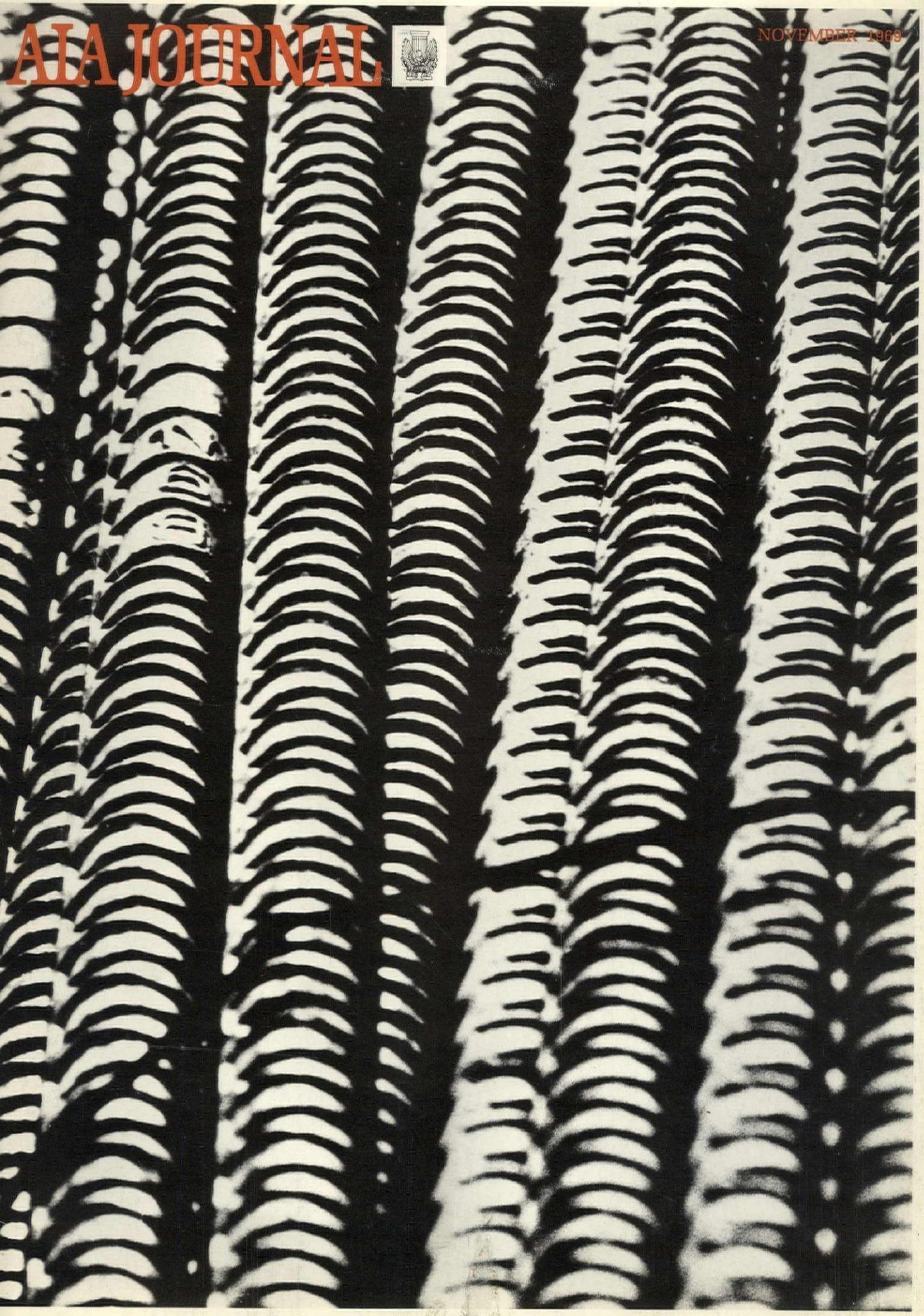
AIA JOURNAL

NOVEMBER 1969



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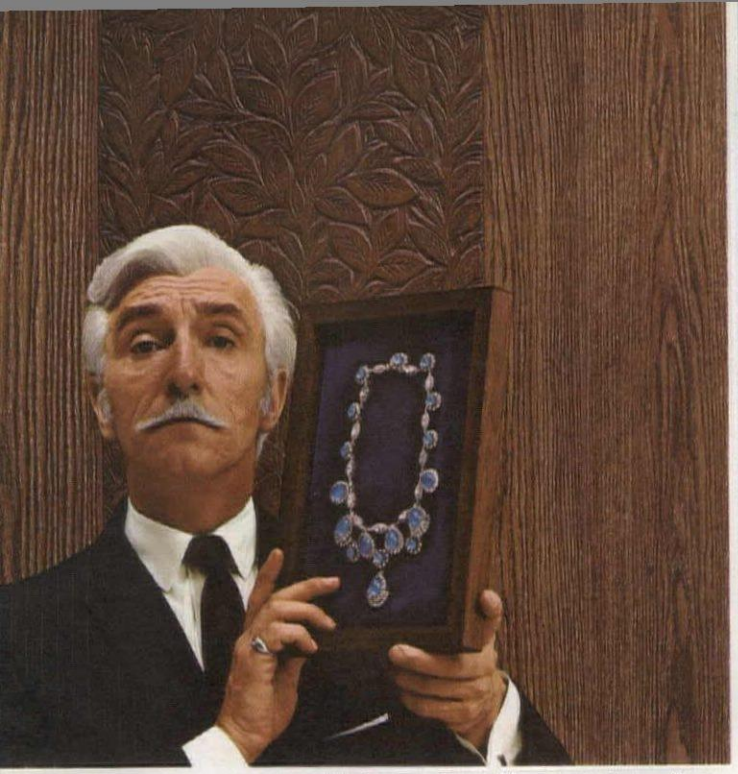

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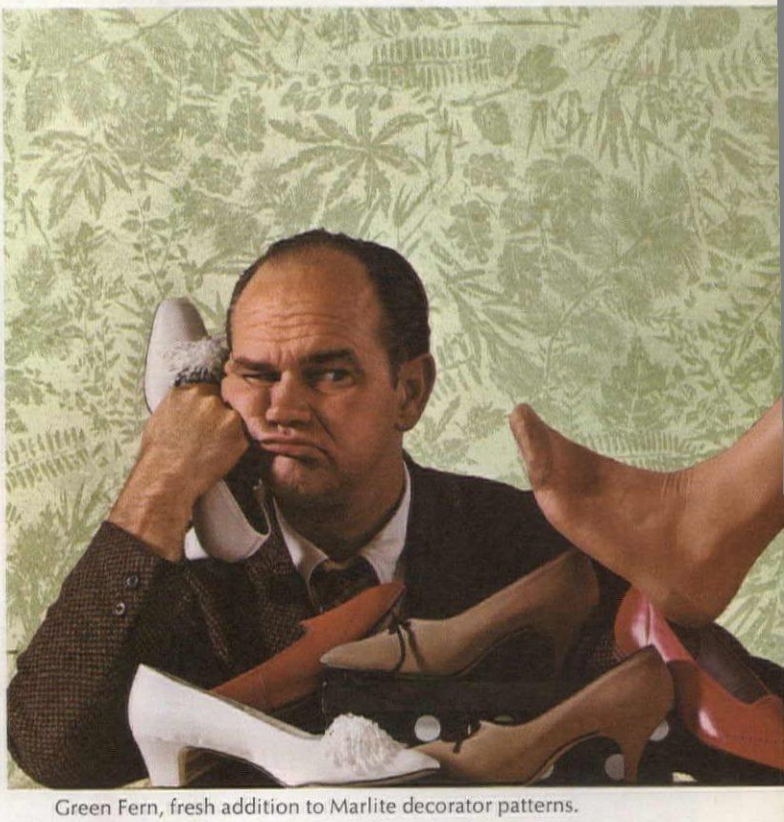

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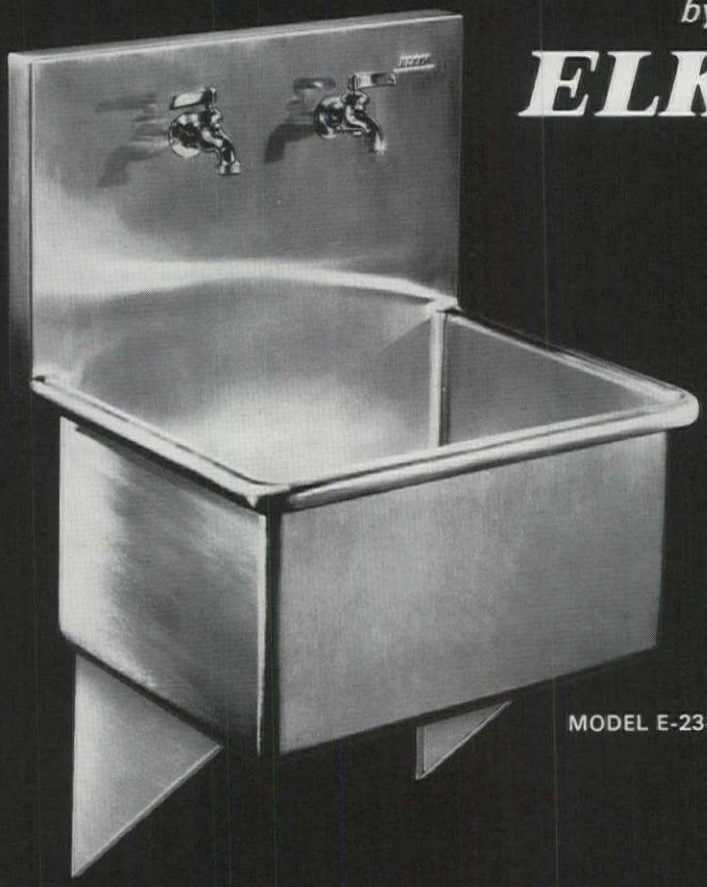

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BPA

VOL. LII, NO. 5

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TAYLOR GREGG

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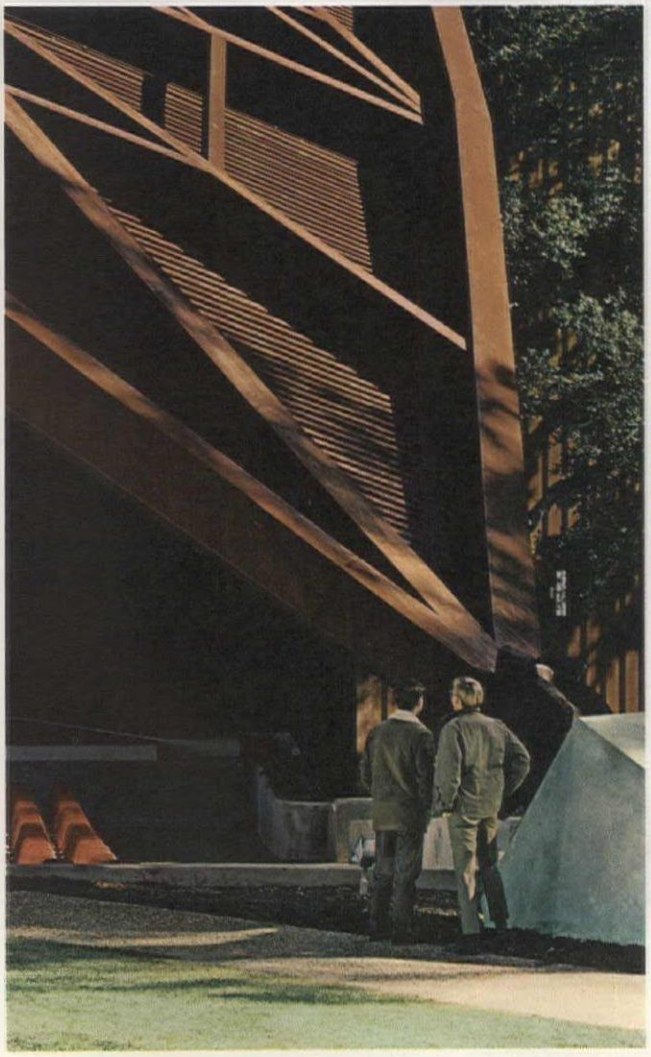
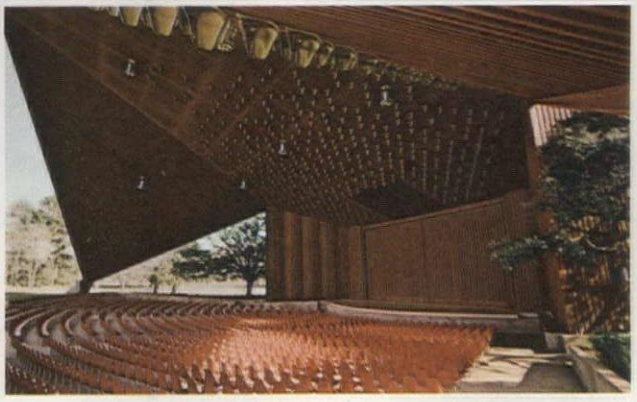




Asides

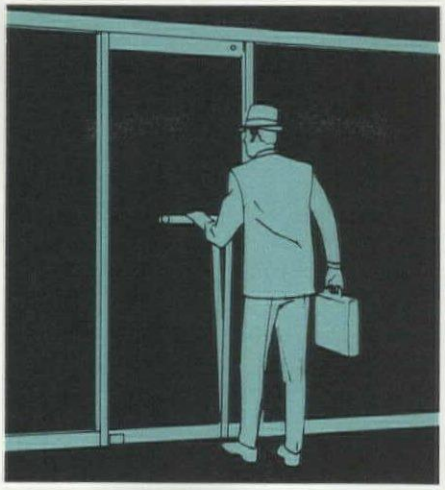
Next Month: Haphazard urban growth is the real culprit in frustrating our efforts to meet housing goals in a national way, a US congressman submits. And from the land of nonhaphazard growth comes an account of the British new towns movement.

Also in December: a few words on esthetics and human values; a concise primer on acoustical principles for the architect; a presentation of this year's four Rome Prize winners in architecture and urban design, continuing an AIA JOURNAL tradition; and an in-depth look at what many consider a model Animal Resource Facility at Pennsylvania State College of Medicine.

A First for 1970: From New York's Museum of Modern Art comes an appointment calendar for the new year, featuring the museum's design collection of useful objects and representing the first record of this collection. An armchair (1926) by the late Mies van der Rohe, FAIA, and a sidechair (1928) by Marcel Breuer, FAIA, are among the items, all photographed by Stan Ries.

The 8x12 calendar, which is designed by Edward Marson, comes in a clear plastic holder. It may be ordered ($6.50 a copy, $4.88 for museum members) from the Museum of Modern Art, 11 West 53rd St., New York, N.Y. 10021. R.E.K.

PHOTO & ART CREDITS: 17 — Dwain Faubion; 32 — Morley Baer; 37, 38-39, 47, 70-71, 72, 75 — Taylor Gregg.



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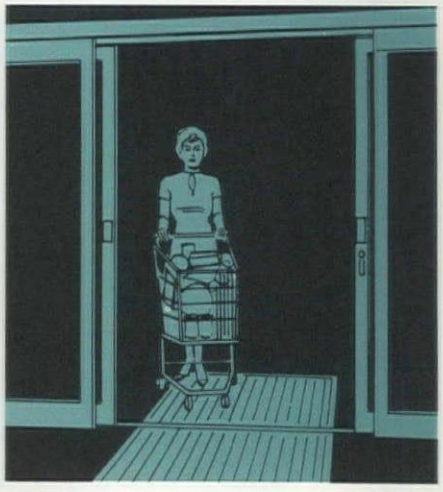

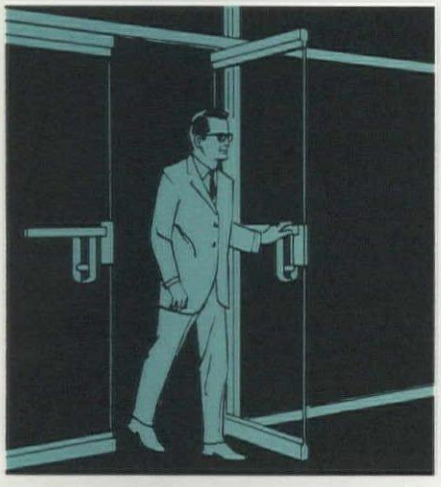

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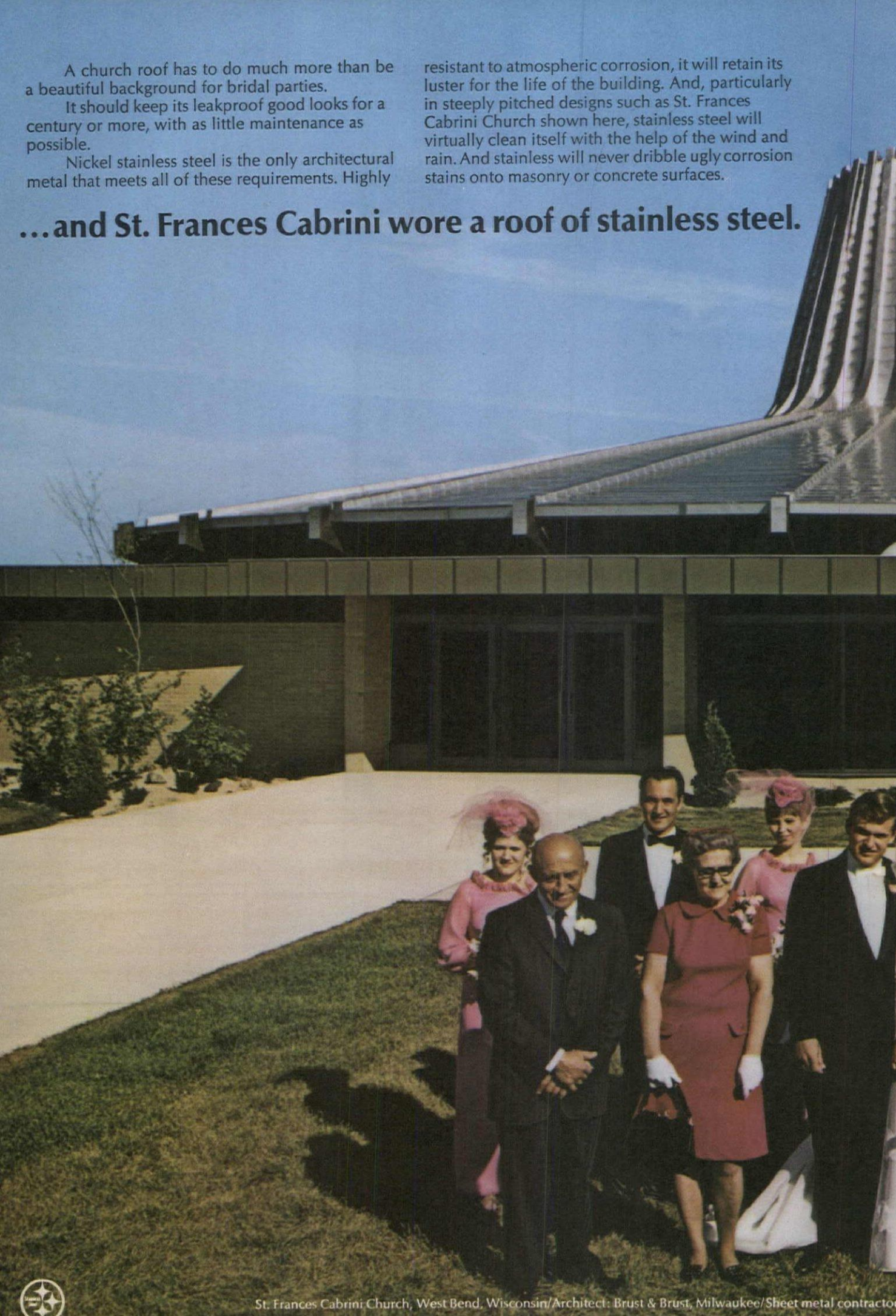

St. Frances Cabrini Church, West Bend, Wisconsin/Architect: Brust & Brust, Milwaukee/Sheet metal contracto

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Reinke & Schomann, Inc., Milwaukee/Roofing material: AISI Type 304 stainless, .015 gauge MicroFlex, Washington Steel Corp., Washington, Pa.

Newslines

AIA Readies for Future With New Staff Director And Broadened Objectives

The American Institute of Architects will enter the 1970s with a new staff director, William L. Slayton, and a set of broadened objectives.

Institute President Rex Whitaker Allen, FAIA, said Slayton will bring with him "extensive experience and involvement in the nation's urban problems" and will give "added impetus and direction to AIA programs directed toward broader concepts and a higher level of environmental design, as well as expansion of professional development."

Slayton

Slayton, 52, leaves the presidency of Urban America, Inc. to assume (by Jan. 1) the position of executive vice president, previously executive director.

The change in position title, Robert F. Hastings, FAIA, Institute first vice president, said, is part of a move to give Slayton "more stature and more authority — more authority to carry out policies set by the board."

Hastings, who presided at a press conference announcing Slayton's appointment, turned to Slayton at one point and said, "Bill, you've got to find the way to help us get out of our little cocoon." He alluded to heightened interdisciplinary cooperation and greater involvement in the social and political decisions which create the "ground rules" for the design professions.

With Pei Firm: Once a planning partner with I. M. Pei & Partners and a self-described architectural buff, Slayton is the first nonarchitect at the Octagon helm since Edward C. Kemper, longtime executive secretary and later executive director who retired in 1949. He succeeds William H. Schieck, FAIA, executive director since 1961.

Scheick, 64, "has seen the AIA through a period of tremendous change," Allen noted, adding: "His effective guidance of the organization during this period of rapid growth has helped make it possible for the architectural profession to move into a new era."

Hastings, filling in for Allen who was attending an International Union of Architects Assembly, referred the press to a policy statement which says that Institute programs be aimed at greater professional competence but also:

"Responsible involvement in those areas — the human and physical sciences, economics, politics, public education — which shape the physical environment and represent constraints in the creative process."

Slayton said it was evident to him that the AIA is undergoing a change in emphasis, as indicated by the resolutions adopted at the Chicago convention. He placed great importance on the influence such institutions as the AIA can have on national issues.

Things can be done to solve or relieve such problems as the current credit crunch in housing, Slayton asserted. For example, Social Security funds could be channeled into mortgage financing to counter what he termed "a very serious situation."

To Find the Mechanisms: The point, he said, is to find the "mechanisms by which things can get done" — mechanisms currently lacking in the face of even so awesome and likely a prospect as the doubling of "our whole urban structure within the next 30 years."

Hastings said that because design professionals — "and we don't mean just architects" — must become involved in the arenas that prescribe the ground rules under which they practice, the choice of Slayton was an appropriate one.

Slayton, who four years ago joined Urban America, a nonprofit organization concerned with the social and physical well being of the nation's cities, was previously commissioner of the Urban Renewal Administration of the Housing and Home Finance Agency. Earlier he had served as a URA field representative during the time urban renewal was in a developmental stage.

Holder of a Master of Arts degree in public administration from the University of Chicago, Slayton began his career as a planning analyst in Milwaukee.

The Cesar Pelli team's winning design for international complex in Vienna.

US Design Team Winner Of Vienna Competition

A team of eight Americans, headed by Cesar Pelli, AIA, has won the international architectural competition for the design of a combined International Organizations Headquarters and Conference Center in Vienna.

The $20,000 first prize will be shared by Pelli, partner in charge of design for the New York-based firm of Gruen Associates, and his collaborators: Roylance Bird Jr., Richard Dodson, Arthur Golding, Friedrich Kastner, Doug Meyer, Victor Schumacher and Engelbert Zobl. All are Gruen senior de-

Continued on page 12

Newslines *from page 10*

signers except Dodson who recently left the firm.

The jury of European architects and officials reviewed more than 250 designs in the competition sponsored by the Republic of Austria and the City of Vienna.

The huge building complex, which will house the United Nations Industrial Development Organization, the International Atomic Energy Agency and four other international bodies, will be constructed on an island in the Danube River at an estimated cost of $120 million.

Institute Agrees to Spend Half Million for Education Of Poor; Approves Report

The AIA has agreed to match a half-million-dollar foundation grant to provide scholarships in architecture for members of disadvantaged groups.

At its fall meeting in Santa Fe, N.M., the Institute's Board of Directors also approved in principle the far-reaching report of the Task Force on Social Responsibility.

"The primary concern of the architect is still the design of the physical environment," the report says, adding: "But more and more in our society decisions on how these spaces are designed must respond to social, economic and political pressures. Since we are concerned with cities and shelter, we must first be concerned with people — their way of life, their economic well-being, the needs of different ethnic groups."

The report calls for a number of projects, some of which would complement or intensify existing social concern efforts of the AIA both nationally and locally.

The name of the foundation taking part in the scholarship program was withheld pending the resolution of final arrangements.

People: Mies Drawings, Letters Bequeathed

The architectural drawings of Mies van der Rohe, FAIA, will have a permanent home in the Museum of Modern Art in New York and his letters will go to the Library of Congress in the nation's capital.

The terms of the will of Mies, who died Aug. 17 at the age of 83, also award $12,500 to Spenrath-

Continued on page 15

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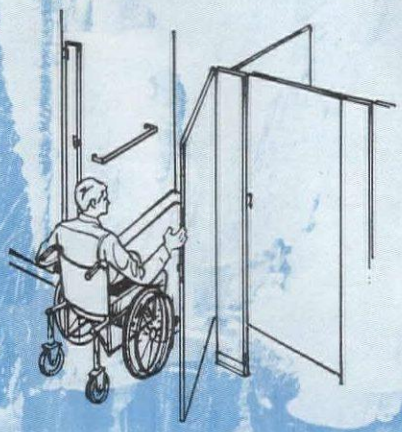

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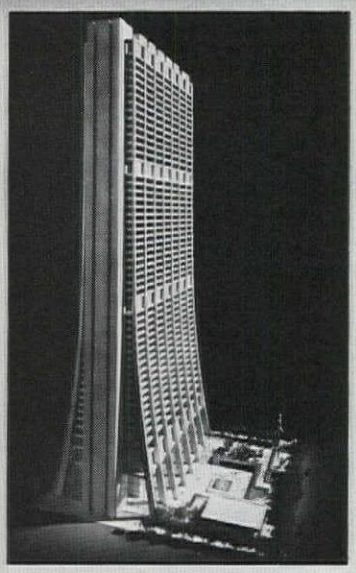

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Newslines *from page 12*

schule, the school he attended in Aachen, Germany, "for scholarships or assistance to students in financial need."

Among other newsmakers:

Paul Thiry, FAIA, of Seattle has been reappointed to a six-year term on the National Capital Planning Commission by President Nixon.

James W. Rich, AIA, has resigned as director of professional services for the National Council of Architectural Registration Boards to become executive secretary of the New York State Board of Examiners of Architects and Landscape Architects. Rich joined NCARB in 1966 after six years of practice in Nashville, Tenn.

Robert C. Weinberg, AIA, has begun his fourth year of broadcasting as critic-at-large for architecture and city planning on New York's radio station WNYC.

Robert W. Williams of American Standard Inc., New York, has been re-elected president of the Producers Council.

Max O. Urbahn, FAIA, director of the Institute's New York Region, has been elected to the board of directors of the American Arbitration Association.

Robert W. Hayes, AIA, of San Francisco, has been named a special consultant to the American Wood Council on innovative housing design.

Leonard G. Siegel, AIA, has been appointed to serve on the board of governors of the Traffic and Transportation Council, Philadelphia Chamber of Commerce.

Jose Bernardo, New York architect, has received a Cintas Fellowship awarded to young creative artists of Cuban citizenship or lineage.

Crafts Exhibit Itinerary Is from Coast to Coast

The first major exhibition of contemporary crafts in the 20th century will begin a cross-country tour next month following a Washington, D.C., display running through Nov. 16.

"Objects: USA, the Johnson Collection of Contemporary Crafts" includes 308 pieces by 258 artists in clay, metal, fiber, glass, mosaic, wood and plastic. The furniture and fabrics should be of particular interest to architects.

The exhibition was assembled

Continued on page 17

Permanent Resident at the Marriott... Split Block of Medusa White.

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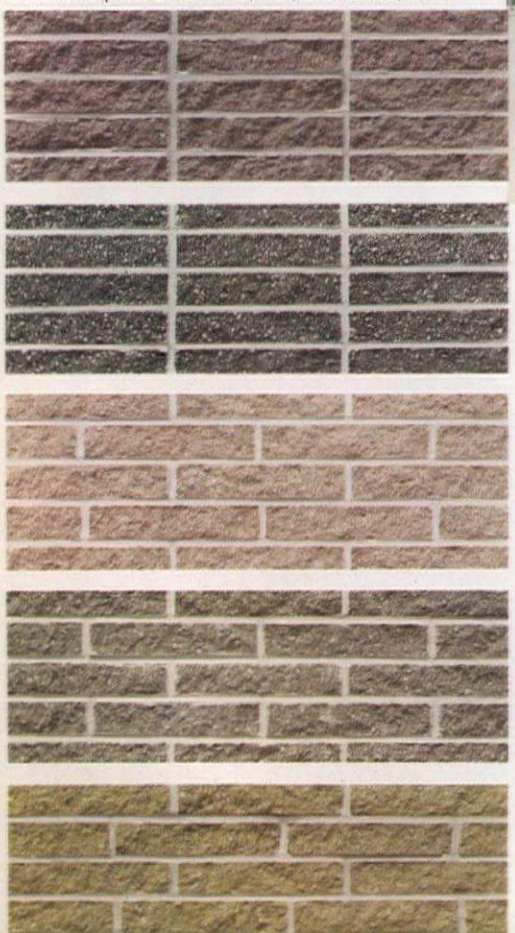
Color Samples: Chas. Svec, Inc., Cleveland, Ohio



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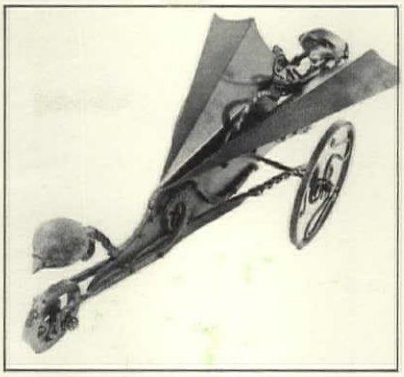


Collection's "Form and Function," humorous air machine and cradle-cabinet.

Newslines *from page 15*

by Lee Nordness, whose New York gallery has introduced the works of many young American craftsmen, and by Paul Smith, director of the Museum of Contemporary Crafts in New York. The two traveled more than 40,000 miles to put together the collection in which craftsmen from 30 states, many of them young and university trained, are represented.

All of the works have been purchased by the Johnson Wax company of Racine, Wis., to assist the artists financially; and, when the tours are completed, the objects will be given to public museums to assure important exposure.

After its showing at the Fine Arts and Portrait Gallery Building of the Smithsonian Institution, the collection will move to the Boston University Museum, Dec. 3-23. Its 1970 schedule is:

Jan. 7 — Memorial Art Gallery, Rochester, N.Y.; Feb. 11 — Cranbrook Academy, Detroit; March 18 — Herron Gallery, Indianapolis Museum of Art; April 22 — Cincinnati Art Museum; May 27 — St. Paul Art Center; July 1 — School of Fine Arts Gallery, University of Iowa, Iowa City; Aug. 5 — Arkansas Art Center, Little Rock; Oct. 14 — Seattle Art Museum; Nov. 18 — Portland (Ore.) Art Museum; Dec. 29 — Los Angeles Municipal Art Gallery.

The exhibition will continue to circulate in 1971 as follows:

Feb. 3 — Oakland Art Museum; March 10 — Phoenix Art Museum; April 14 — Sheldon Memorial Art Gallery, University of Nebraska, Lincoln; May 16 — Milwaukee Art Center; June 23 — George Hunter Gallery, Chattanooga; Sept. 1 — Museum of Art, Carnegie Institute, Pittsburgh; Oct. 6 — Columbia (S.C.) Museum; Nov. 10 — High Museum of Art, Atlanta.

Nixon Backs Revised Plan For Pennsylvania Avenue

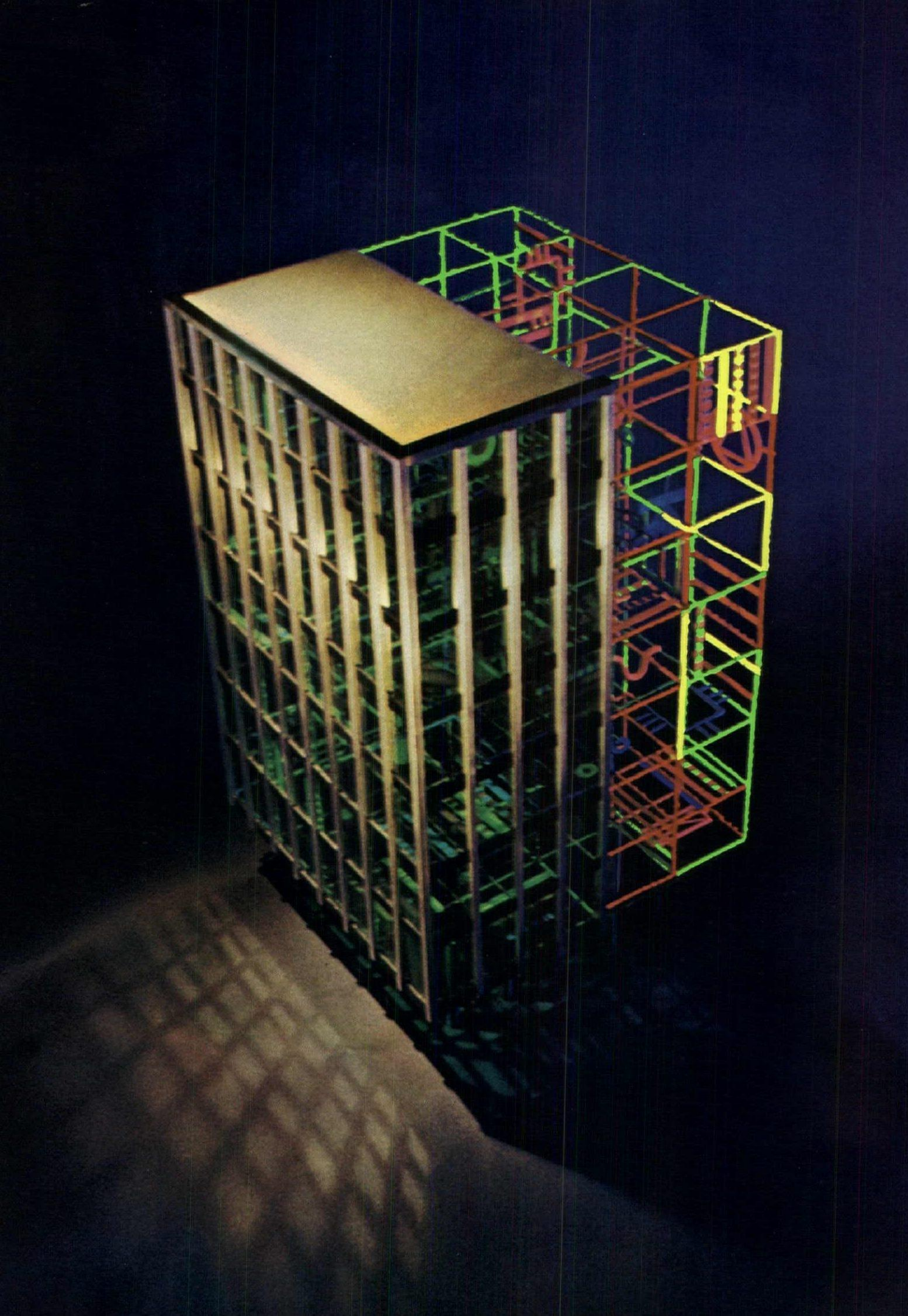
The Nixon Administration, like the Kennedy and Johnson Administrations before it, is putting its support behind the revitalization program for Pennsylvania Avenue. It wants the entire project completed in time for the nation's 200th anniversary in 1976.

There are two new angles to the plan:

- Private enterprise money will finance the construction of new buildings instead of the Urban Renewal funding planned by the Johnson Administration.
- Private residences will be built on or near the avenue, some 1,500 to 2,000 units in all.

Nathaniel A. Owings, FAIA, prime mover of the plan and chairman of the President's Temporary Commission on Pennsylvania Avenue, explained that the latter point has been added to the original plan in order to bring life to the avenue after 5 p.m. They

Continued on page 22



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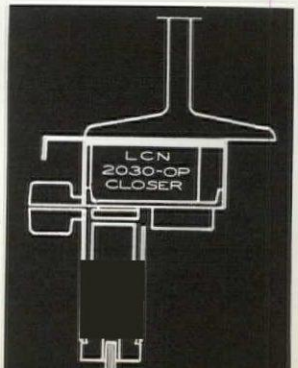

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Newslines *from page 17*

will be high cost townhouses, he said, similar to houses around public squares in Philadelphia.

The original plan for the avenue (Mary Cable's *The Avenue of the Presidents:* Houghton Mifflin, 1969, gives a detailed report on its conception) calls for a National Square encompassed by E, 15th, F and 14th Streets; federal and private office buildings, hotels and stores on the north side of the avenue; underground parking; elimination of awkward intersections; new pavement; etc.

The plan will now be pursued along these lines:

The administration will ask Congress for 1) authority to set up a public-private corporation much like Comsat, 2) approval of its master plan, 3) the right to condemn property and 4) funds to finance a year-long study of the program.

The government would appoint directors to the corporation, which would operate on a $200 million revolving fund raised from the sale of bonds or shares to private enterprise.

The government would condemn the properties involved, buy the land or offer government land in return. The Willard and Washington Hotels are in the limelight in this respect (see AIA Dec. '68, p. 82) since the realization of National Square would require their demolition.

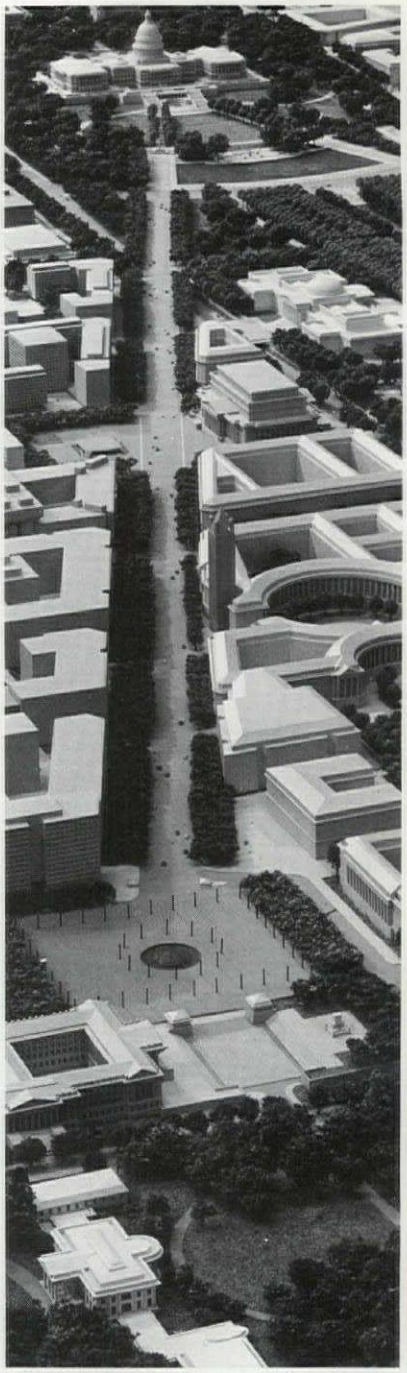
NAHB President Leaves To Become FHA Chief

Eugene A. Gulledge has left the presidency of the National Association of Home Builders to assume the No. 1 spot in the Federal Housing Administration.

The 49-year-old Gulledge, who began his career as a carpenter's helper, was named Assistant Secretary for Mortgage Credit and FHA Commissioner, Department of Housing and Urban Development.

NAHB First Vice President Louis R. Barba of Chatham, N. J., will serve as acting president for the remainder of Gulledge's term, which expires with the NAHB's January convention in Houston.

The new FHA chief, of Greensboro, N. C., expressed his philosophy in a talk earlier this year at the Pacific Coast Builders Conference when he said: "The country is involved in a social revolution with housing right in the middle of it. This 'civil war' can only get worse unless there is a wholesale change of attitude at every level of society."



Pennsylvania Avenue plan from White House to Capitol building.

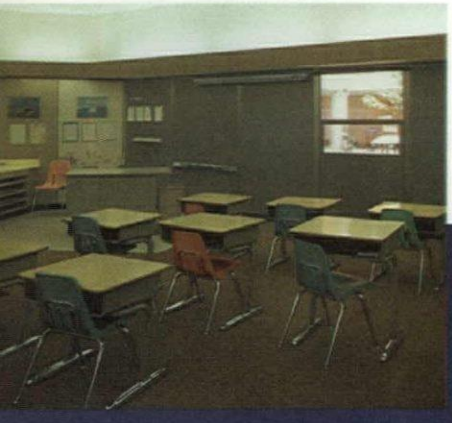
Gulledge added that the building industry is ready and willing to meet the desperate housing needs of the nation but cannot accomplish this goal unless "a lot of sacred cows are booted out the window."

Among the sacred cows he said would have to be discarded are restrictive zoning codes, inequitable use of land and selfish lending practices. *Continued on page 24*

MIRAWAL

A BRIGHT NEW IDEA INSIDE AND OUT.

An unusual new way to inject all sorts of creativity—both inside and out. Mirawal porcelain-enamel-on-steel panels. They fit anywhere. Bright-hued. Won't crack or chip. Colorfast, heatproof and stain-resistant. Easy to clean.



Versatile Mirawal insulated panels are ideal for modern school use—one panel can serve as the complete wall with porcelain enamel on both the outside surface and the floor-to-ceiling chalkboard inside.

Choose from a wide array of contemporary colors. Surface finishes include full-matte, semi-matte, or gloss porcelain. For more details, see Sweet's Architectural File, Section 20b, or write Kaiser Aluminum Mirawal Products, P.O. Box 38, Port Carbon, PA 17965.

MIRAWAL PRODUCTS

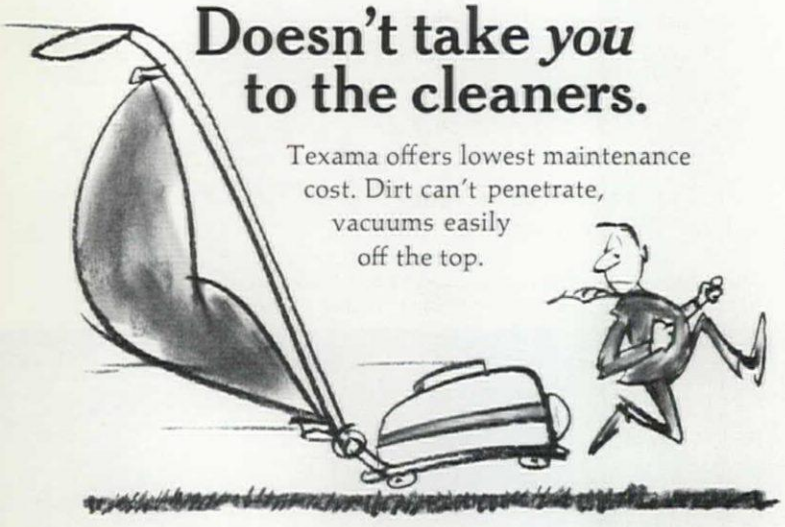
KAISER ALUMINUM

MIRAWAL used as both exterior wall surface and unique interior floor-to-ceiling chalkboards in the Leo J. Muir Elementary School, Bountiful, Utah. Architect: Harold Beecher Associates.

Texama, the knitted carpet, just lays there and doesn't do a thing.

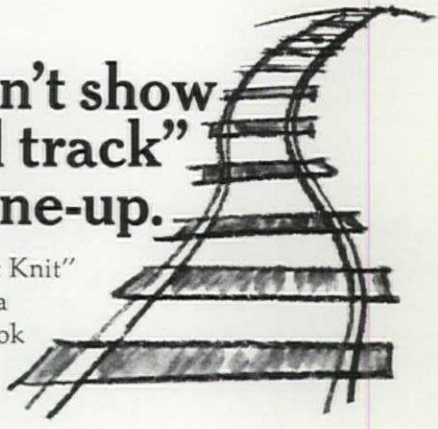
Doesn't take *you* to the cleaners.

Texama offers lowest maintenance cost. Dirt can't penetrate, vacuums easily off the top.



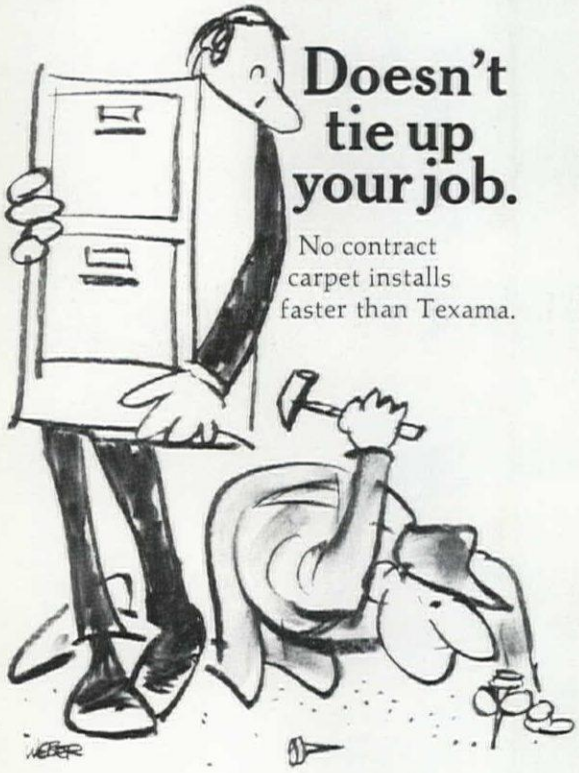
Doesn't show "railroad track" color line-up.

Exclusive "Centric Knit" process gives Texama smooth even look from all angles.



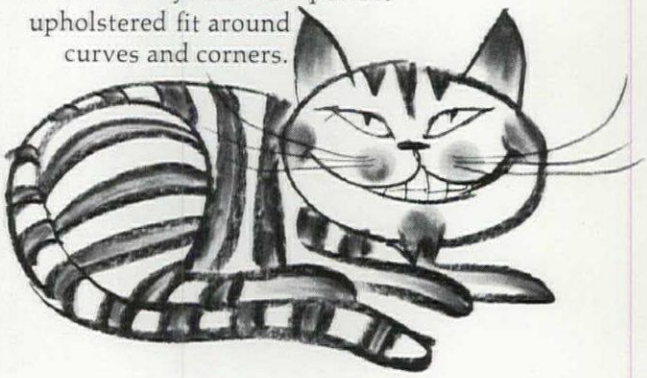
Doesn't tie up your job.

No contract carpet installs faster than Texama.



Doesn't "grin"

on stair nosings. Or anywhere else. Texama always shows a perfect upholstered fit around curves and corners.



Texama is "Centric Knitted" of 100% nylon specially engineered for contract use. Extra-tight construction makes it extremely resistant to moisture, stains and dirt. "Fusion bonded"® to high-density foam rubber cured directly to backing; makes Texama softest underfoot for its type. 13 smashing colors with the subtle look of fine Shetland tweed. To get *all* the facts send for our new Texama booklet.

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Circle 348 on information card

Newslines *from page 24*

lion. This is made up of a $29 million construction contract with the joint venture of Sharp Brothers Contracting Co., Walter Kidde Constructors and the Del E. Webb Corporation, and more than $22 million for land, grading etc.

The tailored-to-the-spectacle stadiums are said to place the fans closer to the action. Additional convenience would be offered by a moving cover planned for the future. The cost estimate does not include the cover but does include the cost of all the structural requirements to literally place the moving roof in position when stadium revenues will justify such an addition.

Project architects are Kivett & Myers, Kansas City; Charles Deaton of Denver is design associate.

Hastings Among Three Named to CIF Unit

Institute First Vice President Robert F. Hastings, FAIA, is one of three to be named to the Architects' Advisory Committee to the Construction Industry Foundation.

The foundation, incorporated in May and maintaining offices in the Fidelity Building, Philadelphia, is examining bidding abuses, soil exploration and survey hazards, professional responsibilities of architects and engineers; in short, the problems and abuses that raise costs and lower quality in construction, according to Robert G. Cerny, FAIA, foundation president.

Also named to the advisory group by Rex Whitaker Allen, FAIA, Institute president, were Jack D. Train, FAIA, and Robert W. Cutler, FAIA.

Membership in CIF, which expects to have a half-million dollar annual operating budget, is open to all groups having a role in the building process, from labor unions to bankers and insurance companies.

Reorganization at Yale Among Campus Changes

Yale University's School of Art and Architecture now has two deans instead of one under a major reorganization which went into effect this academic year.

Howard S. Weaver, who had been dean of the school, is dean of the faculties in arts, while **Charles W. Moore, AIA,** who had been chairman of the Department of Architecture, is dean of the faculties in design and planning.

Yale President Kingman Brewster Jr. said that the new arrangements "are purely of an interim nature, for this year of reappraisal only."

In other campus changes:

• The newly established School of Architecture and Urban Design at the University of Kansas has replaced the five-year undergraduate professional degree program with a new six-year program terminating in a master's degree as the first professional degree.

• The University of Colorado's School of Architecture has been changed to the College of Environmental Design. In addition, a four-year undergraduate program leading to a Bachelor of Science degree with a two-year master's degree program has replaced the five-year curriculum leading to a Bachelor of Architecture degree.

The following appointments also have been made:

Dr. Joseph L. Young has been

Continued on page 30

THE THINK CARPET

A study in sound-absorbing quiet, developed by Patcraft Mills with Zefkrome® acrylic fiber.

The new, anti-noise movement: carpet. Patcraft constructs an ideal one for the modern school environment, with the modern carpet fiber, Zefkrome acrylic. For concentrated quiet. For matchless wear (Zefkrome is up to 50% stronger than other acrylics). For producer-dyed color that lasts. And for a new dimension in maintenance. Less of it. Because Zefkrome makes even more of carpet's economical upkeep. Among acrylics, it offers maximum cleanability. "Entwine" is made in different weights for different traffic areas, including a heavier weight developed especially for corridors. Think about the "Think" carpet and its perfect apropos to the times. Then call or write Bill Conneen, Patcraft Mills, Inc., Dalton, Ga. 30720. (404) 278-2134.

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selected to establish a department devoted to the advancement of art in architecture at the Brooks Institute School of Fine Arts, Santa Barbara, Calif.

Prof. Charles E. Croom has been named acting dean of Syracuse University's School of Architecture. He replaces **D. Kenneth Sargent,** dean since 1958, who has begun a leave of absence which will continue until his retirement in June.

Bruce E. Erickson has been appointed head of the Department of Architecture, College of Design, Architecture and Art at the University of Cincinnati. He succeeds **Richard H. Wheeler,** who will remain as chairman of the Division of Architecture.

Dr. J. Ingraham Clark, former dean of the School of Architecture and Fine Arts at Auburn University, has been named professor and head of the master's program in regional planning at the Pennsylvania State University's Capitol Campus in Middletown.

Richard E. Farson, a behavioral scientist, has been appointed dean of the School of Design of the new California Institute of the Arts.

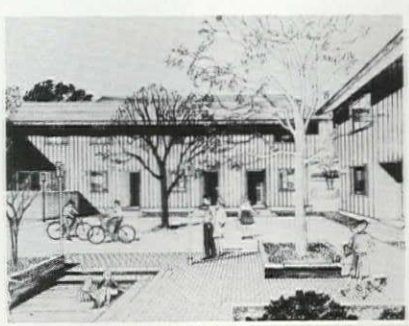
Robert S. Harris, head of the Department of Architecture at the University of Oregon, and **Richard Gensert,** Cleveland engineer, have been named visiting Andrew Mellon Professors of Architecture for 1969-70 at Carnegie-Mellon University.

Highest Award of ASLA Goes to HOK Designer

The American Society of Landscape Architects has presented this year's Honor Award to Neil Porterfield of Hellmuth, Obata & Kassabaum of St. Louis for his married student housing at the University of Michigan.

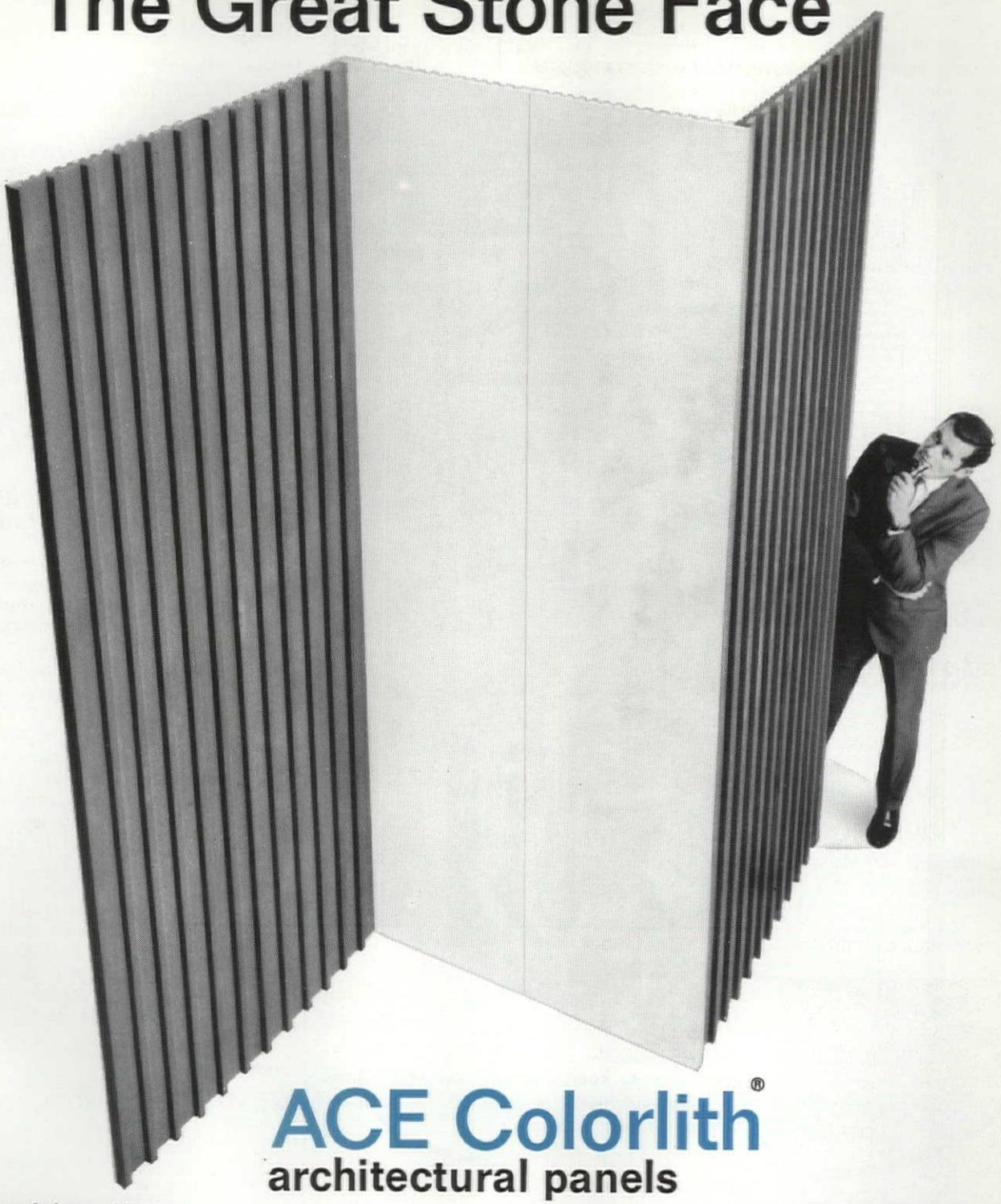
Michael Painter of John C. War-

Continued on page 32



Porterfield's married student houses.

The Great Stone Face



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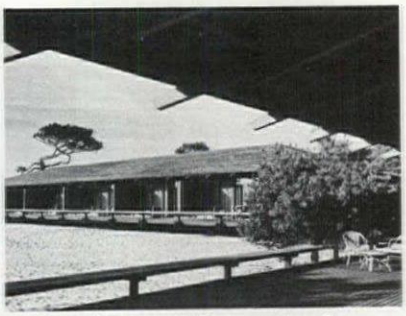
Newslines *from page 30*

necke & Associates of San Francisco received two Merit Awards: one for View Crescent housing, Asilomar Hotel and Conference Grounds, Pacific Grove, Calif.; the other for Ampex Corp. Headquarters, Redwood City, Calif.

The other Merit Award went to M. Paul Friedberg & Associates of New York for the central plaza of the State University of New York at Stoney Brook.

Among three Commendation Award winners was Hellmuth,



Painter's Asilomar Hotel.

Obata & Kassabaum for the Parkside master landscape plan at the University of Wisconsin.

Concrete Construction Subject of Seminars

The American Concrete Institute will launch its new series of educational seminars and clinics Dec. 9-10 in Philadelphia.

In cooperation with ACI's Delaware Valley Chapter, the initial seminar on "Quality Assurance in Concrete Construction" will be held at Benjamin Franklin Hotel.

Through this and future programs, ACI says it hopes to impart new knowledge in concrete to young architectural, engineering and construction personnel.

Information on this and future seminars is available through ACI's education department, P.O. Box 4754, Detroit, Mich. 48219.

Acoustic Pollution Subject Of HUD-Financed Study

Aimed at concentrating on genuine innovation and adaptation of sound control techniques known to aerospace and other scientific fields, Wyle Laboratories has undertaken a study to see how these concepts might be applied to residential projects.

The $160,000 contract awarded by the Department of Housing and Urban Development calls for development of low cost methods and materials to cut down the transmission of noises of all kinds within housing units and from outdoors.

On completion of the study by Wyle's California research staff at El Segundo, HUD will publish the results in a practical guide for architects, builders and others interested in noise control.

Necrology

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UNFINISHED BUSINESS

BY WILLIAM H. SCHEICK, FAIA
Executive Director

The Future – Is It Ours?

For the first time, a reasonably comprehensive and objective study of the future of the building industry has been done. Thanks to the AIA.

Actually, it is a study of the forces exerting great pressures for change upon the process of creating the physical environment and thereby upon the actors in that process of which our profession is one. As the study shows, the building industry, as we know it today, must change radically to create the physical environment expected by society.

The architectural profession must change, too, if it is to maintain a dominant role in the creative process.

AIA's Committee on the Future of the Profession accomplished this study, to be published in book form by the University of Illinois Press early next year.

We expect that many actors in the building process will read the book. Well they might, because the research reports describe a future which is theirs as well as ours — a future that will be there for the taking by those best prepared to adapt to the challenges of change. Some of these other readers already have ideas of taking over the large scale aspects of the building process.

There are many places for architects in this future — architects not unlike they are today and architects in roles not yet clearly defined. Every architect should read this book. To encourage this, it will be made available in a modestly priced paperback edition.

That the AIA has produced this prophetic document is most gratifying to me. On this page in May 1966, I asked who could do the advance thinking for a small profession comprising many small business units — advance thinking of the kind that giant corporations do as a matter of course. President Charles Nes, FAIA, responded to this suggestion by appointing the Committee on the Future of the Profession, chaired by Llewellyn (Skeet) Pitts, FAIA.

From the outset, Skeet, with his unbounded enthusiasm and imagination, envisioned a study that would produce a technically sound report — something more than a collection of personal opinions about the future. He and I became avid searchers into the new discipline of "futures studies," acquainting ourselves with people in this field, their concepts and their works.

The first major action, the Airlee House conference, was indeed "opinion gathering" from a select group of business and government leaders representing a cross section of thinking on the building process. We included Dr. Olaf Helmer of the Rand Corporation, an eminent pioneer in futures studies (AIAJ, April '68).

Gerald McCue, FAIA, took the committee chairmanship after Skeet's untimely death. With consultant David Miller, Gerry McCue designed the research study which realized the committee's original goal.

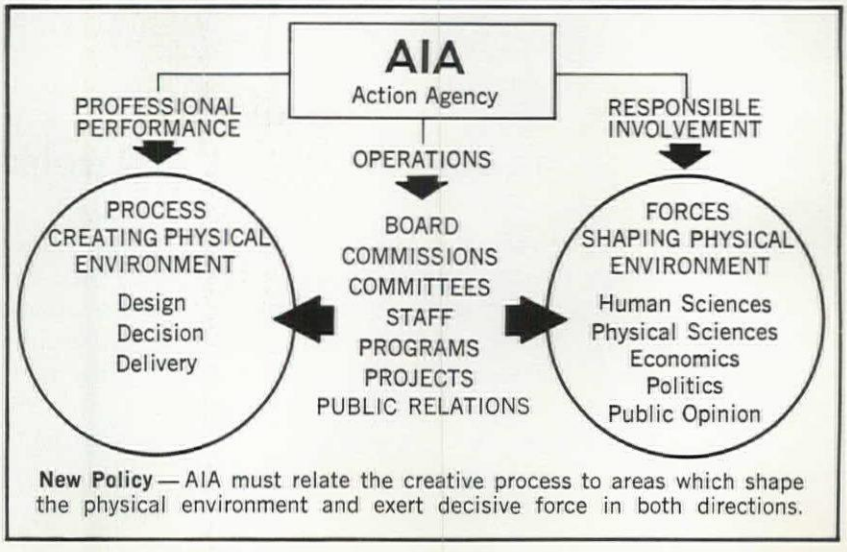
As stated earlier, the study is far broader than the future of our profession. It is a reconnaissance of the powerful forces shaping our physical environment and affecting — sometimes controlling — the creative process.

The Planning Committee of AIA's Executive Committee has already extracted from the futures report significant findings which affect the Institute's goals. The diagram introduces in print for the first time the broad basic concept approved by the Board for planning to achieve these goals.

AIA's *traditional* responsibility to architects is continually to increase their competence as creators of the physical environment. The scope and tempo of programs with this purpose have been increased over the past decade to meet the demands for ever-expanding architectural services. This job will never end, as the complexities of decision, design and delivery increase.

AIA's *new* obligation is to become more responsibly involved in those areas which shape and change the physical environment and thereby influence or control the creative process. The urban crisis precipitated these forces in the middle of the decade of the sixties. *"Responsible involvement"* calls for many carefully evaluated interpretations.

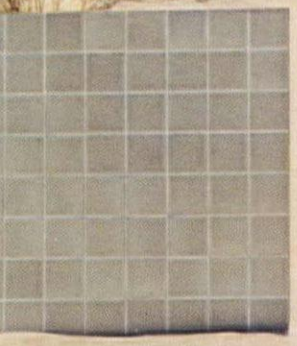
We have our work cut out for us. We may never have made a better investment than the $100,000 plus spent by the Committee on the Future of the Profession. It has given us the tool for comprehending the future. We must find the means to make the future ours. □



New Policy — AIA must relate the creative process to areas which shape the physical environment and exert decisive force in both directions.

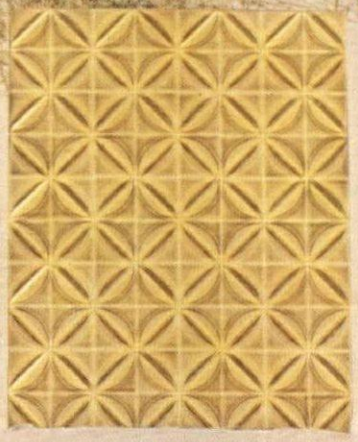
Naturally

new Hacienda series from the desert palette...



YUCCA

BUCKSKIN



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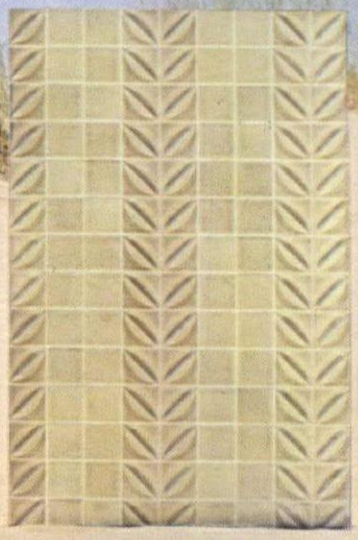

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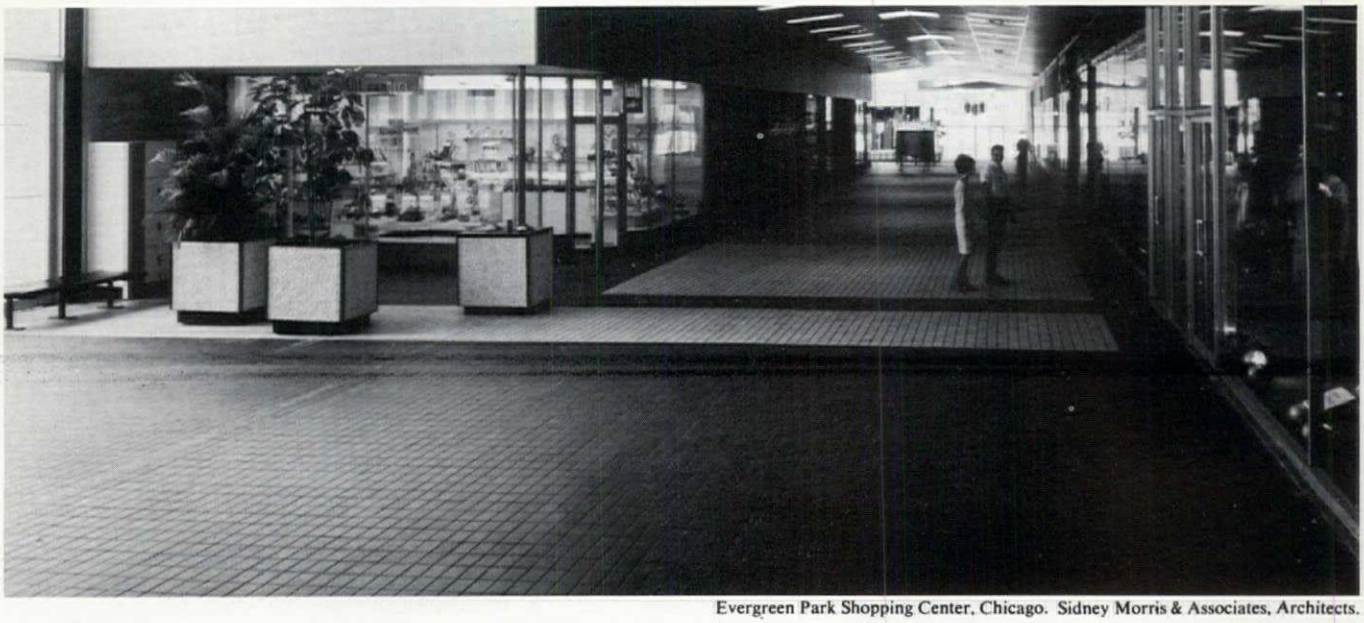

Evergreen Park Shopping Center, Chicago. Sidney Morris & Associates, Architects.

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John Graham & Associates, Architects.

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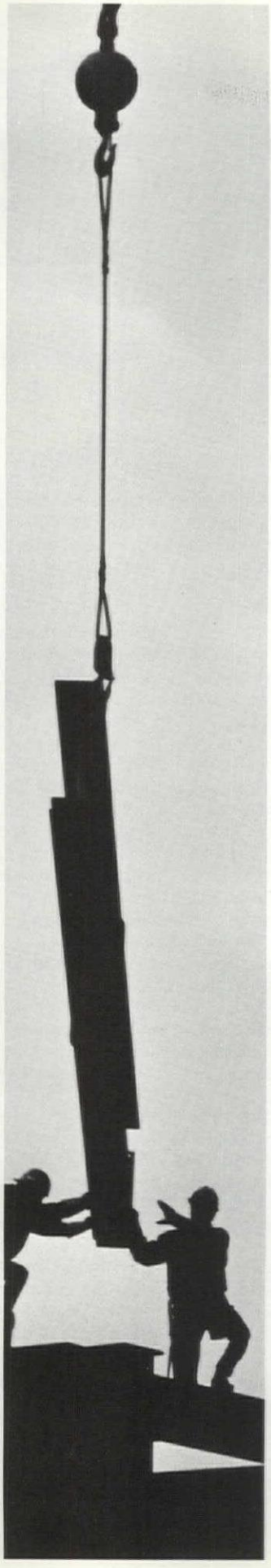


Comment & Opinion: "The truth, the stupendous truth, about developed countries today is that they can have . . . the kind and scale of resources they decide to have. . . . It is no longer resources that limit decisions. It is the decisions that make the resources."

The validity of this statement, made many years ago by U Thant, Secretary-General of the United Nations, has been well demonstrated by the recent, successful Apollo mission, the ultimate significance of which may well turn out to be not so much that man for the first time landed on a sister planet, but that by looking ahead he was able to influence the future. The goals set by President Kennedy in 1962 were realized right on schedule in 1969. The AIA and the construction industry have a similar, though less dramatic, opportunity if they not only look to the future but also develop the necessary resources for the realization of established goals.

It is quite evident that these goals should be the creation of better living, working and recreational environments. Urbanization, which gained momentum with the industrial revolution, may in an increasingly service-oriented society assume a new form, but the rehabilitation of cities and the creation of adequate housing should be goals with top priority. Can we as architects find the means to reach these goals?

Unfortunately, most of us are as apprehensive about the future as a man walking in a dense fog in precipitous mountain country — his next step may be his last, but if he doesn't move he'll freeze.

Recognizing that guidance can be helpful, the AIA three years ago under the foresighted leadership of Charles M. Nes Jr., FAIA, appointed a Committee on the Future of the Profession to "discuss and determine on a more factual basis the problems facing our profession not only today but insofar as it is possible in the years ahead." In 1968 the board approved the funding of two interlocking research projects which, along with their implications for architects as outlined by Gerald M. McCue, FAIA, are summarized in the following pages. As a follow-up, the theme of the 1970 convention in Boston will be "The Architect in a Dynamic Society." Can we and will we as a profession respond?

REX WHITAKER ALLEN, FAIA
President, The American Institute of Architects

What the Future Offe

Architecture's future can only be assessed in the larger contexts of society's future and the future of the building industry. Thus the AIA commissioned "reconnaissance" studies of these contextual areas, the resultant findings, forecasts and recommendations of which lay the base for the report of the Committee on the Future of the Profession. What follows are highlights of the report, to be published early next year by the University of Illinois Press.

The United States is in a shock front of change similar in depth and consequence to the industrial revolution and out of which will come a different kind of building industry — and a different kind of architectural profession.

"Depending upon one's point of view, the future may be termed evolving, expanding and improving, or, by contrast, fragmenting, exploding and deteriorating; but regardless of the vantage point, the profession will be *different*."

This is one conclusion of the AIA Committee on the Future of the Profession. It is stated in the report of the committee and it rests largely on two studies made by AIA-commissioned investigators.

One study probed societal trends. For the nation to come out of the shock front and into a "steady state" condition of dynamic ecological balance, there will have to be new inventions, the study found. Not technical inventions, but social inventions.

In the development of the future physical environment, the overriding social-context issues will be those of economic parity and the search for personal values.

We can have anything we want but not everything we want; decisions will have to be made. We also will have to choose from among the pathways of Revolution, Reaction, mere Response or Reason — Reason with that "desperately needed" ingredient, extrarationality (above and beyond quantitative rationality).

The second study examined the future of a mammoth but incohesive building industry that is predicted to emerge from the shock front restructured along the lines of today's nonbuilding industries. The trend is already in process but to date it has been evolutionary. "It may verge on revolution in the next 15 years," the report says.

But it will be government actions — more than the actions of the industry itself — that will accelerate or decelerate the rate of change in the building industry. Government is seen as a most pervasive and potentially decisive factor.

Shock front impact will be greater on the industry's processes, on how it organizes, operates and delivers, than on its products.

The industry is likely to have major new alliances and drastic departures from its current methods.

Will meaningful environments result from such changes? In the committee's view, if a massive rebuilding program is undertaken "with the objective of creating minimum accommodations, it will prove retrogressive and we will have built a slum of colossal proportions. But should the objective be to provide the best environments a socially and technically advanced society can provide, then the beneficial results should be overwhelming."

As for the field of architecture, the committee deduces that there will be some temporary fragmentation during the shock front riod as professional definitions blur. The number of roles within the profession will widen as architecture strives toward higher levels of expertise in both social relationships and technical processes. The emphasis on the craft of architecture will lessen.

Architecture and the design professions will be in the center of dramatic future changes, the most significant of which will be in social mechanisms, communications systems and cybernetic and mechanized cognitive assists.

In general, the committee urges the architectural profession to "look closely at the changes projected for the future to determine where its efforts for setting the standards will be most effective." The need for performance and environmental standard-setting is a repeated theme; the public will turn elsewhere for solutions, warns the committee, if professional architects fail to produce the integrated social-economic-physical concepts expected of them.

Professional architects are not necessarily registered architects: It is "professional architects as individuals, both generalists and specialists, certified (registered) and *uncertified* who constitute the profession of architecture," the committee declares while urging that the creation of new and hybrid roles within the field not be permitted to result in a "highly detrimental" multiplicity of professional societies.

Although committee statements and recommendations are based largely on the two futures studies, they also represent, as Gerald M. McCue, FAIA, committee chairman, points out, "the considered opinion of architects who have now lived with this question (of what the future may hold) for almost three years." The committee was established late in 1966.

The "reconnaisance" studies were made by William R. Ewald Jr., a development consultant who reconnoitered social influences on the future environment, and by Midwest Research Institute which probed the future role of the building industry. The study of society and its future was deemed a necessary "total context" approach to any investigation of the future. (It also happens to endow the report with relevance to those outside both the profession and the building industry.) The study of

...and Demands

the building industry and its future was undertaken since it is the architect's "immediate environment."

Ewald lays a where-we-are-now groundwork for his projections. As a nation, he finds, we are spiritually poor. "Morale, as they say, is low and the natives are restless — especially some of the young, the black, the scientists and, increasingly, the professionals, but also the middle class and the right wing, for different reasons."

We are also, to be sure, in a new, epochal era. The "unsettled, riot-torn, breaking-up, swept-along feeling of these times" perhaps has been most accurately captured, in Ewald's opinion, by bio-physicist John R. Platt who likened the remainder of this century to the shock front at the leading edge of a plane's wing as it breaks the sound barrier, before the air flow smooths out again.

If man is to survive the jolt, Ewald believes, he must not only pass through this shock front but into the condition of steady state.

"A potential," exclaims Ewald, "of two epochs in one lifetime!"

Designers of the future environment should not "fall into the trap big private enterprise and big government seemed tipped toward — over-simplification and near blind faith in the technologies of the future. Projections of the technological future are (hopefully) not the same as the human future.

"Technology is simply the vision of the future most easily communicated and most easily marketed. It is made up of 'things' we can tabulate, draw pictures and make models of. Our minds are swollen with information on futuristic gadgets. But what a human environment might be we haven't begun to really understand."

It is social inventions that the nation needs if it is to make better use of its technology.

"The limit of what men can do is not *on* men," Ewald argues, "it is *in* them. From industrialized housing and new towns to avoiding world famines, it becomes clear now that the primary barrier to implementation is the will and the social inventions of individuals and society to apply and fund already known technology and to get on with the research we 'know' we need for shaping the future."

Future forecasting can be upended by "system breaks" — radical changes which even the experts do not expect. An example is how World War II and its trailing baby boom overturned population forecasts made in the 1930s.

Moreover, while the individual is subject to the "macro impacts" of society — great growth and concentrations of population, the application of technology, etc. — the environment in turn is subject to the "micro impacts" of the individual. And micro influences, sometimes irrational and extrarational as well, can turn strictly top-down forecasts into utter fiction.

Ewald sees as a key hope for the future the creation of nonprofit institutions serving as vehicles for dialogue and stamped with the same prejudice in favor of long-run issues that government and private enterprise hold for pragmatic, short-run concerns.

"We nominate enlightened dialogue leading to specific action. But we need social inventions to make intelligent two-way dialogue possible now concerning the future we are headed into, the 200 million of us.

"The mechanisms we have inherited for participation don't work well enough in these changing, complex times. They need to be modified and supplemented but not so naively as to expose the machinery of society to the monkey wrench throwers.

"For full participation of whole men — rational, irrational, extrarational — we need to invent the means for men and women of good will to talk over these changes and decide; decide what cities, communities, homes and lives are to be. We see nonprofit centers to restore communication in our society as one of the most needed social inventions of our time."

Ewald finds that technology is converting us from "a fear-of-failure society to a pleasure-seeking society," but "in the process, right now," he says, "nobody's happy."

There are four routes out of the malaise from which to choose: Revolution, Reaction, Response or Reason. Revolution and Reaction carry the onus of violence and Response is "what we have now." Under the pressure of circumstance, "we respond, bargain and pay off." As for Reason:

"A mediating force between the big and small scales of enterprise and government — utilizing the scientist, the professional and the interested citizen — could be a strengthened nonprofit sector. To maintain the right to be called responsive, rather than, ultimately, repressive, a democratic government must encourage dialogue rather than political pressure, physical confrontation and force.

"The nonprofit sector would be the most likely meeting ground for that. It could provide a place of dialogue between the Response Path and the Path of Reason (extending even to the extremes of Revolution and Reaction)."

The nonprofit sector, in Ewald's view, offers a bridge from inadequate programs and prolonged

festering to the potential of a high morale society. Most important, "it limits the likelihood of the Response Path turning repressive as its primary response. It blocks the overcentralization of government."

Reason as a Path to the Future involves more than rationality, however, more than "program planning, budgets and cost-benefit ratios as the means of measuring the desired human results.

"Diversity is more expensive than monotony but there is a *human* cost to monotony and efficient control that the Path of Reason would recognize and would not be willing to pay in order to save dollars. For men recognized as rational-irrational-extrarational beings, it would be unreasonable to choose a path that was exclusively rational."

The Path of Reason would transcend the *purely* responsive in order to realize a scientific humanism that anticipated and was open to full participation. "It is seen," Ewald says, "as the way to a future in which the creative development of the society is the great 'business' of the society, public-private-nonprofit."

Besides system breaks, the radical changes which even experts cannot anticipate, forecasting is complicated by "surprises" — events which in detail or kind may be beyond common knowledge, as Ewald applies the word.

One surprise could be a Year 2000 population in America of 280 million instead of the generally expected 308 million. Another could be not only the expected longer life for man but a longer *vigorous* life. There also may be surprises in employment, nonmilitary research and development, education, leisure, housing and demographic patterns. On the latter two scores he submits:

"While technological construction breakthroughs will be forthcoming, it will be discerned that a comprehensive systems approach is necessary because only 33 percent of the cost of housing is in the building and utilities while 43 percent is in financing and 25 percent in land and taxes. All must be rationalized — a 20 percent cut in building costs, about the maximum reduction to be expected, only reduces the consumer's total cost 12 percent (7 percent in construction, 5 percent in financing)." And he adds:

"Through a national policy that attempted to put human and technological (including economic) costs in balance, we might discover that not only will we be better off with lower national population growth but that the same slowdown might best be applied also to many of the largest metropolitan regions.

"Consider such large urban area disadvantages as pollution, psychological overcrowding, crime, poor education, insurance rates, sense of alienation, tripling land costs, people continually polling 70-80 percent in favor of single-family homes, demonstrably higher costs per person for basic public services in cities over 250,000, and generally higher costs of living.

"Consider smaller city advantages such as improved access to opportunity provided by telecommunications and transportation, underutilized public facilities, easier access to outdoor recreation, more personal identity, lower costs of land, few pollution problems, etc."

If Americans understood the social and economic rewards of full employment and sustained national growth, the social climate and financial capacity could be created to build a human future environment, Ewald argues.

"To realize an operable sense of national community," he declares, "there has to be a wide understanding of the great economic resource the US economy truly is," and "professional men, especially

EWALD'S FOUR PATHS TO THE FUTURE
(Looking at the future from different perspectives; author's comments in parentheses)

	1970	1985	2000
Revolution (age of leaders, 25-35)	Violence and anarchy to bring down present corrupt institutions	a people's dictatorship to restore the human values, rework national priorities	**Ideal** — A Spontaneous Society (serendipity made "efficient," technology and all for 300 million people!)
Reason (age of leaders 40-50)	Anticipation of choices and long-range consequences added to society's concentration on the short term	a planning democracy that encourages technology directed by national and community priorities, determined by direct participation in policy planning	**Ideal** — Scientific Humanism (a new order of civilization for rational-irrational-extrarational men; both planned and spontaneous)
Response (age of leaders 50-60)	Bargain and balance of competing interests, responsive to current pressures which set priorities	a traditional democracy with minimum attempt to formalize national priorities, reliance on market place and ballot box	**Ideal** — Corporate Democracy (efficient response to problems and opportunities determined to be a combination of big government and big corporations)
Reaction (age of leaders 55-65)	Violence and control to bring to an end once and for all molly coddling of present and future dissenters, violent and otherwise	a paternalistic society which looks out for people and protects property rights, provides security	**Ideal** — An Elite Society (maintaining order, efficient production; society's leaders and institutions held to be paramount — a technological society)

the designers of the huge technological environment we are looking into, dependent in so many ways on political decisions, need a working understanding of their nation's economy."

The future, Ewald concludes, belongs to every (micro) one of us. But a successful, human future depends essentially on what Health, Education and Welfare Secretary Robert H. Finch has called "the great third force in American life" — again, that nonprofit independent sector of society.

Government and private enterprise can help the nation achieve many of its environmental objectives, Ewald believes. "But we should not limit ourselves just to these institutions. There is a danger that either of them might become a 'religion' rather than simply performing its function free of self-righteousness."

The Ewald study, the Future of the Profession Committee says in the report, identifies "the critical questions relating to society's objectives for the environment."

Can images of the environment be put forth which will be sufficiently strong and worthy of achievement that the public will support their fulfillment? Will the public be sufficiently concerned about the quality of the environment to allocate a significant portion of the Gross National Product to develop, improve and maintain it? Will sufficiently high goals be set, such that each new development represents a step forward in achieving the highest level of amenity which an advanced technological society can provide? Will the same high standards be set for the nation's low income groups? Will the public recognize a priority for greater overall improvement as compared to a higher level of luxury for a privileged few?

"The answers to these questions will develop from the individual and collective ideologies of our citizens, and from those groups who come forward to lead in establishing these goals," the committee says.

The committee asserts that "the need for setting coordinated objectives and for developing theoretical constructs of idealized environments cannot be overestimated.

"The extent of new development in the next few generations will be unmatched by any time in history, but whether it will develop a higher standard of living, a more rewarding physical environment, or will result in a slow deterioration of human values, will depend upon the objectives and skills of the individuals who are concerned, the ideals which they visualize and the degree to which they convince the public that their visions are worth achieving."

But the public and its government must also be convinced of a capacity to deliver the needed quantity — and there is "some consensus" that the building industry will not be able to measure up. The committee makes this further observation:

"In the event of a major program for rebuilding substandard neighborhoods, the government may have no choice but to take direct action to improve the capacity of the present industry. Should the domestic program come at the expense of the present military industries, then there may be a demand by these industries to take the additional load which the present building industry could not accommodate.

"Even if the program does not result in a cutback in military expenditures, but the action is made under duress, the government may also turn to its normal emergency partner, the military-industrial complex. The public and the government have faith in this group to do the impossible."

The Midwest Research Institute study set out to "bring together a

FACTORS, SURPRISES AND SYSTEM BREAKS OF PARTICULAR RELEVANCE TO THE CREATION OF A HUMAN FUTURE ENVIRONMENT

Philosophy	Priority	Policy	Program
Basic Belief	**Basic Need**	**Basic Change**	**Basic Efforts**
Equal access to opportunity for all which includes:	A comprehensive concept for national development which includes:	The invention of new forms of enterprise as needed which includes:	The sharing of a new spirit and new order of human amenities which includes:
THROUGH DIALOGUE			
• Participation for those who seek it • National scale efforts • Special attention to disadvantaged minorities of all kinds	• Low birth rate • High GNP growth rate • Guaranteed jobs • National settlement strategy	• Expanded civilian R&D • Updated and continuing education • Preventative health measures • Eminent domain for development according to public purpose	• Healthy old age • Extended life • More leisure • Larger homes and second ones • Telecommunications breakthrough • Mass transit breakthrough • Waste disposal breakthrough • Cheap tunneling

mass of data on the way the physical environment is now shaped," and attempts to project trends to the end of the century.

As does Ewald, MRI cautions against an over-reliance on forecasts extending beyond 15 years, however. "Part of the inadequacy," MRI says, "lies with our consuming societal emphasis on numbers. What we can't quantify we tend to minimize — both in forecasting and overt decision making."

Yet it is the qualitative aspects that interest the architect. Moreover, if changing human values and attitudes do in fact create the greatest shock in the shock front years — "as we sense" — then "we may indeed be working from fragile assumptions."

MRI says that while the architect's role in the building process may be unique, he "cannot be isolated or even insulated from the others involved. By whatever path society chooses (Revolution/Reason/Response/Reaction in Ewald's apt terms), future building will ininvolve more complex sets of human and professional relationships."

In MRI's view, the leverage of the design professions in the building process will depend directly on their ability to explore and expand new working relationships "with the countless others involved and affected."

In conventional terms, the building industry is not an industry at all but an ad hoc assemblage of skills, resources and control groups coming together around a defined project.

"Yet it is a central thesis of this report that this situation has been changing and will shift even more rapidly in the future, so that ultimately a more conventional industry structure will appear."

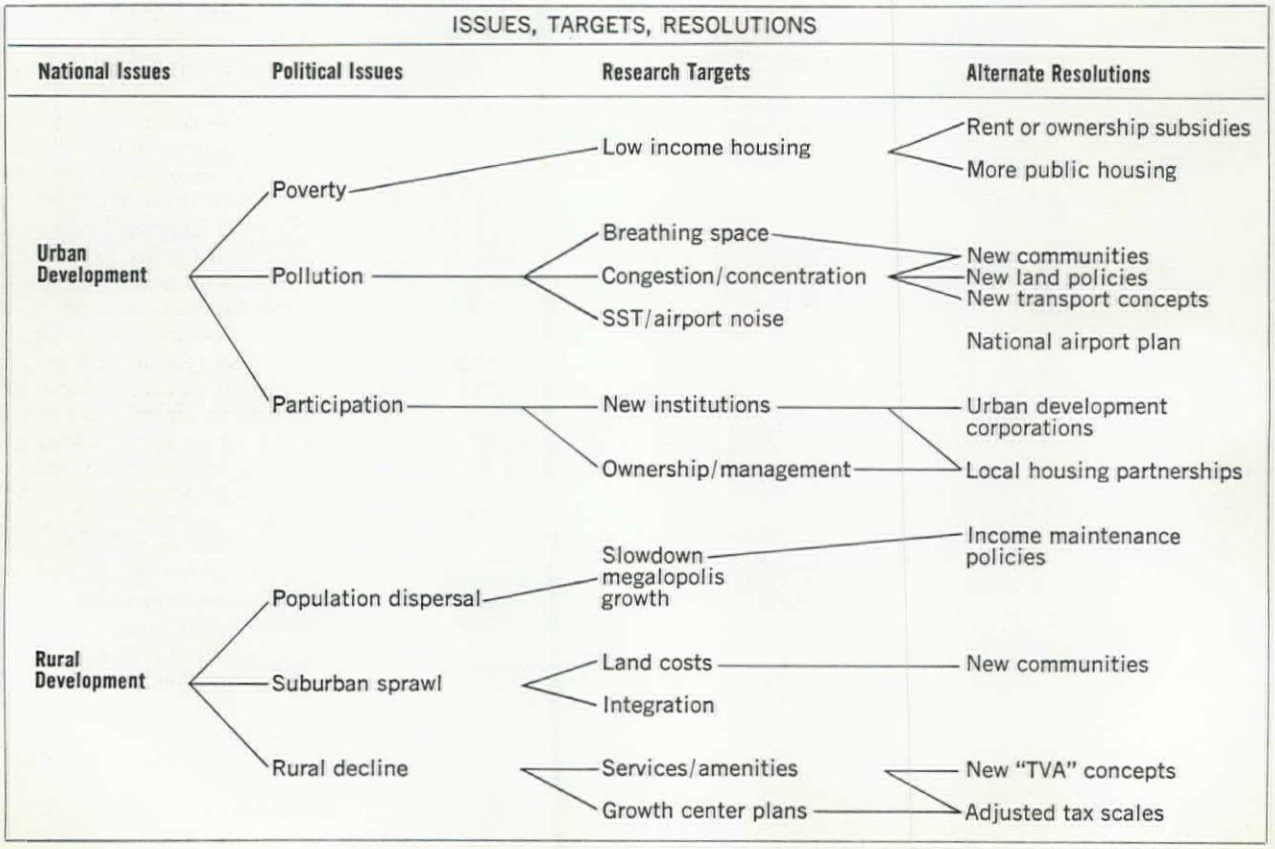
The evolutionary, incremental accumulation of change in building technology, management procedures and decision making which has forced the building industry toward more formalization in its structure will, according to the evidence gathered by MRI, sharply accelerate over the three remaining decades of this century. Indeed, over just the next 15 years the process of organizational change may well verge on revolution.

Today's highly Balkanized industry lacks market control, tight organization, a solid planning base and an orderly way of dealing with the larger human and environmental dimensions of building. Given its dominant characteristic of fragmentation, the industry *does* appear incapable of satisfying future America's construction appetite.

Hampered by both internal and external constraints, the present industry structure cannot produce a radically "different and better America," an even stronger consensus holds, unless fairly massive changes occur in structural relationships, operating styles and the ways planning is accomplished.

But the present industry is only that; for the future, MRI predicts these changes:

- Science and technology will have a major and dramatic impact on the internal structure, management and methods of operation of the building industry over the next 15 years; thereafter, perhaps, the impact will be greater on the products of the industry.
- Public-private sector relations will become more coordinated and positive as accord is reached on many building goals, planning policy issues and on ways to minimize current constraints.
- These factors, combined with additional pressure from market growth, shifting national priorities and the entry of organizations from outside the traditional building industry, will cause a scale-up in planning and building enterprise to encompass larger projects, longer planning time frames and greater attention to human need, stress and tolerance factors.



DIFFICULT TO GAUGE

The Committee on the Future of the Profession found the following "the most difficult problems to assess " in projecting the future of the profession of architecture:

- What specific areas will emerge within the field of architecture, with sufficiently separate bodies of knowledge and related skills that they will be recognized as subdisciplines? (Programming is a candidate at present.)
- Will sufficiently separate roles for professionals be generated by new subdisciplines that they shall begin to be recognized as a new profession? (Computer design applications might fall into this category.)
- Will subdisciplines which develop in architecture combine with subdisciplines in other fields to create a new hybrid and a new profession? (Urban design as a combination of subdisciplines in architecture, planning and landscape architecture is a likely candidate.)
- Will the present field begin to polarize into different sectors such that their commonalities are more closely related to disciplining outside the field than to one another? This appears to be happening in city and regional planning with the current division between the socially oriented and the physically oriented planners.

"These three sets of forces," MRI declares, "*can* produce a radically different building industry in 10 to 20 years. Given a relatively stable world polity, continued economic growth and social evolution rather than revolution in the US, such an outcome seems likely."

Trends in support of these forecasts are already evident, but it will be government actions "more than actions taken by the industry itself" that will "accelerate or decelerate the rate of change."

What MRI calls "the three strategic areas of change" — science and technology, public-private sector relations and a scale-up in planning and building — deserve the careful attention of the architect "because they will affect not only the shape of the building industry but his place in it."

One prediction made with "certainty" is that over the next 10 or 12 years "information systems will be created to link both functions and actors within the building industry on a scale approaching a national information utility.

"Automation of virtually all information activities in the industry will be made possible and profitable by fourth-generation computer technology which should cut computing costs by three orders of magnitude in the mid-1970s. This development should be well timed to permit rapid implementation on an industrywide scale of systems which are now experimental or limited to single-firm use."

Such a utility, however, is just part of a larger trend toward greater use of comprehensive and sophisticated management systems.

In its broadest sense, MRI says, "systems management is coming to the building industry. While the term is fuzzy even in the defense and aerospace industries where it originated, systems management is probably the best way to sum up the influx of new techniques which are leading to reapportionment and rationalization of building industry functions."

Government's increasing involvement in the industry may speed up the use of systems techniques, MRI ventures, adding: "But ultimately it is clear that the industry will adopt these techniques because they *do* improve management control and profits."

The report's contention that relations between government and industry will become more positive as accord is reached on many building goals, planning issues and the minimization of current constraints, is based on several trends:

Government too is using management science which of itself suggests a convergence of government-industry procedures and objectives; government policy studies are becoming more sophisticated; the political issues tied to building are "growth issues"; information systems technology may well make it possible to decentralize and reapportion more government decision making to regional levels, etc.

These and other trends "all point toward increased ties between gov-

POSSIBLE AREAS FOR HEAVY PUBLIC R&D INVESTMENT RELEVANT TO BUILDING

1970 to 1985	1985 to 2000
• Organization of technical information	• Behavioral design research
• Management information systems	• National land use planning
• Buildup of relevant professional skills	• Ecology
• Large building market control demonstrations	• Social values
• New communities	• Retirement and leisure
• Citizen participation	• Lifetime education renewal
• Ownership/financing mechanisms	• Open space development
• Zoning rationalization	• Climate control
• National performance codes	• Life support for alien environments (undersea; arctic; space)
• Conversion to metric system	• Human intelligence augmentation
• Environmental pollution	
• Intergovernmental relations	

ernment and the building industry. But they also portend better organized and coordinated relationships."

MRI also forecasts that the process of scale-up to larger and longer-term building projects is likely to be well developed by the end of the 1970s and should encompass an increasing share of the total building market through the decade following.

MRI's crucial prediction holds that "the building industry is moving toward a classic industry configuration; fragmentation will be gradually replaced by coherence and cohesiveness."

Why? "The dominant pressures are threefold: 1) general economic/efficiency measures, 2) housing requirements for the whole population and 3) the new or renewed physical environment demanded by a people with rising affluence and rising expectations."

MRI speaks of "innovation by invasion" — as the textile industry was invaded by the chemical industry with its synthetic fibers — and says such innovation will come to the building industry through large-scale "macro" or "mega" builders, virtually all of which will include one or more corporate entities with a traditional base *outside the building industry.*

"The huge, well-capitalized, tax savings-oriented, computer-minded multi-industry corporation — usually based in manufacturing but with significant operations in building, real estate and life insurance — looms as the central figure on the construction scene over the next 30 years," says MRI, adding significantly: "The potential power of tomorrow's macro-operator is astounding."

Between the macro-operator on the one hand and government on the other, the industry will become increasingly polarized. But this trend "will tend to be mutually influential." The lines of force in between the two polarities will be money and information.

"This bipolarity should make the building industry more stable and prosperous, particularly in the larger projects, but this increased security will be purchased at the sacrifice of considerable independence on the part of those who elect to serve the poles."

As for new construction technology, its impact will lie in increased building value, more effective use of resources and from an improved human environment. MRI adds:

"Perhaps most important, innovation in construction technology multiplies the range of choices available to the user, the owner and the environmental designer.

"The ultimate judgment of the impact of technological change in construction rests with the coming generation. The early evidence suggests, however, that this judgment will be weighted far more heavily on our ability to meet construction goals for the future in terms of human values than in terms of cost reduction."

Industrialized building methods, MRI finds, are "proliferating" by the month, and by 1975 mergers and acquisitions will have brought lasting organizational alterations to industrialized building. Plug-in units "will see increasing use in all types of construction." And the various experimental projects "involving the systems approach should hold even greater import for the environmental designer than for the engineer."

But "the role of the professional designer over the next 20 years will surely be shaped by further changes in management — as much or more than by changes in the product, or in the process of construction."

MRI reaches the conclusion that the future orders a different kind of architectural profession and a redefinition of professionalism.

MRI sees a number of options open to the profession, the most likely and hopeful of which is the undertaking of a "massive renewal and augmentation of professional skills" both in the schools and among practitioners.

"To prevent professional obsolescence and to prepare for the more comprehensive practice of design, which would seem inevitable if architecture is to survive as a distinct profession and one seen as salient by society, a renewal process via continuing education both on and off the job seems essential," says MRI.

The Committee on the Future of the Profession believes the design professions "are in the area where one should expect the most dramatic future changes. The most significant changes which are anticipated in both society and the building industry are in social mechanisms, in communications systems and cybernetic and mechanized cognitive assists, and these are precisely the areas in which a profession practices.

"As a result, one must expect the near future to be one of great change, an age of experimenting with new methods of analysis and synthesis which are developing in computer science operations, research, and systems engineering. The near future will also find a new thrust for exploration of the social and behavioral sciences for the development of theories which will attempt to bring the relationship between design theory and known science in this area more clearly in line with the relation between theory and practice in the physical sciences."

Also to be expected, in the committee's opinion, is a "temporary fragmentation of effort, a probing by the field of architecture for applicable techniques from outside the field. Concurrently, there will be an exploration in the problem areas associated with architecture by persons outside the field who believe they have knowledge and techniques which might be applicable.

"During this highly volatile period one must expect that there will be new subdivisions and new combinations within existing professions, that the definition of any one profession will become more

NOT STUDIED

With neither its resources nor its time to show results unlimited, the Committee on the Future of the Profession staked out an area for its investigation that by necessity is exclusive. Among pertinences missing from the survey, the committee notes, are such "external factors which will influence the profession in the future" as:

- international technological and social developments
- industries other than those closely related to the present construction industry.

The committee said further study of "the public's demand from the micro-environment" (involving physiological, psychological, spiritual, cultural, social and ecological aspects) must also be made. Both Ewald and MRI urged the AIA to undertake future "futures" studies. The AIA, said MRI, "might consider a continuing "Forum on the Future."

RENEWAL AREAS

The Midwest Research Institute in its report stresses the need for continuing education. MRI says that "elements of mid-career renewal of the architect" might include:

- applied cybernetics
- applied behavioral sciences: problem solving and consultation based on diagnosis of social systems ranging from small groups through organizations to communities or regions
- management techniques: particularly the prediction and implementation of change
- design implications of other new technologies
- design implications of new concepts in education, government, industrial management, community services, communications and other institutional spheres
- demographic attitudinal and value trends, particularly at the community and regional level.

blurred but that the alignments which will ultimately be made in order to form professions will depend upon the value systems and objectives the individuals share as well as the knowledge, techniques and problem areas they hold in common."

The committee makes these recommendations to the profession:

Definitive and Objective: That the traditional breadth of architecture, encompassing art, science, humanism and social responsibility, be reaffirmed, and that the profession establish itself with other leaders in the world of extrarationality, "for society is in desperate need of leadership in this regard."

Social Context: That the profession recognize that it is an integral part of the social environment and that it constantly change itself "to maintain the most viable form for performing its service to society."

Technological Context: That the profession improve its own technological ability and join with other fields to bring the most advanced knowledge into solutions for habitation.

Interdisciplinary Effort: That the profession reaffirm that environmental quality requires many skills, that it pledge itself to develop more productive relationships and promote joint effort, and that it recognize the mutual dependence of design professions.

Maximum Effectiveness: That the profession, its practitioners being few in number, attempt to achieve its objectives at two levels — through unique, standard-setting solutions to individual problems, and through participation in policy and research concerned with repetitively applied solutions of benefit to far more people.

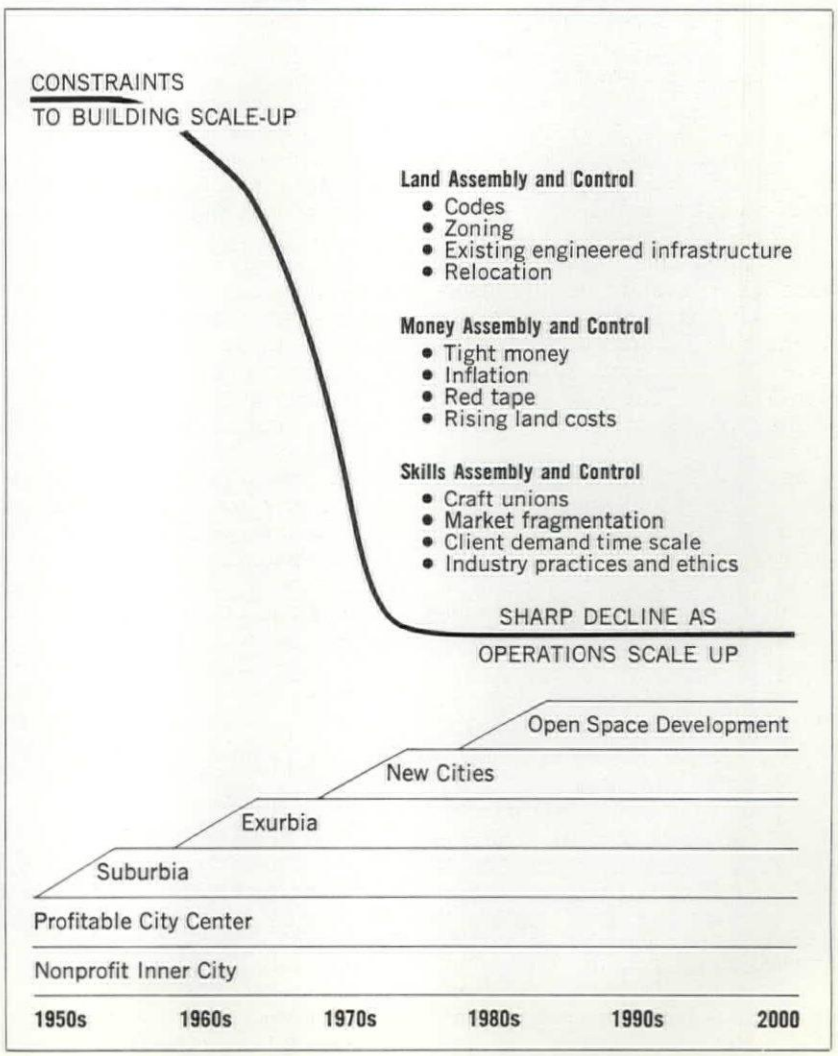
Breadth: That the profession recognize that the knowledge and methodological skills pertaining to the field will increase, and that firms of differing capabilities will practice through new combinations of service in a wide variety of public and private enterprises.

Growth and Development: That the profession recognize it is dependent for its own growth and development on attracting the most creative persons to the field as well as attracting those outside the field to join or collaborate in the offering of professional services.

To serve the rapidly changing "field and profession" of architecture, several different kinds of professional societies could emerge, the committee ventures. "A professional society could come forward to represent the entire field of architecture with its full range of student, professional and nonprofessional roles.

"This society would represent the strongest voice for the field as a spokesman for environmental quality and, as such, it would have as its primary obligation a responsibility to the public and to the field as a whole, using its leverage to politically better the environment. Such a society would have a different task in offering individual personal identification and association for the heterogeneous members who make up the field and would find it difficult to establish a common group of joint effort.

"A second kind of professional society could emerge which would



represent professional architects in all of the roles described earlier. The granting of a professional degree and completion of a stipulated internship period from an accredited architectural school would be sufficient credential for full participation and certification would hold no particular status.

"This society would offer a broad base of support for entrepreneurs and employees, certified and noncertified, and would be limited to those with reasonably similar educational backgrounds, objectives and maturity."

If neither of the two types of professional societies happens, the committee warns that "one should expect much more fragmentation of the field."

Among recommendations made to the AIA — "as the most viable institution of professional architects" — are the following:

Objective: Implement the objectives of the profession; serve the public as such service relates to the profession; and serve the entire field of architecture, not just its professionals.

Resource Development: Develop programs to increase resources through growth of membership within the field and through alliances with other professions, with industry and with nonprofit and public institutions.

Policy Development: Become more involved in current issues.

Government Relations: Vigorously represent the field and profession to government at all levels and provide legislative assistance and advocacy in behalf of environmental improvements.

Public Relations: Expand public relations activities which are seen not only as a means of informing the public about the profession but as an adjunct to the legislative program and as an aid in attracting issue-oriented young architects to AIA membership.

Research and Development Brokerage: Develop a research and development network involving the Institute, the schools and the individual firms, and seek to either establish a research and development center or expand the Urban Design and Development Corporation with the thought of having it work with existing research groups.

Data Utility: Find the "appropriate partners" and seek to establish a data bank for the use of all design professionals, the schools and the Institute's own research, policy and legislative programs.

Scope of Professional Service: Establish policies that encourage innovation in both the scope and the methods of furnishing services.

Constituency: Broaden its representative base to include, with "full, equal and indistinguishable status," certified architects, professional architects, intern architects and the educators.

NEIL GALLAGHER

BACKGROUND OF INVESTIGATIONS

On the recommendation of the Committee on the Future of the Profession, the AIA Board of Directors in April of 1968 funded the formal studies of the future of society and the future of the building industry that were to be undertaken, respectively, by William R. Ewald Jr. and the Midwest Research Institute.

Together, the two investigations cost $65,000, bringing to more than $100,000 the sum invested by the AIA in the committee's program.

Ewald, a civil engineer by training and a planner by experience, established his Washington, D.C., office "to provide a personal consulting and design service to public and private decision makers concerned with future development." Apart from his work for the AIA, he has been involved for the past four years in what he describes as "research, analysis and attempted synthesis into the subject of the future environment."

He was active in "The Next Fifty Years" program of the American Institute of Planners in 1967 and 1968, editing the three "Next Fifty" reports published by the Indiana University Press, *Environment for Man, Environment and Change* and *Environment and Policy*.

MRI, of Kansas City, Missouri, is in operation to gather the data that enables decision makers to make more intelligent decisions. "We concern ourselves not only with alternative solutions to today's problems, but also with the more difficult identification of future problem areas," says an MRI brochure. Among past activities related to the environment, MRI in 1966 co-sponsored with the Kansas City Art Institute a Mid-America Conference on Urban Design.

MRI's technical and supporting staff numbers more than 450 of whom nearly half holds advanced degrees. Collectively, the staff represents some 50 disciplines.

MRI asserts that the "essence of our commitment to the future is the quality of life in our urban culture."

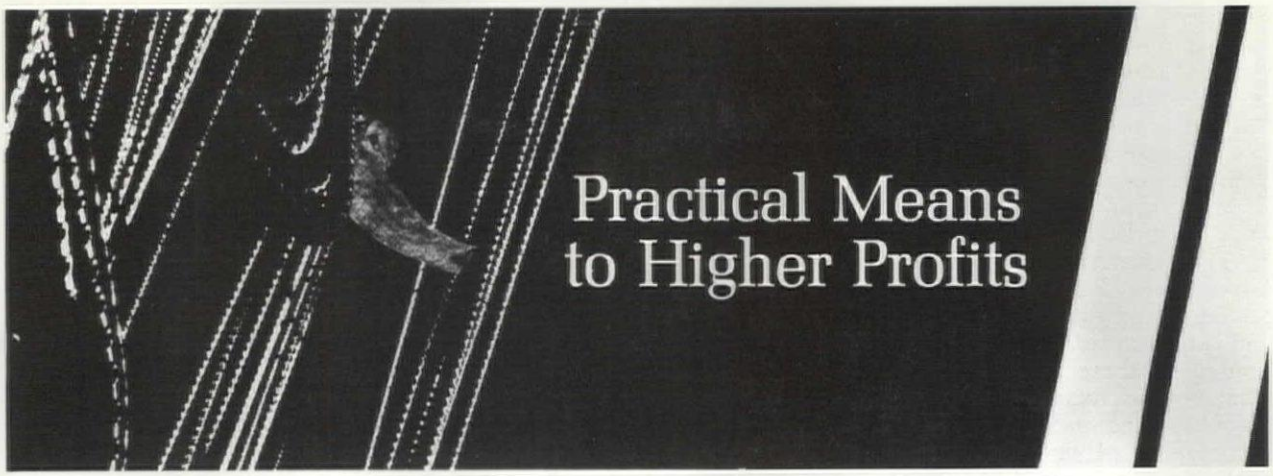
Abt Associates, of Cambridge, Massachusetts, were retained by the AIA as consultants for coordinating societal and building industry study modules.

Both Ewald and MRI, who say their studies constitute a "first" for an organized and comprehensive probe of the future of the creative process of building, warn of the peril of forecasting beyond 15 years but advocate that such predictive attempts be made all the same.

For its part, the Committee on the Future of the Profession "strongly" urges the AIA to sponsor further studies of the factors most pertinent to the future physical environment and the future of the profession.

Among those factors, the committee points out, are the design professions themselves, which are seen by the committee as actively influencing change in their own right and not merely reacting to change.

The committee is headed by Gerald M. McCue, FAIA, successor to the late Lewellyn W. Pitts, FAIA, its first chairman. Other members are Rex W. Allen, FAIA, Institute president; Robert W. Cutler, FAIA, committee vice chairman; Samuel T. Hurst, FAIA; Louis de Moll, FAIA; David McKinley Jr.; and William H. Scheick, FAIA, Institute executive director and staff to the committee.



Practical Means to Higher Profits

A management consultant calls the shots as he sees them regarding architectural fees and more businesslike practices.

BY RICHARD A. ENION

You as an architect will get your fair share in the burgeoning amount of building construction which, according to some predictions, will double by 1980 — if you are geared up to this volume and if you are organized.

And if you aren't, there are other groups waiting in the wings who are studying your services and your markets and who will move in and replace you in some of your traditional roles where they can.

Just to add to your problems, the architectural schools are not turning out enough graduates, and the technical schools are not turning out enough technicians, yet your profession must compete directly for qualified personnel with the consulting engineers and industry, where your competition can generally offer higher starting salaries and better fringe benefits than your offices.

The Subject Is Fees

But you are faced with still another dilemma. Based on my practice as a management consultant to a number of individual architectural offices — about 50 at last count — in many different regions, and based on the individual statewide-fee and cost-of-services surveys my firm is conducting, I can certainly say that the compensation you receive is generally too low. Traditionally, your fees are mostly based on some percent of construction. You may therefore be interested to learn that we have proved conclusively in state after state that the rising cost of producing architectural services in both direct technical labor and overhead is increasing faster than the rising cost of construction — and it is this differential that represents your decline in profits. I might also add that your profits are much lower on public work.

To be candid, I do not think there is any perfect fee system. A fee as a percent of construction has the advantage of being easily calculated, based on a schedule or curve; but only if the schedule is properly calculated can it provide you with enough fee income to offset the differential or gap between your rapidly rising costs and those of construction.

Lump sum fees are always attractive in that you know, as does your client, just how much money you have to work with. However, you can lose your shirt in a lump sum fee negotiation unless you have maintained an excellent history of job cost records and know almost to a penny what it is going to cost you to produce the project, including the scope of services required and what you need as profit.

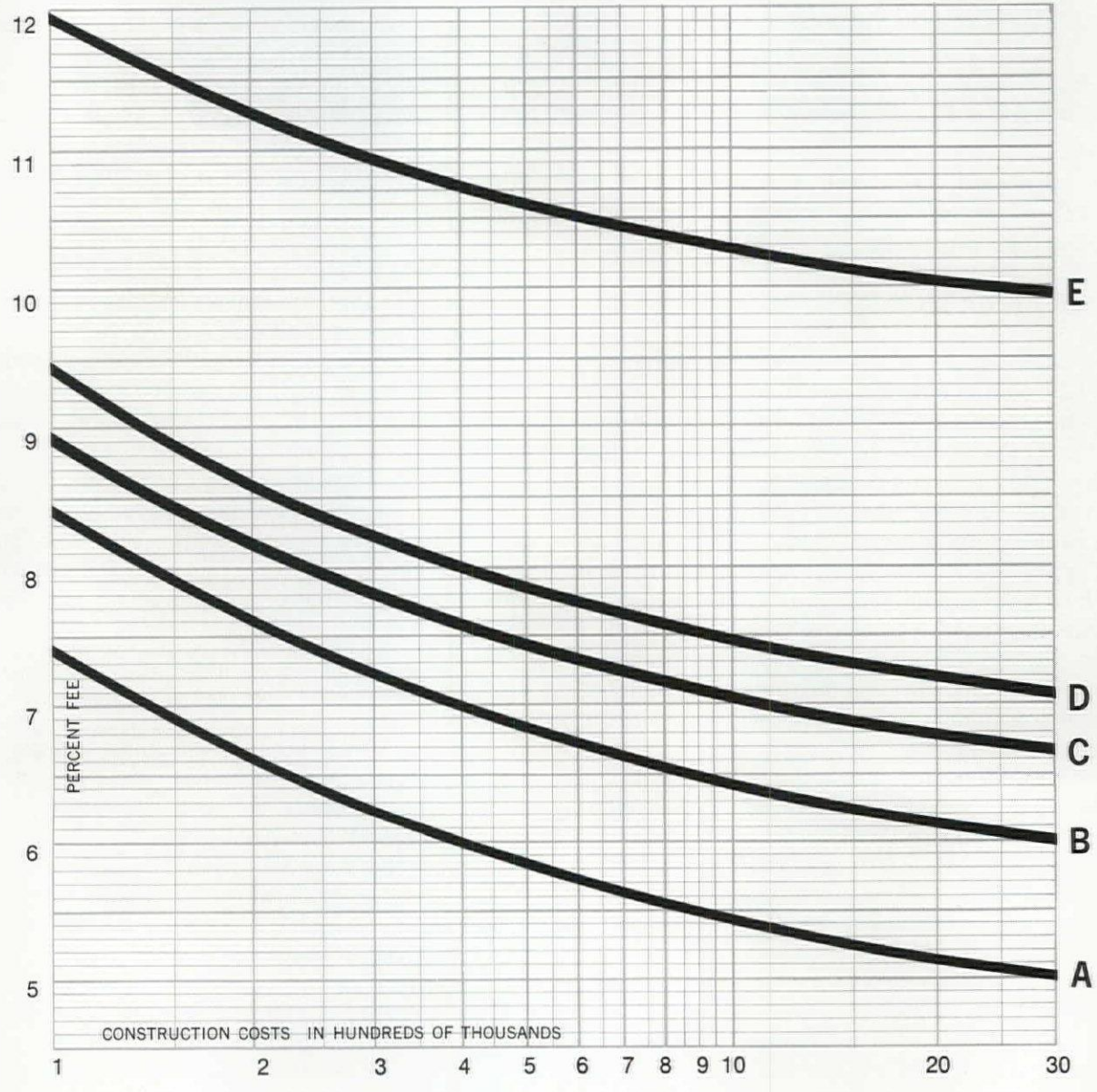
The author: Mr. Enion is president of Enion Associates, Inc., of Philadelphia. This article is adapted from a speech given before the Dallas Chapter AIA.

When negotiating for a lump sum, you must also take into consideration the time it will take to complete the job. A lump sum negotiated today, at today's prices, may look attractive, but if the project extends into 1972, inflation may well wipe out all of your expected profit. Finally, it is always wise to check the lump sum for which you are negotiating against the traditional percent of construction, since I can assure you that your client will be doing just that.

A factor or multiplier times payroll may be tempting, but most clients will insist on a maximum price. One of the things that you have to watch closely with factor times payroll (or another variation: a professional fee plus direct payroll costs) is the escalation of overhead expenses. In many architectural offices today, overhead is at least 100 percent of the technical payroll. If you negotiate a contract at 2½ times your payroll, where your overhead is 100 per-

RECOMMENDED MINIMUM COMPENSATION FOR BASIC ARCHITECTURAL SERVICES

Oregon Council of Architects AIA 1968 Edition



Key: Letters A through E opposite each building type (across page) refer to separately published schedules which stipulate by means of the curves shown above the Recommended Minimum Compensation for Basic Services related to construction cost of the project. Fees for projects costing less than $100,000 are the same as indicated for $100,000. Projects above $3 million are to be negotiated.

Note: Increases up to an additional 2 percent of construction costs for additions and up to 5 percent of construction costs for remodel work which requires detailed investigation of building elements, closer field observations, or additional drafting time may be indicated. When separate contracts are required, the amount of each individual contract, not the sum total of all contracts, shall be the basis for determining fee.

cent, then your profit will be 20 percent. However, if your overhead continues to creep up during the life of the contract and should approach, say, 125 percent, your profit will drop to 10 percent.

What type of fee schedule is best for your firm depends on several factors:

1. Your history of job costs by type, size and complexity of project and scope of the services provided.

2. Your ability to control your in-house costs and your client's building costs.

3. The types of clients you serve and to what they will agree.

4. The traditions and practices of the areas in which you practice.

How well you will fare with an improved fee schedule, or how well you are faring with current fees, depends on how good a manager you are. I hate to say this, but some architectural firms, even with improved fee schedules, will still, at best, barely break even.

Good project budgeting is a prerequisite for profits, but if your firm is poorly organized and if you lack effective management controls, you can budget all day and night and find that the end result is a meaningless exercise in futility.

You as architects have to 1) negotiate better fee schedules and 2) run your practices on a more businesslike basis. If you do not accomplish these two objectives, then despite all of the projected design commissions lying ahead, your profession could well be entering a period of profitless prosperity.

When you think about yourselves as professionals, you must also think of yourselves as businessmen because you can no longer separate the practice from the business of architecture.

Internal Problems Loom

There are always two sides to any coin, and while we talk about improved fee schedules on one side, we must not lose sight of improved in-house fee management on the other. As a re-

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A
Garages
Grandstand
Loft Buildings
Supermarkets

B
Air Terminals (Freight)
Apartments (Highrise)
Auto Dealerships
Bus Terminals
Department Stores (Less Interiors)
Heating Plants
Lecture Halls
Manufacturing Plants
Motels
Office Buildings (Less Interiors)
Parking Structures
Physical Plant
Retirement Homes (Highrise)
Shopping Centers

C
Administration Buildings
Air Terminal (Passenger)
Apartments (Garden)
Banks (Branch)
Broadcasting and TV
Church (Education Facilities)
Cinemas
City Halls
Class Rooms
Clinics (Medical-Dental)
Correctional Building
Court Houses
Dormitories
Fire Stations
Food Service Facilities
Gymnasiums
Health Centers
Hotels (Less Interiors)
Laboratories (Nonscience)
Libraries
Marinas
Mortuaries
Museums
Nursing Homes (Residential)
Park and Recreation Buildings
Penitentiaries
Restaurants
Retirement Homes (Garden)
Schools
Swimming Pools (Outdoor)
Telephone Exchange
Youth Service Buildings (YMCA)

D
Auditorium (With Stage)
Chapels
Churches
Concert Halls
Country and City Clubs
Fraternity Houses
Hospitals
Laboratories (Science)
Lodges
Medical Facilities (Specialized)
Music and Drama Buildings
Nursing Homes (Medical)
Residences (2-4 units)
Sorority Houses
Swimming Pools (Enclosed)
Theater (With Stage)

E
Residences (Custom)

N (Projects to be negotiated)
Artistic Works
Exhibition Buildings
Fixtures-Furniture
Interior Design
Landscape Structures
Memorials
Rehabilitation
Residence—Development Type
Signs—Graphics
Site—Development and Planning
Warehouses
Zoo Structures

sult of improved in-depth studies of all facets of architecture, I have encountered what I call the six major internal problems facing the architect in practice:

1. Lack of formal organization. Whether you are set up to utilize the departmental or project team concept, or some sophisticated combination of both, each man in your organization should know where he fits in, to whom he reports, and what his specific job responsibilities are. This requires an office organization chart, a functional project flow diagram and written position descriptions.

2. Lack of overall cost control. The fee income you receive must be managed, which means creating and maintaining overall office budgets, cash flow forecasts, break-even points and certainly project budgets in both dollar and man-hours as well as project cost profiles.

3. Lack of project scheduling and control. Unfortunately, work loads in an architect's office are never level, and client demands are always impossible. Nevertheless, completion schedules have to be met and man-days per week per job must be projected if you expect to realize an optimum return from your technical payroll.

4. Lack of a formal approach to new business development. Many of you are busy, with healthy backlogs, yet our files have a number of case histories of firms that were too busy to look for work, then experienced serious slumps. It is axiomatic in your profession that you should be seeking new business when you are at your peak.

5. Inadequate handling of personnel. Your principal asset is your people, for without them you don't have much of a practice. Yesterday's casual approach toward salary increases, fringe benefits and other personnel matters is being replaced with specific programs which provide competitive salary scales, workable incentive programs and methods of assessing individual performance. In a few offices, programs for management development are now beginning to appear.

6. Ineffective utilization of the partner group. Ideally, each partner should complement another, so that the partnership will individually and collectively offer management control over all aspects of a growing practice. Where this ideal melding of interests and abilities does not occur, thoughtful care must be taken to see that a management team in depth is developed to run the office, and this involves the whole gambit of selecting associates and even younger partners.

What About Incorporation?

Underlying these problem areas is the perennial concern: to incorporate or not. Many states do not allow the full incorporation of the practice of architecture, but more are joining the ranks each year.

At this point, then, it is well to consider the advantages of incorporation. I am well aware that some architects feel that it would tarnish their professional image if they were to incorporate, yet nothing could be further from the truth. I have not seen any lessening effects on the professional accomplishments of some of my clients who consistently receive design awards and who often are quite active nationally in the programs of The American Institute of Architects.

In proprietorships and partnerships generally, seven firms out of 10 report that the principals find it necessary to leave part of the money on which they have been taxed under the higher personal income tax rates in their firms each year, which means less take-home pay for the partner. This is necessary in order to provide needed cash flow to meet expenses and overhead, and although each principal's capital account does increase with these after-tax dollars, rarely, if ever, does the principal retrieve capital account money and enjoy it.

Let's take the example of three partners, each grossing $50,000 after all other expenses in a partnership. Let's assume that each partner agrees to leave $5,000 of after-tax dollars in the firm to increase its total capital account by $15,000 for that year. Each of these partners ends up in the approximate 50 percent income tax bracket, and the overall average income tax on $50,000 will be about 35 percent of the gross total paid. Therefore, each partner has to pay an average of 35 cents on every dollar of income and leave a total of $5,000 of these after-tax dollars in the firm. Each partner's after-tax actual take-home income would then be approximately $27,500.

However, if the firm were incorporated, the partners could look ahead and decide that they would have to leave $15,000 after-tax dollars in the firm, and they could then declare the amount of money which they needed to leave in the practice as corporate profit (about $19,000 before corporate income tax) in order to net $15,000 as retained earnings because the tax would then be 22 percent (excluding the surtax) under the more favorable federal corporate income tax schedules for this amount of income. It does seem to me that it is far better to leave money in the firm which is taxed at 22 cents on the dollar rather than at 35 cents on the dollar. Each partner would receive a somewhat smaller gross income from the firm, approximately $44,000 in salary, but because each is now in a lower personal income tax bracket, each partner would take home, after taxes, about $30,500, or $3,000 more than he did

under a partnership. This, then, is the first advantage of incorporation: You can probably retain profits for that much needed cash flow at a lower tax rate.

The second advantage is that you can expense out all partner or principal fringe benefit premiums as a deductible expense to the corporation. However, in a proprietorship or partnership, the premiums paid for a principal's fringe benefits must be declared as income to the principal.

The third advantage, and possibly one of the most important reasons for incorporation, is that you can petition the Internal Revenue Service to create a qualified profit-sharing trust, which means that you can take as a deductible expense against the corporation an amount of money up to 15 percent of the firm's annual total payroll and put this money aside as a trust fund where it will grow. Each employee has an equity in this fund in proportion to his salary; therefore, the plan definitely favors the principals of the firm who have the higher salaries. When the money is finally taken out of this trust plan in a lump sum, it is taxed to each individual under the much more favorable capital gains tax rates. This, of course, is in effect a retirement plan and motivates good employees to remain with the firm as they begin to see their share of the profit-sharing plan grow. Under a proprietorship or partnership, you absolutely cannot create a profit-sharing trust plan which will include the partner group.

The fourth advantage of incorporation is that you have a simple but effective way of perpetuating the firm. With several principals owning all of the outstanding stock, schedules can be set up to sell some of it to the younger partners so that each senior partner will then be taxed on the appreciation in the value of the stock, again under the more favorable capital gains tax schedule. This eliminates the need to value work in progress, accounts receivable, etc., which can make sales of a partnership somewhat sticky. Furthermore, if any partner dies, it is possible to have agreements in which the corporation, not the other partners, buys back his stock, and to have the corporation own and pay for life insurance in sufficient amounts to purchase this stock at a fair market value from the deceased partner's estate. Thus each partner knows that if anything happens to him, his family is taken care of, yet the firm will not have to take a financial setback by using retained earnings to settle with his estate.

In those states which do not allow incorporation of the total practice of architecture, there is always the possibility of creating a drafting corporation. Although you must still maintain a partnership, some of your fees will end up in the drafting corporation, and each of the previously cited benefits can still be employed but to a lesser degree.

Today, the practice of architecture is growing so competitive that only firms with a good professional image, management in depth, good organization and effective project cost controls and business methods can survive — if they do not lose sight of the human factors.

I believe that your profession is standing on the threshold of an entirely new ball game. There will be greater demands for your services over the next decade, and you may be hard pressed to meet all of them. At the same time, you are entitled to a fair return for your efforts and energies. You will have to seek improved fee schedules, and you will have to learn to manage your in-house fee income better than you ever have before.

Still, everything you do in an architectural firm involves people. Therefore, those of you who operate within the framework of good business management as professionals, and are willing to spend more time solving your people problems, will have taken a long step forward in order to be in a position to move ahead with an expanded and successful practice in the decade of prosperity that lies before us. □

THE STATUS OF CORPORATE PRACTICE

(Derived from a study of the licensing laws of the 54 jurisdictions, all referred to as states, by Carl M. Sapers, whose summary of the study follows this article.)

- Twenty-five states permit corporate practice, although the statutory provisions are not uniform: Alabama, Arizona, Arkansas, California, Canal Zone, Georgia, Guam, Hawaii, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Mexico, South Carolina, South Dakota, Tennessee, Vermont, Wisconsin.
- Four states contain absolute prohibitions against corporate practice: Florida, New York, Oregon, Mississippi.
- Seven states recite that no corporation shall be registered under the act: Colorado, District of Columbia, Montana, North Carolina, Pennsylvania, Texas, Washington.
- Eighteen states are silent on the subject: Alaska, Connecticut, Delaware, Idaho, Kentucky, Louisiana, Nevada, New Hampshire, New Jersey, North Dakota, Ohio, Oklahoma, Puerto Rico, Rhode Island, Utah, Virginia, West Virginia, Wyoming.

The entire matter of incorporation is a complicated issue, containing many ambiguities. Any architect interested in a particular state should make sure he has a clear understanding of the architecture statute in question.

The Case for Licensing Law Reforms

"Before I built a wall I'd ask to know
What I was walling in or walling out."
—Robert Frost

BY CARL M. SAPERS

A great number of statutes include a description of the method of practice as part of the definitional framework. For example, the practice of architecture consists of investigation, evaluation, planning, design, consultation, etc.

Most statutes define practice in terms of the objects of practice as well. With very few exceptions, the architecture statutes see those objects as building structures or appurtenances thereto, and the engineering statutes see them as structures, building, machinery, equipment, etc.

Various statutes amplify the definition by saying the practice requires the application of certain esthetic and scientific principles. Some further define practice in terms of required training and of registration requirements.

The landscape architecture statutes came substantially later in time and were drafted, therefore, to avoid overlapping insofar as possible those areas jealously protected by the architects and engineers.

In some jurisdictions, architecture and engineering statutes are consciously parallel. For example, Alaska sees both the architect and the engineer as engaging in "consultation, investigation, evaluation, planning, design and supervision of construction for the purpose of assuring compliance with specifications and design." The objects of the architect's activity are structures, buildings, works or projects. The objects of the engineer's activity are the foregoing plus utilities, machines, equipment and processes. In the architecture statute, the professional services require architectural education and the application of special knowledge of architectural design. The engineering statutes sees the professional service as requiring engineering education and the application of special knowledge of the mathematical, physical and engineering science.

California, on the other hand, is a jurisdiction with parallel statutes but with more discrete language in their definitional sections. Its architecture statute sees professional service as requiring the application of the science, art or profession of planning sites and of planning or designing buildings or architectural structures and their related facilities. The engineering statute sees practice as requiring the application of special knowledge of the mathematical, physical and engineering sciences.

Those states which drafted their statutes in parallel could be presumed to have the importance of a distinction in mind. In the balance of the states, the situation is more confusing. In these, one finds identity of objects between the two professions, an identity of means and message of practice. The AIA study makes it clear that definitional distinctions, at least between architects and engineers, are wholly artificial. Were a court compelled to set outlines of demarkations, there are hints in the language of the statute on which a tortured distinction can be made. But the language is not revealing.

Related to this definitional question is the matter of incidental practice because, if the engineer can practice architecture incidentally, it affects the description of matter with which he can deal as a practicing engineer. The typical clause excuses engineers from registration when doing architectural work incidental to their engineering work, or architects from registration when doing engineering work incidental to their architectural work.

Connected with this is an important notion in dealing with registration laws generally: the distinction between statutes barring practice and statutes barring "holding out," the so-called "title" statutes. These refer to the use of a title or other representation that the person involved is able to practice the profession. In 48 of the 54 statutes surveyed, the architecture registration statutes bar both practice and holding out. All of the engineering statutes bar both practice and holding-out by nonregistrants.

It is useful at this point to reflect on the purpose of holding out statutes generally. This prohibition is the result, in most cases, of an attempt to deal with fraudulent representations to the public. In the early days of registration, a prohibition only against holding out allowed the nonregistered person to continue his practice as long as he did not use a title which misled the public. The holding out prohibition by itself can be used to accommodate a difficult situation much as a grandfather clause is used. This is precisely the case with the landscape statutes.

Since honorable architects and engineers could be presumed not to use the title "landscape architect," — while nonetheless practicing landscape architecture — seven of the 15 jurisdictions enacting registration for landscape architects settled on making the landscape stat-

utes holding out statutes only. If the holding out statute can be defended as a sugar-coated pill during the first years of a profession's registration, can an argument be made for the retention for this holding out provision once practice is prohibited? It seems to me the only substantial argument for retaining the holding out provision is that it bars the nonregistrant from practice at an earlier point in time.

It is precisely because the holding out statute bars the nonregistrant at an earlier point in time that it has created problems in interstate practice. Thus an architect in State A cannot go in and be considered for a commission in State B, holding himself out as an architect, unless he is registered there. And not yet having a commission there, he is reluctant to pay the fee and go through the red tape to become registered there.

Interstate Practice

The second point covered by the survey is the existing state of the art with regard to interstate practice. The provisions governing the right of out-of-state professionals to come into the state and practice are both varied and confusing.

Most of the engineering statutes seem more liberal in giving the local registration boards the power to admit for practice any out-of-state engineer who is registered by a state whose requirements are equal to the local state. Many of the engineering statutes have temporary permit provisions allowing the out-of-state engineer to come in for 30, 60 or 90 days and hold himself out as an engineer and actually practice during that period, while his application for registration is being processed.

Only a handful of the architecture statutes contain the same temporary dispensations.

About a dozen architecture statutes permit an out-of-state architect to practice in the local state without any registration provided he acts only through a local architect. While this procedure may serve to enhance the prosperity of the local architectural firms, it raises serious questions of responsibility and liability which many of the statutes have disregarded. Many registration laws consider it improper conduct for a registrant to seal plans or specifications which are not his own. The hiring of a local firm in order to square things up with the registration statute invites precisely that violation. (Idaho allows local affiliation through an elaborate provision which deals with liability.)

Restrictions on Practice

A third area of concern in these statutes is what the registrant may not do. When the survey was begun, the author believed this problem more pervasive than it actually is. Nonetheless,

CHALLENGE FROM THE COMMITTEE

A great change has taken place in evaluating the factors and forces that will influence licensing in the future, not only on the national level but on the state and regional levels as well.

It is obvious that almost every state and territorial board of registration needs to overhaul its laws, rules, policies and practices. The architect who sees a broad refinement of goals will not settle for less, nor will the graduate who comes better trained and equipped than ever before. Both will bypass a profession which through fear of change and indifference employs obsolete tools and techniques.

The AIA Committee on Internship and Licensing in its analysis of the statutes felt it was necessary to draft statutory guidelines for the states rather than to design specific regulations for each. From this vantage point, the committee suggests that:

1. Every state should permit company and corporate practice, providing two-thirds of the directors are licensed professionals.
2. Reciprocity between states through national certification should be implemented.
3. Regulations should be broad and roomy to include engineers, planners, landscape architects, urban designers and those other professions which contribute to the total environment.
4. Restrictions on practice should be taken out of the state statutes.
5. Qualification for admission to the registration examinations should be limited and standardized in so far as age, experience, education and other factors are concerned.
6. State boards should place specific data such as their duties, the type, time and place of examination, etc., in their rules and regulations, not in the statutes.

The committee's overall policy is identified in the "Revised Report of the Basic Concepts of Architectural Registration and Licensing," part of a joint study conducted by the AIA and the National Council of Architectural Registration Boards, which goes back to 1967. In that year, through NCARB and AIA grants, Carl M. Sapers of the Boston law firm of Hill & Barlow was engaged to survey the licensing laws of the 54 states and territories relating to architects, engineers, landscape architects and planners. A summary of his findings from the voluminous report together with the resulting tentative — and entirely flexible — legislative guidelines are presented to the profession for its comments and criticism.

WILLIAM J. GEDDIS, AIA
Chairman, Joint AIA-NCARB Committee on Internship and Licensing

there are in many states provisions which do effectively narrow the architect's field of practice. In North Carolina's architecture statute, the architect is prohibited from specifying any product in which he has an interest and from engaging in building contracting generally. These prohibitions appear to arise from the concern that the architect may have a conflict of interest which would compromise the position of his client. If the architect wants to be a developer, or if he is interested in working on prototype housing systems where he gets his major fee by tying in with a manufacturer of these systems (the manufacturer paying the architect a percentage of the total purchase price), the arrangement is prohibited by such language as is found in the North Carolina statute. Alabama, Connecticut, Maine, Massachusetts, Michigan, New York, Oklahoma, South Dakota and Texas also impose such restrictions. Again, compare the engineers, with a restriction only in New York, and the landscapers, with a restriction only in Nebraska. Thus, while such restrictions are hardly in general use, they are hardly in use at all except with regard to architecture.

Firm Practice

A fourth concern is restrictions on *firm* practice under the registration statutes. Many statutory provisions speak of partnerships, firms and associations and resolve the question of whether such enterprises may engage in professional

TENTATIVE LEGISLATIVE GUIDELINES

I. Definition

A. The practice of architecture, within the meaning and intent of the licensing statute, consists of rendering or offering to render those services, hereafter described, in connection with the design and construction of structures and the utilization of space within and surrounding structures. The services referred to in the previous sentence include the provision of preliminary studies, design drawings and specifications, planning, construction management and administration of construction contracts. The term "structures" is intended to include all the components which a structure comprises including, where appropriate, structural, mechanical and electrical systems. No person not licensed or otherwise permitted to practice under the licensing statute shall engage in the practice of architecture when the public health, welfare or safety is affected by such practice.

B. Because of the rapid pace of change in the professions and trades connected with the construction of the physical environment, the foregoing definition is intended to be broad in its scope and to include various activities previously considered the subject of other licensing statutes, and it should be so interpreted. Conversely, all engineers, landscape architects and planners or other professionals licensed under or exempted from licensing under existing provisions of state law which contemplate that the holder of a license or the exempt person may engage in one or more aspects of what is above defined as the practice of architecture should be permitted to continue to engage in their practice notwithstanding that such practice may consist, in whole or in part, of the practice of architecture as above defined. Persons entering practice within 10 years from the effective date of the new law who would have been permitted to practice immediately prior to the new law shall similarly be permitted to engage in their practice notwithstanding that such practice may consist, in whole or in part, of the practice of architecture as above defined. Finally, this revision is not intended to end other related licensing laws; they will exist concurrently and will, in some cases, provide an option for the professional.

C. It is contemplated that state statutes will continue to exempt various kinds of structures and special categories of persons from the purview of the statute. Construction management and the administration of construction contracts by persons customarily engaged in contracting work should be specifically exempted.

D. It is contemplated that each state will review the use of the word "architecture" itself to determine if a new word or phrase more aptly describes the professional disciplines subject to the statute. Further, it is expected that the composition of the state board will be altered to represent the various professional disciplines subject to the statute.

II. Restrictions on Activities in Which Licensed Architects May Engage

A. No licensed architect should be permitted to engage in or have any financial interest in the manufacture, sale or installation of any component or process in the project for which he is the architect unless he discloses such engagement or interest to his client and his client explicitly waives any objection he may have to such engagement or interest.

B. It is contemplated that state statutes and boards will have other provisions relating to improper conduct by the architect for which he may be subject to discipline, but A, above, is intended to be the sole restriction relating to the architect engaging in or having a financial interest in the building trades.

III. Qualifications for Licensing Under State Procedure

A. To qualify for the licensing procedure the applicant should be

(i) 21 years or older

(ii) a resident of the state administering the examination provided that the board may waive the residency requirement in the case of a *bona fide* resident of a foreign country or in any other case where the board thinks that the applicant is not seeking to avoid the requirements of his state of residency.

There should be no requirement that the applicant be a citizen of the United States.

B. If the state wishes to invest its board with discretion to reject an applicant who is not "of good moral character," the statute should specify the aspects of the applicant's background germane to the inquiry, as

(i) conviction for commission of a felony

(ii) misstatement or misrepresentation of fact by the applicant

practice. The paramount question to practitioners is whether a corporation may engage in the practice.

Regrettably, there are grave ambiguities in the statutes. Breaking into four categories, they 1) prohibit corporate practice, 2) prohibit the registration of a corporation, 3) remain silent on the question, 4) explicitly permit practice.

The architecture statutes of Florida, Mississippi, New York and Oregon, and the engineering and landscape architecture statutes of New York prohibit corporate practice absolutely.

The architecture statutes of Colorado, the District of Columbia, North Carolina, Pennsylvania, Texas and Washington recite that no corporation shall be registered under the act. Herein, the first ambiguity. It may be argued that the mere prohibition against registration of a corporation ought not to bar the practice by a registered individual through the corporate form. The argument proceeds that a corporation does not actually practice: It practices through people and if these are lawfully registered, nothing prohibits them from organizing their business in corporate form.

The contrary view is that the statute bars practice by any person not a registrant. Since a corporation is not juridically a person; if the corporation cannot be registered, it may not practice. Montana's statute indicates that it would take this last position.

In 18 architecture statutes, nine engineering

---

in connection with his application for licensing

(iii) violation of any of the standards of conduct required of license holders and set forth in the statutes or regulations.

(iv) practicing architecture without license in violation of the licensing laws of the jurisdiction in which the practice took place. If the applicant's background includes any of the foregoing, the board may, notwithstanding, license the applicant on the basis of suitable evidence of reform.

C. To be admitted to take the written examination, the applicant must be a graduate of a school of architecture which was accredited by the National Architectural Accrediting Board not later than two years after graduation. In lieu of this requirement, the board may, in its regulation, establish equivalent educational qualifications and/or practical training which may be substituted, in whole or in part, therefor, and the board may adopt as its own equivalents those education and training equivalents published, from time to time, by the National Council of Architectural Registration Boards.

D. To be licensed, the applicant must have had at least three years of diversified practical training in the office of licensed architects, such practical training to be had after termination of the required academic training. In lieu of this requirement, the board may in its regulations establish equivalent practical training and/or educational qualifications which may be substituted, in whole or in part, therefor, and the board may adopt as its own equivalents, those education and training equivalents published, from time to time, by the National Council of Architectural Registration Boards.

E. To be licensed, the applicant must pass a written examination. The written examination shall cover such subjects and be graded on such basis as the board shall, in its regulations, decide. The board may adopt the examinations and recommended grading procedures of the National Council of Architectural Registration Boards.

F. States may, in addition, require a personal interview.

IV. Interstate Practice

A. Every nonresident applicant seeking to practice architecture in a state should be admitted to practice *if*

(i) the applicant holds an unexpired license in the state where his office is located, *and*

(ii) the applicant holds a National Council of Architectural Registration Boards Certificate, *when*

(a) the applicant files his application with the state board, upon a form prescribed by the board and together with a fee prescribed by the board, containing such information concerning the applicant as the board considers pertinent, and

(b) the board receives from the National Council of Architectural Registration Boards a certified copy of the applicant's Council Certificate.

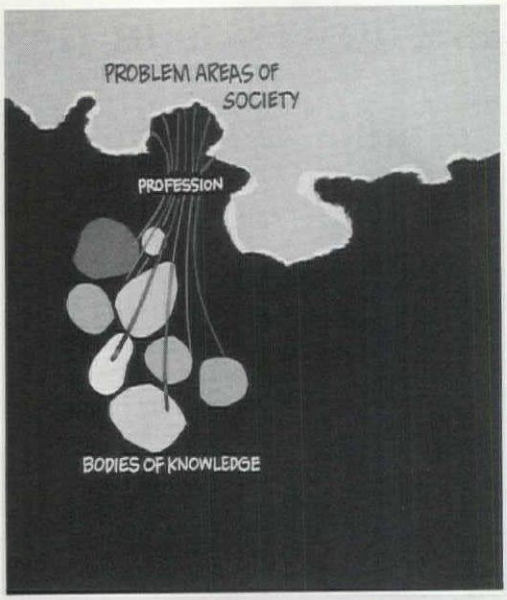
B. A nonresident architect seeking an architectural commission in a state, who qualifies under (i) and (ii) of A, above, should be admitted to the state for the purpose of offering to render architectural services and for that purpose only without having first been licensed by the state.

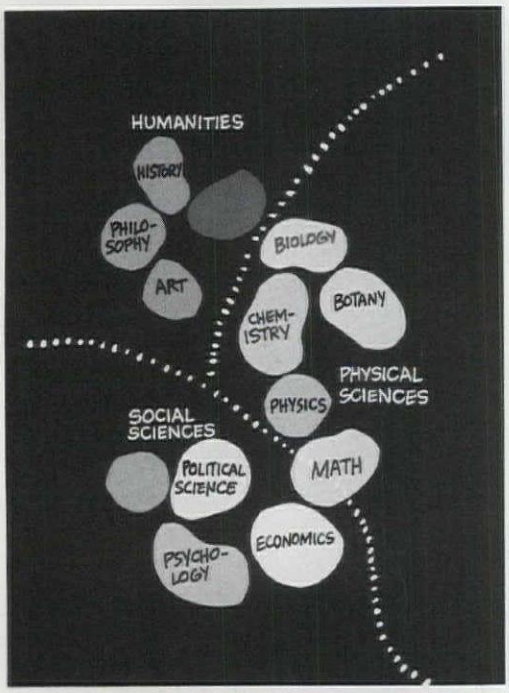
C. The foregoing provisions for admitting to practice a nonresident applicant are to be in addition to the provisions found in the statute for admitting an applicant to practice under the state procedure and to any special provisions in the statute providing a more liberal form of "reciprocity" among states.

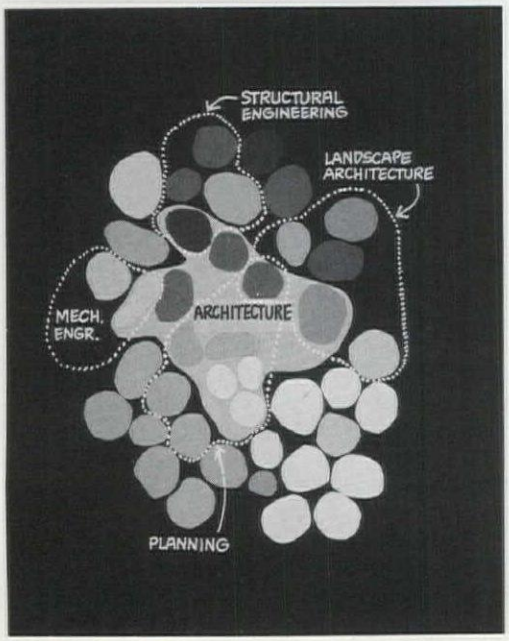
V. Firm Practice

A. A partnership or a corporation should be permitted to practice architecture in a state if two-thirds of the partners (if a partnership) or two-thirds of the directors (if a corporation) are licensed under the laws of *any* state to practice any of the design professions (e.g., architecture, engineering, landscape architecture) and the person having the practice of architecture in his charge is himself a partner (if a partnership) or a director (if a corporation) and licensed to practice architecture in that state. (This is intended to be the most stringent requirement for the firm practice; those states having more liberal requirements should not alter them.)

B. A firm otherwise qualified to practice in a state should be permitted to practice in that state under a name which does not include the names of every partner (if a partnership) or every director (if a corporation) licensed in any state to practice architecture, provided the firm complies with reasonable regulations of the state board requiring the firm to file the names, addresses and other pertinent information concerning its partners (if a partnership) or its directors (if a corporation). □







statutes and eight landscape architecture statutes, there is silence on the question of corporate practice. Here is the second ambiguity. If a particular statute lists other forms, e.g., partnership, in which practice may be conducted, then a plausible argument can be constructed that if the draftsman intended to list the forms permitted, the absence of the corporate form from the list means that it is prohibited. The opposite argument, particularly in those jurisdictions where no list at all exists in the statute, is that the general corporate statute of the state is open to all citizens and if the legislature intended it to be closed to citizens practicing architecture, engineering or landscape architecture, the legislature should have said it explicitly.

Behind the issue of corporate practice is the lingering view that professionals should not be allowed to incorporate. This view was once found in professional canons of ethics, although it is now largely erased from those canons. If we really want to know what the legislature and the groups pushing the legislature were thinking, we would have to consider that many of them viewed corporate practice as an impossibility at the time the legislation was passed because of the professional strictures. For this reason, many states view silence as being a prohibition.

The balance of the states actually permit corporate practice. But here again there is an incredible spectrum of permissions. There is no uniformity. Many states require the majority of the board of directors to be licensed professionals or licensed in that particular profession; others require that all of the board of directors be licensed. At least one state requires that the stockholders be licensed.

Forty-four of the engineering statutes explicitly permit corporate practice. Only 26 of the architectural statutes explicitly permit corporate practice. This statistic confirms a fair overall impression that the engineers have achieved more freedom and less restriction in their registration laws than have the architects. Surely part of this distinction derives from the history of the architectural professional registration statutes. They are the result of pressures from architects interested in protecting the professional character of the architectural profession against the inroads of package dealers, contractors and even engineers.

But this protection by the profession of its own professional character, while it has kept out the outsiders, has narrowed the freedom of the practicing architect. Perhaps Robert Frost's words are appropriate by way of conclusion: *"Before I built a wall I'd ask to know/ What I was walling in or walling out."* □

The Unsettled State of Education

Changes are occurring in US schools of architecture and environmental design at such a rapid rate that many portions of this article will be obsolete before it is published. Yet it is helpful at this important time of transition to pause long enough to consider the significance of some numbers, sizes, ratios, trends and exigencies.

BY GORDON PHILLIPS, AIA

The disciplines which are offered within the schools of architecture and environmental design — architecture, urban design or urban planning, city or regional planning, landscape architecture, building science or building construction and architectural interiors — are given a variety of names by the various schools, as is indicated later.

If all this becomes confusing at times due to the great variety of names and degrees for similar disciplines, it is a reflection of the changing times. While this is evidence of the cherished independence of our schools, it also obviates the need for common descriptive degrees and names for both curricula and courses.[1]

Hereafter, when the name "schools" is used, it will mean all the schools of architecture and environmental design.

Statistics referred to in this report are from the 1969 annual survey of member and associate member schools of the Association of Collegiate Schools of Architecture,[2] compiled by its executive director, James Ellison, who also serves as assistant director of Educational Programs for The American Institute of Architects. Seventy-one out of 81 schools replied to the questionnaire; figures for those not reporting have been interpolated from previous surveys.

There are many important programs underway in the schools which this article cannot mention because all the facts are not available. However, the ACSA and AIA will continue to make every attempt to seek and disseminate such information when it is received.

Numbers

Statistical data gathered in May 1969 indicates that 28,328 students are enrolled in the study of architecture and related disciplines in environmental design in 81 colleges and universities. Of this number, 22,011 are working for a degree in architecture.

The largest school has 1,250 students; the smallest with a full five-year program has 65.

The student/faculty ratio is an indication of the number of full-time students per full-time faculty member in the accredited schools. A full-time student is one taking 12 hours or more of credit each quarter or semester. The ratios range from 5.5 to 31.8 students per faculty member, the average ratio being 14.7.

We are fortunate to have 1,159 young ladies studying architecture, and have welcomed 925 students from foreign countries.

Only 912 students in architectural schools are of minority races.

Ninety-one schools offer a complete degree curriculum in architecture, of which 63 have been accredited by the National Architectural Accrediting Board.

The following degrees were expected to be granted in June 1969 (the 10 schools not reporting not represented here):

Bachelor of Architecture	2,112
Master of Architecture	385
Master of Urban Design or City Planning	429
Doctor of Urban Design or City Planning	11
Bachelor of Architectural Engineering	130
Master of Architectural History	1
Master of Tropical Architecture	21
Master of Environmental Systems	4
Bachelor of Interior Design	120
Master of Interior Design	1
Bachelor of Landscape Architecture	158
Master of Landscape Architecture	161
Bachelor of Building Construction or Building Sciences	158
Master of Building Construction or Building Sciences	33

Variety of Degrees

Architecture: The accepted five-year accredited program in architecture, awarding a Bachelor of Architecture degree, is offered in 50 schools. In most of these schools a master's degree can be earned after one more year of study (5+1). In eight other schools, it takes a total of six years to earn a Bachelor of Architecture. Two other schools require a bachelor's degree as an entrance requirement, and in these schools, the Bachelor of Architecture degree is earned after a total of 3½ to 4 years.

The trend is toward programs which offer a Master of Architecture after six years of study. Generally the first two years of these programs are cultural, science and liberal arts courses to broaden the student's base of knowledge; pro-

[1] "The adoption of a new kind of language and format for the description of curricula" is recommended in "A Study of Education for Environmental Design," a report by Princeton University for the AIA, with Robert L. Geddes, FAIA, and Bernard P. Spring, AIA, as co-directors. (For discussions on the study, see AIAJ, Sept. '68, p. 74, and Dec. '68, p. 78.)

[2] Copies of enrollments and "Statistics Comparative Chart" can be obtained at $1 each (prepaid orders only) through the ACSA, 521 18th St. N. W., Washington, D. C. 20006.

fessional subjects not being offered until the third year. This system allows students to attend two-year colleges nearer their homes the first two years, thereby facilitating transfer into the professional program. The disadvantage is that development of professional skills is delayed two years. Usually a bachelor's degree is awarded after four years which may be called one of the following (number of schools offering the degree indicated):

B.A. in Architecture	2	Bachelor of Environmental Design	1
B.S. in Architecture	3	Bachelor of Environmental Studies	1
B.S. in Art & Design	1	B.F.A. of Environmental Design	1
Bachelor of Fine Arts	3	Bachelor in Urban & Environmental Studies	1
Bachelor of Arts	9		
Bachelor of Architecture	1		
B.A. in Environmental Design	2		
B.S in Architectural Studies	1		

This bachelor's degree is not a professional degree and does not count as educational background for licensing unless it is followed by two more years and a master's degree. In these last two years the student is generally allowed to select subjects in the area of his special interest. Twenty-two schools have this 4+2 program, and a half-dozen schools will change from 5+1 to 4+2 in a year or two.

The master's degree in architecture is called Master of Architecture in all but five schools. It is called Master of Science in Architecture in three schools and Master of Fine Arts in Architecture in the other two. In the great majority of schools this degree can be earned in six years, but in seven schools it takes seven or eight years to earn the same degree (longer if the student did not begin preparing to study architecture until after obtaining a bachelor's degree in another field of study).

The author: Mr. Phillips is director of Educational Programs for The American Institute of Architects.

Graduate programs develop and upgrade scholarship and research and, fortunately, doctorate programs are on the increase. The University of California, Berkeley, for the first time is offering a Doctor of Philosophy in Architecture and City Planning.

The University of Michigan has announced a Doctor of Architecture program "designed to lay the foundations for research, education and practice in architecture in the decades ahead." Six areas of specialization are offered: 1) urban design, 2) facilities design, 3) architectural history, 4) architectural technology, 5) architectural operations, 6) man-environment relationships. In the program offerings, the specialties are described by goal statements of knowledge the student shall have acquired at the conclusion of studies to earn the degree.

Columbia University offers a Ph.D. in Architecture, as does the Illinois Institute of Technology, Princeton University and the University of Pennsylvania. Rice University anticipates a new Ph.D. program beginning this fall.

Architectural Engineering: "Structures" is the name that many prefer to call this discipline. In four schools it is still possible to study four years and earn a Bachelor of Science in Architectural Engineering. In another school it takes five years to earn the same degree. At seven other schools students, after five years, can earn the equivalent called Bachelor of Architectural Engineering. Incidentally, it is still possible in many states to become a registered architect with a four-year degree in architectural engineering plus three years of experience with a registered architect.

Of schools which prefer the name "Structures," three of those in the 5+1 program offer a structural option in the fifth year.

Master's degrees in this discipline are called Master of Architectural Engineering at four schools and Master of Science in Structures at two others. It can still be earned in five years at two schools; at the others, six.

Urban Design or Urban Planning: "Urban" has come to mean the branch of architecture concerned with large and complex design problems of a portion of a city.

In the past few years, the number of schools offering master degree programs in urban design or urban planning has increased rapidly. The terminology is varied, as follows:

M.S. in Urban Planning	1	Master of Architecture in Urban Design	10
Master of Urban Planning	7	Master of Planning & Urban Design	1
Master of Urban Design	2	M.S. in Urban Planning	1

Most of the above programs require two years following a four- or five-year degree in architectural studies.

Three schools offer a five-year Bachelor of Architecture in Urban Design or a concentration in urban design in a five-year program. A four-year Bachelor of Arts in Urban Planning is offered as a prelude to a six-year master's program in one school and a Bachelor or Urban Planning in another.

Rensselaer Institute participates in an interdisciplinary program administered by the director of the Center for Architectural Research, offering a M.S. in Urban-Environmental Studies. A Ph.D. in Urban Planning is offered at Columbia, Princeton University and the University of Washington.

City and Regional Planning: A distinction has been made in this report between the words "urban" and "city and regional." However, to the public the intermixture of "urban," "city" and "community" is semantically confusing. To add to the confusion, the following degrees are offered in city and regional planning:

Master of City Planning	6	Master of Regional Planning	3
M.S. in City & Regional Planning	1	Master of Urban & Regional Planning	1
Master of City & Regional Planning	1	M.F.A. in Planning	1
Master of Planning	1	M.S. in Planning	1

Four- or five-year bachelor's programs with titles such as Bachelor of Urban Planning, Bachelor of City Planning or Bachelor of Community Planning, often precede the master's programs. One school offers a four-year B.S. in City and Regional Planning.

The Doctor of Philosophy in City Planning is offered at IIT and the University of Washington. The Ph.D. in Regional Planning can be achieved at Syracuse University.

Science and Technology: Programs in architectural sciences and architectural technology are relatively new. One school has a four-year B.S. in Building Science, and another school offers a Bachelor of Arts degree with a major in architectural science as preliminary to the accredited professional degree program.

Rensselaer Polytechnic Institute offers a M.S. in Building Sciences. A Master of Architecture in Architectural Sciences can be earned at the University of Kansas. The Doctor of Building Science is an ad hoc degree at the University of Southern California.

The University of Illinois at Chicago and Clemson University have five-year programs terminating in Bachelor of Building Technology, Columbia has a one-year master's program in architectural technology.

Construction: Nine schools offer four-year programs, variously called: B.S. in Building Construction (4 schools), Bachelor of Building Construction (2 schools), B.S. in Construction (1), B.S. in Architectural Construction (1) and Construction Management (1). Two schools have a five-year program terminating in a Bachelor of Architecture in Construction.

The Master of Building Construction is offered at Auburn University and the Master of Architecture with a major in construction at Syracuse.

Landscape Architecture: This report includes only those courses in landscape which are offered in schools of architecture. Six schools offer four-year bachelor's programs, and seven schools offer five-year bachelor's programs in landscape architecture. Five schools have master's programs.

Interior Architecture: The recognition of an interiors specialist gains in importance as the complexity and size of building increase. Programs offered in schools of architecture are a Bachelor of Interior Architecture (3) and a Master of Interior Architecture (1).

Other Specialties: A graduate program in Building Systems Design has been announced by the new School of Architecture and Environmental Design, State University of New York at Buffalo.

Cornell University and the University of Virginia offer the Master of Architectural History; Cornell also offers the Doctor of Philosophy in History.

A Bachelor of Architecture in Humanities can be had after five years at Illinois in Chicago.

A Master of Tropical Architecture is available at Pratt Institute. The University of Arizona offers a Master of Architecture in Public Administration. Master's degrees are available in architectural administration at Syracuse and Kansas. Syracuse also has an option in specifications. Only Iowa State University lists housing as an option for the master's degree.

Also offered are degrees in Master of Environmental Design, Syracuse; Master of Architecture in Environmental Systems, Virginia Polytechnic Institute; Master of Science in Environic Design, University of Notre Dame.

Combined Programs: It is possible to earn combined degrees at some schools. The combinations and total college years required are Master of Architecture and Urban Design (7), Washington University, St. Louis; Master of Architecture and Master of City Planning (7), Georgia Tech; Architecture and Planning (Bachelor of Architecture and Master of Science) (6), Pratt; Master of Landscape Architecture and Master of City Planning (7), Georgia Tech. At the University of California, Berkeley, the Department of Landscape Architecture participates with the Department of City and Regional Planning in a joint degree program in urban design. Through a special curriculum in both departments, a student in this option first obtains his Master of Landscape Architecture or Master of Architecture, and after a third year the Master of City Planning.

Trends

Community Involvement Programs: The University of California Extension of the College of Environmental Design, Berkeley, established a community design center as part of a broad continuing education program servicing low income communities of San Francisco. It operates

ILLUSTRATION 1

VARIOUS EDUCATION MIXES

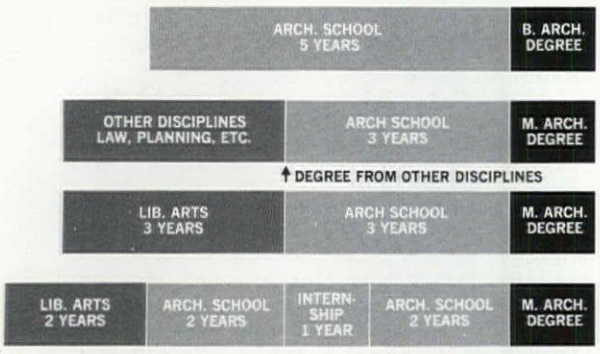


ILLUSTRATION 2

INTERN ARCHITECT RECOGNITION

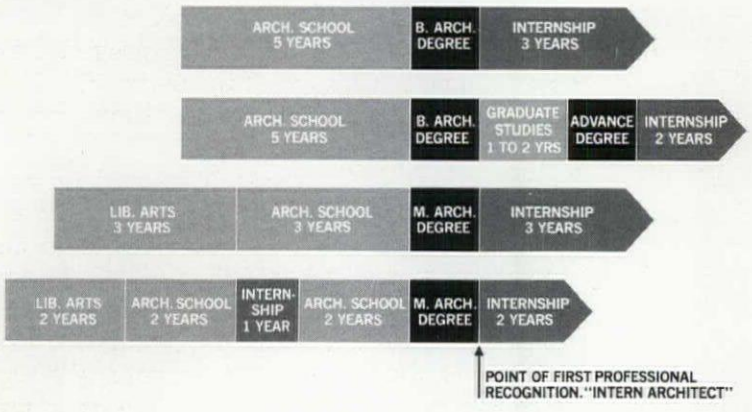
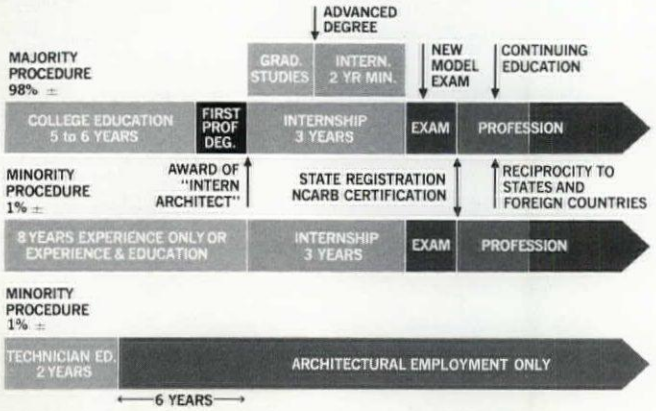


ILLUSTRATION 3

PROPOSED PROCEDURE



NCARB'S 'INTERN ARCHITECT' PROGRAM

Notes by NCARB President Dean L. Gustavson, AIA, whose art appear here and in the preceding article.*

The main thrust of NCARB's activity for 1969-70 is a proposal to grant the title "intern architect" to graduates of accredited architectural schools and to establish a defined internship program and record. Its success will be tied to a flexible approach to education by which different backgrounds of studies and concentrations bring the student to a professional degree.

Illustration 1 shows various models of education possible at the present time. The top bar shows the route most familiar to us, while the second and third are variations. The fourth shows an experimental path under review by the Joint AIA-NCARB Committee on Internship and Licensing.

Illustration 2 identifies a number of systems — certainly not all of them — that relate to the intern architect's recognition and the time the first professional recognition is received, upon the awarding of a degree. The details and procedures will be worked out in the forthcoming year. Our plan, however, is that upon graduation, the candidate receives the title of "intern architect" and that it be granted by the state registration board and the NCARB concurrently.

Illustration 3 shows the proposed on-the-job training and employment that follows technician education. This is a group distinct from those who are in architectural schools and will become more important as a source of manpower, particularly draftsmen. The process of education in technical institutes and, in some cases, in community or junior colleges probably will continue. The obligations of the architectural firms would be to give employment to these technically trained people and continue their instruction in the offices in a kind of on-the-job training. The bottom bar shows the possibility for a person in this route to make a step toward professional status by entering the proposed internship program.

In a related proposal, NCARB has adopted, and encourages the states to use, the new streamlined and uniform application forms and guidelines for registration-certification procedures. These changes will facilitate the processing time required of candidates for examination or of those seeking reciprocity.

*From a paper delivered at the NCARB convention in Chicago and available from NCARB Headquarters, 521 18th St., Washington, D.C. 20006.

as a training ground for graduates in the design field who have not yet achieved full professional status.

Special community action programs, as well as external programs involving participation of professional offices and public agencies, are being offered by Pratt on a selective basis.

VPI has a field unit, the Roanoke Center for Community Planning, which provides services to the community at no cost. Case Western Reserve University makes its facilities available in support of the HOPE (House Our People Economically) program.

Community projects laboratories at Massachusetts Institute of Technology and Harvard University bring students in contact with problems to solve in the real world about them.

Interdisciplinary Approach: A continual effort is underway in our schools to find ways to more effectively teach an interdisciplinary approach to solving design problems. Some schools of architecture have on their faculties experts in other disciplines related to environmental design problems.

Student/Teacher Exchange: A consortia of midwestern schools of architecture has worked out an exchange program whereby students exchange schools for a period of time to experience educational methods of other institutions.

The new school of architecture at the University of Wisconsin in Milwaukee, starting out with only underclassmen, plans to bring in upperclassmen from nearby universities who will inspire and encourage the younger students. The introductory course to architecture and man-built environment is video-taped and made available to other colleges in Wisconsin.

To help upgrade the architecture and planning curricula at Tuskeegee A&I State University, the Ford Foundation has made a five-year grant to Tuskeegee with the University of Michigan on a subcontract. Tuskeegee students study at Ann Arbor in the summer. Video tapes of student work are exchanged for review and evaluation.

Cooperative Programs: At the University of Cincinnati, both the architectural and the community planning programs are on cooperative bases after the sophomore year's second quarter.

At Auburn University a six-year cooperative program is now in the first year of operation. Students work in professional offices and alternate quarters in the university.

Work Experience: Eight schools require one summer of work experience related to architecture for the bachelor's degree, and one school requires two summers. At most schools work experience in professional offices is encouraged but not mandatory.

Technician's Training Programs: Two hundred junior colleges offer programs in architecture. Rapid expansion is evident by the response to questionnaires sent to all AIA components, indicating that 30 or more two-year colleges plan to offer such programs soon.

"A Two-year Program for Architectural Technician's Training," prepared by an Institute task force and promulgated to local colleges by AIA component members, has been designed to educate technicians in three sequential generic groups: drafting, specifications and estimating; graphic arts, models and reproduction; administration, data processing and information.

Foreign Programs: In 1967, the University of Illinois at Urbana began a foreign study program with base of operations in La Napoule, France.

California State Polytechnic's School of Architecture has a similar study program in Italy as does the Rhode Island School of Design and the University of Notre Dame.

Summer tours of Europe are offered by the University of Detroit and the University of Tennessee, while Montana State College sponsors a summer travel course in Mexico.

Other schools reporting foreign programs are Pratt, Illinois at Chicago, Iowa State, VPI, California at Berkeley, MIT and the University of Hawaii.

Broadening of Programs: It is evident from the section on "Variety of Degrees" that many new programs in the environmental design disciplines are being offered. Schools with the regular five-year accredited program are offering more options for concentration in the last year or two of study. For example, Arizona, although convinced that in this state the five-year program will be adequate for several years, has made revisions which provide for options in architectural design, structural design, urban planning, history and business technology.

Exigencies: The "Graduate Fellowship Program in Educational Research"[3] sponsored by the US Office of Education says "there is a critical need for professional people trained to perform educational research, to evaluate new concepts and techniques in education, to develop new curriculums, and to relate the findings in the behavioral and other sciences to education. There is also an increasing demand for developers of new educational systems and products, and for persons trained to disseminate research findings and materials to the classroom."

Funds grants, available from the Office of Education, are generous and lead to the doctorate degree. But architecture is not listed, nor

[3] US Department of Health, Education and Welfare, US Government Printing Office, Washington, D. C.

is environmental design. Here is a need and tremendous opportunities for students.

Only one school reports an option in housing. For each 35 housing units constructed, a housing construction manager is needed. These could be trained in a two-year concentrated program. However, 10 to 15 percent of the managers will be needed in higher management positions requiring at least a bachelor's degree.

Rebuilding a total urban environment requires special education and experience. This professional has no accepted name as yet. He has been called an "urbanologist," but whatever his name, we are not educating enough of them.

There is a shortage of mechanical engineers — those professionals who work with architects designing air distribution and conditioning systems. Only three schools report special programs to fill this shortage now, and the future will be more critical. There is also a shortage of those engineers who work with architects designing electric and communications systems. More specialists in acoustics are also needed, but few courses in acoustics are offered.

Because buildings and groups of buildings are becoming more complicated in size and technology, a demand appears to be growing for professionals in building management and building evaluation.

Transportation designing and planning specialists trained with a background related to architecture and urban environments will be needed in increasing numbers.

The need for some kind of national effort to coordinate all the various programs is obvious.

Action

AIA Programs: Slightly more than a year ago the AIA distributed the Princeton Report which named goals for education, described a process of change and made recommendations for improvement of educational methods.

The three major goals stated that a student should be able to 1) work effectively in today's world, 2) renew and adapt his abilities in response to change and 3) formulate a better future environment.

The nine recommendations of the study have been considered and implemented in one way or another into immediate and long-range action programs in the schools and the profession:

• The AIA Committee on Education and the Commission on Education and Research have members representing AIA, ACSA, NAAB and the National Council of Architectural Registration Boards. Interorganizational communications have been improved, resulting in better coordination of efforts and a broader understanding of problems and implications.

• An evaluation manual for architectural educators will soon be distributed, another AIA-sponsored project prepared by Educational Testing Services.

• Programs in environmental awareness for elementary and secondary schools are being tested and will soon be available.

• The AIA this year for the first time started a national Professional Development Program for practitioners which has received enthusiastic response and will soon be expanded with more continuing education courses offered in more cities.

Educational Services Agency: One of the most important recommendations of the study was "the establishment of one or several national centers for course development to be jointly sponsored by the environmental design professions." A report by the ACSA Committee on Graduate Study and Research[4] concluded that the next essential step for progress was the establishment of an independent, continuing services agency for the schools of architecture. A coordinated effort to establish an Educational Services Agency is undertaken by AIA/ACSA.

Need for Federal Support: A greater number of experts in urban rehabilitation for rebuilding for growth is needed. The planning and design work must be done first. Therefore, we must support education for these environmental designers so that existing educational programs can be enlarged and accelerated.

Teacher Shortages: Schools of architecture recently reported well over 100 teaching positions which they cannot fill either because trained and experienced teachers are not available or because they cannot offer salaries competitive with the professions. Support is needed for graduate schools to train more new teachers and to supplement inadequate salaries.

Accrediting of Schools: Several schools are unable to receive accrediting because they have inadequate facilities and libraries and suffer from incomplete staffing. Federal support is needed to help these schools.

Computerization: Complex urban planning projects, housing planning, etc., call for the latest computer technology. More trained operators will be needed, along with research.

Scholarship Funds: More scholarship funds are needed, especially for the underprivileged and minorities; for support of graduate work and research, development of faculties, improvement and enlargement of facilities; and for schools which are actively engaged in community improvement programs. □

[4] "Graduate Research and Scholarship in Architectural Education," Project 7-8218, Grant OEG 1-7-078218-4303. US Department of Health, Education and Welfare Bureau of Research.

The Flexible Future of Architecture

A Canadian architect states his profound belief that systems building, with which he is deeply involved, is a wonderful tool for the profession; that it can give everyone the opportunity to change his home according to his requirements; that it can make schools, hospitals and institutions as flexible as our present way of life.

BY RODERICK G. ROBBIE

The crucial issue of systems building and its by-product industrialized building is: Can architecture be created from these means of building?

The answer is yes. Systems building is nothing but organized traditional building. Industrialized building is nothing but systems building with an extreme form of specialization in mechanization, production, installation and sales management.

Architects are needed to guide the building industry into the age of systems building. They are needed to show how products which have been produced through mass production processes can form the basis of a real architecture of the 21st century, which uses rather than rejects the industrial process in building.

Through systems building the total skill and resources of the building industry can be harnessed. Industrialization of building can provide the means whereby truly inexpensive structures can become a reality.

Through systems building and industrialization the cyclical renewal of buildings becomes an economic reality, and the many protestations we have made as a profession for an improved quality for our cities become a practical reality.

The author: Mr. Robbie, of the architectural and town planning firm of Robbie Vaughan & Williams and of Robbie Vaughan Williams Jacques Systems of Toronto and Albany, is technical director of the Metropolitan Toronto School Board, Study of Educational Facilities.

Contemporary architecture is in my view totally bankrupt. We read and hear how our architectural grandfathers of the 19th century ran away from the realities and opportunities of structural engineering, choosing instead the genteel trivia of reviving dead architectural styles. In the 1920s we anticipated industrialization and built industrialized architecture — using traditional construction.

Today, when we have for the first time the means of real industrialized building, the means of producing a great environment for everyone rather than for privileged minorities and special groups, what do we do? We go back, not to the Middle Ages, not to Rome, but to Babylon.

We pour concrete by the immovable millions of tons. We produce grim, dank fortifications or soulless iron boxes which simulate industrialization. We produce a priestly and priest-ridden architecture, dominated by the dictates of the prima donna, setting the environmental tastes of society. This kind of dictation has a great deal in common with the kind of arrogant, arbitrary decisions made by women's dress designers each year, where designs are produced that have little relationship to the shape of their clients or the realities of their everyday lives.

Architects have come to believe that a built environment in which a great and lively humanity could exist must be made up only of quality architecture. Where such has been tried, the result is a trend toward a sterile human society. Vulgarity is an essential ingredient to human evolution.

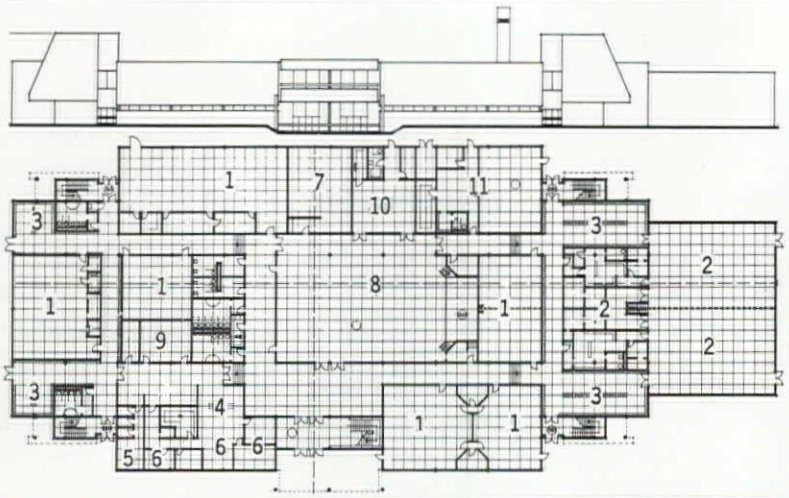
To me, the architect who presumes to know what is best for everyone environmentally is no longer in contact with human society. If the architect does not take the man in the street into the design team for the environment of the future, it is probable that the architect will find himself filling a socially decorative role and be bypassed by more realistic members of the building industry.

Architects have an almost unique task to spearhead: the universal birth of human creativity. For me, the hope of man in every aspect of his endeavor is the exploitation and flowering of his creativity, which I see as the total use of the total capabilities of every human being.

The riddle is how to unlock this creativity from a society which has been trained for centuries to be creatively shy?

The release of general creativity can be started by changing the attitude of laymen toward buildings and the creation of buildings. For one of man's greatest areas of creative shyness surrounds his reverence for buildings, the art of architecture and the arts of sculpture and painting. It is in these areas that the public has always deferred to the opinions of the expert, and consequently maintained its own creative imprisonment. Contemporary sculpture and painting are substantially in the grip of a self-perpetuating international cabal of art critics, gallery owners, curators and miscellaneous camp followers, who have a collective interest in maintaining these arts at a level of rational incomprehensibility and thereby defy public participation, understanding and probable outrage.

A countervailing process must be started to redress the balance to achieve widespread hu-



Pleasantview Junior High School
Boigon & Heinonen

1 Instructional areas
2 Gymnasium area
3 Locker alcoves
4 Reception
5 Health office
6 Administrative areas
7 Staff dining
8 Cafeteria with stage
9 Conference room
10 Kitchen
11 Caretaker and service area

All designs for the Toronto school system are within a 5x5-foot planning grid with standard floor to ceiling heights.

man creative development. It would seem that only architects can initiate the processes necessary to bring about this creative regeneration through their attitude toward architecture and the design of buildings. Once architecture is again a vital force in society, the regeneration of sculpture and painting will take place.

Architects can initiate a second era of human evolution by showing, and involving the public in, the process of building design evolution and change. He should encourage his client to become an environmentalist, while he provides the resources for this metamorphosis. By doing this, architects would add millions of new pairs of eyes to see the state of our physical environment; millions of brains to analyze it and millions of hands to bring about massive environmental rejuvenation.

When we lease an apartment we are told that we cannot change the decorations, nail things to walls, rearrange the facilities to fit our lifestyle or customize the accommodation to our individual needs by opening walls or adding major space separations. Here, a large number of builders who have done no social, anthropological or any other kind of research, nor ever intend to do any, mould not only the physical environment in which the vast majority of Americans and Canadians live but also contribute in the most fundamental way possible to deter the evolution of the human species.

The same accusation can be directed at a majority of the architectural profession with respect to the construction of educational and institutional buildings. I make this rather brash pronouncement in the belief that what is true in housing and in a large measure of educational facilities, the provision of a fixed, unchangeable physical environment, is the means which is frustrating major human advance.

If the means are provided whereby the individual user can make a living and working environment to his specific taste and needs, both physically and spatially, the formal authority structures of society will give to the individual the belief that he is not dependent on, not helpless before unknown forces which he must placate; that he is blessed with remarkable powers of infinite variety, *his creativity*. The variety of environmental arrangements which would arise from a creative society is beyond the comprehension of the design profession and its formal clients.

Every individual must be convinced that he is, and has an absolute right to be, an environmentalist. Architects, contractors, developers and professionals concerned with building are resources, not some kind of omnipotent priesthood of the physical environment. It is not only the right but a necessary ingredient of the species' survival and evolution that everyone become concerned with and active in the development of our physical and built environments.

Toward this objective of releasing creativity the Metropolitan Toronto School Board and its Study of Educational Facilities (SEF) sought to make its school building system totally flexible. Economic restraints forced the fixing of some elements with potentially long lives, such as the building structures, exterior walls and plumbing facilities. We can remove and reuse the two latter, but both would be substantial building operations. All other aspects of an SEF school are easily changed.

We have noted in the School Construction Systems Development in California (SCSD) and a number of other instances a user reluctance to exploit the new schools' flexibility. To try to offset this tendency just to accept and adapt to an environment as found, we are making a film about the relationship of the user to the built environment with specific reference to SEF. This film will show the potentialities of the building system for individual interpretation

and will encourage spatial and environmental experimentation beyond the formal characteristics of the building system.

I believe it would be very good if a paint could be developed which could be peeled from a smooth concrete wall, leaving no mark, thereby enabling the children to decorate the exterior of their school to their own taste each year as a large-scale project in developing outside environmental sensitivity.

I often feel that there must be deep significance in the fact that North America's most influential social institution — the educational — in renewing itself is triggering the regeneration of North America's largest — and most backward — industry: building and building products production.

The first three months of the Toronto school program were spent in overall planning. Work on the primary studies of SEF started early in 1967. At the outset we decided that it would be unrealistic to complete a substantial portion of the educational user requirements study before commencing work on the building system.

As a consequence we have carried forward the primary studies of the program with up to a 3½-year overlap in the case of the building system program and the user requirement studies. I understand this mode of organization has come to be known as the "fast-track" method of project planning.

The Toronto school board and SEF's advisory committee guaranteed a minimum order of 1 million square feet of construction for a two-year period beginning September 1969, with an order ceiling for the same period of 2 million square feet.

To determine the minimum basic order size to obtain a true open system tender from industry, SEF canvassed 270 companies and contractors in Canada during the early part of 1967 and held 120 meetings during that year with every representative interest in the building industry.

It may sound a little presumptuous, but I feel that SEF and other current building systems programs are, for their size, a disproportionately strong force in the long-term remolding of North America's building industry.

Our meetings included architects, engineers, general and trades contractors, trades unions, statutory officials and miscellaneous groups and interests associated with the industry. They provided a realistic base of data and opinions from which to structure the organizational form and management of the First SEF Building System. It was, and still is, my firm belief that the problem confronting the building industry in North America at this time is a desperate need for a total management approach to building rather than new technology — in other words, the systems approach.

Consequently, SEF expressly asked the building industry not to innovate technically when bidding. Industry followed the request and limited innovation only to those areas where there was a gap in existing technology.

During 1967-68, performance specifications were written for a building system comprising 10 subsystems. Two of the subsystems were further subdivided, giving a total of 14 subsystems. The tendering method and all aspects of the conduct of the bid were described in detail in SEF's *Introduction to the First SEF Building System.** This building system comprises the following subsystems: structure, atmosphere, lighting/ceiling, interior space division, vertical skin, plumbing, electric/electronic, casework, seating, standard furniture, roofing, carpeting, gymnasium flooring and hardware.

Together, these constitute just over 80 percent of the finished cost of a school, or just over 90 percent if the general contractor's overhead and profit is not included. In the case of the SEF schools, management contractors retained on a professional fee basis are being used.

The SEF specifications and introductions were sent to 1,000 representatives of the building industry for review and criticism, and as a result were duly revised. At this time the school board increased the basic order to 2 million square feet, comprising 31 schools and one office building, for construction during the September 1969-71 period.

Tenders, restricted to prequalified bidders, were called on July 9, 1968, and closed January 7, 1969. Subsystem tenderers, which were most typically consortiums of subcontractors and manufacturers, were prequalified with respect to their financial status, production and installation capabilities. The review half-way through the tendering period evaluated their technical abilities. Of the 60 potential bidders who sought prequalification, 48 were prequalified and 36 submitted 45 proposals for 10 subsystems.

In February 1969 the school board designated one bidder in each subsystem. Together these contractors, under the direction of SEF as architects and a management contractor as construction coordinator, were required to construct a building to demonstrate the technical compatibility of their subsystem proposals before receiving the contracts for the total program.

The SEF bidding system was based on a series of mandatory interfaces of subsystems, a man-

* *Introduction to the First SEF Building System*, which with *Specifications for the First SEF Building System* and *The Bidding Sheets for the First SEF Building System*, constitute the contract documents for the SEF building program may be purchased from the SEF offices at 49 Jackes Avenue, Toronto 290, Ontario, Canada.

datory interface occurring when the parts of one subsystem had to touch, pass through or be connected with the parts of another subsystem in a finished building.

Under the interfacing bidding system each subsystem bidder gave his price on the assumption of consideration by the owner of at least two other bidders in each mandatory interface. The effect of this bidding method was to bring into being the first true open building system in construction history. To evaluate the bids, just over 1 million interface bidding combinations were considered, revealing 13,040 complete building systems, which met the SEF performance specifications.

These systems ranged in price from about $18 per square foot gross, including foundations, carpeting, built-in equipment and casework, to $26.61. The cost of $18 assumed that the most efficient building layout possible would be used. After allowance was made for architectural design, building cost was set at $19.10 per square foot gross.

This cost is applicable to elementary and intermediate schools and compares to the original project budget of $20.85 per square foot gross, representing an overall saving on the project of 8.39 percent.

The gross budget for SEF was $41.7 million. The value of subsystem proposals offered if tendered by traditional means would have been $52 million. The designated subsystem cost will be $38.2 million. In general terms, the Metropolitan Toronto School Board obtained about 30 percent more value for 8.39 percent less cost than by traditional means.

I would expect the second SEF system to generate a similar improvement in value with about a 10 percent reduction in cost below the current cost of the First SEF Building System, and reach a price level about 25 percent below the current cost of traditional school construction in 1972-73.

Twenty-six architectural firms were retained early in 1968 to prepare design sketches for all schools in the program. These designs reflected the differing educational philosophies of the six borough boards of education and the influence of varying site requirements. All designs were prepared within the 5x5-foot horizontal planning grid requirements of SEF, its standard floor to ceiling heights of 10, 14, 18 and 24 feet, and standard roof and floor thickness of 4 inches.

The architects were also told to assume full airconditioning and carpeting, and relocatability of all interior walls and partitions, lights and ceilings, electrical and electronic services, airconditioning terminals, educational and storage casework and limited relocatability of the plumbing subsystem. The resulting designs were published and used for the establishment of quantities.

With the final designation of the successful subsystems, the architects are now revising their designs to exploit the First SEF Building System fully.

In April 1969 general contractors were invited to seek prequalification to act as construction managers for the first 11 schools and one office building. These were appointed in June. From April to August, metropolitan Toronto was faced with a series of major construction lockouts and strikes. Until they started, SEF had remained precisely on its original time schedule. When they were over, we felt that we were about six weeks behind, but we should be able to meet all original program dates to complete the test school by February 15, 1970, and the remaining 12 buildings by July 20, 1970.

A second, closed school building system made up from a mix of successful and unsuccessful SEF bidders is in an advanced state of development in Toronto. This system, a direct spin-off from the SEF performance specifications, should be announced shortly. Its promoters claim $40 million of construction interest in Ontario and Central Canada.

Inquiries concerning the SEF system have come from all major school boards in Canada and a number of large ones in the US.

My firm has completed preliminary studies for an open building system for family housing. Similar programs for a wide variety of other building types are probable in the near future.

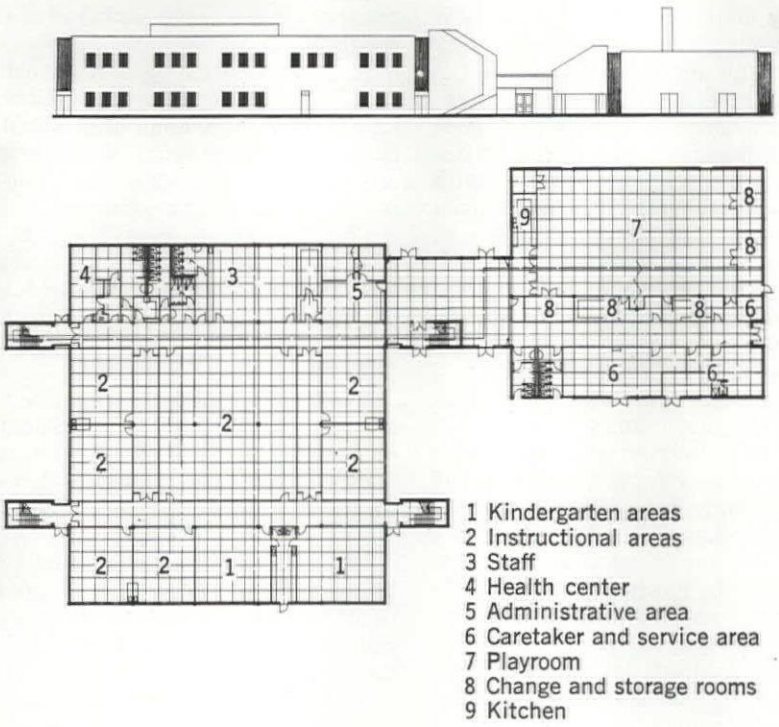
At the suggestion of my firm the Canadian Government in association with the Royal Architectural Institute of Canada has initiated a study into generic planning grids, modules and performance specifications. Through this study it is hoped that rapid integration of a wide variety of building products and methods can be achieved, thereby creating a major overall improvement of the efficiency and quality of the building industry.

To speed the generation of open building systems I believe there must be:

- nationwide — preferably continentalwide — markets available to the subsystem contractors to ensure continuity of demand
- national — or continental — building and fire codes with common modes of interpretation
- standard methods of testing and labeling subsystems and their components
- commonly accepted cost escalation methods
- standard forms of building accounts, project and program procedure.

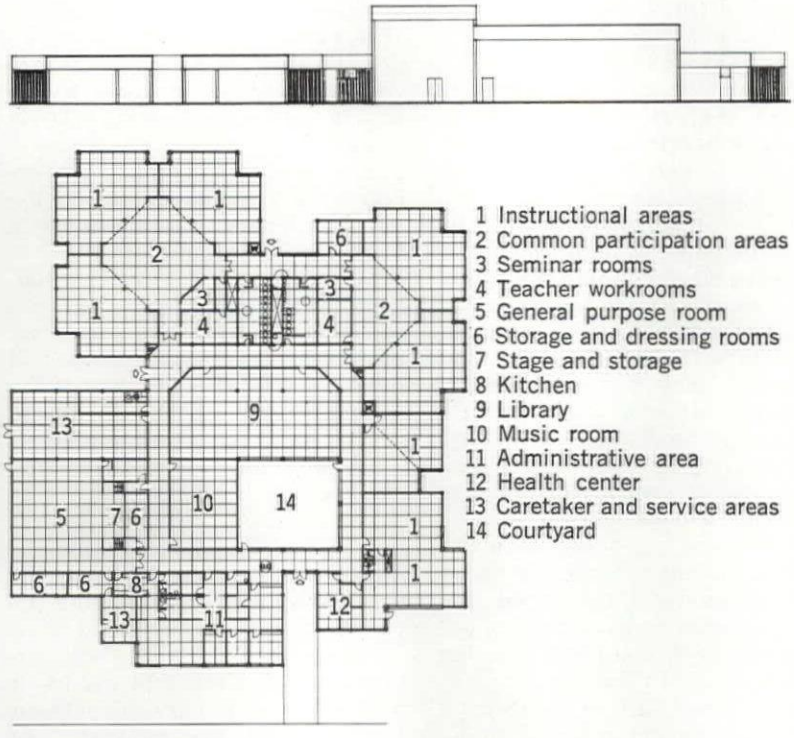
In systems building, with its special mobility, we finally have an architecture that recognizes the most important ingredient — people. □

Avonwick Gate Public School
Jackson Ypes & Associates



1 Kindergarten areas
2 Instructional areas
3 Staff
4 Health center
5 Administrative area
6 Caretaker and service area
7 Playroom
8 Change and storage rooms
9 Kitchen

Finch Park Junior Public School
Lee Robb Elken Jung



1 Instructional areas
2 Common participation areas
3 Seminar rooms
4 Teacher workrooms
5 General purpose room
6 Storage and dressing rooms
7 Stage and storage
8 Kitchen
9 Library
10 Music room
11 Administrative area
12 Health center
13 Caretaker and service areas
14 Courtyard

Everything but the building structure is movable in the Toronto School system's buildings, although moving exterior walls and the plumbing facilities would be a substantial job. All other elements are easily changed.

Coming on Strong: Systems Building

When advocates of systems building meet to discuss this construction method, their belief is restated: Here lies a challenge for the architect and unless he accepts it, others, for sure, will take his place in the building picture.

Make no mistake about it: The systems building explosion is on its way and there's no way to stop it.

Why should it be stopped, for that matter? It offers more than enough advantages to justify its use and architects had better get with it — or be left out in the cold.

This was very much the sentiment, in fact conviction, at the "Systems Day" meeting of the AIA Committee on School and College Architecture last August.

"It's the right direction," admonished J. Urbain Moreau, Canadian engineer and vice president of the Montreal-based systems consultants firm of Irnes, Inc. He had come to the CSCA Houston session with two of his countrymen, both architects: Michél Bezman, also from Irnes, and Roderick G. Robbie, technical director of the Metropolitan Toronto School Board, which runs the largest single systems research and development program in North America.

Architects, maintained Moreau, who admitted to feeling a bit out of place in the group of some 30 of them, certainly have their place in the systems building picture; in fact, they are needed to guide the building industry.

But, with the statment that students in Montreal and Quebec know more about building systems and systems building than the practicing architect, he suggested that today's practitioners will be dropped out of that picture if they don't jump on the bandwagon.

"The way I see it, it's no less than an architect's moral obligation to use any method to help provide a better environment, more economically, than is possible with

traditional construction methods," maintained Spencer B. Cone, FAIA.

"The scramble's on," said Robbie, "and architects had better make sure who'll be the leaders before others have gobbled up architecture." To prevent this from coming about, he said, "we just have to make architecture out of the systems."

What it amounts to, it might seem, is that the architect gets a set of blocks thrown at him and has to take it from there.

Part of the concern, Cone felt, is that the systems are not coming through the profession to the industry, but the other way around. Systems imposed on the architect and his staff from the outside is a tough thing to deal with.

But Robbie explained that as far as the Toronto schools are concerned, every bidder of a system has to have an architect's seal of approval.

The fear of sameness in appearance comes to mind, both to the public and to architects. As for the former, Bezman felt that it needs to know what goes on, that a public information program might be helpful.

As for architects, Robbie held up building systems as a challenge: "We really don't need to end up with educational Esso stations. Anyhow, in Toronto there are 540 conventionally built schools — of which 500 are of red brick. We know that conventional methods cannot answer our needs. Part of the answer lies in the architect's ability to make better use of the components — and a better management control system."

Quite opposite of sameness, building systems will provide for more individuality, more flexibility, a fuller range of options to increase the freedom of the human being, according to Ezra Ehrenkrantz, AIA, prime mover of building systems in the US. "In fact, the freedom we need in our society requires a systems approach to building design."

Ehrenkrantz, who was named Construction's Man of the Year by *Engineering News-Record*, pointed to the necessity of working more closely with the user, taking his requirements closer to heart and confront him with alternatives to help him obtain the best and what he most wants within the budget.

Jonathan King, HON.AIA, vice president of Educational Facilities Laboratories, Inc., a nonprofit educational facilities research corporation established by the Ford Foundation, ventured that so far there has been little time devoted to human requirements and the quality of housing. Indeed, he went on, "there's little thought given to the question whether people will enjoy living in the houses now going up. Architects should worry about this more."

Building systems, said Ehrenkrantz, can give the utmost flexibility, leaving the user the choice where to place interior walls (with snap-in veneers). "We don't need new technology to accomplish this, we need effective management."

This last statement was one that was heard again and again during the day-long session. Said Moreau: "Our problem is not technology, it is to integrate the system, to integrate the disciplinary teams."

Bezman pointed to the three generations of systems: the closed one (a complete set of integrated but noninterchangeable subsystems); the open one (a versatile collection of interchangeable, variable subsystems) and the intersystem generation, using a common core for several building types, with varying components and subsystems.

Ehrenkrantz, who considers us at the beginning of the third generation, pointed to another threesome, types of housing: those conventionally constructed; the auto showroom type, or "mobile homes," of which 400,000 are being constructed this year; and the building systems type.

With time against us — King reminded that 26 million housing units are needed within the next decade — conventional methods are obsolete.

"The systems method requires work and effort from the architect, here's the challenge, and it must be met," argued Ehrenkrantz, "if for no other reason than to meet the trailer threat. If man finds the auto showroom way of buying easier, it's going to be a major battle." Architects, too, will have to be able to give the user more assurance regarding price, performance and time of delivery.

There was no question in the mind of anyone present that as far as time-saving is concerned, the building systems have definite advantages. With fast-track planning (overlapping of planning activities which normally are in sequence) a prototype project referred to by Robbie took less than one year from beginning to completion.

For school buildings particularly, Ehrenkrantz noted, speed is of the essence since student mix and community attitudes can change and make the plan obsolete before the school is finished. A plus factor of the building systems in this respect is that they allow changes of strategy when social problems arise in the course of the program.

A great deal of generic work can be done beforehand without knowledge of whom the client might be, Ehrenkrantz said, then one can move on a faster track during the actual construction.

The question is to find the methodology related to the time available and to find the order in which the systems go on the job, even the sequence in which they are ordered.

In-shop, Robbie contended, about 30 percent less time is spent on working drawings and this could be cut to 50 percent. There are no shop drawings — "in other words, less in-house garbage."

What about the cost factor? Main theme of systems proponents is that they don't look for cheaper but for better buildings for the dollar. If a community has allocated so and so much money for a school, whatever the savings might be usually goes to buy more and better equipment for the various departments. The same thinking can be applied to other structure types.

Quantity alone will unlock the door to savings. For the producers of systems (now some 400 in the US), there must be a guaranteed volume. Actually, the cost in dollars is less now than it was in August 1965.

The systems method, Ehrenkrantz said, goes beyond educational programs and into housing, hospitals, institutions, etc.

John L. Wright, FAIA, AIA Public Affairs Commission chairman, agreed and said the AIA Committee on Architecture for Commerce and Industry is looking at many of the same concepts as the school and college architecture committee.

"When the systems method catches on in the US, there will be an explosion," predicted Robbie. Yes, agreed Ehrenkrantz, "but it's a must that we first get rid of the constraints which restrict the opportunity to serve the client."

Another must — in fact, expressed as a desperate need — is a common dictionary of systems terms before the network gets much larger.

The Institute, suggested Cone, could be a natural sponsor for a systems information clearinghouse.

BESS BALCHEN

Building Technology: Potentials and Problems

The United States today — at a time when more housing is needed than ever — does not exploit existing building technologies to the fullest. The tools are available but the constraints are an obstacle. The latter can only be overcome by a determined, concerted effort by all elements of the building industry. Sketched here are the barest outlines of trends in this intricate field.

BY ALBERT G. H. DIETZ

When the talk is about the large volume of building — particularly housing — projected for the balance of this century, it is often said that we have the necessary technology and that no great improvements are either necessary or likely, but that other factors prevent its full application.

It is also said that costs of building, especially housing for low to moderate income families, are too high but that technology cannot substantially reduce them, and that costs, as reflected in rents, must be brought down in other ways, mainly by financial means such as interest subsidy, preferential tax treatments and so on.

There seems to be a contradiction here. If costs are too high and technology cannot substantially reduce them, then technology is inadequate. It may be true that no great improvements are possible; it may also be true that we need only to utilize fully our existing technology.

To find out whether we can make full use of existing and potential technology we must 1) see what those technologies are, 2) examine the complex interaction of technology with social, political and economic constraints and 3) determine what must be done to remove those constraints so that technology can achieve its full potential.

There is, of course, no single technology; there are many, and none universally applicable to all building situations. We have the traditional methods of construction developed during centuries of trial which, when well organized and efficiently carried out, often still offer the best available solutions to given problems. Nevertheless, we are acutely aware of their shortcomings.

We hear much about industrialization, systems building, the systems approach, the performance concept, organization and project control, and how these promise to help solve our problems.

Industrialization means different things to different people. To some, it is merely a subterfuge to avoid the bad odor of prefabrication. To others, it is the panacea for all building ills. As used here, it means not only shop fabrication but the efficient organization of construction made possible by controlled shop fabrication plus orderly site assembly.

There is no dearth of industrialization schemes. The patent office is full of them. In many respects they are more advanced, i.e., more widely employed, abroad than in the United States. Some are based almost entirely on traditional technologies adapted to shop fabrication; some employ moderately advanced ideas, some are exotic. One convenient way of classification is boxes, big panels and pieces such as columns, beams and floor slabs.

These approaches are not mutually exclusive, nor do they preclude mixtures of industrialized and traditional methods. The latter is the rule: Few, if any, of the new or advanced technologies do not make use of traditional procedures. Box construction is likely to make some use of panels and pieces; the dividing line between big panels and pieces is not sharp; foundations are almost certain to be field fabricated, and it is often more economical to cast floors in place, for example, than to use precast slabs, especially when plans are irregular and non-repetitive.

The author: Mr. Dietz is professor of building engineering, Massachusetts Institute of Technology. This article is adapted from his speech before the AIA/RAIC convention in Chicago.

Materials

Advances in material technology range from modest to exotic. Some new materials are already in use; others appear to be promising for the near future. Still others are in the distant future or

may not find their way into buildings at all. Only a few can be mentioned here.

Among the possibilities being explored in laboratories are the combining of inorganic materials, such as concrete, with organic materials, such as polymers, in an attempt to marry the hardness, compressive strength and durability of the former with the toughness and resilience of the latter. Thin toppings for floors and strong stuccos have already resulted from such combinations.

Composite materials are among the most promising of all developments. The increasingly severe demands imposed by our buildings often cannot be met by simple, single-component materials. They call for the combined behavior of several materials acting in concert to provide properties not attainable by the constituents acting alone. An example may serve to illustrate.

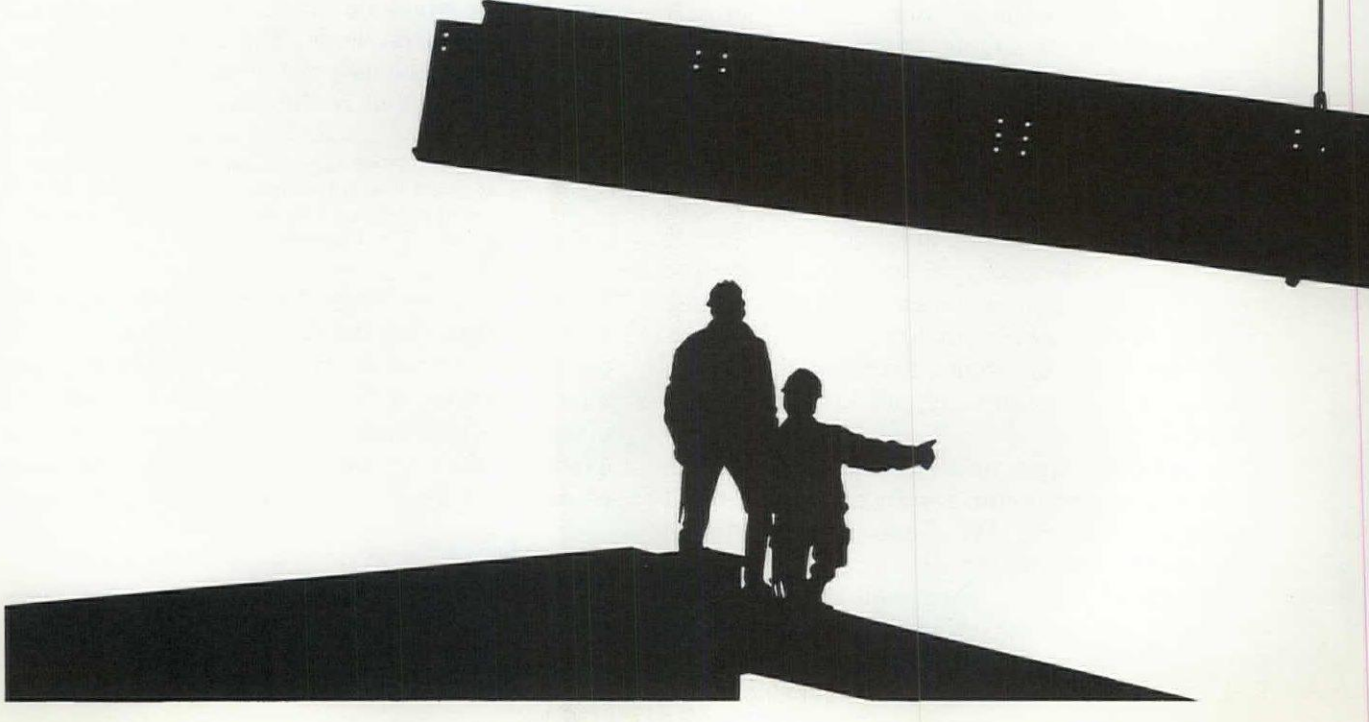
The Greater London Council several years ago decided to construct a number of highrise apartments in which industrialized components should be employed to the greatest practicable extent. Utilizing its power to set its own building standards, it decided upon a series of performance requirements for the exterior walls. These should be factory produced panels able to withstand 80-mile-per-hour winds, with minimum deflection and no residual distortion, with a U-factor not greater than 0.20, an average acoustical attenuation of 35 decibels, zero flame-spread on the surface, one-hour fire penetration resistance, minimum weight, minimum thickness and minimum maintenance.

After extensive design, experimentation and development, a composite wall panel, one story high and 6½-foot wide, emerged that had an outside facing of mineral-loaded molded glass fiber-reinforced plastic with a baked-on polyurethane finish: a 3- to 4-inch thick filling of wire-reinforced foamed concrete, weighing only 20 pounds per cubic foot, and attached to the outside shell by a flexible bond layer, and an inner facing of reinforced gypsum plaster bonded to the core with a layer of bitumen that, simultaneously, provided a vapor barrier.

This panel easily met all requirements, weighed less than 20 percent as much as traditional masonry or precast stone concrete and was one-third the thickness. British paint chemists estimated at least 20-year maintenance-free life for the exterior coating, which can be renewed in place when necessary. Foundations and steel frame were lighter than for traditional construction. The builder could preassemble six panels to the supporting steel and place them so rapidly, with an ordinary tower crane, that manufacture could not keep pace with him. In-place cost was competitive with standard construction, even though the first shells were made in the US and shipped to London for completion.

This is only one example of the growing use of composites in building. Many more can be expected. The building industry may borrow from developments in space vehicles, as it already has from aircraft in the forms of stressed skins and sandwiches. Among the possibilities are filament-winding and the high-performance fibers, filaments and whiskers being explored and exploited for space vehicles.

Costs of most of these materials, ranging as high as several thousand dollars per pound, are



at present completely prohibitive for building and may continue to be, but projected costs of carbon and graphite and some of the carbides are not unreasonable and may bring them within reach for high-performance composites.

We are at present not fully exploiting the composites we have, such as glassfiber-reinforced plastics. Nor are we fully utilizing the possibilities in composite structures. For example, in a study carried out by two graduate students it was demonstrated that in a 150-foot ribbed lamella vaulted roof, concrete ribs could be combined with diamond-shaped, doubly curved 8x 18-foot reinforced plastics infilling panels, one-tenth of an inch thick, capable of carrying the imposed wind and snow loads, and transmitting daylight into the interior, at a saving of one ton of weight per panel. The concrete ribs would provide the primary structure, and the panels would first act as forms and then as lightweight, light-transmitting secondary structures, concrete and plastic each thus making its best contribution to the whole.

The future for composite materials and composite structures, in which several functions are combined to attain superior performance, seems bright but there are real problems to be solved.

Systems Analysis

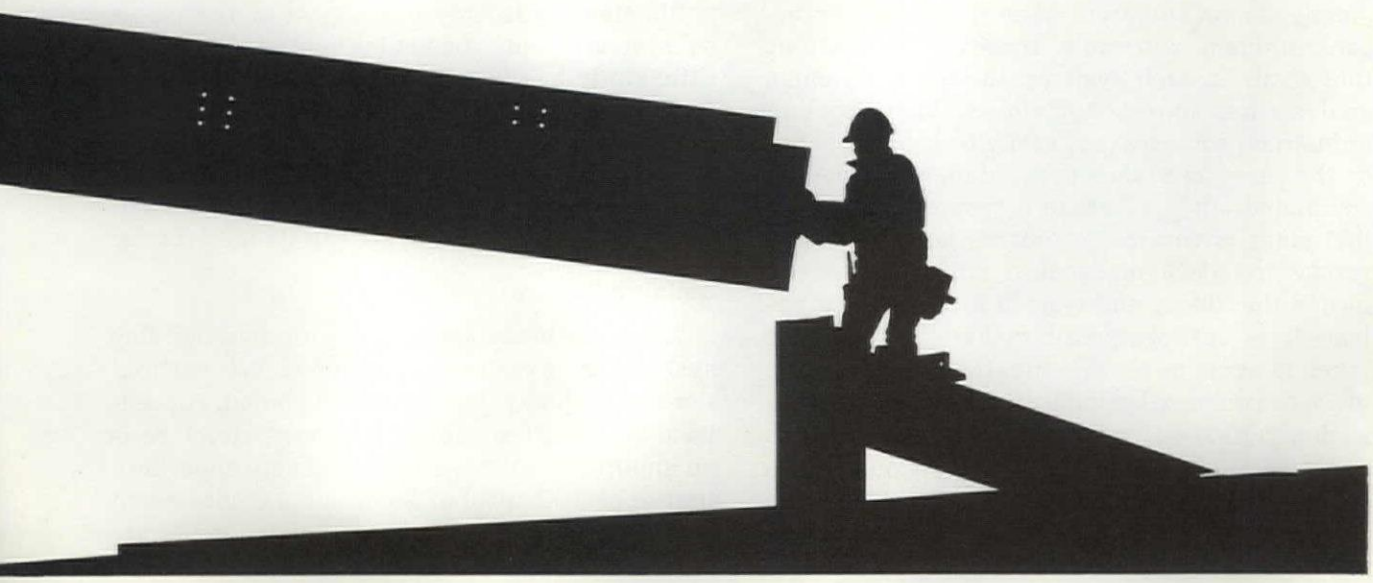
Much is heard today about systems, systems analysis and the systems approach. The building fraternity is accused, by systems-oriented space practitioners, of not employing the systems approach. The building designers retort that they have always designed whole systems, that this is the essence of building design and that buildings are complex systems involving the interaction of human and technical factors, whereas space systems are largely technological devices, complicated in detail but simple in essence, upon which human whim and prejudice have little influence. The form and functioning of a jet plane or a lunar vehicle are determined almost entirely by technological requirements; the form and functioning of a building are dominated by human attitudes and requirements.

There is much truth in both viewpoints. The superb functioning of the lunar probes is the result of an extremely sophisticated, total systems approach. The human brain, superb computer that it is in many ways, is incapable of solving or keeping track of more than just a few simultaneously reacting factors at a time. Mathematical tools must be relied upon to handle multi-faceted problems.

To a limited extent, systems tools are being used in building design. Structures are commonly analyzed and designed by computer; so are many mechanical subsystems. Traffic studies use mathematical models. There are other instances in which a start is being made. These usually have to do with portions of the whole problem.

The crucial part of architecture is the conceptual stage in which the many requirements of the client must somehow be put together into a coherent, optimum plan. This has not, to any noticeable extent, made use of the tools of formal systems analysis.

Perhaps, as matters stand, the problems of building design with all its complexities and human uncertainties is intractable so far as sys-



tems analysis and synthesis are concerned. What seems to be true at the moment is that a combination of formal systems analysis and the empirical, intuitive approach of the master designer must somehow be combined to the benefit of each. Having struggled through the mass of requirements and found a workable solution, it is difficult for the designer to divorce himself from it in his search for other possible solutions; furthermore, he may not have time.

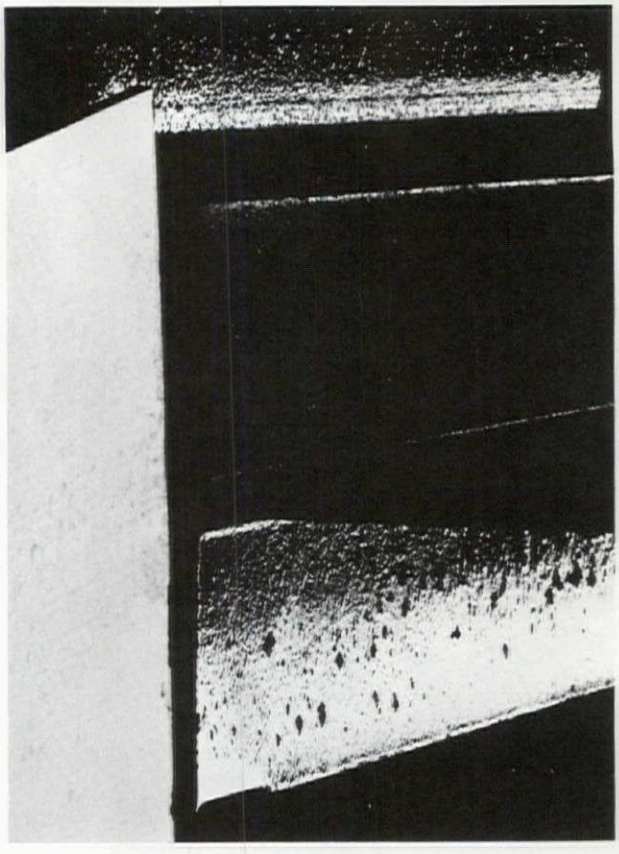
A considerably better approach is for the designer to set down the important relationships among the various aspects of his design problem in such a way that they can be handled by a computer, which can then provide many alternative solutions. Space allocation is one distinct possibility. The crucial point is that the computer, certainly as matters stand now, will not distinguish between acceptable and unacceptable solutions. This must be done by the human designer. What the computer can do is to provide him with more choices.

There seems to be a curious contradiction in the attitudes of many architects toward the computer. It is dismissed as a mere mechanical tool, utterly incapable of doing the creative work of design and therefore of no consequence; it is feared as a monster that will take over. The truth lies somewhere in between, and it seems more likely that the computer, properly employed, holds the promise of relieving the architect of drudgery, freeing him for the creative tasks that are beyond the computer's capacity. But this will not happen until the profession makes a determined effort to understand and use the computer.

Complex Systems

One of the dangers in the manipulation of large, complex systems is that decisions made and actions taken can often be disastrously wrong. This is true because the human mind simply cannot comprehend or visualize the intricate, hidden, extremely sensitive interactions that occur in such systems. Industrial dynamic analysis has shown that violent fluctuations in industrial processes may easily be brought about by the very steps taken to avoid them. A recently completed study of urban dynamics has shown that steps advocated to provide housing and to rescue the decaying central cities may easily hasten that decay and worsen the housing problem. It is entirely possible that the decisions taken to avoid unwanted situations in the design of large complex buildings may lead directly to such situations. If systems analysis can help to avoid such errors, then designers should make every effort to avail themselves of it.

Even a relatively simple example may be illustrative. All too often when a lighting problem



arises, the obvious answer is to increase the level of illumination. Indeed, this idea has become so firmly fixed that code requirements have constantly been rising. What is actually wanted is better visibility, which may be only marginally related to light level. The quality of the luminous environment may be much more important than the level of illumination, which, in any event, gains nothing when raised beyond a certain point and which furthermore may bring about undesirable secondary effects such as overloading the cooling system. Only by considering the total system and its interactions can an optimum answer be found.

Illumination is only one aspect of the whole subsystem of environmental control. Relatively little study has been made of the combined effects of light, sound, temperature, humidity and other factors acting simultaneously, as they do, upon human beings. Each factor by itself has had extensive research but the combination of all of them has had little, compared to its importance.

Building Systems

When the many actual and proposed building systems are examined, it becomes evident that the vast majority, both here and abroad, concentrate on structure. As we all know, structure is an important, but not overwhelmingly important, part of cost. Control of the internal environment is a major factor, and the associated costs are high. Yet, the total systems approach seems all

too often to be neglected. The structure and envelope are carried to the point of no return, and then environmental controls are added almost as a cosmetic unskillfully and perhaps futilely applied.

The whole system of structure and environmental controls must be considered together; indeed, it is their combined action that controls the environment. The technology of integrated, environmental control systems and the technology of coordinating such integrated systems with structure and envelope have not advanced far. Much more must be done if efficient, cost-reducing, overall building systems are to be achieved.

A total systems approach must integrate the functions carried on in a building with structure, environmental controls, internal transport, utilities, efficient construction, operation and maintenance into an optimum solution. That it must also be visually acceptable goes without saying.

In spite of all attempts to allow for every contingency, innovative technologies may run into unforeseen situations, with far-reaching consequences. When a gas heater exploded and blew out the corner panels half way up in a panelized industrialized building in London and caused the corner to collapse, the results reverberated throughout the industrialized building community. It was realized that although the design conformed to all code requirements, that particular contingency had not been anticipated. New regulations have meant extensive and expensive strengthening of existing panelized buildings and redesign of new ones. In one instance, the ensuing delay in construction resulted in the piling up of components at the fabricating shop and forced a disruptive temporary shutdown.

Public Attitude

What about constraints, those factors that may obstruct the further use of better technologies? There are many and some, at least, are rooted outside the building industry per se.

The intensive study phase of the late in-cities program of the Department of Housing and Urban Development brought to light some revealing public attitudes toward new, or at least unfamiliar or not generally employed technologies. Typical reactions were: "OK, so long as it's brick." "No Bucky Fuller." "No more concrete prisons." "No skyscrapers." "No cracker-boxes."

The attitudes clearly reflect suspicion of, and reluctance to employ, unfamiliar technologies as well as distinct disenchantment with unsuccessful applications, of which there have been more than a few.

Rehabilitation of our decaying inner cities poses the greatest need, the greatest challenge, and has so far been the most stubbornly intractable field for the application of new technologies. It poses the most direct contacts with the public; the most unrealistic promises have been made and broken, the greatest disappointments and suspicions have resulted. Inhabitants of the inner city have forcefully proclaimed that "If we don't build it and control it, we will burn it."

These expressions, extreme though they may be, cannot be dismissed out of hand but must be taken into account as new or different technologies are explored. The technology most immediately useful is probably the application of advanced, sophisticated organization and control, utilizing mainly traditional building methods but introducing as rapidly as possible new technologies in centralized compact, mechanical and electrical systems, where new ideas are urgently needed.

Industrialized Organization

An innovation which does not conform to established industrial patterns may have a difficult time in finding a home. For example, the wall panels for the Greater London Council described earlier were not made of only one material, nor was any one material preponderant. It, therefore, did not coincide with the primary interests of any one manufacturer and no materials manufacturer took on either its development or its fabrication. This was undertaken by a small entrepreneur/engineering firm in London which had to pull together the necessary skills on both sides of the Atlantic to accomplish the task.

Such an industrial situation constitutes a serious constraint on progress when that progress calls for the coordination of materials, equipment, or both, into an efficient system or subsystem. Such systems are feasible, but industry is not organized that way. It is not really organized to carry on the necessary research, development and production.

This is understandable. The principals and research directors of a materials-producing firm find their hands full with their own problems without taking on completely new sets. If an innovative idea embodies equipment such as electric or mechanical items as well, the reluctance to become involved is even greater.

Then, collaboration on the part of several industries, especially if they are closely related, may expose the participants to action under the antitrust laws. If a composite component comprises several items that are traditionally handled by several crafts, unions may insist that representatives of each craft be involved in the installation even though they may not actually be needed. Codes may not recognize the virtues of composite behaviour and may, therefore, insist that the components be considered sepa-

rately, thereby negating the objective of the composite.

These impediments notwithstanding, some progress is being made but not as rapidly or extensively as it should be.

Our system of bidding and awarding contracts can be a strong deterrent to innovation. When the requirement is for the availability of three or more suppliers for a given item on an "or equal" basis, and an innovation is produced by only one source, that innovation can be effectively blocked. Something else, such as a cost-benefit analysis, should be available to allow single-source innovations a chance to be employed.

Design-Production Organization

Innovative technology may not only affect materials and equipment manufacturers and the organization of the producing industries; it may significantly affect the organization of the design and building processes.

Analyses lead to the conclusion that efficiency, economy and speed in the construction of highrise frame buildings can be achieved by constructing them from the top down, building the penthouses, roof and top floor at ground level, pushing it up, building the next lower floor under it, pushing that up, etc., until the building is completed. The obvious advantages lie in the elimination of much of the traditional hoisting equipment and the convenience of doing work at ground level, where components can be delivered directly, workmen do not have to travel far and the job can be enclosed to avoid delays due to weather. The push-up equipment, though rugged, is practicable. The technology is feasible.

The principal problem is organization and control. Before any given floor is pushed up out of reach, everything which that floor will need for completion must either be built in, or must at least be stored on it, except for small items which can be transported by the building's elevators. Extreme care in scheduling the job must be exercised to make sure that nothing is omitted that may later have to be hoisted a long way, thus defeating the whole system. Items calling for a long lead time, such as elevator equipment that must be installed at the very beginning, may have to be ordered long before the design of the building is finished. This, in turn, means that the builder must be brought in early in the sequence so that commitments can be made as soon as possible if long delays are to be avoided later. To achieve the benefits of this particular new technology may, therefore, call for a revision of the usual design/bid/build sequence and certainly calls for much more sophisticated organization and control of construction than are ordinarily found.

Management Technology

It has often been remarked that the successful European industrialized systems are the well-organized and well-managed ones, that there is no technical magic in any of them that gives a distinct lead over the others. Cost reductions are achieved mainly by efficiency and speed, not by some mysterious low-cost material. Speed calls for close coordination from the very inception of the project; the owner must make up his mind, the designers cannot dawdle, great care must be taken to foresee all contingencies so as to forestall expensive and timeconsuming changes, orders must be given for items requiring long lead times and the design/production schedule must be carefully worked out, showing the sequence of steps and interdependencies. Only a well coordinated team can accomplish this.

It has been claimed that this emphasis on organization, management and control is really the only "new" technology needed in building, all else is secondary. While this is patently an exaggeration, it does underscore the importance of complete control.

Predictions

Any innovation entails at least some uncertainty with regard to its expected performance. For many purposes, there are no short-time tests that reliably will predict long-time behavior. This is particularly true of weathering. The same situation is true of many other aspects of building behavior. Although a given building's maintenance department may have a good idea of what ails it and what has to be done to keep it going, systematic study of such information is generally lacking and, consequently, it is not easy to devise ways of predicting behavior because the actual conditions are not clearly understood.

This is not to decry the efforts of such organizations as the American Society for Testing and Materials and the United States of America Standards Institute, which are the first to recognize that the basic information upon which their tests and standards depend is far from complete. The building fraternity must assist in providing that understanding.

It is a peculiar situation, to say the least, that the very people who depend most upon ASTM and USASI standards for building components participate very little in preparing them. They are written mostly by materials specialists rather than by the architects and engineers who specify them and, inevitably, reflect the viewpoints of the materials specialists. This is not the fault of ASTM and USASI. They have long been vainly trying to enlist the active participation of the designers in drawing up those standards.

Evaluation of Innovations

In the US there is no established procedure for evaluating and certifying technological innovations in building materials or components. True, as stated above, ASTM and USASI have many test methods widely employed, and one prominent laboratory issues labels respecting degrees of fire resistance, but none of these constitute complete evaluation of a new product.

As matters stand, if a manufacturer brings out a new item and tests it in his own laboratories, the results are suspected of being biased. To obtain independent tests he must find a commercial laboratory, a university experiment station, or some similar testing agency. More than likely, he will have to devise some additional nonstandard tests to check any properties peculiar to his particular device.

In any event, when the report is in it is quite likely to be met with skepticism. The result is that the innovator has a hard time getting his idea evaluated and accepted. Progress is often agonizingly slow, and a good idea may die before it can prove itself.

This problem has been recognized in Europe and many countries have set up a system of evaluation and certification patterned after the original French Agrément procedure. A board of experienced people with government and private backgrounds reviews all new ideas brought before it, prescribes what tests, if any, shall be run, examines the results and issues a certificate setting forth its findings and judgment, how the item may be employed and how it may be expected to behave in use. The sponsor of the idea is free to use his certificate in advertising.

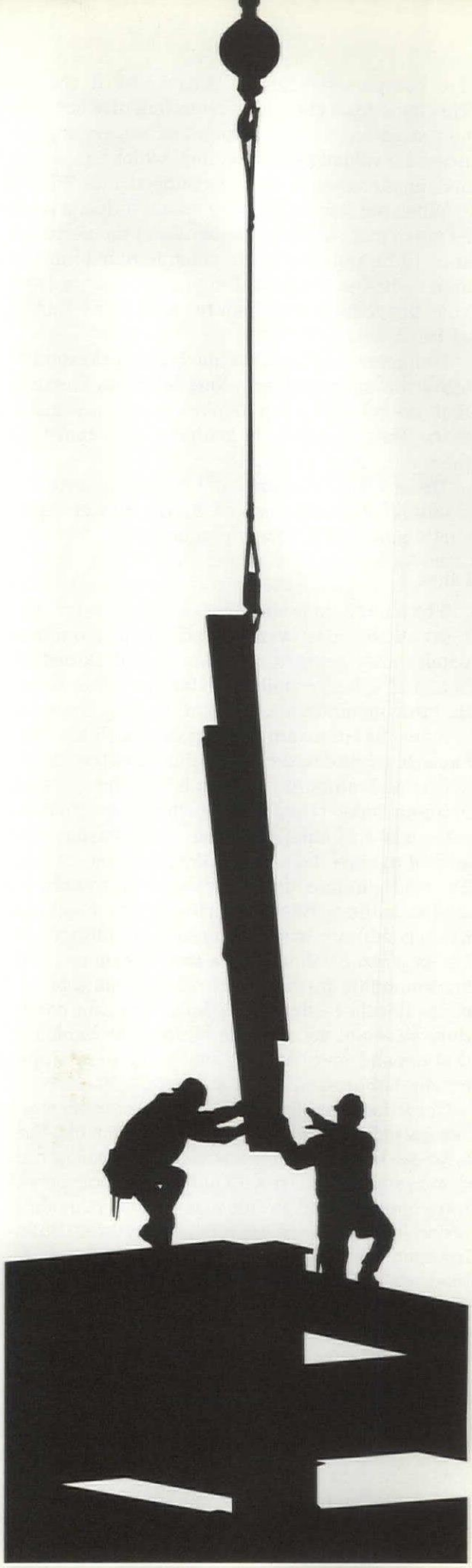
By and large, the Agrément boards have established themselves so well that their certificates are accepted by the building fraternity and by officials as impartial expert evaluations. In France, where buildings must be guaranteed by designers and builders for 10 years, insurance companies frequently demand an Agrément certificate for any new components.

This system may or may not be directly transplantable to the US, but some such central, generally accepted agency could be extremely beneficial in breaking down existing barriers to the adoption of new innovations.

Performance Codes and Specifications

Codes and specifications based on detailed descriptions how to build can seriously hamper progress, whereas a reasoned statement of objectives, or performance, can be a stimulus to progress.

It is not enough merely to specify performance; it must also be possible to evaluate it to see



if a component actually behaves as it should. This calls for a clear understanding of what is to be evaluated and may demand extremely sophisticated evaluative techniques which, in many instances, have not been developed.

When applied to building codes, officials must be much more knowledgeable about the performance to be expected. It is much harder to determine whether a given design will meet a two-hour fire requirement than to see if it is 8 inches of brick.

Designers must assume much greater responsibility for their designs, along with the freedom that design based on performance may allow them. They cannot hide behind a code that tells them to build thus and so.

These responsibilities and problems notwithstanding, the objective of basing design upon performance is inherently sound.

Labor

The labor field is so full of conflicting statistics that one hesitates even to touch upon it. Builders vociferously point to the shortage of skilled labor, and labor equally vociferously points out that the unemployment rate in the building trade is twice that in manufacturing, and both are right because of fluctuations in building activities.

It is undoubtedly true that labor wage rates in building have risen much faster than costs of materials and equipment, but labor insists that annual average take-home pay is not out of line. The crafts unions do not fit the trend toward industrialization, offsite fabrication and components combining several materials and functions, but organized labor claims that it can and will accommodate to this trend. The ultimate power of the locals to determine local working conditions does not accord with building technologies that depend on broad regional or national application. Labor says it can conform.

Traditional skills and the long apprenticeships associated with them may not be applicable. One large-scale European industrialized housing producer prefers to start with unskilled labor; he can train operatives in simple manipulations in short order, and they need not unlearn anything. Building agencies in eastern Europe say that erection requires not more than 25 percent skilled labor. Clearly, the training program for new technologies needs to be examined. Shortages of the right kind of manpower may yet be the most serious constraint, and at the same time the most powerful impetus, toward new technologies.

Government Policies

Government policy strongly affects building and building technology both directly and indirectly. Most advanced technologies require fairly heavy investment in plants, whether fixed or movable. This, in turn, requires at least a reasonably even production schedule, but building is subject to fluctuations caused not only by weather but by economic and political factors beyond its control. Industry is wary of investing in plants that may stand idle.

The announced government goal of an additional 600,000 dwelling units per year for 10 years, to be superimposed upon existing housing starts, can either be a vastly unsettling or a stabilizing influence on the building industry and thus either stimulate or stifle innovative technology. If the government program is carefully planned and phased into overall building, it can help fill in the gaps, smooth out the fluctuations and lend stability; if it is not, it can accentuate the existing swings and defeat its own purpose.

Considerable sums will be needed for research and development to bring existing and potential technology to bear on the production of 2,600,000 units per year, which will be closer to 2,800,000 or 3,000,000 per year when delays and lead times needed to gear up production are considered. While private industry can, and will, absorb much of this cost if there is an assured and steady market, some of the costs will have to be borne by the government, just as it has assumed those costs in fields such as space and defense.

Research

The building field is notable, or notorious, for its uneven, relatively low level of research. Research is extensive in materials and equipment industries, but spotty or nonexistent in areas that have to do with the total building, its functional and physical behavior, design as a total system and other aspects not directly related to component manufacture.

Dissemination of research information is equally unsatisfactory. There is no central agency that collects information, digests it and makes it available to the field. The result is that we do not really know what is going on, where work is being done and where the gaps are.

Government efforts at building research are small and scattered. European governments, whose countries have much smaller building programs than ours, have centralized building research agencies with larger budgets than ours. One Japanese building firm has a larger annual research budget than the principal US government agency carrying on building research.

This is not a plea for all research to be carried on by the US government, but it is a notable fact that the very large research programs that have made possible the advances in space, defense and agriculture, to mention only a few, have been federally supported. In those important areas that do not justify privately supported research alone, government should step in. □

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People First

Donald Chenicek, an architect with the Perkins & Will Partnership, here takes a look at "Alternatives to Unionization," the proceedings from the Joint Committee on Employment Practices conference in St. Louis. Chenicek also holds a Master's Degree in Industrial Relations.*

Last December the Joint Committee on Employment Practices (JCEP) met in St. Louis to discuss "Alternatives to Unionization." Formed in mid-1968, the JCEP was created to promote and coordinate good employment practices among its professional members.

The speakers at the conference did an admirable job of entoning nearly the entire litany of human relations techniques. They talked of humane and reasonable policies. Of salaries which keep pace with the time and the competition. Of a host of benefits: insurance, pensions, stock options and free education. Of the less remunerative rewards: recognition, titles, offices and secretaries. Of good communications: grievance procedures, open door policies, workshops, sounding boards, newsletters and suggestion boxes. Of employee development, opportunity, challenge and responsibility. And even of deep human needs: love and respect.

Once upon a time a group of very wise doctors met to discuss cures. And, when the day was done, they smiled and said, "Now we know what our patients need." And they went back to their offices and sent cures to all their patients. "Everybody," they said, "take this medicine. It will cure your headache."

Certainly an abundance of fine techniques was discussed, techniques worthy of serious consideration by every employer—*after* they know the needs of their employees.

Are the needs of an architect exactly the same as those of an engineer? Do any two professionals have exactly the same needs or abilities? Psychologists tell us that there is indeed a difference between individuals. Why then are we so reticent to acknowledge these differences and deal with them? We seem all too ready to apply techniques without concern to the unique requirements of the individual. Are people or techniques our first concern?

Do we really know our employees? Do we know which want to manage and which do not? Or who works well with whom?

"But I don't have a headache," said one patient. "We decided at our conference that all patients have headaches and need this cure," replied the doctors. "That cure may be fine for headaches but what's bothering me are my eyes," said another patient. "And crowds bother me," added a third.

Just possibly there are thousands of things management could learn from its employees.

The principles of human relations were originally developed by studying groups of employees. Techniques were then devised to meet the needs of the group. Let us acknowledge that times are changing; employees are changing. We must now deal with people one by one. Let us begin to study *individuals* at work, to learn the needs and aspirations of each.

This study can take the form of scientific observation, tests, interviews or just plain conversation.

"We have an idea," said the patients. "Why don't you examine each of us, decide what needs to be done, and then make the cure fit the illness"

The form is less important than the motive. A deep-seated desire to help the employee must underlie our efforts. If it does not, the employee will see this as yet another technique aimed more at getting than giving.

Management cannot fill every need nor solve every problem, but employees must have the opportunity of proving this to themselves. They must see in management an understanding friend ready to do whatever it can to help find a solution to a problem.

A technique not built on the needs of the individual is bound to fail. The individual will measure a technique by his own needs. If it fails to satisfy those needs, it is worthless to him. Worse yet, he will criticize the best intentioned efforts of his employer as being wasteful or foolish.

"Such individual treatment would force us to be as concerned about our patients as we are about the business. Is that realistic?" asked the doctors. "You take care of us," replied the patients, "and we'll take care of the business."

Not one speaker stated clearly that techniques must be tailored to the needs of the individual employee; not the other way around. Could this oversight result from momentarily forgetting that a firm *is* people, that equipment and work are but its clothing and activities?

Unions capitalize on management's tendency to focus on business to the exclusion of the employees. Every man wants to be considered more important than the work he does and he'll give his allegiance to whoever gives him that priority. As one speaker put it at the conference: "They (employees) don't vote *for* a union, they vote *against* management."

"Make the cure fit the illness," mused the doctors. "You know, it might work."

A union's greatest appeal is its ability to give a powerful voice to the needs of the individual. When dealing with professional employees, unions study carefully what each needs and expects; especially those needs overlooked by management. It then forces management to heed these unanswered needs.

Management is managers. It, therefore, becomes the responsibility of every manager to see that the needs of his staff are recognized and, if possible, met.

This means that management must be ready to build its policies, rules and techniques around the needs of its employees and to be prepared to bend these same policies, rules and techniques to meet the particular needs of each.

In short, the alternative to unionization is "People First." □

* The JCEP, sponsored by The American Institute of Architects; the American Congress on Surveying and Mapping; the American Society of Civil Engineers; the Consulting Engineers Council/USA, the Council for Photogrammetry; and Professional Engineers in Private Practice, National Society of Professional Engineers, will have its next meeting in December (*see* Calendar). "Alternatives to Unionization" is available from National Society of Professional Engineers at $5 a copy.

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Books

The Fitness of Man's Environment (Smithsonian Annual II). Robert McC. Adams and others. Washington, D. C.: Smithsonian Institution Press (distributor: Random House), 1968. $5.95.

It eventually surfaces that this is a rather polite book written and published by a polite society and intended for a polite readership. However, viewed from within the framework of the book itself, this does not necessarily constitute a fault. Besides, for collections of this sort, politeness is the rule rather than the exception.

Nevertheless, with the book's own best interests in mind, it has to be pointed out that a great deal of power and penetration can be lost through the presence of the polite *Gestalt*.

By maintaining its academic character of professionalism and strong scholarship, the book has developed extra-ordinary credentials but seriously lessened its impact. This wouldn't have been true in other times or with other topics, but in the face of the crises our cities face today, our discussions call for stronger language, sharper styles and both a wider authorship and a wider audience.

There are some people (a lot of people) who feel that the major crisis facing "man's environment" right now is that it might be burned by some people (a lot of people). Yet nowhere in the book are blacks represented, either as authors or subjects. This seems unbalanced. Discussions of the "Third Dynasty of Ur" may lend a sense of academic authenticity, but in the final analysis they become histrionic and, even worse, irrelevant.

Notable exceptions include essays by Paul Goodman, Edward T. Hall, Philip Johnson and, yes, Hubert H. Humphrey. Former Vice President Humphrey's contribution is a three-page foreword that in effect calls for pulling the stops on adventuresome professionals. He realizes, and says, that the time is ripe for "far out" proposals. The piece should really be more widely available.

The article by Paul Goodman, typically, speaks so clearly it almost sounds naive. He has an amazing ability not to see the emperor's clothes; to tell, for instance, exactly when an institution has lost its meaning or at what point planning stops creating and starts stifling.

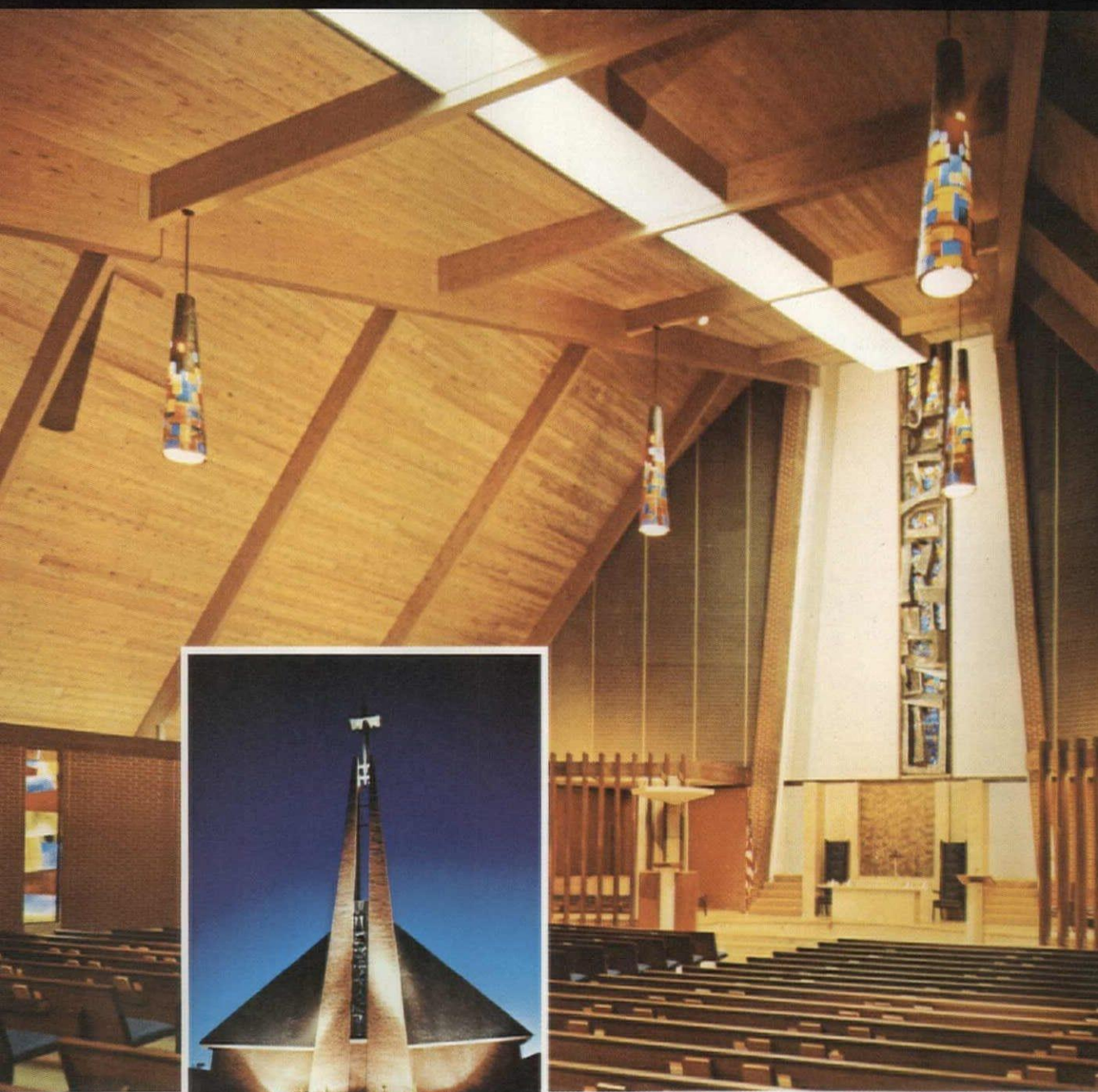
For the avid Hall reader, "Human Needs and Inhuman Cities" may seem a little warmed over, but if it is the reader's first time around there is the usual stock of surprises in store. In a time when architects are preoccupied with how architecture speaks, it is reassuring to find someone concerned with how people listen.

As a writer, Philip Johnson does everything wrong. He contradicts himself, often over a span of two or three pages. He *appears* disorganized. His phrasing is casual to the point of being offhand. He is humorous in the face of very serious topics. Yet, somehow he becomes compelling and extremely pertinent. Johnson manages to let us know not only what he thinks but what he feels.

If his writing is occasionally disjointed, it is an honest and forceful expression of his enormous frustration at the fate of our cities. If he starts out without hope and ends on a positive note, it is be-

Continued on page 88

ECCLESIASTICAL ARCHITECTURE RISES TO NEW HEIGHTS ON SCULPTURE, STAINED GLASS AND LOCK-DECK® DECKING



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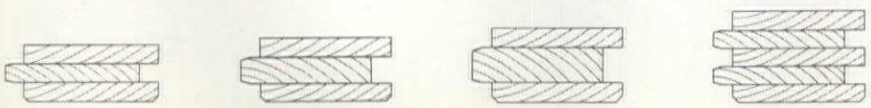

For details see Sweet's Architectural file 1c/Po.

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Books *from page 84*

cause of something he has said in between. In speaking of the values that generate our ugly cities, he touches on concepts of monumentality, tax structures, materialism and, as always, the past. Philip Johnson's sense of history is his bulwark, his license and his ability to be incisive about the present. His secret, perhaps, is that he stands on it, not in it.

The entire book is edible — there's never been any question about that — but parts of it will keep. DAVID CLARKE

The reviewer, who holds two bachelor degrees — one in architecture from the University of Oregon and one in philosophy from the University of Wisconsin — will soon join an architectural-planning firm.

Trees for Architecture and the Landscape. Robert L. Zion. New York: Reinhold, 1968. 284 pp. $25.

It is evident that Zion has used his knowledge and experience, as well as infinite care and patience, in selecting the photographs for this book of portraits of trees. A tree, Zion points out, is a living, ever-changing thing, and one must think of the way it will look in all seasons. Each of the deciduous trees included in this book has been photographed from the identical location in both winter and summer.

The book is much more than beautiful photographs of trees, however, as enjoyable as they are to behold. There is a tremendous amount of practical information in the three remaining parts of the book.

Part 2 tells how to buy trees, how to protect them, how to plant them and how to design with trees. Part 3 sets forth the design attributes of each tree portrayed in the first section. Information is given about height, spread, texture, blossom, fall color, rate of growth, zone of hardiness and design potential. Part 4 provides a list of trees for use in the various states, with the exception of Alaska and Hawaii. Trees are classified by height, by form, by color, and there are lists of trees that are pest resistant and trees for city and for seashore.

If an architectural office can have only one book on trees, it would be hard to think of a better candidate than this one. This is not a botany textbook, understand, but it seems to give the architect all the botany he needs to know where trees are concerned.

The Language of Architecture: A Contribution to Architectural Theory: Niels L. Prak. The Hague: Mouton, 1968. 213 pp. 32½ Dutch guilders.

Prak's aim is to develop a theory of architecture whereby architectural esthetics is related to social history. His book is divided into two major parts, in the first of which he makes a plea "for a general esthetics free from values." He says that confusion in architectural writing is caused by the assumption that "architectural space is a simple visible object." In reality, he claims, there are at least three kinds of space: the physical, the conceptual and the behavioral.

In the second part of the book Prak applies his principles to nine buildings, beginning with Santa Costanza in Rome and continuing on down to our own time.

All Prak's theories may seem confusing at times, and the applications may sometimes raise an eyebrow, but nonetheless his book is provocative. □

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Letters

From Russia Without Love

EDITOR:

The article by Morris Ketchum Jr., FAIA, in the April issue covering the Russian tour of a group of AIA members is apt to produce a somewhat chilling effect.

The reason, as I see it, lies in the emphasis he places on prejudiced "political" remarks in preference to professional observations. It is, of course, the views of Mr. Ketchum as an architect that are of interest to his opposite numbers in my country as well as to his colleagues in the United States.

But along with justifiable criticism of some aspects of Soviet architecture and with equally motivated "respect for urban design" (in the USSR), the reader is exposed to some statements of a different nature.

Mr. Ketchum informs us that while in Moscow and Leningrad, his group "resolved not to discuss international issues at professional meetings." There would be no point in dwelling on this if Mr. Ketchum had not gone on to explain why. The reason, he says, was to prevent Russian architects (who, he notes, gave the group a "cordial reception") from being "penalized by their government."

After this astonishing statement, one is not surprised to come across the familiar cold war clichés: "police state," " barren monotony everywhere in this one-class society," "colorless mediocrity," etc. Mr. Ketchum heaps them all on top of such "innocent" remarks such as "We were permitted to move about in the Soviet cities by ourselves and freely photograph the urban scene." To the uninitiated reader, that might imply an exception — which is not true.

Nor do statements that "There is no private ownership and everyone works for the state," "Clothing stores all sell the same styles. Appliance stores feature the same models," "There is no new construction of private homes," etc., correspond to the facts. All this goes to build up the impression I mentioned above.

An obvious question arises: Would it not be much more reasonable, Mr. Ketchum, to try and contribute to the all-important cause of improving American-Soviet relations rather than doing the opposite?

Both our countries could benefit from a warmer international climate. Why not direct our efforts toward this goal — in all spheres of human endeavor, architecture included?

IVAN PETROV
Science Correspondent
Novosti Press Agency
Moscow, USSR

Mr. Ketchum Replies

EDITOR:

With the blessings of our State Department our group of American architects went to Russia with great expectations and profound respect for Soviet achievements.

Our objectivity with regard to a professional approach with our Russian counterparts necessarily gave way to emotion over the Czechoslovakian occupation by the USSR. As guests of our Russian

Continued on page 92

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Letters *from page 90*

architectural colleagues, we were determined to be totally quiet and noncommittal on this matter, at a time when it was most difficult to react in this way.

My statements emphasize our determination to keep the meetings totally devoid of political discussion. The fact that the Russians could be penalized for such discussion is based on historical facts and was meant in no way to chastise the USSR for its ideologies.

As for taking photographs and moving about freely, restrictions placed on individual tourists have been reported in the press on innumerable occasions and by travelers to whom I have personally spoken.

In our country, we take for granted freely expressed criticism. We are used to critiques of our work and our society which evaluate things as they are — bad or good. I have written and talked widely and devastatingly of many aspects of American architecture and urban design and the framework responsible for both.

Certainly, both our countries could benefit from a warmer international climate. This cannot be based on blanket endorsements, however, but rather on real understanding and honest exchanges.

MORRIS KETCHUM JR., FAIA
New York, N.Y.

ED. NOTE: Eight Russians representing the building industry and including one architect were warmly greeted at the Octagon last month during a cross-country tour. Their Washington visit also took them to the Department of Housing and Urban Development and the National Bureau of Standards.

The Elephant's Roof

EDITOR:

I was amused by the article on page 72 of the July issue entitled "Tin Elephant Turns White."

As the oldest manufacturer of terne roofing in the United States, I can assure you that the covering on this structure is terne, commonly called "tin" roofing. It is precisely the same product that has been protecting the Octagon House, your headquarters in Washington, D.C., since about 1890.

F. C. LAUBENHEIMER
General Sales Manager
Follansbee Steel Corp.
Follansbee, W.Va.

ED. NOTE: When the writer next returns to AIA Headquarters, he will note that the Octagon has terne no longer. The committee handling the restoration, now nearing completion, decided to revert to shingles which originally covered the raised roof, which in turn had been added to correct a leaking condition caused by the flat roof.

Good Medicine

EDITOR:

Bill Scheick's Unfinished Business page for July, "R for Growing Pains," was great. I think his report will do much to reassure the large "uninformed" mass of AIA membership.

Now if Bill could write something to prod that mass into some selfless action, Mount Everest wouldn't be safe on its moorings.

VICTOR C. GILBERTSON, FAIA
Minneapolis, Minn.

A Minority of Sorts

EDITOR:

I have read the special AIA report and the recommendations to employ minority group contractors.

My records reveal that all of my projects have been built by minority groups — "the lowest bidders." Said bidders qualify in all respects as a minority for they are disadvantaged, discouraged, dises-

Continued on page 94

Letters *from page 92*

teemed and on the verge of financial ruin. I have been assured by these bidders that only I, by being an understanding and easy architect, can prevent their immediate sojourn in the poor house. In addition, I understand that these low bidders have been residing in "golden" ghettos, another qualification as a minority.

Another facet of this problem is that the unsuccessful bidders (a majority) regard the low bidders with hate and disdain and predict instant bankruptcy for the minority group. Perhaps the AIA can form a committee to establish guidelines for dealing with both groups.

My personal recommendation is for the low bidders to raise their prices and join the majority. This solution will be helpful to everyone except another minority group called "owners." But perhaps we can form a committee to help and advise them with their problems.

In any event, I am pleased that the architectural profession is part of the program to aid minority groups. As a footnote, the special report encourages "appointing larger numbers of minorities on national committees, etc." Does this mean that we are to appoint larger numbers of lesser numbers (dictionary definition of a minority), or am I confused?

WILLIAM L. WURMB, AIA
Pittsburgh, Pa.

More on Outdoor Theaters

EDITOR:

The article in the August issue by Arthur C. Risser, AIA, provides some interesting insights into the trend toward outdoor theater development. We feel that the author missed several major considerations contributing to the success of Blossom Music Center — and possibly other outstanding outdoor performance facilities.

As architects and planners retained by the Musical Arts Associates of Cleveland, William A. Gould & Associates was responsible for the regional analysis, research, program development and preliminary site plans related to the site selection for this project.

Planning and architecture are interdependent and must be executed as a continuing process to assure a total environment that will be esthetically pleasing and functionally efficient. They represent one problem which requires one solution, achieved through a comprehensive approach. Blossom Music Center is an example of this.

A full program of research was undertaken to determine the factors and criteria for selection of the site for such a facility and a complex evaluation of these factors throughout an eight-county region was undertaken. These factors included audience distribution, regional accessibility, noise sources, land cost and other man-made factors as well as natural and esthetic considerations necessary to the environment for such a summer arts center. As a result, Blossom Music Center is located in the heart of an existing sylvan environment that was selected—not created—serving an area of more than 3 million.

WILLIAM A. GOULD, AIA
Cleveland, Ohio

ED. NOTE: Mr. Risser's intent was to indicate some trends rather than to make an in-depth presentation of the theaters shown.

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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National

Nov. 17: Color Marketing Group Conference, Marco Polo Hotel, Miami Beach, Fla.

Nov. 23-25: National Commission for UNESCO Conference on Man and His Environment: A View Toward Survival, St. Francis Hotel, San Francisco (sponsored by US National Commission for UNESCO)

Nov. 23-26: AIA Student Forum, Rice Memorial Center, Rice University, Houston

Dec. 5: Joint Committee on Employment Practices Third Conference (Employee/Employer — A Relationship in Transition), Arlington Park Towers, adjacent to Chicago's O'Hare Field

Jan. 18-22: National Association of Home Builders Annual Convention-Exposition, Astrodome, Houston

Jan. 29-Feb. 1: Society of Architectural Historians, Annual Meeting, Sheraton-Park Hotel, Washington, D.C.

March 3-5: Aluminum in Architecture Exposition and Seminar, Palmer House, Chicago

March 16-18: Performance of Masonry Structures Conference, National Bureau of Standards, Gaithersburg, Maryland

AIA Regional and State Conventions

Nov. 5-7: North Central States and Minnesota Society of Architects, Hilton Hotel, St. Paul

Nov. 9-14: Western Mountain Region, Dunes Hotel, Las Vegas

Continuing Education

Nov. 10-12: Acoustics and Noise Control in Buildings Workshop. Contact: Dr. Monroe Kriegel, Director of Engineering and Industrial Extension, Oklahoma State University, Stillwater, Oklahoma 74074.

Nov. 14-15: School Conference. Contact: School of Continuing Education, Box 1099, Washington University, St. Louis, Mo. 63130.

Nov. 20-21: Computer Graphics — from the '60s to the '70s Seminar (immediately following closing sessions of the Fall Joint Computer Conference). Contact: Engineering Update Institutes, Dept. S-3, P.O. Box 39, Woodland Hills, Calif. 91364.

Competitions

Jan. 9: Submissions due, Vienna International Garden Show 1974 (buildings included). Contact: Stadtgartenamt, A-1010 Vienna, Austria.

Awards Programs

Feb. 2: Nominations due, R. S. Reynolds Memorial Award for distinguished architecture with significant use of aluminum. Contact: Reynolds Award, AIA, 1735 New York Ave. N. W., Washington, D.C. 20006.

Tours

April 3: Architecture and Garden Tour of Japan, departing from Vancouver, B.C., for 23 days with optional extension to Hong Kong and Bangkok. Contact: Kenneth M. Nishimoto, AIA, 263 S. Los Robles Ave., Pasadena, Calif. 91106. □

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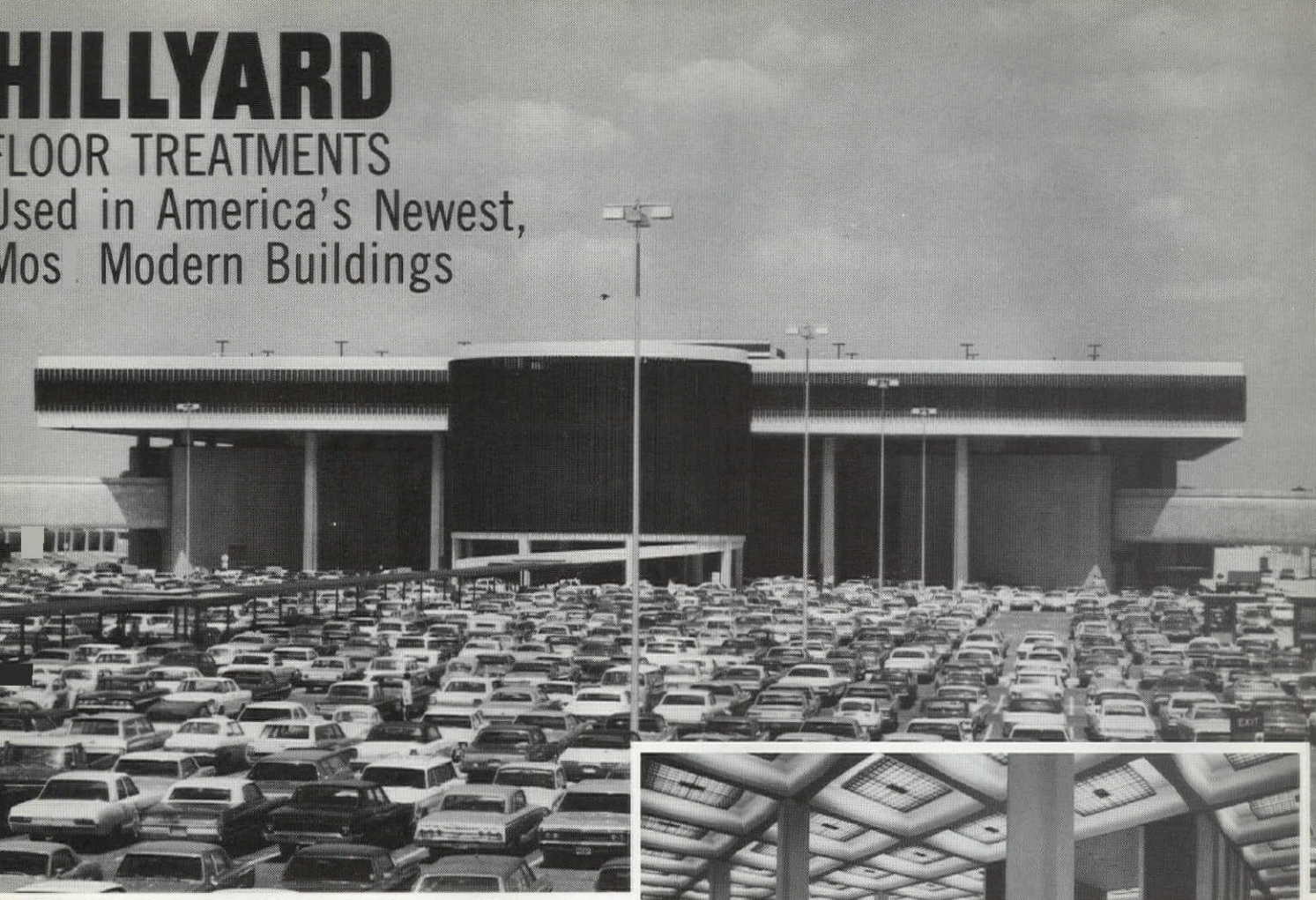

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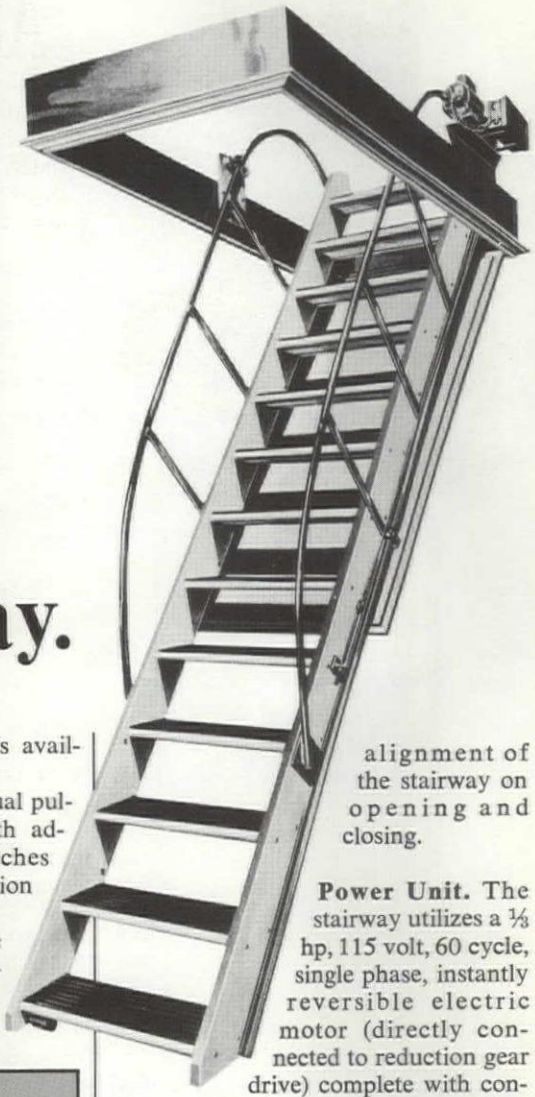

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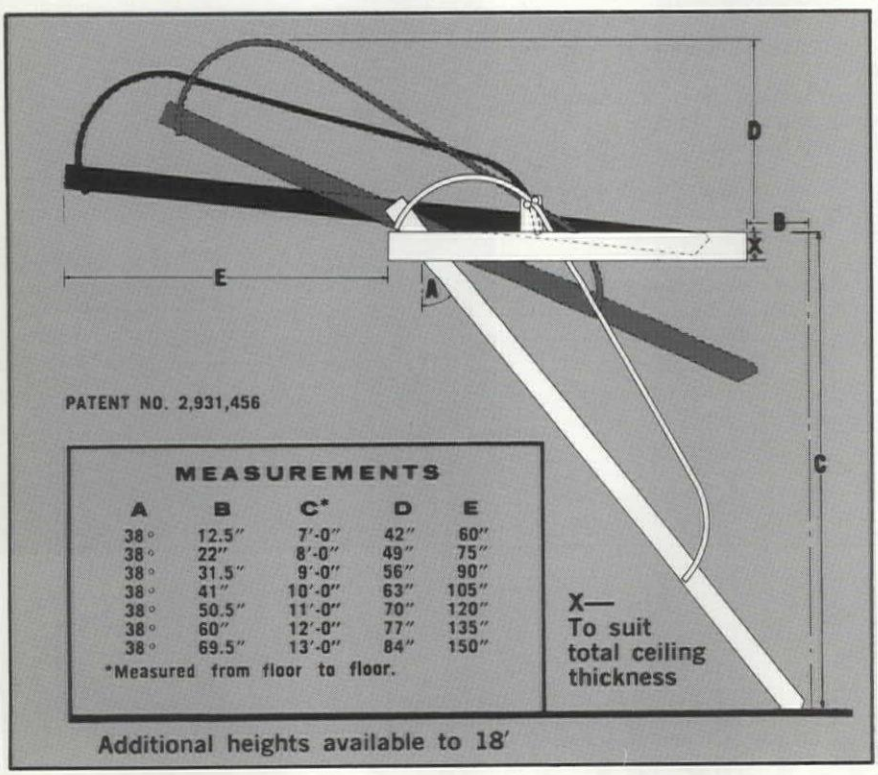

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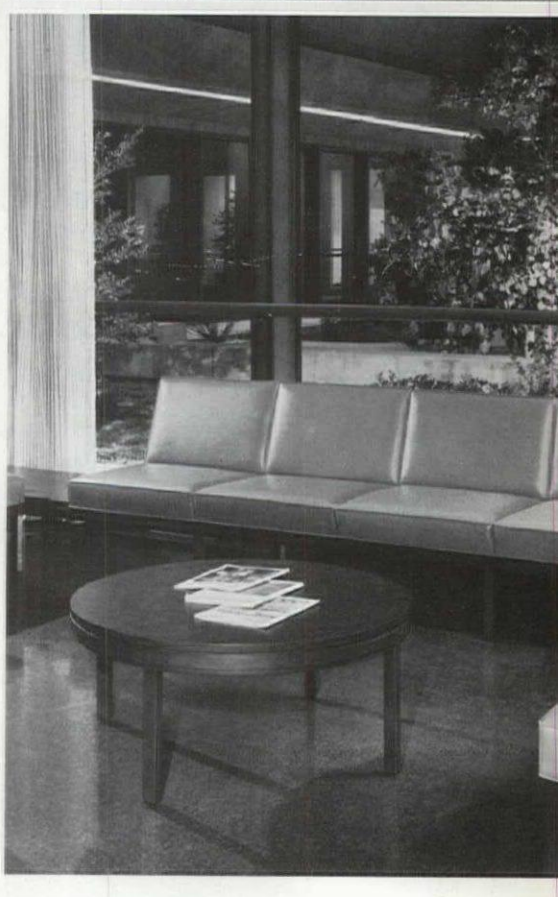

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