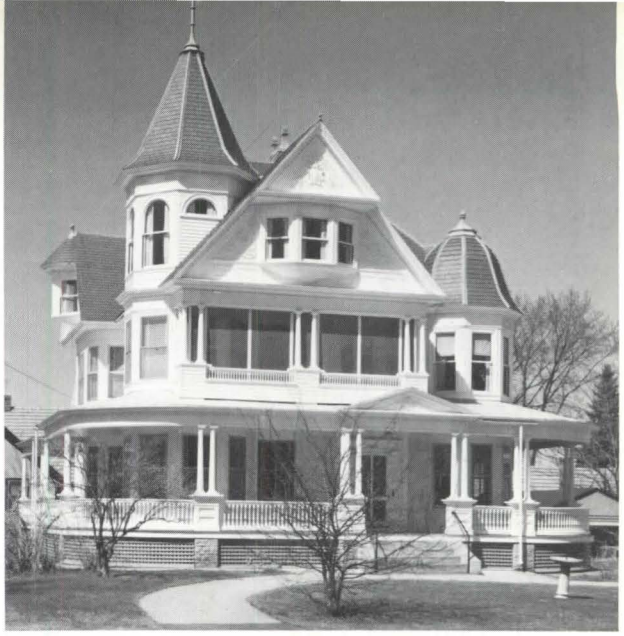
The town prospered with the mills, and between 1840 and 1850 the population grew from 3,000 to 13,000. With its vast landholdings, the Amoskeag Company could guide the expansion carefully. It employed its own engineer, Ezekiel A. Straw, for the city planning, and when deeding lots to the municipality, the use for each was stipulated. In its dispositions, the company blessed Manchester with a good number of public parks and open squares.

The terrain of the mills rises on a gentle slope between the river and the main thoroughfare, Elm Street, running south-north parallel to the river. With a strong sense of responsibility toward its workers, the Amoskeag company set this land aside for workmen's housing. Here we find some of the finest buildings from the 1840s.

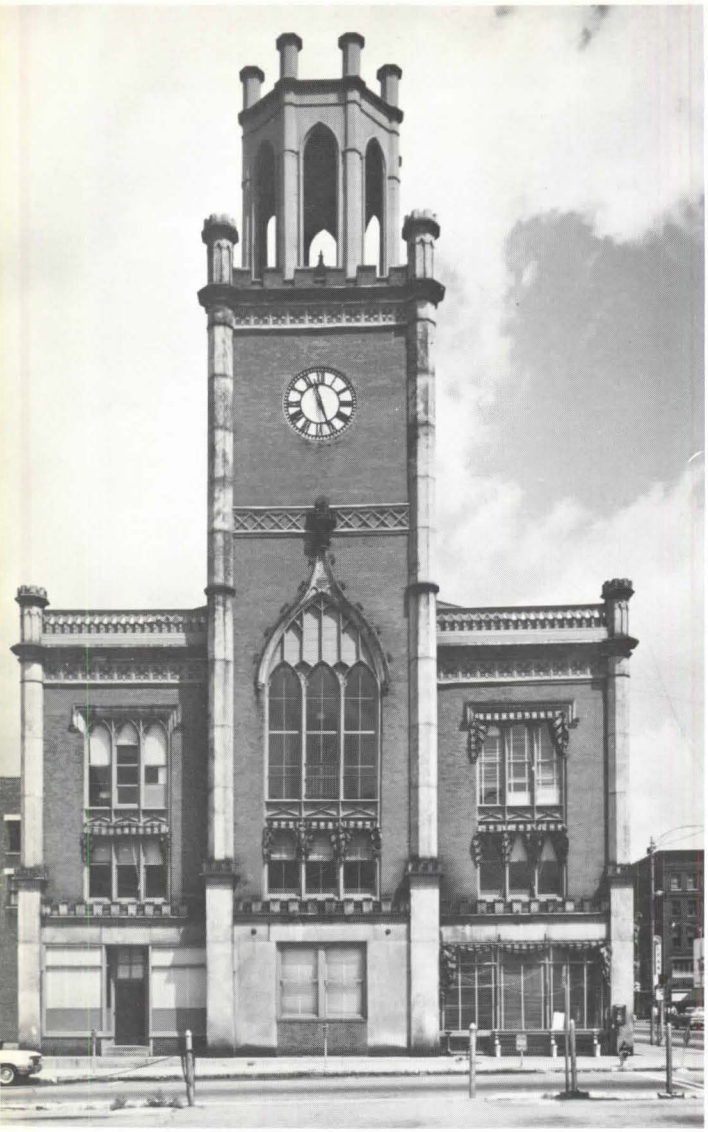
The Civil War halted construction for a brief period, but the late 1860s and '70s saw renewed activity. From this period stem the great mansions of which North Elm Street has such a display as to make it unique in this country. Only one corner filling station disrupts the harmony.

For more than 100 years, the town flourished with the mills but decline set in after World War I. In 1936 their doors closed and the buildings were offered as scrap brick. Ironically, dire economic circumstances saved them, for local merchants were searching for inexpensive plants for new industries. They purchased the chain and established their shops for knitwear, shoes, zipless fasteners, etc. The chain is now out of danger of being demolished.

Manchester's Gothic City Hall, however, designed by Edward Shaw of Boston more than a century ago, is in constant danger of demolition. He was best known for his carpenter handbooks, but, writes Talbot Hamlin in his *Greek*



The great mansions on North Elm Street possibly have an overabundance of towers and turrets and bays and porches, but spacious lawns and gardens are appropriate settings. They share, with all of Manchester's buildings, a careful detailing in stone, iron or wood and an imaginative use of brick and terra cotta.



Revival Architecture of America (Oxford University Press): "Shaw's influence was not limited to his books, but came also from the actual buildings he designed. . . . In Manchester, New Hampshire, there is a handsome Gothic city hall from his design."

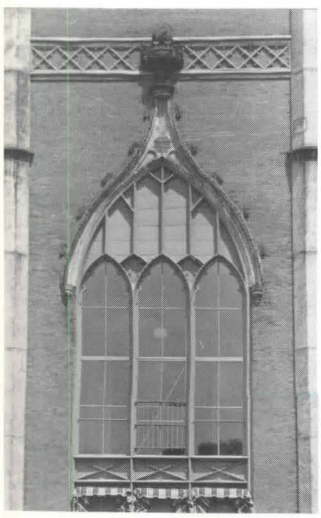
But this handsome city hall has become a political football, for its mid-city, $300,000-plus site is eyed eagerly by taxcollectors. If sold to private enterprise, the sales price and future taxes would bring an attractive addition to communal funds—though at the sacrifice of a fine and, by many, cherished piece of architecture.

Just such a possibility spurred Charles Buckley to plan the exhibition, and this writer was commissioned to take the photographs. We agreed to focus sharply on the building's esthetic qualities and historic significance.

The show opened to record attendance. Almost overnight, Manchester citizens became aware of their heritage and began looking for uses of their near-doomed buildings.

That was back in 1964. Mr. Buckley has moved away now, to become director of the City Art Museum in St. Louis. But with local sentiment aroused, the public's preservation mindedness is stronger than ever in this old industrial town, and no longer will demolition reflect a lack of concern on the part of its citizens. □

Manchester's City Hall, 1845, originally with the tower parapet capped by finials and the entrance below the center front window, is in constant danger of being demolished. Sound construction, durable materials and fine craftsmanship are the salient qualities of Manchester's old edifices, both public and private.



THE INTERNATIONAL ARCHITECT

A synoptic team approach to the underdeveloped areas of the world.

BY JULIAN EUGENE KULSKI, AIA

While the profession and schools of architecture are in the throes of experimenting with education in the context of the developing urban socio-physical environment, evolutionary change has quietly and without fanfare taken place on the international scene.

Agencies responsible for providing assistance to underdeveloped countries have created unique and successful methods for the architect to be involved in building up the economic, educational and socio-physical bases of communities scattered throughout the globe.

The author: Dr. Kulski is professor of city planning at Howard University, Washington, D. C., as well as an international design and planning consultant. In that capacity he has served the World Bank in Thailand, Malawi, Sudan, Peru and Guatemala as well as the US Agency for International Development in Turkey. His book on urban design, *Land of Urban Promise,* was published in 1967. He is a member of the American Institute of Planners.

The means and methods vary greatly from one organization to another; but almost without exception, agencies have found that a synoptic interdisciplinary team approach is by far the most efficient way of attacking the problems of underdeveloped countries. More often than not, architects are the indispensible members of these teams of experts and are utilized throughout the entire developmental process—from project appraisal to supervision.

Moreover, architects play a significant role participating in many functions not traditionally associated with architectural practices such as those of administrators, educators, diplomats, planners and economists. The inherent nature of the interprofessional design team is such that each member, regardless of his professional affiliation, must assume responsibility for the total spectrum of recommendations and proposals. Through a close working relationship and cross-pollinization of ideas within the team, the "international" architect not only soon becomes a master of the comprehensive developmental approach but the educator, economist, engineer and other members of the team have an opportunity to learn the intricacies of architecture and its application to economic development.

It is for this reason that in our search for new horizons for the profession, the international synoptic design team can be extremely inspiring and useful. Such an approach on the domestic scene has recently been exemplified by such significant innovations as the concept team approach of Archibald Rogers, FAIA; and other proposals by committed individuals who, in practice, teaching or government service, are assisting our own urban underdeveloped areas and the people who live there.

Bilateral Economic Assistance Programs

During the last few decades, the most extensive and intensive use of architects in government service in economic assistance programs is to be found in the British and West German bilateral aid programs. In particular, the West German Government's foreign aid program, which is generally characterized by its technical assistance rather than capital investment nature, long ago pioneered in its emphasis on sound architectural principles and involvement of architects in all its building projects. The British architects' contribution to the development of former colonial countries and other emerging nations, particularly in Africa and the Far East, is also outstanding.

The United States Agency for International Development, which followed a policy of non-involvement in architecture or architectural problems during its long and extensive foreign aid program, recently has shown signs of marked improvement in this area. For many years, United States funds supported the building of schools, colleges and other structures throughout the world with no, or very little, architectural management and supervision. Instead of contributing to the economic welfare of the recipient country, this construction has often actually held back national development by encouraging poor standards of construction and architectural practices and benefiting a few unscrupulous individuals rather than assisting in total economic progress.

The maintenance of these structures has also proved to be extremely expensive, thus retarding improvements of social and educational development. The school building program in Turkey is an outstanding example of the lack of architectural policy during the first 15 years of US assistance there. For some time, Turkish architects have unsuccessfully protested against this

state of affairs, which was actually working against their own professional development.

The singular distinction on the part of the US Government in not laying adequate stress on architecture in policy making, administration and supervision of our foreign aid is, however, not surprising. Today, while the nation is engaged in a mammoth building and rebuilding program and the architect's largest client is government, the participation of architects at the middle decision-making level is insignificant. At the highest level, it is nonexistent. According to a recent survey, there are no architects in federal government service at the levels of Assistant Secretary or above and none on the staffs of Congressional committees. No architects are US Senators or Representatives, governors or mayors of large cities, and furthermore, government policies are almost totally devoid of design policy considerations. Since this is not the case in other advanced countries, international agencies have long recognized the need for architectural talent in their upper ranks.

The World Bank

The United Nations Headquarters in New York and the United Nations Educational, Social and Cultural Organization in Paris (the latter has regional school building centers in Colombo, Khartoum and Mexico City) are among the agencies aware of the indispensable role of architectural research and technical assistance. However, it was not the UN or the government of any individual country which initiated and developed the international synoptic design team approach with architecture as the integral ingredient. Rather, the instigators were the international banks—the Inter-American Development Bank in applying the approach to urban development and housing in Latin America, and the International Bank for Reconstruction and Development in the team's application to education.

The International Bank for Reconstruction and Development and its affiliate, the International Development Association, is an organization composed of 107 member countries. Known as the World Bank, it was chartered in 1944, before the formation of the UN, with an original goal of reconstructing war-torn countries, particularly those of western Europe. This objective was achieved more quickly and with greater success than was originally thought possible; and with the constant addition of new, underdeveloped countries to the family of "have-some or have-not" nations, the emphasis of the bank shifted from reconstruction to development.

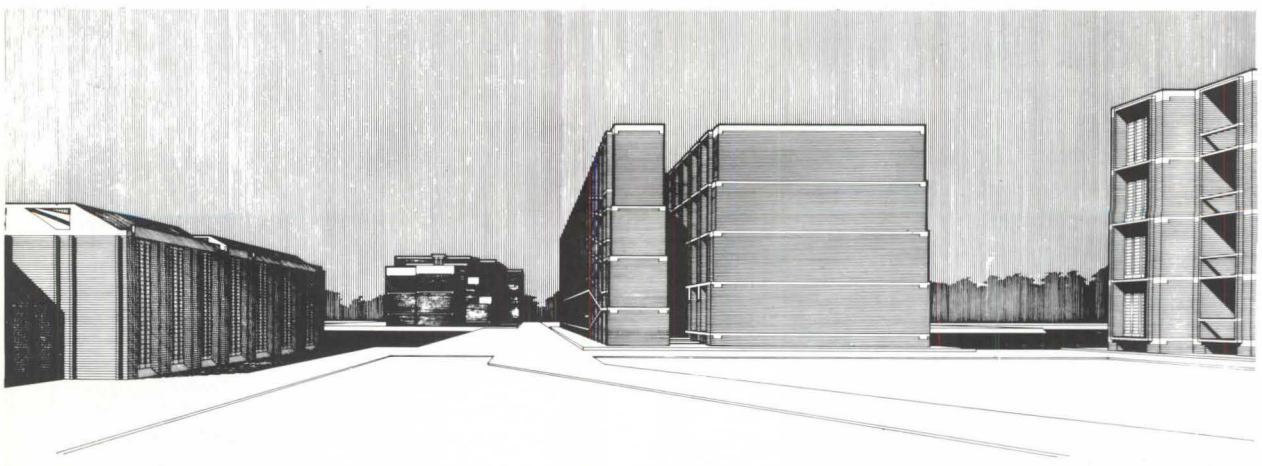
More recently, the IDA was established as an affiliate to provide interest-free loans to member countries unable to pay regular interest rates. A distant parallel might be our own domestic evolution from postwar housing and redevelopment to the present emphasis upon development.

According to their economic and financial capability, member countries are divided into those qualifying for the interest-free IDA loans (with the usual grace period of 10 years and amortization period of up to 50 years) and those who can pay the 6¼ percent interest currently charged for regular bank loans. The transfer of some of the income derived from regular bank operations, plus the contributions from certain member countries, have allowed the IDA to provide badly needed interest-free loans for economic development projects in transportation, agriculture, public utilities and education. It is in this vital area of educational planning, development and construction that the World Bank has initiated the interdisciplinary team of synoptic development.

The Architect's Role on the Team

The architects involved in the World Bank-sponsored education projects fall into three major categories. The first consists of a small group of

Barisal Polytechnic Institute by Stanley Tigerman, AIA, one of five technical institutes in East Pakistan designed by this office and to be built by the government of East Pakistan with financial assistance from the World Bank.



Junior Secondary School Program, Jamaica, will build 50 schools of similar design by Caudill Rowlett Scott. Two Jamaican associate architect firms, a Canadian construction company and local contractors and workmen partake.

full-time staff architects who bear the major responsibility for all architectural and planning functions—research, development of standards, planning assistance to the borrowing countries, appraisal of proposed projects, selection of consultants, administration, development of procedures guiding the selection of contractors, disbursement procedures, design and supervision of construction.

These architects, as well as the architect-consultants who perform similar functions on short-term assignments, are chosen in strict accordance with the bank's highly selective hiring practices from a large body of qualified architect-planners in member countries. Most are leaders in the profession and all hold terminal degrees, generally doctorates in architecture and city planning. They are presently responsible for the administration, design, policy and supervision of hundreds of secondary schools and university campuses in more than 20 countries. So far, the architects in this group have been drawn from West Germany, Great Britain, Italy, Mexico, Burma, Denmark and the United States.

The second group consists of architectural firms selected on an international basis by the borrowing country and approved by the bank for each specific project. Usually they are internationally renowned firms with school planning and design experience in underdeveloped countries. So far, the architectural firms for educational projects funded by the bank have been selected from countries such as Tunisia, Nigeria, Zambia, Morocco, Israel, Italy, Greece, France, Jamaica, Great Britain, Japan and the United States.

From the US have come such firms as Caudill Rowlett Scott, selected by the Jamaican Government for its large school construction program; and Stanley Tigerman, AIA, and Paul Rudolph, AIA, for work in Pakistan.

The third group includes the native architects within each borrowing country, and it is this important group that provides a real challenge and enrichment to the practice of international architecture. Just as the synoptic development team consists mainly of different nationals, providing a marvelous opportunity for professional development, the cooperation between bank architects, members of foreign architectural firms and the patriate architects has been extremely successful and the ensuing architecture thoroughly meaningful in socio-physical as well as economic terms.

The Synoptic Team Itself

The success of the bank and IDA operations in this sphere can be chiefly attributed to the synoptic team concept and its evolution into an efficient and truly professional body. The policy of the bank requires the highest professional standards and conduct among the many disciplines which are required and are associated with bank projects. Through a highly selective system of employing professional talent, the bank has developed a method for international practice of architecture and planning which is indeed unique.

The appraisal team often spends as much as six weeks in the borrowing country examining its economic base and administrative organization, inspecting sites and communities and studying its transportation systems and architectural abilities. This survey is conducted by any available means of transportation, with the small plane often the only feasible solution. Meetings and conferences

are held with officials at the ministerial level and the country's architects and building contractors are interviewed, building methods studied and building costs appraised. Because of the inadequacy of transportation in many countries and the extensive demographic student catchment areas, some of the bank schools must provide boarding facilities for the students, staff housing and the necessary communal facilities as well.

The appraisal of an education project is completed after the team has returned to Washington headquarters. It consists of an extremely comprehensive examination of the country's educational system—its organization and administration and financing from primary education through the university. Appraisal of the need of the proposed project is made chiefly on the basis of the country's manpower requirements, with architectural considerations constituting a significant part. The conclusions and recommendations are the work of the entire team.

After the borrowing country has agreed to the technical and financial conditions required by the bank, the project is presented to the Board of Directors for approval. This august and powerful international body places great significance on the architectural aspects of the education project for which the loan application has been presented. The degree of interest and emphasis which these representatives of the world community place in architecture as a tool toward national economic development could well be emulated by the governments and leaders of many advanced countries.

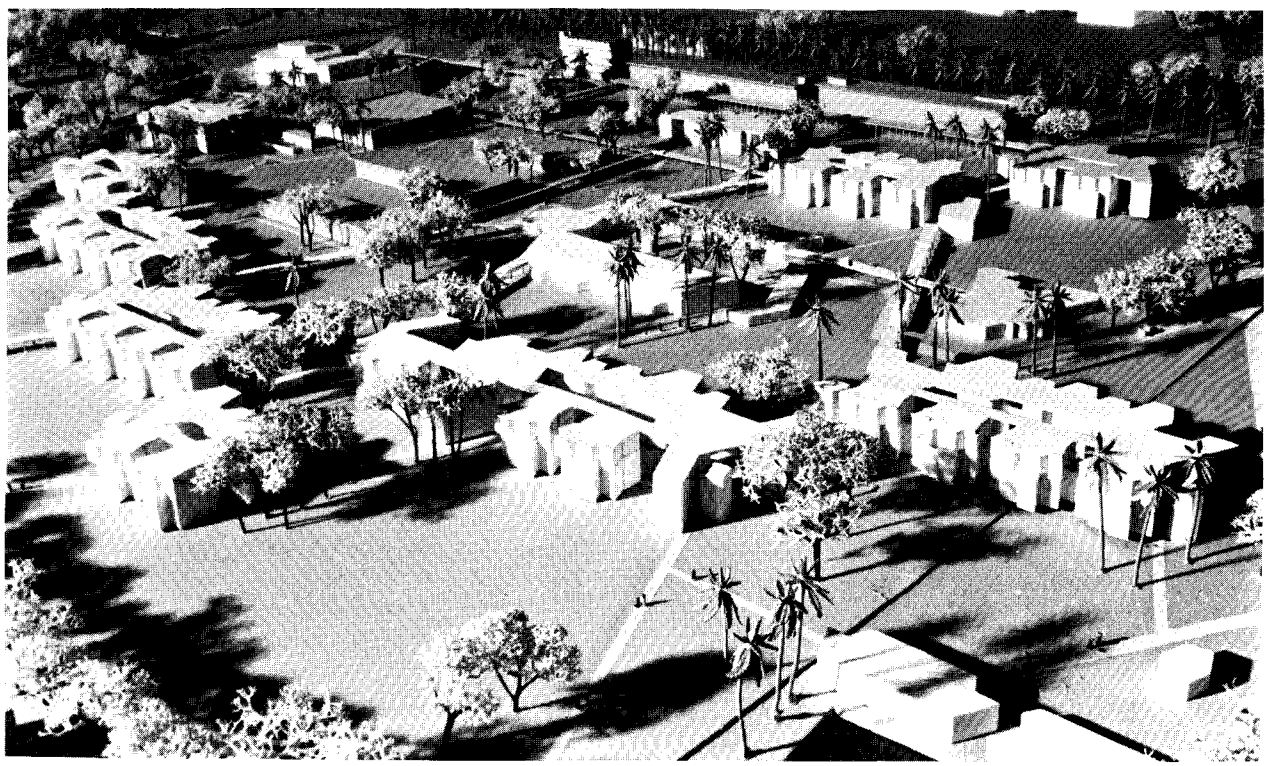
Loans for development are given in accordance with economic priorities and needs. The bank grants loans only in its own member countries. The whole process is highly professional in nature and international in scope. By making economic objectives primary and by employing the professional and objective international synoptic team, political considerations are minimized and good design is possible.

A Development Bank for the US

The underdeveloped sections of our own cities and regions need financing and architecture for their economic development as much as that provided by the World Bank and the IDA on the international scene. Architecture as a tool for social and economic development should not be restricted only to the application of foreign aid.

The recently formed Council for Regional Development needs a financial arm in the form of a United States Bank for Urban and Regional Development. The structure, organization and *modus operandi* would be patterned after the World Bank but would be on a domestic scale, with the 50 states as individual members and a member-appointed governing board. The experience of the international synoptic team in assisting economic development of underdeveloped urban and rural areas offers a proven example of the success of such an approach. □

East Pakistan Agricultural University at Mymensingh by Paul Rudolph, AIA. Construction is scheduled to begin this fall. The International Development Association, an affiliate of the World Bank, has extended credit to finance 60 percent of the cost of buildings and equipment, interest-free, for a 50-year term and 10 years of grace.



MINIMIZING EARTHQUAKE HAZARDS

Those of us who live in earthquake country must learn to adjust to potentially hazardous seismic disturbances which, in the past, have occurred about 1,000 times each year. Each major earthquake has cost an average of $500 million in property damage and a drastic loss of human lives.

The adjustments must be made along the guidelines of safety and economy. One recent preparatory step in this direction is the $20 million National Earthquake Engineering Research Center proposed for the Bay area of San Francisco. Administered by the University of California at Berkeley and supported by federal funds, the facility, if approved, would evaluate the earthquake resistance of standard construction and develop improved techniques and material.

The need for a rise in US investment in seismology is further borne out by a report of the Department of Commerce's Environmental Science Services Administration, published last winter. Entitled "A Preliminary Study of Engineering Seismology Benefits," the report shows that during four disturbances in California, schools built to resist earthquakes suffered substantially less damage than those with no resistant construction.

On the whole, however, other things that can be done below the federal level are not being done, and the possibility of danger is still widespread. One of the most active seismic regions still under major threat is the West Coast of the United States, where the famous San Francisco earthquake of 1906 alone was responsible for over 600 deaths. Two Californians—one a research geologist, the other an architect—concerned with the threat examine in the following articles vital considerations, geological and architectural, respectively, in minimizing the damage that future earthquakes might bring.

I. Geologic Factors

BY ROBERT E. WALLACE

Efforts to minimize earthquake hazards have depended largely upon design and engineering techniques, but greater consideration of geologic factors and greater use of geologic skills could add significantly to the effectiveness of the efforts. Three types of geologic factors should be considered: 1) faulting, 2) failure of unstable ground under earthquake excitation and 3) influence of type and structure of ground on shaking.

In general, the factors to be considered here cannot yet be controlled feasibly by engineering techniques. As an example, this discussion is concerned not with local soil characteristics that could be accommodated in footing design but rather with the problems of landslides and other hazards which might not be economically feasible to control. But steps can be taken by both public and private organizations and by individuals in response to these factors.

Faulting

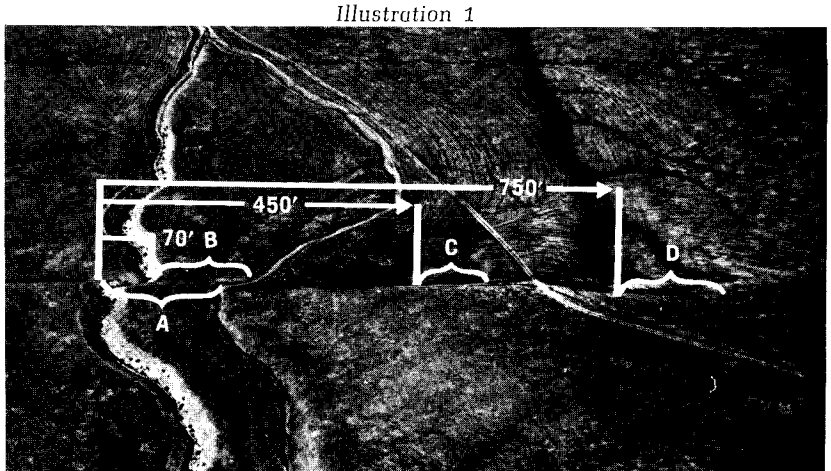
A generally held concept is that earthquakes are generated when elastic strains accumulated within the earth are released by sudden movement along major faults (large fractures in the earth's crust). In the western United States this undoubtedly is the principal source of earthquakes, and in many larger earthquakes (Richter magnitude 6.5 or greater) fault displacement occurs at the ground surface. During the great San Francisco earthquake of 1906, for example, a surface fracture developed along 270 miles of the San Andreas fault, and one side slid horizontally past the other a distance of as much as 20 feet. Displacement on another segment of the fault in 1857 may have been about 30 feet, and during the Imperial Valley, California, earthquake of 1940, the greatest displacement was 19 feet.

These surface fractures that develop during an earthquake along a fault such as the San Andreas commonly disturb the ground surface in a zone about 10 to 20 feet wide, although branching and subsidiary fractures may lace through a zone several hundred feet wide. The fault trace has the appearance of a line along which the ground has been churned; elongate mounds, hummocks and a network of cracks a few tens of feet long and a few inches wide develop. Fences, roads or other structures that lie athwart the fault trace are torn apart. On faults characterized by displacement that is predominantly vertical, as in the Hebgen, Montana, earthquake of 1959, escarpments from a few feet to a few tens of feet high may develop along the surface fractures, and a complex network of fractures hundreds of feet wide may form.

The surface fracture zones, which may be only 10 to 20 feet wide, generally form within a broader fault zone; for example, the complex San Andreas fault zone, within which movement over millions of years has occurred, is as much as a mile wide in places. Secondary fractures may also develop elsewhere in the fault zone or on branching or subsidiary faults.

When advising on site selection, geologists have been confronted with the problem of determining the relative hazard in different parts of the broad fault zone. On at least some segments of the San Andreas fault, for example, in the Carrizo Plain area, the most recent break has also broken repeatedly in the past, perhaps 40 times over 20,000 years (Wallace, 1968[b]). This is seen in Illustration 1, showing stream channels offset 70, 450 and 750 feet along a narrow linear trace of the fault. Each of these

Illustration 1



three offsets represents a cumulative effect of several smaller displacements occurring during more than one earthquake.

Such evidence suggests that sites on the most recently active strand of the fault are particularly hazardous. Along much of the San Andreas and other active faults, many of the most recently active strands can be identified in aerial photographs or on the ground by geomorphic evidence such as linear valleys and ridges, sag ponds or diverted drainage. A series of maps showing these active faults in California is being prepared by the US Geological Survey. Several trace maps have already been published (Schlocker et al., '65; Radbruch, '67; Brown, '67, '68; Ross, '68; Vedder and Wallace, '68).

As clear as the hazard of active fault strands would seem to be, construction across these active strands of faults nevertheless proceeds apace as shown in the photograph of the San Francisco Peninsula (Ill. 2). The problem of identifying an active fault strand is complicated by the fact that, accompanying almost every major break on one strand of a fault, displacements on branching or secondary faults also occur. And although these secondary breaks may be miles from the main strand and may have displacements measured in feet at distances of 8 miles from the main fault (Bonilla, '67), this does not lessen the desirability of avoiding or taking into account the main fault strand.

Failure of Unstable Ground

Some of the most spectacular and severe damage during earthquakes has been related to the structural failure of ground. Illustration 3 shows an aerial view of a part of the Turnagain Heights slide, which was triggered by the great Alaskan earthquake of March 27, 1964. There, under a residential part of Anchorage built on a bluff overlooking Turnagain Arm, sand lenses in a layer of clay failed through the process of liquefaction, permitting overlying blocks of ground to slither in disorder toward the bay. This slide and others like it produced chaos in an area of several square miles and brought ruin to the homes situated upon them. It is worth noting that the damaging landslides in Anchorage occurred about 80 miles from the epicenter, and that the susceptibility of the formation to failure under seismic excitation had been pointed out in a publication five years earlier (Miller and Dobrovolny, '59). Submarine landslides can produce the additional hazard of devastating waves, as at Prince William Sound, Alaska.

The author: Dr. Wallace is a research geologist at the National Center for Earthquake Research of the US Geological Survey (whose director has authorized publication of this article), Menlo Park, California.

In addition to landslides, ground settling — particularly differential settling—can place severe strains on structures situated thereupon. During the Niigata earthquake of 1964 in Japan, liquefaction of the ground under several multistory buildings so decreased the bearing strength of the foundation material that the buildings tilted as much as 80 degrees. Interestingly, this amount of tilting did not produce failure of the structures, and some of those less tilted were later righted by jacking. The structures were well designed and built to withstand shaking, but apparently the potential for failure of the ground had not been recognized.

Type and Structure of Ground

Shaking does not die away uniformly from the epicenter of an earthquake or from a fault that generates the earthquake. It has long been recognized that the type of geologic materials under a given site significantly affects the damage by shaking. In 1906, for example, in the city of Santa Rosa, about 20 miles from the nearest point on the San Andreas fault, damage was severe, far greater than in many areas only a few miles from the fault. And damage at Los Banos, more than 40 airline miles from the fault, was more severe than in parts of San Francisco itself, a few miles from the fault.

Even very locally, foundation conditions can greatly affect damage from shaking, as shown in the photograph of the school site at Varto, Turkey (Ill. 4). On the old river channel, in which the water table stood at, or very near, the surface, 12 of 14 buildings collapsed, whereas on the adjacent bench, about 15 feet higher, none of the buildings of similar construction collapsed (Wallace, '68[a]). Studies by Russian geologists after the earthquake at Bezmein in 1948 (Medvedev, '62) show that intensity is related to both rock type and depth of water table (Ill. 5).

The rock type, geologic structure or degree of water saturation can affect the response of ground in several ways: by amplifying or damping the shaking, by changing the spectrum of shaking, or by changing the total time of damaging shaking. Both theory and data are far from adequate to predetermine exactly what combination of these effects to expect. For the time being, therefore, the principal guide for design considerations is the observed fact that in a great many earthquakes, damage from shaking has been greater on many sites underlain by water-saturated unconsolidated materials.

In summary, the most recently active strand of a major earthquake fault and recently active landslides susceptible to triggering by earthquakes must be given high-risk ratings. Sites on water-saturated, unconsolidated sediments should be rated as having a higher risk from shaking than areas on consolidated bedrock. Further refinements or modifications of the relative hazards of

Illustration 2

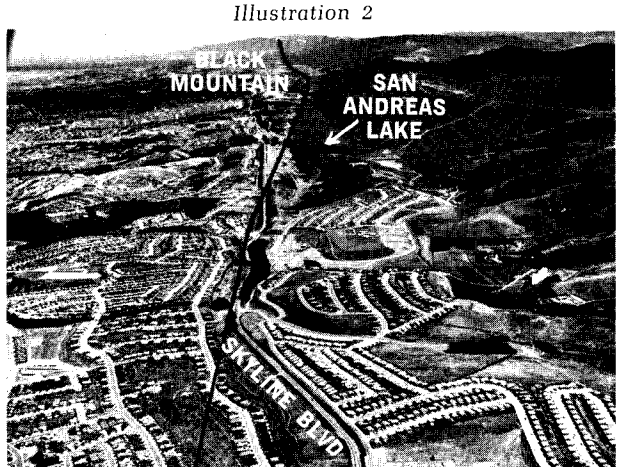


Illustration 3

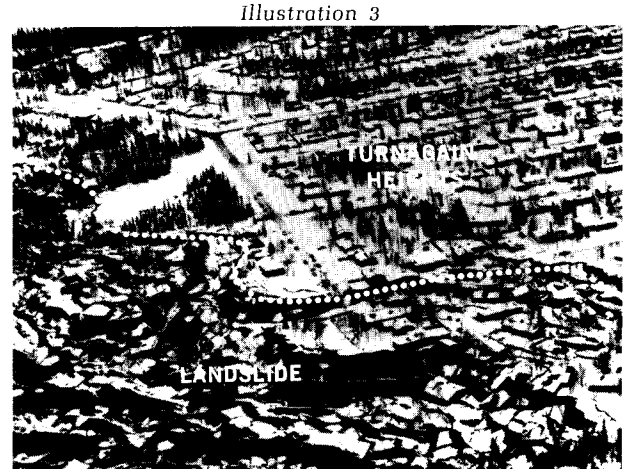


Illustration 4

these three general classes of ground generally can be revealed by a careful geologic analysis of a given site.

Response to the Problem

Basically, there are two ways to respond to any problem: either remove the cause of the problem or accommodate to the problem situation. To a large extent, response to the geologic factors in minimizing earthquake hazard falls in the latter category. For example, major faults responsible for destructive earthquakes are such large features that there is no conceivable way to stop them from moving. Similarly, although small bodies of unstable ground are amenable to control by engineering techniques, such control becomes less and less feasible as the size of the bodies and degree of instability increase. Nor do the shaking characteristics of major geologic units, in which cubic miles of materials are involved, lend themselves to ready modification. The following discussion, therefore, deals largely with methods of accommodating human activities to the geologic situation rather than changing the situation itself.

Codes and Ordinances

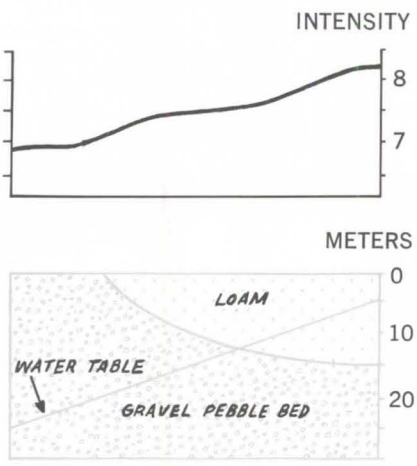
Thus far, the principal steps taken to minimize earthquake hazards have been to recognize in engineering design and construction that lateral stresses are placed upon structures by earthquake shaking. Building codes have acknowledged this factor. For example, the Uniform Building Code states that structures should be able to sustain strong lateral accelerations. The Field Act, enacted in California in 1933, requires that even greater precautions against shaking must be taken for school buildings, particularly from the standpoint of construction supervision.

Until recently, however, the geologic conditions of a given site as they affect earthquake hazard have been given very little official consideration in the form of codes, ordinances and other regulations. Los Angeles County has pioneered techniques of considering geologic conditions and does take into account, among other factors, earthquake problems such as the potential hazards of active fault zones.

A desirable response pattern for a local government would be to recognize earthquake hazards in long-range area planning, and then to incorporate specific requirements in subdivision, grading and other ordinances and codes. In area planning, an attempt could be made to avoid hazardous sites for certain uses and to use them for the least hazardous activities. Parks, golf courses, and similar land uses, for instance, could be planned for the fault zones and some landslide terrains. Schools and high-occupancy public meeting places, or highrise apartments, could be banned from sites athwart most recently active fault strands; but, for example, in much of the rest of a broad fault zone such as the San Andreas, low-density housing of one- or two-story frame construction might be permitted, although owners should be made aware of the hazard.

Ordinances could require that plans for subdivisions, grading and land use of any kind have geologic appraisal in hazardous earthquake areas. Enforcement is an inherent part of any regulatory process, so that even though the applicant for a permit could be made responsible for obtaining an engineering geology study, persons trained in geology and responsible to the public body will be needed, not only to assist in developing the regulations and long-range plans but also in monitoring the adequacy with which the regulations are carried out.

Illustration 5



Similar steps by private organizations or individuals can appropriately be—and more and more are being—carried out voluntarily, but whether this is done depends upon the astuteness and/or conscientiousness of the owner, builder or architect or upon economic considerations. The individual home buyer seldom is able to appraise in detail the nature of earthquake hazard at his particular site, but the large developer who employs engineering firms having diversified capabilities might be able to do so.

Data Available for Action

Necessary for either a regulatory or voluntary response to these problems is the availability of basic geologic data on which action decisions can be based. The US Geological Survey, in some cases in cooperation with state or county agencies, has for many years been preparing and publishing geologic maps (and descriptive texts) that show geologic features pertinent to urban planning and development. Many such maps are available for areas in the earthquake country of the western states. As a guide to development, the US Geological Survey special maps referred to will show the most recently active strands of the San Andreas fault system over its entire 600-mile length.

Even when necessary map data is available, each public body or individual developer must have the data in a form needed to meet individual needs and problems. For cities and counties a special-purpose geologic hazard map conceivably could be designed to answer special needs of the community. Preparation of such a map is currently being considered by at least one town in California. Such a map could be made an integral part of a system of ordinances and codes or, at minimum, could be an advisory document available to both the developers and civic body. With such a map in hand, the hazardous areas could be more readily

identified and both developers and planning board would be in a better position to develop adequate solutions to the problems.

Cost for Local Government

Geological capability at the local government level is a necessity if actions such as those described above are to be introduced and carried out. Los Angeles County has developed such capability already. A prime consideration is the cost and availability of this expertise to small communities. It is possible that some of the cost could appropriately be recovered from permit fees, but part will inevitably and reasonably fall on the public body. Some public officials, understandably, are reluctant to impose any additional costs on the city or on the applicant for permits. The cost-benefit ratio thus must be given careful consideration. The cost sustained by some cities and counties as a result of a continuing landslide problem, even though they have had no earthquakes in recent years, suggests that great savings to the citizens and local governments, as well as increased safety to the citizens, could be achieved by taking greater consideration of geologic factors.

Regardless of continuing costs, there is the question of the liability of a city or county government for earthquake damage. One school of thought is that by officially considering earthquake hazards in the granting of permits, a government assumes liability. However, governments are more and more frequently being judged to have considerable legal responsibility regardless of what they do, and for them to do all possible to avoid specific hazards in the first place possibly better serves both the legal responsibility of the government and the general interests of the citizenry.

Another form of response to earthquake hazards is through insurance. Although insurance cannot directly reduce the physical hazard, it may compensate for the financial hazard to the individual. It is conceivable that insurance rates can become a significant incentive for people to consider more carefully the relative hazards of different sites. Currently, provision for a study of federally supported insurance to cover earthquake losses is pending in Congress as a part of the proposed National Flood Insurance Act.

It is far from a simple task to take into account in practical ways even such simple and definite geologic admonitions as, "Beware of the most recently active fault strand" or "Beware of active landslide areas." Progress is being made, however, and one of the most important steps recently taken is to incorporate in the California Education Code (1967, sec. 15002.1) the following language regarding school sites: "The investigation shall include such geological and engineering studies as will preclude siting of a school over or within a fault, on or below a slide area, or in any other location where the geological characteristics are such that the construction effort required to make the site safe for occupancy is economically unfeasible." Hopefully, similar action will be adopted in other areas of public and private response to the earthquake problem.

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II. Architectural Factors

BY HAROLD D. HAUF, FAIA

Study of building damage caused by the Alaska earthquake of March 27, 1964, points up the influence of architectural decisions on building behavior. Since building height, bulk and form are factors in the structural response to seismic forces, it follows that architectural planning and design can be highly significant factors in earthquake resistance.

Although ideally the design team of architect and structural engineer is assembled at the inception of a project, many times the engineer is presented an architectural scheme and asked to handle the seismic requirements within the functional solution proposed. As a consequence, planning and design decisions may already have been taken without full consideration of alternative schemes that might lend themselves more readily to effective resistance against earthquake forces.

Although buildings are built for specific functions, and it is necessary that elements of the structural system not obstruct or inhibit performance of these functions, there is normally more than one functional scheme that will satisfy the occupancy *requirements* for any given project.

There are also several possibili-

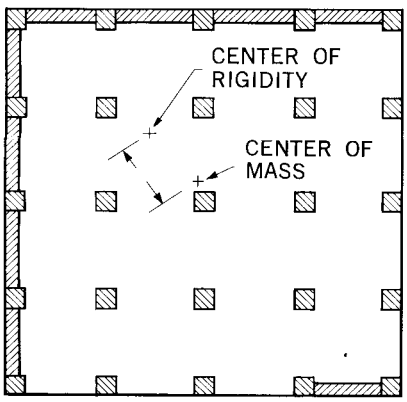
ties for the structural solution; and consequently, imaginative cooperative effort between architect and engineer during the development of preliminary studies can produce effective solutions to the building program without resorting to unduly complicated and extravagant structural arrangements. The movement of water storage tanks and pieces of heavy mechanical equipment, observed on the upper floors of some buildings in Anchorage, is a reminder that mechanical systems also possess elements whose behavior under seismic forces warrants early consideration of their placement within the building in relation to occupancy functions.

This brief discussion of factors —few but significant—largely under the architect's control does not, of course, equate effective earthquake resistance with avoidance of all damage. An attempt to achieve the latter, except for moderate earthquakes that may occur over the life of a building, would not be justified economically. Current design objectives, therefore, seek to limit the type and extent of damage that might cause bodily injury or loss of life when a building experiences a severe earthquake.

The author: Mr. Hauf is professor of architecture at the University of Southern California in Los Angeles. The article presented here has been prepared for the engineering section of the report being compiled by the Committee on the Alaska Earthquake of the National Academy of Sciences.

In view of the possibility that the presumably infrequent severe earthquake may cause considerable property damage costly to repair, an element of calculated risk is involved when balancing potential repair costs against the additional initial cost of measures designed to prevent the damage entirely, or against the cost of earthquake damage insurance. However, there are a few basic design considerations that operate to reduce potential damage and that do not necessarily call for significantly increased initial costs. Some of these are examined here.

Illustration 1



The Plan and Torsional Resistance

The objective here is to prevent torsional movement that may occur in a building subjected to earthquake forces when there is an eccentricity between the center of mass and the center of rigidity (Ill. 1). Wherever possible, buildings should be designed so there will be no substantial built-in eccentricity. This condition can theoretically be achieved when the architectural planning is carried out so that shear-resisting elements and the dead load of the structure are symmetrically disposed with respect to the principal axes of the plan. Such an arrangement, of course, is not always easy to achieve since the exigencies of space layout and utilization do not necessarily coordinate with ideal shear wall locations. Nevertheless, much may be accomplished toward this objective if it is borne in mind as a factor during development of the building plan.

One proponent of this approach holds that "as an experienced architect conceives the spatial and esthetic requirements for a multistory building in a seismic area, he thinks in terms of structure intuitively. From his rough sketches . . . to his preliminary drawings, he has determined the structural form, column and story spacings, shear wall locations and surface openings." [1] Where such an attitude prevails, the chance of developing compatible functional and structural schemes is obviously enhanced.

The effect of large torsional motion, attributed to a relatively large eccentricity between center of rigidity of resisting elements and center of mass of the structure, was dramatized by the failure of the J. C. Penney Building in Anchorage (Ill. 2).[2] This five-story, approximately square building was of reinforced concrete construction. The column bays were 22 x 26 feet and the floors were 10-inch thick flat plates, constituting relatively rigid diaphragms.

The arrangement of effective shear-resisting elements, however, was quite asymmetrical (roughly similar to Ill. 1), consisting principally of the south and west walls

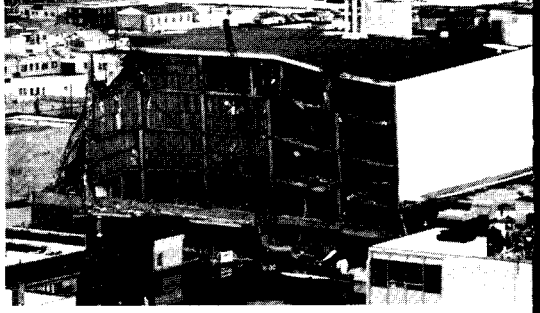


Illustration 2

which were of poured concrete for the full building height. There was no shear wall in the north facade which was covered with 4-inch thick precast nonstructural reinforced concrete panels; but the east wall, also covered with the precast panels, had poured concrete shear walls between columns in the two northerly bays. The rotational displacement induced by the earthquake apparently caused failure of this east wall shear-resistant element, thereby rendering the remainder of the shear wall pattern even more eccentric with respect to the center of mass. As a consequence the building became more susceptible to rotational distortion which progressively caused failure in the principal south and west shear walls.

It is believed that tortional phenomena may be of greater significance in the resistance of tall framed buildings to earthquakes than has been recognized generally. This applies particularly to modern curtain wall buildings because of their lack of peripheral resistance, whether the curtain wall consists of precast concrete panels or metal and glass panels. The architectural scheme can have significant influence here depending on the extent to which it permits provision of lateral resistance in the outermost periphery of structural support, either by symmetrical moment-resisting frames or shear walls.[3]

The problem is more difficult to handle architecturally in buildings where the service core is asymmetrically placed with respect to the entire building envelope. Since the walls surrounding the core are usually available for the structural purposes, symmetrical core location is obviously advantageous, but it is not always feasible. The ingenuity of both architect and struc-

1. Robert L. Alexander, "Where the Architect Stands on the Team: An Introduction to Seismic Design," AIA JOURNAL, Dec. 1964.
2. G. V. Berg and J. L. Stratta, "Anchorage and the Alaska Earthquake," American Iron and Steel Institute, New York, 1964.
3. J. A. Blume, N. M. Newmark and L. H. Corning, "Design of Multistory Reinforced Concrete Buildings for Earthquake Motions," Chicago, 1961.

tural engineer may be taxed to minimize potential torsional displacement in buildings with asymmetrical plans.

In earthquake-prone areas, however, this factor should be weighed most thoroughly, and the architectural scheme developed so as to accommodate structural elements required to prevent undue eccentricity between the center of mass and the center of rigidity of lateral force-resisting elements. Imaginative design thinking can produce compatible solutions to this highly significant problem if it is recognized as such during the early stages of a project.

Pounding Room

Recognition of the importance of building separations early in the planning and design stage may make it possible to eliminate hammering of adjacent structures during an earthquake, with its attendant local damage and potential hazard to people in the streets. Unfortunately, the amount of separation required to avoid contact under seismic oscillation is not known with any high degree of precision, but planning for spaces between individual buildings on a site will obviously minimize this hazard.

Connections between buildings of any one project can be made by lightly constructed corridor "links" made more or less flexible. Separations are also necessary between units of one building when they have greatly different vibration characteristics and cannot be designed to act as an integral unit. This situation frequently may be critical where low wings adjoin a higher tower-like unit or where wings of widely different mass and extent intersect.

Damage due to hammering or pounding under these conditions was observed at the Anchorage Westward Hotel where the six-story block adjoins the 14-story tower portion; at the West Anchorage High School where gymnasium and classroom sections joined; and in other buildings.

A similar condition exists in very long buildings that require joints to accommodate movement due to temperature change, and it is important that the separation be great enough to provide for earthquake deflection as well as for the thermal considerations. Obviously, construction of such joints must be watched carefully by field inspection forces since the best designed separation will not function if the joint accumulates debris.

There is also, of course, the problem of providing adequate separation of buildings erected by different owners on adjacent sites. The application of measures to assure such separation in congested city business districts is often very difficult. High land values have been thought to require buildings constructed flush with the lot lines, except for alley or courtyard requirements dictated by other considerations. Although the ratio of built-over area to unoccupied site of several new high rise office buildings indicates a partial erosion of this concept, many of these examples are buildings that occupy an entire block or have streets on at least three boundaries so that special setback for seismic factors is not seriously involved.

Obviously this circumstance is not germane to the interior lot problem, so resistance to mandatory building separation requirements will probably continue for some time. It is here that the architect's ingenuity in planning the building so that space may be released to provide property-line clearance, without serious economic penalty, furthers the principles of good earthquake engineering.

Buildings with Wings

Irregular plan forms which induce parts of the building to vibrate relative to each other are, in general, more subject to cracking and overstressing than are buildings of simpler shape. A building whose plan form is as shown at (a) of Illustration 3 is more likely to sustain earthquake damage than is a rectangular one such as (b), even when they are both designed according to the same building code requirements. Potential damage at the re-entrant corner (c) can result from the tendency during an earthquake for the wings to "flap" and thus produce relatively high stresses around corner (c). This is not to say that buildings of this shape should not be built when the requirements of plan and site indicate its desirability. However, special precautions must be taken in detailing the articulation of the wings, or in providing additional structural strength at the junction.

Choice of Materials

Observation of damage in the Alaska earthquake refocuses attention on the desirability of avoiding unnecessary dead load when designing buildings for seismic-prone areas. Large loads aloft, such as the heavy roof of the classroom section of the West Anchorage High School, generate large inertial forces under the accelerations produced by earthquake motion. Although these forces may be contained by proper design of supporting elements, the selection of lighter-weight construction will reduce their magnitude and consequently the magnitude of the problem of restraining them. The construction of shear walls in multistory buildings usually requires the use of relatively heavy materials, but there is considerable latitude in selecting the materials for nonstructural exterior walls and interior partitions.

It should be recognized that rigid walls and partitions may participate in resisting seismic forces even though they are not intended to do so. For example, a partition of block masonry running between two columns and from floor to overhead beam may be intended only as a filler wall.

Whether this wall assists the frame elements in resisting lateral force depends upon several factors, but especially on the manner in which it is connected to the beams and columns. If there were clearance on one or more edges of the panel, the frame would resist lateral force by itself until its deflection brought the wall resistance into play. On the other hand, if the masonry wall were fitted tightly to the frame on all sides, there would be composite action of frame and wall until the wall failed. After this

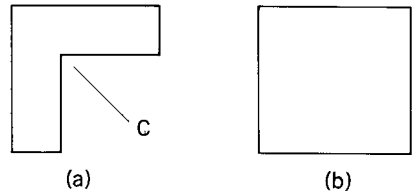


Illustration 3

point the frame would resist lateral force alone or with only partial assistance from the wall.

Obviously the intended interaction between frame and walls or partitions needs resolution early in the design stage. Where composite action is envisaged, specifications must require that partitions be reinforced and tied to framing members so that a hazard to occupants will not be created. Where such action is not desired, the use of lighter weight, more flexible partitions with panel faces consisting of plastic laminates, plywood and similar materials should be considered. It was observed in Anchorage that al-

though solid plaster partitions developed through cracks and in many instances had to be completely rebuilt, plaster on metal or gypsum lath over steel or wood studs were less costly to repair.

Another instance in Anchorage points up the importance of giving careful thought to the interior finish of certain facilities which may be needed desperately during an earthquake's aftermath. It was reported that in one of the hospitals, although there was little damage, the dust generated by cracked plaster in the operating room made the room unusable until it was given a thorough washing. In this case the inability to use the room was of much greater significance than the cost of the modest damage.

Stairs as Structural Elements

Stairs are usually relatively rigid elements and can act to resist earthquake forces even when not intentionally designed to do so, particularly when the structural elements of the building are less rigid than the stairs. However, this may lead to the stairs failing because they pick up most of the earthquake force even though not designed with strength to do this.

In the Cordova Building, steel stairs were fastened to a main column at mid-height and caused the column to fail. In this case, the stairs damaged the main structure.

Although locations of stairways are usually determined by occupancy and legal egress requirements, their design and detailing should be carried out so that there is not an unfavorable interaction between the stairs and the structure of the building.

The Falling Missiles Hazard

The breaking loose of precast concrete nonstructural panels on the north and east walls of the Penney Building cited earlier generates a doubt as to the wisdom of using such heavy units for nonstructural curtain walls in seismic areas. In addition to their contribution to raising the structure's center of gravity by increasing the weight aloft, such panels become truly lethal missiles when they fall into the street below, as dramatically illustrated by Illustration 4. These same considerations would also seem cogent to the design of exterior sun-shading devices on multistory buildings.

It is possible that further development of fastenings for heavy nonstructural elements may alleviate the potential hazard in this

Illustration 4

regard, but observation of the generally satisfactory behavior of insulated metal and glass curtain walls during the Alaska earthquake[4] can no doubt be attributed to their inherent flexibility which permits a considerable measure of distortion without complete and sudden collapse.

As the number of highrise buildings increases in metropolitan centers located in seismic zones, the matter of keeping damaged components on or in the building where damage occurs becomes increasingly important. This, of course, is also important for lowrise structures, but the potential volume of falling wall panels, sun shades and veneers increases with height. Since people are sure to be in the streets, this type of nonstructural damage takes on a significance which needs much wider consideration than it apparently has received to date. Because the elements discussed here are those that contribute to a building's architectural character, the architect can exert considerable influence on this potential hazard with his design.

The relationship between architectural character of a building's facades and its susceptibility to earthquake damage was clearly demonstrated in the behavior of the two 14-story apartment buildings in Anchorage. The buildings had reinforced concrete exterior walls with relatively short, deep spandrel beams framing into relatively husky vertical members. The extensive damage sustained by these walls is attributed to the relatively large shear forces, generated in the spandrels under the strong shaking, which caused them to shatter. It is thus possible for architectural design to solicit potential damage quite inadvertently. Situations of this nature can be avoided by collaboration between architect and structural engineer at an early stage in the design when all factors controlling a building's response to earthquakes may be examined.

Since windows comprise such a large proportion of the area of exterior walls in modern buildings, glazing details are worthy of special consideration. During an earthquake the vibrations of a building produce relative horizontal displacements between adjacent floors. In a steel frame building there may be as much as half an inch relative displacement in a strong earthquake, and consequently provision for adequate play in the details may make the difference between no damage and having most of the windows broken.

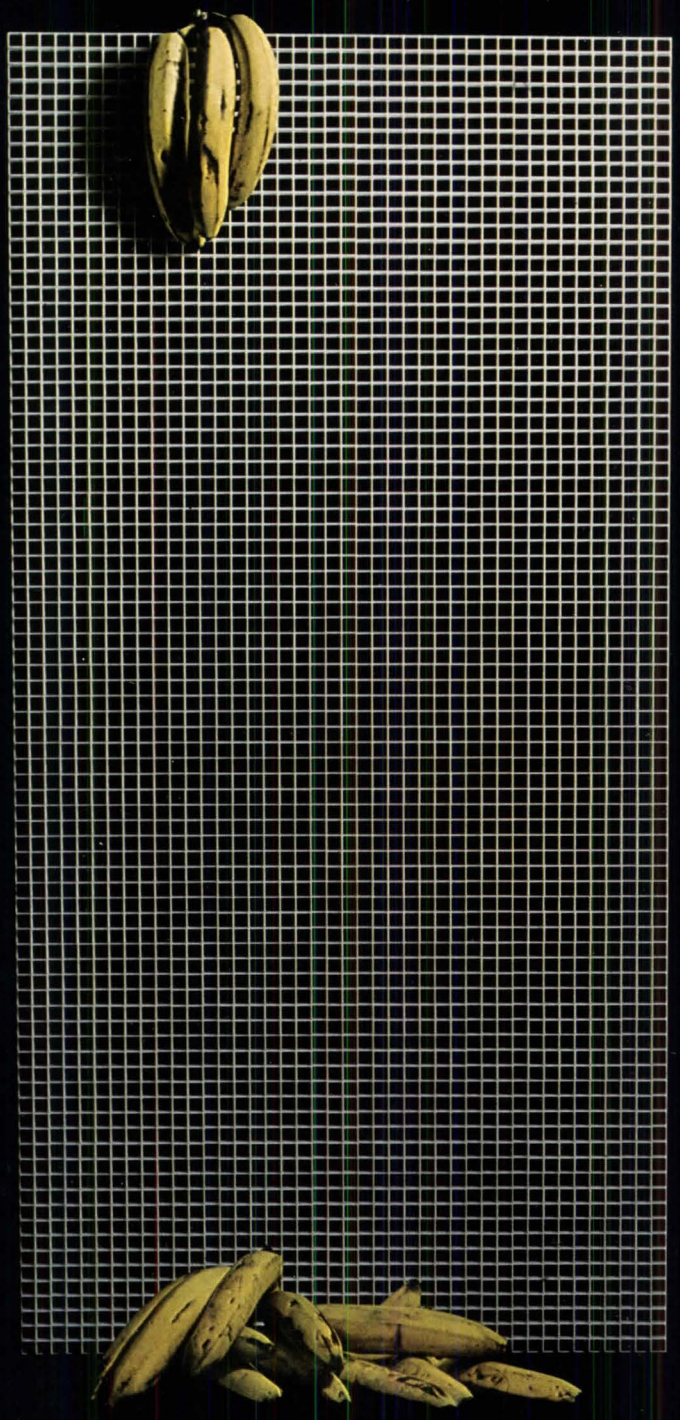
Site Considerations

The degree to which the architect can influence the selection of the site for a proposed building varies widely with the type of project and its sponsor. When all factors relating to functional aspects of location for the proposed enterprise have been considered, and alternative sites are available, the relative seismic hazards should be investigated so that purchase price can be balanced against the estimated cost of anticipated special foundation problems.

For many buildings in metropolitan areas, however, there will not be an opportunity for choice. The sponsor of a project will already have acquired his site (hopefully having availed himself of soil engineering and geologic counsel) on the basis of market analysis or other economic considerations. In such cases the architect will have to accept the geology and seismicity as they are found. Fortunately, if sufficient money is available to cover the cost of marshaling competent engineering design talent, and to provide quality control of both materials and construction techniques, there are relatively few sites that cannot be built upon with reasonable assurance of achieving effective earthquake resistance.

Since man is presumably going to continue to build and carry on his social, economic and political activities in areas where earthquakes are liable to occur, attention must be focused on ways to limit an earthquake's destructiveness. Attention to the few but significant architectural design decisions identified here should contribute to this end. □

4. L. E. Hixon, "How to Design Against Earthquakes," AIA JOURNAL, Oct. 1965.



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Urban Planning Extended

Lake Oswego, a suburb 8 miles from Portland on the Willamette River, has a lot going for it. In addition to its waterfront on the Willamette, its assets include a 3½-mile artificial lake, unsurpassed residential settings and middle- and upper-class homes that typify everything that's right with US suburbia.

But it has a downtown commercial area where growth has been disorganized and poorly controlled; which has turned its back on its principal natural assets, the lake and the river; and which is even more drastically cut off from its waterfront by the tracks of the Southern Pacific railroad.

Anybody taking a close look at Lake Oswego's downtown area might decide that the town is ripe for some urban renewal, but not the wholesale, all-at-once variety which seems, in John Steinbeck's words, to "throw off a prow-wave of sterility."

That was the state of affairs in Lake Oswego when the Portland-based Western Wood Products Association turned its attention toward the town.

WWPA executives wanted to demonstrate the association's belief in a close relationship between social and commercial progress, with resulting benefits to investors and the community. They also saw a clear opportunity to promote the local lumber industry, by demonstrating new uses for wood products in urban-core commercial construction.

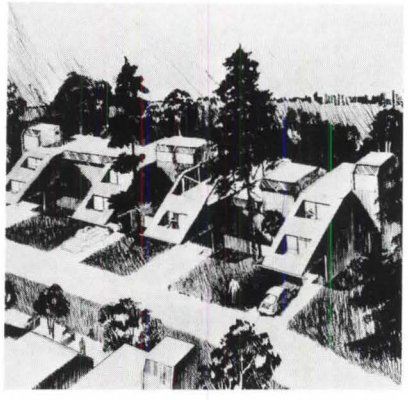
Thus Urban Projection was conceived by the WWPA as a "show-how" plan of action for the voluntary, self-guided development of a growing community's commercial area. "Show How" is the operative phrase; the instigators of the plan believe that the public—potential investors—need help in visualizing community development in three dimensions, rather than the two provided by a conventional master plan. Laymen rarely have the training which enables architects and planners to look at a two-dimensional community master plan and translate it automatically into the visual image of a city. Urban Projection adds the third dimension of building design and landscape to the growth charts and land-use maps of the master plan.

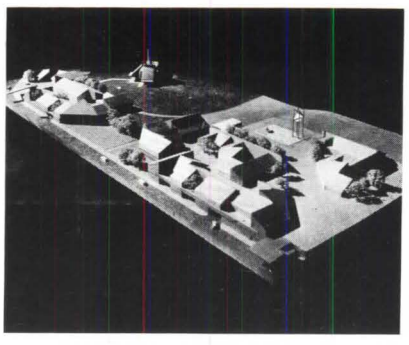
Urban Projection is not viewed as an all-at-once clean sweep. Descriptive material repeatedly stresses the idea that the plan is evolutionary, rather than revolutionary, in its implementation—that it is intended as a guide for orderly community growth and change.

It was important for WWPA to assure the residents of Lake Oswego that Urban Projection was not a plan to raze and rebuild their city a week from tomorrow. It was also important that the citizens not feel that their town had been singled out for criticism as a horrible example. Association executives and others associated with the project worked patiently with civic leaders, the press and citizens' groups to get the message across: "Lake Oswego is one of the best places in the nation to live. Its business area is actually no better and no worse than that of any average community, but Lake Oswego is not 'just average'—it deserves better."

Next, a design team was assembled. Because of the scope and complexity of the job, the decision was made not to retain one but four architectural firms: Broome, Selig & Oringdulph; Fletcher & Finch; Zaik/Miller; and Farnham Peck Associates, all of Portland. Kenneth Kaji was retained to coordinate the project; George M. Schwarz Jr. was hired as a consultant to advise on outdoor furnishings. George Whittier, AIA, staff architect for WWPA, provided liaison with the association.

Part of a multicompany master plan are Farnham Peck Associates' townhouses and Fletcher & Finch's commercial center with garage below. A restaurant is over the water, rear.





The architects worked as a team to develop a master plan, which was then divided into smaller areas for detailed development by one of the four participating firms. The master plan concerned itself with tangible aspects of the city's development — commercial, municipal facilities, housing, recreation, cultural and transportation—and a very important intangible: Lake Oswego's emotional or psychological image of itself.

The accompanying photograph and drawing show some of the changes which the Urban Projection team sees in Lake Oswego's future. What are the implications for other communities?

WWPA foresees that its role in Lake Oswego's Urban Projection could, in other cities, be taken by a businessmen's committee. The procedures being established in the first project will provide guidelines for such committees, and the Lake Oswego story will be documented, in print and on film, for the guidance of other cities. One of the primary objectives of Urban Projection—total community involvement—will be brought about by enlisting the cooperation of area realtors, mortgage bankers, contractors and the local press.

The story is an attractive one. It involves an upgraded physical and visual environment, profitable investment opportunities, attraction of new families to the community, with resultant broadening of the tax base. It is one which should capture the community imagination of cities all over the nation.

Lake Oswego residents are enthusiastic. As Mayor George Thomas put it, "Few communities have ever had the opportunity to look into the future. Lake Oswego is being given that chance—perhaps the first of many to gaze into the Urban Projection crystal ball." □

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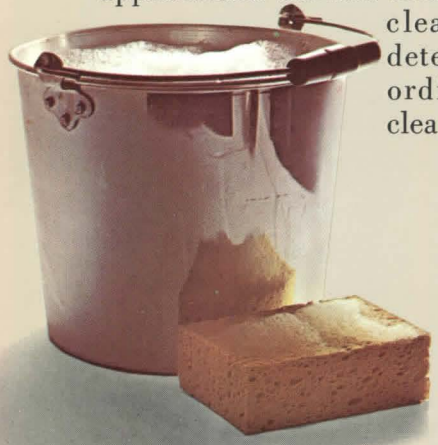

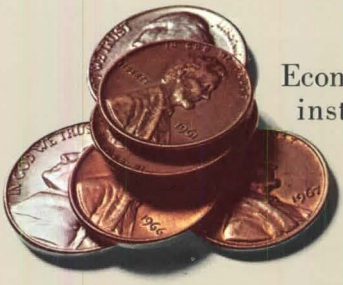

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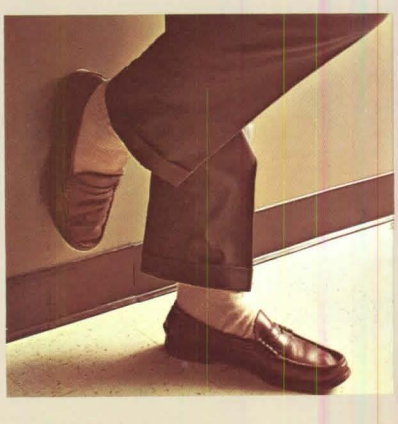

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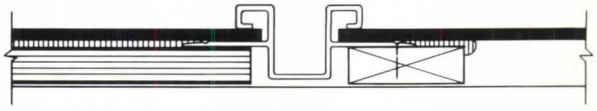
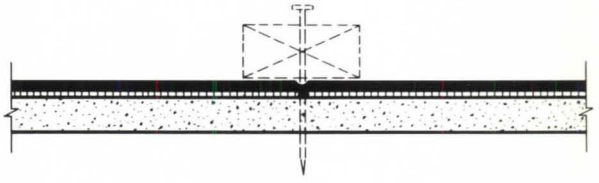
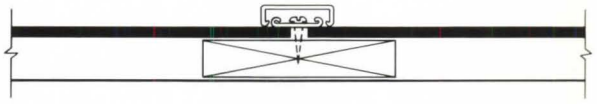
For greater articulation use the "K" series molding. It will create a distinctive scale without increasing overall wall thickness.



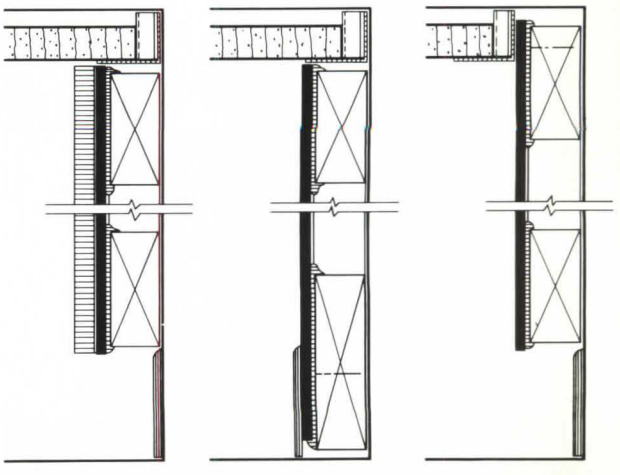
Vertical joints without moldings can be secured by chamfering Glasweld edges with a carborundum flocked steel file. Apply exterior grade mastic to the entire substrate, seat and temporarily block at joint. Fasten top or bottom. Use a grout or sealant at joint.



Where impact is a minimal problem, Glasweld can be mounted on furring strips. Spacing for ⅛″ thickness, 12″x120″. Shown here is a snap-on molding which can be used in a matching or contrasting color.



Head and Base Treatments. Where the vertical edges of Glasweld are retained by moldings, panels do not have to be secured top and bottom. Panels mounted without vertical moldings must be mechanically supported top or bottom to prevent slippage due to possible mastic release.



(Scale ⅜″ = 1″)

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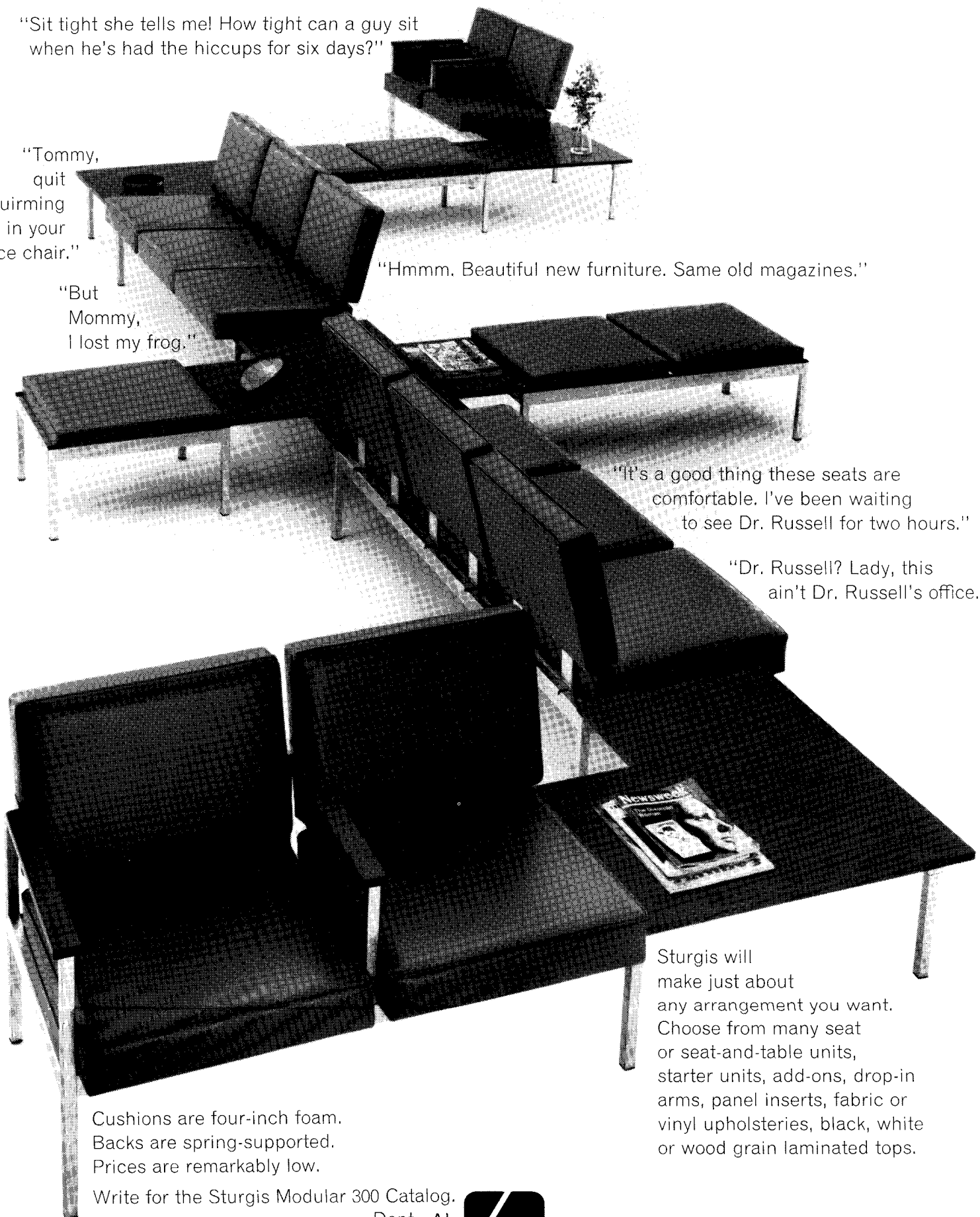
"Hmmm. Beautiful new furniture. Same old magazines."

"It's a good thing these seats are comfortable. I've been waiting to see Dr. Russell for two hours."

"Dr. Russell? Lady, this ain't Dr. Russell's office."



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Backs are spring-supported.
Prices are remarkably low.

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Books

Canada Builds, 1867-1967. T. Ritchie and the Staff of the Division of Building Research, National Research Council of Canada. Toronto: University of Toronto Press, 1967. 406 pp. $12.50.

In 1862 the novelist Anthony Trollope wrote, "In going from the states into Canada, an Englishman is struck by the feeling that he is going from a richer country into one that is poorer, and from a greater country into one that is less." But no more.

This truly fascinating account of building in Canada reveals the vast resources of that country, its remarkable and ingenious builders and its ability to cope with almost anything. The story of Canada's building is, incidentally, the story of the social customs and habits of the Canadians, and all come off very well in the end. Each region of Canada is considered, and the traditions of its settlers and its materials and methods of building investigated.

Major emphasis is given to the changes in methods and materials as the country itself has changed. It must have taken herculean effort to find and to organize the 500 illustrations. They show graphically and dramatically the developments that have taken place over the 100-year span. The text is entertaining, and anyone interested in the building industry will enjoy this source book. As Ritchie concludes, such an expression as "the building industry" would not have been justified in Canada in 1867; there was no such industry. "But there is now, and it is the largest in Canada." Congratulations to those who worked to bring this book into being.

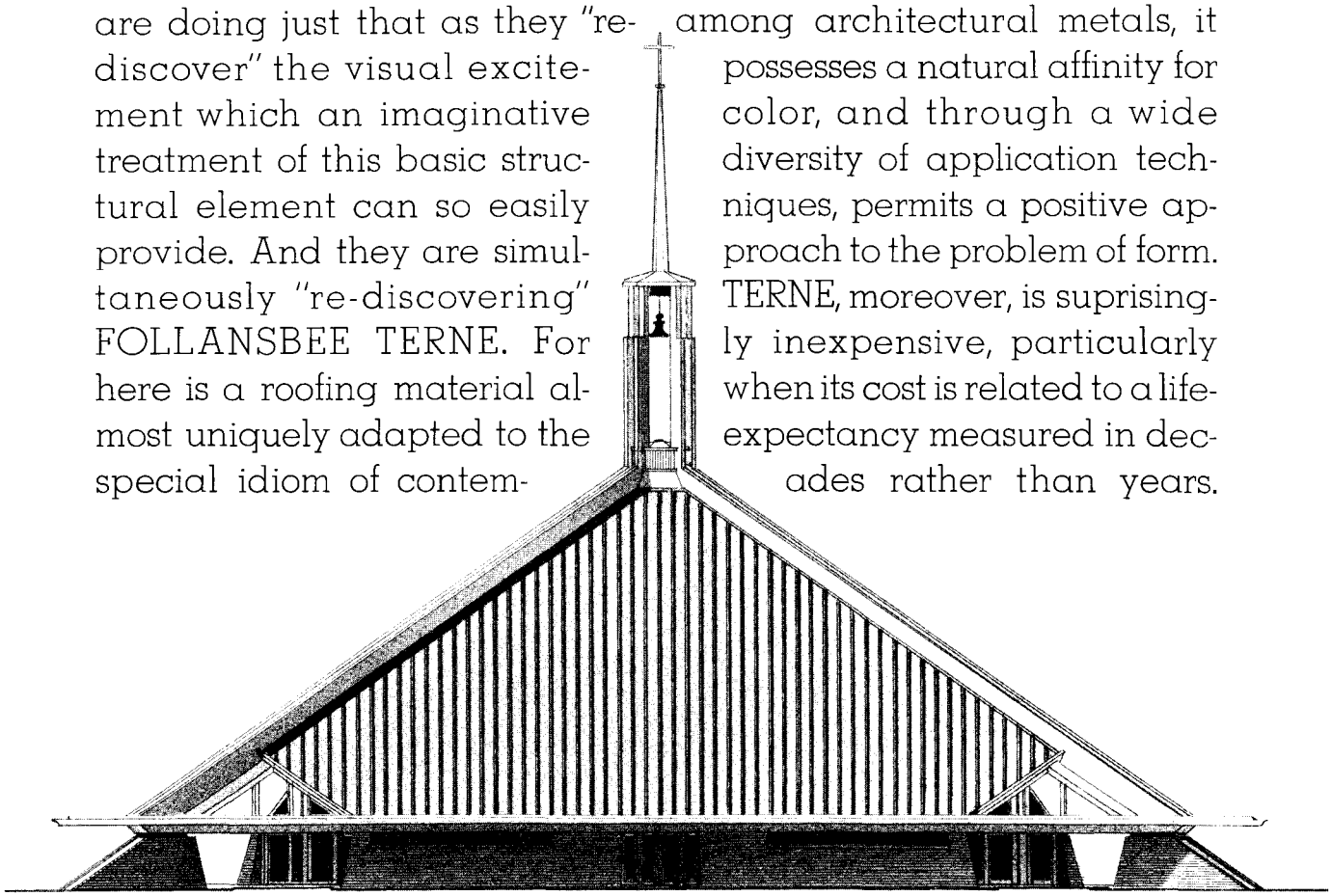
Henry Hobson Richardson and His Works. Mrs. Schuyler Van Rensselaer. Park Forest, Ill.: Prairie School Press, 1968. 152 pp. $25.

Mrs. Van Rensselaer's biography of Richardson is generally considered a landmark in American architectural history. Originally issued in an edition of 500 copies, it is now naturally rather hard to come by. This edition presenting the original material in near facsimile will make it easily available. James D. Van Trump has contributed a brief introduction touching on the life of the author and the importance of her book.

Continued on page 82

Speaking of roofs

. . . and architects everywhere are doing just that as they "re-discover" the visual excitement which an imaginative treatment of this basic structural element can so easily provide. And they are simultaneously "re-discovering" FOLLANSBEE TERNE. For here is a roofing material almost uniquely adapted to the special idiom of contemporary design. Almost alone among architectural metals, it possesses a natural affinity for color, and through a wide diversity of application techniques, permits a positive approach to the problem of form. TERNE, moreover, is suprisingly inexpensive, particularly when its cost is related to a life-expectancy measured in decades rather than years.



Concordia Lutheran Junior College — A College of the Lutheran Church, Missouri Synod — Ann Arbor, Michigan
Architect: Vincent G. Kling, FAIA Philadelphia, Pa. Roofing Contractor: Detroit Cornice & Slate—Detroit, Michigan

Follansbee

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Books *from page 80*

The Design of the Small Public Library. Rolf Myller. New York: R. R. Bowker, 1966. 95 pp. $10.

This little volume is presented as a comprehensive guide which condenses the essential principles, criteria and methodology required for the design of a small public library. After perusal, one feels that it accomplishes its purpose.

Written for libraries serving less than 10,000 populations, it was commissioned by the New York State Department of Education, Division of Library Extension. The author, an architect, first points out elements that form the library team: the board of trustees, the librarian and the architect, to which may be added, if desired, a library building consultant. Myller then lists the function of each party at various stages of the project and discusses the development of the library program by the librarian, following the preparation of a library philosophy based on its history, objectives and policies. Various factors to be considered in planning are discussed, among which are the choice of the site, relationship of departments, layout of furniture and equipment, and materials.

Thought-provoking comments are made at all stages. No plans are given since this is not intended for slavish copying, but if any library team follows the procedure outlined, the resulting library should be both satisfying and functional.

GEORGE E. PETTENGILL, HON. AIA

Curtain Wall Construction. Editor-in-Chief, Konrad Gatz, in collaboration with H. J. Meier-Menzel and Fritz Hierl. New York: Praeger, 1967. 174 pp. $15.

This book provides a visual survey of exterior walls of buildings in all parts of the world. The purpose of the publication is "to counteract the design impoverished treatments of exterior walls so prevalent today."

All types of facing are considered, including precast concrete, glass, aluminum, steel, brick, timber and asbestos cement. The major sections of the book deal with precast concrete external wall elements; external curtain wall construction; solid walls and framing with projections; and window walls, balconies and terraces. There is a subsection on free-standing external walls and sunbreaks. In addition to the illustrative materials, there are 11 essays reproduced in the back of the book. The articles first appeared in the German periodical *Detail*, and they are by various specialists.

Schools of Prestressed Concrete: Planning, Design and Construction of Educational Facilities for Schools and Colleges. Chicago: Prestressed Concrete Institute, 1968. 156 pp. $10.

The Prestressed Concrete Institute, author and publisher of this volume, has been a source of information for such structures as bridges and highrise buildings. Increasingly, the institute is called upon also for information about the use of prestressed concrete for educational buildings. This book has come into being to demonstrate the way in which precast and prestressed concrete can be used for school and college buildings.

As this book points out, we have come a long way from the simple one-room schoolhouse. Today's educational buildings are complex, and provision has to be made for laboratories, libraries, audio-visual cen-

ters, natatoriums, cafeterias and other facilities to meet the demands of modern education.

The book's aim is to illustrate that the prestressed concrete industry serves today's schools and colleges —and serves them well. Over 200 photographs and 100 line drawings supplement the text in the development of the three major sections of the book: planning, design and construction. In some cases, a single school may be discussed in all three sections.

Nearly every kind of precast and prestressed concrete component is illustrated. The intent of the publication is "to illustrate how the precast and prestressed concrete industry most capably serves the architect, the engineer, the school administrator, lay school board members—and perhaps more importantly—the student in the creation of outstanding facilities for education." After an examination of the book, one concludes that the intent was realized.

American Building: Materials and Techniques from the First Colonial Settlements to the Present. Carl W. Condit. Chicago: University of Chicago Press, 1968. 329 pp. $10.

"Mr. Condit teaches us primarily the anatomy and physiology—rather than the cosmetics—of American building," writes Daniel Boorstin, editor of the series Chicago History of American Civilization, of which this book is a part. "His focus," continues Boorstin, "is on what holds the building together," and "the heroes of his story are wood and steel and concrete."

Condit, professor of art and general studies at Northwestern University, holds degrees in both English and civil engineering. His knowledge of technological advances in building and engineering structures is acknowledged; his prose, happily, is highly readable. Here he presents a popular history of American building from the colonial period on down to the industrial and urban expansion in the 20th century.

This is not a study of architectural form but rather a contribution to the history of building materials and structural techniques as an aspect of technological development in this country. From domed wigwam of thatch or bark, a technique learned from the Indians, on to the semicircular cantilevers and helices of Chicago's Marina City, Condit develops his story.

As Condit points out in an excellent bibliographical essay at the conclusion of the book, there is a paucity of general works on American building. The books by Condit himself (*American Building Art: The Nineteenth Century* and *American Building Art: The Twentieth Century*, New York, Oxford University Press, 1960 and 1961) are the only ones which deal strictly with the history of building techniques and structural engineering in the United States. Another contribution from him is welcome.

Designing for Asepsis. Washington, D.C.: US Department of Commerce, 1968. $3 clothbound, 65¢ paperbound.

This book comprises the proceedings of a conference held in May 1964, sponsored by the New York Chapter AIA and the AIA Committee on Hospital Architecture, among others. It includes papers by architects, physicians, hospital consultants, engineers and other individuals involved in hospital design and environmental sanitation. Topics range from specialized treatment areas to the movement of supplies through the hospital. □

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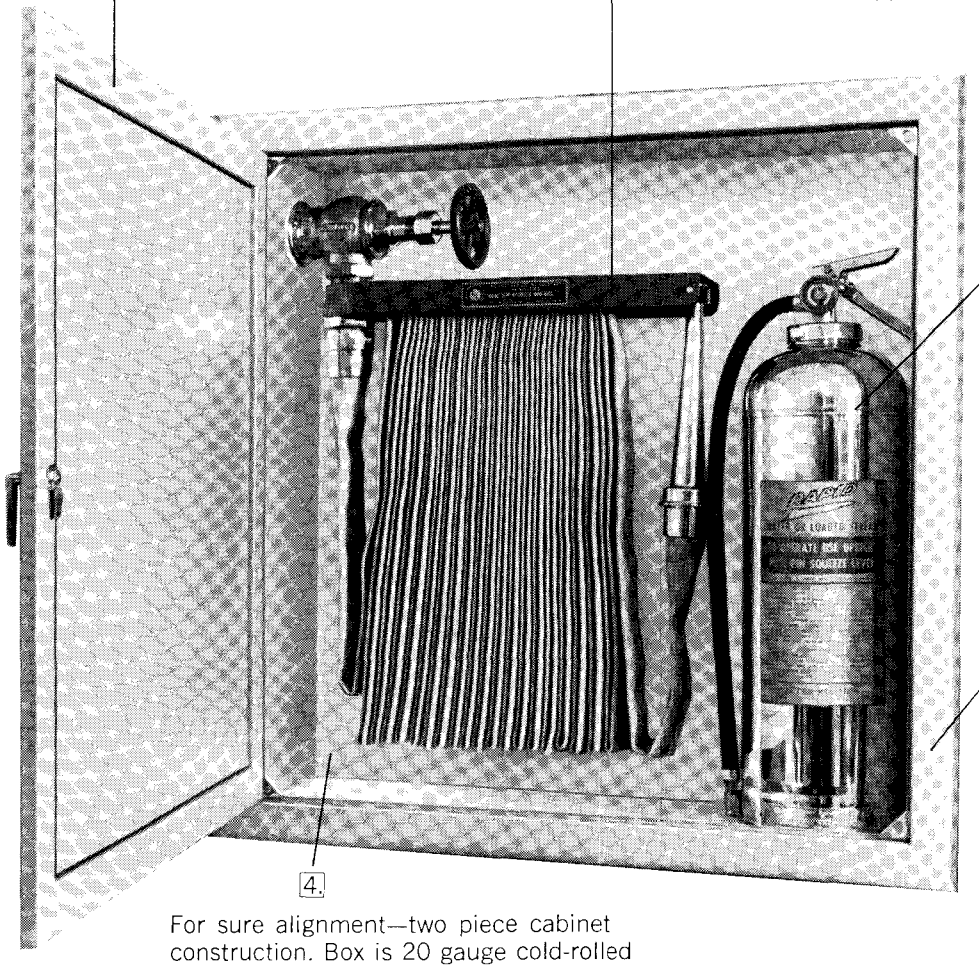

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Calendar

National

Sept. 23-25: National Bureau of Standards *"Man and His Shelter"* Conference, Gaithersburg, Md.

Oct. 6-10: Prestressed Concrete Institute Annual Convention, Olympic Hotel, Seattle

Oct. 30-Nov. 1: Architectural Woodwork Institute Annual Convention, Sheraton-Boston Hotel, Boston

AIA Regional and State Conventions

Sept. 4-6: North Central States Region, Radisson Hotel, Minneapolis

Sept. 18-21: Western Mountain Region, Hotel Utah, Salt Lake City

Sept. 26-28: New Jersey Society, Chalfonte-Haddon Hall, Atlantic City

Oct. 3-5: Pennsylvania Region, Bellevue-Stratford, Philadelphia

Oct. 3-6: Northwest Region, Sun Valley Lodge, Sun Valley, Idaho

Oct. 7-9: California Council, Fairmont Hotel, San Francisco

Oct. 9-12: South Atlantic Region, Marriott Motor Hotel, Atlanta

Oct. 9-13: New York Region, Whiteface Inn, Lake Placid

Oct. 10-12: Central States Region, Tan-Tar-A Resort, Osage Beach, Mo.

Oct. 10-12: Louisiana Architects Association, Jung Hotel, New Orleans

Oct. 11-12: Alabama Council of Architects, Carriage Inn, Huntsville

Oct. 17-19: Ohio Region, Sheraton Biltmore, Dayton

Oct. 23-25: Indiana Society of Architects, Stouffers Indianapolis Inn, Indianapolis

Oct. 25-28: Florida Region, Daytona Plaza, Daytona Beach

Nov. 6-8: Texas Region, Driscoll Hotel, Corpus Christi

Nov. 7-10: New England Region, Park Plaza Hotel, New Haven, Conn.

International

Aug. 26-30: International Health Conference, Copenhagen

Sept. 9-14: Congress of the International Association for Bridge and Structural Engineering, New York Hilton Hotel, New York City

Oct. 14-16: Congress of International Council for Building Research Studies and Documentation, Willard Hotel, Washington, D. C., and Skyline Hotel, Ottawa (Oct. 9-11)

Continuing Education

Sept. 8-13: Seminar on Acoustics and Noise Control in Buildings, Department of Architectural Engineering, Pennsylvania State University, University, Park 16802.

• Competition for grants for academic study or research abroad and for professional training in the creative and performing arts. Contact: Information and Reference Services Division, Institute of International Education, 809 United Nations Plaza, New York City 10017. Submissions due Nov. 1.

Awards Programs

• James F. Lincoln Arc Welding Foundation. Contact: Secretary of the Foundation, P.O. Box 3035, Cleveland, Ohio 44117. Submissions due July 15. □

Architects: O'Neil Ford and Associates, San Antonio, Texas
Contractors: Darragh and Lyda, San Antonio, Texas
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"Tower traffic" under control of Russwin doorware at Hemisfair '68

Soaring some 622 feet above San Antonio's fabulous World's Fair, the Tower of the Americas is a popular attraction. The tower boasts the highest revolving restaurant in the Western Hemisphere plus two observation levels and is visited by as many as 2000 persons an hour.

In designing this spectacular structure, *architects* selected Russwin locksets, door closers and exit bolts. Chosen on the basis of progressive styling as well as proven performance, this modern doorware perfectly complements the futuristic interior of the tower while functioning faultlessly under the heaviest traffic.

Go to the top when you select door hardware for commercial, institutional and industrial buildings. Speak to Russwin before you specify. Russwin, Division of Emhart Corporation, New Britain, Connecticut 06050. In Canada—Russwin Lock Division, Belleville, Ontario.

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Letters

Hurrah for HemisFair

EDITOR:

With reference to your April issue, it was very satisfying to see such a lengthy, well-done discourse —"HemisFair '68 and Paseo del Rio '38"—on an exposition which seems not to be receiving all the fanfare of other recent productions of its general nature.

We had the good fortune to visit San Antonio in late March to attend a planning conference and the misfortune to have had too little time to absorb completely all HemisFair '68 has to offer. The exposition was not yet open to the public and our guided tour was necessarily limited, but our reaction was unanimous: HemisFair '68 is giving San Antonio what the 1962 World's Fair gave to Seattle—a downtown-oriented center of both functional and esthetic value.

Incidentally, the April issue bore two surprising errors: 1) William Sydney Porter's pseudonym has been converted from "O. Henry" to "O'Henry" (p. 55). 2) The reference to "Metro" as being exclusive in the United States in its use for the Washington, D.C., area (p. 26) ignores the existence of "Metro" in Seattle which describes an existing system for controlling waste disposal and water pollution on a regional scale and future systems (already identified by enabling legislation) of metropolitan planning, zoning, rapid transit, et al.

JEAN D. HANSFORD
Campus Planner
Ohio State University
Columbus, Ohio

Correcting the Credits

EDITOR:

In noting the mosaic mural by Glen Michaels for the International Monetary Fund Building which appears in May, we would like to point out that the architectural credits are incorrect. Clas, Riggs, Owens & Ramos were architects for the project; Vincent Kling was consulting architect.

GEORGE H. RIGGS JR., AIA
Washington, D.C.

EDITOR:

I believe your readers would like to know that the translator of Dahinden's *New Trends in Architecture* reviewed in May is Brother Cajetan J. B. Baumann, O.F.M., FAIA. ELISABETH COIT, FAIA
New York, N.Y.

Guidelines for Out-of-Towners

EDITOR:

The following letter has been sent to James Thornberry, president of the Louisville Board of Aldermen:

I am concerned over the continued practice by the City and/or private agencies here of hiring out-of-town architects and consultants without stipulating that they hire local associates.

It came to my attention today, at a Citizens Metropolitan Planning Council meeting, that the City is contracting with Victor Gruen Associates for further central-city planning and design work. It was my comment at the CMPC meeting —and I urge this policy for you and the aldermen to consider—that:

Whenever the City or its agencies contracts with an out-of-town architect, planner or other consultant, it stipulate by contract and ensure in practice:

1. That all out-of-town consultants, architects, et al. be *required* as a part of the contract that they retain a local associate (architect, landscape architect, consultant) to assist in the formulation and carrying out of the plan and design.

2. That duplicate copies of all basic data, worksheets, statistics, and documentation be made and left with a responsible person or office in Louisville so that the valuable "raw material" from preparation of plans be kept here and useful to other local designers, planners, developers.

3. That a local agency or institution be made a depository for all such materials mentioned in No. 2 so that all this information becomes a part of the locally available storehouse of valuable knowledge.

None of the above indicates that we ought *not* hire out-of-town advisers. They are valuable and, when well chosen, may be indispensable. But I think it is very bad public policy to spend large public and private sums on fees without stipulating that as much benefit as possible accrue to the local community after the out-of-town advisers have left with their remunerations. Merely leaving a plan is not enough! GRADY CLAY
Editor, Landscape Architecture
Louisville, Ky.

The AIA JOURNAL encourages expressions of opinions from its readers but reserves the right to edit for length and style. Address letters to the Editor at the Octagon.

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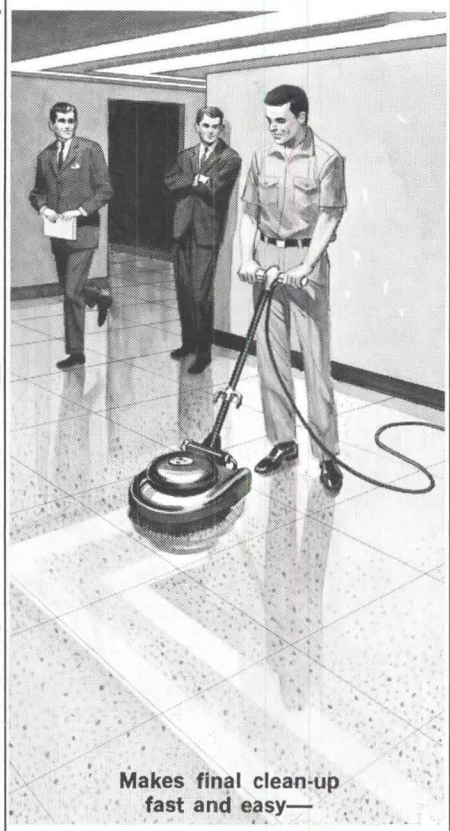

Makes final clean-up fast and easy—

For floor beauty that helps gain acceptance

DESCRIPTION: An ester-type penetrating sealer that may be buffed to provide a hard, wear-resistant lustrous finish. For terrazzo, thinset terrazzo, seamless and other masonry surfaces.

SPECIFICATION AND HOW TO APPLY: Floor must be thoroughly cleaned and free of stains. Agitate material until uniform. Apply in thin even coat with lamb's wool applicator. Let dry, not to exceed 20-30 minutes until pressure of the fingers *pulled across* the surface produces a squeaking sound. Buff each coat after application to provide greater lustre. Apply second thin coat and buff.

COVERAGE: 600 square feet per gallon first coat, 900 square feet per gallon second coat.

TECHNICAL DATA: NVM—10.5% minimum. Film properties: Drying time—45 min. maximum; Appearance—free from particles—semi-transparent; Tackiness—none; Water resistance—no loosening of film, no removal of gloss. General Appearance: Color—light, shall contain no pigments or dyes; Odor—non-objectionable at any time; Viscosity—heavy-bodied liquid mixture.

GUARANTEE: When applied in accordance with manufacturer's directions, it is guaranteed to meet all claims made for it in the proper sealing and finishing of terrazzo floors.

EXCEPTION: For white terrazzo or other white masonry floors, specify White Onex-Seal.

MAINTENANCE: Sweep daily with a Super Hil-Tone treated dust mop (do not use an oily mop dressing). Buff periodically. When floor is soiled, clean with Super Shine-All, a neutral chemical cleaner. Traffic lanes may be patched in and buffed to blend in with the rest of the floor. Reseal as needed depending upon traffic and kind of use.

APPROVALS: This is the type of a penetrating seal recommended for use by the National Terrazzo and Mosaic Association. U/L listed relating to fire hazard and slip resistance.

REFERENCES: Hillyard A.I.A. File 9
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Asides

Next Month: The much-debated Battelle Report has significant implications for the architect, for repeatedly—eight times to be exact—the profession is identified as a "constraint" standing in opposition to industrial development. Discussion of the study leads to a wider examination of trends within the building industry and a defense of the architect as anything but a constraint.

Among August's other offerings will be a pictorial essay on a handsome and functional parking garage concept; an account of the last days of a Beaux Arts ghost town designed by Goodhue in, of all places, Tyrone, New Mexico; a photographer's opinions on the role of his craft as it relates to awards programs.

A Farewell: This month the AIA JOURNAL bids adieu to Marilyn E. Ludwig, assistant editor, who has been associated with the magazine for the past six years. The staff will not be losing sight of her, however, for she will go only a few blocks away to join the Building Research Institute as editor and director of public relations.

Philly Gets into the Act: Expositions are very much in the news these days, what with crowds picking up at HemisFair '68 (AIAJ, April); with the Montreal exposition again underway as "Man and His World"—and the site of the presentation of the R. S. Reynolds Memorial Award on June 13 to the Netherlands Pavilion, described in this issue; and with Japan's Expo '70 having its construction start near Osaka. (AIAJ, May.)

Now Philadelphia, which will host the AIA convention in 1976, hopes to celebrate the nation's 200th birthday with a world's fair. The nonprofit Philadelphia Bicentennial Corp. will seek sanction from the International Bureau of Expositions in Paris.

More Than One Hat: C. M. Deasy, FAIA, who authored the article "When a Sociologist Gets into the Act" in the January JOURNAL, produced and moderated a six-part series for Channel 28, Community Television of Southern California. Concluding in May, it was called "Quest, Los Angeles." R.E.K.

PHOTO & ART CREDITS: P. 22—Frederick C. Baldwin; 40—Robert Galbraith; 45, right, top and bottom, 46—Cas Oorthuys; 74—Art Commercial Studios.

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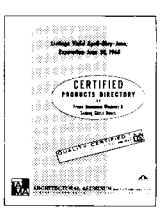

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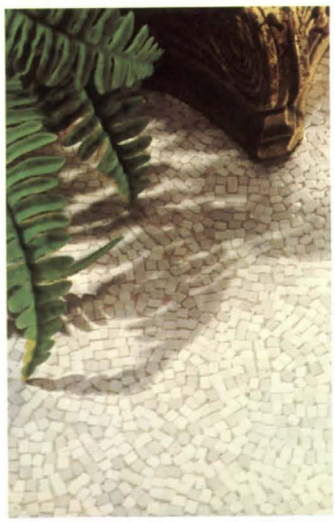

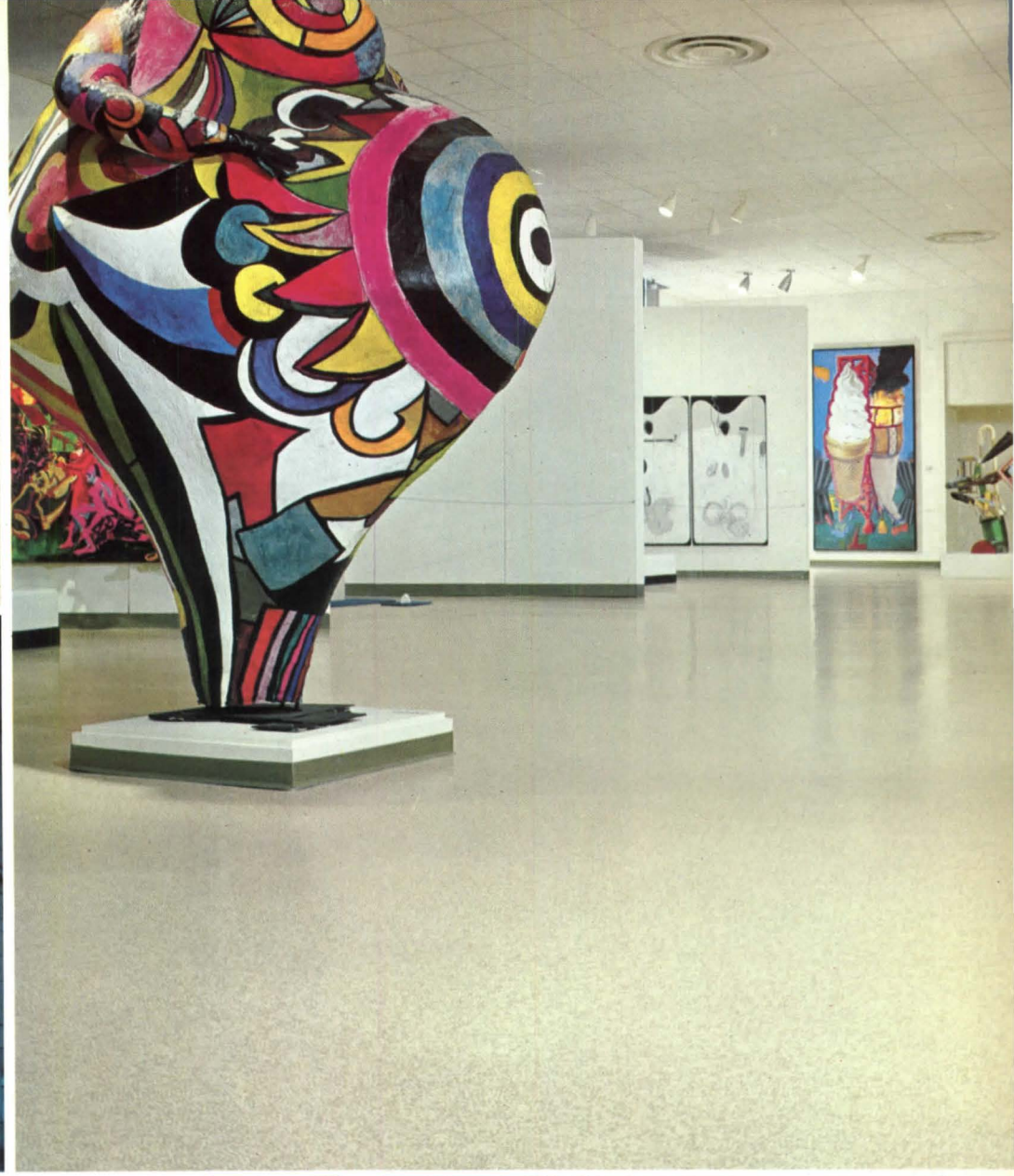

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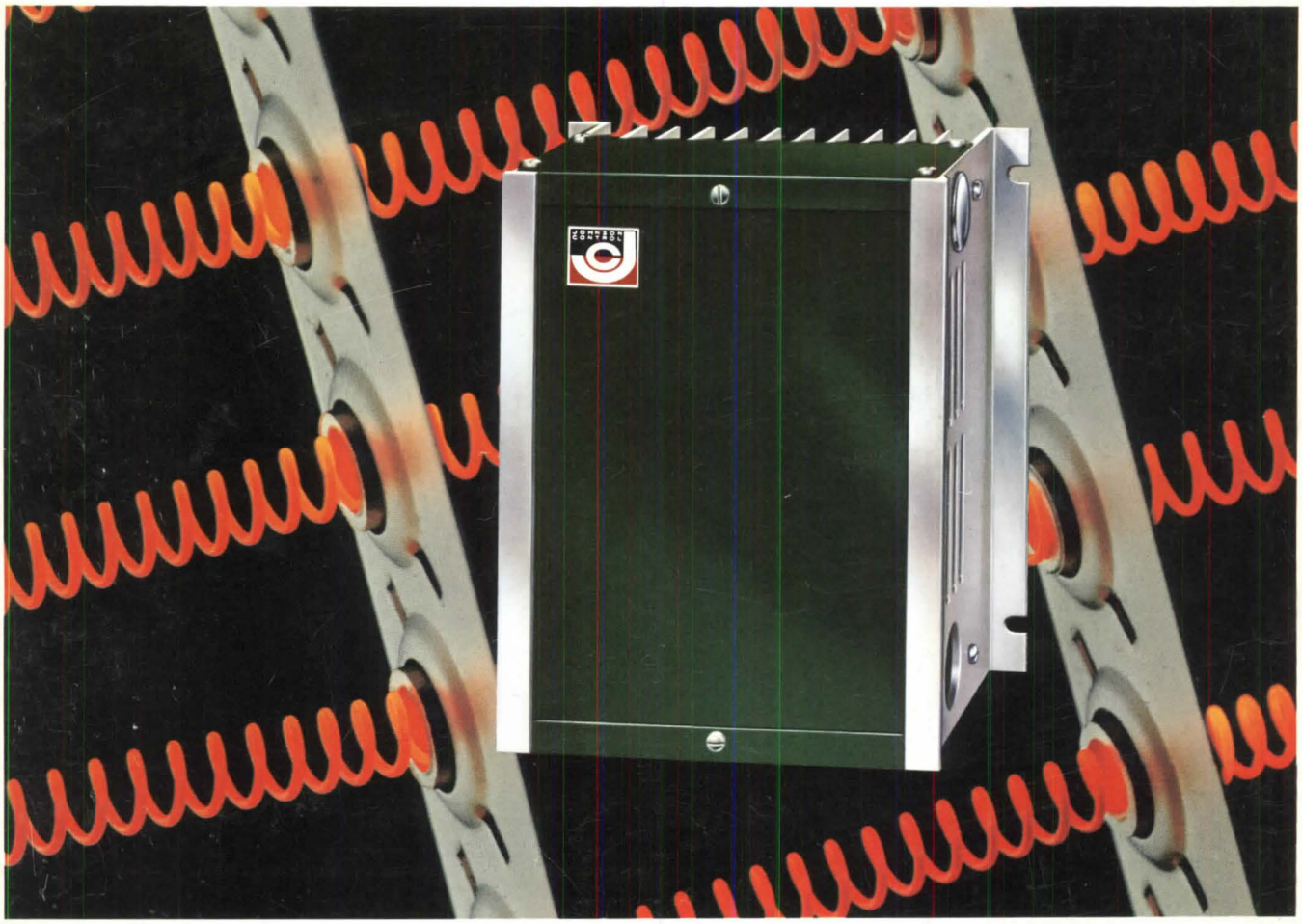

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